

# SQL Manager.net™

EMS® Software Development



## SQL Manager for InterBase/Firebird User's Manual

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# **SQL Manager for InterBase/Firebird User's Manual**

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**Part**





# 1 Welcome to SQL Manager for IB/FB!

**EMS SQL Manager for InterBase/Firebird** is a powerful tool for InterBase/Firebird database server administration and development. **SQL Manager for InterBase/Firebird** works with InterBase versions up to 2020 and Firebird versions up to 4.0, and supports all InterBase and Firebird latest features. It offers plenty of powerful tools for experienced users to satisfy all their needs. **SQL Manager** has a new state-of-the-art graphical user interface with well-described wizard system, so clear in use that even a newbie will not be confused with it.

Visit our web-site for details: <https://www.sqlmanager.net/>

## Key features

- Compatibility with Firebird server versions up to 4.0 and InterBase server versions up to 2020
- Support of Unicode data
- Rapid database management and navigation
- Easy management of all InterBase and Firebird objects with Unicode supporting editors
- Advanced data manipulation tools
- Effective security management
- Excellent visual and text tools for query building
- Impressive data export and import capabilities
- Database Designer to handle database structure in a few clicks
- Easy-to-use wizards performing InterBase and Firebird services
- Powerful tools to make your work with InterBase and Firebird as easy as it can be
- Report designer with clear in use report construction wizard
- Handy interface with dark schema support

## Product information

Homepage <https://www.sqlmanager.net/products/ibfb/manager>  
Support Ticket System <https://www.sqlmanager.net/support>  
Register online at <https://www.sqlmanager.net/products/ibfb/manager/buy>

## 1.1 What's new

**Version****SQL Manager** for **InterBase/Firebird** 6.2.1**Release date**

January 26, 2024

**What's new in SQL Manager for InterBase/Firebird 6.2.1?**

1. SQL is not discarded on exit from Query Designer.
2. Object selection mode added to DB Designer.
3. Connection services are now using the main selected service or utility.
4. Find dialog. ESC closes the popup instead of closing the dialog.
5. Data Import. Encoding is defined automatically now for TXT/CSV files.
6. Parameters are now using TYPE OF COLUMN on creating procedures from table.
7. Authorization dialog added to the Database designer.
8. Fix of importing data with floating points.
9. Collation was modified on editing field size. Fixed now.
10. Fixes of editing TIMETZ values with timezone offset.
11. Fixes for work with databases with NONE encoding.
12. Improvements in displaying dark visual schema.
13. Other minor improvements and fixes.

## 1.2 System requirements

### System requirements for SQL Manager for InterBase/Firebird

- Microsoft Windows XP, Microsoft Windows Server 2003, Microsoft Windows Server 2008, Microsoft Windows Server 2008 R2, Microsoft Windows Server 2012, Microsoft Windows Server 2012 R2, Microsoft Windows Server 2016, Microsoft Windows Server 2019, Microsoft Windows Vista, Microsoft Windows 7, Microsoft Windows 8/8.1, Microsoft Windows 10, Microsoft Windows 11, Microsoft Windows 11 ARM
- 512 Mb RAM or more; 1024 Mb or more recommended
- 200 Mb of available HD space for program installation
- Possibility to connect to any local or remote InterBase/Firebird server
- Supported InterBase and Firebird server versions: InterBase - up to 2020; Firebird - up to 4.0

## 1.3 Feature Matrix

The **FREE** *Lite version* of **SQL Manager for InterBase/Firebird** does not include all features of the *Full version* and has some limitations concerning the number of the databases that can be registered and the set of data manipulation and server maintenance tools. The detailed feature matrix is given below.

Note that when using the **FREE** *Lite version* of **SQL Manager for InterBase/Firebird** you can [activate](#)<sup>[740]</sup> a 30-day period of fully-functional usage. After the period expires, you will be able to continue using the **Lite** version.

For more information on activating the **Full** version features see [Full Mode activation](#)<sup>[740]</sup>.

## 1.4 Installation

If you are **installing SQL Manager for InterBase/Firebird for the first time** on your PC:

- download the **SQL Manager for InterBase/Firebird** distribution package from the [download page](#) available at our site;
- unzip the downloaded file to any local directory, e.g. *C:\unzipped*;
- run *IbManagerFullSetup.exe* (**Full** version) or *IbManagerLiteSetup.exe* (**Lite** version) from the local directory and follow the instructions of the installation wizard;
- after the installation process is complete, find the **SQL Manager** shortcut in the corresponding group of Windows Start menu.

If you want to **upgrade an installed copy of SQL Manager for InterBase/Firebird** to the latest version:

- download the **SQL Manager for InterBase/Firebird** distribution package from the [download page](#) available at our site;
- unzip the downloaded file to any local directory, e.g. *C:\unzipped*;
- close **SQL Manager** application if it is running;
- run *IbManagerFullSetup.exe* (**Full** version) or *IbManagerLiteSetup.exe* (**Lite** version) from the local directory and follow the instructions of the installation wizard.

You can update **SQL Manager** via [SQL Manager Direct](#)<sup>[924]</sup>.

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### See also:

[SQL Manager FAQ](#)<sup>[261]</sup>

## 1.5 Registration

All purchases are provided by **Digital River** registration service. The **Digital River** order process is protected via a secure connection and makes on-line ordering by credit/debit card quick and safe.

**Digital River** is a global e-commerce provider for software and shareware sales via the Internet. It accepts payments in US Dollars, Euros, Pounds Sterling, Japanese Yen, Australian Dollars, Canadian Dollars or Swiss Franks by Credit Card (Visa, MasterCard/ EuroCard, American Express, Diners Club), Bank/Wire Transfer, Check or Cash.

If you want to review your order information, or you have questions about ordering or payments please visit our [Customer Care Center](#), provided by **Digital River**.

Please note that all of our products are delivered via ESD (Electronic Software Delivery) only. After purchase you will be able to immediately download the registration keys or passwords. Also you will receive a copy of registration keys or passwords by email. Please make sure to enter a valid email address in your order. If you have not received the keys within 2 hours, please, contact us at [sales@sqlmanager.net](mailto:sales@sqlmanager.net).

Product distribution	MyCommerce/Digital River
<b>EMS SQL Manager for InterBase/Firebird</b> (Business license) + 1-Year Maintenance*	<a href="#">Register Now!</a>
<b>EMS SQL Manager for InterBase/Firebird</b> (Business license) + 2-Year Maintenance*	
<b>EMS SQL Manager for InterBase/Firebird</b> (Business license) + 3-Year Maintenance*	
<b>EMS SQL Manager for InterBase/Firebird</b> (Non-commercial license) + 1-Year Maintenance*	
<b>EMS SQL Manager for InterBase/Firebird</b> (Non-commercial license) + 2-Year Maintenance*	
<b>EMS SQL Manager for InterBase/Firebird</b> (Non-commercial license) + 3-Year Maintenance*	
<b>EMS SQL Manager for InterBase/Firebird</b> (Trial version)	<a href="#">Download Now!</a>
<b>EMS SQL Manager for InterBase/Firebird Lite</b>	<a href="#">Download Now!</a>

\***EMS Maintenance Program** provides the following benefits:

- Free software bug fixes, enhancements, updates and upgrades during the maintenance period
- Free unlimited communications with technical staff for the purpose of reporting Software failures
- Free reasonable number of communications for the purpose of consultation on operational aspects of the software

After your maintenance expires you will not be able to update your software or get technical support. To protect your investments and have your software up-to-date, you need to renew your maintenance.

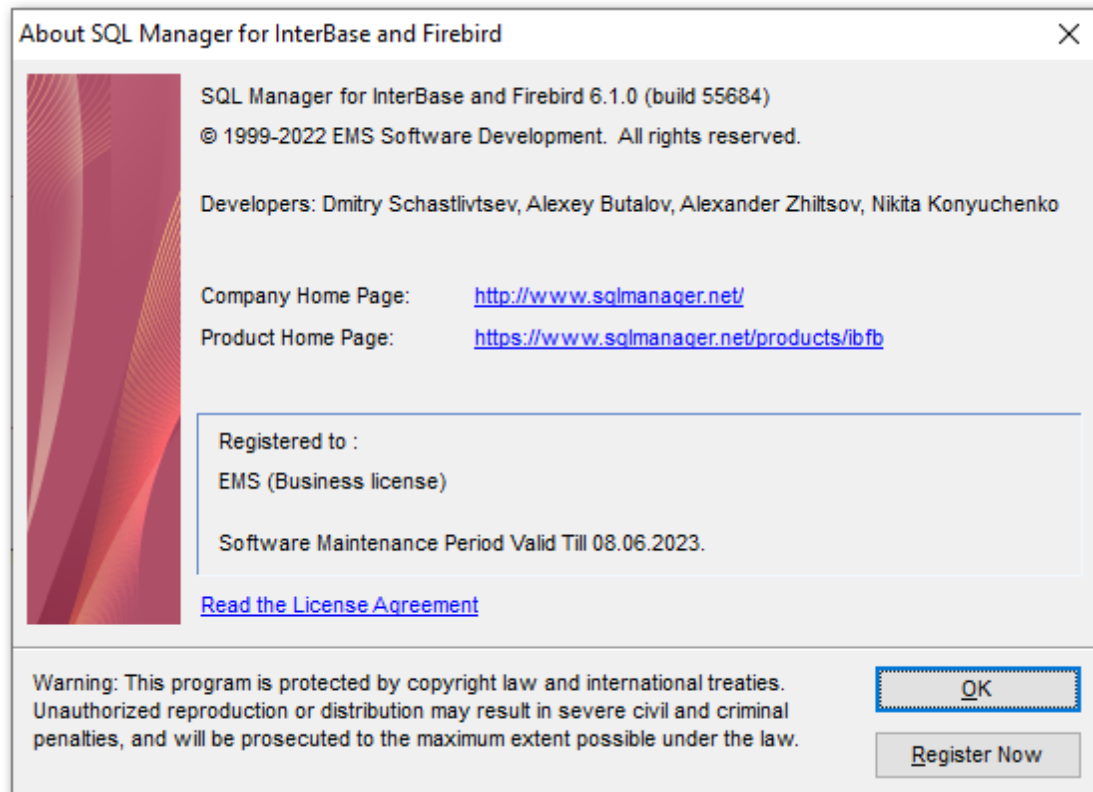
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**See also:**

[How to register SQL Manager](#)<sup>[24]</sup>

## 1.6 How to register SQL Manager

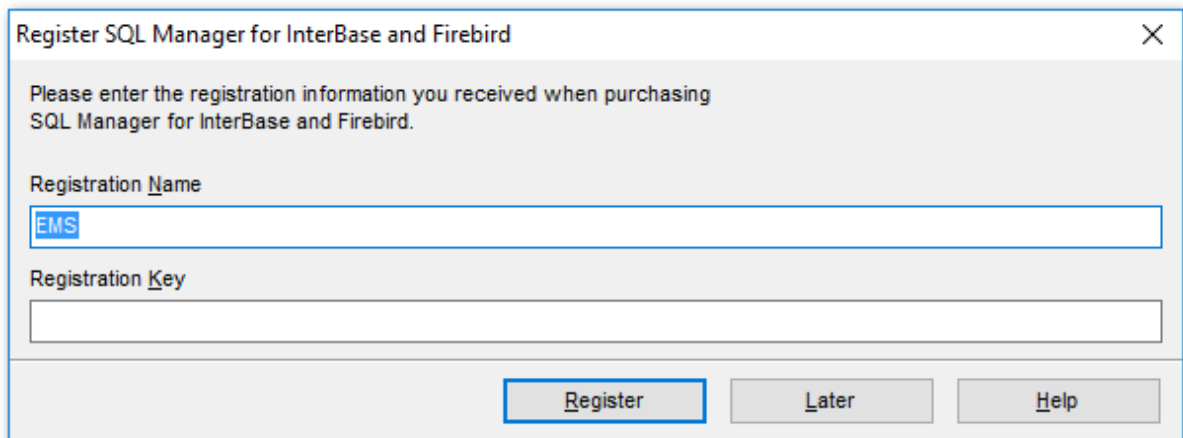
**EMS** If you have not registered your copy of **SQL Manager for InterBase/Firebird** yet, you can do it by pressing the **Register Now** button and entering your registration information in the **Register SQL Manager for InterBase/Firebird** dialog.



To register your newly purchased copy of **EMS SQL Manager for InterBase/Firebird**, perform the following steps:

- receive the notification letter from **Digital River** with the registration info;
- enter the **Registration Name** and the **Registration Key** from this letter;
- make sure that the registration process has been completed successfully – check the registration information in the **About SQL Manager for InterBase/Firebird** dialog (use the **Help | About** menu item to open this dialog).





Register SQL Manager for InterBase and Firebird

Please enter the registration information you received when purchasing SQL Manager for InterBase and Firebird.

Registration Name

Registration Key

Register Later Help

---

**See also:**

[Registration](#) 

## 1.7 EMS SQL Manager FAQ

Please read this page attentively if you have questions about **EMS SQL Manager for InterBase/Firebird**.

### Table of contents

#### Product questions

- [What is EMS SQL Manager for InterBase/Firebird?](#)<sup>[26]</sup>
- [What is the difference between Full/Lite editions of EMS InterBase/Firebird?](#)<sup>[26]</sup>
- [What do I need to start working with EMS SQL Manager for InterBase/Firebird?](#)<sup>[27]</sup>
- [What is the difference between the Export/Import functions in SQL Manager and the Data Export/Import utilities?](#)<sup>[27]</sup>
- [What is the difference between the Design Query module in SQL Manager and the SQL Query for InterBase/Firebird utility?](#)<sup>[27]</sup>
- [What is the difference between the Extract Database function in SQL Manager for InterBase/Firebird and the DB Extract for InterBase/Firebird standalone utility?](#)<sup>[27]</sup>

#### Common questions

- [I can't modify DDL. Why?](#)<sup>[27]</sup>
- [How can I customize data formats in grid?](#)<sup>[27]</sup>
- [I need to perform some changes in database objects of my test database and then make the same changes on master database. Are there any tools for this purpose in SQL Manager for InterBase/Firebird?](#)<sup>[27]</sup>
- [When I create database objects, their names are always converted to lower case. How I can prevent it?](#)<sup>[28]</sup>
- [I am trying to create a report in Report Designer, but I can't get access to the table data: 'Band data source' list is empty.](#)<sup>[28]</sup>
- [How can I speed up my work with large tables?](#)<sup>[28]</sup>
- [I have a table with appr. 1000 records only, and a large number of fields. Opening this table on the 'Data' tab takes too much time.](#)<sup>[29]</sup>

#### Export/Import questions

- [I'm trying to export data from a table, but BLOB fields are not exported.](#)<sup>[29]</sup>
- [What is the difference between the "Extract Database" and "Export as SQL Script" functions?](#)<sup>[29]</sup>
- [How can I change the default directory where exported data are saved?](#)<sup>[29]</sup>

### Question/answer list

#### Product questions

*Q: What is EMS SQL Manager for InterBase/Firebird?*

**A: EMS SQL Manager for InterBase/Firebird** is a powerful tool for InterBase/Firebird administration and development. **SQL Manager for InterBase/Firebird** works with Firebird server versions up to 4.0 and InterBase server versions up to 2020, and supports all of the latest InterBase/Firebird features. It offers plenty of powerful tools for experienced users to satisfy all their needs. **SQL Manager for InterBase/Firebird** has a new state-of-the-art graphical user interface with well-described wizard system, so clear in use that even a newbie will not be confused with it.

*Q: What is the difference between Full/Lite editions of EMS SQL Manager for InterBase/*

*Firebird?*

A: These editions of **SQL Manager** differ in price and features. To register **SQL Manager for InterBase/Firebird**, see the [Purchase page](#), and to learn about the difference in features please go to our [Feature Matrix page](#)<sup>[20]</sup>.

Q: *What do I need to start working with EMS SQL Manager for InterBase/Firebird?*

A: First of all, you must have an opportunity to connect to some local or remote InterBase/Firebird server. Besides, you need your workstation to satisfy the [system requirements](#)<sup>[19]</sup> of **SQL Manager for InterBase/Firebird**.

Q: *What is the difference between the Export/Import functions in SQL Manager and the Data Export/Import utilities?*

A: The Data Export/Import for InterBase/Firebird utilities include some additional features which are not available in SQL Manager, such as:

- export/import data from/to several tables simultaneously;
- export/import data from/to tables selected from different databases on one host;
- a command-line utility to export/import data using the configuration file with all the export/import options.

Q: *What is the difference between the Design Query module in SQL Manager and the SQL Query for InterBase/Firebird utility?*

A: First of all, SQL Query for InterBase/Firebird works faster as it is a much lighter product. Besides, it provides additional features for query building, e.g.:

- keeping query history which allows you to rollback to any edited query;
- various interface improvements for more productive and easier work.

Q: *What is the difference between the Extract Database function in SQL Manager for InterBase/Firebird and the DB Extract for InterBase/Firebird standalone utility?*

A: The DB Extract for InterBase/Firebird utility includes some additional features which are not available in SQL Manager, such as:

- extracting metadata and/or data from several databases on one host;
- a console application for performing extract in one-touch;
- faster extraction speed.

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## Common questions

Q: *I can't modify DDL. Why?*

A: The DDL tab of the **SQL Manager** editors is read-only. It displays object structure as SQL text and reflects the operations you perform over the object under other editor tabs. To modify an object, you can copy the text to the clipboard and edit it using [Execute Script Editor](#)<sup>[542]</sup>. For more details refer to [Viewing object DDL structure](#)<sup>[886]</sup>.

Q: *How can I customize data formats in grid?*

A: You can customize all display formats: integer, float, date, time and datetime using the [Color & Formats](#)<sup>[786]</sup> page of the [Environment Options](#)<sup>[736]</sup> dialog.

Q: *I need to perform some changes in database objects of my test database and then make the same changes on master database. Are there any tools for this purpose in SQL Manager for InterBase/Firebird?*

A: The [Database Registration Info](#)<sup>[115]</sup> dialog provides the [Logs](#)<sup>[134]</sup> section where you can enable logging metadata changes performed over the database and/or SQL queries

executed in [Query data](#)<sup>[330]</sup>.

Q: *When I create database objects, their names are always converted to lower case. How I can prevent it?*

A: Please try to switch off the "Convert created objects' names to lower case" option within the [Object Editors](#)<sup>[772]</sup> section of the [Environment Options](#)<sup>[736]</sup> dialog.

Q: *I am trying to create a report in Report Designer, but I can't get access to the table data: 'Band data source' list is empty.*

A: It is recommended to use [Create Report wizard](#)<sup>[573]</sup> which is run by right-clicking the Reports node in [DB Explorer](#)<sup>[631]</sup> and selecting the 'New Report...' context menu item. The wizard will create all necessary data sources.

If you still want to use [Report Designer](#)<sup>[581]</sup>, to get the data source in a report, you need [to add database and query components](#)<sup>[584]</sup> to the report.

Q: *How can I speed up my work with large tables?*

A: For your convenience and to speed up your work, the [Data Grid](#)<sup>[373]</sup> allows customizing a number of data display parameters. Here are the most important of them (accessible through the [Grid | Data Options](#)<sup>[782]</sup> section of the [Environment Options](#)<sup>[736]</sup> dialog):

- *Limit options in table and view editors.* The 'Select all records of a table' option will enable you to see all table records without extra references to the server, yet in case of large tables or low speed connection channel the data may be fetched with huge delays and the incoming traffic might grow considerably. This mode is recommended when working with local databases or in a private network. The 'Select only' mode restricts the maximum number of records returned after the query. A man cannot process a massive amount of information at once. Hence, we came up with this mode. This mode speeds up table data viewing considerably, prevents hanging and connection timeout. It is recommended to work with large tables, in case of low speed connection channels and when the traffic volume is of importance. This is the default mode. When in this mode, enabling the 'Use SQL sorting in data view' and 'Use SQL filter in data view' options comes really helpful.

- *Default Grid Mode.* This option defines whether the requested rows will be loaded in the Grid all at once ('Load all rows'), or in parts ('Load visible rows') as the user scrolls down table data. The first mode increases the query opening time, but speeds up scrolling. In the second mode the query opens very fast, but there might be delays when navigating the grid.

- *Use SQL sorting in data view.* With this option enabled, when the user sets data sorting, a new request is sent to the server, and the result is shown anew in the Grid. Enabling this option is very helpful with the 'Select only' mode enabled, but it increases the traffic. When this option is disabled, sorting is made on the client computer without any references to the server but only loaded data are sorted. That is, if you set 'Select only 1,000 records', then only these records will be sorted.

- *Use SQL filter in data view.* With this option enabled, the data will be sorted on the server to which a new request is sent, and the result will be shown anew in the Grid. Enabling this option is also helpful when the 'Select only' mode is on, but it increases the traffic. When this option is disabled, the filtering is made on the client computer without any references to the server but only loaded data are filtered. That is, if you set 'Select only 1,000 records', then only these records will be filtered.

We recommend that you set the following option values to achieve maximum efficiency when working with large tables:

- *Select only* – ON
- *Load visible rows* – ON
- *Use SQL sorting in data view* – ON

- Use SQL filter in data view – ON

Q: I have a table with appr. 1000 records only, and a large number of fields. Opening this table on the 'Data' tab takes too much time.

A: You need to set the [Grid Mode](#)<sup>[782]</sup> for the table to 'Load Visible Rows'. Please right click within the [table grid](#)<sup>[199]</sup> and select the 'Grid Mode' | 'Load Visible Rows' context menu item.

[Scroll to top](#)<sup>[26]</sup>

### Export/Import questions

Q: I'm trying to export data from a table, but BLOB fields are not exported.

A: Fields of type BLOB are not exported by default. You should select these fields manually at the [Selecting fields for export](#)<sup>[447]</sup> step.

Q: What is the difference between the "Extract Database" and "Export as Execute Script" functions?

A: [Export as SQL Script](#)<sup>[517]</sup> is intended for exporting table data that will be inserted into a database system other than InterBase/Firebird. Use [Extract Database Wizard](#)<sup>[550]</sup> to copy metadata and/or data to a database on InterBase/Firebird afterwards.

Q: How can I change the default directory where exported data are saved?

A: Follow the steps below to change the default directory:

1. Right-click the database alias in [DB Explorer](#)<sup>[63]</sup> and select the 'Database Registration Info...' [context menu](#)<sup>[53]</sup> item (you can also find this item in the 'Database' [main menu](#)<sup>[882]</sup>) to open the [Database Registration Info](#)<sup>[115]</sup> dialog.
2. Proceed to the [Directories](#)<sup>[133]</sup> section within the dialog.
3. Set the 'Default directory for Export Data'.

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If you still have any questions, contact us at our [Support Center](#).

## 1.8 Other EMS Products

### Quick navigation



### MySQL



#### [SQL Management Studio for MySQL](#)

EMS SQL Management Studio for MySQL is a complete solution for database administration and development. SQL Studio unites the must-have tools in one powerful and easy-to-use environment that will make you more productive than ever before!



#### [SQL Manager for MySQL](#)

Simplify and automate your database development process, design, explore and maintain existing databases, build compound SQL query statements, manage database user rights and manipulate data in different ways.



#### [Data Export for MySQL](#)

Export your data to any of 20 most popular data formats, including MS Access, MS Excel, MS Word, PDF, HTML and more.



#### [Data Import for MySQL](#)

Import your data from MS Access, MS Excel and other popular formats to database tables via user-friendly wizard interface.



#### [Data Pump for MySQL](#)

Migrate from most popular databases (MySQL, PostgreSQL, Oracle, DB2, InterBase/Firebird, etc.) to MySQL.



#### [Data Generator for MySQL](#)

Generate test data for database testing purposes in a simple and direct way. Wide range of data generation parameters.



#### [DB Comparer for MySQL](#)

Compare and synchronize the structure of your databases. Move changes on your development database to production with ease.



#### [DB Extract for MySQL](#)

Create database backups in the form of SQL scripts, save your database structure and table data as a whole or partially.



#### [SQL Query for MySQL](#)

Analyze and retrieve your data, build your queries visually, work with query plans, build charts based on retrieved data quickly and more.



#### [Data Comparer for MySQL](#)

Compare and synchronize the contents of your databases. Automate your data migrations from development to production database.

[Scroll to top](#) <sup>[30]</sup>

## Microsoft SQL Server



### [SQL Management Studio for SQL Server](#)

EMS SQL Management Studio for SQL Server is a complete solution for database administration and development. SQL Studio unites the must-have tools in one powerful and easy-to-use environment that will make you more productive than ever before!



### [EMS SQL Backup for SQL Server](#)

Perform backup and restore, log shipping and many other regular maintenance tasks on the whole set of SQL Servers in your company.



### [SQL Administrator for SQL Server](#)

Perform administrative tasks in the fastest, easiest and most efficient way. Manage maintenance tasks, monitor their performance schedule, frequency and the last execution result.



### [SQL Manager for SQL Server](#)

Simplify and automate your database development process, design, explore and maintain existing databases, build compound SQL query statements, manage database user rights and manipulate data in different ways.



### [Data Export for SQL Server](#)

Export your data to any of 20 most popular data formats, including MS Access, MS Excel, MS Word, PDF, HTML and more



### [Data Import for SQL Server](#)

Import your data from MS Access, MS Excel and other popular formats to database tables via user-friendly wizard interface.



### [Data Pump for SQL Server](#)

Migrate from most popular databases (MySQL, PostgreSQL, Oracle, DB2, InterBase/Firebird, etc.) to Microsoft® SQL Server™.



### [Data Generator for SQL Server](#)

Generate test data for database testing purposes in a simple and direct way. Wide range of data generation parameters.



### [DB Comparer for SQL Server](#)

Compare and synchronize the structure of your databases. Move changes on your development database to production with ease.



### [DB Extract for SQL Server](#)

Create database backups in the form of SQL scripts, save your database structure and table data as a whole or partially.



### [SQL Query for SQL Server](#)

Analyze and retrieve your data, build your queries visually, work with query plans, build charts based on retrieved data quickly and more.



### [Data Comparer for SQL Server](#)

Compare and synchronize the contents of your databases. Automate your data migrations from development to production database.

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## PostgreSQL



### [SQL Management Studio for PostgreSQL](#)

EMS SQL Management Studio for PostgreSQL is a complete solution for database administration and development. SQL Studio unites the must-have tools in one powerful and easy-to-use environment that will make you more productive than ever before!



### [EMS SQL Backup for PostgreSQL](#)

Creates backups for multiple PostgreSQL servers from a single console. You can use automatic backup tasks with advanced schedules and store them in local or remote folders or cloud storages



### [SQL Manager for PostgreSQL](#)

Simplify and automate your database development process, design, explore and maintain existing databases, build compound SQL query statements, manage database user rights and manipulate data in different ways.



### [Data Export for PostgreSQL](#)

Export your data to any of 20 most popular data formats, including MS Access, MS Excel, MS Word, PDF, HTML and more



### [Data Import for PostgreSQL](#)

Import your data from MS Access, MS Excel and other popular formats to database tables via user-friendly wizard interface.



### [Data Pump for PostgreSQL](#)

Migrate from most popular databases (MySQL, SQL Server, Oracle, DB2, InterBase/Firebird, etc.) to PostgreSQL.



### [Data Generator for PostgreSQL](#)

Generate test data for database testing purposes in a simple and direct way. Wide range of data generation parameters.



### [DB Comparer for PostgreSQL](#)

Compare and synchronize the structure of your databases. Move changes on your development database to production with ease.



### [DB Extract for PostgreSQL](#)

Create database backups in the form of SQL scripts, save your database structure and table data as a whole or partially.



### [SQL Query for PostgreSQL](#)

Analyze and retrieve your data, build your queries visually, work with query plans, build charts based on retrieved data quickly and more.



### [Data Comparer for PostgreSQL](#)

Compare and synchronize the contents of your databases. Automate your data migrations from development to production database.

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## InterBase / Firebird



### [SQL Management Studio for InterBase/Firebird](#)

EMS SQL Management Studio for InterBase and Firebird is a complete solution for database administration and development. SQL Studio unites the must-have tools in one powerful and easy-to-use environment that will make you more productive than ever before!





### [SQL Manager for InterBase/Firebird](#)

Simplify and automate your database development process, design, explore and maintain existing databases, build compound SQL query statements, manage database user rights and manipulate data in different ways.



### [Data Export for InterBase/Firebird](#)

Export your data to any of 20 most popular data formats, including MS Access, MS Excel, MS Word, PDF, HTML and more



### [Data Import for InterBase/Firebird](#)

Import your data from MS Access, MS Excel and other popular formats to database tables via user-friendly wizard interface.



### [Data Pump for InterBase/Firebird](#)

Migrate from most popular databases (MySQL, SQL Server, Oracle, DB2, PostgreSQL, etc.) to InterBase/Firebird.



### [Data Generator for InterBase/Firebird](#)

Generate test data for database testing purposes in a simple and direct way. Wide range of data generation parameters.



### [DB Comparer for InterBase/Firebird](#)

Compare and synchronize the structure of your databases. Move changes on your development database to production with ease.



### [DB Extract for InterBase/Firebird](#)

Create database backups in the form of SQL scripts, save your database structure and table data as a whole or partially.



### [SQL Query for InterBase/Firebird](#)

Analyze and retrieve your data, build your queries visually, work with query plans, build charts based on retrieved data quickly and more.



### [Data Comparer for InterBase/Firebird](#)

Compare and synchronize the contents of your databases. Automate your data migrations from development to production database.

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## Oracle



### [SQL Management Studio for Oracle](#)

EMS SQL Management Studio for Oracle is a complete solution for database administration and development. SQL Studio unites the must-have tools in one powerful and easy-to-use environment that will make you more productive than ever before!



### [SQL Manager for Oracle](#)

Simplify and automate your database development process, design, explore and maintain existing databases, build compound SQL query statements, manage database user rights and manipulate data in different ways.



### [Data Export for Oracle](#)

Export your data to any of 20 most popular data formats, including MS Access, MS Excel, MS Word, PDF, HTML and more.

[Data Import for Oracle](#)

Import your data from MS Access, MS Excel and other popular formats to database tables via user-friendly wizard interface.

[Data Pump for Oracle](#)

Migrate from most popular databases (MySQL, PostgreSQL, MySQL, DB2, InterBase/Firebird, etc.) to Oracle

[Data Generator for Oracle](#)

Generate test data for database testing purposes in a simple and direct way. Wide range of data generation parameters.

[DB Comparer for Oracle](#)

Compare and synchronize the structure of your databases. Move changes on your development database to production with ease.

[DB Extract for Oracle](#)

Create database backups in the form of SQL scripts, save your database structure and table data as a whole or partially.

[SQL Query for Oracle](#)

Analyze and retrieve your data, build your queries visually, work with query plans, build charts based on retrieved data quickly and more.

[Data Comparer for Oracle](#)

Compare and synchronize the contents of your databases. Automate your data migrations from development to production database.

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## IBM DB2

[SQL Manager for DB2](#)

Simplify and automate your database development process, design, explore and maintain existing databases, build compound SQL query statements, manage database user rights and manipulate data in different ways.

[Data Export for DB2](#)

Export your data to any of 20 most popular data formats, including MS Access, MS Excel, MS Word, PDF, HTML and more.

[Data Import for DB2](#)

Import your data from MS Access, MS Excel and other popular formats to database tables via user-friendly wizard interface.

[Data Pump for DB2](#)

Migrate from most popular databases (MySQL, PostgreSQL, Oracle, MySQL, InterBase/Firebird, etc.) to DB2

[Data Generator for DB2](#)

Generate test data for database testing purposes in a simple and direct way. Wide range of data generation parameters.

[DB Extract for DB2](#)

Create database backups in the form of SQL scripts, save your database structure and table data as a whole or partially.



### [SQL Query for DB2](#)

Analyze and retrieve your data, build your queries visually, work with query plans, build charts based on retrieved data quickly and more.

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## Tools & components



### [Advanced Data Export for RAD Studio VCL](#)

Advanced Data Export for RAD Studio VCL allows you to save your data in the most popular office programs formats.



### [Advanced Data Export .NET](#)

Advanced Data Export .NET is a component for Microsoft Visual Studio .NET that will allow you to save your data in the most popular data formats for the future viewing, modification, printing or web publication. You can export data into MS Access, MS Excel, MS Word (RTF), PDF, TXT, DBF, CSV and more! There will be no need to waste your time on tiresome data conversion - Advanced Data Export will do the task quickly and will give the result in the desired format.



### [Advanced Data Import for RAD Studio VCL](#)

Advanced Data Import for RAD Studio VCL will allow you to import your data to the database from files in the most popular data formats.



### [Advanced PDF Generator for RAD Studio](#)

Advanced PDF Generator for RAD Studio gives you an opportunity to create PDF documents with your applications written on Delphi or C++ Builder.



### [Advanced Query Builder for RAD Studio VCL](#)

Advanced Query Builder for RAD Studio VCL is a powerful component for Delphi and C++ Builder intended for visual building SQL statements for the SELECT, INSERT, UPDATE and DELETE clauses.



### [Advanced Excel Report for RAD Studio](#)

Advanced Excel Report for RAD Studio is a powerful band-oriented generator of template-based reports in MS Excel.



### [Advanced Localizer for RAD Studio VCL](#)

Advanced Localizer for RAD Studio VCL is an indispensable component for Delphi for adding multilingual support to your applications.

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**Part**



## 2 Getting Started

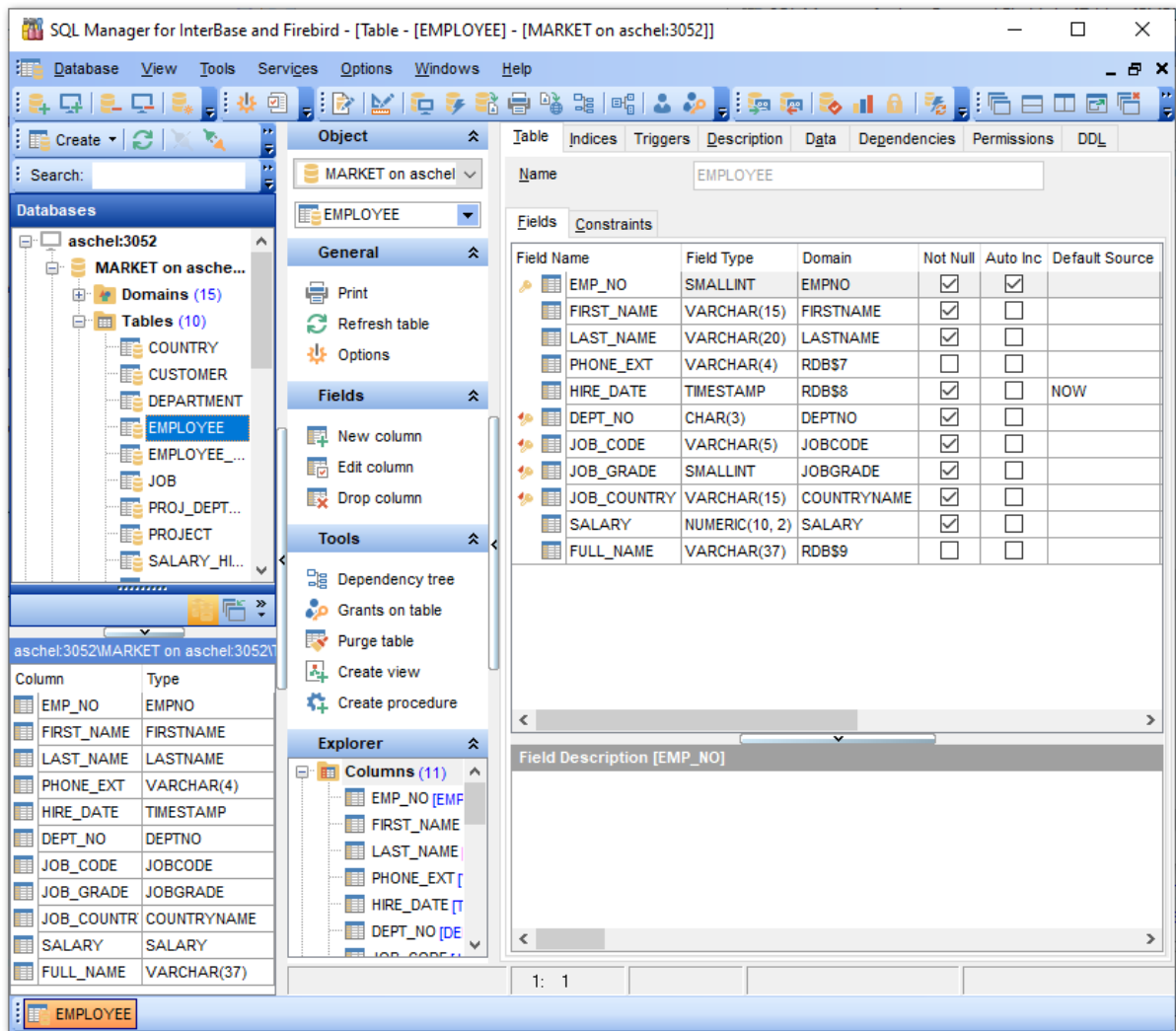
**SQL Manager for InterBase/Firebird** provides you with an ability to contribute to efficient InterBase/Firebird administration and development using a variety of available tools easily and quickly.

The succeeding chapters of this document are intended to inform you about the tools implemented in **SQL Manager for InterBase/Firebird**. Please see the instructions below to learn how to perform various operations in the easiest way.

- [Selecting style and language](#)<sup>[40]</sup>
- [How the application looks when you start it for the first time](#)<sup>[42]</sup>
- [Using Desktop Pane](#)<sup>[44]</sup>
- [Database navigation](#)<sup>[46]</sup>
- [Working with database objects](#)<sup>[49]</sup>
- [Using context menus](#)<sup>[51]</sup>
- [Working with child windows](#)<sup>[58]</sup>

See the [How to...](#)<sup>[838]</sup> chapter to view brief instructions on how to perform some operations on databases, database objects, etc.

**Enjoy your work with EMS SQL Manager for InterBase/Firebird!**

**See also:**[Database Explorer](#) <sup>63</sup>[Database Management](#) <sup>87</sup>[Database Objects Management](#) <sup>162</sup>[Query Management Tools](#) <sup>328</sup>[Data Management](#) <sup>368</sup>[Import/Export Tools](#) <sup>443</sup>[Database Tools](#) <sup>532</sup>[Services](#) <sup>651</sup>[Security management](#) <sup>711</sup>[External Tools](#) <sup>832</sup>[How to...](#) <sup>838</sup>



## 2.1 Selecting style and language

Before you start SQL Manager for the first time, you have to choose the appearance style and the interface language. You can change these settings any time using the [Environment Options](#)<sup>[743]</sup> dialog to configure environment style and the language.

### Appearance theme

Select the main color theme for the application: Light, Blue or Dark.

### Bar style for editors

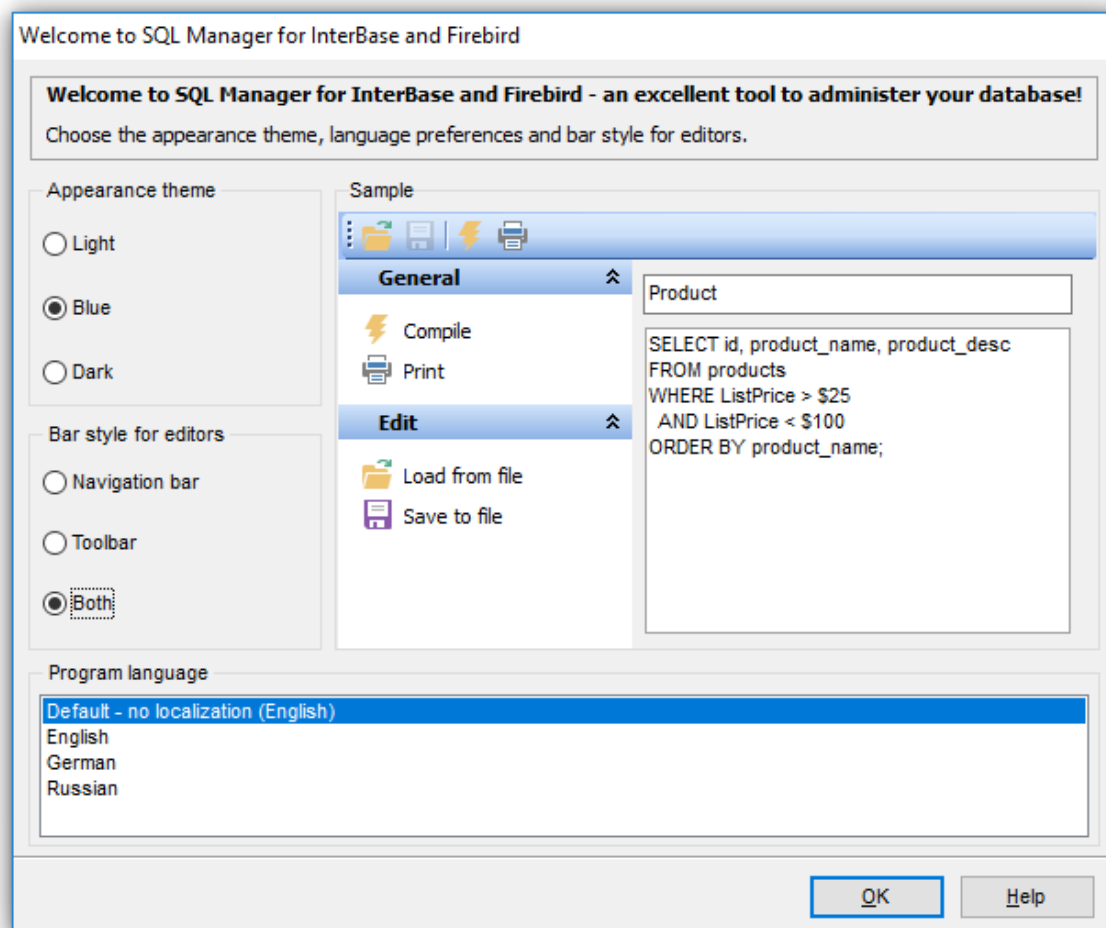
Here you can define the location of action buttons:  within the *Navigation bar* (on the left) and/or  on the *Toolbar*.

### Program language

Select the interface language from the list of available languages.

### Sample

See the example of selected options for interface.



### See also:

[First time started](#)<sup>[42]</sup>



[Using Desktop Panel](#)<sup>[44]</sup>

[Database navigation](#)<sup>[46]</sup>

[Working with database objects](#)<sup>[49]</sup>

[Using context menus](#)<sup>[51]</sup>

[Working with windows](#)<sup>[58]</sup>

## 2.2 First time started

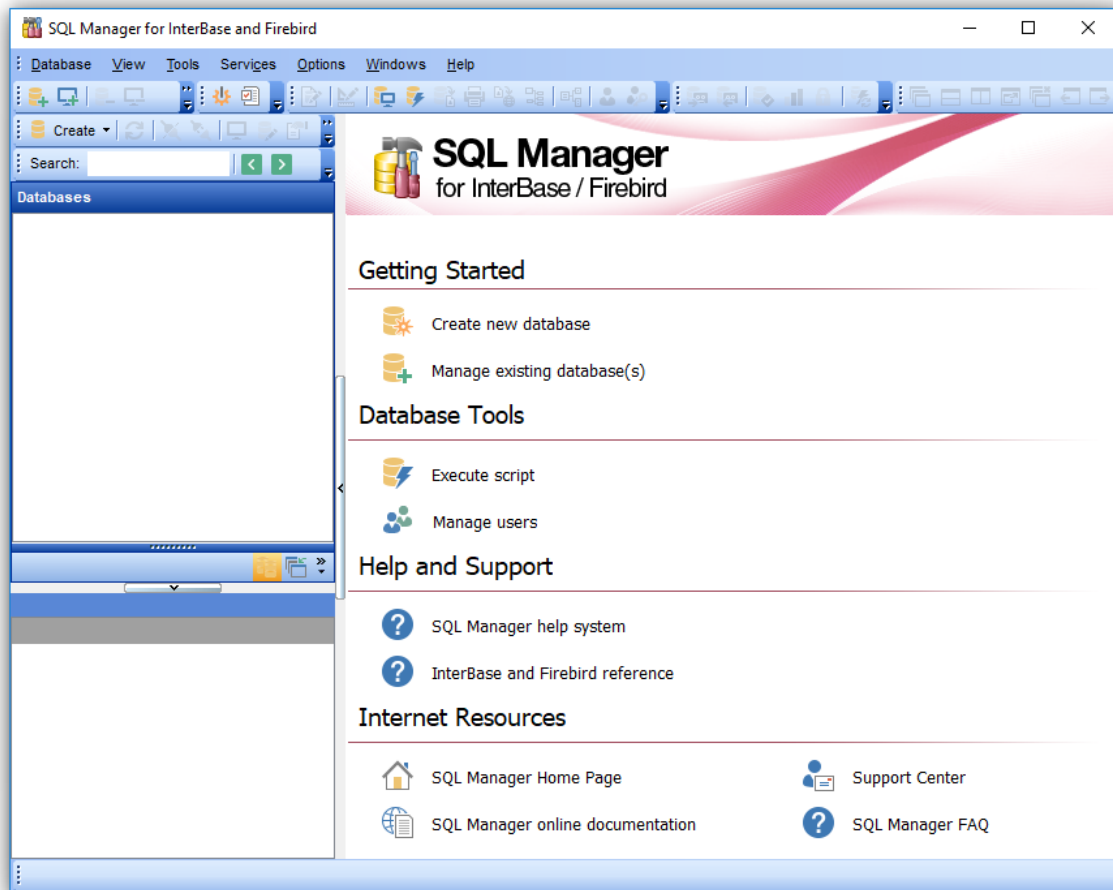
This is how **SQL Manager for InterBase/Firebird** looks when you start it for the first time. Use the [Desktop panel](#)<sup>[44]</sup> to fulfill any of common tasks: [Create a new database](#)<sup>[100]</sup>, [Manage existing database\(s\)](#)<sup>[107]</sup>, and several tasks that do not require database registration, i.e. [Execute script](#)<sup>[542]</sup>, accessing the **reference system** or using available **Internet resources**.

The [main menu](#)<sup>[882]</sup> allows you to perform various **Database** operations, open [To-Do List](#)<sup>[913]</sup> and activate/deactivate [Database Explorer](#)<sup>[63]</sup>, [SQL Assistant](#)<sup>[80]</sup> and various [toolbars](#)<sup>[884]</sup> within the **View** menu, manage your databases using items of the **Tools** and **Services** menus, [customize](#)<sup>[735]</sup> the application using the **Options** menu, manage **SQL Manager Windows** using [Window List](#)<sup>[915]</sup> and other tools, and access [Registration](#)<sup>[22]</sup> information and product documentation, [update](#)<sup>[924]</sup> the product to the latest version using the corresponding items available within the **Help** menu.

To start working with your InterBase/Firebird server, you should first register the host using [Register Host wizard](#)<sup>[90]</sup>. After that you need to register one or several databases using [Register Database Wizard](#)<sup>[107]</sup>.

By default the corresponding  **Register Host**,  **Register Database** buttons are available on the [toolbar](#)<sup>[884]</sup> and within the **Database** menu.

When the database connection settings are specified, you can set connection to your database and proceed to [Database navigation](#)<sup>[46]</sup>, [Database Objects management](#)<sup>[162]</sup>, [working with SQL queries](#)<sup>[328]</sup> and other tools of **SQL Manager**.

**See also:**

[Selecting style and language](#) <sup>[40]</sup>

[Using Desktop Panel](#) <sup>[44]</sup>

[Database navigation](#) <sup>[46]</sup>

[Working with database objects](#) <sup>[49]</sup>

[Using context menus](#) <sup>[51]</sup>

[Working with windows](#) <sup>[58]</sup>


## 2.3 Using Desktop Panel

**Desktop Panel** is the area that is visible when no child windows are open in **SQL Manager for InterBase/Firebird**. The working area of **Desktop Panel** is divided into four sections: *Getting Started*, *Database Tools*, *Help and Support*, *Internet Resources*.



### Getting Started

- |   |  |
|---|--|
|  Create new database         |  Create new table           |
|  Manage existing database(s) |  Create new database object |





### Database Tools

- |  |  |
|--|--|
|  Execute script |  Query data         |
|  Manage users   |  Manage permissions |

### Help and Support





-  SQL Manager help system
-  InterBase and Firebird reference

### Internet Resources



- |  |   |
|--|---|
|  SQL Manager Home Page            |  Support Center  |
|  SQL Manager online documentation |  SQL Manager FAQ |


Using the **Desktop Panel** items you can:


#### Getting Started

-  [Create](#)<sup>[100]</sup> a new InterBase/Firebird database
-  [Register](#)<sup>[107]</sup> existing database(s) to operate them afterwards in **SQL Manager**
-  Create a new table within the current database using the [New Table](#)<sup>[179]</sup> window (this item is available if there is at least one active database connection)
-  [Create a new database object](#)<sup>[164]</sup> within the current database (this item is available if there is at least one active database connection)


#### Database Tools

-  Execute a script using [Execute Script](#)<sup>[542]</sup> editor
-  [Query data](#)<sup>[330]</sup> (this item is available if there is at least one active database connection)

 Manage Users allows you to create new or edit existing users using [User Manager](#)<sup>[71]</sup>

 Manage permissions on database objects to InterBase/Firebird users using [Grant Manager](#)<sup>[72]</sup> (this item is available if there is at least one active database connection)

### Help and Support

 Show this help file

 Show **InterBase and Firebird** help file

### Internet Resources

 Visit **SQL Manager** Home Page

 Browse **SQL Manager** online documentation

 Go to [Technical Support Center](#)

 Look through the [Frequently Asked Questions](#)<sup>[26]</sup> page

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### See also:

[Selecting style and language](#)<sup>[40]</sup>

[First time started](#)<sup>[42]</sup>


[Database navigation](#)<sup>[46]</sup>

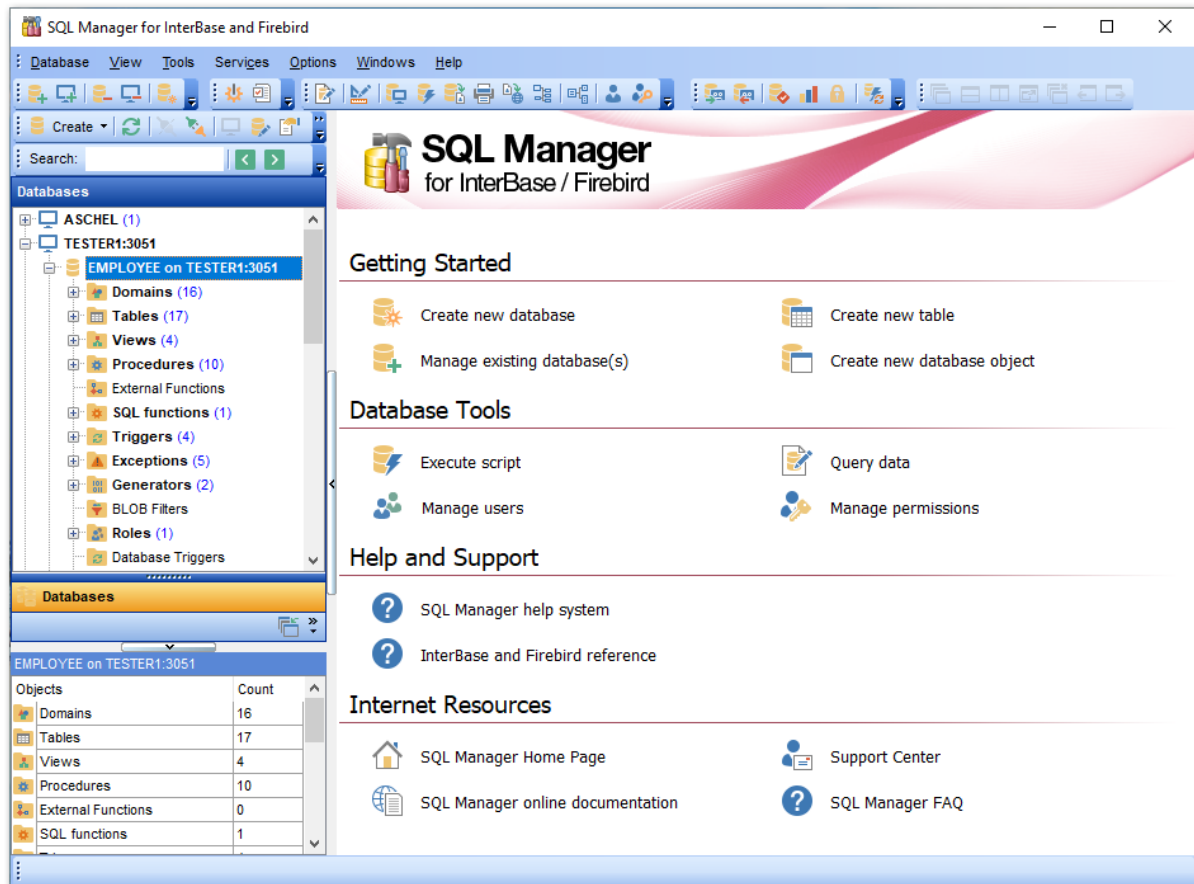
[Working with database objects](#)<sup>[49]</sup>

[Using context menus](#)<sup>[51]</sup>

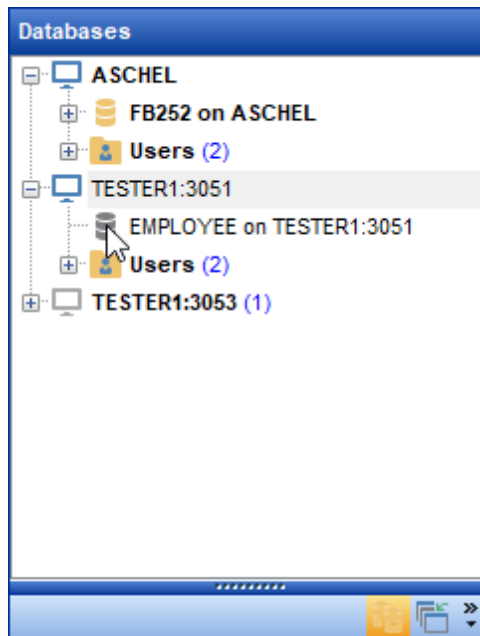
[Working with windows](#)<sup>[58]</sup>

## 2.4 Database navigation

After you have registered the required database(s), the corresponding alias(es) appear in the [DB Explorer](#)<sup>[63]</sup> tree on the left. If the **Show Hosts** option is checked on the [Environment Options](#)<sup>[736]</sup> | [DB Explorer](#)<sup>[745]</sup> page, the host nodes are also displayed in the tree (alternatively, you can use the **Show Hosts** item of the [Database context menu](#)<sup>[53]</sup>, or the drop-down menu of the **View Mode**  [toolbar](#)<sup>[83]</sup> button for the same purpose).



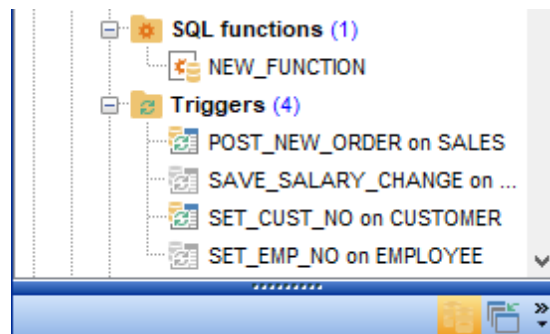
[DB Explorer](#)<sup>[63]</sup> displays all registered hosts and databases. Connected/disconnected hosts and databases can be easily distinguished in the tree: aliases of disconnected hosts and databases are grayed out.



To [connect](#)<sup>[67]</sup> to a database, simply double-click its alias (or select the database alias in [DB Explorer](#)<sup>[63]</sup> and press **Enter**). If the connection is successful, the database node expands into a tree of objects.

Now you can navigate within the database objects. Use [SQL Assistant](#)<sup>[80]</sup> to get extended information about the currently selected object.

For your convenience objects having different status (e.g. enabled/disabled) and valid/invalid objects are displayed with different icons in [Database Explorer](#)<sup>[63]</sup>.



### See also:

[Selecting style and language](#)<sup>[40]</sup>

[First time started](#)<sup>[42]</sup>

[Using Desktop Panel](#)<sup>[44]</sup>

[Working with database objects](#)<sup>[49]</sup>

[Using context menus](#)<sup>[51]</sup>

[Working with windows](#)<sup>[58]</sup>





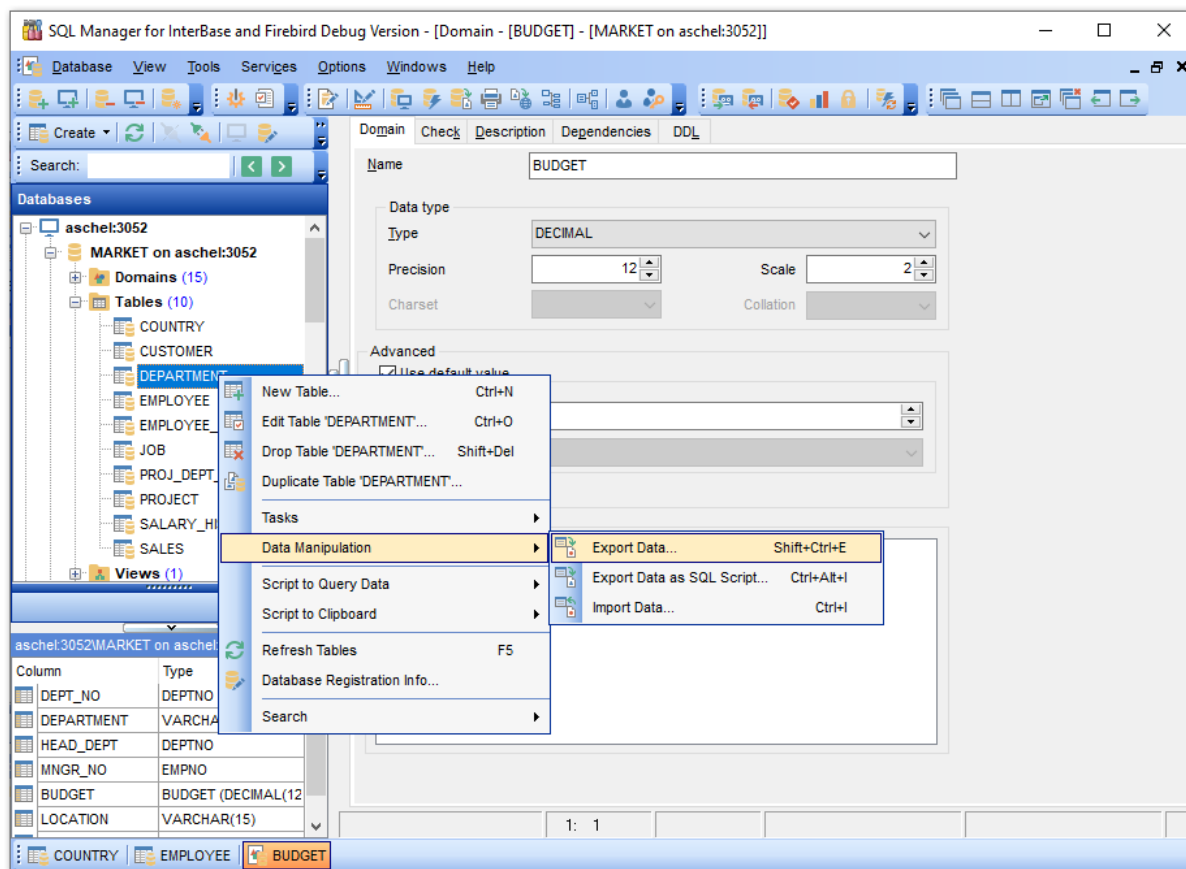
## 2.5 Working with database objects


The nodes of the [DB Explorer](#)<sup>[63]</sup> tree allow you to access [objects of the selected database](#)<sup>[162]</sup>. If InterBase/Firebird server you are connected to supports certain types of objects, their nodes will appear in the tree.

Double-click an object group *to expand/collapse the corresponding tree node.*

Double-click an object *to open it in the corresponding editor.*

Right-click an object to display its [context menu](#)<sup>[56]</sup> which allows you to perform various operations over the selected object or database.



If you want to use the [DB Explorer](#)<sup>[63]</sup> tree for working with **table subjects** (fields, indexes, Foreign keys, etc.), check the **Show table subjects** option which is available within the **General options** group of the [Environment Options](#)<sup>[736]</sup> | [DB Explorer](#)<sup>[745]</sup> page (you can also use the **Show Table Subjects** menu item in the drop-down menu of the **View Mode**  [toolbar](#)<sup>[83]</sup> button for the same purpose.)



### See also:

[Selecting style and language](#)<sup>[40]</sup>

[First time started](#) <sup>42</sup>

[Using Desktop Panel](#) <sup>44</sup>

[Database navigation](#) <sup>46</sup>

[Using context menus](#) <sup>51</sup>

[Working with windows](#) <sup>58</sup>

## 2.6 Using context menus

The **context menus** are aimed at facilitating your work with **SQL Manager for InterBase/Firebird**: you can perform a variety of operations using context menu items.

Select an object in [DB Explorer](#)<sup>[63]</sup> and right-click its alias to open the context menu.

- [Host context menu](#)<sup>[52]</sup>
- [Database context menu](#)<sup>[53]</sup>
- [Object context menu](#)<sup>[56]</sup>

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### See also:

[Selecting style and language](#)<sup>[40]</sup>

[First time started](#)<sup>[42]</sup>

[Using Desktop Panel](#)<sup>[44]</sup>

[Database navigation](#)<sup>[46]</sup>

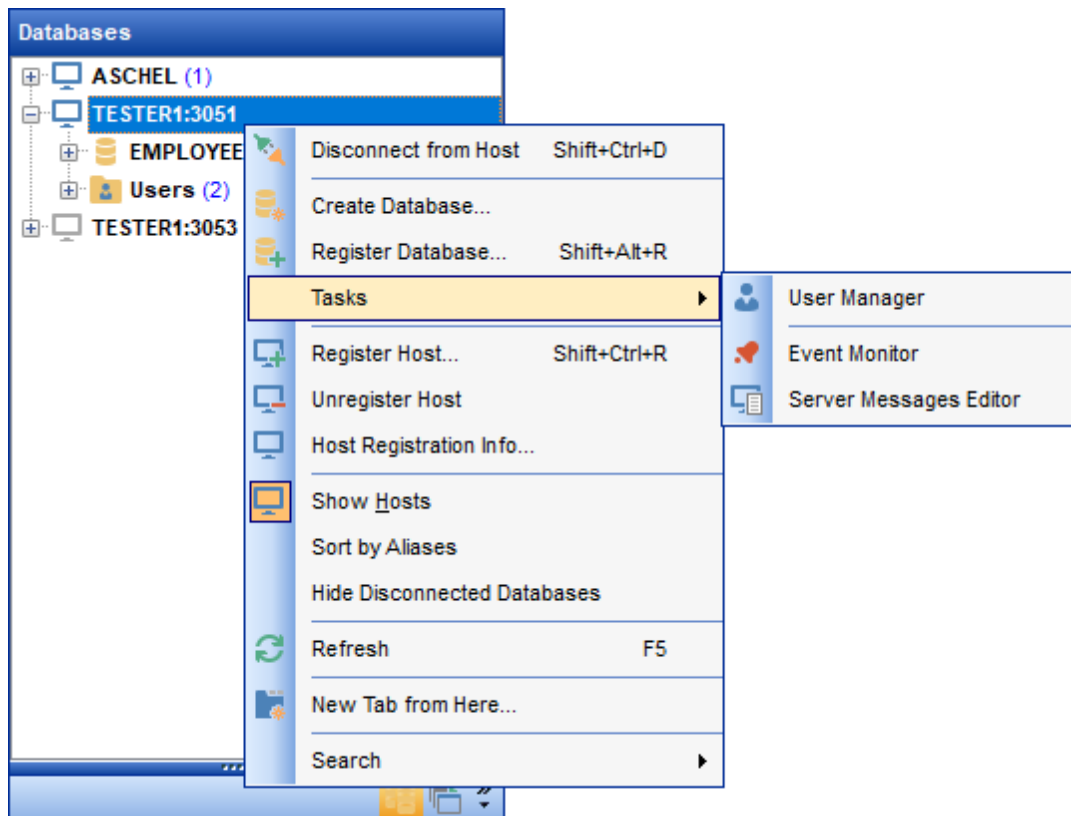
[Working with database objects](#)<sup>[49]</sup>

[Working with windows](#)<sup>[58]</sup>

## 2.6.1 Host context menu

The **context menu of a host** in the [DB Explorer](#)<sup>[63]</sup> tree allows you to:

- [connect](#)<sup>[88]</sup>/[disconnect](#)<sup>[88]</sup> to/from host;
- [create a new database](#)<sup>[100]</sup> at the selected host;
- register a new database using [Register Database Wizard](#)<sup>[107]</sup>;
- access [server tools](#)<sup>[65]</sup> available in the **Tasks** submenu;
- register a new host using [Register Host Wizard](#)<sup>[90]</sup>;
- [unregister](#)<sup>[87]</sup> the selected host;
- view/edit the selected host properties within the [Host Registration Info](#)<sup>[152]</sup> dialog;
- configure representation of hosts and databases in [Database Explorer](#)<sup>[63]</sup>;
- create a new tab for the selected host [to access it through this tab quickly](#)<sup>[73]</sup> and/or manage the existing tab;
- [search](#)<sup>[78]</sup> for an object within the tree.



**Tasks submenu** allows you to:

- manage [users](#)<sup>[714]</sup>;
- launch [Event Monitor](#)<sup>[619]</sup>;
- view and edit server messages using [Server Messages Editor](#)<sup>[625]</sup>.











### See also:

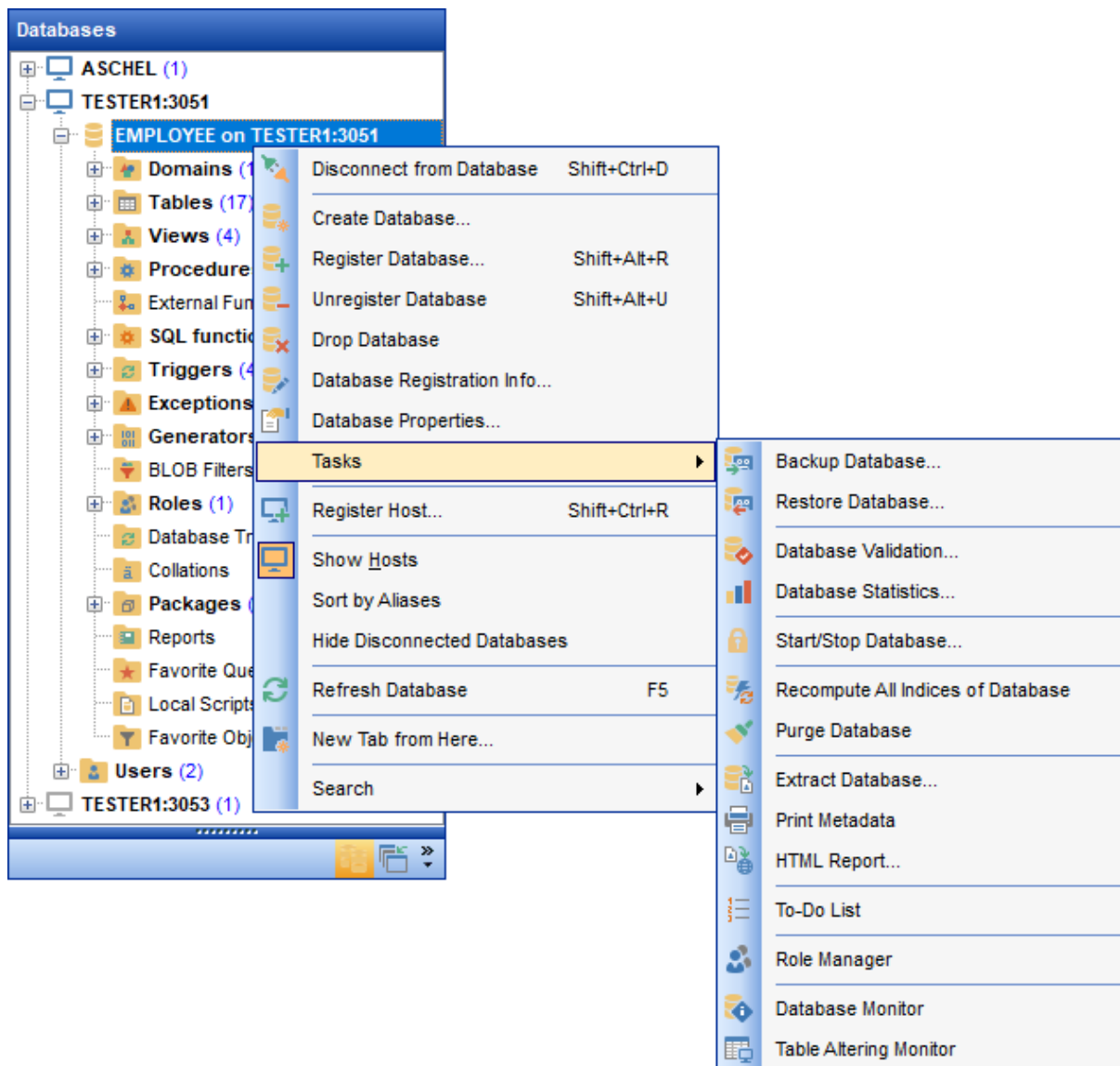
[Database context menu](#)<sup>[53]</sup>

[Object context menu](#)<sup>[56]</sup>

## 2.6.2 Database context menu

The **context menu of a registered database** in the [DB Explorer](#)<sup>[63]</sup> tree allows you to:

-  [connect](#)<sup>[87]</sup> to the selected database (if connection to the database is not active yet);
-  [disconnect](#)<sup>[88]</sup> from the selected database (if connection to the database has been already activated);
-  [create a new database](#)<sup>[100]</sup> at the host where the selected database resides;
- register a new database using  [Register Database Wizard](#)<sup>[107]</sup>;
-  [unregister](#)<sup>[87]</sup> the selected database;
-  [drop](#)<sup>[87]</sup> the selected database;
- view/edit the selected database registration information within the  [Database Registration Info](#)<sup>[115]</sup> dialog;
- view/edit the  [Database properties](#)<sup>[138]</sup>;
- access [database tools](#)<sup>[532]</sup> available in the **Tasks** submenu;
- register a new host using  [Register Host Wizard](#)<sup>[90]</sup>;
- configure representation of hosts and databases in [Database Explorer](#)<sup>[63]</sup>;
- refresh the selected database;
- create a new tab for the selected database [to access it through this tab quickly](#)<sup>[73]</sup> and/or manage the existing tab;
-  [search](#)<sup>[78]</sup> for an object within the tree.



**Tasks submenu** allows you to:

- backup database<sup>[652]</sup> using the wizard;
- restore database<sup>[663]</sup> using the wizard;
- validate database<sup>[680]</sup>;
- retrieve database statistics<sup>[686]</sup>;
- start/stop database<sup>[692]</sup>;
- recompute all indices of a database;
- purge a database<sup>[705]</sup>;
- extract database<sup>[550]</sup> objects and/or data to an Execute Script;
- print metadata<sup>[562]</sup>;
- generate html report<sup>[566]</sup> of the selected objects;
- create to-do list<sup>[913]</sup>;
- manage roles<sup>[722]</sup> and their privileges;

 launch [Table Altering Monitor](#)<sup>622</sup>.

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**See also:**

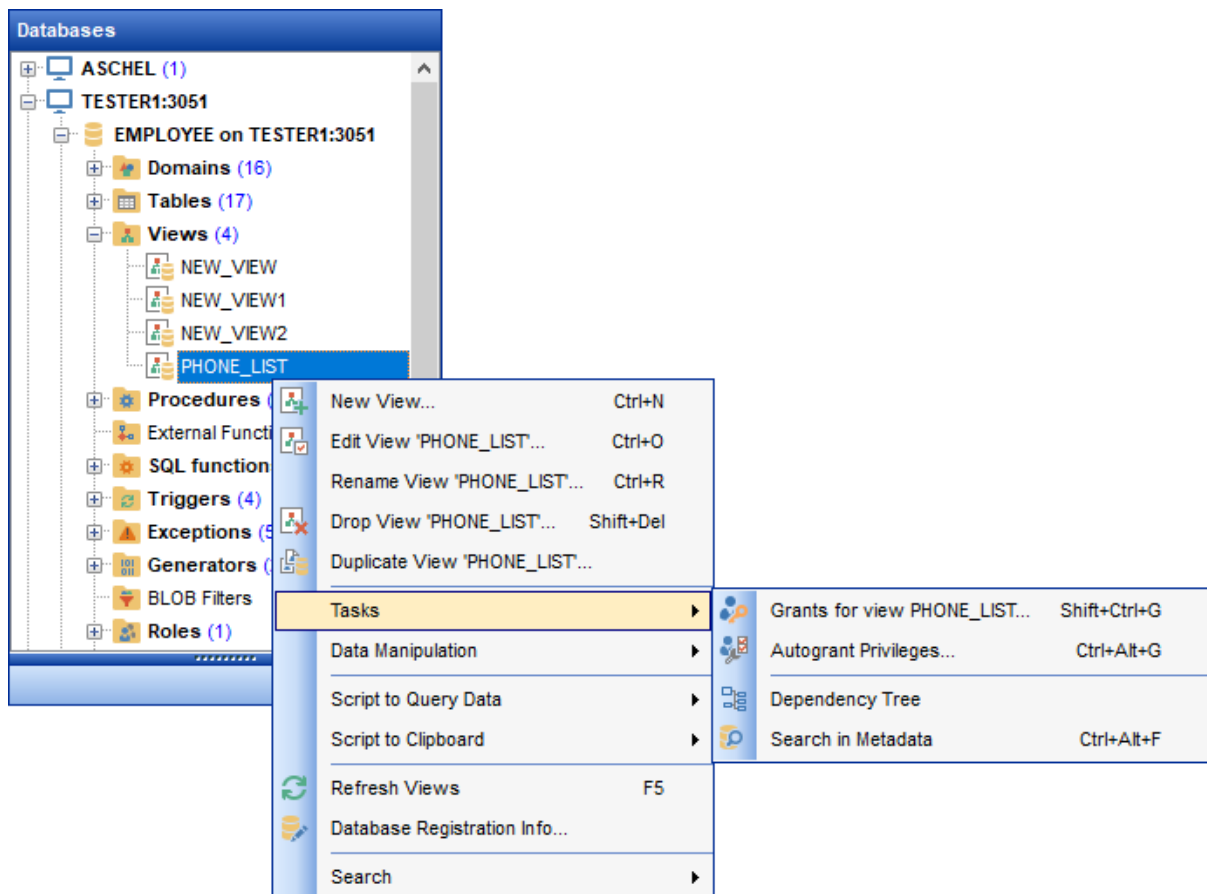
[Host context menu](#)<sup>52</sup>

[Object context menu](#)<sup>56</sup>

### 2.6.3 Object context menu

The **context menu of an object** (e.g. *table* or *view*) in the [DB Explorer](#)<sup>[63]</sup> tree allows you to:

- [create](#)<sup>[164]</sup> a new database object of the same type;
- [edit](#)<sup>[162]</sup> the selected object in its editor;
- [rename](#)<sup>[162]</sup> the selected object;
- [drop](#)<sup>[162]</sup> the selected object from the database;
-  [duplicate](#)<sup>[166]</sup> the selected object (create a new object with the same [DDL](#)<sup>[886]</sup> structure and properties as the selected object has);
- access common **Tasks** applied to this object;
- perform [data manipulation](#)<sup>[443]</sup> operations (for [tables](#)<sup>[178]</sup> and [views](#)<sup>[242]</sup>);
- define  [grants](#)<sup>[726]</sup> for the selected object;
- generate the object script and open it in [editor](#)<sup>[330]</sup>;
- generate the database script and copy its text to Windows clipboard;
- refresh all objects of the selected object type;
- view/edit the database registration information within the  [Database Registration Info](#)<sup>[115]</sup> dialog (for [database objects](#)<sup>[162]</sup>);
-  create a new tab for the selected object [to access it through this tab quickly](#)<sup>[73]</sup> and/or manage the existing tab;
-  [search](#)<sup>[78]</sup> for an object within the tree.



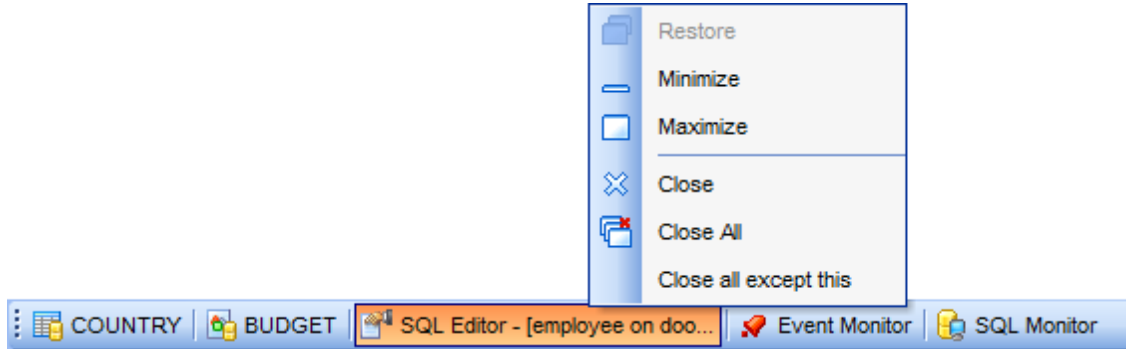


**See also:**[Host context menu](#)<sup>52</sup>[Database context menu](#)<sup>53</sup>

## 2.7 Working with windows

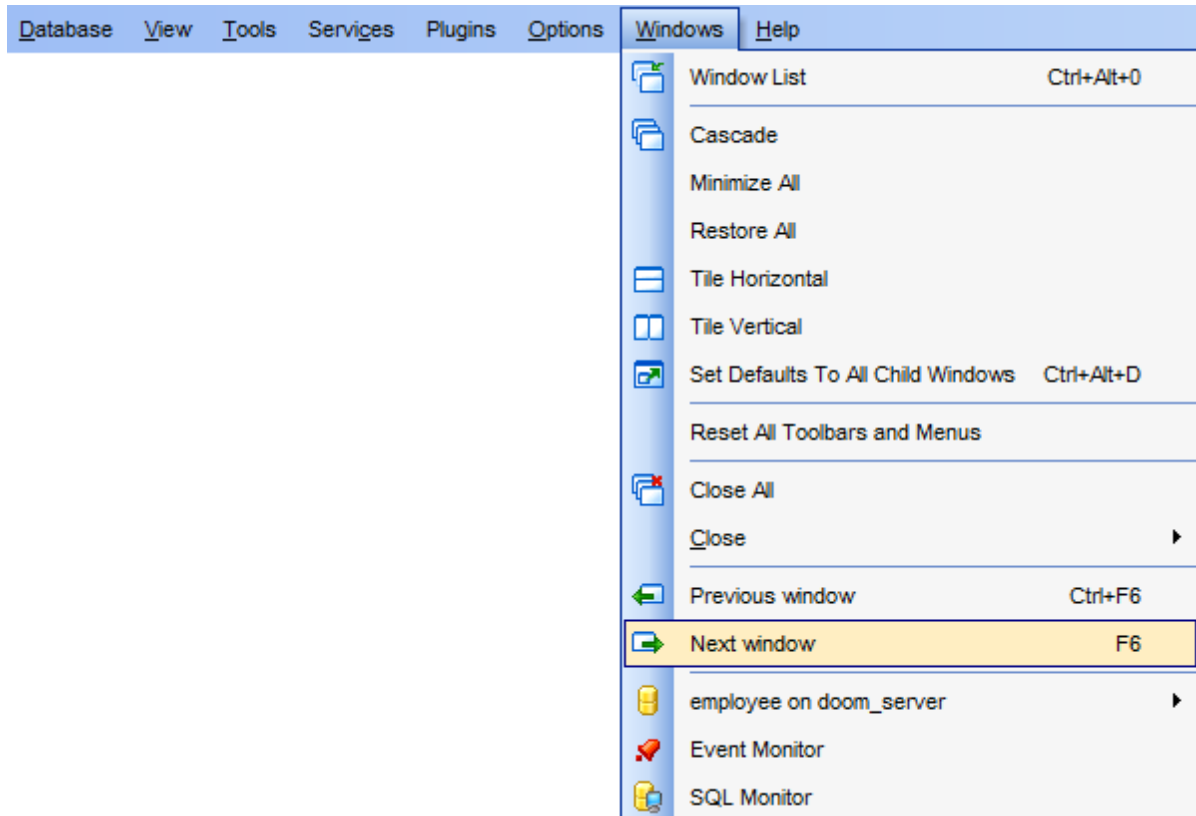
The **Windows Toolbar** of **SQL Manager** allows you to switch between child windows easily, like in Windows Task Bar.

To activate the window you need, simply click one of the window buttons. To perform some additional actions with the window, right-click its tab and select the corresponding menu item from the popup menu.



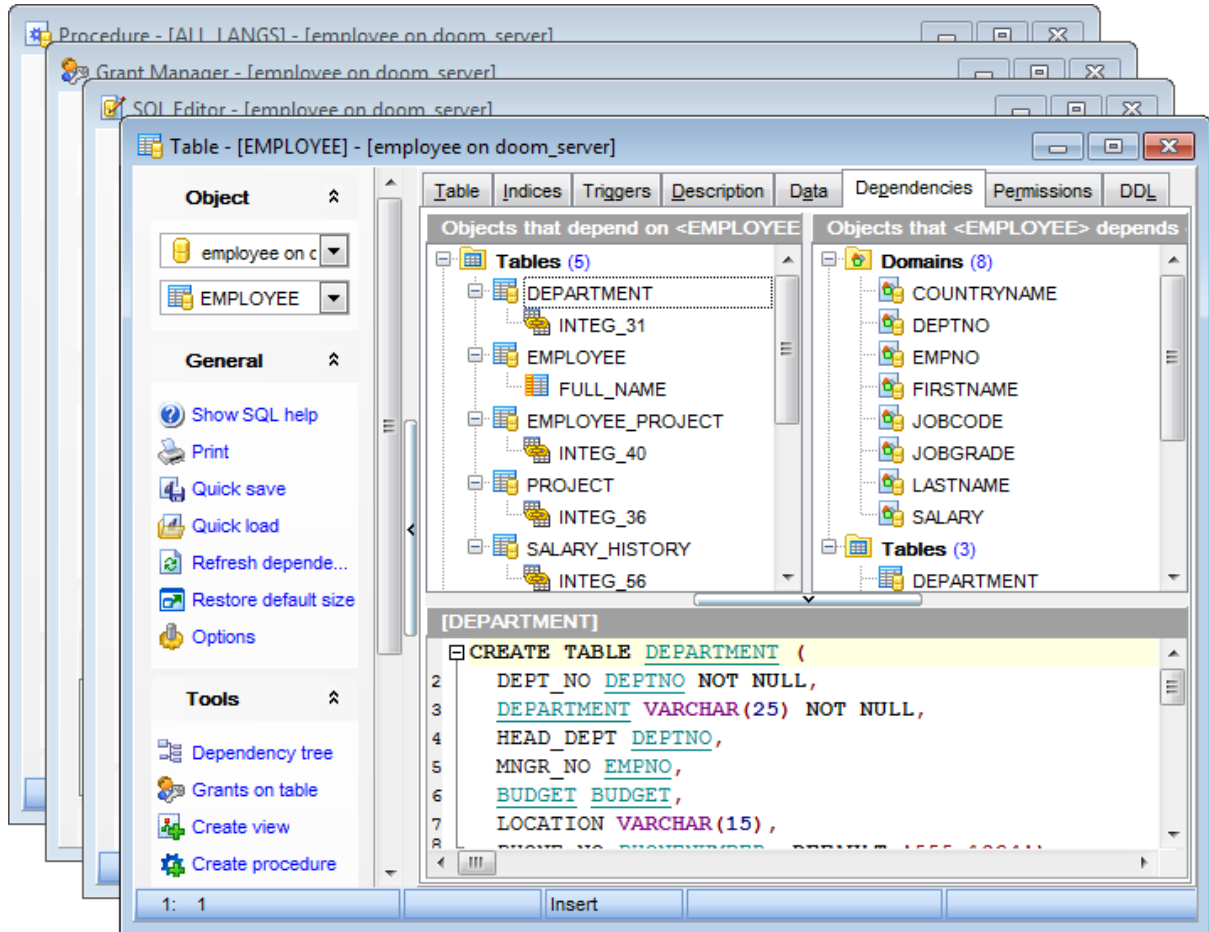
If you have multiple windows opened, you can also switch between them using the **Ctrl+Tab** [shortcut](#)<sup>[932]</sup>.

The **Windows** menu facilitates your work with **SQL Manager** windows.

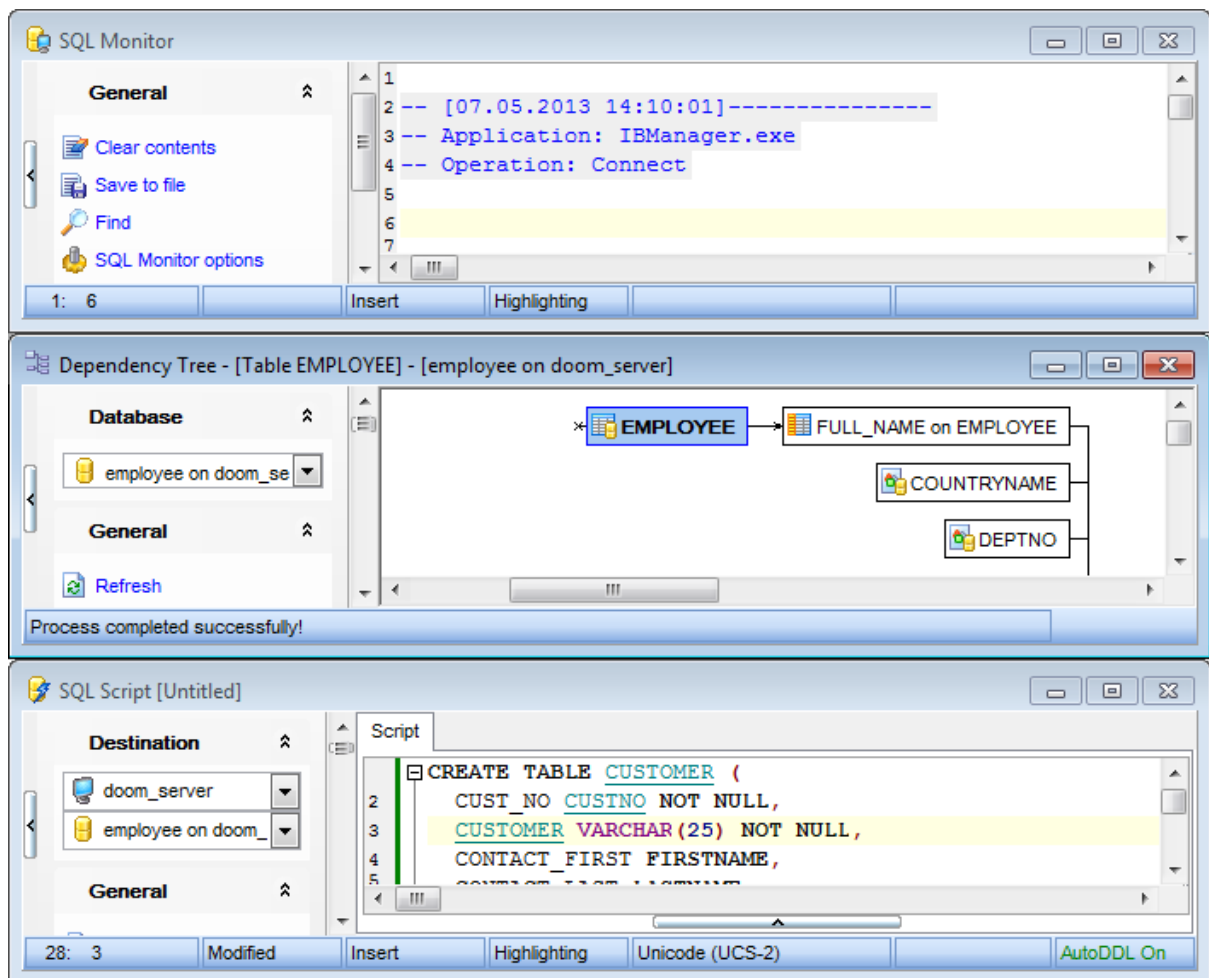


The **Windows** menu allows you to:

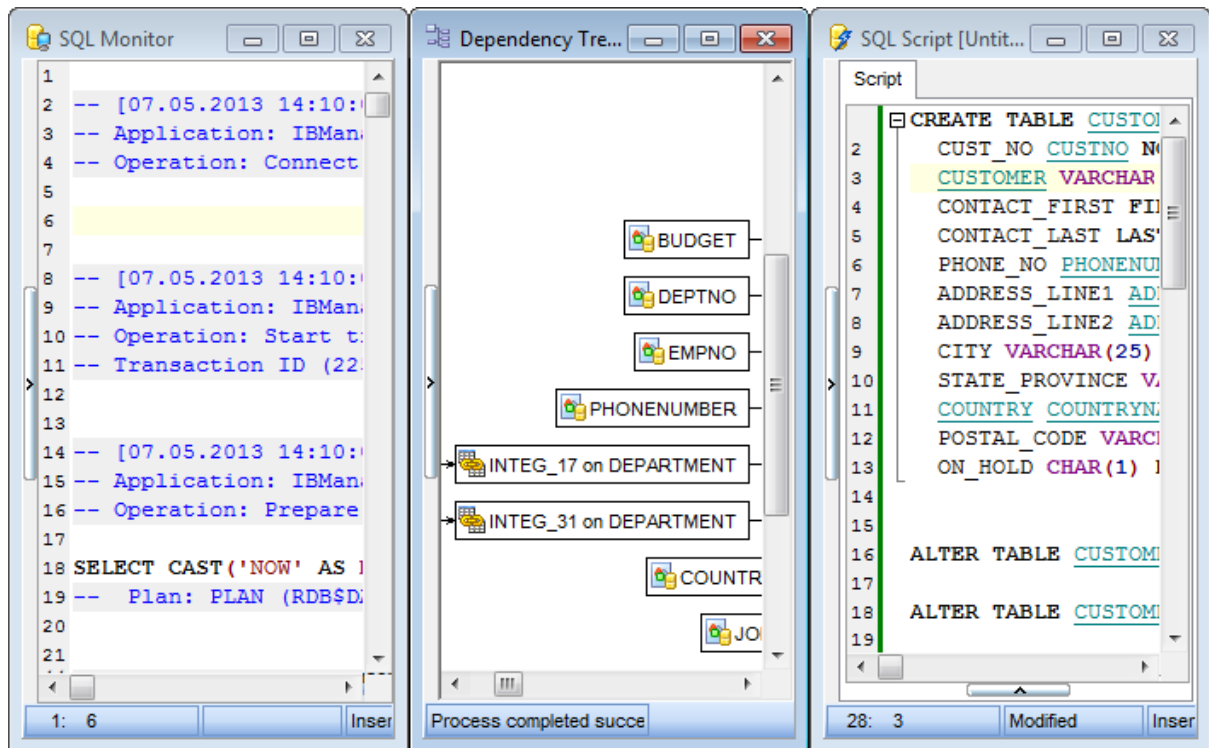
- view the [Windows List](#)<sup>[915]</sup> within the corresponding [tab](#)<sup>[73]</sup> of DB Explorer;
- set all current windows *cascade*:



- minimize all windows;
- restore all windows;
- tile all current windows *horizontally*:



- tile all current windows *vertically*:



- set defaults to all windows;
- reset all [toolbars and menus](#)<sup>[916]</sup>;
- close all windows;
- close all editors of the specified object type (can be selected from the submenu);
- switch to the previous window;
- switch to the next window;
- activate one of currently opened windows.

### See also:

[Selecting style and language](#)<sup>[40]</sup>

[First time started](#)<sup>[42]</sup>

[Using Desktop Pane](#)<sup>[44]</sup>

[Database navigation](#)<sup>[46]</sup>

[Working with database objects](#)<sup>[49]</sup>

[Using context menus](#)<sup>[51]</sup>

**Part**



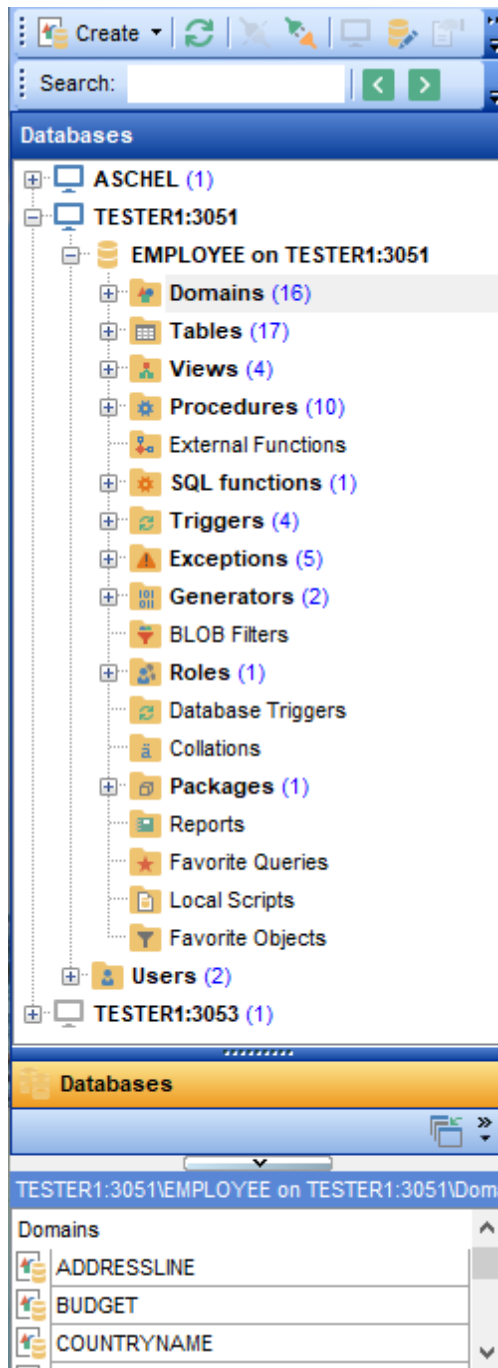
## 3 Database Explorer

**Database Explorer** (or **DB Explorer**) is the basic window of **SQL Manager for InterBase/Firebird** for [navigation](#)<sup>[46]</sup> within databases and working with database objects. The tree-like structure of DB Explorer allows you to manage the databases, database objects and perform other everyday operations quickly and easily.

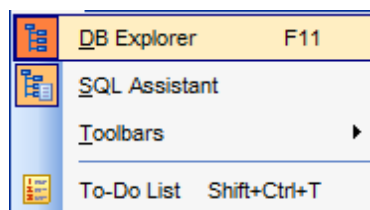
The following list contains the most frequently used features provided by Database Explorer.

- [Managing database registration info](#)<sup>[66]</sup>
- [Connecting to databases and hosts](#)<sup>[67]</sup>
- [Performing basic operations upon database objects](#)<sup>[69]</sup>
- [Selecting multiple objects](#)<sup>[71]</sup>
- [Navigating database objects using multiple tabs](#)<sup>[73]</sup>
- [Easy access to recently opened objects](#)<sup>[75]</sup>
- [Managing favorite objects](#)<sup>[76]</sup>
- [Searching within the tree](#)<sup>[78]</sup>
- [Viewing extended information about database objects](#)<sup>[80]</sup>
- [Configuring Database Explorer](#)<sup>[82]</sup>
- [Managing Favorite queries](#)<sup>[85]</sup>

All objects are structured by their types and are available within the corresponding nodes of the tree. The number of objects of each type is displayed in brackets after the node name denoting the object type. To expand/collapse a node, you can double-click it or use the +/- icons.



To view/hide the Database Explorer window, use the **View | DB Explorer** [main menu](#)<sup>882</sup> item or press the **F11** key.





Use the *Ctrl+Shift+C* [shortcut](#)<sup>[932]</sup> to collapse current **DB Explorer** tree branch and switch to the parent node.

Note that you can change host and database aliases order by dragging them within the **DB Explorer** tree.

---

**See also:**

[Getting Started](#)<sup>[37]</sup>

[Database Management](#)<sup>[87]</sup>

[Database Objects Management](#)<sup>[162]</sup>

[Query Management Tools](#)<sup>[328]</sup>

[Data Management](#)<sup>[368]</sup>

[Import/Export Tools](#)<sup>[443]</sup>

[Database Tools](#)<sup>[532]</sup>

[Services](#)<sup>[651]</sup>

[Security management](#)<sup>[711]</sup>

[Options](#)<sup>[733]</sup>

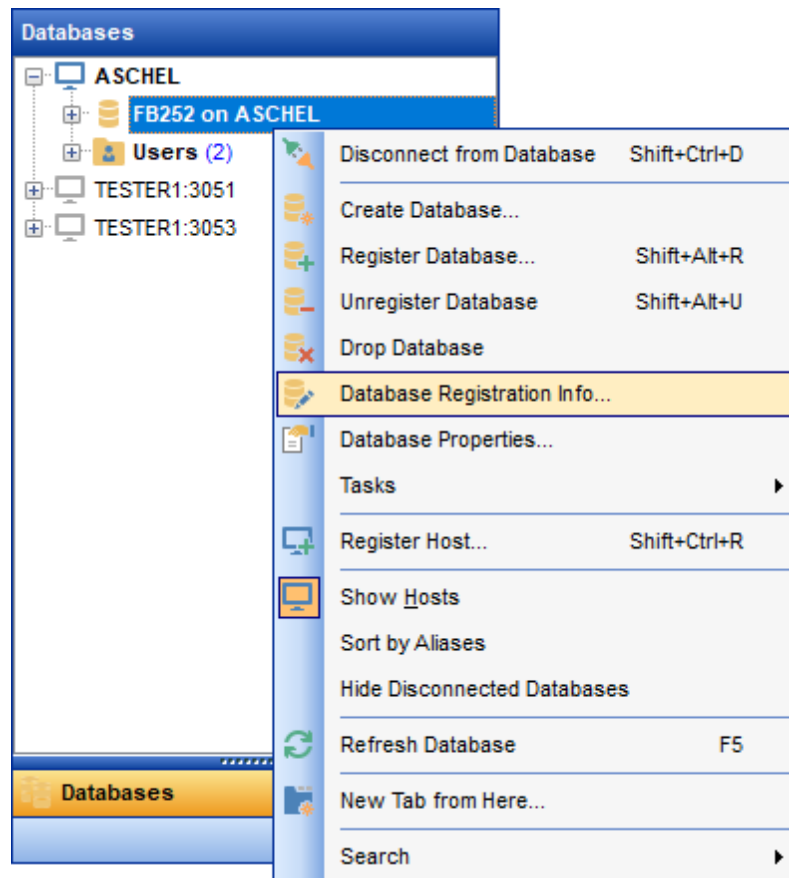
[External Tools](#)<sup>[832]</sup>

[How To...](#)<sup>[833]</sup>

### 3.1 Managing database registration info

After you have created and/or registered your database in **SQL Manager for InterBase/Firebird**, you can perform a number of operations with the database using the [context menu](#)<sup>[53]</sup>.

If you need to view/edit the registration information of a database, right-click the database alias in DB Explorer and select the **Database Registration Info...** context menu item to open the [Database Registration Info](#)<sup>[115]</sup> dialog.



#### See also:

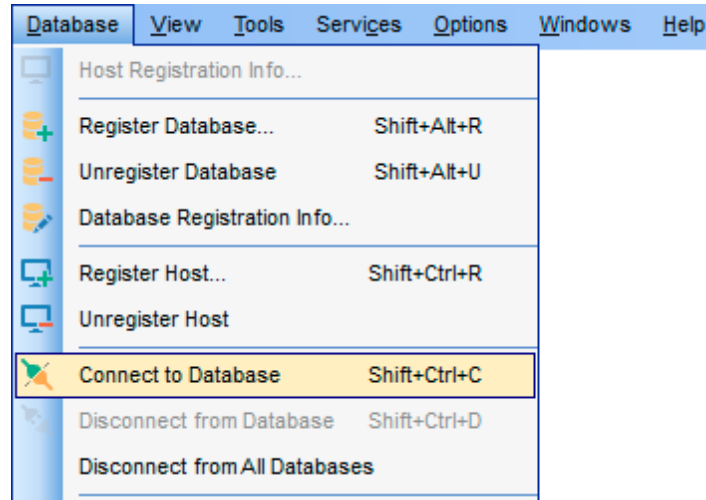
[Register Database](#)<sup>[107]</sup>

[Database Registration Info](#)<sup>[115]</sup>

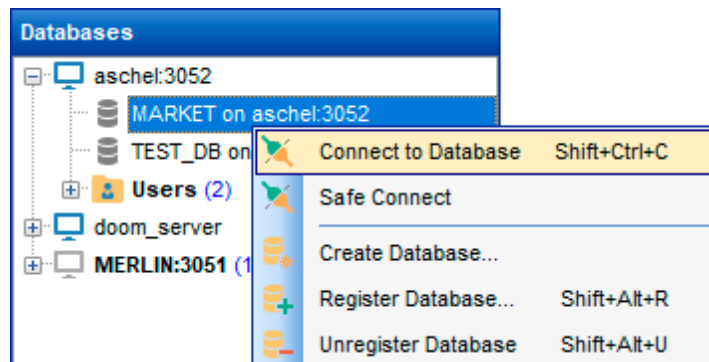
[Database Properties](#)<sup>[138]</sup>

## 3.2 Connecting to databases and hosts

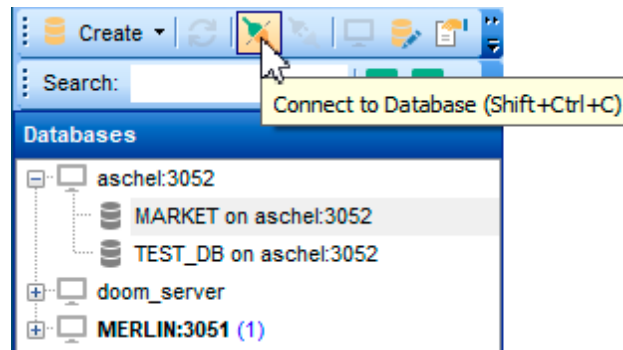
When the InterBase/Firebird host is [registered](#)<sup>[90]</sup>, and the [database registration](#)<sup>[107]</sup> is complete, you can establish [connection](#)<sup>[88]</sup> to your database.




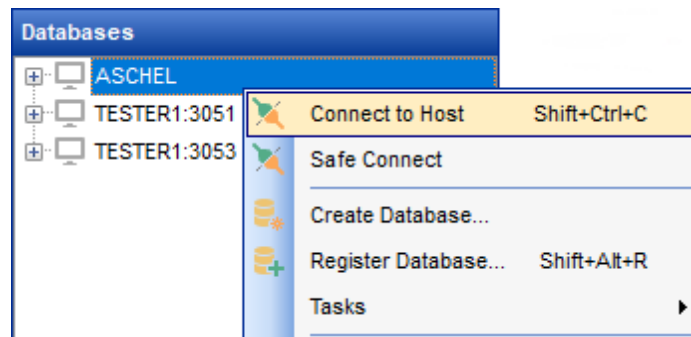
The simplest way to connect to a database is to double-click its alias in the [Database Explorer](#)<sup>[63]</sup> tree. The same operation can be performed by selecting the **Connect to Database** or **Safe Connect** item of the database [context menu](#)<sup>[53]</sup>, or by using the **Database | Connect to Database** [main menu](#)<sup>[882]</sup> item. **Safe Connect** provides a secure connection to the database using the `isc_dpb_no_db_triggers` parameter.



Alternatively, you can use the `Shift+Ctrl+C` [shortcut](#)<sup>[932]</sup>, the **Connect to Database** ( **Connect to Host**), or the **Safe Connect** [toolbar](#)<sup>[82]</sup> buttons.



Before working with server-scoped objects and services, a [host connection](#)<sup>[88]</sup> must be established by selecting the  **Connect to Host** item of the host [context menu](#)<sup>[52]</sup>, or by using the **Database | Connect to Host** [main menu](#)<sup>[882]</sup> item.



**See also:**

[Register Database](#)<sup>[107]</sup>

[Database Registration Info](#)<sup>[115]</sup>

### 3.3 Operations with database objects

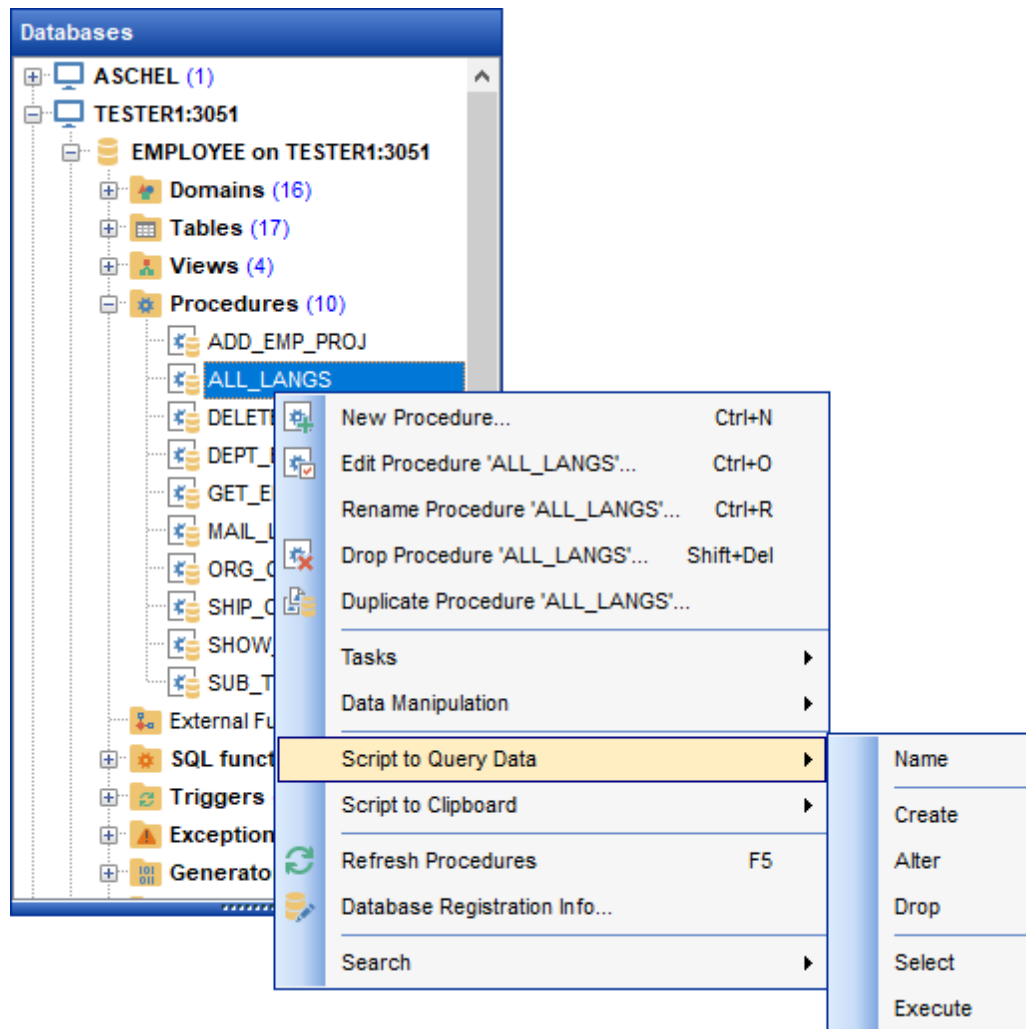
**Database Explorer** allows you to perform various operations with [database objects](#)<sup>[162]</sup>.

To open an object in its editor, you can double-click the object in the **DB Explorer** tree.

You can also right-click an object within the **DB Explorer** tree and use its [context menu](#)<sup>[56]</sup> to perform a number of operations:

- create a new object (the **New <object>...** item);
- edit currently selected object (the **Edit <object\_name>...** item);
- rename currently selected object (the **Rename <object\_name>...** item);
- drop the selected object from the database (the **Drop <object\_name>...** item);
- duplicate the selected object (the **Duplicate <object\_name>...** item);
- define grants for the selected object (the **Grants for <object\_name>...** item).

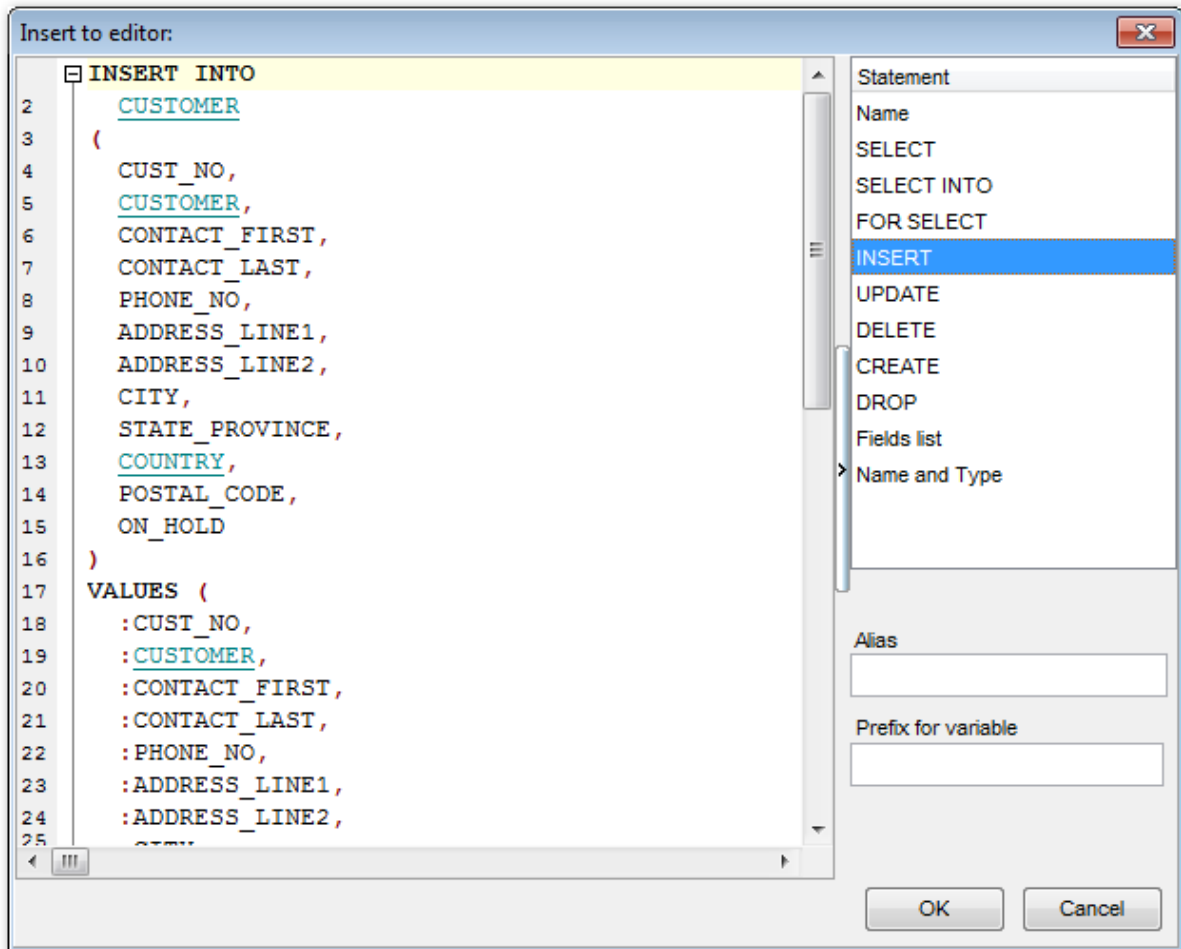
Note that the context menu contains object-specific items only when the object is currently selected in **DB Explorer**.



Using drag-and-drop operations you can add objects to [Query Data editor](#)<sup>[330]</sup>, [Query Designer](#)<sup>[347]</sup> or [Execute Script Editor](#)<sup>[542]</sup>. For your convenience the **Insert to editor** dialog

is implemented. The dialog allows you to specify the **statement** to be inserted into the editor: *Name*, *SELECT*, *INSERT*, *UPDATE*, *DELETE*, *CREATE*, *ALTER*, *DROP*, *Fields list*, *Name and Type*. If necessary, set the **Alias** and **Prefix for variable**.

If more convenient, you can edit the generated statement manually (see [Working with query](#)<sup>[333]</sup>).



#### See also:

[Database Objects Management](#)<sup>[162]</sup>

[Query Editor](#)<sup>[330]</sup>

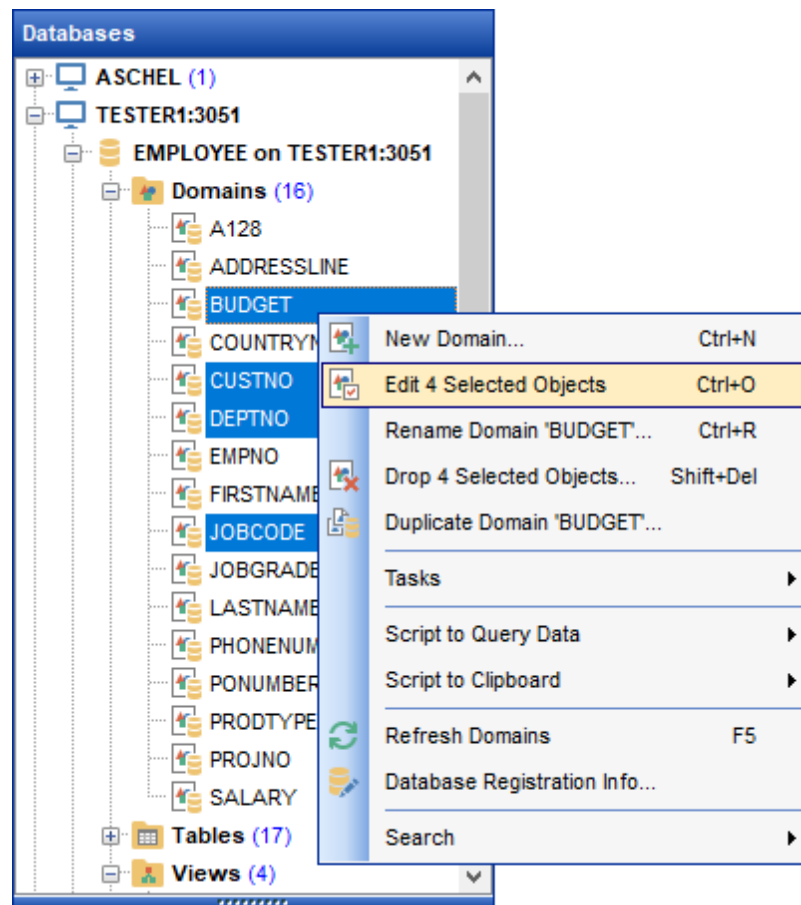
[Selecting multiple objects](#)<sup>[71]</sup>

### 3.4 Selecting multiple objects

You can select more than one object in **Database Explorer** by pressing the *Ctrl* or the *Shift* key and selecting multiple objects one by one.

The **context menu** of several selected objects allows you to:

- [create](#)<sup>[162]</sup> a new database object of the same type;
- edit the selected objects;
- drop the selected objects;
- perform other operations with the first of the selected objects (see [Operations with database objects](#)<sup>[69]</sup>).



**Hint:** You can move several objects to your [projects](#)<sup>[76]</sup>: just drag and drop the selected objects to the previously created subfolder within the **Favorite Objects** node of **DB Explorer**.

---

#### See also:

[Operations with database and server objects](#)<sup>[69]</sup>

[Database Objects Management](#)<sup>[162]</sup>

[Managing projects](#)<sup>[76]</sup>





### 3.5 Using tabs for database navigation

To make your work with **Database Explorer** even more convenient, the capability of **working with several tabs** is implemented.

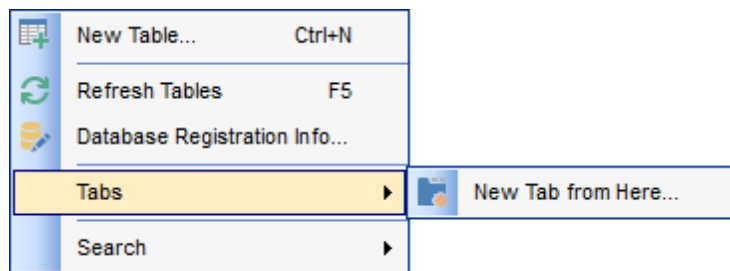
You can use tabs when you wish to work with a particular node of the DB Explorer tree only: with a group of objects, or with a specific database [Favorite Objects](#)<sup>[76]</sup> folder. Creating such tabs will minimize scrolling within large trees, you only need to switch between them with a single click on the corresponding tab.

#### Creating tabs

In order to create a new tab:

- right-click the node (e.g. the **Tables** node) for which you wish to create a tab and select the **New Tab from Here...** context menu item.

**Note:** A tab can be created only on the basis of a tree node. For example, if the **Show Table Subobjects** option is disabled in the [View Mode](#)<sup>[83]</sup> menu, the **New Tab from Here...** item will not be available for tables, since none of them will be a tree node anymore.

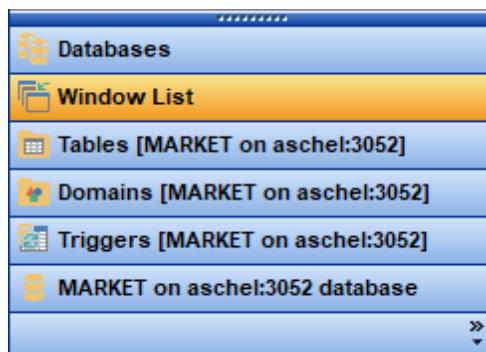


The specified tabs can be displayed in either of the two views:

- as *icons* on the lower pane of DB Explorer:



- as *tabs* with captions:

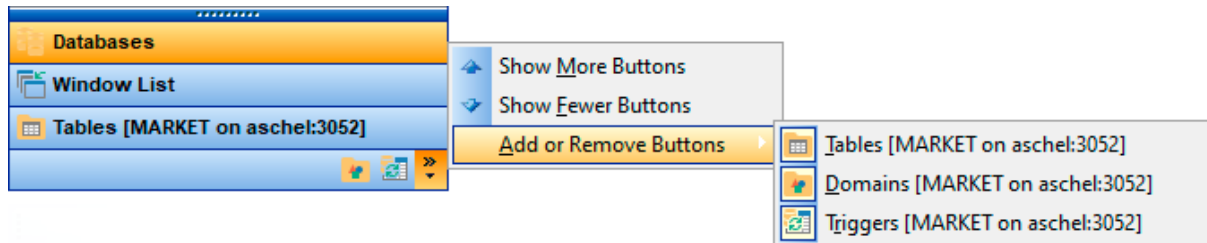


**Hint:** You can reorder items in the *tabs* view by dragging their captions up and down.

To add/remove items to/from the *tabs* view, you can drag the horizontal [splitter](#)<sup>[884]</sup> up/down:



or click the **Configure buttons** icon available in the bottom right corner of the **DB Explorer** window, and select **Show More Buttons** / **Show Fewer Buttons** / **Add or Remove Buttons** items from the popup menu.



**Note:** Navigation through the tabs is also possible with the help of the following [shortcuts](#)<sup>[935]</sup>:

- *Ctrl+Shift+N* - move to the next tab;
- *Ctrl+Shift+P* - move to the previous tab.

### Renaming tabs

In order to rename a tab:

- switch to the tab by clicking its caption or icon (there can be only one active tab, and it is highlighted with a different color);
- right-click within the DB Explorer area and select the **Rename Current Tab...** context menu item.

### Removing tabs

In order to remove a tab:

- switch to the tab by clicking its caption or icon (there can be only one active tab, and it is highlighted with a different color);
- right-click within the DB Explorer area and select the **Delete Current Tab** context menu item.


### See also:

[Managing Favorite Objects](#)<sup>[76]</sup>

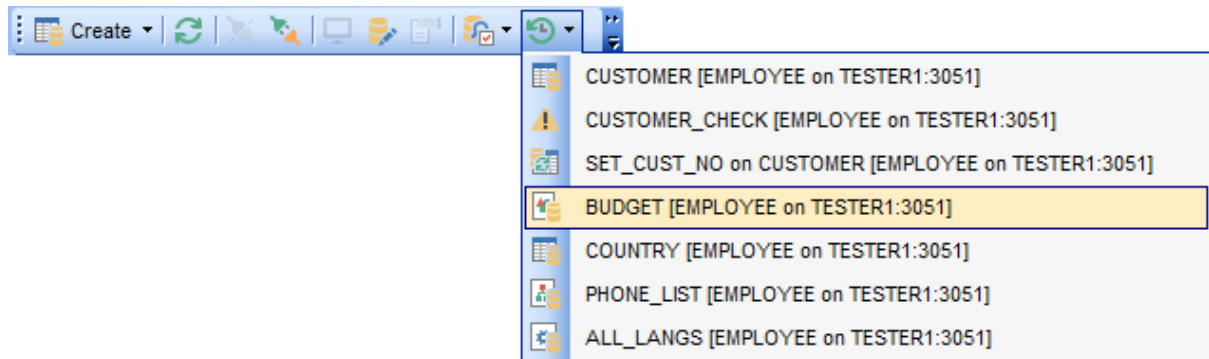
[Windows List](#)<sup>[915]</sup>

[Database Objects Management](#)<sup>[162]</sup>

### 3.6 Recently opened objects

Use the  **Recent Objects** button available on the DB Explorer [toolbar](#)<sup>[82]</sup> to access the list of recently opened database objects (during the current session).

This list is common for all registered databases. Next to the object name the database name and the host/address are displayed. Select an object from this list to open it using its editor.



To change the number of objects that are considered 'recent', select the **Options | Environment Options** [main menu](#)<sup>[88]</sup> item, proceed to the **Tools | DB Explorer** section within the **Environment Options** dialog, and set the **Recent objects count** option value (see [Environment Options](#)<sup>[736]</sup> for details).

---

#### See also:

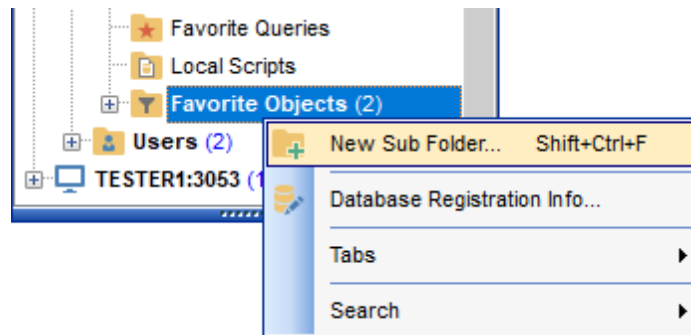
[Database Objects Management](#)<sup>[162]</sup>

[Environment Options](#)<sup>[736]</sup>

### 3.7 Managing favorite objects

Use the **Favorite Objects** node for each database to work with the selected objects of this database only. You can place any object from the database tree here.

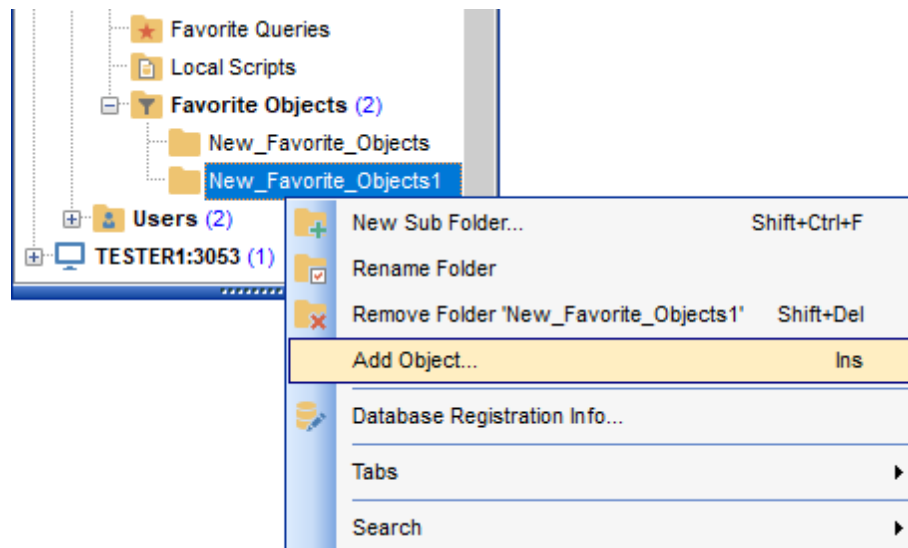
You can also create a separate tab for your project. See [Using tabs for database navigation](#)<sup>[73]</sup> section for details.



#### Creating favorite objects folders

In order to create a new folder:

- create a folder (if necessary, you can create subfolders inside the project folder) by right-clicking the **Projects** node and selecting the **New Sub Folder...** context menu item;
- enter the folder name within the **New Folder** dialog.



#### Adding objects

In order to add a new object to the folder:

- extend the **Favorite Objects** node in DB Explorer;
- drag an object (or multiple objects) from the database tree to the project folder

or

- right-click the project folder and select the **Add Object...** context menu item, or use the *Ins* key;
- use the [Select Object](#)<sup>[931]</sup> dialog to specify objects to be added to the project folder.

### Removing objects from the folder

In order to remove an object from the folder:

- right-click the object and select the **Remove <object\_name> from Favorite Objects** context menu item, or use the *Shift+Ctrl+Del* [shortcut](#)<sup>[932]</sup>;
- confirm removing in the dialog window.

**Note:** This operation does not drop the object from the database, but only removes its alias from the project tree.

---

### See also:

[Using tabs for database navigation](#)<sup>[731]</sup>

[Select Object dialog](#)<sup>[931]</sup>

[Database Objects Management](#)<sup>[162]</sup>

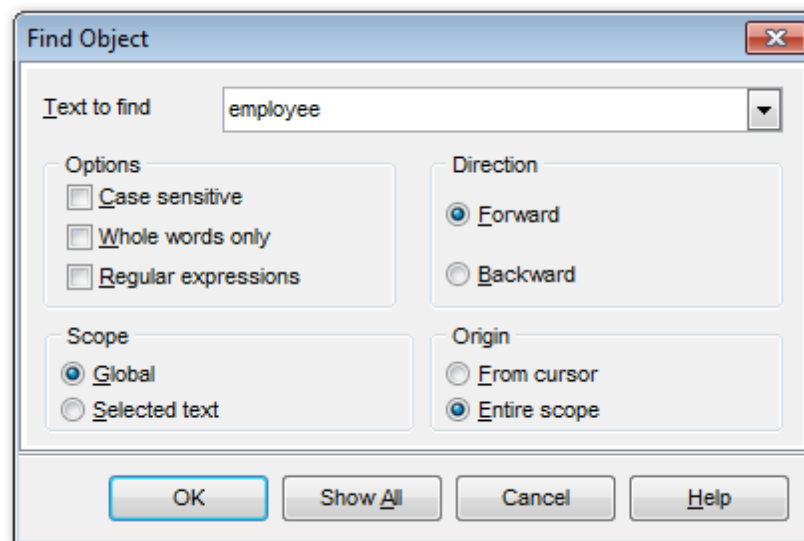
### 3.8 Searching within the tree

**SQL Manager for InterBase/Firebird** provides an ability to search for items within the **DB Explorer** tree. Searching for items may be useful if you have a lot of database objects, and it may be sometimes hard to find the one you need.


There are two search facilities implemented in **SQL Manager** for your convenience. You can search for objects within the **DB Explorer** tree in either of the following ways:

#### Find Object dialog




To call the **Find Object** dialog, right-click the **Database** alias, any database object group nodes or objects in the **DB Explorer** tree and select the **Find Object...** [context menu](#)<sup>[51]</sup> item, or use the **Ctrl+F**.

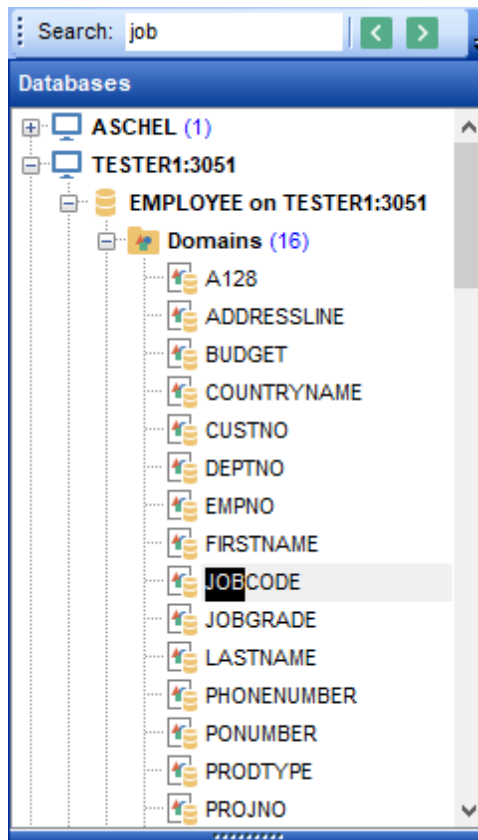


Available search options are similar to those provided by the **Find Text** dialog. For detailed description of the search options refer to the [Find Text dialog](#)<sup>[90]</sup> page.

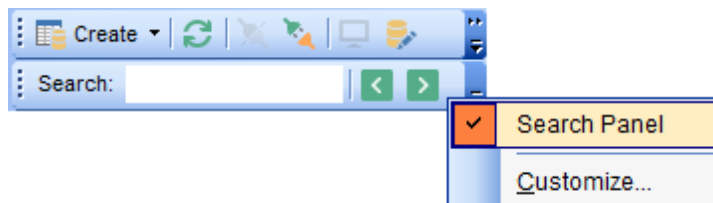
**Note:** You can specify whether the search will be performed within the entire tree or within the currently selected node only: toggle search mode using the  **Search by categories** button on the [Search Panel](#)<sup>[82]</sup>, or use the corresponding option available in the [Tools | DB Explorer](#)<sup>[74]</sup> section of the [Environment Options](#)<sup>[73]</sup> dialog.

#### Search Panel

Type in the first letters in the edit-box, and the corresponding object will be highlighted in the tree, as displayed in the picture below. The   buttons allow you to define the search direction. The  button toggles searching by category. Use the **Start-with** button (available in customizing the toolbar) to search for the objects starting with the input text.



By default, the **Search Panel** is activated in the upper area of DB Explorer. To disable the panel, right-click within the panel and deselect the checkbox at the corresponding popup menu item.



You can customize search options to your needs in [Environment options](#)<sup>[74]</sup>.

**Hint:** The **Search Panel** is dockable, i.e. you can drag it to any location within the **DB Explorer** form.

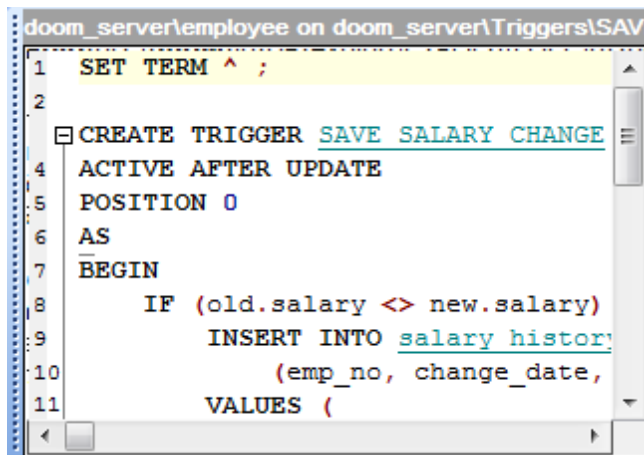
---

**See also:**

[Find Text dialog](#)<sup>[90]</sup>

### 3.9 SQL Assistant

**SQL Assistant** which is located at the bottom of the **Database Explorer** window helps you to work with your [database objects](#)<sup>[62]</sup>. Depending on the current selection in DB Explorer, the SQL Assistant area displays additional information pertaining to the selected object.




```

1 SET TERM ^ ;
2
3 CREATE TRIGGER SAVE SALARY CHANGE
4 ACTIVE AFTER UPDATE
5 POSITION 0
6 AS
7 BEGIN
8     IF (old.salary <> new.salary)
9         INSERT INTO salary_history
10            (emp_no, change_date,
11            VALUES (

```

If you select a **database** in DB Explorer, SQL Assistant displays the list of the database *object groups* and the number of objects in each group.

Selecting an **object group** in DB Explorer displays the list of the *objects* in SQL Assistant. Double-clicking the object name in **SQL Assistant** makes the object available for editing in the appropriate editor. The context menu of the object or group of objects (selected with the *Ctrl* or *Shift* keys pressed) allows you to edit or drop the selected objects.

If you select a **table** or a **view** in DB Explorer, SQL Assistant displays the list of the table subobjects (e.g. *fields* and their *types*) by default. What is displayed in **SQL Assistant** when a table or a view is selected in DB Explorer depends on the **Table Details / View Details** selection. Click the **View Mode**  [toolbar](#)<sup>[83]</sup> button and select the **Table Details | Show...** (or **View Details | Show...**) drop-down menu item, or use the context menu of SQL Assistant. Possible values are: *Show Fields*, *Show Primary Keys*, *Show Uniques*, *Show Foreign Keys*, *Show Checks*, *Show Indexes*, *Show Triggers*, *Show DDL*, *Show Description* (for tables); *Show Fields*, *Show Triggers*, *Show DDL*, *Show Description* (for views).

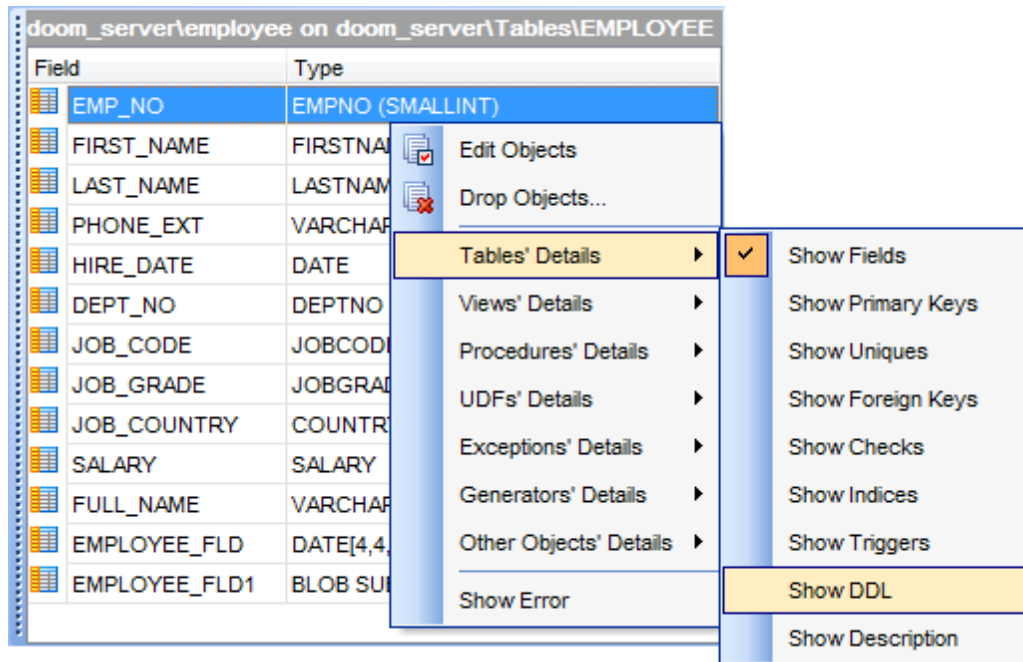
If you select a **procedure** or a **user-defined function** in DB Explorer, SQL Assistant lists its parameters by default. Use the **Procedure Details / UDF Details | Show...** context menu item within the SQL Assistant area to define the content of SQL Assistant when a procedure or a user-defined function is selected in DB Explorer. Possible values are: *Show Parameters*, *Show DDL*, *Show Description* (for procedures); *Show Arguments*, *Show DDL*, *Show Description* (for UDFs).

If you select an **exception** in DB Explorer, SQL Assistant lists its text by default. Use the **Exception Details** context menu item within the SQL Assistant area to define the content of SQL Assistant when an exception is selected in DB Explorer. Possible values are: *Show Text*, *Show DDL*, *Show Description*.



If you select a **generator** in DB Explorer, SQL Assistant lists its value by default. Use the **Generator Details** context menu item within the SQL Assistant area to define the content of SQL Assistant when a generator is selected in DB Explorer. Possible values are: *Show Value*, *Show DDL*.

Selecting other objects in **DB Explorer** displays the DDL definition in **SQL Assistant** by default. Use the **Other Objects' Details | Show...** context menu item within the SQL Assistant area to define the content of SQL Assistant when an object is selected in DB Explorer. Possible values are: *Show DDL*, *Show Description*.



You can also use **SQL Assistant** to work with your [queries](#)<sup>[328]</sup> quickly. You can drag-and-drop object aliases to the [Query Editor](#)<sup>[330]</sup>, [Query Designer](#)<sup>[347]</sup> or [Execute Script Editor](#)<sup>[542]</sup> working area, in the same way as [this operation](#)<sup>[69]</sup> is performed in **Database Explorer**.

#### See also:


[Database Objects Management](#)<sup>[162]</sup>

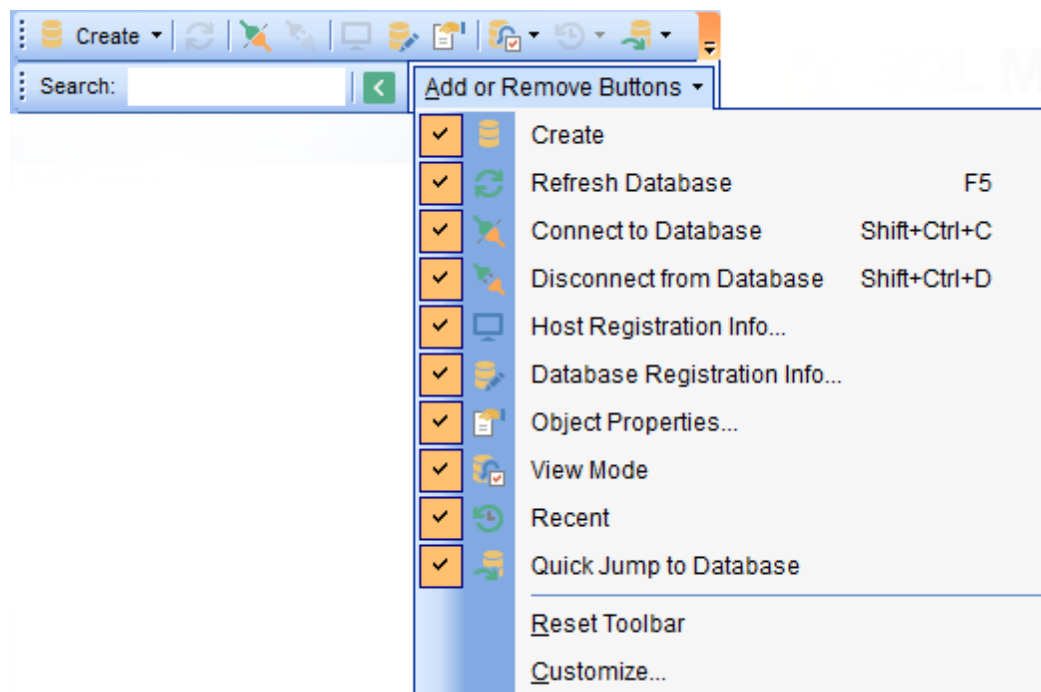
## 3.10 Configuring Database Explorer

### Configuring DB Explorer toolbar


The [toolbar](#)<sup>[88]</sup> of Database Explorer contains most frequently used tools for working with databases and database objects, and a tool for configuring DB Explorer. The following actions are available in the toolbar by default:

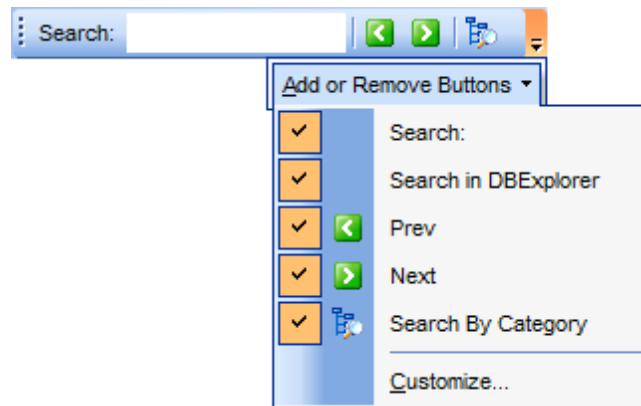
- [create](#)<sup>[162]</sup> a new object;
- refresh the current tree branch;
- [connect](#)<sup>[67]</sup> to a database;
- [disconnect](#)<sup>[88]</sup> from a database;
- view the selected object properties;
- configure Database Explorer using the [View Mode](#)<sup>[83]</sup> menu;
- view the list of [recently opened objects](#)<sup>[75]</sup>;
- jump to any of registered databases quickly.

Click **More buttons...**  on the right side of the toolbar and use the **Add or Remove Buttons** popup menu items to define the set of actions available in the toolbar. To [customize](#)<sup>[916]</sup> the toolbar, select the **Add or Remove Buttons | Customize...** item from the popup menu.




### Configuring the Search Panel

Click **More buttons...**  on the right side of the [Search Panel](#)<sup>[78]</sup> and use the **Add or Remove Buttons** popup menu items to define the set of the panel elements. To [customize](#)<sup>[916]</sup> the panel, select the **Add or Remove Buttons | Customize...** item from the popup menu.

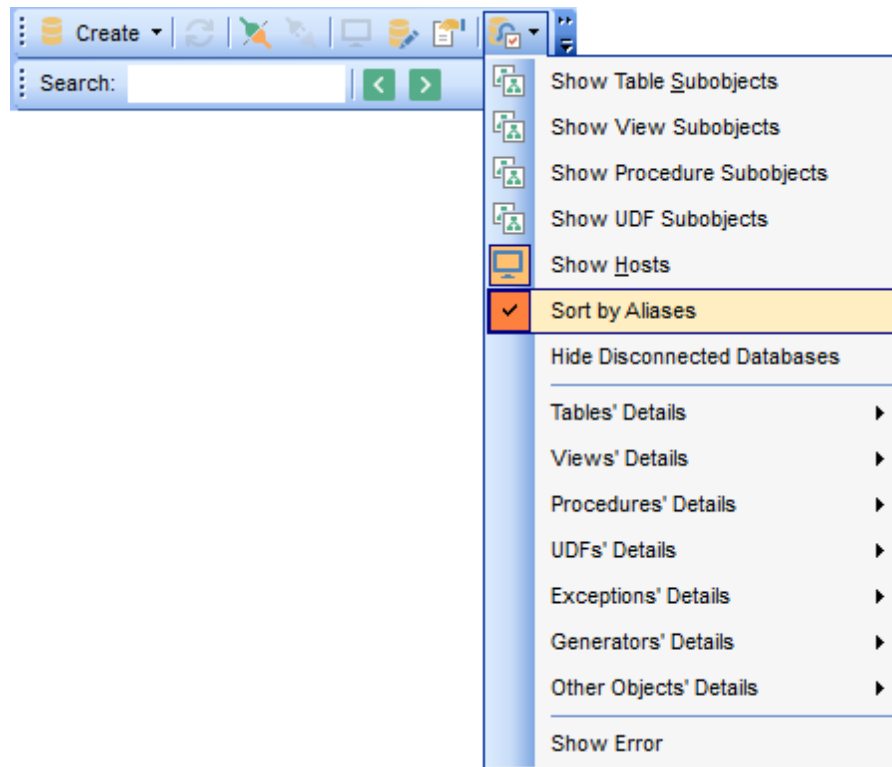


### Using View Mode menu

Use the **View Mode**  [toolbar](#)<sup>[82]</sup> button to configure **Database Explorer** according to your needs.

The drop-down menu called upon clicking this button allows you to:

- show/hide table subobjects as child nodes of [tables](#)<sup>[178]</sup>;
- show/hide view subobjects as child nodes of [views](#)<sup>[242]</sup>;
- show/hide procedure subobjects as child nodes of [procedures](#)<sup>[253]</sup>;
- show/hide UDF subobjects as child nodes of [UDFs](#)<sup>[272]</sup>;
- show/hide host nodes for [registered databases](#)<sup>[107]</sup>;
- sort the list of databases by their aliases in the DB Explorer tree;
- show/hide [disconnected databases](#)<sup>[67]</sup>;
- configure table/view/procedure/UDF/exception/generator/other objects' details for the [SQL Assistant](#)<sup>[80]</sup> area;
- show/hide error.



Use the [DB Explorer](#)<sup>[745]</sup> section of the [Environment Options](#)<sup>[736]</sup> dialog (**Options | Environment Options...**) to see more options to configure **Database Explorer**.

---

**See also:**

[Customize toolbars and menus](#)<sup>[916]</sup>

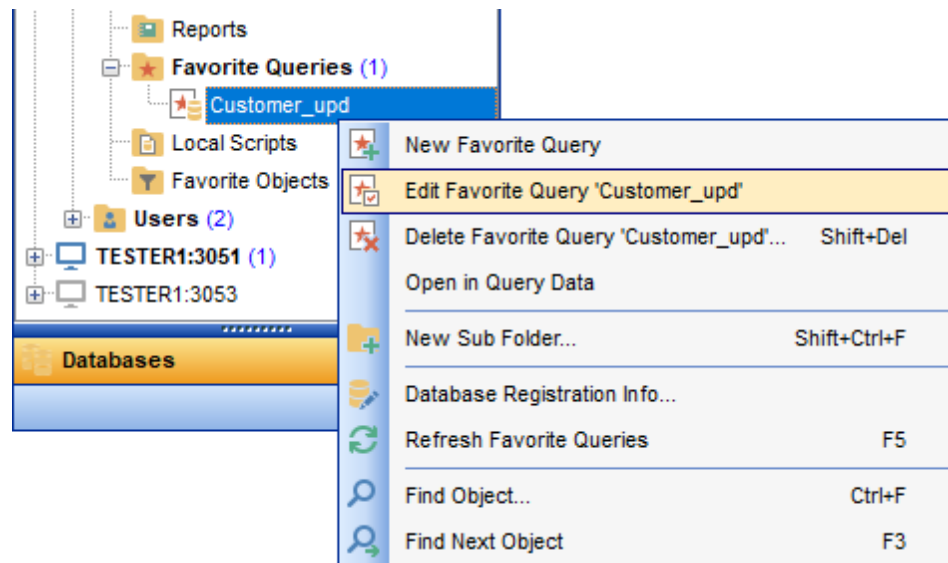
[DB Explorer options](#)<sup>[745]</sup>

### 3.11 Managing Favorite queries

**Favorite Queries** is a new feature of **SQL Manager**. Now you are provided with an opportunity to save the most frequently used SQL queries as Favorite Queries.

Use the **Favorite Queries** node of DB Explorer to access the list of your Favorite queries quickly. Queries stored in the database and those stored in Windows registry can be easily distinguished by their icons.

Using the context menu you can create a new Favorite query or edit an existing one using [Favorites editor](#)<sup>[345]</sup>, open any of the existing queries in [Query Editor](#)<sup>[330]</sup> or remove a query if you don't need it any longer.



You can also create a separate tab for your Favorite queries. See [Using tabs for database navigation](#)<sup>[73]</sup> section for details.

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#### See also:

[Using tabs for database navigation](#)<sup>[73]</sup>

[Favorites editor](#)<sup>[345]</sup>


**Part**




## 4 Database Management

**SQL Manager for InterBase/Firebird** provides a number of tools you may need to manage your InterBase/Firebird databases. Find the list of common database management operations for working in **SQL Manager** below.


### Registering Hosts

- select the **Database | Register Host...** [main menu](#)<sup>[882]</sup> item or use the corresponding  **Register Host** [toolbar](#)<sup>[884]</sup> button
- or
- right-click any host alias and select the **Register Host...** [context menu](#)<sup>[52]</sup> item in the [DB Explorer](#)<sup>[63]</sup> tree;
  - set all the necessary options using [Register Host wizard](#)<sup>[90]</sup> which guides you through the entire process of host registration.

### Unregistering Hosts

- select the host to unregister in the [DB Explorer](#)<sup>[63]</sup> tree;
  - select the **Database | Unregister Host** [main menu](#)<sup>[882]</sup> item or use the corresponding  **Unregister Host** [toolbar](#)<sup>[884]</sup> button
- or
- right-click the host alias and select the **Unregister Host** [context menu](#)<sup>[52]</sup> item in the [DB Explorer](#)<sup>[63]</sup> tree;
  - confirm unregistering in the corresponding dialog window.


### Creating Databases

- select the **Database | Create Database** [main menu](#)<sup>[882]</sup> item or use the corresponding  **Create Database** [toolbar](#)<sup>[884]</sup> button;
- set all the necessary options using [Create Database wizard](#)<sup>[100]</sup> which guides you through the entire process of creating a new database.


### Dropping Databases

- select the database to drop in the [DB Explorer](#)<sup>[63]</sup> tree;
- select the **Database | Drop Database** [main menu](#)<sup>[882]</sup> item;
- confirm dropping in the corresponding dialog window.

### Registering Databases


- select the **Database | Register Database...** [main menu](#)<sup>[882]</sup> item or use the corresponding  **Register Database** [toolbar](#)<sup>[884]</sup> button
- or
- right-click any database alias and select the **Register Database...** [context menu](#)<sup>[53]</sup> item in the [DB Explorer](#)<sup>[63]</sup> tree;
  - set all the necessary options using [Register Database wizard](#)<sup>[107]</sup> which guides you through the entire process of database registration.

### Unregistering Databases


- select the database to unregister in the [DB Explorer](#)<sup>[63]</sup> tree;
  - select the **Database | Unregister Database** [main menu](#)<sup>[882]</sup> item or use the corresponding  **Unregister Database** [toolbar](#)<sup>[884]</sup> button
- or
- right-click the database alias and select the **Unregister Database** [context menu](#)<sup>[53]</sup>

- item in the [DB Explorer](#) tree;
- confirm unregistering in the corresponding dialog window.


### Connecting to Hosts

- select the host to connect to in the [DB Explorer](#) tree;
  - select the **Database | Connect to Host** [main menu](#) item or use the corresponding  **Connect to Host** [toolbar](#) button
- or
- right-click the host and select the **Connect to Host** [context menu](#) item in the [DB Explorer](#) tree.


### Disconnecting from Hosts

- select the host to disconnect from in the [DB Explorer](#) tree;
  - select the **Database | Disconnect from Host** [main menu](#) item or use the corresponding  **Disconnect from Host** [toolbar](#) button
- or
- right-click the host and select the **Disconnect from Host** [context menu](#) item in the [DB Explorer](#) tree.

### Connecting to Databases

- select the database to connect to in the [DB Explorer](#) tree;
  - select the **Database | Connect to Database** [main menu](#) item or use the corresponding  **Connect to Database** [toolbar](#) button
- or
- right-click the database alias and select the **Connect to Database** [context menu](#) item in the [DB Explorer](#) tree.


### Disconnecting from Databases

- select the database to disconnect from in the [DB Explorer](#) tree;
  - select the **Database | Disconnect from Database** [main menu](#) item or use the corresponding  **Disconnect from Database** [toolbar](#) button
- or
- right-click the database alias and select the **Disconnect from Database** [context menu](#) item in the [DB Explorer](#) tree.

### Viewing and Editing Database Registration Info

- select the database or any of its objects in the [DB Explorer](#) tree;
  - select the **Database | Database Registration Info...** [main menu](#) item
- or
- right-click the database alias or any of its objects and select the **Database Registration Info...** [context menu](#) item in the [DB Explorer](#) tree.

### Viewing and Editing Database Properties

- select the database in the [DB Explorer](#) tree;
- right-click the database and select the **Database Properties...** [context menu](#) item or use the corresponding  **Properties** [toolbar](#) button

### Viewing and Editing Host Registration Info

- select the host in the [DB Explorer](#) tree;
  - select the **Database | Host Registration Info...** [main menu](#) item
- or
- right-click the host alias and select the **Host Registration Info...** [context menu](#) item



item in the [DB Explorer](#)<sup>[63]</sup> tree.

Availability:

**Full** version (for Windows) **Yes**

**Lite** version (for Windows) **Yes**

**Note:** To compare all features of the **Full** and the **Lite** versions of **SQL Manager**, refer to the [Feature Matrix](#)<sup>[20]</sup> page.

---

**See also:**

[Getting Started](#)<sup>[37]</sup>

[Database Explorer](#)<sup>[63]</sup>

[Database Objects Management](#)<sup>[162]</sup>

[Query Management Tools](#)<sup>[328]</sup>

[Data Management](#)<sup>[368]</sup>

[Import/Export Tools](#)<sup>[443]</sup>

[Database Tools](#)<sup>[532]</sup>

[Services](#)<sup>[651]</sup>

[Security management](#)<sup>[711]</sup>


[Options](#)<sup>[733]</sup>

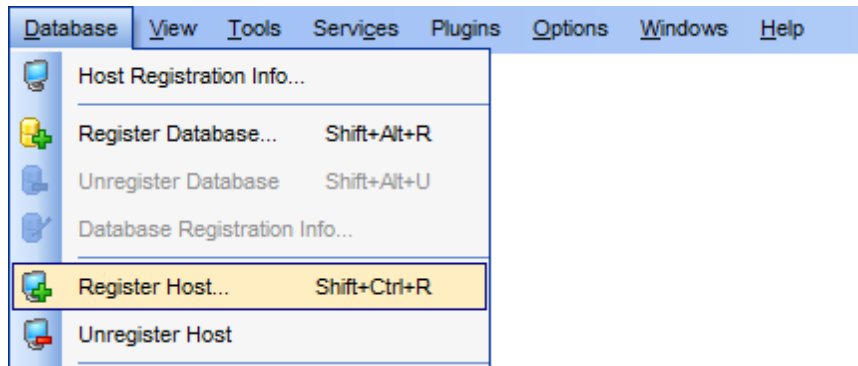
[External Tools](#)<sup>[832]</sup>

[How To...](#)<sup>[833]</sup>

## 4.1 Register Host wizard

**Register Host wizard** allows you to register a host in **SQL Manager for InterBase/Firebird**.

To start the wizard, select the **Database | Register Host...** [main menu](#)<sup>[882]</sup> item, or use the  **Register Host** button on the main [toolbar](#)<sup>[884]</sup>. You can also use the *Shift+Ctrl+R* [shortcut](#)<sup>[932]</sup> for the same purpose.



- [Setting connection parameters](#)<sup>[917]</sup>
- [SSH tunneling parameters](#)<sup>[967]</sup>
- [Setting specific options](#)<sup>[987]</sup>

---

### See also:

[Register Database wizard](#)<sup>[107]</sup>

[Host Registration Info](#)<sup>[152]</sup>

### 4.1.1 Setting connection parameters

Use this step of the wizard to set the necessary **connection parameters** for the new host using the controls available in the **Server** and **Client** areas.

**Register Host Wizard**

**Register Host**

Specify the connection parameters

Welcome to the Register Host Wizard!  
This wizard allows you to set the connection parameters for the selected host only once, giving you the possibility to connect them quickly afterwards.

This wizard will guide you through the process of setting the connection parameters and customizing specific options.

**Server not defined**

Host name: TESTER1

Protocol: TCP/IP Port/service: 3051

User name: SYSDBA Password: [ ]

SQL role: [ ] Get Server Preferences

Security DB: [ ]

**Client file is not found**

Client library: C:\gds32.dll

Authentication type

Normal (traditional IB/FB authentication with security database)

Win32 NTLM authentication (only for FB 2.1 or above)

Mixed

Use Secure Shell (SSH) tunneling  Use SSL

Help < Back Next > Cancel

#### Server

In this section you need to define connection parameters.

#### Host name

Type in, or use the drop-down list to specify the host name of the InterBase/Firebird server.

#### Protocol

Use the drop-down list to select the communication protocol to be used for the connection. Possible values are: *Local, TCP/IP, Novell SPX, NetBEUI, Embedded*.

#### Port/service

Use this field to specify a port or service to connect through. By default it is "gds\_db" for InterBase and port 3050 for Firebird.

Afterwards you must specify valid authorization info to access the target InterBase/Firebird server: **User name** and **Password**.

The default superuser name is 'SYSDBA' with password 'masterkey'.

You can also define the user [role](#) in **SQL role** field.


Pressing the **Get Server Preferences** button allows the program to do the following actions automatically:

- get server version (when done the version will be displayed in the title of the section);
- define security database if possible (a few servers do not allow such an operation);
- detect client library according to the server version (also shows the version in the corresponding section title) from the following folders (from all successful results the program chooses the one that best corresponds to the server version):
  - ✓ the folder specified in the **Client Library** field;
  - ✓ the server home folder and subfolders (server must be local and home folder must be specified);
  - ✓ the root folder of **SQL Manager**;
  - ✓ the folders associated with the Path environment variable;
  - ✓ \Windows and \Windows\System32;
- set authentication type.

**Note:** This operation may take a few time if you are getting server preferences for the first time.

### Security DB

Authorized InterBase/Firebird [users](#) are stored in a **security database**. Each InterBase/Firebird server has its own [security database](#), which means that a user definition is bound to the server where it is stored. The security database also stores an encrypted password for each user.


Type in or use the  button to specify the path to the security database. The drop-down list contains the previously specified security databases.

### Client

In this section you can specify the client settings.

#### Client library

Client library provides the conduit between the API or object library an application uses to communicate with the DB server and the networking protocols used to exchange data with the network.

Type in or use the  button to specify the path to the client library. For successful connection to the server it is crucial to use the appropriate client library - the one that is compatible with the server you are using: *gds32.dll* for InterBase and *fbclient.dll* for Firebird. Please note that the client library file must be located on your local machine (e.g. in the directory where the application is installed). The drop-down list contains the previously specified client libraries.

**Hint:** Automatic search for the library is performed upon pressing the **Get Server Preferences** button.

#### Authentication type

This group is only available in case you connect to Firebird 2.1 or higher. Specify the preferable type of server authentication to be used for the connection:

*Normal (traditional IB/FB authentication with security database)*

The user must identify him/herself with a Firebird username and password, which the server checks against the security database. The Firebird security database is named *security2.fdb*. For user authentication it has a table named RDB\$USERS that stores the new hashed passwords.

*Win32 NTLM authentication (only FB 2.1 or above)*

NTLM credentials are based on data obtained during the interactive Windows logon process. The user is automatically identified by his OS account name. In this case login name will consist of the server name that performed authentication and user name.

*Mixed*

The user either supplies a Firebird username and password, or is logged in with his OS account name.

**Note:** In Firebird 2.1, if **Authentication type** is *Win32 NTLM* or *Mixed*, Windows administrators automatically receive SYSDBA privileges in all databases, including the security database.

**Use Secure Shell (SSH) tunneling**

Select this option to establish connection to an intermediate SSH server and forward all InterBase/Firebird commands through the secure tunnel.

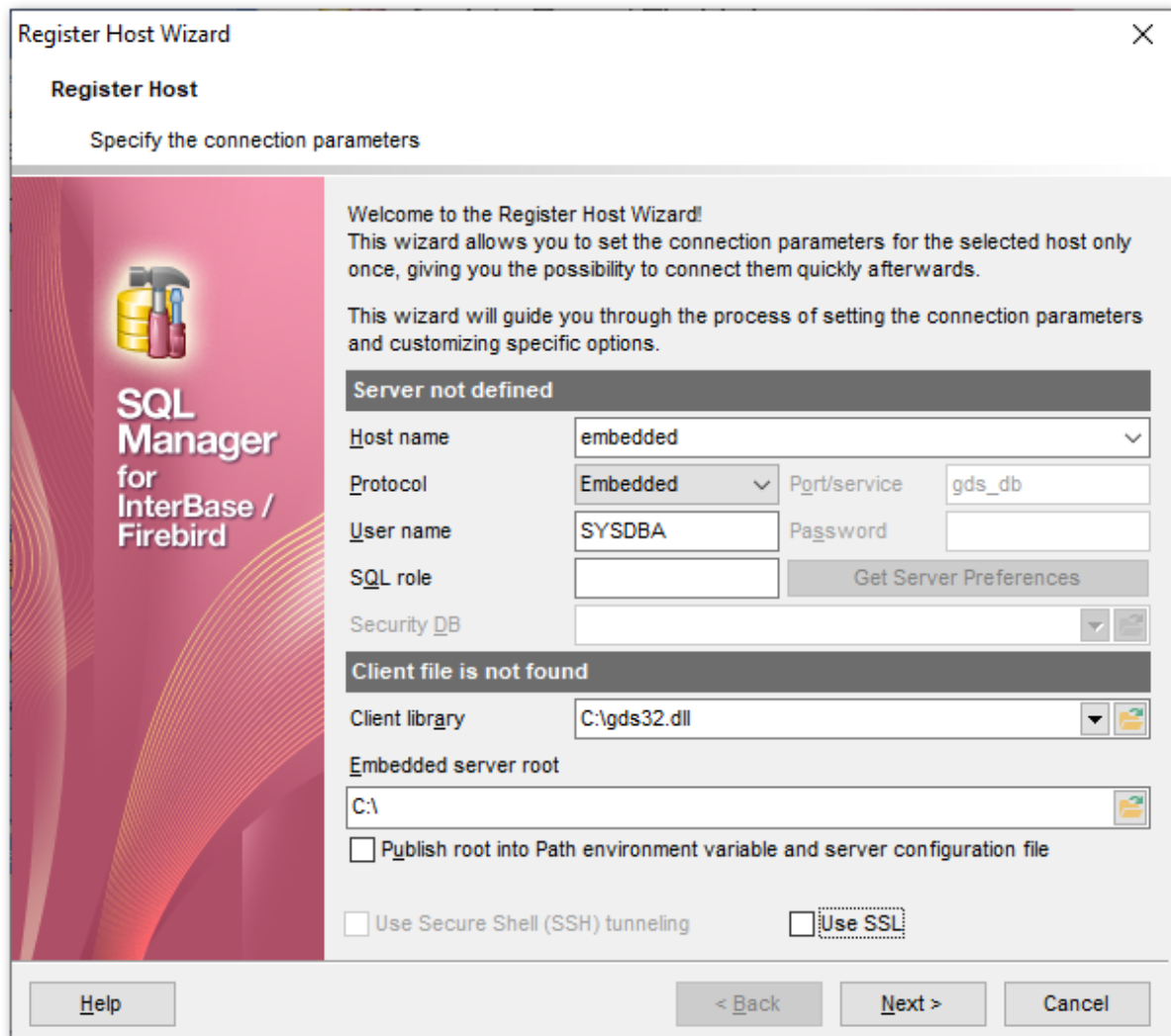
If this option is checked, you should set tunneling parameters at the [SSH tunneling parameters](#)<sup>[96]</sup> step of the wizard.

**Use SSL**

Enable this option to connect via an encrypted channel.

If this option is checked, you should set tunneling parameters at the [SSL parameters](#)<sup>[97]</sup> step of the wizard.


If **Embedded** is selected in the **Protocol** drop-down list, you need to specify [embedded server connection](#)<sup>[71]</sup> properties.



### Host name

Type in, or use the drop-down list to specify the host name of the embedded server.

### Client library

Type in or use the  button to specify the path to the client library for the embedded server. The drop-down list contains the previously specified client libraries.

Firebird Embedded Server is intended to work with embedded databases. It consists of one \*.dll file - *fbembed.dll*. This is a special client library that includes the server itself. When an application links to this library it loads the server and allows direct access to any database that is accessible on the local computer. This version of the server does not use a security database. The user name specified during the "logon" (no password authentication occurs) is used to manage user access to database objects (via SQL permissions) but if that user name is SYSDBA (or the owner of the database) then unrestricted access is possible.

### Embedded server root

In Firebird 2.1 (and lower) the embedded server root is a directory where the executable

file *fbguard.exe* is stored.

In Firebird 2.5 it is a directory that contains *fbembed.dll* file.

An embedded server locks a database file for its own exclusive use after successful connection. This means that you cannot access the same database from multiple embedded server processes simultaneously (or from any other servers, once an embedded server has locked the file).

**Publish root into Path environment variable and server configuration file**

Select this option to add the path specified in the *Embedded server root* field to the 'Path' environment variable and server configuration file.

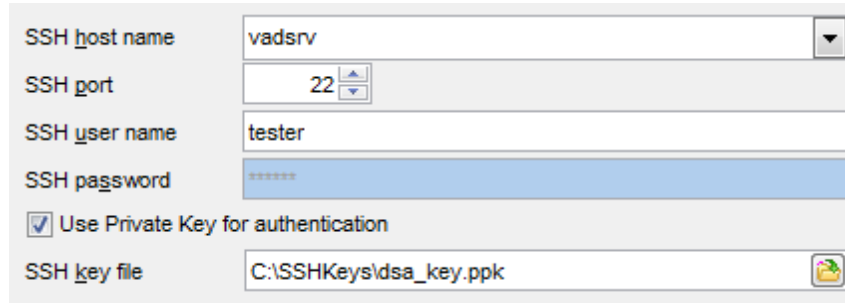
If you want to use the local utilities (eg, *gbak.exe*) then you need to rename the library *fbembed.dll* to *fbclient.dll*, and place utilities into the folder where embedded server libraries are located.

Click the **Next** button to proceed to [Setting specific options](#)<sup>[98]</sup> for the host being registered, to the [SSH tunneling parameters](#)<sup>[96]</sup> step of the wizard (if the **Use Secure Shell (SSH) tunneling** option is enabled for the host), or to the [SSL parameters](#)<sup>[97]</sup> step of the wizard (if the **Use SSL** option is enabled).

### 4.1.2 SSH tunneling parameters

Use this step to set SSH tunneling parameters.

**Note:** This step is only available if the  **Use Secure Shell (SSH) tunneling** option was selected at the [previous](#)<sup>[91]</sup> step.



The screenshot shows a dialog box for configuring SSH tunneling parameters. It contains the following fields and options:

- SSH host name:** A dropdown menu with the value "vadsrv".
- SSH port:** A spin box with the value "22".
- SSH user name:** A text input field with the value "tester".
- SSH password:** A text input field with masked characters "\*\*\*\*\*".
- Use Private Key for authentication**
- SSH key file:** A text input field with the value "C:\SSHKeys\dsa\_key.ppk" and a file selection icon.

Specify **SSH Host name**, **SSH port**, **SSH user name**, **SSH password**, the path to the **SSH key file** (if necessary) in the corresponding boxes.

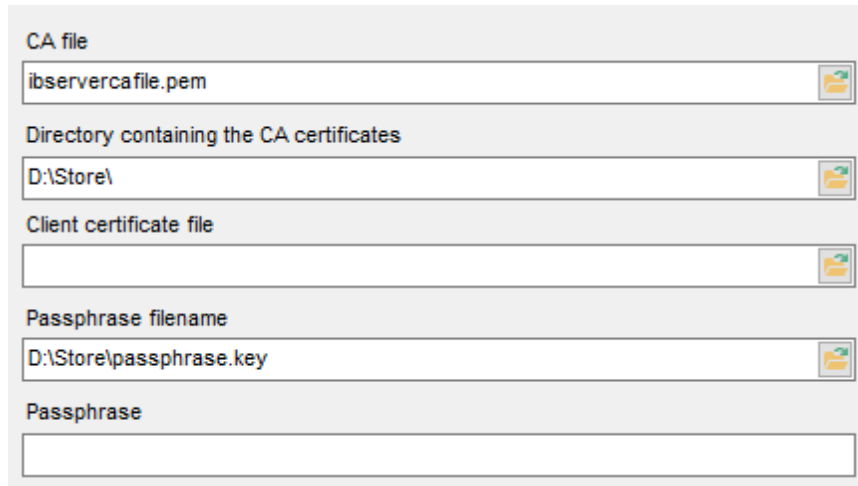
See [SSH connection properties](#)<sup>[92]</sup> for details.

Click the **Next** button to proceed to the [Setting specific options](#)<sup>[98]</sup> step of the wizard.



### 4.1.3 SSL parameters

SSL preferences allows you to connect to the server via encrypted channel for increased security.



The screenshot shows a configuration window with the following fields:

- CA file:** ibservercafile.pem
- Directory containing the CA certificates:** D:\Store\
- Client certificate file:** (empty)
- Passphrase filename:** D:\Store\passphrase.key
- Passphrase:** (empty)

**Client certificate**

Set the full path to the SSL certificate on the client machine.

**Passphrase file**

Set the full path to the file containing the key passphrase.

**Passphrase**

Input passphrase password.

**CA file**

Specify the name of the certificate authority file.

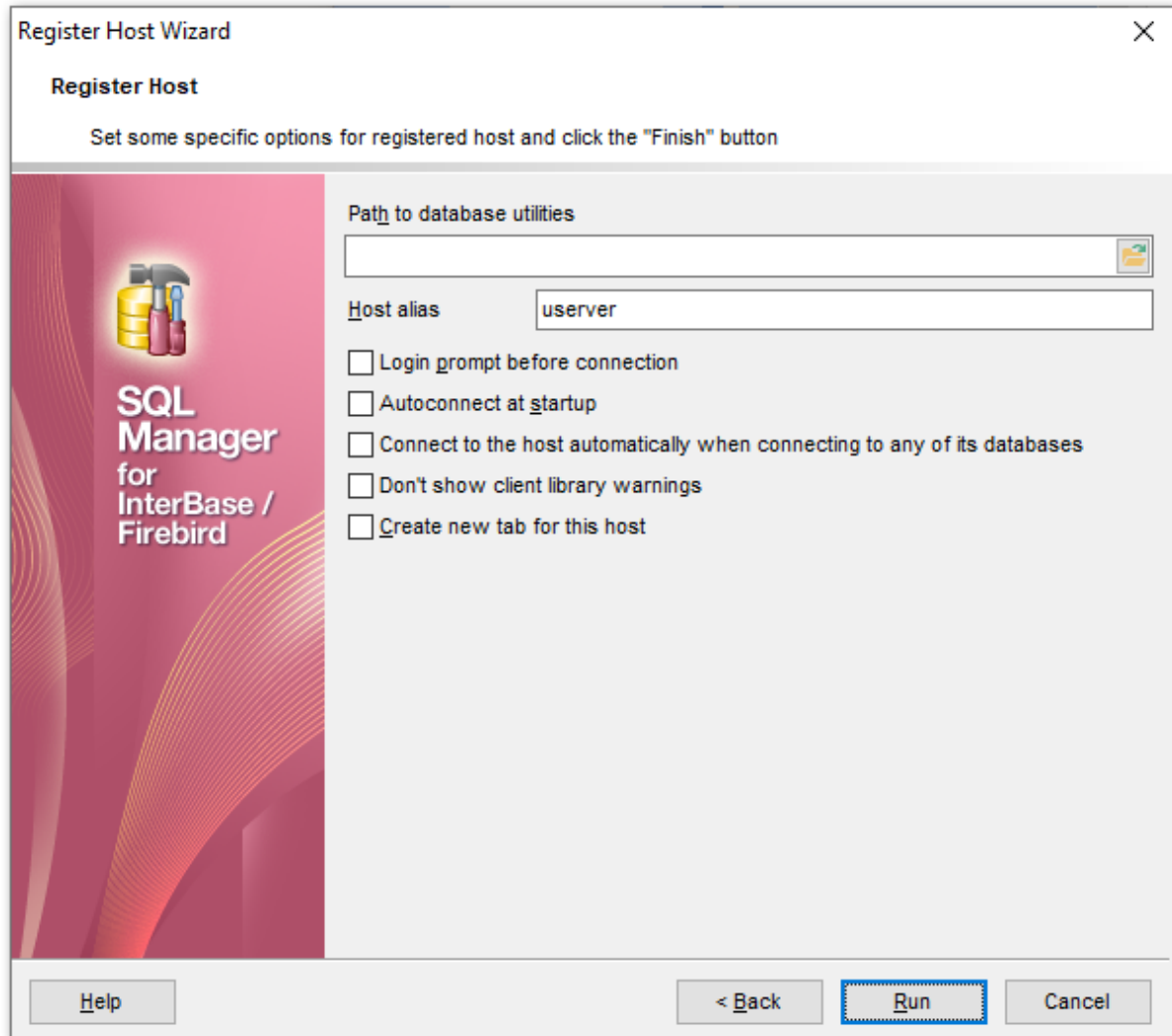
**CA path**

Set the path for the location of the certificate authority file.


Click the **Next** button to proceed to the [Setting specific options](#)<sup>[98]</sup> step of the wizard.

#### 4.1.4 Setting specific options

This step of the wizard allows you to set some **specific options** for the host being registered.



##### Path to database utilities

Type in or use the  button to specify the path to InterBase/Firebird database utilities.

##### Host alias

Set the alias for the current host to be displayed in the DB Explorer.

##### Login prompt before connection

Enables **SQL Manager for InterBase/Firebird** to [prompt](#)<sup>[927]</sup> for user name and password each time you [connect](#)<sup>[67]</sup> to the host.

##### Autoconnect at startup

With this option set, connection to the registered host is established automatically at application startup.

**Connect to the host automatically when connecting to any its database**

With this option set, the application connects to the host automatically when connection to any of its databases is established.

**Don't show client library warnings**

Turn this option on to skip the message of client library version incompatibility.


**Create new tab for this host**

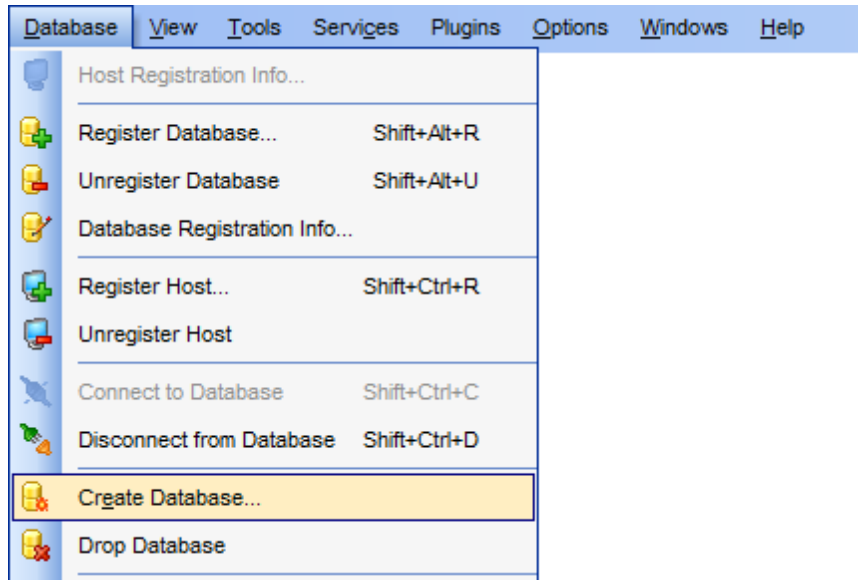
If this option is checked, the host will be displayed within a separate [tab](#)<sup>[73]</sup> in [DB Explorer](#)<sup>[63]</sup>.

Click the **Finish** button when done to start working with the newly registered host in **SQL Manager for InterBase/Firebird**.

## 4.2 Create Database wizard

**Create Database wizard** allows you to create a new database on your InterBase/Firebird host.

To start the wizard, select the **Database | Create Database...** [main menu](#)<sup>[882]</sup> item, or use the  **Create Database** button on the main [toolbar](#)<sup>[884]</sup>.



- [Selecting host](#)<sup>[107]</sup>
- [Specifying database parameters](#)<sup>[103]</sup>
- [Defining database files](#)<sup>[105]</sup>
- [Viewing result SQL statement](#)<sup>[106]</sup>

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### See also:

[Register Database wizard](#)<sup>[107]</sup>

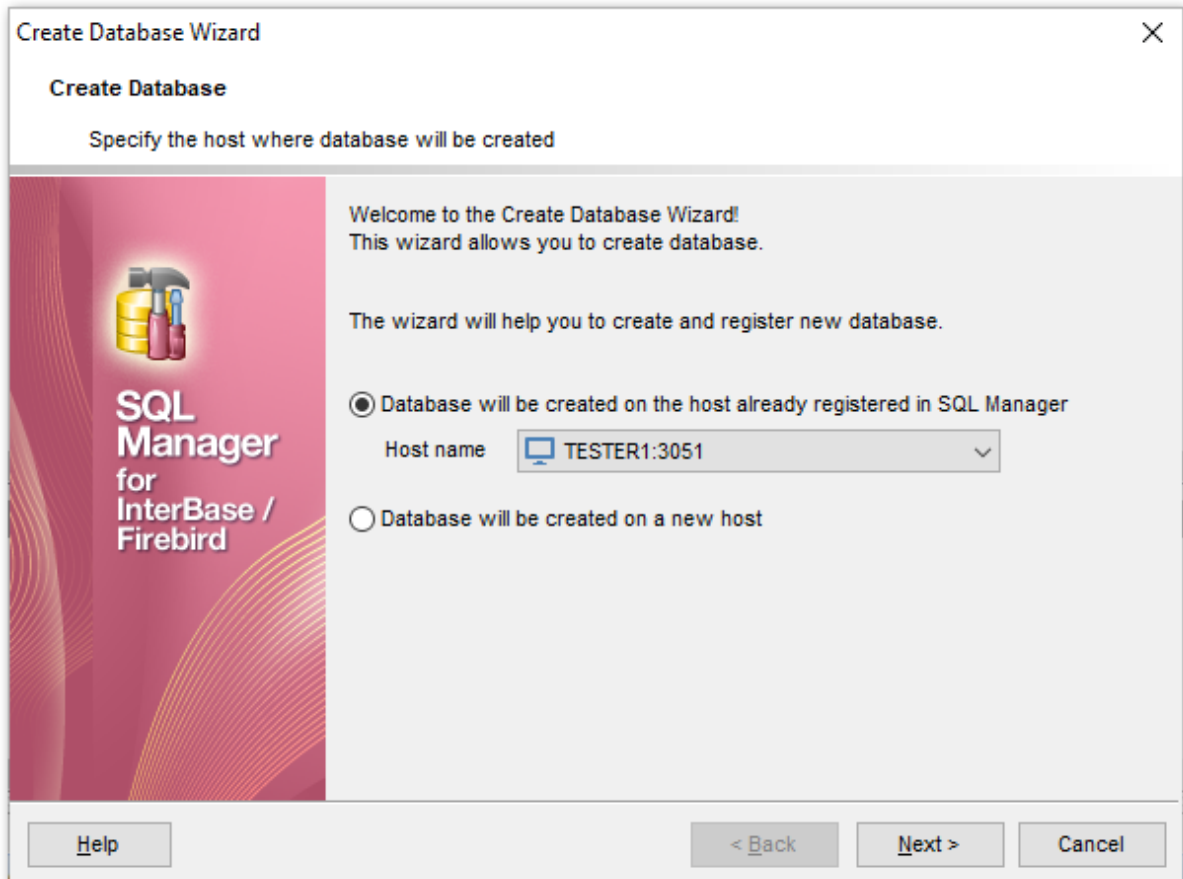
[Database Registration Info](#)<sup>[115]</sup>

[Database Properties](#)<sup>[138]</sup>

## 4.2.1 Selecting host

Use this step of the wizard to select the host for the database to be created.

Switch to **Database will be created on a new host** if you need to register a new host and create a database. The database will be registered on this host.



### Host name

Use the drop-down list of [registered](#)<sup>[87]</sup> hosts to select the one where the new database will reside.

Click the **Next** button to proceed to the [Setting connection properties](#)<sup>[103]</sup> step of the wizard.

---

### See also:

[Register Host wizard](#)<sup>[90]</sup>

## 4.2.2 Setting connection parameters

If at the first step you indicated that the server is not registered, then at the second step you will need to specify the connection parameters to the server.

Use this step of the wizard to set the necessary **connection parameters** for the database in the corresponding boxes.

**Create Database Wizard**

**Create Database**

Specify the Secure Shell (SSH) tunnel parameters

**Server not defined**

Host name: DOOMSERVER

Protocol: TCP/IP Port/service: gds\_db

User name: SYSDBA Password:

SQL role: Get Server Preferences

Security DB: C:\Program Files (x86)\Firebird\Firebird\_2\_5\example:

**Client file is not found**

Client library: C:\gds32.dll

Authentication type

Normal (traditional IB/FB authentication with security database)

Win32 NTLM authentication (only for FB 2.1 or above)

Mixed

Use Secure Shell (SSH) tunneling  Use SSL

Help < Back Next > Cancel

Set the server connection parameters and client configuration in the corresponding boxes: *host name*, *protocol*, *port/service*, *user name*, *password*, etc.

For more details refer to the [Setting connection parameters](#)<sup>[91]</sup> step of **Register Host wizard**.


When you are done, click the **Next** button to proceed to the [Specifying database parameters](#)<sup>[103]</sup> step of the wizard.

### 4.2.3 Specifying database parameters

Use this step of the wizard to set the necessary **connection parameters** for the database being created.

#### Database file

##### Fully qualified database file path

This field requires new database file specification, including full name of the database file. Type in or use the  button to specify the path to the database file. The drop-down list contains the previously specified paths.

#### Database login

##### User name

Specify a [user](#) name (checked against valid user name and password combinations in the [security database](#) on the server where the database will reside).

##### Password

Specify the password (checked against valid user name and password combinations in the [security database](#) on the server where the database will reside).

#### Other parameters

##### Page size

Size (in *bytes*) for database pages. Possible values are 1024, 2048, 4096 (default), or

8192.

**SQL dialect**

Declares the SQL Dialect for database access.

**SQL dialect**

- |   | Used for  |
|---|---|
| 1 | InterBase 5.5 and earlier compatibility   |
| 3 | InterBase 6.0; allows you to use delimited identifiers, exact numerics, and DATE, TIME, and TIMESTAMP datatypes |

**Charset**

Use the drop-down list to select the default character set for the database, i.e. the character set used by the server for string (CHAR, VARCHAR, text Blob) columns in the database when no other character set information is provided.

**Collation**

Select the appropriate sorting option in this list.

**Difference file**

Optional clause specifying the path and name for the file delta that stores any mutations to the database file after it has been switched to the "copy-safe" mode.

 **Single database file**

If you want to store your new database in several files, uncheck this option. By default this option is checked, it means that the database is stored in one file only.

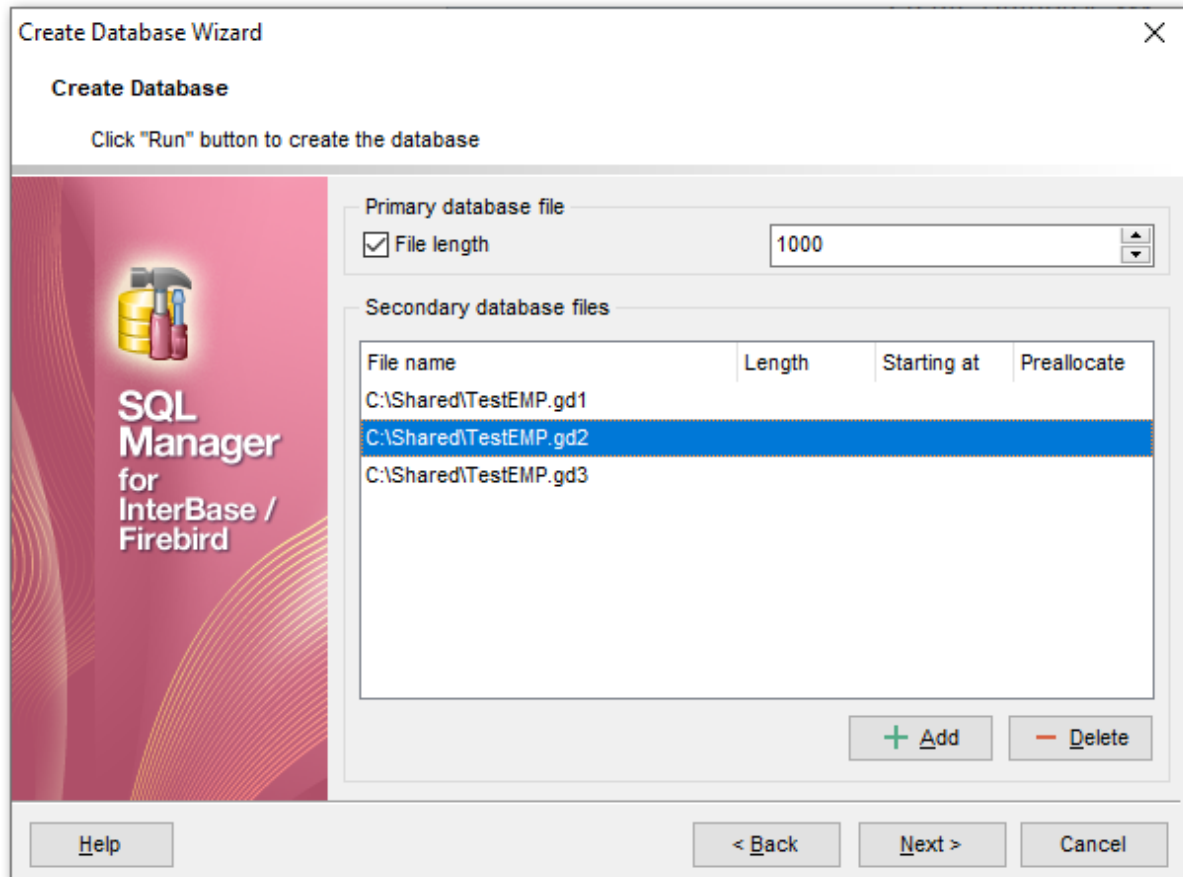
Click the **Next** button to proceed to the [Defining database files](#)<sup>[105]</sup> step of the wizard, or to the [Viewing result SQL statement](#)<sup>[106]</sup> step, depending on the **Single database file** option selection.



#### 4.2.4 Defining database files

Specify the parameters of the database single and secondary files.

**Note:** This step is skipped if you checked the  **Single Database File** option on the previous step.



##### Primary database file

###### File length

Enable this option to set the length of the primary database file (the file defined at the [previous step](#)<sup>[103]</sup>). This number indicates when the new database file will be started.

##### Secondary database files

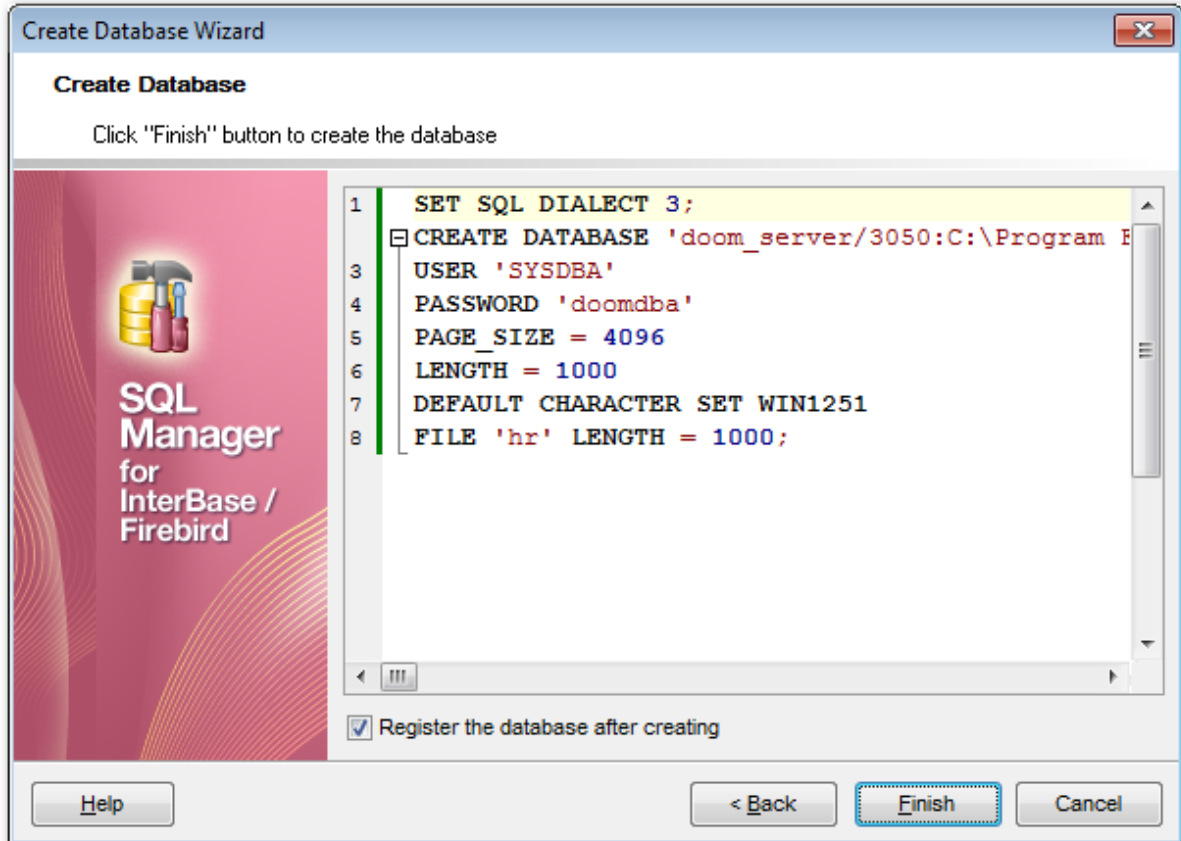
This group allows you to define one or more secondary database files.

Click the **Add** button to add a new file, input its name in the **File name** field, set its length (**secondary file length** indicates where the next file will be started), or the **starting at** value (if you haven't set the previous file length) and click the **Add** button. The file is added to the file list.

Click the **Next** button to proceed to [Viewing result SQL statement](#)<sup>[106]</sup>.

## 4.2.5 Viewing result SQL statement

View the result *CREATE DATABASE* statement issued for the new database creation. For more information see [Compile window](#)<sup>[898]</sup>.



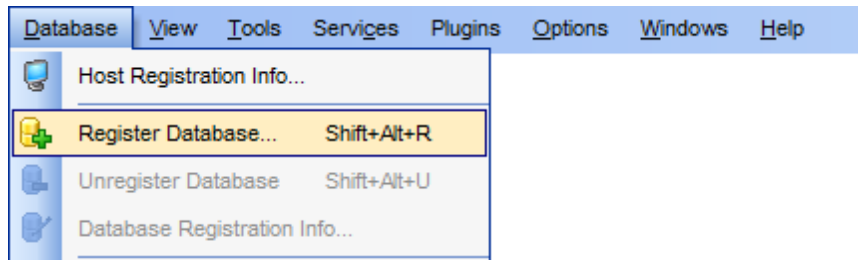
If the  **Register the database after creating** option is checked, the [Database Registration Info](#)<sup>[115]</sup> dialog will appear.

## 4.3 Register Database wizard

**Register Database Wizard** allows you to register a single database.

To start the wizard, select the **Database | Register Database...** [main menu](#)<sup>[882]</sup> item, or use the **Register Database** button on the main [toolbar](#)<sup>[884]</sup>. You can also use the **Shift+Alt+R** [shortcut](#)<sup>[932]</sup> for the same purpose.

- [Selecting host](#)<sup>[108]</sup>  
Database is located on a registered host:
- [Setting connection parameters](#)<sup>[109]</sup>  
Database is located on a new host:
- [Setting connection parameters](#)<sup>[111]</sup>
- [Setting specific options](#)<sup>[112]</sup>



### See also:

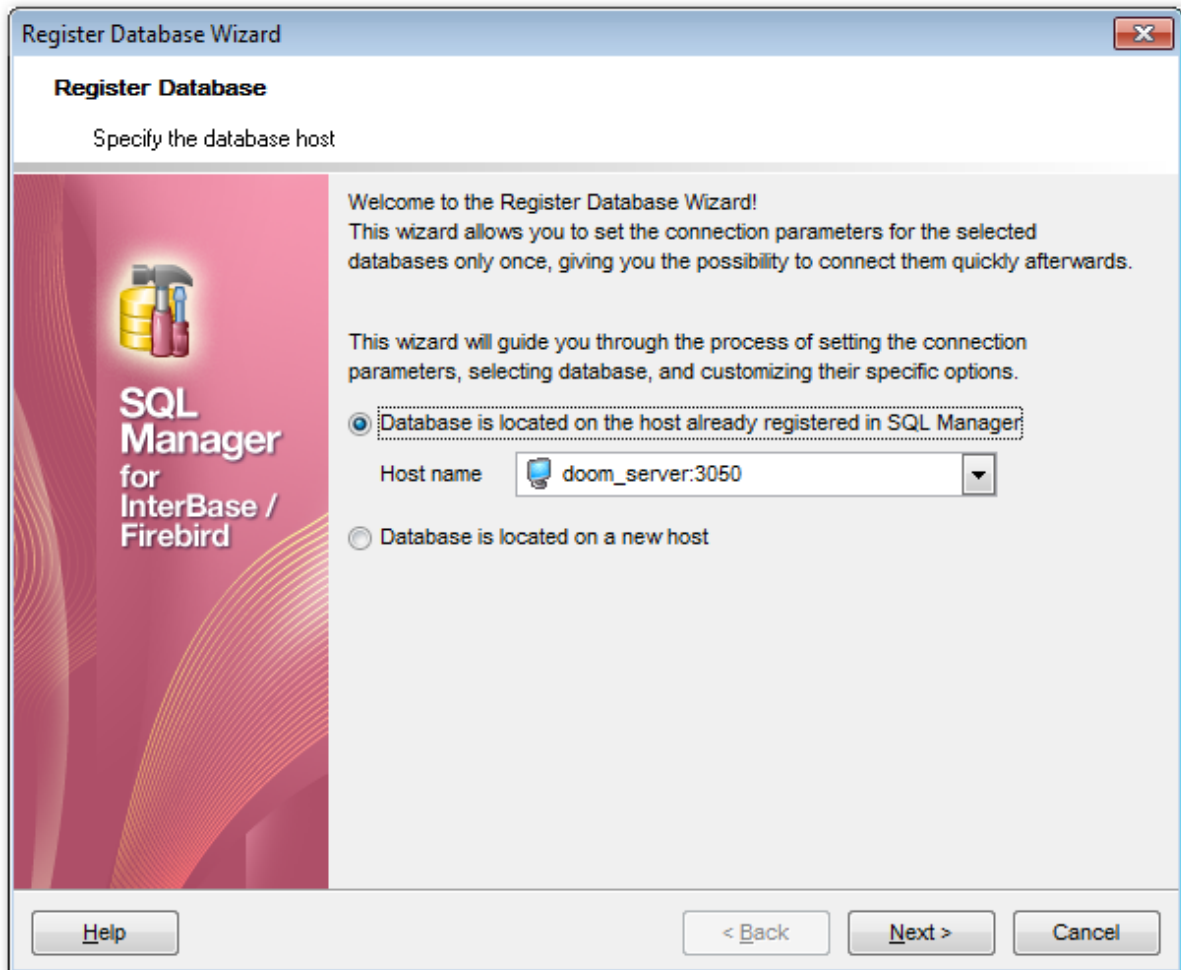
[Create Database wizard](#)<sup>[100]</sup>

[Database Registration Info](#)<sup>[115]</sup>

[Database Properties](#)<sup>[138]</sup>

### 4.3.1 Selecting host

At this step you need to select the **host** on which the database is located: choose whether the database to be registered is located on a *host already registered* in **SQL Manager**, or whether a *new host* should be registered for the database in the application.



**Database is located on the host already registered in SQL Manager**

This option indicates that the database being registered resides on a [registered](#)<sup>[90]</sup> host. Use the **Host name** drop-down list to select the required host.

**Database is located on new host**

This option indicates that the database being registered resides on a non-registered host.

Click the **Next** button to proceed to [setting connection parameters](#)<sup>[109]</sup> for database on a registered host, or to [setting connection parameters](#)<sup>[111]</sup> for database on a new host, depending on your selection at this step.

## 4.3.2 Database on a registered host

### 4.3.2.1 Setting connection parameters

Use this step of the wizard to set the necessary **connection parameters** for the database in the corresponding boxes.

The screenshot shows a dialog box titled "Register Database Wizard". The main heading is "Register Database" and the instruction is "Specify the connection parameters". On the left side, there is a graphic with the text "SQL Manager for InterBase / Firebird". On the right side, there are three input fields: "User name" with the value "SYSDBA", "Password" with the value "\*\*\*\*\*", and "Role" which is empty. At the bottom of the dialog, there are four buttons: "Help", "< Back", "Next >", and "Cancel".

#### User name

Checks the [user](#)<sup>[71]</sup> name against valid user name and password combinations in the [security database](#)<sup>[71]</sup> on the server where the database resides.

#### Password

Checks the password against valid user name and password combinations in the [security database](#)<sup>[71]</sup> on the server where the database resides.

#### Role

Specify the [SQL role](#)<sup>[71]</sup> that you adopt on connection to the database. You must have previously been granted [membership](#)<sup>[725]</sup> in the role to gain the privileges of that role.

For more details see the [Setting connection parameters](#)<sup>[91]</sup> step of **Register Host wizard**.

When you are done, click the **Next** button to proceed to the [Setting specific options](#)<sup>[112]</sup> step of the wizard.

### 4.3.3 Database on a new host

#### 4.3.3.1 Setting connection parameters

Use this step of the wizard to set the necessary **connection parameters** for the database in the corresponding boxes.

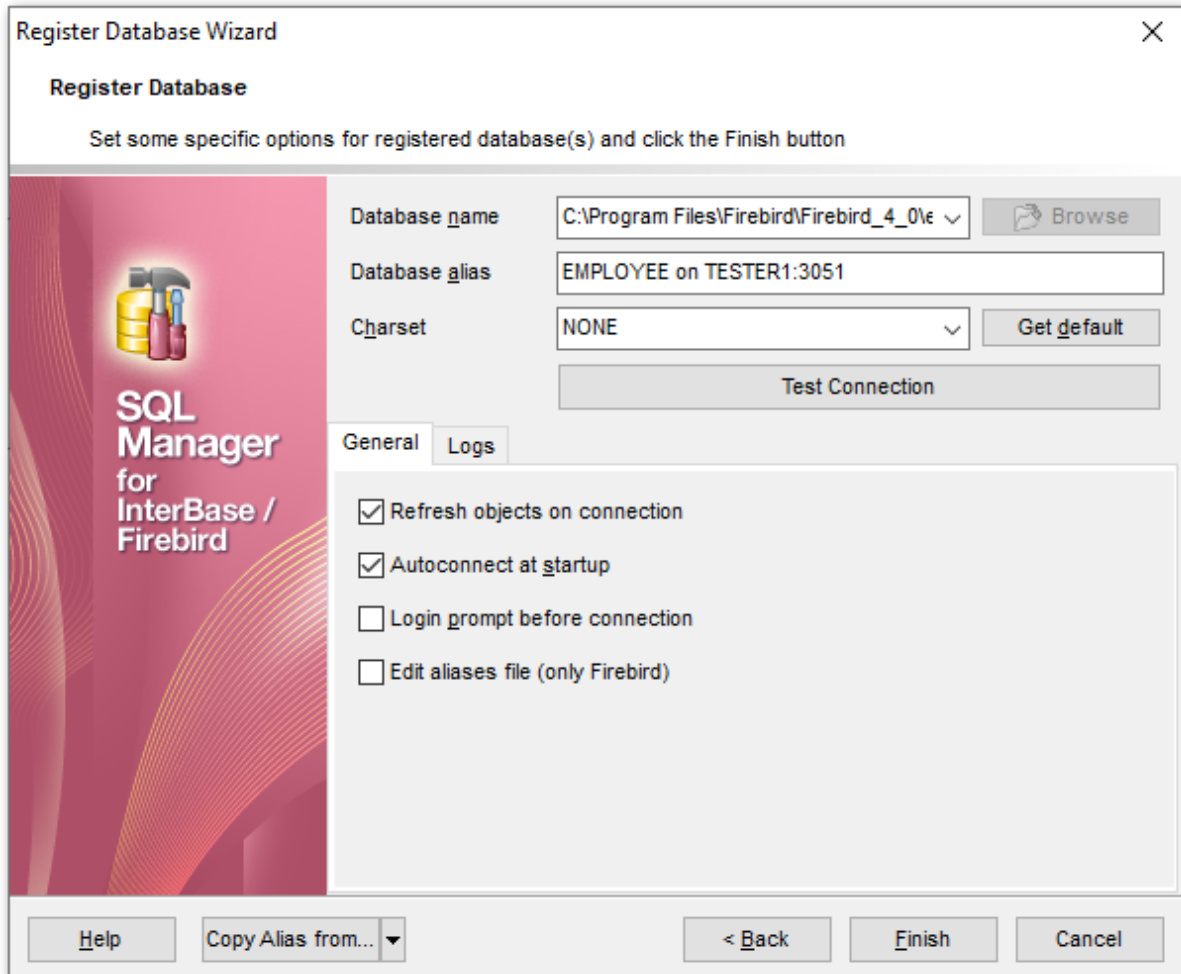
The screenshot shows the 'Register Database Wizard' dialog box. The title bar reads 'Register Database Wizard'. The main title is 'Register Database' and the subtitle is 'Specify the connection parameters'. On the left is a graphic for 'SQL Manager for InterBase / Firebird'. The right side contains several input fields: 'Host name' (DOOMSERVER), 'Protocol' (TCP/IP), 'Port/service' (gds\_db), 'User name' (SYSDBA), 'Password' (empty), 'SQL role' (empty), 'Security DB' (D:\Program Files (x86)\Firebird\Firebird\_2\_5\examples), and 'Client library' (C:\gds32.dll). There are also radio buttons for 'Authentication type' (Normal, Win32 NTLM, Mixed) and checkboxes for 'Use Secure Shell (SSH) tunneling' and 'Use SSL'. At the bottom are 'Help', '< Back', 'Next >', and 'Cancel' buttons.

Set the server connection parameters and client configuration in the corresponding boxes: *host name*, *protocol*, *port/service*, *user name*, *password*, etc. For more details refer to the [Setting connection parameters](#)<sup>[91]</sup> step of **Register Host wizard**.


When you are done, click the **Next** button to proceed to the [Setting specific options](#)<sup>[112]</sup> step of the wizard.

#### 4.3.4 Setting specific options

This step of the wizard allows you to set the **database name**, **database alias**, **character set**, and **registration options** (using the *General* and *Logs* tabs).



##### Database name

Type in or use the  **Browse** button to specify the path to the database file (\*.gdb, \*.ib for InterBase or \*.fdb for Firebird). The drop-down list contains the previously specified paths.

##### Database alias

Enter the alias to be used to display the database in [DB Explorer](#)<sup>[63]</sup> and **SQL Manager** tools. By default, a database alias generated by the application has the following format:  
`<database_name> on <host_name_or_address>[:<port>]`

##### Charset

Specify an active character set to use for subsequent database attachments. The **Get default** button applies the default character set which was specified on [creation](#)<sup>[87]</sup> of the database.

Click **Test Connection** to check availability of the database at the moment. If connection



is successful, you will get the 'Connected!' message; otherwise an error message will be returned.

The **General** tab allows you to set common database registration options:

#### Font charset

Specify the character set to be used to display data in the [grid](#)<sup>[373]</sup>.

#### Refresh objects on connection

This option allows you to enable/disable refreshing objects on connection to the database. It is highly recommended to uncheck this option if your database contains many objects or if connection to the database is slow.

#### Autoconnect at startup

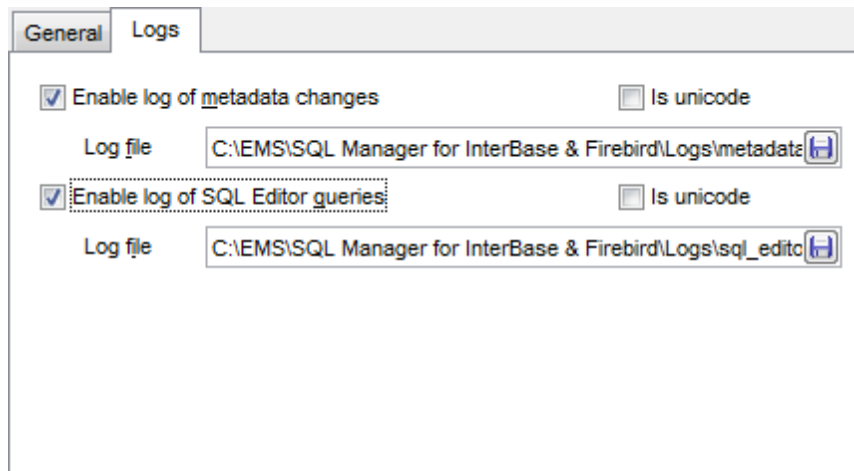
With this option set, [connection](#)<sup>[67]</sup> to the registered database is established automatically at application startup.

#### Login prompt before connection

Enables **SQL Manager for InterBase/Firebird** to [prompt](#)<sup>[927]</sup> for user name and password each time you [connect](#)<sup>[67]</sup> to the database.

#### Edit aliases file (only Firebird)

This option allows editing local Firebird server aliases file.




The **Logs** tab allows you to set log options for the database:

#### Enable log of metadata changes

Check this option if you wish to log metadata changes of your database in a file.


#### Log file

This field is enabled if the **Enable log of metadata changes** option is selected. Type in or use the **Save as**  button to specify the path to the \*.sql file to store the metadata logs.

#### Enable log of Query Data queries

Check this option if you wish to log your [Query Editor](#)<sup>[330]</sup> queries in a file.

**Log file**

This field is enabled if the **Enable log of Query Data queries** option is selected. Type in or use the **Save as**  button to specify the path to the \*.sql file to store the logs of SQL queries.

 **Is Unicode**

Enable this option to save logs in Unicode. If the option is disabled, ANSI will be used.

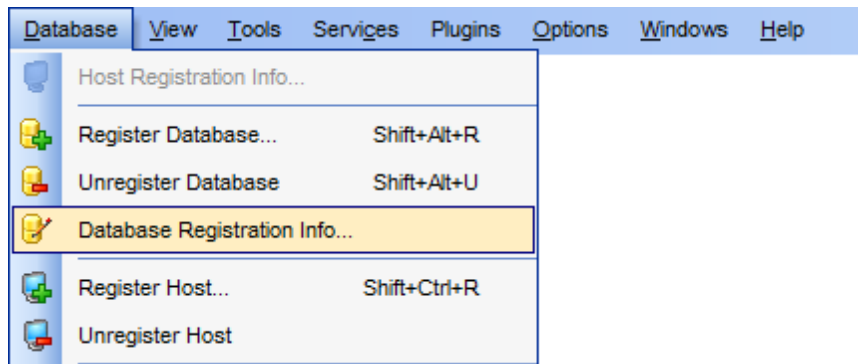
The **Copy Alias from...** menu allows you to select the alias of a previously registered database and use it for the newly configured database.

Click the **Finish** button when done to start working with the newly registered database in **SQL Manager for InterBase/Firebird**.

## 4.4 Database Registration Info

Use the **Database Registration Info** dialog to view and edit the registration properties of the database.

To open the dialog, select the database or any of its objects in the [DB Explorer](#)<sup>[63]</sup> tree, then select the **Database | Database Registration Info...** [main menu](#)<sup>[882]</sup> item, or right-click the database alias in [DB Explorer](#)<sup>[63]</sup> and use the **Database Registration Info...** context menu item. You can also use the **Database Registration Info...** button on the main [toolbar](#)<sup>[884]</sup>.



- [Editing connection properties](#)<sup>[116]</sup>
- [Setting common database options](#)<sup>[118]</sup>
- [Setting display options](#)<sup>[120]</sup>
- [Setting options for system objects](#)<sup>[122]</sup>
- [Setting grid and data options](#)<sup>[124]</sup>
- [Defining transactions](#)<sup>[129]</sup>
- [Defining events](#)<sup>[131]</sup>
- [Setting default directories](#)<sup>[133]</sup>
- [Setting log options](#)<sup>[134]</sup>
- [Find Option](#)<sup>[136]</sup>

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### See also:

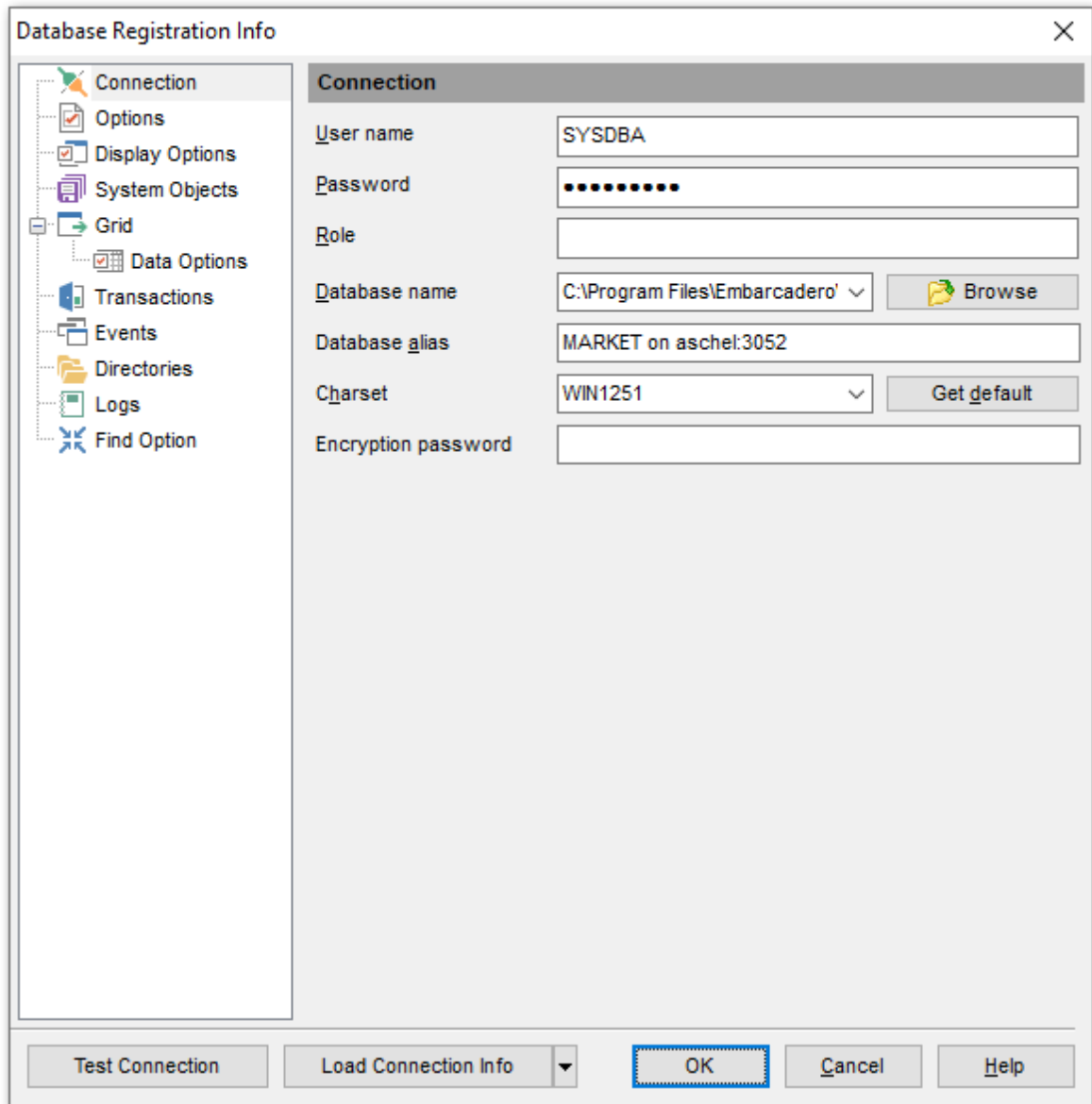
[Register Database wizard](#)<sup>[107]</sup>

[Create Database wizard](#)<sup>[100]</sup>

[Database Properties](#)<sup>[138]</sup>

#### 4.4.1 Connection

The **Connection** section of the **Database Registration Info** dialog allows you to view and/or edit the connection properties in the corresponding boxes: *User name*, *Password*, *Role*, *Database name*, *Database alias*, *Charset*, *Font charset*.



##### User name

If necessary, edit the [user](#)<sup>[711]</sup> name used to access the database.


##### Password

If necessary, edit the password used to authenticate the user.

##### Role

Specify the [SQL role](#)<sup>[711]</sup> that you adopt on connection to the database. You must have previously been granted [membership](#)<sup>[725]</sup> in the role to gain the privileges of that role.

**Database name**

Type in or use the  **Browse** button to specify the path to the database file (*\*.gdb*, *\*.ib* for InterBase or *\*.fdb* for Firebird). The drop-down list contains the previously specified paths.

**Database alias**

Enter the alias to be used to display the database in [DB Explorer](#)<sup>[63]</sup> and **SQL Manager** tools. By default, a database alias generated by the application has the following format:  
`<database_name> on <host_name_or_address>[:<port>]`

**Charset**

Specify an active character set to use for subsequent database attachments. The **Get default** button applies the default character set which was specified on [creation](#)<sup>[87]</sup> of the database.

**Encryption password**

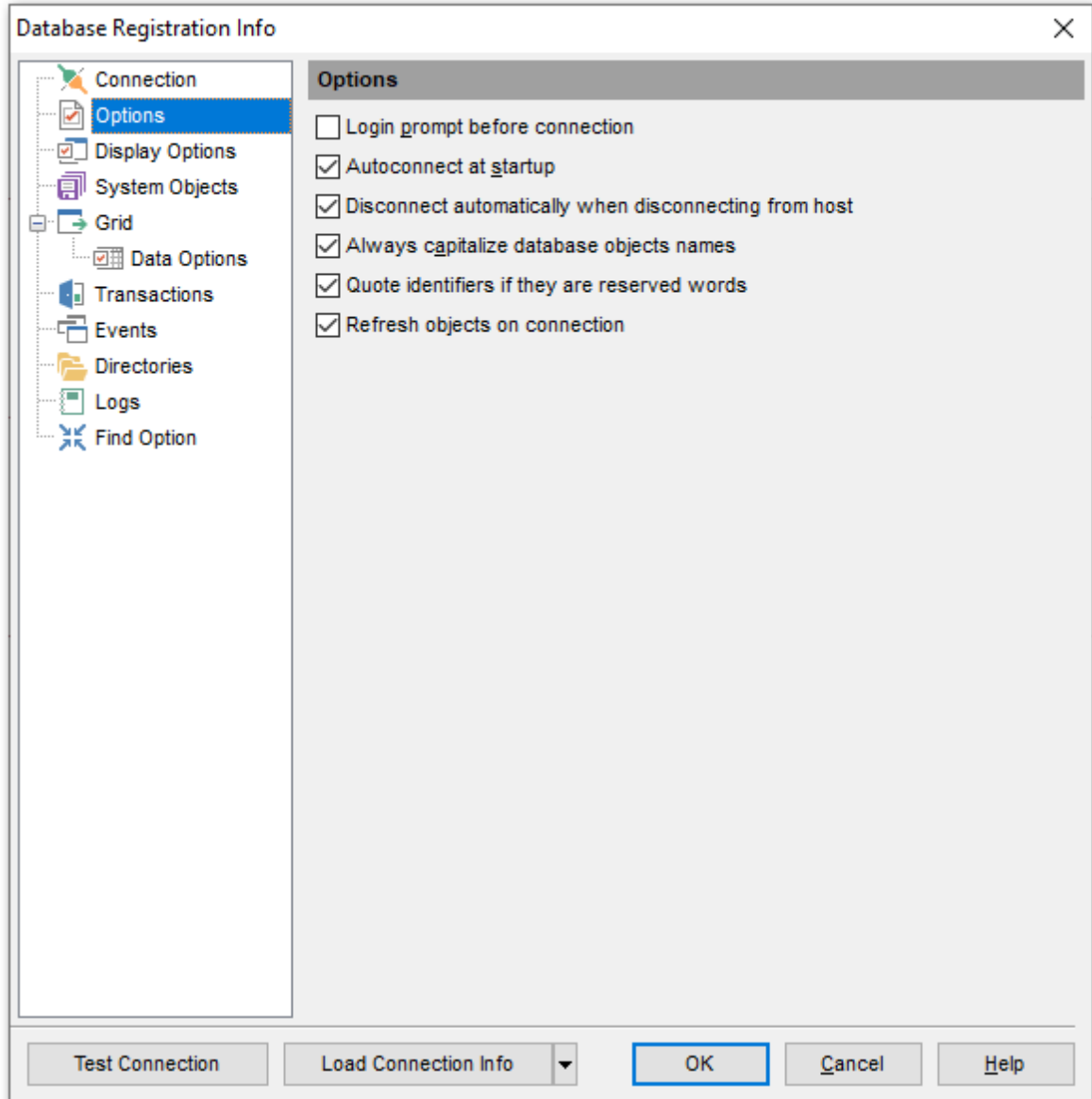
Allows to connect to the InterBase server databases using System Encryption Password.

Once you have specified the connection properties, you can check whether it is possible to establish connection to the database: click the **Test Connect** button for this purpose. If connection is successful, you will get the *'Connected!'* message; otherwise an error message will be returned.

The **Load Connection Info** menu allows you to select the alias of a previously registered database and use it for the newly created/configured database.

## 4.4.2 Options

The **Options** section of the **Database Registration Info** dialog allows you to set various options for the database.



Customize common database options according to your needs. The detailed description is given below.

**Login prompt before connection**

Enables **SQL Manager for InterBase/Firebird** to [prompt](#)<sup>[927]</sup> for user name and password each time you [connect](#)<sup>[67]</sup> to the database.

**Autoconnect at startup**

Check this option to specify that **SQL Manager for InterBase/Firebird** automatically

establishes connection to the registered database at application startup.

**Disconnect automatically when disconnecting from host**

When this option is enabled, the application disconnects from the database automatically upon disconnection from the host.

**Always Capitalize database object names**

If this option checked, **SQL Manager for InterBase/Firebird** automatically capitalizes all database object names. Recommended for working with InterBase 5.x.

**Quote identifiers if they are reserved words**

If this option is checked, then the quotation marks are added automatically to all the identifiers, spelled as InterBase reserved words.

**Refresh objects on connection**

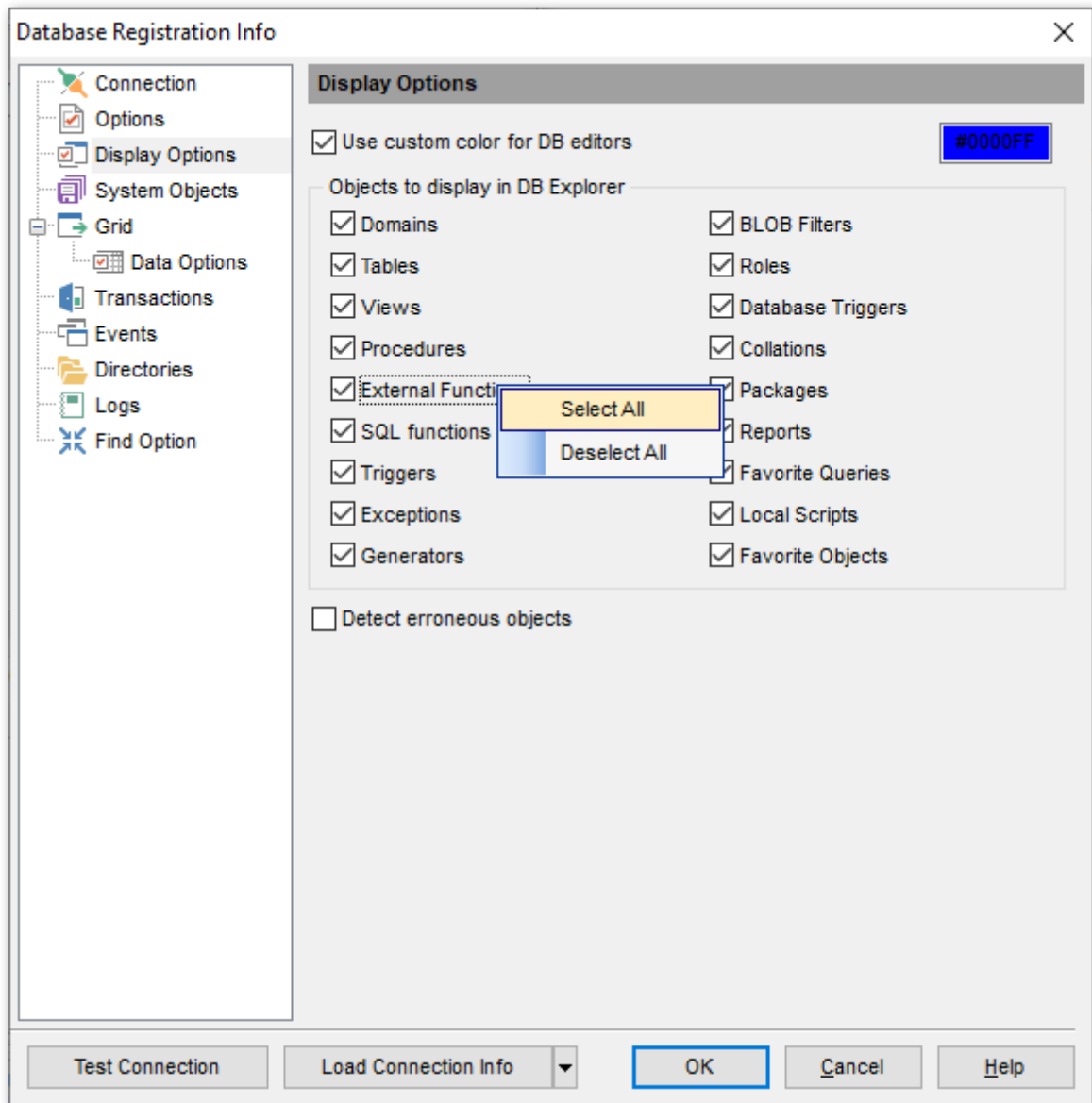
This option allows you to enable/disable refreshing objects on connection to the database. It is highly recommended to uncheck this option if your database contains many objects or if connection to the database is slow.

### 4.4.3 Display options

The **Display Options** section of the **Database Registration Info** dialog allows you to specify which [objects](#)<sup>[162]</sup> will be displayed in the [Database Explorer](#)<sup>[63]</sup> tree.

**Use custom color for DB editors**

With this option checked the text color for editor tabs is black. To apply user font color uncheck the option and select the color.



For your convenience the *Select All* and *Deselect All* functions are implemented in the **context menu** of the objects list area.

**Detect erroneous objects**

If this option is selected, invalid objects are detected in the process of [database navigation](#)<sup>[46]</sup> and marked out with a red cross in [DB Explorer](#)<sup>[63]</sup>.

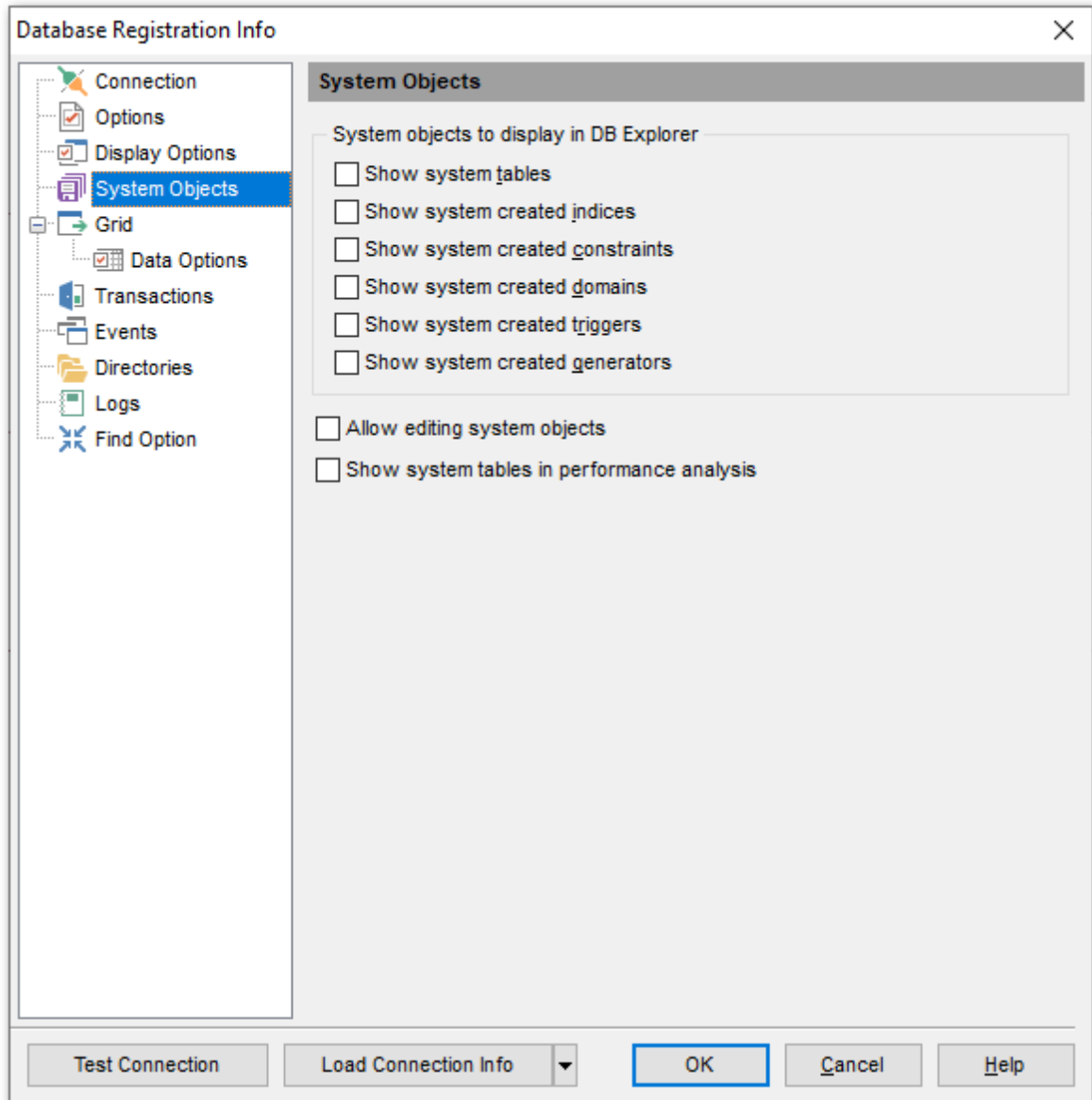


---

**See also:**[Database Objects Management](#)<sup>[162]</sup>[Database Explorer](#)<sup>[63]</sup>

#### 4.4.4 System objects

The **System objects** section of the **Database Registration Info** dialog allows you to specify which system objects will be displayed in the [Database Explorer](#)<sup>[63]</sup> tree.



#### System objects to display in DB Explorer

**Show system tables**

This option specifies whether system [tables](#)<sup>[178]</sup> are displayed in [DB Explorer](#)<sup>[63]</sup> or not.

**Show system created indexes**

This option specifies whether system [indexes](#)<sup>[225]</sup> are displayed in [DB Explorer](#)<sup>[63]</sup> or not.

**Show system created constraints**

This option specifies whether system [constraints](#)<sup>[216]</sup> are displayed in [DB Explorer](#)<sup>[63]</sup> or not.

**Show system created domains**

This option specifies whether system [domains](#)<sup>[172]</sup> (i.e. the domains having names starting with 'RDB\$') are displayed in [DB Explorer](#)<sup>[63]</sup> or not.

**Show system created triggers**

This option specifies whether system [triggers](#)<sup>[281]</sup> (created automatically by the server for implementation of the 'CHECK VALUE...' restrictions) are displayed in [DB Explorer](#)<sup>[63]</sup> or not.

**Show system created generators**

This option specifies whether system [generators](#)<sup>[293]</sup> (i.e. the generators having names starting with 'RDB\$') are displayed in [DB Explorer](#)<sup>[63]</sup> or not.

For your convenience the *Select All* and *Deselect All* functions are implemented in the **context menu** of the option group.

**Allow editing system objects**

When this option is enabled, you can edit [triggers](#)<sup>[281]</sup> for system [tables](#)<sup>[178]</sup> and [views](#)<sup>[242]</sup>.

**Show system tables in performance analysis**

Enable the option to include system tables in [performance analysis](#)<sup>[895]</sup>.

---

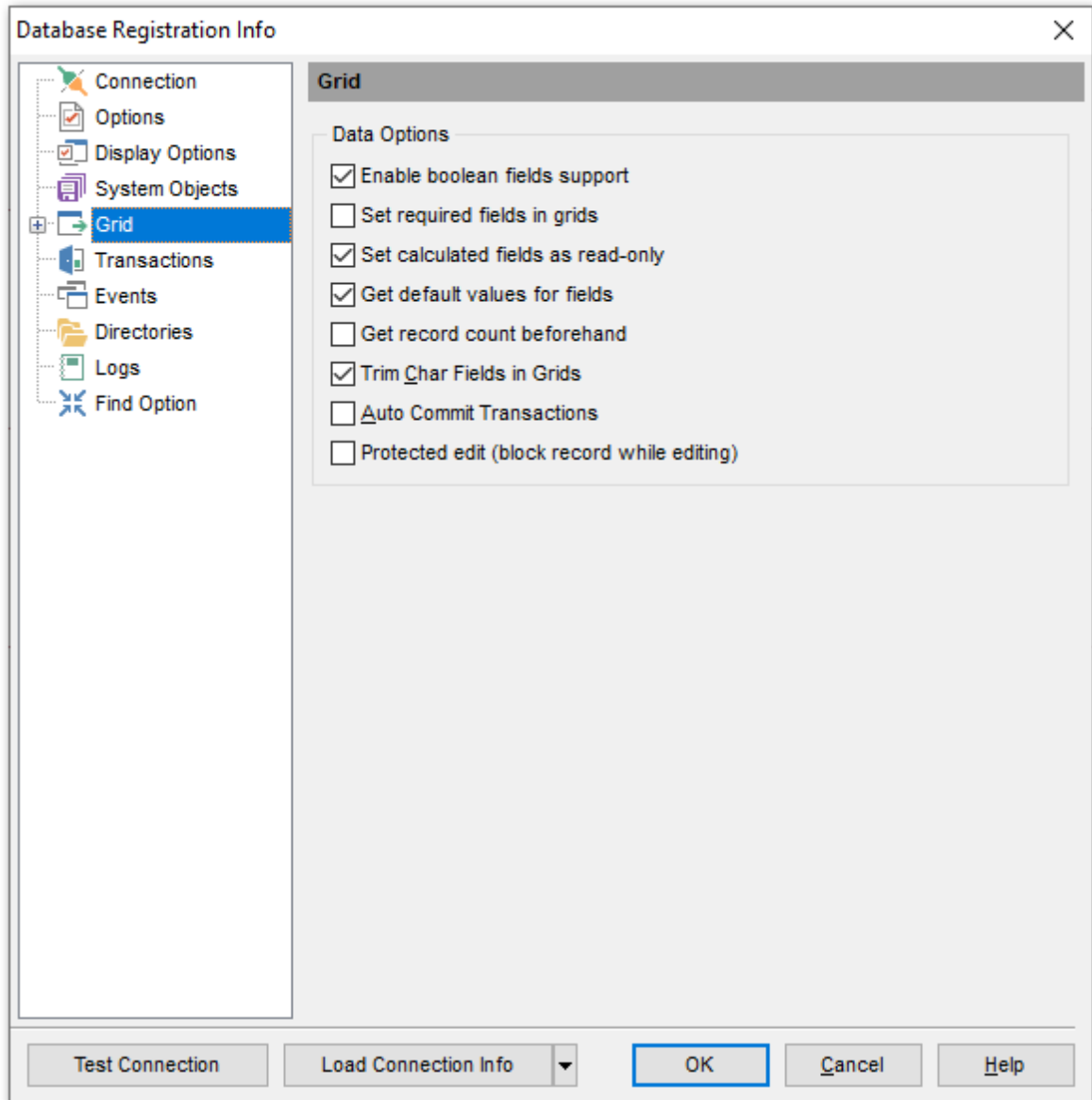
**See also:**

[Database Objects Management](#)<sup>[162]</sup>

[Database Explorer](#)<sup>[63]</sup>

#### 4.4.5 Grid

The **Grid** section of the **Database Registration Info** dialog allows you to adjust the default grid mode settings.



**Enable boolean fields support**

If this option is checked, boolean fields are supported in [data\\_grid](#)<sup>[373]</sup>.

**Set required fields in grids**

If this option is checked, you have to set values for all the NOT NULL table fields.

**Set calculated fields as read-only**

If this option is checked, calculated field values cannot be edited.

**Get default values for fields**

If this option is checked, **SQL Manager** will automatically get the default field values from the database server.

**Get record count beforehand**

If this option is checked, **SQL Manager** automatically calculates the number of records in table or query. Corresponding information is displayed in the status bar.

**Trim Char Fields in Grids**

If this option is checked, the final spaces in fields of the CHAR type are trimmed during the editing process.

**Auto Commit Transactions**

If this option is checked, **SQL Manager** automatically commits transactions, otherwise you have to do it manually.

**Protected edit (block record while editing)**

If this option is checked, **SQL Manager** blocks the record you are editing, so that other users cannot edit this record. This helps to avoid conflicts of collective access to the database.

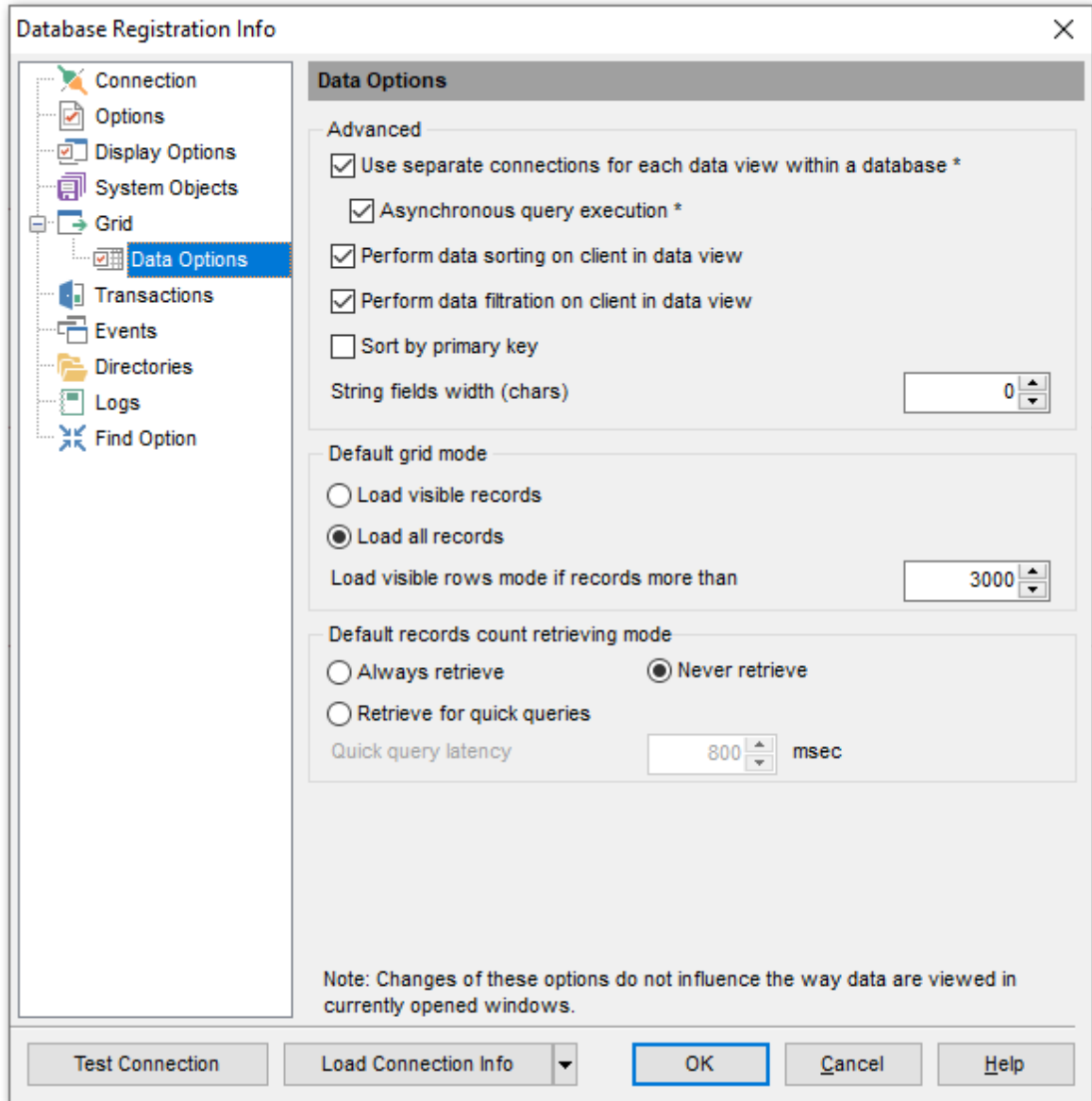
---

**See also:**

[Data View](#)<sup>[369]</sup>

#### 4.4.5.1 Data options

The **Data Options** section of the **Database Registration Info** dialog allows you to define options for [data view](#)<sup>[369]</sup>. These options will be applied only to this database. Default settings for newly registered databases can be defined on the [Grid | Data Options](#)<sup>[782]</sup> page of the [Environment Options](#)<sup>[736]</sup> dialog.



#### Advanced

**Use separate connections for each data view within a database**

Select this option to use a separate connection for each [data view](#)<sup>[369]</sup> within a database. Disabling this option is recommended if maximum allowed number of connections is too low.

**Asynchronous query execution**

Check this option to allow executing queries in background mode (asynchronously). Note that this option is only available when the *Use separate connections for each data view within a database* option is enabled.

 **Perform data sorting on client in data view**

If enabled, the data are sorted by **SQL Manager for InterBase/Firebird** (on the client side). If this option is disabled, the data are sorted on InterBase/Firebird server with the help of the *ORDER BY* clause used in SQL query.

 **Perform data filtration on client in data view**

If enabled, the data are filtered by **SQL Manager for InterBase/Firebird** (on the client side).

If disabled, SQL filter is used in [data view](#)<sup>[369]</sup>. In this case filtering is performed on the InterBase/Firebird server with the help of the *WHERE* clause used in SQL query.

With the **Perform data sorting on client in data view** option enabled, sorting is performed by means of the grid. Otherwise a click on the column header for sorting causes reloading all table data with the selected field in the *ORDER BY* expression of the *SELECT* statement.

If the table contains a huge amount of records and the **Select only N records** mode (see the **Default limit options in table and view editors** group) is used, this mode is more preferable (e.g. all the records having values starting with "A" will be displayed, and not those which were in originally opened N records).

All above-mentioned is related to the **Perform data filtration on client in data view** option as well. If the filter is applied to a table containing a great number of records, it is strongly recommended to enable this option - in this case the filter will be applied to all table/view records, not only to those which are displayed at the present moment.

 **Sort by primary key**

When enabled, the option allows sorting data by the [primary key](#)<sup>[216]</sup> on opening the [data grid](#)<sup>[373]</sup>.

**String fields width (chars)**

Using this option you can limit string fields width that may improve performance on large datasets.

**Default Grid Mode** **Load visible rows**

The grid loads only a fixed number of dataset records into memory. This option minimizes dataset loading time. The automatic sorting, filtering, summary calculations are not supported in this mode.

 **Load all rows**

The grid loads all records from a dataset. This option increases the grid performance by reloading only changed dataset records when updating. In this mode all features (automatic sorting, filtering and summary calculations) are available.

**Default Grid Mode** defines grid mode which will be used by default.

With the **Load all rows** option enabled, when loading data, all the records are loaded into

grid buffers. In this mode opening the tables with many records may take a very long time. But in this case you have some advantages: e.g. in the filter drop-down list the column headers are displayed with the values for quick filter; it is possible to open several sublevels at the same time when viewing data in master-detail view, etc.

Because opening and other operations with an object consisting of many records takes sufficient time the **Load visible rows** mode should be used instead. It can be set individually for each table and is saved between sessions (can be set through the [context menu](#)<sup>[382]</sup> of the grid).

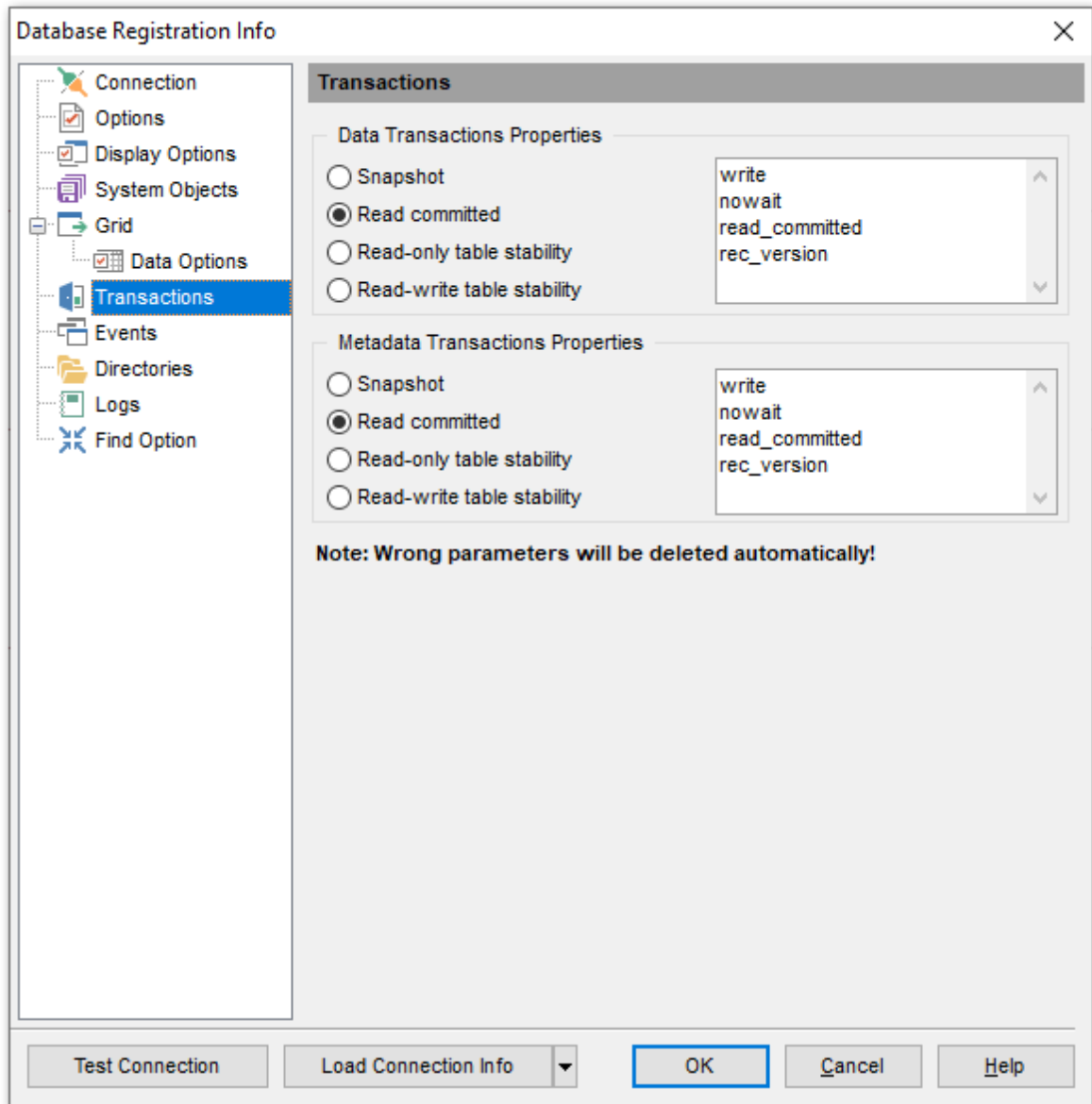
**Load visible rows mode if records more than...**

Set this option to switch to the **Load visible rows** mode when the number of records in the dataset exceeds the specified value.



#### 4.4.6 Transactions

The **Transactions** section of the **Database Registration Info** dialog allows you to set the isolation level for data and metadata. Isolation level determines how a transaction interacts with other simultaneous transactions accessing the same tables.



#### Data Transactions Properties | Metadata Transactions Properties

##### ● Snapshot

Provides a repeatable-read view of the database at the moment the transaction starts. Changes made by other simultaneous transactions are not visible. Snapshot table stability provides a repeatable read of the database by ensuring that transactions cannot write to tables, though they may still be able to read from them.

##### ● Read committed

Enables transactions to see the most recently committed changes made by other simultaneous transactions. It can also update rows as long as no update conflict occurs. Uncommitted changes made by other transactions remain invisible until committed.

**Read-only table stability**

Defines the 'read-only' access mode when the transactions are only allowed selecting data from the table.

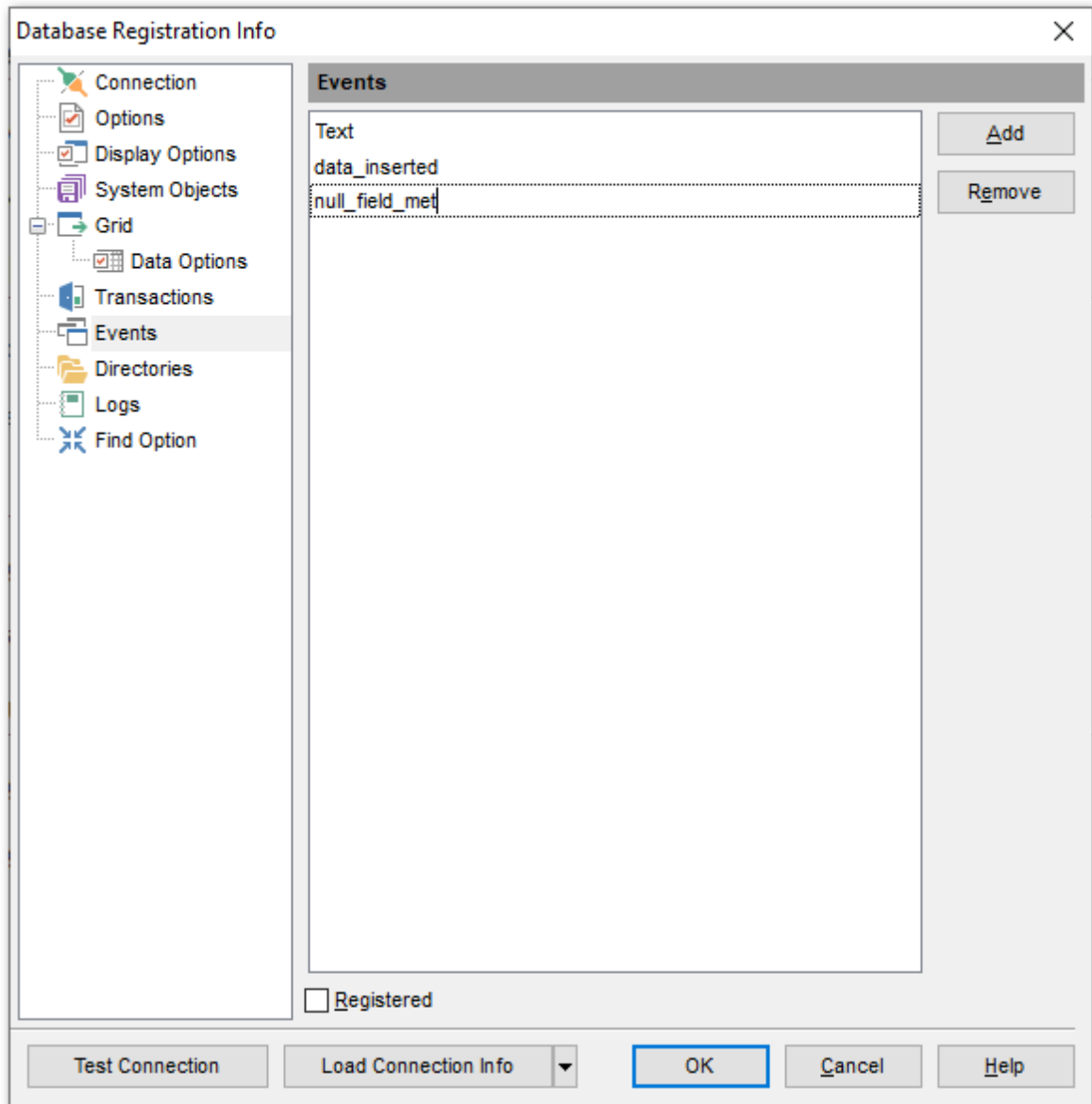
**Read-write table stability**

Defines the read-write access mode when the transactions are allowed to select, insert, update and delete data from the table.

**Note:** **SQL Manager** automatically deletes wrong parameters, if any.

#### 4.4.7 Events

The **Events** section of the **Database Registration Info** dialog allows you to specify what alerters should be taken into account (which event messages should be displayed in [Event Monitor](#)<sup>[619]</sup>).



Add the strings of event messages (the ones set in event alerters) using the **Add** and **Remove** buttons. Check  **Registered** to register the event in [Event Monitor](#)<sup>[619]</sup>.

Example:

You need to get notification when some event takes place. For this purpose you can use the instruction like `POST_EVENT 'event_name'` inside a [procedure](#)<sup>[253]</sup> or [trigger](#)<sup>[287]</sup> body:

```
BEGIN
```

```
/* Statements... */  
POST_EVENT 'NULL_field_met';  
/* Statements... */  
END
```

When the statements are executed the notifications will appear in the [Events Monitor](#)<sup>[621]</sup> window.

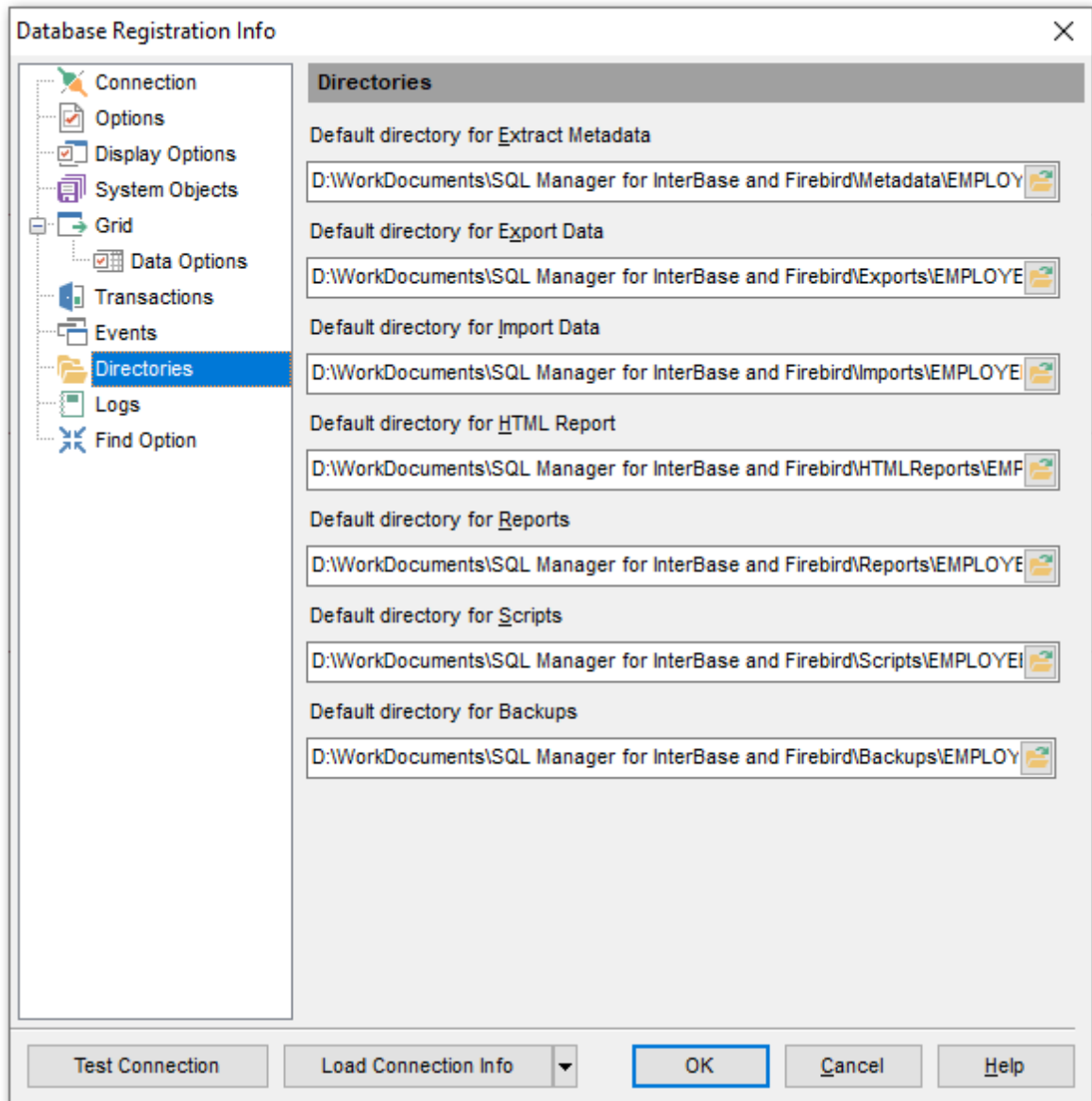
---

**See also:**

[Event Monitor](#)<sup>[619]</sup>

#### 4.4.8 Directories

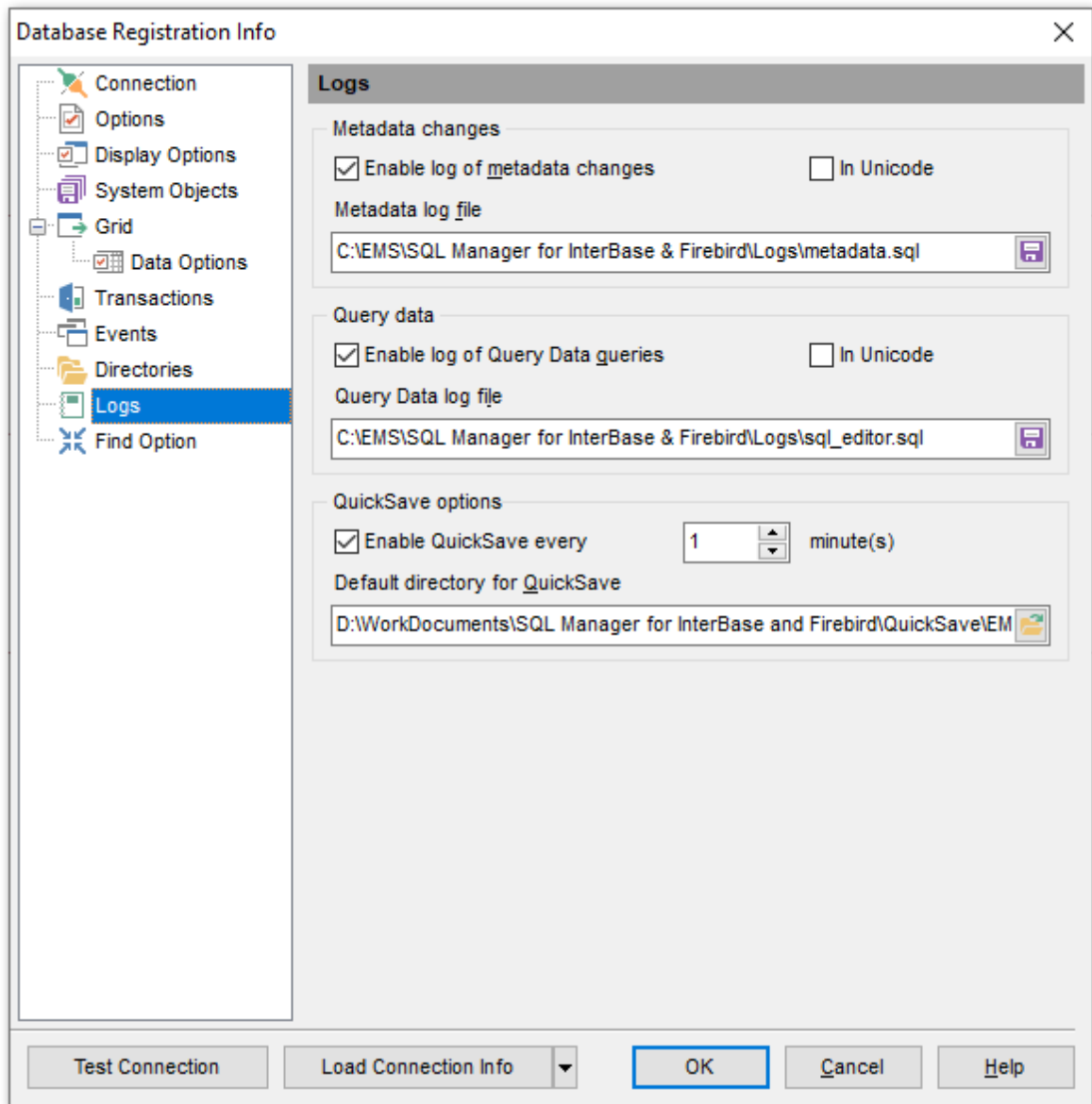
The **Directories** section of the **Database Registration Info** dialog allows you to set the directories to be used by default for [database extract](#)<sup>[550]</sup>, [data export](#)<sup>[444]</sup>, [data import](#)<sup>[491]</sup>, [saving HTML reports](#)<sup>[566]</sup>, [creating reports](#)<sup>[573]</sup>, saving [scripts](#)<sup>[542]</sup>, [backup](#)<sup>[652]</sup> operations.



#### 4.4.9 Logs

The **Logs** section of the **Database Registration Info** dialog allows you to specify log file names for metadata changes logging and SQL query logging, if necessary.

Logging can be useful when you are going to move the changes made in the development database to the production database.




##### Metadata changes

###### Enable log of metadata changes

Check this option if you wish to log metadata changes of your database in a file.

##### Metadata log file

This field is enabled if the **Enable log of metadata changes** option is selected. Type in


or use the **Save as**  button to specify the path to the \*.sql file to store the metadata logs.

### Query data

#### **Enable log of Query Data queries**

Check this option if you wish to log your [queries](#)<sup>[330]</sup> in a file.

#### **Query Data log file**

This field is enabled if the **Enable log of Query Data queries** option is selected. Type in or use the **Save as**  button to specify the path to the \*.sql file to store the logs of SQL queries: date/time of query execution, SQL text, execution result or errors (if any).

#### **In Unicode**

Enable this option to save logs in Unicode. If the option is disabled, ANSI will be used.


### QuickSave options

Options of this group allow you to set up the [Quick save / Quick load](#)<sup>[922]</sup> feature - automatic saving the DDL and location of database objects using the quick-saving cache.

#### **Enable QuickSave every ... Minute(s)**

Check this option to enable [quick saving](#)<sup>[922]</sup> recurrently after the specified time interval (in *minutes*).

#### **Default directory for QuickSave**

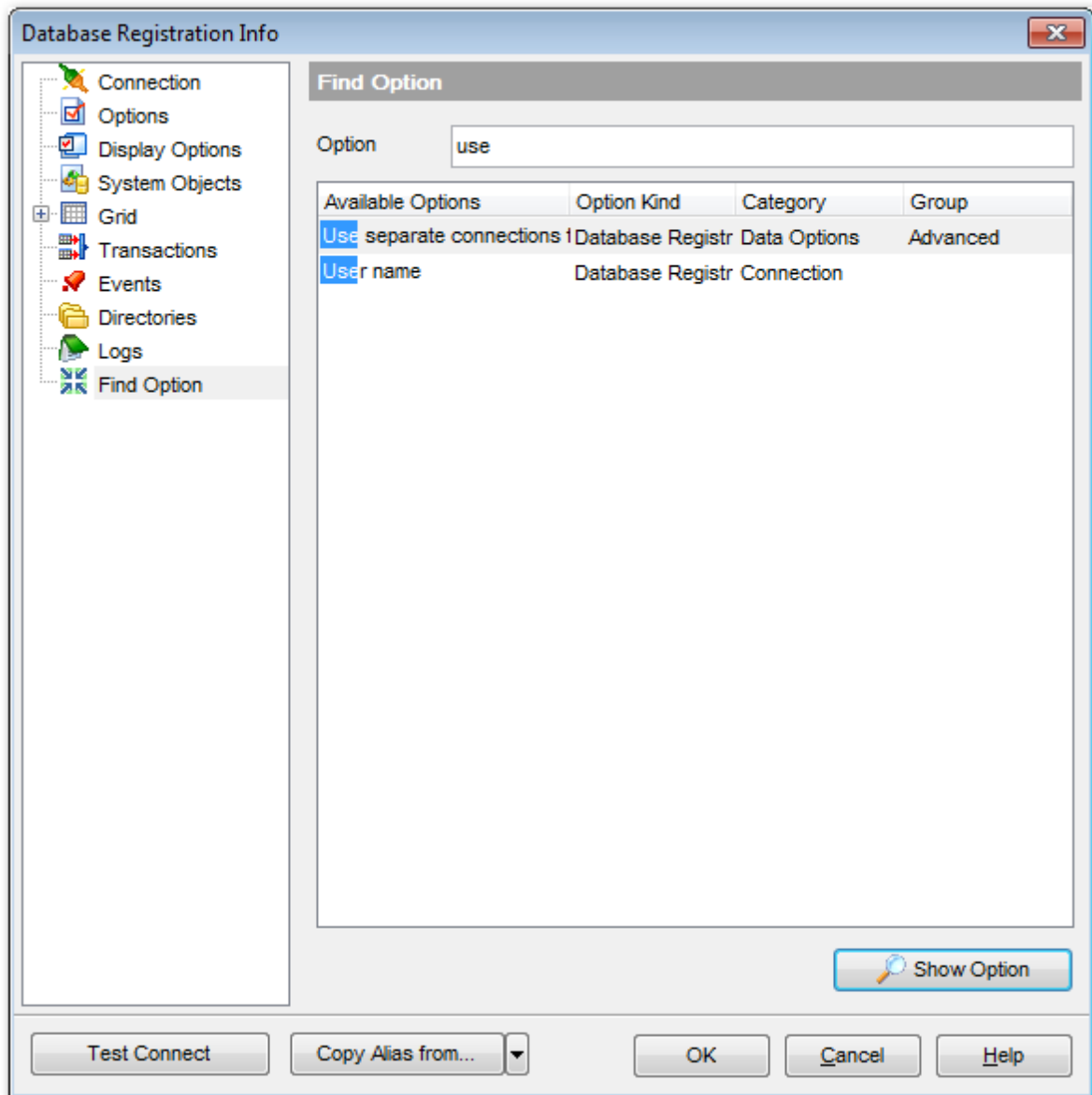
Type in or use the  button to specify the directory for the quick-saving cache.

#### 4.4.10 Find Option


The **Find Option** section allows you to search for options available within the **Database Registration Info** dialog easily and quickly.

##### Option


In this field you can enter the name of the option to search for within the database registration options.



The **Available options** area lists all options of the Database Registration category according to the specified name. The **Option Kind**, **Category** and **Group** columns specify option type and location.


Select the required option in the list and click  **Show Option** to open the corresponding section where you can view/edit the value of this option. For your convenience the



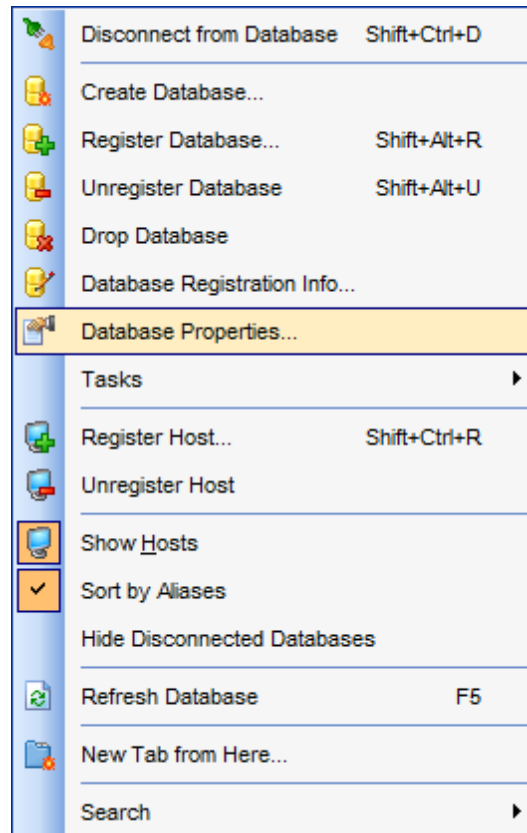
required option is marked with an animated  icon.

## 4.5 Database Properties

The **Database Properties** dialog allows you to view/edit a number of properties which can be changed to optimize database performance.

To open the dialog, right-click the database alias in [DB Explorer](#)<sup>[63]</sup> and select the **Database Properties...** [context menu](#)<sup>[53]</sup> item, or use the  **Properties** button on the DB Explorer [toolbar](#)<sup>[82]</sup>.

A number of database properties that determine the characteristics can be set for each database. These options are unique to each database and do not affect other databases.



- [Info](#)<sup>[139]</sup>
- [General](#)<sup>[141]</sup>
- [Active users](#)<sup>[144]</sup>
- [Description](#)<sup>[146]</sup>
- [Secondary Files](#)<sup>[148]</sup>
- [Find Option](#)<sup>[829]</sup>

---

### See also:

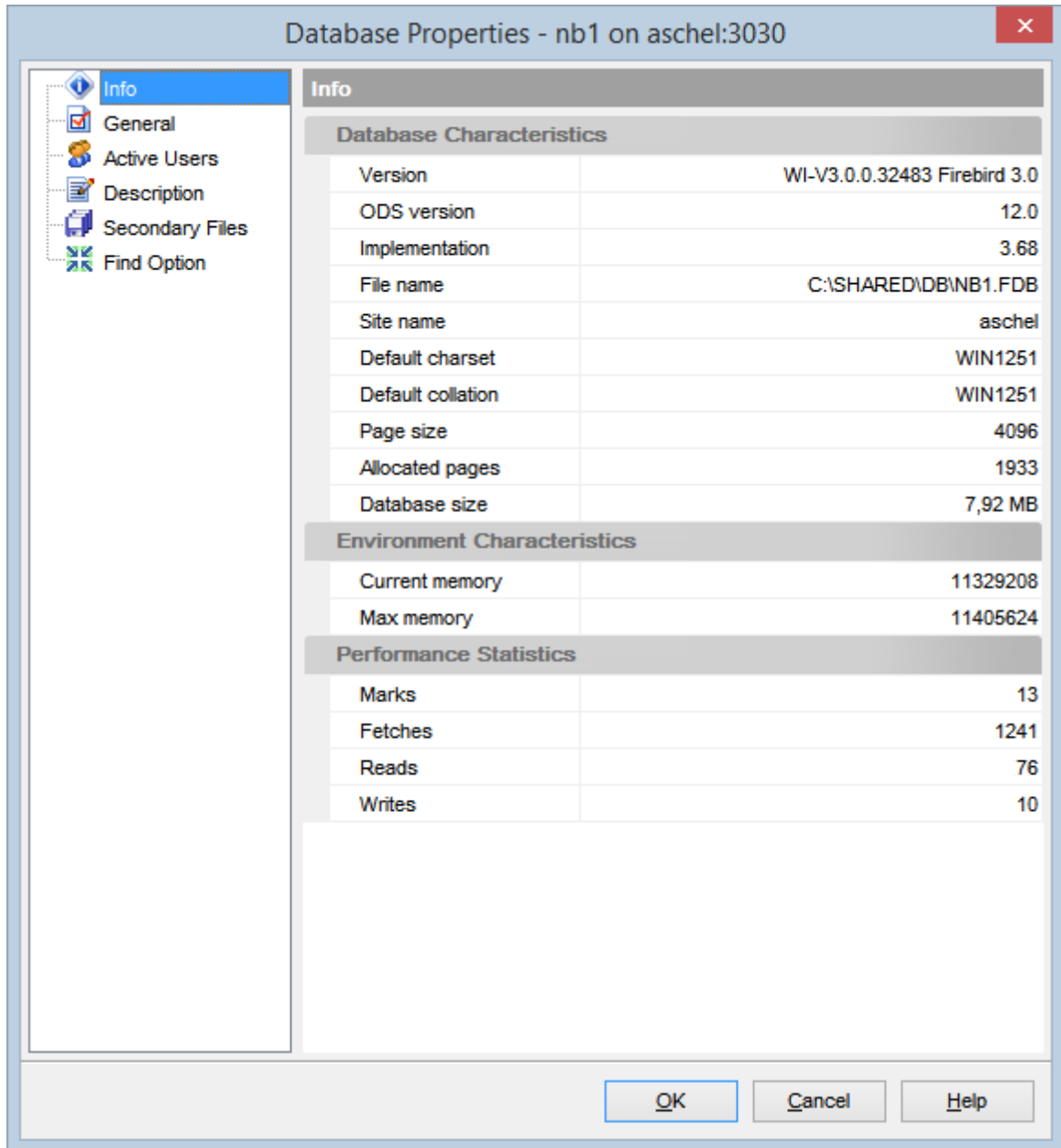
[Register Database wizard](#)<sup>[107]</sup>

[Create Database wizard](#)<sup>[100]</sup>

[Database Registration Info](#)<sup>[115]</sup>

## 4.5.1 Info

The **Info** section of the **Database Properties** displays the summary about database properties. The dialog allows you to view info about database file, charset, memory characteristics and performance statistics.



### Database Characteristics

#### Version

Database version info.

#### ODS version

On-disk structure version used by the database.

**Implementation**

Version of the implementation.

**File name**

Full database file name.

**Site name**

Database host name.

**Default charset**

Default charset for the database. It can be changed at [General tab](#)<sup>[141]</sup>.

**Default collation**

Default collation for the database.

**Page size**

Database page size (in bytes).

**Allocated pages**

Number of pages in the database.

**Database size**

Size of the database (in Mb).

**Environment Characteristics****Current memory**

The amount of memory in use, in bytes.

**Max memory**

The maximum number of bytes used by the database.

**Performance Statistics****Marks**

Count of database pages marked

**Fetches**

Count of database pages fetched

**Reads**

Count of database pages read

**Writes**

Count of database pages written

---

**See also:**

[General](#)<sup>[141]</sup>

[Active users](#)<sup>[144]</sup>

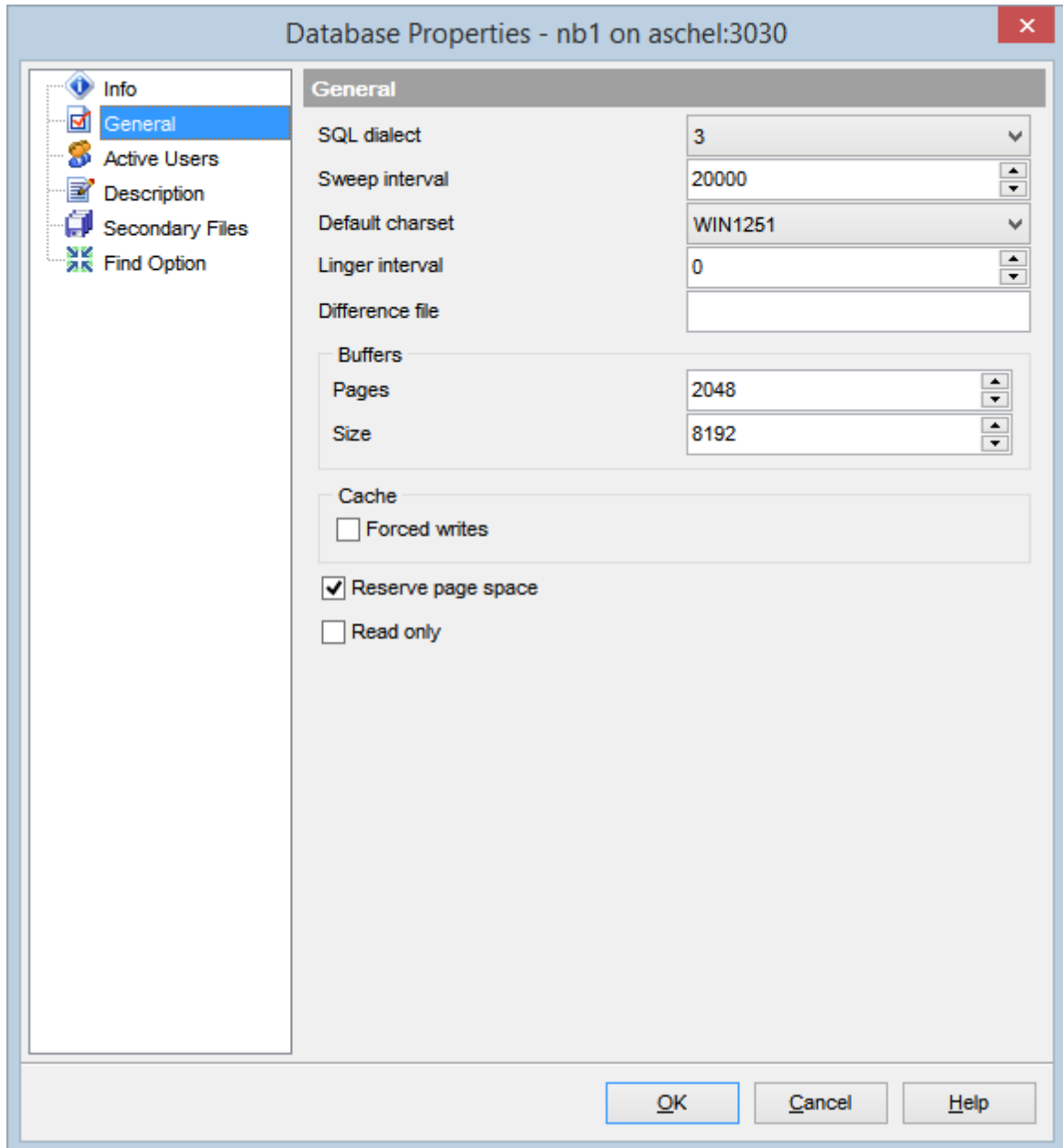
[Description](#)<sup>[146]</sup>

[Secondary Files](#)<sup>[148]</sup>

[Find Option](#)<sup>[150]</sup>

## 4.5.2 General

The **General** section of the **Database Properties** dialog allows you to view/edit the general database properties. The list of available options depends on the server type and version.



### SQL dialect

SQL dialect used. Possible values are: 1, 3.

### Sweep interval

Number of transactions after executing which automatic garbage collection is carried out.

### Reclaim interval

The interval in seconds. It determines how often the garbage collector thread will run to release memory from unused procedures, triggers, and internal system queries back to InterBase memory heap.

**Default charset**

Default charset used for the database.

**Linger interval**

Interval in seconds, which allows the server to keep the database open for a period after the last attachment is closed.

**Difference file**

File path and name for DIFFERENCE files (.delta files).

**Buffers****Pages**

Number of database pages per database.

**Size**

Page size (in kilobytes).

**Cache** **Forces writes**

Enables/disables the mode of forced writing data on disk.

 **Group commit**

Enables/disables transactions to be committed by a background cache writer thread.

 **Linger interval**

Enables/disables interval in seconds, which allows the server to remain active after all users have disconnected.

 **Flush interval**

Enables/disables database flush.

**Embedded User Authentication** **Use Embedded User Authentication**

Specifies whether [Embedded User Authentication](#)<sup>[711]</sup> is used for the database or not.

 **Enabled**

Enables/disables [Embedded User Authentication](#)<sup>[711]</sup>.

 **Reserve page spaces**

Enables space reservation.

 **Read only**

Enables/disables read-only mode for the database.

---

**See also:**

[Info](#)<sup>[139]</sup>

[Active users](#)<sup>[144]</sup>

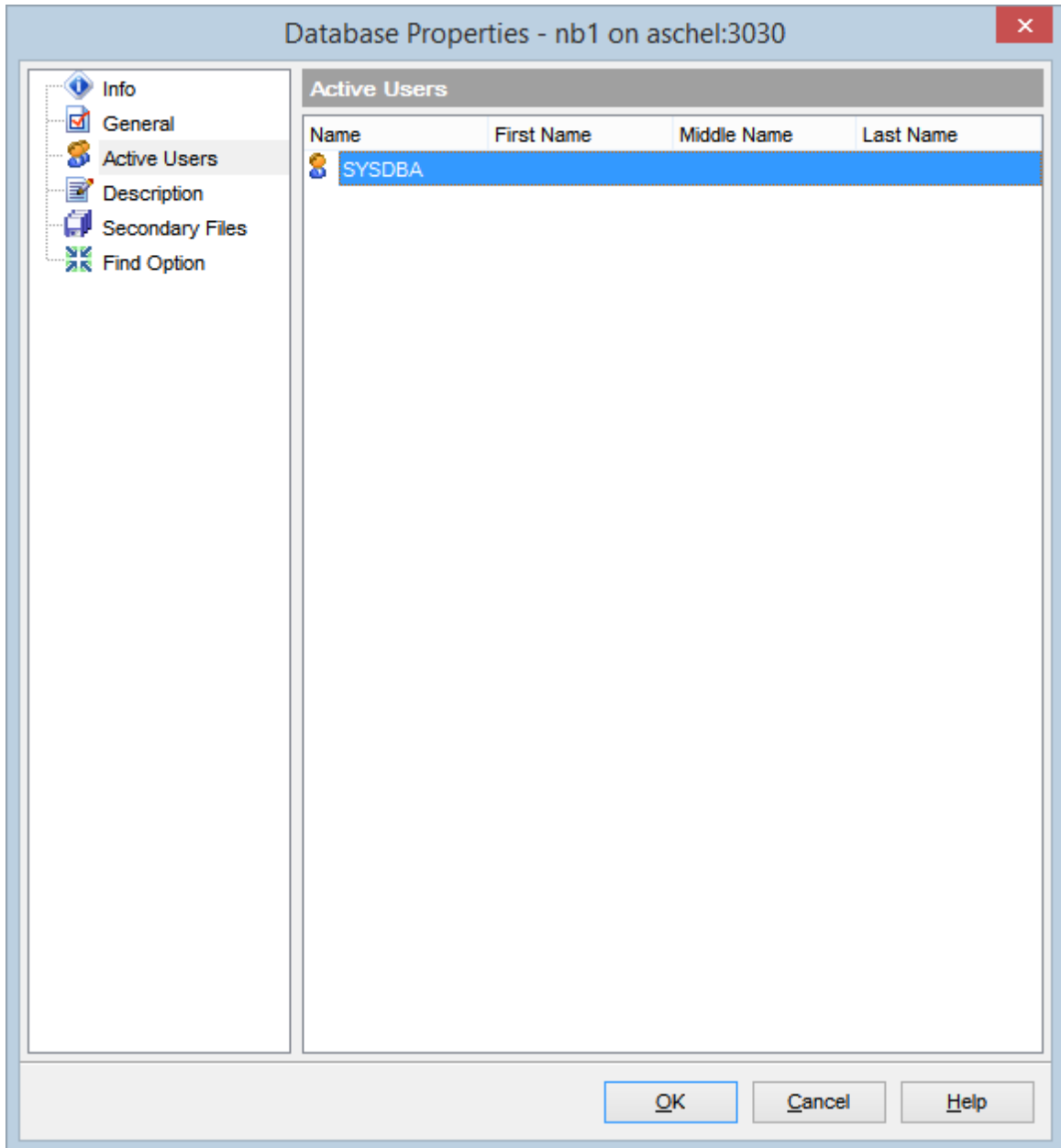
[Description](#)<sup>[146]</sup>

[Secondary Files](#)<sup>[148]</sup>

[Find Option](#)<sup>[150]</sup>

### 4.5.3 Active users

The **Active Users** section of the **Database Properties** dialog displays the list of currently active database [users](#)<sup>[141]</sup>.



**See also:**

[Info](#)<sup>[139]</sup>

[General](#)<sup>[141]</sup>

[Description](#)<sup>[146]</sup>

[Secondary Files](#)<sup>[148]</sup>

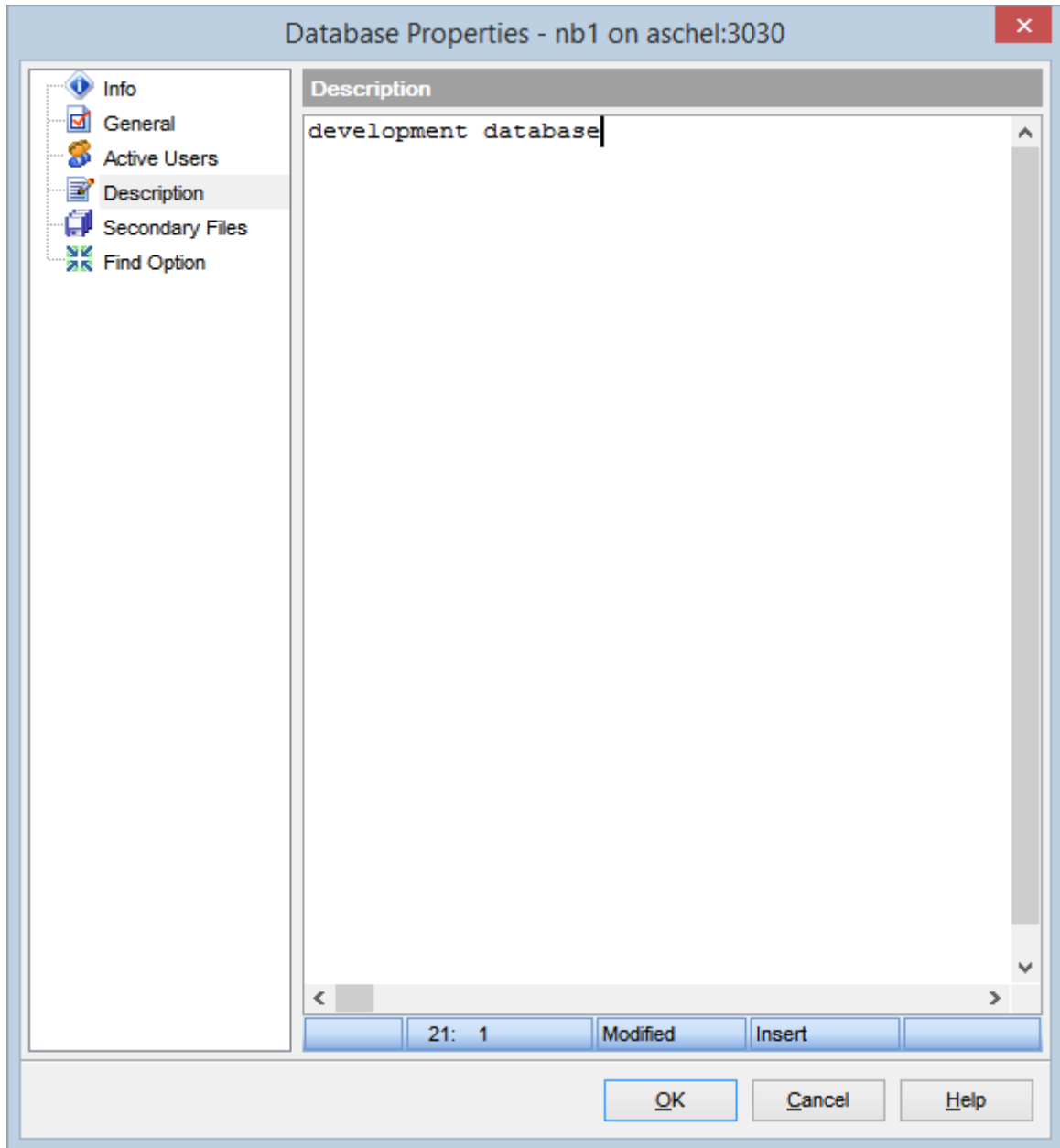
[Find Option](#)<sup>[150]</sup>





#### 4.5.4 Description

The **Description** section of the **Database Properties** dialog allows you to view/edit optional text to be used as description of the database.



**See also:**

[Info](#)<sup>[139]</sup>

[General](#)<sup>[141]</sup>

[Active users](#)<sup>[144]</sup>

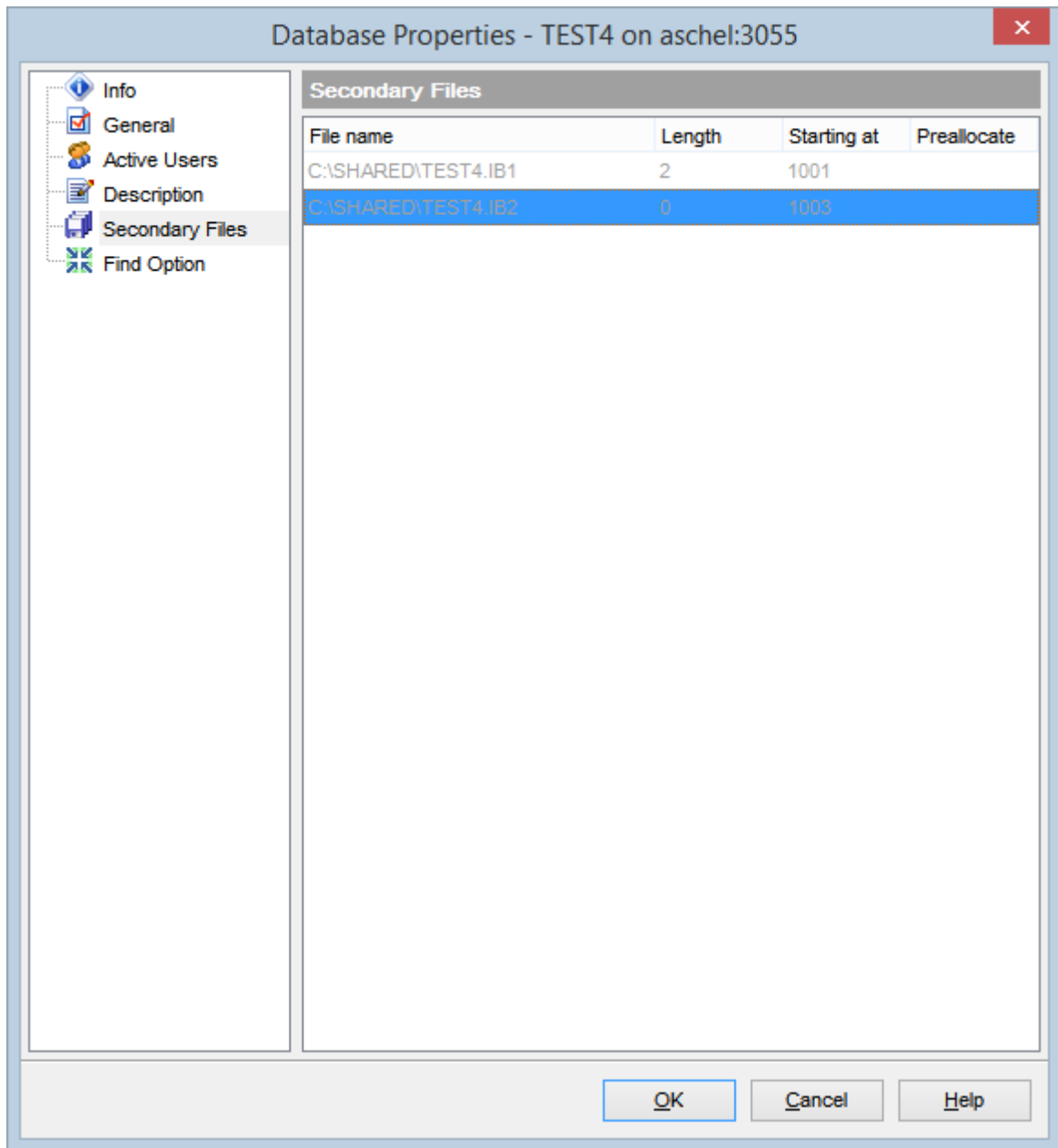
[Secondary Files](#)<sup>[148]</sup>

[Find Option](#)<sup>[150]</sup>



## 4.5.5 Secondary Files

The **Secondary Files** section allows you to view database secondary file(s).



*Length* value specifies the maximum size of the secondary database file, in pages.

*Starting at* value specifies the database page number at which the next secondary database file should start.

*Preallocate* value specifies additional database space for the new file.

**See also:**

[Info](#)<sup>[139]</sup>

[General](#)<sup>[141]</sup>

[Active users](#)<sup>[144]</sup>

[Description](#)<sup>[146]</sup>

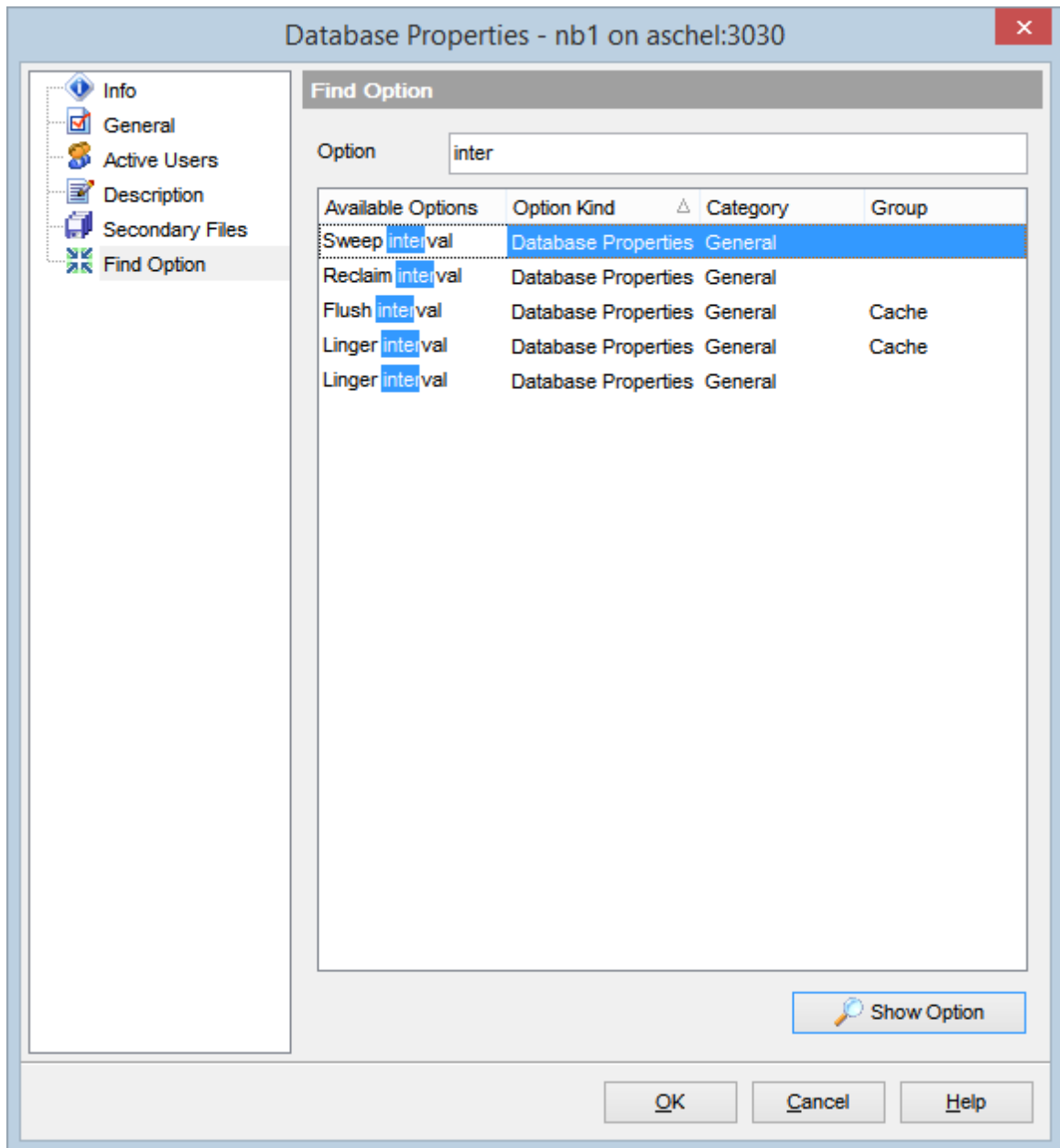
[Find Option](#)<sup>[150]</sup>

## 4.5.6 Find Option

The **Find Option** section allows you to search for options available within the **Database Properties** dialog easily and quickly.


### Option

In this field you can enter the name of the option to search for within the database properties.



The **Available options** area lists all options of the Database Properties category according to the specified name. The **Option Kind**, **Category** and **Group** columns specify option type and location.

Select the required option in the list and click  **Show Option** to open the corresponding

section where you can view/edit the value of this option. For your convenience the required option is marked with an animated  icon.

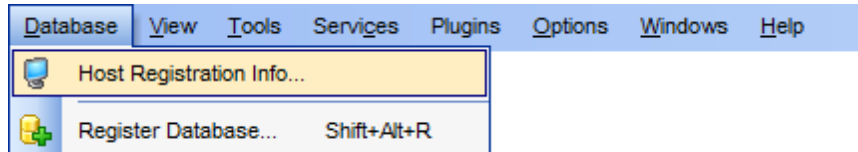
---

**See also:**[Info](#)<sup>[139]</sup>[General](#)<sup>[141]</sup>[Active users](#)<sup>[144]</sup>[Description](#)<sup>[146]</sup>[Secondary Files](#)<sup>[148]</sup>

## 4.6 Host Registration Info

Use the **Host Registration Info** dialog to view and edit the registration properties of the host.

To open the dialog, select the **Database | Host Registration Info...** [main menu](#)<sup>[882]</sup> item, or right-click the host in the [DB Explorer](#)<sup>[63]</sup> tree, and select the **Host Registration Info...** [context menu](#)<sup>[52]</sup> item.



- [Connection properties](#)<sup>[153]</sup>
- [Host options](#)<sup>[155]</sup>
- [SSH tunneling](#)<sup>[157]</sup>
- [SSL parameters](#)<sup>[159]</sup>
- [Find Option](#)<sup>[829]</sup>

---

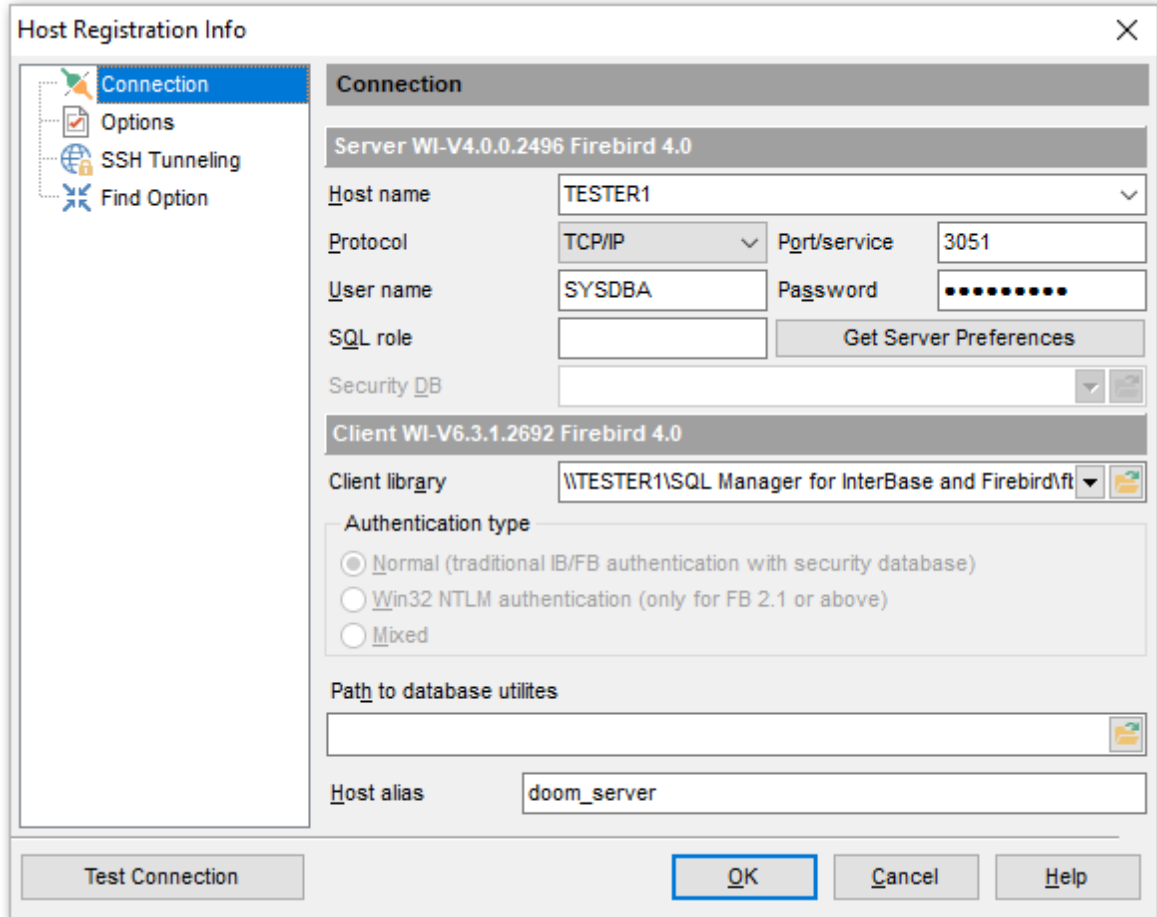
### See also:

[Register Host wizard](#)<sup>[90]</sup>



### 4.6.1 Connection

The **Connection** section of the **Host Registration Info** dialog allows you to view and edit connection parameters for the host.



Set the server connection parameters and client configuration in the corresponding boxes: *host name*, *protocol*, *port/service*, *user name*, *password*, etc. For more details refer to the [Setting connection parameters](#)<sup>[91]</sup> step of **Register Host wizard**.

In case an **embedded server** (a server with [Embedded User Authentication](#)<sup>[71]</sup>) is used, some connection options are disabled, and the **Connection** section of the **Host Registration Info** dialog looks slightly different. For more details see [setting embedded server connection parameters](#)<sup>[93]</sup>.

**Note:** [Backup](#)<sup>[652]</sup> and [Restore](#)<sup>[663]</sup> of a database located on the [Embedded](#)<sup>[711]</sup> host is only possible via local tools. You need *icudt30.dll*, *icuin30.dll*, *icuuc30.dll* and *fbembed.dll* (*fbembed.dll* must be renamed to *fbclient.dll*) to be located along with *gbak.exe* file at the folder specified at the **Path to database utilities** field.

Set the alias in the for the current host in the **Host alias** field to be displayed in the DB Explorer.

Once you have specified the connection properties, you can check whether it is possible to establish connection to the host: click the **Test Connection** button for this purpose. If connection is successful, you will get the 'Connected!' message; otherwise an error message will be returned.

#### See also:

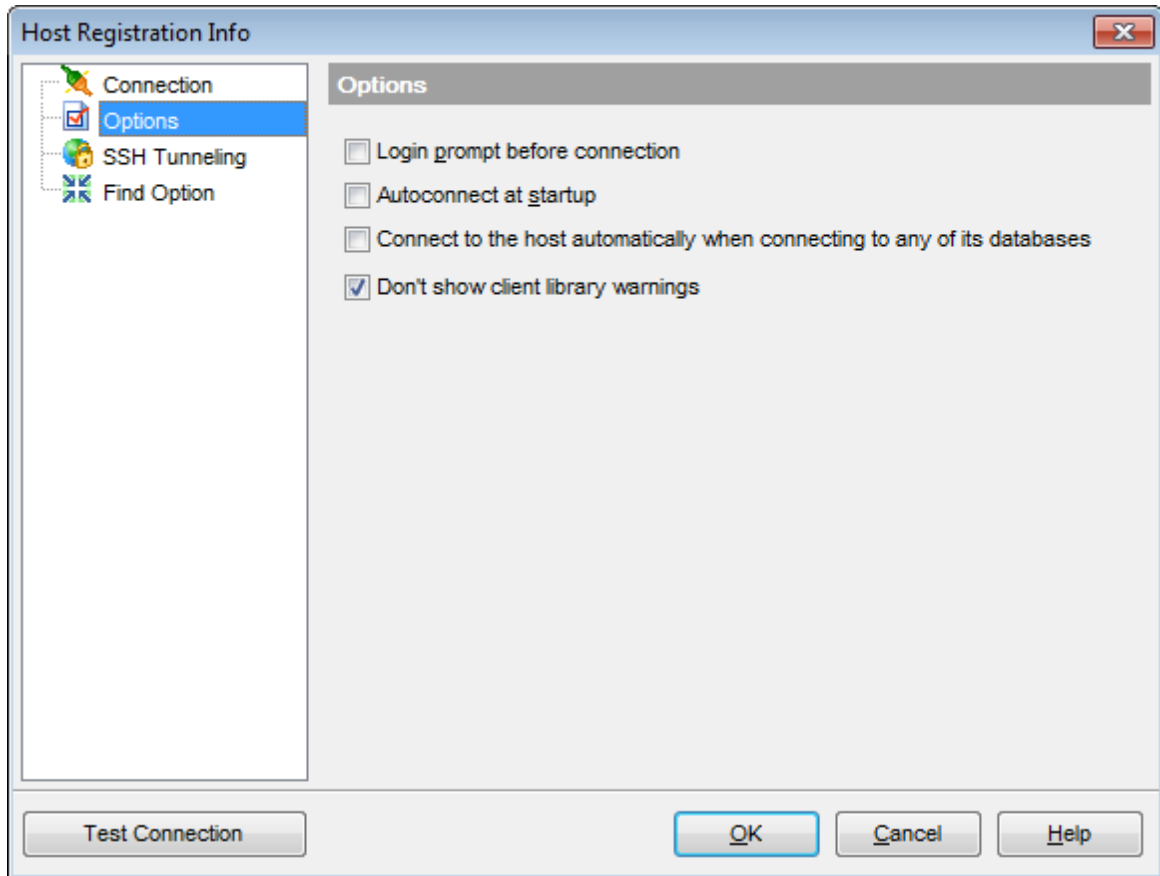
[Common host options](#)<sup>[155]</sup>

[SSH tunneling](#)<sup>[157]</sup>

[Find Option](#)<sup>[160]</sup>

## 4.6.2 Common host options

The **Options** section of the **Host Registration Info** dialog allows you to set various options for the host.



Customize common host options according to your needs. The detailed description is given below.

**Login prompt before connection**

Enables **SQL Manager for InterBase/Firebird** to [prompt](#)<sup>[927]</sup> for user name and password each time you [connect](#)<sup>[67]</sup> to the host.

**Autoconnect at startup**

With this option set, connection to the registered host is established automatically at application startup.

**Connect to the host automatically when connecting to any its database**

With this option set, the application connects to the host automatically when connection to any of its databases is established.

**Don't show client library warnings**

Turn this option on to skip the message of client library version incompatibility.

---

**See also:**

[Connection](#)<sup>[153]</sup>

[SSH tunneling](#)<sup>[157]</sup>

[Find Option](#)<sup>[160]</sup>

### 4.6.3 SSH tunneling

The **SSH Tunneling** section of the **Host Registration Info** dialog allows you to enable/disable SSH tunneling for connection to the host and its databases, and set all the necessary SSH tunneling parameters. Note that SSH tunneling is only available when the TCP/IP protocol is used.

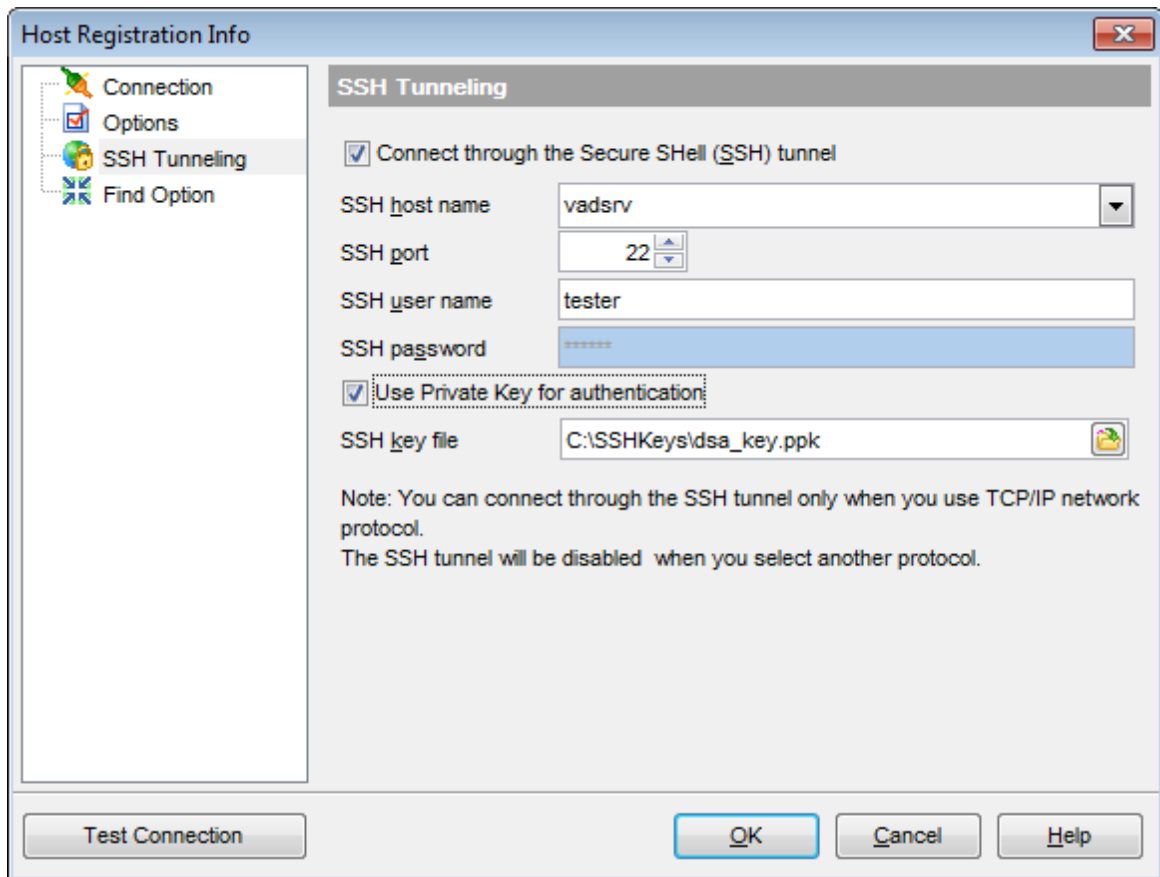
**Connect through the Secure Shell (SSH) tunnel**

Select this option to establish connection to an intermediate SSH server and forward all InterBase/Firebird commands through the secure tunnel.

Specify **SSH Host name**, **SSH port**, **SSH user name**, **SSH password**, the path to the **SSH key file** (if necessary) in the corresponding boxes.

See [SSH connection properties](#)<sup>[920]</sup> for details.

**Note:** InterBase/Firebird host name on the [Connection](#)<sup>[153]</sup> page should be set relatively to the SSH server in this case. For example, if both InterBase/Firebird and SSH servers are located on the same computer, you should specify *localhost* as **Host name** instead of the server's external host name or IP address.



**See also:**

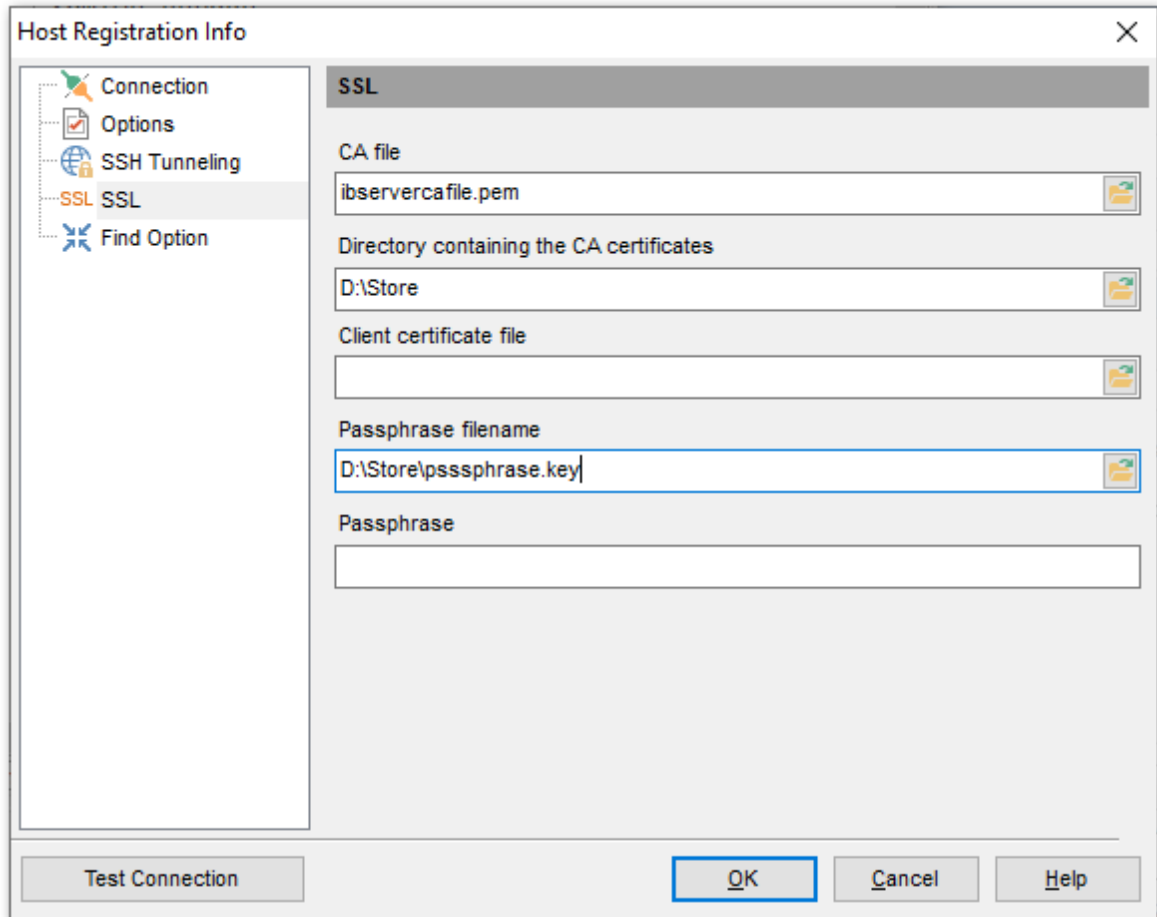
[Connection](#)<sup>[153]</sup>

[Common host options](#)<sup>[155]</sup>

[Find Option](#)<sup>[160]</sup>

#### 4.6.4 SSL parameters

SSL preferences allows you to connect to the server via encrypted channel for increased security.

**Client certificate**

Set the full path to the SSL certificate on the client machine.

**Passphrase file**

Set the full path to the file containing the key passphrase.

**Passphrase**

Input passphrase password.

**CA file**

Specify the name of the certificate authority file.

**CA path**

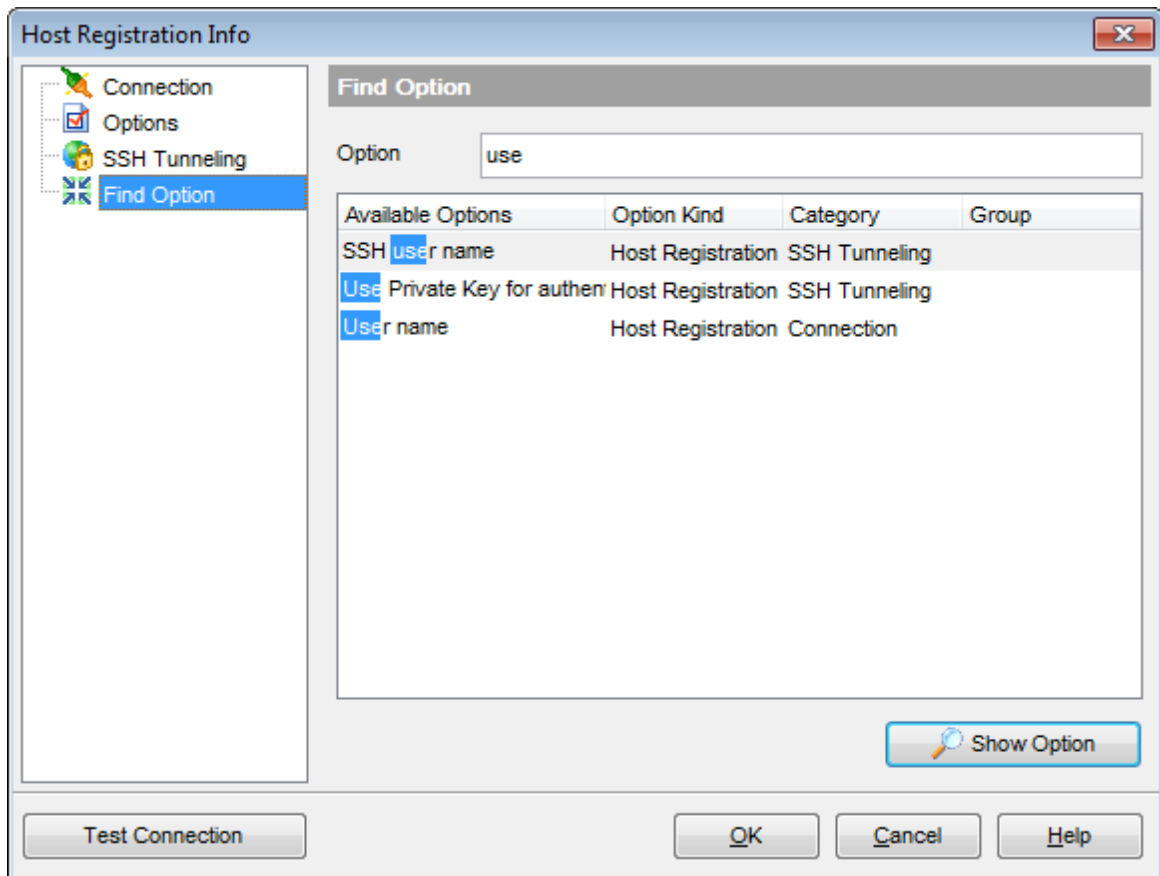
Set the path for the location of the certificate authority file.

## 4.6.5 Find Option



The **Find Option** section allows you to search for options available within the **Host Registration Info** dialog easily and quickly.

### Option

In this field you can enter the name of the option to search for within the host registration options.



The **Available options** area lists all options of the Host Registration category according to the specified name. The **Option Kind**, **Category** and **Group** columns specify option type and location.

Select the required option in the list and click  **Show Option** to open the corresponding section where you can view/edit the value of this option. For your convenience the required option is marked with an animated .

### See also:

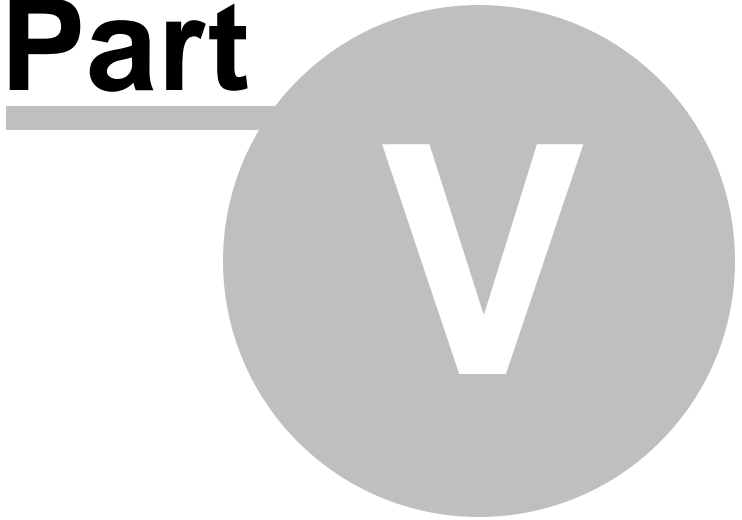
[Connection](#)<sup>[153]</sup>

[Common host options](#)<sup>[155]</sup>

[SSH tunneling](#)<sup>[157]</sup>



**Part**



## 5 Database Objects

**SQL Manager for InterBase/Firebird** provides powerful tools to manage **database objects**.

To obtain detailed information concerning InterBase/Firebird database objects, refer to the official InterBase/Firebird server documentation.

**Note:** Before working with database objects in **SQL Manager for InterBase/Firebird** you should [connect to the database](#)<sup>[67]</sup> first.

### Creating Database Objects

- select the **Database | New Object...** [main menu](#)<sup>[882]</sup> item;
- select the type of object within the [New Object](#)<sup>[164]</sup> dialog;
- follow the steps of the wizard which guides you through the entire process of creating the object, or set the object properties using its editor - depending on the selected object type.

Note that you can also create a database object by selecting the appropriate [context menu](#)<sup>[51]</sup> item of the [DB Explorer](#)<sup>[69]</sup> tree or using the *Ctrl+N* [shortcut](#)<sup>[932]</sup>.

### Editing Database Objects

- select the database object in the [DB Explorer](#)<sup>[63]</sup> tree;
- right-click the object to call its [context menu](#)<sup>[56]</sup> and select the **Edit <object type> <object name>** context menu item, or double-click the object to open it in its editor.

### Renaming Database Objects


- select the object to rename in the [DB Explorer](#)<sup>[63]</sup> tree;
- right-click the object and select the **Rename <object type> <object name>...** item from the [context menu](#)<sup>[56]</sup>;
- edit the object name using the **Rename Object...** dialog.

**Note:** This operation is possible for all objects except for [tables](#)<sup>[178]</sup>.

### Dropping Database Objects

- select the database object in the [DB Explorer](#)<sup>[69]</sup> tree;
- right-click the object to call its [context menu](#)<sup>[56]</sup> and select the **Drop <object type> <object name>** context menu item;
- confirm dropping in the dialog window.

When using an object editor, you can benefit from **tabs**. To switch between tab views, click on their respective tabs at the top of the main editor window. You can do it at any time, since the tab views are absolutely independent.

To compile a newly created or edited object, you can use the  **Compile** item available within the [Navigation bar](#)<sup>[882]</sup> or [Toolbar](#)<sup>[884]</sup> of the object editor.

---

### See also:

[Getting Started](#)<sup>[37]</sup>

[Database Explorer](#)<sup>[63]</sup>

[Database Management](#)<sup>[87]</sup>

[Query Management Tools](#)<sup>[328]</sup>

[Data Management](#) <sup>[368]</sup>

[Import/Export Tools](#) <sup>[443]</sup>

[Database Tools](#) <sup>[532]</sup>

[Services](#) <sup>[651]</sup>

[Security management](#) <sup>[711]</sup>

[Options](#) <sup>[735]</sup>

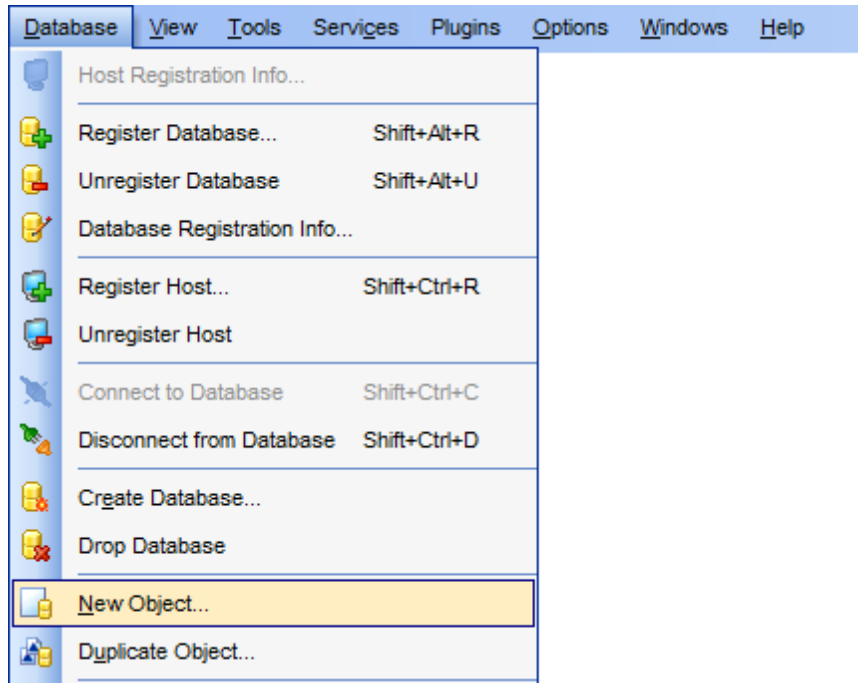
[External Tools](#) <sup>[832]</sup>

[How To...](#) <sup>[838]</sup>

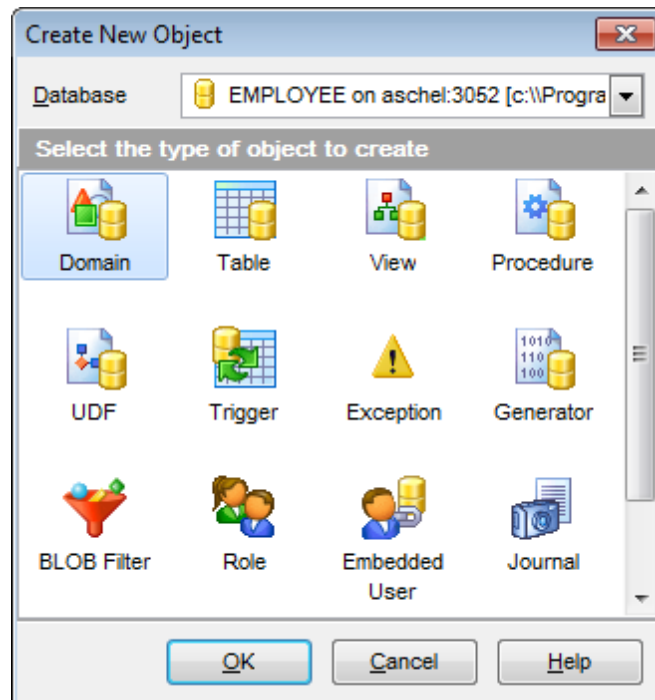
## 5.1 New Object

The **Create New Object** dialog allows you to select the type of the object to be created and run the appropriate wizard or editor.

To open the dialog, select the **Database | New Object...** [main menu](#) <sup>882</sup> item.



Use the **Database** drop-down list to select the alias of the database where the new object should be created. Pick an object type icon and click **OK** to invoke the corresponding wizard or dialog.



---

**See also:**

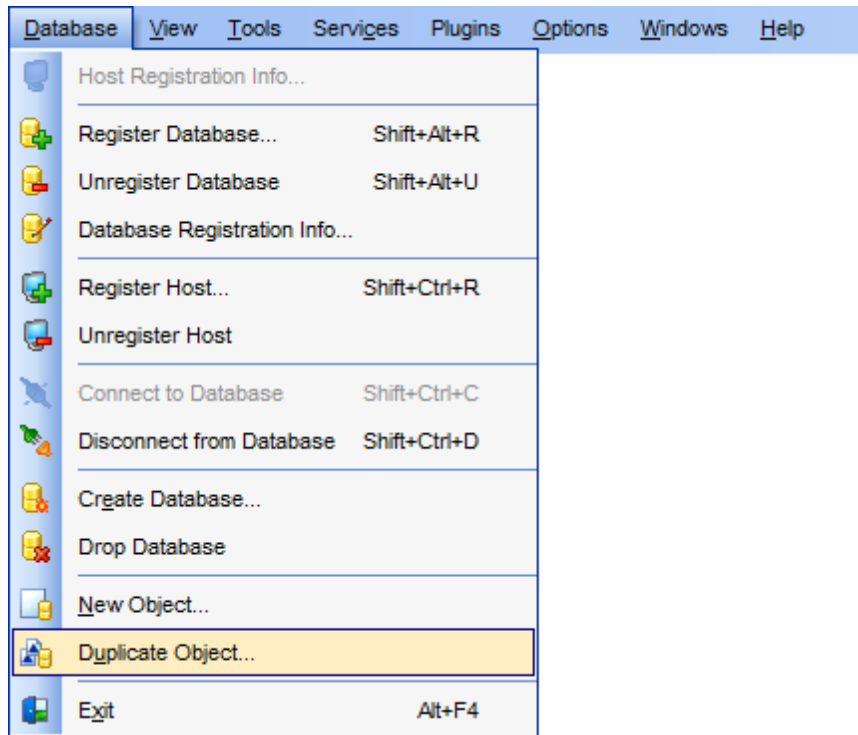
[Operations with database and server objects](#)<sup>[69]</sup>

[Duplicate Object Wizard](#)<sup>[166]</sup>

## 5.2 Duplicate Object Wizard

Use the **Duplicate Object Wizard** to create a new database object of the same type and having the same properties as one of the existing ones.

To run the wizard, select the **Database | Duplicate Object...** [main menu](#)<sup>[882]</sup> item, or right-click an object of the desired type in the [DB Explorer](#)<sup>[63]</sup> tree and use the **Duplicate <object type> <object name>...** [context menu](#)<sup>[56]</sup> item.



- [Selecting the source database](#)<sup>[167]</sup>
- [Selecting object to duplicate](#)<sup>[168]</sup>
- [Selecting destination database](#)<sup>[169]</sup>
- [Specifying object details](#)<sup>[170]</sup>
- [Viewing the new object's definition](#)<sup>[171]</sup>

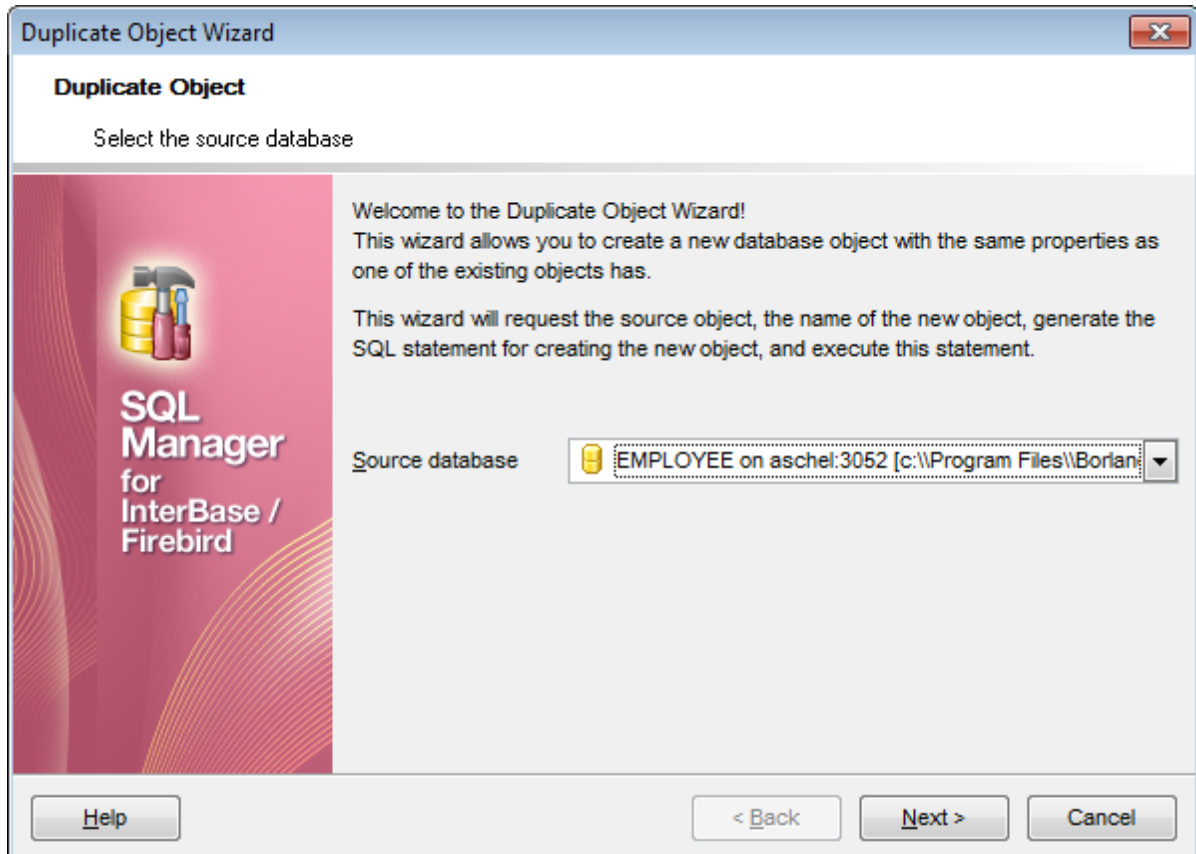
---

### See also:

[New Object dialog](#)<sup>[164]</sup>

### 5.2.1 Selecting the source database

This step of the wizard allows you to select the **source database** containing the source object to be duplicated.



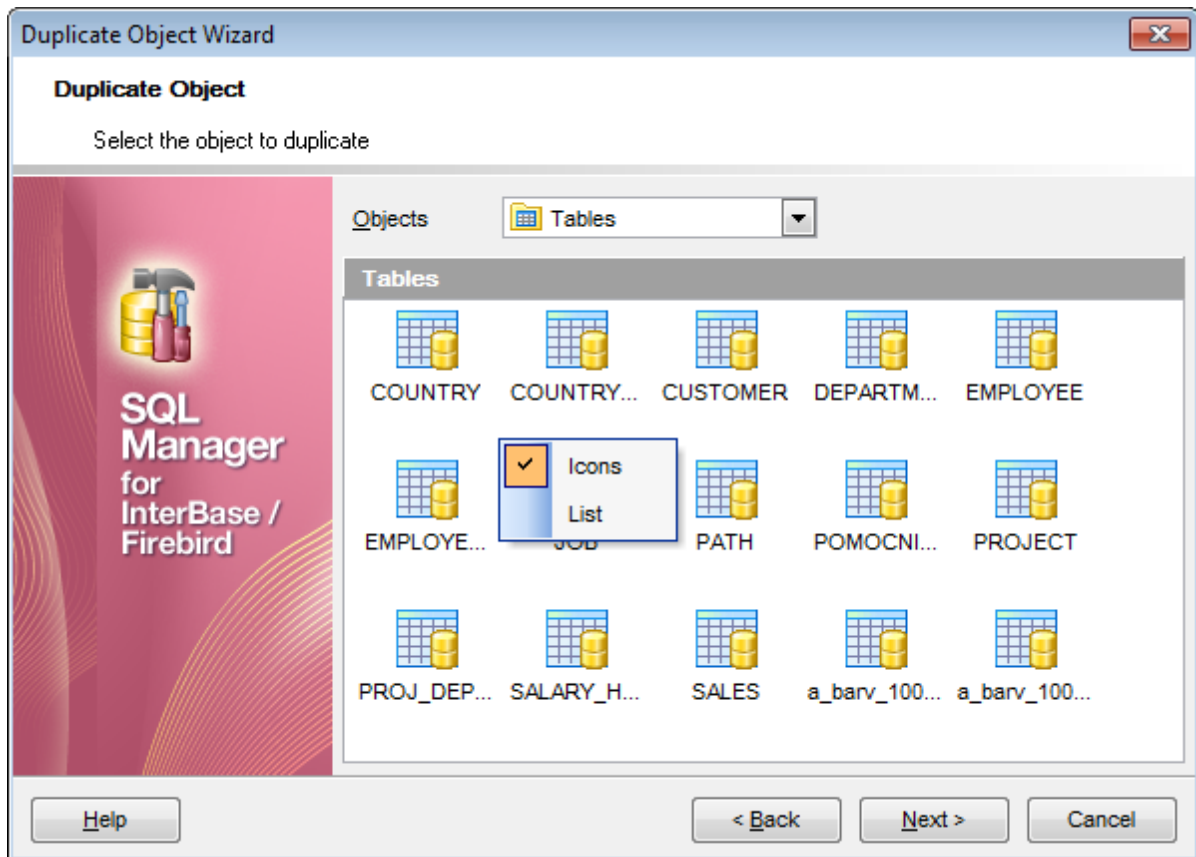
Click the **Next** button to proceed to the [Selecting object to duplicate](#)<sup>168</sup> step of the wizard.

## 5.2.2 Selecting object to duplicate

Use the **Objects** drop-down menu to select the type of object you intend to duplicate.

Select a database object to copy its properties to the new object.

**Hint:** The **context menu** of the objects list area allows you to specify whether objects of the specified type should be displayed as *icons* or as *list*.



Click the **Next** button to proceed to the [Selecting destination database](#)<sup>[169]</sup> step of the wizard.



### 5.2.3 Selecting destination database

Select the **target database** to create the new object in, set the **name** of the new database object.

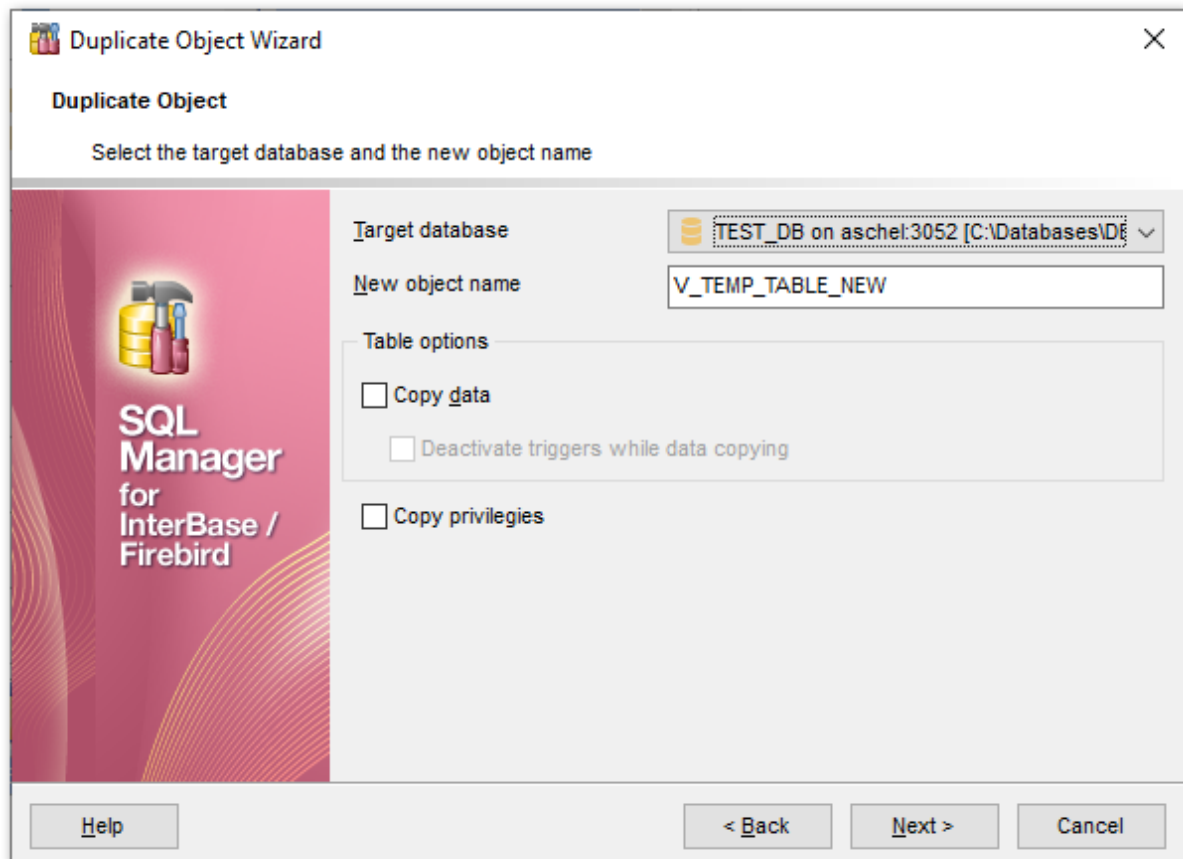
#### Table options

**Copy data**

Check this option to copy data from the source table to the new one.

**Deactivate triggers while data copying**

Disables object triggers firing while copying data.



**Copy privileges**

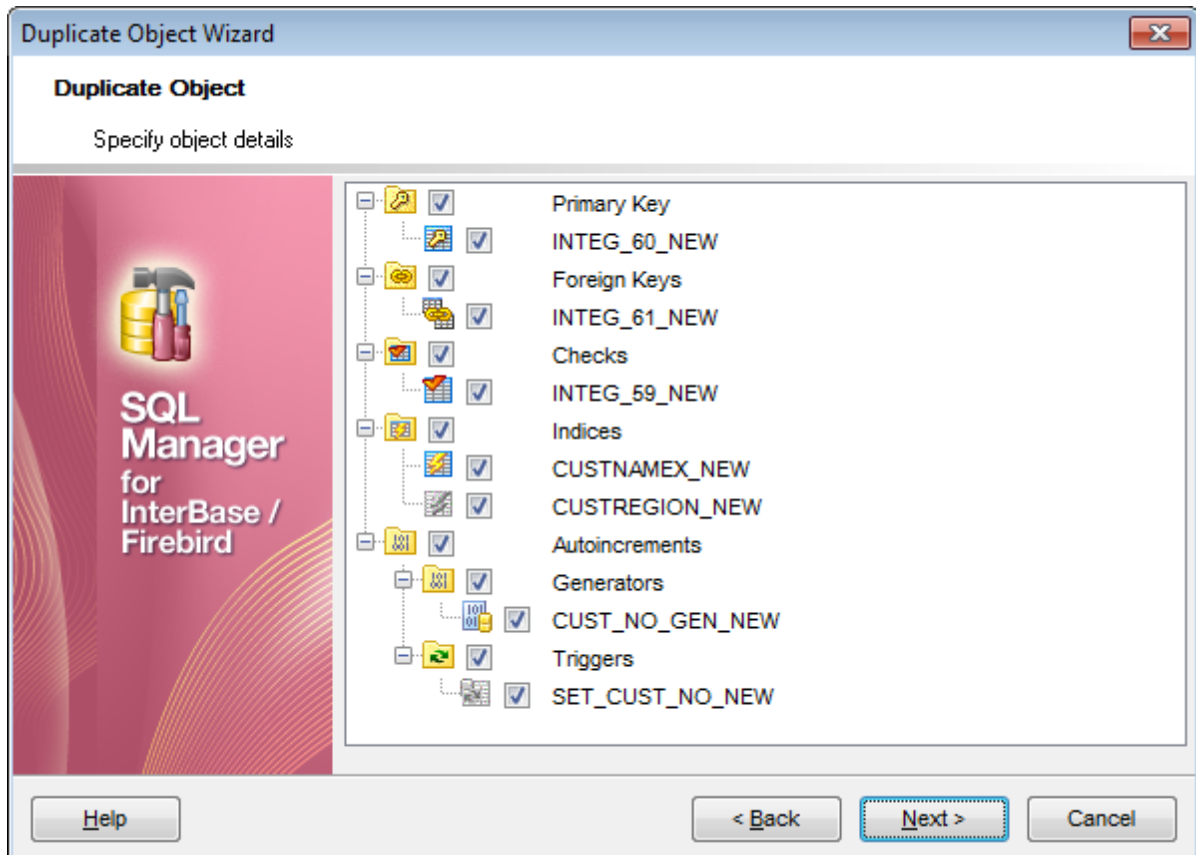
Defines whether the privileges on the object should be copied as well (displaying the option depends on the object type).

Click the **Next** button to proceed to the [Specifying object details](#)<sup>[170]</sup> step of the wizard.

## 5.2.4 Specifying object details

Specify **object details** (subobjects, dependent objects) to be duplicated in the target object.

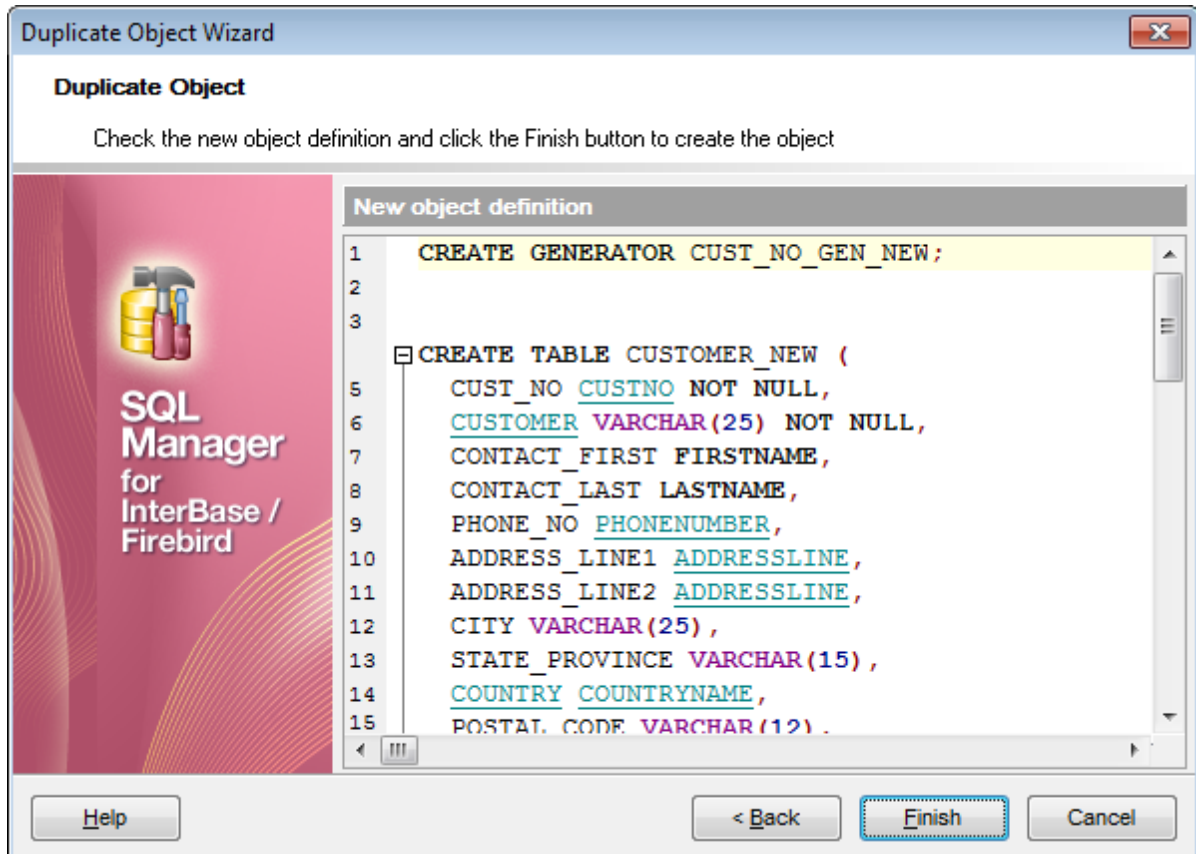
**Note:** Availability of this step depends on the type of object being duplicated.



Click the **Next** button to proceed to the [Modifying the new object's definition](#)<sup>[17]</sup> step of the wizard.

### 5.2.5 Viewing the new object's definition

This step of the wizard allows you to browse **the result SQL statement**.



Click the **Finish** button to create the object.

## 5.3 Domains

A **Domain** is a column definition template, global to the database, upon which actual column definitions in [tables](#)<sup>[178]</sup> may be based.

If there are [columns](#)<sup>[200]</sup> in the database table or in several database tables having the same properties, it is useful to describe such column type and its behavior as a domain, and then correspond each of these columns to this domain.

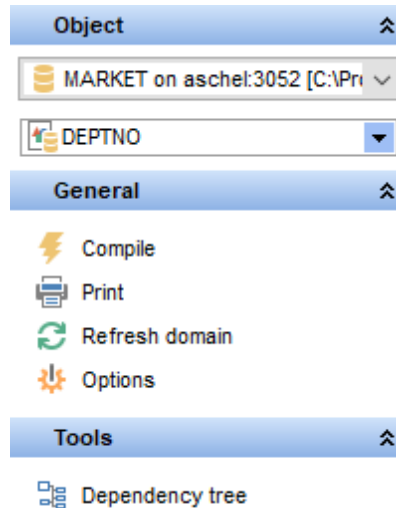
**Domain Editor** allows you to define domain properties. It opens automatically when you create a new domain and is available on editing an existing one.

To open a domain in **Domain Editor**, double-click it in the [DB Explorer](#)<sup>[63]</sup> tree.

- [Using Navigation bar and Toolbar](#)<sup>[173]</sup>
- [Creating/editing domain](#)<sup>[175]</sup>
- [Defining domain check](#)<sup>[177]</sup>
- [Browsing object dependencies](#)<sup>[888]</sup>
- [Editing object description](#)<sup>[887]</sup>
- [Viewing DDL definition](#)<sup>[886]</sup>

### 5.3.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Domain Editor**.



#### Object

- select a database
- select a domain for editing

#### General

- [compile](#)<sup>[898]</sup> the domain (if it is being created/modified)
- show SQL help
- set [printing options](#)<sup>[565]</sup> to [print metadata](#)<sup>[562]</sup> of the domain
- view the [dependency tree](#)<sup>[534]</sup> for the domain
- save the object using the [Quick Save](#)<sup>[922]</sup> feature
- load the object from buffers using the [Quick Load](#)<sup>[922]</sup> feature
- refresh the content of the active tab
- open the object editor preferences.


Depending on the current tab selection, the **Navigation bar** expands to one or more additional panes with tab-specific actions that can be useful for working with the domain:

#### Array dimensions

- add an array dimension
- insert an array dimension
- delete the selected array dimension
- move the selected array dimension up
- move the selected array dimension down

#### Description

- save object [description](#)<sup>[887]</sup> to file
- copy [description](#)<sup>[887]</sup> to clipboard

**DDL** save [DDL](#)<sup>[886]</sup> to file open [DDL](#)<sup>[886]</sup> in [Execute Script](#)<sup>[542]</sup>

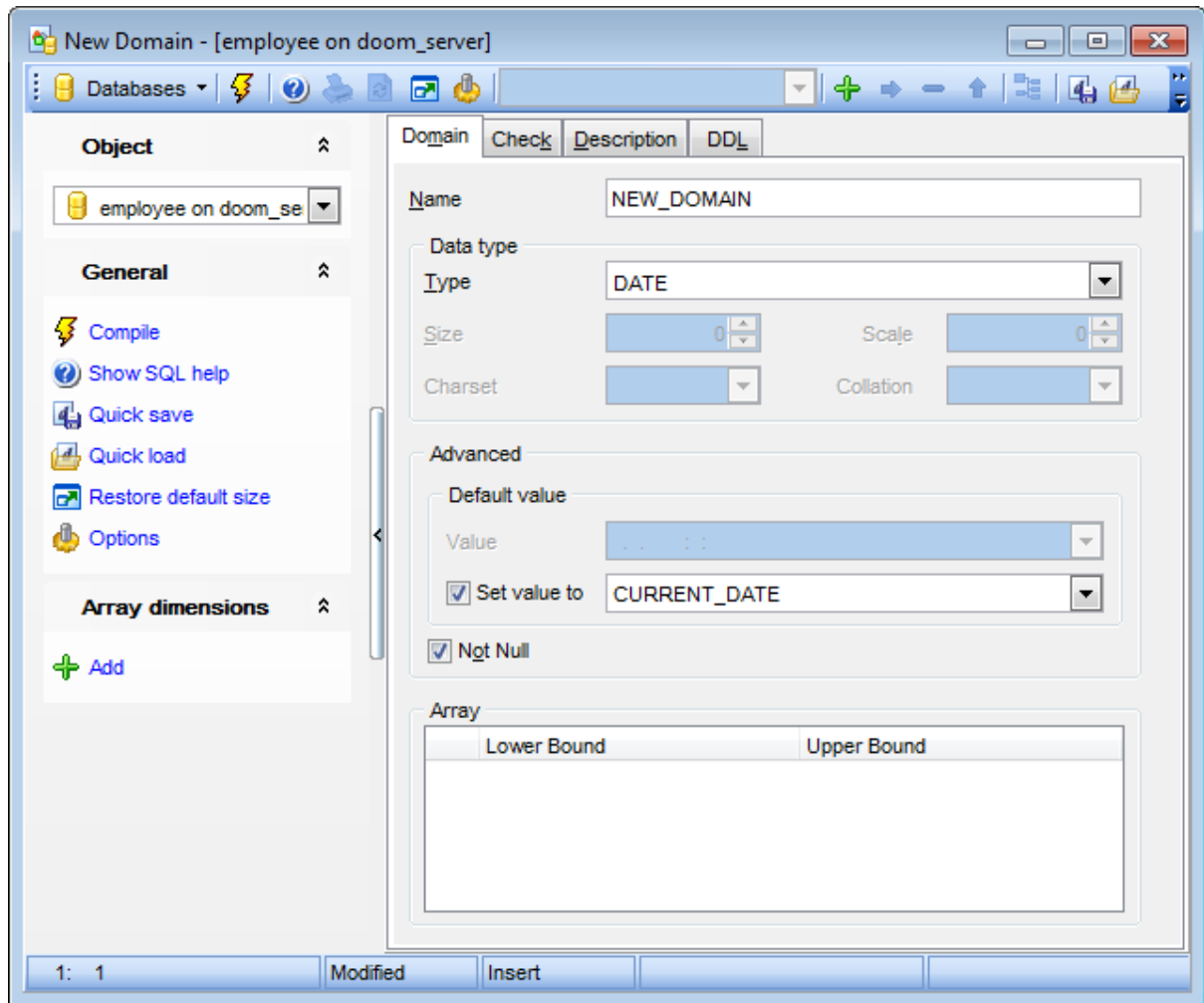
Items of the **Navigation bar** are also available on the **ToolBar** of **Domain Editor**. To enable the [toolbar](#)<sup>[884]</sup>, open the [Environment Options](#)<sup>[736]</sup> dialog, proceed to the [Windows](#)<sup>[743]</sup> section there and select  *Toolbar* (if you need the toolbar only) or  *Both* (if you need both the toolbar and the [Navigation bar](#)<sup>[882]</sup>) in the **Bar style for child forms** group.

### 5.3.2 Creating/editing domain

Use the **Domain** tab of **Domain Editor** to create/edit a domain and specify its definition.

#### Name

Enter a name for the new domain, or modify the name of the domain being edited.



#### Data type

Select the underlying *data type* of the domain from the drop-down list, and set its *length*, *scale*, *charset*, *collation*, *segment size*, *subtype* (for BLOB data type: 0 - N/A data, 1 - text data, 2 - BLR (Binary Language Representation) data, etc.), if required for the selected data type.

#### Advanced

##### Default value

This specifies a default value for columns based on the domain. If no default value is specified, then the default value is the null value.

##### Value

Type in the preferable default value for a domain. The data type of the default expression

must match the data type of the domain.

**Set value to**

Use the drop-down list to select the default value for domain of the selected datatype.

**Not Null**

If enabled, specifies that values of this domain are not allowed to be null.

### Array

This area allows you to manage domain array, if necessary. Use the **Lower Bound / Upper Bound** spinner controls for setting array dimensions.

Right-click the area to display the context menu allowing you to *add, insert, delete* the selected array dimension, or move it *up/down*.

Array management tools are also available through the [Navigation bar](#)<sup>[173]</sup> and [toolbar](#)<sup>[174]</sup> of **Domain Editor**.

To compile a domain, you can use the  **Compile** item available within the [Navigation bar](#)<sup>[173]</sup> or [toolbar](#)<sup>[174]</sup>.

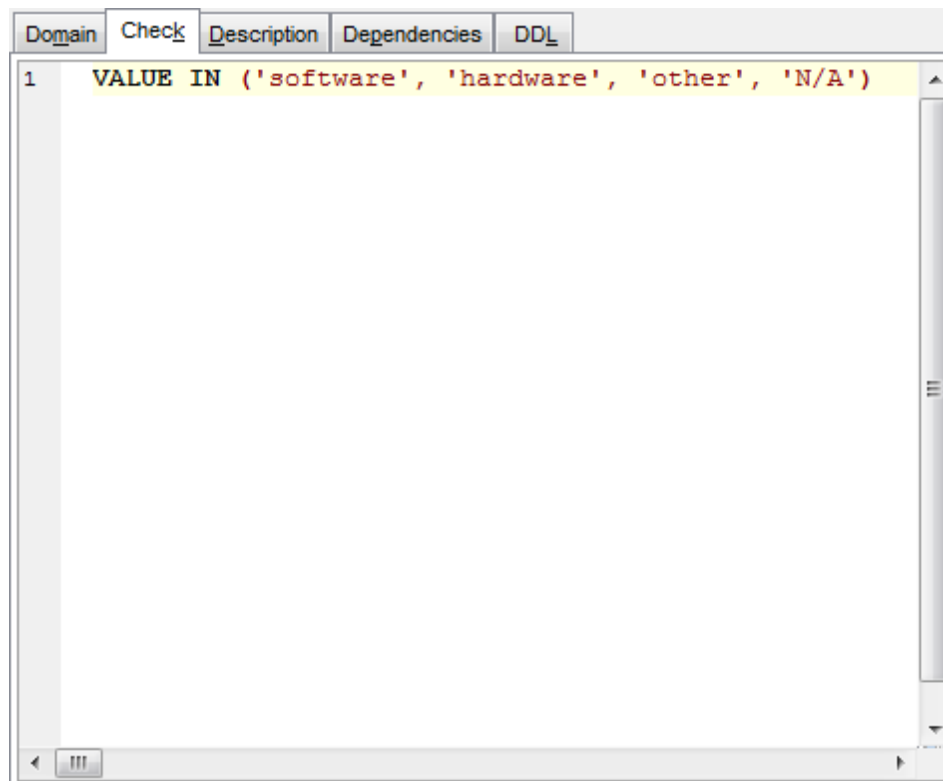


### 5.3.3 Defining domain check

The **Check** tab allows you to set CHECK constraints, i.e. conditions that must be true for inserts and updates to the field, based on the current domain, e.g. `VALUE >= 10`. The CHECK constraint cannot reference any domain or column.

For your convenience the **syntax highlight**, **code folding** and a number of other features for efficient SQL editing are implemented. For details see [Working with query](#)<sup>[333]</sup> and [Using the context menu](#)<sup>[335]</sup>.

The check definition can be loaded from, and saved to, a file with the help of the appropriate items of the **Check** group of the [Navigation bar](#)<sup>[173]</sup>.



See [Checks](#)<sup>[216]</sup> for details.

## 5.4 Tables

Relational databases store all their data in **Tables**. A table is a data structure consisting of an unordered set of horizontal rows, each containing the same number of vertical columns. The intersection of an individual row and column is a field that contains a specific piece of information. Much of the power of relational databases comes from defining the relations among the tables.

### Creating Tables

- select the **Database | New Object...** [main menu](#)<sup>[882]</sup> item;
- select **Table** in the [Create New Object](#)<sup>[164]</sup> dialog;
- define table properties and fields using the appropriate tabs of [Table Editor](#)<sup>[184]</sup>.

**Hint:** To create a new table, you can also right-click the **Tables** node or any object within this node in the [DB Explorer](#)<sup>[63]</sup> tree and select the **New Table...** item from the [context menu](#)<sup>[56]</sup>.

To create a new table with the same properties as one of existing tables has:

- select the **Database | Duplicate Object...** menu item;
- follow the instructions of [Duplicate Object Wizard](#)<sup>[166]</sup>.

Alternatively, you can right-click a table in the [DB Explorer](#)<sup>[63]</sup> tree and select the **Duplicate Table <table\_name>...** context menu item.

[Duplicate Object Wizard](#)<sup>[166]</sup> allows you to select the database to create a new table in, and to view the result SQL statement for creating the table.

### Editing Tables

To edit an existing table (manage its [fields](#)<sup>[188]</sup>, [indexes](#)<sup>[196]</sup>, [data](#)<sup>[199]</sup>, etc.):

- select the table for editing in the [DB Explorer](#)<sup>[63]</sup> tree (type the first letters of the table name for quick [search](#)<sup>[78]</sup>);
- right-click the object and select the **Edit Table <table\_name>** context menu item, or simply double-click the table;
- edit table subobjects and data using the appropriate tabs of [Table Editor](#)<sup>[184]</sup>.

### Dropping Tables

- select the table to drop in the [DB Explorer](#)<sup>[63]</sup> tree;
- right-click the object and select the **Drop Table <table\_name>...** context menu item;
- confirm dropping in the dialog window.

**Note:** If more convenient, you can also use the following [shortcuts](#)<sup>[932]</sup>:

*Ctrl+N* to create a new table;

*Ctrl+O* to edit the selected table;

*Shift+Del* to drop the object from the database.

### 5.4.1 New Table

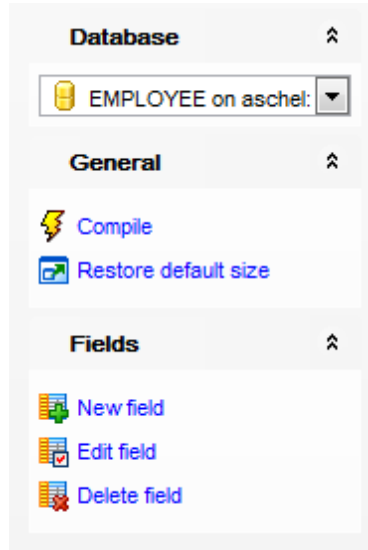
The **New Table** window is a mode of [Table Editor](#)<sup>[184]</sup> that opens automatically when you create a new table (see [Create table](#)<sup>[178]</sup> for details) and allows you to create a new table, set table [properties](#)<sup>[181]</sup>, and specify table [fields](#)<sup>[183]</sup>.

To call **Table Editor** for creating a new table, you can right-click the **Tables** node or any object within this node in the [DB Explorer](#)<sup>[63]</sup> tree and use the *Ctrl+N* [shortcut](#)<sup>[932]</sup>.

- [Using Navigation bar and Toolbar](#)<sup>[180]</sup>
- [Setting table properties](#)<sup>[181]</sup>
- [Specifying table fields](#)<sup>[183]</sup>

#### 5.4.1.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Table Editor**.




The **Navigation bar** of **Table Editor** (in the *New table* mode) allows you to:

##### Database

 select a database to create a new table in


##### General

 [compile](#)<sup>[898]</sup> the newly created table

 restore the default size and position of the editor window

Depending on the current tab selection, the **Navigation bar** expands to one or more additional panes with tab-specific actions that can be useful for working with the table:

##### Fields


 [add](#)<sup>[200]</sup> a new field

 [edit](#)<sup>[200]</sup> selected field

 [drop](#)<sup>[200]</sup> selected field(s)

##### DDL

 save [DDL](#)<sup>[886]</sup> to file

 open [DDL](#)<sup>[886]</sup> in [Query Editor](#)<sup>[830]</sup>

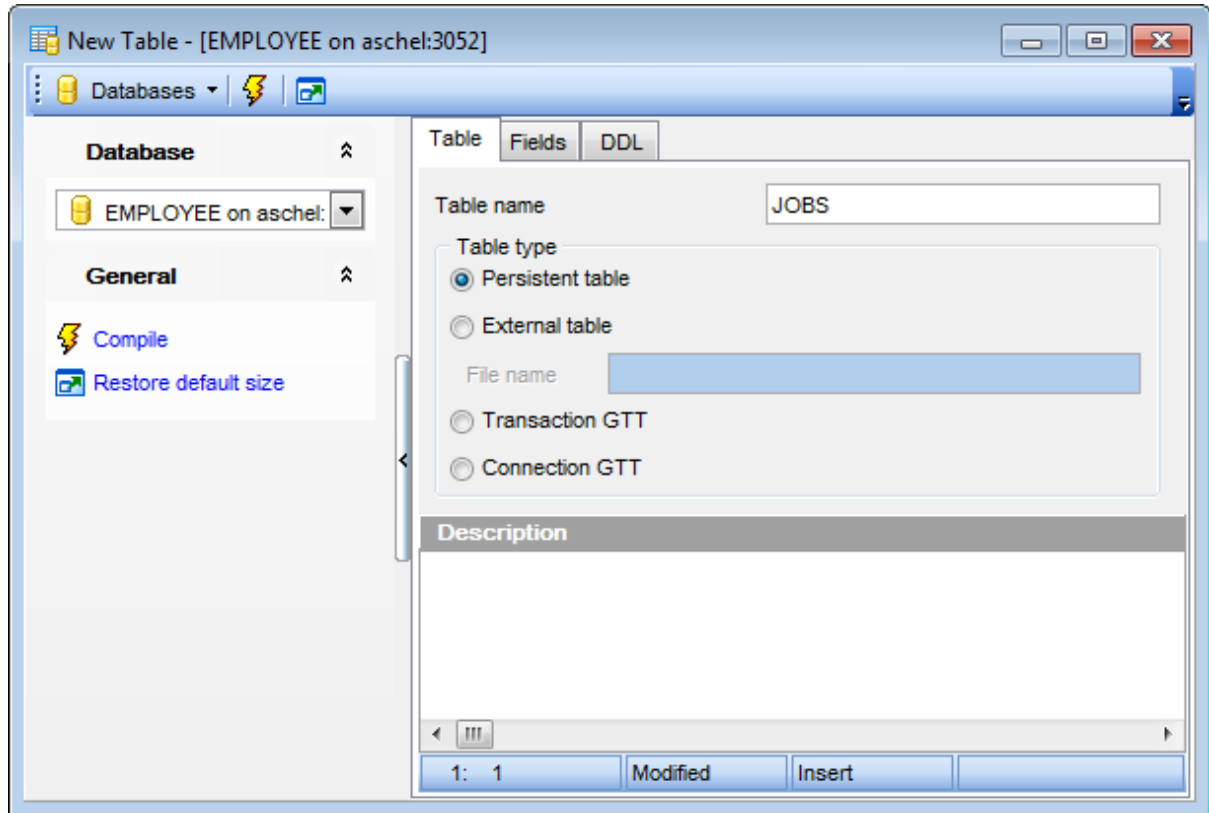
Items of the **Navigation bar** are also available on the **ToolBar** of **Table Editor**. To enable the [toolbar](#)<sup>[884]</sup>, open the [Environment Options](#)<sup>[736]</sup> dialog, proceed to the [Windows](#)<sup>[743]</sup> section there and select  *Toolbar* (if you need the toolbar only) or  *Both* (if you need both the toolbar and the [Navigation bar](#)<sup>[882]</sup>) in the **Bar style for child forms** group.

### 5.4.1.2 Setting table properties

Use the **Table** tab of **Table Editor** to create a table and specify its properties.

#### Table name

Name of the table; must be unique among table and [procedure](#)<sup>[253]</sup> names in the database.



#### Table type

This group allows you to specify the type of the table being created.


- Persistent table*

Specifies a regular table with data stored in the database.

- External table*

Specifies that data for the table under creation resides in a table or file outside the database.

#### File name

Type in or use the  button for complete file specification of the external file/table. The drop-down list contains the previously specified paths.

- Transaction GTT**


If this option is selected then Global Temporary Table records are stored until any transaction is committed within this connection session.

**Connection GTT**

This option indicates that Global Temporary Table records are stored up to the termination of the session during which the records were added. Stored records visibility is restricted with this connection.

**Description**

This field contains any optional description for the table.

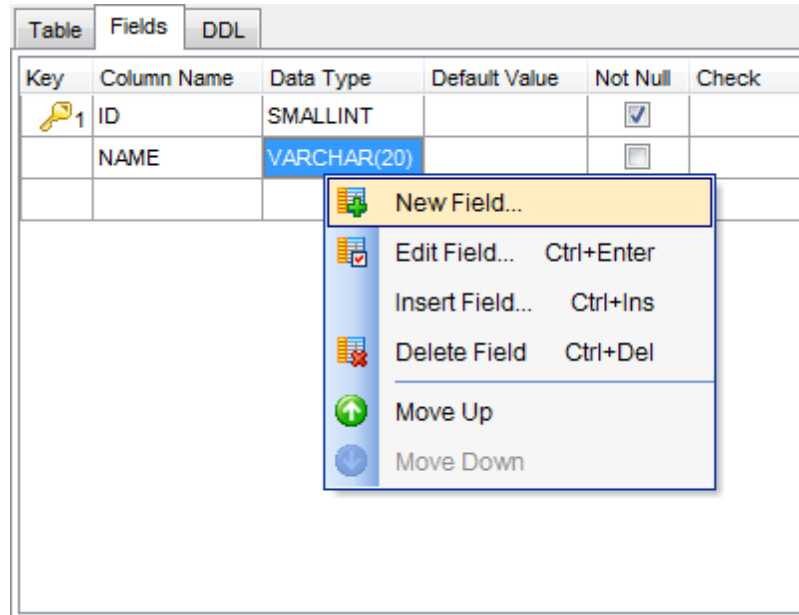
To compile the table, use the  **Compile** item available within the [Navigation bar](#)<sup>180</sup> or [toolbar](#)<sup>180</sup>.

### 5.4.1.3 Specifying fields

The **Fields** tab is intended for setting up table [fields](#)<sup>[200]</sup>. Double-click a field to open [Field Editor](#)<sup>[201]</sup> for editing the field.

Right-click within the **Table Fields** area to display the context menu allowing you to *insert, edit, delete, and reorder* fields.


Fields management tools are also available through the [Navigation bar](#)<sup>[180]</sup> of **Table Editor**.



The **Table Fields** list provides the following attributes of each field of the new table:

Key  
 Column Name  
 Data Type  
 Default Value  
 Not Null  
 Check

For details see [Fields](#)<sup>[200]</sup>.

To compile the table, use the  **Compile** item available within the [Navigation bar](#)<sup>[180]</sup>.

## 5.4.2 Table Editor

**Table Editor** is the basic **SQL Manager** tool for working with [tables](#)<sup>[178]</sup>. It opens automatically in the [New table](#)<sup>[179]</sup> mode when you create a new table and is available on editing an existing one (see [Create table](#)<sup>[178]</sup> and [Edit table](#)<sup>[178]</sup> for details).

**Table Editor** allows you to create, edit and drop table's [fields](#)<sup>[200]</sup>, [indexes](#)<sup>[225]</sup>, [foreign keys](#)<sup>[216]</sup> and other table subobjects, manage table [data](#)<sup>[199]</sup>, and much more.

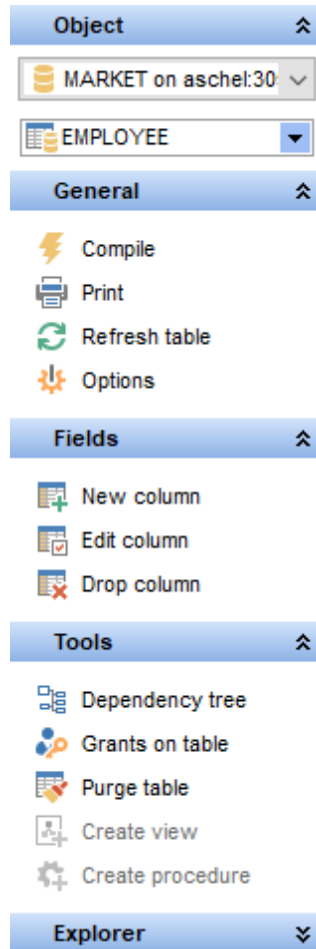
To open a table in **Table Editor**, double-click it in the [DB Explorer](#)<sup>[63]</sup> tree.

- [Using Navigation bar and Toolbar](#)<sup>[185]</sup>
- [Managing fields](#)<sup>[188]</sup>
- [Managing indexes](#)<sup>[196]</sup>
- [Managing constraints](#)<sup>[197]</sup>
- [Managing triggers](#)<sup>[197]</sup>
- [Working with table data](#)<sup>[199]</sup>
- [Browsing object dependencies](#)<sup>[888]</sup>
- [Setting object permissions](#)<sup>[889]</sup>
- [Viewing DDL definition](#)<sup>[886]</sup>





### 5.4.2.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Table Editor**.












The **Navigation bar** of **Table Editor** (in the *Edit table* mode) allows you to:




#### Object

-  select a database
-  select a table for editing

#### General

-  refresh the content of the active tab
-  define [grants](#)<sup>[728]</sup> on the table
-  set [printing options](#)<sup>[565]</sup> to [print metadata](#)<sup>[562]</sup> of the table
-  save the object using the [Quick Save](#)<sup>[922]</sup> feature
-  load the object from buffers using the [Quick Load](#)<sup>[922]</sup> feature
-  show SQL help
-  adjust [Table Editor options](#)<sup>[774]</sup>
-  restore the default size and position of the editor window
-  [compile](#)<sup>[898]</sup> the table (if it is being modified)

## Tools



-  view the [dependency tree](#)<sup>[534]</sup> for the table
-  [create](#)<sup>[232]</sup> a [view](#)<sup>[242]</sup> based on the table
-  [create](#)<sup>[236]</sup> a [procedure](#)<sup>[253]</sup> based on the table

## Explorer




-  browse the table subobjects using the Explorer tree

Depending on the current tab selection, the **Navigation bar** expands to one or more additional panes with tab-specific actions that can be useful for working with the table:













## Description

-  save object [description](#)<sup>[887]</sup> to file
-  copy [description](#)<sup>[887]</sup> to clipboard




## Fields

-  [add](#)<sup>[200]</sup> a new field
-  [edit](#)<sup>[200]</sup> selected field
-  [drop](#)<sup>[200]</sup> selected field(s)




## Constraints

-  [add](#)<sup>[216]</sup> a new primary key
-  [edit](#)<sup>[216]</sup> selected primary key
-  [drop](#)<sup>[217]</sup> selected primary key
-  [add](#)<sup>[217]</sup> a new foreign key
-  [edit](#)<sup>[217]</sup> selected foreign key
-  [drop](#)<sup>[217]</sup> selected foreign key(s)
-  [add](#)<sup>[217]</sup> a new check
-  [edit](#)<sup>[217]</sup> selected check
-  [drop](#)<sup>[218]</sup> selected check(s)
-  [add](#)<sup>[218]</sup> a new unique constraint
-  [edit](#)<sup>[218]</sup> selected unique constraint
-  [drop](#)<sup>[218]</sup> selected unique constraint(s)



## Indexes



-  [add](#)<sup>[225]</sup> a new index
-  [edit](#)<sup>[225]</sup> selected index
-  [drop](#)<sup>[225]</sup> selected index(-es)

## Triggers











-  [add](#)<sup>[230]</sup> a new trigger
-  [edit](#)<sup>[230]</sup> selected trigger
-  [drop](#)<sup>[230]</sup> selected trigger(s)

## Data Management



-  commit transaction
-  rollback transaction

-  export data from the table using [Export Data Wizard](#)<sup>[444]</sup>
-  export data from the table as SQL script using [Export as SQL Script Wizard](#)<sup>[517]</sup>
-  import data into the table using [Import Data Wizard](#)<sup>[491]</sup>

### Permissions

-  Grant
-  Grant with Grant Option
-  Revoke
-  Grant All
-  Grant All with Grant Option
-  Revoke All
-  Grant on All
-  Grant on All with Grant Option
-  Revoke on All
-  Add Grantee object

### DDL

-  save [DDL](#)<sup>[886]</sup> to file
-  open DDL in Execute Script

Items of the **Navigation bar** are also available on the **ToolBar** of **Table Editor**. To enable the [toolbar](#)<sup>[884]</sup>, open the [Environment Options](#)<sup>[736]</sup> dialog, proceed to the [Windows](#)<sup>[743]</sup> section there and select  *Toolbar* (if you need the toolbar only) or  *Both* (if you need both the toolbar and the [Navigation bar](#)<sup>[882]</sup>) in the **Bar style for child forms** group.

### 5.4.2.2 Managing fields

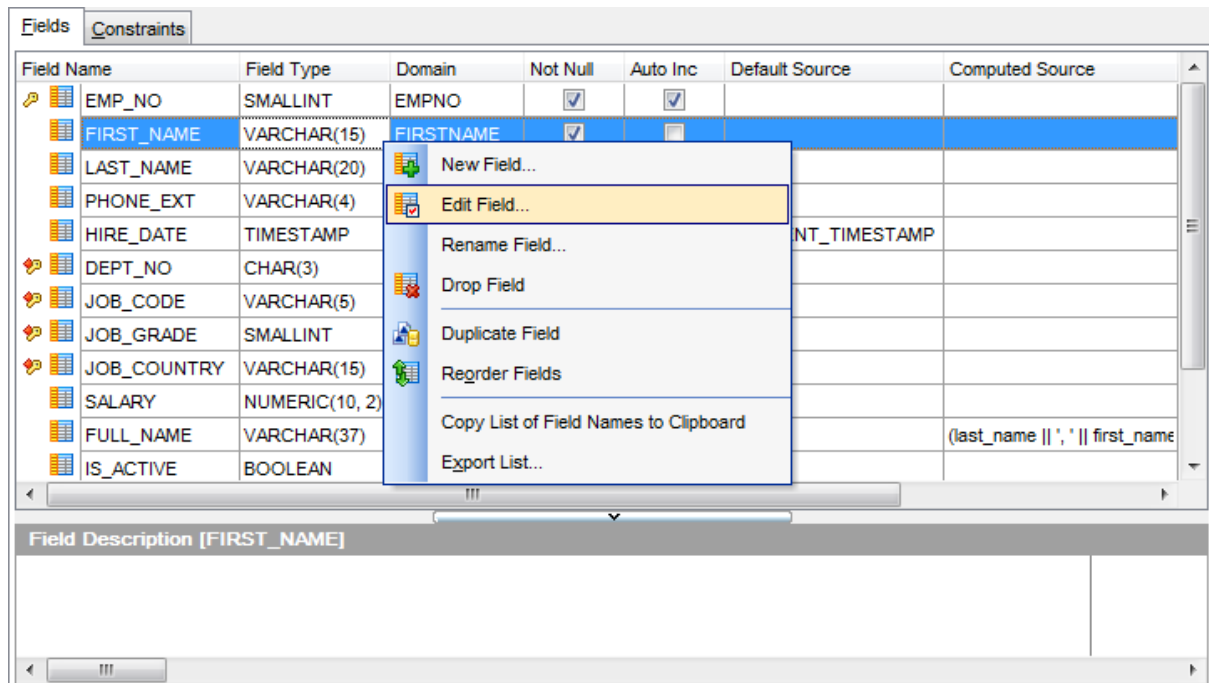
The **Fields** tab is intended for managing table [fields](#)<sup>[200]</sup>.

**Hint:** This tab is selected by default upon opening **Table Editor** if the *Always open the fields tab* option is enabled on the [Tools | Object Editors | Table Editor](#)<sup>[774]</sup> page of the [Environment Options](#)<sup>[736]</sup> dialog.

Double-click a field to open [Field Editor](#)<sup>[201]</sup> for editing the field.

Right-click a field to display the context menu allowing you to *create new, edit, drop, rename, duplicate* the selected field, or [reorder](#)<sup>[190]</sup> fields of the table. Using the menu you can also copy to clipboard or [export](#)<sup>[444]</sup> the list of the table fields to any of supported [formats](#)<sup>[911]</sup>.

Fields management tools are also available through the [Navigation bar](#)<sup>[185]</sup> and [toolbar](#)<sup>[187]</sup> of **Table Editor**.



The **Fields** list provides the following attributes of each field of the table:

*Field Name*

*Field Type*

*Domain*

*Not Null*

*Default Source*

*Computed Source*

*Description*

For details see [Fields](#)<sup>[200]</sup>.

If necessary, you can also use the **Field Description** area to supply a *description* for each field.





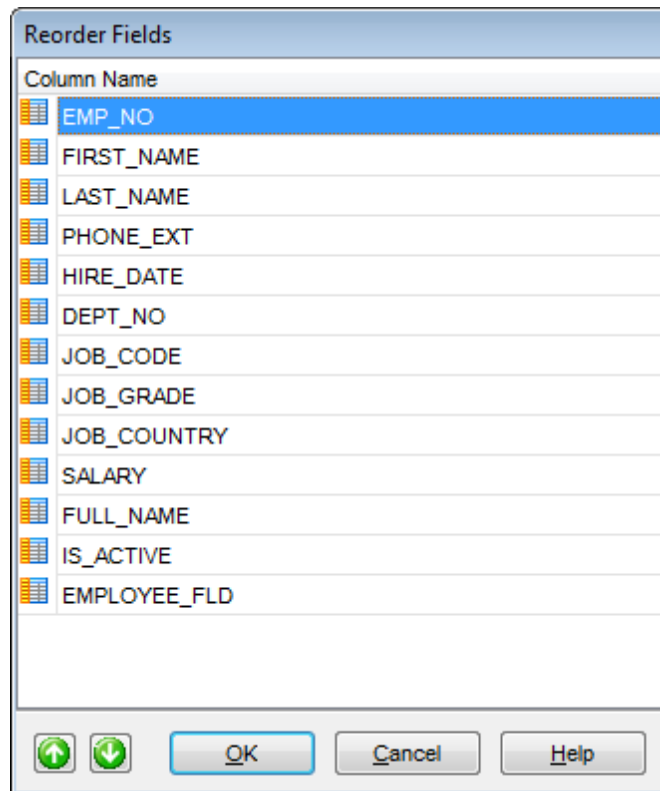
### 5.4.2.3 Changing fields order

The **Reorder Fields** dialog allows you to change the fields order in the table.

To open this dialog, open the table in **Table Editor**, proceed to the [Fields](#)<sup>[188]</sup> tab there, right-click within the **Fields** list and select the **Reorder Fields** item from the context menu.

The fields are displayed in the **Column name** list in the current order.

To change the fields order, use the   buttons or drag-and-drop operations within the list. Click the **OK** button and compile the table to view the modification script in the [Compile](#)<sup>[898]</sup> window and apply changes.



#### 5.4.2.4 Managing constraints

The **Constraints** tab of **Table Editor** allows you to manage table data integrity constraints:

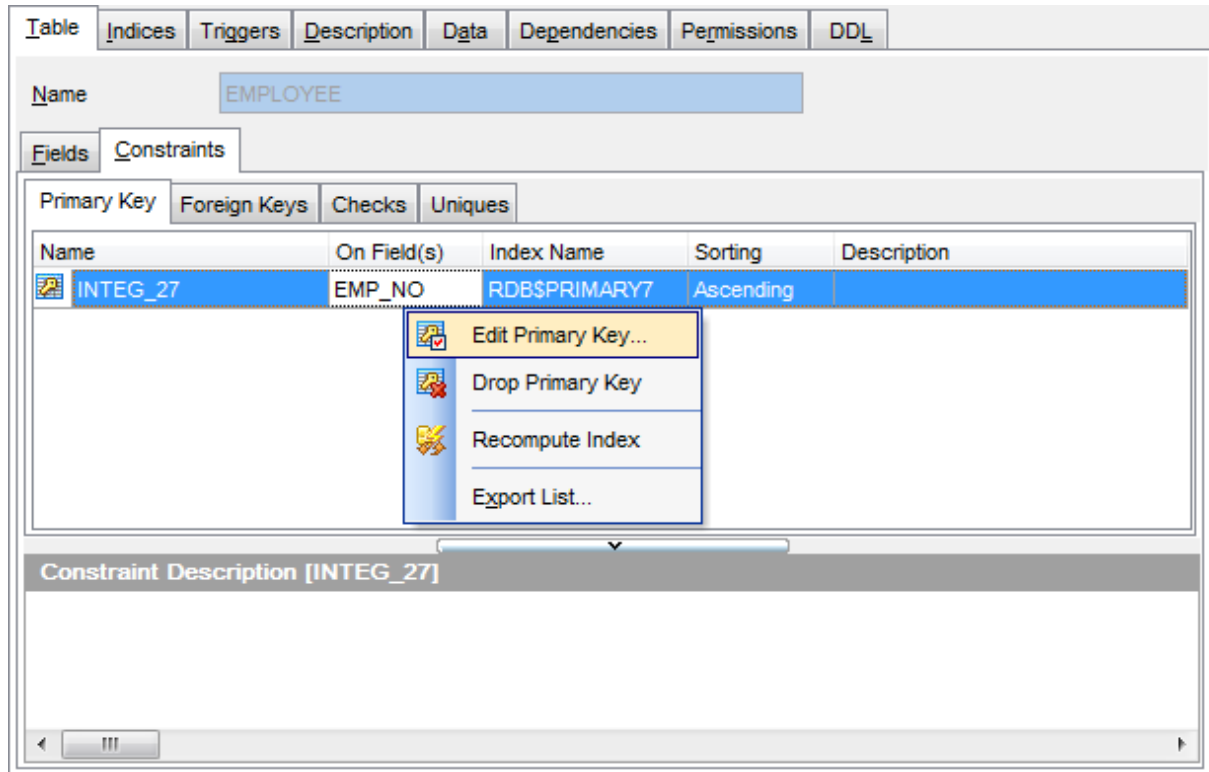
- [PRIMARY KEY](#)<sup>[192]</sup>
- [FOREIGN KEY](#)<sup>[193]</sup>
- [CHECK](#)<sup>[194]</sup>
- [UNIQUE](#)<sup>[195]</sup>

## 5.4.2.4.1 Primary keys

The **Primary Key** tab is provided for managing table [PRIMARY KEY](#)<sup>[216]</sup> constraints. Double-click a primary key to open [Constraints Editor](#)<sup>[219]</sup> for [editing the primary key](#)<sup>[220]</sup>.

Right-click a primary key to display the context menu allowing you to *create new*, *edit*, *rename*, or *drop* the selected primary key. Using the menu you can also *recompute* the underlying index and [export](#)<sup>[444]</sup> the list of keys to any of supported [formats](#)<sup>[911]</sup>.

Keys management tools are also available through the [Navigation bar](#)<sup>[185]</sup> of **Table Editor**.



The **Keys** list provides the following attributes of primary key of the table:

*Name*  
*On Field(s)*  
*Index Name*  
*Sorting*

For details see [Primary keys](#)<sup>[216]</sup>.

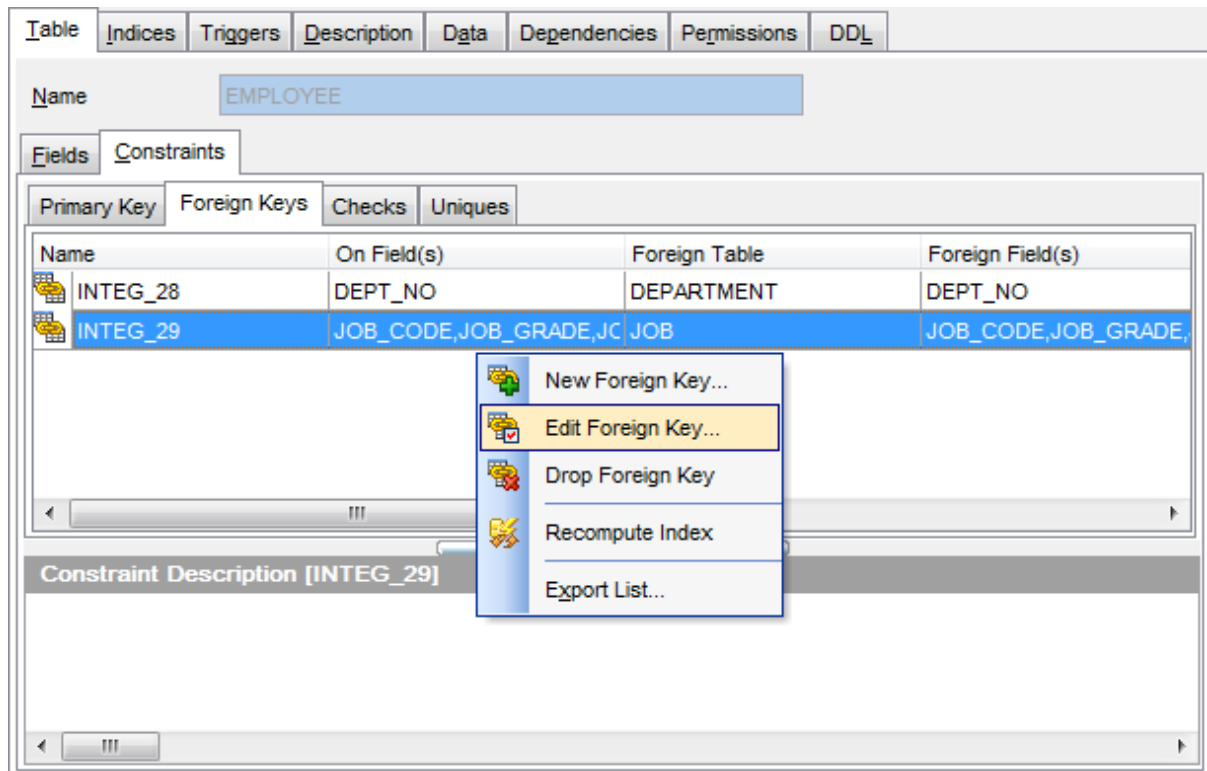


## 5.4.2.4.2 Foreign keys

The **Foreign Keys** tab is provided for managing table [FOREIGN KEY](#)<sup>[216]</sup> constraints. Double-click a foreign key to open [Constraints Editor](#)<sup>[219]</sup> for [editing the foreign key](#)<sup>[221]</sup>.

Right-click a Foreign key to display the context menu allowing you to *create new*, *edit*, *rename*, or *drop* the selected Foreign key. Using the menu you can also [export](#)<sup>[444]</sup> the list of the table Foreign keys to any of supported [formats](#)<sup>[911]</sup>.

Foreign keys management tools are also available through the [Navigation bar](#)<sup>[185]</sup> of **Table Editor**.



The **Foreign Keys** list provides the following attributes of each Foreign key of the table:

*Name*  
*On Field(s)*  
*Foreign Table*  
*Foreign Field(s)*  
*Index Name*  
*Sorting*

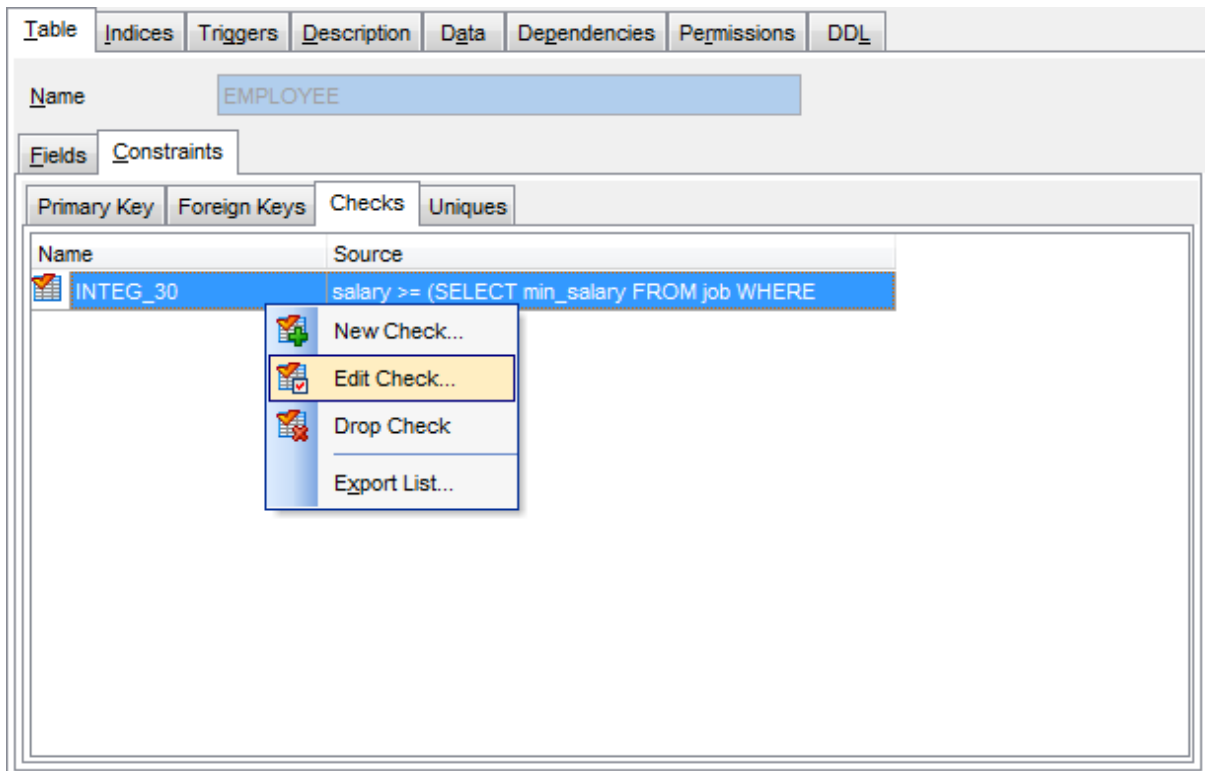
For details see [Foreign keys](#)<sup>[216]</sup>.

## 5.4.2.4.3 Checks

The **Checks** tab is provided for managing table [CHECK](#)<sup>[216]</sup> constraints. Double-click a check to open [Constraints Editor](#)<sup>[219]</sup> for [editing the check](#)<sup>[223]</sup>.

Right-click a check to display the context menu allowing you to *create new, edit, rename*, or *drop* the selected check. Using the menu you can also [export](#)<sup>[444]</sup> the list of the table checks to any of supported [formats](#)<sup>[917]</sup>.

Checks management tools are also available through the [Navigation bar](#)<sup>[185]</sup> of **Table Editor**.



The **Checks** list provides the following attributes of each check constraint of the table:

*Name*

*Source*

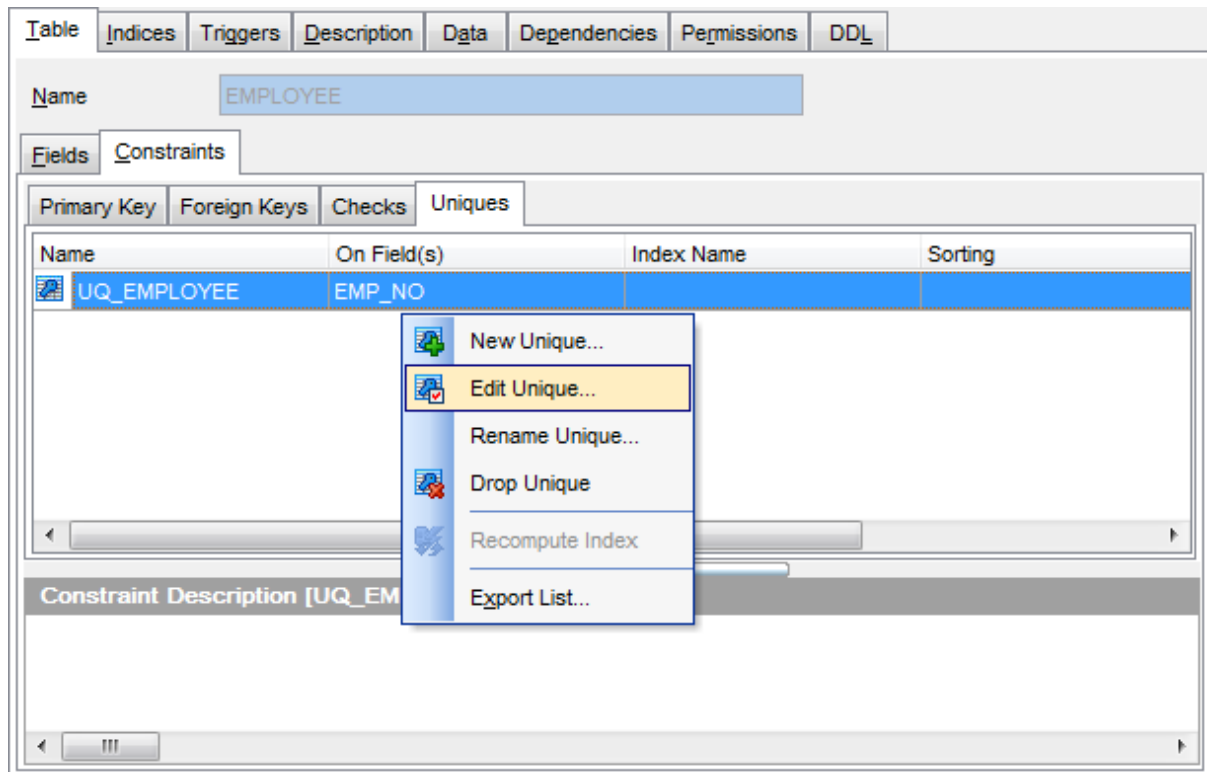
For details see [Checks](#)<sup>[216]</sup>.

## 5.4.2.4.4 Unique constraints

The **Uniques** tab is provided for managing table [UNIQUE](#)<sup>[216]</sup> constraints. Double-click a key to open [Constraints Editor](#)<sup>[219]</sup> for [editing the unique constraint](#)<sup>[224]</sup>.

Right-click a key to display the context menu allowing you to *create new, edit, rename, or drop* the selected unique key. Using the menu you can also *recompute* the underlying index and [export](#)<sup>[444]</sup> the list of the table unique keys to any of supported [formats](#)<sup>[911]</sup>.

Keys management tools are also available through the [Navigation bar](#)<sup>[185]</sup> of **Table Editor**.



The **Uniques** list provides the following attributes of each unique constraint of the table:

*Name*  
*On Field(s)*  
*Index Name*  
*Sorting*  
*Description*

For details see [Unique constraints](#)<sup>[216]</sup>.

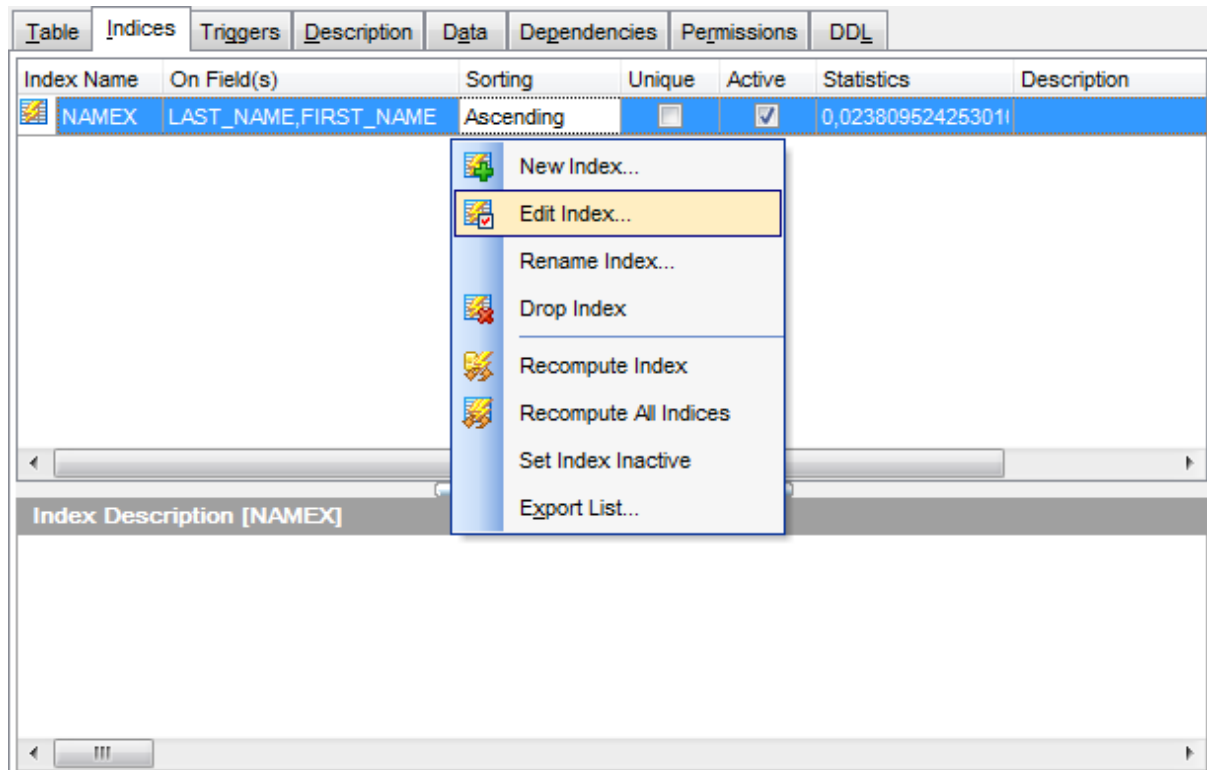
If necessary, you can also use the **Constraint Description** area to supply a *description* for each unique constraint.

### 5.4.2.5 Managing indices

The **Indexes** tab is provided for managing table [indexes](#)<sup>[225]</sup>. Double-click an index to open [Index Editor](#)<sup>[226]</sup> for editing the index.

Right-click an index to display the context menu allowing you to *create new, edit, rename, or drop* the selected index. Using the menu you can also *recompute* selected or all indexes, set the index *active/inactive*, and [export](#)<sup>[444]</sup> the list of the table indexes to any of supported [formats](#)<sup>[911]</sup>.

Indexes management tools are also available through the [Navigation bar](#)<sup>[185]</sup> of **Table Editor**.



The **Indexes** list provides the following attributes of each index of the table:

*Index Name*  
*On Field(s)*  
*Sorting*  
*Unique*  
*Active*  
*Statistics*  
*Description*

For details see [Indexes](#)<sup>[225]</sup>.

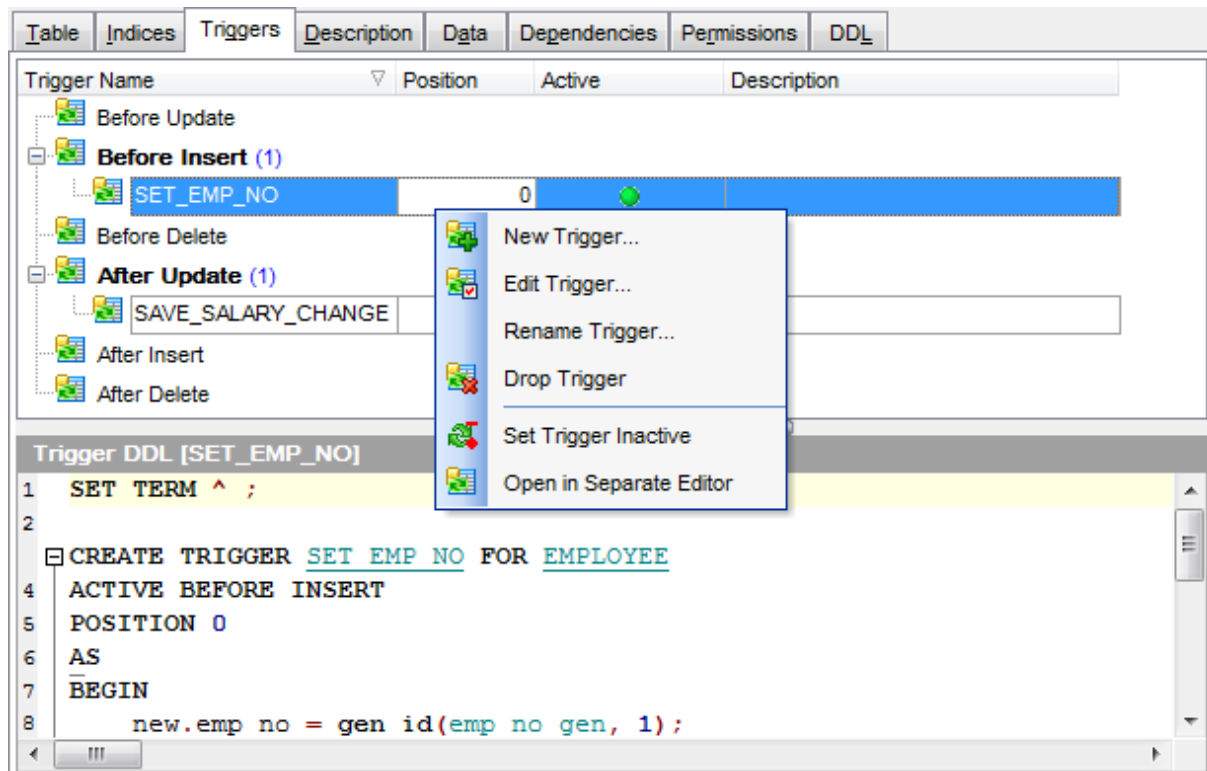
If necessary, you can also use the **Index Description** area to supply a *description* for each index.

### 5.4.2.6 Managing triggers

The **Triggers** tab is provided for managing table [triggers](#)<sup>[230]</sup>. Double-click a trigger to open [Trigger Editor](#)<sup>[231]</sup> for editing the trigger.

Right-click the area to display the context menu allowing you to *create* new, *edit*, *rename*, or *drop* the selected trigger. Using the menu you can also set the trigger *active/inactive*, and open the selected trigger in a separate [Trigger Editor](#)<sup>[230]</sup>.

Triggers management tools are also available through the [Navigation bar](#)<sup>[185]</sup> of **Table Editor**.



The **Triggers** list provides the following attributes of each trigger of the view:






*Trigger Name*  
*Position*  
*Active*  
*Description*

On this tab all triggers are grouped into categories:

- *Before Insert*
- *After Insert*
- *Before Update*
- *After Update*
- *Before Delete*
- *After Delete*

The trigger definition is displayed in the **Trigger DDL** window.

Use the context menu or items on a toolbar to manage triggers:

-  [add](#)<sup>[230]</sup> a new trigger
-  [edit](#)<sup>[230]</sup> selected trigger
-  [drop](#)<sup>[230]</sup> selected trigger(s)
-  set trigger active/inactive
-  open selected trigger in a [Trigger Editor](#)<sup>[281]</sup>

For details see [Triggers](#)<sup>[281]</sup>.

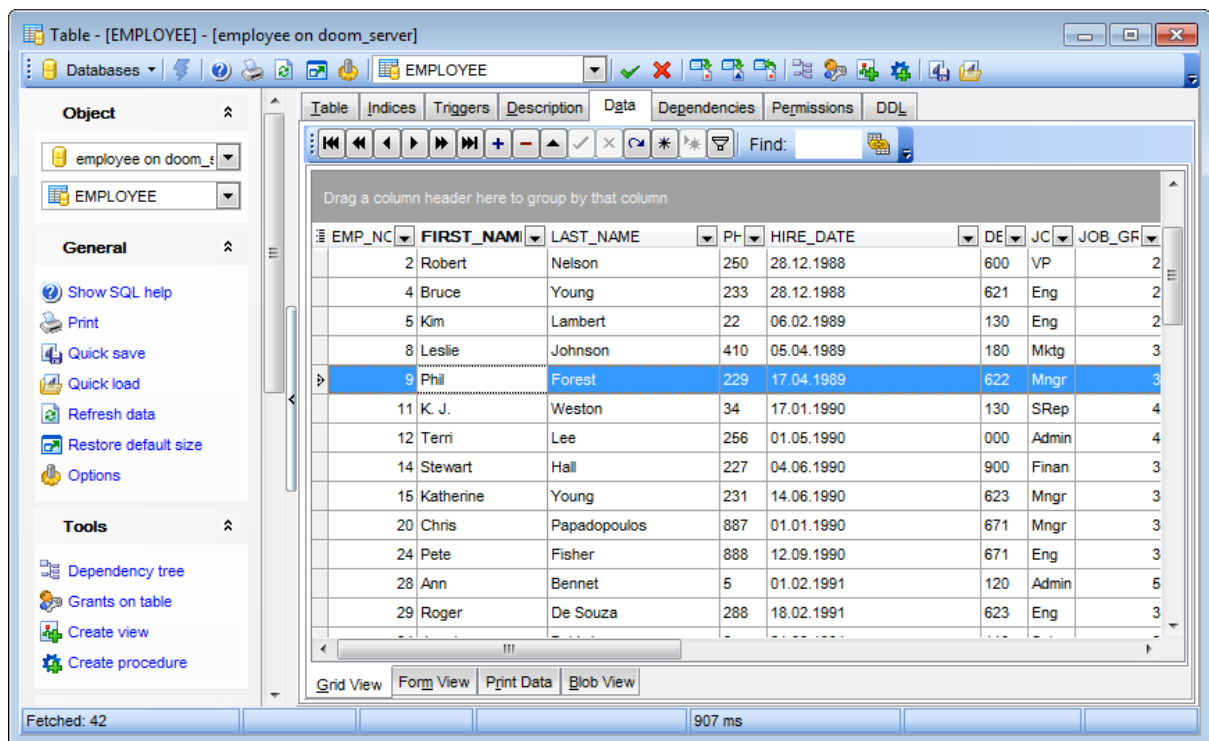
### 5.4.2.7 Working with table data

The **Data** tab displays the table data as a grid by default (see [Data View](#)<sup>[369]</sup> for details). The context menu of this tab allows you to [Export Data](#)<sup>[444]</sup>, [Import Data](#)<sup>[491]</sup>, [Export as SQL Script](#)<sup>[517]</sup>.

Data management tools are also available through the [Navigation bar](#)<sup>[185]</sup> of **Table Editor**.

While working with data, you are provided with a number of [filtering](#)<sup>[379]</sup> and [grouping](#)<sup>[376]</sup> facilities.

If necessary, you can **group the data in grid** by any of the columns. This operation is performed by dragging the column header to the gray "**Group by**" box area at the top. When grouping by a column is applied to the grid, all the rows are displayed as subnodes to the grouping row value. To reverse grouping, just drag the column header back.



#### See also:

[Working with view data](#)<sup>[252]</sup>

### 5.4.3 Fields

Table fields are managed within the **Fields** tab of [Table Editor](#)<sup>[184]</sup>.

#### Creating Fields

- open the table in [Table Editor](#)<sup>[184]</sup>;
- proceed to the **Fields** tab there;
- right-click the tab area and select the **New Field...** context menu item, or press the *Ins* key;
- define the field properties using the [Field Editor](#)<sup>[201]</sup> dialog.

#### Editing Fields

To edit an existing table field:

- open the table in [Table Editor](#)<sup>[184]</sup>;
- proceed to the **Fields** tab there;
- right-click the field and select the **Edit Field <field\_name>...** context menu item, or simply double-click the field;
- edit the field properties using the [Field Editor](#)<sup>[201]</sup> dialog.

To change the name of a field:

- open the table in [Table Editor](#)<sup>[184]</sup>;
- proceed to the **Fields** tab there;
- right-click the field to rename and select the **Rename Field <field\_name>...** item from the context menu;
- edit the field name using the **Rename Object...** dialog.

To change the order of table fields:

- open the table in [Table Editor](#)<sup>[184]</sup>;
- proceed to the **Fields** tab there;
- right-click a field and select the **Reorder Fields** context menu item;
- edit fields' order using the [Reorder Fields](#)<sup>[190]</sup> dialog.

#### Dropping Fields

- open the table in [Table Editor](#)<sup>[184]</sup>;
- proceed to the **Fields** tab there;
- right-click the field and select the **Drop Field <field\_name>** context menu item, or press the *Del* key;
- confirm dropping in the dialog window.



### 5.4.3.1 Field Editor

**Field Editor** allows you to specify field definition and set field properties. It opens automatically when you create a new field and is available on editing an existing one (see [Create field](#)<sup>[200]</sup> and [Edit field](#)<sup>[200]</sup> for details).

To open a field in **Field Editor**, double-click it in the [DB Explorer](#)<sup>[63]</sup> tree, or use the **Edit Field...** item of the context menu within the [Fields](#)<sup>[188]</sup> tab of [Table Editor](#)<sup>[184]</sup>.

- [Setting field name and type](#)<sup>[202]</sup>
- [Options for domain-based field](#)<sup>[204]</sup>
- [Options for field of standard data type](#)<sup>[206]</sup>
- [Defining array](#)<sup>[207]</sup>
- [Specifying 'COMPUTED BY' expression](#)<sup>[209]</sup>
- [Setting field defaults](#)<sup>[210]</sup>
- [Defining autoincrement](#)<sup>[211]</sup>
- [Setting field checks](#)<sup>[215]</sup>
- [Editing object description](#)<sup>[887]</sup>
- [Viewing DDL definition](#)<sup>[886]</sup>

## 5.4.3.1.1 Setting field name and type

**Column**

Enter a name for the new field, or modify the name of the field being edited. Note that the name of a field must be unique among all the field names in the table.

 **Not Null**

Check this option to specify that the values for the column should never contain a null value. *NOT NULL* affects all INSERT and UPDATE operations on a column.

 **Add to primary key**

Check this option to include the field into the [primary key](#)<sup>[216]</sup>. Note that if a field is included into a primary key, it also gets the **Not Null** attribute enabled.

**Field based on**

This group allows you to select the source type for the field being created/edited. It can be one of existing [domains](#)<sup>[172]</sup>, a standard (built-in) InterBase/Firebird data type (e.g. INTEGER, DATE or CHAR), or a 'COMPUTED BY' expression (if you want to calculate the field value using values of other fields).

 **Domain**

Specifies that the field is based on a domain previously created in the database. If this option is selected, you should set [options for domain-based field](#)<sup>[204]</sup>.

**Standard Data type**

Specifies that the field is based on a standard data type.

If this option is selected, you should set [options for field of standard data type](#)<sup>[206]</sup>.

**'COMPUTED BY' expression**

Specifies that the value of the field's data is calculated from an expression at runtime, and therefore storage space is not allocated in the database.

If this option is selected, you should [specify 'COMPUTED BY' expression](#)<sup>[209]</sup>.

**Support IB6/FireBird syntax**

This option is only available on editing an existing field. Select this option to enable support of InterBase 6.0 / FireBird syntax.

## 5.4.3.1.2 Options for domain-based field

If you select the  *Domain* option of the **Field based on** group indicating that the field being created/edited is based on a [domain](#)<sup>[172]</sup>, you should specify **domain-specific options**.

The screenshot shows a dialog box for configuring a field. The 'Name' field contains 'EMPNO'. Below it are two checked checkboxes: 'Not Null' and 'Add to primary key'. The 'Field based on' section has three radio buttons: 'Domain' (selected), 'Standard data type', and ''COMPUTED BY' expression'. The 'Domain' section includes a 'Domain name' dropdown menu with 'EMPNO' selected, an 'Edit Domain' button, a 'Collation' dropdown menu with 'SMALLINT' selected, and a 'New Domain' button. The 'Domain info' section shows 'SMALLINT'. The 'Autoincrement' section has two checkboxes: 'Autoincrement value' (checked) and 'Identity' (unchecked), with a 'Start with' spinner set to '1'. The 'Use default value' section has two checkboxes: 'Use default value' (unchecked) and 'Set value to' (checked), with a 'Default value' spinner set to '0' and a dropdown menu set to 'NULL'.

**Domain****Domain name**

Use the drop-down list of existing [domains](#)<sup>[172]</sup> to select the domain to be used for the field.

 **Autoincrement value** and  **Identity**

These options are only available if the selected domain is based on a numeric data type. For details see [Defining autoincrement](#)<sup>[211]</sup>.

**Collation**

This setting is only available if the selected domain is based on a string data type. Use the drop-down list to select the collation order to be used for string data stored in the column.

To [edit](#)<sup>[172]</sup> the selected domain using [Domain Editor](#)<sup>[172]</sup>, click the **Edit Domain** button. To [create](#)<sup>[172]</sup> a new domain for the field using [Domain Editor](#)<sup>[172]</sup>, click the **New Domain** button.

**Domain info**

This group allows you to view basic information on the selected domain.

 **Use default value**

Enable this option to specify the value this field will take by default. For details see

[Setting field defaults](#)<sup>210</sup>.

## 5.4.3.1.3 Options for field of standard data type

If you select the  *Standard data type* option of the **Field based on** group indicating that the field being created/edited is based on a standard InterBase/Firebird data type, you should specify **options** for the data type.

The screenshot shows a dialog box for configuring a field. The 'Name' field is 'MODIFIED'. There are checkboxes for 'Not Null' and 'Add to primary key'. The 'Field based on' section has three radio buttons: 'Domain', 'Standard data type' (selected), and ''COMPUTED BY' expression'. The 'Field type' is a dropdown menu showing 'TIME'. The 'Field dimension' section has two spinners: 'Length' and 'Scale', both set to 0. The 'Field character set' section has two dropdown menus: 'Charset' and 'Collation'. The 'Autoincrement' section has two checkboxes: 'Autoincrement value' and 'Identity', both unchecked, and a 'Start with' spinner set to 1. The 'Use default value' section has two checkboxes: 'Use default value' and 'Set value to', both checked. The 'Default value' spinner is set to '00:00:00' and the 'Set value to' dropdown is set to 'NOW'.

**Field type**

Use the drop-down list of ANSI SQL data types to select the one to be applied for the field.

 **Autoincrement value** and  **Identity**

Use these options to setup [autoincrement](#) field properties.

**Field dimension**

For NUMERIC and DECIMAL data types set digit **precision** (digits of precision to store, 1 to 18) and **scale** (number of decimal places that can be stored, 1 to 18) in the appropriate boxes; for CHAR and VARCHAR set **length** (in characters), for BLOB data type set **segment size** and **subtype**.

**Field character set**

Use this group to set the column **character set** and **collation order**.

String (CHAR, VARCHAR, text Blob) columns of InterBase/Firebird can use different character sets. A **character set** defines the symbols that can be entered as text in a column, and it also defines the maximum number of bytes of storage necessary to represent each symbol. A number of **character sets** can be used to store InterBase/Firebird data, and the server allows comparisons according to a variety of **collations**.

The column character set and collation are treated by the server in the following way:

- If both **Character Set** *X* and **Collation** *Y* are specified, then character set *X* and collation *Y* will be applied
- If **Character Set** *X* is specified without **Collation**, then character set *X* and its default collation will be applied
- Otherwise, the database character set (see the [Connection](#)<sup>[116]</sup> section of the [Database Registration Info](#)<sup>[115]</sup> dialog) and its default collation are used

### **Charset**

Use the drop-down list to select the character set for the column.

### **Collation**

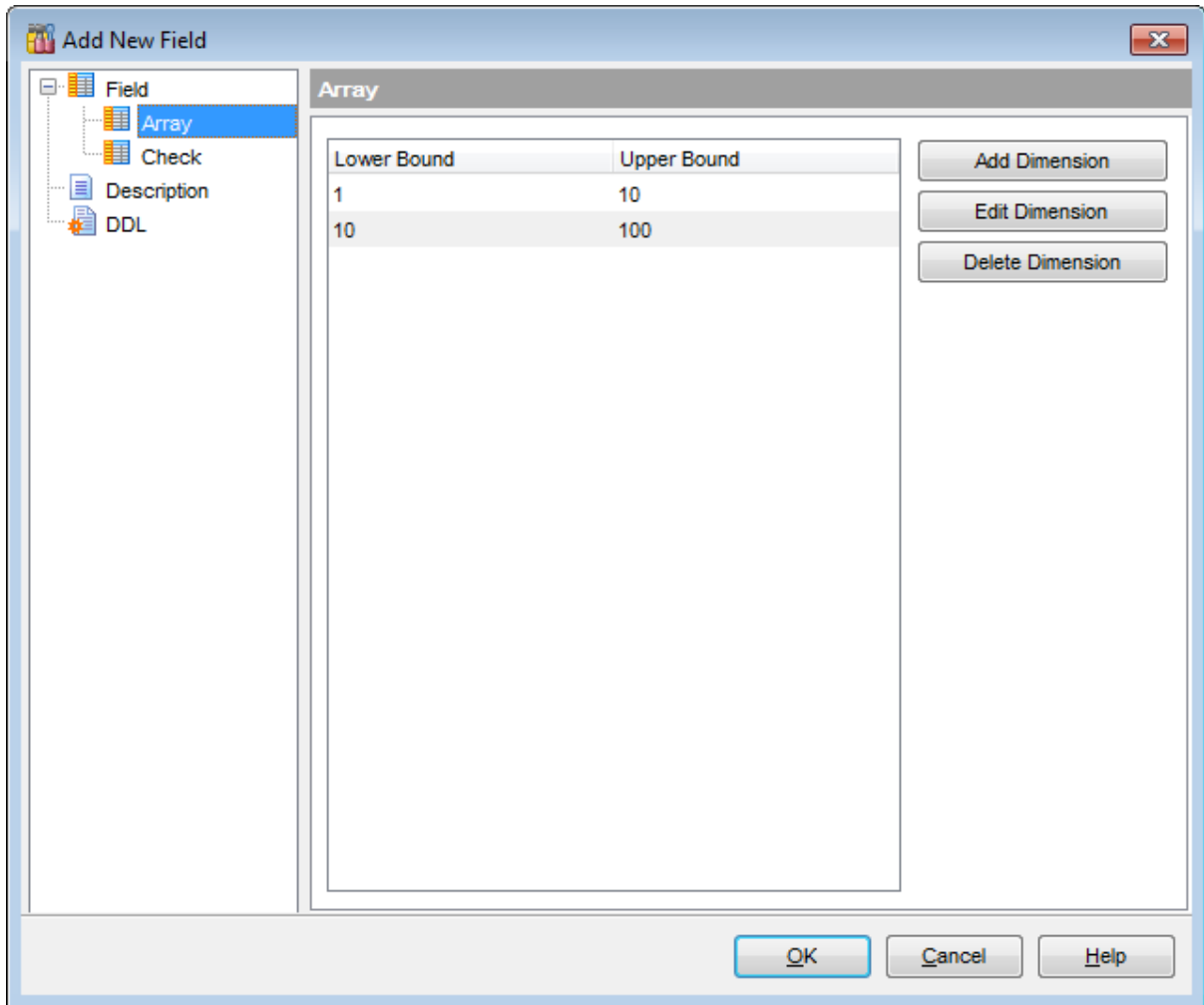
Use the drop-down list to specify the collation order to be used for string data stored in the column.

#### **Use default value**

Enable this option to specify the value this field will take by default. For details see [Setting field defaults](#)<sup>[210]</sup>.

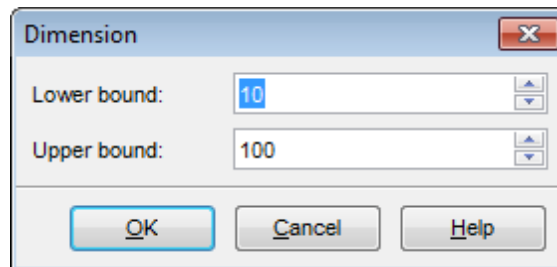
#### 5.4.3.1.3.1 Defining array

A field can be an **array** of one of standard data types (except BLOB). To set array parameters, specify the [data type](#)<sup>[208]</sup> and then select the **Array** tab of the dialog.



To *add/edit* an array dimension, click the **Add Dimension / Edit Dimension** button to call the **Dimension Editor** dialog.

Use the spinner controls of the dialog to set the **lower/upper bounds**.

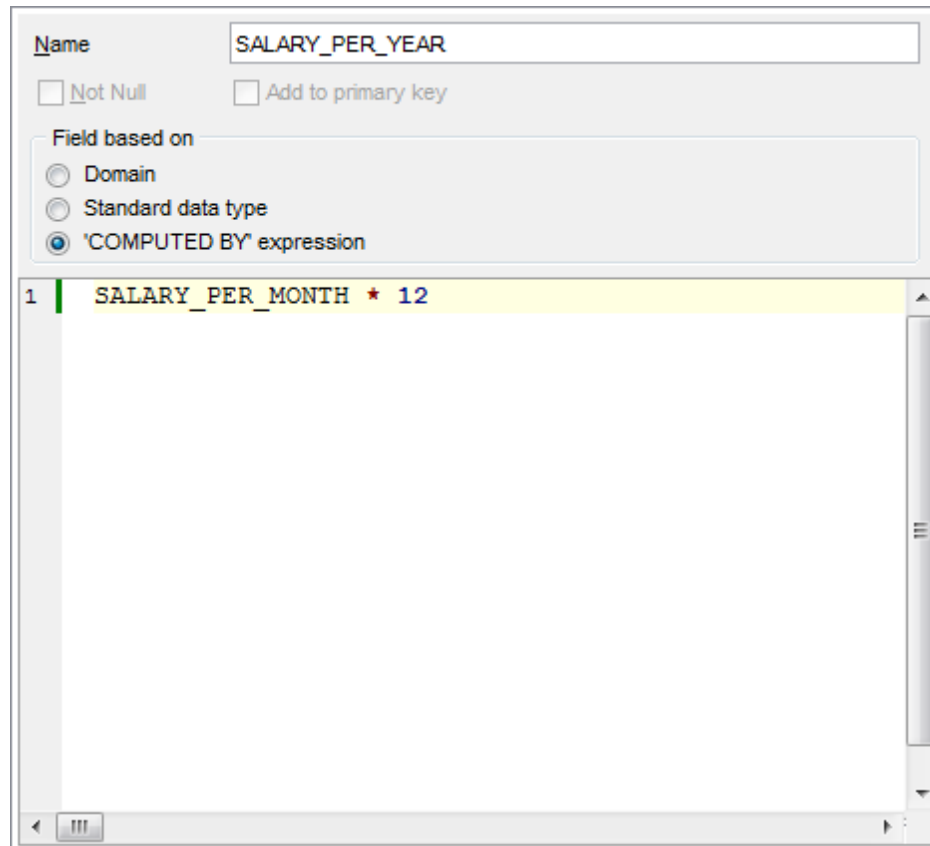


To *delete* a dimension, select one in the list and click the **Delete Dimension** button.



## 5.4.3.1.4 Specifying 'COMPUTED BY' expression

If you select the  'COMPUTED BY' expression option of the **Field based on** group indicating that values of the field being created/edited will be calculated according to an expression, you should specify the '**COMPUTED BY**' expression in the editable area below.



The screenshot shows a dialog box for creating a field. The 'Name' field is set to 'SALARY\_PER\_YEAR'. There are two checkboxes: 'Not Null' and 'Add to primary key', both of which are unchecked. The 'Field based on' group has three radio buttons: 'Domain', 'Standard data type', and 'COMPUTED BY' expression. The 'COMPUTED BY' expression radio button is selected. Below the radio buttons is a text area containing the expression 'SALARY\_PER\_MONTH \* 12'.

Set the expression to be used for calculation, e.g.  
(*OLD\_SALARY + OLD\_SALARY \* PERCENT\_CHANGE / 100*)

Note the following:

- the expression can be any arithmetic expression valid for the data types in the expression;
- any columns referenced in the expression must exist before they can be used in expression;
- the expression cannot reference BLOB columns;
- the expression must return a single value, and cannot return an array.

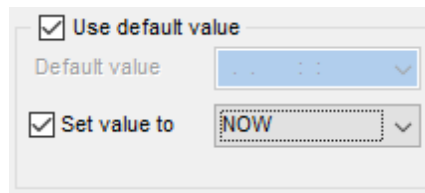
For your convenience the **syntax highlight**, **code folding** and a number of other features for efficient SQL editing are implemented. For details see [Working with query](#)<sup>[333]</sup> and [Using the context menu](#)<sup>[335]</sup>.

## 5.4.3.1.5 Setting field defaults

The **Use default value** group allows you to define the default value for the column, i.e. the value that is entered when no other entry is made

To activate the group, enable the  **Use default value** option.

Use the provided controls to specify the default field value.



The screenshot shows a user interface for setting field defaults. It features two checked checkboxes: 'Use default value' and 'Set value to'. Below 'Use default value' is a 'Default value' spinner control. Below 'Set value to' is a dropdown menu with 'NOW' selected.

**Default value**

Type in the preferable default value for a domain. The data type of the default expression must match the data type of the field:

- for *integral* (*SMALLINT*, *INTEGER*) and *floating-point* (*FLOAT*, *NUMERIC*, *DOUBLE PRECISION*, *DECIMAL*) data types, use the spinner control to specify the necessary value;
- for *string* data types (*CHAR*, *VARCHAR*), use the editable area to input the necessary text;
- for *temporal* data types (*DATE*, *TIME*), type in or click the arrow-down button to call the *Date editor* popup window and set the required date value.

 **Set value to**

Use the drop-down list to select the default value for a field of the selected datatype.

Note that the default value set for the [field based on a domain](#)<sup>[204]</sup> in the **Field Default** group of **Field Editor** will override the corresponding value set for the [domain](#)<sup>[172]</sup>.

#### 5.4.3.1.6 Defining autoincrement

For *SMALLINT* and *INTEGER* fields, **Field Editor** provides you with an ability to specify autoincrement. A [generator](#)<sup>[293]</sup>, a [trigger](#)<sup>[281]</sup> and/or a [procedure](#)<sup>[253]</sup> wrapper can be created to implement the autoincrement property for the field being created/edited.

To *enable* the autoincrement property, select the  **Autoincrement value** option.

- [Defining generator](#)<sup>[211]</sup>
- [Defining trigger](#)<sup>[212]</sup>
- [Defining procedure](#)<sup>[213]</sup>

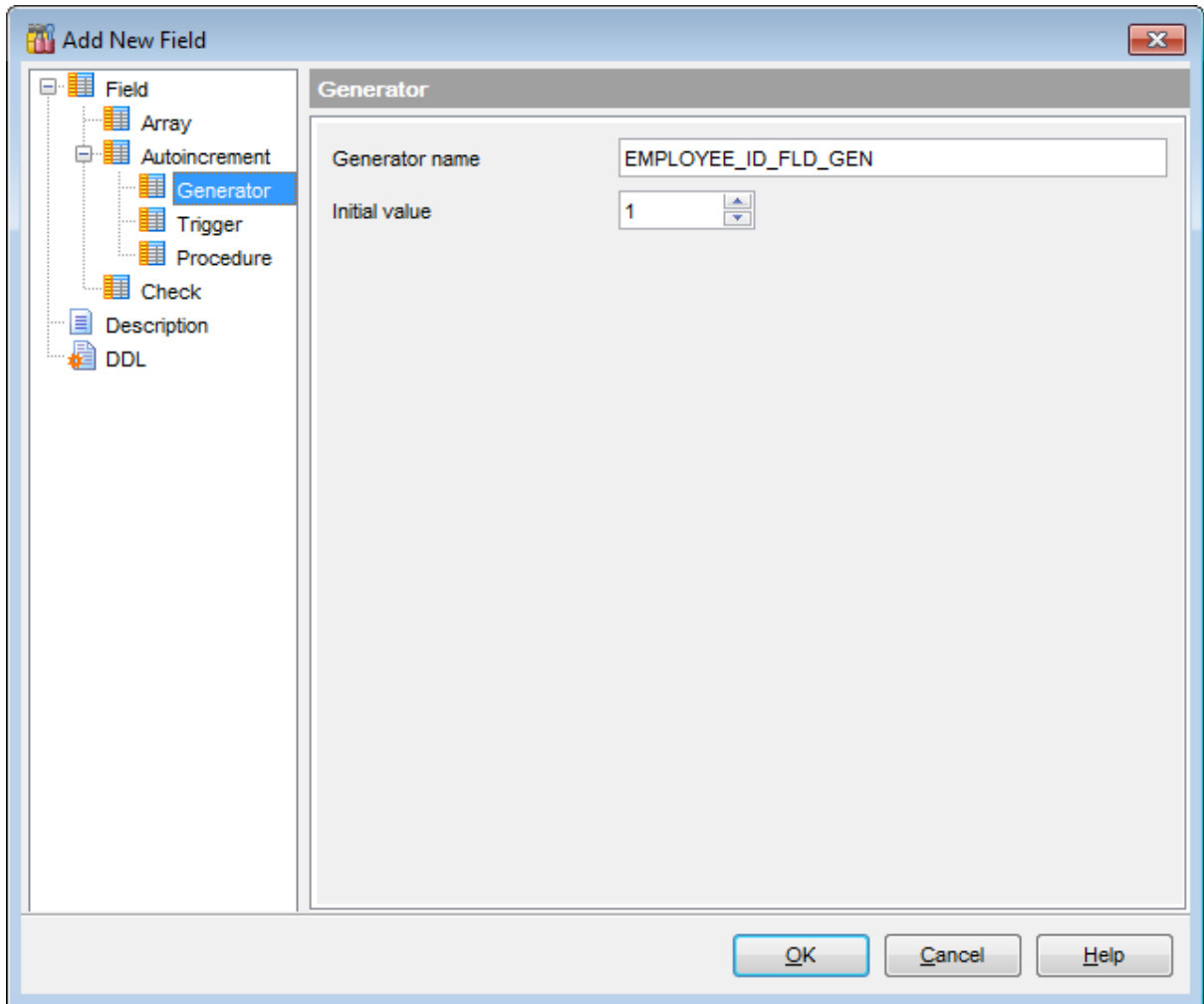
To *disable* the autoincrement property, deselect the  **Autoincrement value** option. The tree on the left will change - the **Disable** node will appear under the **Autoincrement** branch. Switch to the **Disable** page, and select the objects to be dropped with the help of the corresponding flags:

- Drop generator*
- Drop trigger*
- Drop procedure wrapper*

Since Firebird 3.0 it is possible to define the *IDENTITY* field property to enable autoincrement abilities of the field. Select the  **Identity** option to switch on identity and set the initial sequence value in the **Start with** field. Please note that it is not possible to use **Identity** and **Autoincrement value** options at the same time because they provide with the same feature.

#### 5.4.3.1.6.1 Defining generator

The **Generator** page allows you to specify properties of the [generator](#)<sup>[293]</sup> to be created along with the autoincrement field.

**Generator name**

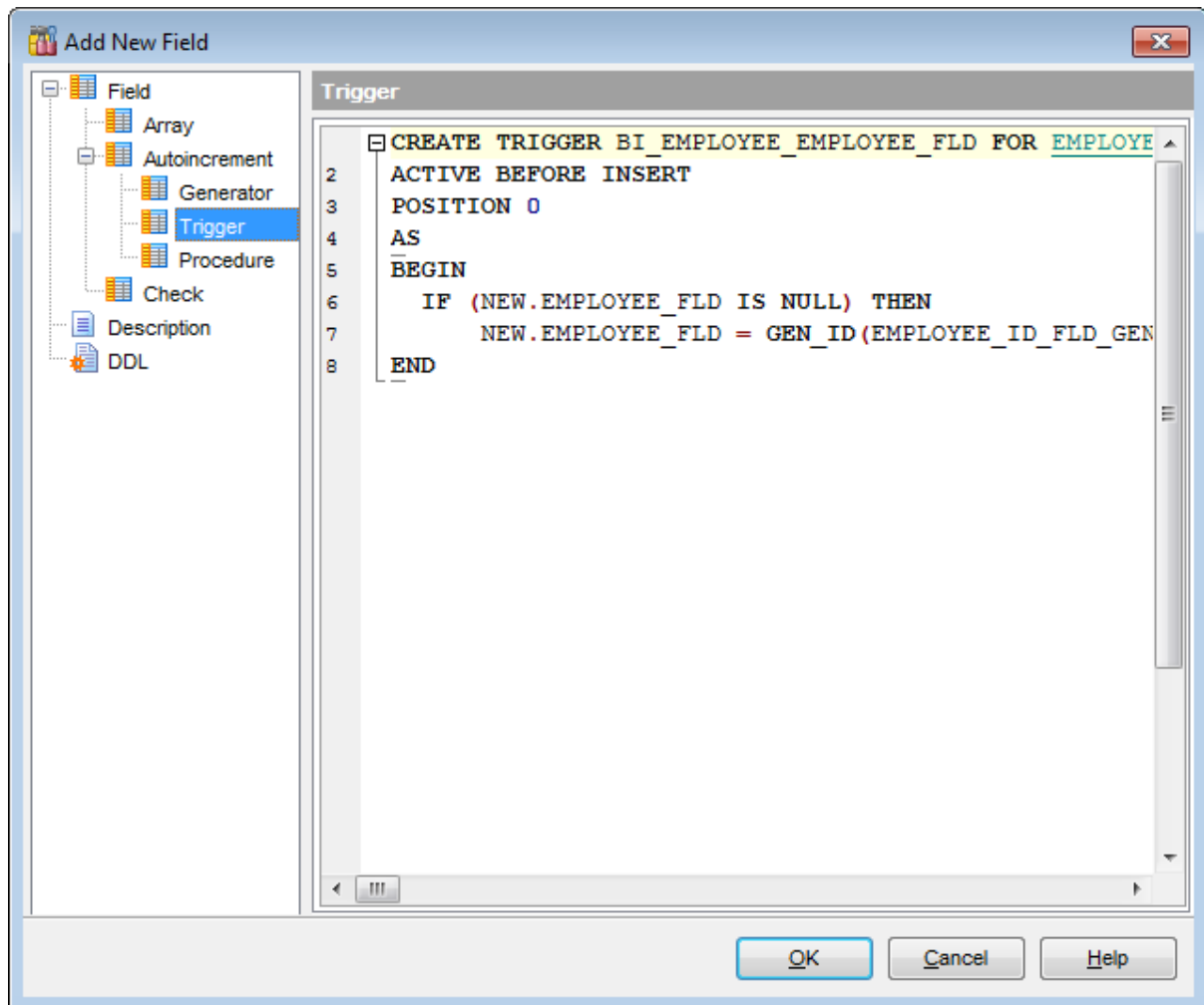
Defines the name of the generator to be created.

**Initial value**

Sets the initial value for the generator.

#### 5.4.3.1.6.2 Defining trigger

The **Trigger** page allows you to specify properties of the [trigger](#) to be created along with the autoincrement field.



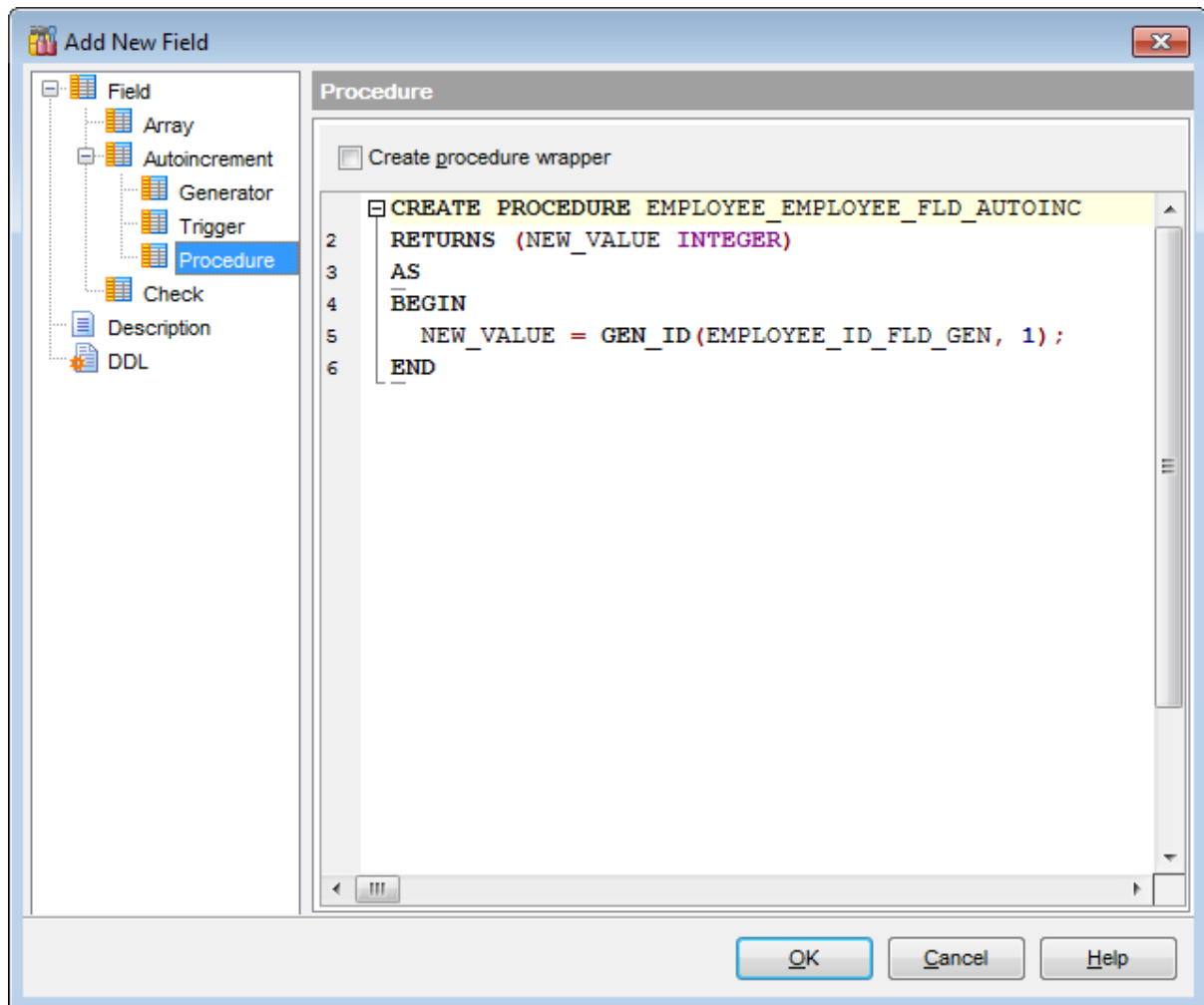
### Trigger definition

A block of statements in InterBase procedure and trigger language bracketed with BEGIN and END.

For your convenience the **syntax highlight**, **code folding** and a number of other features for efficient SQL editing are implemented. For details see [Working with query](#)<sup>[333]</sup> and [Using the context menu](#)<sup>[335]</sup>.

#### 5.4.3.1.6.3 Defining procedure

The **Procedure** page allows you to specify properties of the [procedure](#)<sup>[253]</sup> wrapper to be created along with the autoincrement field.



**Create procedure wrapper**

Enable the option to create a procedure wrapper. Procedure wrapper returns a new generator value and can be used instead of GEN\_ID for a specific generator.

**Procedure definition**

A block of statements in InterBase procedure and trigger language bracketed with BEGIN and END.

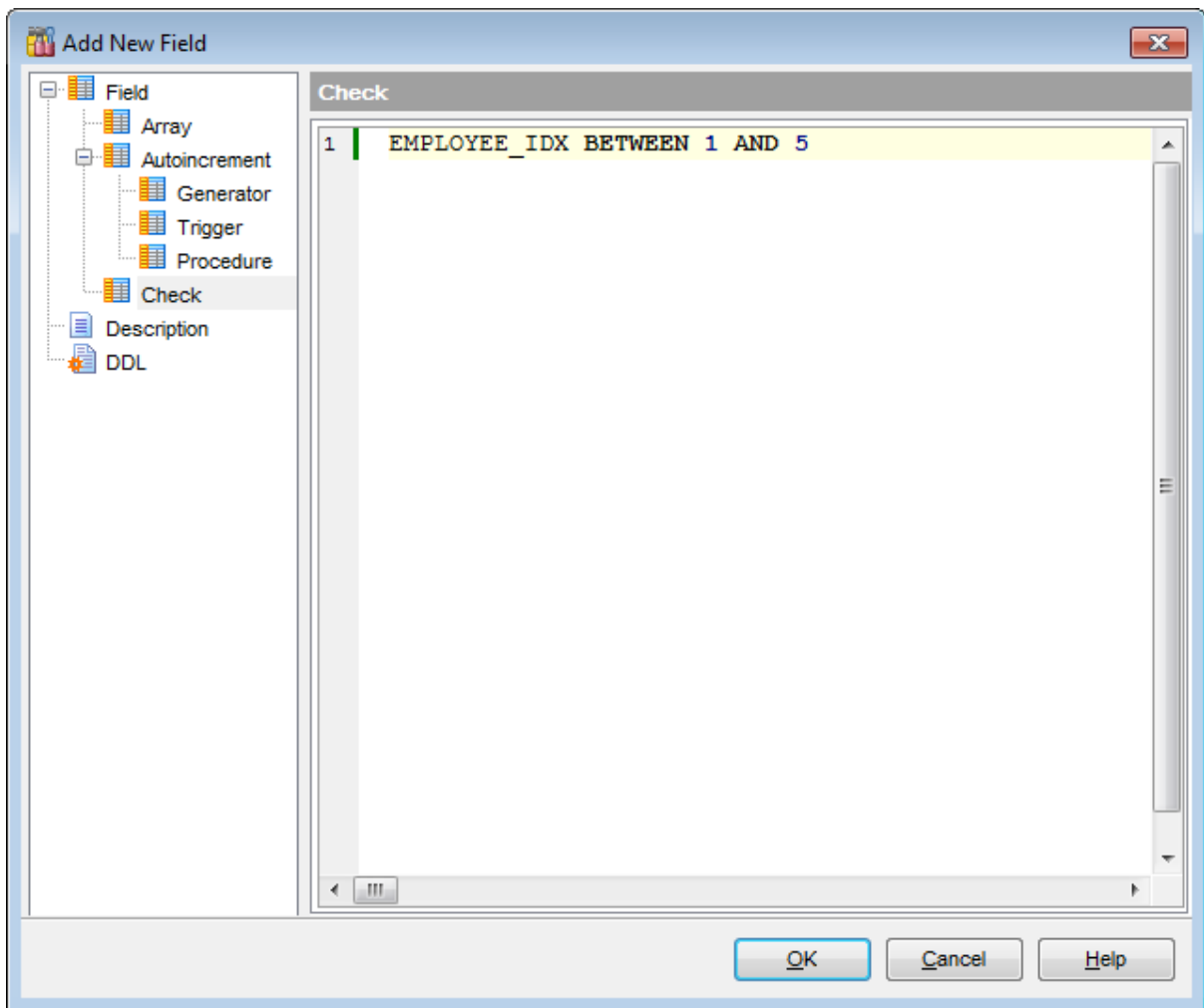
For your convenience the **syntax highlight**, **code folding** and a number of other features for efficient SQL editing are implemented. For details see [Working with query](#)<sup>[333]</sup> and [Using the context menu](#)<sup>[335]</sup>.

## 5.4.3.1.7 Setting field check

The **Check** page allows you to set CHECK constraints, i.e. conditions that must be true for inserts and updates to the field, e.g. `VALUE >= 10` or `MIN_SALARY < MAX_SALARY`. An attempt to enter a new value in the column fails if the value does not meet the specified check condition.

For your convenience the **syntax highlight**, **code folding** and a number of other features for efficient SQL editing are implemented. For details see [Working with query](#)<sup>[333]</sup> and [Using the context menu](#)<sup>[335]</sup>.

Note that the check value set for the [field based on a domain](#)<sup>[204]</sup> in the **Check** section of **Field Editor** will override the corresponding value set for the [domain](#)<sup>[172]</sup>.



See [Checks](#)<sup>[216]</sup> for details.

## 5.4.4 Table Constraints

**Constraints** let you define the way the server automatically enforces the integrity of a database. Constraints define rules regarding the values allowed in columns and are the standard mechanism for enforcing integrity.

A **PRIMARY KEY** constraint designates a column as the Primary key of a table. A composite primary key designates a combination of columns as the primary key.

Table primary keys are managed within the **Constraints | Primary Key** tab of [Table Editor](#)<sup>[184]</sup>.

A **FOREIGN KEY** constraint (also called a *referential integrity constraint*) designates a column as the Foreign key and establishes a relationship between that foreign key and a specified Primary or Unique key called the *referenced key*. A composite Foreign key designates a combination of columns as the foreign key.

Table Foreign keys are managed within the **Constraints | Foreign Keys** tab of [Table Editor](#)<sup>[184]</sup>.

A **CHECK** specifies an expression producing a Boolean result which new or updated rows must satisfy for an insert or update operation to succeed. Expressions evaluating to TRUE or UNKNOWN succeed. Should any row of an insert or update operation produce a FALSE result an error exception is raised and the insert or update does not alter the database. A check constraint specified as a column constraint should reference that column's value only, while an expression appearing in a table constraint may reference multiple columns.

Table checks are managed within the **Constraints | Checks** tab of [Table Editor](#)<sup>[184]</sup>.

A **UNIQUE** constraint prevents insertion or updating of duplicate values into table columns.

Table unique keys are managed within the **Constraints | Uniques** tab of [Table Editor](#)<sup>[184]</sup>.

### Creating Primary Keys

- open the table in [Table Editor](#)<sup>[184]</sup>;
- proceed to the **Constraints** tab, and then to the **Primary Key** tab there;
- right-click the tab area and select the **New Primary Key...** context menu item, or press the *Ins* key;
- define the primary key properties using the [Constraints Editor](#)<sup>[219]</sup> dialog.

### Editing Primary Keys

To edit an existing primary key:

- open the table in [Table Editor](#)<sup>[184]</sup>;
- proceed to the **Constraints** tab, and then to the **Primary Key** tab there;
- right-click the primary key and select the **Edit Primary Key <PK\_name>** context menu item, or simply double-click the primary key;
- edit the primary key properties using the [Constraints Editor](#)<sup>[219]</sup> dialog.

To change the name of a primary key:

- open the table in [Table Editor](#)<sup>[184]</sup>;
- proceed to the **Constraints** tab, and then to the **Primary Key** tab there;
- right-click the primary key to rename and select the **Rename Primary Key <PK\_name>...** item from the context menu;



- edit the primary key name using the **Rename Object...** dialog.

#### Dropping Primary Keys

- open the table in [Table Editor](#)<sup>[184]</sup>;
- proceed to the **Constraints** tab, and then to the **Primary Key** tab there;
- right-click the primary key and select the **Drop Primary Key <PK\_name>** context menu item, or press the *Del* key;
- confirm dropping in the dialog window.

#### Creating Foreign Keys

- open the table in [Table Editor](#)<sup>[184]</sup>;
- proceed to the **Constraints** tab, and then to the **Foreign Keys** tab there;
- right-click the tab area and select the **New Foreign Key...** context menu item, or press the *Ins* key;
- define the Foreign key properties using the [Constraints Editor](#)<sup>[219]</sup> dialog.

#### Editing Foreign Keys

To edit an existing Foreign key:

- open the table in [Table Editor](#)<sup>[184]</sup>;
- proceed to the **Constraints** tab, and then to the **Foreign Keys** tab there;
- right-click the Foreign key and select the **Edit Foreign Key <FK\_name>...** context menu item, or simply double-click the Foreign key;
- edit the Foreign key properties using the [Constraints Editor](#)<sup>[219]</sup> dialog.

To change the name of a Foreign key:

- open the table in [Table Editor](#)<sup>[184]</sup>;
- proceed to the **Constraints** tab, and then to the **Foreign Keys** tab there;
- right-click the Foreign key to rename and select the **Rename Foreign Key <FK\_name>...** item from the context menu;
- edit the Foreign key name using the **Rename Object...** dialog.

#### Dropping Foreign Keys

- open the table in [Table Editor](#)<sup>[184]</sup>;
- proceed to the **Constraints** tab, and then to the **Foreign Keys** tab there;
- right-click the Foreign key and select the **Drop Foreign Key <FK\_name>** context menu item, or press the *Del* key;
- confirm dropping in the dialog window.

#### Creating Checks

- open the table in [Table Editor](#)<sup>[184]</sup>;
- proceed to the **Constraints** tab, and then to the **Checks** tab there;
- right-click the tab area and select the **New Check...** context menu item, or press the *Ins* key;
- define the check properties using the [Constraints Editor](#)<sup>[219]</sup> dialog.

#### Editing Checks

To edit an existing check:

- open the table in [Table Editor](#)<sup>[184]</sup>;
- proceed to the **Constraints** tab, and then to the **Checks** tab there;
- right-click the check and select the **Edit Check <check\_name>...** context menu item, or simply double-click the check;
- edit the check properties using the [Constraints Editor](#)<sup>[219]</sup> dialog.

To change the name of a check:

- open the table in [Table Editor](#)<sup>[184]</sup>;

- proceed to the **Constraints** tab, and then to the **Checks** tab there;
- right-click the check to rename and select the **Rename Check <check\_name>...** item from the context menu;
- edit the check name using the **Rename Object...** dialog.

#### Dropping Checks

- open the table in [Table Editor](#)<sup>[184]</sup>;
- proceed to the **Constraints** tab, and then to the **Checks** tab there;
- right-click the check and select the **Drop Check <check\_name>** context menu item, or press the *Del* key;
- confirm dropping in the dialog window.

#### Creating Unique Keys

- open the table in [Table Editor](#)<sup>[184]</sup>;
- proceed to the **Constraints** tab, and then to the **Uniques** tab there;
- right-click the tab area and select the **New Unique...** context menu item, or press the *Ins* key;
- edit the unique key properties using the [Constraints Editor](#)<sup>[219]</sup> dialog.

#### Editing Unique Keys

To edit an existing unique key:

- open the table in [Table Editor](#)<sup>[184]</sup>;
- proceed to the **Constraints** tab, and then to the **Uniques** tab there;
- right-click the unique key and select the **Edit Unique <unique\_name>...** context menu item, or simply double-click the unique key;
- edit the unique key properties using the [Constraints Editor](#)<sup>[219]</sup> dialog.

To change the name of a unique key:

- open the table in [Table Editor](#)<sup>[184]</sup>;
- proceed to the **Constraints** tab, and then to the **Uniques** tab there;
- right-click the unique key to rename and select the **Rename Unique <unique\_name>...** item from the context menu;
- edit the unique key name using the **Rename Object...** dialog.

#### Dropping Unique Keys

- open the table in [Table Editor](#)<sup>[184]</sup>;
- proceed to the **Constraints** tab, and then to the **Uniques** tab there;
- right-click the unique key and select the **Drop Unique <unique\_name>** context menu item, or press the *Del* key;
- confirm dropping in the dialog window.

#### 5.4.4.1 Constraints Editor

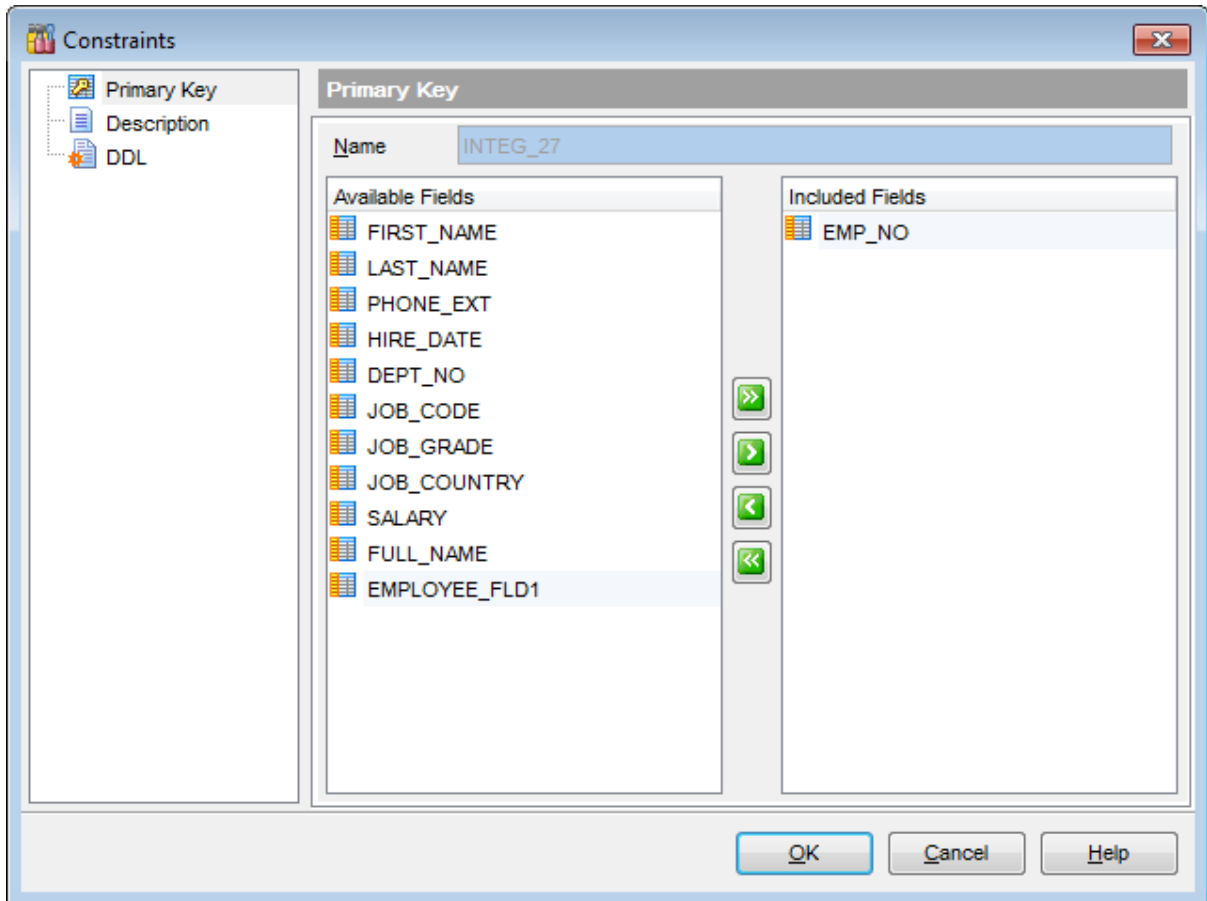
**Constraints Editor** is a tool for working with [table constraints](#)<sup>[216]</sup>. It opens automatically when you create a new constraint and is available on editing an existing one (see [Create Primary Key](#)<sup>[216]</sup>, [Edit Primary Key](#)<sup>[216]</sup>, [Create Foreign Key](#)<sup>[217]</sup>, [Edit Foreign Key](#)<sup>[217]</sup>, [Create Unique Key](#)<sup>[218]</sup>, [Edit Unique Key](#)<sup>[218]</sup>, [Create Check](#)<sup>[217]</sup>, [Edit Check](#)<sup>[217]</sup> for details).

To open **Constraints Editor** for viewing/editing *primary key*, *foreign key*, *check*, *unique* constraints of a table, open the table in [Table Editor](#)<sup>[184]</sup>, proceed the **Constraints** tab, then to the sub-tab of the constraint you need, and double-click it in the list.

- [Creating/editing primary key](#)<sup>[220]</sup>
- [Creating/editing foreign key](#)<sup>[221]</sup>
- [Creating/editing check](#)<sup>[223]</sup>
- [Creating/editing unique key](#)<sup>[224]</sup>
- [Editing object description](#)<sup>[887]</sup>
- [Viewing DDL definition](#)<sup>[886]</sup>





## 5.4.4.1.1 Creating/editing primary key

The **Primary Key** section of the **Constraints** dialog allows you to specify PRIMARY KEY constraint definition.

**Name**

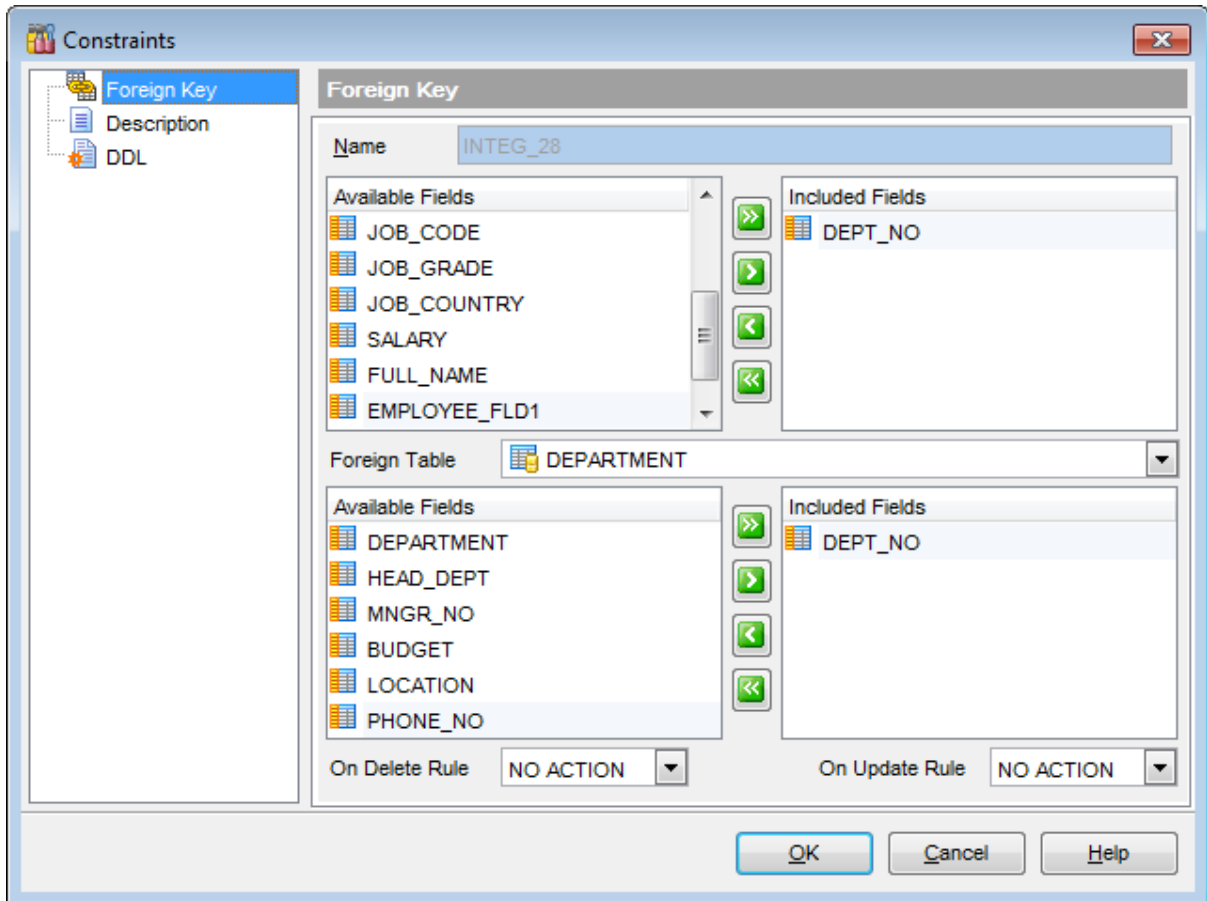
Name of the PRIMARY KEY constraint; the constraint name must be unique within the table.

**Fields for primary key**

To include field(s) in the primary key, you need to move it from the **Available Fields** list to the **Included Fields** list. Use the     buttons or drag-and-drop operations to move the fields from one list to another.





## 5.4.4.1.2 Creating/editing foreign key

The **Foreign Key** section of the **Constraints** dialog allows you to specify FOREIGN KEY constraint definition.

**Name**

Name of the FOREIGN KEY constraint; the constraint name must be unique within the table.





The **Table Fields** area allows you to select Foreign key field(s).

To select a field, you need to move it from the **Available Fields** list to the **Included Fields** list. Use the     buttons or drag-and-drop operations to move the fields from one list to another.

**Foreign Table**

Use the drop-down list to select the foreign table.

The **Foreign Table Fields** area allows you to select the field(s) of the Foreign table.

To select a field, you need to move it from the **Available Fields** list to the **Included Fields** list. Use the     buttons or drag-and-drop operations to move the fields from one list to another.

If the referenced column(s) are changed frequently, it may be wise to add an index to the foreign key column so that referential actions associated with the foreign key column

were performed more efficiently. See [Indexes](#)<sup>[225]</sup> for details.

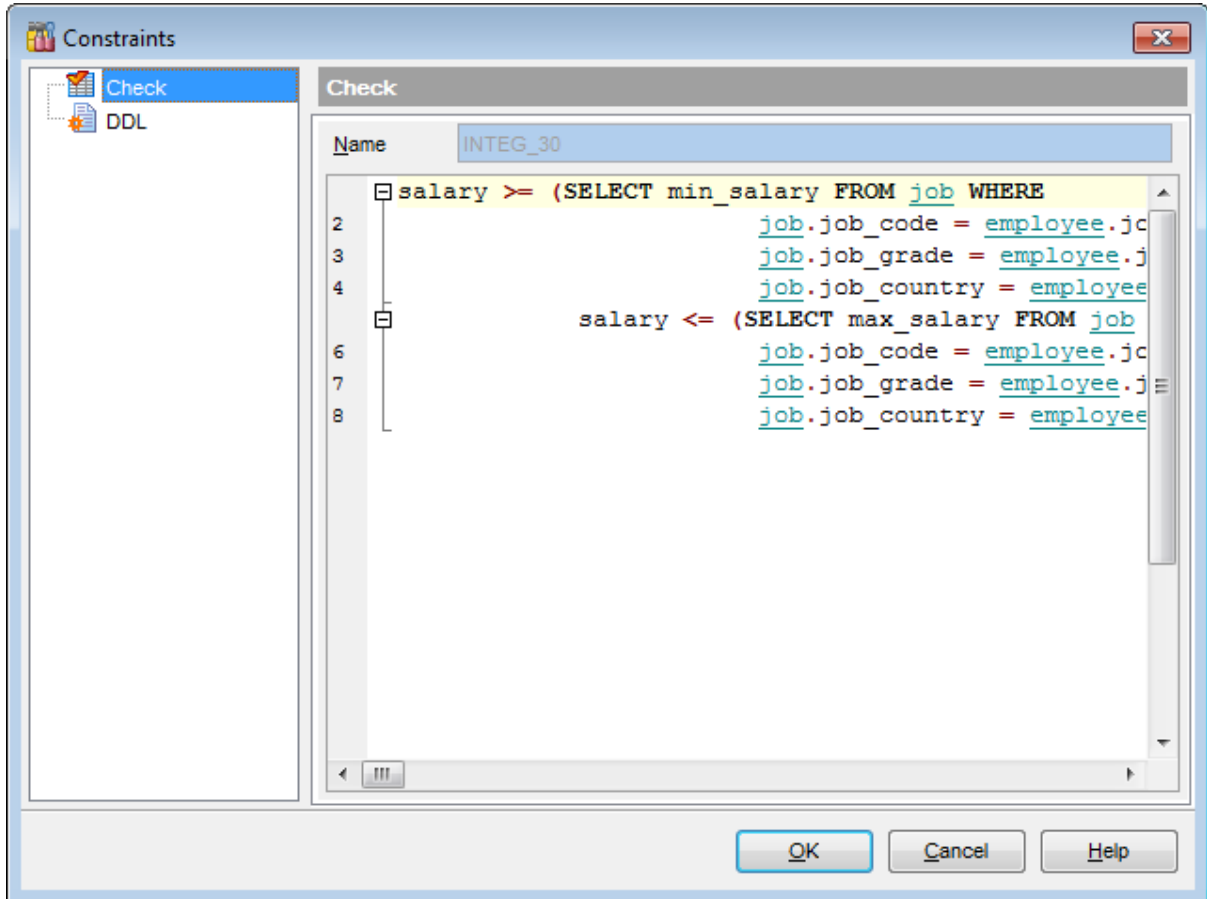
**On Delete rule / On Update rule**

Set rules to change a foreign key whenever the referenced primary key changes.

- *NO ACTION*  
Does not change the foreign key column(s); may cause the primary key update to fail due to referential integrity checks. This is the default action.
- *CASCADE*  
Delete any rows referencing the deleted row, or update the value of the referencing column to the new value of the referenced column, respectively.
- *SET NULL*  
Set the referencing column(s) to NULL.
- *SET DEFAULT*  
Set the referencing column(s) to their default values in effect when the referential integrity constraint is defined. When the default for a foreign column changes after the referential integrity constraint is defined, the change does not have an effect on the default value used in the referential integrity constraint.

## 5.4.4.1.3 Creating/editing check

The **Check** section of the **Constraints** dialog allows you to specify CHECK constraint definition.

**Name**

Name of the CHECK constraint; the constraint name must be unique within the table.

**Check Constraint Text**

Set CHECK constraints, i.e. conditions that must be true for inserts and updates to the table, e.g.

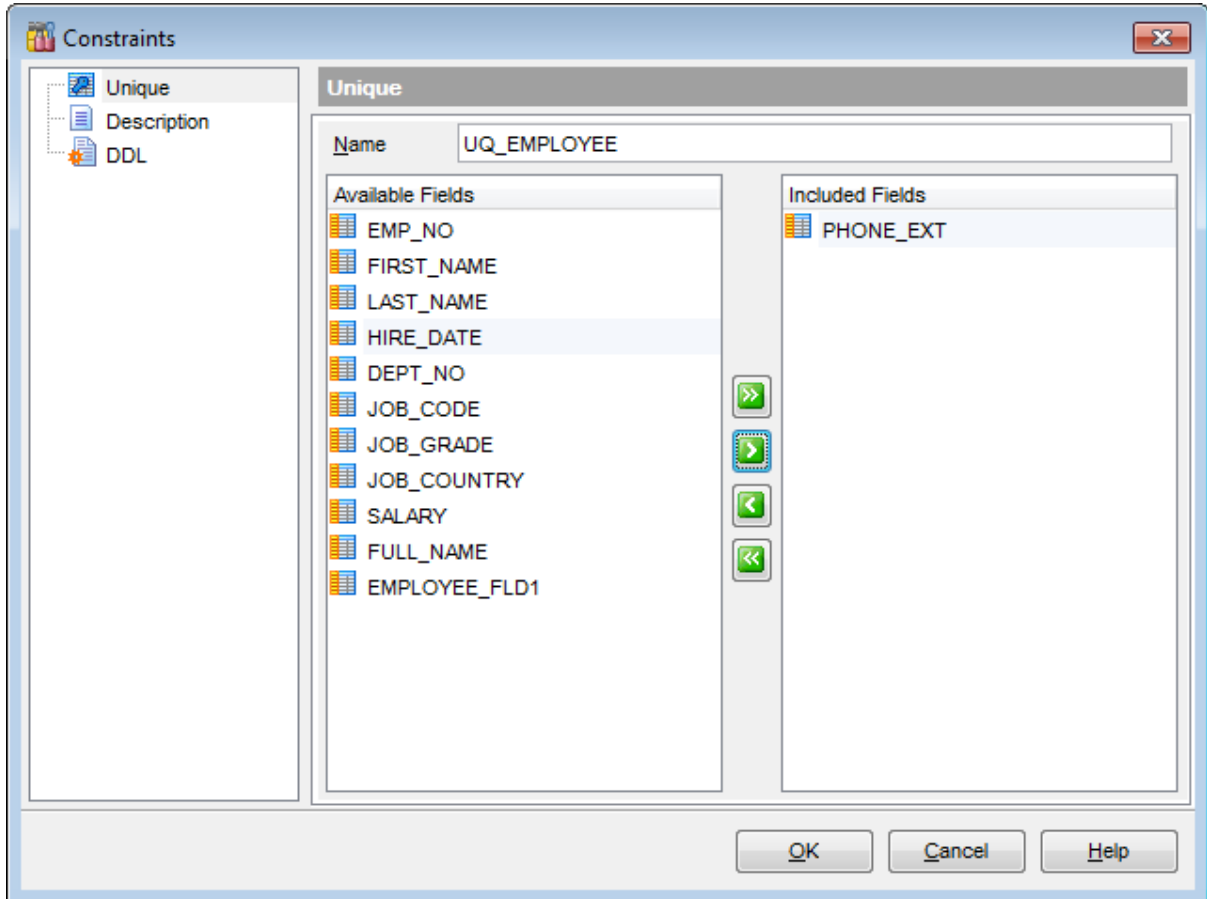
*PERCENT\_CHANGE BETWEEN -50 AND 50*

An attempt to enter a new value in the table fails if the value does not meet the specified check condition.

For your convenience the **syntax highlight**, **code folding** and a number of other features for efficient SQL editing are implemented. For details see [Working with query](#)<sup>[333]</sup> and [Using the context menu](#)<sup>[335]</sup>.





## 5.4.4.1.4 Creating/editing unique key

The **Unique** section of the **Constraints** dialog allows you to specify UNIQUE constraint definition.

**Name**

Name of the UNIQUE constraint; the constraint name must be unique within the table.

**Fields for unique key**

To include field(s) in the unique key, you need to move it from the **Available Fields** list to the **Included Fields** list. Use the     buttons or drag-and-drop operations to move the fields from one list to another.



## 5.4.5 Indices

Table indexes are managed within the **Indices** tab of [Table Editor](#)<sup>[184]</sup>.

### Creating Indices

- open the table in [Table Editor](#)<sup>[184]</sup>;
- proceed to the **Indices** tab there;
- right-click the tab area and select the **New Index...** context menu item, or press the *Ins* key;
- define the index properties using the [Index Editor](#)<sup>[226]</sup> dialog.

### Editing Indices

To edit an existing table index:

- open the table in [Table Editor](#)<sup>[184]</sup>;
- proceed to the **Indices** tab there;
- right-click the index and select the **Edit Index <index\_name>...** context menu item, or simply double-click the index;
- edit the index properties using the [Index Editor](#)<sup>[226]</sup> dialog.

To change the name of an index:

- open the table in [Table Editor](#)<sup>[184]</sup>;
- proceed to the **Indices** tab there;
- right-click the index to rename and select the **Rename Index <index\_name>...** item from the context menu;
- edit the index name using the **Rename Object...** dialog.

### Dropping Indices

- open the table in [Table Editor](#)<sup>[184]</sup>;
- proceed to the **Indices** tab there;
- right-click the index and select the **Drop Index <index\_name>** context menu item, or press the *Del* key;
- confirm dropping in the dialog window.

#### 5.4.5.1 Index Editor

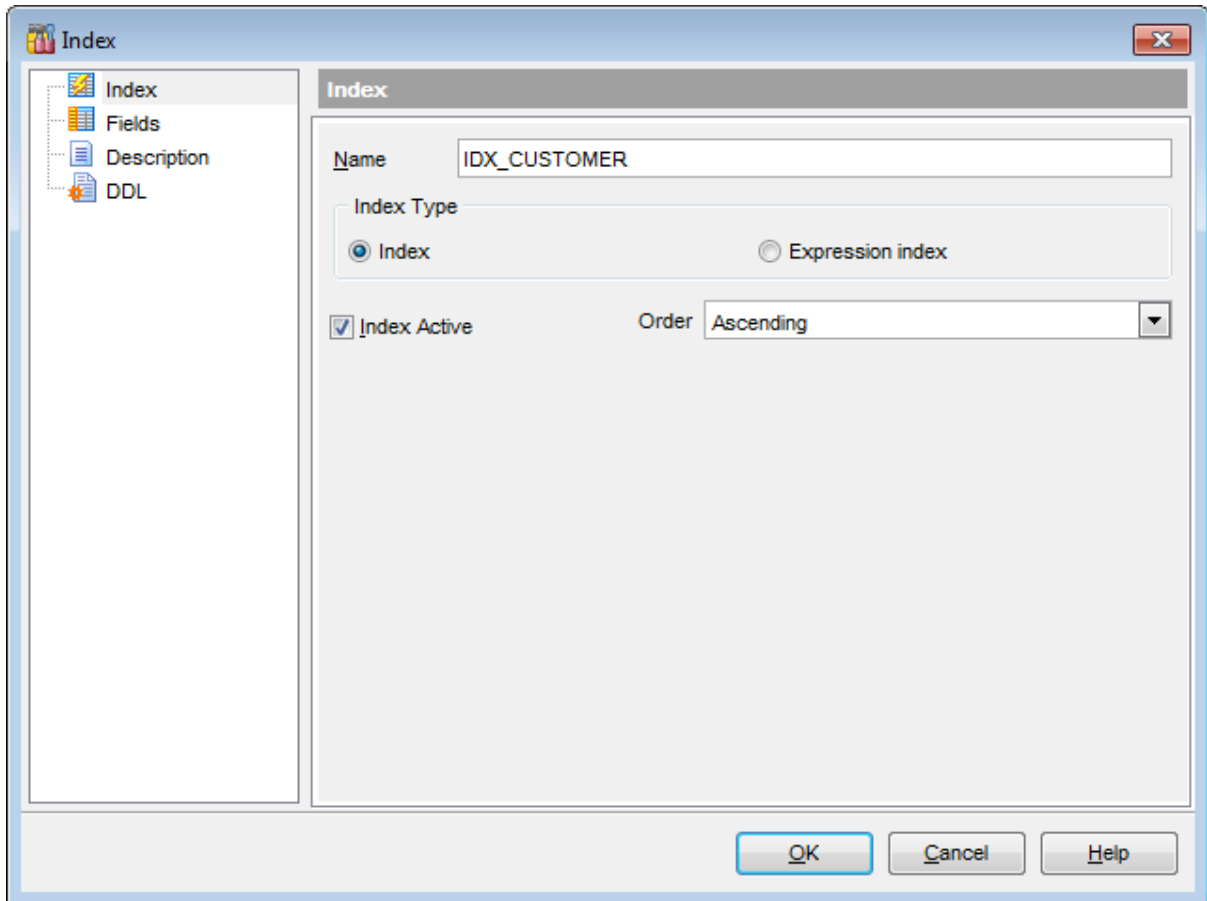
**Index Editor** allows you to specify index definition and set index properties. It opens automatically when you create a new index and is available on editing an existing one (see [Create Index](#)<sup>[225]</sup> and [Edit Index](#)<sup>[225]</sup> for details).

To open an index in **Index Editor**, double-click it in the [DB Explorer](#)<sup>[63]</sup> tree, or use the **Edit Index...** item of the context menu within the [Indexes](#)<sup>[196]</sup> tab of [Table Editor](#)<sup>[184]</sup>.

- [Specifying index properties](#)<sup>[227]</sup>
- [Selecting index fields](#)<sup>[228]</sup>
- [Editing index description](#)<sup>[887]</sup>
- [Viewing DDL definition](#)<sup>[886]</sup>

## 5.4.5.1.1 Specifying index properties

Use the **Index** page of the **Index Editor** dialog to specify common index properties.

**Name**

Specifies index name (if necessary, you can edit the one assigned by default).

Use the **Index type** section to define the created index type:

**Index**

This option indicates that the index is defined by a field or a number of fields.

**Expression Index**

This option indicates that index is defined by the expression from the [Expression value](#) <sup>228</sup> tab.

**Index Active**

Enables/disables the index immediately after it is created or changes applied.





**Order**

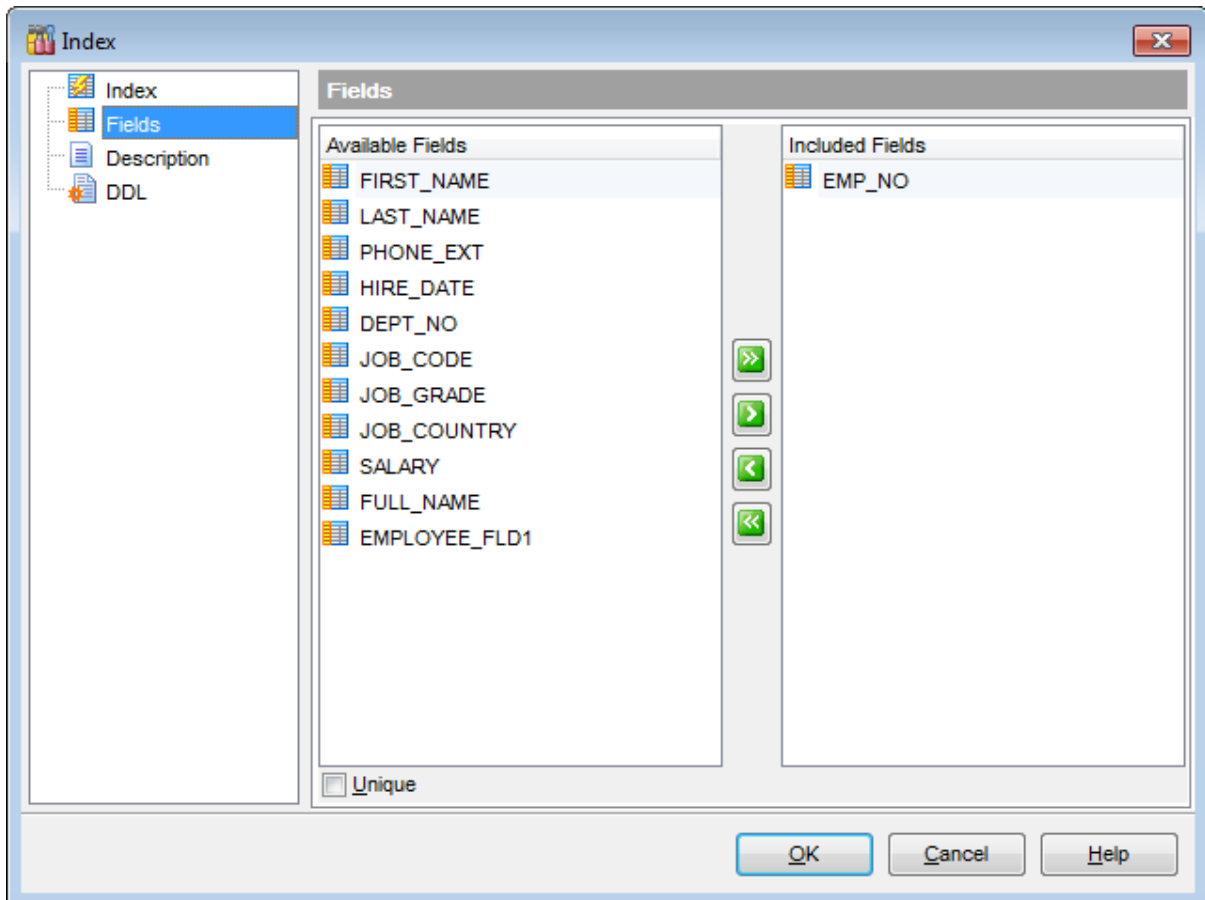
Use the drop-down list to select whether the *ascending* or *descending* sorting order should be used for index columns.

## 5.4.5.1.2 Selecting index fields

Use the **Fields** page of the **Index Editor** dialog to select the fields for the index.

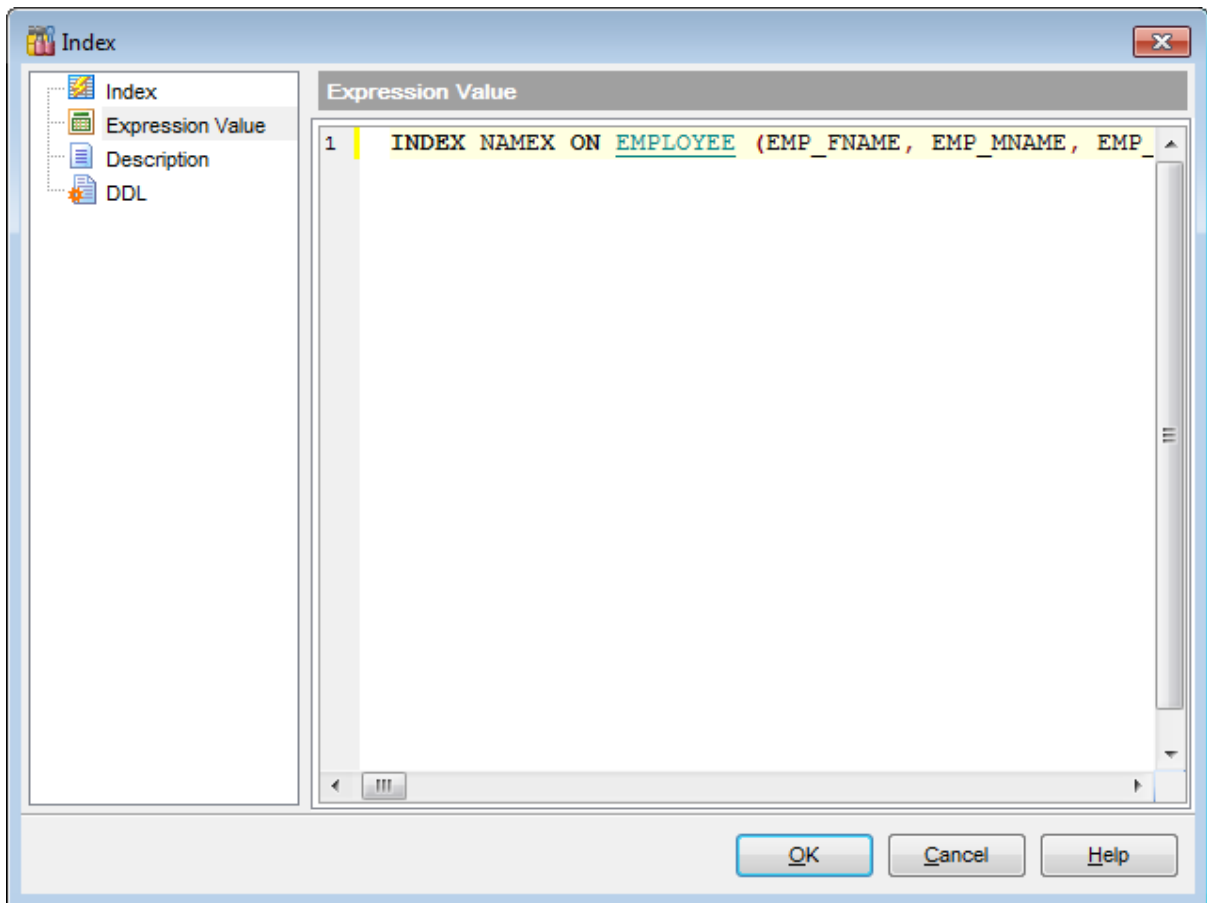
**Fields for index**

To include field(s) in the index, you need to move it from the **Available Fields** list to the **Selected Fields** list. Use the     buttons or drag-and-drop operations to move the fields from one list to another.

 **Unique**

Check this option to prevent inserting or updating duplicate values in indexed columns.

If the  **Expression Index** option was selected at the [Index](#)<sup>[227]</sup> tab then you need to define the expression at the **Expression Value** tab.



## 5.4.6 Triggers

Table triggers are managed within the **Triggers** tab of the [Table Editor](#)<sup>[184]</sup>.

### Creating Triggers

- open the table in [Table Editor](#)<sup>[184]</sup>;
- proceed to the **Triggers** tab there;
- right-click the tab area and select the **New Trigger...** context menu item, or press the *Ins* key;
- edit the trigger properties using the [Trigger Editor](#)<sup>[231]</sup> dialog.

### Editing Triggers

To edit an existing trigger:

- open the table in [Table Editor](#)<sup>[184]</sup>;
- proceed to the **Triggers** tab there;
- right-click the trigger and select the **Edit Trigger <trigger\_name>...** context menu item, or simply double-click the trigger;
- edit the trigger properties using the [Trigger Editor](#)<sup>[231]</sup> dialog.

To change the name of a trigger:

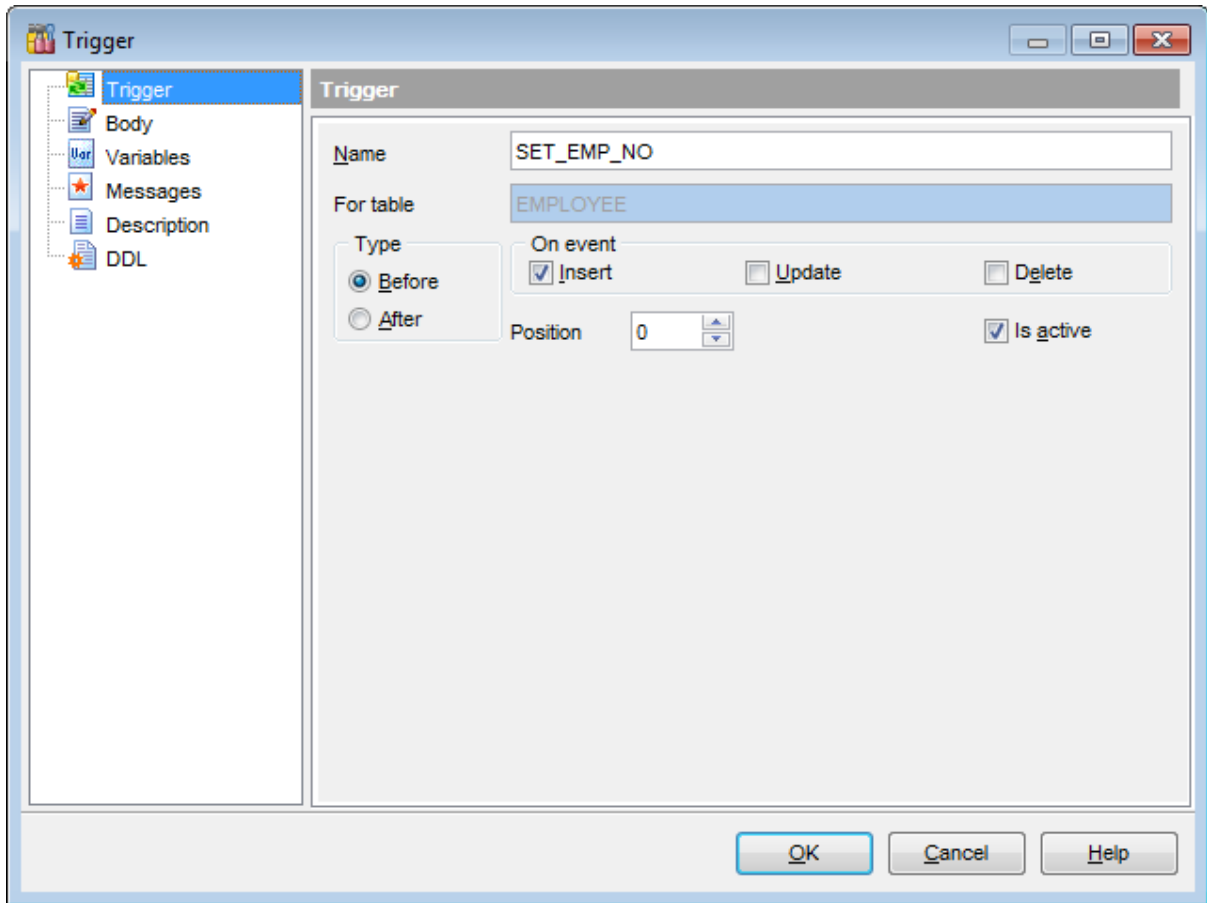
- open the table in [Table Editor](#)<sup>[184]</sup>;
- proceed to the **Triggers** tab there;
- right-click the trigger to rename and select the **Rename Trigger <trigger\_name>...** item from the context menu;
- edit the trigger name using the **Rename Object...** dialog.

### Dropping Triggers

- open the table in [Table Editor](#)<sup>[184]</sup>;
- proceed to the **Triggers** tab there;
- right-click the trigger and select the **Drop Trigger <trigger\_name>** context menu item, or press the *Del* key;
- confirm dropping in the dialog window.

#### 5.4.6.1 Trigger Editor

**Trigger Editor** allows you to set properties for a new trigger or edit an existing trigger.



For details see [Trigger Editor](#)<sup>[287]</sup> | [Creating/editing trigger](#)<sup>[285]</sup>, [Managing trigger messages](#)<sup>[288]</sup>.

## 5.4.7 Creating table-based objects

### 5.4.7.1 View from Table

**SQL Manager for InterBase/Firebird** provides you with an ability to create an updatable view from a table and set its properties using the **Create View from Table** dialog.

To open the dialog, right-click the table in DB Explorer and select the **Tasks | Create View... context menu**<sup>[56]</sup> item, or open the table in **Table Editor**<sup>[184]</sup> and use the **Create View** item of the **Navigation bar**<sup>[185]</sup>.

- [Options](#)<sup>[233]</sup>
- [View info](#)<sup>[234]</sup>
- [View triggers](#)<sup>[235]</sup>

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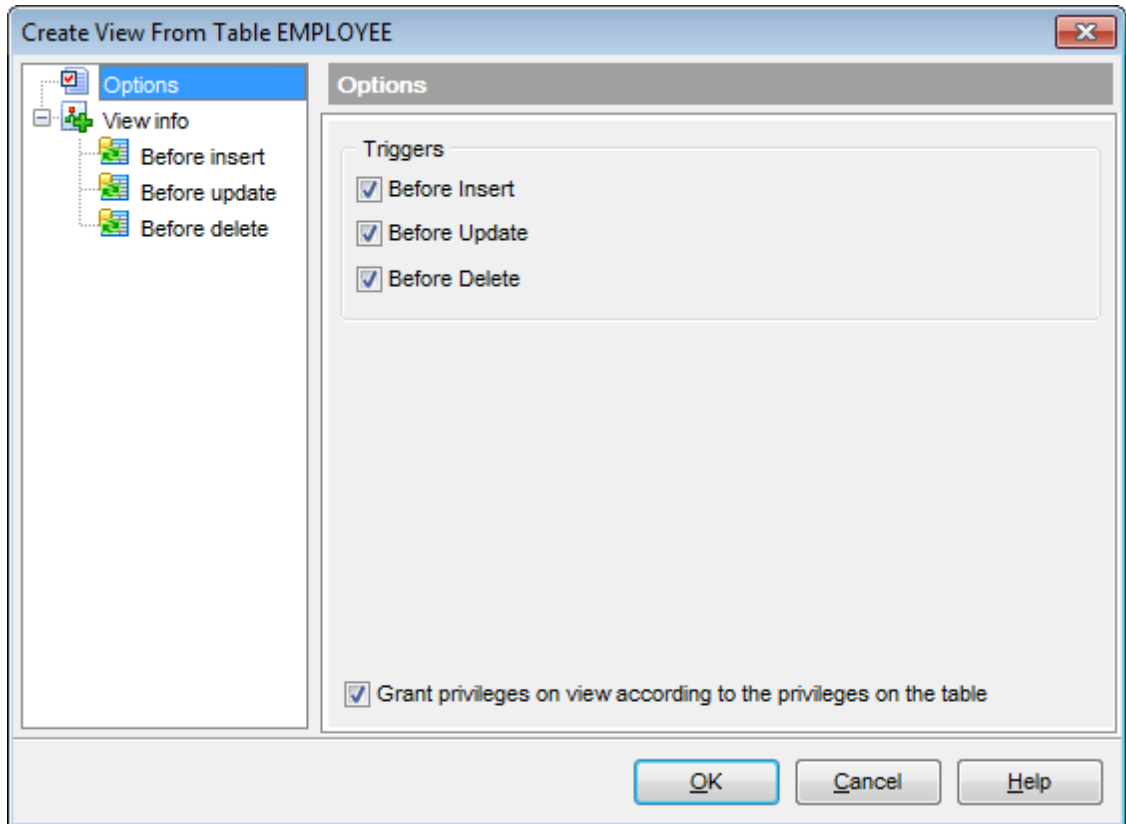
#### See also:

[SIUD Procedures from Table](#)<sup>[236]</sup>



## 5.4.7.1.1 Options

The **Options** section of the **Create View from Table** dialog allows you to specify common options for the view being created.

**Triggers**

Select [trigger](#)<sup>[230]</sup> type(s) to be created for the view with the help of the corresponding flags:

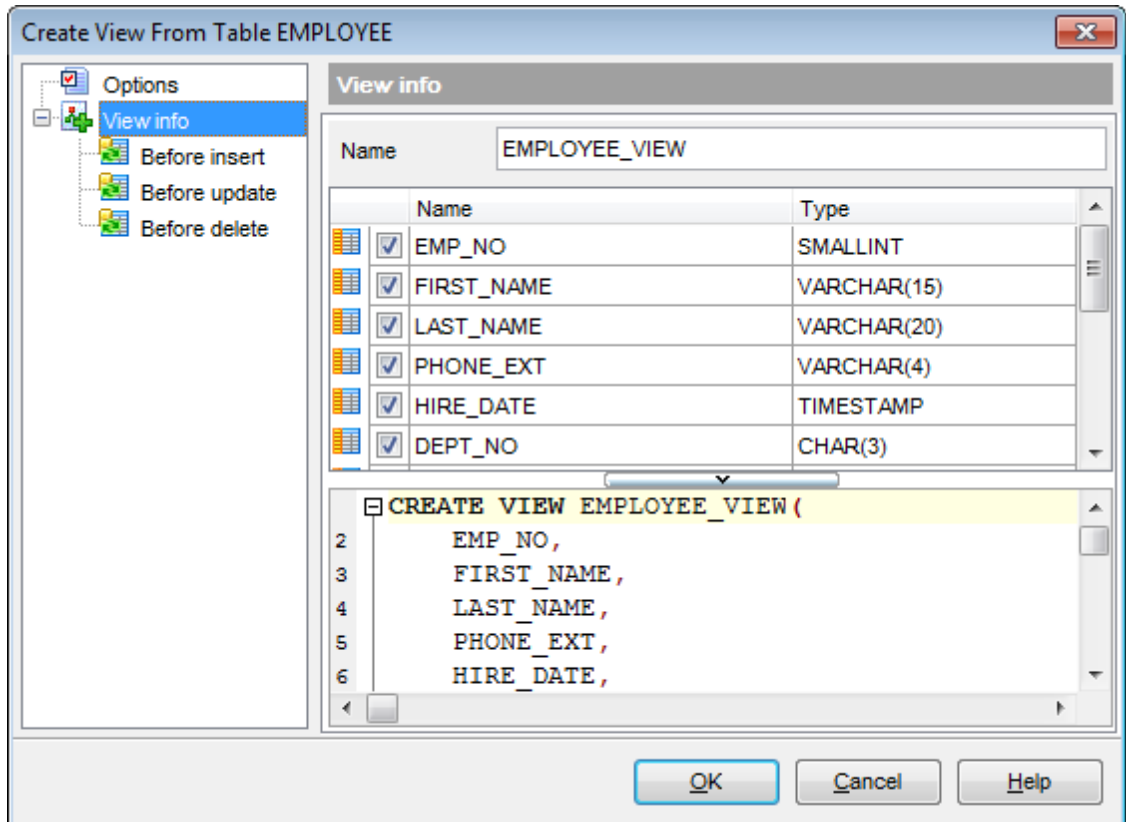
- Before Insert*
- Before Update*
- Before Delete*

 **Grant privileges on view according to the privileges on the table**

Enable the option [grant](#)<sup>[728]</sup> the same privileges on the view as granted on the source table.

## 5.4.7.1.2 View info

The **View info** section of the **Create View from Table** dialog provides the definition of the view generated from the table.

**Name**

Specifies view name (if necessary, you can edit the one assigned by default).

The **Fields** list displays view fields as specified in the *fields clause* and the *AS clause* of the view definition.

The list provides the following attributes of each field:

*Name*

*Type*

To add/remove fields to/from the construction, check/uncheck flags available in the first column of the **Fields** list.

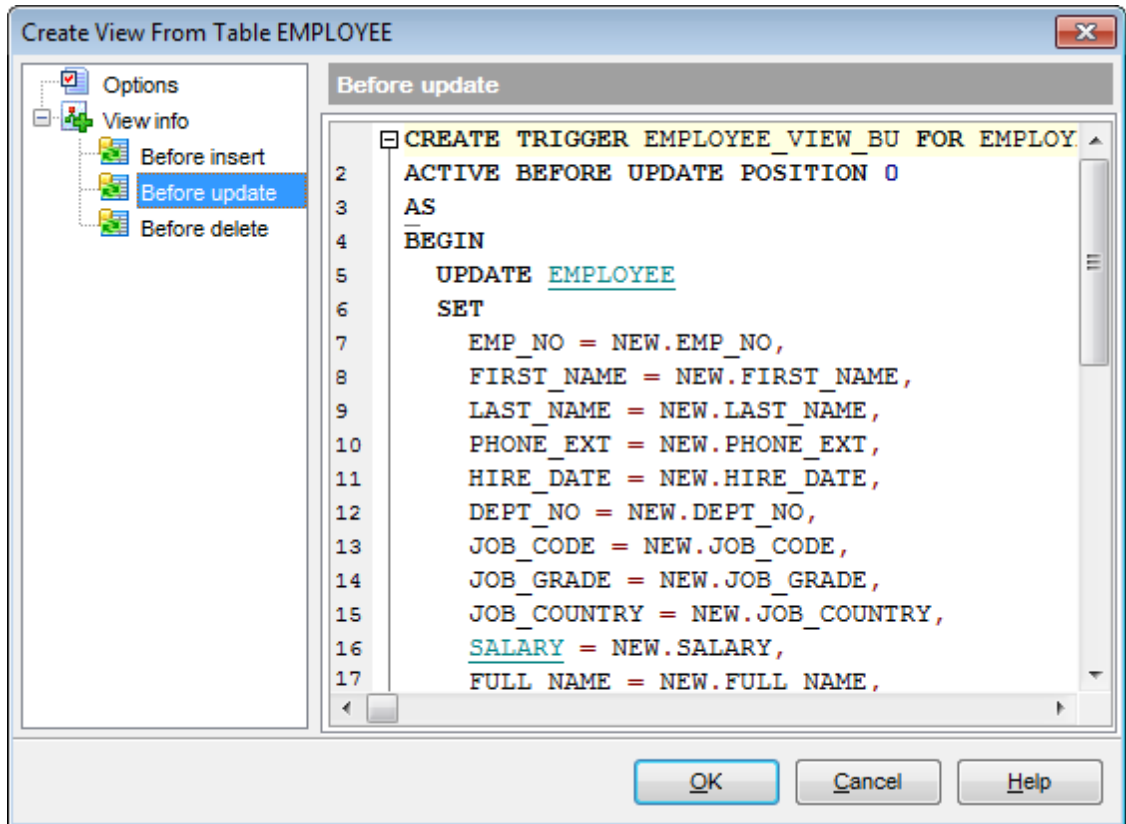
For your convenience the *Select All*, *Deselect All* and *Invert Selection* functions are implemented in the **context menu** of the fields list area.

The lower area represents the view definition as SQL statement. It is possible to edit the definition directly using the editor area to make appropriate changes.

For your convenience the **syntax highlight**, **code completion** and a number of other features for efficient SQL editing are implemented. For details see [Working with query](#)<sup>[333]</sup> and [Using the context menu](#)<sup>[335]</sup>.

## 5.4.7.1.3 View triggers

The **Before insert** / **Before update** / **Before delete** pages allow you to specify definitions for corresponding triggers generated for the view. The set of available sections is determined by selection in the **Triggers** group of the [Options](#)<sup>[233]</sup> page.



Edit the block of statements within the BEGIN / END pair according to your needs. For your convenience the **syntax highlight**, **code folding** and a number of other features for efficient SQL editing are implemented. For details see [Working with query](#)<sup>[333]</sup> and [Using the context menu](#)<sup>[335]</sup>.

#### 5.4.7.2 Procedures from Table

**SQL Manager for InterBase/Firebird** provides you with an ability to create SELECT/INSERT/UPDATE/DELETE procedures from a table and set their properties using the **Create Procedures from Table** dialog.

To open the dialog, right-click the table in DB Explorer and select the **Tasks | Create SIUD Procedures...** [context menu](#)<sup>[56]</sup> item, or open the table in [Table Editor](#)<sup>[184]</sup> and use the **Create Procedure** item of the [Navigation bar](#)<sup>[185]</sup>.

- [Options](#)<sup>[237]</sup>
- [SELECT procedure](#)<sup>[238]</sup>
- [INSERT procedure](#)<sup>[239]</sup>
- [UPDATE procedure](#)<sup>[240]</sup>
- [DELETE procedure](#)<sup>[241]</sup>

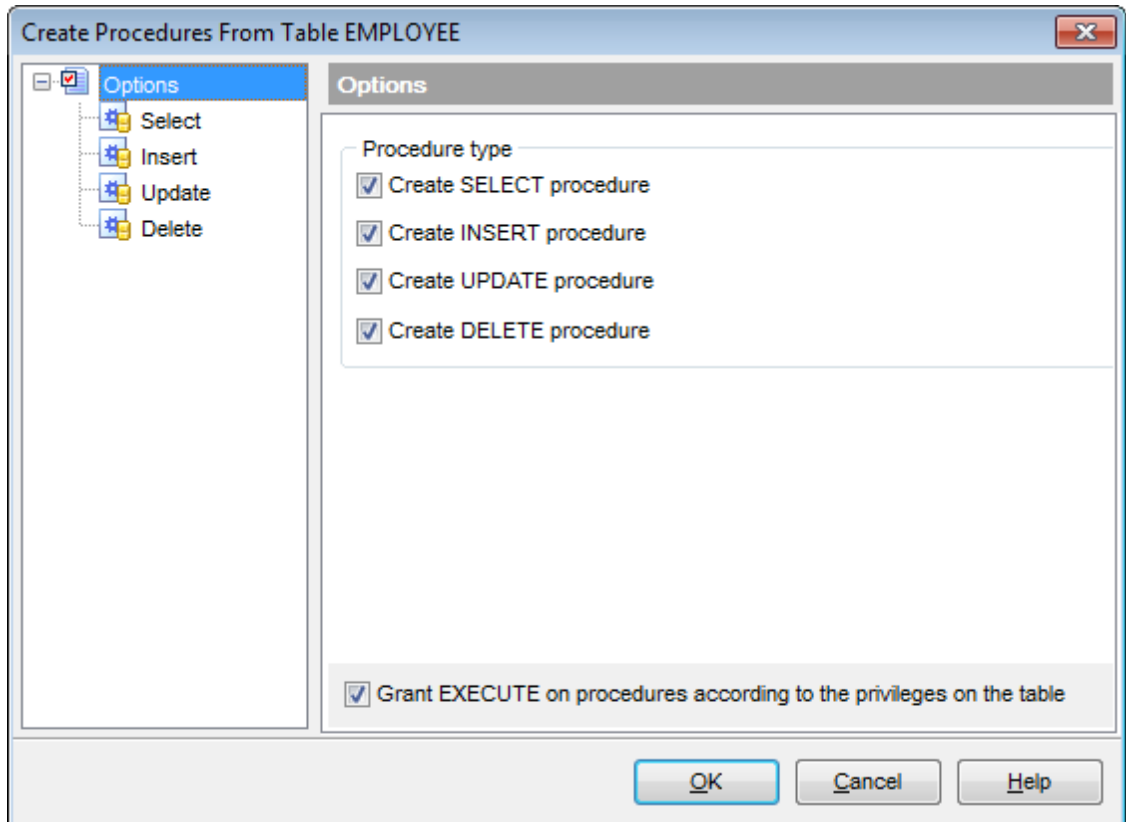
---

#### See also:

[View from Table](#)<sup>[232]</sup>

## 5.4.7.2.1 Options

The **Options** section of the **Create Procedures from Table** dialog allows you to specify common options for the procedures being created.

**Procedure type**

Select [procedure](#)<sup>[230]</sup> type(s) to be created with the help of the corresponding flags:

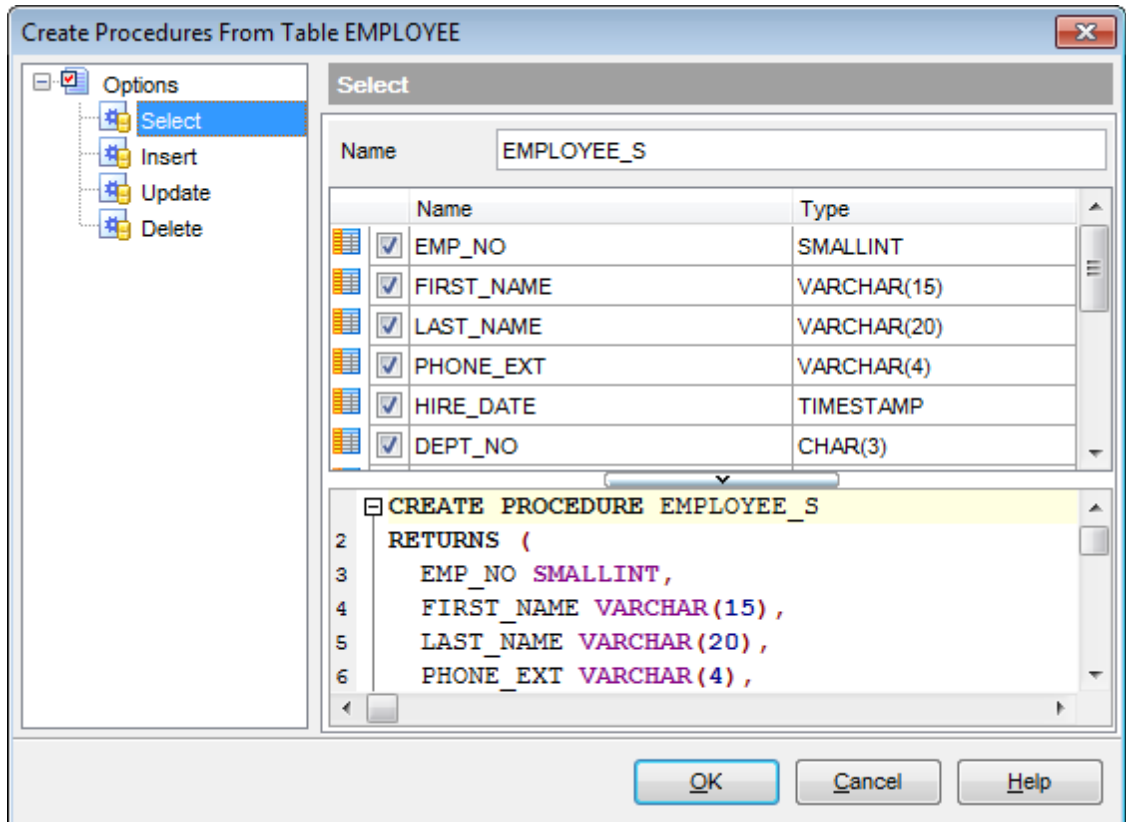
- Create SELECT procedure*
- Create INSERT procedure*
- Create UPDATE procedure*
- Create DELETE procedure*

 **Grant EXECUTE on procedures according to the privileges on the table**

Enable the option to [grant](#)<sup>[726]</sup> the EXECUTE privileges on the procedure(s) as it is granted on the source table.

## 5.4.7.2.2 SELECT procedure

The **Select** section of the **Create Procedures from Table** dialog provides the definition of the SELECT procedure generated from the table.

**Name**

Specifies procedure name (if necessary, you can edit the one assigned by default).

The **Fields** list displays fields as specified in the *fields clause* of the procedure definition. The list provides the following attributes of each field:

*Name*

*Type*

To add/remove fields to/from the construction, check/uncheck flags available in the first column of the **Fields** list.

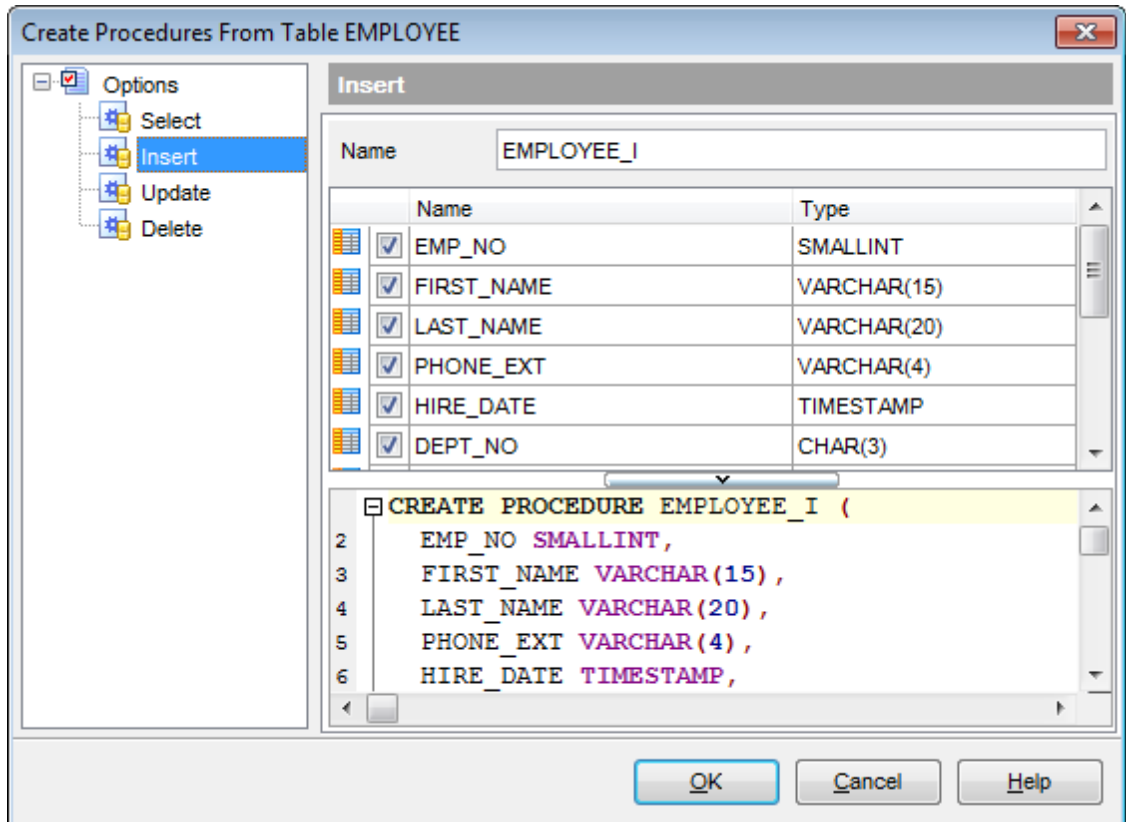
For your convenience the *Select All*, *Deselect All* and *Invert Selection* functions are implemented in the **context menu** of the fields list area.

The lower area represents the SELECT procedure definition as SQL statement. It is possible to edit the definition directly using the editor area to make appropriate changes. Edit the block of statements within the BEGIN / END pair according to your needs.

For your convenience the **syntax highlight**, **code completion** and a number of other features for efficient SQL editing are implemented. For details see [Working with query](#)<sup>[333]</sup> and [Using the context menu](#)<sup>[335]</sup>.

## 5.4.7.2.3 INSERT procedure

The **Insert** section of the **Create Procedures from Table** dialog provides the definition of the INSERT procedure generated from the table.

**Name**

Specifies procedure name (if necessary, you can edit the one assigned by default).

The **Fields** list displays fields as specified in the *fields clause* of the procedure definition. The list provides the following attributes of each field:

*Name*

*Type*

To add/remove fields to/from the construction, check/uncheck flags available in the first column of the **Fields** list.

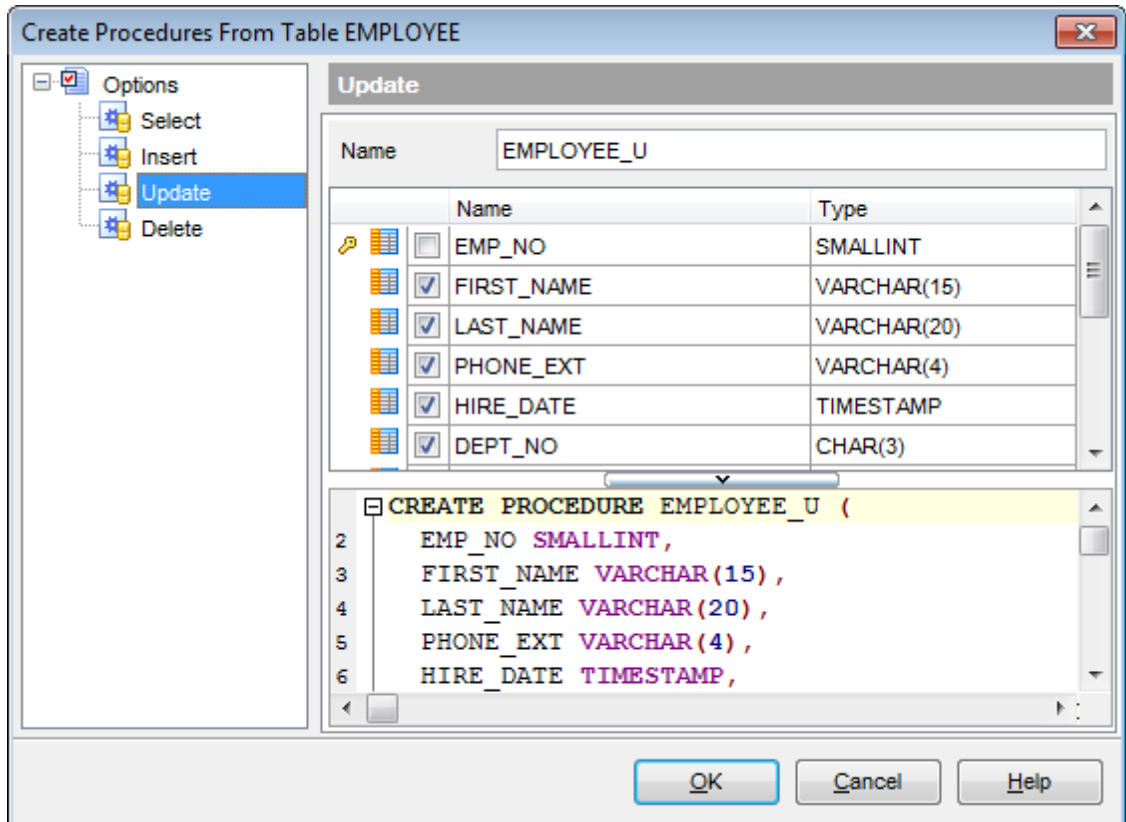
For your convenience the *Select All*, *Deselect All* and *Invert Selection* functions are implemented in the **context menu** of the fields list area.

The lower area represents the INSERT procedure definition as SQL statement. It is possible to edit the definition directly using the editor area to make appropriate changes. Edit the block of statements within the BEGIN / END pair according to your needs.

For your convenience the **syntax highlight**, **code completion** and a number of other features for efficient SQL editing are implemented. For details see [Working with query](#)<sup>[333]</sup> and [Using the context menu](#)<sup>[335]</sup>.

## 5.4.7.2.4 UPDATE procedure

The **Update** section of the **Create Procedures from Table** dialog provides the definition of the UPDATE procedure generated from the table.

**Name**

Specifies procedure name (if necessary, you can edit the one assigned by default).

The **Fields** list displays fields as specified in the *fields clause* of the procedure definition. The list provides the following attributes of each field:

*Name*

*Type*

To add/remove fields to/from the construction, check/uncheck flags available in the first column of the **Fields** list.

For your convenience the *Select All*, *Deselect All* and *Invert Selection* functions are implemented in the **context menu** of the fields list area.

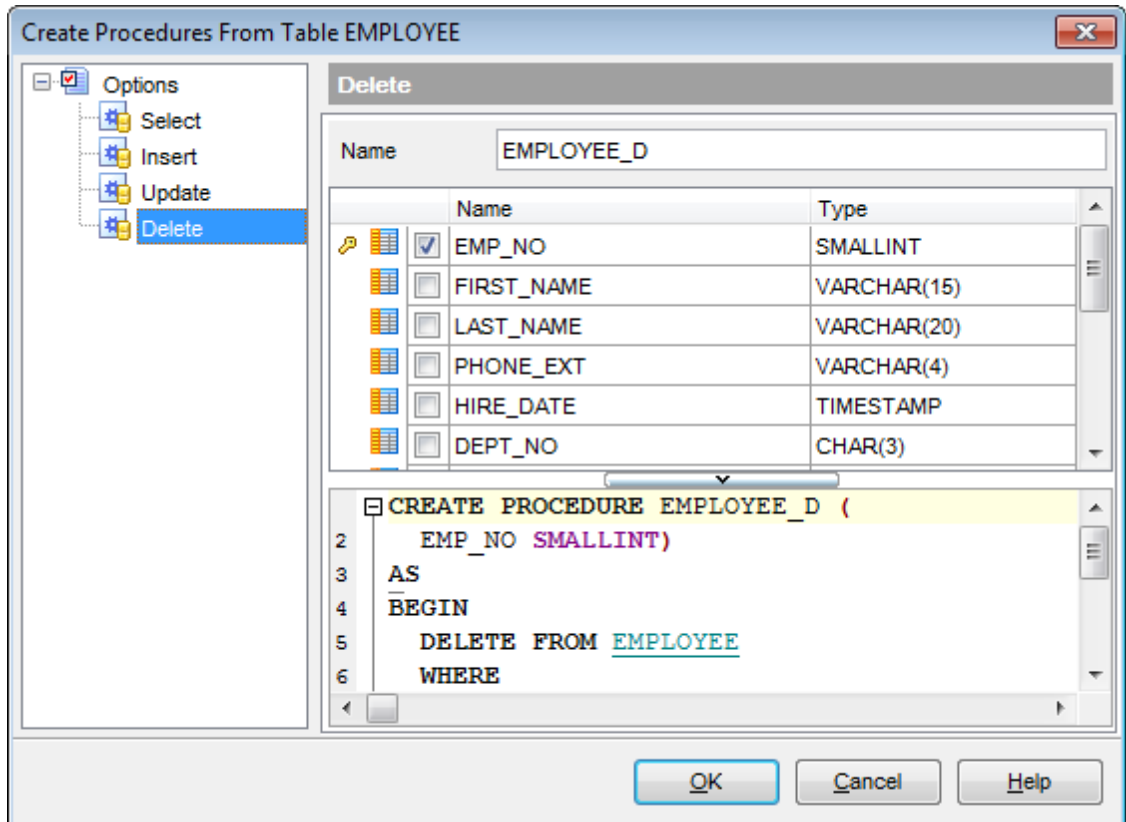
The lower area represents the UPDATE procedure definition as SQL statement. It is possible to edit the definition directly using the editor area to make appropriate changes. Edit the block of statements within the BEGIN / END pair according to your needs.

For your convenience the **syntax highlight**, **code completion** and a number of other features for efficient SQL editing are implemented. For details see [Working with query](#)<sup>[333]</sup> and [Using the context menu](#)<sup>[335]</sup>.



## 5.4.7.2.5 DELETE procedure

The **Delete** section of the **Create Procedures from Table** dialog provides the definition of the DELETE procedure generated from the table.

**Name**

Specifies procedure name (if necessary, you can edit the one assigned by default).

The lower area represents the DELETE procedure definition as SQL statement. It is possible to edit the definition directly using the editor area to make appropriate changes. Edit the block of statements within the BEGIN / END pair according to your needs.

For your convenience the **syntax highlight**, **code completion** and a number of other features for efficient SQL editing are implemented. For details see [Working with query](#)<sup>[333]</sup> and [Using the context menu](#)<sup>[335]</sup>.

## 5.5 Views

A **View** is a logical table based on one or more [tables](#)<sup>[178]</sup> or views. A view contains no data itself. The tables upon which a view is based are called *base tables*.

**Views** are useful for allowing users to access a set of relations ([tables](#)<sup>[178]</sup>) as if it were a single table, and limiting their access to just that. Views can also be used to restrict access to rows (a subset of a particular table).

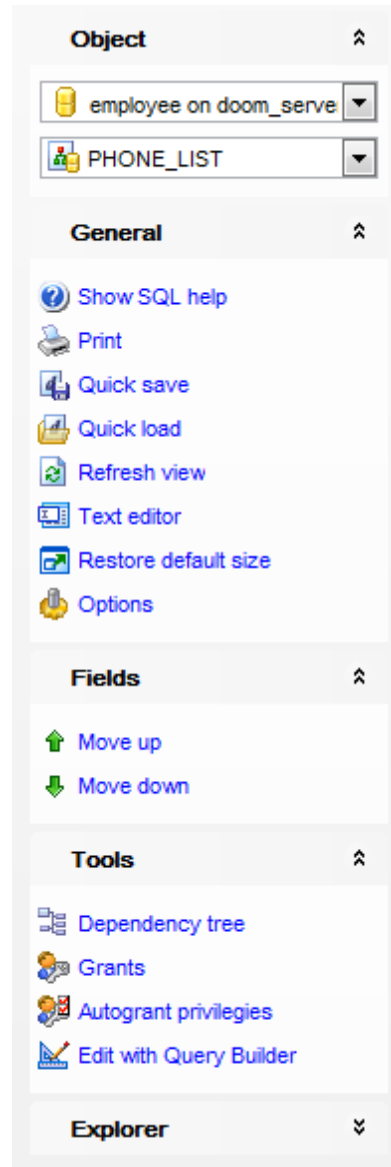
**View Editor** allows you to create new views and define their properties (view name and the SELECT statement it implements). It opens automatically when you create a new view and is available on editing an existing one.

To open a view in **View Editor**, double-click it in the [DB Explorer](#)<sup>[63]</sup> tree.



- [Using Navigation bar and Toolbar](#)<sup>[243]</sup>
- [Creating/editing view](#)<sup>[246]</sup>
- [Managing common properties and fields](#)<sup>[248]</sup>
- [Managing triggers](#)<sup>[249]</sup>
- [View plan](#)<sup>[251]</sup>
- [Working with data](#)<sup>[252]</sup>
- [Editing object description](#)<sup>[887]</sup>
- [Browsing object dependencies](#)<sup>[888]</sup>
- [Setting object permissions](#)<sup>[889]</sup>
- [Viewing DDL definition](#)<sup>[886]</sup>

### 5.5.1 Using Navigation bar and Toolbar




The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **View Editor**.









#### Object





-  select a database
-  select a view for editing

#### General

-  [compile](#)<sup>[698]</sup> the view (if it is being created/modified)
-  show SQL help
-  set [printing options](#)<sup>[565]</sup> to [print metadata](#)<sup>[562]</sup> of the view

-  save the object using the [Quick Save](#)<sup>[922]</sup> feature
-  load the object from buffers using the [Quick Load](#)<sup>[922]</sup> feature
-  refresh the content of the active tab
-  toggle *Text / Visual* editor modes
-  restore the default size and position of the editor window
-  adjust [Visual Mode Editors options](#)<sup>[775]</sup>

### Tools






-  view the [dependency tree](#)<sup>[534]</sup> for the view
-  set autogrant privileges for the view
-  define [grants](#)<sup>[726]</sup> on the view
-  edit the view query using [Query Designer](#)<sup>[347]</sup>

### Explorer



-  browse the view subobjects using the Explorer tree

Depending on the current tab selection, the **Navigation bar** expands to one or more additional panes with tab-specific actions that can be useful for working with the view:






### Triggers

-  [add](#)<sup>[230]</sup> a new trigger
-  [edit](#)<sup>[230]</sup> selected trigger
-  [drop](#)<sup>[230]</sup> selected trigger(s)
-  set trigger active/inactive
-  open selected trigger in a [Trigger Editor](#)<sup>[281]</sup>











### Description

-  save object [description](#)<sup>[887]</sup> to file
-  copy [description](#)<sup>[887]</sup> to clipboard

### Data Management

-  commit transaction
-  rollback transaction
-  export data from the view using [Export Data Wizard](#)<sup>[444]</sup>
-  export data from the view as SQL script using [Export as SQL Script Wizard](#)<sup>[517]</sup>
-  import data into the view using [Import Data Wizard](#)<sup>[491]</sup>

### Permissions

-  Grant
-  Grant with Grant Option
-  Revoke
-  Grant All
-  Grant All with Grant Option
-  Revoke All
-  Grant on All
-  Grant on All with Grant Option
-  Revoke on All
-  Add grantee object

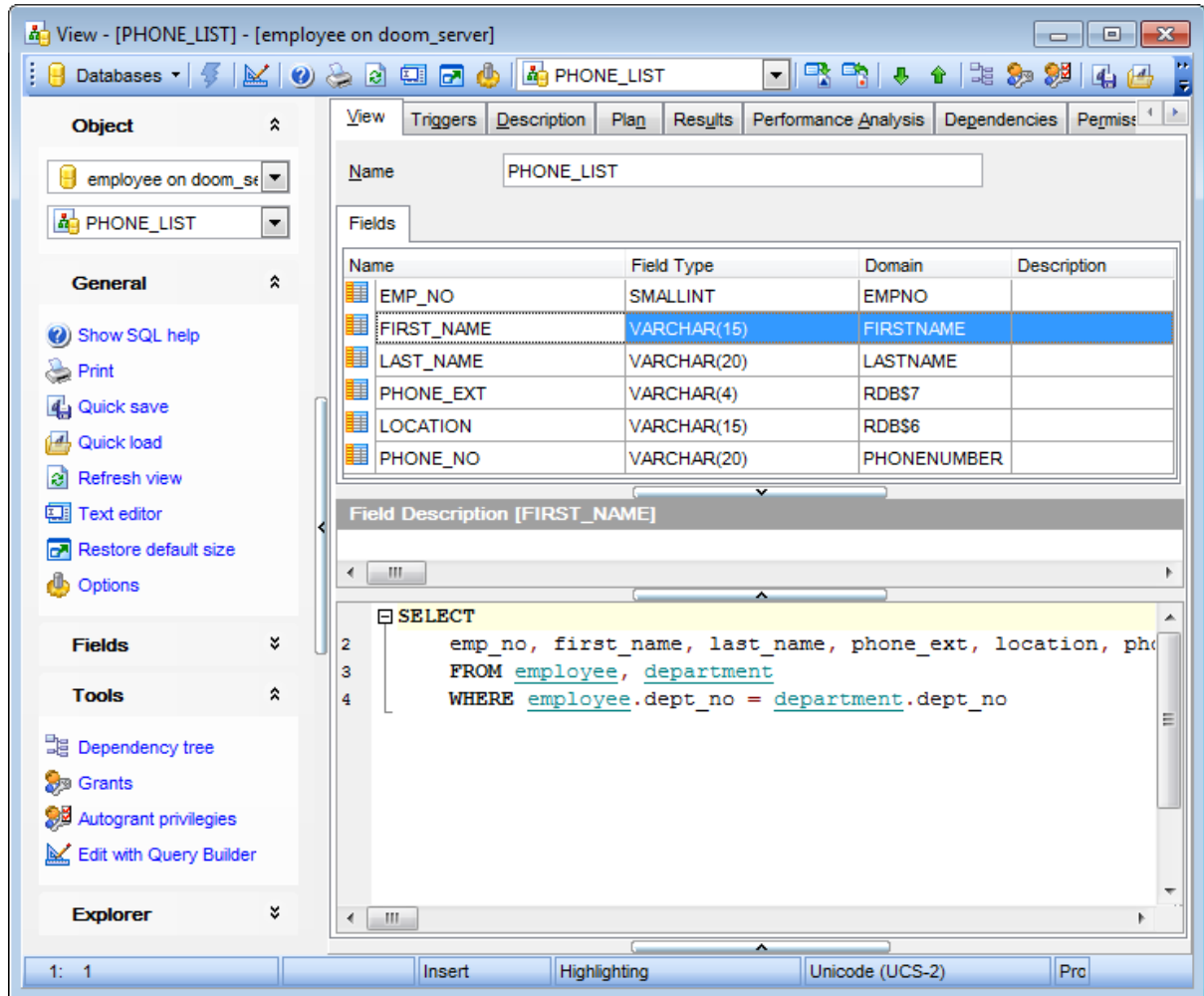
**DDL** save [DDL](#)<sup>[886]</sup> to file open [DDL](#)<sup>[886]</sup> in [Execute Script](#)<sup>[542]</sup>

Items of the **Navigation bar** are also available on the **ToolBar** of **View Editor**. To enable the [toolbar](#)<sup>[884]</sup>, open the [Environment Options](#)<sup>[736]</sup> dialog, proceed to the [Windows](#)<sup>[743]</sup> section there and select  *Toolbar* (if you need the toolbar only) or  *Both* (if you need both the toolbar and the [Navigation bar](#)<sup>[882]</sup>) in the **Bar style for child forms** group.

## 5.5.2 Creating/editing view

Use the **Object** tab of **View Editor** to create/edit a view and specify its definition.

**View Editor** provides two modes: *Text editor* and *Visual editor*. To switch between these editor modes, use the corresponding items available in the **General** group of the [Navigation bar](#)<sup>[243]</sup> and [toolbar](#)<sup>[245]</sup>.



When in the **Text editor** mode, you can use the editor area to specify the view definition as SQL statement using a template, hence it is enough to simply edit the template using the editor area to make appropriate changes, and compile the view.

For your convenience the **syntax highlight**, **code completion** and a number of other features for efficient SQL editing are implemented. For details see [Working with query](#)<sup>[333]</sup> and [Using the context menu](#)<sup>[335]</sup>.

When in the **Visual editor** mode, you are provided with a set of widgets allowing you to benefit from graphical user interface while editing the object properties.

### Name

Enter a name for the new view, or modify the name of the view being edited.

The **Fields** list provides the following attributes of each field of the view:

*Name*

*Field Type*

*Domain*

*Description*

If necessary, you can also use the **Field Description** area to supply a *description* for each field.

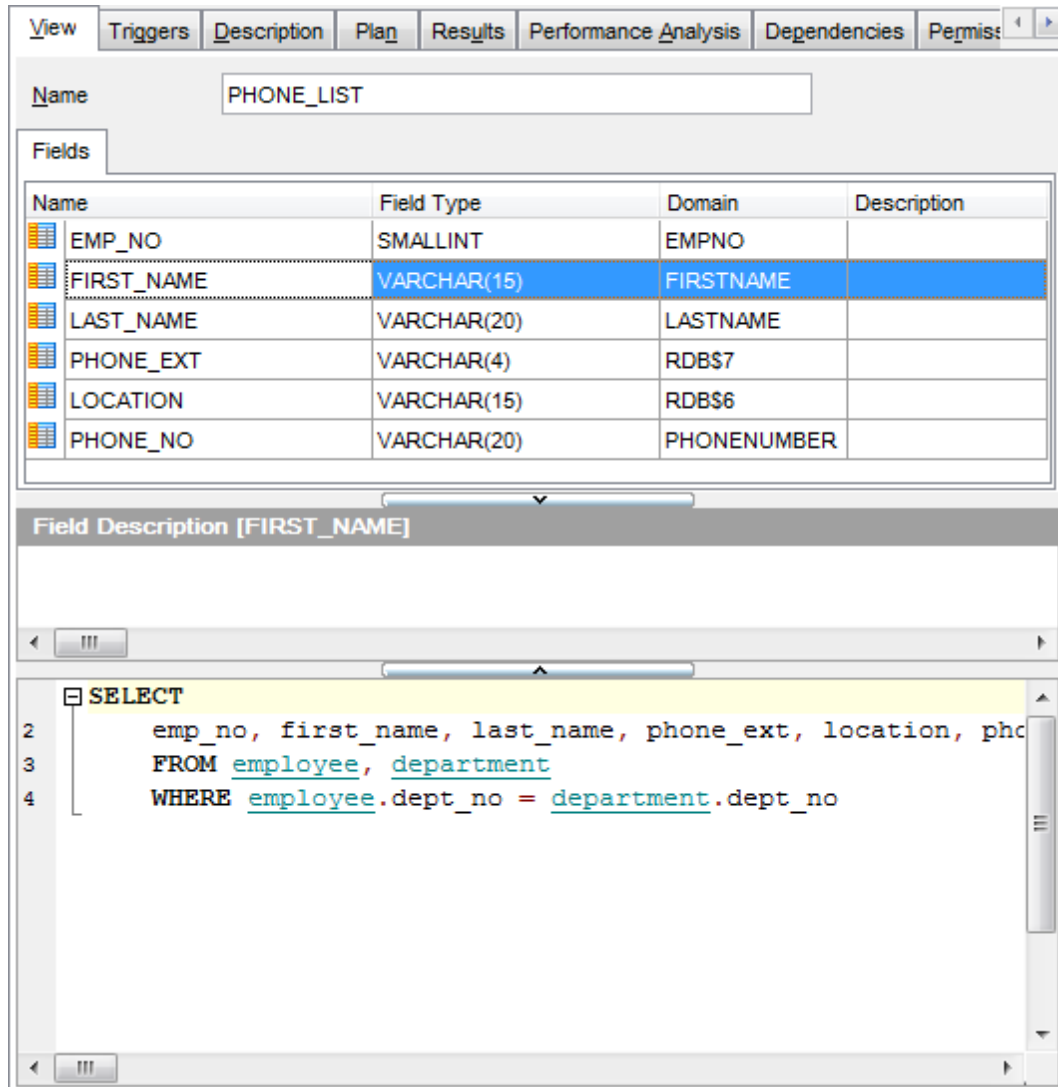
The lower area allows you to specify the AS clause of the view definition. When editing the view, you can edit the definition using the editor area to make appropriate changes, and recompile the view.

**Note:** When you edit the query of the AS clause, all the changes you make are processed by the **View Editor** precompiler, and the list of fields is formed automatically.

To compile a view, you can use the  **Compile** item available within the [Navigation bar](#)<sup>[243]</sup> or [toolbar](#)<sup>[245]</sup>.

### 5.5.3 Managing fields

The **Fields** tab is provided for viewing fields represented in the view.



The **Fields** list provides the following attributes of each field of the view:

*Name*  
*Field Type*  
*Domain*  
*Description*

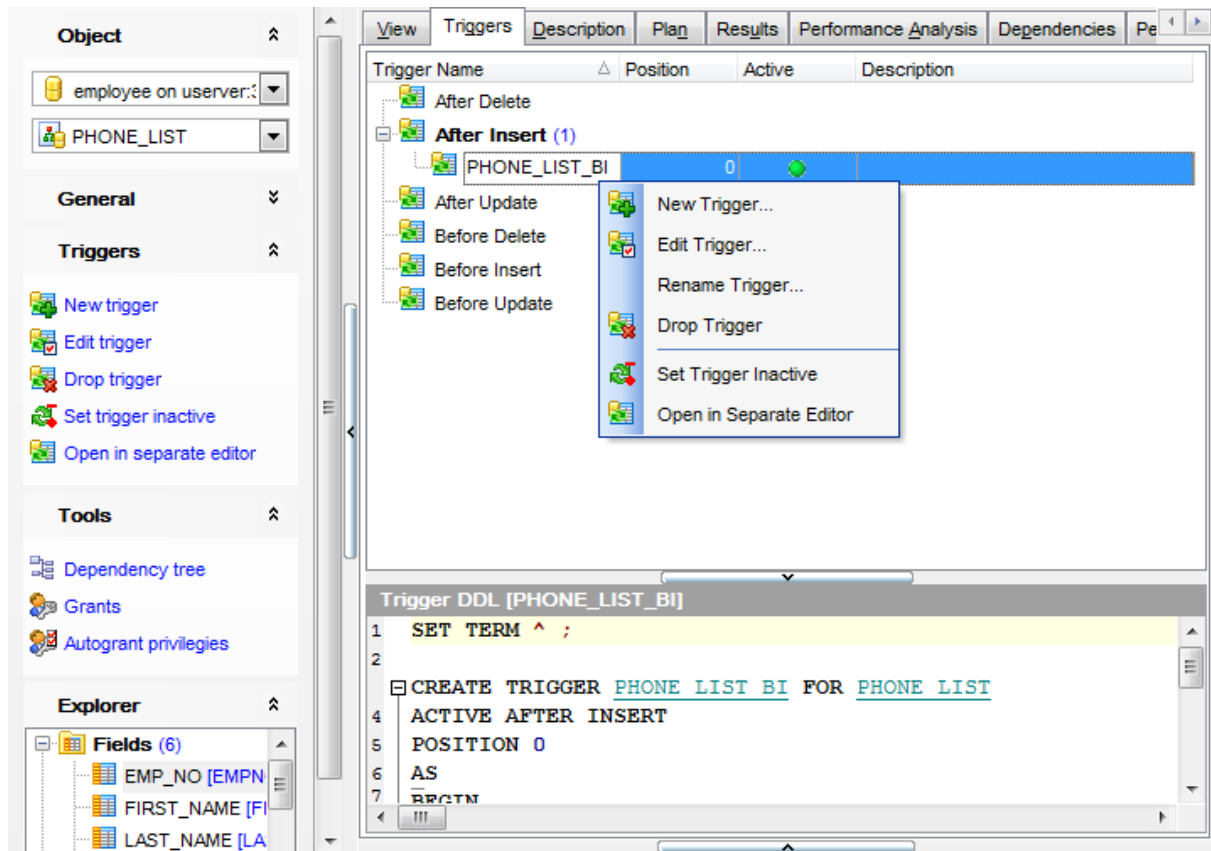
If necessary, you can also use the **Field Description** area to supply a *description* for each field.



## 5.5.4 Managing triggers

The **Triggers** tab is provided for managing triggers represented in the view. Double-click a trigger to open [Trigger Editor](#)<sup>[28]</sup> for editing the trigger.

Right-click the area to display the context menu allowing you to *create new*, *edit*, *rename*, or *drop* the selected trigger. Using the menu you can also set the trigger *active/inactive*, and open the selected trigger in a separate [Trigger Editor](#)<sup>[28]</sup>.



The **Triggers** list provides the following attributes of each trigger of the view:






*Trigger Name*  
*Position*  
*Active*  
*Description*

On this tab all triggers are grouped into categories:

- *Before Insert*
- *After Insert*
- *Before Update*
- *After Update*
- *Before Delete*
- *After Delete*

The trigger definition is displayed in the **Trigger DDL** window.

Use the context menu or items on a toolbar to manage triggers:

-  [add](#)<sup>[230]</sup> a new trigger
-  [edit](#)<sup>[230]</sup> selected trigger
-  [drop](#)<sup>[230]</sup> selected trigger(s)
-  set trigger active/inactive
-  open selected trigger in a [Trigger Editor](#)<sup>[281]</sup>

For details see [Triggers](#)<sup>[281]</sup>.

### 5.5.5 View plan

The **Plan** tab is provided for your convenience to see the plan of the query implied by the view.

The screenshot shows the 'View - [PHONE\_LIST] - [EMPLOYEE on aschel:3052]' window. The 'Plan' tab is selected, displaying a query plan diagram and a table of operations.

The query plan diagram shows the following flow: PLAN (play button icon) ← JOIN (table icon) ← NATURAL (downward arrow icon) ← INDEX (table icon) ← RDB\$FOR... (table icon).

The table below the diagram lists the operations and their details:

Operation	Object type	Object name	Alias	Fields
PLAN				
JOIN				
NATURAL	Table	DEPARTMENT	DEPARTMENT	
INDEX	Table	EMPLOYEE	EMPLOYEE	
RDB\$FC	Index	RDB\$FOREIGI		DEPT_NO

See [Query plan](#)<sup>[337]</sup> for details.

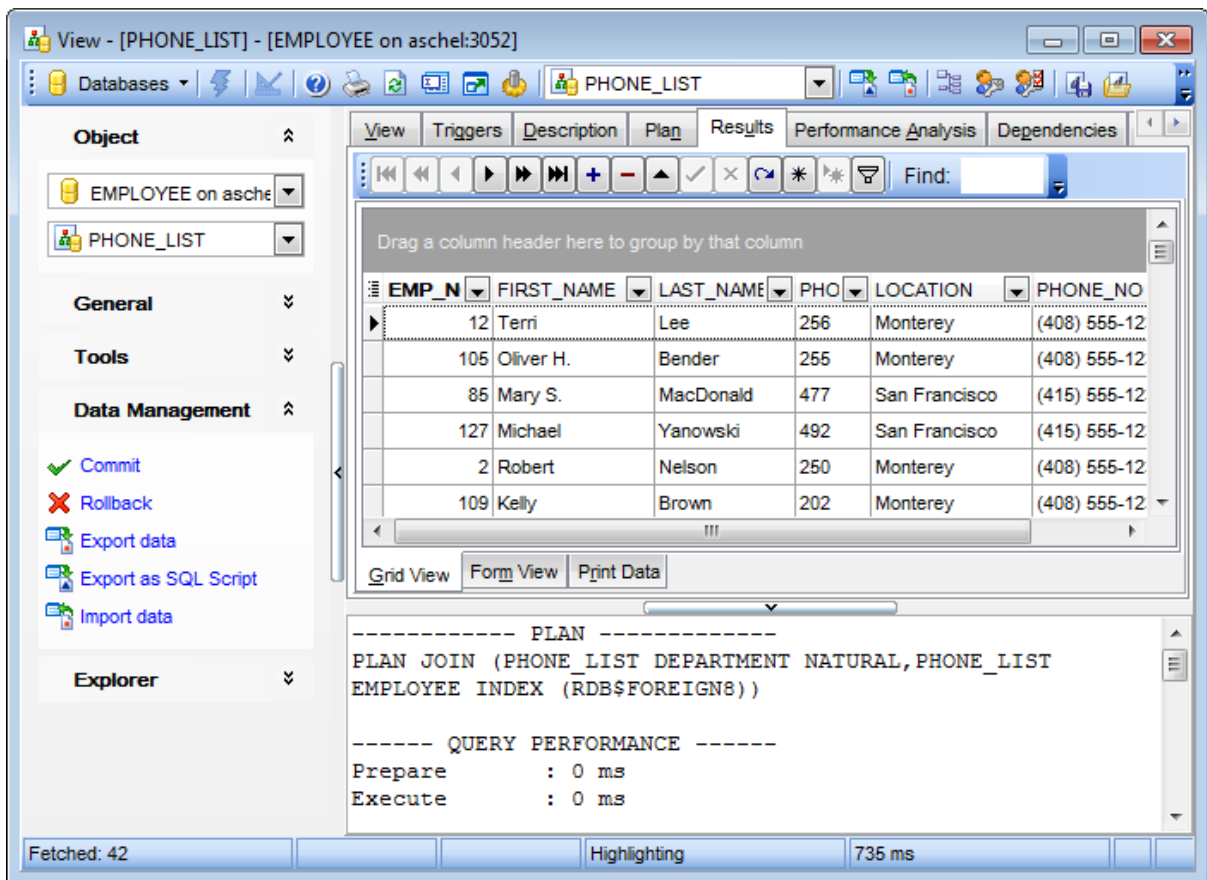
## 5.5.6 Working with data

The **Results** tab displays the view data as a grid by default (see [Data View](#)<sup>[369]</sup> for details). The context menu of this tab and the [Navigation bar](#)<sup>[243]</sup> allow you to [Export Data](#)<sup>[444]</sup>, [Import Data](#)<sup>[491]</sup>, [Export as SQL Script](#)<sup>[517]</sup>.

While working with view data, you are provided with a number of [filtering](#)<sup>[379]</sup> and [grouping](#)<sup>[376]</sup> facilities.

If necessary, you can **group the data in grid** by any of the columns. This operation is performed by dragging the column header to the gray "**Group by**" box area at the top. When grouping by a column is applied to the grid, all the rows are displayed as subnodes to the grouping row value. To reverse grouping, just drag the column header back.

[Data management](#)<sup>[368]</sup> tools are also available through the [Navigation bar](#)<sup>[243]</sup> and [toolbar](#)<sup>[245]</sup> of **View Editor**.



In the bottom pane of this tab you can see brief statistics concerned query execution.

### See also:

[Data View](#)<sup>[369]</sup>

## 5.6 Procedures

A **Procedure** is a set of procedural constructs and embedded SQL statements that is stored in the database and can be called by name.

A **Stored procedure** is a self-contained program written in InterBase procedure and trigger language, and stored as part of a database's metadata. Stored procedures can be invoked directly from applications, or can be substituted for a [table](#)<sup>[178]</sup> or [view](#)<sup>[242]</sup> in a *SELECT* statement. Stored procedures can receive [input parameters](#)<sup>[893]</sup> from and return values to applications and can [execute](#)<sup>[260]</sup> on the server.

### Creating Procedures

- select the **Database | New Object...** [main menu](#)<sup>[882]</sup> item;
- select **Procedure** in the [Create New Object](#)<sup>[164]</sup> dialog;
- define procedure properties using the appropriate tabs of [Procedure Editor](#)<sup>[255]</sup>.

**Hint:** To create a new procedure, you can also right-click the **Procedures** node or any object within this node in the [DB Explorer](#)<sup>[63]</sup> tree and select the **New Procedure...** item from the [context menu](#)<sup>[56]</sup>.

To create a new procedure with the same properties as one of existing procedures has:

- select the **Database | Duplicate Object...** [main menu](#)<sup>[882]</sup> item;
- follow the instructions of [Duplicate Object Wizard](#)<sup>[166]</sup>.

Alternatively, you can right-click a procedure in the [DB Explorer](#)<sup>[63]</sup> tree and select the **Duplicate Procedure <procedure\_name>...** context menu item.

[Duplicate Object Wizard](#)<sup>[166]</sup> allows you to select the database to create a new procedure in, and to view the result SQL statement for creating the procedure.

### Editing Procedures

To edit an existing procedure:

- select the procedure for editing in the [DB Explorer](#)<sup>[63]</sup> tree (type the first letters of the procedure name for quick [search](#)<sup>[78]</sup>);
- right-click the object and select the **Edit Procedure <procedure\_name>** context menu item, or simply double-click the procedure;
- edit procedure definition using the appropriate tabs of [Procedure Editor](#)<sup>[255]</sup>.

To change the name of a procedure:

- select the procedure to rename in the [DB Explorer](#)<sup>[63]</sup> tree;
- right-click the procedure alias and select the **Rename Procedure <procedure\_name>...** item from the [context menu](#)<sup>[56]</sup>;
- edit the procedure name using the **Rename Object...** dialog.

### Executing Procedures

- select the procedure to execute in the [DB Explorer](#)<sup>[63]</sup> tree (type the first letters of the procedure name for quick [search](#)<sup>[78]</sup>);
- right-click the object and select the **Edit Procedure <procedure\_name>...** context menu item, or simply double-click the procedure;
- execute the procedure using the **Execute Procedure** Navigation bar item of [Procedure Editor](#)<sup>[255]</sup>.

### Debugging Procedures

- select the procedure to debug in the [DB Explorer](#)<sup>[63]</sup> tree (type the first letters of the procedure name for quick [search](#)<sup>[78]</sup>);
- right-click the object and select the **Tasks | Debug** context menu item, or [open](#)<sup>[253]</sup>

the procedure in [Procedure Editor](#)<sup>[255]</sup> and click the **Debug procedure** item on the [Navigation bar](#)<sup>[256]</sup> or [toolbar](#)<sup>[257]</sup>;

- use tools provided by [Procedure/Trigger Debugger](#)<sup>[262]</sup> to debug the procedure.

### Dropping Procedures

- select the procedure to drop in the [DB Explorer](#)<sup>[63]</sup> tree;
- right-click the object and select the **Drop Procedure <procedure\_name>...** context menu item;
- confirm dropping in the dialog window.

**Note:** If more convenient, you can also use the following [shortcuts](#)<sup>[932]</sup>:

*Ctrl+N* to create a new procedure;

*Ctrl+O* to edit the selected procedure;

*Ctrl+R* to rename the procedure;

*F9* to execute the procedure;

*Shift+Ctrl+F9* to debug the procedure;

*Shift+Del* to drop the object from the database.

### 5.6.1 Procedure Editor

**Procedure Editor** allows you to create a new procedure, execute the existing procedure or edit its definition. It opens automatically when you create a new procedure and is available on editing an existing one (see [Create procedure](#)<sup>[253]</sup> and [Edit procedure](#)<sup>[253]</sup> for details).

To open a stored procedure in **Procedure Editor**, double-click it in the [DB Explorer](#)<sup>[63]</sup> tree.

- [Using Navigation bar and Toolbar](#)<sup>[256]</sup>
- [Creating/editing procedure](#)<sup>[258]</sup>
- [Specifying input parameters](#)<sup>[893]</sup>
- [Executing procedure](#)<sup>[260]</sup>
- [Browsing object dependencies](#)<sup>[888]</sup>
- [Editing object description](#)<sup>[887]</sup>
- [Viewing object operations](#)<sup>[894]</sup>
- [Setting object permissions](#)<sup>[889]</sup>
- [Viewing DDL definition](#)<sup>[886]</sup>

---



**See also:**

[Procedure/Trigger Debugger](#)<sup>[262]</sup>











### 5.6.1.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Procedure Editor**.





#### Object

-  select a database
-  select a procedure for editing


#### General

-  [compile](#)<sup>[898]</sup> the procedure (if it is being created/modified)
-  [execute](#)<sup>[260]</sup> the procedure
-  show SQL help
-  set [printing options](#)<sup>[565]</sup> to [print metadata](#)<sup>[562]</sup> of the procedure
-  save the object using the [Quick Save](#)<sup>[922]</sup> feature
-  load the object from buffers using the [Quick Load](#)<sup>[922]</sup> feature
-  refresh the content of the active tab
-  toggle *Text / Visual* editor modes
-  restore the default size and position of the editor window
-  adjust [Visual Mode Editors options](#)<sup>[775]</sup>

#### Tools






-  view the [dependency tree](#)<sup>[534]</sup> for the procedure
-  define [grants](#)<sup>[728]</sup> on the procedure
-  set autogrant privileges for the procedure
-  debug the procedure using [Procedure/Trigger Debugger](#)<sup>[262]</sup>

#### Explorer









-  browse the procedure parameters and variables using the Explorer tree

Depending on the current tab selection, the **Navigation bar** expands to one or more additional panes with tab-specific actions that can be useful for working with the procedure:



#### Input Parameters / Output Parameters / Variables / Cursors

-  append a new input parameter / output parameter / variable / cursor
-  insert a input parameter / output parameter / variable / cursor
-  delete the selected input parameter / output parameter / variable / cursor
-  move the selected input parameter / output parameter / variable / cursor up
-  move the selected input parameter / output parameter / variable / cursor down



#### Permissions

-  Grant
-  Grant with Grant Option
-  Revoke
-  Grant All
-  Grant All with Grant Option
-  Revoke All
-  Grant on All
-  Grant on All with Grant Option





-  Revoke on All
-  Add grantee object

### Description

-  save object [description](#)<sup>[887]</sup> to file
-  copy [description](#)<sup>[887]</sup> to clipboard

### DDL

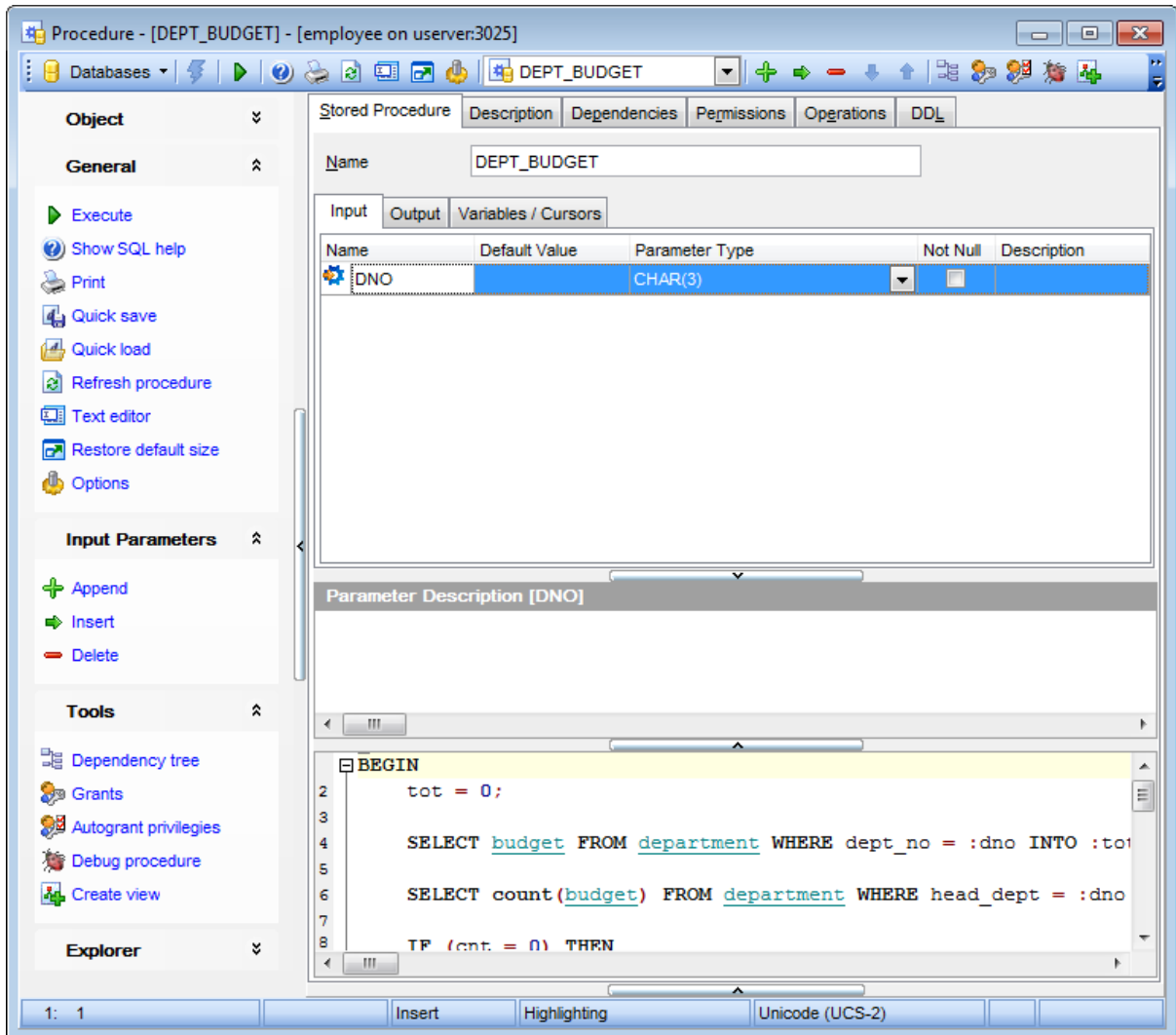
-  save [DDL](#)<sup>[886]</sup> to file
-  open [DDL](#)<sup>[886]</sup> in [Execute Script](#)<sup>[542]</sup>

Items of the **Navigation bar** are also available on the **ToolBar** of **Procedure Editor**. To enable the [toolbar](#)<sup>[884]</sup>, open the [Environment Options](#)<sup>[736]</sup> dialog, proceed to the [Windows](#)<sup>[743]</sup> section there and select  *Toolbar* (if you need the toolbar only) or  *Both* (if you need both the toolbar and the [Navigation bar](#)<sup>[882]</sup>) in the **Bar style for child forms** group.

### 5.6.1.2 Creating/editing procedure

Use the **Stored Procedure** tab of **Procedure Editor** to view and edit the stored procedure definition.

**Procedure Editor** provides two modes: *Text editor* and *Visual editor*. To switch between these editor modes, use the corresponding items available in the **General** group of the [Navigation bar](#)<sup>[256]</sup> and [toolbar](#)<sup>[257]</sup>.



When in the **Text editor** mode, you can use the editor area to specify the procedure definition as SQL statement using a template, hence it is enough to simply edit the template using the editor area to make appropriate changes, and compile the procedure.

For your convenience the **syntax highlight**, **code completion** and a number of other features for efficient SQL editing are implemented. For details see [Working with query](#)<sup>[333]</sup> and [Using the context menu](#)<sup>[335]</sup>.

When in the **Visual editor** mode, you are provided with a set of widgets allowing you to benefit from graphical user interface while editing the object properties.

**Name**

Enter a name for the new procedure, or modify the name of the procedure being edited. Note that procedure name must be unique among [procedure](#)<sup>[253]</sup>, [table](#)<sup>[178]</sup> and [view](#)<sup>[242]</sup> names in the database.

The [Parameters and variables](#)<sup>[890]</sup> area allows you to manage *input parameters*, *output parameters*, *variables* and *cursors* at the corresponding tabs.

The lower area allows you to specify the procedure body, i.e. an optional list of local variables and their data types and a block of statements in InterBase procedure and trigger language, bracketed by *BEGIN* and *END*. When editing the procedure, you can edit its body using the editor area to make appropriate changes, and recompile the procedure.

To compile a procedure, you can use the  **Compile** item available within the [Navigation bar](#)<sup>[256]</sup> or [toolbar](#)<sup>[257]</sup>.

---

**See also:**

[Managing parameters](#)<sup>[890]</sup>

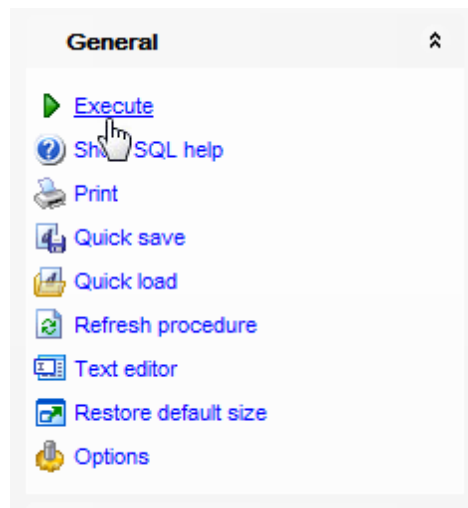
[Specifying input parameters](#)<sup>[893]</sup>

### 5.6.1.3 Executing procedure

**Procedure Editor** provides an ability to execute procedures. Click the ► **Execute** item of the [Navigation bar](#)<sup>[256]</sup> or use the corresponding [toolbar](#)<sup>[257]</sup> button to execute the procedure.

If the procedure has input parameters, **SQL Manager** allows you to specify the values for these parameters in the [Input Parameters](#)<sup>[893]</sup> dialog which appears just before execution.

The result of the successfully executed procedure, as well as the error message in case of execution failure, appears in the message panel at the bottom of the **Procedure Editor** window.



**Note:** If any unsaved changes are applied to the stored procedure being currently edited, the execution of the procedure is impossible unless changes are saved through the **Compile** item of the **Navigation bar**.

---

#### See also:

[Specifying input parameters](#)<sup>[893]</sup>

[Procedure Editor](#)<sup>[255]</sup>

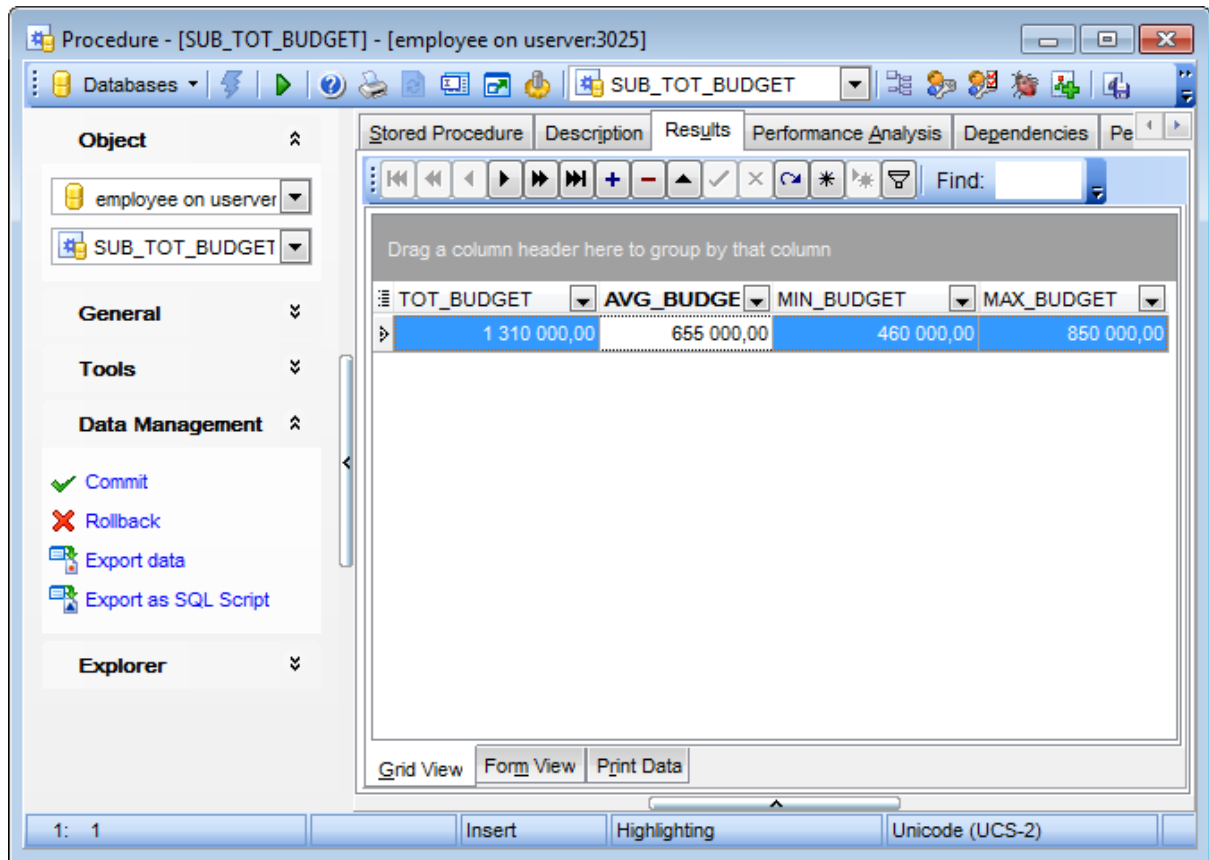
#### 5.6.1.4 Working with data

The **Data** tab displays the procedure data as a grid by default (see [Data View](#)<sup>[369]</sup> for details). The context menu of this tab and the [Navigation bar](#)<sup>[243]</sup> allow you to [Export Data](#)<sup>[444]</sup>, [Import Data](#)<sup>[491]</sup>, [Export as SQL Script](#)<sup>[517]</sup>.

While working with procedure data, you are provided with a number of [filtering](#)<sup>[379]</sup> and [grouping](#)<sup>[376]</sup> facilities.



If necessary, you can **group the data in grid** by any of the columns. This operation is performed by dragging the column header to the gray "**Group by**" box area at the top. When grouping by a column is applied to the grid, all the rows are displayed as subnodes to the grouping row value. To reverse grouping, just drag the column header back.

[Data management](#)<sup>[368]</sup> tools are also available through the [Navigation bar](#)<sup>[256]</sup> and [toolbar](#)<sup>[257]</sup> of **Procedure Editor**.



## 5.6.2 Procedure/Trigger Debugger

To fix the errors in the [procedure](#)<sup>[253]</sup> or [trigger](#)<sup>[281]</sup> code and to optimize the procedure/trigger work, you can debug the procedure/trigger step-by-step before compilation, using the **Procedure/Trigger Debugger**.

To activate the debugger, open the procedure in [Procedure Editor](#)<sup>[255]</sup>, or the trigger in [Trigger Editor](#)<sup>[281]</sup>, then click the  **Debug procedure** /  **Debug trigger** button on the [toolbar](#)<sup>[884]</sup> or use the corresponding item of the [Navigation bar](#)<sup>[882]</sup>. You can also use the *Shift+Ctrl+F9* [shortcut](#)<sup>[932]</sup> for the same purpose.

- [Using Navigation bar and Toolbar](#)<sup>[263]</sup>
- [Debugging procedure/trigger](#)<sup>[265]</sup>
- [Browsing debug information](#)<sup>[267]</sup>

Availability:

**Full** version (for Windows) **Yes**

**Lite** version (for Windows) **No**

**Note:** To compare all features of the **Full** and the **Lite** versions of **SQL Manager**, refer to the [Feature Matrix](#)<sup>[20]</sup> page.

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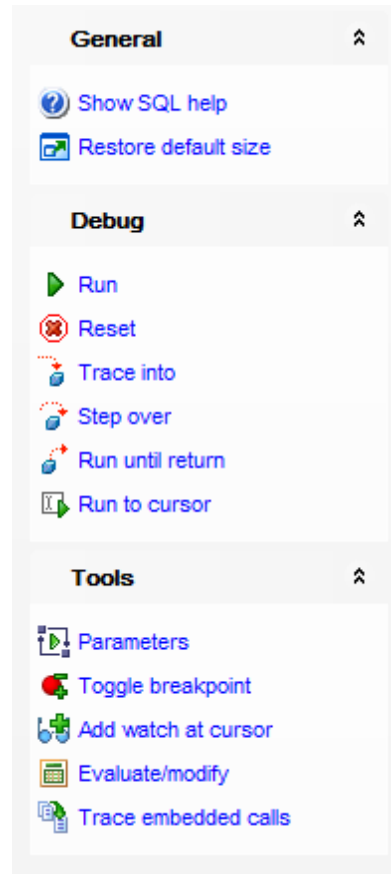
**See also:**

[Procedure Editor](#)<sup>[255]</sup>



[Trigger Editor](#)<sup>[281]</sup>

### 5.6.2.1 Using Navigation bar and Toolbar







The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Procedure/Trigger Debugger**.







#### General



-  show SQL help
-  restore the default size and position of the debugger window

#### Debug

-  run the procedure/trigger
-  reset procedure/trigger execution
-  trace into a procedure that is called from the current procedure
-  step over the procedure that is called from the current procedure
-  run the procedure until return to the upper-level procedure
-  run the procedure/trigger to the cursor position

#### Tools

-  commit retaining
-  open the [Input Parameters](#)<sup>[893]</sup> dialog
-  toggle breakpoint at the current statement
-  add [watch](#)<sup>[267]</sup> at cursor

-  [evaluate/modify](#) <sup>[267]</sup> a variable
-  toggle tracing embedded calls

Items of the **Navigation bar** are also available on the **ToolBar** of **Procedure/Trigger Debugger**. To enable the [toolbar](#) <sup>[884]</sup>, open the [Environment Options](#) <sup>[736]</sup> dialog, proceed to the [Windows](#) <sup>[743]</sup> section there and select  *Toolbar* (if you need the toolbar only) or  *Both* (if you need both the toolbar and the [Navigation bar](#) <sup>[882]</sup>) in the **Bar style for child forms** group.



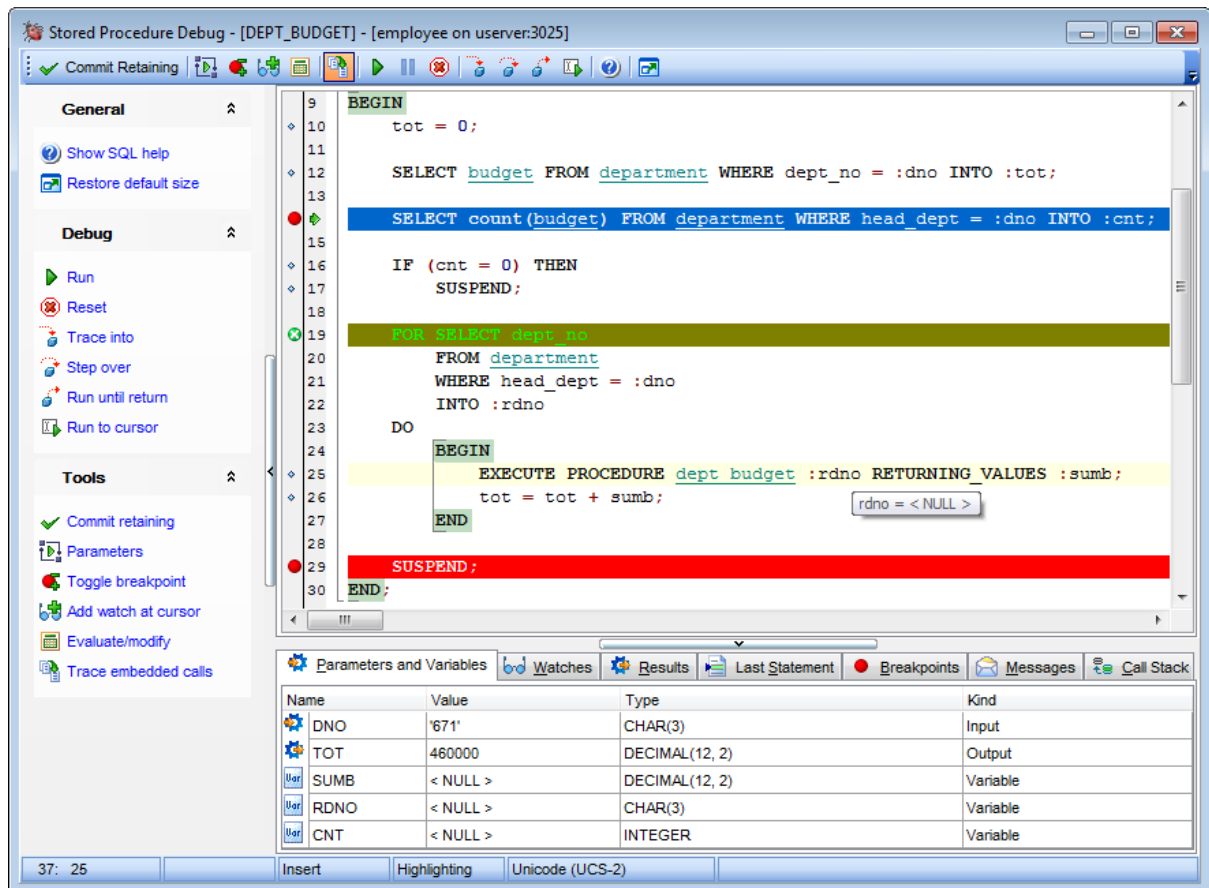
### 5.6.2.2 Debugging procedure/trigger

The working area allows you to view the text of procedure/trigger definition.

The red spots (●) at the left of the workspace and red highlight stand for enabled [breakpoints](#)<sup>[269]</sup>;

the green spots (⊗) and green highlight stand for disabled [breakpoints](#)<sup>[269]</sup>;

the green arrow (➡) and blue highlight indicate the currently executed statement.



For your convenience the following [shortcuts](#)<sup>[932]</sup> are implemented:

- To start executing the procedure step-by-step, press **F8**.
- To trace into a procedure that is called from the current procedure, press **F7**.
- To reset the procedure execution, press the **Ctrl+F2** key combination.
- To add/remove a breakpoint to/from the current statement, press the **Ctrl+F8** key combination.
- To run the procedure (to the end or to the next breakpoint), press **F9**.

Set mouse cursor over a parameter to see a **hint** with its current value.

**Hint:** Click an embedded procedure (or any other object) name with the *Ctrl* key pressed to open the object in its editor. For details see [Using object links](#)<sup>[339]</sup>.

The lower area of the **Procedure/Trigger Debugger** window allows you to browse *parameters and variables, watches, results, last statement, breakpoints, messages, call*

*stack*. For details see [Browsing debug information](#)<sup>[267]</sup>.

### 5.6.2.3 Browsing debug information

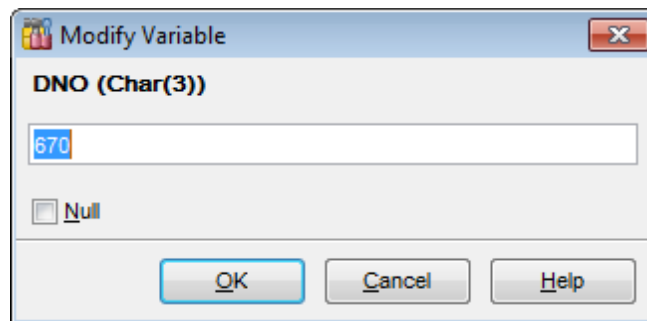
Use tabs at the bottom of the debugger window to view miscellaneous debug information.

#### Parameters and Variables

This tab displays the list of procedure input and output parameters and variables (distinguished by respective icons) with their values and types.

Name	Value	Type	Kind
DNO	'670'	CHAR(3)	Input
TOT	1150000	DECIMAL(12, 2)	Output
SUMB	< NULL >	DECIMAL(12, 2)	Variable
RDNO	< NULL >	CHAR(3)	Variable
CNT	2	INTEGER	Variable

Double-click an item in the list to call the **Modify Variable** dialog allowing you to set the parameter/variable value.



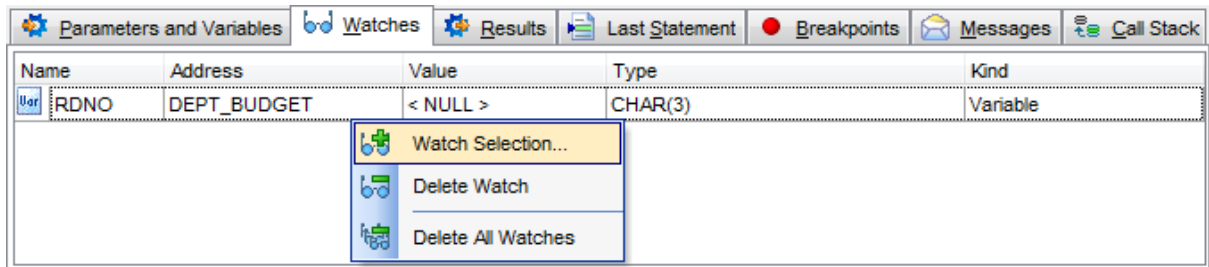
Use the edit control to specify a value for the variable, or select the  **Null** option.

The controls vary according to the data type of the variable being edited:

- for *integral* data types (*SMALLINT*, *INTEGER*), use the spinner control to specify the necessary value
- for *floating-point* data types (*FLOAT*, *NUMERIC*, *DOUBLE PRECISION*, *DECIMAL*), type in or click the arrow-down button to call the *Calculator* popup window and set the necessary value
- for *string* data types (*CHAR*, *VARCHAR*), use the editable area to input the necessary text
- for *temporal* data types (*DATE*, *TIME*), type in or click the arrow-down button to call the *Date editor* popup window and set the required date value

#### Watches

Use this tab to manage watches for parameters and variables declared in the procedure being currently debugged.



The **Watches** list provides the following attributes of each parameter/variable of the procedure:

*Name*

*Address* (the name of the procedure to which the parameter or variable belongs)

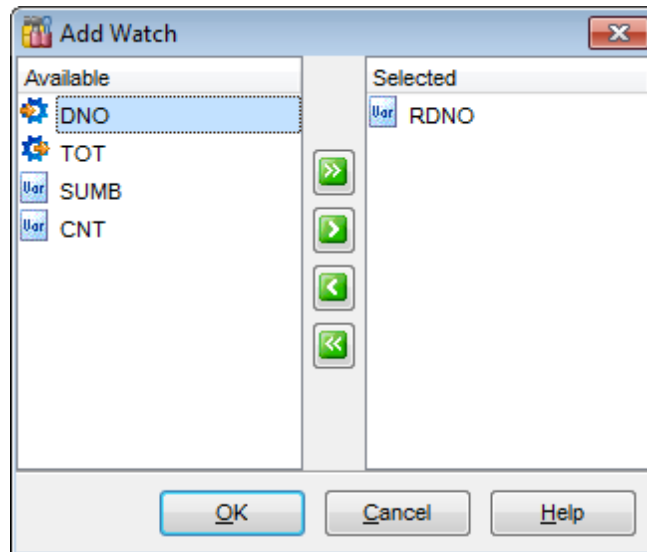
*Value*


*Type*

*Kind*

Right-click an item in the list to call the **context menu** allowing you to *select watches* using the **Add Watch** dialog, to *delete* the selected watch, or to *delete all* watches.

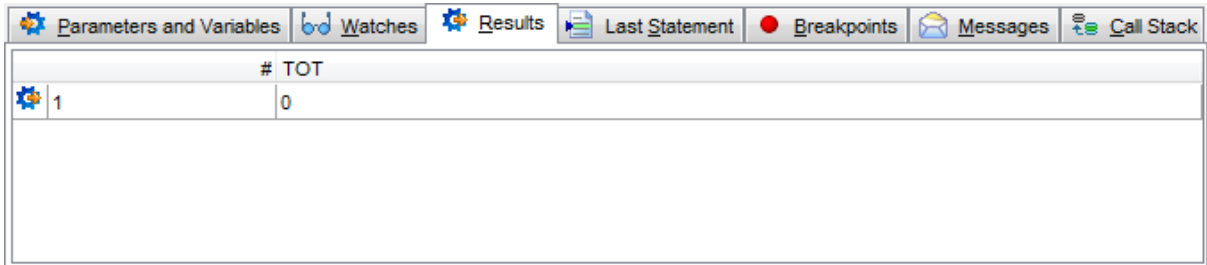
The **Add Watch** dialog allows you to select the parameters and variables to add watch for.



To select a parameter/variable, you need to move it from the **Available** list to the **Selected** list. Use the  buttons or drag-and-drop operations to move the parameters and variables from one list to another.

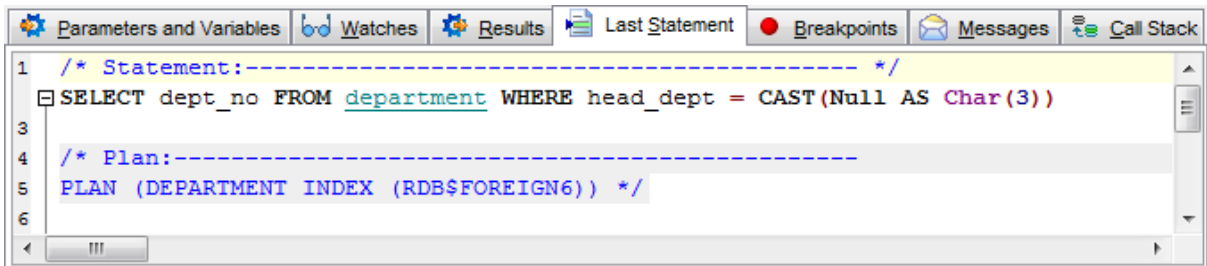
### Results

If the procedure is supposed to return any results, this tab displays the intermediate execution results.



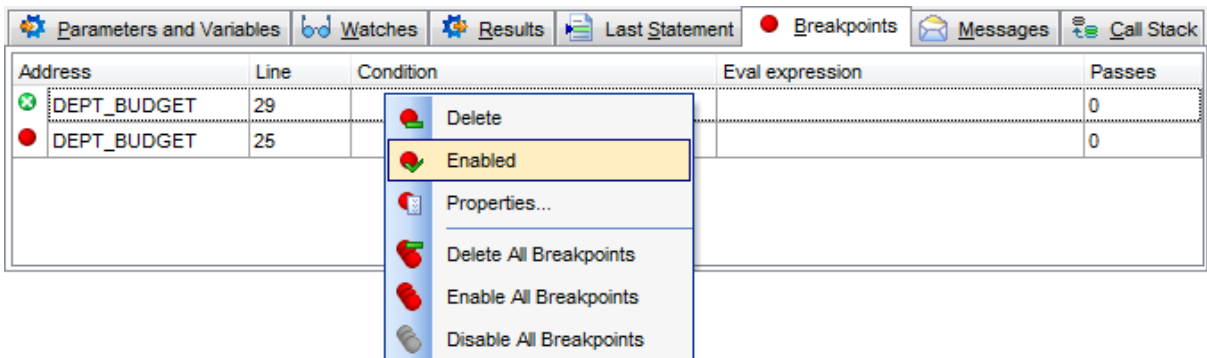
### Last Statement

This tab displays the last executed statement, the statement execution plan and other information such as execution time.



### Breakpoints

This tab displays the breakpoints set in the procedure.



The **Breakpoints** list provides the following attributes of each breakpoint of the procedure:

*Address* (the name of the procedure to which the breakpoint belongs)

*Line* (the line number where the breakpoint is set)

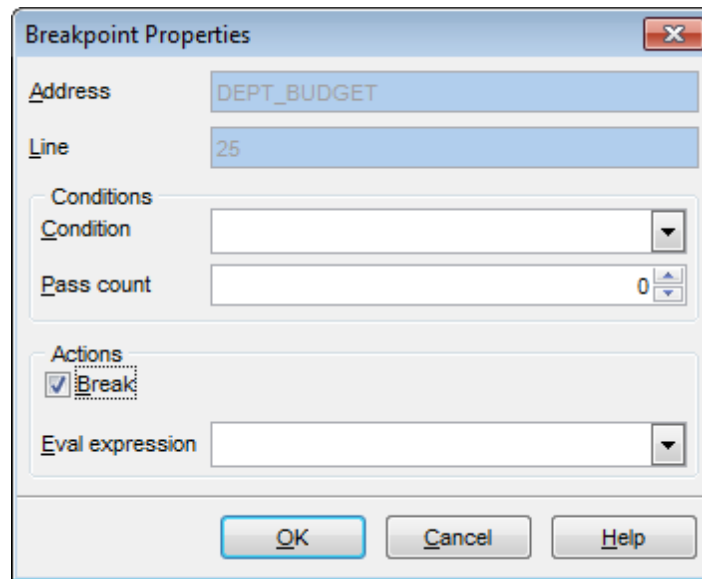
*Condition*

*Eval expression*

*Passes* (the number of times the execution has already passed through the breakpoint)

Right-click an item in the list to call the **context menu** allowing you to *enable/disable*, to specify properties using the **Breakpoint Properties** dialog, to *delete* the selected breakpoint, or to *delete all* breakpoints.

The **Breakpoint Properties** dialog allows you to view/edit properties for each [breakpoint](#) set in the procedure.



## Conditions

### Condition

This field should contain the correct SQL statement returning a boolean value. The execution will stop at this breakpoint if the statement is true, and skip the breakpoint if it is false.

### Pass count

Specify the number of passes for the breakpoint before the execution stops.

## Actions

### Break

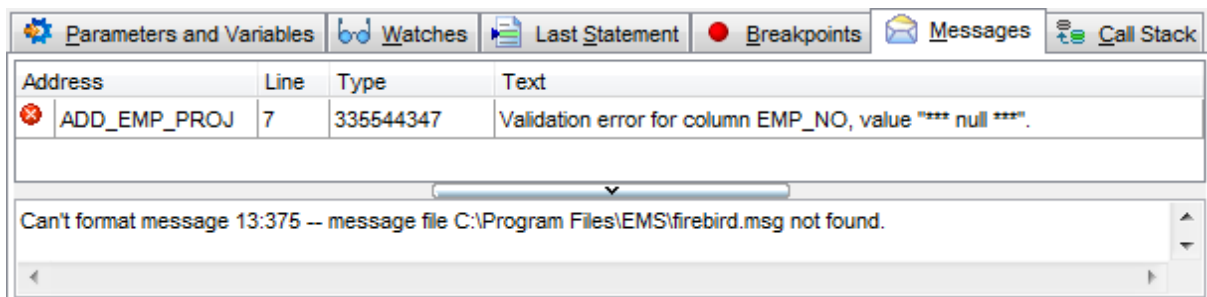
Enable the option to stop execution at this breakpoint.

### Eval expression

Specify the correct SQL statement to evaluate some expression when passing through this point.

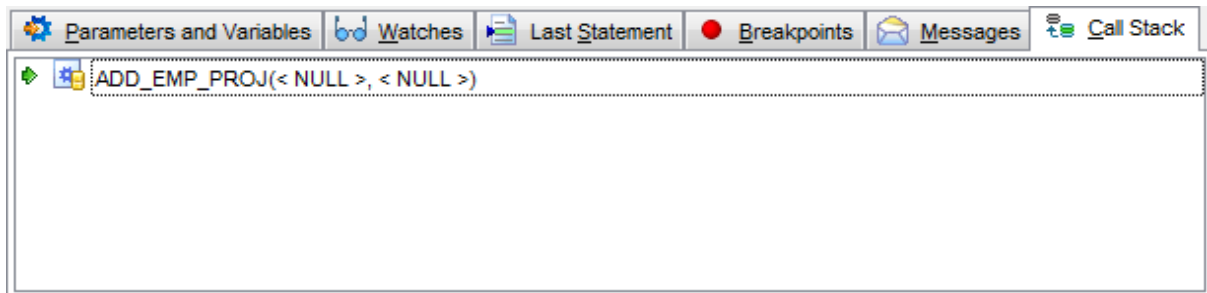
## Messages

This tab displays various messages and errors received from the debugger after execution (if any).



## Call Stack

Use this tab to see the stack (ordered log) of the procedure calls.



The parameters with which the procedure has been called are listed in the brackets after the procedure name.

A double-click on an item under the [Breakpoints](#)<sup>[269]</sup>, [Messages](#)<sup>[270]</sup> and [Call Stack](#)<sup>[270]</sup> tabs leads to the corresponding call.

## 5.7 External Functions

An **External function** is a database function written entirely in a host language to perform data manipulation tasks not directly supported by InterBase/Firebird. It's executed on the server.

External functions give you the ability to create your own functions (like *count*) and integrate them in the database itself. Each external function is arranged as a function belonging to DLL. Thus, one dynamically loaded library consists of at least one function.

**External Function Editor** allows you to define user-defined function properties. It opens automatically when you declare a new user-defined function and is available on editing an existing one.

To open an external function **External Function Editor**, double-click it in the [DB Explorer](#) tree.



- [Using Navigation bar and Toolbar](#)<sup>[273]</sup>
- [Creating/editing external function](#)<sup>[274]</sup>
- [Browsing object dependencies](#)<sup>[888]</sup>
- [Editing object description](#)<sup>[887]</sup>
- [Viewing DDL definition](#)<sup>[886]</sup>











## 5.7.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **External function editor**.

### Object

-  select a database
-  select an external function for editing

### General






-  [compile](#)<sup>[898]</sup> the external function (if it is being created/modified)
-  show SQL help
-  set [printing options](#)<sup>[565]</sup> to [print metadata](#)<sup>[562]</sup> of the external function
-  save the object using the [Quick Save](#)<sup>[922]</sup> feature
-  load the object from buffers using the [Quick Load](#)<sup>[922]</sup> feature
-  refresh the content of the active tab
-  adjust [Object Editors options](#)<sup>[772]</sup>
-  restore the default size and position of the editor window

### Tools



-  view the [dependency tree](#)<sup>[534]</sup> for the external function

Depending on the current tab selection, the **Navigation bar** expands to one or more additional panes with tab-specific actions that can be useful for working with the external function:



### Input Arguments

-  append a new input argument
-  insert an input argument
-  delete the selected input argument
-  move the selected input argument up
-  move the selected input argument down

### Description

-  save object [description](#)<sup>[887]</sup> to file
-  copy [description](#)<sup>[887]</sup> to clipboard

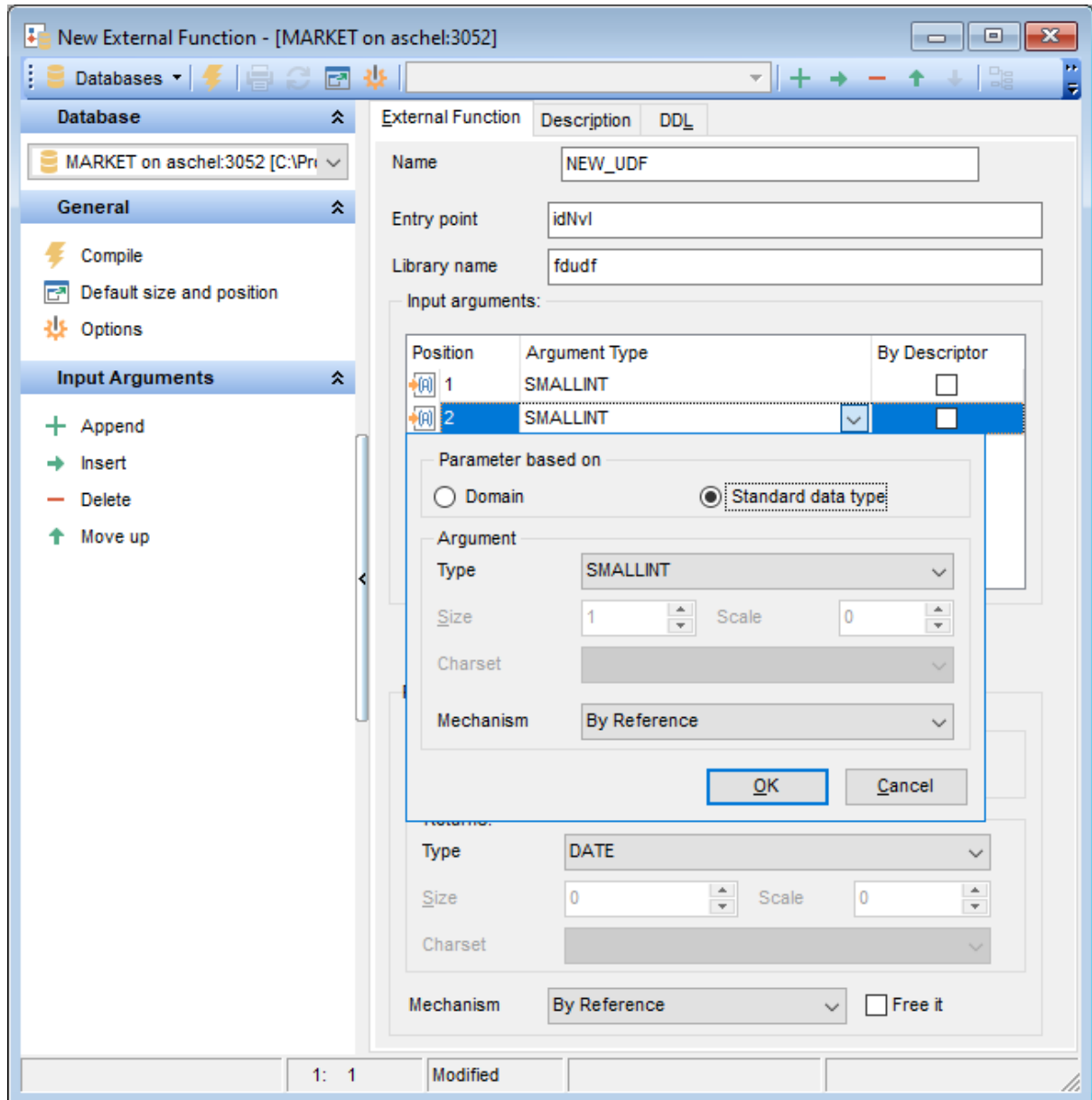
### DDL

-  save [DDL](#)<sup>[886]</sup> to file
-  open [DDL](#)<sup>[886]</sup> in [Execute Script](#)<sup>[330]</sup>

**NOTE:** Items of the **Navigation bar** are also available on the **ToolBar** of **UDF Editor**. To enable the [toolbar](#)<sup>[884]</sup>, open the [Environment Options](#)<sup>[736]</sup> dialog, proceed to the [Windows](#)<sup>[743]</sup> section there and select  *Toolbar* (if you need the toolbar only) or  *Both* (if you need both the toolbar and the [Navigation bar](#)<sup>[882]</sup>) in the **Bar style for child forms** group.

## 5.7.2 Creating/editing external functions

Use the **External Function** tab of **External Function Editor** to view and edit external functions.



### Name

Name of the external function to use in the SQL statements, or modify the name of the external function being edited (this name can be different from the name of the function specified as **Entry point**).

### Entry point

Name of the external function in the source code as stored in the library that is referenced by the external function (*ENTRY\_POINT*).

**Library name**

File name identifying the library that contains the external function (*MODULE\_NAME*).

**Input arguments**

This group is provided for managing the list of input arguments passed to the external function.

Right-click the area to display the context menu allowing you to *append*, *insert*, *delete* the selected argument, or move it *up/down*.

Arguments management tools are also available through the [Navigation bar](#)<sup>[273]</sup> and [toolbar](#)<sup>[273]</sup> of **External Function Editor**.

Use the dropdown button to open [Data Type Editor](#)<sup>[890]</sup> which allows you to define input argument data type properties.

**Returns**


This group allows you to select the *data type / domain* and set *properties* specific for this data type / domain. For details see [Managing parameters](#)<sup>[890]</sup>.

**By**

Use the drop-down list to select the way to pass the return value – *by value*, *by reference* or *by descriptor*.

 **Free it**

This option frees memory of the return value after the external function finishes running (*FREE\_IT*).

To compile an external function, you can use the  **Compile** item available within the [Navigation bar](#)<sup>[273]</sup> or [toolbar](#)<sup>[273]</sup>.

---

**See also:**

[Managing parameters](#)<sup>[890]</sup>

## 5.8 SQL Functions

An **SQL function** is a program (the function body) that can be invoked by using zero or more input values (arguments) to a single value (the result). A Function can be stored as a database object providing reusable code.

**SQL Function Editor** allows you to define user-defined function properties. It opens automatically when you declare a new user-defined function and is available on editing an existing one.



To open an **SQL Function Editor**, double-click it in the [DB Explorer](#)<sup>[63]</sup> tree.

- [Using Navigation bar and Toolbar](#)<sup>[277]</sup>
- [Creating/editing SQL function](#)<sup>[279]</sup>
- [Managing parameters\arguments\variables](#)<sup>[890]</sup>
- [Specifying input parameters](#)<sup>[893]</sup>
- [Browsing object dependencies](#)<sup>[888]</sup>
- [Setting object permissions](#)<sup>[889]</sup>
- [Editing object description](#)<sup>[887]</sup>
- [Viewing DDL definition](#)<sup>[886]</sup>











## 5.8.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **SQL Function editor**.






### Object

-  select a database
-  select an SQL function for editing

### General






-  execute the current SQL Function
-  [compile](#)<sup>[898]</sup> the SQL function (if it is being created/modified)
-  show SQL help
-  set [printing options](#)<sup>[565]</sup> to [print metadata](#)<sup>[562]</sup> of the SQL function
-  save the object using the [Quick Save](#)<sup>[922]</sup> feature
-  load the object from buffers using the [Quick Load](#)<sup>[922]</sup> feature
-  refresh the content of the active tab
-  switches between Text and Visual editor modes
-  adjust [Object Editors options](#)<sup>[772]</sup>
-  restore the default size and position of the editor window

### Tools



-  view the [dependency tree](#)<sup>[534]</sup> for the SQL function
-  define [grants](#)<sup>[728]</sup> on the SQL Function
-  set autogrant privileges for the SQL Function
-  debug the SQL Function using [Debugger](#)<sup>[262]</sup>
-  [create](#)<sup>[232]</sup> a [view](#)<sup>[242]</sup> based on the SQL Function

Depending on the current tab selection, the **Navigation bar** expands to one or more additional panes with tab-specific actions that can be useful for working with the SQL function:



### Input Arguments

-  append a new input argument
  -  insert an input argument
  -  delete the selected input argument
  -  move the selected input argument up
  -  move the selected input argument down
- Export list** - use it to [export](#)<sup>[444]</sup> the arguments list to the specified format

### Description

-  save object [description](#)<sup>[887]</sup> to file
-  copy [description](#)<sup>[887]</sup> to clipboard

### DDL

-  save [DDL](#)<sup>[886]</sup> to file
-  open [DDL](#)<sup>[886]</sup> in [Execute Script](#)<sup>[542]</sup>

**NOTE:** Items of the **Navigation bar** are also available on the **ToolBar** of **UDF Editor**. To

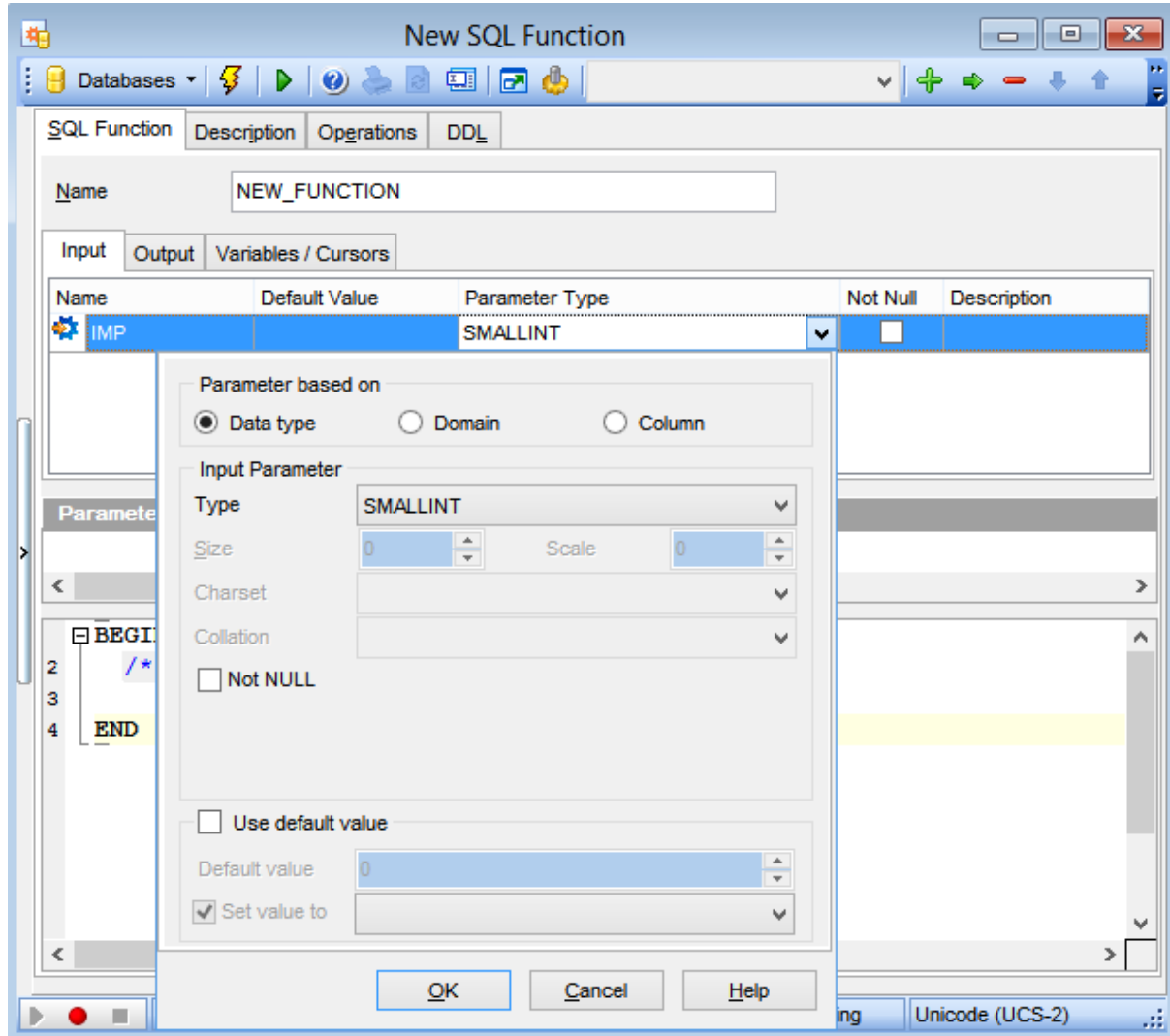
enable the [toolbar](#)<sup>[884]</sup>, open the [Environment Options](#)<sup>[736]</sup> dialog, proceed to the [Windows](#)<sup>[743]</sup> section there and select  *Toolbar* (if you need the toolbar only) or  *Both* (if you need both the toolbar and the [Navigation bar](#)<sup>[882]</sup>) in the **Bar style for child forms** group.

## 5.8.2 Creating/editing SQL Functions

Use the **SQL Function** tab of **SQL Function Editor** to view and edit SQL functions.

### Name

Name of the SQL function.



### Input parameters

This group is provided for managing the list of input parameters passed to the SQL function.

The **Input parameters** list provides the following attributes of each input arguments of the SQL function:

*Name, Default value, Parameter type, Not Null attribute and Description.*

Click the arrow-down button to call [Data Type Editor](#)<sup>[890]</sup> for setting properties of the parameter data type. It allows you to select the source type for the argument being created/edited. It can be one of existing [domains](#)<sup>[172]</sup>, a standard InterBase/Firebird data

type or a column.

### Output parameters

This group is provided for managing the list of output parameters passed to the SQL function.

The **Output parameters** list provides the following attributes of each input arguments of the SQL function:

*Name, Parameter type, Not Null attribute.*

Click the arrow-down button to call Data Type Editor for setting properties of the parameter data type. It allows you to select the source type for the argument being created/edited. It can be one of existing [domains](#)<sup>[172]</sup>, a standard InterBase/Firebird data type or a column.

### Variables/Cursors

This group allows you to select the source type for the return parameter being created/edited. It can be one of existing [domains](#)<sup>[172]</sup> or a standard InterBase/Firebird data type. For detailed information see [Managing parameters](#)<sup>[890]</sup>.

The lower area allows you to specify the function body.

To compile an SQL Function use the  **Compile** item available within the [Navigation bar](#)<sup>[273]</sup> or [toolbar](#)<sup>[273]</sup>.

---

### See also:

[Managing parameters](#)<sup>[890]</sup>

[Specifying input parameters](#)<sup>[893]</sup>



## 5.9 Triggers

A **Trigger** is an object in the database that is invoked when a particular SQL statement is run. In InterBase/Firebird, a trigger is a self-contained program associated with a table or view that automatically performs an action (fires) in response to a DML operation (when a row in the table or view is inserted, updated, or deleted).

**Trigger Editor** allows you to define trigger properties. It opens automatically when you create a new trigger and is available on editing an existing one.

To open a trigger in **Trigger Editor**, double-click it in the [DB Explorer](#)<sup>[63]</sup> tree.

- [Using Navigation bar and Toolbar](#)<sup>[282]</sup>
- [Creating/editing trigger](#)<sup>[285]</sup>
- [Browsing object dependencies](#)<sup>[888]</sup>
- [Editing object description](#)<sup>[887]</sup>
- [Viewing object operations](#)<sup>[894]</sup>
- [Viewing DDL definition](#)<sup>[886]</sup>

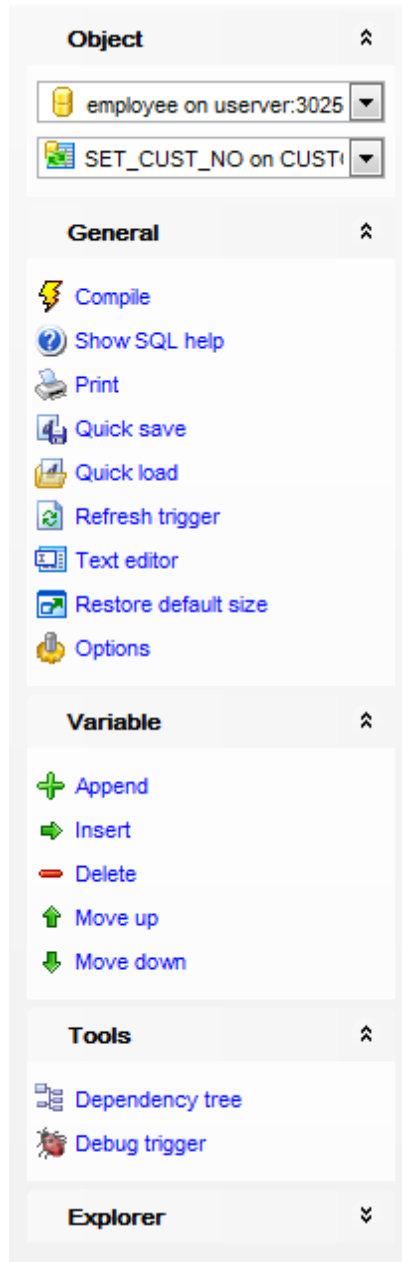
---

### See also:


[Procedure/Trigger Debugger](#)<sup>[262]</sup>

### 5.9.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Trigger Editor**.













#### Object

 select a database




 select a trigger for editing

#### General

 [compile](#)  the trigger (if it is being created/modified)






-  show SQL help
-  set [printing options](#)<sup>[565]</sup> to [print metadata](#)<sup>[562]</sup> of the trigger
-  save the object using the [Quick Save](#)<sup>[922]</sup> feature
-  load the object from buffers using the [Quick Load](#)<sup>[922]</sup> feature
-  refresh the content of the active tab
-  toggle *Text / Visual* editor modes
-  adjust [Visual Mode Editors options](#)<sup>[775]</sup>
-  restore the default size and position of the editor window

### Tools






-  view the [dependency tree](#)<sup>[534]</sup> for the trigger
-  set autogrant privileges for the trigger
-  debug the trigger using [Procedure/Trigger Debugger](#)<sup>[262]</sup>

Depending on the current tab selection, the **Navigation bar** expands to one or more additional panes with tab-specific actions that can be useful for working with the trigger:











### Variable

-  append a new variable
-  insert a variable
-  delete the selected variable
-  move the selected variable up
-  move the selected variable down



### Message

-  append a new message
-  insert a message
-  delete the selected message
-  move the selected message up
-  move the selected message down

### Permissions


-  Grant
-  Grant with Grant Option
-  Revoke
-  Grant All
-  Grant All with Grant Option
-  Revoke All
-  Grant on All
-  Grant on All with Grant Option
-  Revoke on All
-  add a grantee object

### Description

-  save object [description](#)<sup>[887]</sup> to file
-  copy [description](#)<sup>[887]</sup> to clipboard

### DDL

-  save [DDL](#)<sup>[886]</sup> to file

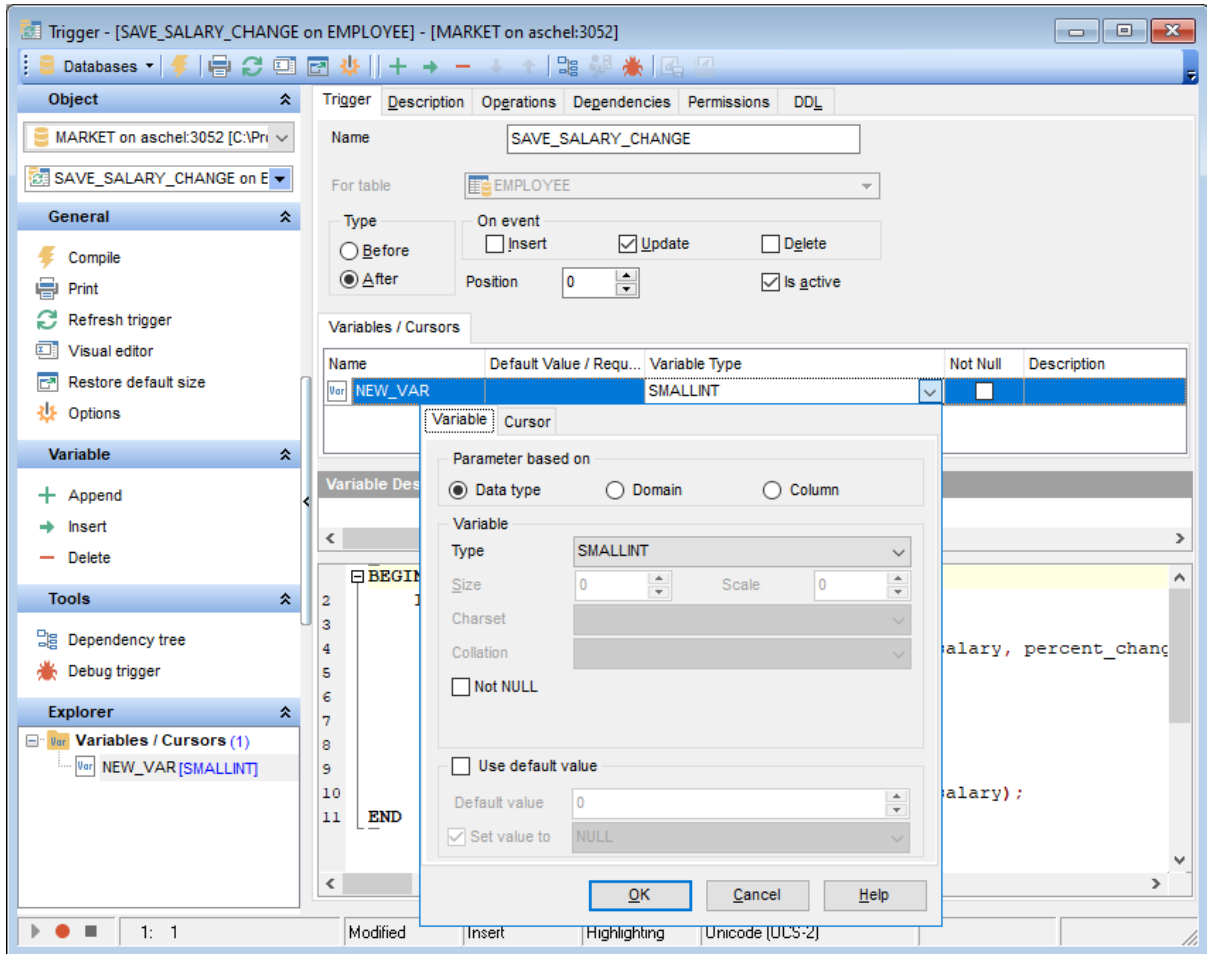
 open [DDL](#)<sup>[886]</sup> in [Execute Script](#)<sup>[542]</sup>

Items of the **Navigation bar** are also available on the **ToolBar** of **Trigger Editor**. To enable the [toolbar](#)<sup>[884]</sup>, open the [Environment Options](#)<sup>[736]</sup> dialog, proceed to the [Windows](#)<sup>[743]</sup> section there and select  *Toolbar* (if you need the toolbar only) or  *Both* (if you need both the toolbar and the [Navigation bar](#)<sup>[882]</sup>) in the **Bar style for child forms** group.

## 5.9.2 Creating/editing trigger

Use the **Trigger** tab of **Trigger Editor** to view and edit the trigger definition.

**Trigger Editor** provides two modes: *Text editor* and *Visual editor*. To switch between these editor modes, use the corresponding items available in the **General** group of the [Navigation bar](#)<sup>[282]</sup> and [toolbar](#)<sup>[284]</sup>.



When in the **Text editor** mode, you can use the editor area to specify the trigger definition as SQL statement using a template, hence it is enough to simply edit the template using the editor area to make appropriate changes, and compile the trigger.

For your convenience the **syntax highlight**, **code completion** and a number of other features for efficient SQL editing are implemented. For details see [Working with query](#)<sup>[333]</sup> and [Using the context menu](#)<sup>[335]</sup>.

When in the **Visual editor** mode, you are provided with a set of widgets allowing you to benefit from graphical user interface while editing the object properties.

### Name

Enter a name for the new trigger, or modify the name of the trigger being edited. Note that trigger name must be unique in the database.

**For table**

The drop-down list of [tables](#)<sup>[178]</sup> and [views](#)<sup>[242]</sup> allows you to select the table or view on which the trigger is executed.

**Type**

Select the trigger behavior type:

*Before*

This selection specifies that the trigger is fired before the triggering SQL statement.

*After*

This selection specifies that the trigger is fired only when all operations specified in the triggering SQL statement have executed successfully.

**On event**

Specify the data modification statement(s) that activate the trigger when it is tried against this table or view:

*Insert*

*Update*

*Delete*

**Position**

Defines the order of firing triggers on the same event. Lower-number triggers fire first, thus trigger with the default position (0) will be the first trigger to fire.

**Is active**

Activates/deactivates the trigger immediately after it is created. A disabled (inactive) trigger still exists as an object in the database, but does not fire.

**Variables**

This group is provided for managing the list of local variables declared and used only in the trigger.

The **Variables** list provides the following attributes of each variable used in the trigger:

*Name* (name of the variable, unique for variables within the trigger)

*Default Value* (a default value for the variable)

*Variable Type* (the data type of the variable, click the arrow-down button to call **Data Type Editor** for setting properties of the variable data type)

*Description* (description of the variable)

Right-click the area to display the context menu allowing you to *append*, *insert*, *delete* the selected variable, or move it *up/down*.

Variables management tools are also available through the [Navigation bar](#)<sup>[282]</sup> and [toolbar](#)<sup>[284]</sup> of **Trigger Editor**.

The **Data Type Editor** popup window allows you to define variable data type properties.

**Parameter based on**

This group allows you to select the source type for the variable being created/edited. It can be one of existing [domains](#)<sup>[172]</sup>, a standard InterBase/Firebird data type or a column.

*Data type*

Specifies that the parameter is based on a standard data type.

*Domain*

Specifies that the parameter is based on a [domain](#)<sup>[172]</sup> previously created in the database. Note that creating parameters based on a domain is only available for Firebird 2.1 and later.

*Column*

Specifies that the parameter is based on a field.

### Variable

This group allows you to select the *data type / domain / column* and set *properties* specific for this data type / domain / column. For details see [Domain options](#)<sup>[204]</sup>, [Options for standard data type](#)<sup>[206]</sup>.

### Cursors

This group is provided for managing the list of cursors declared to define sets of rows that can be retrieved using the cursor.

The **Cursors** list provides the following attributes of each cursor used in the trigger:


*Name* (cursor name)

*Query* (the SELECT query that determines which rows to retrieve, click the arrow-down button to call **Query Data editor** for editing the query text)

*Description* (description of the cursor)

The **Query Data** popup window allows you to specify the SELECT query.

For your convenience the **syntax highlight, code completion** and a number of other features for efficient SQL editing are implemented. For details see [Working with query](#)<sup>[333]</sup> and [Using the context menu](#)<sup>[335]</sup>.

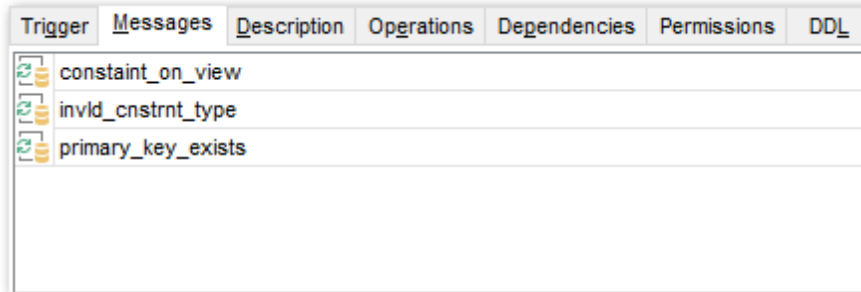
If more convenient, you can click the  button to call [Query Designer](#)<sup>[347]</sup> for building the query visually.

The lower area allows you to specify the trigger body, i.e. an optional list of local variables and their data types and a block of statements in InterBase procedure and trigger language, bracketed by *BEGIN* and *END*. These statements are performed when the trigger fires. When editing the trigger, you can edit its body using the editor area to make appropriate changes, and recompile the trigger.

To compile a trigger, you can use the  **Compile** item available within the [Navigation bar](#)<sup>[282]</sup> or [toolbar](#)<sup>[284]</sup>.

### 5.9.3 Managing trigger messages

The **Messages** tab is provided for displaying the list of trigger messages associated with the system trigger.



The screenshot shows a window with several tabs: Trigger, Messages, Description, Operations, Dependencies, Permissions, and DDL. The Messages tab is active and displays a list of three system triggers, each with a small icon to its left:

Trigger	Messages	Description	Operations	Dependencies	Permissions	DDL
	constant_on_view					
	invid_cnstrnt_type					
	primary_key_exists					

---

#### See also:

[System objects](#) <sup>122</sup>



## 5.10 Exceptions

**Exceptions** are user-defined errors and messages for use in [stored procedures](#)<sup>[253]</sup> and [triggers](#)<sup>[281]</sup>.

When raised by a trigger or a stored procedure, the exception:

- terminates the trigger or procedure in which it was raised and undoes any actions performed (directly or indirectly) by it;
- returns an error message to the calling application.

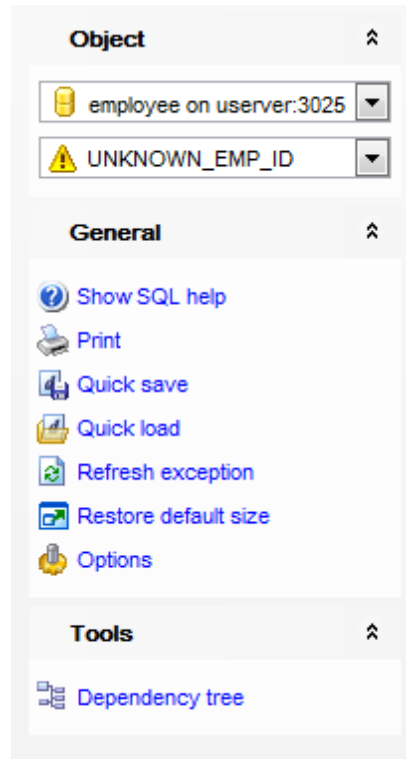
**Exception Editor** allows you to define exception properties. It opens automatically when you create a new exception and is available on editing an existing one.

To open an exception in **Exception Editor**, double-click it in the [DB Explorer](#)<sup>[63]</sup> tree.

- [Using Navigation bar and Toolbar](#)<sup>[290]</sup>
- [Creating/editing exception](#)<sup>[292]</sup>
- [Browsing object dependencies](#)<sup>[888]</sup>
- [Editing object description](#)<sup>[887]</sup>
- [Viewing DDL definition](#)<sup>[886]</sup>

### 5.10.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Exception Editor**.



The **Navigation bar** of **Exception Editor** allows you to:

#### Object

- select a database
- select an exception for editing

#### General

- [compile](#)<sup>[898]</sup> the exception (if it is being created/modified)
- show SQL help
- set [printing options](#)<sup>[565]</sup> to [print metadata](#)<sup>[562]</sup> of the exception
- save the object using the [Quick Save](#)<sup>[922]</sup> feature
- load the object from buffers using the [Quick Load](#)<sup>[922]</sup> feature
- refresh the content of the active tab
- adjust [Object Editors options](#)<sup>[772]</sup>
- restore the default size and position of the editor window



#### Tools

- view the [dependency tree](#)<sup>[534]</sup> for the exception



Depending on the current tab selection, the **Navigation bar** expands to one or more additional panes with tab-specific actions that can be useful for working with the

exception:

### Description

-  save object [description](#)<sup>[887]</sup> to file
-  copy [description](#)<sup>[887]</sup> to clipboard

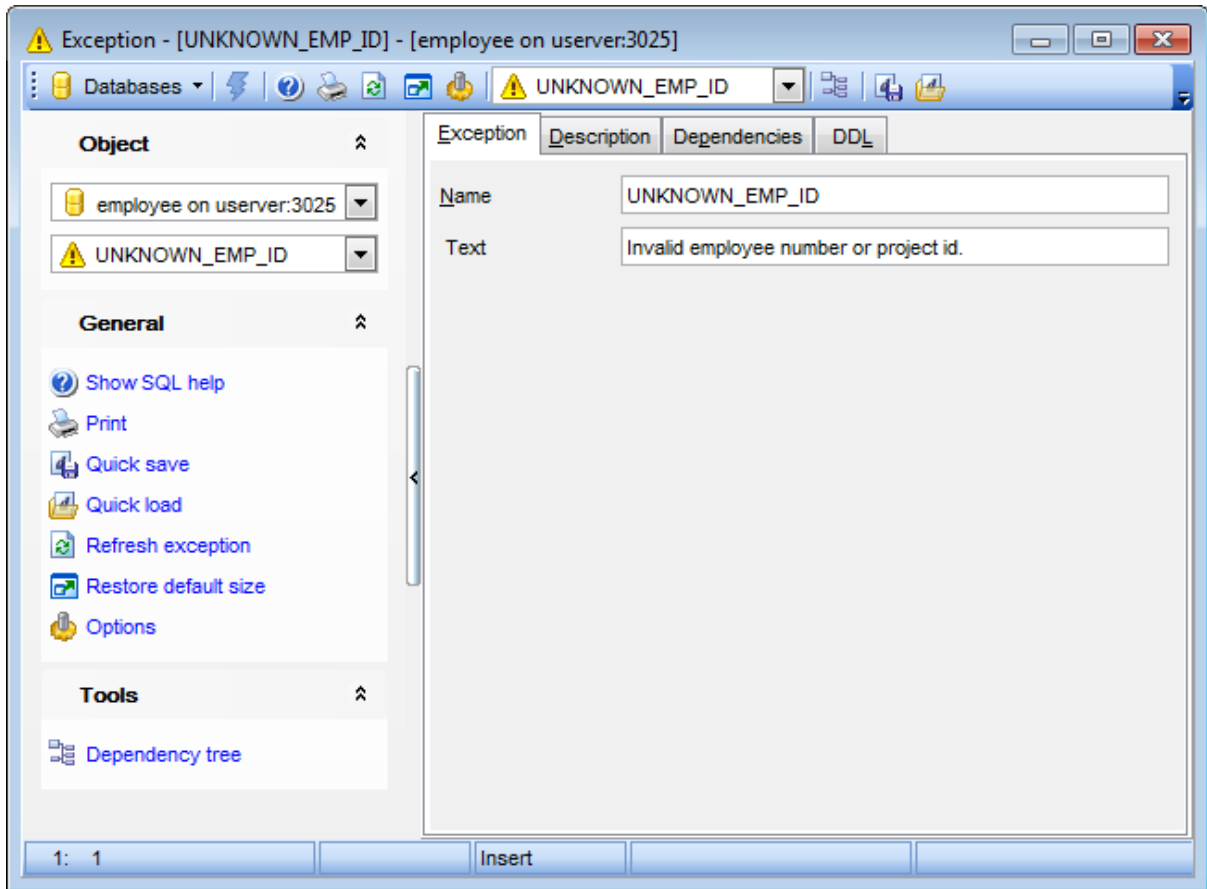
### DDL

-  save [DDL](#)<sup>[886]</sup> to file
-  open [DDL](#)<sup>[886]</sup> in [Execute Script](#)<sup>[542]</sup>

Items of the **Navigation bar** are also available on the **ToolBar** of **Exception Editor**. To enable the [toolbar](#)<sup>[884]</sup>, open the [Environment Options](#)<sup>[736]</sup> dialog, proceed to the [Windows](#)<sup>[743]</sup> section there and select  *Toolbar* (if you need the toolbar only) or  *Both* (if you need both the toolbar and the [Navigation bar](#)<sup>[882]</sup>) in the **Bar style for child forms** group.

## 5.10.2 Creating/editing exception

Use the **Exception** tab of **Exception Editor** to view and edit the exception definition.



### Name

Enter a name for the new exception, or modify the name of the exception being edited. Note that exception name must be unique among exception names in the database.

### Text

Text of the message displayed when the exception is raised. The maximum allowed string length is 78 characters.

To compile an exception, you can use the  **Compile** item available within the [Navigation bar](#)<sup>[290]</sup> or [toolbar](#)<sup>[291]</sup>.

## 5.11 Generators

A **Generator** is a sequential number that can be automatically inserted in a column. A generator is often used to ensure a unique value in a [PRIMARY KEY](#)<sup>[216]</sup>, such as an invoice number, that must uniquely identify the associated row.

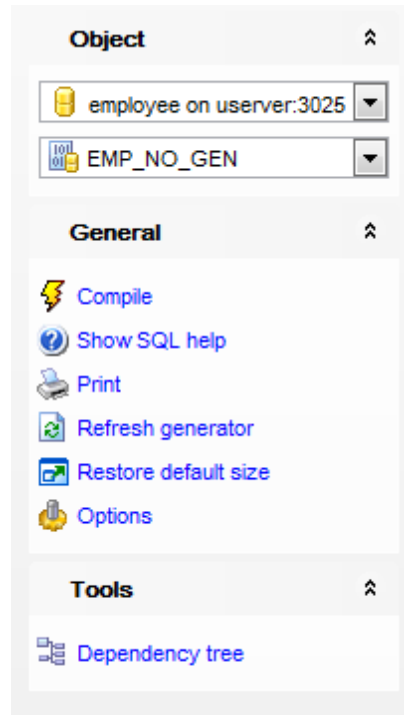
**Generator Editor** allows you to define generator properties. It opens automatically when you create a new generator and is available on editing an existing one.

To open a generator in **Generator Editor**, double-click it in the [DB Explorer](#)<sup>[63]</sup> tree.

- [Using Navigation bar and Toolbar](#)<sup>[294]</sup>
- [Creating/editing generator](#)<sup>[296]</sup>
- [Browsing object dependencies](#)<sup>[888]</sup>
- [Viewing DDL definition](#)<sup>[886]</sup>



### 5.11.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Generator Editor**.









The **Navigation bar** of **Generator Editor** allows you to:

#### Object

-  select a database
-  select a generator for editing

#### General



-  [compile](#)<sup>[898]</sup> the generator (if it is being created/modified)
-  show SQL help
-  set [printing options](#)<sup>[565]</sup> to [print metadata](#)<sup>[562]</sup> of the generator
-  refresh the content of the active tab
-  adjust [Object Editors options](#)<sup>[772]</sup>
-  restore the default size and position of the editor window

#### Tools

-  view the [dependency tree](#)<sup>[534]</sup> for the generator

Depending on the current tab selection, the **Navigation bar** expands to one or more additional panes with tab-specific actions that can be useful for working with the generator:

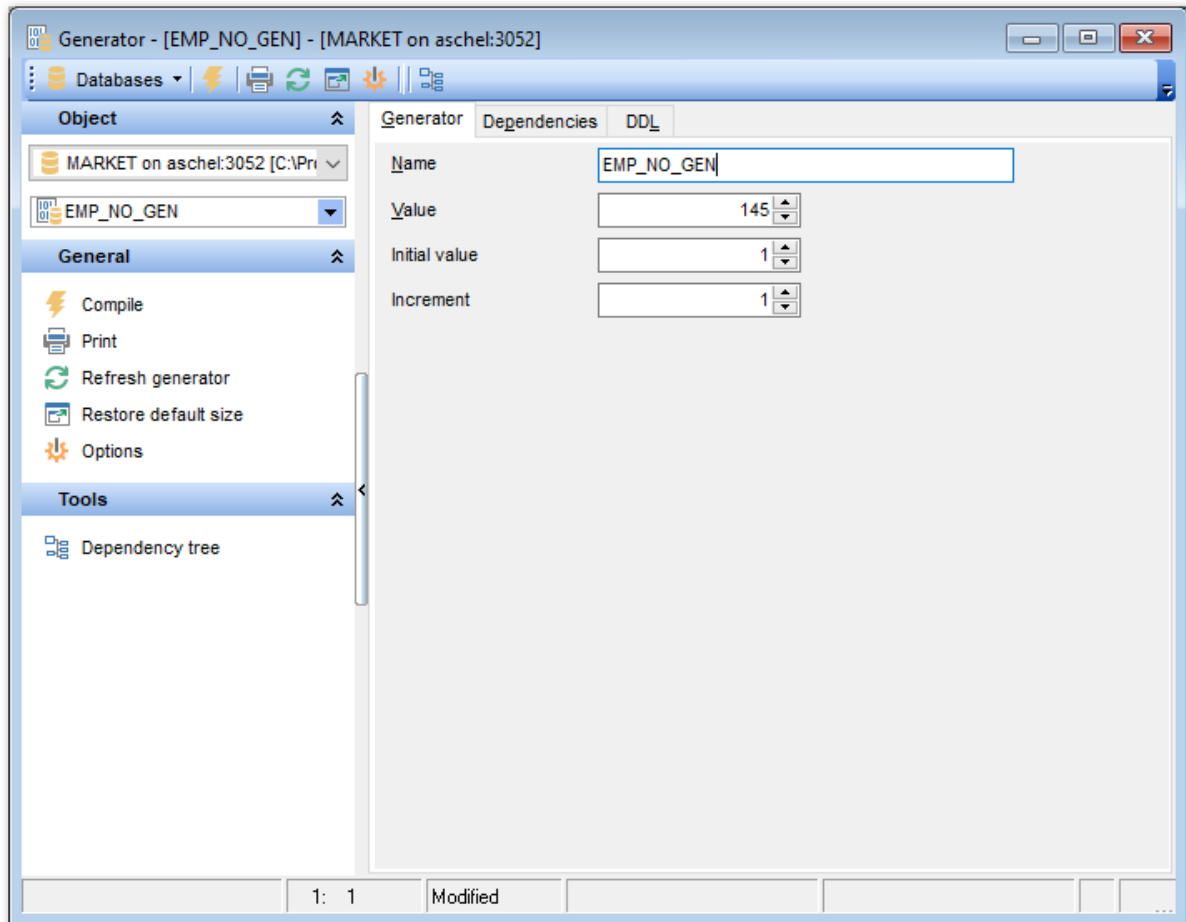
#### DDL

-  save [DDL](#)<sup>[886]</sup> to file
-  open [DDL](#)<sup>[886]</sup> in [Execute Script](#)<sup>[545]</sup>

Items of the **Navigation bar** are also available on the **ToolBar** of **Generator Editor**. To enable the [toolbar](#)<sup>[884]</sup>, open the [Environment Options](#)<sup>[736]</sup> dialog, proceed to the [Windows](#)<sup>[743]</sup> section there and select  *Toolbar* (if you need the toolbar only) or  *Both* (if you need both the toolbar and the [Navigation bar](#)<sup>[882]</sup>) in the **Bar style for child forms** group.

### 5.11.2 Creating/editing generator

Use the **Generator** tab of **Generator Editor** to view and edit the generator definition.



#### Name

Enter a name for the new generator, or modify the name of the generator being edited. Note that generator name must be unique among generator names in the database.

#### Value

Use the spinner control to set a starting value for the generator.

#### Initial value

Start value of the generator.

#### Increment

Allows to specify an increment for the next value.

To compile a generator, you can use the  **Compile** item available within the [Navigation bar](#)<sup>[294]</sup> or [toolbar](#)<sup>[295]</sup>.



## 5.12 BLOB Filters

A *Binary Large Object* (or *BLOB*) is a collection of binary data stored as a single entity in a database management system. BLOBs are typically images, audio or other multimedia objects, though sometimes binary code is stored as a BLOB.

**BLOB filters** are routines for Blobs. They translate Blob data from one type to another, i. e. they allow the contents of Blob subtype X to be displayed as subtype Y, or vice versa. These filters are ideal tools for certain binary operations, such as the compression and translation of Blobs, depending upon the application requirements.

Blob filters are written in the same way that [UDFs](#)<sup>[272]</sup> are written, and are generally part of standard libraries, just as UDFs are.

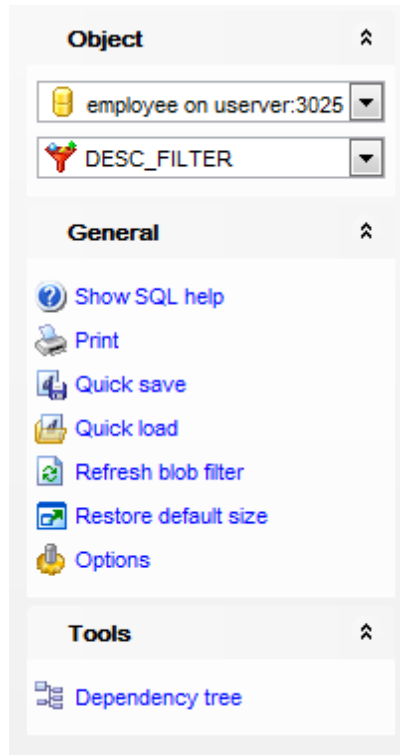
**BLOB Filter Editor** allows you to define BLOB filter properties. It opens automatically when you declare a new BLOB filter and is available on editing an existing one.

To open a BLOB filter in **BLOB Filter Editor**, double-click it in the [DB Explorer](#)<sup>[63]</sup> tree.

- [Using Navigation bar and Toolbar](#)<sup>[298]</sup>
- [Creating/editing BLOB Filter](#)<sup>[300]</sup>
- [Browsing object dependencies](#)<sup>[888]</sup>
- [Editing object description](#)<sup>[887]</sup>
- [Viewing DDL definition](#)<sup>[886]</sup>

### 5.12.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **BLOB Filter Editor**.



The **Navigation bar** of **BLOB Filter Editor** allows you to:

#### Object

- select a database
- select a BLOB filter for editing

#### General

- [compile](#)<sup>[898]</sup> the BLOB filter (if it is being created/modified)
- show SQL help
- set [printing options](#)<sup>[565]</sup> to [print metadata](#)<sup>[562]</sup> of the BLOB filter
- save the object using the [Quick Save](#)<sup>[922]</sup> feature
- load the object from buffers using the [Quick Load](#)<sup>[922]</sup> feature
- refresh the content of the active tab
- adjust [Object Editors options](#)<sup>[772]</sup>
- restore the default size and position of the editor window



#### Tools

- view the [dependency tree](#)<sup>[534]</sup> for the filter



Depending on the current tab selection, the **Navigation bar** expands to one or more additional panes with tab-specific actions that can be useful for working with the BLOB

filter:

### Description

-  save object [description](#) to file
-  copy [description](#) to clipboard

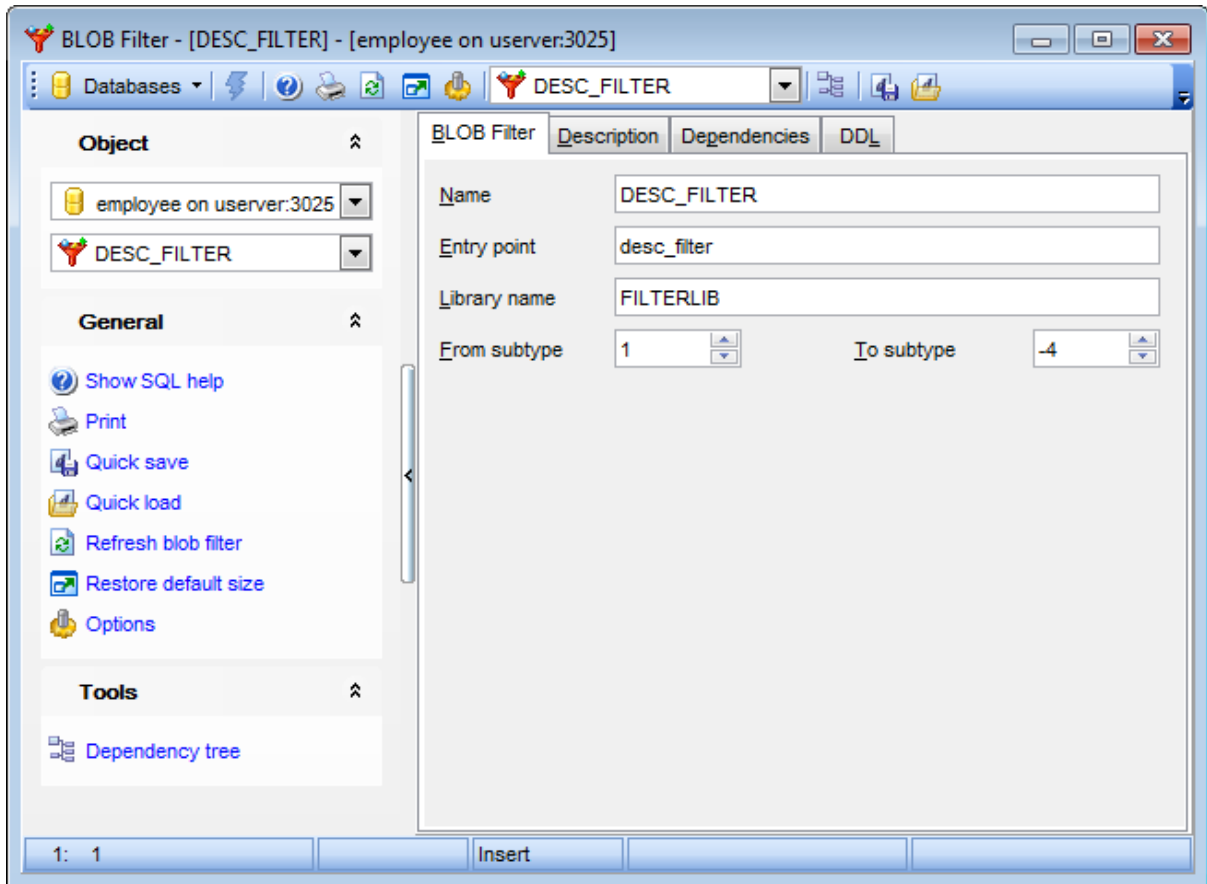
### DDL

-  save [DDL](#) to file
-  open [DDL](#) in [Execute Script](#)

Items of the **Navigation bar** are also available on the **ToolBar** of **BLOB Filter Editor**. To enable the [toolbar](#), open the [Environment Options](#) dialog, proceed to the [Windows](#) section there and select  *Toolbar* (if you need the toolbar only) or  *Both* (if you need both the toolbar and the [Navigation bar](#)) in the **Bar style for child forms** group.

### 5.12.2 Creating/editing BLOB Filter

Use the **BLOB Filter** tab of **BLOB Filter Editor** to view and edit the BLOB filter definition.



#### Name

Enter a name for the new filter to use in the SQL statements, or modify the name of the filter being edited. Note that filter name must be unique among filter names in the database.

#### Entry point

Name of the BLOB filter in the source code as stored in a linked library (*ENTRY\_POINT*).

#### Library name

File name identifying the object module in which the filter is stored (*MODULE\_NAME*).

Each filter declared to the database should have a unique combination of *input type* and *output type* integer values. The server provides a built-in type of 1, for handling text. User-defined types are expressed as negative values.

#### From subtype

Indicates the Blob subtype from which data is to be converted (*INPUT\_TYPE*).

**To subtype**

Indicates the Blob subtype into which data is to be converted (*OUTPUT\_TYPE*).

To compile a BLOB filter, you can use the  **Compile** item available within the [Navigation bar](#)<sup>[298]</sup> or [toolbar](#)<sup>[299]</sup>.

## 5.13 Journals

Database **Journaling** improves VLDB management and facilitates disaster recovery. When journaling is enabled, all transaction changes are safely recorded on durable storage before the transaction is committed. This guarantees the ACID properties of a transaction (the database industry standards for Atomicity, Consistency, Isolation, and Durability).

A **Journal archive** is the set of destination directories that will hold the current set of **journal** files for a particular database. The purpose of the journal archive is to support long-term database recovery.

Note that **Journaling** is only available on the Server Edition of InterBase 2009 and higher.

### Creating Journal

To create a journal:

- select the **Database | New Object...** [main menu](#)<sup>[882]</sup> item;
- select **Journal** in the [Create New Object](#)<sup>[164]</sup> dialog;
- define journal properties using the appropriate tabs of [Journal Editor](#)<sup>[304]</sup>.

**Hint:** To create a journal, you can also right-click the **Journal** node in the [DB Explorer](#)<sup>[63]</sup> tree and select the **Create Journal** item from the context menu.

After the journaling configuration is set, to [archive](#)<sup>[308]</sup> a database or journal files to the archive:

- select the **Database | New Object...** [main menu](#)<sup>[882]</sup> item;
- select **Journal** in the [Create New Object](#)<sup>[164]</sup> dialog;
- follow instructions of [Backup Database](#)<sup>[652]</sup> wizard.

**Hint:** To archive a database or journal files, you can also right-click the **Journal** node in the [DB Explorer](#)<sup>[63]</sup> tree and select the **New Journal...** item from the context menu.

### Viewing Journal

To view journal configuration:

- right-click the **Journal** node in the [DB Explorer](#)<sup>[63]</sup> tree and select the **View Journal** context menu item, or simply double-click the node;
- view journal journaling configuration using the appropriate tabs of [Journal Editor](#)<sup>[304]</sup>.

### Sweeping Journal

To [sweep](#)<sup>[308]</sup> archives until the sequence number:

- right-click the archive with the required sequence number within the **Journal** node in the [DB Explorer](#)<sup>[63]</sup> tree and select the **Tasks | Sweep Until...** context menu item;
- confirm sweeping in the dialog window.

### Dropping Journal

To [drop](#)<sup>[308]</sup> a journal:

- right-click the **Journal** node in the [DB Explorer](#)<sup>[63]</sup> tree and select the **Drop Journal** context menu item;
- confirm dropping in the dialog window.

**Note:** If more convenient, you can also use the following [shortcuts](#)<sup>[932]</sup>:  
*Ctrl+N* to create a journal.

### 5.13.1 Journal Editor

**Journal Editor** allows you to define journal properties. It opens automatically when you create a new journal and is available on editing an existing one (see [Create journal](#)<sup>[302]</sup> and [Edit journal](#)<sup>[302]</sup> for details).

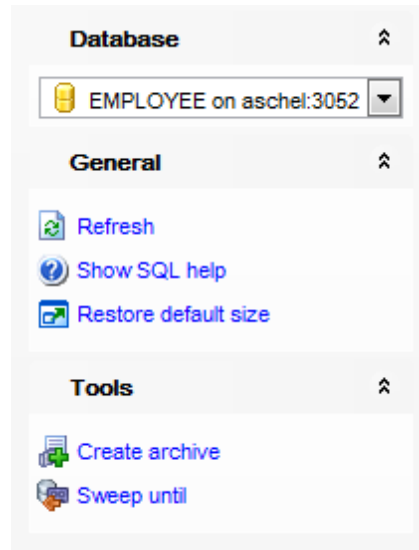
To open a journal in **Journal Editor**, double-click it in the [DB Explorer](#)<sup>[63]</sup> tree.

- [Using Navigation bar and Toolbar](#)<sup>[305]</sup>
- [Creating/viewing journal](#)<sup>[306]</sup>
- [Viewing DDL definition](#)<sup>[386]</sup>



### 5.13.1.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Journal Editor**.



The **Navigation bar** of **Journal Editor** allows you to:

#### General

- compile the journal configuration (if it is being initially set)
- show SQL help
- adjust [Object Editors options](#)<sup>[772]</sup>
- restore the default size and position of the editor window

#### Tools

- create database backup
- sweep backups until current sequence

Depending on the current tab selection, the **Navigation bar** expands to one or more additional panes with tab-specific actions that can be useful for working with the journal:

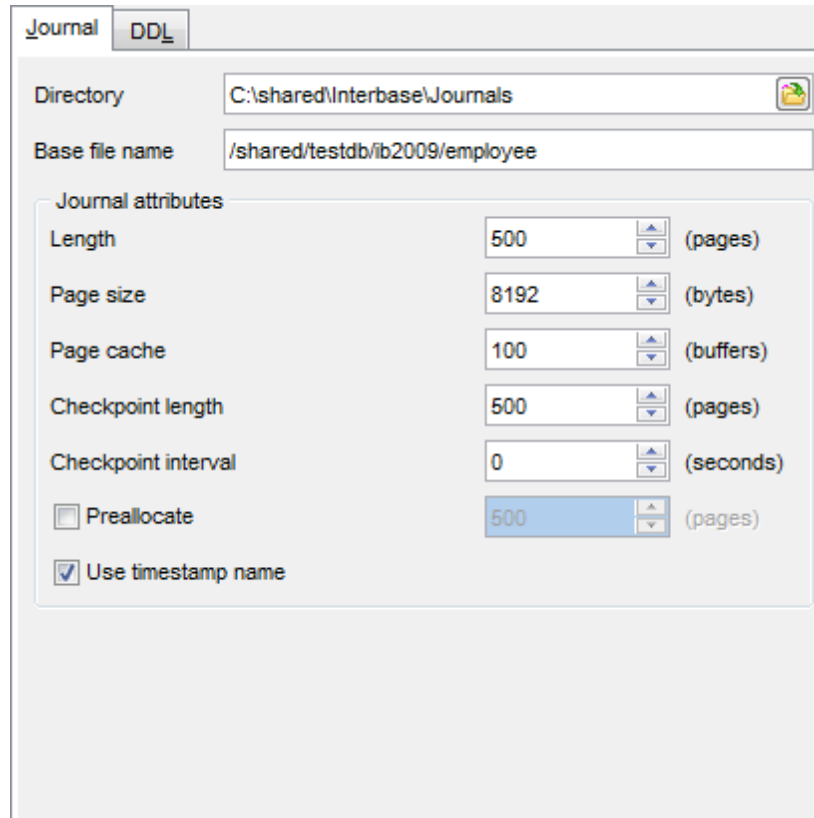
#### DDL

- save [DDL](#)<sup>[886]</sup> to file
- open [DDL](#)<sup>[886]</sup> in [Execute Script](#)<sup>[545]</sup>

Items of the **Navigation bar** are also available on the **ToolBar** of **Journal Editor**. To enable the [toolbar](#)<sup>[884]</sup>, open the [Environment Options](#)<sup>[736]</sup> dialog, proceed to the [Windows](#)<sup>[743]</sup> section there and select  *Toolbar* (if you need the toolbar only) or  *Both* (if you need both the toolbar and the [Navigation bar](#)<sup>[882]</sup>) in the **Bar style for child forms** group.

### 5.13.1.2 Creating/viewing journal

The **Journal** tab of **Journal Editor** allows you to set options that control the journaling configuration of the database.



The screenshot shows the 'Journal' tab of the 'Journal Editor' dialog box. It has two tabs: 'Journal' and 'DDL'. The 'Journal' tab is active. The 'Directory' field contains 'C:\shared\Interbase\Journals' and has a folder icon button to its right. The 'Base file name' field contains '/shared/testdb/ib2009/employee'. Below these fields is a section titled 'Journal attributes' containing several settings:

Attribute	Value	Unit
Length	500	(pages)
Page size	8192	(bytes)
Page cache	100	(buffers)
Checkpoint length	500	(pages)
Checkpoint interval	0	(seconds)
Preallocate	<input type="checkbox"/>	500 (pages)
Use timestamp name	<input checked="" type="checkbox"/>	

#### Directory

Type in or use the  button to specify the full path to the journal file.

#### Base file name

Enter the base file name of the journal file.

#### Journal attributes

##### Length

Specifies the number of pages that will be written to the journal file before initiating a rollover to a new journal file. A single journal file is limited to 2GB in size.

##### Page size

Determines the size (in *bytes*) of a journal page. A journal page size must be at least twice the size of a database page size. If a journal page size of less is specified, it will be rounded up to twice the database page size and a warning will be returned.

##### Page cache

Determines the number of journal buffers that will be allocated. The size of each buffer is the same as the journal page size.

**Checkpoint length**

Determines the number of journal pages to be written before initiating a database checkpoint.

**Checkpoint interval**

Determines the number of seconds between database checkpoints.

**Note:** If both **Checkpoint length** and **Checkpoint interval** are specified, whichever event occurs first will initiate a database checkpoint.


 **Preallocate**

Use this option to reserve specified amount (in pages) of disk space for the journal.

 **Use timestamp name**

Determines whether or not the file creation timestamp will be appended to the base journal file name. If this option is enabled, the base journal file name will be appended with a timestamp of the form:

`<YYYY>_<MM>_<DD>T<hh>_<mm>_<ss>Z.<sequence-number>.journal`

To execute *CREATE JOURNAL* with the specified parameters and *CREATE JOURNAL ARCHIVE*, you can use the  **Compile** item available within the [Navigation bar](#)<sup>[305]</sup> or [toolbar](#)<sup>[305]</sup>.

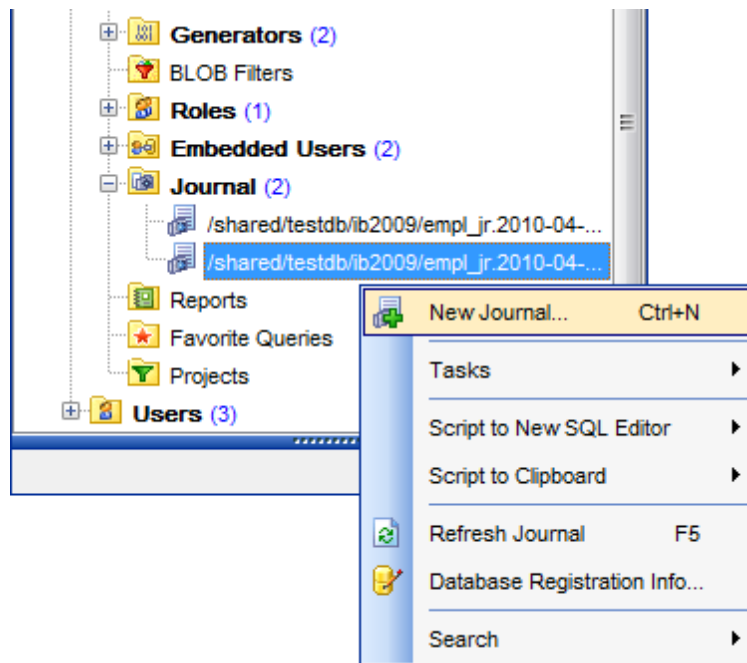
### 5.13.2 Journal management

All journal archive items within the **Journals** node are denoted by an archive sequence number that corresponds to the order in which the items were created in the archive.

#### Creating new backup archives

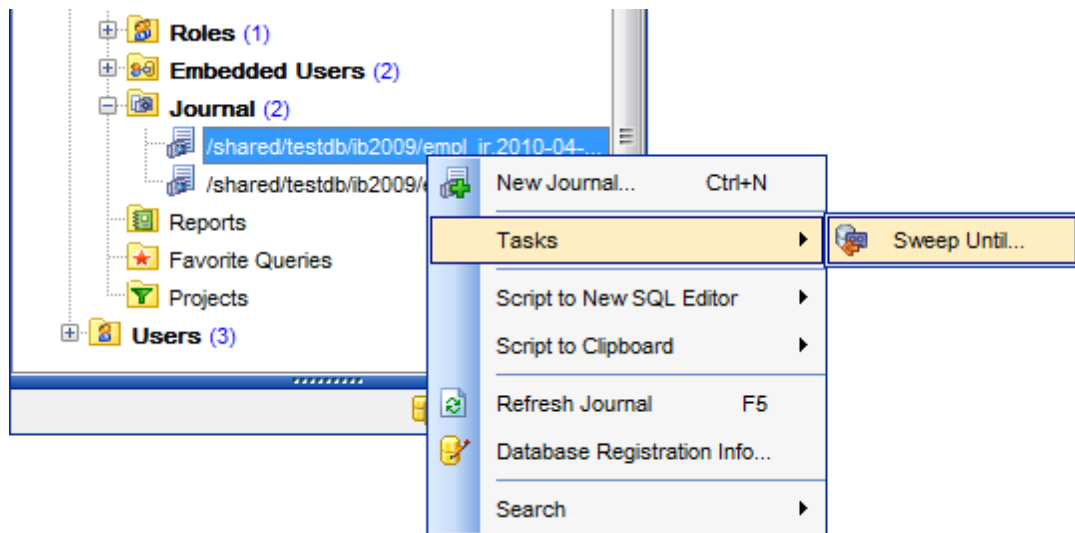
As the number of journal files grows in the archive, when you have not created more recent archived database dumps, the time that you will need to recover a database from the archive also grows. Therefore, it is a good practice to periodically create additional database dumps in the archive.

To create a new backup archive, right-click the **Journal** node and select the **New Journal...** item from the context menu. [Backup Database](#)<sup>[652]</sup> wizard will guide you through the process of creating a new backup.



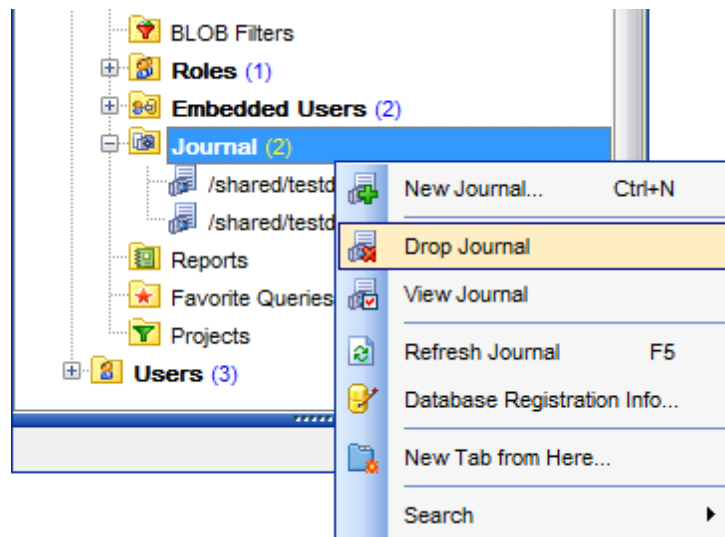
#### Sweeping

The archive may grow in storage size infinitely, as the database and the current journal files are continually archived. To garbage-collect archive items less than an archive sequence number, right-click the archive with the required sequence number within the **Journal** node in the [DB Explorer](#)<sup>[63]</sup> tree and select the **Tasks | Sweep Until...** item from the context menu.



### Dropping journal

Dropping journal disables journal archiving for the database. It causes all journal files and database file dumps to be deleted in all journal archive directories. To drop the journal, right-click the **Journal** node and select the **Drop Journal** context menu item.



### Viewing journal

Created journals can be opened to view. The appeared dialog allows all the operations described above except [dropping journal](#)<sup>[309]</sup>. This how this dialog looks:

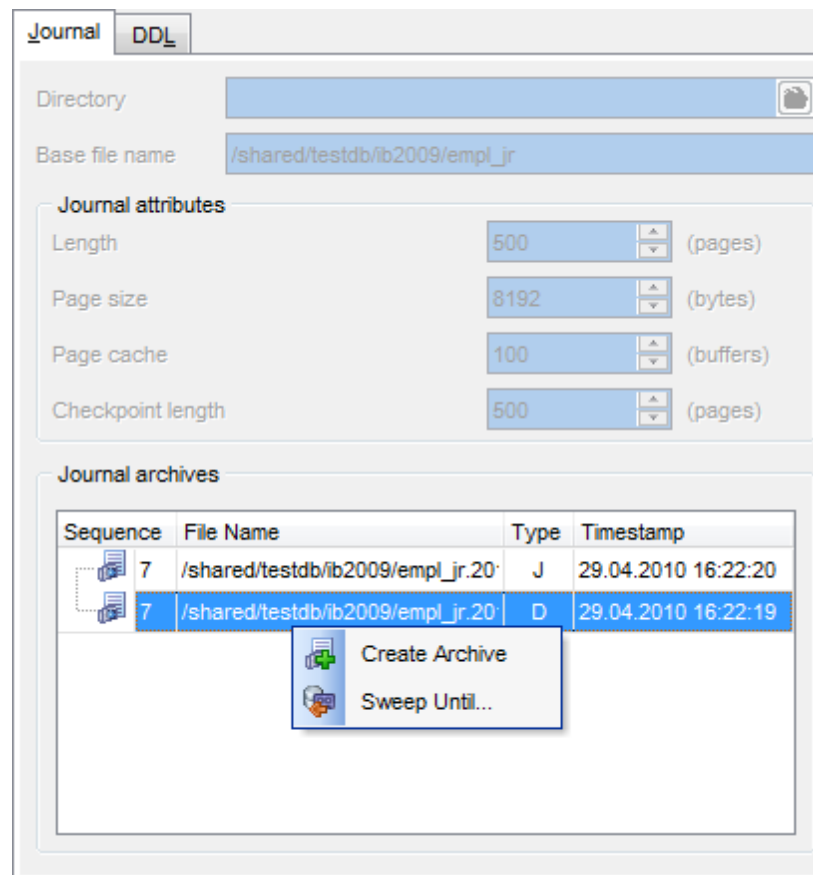




Table provides information about sequences. You can  [create new archive](#)<sup>[308]</sup> or  [sweep backups](#)<sup>[308]</sup> using corresponding context menu or navigation bar items.

## 5.14 Database Triggers

A **Database trigger** is a PSQL module that is executed when a connection-level or transaction-level event occurs.

**Database triggers** are used only for centralized, global operations that should be fired for the triggering statement, regardless of which user or database application issues the statement.

Note that **Database triggers** are only available on Firebird 2.1 and higher.

**Database Trigger Editor** allows you to define database trigger properties. It opens automatically when you create a new database trigger and is available on editing an existing one.



To open a database trigger in **Database Trigger Editor**, double-click it in the [DB Explorer](#) tree.

- [Using Navigation bar and Toolbar](#)<sup>[312]</sup>
- [Creating/editing DB Trigger](#)<sup>[314]</sup>
- [Browsing object dependencies](#)<sup>[888]</sup>
- [Editing object description](#)<sup>[887]</sup>
- [Viewing object operations](#)<sup>[894]</sup>
- [Setting object permissions](#)<sup>[889]</sup>
- [Viewing DDL definition](#)<sup>[886]</sup>










### 5.14.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Database Trigger Editor**.





#### Object

-  select a database
-  select a database trigger for editing

#### General






-  [compile](#)<sup>[898]</sup> the database trigger (if it is being created/modified)
-  show SQL help
-  set [printing options](#)<sup>[565]</sup> to [print metadata](#)<sup>[562]</sup> of the database trigger
-  save the object using the [Quick Save](#)<sup>[922]</sup> feature
-  load the object from buffers using the [Quick Load](#)<sup>[922]</sup> feature
-  refresh the content of the active tab
-  toggle *Text* / *Visual* editor modes
-  adjust [Visual Mode Editors options](#)<sup>[775]</sup>
-  restore the default size and position of the editor window

#### Tools






-  view the [dependency tree](#)<sup>[534]</sup> for the database trigger
-  define [grants](#)<sup>[725]</sup> on the database trigger
-  set autogrant privileges for the database trigger
-  debug the database trigger using [Procedure/Trigger Debugger](#)<sup>[262]</sup>

Depending on the current tab selection, the **Navigation bar** expands to one or more additional panes with tab-specific actions that can be useful for working with the database trigger:

#### Variable

-  append a new variable
-  insert a variable
-  delete the selected variable
-  move the selected variable up
-  move the selected variable down

#### Message

-  append a new message
-  insert a message
-  delete the selected message
-  move the selected message up
-  move the selected message down

#### Permissions

-  add a grantee object

#### Description


-  save object [description](#)<sup>[887]</sup> to file



 copy [description](#) to clipboard

#### DDL

 save [DDL](#) to file

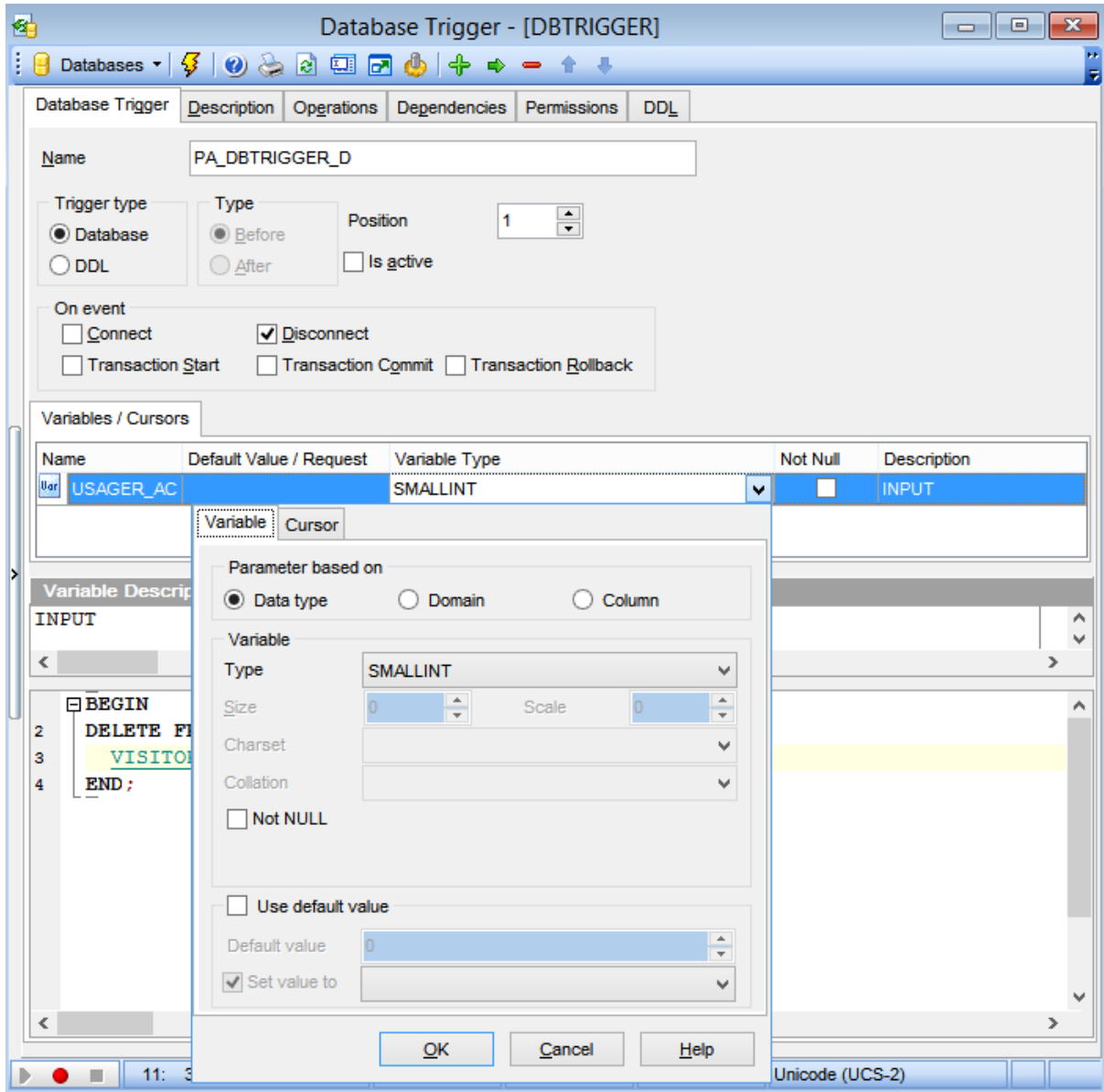
 open [DDL](#) in [Execute Script](#)

**NOTE:** Items of the **Navigation bar** are also available on the **ToolBar** of **Database Trigger Editor**. To enable the [toolbar](#), open the [Environment Options](#) dialog, proceed to the [Windows](#) section there and select  *Toolbar* (if you need the toolbar only) or  *Both* (if you need both the toolbar and the [Navigation bar](#)) in the **Bar style for child forms** group.

### 5.14.2 Creating/editing DB Trigger

Use the **Database Trigger** tab of **Database Trigger Editor** to view and edit the database trigger definition.

**Database Trigger Editor** provides two modes: *Text editor* and *Visual editor*. To switch between these editor modes, use the corresponding items available in the **General** group of the [Navigation bar](#)<sup>[312]</sup> and [toolbar](#)<sup>[313]</sup>.



When in the **Text editor** mode, you can use the editor area to specify the database trigger definition as SQL statement using a template, hence it is enough to simply edit the template using the editor area to make appropriate changes, and compile the database trigger.

For your convenience the **syntax highlight, code completion** and a number of other features for efficient SQL editing are implemented. For details see [Working with query](#)<sup>[333]</sup> and using the context menu.

When in the **Visual editor** mode, you are provided with a set of widgets allowing you to benefit from graphical user interface while editing the object properties.

### Name

Enter a name for the new database trigger, or modify the name of the trigger being edited. Note that database trigger name must be unique in the database.

### Trigger type

*Database*

The trigger is created for the *database event*. Use the **On event** group to specify the triggering event

*DDL*

The trigger is executed only when committing the transaction in which the affected DDL command runs. Check the required DDL statement(s) from the **On event** group.

### On event

If the  *Database* trigger has been selected:

*Connect*

- Database connection established
- A transaction is started
- Triggers are fired - uncaught exceptions rollback the transaction, disconnect the attachment and are returned to the client
- The transaction is committed

*Disconnect*

- A transaction is started
- Triggers are fired - uncaught exceptions rollback the transaction, disconnect the attachment and are swallowed
- The transaction is committed
- The attachment is disconnected

*Transaction Start*

- Triggers are fired in the newly user created transaction - uncaught exceptions are returned to the client, and the transaction is rolled back

*Transaction Commit*

- Triggers are fired in the committing transaction - uncaught exceptions rollback the triggers savepoint, the commit command is aborted, and the exception is returned to the client

*Transaction Rollback*

Triggers are fired in the rollback of the transaction - changes done will be rolled back together with the transaction; exceptions are swallowed.

If the  *DDL* trigger type has been selected the list of available DDL statements is displayed.

**Position**

Defines the order of firing database triggers on the same event. Lower-number triggers fire first, thus trigger with the default position (0) will be the first trigger to fire.

 **Is active**

Activates/deactivates the database trigger immediately after it is created. A disabled (inactive) trigger still exists as an object in the database, but does not fire.

**Variables**

This group is provided for managing the list of local variables declared and used only in the database trigger.

**Parameter based on**

This group allows you to select the source type for the variable being created/edited. It can be one of existing [domains](#)<sup>[172]</sup>, a standard InterBase/Firebird data type or a column.

 *Data type*

Specifies that the parameter is based on a standard data type.

 *Domain*

Specifies that the parameter is based on a [domain](#)<sup>[172]</sup> previously created in the database. Note that creating parameters based on a domain is only available for Firebird 2.1 and later.

 *Column*

Specifies that the parameter is based on a field.

**Data type**

The screenshot shows a dialog box with two tabs: 'Variable' and 'Cursor'. The 'Variable' tab is selected. The 'Parameter based on' section has three radio buttons: 'Data type' (selected), 'Domain', and 'Column'. Below this, the 'Variable' section contains several fields: 'Type' is a dropdown menu showing 'NUMERIC'; 'Precision' is a numeric input field with '12'; 'Scale' is a numeric input field with '2'; 'Charset' and 'Collation' are dropdown menus; 'Not NULL' is a checkbox; 'Use default value' is a checkbox; 'Default' is a text input field with '0'; and 'Set default value to' is a dropdown menu showing 'NULL'. At the bottom, there are three buttons: 'OK', 'Cancel', and 'Help'.

**Variable**

For NUMERIC and DECIMAL data types set digit **precision** (digits of precision to store, 1 to 18) and **scale** (number of decimal places that can be stored, 1 to 18) in the appropriate boxes; for CHAR and VARCHAR set **length** (in characters), for BLOB data type set **segment size** and **subtype**. You can also set the variable **character set** and **collation order** within this group.

## Domain

Use the **Domain** drop-down list of existing [domains](#)<sup>[172]</sup> to select the domain to be used for the variable. The collation drop-down list is only available if the selected domain is based on a string data type. Use this drop-down list to select the collation order to be used for string data stored in the variable.

To [edit](#)<sup>[172]</sup> the selected domain using [Domain Editor](#)<sup>[172]</sup>, click the **Edit Domain** button. To [create](#)<sup>[172]</sup> a new domain for the field using [Domain Editor](#)<sup>[172]</sup>, click the **New Domain** button.

## Column

The screenshot shows the 'Variable' dialog box in the SQL Manager for InterBase/Firebird, specifically the 'Cursor' tab. The dialog is titled 'Variable' and has two tabs: 'Variable' and 'Cursor'. The 'Cursor' tab is active. It contains several sections: 'Parameter based on' with radio buttons for 'Data type', 'Domain', and 'Column' (selected); 'Column' section with 'Table name' (TCRESPON1) and 'Field name' (RESPONSABLE) dropdowns, a 'Not NULL' checkbox, and a 'Collation' dropdown (not defined); 'Column info' section showing 'CHAR(1) CHARACTER SET WIN1251'; and 'Use default value' section with a 'Default' text box and a 'Set default value to' dropdown (NULL). At the bottom are 'OK', 'Cancel', and 'Help' buttons.

Column group contains **Table name** and **Field name** drop-down lists that can be used to define the the column variable should be based on. Within the **Collation** drop-down list you can set the collation order.

The **Not NULL** and **Use default value** options are common for all types.

**Not NULL**

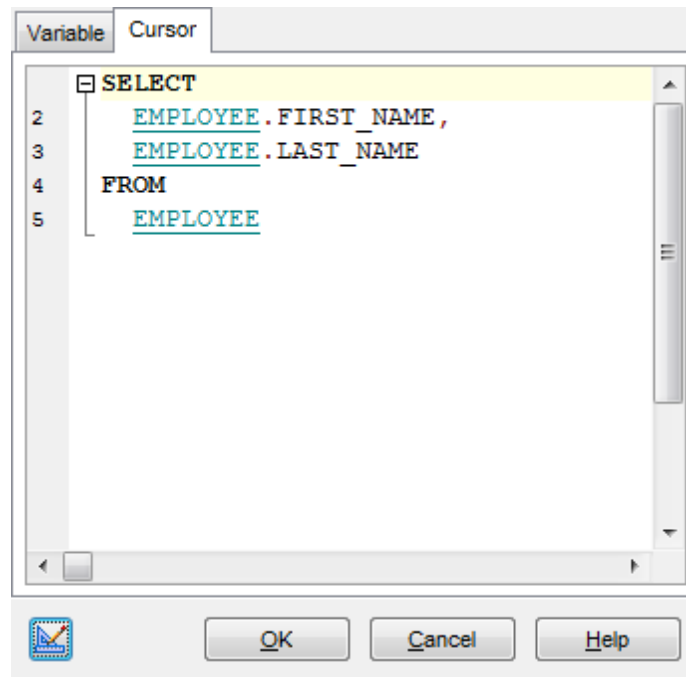
This option indicates if a variable can contain NULL values.

**Use default value**

With this option you can set the default variable value.


### **Cursors**

This group is provided for managing the list of cursors declared to define sets of rows that can be retrieved using the cursor.



For details refer to [Creating/editing trigger](#)<sup>[285]</sup>.

The lower area allows you to specify the trigger body, i.e. an optional list of local variables and their data types and a block of statements in InterBase procedure and trigger language, bracketed by *BEGIN* and *END*. These statements are performed when the trigger fires. When editing the trigger, you can edit its body using the editor area to make appropriate changes, and recompile the trigger.

To compile a database trigger, you can use the  **Compile** item available within the [Navigation bar](#)<sup>[312]</sup> or [toolbar](#)<sup>[313]</sup>.

## 5.15 Collations

A **Collation** is an object in the database that set comparison rules for text data in the database. The collation must already be present on your system (typically in a library file) and must be properly registered in a .conf file in the intl subdirectory of your Firebird installation. You may also base the collation on one that is already present in the database.

**Collation Editor** allows you to define collation properties. It opens automatically when you create a new collation and is available on editing an existing one.

To open a collation in **Collation Editor**, double-click it in the [DB Explorer](#)<sup>[63]</sup> tree.



- [Using Navigation bar and Toolbar](#)<sup>[32]</sup>
- [Creating/editing collation](#)<sup>[32]</sup>








### 5.15.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Database Trigger Editor**.

#### Object

-  select a database
-  select a collation for editing

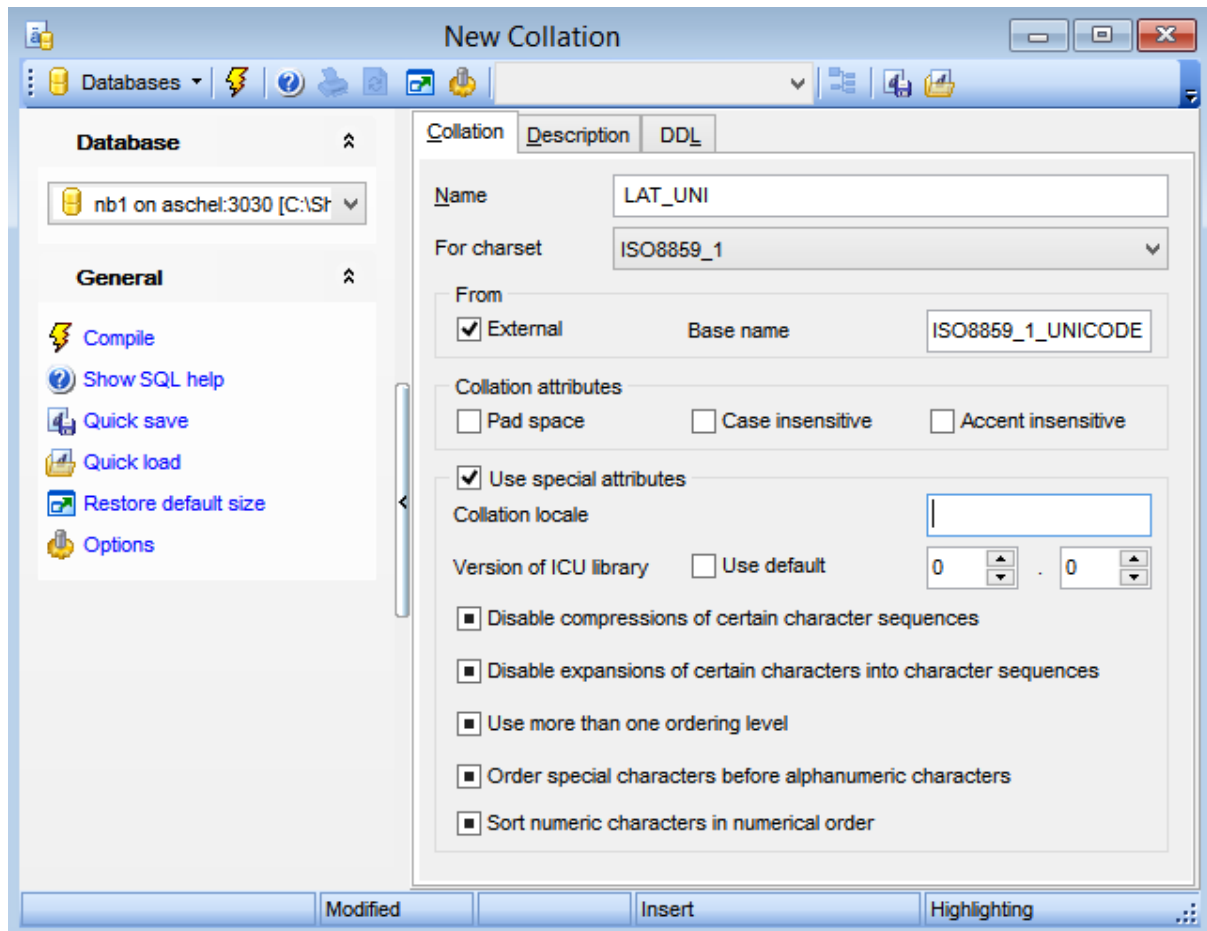
#### General

-  [compile](#)<sup>[898]</sup> the collation (if it is being created/modified)
-  set [printing options](#)<sup>[565]</sup> to [print metadata](#)<sup>[562]</sup> of the collation
-  refresh the content of the active tab
-  adjust [Visual Mode Editors options](#)<sup>[775]</sup>
-  restore the default size and position of the editor window

**NOTE:** Items of the **Navigation bar** are also available on the **ToolBar** of **Database Trigger Editor**. To enable the [toolbar](#)<sup>[884]</sup>, open the [Environment Options](#)<sup>[736]</sup> dialog, proceed to the [Windows](#)<sup>[743]</sup> section there and select  *Toolbar* (if you need the toolbar only) or  *Both* (if you need both the toolbar and the [Navigation bar](#)<sup>[882]</sup>) in the **Bar style for child forms** group.

## 5.15.2 Creating/editing collation

Use the **Collation** tab of **Collation Editor** to view and edit the collation definition.



### Name

Enter a name for the new collation, or modify the name of the collation being edited.

### For charset

Use the dropdown list to select the charset present in the database.

### From

Select the collation from the existing ones in **Base name**, or check the  **External** option and specify the name manually. The name should strongly correspond to the collation existing in \$fbroot/intl/fbintl.conf file.

### Collation attributes

#### Pad space

Set this option ON to exclude pad spaces.

#### Case insensitive

Set this option ON not to consider case in collations.

#### Accent insensitive

Set this option ON not to consider accents in collations.

Set the  **Use special attributes** flag to add specific attributes to the collation.

Specify the **Collation locale** manually. It required to specify the exact **Version of ICU library** to use, or switching on the  **Use default** option.

**Disable compression of certain character sequence**

Use this option to disable compression of certain character sequence. Compressions cause certain character sequences to be sorted as atomic units.

**Disable expansions of certain characters into character sequences**

Use this option to treat certain characters as a sequence of characters and sort accordingly.

**Use more than one ordering level**

Use this option to enable multi-level sorting.

**Order special characters before alphanumeric characters**

Use this option to sort special characters before alphanumeric ones.

**Sort numeric characters in numerical order**

Use this option to enable natural sorting order.

## 5.16 Packages

A **package** is a group of procedures and functions managed as one entity.

Note that **Packages** are only available on Firebird 3.0 and higher.

**Package Editor** allows you to define package properties and content. It opens automatically when you create a new package and is available on editing an existing one.



To open a package in **Package Editor**, double-click it in the [DB Explorer](#)<sup>[63]</sup> tree.

- [Using Navigation bar and Toolbar](#)<sup>[325]</sup>
- [Creating/editing package](#)<sup>[326]</sup>






### 5.16.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Package Editor**.

#### Object

-  select a database
-  select a package for editing

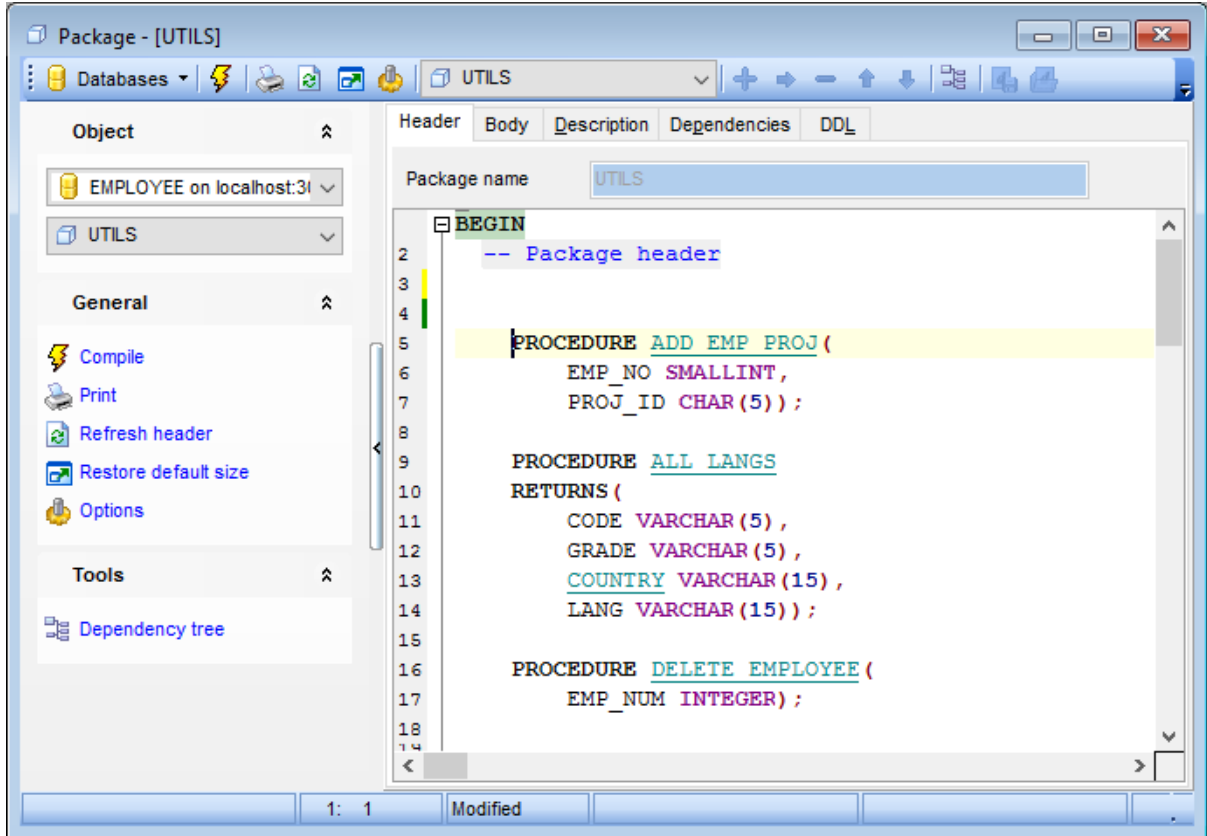
#### General

-  [compile](#)<sup>[898]</sup> the package (if it is being created/modified)
-  set [printing options](#)<sup>[565]</sup> to [print metadata](#)<sup>[562]</sup> of the package
-  refresh the content of the active tab
-  adjust [Visual Mode Editors options](#)<sup>[775]</sup>
-  restore the default size and position of the editor window

**NOTE:** Items of the **Navigation bar** are also available on the **ToolBar** of **Package Editor**. To enable the [toolbar](#)<sup>[884]</sup>, open the [Environment Options](#)<sup>[736]</sup> dialog, proceed to the [Windows](#)<sup>[743]</sup> section there and select  *Toolbar* (if you need the toolbar only) or  *Both* (if you need both the toolbar and the [Navigation bar](#)<sup>[882]</sup>) in the **Bar style for child forms** group.

## 5.16.2 Creating/editing package

Use the **Header** and **Body** tabs of **Package Editor** to view and edit the package definition.



### Package name

Enter a name for the new package. The name of the existing package cannot be modified.

Specify the package header definition in the text editor area. The body of the package can be defined in the text area at the **Body** tab.

**Part**




## 6 Query Tools


When using **SQL Manager for InterBase/Firebird**, you are provided with two basic tools you may need to manage your SQL queries: [Query Data](#)<sup>[330]</sup> for editing SQL query text directly and [Query Designer](#)<sup>[347]</sup> for building queries visually. Find the list of common SQL query management operations below.

### Creating New Queries

In order to create a new query in *Query Data*:


- select the **Tools | Query Data main menu**<sup>[882]</sup> item or use the corresponding  [toolbar](#)<sup>[884]</sup> button;
- click the **Add new query** item of the [Navigation bar](#)<sup>[331]</sup>;
- edit the query text within the **Edit** tab of [Query Data](#)<sup>[330]</sup>.

In order to create a new query in *Query Designer*:


- select the **Tools | Query Designer main menu**<sup>[882]</sup> item or use the corresponding  [toolbar](#)<sup>[884]</sup> button;
- build the query visually within the **Builder** tab of [Query Designer](#)<sup>[347]</sup>.

### Editing Queries


In order to open a query in *Query Data*:

- select the **Tools | Query Data main menu**<sup>[882]</sup> item or use the corresponding  [toolbar](#)<sup>[884]</sup> button;
- use the numbered tabs at the bottom of the editor window to switch between previously edited queries. The last edited query is displayed automatically on opening the editor;
- edit the query text within the **Edit** tab of [Query Data](#)<sup>[330]</sup>.

In order to open a query in *Query Designer*:


- select the **Tools | Query Designer main menu**<sup>[882]</sup> item or use the corresponding  [toolbar](#)<sup>[884]</sup> button;
- the last edited query is displayed automatically on opening Query Designer;
- to load a previously saved diagram, click the **Load diagram** item of the [Navigation bar](#)<sup>[348]</sup>;
- to load a query from an \*.sql file, open the **Edit** tab and click the **Load SQL** button of the Navigation bar;
- edit the query visually within the **Builder** and/or the **Edit** tabs of [Query Designer](#)<sup>[347]</sup>.

In order to load a query from an \*.sql file:

- select the **Tools | Query Data main menu**<sup>[882]</sup> item or use the corresponding  [toolbar](#)<sup>[884]</sup> button;
- click the **Load from file** item of the [Navigation bar](#)<sup>[331]</sup>;
- browse for the query file using the **Open SQL File** dialog;
- edit the query text within the **Edit** tab of [Query Data](#)<sup>[330]</sup>.

### Executing Queries

In order to execute a query:

- *create a new query or open an existing one*;
- click the  **Execute** item of the [Navigation bar](#)<sup>[331]</sup> or use the F9 hot-key to execute the query;
- view/edit the returned data within the **Results** tab of [Query Data](#)<sup>[330]</sup>.



### Saving Queries

In order to save a query:

- *create a new query* or *open an existing one*;
  - click the **Save to file** [Navigation bar](#)<sup>[331]</sup> item (in *Query Data*) or the **Save SQL** [Navigation bar](#)<sup>[348]</sup> item (in *Query Designer*), or use the *Ctrl+S* [shortcut](#)<sup>[932]</sup> to save the query using the **Save as...** dialog;
  - click the **Save diagram** [Navigation bar](#)<sup>[348]</sup> item in [Query Designer](#)<sup>[347]</sup> to save the designed diagram;
- or
- use the **Save all** [Navigation bar](#)<sup>[331]</sup> item in [Query Data](#)<sup>[330]</sup> if you need to save all the queries to one file.
- 

### See also:

[Getting Started](#)<sup>[37]</sup>

[Database Explorer](#)<sup>[63]</sup>

[Database Management](#)<sup>[87]</sup>

[Database Objects Management](#)<sup>[162]</sup>

[Data Management](#)<sup>[368]</sup>

[Import/Export Tools](#)<sup>[443]</sup>

[Database Tools](#)<sup>[532]</sup>

[Services](#)<sup>[651]</sup>

[Security management](#)<sup>[711]</sup>


[Options](#)<sup>[733]</sup>

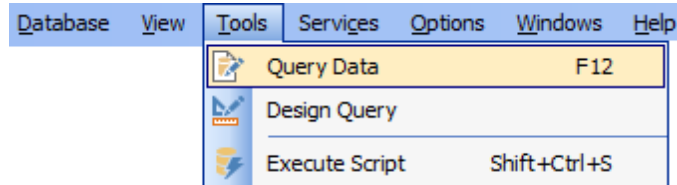
[External Tools](#)<sup>[832]</sup>

[How To...](#)<sup>[833]</sup>

## 6.1 Query Data

**Query Data** is the basic tool of **SQL Manager for InterBase/Firebird** for creating and executing queries. The tool allows you to create and edit the SQL text of a query, prepare and execute queries and view the results of query execution.

To open Query Data editor select the **Tools | Query Data** [main menu](#)<sup>[882]</sup> items or use the corresponding  [toolbar](#)<sup>[884]</sup> button. You can also use **F12** [shortcut](#)<sup>[932]</sup> for the same purpose.



- [Using Navigation bar and Toolbar](#)<sup>[331]</sup>
- [Working with query](#)<sup>[333]</sup>
- [Using the context menu](#)<sup>[335]</sup>
- [Viewing query plan](#)<sup>[337]</sup>
- [Using object links](#)<sup>[339]</sup>
- [Executing queries and viewing results](#)<sup>[340]</sup>
- [Viewing query logs](#)<sup>[343]</sup>
- [Favorites editor](#)<sup>[345]</sup>
- [Viewing performance analysis](#)<sup>[895]</sup>

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### See also:

[Query Designer](#)<sup>[347]</sup>

[Query parameters](#)<sup>[365]</sup>


[Execute Script Editor](#)<sup>[542]</sup>

[Editor Options](#)<sup>[796]</sup>














## 6.1.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Query Data**.






### Database

 select a database for the query

### General





-  toggle AutoDDL
-  execute the current query
-  execute selected code only
-  execute code under cursor
-  prepare query for execution
-  view estimated [query execution plan](#)<sup>[337]</sup>
-  run [Query Designer](#)<sup>[347]</sup> to design the query as a diagram
-  configure Query Data within the [Tools | Query Data](#)<sup>[750]</sup> page of the [Environment Options](#)<sup>[736]</sup> dialog
-  switch the results representation mode: *on Edit tab* or *on separate tab*
-  show SQL help
-  create a [view](#)<sup>[242]</sup> based on the query
-  create a [procedure](#)<sup>[253]</sup> based on the query
-  restore the default size and position of the editor window

### Queries




-  add a new query (note that the current query text will not be lost)
-  rename the current query
-  remove the query
-  remove all queries from the editor
-  edit the query text using [Favorites editor](#)<sup>[345]</sup> and add the query to the [Favorite Queries](#)<sup>[85]</sup> list

Depending on the current tab selection, the **Navigation bar** expands to one or more additional panes with tab-specific actions that can be useful for working with queries:

### Edit


-  activate the [Find Text](#)<sup>[901]</sup> dialog
-  load a query from an *\*.sql* file using the **Open SQL File** dialog
-  save the query to an *\*.sql* file
-  save all queries to an *\*.sql* file

### Logs

-  activate the [Find Text](#)<sup>[901]</sup> dialog
-  save the query log to a file
-  clear logs

### Data Management

-  commit transaction

-  rollback transaction
-  export the returned dataset using [Export Data Wizard](#)<sup>[444]</sup>
-  export the returned dataset as SQL Script using the [Export as SQL Script](#)<sup>[517]</sup> wizard
-  [import data](#)<sup>[491]</sup>

Items of the **Navigation bar** are also available on the **ToolBar** of **Query Data**. To enable the [toolbar](#)<sup>[884]</sup>, open the [Environment Options](#)<sup>[736]</sup> dialog, proceed to the [Windows](#)<sup>[743]</sup> section there and select  *Toolbar* (if you need the toolbar only) or  *Both* (if you need both the toolbar and the [Navigation bar](#)<sup>[882]</sup>) in the **Bar style for child forms** group.

---

#### See also:

- [Working with query](#)<sup>[333]</sup>
- [Viewing query plan](#)<sup>[337]</sup>
- [Executing queries](#)<sup>[340]</sup>
- [Viewing query logs](#)<sup>[343]</sup>
- [Favorites editor](#)<sup>[345]</sup>

## 6.1.2 Working with queries

The **Editor area** of Query Data is available within the **Edit** tab and is provided for working with SQL queries in text mode.

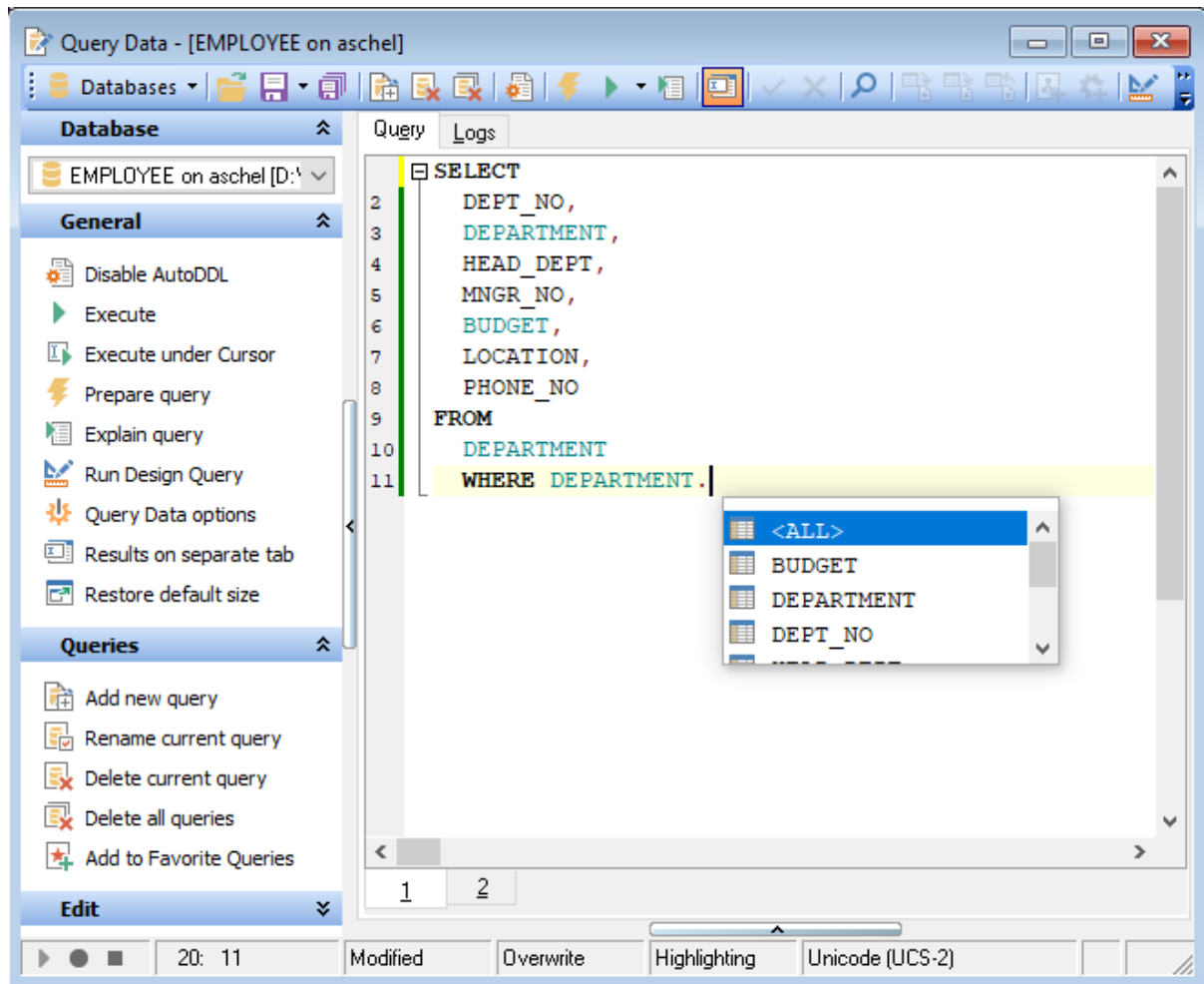
For your convenience the **syntax highlight, code completion** and a number of other features for efficient SQL editing are implemented:

- using [object links](#)<sup>[339]</sup> allowing you to open the object in the associated editor;
- ability to display line numbers;
- code folding for statements and clauses;
- customizable margins and gutters;
- formatting code for better representation

and more.

If necessary, you can enable/disable or customize most of Query Data features using the [Editor Options](#)<sup>[796]</sup> dialog.

The example of code completion is illustrated in the picture below. You can set the delay within the [Quick code](#)<sup>[805]</sup> section of the [Editor Options](#)<sup>[796]</sup> dialog or activate the completion list manually by pressing the *Ctrl+Space* [shortcut](#)<sup>[932]</sup>.



**Hint:** To use a [keyboard template](#)<sup>[825]</sup>, type the template name and press the *Ctrl+J* [shortcut](#)<sup>[932]</sup>: the text associated with the template will be inserted automatically.

If necessary, you can **print** the SQL text of your query using the corresponding item of the [context menu](#)<sup>[335]</sup>.

---

**See also:**

[Using Navigation bar and Toolbar](#)<sup>[331]</sup>

[Using the context menu](#)<sup>[335]</sup>

[Editor Options](#)<sup>[796]</sup>

[Keyboard Templates](#)<sup>[825]</sup>

[Favorites editor](#)<sup>[345]</sup>

[Find Text dialog](#)<sup>[901]</sup>

[Replace Text dialog](#)<sup>[903]</sup>

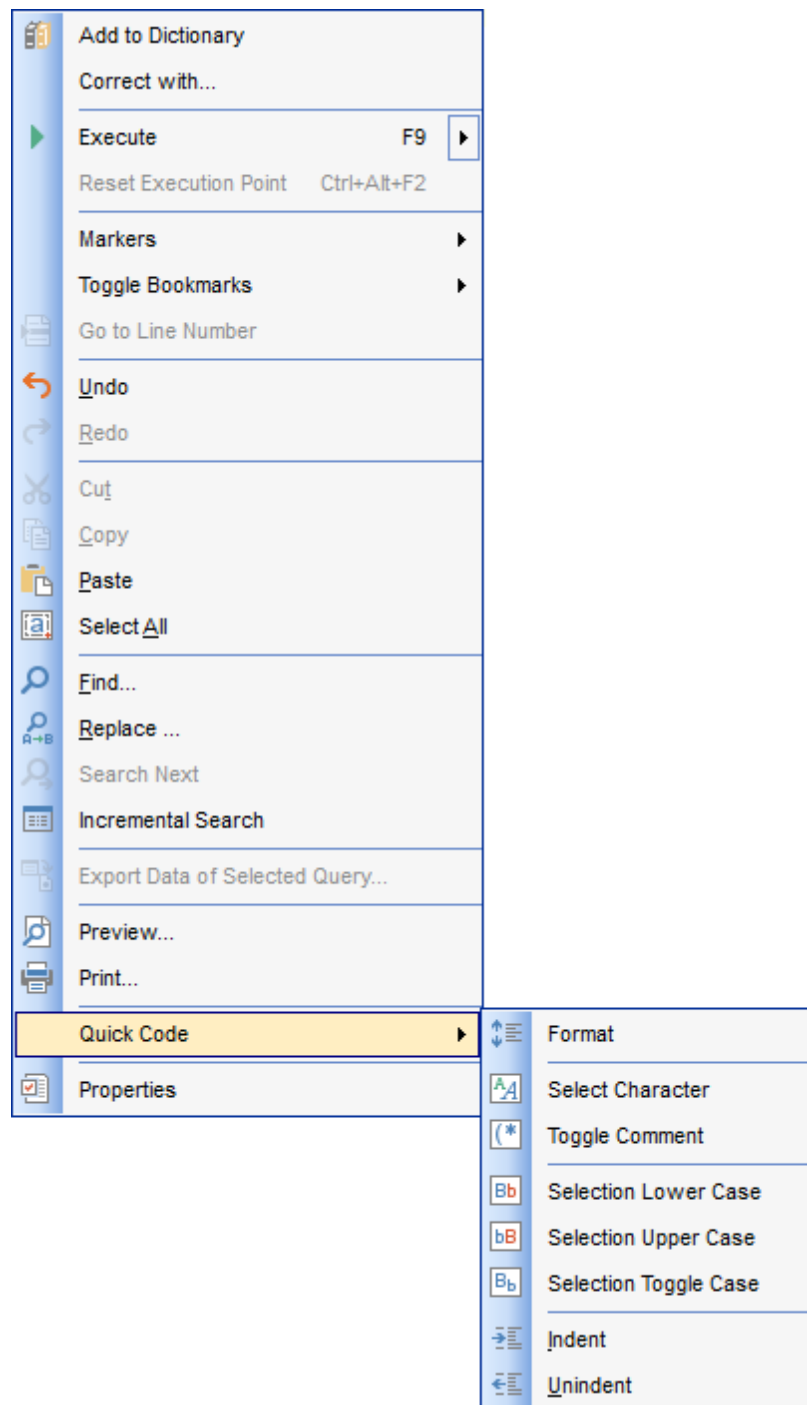
### 6.1.3 Using the context menu

The **context menu** of Query Data area contains execution commands, most of the standard text-processing functions (*Cut, Copy, Paste, Select All*) and functions for working with the query as a whole, e.g. you can *move the cursor to a particular line, change the case* of selected text, view the query *properties* or *print* the text of the query. Each of these operations can be also performed with the corresponding hot keys used.

Implementation of the [Find Text](#)<sup>[901]</sup> / [Replace Text](#)<sup>[903]</sup> dialogs and [Incremental search](#)<sup>[885]</sup> bar contributes to more efficient work with the SQL code.

Find the complete list of **Query Data** context menu items below. The context menu allows you to:

- add the selected text to dictionary or correct text (see [Spell checking](#)<sup>[812]</sup> for details);
- execute the query/selected text/text under cursor, and reset execution point (if necessary);
- manage markers: *Drop Marker, Collect Marker, Swap Marker*;
- toggle bookmarks allowing you to navigate through the query text and jump to a line with a particular number;
- perform editing operations: *Undo/Redo, Cut, Copy, Paste, Select all*;
- perform [search](#)<sup>[901]</sup> and [replace](#)<sup>[903]</sup> operations;
- export data of selected query;
- perform preview/print operations;
- use the *Quick code* group allowing you to format the selected code using *SQL Formatter* to make the code easier to read, toggle comments for code fragments, change case of the selected text, indent/unindent code lines;
- open the [Editor Options](#)<sup>[796]</sup> dialog.

**See also:**


[Working with query](#)<sup>[333]</sup>

[Executing queries](#)<sup>[340]</sup>

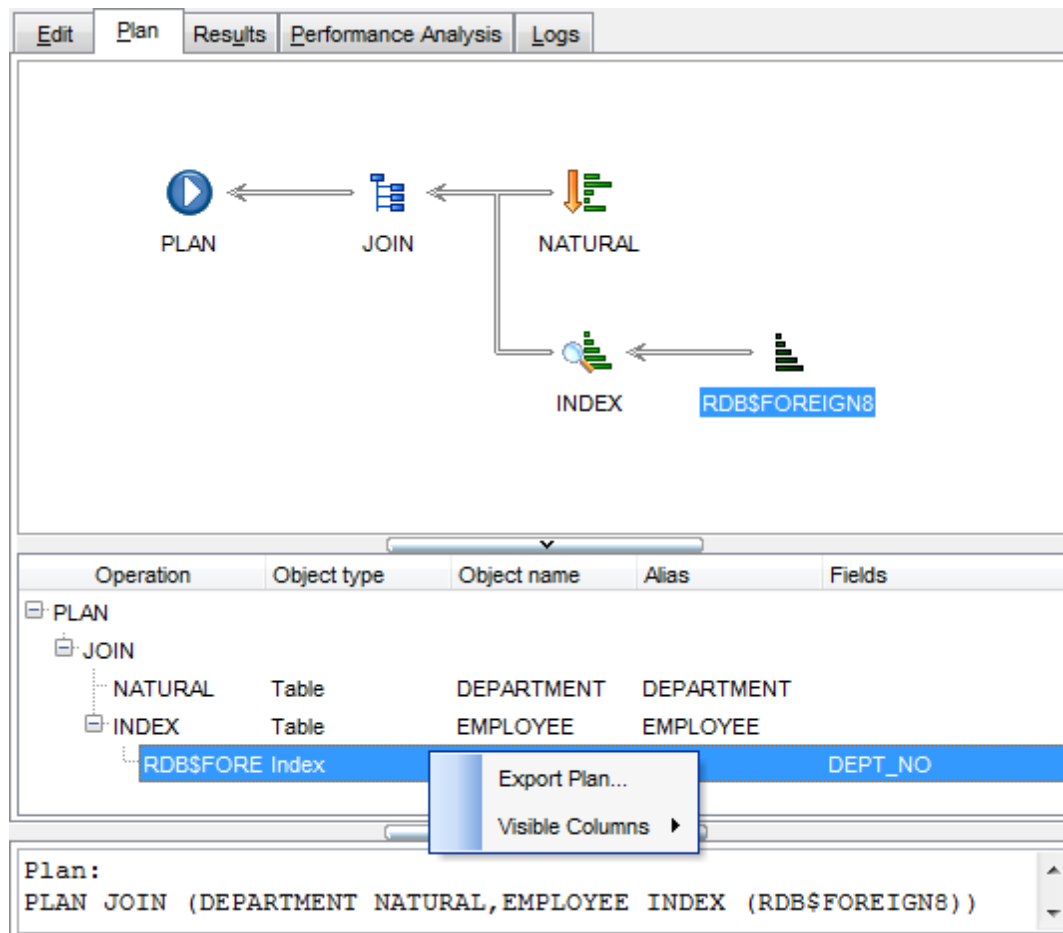


### 6.1.4 Viewing query plan

Using **SQL Manager for InterBase/Firebird**, you can view **the plan** for each of the queries created and executed in the application. The query plan is available within the corresponding **Plan** tab.

To view the **Plan** of a query, open the query in **Query Data** and use the  **Explain query** item of the [Navigation bar](#)<sup>[331]</sup> or [toolbar](#)<sup>[332]</sup>.

The **Plan** tab allows you to view the sequence of actions performed by the database server in the process of the query execution, and the amount of system resources used for the query execution.



The **Operation** panel below displays the operations as a tree list with the following columns: *Operation*, *Object type*, *Object name*, *Alias*, *Fields*.

Right-click within the panel to display the **context menu** allowing you to configure the set of *visible columns* or [export](#)<sup>[444]</sup> the plan to any of supported [formats](#)<sup>[917]</sup>.

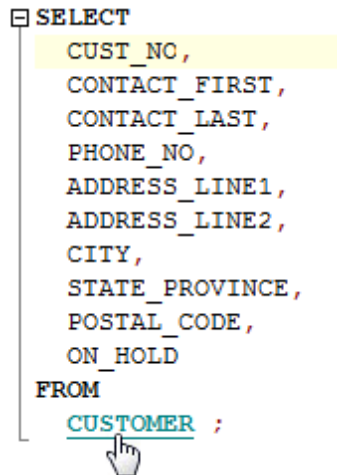
If necessary, you can specify that the **Plan** tab appears automatically upon query execution in Query Data: select the  **Explain query on execution** option available within the [Tools | Query Data](#)<sup>[750]</sup> section of the [Environment Options](#)<sup>[736]</sup> dialog.

**See also:**[Query Data options](#)<sup>750</sup>[Executing queries](#)<sup>340</sup>

### 6.1.5 Using object links

Objects that exist in the database are highlighted in the text as hyperlinks. You can open an object in the appropriate editor by clicking the object name in the text with the *Ctrl* key pressed.

```
SELECT
  CUST_NO,
  CONTACT_FIRST,
  CONTACT_LAST,
  PHONE_NO,
  ADDRESS_LINE1,
  ADDRESS_LINE2,
  CITY,
  STATE_PROVINCE,
  POSTAL_CODE,
  ON_HOLD
FROM
  CUSTOMER ;
```



Please note that you can change the way highlighted objects look in the editor: use the [Display | Highlight](#) <sup>[803]</sup> section of the [Editor Options](#) <sup>[796]</sup> dialog.

---

#### See also:

[Working with query](#) <sup>[333]</sup>

[Editor Options](#) <sup>[796]</sup>

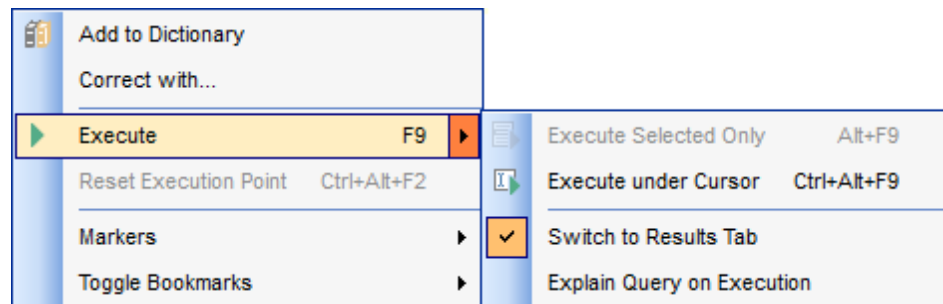
## 6.1.6 Executing queries

When all the query parameters are set, you can immediately **execute the query** in **Query Data**.

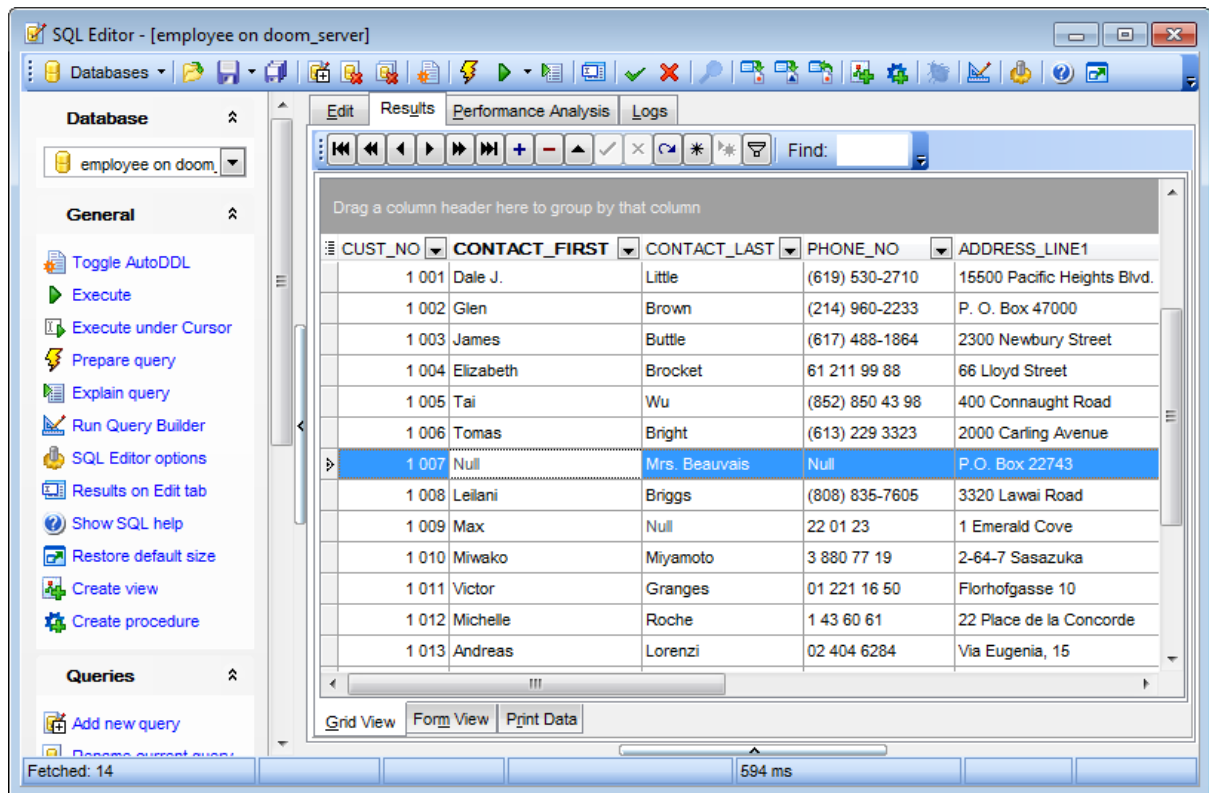
To execute a query, click the ► **Execute** item of the [Navigation bar](#)<sup>[331]</sup>. You can also use the [context menu](#)<sup>[335]</sup> or *F9* hot key for the same purpose.

If the SQL syntax is correct, the query is executed and, in case the query statement is supposed to return data (e.g. as SELECT statement), the returned dataset appears within the **Results** tab. The position of the tab depends on the **Results on Edit tab / Results on separate tab** selection in the [Navigation bar](#)<sup>[331]</sup>.

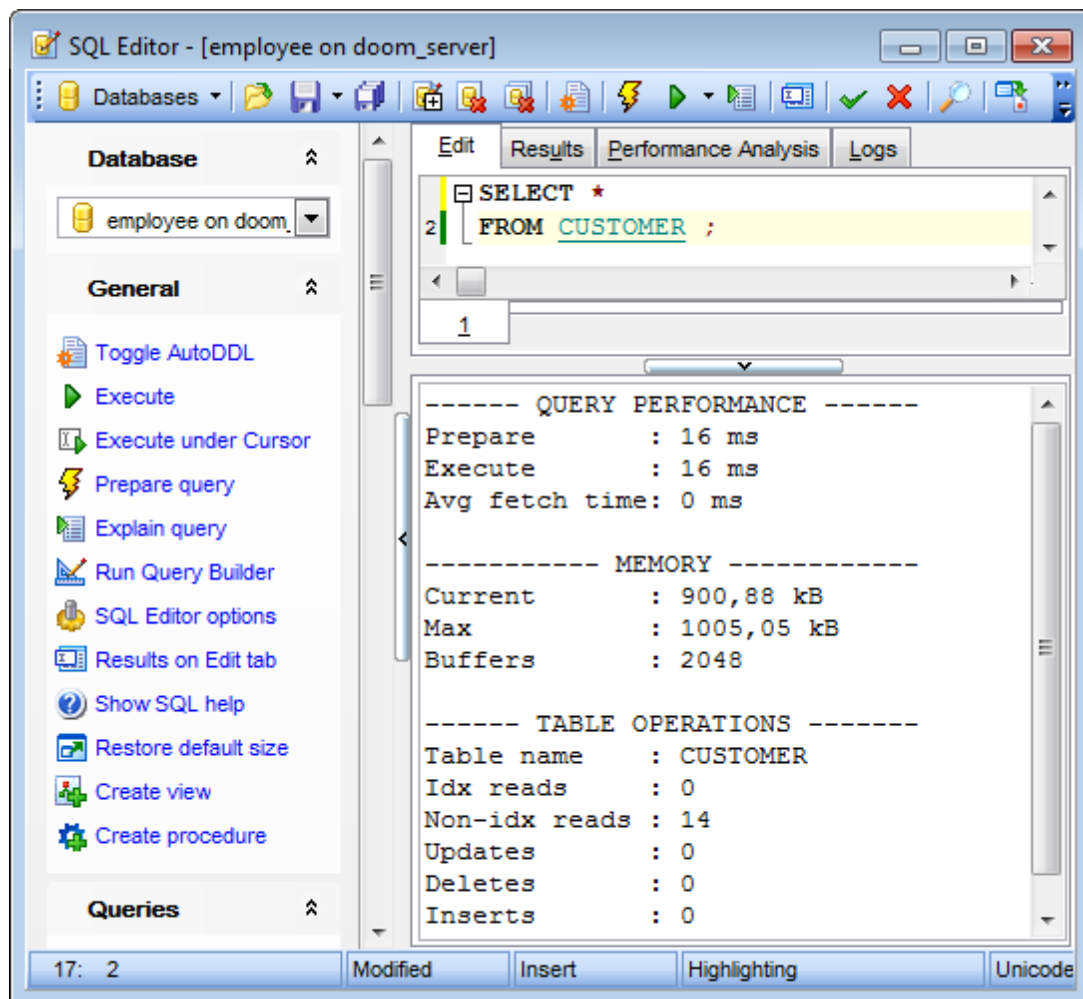
If SQL syntax of the query contains any errors, the query execution is stopped and the corresponding error message is displayed in the status bar area at the bottom of the editor window.



By default, data returned by a query are displayed as a grid (see [Data View](#)<sup>[369]</sup> for details). The [context menu](#)<sup>[382]</sup> of the grid allows you to [Export Data](#)<sup>[444]</sup>, [Export as SQL Script](#)<sup>[517]</sup>.



You can see brief statistics concerned query execution. Expand the bottom pane for this purpose.

**See also:**[Data View](#)<sup>[369]</sup>[Export Data](#)<sup>[444]</sup>[Export as SQL Script](#)<sup>[517]</sup>

## 6.1.7 Viewing query logs

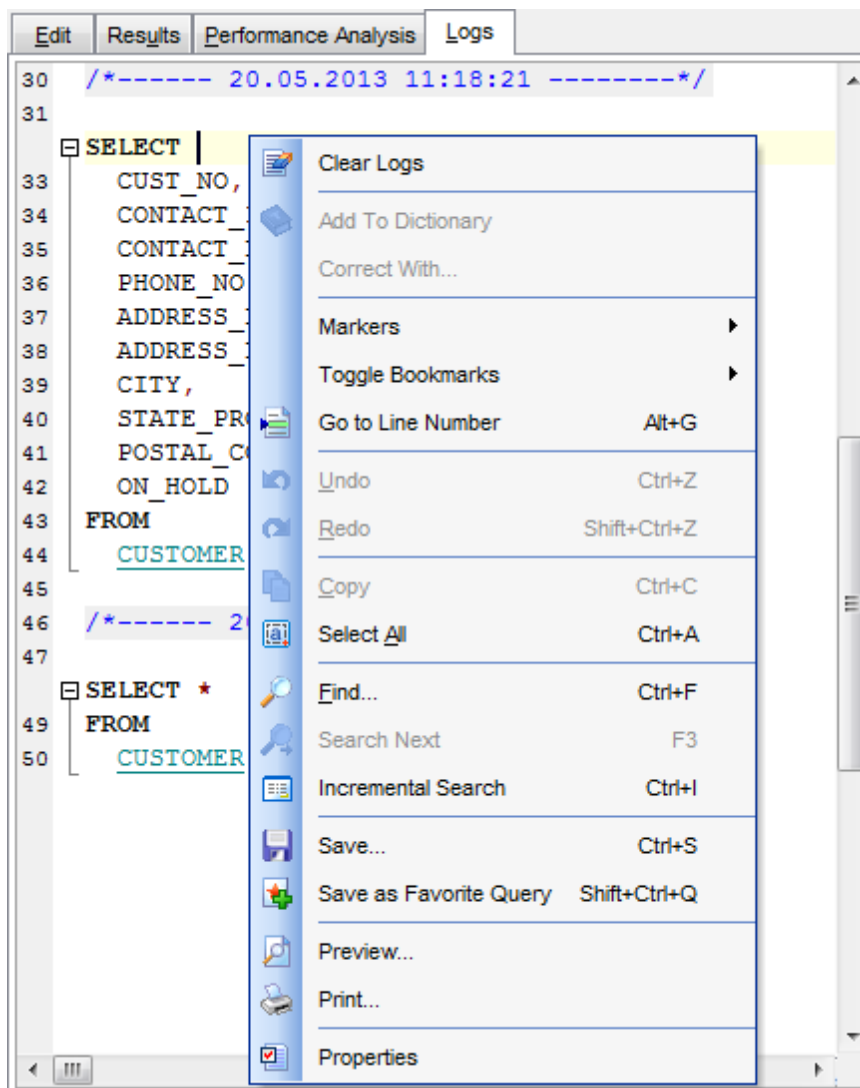
This tab allows you to view the query **log**. The log is available within the **Logs** tab of **Query Data**.

Using this tab you can view *log entries* containing the following details:

- date and time of the query execution;
- text of the query;
- number of rows fetched and fetch time, or the text of the error (if any).

Date/time and the execution result information are embedded as code comments conforming with the rules of SQL.

With the help of the **context menu** the log can be *printed*, *saved* to file or *cleared*. You can also use a number of Query Data [context menu](#)<sup>[335]</sup> generic functions.




### See also:


[Executing queries](#)<sup>[340]</sup>

[Using the context menu](#)<sup>[335]</sup>

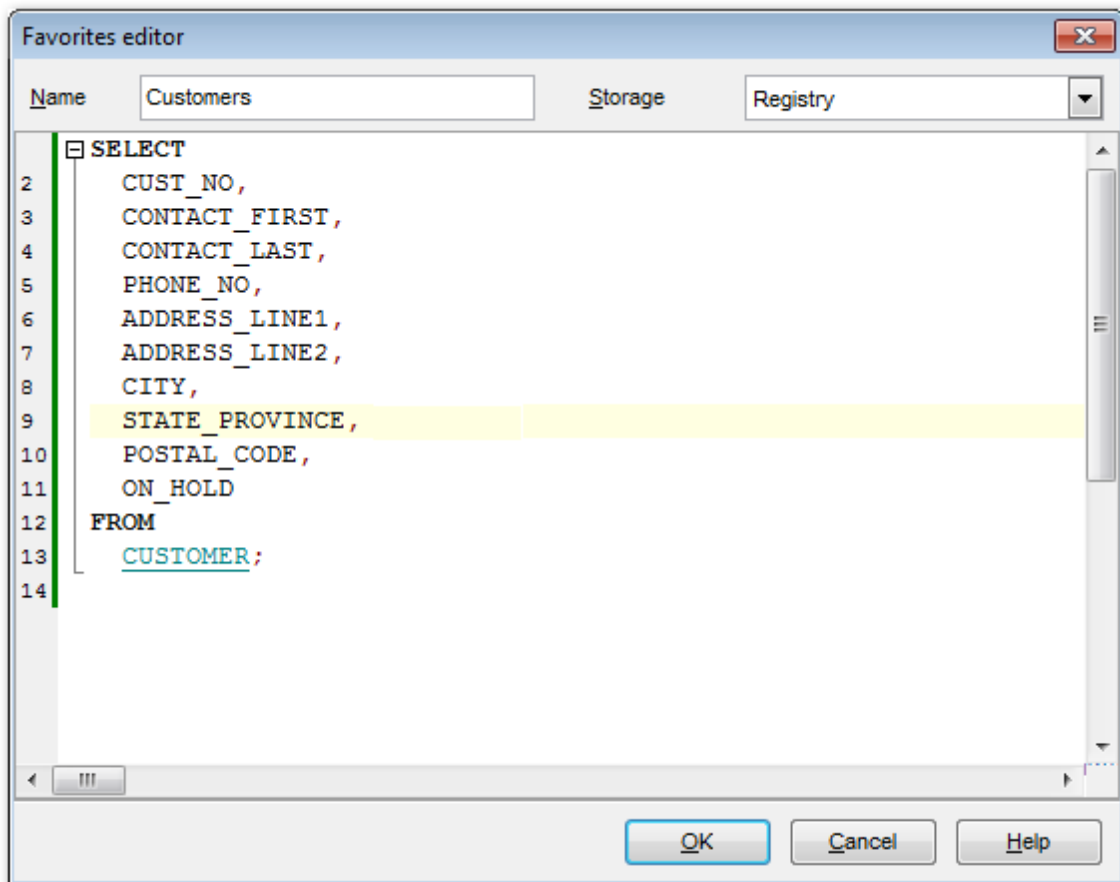


## 6.1.8 Favorites editor

For your convenience the **Favorite Queries** list is implemented in **SQL Manager for InterBase/Firebird**. This list is available within the  **Favorite Queries** node of [Database Explorer](#)<sup>[85]</sup> and allows you to store the most frequently used SQL queries in one location.

To add a query to the **Favorite Queries** list, use the  **Add to Favorite Queries** [Navigation bar](#)<sup>[331]</sup> item in **Query Data**. The corresponding item is also available in the [context menu](#)<sup>[335]</sup> of Query Data working area.

You can edit any of your Favorite Queries using **Favorites editor**.



### Name

Set the name of the Favorite query.

### Storage

Specify where the Favorite query will be stored: in *Windows Registry* or in the *Database*.

### See also:

[Managing Favorite queries](#)<sup>[85]</sup>

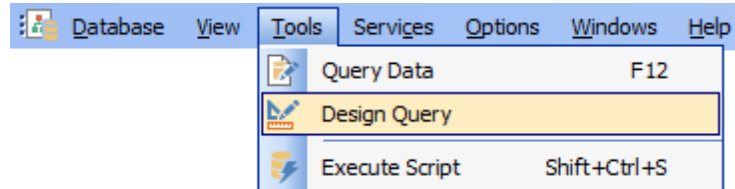
[Working with query](#)<sup>[333]</sup>



## 6.2 Design Query

**Query Designer** is implemented in **SQL Manager for InterBase/Firebird** for building queries visually. The tool allows you to create and edit queries without deep knowledge of SQL. You can also prepare and execute queries, and view the results of their execution.

To open Query Designer select **Tools** |  **Design Query** [main menu](#)<sup>[882]</sup> items or use the corresponding  [toolbar](#)<sup>[884]</sup> buttons.



- [Using Navigation bar and Toolbar](#)<sup>[348]</sup>
- [Working with diagram area](#)<sup>[350]</sup>
- [Joining two database objects by fields](#)<sup>[353]</sup>
- [Setting the selection criteria](#)<sup>[355]</sup>
- [Setting output fields for selection](#)<sup>[357]</sup>
- [Setting the grouping criteria](#)<sup>[359]</sup>
- [Setting parameters of sorting](#)<sup>[360]</sup>
- [Working with editor area](#)<sup>[361]</sup>
- [Executing queries and viewing results](#)<sup>[362]</sup>
- [Viewing query plan](#)<sup>[364]</sup>
- [Viewing performance analysis](#)<sup>[895]</sup>

**Availability:**

**Full** version (for Windows) **Yes**

**Lite** version (for Windows) **No**

**Note:** To compare all features of the **Full** and the **Lite** versions of **SQL Manager**, refer to the [Feature Matrix](#)<sup>[20]</sup> page.

---

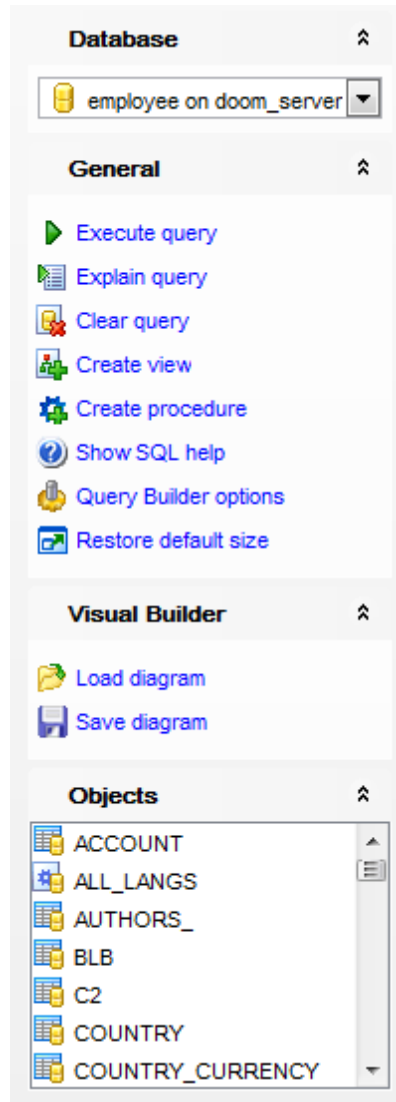
**See also:**

[Query Data](#)<sup>[330]</sup>

[Query parameters](#)<sup>[365]</sup>


## 6.2.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Query Builder**.











The **Navigation bar** of **Query Builder** allows you to:

### Database


 select a database for the query

### General

-  execute the current query
-  view estimated [query execution plan](#)<sup>[364]</sup>
-  clear the query
-  create a [view](#)<sup>[242]</sup> based on the query
-  create a [procedure](#)<sup>[253]</sup> based on the query



-  show SQL help
-  configure Query Builder using the [Query Builder Options](#)<sup>[757]</sup> page of the [Environment Options](#)<sup>[736]</sup> dialog
-  restore the default size and position of the builder window

### Objects



-  browse objects of the database; you can also add tables, views and procedures to the diagram using drag-and-drop operations

Depending on the current tab selection, the **Navigation bar** expands to one or more additional panes with tab-specific actions that can be useful for working with queries:



### Visual Builder

-  load a diagram from a \*.vqb file using the **Open diagram** dialog
-  save the diagram to a \*.vqb file using the **Save diagram as...** dialog

### Edit

-  load a query from an \*.sql file using the **Open SQL File** dialog
-  save the query to an \*.sql file

### Data Management

-  commit transaction
-  rollback transaction
-  export the returned dataset using [Export Data Wizard](#)<sup>[444]</sup>
-  export the returned dataset as SQL Script using the [Export as SQL Script](#)<sup>[517]</sup> wizard

Items of the **Navigation bar** are also available on the **ToolBar** of **Query Builder**. To enable the [toolbar](#)<sup>[884]</sup>, open the [Environment Options](#)<sup>[736]</sup> dialog, proceed to the [Windows](#)<sup>[743]</sup> section there and select  *Toolbar* (if you need the toolbar only) or  *Both* (if you need both the toolbar and the [Navigation bar](#)<sup>[882]</sup>) in the **Bar style for child forms** group.

---

### See also:

- [Working with diagram area](#)<sup>[350]</sup>
- [Query execution](#)<sup>[362]</sup>

## 6.2.2 Working with diagram area

The main working area of **Query Designer** is the diagram area available within the **Builder** tab. Here you can create a query by placing the database [tables](#)<sup>[178]</sup> and [views](#)<sup>[242]</sup> onto the area, and edit it by selecting the required data fields and setting links between objects.

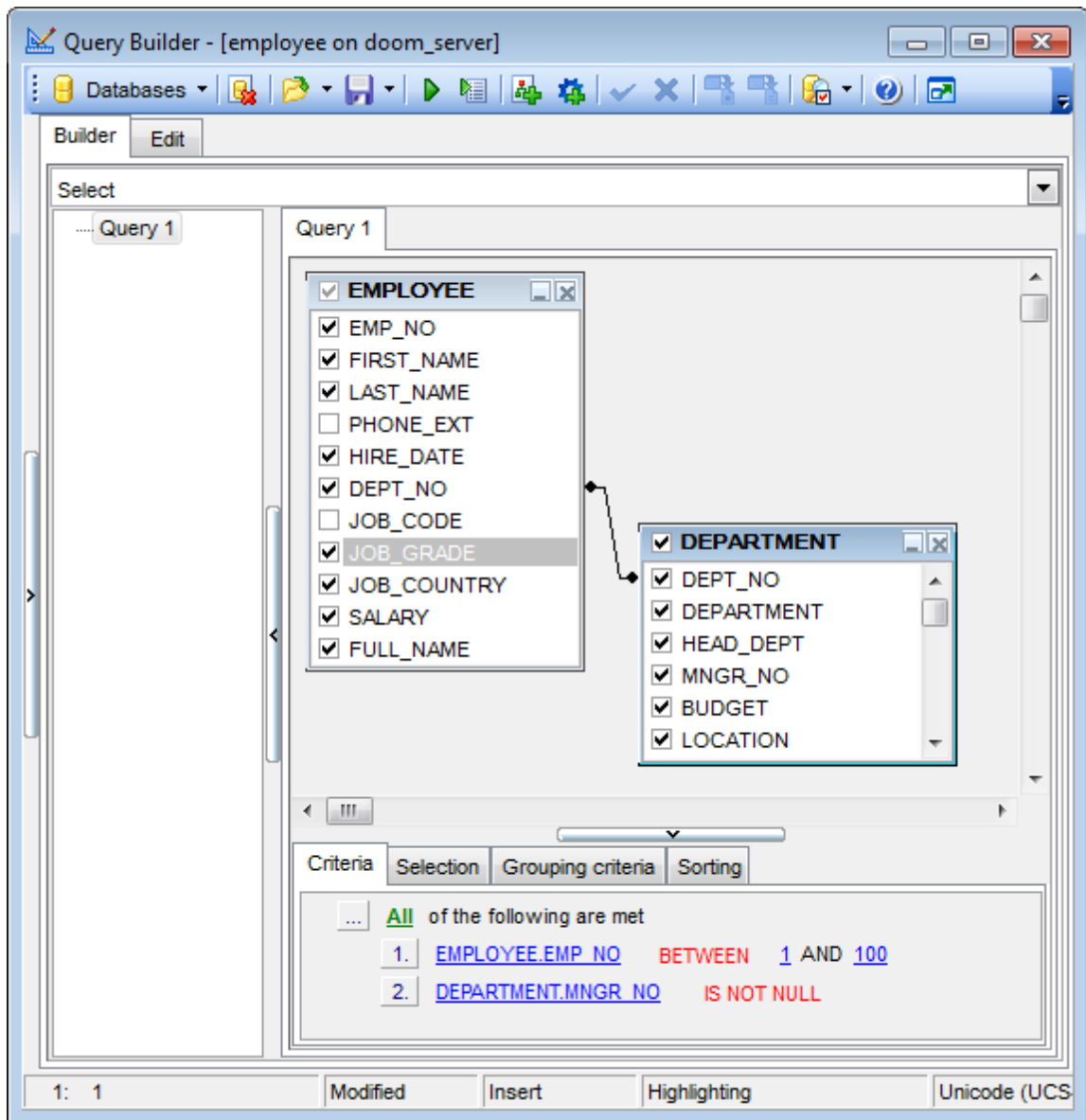
To add an object to the query, you can simply drag it from the [DB Explorer](#)<sup>[69]</sup> tree to the diagram area.

*To include a field* in the query, check the corresponding box located to the left from the field name in the list, or just double-click it. To include all fields of the table/view, check the box located to the left of the table/view caption. If you do not check any fields, the SQL statement is generated as `SELECT * FROM <table/view_name>`, i.e. all the fields are included in the query.

To *collapse/expand* the list of table/view fields, click the minimize/maximize button at the object caption.

*To exclude a field* from the query, uncheck the respective box. In order to remove the entire table/view from the query, close it by clicking the corresponding cross-button at the object caption, or right-click the object and select **Delete** from the context menu. You can also select the object and press the **Del** key.

*To edit the alias* of a table/view, double-click the object caption and enter the new name, or right-click the object and select **Rename** from the context menu.

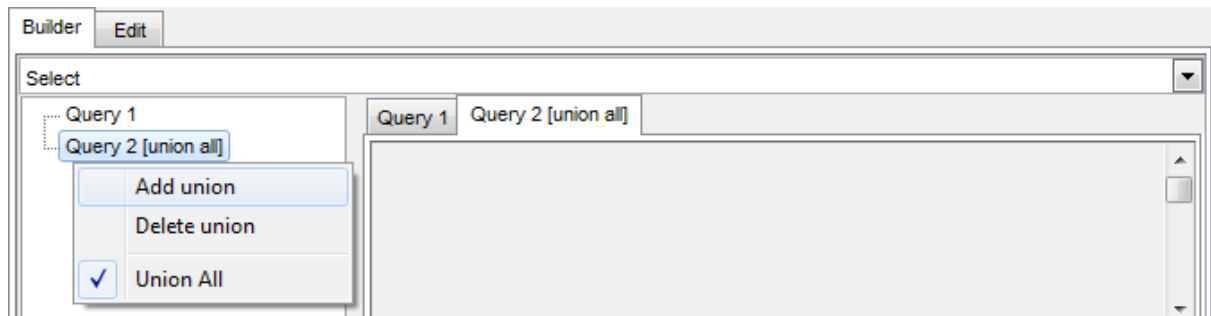


**Query Designer** allows you to create complex queries consisting of two or more queries combined in one with the *UNION* operator, or add nested queries. The panel to the left of the diagram area displays the **tree of subqueries**.

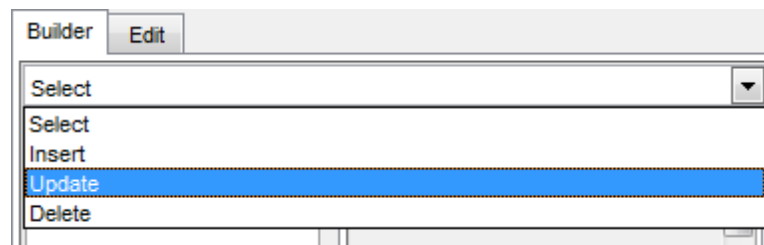
To add a query, right-click within the **tree of subqueries** area and select **Add union** from the context menu. A tab for the new query will appear in the diagram area.

To remove a query from the tree, right-click the query and select **Delete union** from the context menu.

To add the *UNION ALL* operator to the query, right-click the newly added query and select the corresponding context menu item.



**Note:** Depending on which query type you need to execute, you can select one from the drop-down list above the tree of subqueries: *Select*, *Insert*, *Update*, or *Delete*.



---

**See also:**

[Joining two objects](#)<sup>[353]</sup>

[Working with the editor area](#)<sup>[361]</sup>

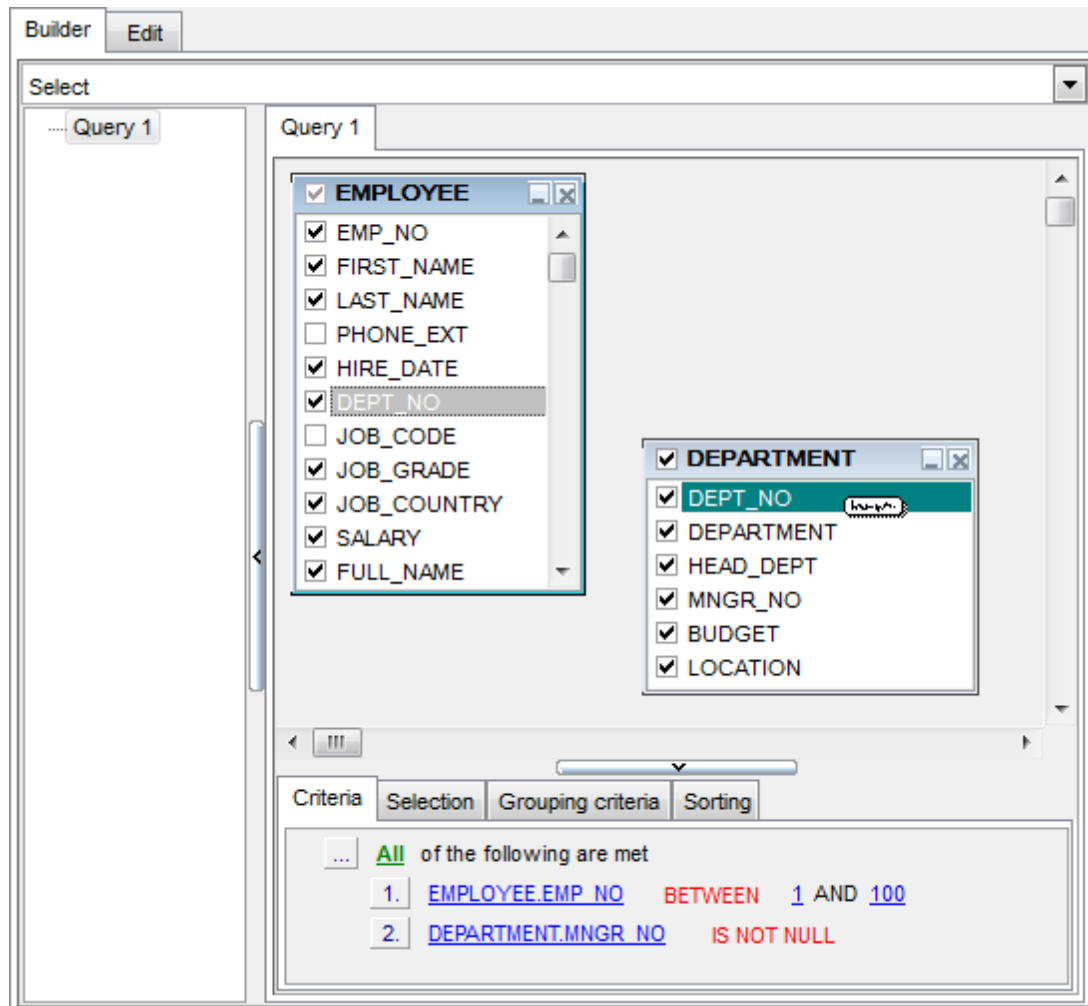
[Query execution](#)<sup>[362]</sup>



### 6.2.3 Joining two objects

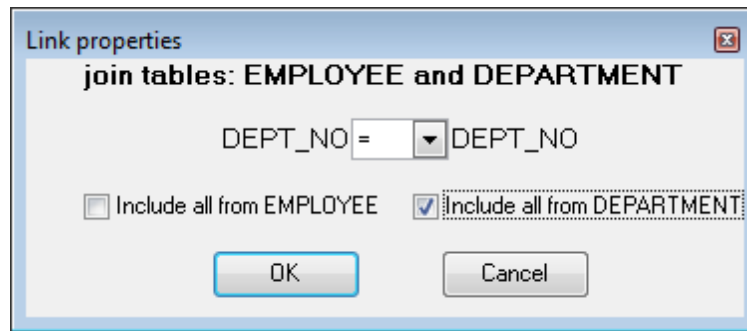
The **diagram area** allows you to associate two objects by their fields: this operation is performed by dragging a field from one object list to another. This will set a link between these objects by the selected fields. It is indicated by a bidirectional arrow between the linked fields.

**Note:** Once two or more tables related by a foreign key are added to the diagram area, the corresponding visual joining of these tables appears at the **Builder** tab and the **JOIN** statement appears under the **Edit** tab.



You can view the link properties of objects association: set the mouse cursor over the linking arrow, and a hint containing the association condition will popup after a short delay.

To edit the link properties, double-click the linking arrow or right-click it and select the **Property** popup menu item. The **Link properties** dialog allows you to change the association condition by choosing it from the drop-down list (=, >, <, >=, <=, <>).



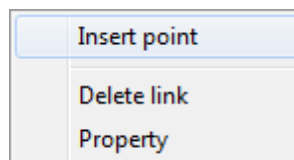
For your convenience the  **Include all** option is available for each object of the association:

- if the option is enabled for the left table, the *LEFT JOIN* operator will be used for the association;
- if the option is enabled for the right table, the *RIGHT JOIN* operator is used for the association;
- if the option is enabled for neither of the tables, the *INNER JOIN* operator is used for the association.

Click **OK** to apply the changes you have made.

To remove a link between objects, right-click the linking arrow and select the **Delete link** popup menu item.

To add a point to the link line, right-click the linking arrow and select the **Insert point** popup menu item. Using the point you can move the link line easily. The point does not cause any changes to the query, it is only used for the diagram representation and makes visual building handy and more comprehensible.



---

#### See also:

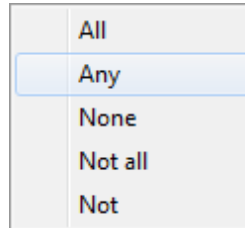
[Working with diagram area](#)<sup>[350]</sup>


[Setting criteria](#)<sup>[355]</sup>

## 6.2.4 Setting criteria

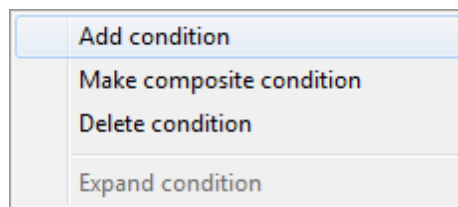
Use the **Criteria** tab to set the selection conditions.

The way the conditions are used is set in the upper string of the area (*All, Any, None or Not all of the following are met*). Click the green link to change it.




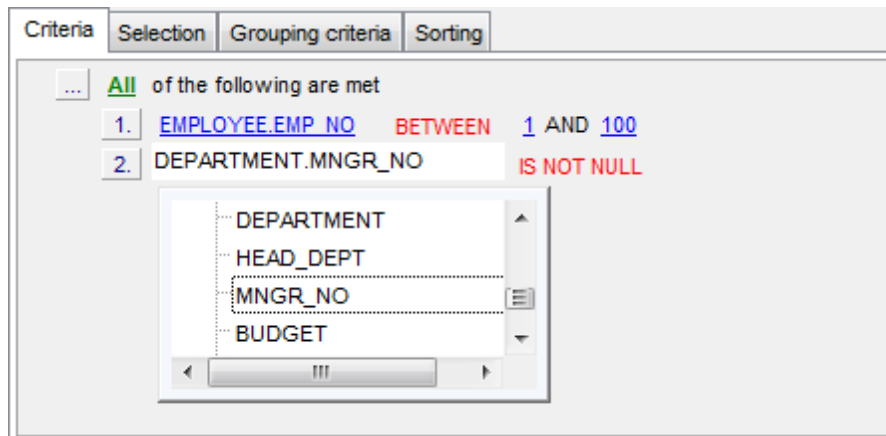
To add a condition, click the ellipsis  button on the left, and select the **Add condition** popup menu item.

Edit the condition by clicking the elements of the condition pattern and setting the necessary values. Clicking the numbered button to the left of the condition string activates the popup menu which allows you to *add a new condition* at the same enclosure level, *make composite condition* by adding a new enclosure level, *delete the current condition*, *expand* or *collapse* enclosure levels of the condition (if the condition is composite).

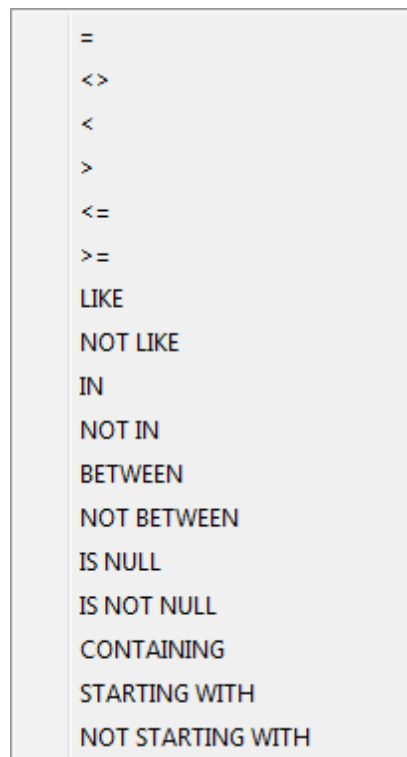


A simple condition pattern contains three elements: *an argument*, *a condition operator* and *a second argument* (if required for the condition).

Clicking each element field allows you to set its value. You can add a field by drag-and-dropping it from the working area to Criteria, Selection, Grouping criteria or Sorting tabs. When clicking an argument field, you can edit the argument as a text string: set an object name or a certain value in this field. Right-clicking the field in the edit mode activates the popup menu with the **Insert field** (also called by the *Shift+Enter* [shortcut](#) ); this item allows you to select a field from the list of all the table fields) and **Insert query** (this item adds a nested query) items.



Clicking the condition operator field activates the popup menu from which you can select the operator you need.



---

**See also:**

[Setting output fields<sup>\[357\]</sup>](#)

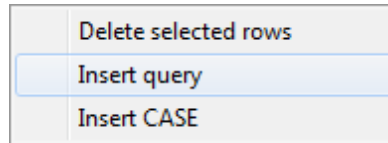
[Setting grouping criteria<sup>\[359\]</sup>](#)

[Setting sorting parameters<sup>\[360\]</sup>](#)

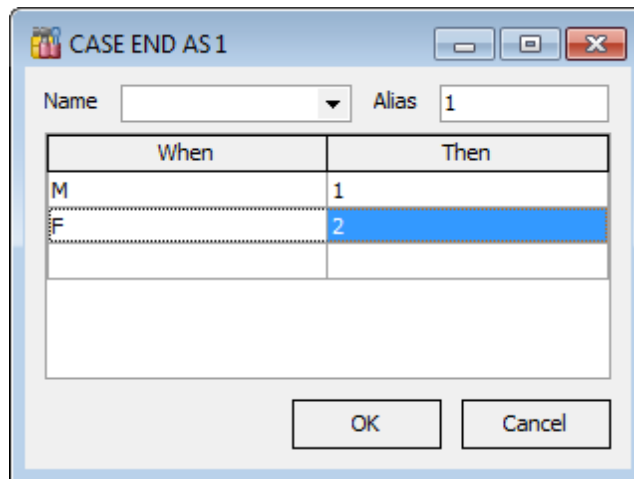
## 6.2.5 Setting output fields

The **Selection** tab displays the output fields of the query as a grid.

The grid allows you to edit the names of the query output fields, specify their display order and set the aggregate functions for each field. To remove a field from the list, right-click the field row and select the **Delete current row** popup menu item.



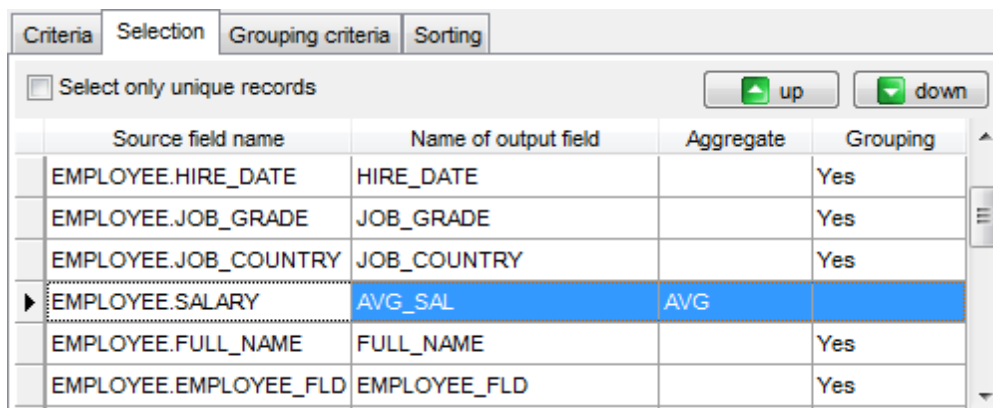
The popup menu also allows you to *insert a nested query* and add a *CASE* clause. To edit the *CASE* clause, use the **CASE END AS** dialog.



To change the *input query field*, click it and then type the field name or select it from the drop-down list.

To change the *output query field* name, set the cursor at the corresponding column and type the required field name.

To reorder fields in the list, use the   buttons.



To set an aggregate function for a field, click the field row within the **Aggregate** column, and then type in the function name or select one from the drop-down list (*SUM*, *MIN*, *MAX*, *AVG*, or *COUNT*).

The **Grouping** column displays the grouping state for each of the output fields.

**Select only unique records**

If you check this option, the duplicate records (if any) are not included into the query result (i.e. the *DISTINCT* keyword is added to the SQL query text).

---

**See also:**

[Setting criteria](#)<sup>[355]</sup>

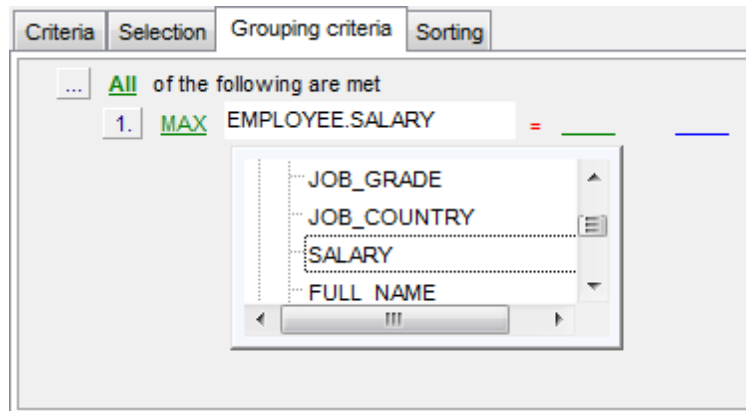
[Setting grouping criteria](#)<sup>[359]</sup>

[Setting sorting parameters](#)<sup>[360]</sup>

## 6.2.6 Setting grouping criteria

The **Grouping criteria** tab allows you to set conditions for grouping query records.

The grouping condition pattern fields are set in the same way as those of the [Criteria](#)<sup>[355]</sup> pattern.



These conditions will be included in the *HAVING* statement of the generated SQL query.

---

### See also:

[Setting criteria](#)<sup>[355]</sup>





[Setting output fields](#)<sup>[357]</sup>

[Setting sorting parameters](#)<sup>[360]</sup>

## 6.2.7 Setting sorting parameters

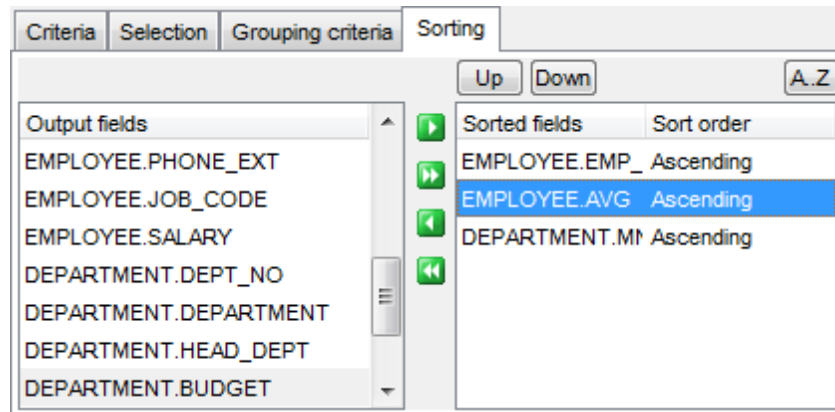
The **Sorting** tab allows you to set sorting parameters for the records returned by the query.

The working area contains the **Output fields** list (at the left) which represents all fields of the objects used in the query, and the **Sorted fields** list (at the right) which contains the fields to sort records by.

To move a field from one list to another, drag the selected field or use the **Add** and **Remove** buttons:    .

To change the sorting order for a sorted field, select the field in the **Sorted fields** list and move it using the **Up** and **Down** buttons.

To change the sorting direction, select the field in the **Sorted fields** list and switch the direction (*Ascending*, *Descending*) using the corresponding **A..Z/Z..A** button.



### See also:

[Setting criteria](#)<sup>[355]</sup>

[Setting output fields](#)<sup>[357]</sup>

[Setting grouping criteria](#)<sup>[359]</sup>

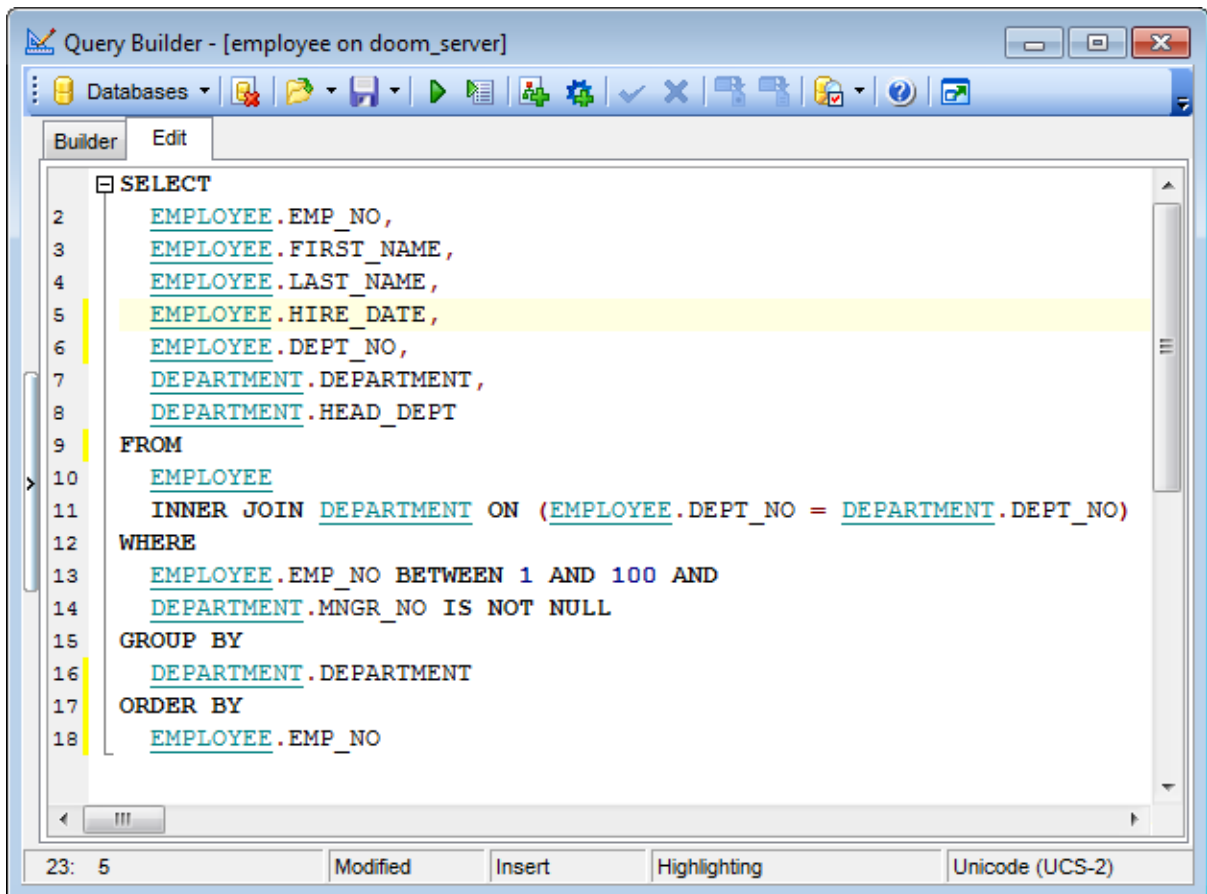


## 6.2.8 Working with the editor area

The **Editor area** of **Query Designer** is available within the **Edit** tab and is provided for working directly with the SQL query text which is generated automatically while you build the query visually.

You can edit this text according to the rules of SQL, and all the changes will be displayed within the **Builder** tab respectively.

To learn more about the Query Data features available within the **Edit** tab, see [Working with query](#)<sup>[333]</sup>.



### See also:

[Working with diagram area](#)<sup>[350]</sup>

[Query execution](#)<sup>[362]</sup>

[Query Data](#)<sup>[330]</sup>

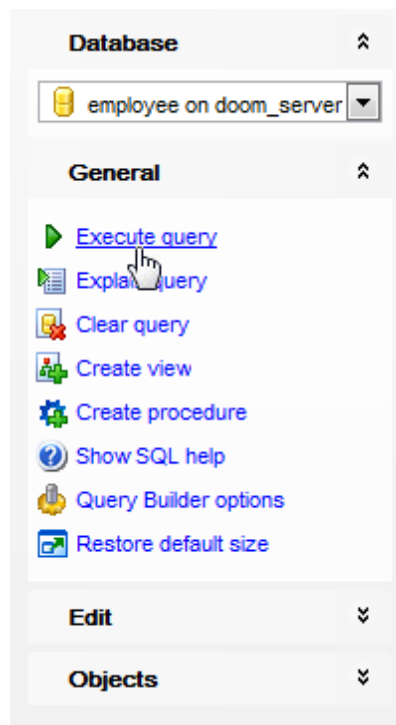
## 6.2.9 Query execution

When all the query parameters are set, you can immediately **execute the query** in **Query Designer**.

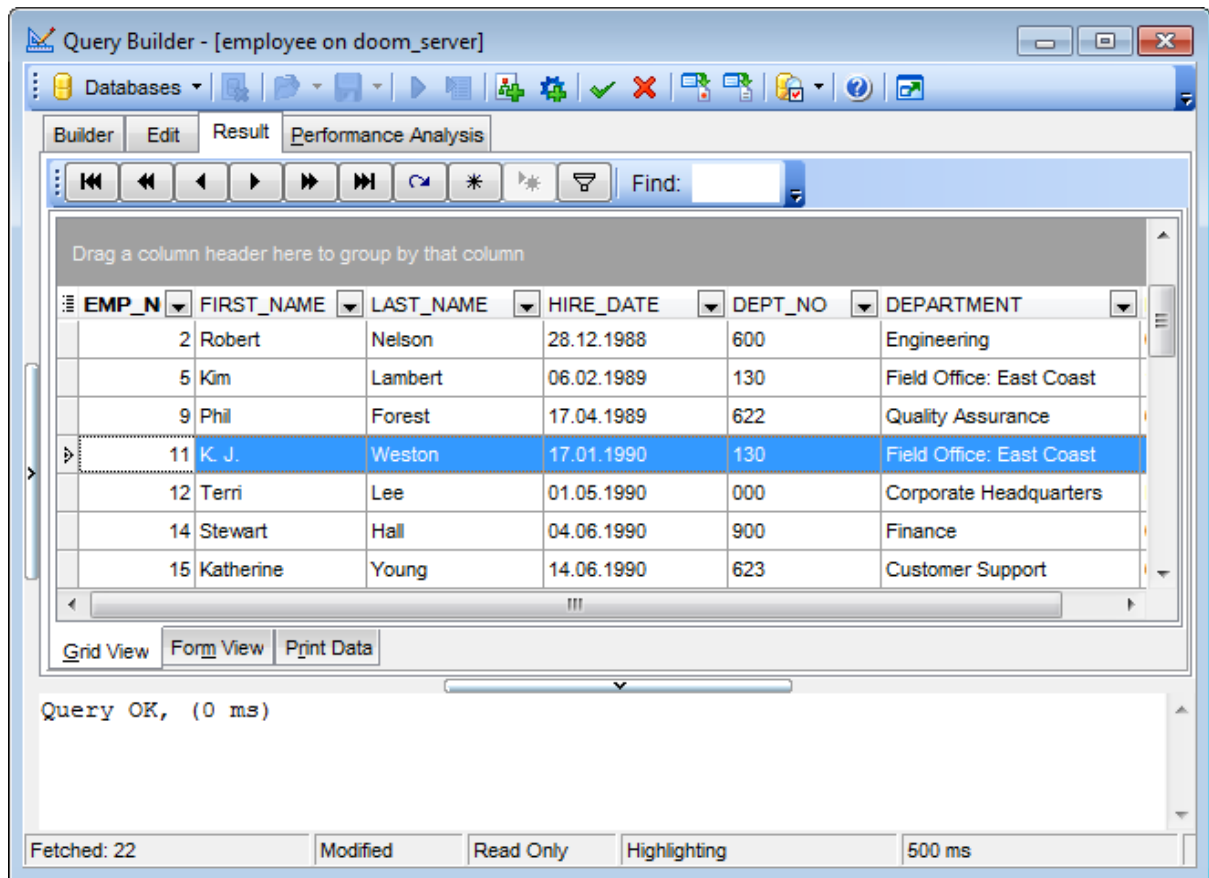
To execute a query, click the ► **Execute query** item of the [Navigation bar](#)<sup>[348]</sup>. You can also use the *F9* hot key for the same purpose.

If the query parameters are specified correctly, the query is executed and, in case the query statement is supposed to return data (e.g. as SELECT statement), the returned dataset appears within the **Result** tab.

If SQL syntax of the query contains any errors, the query execution is stopped and the corresponding error message is displayed in the status bar area at the bottom of the Query Builder window.



By default, data returned by a query are displayed as a grid (see [Data View](#)<sup>[369]</sup> for details). The [context menu](#)<sup>[379]</sup> of the grid allows you to [Export Data](#)<sup>[444]</sup>, [Export As SQL Script](#)<sup>[517]</sup>.

**See also:**

[Working with diagram area](#)<sup>[350]</sup>

[Working with the editor area](#)<sup>[361]</sup>

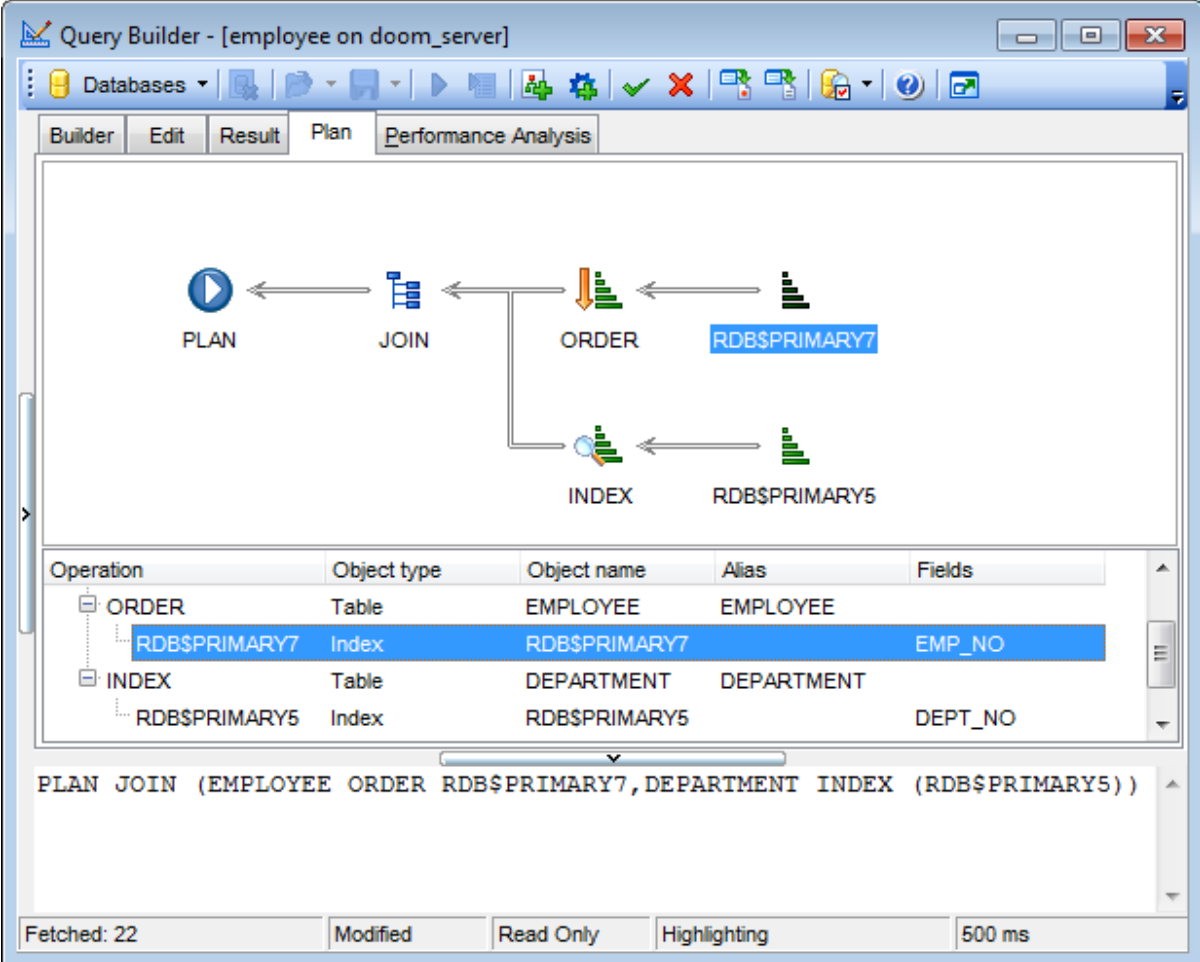
[Data View](#)<sup>[369]</sup>

## 6.2.10 Viewing query plan

Using **SQL Manager for InterBase/Firebird**, you can view **the plan** for each of the queries created and executed in the application. The query plan is available within the corresponding **Plan** tab.

To view the **Plan** of a query, open **Query Builder** and use the  **Explain query** item of the [Navigation bar](#)<sup>[348]</sup> or [toolbar](#)<sup>[349]</sup>.

The **Plan** tab allows you to view the sequence of actions performed by the database server in the process of the query execution, and the amount of system resources used for the query execution.



Operation	Object type	Object name	Alias	Fields
ORDER	Table	EMPLOYEE	EMPLOYEE	
RDB\$PRIMARY7	Index	RDB\$PRIMARY7		EMP_NO
INDEX	Table	DEPARTMENT	DEPARTMENT	
RDB\$PRIMARY5	Index	RDB\$PRIMARY5		DEPT_NO

PLAN JOIN (EMPLOYEE ORDER RDB\$PRIMARY7, DEPARTMENT INDEX (RDB\$PRIMARY5))

Fetches: 22    Modified    Read Only    Highlighting    500 ms

**See also:**

[Query execution](#)<sup>[362]</sup>

## 6.3 Query parameters

Both [Query Data](#)<sup>[330]</sup> and [Query Designer](#)<sup>[347]</sup> support parameters usage inside the query text. A parameter is a kind of variable for which a value can be specified just before the query execution. In the query text the parameter should appear as an identifier with a colon (':') at the beginning, e.g.

```
SELECT * FROM MYTABLE WHERE ID = :param1;
```

**Note:** The **Allow using of parameters in query text** option should be checked on the [Tools](#)<sup>[749]</sup> page of the [Environment Options](#)<sup>[736]</sup> dialog for this feature to be enabled.

---

### See also:

[Query Data](#)<sup>[330]</sup>

[Query Designer](#)<sup>[347]</sup>

### 6.3.1 Input parameters dialog

The **Input Parameters** dialog is used to specify the query parameters as well as values of the input parameters of the query before execution.

Date	FIRST	LAST
25.07.2017 16:04:22	%A%	JOHNSON
25.07.2017 16:03:54	%AL%	BROWN

FIRST (VARCHAR(15))	<input type="checkbox"/> Null	<input type="text" value="%A%"/>
LAST (VARCHAR(20))	<input type="checkbox"/> Null	<input type="text" value="JOHNSON"/>

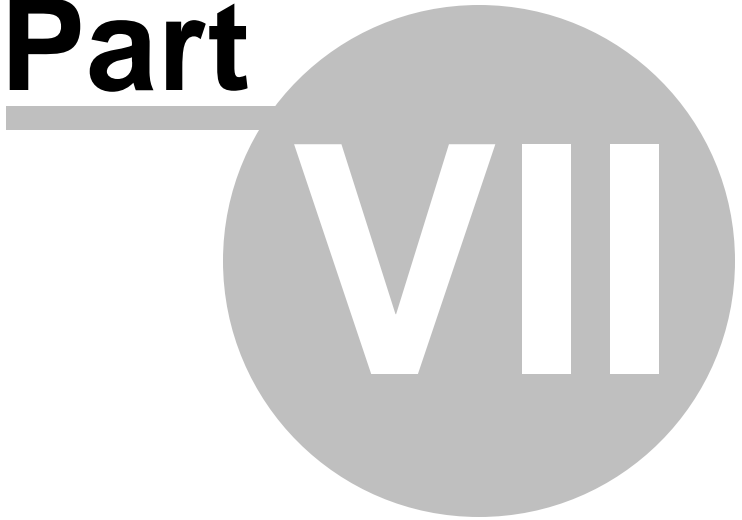
Buttons: **OK**, **Cancel**, **Help**

The edit field for input parameters varies according to the field data type. For your convenience the *Calculator* and *Date editor* are implemented for *floating-point* (*FLOAT*, *NUMERIC*, *DOUBLE PRECISION*, *DECIMAL*) and *temporal* (*DATE*, *TIME*) types respectively: click the arrow-down button to call the *Calculator / Date editor* popup window.

Also you can choose the recently used set of values in the table at the top of the window. To apply values from the table just double-click its row.

Click **OK** button to apply the values and execute the query or click **Cancel** button to abort execution.

**Part**



## 7 Data Management

Table data and query results are displayed on the **Data** or **Results** tab of [Table Editor](#)<sup>[184]</sup>, [Query Data](#)<sup>[330]</sup>, [Query Designer](#)<sup>[347]</sup>, etc.

Data can be displayed in one of the following modes: **Grid View**, **Form View**, **Print Data**, **BLOB View**. See [Data View](#)<sup>[369]</sup> to learn more about these modes. You are also provided with a number of [filtering tools](#)<sup>[379]</sup> when working with your data.

- [Data View](#)<sup>[369]</sup>
- [Custom Filter](#)<sup>[431]</sup>
- [Filter Builder dialog](#)<sup>[433]</sup>

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### See also:

[Getting Started](#)<sup>[37]</sup>

[Database Explorer](#)<sup>[63]</sup>

[Database Management](#)<sup>[87]</sup>

[Database Objects Management](#)<sup>[162]</sup>

[Query Management Tools](#)<sup>[328]</sup>

[Import/Export Tools](#)<sup>[443]</sup>

[Database Tools](#)<sup>[532]</sup>

[Services](#)<sup>[65]</sup>

[Security management](#)<sup>[71]</sup>

[Options](#)<sup>[73]</sup>

[External Tools](#)<sup>[832]</sup>

[How To...](#)<sup>[838]</sup>



## 7.1 Data View

**SQL Manager for InterBase/Firebird** provides you with powerful tools for **viewing, editing and printing data** from tables and queries:

- table / view data are available within the **Data** tab of [Table Editor](#)<sup>[184]</sup> / [View Editor](#)<sup>[242]</sup> correspondingly;
- upon [a query execution](#)<sup>[340]</sup> the returned dataset appears within the **Result(s)** tab of [Query Data](#)<sup>[330]</sup> / [Query Builder](#)<sup>[347]</sup> (in Query Data the position of the tab depends on the **Results on Edit tab / Results on separate tab** selection in the [Navigation bar](#)<sup>[337]</sup>).

The data can be displayed in one of four available **modes**: *Grid View*, *Form View*, *Print Data* and *BLOB View*. The **status bar** at the bottom displays the number of records in the current dataset, the time the records were fetched by the application and the status of the records (whether the data are read-only or editable).

Please see the succeeding chapters to learn how to work with your data in the simplest and most efficient way.

- [Using Navigation bar and Toolbars](#)<sup>[370]</sup>
- [Grid View](#)<sup>[373]</sup>
- [Form View](#)<sup>[395]</sup>
- [Print Data](#)<sup>[396]</sup>
- [BLOB View](#)<sup>[422]</sup>
- [Applying changes](#)<sup>[430]</sup>

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### See also:

[Custom Filter](#)<sup>[431]</sup>

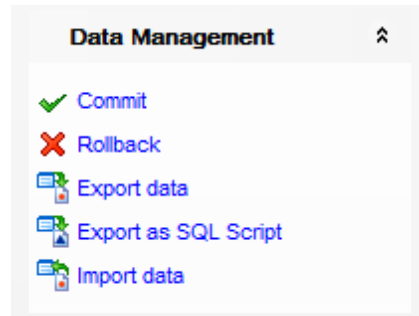
[Filter Builder dialog](#)<sup>[433]</sup>

[Table Editor](#)<sup>[184]</sup>

[View Editor](#)<sup>[242]</sup>

## 7.1.1 Using Navigation bar and Toolbars

### Data Management



- ✓ commit transaction
- ✗ rollback transaction
- 📄 export data<sup>[441]</sup>
- 📄 export data as SQL script<sup>[517]</sup>
- 📄 import data<sup>[491]</sup> (in *Table Editor*, *View Editor* only)

### Tools

- 📄 view the [dependency tree](#)<sup>[534]</sup> for the table
- 👤 define [grants](#)<sup>[726]</sup> on the table
- 📄 create a [view](#)<sup>[242]</sup> on the table
- 🗑️ [purge](#)<sup>[707]</sup> table data
- ⚙️ create [procedure](#)<sup>[253]</sup> based on the table

**NOTE:** Items of the **Navigation bar** are also available on the **ToolBar**. To enable the [toolbar](#)<sup>[884]</sup>, open the [Environment Options](#)<sup>[736]</sup> dialog, proceed to the [Windows](#)<sup>[743]</sup> section there and select  *ToolBar* (if you need the toolbar only) or  *Both* (if you need both the toolbar and the [Navigation bar](#)<sup>[882]</sup>) in the **Bar style for child forms** group.

The **Navigation pane** contains toolbars allowing you to:

- go to the first record of the dataset;
- go to the previous page;
- go to the previous record;
- go to the next record;
- go to the next page;
- go to the last record of the dataset;
- insert a new record (in *Table Editor* only);
- delete the selected record (in *Table Editor* only);
- edit the selected record (in *Table Editor* only);
- [post](#)<sup>[430]</sup> edit (in *Table Editor* only);
- cancel edit (in *Table Editor* only);
- refresh data;
- set bookmark;
- go to saved bookmark;
- call the [Filter Builder](#)<sup>[433]</sup> dialog;
- search for a string in the currently selected column data;

- enable [multi-level mode](#)<sup>[384]</sup> to display data of the table(s) related by a [foreign key](#)<sup>[216]</sup> (in *Table Editor* only).



The **Toolbar** of the [Print Data](#)<sup>[396]</sup> mode allows you to:

- customize the report using [Report Formatter](#)<sup>[405]</sup> and the [Report Options](#)<sup>[416]</sup> dialog;
- load a report from an external \*.rps file;
- save the current report to an external \*.rps file;
- print the report using the default printer;
- set printing options using the standard [Print](#)<sup>[421]</sup> dialog;
- call the [Page Setup](#)<sup>[398]</sup> dialog;
- show/hide report thumbnails;
- customize the [Report Title](#)<sup>[416]</sup>;
- add [Date and Time](#)<sup>[418]</sup>, [Page Numbering](#)<sup>[418]</sup>, show/hide empty pages;
- shrink the report to the page;
- specify background color;
- zoom in/out, [setup zoom](#)<sup>[419]</sup>, zoom page width, whole page, two/four/multiple pages;
- select the active page of the report;
- go to first/previous/next/last page of the report;
- show linked details (automatically add grid levels on the basis of existing foreign keys).



The **Toolbar** of the [BLOB View](#)<sup>[422]</sup> mode allows you to:

- select a BLOB column;
- select encoding (*ANSI*, *UTF-8*, *UNICODE-16*);
- load BLOB content from an external file;
- save the BLOB column content to an external file;
- cut/copy/paste selected text to/from clipboard (enabled for the *Text* and *Rich Text* tabs only);
- undo changes;
- print the text (enabled for the *Text*, *Rich Text* and *HTML* tabs only);
- select font to be applied to the selected text (enabled for the *Rich Text* tab only);
- select font size to be applied to the selected text (enabled for the *Rich Text* tab only);
- make the selected text bold/italic/underlined (enabled for the *Rich Text* tab only);
- align left/center/right (enabled for the *Rich Text* tab only);
- add/remove list bullets (enabled for the *Rich Text* tab only).



### See also:

[Grid View](#)<sup>[373]</sup>

[Form View](#)<sup>[395]</sup>

[Print Data](#)<sup>[396]</sup>

[BLOB View](#)<sup>[422]</sup>

[Applying changes](#)<sup>[430]</sup>

[Customize toolbars and menus](#)<sup>[916]</sup>



## 7.1.2 Grid View

By default, data returned by a query are displayed as a grid. It is indicated by the **Grid View** tab selected on the View mode panel at the bottom of the **Results** area of the window.

When in the **Grid View** mode, the columns correspond to the fields and the rows correspond to the records.

If more convenient, you can [change the order](#)<sup>[375]</sup> of the columns by dragging their headers horizontally. Clicking the column caption sorts data by the values of this column in the ascending or the descending mode. The [navigation pane](#)<sup>[370]</sup> at the top of the grid allows you to browse the data quickly, to insert, update and delete records, and to set a [filter](#)<sup>[379]</sup> for the records using the [Filter Builder](#)<sup>[433]</sup> dialog and other tools.

The [Navigation bar](#)<sup>[370]</sup> of the parent window, [toolbars](#)<sup>[371]</sup> and the [context menu](#)<sup>[382]</sup> of the grid provide you with a number of data management functions: [Export Data](#)<sup>[444]</sup>, [Import Data](#)<sup>[491]</sup>, [Export as SQL Script](#)<sup>[517]</sup> and more.

- [Customizing columns](#)<sup>[375]</sup>
- [Grouping data within the grid](#)<sup>[376]</sup>
- [Filtering records](#)<sup>[379]</sup>
- [Using the context menu](#)<sup>[382]</sup>
- [Working in multi-level mode](#)<sup>[384]</sup>
- [Browsing data in card view](#)<sup>[392]</sup>
- [Column Summary](#)<sup>[393]</sup>
- [Copying records](#)<sup>[394]</sup>

EMP_NC	FIRST_NAME	LAST_NAME	PHONE	HIRE_DATE	DE	JC	JOB_GRADE
9	Phil	Forest	229	17.04.1989	622	Mngr	3
11	K. J.	Weston	34	17.01.1990	130	SRep	4
12	Terri	Lee	256	01.05.1990	000	Admin	4
14	Stewart	Hall	227	04.06.1990	900	Finan	3
15	Katherine	Young	231	14.06.1990	623	Mngr	3
20	Chris	Papadopoulos	887	01.01.1990	671	Mngr	3
24	Pete	Fisher	888	12.09.1990	671	Eng	3
28	Ann	Bennet	5	01.02.1991	120	Admin	5
29	Roger	De Souza	288	18.02.1991	623	Eng	3
34	Janet	Baldwin	2	21.03.1991	110	Sales	3
36	Roger	Reeves	6	25.04.1991	120	Sales	3
37	Willie	Stansbury	7	25.04.1991	120	Eng	4
44	Leslie	Phong	216	03.06.1991	623	Eng	4
45	Ashok	Ramanathan	209	01.08.1991	621	Eng	3
46	Walter	Steadman	210	09.08.1991	900	CFO	1

Grid View Form View Print Data Blob View

**See also:**

[Using Navigation bar and Toolbars](#)<sup>[370]</sup>

[Form View](#)<sup>[395]</sup>


[Print Data](#)<sup>[396]</sup>

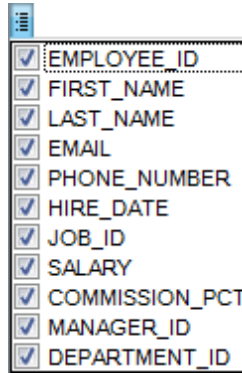
[BLOB View](#)<sup>[422]</sup>

[Applying changes](#)<sup>[430]</sup>

### 7.1.2.1 Customizing columns

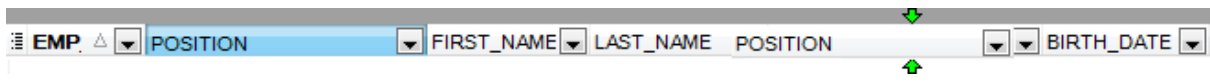
#### Selecting visible columns

When working in the **Grid View** mode, you can specify which columns of the current dataset will be visible. Click the  button available in the top left corner of the data grid and select/deselect columns in the drop-down list to specify their visibility/invisibility.



#### Changing columns order

For your convenience the possibility to *change the order* of the columns in the data grid is available. To reorder columns, drag a column header horizontally to a place in between two other column headers indicated with green arrows.



#### See also:

[Grouping data](#) <sup>[376]</sup>

[Filtering records](#) <sup>[379]</sup>

[Working in multi-level mode](#) <sup>[384]</sup>

[Working in card view mode](#) <sup>[392]</sup>

[Column Summary](#) <sup>[393]</sup>

### 7.1.2.2 Grouping and sorting data

In order to **sort data**, do the following:

open data at the **Data** or **Results** tab, choose the column by which you need to sort data and click the column title.

If the column was not sorted, the first click will sort it in the ascending order and the second one - in the descending order.

#### **Clear Sorting**

To cancel the sorting, open the context menu by right-clicking the necessary column and choose the **Clear Sorting** item, or press the *Ctrl* button and click the column title.

If necessary, you can **group the data in grid** by any of the columns.

This operation is performed by dragging the column header to the gray "**Group by**" box area at the top. In order to display this area, select the  **Show "Group by" box** option available in the [Grid](#)<sup>[779]</sup> section of the [Environment Options](#)<sup>[736]</sup> dialog.

When grouping by a column is applied to the grid, all the records are displayed as subnodes to the grouping row value as displayed in the screenshot below. The grouping row can contain the column summary information specified in the **Group header** group of the [Column Summary](#)<sup>[393]</sup> dialog.

To reverse grouping, just drag the column header back.

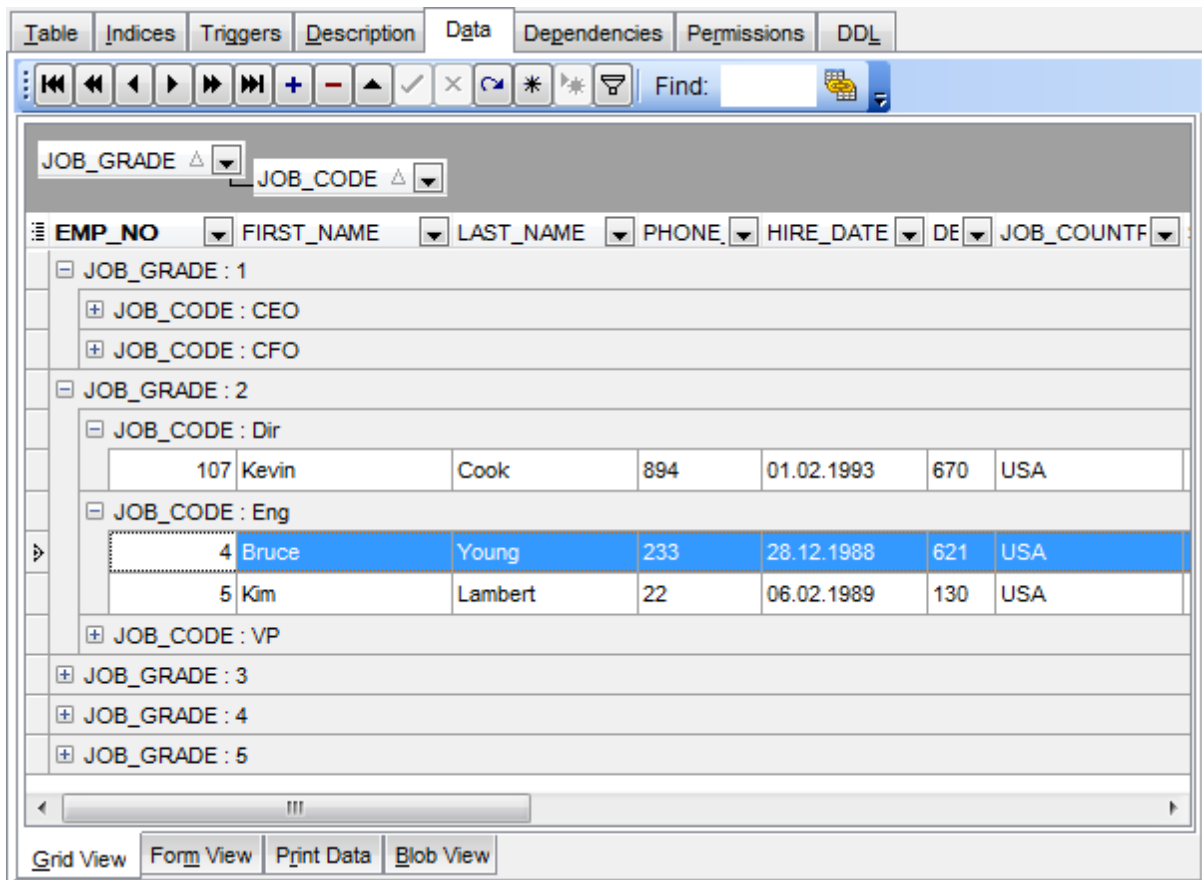
**Hint:** While dragging the column header back, you can also [change the column position](#)<sup>[376]</sup>.



The screenshot shows the 'Data' tab of SQL Manager for InterBase/Firebird. The data grid displays employee information grouped by JOB\_CODE. The columns are EMP\_NO, FIRST\_NAME, LAST\_NAME, PHONE, HIRE\_DATE, DE, and JOB\_GRADE. The data is sorted by EMP\_NO. The selected row is EMP\_NO 46, Walter Steadman, with JOB\_CODE Dir.

EMP_NO	FIRST_NAME	LAST_NAME	PHONE	HIRE_DATE	DE	JOB_GRADE
JOB_CODE : Admin						
12	Terri	Lee	256	01.05.1990	000	4
28	Ann	Bennet	5	01.02.1991	120	5
65	Sue Anne	O'Brien	877	23.03.1992	670	5
109	Kelly	Brown	202	04.02.1993	600	5
JOB_CODE : CEO						
JOB_CODE : CFO						
46	Walter	Steadman	210	09.08.1991	900	1
JOB_CODE : Dir						
JOB_CODE : Doc						
JOB_CODE : Eng						
JOB_CODE : Finan						
JOB_CODE : Mktg						
JOB_CODE : Mngr						
9	Phil	Forest	229	17.04.1989	622	3
15	Katherine	Young	231	14.06.1990	623	3

If necessary, you can group data by two or more columns. In this case column headers are displayed hierarchically, and data are grouped by these columns in the order the column headers appear in the **"Group by"** area.

**See also:**

[Customizing columns](#)<sup>[375]</sup>

[Filtering records](#)<sup>[379]</sup>

[Working in multi-level mode](#)<sup>[384]</sup>

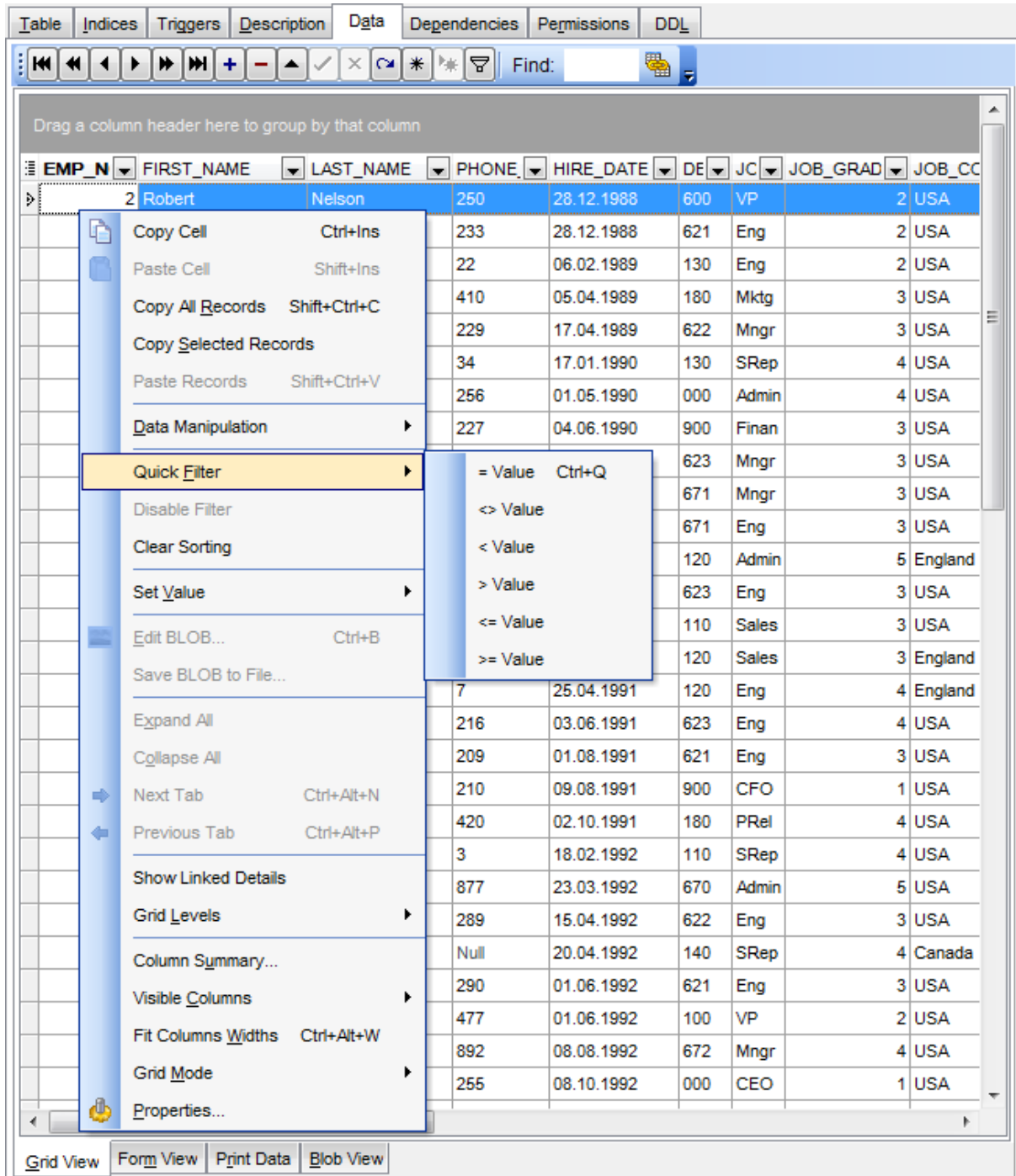
[Working in card view mode](#)<sup>[392]</sup>

[Column Summary](#)<sup>[393]</sup>

### 7.1.2.3 Filtering records

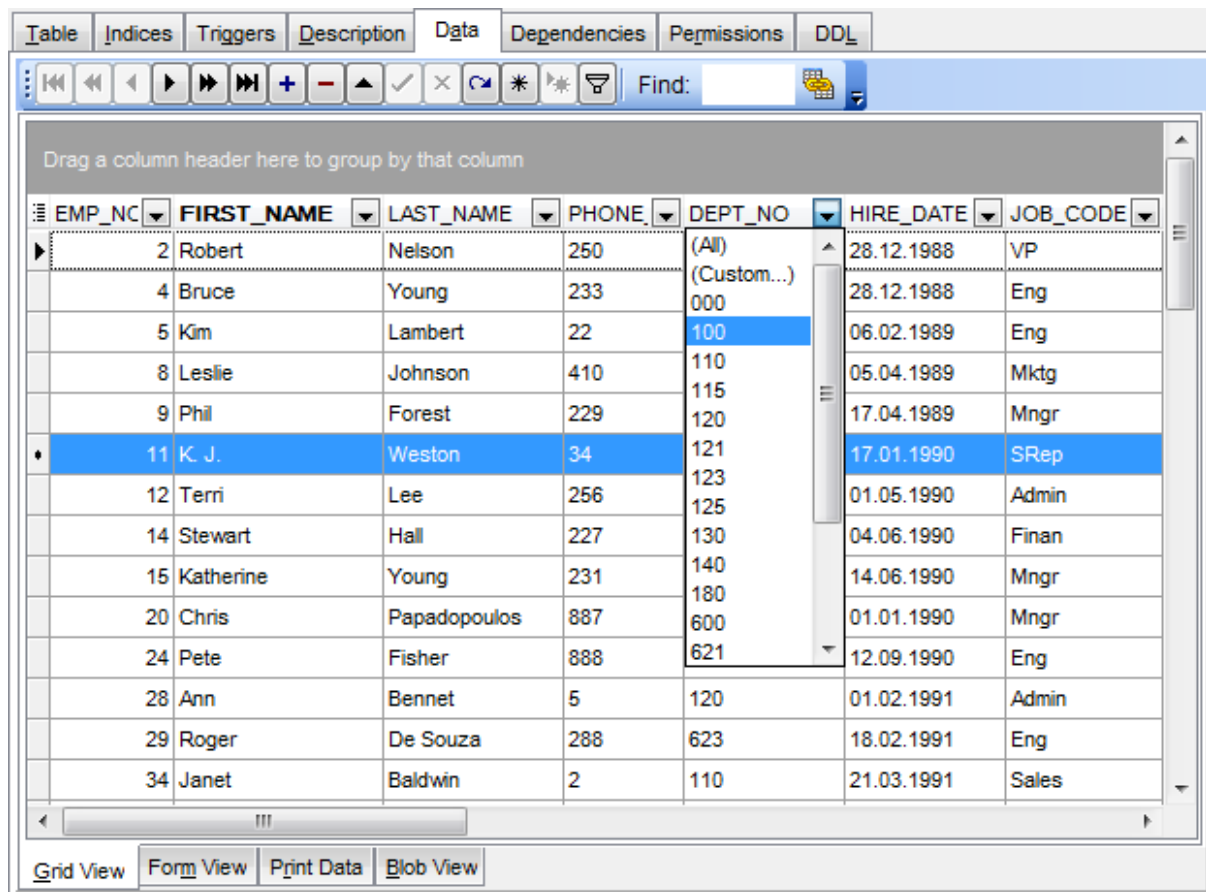
A number of **filtering** facilities are implemented in the grid for your convenience. You can filter records in the grid in either of the following ways:

- right-click a row and select the **Quick Filter** context menu item to filter records by the current value of the selected column;




- click the Arrow-Down button next to the column caption to display the drop-down list

and select any of the column values to filter records by this value of the selected column;

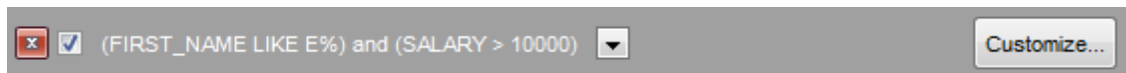



or

- click the Arrow-Down button next to the column caption to display the drop-down list, then select the **Custom** item and build a simple filter using the [Custom Filter](#)<sup>[431]</sup> dialog;
- use the **Set filter**  button on the [navigation pane](#)<sup>[370]</sup> to invoke the [Filter Builder](#)<sup>[433]</sup> dialog and create a composite filter using the dialog.

After the filter is set, the gray **filtering panel** becomes visible at the bottom of the grid. This panel allows you to see the active filtering condition and easily enable or disable it using the checkbox on the left. The Arrow-down button opens the drop-down menu which allows you to browse the filter history for this dataset.

If necessary, you can click the **Customize...** button on the right to customize your filter and add more complicated filtering conditions within the [Filter Builder](#)<sup>[433]</sup> dialog.



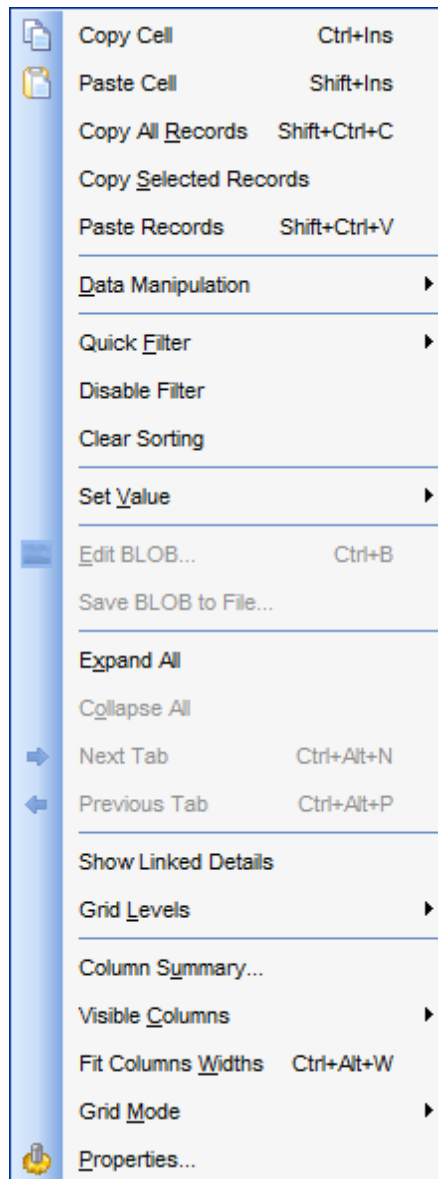
To remove the current filter, click the **Close**  button.

**See also:**[Customizing columns](#)<sup>[375]</sup>[Grouping data](#)<sup>[376]</sup>[Custom Filter](#)<sup>[431]</sup>[Filter Builder dialog](#)<sup>[433]</sup>

#### 7.1.2.4 Using the context menu

The **context menu** of the grid is aimed at facilitating your work with data: you can perform a variety of operations using the context menu items:

- copy the selected cell value to Windows clipboard;
- paste the clipboard content to the currently selected cell;
- copy/paste multiple records;
- data manipulation: [Export Data](#)<sup>[444]</sup> from the table, [Import Data](#)<sup>[497]</sup> to the table, [Export Data as SQL Script](#)<sup>[517]</sup>;
- set/disable [Quick Filter](#)<sup>[379]</sup>;
- clear sorting;
- set a value for the selected cell: *NULL*, *Empty string* (for string fields), *Now* (for TIME fields), *"Zero"* (for DATE fields);
- edit the BLOB value or save the BLOB to file using [BLOB viewer/editor](#)<sup>[422]</sup>;
- show linked details (automatically add grid levels on the basis of existing foreign keys)
- expand/collapse [grid levels](#)<sup>[384]</sup> and navigate within the tabs;
- manage grid levels: [add a new grid level](#)<sup>[385]</sup>, delete the current grid level (this item is enabled only when the detail level exists and is currently focused);
- switch to the [Card View](#)<sup>[392]</sup> mode;
- view [Column Summary](#)<sup>[393]</sup>;
- select visible/invisible columns of the dataset;
- fit column width for better representation;
- specify the grid mode: *Load All Rows*, *Load Visible Rows*, *Default*;
- view/edit [grid properties](#)<sup>[779]</sup>.



**Note:** If the  **Show editor immediately** and  **Always show editor** options on the [Environment options | Grid](#) tab are checked then the context menu of a grid can be evoked by selecting the necessary cell and right-clicking the table header. Otherwise, right-clicking the cell evokes the cell editing menu.

### 7.1.2.5 Working in multi-level mode

One of unique features of **SQL Manager for InterBase/Firebird** is the ability to work with data in multi-level mode to view and modify data in several related tables simultaneously.

To manage grid levels, right-click the grid and select the **Grid Levels context menu**<sup>[382]</sup> group. Items of this group allow you to:

- add a new grid level using [Create Grid Level Wizard](#)<sup>[385]</sup>;
- delete the current grid level;
- switch between the ordinary *Table View* and the [Card View](#)<sup>[392]</sup> modes.

DEPT	DEPARTMENT	HE	MNGR_I	BUDGET	LOCATION	PHONE_NO	
000	Corporate Headquarters	Null	105	1000000	Monterey	(408) 555-123	
100	Sales and Marketing	000	85	2000000	San Francisco	(415) 555-123	
EMPLOYEE							
EMP_N	FIRST_NAME	LAST_NAME	PH	HIRE_DATE	DEPT	JC	JOB_GF
127	Michael	Yanowski	492	09.08.1993	100	SRep	
85	Mary S.	MacDonald	477	01.06.1992	100	VP	
600	Engineering	000	2	1100000	Monterey	(408) 555-123	
900	Finance	000	46	400000	Monterey	(408) 555-123	
EMPLOYEE							
EMP_N	FIRST_NAME	LAST_NAME	PH	HIRE_DATE	DEPT	JC	JOB_GF
46	Walter	Steadman	210	09.08.1991	900	CFO	
14	Stewart	Hall	227	04.06.1990	900	Finan	
180	Marketing	100	Null	1500000	San Francisco	(415) 555-123	
620	Software Products Div.	600	Null	1200000	Monterey	(408) 555-123	
621	Software Development	620	Null	400000	Monterey	(408) 555-123	

#### See also:

[Using the context menu](#)<sup>[382]</sup>

[Create Grid Level wizard](#)<sup>[385]</sup>

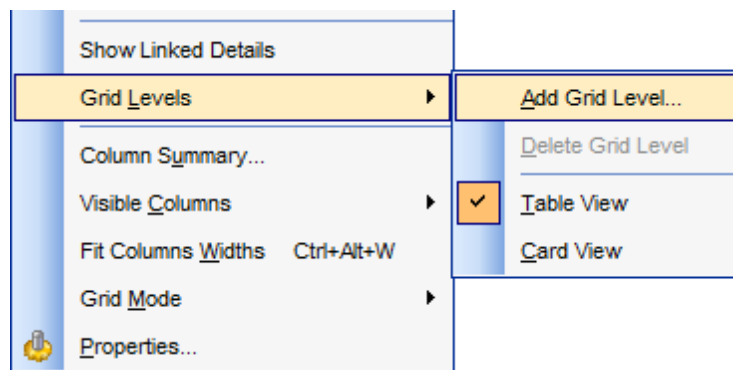


## 7.1.2.5.1 Create Grid Level wizard

**Create Grid Level Wizard** allows you to add a new detail level to the grid in order to get master-detail representation of your data.

To start the wizard, right-click the grid, select the **Grid Levels context menu**<sup>[382]</sup> group and proceed to the **Add Grid Level...** item within this group.

- [Specifying master level](#)<sup>[385]</sup>
- [Selecting source table](#)<sup>[386]</sup>
- [Binding master and detail levels](#)<sup>[388]</sup>
- [Query parameterization](#)<sup>[389]</sup>
- [Setting additional parameters](#)<sup>[390]</sup>



---

**See also:**

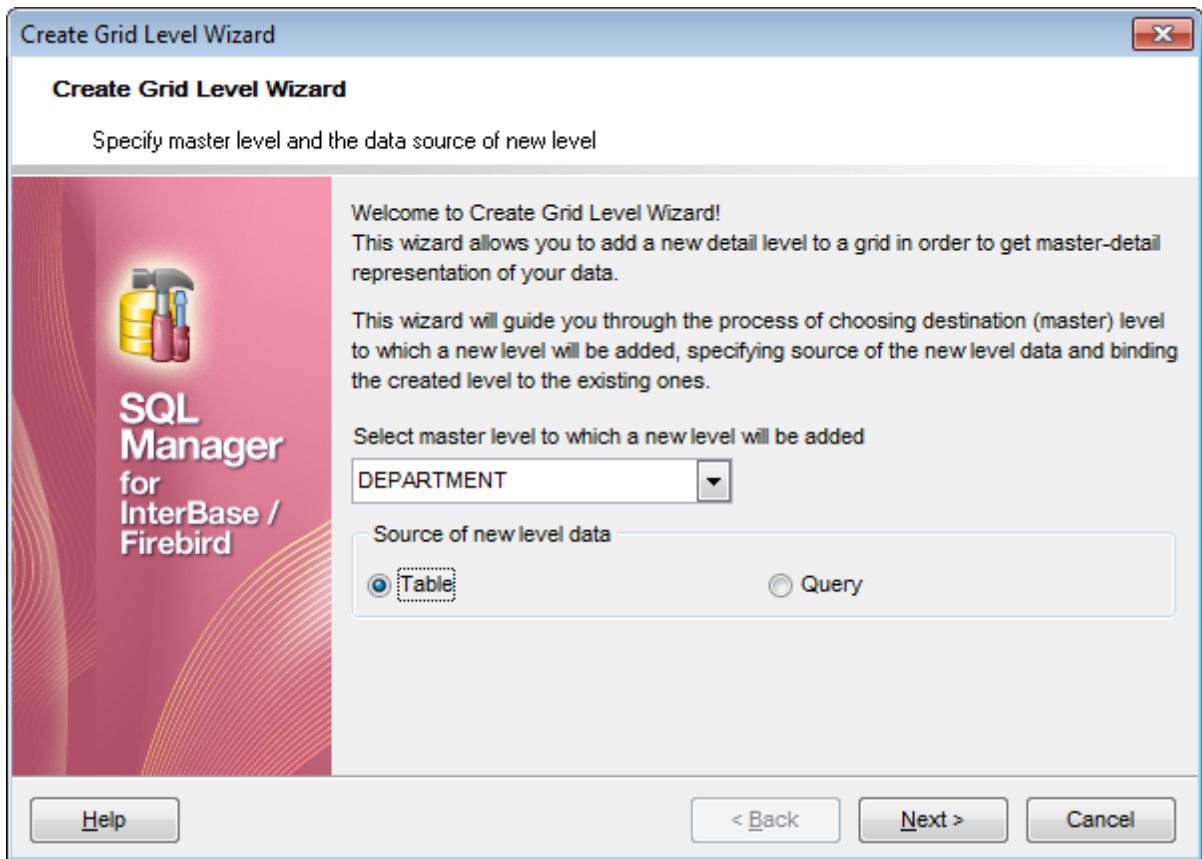
[Working in multi-level mode](#)<sup>[384]</sup>

## 7.1.2.5.1.1 Specifying master level

Use the drop-down list to select the table of the **master level** to which a new level will be added.

**Source of new level data**

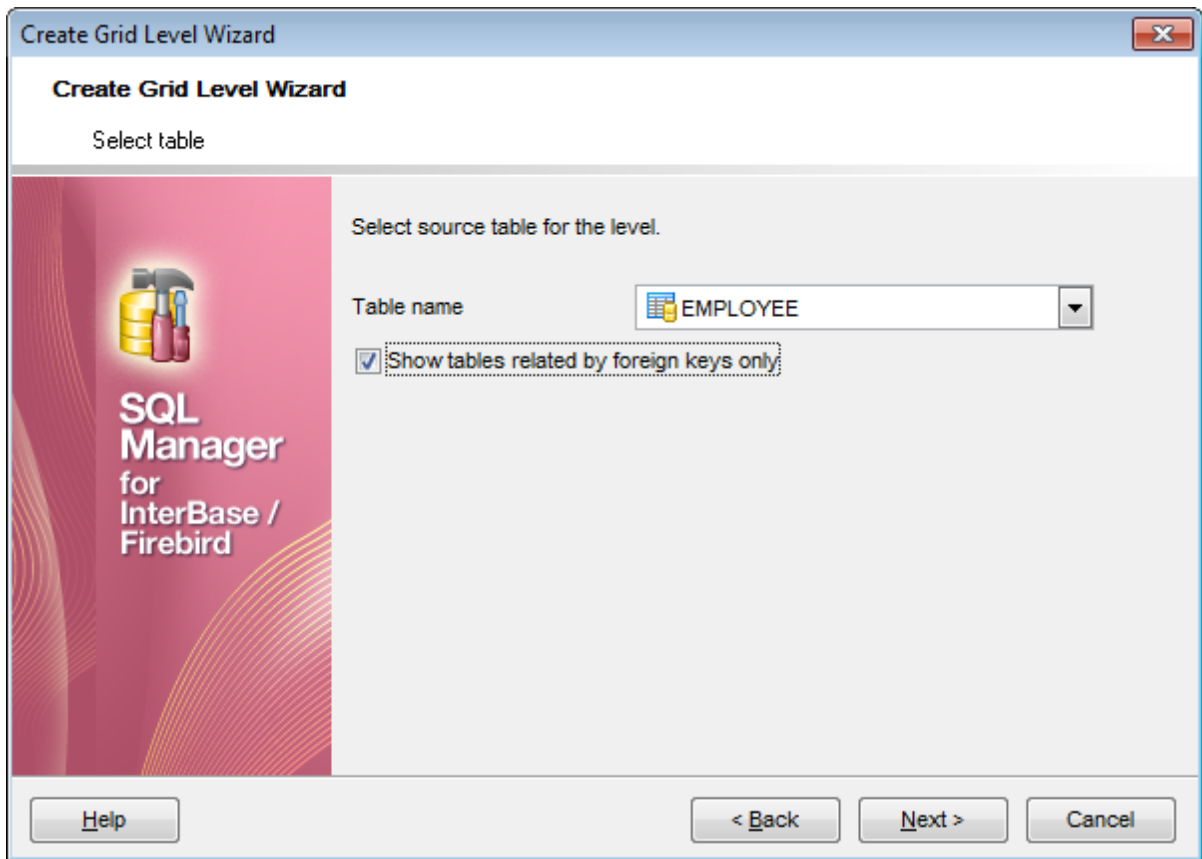
Select the source type of the new level data:  *Table* or  *Query*.



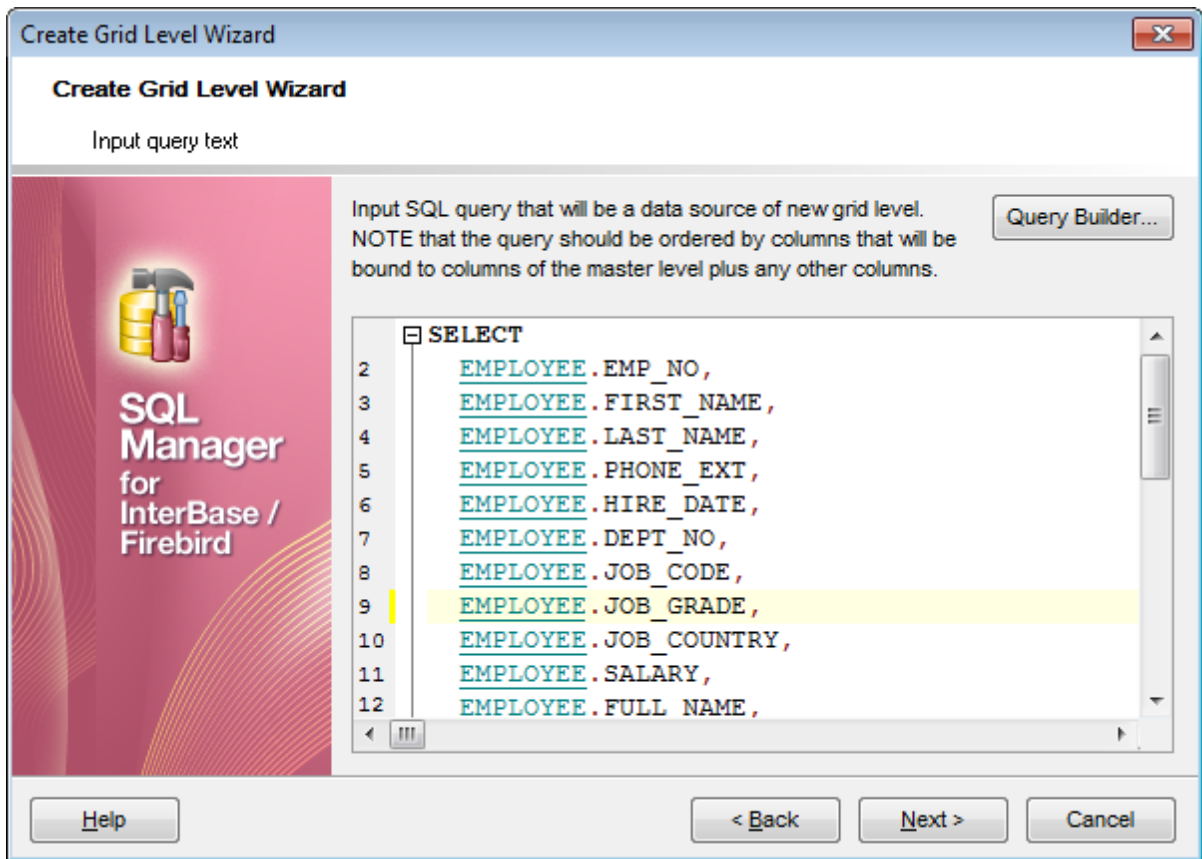
Click the **Next** button to proceed to the [Defining source for detail level](#)<sup>386</sup> step to select a table for the detail level or input a query, depending on whether the  **Table** or the  **Query** option has been selected.

#### 7.1.2.5.1.2 Defining source for detail level

If the  **Table** option has been selected at the [previous step](#)<sup>385</sup>, you should now specify a table for the detail view using the **Table name** drop-down list. Set the  **Show tables related by foreign keys only** option to narrow the list of tables by including only tables linked by Foreign keys.



If the **Query** option has been selected at the [previous step](#)<sup>385</sup>, you should now enter a query that will be used as the source of the new grid level. If necessary, you can use [Query Builder](#)<sup>347</sup> to build the SQL query visually.



Click the **Next** button to proceed to the [Binding master and detail levels](#)<sup>388</sup> step of the wizard.

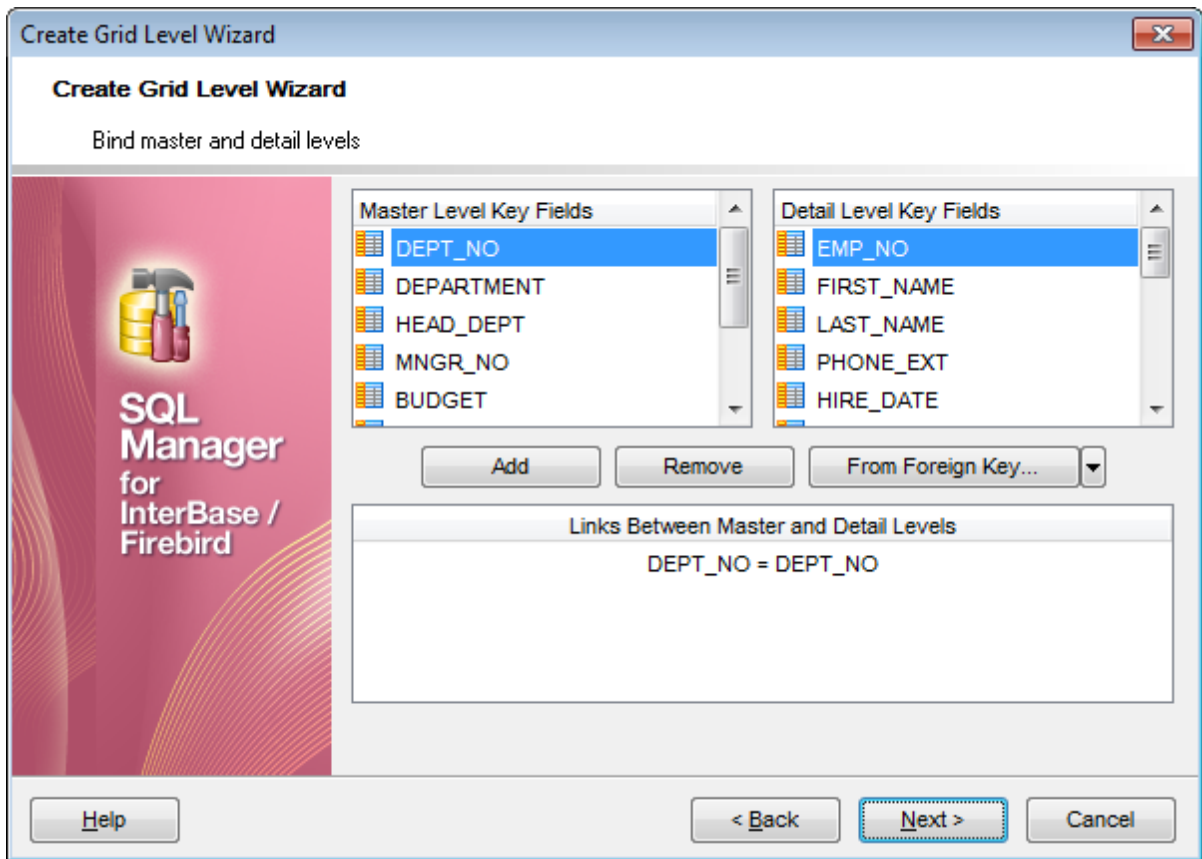
#### 7.1.2.5.1.3 Binding master and detail levels

Define pairs of fields to link the Master Level and the Detail Level data sources:

- select a field in the **Master Level Key Fields** list;
- select a corresponding field in the **Detail Level Key Fields** list;
- click **Add** to set correspondence between the selected fields.

The newly created correspondences are listed in the **Links Between Master and Detail Levels** area. If necessary, you can delete any correspondence using the the **Remove** button.

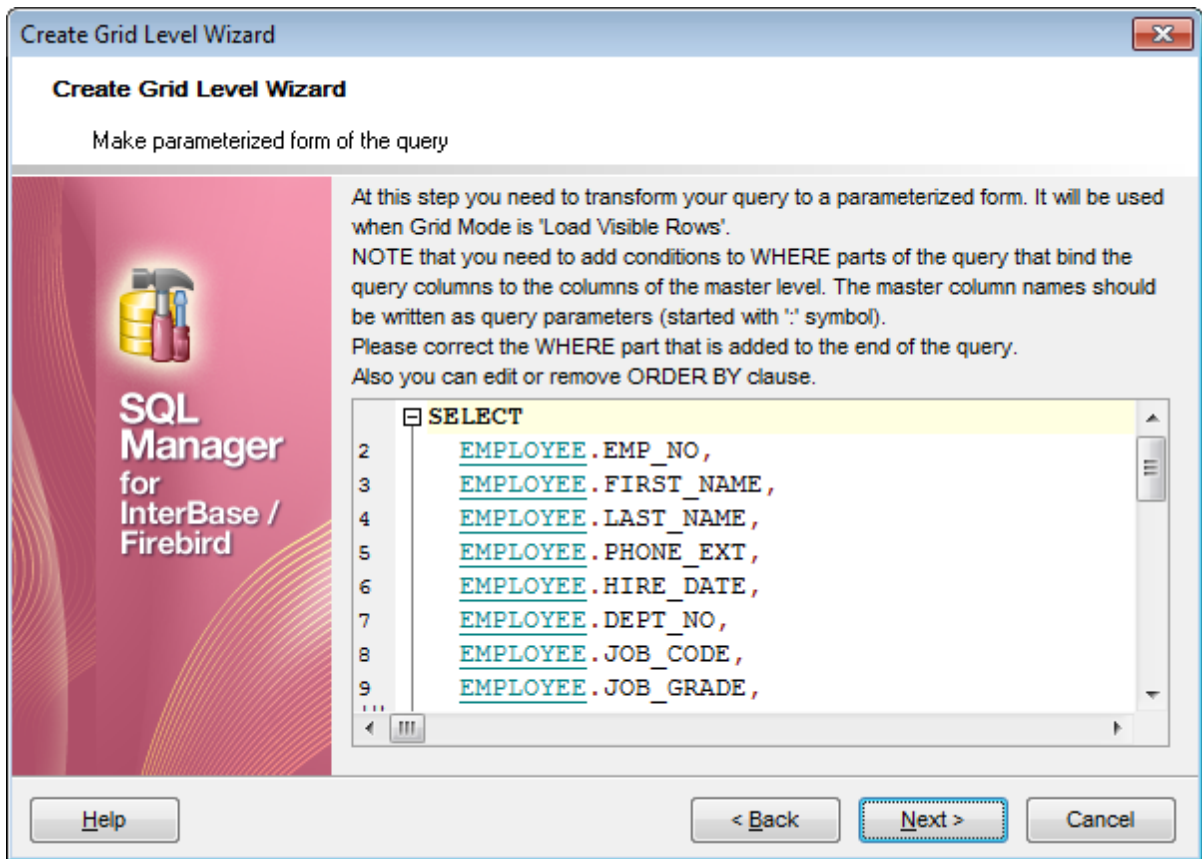
The **From Foreign Key...** menu is available if the  **Show tables related by foreign keys only** option has been selected at the [previous step](#)<sup>386</sup>. This menu allows you to select the [foreign key](#)<sup>216</sup> to be used for identifying master-detail levels (if the table has more than one foreign key relation).



Click the **Next** button to proceed to the [Setting additional parameters](#)<sup>[390]</sup> step or to the [Query parameterization](#)<sup>[389]</sup> step of the wizard if  **Query** was selected at the [Specifying master level](#)<sup>[385]</sup> step of the wizard.

#### 7.1.2.5.1.4 Query parameterization

If  **Query** was selected at the [Specifying master level](#)<sup>[385]</sup> step of the wizard, you should now transform the query to a parameterized form that will be used in the 'Load visible rows' Grid Mode (see the [Grid | Data Options](#)<sup>[782]</sup> section of the [Environment Options](#)<sup>[736]</sup> dialog to get more information about grid modes offered by **SQL Manager**).



Click the **Next** button to proceed to the [Setting additional parameters](#)<sup>[390]</sup> step of the wizard.

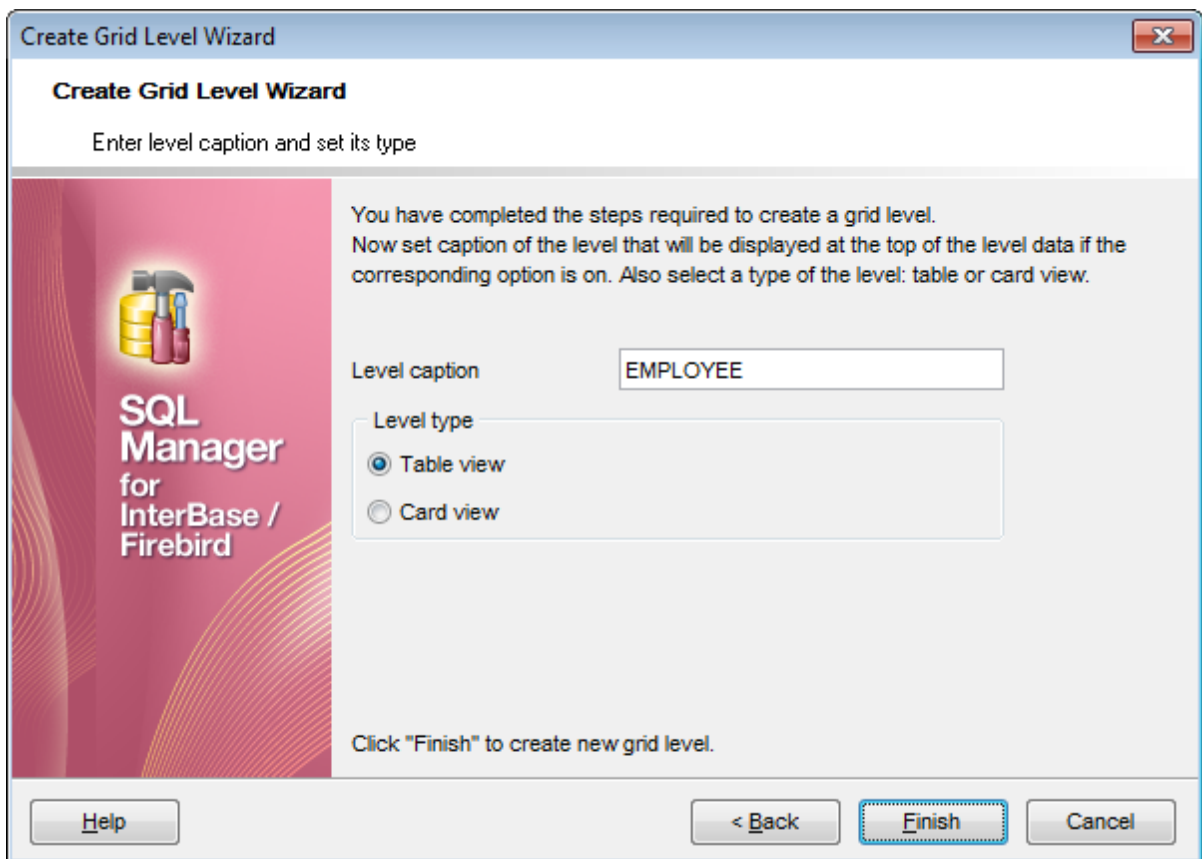
#### 7.1.2.5.1.5 Setting additional parameters

##### **Level caption**

Set the caption to be used for the new level in the grid.

##### **Level type**

Select the type of view you wish to be applied to the grid level:  *Table view* or  *Card view*.

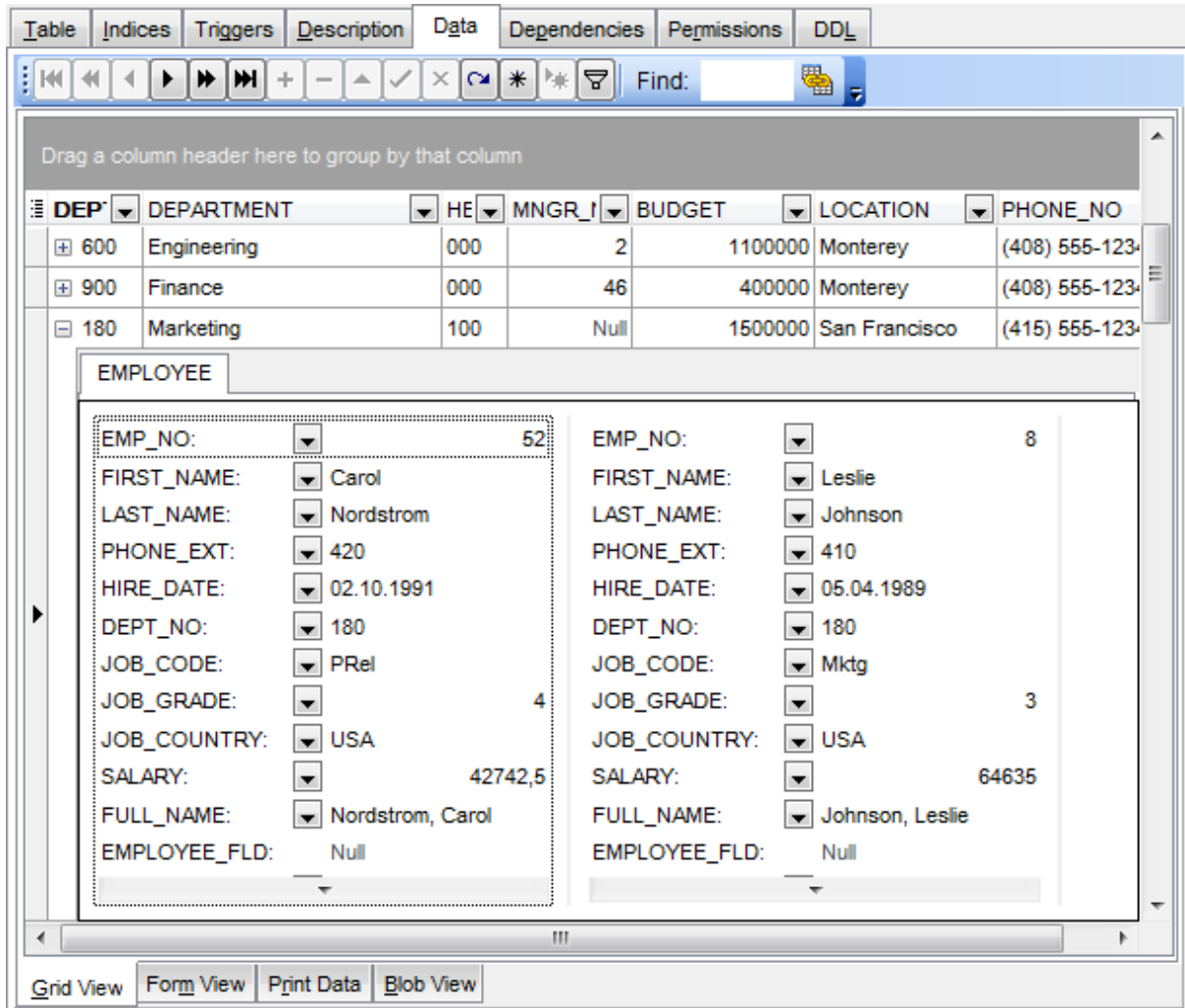


When you are done, click the **Finish** button to complete the operation.

### 7.1.2.6 Working in card view mode

Depending on your preferences, you can represent data in the **Table View** or in the **Card View** modes.

To switch to the **Card View** mode of data representation, right-click the grid, expand the **Grid Levels** [context menu](#)<sup>[382]</sup> group and select the **Card View** item within this group.



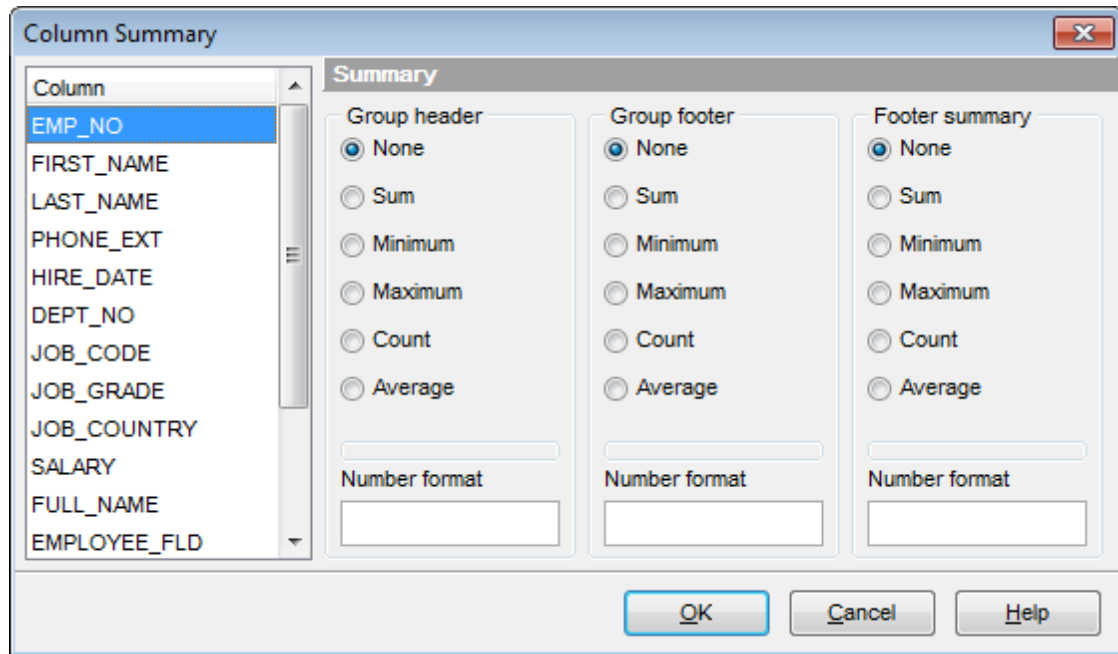
#### See also:

[Using the context menu](#)<sup>[382]</sup>



### 7.1.2.7 Column Summary

If necessary, you can select the **Column Summary...** [context menu](#)<sup>[382]</sup> item to open the **Column Summary** dialog which allows you to set the summary for each particular column that will be displayed in the *grid footer*, *group header* and *group footer* areas. Column Summary information displayed in the *group footer* and *group header* areas is available for [grouped data](#)<sup>[376]</sup>.



The **Column** list displays all columns of the dataset. Select a column and specify which information should be displayed in the grid as summary for this column:

- None*
- Sum* (for numeric types only)
- Minimum* (for numeric and date/time types only)
- Maximum* (for numeric and date/time types only)
- Count*
- Average* (for numeric types only)

Use the **Number format** edit boxes in each group to specify the preferable [format](#)<sup>[906]</sup> for summary info representation.

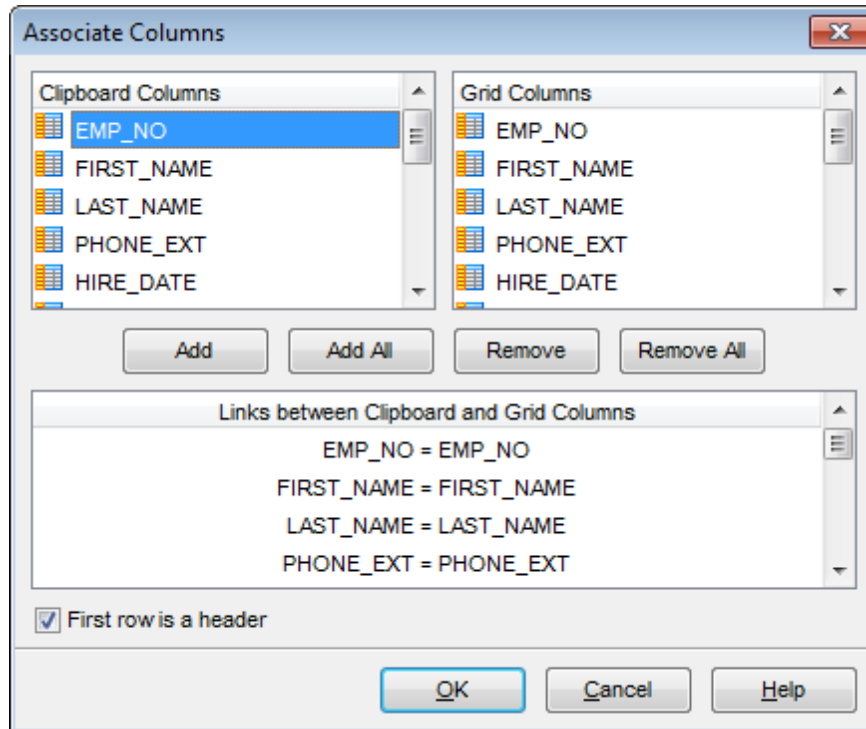
---

#### See also:

[Using the context menu](#)<sup>[382]</sup>

### 7.1.2.8 Copying records

When you copy several records to clipboard and paste them into the grid, you are offered to set correspondence between columns of the clipboard and fields of the target InterBase/Firebird table using the **Associate Columns** dialog.



The **Clipboard Columns** and **Grid Columns** lists display the source and target dataset columns respectively. Set correspondence between the source clipboard columns and the table columns:

- select a source clipboard column in the **Clipboard Columns** list;
- select the corresponding field the target table in the **Grid Columns** list;
- click the **Add** button to set correspondence between the selected columns;
- the pair of columns appears in the **Links between...** list below;
- repeat the operation for all the columns you need copy.

Use the **Add All** button to add all columns to the **Links between...** list on the basis of their order.

To remove a correspondence, select the pair of columns in the **Links between...** list and press the **Remove** button.

To remove all correspondences, press the **Remove All** button.

**First row is a header**

This option specifies that the first row of the associated columns will be taken as the column header.

### 7.1.3 Form View

The **Form View** tab allows you to view data as a form. To activate this type of data view, select the **Form View** tab on the View mode panel at the bottom of the window.

The form displays the current record: field names on the left and the corresponding values on the right. If the fields are available for editing, you can edit the record directly on this form. The [navigation pane](#)<sup>[370]</sup> at the top of the form allows you to browse the data quickly, to insert, update and delete records, and to set a filter for the records using the [Filter Builder](#)<sup>[433]</sup> dialog.

Field Name	Field Type	Null	Value
EMP_NO	SMALLINT	<input checked="" type="checkbox"/>	2
FIRST_NAME	VARCHAR(15)	<input type="checkbox"/>	Robert
LAST_NAME	VARCHAR(20)	<input type="checkbox"/>	Nelson
PHONE_EXT	VARCHAR(4)	<input type="checkbox"/>	250
HIRE_DATE	DATE	<input type="checkbox"/>	28.12.1988
DEPT_NO	CHAR(3)	<input type="checkbox"/>	600
JOB_CODE	VARCHAR(5)	<input type="checkbox"/>	VP
JOB_GRADE	SMALLINT	<input type="checkbox"/>	2
JOB_COUNTRY	VARCHAR(15)	<input type="checkbox"/>	USA
SALARY	NUMERIC(15, 2)	<input type="checkbox"/>	105900
FULL_NAME	VARCHAR(37)	<input type="checkbox"/>	Nelson, Robert

Each field has a  **Null** checkbox which allows you to clear the field value and set it to NULL (if the field is nullable).

#### See also:

[Using Navigation bar and Toolbars](#)<sup>[370]</sup>

[Grid View](#)<sup>[373]</sup>

[Print Data](#)<sup>[396]</sup>

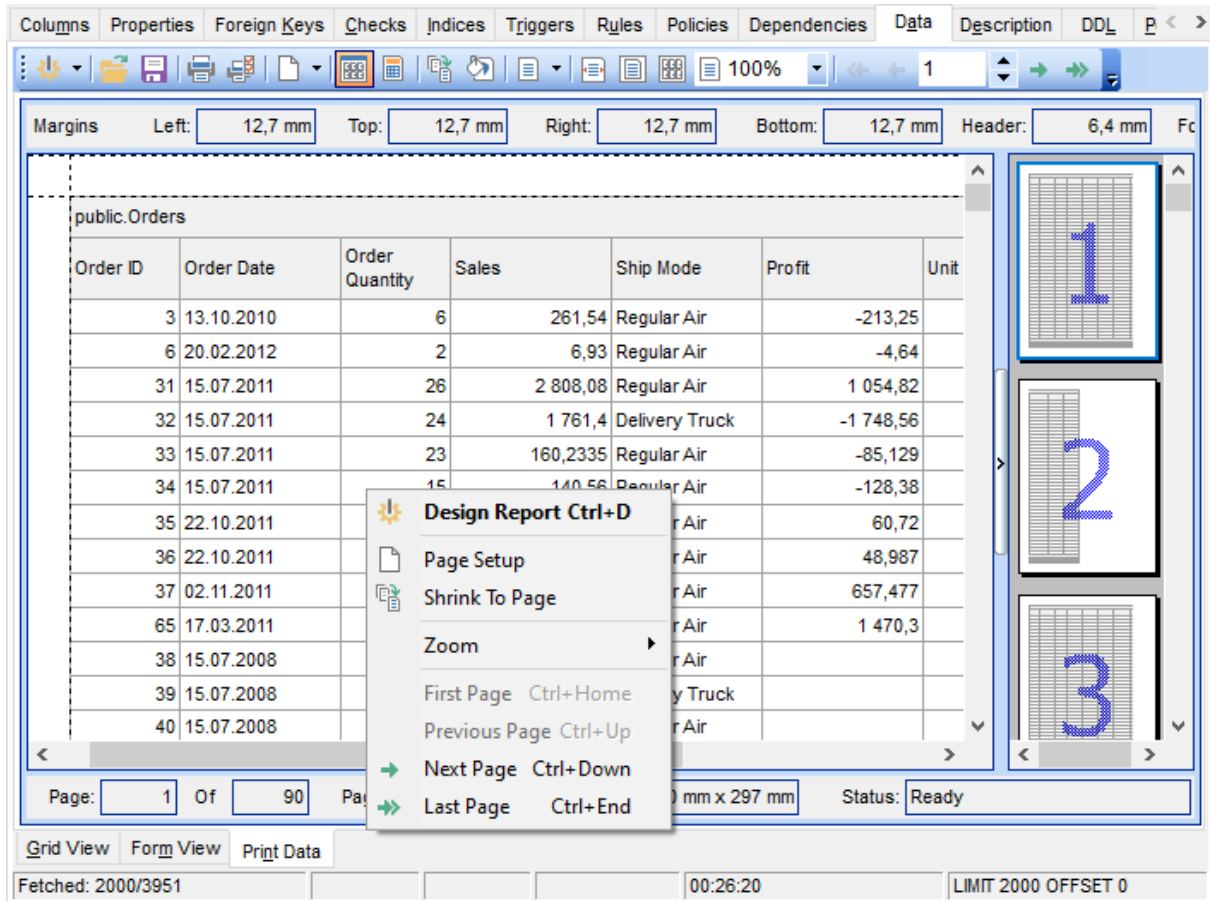
[BLOB View](#)<sup>[422]</sup>

[Applying changes](#)<sup>[430]</sup>

## 7.1.4 Print Data

Using the **Print Data** tab you can view data in the way they are printed, in WYSIWYG mode.

When in **Print Data** mode, you are provided with a powerful *context menu* and [toolbar](#)<sup>[37]</sup> allowing you to design a report, change the view scope, save reports and load previously saved ones, set [report options](#)<sup>[41]</sup>, and specify a number of [printing](#)<sup>[42]</sup> parameters using [Report Formatter](#)<sup>[40]</sup> and the [Page Setup](#)<sup>[39]</sup> dialog.



Availability:

**Full** version (for Windows) **Yes**

**Lite** version (for Windows) **No**

**Note:** To compare all features of the **Full** and the **Lite** versions of **SQL Manager**, refer to the [Feature Matrix](#)<sup>[20]</sup> page.

**See also:**

[Using Navigation bar and Toolbars](#)<sup>[37]</sup>

[Grid View](#)<sup>[373]</sup>

[Form View](#)<sup>[395]</sup>

[BLOB View](#)<sup>[422]</sup>

[Applying changes](#)<sup>[430]</sup>

#### 7.1.4.1 Page Setup

The **Page Setup** dialog allows you to specify a number of settings pertaining to the report page.

To open the dialog, use the  **Page Setup** button available on the [toolbar](#)<sup>[37]</sup>.

Use the following tabs of the **Page Setup** dialog:

- [Page](#)<sup>[39]</sup>
- [Margins](#)<sup>[40]</sup>
- [Header/Footer](#)<sup>[40]</sup>
- [Scaling](#)<sup>[40]</sup>

When you are done, you can click the **Print...** button at the bottom to call the [Print](#)<sup>[42]</sup> dialog.

---

#### See also:

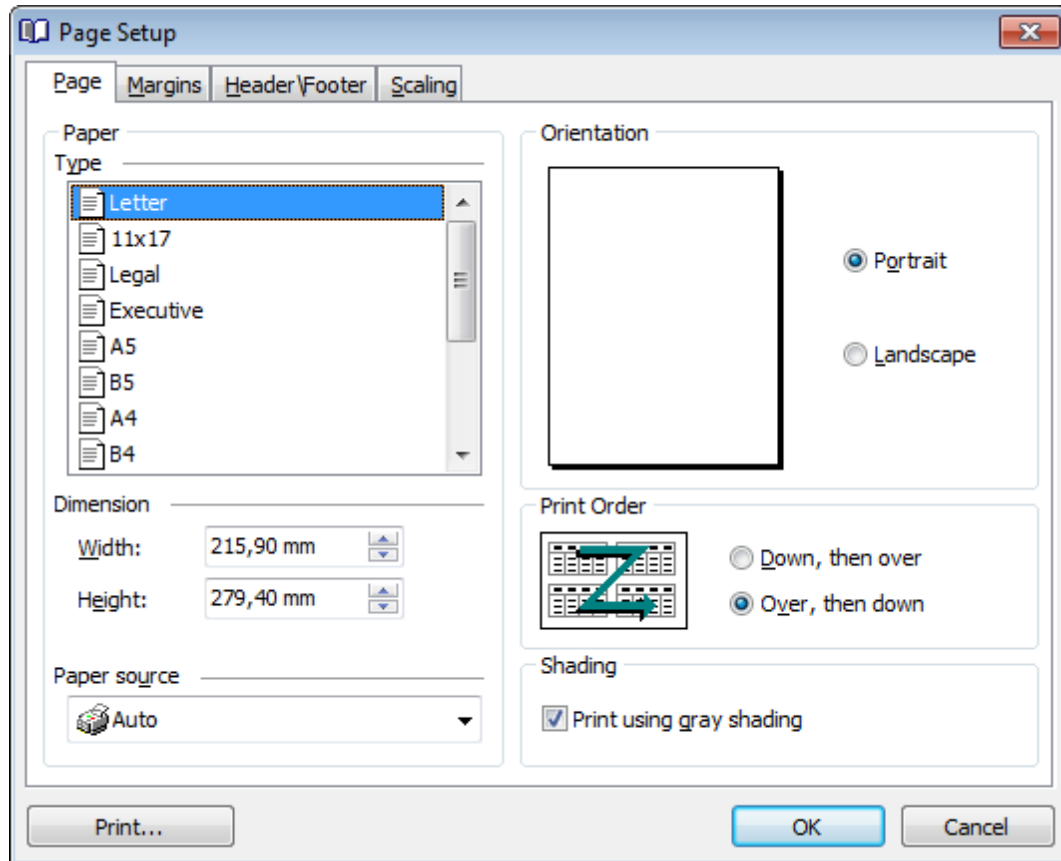
[Report Formatter](#)<sup>[40]</sup>

[Setting report options](#)<sup>[41]</sup>

[Print dialog](#)<sup>[42]</sup>

## 7.1.4.1.1 Page

The **Page** tab of the **Page Setup** dialog allows you to specify the *paper*, *page orientation*, *print order* and *shading* settings.



### Paper

Select one of the standard paper types in the **Type** list, or specify custom *width* and *height* using the **Dimension** group (in inches or millimeters, depending on the *unit of measure* specified in the [Options](#)<sup>[416]</sup> dialog).

Use the **Paper source** drop-down list to select the paper feed type.

### Orientation

Select the preferable page orientation (your selection is illustrated in the chart on the left):

- Portrait*
- Landscape*

### Print Order

Select the preferable order for printing report pages (your selection is illustrated in the chart on the left):

- Down, then over*
- Over, then down*

### **Shading**

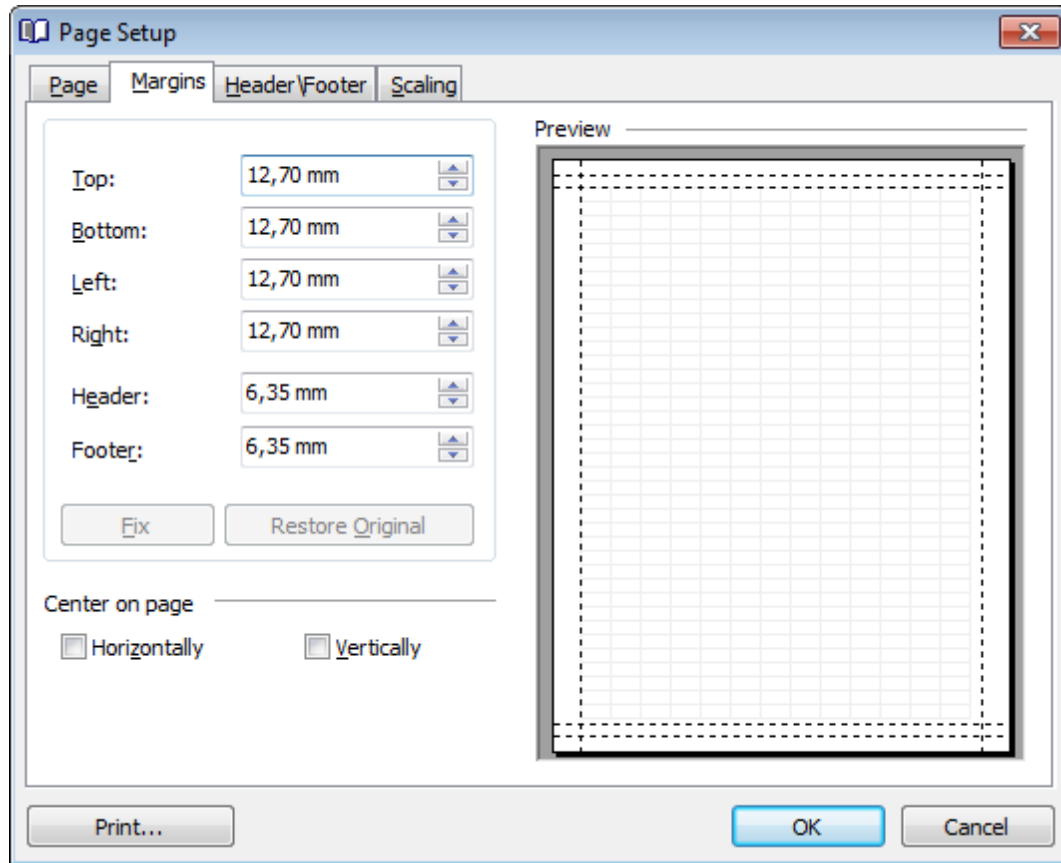
**Print using gray shading**

If this option is selected, gray shading (along with black and white) will be used for printing the report.



## 7.1.4.1.2 Margins

The **Margins** tab of the **Page Setup** dialog allows you to specify the size of the *margins* and *running titles*.



Use the spinner controls to specify the size of **top** / **bottom** / **left** / **right** margins and **header** / **footer** (in inches or millimeters, depending on the *unit of measure* specified in the [Options](#)<sup>[416]</sup> dialog). The **Preview** area on the right illustrates the changes you have made.

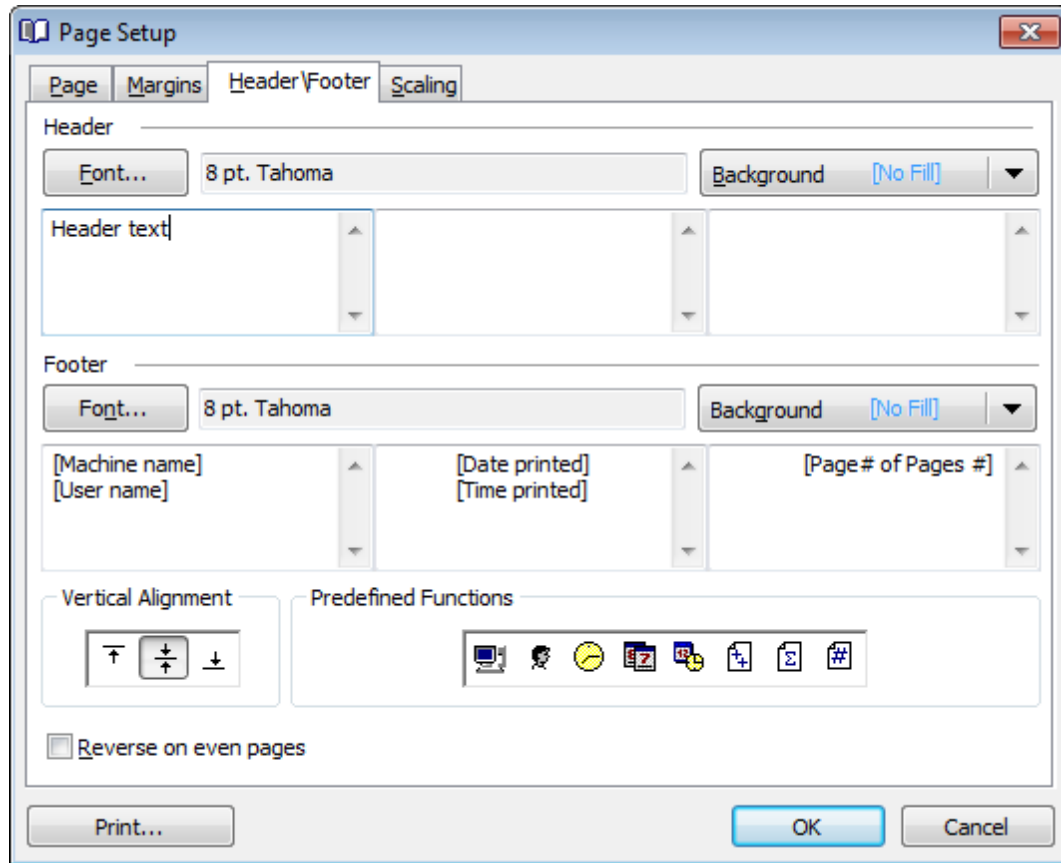
If you have specified an improper value, you can click the **Fix** button to correct it. To restore the default size values, click the **Restore Original** button.

**Center on page**

This group allows you to specify whether the text should be centered **horizontally** and/ or **vertically** on the page.

## 7.1.4.1.3 Header/Footer

The **Header/Footer** tab of the **Page Setup** dialog allows you to specify properties of the *header* and *footer* running titles.



### Header / Footer

Click the **Font...** button to specify font properties using the standard **Font** dialog. The font name and size are displayed in the gray area next to the **Font...** button. Use the **Background** drop-down list to select the background color that will be applied to the page header/footer, or to customize the color using the **Color** and **Fill Effects** dialogs.

For each of the running titles you are provided with three separate text editing fields. You can use any, all or none of the fields to enter the header and footer text.

The **Vertical Alignment** group allows you to specify vertical alignment for the header/footer text according to any of the three available patterns.

### Predefined Functions

This group allows you to add the following standard functions to the header and footer:

[Machine Name]  
[User Name]  
[Time Printed]

*[Date Printed]*

*[Date & Time Printed]*

*[Page # of Pages #]*

*[Total Pages]*

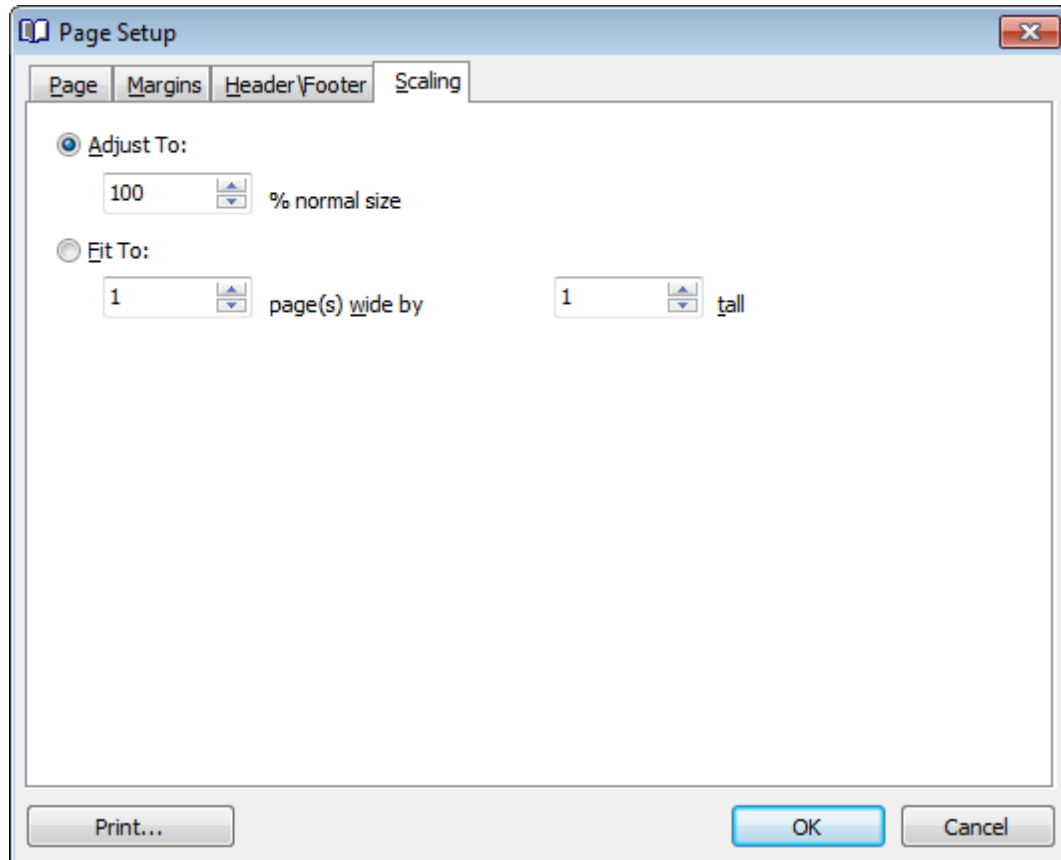
*[Page #]*

**Reverse on even pages**

If this option is selected, the header and footer text will be reversed on even pages of the printing report.

## 7.1.4.1.4 Scaling

The **Scaling** tab of the **Page Setup** dialog allows you to specify the page *scaling* options.



Select the preferable scaling mode:

*Adjust to ... % normal size*

Use the spinner control to set the percentage of the regular page size to which the page size will be adjusted.

*Fit to ... page(s) wide by ... tall*

Use the spinner controls to set the maximum number of pages (by width and by height) on one page to fit its size.

#### 7.1.4.2 Report Formatter

**Report Formatter** allows you to specify a number of settings pertaining to the printing form of the report.

To open the tool, click the  **Design Report** button available on the [toolbar](#)<sup>[371]</sup>, or use the *Ctrl+D* [shortcut](#)<sup>[934]</sup>.

Use the following tabs of the **Format Report** dialog:

- [View](#)<sup>[406]</sup>
- [Behaviors](#)<sup>[407]</sup>
- [Formatting](#)<sup>[408]</sup>
- [Styles](#)<sup>[410]</sup>
- [Preview](#)<sup>[412]</sup>
- [Cards](#)<sup>[413]</sup>
- [Charts](#)<sup>[415]</sup>

The **Title Properties...** button allows you to customize the report title using the [Report Title](#)<sup>[416]</sup> dialog.

---

#### See also:

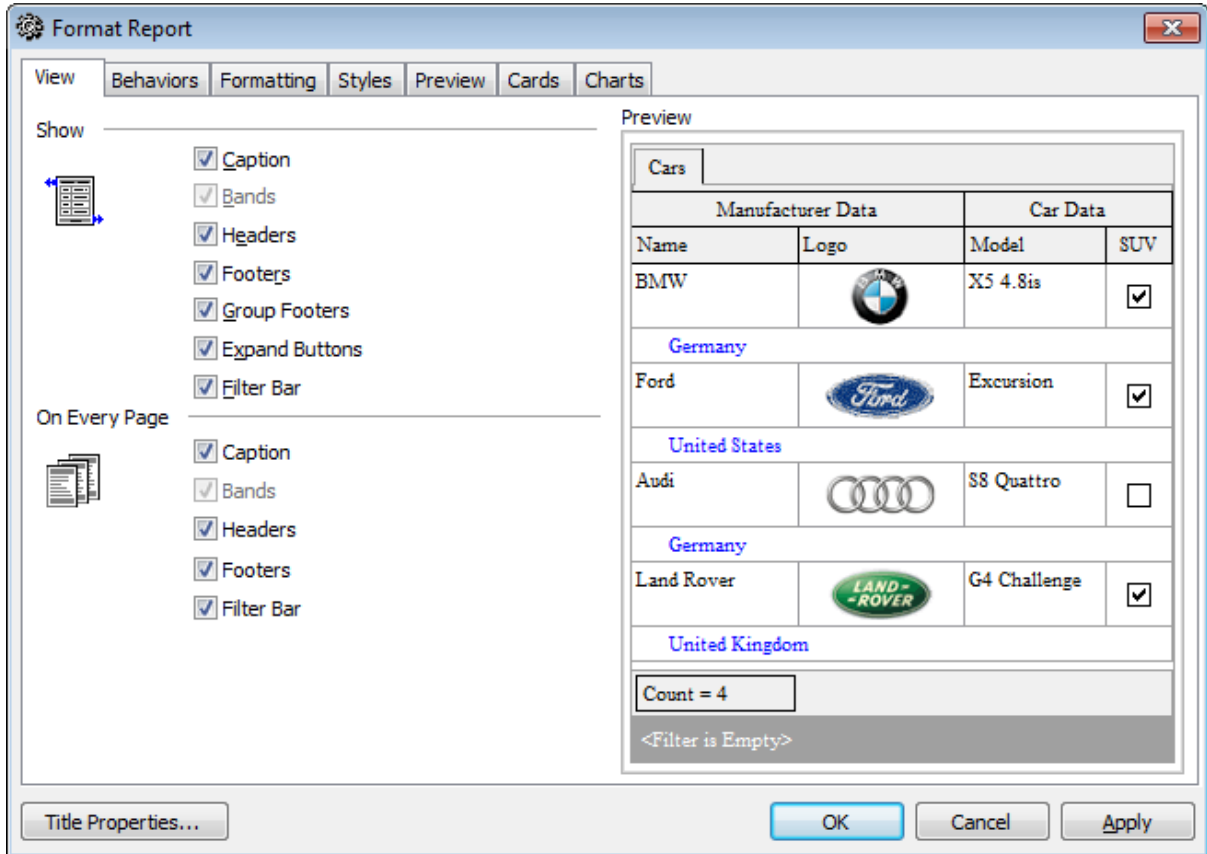
[Page Setup](#)<sup>[398]</sup>

[Setting report options](#)<sup>[416]</sup>

[Print dialog](#)<sup>[421]</sup>

## 7.1.4.2.1 View

The **View** tab of the **Format Report** dialog allows you to specify report elements to show in the report.

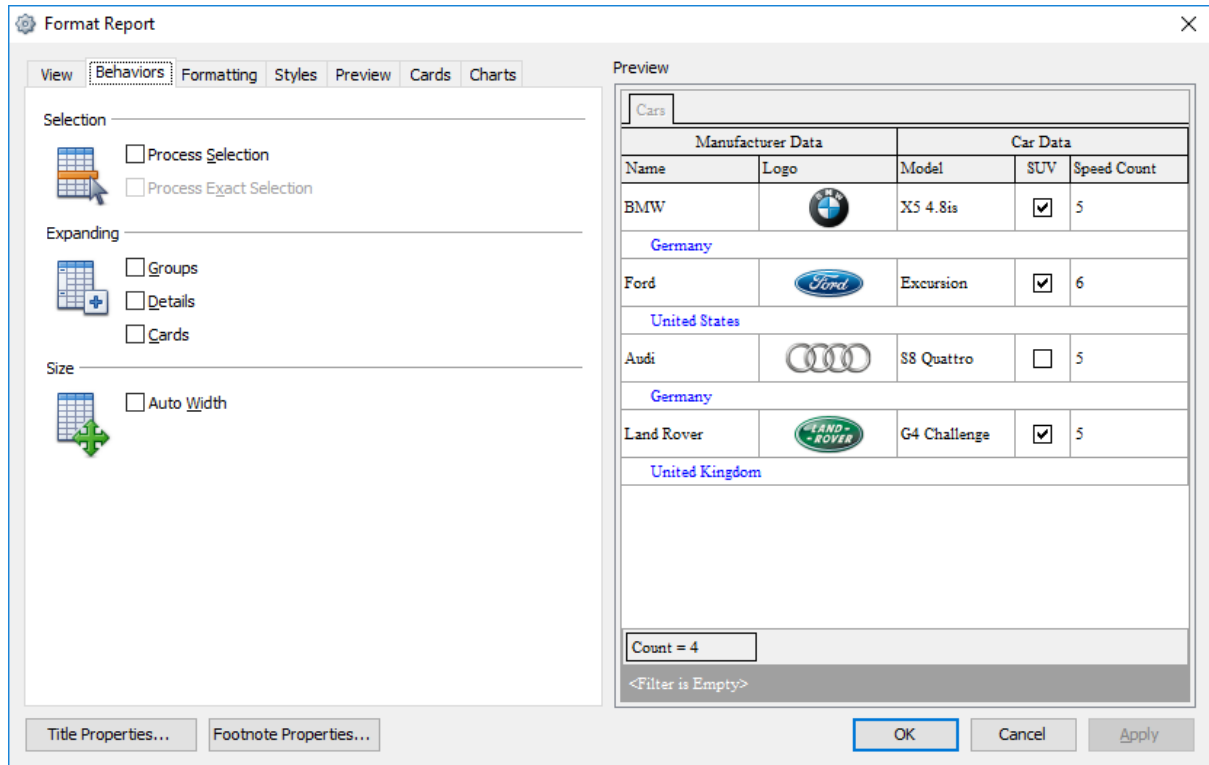


Tick off the elements to **show** in the report (*caption, bands, headers, footers, group footers, expand buttons, filter bar*) and **on every page** of the report (*caption, bands, headers, footers, filter bar*).

The **Preview** area on the right illustrates the changes you have made.

## 7.1.4.2.2 Behaviors

The **Behaviors** tab of the **Format Report** dialog allows you to specify the way (behavior) the report elements will appear on the printing form.



### Selection

**Process selection** /  **Process exact selection**

Specify whether the text selection should or should not be processed (precisely) for the printing form.

### Expanding

Tick off the elements to expand in the report: *groups, details, cards*.

### Size

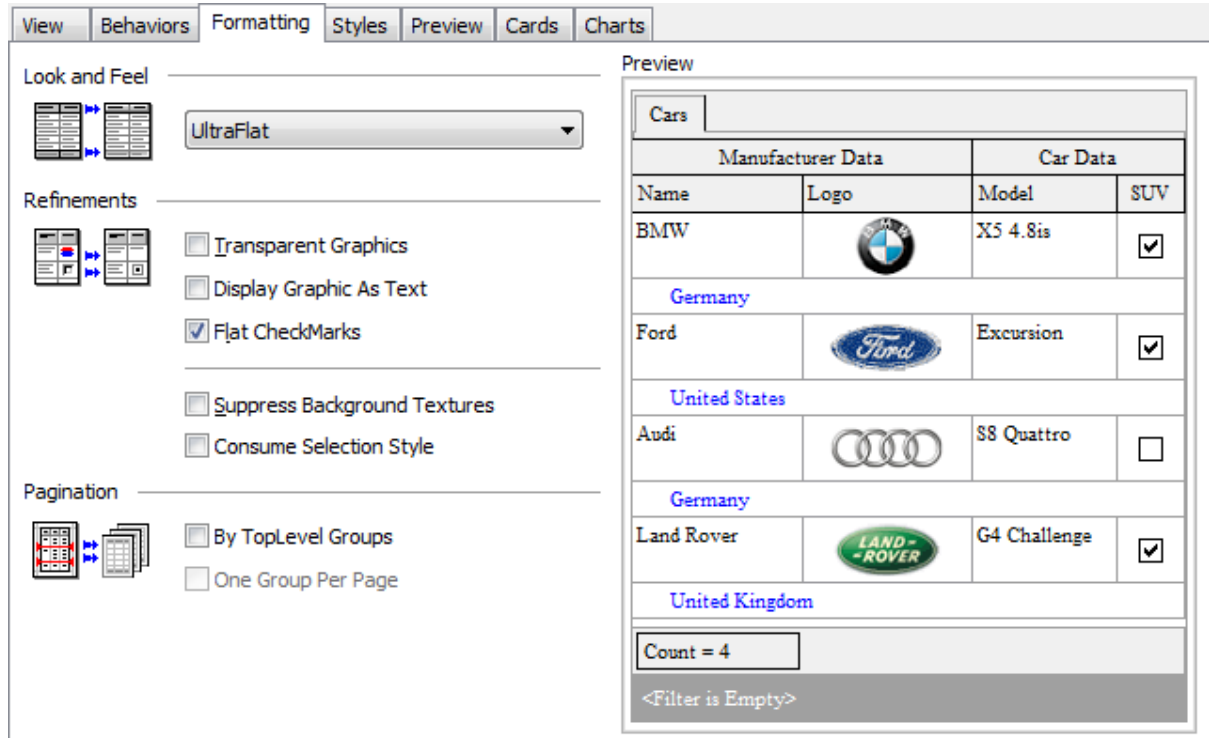
**Auto Width**

If this option is selected, the table will be resized automatically to fit the page by width.

The **Preview** area on the right illustrates the changes you have made.

## 7.1.4.2.3 Formatting

The **Formatting** tab of the **Format Report** dialog allows you to specify *Look and Feel*, *Refinements* and *Pagination* options.



### Look and Feel

This setting determines the manner in which the cells are painted. Use the drop-down list to select the painting style that will be applied to the cells on the printing form:

*Flat*  
*Standard*  
*UltraFlat*

### Refinements

Options of this group allow you to reduce the report size.

**Transparent graphics**

If this option is selected, the images will be drawn transparent in the report.

**Display graphic as text**

If this option is selected, text will be displayed instead of the images.

**Flat CheckMarks**

If this option is selected, the checkboxes will be drawn flat.

### Pagination

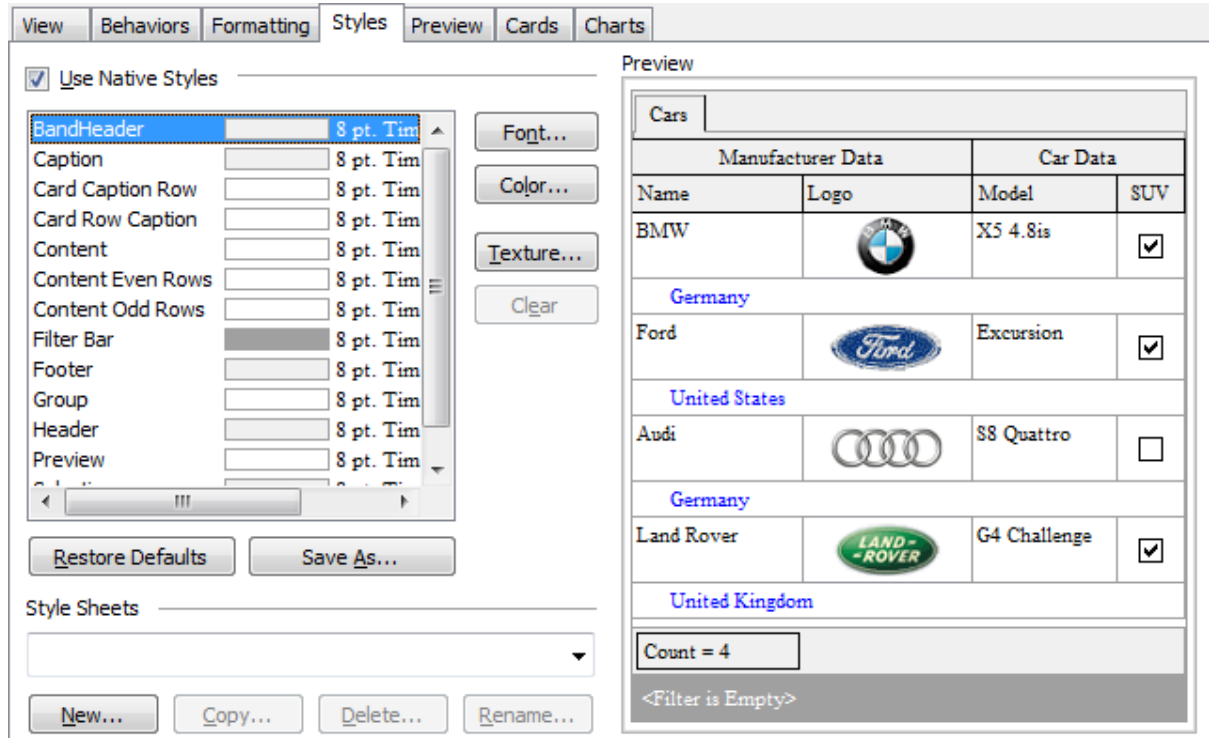
Specify the way pagination will be performed for the report: **By TopLevel groups** or **One group per page**.



The **Preview** area on the right illustrates the changes you have made.

## 7.1.4.2.4 Styles

The **Styles** tab of the **Format Report** dialog allows you to specify styles to be applied to the report elements.



**Use native styles**

This option determines whether the native Windows style will be applied to the report elements.

**Note:** The **Native style** option is currently supported for the Windows® XP operating system only.

The elements list displays the names of all report elements, with background color and font properties specified by default. You can **Use native styles** for them or customize them according to your preferences.

To edit an element, select it in the list and use the buttons to the right to edit the style for it.

Click the **Font...** button to specify font properties using the standard **Font** dialog.

Click the **Color...** button to customize the background color using the standard **Color** dialog.

Click the **Texture...** button to load an image that will be used as the texture for the element.

To rollback the changes, click the **Clear** button.

To restore the default stylesheet properties, click the **Restore Defaults** button.

If you need to save the current style sheet, you can click the **Save as...** button.

These items are also available through the **context menu** of the elements list.

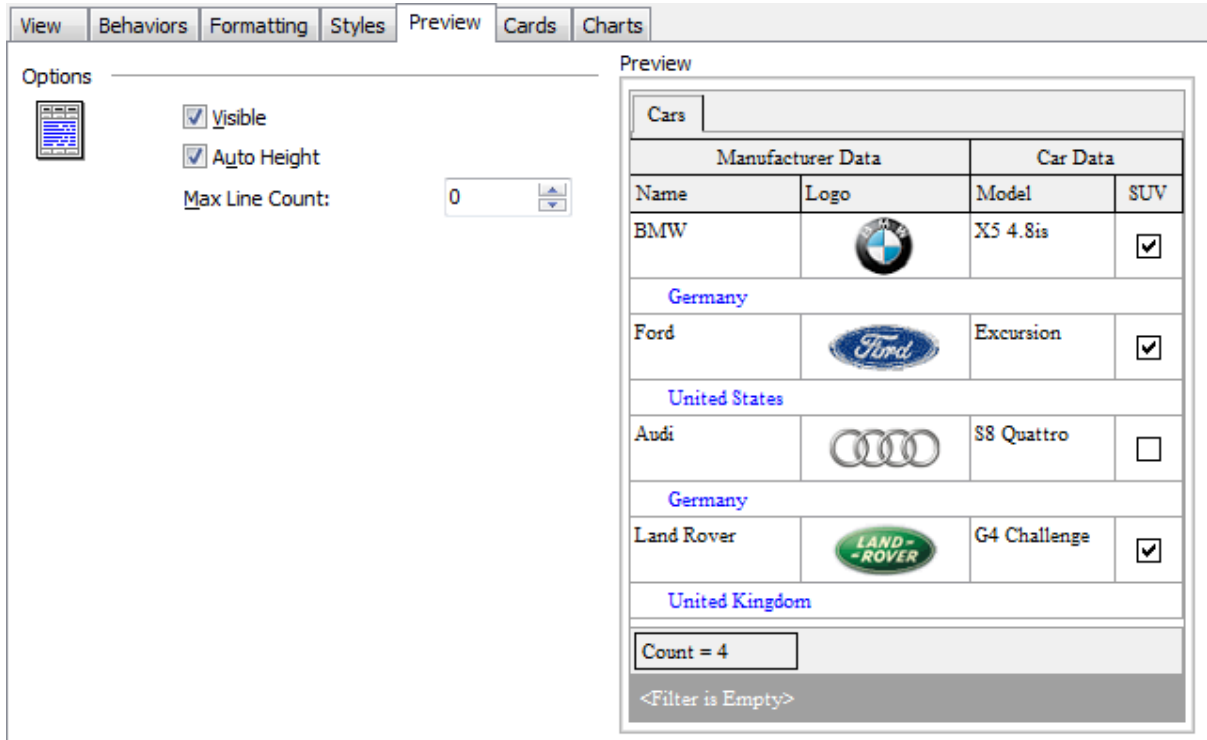
**Style Sheets**

Use the drop-down menu to select the style sheet you need. To manage the style sheets, use the corresponding buttons below: **New...**, **Copy...**, **Delete...**, **Rename...**

The **Preview** area on the right illustrates the changes you have made.

## 7.1.4.2.5 Preview

The **Preview** tab of the **Format Report** dialog allows you to specify report preview options.

 **Visible**

This option specifies visibility of the grouping rows.

 **Auto height**

If this option is selected, the table will be resized automatically to fit the page by height.

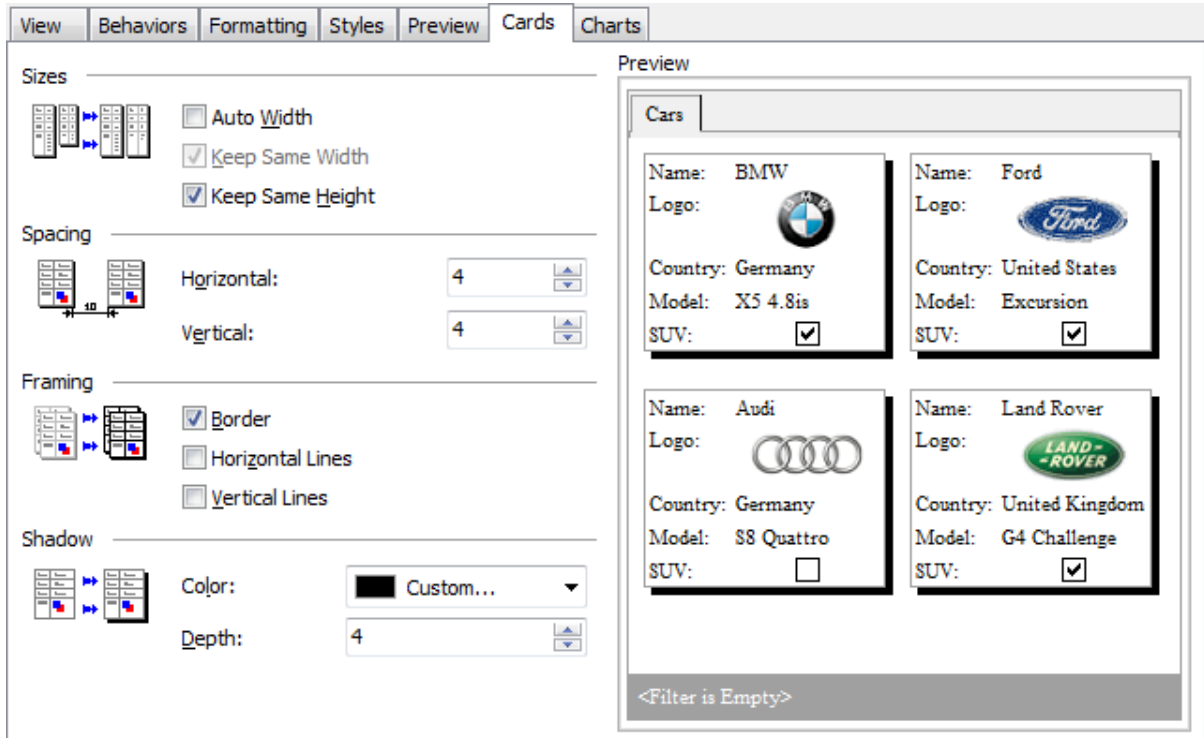
**Max line count**

Use the spinner control to specify the maximum possible number of lines.

The **Preview** area on the right illustrates the changes you have made.

## 7.1.4.2.6 Cards

The **Cards** tab of the **Format Report** dialog allows you to specify properties for the card view.



### Sizes

**Auto Width**

If this option is selected, the cards will be resized automatically to fit the page by width.

**Keep same width**

Select this option to keep the card width fixed.

**Keep same height**

Select this option to keep the card height fixed.

### Spacing

This group allows you to specify **horizontal** and **vertical** spacing between cards.

### Framing

**Border**

This option specifies visibility of the card borders.

**Horizontal lines**

This option specifies visibility of the horizontal lines (row delimiters) within cards.

**Vertical lines**

This option specifies visibility of the vertical lines (column delimiters) within cards.

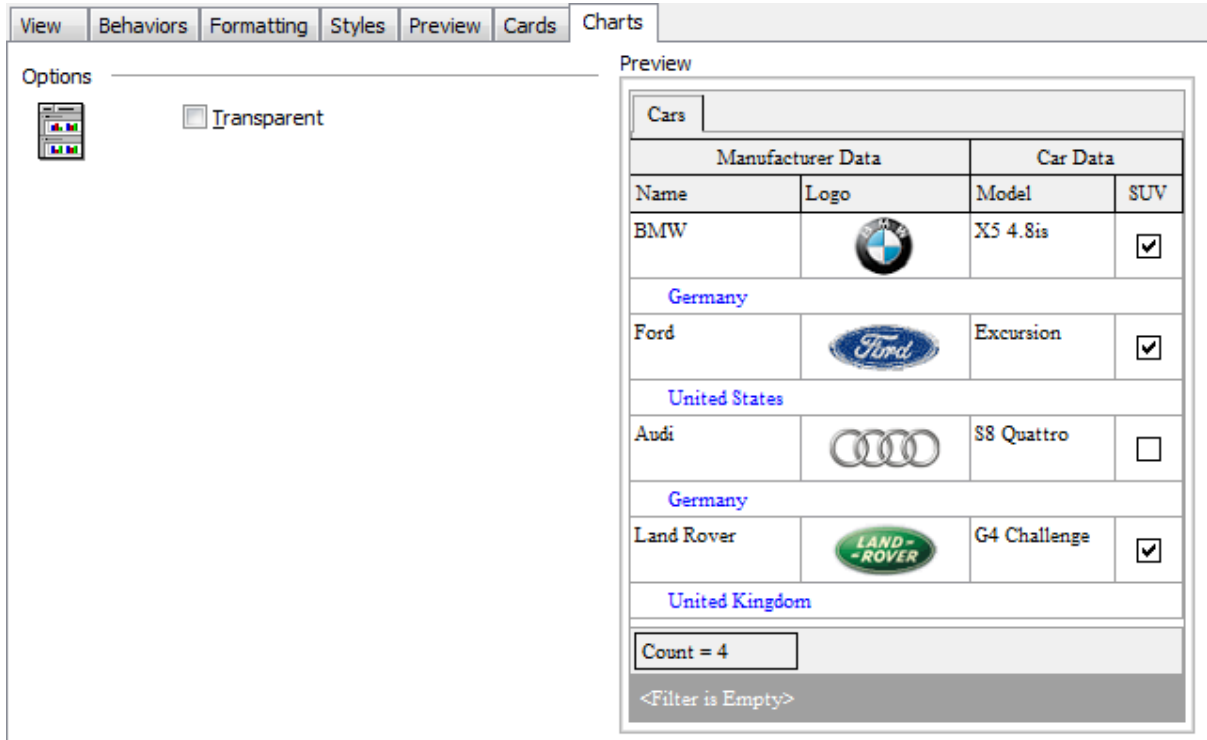
**Shadow**

Use the **Color** drop-down list to select the color that will be applied to the card shadows. If necessary, specify the color **depth** using the corresponding spinner control.

The **Preview** area on the right illustrates the changes you have made.

## 7.1.4.2.7 Charts

The **Charts** tab of the **Format Report** dialog allows you to specify options for the charts used in the report.



**Transparent**

If this option is selected, the charts will be drawn transparent in the report.

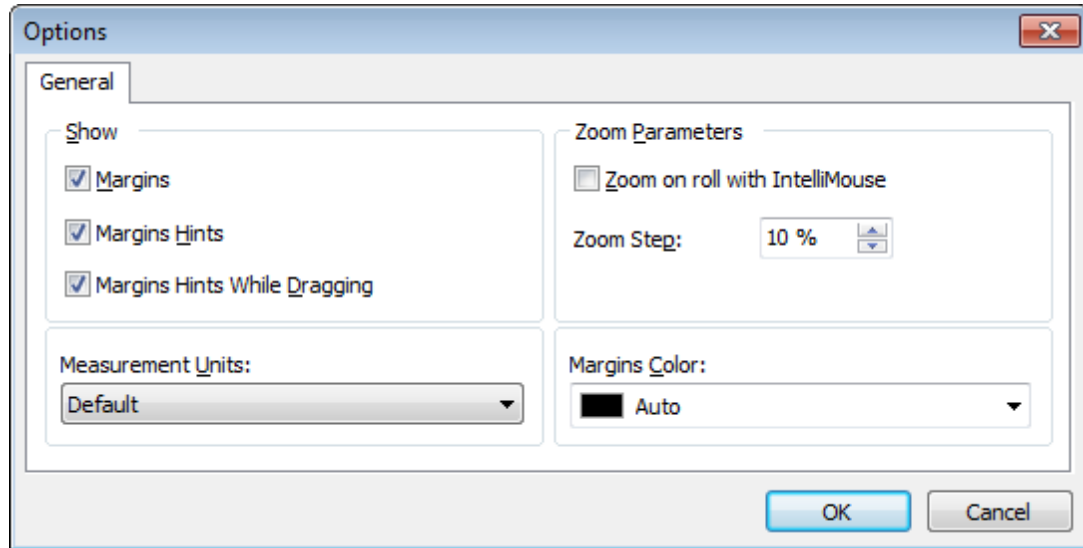
The **Preview** area on the right illustrates the changes you have made.

### 7.1.4.3 Setting report options

#### Options dialog

The **Options** dialog allows you to specify a number of settings pertaining to the printing report.

To open the dialog, open the **Design Report**  menu available on the [toolbar](#)<sup>[37]</sup> and select the **Preferences** item.



#### Show

Tick off the elements to **show** in the printing report (*margins, margins hints, margins hints while dragging*).

Use the **Measurement Units** drop-down list to select the unit of measure that will be used in report settings: *default, inches, or millimeters*.

#### Zoom Parameters

##### Zoom on roll with IntelliMouse

If this option is selected, you can zoom in/out by scrolling up/down (with a Microsoft® mouse or a compatible mouse used).

##### Zoom Step


Use the spinner control to specify the percentage of the original page size to be considered as one zoom step.

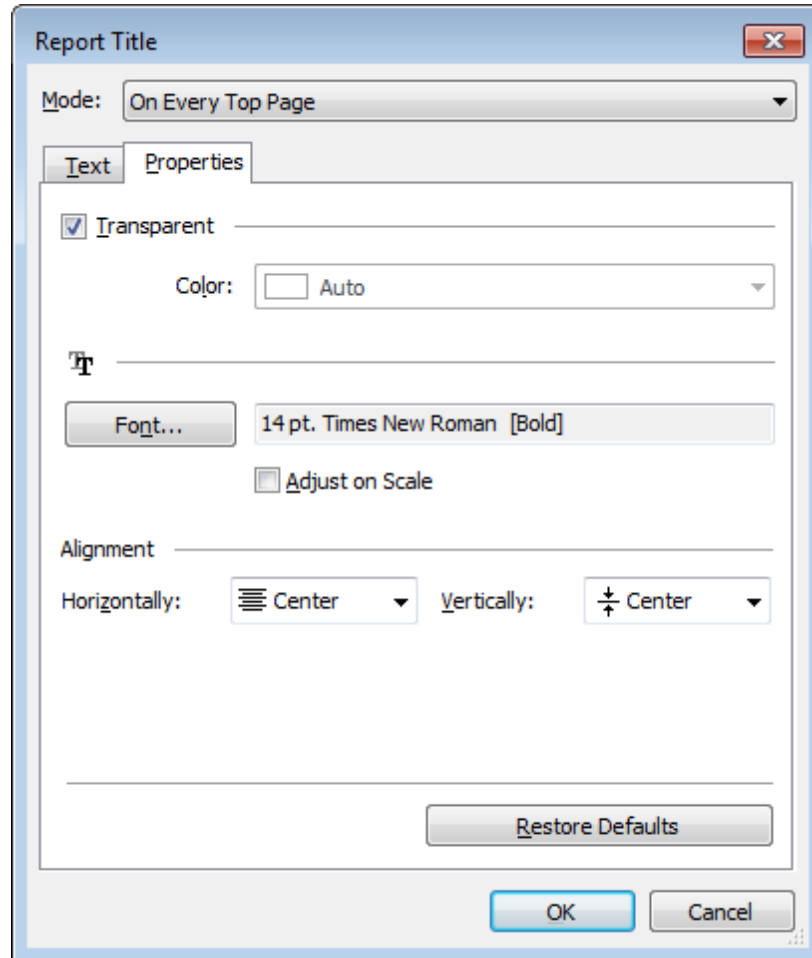
Use the **Margins Color** drop-down list to select the color that will be applied to the report margins.

#### Report Title dialog

The **Report Title** dialog allows you to specify the report title text and properties.



To open the dialog, use the **Title...**   button available on the [toolbar](#) .



### Mode

Use the drop-down list to select where the report title should be displayed *on the first page, on every top page, or not displayed at all.*

### Text

Use the edit box to enter the text of the report title.

### Properties

#### **Transparent**

If this option is selected, the report title will be drawn transparent.

Use the **Color** drop-down list to select the color that will be applied to the report title (enabled if the  **Transparent** option is not selected).

Click the **Font...** button to specify title font properties using the standard **Font** dialog. The font name and size are displayed in the gray area next to the **Font...** button.

**Adjust on scale**

If this option is selected, the title can be adjusted on scale.

**Alignment**

Use the **Horizontally** drop-down list to select the type of horizontal alignment to be applied to the report title: *Left*, *Center*, or *Right*.

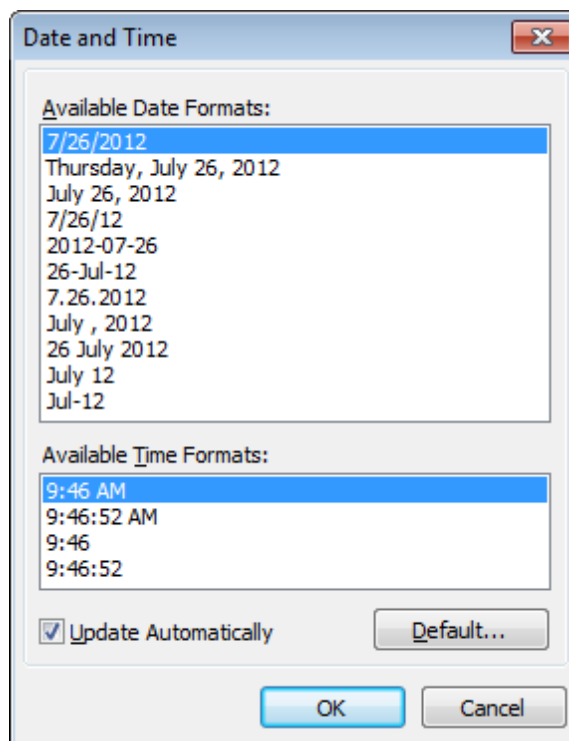
Use the **Vertically** drop-down list to select the type of vertical alignment to be applied to the report title: *Top*, *Center*, or *Bottom*.

To restore the default title properties, click the **Restore Defaults** button.

**Date and Time dialog**

The **Date and Time** dialog allows you to specify the date/time formats to be used in the report.

To open the dialog, open the **Title...**  menu available on the [toolbar](#)  and select the **Date and Time...** item.




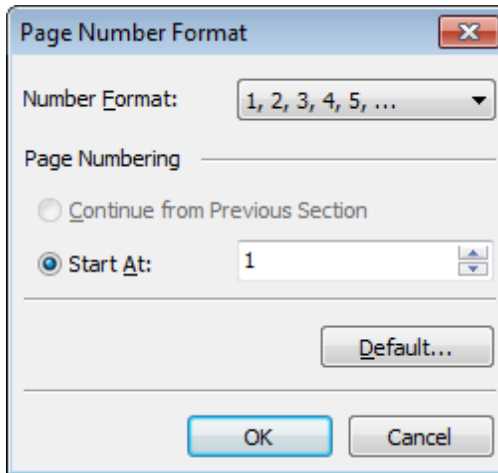
Select the preferable values from the **Available Date Formats** and the **Available Time Formats** lists. If necessary, you can specify that the date/time will be *updated automatically*.

To apply the default date/time format, click the **Default...** button.

**Page Number Format dialog**

The **Page Number Format** dialog allows you to specify the formats for page numbers to be used in the report.

To open the dialog, open the **Title...**  menu available on the [toolbar](#)<sup>[371]</sup> and select the **Page Numbering...** item.




Select the preferable number format from the **Number Format** drop-down list.

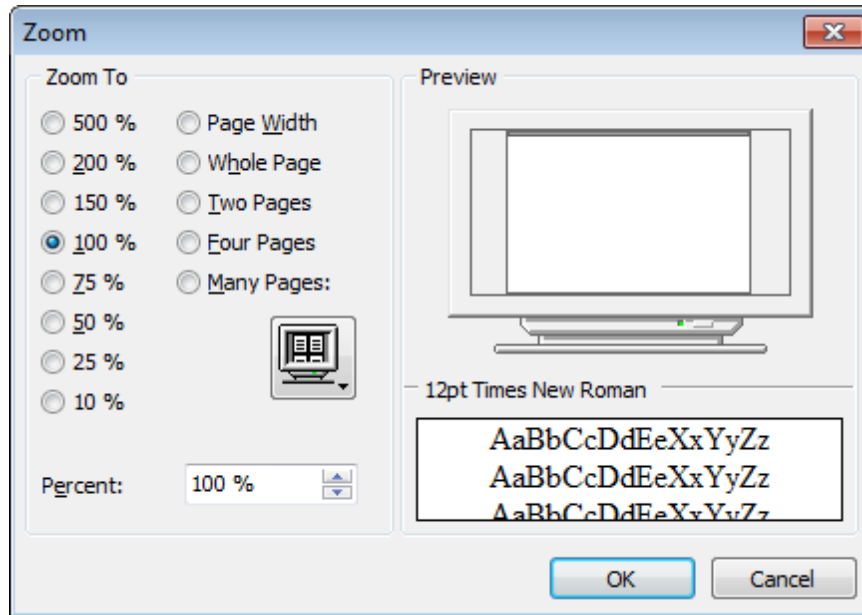
Use the **Page Numbering** section to specify whether page numbering should *continue from the previous section* (if any) or *start at the specified number*.

To set the default numbering values, click the **Default...** button.

### Zoom dialog

The **Zoom** dialog allows you to zoom the report page more better representation.

To open the dialog, open the **Zoom**  menu available on the [toolbar](#)<sup>[371]</sup> and select the **Setup zoom...** item.



Select the preferable percentage of zoom value (500%, 200%, 150%, 100%, 75%, 50%, 25%, 10%) or specify one of frequently used values:

- Page Width*
- Whole Page*
- Two Pages*
- Four Pages*
- Many Pages* (click the chart below and select the item you need)

If necessary, you can set a custom percent value using the **Percent** spinner control below.

The **Preview** area on the right illustrates the changes you have made.

---

#### See also:


[Page Setup](#)<sup>[398]</sup>

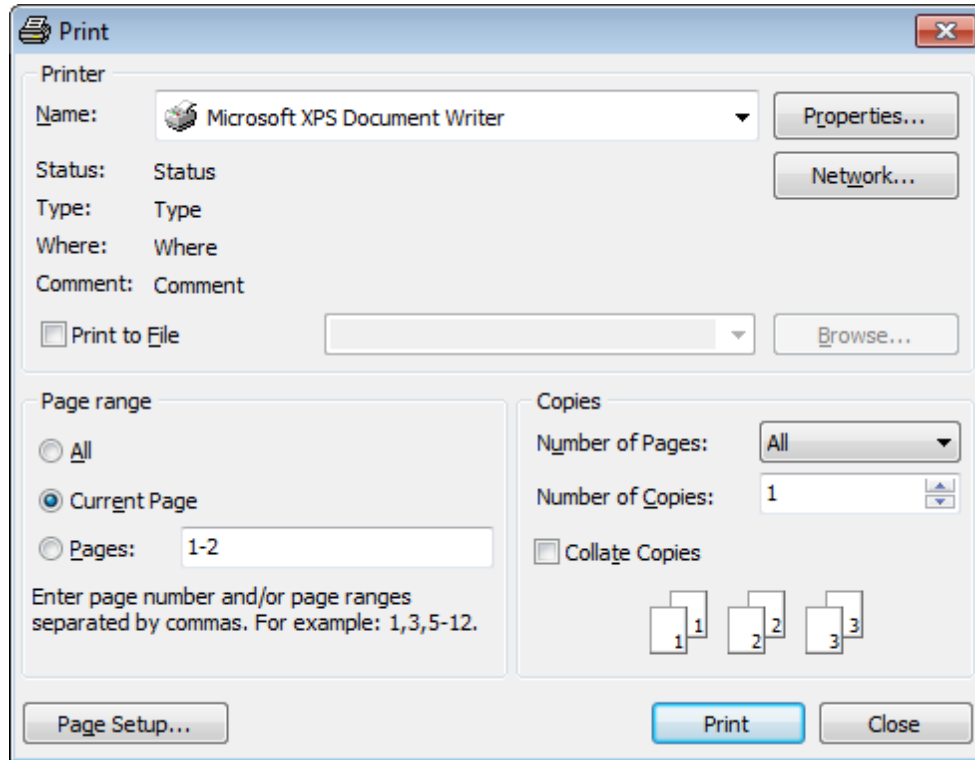
[Report Formatter](#)<sup>[405]</sup>

[Print dialog](#)<sup>[421]</sup>

#### 7.1.4.4 Print dialog

The standard **Print** dialog allows you to specify printing settings for the report in groups: *printer, page range, copies*.

To open the dialog, click the **Print dialog**  button available on the [toolbar](#)<sup>[371]</sup>, or use the **Ctrl+P** [shortcut](#)<sup>[934]</sup>.



When you are done, click the **Print** button to start printing.

If you need to change any page settings before printing, you can click the **Page Setup...** button at the bottom to call the [Page Setup](#)<sup>[398]</sup> dialog.

---

#### See also:

[Page Setup](#)<sup>[398]</sup>

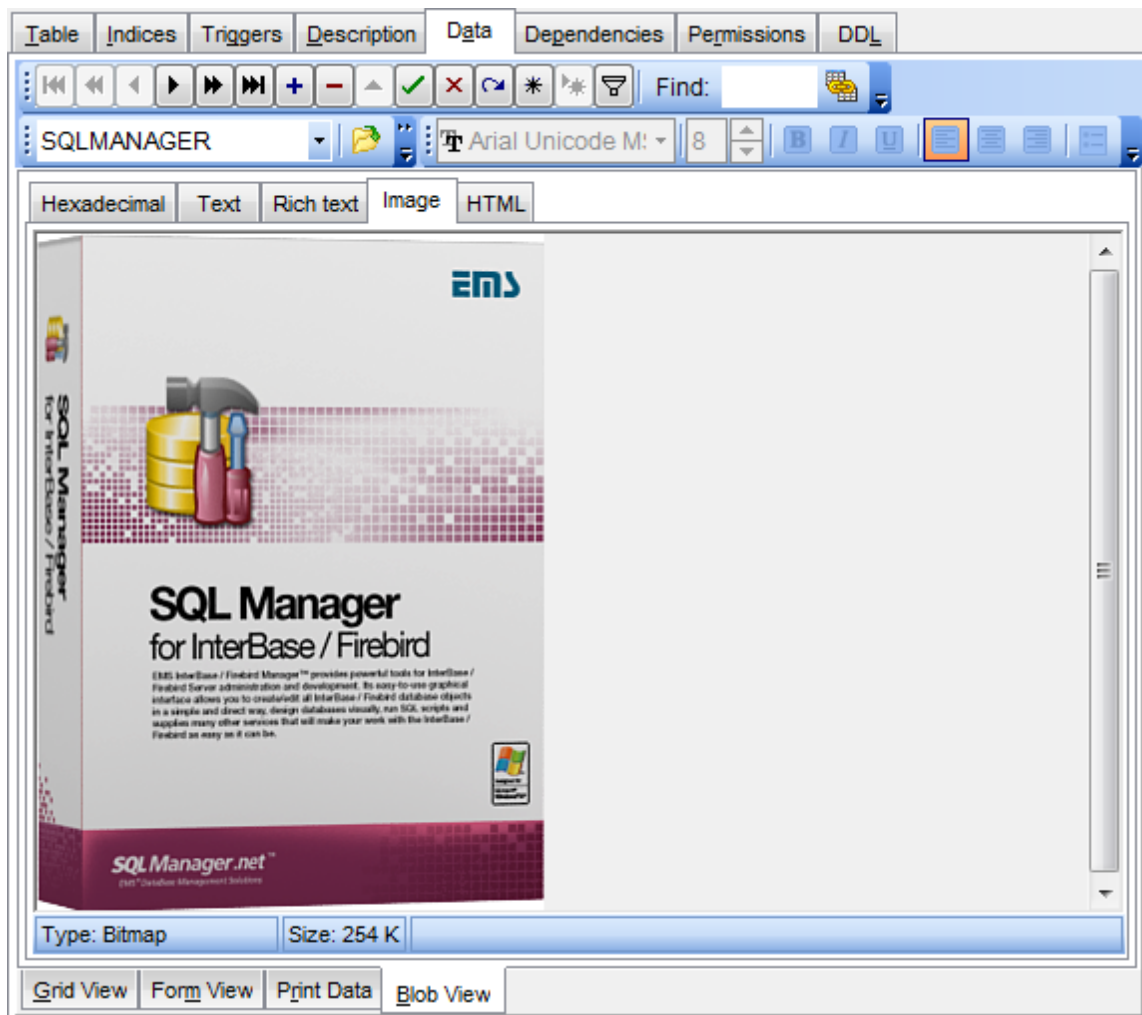
[Report Formatter](#)<sup>[405]</sup>

[Setting report options](#)<sup>[416]</sup>

## 7.1.5 BLOB View

**SQL Manager for InterBase/Firebird** provides BLOB Viewer/Editor to view and edit BLOB (Binary Large Object) fields content. The BLOB Viewer/Editor can be invoked from the data grid within [Table Editor](#)<sup>[184]</sup>, [Query Data](#)<sup>[330]</sup>, [Query Designer](#)<sup>[347]</sup>, etc.

- [Navigation within the BLOB Viewer/Editor](#)<sup>[424]</sup>
- [Viewing/Editing BLOB field as Hexadecimal dump](#)<sup>[425]</sup>
- [Viewing/Editing BLOB field as plain Text](#)<sup>[426]</sup>
- [Viewing/Editing BLOB field as Rich Text \(RTF\)](#)<sup>[427]</sup>
- [Viewing/Editing BLOB field as Image](#)<sup>[428]</sup>
- [Viewing/Editing BLOB field as HTML](#)<sup>[429]</sup>



Availability:

**Full** version (for Windows) **Yes**

**Lite** version (for Windows) **No**

**Note:** To compare all features of the **Full** and the **Lite** versions of **SQL Manager**, refer to the [Feature Matrix](#)<sup>[20]</sup> page.

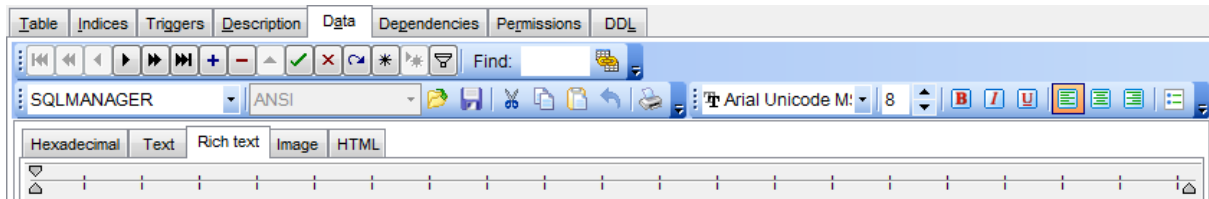
**See also:**[Using Navigation bar and Toolbars](#)<sup>[370]</sup>[Grid View](#)<sup>[373]</sup>[Form View](#)<sup>[395]</sup>[Print Data](#)<sup>[396]</sup>[Applying changes](#)<sup>[430]</sup>

### 7.1.5.1 Navigation within BLOB Editor

The **BLOB Viewer/Editor** provides an ability to navigate within the records using **DB Navigation** buttons on the [navigation pane](#)<sup>[370]</sup> at the top of the viewer window.

Using items of the [navigation pane](#)<sup>[370]</sup> and the drop-down menu you can browse the data quickly, insert, update and delete records, set a filter for the records using the [Filter Builder](#)<sup>[433]</sup> dialog, load new BLOB content and save the current content to files.

The [toolbar](#)<sup>[371]</sup> allows you to switch the fields and perform a number of editing operations. The set of toolbar items depends on the current selection and view mode.



#### See also:

[Editing as Hexadecimal](#)<sup>[425]</sup>

[Editing as Text](#)<sup>[426]</sup>

[Editing as Rich Text](#)<sup>[427]</sup>



[Editing as Image](#)<sup>[428]</sup>

[Editing as HTML](#)<sup>[429]</sup>

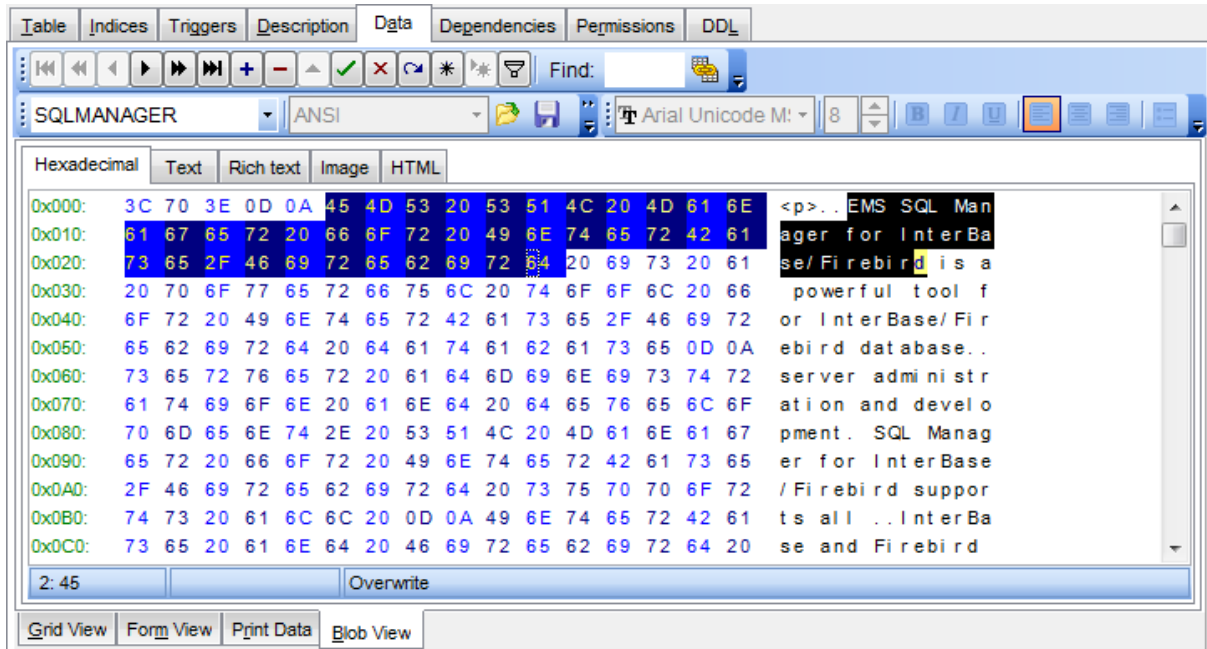


### 7.1.5.2 Editing as Hexadecimal

The **Hexadecimal** tab allows you to view/edit the BLOB data as hexadecimal.

The [toolbar](#)<sup>[37]</sup> provides additional functionality for BLOB Viewer/Editor: use the  **Save to file** and the  **Load from file** toolbar buttons to save the hexadecimal data to a file, or load data from a file.

Use the *Ins* key to switch between the Insert and Overwrite modes.



#### See also:

[Navigation within BLOB Editor](#)<sup>[424]</sup>

[Editing as Text](#)<sup>[426]</sup>



[Editing as Rich Text](#)<sup>[427]</sup>

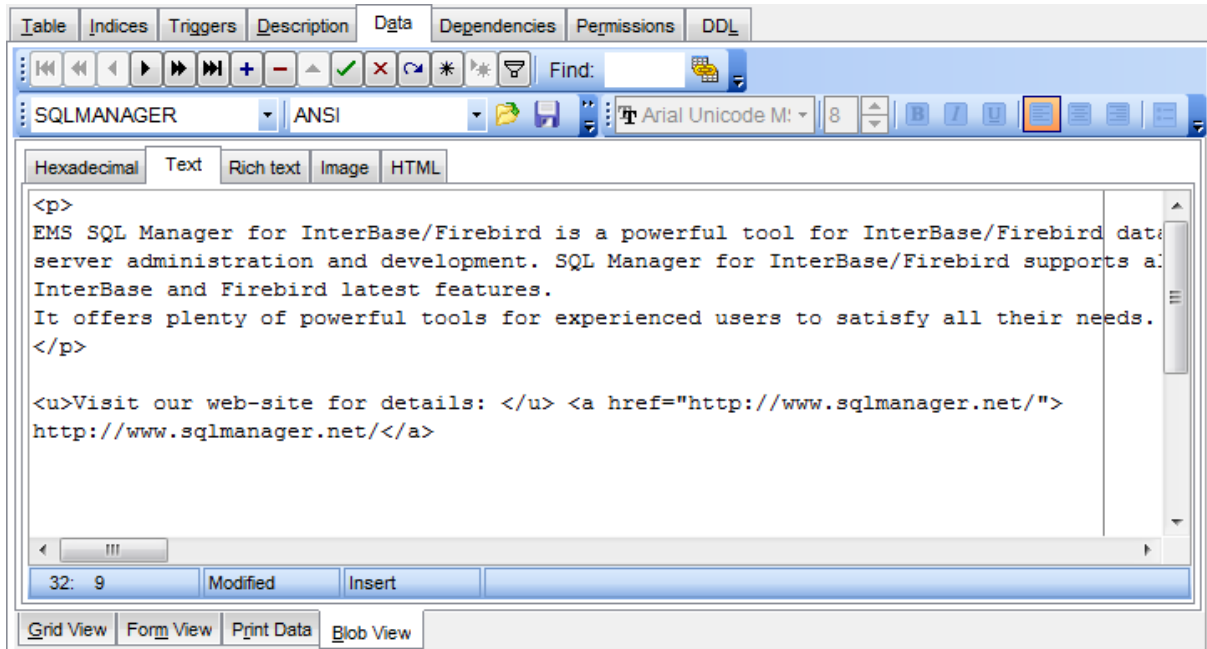
[Editing as Image](#)<sup>[428]</sup>

[Editing as HTML](#)<sup>[429]</sup>

### 7.1.5.3 Editing as Text

The **Text** tab allows you to view/edit the BLOB data as plain text.

The [toolbar](#)<sup>[37]</sup> provides additional functionality for BLOB Viewer/Editor: use the **Save to file**  and the **Load from file**  toolbar buttons to save the text to a \*.txt file, or load text from a file. Additionally, you can use the *Cut, Copy, Paste, Select All, Undo, Word Wrap* context menu items for editing the text efficiently, and the **Print** context menu item to print the content of the **Text** tab.



#### See also:

[Navigation within BLOB Editor](#)<sup>[424]</sup>

[Editing as Hexadecimal](#)<sup>[425]</sup>



[Editing as Rich Text](#)<sup>[427]</sup>

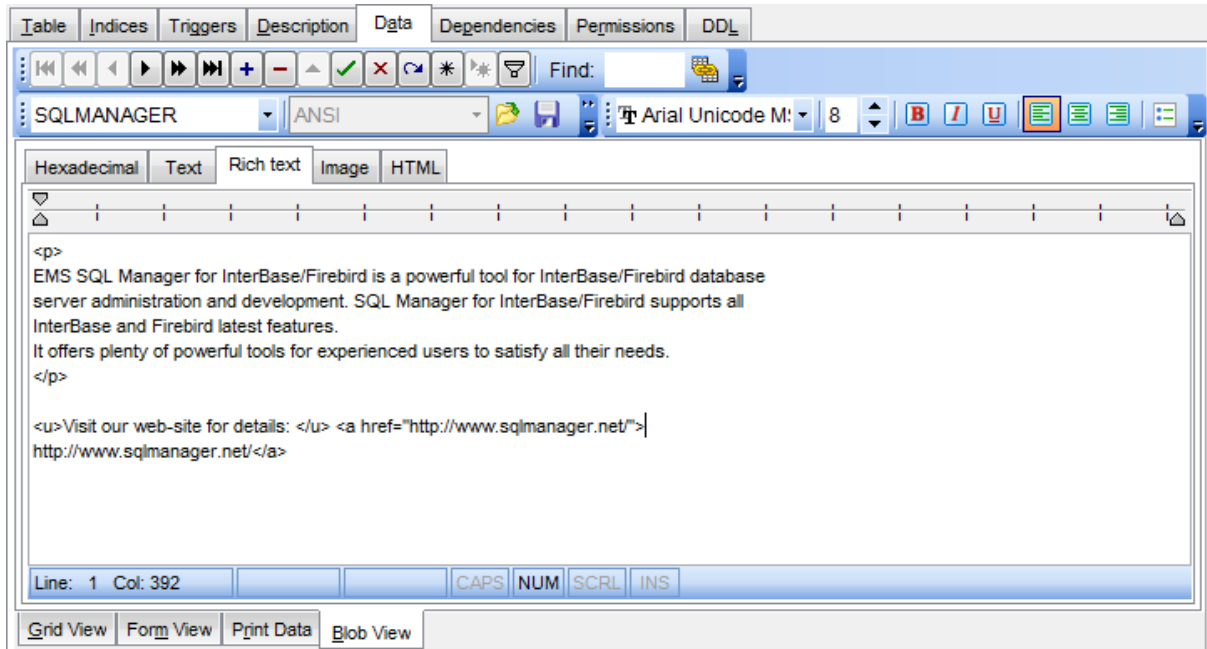
[Editing as Image](#)<sup>[428]</sup>

[Editing as HTML](#)<sup>[429]</sup>

#### 7.1.5.4 Editing as Rich Text

The **Rich Text** tab allows you to view/edit the BLOB data in Rich Text format (RTF).

The [toolbar](#)<sup>[371]</sup> provides additional functionality for BLOB Viewer/Editor: use the **Save to file**  and the **Load from file**  toolbar buttons to save the Rich Text to a \*.rtf file, or load text from a file. Additionally, you can use the *Cut, Copy, Paste, Select All, Undo* context menu items for editing the text efficiently, and the **Print** context menu item to print the content of the **Rich Text** tab.



#### See also:

[Navigation within BLOB Editor](#)<sup>[424]</sup>

[Editing as Hexadecimal](#)<sup>[425]</sup>



[Editing as Text](#)<sup>[426]</sup>

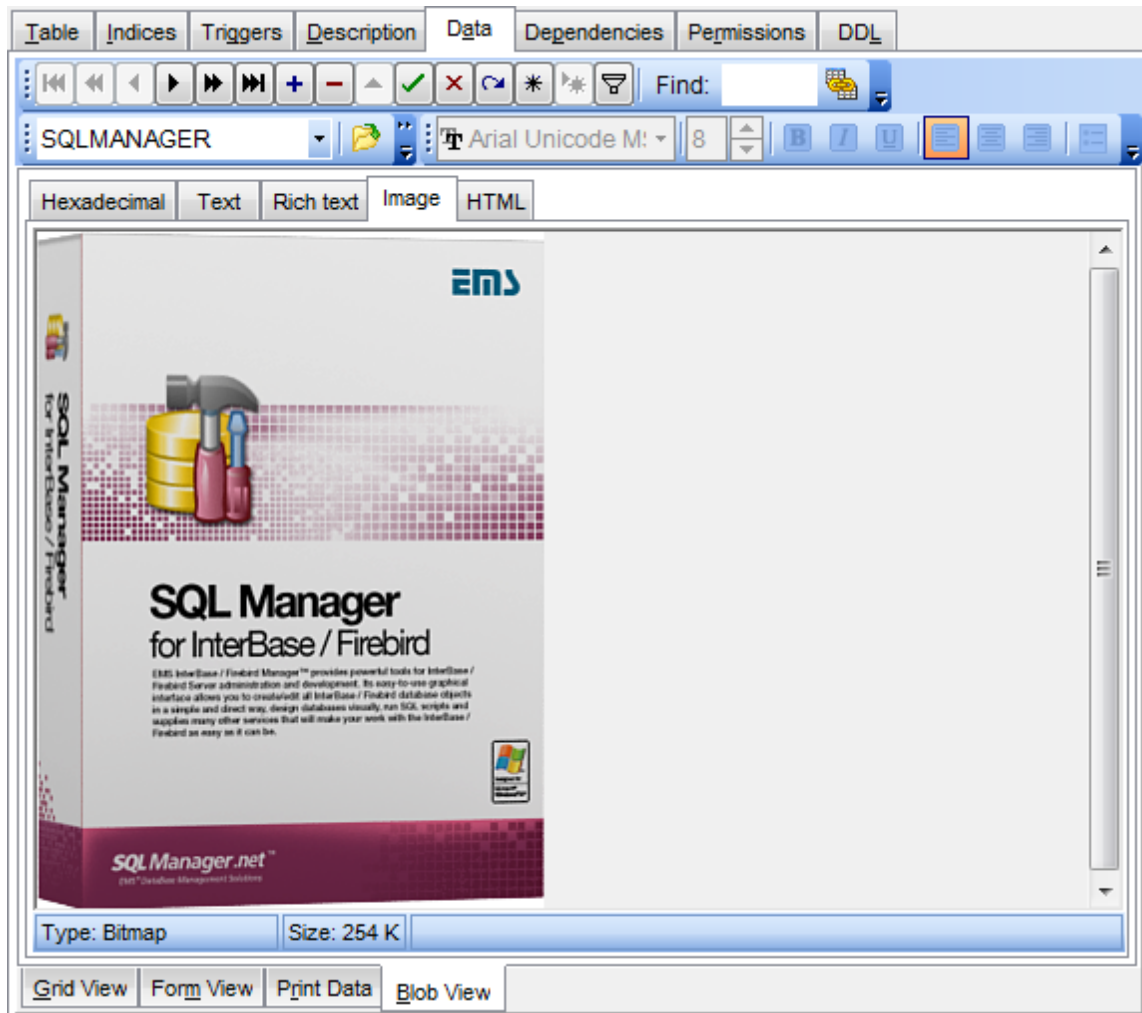
[Editing as Image](#)<sup>[428]</sup>

[Editing as HTML](#)<sup>[429]</sup>

### 7.1.5.5 Editing as Image

The **Image** tab allows you to view the BLOB data as image.

The [toolbar](#)<sup>[37]</sup> provides additional functionality for BLOB Viewer/Editor: use the **Save to file**  and the **Load from file**  toolbar buttons to save the image to a \*.png, \*.wmf, \*.ico or \*.jpg file, or load an image from a file.



#### See also:

[Navigation within BLOB Editor](#)<sup>[424]</sup>

[Editing as Hexadecimal](#)<sup>[425]</sup>



[Editing as Text](#)<sup>[426]</sup>

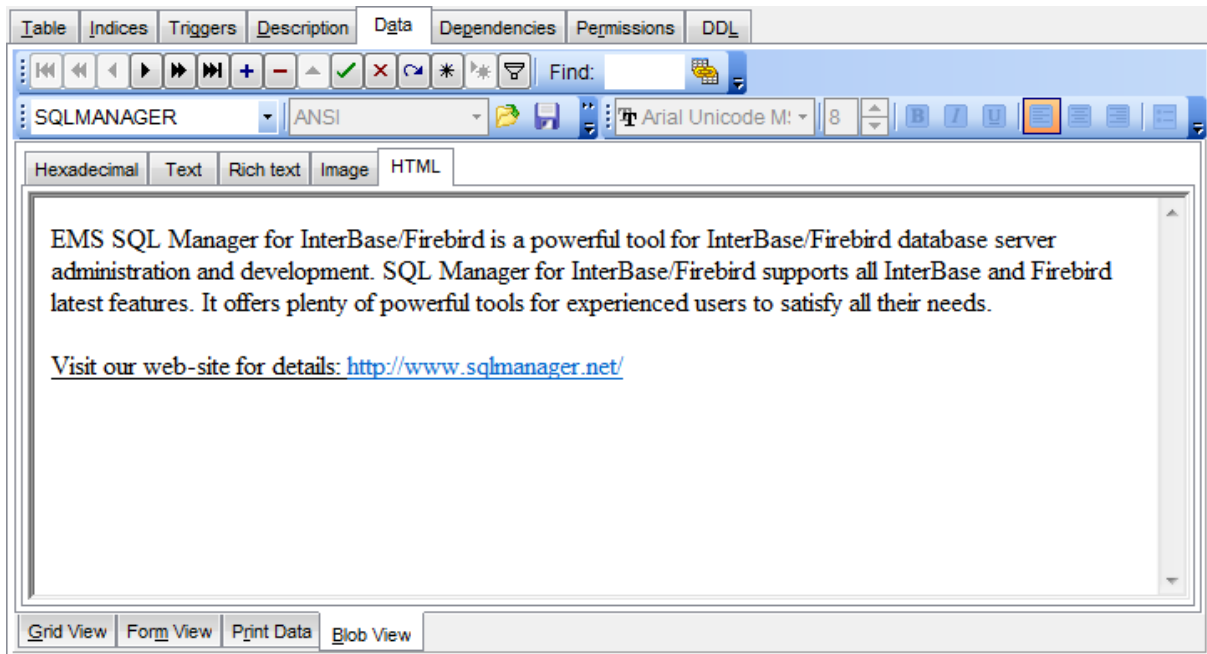
[Editing as Rich Text](#)<sup>[427]</sup>

[Editing as HTML](#)<sup>[429]</sup>

### 7.1.5.6 Editing as HTML

The **HTML** tab allows you to view the BLOB data as HTML (Hyper-Text Markup Language format) - in the way this data would be displayed by your Internet browser.

The [toolbar](#)<sup>[371]</sup> provides additional functionality for BLOB Viewer/Editor: use the  **Save to file** and the  **Load from file** toolbar buttons to save the content as a \*.html, or \*.htm file, or load content from a file.



#### See also:

[Navigation within BLOB Editor](#)<sup>[424]</sup>



[Editing as Hexadecimal](#)<sup>[425]</sup>

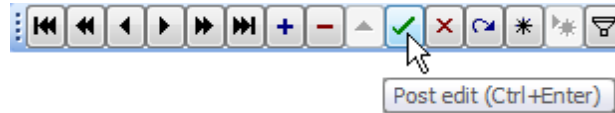
[Editing as Text](#)<sup>[426]</sup>

[Editing as Rich Text](#)<sup>[427]</sup>

[Editing as Image](#)<sup>[428]</sup>

### 7.1.6 Applying changes

After changes are done, click the **Post Edit**  button on the [navigation pane](#)<sup>370</sup> to apply the changes or the **Cancel Edit**  button to discard the changes.



#### See also:

[Using Navigation bar and Toolbars](#)<sup>370</sup>

[Grid View](#)<sup>373</sup>

[Form View](#)<sup>395</sup>

[Print Data](#)<sup>396</sup>

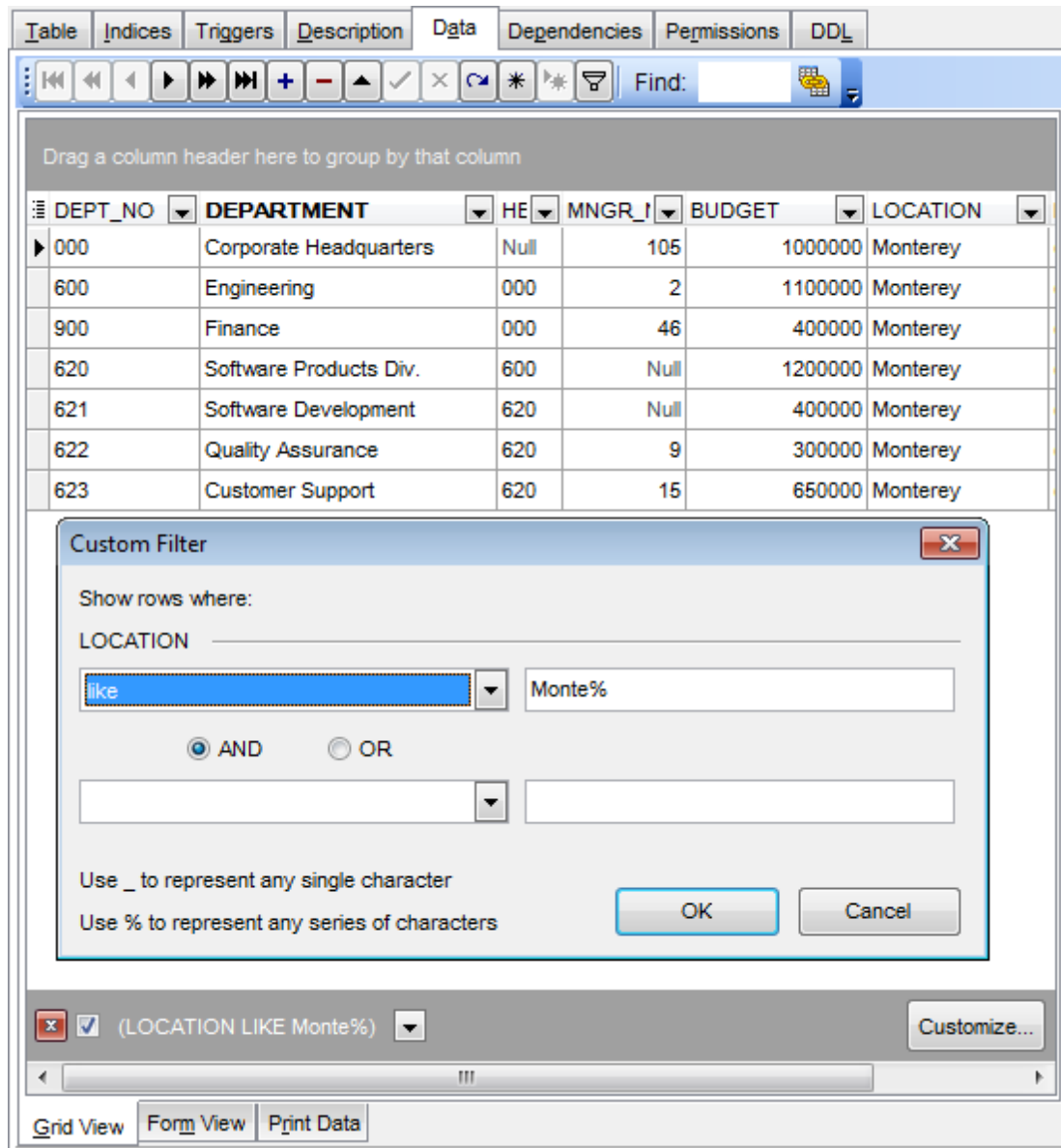
[BLOB View](#)<sup>422</sup>

## 7.2 Custom Filter

The **Custom Filter** dialog is one of the [filtering](#)<sup>[379]</sup> facilities implemented in [Data View](#)<sup>[369]</sup> for your convenience.

To open the dialog, click the Arrow-Down button next to the column caption, and select the **Custom** item from the drop-down list.

Select a logical operator for checking the column values (*like, is less than, is greater than, etc.*) and set a value to be checked by this operator in the corresponding box on the right.



If necessary, you can set the second condition and specify the relation between the two conditions: whether both of them should be satisfied (*AND*) or just any of them (*OR*). Use the '\_' character to represent any single symbol, and use the '%' character to represent

any series of symbols in the condition string.

---

**See also:**

[Data View](#)<sup>[369]</sup>

[Filter Builder dialog](#)<sup>[433]</sup>



## 7.3 Filter Builder dialog

The **Filter Builder** dialog is a powerful [filtering](#)<sup>[379]</sup> tool implemented in [Data View](#)<sup>[369]</sup> for your convenience.

The dialog is aimed at facilitating the procedure of creating and applying complex filter criteria for data. In addition, the tool allows you to save filter criteria to an external \*.flt file for future use.

To open the **Filter Builder** dialog, use the  **Set filter** button on the navigation pane available within the [Data](#)<sup>[199]</sup> tab of [Table Editor](#)<sup>[184]</sup> and the **Result(s)** tabs of [Query Data](#)<sup>[330]</sup> and [Query Builder](#)<sup>[347]</sup>.

- [Invoking the Filter Builder dialog](#)<sup>[434]</sup>
- [Adding a new condition to the filter](#)<sup>[435]</sup>
- [Setting filter criteria](#)<sup>[436]</sup>
- [Setting filter operator](#)<sup>[437]</sup>
- [Setting filter criteria values](#)<sup>[438]</sup>
- [Adding a new group](#)<sup>[439]</sup>
- [Setting group operator](#)<sup>[440]</sup>
- [Applying filter conditions](#)<sup>[441]</sup>

---

### See also:

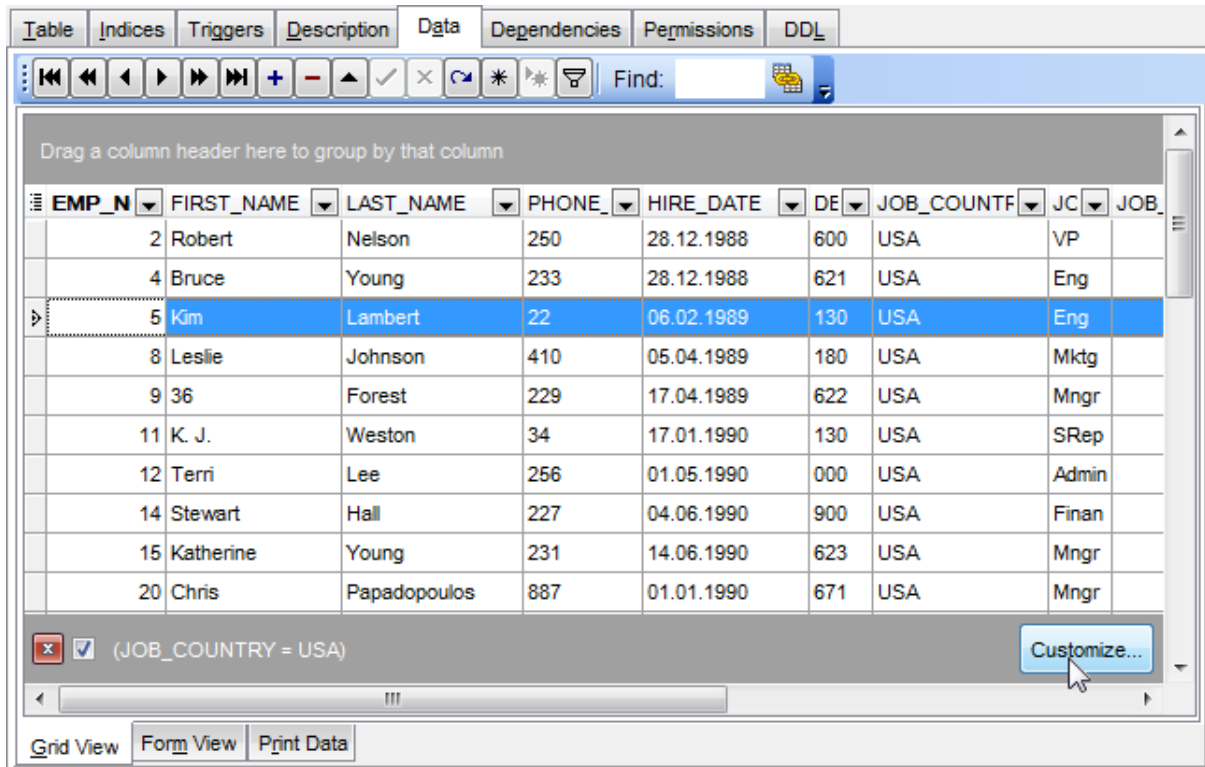
[Data View](#)<sup>[369]</sup>


[Custom Filter](#)<sup>[431]</sup>

### 7.3.1 Invoking the Filter Builder dialog

The **Filter Builder** dialog can be invoked in either of the following ways:

- if a [simple filter](#)<sup>[379]</sup> or the [Custom Filter](#)<sup>[431]</sup> is being used, click the **Customize...** button on the gray **filtering panel**;



- use the **Set filter**  button on the navigation pane and create a composite filter using the dialog.



The succeeding pages of this chapter are intended to illustrate usage of the **Filter Builder** dialog. Please see the instructions below to learn how to perform various operations in the easiest way.

#### See also:

[Adding a new condition](#)<sup>[435]</sup>

[Setting filter criteria](#)<sup>[436]</sup>

[Setting filter operator](#)<sup>[437]</sup>

[Setting filter criteria values](#)<sup>[438]</sup>

[Adding a new group](#)<sup>[439]</sup>

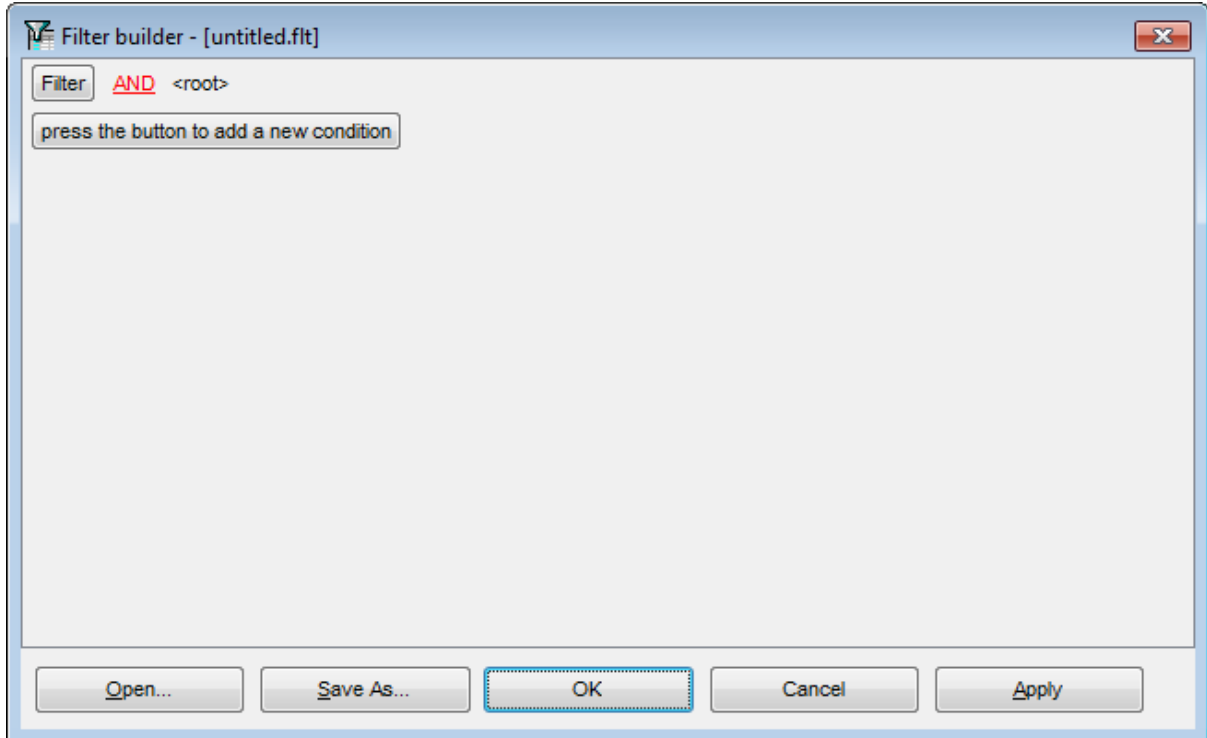
[Setting group operator](#)<sup>[440]</sup>

[Applying filter conditions](#)<sup>[441]</sup>

### 7.3.2 Adding a new condition

Suppose we need to select data from the sample table *EMPLOYEE* to view the list of IT specialists hired after 6/15/2009. These criteria are applied to the *HIRE\_DATE*, the *DEPT\_ID* and the *POSITION* fields.

Click **press the button to add a new condition** - this will add a new condition to the criteria. Alternatively, you can click the **Filter** button and select the **Add Condition** popup menu item.



#### See also:

[Invoking the Filter Builder dialog](#)<sup>[434]</sup>

[Setting filter criteria](#)<sup>[436]</sup>

[Setting filter operator](#)<sup>[437]</sup>


[Setting filter criteria values](#)<sup>[438]</sup>

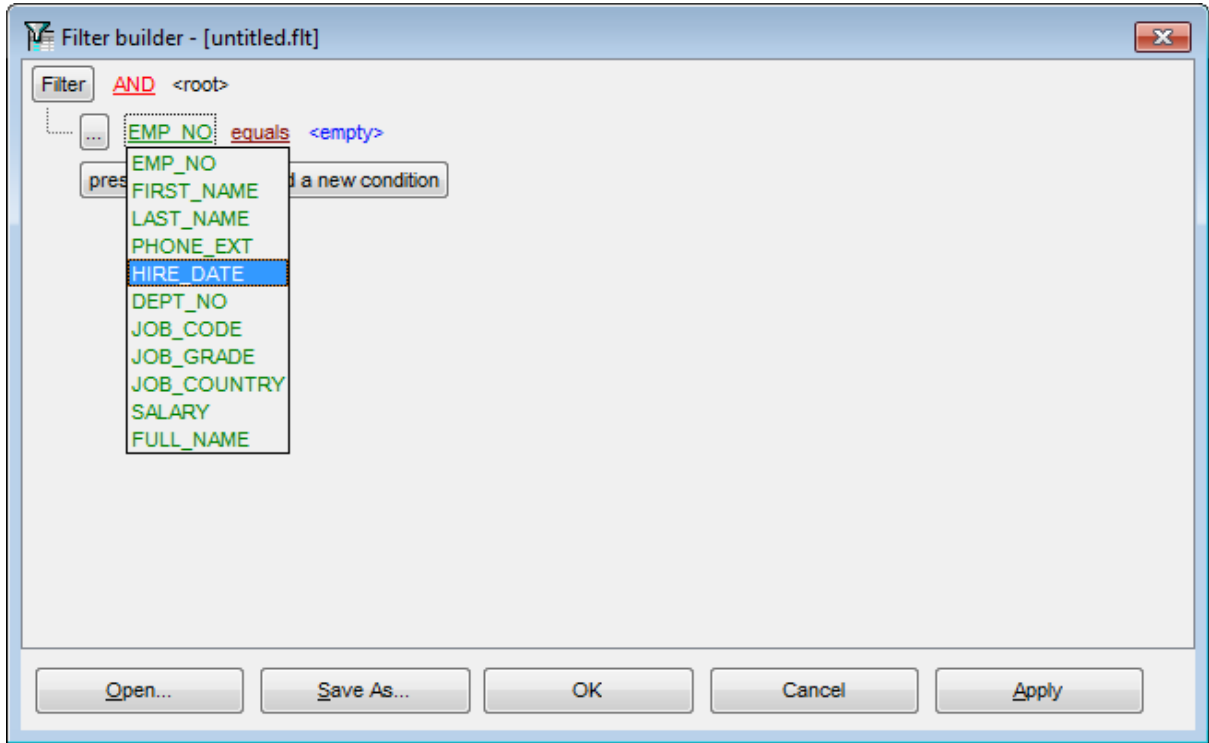
[Adding a new group](#)<sup>[439]</sup>

[Setting group operator](#)<sup>[440]</sup>

[Applying filter conditions](#)<sup>[441]</sup>

### 7.3.3 Setting filter criteria

As we need to apply the filter criteria to the *HIRE\_DATE* field, we click the column box (next to the ellipsis  button) to open the drop-down list displaying the available column names and select the *HIRE\_DATE* item.



#### See also:

[Invoking the Filter Builder dialog](#)<sup>[434]</sup>

[Adding a new condition](#)<sup>[435]</sup>

[Setting filter operator](#)<sup>[437]</sup>

[Setting filter criteria values](#)<sup>[438]</sup>

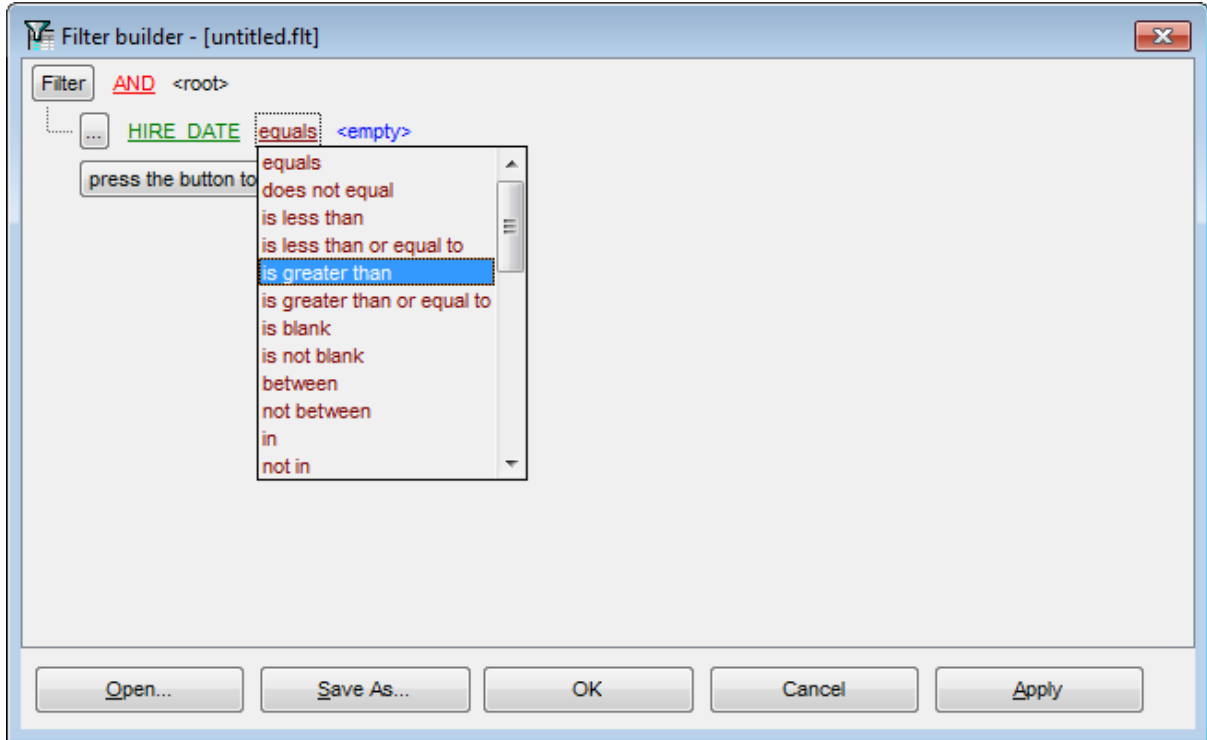
[Adding a new group](#)<sup>[439]</sup>

[Setting group operator](#)<sup>[440]</sup>

[Applying filter conditions](#)<sup>[441]</sup>

### 7.3.4 Setting filter operator

Since we need the list of employees hired after 6/15/2009, we need to select the *IS GREATER THAN* operator from the corresponding drop-down list.



#### See also:

[Invoking the Filter Builder dialog](#)<sup>[434]</sup>

[Adding a new condition](#)<sup>[435]</sup>

[Setting filter criteria](#)<sup>[436]</sup>

[Setting filter criteria values](#)<sup>[438]</sup>

[Adding a new group](#)<sup>[439]</sup>

[Setting group operator](#)<sup>[440]</sup>

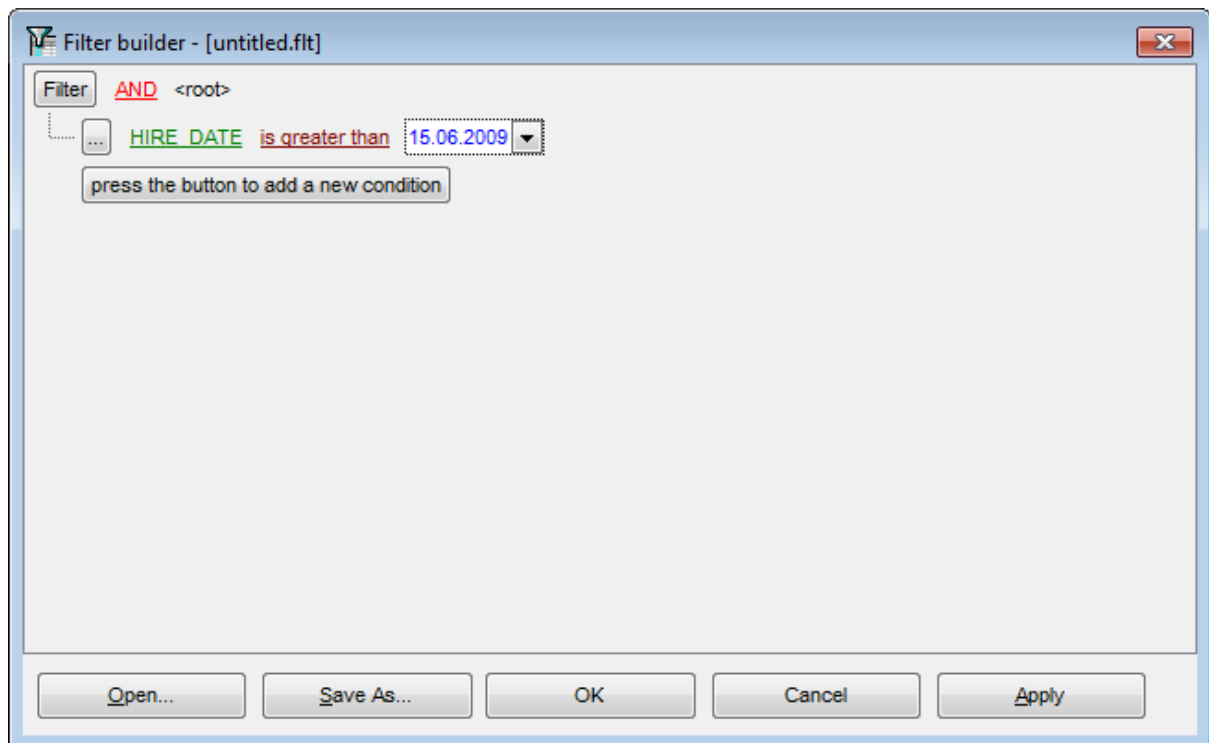
[Applying filter conditions](#)<sup>[441]</sup>

### 7.3.5 Setting filter criteria values

Next, we need to specify value '6/15/2009' for the *IS GREATER THAN* operator.

Similarly, if, for example, we need to get the list of employees hired during the 6/15/2008 - 6/15/2009 term, we set the *BETWEEN* [filter operator](#)<sup>[437]</sup> (this will add two empty value boxes to specify the inclusive range for the *BETWEEN* condition) and specify the range for the operator, i.e. the '6/15/2008' and the '6/15/2009' values in the corresponding value boxes.

It is possible to set the date value **manually** by typing it in, or via the **date editor** which is activated when you click the value box.



Editors used in value boxes are determined by the **data type** assigned to the corresponding columns.

#### See also:

[Invoking the Filter Builder dialog](#)<sup>[434]</sup>

[Adding a new condition](#)<sup>[435]</sup>

[Setting filter criteria](#)<sup>[436]</sup>

[Setting filter operator](#)<sup>[437]</sup>


[Adding a new group](#)<sup>[439]</sup>

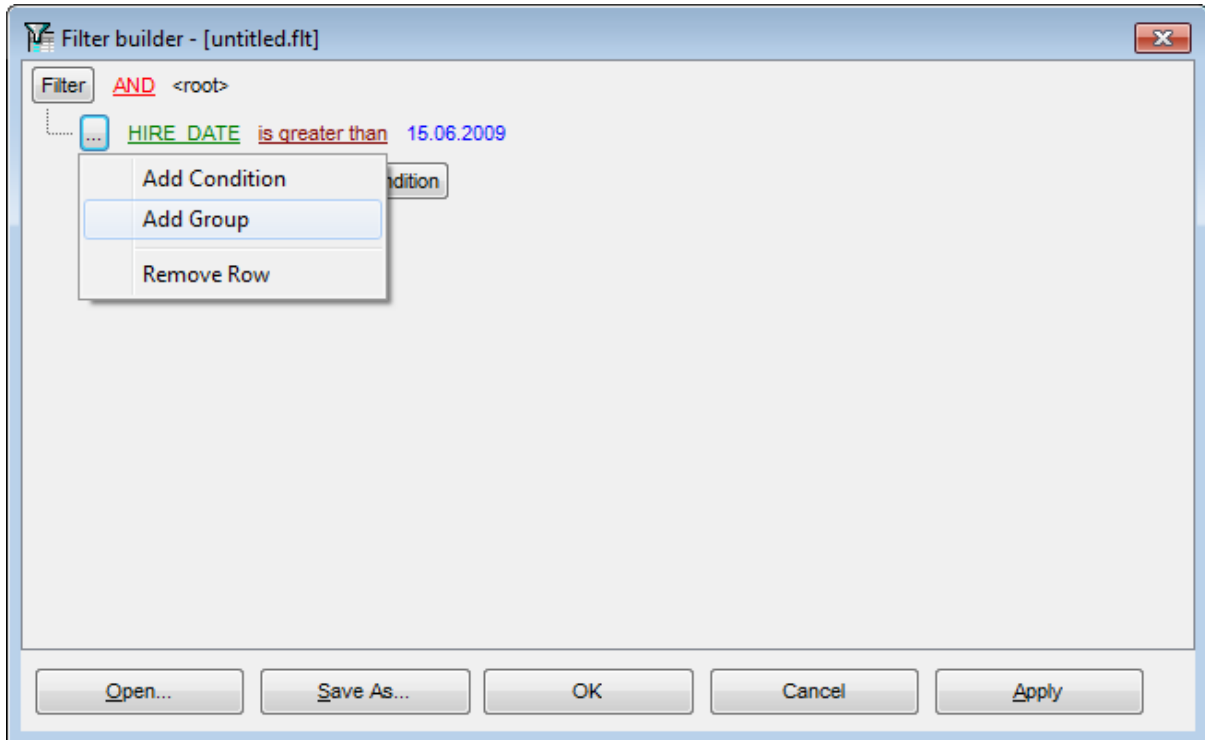
[Setting group operator](#)<sup>[440]</sup>

[Applying filter conditions](#)<sup>[441]</sup>

### 7.3.6 Adding a new group

Since we also need to get the list of IT specialists (i.e. those registered in a department and having an IT-oriented job), we can add a complex filter condition combining simple conditions with the *AND* operator (however, in this particular case we can just add them on the same root level as for the existing condition).

If you need to add a group of conditions, click the ellipsis  button for the *HIRE\_DATE* condition and select the **Add Group** popup menu item.



#### See also:

[Invoking the Filter Builder dialog](#)<sup>[434]</sup>

[Adding a new condition](#)<sup>[435]</sup>

[Setting filter criteria](#)<sup>[436]</sup>

[Setting filter operator](#)<sup>[437]</sup>

[Setting filter criteria values](#)<sup>[438]</sup>

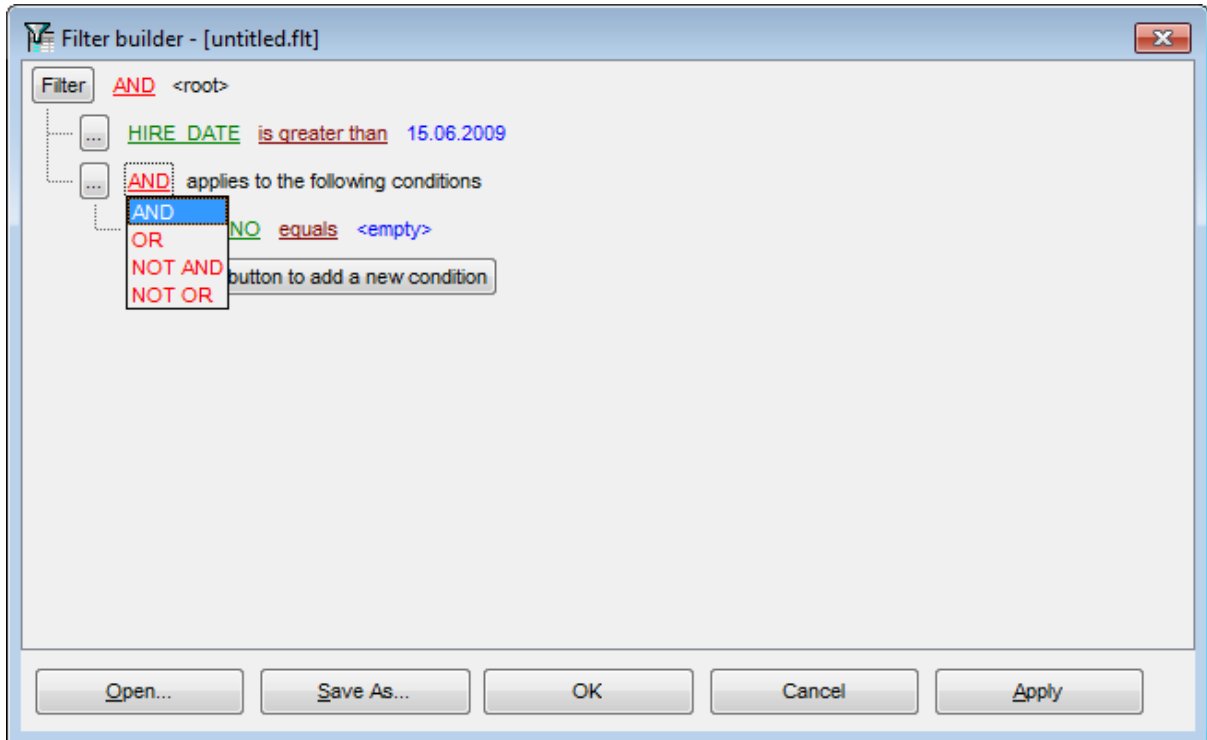
[Setting group operator](#)<sup>[440]</sup>

[Applying filter conditions](#)<sup>[441]</sup>

### 7.3.7 Setting group operator

Conditions of complex criteria can be combined with any of the four logical operators used: *AND*, *OR*, *NOT AND*, *NOT OR*.

In our case it is enough to click the **group operator** box and select the *AND* item from the drop-down menu.



#### See also:

[Invoking the Filter Builder dialog](#)<sup>[434]</sup>

[Adding a new condition](#)<sup>[435]</sup>

[Setting filter criteria](#)<sup>[436]</sup>

[Setting filter operator](#)<sup>[437]</sup>

[Setting filter criteria values](#)<sup>[438]</sup>

[Adding a new group](#)<sup>[439]</sup>

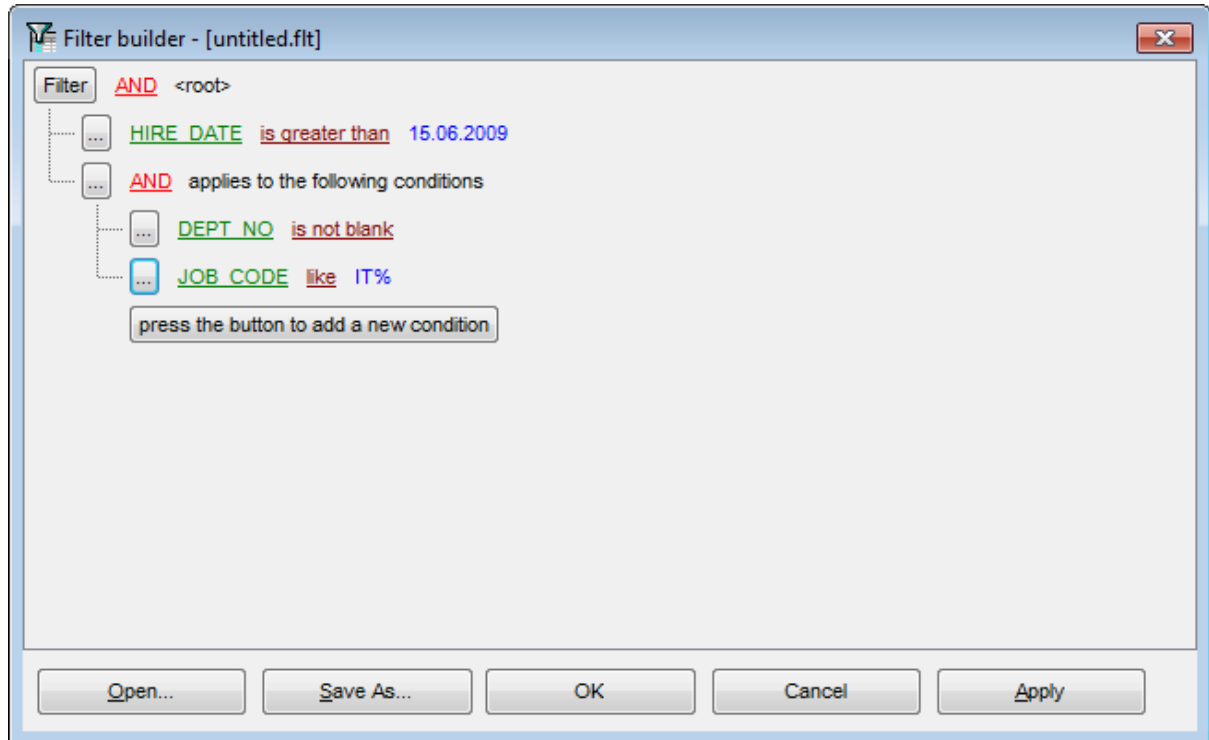
[Applying filter conditions](#)<sup>[441]</sup>



### 7.3.8 Applying filter conditions

Suppose we have created a condition within the new group. If we need, we can [add more conditions](#)<sup>[435]</sup> at the same level and specify the required values using the value boxes. When the operation is completed, the **Filter Builder** dialog will look like in the screenshot below.

Click the **Apply** button to see the result of the filtering you have made, and click **OK** or **Cancel** to close the dialog with or without saving your filter conditions respectively.



The **Filter Builder** dialog allows you to save filter criteria to and load them from external files. Clicking the **Save As...** or the **Open...** buttons activates the corresponding dialogs. Filter settings are stored in *\*.flt* files.

Please be informed that a column in the file is referenced by its position within a view, hence filter settings cannot be correctly restored if columns have been deleted from the view after saving the filter to a file.

---

#### See also:

[Invoking the Filter Builder dialog](#)<sup>[434]</sup>

[Adding a new condition](#)<sup>[435]</sup>

[Setting filter criteria](#)<sup>[436]</sup>

[Setting filter operator](#)<sup>[437]</sup>

[Setting filter criteria values](#)<sup>[438]</sup>

[Adding a new group](#)<sup>[439]</sup>

[Setting group operator](#)<sup>[440]</sup>

**Part**



## 8 Import/Export Tools

Using **SQL Manager for InterBase/Firebird** you are provided with powerful tools to import and export data to/from your InterBase/Firebird database.

### [Export Data Wizard](#)<sup>[44]</sup>

Exports data to various supported formats including *MS Excel*, *MS Access*, *RTF*, *HTML*, *PDF*, *CSV*, *XML*, and more.

### [Import Data Wizard](#)<sup>[49]</sup>

Imports data from any of supported formats: *MS Excel*, *MS Access*, *DBF*, *TXT*, *CSV*, *XML*, and more.

### [Export Data as SQL Script](#)<sup>[51]</sup>

Exports data to an SQL script as a number of INSERT statements.

### [Using templates](#)<sup>[91]</sup>

Facilitates using import/export wizards.

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#### See also:

[Getting Started](#)<sup>[37]</sup>

[Database Explorer](#)<sup>[63]</sup>

[Database Management](#)<sup>[87]</sup>

[Database Objects Management](#)<sup>[162]</sup>

[Query Management Tools](#)<sup>[328]</sup>

[Data Management](#)<sup>[368]</sup>

[Database Tools](#)<sup>[532]</sup>

[Services](#)<sup>[65]</sup>

[Security management](#)<sup>[71]</sup>

[Options](#)<sup>[73]</sup>

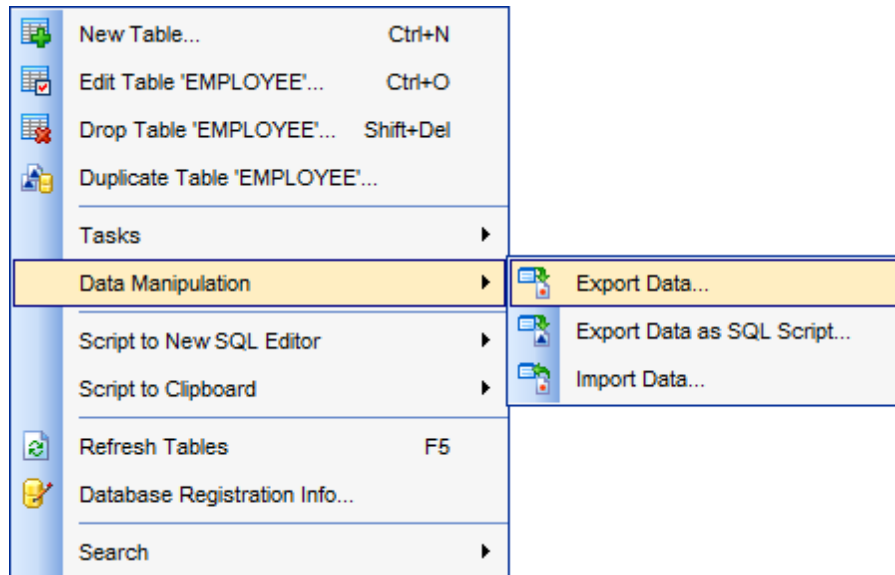
[External Tools](#)<sup>[832]</sup>

[How To...](#)<sup>[838]</sup>

## 8.1 Export Data Wizard

**Export Data Wizard** allows you to export data from a [table](#)<sup>[178]</sup> / [view](#)<sup>[242]</sup> or from a query result to any of supported formats (*MS Excel, MS Access, MS Word, RTF, HTML, PDF, TXT, CSV, XML, DBF, etc.*). You can save your settings as a [template](#)<sup>[910]</sup> any time for future use.

To start the wizard, right-click the object in [DB Explorer](#)<sup>[63]</sup>, select the **Data Manipulation** [context menu](#)<sup>[56]</sup> group and proceed to the **Export Data...** item within this group.



Alternatively, you can open the **Data** tab of [Table Editor](#)<sup>[184]</sup> / [View Editor](#)<sup>[242]</sup> or the **Result (s)** tab of [Query Data](#)<sup>[330]</sup> / [Query Builder](#)<sup>[347]</sup>, right-click the [grid](#)<sup>[373]</sup> there, then select the **Data Manipulation** [context menu](#)<sup>[382]</sup> group and proceed to the **Export Data of <object\_name>...** item within this group, or use the **Export Data** item of the [Navigation bar](#)<sup>[882]</sup>.

- [Setting name and format for the destination file](#)<sup>[446]</sup>
- [Selecting fields for export](#)<sup>[447]</sup>
- [Adjusting formats applied to exported data](#)<sup>[448]</sup>
- [Setting header and footer text for the destination file](#)<sup>[449]</sup>
- [Setting format-specific options](#)<sup>[450]</sup>
- [Setting common export options](#)<sup>[489]</sup>
- [Exporting data](#)<sup>[490]</sup>

Availability:

**Full** version (for Windows) **Yes**

**Lite** version (for Windows) **No**


**Note:** To compare all features of the **Full** and the **Lite** versions of **SQL Manager**, refer to the [Feature Matrix](#)<sup>[20]</sup> page.

**See also:**[Import Data Wizard](#)<sup>[49]</sup>[Export as SQL Script](#)<sup>[517]</sup>[Using templates](#)<sup>[910]</sup>

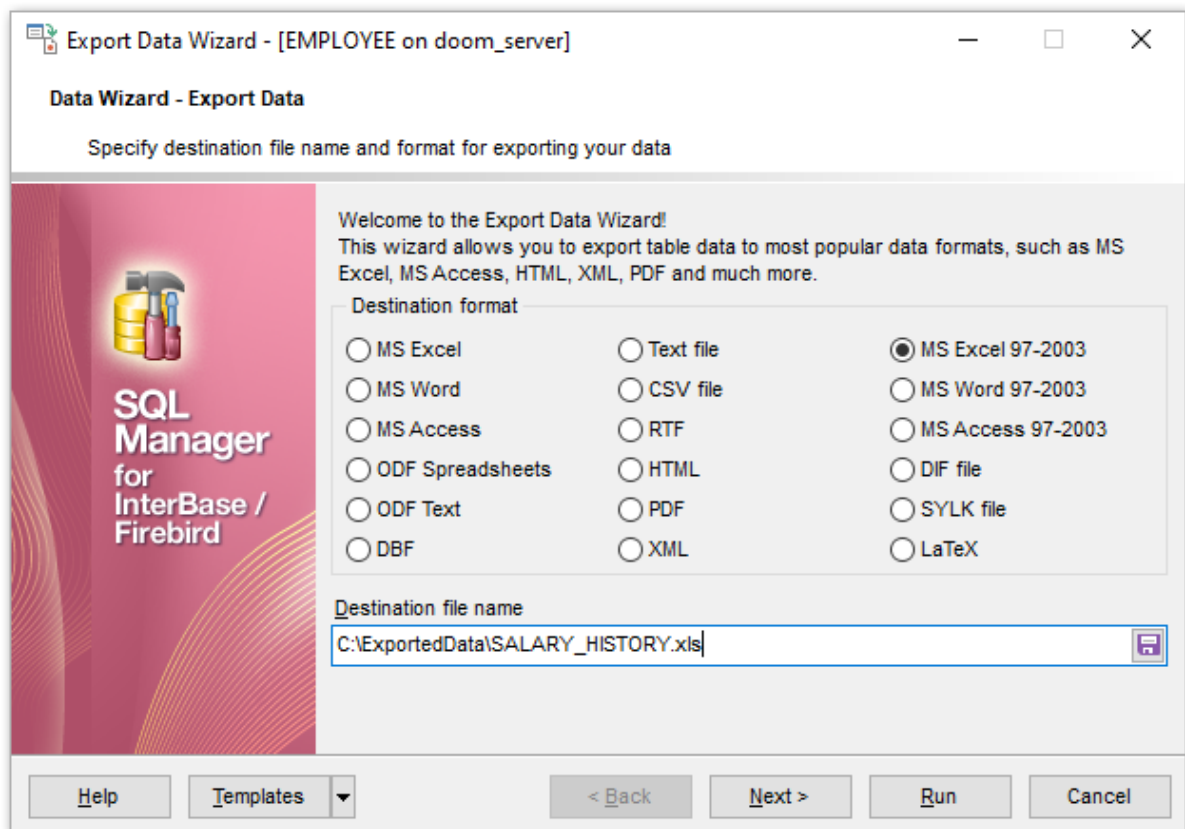
### 8.1.1 Setting destination file name and format

This step of the wizard allows you to select the destination file format you need to export data into.

#### Destination file name

Type in or use the  button to specify the path to the file using the **Save as...** dialog. The file name extension changes automatically according to the selected **Destination format**.

**Note:** If the target file already exists, the application will show a [warning](#)<sup>[929]</sup> dialog where you can choose the action you need.







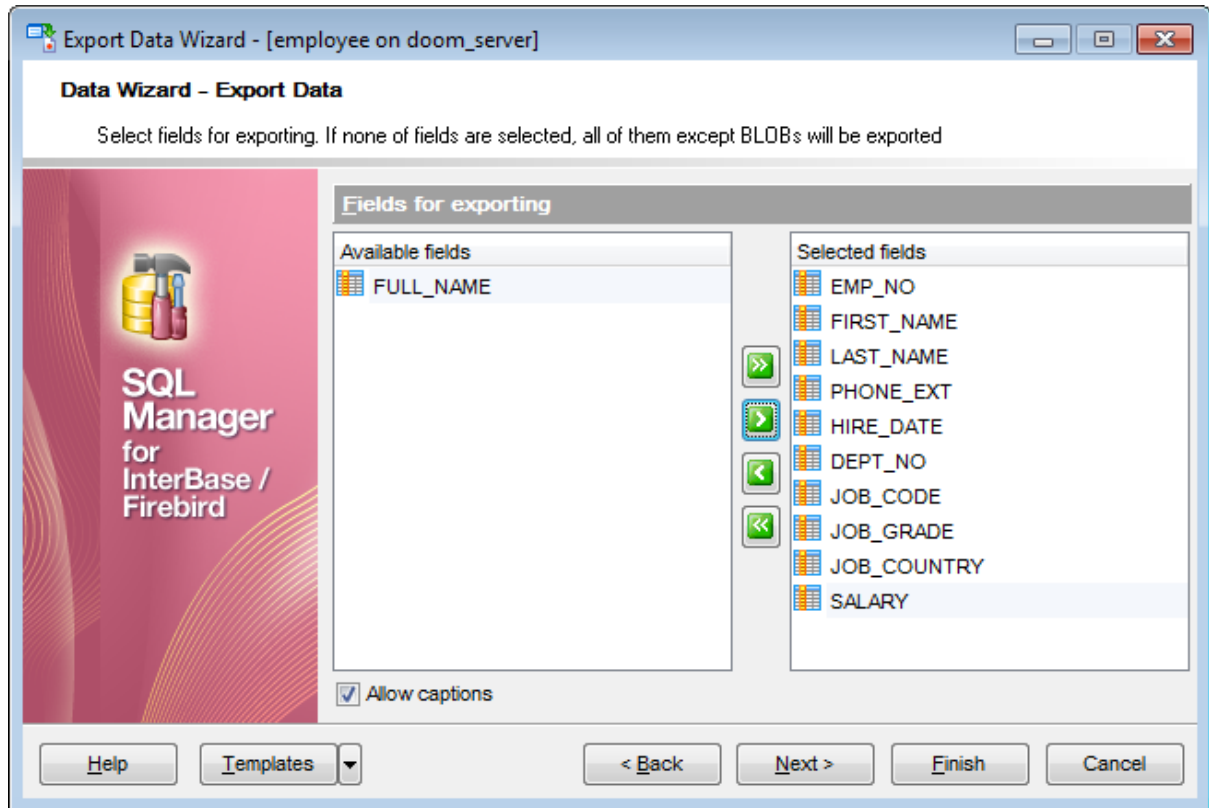
#### Destination format

Specify the format of the destination file. For details refer to [Supported file formats](#)<sup>[917]</sup>.

Click the **Next** button to proceed to the [Selecting fields for export](#)<sup>[447]</sup> step of the wizard.

## 8.1.2 Selecting fields for export

This step of the wizard allows you to select the table field(s) to be exported. To select a field, you need to move it from the **Available fields** list to the **Selected fields** list. Use the     buttons or drag-and-drop operations to move the fields from one list to another.



If you leave all the fields in the **Available fields** list, all fields of the table (except BLOBs) will be exported.

### **Allow captions**

Check this option if you need to export the field captions as well.

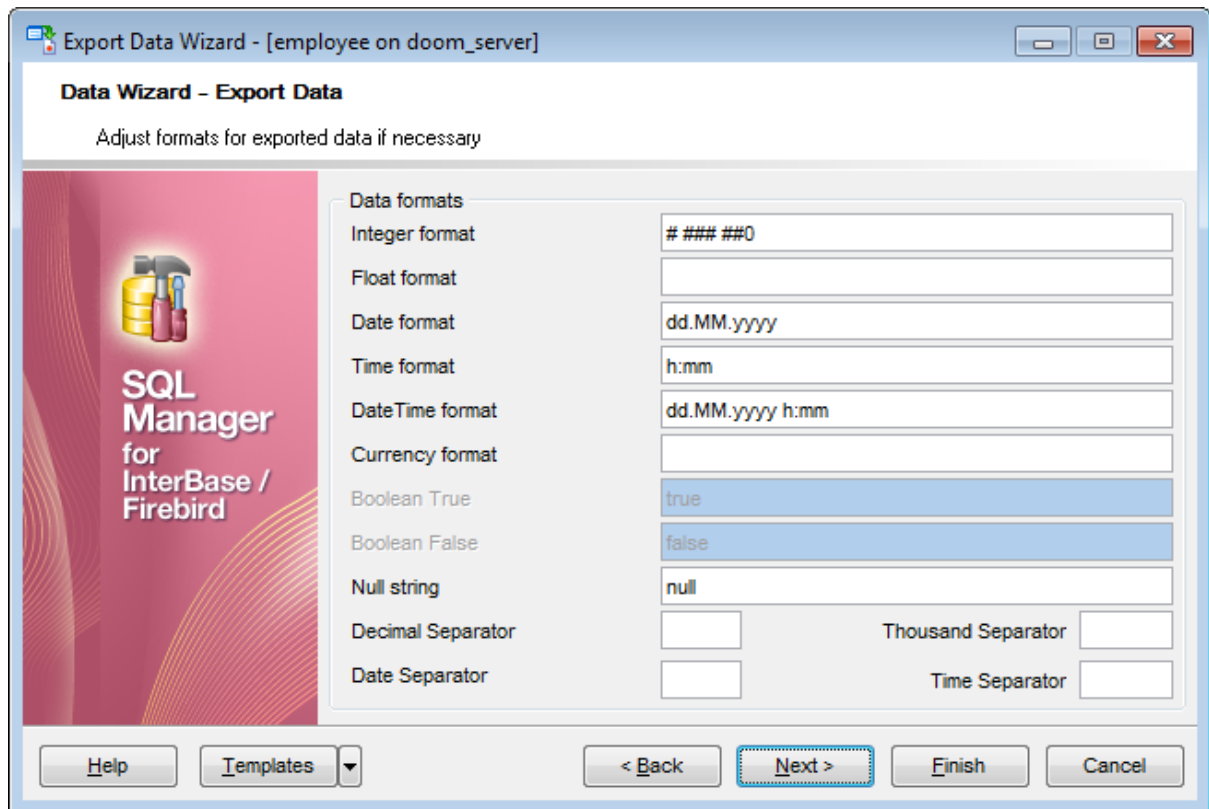
Click the **Next** button to proceed to the [Adjusting data formats](#)<sup>[448]</sup> step of the wizard.

### 8.1.3 Adjusting data formats

This step allows you to customize formats applied to exported data.

#### Data formats

Edit the format masks to adjust the result format in the way you need: *Integer*, *Float*, *Date*, *Time*, *DateTime*, *Currency*, *Boolean True*, *Boolean False*, *NULL string*, *Decimal separator*, *Thousand separator*, *Date separator*, *Time separator*.



**Hint:** The formats used by default are specified in the [Data Export](#)<sup>[771]</sup> section of the [Environment Options](#)<sup>[736]</sup> dialog.

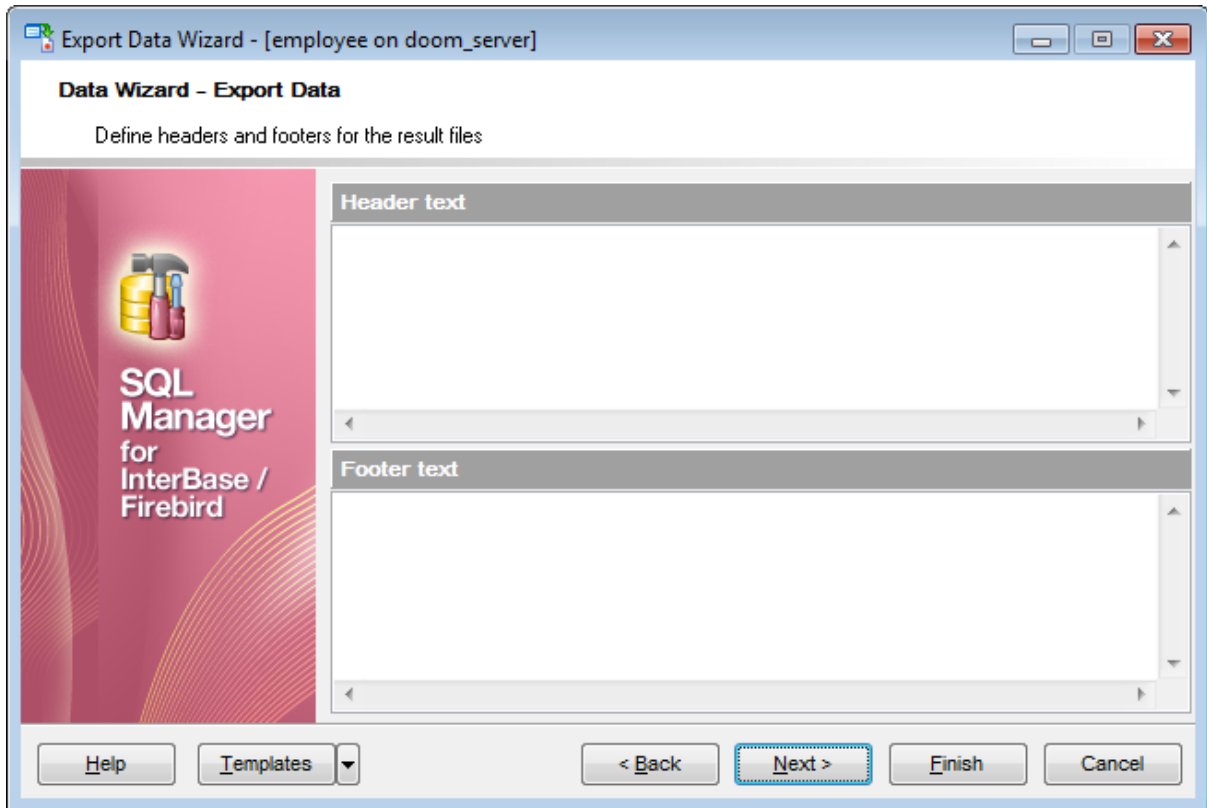
For more details refer to [Format specifiers](#)<sup>[906]</sup>.

Click the **Next** button to proceed to the [Setting header and footer](#)<sup>[449]</sup> step of the wizard.



### 8.1.4 Setting header and footer

Set **Header text** and **Footer text** for the result file. This text will appear at the beginning and at the end of the result file respectively.



Click the **Next** button to proceed to [Setting format-specific options](#)<sup>[450]</sup>.

### 8.1.5 Setting format-specific options

This step of the wizard allows you to customize **Format-specific options**:

- [Excel 97-2003 options](#)<sup>[451]</sup>
- [Access 97-2003 options](#)<sup>[467]</sup>
- [Word 97-2003 / RTF options](#)<sup>[468]</sup>
- [HTML options](#)<sup>[471]</sup>
- [PDF options](#)<sup>[477]</sup>
- [TXT options](#)<sup>[479]</sup>
- [CSV options](#)<sup>[480]</sup>
- [XML options](#)<sup>[481]</sup>
- [MS Excel / ODS options](#)<sup>[482]</sup>
- [Access options](#)<sup>[485]</sup>
- [MS Word / ODT options](#)<sup>[486]</sup>

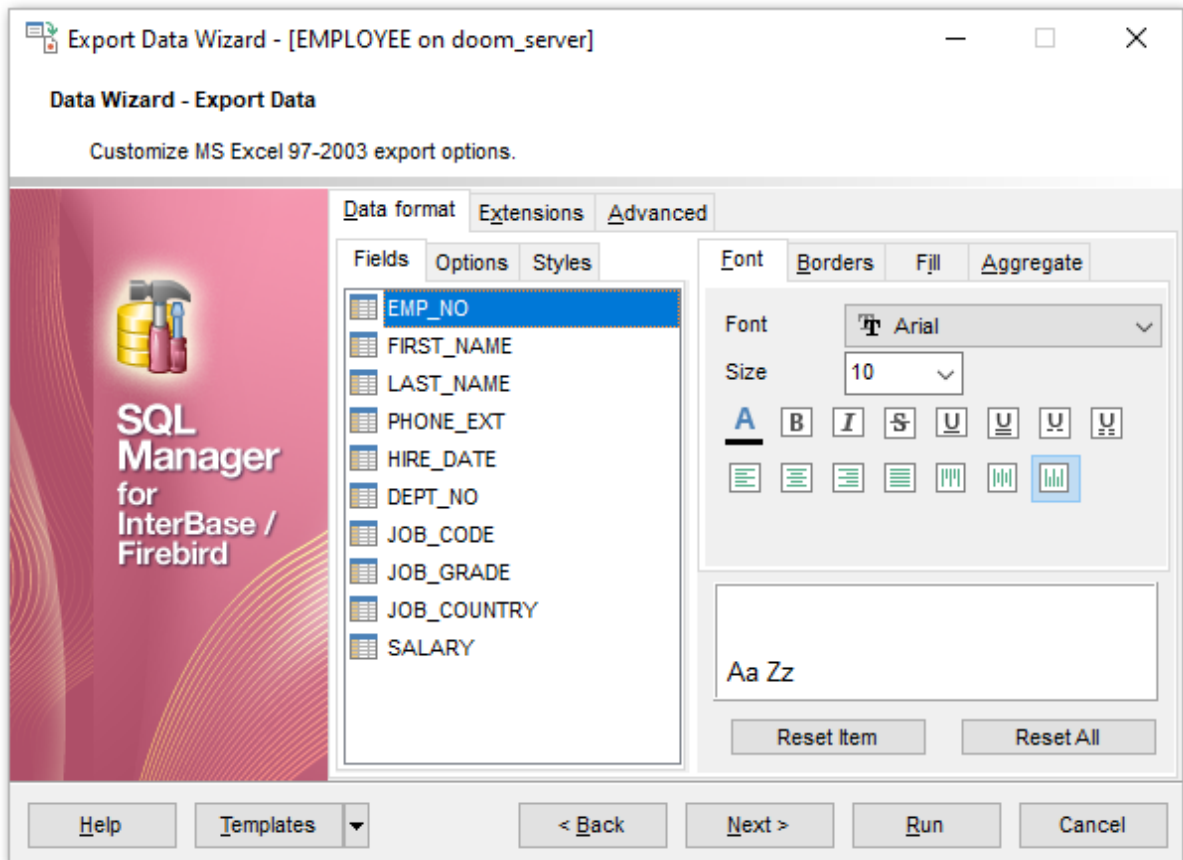
To get more information about the file formats, see the [Supported file formats](#)<sup>[911]</sup> page.

### 8.1.5.1 Excel 97-2003 options

This step allows you to set options for the target **MS Excel 97-2003** (\*.xls) file.

You can customize **Data format**, **Extensions** and set **Advanced** options available within the corresponding tabs:

- [Data format](#)<sup>[452]</sup>
- [Extensions](#)<sup>[457]</sup>
- [Advanced](#)<sup>[466]</sup>



When you are done, click the **Next** button to proceed to [Setting common export options](#)<sup>[489]</sup>.

## 8.1.5.1.1 Data format

The **Data Format** tab contains general options which allow you to adjust the format for each kind of Excel cells. This means that you can specify such parameters as *font*, *borders*, *filling color* and *method*, etc. for each entity (such as *data field*, *header*, *footer*, *caption*, *data*, *hyperlink* and so on) separately. Also it is possible to create *styles* to make the target Excel file striped by columns or rows.

- [Fields](#)<sup>452</sup>
- [Options](#)<sup>454</sup>
- [Styles](#)<sup>455</sup>

For your convenience the previews illustrating the changes are displayed in the **Sample Group** area on each page of **Data Format** tab.

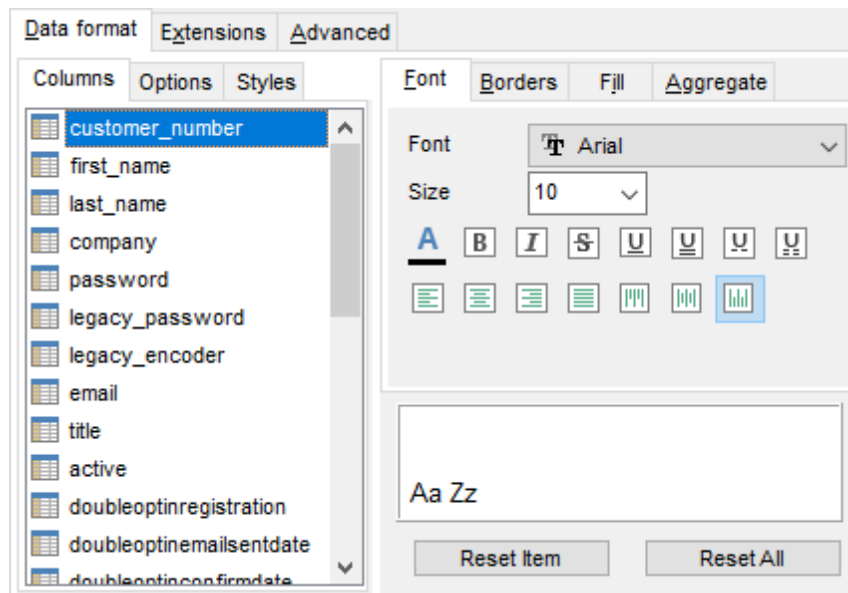
## 8.1.5.1.1.1 Fields

Using the **Fields** tab you can set *font* options, *border* and *fill* options and *aggregate functions* for all the **fields** you want to export.


The **Font** tab allows you to specify properties of the font that will be used in the output Excel file cells.


Use the **Font** and **Size** drop-down lists to select the *font* and *size* to be applied to the output text.

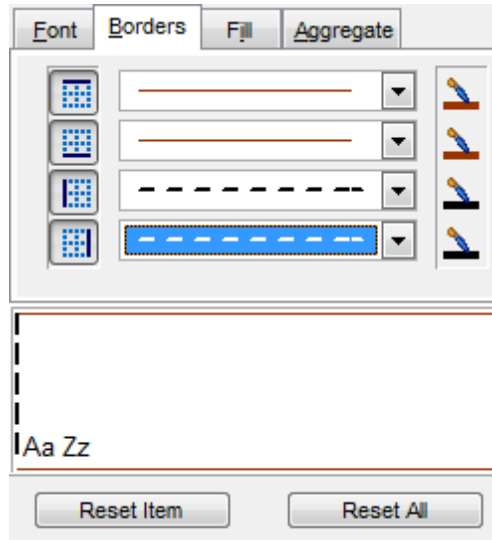
Use the buttons below to set *font color*, make text *bold*, *italicized*, *strikethrough* text, set *underline* effects, specify text *horizontal* and *vertical align*.



The **Borders** tab allows you to specify properties of the borders of the output Excel file cells.


Press the  buttons on the left to show/hide the borders they indicate.


Use the drop-down list for each border to select the *line type* and the  button on the right to select the *line color* for each border.

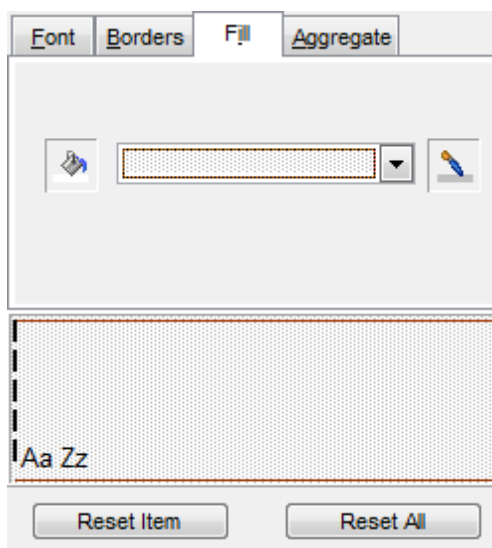


The **Fill** tab allows you to specify the fill pattern for the output Excel file cells.

Use the drop-down list to select the preferable fill pattern type.

Press the  button on the left to set the background color for the fill pattern.

Press the  button on the right to set the foreground color for the fill pattern.

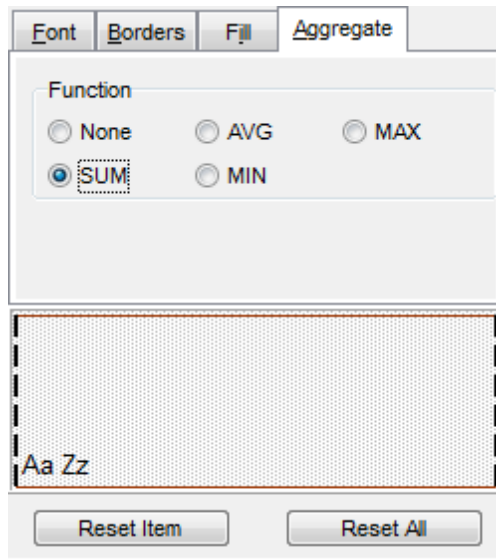


The **Aggregate** tab allows you to specify an aggregate function for the field in the

output Excel file.

Select a **function** that will be applied to the field:

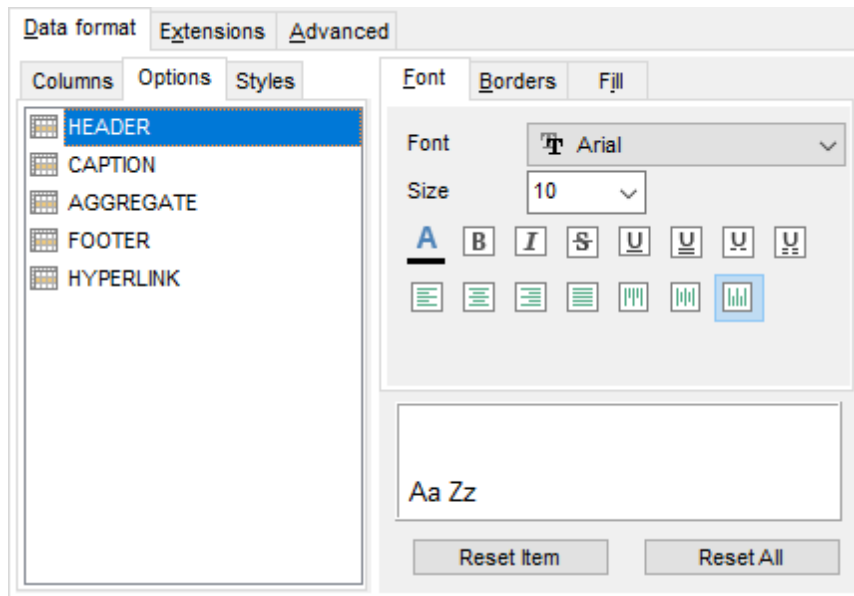
- None
- AVG
- MAX
- SUM
- MIN



You can reset the changes any time using the **Reset Item** and the **Reset All** buttons.

#### 8.1.5.1.1.2 Options

Using the **Options** tab you can set *font* options, *border* and *fill* options for all **elements** of the Excel sheet (*header, caption, footer, aggregates and hyperlinks*).





The **font**, **borders** and **fill** options are specified in the same way as for output **Fields**. For details refer to the [Fields](#) <sup>[452]</sup> page.



You can reset the changes any time using the **Reset Item** and the **Reset All** buttons.


#### 8.1.5.1.1.3 Styles

Using the **Styles** tab you can make a style template: set *font* options, *border* and *fill* options and save them.

To add a style template, click the **Plus**  button.

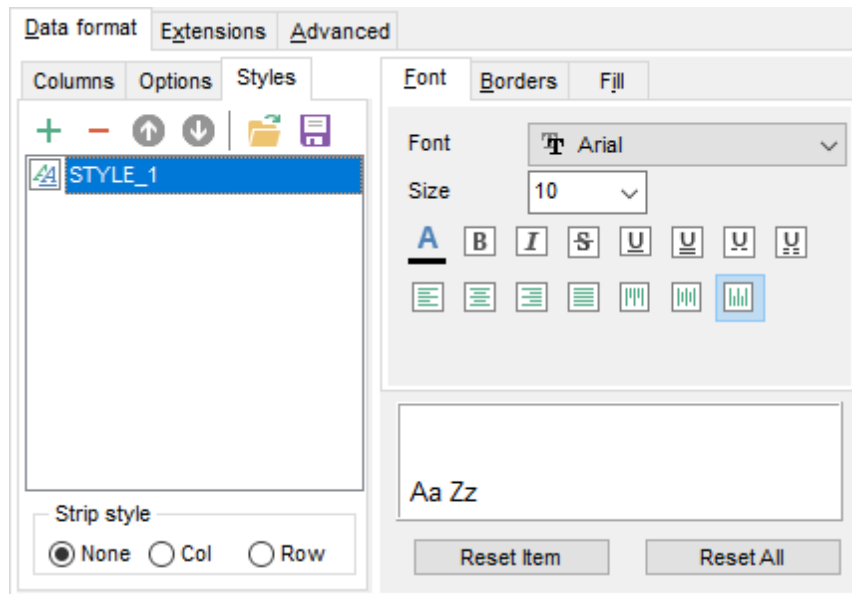
To delete a style template, select it and click the **Minus**  button.

To reorder style templates in the list, use the   buttons.

To load a style template, click the  button.

To save the current style template, click the  button.

If you have created or loaded more than one style template, they can be ignored, or used *column-by-column* or *row-by-row* (it depends on the **Strip type** selection).





The **font**, **borders** and **fill** options are specified in the same way as for output **Fields**. For details refer to the [Fields](#) <sup>452</sup> page.

You can reset the changes any time using the **Reset Item** and the **Reset All** buttons.



## 8.1.5.1.2 Extensions

The **Extensions** tab provides an ability to add [hyperlinks](#)<sup>[457]</sup> and [notes](#)<sup>[458]</sup> and to any cell of the target file, to specify a value of a cell, to create a [chart](#)<sup>[460]</sup> and to [merge cells](#)<sup>[464]</sup>.

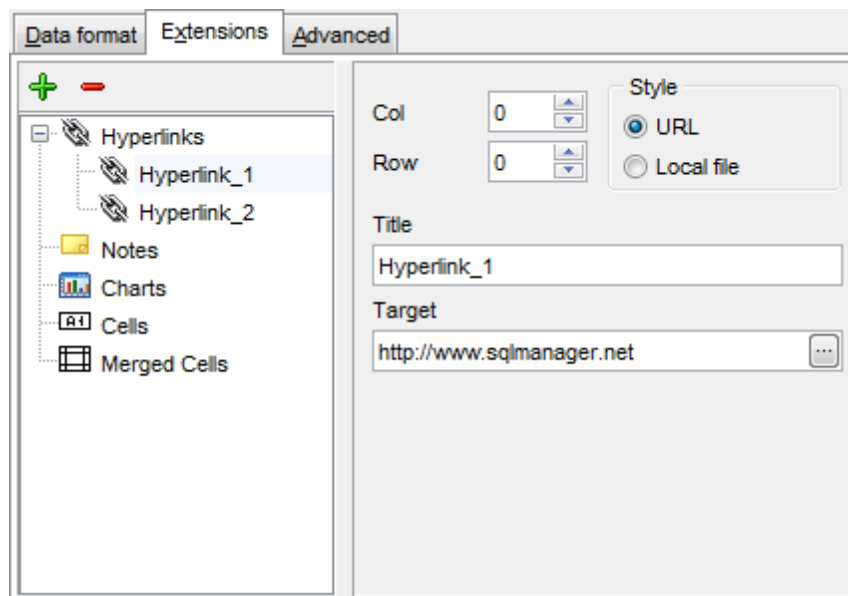
Click the **Plus**  button to add an element;  
click the **Minus**  button to delete an element.

- [Hyperlinks](#)<sup>[457]</sup>
- [Notes](#)<sup>[458]</sup>
- [Charts](#)<sup>[460]</sup>
- [Cells](#)<sup>[463]</sup>
- [Merged Cells](#)<sup>[464]</sup>

## 8.1.5.1.2.1 Hyperlinks

If you need to create a **hyperlink**:

- set the cell coordinates (*Col* and *Row*);
- specify whether this is a *local* link or *URL*;
- enter the *title* of the hyperlink;
- specify the *target* file location or address.




Use the **Col** and **Row** spinner controls to specify the column and row for the hyperlink in the output file.

The **Style** group allows you to select the preferable hyperlink style:

- URL*
- Local file* (i.e. the file is located on your local machine or on a machine in the LAN)

Use the **Title** box to specify the hyperlink name.

The **Target** box lets you enter the path to the target file or URL. Use the  button to

check whether the specified location is available.

#### 8.1.5.1.2.2 Notes

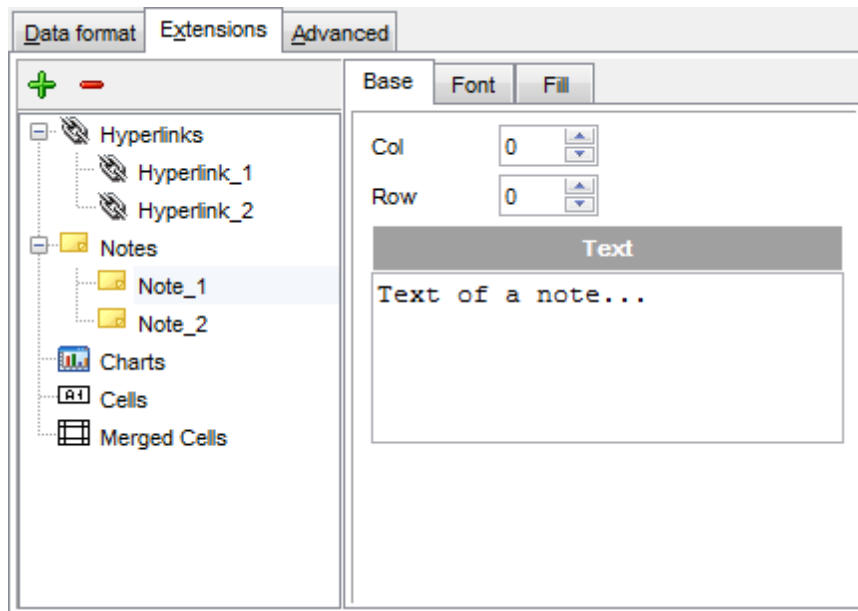
If you need to create a **note**:

- set the cell coordinates (*Col* and *Row*);
- enter *text* of a note for the cell;
- set the *font* and *fill* properties using the corresponding tabs.

The **Base** tab allows you to specify basic properties of the note to be added to the output Excel file.

Use the **Col** and **Row** spinner controls to specify the column and row for the note in the file.

Use the edit-box below to enter the text of the note.



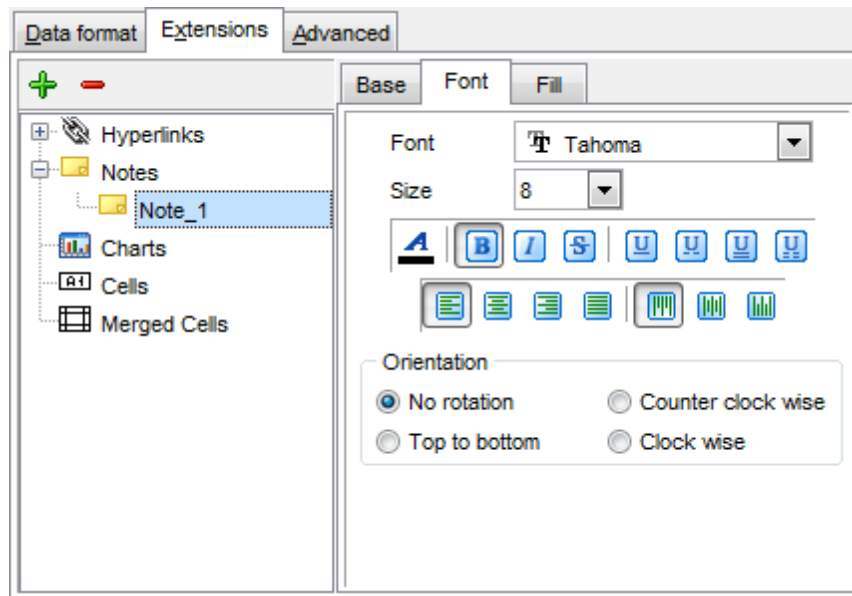
The **Font** tab allows you to specify properties of the font that will be used for the note.

Use the **Font** and **Size** drop-down lists to select the *font* and *size* to be applied to the output text.

Use the buttons below to set *font color*, make text *bold*, *italicized*, *strikethrough* text, set *underline* effects, specify text *horizontal* and *vertical align*.

The **Orientation** group allows you to select the note text orientation:


- No rotation*
- Top to bottom*
- Counterclockwise*
- Clockwise*




The **Fill** tab allows you to specify the fill type and transparency for the note.

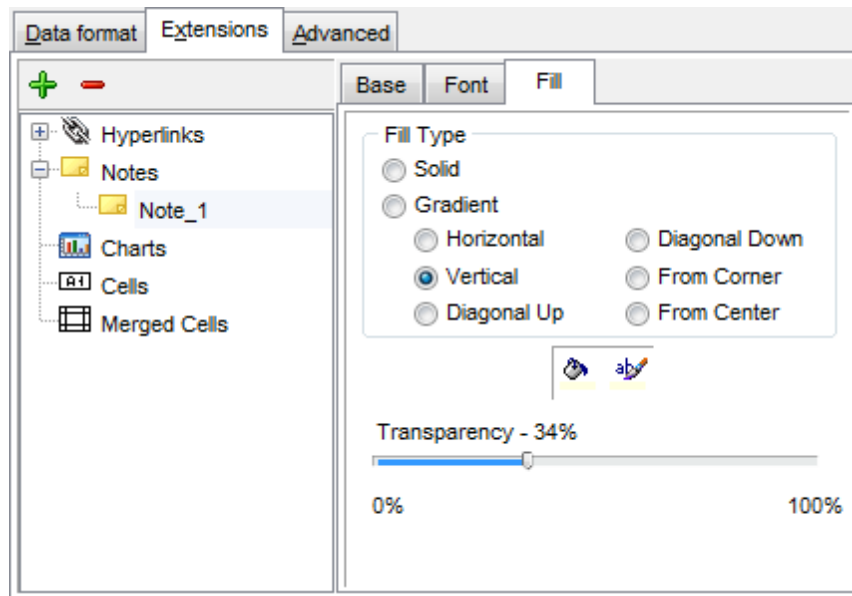
The **Fill Type** group allows you to select whether the fill color will be **solid** or **gradient**:

- Horizontal*
- Vertical*
- Diagonal up*
- Diagonal down*
- From corner*
- From center*

Press the  button to set the background color for the fill pattern.

Press the  button to set the foreground color for the fill pattern.

The **Transparency** control allows you to set the transparency degree for the note. Move the slider between the **0%** and **100%** threshold values to select the required transparency value within this scope.



#### 8.1.5.1.2.3 Charts

If you need to create a **chart**:

- enter the chart *title*;
- select the chart style;
- set the legend position;
- specify if you want to show the legend;
- specify if you want to set the chart color automatically;
- define the chart *position* and *category labels* using the corresponding tabs.

The **Base** tab allows you to specify basic properties of the chart to be added to the output Excel file.

Use the **Title** box to specify the chart name.

Use the **Style** drop-down list to select the preferable chart style (*Column*, *Column 3D*, *Bar*, *Bar 3D*, *Line*, *Line Mark*, *Line 3D*, etc.).

The **Legend position** group allows you to specify position of the chart legend:

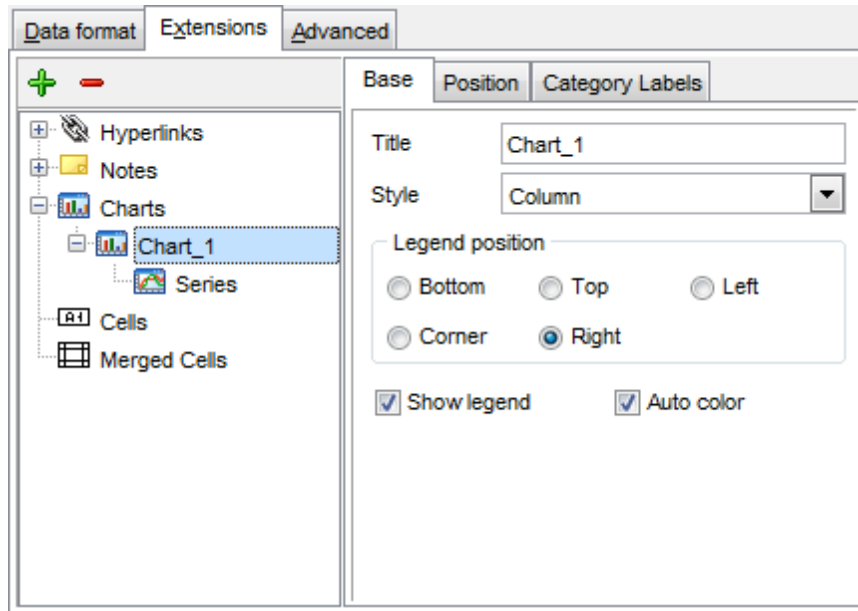
- Bottom*
- Top*
- Left*
- Corner*
- Right*

**Show legend**

This options specifies whether the chart legend will be visible or not.

**Auto color**

If this option is selected, each series will be automatically differentiated with different colors on the chart, otherwise one color will be applied for all series.



The **Position** tab allows you to specify properties pertaining to the chart position on the output file sheet.

*Auto*

Specifies automatic position of the chart.

The **Placement** group allows you to specify the chart position relative to the data:

*Bottom*

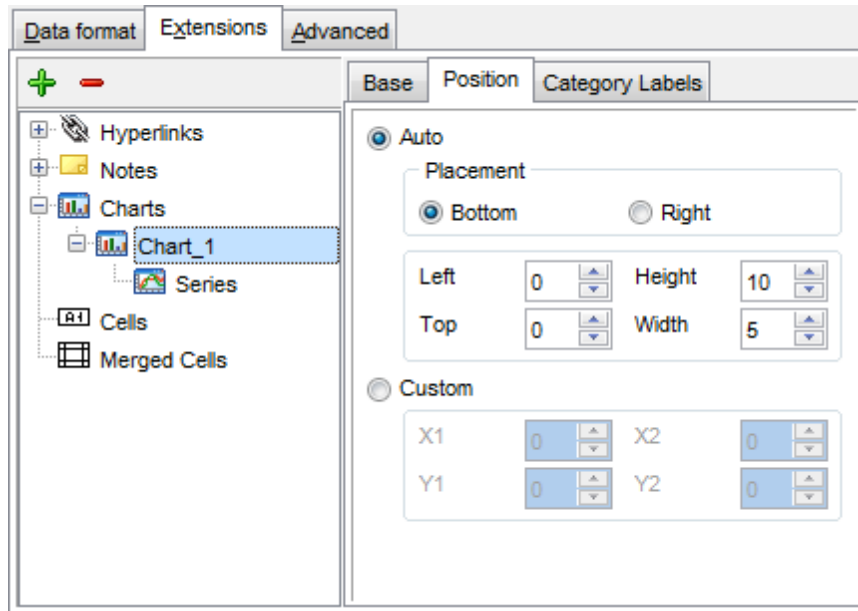
*Right*

Use the **Left** and **Top** spinner controls to specify the spacing between the chart and data at the left and at the top respectively.

Use the **Height** and **Width** spinner controls to specify the chart *height* and *width* respectively.

*Custom*

Specifies absolute position of the chart (irrelative to the data). Use the spinner controls to set the coordinates you need.



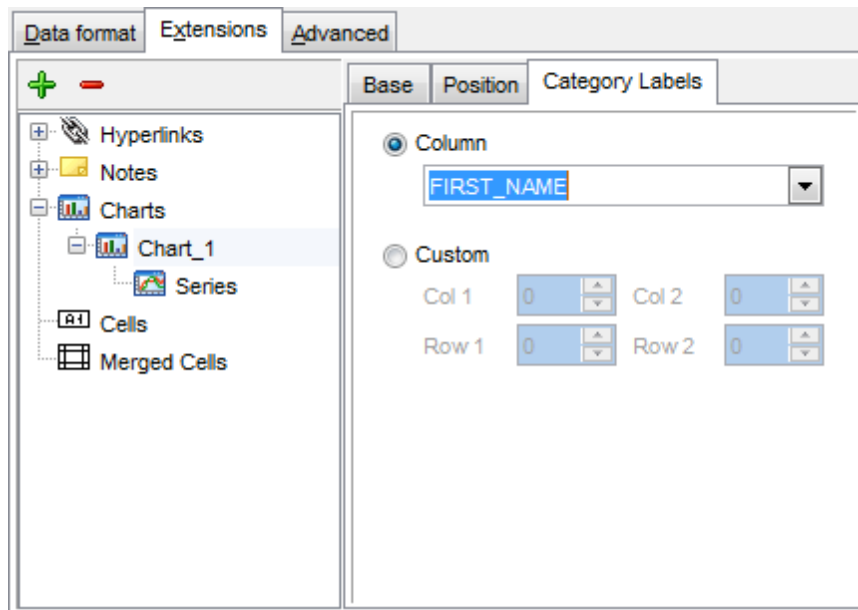
The **Category Labels** tab allows you to specify in which rows and columns the chart will be built.

*Column*

Use the drop-down list to select the column that will be used to take values for x-axis.


*Custom*

Specify the range of cells from which x-axis values will be taken. Use the spinner controls to set the range you need.



To build a chart, you also need to create **series** that will be used to take values for y-

axis. To add **series** for the chart:

- add one or more series using the  button;
- enter the *titles*;
- set data ranges (select a column from the drop-down list or set the custom range);
- define colors for all the graphs.

Use the **Title** box to specify the series name.


### Data range

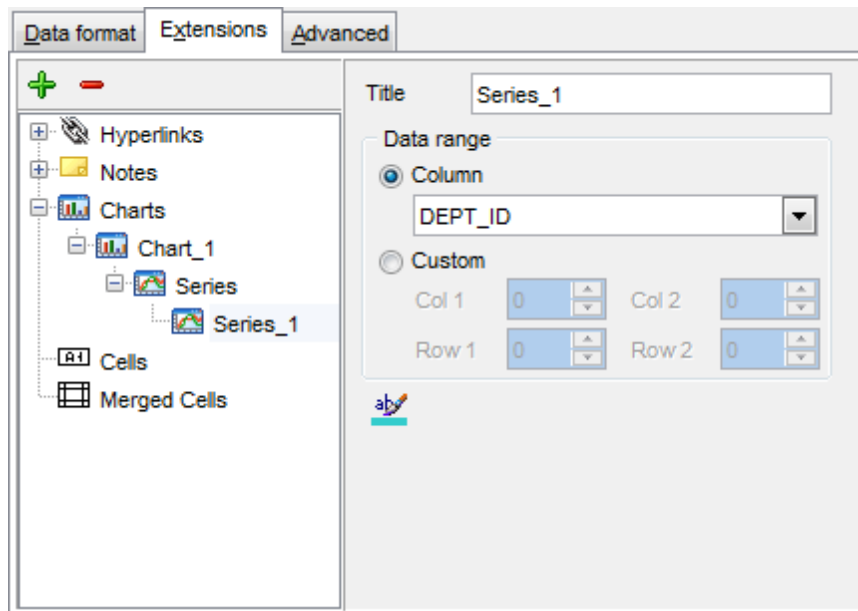
#### Column

Use the drop-down list to select the column that will be used to take values for the series.

#### Custom

Specify the range of cells from which the series will be formed. Use the spinner controls to set the range you need.

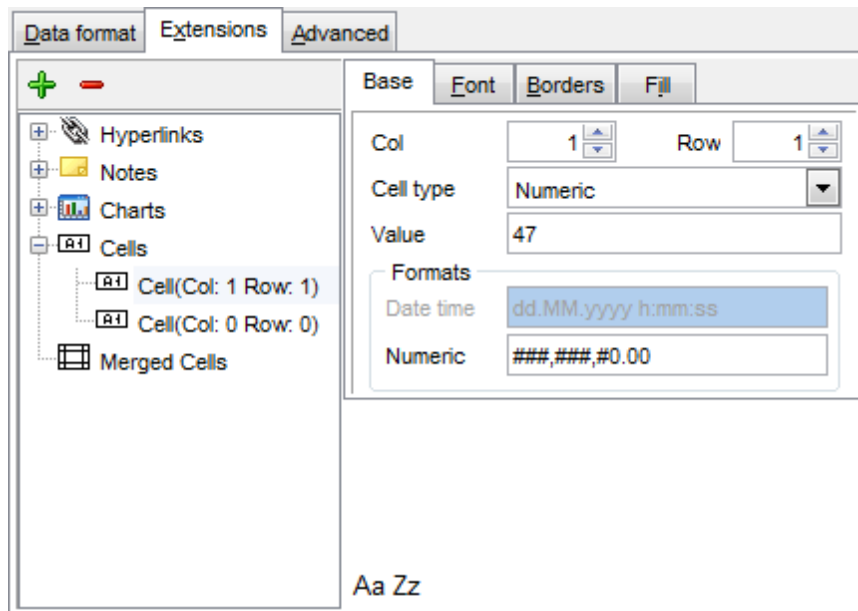
Press the  button to set the color for the series.



#### 8.1.5.1.2.4 Cells

If you need to add a value in a specific cell:

- set the cell coordinates (*Col* and *Row*);
- select the cell type;
- enter a *value*;
- if you are adding a numeric or a date/time value, you can set the cell *format*;
- set the *font*, *borders* and *fill* properties using the corresponding tabs.



The **Base** tab allows you to specify basic properties of the cell.

Use the **Col** and **Row** spinner controls to specify the column and row denoting the cell. Use the **Cell type** drop-down list to select the data type for the cell (*Boolean*, *DateTime*, *Numeric* or *String*). Set the required value in the **Value** edit box.

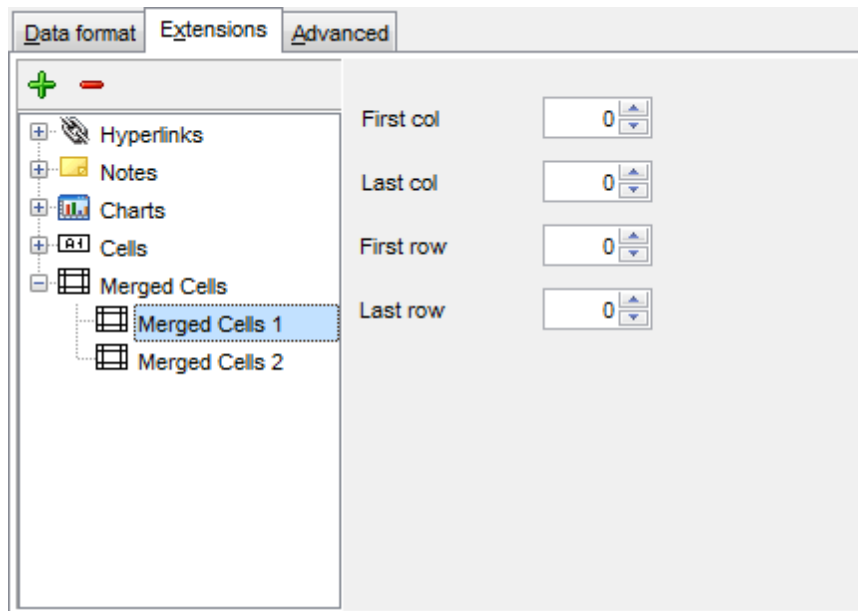
The **Formats** group allows you to specify data format for numeric or a date/time types.

The **font**, **borders** and **fill** options are specified in the same way as for output **Fields**. For details refer to the [Fields](#)<sup>[452]</sup> page.

#### 8.1.5.1.2.5 Merged Cells

If you want to merge two or more cells, set the range of cell coordinates: *First col*, *Last col*, *First row*, *Last row*. Use the spinner controls to set the range you need.





## 8.1.5.1.3 Advanced

The **Advanced** tab allows you to set a number of advanced options to be applied to the result MS Excel file.

**Page header**

If necessary, enter some text for the page header.

**Page footer**


If necessary, enter some text for the page footer.

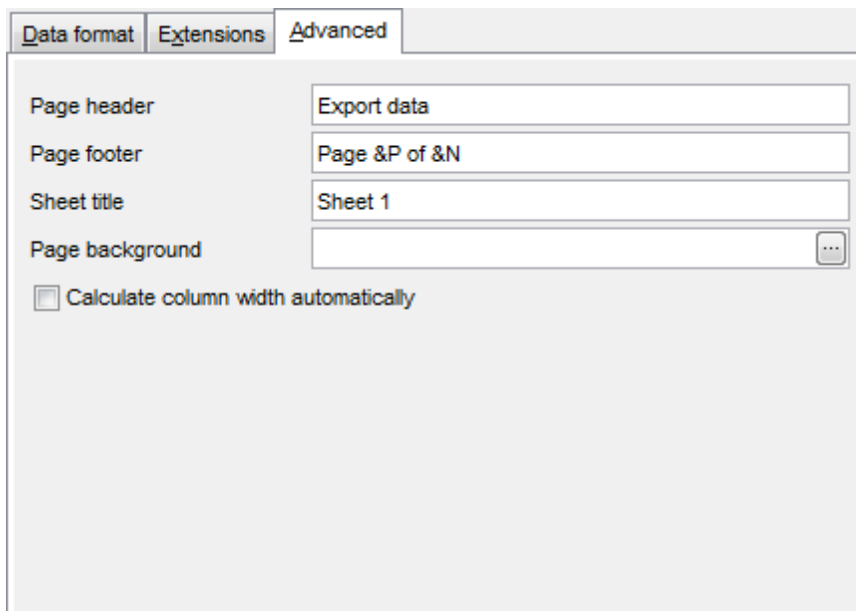
**Hint:** It is also possible to set macros in the **Page header** and **Page footer** fields:  
&N stands for the quantity of pages;  
&P - the number of the current page.


**Sheet title**

Specify the sheet title for the target file.

**Page background**

If necessary, use the **Ellipsis**  button to browse for a graphical file to be applied as the page background.



Option	Value
Page header	Export data
Page footer	Page &P of &N
Sheet title	Sheet 1
Page background	
Calculate column width automatically	<input checked="" type="checkbox"/>

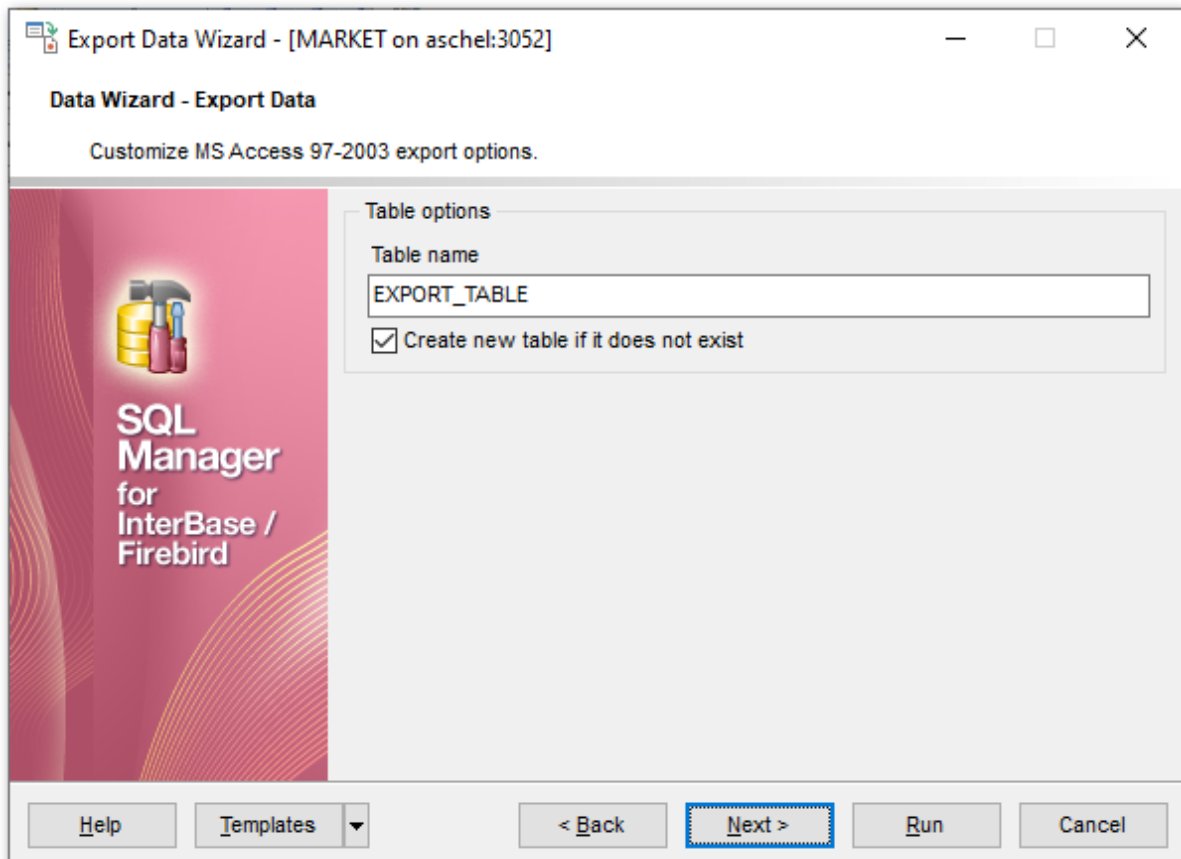
 **Calculate column width automatically**

This option allows the wizard to determine column width in the target file automatically according to column size.

### 8.1.5.2 Access 97-2003 options

This step allows you to set options for the target **MS Access** (\*.mdb) file.

Set the name for the target table and specify whether the wizard should **create a new table** in the MS Access database if it does not exist yet, or use the existing table to export data into.



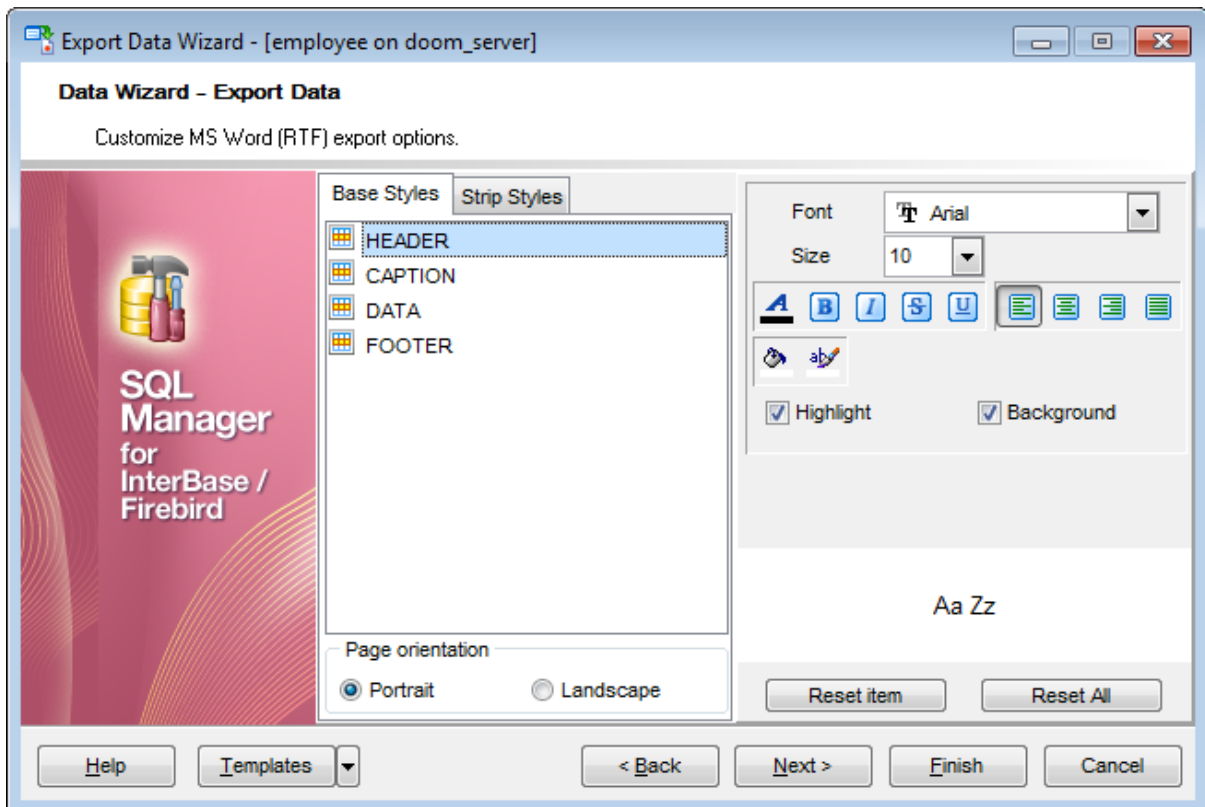
When you are done, click the **Next** button to proceed to [Setting common export options](#) [489].

### 8.1.5.3 Word 97-2003 / RTF options

This step allows you to set options for the target **MS Word 97-2003** (\*.doc) and **Rich Text Format** (\*.rtf) files.

- [Base Styles](#)<sup>469</sup>
- [Strip Styles](#)<sup>470</sup>

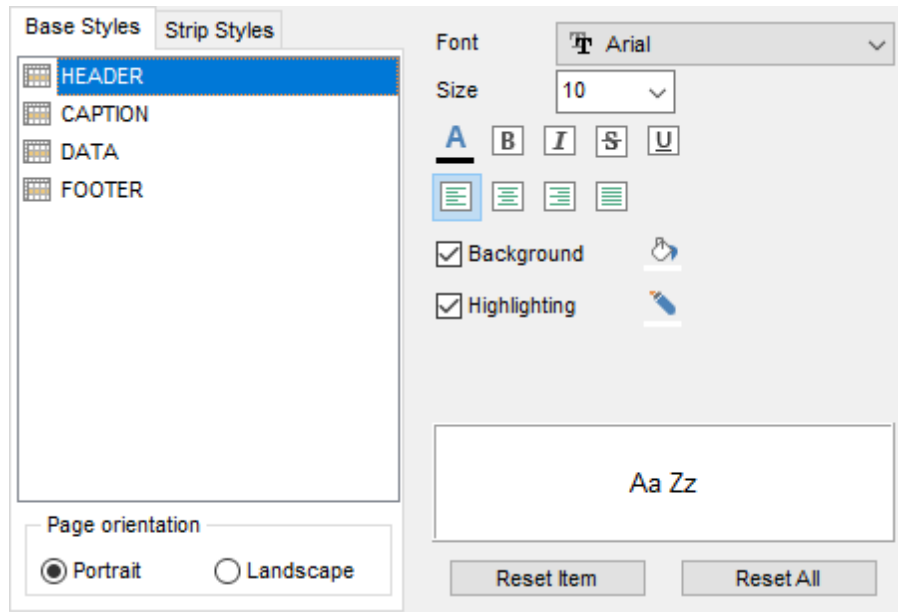
For your convenience the previews illustrating the changes are displayed in the **Sample Group** area within the *Base Styles* and the *Strip Styles* tabs.



When you are done, click the **Next** button to proceed to [Setting common export options](#)<sup>489</sup>.

## 8.1.5.3.1 Base Styles

The **Base Styles** tab contains the list of target file entities: *HEADER*, *CAPTION*, *DATA*, *FOOTER*. You can customize style options, such as *font* and *size*, *background* and *foreground colors*, *text alignment*, etc. for each of them by clicking the corresponding item in the list and setting the options in the right-side panel. You can also switch **page orientation** for the target Word/RTF file using this tab.



Use the **Font** and **Size** drop-down lists to select the *font* and *size* to be applied to the text.


Use the buttons below to set *font color*, make text *bold*, *italicized*, *underlined*, *strikethrough* text, specify *horizontal align*.


**Highlight**

Enables/disables text highlight.

**Background**

Enables/disables background for text.

Press the  button to set the background color for the text.

Press the  button to set the highlight color for the text.



You can reset the changes any time using the **Reset Item** and the **Reset All** buttons.

## 8.1.5.3.2 Strip Styles


Using the **Strip Styles** tab you can create a style template: set *font*, *size*, *background* and *foreground colors*, *text alignment*, *highlight* and save them.

To add a style template, click the **Plus +** button.

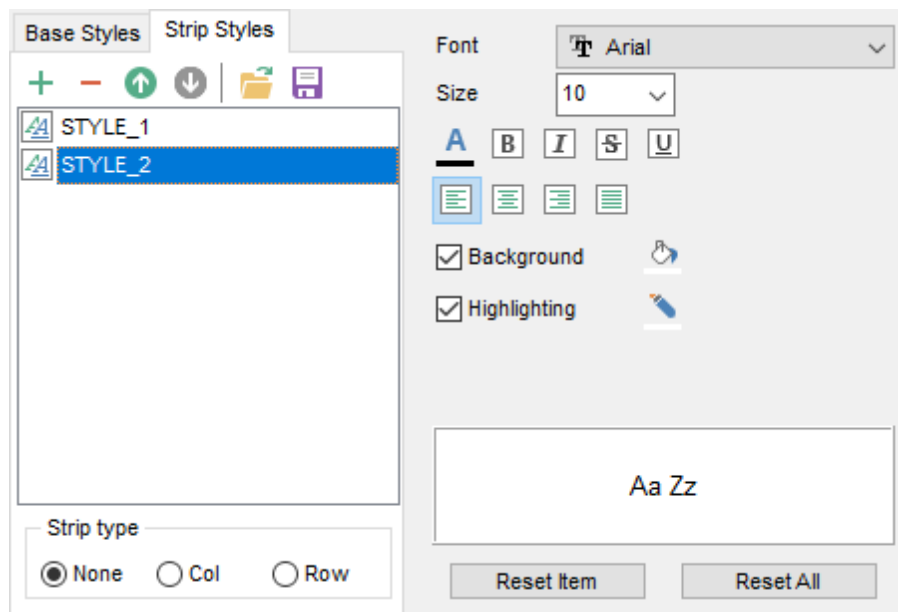
To delete a style template, select it and click the **- Minus** button.

To reorder style templates in the list, use the   buttons.

To load a style template, click the  button.

To save the current style template, click the  button.

If you have created or loaded more than one style template, they can be ignored, or used *column-by-column* or *row-by-row* (it depends on the **Strip type** selection).

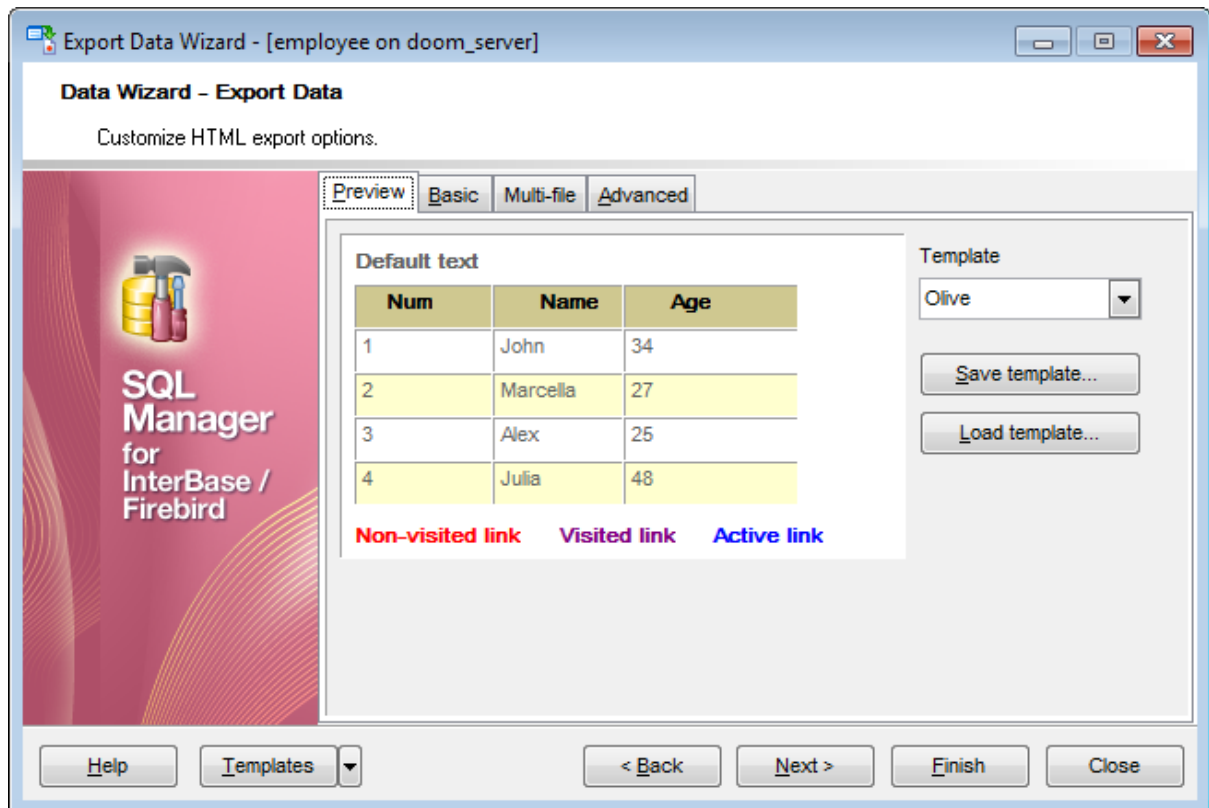


You can reset the changes any time using the **Reset Item** and the **Reset All** buttons.

#### 8.1.5.4 HTML options

This step allows you to set options for the target **HTML** (\*.htm) file.

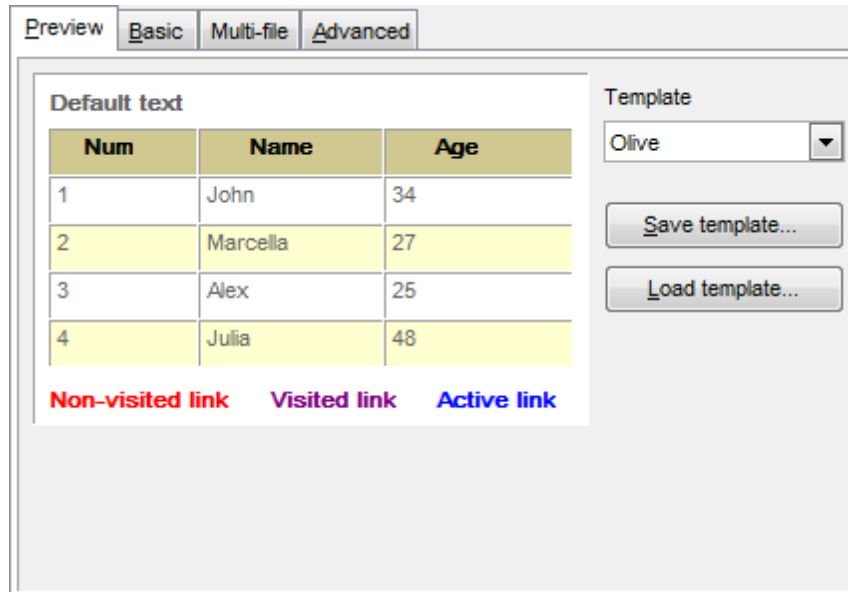
- [Preview](#)<sup>[472]</sup>
- [Basic](#)<sup>[473]</sup>
- [Multi-file](#)<sup>[474]</sup>
- [Advanced](#)<sup>[476]</sup>



When you are done, click the **Next** button to proceed to [Setting common export options](#)<sup>[489]</sup>.

## 8.1.5.4.1 Preview

The **Preview** tab allows you to customize the style that will be applied to the target HTML file using a number of built-in templates provided in the **Templates** drop-down list.




You can select any of the pre-defined templates and customize it by clicking objects in the preview panel, and save the settings as a custom template using the **Save template...** button. Use the **Load template...** button to load a previously saved custom template from your hard disk.

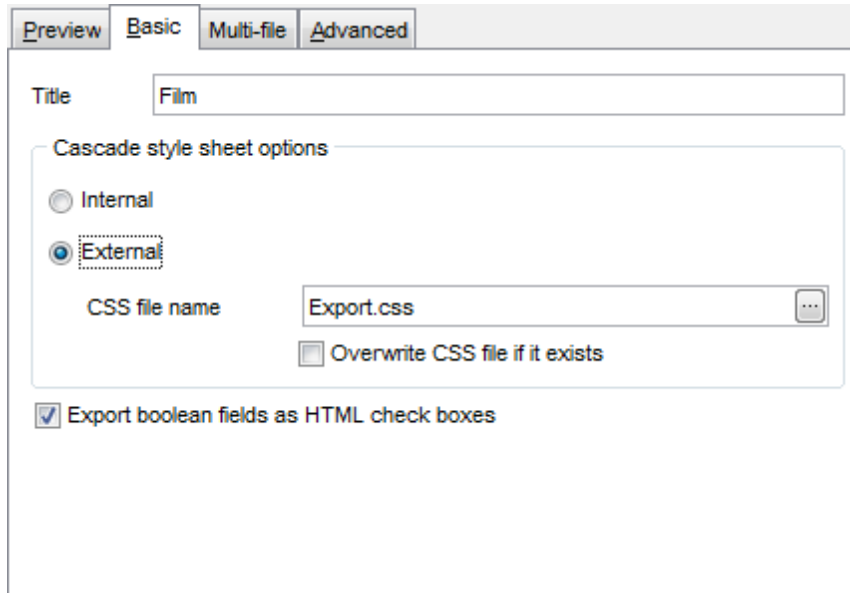
Click on an element of the table to select the color that will be applied for this element ( *background, font, header row, odd row, even row, non-visited link, visited link, active link* ).



## 8.1.5.4.2 Basic

The **Basic** tab allows you to specify the basic parameters of target HTML file:

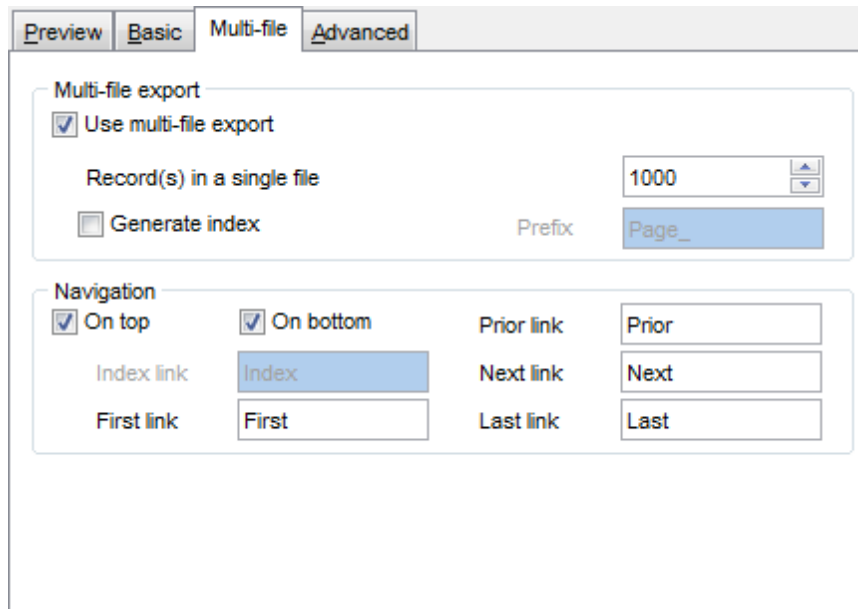
- specify the title of the result file;
- select whether the cascade style sheet (CSS) should be internal or external (the **Ellipsis**  button to browse for a \*.css file);
- determine whether boolean fields of the table should be exported as HTML check boxes.



The screenshot shows the 'Basic' tab of a configuration dialog. At the top, there are four tabs: 'Preview', 'Basic', 'Multi-file', and 'Advanced'. The 'Basic' tab is active. Below the tabs, there is a 'Title' field with the text 'Film'. Underneath, there is a section titled 'Cascade style sheet options' which contains two radio buttons: 'Internal' and 'External'. The 'External' radio button is selected. Below the radio buttons, there is a 'CSS file name' field with the text 'Export.css' and an ellipsis button to its right. Below the 'CSS file name' field, there is a checkbox labeled 'Overwrite CSS file if it exists' which is currently unchecked. At the bottom of the dialog, there is a checked checkbox labeled 'Export boolean fields as HTML check boxes'.

## 8.1.5.4.3 Multi-file

The **Multi-file** tab provides you with an ability to split the target HTML file into several separate files. This tab allows you to specify the *record count* for a single file, set an option *to generate an index HTML file*, and add an ability to navigate between the exported files.



The screenshot shows the 'Multi-file' tab of a dialog box. It is divided into two main sections: 'Multi-file export' and 'Navigation'. In the 'Multi-file export' section, the 'Use multi-file export' checkbox is checked. Below it is a spinner control for 'Record(s) in a single file' with the value 1000. There is also an unchecked checkbox for 'Generate index' and a text box for 'Prefix' containing 'Page\_'. The 'Navigation' section has two checked checkboxes: 'On top' and 'On bottom'. Below these are five text boxes for navigation links: 'Prior link' (Prior), 'Index link' (Index), 'Next link' (Next), 'First link' (First), and 'Last link' (Last).

### Multi-file export

**Use multi-file export**

Enables/disables the multi-file export feature.

**Record(s) in a single file**

Use the spinner control to specify the number of records to be exported into each of the files.

**Generate index**

Specifies that an index file containing links to all the data files will be generated. Use the edit-box next to the checkbox to set a name for the index file.

### Navigation

This group allows you to specify properties for navigation elements, i.e. the elements that provide quick access to pages of the multi-file document. Navigation is implemented as a set of hyperlinks.

**On top**

Specifies that the hyperlinks will be placed at the top of the page.

**On bottom**

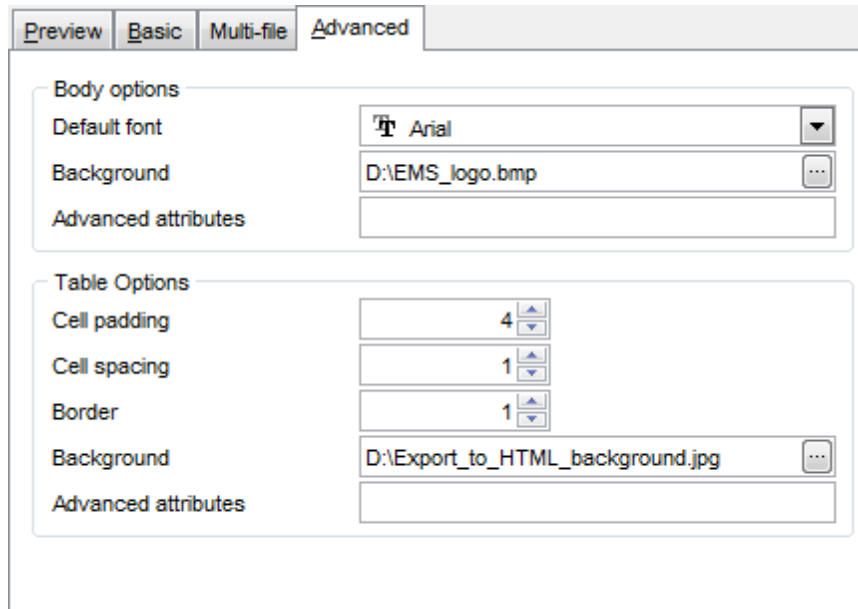
Specifies that the hyperlinks will be placed at the bottom of the page.

Use the **Index link**, **First link**, **Prior link**, **Next link** and **Last link** boxes to specify

captions for the corresponding navigation elements.

## 8.1.5.4.4 Advanced

The **Advanced** tab allows you to set a number of advanced options to be applied to the result HTML file.




### Body options

#### Default font

Use the drop-down list to select the font that will be used in the result file by default.


#### Background

If necessary, use the **Ellipsis**  button to browse for a graphical file to be applied as the page background.

### Table options

Use the spinner controls to specify common table options: **cell padding**, **cell spacing**, **border**.

#### Background

If necessary, use the **Ellipsis**  button to browse for a graphical file to be applied as the table background.

It is also possible to define **advanced attributes** for both the HTML body and table.

### 8.1.5.5 PDF options

This step allows you to set options for the target **PDF** (\*.pdf) file.

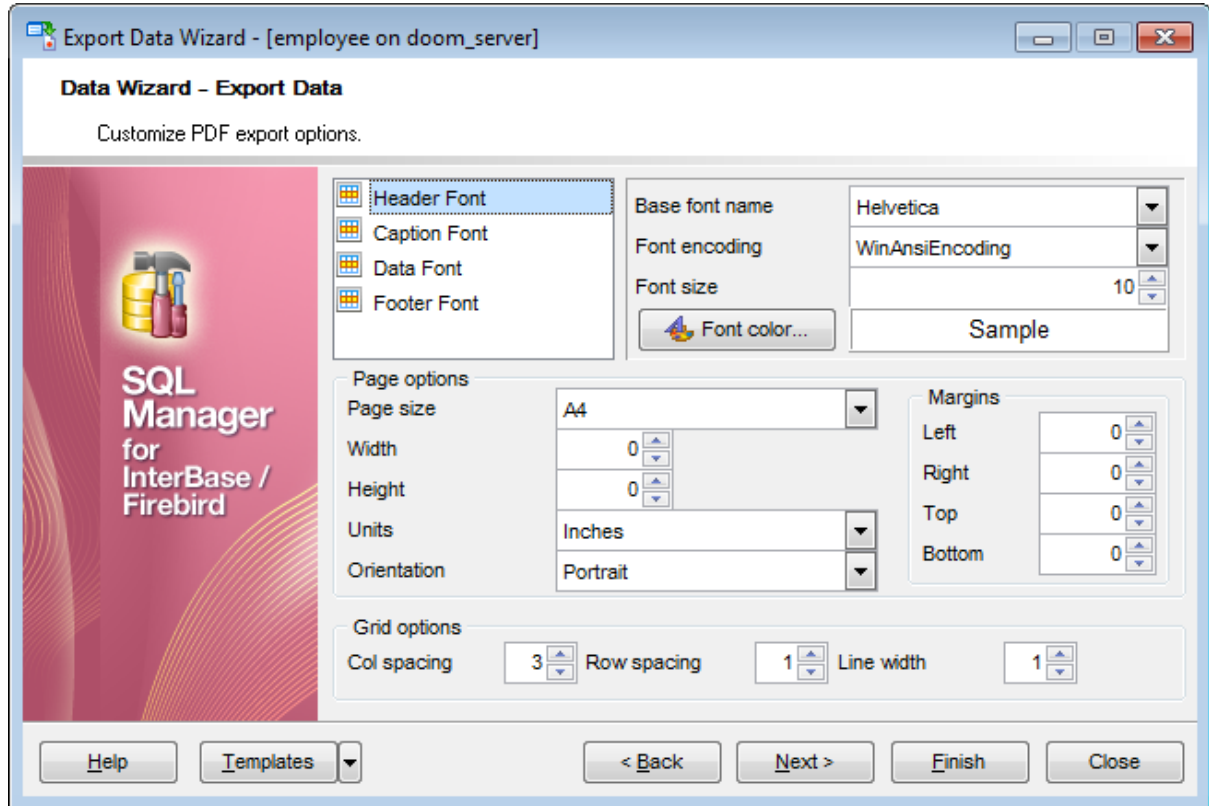
#### Fonts

This group of options allows you to customize fonts for the *header, caption, data, footer* of the result file.

Use the **Base font name** and **Font encoding** drop-down lists to select the preferable font (*Helvetica, Courier, Times Roman, etc.*) and encoding (*Standard, WinANSI, MacRoman, PDFDoc*) respectively, and the **Font size** spinner control to specify the font size.

Click the **Font color...** button to select the color to be applied to the font.

For your convenience the preview illustrating the changes is displayed in the **Sample** area.



#### Page options

Use the **Page size** drop-down list to select one of the standard page formats (*Letter, Legal, A3, A4, etc.*).

Use the **Width** and **Height** spinner controls to specify the page *width* and *height* respectively.

Use the **Units** drop-down list to select the unit of measure that will be used in report settings: *inches, millimeters, or dots*.

Use the **Orientation** drop-down list to select the preferable page orientation: *portrait* or *landscape*.

**Margins**

Use the **Left**, **Right**, **Top**, **Bottom** spinner controls to specify the corresponding page margins for the output PDF file.

**Grid options**

Use the **Col spacing**, **Row spacing**, **Line width** spinner controls to specify spacing for grid columns, rows, and grid line width respectively.

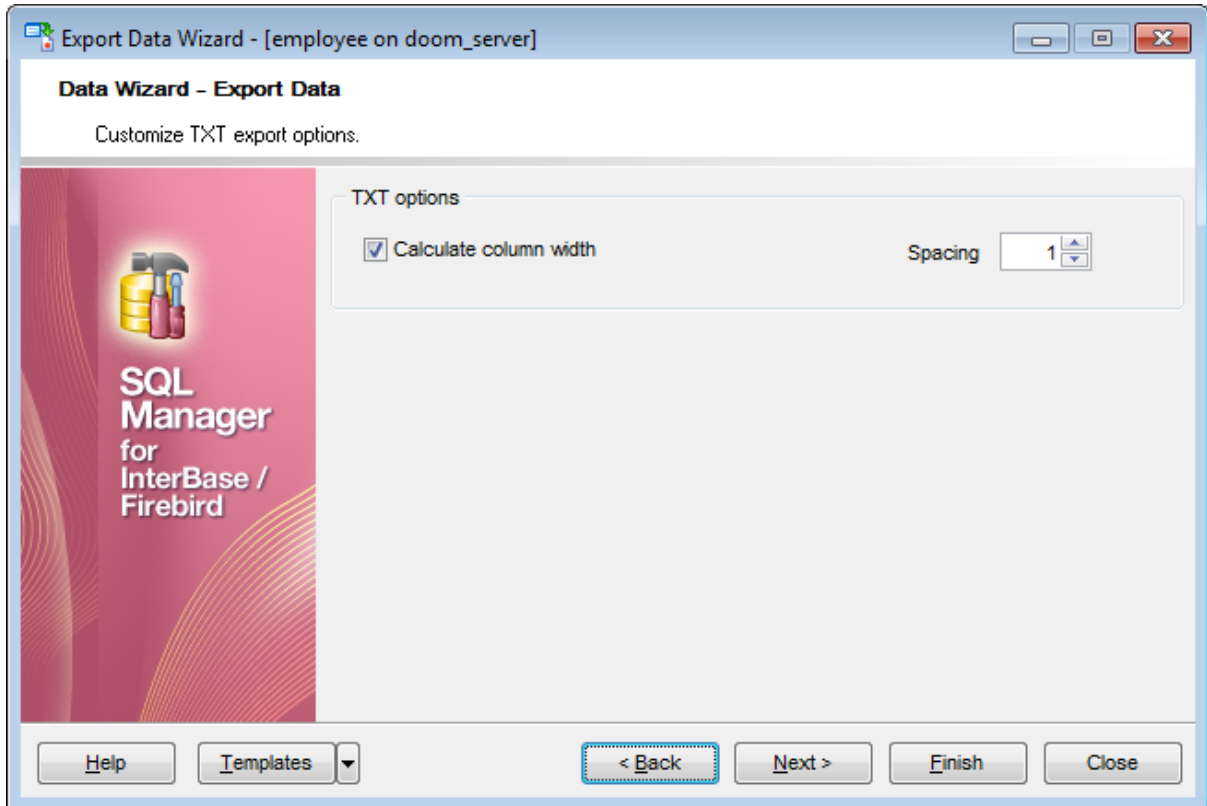
When you are done, click the **Next** button to proceed to [Setting common export options](#)

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### 8.1.5.6 TXT options

This step allows you to set options for the target **text** (\*.txt) file.

Set the **Calculate column width** option on if you want each column of the target file to be adjusted to the maximum number of characters in it. The **Spacing** option specifies the number of spaces between columns in the target file.



When you are done, click the **Next** button to proceed to [Setting common export options](#)

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### 8.1.5.7 CSV options

This step allows you to set options for the target **CSV** (\*.csv) file.

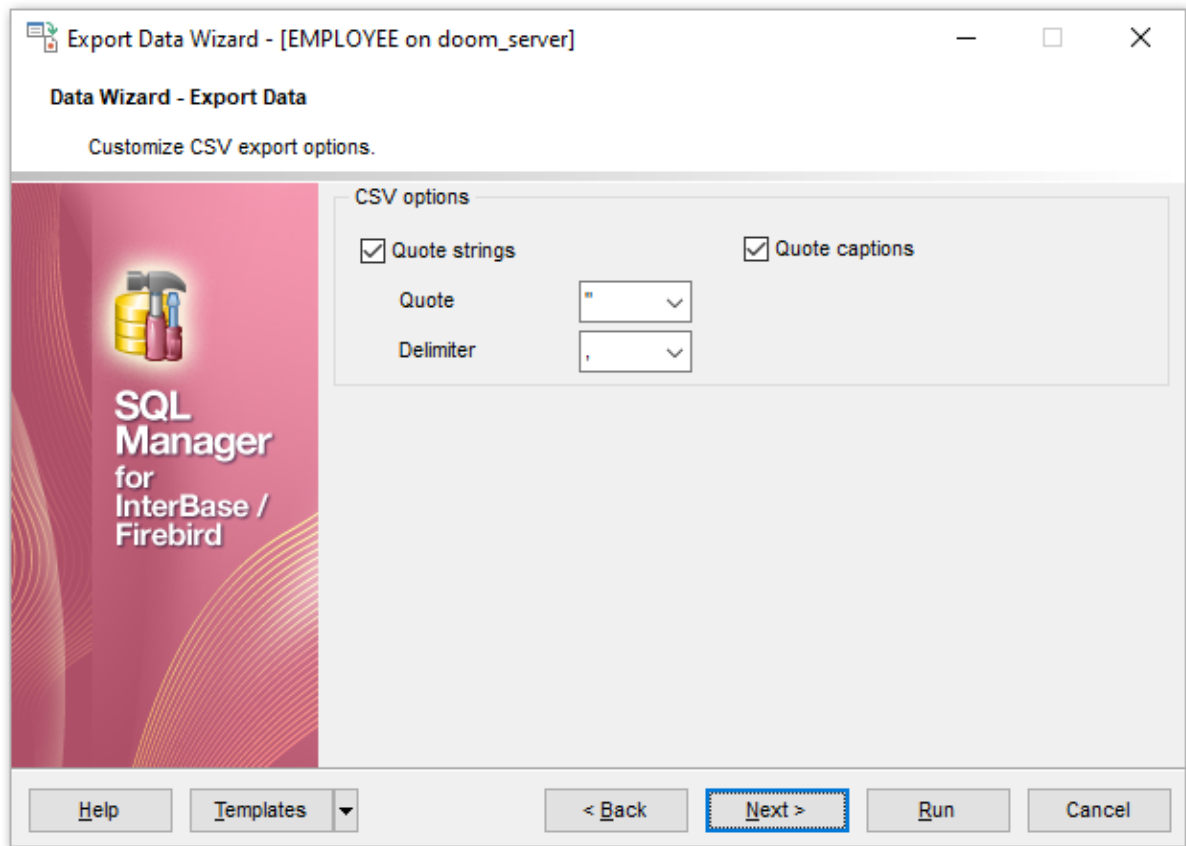
**Quote strings**

Check this option to apply quoting for string values in the target file.

**Quote captions**

Check this option to apply quoting for captions in the target file.

Specify the column separator using the **Comma** drop-down list and the preferable quote character using the **Quote** drop-down list.



When you are done, click the **Next** button to proceed to [Setting common export options](#) [489].



### 8.1.5.8 XML options

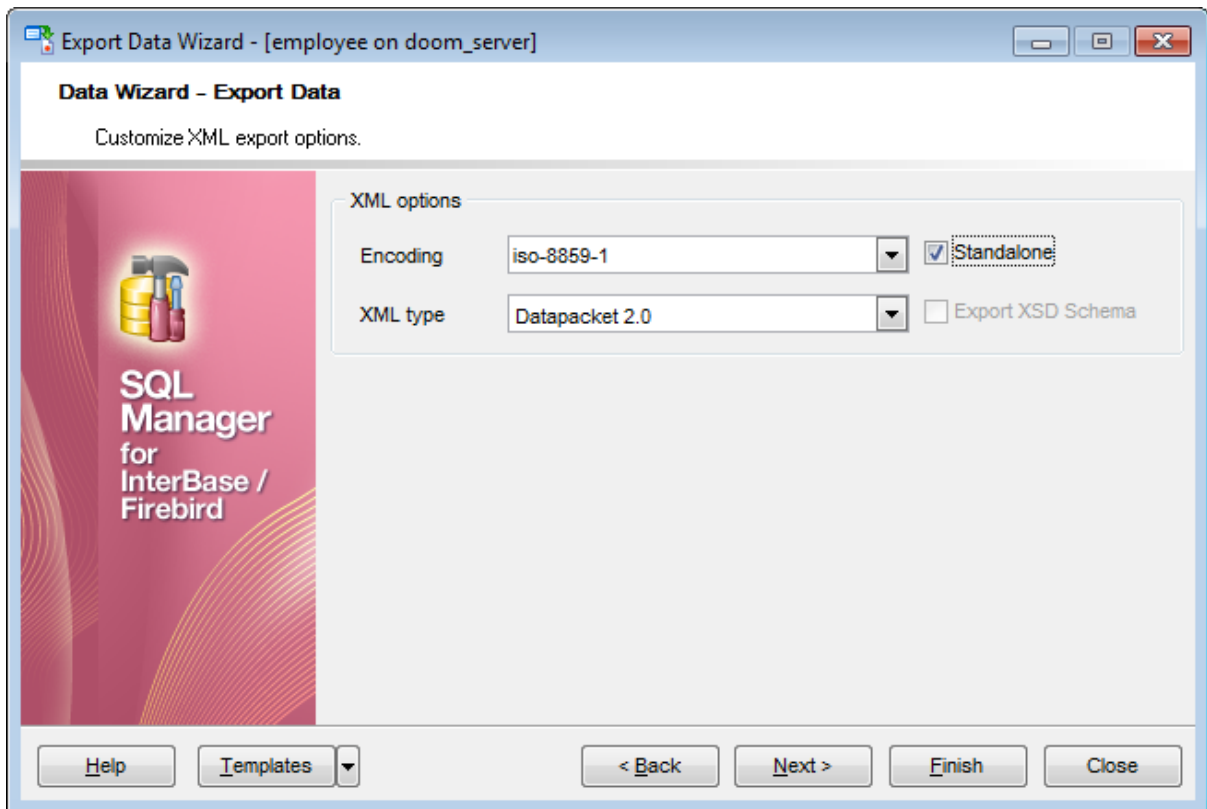
This step allows you to set options for the target **XML** (\*.xml) file.

Specify XML document encoding in the **Encoding** edit box and set the **Standalone** option on if you intend to create a standalone XML document (*standalone="yes"*).

#### XML type

Select the type of the result XML document: *Datapacket 2.0* or *Access*.

Conversion between generic XML documents and documents of the *XML-Datapacket* (CDS) format can be performed with the help of XML Mapper by Borland®.



When you are done, click the **Next** button to proceed to [Setting common export options](#)

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### 8.1.5.9 MS Excel / ODS options

This step allows you to set options for the target **MS Excel** (\*.xlsx) or **ODF Spreadsheets** (\*.ods) file.

Using the **Base Styles** tab you can set *font* and *border* options for all **elements** of the Excel 2007 / ODS sheet (*HEADER, CAPTION, DATA, FOOTER*). You can customize style options, such as *font* and *size*, *background* and *foreground colors*, *text alignment*, etc. for each of them by clicking the corresponding item in the list and setting the options in the right-side panel.


If necessary, you can also specify the **sheet name** for the target Excel 2007 / ODS file.

Use the **Font** and **Size** drop-down lists to select the *font* and *size* to be applied to the text.

Use the buttons below to set *font color*, make text *bold*, *italicized*, *underlined*, specify *horizontal* and *vertical align*.

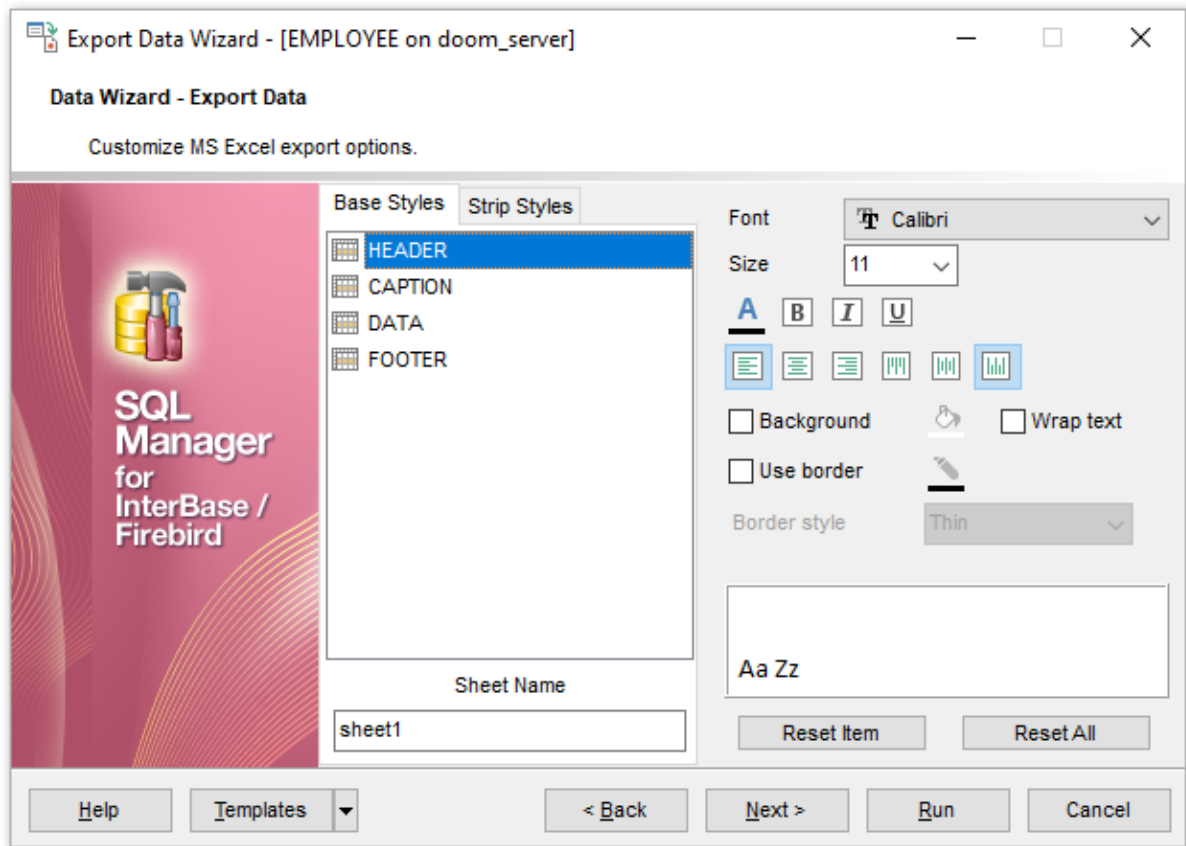
**Background**

Enables/disables background for text.


Press the  button to set the background color for the text.


The **Wrap Text** button enables/disables the text wrapping feature.



For your convenience the previews illustrating the changes are displayed in the **Sample Group** area within the *Base Styles* and the *Strip Styles* tabs.




Using the **Strip Styles** tab you can create a style template: set *font*, *size*, *background color*, *text alignment*, *wrap text* options and save them.

To add a style template, click the **Plus**  button.

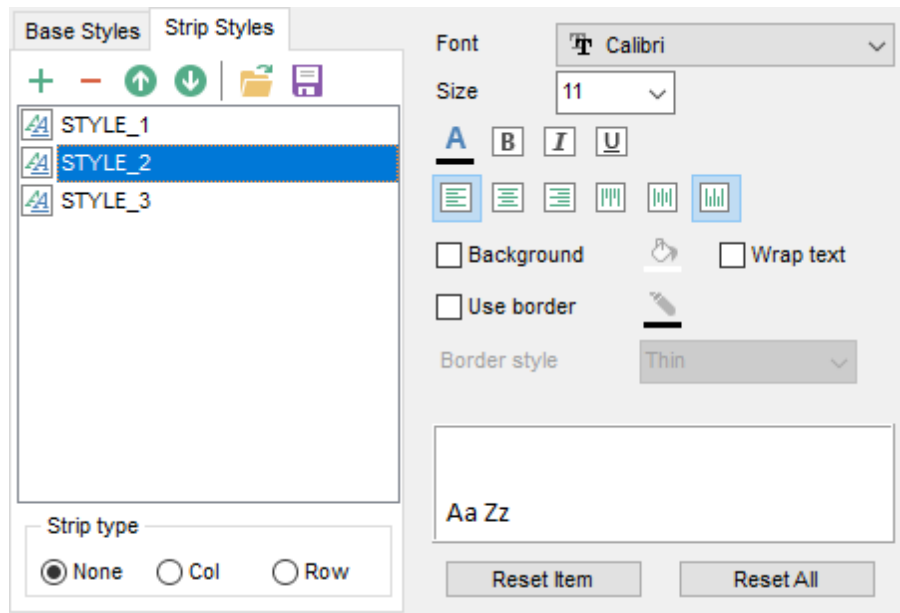
To delete a style template, select it and click the **Minus**  button.

To reorder style templates in the list, use the   buttons.

To load a style template, click the  button.

To save the current style template, click the  button.


If you have created or loaded more than one style template, they can be ignored, or used *column-by-column* or *row-by-row* (it depends on the **Strip type** selection).



You can reset the changes any time using the **Reset Item** and the **Reset All** buttons.

**Use border**

Enables/disables borders in the output file.

Press the  button to set the color to be applied to the borders.

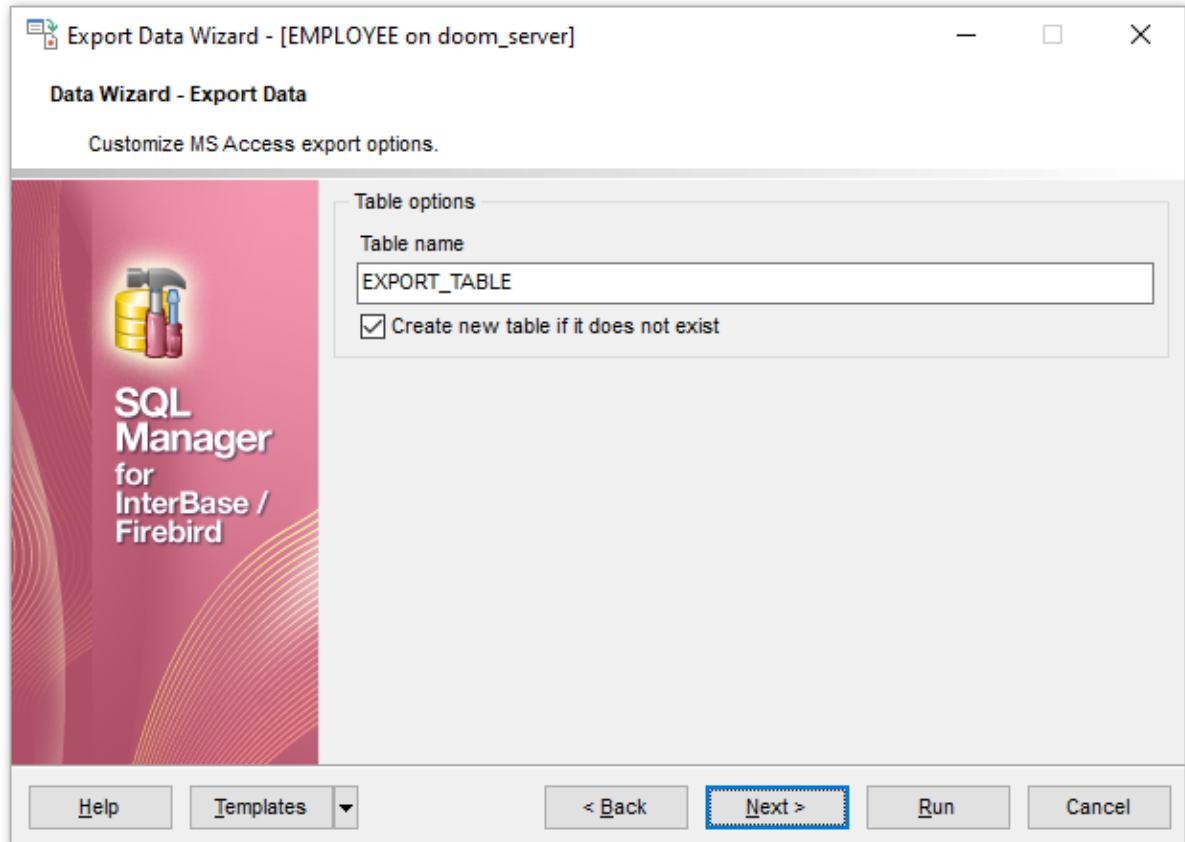
Use the **Border Style** drop-down list to select the preferable style that will be used for borders (*thin, dashed, dashdot, dotted, etc.*).

When you are done, click the **Next** button to proceed to [Setting common export options](#) [489].

### 8.1.5.10 Access options

This step allows you to set options for the target **MS Access** (\*.accdb) file.

Set the name for the target table and specify whether the wizard should **create a new table** in the MS Access database if it does not exist yet, or use the existing table to export data into.



When you are done, click the **Next** button to proceed to [Setting common export options](#) [489].

#### 8.1.5.11 MS Word / ODT options

This step allows you to set options for the target **MS Word** (\*.docx) or **ODF text** (\*.odt) file.


Using the **Base Styles** tab you can set *font* options for all **elements** of the Word 2007 / ODT document (*HEADER, CAPTION, DATA, FOOTER*). You can customize style options, such as *font and size, background and foreground colors, text alignment, text highlight*, etc. for each of them by clicking the corresponding item in the list and setting the options in the right-side panel.

Use the **Font** and **Size** drop-down lists to select the *font* and *size* to be applied to the text.

Use the buttons below to set *font color, make text bold, italicized, underlined, strikethrough* text, specify *horizontal align*.

##### **Background**

Enables/disables background for text.

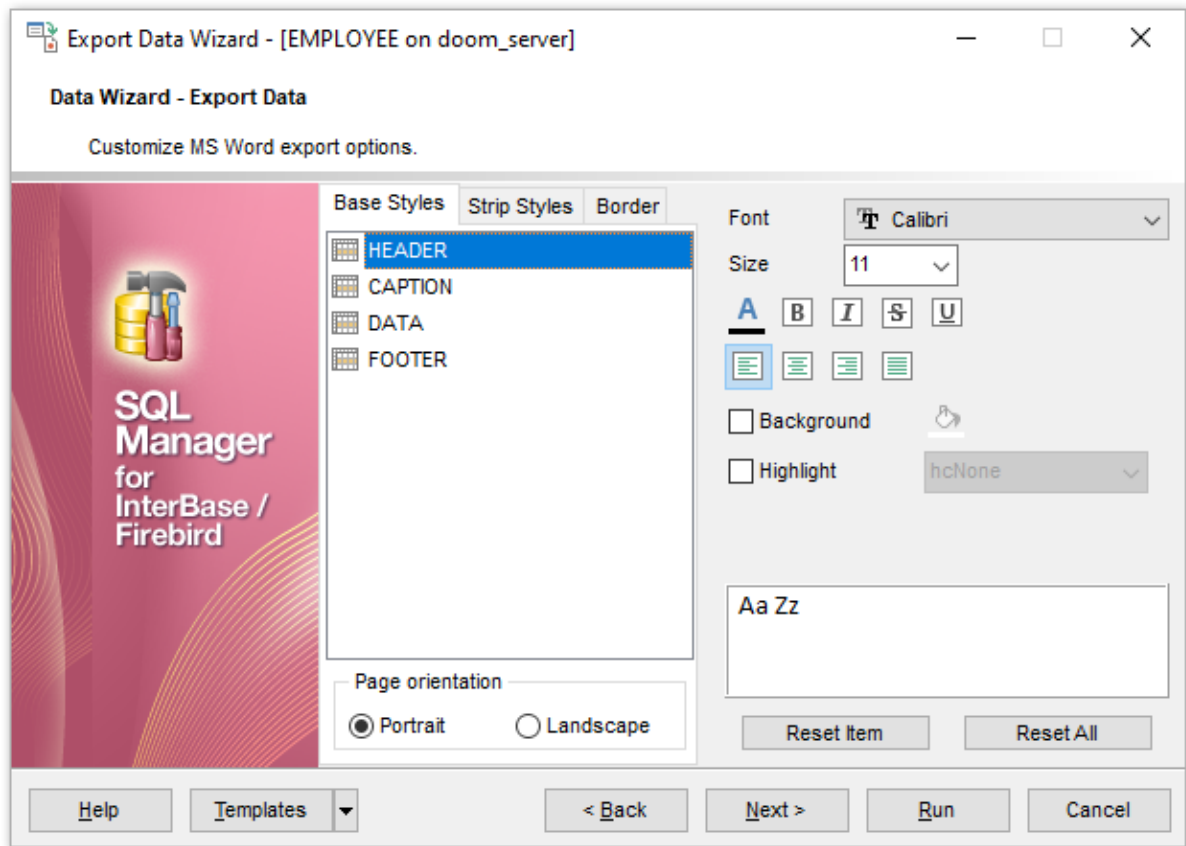
Press the  button to set the background color for the text.

##### **Highlight**


Enables/disables text highlight.


If this option is enabled, you should select the preferable highlight color from the drop-down list.



For your convenience the previews illustrating the changes are displayed in the **Sample Group** area within the *Base Styles* and the *Strip Styles* tabs.



Using the **Strip Styles** tab you can create a style template: set *font*, *size*, *background color*, *text alignment*, *highlight* options and save them.

To add a style template, click the **Plus**  button.

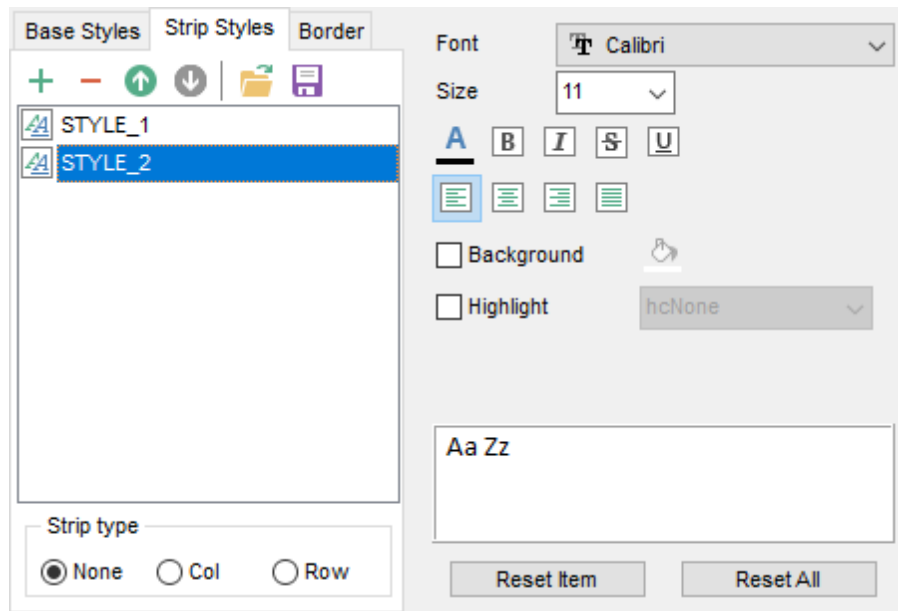
To delete a style template, select it and click the **Minus**  button.

To reorder style templates in the list, use the   buttons.

To load a style template, click the  button.

To save the current style template, click the  button.

If you have created or loaded more than one style template, they can be ignored, or used *column-by-column* or *row-by-row* (it depends on the **Strip type** selection).




You can reset the changes any time using the **Reset Item** and the **Reset All** buttons.

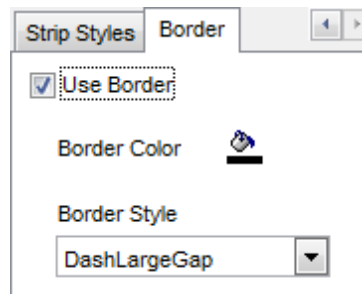
Using the **Border** tab you can enable borders in the result Word 2007 / ODT document and customize them.

**Use border**

Enables/disables borders in the output file.

Press the  button to set the color to be applied to the borders.

Use the **Border Style** drop-down list to select the preferable style that will be used for borders (*single, thick, double, hairline, etc.*).

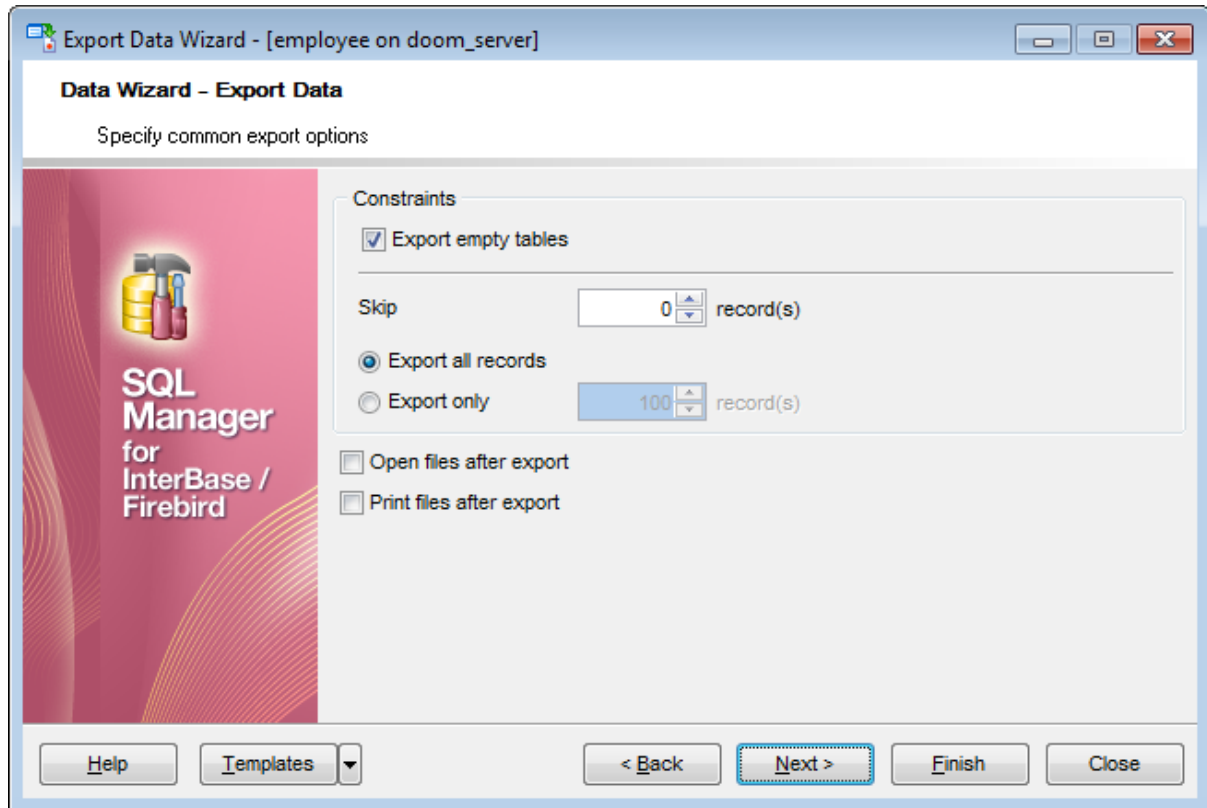


When you are done, click the **Next** button to proceed to [Setting common export options](#)  
489.



## 8.1.6 Setting common export options

Use this step of the wizard to set common export options. The detailed description of these options is given below.



**Export empty tables**

If checked, you can export the table even if it does not contain any data.

**Skip ... record(s)**

Specifies the number of records to be skipped before export starts.

**Export all records**

Specifies that all records of the table will be exported.

**Export only ... record(s)**

Specifies the number of records to be exported.

**Open files after export**

If this option is checked, the result file will be opened with the currently associated program after the export operation is completed.

**Print files after export**

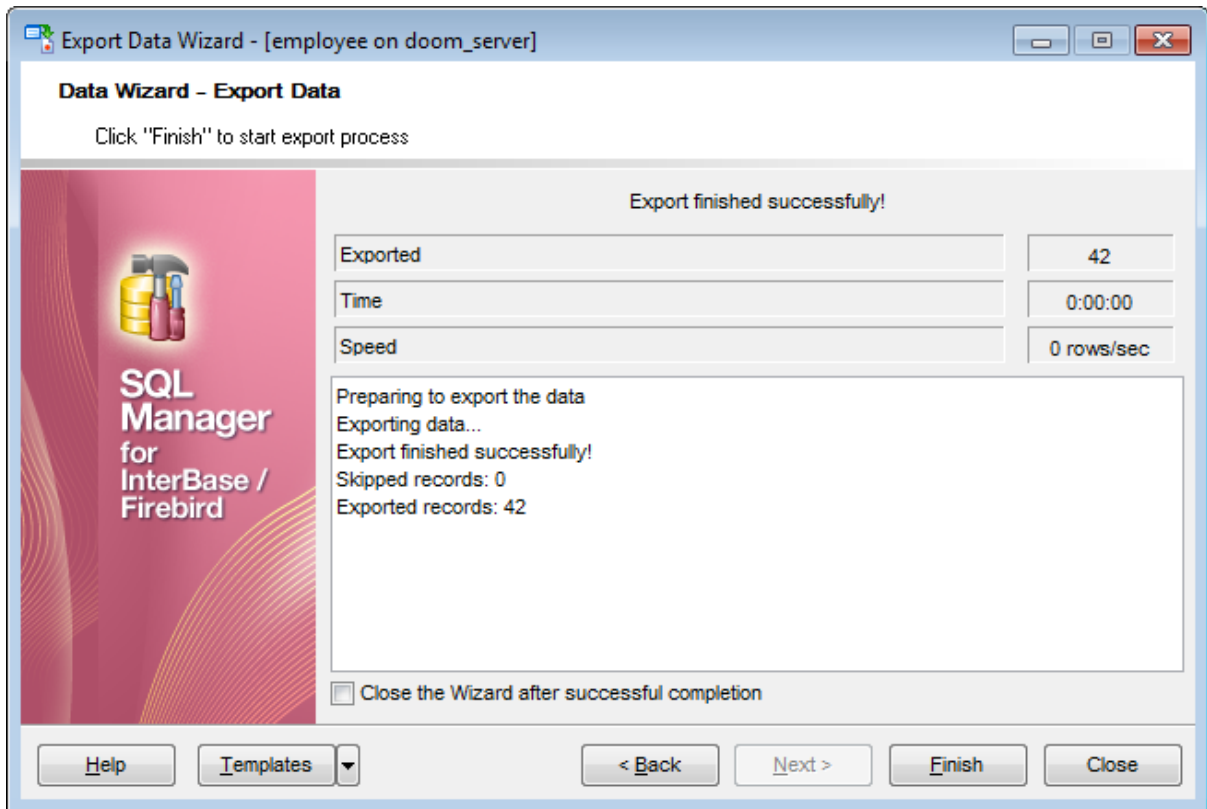
If this option is checked, the result file will be sent to the default printer after the export operation is completed.

When you are done, click the **Next** button to proceed to the [last step](#)<sup>[490]</sup> of the wizard.

### 8.1.7 Exporting data

This step of the wizard is intended to inform you that all export options have been set, and you can start the export process.

The log area allows you to view the log of operations and errors (if any).



**Close the Wizard after successful completion**

If this option is selected, the wizard is closed automatically when the export process is completed.

If necessary, you can save a [template](#)<sup>[910]</sup> for future use.

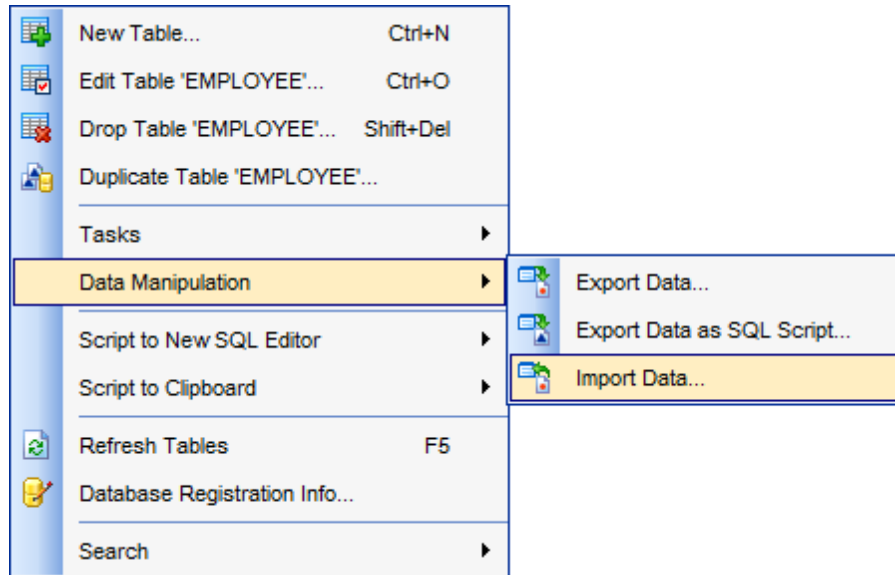
Click the **Finish** button to run the export process.

After the operation is completed, you can view the number of *exported* records, elapsed *time*, estimated export *speed*, and the *log* of operations and errors (if any).

## 8.2 Import Data Wizard

**Import Data Wizard** allows you to import data to a [table](#)<sup>[178]</sup> / [view](#)<sup>[242]</sup> from any of supported formats (*MS Excel, MS Access, DBF, XML, TXT, CSV, HTML, MS Excel 2007, MS Word 2007, ODF*). You can save your settings as a [template](#)<sup>[910]</sup> any time for future use.

To start the wizard, right-click the table/view in [DB Explorer](#)<sup>[63]</sup>, select the **Data Manipulation** [context menu](#)<sup>[56]</sup> group and proceed to the **Import Data...** item within this group.



Alternatively, you can open the **Data** tab of [Table Editor](#)<sup>[184]</sup> / [View Editor](#)<sup>[242]</sup>, right-click the [grid](#)<sup>[373]</sup> there, then select the **Data Manipulation** [context menu](#)<sup>[382]</sup> group and proceed to the **Import Data to <object\_name>...** item within this group, or use the **Import Data** item of the [Navigation bar](#)<sup>[882]</sup>.

- [Setting source file name and format](#)<sup>[493]</sup>
- [Selecting the source to import data from](#)<sup>[494]</sup>
- [Setting correspondence between the source and target fields](#)<sup>[495]</sup>
- [Adjusting common data formats](#)<sup>[509]</sup>
- [Setting advanced field formats](#)<sup>[510]</sup>
- [Setting import mode and data write type](#)<sup>[512]</sup>
- [Customizing common import options](#)<sup>[514]</sup>
- [Importing data](#)<sup>[516]</sup>

Availability:

**Full** version (for Windows) **Yes**

**Lite** version (for Windows) **No**


**Note:** To compare all features of the **Full** and the **Lite** versions of **SQL Manager**, refer to the [Feature Matrix](#)<sup>[20]</sup> page.

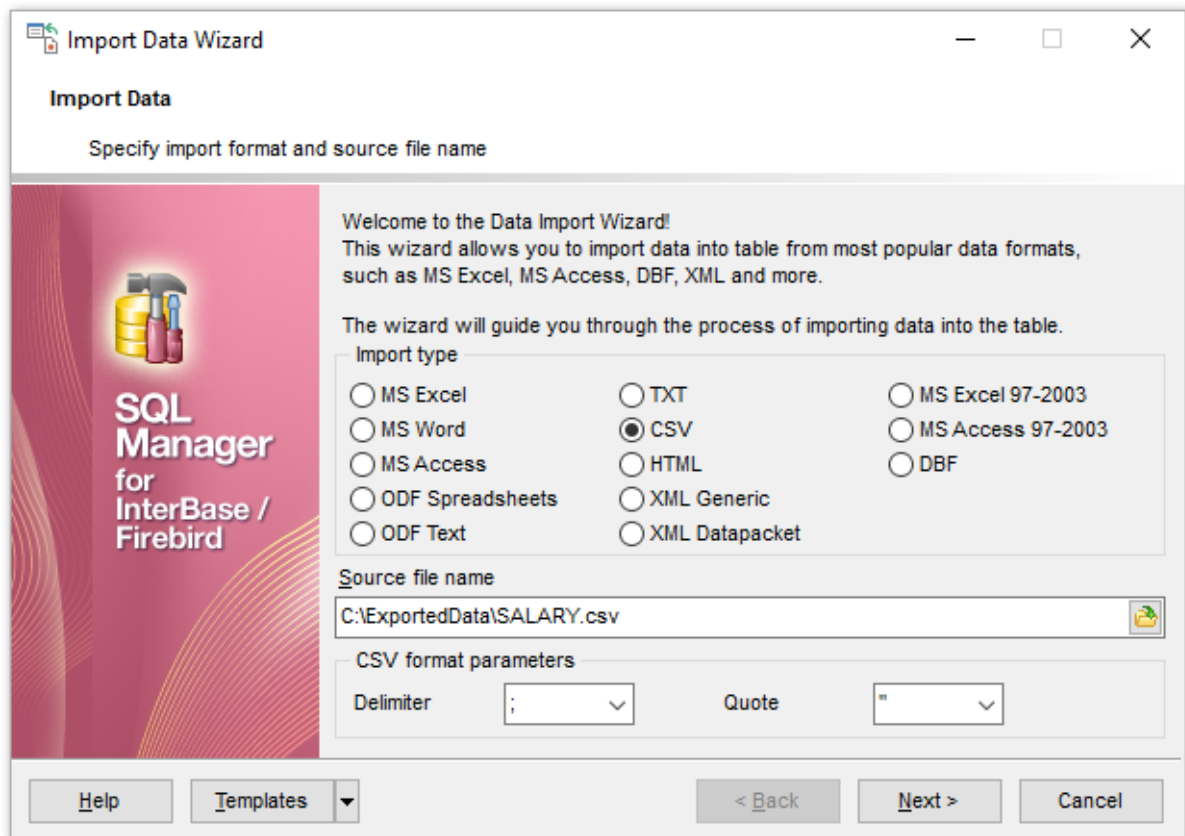
**See also:**[Export Data Wizard](#)<sup>[444]</sup>[Export as SQL Script](#)<sup>[517]</sup>[Using templates](#)<sup>[910]</sup>

## 8.2.1 Selecting source file name and format

This step of the wizard allows you to select the source file format you need to import data from.

### Source file name

Type in or use the  button to specify the path to the file using the **Open file...** dialog. The file name extension changes automatically according to the selected **Import Type**.



### Import Type

Specify the format of the source file. For details refer to [Supported file formats](#)<sup>[91]</sup>.

### CSV format parameters

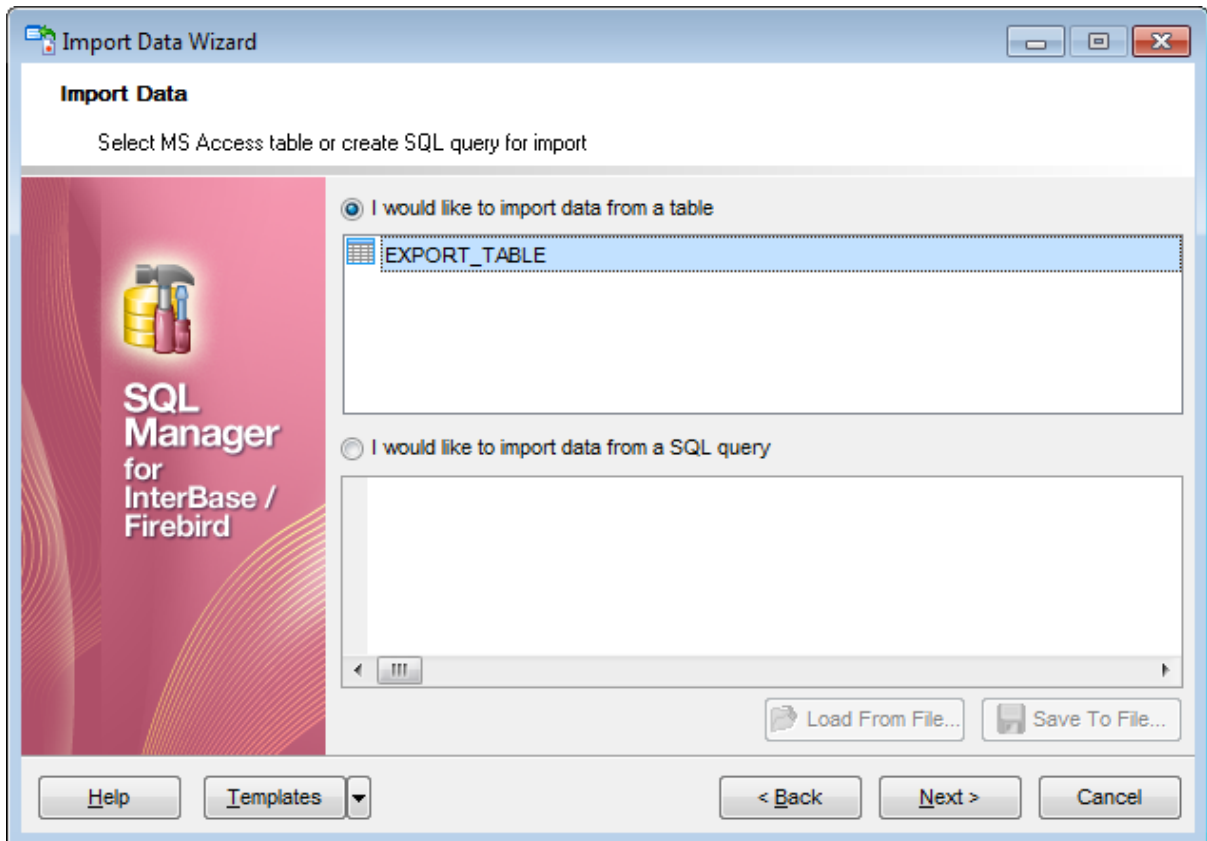
For [CSV](#)<sup>[50]</sup> import you should define **Delimiter** and **Quote** settings using the corresponding drop-down lists.

Click the **Next** button to proceed to the [Setting fields correspondence](#)<sup>[495]</sup> step or to the [Selecting data source](#)<sup>[494]</sup> step of the wizard if you have selected **MS Access** as the source file format.

## 8.2.2 Selecting data source

This step of the wizard is only available when you are importing data from *MS Access*. Select a **table** from the table list or input a **query** in the corresponding text boxes to specify the data source.

If you choose a query as the data source, you also can load a SQL query from a *\*.sql* file or save the current query text to a file using the **Load from File...** and the **Save to File...** buttons correspondingly.



Click the **Next** button to proceed to the [Setting fields correspondence](#)<sup>495</sup> step of the wizard.

### 8.2.3 Setting fields correspondence

This step of the wizard allows you **to set correspondence** between columns of the source file and fields of the target InterBase/Firebird table.

- [MS Excel 97-2003](#)<sup>[496]</sup>
- [MS Access / DBF / XML Datapacket](#)<sup>[499]</sup>
- [TXT](#)<sup>[500]</sup>
- [CSV](#)<sup>[501]</sup>
- [HTML](#)<sup>[503]</sup>
- [XML Generic](#)<sup>[505]</sup>
- [MS Excel / Word, ODF](#)<sup>[507]</sup>

To get more information about the file formats, see the [Supported file formats](#)<sup>[917]</sup> page.

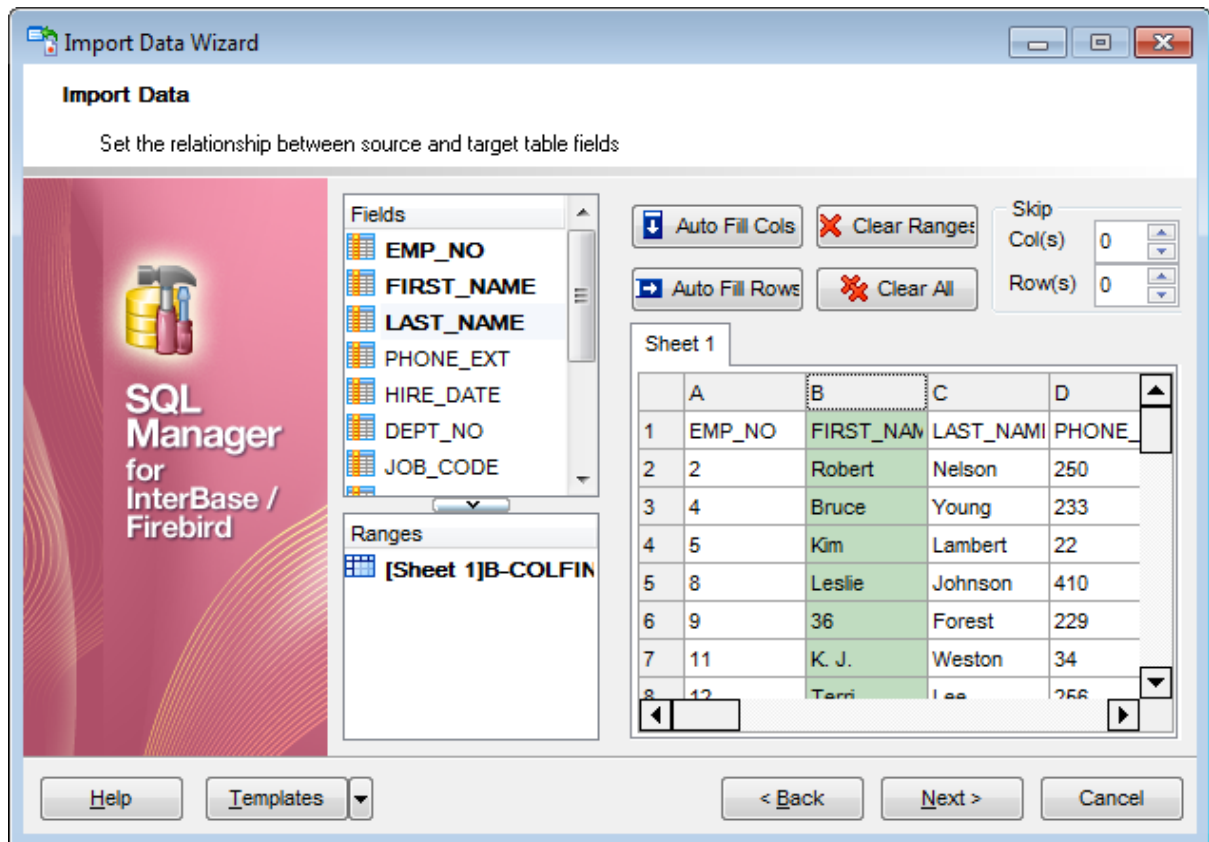
### 8.2.3.1 Excel 97-2003


Specify ranges in the grid for the target and source fields:


- select a field of the target InterBase/Firebird table in the **Fields** list;
- proceed to the **Sheet** grid: click a column caption to select the whole column or click the row number to select the whole row;
- the selected column/row of the source file gets green highlight, and a new range indicating the source and target fields correspondence appears in the **Ranges** list;
- repeat the operation for all the fields you need to be included in the import process.

If the source Excel file and the destination InterBase/Firebird table have the same order of columns or rows, you can use the  **Auto Fill Cols** or the  **Auto Fill Rows** buttons to set correspondence between them automatically.

If necessary, you can choose to **skip** a defined number of the source file columns and/or rows using the **Col(s)** and **Row(s)** spinner controls of the **Skip** group (e.g. if you need to exclude column headers from the imported data range).

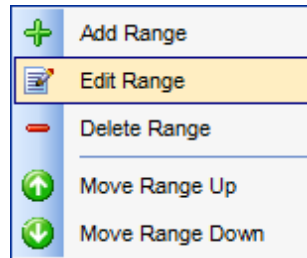


To clear ranges for a field, select the field in the **Fields** list and press the  **Clear Ranges** button.

To clear all ranges specified for the target table fields, press the  **Clear All** button.

Right-click a range in the **Ranges** list to call its popup menu. Using the popup menu you can *add* or *edit* ranges manually, *remove* them or change their *order*.





The **Range** dialog allows you to edit the data range for import manually.

#### **Range Type**

Use the drop-down list to select whether a *column*, a *row*, or a *cell* of the source Excel file will be mapped to the target table field.

Depending on the selected range type you should specify the column (e.g. *B*), the row (e.g. *2*) or the cell (e.g. *A2*).

#### **Start / Finish**

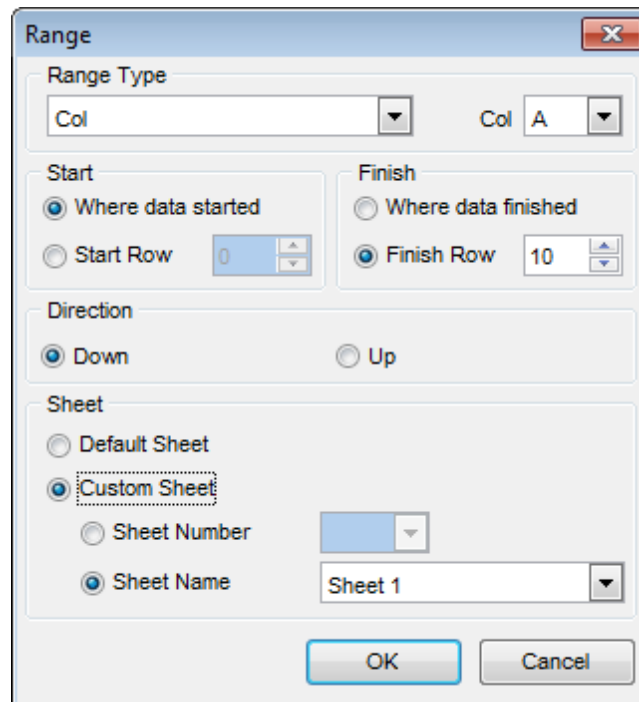
These groups allow you to set the precise data range for import: select **Where data started / finished** or use the spinner control to specify the **start/finish row** (or **start/finish column**).

#### **Direction**

Use this group to select the direction for importing data of the specified range: *Down* or *Up*.

#### **Sheet**

Use this group to define whether the specified range will be taken from the **default** Excel sheet or from a **custom** sheet (select **sheet number** or **sheet name** using the corresponding drop-down lists).



Click the **Next** button to proceed to the [Adjusting data formats](#) step of the wizard.

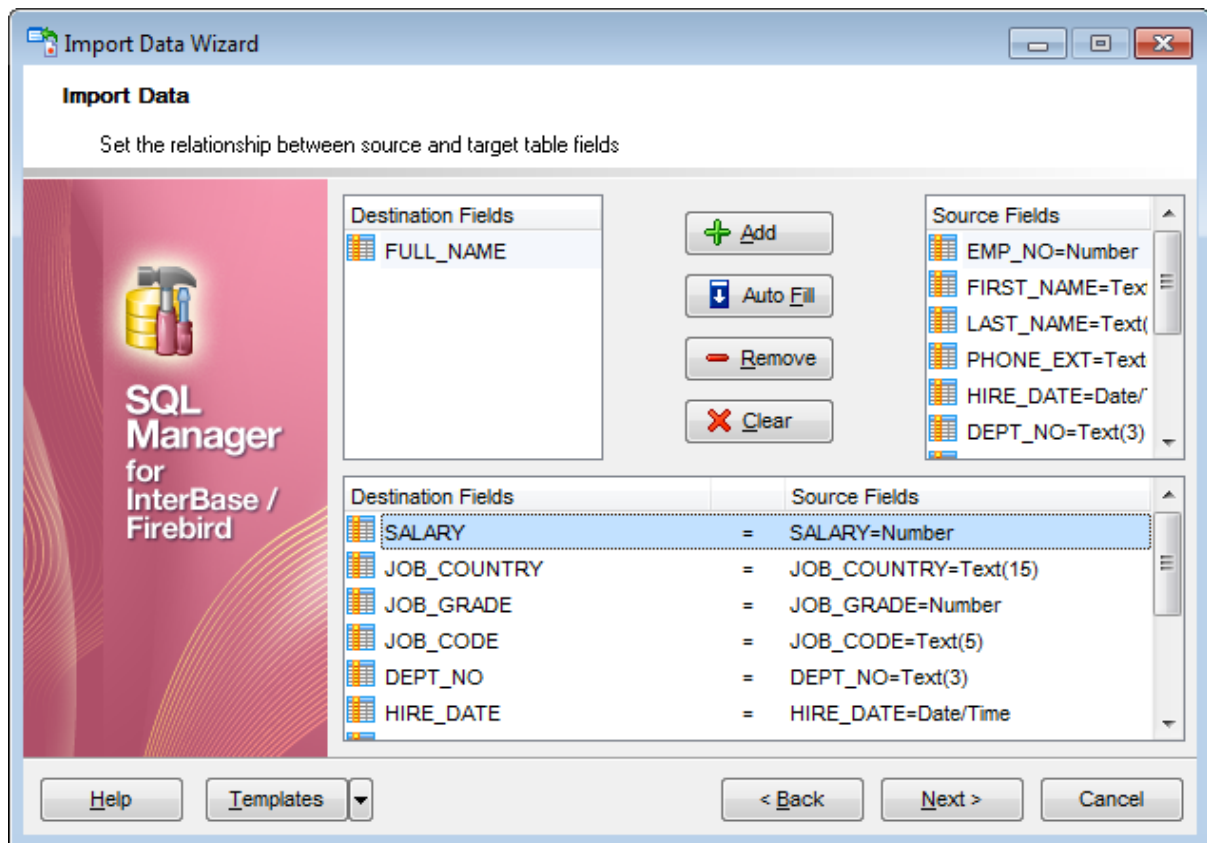
### 8.2.3.2 Access/DBF/XML Datapacket

Set correspondence between the source MS Access fields and the target InterBase/Firebird table fields:

- select a field of the target InterBase/Firebird table in the **Destination Fields** list;
- select the corresponding field of the source MS Access table in the **Source Fields** list;
- click the **+ Add** button to set correspondence between the selected fields;
- the pair of fields appears in the list below;
- repeat the operation for all the fields you need to be included in the import process.

Use the **Auto Fill** button to set correspondence between the source and target fields automatically on the basis of their order.

When importing data from a DBF file, the additional **Skip deleted records** option appears. Selecting this checkbox allows you to skip records marked for deletion.



To remove a correspondence, select the pair of fields in the list below and press the **- Remove** button.

To remove all correspondences, press the **X Clear** button.

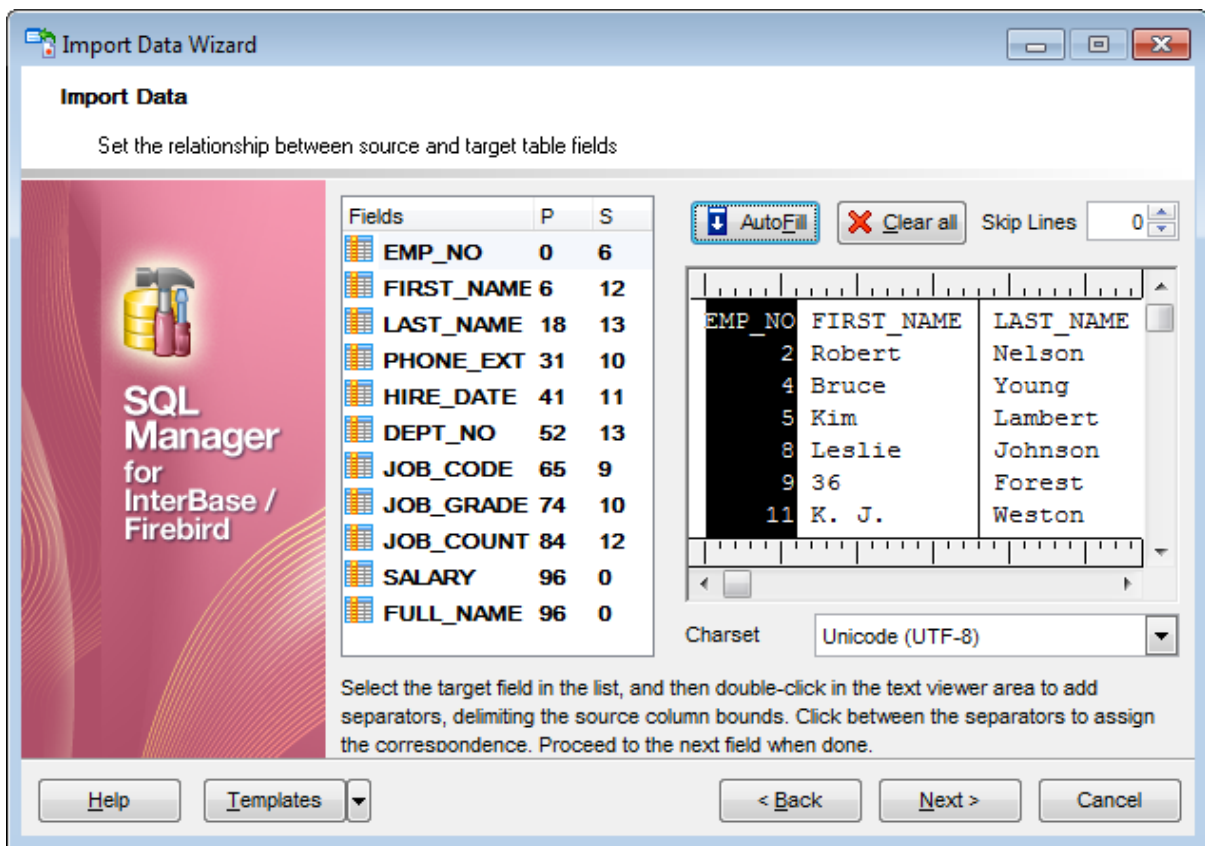
Click the **Next** button to proceed to the [Adjusting data formats](#)<sup>[509]</sup> step of the wizard.

## 8.2.3.3 TXT

Set correspondence between the source text file columns and the target InterBase/Firebird table fields:

- select a field of the target InterBase/Firebird table in the **Fields** list;
- double-click in the text viewer area to add vertical separators delimiting the source column bounds;
- click the area between the separators to assign the column to the selected target table field - the selected source column gets black highlight;
- repeat the operation for all the fields you need to be included in the import process.

If necessary, you can choose to **skip** a defined number of the source file lines using the **Skip Lines** spinner control (e.g. if you need to exclude column headers from the imported data range).



To clear all correspondences, press the **✖ Clear** button.


**Note:** if you cannot see the content of the source text file properly, you should select the appropriate **Charset** to be used for processing data.

Click the **Next** button to proceed to the [Adjusting data formats](#) <sup>509</sup> step of the wizard.

### 8.2.3.4 CSV

Set correspondence between the target table fields and the source CSV file columns:

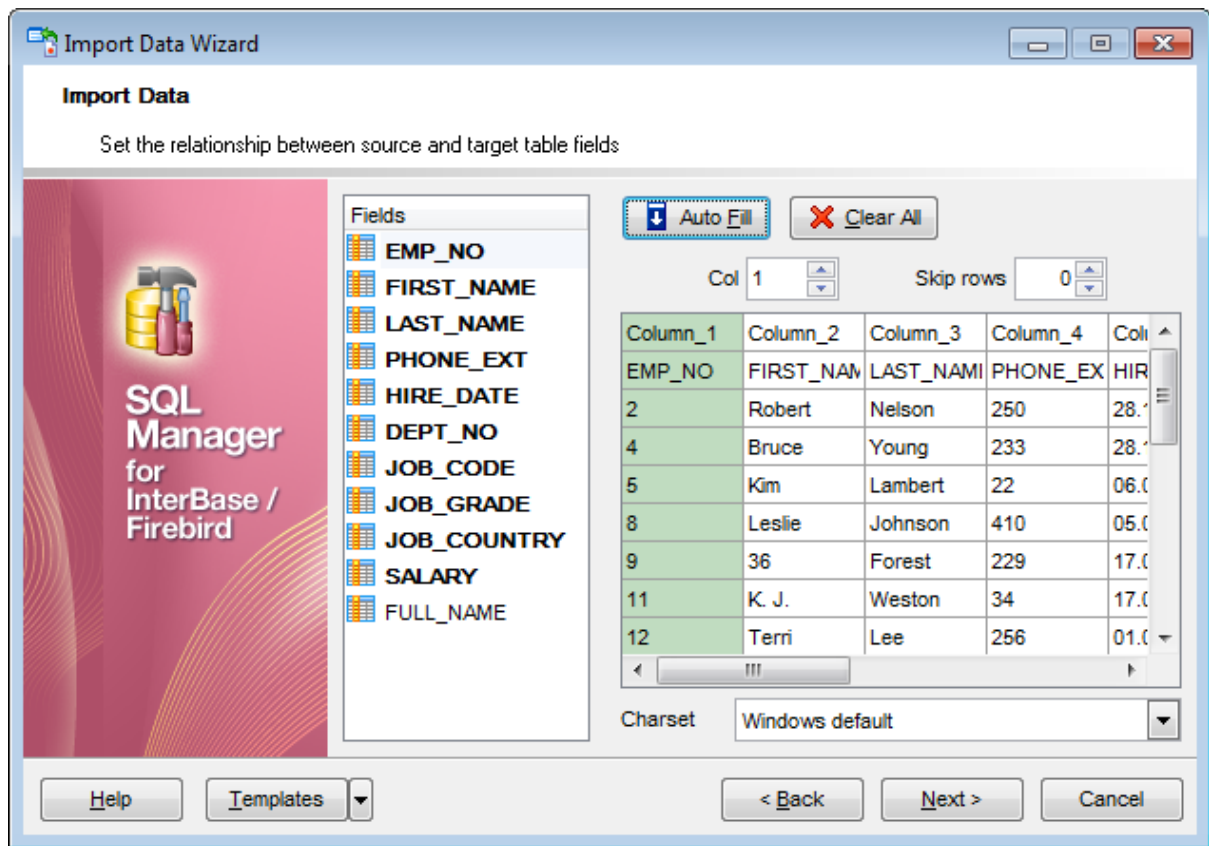
- select a field of the target InterBase/Firebird table in the **Fields** list;
- proceed to the source grid viewer area: click a caption to assign the column to the selected target table field;
- the selected column of the source file gets gray highlight;
- repeat the operation for all the fields you need to be included in the import process.


If the source CSV file and the destination InterBase/Firebird table have the same order of columns, you can use the  **Auto Fill** button to set correspondence between them automatically.

Note that the CSV delimiter is specified at the [Selecting source file name and format](#)<sup>[493]</sup> step of the wizard.

The **Col(s)** control indicates the currently selected source file column. You can also use this spinner control for quick column selection.

If necessary, you can choose to **skip** a defined number of the source file rows using the **Row(s)** spinner control of the **Skip** group (e.g. if you need to exclude column headers from the imported data range).



To remove a correspondence, select the field in the **Fields** list and press the  **Clear** button.


**Note:** if you cannot see the content of the source text file properly, you should select the appropriate **Charset** to be used for processing data.

Click the **Next** button to proceed to the [Adjusting data formats](#)<sup>509</sup> step of the wizard.

### 8.2.3.5 HTML

Set correspondence between the target table fields and the source HTML file columns:


- select a field of the target InterBase/Firebird table in the **Fields** list;
- proceed to the source grid viewer area: select the **Table** from which you intend to import data and click a column to assign the column to the selected target table field;
- the selected column of the source file gets green highlight;
- repeat the operation for all the fields you need to be included in the import process.

If the source HTML file and the destination InterBase/Firebird table have the same order of columns, you can use the  **Auto Fill** button to set correspondence between them automatically.

The **Col** control indicates the currently selected source file column. You can also use this spinner control for quick column selection.

If necessary, you can choose to **skip** a defined number of the source file rows using the **Row** spinner control of the **Skip** group (e.g. if you need to exclude column headers from the imported data range).




To remove a correspondence, select the field in the **Fields** list and press the  **Clear** button.

To remove all correspondences, press the  **Clear All** button.

Click the **Next** button to proceed to the [Adjusting data formats](#)<sup>509</sup> step of the wizard.




### 8.2.3.6 XML Generic

In order to set mapping of a Generic XML document, you should enter the relative **XPath** (the path must be specified in the XPath format). Press the  **Fill Grid** button to get the grid filled with text and attribute values of the selected node.

**Note:** if the source XML document contains huge amount of data, building the tree may take a long time.

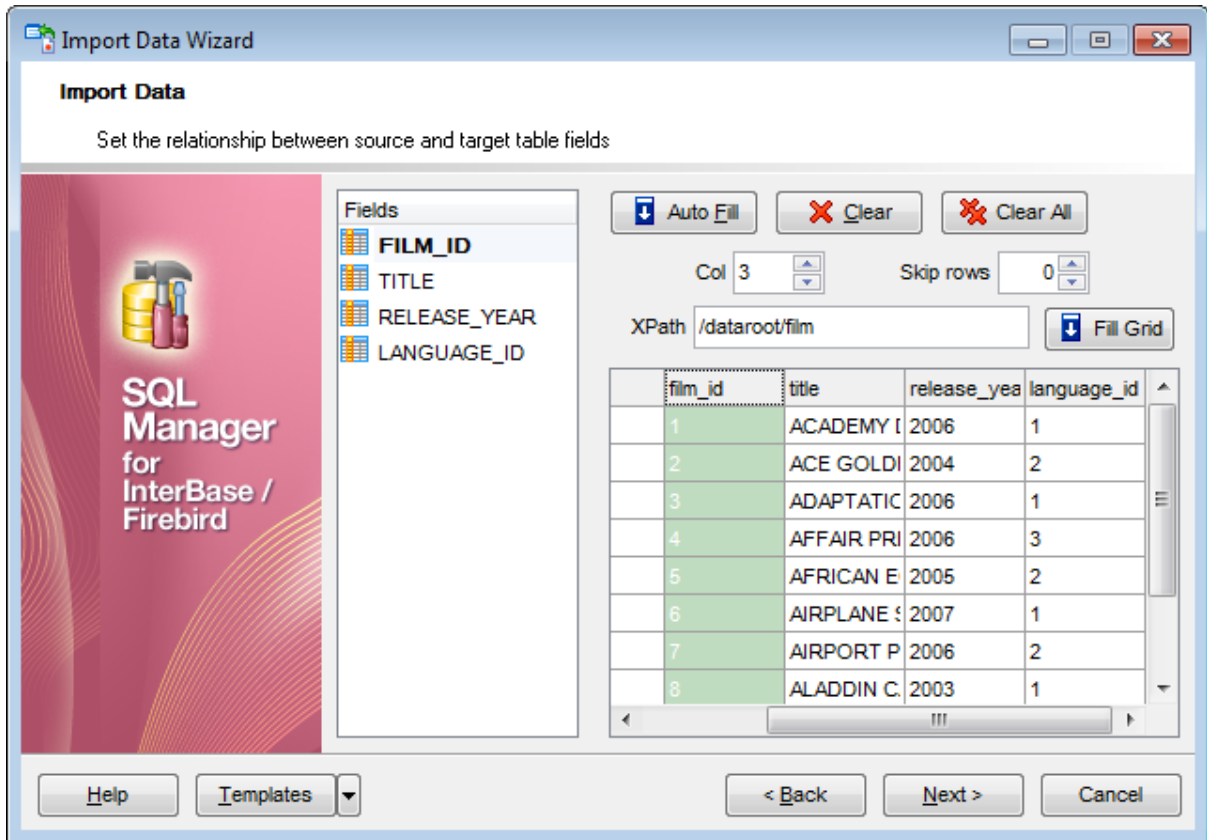
Set correspondence between the source XML file columns and the target InterBase/Firebird table fields:

- select a field of the target InterBase/Firebird table in the **Fields** list;
- proceed to the source grid viewer area: click a column to assign the column to the selected target table field;
- the selected column of the source file gets gray highlight;
- repeat the operation for all the fields you need to be included in the import process.

You can use the  **Auto Fill** button to set correspondence between the source and target fields automatically according to their order (mapping is started from the first attribute value in this case).

The **Col(s)** control indicates the currently selected source file column. You can also use this spinner control for quick column selection.

If necessary, you can choose to **skip** a defined number of the source file lines using the **Row(s)** spinner control of the **Skip** group (e.g. if you need to exclude node headers from the imported data range).



To remove a correspondence, select the field in the **Fields** list and press the **✖ Clear** button.


To remove all correspondences, press the **✖ Clear All** button.

Click the **Next** button to proceed to the [Adjusting data formats](#)<sup>[509]</sup> step of the wizard.

### 8.2.3.7 MS Excel/Word, ODF

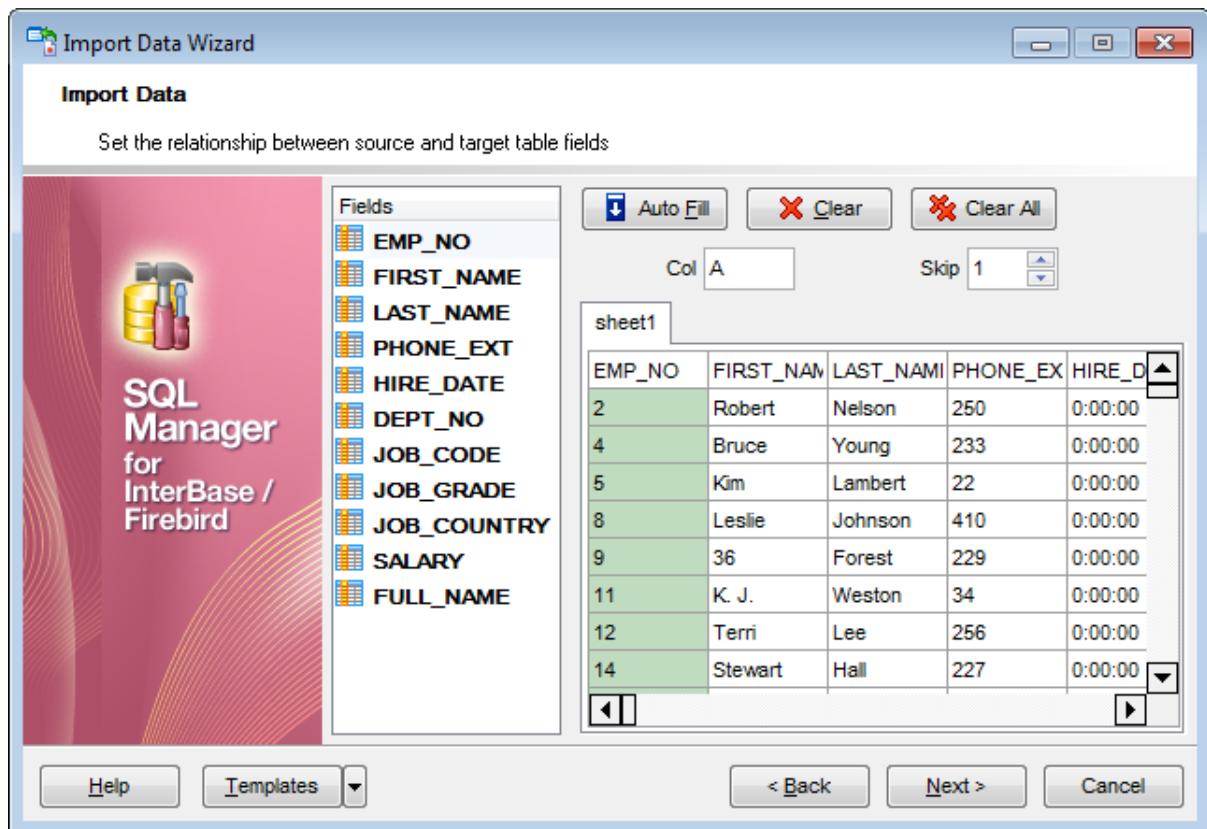
Specify ranges in the grid for the target and source fields:

- select a field of the target InterBase/Firebird table in the **Fields** list;
- proceed to the **Sheet** grid: click a column to assign the column to the selected target table field;
- the selected column of the source file gets green highlight;
- repeat the operation for all the fields you need to be included in the import process.

If the source file and the destination InterBase/Firebird table have the same order of columns, you can use the  **Auto Fill** button to set correspondence between them automatically.

The **Col** control indicates the currently selected source file column. You can also use this control for quick column selection.

If necessary, you can choose to **skip** a defined number of the source file rows using the **Skip** spinner control (e.g. if you need to exclude column headers from the imported data range).



To remove a correspondence, select the field in the **Fields** list and press the **Clear** button.

To remove all correspondences, press the **Clear All** button.

Click the **Next** button to proceed to the [Adjusting data formats](#)<sup>509</sup> step of the wizard.

## 8.2.4 Adjusting data formats

This step of the wizard provides a number of options for setting common formats for all imported data:

**Date & Time formats:** *Short date, Long date, Short time, Long time;*

**Separators:** *Decimal, Thousand, Date, Time;*

**Boolean True** (specify the text that will be displayed for the boolean *TRUE* values);

**Boolean False** (specify the text that will be displayed for the boolean *FALSE* values);

**NULL values** (specify the text that will be displayed for the *NULL* values).

For more information refer to the [Format specifiers](#)<sup>[906]</sup> page.

Import Data Wizard

**Import Data**

Adjust common data formats for import

SQL Manager for InterBase / Firebird

**Date & Time formats**

Short date	dd.MM.yyyy
Long date	d MMMM yyyy 'r.'
Short time	h:mm
Long time	h:mm:ss

**Separators**

Decimal	,
Thousand	#160
Date	.
Time	:

Boolean True	Boolean False	Null Values
True	False	Null

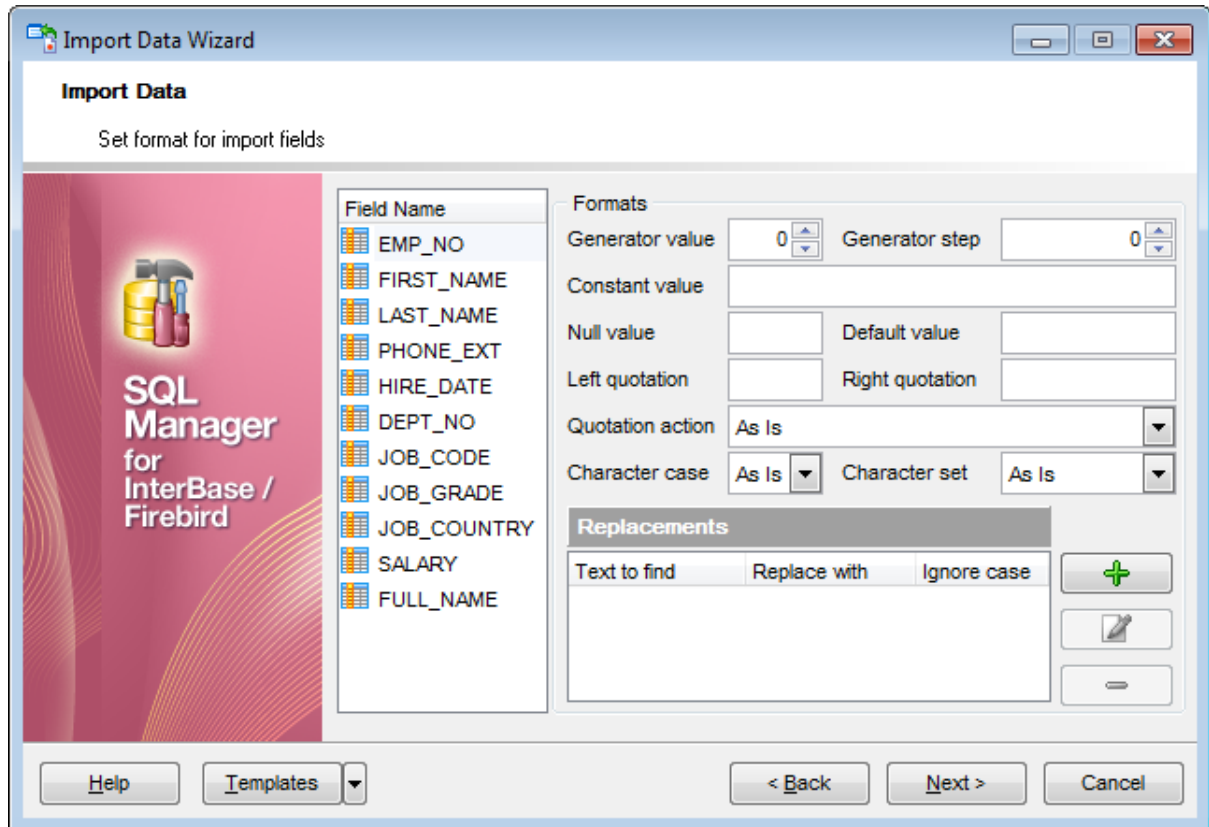
Help Templates < Back Next > Cancel

Click the **Next** button to proceed to the [Setting advanced field formats](#)<sup>[510]</sup> step of the wizard.

## 8.2.5 Setting advanced field formats

This step of the wizard allows you to set **formats** each field separately.

Select a field in the list and adjust **format options** that will be applied to this field only.



Specify **Generator value** and **Generator step** for incremental data generation into the specified field, or enter a **Constant value** which will be set for all records in the field.

Specify the **NULL value** which will be used for the records where the value is NULL.

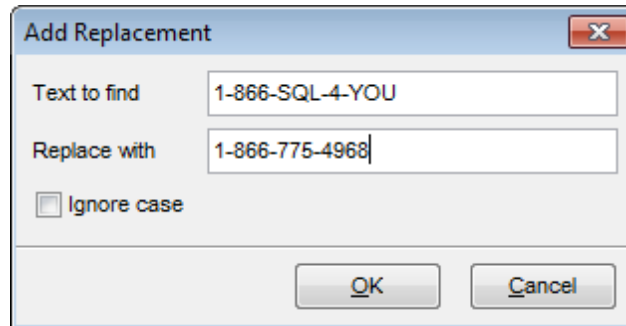
If necessary, specify the **default value**.


Use the **Left / Right quotation** edit boxes to specify left/right quotation marks. Use the **Quotation action** drop-down list to select whether the quotation marks should be *added, removed, or left 'As is'*.


Use the **Character case** drop-down list to select the case that will be used for string values of the field: *Upper, Lower, UpperFirst, UpperFirstWord, or 'As is'*.

Use the **Character set** drop-down list to select which charset will be used for string data in the field: *ANSI, OEM, or As is*.

The **Replacements** area allows you to set the text you need to be replaced during data import into the selected field. Press the **Plus +** button to specify a new replacement options using the **Add Replacement** dialog.



To edit a replacement, click the  **Edit** button.

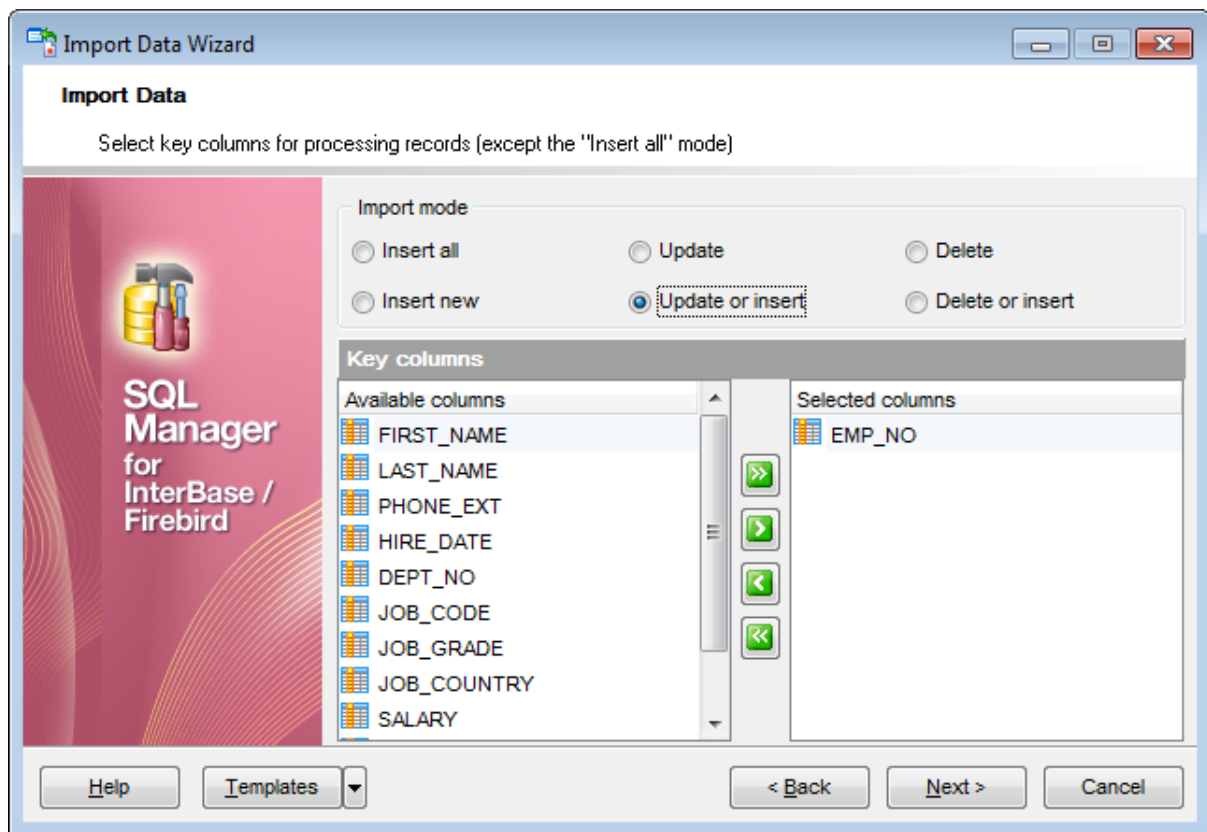
To remove a replacement, click the  **Minus** button.

When you are done, click the **Next** button to proceed to the [Setting import mode](#)<sup>[512]</sup> step of the wizard.

## 8.2.6 Setting import mode

This step of the wizard allows you to define the records processing mode as *Insert All*, *Insert New*, *Update*, *Update or Insert*, *Delete*, *Delete or Insert* mode:

- **Insert all:** all records from the source file are inserted into the tables irrespective of whether any records exist in the destination table or not
- **Insert new:** already existing records are skipped, and new records are inserted into the destination table
- **Update:** all existing records are updated from the source file
- **Update or insert:** already existing records are updated and new records are inserted into the destination table
- **Delete:** already existing records are deleted
- **Delete or insert:** existing records are deleted and new records are inserted into the destination table



Here is an **example** of some import modes offered by Import Data Wizard:

All import modes (except for the **Insert All** mode) are based on key values information. In order to perform import operations with these modes used, you need to have matches between the source file key column(s) and the destination table key field(s).

For example, your source file contains three rows with the key values 1, 2, 3, and your destination table contains three rows with the key values 1, 2, 4.

**Destination table**

**Source file data**



ID	DATA
1	a
2	b
4	f

	A	B
1	1	c
2	2	d
3	3	e

If you use the **Insert new** import mode, in this case only the row with key value 3 will be inserted into the destination table.

If you use the **Update** import mode, then the rows with key values 1, 2 will be updated.

If you use the **Update or insert** import mode, then rows 1, 2 will be updated and the row with key value 3 will be inserted.

It is applied to all other import modes, except for the **Insert all** mode. For all these modes (except for the **Insert all** mode) it is obligatory to select the primary key fields. This field (or fields) is used as key field to identify specific data in the target database.

#### Insert new

ID	DATA
1	a
2	b
3	e
4	f

#### Update

ID	DATA
1	c
2	d
4	f

#### Update or insert

ID	DATA
1	c
2	d
3	e
4	f

#### Delete

ID	DATA
4	f





#### Delete or insert

ID	DATA
3	e
4	f

The key columns for these operations are defined in the **Key columns** area.

Use **Import mode** to select whether to insert all records, or to update/delete existing ones. Note that for updating/deleting existing records in the target table you should move its key columns from the **Available columns** list to the **Selected columns** list.

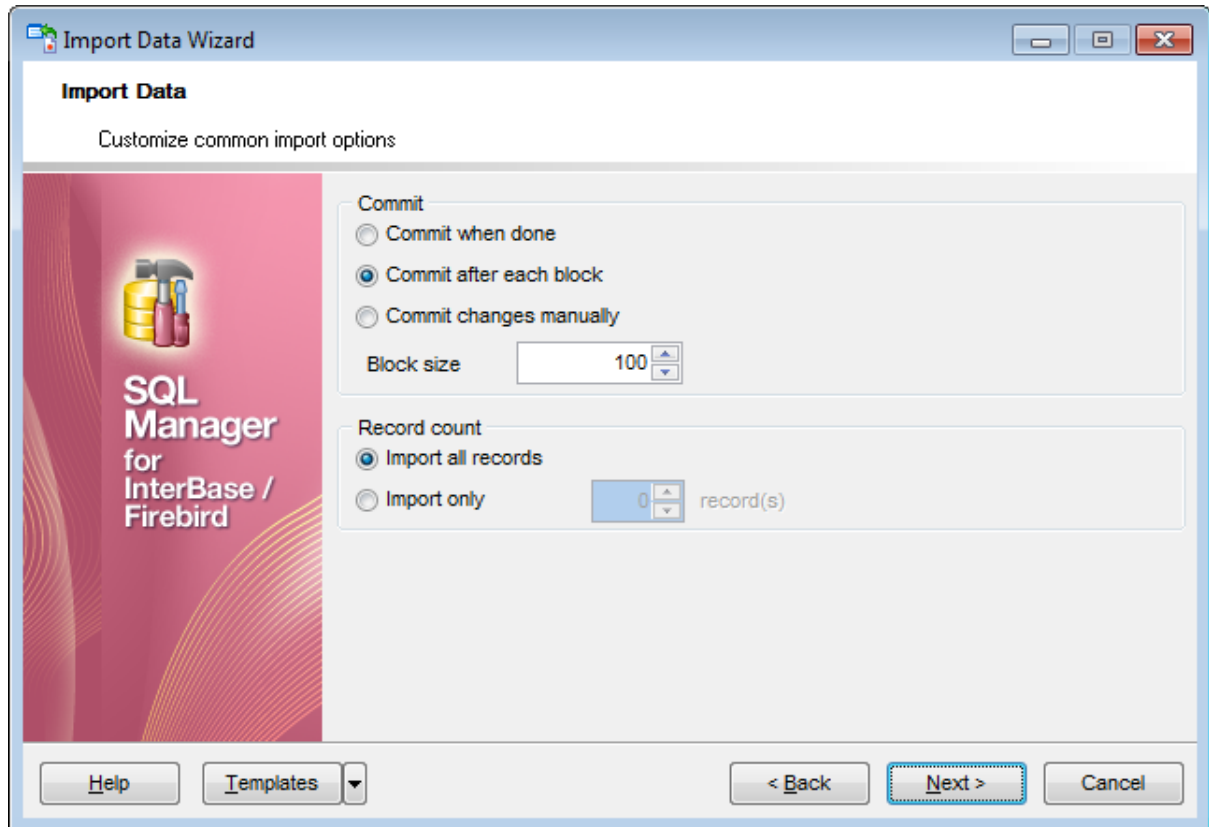
The **Key columns** area allows you to select the fields of the table to be used as the key fields for the import process.

To select a field, you need to move it from the **Available columns** list to the **Selected columns** list. Use the     buttons or drag-and-drop operations to move the fields from one list to another.

When you are done, click the **Next** button to proceed to the [Customizing common options](#) step of the wizard.

## 8.2.7 Customizing common options

Use this step of the wizard to set common import options. The detailed description of these options is given below.



### Commit

**Commit when done**

Commits the transaction when all records are imported.

**Commit after each block**

Inserts the *COMMIT* statement after a defined number of records.

**Commit changes manually**

Select this option if you intend to commit the transaction manually.

### Block size

Use the spinner control to define the number of records in each committed block.

### Record count

**Import all records**

Specifies that all records of the source file will be imported.

**Import only ... record(s)**

Specifies the number of records to be imported.

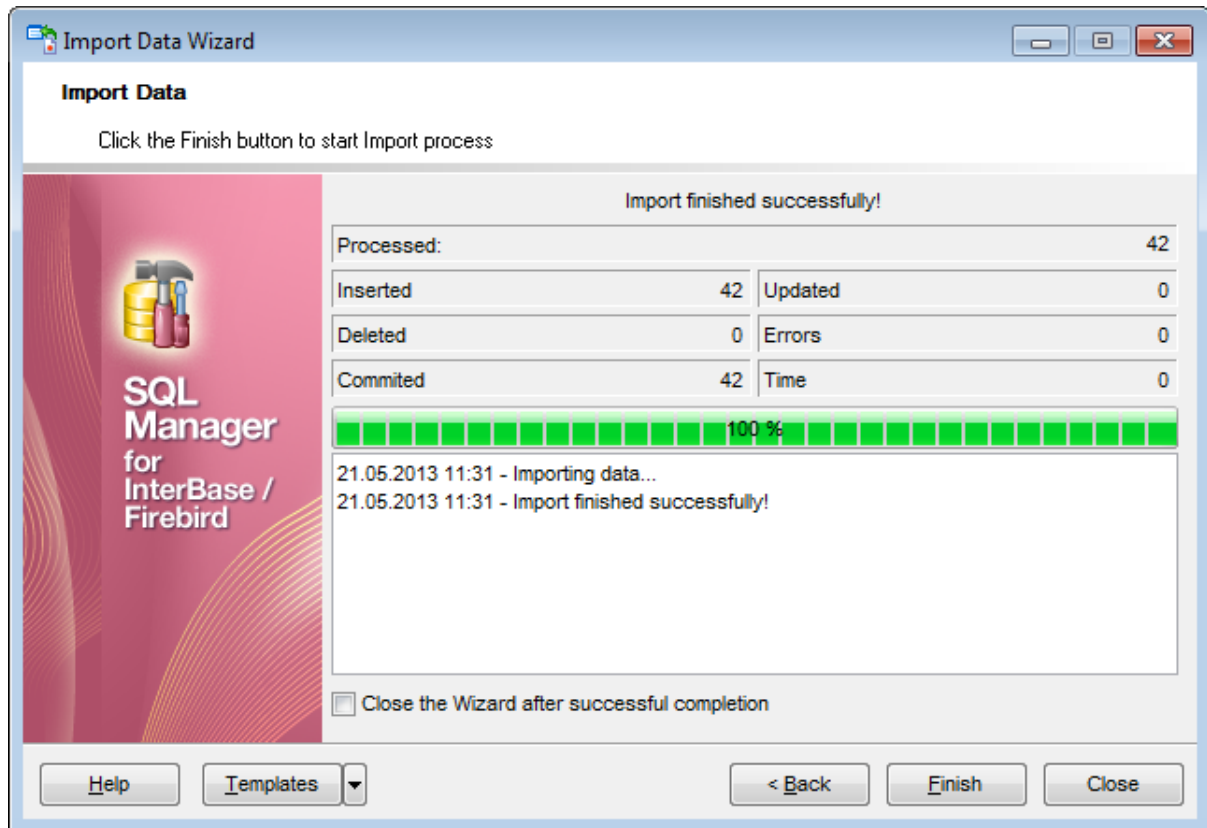
When you are done, click the **Next** button to proceed to the [last step](#) of the wizard.



## 8.2.8 Importing data

This step of the wizard is intended to inform you that all import options have been set, and you can start the import process.

The log area allows you to view the log of operations and errors (if any).



### Close the Wizard after successful completion

If this option is selected, the wizard is closed automatically when the import process is completed.

If necessary, you can save a [template](#) for future use.

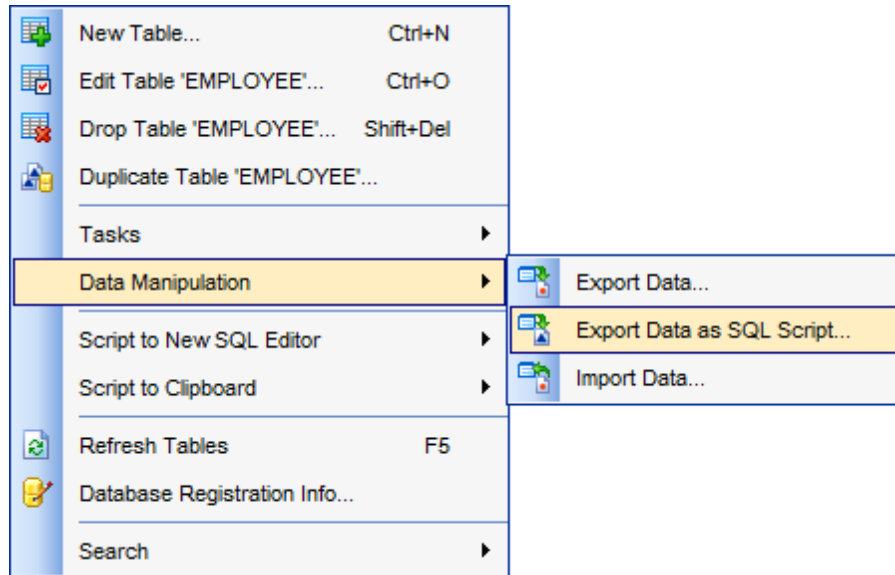
Click the **Finish** button to run the import process.

After the operation is completed, you can view the total number of *processed* records, the number of *inserted/updated/deleted* records, the number of *committed* records, the number of *errors*, elapsed *time*, and the *log* of operations and errors (if any).

## 8.3 Export as SQL Script

**Export as SQL Script Wizard** allows you to export data from a [table](#)<sup>[178]</sup> / [view](#)<sup>[242]</sup> or from a query result to SQL script as a number of INSERT statements. You can save your settings as a [template](#)<sup>[910]</sup> any time for future use.

To start the wizard, right-click the object in [DB Explorer](#)<sup>[63]</sup>, select the **Data Manipulation** [context menu](#)<sup>[56]</sup> group and proceed to the **Export Data as SQL Script...** item within this group.



Alternatively, you can open the **Data** tab of [Table Editor](#)<sup>[184]</sup> / [View Editor](#)<sup>[242]</sup> or the **Result (s)** tab of [Query Data](#)<sup>[330]</sup> / [Query Builder](#)<sup>[347]</sup>, right-click the [grid](#)<sup>[373]</sup> there, then select the **Data Manipulation** [context menu](#)<sup>[382]</sup> group and proceed to the **Export <object\_name> as SQL Script...** item within this group, or use the **Export as SQL Script** item of the [Navigation bar](#)<sup>[882]</sup>.

- [Selecting destination DBMS](#)<sup>[519]</sup>
- [Setting destination file name](#)<sup>[527]</sup>
- [Setting BLOB options](#)<sup>[523]</sup>
- [Selecting field to export](#)<sup>[525]</sup>
- [Editing the result table definition](#)<sup>[526]</sup>
- [Setting export options](#)<sup>[527]</sup>
- [Exporting as SQL Script](#)<sup>[529]</sup>

Availability:

**Full** version (for Windows) **Yes**

**Lite** version (for Windows) **No**

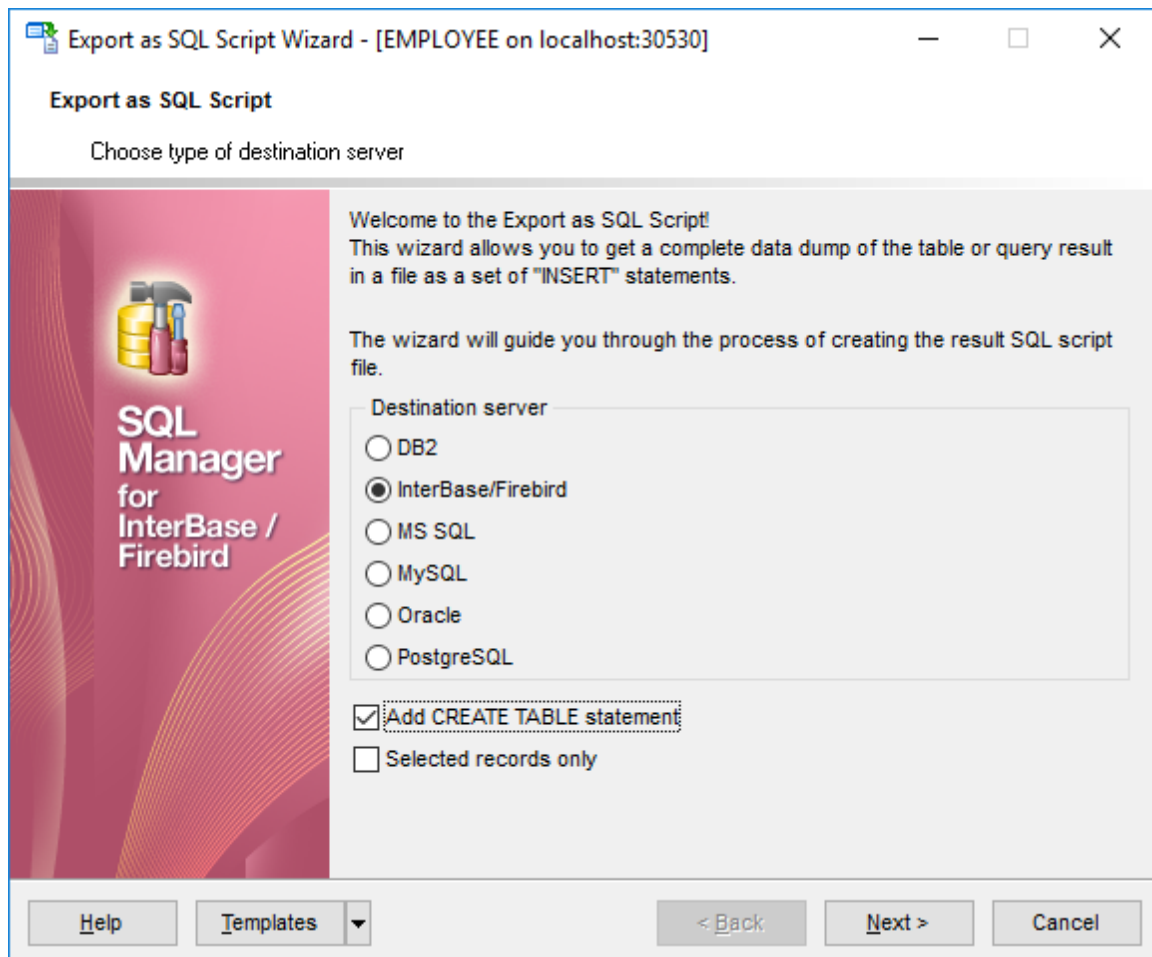
**Note:** To compare all features of the **Full** and the **Lite** versions of **SQL Manager**, refer to the [Feature Matrix](#)<sup>[20]</sup> page.

**See also:**[Export Data Wizard](#)<sup>[444]</sup>[Import Data Wizard](#)<sup>[491]</sup>[Using templates](#)<sup>[910]</sup>

### 8.3.1 Selecting destination DBMS

This step of the wizard allows you to define the **destination server** you need to export data for. The result script will be generated in compliance with the specifications of the selected DBMS:

- DB2
- InterBase/Firebird
- Microsoft® SQL Server
- MySQL
- Oracle
- PostgreSQL



**Add CREATE TABLE statement**

Check this option to add the *CREATE TABLE* statement to the result script.

**Selected records only**

This option is visible if the **Export as SQL Script** wizard is opened from the **Data/Results** grid view. If the option is checked only selected rows will be exported.

Click the **Next** button to proceed to the [Setting destination file name](#)<sup>527</sup> step of the


wizard.



### 8.3.2 Setting destination file name

Specify whether the result script will be loaded to [Execute Script Editor](#)<sup>[542]</sup> or saved to a file.

#### File name

Type in or use the  button to specify the path to the file and the file name.

If necessary, select the **File charset** using the corresponding drop-down list.

#### Compression options

##### Compress file

Check this option if you wish to compress the output file.

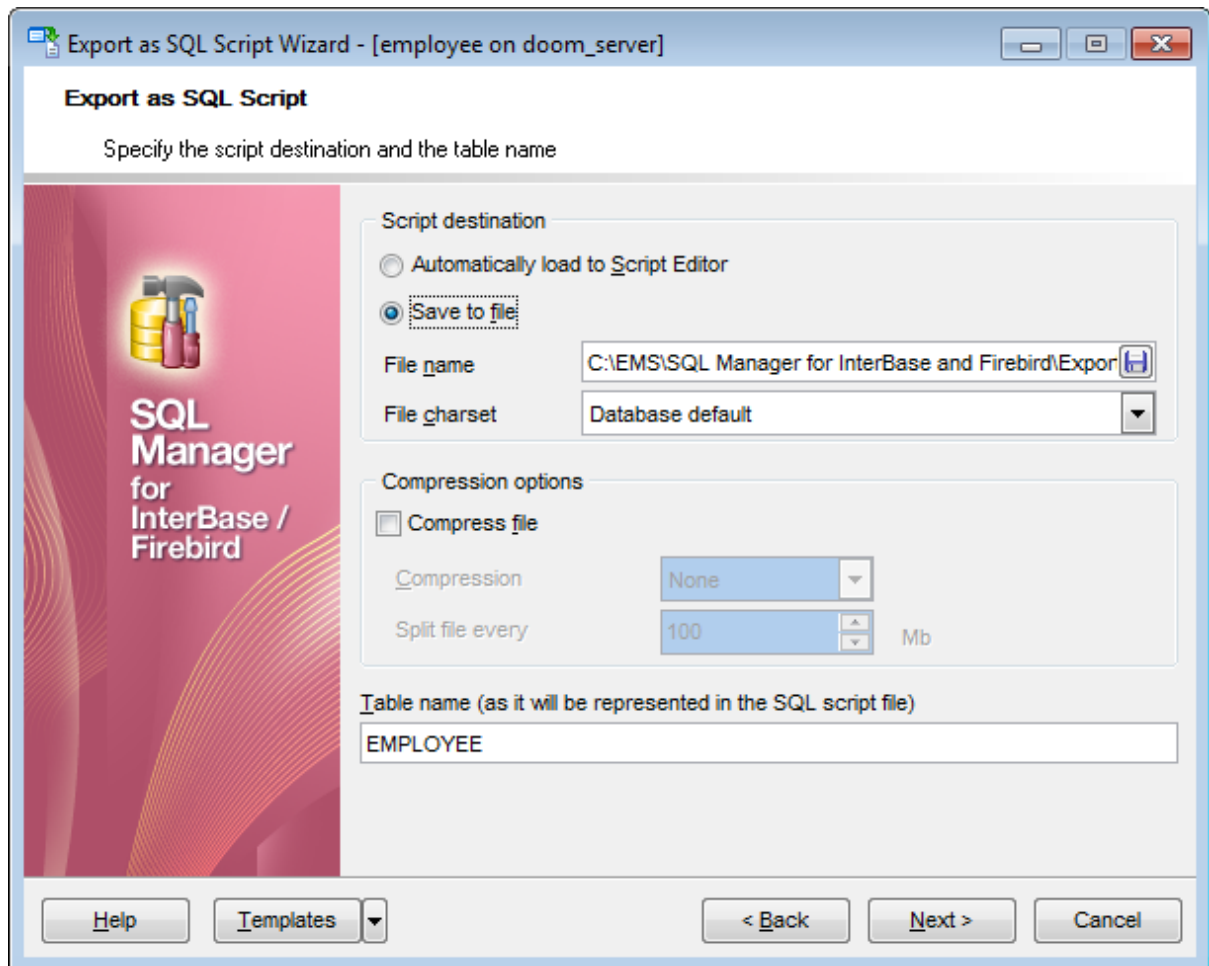
##### Compression

Define the desired compression level to be applied for the file: *None*, *Fastest*, *Default*, *Best*.

##### Split file every ... Mb

Specify the size (in *megabytes*) of each part the output file will be split into.


Enter the **Table name** and the **Schema name** to be included in the result SQL script. Schema name should only be specified for the DBMS in which this object is implemented.



Click the **Next** button to proceed to the [Setting BLOB options](#)<sup>[523]</sup> step of the wizard.

### 8.3.3 Setting BLOB options

#### BLOB and arrays options

In this group of options you can determine whether BLOB fields are *not to be extracted*, *extracted as strings*, or *extracted into a separate file* (available for *DB2, InterBase/Firebird, MS SQL, Oracle destination servers*<sup>[519]</sup>). If the latter is selected, you also need to specify the **File name** (the *\*.blo* file where the BLOB data will be stored) and the location of the file on your local machine using the  button.

#### **Compress file**

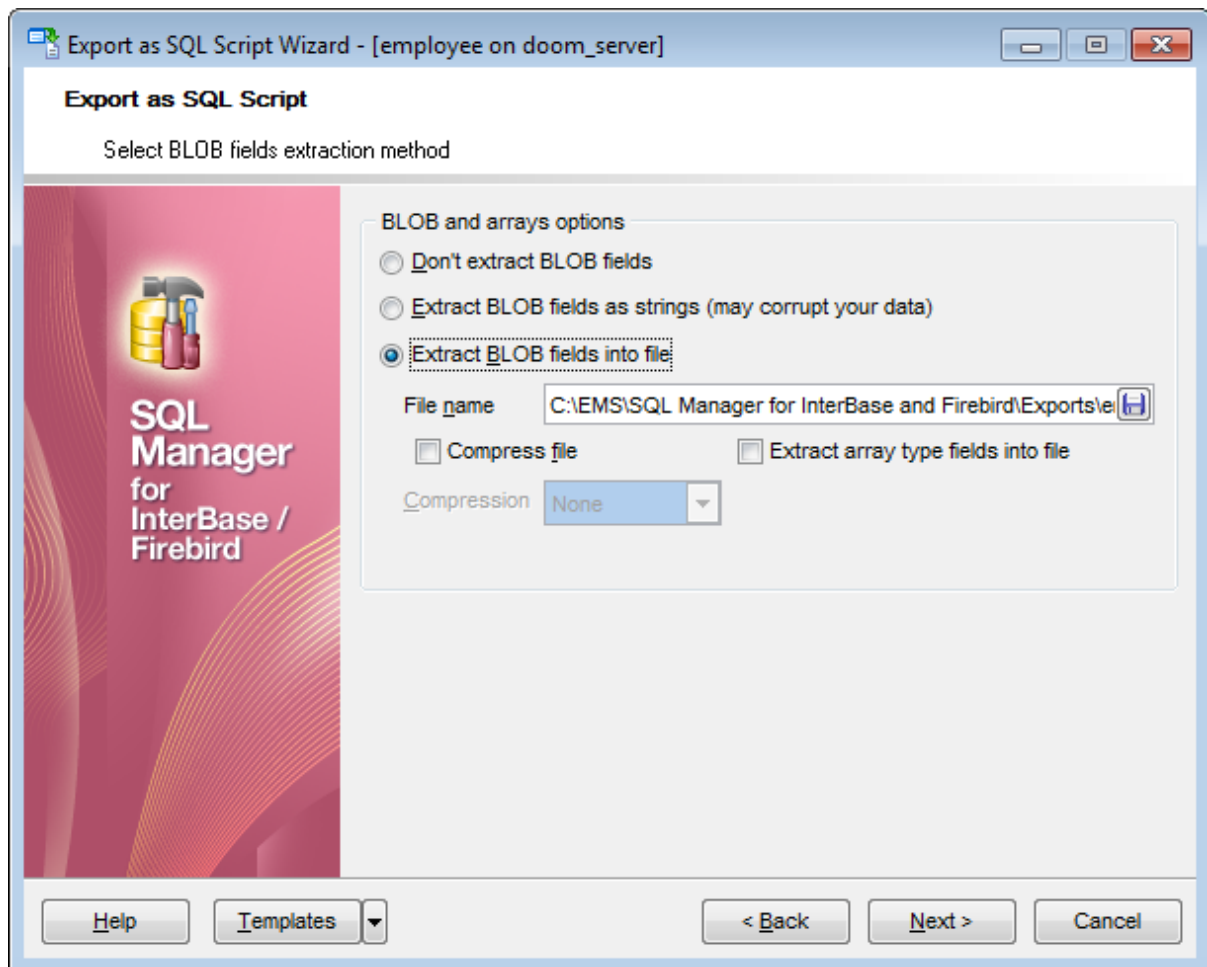
Check this option if you wish to compress the file containing BLOB data.

#### **Extract array type fields into file**

Check this option if you wish fields of array type to be dumped into the file.

#### Compression

Define the desired compression level to be applied for the file: *None, Fastest, Default, Best*.







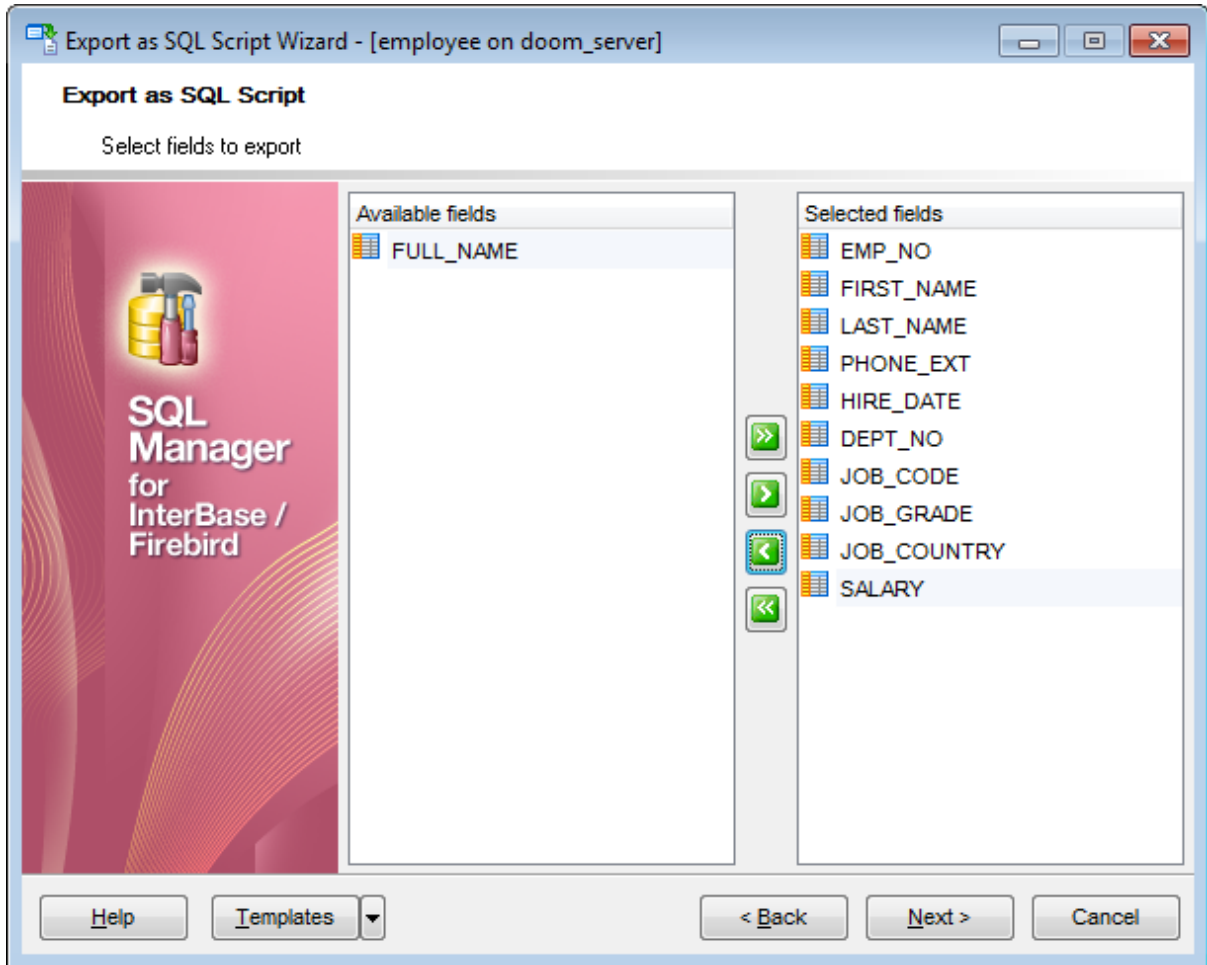
Click the **Next** button to proceed to the [Selecting fields to export](#)<sup>[525]</sup> step of the wizard.



### 8.3.4 Selecting fields to export

This step of the wizard allows you to select the table field(s) to be exported to SQL script.

To select a field, you need to move it from the **Available fields** list to the **Selected fields** list. Use the     buttons or drag-and-drop operations to move the fields from one list to another.

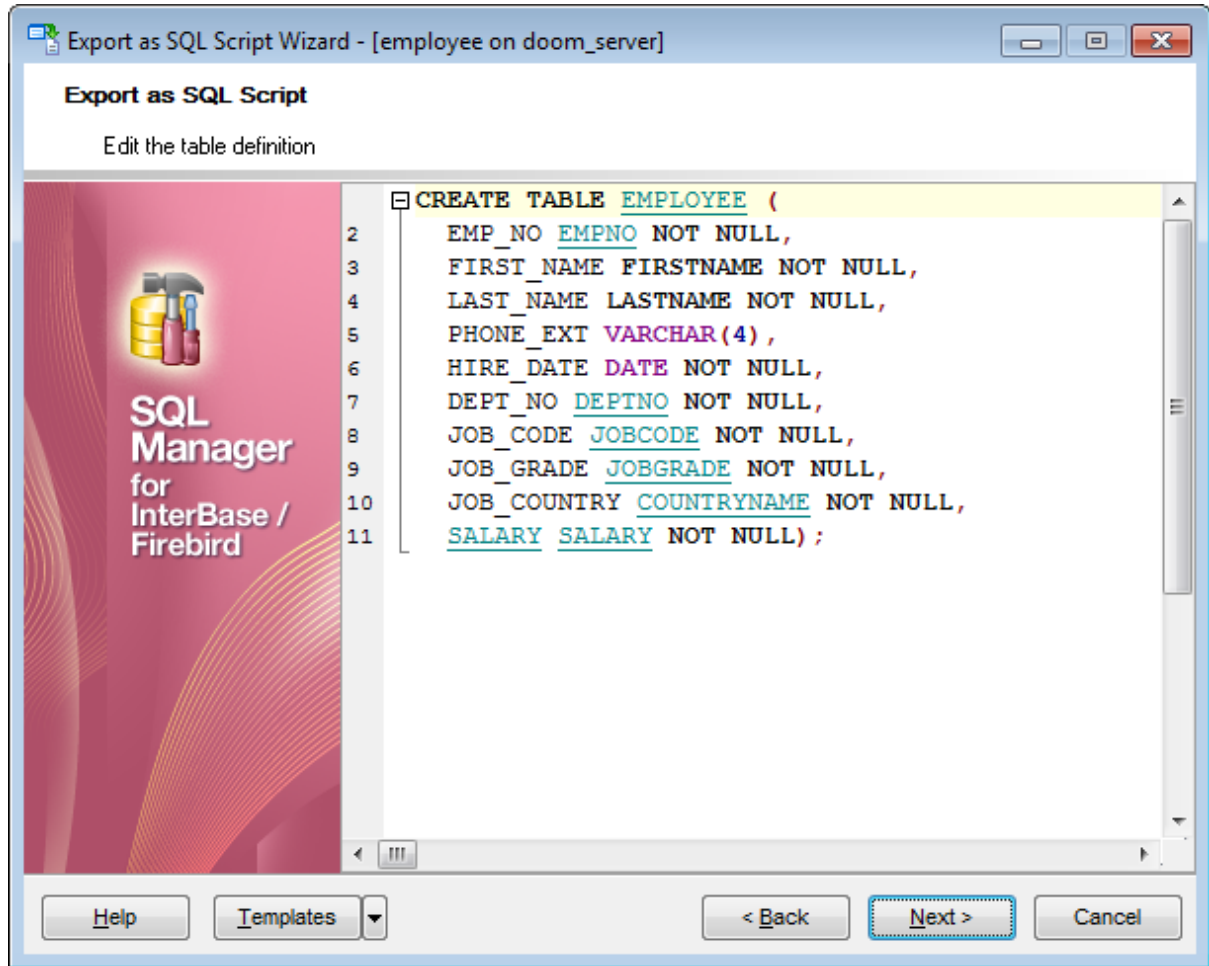


Click the **Next** button to proceed to the [Editing table definition](#) <sup>[526]</sup> step of the wizard.

### 8.3.5 Editing table definition

This step is available only if the **Add CREATE TABLE statement** option was checked on the [Selecting destination DBMS](#)<sup>[519]</sup> step of the wizard. It allows you to view/edit the SQL script for creating the table.

For your convenience the **syntax highlight**, **code folding** and a number of other features for efficient SQL editing are implemented. For details see [Working with query](#)<sup>[333]</sup> and [Using the context menu](#)<sup>[335]</sup>.



Click the **Next** button to proceed to the [Setting export options](#)<sup>[527]</sup> step of the wizard.

### 8.3.6 Setting export options

Specify common export options according to your needs.

If necessary, you can choose **to replace non-print characters in strings with spaces**.

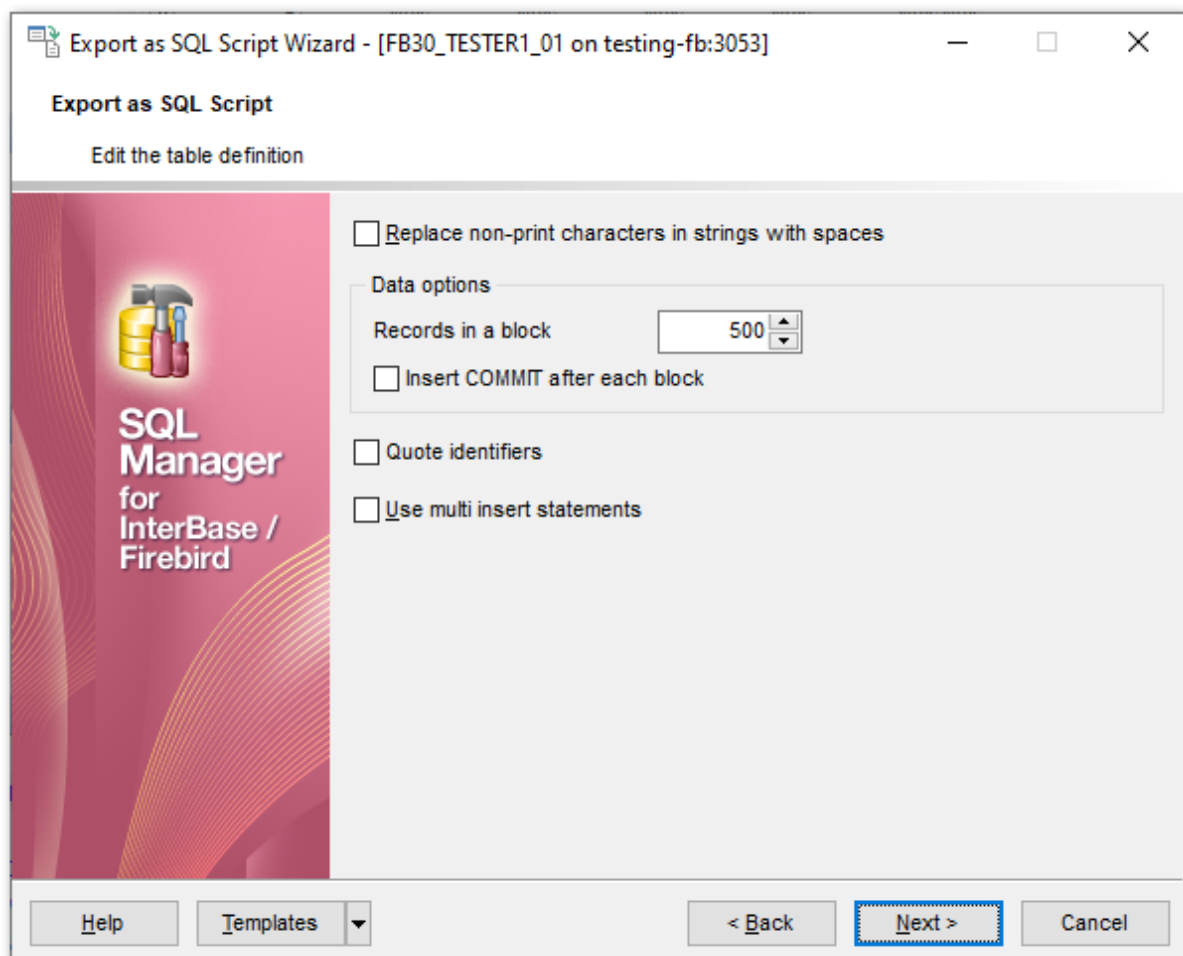
#### Data options

##### Records in block

Use the spinner control to define the number of records in each committed block.

##### Insert COMMIT after each block

Check this option to add the *COMMIT* statement after a defined number of records.



##### Quote identifiers

Quotes will be added to the script, if you enable this option.

##### Use multi insert statements

Enable to generate multiple rows in a single command.

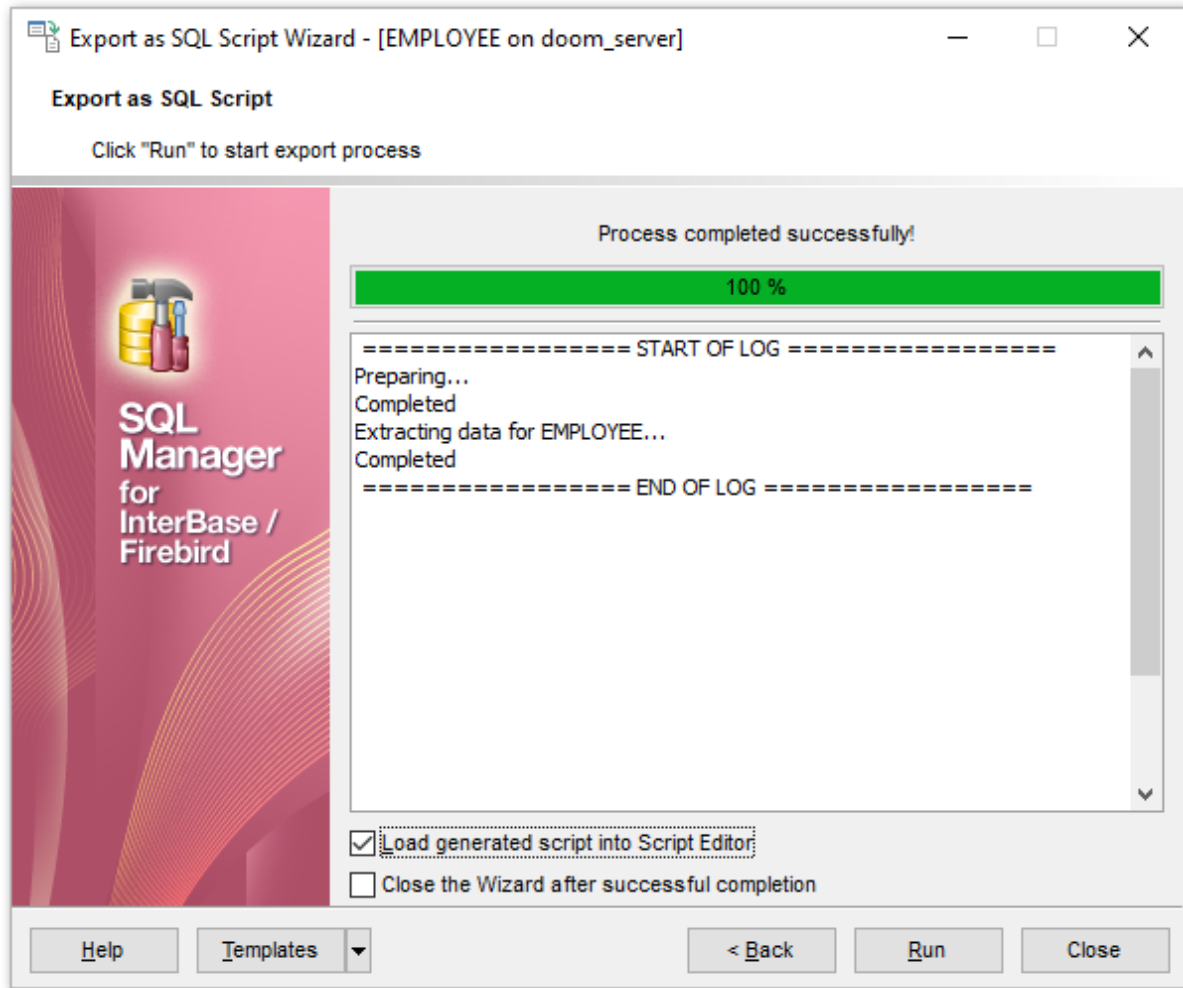
Click the **Next** button to proceed to [Exporting as SQL Script](#)<sup>529</sup>.



### 8.3.7 Exporting as SQL Script

This step of the wizard is intended to inform you that all export options have been set, and you can start the export as SQL script process.

The log area allows you to view the log of operations and errors (if any).



**Load generated script into Script Editor**

Check this option to load the result script to [Execute Script Editor](#)<sup>[542]</sup>.

**Close the Wizard after successful completion**

If this option is selected, the wizard is closed automatically when the export process is completed.

If necessary, you can save a [template](#)<sup>[910]</sup> for future use.

Click the **Finish** button to run the export as SQL script process.



**Part**



## 9 Database Tools

SQL Manager for InterBase/Firebird provides graphical interface for a number of database maintenance operations. The following *services* are available in SQL Manager:

### [Dependency Tree](#)<sup>[534]</sup>

Allows you to view all the object dependencies in one diagram.

### [SQL Monitor](#)<sup>[539]</sup>

Displays all the SQL statements executed while working in **SQL Manager for InterBase/Firebird**.

### [Execute Script Editor](#)<sup>[542]</sup>

Executes SQL scripts in the database.

### [Extract Database Wizard](#)<sup>[550]</sup>

Extracts the table metadata and/or data to an SQL script which can be executed later on another machine to restore the database structure and/or data.

### [Print Metadata](#)<sup>[562]</sup>

Creates powerful metadata reports in the WYSIWYG mode ready for printing.

### [HTML Report](#)<sup>[566]</sup>

Creates powerful metadata reports in the HTML format.

### [Reports management](#)<sup>[572]</sup>

Tools for efficient management of reports: creating, editing, viewing, printing.

### [Search in Metadata](#)<sup>[600]</sup>

Provides quick search for a string within the scope of database metadata.

### [Database Monitor](#)<sup>[605]</sup>

Displays various statistics on database in general and database activities.

### [Event monitor](#)<sup>[619]</sup>

Allows you to view [event](#)<sup>[131]</sup> notifications.

### [Table Altering Monitor](#)<sup>[622]</sup>

Allows you to view the number of changes in table and view metadata.

### [Server Messages Editor](#)<sup>[625]</sup>

Allows you to view and edit server messages.

### [Database Designer](#)<sup>[630]</sup>

Allows you to lay out your database schema visually.

### [Using templates](#)<sup>[910]</sup>

Facilitates using **SQL Manager** wizards.

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#### See also:

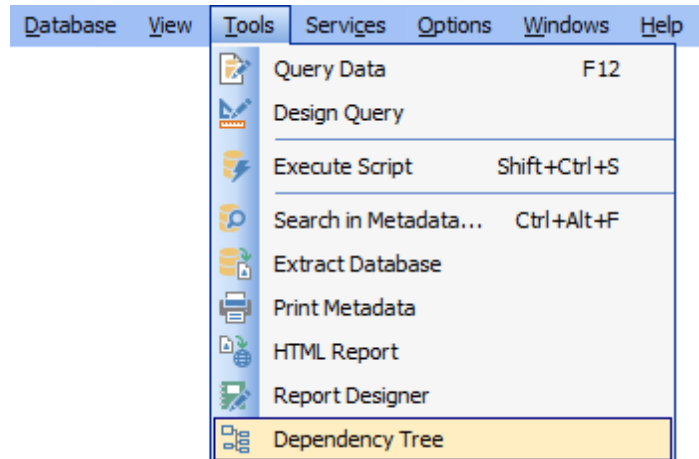
[Getting Started](#)<sup>[37]</sup>

[Database Explorer](#)<sup>[63]</sup>  
[Database Management](#)<sup>[87]</sup>  
[Database Objects Management](#)<sup>[162]</sup>  
[Query Management Tools](#)<sup>[328]</sup>  
[Data Management](#)<sup>[368]</sup>  
[Import/Export Tools](#)<sup>[443]</sup>  
[Services](#)<sup>[65]</sup>  
[Security management](#)<sup>[71]</sup>  
[Options](#)<sup>[73]</sup>  
[External Tools](#)<sup>[83]</sup>  
[How To...](#)<sup>[838]</sup>

## 9.1 Dependency Tree

The **Dependency Tree** tool allows you to view all the object dependencies in one diagram.

To call the **Dependency Tree** window, select the **Tools | Dependency Tree** [main menu](#)<sup>[882]</sup> item, or use the **Dependency Tree**  button on the main [toolbar](#)<sup>[884]</sup>.



- [Using Navigation bar and Toolbar](#)<sup>[535]</sup>
- [Viewing dependency tree](#)<sup>[537]</sup>

Availability:

**Full** version (for Windows) **Yes**

**Lite** version (for Windows) **No**

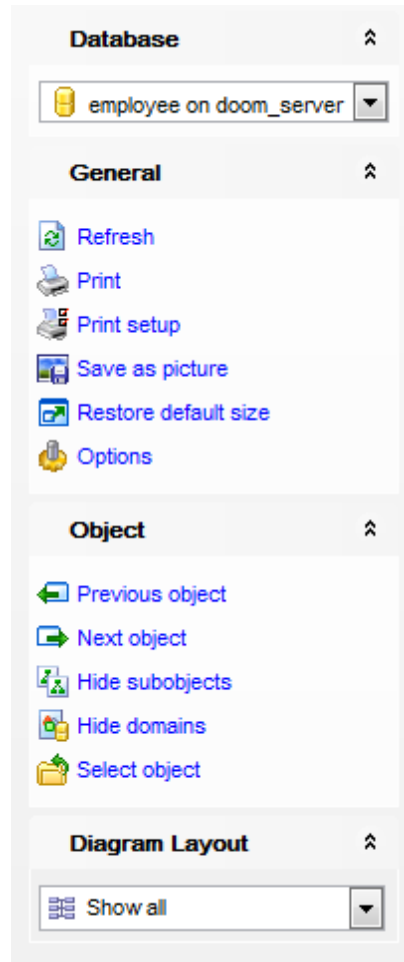
**Note:** To compare all features of the **Full** and the **Lite** versions of **SQL Manager**, refer to the [Feature Matrix](#)<sup>[201]</sup> page.

**See also:**

[Database Objects Management](#)<sup>[162]</sup>

### 9.1.1 Using Navigation bar and Toolbar







The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Dependency Tree**.





#### Database




 select a database for browsing object dependencies

#### General




-  refresh the currently displayed dependency tree
-  print the diagram
-  set printing options using the **Print Setup** dialog
-  save the current diagram as a picture
-  edit [dependency tree options](#) (769)
-  restore the default size and position of the window

#### Object

-  navigate by switching to the previous object
-  navigate by switching to the next object

-  show/hide subobjects
-  show/hide [domains](#)<sup>[172]</sup>
-  [select](#)<sup>[537]</sup> a root object

### Diagram Layout

-  show all objects
-  show objects depending on the Root object
-  show objects the Root object depends on

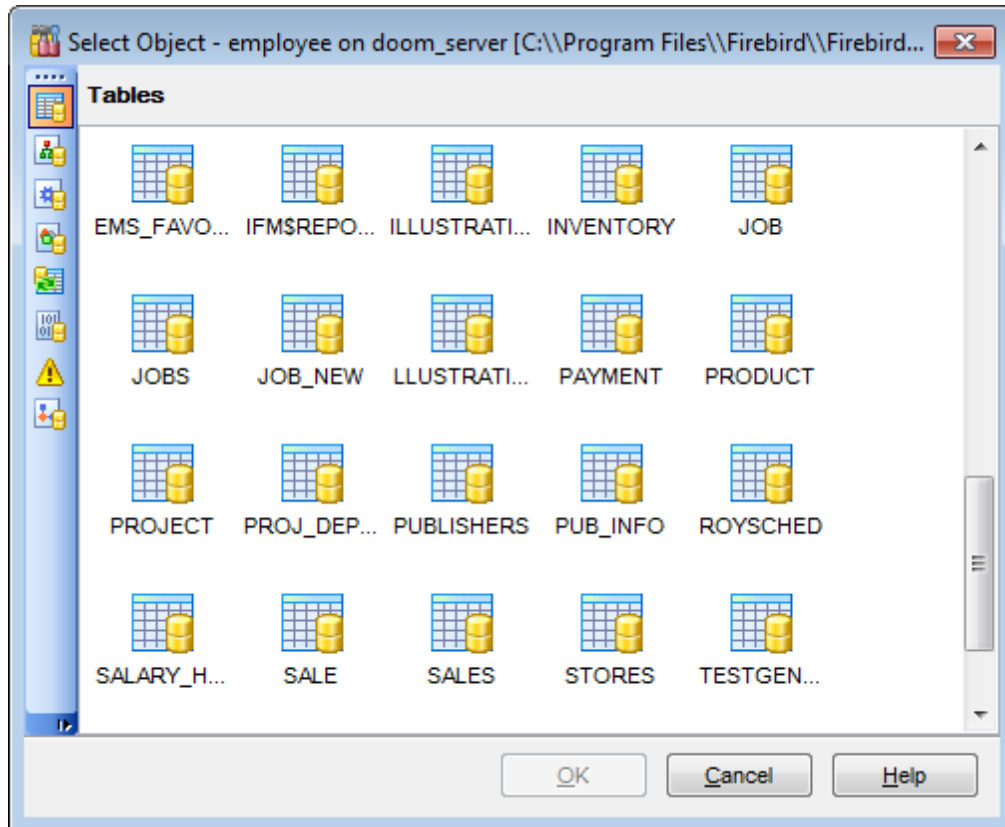
Items of the **Navigation bar** are also available on the **ToolBar** of the **Dependency Tree** window. To enable the [toolbar](#)<sup>[884]</sup>, open the [Environment Options](#)<sup>[736]</sup> dialog, proceed to the [Windows](#)<sup>[743]</sup> section there and select  *Toolbar* (if you need the toolbar only) or  *Both* (if you need both the toolbar and the [Navigation bar](#)<sup>[882]</sup>) in the **Bar style for child forms** group.

**Hint:** Items of the **Object** pane of the **Navigation bar** are also available in the *context menu* of the **Dependency Tree** area.

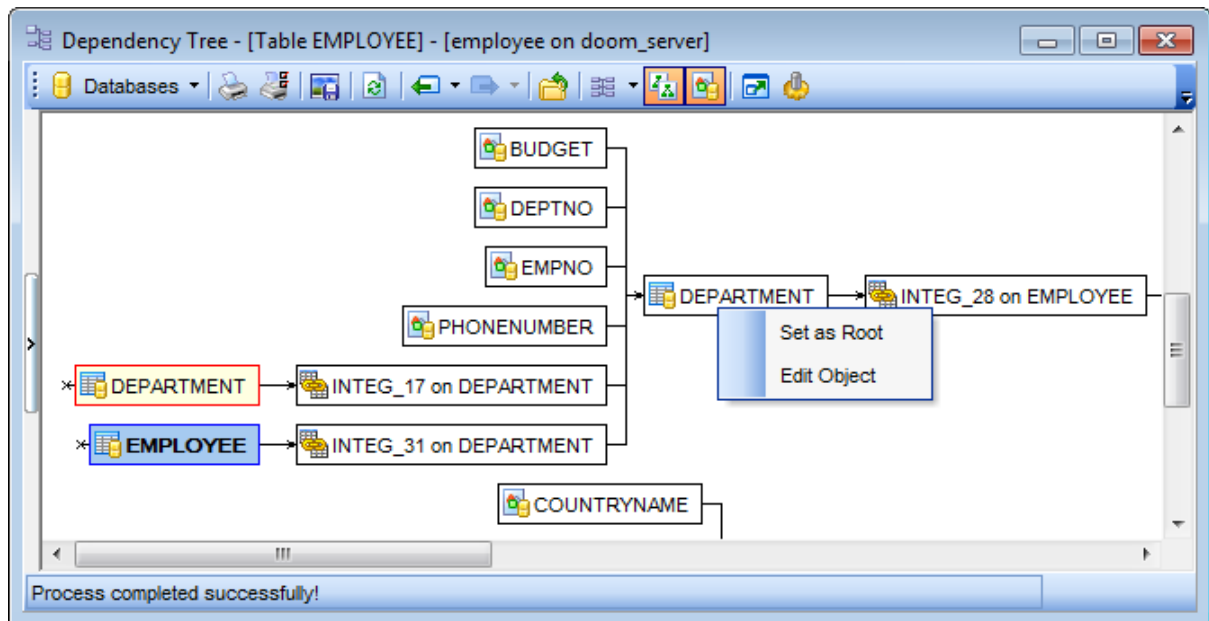


### 9.1.2 Viewing dependency tree

To view dependencies of an object, click the **Select object** [Navigation bar](#)<sup>535</sup> item. Then select the required object in the **Select Object** dialog window. The dependency tree will appear in the main area of the window.



While the tree of dependencies is being built, the [progress bar](#)<sup>884</sup> is displayed in the status area at the bottom of the window.



The *root* object is marked out in blue.

The objects that *the root object depends on* are located to the left of the root object. The objects that *depend on the root object* are located to the right of the root object.

*Object dependencies* are denoted as regular arrows from the left to the right (->). A *cyclic dependency* (i.e. when the object already has some other depending object(s)) is denoted as a line ending with a cross (-x).

You can switch between objects by selecting them in the diagram. The selected object becomes the root object. To make an object root, you can also right-click it in the diagram area and select **Set as Root** from the **context menu**. The context menu of an object also allows you to *edit* it using the corresponding editor.

The history of selected root objects is also available: you can move back and forward through this history using the **Previous object** and the **Next object** links on the [Navigation bar](#)<sup>[535]</sup> or [toolbar](#)<sup>[536]</sup>.

**Hint:** To show/hide subobjects (e.g. table [triggers](#)<sup>[230]</sup>, [foreign keys](#)<sup>[216]</sup>), click the **Show subobjects** / **Hide subobjects** item on the [Navigation bar](#)<sup>[535]</sup>.

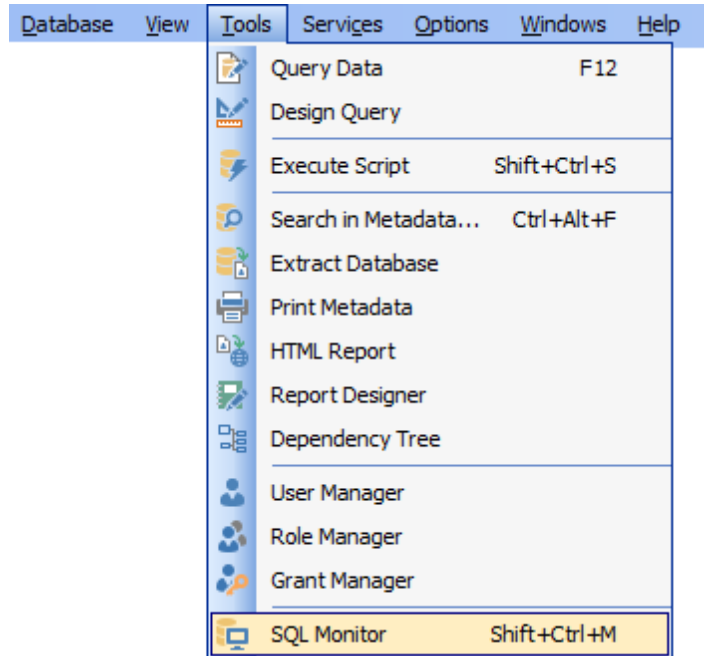
#### See also:

[Select Object dialog](#)<sup>[931]</sup>

## 9.2 SQL Monitor

**SQL Monitor** allows you to view the log of all operations performed over databases and database objects in **SQL Manager for InterBase/Firebird**. The content of the window is read-only.

To open the **SQL Monitor** window, select the **Tools** |  **SQL Monitor** [main menu](#)<sup>[882]</sup> item, or use the *Shift+Ctrl+M* [shortcut](#)<sup>[932]</sup>.



- [Using Navigation bar and Toolbar](#)<sup>[540]</sup>
- [Working with SQL Monitor](#)<sup>[541]</sup>

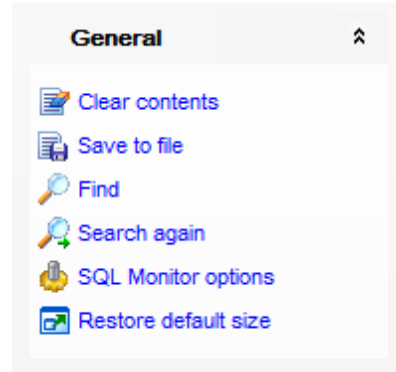
---

### See also:








[SQL Monitor options](#)<sup>[753]</sup>

## 9.2.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **SQL Monitor**.



### General

-  clear the content of the window
-  save the content to a \*.txt file using the **Save as...** dialog
-  search for a string using the [Find Text](#)<sup>[901]</sup> dialog
-  search again
-  configure SQL Monitor using the [SQL Monitor](#)<sup>[753]</sup> section of the [Environment Options](#)<sup>[736]</sup> dialog
-  restore the default size and position of the window
-  specify that the window is displayed on top of other child windows

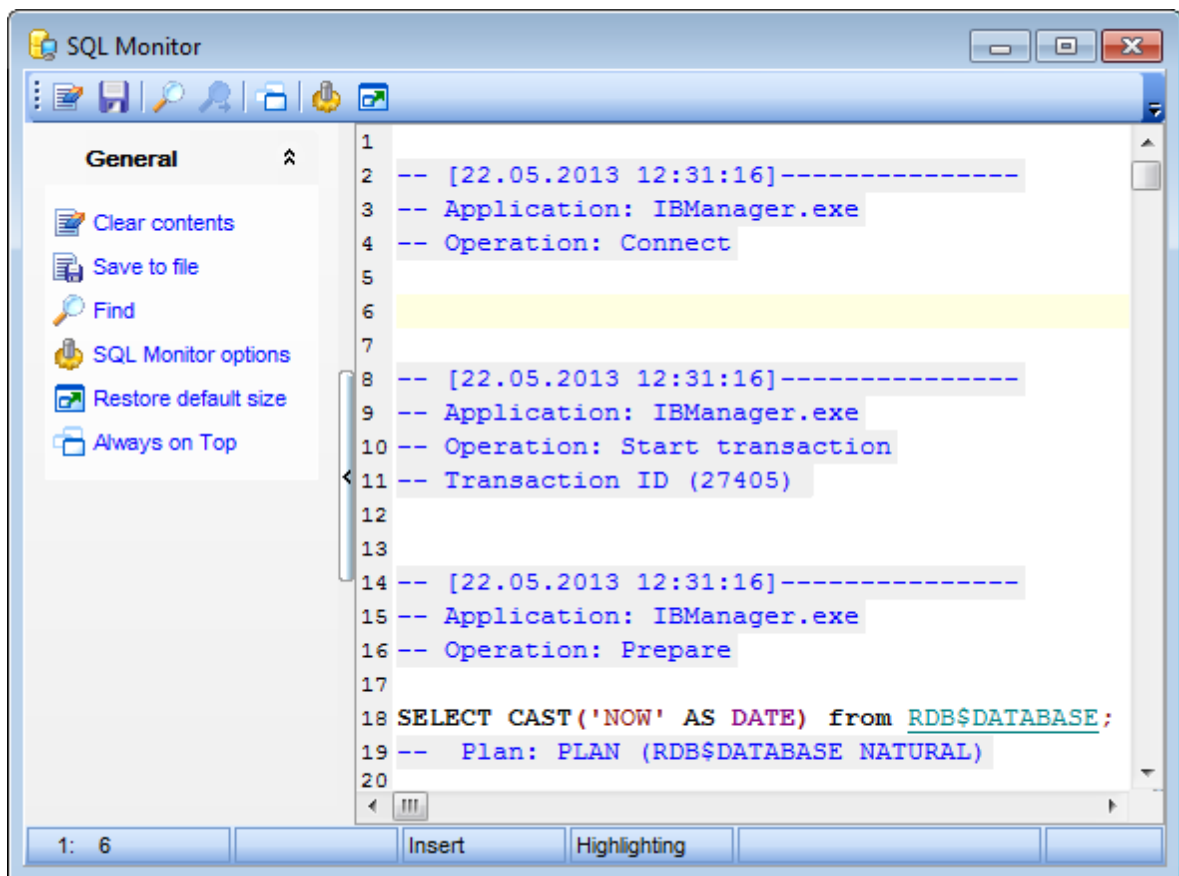
Items of the **Navigation bar** are also available on the **ToolBar** of **SQL Monitor**. To enable the [toolbar](#)<sup>[884]</sup>, open the [Environment Options](#)<sup>[736]</sup> dialog, proceed to the [Windows](#)<sup>[743]</sup> section there and select  *Toolbar* (if you need the toolbar only) or  *Both* (if you need both the toolbar and the [Navigation bar](#)<sup>[882]</sup>) in the **Bar style for child forms** group.

## 9.2.2 Working with SQL Monitor

The working area of **SQL Monitor** lists the log of database operations and SQL queries as items, each consisting of 3 parts: *Executed* (the date and time of the operation), *Operation* (SQL statement sent to the server), *Result* (the result of the operation).

Items of the **context menu** of SQL Monitor area provide access to various functions for working with the window content. The context menu contains standard text-processing functions (*Copy*, *Select All*), [spelling checking](#)<sup>[812]</sup> and functions for working with the content as a whole, e.g. you can set *markers*, *move the cursor to a particular line*, *save the content to a file* or as a [favorite query](#)<sup>[857]</sup>, configure the editor using the [properties](#)<sup>[797]</sup> item or *preview/print* the content. Most of these operations can be also performed with the corresponding [hot keys](#)<sup>[932]</sup> used.

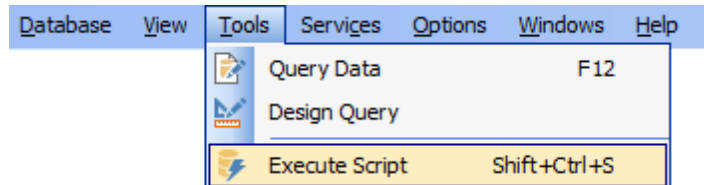
Implementation of the [Find Text](#)<sup>[907]</sup> dialog and [Incremental search](#)<sup>[885]</sup> bar contributes to more efficient work with the content of SQL Monitor.



## 9.3 Execute Script

Using **Execute Script Editor** you can view, edit and execute SQL scripts.

To open Execute Script Editor, select the **Tools | Execute Script** [main menu](#)<sup>[882]</sup> items or use the corresponding [toolbar](#)<sup>[884]</sup> button. You can also use the *Shift+Ctrl+S* [shortcut](#)<sup>[932]</sup> for the same purpose.



In the script area you can view and edit the SQL script text. For your convenience syntax highlight and code completion features are implemented.

- [Using Navigation bar and Toolbar](#)<sup>[543]</sup>
- [Working with Execute Script editor area](#)<sup>[545]</sup>
- [Using Script Explorer](#)<sup>[547]</sup>
- [Script execution](#)<sup>[548]</sup>

**Note:** **SQL Script editor** does not show results returned upon SELECT queries execution. Please use [Query Data](#)<sup>[330]</sup> for that purpose instead.

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### See also:

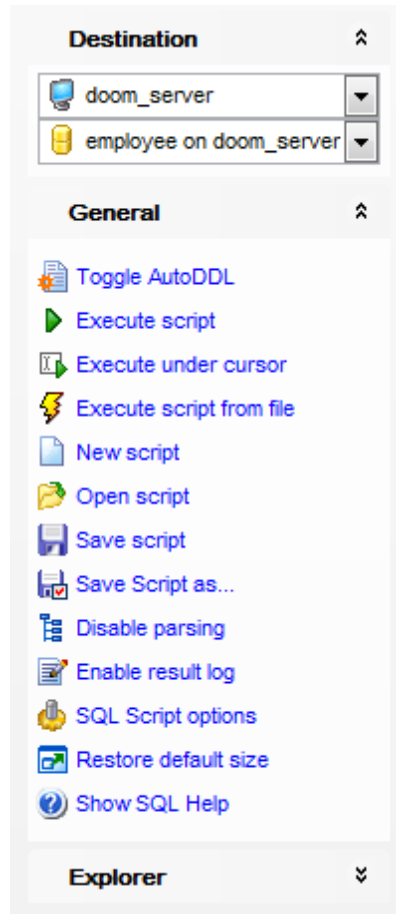
[Query Data](#)<sup>[330]</sup>

[SQL Script options](#)<sup>[755]</sup>



[Editor Options](#)<sup>[796]</sup>

### 9.3.1 Using Navigation bar and Toolbar












The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **SQL Script Editor**.






#### Destination


-  select a host
-  select a database for the script

#### General

-  toggle AutoDDL
-  [execute](#)<sup>548</sup> the current script
-  execute selected code only
-  execute code under cursor
-  execute a script from file
-  create a new script
-  load a script from an \*.sql file using the **Open SQL Script** dialog
-  save the current script
-  save the script to an \*.sql file using the **Save as...** dialog
-  enable/disable parsing of SQL code
-  enable/disable result log

-  configure SQL Script Editor within the [Script Options](#)<sup>[755]</sup> section of the [Environment Options](#)<sup>[736]</sup> dialog
-  show SQL help
-  restore the default size and position of the editor window

### Explorer

-  browse the tree objects used in the script using the [Script Explorer](#)<sup>[547]</sup> pane

Items of the **Navigation bar** are also available on the **ToolBar** of **SQL Script Editor**. To enable the [toolbar](#)<sup>[884]</sup>, open the [Environment Options](#)<sup>[736]</sup> dialog, proceed to the [Windows](#)<sup>[743]</sup> section there and select  *Toolbar* (if you need the toolbar only) or  *Both* (if you need both the toolbar and the [Navigation bar](#)<sup>[882]</sup>) in the **Bar style for child forms** group.

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### See also:

- [Working with Execute Script editor area](#)<sup>[545]</sup>
- [Using Script Explorer](#)<sup>[547]</sup>
- [Script execution](#)<sup>[548]</sup>



### 9.3.2 Working with SQL Script editor area

The **Editor area** of SQL Script is provided for efficient working with SQL scripts in text mode.

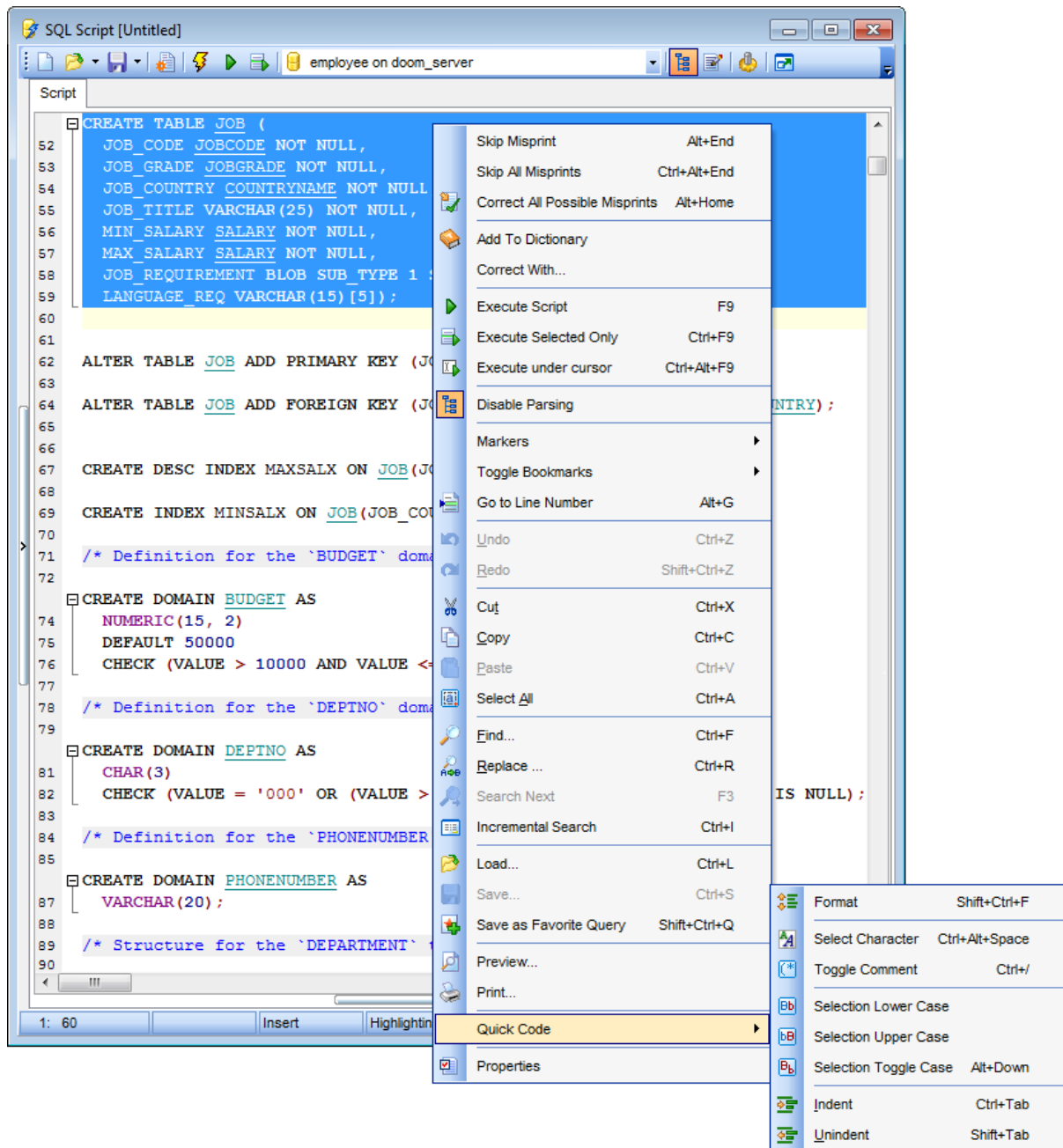
For your convenience the **syntax highlight, code completion** and a number of other features for efficient SQL editing are implemented:

- using [object links](#)<sup>[339]</sup> allowing you to open the object in the associated editor;
- ability to display line numbers;
- code folding for statements and clauses;
- customizable margins and gutters;
- formatting code for better representation

and more.

The **context menu** of Execute Script Editor area contains [execution](#)<sup>[548]</sup> commands, most of the standard text-processing functions (*Cut, Copy, Paste, Select All*), [spelling checking](#)<sup>[812]</sup> and functions for working with the script as a whole, e.g. you can enable/disable *parsing*, toggle *bookmarks* and *comments*, *move the cursor to a particular line*, *change the case* of selected text, *load/save* the content from/to a file or save as a [favorite query](#)<sup>[85]</sup>, [configure](#)<sup>[797]</sup> the editor using the **Properties** item or *preview/print* the text of the script. Most of these operations can be also performed with the corresponding [hot keys](#)<sup>[932]</sup> used.

Implementation of the [Find Text](#)<sup>[901]</sup> / [Replace Text](#)<sup>[903]</sup> dialogs and [Incremental search](#)<sup>[885]</sup> bar contributes to more efficient work with the SQL code.



### See also:

[Using Navigation bar and Toolbar](#)<sup>[543]</sup>

[Using Script Explorer](#)<sup>[547]</sup>

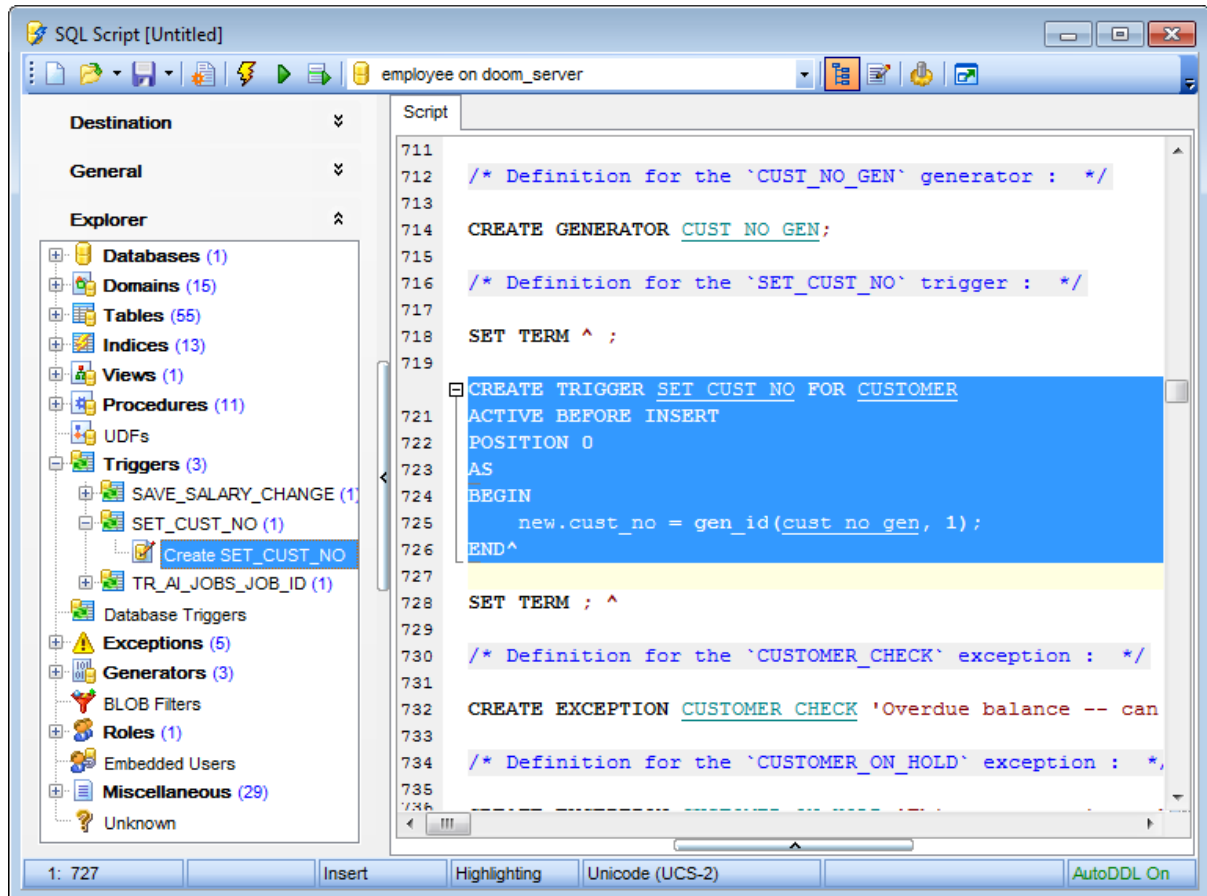
[Script execution](#)<sup>[548]</sup>

[Managing Favorite queries](#)<sup>[85]</sup>

[Execute Script options](#)<sup>[755]</sup>

### 9.3.3 Using Script Explorer

The **Explorer** group on the [Navigation bar](#)<sup>[543]</sup> displays the tree of objects, used in the current script and allows you to get to the required script fragment quickly by clicking the object in the tree.



**Hint:** When you click a node in the **Script Explorer** tree, the corresponding SQL statement is highlighted in the editor area. If you double-click a node, the corresponding SQL statement is highlighted, and the current focus is switched to the editor area (the cursor appears after the highlighted statement).

#### See also:

[Using Navigation bar and Toolbar](#)<sup>[543]</sup>

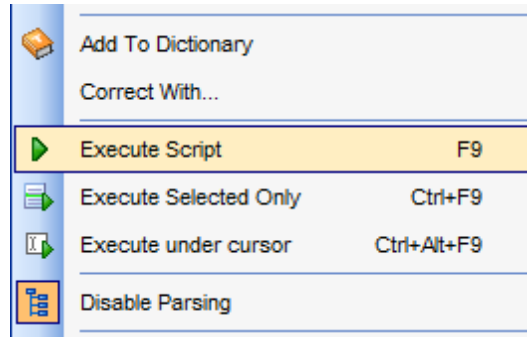
[Working with Execute Script editor area](#)<sup>[545]</sup>

[Database Objects Management](#)<sup>[162]</sup>

### 9.3.4 Script execution

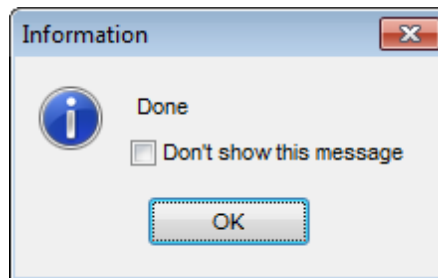
When all the script parameters are set, you can immediately **execute the script** in **Execute Script Editor**.

To execute a script, click the **Execute script** item of the [Navigation bar](#)<sup>[543]</sup> or [toolbar](#)<sup>[544]</sup>. You can also use the [context menu](#)<sup>[545]</sup> or *F9* hot key for the same purpose.



**Note:** If the  **Execute selected text separately** option (see the [Tools | Execute Script](#)<sup>[755]</sup> section of the [Environment Options](#)<sup>[736]</sup> dialog) is enabled (by default) and a text fragment is currently selected, only this fragment is executed when you click *Execute script* on the [Navigation bar](#)<sup>[543]</sup> or press *F9*. If this option is disabled, the whole script is executed, but you can still execute the selected fragment using the corresponding *Execute Selected Only* item of the [context menu](#)<sup>[545]</sup> or by pressing *Ctrl+F9*.

If the SQL syntax is correct, the script is executed and the 'Done!' information message appears.



If the syntax contains errors or script cannot be executed, the corresponding error message is displayed in the status bar area at the bottom of the editor window.

**Hint:** When you select an item from the error list (in the status bar area), the corresponding SQL statement is highlighted in the editor area. If you double-click an item, the corresponding SQL statement is highlighted, and the current focus is switched to the editor area (the cursor appears after the highlighted statement).

**Note:** **Execute Script Editor** does not show results returned upon SELECT queries execution. Please [execute](#)<sup>[340]</sup> such queries in [Query Data](#)<sup>[330]</sup> to see the result dataset.

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#### See also:



[Using Navigation bar and Toolbar](#)<sup>[543]</sup>

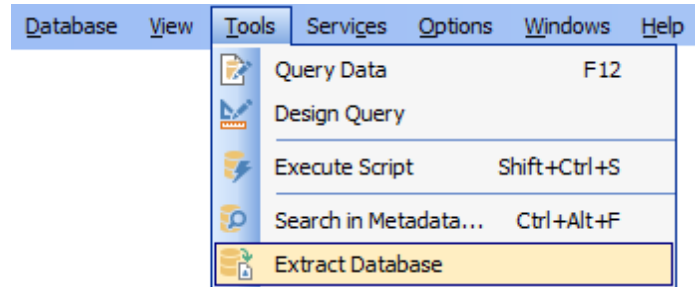
[Working with Execute Script editor area](#)<sup>[545]</sup>

[Using Script Explorer](#)<sup>[547]</sup>

## 9.4 Extract Database Wizard

**Extract Database Wizard** allows you to extract database objects and/or data to an SQL script, e.g. for backup purposes.

To start the wizard, select the **Tools** |  **Extract Database...** [main menu](#)<sup>[882]</sup> item, or right-click the database alias in the [DB Explorer](#)<sup>[63]</sup> tree and select the **Tasks** |  **Extract Database...** item from the [context menu](#)<sup>[53]</sup>.



- [Selecting a database for extraction](#)<sup>[551]</sup>
- [Specifying destination file name](#)<sup>[552]</sup>
- [Setting extraction mode](#)<sup>[554]</sup>
- [Setting BLOB options](#)<sup>[555]</sup>
- [Selecting objects for metadata extraction](#)<sup>[557]</sup>
- [Selecting objects for data extraction](#)<sup>[558]</sup>
- [Customizing script options](#)<sup>[559]</sup>
- [Start of extraction process](#)<sup>[561]</sup>
- [Using templates](#)<sup>[910]</sup>

---

### See also:

[Execute Script Editor](#)<sup>[542]</sup>

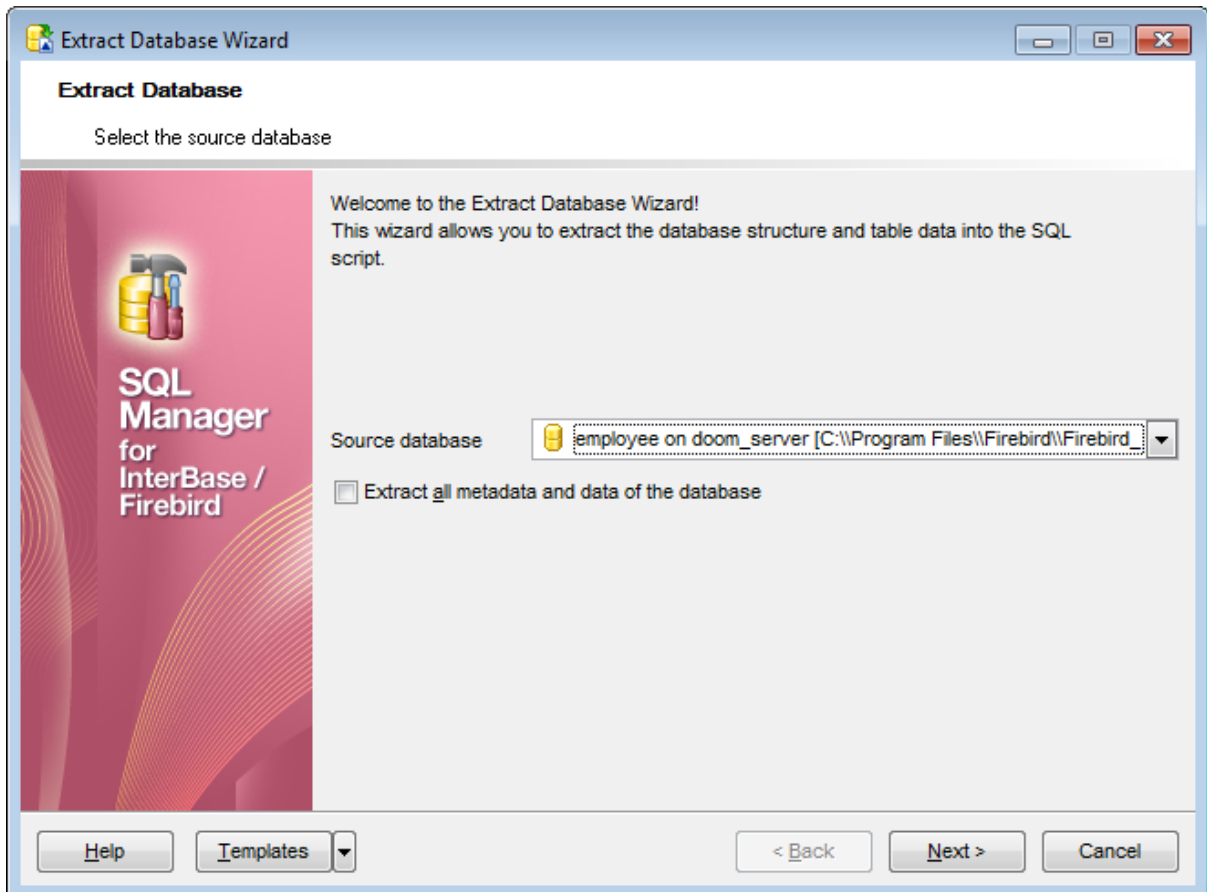
[Database Objects Management](#)<sup>[162]</sup>

[Using templates](#)<sup>[910]</sup>

### 9.4.1 Selecting source database

This step of the wizard allows you to select the **source database** from which metadata and/or data are to be extracted.

If necessary, check the  **Extract all metadata and data of the database** option to simplify the wizard.




Click the **Next** button to proceed to the [Specifying destination file name](#)<sup>552</sup> step of the wizard.

## 9.4.2 Specifying destination file name

### Script destination

This group of options allows you to specify whether the result SQL script will be automatically loaded to [Execute Script Editor](#)<sup>[542]</sup> or saved into a file.

### File name

Set a name for the result \*.sql file and type in or use the **Save as...**  button to specify the path to this file on your local machine or on a machine in the LAN.

### File charset

If necessary, use the drop-down list to select the character set to be applied to the output file.

### Compression options

#### Compress file

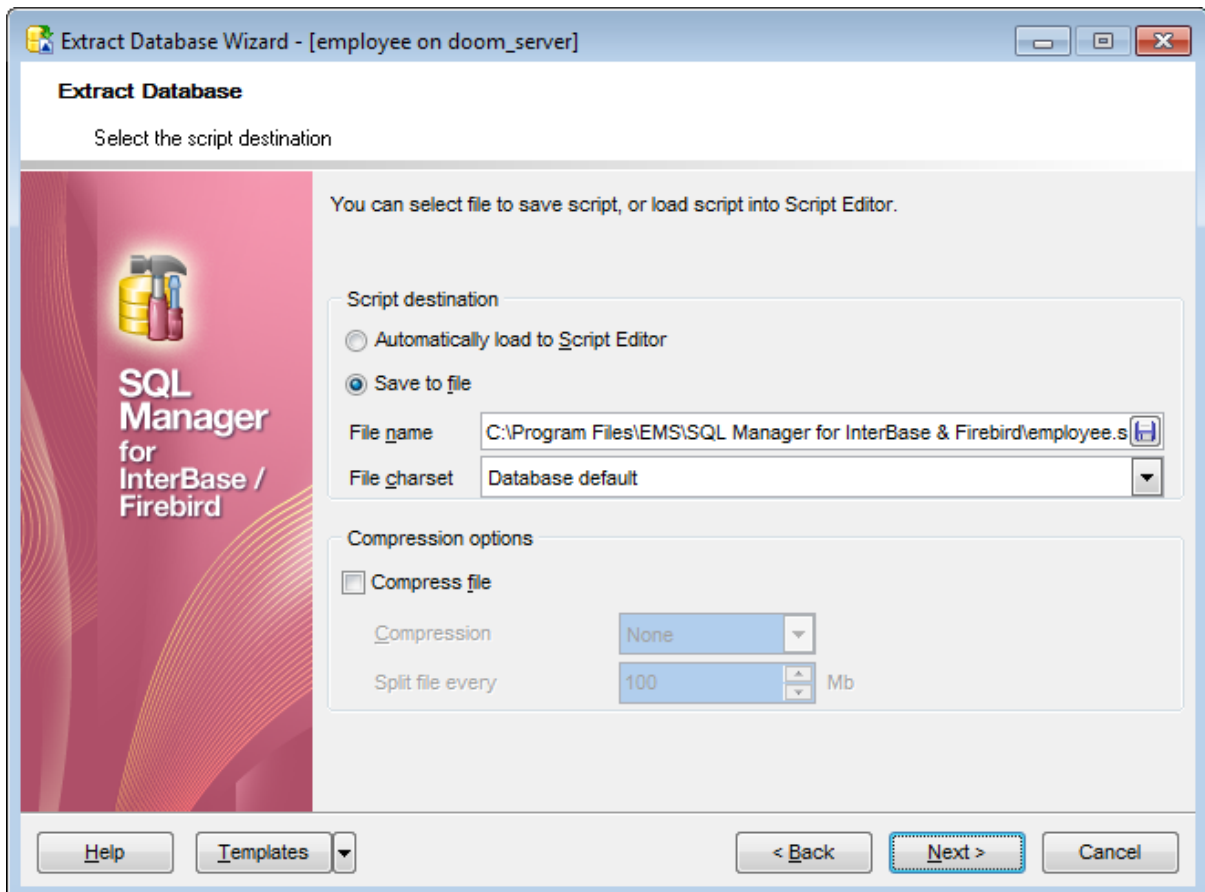
Check this option if you wish to compress the output file.

### Compression

Define the desired compression level to be applied for the file: *None*, *Fastest*, *Default*, *Best*.

### Split file every ... Mb

Specify the size (in *megabytes*) of each part the output file will be split into.

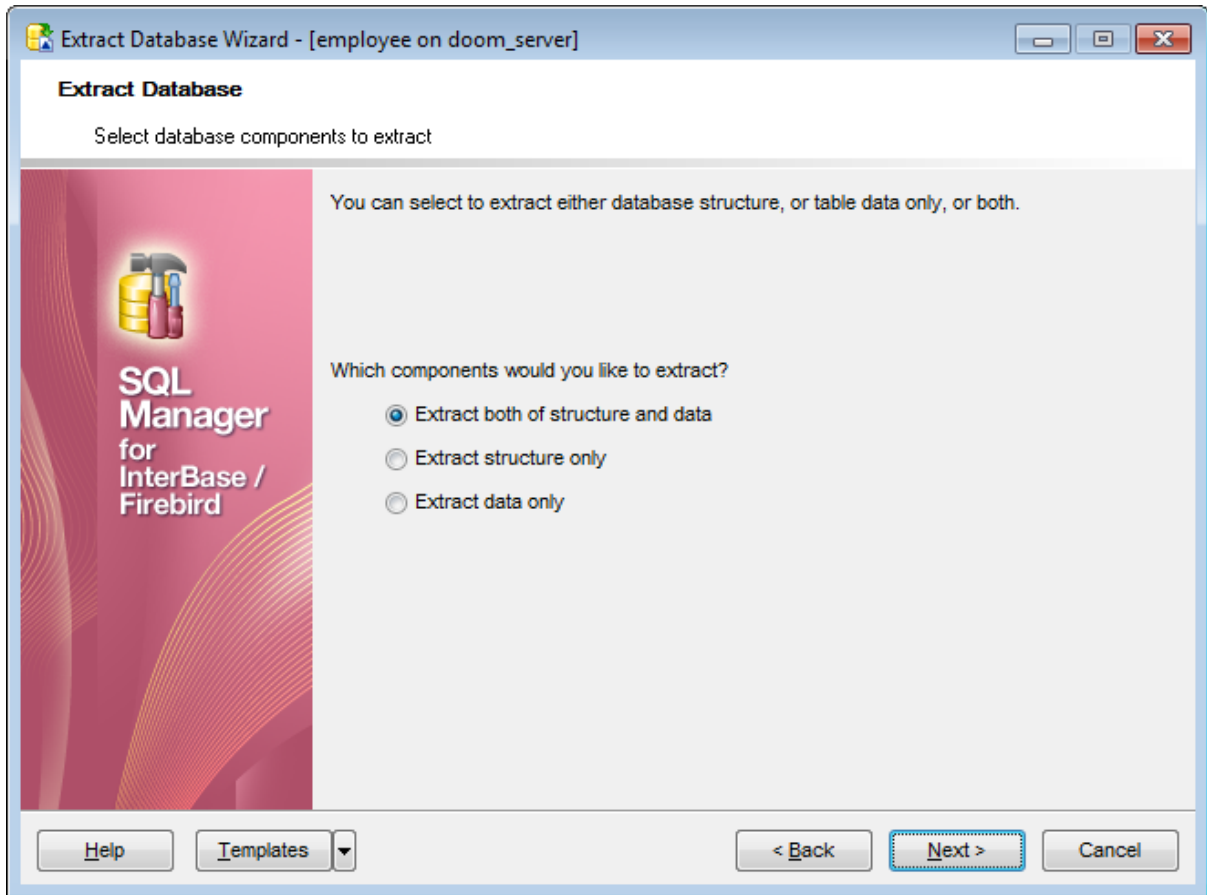




Depending on whether you have checked the  **Extract all metadata and data of the database** option at the [Selecting source database](#)<sup>[551]</sup> step, upon pressing the **Next** button you will either proceed to the [next step of the wizard](#)<sup>[554]</sup>, or you will be immediately forwarded to the [Setting BLOB options](#)<sup>[555]</sup> step, and then to the [Customizing script options](#)<sup>[559]</sup> step of the wizard.

### 9.4.3 Setting extraction mode


This step allows you to specify the **extraction mode**: choose whether *structure only*, *data only* or *both* are to be extracted.



Click the **Next** button to proceed to the [Setting BLOB options](#)<sup>[555]</sup> step of the wizard.

## 9.4.4 Setting BLOB options

### BLOB and arrays options

In this group of options you can determine whether BLOB fields are *not to be extracted*, *extracted as strings* (should be used in case BLOB fields contain only text data), or *extracted into a separate file*. If the latter is selected, you also need to specify the **File name** (the \*.blo file where the BLOB data are to be stored) and the location of the file on your local machine using the **Save as...**  button.

**Note:** *Extracting BLOB fields as strings* can lead to the inability to execute an SQL query because the query length is limited to 64K.

#### **Compress file**

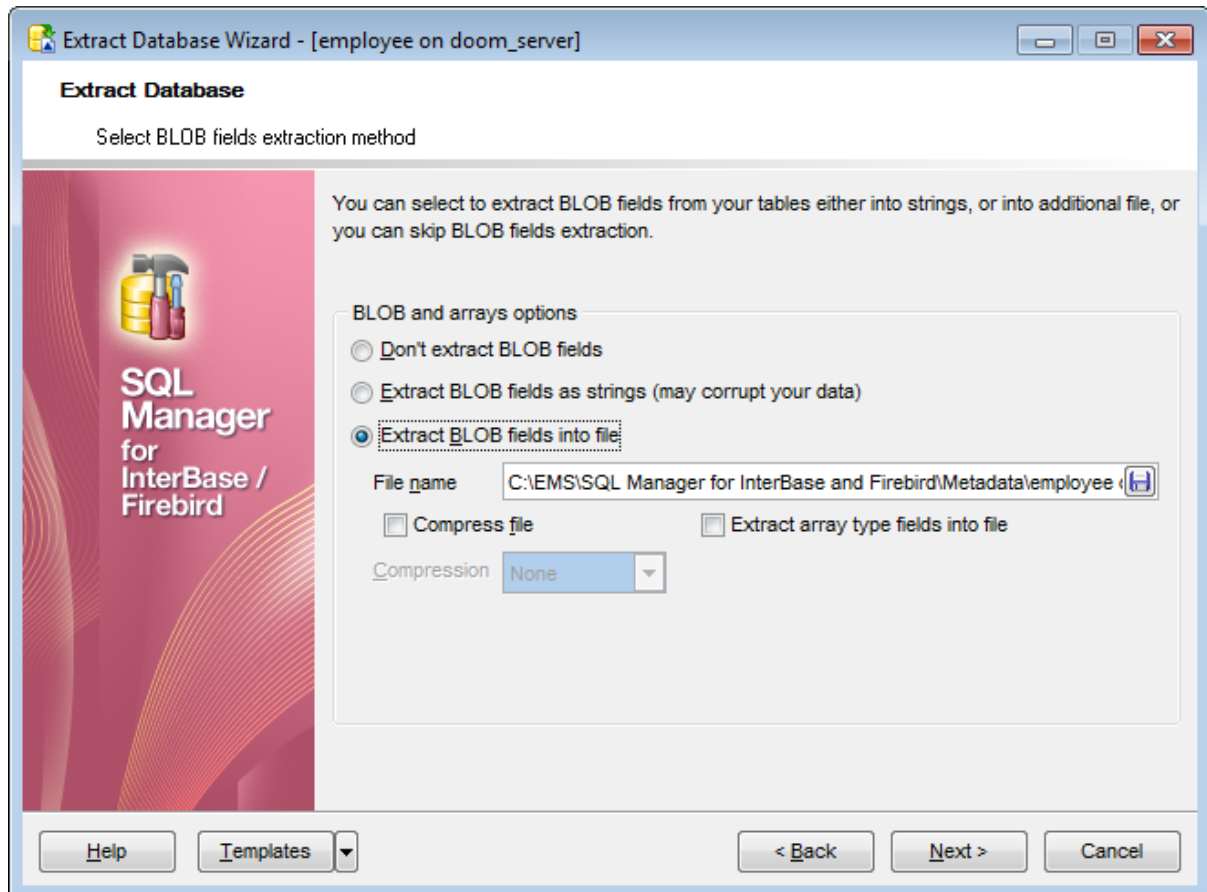
Check this option if you wish to compress the file containing BLOB data.

#### **Extract array type fields into file**

Check this option if you wish fields of array type to be dumped into the file.

### Compression

Define the desired compression level to be applied for the file: *None*, *Fastest*, *Default*, *Best*.



**Note:** If you choose to  **Extract BLOB fields into file** then afterwards the result SQL

file can be restored only by using the SQL Manager for InterBase/Firebird [Execute Script](#) <sup>542</sup> tool.

Click the **Next** button to proceed to [Selecting objects for structure extraction](#) <sup>557</sup>.

### 9.4.5 Selecting objects for structure extraction

This step of the wizard allows you to **select objects for metadata extraction**.

Note that this step is only available if the  **Extract all metadata and data of the database** option was unchecked when [selecting the source database](#)<sup>557</sup>.

#### **Extract all objects**





Adds all objects of the database to structure extraction process.

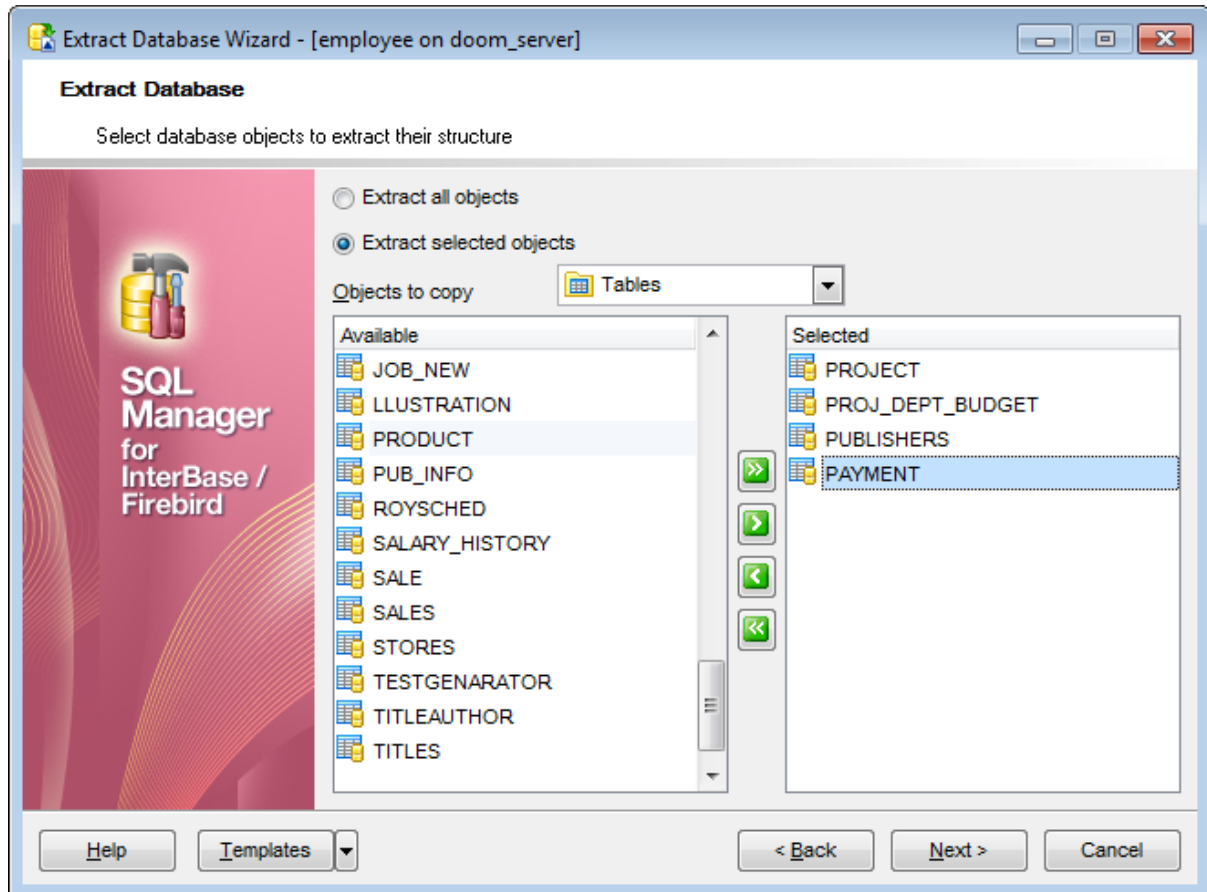
#### **Extract selected objects**

Adds only selected objects to structure extraction process.

#### **Objects to copy**

Use the drop-down list to select the type of objects to be extracted.

To select an object, you need to move it from the **Available** list to the **Selected** list. Use the     buttons or drag-and-drop operations to move the objects from one list to another.



Click the **Next** button to proceed to [Selecting objects for data extraction](#)<sup>558</sup>.





### 9.4.6 Selecting objects for data extraction

This step of the wizard allows you to **select tables for data extraction**.

Note that this step is only available if the  **Extract all metadata and data of the database** option was unchecked when [selecting the source database](#)<sup>[557]</sup>.

**Extract data of the selected tables**

Adds only selected tables to data extraction process.

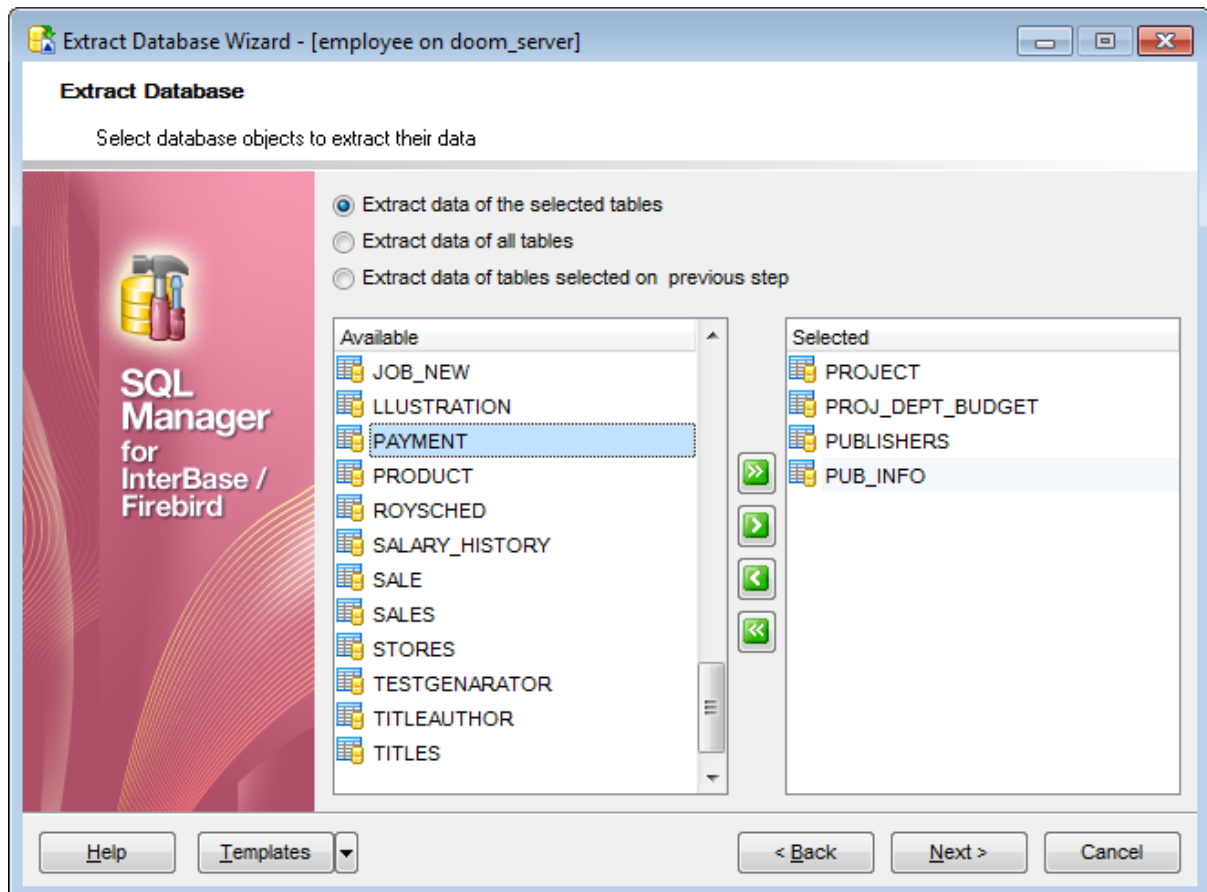
To select a table, you need to move it from the **Available** list to the **Selected** list. Use the     buttons or drag-and-drop operations to move the tables from one list to another.

**Extract data of all tables**

Adds all tables of the database to data extraction process.

**Extract data of tables selected on the previous step**

Adds only the tables [selected for metadata extraction](#)<sup>[557]</sup>.



Click the **Next** button to proceed to the [Customizing script options](#)<sup>[559]</sup> step of the wizard.

### 9.4.7 Customizing script options

This step allows you to customize common **script options** and **data options** for the extraction process.

#### Script options

**Generate "CREATE DATABASE" statement**

Check this option to add the *CREATE DATABASE* statement to the result script.

**Generate "CONNECT DATABASE" statement**

Check this option to add the *CONNECT DATABASE* statement to the result script.

**Include Password in "CONNECT" and "CREATE DATABASE" statements**

Check this option to add the *PASSWORD* clause to the *CONNECT / CREATE DATABASE* statements in the result script.

**Generate "CREATE JOURNAL" statement**

When this option is enabled, the *CREATE JOURNAL* statement will be created in the script.

**Generate "DROP" statements for objects**

Check the option to add the *DROP* statements for the extracted objects in the result script.

**Generate "SET AUTO DDL" statement**

Check this option to add the *SET AUTO DDL* statement, and select whether *SET AUTO DDL ON* or *SET AUTO DDL OFF* is to be used in the result script.

**Set generators**

Check this option to add the *SET GENERATOR* statements to the result script.

**Include object descriptions**

This option specifies whether object [descriptions](#)<sup>[887]</sup> will be included in the result script or not.

**Include trigger messages**

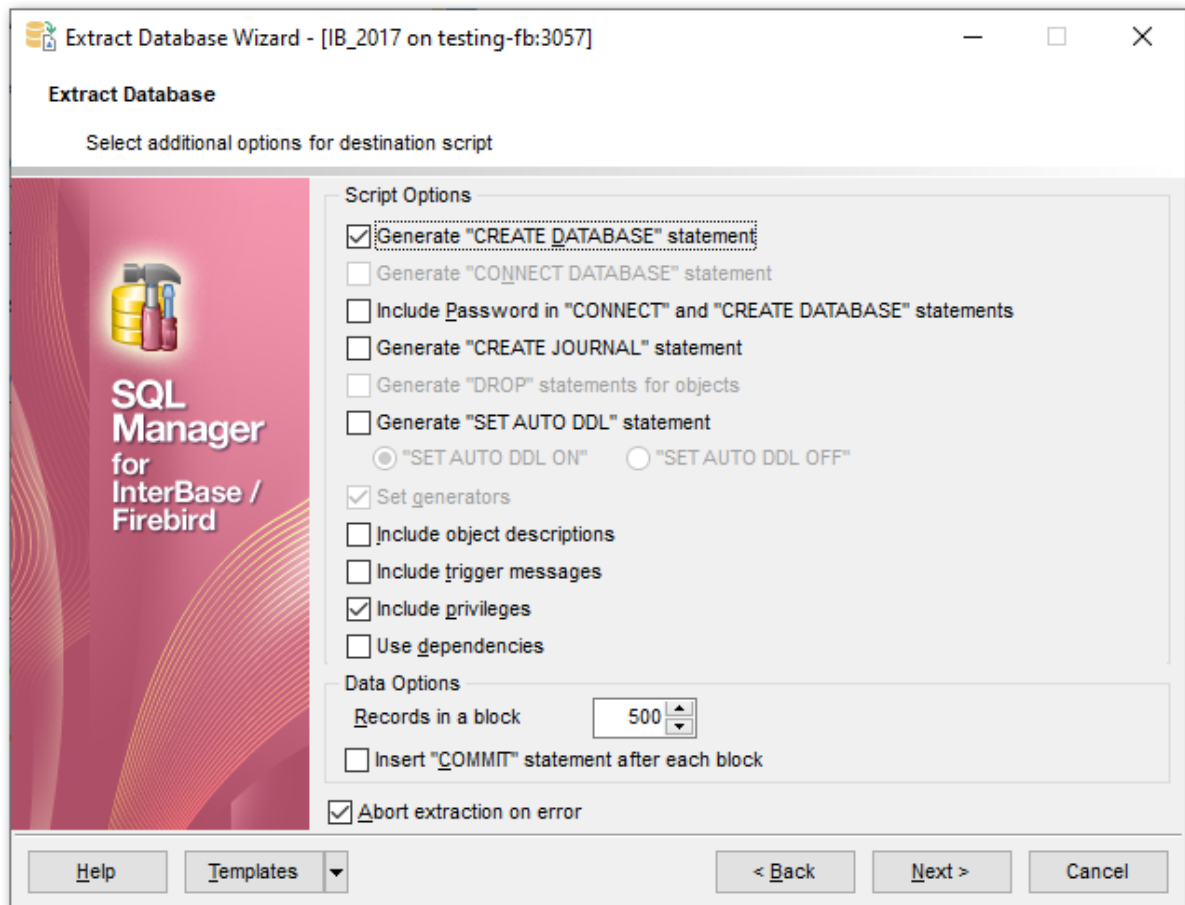
This option specifies whether [trigger messages](#)<sup>[288]</sup> will be included in the result script or not.

**Include privileges**

This option specifies whether [granted](#)<sup>[726]</sup> privileges will be included in the result script or not.

**Use dependencies**

This option determines objects' [dependencies](#)<sup>[888]</sup> usage in the extraction process. Check the option to extract all objects that the selected objects depend on.



### Data options

#### Records in a block / Insert "COMMIT" statement after each block

These controls allow you to define whether the *COMMIT* statement is added to the script or not, and to specify the number of records in each block to be supplemented with this statement.

#### Abort extraction on error

This option determines whether the extraction process should be stopped or forced to continue if an error occurs.

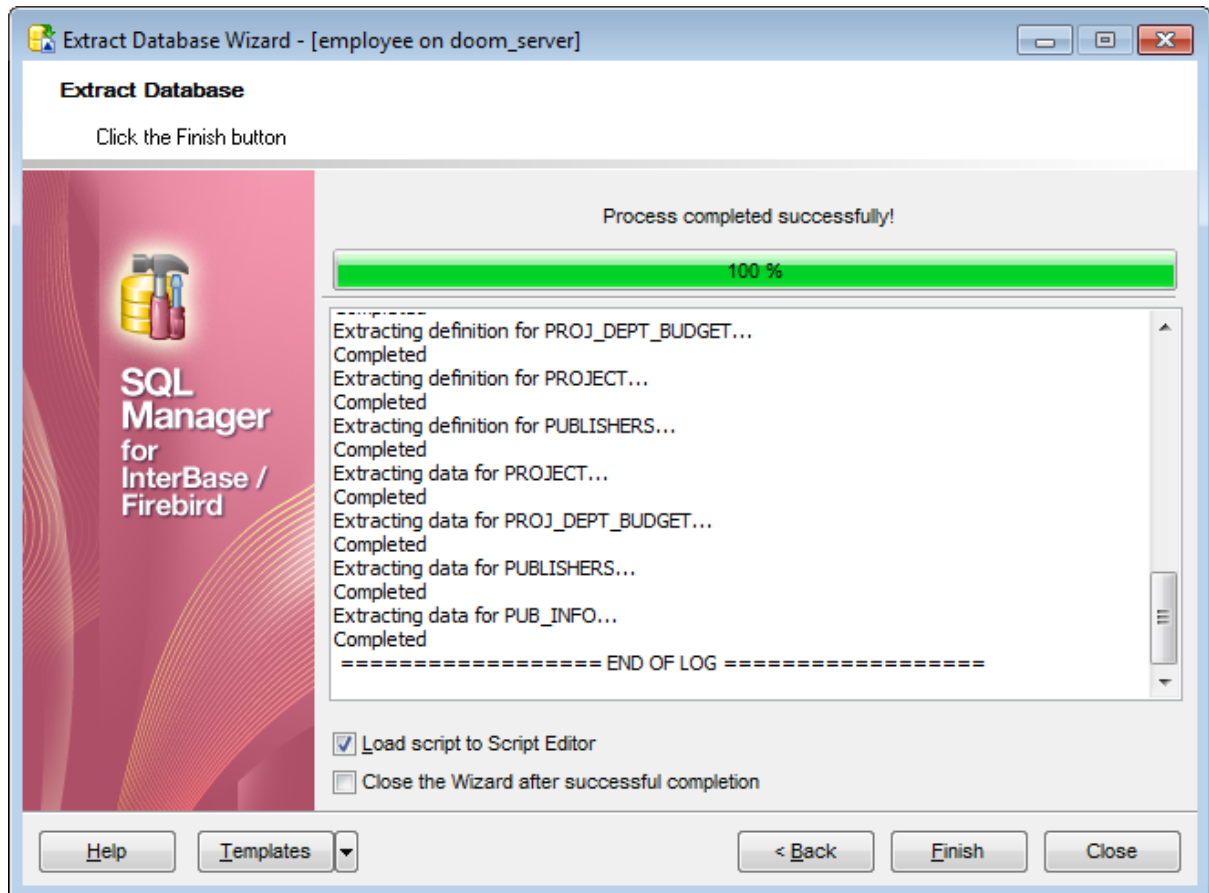
Click the **Next** button to proceed to the [last](#) step of the wizard.



### 9.4.8 Start of extraction process

This step of the wizard is intended to inform you that all extraction options have been set, and you can start the extraction process.

The log area allows you to view the log of operations and errors (if any).



#### Load script to Script Editor

Check this option to load the result script to [Execute Script Editor](#)<sup>[542]</sup>.

#### Close the wizard after successful completion

If this option is selected, the wizard is closed automatically when the extraction process is completed.

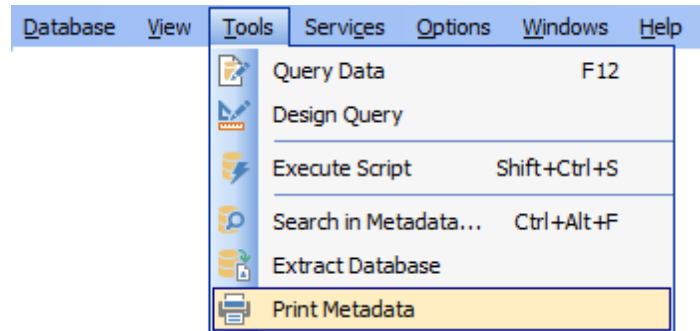
If necessary, you can save a [template](#)<sup>[910]</sup> for future use.

Click the **Finish** button to run the extraction process.

## 9.5 Print Metadata

**Print Metadata** allows you to generate and print metadata reports of any database object(s).

To open the window, select the **Tools |  Print Metadata** [main menu](#)<sup>[882]</sup> item, or use the **Print Metadata**  button on the main [toolbar](#)<sup>[884]</sup>.



- [Using Navigation bar and Toolbar](#)<sup>[563]</sup>
- [Selecting objects](#)<sup>[564]</sup>
- [Printing options](#)<sup>[565]</sup>
- [Print Preview](#)<sup>[595]</sup>

Availability:

**Full** version (for Windows) **Yes**

**Lite** version (for Windows) **No**

**Note:** To compare all features of the **Full** and the **Lite** versions of **SQL Manager**, refer to the [Feature Matrix](#)<sup>[20]</sup> page.

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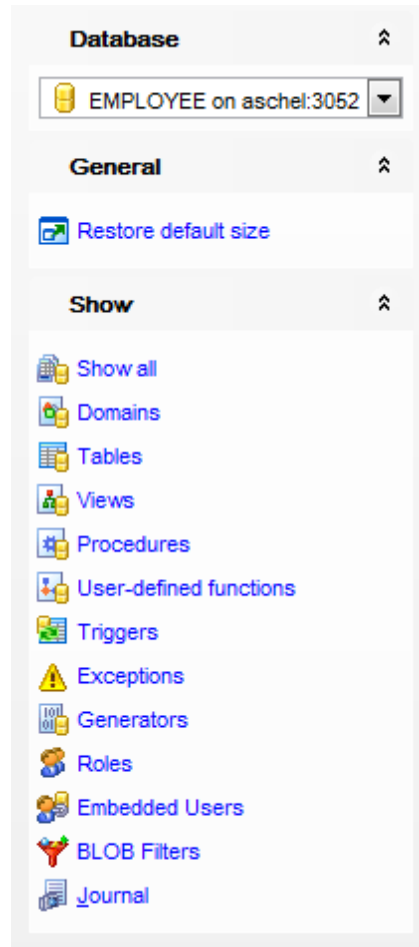
**See also:**

[Database Objects Management](#)<sup>[162]</sup>


[Print Metadata options](#)<sup>[767]</sup>

### 9.5.1 Using Navigation bar and Toolbar


The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Print Metadata**.




#### Database

 select a database for the printing report

#### General

 print metadata of the selected object(s)

 [preview](#)<sup>[595]</sup> the printing report

 restore the default size and position of the window



#### Show

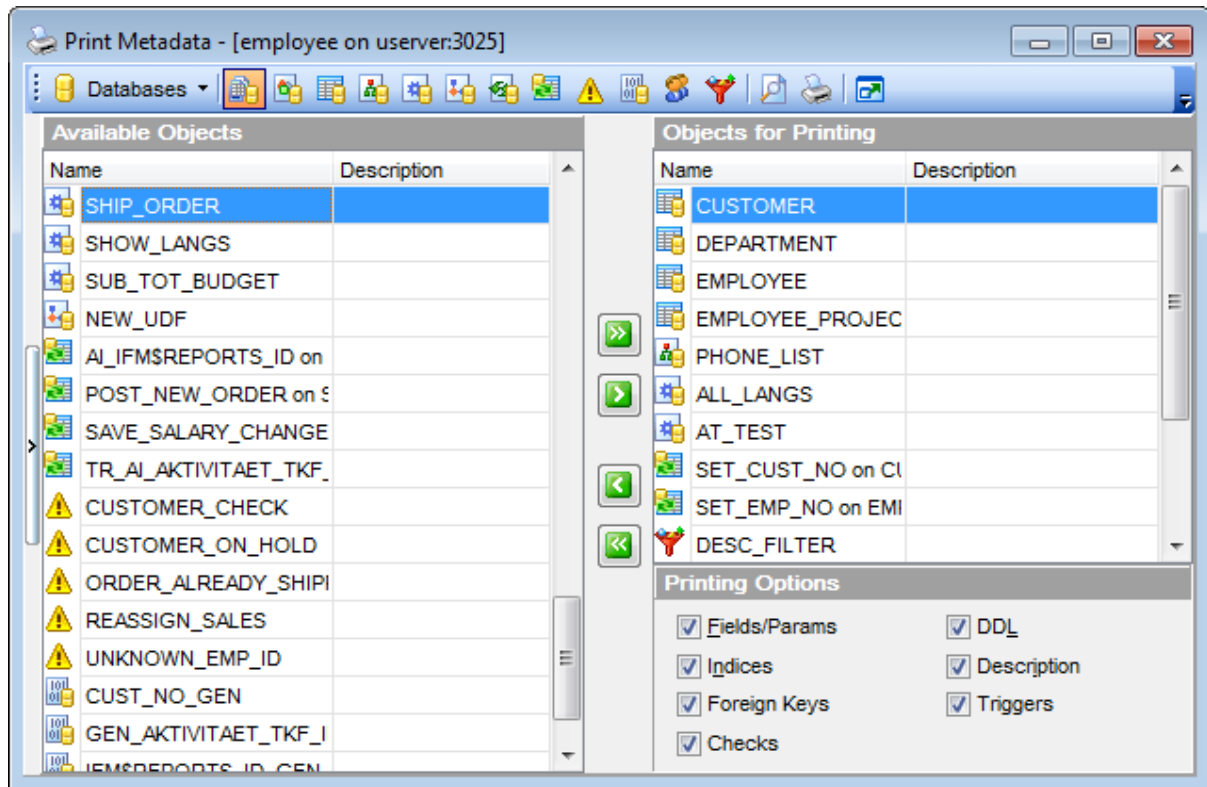
✓ filter database objects available in the [Available Objects](#)<sup>[564]</sup> list by type

Items of the **Navigation bar** are also available on the **ToolBar** of the **Print Metadata** window. To enable the [toolbar](#)<sup>[884]</sup>, open the [Environment Options](#)<sup>[736]</sup> dialog, proceed to the [Windows](#)<sup>[743]</sup> section there and select  *Toolbar* (if you need the toolbar only) or  *Both* (if you need both the toolbar and the [Navigation bar](#)<sup>[882]</sup>) in the **Bar style for child forms** group.



## 9.5.2 Selecting objects

The **Print Metadata** window allows you to select the database objects for printing metadata.

To select an object, you need to move it from the **Available Objects** list to the **Objects for Printing** list. Use the   buttons or drag-and-drop operations to move the objects from one list to another.

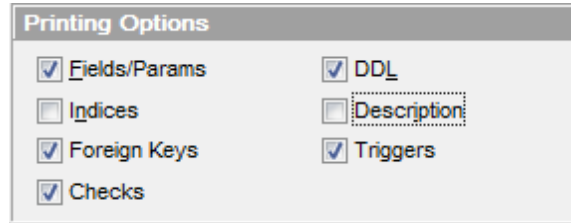


After you select one or several objects, the **Printing Options** pane appears at the bottom. Select an object in the **Objects for Printing** list and specify items to be included into the printing report. For details see [Printing options](#)<sup>[563]</sup>.

**Note:** You can  **preview** the printing report and  **print** metadata for objects of the selected type using the corresponding items of the [Navigation bar](#)<sup>[563]</sup> (or [toolbar](#)<sup>[563]</sup>). For details see [Report Viewer](#)<sup>[593]</sup>.

### 9.5.3 Printing options

The **Printing Options** area is available in the bottom right corner of the **Print Metadata** window. It is also available within a separate **Printing options** dialog when called from a [Navigation bar](#)<sup>[882]</sup> or [toolbar](#)<sup>[884]</sup> of an object editor.



#### Categories for printing

Use this group to specify items to be included into the printing report: *Fields/Params*, *Indexes*, *Foreign keys*, *Checks*, *DDL*, *Description*, *Triggers* (availability of the items depends on the object).

Click the **Print** button to call the standard **Print** dialog to set printer configuration and start printing the report.

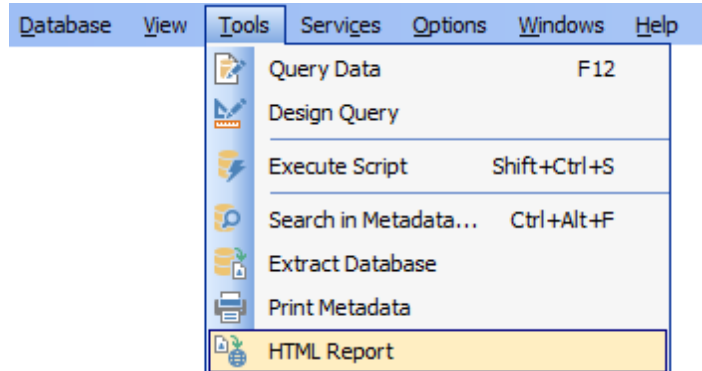
Click the **Preview** button to call the [Report Viewer](#)<sup>[595]</sup> dialog to preview the report.

Click the **Design** button to call [Report Designer](#)<sup>[581]</sup> to edit the report.

## 9.6 HTML Report Wizard

**HTML Report wizard** allows you to generate a detailed HTML report of the selected database objects.

To start **HTML Report Wizard**, select the **Tools | HTML Report** [main menu](#)<sup>[882]</sup> item, or use the **HTML Report** [button](#)<sup>[884]</sup> on the main [toolbar](#)<sup>[884]</sup>. Alternatively, you can right-click the database alias in the [DB Explorer](#)<sup>[63]</sup> tree and select the **Tasks | HTML Report...** item from the [context menu](#)<sup>[53]</sup>.



- [Selecting database and directory](#)<sup>[567]</sup>
- [Selecting object types](#)<sup>[568]</sup>
- [Specifying CSS for HTML report](#)<sup>[569]</sup>
- [Setting additional report options](#)<sup>[570]</sup>
- [Creating HTML report](#)<sup>[571]</sup>
- [Using templates](#)<sup>[910]</sup>

Availability:

**Full** version (for Windows) **Yes**

**Lite** version (for Windows) **No**

**Note:** To compare all features of the **Full** and the **Lite** versions of **SQL Manager**, refer to the [Feature Matrix](#)<sup>[20]</sup> page.

**See also:**

[Database Objects Management](#)<sup>[162]</sup>

[Using templates](#)<sup>[910]</sup>


### 9.6.1 Selecting database and directory

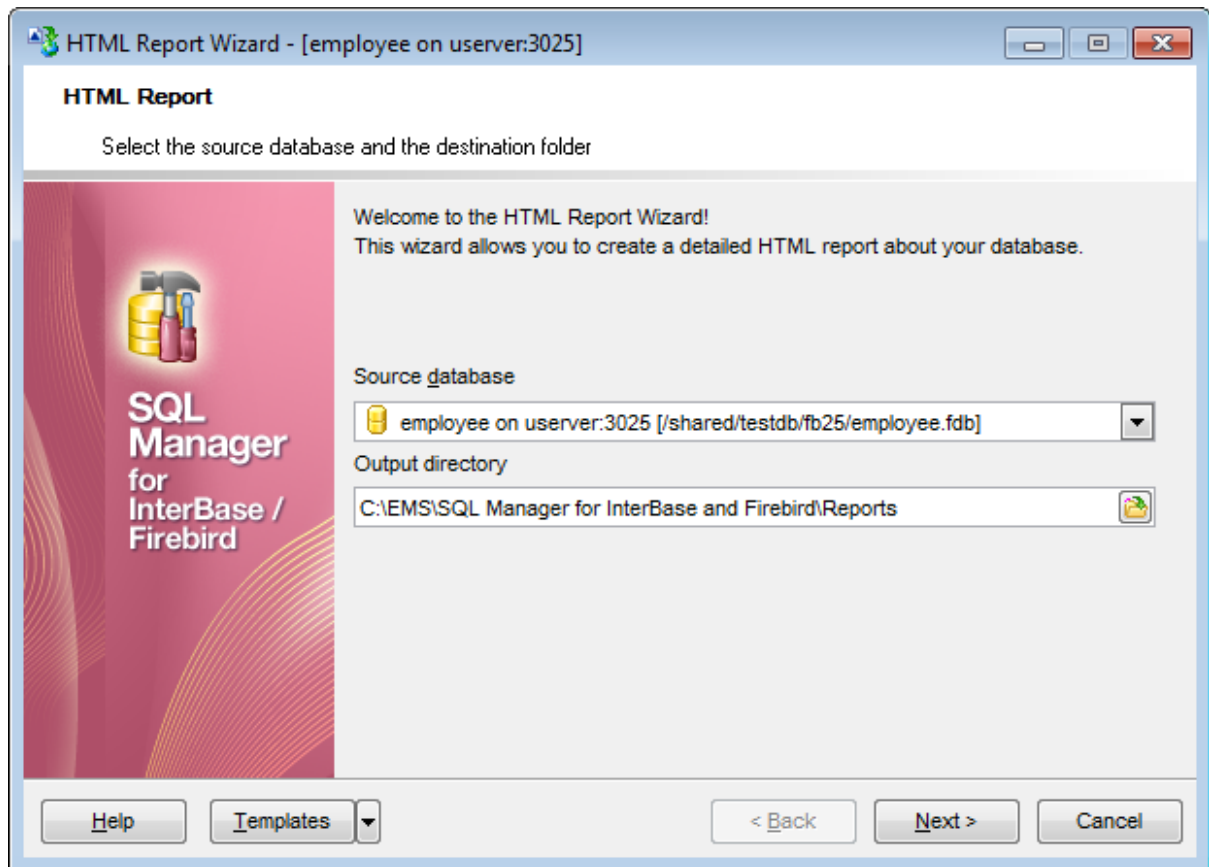
At this step of the wizard you should select the **source database** and **output directory** for the HTML report.

#### Source database

Use the drop-down list of [registered](#)<sup>[107]</sup> and [connected](#)<sup>[67]</sup> databases to select the source database for the report.

#### Output directory

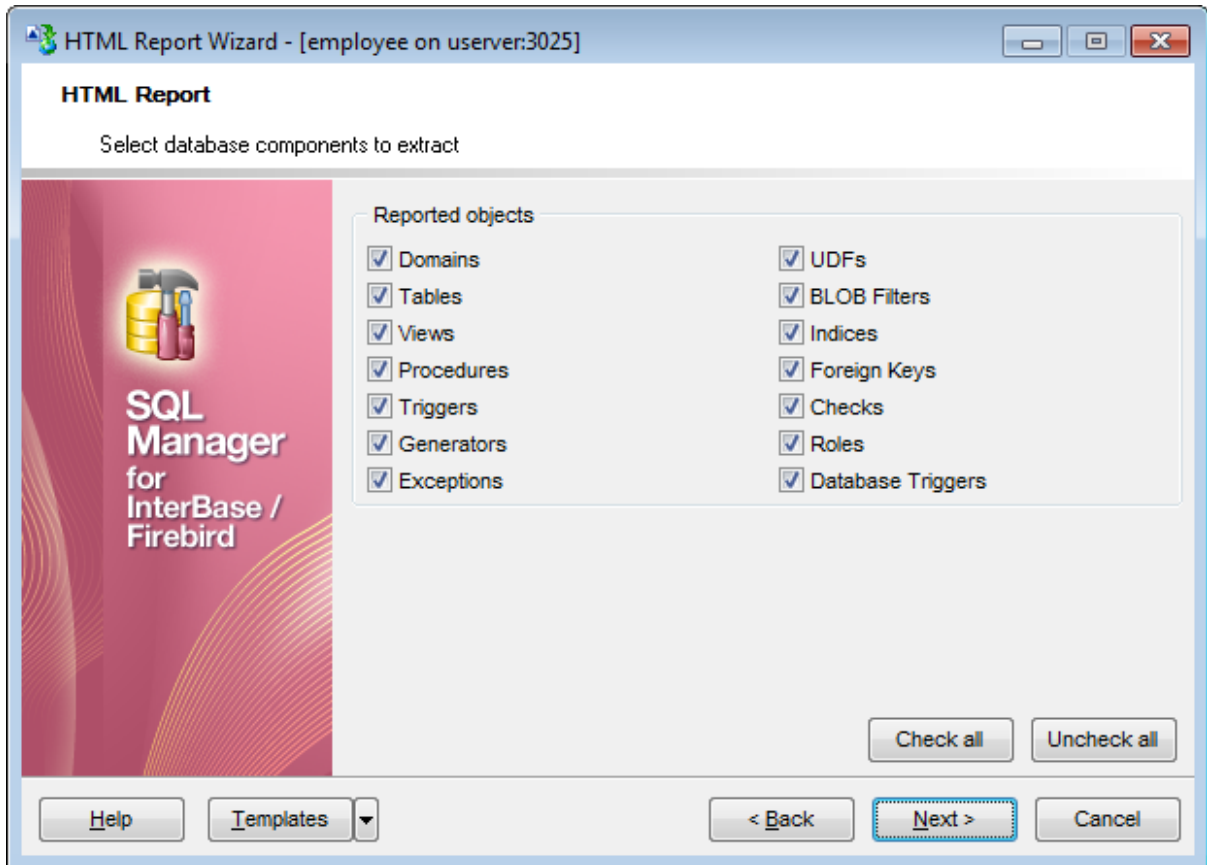
Type in or use the  button to specify the path to the output directory for the result HTML files using the **Browse for Folder** dialog.



Click the **Next** button to proceed to the [Selecting object types](#)<sup>[568]</sup> step of the wizard.

## 9.6.2 Selecting object types

Use this step of the wizard to select *the types of objects* to be included in the result HTML report.



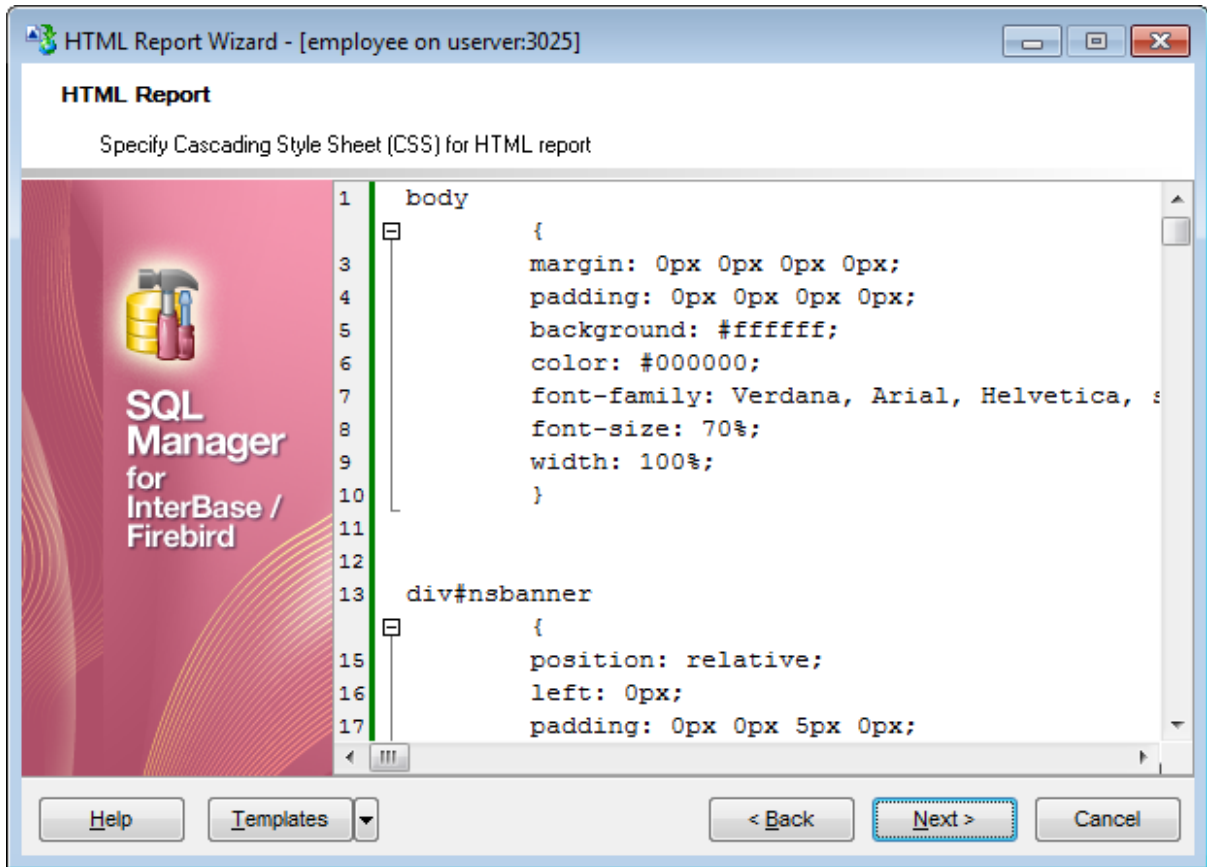
For your convenience the *Check All* and *Unckeck All* buttons are implemented at the bottom of the objects list area.

Click the **Next** button to proceed to the [Specifying CSS](#)<sup>[569]</sup> step of the wizard.



### 9.6.3 Specifying CSS

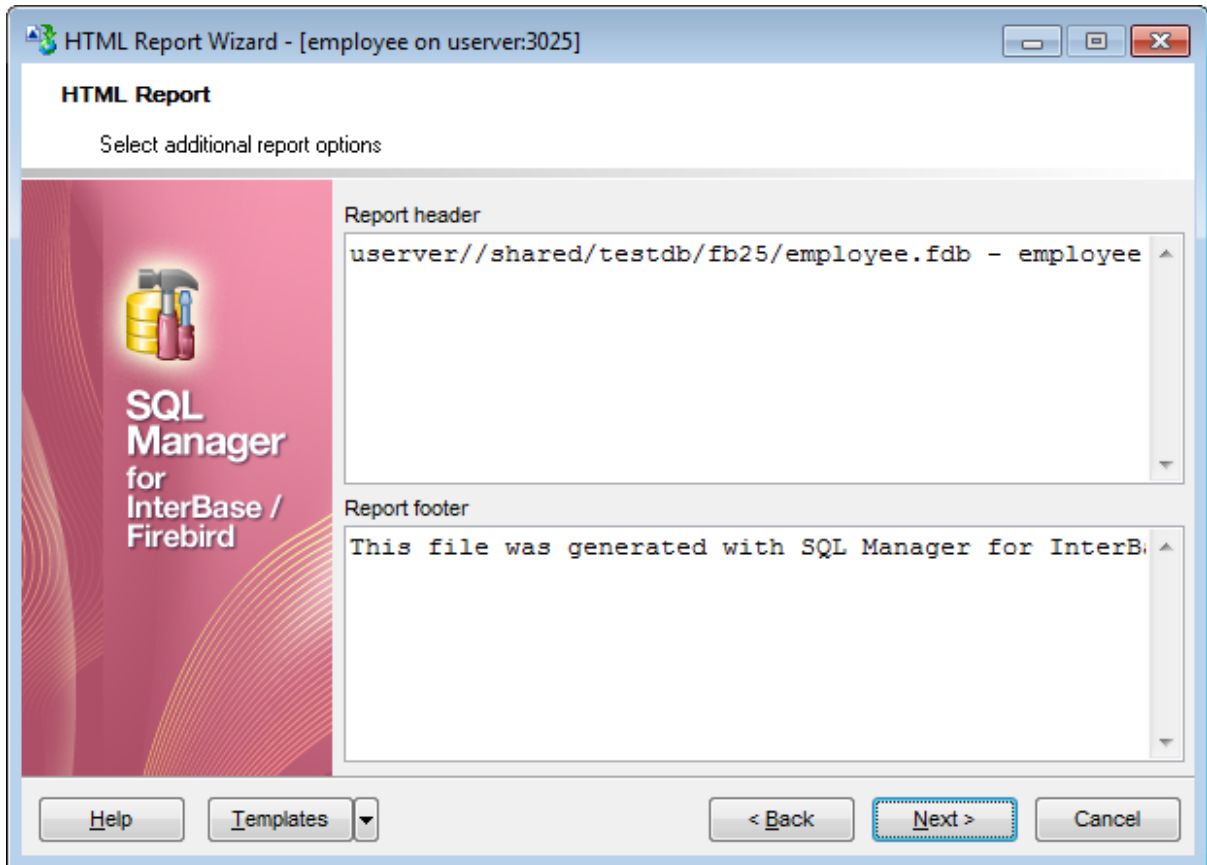
This step of the wizard allows you to edit the CSS (Cascading Style Sheet) file that will be used by the result HTML report.



Click the **Next** button to proceed to the [Setting additional report options](#)<sup>[570]</sup> step of the wizard.

### 9.6.4 Setting additional report options

Use this step of the wizard to set additional HTML report options.



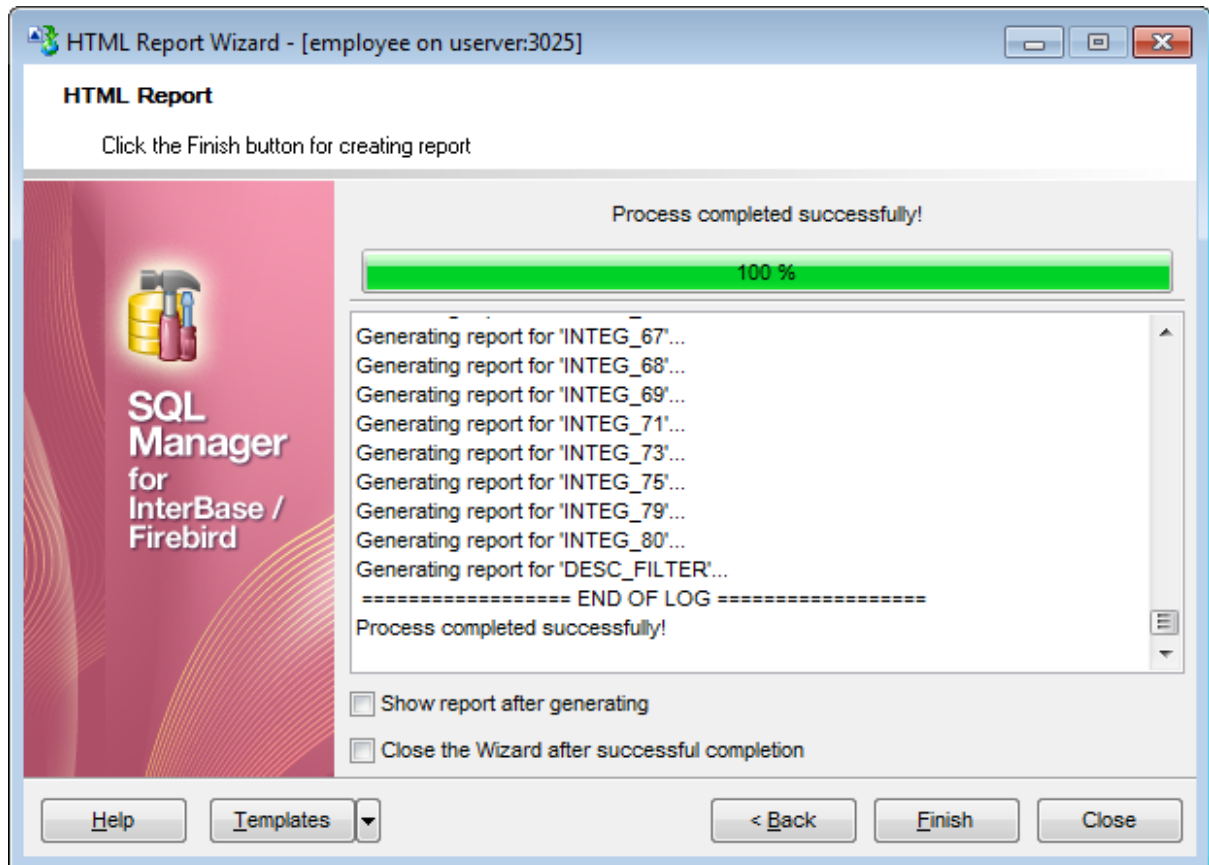
If necessary, you can set optional text to **Report header** and **Report footer** of the result HTML report. For your convenience the default header and footer text is already available. If necessary, you can edit this text according to your needs.

Click the **Next** button to proceed to [Creating HTML report](#)<sup>571</sup>.

### 9.6.5 Creating HTML report

This step of the wizard is intended to inform you that all necessary options have been set, and you can start the process.

The log area allows you to view the log of operations and errors (if any).



**Show report after generating**

This option opens the result report in your default browser after generating.

**Close the wizard after successful completion**

If this option is selected, the wizard is closed automatically when the creating HTML report process is completed.

If necessary, you can save a [template](#)<sup>[910]</sup> for future use.

Click the **Finish** button to run the process.

## 9.7 Reports management

**SQL Manager for InterBase/Firebird** provides several tools for efficient *reports management*:

[Create Report Wizard](#)<sup>[573]</sup>

This tool is used to simplify the process of creating reports.

[Report Designer](#)<sup>[581]</sup>

It is a basic tool for creating powerful reports.

[Report Editor](#)<sup>[590]</sup>

Allows you to manage created reports.

[Report Viewer](#)<sup>[593]</sup>

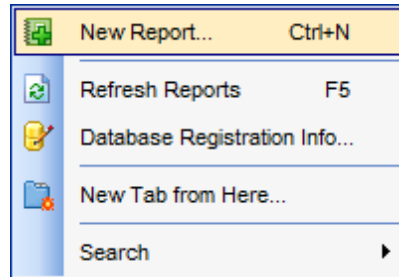
Allows you to preview reports before printing and export them to other formats.

Reports can be stored either in the database (table *IFM\$REPORTS* will be created to store them) or in a directory on your hard drive specified on the [Directories](#)<sup>[133]</sup> page of the [Database Registration Info](#)<sup>[115]</sup> dialog.

## 9.7.1 Create Report Wizard

Using **Create Report Wizard** you can create a report containing required datasets, bands and fields on them, with a definite report style applied.

To start the wizard, select the **Database | New Object... main menu**<sup>[882]</sup> item, then select **Report** in the **Create New Object**<sup>[164]</sup> dialog. Alternatively, you can right-click the **Reports** node of the **DB Explorer**<sup>[63]</sup> tree and select the **New Report...** item from the **context menu**<sup>[56]</sup>.



- [Specifying report name and options](#)<sup>[574]</sup>
- [Selecting report bands](#)<sup>[575]</sup>
- [Selecting report style](#)<sup>[577]</sup>
- [Specifying paper settings](#)<sup>[578]</sup>
- [Specifying margins](#)<sup>[579]</sup>
- [Specifying other page settings](#)<sup>[580]</sup>

Availability:

**Full** version (for Windows) **Yes**

**Lite** version (for Windows) **No**

**Note:** To compare all features of the **Full** and the **Lite** versions of **SQL Manager**, refer to the [Feature Matrix](#)<sup>[20]</sup> page.

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**See also:**

[Report Designer](#)<sup>[581]</sup>

[Report Editor](#)<sup>[590]</sup>

[Report Viewer](#)<sup>[593]</sup>

### 9.7.1.1 Specifying database name and report options

Select the source **database** for adding a report and choose the action you need to perform: either *create a new report* or *import an existing report from file*.

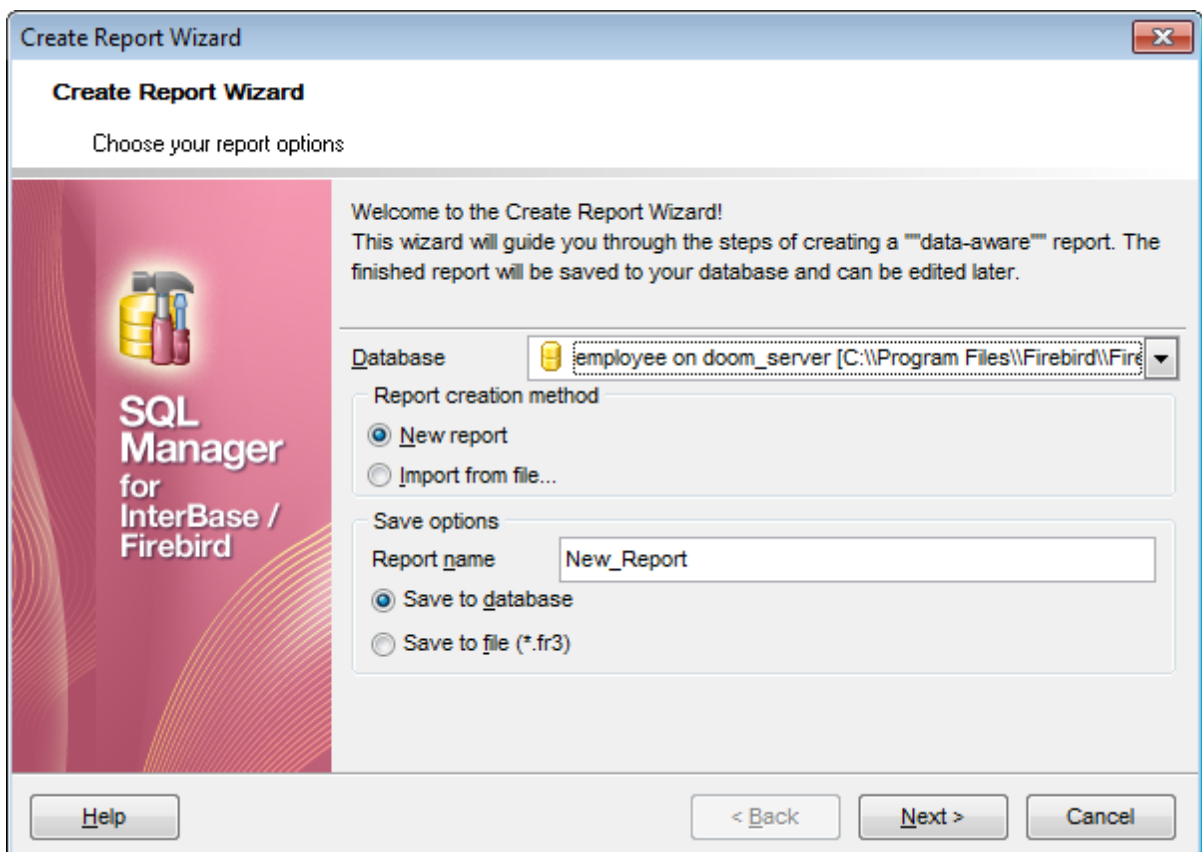
Set the **name** for the new report and specify the save options for it: .

**Save to database**

The report will be created on the server inside the database.





**Save to file**

If this option is selected, the report will be saved as a \*.fr3 file to the directory specified on the [Directories](#)<sup>[133]</sup> page of the [Database Registration Info](#)<sup>[115]</sup> dialog.

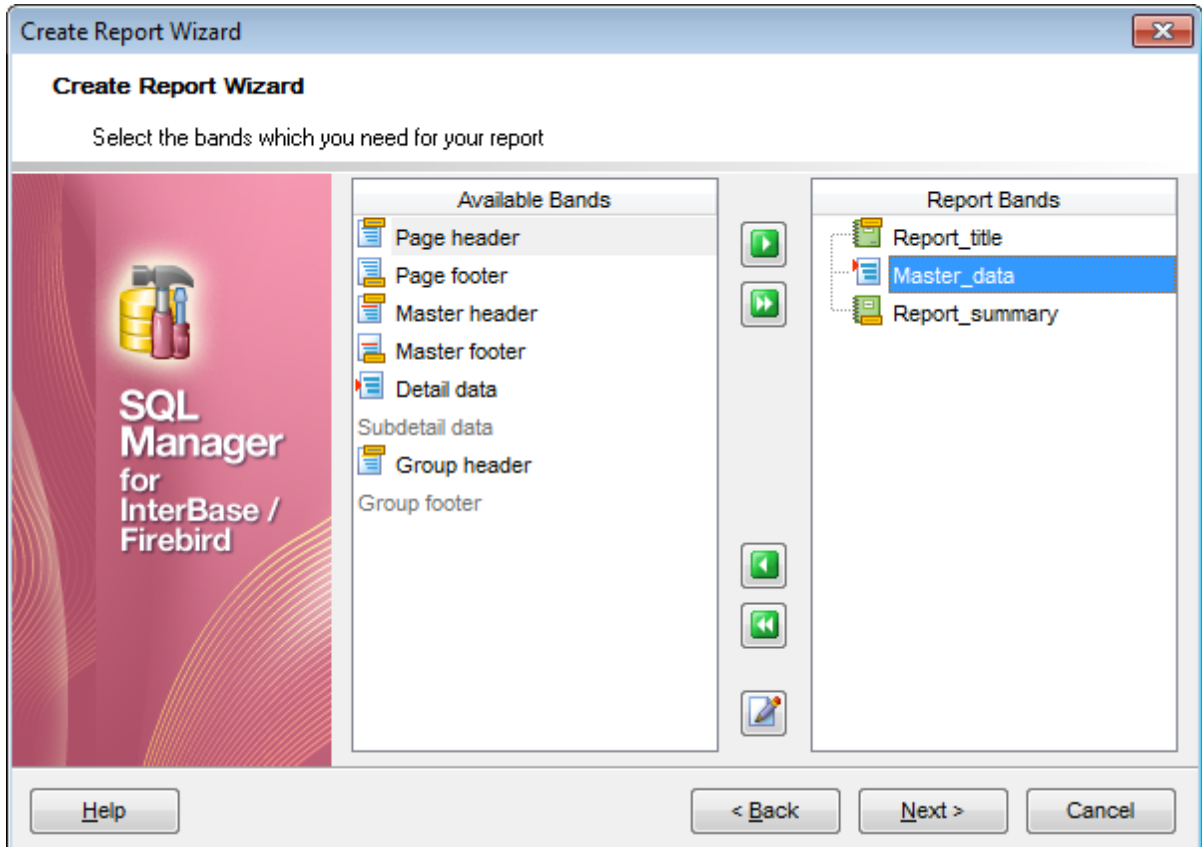


Click the **Next** button to proceed to the [Selecting report bands](#)<sup>[575]</sup> step of the wizard.

### 9.7.1.2 Selecting report bands

This step of the wizard allows you to select the bands to be included in the report. To select a band, you need to move it from the **Available Bands** list to the **Report Bands** list. Use the     buttons or drag-and-drop operations to move the fields from one list to another.

Use the **Edit**  button to create datasets for 'data' bands using [Query Builder](#)<sup>347</sup>.



Brief information about bands functionality is listed below. See **FastReport Help** for more information.

<b>Name</b>	<b>Functionality</b>
Report title	<i>Prints once at the beginning of report</i>
Report summary	<i>Prints once at the end of report</i>
Page header	<i>Prints at the top of each page</i>
Page footer	<i>Prints at the bottom of each page</i>
Master header	<i>Prints at the beginning of master list</i>
Master data	<i>Data rows of master list</i>
Master footer	<i>Prints at the end of master list</i>
Detail header	<i>Prints at the beginning of detail list</i>
Detail data	<i>Data rows of detail list</i>

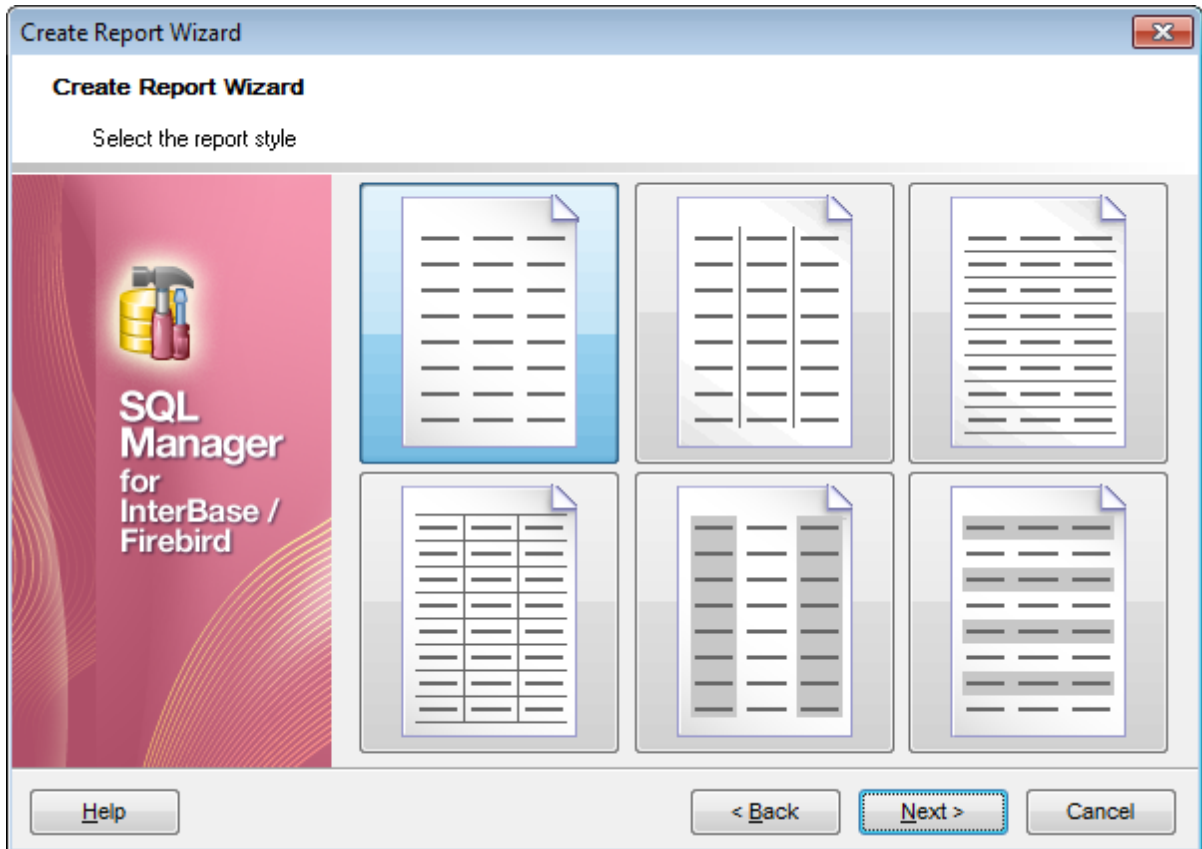
Detail footer	<i>Prints at the end of detail list</i>
Subdetail header	<i>Prints at the beginning of subdetail list</i>
Subdetail data	<i>Data rows of subdetail list</i>
Subdetail footer	<i>Prints at the end of subdetail list</i>
Group header	<i>Prints at the beginning of each group</i>
Group footer	<i>Prints at the end of each group</i>

Click the **Next** button to proceed to the [Selecting report style](#)<sup>577</sup> step of the wizard.



### 9.7.1.3 Selecting report style

Select the report style by clicking one of the images illustrating the styles available for the report.

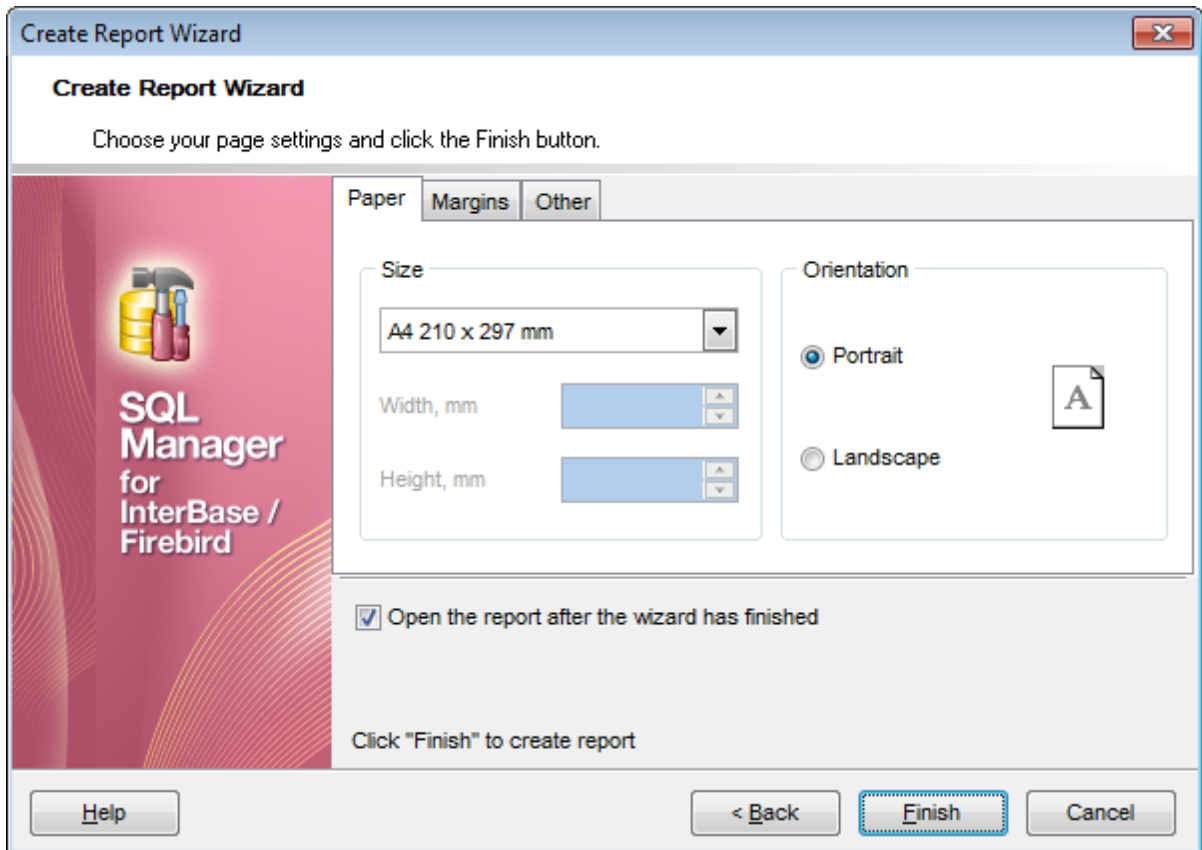


Click the **Next** button to proceed to the [Specifying paper settings](#)<sup>578</sup> step of the wizard.

### 9.7.1.4 Specifying page settings

#### 9.7.1.4.1 Specifying paper settings

Specify report options: paper size and *orientation*, [page margins](#)<sup>[579]</sup>, [other settings](#)<sup>[580]</sup>. For details see [Page settings](#)<sup>[597]</sup>.



Use the **Margins** tab to [specify margins](#)<sup>[579]</sup> for the result report.

**Open the report after the wizard has finished**

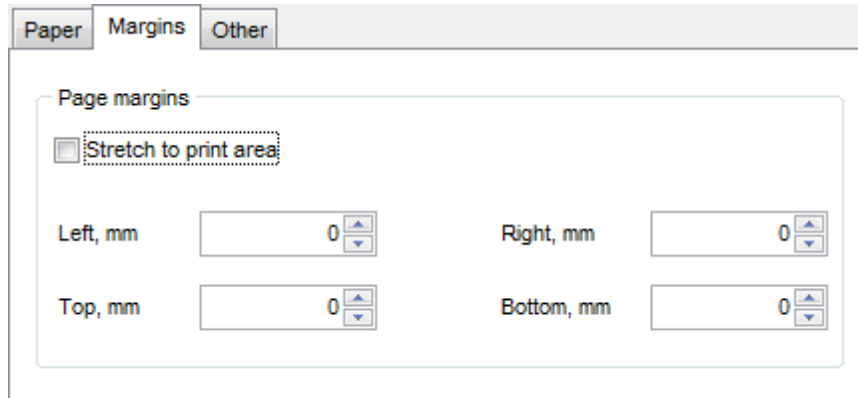
If this option is checked, the report will be opened in [Report Designer](#)<sup>[581]</sup> after generating.

When you are done, click the **Finish** button to run the report generation process.

## 9.7.1.4.2 Specifying margins

**Page margins** **Stretch to print area**

If this option is checked, the size of report is adjusted to the print area. If this option is unchecked, you can specify the *left*, *right*, *top* and *bottom* margins (in millimeters).



The screenshot shows a dialog box with three tabs: 'Paper', 'Margins', and 'Other'. The 'Margins' tab is selected. Inside the dialog, there is a section titled 'Page margins'. At the top of this section is a checkbox labeled 'Stretch to print area', which is checked. Below this checkbox are four spinners arranged in a 2x2 grid. The top-left spinner is labeled 'Left, mm' and has the value '0'. The top-right spinner is labeled 'Right, mm' and has the value '0'. The bottom-left spinner is labeled 'Top, mm' and has the value '0'. The bottom-right spinner is labeled 'Bottom, mm' and has the value '0'. Each spinner has up and down arrow buttons.

Use the **Other** tab to [specify other page settings](#)<sup>[580]</sup> for the result report.

 **Open the report after the wizard has finished**

If this option is checked, the report will be opened in [Report Designer](#)<sup>[581]</sup> after generating.

When you are done, click the **Finish** button to run the report generation process.

## 9.7.1.4.3 Specifying other page settings

**Options** **Print to previous page**

This option allows to use white space on a previous page. This option can be used in case when a report template consists of several pages or when printing batch (composite) reports.

 **Two-pass report**

If this option is selected, report's formation will be performed in two steps. During the first pass, a report is formed, and is divided into pages, but the result is not saved anywhere. During the second pass a standard report formation with saving a result in the stream is performed.

 **Page numbering**

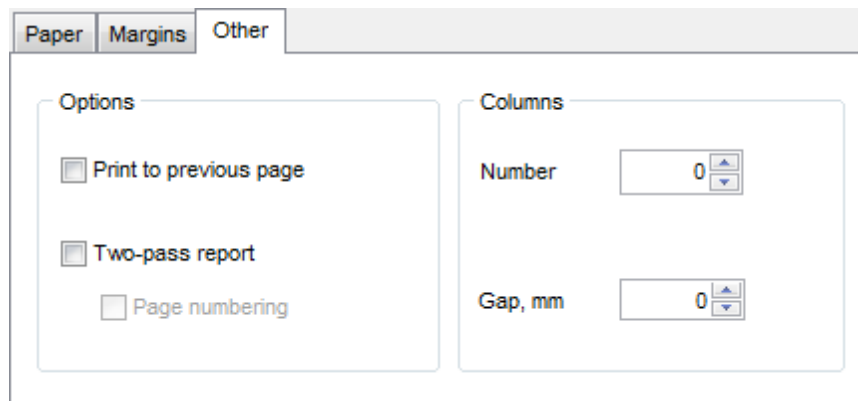
This option allows to print a page numbers.

**Columns****Number**

This parameter specifies the number of columns for multi-column reports' printing.

**Gap, mm**

This parameter specifies the width of the gap between columns.



The screenshot shows a dialog box with three tabs: 'Paper', 'Margins', and 'Other'. The 'Other' tab is selected. It contains two main sections: 'Options' and 'Columns'. The 'Options' section has three checkboxes, all of which are unchecked: 'Print to previous page', 'Two-pass report', and 'Page numbering'. The 'Columns' section has two spinners: 'Number' and 'Gap, mm', both of which are set to the value 0.

 **Open the report after the wizard has finished**

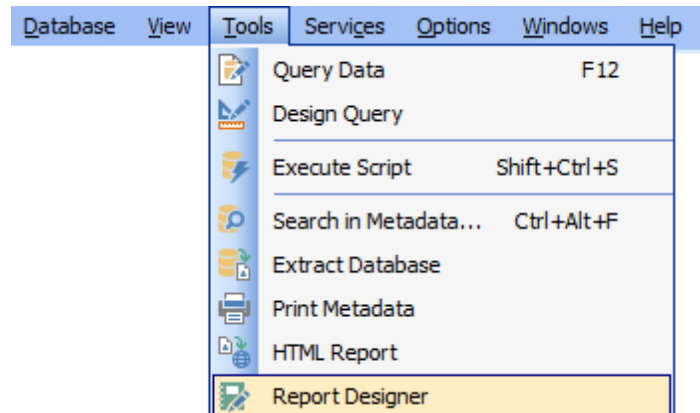
If this option is checked, the report will be opened in [Report Designer](#)<sup>[58]</sup> after generating.

When you are done, click the **Finish** button to run the report generation process.

## 9.7.2 Report Designer

**Report Designer** allows you to create and edit reports. This tool can be opened after completion of [Create Report Wizard](#)<sup>[573]</sup> to design a new report.

To edit an already existing project, use the appropriate [Navigation bar](#)<sup>[591]</sup> item of [Report Editor](#)<sup>[590]</sup>.



This module is provided by Fast Reports, Inc. (<http://www.fast-report.com>) and has its own help system. Press **F1** key in the **Report Designer** to call the **FastReport** help.

Please find the instructions on how to create a simple report in the **Report Designer** below:

- [Adding dialog form](#)<sup>[582]</sup>
- [Adding database and query components](#)<sup>[584]</sup>
- [Adding report data](#)<sup>[587]</sup>
- [Report Preview](#)<sup>[595]</sup>
- [Saving the report](#)<sup>[589]</sup>

**Note:** The **Object Inspector** which allows you to edit report object properties, can be shown/hidden by pressing the **F11** key.

Availability:

**Full** version (for Windows) **Yes**

**Lite** version (for Windows) **No**

**Note:** To compare all features of the **Full** and the **Lite** versions of **SQL Manager**, refer to the [Feature Matrix](#)<sup>[20]</sup> page.

**See also:**

[Create Report Wizard](#)<sup>[573]</sup>

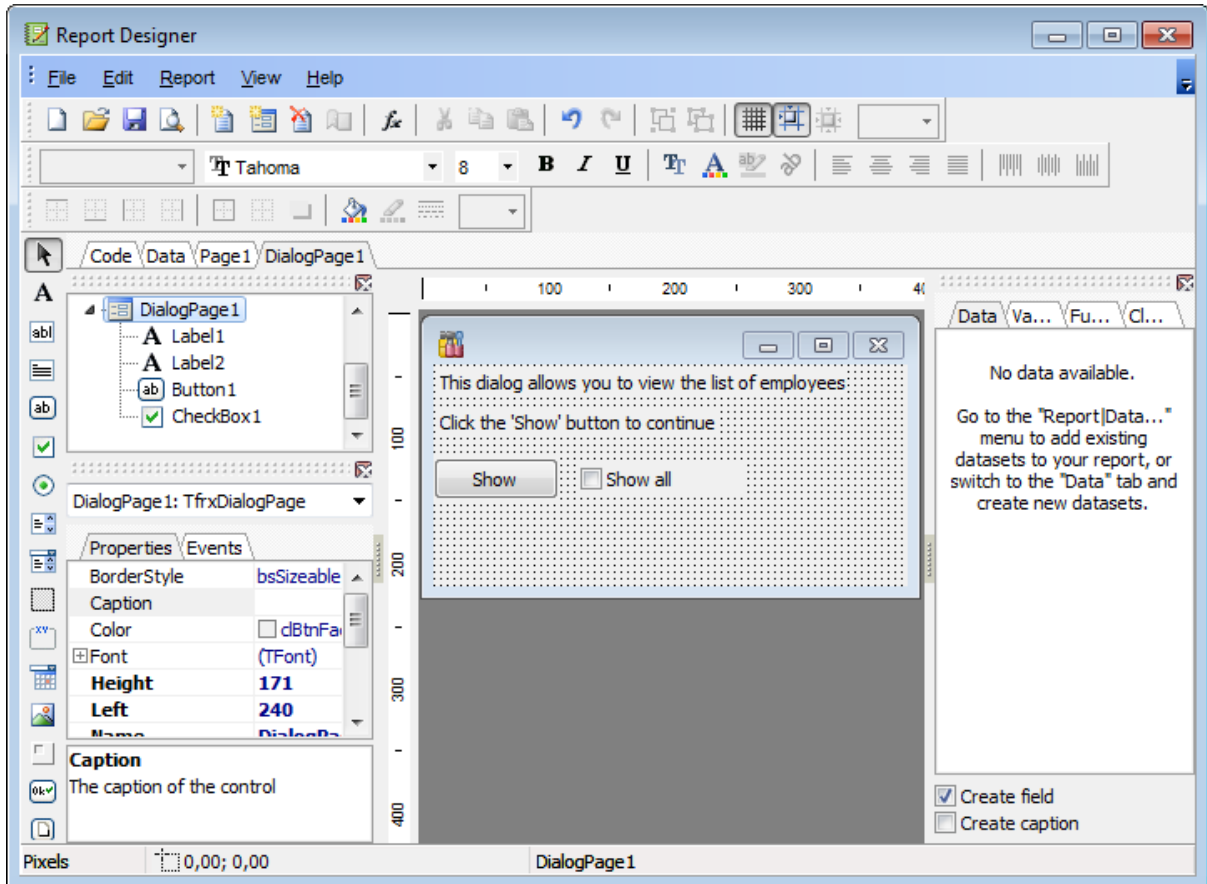
[Report Editor](#)<sup>[590]</sup>

[Report Viewer](#)<sup>[593]</sup>

### 9.7.2.1 Adding dialog form

To add a dialog form, select the **File | New Dialog** main menu item in **Report Designer**.

The new dialog appears within the *DialogPage1* tab of the designer. Use the available RAD tools to add necessary interface elements to the dialog.



To call the dialog, proceed to the **Code** tab and supply the corresponding statement (*PascalScript*), e.g.

```
begin
DialogPage1.ShowModal;
end.
```

Using the **Language** drop-down list you can select the script language to be used for the event handler: *PascalScript* (by default), *C++Script*, *BasicScript*, *JScript*.

For instance, the following C++ Script code can be used as the handler for the *OnClick* event of the 'Show' button to open [FIBQuery](#)<sup>[584]</sup>:

```
{
FIBQuery1.Active = true;
}
```

**See also:**

[Adding database and query components](#)<sup>[584]</sup>


[Adding report data](#)<sup>[587]</sup>

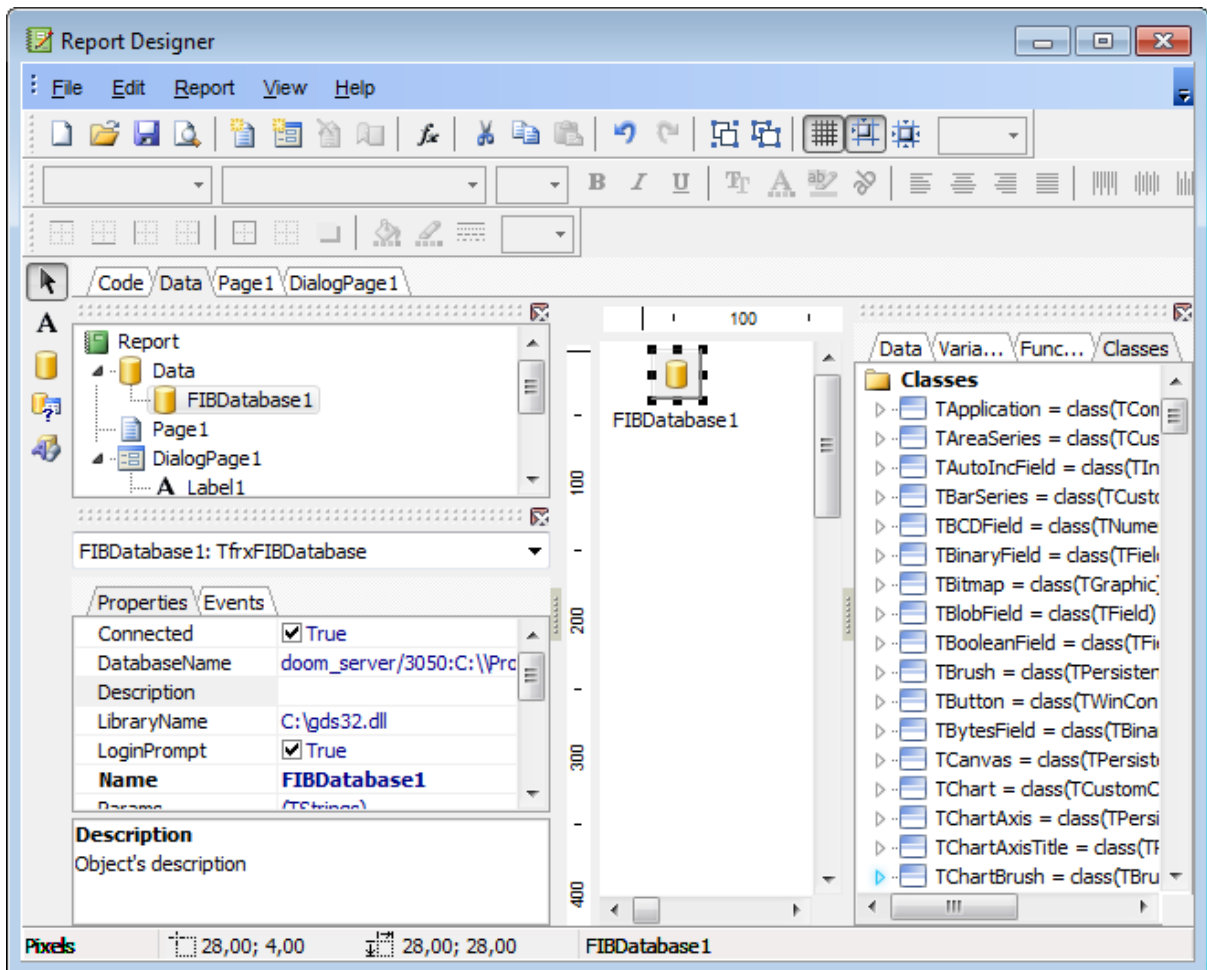
[Saving the report](#)<sup>[589]</sup>

### 9.7.2.2 Adding database and query components

#### Adding database component


In order to add the *Database* component:

- proceed to the **Data** tab of **Report Designer**;
- pick the  **Database** component on the toolbar (on the left);
- click within the working area - the corresponding *FIBDatabase1* icon appears in the area;
- set the database name and authorization parameters within the **Properties Inspector**



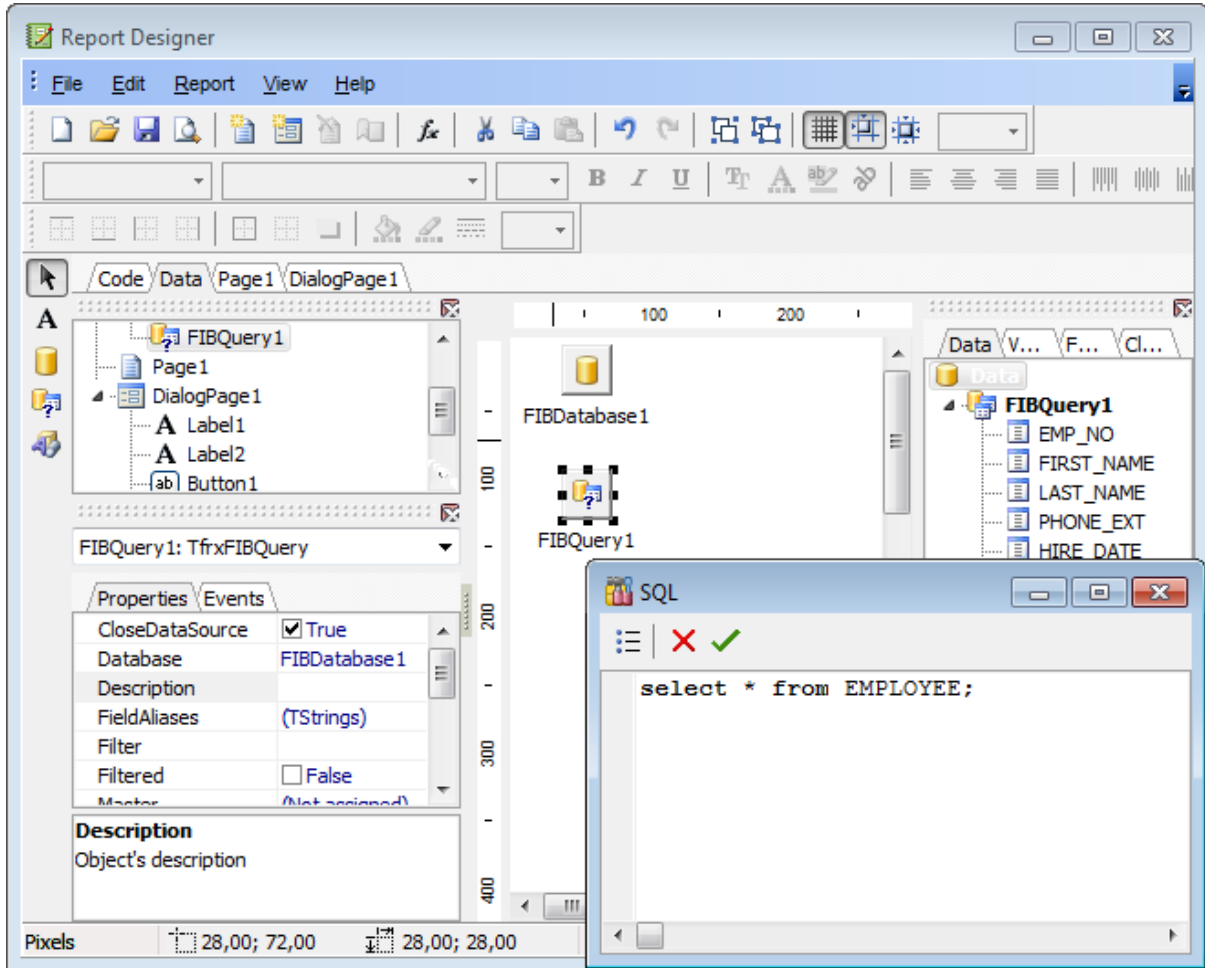
#### Adding query component

In order to add the *Query* component:

- proceed to the **Data** tab of **Report Designer**;
- pick the  **Query** component on the toolbar (on the left);
- click within the working area - the corresponding *FIBQuery1* icon appears in the area;
- set the database name and authorization parameters within the **Properties Inspector**;

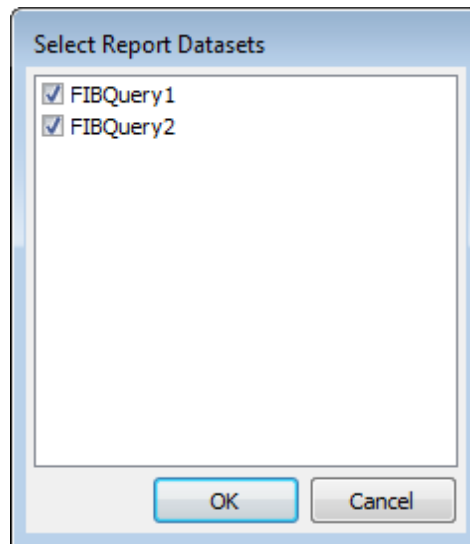


- double-click the *FIBQuery1* icon to open the **SQL** window;
- input the SQL query that returns the required dataset and click the  button;
- repeat the operation if you wish to add other query components to the report.



**Note:** The **Properties Inspector** panel which allows you to edit report object properties can be shown/hidden by pressing the **F11** key.

Using the above given steps you can create as many queries as you need. In order to select a dataset returned by a query, select the **Report | Data...** main menu item of **Report Designer** to call the **Select Report Datasets** dialog. Pick the required query within the dialog and press **OK**.



---

**See also:**

[Adding dialog form](#)<sup>[582]</sup>

[Adding report data](#)<sup>[587]</sup>

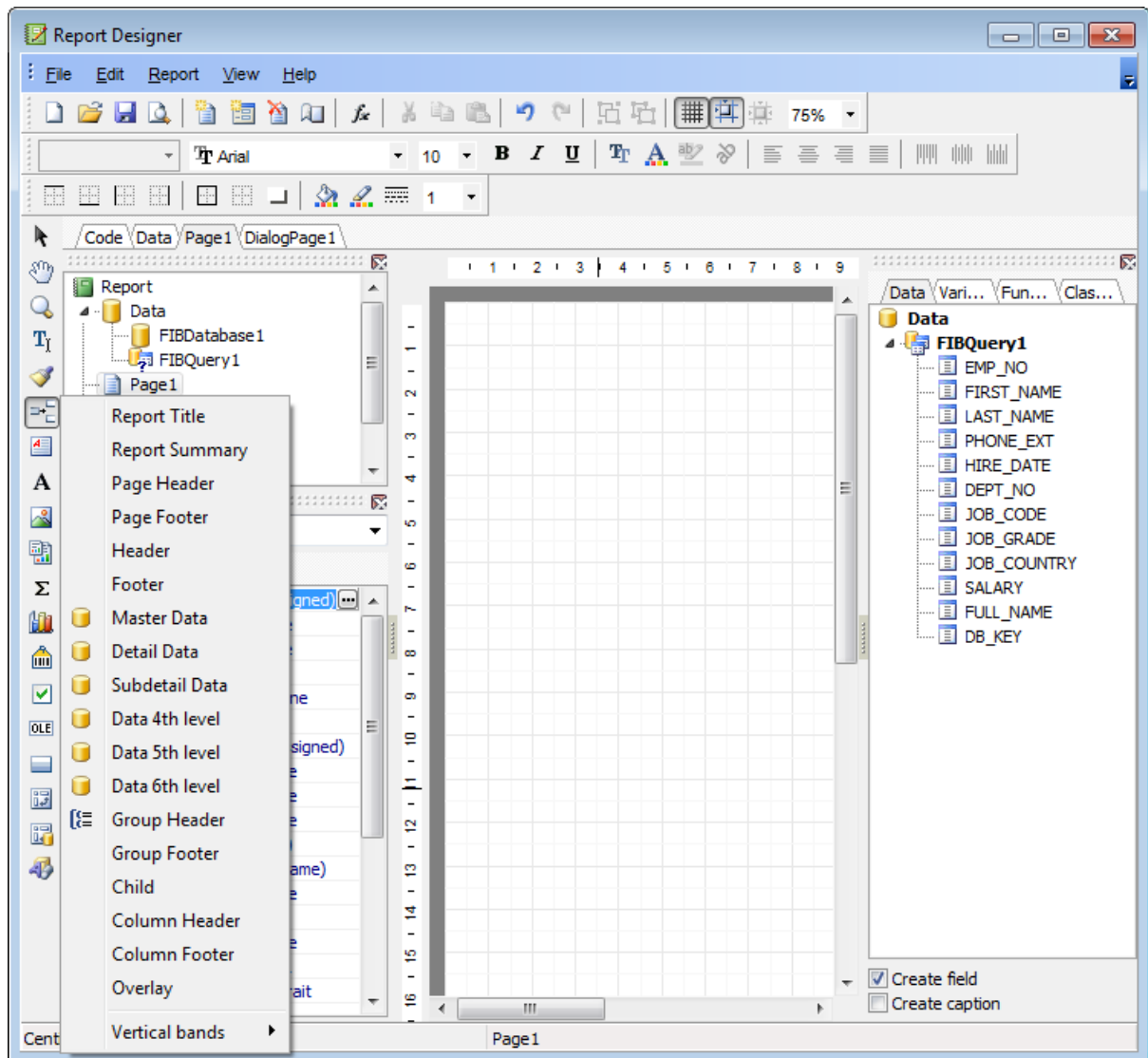
[Saving the report](#)<sup>[589]</sup>

### 9.7.2.3 Adding report data

#### Adding bands

In order to add a band to the report:

- proceed to the **Page1** tab of **Report Designer**;
- pick the **Insert Band** component on the toolbar (on the left);
- select the band to be added to the report;
- click within the working area - the corresponding element appears in the area;
- set element properties within the **Properties Inspector**.

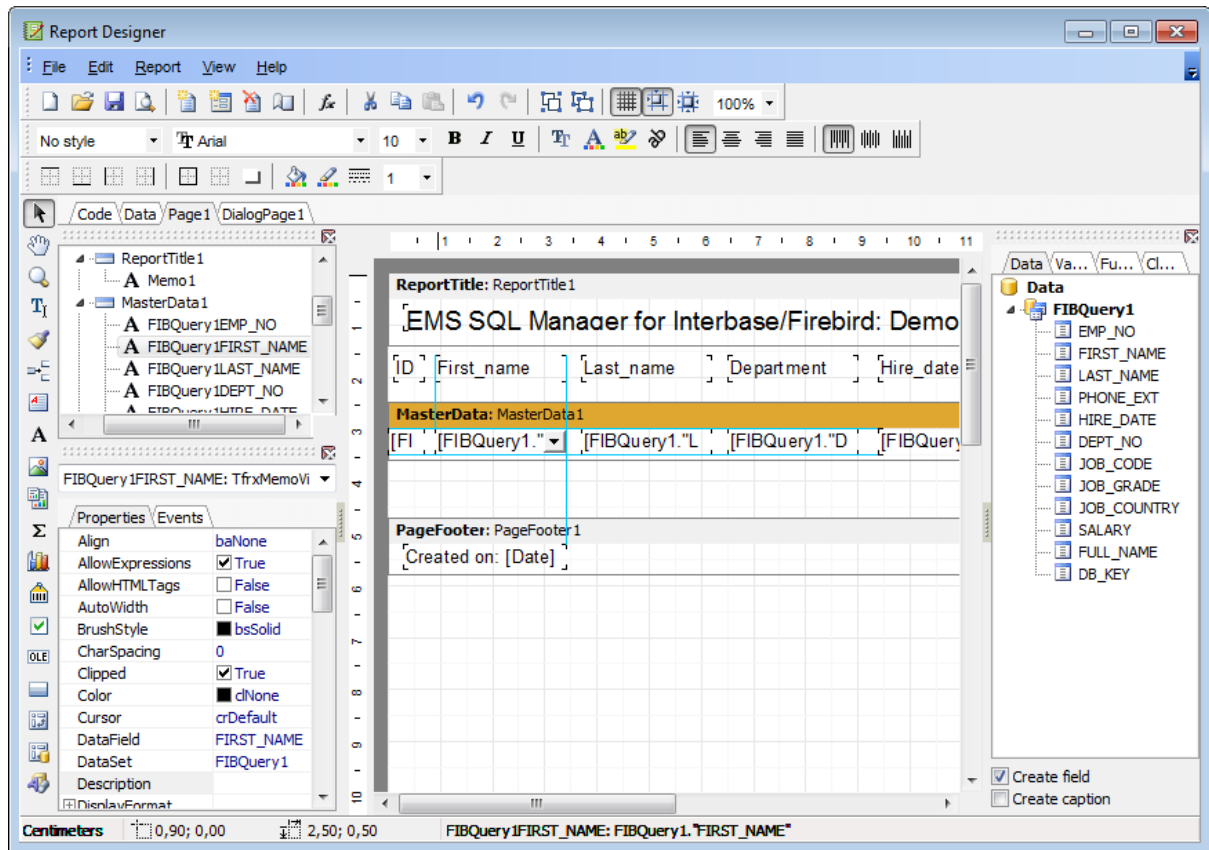


#### Adding report data

In order to add data to the report:

- proceed to the **Data** tab within the panel on the right side of the window;
- pick a field within the **Data** tree and drag it to the working area;

- add all necessary elements one by one using drag-and-drop operation for each of them.



**Note:** The **Properties Inspector** panel which allows you to edit report object properties can be shown/hidden by pressing the **F11** key.

**Note:** To preview the newly created report, select the **File | Preview** main menu item or use the corresponding **Preview** toolbar button. You can also use the **Ctrl+P** [shortcut](#) [\[932\]](#) for the same purpose. For details see [Report Viewer](#) [\[593\]](#).

#### See also:



[Adding dialog form](#) [\[582\]](#)

[Adding database and query components](#) [\[584\]](#)

[Saving the report](#) [\[589\]](#)

#### 9.7.2.4 Saving the report

When all report parameters are set, you can save the report to an external \*.fr3 file on your local machine or on a machine in the LAN.

To save the report, select the **File |  Save** main menu item or use the corresponding  **Save Report** toolbar button. You can also use the *Ctrl+S* [shortcut](#)<sup>[532]</sup> for the same purpose.

If necessary, you can add the report to the database using [Create Report Wizard](#)<sup>[573]</sup> and perform preview/print operations using [Report Editor](#)<sup>[590]</sup>.

---

#### See also:

[Adding dialog form](#)<sup>[582]</sup>

[Adding database and query components](#)<sup>[584]</sup>

[Adding report data](#)<sup>[587]</sup>

### 9.7.3 Report Editor

**Report Editor** allows you to view, edit, save and print reports.

To open a report in **Report Editor**, double-click it in the [DB Explorer](#)<sup>[63]</sup> tree, or right-click it and select the **Edit Report <report\_name>...** item from the [context menu](#)<sup>[56]</sup>.

- [Using Navigation bar and Toolbar](#)<sup>[59]</sup>
- [Viewing Report](#)<sup>[59]</sup>

Availability:

**Full** version (for Windows) **Yes**

**Lite** version (for Windows) **No**

**Note:** To compare all features of the **Full** and the **Lite** versions of **SQL Manager**, refer to the [Feature Matrix](#)<sup>[20]</sup> page.

---

**See also:**

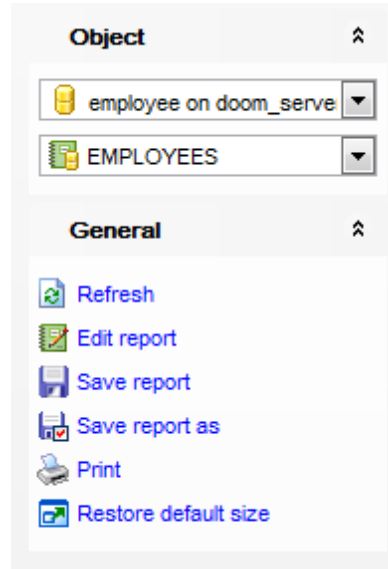
[Create Report Wizard](#)<sup>[57]</sup>

[Report Designer](#)<sup>[58]</sup>

[Report Viewer](#)<sup>[59]</sup>



### 9.7.3.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Report Editor**.









The **Navigation bar** of **Report Editor** allows you to:

#### Object

-  select a database
-  select a report

#### General

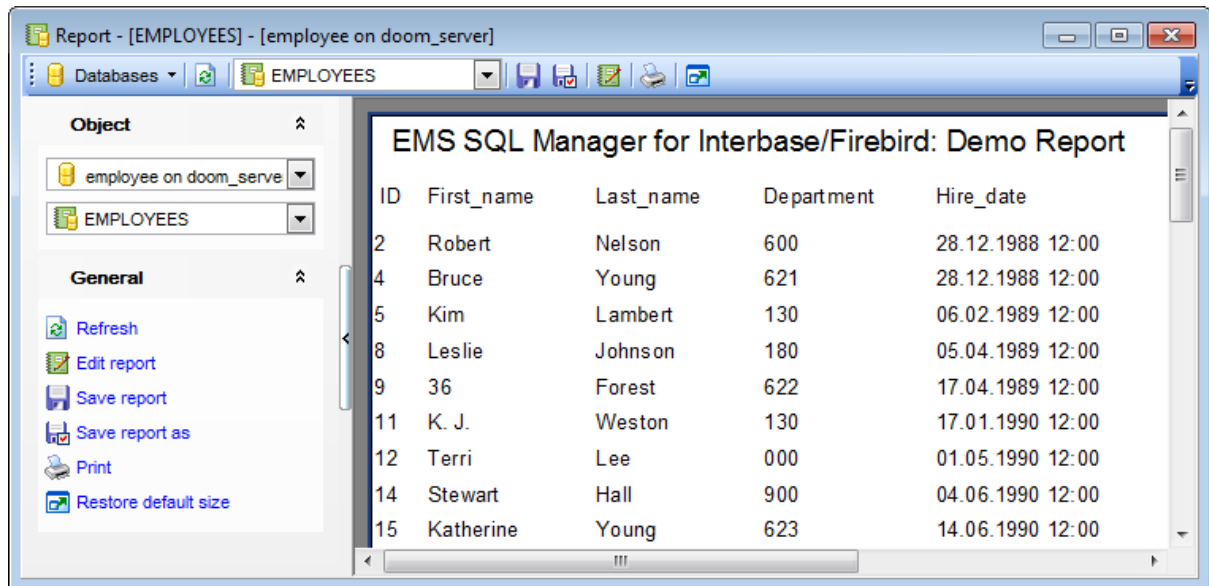
-  refresh the content of the window
-  edit report using [Report Designer](#)<sup>[581]</sup>
-  save the current report
-  save the report to a \*.fr3 file using the **Save as...** dialog
-  print the report
-  restore the default size and position of the viewer window

Items of the **Navigation bar** are also available on the **ToolBar** of the **Report Editor** window. To enable the [toolbar](#)<sup>[884]</sup>, open the [Environment Options](#)<sup>[736]</sup> dialog, proceed to the [Windows](#)<sup>[743]</sup> section there and select  *Toolbar* (if you need the toolbar only) or  *Both* (if you need both the toolbar and the [Navigation bar](#)<sup>[882]</sup>) in the **Bar style for child forms** group.

### 9.7.3.2 Viewing Report

The main window of **Report Editor** allows you to view the specified report.

Possible report operations are available through the [Navigation bar](#)<sup>591</sup> and [toolbar](#)<sup>591</sup> of the editor window.





## 9.7.4 Report Viewer

**Report Viewer** allows you to preview reports generated in **SQL Manager** before printing and export them to other formats.

This module is provided by Fast Reports, Inc. (<http://www.fast-report.com>) and has its own help system. For more information refer to the *Fast Report User Manual* (*FRUserManual.chm*) distributed with the program.

The tool opens automatically when a  **Preview** item is used in [Print Metadata](#)<sup>[562]</sup> or [Report Designer](#)<sup>[581]</sup>.

- [Using Toolbar and context menu](#)<sup>[594]</sup>
- [Working with Report Viewer](#)<sup>[595]</sup>
- [Page settings](#)<sup>[597]</sup>
- [Sending Report by E-mail](#)<sup>[599]</sup>

Availability:

**Full** version (for Windows) **Yes**

**Lite** version (for Windows) **No**

**Note:** To compare all features of the **Full** and the **Lite** versions of **SQL Manager**, refer to the [Feature Matrix](#)<sup>[20]</sup> page.

---

**See also:**

[Create Report Wizard](#)<sup>[573]</sup>

[Report Designer](#)<sup>[581]</sup>

















[Report Editor](#)<sup>[590]</sup>

### 9.7.4.1 Using Toolbar and context menu

The **Toolbar** and **context menu** provide quick access to tools implemented in **Report Viewer**.



The **Toolbar** of **Report Viewer** allows you to:

-  print the report
-  save the current report to an external \*.fp3 file
-  call a menu allowing you to [export](#)<sup>[598]</sup> the preview content to any of the available formats: *PDF file, HTML file, RTF file, Excel table (OLE), Excel table (XML), BMP image, JPEG image, TIFF image, GIF image, E-mail, CSV file, Text file, Open Document Spreadsheet, Open Document Text, Text (matrix printer)*
-  specify Export to PDF options
-  specify [Send by E-mail](#)<sup>[599]</sup> options
-  search for text within the report content
-  zoom in
-  zoom out
-  enable/disable full screen view
-  enable/disable report outline
-  enable/disable report thumbnails
-  specify [page settings](#)<sup>[597]</sup>
-  navigate to the first page of the report
-  navigate to the previous page of the report
-  navigate to the next page of the report
-  navigate to the last page of the report

Items of the **Toolbar** are also available in the **context menu** of the **Report Viewer** window. To open the menu, right-click in the working area of the viewer.

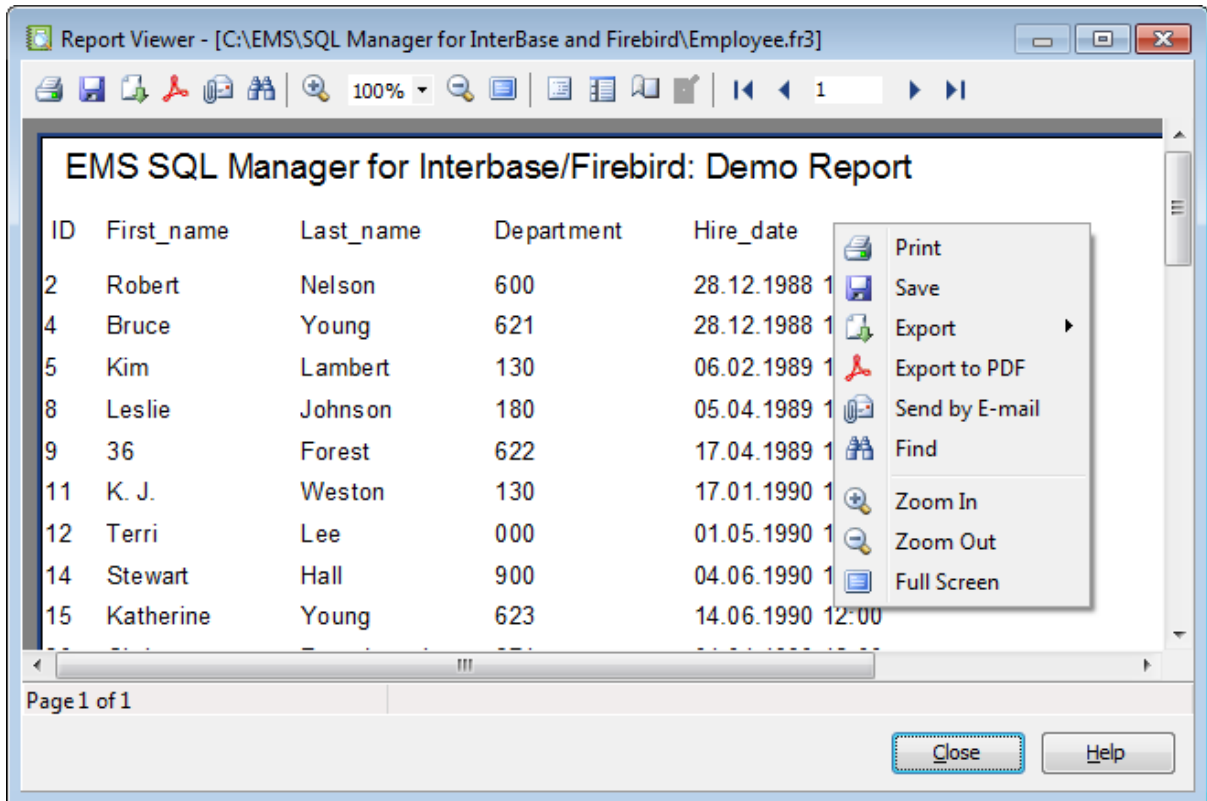
### 9.7.4.2 Working with Report Viewer

**Report Viewer** provides a quick preview of data and metadata reports generated in **SQL Manager**:

- [Viewing data report](#)<sup>[595]</sup>
- [Viewing metadata report](#)<sup>[595]</sup>

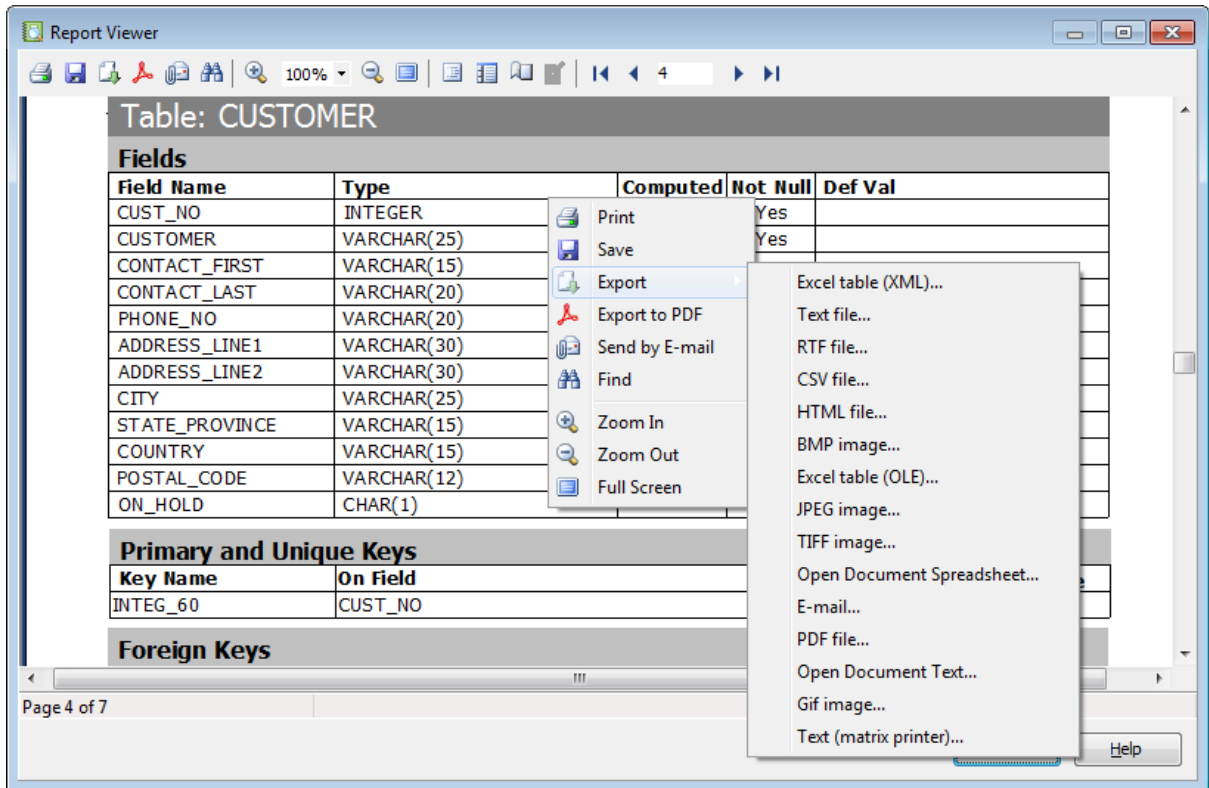
#### Data Report

The screenshot below illustrates viewing data reports generated with the [Report Designer](#)<sup>[581]</sup> tool.



#### Metadata Report

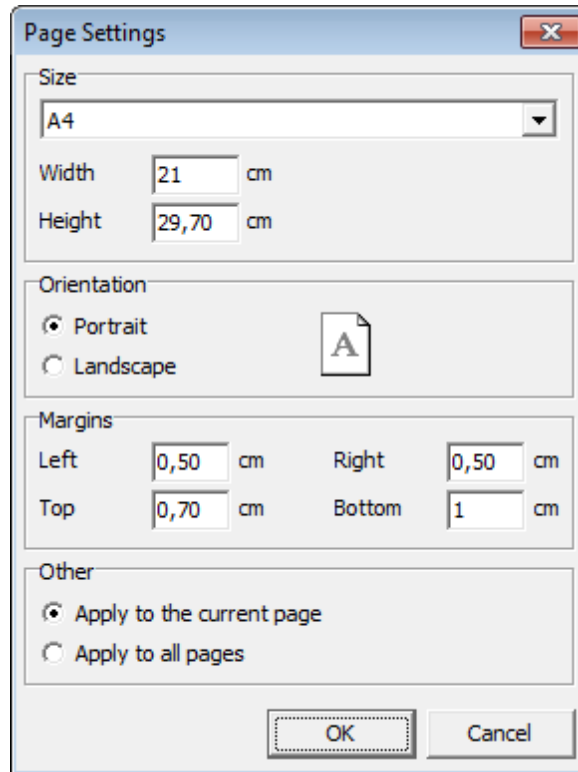
The screenshot below illustrates viewing metadata reports generated with the [Print Metadata](#)<sup>[562]</sup> tool.



**Note:** Report Viewer tools are available through the [toolbar](#)<sup>[594]</sup> and [context menu](#)<sup>[594]</sup> of the preview area.

### 9.7.4.3 Page settings

The **Page Settings** dialog allows you to configure page *size*, *orientation*, *margins*, and *other* settings.



#### Size

Select one of the standard paper types from the drop-down list, or specify custom *width* and *height* using the corresponding controls below (in centimeters).

#### Orientation

Select the preferable page orientation (your selection is illustrated in the chart on the right):

- Portrait*
- Landscape*

#### Margins

Use this group to specify the *left*, *right*, *top* and *bottom* margins (in centimeters).

#### Other

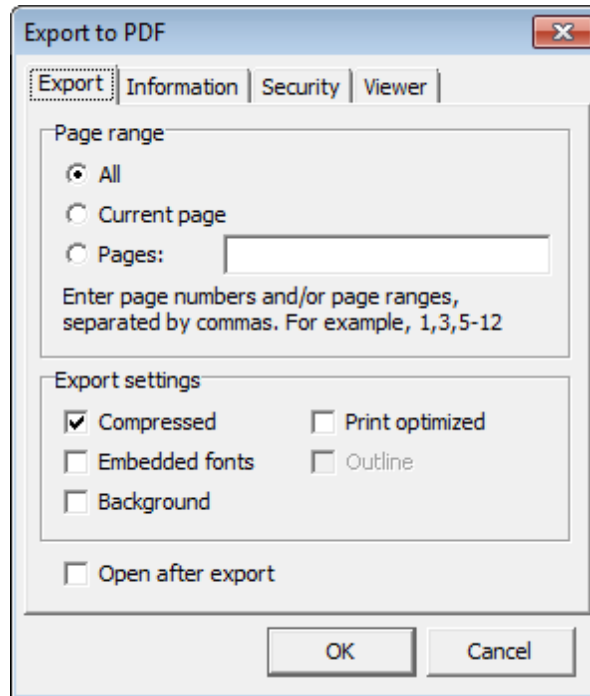
Select the scope the settings are to be applied to:

- Apply to the current page*
- Apply to all pages*

For more information refer to the *Fast Report User Manual* distributed with the program.

#### 9.7.4.4 Exporting report content

The **Export** dialog allows you to configure *page range* and a number of *output format settings*.



##### Page range

This group allows you to specify which report pages are to be exported:

- All
- Current page
- Specified pages (you should input page number(s) and/or page range(s) in the edit box)

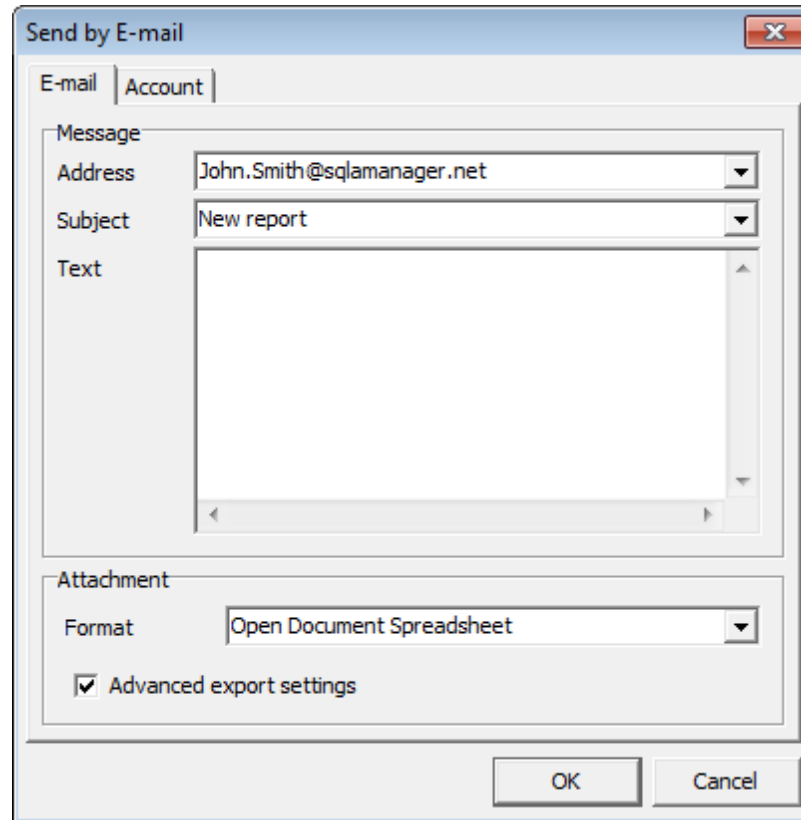
##### Format-specific settings

These settings vary according to the specified output format: *PDF file, HTML file, RTF file, Excel table (OLE), Excel table (XML), BMP image, JPEG image, TIFF image, GIF image, E-mail, CSV file, Text file, Open Document Spreadsheet, Open Document Text, Text (matrix printer)*.

For more information refer to the *Fast Report User Manual* distributed with the program.

#### 9.7.4.5 Sending by E-mail


The **Send by E-mail** dialog allows you to send a report by e-mail in any supported format.

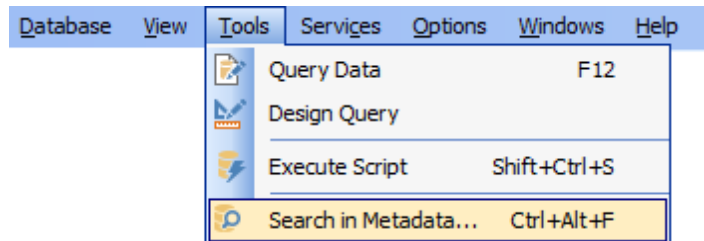


For more information refer to the *Fast Report User Manual* distributed with the program.

## 9.8 Search in Metadata

The **Search in Metadata** tool is implemented for quick search within the scope of database metadata. The tool allows you to set various search conditions and view the results.

To launch the **Search in Metadata** tool, select the **Tools |  Search in Metadata** [main menu](#)<sup>[682]</sup> item, or use the **Ctrl+Alt+F** [shortcut](#)<sup>[932]</sup>.



- [Using Navigation bar and Toolbar](#)<sup>[601]</sup>
- [Setting search conditions](#)<sup>[603]</sup>
- [Viewing search results](#)<sup>[604]</sup>

**Availability:**

**Full** version (for Windows) **Yes**

**Lite** version (for Windows) **No**

**Note:** To compare all features of the **Full** and the **Lite** versions of **SQL Manager**, refer to the [Feature Matrix](#)<sup>[20]</sup> page.

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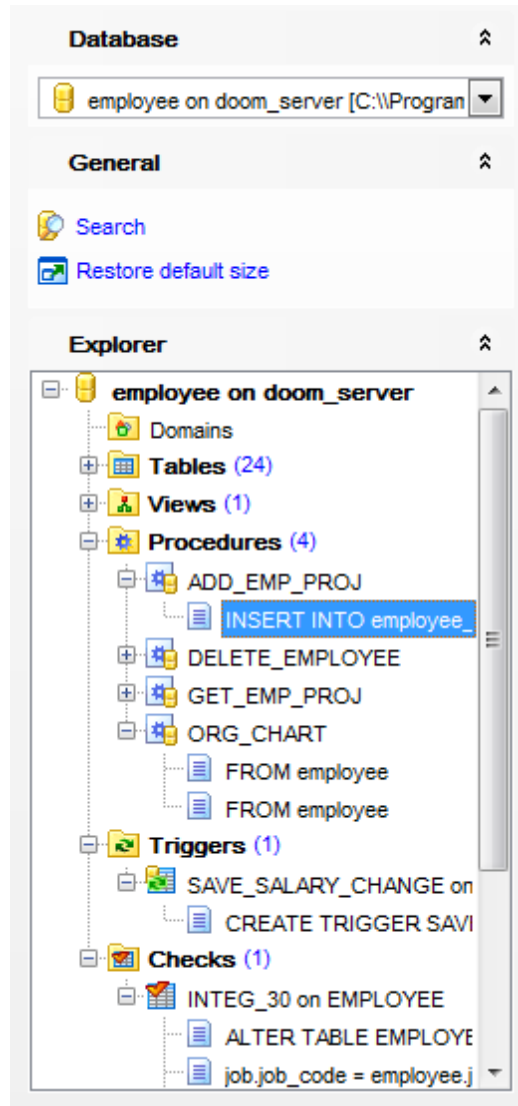
**See also:**

[Database Objects Management](#)<sup>[162]</sup>




### 9.8.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Search in Metadata**.




The **Navigation bar** of the **Search in Metadata** tool allows you to:

#### Database


 select a database for searching

#### General

 set [search conditions](#)<sup>[603]</sup>

 restore the default size and position of the window

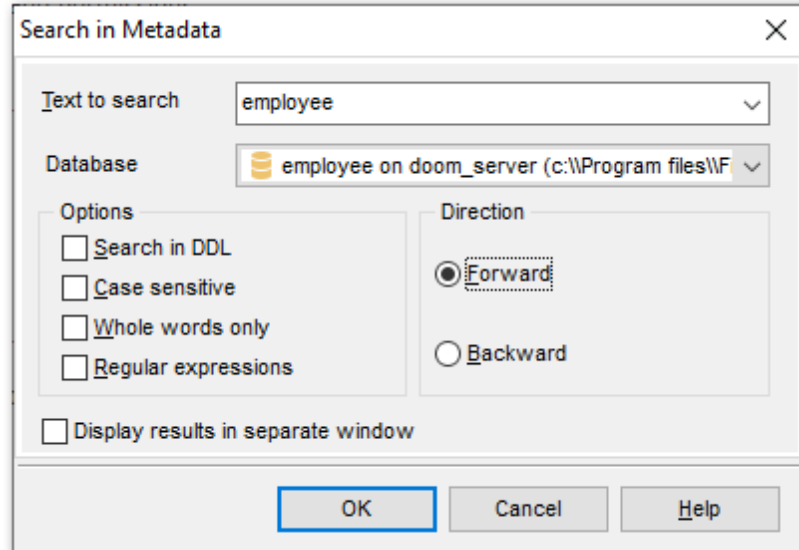
#### Explorer

 browse the tree of found database objects

Items of the **Navigation bar** are also available on the **ToolBar** of the **Search in Metadata** tool. To enable the [toolbar](#)<sup>[884]</sup>, open the [Environment Options](#)<sup>[736]</sup> dialog, proceed to the [Windows](#)<sup>[743]</sup> section there and select  *Toolbar* (if you need the toolbar only) or  *Both* (if you need both the toolbar and the [Navigation bar](#)<sup>[882]</sup>) in the **Bar style for child forms** group.

## 9.8.2 Setting search conditions

The **Find in metadata** dialog allows you to set search conditions. It opens each time the **Search in Metadata** tool is launched.



### Text to find

Enter a search string in this box. The Arrow-Down button which can be found next to the input box allows you to select any of the previously entered search strings.

### Database

Use the drop-down list to select a database for the search operation.

### Options

Available search options are similar to those provided by the **Find Text** dialog. For detailed description of the search options refer to the [Find Text dialog](#)<sup>[901]</sup> page.

When all the options are set, click OK. The **Search in Metadata [search string]** report window will display the search progress and [results](#)<sup>[604]</sup>.

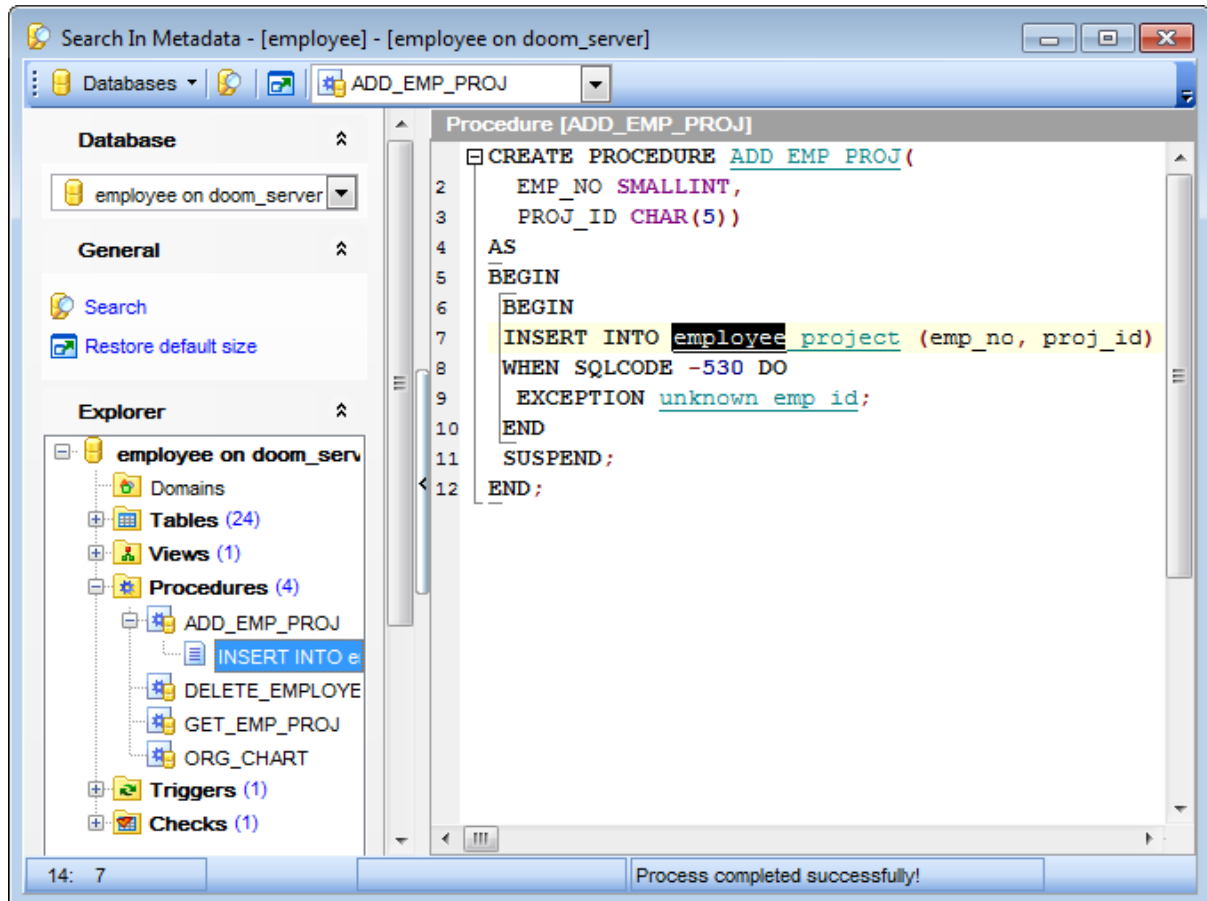
---

### See also:

[Find Text dialog](#)<sup>[901]</sup>

### 9.8.3 Viewing search results

The **Search in Metadata** window allows you to view the search progress and results fetched from the database.



After the search is complete, the **Explorer** group on the [Navigation bar](#)<sup>[601]</sup> displays the tree of database objects in which the search string is found, and allows you to view metadata of the required object or its fragment quickly by clicking enclosed object branches in the tree.

The **Object <object\_name>** area is provided for viewing metadata of the objects, with the search string highlighted.

For your convenience the **syntax highlight, code completion** and a number of other features for efficient SQL editing are implemented. For details see [Working with query](#)<sup>[333]</sup> and [Using the context menu](#)<sup>[335]</sup>.

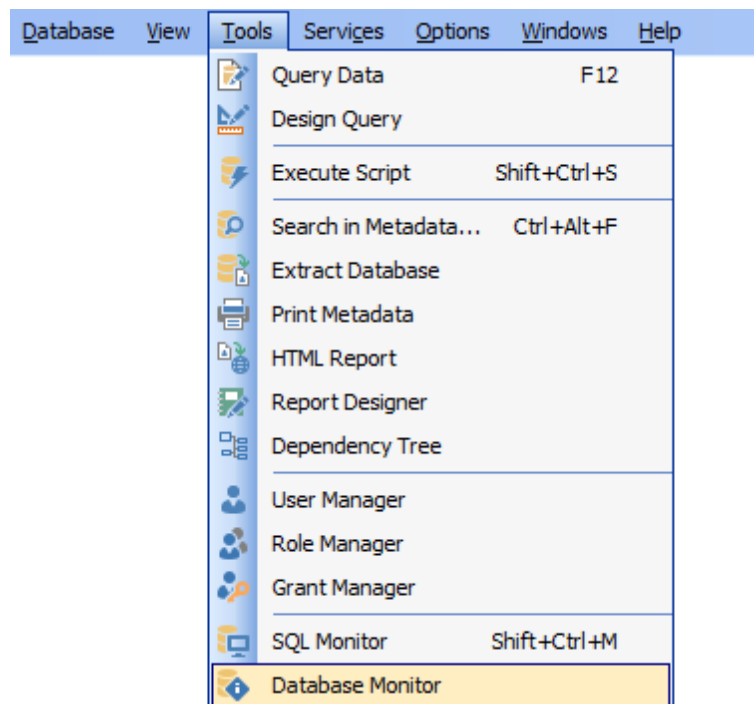
## 9.9 Database Monitor

**Database Monitor** allows you to get actual information about the database and its activities.

Use **Database Monitor** to monitor database activities in real-time and to terminate/shutdown processes (when possible) to troubleshoot related issues. Collected information is arranged by sections available within the corresponding tabs.

This feature is available only for InterBase 7 (and higher) and Firebird 2.1 (in ODS 11.1 and higher) InterBase/Firebird versions.

To launch the tool, select the **Tools | Database Monitor** [main menu](#)<sup>[882]</sup> item, or right-click the database alias in the [DB Explorer](#)<sup>[631]</sup> tree and select the **Tasks | Database Monitor** item from the [context menu](#)<sup>[531]</sup>.



- [Using Navigation bar and Toolbar](#)<sup>[607]</sup>
- [Database overview](#)<sup>[609]</sup>
- [Viewing transactions](#)<sup>[610]</sup>
- [Viewing statements](#)<sup>[611]</sup>
- [Viewing users](#)<sup>[612]</sup>
- [Viewing call stack \(Firebird only\)](#)<sup>[614]</sup>
- [Viewing procedures \(InterBase only\)](#)<sup>[615]</sup>
- [Viewing relations \(InterBase only\)](#)<sup>[616]</sup>
- [Viewing triggers \(InterBase only\)](#)<sup>[617]</sup>
- [Memory usage \(InterBase only\)](#)<sup>[618]</sup>

**Availability:**

**Full** version (for **Yes**)

Windows)

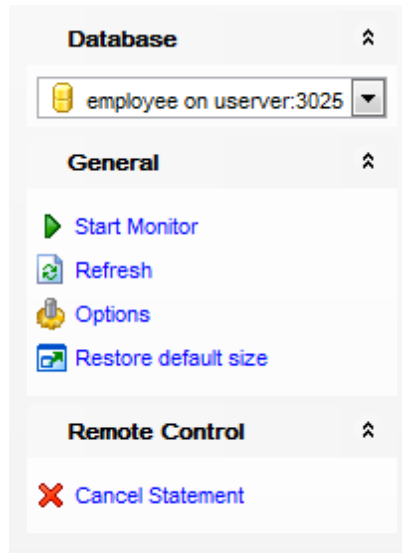
**Lite** version (for **No**

Windows)

**Note:** To compare all features of the **Full** and the **Lite** versions of **SQL Manager**, refer to the [Feature Matrix](#)<sup>[20]</sup> page.

### 9.9.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Database Monitor**.



The **Navigation bar** of the **Database Monitor** window allows you to:

#### Database

select a database for monitoring

#### General

- edit [database monitor options](#)<sup>[768]</sup>
- start/resume monitoring
- pause monitoring
- restore the default size and position of the window

Depending on the current tab selection, the **Navigation bar** expands to one or more additional panes with tab-specific actions that can be useful for working with the tool:

#### Remote Control

- commit transaction (at the [Transactions](#)<sup>[610]</sup> tab)
- rollback transaction (at the [Transactions](#)<sup>[610]</sup> tab)
- cancel statement (at the [Statements](#)<sup>[611]</sup> tab)
- shutdown user (at the [Users](#)<sup>[612]</sup> tab)
- cancel current operation (at the [Users](#)<sup>[612]</sup> tab)

Items of the **Navigation bar** are also available on the **ToolBar** of the **Database Monitor** window. To enable the [toolbar](#)<sup>[884]</sup>, open the [Environment Options](#)<sup>[736]</sup> dialog, proceed to the [Windows](#)<sup>[743]</sup> section there and select  *Toolbar* (if you need the toolbar only) or  *Both* (if you need both the toolbar and the [Navigation bar](#)<sup>[882]</sup>) in the **Bar style for child forms** group.





## 9.9.2 Database overview

The **Database** tab of **Database Monitor** allows you to get the general overview of the database.

Transaction parameters	
Page reads	150
Page writes	5
Page fetches	30494
Page marks	6040
Objects	
Attachments	2
Statements	5
Pools	70
Procedures	0
Relations	45
Triggers	35
Active threads	1
Allocated pages	344
Memory	
Sort memory	1048500
Current memory	12437416
Maximum memory	12445732
Permanent pool memory	274432
Cache pool memory	1462272
Records	

The working area consists of the following sections:

**Database parameters** (*database path, database ID, sweep interval, sweep active, sweep relation, sweep records, state, page reads, page writes, page fetches, page marks*)

**Transaction parameters** (*transactions, transaction commits, transaction rollbacks, transaction prepares, transaction deadlocks, transaction conflicts, transaction waits, next transaction, oldest interesting, oldest active, oldest snapshot, cache buffers, cache free writes, cache precedence, cache free waits, cache latch waits*)

**Objects** (*attachments, statements, pools, procedures, relations, triggers, active threads, allocated pages*)

**Memory** (*sort memory, current memory, maximum memory, permanent pool memory, cache pool memory*)

**Records** (*record selects, record inserts, record updates, record deletes, record purges, record expunges, record blackouts*)

### 9.9.3 Viewing transactions

The **Transactions** tab of **Database Monitor** allows you to view the list of transactions in the database (currently active or in limbo).

The screenshot shows the 'Transactions' tab in the Database Monitor. The grid displays the following data:

ID	User	State	Start time	Commit retaining	Isolation level	Read only	Write
27920	SYSDBA	ACTIVE	23.05.2013 14:25:52	N	READ COMMITTED	N	N

The list displays the transactions as a grid with the following columns:

*ID, User, State, Start time, Commit retaining, Isolation level, Read only, Write, No wait, Snapshot, Pool memory, Quantum, Savepoint records, Page reads, Page writes, Page fetches, Page marks, Record selects, Record inserts, Record updates, Record deletes, Record purges, Record expunges, Record backouts (for InterBase);*

*ID, User, State, Start time, Protocol, Remote address, Isolation mode, Lock timeout, Read only, Auto commit, Auto undo (for Firebird).*

If more convenient, you can [change the order](#) of the columns by dragging their headers horizontally.

Click a column caption to **sort** items by values of this column in the ascending or the descending mode.

If necessary, you can **group the data in grid** by any of the columns. This operation is performed by dragging the column header to the gray **"Group by"** box area at the top. When grouping by a column is applied to the grid, all the rows are displayed as subnodes to the grouping row value. To reverse grouping, just drag the column header back.

## 9.9.4 Viewing statements

The **Statements** tab of **Database Monitor** allows you to view the list of statements being currently executed in the database.

The screenshot shows the 'Statements' tab in the Database Monitor application. The grid displays the following data:

ID	User	State	Start time	Pool memory	Clone no.	Quantum	Call
46	SYSDBA	STALLED	01.01.1970 5:00:00	4096		0	0
368	SYSDBA	ACTIVE	23.05.2013 14:26:31	18432		0	0
70	SYSDBA	STALLED	01.01.1970 5:00:00	9216		0	0
71	SYSDBA	INACTIVE	01.01.1970 5:00:00	9216		0	0
59	SYSDBA	STALLED	01.01.1970 5:00:00	4096		0	0

Below the grid, the 'Statement Text' area displays the following SQL statement:

```

SELECT S.*, A.TMP$USER, S.RDB$DB_KEY
FROM TMP$STATEMENTS S, TMP$ATTACHMENTS A
WHERE A.TMP$ATTACHMENT_ID = S.TMP$ATTACHMENT_ID /* CSMON$CON_NAME=DB_0x047F66E
  
```

The window consists of two basic areas: **Statement List** and **Statement Text**.

The **Statement List** area displays the statements as a grid with the following columns: *ID, User, State, Start time, Protocol, Remote address*.

If more convenient, you can [change the order](#) of the columns by dragging their headers horizontally.

Click a column caption to **sort** items by values of this column in the ascending or the descending mode.

If necessary, you can **group the data in grid** by any of the columns. This operation is performed by dragging the column header to the gray **"Group by"** box area at the top. When grouping by a column is applied to the grid, all the rows are displayed as subnodes to the grouping row value. To reverse grouping, just drag the column header back.

The **Statement Text** area displays the corresponding *SELECT* statement used to get data from system tables.

Statements management tools are available through the [Navigation bar](#) and [toolbar](#) of **Database Monitor**.

## 9.9.5 Viewing users

The **Users** tab of **Database Monitor** allows you to view the list of [users](#) logged in since the current connection was opened.

ID	User	State	Login time	Pool memory	Host	IP address	P
0	COLLECTOR	CONNECTED	23.05.2013 14:13:56				
4	SYSDBA	ACTIVE	23.05.2013 14:23:52		KA	192.168.66.63	
1	SYSDBA	CONNECTED	23.05.2013 14:13:56		KA	192.168.66.63	

The list displays the users as a grid with the following columns:

*ID, User, State, Login time, Pool memory, Host, IP address, Process ID, Quantum, Priority, Compiled statements, Active transactions, Active sorts, DB key ID, Page reads, Page writes, Page fetches, Page marks, Record selects, Record inserts, Record updates, Record deletes, Record purges, Record expunges, Record backouts (for InterBase); ID, User, Role, State, Login time, Server PID, Remote PID, State, Remote protocol, Remote address, Charset ID, Garbage collection, Compiled statements, Active transactions, Active sorts, DB key ID, Page reads, Page writes, Page fetches, Page marks, Record selects, Record inserts, Record updates, Record deletes, Record purges, Record expunges, Record backouts (for Firebird).*

If more convenient, you can [change the order](#) of the columns by dragging their headers horizontally.

Click a column caption to **sort** items by values of this column in the ascending or the descending mode.

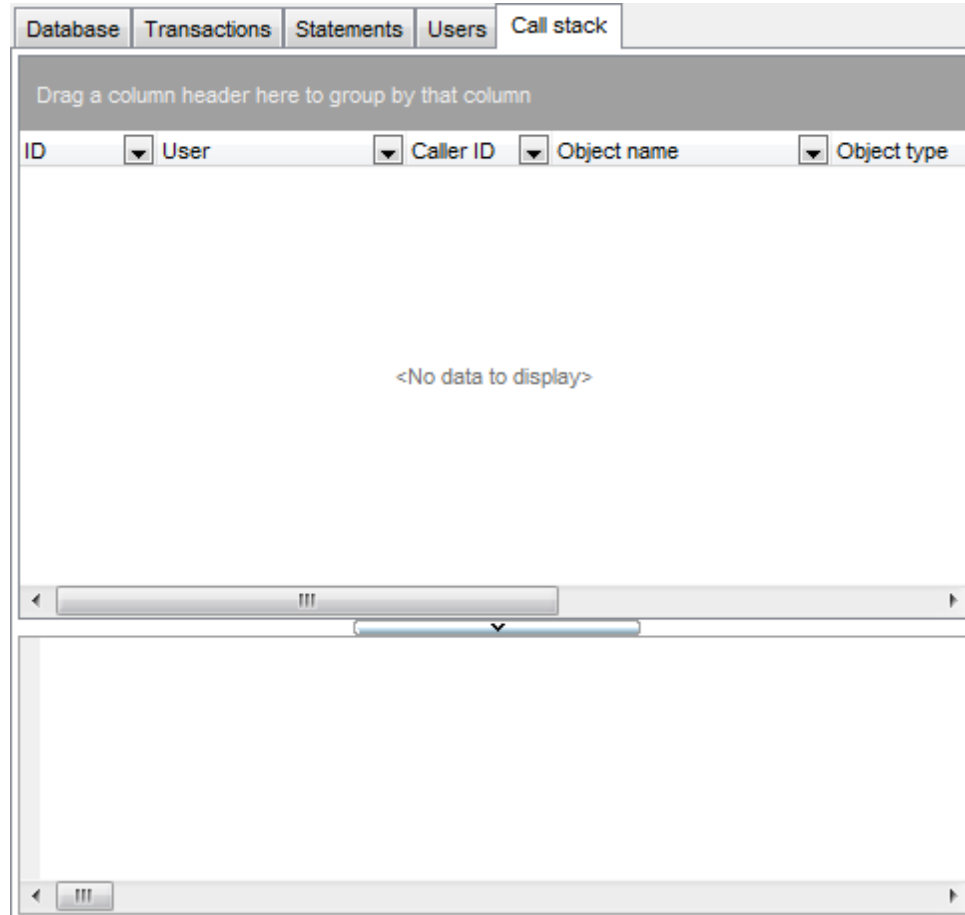
If necessary, you can **group the data in grid** by any of the columns. This operation is performed by dragging the column header to the gray **"Group by"** box area at the top. When grouping by a column is applied to the grid, all the rows are displayed as subnodes to the grouping row value. To reverse grouping, just drag the column header back.

Users management tools are available through the [Navigation bar](#)<sup>[607]</sup> and [toolbar](#)<sup>[607]</sup> of **Database Monitor**.

## 9.9.6 Viewing call stack

The **Call stack** tab of **Database Monitor** allows you to view the call stack for the database.

**Note:** This tab is available for Firebird databases only.



The list displays the call stack as a grid with the following columns: *ID, User, Caller ID, Object name, Object type, Start time, Source line, Source column*. If more convenient, you can [change the order](#)<sup>[375]</sup> of the columns by dragging their headers horizontally.

Click a column caption to **sort** items by values of this column in the ascending or the descending mode.

If necessary, you can **group the data in grid** by any of the columns. This operation is performed by dragging the column header to the gray **"Group by" box** area at the top. When grouping by a column is applied to the grid, all the rows are displayed as subnodes to the grouping row value. To reverse grouping, just drag the column header back.

### 9.9.7 Viewing procedures

The **Procedures** tab of **Database Monitor** allows you to view the [procedures](#)<sup>[253]</sup> executed in the database since the current connection was opened.

**Note:** This tab is available for InterBase databases only.

The screenshot shows the 'Procedures' tab in the Database Monitor application. At the top, there are several tabs: Database, Transactions, Statements, Users, Procedures (selected), Relations, Triggers, and Memory usage. Below the tabs is a gray area with the text 'Drag a column header here to group by that column'. Below this is a grid with the following columns: ID, Procedure name, Pool memory, Clone no., Start time, Use count, and Quantum. The grid contains two rows of data for the procedure 'ADD\_EMP\_PROJ'.

ID	Procedure name	Pool memory	Clone no.	Start time	Use count	Quantum
2	ADD_EMP_PROJ	5120	0	01.01.1970 5:00:00	0	
2	ADD_EMP_PROJ	1024	1	01.01.1970 5:00:00	0	

The list displays the procedures as a grid with the following columns: *ID*, *Procedure name*, *Pool memory*, *Clone no.*, *Start time*, *Use count*, *Quantum*. If more convenient, you can [change the order](#)<sup>[375]</sup> of the columns by dragging their headers horizontally.

Click a column caption to **sort** items by values of this column in the ascending or the descending mode.

If necessary, you can **group the data in grid** by any of the columns. This operation is performed by dragging the column header to the gray **"Group by" box** area at the top. When grouping by a column is applied to the grid, all the rows are displayed as subnodes to the grouping row value. To reverse grouping, just drag the column header back.

## 9.9.8 Viewing relations

The **Relations** tab of **Database Monitor** allows you to view some of the characteristics of [tables](#)<sup>[178]</sup> and [views](#)<sup>[242]</sup> in the database.

**Note:** This tab is available for InterBase databases only.

ID	Relation name	Use count	Sweep count	Scan count	Formats	Pointer pages
1	RDB\$DATABASE	2	0	0	2	1
2	RDB\$FIELDS	6	0	0	1	1
3	RDB\$INDEX_SEGMENTS	4	0	0	2	1
4	RDB\$INDICES	9	0	0	2	1
5	RDB\$RELATION_FIELDS	11	0	0	2	1
6	RDB\$RELATIONS	15	0	0	2	1
7	RDB\$VIEW_RELATIONS	1	0	0	1	1
9	RDB\$SECURITY_CLASSES	3	0	0	1	1
11	RDB\$TYPES	1	0	0	1	1
12	RDB\$TRIGGERS	6	0	0	2	1
14	RDB\$FUNCTIONS	2	0	0	1	1
15	RDB\$FUNCTION_ARGUMEN	0	0	0	1	1
16	RDB\$FILTERS	0	0	0	1	1
17	RDB\$TRIGGER_MESSAGES	0	0	0	1	1
18	RDB\$USER_PRIVILEGES	1	0	0	2	1
20	RDB\$GENERATORS	2	0	0	2	1
21	RDB\$FIELD_DIMENSIONS	0	0	0	1	1
22	RDB\$RELATION_CONSTRAI	17	0	0	2	1

The list displays the relations as a grid with the following columns:

*ID, Relation name, Use count, Sweep count, Scan count, Formats, Pointer pages, Data pages, Garbage collect pages, Page reads, Page writes, Page fetches, Page marks, Indexed selects, Sequential selects, Record inserts, Record updates, Record deletes, Record purges, Record expunges, Record backouts.*

If more convenient, you can [change the order](#)<sup>[375]</sup> of the columns by dragging their headers horizontally.

Click a column caption to **sort** items by values of this column in the ascending or the descending mode.

If necessary, you can **group the data in grid** by any of the columns. This operation is performed by dragging the column header to the gray **"Group by" box** area at the top. When grouping by a column is applied to the grid, all the rows are displayed as subnodes to the grouping row value. To reverse grouping, just drag the column header back.



### 9.9.9 Viewing triggers

The **Triggers** tab of **Database Monitor** allows you to view the [triggers](#)<sup>[287]</sup> defined in the database.

**Note:** This tab is available for InterBase databases only.

ID	Relation name	Trigger name	Trigger type	Start time
1	RDB\$INDEX_SEGMENTS	RDB\$TRIGGER_18		3 01.01.1970 5:00:00
2	RDB\$INDEX_SEGMENTS	RDB\$TRIGGER_17		5 01.01.1970 5:00:00
3	RDB\$INDICES	RDB\$TRIGGER_20		3 01.01.1970 5:00:00
4	RDB\$INDICES	RDB\$TRIGGER_19		5 01.01.1970 5:00:00
5	RDB\$RELATION_FIELDS	RDB\$TRIGGER_24		3 01.01.1970 5:00:00
6	RDB\$RELATION_FIELDS	RDB\$TRIGGER_23		5 01.01.1970 5:00:00
7	RDB\$RELATION_FIELDS	RDB\$TRIGGER_27		6 01.01.1970 5:00:00
8	RDB\$RELATIONS	RDB\$TRIGGER_4		1 01.01.1970 5:00:00
9	RDB\$RELATIONS	RDB\$TRIGGER_5		3 01.01.1970 5:00:00
10	RDB\$TRIGGERS	RDB\$TRIGGER_2		3 01.01.1970 5:00:00
11	RDB\$TRIGGERS	RDB\$TRIGGER_22		3 01.01.1970 5:00:00
12	RDB\$TRIGGERS	RDB\$TRIGGER_3		5 01.01.1970 5:00:00
13	RDB\$TRIGGERS	RDB\$TRIGGER_21		5 01.01.1970 5:00:00
14	RDB\$USER_PRIVILEGES	RDB\$TRIGGER_9		1 01.01.1970 5:00:00
15	RDB\$USER_PRIVILEGES	RDB\$TRIGGER_33		1 01.01.1970 5:00:00
16	RDB\$USER_PRIVILEGES	RDB\$TRIGGER_1		3 01.01.1970 5:00:00
17	RDB\$USER_PRIVILEGES	RDB\$TRIGGER_31		3 01.01.1970 5:00:00

The list displays the triggers as a grid with the following columns:

*ID, Relation name, Trigger name, Trigger type, Start time, Trigger sequence, Order, Operation, Clone no., Quantum, Invocations, Pool memory, Page reads, Page writes, Page fetches, Page marks, Record inserts, Record updates, Record deletes, Record purges, Record expunges, Record backouts.*

If more convenient, you can [change the order](#)<sup>[375]</sup> of the columns by dragging their headers horizontally.

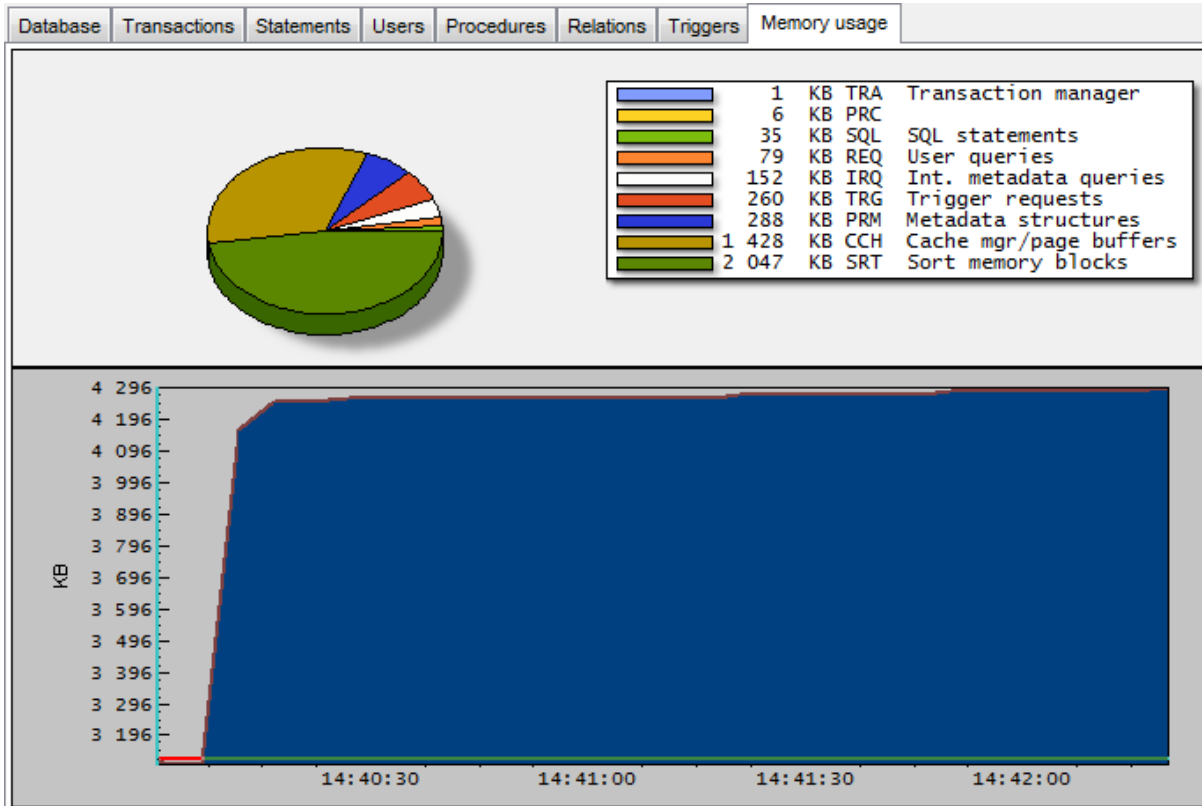
Click a column caption to **sort** items by values of this column in the ascending or the descending mode.

If necessary, you can **group the data in grid** by any of the columns. This operation is performed by dragging the column header to the gray **"Group by"** box area at the top. When grouping by a column is applied to the grid, all the rows are displayed as subnodes to the grouping row value. To reverse grouping, just drag the column header back.

### 9.9.10 Memory usage

The **Memory usage** tab of **Database Monitor** provides information on memory usage in the database.

**Note:** This tab is available for InterBase databases only.



The diagram area provides visual representation of memory usage.

The **pie diagram** in the upper area represents the percentage of memory pool allocated for each of the following:

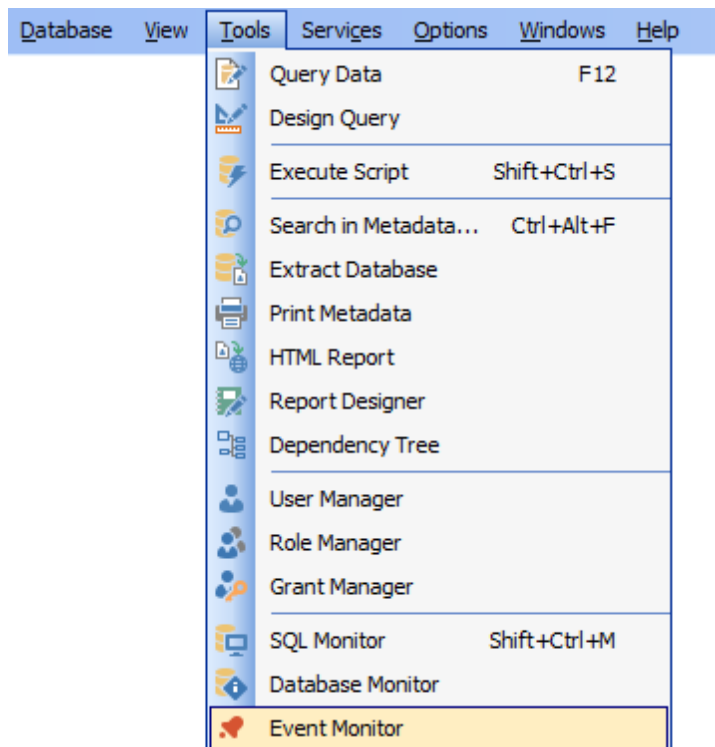
- TRA (Transaction manager)
- DYN
- SQL (SQL statements)
- REQ (User queries)
- IRQ (Int. metadata queries)
- TRG (Trigger requests)
- PRM (Metadata structures)
- SRT (Sort memory blocks)
- CCH (Cache mgr/page buffers)

The **chart** in the lower area represents the memory pool usage history in progress: the *ordinate* defines memory amount (in KB); the *abscissa* defines time intervals.

## 9.10 Event Monitor

**Event Monitor** allows you to see the notifications made by event alerters. *Event alerters* are messages passed from the database to an application; enables applications to receive asynchronous notification of database changes.

To launch the tool, select the **Tools |  Event Monitor** item from the [main menu](#)<sup>[882]</sup>.



- [Using Navigation bar and Toolbar](#)<sup>[620]</sup>
- [Working with Event Monitor](#)<sup>[621]</sup>

### Availability:

**Full** version (for Windows) **Yes**

**Lite** version (for Windows) **No**

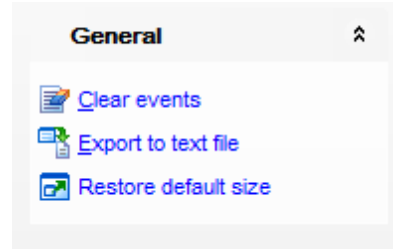
**Note:** To compare all features of the **Full** and the **Lite** versions of **SQL Manager**, refer to the [Feature Matrix](#)<sup>[20]</sup> page.

### See also:




[Events](#)<sup>[131]</sup>

### 9.10.1 Using Navigation bar and toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Event Monitor**.



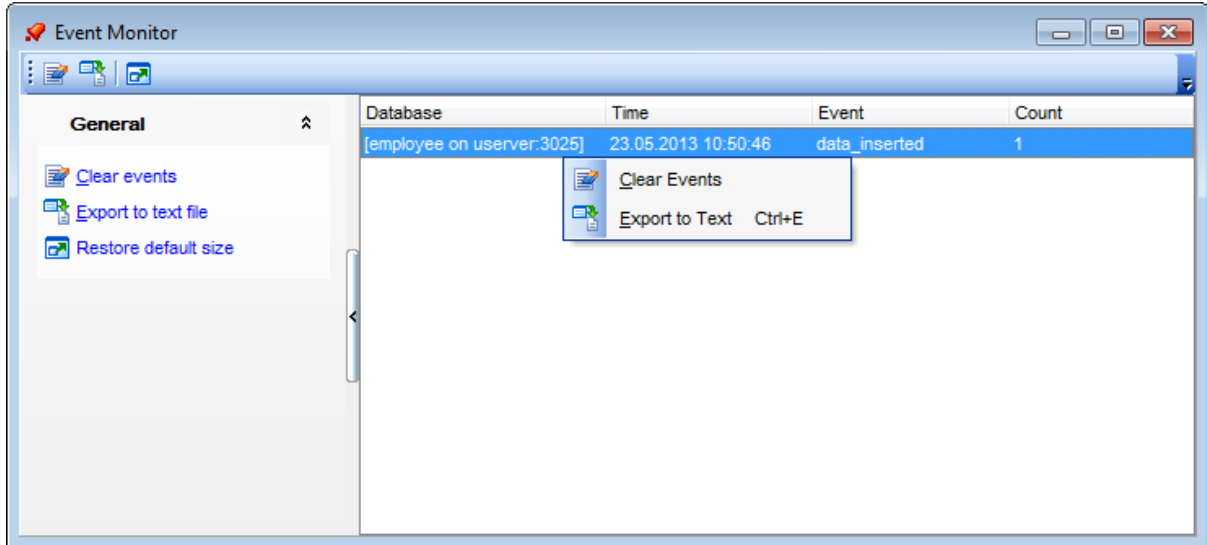
#### General

-  clear the list of events
-  export the list of events to a \*.txt file
-  restore the default size and position of the window

Items of the **Navigation bar** are also available on the **ToolBar** of **Event Monitor**. To enable the [toolbar](#)<sup>[884]</sup>, open the [Environment Options](#)<sup>[736]</sup> dialog, proceed to the [Windows](#)<sup>[743]</sup> section there and select  *Toolbar* (if you need the toolbar only) or  *Both* (if you need both the toolbar and the [Navigation bar](#)<sup>[882]</sup>) in the **Bar style for child forms** group.

## 9.10.2 Working with Event Monitor

The working area of **Event Monitor** lists the events that were [defined](#)<sup>[131]</sup> for the database and then posted.



The list displays the events as a grid with the following columns: *Database*, *Time*, *Event*, *Count*.


Click a column caption to **sort** items by values of this column in the ascending or the descending mode.

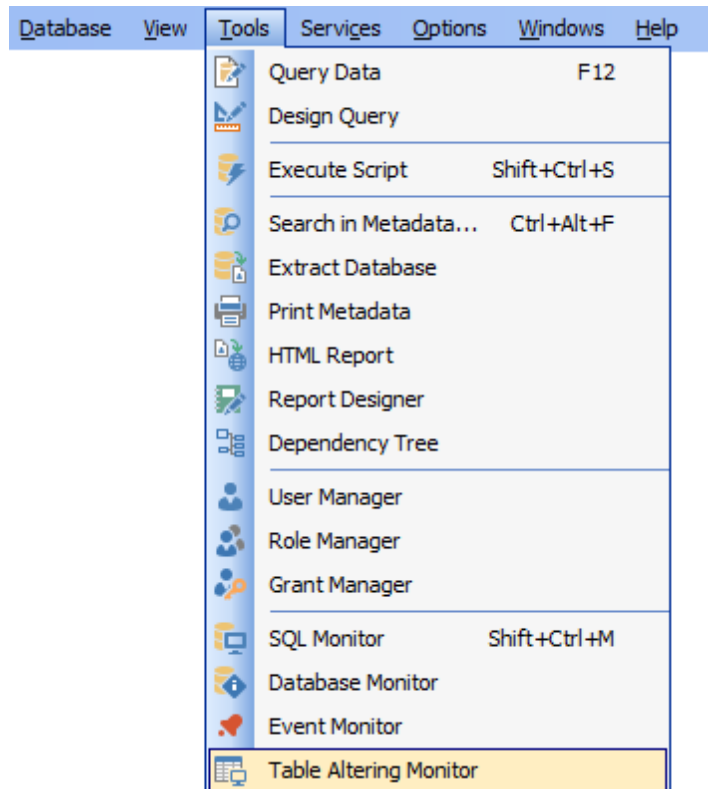
Right-click an item within the list to call the **context menu** allowing you to *clear* the list of events, or export the list to a \*.txt file. These operations can also be performed with the corresponding [hot keys](#)<sup>[932]</sup> used.

Event management tools are also available through the [Navigation bar](#)<sup>[620]</sup> of **Event Monitor**.

## 9.11 Table Altering Monitor

**Table Altering Monitor** allows you to view the number of metadata changes in [tables](#)<sup>[178]</sup> and [views](#)<sup>[242]</sup> of the database. InterBase/Firebird allows editing a table or a view metadata up to 255 times, after reaching this limit [backup](#)<sup>[652]</sup> and [restore](#)<sup>[663]</sup> are recommended for the database.

To launch the tool, select the **Tools |  Table Altering Monitor main menu**<sup>[882]</sup> item, or right-click the database alias in the [DB Explorer](#)<sup>[63]</sup> tree and select the **Tasks |  Table Altering Monitor** item from the [context menu](#)<sup>[53]</sup>.



**Availability:**

**Full** version (for Windows) **Yes**

**Lite** version (for Windows) **No**

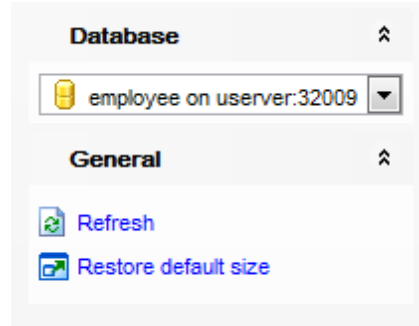
**Note:** To compare all features of the **Full** and the **Lite** versions of **SQL Manager**, refer to the [Feature Matrix](#)<sup>[20]</sup> page.

**See also:**

[Tables](#)<sup>[178]</sup>


### 9.11.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Table Altering Monitor**.





The **Navigation bar** of the **Table Altering Monitor** window allows you to:

#### Database

 select a database for browsing table and view metadata changes

#### General

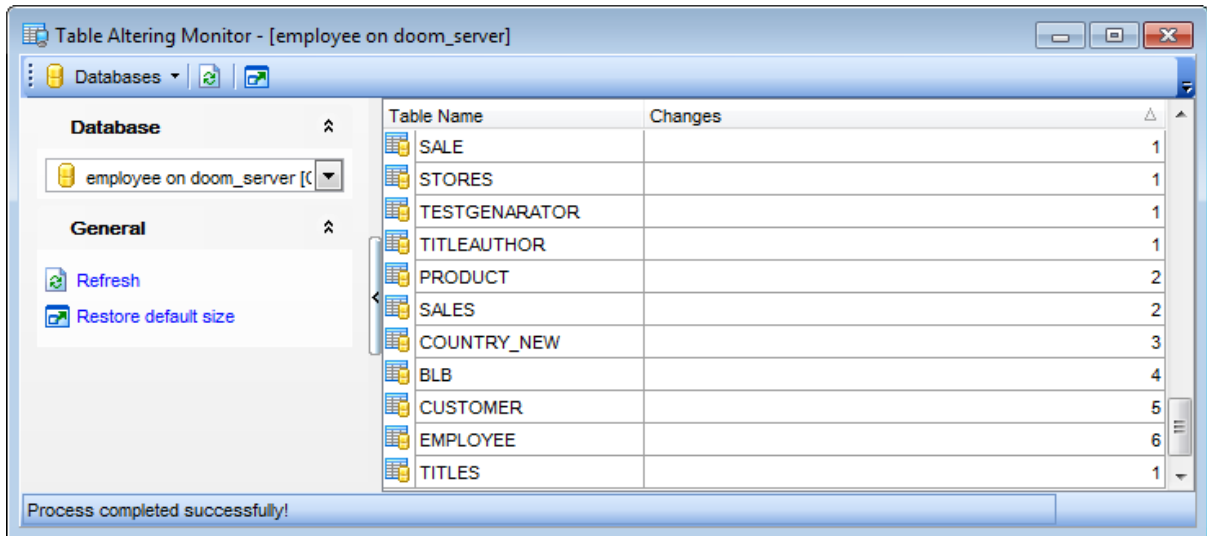
 refresh the currently displayed list

 restore the default size and position of the window

Items of the **Navigation bar** are also available on the **ToolBar** of the **Table Altering Monitor** window. To enable the [toolbar](#)<sup>[884]</sup>, open the [Environment Options](#)<sup>[736]</sup> dialog, proceed to the [Windows](#)<sup>[743]</sup> section there and select  *Toolbar* (if you need the toolbar only) or  *Both* (if you need both the toolbar and the [Navigation bar](#)<sup>[882]</sup>) in the **Bar style for child forms** group.

### 9.11.2 Working with Table Altering Monitor

The working area of the **Table Altering Monitor** window lists all tables and views of the database and the number of changes made to them.



#### See also:

[Using Navigation bar and Toolbar](#)<sup>[623]</sup>

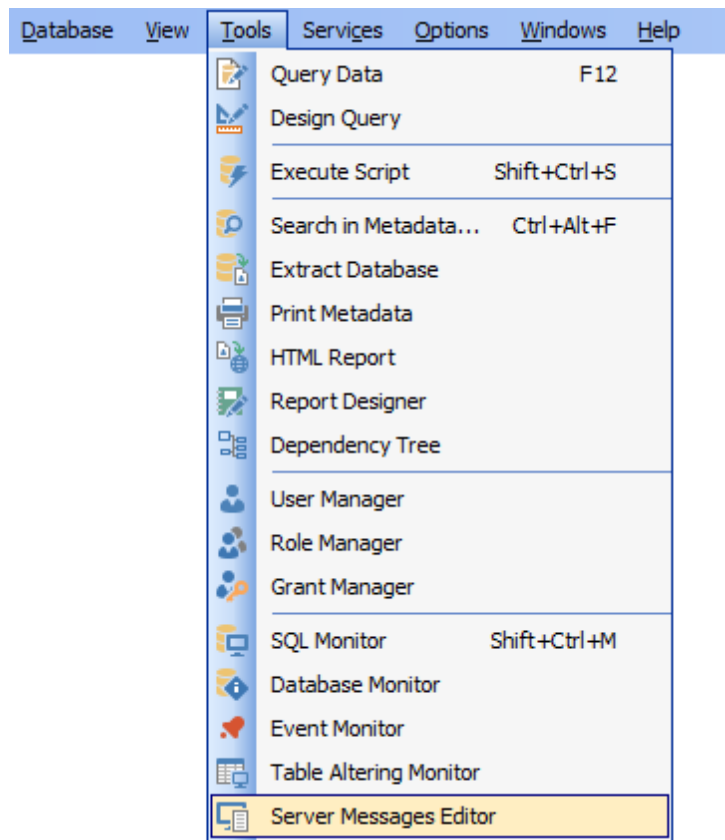


## 9.12 Server Messages Editor

**Server Messages Editor** allows you to view and edit system messages of InterBase/Firebird server.

It may be useful when there is a need to find a certain message, edit a standard server message according to your preferences, or translate messages into your native language.

To launch the tool, select the **Tools |  Server Messages Editor** item from the [main menu](#)<sup>[682]</sup>.



- [Using Navigation bar and Toolbar](#)<sup>[626]</sup>
- [Working with server messages](#)<sup>[627]</sup>
- [Go to Message Number dialog](#)<sup>[628]</sup>
- [Editing Server Messages](#)<sup>[629]</sup>

Availability:

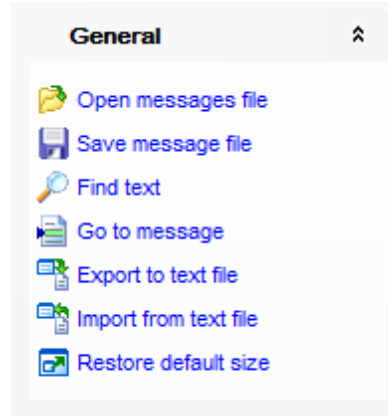
**Full** version (for Windows) **Yes**

**Lite** version (for Windows) **No**

**Note:** To compare all features of the **Full** and the **Lite** versions of **SQL Manager**, refer to the [Feature Matrix](#)<sup>[20]</sup> page.








### 9.12.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Server Messages Editor**.



The **Navigation bar** of the **Server Messages Editor** window allows you to:

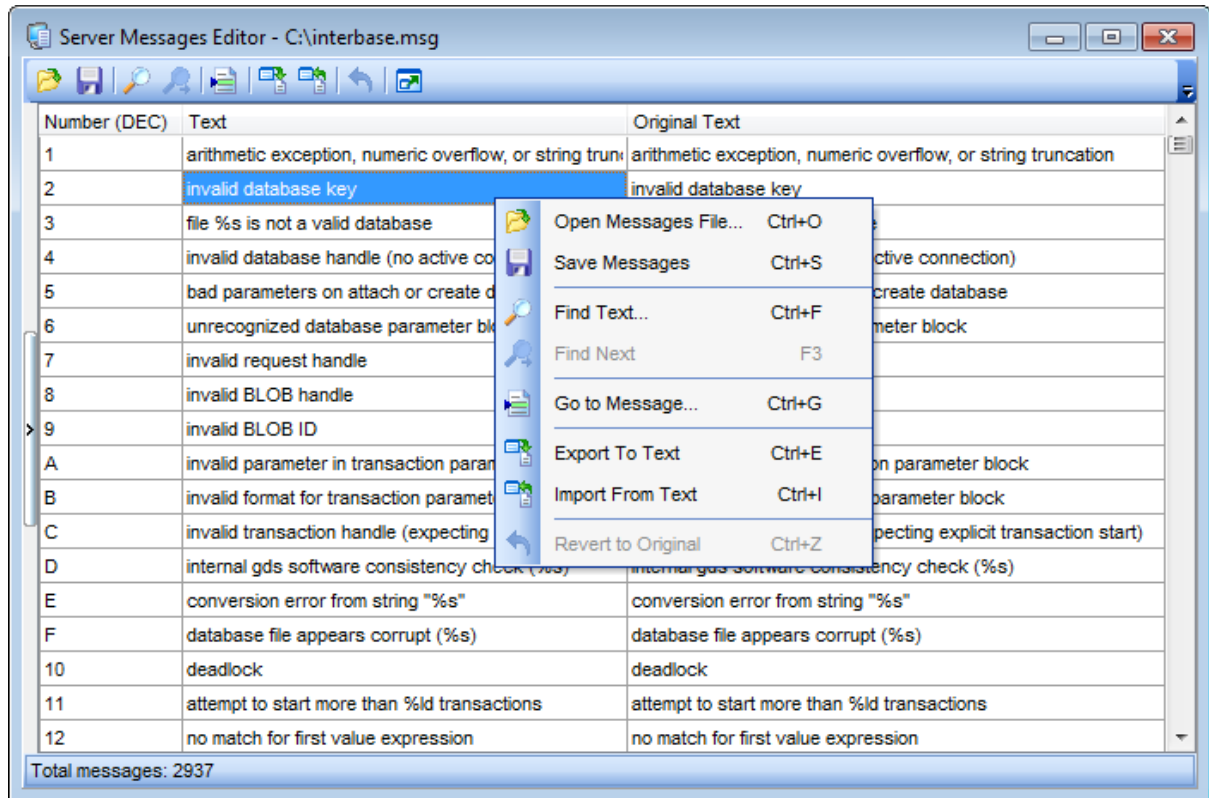
#### General

-  load server messages from a \*.msg file using the **Open** dialog
-  search for a string using the [Find Text](#)<sup>[901]</sup> dialog
-  search again
-  open the [Go to Message Number](#)<sup>[628]</sup> dialog
-  export the list of messages to a \*.txt file
-  import the list of messages from a \*.txt file
-  restore the default size and position of the window

Items of the **Navigation bar** are also available on the **ToolBar** of the **Server Messages Editor** window. To enable the [toolbar](#)<sup>[884]</sup>, open the [Environment Options](#)<sup>[736]</sup> dialog, proceed to the [Windows](#)<sup>[743]</sup> section there and select  *Toolbar* (if you need the toolbar only) or  *Both* (if you need both the toolbar and the [Navigation bar](#)<sup>[882]</sup>) in the **Bar style for child forms** group.

## 9.12.2 Working with server messages

The working area of **Server Messages Editor** lists InterBase/Firebird server messages.



The list displays the server messages as a grid with the following columns: *Number*, *Text*, *Original Text*. If more convenient, you can [change the order](#)<sup>[375]</sup> of the columns by dragging their headers horizontally.

Click the *Number* column caption to toggle the *DEC/HEX* notation-specific representation modes.

Double-click an item in the list to [edit](#)<sup>[629]</sup> the underlying message.

Right-click an item within the list to call the **context menu** allowing you to *open* a \*.msg file, *save* current changes, *find text / search again* using the [Find Text](#)<sup>[901]</sup> dialog, *go to a message with specified number*<sup>[628]</sup>, and *export/import* the list of messages to/from a \*.txt file, *revert* the selected message to original (i.e. undo changes).

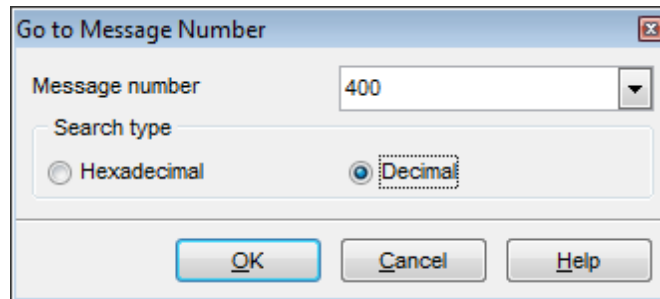
Server message management tools are also available through the [Navigation bar](#)<sup>[626]</sup> of **Server Messages Editor**.

The status bar area displays the total messages count loaded from the file.

### 9.12.3 Go to Message Number dialog

The **Go to Message Number** dialog allows you to jump to the message with a certain number.

To call this dialog, select the corresponding items on the [Navigation bar](#)<sup>626</sup>, [toolbar](#)<sup>626</sup>, or *context menu* of the [working area](#)<sup>627</sup> of **Server Messages Editor**.



#### **Message number**

Input the number of the message you need. The drop-down list contains the previously specified values.

#### **Search type**

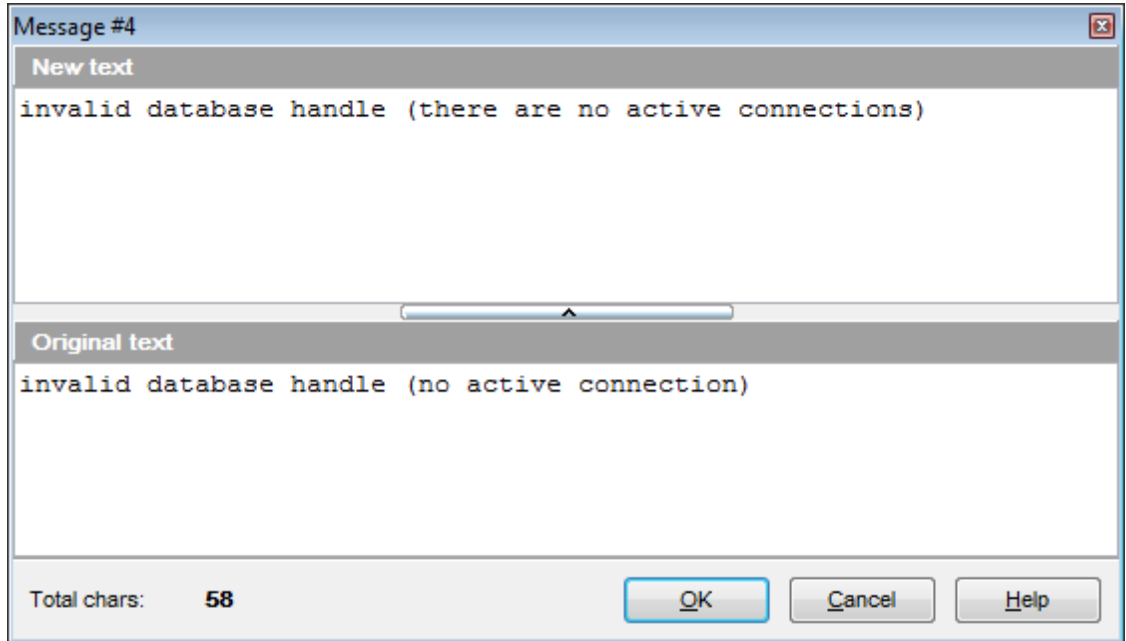
Select a number notation to be used in the message search operation:

- Hexadecimal*
- Decimal*

### 9.12.4 Editing Server Messages

The **Message #<message\_no>** dialog allows you to view and edit message text.

To call this dialog, double-click the message you need in the [working area](#)<sup>[627]</sup> of **Server Messages Editor**.



The **New text** area displays the message text with currently made changes. The content of this area is editable.

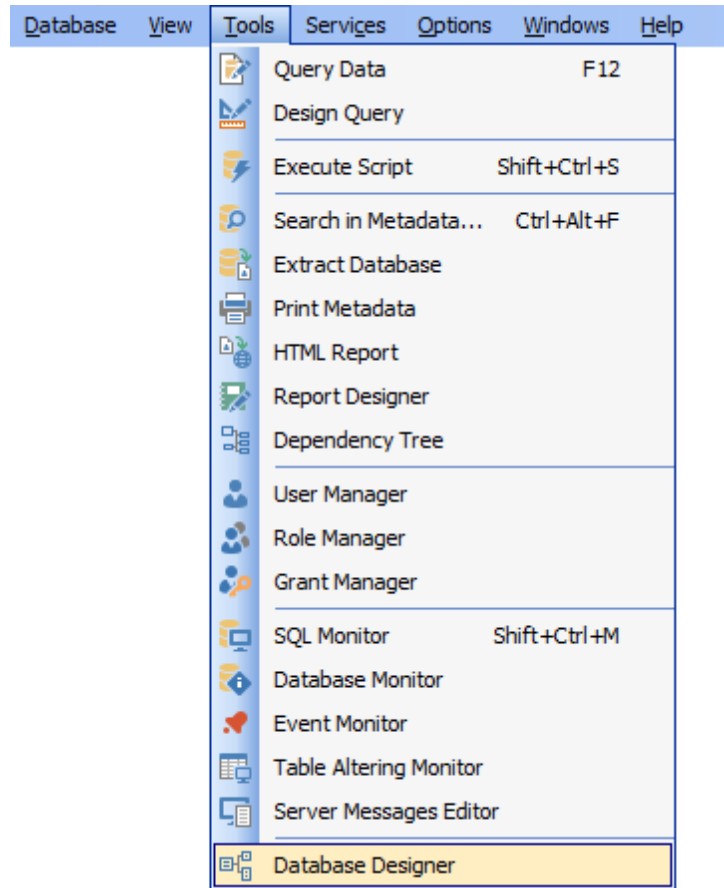
The **Original text** area displays the original message text. The content of this area is read-only.

The **Total chars** value at the bottom stands for the total characters count in the **New text** area.

## 9.13 Database Designer

**Database Designer** is provided for visual presentation of databases, database objects and relations between objects. It also allows you to create, edit and drop tables and table fields, set relations between tables and perform other operations you may need to achieve your purpose.

To open the designer, select the **Tools** | **Database Designer main menu** [\[882\]](#) item, or use the **VDBD** [\[884\]](#) button on the main [toolbar](#) [\[884\]](#).



- [Using Navigation bar and Toolbars](#) [\[632\]](#)
- [Using Diagram Navigator and DB Objects pane](#) [\[635\]](#)
- [Using context menus](#) [\[637\]](#)
- [Adding/removing objects to/from diagram](#) [\[639\]](#)
- [Creating new objects](#) [\[640\]](#)
- [Creating relations](#) [\[641\]](#)
- [Working with diagram pages](#) [\[642\]](#)
- [Reverse engineering](#) [\[643\]](#)
- [Printing diagram](#) [\[644\]](#)
- [Saving/loading diagram](#) [\[648\]](#)
- [Setting diagram options](#) [\[649\]](#)

Availability:

**Full** version (for **Yes**)

Windows)

**Lite** version (for **No**  
Windows)

**Note:** To compare all features of the **Full** and the **Lite** versions of **SQL Manager**, refer to the [Feature Matrix](#)<sup>[20]</sup> page.

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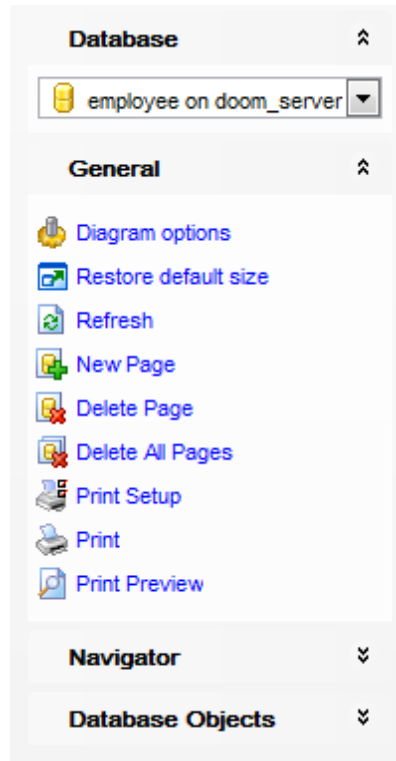
**See also:**

[Database Objects Management](#)<sup>[162]</sup>

[Database Designer options](#)<sup>[763]</sup>


### 9.13.1 Using Navigation bar and Toolbars

The **Navigation bar** and **Toolbars** provide quick access to tools implemented in **Database Designer**.












The **Navigation bar** of **Database Designer** allows you to:

#### Database

 select a database for building the diagram

#### General



-  edit [diagram options](#)<sup>[649]</sup>
-  restore the default size and position of the [window](#)<sup>[630]</sup>
-  refresh objects in the diagram
-  add a new page
-  delete the current page
-  delete all pages
-  set printing options using the **Print Setup** dialog
-  preview the diagram
-  print the diagram

#### Navigator

✓ use [Diagram Navigator](#)<sup>[635]</sup>

#### Database Objects



-  search for objects in the diagram using the [Database Objects](#) pane
-  [add](#) objects to the diagram using the [Database Objects](#) pane

The **Toolbars** of **Database Designer** provide quick access to most tools for working with diagrams.

To enable the [toolbars](#), open the [Environment Options](#) dialog, proceed to the [Windows](#) section there and select  *Toolbar* (if you need the toolbars only) or  *Both* (if you need both the toolbars and the [Navigation bar](#)) in the **Bar style for child forms** group.

The **main toolbar** (by default, the toolbar is located at the top of the diagram area) contains a number of tools (including items of the **Navigation bar**, [context menu](#), tools for [printing diagram](#), etc.) allowing you to:

- select the database for building the diagram;
- create a new diagram;
- [open](#) an existing diagram;
- [save](#) the current diagram to a \*.ibd file;
- [save](#) the current diagram as an image;
- adjust diagram zoom for optimal representation: *zoom in*, *zoom out*;
- open the [Print Setup](#) dialog;
- [print](#) the diagram;
- show [Print Preview](#);
- arrange objects in the diagram;
- extract metadata of all objects in the diagram and load the script to [Execute Script Editor](#);
- perform [Reverse Engineering](#);
- refresh objects in the diagram;
- view/edit [diagram options](#);
- specify a predefined zoom value;
- restore the default size and position of the [window](#).



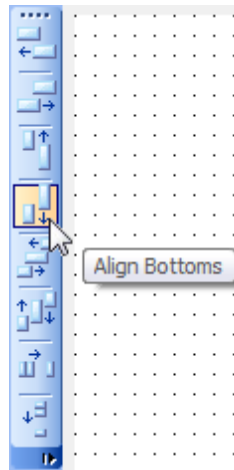
The **Pages** toolbar (by default, the toolbar is located at the top of the diagram area) contains tools for working with [diagram pages](#) allowing you to:

- *add* a new page;
- *delete* the current page;
- *delete all* pages.



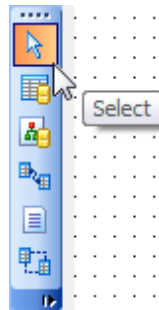
The **Alignment Palette** (by default, the toolbar is located on the left side of the diagram area) allows you to:

- align left/right edges of selected objects;
- align tops/bottoms of selected objects;
- align horizontal/vertical centers of selected objects;
- space selected objects equally horizontal/vertical.



The **New object** toolbar (by default, the toolbar is located on the left side of the diagram area) allows you to:

- set the cursor mode to *Select*;
- create a [new object](#)<sup>[640]</sup> (a *table*, a *view*, or a *comment*);
- create a new [relation](#)<sup>[641]</sup>.



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### See also:

[Using Diagram Navigator and DB Objects pane](#)<sup>[635]</sup>

[Using context menus](#)<sup>[637]</sup>

[Adding/removing objects to/from diagram](#)<sup>[639]</sup>

[Creating new objects](#)<sup>[640]</sup>

[Creating relations](#)<sup>[641]</sup>

[Working with diagram pages](#)<sup>[642]</sup>

[Reverse engineering](#)<sup>[643]</sup>

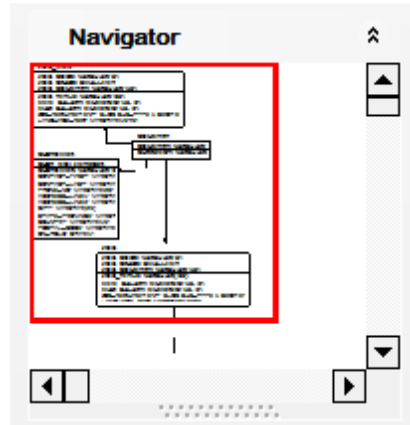
[Printing diagram](#)<sup>[644]</sup>

[Saving/loading diagram](#)<sup>[645]</sup>

[Setting diagram options](#)<sup>[649]</sup>

### 9.13.2 Using Diagram Navigator and DB Objects pane

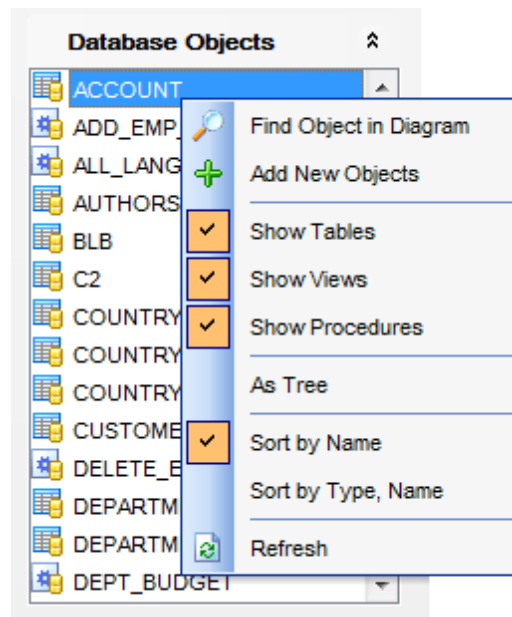
To navigate within the large diagram, use the **Navigator** tool available on the [Navigation bar](#)<sup>[632]</sup>. It allows you to see the whole diagram in a reduced scale and to perform a number of operations over the diagram objects.



A mouse click in the **Navigator** area sets the center of the visible diagram area. The area currently visible in the main [diagram area](#)<sup>[630]</sup> is outlined in a red bounding rectangle.


Using the **Navigator** you can work with the diagram objects in the same way as in the main [diagram area](#)<sup>[630]</sup>: [add](#)<sup>[639]</sup>/[remove](#)<sup>[639]</sup>, [create](#)<sup>[640]</sup> new objects, move objects within the diagram and perform other operations.

The **Database Objects** pane available on the [Navigation bar](#)<sup>[632]</sup> allows you to browse the list of available [database objects](#)<sup>[162]</sup> that can be added to the diagram.



Select and drag an object to the diagram area or double-click it to [add](#)<sup>[639]</sup> the object to the diagram.

Right-click an item within the list to call the **context menu** allowing you to:

 find the selected object in the diagram (if the object is found, it will be highlighted in the [diagram area](#)<sup>[630]</sup>);

 add new objects to the diagram by [Reverse engineering](#)<sup>[643]</sup>;

✓ specify whether *tables* are to be displayed;

✓ specify whether *views* are to be displayed;

✓ specify whether *procedures* are to be displayed;

✓ toggle objects representation mode: *as a tree / as a list*;

✓ select the sorting mode applied to the objects in the list: *by name / by type, name*;

 refresh the list.

---

### See also:

[Using Navigation bar and Toolbars](#)<sup>[632]</sup>

[Adding/removing objects to/from diagram](#)<sup>[639]</sup>

[Creating new objects](#)<sup>[640]</sup>

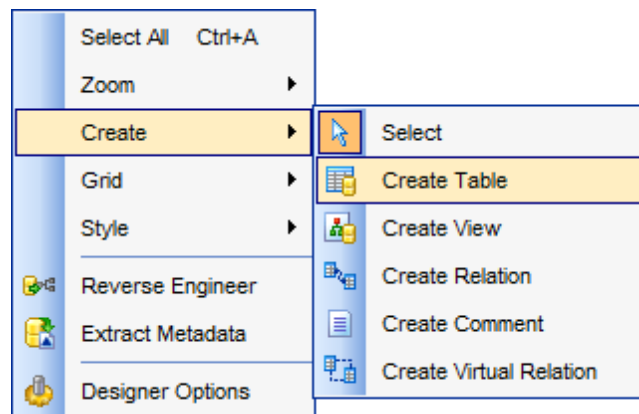
[Creating relations](#)<sup>[641]</sup>

[Working with diagram pages](#)<sup>[642]</sup>

### 9.13.3 Using context menus

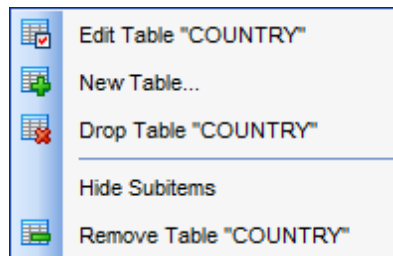
The **context menu** of the diagram area contains a number of items available in the [Navigation bar](#)<sup>[632]</sup> and [toolbars](#)<sup>[633]</sup> and allows you to:

- select all objects in the diagram area;
- adjust diagram zoom for optimal representation: *zoom in*, *zoom out*, *select rectangle to fit*, *fit model*, specify a predefined zoom value;
- set the cursor mode to *Select* or create a new [table](#)<sup>[640]</sup>, [relation](#)<sup>[641]</sup>, or [comment](#)<sup>[640]</sup>;
- configure the [grid](#)<sup>[649]</sup>: *draw grid*, *snap to grid*;
- adjust the diagram [style](#)<sup>[649]</sup>: *draw primary key fields separately*, *draw entities icons*, *draw attributes icons*, *draw only names of entities*, *draw foreign key names*;
- perform [Reverse Engineering](#)<sup>[643]</sup>;
- extract metadata of the diagram objects to [Execute Script Editor](#)<sup>[542]</sup>;
- view/edit [diagram options](#)<sup>[649]</sup>.



The **context menu** of an entity contains items for working with the object and allows you to:

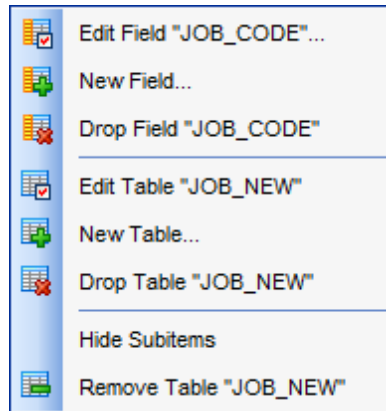
- [edit](#)<sup>[162]</sup> the object using its editor ([Table Editor](#)<sup>[184]</sup>, [View Editor](#)<sup>[242]</sup>);
- [create](#)<sup>[640]</sup> a new object using its editor ([New table](#)<sup>[179]</sup>, [View Editor](#)<sup>[242]</sup>);
- [drop](#)<sup>[162]</sup> the object from the database;
- show/hide object subitems;
- [remove](#)<sup>[639]</sup> the object from the diagram.



The **context menu** of a field contains items for working with the object and its fields and allows you to:

- [edit](#)<sup>[200]</sup> the selected field using its editor ([Field Editor](#)<sup>[201]</sup>);
- [create](#)<sup>[200]</sup> a new field;
- [drop](#)<sup>[200]</sup> the selected field;

- [edit](#)<sup>[162]</sup> the object using its editor ([Table Editor](#)<sup>[184]</sup>, [View Editor](#)<sup>[242]</sup>);
- [create](#)<sup>[640]</sup> a new object using its editor ([New table](#)<sup>[179]</sup>, [View Editor](#)<sup>[242]</sup>);
- [drop](#)<sup>[162]</sup> the object from the database;
- show/hide object subitems;
- [remove](#)<sup>[639]</sup> the object from the diagram.



---

**See also:**

[Using Navigation bar and Toolbars](#)<sup>[632]</sup>

[Adding/removing objects to/from diagram](#)<sup>[639]</sup>

[Creating new objects](#)<sup>[640]</sup>

[Creating relations](#)<sup>[641]</sup>

## 9.13.4 Working with diagram objects

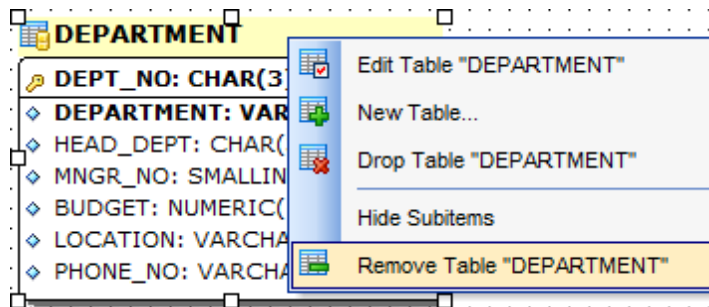
### 9.13.4.1 Adding/removing objects to/from diagram

To *add* an object to the diagram:

- drag it from the [Database Explorer](#)<sup>[631]</sup> tree to the [diagram area](#)<sup>[630]</sup>
- or
- drag it from the [Database Objects](#)<sup>[635]</sup> pane (available on the [Navigation bar](#)<sup>[632]</sup>) to the [diagram area](#)<sup>[630]</sup> or simply double-click this object in the list.

To add objects by [Reverse engineering](#)<sup>[643]</sup>, you can right-click within the **Database Objects** list and select the **+ Add new objects...** context menu item.

To remove an object from the diagram, select it in the diagram area, then right-click its title and choose the **Remove <object\_name>** item from the [context menu](#)<sup>[637]</sup>, or just press the **Del** key.



#### See also:

[Using Navigation bar and Toolbars](#)<sup>[632]</sup>

[Using Diagram Navigator and DB Objects pane](#)<sup>[635]</sup>

[Using context menus](#)<sup>[637]</sup>

[Creating new objects](#)<sup>[640]</sup>

[Creating relations](#)<sup>[641]</sup>

[Reverse engineering](#)<sup>[643]</sup>

[Database Objects Management](#)<sup>[162]</sup>

### 9.13.4.2 Creating objects

To [create](#)<sup>[162]</sup> a new object using Database Designer:

- press the **Create table** button on the [New object toolbar](#)<sup>[634]</sup>;
- click the desired point on the diagram to place the new object at;
- specify object properties using its editor ([New table](#)<sup>[179]</sup>, [View Editor](#)<sup>[242]</sup>).



**Hint:** To create a new object, you can also select the corresponding item from the [context menu](#)<sup>[637]</sup>. The context menus also allow you to [edit](#)<sup>[162]</sup> and [drop](#)<sup>[162]</sup> database objects.

---

#### See also:

[Using Diagram Navigator and DB Objects pane](#)<sup>[635]</sup>

[Adding/removing objects to/from diagram](#)<sup>[639]</sup>

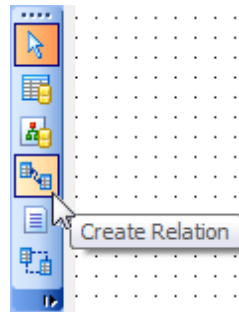
[Creating relations](#)<sup>[641]</sup>



### 9.13.4.3 Creating relations

To establish a new relation (which is the [foreign key](#)<sup>[216]</sup> in terms of database management):

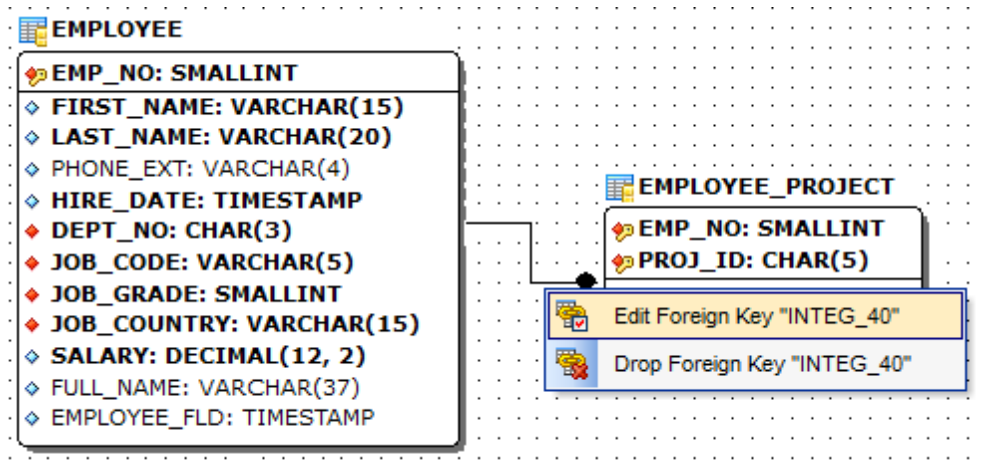
- press the **Create relation** button on the [New object toolbar](#)<sup>[634]</sup>;
- click the entity where the referential constraint should be created;
- click the referred entity;
- specify new foreign key properties using [Foreign key Editor](#)<sup>[227]</sup>.



**Hint:** To create a relation, you can also use the corresponding item of the [context menu](#)<sup>[637]</sup>.

Once the relation is created, it is displayed as a line between two entities in the diagram area. The style the line is drawn is determined by the diagram *notation*.

The **context menu** of this line allows you to [edit](#)<sup>[217]</sup> the foreign key using [Foreign key Editor](#)<sup>[219]</sup> or [drop](#)<sup>[217]</sup> the foreign key from the database.



#### See also:

[Using Diagram Navigator and DB Objects pane](#)<sup>[635]</sup>

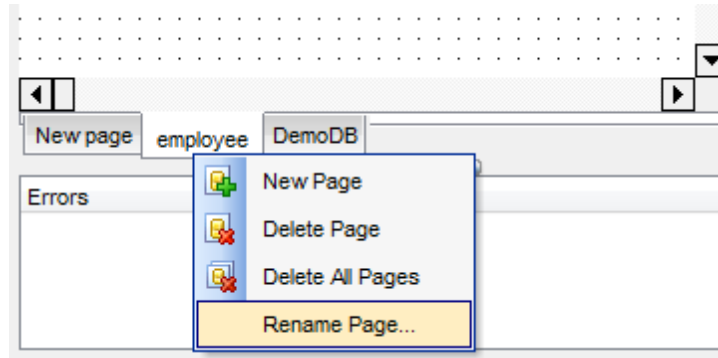
[Adding/removing objects to/from diagram](#)<sup>[639]</sup>

[Creating new objects](#)<sup>[640]</sup>

### 9.13.5 Working with diagram pages

You can create several **pages** in one diagram to split the model into several subject groups, e.g. for better comprehension.

To manage diagram pages, right-click on the tabs at the bottom of the diagram area and select the required popup menu items for *adding*, *deleting* and *renaming* pages.



**Hint:** Page management items are also available on the [Pages toolbar](#)<sup>[633]</sup> of Database Designer.

---


#### See also:

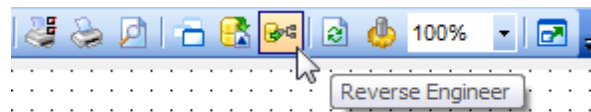
[Using Diagram Navigator and DB Objects pane](#)<sup>[635]</sup>

[Adding/removing objects to/from diagram](#)<sup>[639]</sup>

### 9.13.6 Reverse engineering

The **reverse engineering** operation builds relationship diagram on the basis of the current database's structure. The objects are arranged automatically within the diagram model.

To start the reverse engineering process, press the  **Reverse Engineer** button on the [main toolbar](#)<sup>[633]</sup>, or use the corresponding item of the [context menu](#)<sup>[637]</sup>.



---

#### See also:

[Using Navigation bar and Toolbars](#)<sup>[632]</sup>


[Using Diagram Navigator and DB Objects pane](#)<sup>[635]</sup>

[Adding/removing objects to/from diagram](#)<sup>[639]</sup>


### 9.13.7 Printing diagram

**Database Designer** allows you to print and preview the diagram.


*To preview the diagram:*

- press the  **Print Preview** button on the [toolbar](#)<sup>[633]</sup>;
- preview the diagram using the [Print Preview](#)<sup>[645]</sup> window.

*To setup print options:*

- press the  **Print Setup** button on the [toolbar](#)<sup>[633]</sup>, or use the corresponding link on the [Navigation bar](#)<sup>[632]</sup>;
- set printing options using the [Print Setup](#)<sup>[646]</sup> dialog and press **OK**.

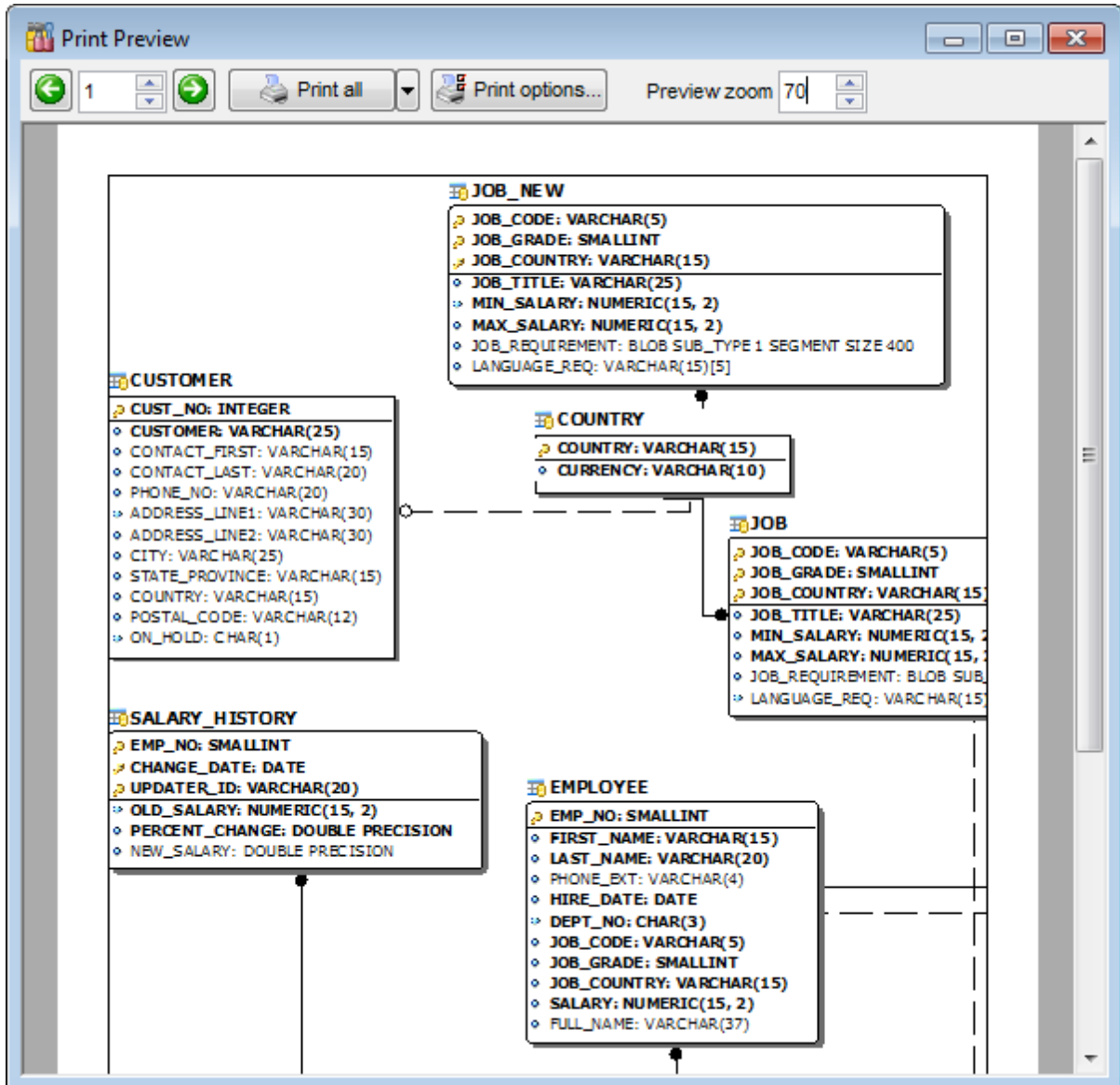
*To print the diagram:*

- press the  **Print** button on the [toolbar](#)<sup>[633]</sup>;
- set printing options using the [Print Setup](#)<sup>[646]</sup> dialog and press the **Print** button.

### 9.13.7.1 Print Preview

The **Print Preview** dialog allows you to see the diagram layout in WYCIWYG mode before it will be printed.

Use the navigation buttons or the spinner control to navigate within the preview pages. Click the **Print options...** button to call the [Print Setup](#) dialog. If necessary, specify the **preview zoom** according to your preferences. Click the **Print all** button to start printing.



**See also:**

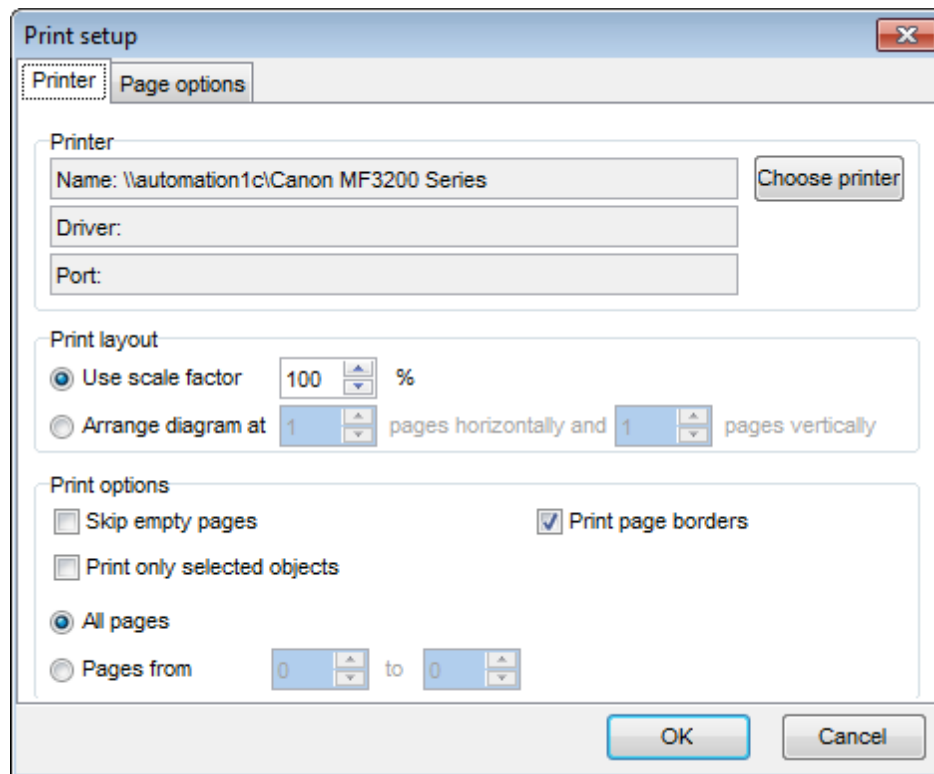
[Print Setup dialog](#)

### 9.13.7.2 Print Setup dialog

The **Print Setup** dialog of **Database Designer** provides two tabs for setting printing options: **Printer** and **Page options**.

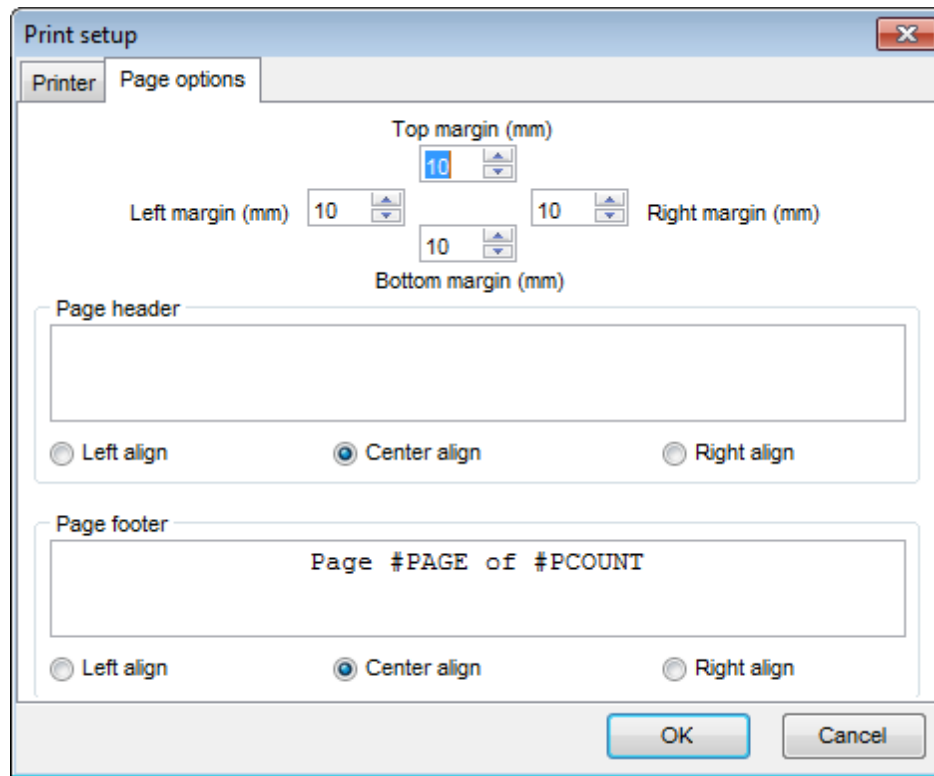
The **Printer** tab of the **Print Setup** dialog allows you to:

- specify the printer (use the **Choose printer** button to select a printer which is not set by default on your system; the *name*, *driver*, *port* fields display the selected printer details);
- specify print layout: print using a defined *scale factor* or arrange diagram at a defined number of pages horizontally and vertically;
- set other print options.



The **Page options** tab of the **Print Setup** dialog allows you to:

- specify page margins (in millimeters): *Top margin*, *Bottom margin*, *Left margin*, *Right margin*;
- specify **Page header** and **Page footer**: enter the header/footer running titles *text*, set left/center/right *align*.





**Hint:** It is also possible to set macros in the **Page header** and **Page footer** fields:  
#PCOUNT stands for the quantity of pages;  
#PAGE - the number of the current page;  
#DATE denotes the current date;  
#TIME denotes the current time.

---


**See also:**

[Print Preview](#)<sup>[645]</sup>

### 9.13.8 Saving/loading diagram

Use the  **Save Diagram** and the  **Open Diagram** buttons on the [main toolbar](#)<sup>[633]</sup> to save the diagram as a \*.ibd file for future use or to load the previously saved diagram.



If necessary, you can save the diagram as an image: click the  **Save as Picture** button on the [main toolbar](#)<sup>[633]</sup>.

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#### See also:

[Using Navigation bar and Toolbars](#)<sup>[632]</sup>

[Using Diagram Navigator and DB Objects pane](#)<sup>[635]</sup>


[Using context menus](#)<sup>[637]</sup>

[Adding/removing objects to/from diagram](#)<sup>[639]</sup>

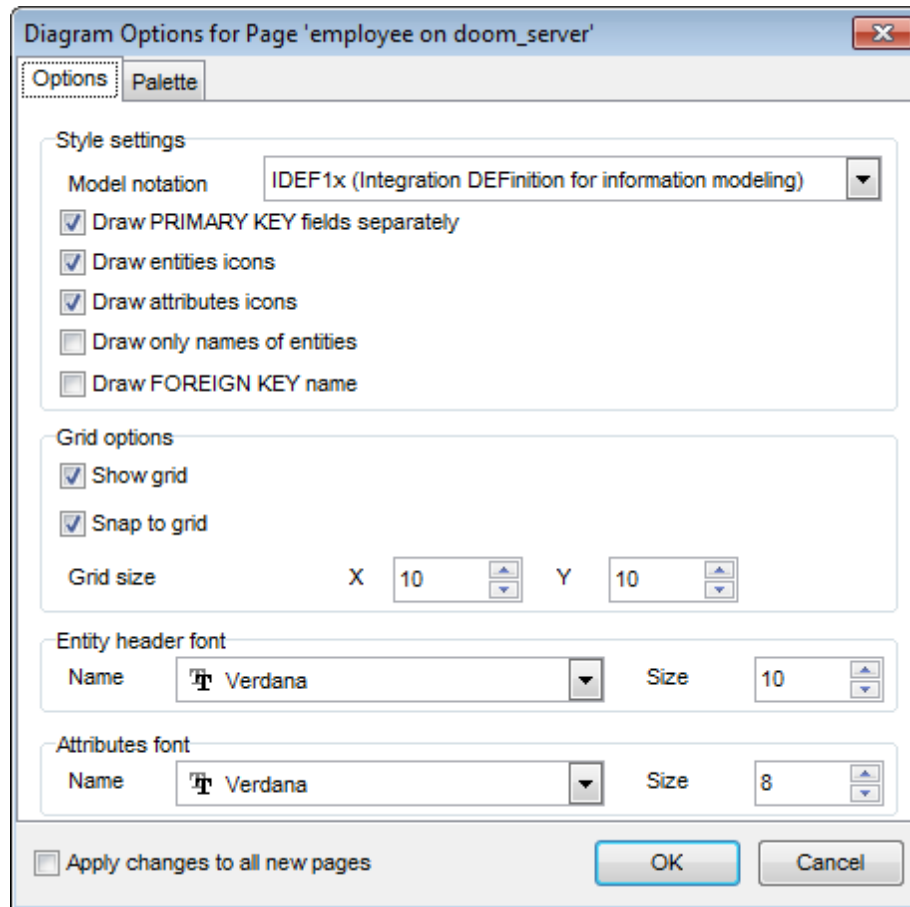


### 9.13.9 Setting diagram options

Using the **Diagram Options** dialog you can setup the behavior and look of each diagram page.

To open this dialog, use the  **Diagram options** item of the [Navigation bar](#)<sup>[632]</sup> or on the [main toolbar](#)<sup>[633]</sup>, or select the corresponding item from the [context menu](#)<sup>[637]</sup>.

See detailed description of each option on the [Database Designer](#)<sup>[763]</sup> page of the [Environment Options](#)<sup>[736]</sup> dialog.



**Apply changes to all new pages**

If this option is selected, the current settings will be applied to all newly created pages of Database Designer.

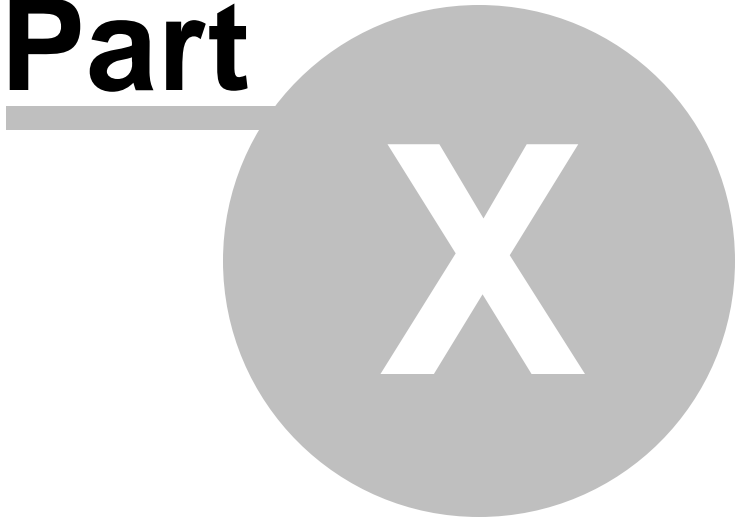
---

**See also:**

[Using Diagram Navigator and DB Objects pane](#)<sup>[635]</sup>

[Database Designer options](#)<sup>[763]</sup>

**Part**



## 10 Services

**SQL Manager for InterBase/Firebird** provides graphical interface for a number of database maintenance operations. The following *specific database tools* are available in **SQL Manager for InterBase/Firebird**:

**[Backup Database Wizard](#)**<sup>[652]</sup>

Creates backup copies of databases.

**[Restore Database Wizard](#)**<sup>[663]</sup>

Restores databases from previously created backups.

**[Database Validation](#)**<sup>[680]</sup>

Validates the database, verifies the integrity of data structures.

**[Database Statistics](#)**<sup>[688]</sup>

Collects statistics on a specified database.

**[Start/Stop database](#)**<sup>[692]</sup>

Provides the ability to turn a database to a single-user mode (shutdown) and bring a database back online.

**[Rebuild Database Indexes](#)**<sup>[698]</sup>

Recomputes or rebuilds database indexes.

**[Purge Database](#)**<sup>[705]</sup>

Clears the data of the selected tables.

To obtain detailed information concerning specific InterBase/Firebird database maintenance services, refer to the official server documentation.

---

**See also:**

[Getting Started](#)<sup>[37]</sup>

[Database Explorer](#)<sup>[63]</sup>

[Database Management](#)<sup>[87]</sup>

[Database Objects Management](#)<sup>[162]</sup>

[Query Management Tools](#)<sup>[328]</sup>

[Data Management](#)<sup>[368]</sup>

[Import/Export Tools](#)<sup>[443]</sup>

[Database Tools](#)<sup>[632]</sup>

[Security management](#)<sup>[711]</sup>

[Options](#)<sup>[735]</sup>

[External Tools](#)<sup>[832]</sup>

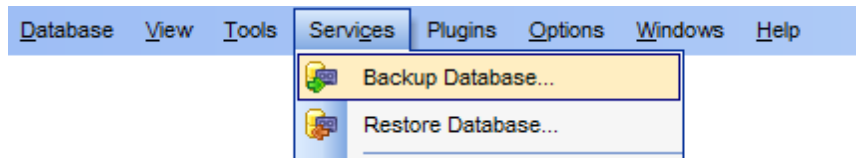
[How To...](#)<sup>[838]</sup>

## 10.1 Backup Database

**Backup Database Wizard** allows you to perform the database backup operation on your InterBase/Firebird system.

This operation is used to create a full backup copy of a database, an archive backup, or an incremental backup (online dump for InterBase 2009 and higher) of a database.

To run the wizard, select the **Services | Backup Database main menu** item, or right-click the database alias in the **DB Explorer** tree and select the **Tasks | Backup Database context menu** item.



- [Selecting database and backup type](#)
- [Full Backup options](#)
- [Archive Backup options](#)
- [Incremental Backup options](#)
- [Setting general backup options](#)
- [Running backup](#)

Availability:

**Full** version (for Windows) **Yes**

**Lite** version (for Windows) **No**

**Note:** To compare all features of the **Full** and the **Lite** versions of **SQL Manager**, refer to the [Feature Matrix](#) page.

---

**See also:**

[Restore Database](#)

[Using templates](#)

### 10.1.1 Selecting database and backup type

This step of the wizard allows you to specify the **database** name, **backup type**, **backup file**, **user name** / **password**, and options specific for the selected backup type.

#### Database

Use the drop-down list to select the database to backup.

#### Backup type

##### Full backup

Specifies that all the data of the database are copied. For details see [Full Backup options](#) [655].

##### Archive backup

This type is available only in InterBase. Use this type to backup the database journals.

For details see [Archive Backup options](#)<sup>[657]</sup>.

#### **Incremental backup**

This is a physical backup mechanism. It backs up the physical pages of the database to "dump" files. The incremental backup feature ensures that the output dump files represent the on-disk state of the database as of the instant the online dump was started, so transaction and page consistency are maintained in the process. For details see [Incremental Backup options](#)<sup>[658]</sup>.

Note that the *archive backup* and *incremental backup* types are only available in InterBase 2009 and Firebird 2.0 and higher versions.

### **Backup File**

#### **Backup file name**

Specify the path and name of the output backup file. It is possible to insert date and time variables in this field. This is helpful if unique backup name required. You can save template with backup file name containing variables to ease further backup operations. The following variables can be used: *[Timestamp]*, *[Date]*, *[Time]*.

Usage example: 'C:\Backups\my\_database[*Timestamp*].GBK'.

**Note:** Variables value format is defined by system settings.

You must also specify **User name** and **Password** in the corresponding boxes. This user name and password will be needed afterwards to access the backup file.

Click the **Next** button to proceed to the [Setting backup options](#)<sup>[660]</sup> step (for **Full Backup**), or to [Running backup](#)<sup>[662]</sup> (for **Archive Backup, Incremental Backup**).

## 10.1.2 Backup type-specific options

### 10.1.2.1 Full Backup options

If  **Full backup** is specified as the [backup type](#)<sup>[653]</sup>, you need to set full backup options.

The screenshot shows a dialog box for configuring backup options. At the top, the 'Database' is set to 'EMPLOYEE on aschel:3052 [c:\Program Files\Borland\In...]' with a dropdown arrow. Below this, the 'Backup type' section has three radio buttons: 'Full backup' (selected), 'Archive backup', and 'Incremental backup'. The 'Backup File' section contains a text field for 'Backup file name' with the value 'c:\Program Files\Borland\InterBase\examples\database\EMPLOYEE-2013.5'. Below this are two text fields: 'User name' with 'SYSDBA' and 'Password' with '\*\*\*\*\*'. There are three unchecked checkboxes: 'Shutdown database before service start', 'Bring database online after service finished', and 'Compression'. At the bottom, there are two sections: 'Execution mode' with 'Use services' selected (radio button), and 'Store mode' with 'Server' selected (radio button).

#### **Shutdown database before service start**

Select this option to shutdown the database before [running backup](#)<sup>[662]</sup>. For details see [Start/Stop Database](#)<sup>[692]</sup>.

#### **Bring database online after service finished**

Select this option to bring the database online after [running backup](#)<sup>[662]</sup>. For details see [Start/Stop Database](#)<sup>[692]</sup>.

#### **Compression**

If this option is selected, the backup file will be compressed by the application. This option is available only if the backup file is located on the local computer.

**Note:** You can use compressed backup files as the source in [Restore Database Wizard](#)<sup>[663]</sup>.

### **Execution mode**

#### **Use local utilities**

Select this option to backup the database using local utilities.

**Note:** To enable this mode, you need to specify the location of the utilities in the **Path to database utilities** field on the [Connection](#)<sup>[153]</sup> page of the [Host Registration Info](#)<sup>[152]</sup> dialog, and *gbak.exe* and *nbackup.exe* (for Firebird multi-level backup) files must exist in this directory.

**Use services**

Select this option to use the server services for the backup operation.

**Note:** Backup of a database located on the Embedded host is only possible with local tools used. You need *icudt30.dll*, *icuin30.dll*, *icuuc30.dll* and *fbembed.dll* (*fbembed.dll* must be renamed to *fbclient.dll*) to be located along with *gbak.exe* file inside the directory specified in the **Path to database utilities** field on the [Connection](#)<sup>[153]</sup> page of the [Host Registration Info](#)<sup>[152]</sup> dialog.

**Store mode****Local**

Select this option to store the backup file on the local machine. This mode is available only when you select **Use local utilities** in the **Execution mode** group.

**Server**

Select this option to store the backup file on the server machine.

---

**See also:**

[Archive Backup options](#)<sup>[657]</sup>

[Incremental Backup options](#)<sup>[658]</sup>



### 10.1.2.2 Archive Backup options

If  **Archive Backup** is specified as the [backup type](#)<sup>[653]</sup>, you need to set specific archive backup options.

The screenshot shows a dialog box for configuring a backup. At the top, the 'Database' dropdown is set to 'EMPLOYEE on aschel:3052 [c:\Program Files\Borland\In...]'.

The 'Backup type' section has three radio buttons: 'Full backup', 'Archive backup' (which is selected), and 'Incremental backup'.

The 'Backup File' section contains a text field for 'Backup file name' with the value 'c:\Program Files\Borland\InterBase\examples\database\EMPLOYEE-2013.5'. Below this are two text fields: 'User name' with the value 'SYSDBA' and 'Password' with a masked value '\*\*\*\*\*'.

The 'Execution mode' section has two radio buttons: 'Use local utilities' and 'Use services' (which is selected).

The 'Archive Backup Type' section has two radio buttons: 'Database backup' (which is selected) and 'Journals backup'.

#### Execution mode

##### Use local utilities

Select this option to backup the database using local utilities.

**Note:** To enable this mode, you need to specify the location of the utilities in the **Path to database utilities** field on the [Connection](#)<sup>[153]</sup> page of the [Host Registration Info](#)<sup>[152]</sup> dialog, and *gbak.exe* and *nbackup.exe* (for Firebird multi-level backup) files must exist in this directory.

##### Use services

Select this option to use the server services for the backup operation.

#### Archive Backup Type

##### Database backup

Select this option to backup the database.

##### Journals backup

Select this option to backup the [journal archive](#)<sup>[302]</sup>.

---

#### See also:

[Full Backup options](#)<sup>[655]</sup>

[Incremental Backup options](#)<sup>[658]</sup>

### 10.1.2.3 Incremental Backup options

If  **Incremental backup** is specified as the [backup type](#)<sup>[653]</sup>, you need to set specific incremental backup (Online Dump) options.

The screenshot shows a dialog box for configuring a backup. At the top, the 'Database' dropdown is set to 'DB on localhost [C:\PROGRAM FILES\FIREBIRD\FIREBIRD...]'. Under the 'Backup type' section, 'Incremental backup' is selected with a radio button. The 'Backup File' section contains a 'Backup file name' field with the path 'C:\PROGRAM FILES\FIREBIRD\FIREBIRD\_2\_1\EXAMPLES\EMPBUILD\'. Below this are 'User name' and 'Password' fields; 'User name' contains 'SYSDBA' and 'Password' contains a masked password '\*\*\*\*\*'. At the bottom, there is a checkbox for 'Generate backup name' which is unchecked, and a 'Backup level' spinner set to '0'.

#### Execution mode

##### Use local utilities

Select this option to backup the database using local utilities.

**Note:** To enable this mode, you need to specify the location of the utilities in the **Path to database utilities** field on the [Connection](#)<sup>[153]</sup> page of the [Host Registration Info](#)<sup>[152]</sup> dialog, and *gbak.exe* and *nbackup.exe* (for Firebird multi-level backup) files must exist in this directory.

##### Use services

Select this option to use the server services for the backup operation.

##### Overwrite old file

This option is available only for Interbase 2009 or higher. If you enable this option, the utility will completely overwrite the old backup file. Otherwise the new backup file will contain only changes relatively to the previous backup.

##### Generate backup name

Check this option if you need backup file name to be generated automatically.

#### Backup level

Specify the level of the backup. Note that you cannot make a level *n* backup if level *n-1* backup of this database does not exist in backup history. Only level 0 backup can be created without any restrictions.

**Note:** This option is only available for Firebird 2.0 or higher. The option is available if the location of the utilities is specified in the **Path to database utilities** field on the [Connection](#)<sup>[153]</sup> page of the [Host Registration Info](#)<sup>[152]</sup> dialog, and *nbackup.exe* file exists in this directory. Moreover, the server must be registered locally.

---

**See also:**

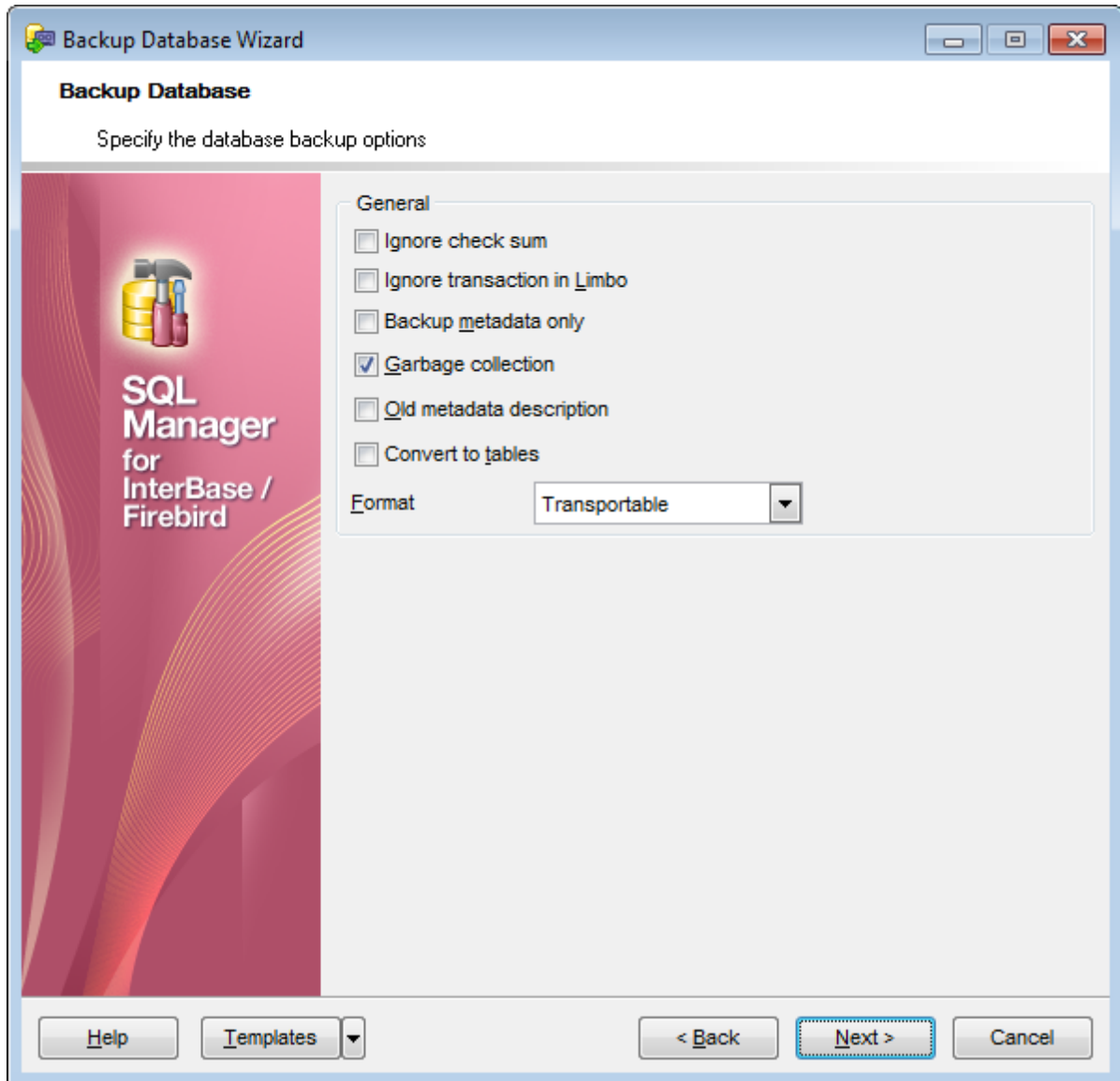
[Full Backup options](#)<sup>[655]</sup>

[Archive Backup options](#)<sup>[657]</sup>

### 10.1.3 Setting backup options

This step of the wizard allows you to set the general backup options.

**Note:** This step is only available if  **Full backup** is specified as the [backup type](#)<sup>[653]</sup>.



#### General

**Ignore check sum**

If this option is selected, wrong check sums of the database header pages where the database connection properties are stored, are ignored in the backup operation.

**Ignore transaction in Limbo**

If this option is selected, transactions in limbo, i.e. transactions that cannot be defined as executed or aborted, are ignored in the backup operation.

**Backup metadata only**

If this option is selected, only database metadata are saved in the backup file.

 **Garbage collection**

If this option is selected, garbage collection is executed in the backup operation.

 **Old metadata description**

If this option is selected, old metadata descriptions are included into the reserve database.

 **Convert to tables**

This option converts the database data to tables in the backup operation.

**Format**

Select the data format for the reserve database: *Transportable* (the database can be then moved from one platform to another) or *Non-Transportable*.

**Shutdown Mode**

This group appears if the  **Shutdown database before service start** option has been enabled at the [first step](#)<sup>[653]</sup>. The following shutdown modes are available:

- Forced*
- Deny new transactions*
- Deny new attachments*

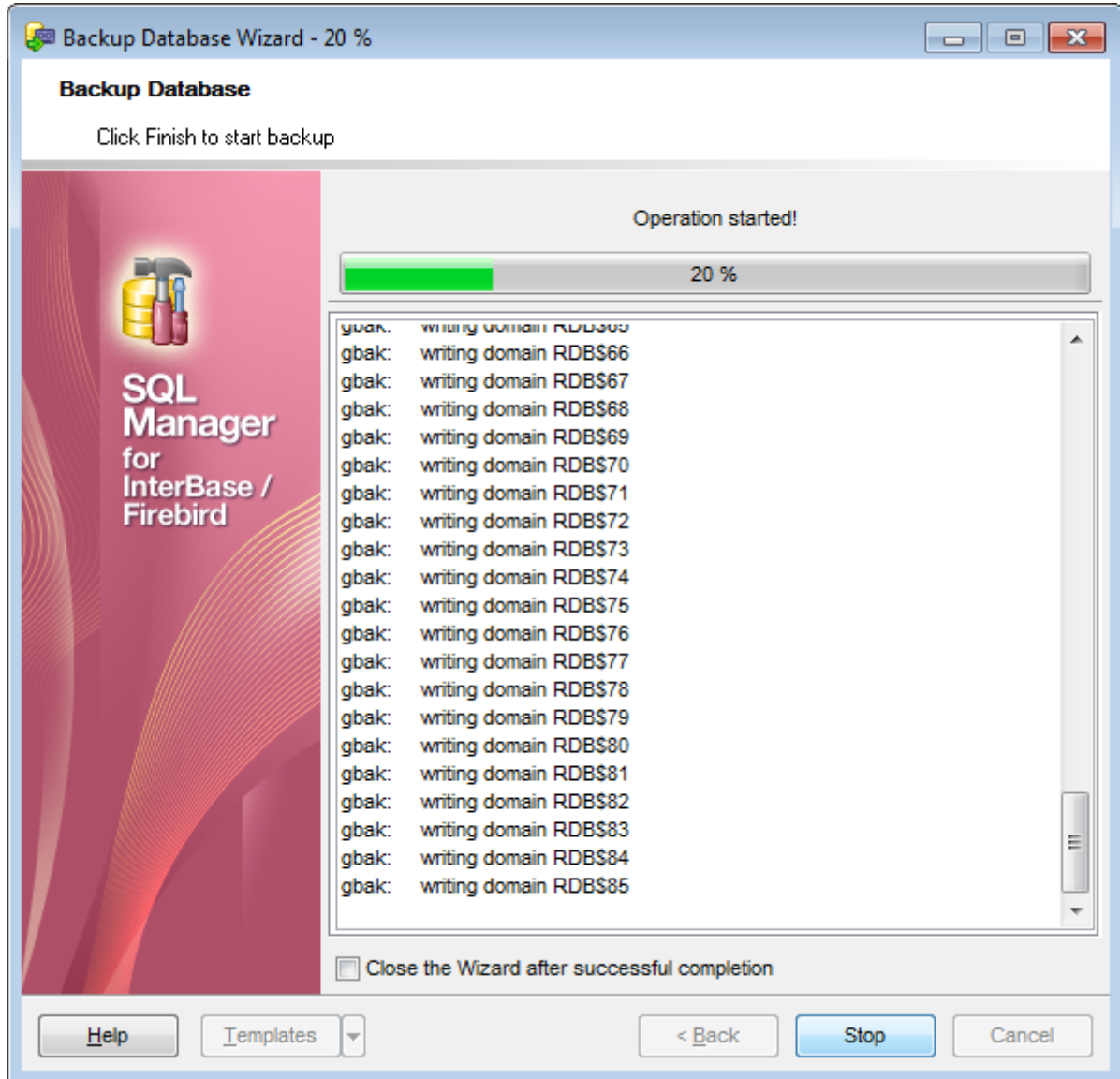
For details see [Setting shutdown options](#)<sup>[695]</sup>.

Click the **Next** button to proceed to [Running backup](#)<sup>[662]</sup>.

### 10.1.4 Running backup

This step of the wizard is intended to inform you that all necessary options have been set, and you can start the process.

The log area allows you to view the log of operations and errors (if any).



**Close the wizard after successful completion**

If this option is selected, the wizard is closed automatically when the backup process is completed.



If necessary, you can save a [template](#) for future use.

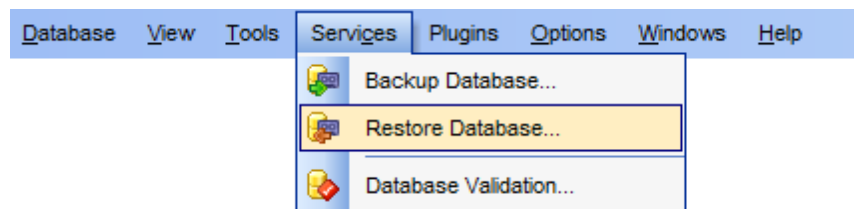
Click the **Finish** button to run the process.

## 10.2 Restore Database

**Restore Database Wizard** allows you to perform the database restore operation on your InterBase/Firebird system.

This operation is used to rebuild a damaged or corrupted database that has been backed up using [Backup Database Wizard](#)<sup>[652]</sup>. The restored database is in the same state it was in when the backup copy was made. A database can be overwritten with a different image, and a backup image can be restored to a new database.

To run the wizard, select the **Services** |  **Restore Database** [main menu](#)<sup>[882]</sup> item, or right-click the database alias in the [DB Explorer](#)<sup>[63]</sup> tree and select the **Database Operations** |  **Restore Database** [context menu](#)<sup>[53]</sup> item.



- [Selecting restore type](#)<sup>[664]</sup>
- [Restore from Full Backup](#)<sup>[666]</sup>
- [Restore from Incremental Backup](#)<sup>[669]</sup>
- [Restore from Journal Archive](#)<sup>[672]</sup>
- [Restore Online Dump](#)<sup>[674]</sup>
- [Setting general restore options](#)<sup>[676]</sup>
- [Running restore](#)<sup>[678]</sup>

Availability:

**Full** version (for Windows) **Yes**

**Lite** version (for Windows) **No**

**Note:** To compare all features of the **Full** and the **Lite** versions of **SQL Manager**, refer to the [Feature Matrix](#)<sup>[20]</sup> page.

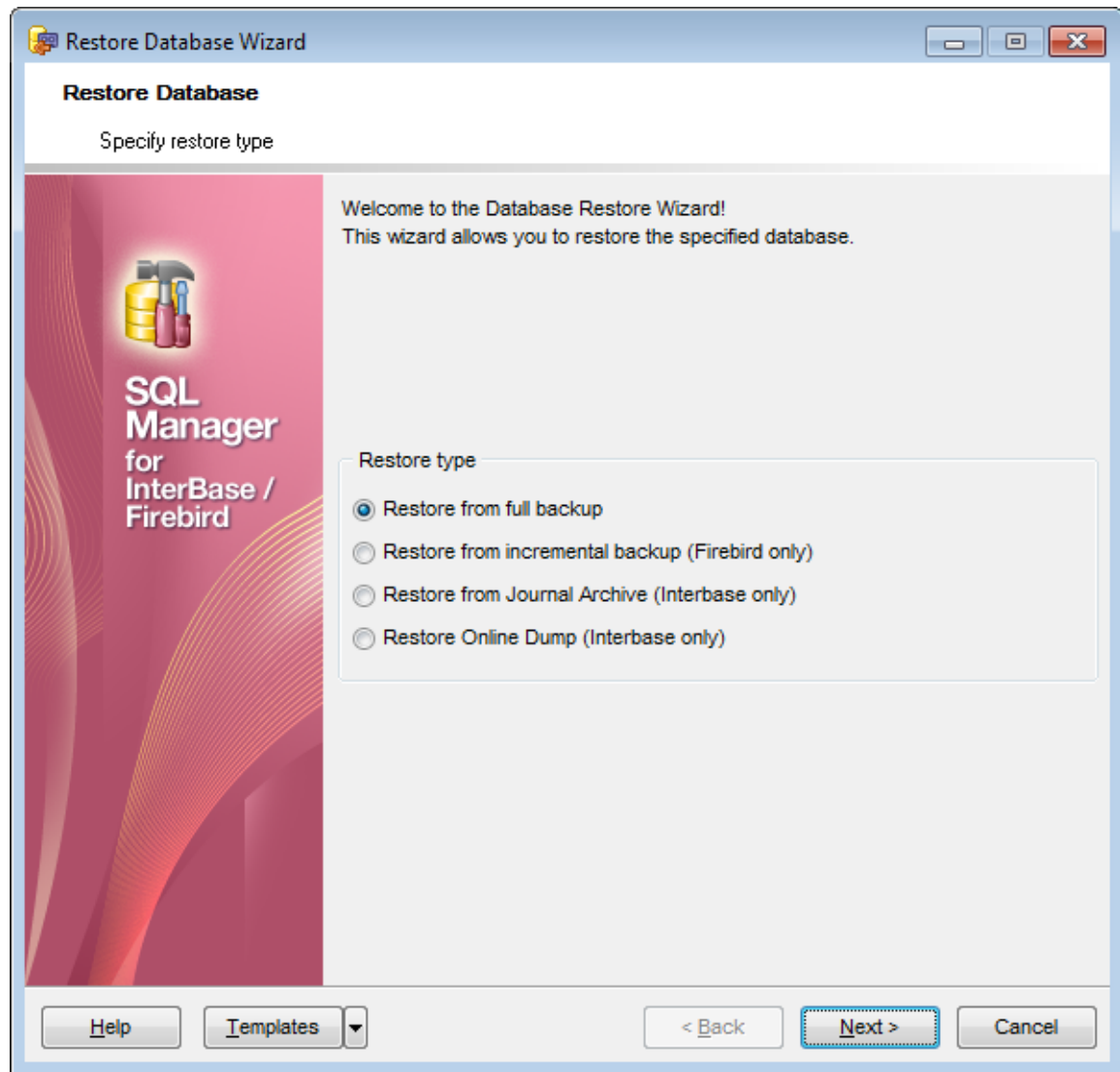
**See also:**

[Backup Database](#)<sup>[652]</sup>

[Using templates](#)<sup>[910]</sup>

## 10.2.1 Selecting restore type

This step of the wizard allows you to specify the **restore type**.



### Restore type

**Restore from full backup**

Specifies that the database will be restored from a [full backup](#)<sup>[655]</sup>.

**Restore from incremental backup (Firebird only)**

Specifies that the database will be restored from an [incremental backup](#)<sup>[658]</sup>.

**Restore from Journal Archive (InterBase only)**

Specifies that the database will be restored from a [journal archive backup](#)<sup>[657]</sup>.

**Restore from Online Dump (InterBase only)**

Specifies that the database will be restored from an [online dump](#)<sup>[658]</sup>.



**Note:** You can restore the database from a backup copy, located on the Embedded server, only with the help of local utilities. The 'fbembed.dll' library of the embedded server must be renamed to 'fbclient.dll' and located in the directory with the gbak.exe utility. The icudt30.dll, icuin30.dll and icuuc30.dll libraries must be also located in this directory.

You can specify the directory with the gbak.exe utility in the **Path to database utilities** field on the [Connection](#)<sup>[153]</sup> tab in the [Host Registration Info](#)<sup>[152]</sup> dialog.

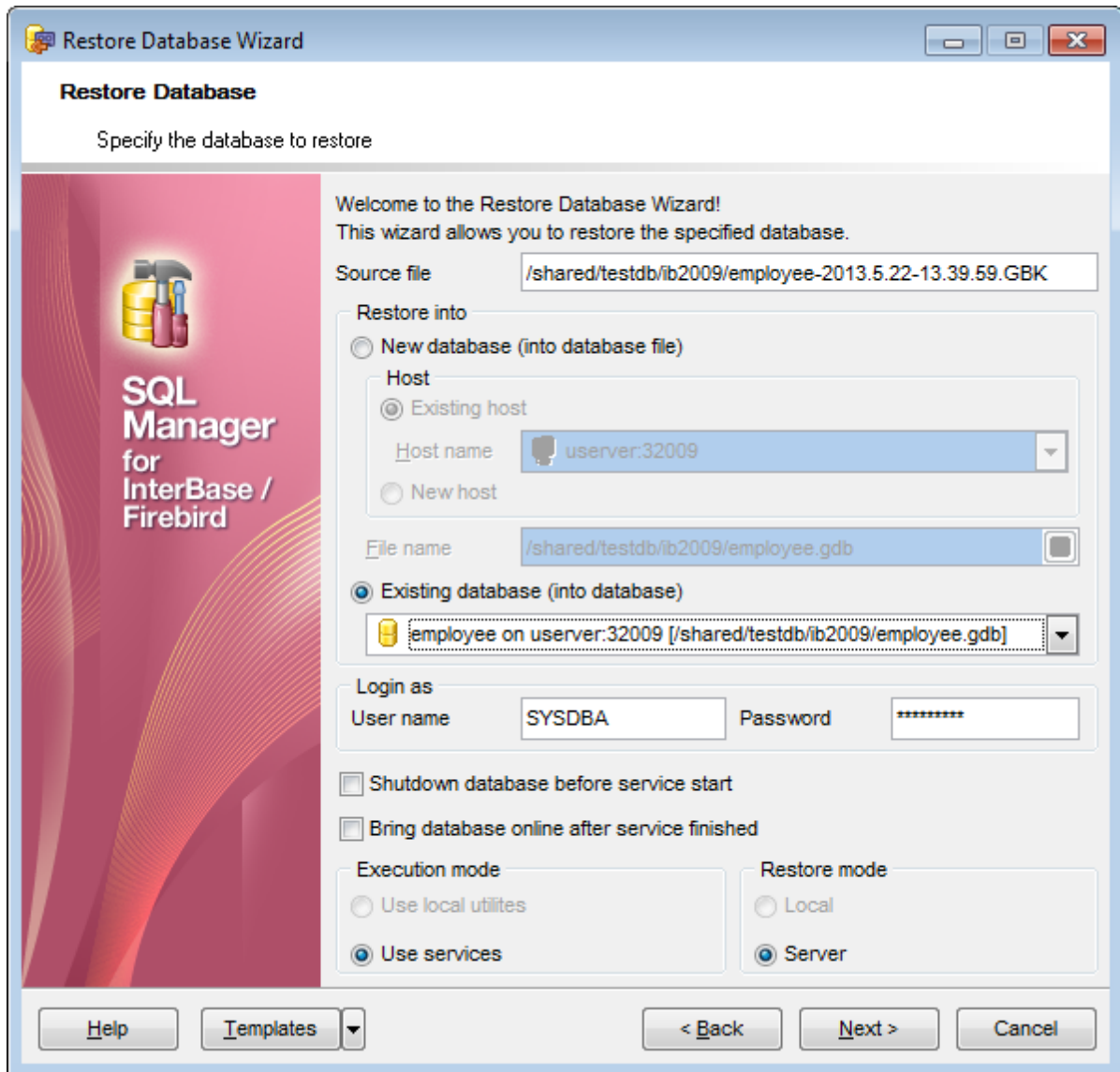
Click the **Next** button to proceed to the next step which varies depending on the selected restore type:

- [Restore from Full Backup](#)<sup>[666]</sup>
- [Restore from Incremental Backup](#)<sup>[669]</sup>
- [Restore from Journal Archive](#)<sup>[672]</sup>
- [Restore Online Dump](#)<sup>[674]</sup>


## 10.2.2 Restore type-specific options

### 10.2.2.1 Restore from Full Backup

If  **Restore from full backup** is specified as the [restore type](#)<sup>[664]</sup>, you need to set restore from [full backup](#)<sup>[655]</sup> options.



#### Source file

Type in or use the  button to specify the backup file from which the restore operation should be performed.

#### Restore into

Specify the database into which you want to restore one from the source file.

- New database (into database file)**

Select this option to create a new database to restore the backup into.

### Host

This group allows you to define the host on which the new database will be located.

**Existing host**

Specifies that the database to be created will reside on an existing (already [registered](#)<sup>[87]</sup>) host. Use the **Host name** drop-down list to select the host for the new database.

**New host**

Specifies that the database to be created will reside on a new host. If this option is selected, you will need to specify new host options at the next step. For details see [Setting connection parameters](#)<sup>[91]</sup>, [SSH tunneling parameters](#)<sup>[96]</sup>.

**Existing database (into database)**

Select this option to restore the backup into an existing (already [registered](#)<sup>[87]</sup>) database. Select the necessary database from the drop-down list, and use the **Login as** group to specify the *User name* and *Password* to access the database.

**Shutdown database before service start**

Select this option to shutdown the database before [running restore](#)<sup>[678]</sup>. For details see [Start/Stop Database](#)<sup>[692]</sup>.

**Bring database online after service finished**

Select this option to bring the database online after [running restore](#)<sup>[678]</sup>. For details see [Start/Stop Database](#)<sup>[692]</sup>.

### Execution mode

**Use local utilities**

Select this option to restore the database using local utilities.

**Use services**

Select this option to use the server services for the restore operation.

**Note:** Restore of a database located on the Embedded host is only possible with local tools used. You need *icudt30.dll*, *icuin30.dll*, *icuuc30.dll* and *fbembed.dll* (*fbembed.dll* must be renamed to *fbclient.dll*) to be located along with *gbak.exe* file inside the directory specified in the **Path to database utilities** field on the [Connection](#)<sup>[153]</sup> page of the [Host Registration Info](#)<sup>[152]</sup> dialog.

### Restore mode

**Local**

Select this option to store the restore file on the local machine. This mode is available only when you select **Use local utilities** in the **Execution mode** group.

**Server**

Select this option to store the restore file on the server machine.

---

### See also:

[Restore from Incremental Backup](#)<sup>[669]</sup>

[Restore from Journal Archive](#)<sup>[672]</sup>

[Restore Online Dump](#)<sup>[674]</sup>



### 10.2.2.2 Restore from Incremental Backup

If  **Restore from incremental backup** is specified as the [restore type](#)<sup>[664]</sup>, you need to set restore from [incremental backup](#)<sup>[658]</sup> options.

**Note:** This restore type is only available for Firebird version 2.0 or higher.

The screenshot shows a dialog box titled "Restore into". It has three main sections:

- Restore into:**
  - Host:**
    - Existing host
    - Host name: localhost (dropdown menu)
    - New host
  - File name: C:\EMS\tempbuild\EMPLOYEE.FDB (with a folder icon button)
- Restore source:**
  - Select entry from backup history
  - Specify backup files manually
- File list:**

Lvl	File name
0	C:\EMS\tempbuild\EMPLOYEE-2013.5.23-14.8.31.FBK

At the bottom right of the list are '+' and '-' buttons.

#### Restore into

This group allows you to define the target host onto which the incremental backup will be restored.


##### Existing host

Specifies that the database will be restored onto an existing (already [registered](#)<sup>[871]</sup>) host. Use the **Host name** drop-down list to select the host for the restored database.

##### New host

Specifies that the database will be restored onto a new host. If this option is selected, you will need to specify new host options at the next step. For details see [Setting connection parameters](#)<sup>[917]</sup>.

#### File name

Type in or use the  button to specify the database location and name (\*.FDB).

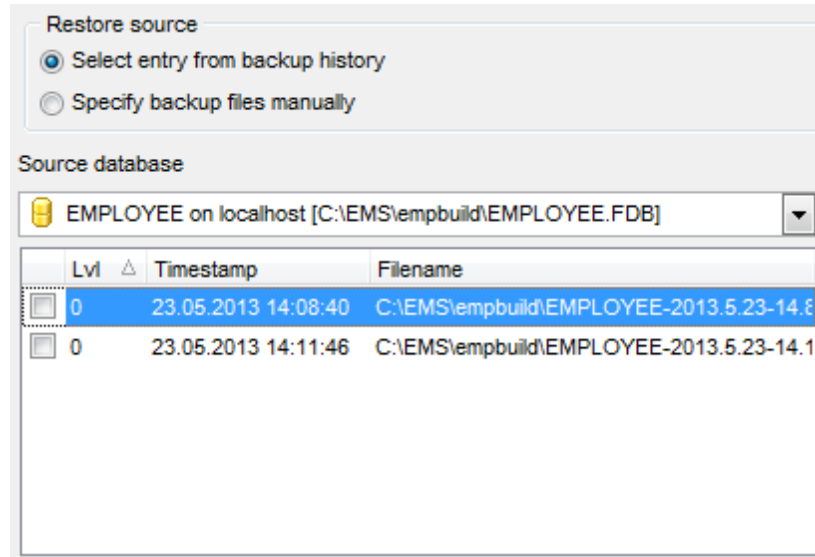
#### Restore source

This group allows you to select the restore source file(s) from the backup history or

specify them manually.

**Select entry from backup history**

Indicates that the backup file(s) will be selected from the the backup history.



Select the **Source database** from the drop-down list to get its backup history that will be displayed in list below.

**Note:** Only local Firebird databases can be found in the drop-down list.

The list displays the backup history items as a grid with the following columns: *Level*, *Timestamp*, *Filename*.

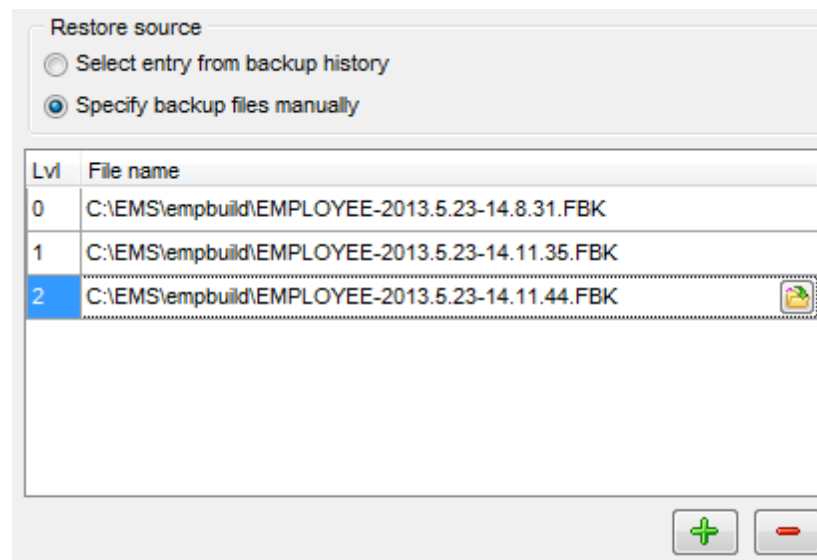
Click a column caption to **sort** items by values of this column in the ascending or the descending mode.




Check/uncheck the boxes in the first column to select/deselect items.

**Note:** Levels of the selected backups must form a continuous range with  $0$  and  $n$  as boundaries with step  $1$  ( $0, 1, 2, 3 \dots n-1, n$ ).

**Specify backup files manually**

Indicates that the backup file(s) will be specified manually.



The area below allows you to select source files for incremental restore manually. Use the   buttons to add and remove files. Type in or use the  button to specify file location and name.

---

**See also:**

[Restore from Full Backup](#)<sup>[666]</sup>

[Restore from Journal Archive](#)<sup>[672]</sup>

[Restore Online Dump](#)<sup>[674]</sup>

### 10.2.2.3 Restore from Journal Archive

If  **Restore from Journal Archive** is specified as the [restore type](#)<sup>[664]</sup>, you need to set restore from [journal archive backup](#)<sup>[657]</sup> options.

**Note:** This restore type is only available for InterBase 2009 or higher.

#### Database archive file name

Type in or use the button to specify the database archive file (\*.DATABASE) from which the restore operation should be performed.

#### Login information

Specify the *User name* and *Password* to access the backup archive file.

#### Restore into

Specify the database into which you want to restore one from the source file.

##### **New database (into database file)**

Select this option to create a new database to restore the backup into.

#### Host

This group allows you to define the host on which the new database will be located.

##### **Existing host**

Specifies that the database to be created will reside on an existing (already [registered](#)<sup>[87]</sup>) host. Use the **Host name** drop-down list to select the host for the new database.

##### **New host**

Specifies that the database to be created will reside on a new host. If this option is selected, you will need to specify new host options at the next step. For details see [Setting connection parameters](#)<sup>[91]</sup>.



**Existing database (into database)**

Select this option to restore the backup into an existing (already [registered](#)<sup>[667]</sup>) database. Select the necessary database from the drop-down list.

 **Use until option**

Select this option to set the date and time before which the database with changes done is to be restored.

For your convenience the *Date editor* is implemented for inputting the timestamp: click the arrow-down button to call the *Date editor* popup window.

---

**See also:**

[Restore from Full Backup](#)<sup>[668]</sup>

[Restore from Incremental Backup](#)<sup>[669]</sup>

[Restore Online Dump](#)<sup>[674]</sup>

### 10.2.2.4 Restore Online Dump

If  **Restore from Online Dump** is specified as the [restore type](#)<sup>[664]</sup>, you need to set restore from [incremental backup \(online dump\)](#)<sup>[658]</sup> options.

**Note:** This restore type is only available for InterBase 2009 or higher.

#### Online Dump source file

Type in or use the button to specify the Online Dump file (\*.GBK) from which the restore operation should be performed.

#### Login information

Specify the *User name* and *Password* to access the source file.

#### Path to database utilities

Type in or use the button to specify the path to the database utilities.

#### Rename result database file

If the option is disabled, the database will be restored into the original one. Enable this option to restore the backup into a new database.

#### New database file name field

Type in or use the button to specify the database location and name (\*.GDB).

#### Register after restore

If this option is selected, the newly restored database will be [registered](#)<sup>[87]</sup> in the application.

#### Host

This group allows you to define the host where the database will be located.

**Existing host**

Specifies that the database will reside on an existing (already [registered](#)<sup>[87]</sup>) host. Use the **Host name** drop-down list to select the host for the restored database.

**New host**

Specifies that the database will reside on a new host. If this option is selected, you will need to specify new host options at the next step. For details see [Setting connection parameters](#)<sup>[91]</sup>.

---

**See also:**

[Restore from Full Backup](#)<sup>[666]</sup>

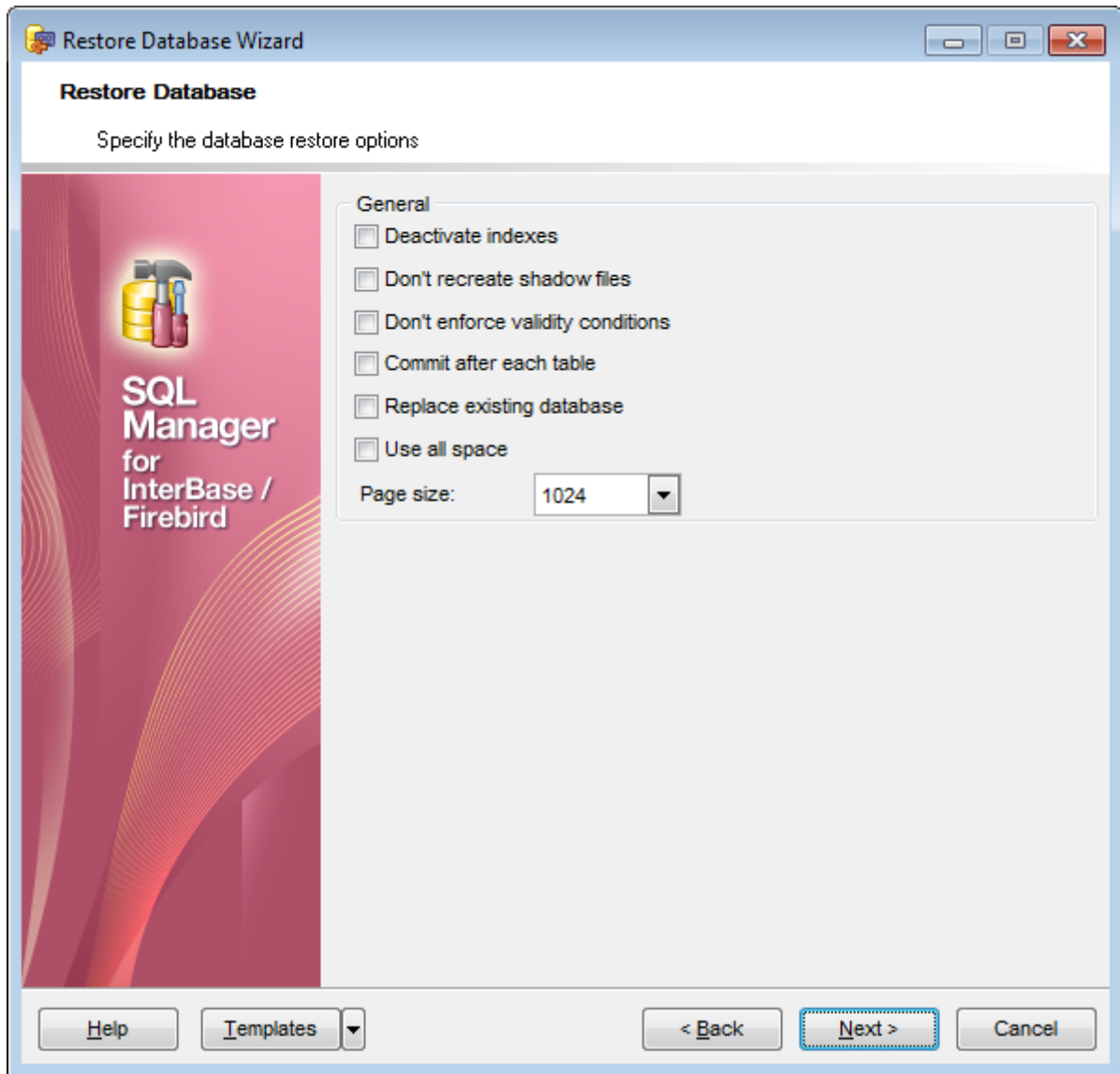
[Restore from Incremental Backup](#)<sup>[669]</sup>

[Restore from Journal Archive](#)<sup>[672]</sup>

### 10.2.3 Setting restore options

This step of the wizard allows you to set the general restore options.

**Note:** This step is only available if  **Restore from full backup** is specified as the [restore type](#)<sup>[664]</sup>.



**Deactivate indexes**

If this option is selected, database indexes are deactivated while restoring.

**Don't recreate shadow files**

If this option is selected, shadow files are not recreated while restoring.

**Don't enforce validity conditions**

If this option is selected, database validity conditions are not restored.

**Commit after each table**

If this option is selected, **SQL Manager** commits work after restoring each table.

 **Replace existing database**

If this option is selected, the restored database replaces an existing one.

 **Use all space**

Restores database with 100 per cent fill ratio on each data page, instead of the default 80 per cent fill ratio.

**Page size**

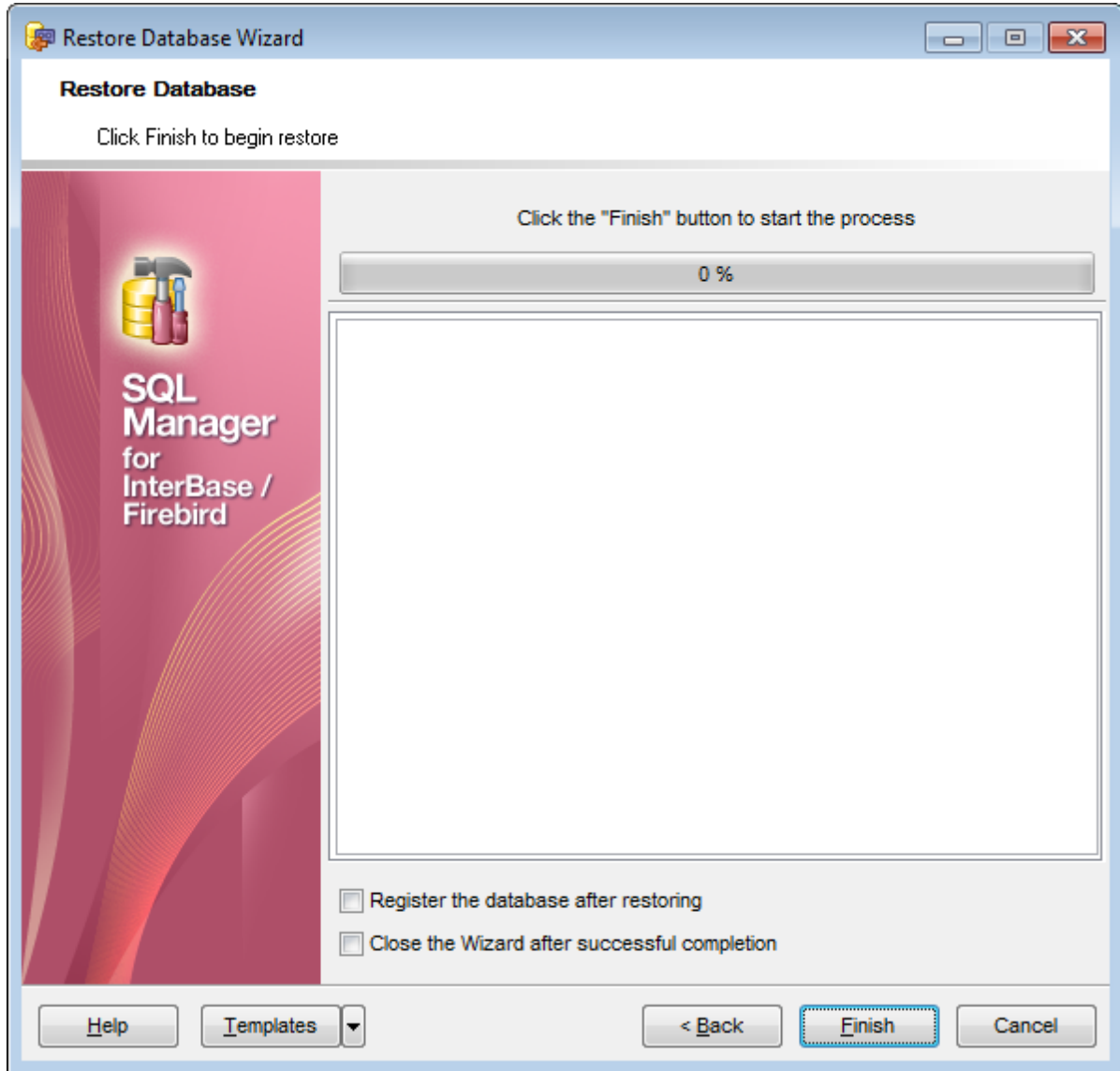
Use the drop-down list to specify the database page size (in *bytes*). Possible values are: 1024, 2048, 4096, 8192, 16384.

Click the **Next** button to proceed to [Running restore](#)<sup>[678]</sup>.

## 10.2.4 Running restore

This step of the wizard is intended to inform you that all necessary options have been set, and you can start the process.

The log area allows you to view the log of operations and errors (if any).



**Register the database after restoring**

If this option is selected, the newly restored database will be [registered](#)<sup>[87]</sup> in **SQL Manager** automatically.

**Close the wizard after successful completion**

If this option is selected, the wizard is closed automatically when the restore process is completed.

If necessary, you can save a [template](#)<sup>[910]</sup> for future use.



Click the **Finish** button to run the process.

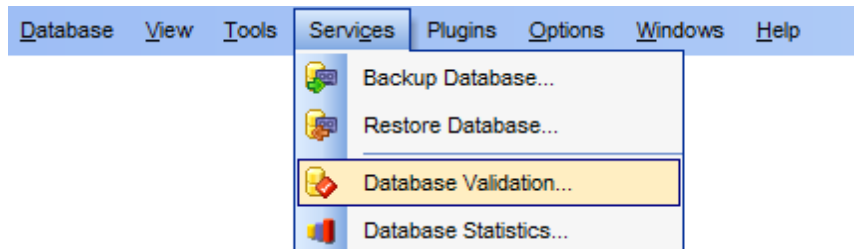
## 10.3 Database Validation

**Database Validation Wizard** allows you to validate databases for verifying the integrity of data structures.

A database should be validated:

- whenever a [database backup](#)<sup>[652]</sup> is unsuccessful;
- whenever an application receives a "corrupt database" error;
- periodically, to monitor for corrupt data structures or misallocated space;
- any time when data corruption is suspected.

To run the wizard, select the **Services** |  **Database Validation...** [main menu](#)<sup>[882]</sup> item, or right-click the database alias in the [DB Explorer](#)<sup>[63]</sup> tree and select the **Tasks** |  **Database Validation...** [context menu](#)<sup>[53]</sup> item.



- [Selecting database and execution mode](#)<sup>[681]</sup>
- [Setting validation options](#)<sup>[683]</sup>
- [Running database validation](#)<sup>[685]</sup>

**Availability:**

**Full** version (for Windows) **Yes**

**Lite** version (for Windows) **No**

**Note:** To compare all features of the **Full** and the **Lite** versions of **SQL Manager**, refer to the [Feature Matrix](#)<sup>[20]</sup> page.

---

**See also:**

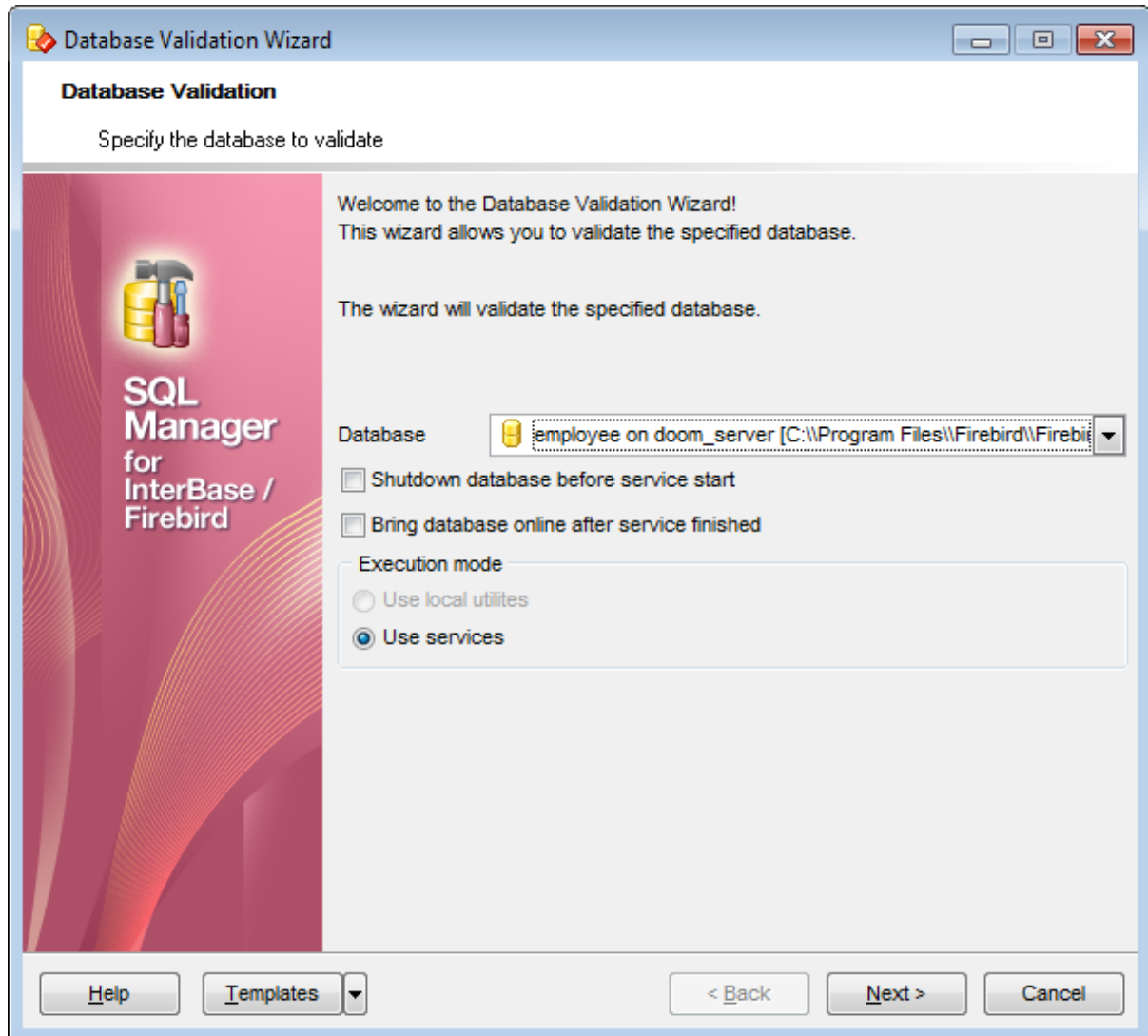
[Start/Stop Database](#)<sup>[692]</sup>

[Using templates](#)<sup>[910]</sup>



### 10.3.1 Selecting database and execution mode

This step of the wizard allows you to specify the **database** name, shutdown / bring online **options**, and **execution mode**.



#### Database

Use the drop-down list to select the database to be validated.

#### Shutdown database before service start

Select this option to shutdown the database before [Running database validation](#)<sup>[685]</sup>. For details see [Start/Stop Database](#)<sup>[692]</sup>.

#### Bring database online after service finished

Select this option to bring the database online after [Running database validation](#)<sup>[685]</sup>. For details see [Start/Stop Database](#)<sup>[692]</sup>.

#### Execution mode

##### Use local utilities

Select this option to validate the database using local utilities.

**Note:** To enable this mode, you need to specify the location of the utilities in the **Path to database utilities** field on the [Connection](#)<sup>[153]</sup> page of the [Host Registration Info](#)<sup>[152]</sup> dialog.

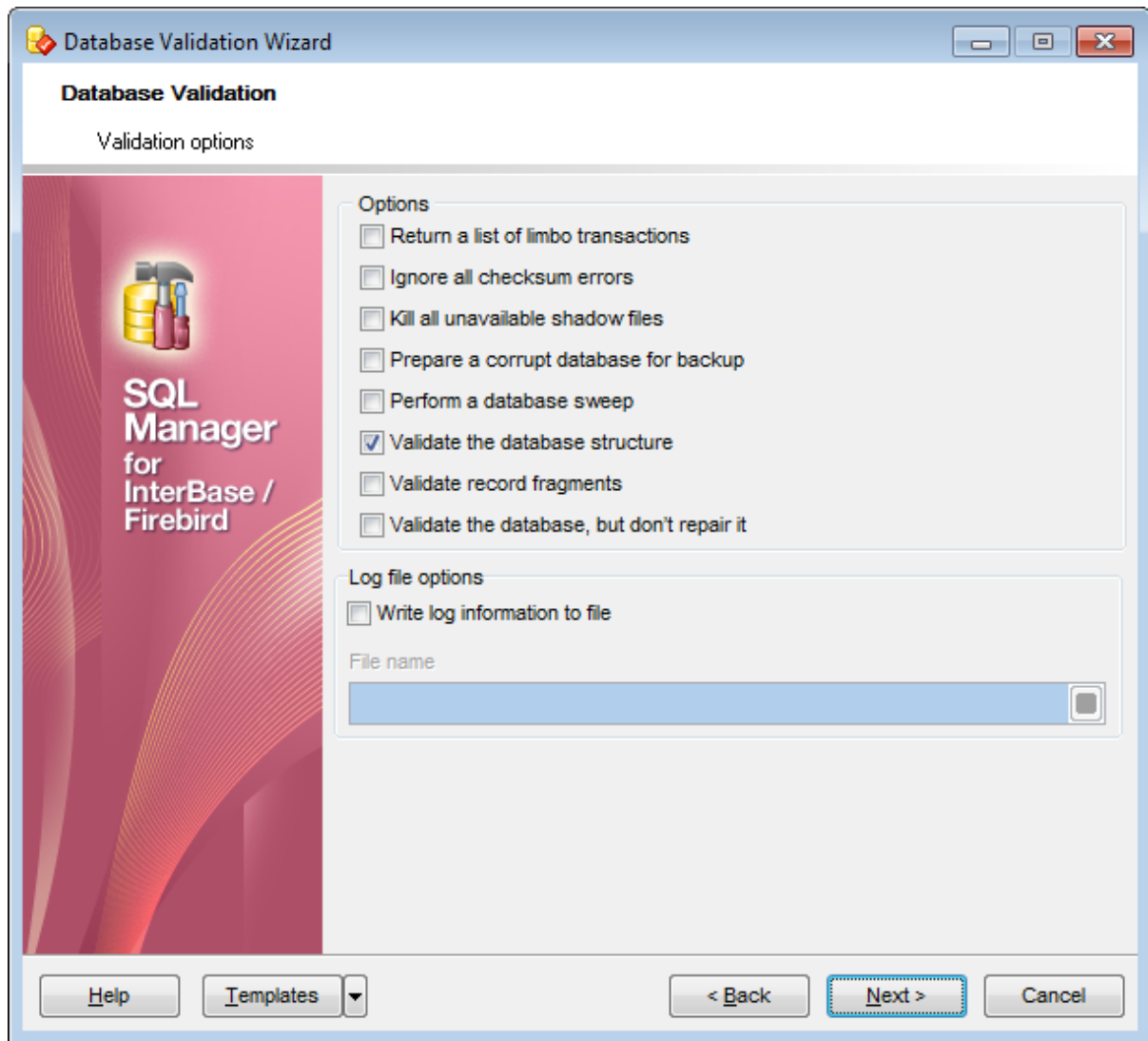
**Use services**

Select this option to use the server services for the database validation operation.

Click the **Next** button to proceed to the [Setting validation options](#)<sup>[683]</sup> step of the wizard.

### 10.3.2 Setting validation options

This step of the wizard allows you to set the general validation options.



#### Options

**Return a list of limbo transactions**

If this option is selected, the database is checked on transactions in limbo, i.e. the transactions that cannot be defined as executed or aborted.

**Validate the database, but don't repair it**

Enables the "Read Only" mode of validation. By default, validating a database updates it, if necessary. Check this option to prevent updating.

**Ignore all checksum errors**

If this option is selected, all checksum errors are ignored.

A checksum is a page-by-page analysis of data to verify its integrity. A bad checksum means that a database page has been randomly overwritten (e.g. due to a system crash).

**Kill all unavailable shadow files**

If this option is selected, server drops the shadows which cannot be used.

 **Prepare a corrupt database for backup**

Performs total cleaning of the corrupt database, preparing the database for [backup](#)<sup>652</sup>.

 **Perform a database sweep**

Removes all outdated records.

 **Validate the database structure**

Repairs corrupt or misallocated structures.


 **Validate record fragments**

Releases unassigned record fragments.

**Log file options** **Write log information to file**

Check this option if you wish to log validation process to an external file.

**File name**

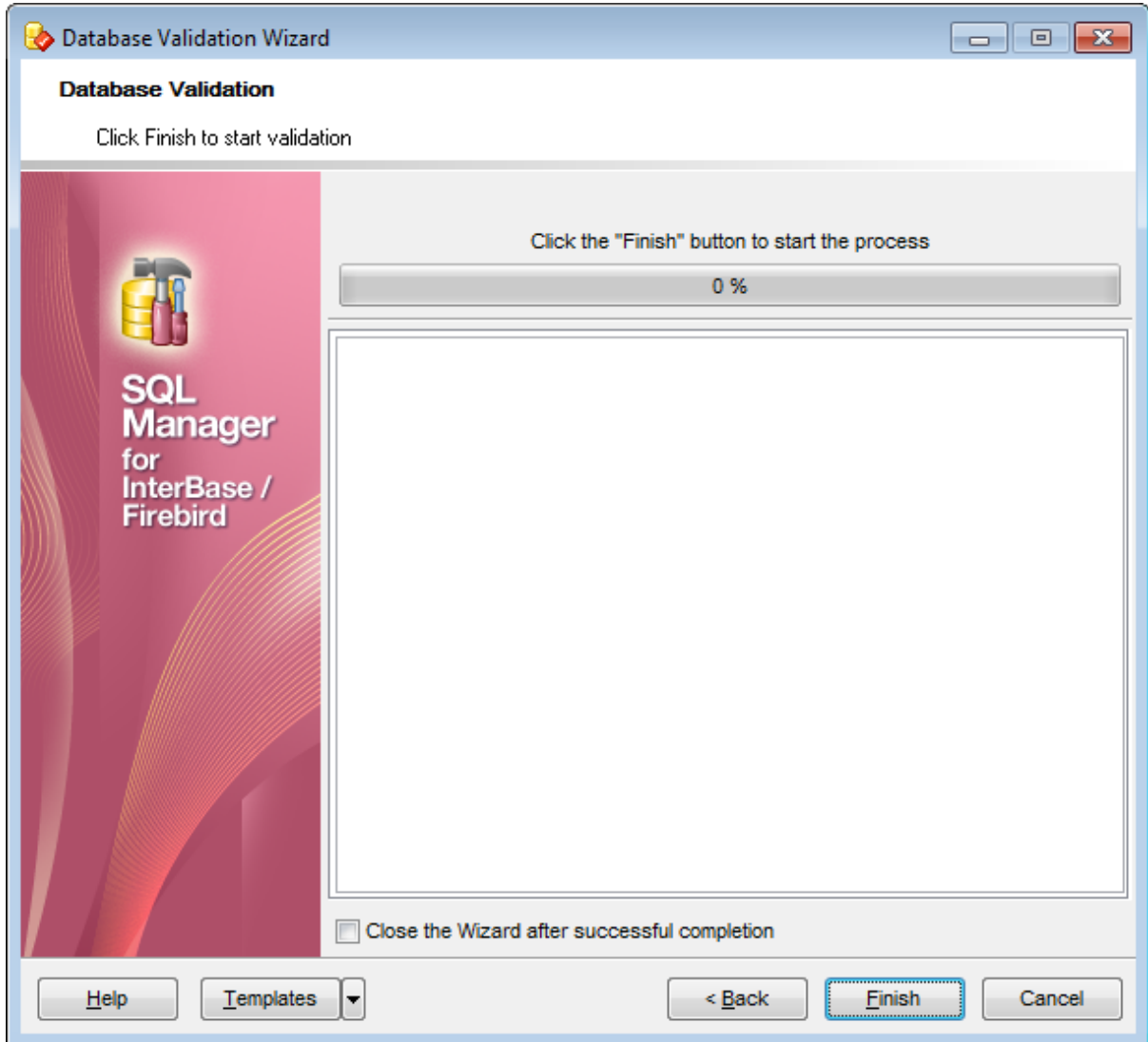
This field is enabled if the **Write log information to file** option is selected. Type in or use the  **Save as** button to specify the path to the \*.log file to store the database validation logs.

Click the **Next** button to proceed to [Running database validation](#)<sup>685</sup>.

### 10.3.3 Running database validation

This step of the wizard is intended to inform you that all necessary options have been set, and you can start the process.

The log area allows you to view the log of operations and errors (if any).



**Close the wizard after successful completion**

If this option is selected, the wizard is closed automatically when the validation process is completed.

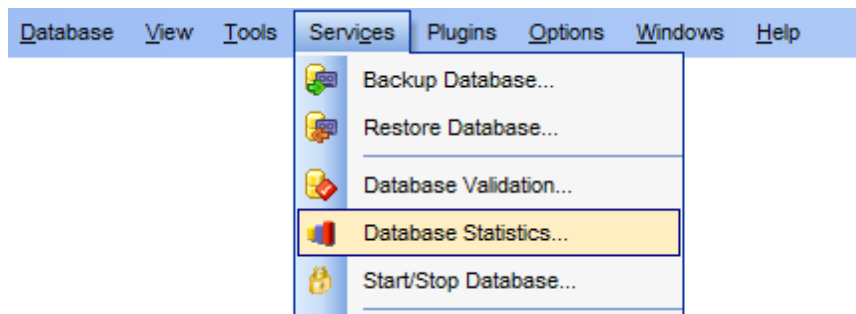
If necessary, you can save a [template](#) for future use.

Click the **Finish** button to run the process.

## 10.4 Database Statistics

**Database Statistics Wizard** allows you to retrieve database statistics.

To run the wizard, select the **Services | Database Statistics...** [main menu](#)<sup>[882]</sup> item, or right-click a table in the [DB Explorer](#)<sup>[631]</sup> tree and select the **Table Services | Database Statistics...** [context menu](#)<sup>[531]</sup> item.



- [Selecting database and execution mode](#)<sup>[687]</sup>
- [Setting statistics options](#)<sup>[689]</sup>
- [Running statistics collection](#)<sup>[691]</sup>

Availability:

**Full** version (for Windows) **Yes**

**Lite** version (for Windows) **No**

**Note:** To compare all features of the **Full** and the **Lite** versions of **SQL Manager**, refer to the [Feature Matrix](#)<sup>[201]</sup> page.

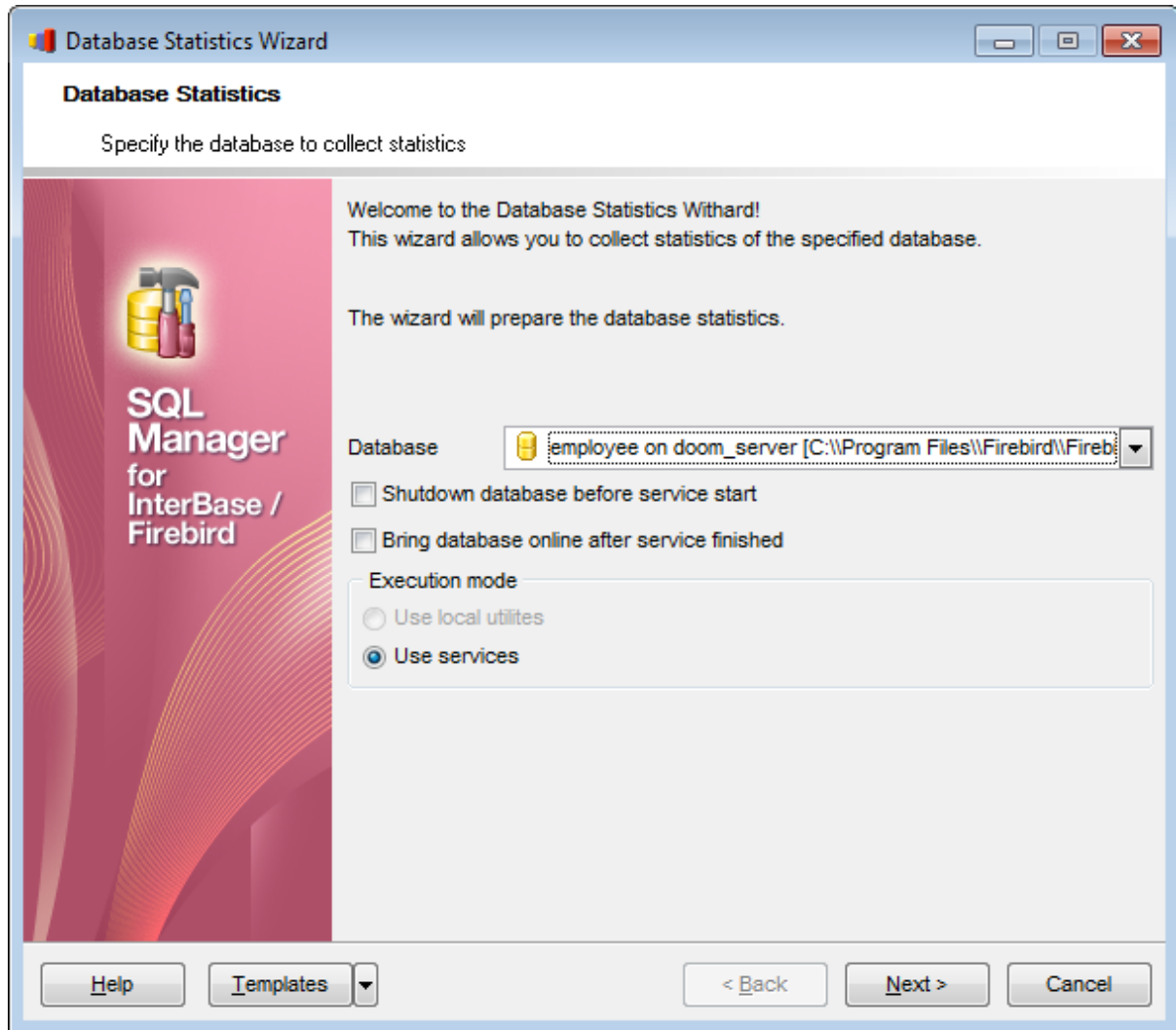
**See also:**

[Start/Stop Database](#)<sup>[692]</sup>

[Using templates](#)<sup>[910]</sup>

### 10.4.1 Selecting database and execution mode

This step of the wizard allows you to specify the **database** name, shutdown / bring online **options**, and **execution mode**.



#### Database

Use the drop-down list to select the database for collecting statistics.

#### Shutdown database before service start

Select this option to shutdown the database before [Running statistics collection](#)<sup>[691]</sup>. For details see [Start/Stop Database](#)<sup>[692]</sup>.

#### Bring database online after service finished

Select this option to bring the database online after [Running statistics collection](#)<sup>[691]</sup>. For details see [Start/Stop Database](#)<sup>[692]</sup>.

#### Execution mode

##### Use local utilities

Select this option to collect database statistics using local utilities.

**Note:** To enable this mode, you need to specify the location of the utilities in the **Path to database utilities** field on the [Connection](#)<sup>[153]</sup> page of the [Host Registration Info](#)<sup>[152]</sup> dialog.

**Use services**

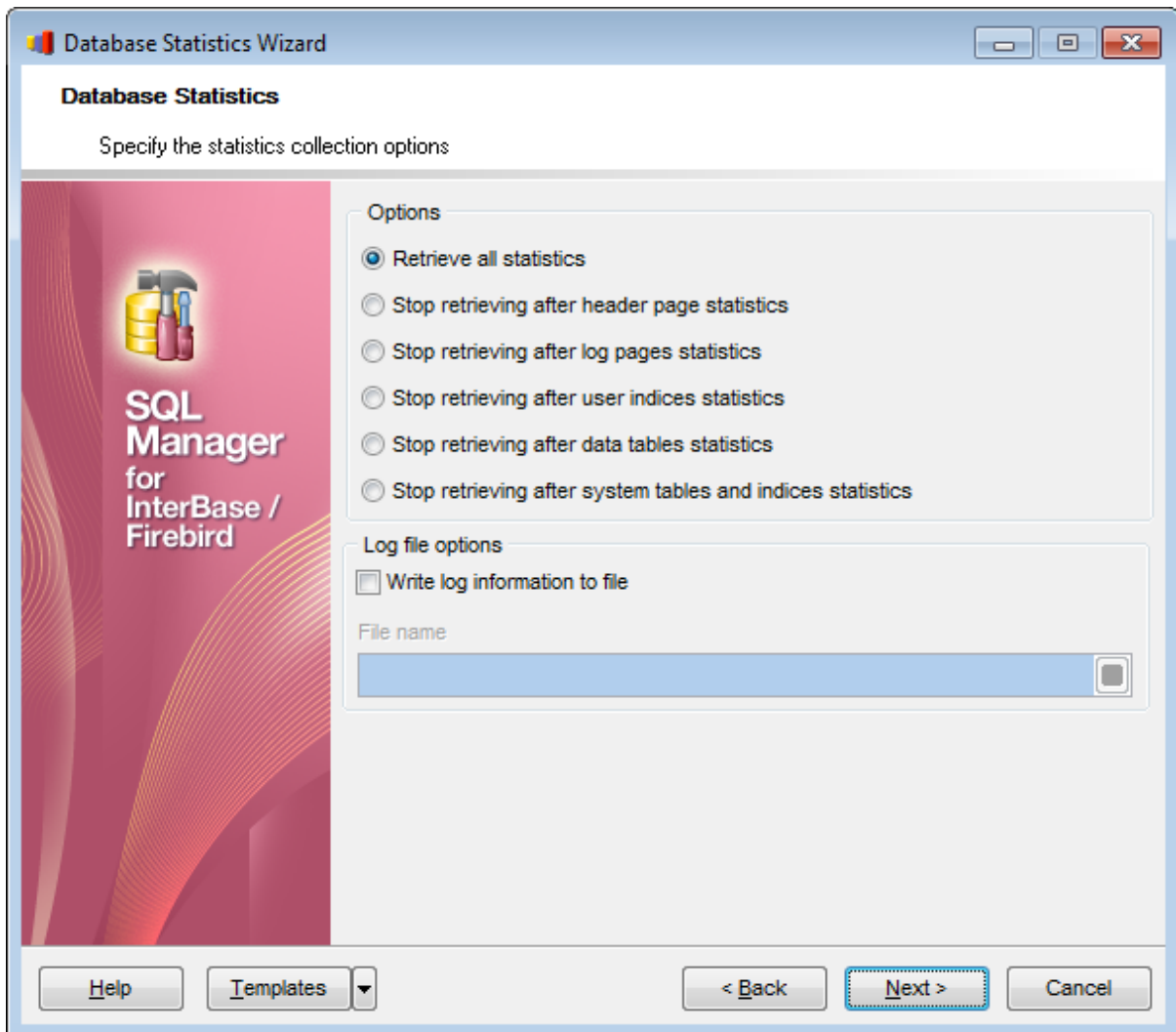
Select this option to use the server services for the database statistics operation.

Click the **Next** button to proceed to the [Setting statistics options](#)<sup>[689]</sup> step of the wizard.



## 10.4.2 Setting statistics options

This step of the wizard allows you to set the general statistics collection options.



### Options

This group allows you to select what kind of statistics is to be collected:


- Retrieve all statistics*
- Stop retrieving after header page statistics*
- Stop retrieving after log pages statistics*
- Stop retrieving after user indexes statistics*
- Stop retrieving after data tables statistics*
- Stop retrieving after system tables and indexes statistics*


### Log file options

- Write log information to file**

Check this option if you wish to log statistics collection to an external file.

### File name

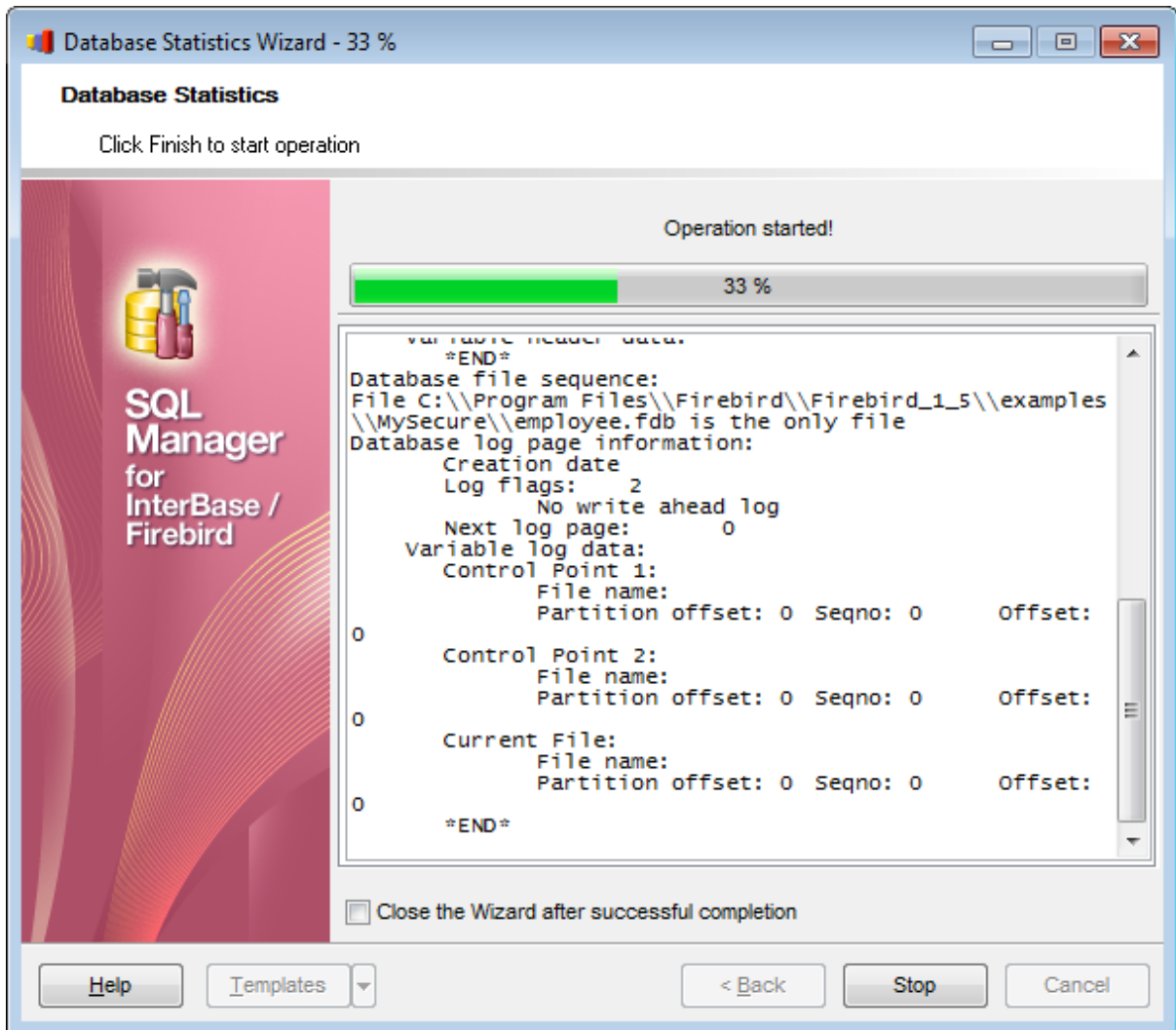
This field is enabled if the **Write log information to file** option is selected. Type in or use the **Save as**  button to specify the path to the \*.log file to store the database statistics collection logs.

Click the **Next** button to proceed to [Running statistics collection](#) .

### 10.4.3 Running statistics collection

This step of the wizard is intended to inform you that all necessary options have been set, and you can start the process.

The log area allows you to view the log of operations and errors (if any).



**Close the wizard after successful completion**

If this option is selected, the wizard is closed automatically when the statistics collection process is completed.

If necessary, you can save a [template](#) for future use.

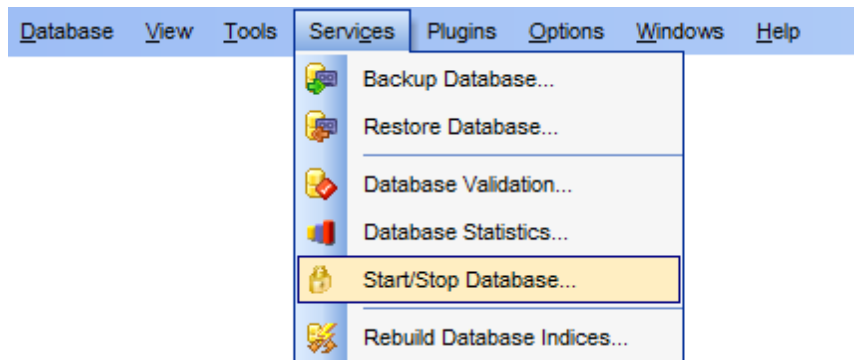
Click the **Finish** button to run the process.

## 10.5 Start/Stop Database

**Start/Stop Database Wizard** allows you to shutdown (to switch to the one-user database connection mode) and to bring database online back again.

Maintaining a database often involves shutting it down. The user who shuts down the database then has exclusive access to the database. After a database is shut down, it must be restarted (brought back online) before users can access it.

To run the wizard, select the **Services | Start/Stop Database... main menu** <sup>[882]</sup> item, or right-click a table in the **DB Explorer** <sup>[63]</sup> tree and select the **Table Services | Start/Stop Database... context menu** <sup>[53]</sup> item.



- [Selecting database and execution mode](#) <sup>[693]</sup>
- [Setting shutdown options](#) <sup>[695]</sup>
- [Running Bring Online / Shutdown Database](#) <sup>[697]</sup>

Availability:

**Full** version (for Windows) **Yes**

**Lite** version (for Windows) **No**

**Note:** To compare all features of the **Full** and the **Lite** versions of **SQL Manager**, refer to the [Feature Matrix](#) <sup>[20]</sup> page.

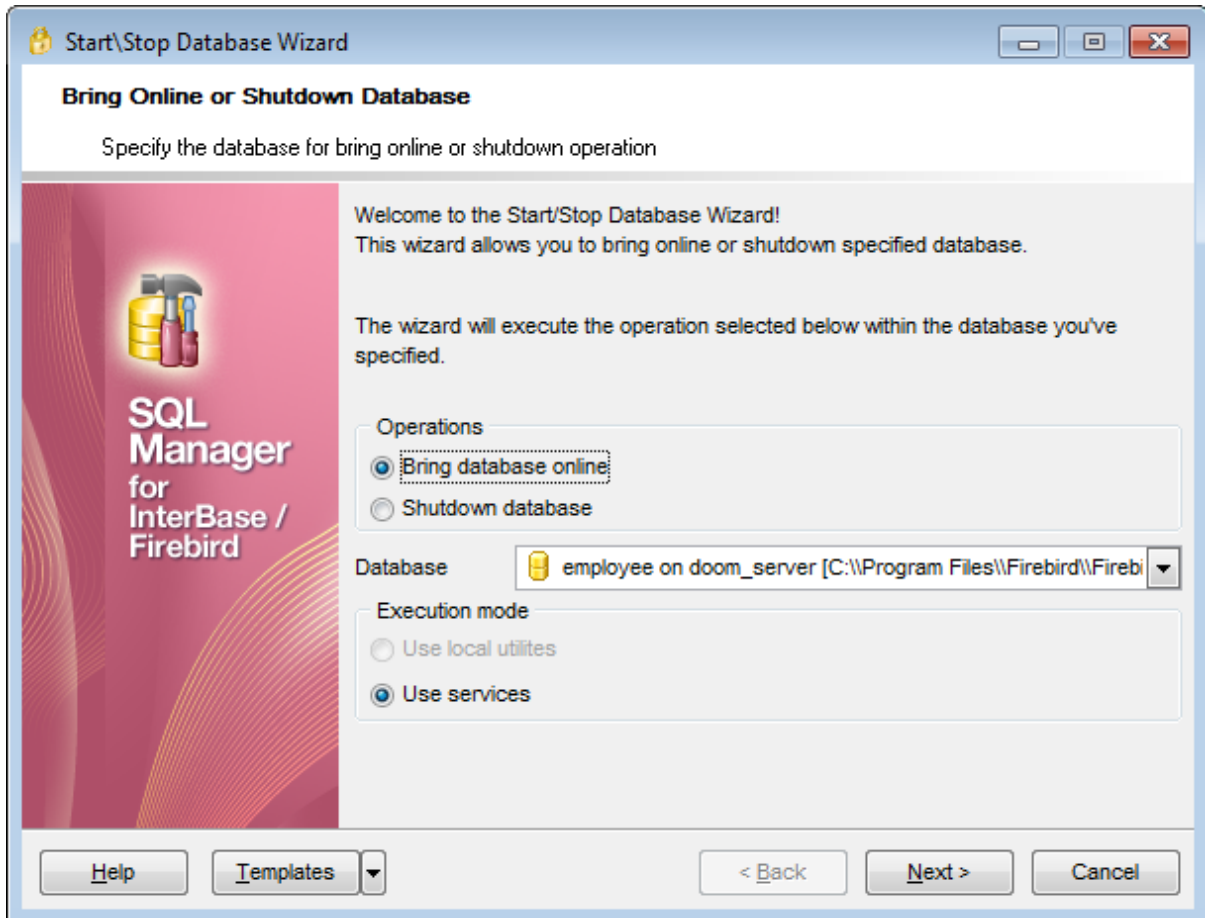
---

**See also:**

[Using templates](#) <sup>[910]</sup>

### 10.5.1 Selecting database and execution mode

This step of the wizard allows you to specify the **operation**, **database** name, and **execution mode**.



#### Operations

##### Bring database online

Specifies that the specified database will be brought online (restarted).

##### Shutdown database

Specifies that the specified database will be shut down (switched to the one-user database connection mode).

#### Database

Use the drop-down list to select the database to shut down / bring online.

#### Execution mode

##### Use local utilities

Select this option to shut down / bring database online using local utilities.

**Note:** To enable this mode, you need to specify the location of the utilities in the **Path to database utilities** field on the [Connection](#)<sup>[153]</sup> page of the [Host Registration Info](#)<sup>[152]</sup> dialog.

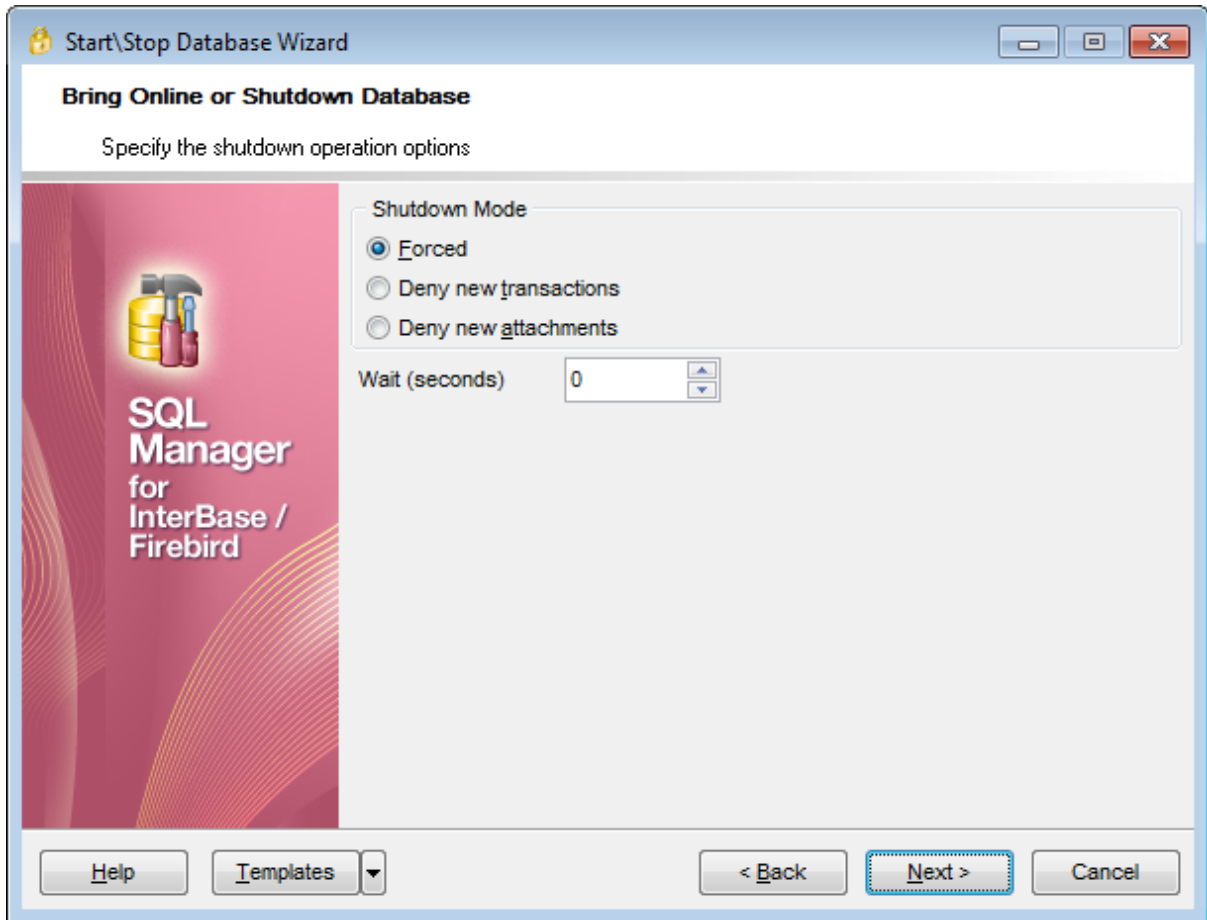
**Use services**

Select this option to use the server services for the shutdown / bring online operation.

Click the **Next** button to proceed to the [Shutdown database options](#)<sup>695</sup> step (for the **Shutdown database** mode), or to [Running Bring Online / Shutdown Database](#)<sup>697</sup> (for the **Bring database online** mode).

## 10.5.2 Setting shutdown options

This step of the wizard allows you to set the general shutdown database options.



### Shutdown Mode

#### **Forced**

In this mode all the transactions, still active by the stated time, are forcedly aborted and all the users are forcedly disconnected.

#### **Deny new transactions**

In this mode all the transactions must be executed by the stated time. Starting of any new transactions is blocked. If there are some transactions still active by the stated time, database shutdown is not executed.

#### **Deny new attachments**

In this mode all the active user attachments must finish their work by the stated time. If there are some attachments still active by the stated time, database shutdown is not executed.

### Wait (seconds)

Time to wait for the shutdown to execute (in *seconds*).

Click the **Next** button to proceed to [Running Bring Online / Shutdown Database](#)<sup>697</sup>.

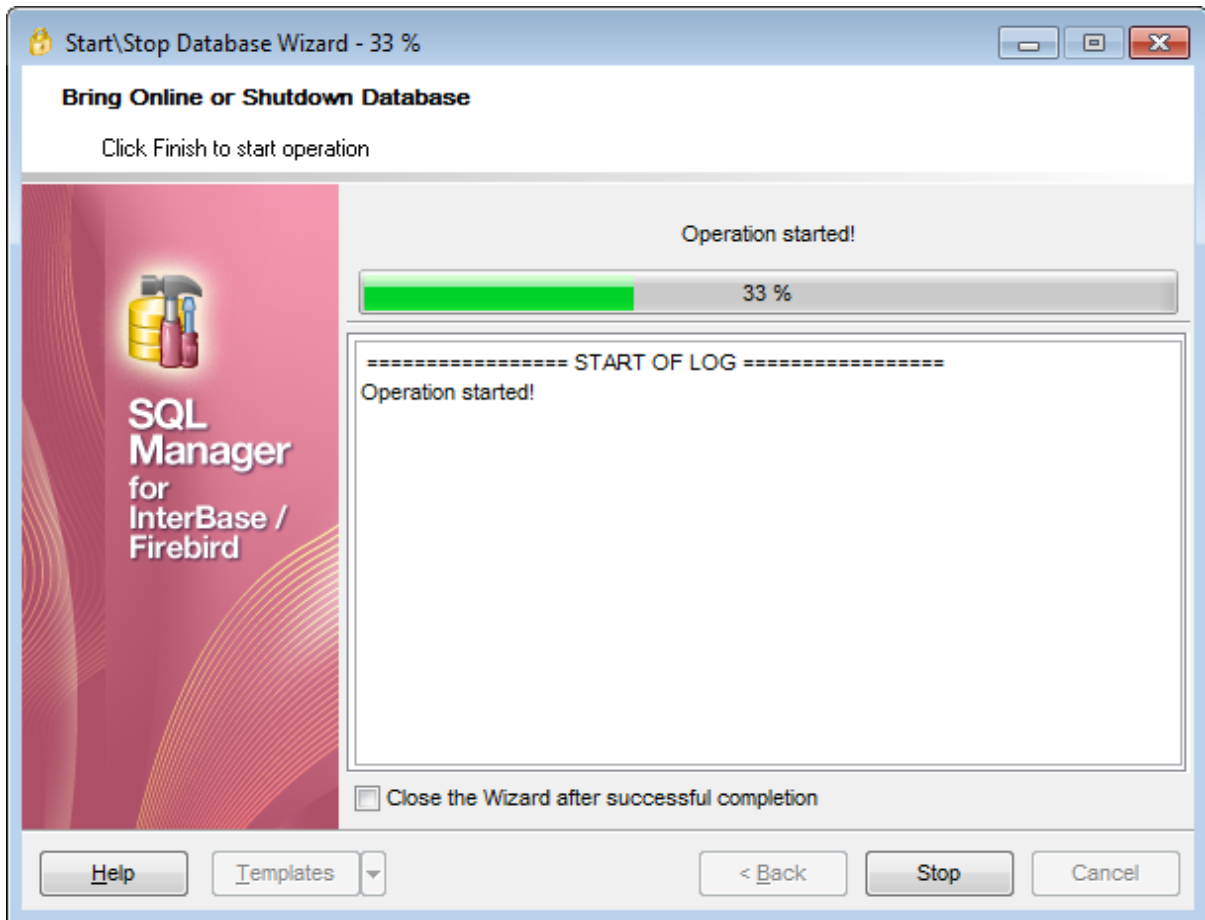




### 10.5.3 Running Bring Online / Shutdown Database

This step of the wizard is intended to inform you that all necessary options have been set, and you can start the process.

The log area allows you to view the log of operations and errors (if any).



**Close the wizard after successful completion**

If this option is selected, the wizard is closed automatically when the bring online / shutdown process is completed.

If necessary, you can save a [template](#) for future use.

Click the **Finish** button to run the process.



## 10.6 Rebuild Database Indices

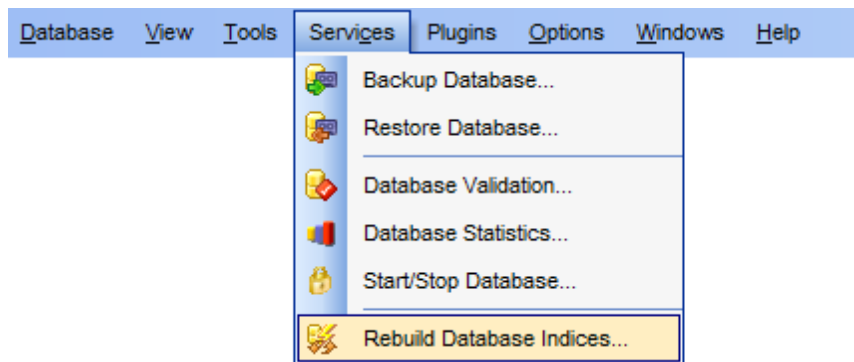
**Rebuild Indexes Wizard** allows you to recompute or rebuild [indexes](#)<sup>[225]</sup>.

To improve index performance, one should consider *recomputing* or *rebuilding* database indexes.

**Recomputing** index selectivity is performed through *SET STATISTICS*. Index selectivity is a calculation, based on the number of distinct rows in a table, that is made by the optimizer when a table is accessed. It is cached in memory, where the optimizer can access it to calculate the optimal retrieval plan for a given query.

**Rebuilding** an index consists in making it inactive, then active with sequential calls to *ALTER INDEX*. Deactivating an index is exactly like [dropping](#)<sup>[225]</sup> it, except that the index definition remains in the database. Activating an index creates a new index structure.

To run the wizard, select the **Services |  Rebuild Database Indices...** [main menu](#)<sup>[882]</sup> item, or right-click a table in the [DB Explorer](#)<sup>[63]</sup> tree and select the **Table Services |  Rebuild All Indexes of Database** [context menu](#)<sup>[53]</sup> item.



- [Selecting database and execution mode](#)<sup>[699]</sup>
- [Selecting action for indexes](#)<sup>[701]</sup>
- [Selecting indexes](#)<sup>[703]</sup>
- [Recomputing/rebuilding indexes](#)<sup>[704]</sup>

Availability:

**Full** version (for Windows) **Yes**

**Lite** version (for Windows) **No**

**Note:** To compare all features of the **Full** and the **Lite** versions of **SQL Manager**, refer to the [Feature Matrix](#)<sup>[20]</sup> page.

**See also:**

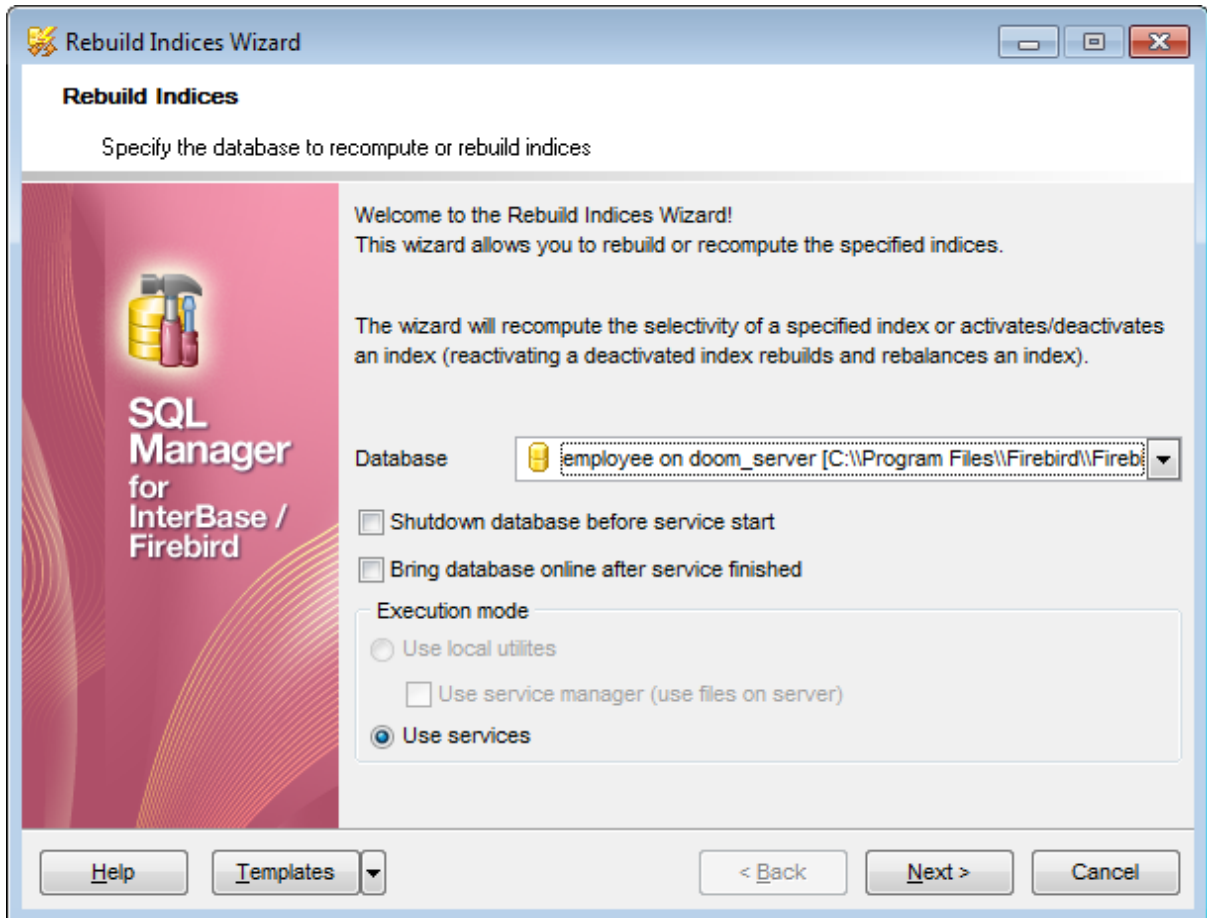
[Start/Stop Database](#)<sup>[692]</sup>

[Indices](#)<sup>[225]</sup>

[Using templates](#)<sup>[910]</sup>

### 10.6.1 Selecting database and execution mode

This step of the wizard allows you to specify the **database** name, shutdown / bring online **options**, and **execution mode**.



#### Database

Use the drop-down list to select the database for recomputing/rebuilding indexes.

#### Shutdown database before service start

Select this option to shutdown the database before [Recomputing/rebuilding indexes](#)<sup>[704]</sup>. For details see [Start/Stop Database](#)<sup>[692]</sup>.

#### Bring database online after service finished

Select this option to bring the database online after [Recomputing/rebuilding indexes](#)<sup>[704]</sup>. For details see [Start/Stop Database](#)<sup>[692]</sup>.

#### Execution mode

##### Use local utilities

Select this option to recompute/rebuild indexes using local utilities.

**Note:** To enable this mode, you need to specify the location of the utilities in the **Path to database utilities** field on the [Connection](#)<sup>[153]</sup> page of the [Host Registration Info](#)<sup>[152]</sup> dialog.

**Use service manager (use files on server)**

If this option is selected, the recomputing/rebuilding indexes will be performed with the service manager used.

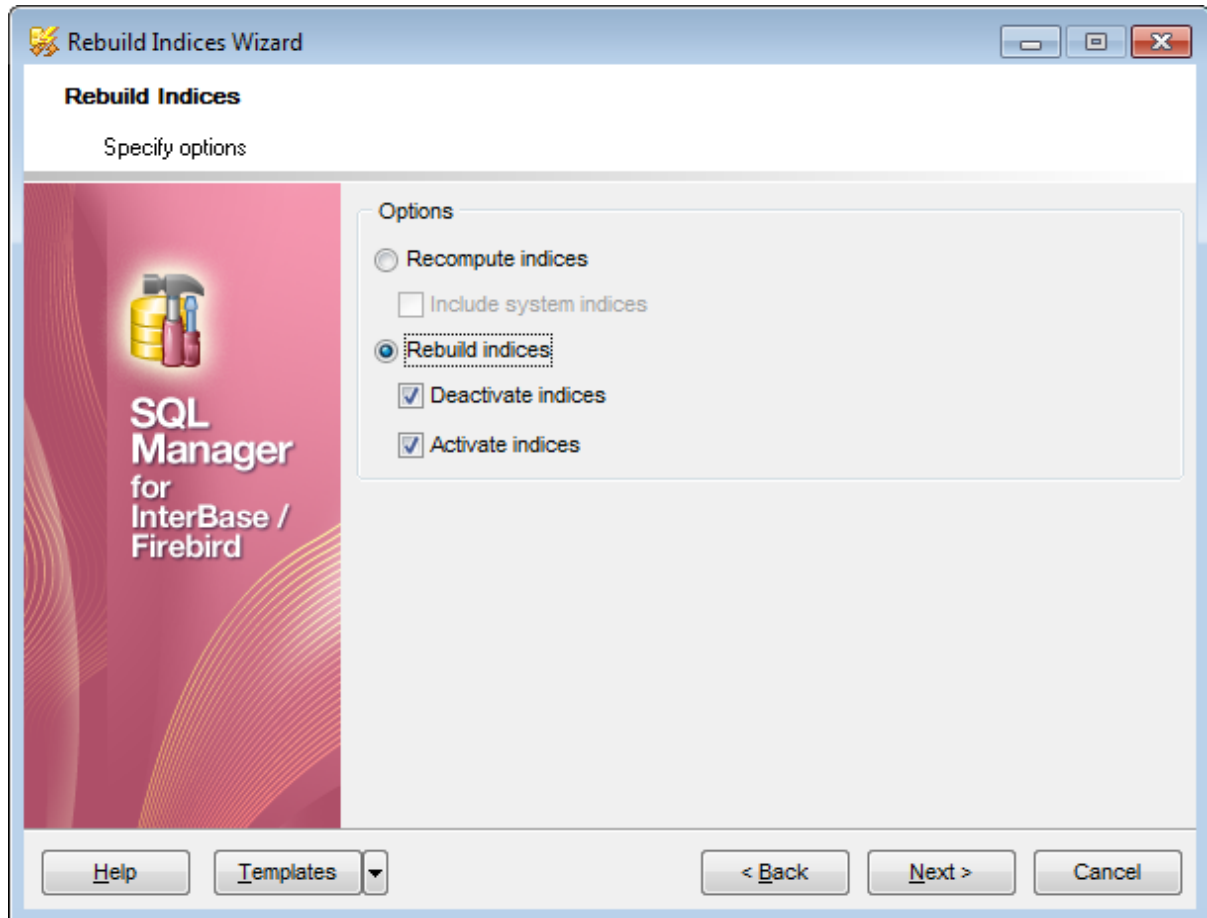
**Use services**

Select this option to use the server services for the recomputing/rebuilding indexes operation.

Click the **Next** button to proceed to the [Selecting action for indexes](#)<sup>701</sup> step of the wizard.

## 10.6.2 Selecting action for indexes

This step of the wizard allows you to select the **action** for database indexes and set the action-specific **options**.



### Options

#### **Recompute indexes**

Specifies *SET STATISTICS* to be executed for recomputing database indexes.

#### **Include system indexes**

If this option is selected, system indexes will be recomputed as well.

#### **Rebuild indexes**

Specifies deactivating/activating database indexes through *ALTER INDEX*.

#### **Deactivate indexes**

If this option is selected, database indexes will be deactivated (*ALTER INDEX ... INACTIVE*)

#### **Activate indexes**





If this option is selected, database indexes will be activated (*ALTER INDEX ... ACTIVE*).

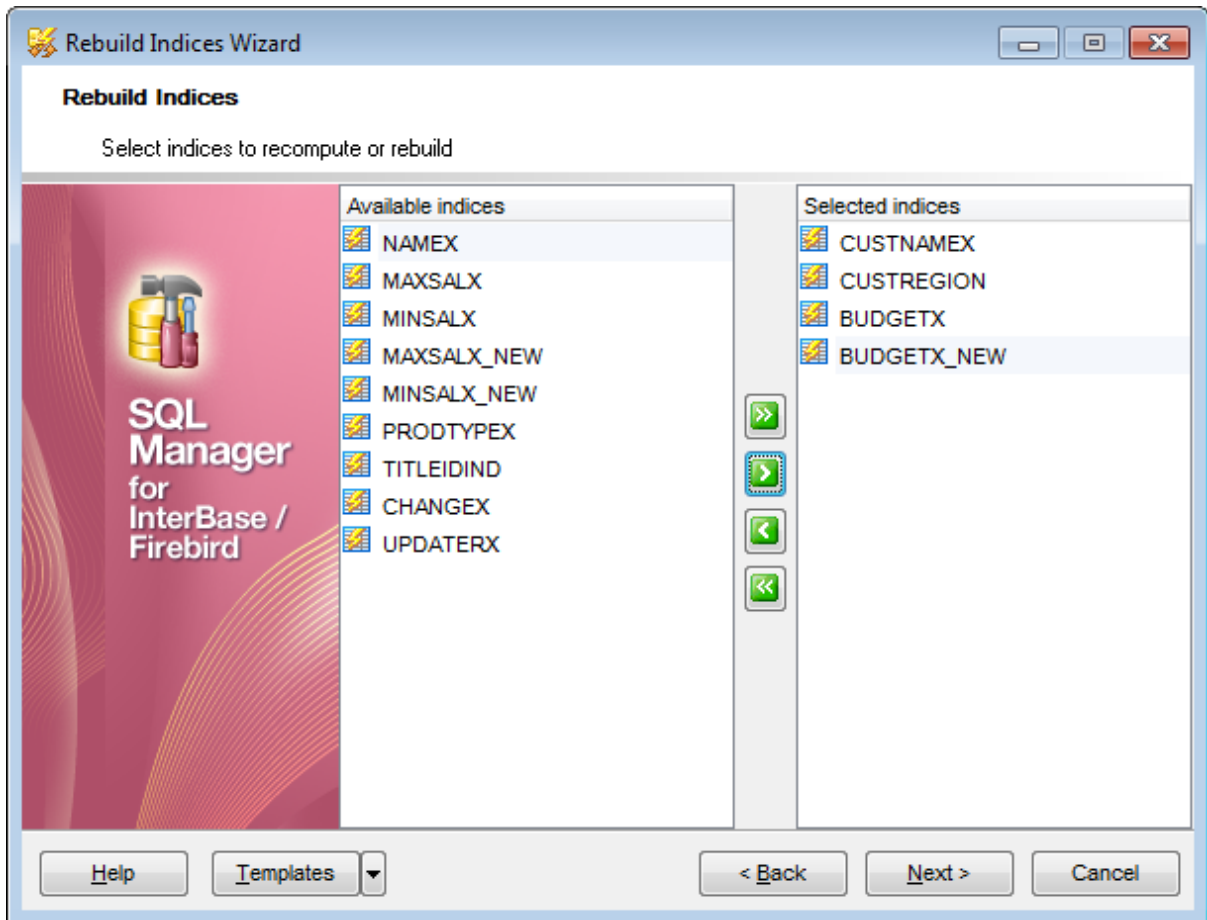
Click the **Next** button to proceed to the [Selecting indexes](#)<sup>[703]</sup> step of the wizard.



### 10.6.3 Selecting indexes

This step of the wizard allows you to **select indexes** for management.

To select an index, you need to move it from the **Available Indexes** list to the **Selected Indexes** list. Use the     buttons or drag-and-drop operations to move the indexes from one list to another.

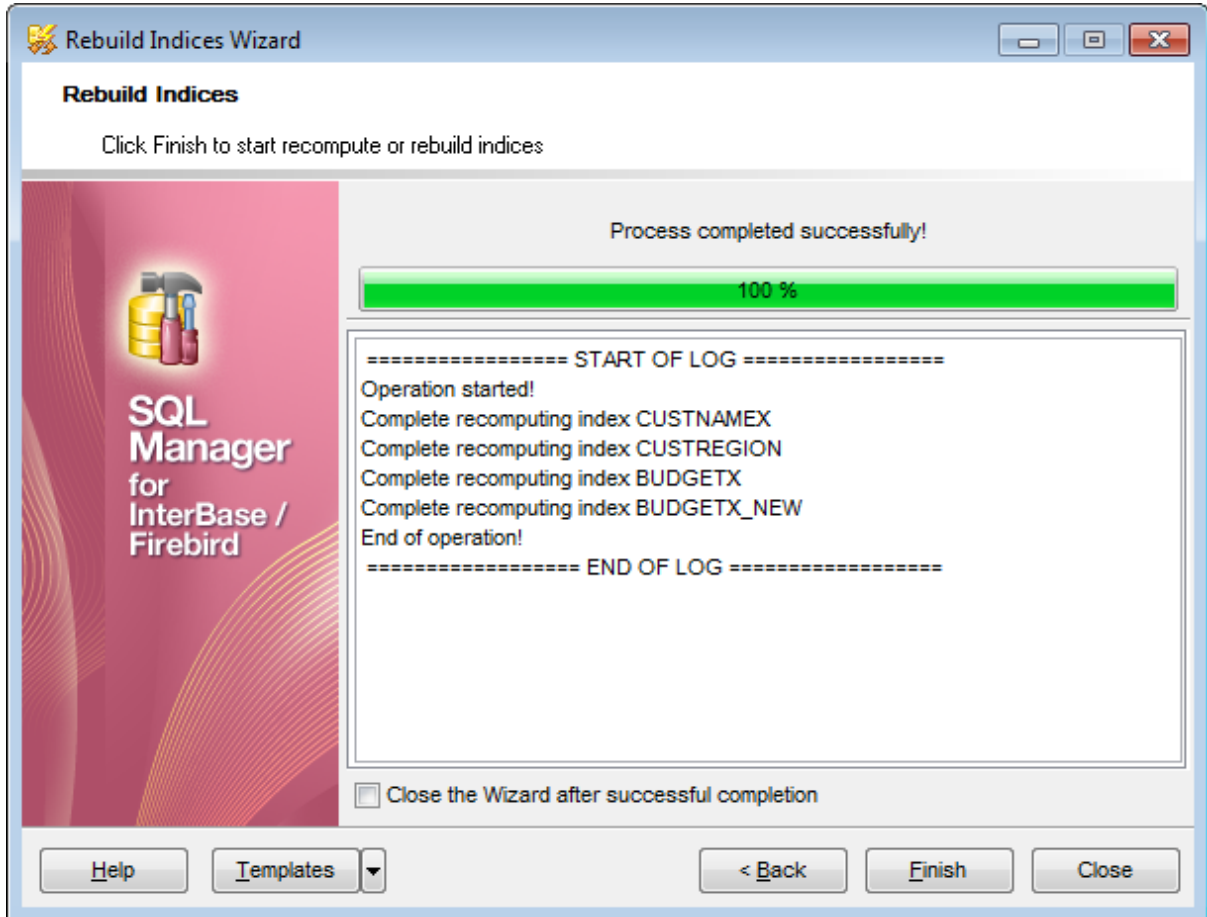


Click the **Next** button to proceed to [Recomputing/rebuilding indexes](#)<sup>[704]</sup>.

### 10.6.4 Recomputing/rebuilding indexes

This step of the wizard is intended to inform you that all necessary options have been set, and you can start the process.

The log area allows you to view the log of operations and errors (if any).



**Close the wizard after successful completion**

If this option is selected, the wizard is closed automatically when the backup process is completed.

If necessary, you can save a [template](#)<sup>[910]</sup> for future use.



Click the **Finish** button to run the process.

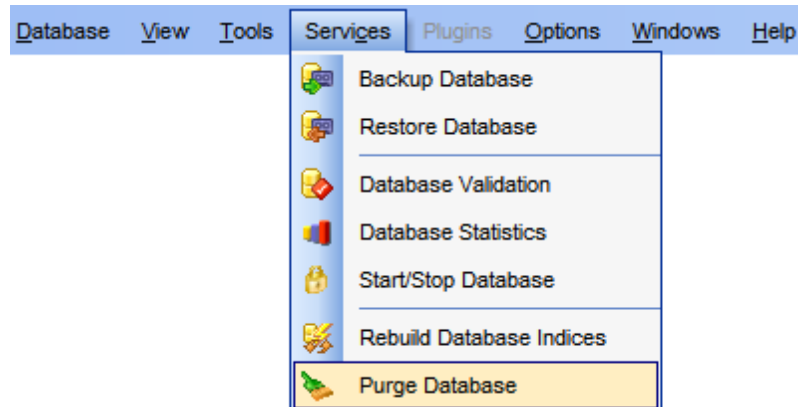


## 10.7 Purge Database

Purge Database Wizard allows you to delete data from the selected tables.

### To run the wizard

select **Services** |  **Purge database...** from the main menu  
or right-click a table in the [DB Explorer](#)<sup>[63]</sup> tree and select the **Tasks** |  **Purge table...** context menu item.



- [Selecting database and execution mode](#)<sup>[706]</sup>
- [Selecting options for data deleting](#)<sup>[707]</sup>
- [Selecting tables to purge data](#)<sup>[708]</sup>
- [Running purging operation](#)<sup>[709]</sup>

Availability:

**Full**      **Yes**

version

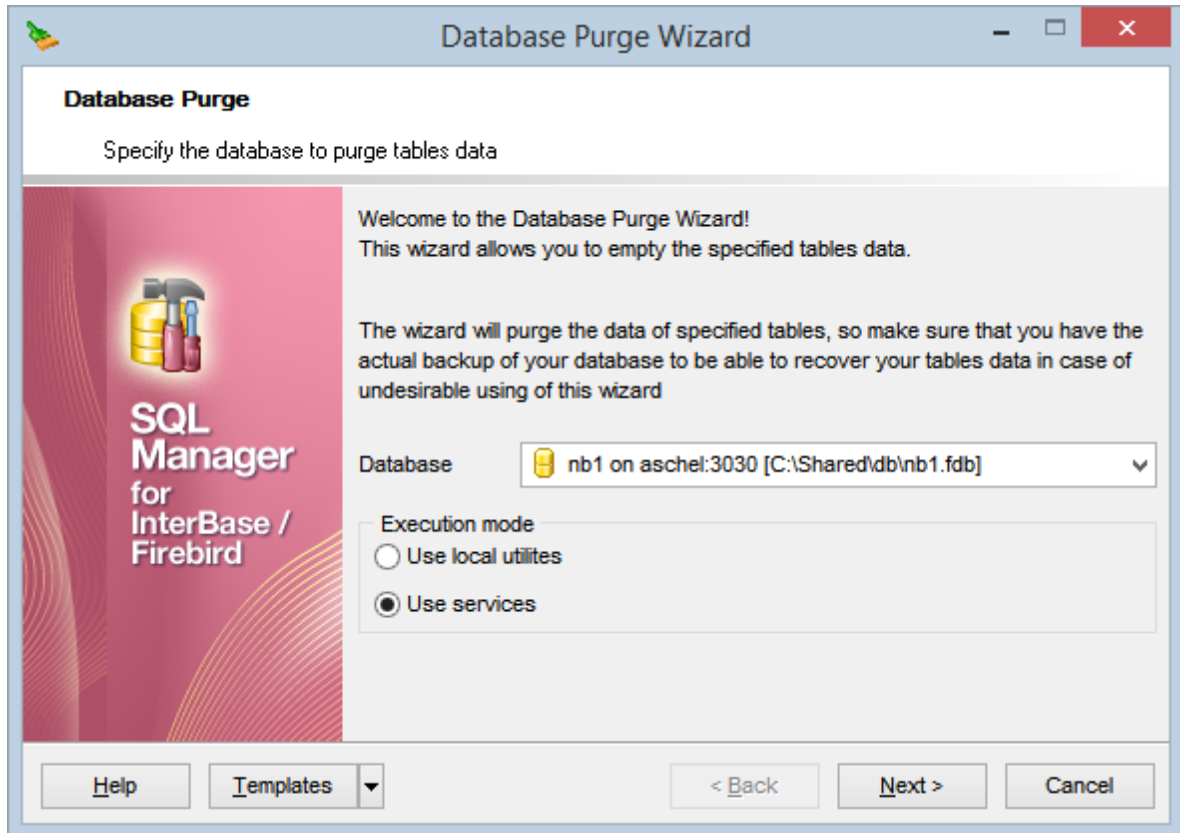
**Lite**      **No**

version

**Note:** To compare all features of the **Full** and the **Lite** versions of **SQL Manager**, refer to the [Feature Matrix](#)<sup>[20]</sup> page.

### 10.7.1 Selecting database and execution mode

This step of the wizard allows you to specify the **database** name and set **execution mode**.



#### Database

Use the drop-down list to select the database for purging data.

#### Execution mode

##### Use local utilities

Select this option to purge tables using local utilities.

**Note:** To enable this mode, you need to specify the location of the utilities in the **Path to database utilities** field on the [Connection](#)<sup>[153]</sup> page of the [Host Registration Info](#)<sup>[152]</sup> dialog.

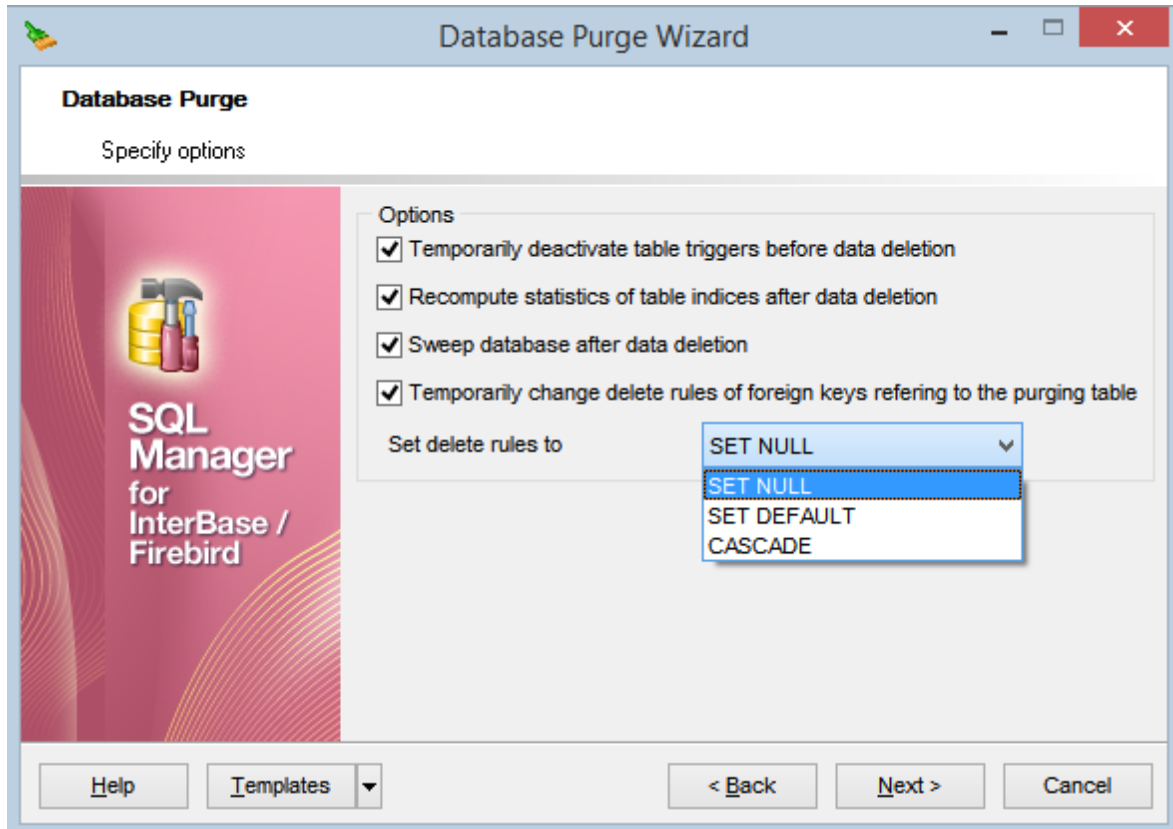
##### Use services

Select this option to use the server services for database purging.

Click **Next >** to proceed to the [Selecting options for data deleting](#)<sup>[707]</sup> step.

## 10.7.2 Selecting options for data deleting

This step of the wizard allows you to select the options and rules for deleting data.



**Temporarily deactivate table triggers before data deletion**

Use this option to disable triggers before deleting data. After the data has been deleted, the trigger will be automatically activated.

**Recompute statistics of table indices after data deletion**

Use this option to recompute statistics after deleting data.

**Sweep database after data deletion**

Use this option to sweep the database after deleting data.





**Temporarily change delete rules of foreign keys referring to the purging table**

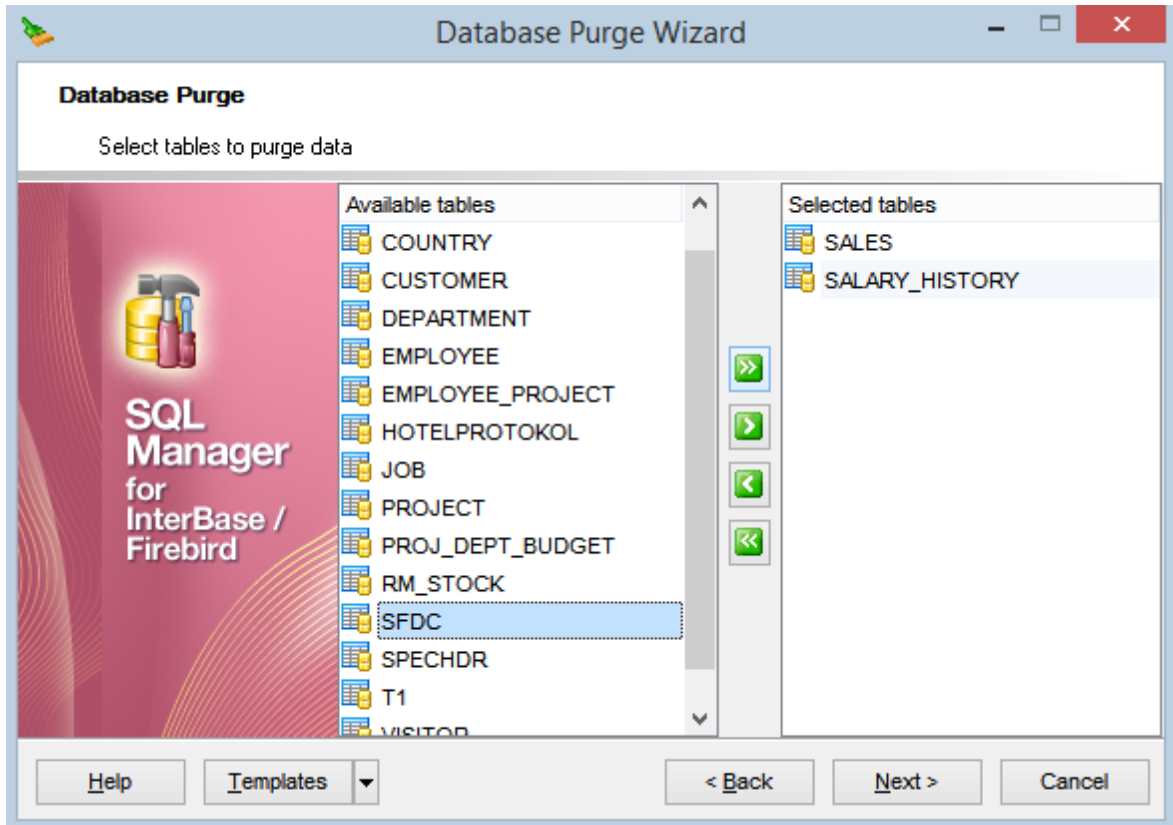
Use this option to change delete rules for foreign keys linked to the selected tables. You can choose the new rule: *SET NULL*, *SET DEFAULT* or *CASCADE*.

Click **< Back** to go back to [Selecting database and execution mode](#)<sup>[706]</sup> step or **Next >** to proceed to the [Selecting tables to purge data](#)<sup>[708]</sup> step.

### 10.7.3 Selecting tables to purge data

This step of the wizard allows you to **select tables** for purging data.

To select a table, you need to move it from the **Available tables** list to the **Selected tables** list using the     buttons or drag-and-drop operations.

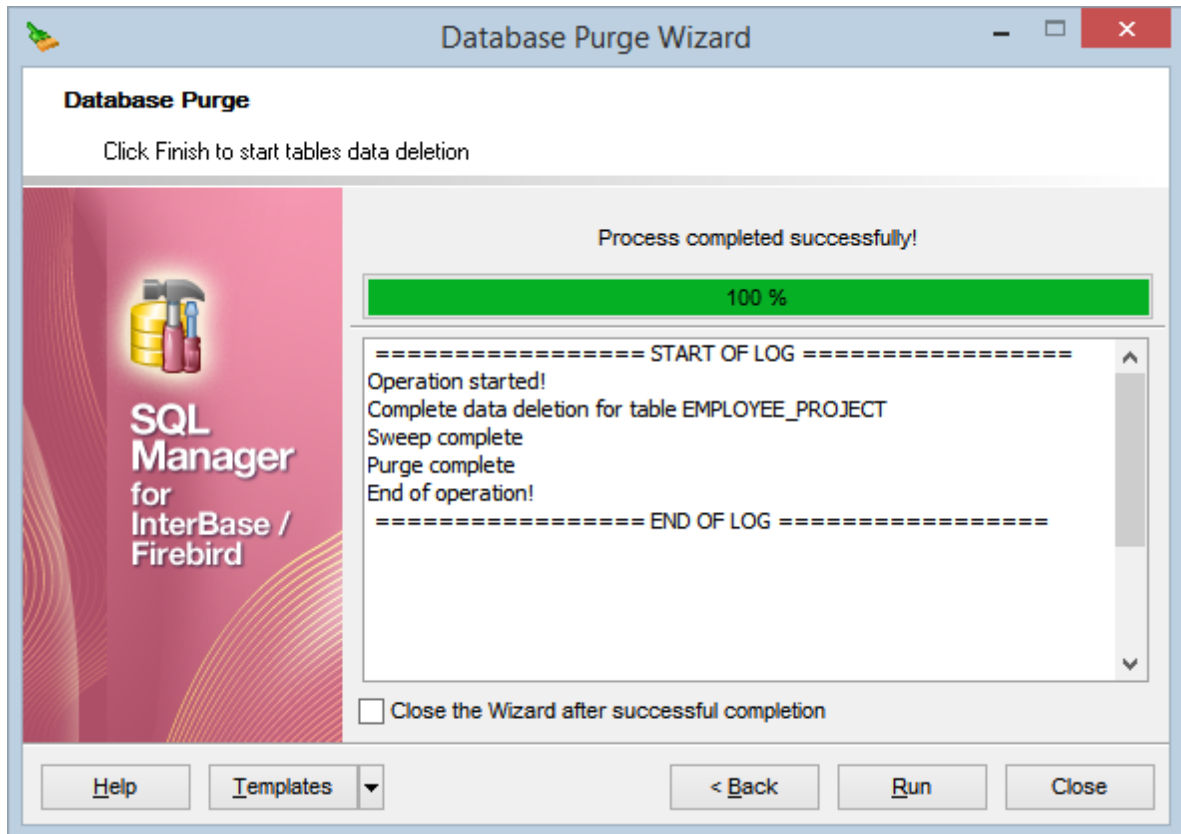


Click **< Back** to go back to [Selecting options for data deleting](#) <sup>707</sup> step or **Next >** to proceed to the [Running purging operation](#) <sup>709</sup> step.

### 10.7.4 Running purging operation

This step of the wizard is intended to inform you that all necessary options have been set, and you can start the process.

The log area allows you to view the log of operations and errors (if any).



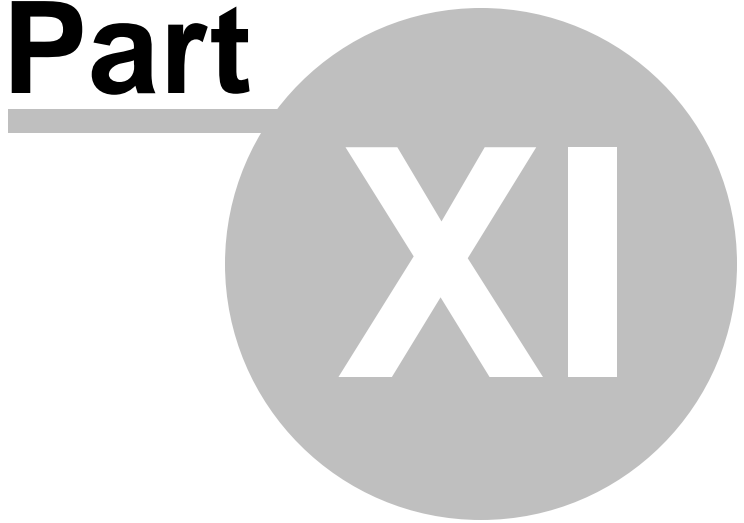
#### Close the wizard after successful completion

If this option is selected, the wizard is closed automatically when the backup process is completed.

If necessary, you can save a [template](#)<sup>[910]</sup> for future use.

Click the **Finish** button to run the process or click **< Back** to go back to [Selecting tables to purge data](#)<sup>[708]</sup> step.

**Part**



## 11 Security management

**Security** for InterBase/Firebird relies on a central [security database](#)<sup>[92]</sup> for each server host. This database contains a record for each legitimate [user](#)<sup>[71]</sup> who has permission to [connect](#)<sup>[88]</sup> to databases and services on that host. Each record includes the user login name and the associated encrypted password. The entries in this security database apply to all databases on the server host.

InterBase/Firebird manages database access permissions using the concept of **users**:

- *SYSDBA* (a special user account that can bypass normal SQL security and perform tasks such as database [backups](#)<sup>[65]</sup> and [shutdowns](#)<sup>[69]</sup>; this is the only authorized user initially; the default password for the user is *masterkey*);
- other users (other users on a per-server basis created by *SYSDBA*)

**Embedded Database User Authentication** is supported by InterBase 7.5 and later versions of InterBase.

**Embedded User Authentication** stores user name / password accounts in the database. This overrides the server-wide security database for user authentication. Only the database owner is allowed to administer embedded user authentication against a database. A normal user may alter the password for their user account.

**Note:** There are issues related to database [backup](#)<sup>[65]</sup>/[restore](#)<sup>[66]</sup> performed under embedded users. For details refer to the official InterBase documentation.

InterBase/Firebird implements features for assigning SQL privileges to groups of users.

**SQL roles** are implemented on a per-database basis, and the implementation includes the following:

- a role is [declared](#)<sup>[71]</sup>;
- privileges on [database objects](#)<sup>[16]</sup> are [assigned](#)<sup>[71]</sup> to the role with the help of [Grant Manager](#)<sup>[72]</sup>;
- [role members](#)<sup>[72]</sup> are defined;
- the role name is specified on the [Connection](#)<sup>[11]</sup> page of the [Database Registration Info](#)<sup>[11]</sup> dialog.

A [user](#)<sup>[71]</sup> can belong to only one role per connection to the database and cannot change role while connected. To change role, the user must [disconnect](#)<sup>[88]</sup> and [reconnect](#)<sup>[88]</sup>, specifying a different role name.

**SQL Manager for InterBase/Firebird** provides tools for efficient management of InterBase/Firebird users and SQL roles:

### [User Manager](#)<sup>[71]</sup>

A tool for managing InterBase/Firebird server users.

### [User Editor](#)<sup>[71]</sup>

A tool for editing InterBase/Firebird server users.

### [Role Manager](#)<sup>[72]</sup>

A tool for managing InterBase/Firebird database roles.

### [Members of Role](#)<sup>[72]</sup>

A tool for defining InterBase/Firebird database role members.

### [Grant Manager](#)<sup>[72]</sup>

Allows you to manage grants on your InterBase/Firebird database objects.

### Adding Users

- select the **Tools | User Manager main menu** [\[882\]](#) item or use the corresponding [\[884\]](#) **toolbar** button to open [\[714\]](#) **User Manager**;
- select the **Add User...** item from the **context menu** or within the [\[715\]](#) **Navigation bar**;
- define user properties and membership using [\[717\]](#) **User Editor**.

### Editing Users

- select the **Tools | User Manager main menu** [\[882\]](#) item or use the corresponding [\[884\]](#) **toolbar** button to open [\[714\]](#) **User Manager**;
- right-click and select the **Edit User...** item from the **context menu** or within the [\[715\]](#) **Navigation bar**;
- edit the user properties and membership using [\[717\]](#) **User Editor**.

### Deleting Users

- select the **Tools | User Manager main menu** [\[882\]](#) item or use the corresponding [\[884\]](#) **toolbar** button to open [\[714\]](#) **User Manager**;
- right-click the user to delete and select the **Delete User** item from the **context menu** or within the [\[715\]](#) **Navigation bar**;
- confirm deleting in the dialog window.

### Adding Roles

- select the **Database | New Object...** [\[882\]](#) **main menu** item;
- select **Role** in the [\[164\]](#) **Create New Object** dialog;
- define role name and confirm new role declaration in the dialog window

or

- select the **Tools | Role Manager main menu** [\[882\]](#) item to open [\[721\]](#) **Role Manager**;
- right-click and select the **Add Role...** item from the **context menu** or within the [\[723\]](#) **Navigation bar**;
- define role name and confirm new role declaration in the dialog window.

**Hint:** To create a new role, you can also right-click the **Roles** node or any object within this node in the [\[63\]](#) **DB Explorer** tree and select the **New Role...** item from the [\[56\]](#) **context menu**.

To create a new role with the same properties as one of existing roles has:

- select the **Database | Duplicate Object...** [\[882\]](#) **main menu** item;
- follow the instructions of [\[166\]](#) **Duplicate Object Wizard**.

Alternatively, you can right-click a role in the [\[63\]](#) **DB Explorer** tree and select the **Duplicate Role 'role\_name'...** context menu item.

[\[166\]](#) **Duplicate Object Wizard** allows you to select the database to create a new role in, and to view the result SQL statement for creating the role.

### Editing Role Members

- select the **Tools | Role Manager main menu** [\[882\]](#) item to open [\[721\]](#) **Role Manager**;
- select the **Edit role members** item within the [\[723\]](#) **Navigation bar**, or double-click a role in the list;
- edit the role members using the [\[725\]](#) **Members of Role** dialog.


### Deleting Roles

- select the **Tools | Role Manager main menu** [\[882\]](#) item to open [\[721\]](#) **Role Manager**;
- right-click the role to delete and select the **Delete Role** item from the **context menu**





- or within the [Navigation bar](#)<sup>[723]</sup>;
- confirm deleting in the dialog window.

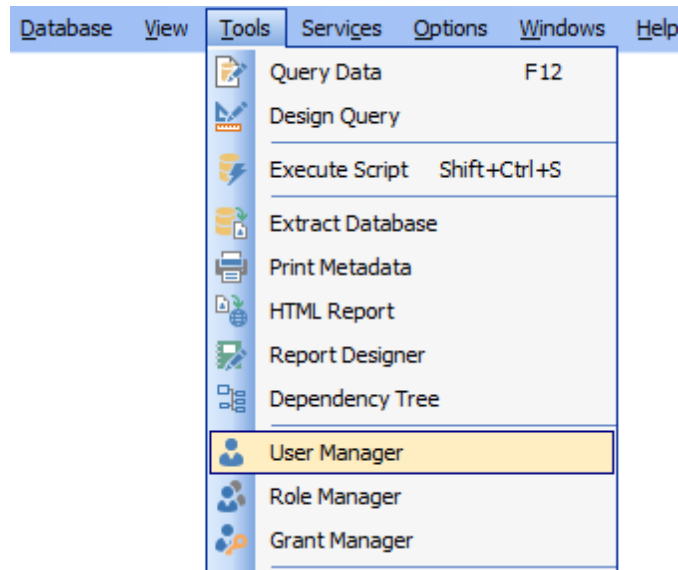
### Managing Privileges

- select the **Tools | Grant Manager main menu**<sup>[882]</sup> item, or use the corresponding  [toolbar](#)<sup>[884]</sup> button to open [Grant Manager](#)<sup>[726]</sup>;
  - select the object type using the drop-down list on the [toolbar](#)<sup>[727]</sup>;
  - select a *user*, a *role*, a *view*, a *trigger*, or a *procedure* from the **Privileges for** list available within the [Navigation bar](#)<sup>[727]</sup>;
  - edit the grantee's privileges using [Grant Manager](#)<sup>[726]</sup>
- or
- right-click an object in [DB Explorer](#)<sup>[63]</sup> and select the **Tasks | Grants for <object\_name>** item from the [context menu](#)<sup>[56]</sup>;
  - edit privileges using [Grant Manager](#)<sup>[726]</sup>.

## 11.1 User Manager

**User Manager** allows you to browse the list of existing InterBase/Firebird users, and manage them efficiently.

To launch the tool, select the **Tools |  User Manager main menu** <sup>[882]</sup> item, or right-click the host alias in the **DB Explorer** <sup>[63]</sup> tree and select the **Tasks |  User Manager** item from the **context menu** <sup>[52]</sup>.



**Note:** You should register the server host with [Register Host Wizard](#) <sup>[90]</sup> before using this tool.

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### See also:

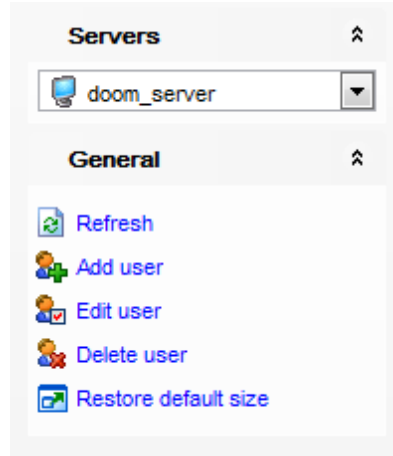
[Grant Manager](#) <sup>[726]</sup>

[Role Manager](#) <sup>[722]</sup>

[Embedded User Editor](#) <sup>[719]</sup>



### 11.1.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **User Manager**.








The **Navigation bar** of the **User Manager** window allows you to:

#### Servers

-  select a server host for managing users
-  select a database on the host for managing embedded users (if [Embedded User Authentication](#)<sup>[711]</sup> is enabled for the server)

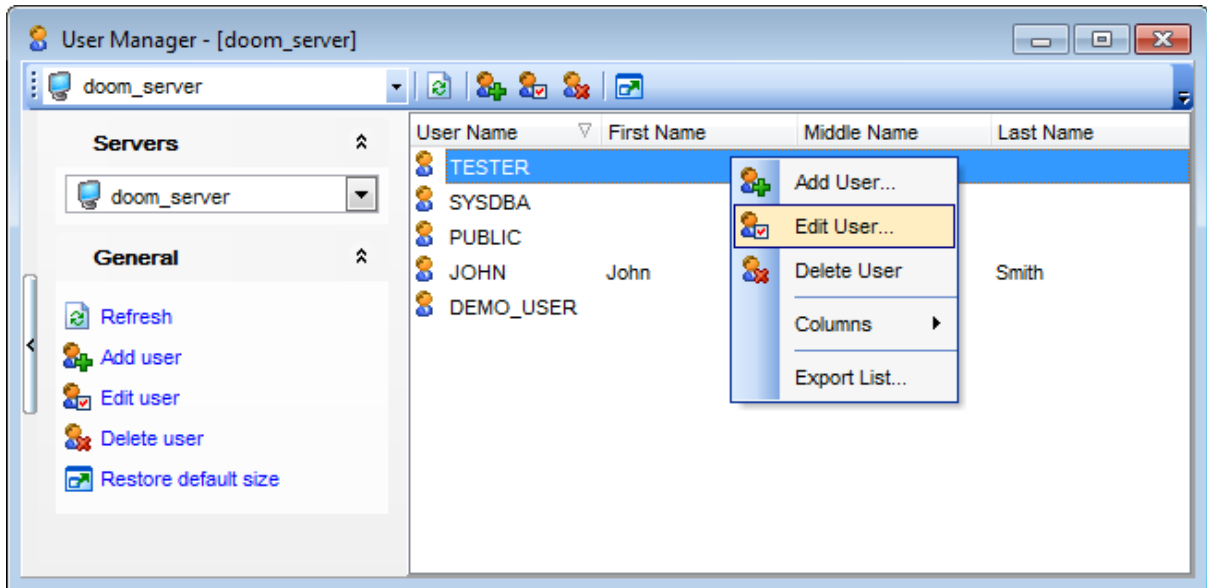
#### General

-  refresh the currently displayed list of users
-  [add](#)<sup>[712]</sup> a new *user*
-  [edit](#)<sup>[712]</sup> the selected *user*
-  [delete](#)<sup>[712]</sup> the selected *user*
-  restore the default size and position of the window

Items of the **Navigation bar** are also available on the **ToolBar** of the **User Manager** window. To enable the [toolbar](#)<sup>[884]</sup>, open the [Environment Options](#)<sup>[736]</sup> dialog, proceed to the [Windows](#)<sup>[743]</sup> section there and select  *Toolbar* (if you need the toolbar only) or  *Both* (if you need both the toolbar and the [Navigation bar](#)<sup>[882]</sup>) in the **Bar style for child forms** group.

### 11.1.2 Managing users

If you are not connected to the database server yet, select the server host from the **Servers** drop-down list on the [Navigation bar](#)<sup>[715]</sup> and you will be prompted for connection confirmation.



The list displays the existing users as a grid with the following columns: *User Name*, *First Name*, *Middle Name*, *Last Name*.

Click a column caption to **sort** items by values of this column in the ascending or the descending mode.

Right-click an item within the list to call the **context menu** allowing you to *add* a new user and specify its properties using [User Editor](#)<sup>[717]</sup>, *edit*, *delete* the selected user, or show/hide columns of the list. Using the context menu you can also [export](#)<sup>[444]</sup> the list of users to any of supported output file [formats](#)<sup>[911]</sup>.

Users management tools are also available through the [Navigation bar](#)<sup>[715]</sup> and [toolbar](#)<sup>[715]</sup> of **User Manager**.

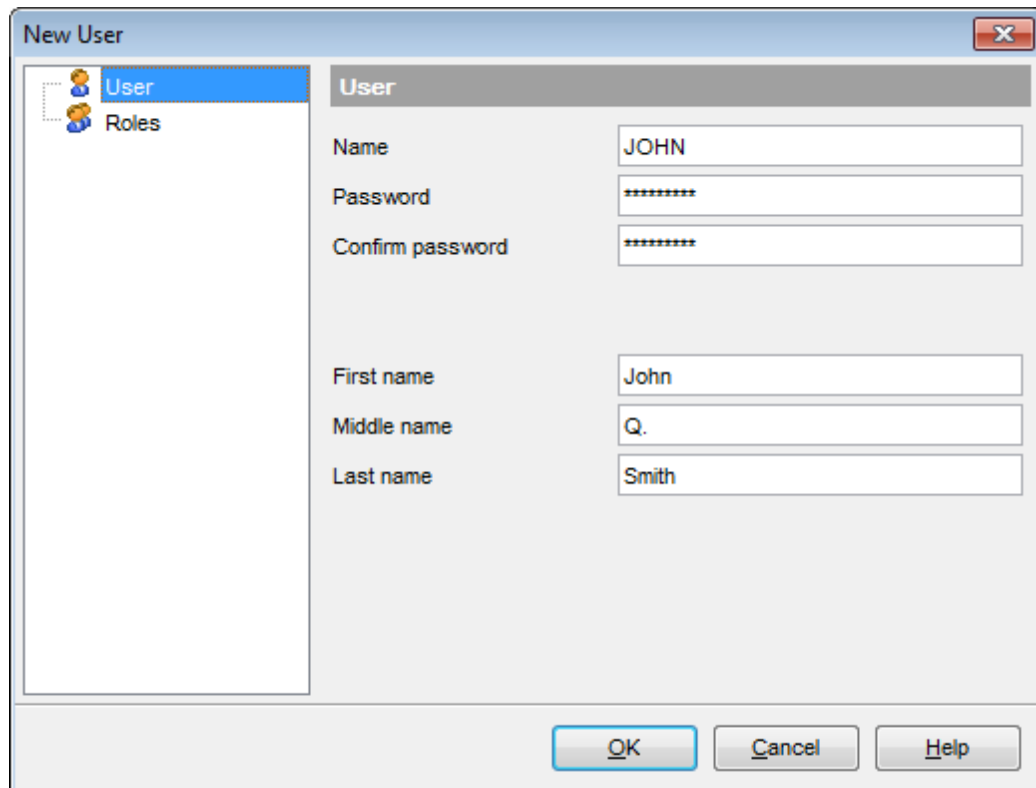
### 11.1.3 User Editor

The **User Editor** dialog window allows you to view/edit users.

To open the dialog, click **Add User** / **Edit User** on the [Navigation bar](#)<sup>[715]</sup> or [toolbar](#)<sup>[715]</sup> of [User Manager](#)<sup>[714]</sup>, or right-click and select the **Add User...** / **Edit User...** item from the **context menu**. Alternatively, you can just double-click the user for editing.

#### User

This page allows you to specify user name, password and personal info for the user being created/edited.



#### Name

Enter a name for the new user, or view the name of the user being edited.

**Note:** User name is significant to 31 characters and is not case sensitive.

#### Password / Confirm password

Set a password by which the user will be identified in the server.

**Note:** Password is significant to 8 characters and is case sensitive.

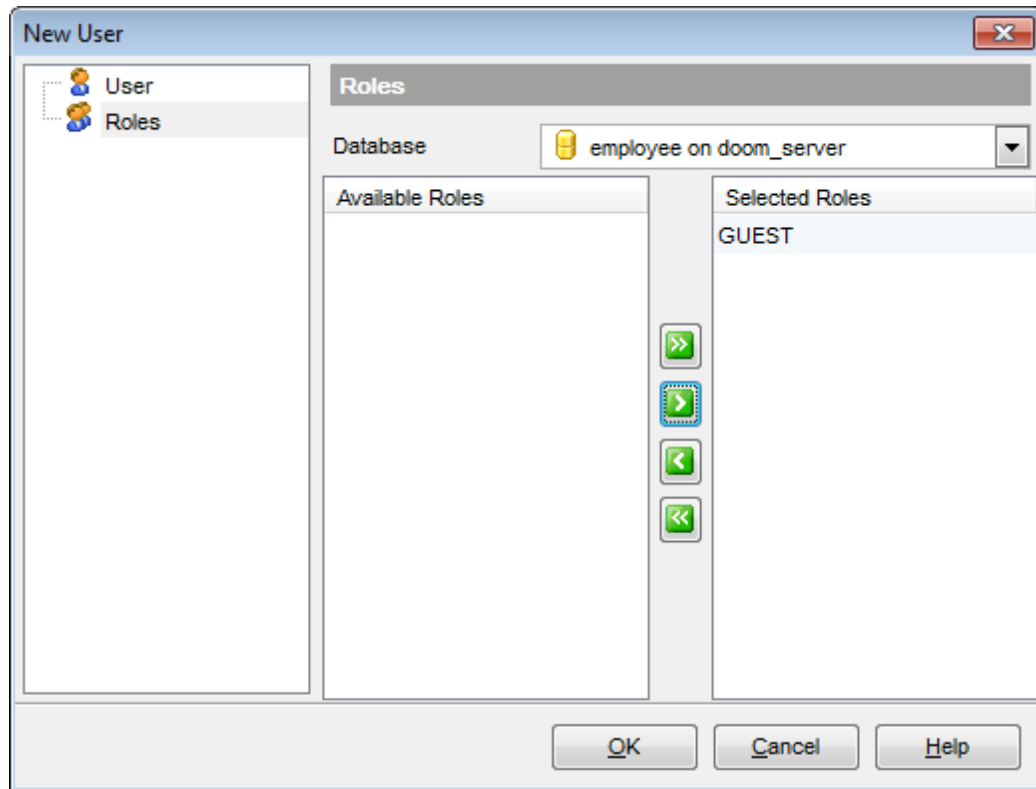
#### First name / Middle name / Last name





Specify user's real name (as opposed to login name): first name, middle name, last name.

#### Roles

This page allows you to select the [role](#)<sup>[711]</sup> the user being created/edited will have

privileges of.



To select a role, you need to move it from the **Available Roles** list to the **Selected Roles** list. Use the     buttons or drag-and-drop operations to move the objects from one list to another.

## 11.2 Embedded User Editor

The **Embedded User Editor** dialog window allows you to view/edit embedded users.

To open an embedded user in **Embedded User Editor**, double-click it in the [DB Explorer](#) tree.

### User

This page allows you to specify embedded user name, password, personal info, default role and specific settings for the embedded user being created/edited.

The screenshot shows the 'Embedded User Editor' dialog box. The left pane shows a tree view with 'User' and 'Roles' nodes. The main pane is titled 'User' and contains the following fields:

- Name: JOE
- Password: 8 asterisks
- Confirm password: 8 asterisks
- First name: Joe
- Middle name: (empty)
- Last name: Smith
- Default role: NEW\_ROLE (dropdown menu)
- System user name: (empty)
- Group name: (empty)
- GID: -1 (spin box)
- UID: -1 (spin box)
- Active:

Buttons at the bottom: OK, Cancel, Help.

### Name

Enter a name for the new embedded user, or view the name of the embedded user being edited.

**Note:** Embedded user name is significant to 31 characters and is not case sensitive.

### Password / Confirm password

Set a password by which the embedded user will be identified in the database.

**Note:** Password is significant to 8 characters and is case sensitive.

### First name / Middle name / Last name

Specify embedded user's real name (as opposed to login name): first name, middle name, last name.

**Default role**

Use the drop-down list to select the [role](#) the embedded user being created/edited will have privileges of (by default).

**System user name**

Enter the name of the system user.

**Group name**

Enter the name of the group the embedded user will belong to.

**GID**

Optional GroupID. Currently not used by InterBase.

**UID**

Optional UserID. Currently not used by InterBase.

 **Active**

This option activates/deactivates the embedded user.

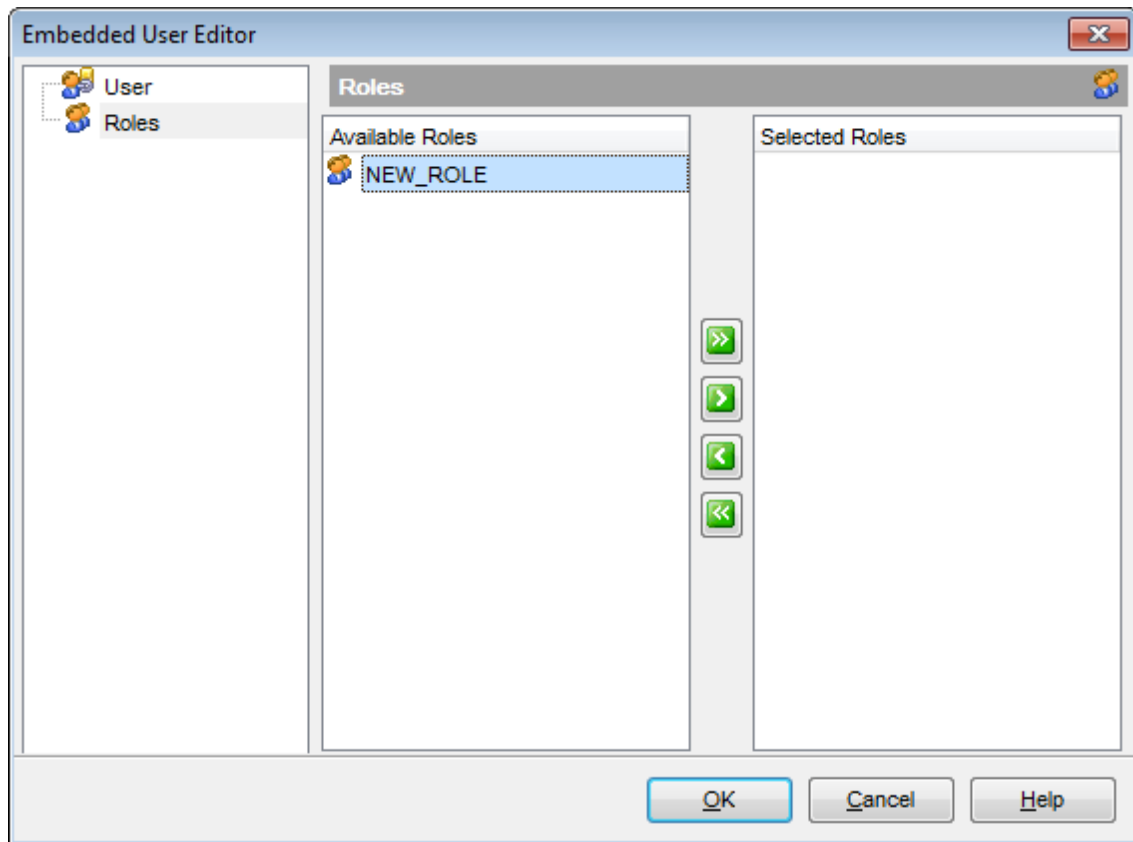
 **Database Owner**





If this option is selected, the embedded user is the database owner (*rdb\$user\_privilege = 1*).

**Roles**

This page allows you to select the [role](#) the embedded user being created/edited will have privileges of.





To select a role, you need to move it from the **Available Roles** list to the **Selected Roles** list. Use the     buttons or drag-and-drop operations to move the objects from one list to another.

**See also:**



[User Manager](#)<sup>[714]</sup>

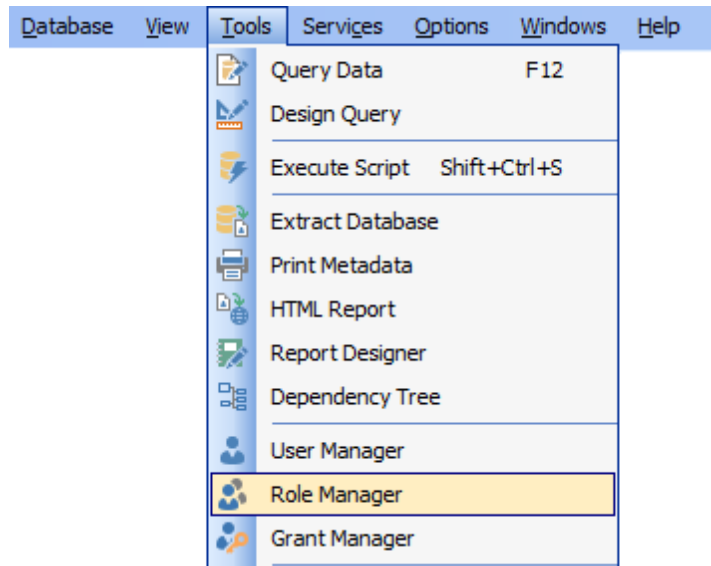
[Role Manager](#)<sup>[722]</sup>

[Grant Manager](#)<sup>[726]</sup>

## 11.3 Role Manager

**Role Manager** allows you to browse the list of existing SQL roles, and manage them efficiently.

To launch the tool, select the **Tools |  Role Manager main menu** <sup>[882]</sup> item, or right-click the database alias in the **DB Explorer** <sup>[63]</sup> tree and select the **Tasks |  Role Manager** item from the **context menu** <sup>[53]</sup>.



### See also:

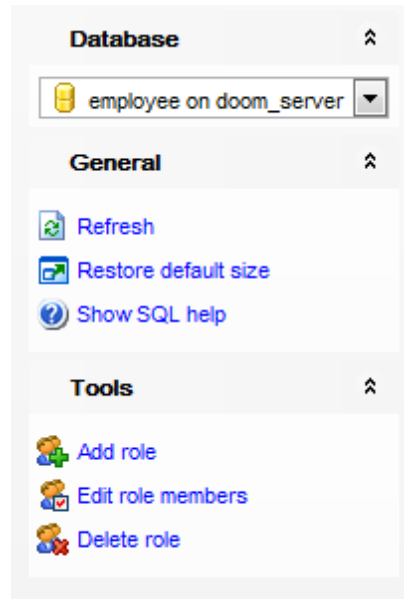
[User Manager](#) <sup>[714]</sup>

[Embedded User Editor](#) <sup>[719]</sup>

[Grant Manager](#) <sup>[726]</sup>


### 11.3.1 Using Navigation bar and Toolbar

The **Navigation bar** and **Toolbar** provide quick access to tools implemented in **Role Manager**.






The **Navigation bar** of the **Role Manager** window allows you to:




#### Database

 select a database for managing roles

#### General

-  refresh the currently displayed list of roles
-  show SQL help
-  restore the default size and position of the window

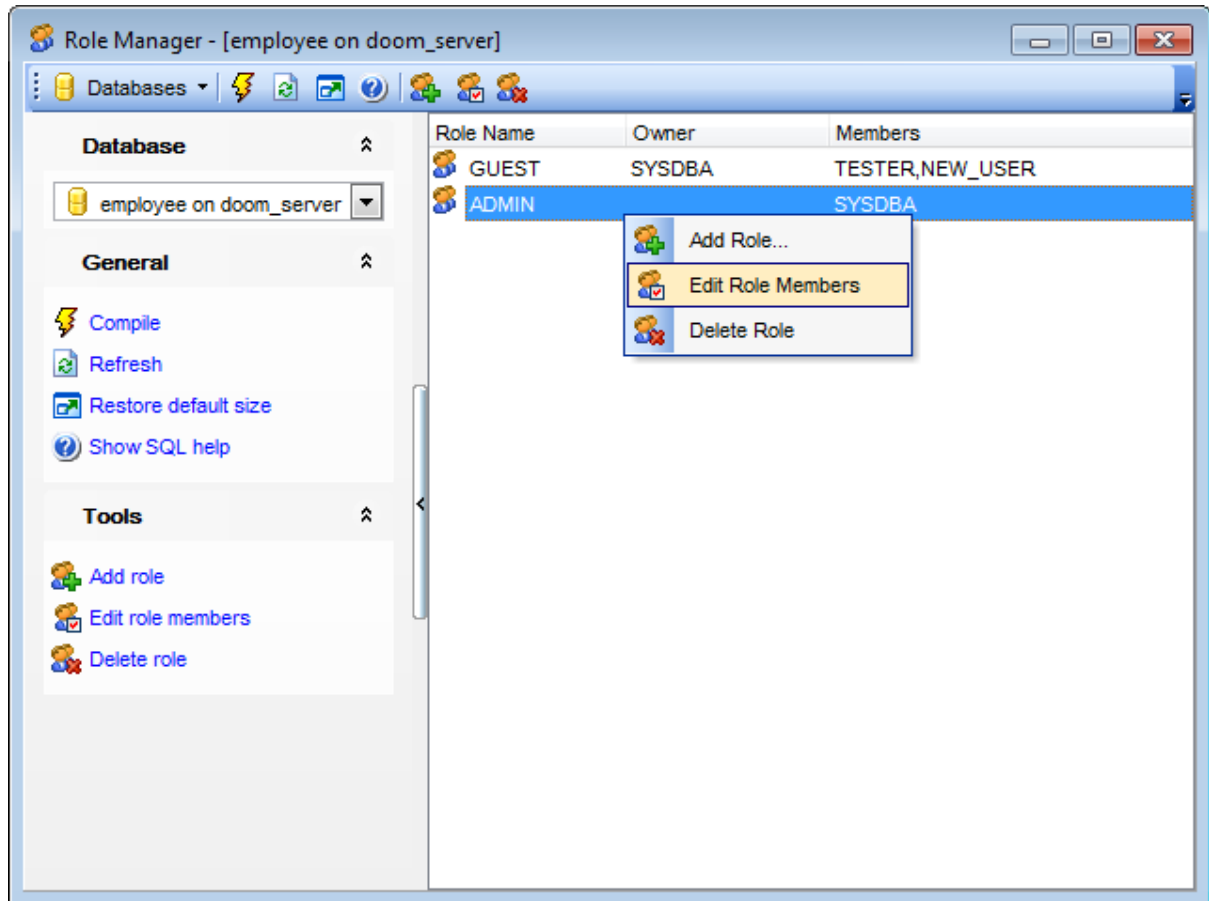
#### Tools

-  [add](#)<sup>[712]</sup> a new *role*
-  [edit](#)<sup>[712]</sup> the selected *role members*
-  [delete](#)<sup>[712]</sup> the selected *role*

Items of the **Navigation bar** are also available on the **ToolBar** of the **Role Manager** window. To enable the [toolbar](#)<sup>[884]</sup>, open the [Environment Options](#)<sup>[736]</sup> dialog, proceed to the [Windows](#)<sup>[743]</sup> section there and select  *Toolbar* (if you need the toolbar only) or  *Both* (if you need both the toolbar and the [Navigation bar](#)<sup>[882]</sup>) in the **Bar style for child forms** group.

### 11.3.2 Managing roles

To browse the list of roles, select the database from the **Database** drop-down list on the [Navigation bar](#)<sup>[723]</sup>.



The list displays the existing roles as a grid with the following columns: *Role Name*, *Owner*, *Members*.

Click a column caption to **sort** items by values of this column in the ascending or the descending mode.

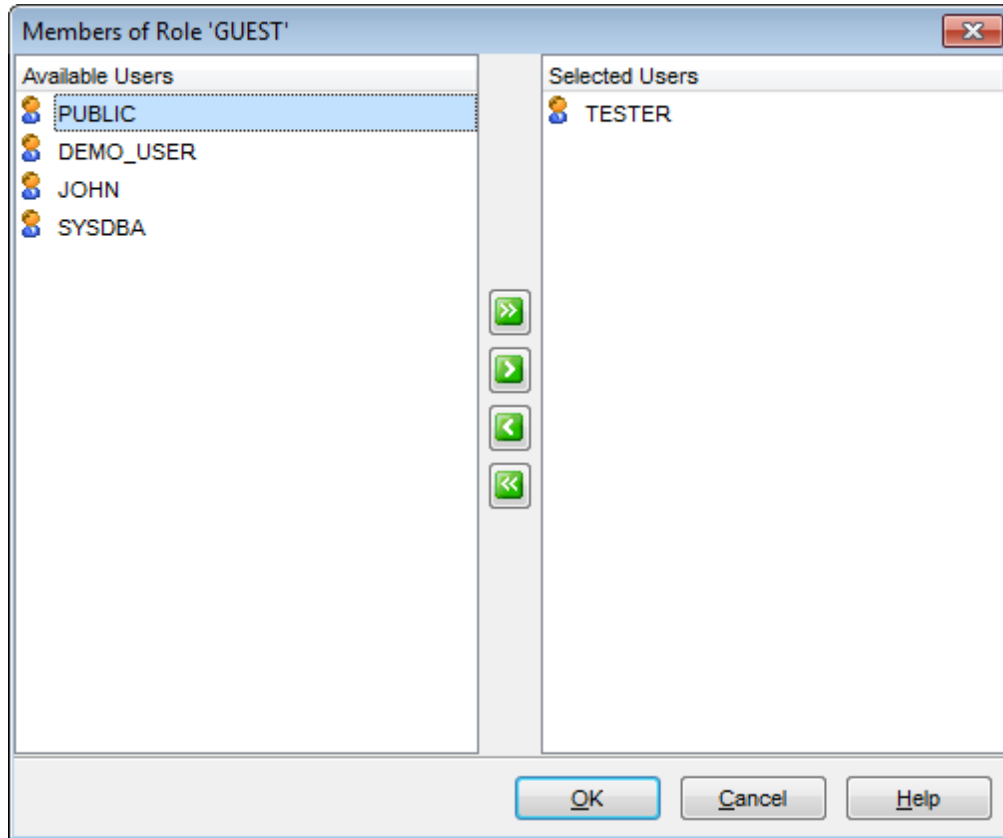
Right-click an item within the list to call the **context menu** allowing you to *add* a new role, *delete* the selected role, or *refresh* the list.





Roles management tools are also available through the [Navigation bar](#)<sup>[723]</sup> and [toolbar](#)<sup>[723]</sup> of **Role Manager**.

### 11.3.3 Defining role members

The **Members of Role** dialog allows you to select the users to which the role will be assigned, i.e. the existing users to be added as members of the role being edited.

To open the dialog, click **Edit role members** within the [Navigation bar](#)<sup>[723]</sup> or [toolbar](#)<sup>[723]</sup> of [Role Manager](#)<sup>[722]</sup>, or double-click a role in the list.



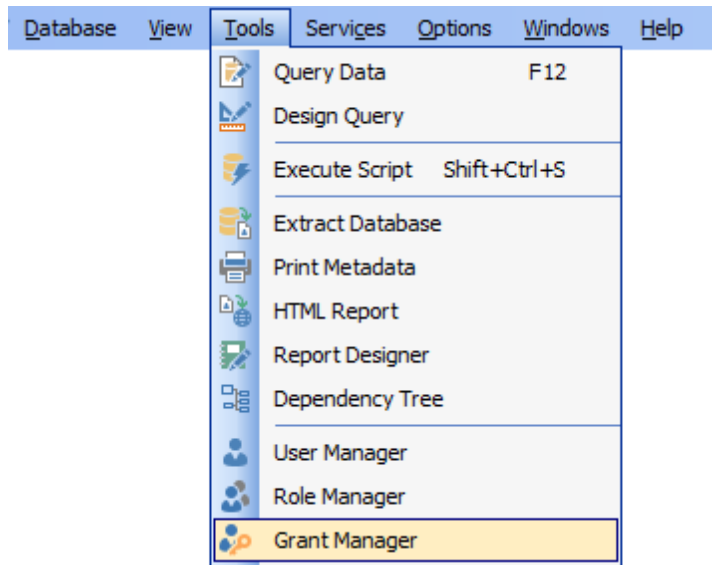
To select a user, you need to move it from the **Available Users** list to the **Selected Users** list. Use the     buttons or drag-and-drop operations to move the users from one list to another.

## 11.4 Grant Manager

**Grant Manager** allows you to set the user access grants on certain database objects: [tables](#)<sup>[178]</sup>, [views](#)<sup>[242]</sup>, [procedures](#)<sup>[253]</sup>, etc. Granting privileges on the selected database objects allows a user to perform the defined operation over the objects.

Connecting to a database does not automatically include privileges to modify or even view data stored within that database. Privileges must be granted explicitly; [users](#)<sup>[711]</sup> cannot access any database objects until they have been granted privileges.

To open **Grant Manager**, select the **Tools |  Grant Manager** main menu item.



- [Using Navigation bar, Toolbar and context menu](#)<sup>[727]</sup>
- [Managing database-specific privileges](#)<sup>[729]</sup>
- [Managing DDL grants](#)<sup>[731]</sup>
- [Managing column permissions](#)<sup>[732]</sup>
- [Filtering objects in list](#)<sup>[733]</sup>

---

### See also:

[User Manager](#)<sup>[714]</sup>


[Embedded User Editor](#)<sup>[719]</sup>

[Role Manager](#)<sup>[722]</sup>


### 11.4.1 Using Navigation bar, Toolbar and context menu

The **Navigation bar**, **Toolbar** and **context menu** provide quick access to tools implemented in **Grant Manager**.


#### Database

 select a **database** for grants management












#### General

 **compile**<sup>[898]</sup> changes in privileges


 **refresh** the content of the window

 **restore** the default size and position of the window


#### Tools

-  Grant - grant a permission on an object to the selected grantee (user/role/view/trigger/procedure);
-  Revoke - revoke a previously granted permission;
-  Grant with GRANT Option - grant a permission (with GRANT Option) on an object to the selected grantee (user/role/view/trigger/procedure);
-  Grant All - grant all permissions on an object to the selected grantee (user/role/view/trigger/procedure);
-  Revoke All - revoke all previously granted permissions on an object;
-  Grant All with GRANT Option - grant all permissions (with GRANT Option) on an object to the selected grantee (user/role/view/trigger/procedure);
-  Grant on All - grant a permission (with GRANT Option) on all objects to the selected grantee (user/role/view/trigger/procedure);
-  Revoke on All - revoke a previously granted permission on all objects;
-  Grant on All with GRANT Option
-  *Grant All on All* - grant all permissions (with GRANT Option) on all objects to the selected grantee (user/role/view/trigger/procedure)
-  *Revoke All on All* - revoke all previously granted permissions on all objects;

#### Privileges for

 select an existing database [user](#)<sup>[711]</sup>/[role](#)<sup>[711]</sup>/[view](#)<sup>[242]</sup>/[trigger](#)<sup>[281]</sup>/[procedure](#)<sup>[253]</sup> to grant privileges to

#### Legend

 view the legend

**NOTE:** Items of the **Navigation bar** are also available on the **ToolBar** of **Grant Manager**. To enable the [toolbar](#)<sup>[884]</sup>, open the [Environment Options](#)<sup>[736]</sup> dialog, proceed to the [Windows](#)<sup>[743]</sup> section there and select  *Toolbar* (if you need the toolbar only) or  *Both* (if you need both the toolbar and the [Navigation bar](#)<sup>[882]</sup>) in the **Bar style for child forms** group.

#### See also:

[Managing database-specific privileges](#)<sup>[729]</sup>

[Managing DDL grants](#)<sup>[731]</sup>

[Managing column permissions](#)<sup>[732]</sup>

[Filtering objects in list](#)<sup>[733]</sup>





## 11.4.2 Managing database-specific privileges

This window allows you to define privileges on database objects and grant privileges to a [user](#)<sup>[711]</sup>, [role](#)<sup>[711]</sup>, [view](#)<sup>[242]</sup>, [trigger](#)<sup>[281]</sup>, or [procedure](#)<sup>[253]</sup>.

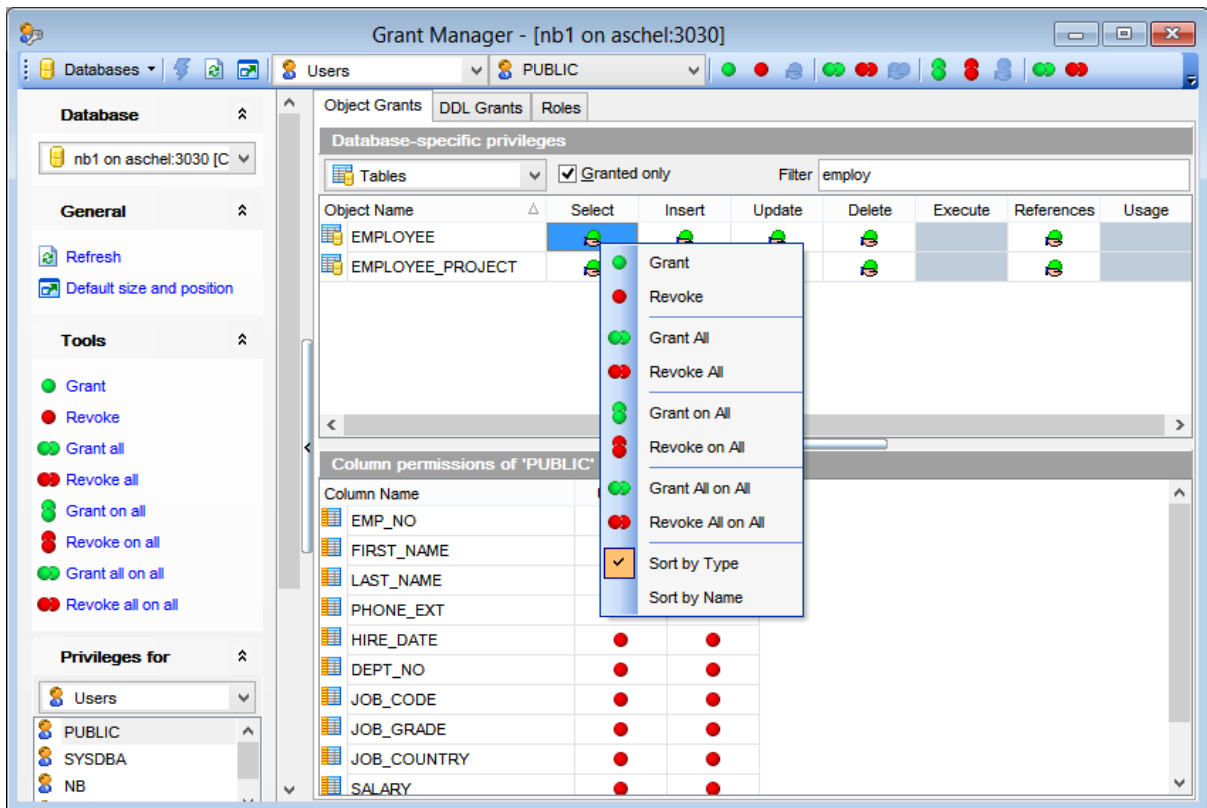
To edit the privileges of a [user](#)<sup>[711]</sup>/[role](#)<sup>[711]</sup>/[view](#)<sup>[242]</sup>/[trigger](#)<sup>[281]</sup>/[procedure](#)<sup>[253]</sup> on an object of a database, select the database using the **Database** pane of the [Navigation bar](#)<sup>[727]</sup>, then select a *user*, a *role*, a *view*, a *trigger*, or a *procedure* from the **Privileges for** list available within the [Navigation bar](#)<sup>[727]</sup>. Then select the type of objects to be displayed in the main working window using the drop-down list at the top.

The **Object Name** column contains the list of objects of the selected type; each subsequent column corresponds to the permission which can be granted on the selected object:

*SEL, INS, UPD, DEL, References* (for [tables](#)<sup>[178]</sup>, [views](#)<sup>[242]</sup>);

*Execute* (for [procedures](#)<sup>[253]</sup>);











*Usage* (for [exceptions](#)<sup>[289]</sup> and [generators](#)<sup>[293]</sup>).



The list of objects can be configured in several ways: you can specify that [only granted objects](#)<sup>[733]</sup> are displayed in the grid, or define an object name to [filter](#)<sup>[733]</sup> the objects by that name.

Right-click a cell to grant a specific permission on a certain object. To grant a permission on an object, you should find the object in the **Object Name** list and the column with the corresponding permission. The [context menu](#)<sup>[727]</sup> of a cell contains possible permissions that can be granted:

- *Grant*

-  Revoke (removes a previously granted permission)
-  Grant with GRANT Option
-  Grant All
-  Revoke All
-  Grant All with GRANT Option
-  Grant on All
-  Revoke on All
-  Grant on All with GRANT Option
-  Grant All on All
-  Revoke All on All

---

**See also:**

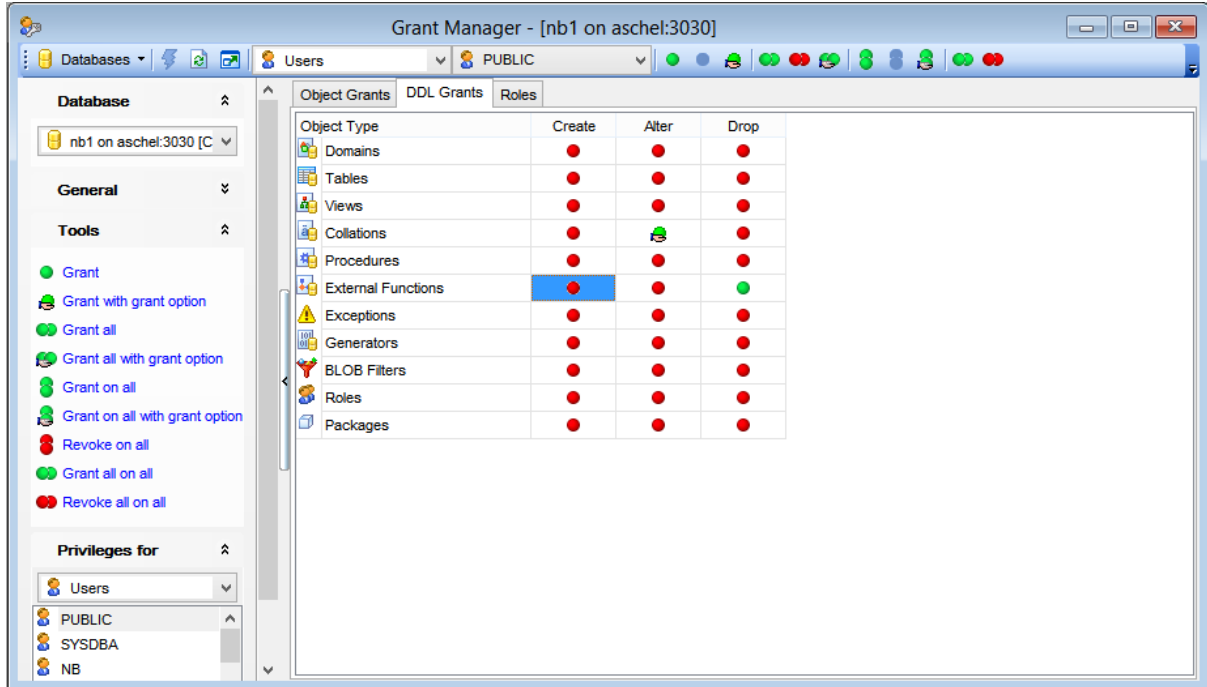
[Using Navigation bar and context menu](#)<sup>[727]</sup>

[Managing column permissions](#)<sup>[732]</sup>

[Filtering objects in list](#)<sup>[733]</sup>

### 11.4.3 Managing DDL grants

This tab allows you to define DDL grants (Create, Alter, Drop) for different object types to a [user](#)<sup>[71]</sup>, [role](#)<sup>[71]</sup>, [view](#)<sup>[242]</sup>, [trigger](#)<sup>[281]</sup>, or [procedure](#)<sup>[253]</sup>.



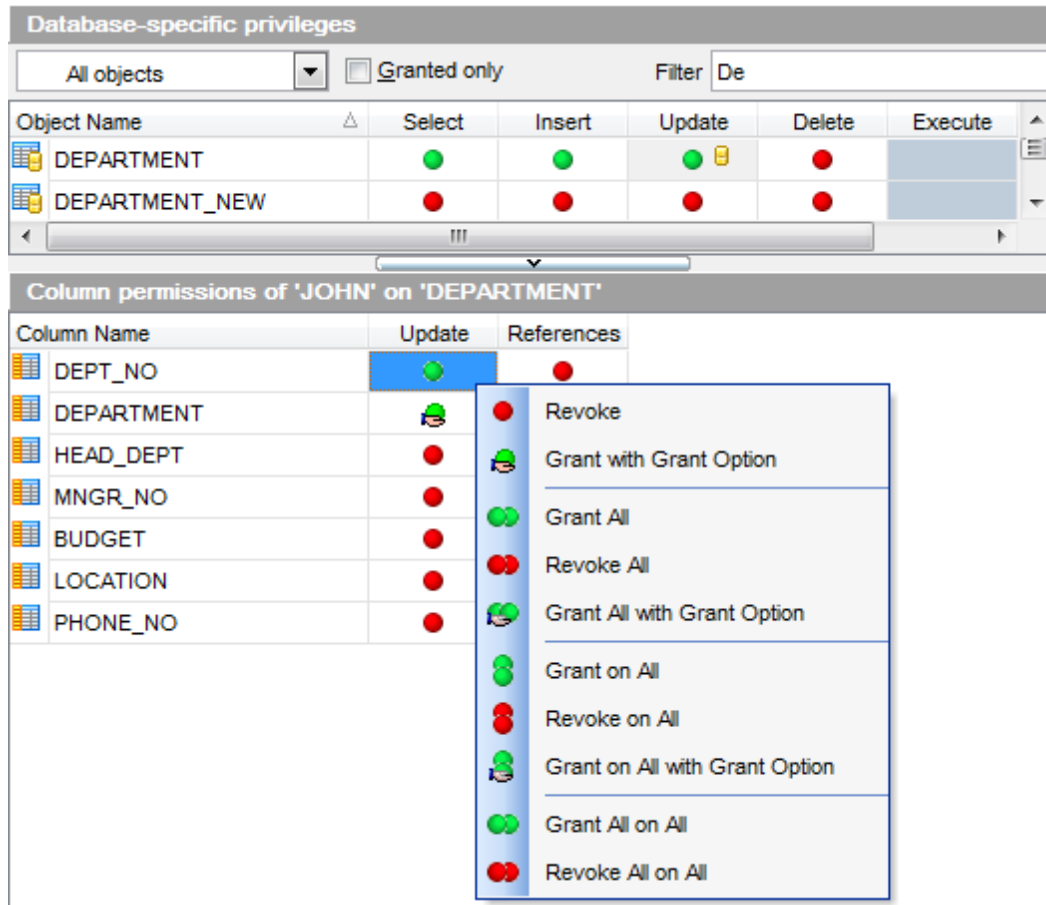
Right-click a cell to grant a specific permission on a certain object type. The context menu of a cell contains possible permissions that can be granted:

- Grant
- Revoke (removes a previously granted permission)
- Grant with GRANT Option
- Grant All
- Revoke All
- Grant All with GRANT Option
- Grant on All
- Revoke on All
- Grant on All with GRANT Option
- Grant All on All
- Revoke All on All

### 11.4.4 Managing column permissions

The **Column permissions of <grantee\_name> on <object\_name>** area displays the grid with table/view columns and the privileges that can be granted to the selected *user*, *role*, *view*, *trigger*, or *procedure*.

Use items of the [context menu](#)<sup>[727]</sup> to grant/revoke permissions on columns.



If permissions on a column have been defined (for a *table* or *view*), the corresponding permission cell of the table/view contains a specific icon.

#### See also:

[Using Navigation bar, Toolbar and context menu](#)<sup>[727]</sup>

[Managing database-specific privileges](#)<sup>[729]</sup>

[Filtering objects in list](#)<sup>[733]</sup>

### 11.4.5 Filtering objects in list

In large databases with huge amount of objects it may be difficult to find the required object. For this purpose you are provided with several tools for *filtering objects in list*:

- the **Object type** control: select the required object type from the drop-down list (e.g. *Tables*);
- the **Filter** panel: enter a character string to filter the object names by that string;
- the  **Granted only** option: check this option to display objects with at least one granted operation.

Database-specific privileges						
All objects	<input checked="" type="checkbox"/> Granted only	Filter C				
Object Name	Select	Insert	Update	Delete	Execute	References
C2	●	●	●	●		●
COUNTRY	●	●	●	●		●

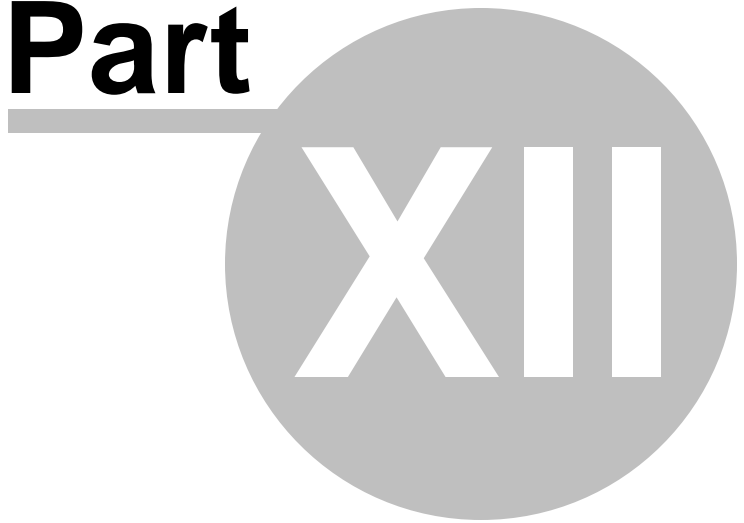
**See also:**

[Using Navigation bar, Toolbar and context menu](#)<sup>[727]</sup>

[Managing database-specific privileges](#)<sup>[729]</sup>

[Managing column permissions](#)<sup>[732]</sup>

**Part**



**XII**

## 12 Options

**SQL Manager for InterBase/Firebird** provides you with capabilities for flexible personalization of the application.

Please see the chapters below to learn how to use personalization tools effectively.

- [Environment Options](#)<sup>[736]</sup>
- [Editor Options](#)<sup>[796]</sup>
- [Save Settings](#)<sup>[815]</sup>
- [Localization](#)<sup>[820]</sup>
- [Keyboard Templates](#)<sup>[825]</sup>
- [Object Templates](#)<sup>[827]</sup>

The **Options** menu allows you to export all program settings to a \*.reg file for future use, e.g. when you need to move the settings to another machine (see [Save Settings](#)<sup>[815]</sup> for details).

**Hint:** Each of the SQL Manager Options dialogs is provided with the **Reset to defaults button**. You can use it either to **Reset current category** or to **Reset all categories**.


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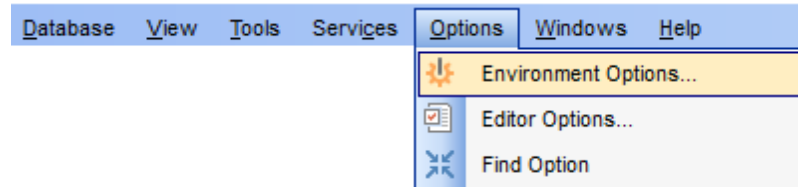
### See also:

- [Getting Started](#)<sup>[37]</sup>
- [Database Explorer](#)<sup>[63]</sup>
- [Database Management](#)<sup>[87]</sup>
- [Database Objects Management](#)<sup>[162]</sup>
- [Query Management Tools](#)<sup>[328]</sup>
- [Data Management](#)<sup>[368]</sup>
- [Import/Export Tools](#)<sup>[443]</sup>
- [Database Tools](#)<sup>[532]</sup>
- [Services](#)<sup>[651]</sup>
- [Security management](#)<sup>[711]</sup>
- [External Tools](#)<sup>[832]</sup>
- [How To...](#)<sup>[838]</sup>

## 12.1 Environment Options

**Environment Options** allow you to customize general options of the **SQL Manager** application.

To open the **Environment Options** window, select the **Options | Environment Options...** [main menu](#)<sup>[882]</sup> item, or use the **Environment Options**  button on the main [toolbar](#)<sup>[884]</sup>.



### [Preferences](#)<sup>[738]</sup>

[Full mode activation](#)<sup>[740]</sup>

### [Confirmations](#)<sup>[741]</sup>

### [Appearance](#)<sup>[743]</sup>

### [DB Explorer](#)<sup>[745]</sup>

[Search](#)<sup>[747]</sup>

[SQL Assistant](#)<sup>[748]</sup>

### [Tools](#)<sup>[749]</sup>

[Query Data](#)<sup>[750]</sup>

[SQL Monitor](#)<sup>[753]</sup>

[Execute Script](#)<sup>[755]</sup>

[Design Query](#)<sup>[757]</sup>

[Style & Color](#)<sup>[759]</sup>

[Database Designer](#)<sup>[763]</sup>

[Extract Database](#)<sup>[766]</sup>

[Print Metadata](#)<sup>[767]</sup>

[Database Monitor](#)<sup>[768]</sup>

[Dependencies](#)<sup>[769]</sup>

[Data Export](#)<sup>[771]</sup>

### [Object Editors](#)<sup>[772]</sup>

[Table Editor](#)<sup>[774]</sup>

[Visual Mode Editors](#)<sup>[775]</sup>

### [Fonts](#)<sup>[777]</sup>

### [Grid](#)<sup>[779]</sup>

[Data Options](#)<sup>[782]</sup>

[Print Data](#)<sup>[785]</sup>

[Color & Formats](#)<sup>[786]</sup>

[Advanced](#)<sup>[788]</sup>

[Column Options](#)<sup>[790]</sup>

### [Localization](#)<sup>[792]</sup>

### [Global Shortcuts](#)<sup>[794]</sup>

### [Find Option](#)<sup>[795]</sup>

**See also:**



[Editor Options](#) 

### 12.1.1 Preferences

**Restore desktop on connect**

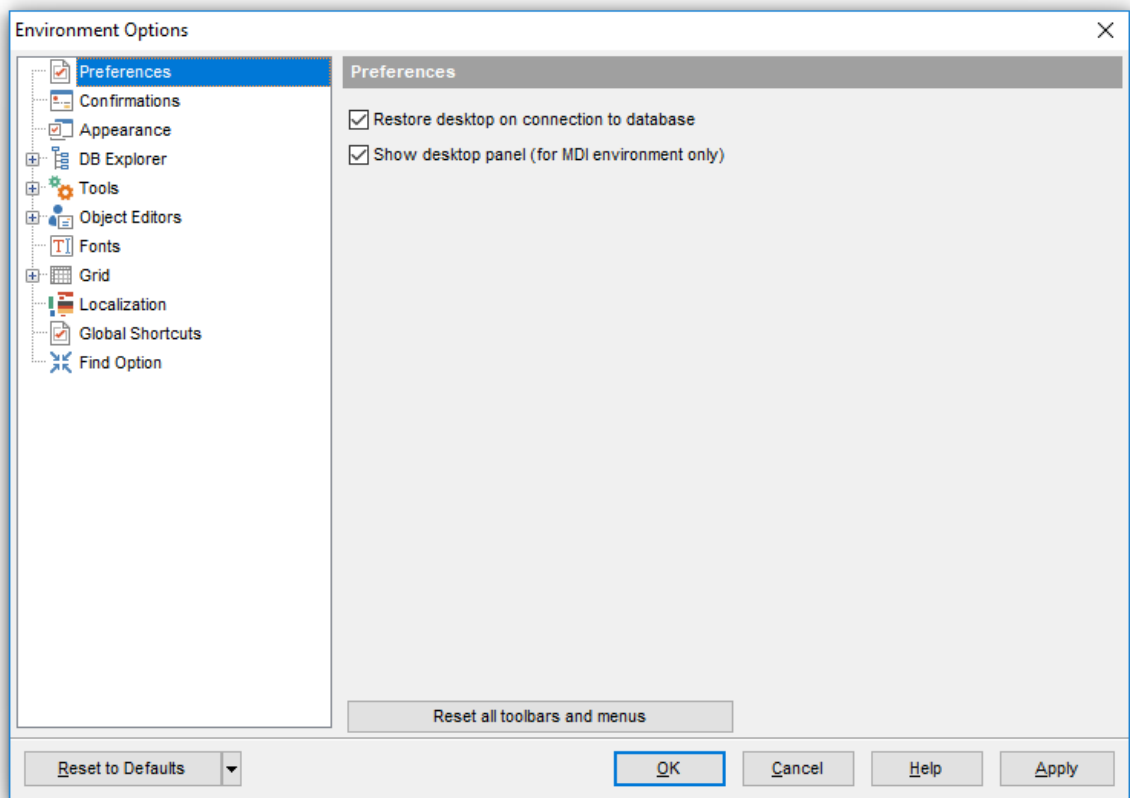
This option determines whether the previously opened windows and their positions should be restored upon connection to the database.

**Show desktop panel** (for MDI Environment style only)

Displays [Desktop Panel](#)<sup>[44]</sup> when no child windows are open.

**Show Full Version features**

This option is available in the Lite version of **SQL Manager**. When selected, a 30-day period of fully-functional usage is [activated](#)<sup>[740]</sup>.



If necessary, you can **reset all toolbars and menus** of the application using the corresponding button.

**Hint:** The **Reset to Defaults** button which is common for all sections of the **Environment Options** dialog opens a menu with items allowing you to discard all changes and reset options of the *current category* or of *all categories* to their defaults.

**See also:**

[Confirmations](#)<sup>[741]</sup>

[Tools](#)<sup>[749]</sup>

[Fonts](#) 

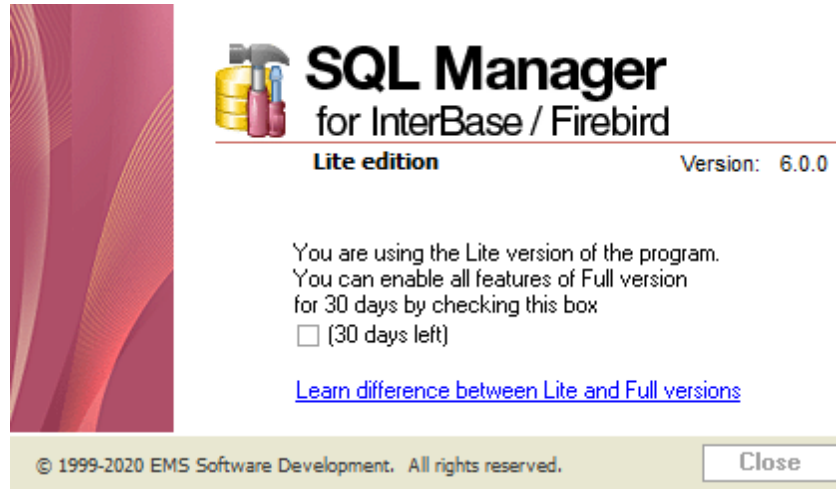
[Grid](#) 

[Localization](#) 

[Find Option](#) 

### 12.1.1.1 Full mode activation

Note that when using **the FREE Lite version of SQL Manager for InterBase/Firebird** (which contains functional limitations) you can activate a 30-day period of fully-functional usage. During this period you will get the splash screen displaying the number of days left every time you start the application. After the period expires, you will be able to continue using the Lite version.



To activate *the 30-day Full version mode*, please enable the  **Show Full Version features** option available on the [Preferences](#)<sup>[738]</sup> page of the **Environment Options** dialog (note that this option is only available in the Lite version of **SQL Manager**).

## 12.1.2 Confirmations

### **Confirm saving the object (or document) upon closing the editor**

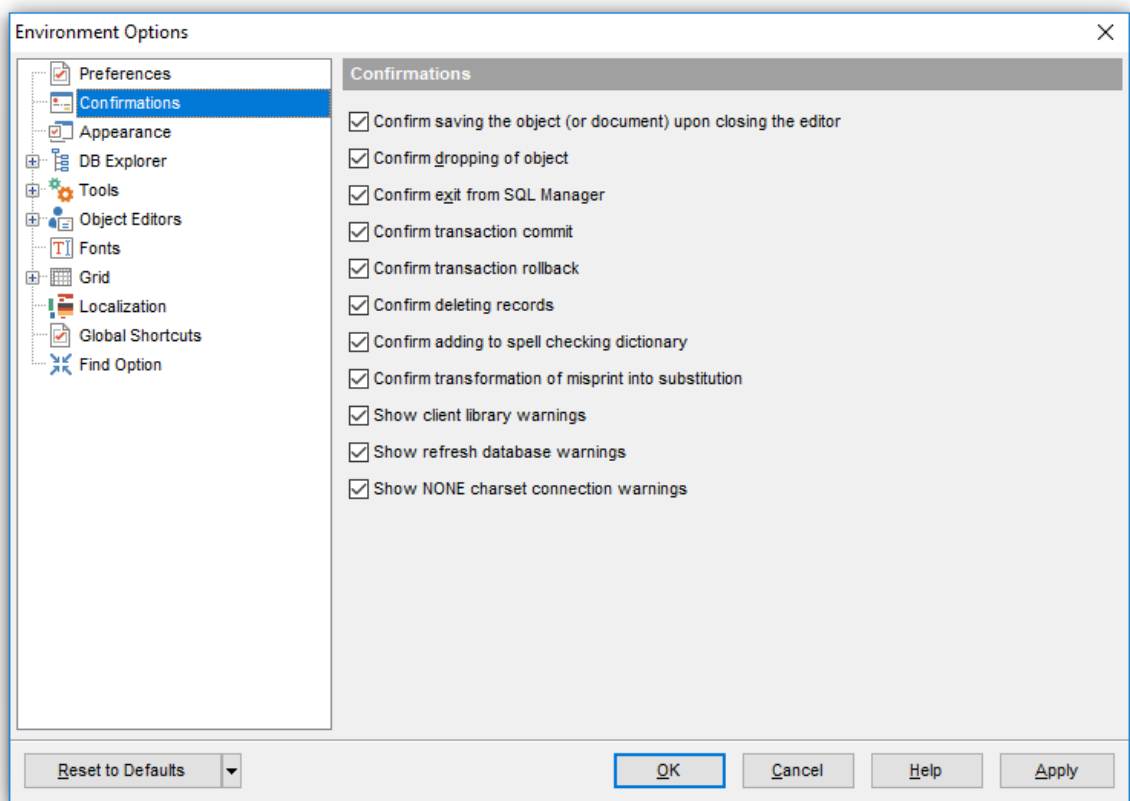
If this option is selected, the program requires confirmation each time you want to save changes in a database object or document.

### **Confirm dropping of object**

If this option is selected, the program requires confirmation of [dropping](#)<sup>[162]</sup> a database object.

### **Confirm exit from SQL Manager**

If this option is selected, you are prompted for confirmation each time when you exit the application.



### **Confirm transaction commit**

If this option is checked, the program requires confirmation on attempt to commit a transaction.

### **Confirm transaction rollback**

If this option is checked, the program requires confirmation on attempt to rollback a transaction.

### **Confirm deleting records**

This option enables/disables a confirmation dialog for deleting records.

**Confirm addition into spell checking dictionary**

Enable this option if you wish to be prompted for adding a word to the dictionary which is used for checking words spelling (see [Spell Checking](#)<sup>[812]</sup>).

**Confirm transformation of misprint into substitution**

If this option is selected, you need to confirm replacing a misprinted word with a corresponding substitution word (see [Spell Checking](#)<sup>[812]</sup>).

**Show client library warnings**

If this option is selected, the application displays warnings returned by the client library used for connection.

**Show refresh database warnings**

If this option is selected, the application displays warnings received upon refreshing a database.

**Show NONE charset connection warnings**

If this option is selected, the application displays warnings upon connection with *NONE* charset specified.

**Confirm successful compilation**

This option enables/disables the [Compile](#)<sup>[898]</sup> window.

## 12.1.3 Appearance

### Theme

Select the main color theme for the application: Light, Blue or Dark.

### Environment style

This group allows you to define the basic window environment -  *MDI* (like Microsoft® Office) or  *Floating windows* (like Borland® Delphi IDE).

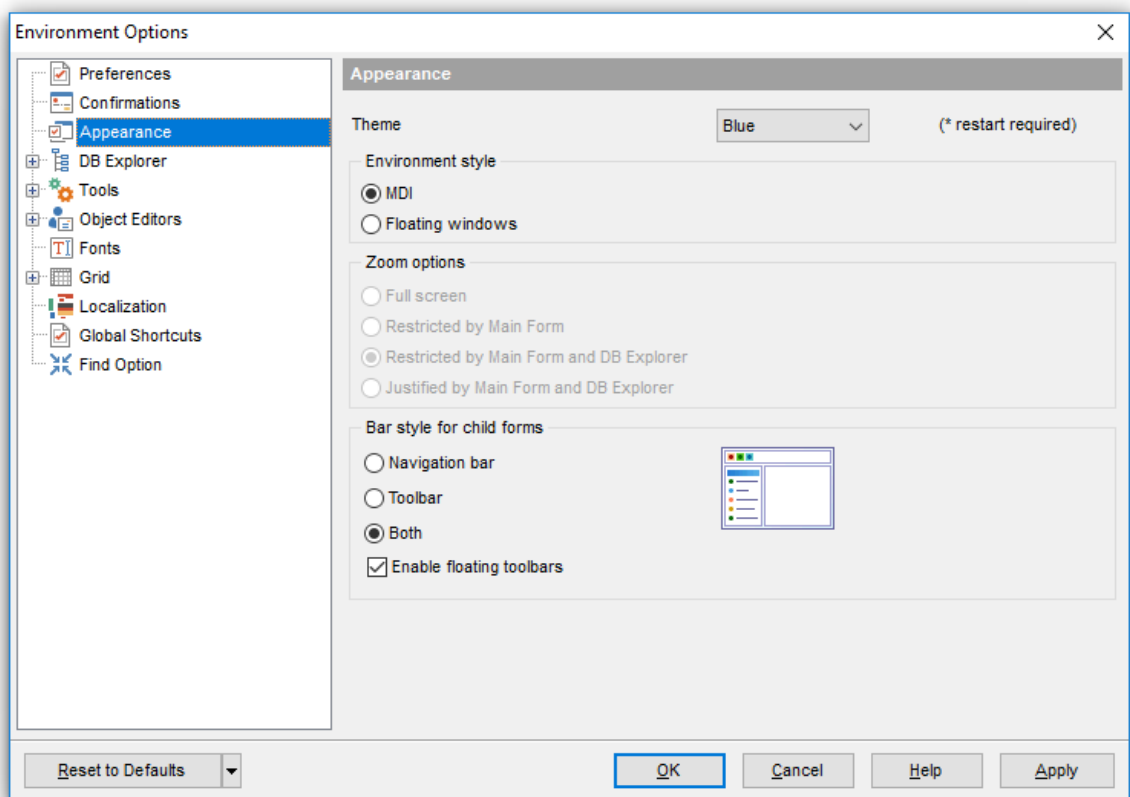
### Windows restrictions

This option allows you to set the number of editors ([Table Editor](#)<sup>[184]</sup>, [Query Data](#)<sup>[330]</sup>, etc.) that can be opened simultaneously.

### Zoom options

This group of options is only available if **Environment Style** is set to *Floating windows environment*. It allows you to set maximization size for child windows:

- Full screen*
- Restricted by Main Form*
- Restricted by Main Form and DB Explorer*
- Justified my Main Form and DB Explorer*



### Bar style for child forms

Here you can define the location of action buttons:  within the *Navigation bar* (on the left) and/or  on the *Toolbar*.

If necessary, you can also  **Enable floating toolbars** for your application.





## 12.1.4 DB Explorer

### General options

**Show hosts in DB Explorer**

Shows/hides hosts in the [DB Explorer](#)<sup>[63]</sup> tree.

**Show table subobjects**

Shows/hides [table](#)<sup>[178]</sup> subobjects (fields, indexes, etc.) in the [DB Explorer](#)<sup>[63]</sup> tree.

**Show procedure subobjects**

Toggles displaying [stored procedure](#)<sup>[253]</sup> subobjects (input/output parameters) in the [DB Explorer](#)<sup>[63]</sup> tree.

**Show UDF subobjects**

Toggles displaying [UDF](#)<sup>[272]</sup> subobjects in the [DB Explorer](#)<sup>[63]</sup> tree.

**Ping hosts**

Checking the host for availability.

**Sort by aliases**

Use this option to apply sorting registered databases by their aliases in the [DB Explorer](#)<sup>[63]</sup> tree.

**Rename objects by editing in place**

Allows you to edit object names in [DB Explorer](#)<sup>[63]</sup> by selecting any object and clicking its alias one more time.


**Auto expand navigation pane**

If this option is checked, the list of navigation tabs in DB Explorer is expanded automatically on program launch.

**Show hints**

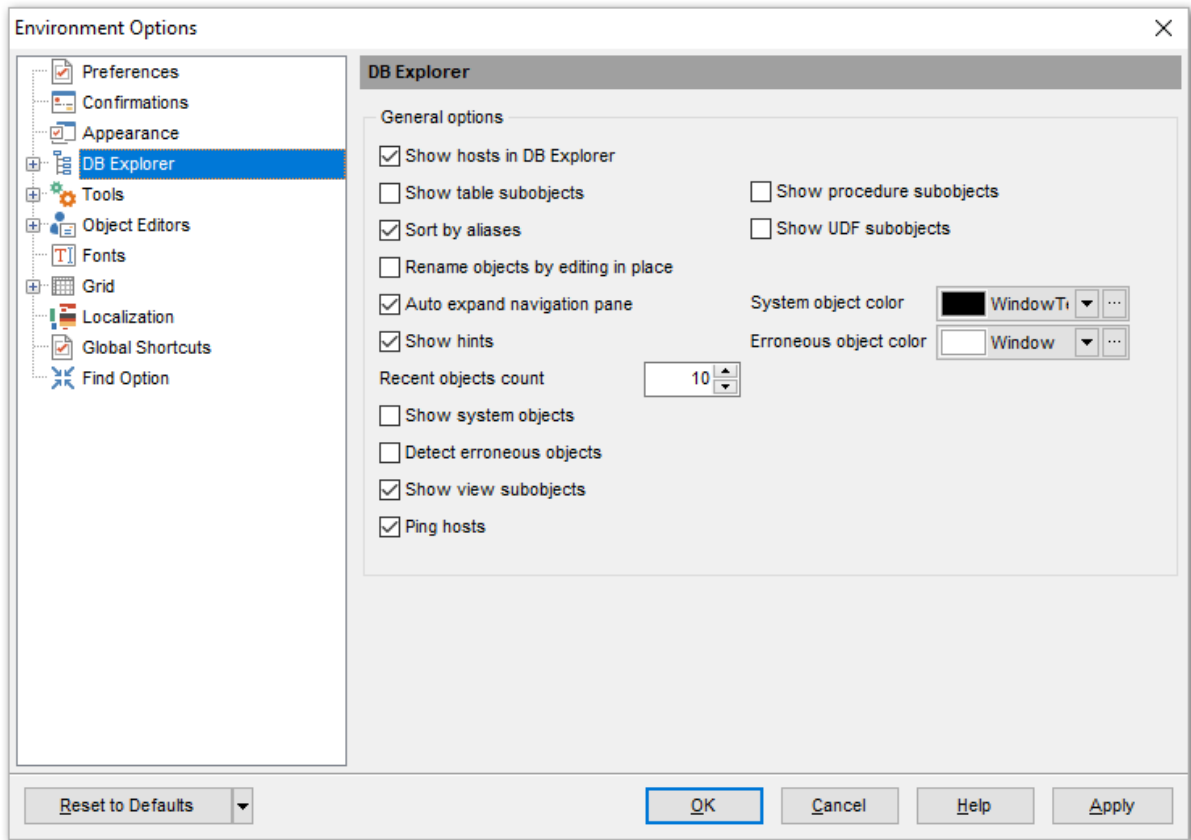
The option enables/disables hints for objects in the [DB Explorer](#)<sup>[63]</sup> tree.

Select colors for **system objects / erroneous objects** from the **System object color / Erroneous object color** drop-down lists. If you select the **Default** item, the default color will be applied.

**Note:** When setting colors, select an item from the drop-down list or click the ellipsis  button to select a color using the **Color** dialog where you can specify the required color from the palette.

**Recent objects count**

Defines the number of objects displayed within the [Recent](#)<sup>[75]</sup> menu of the [DB Explorer](#)<sup>[63]</sup>.



**Show system objects**

Shows/hides system objects (having names starting with *RDB\$*) in the [DB Explorer](#)<sup>631</sup> tree.

**Detect erroneous objects**

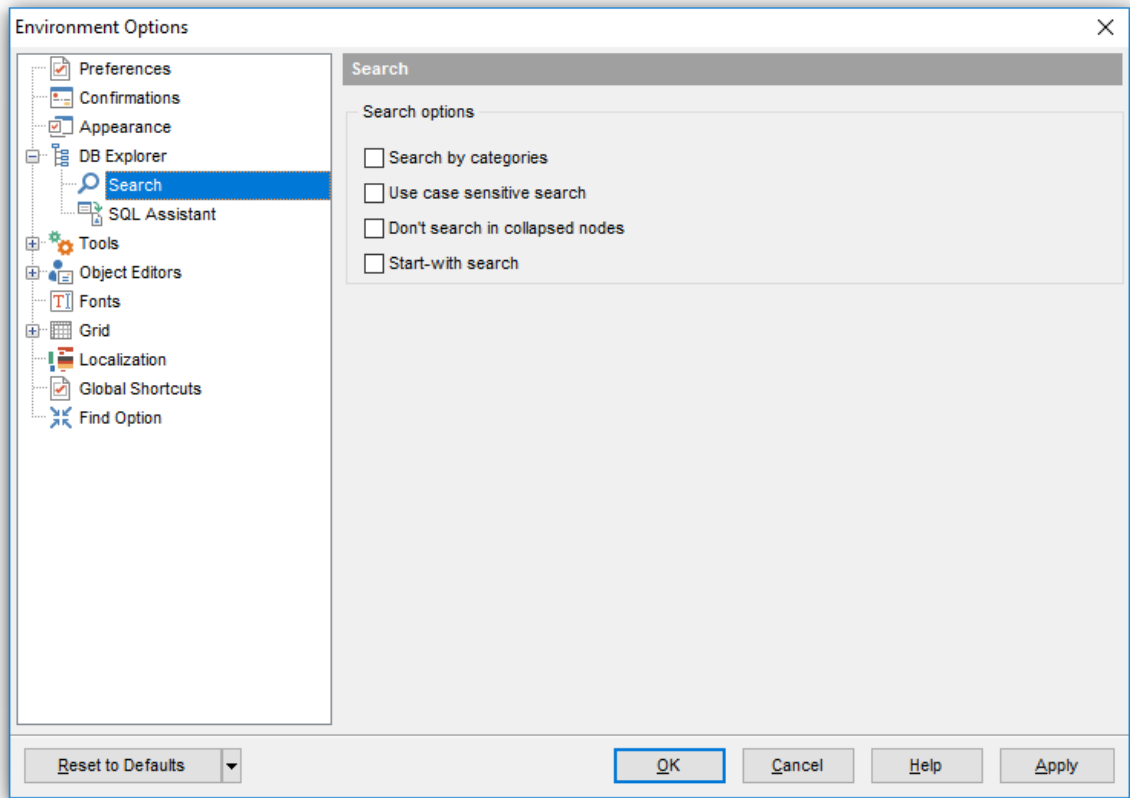
Enables/disables displaying the objects with "broken" DDL with different icons in the tree.

**Show view subobjects**


Toggles displaying view subobjects in the [DB Explorer](#)<sup>631</sup> tree.

### 12.1.4.1 Search

Use these options to adjust search settings for the [search string](#)<sup>[78]</sup> in DB Explorer.



**Search by categories**

Enable this option to only search in category names. Use this option to quickly access the object node. You can use the corresponding  button on the Search toolbar in DB Explorer to quickly toggle the option.

**Use case sensitive search**

Enable this option to differentiate uppercase characters from lowercase ones using the [Search Panel](#)<sup>[78]</sup>.

**Don't search in collapsed nodes**

Enable this option to restrict searching in the collapsed nodes in DB Explorer.

**Start-with search**

Enable this option to search for the names starting with the specified text only.

### 12.1.4.2 SQL Assistant

#### Table / View / Procedure / UDF / Exception / Generator details in SQL Assistant

These options switch the [SQL Assistant](#)<sup>[80]</sup> mode for displaying details for InterBase/Firebird [objects](#)<sup>[162]</sup> selected in the [DB Explorer](#)<sup>[63]</sup> tree:

for [tables](#)<sup>[178]</sup>: *fields, primary keys, uniques, Foreign keys, checks, indexes, triggers, description or definition;*

for [views](#)<sup>[242]</sup>: *fields, triggers, description or definition;*

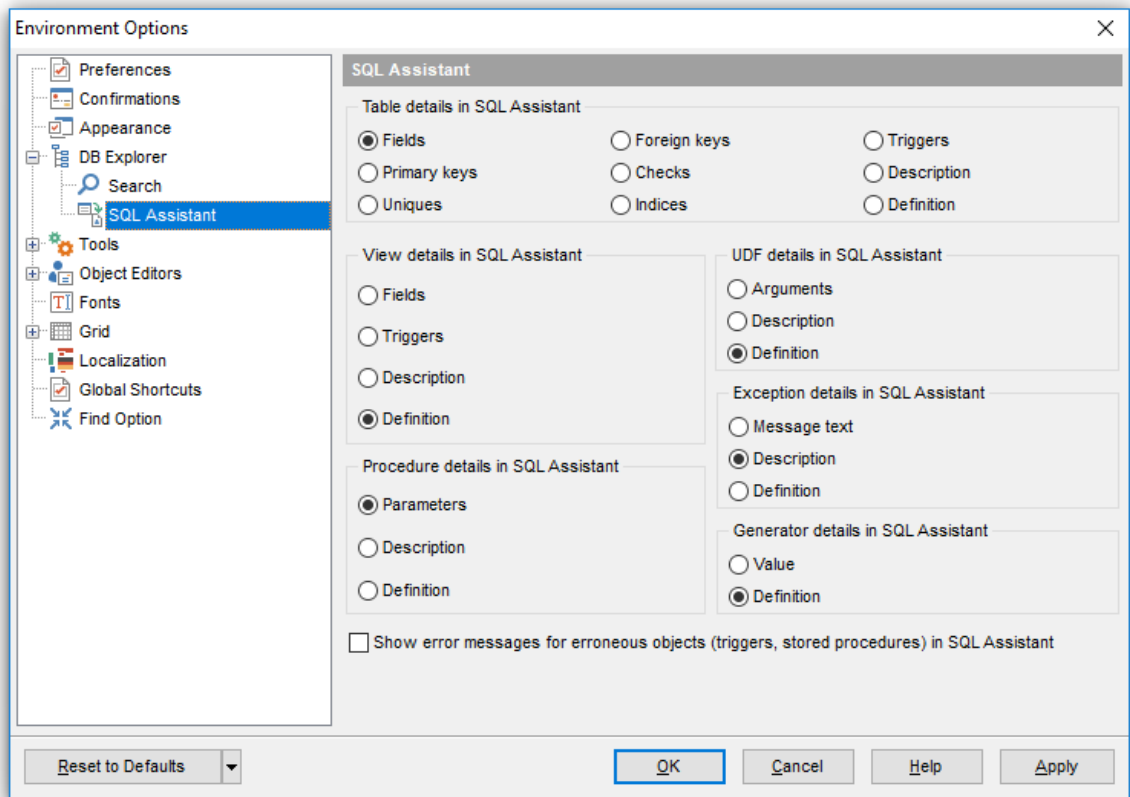
for [procedures](#)<sup>[253]</sup>: *parameters, description or definition;*

for [UDFs](#)<sup>[272]</sup>: *arguments, description or definition;*

for [exceptions](#)<sup>[289]</sup>: *message text, description or definition;*

for [generators](#)<sup>[293]</sup>: *value or definition.*

If necessary, you can specify to  **Show error messages for erroneous objects (triggers, stored procedures) in SQL Assistant.**



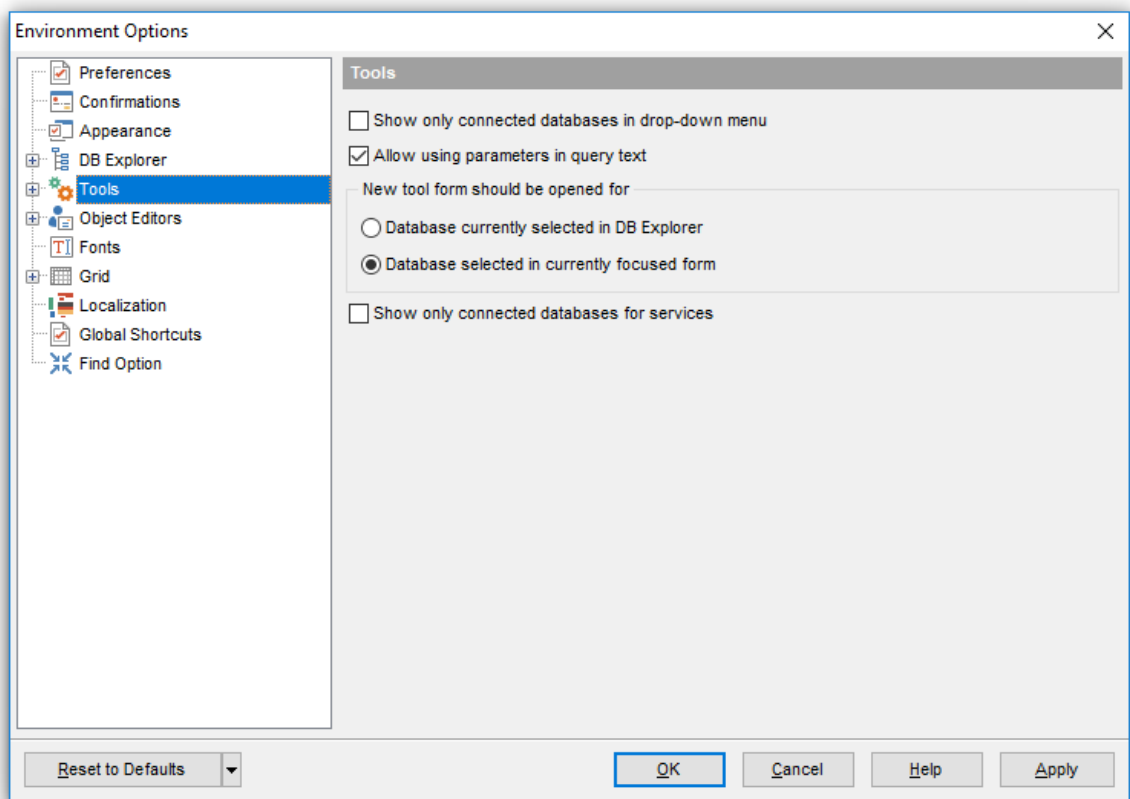
## 12.1.5 Tools

### Show only connected databases in drop-down menu

If this option is checked, only [connected](#)<sup>[67]</sup> databases are displayed in drop-down menus of such tools as [Query Builder](#)<sup>[64]</sup>, [Script editor](#)<sup>[64]</sup>, etc.

### Allow using parameters in query text

This feature allows you to specify different values within a query in a [popup dialog](#)<sup>[366]</sup> just before the query execution. Use the colon (':') character before an identifier (e.g. :P1) to specify a parameter within the query.



### **New tool form should be opened for**

Use this group to specify the database to open new editors for:

- Database currently selected in DB Explorer
- Database selected in currently focused form

### Show only connected databases for services

If this option is checked, only [connected](#)<sup>[67]</sup> databases are displayed in services such as [Backup Database](#)<sup>[652]</sup>, [Restore Database](#)<sup>[663]</sup>, etc.

### 12.1.5.1 Query Data

**Explain query on execution**

If this option is checked, the [query plan](#)<sup>[337]</sup> is displayed automatically upon query execution in [Query Data](#)<sup>[330]</sup>.

**Show result for each query**

With this option checked, when you [execute](#)<sup>[340]</sup> two or more queries, the result of each query will be displayed one by one. Otherwise, only the result of the last query will be displayed.

**Execute selected text separately**

Check this option to allow [execution](#)<sup>[340]</sup> of the selected statement separately.

**Write only successfully executed queries to database SQL log file**

If this option is checked, unsuccessful queries will not be saved to the Query Data log file (see [Setting log options](#)<sup>[134]</sup> in the [Database Registration Info](#)<sup>[115]</sup> dialog).

**Show results on Query tab**

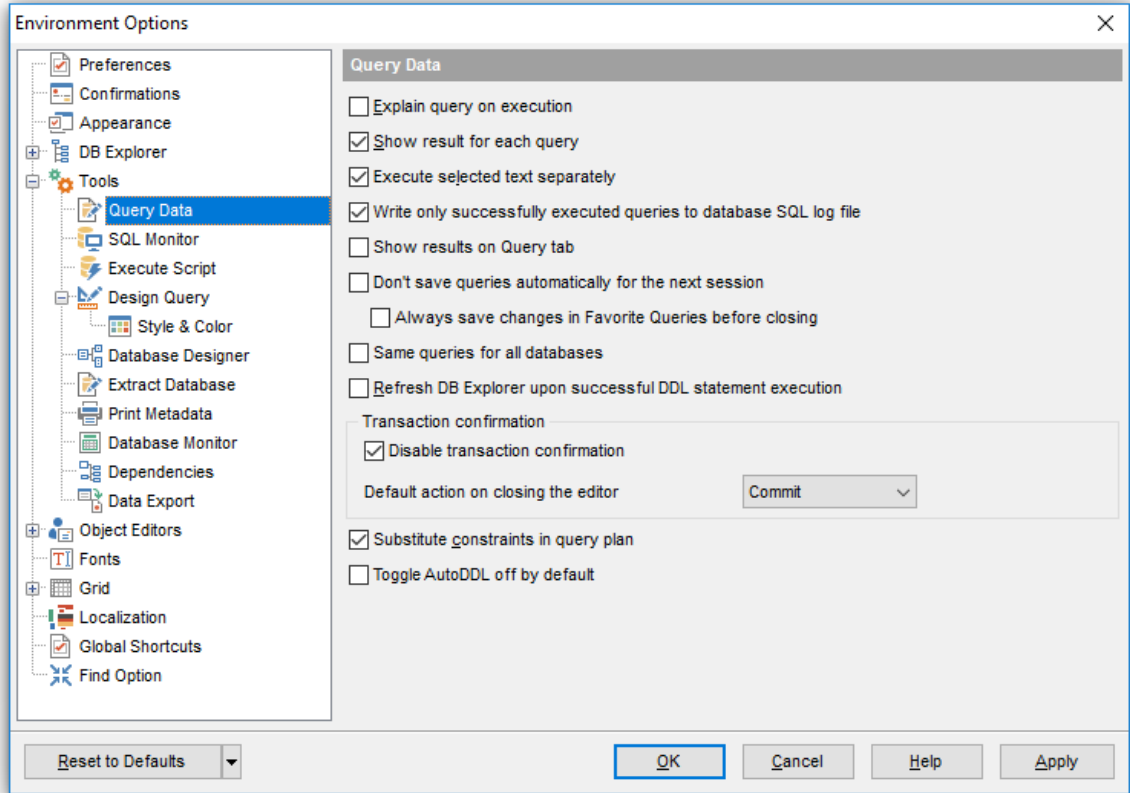
If this option is checked, the **Results** tab is displayed as a separate tab.

**Don't save queries automatically for the next session**

If this option is checked, the SQL query text will not be saved. Otherwise, it will be saved in Windows registry and will be therefore available in the next sessions of application.

**Always save changes in Favorite Queries before closing**

This option enables/disables saving changes in SQL queries marked as [Favorite](#)<sup>[85]</sup> automatically upon closing the editor.



**Same queries for all databases**

With this option enabled, [Query Data](#)<sup>[330]</sup> stores all queries in a shared repository, so that switching to another database does not cause loading queries of that database (applying this option does not affect currently opened copies of Query Data). The value of the option can be changed freely without any risk to lose the query repository content.

**Refresh DB Explorer upon successful DDL statement execution**

If this option is selected, the content of [DB Explorer](#)<sup>[63]</sup> is refreshed each time a DDL statement is [executed](#)<sup>[340]</sup> successfully in [Query Data](#)<sup>[330]</sup>.

### Transaction confirmation

**Disable transaction confirmation**

If this option is checked, no transaction confirmation will be required on closing [Query Designer](#)<sup>[347]</sup> and [Query Data](#)<sup>[330]</sup>. Specify the **default action** (*Commit* or *Rollback*) and this action will be performed automatically each time when you close the editor.

**Substitute constraints in query plan**

If this option is checked, natively used constraints are substituted with indexes in the [query plan](#)<sup>[337]</sup>.

**Toggle AutoDDL off by default**

Toggles the default mode (on/off) for automatic committing of each statement.

### See also:

[Query Data](#) 




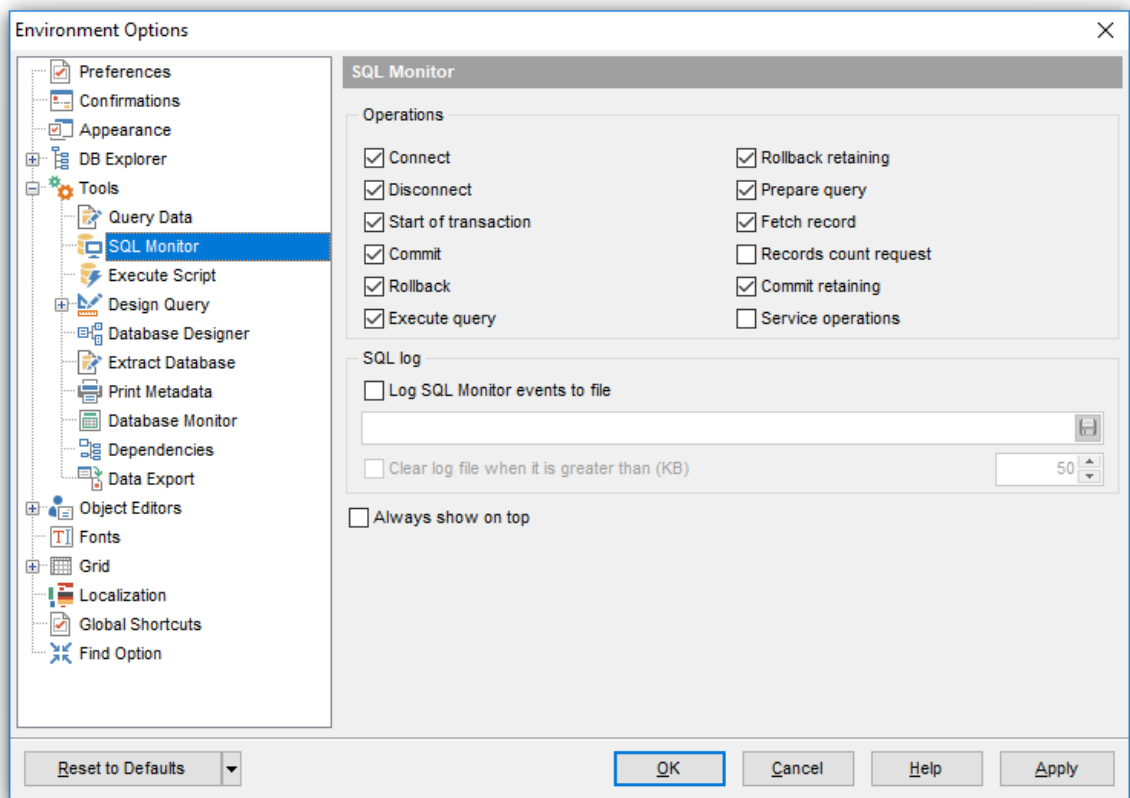
### 12.1.5.2 SQL Monitor

#### Operations

This group allows you to specify which operations will be monitored by the application: *connect, disconnect, start of transaction, commit, commit retaining, service operations, rollback, rollback retaining, execute query, prepare query, fetch record.*

#### SQL log

This group of options allows you to enable logging of all [SQL Monitor](#)<sup>539</sup> events to a file. Check the **Log SQL Monitor events to file** option, specify the path to the log file using the  button, and enter a name for the \*.sql file. To clear the log file after it reaches some definite size, check the **Clear log file when it is greater than...** option and set the maximum file size (in Kilobytes).



#### Show time of operation

If this option is checked, the execution time of logged operations is added.

#### Always show on top

Select this option if you want to display the [SQL Monitor](#)<sup>539</sup> window in the foreground permanently.

#### See also:

[SQL Monitor](#)<sup>539</sup>



### 12.1.5.3 Execute Script

**Abort script on error**

If this option is checked, script execution is aborted if an error occurs.

**Note:** Errors of *CONNECT* and *CREATE DATABASE* statements abort script execution anyway.

**Show statements explorer**

With this option checked, [Execute Script Editor](#)<sup>[542]</sup> parses the loaded script to enable fast navigation in the [Script Explorer](#)<sup>[547]</sup> tree.

**Show message when done**

Displays a message box on finishing script execution.

**Execute selected text separately**

Check this option to allow [execution](#)<sup>[340]</sup> of the selected statement separately.

**Don't clear error list on selected text execution**

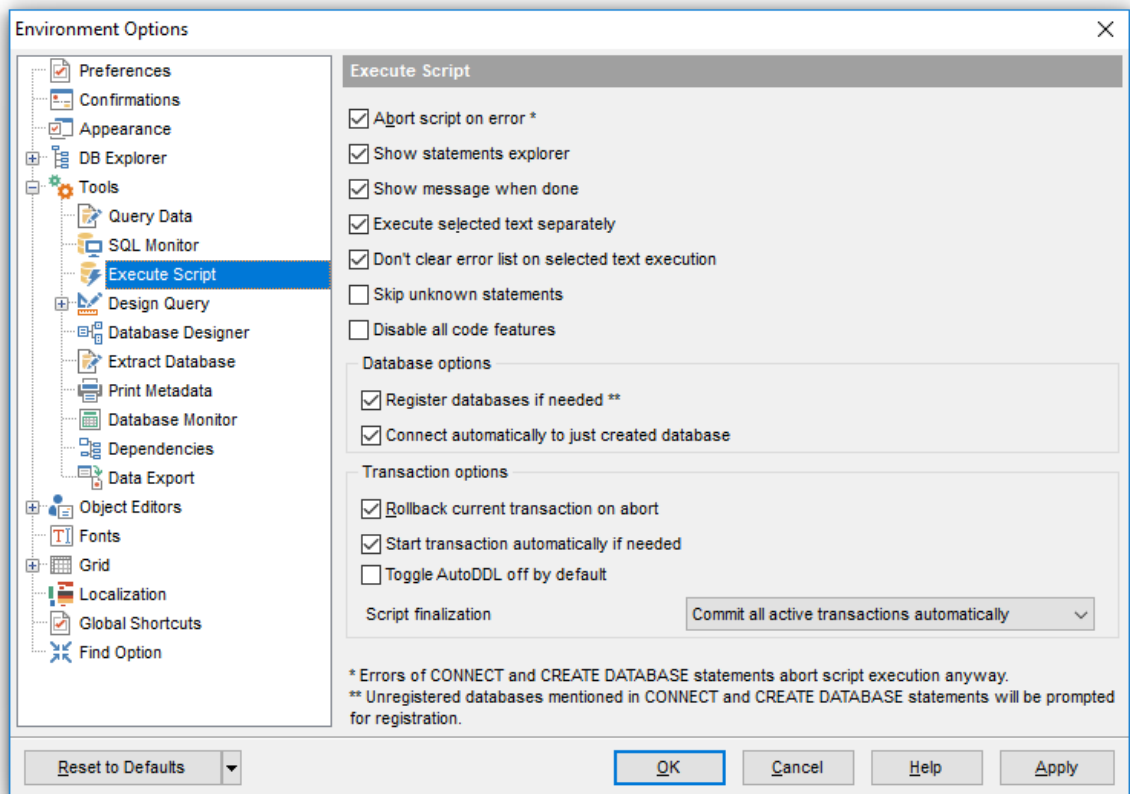
If this option is checked, the error list is not cleared upon execution of the selected statement.

**Skip unknown statements**

Skips unknown statements on script execution.

**Disable all code features in Execute Script**

Disables syntax highlighting and code folding to speed up processing of script.



### Database options

**Register databases if needed**

If the option is enabled, the [Database Registration Info](#)<sup>[115]</sup> dialog will be displayed automatically after successful `CREATE DATABASE` or `CONNECT` script execution.

**Note:** Unregistered databases mentioned in the `CONNECT` and `CREATE DATABASE` statements will be prompted for registration.

**Connect automatically to just created database**

Enable this option to automatically connect to just created database in DB Explorer.

### Transaction options

**Rollback current transaction on abort**

This option evokes automatic rollback of the current transaction when script execution is aborted (due to an error or if interrupted by user).

**Start transaction automatically if needed**

Enable this option to automatically start transaction on execution.

**Toggle AutoDDL off by default**

Toggles the default mode (on/off) for automatic committing of each statement.

### Script finalization

*Commit all active transactions automatically*

All transactions are committed automatically after the script has been executed.

*Ask user to select required action*

The user is prompted to commit or abort transaction after the script has been executed.

---

### See also:

[Execute Script Editor](#)<sup>[542]</sup>

#### 12.1.5.4 Design Query

##### General options

**Allow SELECT queries only**

When this option is checked, the *INSERT*, *UPDATE* and *DELETE* statements are not allowed in [Query Builder](#)<sup>[347]</sup>.

**Select condition row**

Displays the selected condition in different rows on the **Criteria** and **Grouping Criteria** tabs of [Query Builder](#)<sup>[347]</sup>.

**Drag field name**

Displays the dragged field name in the **Builder** area.

**Hide selection when inactive**

Hides the selection when the [Query Builder](#)<sup>[347]</sup> window is inactive.

**Show field types**

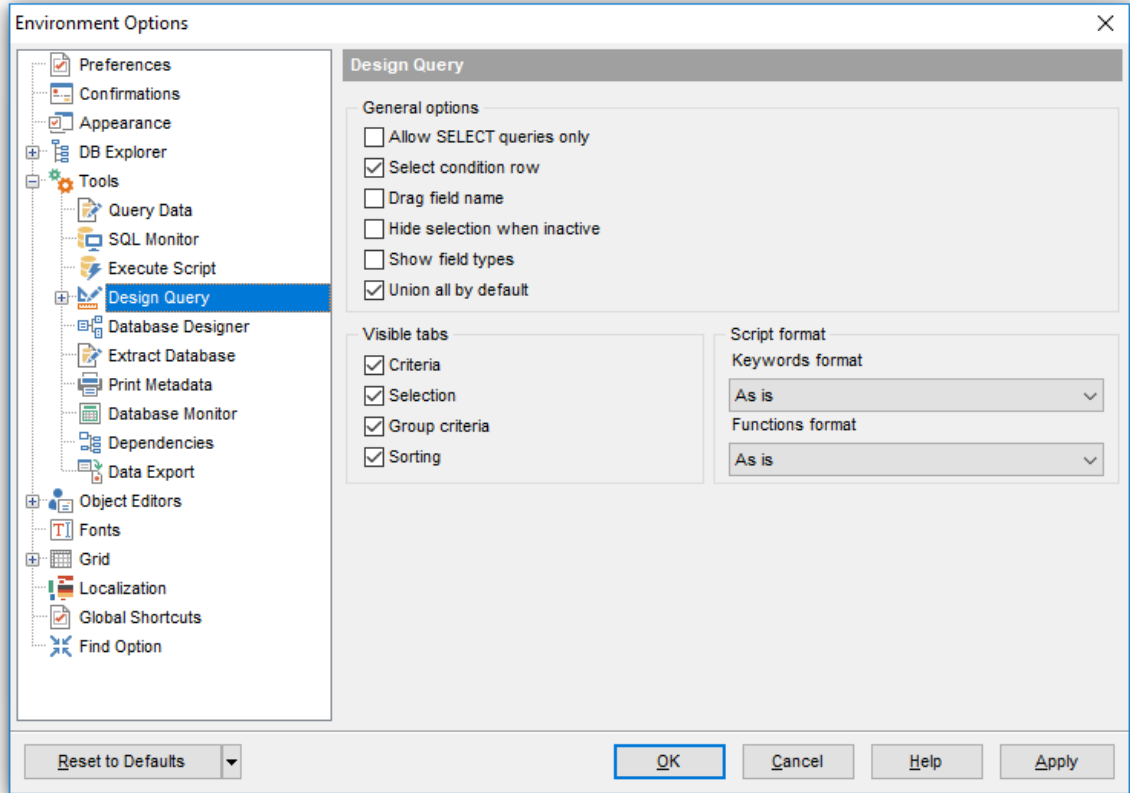
Displays the field data type next to the field name in the table box.

**Union all by default**

Check this option to use the *UNION ALL* expression in [Query Builder](#)<sup>[347]</sup> by default.

The *UNION* keyword allows you to include the results of two *SELECT* statements in one resulting table.

The *ALL* parameter incorporates all rows into the results, including duplicates. If not specified, duplicate rows are removed.



### Visible tabs

These options specify which [Query Builder](#)<sup>[347]</sup> tabs are available and which are not. Use the check boxes to make the corresponding tabs visible/invisible.

### Script format

These options specify case formatting of keywords and functions in query text within the [Edit](#)<sup>[361]</sup> tab: *As is* keeps the original case, *Uppercase* sets all the keywords/functions to the upper case, *Lowercase* sets all the keywords/functions to the lower case, and *First upper* sets the first letters of all keywords/functions to the upper case.

Additionally, you can set styles and color for all **Query Builder** objects by using [Style & Color](#)<sup>[759]</sup>.

---

### See also:

[Query Builder](#)<sup>[347]</sup>

## 12.1.5.4.1 Style &amp; Color

**Style**

These options specify the way various [Query Builder](#)<sup>[347]</sup> elements look: the **Condition button**: *Flat, 3DLook, Raised*; **object borders**: *Bump, Etched, Raised, Sunken*.

 **Flat objects**

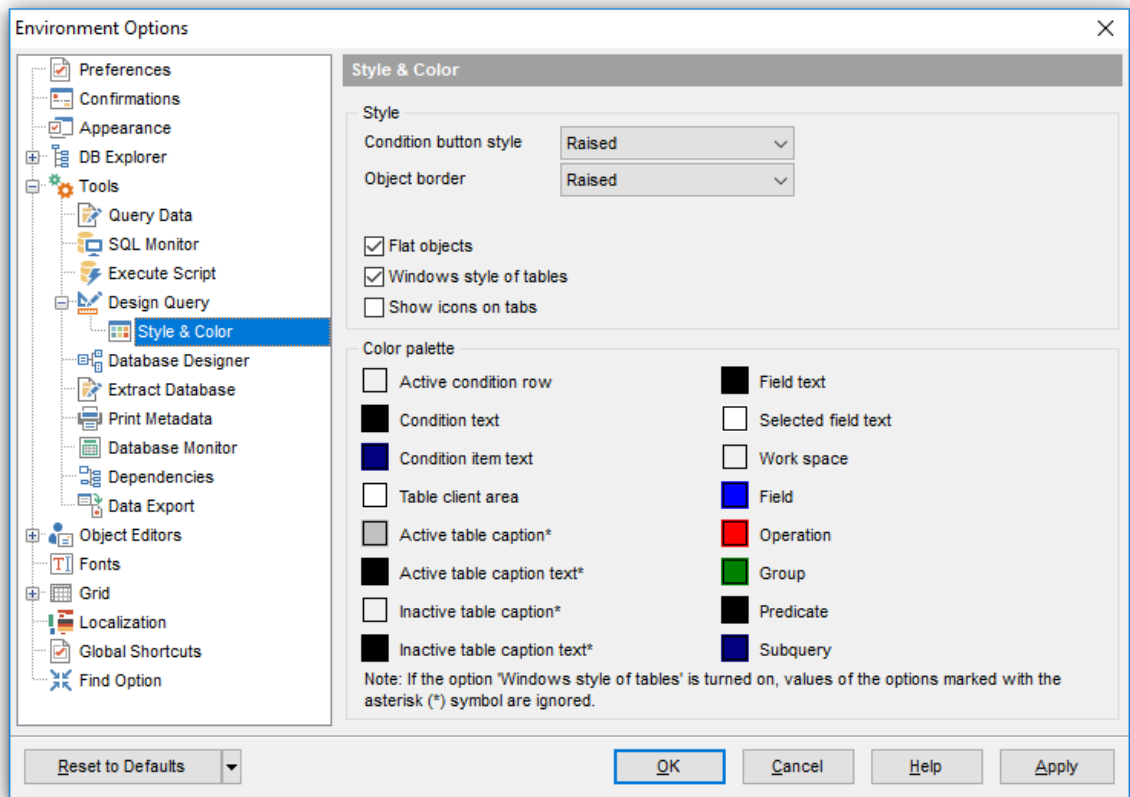
This option sets the flat appearance of objects in [Design Query](#)<sup>[347]</sup>.

 **Windows style of tables**

This option determines the appearance of tables in the Builder tab.

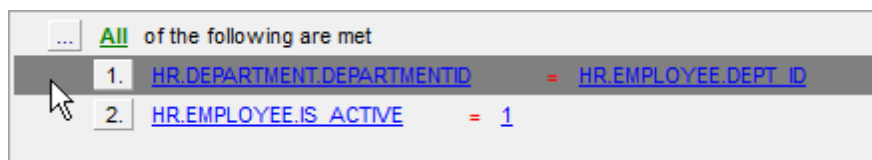
 **Show icons on tabs**

With this option selected, you can see icons next to the tab names in [Design Query](#)<sup>[347]</sup>.

**Color palette**

These options define the colors of various [Query Builder](#)<sup>[347]</sup> elements.

*Active condition row* (at the [Criteria](#)<sup>[355]</sup> and [Grouping criteria](#)<sup>[359]</sup> tabs):



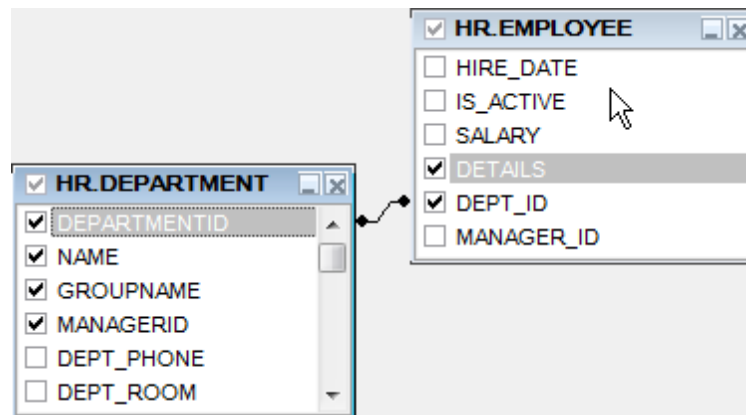
Condition text (at the [Criteria](#)<sup>[355]</sup> and [Grouping criteria](#)<sup>[359]</sup> tabs):



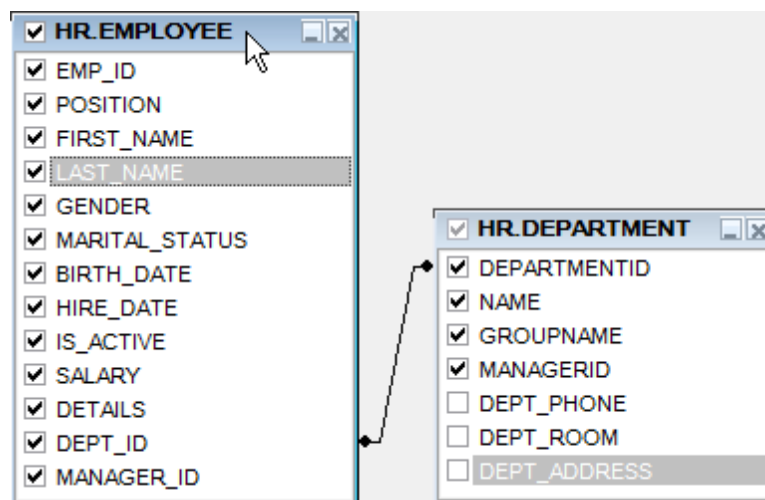
Condition item text (at the [Criteria](#)<sup>[355]</sup> and [Grouping criteria](#)<sup>[359]</sup> tabs):



Table client area (in the [diagram area](#)<sup>[350]</sup>):

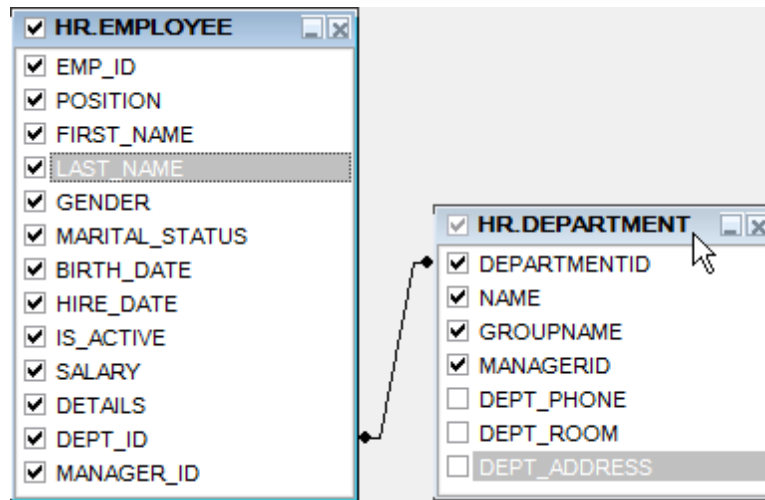


Active table caption (in the [diagram area](#)<sup>[350]</sup>):



Inactive table caption (in the [diagram area](#)<sup>[350]</sup>):





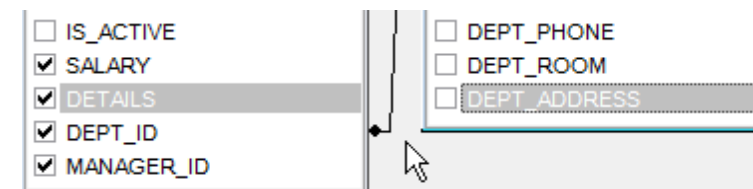
Field text (in the [diagram area](#)<sup>[350]</sup>):



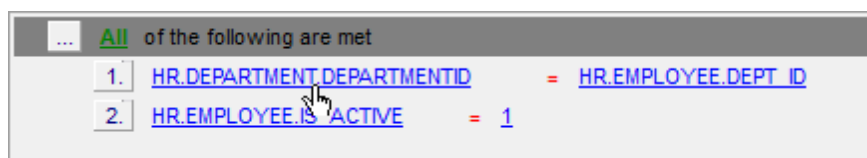
Selected field text (in the [diagram area](#)<sup>[350]</sup>):



Work space (in the [diagram area](#)<sup>[350]</sup>):



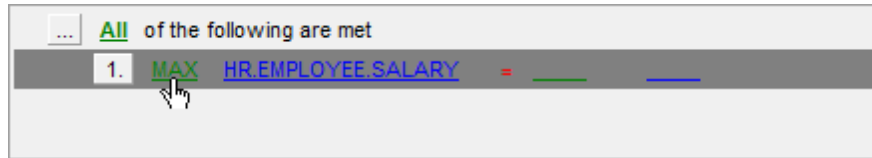
Field (at the [Criteria](#)<sup>[355]</sup> and [Grouping criteria](#)<sup>[359]</sup> tabs):



Operation (at the [Criteria](#)<sup>[355]</sup> and [Grouping criteria](#)<sup>[359]</sup> tabs):



Group (at the [Grouping criteria](#)<sup>[359]</sup> tab):



Predicate (at the [Criteria](#)<sup>[355]</sup> and [Grouping criteria](#)<sup>[359]</sup> tabs when a [subquery](#)<sup>[351]</sup> is used):



Subquery (at the [Criteria](#)<sup>[355]</sup> and [Grouping criteria](#)<sup>[359]</sup> tabs when a [subquery](#)<sup>[351]</sup> is used):



Click an item to select a color for the corresponding element using the **Color** dialog where you can specify the required color from the palette.

### 12.1.5.5 Database Designer

#### **Automatically open last diagram file**

Enable this option to load the last opened diagram file on starting the Database Designer.

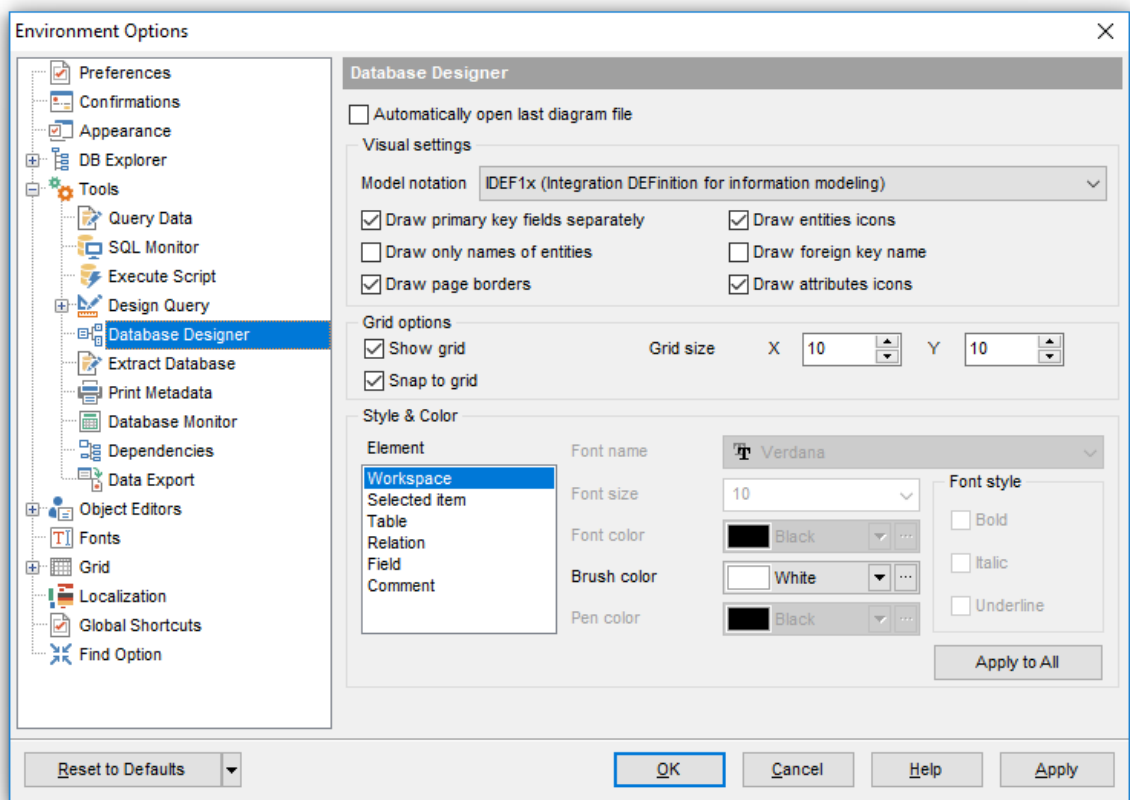
#### Visual settings

##### Model notation

When you work in [Database Designer](#)<sup>6301</sup>, you can choose one of the following modeling notations:

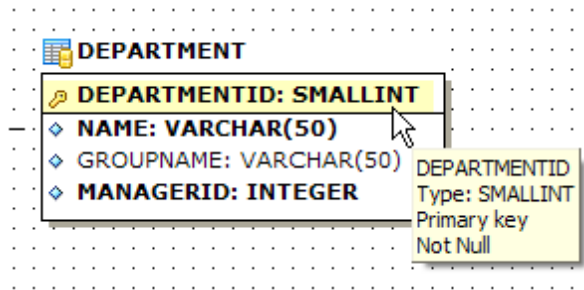
- Integration DEFinition for Information Modeling (IDEF1X);
- Information Engineering (IE).

The *IDEF1X* and *IE* notations use different symbols to represent relationships between entities (and tables).



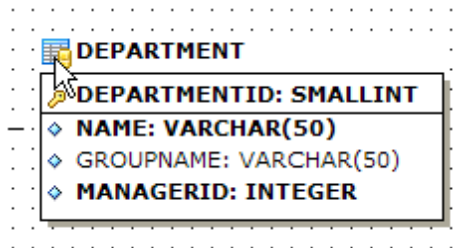
#### **Draw PRIMARY KEY fields separately**

Separates Primary key fields from other fields with a horizontal line.



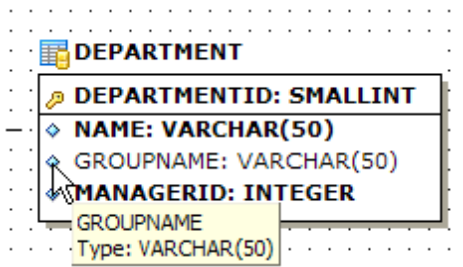
**Draw entities icons**

Displays icons at the left of each entity header according to its type.



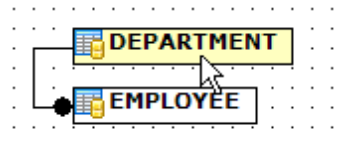
**Draw attributes icons**

Displays icons at the left of each attribute according to its type (Primary key, Foreign key, ordinary field).



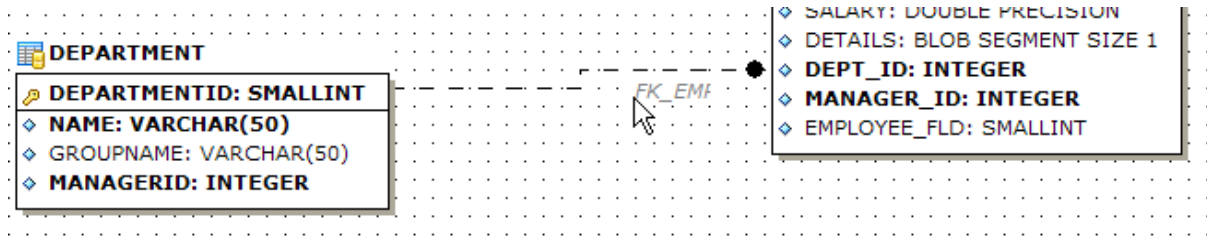
**Draw only names of entities**

Displays only entity headers, fields are hidden.



**Draw FOREIGN KEY name**

Displays foreign key names for the corresponding relations.



**Draw page borders**

Displays borders of the page on the diagram.

If y

**Grid options**

**Show grid**

Displays dots in the diagram area to make the grid visible.

**Snap to grid**

Automatically aligns entities on the form with the nearest grid line. You cannot place an entity in between grid lines.

**Grid size**

Sets grid spacing in pixels along the x- and y-axes. Specify a higher number to increase grid spacing.

**Style & Color**

This section helps you to customize the default view of the diagram objects.

Select the **Element type** from the list: *Workspace, Selected item, Table, Relation, Field, Comment* and set the required options for it, including color or font properties. Use the **Apply to all** button to apply the changes to all elements.

**See also:**


[Database Designer](#)<sup>[630]</sup>

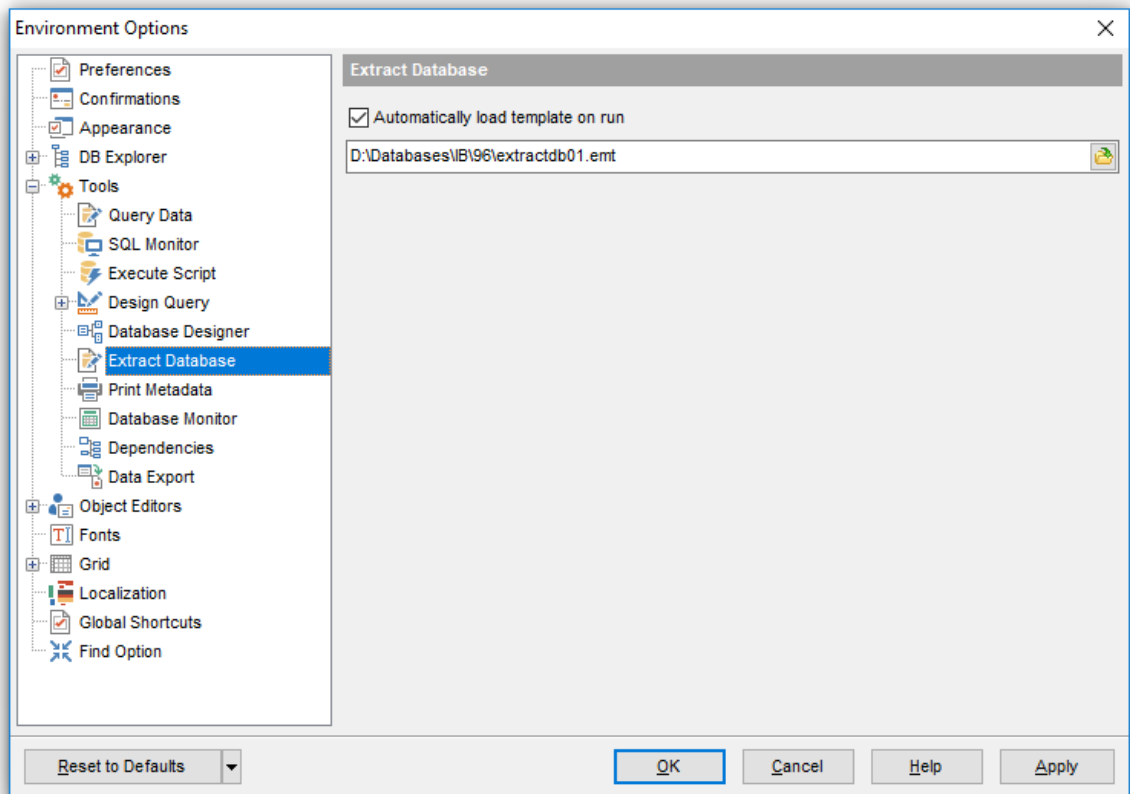
### 12.1.5.6 Extract Database

This page allows you to customize settings of the [Extract Database](#) wizard.

**Automatically load template on run**

Check this option to specify that a [template](#) file will be automatically loaded on running the [Extract Database](#) wizard.

Type in or use the  button to specify the path to the \*.emt file to be used by the wizard.



**See also:**

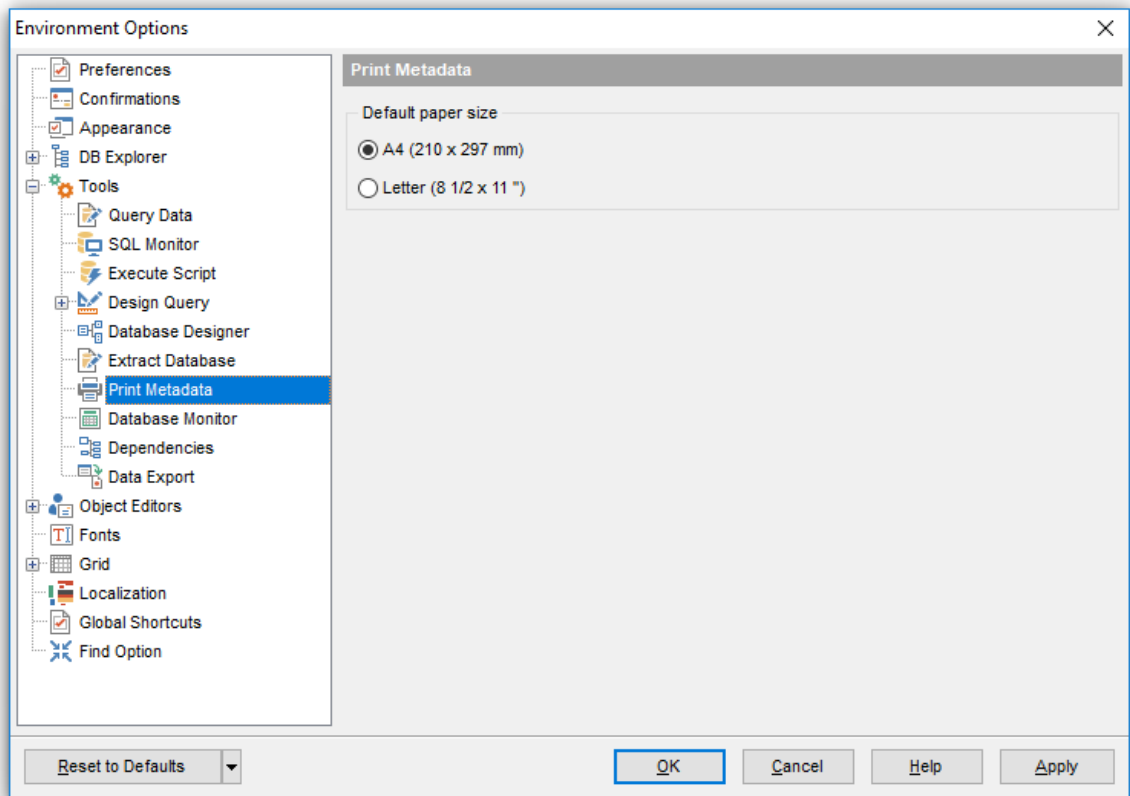
[Extract Database](#)

### 12.1.5.7 Print Metadata

#### Default paper size

Define the default paper size for reports created with the [Print Metadata](#)<sup>[562]</sup> tool used:

- A4 (210 x 297 mm)
- Letter (8 1/2 x 11 ")

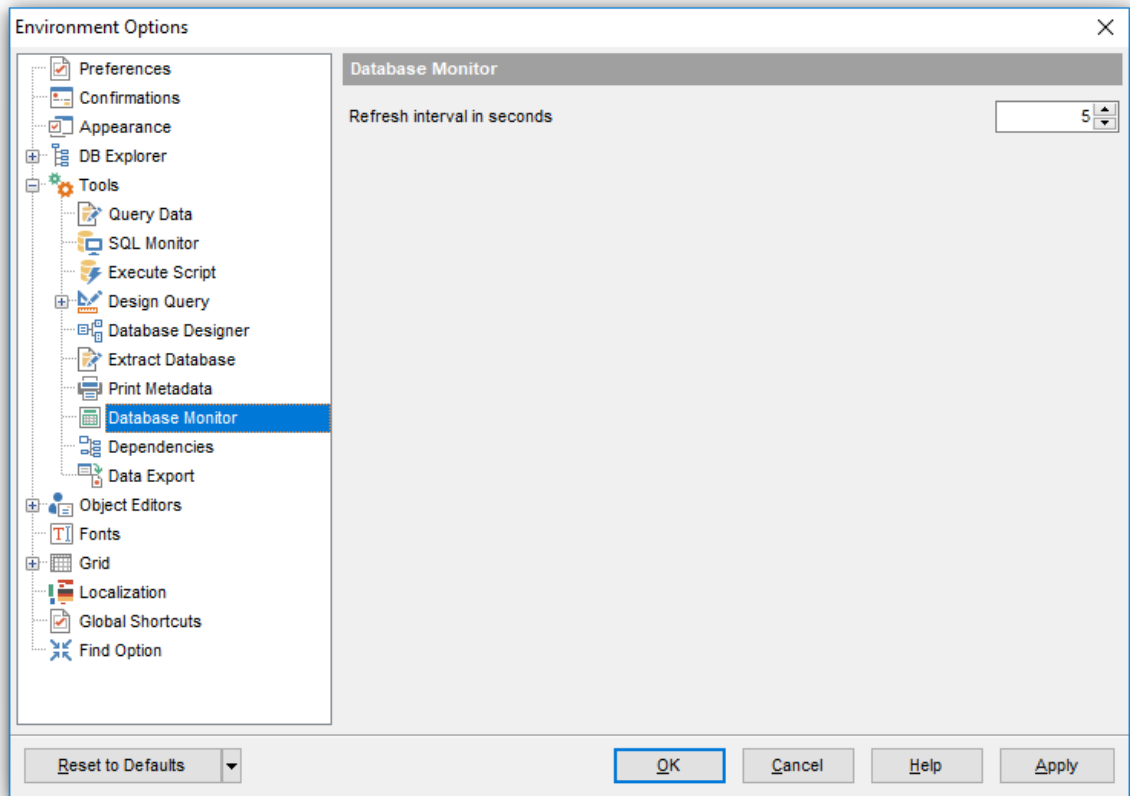


#### See also:

[Print Metadata](#)<sup>[562]</sup>

### 12.1.5.8 Database Monitor

This section allows you to set preferences pertaining to the [Database Monitor](#)<sup>[605]</sup> tool.



#### Refresh interval in seconds

Set the refresh interval (in *seconds*) for collecting information by **Database Monitor**.

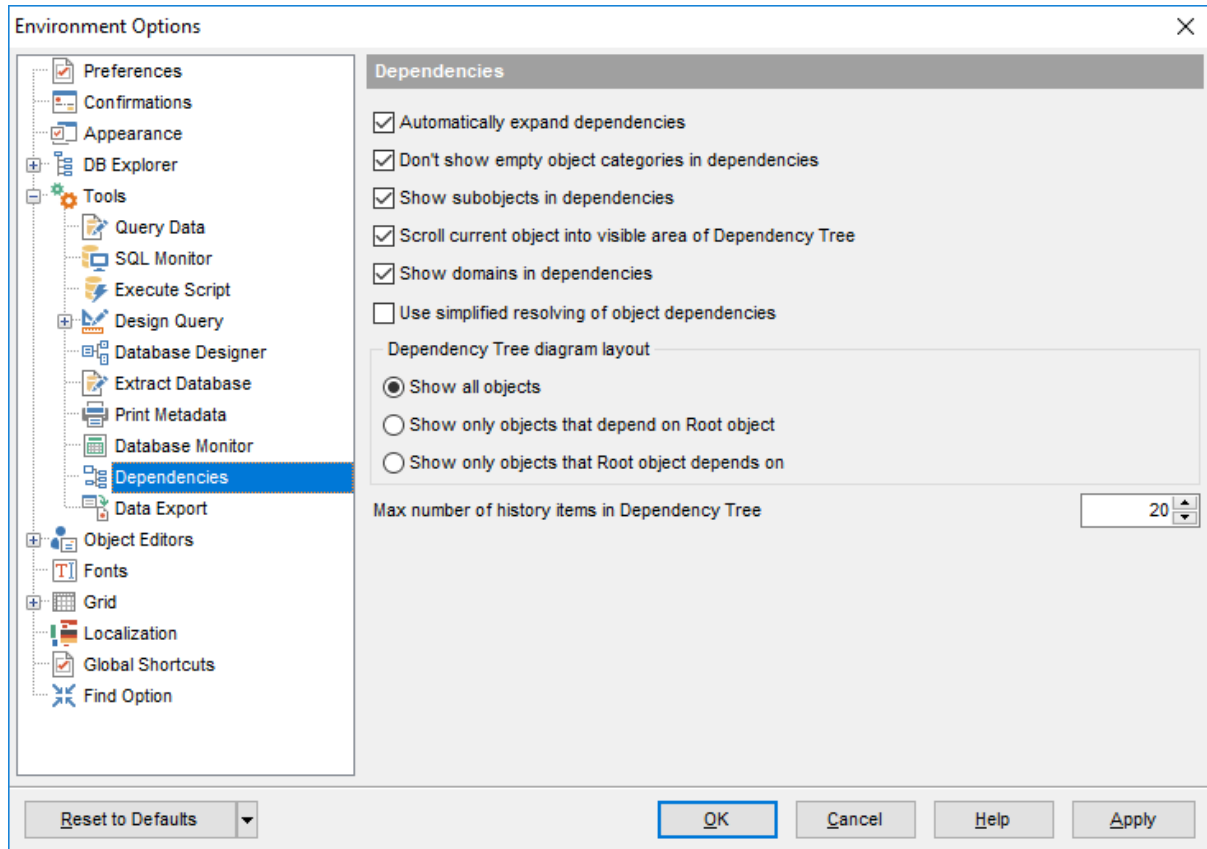
#### See also:

[Database Monitor](#)<sup>[605]</sup>



### 12.1.5.9 Dependencies

This section allows you to set preferences pertaining to the [Dependencies](#)<sup>[888]</sup> tab of object editors and the [Dependency Tree](#)<sup>[534]</sup> tool.



#### **Automatically expand dependencies**

Set this option to expand the tree of dependent objects automatically on opening the [Dependencies](#)<sup>[888]</sup> tab of an object editor.

#### **Don't show empty object categories in dependencies**

Set this option to hide empty objects categories in the trees of dependent objects.

#### **Show subobjects in dependencies**

Set this option to show subobjects of dependent objects.

#### **Scroll current object into visible area of Dependency Tree**

Set this option to scroll the Root (currently selected) object to the visible area of the [Dependency Tree](#)<sup>[534]</sup> working area.

#### **Show domains in dependencies**

Set this option to show [domains](#)<sup>[172]</sup> in [Dependency Tree](#)<sup>[534]</sup>.

#### **Use simplified resolving of object dependencies**

Set this option to disable parsing while fetching object dependencies.

### Dependency Tree diagram layout

This group allows you to specify which objects are to be displayed in [Dependency Tree](#)<sup>[534]</sup>:

- Show all objects*
- Show only objects that depend on the Root object*
- Show only objects that the Root object depends on*

#### **Max number of history items in Dependency Tree**

Set the maximum number of history items to be saved in [Dependency Tree](#)<sup>[534]</sup> tool.

**Note:** Navigation through history items is performed by using the **Previous object** / **Next object** items of the [Navigation bar](#)<sup>[535]</sup>.

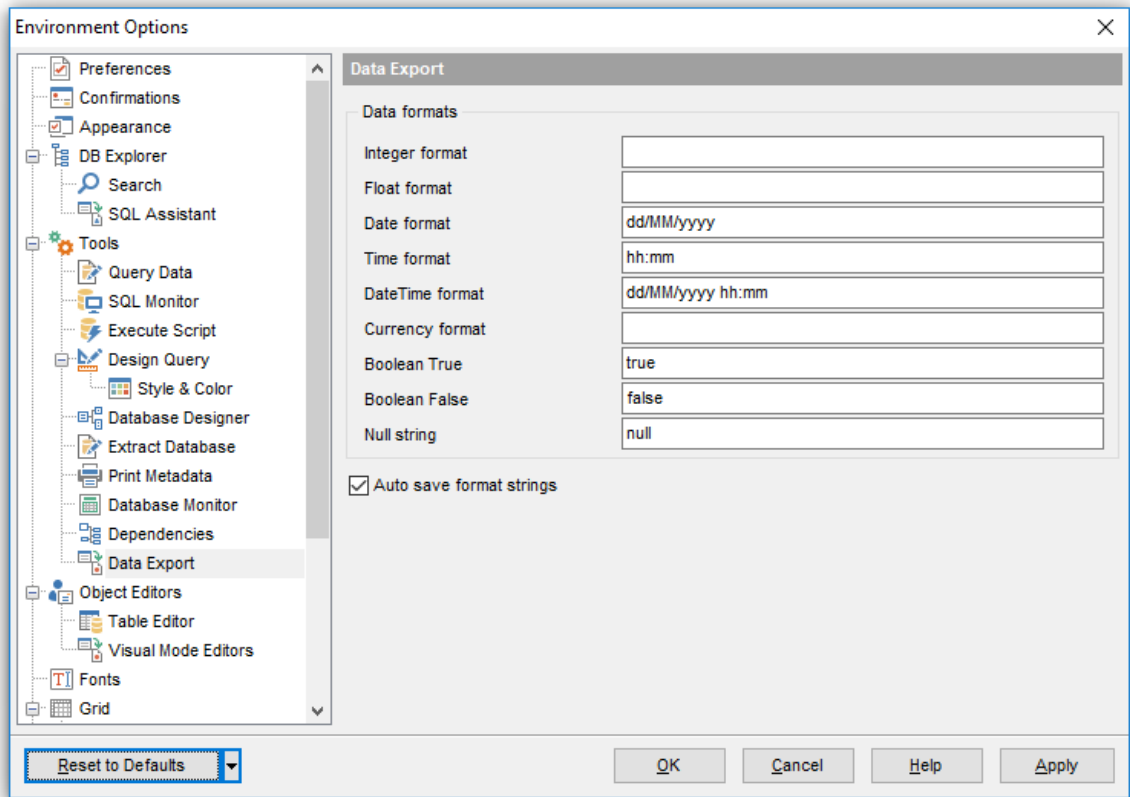
---

#### **See also:**

[Dependency Tree](#)<sup>[534]</sup>

### 12.1.5.10 Data Export

This page allows you to customize formats applied to [exported](#)<sup>[444]</sup> data.



#### Data formats

Edit the format masks to adjust the result format in the way you need: *Integer format*, *Float format*, *Date format*, *Time format*, *DateTime format*, *Currency format*, *Boolean True*, *Boolean False*, *Null string*.

#### Auto save format strings

Select this option to save specified format strings automatically.

If more convenient, you can click the **Set defaults** button to apply default data formats.

These settings can also be specified at the [Adjusting data formats](#)<sup>[448]</sup> step of [Export Data Wizard](#)<sup>[444]</sup>.

For more details see [Format specifiers](#)<sup>[906]</sup>.

#### See also:

[Export Data Wizard](#)<sup>[444]</sup>

## 12.1.6 Object Editors

**Show privileges in objects DDL**

Toggles displaying the script fragment for setting grants at the [DDL](#) tab of object editors.

**Show description in objects DDL**

Toggles displaying the script fragment for setting description at the [DDL](#) tab of object editors.

**Automatically show Object Explorer\***

Enables/disables the *Object Explorer* panel within the *Navigation bar* of [Table Editor](#) and [Procedure Editor](#).

**Restore the object changes after abnormal closure of editor**

Select this option if you wish changes made to an object in its editor to be restored from internal buffers unexpected interruption of the editor occurs.

**Keep layout for each editor separately**

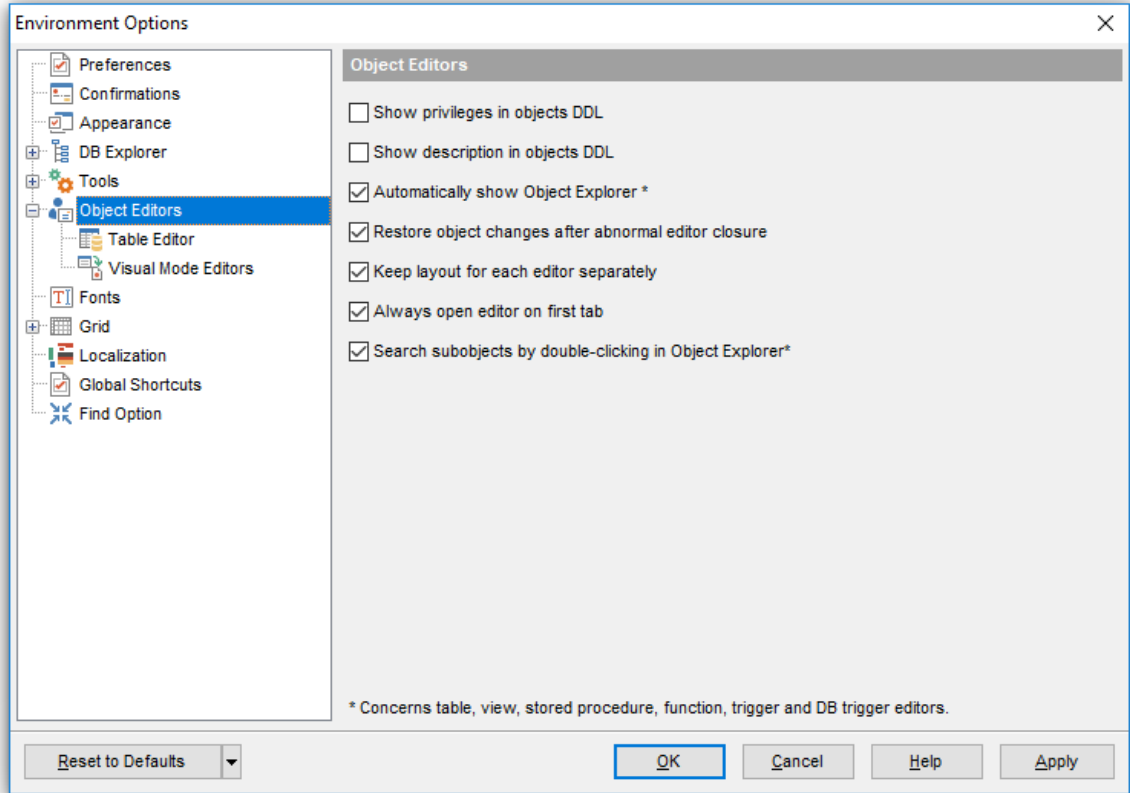
If the option is enabled, layout (mode) is kept for each editor separately.

**Always open the Edit tab**

If this option is checked, the **Edit** tab is activated by default on opening an object in its editor.

**Search subobjects by double click in Object Explorer\***

If this option is checked, you may open subobjects on the appropriate tab by double click in the *Object Explorer* panel within the *Navigation bar* of [Table Editor](#) and [Procedure Editor](#).



\* Regarding [table](#)<sup>[184]</sup>, [view](#)<sup>[242]</sup>, [stored procedure](#)<sup>[255]</sup>, [trigger](#)<sup>[281]</sup> and [DB trigger](#)<sup>[311]</sup> editors.

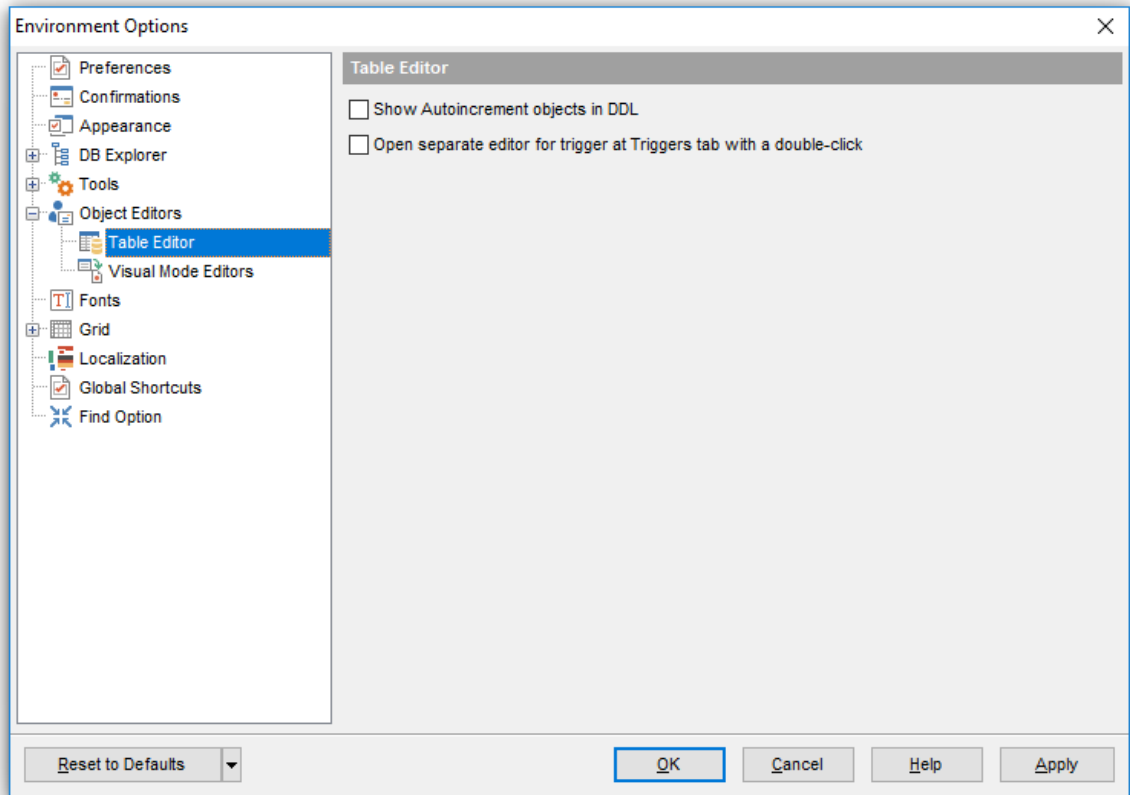
### 12.1.6.1 Table Editor

**Show Autoincrement objects in DDL**

If this option is selected, definition of objects used for the [Autoincrement](#)<sup>[211]</sup> property implementation will be displayed in table [DDL](#)<sup>[886]</sup>.

**Open separate editor for trigger at Triggers tab with a double-click**

If this option is selected, a separate [Trigger Editor](#)<sup>[281]</sup> will be opened when a trigger is double-clicked under the [Triggers](#)<sup>[197]</sup> tab of [Table Editor](#)<sup>[184]</sup>.



**See also:**

[Table Editor](#)<sup>[184]</sup>

### 12.1.6.2 Visual Mode Editors

**Recompile dependencies**

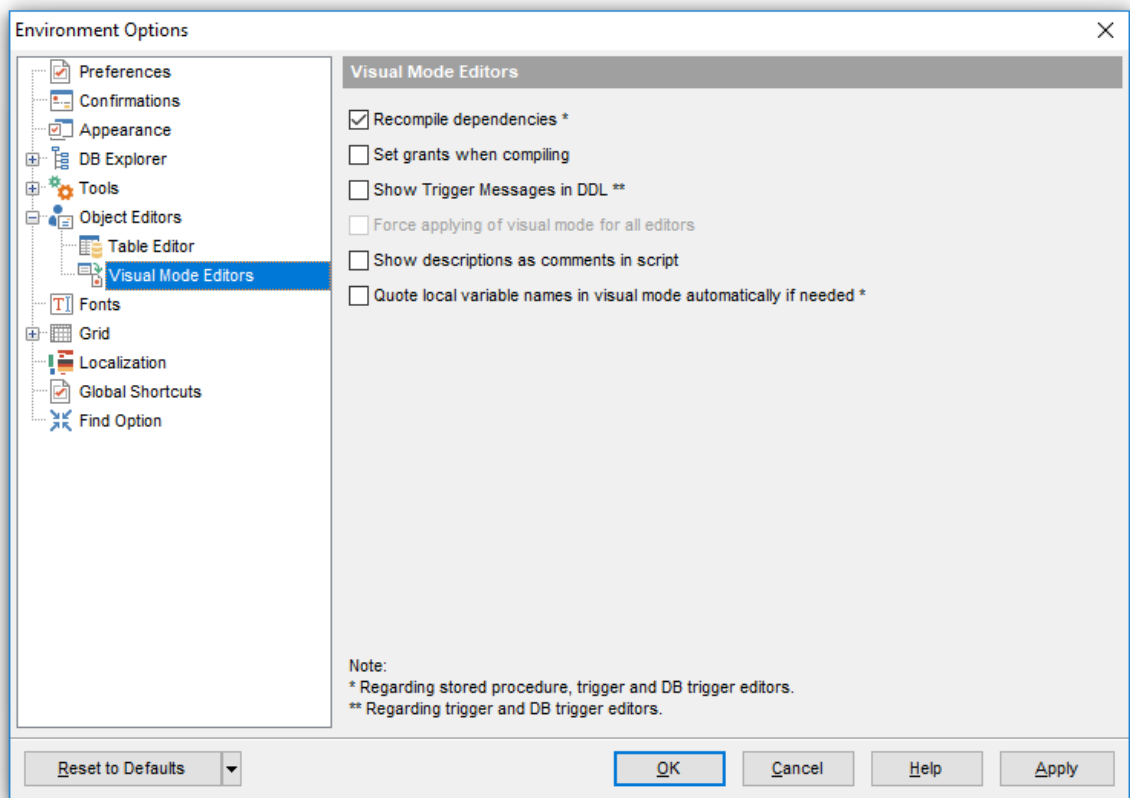
If the option is selected, the objects that refer to the current object are [recompiled](#)<sup>[899]</sup>.

**Set grants when compiling**

This option allows you to set [grants](#)<sup>[726]</sup> on the object automatically when [compiling](#)<sup>[898]</sup> the object.

**Show Trigger Messages in DDL**

Toggles displaying the script fragment for setting [trigger messages](#)<sup>[288]</sup> at the [DDL](#)<sup>[886]</sup> tab of the trigger editors.



**Force applying of visual mode for all editors**

Enables visual mode for all editors. This option is unavailable if **Keep layout for each editor separately** option is ON at [Object Editors](#)<sup>[772]</sup> options.

**Show descriptions as comments in script**

Toggles displaying [object descriptions](#)<sup>[887]</sup> as comments in scripts generated for the objects.

**Quote local variable names in visual mode automatically if needed.**

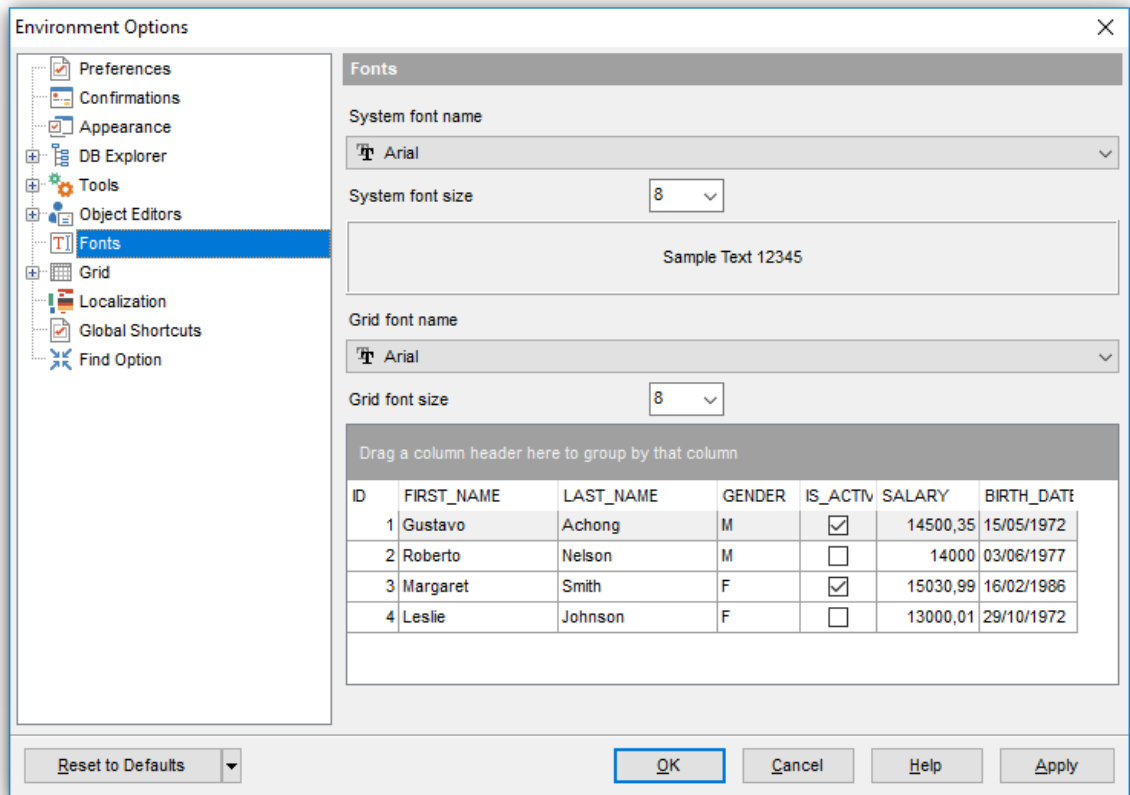
If this option is enabled, the local variable names are quoted automatically if they are entered in lowercase. This option is working correctly if the  *Always capitalize database objects names* option on the [Common options](#)<sup>[118]</sup> tab in the [Database Registration Info](#)<sup>[115]</sup>

dialog is not enabled.



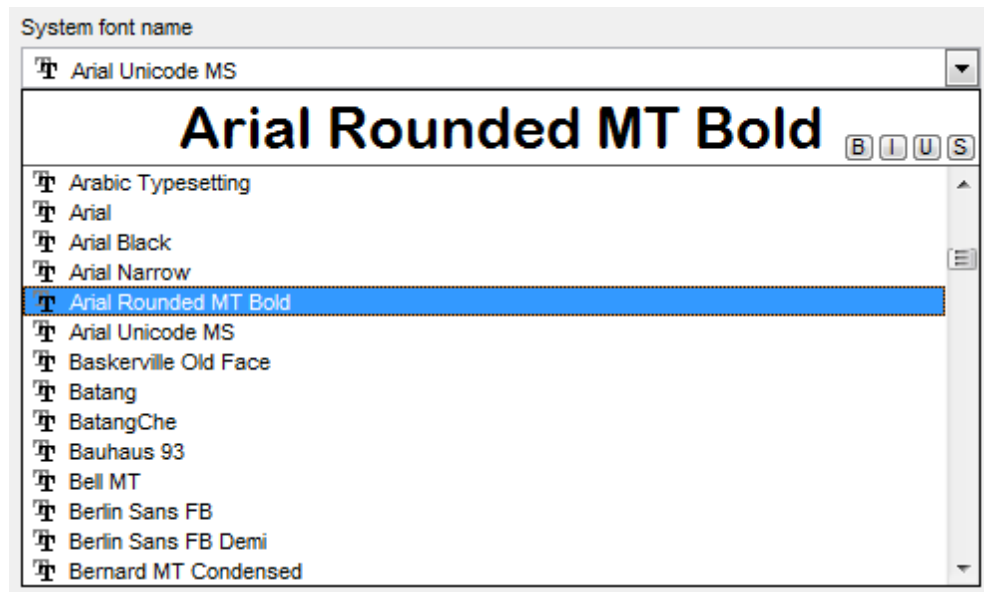
## 12.1.7 Fonts

This section of the **Environment Options** dialog allows you to specify fonts used in the application.



### System font name

Defines the font used by **SQL Manager for InterBase/Firebird**. Select the font name from the drop-down list of available system fonts.



### System font size

Select the required size for the system font.

The box below displays the *sample text* with the selected font applied.

### Grid font name

Defines the font used in the [Data grid](#)<sup>[373]</sup>. Select the font name from the drop-down list of available fonts.

### System font size

Select the required size for the grid font.

The grid below displays the *sample grid* with the selected font applied.

## 12.1.8 Grid

### General options

**Striped grids**

Displays the odd grid rows in a different color defined by the **Strip** option available on the [Color & Formats](#)<sup>[786]</sup> page.

**Show editor immediately**

Allows editing the cell value right after the cell is clicked.

**Always show editor**

Set this option to make the cell editors always active.

**Enable auto-search in grid**

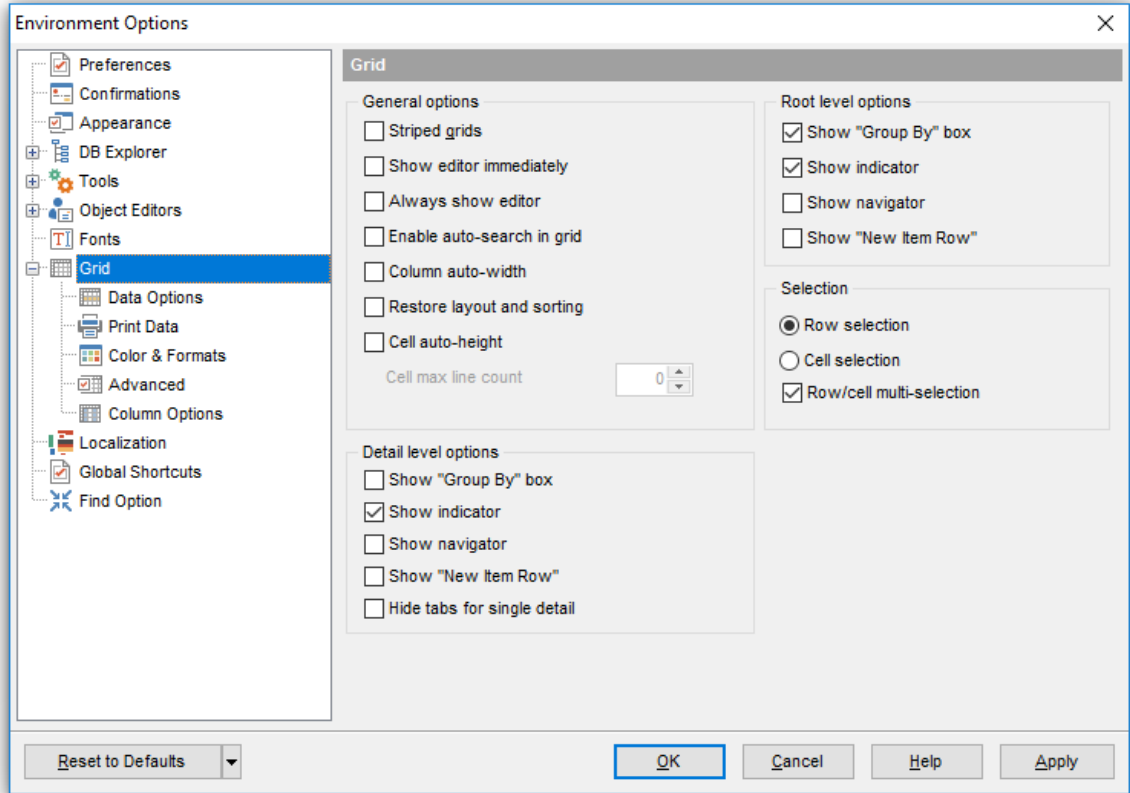
If this option is checked, the cursor is automatically forwarded to the closest match when you start typing.

**Column auto-width**

With this option set, column widths are changed in order to display all columns without using the horizontal scroll bar. If the content a column is still too large to display without a need to resize the grid, then the column values are truncated and the hidden characters are replaced with an ellipsis at the end.

**Cell auto-height**

If the widths of the columns are insufficient to display the full content, then text clipping occurs. Set this option to prevent this. If this option is set, the cell content is displayed in multiple lines where necessary. You can set the number of lines to display using the **Cell max line count** option.



### Root level options

These options are applied to the [main view](#)<sup>[384]</sup> of the grid. See [Grid View](#)<sup>[373]</sup> for details. The options are described in the **Detail level options** list below.

### Detail level options

These options are applied to the [detail view](#)<sup>[384]</sup> of the grid. See [Grid View](#)<sup>[373]</sup> for details.

#### Show "Group by" box

Displays the gray area above the column caption allowing one to [group](#)<sup>[376]</sup> data in the grid.

#### Show indicator

Activates/deactivates the row indicator pane at the left.

DEPAR	NAME	GROUPNAME	MANAG
1	Administration	Executive General and Administration	4
2	Marketing	Sales and Marketing	7
3	Purchasing	Sales and Marketing	12
4	Human Resources	Executive General and Administration	35

#### Show navigator

Activates/deactivates the data navigator similar to the [navigation pane](#)<sup>[370]</sup> at the top of the grid. The navigator is available at the bottom of detail level view.

DEPAR	NAME	GROUPNAME	MANAG
1	Administration	Executive General and Administration	4
2	Marketing	Sales and Marketing	7
3	Purchasing	Sales and Marketing	12
4	Human Resources	Executive General and Administration	35

**Show "New item row"**

Displays an empty row at the bottom of a view which is a convenient way for adding data to the grid.

**Hide tabs for single detail**

This option is useful when only one view is present on the detail level. When the option is enabled, the view tab is hidden.

### Selection

If the  **Row selection** is selected then the whole record in the table is selected in the table on clicking the cell. Otherwise, only the clicked cell is selected ( **Cell selection** option).

Check the  **Row/cell multi-selection** option to enable the selection of multiple cells or rows in the grid with the *Shift* button.

### See also:

[Grid View](#) <sup>[373]</sup>

### 12.1.8.1 Data Options

#### Advanced

##### **Use separate connections for each data view within a database**

Select this option to use a separate connection for each [data view](#)<sup>[369]</sup> within a database. Disabling this option is recommended if maximum allowed number of connections is too low.

##### **Asynchronous query execution**

Check this option to allow executing queries in background mode (asynchronously). Note that this option is only available when the *Use separate connections for each data view within a database* option is enabled.

##### **Perform data sorting on client in data view**

If enabled, the data are sorted by **SQL Manager for InterBase/Firebird** (on the client side). If this option is disabled, the data are sorted on InterBase/Firebird server with the help of the *ORDER BY* clause used in SQL query.

##### **Perform data filtration on client in data view**

If enabled, the data are filtered by **SQL Manager for InterBase/Firebird** (on the client side).

If disabled, SQL filter is used in [data view](#)<sup>[369]</sup>. In this case filtering is performed on the InterBase/Firebird server with the help of the *WHERE* clause used in SQL query.

With the **Perform data sorting on client in data view** option enabled, sorting is performed by means of the grid. Otherwise a click on the column header for sorting causes reloading all table data with the selected field in the *ORDER BY* expression of the *SELECT* statement.

If the table contains a huge amount of records and the **Select only N records** mode (see the **Default limit options in table and view editors** group) is used, this mode is more preferable (e.g. all the records having values starting with "A" will be displayed, and not those which were in originally opened N records).

All above-mentioned is related to the **Perform data filtration on client in data view** option as well. If the filter is applied to a table containing a great number of records, it is strongly recommended to enable this option - in this case the filter will be applied to all table/view records, not only to those which are displayed at the present moment.

##### **Load visible rows mode if records more than...\***

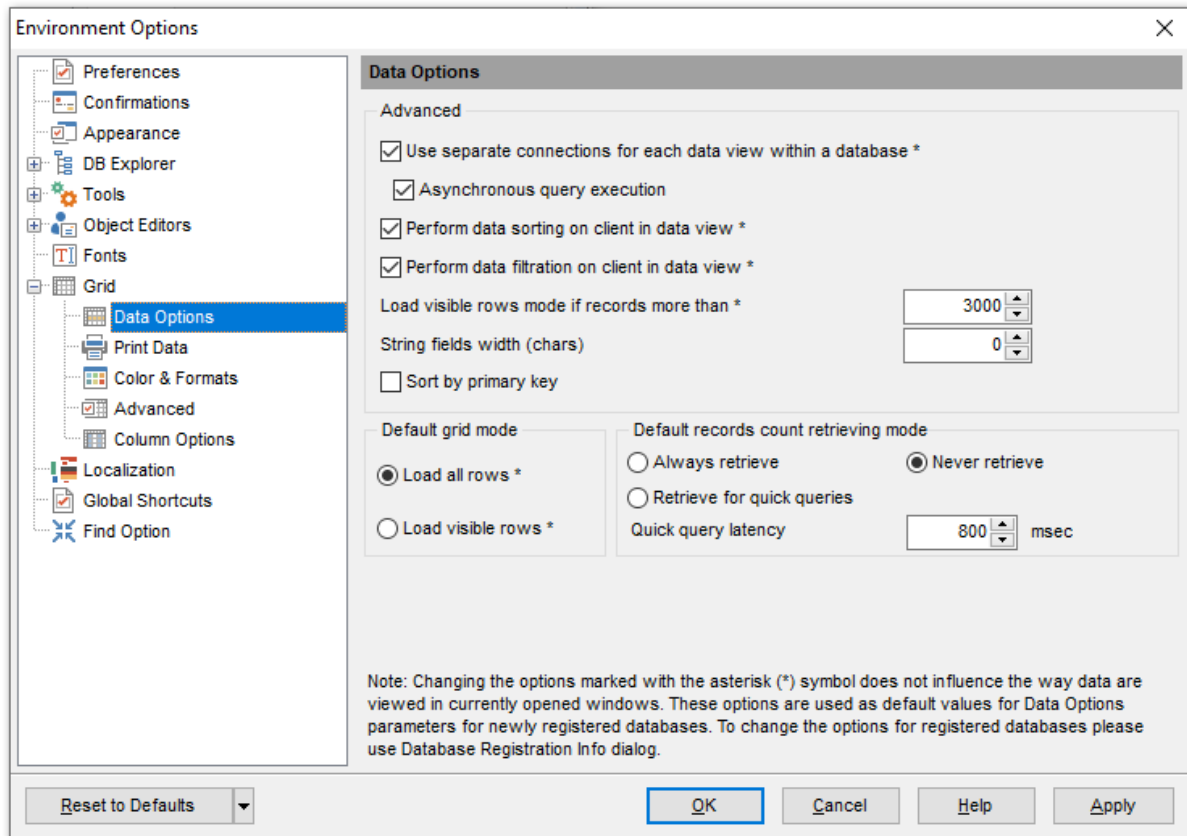
Set this option to switch to the **Load visible rows** mode when the number of records in the dataset exceeds the specified value.

##### **String fields width (chars)**

Using this option you can limit string fields width that may improve performance on large datasets.

##### **Sort by primary key**

When enabled, the option allows sorting data by the [primary key](#)<sup>[216]</sup> on opening the [data grid](#)<sup>[373]</sup>.



### Default grid mode

#### Load all rows\*

The grid loads all records from a dataset. This option increases the grid performance by reloading only changed dataset records when updating. In this mode all features (automatic sorting, filtering and summary calculations) are available.

#### Load visible rows\*

The grid loads only a fixed number of dataset records into memory. This option minimizes dataset loading time. Automatic sorting, filtering, summary calculations are not available in this mode.

The **Default grid mode** options allow you to define the grid mode which will be used by default.

With the **Load all rows** option enabled, when loading data, all the records are loaded into grid buffers. In this mode opening the tables with many records may take a considerable amount of time. But in this case you can make use of some advantages: in the filter drop-down list the column headers are displayed with the values for quick filtering; it is possible to open several sub-levels at the same time when viewing data in master-detail view, etc.

In case opening and other operations with an object consisting of many records takes sufficient time, the **Load visible rows** mode should be used instead. It can be set individually for each table and saved between sessions (can be set through the [context menu](#)<sup>[382]</sup> of the grid).

### Default records count retrieving mode

#### Always retrieve

Use this mode to get record count always.

**Never retrieve**

This mode disables retrieving record counting.

**Retrieve for quick queries**

Use this mode to retrieve records count if it takes less time than specified at the **Quick query latency** field below.

**Note:** Changing the options marked with the asterisk (\*) sign does not affect the way data are viewed in currently opened windows. These options are used as default values for Data Options parameters for newly registered databases. To change the options for registered databases, please use the [Database Registration Info](#) dialog.

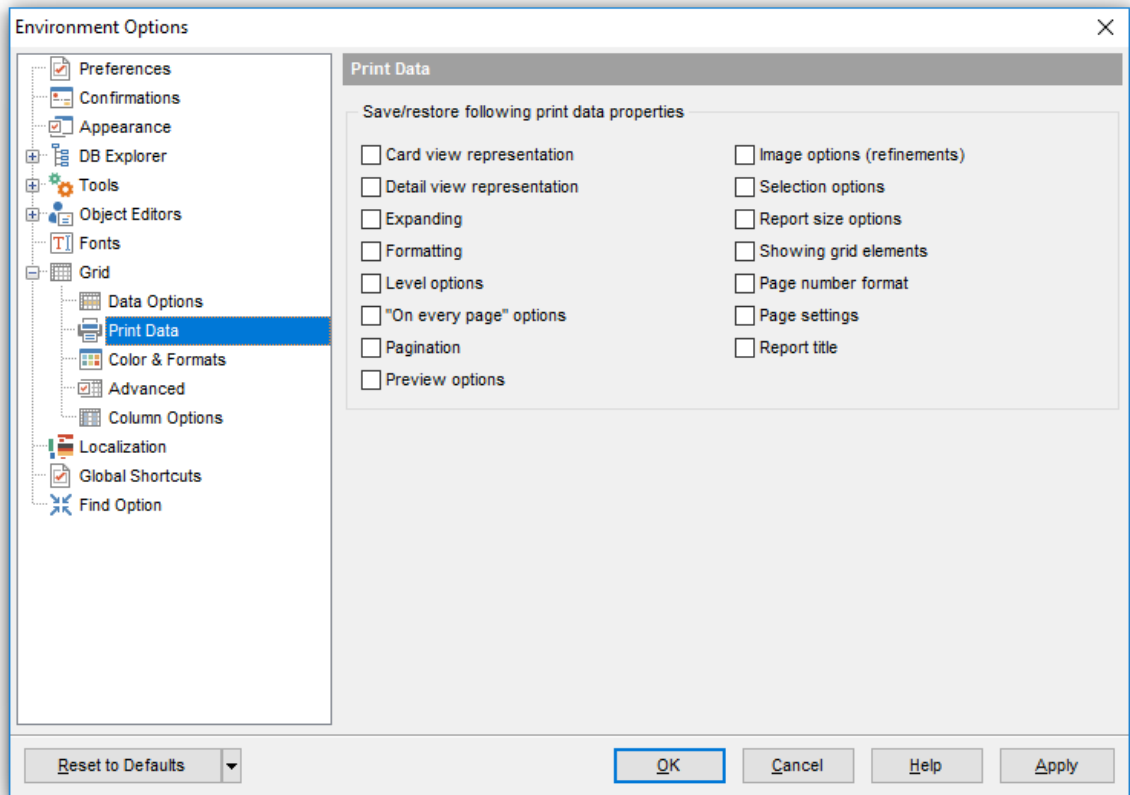


### 12.1.8.2 Print Data

#### Save/restore following print data properties

These options specify which [Print Data](#) properties will be saved between work sessions (e.g. if you tick off the *Page settings* item, those settings will be saved and stored between the sessions).

You can save/restore the following **Print Data properties**: *Card view representation, Detail view representation, Expanding, Formatting, Level options, "On every page" options, Pagination, Preview options, Image options, Selection options, Report size options, Showing grid elements, Page number format, Page settings, Report title.*



### 12.1.8.3 Color & Formats

#### Display formats

##### Integer fields

Defines the format for displaying *SMALLINT*, *INTEGER* and *BIGINT* fields.

##### Float fields

Defines the format for displaying *FLOAT*, *DOUBLE PRECISION* and *DECIMAL* fields.

##### Datetime fields

Defines the format for displaying *TIMESTAMP* fields.

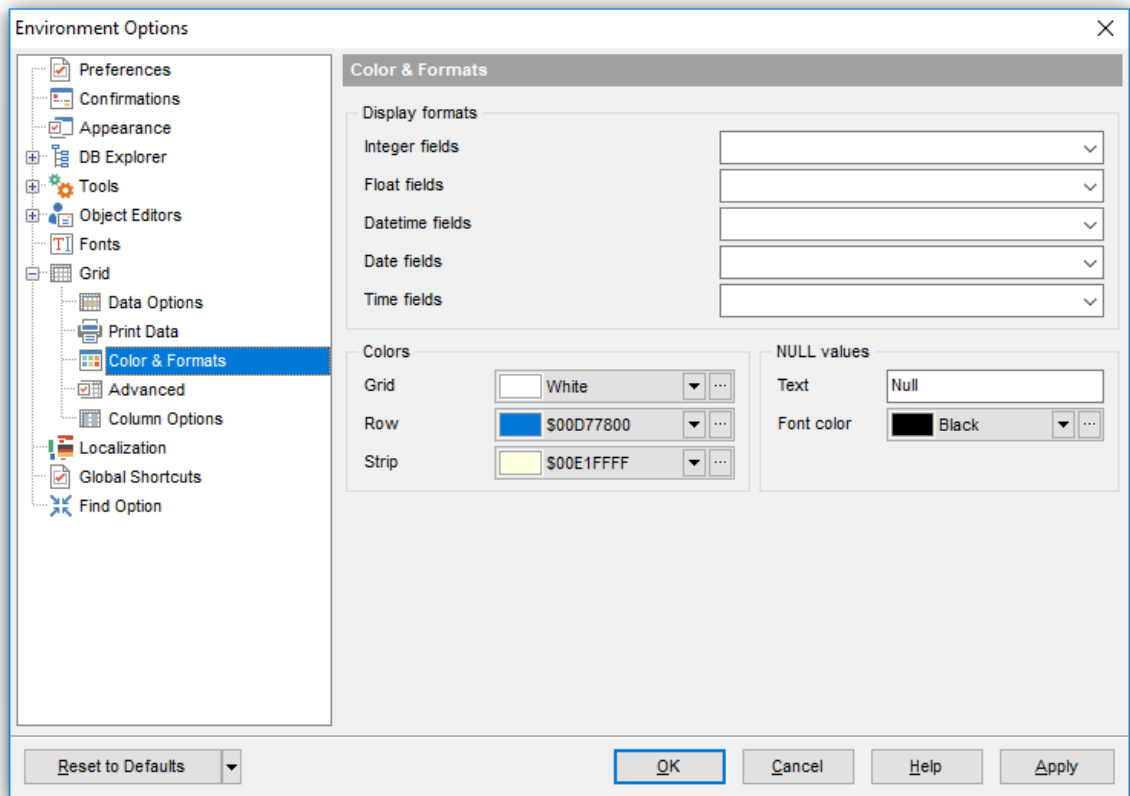
##### Date fields

Defines the format for displaying *DATE* fields.


##### Time fields

Defines the format for displaying *TIME* fields.

For more information refer to the [Format specifiers](#)<sup>[906]</sup> page.



#### Colors

Options of this group allow you to set colors for basic [grid](#)<sup>[373]</sup> elements. Use the ellipsis  button to open the **Color** dialog allowing you to select the required color from the palette.

#### Grid

Defines the background color of the data grid.

**Row**

Defines the color of the selected row in the data grid.


**Strip**

Defines the color of the odd rows (applied if the **Striped grids** option is set on the [Grid](#)<sup>[779]</sup> page).

**NULL values****Text**

Defines the text that stands for NULL values in [grid](#)<sup>[373]</sup>.

**Font color**

Defines the font color for displaying NULL values in the [grid](#)<sup>[373]</sup>. Use the ellipsis  button to open the **Color** dialog allowing you to select the required color from the palette.

#### 12.1.8.4 Advanced

##### Advanced options

**Cell hints for clipped text**

Indicates whether a hint box is displayed when hovering over a cell containing clipped text.

**Focus cell on cycle**

Determines whether the focus moves to the next row after it reaches the right-most cell within the current row.

**Focus first cell on new record**

Determines whether the focus moves to the first cell of a newly created row.

**Next cell on pressing Enter**

Determines whether the current view columns can be navigated by using the **Enter** key.

**Show navigator hints**

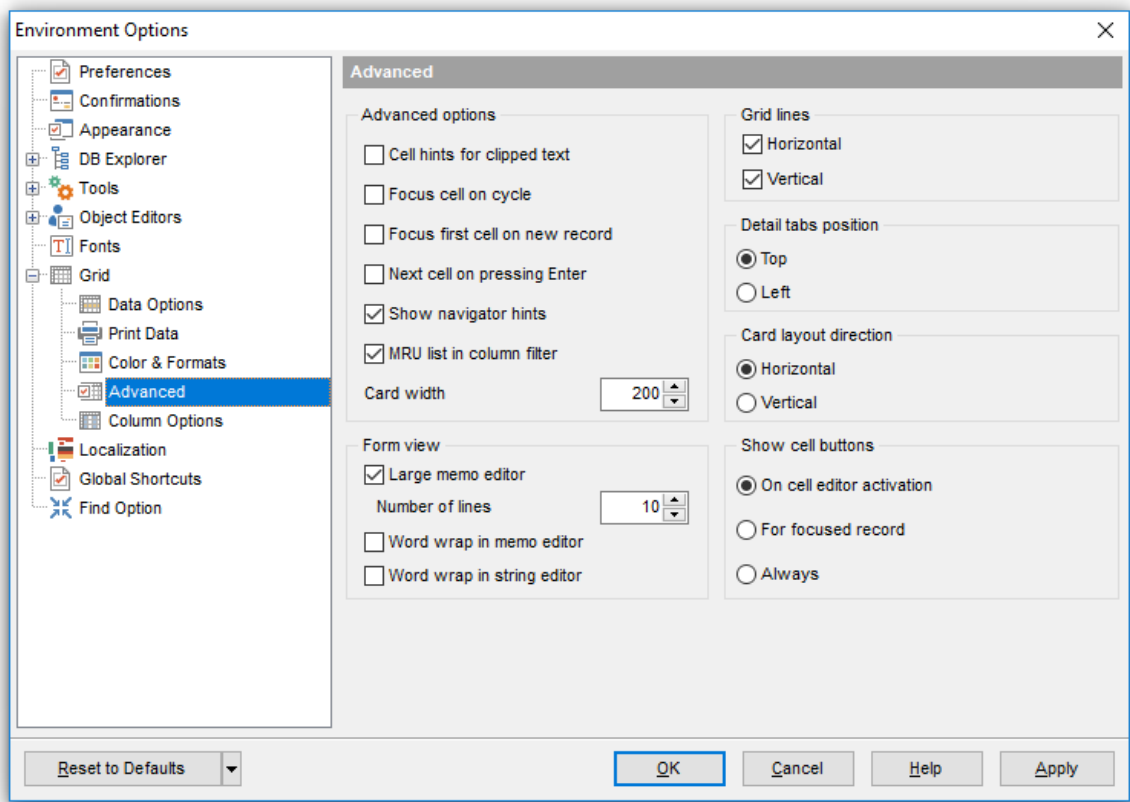
Indicates whether a hint box is displayed when hovering over navigation buttons.

**MRU list in column filter**

Enables showing of *Most Recently Used* items when filtering columns.

##### Card width

Defines the width of the card used in [Card View](#)<sup>392</sup> mode.



##### Form view

**Large memo editor**

Enables large editors on the [Form view](#)<sup>[395]</sup>. Set the **number of lines** for text-typed fields.

 **Word wrap in memo editor**

Determines whether long strings are wrapped within the memo editor area.

 **Word wrap in string editor**

Determines whether long strings are wrapped within the string editor area.

**Grid lines**

Determines whether to display *vertical* and *horizontal* lines between cells.

**Detail tabs position**

Specifies the position of the tabs in detail level views: *top* or *left*.

**Card layout direction**

Specifies the direction of cards in Card View mode: *horizontal* or *vertical*.

**Show edit buttons**

Indicates when the edit buttons are displayed: *never*, *for focused record* or *always*.

### 12.1.8.5 Column Options

#### Common options

**Auto-select text**

Determines whether all text within an editor is automatically selected when the editor gets focus.

**Hide selection on losing focus**

Determines whether the visual indication of the selected text remains when the editor loses focus.

#### Memo editor options

**Inserting Return characters**

Specifies whether a user can insert return characters into text.

**Inserting Tab characters**

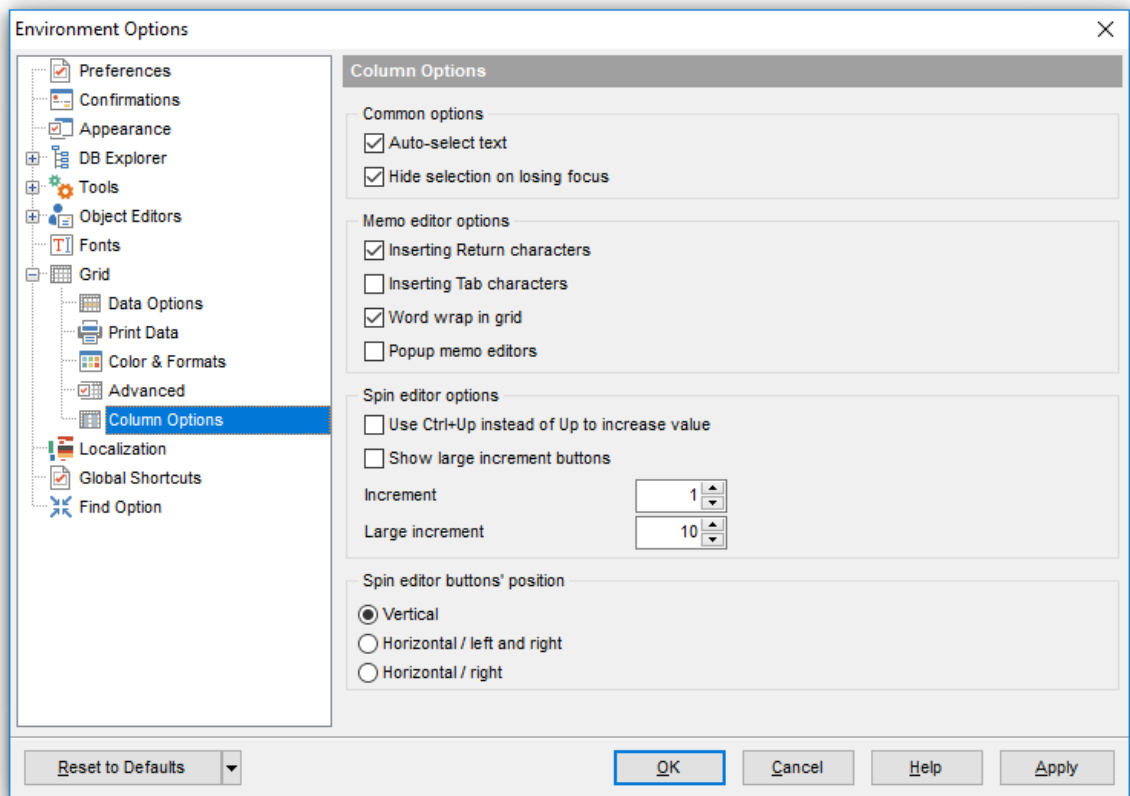
Specifies whether a user can insert tab characters into text.

**Word wrap in grid**

Determines whether long strings are wrapped in grid.

**Popup memo editors**

Turns on popup memo editors for text BLOB type fields.



#### Spin editor options

**Use Ctrl+Up instead of Up to increase value**

Allows you to use *Ctrl+Up* and *Ctrl+Down* key combinations for editing spinner values (for INTEGER field values).

**Show large increment buttons**

Determines whether fast buttons (for large increment) are visible within the editor.

**Increment**

Specifies the increment value for the spin editor (spinner control).

**Large increment**

Specifies the large increment value for the spin editor (spinner control).

**Spin editor buttons' position**


Specifies the position of spin editor (spinner control) buttons: *vertical*, *horizontal / left and right* or *horizontal / right*.

## 12.1.9 Localization

The **Localization** section of the **Environment Options** dialog is provided for managing the localization files of **SQL Manager for InterBase/Firebird**.

You can create your own \*.Ing files similar to those available in the %program\_directory%\Languages folder, add them to the list of available languages and set the new language as the program interface language.

### Default directory

Use the **Explorer**  button to specify the directory where the \*.Ing files are to be stored by default.

### Choose program language

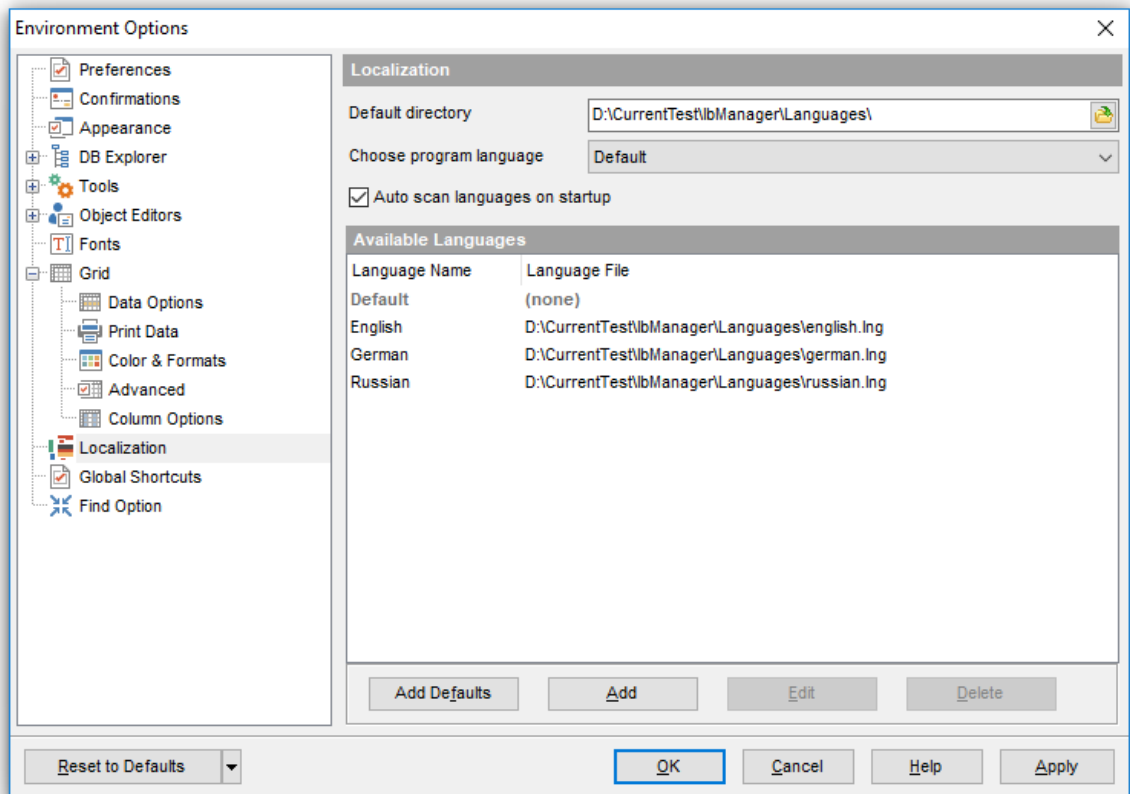
Use the drop-down list of available languages to select the interface language to be applied to the application.

### Auto scan languages on startup

When checked, the directory with localization files will be scanned automatically at the application startup; all the languages found will be added to the list of available languages.

### Available Languages

Lists all the languages available for localization and the corresponding \*.Ing files. Double-click a language in the list to edit its name or the \*.Ing file.





**Add Defaults**

This button is used to search for \*.lng files in the **Default directory** and add all of them to the **Available Languages** list.

**Add**

Opens the [Add language](#)<sup>[809]</sup> dialog where you can specify your own localization file and set the language name.

**Edit**

Opens the [Edit language](#)<sup>[809]</sup> dialog where you can change the language name or select another localization file for the specified language.

**Delete**

Removes the selected language from the **Available languages** list (without confirmation).

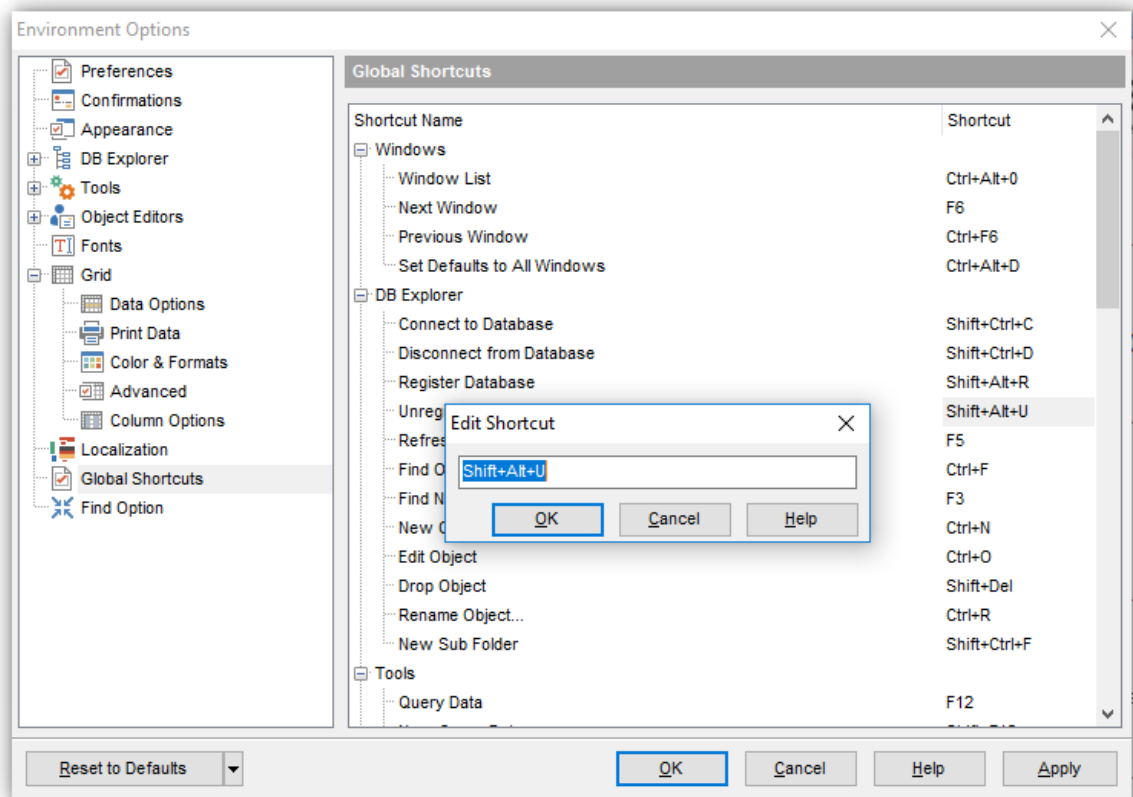
---

**See also:**

[Localization](#)<sup>[820]</sup>

### 12.1.10 Global Shortcuts

This section allows you to view/edit shortcuts for most needed actions when working with SQL Manager for InterBase/Firebird.



To edit a shortcut, select the required action click the ellipsis button and press the preferred key combination to assign it with the action.

#### See also:

[Key Mapping](#)<sup>[810]</sup>

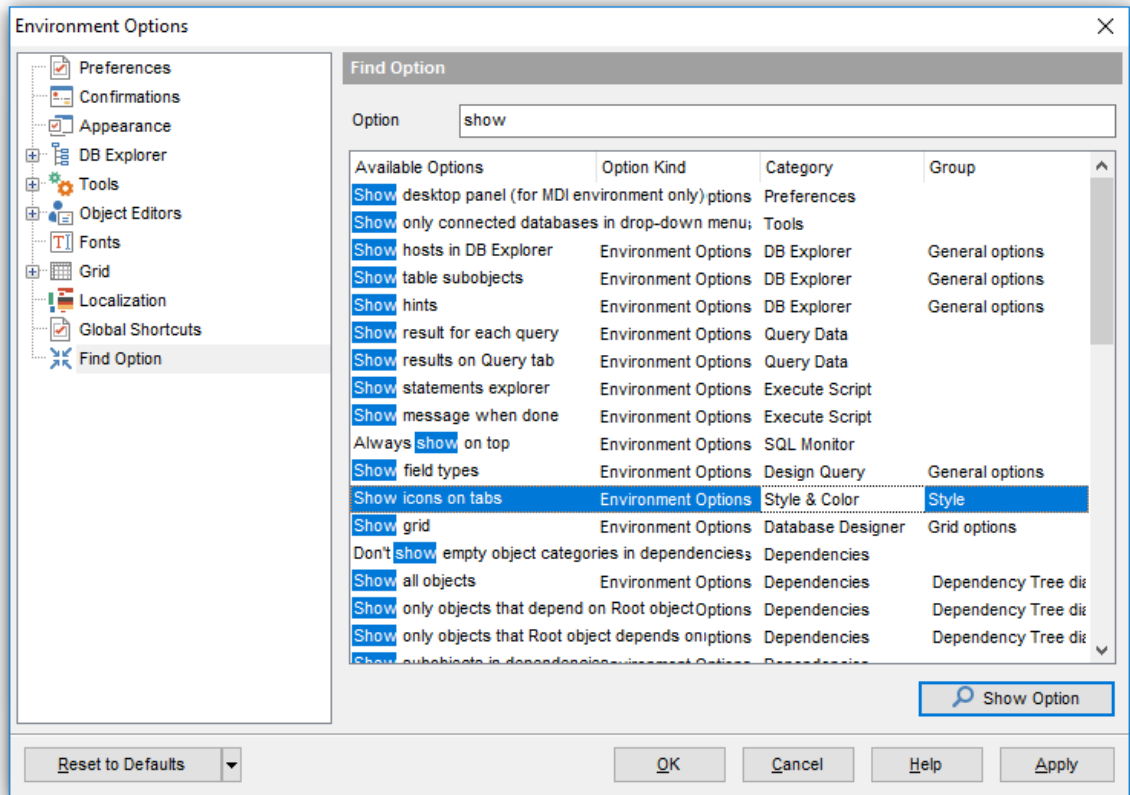
[Keyboard Templates](#)<sup>[825]</sup>

### 12.1.11 Find Option



The **Find Option** section allows you to search for options available within the **Environment Options** dialog easily and quickly.

#### Option

In this field you can enter the name of the option to search for within **SQL Manager Environment Options**.




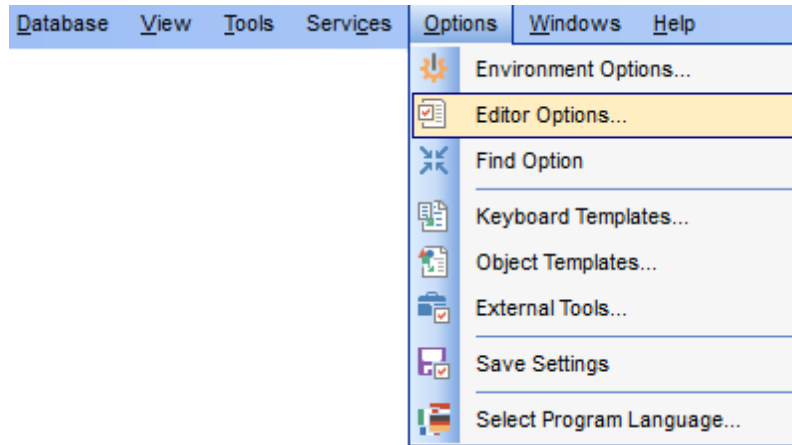
The **Available options** area lists all options of the *Environment Options* category according to the specified name. The **Option Kind**, **Category** and **Group** columns specify option type and location.

Select the required option in the list and click  **Show Option** to open the corresponding section where you can view/edit the value of this option. For your convenience the required option is marked with an animated .

## 12.2 Editor Options

**Editor Options** allow you to set the parameters of viewing and editing SQL statements within [Query Data](#)<sup>[830]</sup> and other SQL editing tools of the **SQL Manager** application.

To open the **Editor Options** window, select the **Options | Editor Options...** [main menu](#)<sup>[882]</sup> item, or use the **Editor Options**  button on the main [toolbar](#)<sup>[884]</sup>.



[General](#)<sup>[797]</sup>

[Display](#)<sup>[801]</sup>

[SQL Formatter](#)<sup>[807]</sup>

[Key Mapping](#)<sup>[810]</sup>

[Spell Checking](#)<sup>[812]</sup>

[Find Option](#)<sup>[814]</sup>

### See also:

[Environment Options](#)<sup>[736]</sup>

## 12.2.1 General

### Editor options

**Auto indent**

If this option is checked, each new indentation is the same as the previous one when editing SQL text.

Indents and outdents are used in the process of text editing to make the source code easier to read.

**Insert mode**

If this option is checked, the insert symbols mode is on by default.

**Find text at cursor**

If this option is checked, the **Text to find** field in the [Find Text](#) dialog is automatically filled with the text on which the cursor is set.

**Always show hyperlinks**

If this option is checked, hyperlinks are displayed in the editor window. To open a link, click it with the *Ctrl* key pressed.

**Double click line**

If this option is checked, double-clicking the line on which the cursor is set selects the whole line.

**Trim trailing spaces**

If this option is checked, all spaces after the last symbol in line will be trimmed.

**Fixed line height**

Prevents line height calculation. If this option is checked, the default line height is taken.

**Persistent blocks**

Keeps marked blocks selected even when the cursor is moved with the arrow keys used, unless a new block is selected.

**Fixed column move**

If this option is checked, the caret keeps its horizontal position when moved between lines.

**Optimal fill**

Check this option to enable optimal algorithm of filling text content in the working area of the editor.

**Unindent keep align**

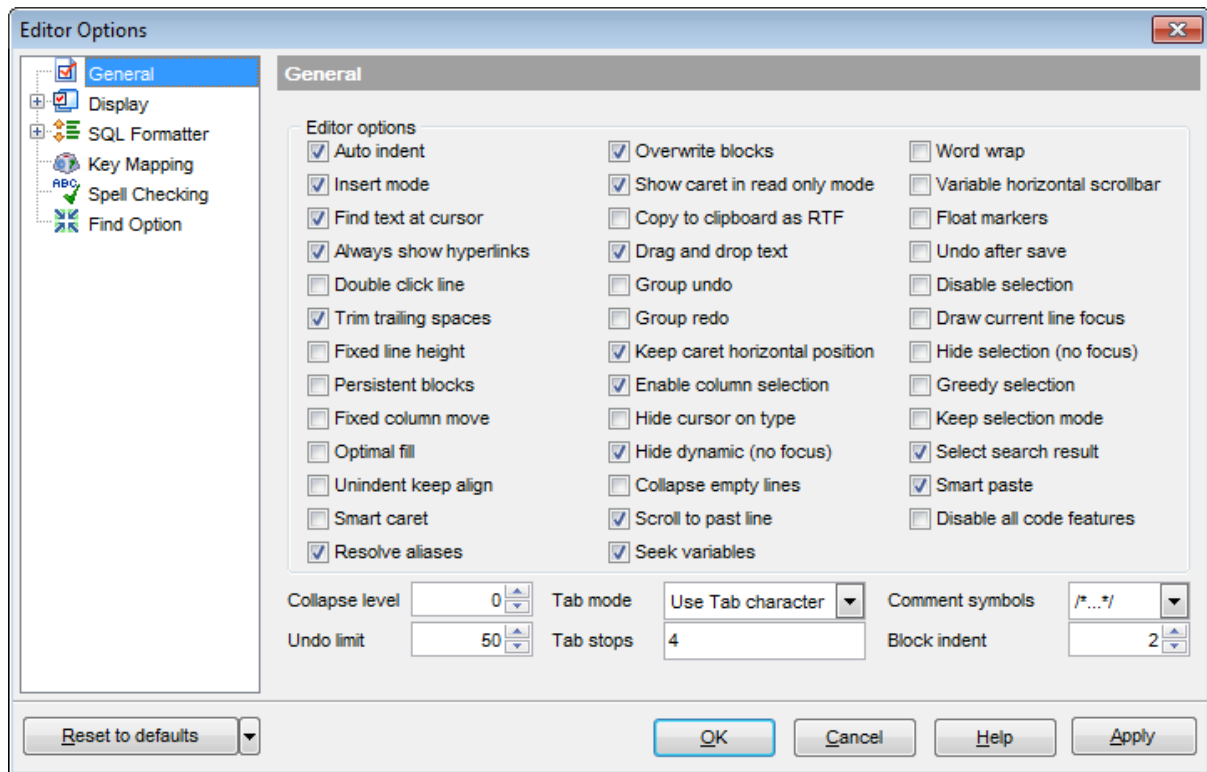
Keeps align for the lines that are not indented.

**Smart caret**

This option determines the caret movement (up, down, line start, line end). The caret is moved to the nearest position on the screen.

**Resolve aliases**

Enables/disables the syntax highlight and code completion features for aliases.



**Overwrite blocks**

Replaces a marked block of text with whatever is typed next. If **Persistent Blocks** is also selected, the text you enter is appended to the currently selected block.

**Show caret in read only mode**

Displays/hides the caret in read-only mode.

**Copy to clipboard as RTF**

If this option is checked, the selected text is copied in Rich Text format.

**Drag and drop text**

This option allows to drag and drop selected text.

**Group undo**

This option allows you to undo multiple actions of the same kind.

**Group redo**

This option allows you to redo multiple actions of the same kind.

**Keep caret horizontal position (Cursor beyond EOL)**

If this option is checked, the horizontal position of a cursor is kept. If you move the cursor (using the *Up* and *Down* arrow keys) onto a line having length less than the current cursor horizontal position, it will be positioned after the last symbol of the line.

**Enable column selection**

Enables/disables column selection mode.

**Hide cursor on type**

Hides/displays mouse cursor within the working area while a user is typing some text.

 **Hide dynamic (no focus)**

Hides dynamic highlights when an editor is not focused.

 **Collapse empty lines**

Collapses empty lines after a text range when this range has been collapsed.

 **Scroll to past line (Scroll to the last line only)**

When the option is enabled, you can scroll to the last line of the text only, otherwise you can scroll to the end of the page.

 **Word wrap**

When on, text is wrapped at the right margin of the editor area to fit in the visible area.

 **Variable horizontal scrollbar**

If this option is checked, the horizontal scrollbar varies according to the current content of the editor.

 **Float markers**

When enabled, markers are linked to the text, and they will move with the text while the text is being edited; otherwise the markers are linked to the caret position, and stay unchanged while the text is being edited.

 **Undo after save**

Keeps undo buffer unchanged after saving.

 **Disable selection**

Disables any selection when editing.

 **Draw current line focus**

Draws the focus rectangle around the current line when the editor has focus.

 **Hide selection (no focus)**

Hides the selection when the editor loses focus.

 **Greedy selection**

Selects an extra column/line in column/line selection modes.

 **Keep selection mode**

Enables selection for caret movement commands (like in BRIEF).

 **Select search result**

Determines whether the search result should be selected.

 **Smart paste**

When this option is enabled, the editor gets both Unicode and ANSI content from the clipboard, converts them using the selected character set and selects the best text to be pasted. This allows getting correct text copied from both ANSI and Unicode applications disregarding the currently selected keyboard language.

 **Disable all code features**

This option disables code completion, code folding, highlight and all options that are set on the [Code Completion](#) <sup>[805]</sup> page. For options that are set on the [Highlight](#) <sup>[803]</sup> page, the defaults will be applied.

**Collapse level**

Specifies the level of text ranges that will be affected by the "Collapse all" command.

**Undo limit**

Defines the maximum number of changes possible to be undone.

**Tab mode**

Specifies the way the TAB key is processed. Possible values are: *Use tab character* (inserts a tab character); *Insert spaces* (inserts space characters); *Dialog behaviour* (when the edit control is in a dialog, the focus is switched to the next control); *Smart tab* (tabs to the first non-white space character in the preceding line).

**Tab stops**

Defines the tab length used when editing a text.

**Comment symbols**

Defines the symbols which will be used to comment code fragments.

**Block indent**

Specify the number of spaces to indent a marked block.

**Hint:** The **Reset to Defaults** button which is common for all sections of the **Editor Options** dialog opens a menu with items allowing you to discard all changes and reset options of the *current category* or of *all categories* to their defaults.



## 12.2.2 Display

### Default editor fonts

Use these options to set the *font* and *size* used in the editor.

**Show only fixed-width fonts**

Use this option to display only fonts with fixed width in the **Font** dialog.

### Gutter

**Show line numbers**

If this option is checked, line numbers are displayed in the SQL text editor window.

**Gutter auto width**

Enable this option to specify that the gutter width will be adjusted automatically.

**Display line state**

If this option is checked, a colored line indicating the state of all altered lines in the text is displayed at the gutter of the editor window.

**Use code folding**

Check this option to enable to code folding feature of Query data.

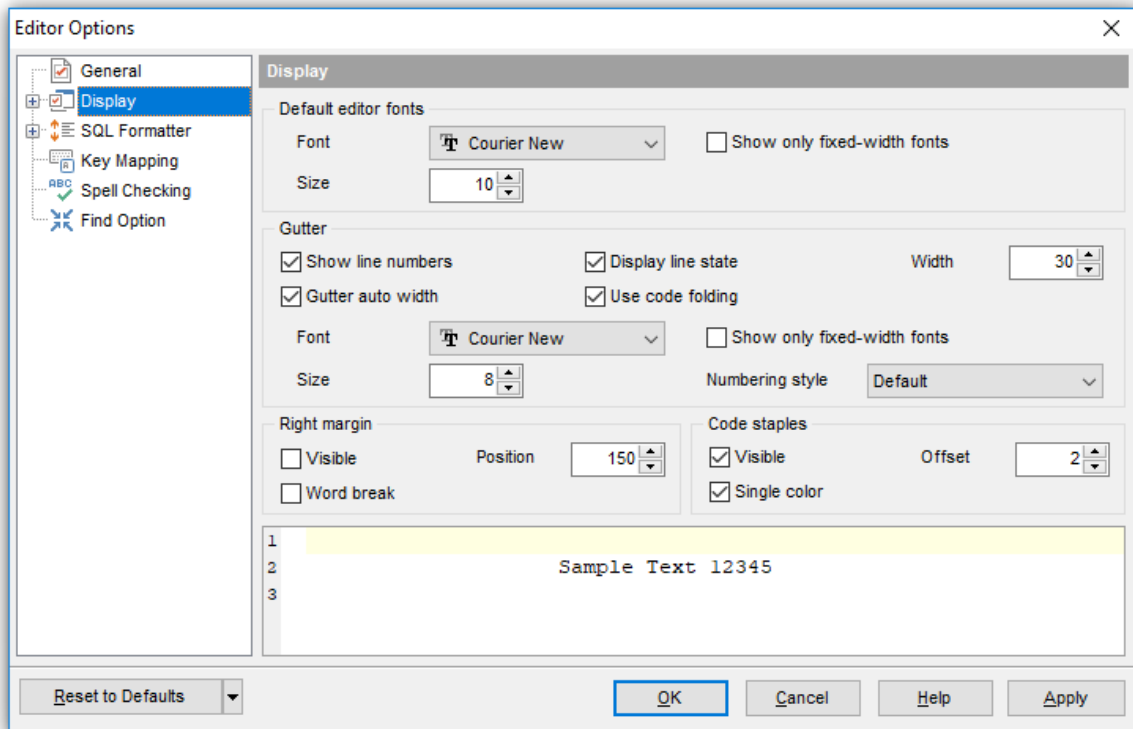
### Width

Defines the gutter width in the editor window.

Use these options to set the *Font*, *Size* and *Numbering style* used in the gutter.

**Show only fixed-width fonts**

Use this option to display only fonts with fixed width in the **Font** dialog.



### Right margin

**Visible**

Makes the right text margin visible.


**Word break**

Allows breaking the words at the right margin.

### Position

Defines the position of the right text margin in the editor window.

### Color

Defines the color of the right margin in the editor window. Select an item from the drop-down list or click the ellipsis  button to select a color using the **Color** dialog where you can specify the required color from the palette.

### Code staples

**Visible**

Makes the code staples visible in the editor window.

**Single color**

Check the option to apply a single color for code staples.

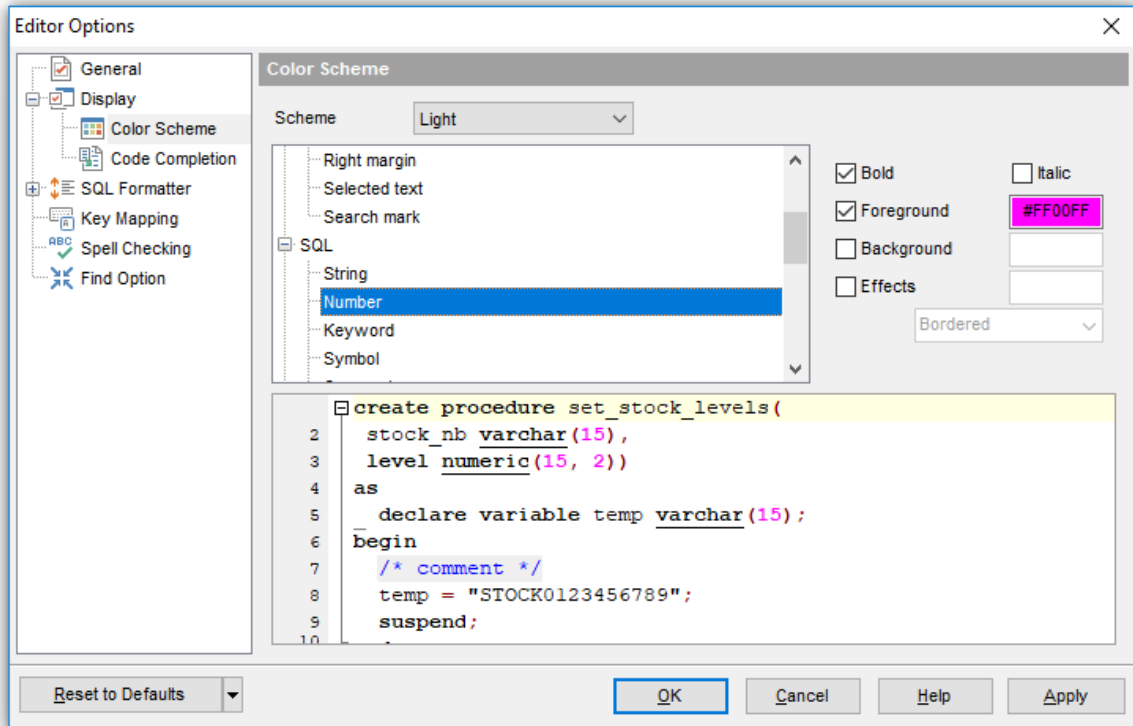
**Offset**

Specify the offset value for code staples.

### 12.2.2.1 Color Scheme

#### Scheme

Select the default color scheme for all editors: *Default* (Light) or *Dark*.



The **Element** list contains all elements available in SQL editors of the program. For your convenience the preview area (located below the **Element** list) illustrates the changes being made to each of the elements

Controls for changing the properties of the item selected in the **Element** list are located on the right. Use the following instructions for each of the elements.

**Bold**

Highlights the element with bold.

**Italic**

Makes the element text cursive.

**Foreground**

Select the foreground color for the element.

**Background**

Select the background color for the element.

**Effects**

Enables additional effects for the element text.

**See also:**

[Code Completion](#) <sup>805</sup>



### 12.2.2.2 Code Completion

The **Code Completion** section of the **Editor Options** dialog allows you to specify the **automatic features, fonts, styles, foreground and background colors, borders** and other attributes of the text used by the editor to display objects for 'quick code': *tables, indices, fields, foreign keys, procedures, functions, views, etc.*

#### Automatic features

##### **Code completion**

If this option is checked, then on typing the first word characters in the SQL text editor you will be offered some variants for the word completion in a popup list (an analogue of the **Code Insight** feature in **Delphi IDE**). The popup list will appear after a period of time defined by the **Delay** option.

##### **Delay**

Using this option you can change the time after which completion variants popup.

##### **Sensitivity**

This option allows you to set the number of characters to be typed before code completion is activated.

##### **Parameters completion**

If this option is checked, the Delphi-like hint for key words is enabled.

##### **Group by type**

If enabled, the items in the code completion list are sorted by type, otherwise they are sorted by name.

##### **Sort column names**

Enable this option to force sorting for field names.

##### **Show information hints**

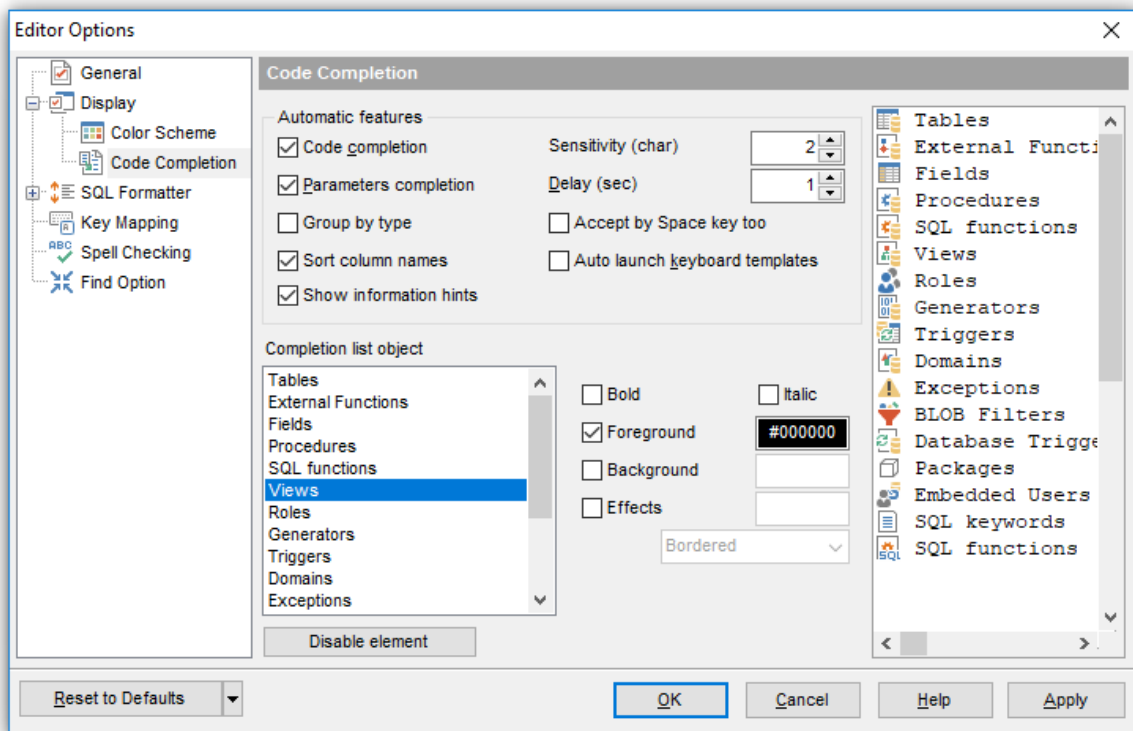
This option enables/disables information hints for variants offered by *code completion* feature.

##### **Auto launch keyboard templates**

Allows you to use keyboard templates for faster typing frequently used expressions (see [Keyboard Templates](#)<sup>[825]</sup>).

##### **Accept by Space key too**

Enables selecting the completion item with Space key.



### Completion list object

The list contains all objects for which you can set quick code parameters. For your convenience the preview area (located to the right of the **Completion list object** list) illustrates the changes being made to each of the objects.

If you press the **Disable element** button, the standard settings will be applied to this object; the button text will change to **Enable element**. If you press this button, you will be able to change font and color attributes for this object.

Controls for changing the properties of the item selected in the **Completion list object** list are located on the right.

### See also:

[Highlight](#) <sup>803</sup>

### 12.2.3 SQL Formatter

**SQL Formatter** is a feature implemented in SQL Manager for InterBase/Firebird and is a useful tool for formatting SQL queries and scripts, making SQL statements easy to read. SQL Formatter is introduced in [Query Data](#)<sup>[330]</sup>, [Execute Script](#)<sup>[542]</sup> and some object editors.

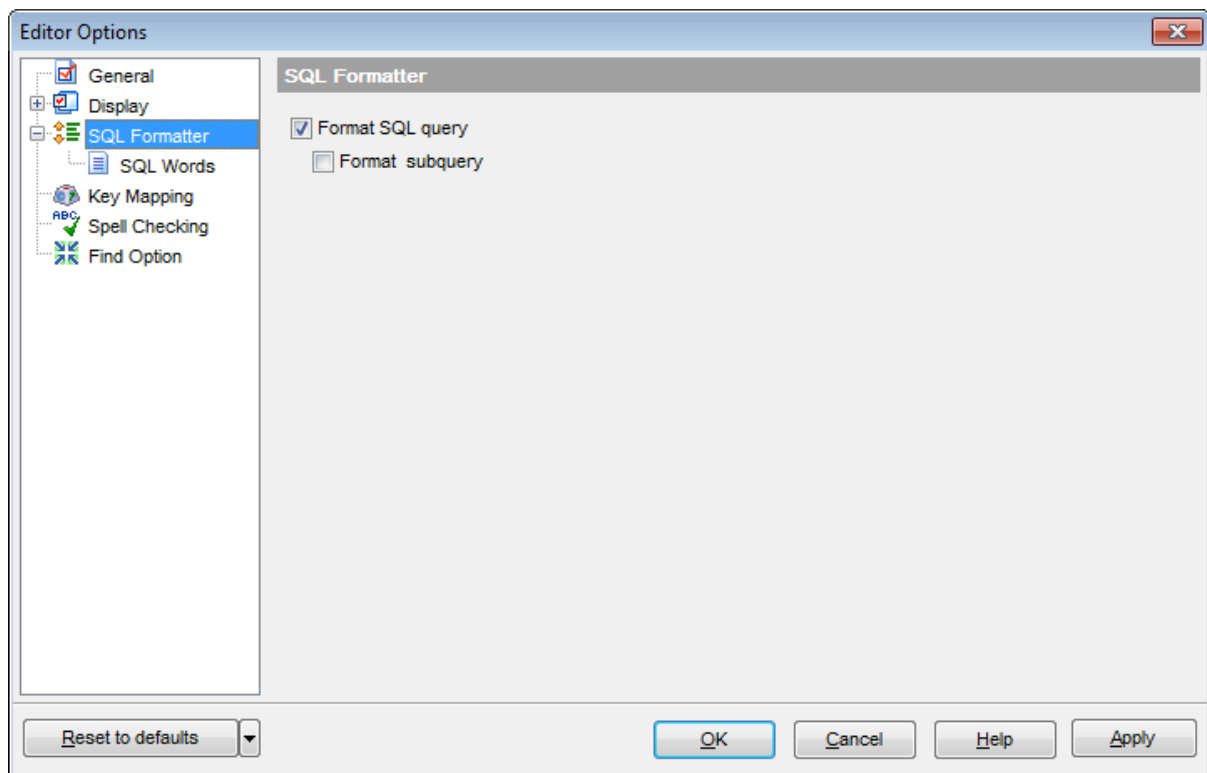
The **Settings** tab of the **SQL Formatter** section allows you to enable this feature and apply SQL formatting to subqueries, if necessary.

**Format SQL query**

Check this option to enable SQL formatting.

**Format subquery**

Enables SQL formatting for subqueries.



**See also:**

[Query Data](#)<sup>[330]</sup>

### 12.2.3.1 SQL Words

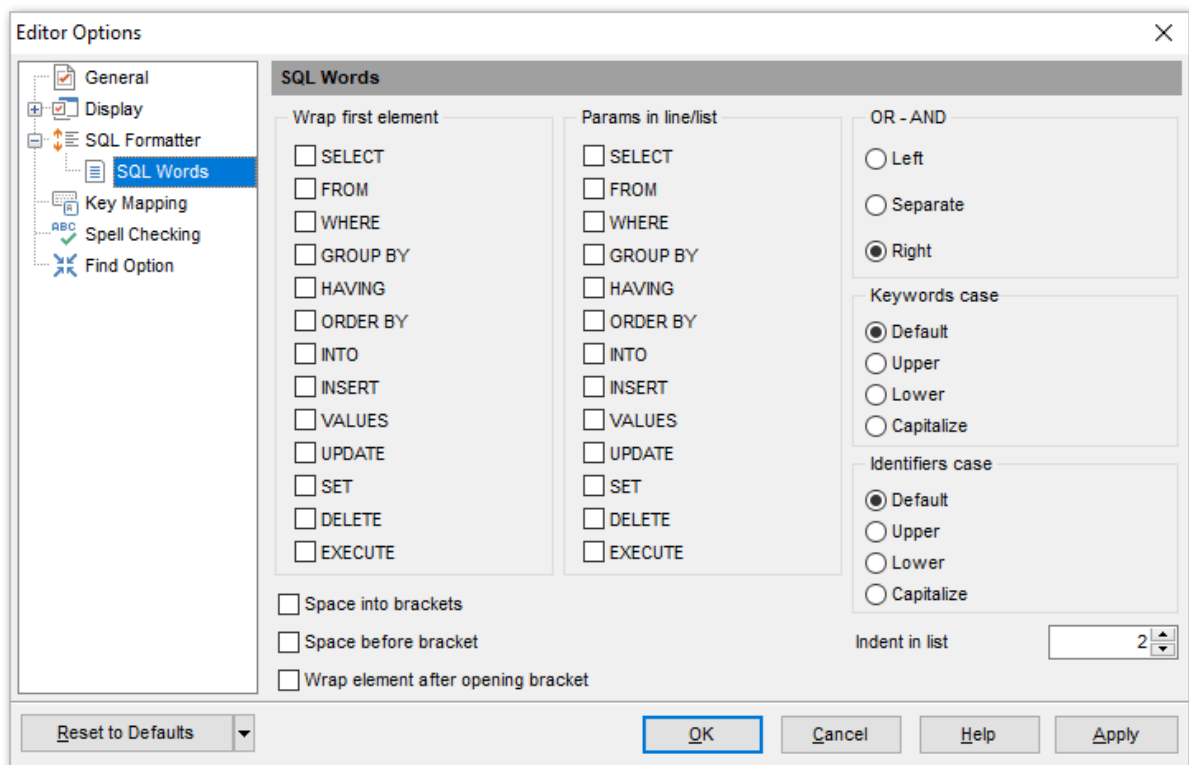
The **SQL words** page of the **SQL Formatter** section allows you to select the key words for each action of SQL formatter and to set formatting parameters.

#### Wrap first element

Wraps the selected text at a specific column. Select the SQL key words after which formatting should be applied.

#### Params in line/list

Allows you to display the parameters followed by the defined key words in list or in line.



#### OR - AND

Set the placement of the AND an OR operators according to the operands followed by them. See the example below.

##### Left

```
WHERE
  AND ...
  AND ...
  AND ...
```

##### Separate

```
WHERE
...
  AND
```



...  
AND

**Right**

WHERE  
... AND  
... AND  
... AND

The **Keywords case** / **Identifiers case** options allow you to define the case of the corresponding items.

You can choose *UPPER*, *lower*, *Capitalize*.

*Default* case means that the name of the identifier/keyword remains "AS IS".

**Space before bracket**

Adds a "space" character before the opening bracket and after the closing one.

**Space into brackets**

Adds a "space" character after the opening bracket and before the closing one.

**Wrap element after opening bracket**

Transfer to a new line after opening the bracket.

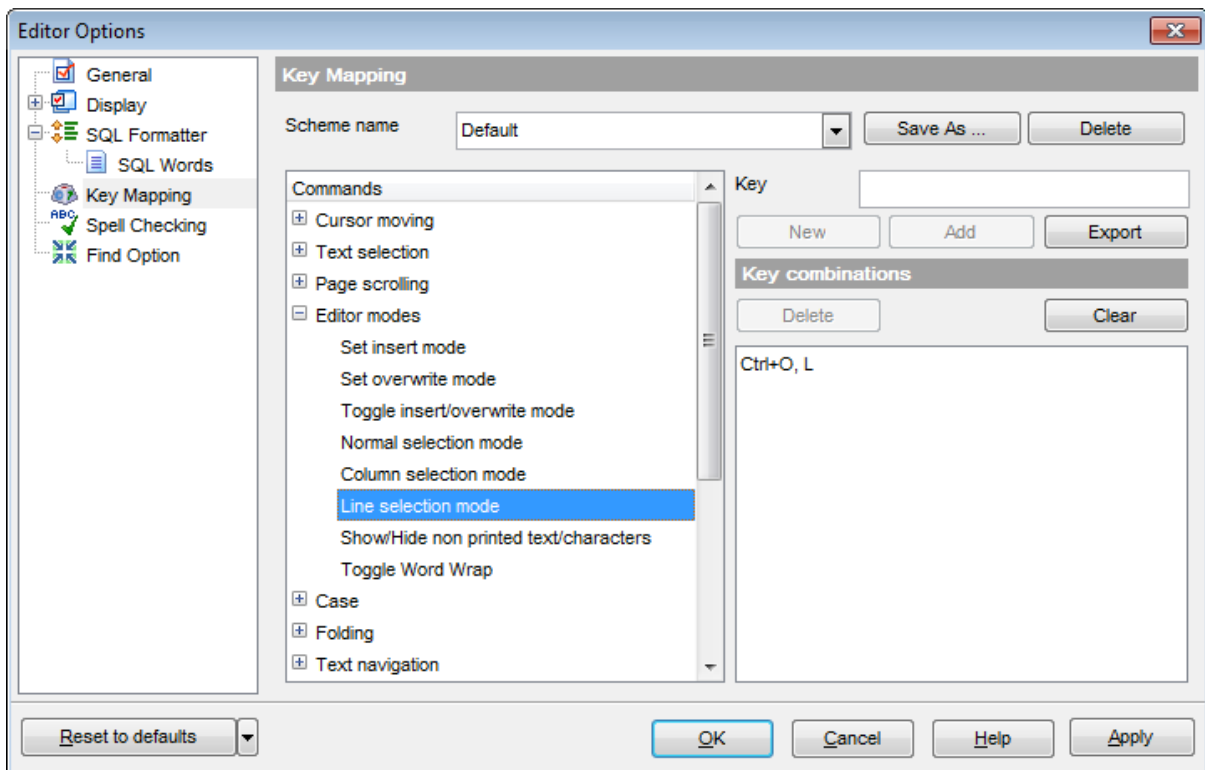
**Indent in list**

Sets the size of indent relatively to the previous string.

## 12.2.4 Key Mapping

For your convenience **key mapping** is provided in **SQL Manager for InterBase/Firebird**. On this page you can set the [shortcuts](#)<sup>[932]</sup> for various commands/operations according to your needs.

Use the **Commands** list on the right to select the command for which you need to make a shortcut, then place cursor into the **Key** editor and press the key combination you find useful (use *Ctrl Alt Shift* buttons). After setting the shortcut, press the **New** button to add it to the list of existing **Key combinations**. If the specified shortcut is already assigned to another command/operation, an error message with the command/operation will be returned.



**Note:** It is possible to set more than one key combination for the same command/operation (e.g. *Ctrl-K*, *Ctrl-H*) using the **Add** button.

If necessary, you can export the current Key mapping list to an external file by pressing the **Export** button.

Manage the shortcuts within the Key combinations list using the **Delete** (to remove the selected item) and the **Clear** (to remove all shortcuts for this command/operation) buttons.

It is also possible to save a custom key mapping scheme, if necessary:

- set the shortcuts for the appropriate commands/operations;
- click the **Save As...** button;
- input the new scheme name in the corresponding dialog.

To delete a scheme, select it in the **Scheme name** drop-down list and press the **Delete** button.

---

**See also:**

[Query Data](#)<sup>[330]</sup>

[SQL Manager shortcuts](#)<sup>[932]</sup>

## 12.2.5 Spell Checking

**Spell checking** is a new feature implemented in **SQL Manager for InterBase/Firebird** for your convenience.

Set the necessary **Spell checker mode**:

**Highlighting**

In this mode incorrectly spelled and misprinted words are highlighted in the editor.

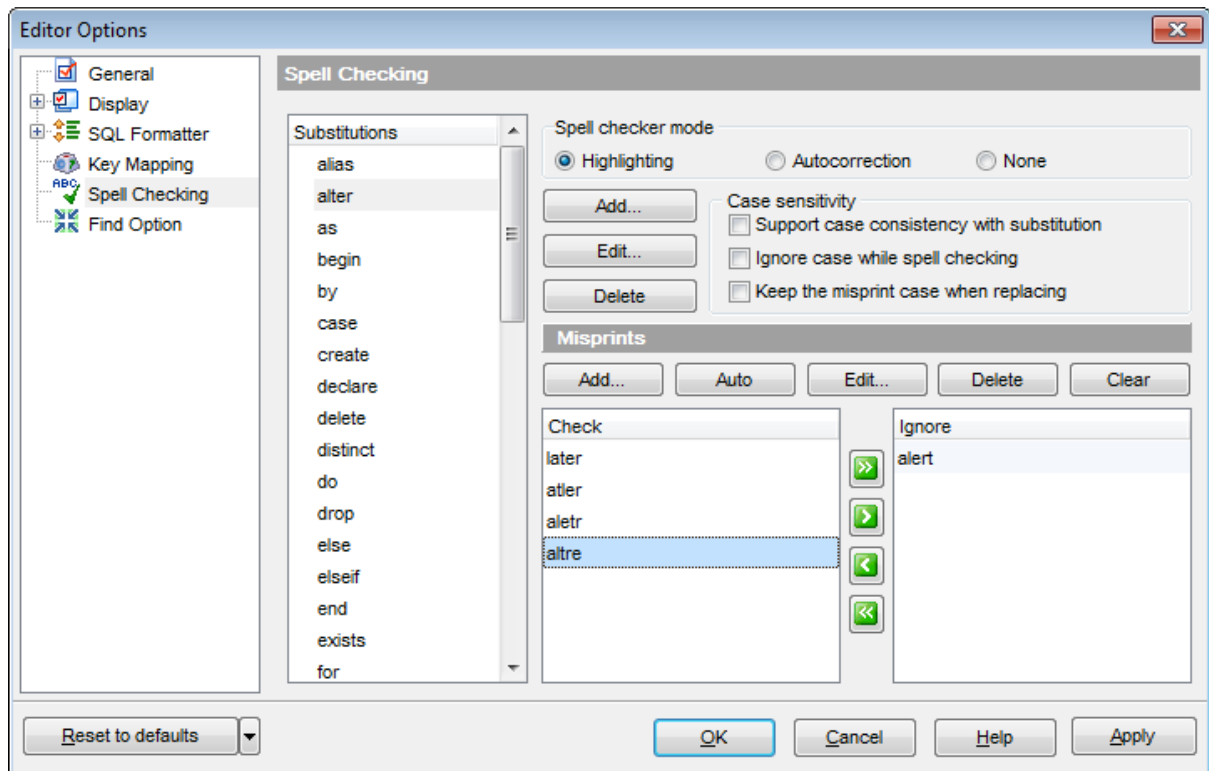
**Autocorrection**

In this mode incorrectly spelled and misprinted words are replaced with the corresponding words from the **Substitutions** list automatically.

**None**

In this mode the spelling checker is disabled.

Use the **Add...** button to add a new item to the **Substitutions** list, the **Edit...** button to alter the selected substitution, and the **Delete** button to remove the selected substitution from the spelling checker vocabulary.



### Case sensitivity

**Support case consistency with substitution**

If this option is selected, the spelling checker uses the case of words-substitutions when performing a replacement.

**Ignore case while spell checking**

Check this option to disable case checking.





 **Keep the misprint case when replacing**

Check this option if you do not wish to change the case of the replaced word.

**Misprints**

Controls of this group allow you to manage the spelling checker vocabulary: use the **Add...** button to add a new misprint to the vocabulary, the **Auto** button to use the default list of misprints, the **Edit...** button to change the selected misprint, the **Delete** button to remove the selected misprint from the vocabulary, and the **Clear** button to empty the list of misprints for the currently selected substitution.

It is also possible to exclude a misprint from spell checking without deleting the misprint. This misprint will therefore remain in the vocabulary, but it will be ignored by the spelling checker.

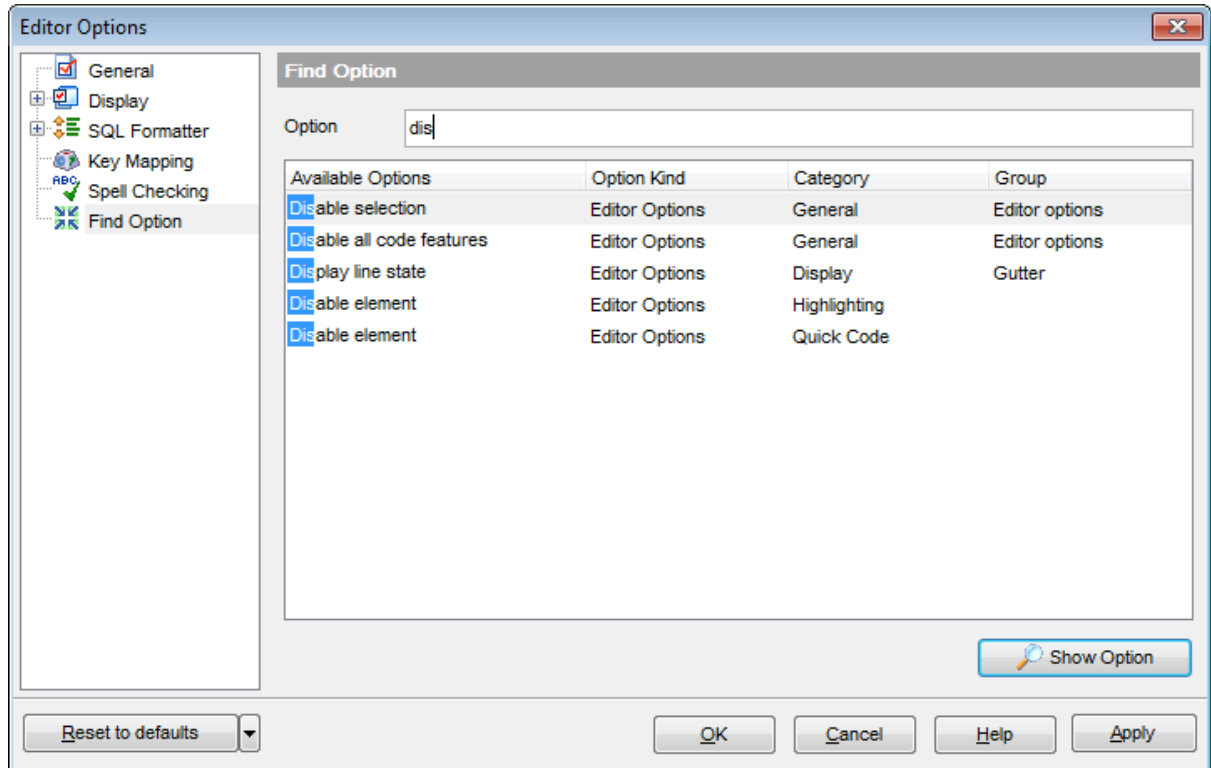
To mark a misprint as excluded, you need to move it from the **Check** list to the **Ignore** list. Use the     buttons or drag-and-drop operations to move the misprints from one list to another.

## 12.2.6 Find Option



The **Find Option** section allows you to search for options available within the **Editor Options** dialog easily and quickly.

### Option

In this field you can enter the name of the option to search for within **SQL Manager Editor Options**.



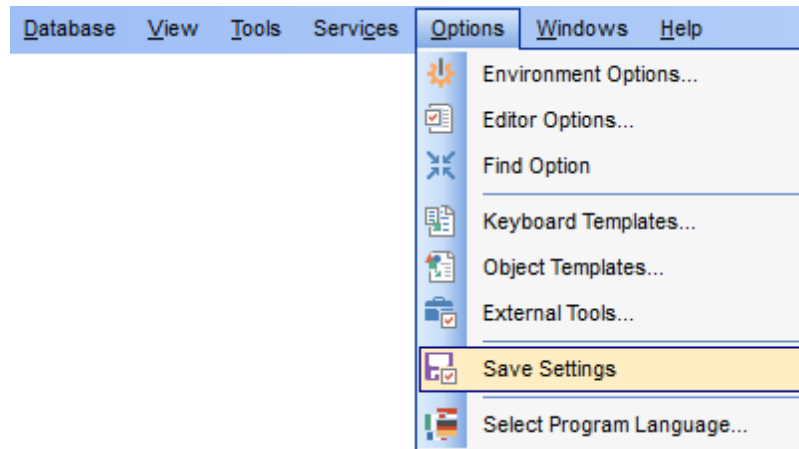
The **Available options** area lists all options of the *Editor Options* category according to the specified name. The **Option Kind**, **Category** and **Group** columns specify option type and location.

Select the required option in the list and click  **Show Option** to open the corresponding section where you can view/edit the value of this option. For your convenience the required option is marked with an animated  icon.

## 12.3 Save Settings

**Save Settings Wizard** allows you to export the settings of **SQL Manager for InterBase/Firebird** - wholly or partially - to a single \*.reg file which can be applied afterwards to **SQL Manager for InterBase/Firebird** installed on another machine, or it can be used to backup previous settings.

To start the wizard, select the **Options | Save Settings** [main menu](#)<sup>[882]</sup> item.




- [Specifying destination file](#)<sup>[816]</sup>
- [Selecting settings](#)<sup>[817]</sup>
- [Selecting databases](#)<sup>[818]</sup>
- [Saving settings](#)<sup>[819]</sup>

To apply saved settings you need to open the created \*.reg file, then press the OK button in the window appeared. All settings will be applied automatically (they will be added in the Windows Registry).

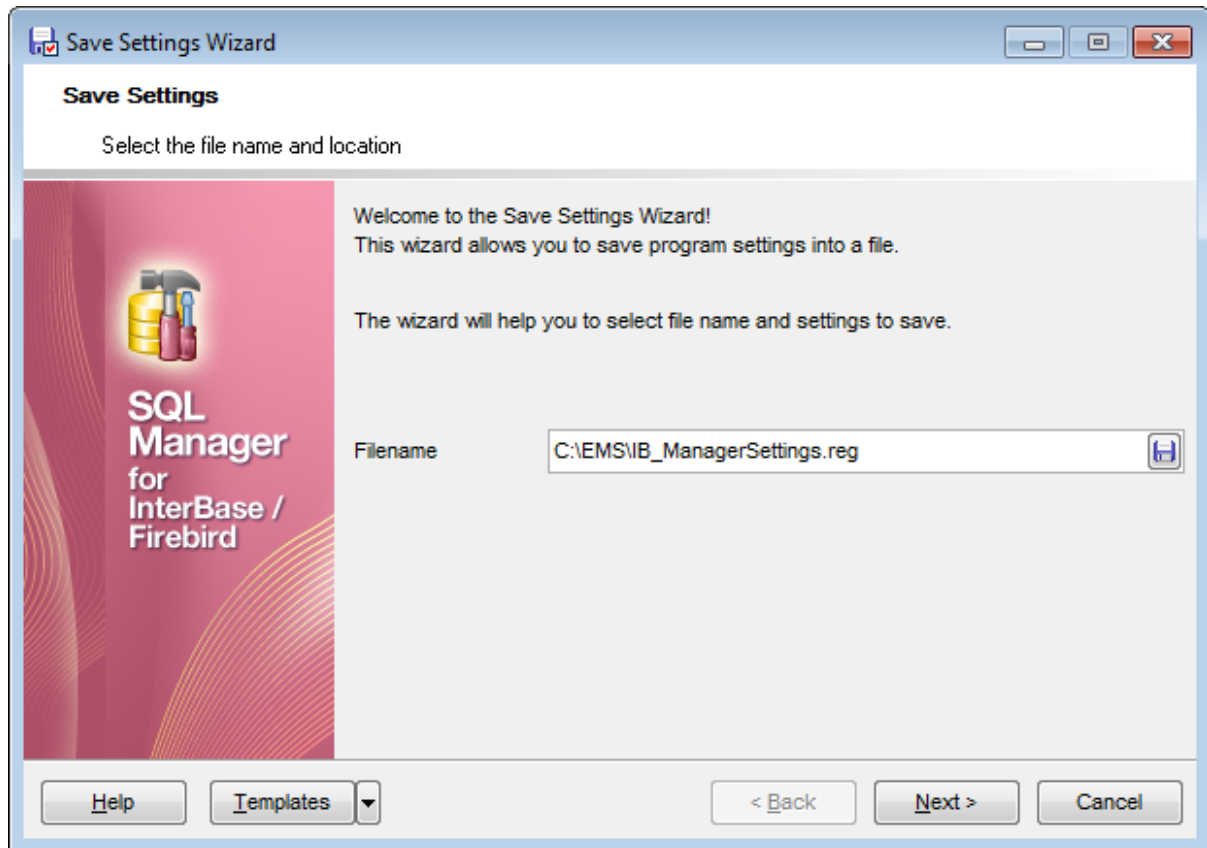
### 12.3.1 Specifying destination file

This step of the wizard allows you to specify the location of the destination file.

#### Filename

Use the  button to set the path to the \*.reg file where the application settings are to be saved.

**Note:** If the target file already exists, the application will show a [warning](#)<sup>[829]</sup> dialog where you can choose the action you need.

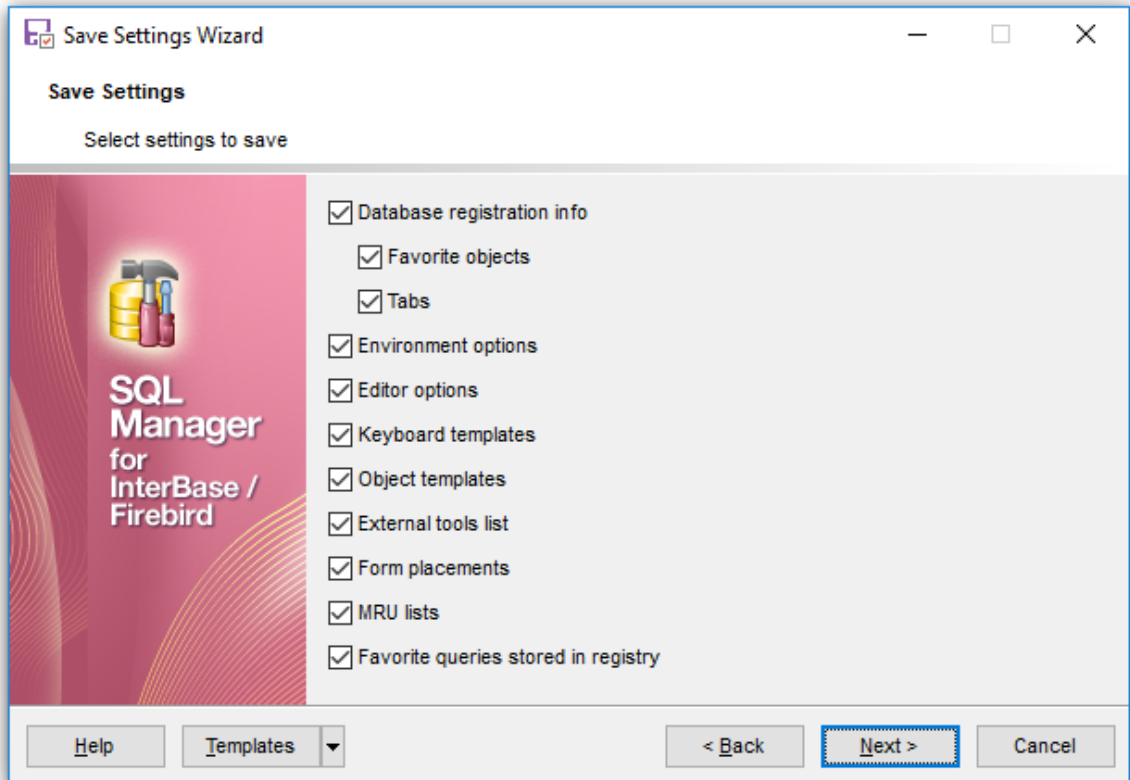


Press the **Next** button to proceed to the [next step](#)<sup>[817]</sup> of the wizard.



### 12.3.2 Selecting settings





This step of the wizard allows you to specify the information you need to be saved to the result file: *Database registration info, Favorite objects, Tabs, Environment options, Editor options, Keyboard templates, Object templates, External tools list, Form placements, MRU lists, Favorite queries*.

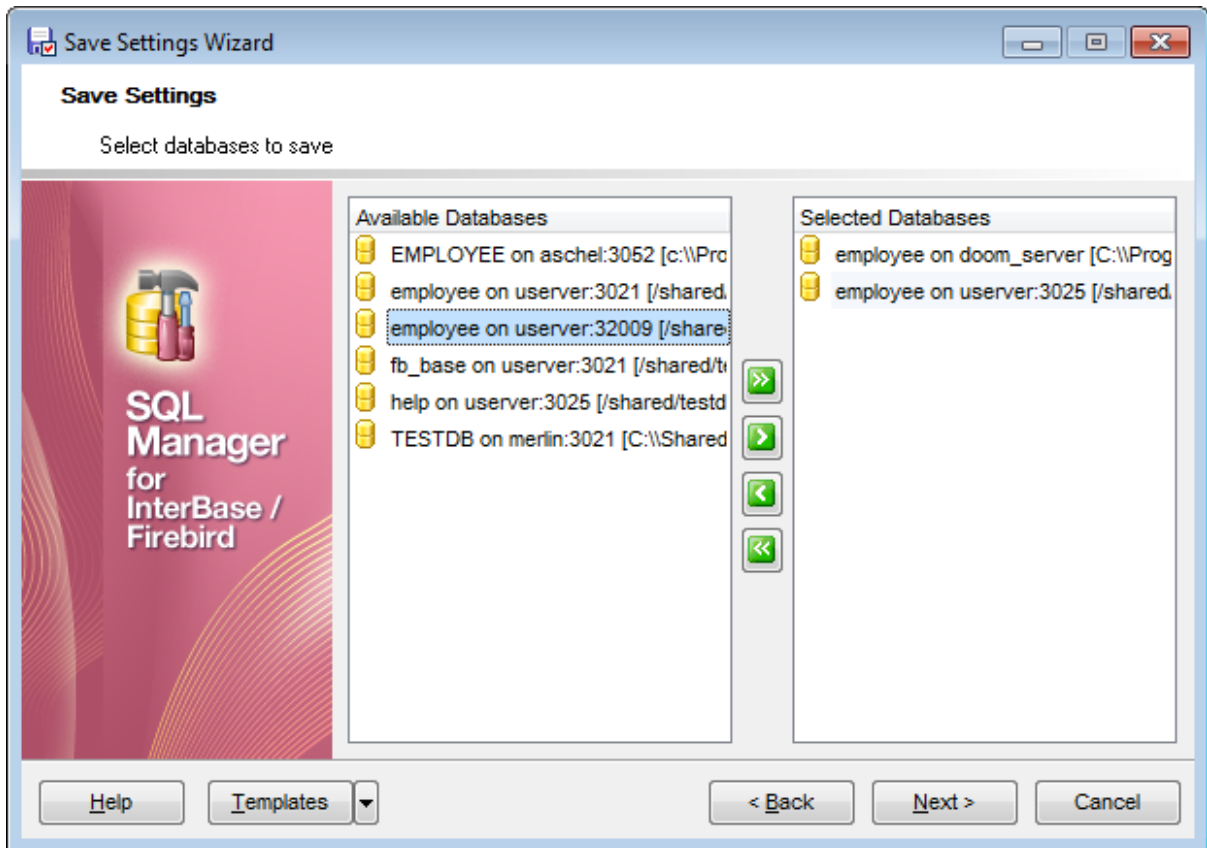


Press the **Next** button to proceed to the [next step](#)<sup>[818]</sup> of the wizard.

### 12.3.3 Selecting databases

This step of the wizard allows you to select the database(s) to save the registration settings.

To select a database, you need to move its alias from the **Available Databases** list to the **Selected Databases** list. Use the     buttons or drag-and-drop operations to move the databases from one list to another.

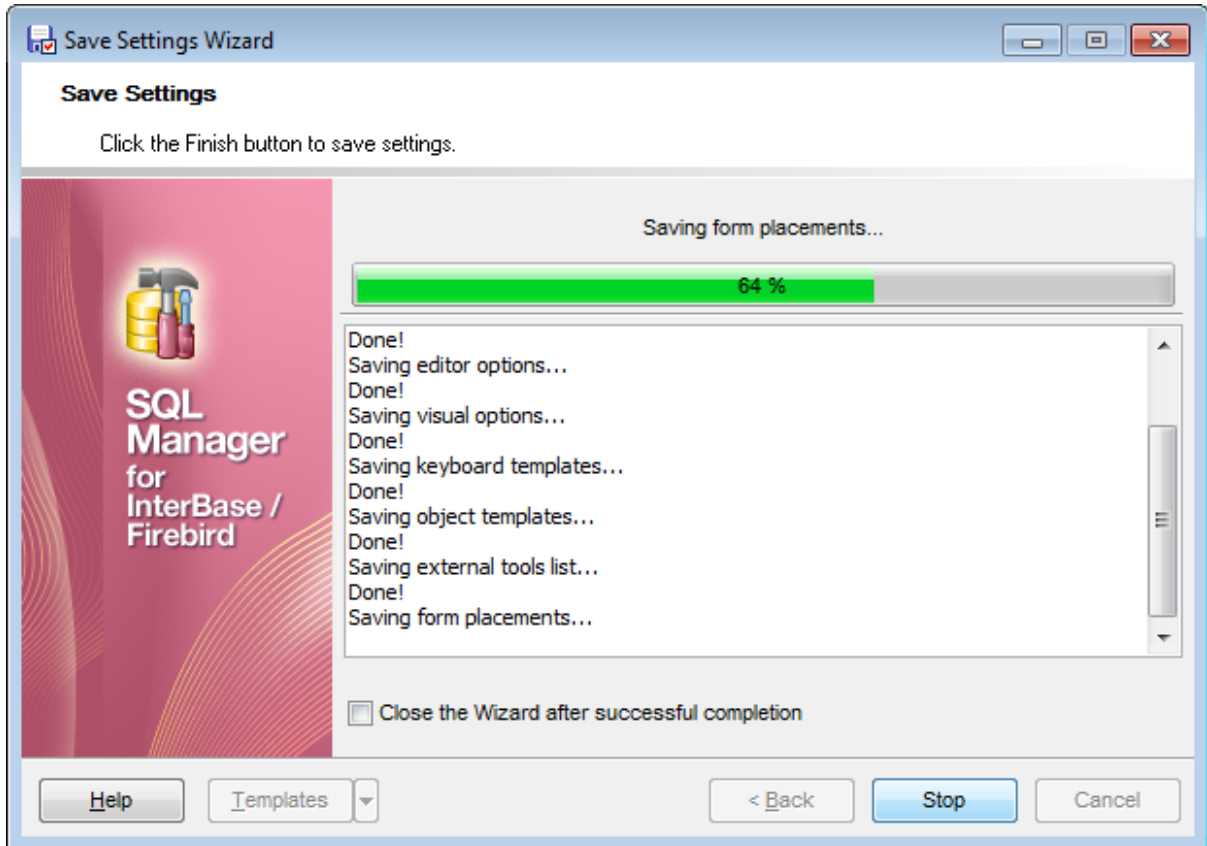


Press the **Next** button to proceed to the [last step](#) <sup>819</sup> of the wizard.

### 12.3.4 Saving settings

This step of the wizard is intended to inform you that the saving settings operation has been configured, and the wizard is ready to save the application settings to the specified file.

The log area allows you to view the log of operations and errors (if any).



**Close the Wizard after successful completion**

If this option is selected, the wizard is closed automatically when the export process is completed.

If necessary, you can save a [template](#)<sup>[910]</sup> for future use.

Click the **Finish** button to start saving settings.


## 12.4 Localization

When using **SQL Manager for InterBase/Firebird**, you are provided with multi-language interface support. You can change the program language, specify the directories for your localization files easily, edit existing localizations and create your own localization files.

### Changing Program Language

- select the **Options | Select Program Language...** [main menu](#)<sup>[882]</sup> item;
- select the interface language in the [Select Language](#)<sup>[823]</sup> dialog;
- click **OK** to apply the language and close the dialog.

### Editing Program Localization

- open one of the program windows (e.g. [Table Editor](#)<sup>[184]</sup>, [Query Data](#)<sup>[330]</sup>) where you wish to edit the localization of captions and hints;
- use the *Shift+Ctrl+L* keyboard [shortcut](#)<sup>[932]</sup> to open the [Localization Editor](#)<sup>[821]</sup> window;
- edit window captions and hints as necessary;
- click the **Save**  button on the [toolbar](#)<sup>[884]</sup>.

**Note:** The [Localization Editor](#)<sup>[821]</sup> window is only available if the currently selected language is different from the default.

### Creating New Localization Files

- create a new localization file similar to those located in the `%program_directory%\Languages` folder;
- select the **Options | Environment Options** [main menu](#)<sup>[882]</sup> item;
- proceed to the [Localization](#)<sup>[792]</sup> section of the **Environment Options** dialog;
- click the **Add** button;
- set the language name and the path to the new `*.lng` file within the [Language Info Editor](#)<sup>[909]</sup> dialog.

The new language is added to the list of available languages. Now you can set it as the interface language using the [Select Program Language](#)<sup>[823]</sup> dialog or the [Localization](#)<sup>[792]</sup> section of the [Environment Options](#)<sup>[736]</sup> dialog.

---

### See also:

[Localization](#)<sup>[792]</sup>


[Language Info Editor](#)<sup>[909]</sup>

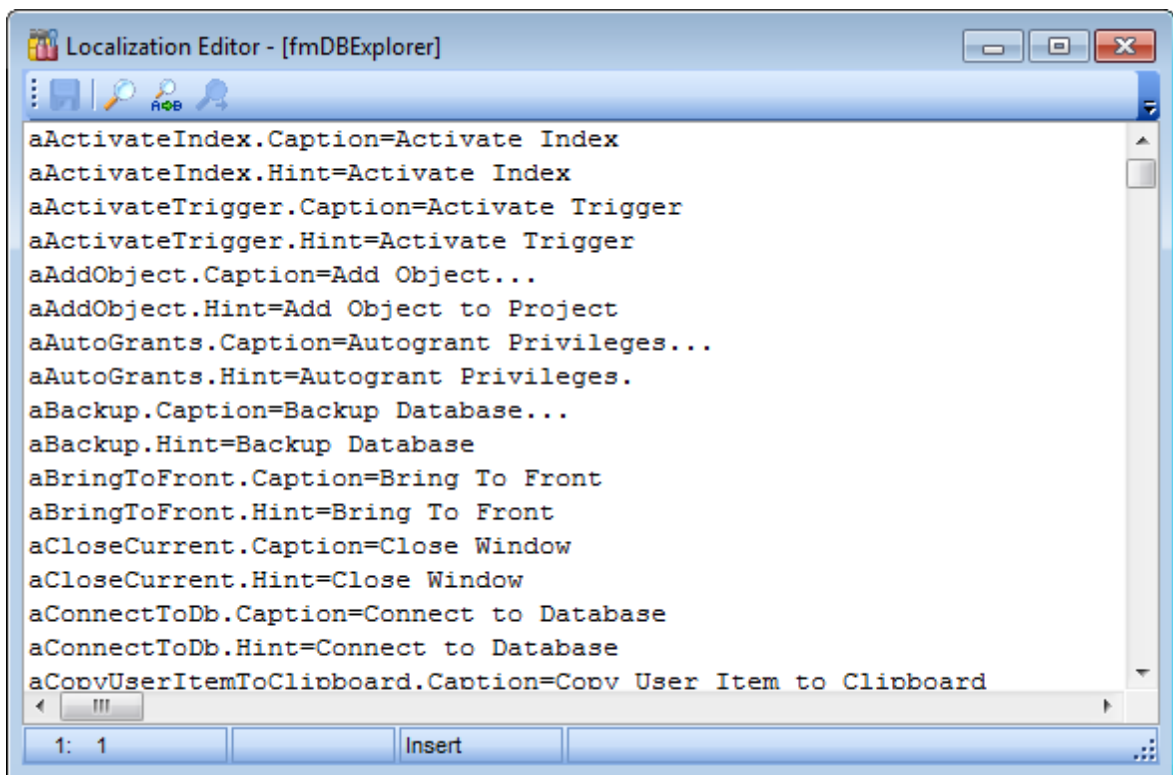
### 12.4.1 Localization Editor

The **Localization Editor** window allows you to edit the captions and hints of any **SQL Manager** window, if the selected program language is different from the default one.

To call this window, use the *Shift+Ctrl+L* [shortcut](#)<sup>[932]</sup> in any child window of **SQL Manager for InterBase/Firebird**.

The working area of the window contains the element names and the corresponding strings divided by the "=" character. These strings are what you see in the program as menu items, window captions, button hints, etc. Edit them to change the program appearance. Be careful and do not edit the identifiers that stand before the "=" character - this will not produce any effect.

For your convenience the **Find** and **Replace** features are provided - the corresponding [toolbar](#)<sup>[884]</sup> buttons are used to call the [Find Text](#)<sup>[901]</sup> dialog or the [Replace Text](#)<sup>[903]</sup> dialog respectively. The **Search Again**  button enables the repeated search for the text that was last searched.



When you are done with editing, click the **Save**  button on the [toolbar](#)<sup>[884]</sup> to apply the changes you have made.

Availability:

**Full** version (for **Yes** Windows)

**Lite** version (for **Yes**  
Windows)

**Note:** To compare all features of the **Full** and the **Lite** versions of **SQL Manager**, refer to the [Feature Matrix](#)<sup>[20]</sup> page.

---

**See also:**

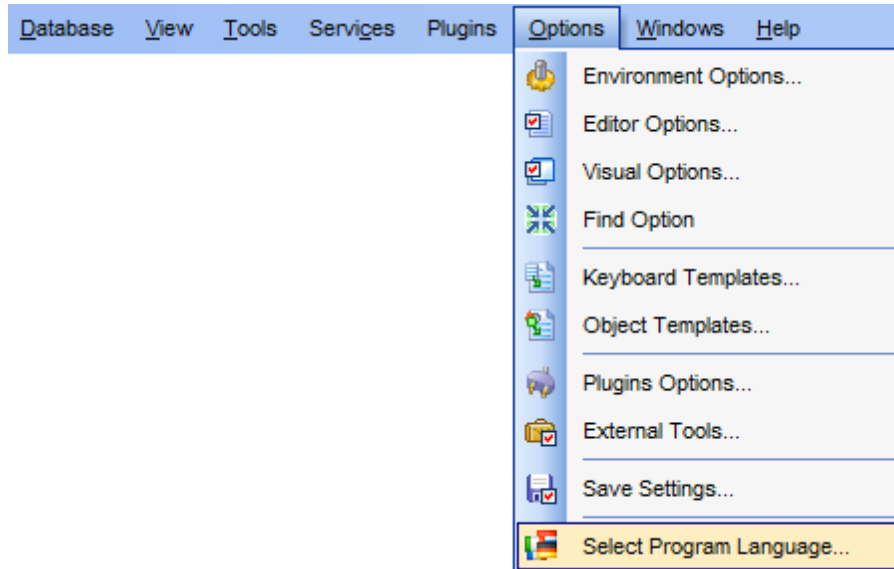
[Select Program Language](#)<sup>[823]</sup>


[Localization](#)<sup>[792]</sup>

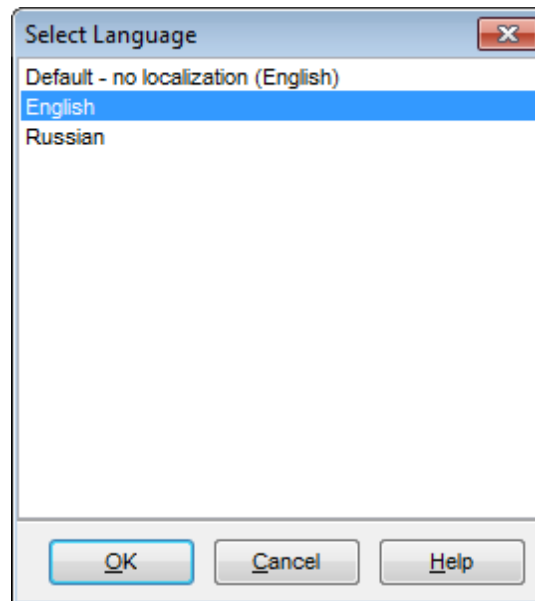
## 12.4.2 Select Program Language

The **Select Language** dialog allows you to select a language for **SQL Manager for InterBase/Firebird** localization.

To open this dialog, select the **Options** |  **Select Program Language...** [main menu](#)  item.



The dialog displays the list of available languages configured on the [Environment Options | Localization](#)  page. Select a language from the list and click **OK** to confirm your choice and close the dialog.



Availability:

**Full** version (for Windows) **Yes**

**Lite** version (for Windows) **Yes**

**Note:** To compare all features of the **Full** and the **Lite** versions of **SQL Manager**, refer to the [Feature Matrix](#)<sup>[20]</sup> page.

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**See also:**

[Localization Editor](#)<sup>[82]</sup>

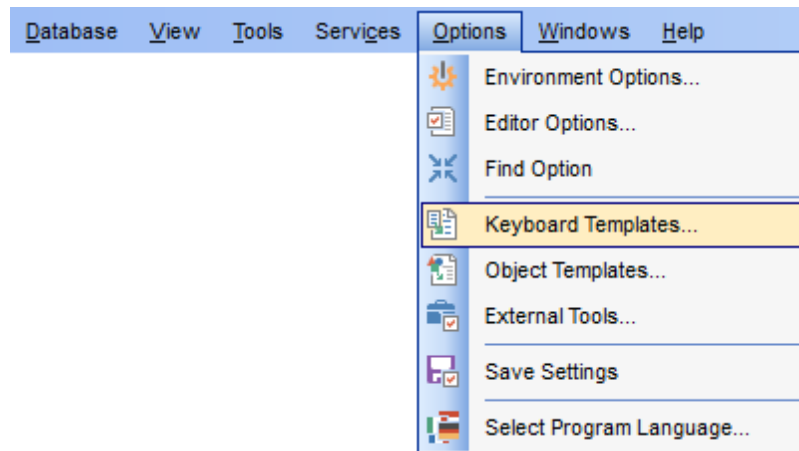
[Localization](#)<sup>[79]</sup>



## 12.5 Keyboard Templates

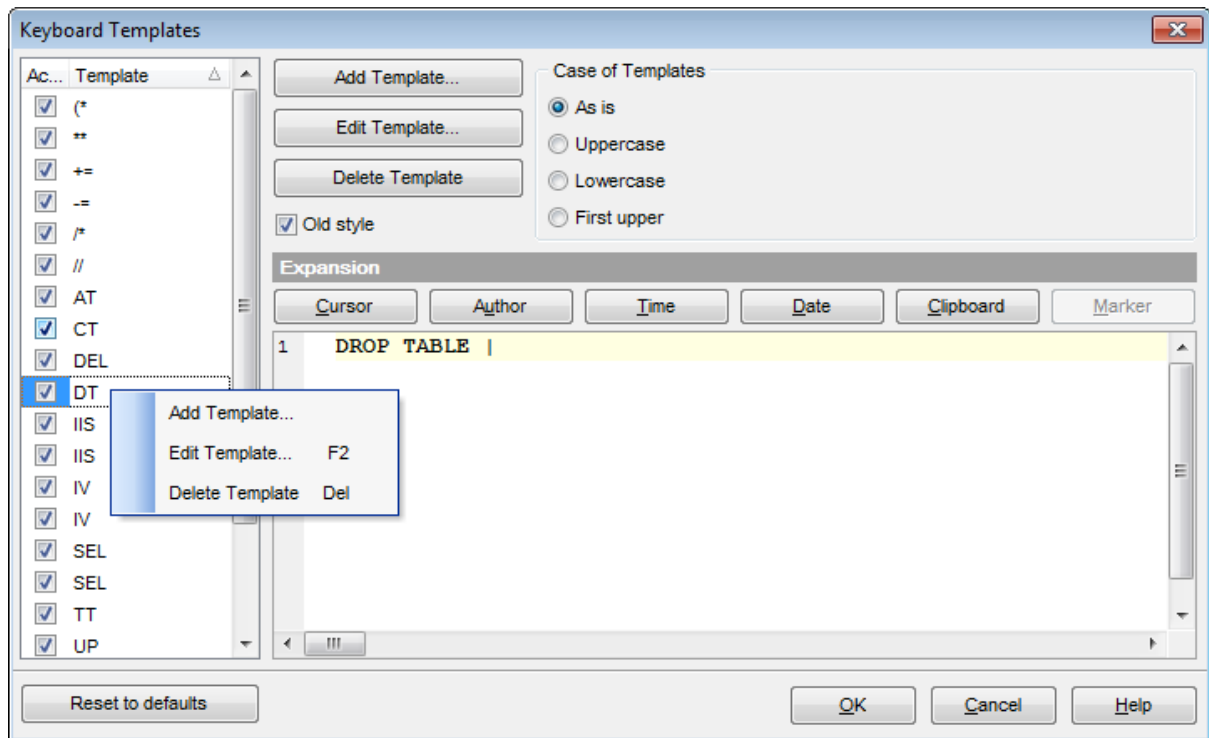
The **Keyboard Templates** window allows you to create new keyboard templates for quicker typing regularly used expressions and to edit the existing ones.

To open this window, select the **Options |  Keyboard Templates...** [main menu](#)<sup>[882]</sup> item.



To add a new keyboard template, click the **Add Template...** button, set the template name and define the template expression. In the upper right area of the window you can change the **case** of the template expression (*As is, Uppercase, Lowercase, First upper*).

You can deactivate an existing template by selecting it from the list on the left and removing the **Active** flag of the template.



If necessary, you can also edit the template name using the **Edit Template...** button, delete the template using the **Delete Template** button or edit the template expression within the **Expansion** area of the window. For faster editing you can use the *Cursor*, *Author*, *Time*, *Date*, *Clipboard*, *Marker* buttons.

**Hint:** Add/edit/delete template items are also available in the *context menu* of the template list on the right.

**Old style**

This option specifies whether the selected keyboard template expansion should conform to the template specifications used in the earlier versions of **SQL Manager for InterBase/Firebird**.

Once you have defined the templates, you can use them in [Query Data](#)<sup>[330]</sup>. First of all, make sure that the  **Auto launch keyboard templates** option is selected on the [Code Completion](#)<sup>[805]</sup> page of the [Editor Options](#)<sup>[796]</sup> dialog. When [editing SQL text](#)<sup>[333]</sup> in Query Data, type a template name and use the *Ctrl+J* [shortcut](#)<sup>[932]</sup>: the text associated with the template (**Expansion**) will be inserted automatically.

**Hint:** The **Reset to defaults** button which is available at the bottom of the **Keyboard Templates** dialog allows you to discard all changes and restore the settings to their defaults.

**See also:**

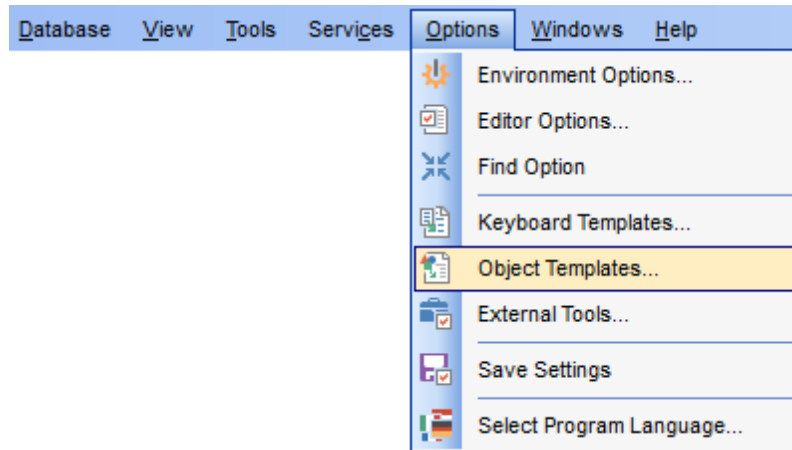
[Code Completion](#)<sup>[805]</sup>

[SQL Manager shortcuts](#)<sup>[932]</sup>

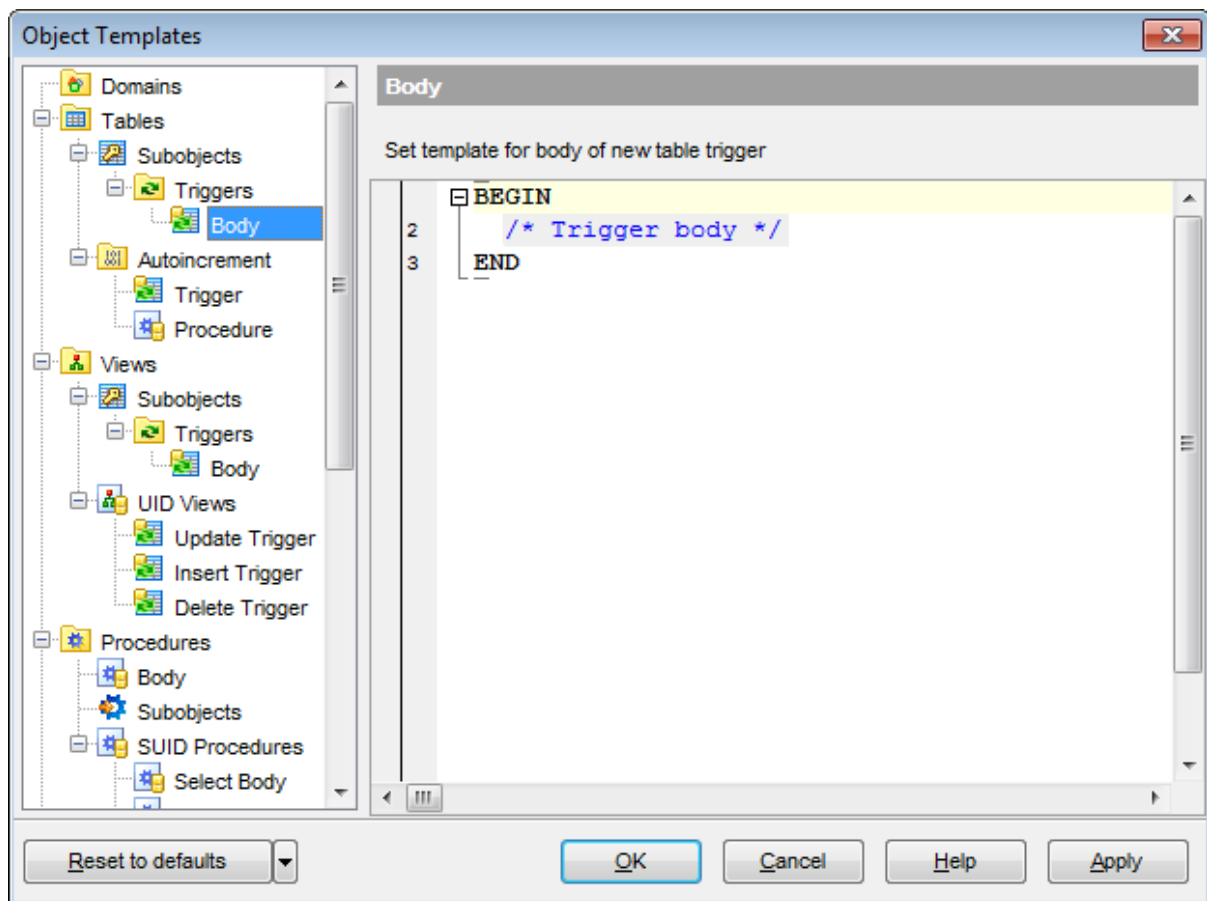
## 12.6 Object Templates

The **Object Templates** window allows you to preset the definition template for the name and/or body of an object to be created.

To open this window, select the **Options |  Object Templates...** [main menu](#)<sup>[882]</sup> item.



Select an object in the tree (*Domain, Table, View, Procedure, DB Trigger, UDF, Exception, Generator, BLOB Filter, User, Embedded User, Role, Report, Favorite Query, Project*) and set its template using the editor area.

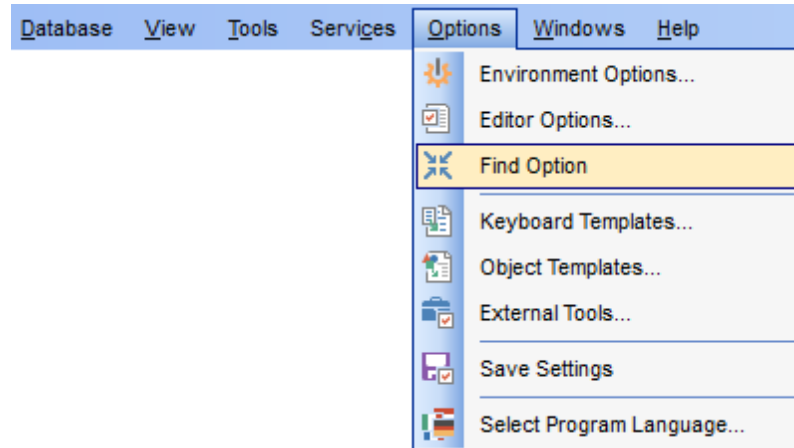
**See also:**

[Database Objects Management](#)<sup>[162]</sup>

## 12.7 Find Option dialog

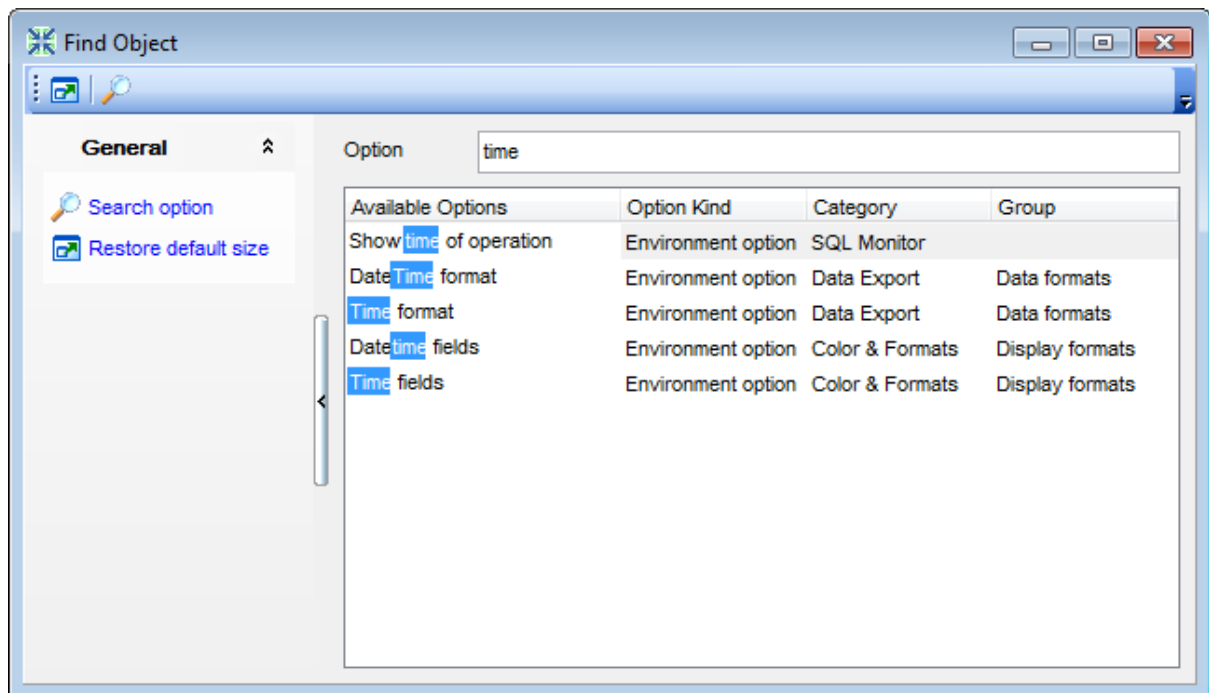
The **Find Option** dialog allows you to search for **SQL Manager** options easily.

To open this dialog, select the **Options | Find Option** [main menu](#) item.




### Option

In this field you can enter the name of the option to search for within the entire set of **SQL Manager** options.



The **Available options** area lists all options by categories according to the specified name. The **Option Kind**, **Category** and **Group** columns specify option type and location. Select the required option in the list and click **Show Option** to open the corresponding

dialog where you can view/edit the value of this option. For your convenience the required option is marked with an animated  icon.

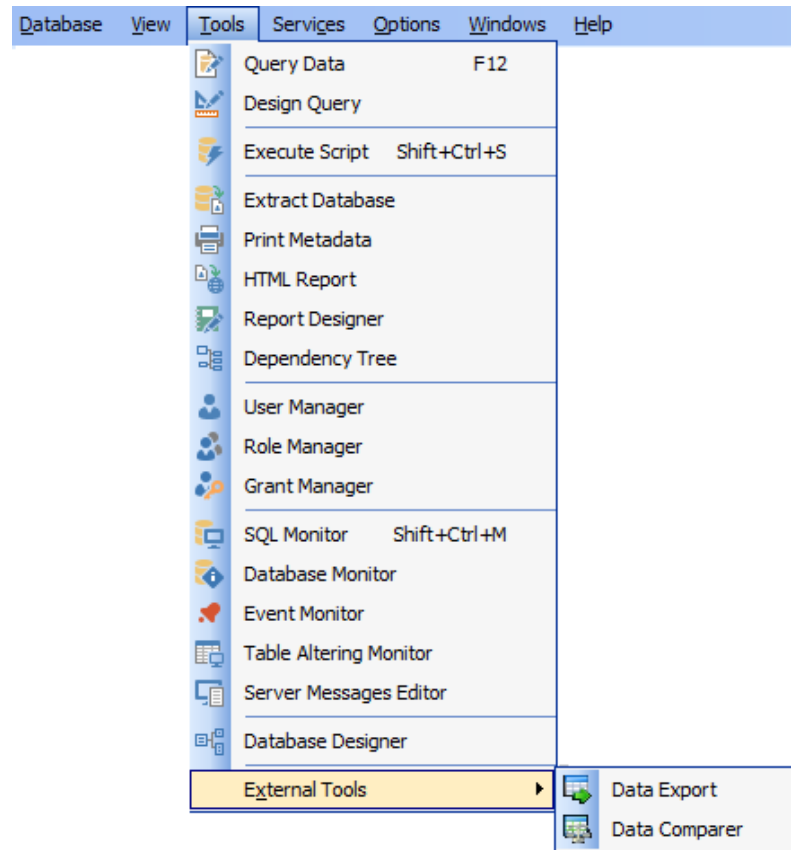
**Part**



## 13 External Tools

When using **SQL Manager for InterBase/Firebird**, you can add **external Windows applications** to make your work more efficient.

- [External Tools dialog](#)<sup>[834]</sup>
- [External Tool Info editor](#)<sup>[836]</sup>



### Adding External Tools

- select the **Options | External Tools... main menu**<sup>[882]</sup> item;
- click the **Add...** button in the [External Tools](#)<sup>[834]</sup> dialog;
- specify parameters of the new external tool within the [External Tool Info](#)<sup>[836]</sup> editor;
- confirm adding the new external tool by clicking **OK** in the [External Tool Info](#)<sup>[836]</sup> editor and the [External Tools](#)<sup>[834]</sup> dialog.

This adds the icon and the title of the application you have selected to the **Tools | External Tools** submenu. Now you can run this tool quickly without closing **SQL Manager**.

### Removing External Tools

- select the **Options | External Tools... main menu**<sup>[882]</sup> item;
- select the tool to be removed in the **Tools** list of the [External Tools](#)<sup>[834]</sup> dialog;
- press the **Del** key or click the **Delete** button within the dialog;
- click **OK** to confirm removing the tool and closing the dialog.

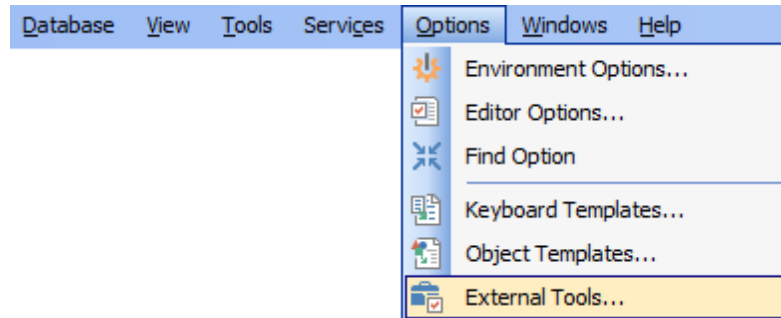


The selected tool has been removed and is no longer accessible from the **Tools | External Tools** submenu.

## 13.1 External Tools dialog

The **External Tools** dialog allows you to manage the list of external applications which can be easily run from within **SQL Manager** environment.

To open this dialog, select the **Options** |  **External Tools...** [main menu](#)<sup>[882]</sup> item.



### **Tools**

Lists all added external applications.

### **Add...**

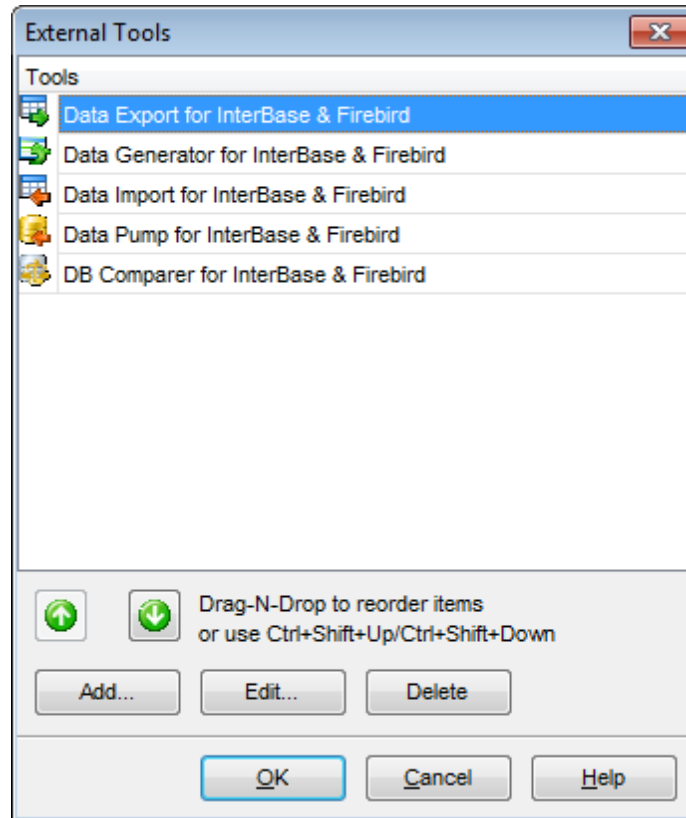
Opens the [External Tool Info](#)<sup>[836]</sup> editor for adding a new tool to the **Tools** | **External Tools** submenu.



### **Edit...**

Opens the [External Tool Info](#)<sup>[836]</sup> editor for editing the title, the hot key, the path to the executable file, the working directory and execution parameters of the tool currently selected in the **Tools** list.

### **Delete**

Removes the selected tool from the list of **SQL Manager for InterBase/Firebird** external tools.



To change the order of tools in the list, use the   arrow buttons at the bottom area of the dialog, or use the *Ctrl+Shift+Up* / *Ctrl+Shift+Down* [shortcuts](#)<sup>[932]</sup>. You can also drag-and-drop items within the list box to change their positions.

Availability:

**Full** version (for Windows) **Yes**

**Lite** version (for Windows) **Yes**

**Note:** To compare all features of the **Full** and the **Lite** versions of **SQL Manager**, refer to the [Feature Matrix](#)<sup>[20]</sup> page.

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**See also:**

[External Tool Info editor](#)<sup>[836]</sup>

## 13.2 External Tool Info editor

The **External Tool Info** editor allows you to set common parameters of running added external programs from within **SQL Manager** environment. This dialog is used both when adding external tools and editing their parameters (see [Add External Tool](#)<sup>[832]</sup> and [External Tools](#)<sup>[834]</sup>).


### Title

Enter the title to be displayed in the **Tools | External Tools** submenu of **SQL Manager**.

### Hot Key

Press a key or a key combination to set it as a hot key for running the tool.

### Program

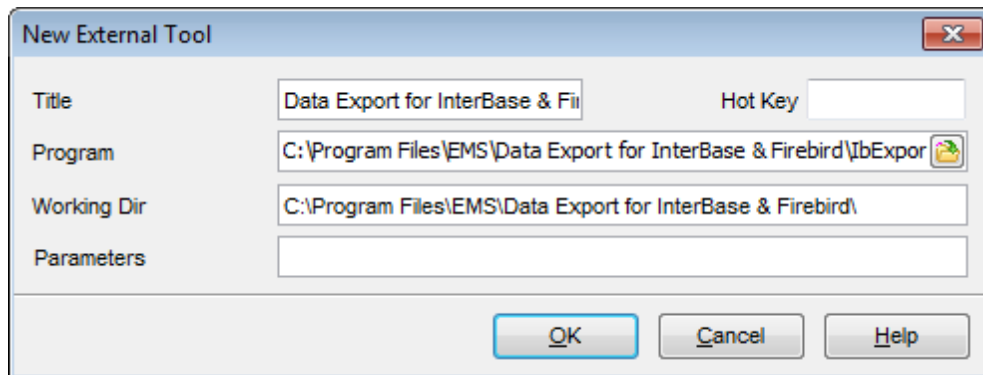
Use the  **Explorer** button to specify the path to the \*.exe file of the external program.

### Working Dir

Set the default working directory of the program.

### Parameters

This box stores parameters for the program execution (if required).



### Availability:

**Full** version (for Windows) **Yes**

**Lite** version (for Windows) **Yes**

**Note:** To compare all features of the **Full** and the **Lite** versions of **SQL Manager**, refer to the [Feature Matrix](#)<sup>[20]</sup> page.

### See also:

[External Tools dialog](#)<sup>[834]</sup>

**Part**



## 14 How To...

The succeeding pages of this chapter are intended to provide you with brief instructions on how to perform this or that operation correctly using **SQL Manager for InterBase/Firebird**.

### Work with Databases

- [Connect to a database](#) <sup>[840]</sup>
- [Create a database](#) <sup>[841]</sup>
- [Edit database connection parameters](#) <sup>[842]</sup>
- [Backup a database](#) <sup>[846]</sup>
- [Restore a database from a backup](#) <sup>[847]</sup>
- [Make work with a database faster](#) <sup>[843]</sup>
- [Create a database copy](#) <sup>[848]</sup>
- [Document a database](#) <sup>[849]</sup>
- [Save metadata reports to file](#) <sup>[850]</sup>
- [Log database changes](#) <sup>[851]</sup>
- [Design a visual database structure](#) <sup>[844]</sup>
- [View an ER diagram](#) <sup>[845]</sup>
- [Get an SQL dump](#) <sup>[852]</sup>

### Work with Database Objects

- [Group objects](#) <sup>[853]</sup>
- [Find objects](#) <sup>[854]</sup>
- [View dependencies](#) <sup>[855]</sup>
- [Get an object DDL](#) <sup>[856]</sup>

### Work with Data

- [Export/import data](#) <sup>[860]</sup>
- [Export data as SQL Script](#) <sup>[861]</sup>
- [Set data filter](#) <sup>[858]</sup>
- [View tables with many records](#) <sup>[857]</sup>
- [Export filtered data](#) <sup>[862]</sup>
- [Edit data of master-detail tables](#) <sup>[864]</sup>
- [Sort and group data](#) <sup>[859]</sup>
- [Create an autoincrement field](#) <sup>[863]</sup>
- [Add image to table](#) <sup>[865]</sup>
- [Set data display format](#) <sup>[866]</sup>

### Work with Queries and Scripts

- [Export query results into file](#) <sup>[871]</sup>
- [Work with several queries at once](#) <sup>[868]</sup>
- [Save most frequently used queries](#) <sup>[869]</sup>
- [Execute queries with parameters](#) <sup>[870]</sup>
- [Create SQL statements rapidly](#) <sup>[867]</sup>
- [Execute scripts](#) <sup>[872]</sup>
- [Execute a large SQL script](#) <sup>[873]</sup>
- [Make SQL script work faster](#) <sup>[874]</sup>
- [Customize work with Query/Script text](#) <sup>[875]</sup>
- [View executed queries and scripts](#) <sup>[876]</sup>

[Create a simple report in Report Designer](#)<sup>[877]</sup>

[Transfer program settings](#)<sup>[878]</sup>

[Update SQL Manager](#)<sup>[879]</sup>

[Report bugs and suggestions](#)<sup>[880]</sup>

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**See also:**

[Getting Started](#)<sup>[37]</sup>

[Database Explorer](#)<sup>[63]</sup>

[Database Management](#)<sup>[87]</sup>

[Database Objects Management](#)<sup>[162]</sup>

[Query Management Tools](#)<sup>[328]</sup>

[Data Management](#)<sup>[368]</sup>

[Import/Export Tools](#)<sup>[443]</sup>

[Database Tools](#)<sup>[532]</sup>

[Services](#)<sup>[651]</sup>

[Security management](#)<sup>[711]</sup>



[Personalization](#)<sup>[735]</sup>

[External Tools](#)<sup>[832]</sup>


## 14.1 Work with Databases

### 14.1.1 Connect to a database

**If a host and a database are not registered yet or you have launched SQL Manager for InterBase/Firebird for the first time and you want to connect to a database then you should do the following:**

1. Launch the [Register Database wizard](#)<sup>[107]</sup> by selecting the **Database |  Register Database... main menu**<sup>[882]</sup> item.
2. On the [first step](#)<sup>[108]</sup> choose  *Database is located on a new host* item.
3. On the [second step](#)<sup>[111]</sup> set connection parameters for the new database.
4. On the [third step](#)<sup>[112]</sup> set options of a newly registered database: Database name, Database alias and Charset. Click **Test Connection** to check availability of the database at the moment. Then set common and log options for the database on the **General** and **Logs** tabs correspondingly.
5. The registered database is now displayed in the [DB Explorer](#)<sup>[63]</sup>. To connect to the database double-click its alias or select the  **Connect to Database** item of the database [context menu](#)<sup>[53]</sup>.

**To connect to a new database on a registered host perform the following operations:**



1. Launch the [Register Database wizard](#)<sup>[107]</sup> by selecting the **Database |  Register Database... main menu**<sup>[882]</sup> item.
  2. On the [first step](#)<sup>[108]</sup> choose  *Database is located on the host already registered in SQL Manager*.
  3. On the [second step](#)<sup>[109]</sup> set the necessary parameters to connect to the already registered server: User name, Password and [Role](#)<sup>[722]</sup>.
- Then follow points 4 and 5 from the instruction above.



### 14.1.2 Create a database


If you want to create a database, please, make sure that the host for this database has been already registered. For more details see the [Register Host wizard](#)<sup>[90]</sup>.

To create a database on the registered server perform the following operations:

1. Launch the [Create Database wizard](#)<sup>[100]</sup> by selecting **Database |  Create Database main menu**<sup>[88]</sup> item.
2. On the [first step](#)<sup>[101]</sup> select the host where the new database will reside.
3. On the [second step](#)<sup>[103]</sup> define the path to the database file in the **Fully qualified database file path** field, login parameters - in the **User name** and the **Password** fields. If you want to store your new database in several files, uncheck the  **Single database file** option. In this case you will proceed to the [Defining database files](#)<sup>[105]</sup> step of the wizard where you are to add secondary file by inputting its name in the **File name** field (type in or use the  button to specify the path to the database file), then setting its length (**secondary file length** indicates where the next file will be started) and clicking the **Add** button.
4. On the [final step](#)<sup>[106]</sup> check the  **Register after creating** option in order to open the [Database Registration Info](#)<sup>[115]</sup> dialog after database creation.

### 14.1.3 Edit database connection parameters

If you have made a mistake when [creating](#)<sup>[100]</sup> and [registering](#)<sup>[107]</sup> a database or the information provided is incomplete then it can be edited using the [Database Registration Info](#)<sup>[115]</sup> dialog. You can view this information both for connected or disconnected database.

To open the dialog, select the database right-click the database alias in [DB Explorer](#)<sup>[63]</sup> and use the  **Database Registration Info...** context menu item. The connection parameters can be changed on the **Connections** tab of the dialog. Here you can define or redefine the following properties in the corresponding boxes: *User name*, *Password*, *Role*, *Database name*, *Database alias*, *Charset*, *Font charset*.

#### 14.1.4 Make work with a database faster

If your database contains too many objects or if a connection to the database is slow you can increase work speed by unchecking the  **Refresh objects on connection** option when registering database or editing the [Database Registration Info](#)<sup>[115]</sup>.


### 14.1.5 Design a visual database structure



To design your database visually you may use the [Database Designer](#)<sup>[630]</sup>. It allows you to create, edit and drop tables and table fields, set relations between tables and perform other operations you may need to achieve your purpose.

To create a new object right-click within the [Database Designer](#)<sup>[630]</sup> area and then choose the **Create** item of the context menu. After that a new object will appear on a diagram. After you have finished designing your diagram you can click a Compile button to create this structure physically.


### 14.1.6 View an ER diagram

The relationship diagram is built using the [reverse engineering](#)<sup>[643]</sup> operation. To view an ER diagram of a scheme you should follow the steps:

1. Run [Database Designer](#)<sup>[630]</sup>;
2. Click the  **Reverse Engineer** button on the [main toolbar](#)<sup>[633]</sup> or use the corresponding item of the [context menu](#)<sup>[637]</sup>.
3. Choose schemas to reverse engineer from.

The created diagram can be saved as a \*.ibd file ( **Save Diagram** button) or as an image ( **Save as Picture** button).

### 14.1.7 Backup a database

A database backup is created by means of the [Backup Database Wizard](#)<sup>[652]</sup>. To launch it and set necessary backup options choose **Services |  Backup Database main menu**<sup>[882]</sup> item.

[Backup Database Wizard](#)<sup>[652]</sup> allows you to make a backup on the local or remote host.

#### To create a local database backup:


1. Select the  *Use local utilities* option in the **Execution mode** group. To enable this mode, you need to specify the location of the utilities in the **Path to database utilities** field on the [Connection](#)<sup>[153]</sup> page of the [Host Registration Info](#)<sup>[152]</sup> dialog, and *gbak.exe* and *nbackup.exe* (for Firebird multi-level backup) files must exist in this directory.
2. Select the  *Local* option in the **Store mode** group to store the backup file on the local machine.

**Note:** Backup of a database located on the Embedded host is only possible with local tools used. You need *icudt30.dll*, *icuin30.dll*, *icuuc30.dll* and *fbembed.dll* (*fbembed.dll* must be renamed to *fbclient.dll*) to be located along with *gbak.exe* file inside the directory specified in the **Path to database utilities** field on the [Connection](#)<sup>[153]</sup> page of the [Host Registration Info](#)<sup>[152]</sup> dialog.

#### To create a database backup on the remote host:

1. Select the  *Use services* option in the **Execution mode** group to use the server services for the backup operation.
2. Select the  *Server* option in the **Store mode** group to store the backup file on the server machine.

### 14.1.8 Restore a database from a backup

Use the [Restore Database Wizard](#)<sup>[663]</sup> to restore a database from a backup. To launch the wizard and set restore options choose **Services** |  **Restore Database** [main menu](#)<sup>[882]</sup> item.

Restore Database Wizard allows you to restore a database from a backup that resides on a local or remote server.

#### To restore a database from a local host:

1. Select the  *Use local utilities* option in the **Execution mode** group. To enable this mode, you need to specify the location of the utilities in the **Path to database utilities** field on the [Connection](#)<sup>[153]</sup> page of the [Host Registration Info](#)<sup>[152]</sup> dialog, and *gbak.exe* and *nbackup.exe* (for Firebird multi-level backup) files must exist in this directory.
2. Choose the  *Local* option in the **Restore mode** group to store the restore file on the local machine.

**Note:** Restore of a database located on the Embedded host is only possible with local tools used. You need *icudt30.dll*, *icuin30.dll*, *icuuc30.dll* and *fbembed.dll* (*fbembed.dll* must be renamed to *fbclient.dll*) to be located along with *gbak.exe* file inside the directory specified in the **Path to database utilities** field on the [Connection](#)<sup>[153]</sup> page of the [Host Registration Info](#)<sup>[152]</sup> dialog.

#### To restore a database from a remote host:

1. Select the  *Use services* option in the **Execution mode** group to use the server services for the restore operation.
2. Choose the  *Server* option in the **Restore mode** group to store the restore file on the server machine.

### 14.1.9 Create a database copy

In order to create a copy of the whole database or of separate objects you can:

1. Extract DB objects structure and data into SQL script using the [Extract Database Wizard](#)<sup>[550]</sup>. The result script can be used to copy or restore your database.
2. Create database backups with the help of the [Backup Database Wizard](#)<sup>[652]</sup>.
3. Create copies of separate database objects by using the [Duplicate Object Wizard](#)<sup>[166]</sup>.






### 14.1.10 Document a database

There are several ways to document a database:

1. You can generate a detailed HTML report of the selected database objects using [HTML Report Wizard](#)<sup>[566]</sup>.
2. You can generate and [print metadata](#)<sup>[562]</sup> reports of any database object(s). Generated reports can be exported to any of the available formats: *HTML file, Excel file, Text file, RTF file, CSV file, HTML file, BMP image, Excel table (OLE), JPEG image, TIFF image*.
3. You can save the [Database Designer](#)<sup>[630]</sup> diagram as a \*.ibd file for future use. A diagram is saved with the objects XML files. If necessary, you can also save the diagram as an image.

### 14.1.11 Save metadata reports to file

To save a metadata report in a file of any supported format (\*.txt, \*.csv, \*.pdf, \*.html) you should do the following:

1. Open the [Print Metadata](#)<sup>[562]</sup> window by selecting the **Tools |  Print Metadata** item of the [main menu](#)<sup>[882]</sup>.
2. Mark the needed objects and define printing settings and click the  **Preview** button on the [navigation bar or toolbar](#)<sup>[563]</sup>.
3. In the opened Preview window click  **Export** and select from the drop-down list the needed file format for report saving. When done, specify file name and location.

### 14.1.12 Log database changes

If you want to perform metadata changes logging and SQL query logging you need to:

1. Check the  **Enable log of metadata changes** and specify the path to the \*.sql file to store the metadata logs.
2. Check the  **Enable log of Query Data queries** and specify the path to the \*.sql file to store the logs of SQL queries: date/time of query execution, SQL text, execution result or errors (if any).

This can be done in the [Database Registration Info | Logs](#)<sup>134</sup> window.

You can also allow automatic saving the DDL and location of database objects after the specified time interval by checking  **Enable QuickSave every ... Minute(s)** option.

### 14.1.13 Get an SQL dump

To get an SQL dump (an `*.sql` file) of your database use the [Extract Database Wizard](#)<sup>[550]</sup> that will extract database objects and/or data to an SQL script, e.g. for backup purposes.

## 14.2 Work with Database Objects


### 14.2.1 Group objects

If you want to group objects you can do it in one of the following ways:

**Using Favorite objects (situated in the [DB Explorer](#)<sup>[63]</sup> tree):**

1. Click create **New Sub Folder** in the **Favorite Objects** folder using the corresponding item of the context menu
2. Define its name and drag-and-drop necessary objects there or use the **Add Object** item of the created folder context menu. Pick the objects to add to folder from the appeared dialog.

**Using [DB Explorer](#)<sup>[63]</sup> tabs:**

1. Right-click the necessary object in the [DB Explorer](#)<sup>[63]</sup>.
2. Choose the  **New Tab from Here** item of the [object context menu](#)<sup>[56]</sup> and define the name of the tab.
3. Now your objects are stored on the separate tab of a [DB Explorer](#)<sup>[63]</sup>.


**Note:** If object is not a tree node, it cannot be placed on separate tab.

## 14.2.2 Find objects

In order to search for objects you need you can:

1. Call the **Find Object** dialog by right-clicking the **Database** alias, any database object group nodes or objects in the **DB Explorer** tree and select the **Find Object...** [context menu](#)<sup>[51]</sup> item.
2. Call the **Find Object** dialog by using the *Ctrl+F* [shortcut](#)<sup>[932]</sup>.
3. Type in the first letters in the edit-box of the [Search Panel](#)<sup>[78]</sup>, and the corresponding object will be highlighted in the tree, as displayed in the picture below.

**Note:** Objects among which the search is performed should be updated and the object node should be expanded.

4. Launch the [Search in Metadata](#)<sup>[600]</sup> tool by selecting the **Tools** |  **Search in Metadata** [main menu](#)<sup>[882]</sup> item, or using the *Ctrl+Alt+F* [shortcut](#)<sup>[932]</sup>. After the search is complete, the **Explorer** group on the [Navigation bar](#)<sup>[601]</sup> displays the tree of database objects in which the search string is found, and allows you to view metadata of the required object or its fragment.

### 14.2.3 View dependencies

If you want to view all the object dependencies then:

1. Use a dependencies tab in the [Table Editor](#)<sup>[184]</sup>.
2. Use the [Dependency Tree](#)<sup>[534]</sup> tool.

These tools may be useful when you can't find an object that prevents you from dropping a table.

#### 14.2.4 Get an object DDL

In order to get an object DDL you can:

1. Right-click the object in the [DB explorer](#)<sup>63</sup> tree and select the **Script to New Query Data | Create** context menu item.
2. Right-click the object and select the **Edit Table <table\_name>...** context menu item or double-click the table and then proceed to the DDL tab in the opened table editor window.
3. Right-click the object in the [DB explorer](#)<sup>63</sup> tree and select the **Data Manipulation | Export Data as SQL Script** context menu item.



## 14.3 Work with Data

### 14.3.1 View tables with many records

If your table contains a lot of records you can minimize dataset loading time by:

1. Setting the number of records to be selected;
2. Enabling  **Load visible records** in order to load only a fixed number of dataset records into memory;
3. Checking the  **Never retrieve** option to disable retrieving record count for tables.

These options can be set only for the selected database on the [Data Options](#)<sup>[126]</sup> page of the [Database Registration Info](#)<sup>[115]</sup>.

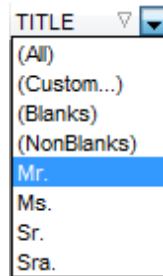
Default settings for newly registered databases can be defined on the [Grid | Data Options](#)<sup>[782]</sup> page of the [Environment Options](#)<sup>[736]</sup> dialog.

### 14.3.2 Set data filter

#### Quick Filtering (by the current value in a cell)

Open the context menu of the needed column and choose the **Quick Filter** item. Then choose a filter condition in the opened submenu.

#### Filtering by Column



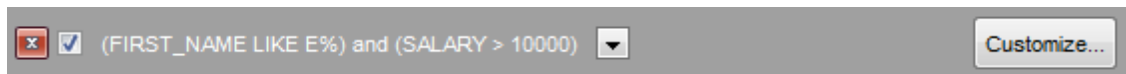
Open the drop-down list on the column title and choose a filter condition from the list. You can set advanced conditions by using the **Custom...** menu item.

When choosing this item, the special [window for setting filter conditions](#)<sup>[379]</sup> opens.

#### Advanced Filtering

You can set advanced filter options by pressing the button  on the [toolbar](#)<sup>[370]</sup> of the Data View and set filter parameters in the [Filter Builder](#)<sup>[433]</sup>. Apply the set conditions by pressing the **Apply** button.

If a filter is set for a table, the special bar appears in the lower part of the table where you can see filter conditions and the history of filter changes opened by pressing the drop-down list.



#### Disable Filtering

To cancel filtering, open the context menu of the column and choose the **Disable filter** item.

Or press the  button on the filter toolbar.

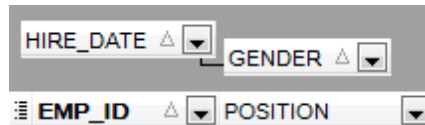
### 14.3.3 Sort and group data

**In order to sort data, do the following:**

1. Open data at the **Data** or **Results** tab.
2. Choose the column by which you need to sort data and click the column title.
3. If the column was not sorted, the first click will sort it in the ascending order and the second one - in the descending order.

**Note:** To cancel the sorting, open the context menu by right-clicking the necessary column and choose the **Clear Sorting** item, or press the *Ctrl* button and click the column title.

**To enable grouping,** drag the column title to the special grouping car above the table.




**Note:** To disable grouping, drag the column title from the group bar back to the table.

### 14.3.4 Export/import data

You can *export* data from a database table into an external [file of any supported format](#) <sup>[91]</sup> by means of the [Export Data Wizard](#) <sup>[44]</sup>.

**There are several ways to launch Export Data Wizard:**

1. Open the **Data** or **Results** tab, press  **Export Data** on one of the Data View [toolbars](#) <sup>[370]</sup>.
2. Open the **Data** or **Results** tab, choose **Data Manipulation | Export Data** in the [Data Grid context menu](#) <sup>[382]</sup>.
3. Open the [table context menu](#) <sup>[56]</sup> in the [DB Explorer](#) <sup>[63]</sup>, choose the **Data Manipulation | Export Data** item.
4. Open the **Data** or **Results** tab and use the shortcut **Shift+Ctrl+E**.




**You can import data from external sources into a table or view using [Import Data Wizard](#)** <sup>[49]</sup>:

1. Open the **Data** tab, press the **Import Data** button on one of the Data View [toolbar](#) <sup>[370]</sup>.
2. Open the **Data** tab, choose **Data Manipulation | Import Data** in the [Data Grid context menu](#) <sup>[382]</sup>.
3. Open the [table context menu](#) <sup>[56]</sup> in the [DB Explorer](#) <sup>[63]</sup>, choose the **Import Data** item.
4. Open the **Data** tab and use the shortcut **Ctrl+I**.

**Note:** Export and import data tools are available in full version of SQL Manager for InterBase/Firebird only.

### 14.3.5 Export data as SQL Script

You can export data from a database table into SQL script with INSERT INTO statements in one of the following ways:

1. Open the **Data** or **Results** tab, press the  **Export Data as SQL Script** on one of the **Data View toolbars** [\[370\]](#) and set export parameters in the opened [Export as SQL Script Wizard](#) [\[517\]](#).
2. Open the **Data** or **Results** tab, choose **Data Manipulation |  Export Data as SQL Script** in the [Data Grid context menu](#) [\[382\]](#) and set export parameters in the opened [Export as SQL Script Wizard](#) [\[517\]](#).
3. Open the [table context menu](#) [\[56\]](#) in the [DB Explorer](#) [\[63\]](#), choose the  **Export Data as SQL Script** item and set export parameters in the opened [Export as SQL Script Wizard](#) [\[517\]](#).

**Note:** In order to extract table DDL (CREATE TABLE statement), check the  **Add CREATE TABLE statement** box at the [Step 1](#) [\[519\]](#).

### 14.3.6 Export filtered data

If you have set a filter in a [Data View](#)<sup>[369]</sup> and want to export only this data then you need to uncheck  **Perform data filtration on client in data view** option on the [Database Registration Info | Data Options](#)<sup>[126]</sup> tab. In this case all the changes made by applying filters are performed on the InterBase/Firebird server with the help of the *WHERE* clause used in SQL query. Otherwise your changes will just be displayed on your client machine but data will be exported into a file without applied filters.

### 14.3.7 Create an autoincrement field

To create an autoincrement field you need to check  **Autoincrement value** option when [specifying options](#) for domain-based fields. If the option is enabled, the autoincrement property is specified for the domain. For details see [Defining autoincrement](#).

### 14.3.8 Edit data of master-detail tables


You can work with data in multi-level mode, that is you can view and modify it in several related tables simultaneously.

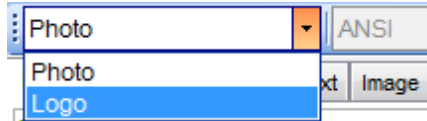
To manage grid levels, right-click the grid and select the **Grid Levels context menu**<sup>[382]</sup> group. Click **Add Grid Level** in the menu to run the [Create Grid Level wizard](#)<sup>[385]</sup>. After the level is added you can edit data of the related tables.



### 14.3.9 Add image to table


If you want to add an image to a table then do the following:

1. Open the table on the Data tab.
2. Go to the BLOB View section (the navigation buttons are located in the bottom part of the window) and then proceed to the Image tab.
3. If there are several BLOB fields, choose the required field from the Select BLOB Column drop-down list on the [toolbar of the Blob View tab](#)<sup>[371]</sup> and press the  **Load from File** button on the same toolbar.
4. Choose the needed image file in the appeared dialog.



**Note:** Adding images to table is possible only if table contains at least one [BLOB field](#)<sup>[422]</sup>.

### 14.3.10 Set data display format

To set the format for displaying data open the **Options |  Environment Options** dialog from the [main program menu](#)<sup>[882]</sup>, proceed to the [Color & Formats](#)<sup>[786]</sup> tab and define or choose the display format for some [data types](#)<sup>[911]</sup> in the **Display formats** section.

## 14.4 Work with Queries and Scripts

### 14.4.1 Create SQL statements rapidly

There are two options for creating SQL queries rapidly:

#### In the DB Explorer

1. Right-click a table in the [DB Explorer](#)<sup>[63]</sup>
2. Choose Script to New Query Data context menu item.
3. Select the necessary query type.

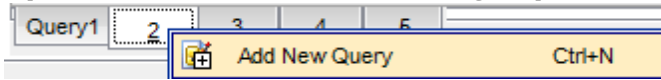
#### In the Query Designer

1. Open [Query Designer](#)<sup>[347]</sup>.
2. On the **Builder** tab drag an object from the [DB Explorer](#)<sup>[69]</sup> tree to the diagram area.
3. Choose necessary fields to include in the query by checking the corresponding box located to the left from the field name in the list, or just by double-clicking it. To include all fields of the table/view, check the box located to the left of the table/view caption.
4. [Associate two objects](#)<sup>[353]</sup> by their fields. Drag a field from one object list to another. This will set a link between these objects by the selected fields. It is indicated by a bidirectional arrow between the linked fields.
5. [Edit link properties](#)<sup>[353]</sup>. Double-click the linking arrow or right-click it and select the **Property** popup menu item. The **Link properties** dialog allows you to change the association condition by choosing it from the drop-down list.
6. You can view and edit your SQL statement on the **Edit** tab of the [Query Designer](#)<sup>[347]</sup>.

### 14.4.2 Work with several queries at once

[Query Data](#)<sup>[330]</sup> provides a possibility to open and edit several queries. You can create tabs in the lower part of the **Query Data**, each tab may contain a separate query. There are several ways for creating tabs:

1. Open  **Query Data** and choose  **Add New Query** on one of the [toolbars](#)<sup>[331]</sup>.
2. Open  **Query Data** and choose  **Add New Query** in the context menu<sup>[335]</sup> of the



existing tab.

3. Use the shortcut **Ctrl + N**.

**Note:** Each tab can be renamed and any query can be added to [Favorite Queries](#)<sup>[85]</sup>.

### 14.4.3 Save most frequently used queries

Use the [Favorite Queries](#)<sup>[85]</sup> feature to store your most frequently used SQL queries. To access the list of your favorite queries you can use the **Favorite Queries** node of DB Explorer or create a separate tab for your Favorite queries.

Using the context menu you can create a new Favorite query or edit an existing one using [Favorites editor](#)<sup>[84]</sup>, open any of the existing queries in [Query Data](#)<sup>[33]</sup> or remove a query if you don't need it any longer.

#### 14.4.4 Execute queries with parameters




If you want to use queries with parameters then you should check  **Allow using parameters in query text** option in the [Environment Options | Tools](#)<sup>[749]</sup>.

This feature allows you to specify different values within a query in a [popup dialog](#)<sup>[366]</sup> just before the query execution. Use the colon (':') character before an identifier (e.g. :P1) to specify a parameter within the query.


### 14.4.5 Export query results into file

When executing queries, their results can be displayed on the **Edit** or **Results** tab in the [Data View](#)<sup>[369]</sup>.

You can copy data from database tables into an external [file of any supported format](#)<sup>[91]</sup> in one of the following ways:

1. Open the **Data** or **Results** tab, press  **Export Data** on one of the Data View toolbars and define export parameters in the opened [Data Export Wizard](#)<sup>[444]</sup>.
2. Open the **Data** or **Results** tab, choose **Data Manipulation |  Export Data** in the [Data Grid context menu](#)<sup>[382]</sup> and define export parameters in the opened [Data Export Wizard](#)<sup>[444]</sup>.
3. Open the [table context menu](#)<sup>[56]</sup> in the [DB Explorer](#)<sup>[63]</sup>, choose the  **Export Data** item and define export parameters in the opened [Data Export Wizard](#)<sup>[444]</sup>.
4. Open the **Data** or **Results** tab and use the shortcut Ctrl+E.


### 14.4.6 Execute scripts

[Execute Script](#) <sup>[542]</sup> allows you to create, view, edit and execute SQL scripts. To open Execute Script Editor select the **Tools** |  **Execute Script...** [main menu](#) <sup>[882]</sup> item. This tool is intended for work with a great number of SQL statements and with scripts that are stored in files. For instance, you can execute a script directly from a file without loading it to the Editor window. This reduces memory usage. However Execute Script allows just to estimate whether the execution of script statements will be successful, but it does not return query result.

**Note:** To execute SQL scripts you should use [Execute Script](#) <sup>[542]</sup>, not [Query Data](#) <sup>[330]</sup>. The latter is intended for creating, editing and executing SQL statements. It also provides a possibility to view query result, perform various operations with it (data import, data export, etc.) and manage transactions.




### 14.4.7 Execute a large SQL script

If you need to execute a large SQL script it's not necessary to load it from file to the [Execute Script Editor](#)<sup>[542]</sup> window as it can take a lot of time. Instead you can execute script directly from \*.sql, \*.zsql or \*.txt file. In order to do this click the  **Execute script from file** button of the [Navigation bar and Toolbar](#)<sup>[543]</sup> in [Execute Script editor](#)<sup>[542]</sup>.

### 14.4.8 Make SQL script work faster

In order to make the Execute Script work faster, you can disable some functions.

#### Parsing

Choose and disable the  **Disable Parsing** item on [one of Execute Script Editor toolbars](#) <sup>[543]</sup>.

#### Automatic Creation of Hierarchical Text Structure

Uncheck the  **Use code folding** box at **Options | Editor options** in the [main program menu](#) <sup>[882]</sup>.

#### Syntax Highlight and Code Completion for Aliases

Choose **Options | Editor options** in the [main program menu](#) <sup>[882]</sup>, proceed to the **General** tab and uncheck the  **Resolve aliases** box - the [syntax highlight](#) <sup>[803]</sup> and [Code Completion](#) <sup>[805]</sup> for aliases will be disabled.

### 14.4.9 Customize work with Query/Script text

To customize work with a query/script text you may:

#### Use Internal Link

This means that the name of the object existing on a database is highlighted in a query/script text. Such an object can be opened by holding the *Ctrl* key and clicking the object with a mouse.

#### Add Text Template

Keyboard templates allow you to type regularly used expressions and edit the existing ones quicker. Once you have defined the templates, you can use them in [Query Data](#)<sup>[330]</sup>. When [editing SQL text](#)<sup>[333]</sup> in Query Data, type a template name and use the *Ctrl+J* [shortcut](#)<sup>[932]</sup>: the text associated with the template will be inserted automatically.

#### Use Automatic Completion (Object List)

You can call the autocompletion list by starting entering the first characters of the text and using the shortcut *Ctrl + Space*.

#### Customize Autocompletion List

Choose **Options** | **Editor options** in the [main program menu](#)<sup>[882]</sup>, proceed to the [Code Completion](#)<sup>[805]</sup> tab and define the list and quick code parameters.

#### Apply Automatic Formatting of Query/Script

Choose **Quick Code** | **Format** in the Query Data/Execute Script [context menu](#)<sup>[335]</sup> or the *Shift+Ctrl+F* shortcut to apply automatic formatting.

#### Set Font and Query/Script Format at the Display tab

Choose **Options** | **Editor options** in the [main program menu](#)<sup>[882]</sup>, proceed to the [Display](#)<sup>[807]</sup> tab and define common font and format parameters for Query Data/Execute Script.

#### Set Font and Query/Script Format at the Highlight tab

Choose **Options** | **Editor options** in the [main program menu](#)<sup>[882]</sup>, proceed to the [Highlight](#)<sup>[803]</sup> tab and define font options for each element.

**Note:** If some font parameters are defined on the **Highlight** tab, they will be applied to the query/script text and not the ones defined on the **Display** tab.




#### 14.4.10 View executed queries and scripts

To view all queries and scripts sent to the server you need to launch [SQL Monitor](#)<sup>[539]</sup>. It will show you the log of database operations and SQL queries as items, each consisting of 3 parts: *Executed* (the date and time of the operation), *Operation* (SQL statement sent to the server), *Result* (the result of the operation).

**Note:** SQL Monitor only displays scripts and queries executed in SQL Manager for InterBase/Firebird during current session.

## 14.5 Create a simple report in Report Designer

To create a report using [Report Designer](#)<sup>[584]</sup>:

1. Select the **Tools** |  **Report Designer** main menu item.
2. In the opened **Report Designer** select the **File** |  **New Report** main menu item, or click the  **New Report** item of the navigation bar. The following objects will be added to the newly created report: **ReportTitle**, **MasterData** and **PageFooter**.
3. [Connect to data source](#)<sup>[584]</sup>.
4. Add [ADOTable](#)<sup>[584]</sup> or [ADOQuery](#)<sup>[584]</sup> object.
5. Link [ADOTable](#)<sup>[584]</sup> or [ADOQuery](#)<sup>[584]</sup> with [ADODatabase](#)<sup>[584]</sup>.
6. Place database fields on the Page1. Move the required fields from Data Tree to **Band MasterData**.

## 14.6 Transfer program settings

If you want to apply current program settings (wholly or partially) to SQL Manager for InterBase/Firebird installed on another machine you can save them into a single \*.reg file. This can be done by means of the [Save Settings Wizard](#).

Note that [Favorite Queries](#) are not saved in this case. To get access to your queries from another machine please [store](#) them in the database.

## 14.7 Update SQL Manager

**SQL Manager for InterBase/Firebird** can be updated in the following ways:

1. Download the SQL Manager for InterBase/Firebird distribution package from the [download](#) page, then extract archive to the preferable directory (e.g. c:\unzipped). Close SQL Manager for InterBase/Firebird if it's opened and run *IbManagerFullSetup.exe* or *IbManagerLiteSetup.exe*.
2. Select the **Help | [SQL Manager Direct](#)**<sup>[924]</sup>, then press the **Update** button. If new SQL Manager for InterBase/Firebird version is released it will be offered for downloading. Click Yes in the dialog window to update SQL Manager for InterBase/Firebird automatically.

## 14.8 Report bugs and suggestions

1. Before reporting bugs and suggestions make sure you are using the latest version of the SQL Manager for InterBase/Firebird.
2. If so then you may contact us via Members Area on <http://www.sqlmanager.net/>, via **Help** main menu or by sending an email to [support@sqlmanager.net](mailto:support@sqlmanager.net).
3. Please, don't forget to mention your OS version, InterBase/Firebird version and program version.
4. Describe the steps to reproduce the bug in detail and illustrate them with screenshots.



**Part**

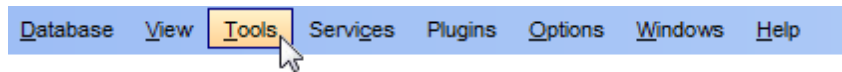


## 15 Appendix

### 15.1 Program interface

#### Main menu

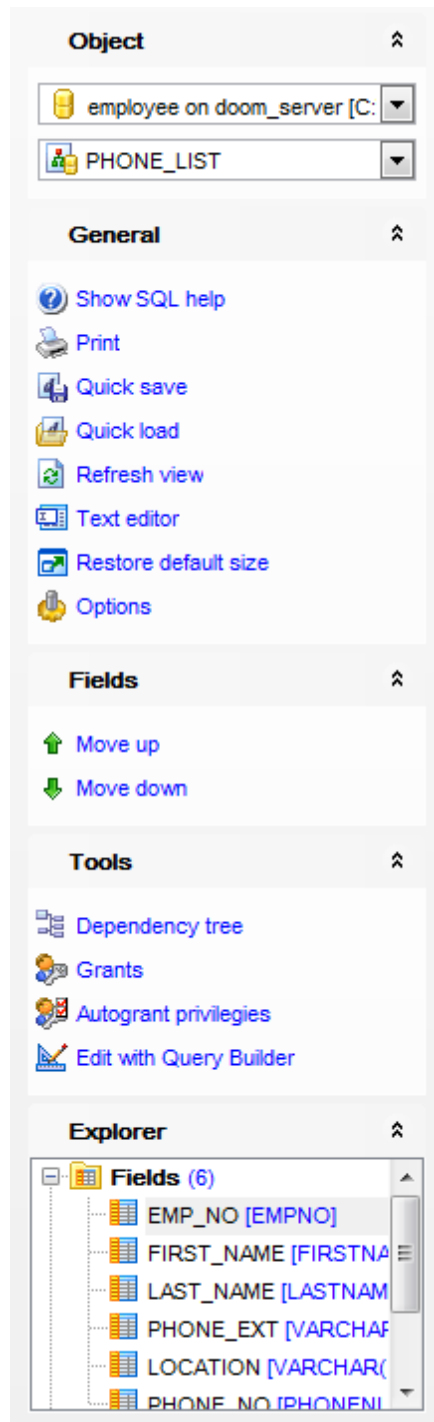
The main menu allows you to perform various **Database** operations, open [To-Do List](#)<sup>[913]</sup> and activate/deactivate [Database Explorer](#)<sup>[63]</sup>, [SQL Assistant](#)<sup>[80]</sup> and various [toolbars](#)<sup>[884]</sup> within the **View** menu, manage your databases using items of the **Tools** and **Services** menus, [customize](#)<sup>[735]</sup> the application using the **Options** menu, manage **SQL Manager Windows** using [Window List](#)<sup>[915]</sup> and other tools, and access [Registration](#)<sup>[22]</sup> information and product documentation, [update](#)<sup>[924]</sup> the product to the latest version using the corresponding items available within the **Help** menu.





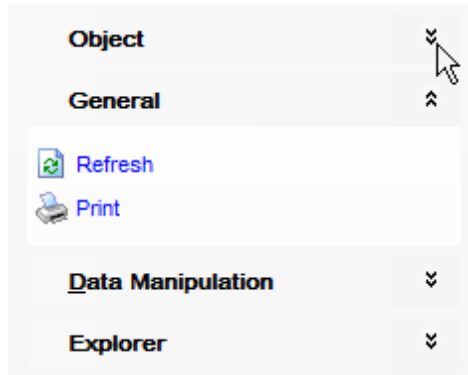
**Note:** To learn how to configure **SQL Manager** menus, refer to the [Customize toolbars and menus](#)<sup>[916]</sup> page.

#### Navigation bars in object editors and program tools

**Navigation bars** are interface elements that enable users to quickly locate tools they need. Navigation bar items are displayed within a group with the help of links. A typical Navigation bar of **SQL Manager** contains links to commonly accessed tools (*refresh*, *print*, *restore default size* of the window), *options* pertaining to the editor or tool, and specific tools.



Navigation bar panes (groups) can be **expanded/collapsed**. When expanded, a pane provides access to its links; when collapsed, panes are displayed as headers only. To expand/collapse a pane, click the pane header. The   icons indicate the current pane state (collapsed/expanded respectively).

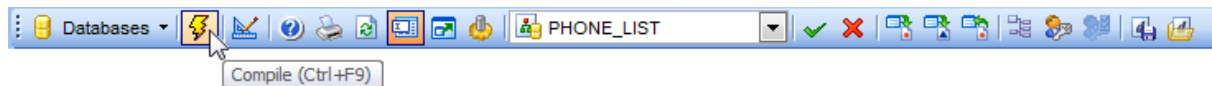


**Note:** Depending on the current tab selection, Navigation bars in most of the program tools expand to one or more additional panes with tab-specific actions that can be useful for working with the object or service.

**Hint:** Most items of the Navigation bars are also available on the [Toolbars](#)<sup>[884]</sup>.

### Toolbars in the main program window, object editors and program tools

A **toolbar** is a horizontal row or vertical column of selectable image buttons that give the user a constantly visible reminder of and an easy way to select certain application functions. Most **SQL Manager** editors and tools are supplemented with toolbars.



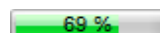
To enable the **toolbars** in **SQL Manager for InterBase/Firebird**, open the [Environment Options](#)<sup>[736]</sup> dialog, proceed to the [Windows](#)<sup>[743]</sup> section there and select  *Toolbar* (if you need the toolbar only) or  *Both* (if you need both the toolbar and the [Navigation bar](#)<sup>[882]</sup>) in the **Bar style for child forms** group.

**Hint:** Most **SQL Manager** toolbars are dockable, i.e. you can place a toolbar to any available location within the parent window.

To learn how to configure toolbar items, refer to the [Customize toolbars and menus](#)<sup>[916]</sup> page.

### Progress bars

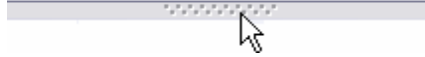
A **progress bar** is an interface element that conveys the progress of a task or service. Several **SQL Manager** editors (e.g. [Execute Script](#)<sup>[542]</sup>), tools (e.g. [Dependency Tree](#)<sup>[534]</sup>) and wizards (e.g. [Import Data Wizard](#)<sup>[491]</sup>) are supplemented with progress bars indicating the progress of lengthy operations.



The graphic of **SQL Manager** progress bars is accompanied by a textual representation of the progress in the percent format.

### Splitters

**Splitter** controls are used to resize docked controls at run time. In **SQL Manager for InterBase/Firebird** the splitter controls are used on the main form, [DB Explorer](#)<sup>[63]</sup>, and in program tools and editors as a separator between the working area and [Navigation bars](#)<sup>[882]</sup>, status bars, etc.



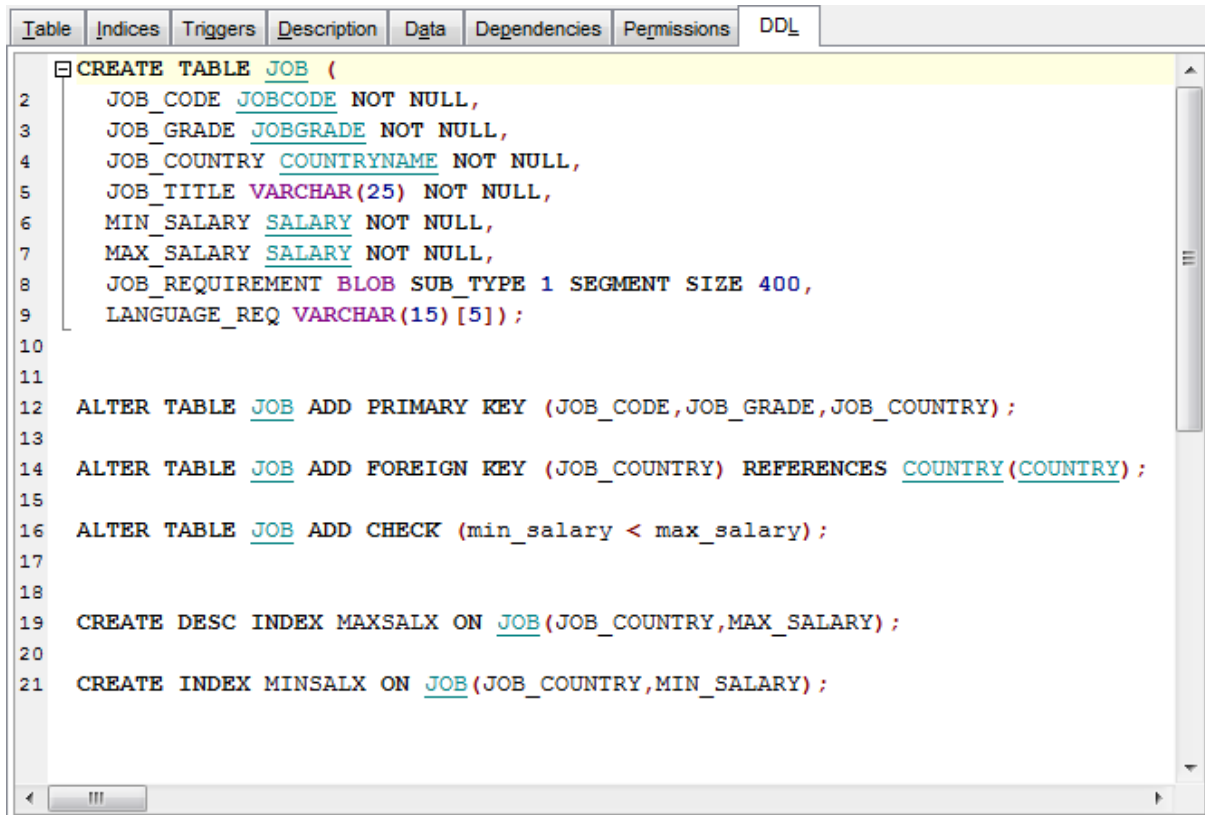
### Incremental Search bar

**Incremental search** bar is the tool which is available in the status bar area of some **SQL Manager** tools. The bar is normally called through the *Ctrl+I* [shortcut](#)<sup>[932]</sup>. Type in the first letters of the search string, and the corresponding string will be highlighted in the search scope.

Search:

## 15.2 Viewing object DDL structure

The **DDL** (Data Definition Language) tab displays the SQL statement for creating the object with all its subobjects, if any. This text is read-only. If you want to change the object definition, use the appropriate editor tabs instead, or copy the text to the Windows Clipboard to paste it in the [Query Data](#)<sup>[330]</sup> or [Execute Script Editor](#)<sup>[642]</sup>.



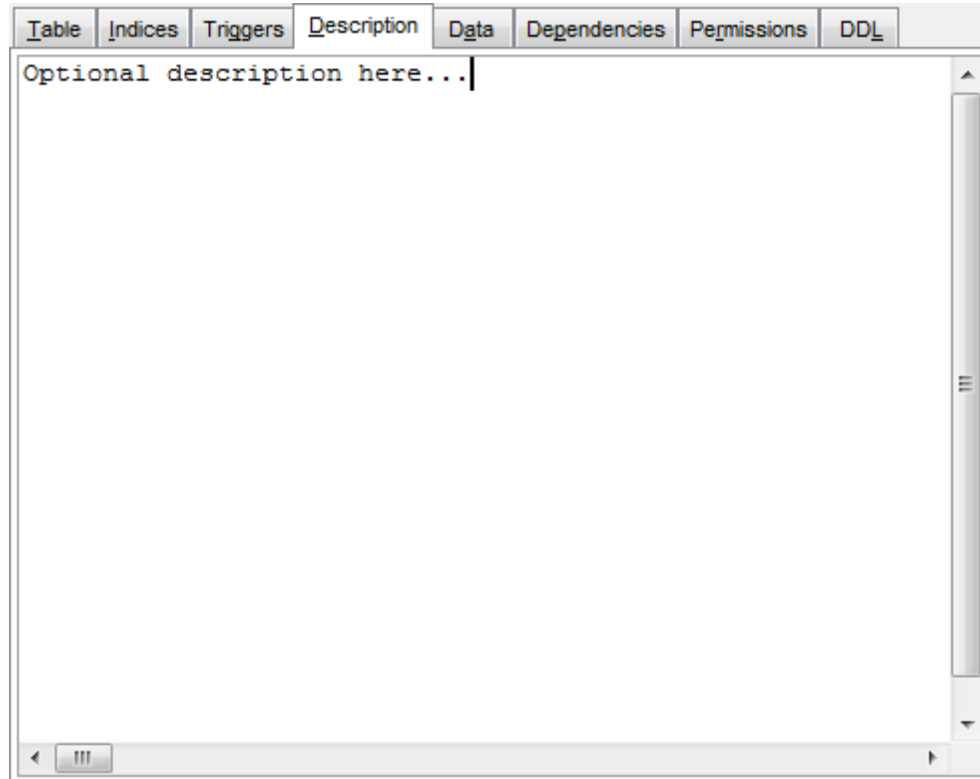
The screenshot shows a window with several tabs: Table, Indices, Triggers, Description, Data, Dependencies, Permissions, and DDL. The DDL tab is active and displays the following SQL code:

```
1 CREATE TABLE JOB (  
2     JOB_CODE JOBCODE NOT NULL,  
3     JOB_GRADE JOBGRADE NOT NULL,  
4     JOB_COUNTRY COUNTRYNAME NOT NULL,  
5     JOB_TITLE VARCHAR(25) NOT NULL,  
6     MIN_SALARY SALARY NOT NULL,  
7     MAX_SALARY SALARY NOT NULL,  
8     JOB_REQUIREMENT BLOB SUB_TYPE 1 SEGMENT SIZE 400,  
9     LANGUAGE_REQ VARCHAR(15) [5]);  
10  
11  
12 ALTER TABLE JOB ADD PRIMARY KEY (JOB_CODE, JOB_GRADE, JOB_COUNTRY);  
13  
14 ALTER TABLE JOB ADD FOREIGN KEY (JOB_COUNTRY) REFERENCES COUNTRY(COUNTRY);  
15  
16 ALTER TABLE JOB ADD CHECK (min_salary < max_salary);  
17  
18  
19 CREATE DESC INDEX MAXSALX ON JOB(JOB_COUNTRY, MAX_SALARY);  
20  
21 CREATE INDEX MINSALX ON JOB(JOB_COUNTRY, MIN_SALARY);
```

**Hint:** If more convenient, you can use the **Save DDL to file** and **Open DDL in Query Data** items available on the DDL pane within the Navigation bar of object editors.

## 15.3 Editing object description

The **Description** tab allows you to view and edit the comment for the object (optional).

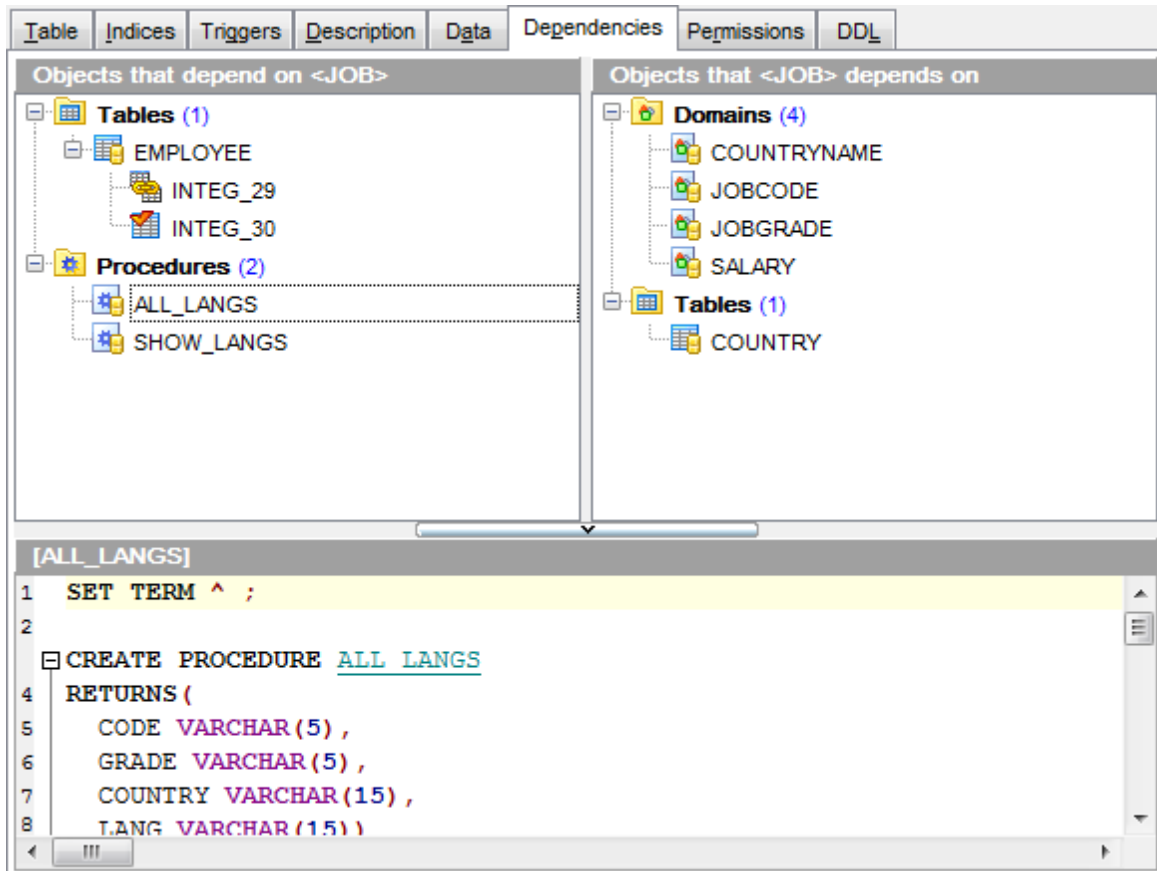


You can save changes made in this area by clicking the **Save Description** item on the [Navigation bar](#)<sup>882</sup>.

## 15.4 Browsing object dependencies

The **Dependencies** tab allows you to view objects that depend on the object being edited, and the objects that the edited object depends on.

While the tree of dependencies is built, the [progress bar](#)<sup>[884]</sup> is displayed in the status area of the editor window.



**Hint:** To open a dependent object or a depending object in its editor, you can simply double-click the object alias in the **Objects that <object\_name> depends on** and **Objects that depend on <object\_name>** lists.

**See also:**

[Dependency Tree](#)<sup>[534]</sup>



## 15.5 Setting object permissions

The **Permissions** tab allows you to view the permissions currently allocated for this object, and to [grant permissions](#)<sup>[729]</sup> on the object to any of the existing grantees.

**Privileges on object** can be assigned for [procedures](#)<sup>[253]</sup> and [views](#)<sup>[242]</sup>. Managing **column permissions** is available for [tables](#)<sup>[178]</sup> and [views](#)<sup>[242]</sup>.

Table	Indices	Triggers	Description	Data	Dependencies	Permissions	DDL		
Object Name				Select	Insert	Update	Delete	Execute	References
JOHN				●	●	●	●		●
SYSDBA				●	●	●	●		●

Column permissions of 'JOHN' on 'JOB'		
Column Name	Update	References
JOB_CODE	●	●
JOB_GRADE	●	●
JOB_COUNTRY	●	●
JOB_TITLE	●	●
MIN_SALARY	●	●
MAX_SALARY	●	●
JOB_REQUIREMENT	●	●
LANGUAGE_REQ	●	●

For details see [Grant Manager](#)<sup>[726]</sup>.

## 15.6 Managing parameter properties

Select the object to create the field type on.

*Data type*

Specifies that the parameter is based on a standard data type.

The screenshot shows a dialog box titled "Parameter based on". At the top, there are three radio buttons: "Data type" (selected), "Domain", and "Column". Below this is a section titled "Input Parameter" containing several fields: "Type" (CHAR), "Length" (20), "Scale" (0), "Charset" (UNICODE\_FSS), and "Collation" (UNICODE\_FSS). There is also a "Not NULL" checkbox which is unchecked. Below the "Input Parameter" section, there is a "Use default value" checkbox which is checked. Underneath it, there is a "Default value" field with a dropdown arrow. At the bottom, there is a "Set value to" checkbox which is checked, and a dropdown menu showing "CURRENT\_USER".

### Type

Use the drop-down list of SQL data types to select the one to be applied for the parameter type.

For NUMERIC and DECIMAL data types set digit **precision** (digits of precision to store, 1 to 18) and **scale** (number of decimal places that can be stored, 1 to 18) in the appropriate boxes; for CHAR and VARCHAR set **length** (in characters), for BLOB data type set **segment size** and **subtype**.

### Charset

Use the drop-down list to select the character set for the parameter type.

### Collation

Use the drop-down list to specify the collation order to be used for string data.

**Not NULL**

Enable this option to add the Not NULL attribute to the parameter.

**Use default value**

Enable this option to specify the value this field will take by default. For details see [Setting field defaults](#)<sup>[170]</sup>.

*Domain*

Specifies that the parameter is based on a [domain](#)<sup>[172]</sup> previously created in the database.

Note that creating parameters based on a domain is only available for Firebird 2.1 and later.

The screenshot shows a dialog box titled "Parameter based on" with three radio buttons: "Data type", "Domain" (selected), and "Column". Below this, the "Domain" section contains a "Domain name" dropdown menu with "DEPTNO" selected, an "Edit Domain" button, a "Collation" dropdown menu with "WIN1251" selected, and a "New Domain" button. There are two checkboxes: "Full inheritance of domain attributes" (unchecked) and "Not NULL" (unchecked). The "Domain info" section displays "CHAR(3) COLLATE WIN1251". At the bottom, there is a "Use default value" checkbox (checked) and a "Set value to" dropdown menu with "NULL" selected.

### Domain name

Select the domain name from the list of existing [domains](#)<sup>[172]</sup>.

### Collation

Use the drop-down list to specify the collation order to be used for string data.

Use **Edit Domain** button to edit the [domain](#)<sup>[173]</sup> selected in **Domain name** or **New Domain** button to open [Domain editor](#)<sup>[175]</sup> for creating the new domain.

### Full inheritance of domain attributes

If this option is set, the TYPE OF <domain\_name> clause is generated, and data type of the domain is used.

### Not NULL

Enable this option to add the Not NULL attribute to the parameter.

**Domain info** displays the summary of the domain-based parameter: data type and size.

### Use default value

Enable this option to specify the value this data type will take by default. For details see [Setting field defaults](#)<sup>[210]</sup>.

### Column

Specifies that the parameter is based on a field.

Parameter based on

Data type  Domain  Column

Column

Table name

Field name

Not NULL Collation

Column info

VARCHAR(20)

Use default value

Default value

Set value to

**Table name**

Select the [table](#)<sup>178</sup> to use field type from the dropdown list.

**Field name**

Select the field name from the list of table fields to create the parameter type on.

 **Not NULL**

Enable this option to add the Not NULL attribute to the parameter.

**Collation**

Use the drop-down list to specify the collation order to be used for the parameter.

**Column info** displays the summary of the column-based parameter: data type and size.

 **Use default value**

Enable this option to specify the value this data type will take by default. For details see [Setting field defaults](#)<sup>210</sup>.

## 15.7 Specifying input parameters

If the stored procedure (or function) has parameters, the **Input Parameter dialog** appears before the execution. It allows you to specify the values for all parameters. After changes are done, click the **OK** button to execute the stored procedure/function, or the **Cancel** button to abort the execution.

Date	FIRST	LAST
25.07.2017 16:04:22	%A%	JOHNSON
25.07.2017 16:03:54	%AL%	BROWN

FIRST (VARCHAR(15))	<input type="checkbox"/> Null	%A%
LAST (VARCHAR(20))	<input type="checkbox"/> Null	JOHNSON

OK Cancel Help

Also you can choose the recently used set of values in the table at the top of the window. To apply values from the table just double-click its row.

## 15.8 Viewing object operations

The **Operations** tab of [Procedure Editor](#)<sup>[25]</sup>, [Trigger Editor](#)<sup>[28]</sup>, [Database Trigger Editor](#)<sup>[31]</sup> displays DML operations performed by the current [procedure](#)<sup>[25]</sup> / [trigger](#)<sup>[28]</sup> / [database trigger](#)<sup>[31]</sup> respectively. On clicking an operation in the list you get the corresponding *SELECT*, *INSERT*, *UPDATE* or *DELETE* statement displayed in the **Statement** area below.

Operation	Object	Statement
Select	SALES	SELECT count(po_number) FROM sales WHERE sales_rep = :emp_num INT
Update	DEPARTMENT	UPDATE department SET mngr_no = NULL WHERE mngr_no = :emp_num
Update	PROJECT	UPDATE project SET team_leader = NULL WHERE team_leader = :emp_num
Delete	EMPLOYEE_PROJECT	DELETE FROM employee_project WHERE emp_no = :emp_num
Delete	SALARY_HISTORY	DELETE FROM salary_history WHERE emp_no = :emp_num
Delete	EMPLOYEE	DELETE FROM employee WHERE emp_no = :emp_num

**Statement**

```

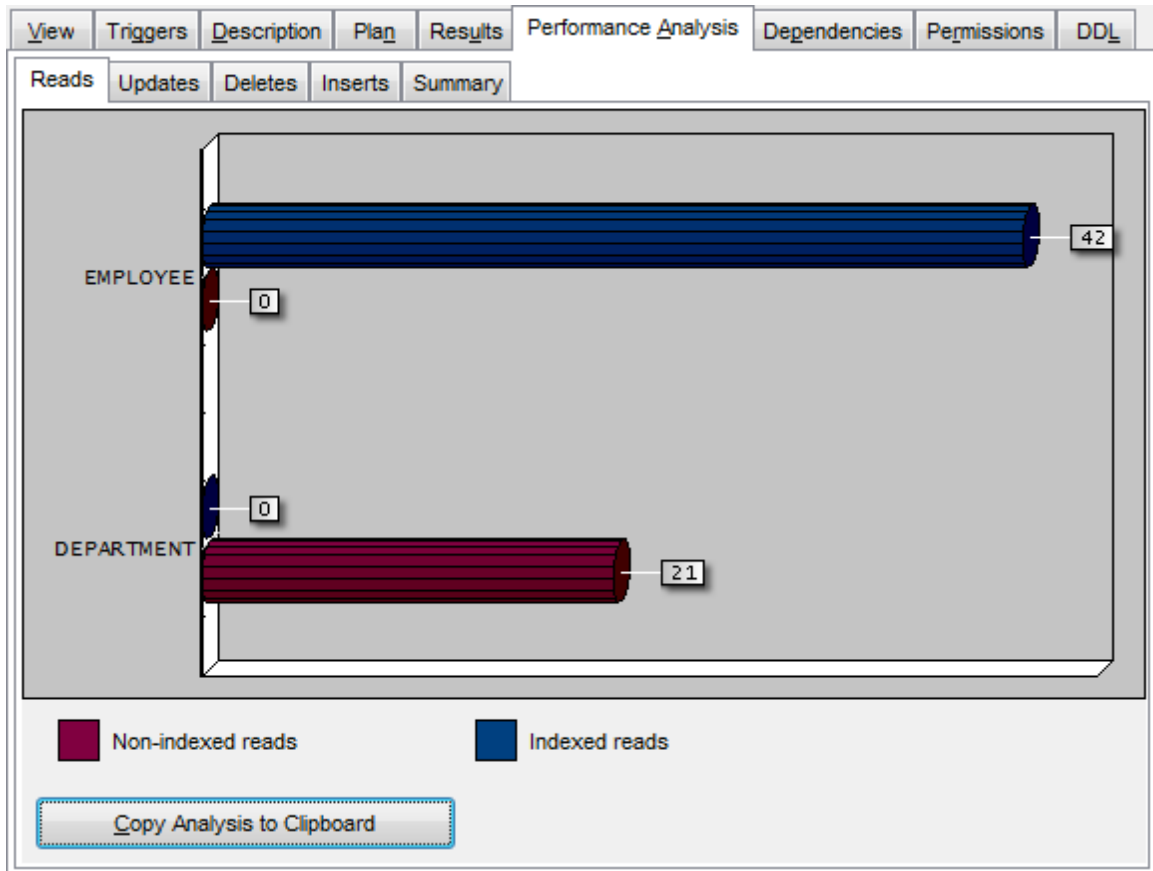
1 UPDATE department
2   SET mngr_no = NULL
3   WHERE mngr_no = :emp_num

```

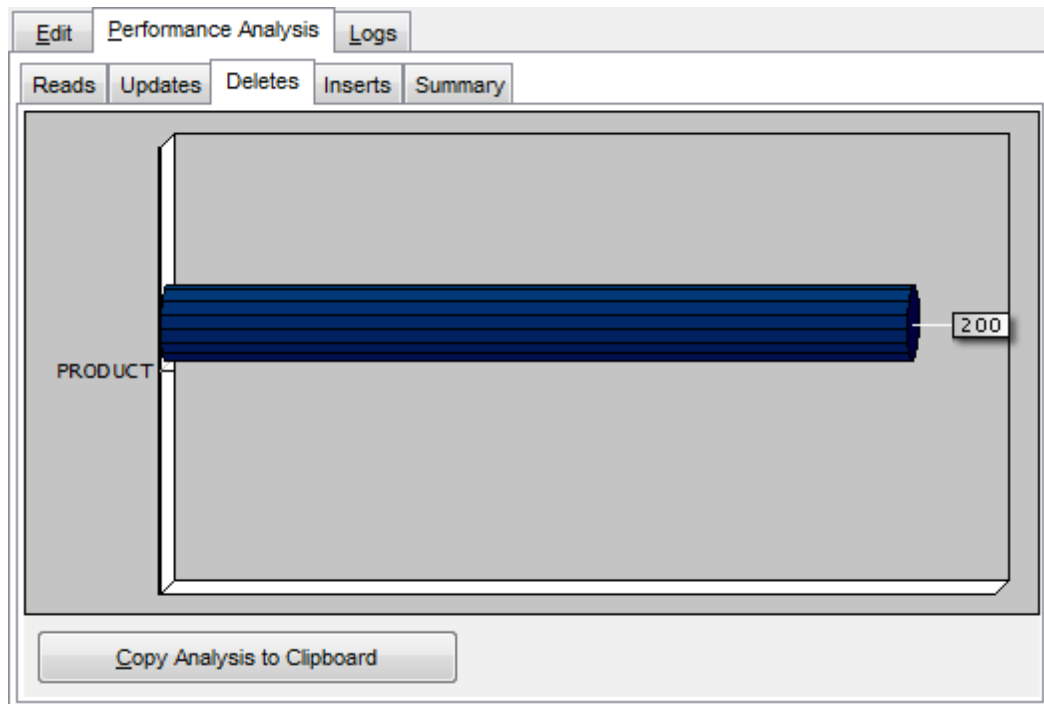
## 15.9 Viewing performance analysis

The **Performance Analysis** tab of [View Editor](#)<sup>[242]</sup>, [Data Editor](#)<sup>[330]</sup>, [Design Query](#)<sup>[347]</sup> editors displays the performance analysis for the query.

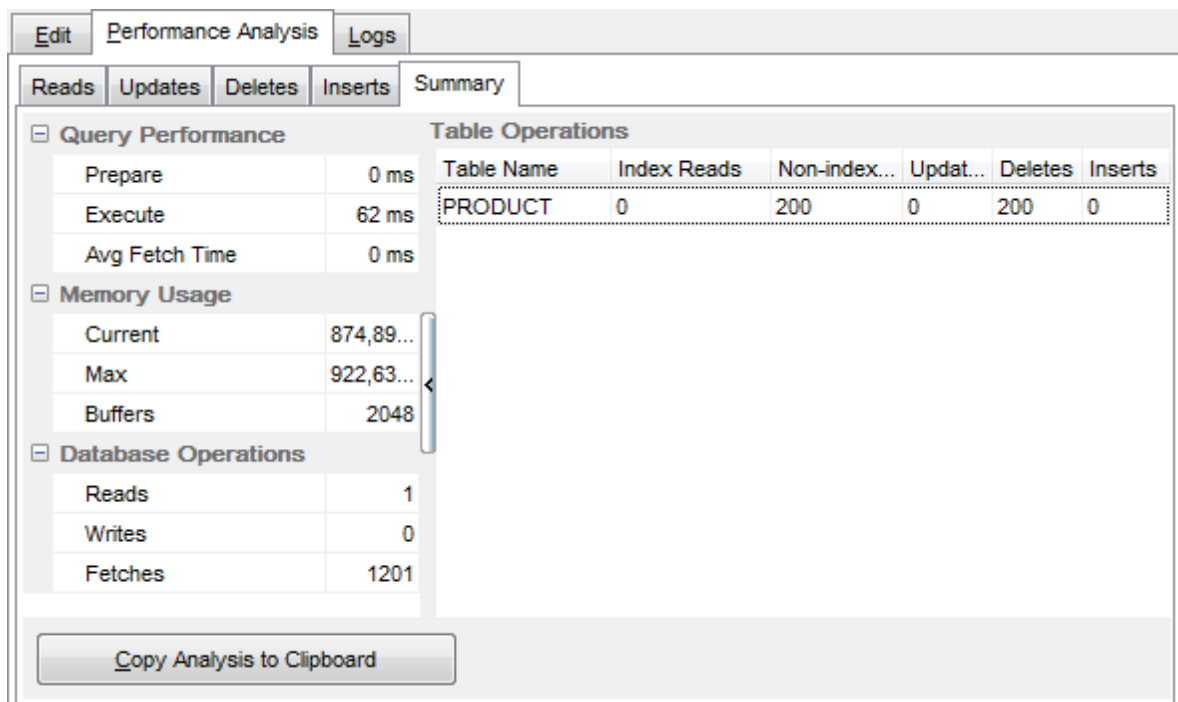
At the **Reads** sub-tab you can see the result of query execution. Visual comparison of indexed and with non-indexed reads is displayed on a diagram.



At the **Updates**, **Deletes** and **Inserts** sub-tabs you can find statistics on the corresponding *UPDATE/DELETE/INSERT* operations.



At the **Summary** sub-tab you can view full execution statistics for the query:



The **Query time**, **Memory** and **Operations** sections display summary analysis of the query execution and can be copied to clipboard by pressing the corresponding button.

Statistics on *indexed reads (IR)*, *non-indexed reads (NIR)*, *updates (UPD)*, *deletes (DEL)* and *inserts (INS)* are presented as a table.





## 15.10 Compile window

The **Compile** window is used to trace the errors and edit SQL statements during their compilation. The compilation window appears each time metadata is changed, both when the compilation is successful and when there are compilation errors.

### Statement sequence

This area contains the list of operations and the result of their parsing (*successful or error*).

### Selected statement

This area displays the SQL statement pending to be executed to perform metadata changing. In this area you can view and edit the SQL statement.

In case of a compilation error the **Error** tab also becomes visible - here you can view the error description returned by the server.

### Commit

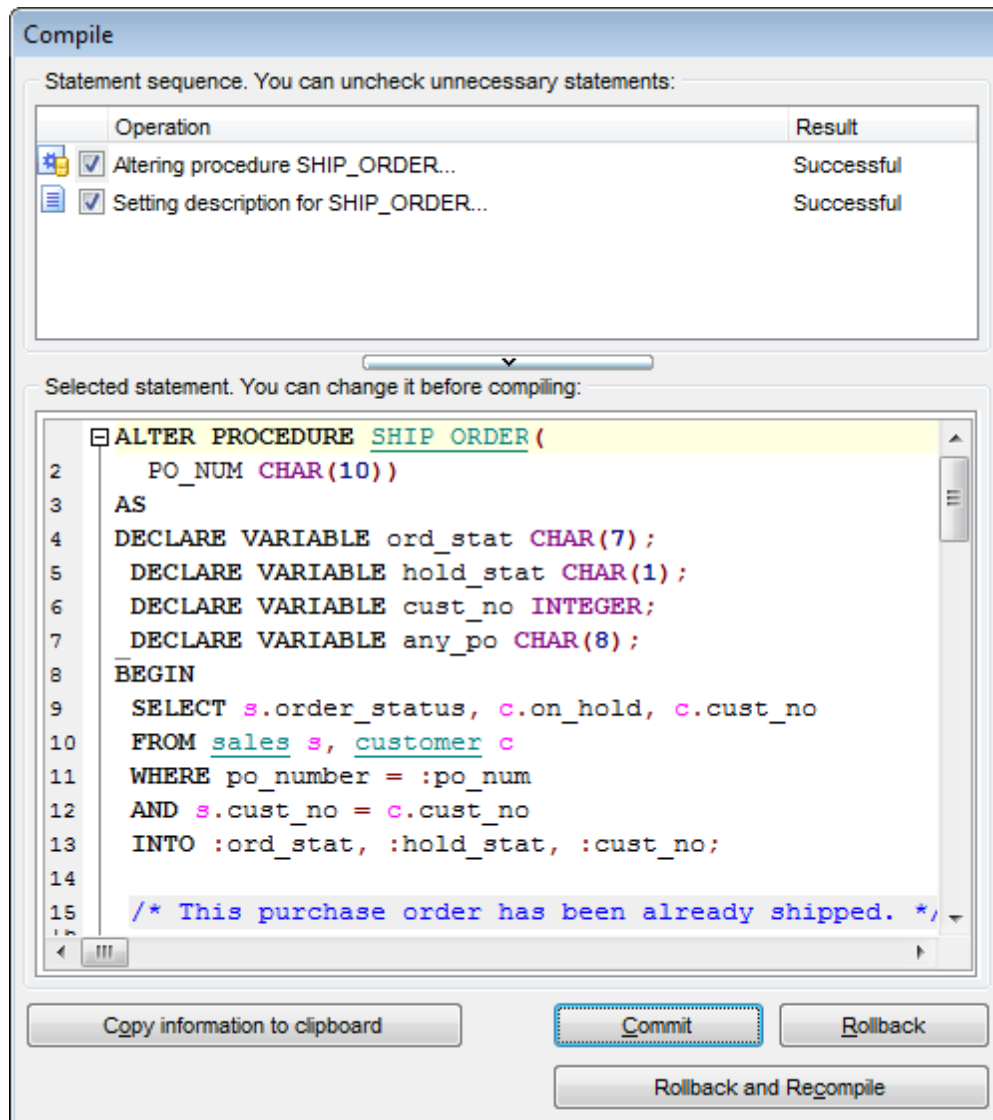
This button starts execution of the statement(s). Click it to commit the current transaction. This button is available only if there were no errors in compilation.

### Rollback

This button cancels the script execution and allows you to return to the previous stage (editor window or [DB Explorer](#)<sup>[63]</sup>).

### Rollback and Recompile

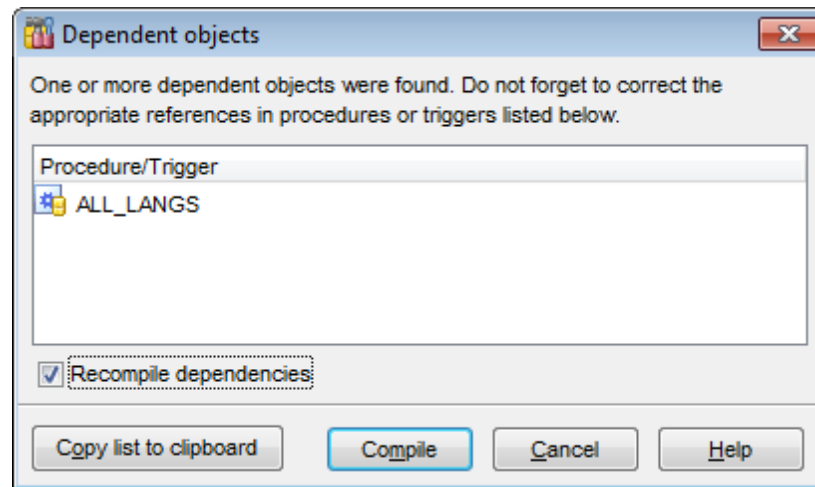
This button calls for recompilation with the changes you made in the **Selected statement** editing area. Use this button after correcting the SQL statement.



If necessary, you can **copy information to clipboard** and save it in a text editor afterwards (the button is only enabled when a compilation error occurs).

If you want this window to appear only in case of an error, uncheck the  **Confirm successful compilation** option (checked by default) available within the [Confirmations](#)<sup>[741]</sup> section of the [Environment Options](#)<sup>[736]</sup> dialog.

If object compilation requires recompilation of its dependencies, the **Compile** window looks like in the screenshot below.



## 15.11 Find Text dialog

The **Find Text** dialog is provided for quick and flexible searching for specified text within the working area of **SQL Manager** editors.

### Text to find

Enter a search string in this box. The Arrow-Down button which can be found next to the input box allows you to select any of the previously entered search strings.

### Options

#### Search in DDL

This option includes object definition in search scope.

#### Case sensitive

This option can be used to differentiate uppercase characters from lowercase ones during the search process.

#### Whole words only

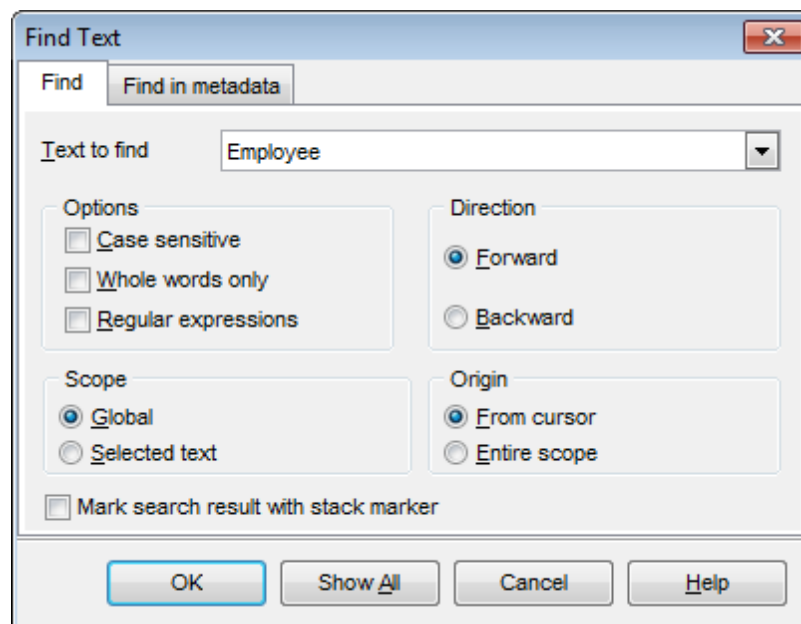
Use this option to search for words only (with this option off, the search string might be found within longer words.)

#### Regular expressions

Recognizes regular expressions in the **Text to find** field.

For example, you can type "empl\*" to search for metadata containing the "empl" substring; enter "^emp" to search for words starting with "emp" or "^emp|emp\$" to search for the string "emp" at the beginning or at the end of the string.

**Note:** The syntax of regular expressions that can be used in the **Text to find** field is similar to that used in Perl regular expressions. Comprehensive information about it can be found at <http://perldoc.perl.org/perlre.html#Regular-Expressions>.



### Direction

#### Forward

Searches from the current position to the end of the working area.

**Backward**

Searches from the current position to the beginning of the working area.

**Scope**

**Global**

Searches within the entire working area, in the direction specified by the *Direction* setting.

**Selected text**

Searches only within the currently selected text, in the direction specified by the *Direction* setting. You can use the mouse or block commands to select a block of text.

**Origin**

**From cursor**

The search starts at the cursor's current position, and then proceeds either forward to the end of the scope, or backward to the beginning of the scope depending on the *Direction* setting.

**Entire scope**

The search covers either the entire block of selected text or the entire script (no matter where the cursor is in the Editor area) depending upon the *Scope* options.

**Mark search result with stack marker**

The option toggles marking search results. If this option is selected, stack markers are set at all search positions - this makes it possible to jump from one marker (search result) to another within the text.

Click the **Show All** button to highlight every occurrence of the search string.

## 15.12 Replace Text dialog

The **Replace Text** dialog is provided for searching and replacing text within the working area of SQL Manager editors.

### **Text to find**

Enter a search string in this box. The Arrow-Down button which can be found next to the input box allows you to select any of the previously entered search strings.

### **Text to replace**

This box allows you to enter a string to replace the search string. The Arrow-Down button which can be found next to the input box allows you to select any of the previously entered strings. To replace the search string with an empty string, leave this input box blank.

### **Options**

#### **Case sensitive**

This option can be used to differentiate uppercase characters from lowercase ones during the search process.

#### **Whole words only**

Use this option to search for words only (with this option off, the search string might be found within longer words.)

#### **Regular expressions**

Recognizes regular expressions in the **Text to find** field.

#### **Replace with template**

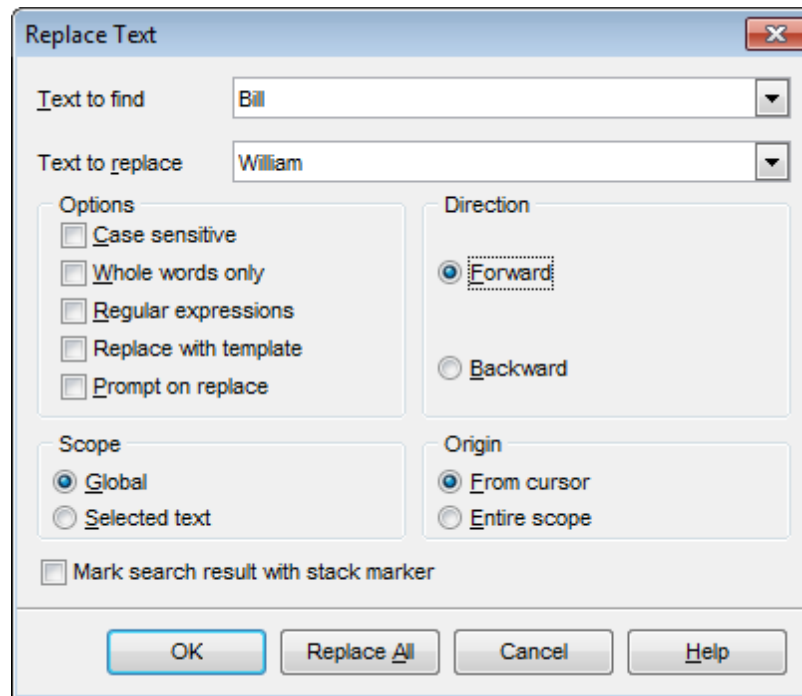
This option requires the **Regular expressions** option selection.

Enable this option to use regular expressions in the **Text to replace** field. Expression used in this field will be applied to each string that matches the **Text to find** expression.

**Note:** The syntax of regular expressions that can be used in the **Text to find** and the **Text to replace** fields is similar to that used in Perl regular expressions. Comprehensive information about it can be found at <http://perldoc.perl.org/perlre.html#Regular-Expressions>.

#### **Prompt on replace**

Check this option if you wish to be prompted before replacing upon each occurrence of the search string. When this option is off, the search string is replaced automatically.



### Direction

#### **Forward**

Searches and replaces from the current position to the end of the working area.

#### **Backward**

Searches and replaces from the current position to the beginning of the working area.

### Scope

#### **Global**

Searches and replaces within the entire working area, in the direction specified by the *Direction* setting.

#### **Selected text**

Searches and replaces only within the currently selected text, in the direction specified by the *Direction* setting. You can use the mouse or block commands to select a block of text.

### Origin

#### **From cursor**

The search and replace process starts at the cursor's current position, and then proceeds either forward to the end of the scope, or backward to the beginning of the scope depending on the *Direction* setting.

#### **Entire scope**

The search and replace process covers either the entire block of selected text or the entire script (no matter where the cursor is in the Editor area) depending upon the *Scope* options.

#### **Mark search result with stack marker**



The option toggles marking search results. If this option is selected, stack markers are set at all search positions - this makes it possible to jump from one marker (search result) to another within the text.

Click the **Replace All** button to replace every occurrence of the search string. If you have checked the **Prompt on replace** option, the confirmation dialog box appears upon each occurrence of the search string.

## 15.13 Format specifiers

The following format specifiers are supported in the format string:

### Float/Integer format

#### **0**

Digit place holder. If the value being formatted has a digit in the position where the '0' appears in the format string, then that digit is copied to the output string. Otherwise, a '0' is stored in that position in the output string.

#### **#**

Digit placeholder. If the value being formatted has a digit in the position where the '#' appears in the format string, then that digit is copied to the output string. Otherwise, nothing is stored in that position in the output string.

#### **.**

Decimal point. The first '.' character in the format string determines the location of the decimal separator in the formatted value; any additional '.' characters are ignored.

#### **,**

Thousand separator. If the format string contains one or more ',' characters, the output will have thousand separators inserted between each group of three digits to the left of the decimal point. The placement and number of ',' characters in the format string does not affect the output, except to indicate that thousand separators are wanted.

#### **E+**

Scientific notation. If any of the strings 'E+', 'E-', 'e+', or 'e-' are contained in the format string, the number is formatted using scientific notation. A group of up to four '0' characters can immediately follow the 'E+', 'E-', 'e+', or 'e-' to determine the minimum number of digits in the exponent. The 'E+' and 'e+' formats cause a plus sign to be output for positive exponents and a minus sign to be output for negative exponents. The 'E-' and 'e-' formats output a sign character only for negative exponents.

### Date/Time format

#### **c**

Displays the date using the format using the Short Date Format, followed by the time using the Long Time Format. The time is not displayed if the date-time value indicates midnight precisely.

#### **d**

Displays the day as a number without a leading zero (1-31).

#### **dd**

Displays the day as a number with a leading zero (01-31).

#### **ddd**

Displays the day as an abbreviation (Sun-Sat) using the strings of the Short Day Names.

#### **dddd**

Displays the day as a full name (Sunday-Saturday) using the strings of the Long Day

Names.

**dddd**

Displays the date using the Short Date Format.

**dddddd**

Displays the date using the Long Date Format.

**e**

Displays the year in the current period/era as a number without a leading zero (Japanese, Korean and Taiwanese locales only).

**ee**

Displays the year in the current period/era as a number with a leading zero (Japanese, Korean and Taiwanese locales only).

**g**

Displays the period/era as an abbreviation (Japanese and Taiwanese locales only).

**gg**

Displays the period/era as a full name. (Japanese and Taiwanese locales only).

**m**

Displays the month as a number without a leading zero (1-12). If the m specifier immediately follows an h or hh specifier, the minute rather than the month is displayed.

**mm**

Displays the month as a number with a leading zero (01-12). If the mm specifier immediately follows an h or hh specifier, the minute rather than the month is displayed.

**mmm**

Displays the month as an abbreviation (Jan-Dec) using the strings given of the Short Month Names.

**mmmm**

Displays the month as a full name (January-December) using the strings of the Long Month Names.

**yy**

Displays the year as a two-digit number (00-99).

**yyyy**

Displays the year as a four-digit number (0000-9999).

**h**

Displays the hour without a leading zero (0-23).

**hh**

Displays the hour with a leading zero (00-23).

**n**

Displays the minute without a leading zero (0-59).

**nn**

Displays the minute with a leading zero (00-59).

**s**

Displays the second without a leading zero (0-59).

**ss**

Displays the second with a leading zero (00-59).

**z**

Displays the millisecond without a leading zero (0-999).

**zzz**

Displays the millisecond with a leading zero (000-999).

**t**

Displays the time using the Short Time Format.

**tt**

Displays the time using the Long Time Format.

**am/pm**

Uses the 12-hour clock for the preceding h or hh specifier, and displays 'am' for any hour before noon, and 'pm' for any hour after noon. The am/pm specifier can use lower, upper, or mixed case, and the result is displayed accordingly.

**a/p**

Uses the 12-hour clock for the preceding h or hh specifier, and displays 'a' for any hour before noon, and 'p' for any hour after noon. The a/p specifier can use lower, upper, or mixed case, and the result is displayed accordingly.

**ampm**

Uses the 12-hour clock for the preceding h or hh specifier, and displays the contents of the TimeAMString global variable for any hour before noon, and the contents of the TimePMString global variable for any hour after noon.

**/**

Displays the date separator character using the Date Separator.

**:**

Displays the time separator character using the Time Separator.

**'xx'/"xx"**

Characters enclosed in single or double quotes are displayed as-is, and do not affect formatting.

## 15.14 Language Info Editor

The **Language Info Editor** dialog allows you to set the language name and specify the corresponding \*.lng localization file. This dialog is opened when you add or edit a language (see [Environment Options | Localization](#)<sup>[792]</sup>).

### Language Name

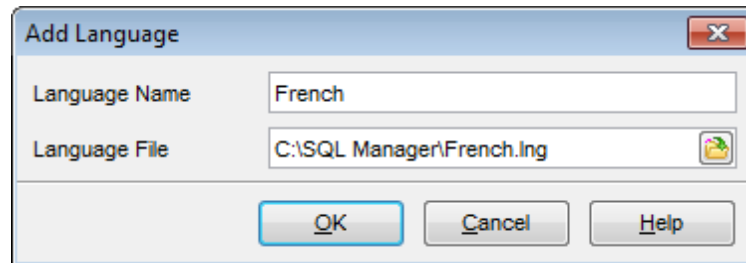
The name of the language that is displayed in the [Select Program Language](#)<sup>[823]</sup> dialog and within the **Available Languages** list of the [Environment Options | Localization](#)<sup>[792]</sup> section.

### Language File

The \*.lng file containing the translated string resources. See the %program\_directory%\Languages folder to find already existing localization files.

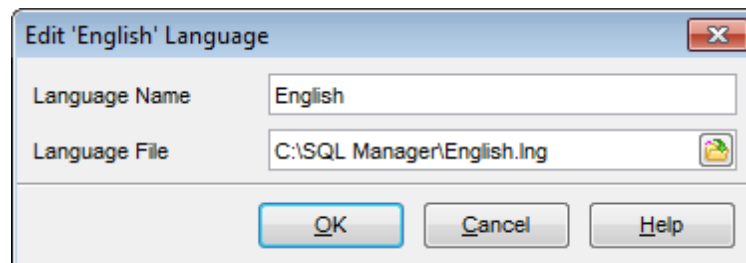
### Adding a language

The *Add language* dialog allows you to specify your own localization file and set the language name.



### Editing a language

The *Edit language* dialog allows you to change the language name or select another localization file for the specified language.



## 15.15 Using templates

For your convenience the ability to use templates is provided by **SQL Manager for InterBase/Firebird**. A template is a named collection of wizard options stored in a file.

Instead of performing a long chain of routine steps all the time you can save all the options of the wizard for future use as a template file. Select the **Templates | Save Template** drop-down menu item, specify the template file name and set an optional comment for the template file.

When starting the wizard next time, you can load the template by selecting the **Templates | Load Template** drop-down menu item.

Note that saving/loading of templates is possible at any step of the wizard.

## 15.16 Supported file formats

### • **MS Excel 97-2003**

The most popular e-table format used by Microsoft® Excel (\*.xls). The result files are fully compatible with Microsoft® Excel versions 97-2000, 2003 and XP.

### • **MS Access 97-2003**

File of Microsoft® Access 97-2003 format (\*.mdb) with an ADO connection used.

### • **MS Word 97-2003**

One of the most popular text processing formats used by Microsoft® Word (\*.doc). The result files are fully compatible with Microsoft® Word versions 97-2000, 2003 and XP.

### • **RTF**

Rich Text Format (\*.rtf) supported by many text processing programs (e.g. WordPad).

### • **HTML**

Hyper Text Markup Language file format (\*.html, \*.htm), complete compatibility with HTML 4.0 specification.

### • **PDF**

A standard format in electronic publishing (\*.pdf).

### • **Text file**

Plain text file format (\*.txt).

### • **CSV file**

Comma-Separated Value file format (\*.csv).

### • **DIF file**

Data Interchange File (\*.dif) format.

### • **SYLK**

Symbolic Links (\*.slk) file format.

**Note:** all the text formats including *Text file*, *CSV*, *DIF*, *SYLK* are usually used as working or interchange formats.

### • **LaTeX**

A specific file format (\*.tex) which is a popular (especially among mathematicians and physicists) macroextension of *TeX* pack developed by D.Knut.

### • **XML**

A markup language for documents containing structured information (\*.xml).

### • **DBF**

Database file format (\*.dbf) used by dBASE and a number of xBASE applications.

### • **MS Excel**

The contemporary e-table format used by Microsoft® Excel (\*.xlsx). The result files are fully compatible with Microsoft® Excel 2007.

### • **MS Access**

File of Microsoft® Access 2007 format (\*.accdb) with an ADO connection used.

• **MS Word**

The contemporary text processing format used by Microsoft® Word (\*.docx). The result files are fully compatible with Microsoft® Word 2007.

• **ODF Spreadsheets**

OASIS Open Document Format for Office Applications - open document file format for spreadsheets (\*.ods) used by a number of applications including OpenOffice.org and KOffice.

• **ODF text**

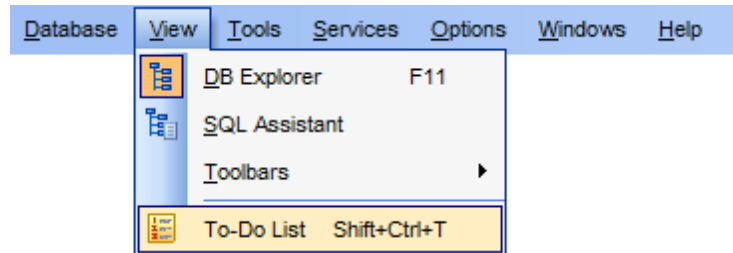
OASIS Open Document Format for Office Applications - open document file format for word processing (\*.odt) documents used by a number of applications including OpenOffice.org and KOffice.



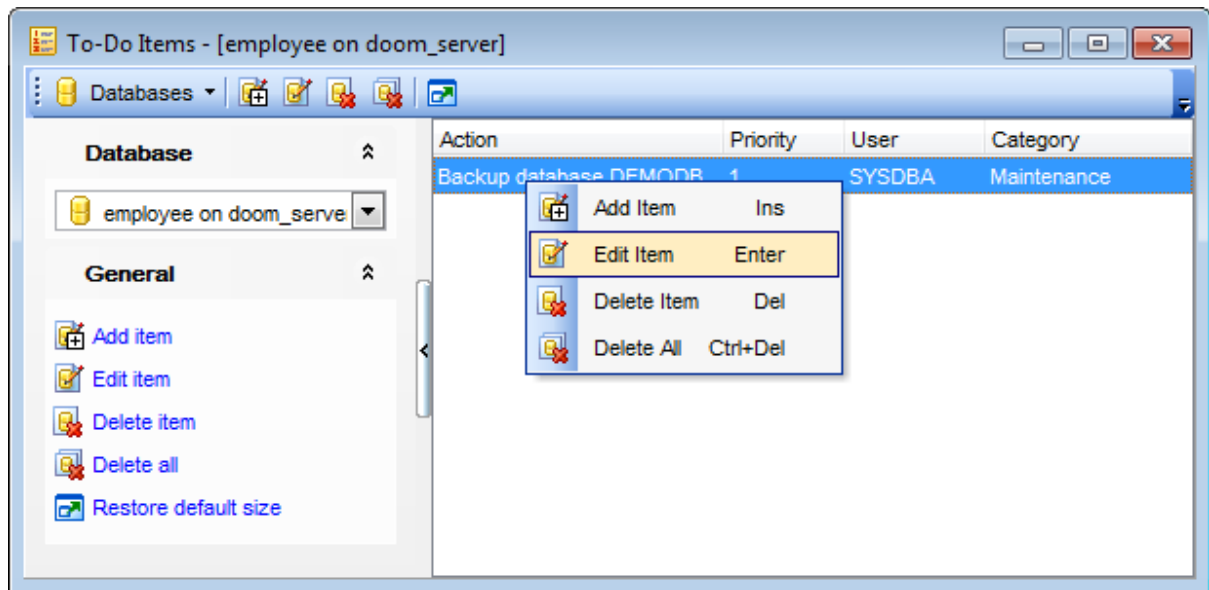
## 15.17 To-Do List

The **To-Do List** window allows you to make up a list of tasks for the database.

To call this window, select the **View | To-Do List** [main menu](#)<sup>[882]</sup> item, or use the *Shift+Ctrl+T* [shortcut](#)<sup>[932]</sup>.



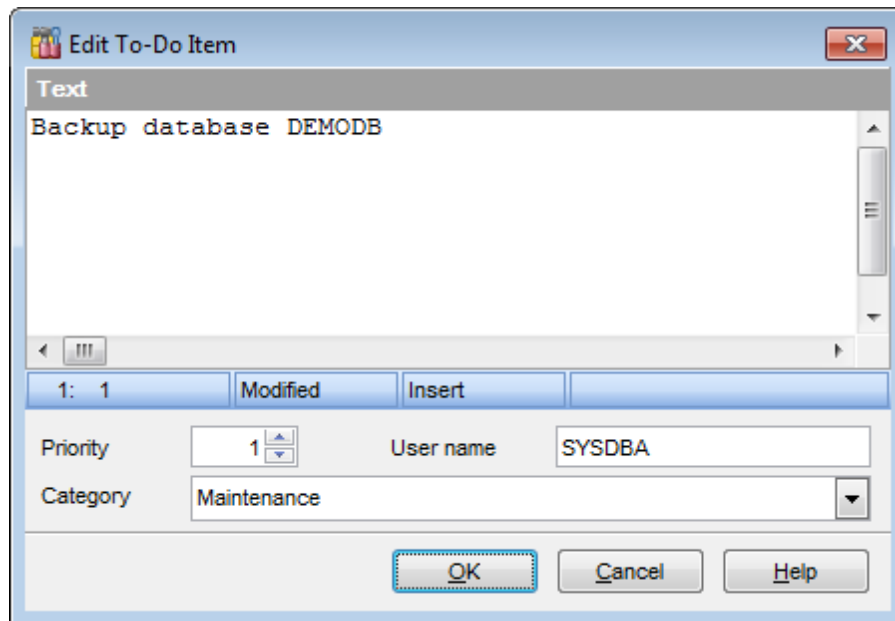
The task list is displayed in a form of a grid. Its columns (*Action*, *Priority*, *User*, *Category*) correspond to the task parameters. Click the column caption to sort the task list by the current parameter or change the sorting direction. Use the Navigation bar and context menu to *add*, *edit*, and *delete* to-do items.



### Database

Select the database to apply the task list to. When switching between the databases you can view different task lists.

To add a task to this list, click the **Add Item** link on the Navigation bar, or select **Add Item** from the context menu. You can also use the *Ins* key for the same purpose. Define the task parameters and click **OK** to add the new task to the list.

**Text**

Optional text to describe the task.

**Priority**

Set a numeric value to indicate the priority of the task.

**User Name**

The database User name this task is applied to.

**Category**

Set a category for the task. Using categories may be useful for grouping tasks.

*To modify a task*, select the task in the list and click the **Edit Item** link of the Navigation bar, or select **Edit Item** in the context menu. You can also use the *Enter* key for the same purpose.

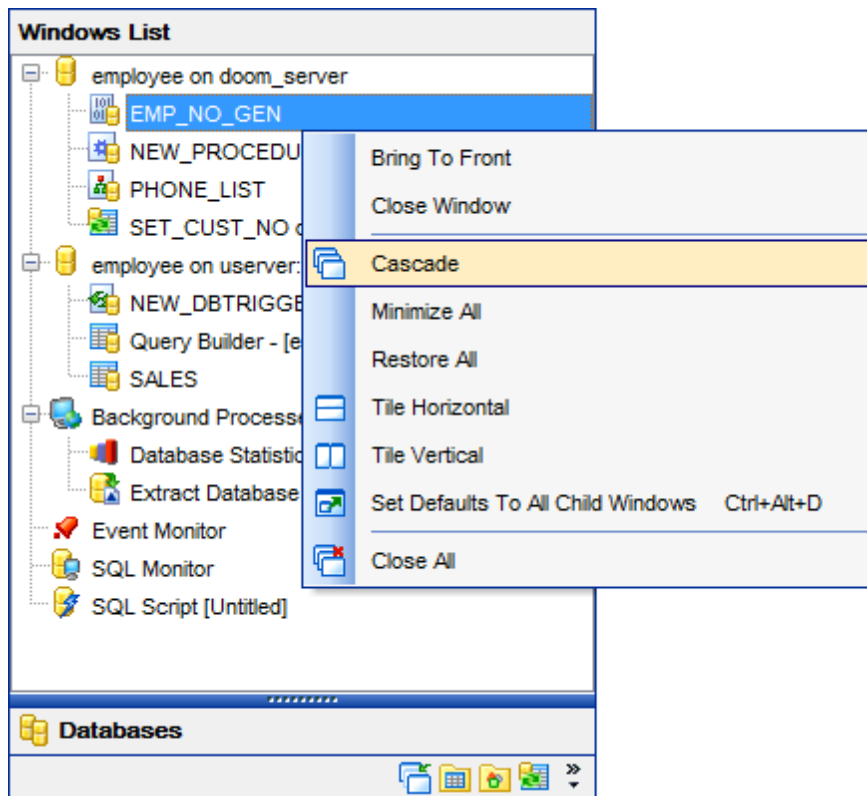
*To remove a task*, select the task in the list and click the **Delete Item** link of the Navigation bar, or select **Delete Item** in the context menu. You can also use the *Del* key for the same purpose.

*To remove all tasks* from To-Do List, click the **Delete all** link of the Navigation bar, or select **Delete all** in the context menu. You can also use the *Ctrl+Del* [shortcut](#)<sup>[932]</sup> for the same purpose.

## 15.18 Windows List

The **Windows List** panel allows you to browse the list of windows that are currently opened within **SQL Manager for InterBase/Firebird** IDE.

To activate this panel as a DB Explorer [tab](#)<sup>[73]</sup>, select the **Windows | Window List** [main menu](#)<sup>[88]</sup> item, or use the *Ctrl+Alt+O* [shortcut](#)<sup>[93]</sup>.



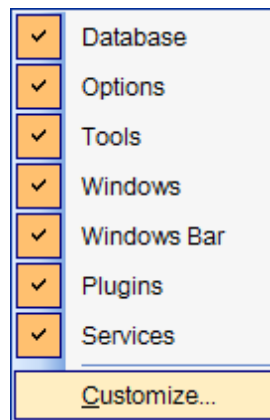
If necessary, you can right-click within the list area to call the **popup menu** which allows you to bring a window to foreground, close windows one by one or in groups, and to arrange the windows according to your preferences.

## 15.19 Customize toolbars and menus

For your convenience **SQL Manager for InterBase/Firebird** provides **toolbars** and **menus** that you can customize, so the commands you use frequently are readily available and easily identifiable.

The **Customize** dialog allows you to create and personalize **SQL Manager** menus and [toolbars](#).

To call this dialog, click **More buttons...** on the right side of any [toolbar](#), then click **Add or Remove Buttons** and select **Customize...** from the drop-down menu. Alternatively, you can right-click any toolbar and select the **Customize...** popup menu item.



### Toolbars

#### Toolbars

This list displays all currently existing toolbars of **SQL Manager** (both *default* and *user-defined* toolbars). Check/uncheck the box at a toolbar name to show/hide the toolbar.

#### New...

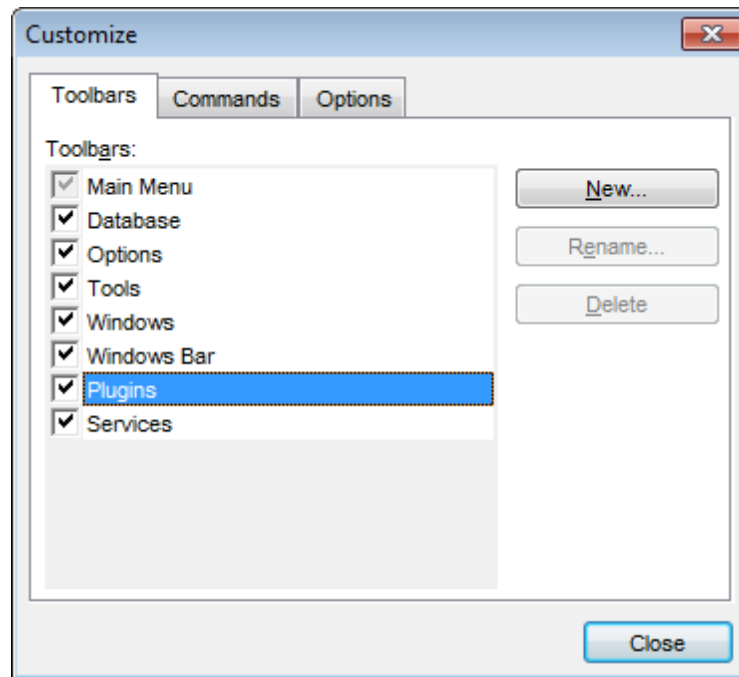
Use this button to add a new user-defined toolbar to the **Toolbars** list. Set a name for the newly created toolbar and dock it by dragging it to any permitted location within the application window.

#### Rename...

Use this button to rename the selected user-defined toolbar.

#### Delete

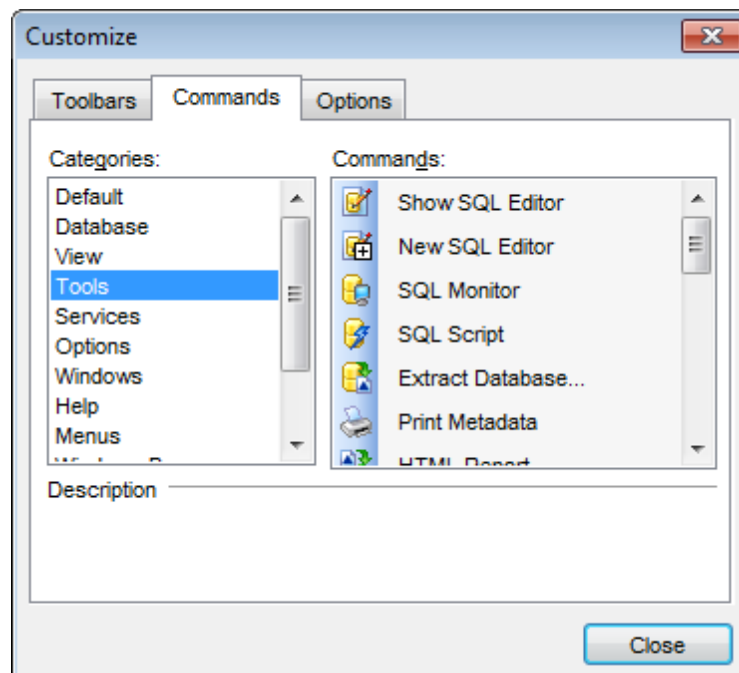
Use this button to delete the selected user-defined toolbar.



### Commands

This tab allows you to browse the list of all commands available within the menus and toolbars of the application window. Selecting categories in the **Categories** list displays commands of the selected category (e.g. 'Database' or 'Tools') in the **Commands** list.

If necessary, you can pick a command and drag it to any [toolbar](#)<sup>884</sup> to create a button for this command.



## Options

### Personalized Menus and Toolbars

**Menus show recently used commands first**

This option determines whether the most frequently used items will be placed in menus at first position.

If this option is enabled, frequently used menu items are "promoted" and displayed higher on the list. Unused and infrequently used menu items are visually suppressed and appear "collapsed".

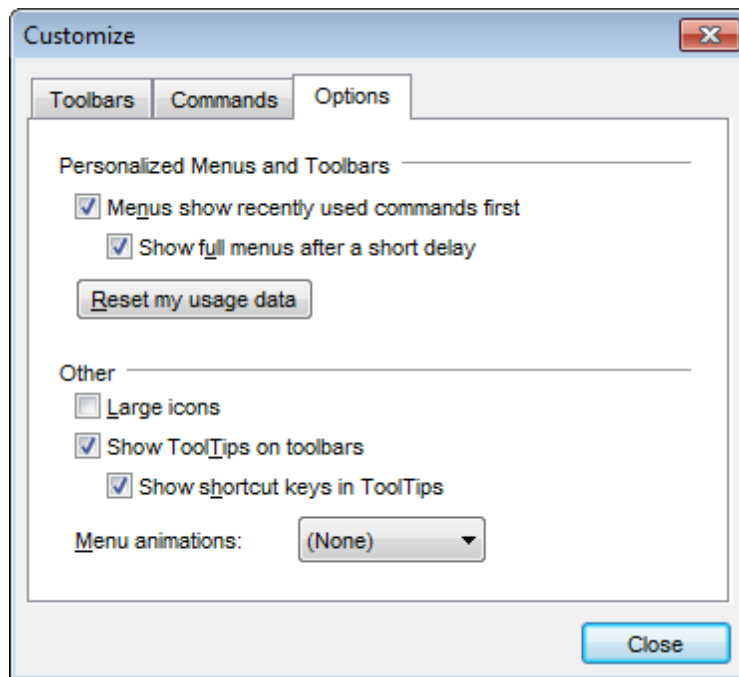
**Show full menus after a short delay**

This option is available only if the **Menus show recently used commands first** option is selected.

If this option is enabled, infrequently used menu items (if they appear "collapsed") will be automatically expanded after a delay upon setting mouse cursor (or upon selection with the *Up/Down* keys) on the bottom of the menu. Otherwise, the menu expands only after clicking its bottom-most button (or using the *Ctrl+Down* [shortcut](#)<sup>[935]</sup>).

### Reset my usage data

Resets the lists of recently used commands in the toolbars and menus.



## Other

**Large icons**

This option displays larger icons on the parent window [toolbars](#)<sup>[884]</sup>.

**Show ToolTips on toolbars**

If this option is selected, ToolTips (hints) popup when the mouse cursor is positioned over a [toolbar](#)<sup>[884]</sup> button.

**Show shortcut keys in ToolTips**

If this option is selected, the corresponding [shortcuts](#)<sup>932)</sup> are displayed in ToolTips (hints) for toolbar buttons.

**Menu animations**

Use the drop-down list to specify the menu animation effects:

*None* (no animation)

*Random* (random choice: *Unfold*, *Slide*, *Fade*)

*Unfold* (unfolding menus)

*Slide* (sliding menus)

*Fade* (menus fade in when appearing)

## 15.20 SSH tunneling options

**SSH** (Secure Shell Host) protocol is used to heighten computer security when working with Unix systems on the Internet. SSH uses several encryption algorithms of different reliability. The spread of SSH is also related to the fact that a number of \*nix operating systems (e.g. FreeBSD) include SSH server in their standard distributions. To learn more about SSH, please visit <http://openssh.org>.

The SSH tunneling feature of **SQL Manager** is a means of ensuring secure connection to InterBase/Firebird servers when working over insecure connection channels. You can also use SSH tunnel to get access to the remote InterBase/Firebird servers when port 3306 is closed for external connections for some reasons.

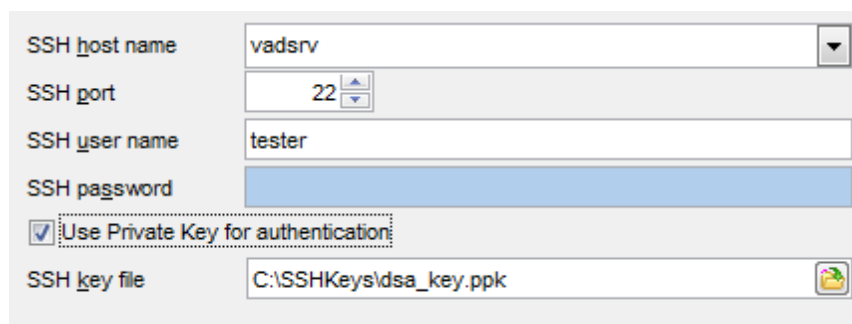
The connection via SSH tunnel works in the following way.

First, a connection is established and the process of authentication between SSH client built in **SQL Manager** and remote InterBase/Firebird server is performed. Then all incoming and outgoing information between the application and InterBase/Firebird is transmitted through SSH server with the help of a communication port (regularly port 22), and SSH server transfers this information directly to InterBase/Firebird server.

To setup the connection via **SSH tunnel**, input the following values in the corresponding fields:

- **SSH host name** is the name of the host where SSH server is running
- **SSH port** indicates the port where SSH server is activated
- **SSH user name** stands for the user on the machine where SSH server is running (**Note:** it is a Linux/Windows user, not a user of InterBase/Firebird server)
- **SSH password** is the Linux/Windows user password

Please note that InterBase/Firebird **host name** should be set relatively to the SSH server in this case. For example, if both InterBase/Firebird and SSH servers are located on the same computer, you should specify *localhost* as **host name** instead of the server external host name or IP address.



The screenshot shows a configuration window for SSH tunneling. It contains the following fields and options:

- SSH host name:** A dropdown menu with the value "vadsrv".
- SSH port:** A numeric input field with the value "22".
- SSH user name:** A text input field with the value "tester".
- SSH password:** A text input field that is currently masked with blue bars.
- Use Private Key for authentication:** A checked checkbox.
- SSH key file:** A text input field with the value "C:\SSHKeys\dsa\_key.ppk" and a file selection icon on the right.

### Use Private Key for authentication

If the SSH encryption is enabled on the SSH server, a user can generate a pair of cryptographic keys (the **Private key** and the **Public key**). The **Public key** is placed on the SSH server, and the **Private key** is the part you keep secret inside a secure box that can only be opened with the correct passphrase (or an empty string as the passphrase). When you wish to access the remote system, you open the secure box with your passphrase (if any), and use the private key to authenticate yourself with the Public key on the remote Linux computer.



**SSH Key file**

Specify the location (the secure box) of the **Private key** file on your local machine.

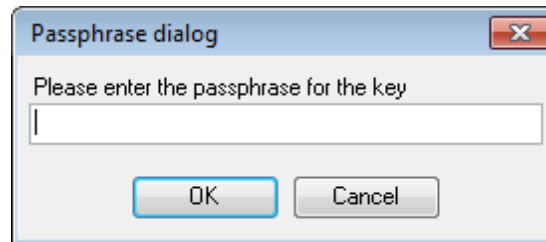
Supported Private Key file formats are:

*OpenSSH*

*Putty*

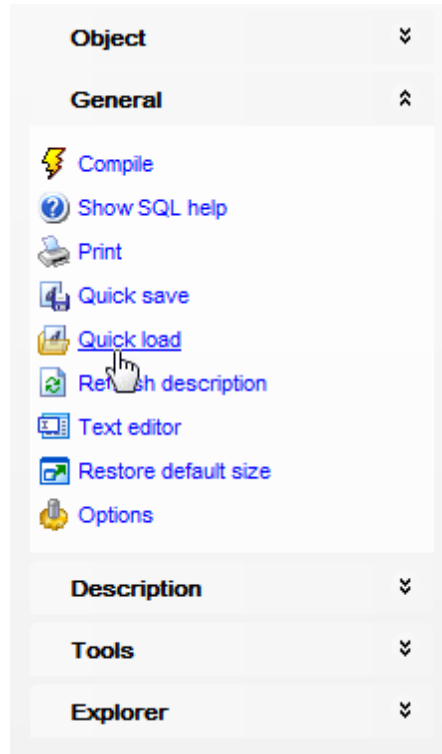
*SSH.com*

Note that you need to trust your local machine not to scrape your passphrase or a copy of your Private key file while it is out of its secure box.



## 15.21 Quick save / Quick load

The **Quick save** / **Quick load** features available on the [Navigation bar](#)<sup>8821</sup> of most object editors allow you to save/load object's DDL quickly bypassing standard means by saving/loading changes to/from from internal buffers.



## 15.22 Connection Lost dialog

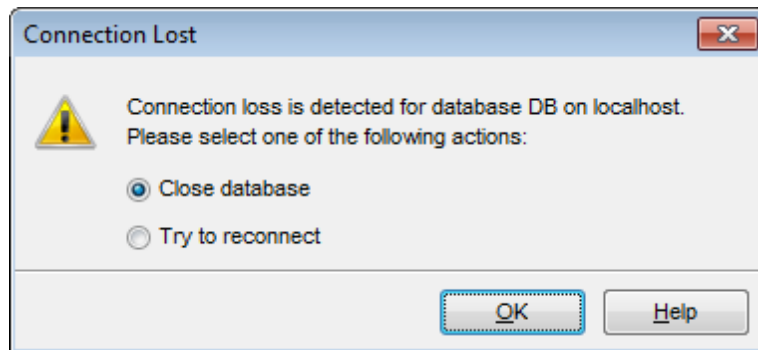
When InterBase/Firebird server connection loss is detected by **SQL Manager**, the **Connection Lost** dialog is displayed. You can choose one of available options in this case:

**Close database**

The application closes the database, and its objects are no more displayed in [DB Explorer](#) and child windows.

**Try to reconnect**

The application tries to reconnect to the server.

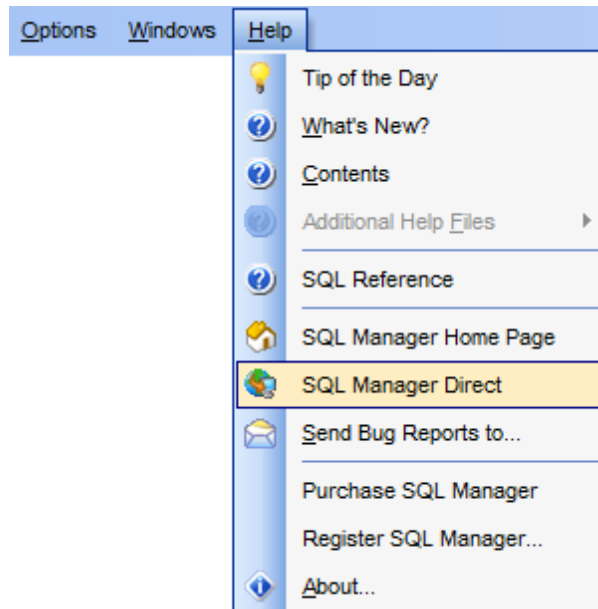


## 15.23 SQL Manager Direct

**SQL Manager Direct** is a feature of **SQL Manager for InterBase/Firebird** which provides you with quick access to the related Internet resources and allows you to keep your **SQL Manager** version up-to-date.

To open the **SQL Manager Direct** window, select the **Help | SQL Manager Direct** item from the [main menu](#)<sup>[882]</sup>.

On opening **SQL Manager Direct** or pressing the **Update** button, program checks for updates available at EMS Software Development server.



Links to [sqlmanager.net](http://sqlmanager.net) resources provided by the **SQL Manager Direct** window are grouped into several sections:

- *SQL Manager for InterBase/Firebird News*
- *General Information*
- *Downloads*
- *Related Products*

Upon a link selection you will be immediately forwarded to the corresponding resource.

### **SQL Manager for InterBase/Firebird News**

This section takes you directly to the latest EMS news column. Using the links you can get up-to-date news, product information and downloads from [sqlmanager.net](http://sqlmanager.net).

### **General Information**

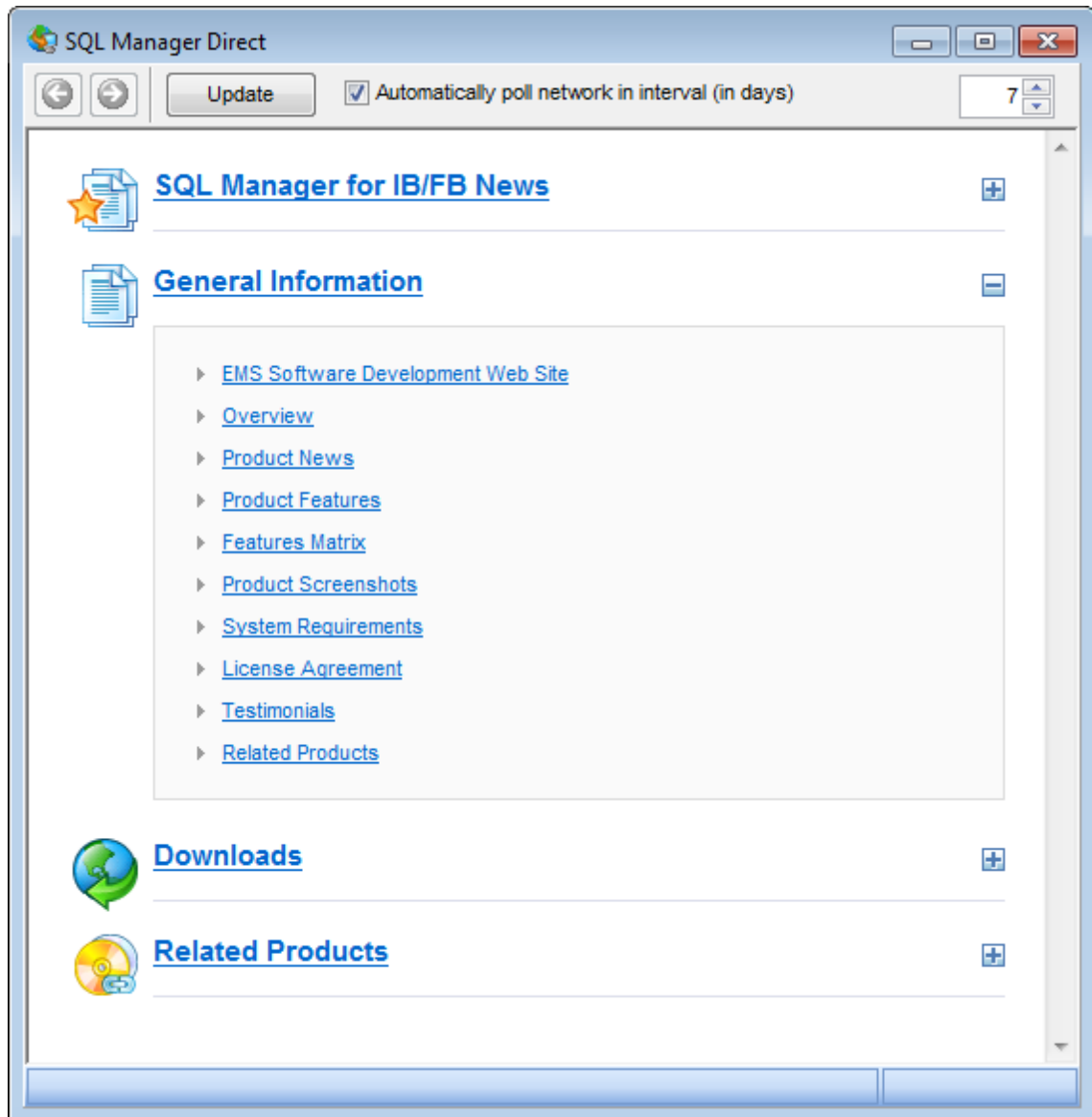
This section offers a number of links to product news, features, [Feature Matrix](#)<sup>[20]</sup>, [system requirements](#)<sup>[19]</sup>, testimonials and much more.



### **Downloads**

Using links of this section you can download other product versions and documentation from the [download page](#).

### **Related Products**

This section allows you to browse the list of related products developed by EMS Database Management Solutions, Inc.



Use the   buttons to navigate in the same way as you normally do it using a web browser.

Click the **Update** button to refresh the page.

If a newer version of **SQL Manager** is available on the server the program will inform you via corresponding dialog window. You can use this window to download this version.

**Automatically poll network in interval (in days)**

If this option is selected, the page is refreshed automatically after the specified time interval. Use the spinner control to set the interval (in days).

In the **Status** area at the bottom of the **SQL Manager Direct** window you can find the

status of your request to the [sqlmanager.net](http://sqlmanager.net) website.

**Note:** Internet connection settings defined at Windows Control panel affect this page displaying. If a proxy-server requiring authorization is used, then authorization parameters should be defined via dialog window, that appears on opening SQL Manager Direct page or on pressing the Update button.

## 15.24 Login Host / Login Database dialogs

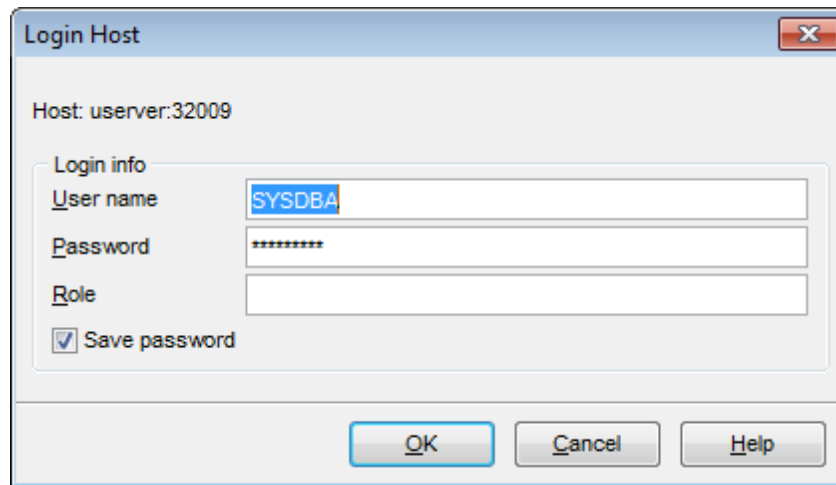
The **Login Host** dialog appears each time a connection request is sent to a server which requires authentication, i.e. on attempt to [connect](#)<sup>[88]</sup> to a host if no password was specified to authorize the user or if the **Login prompt before connection** option is enabled on the [Options](#)<sup>[155]</sup> page of the [Host Registration Info](#)<sup>[152]</sup> dialog.

The screenshot shows the 'Login Host' dialog box. The title bar reads 'Login Host'. The main content area is titled 'Host: userver:32009 (SSH)'. It is divided into two sections: 'Login info' and 'SSH login info'. The 'Login info' section contains a 'User name' field with 'SYSDBA', a 'Password' field with asterisks, a 'Role' field, and a checked 'Save password' checkbox. The 'SSH login info' section contains a dropdown for 'SSH host name' (vadsrv), a spinner for 'SSH port' (22), a text field for 'SSH user name' (tester), a text field for 'SSH password' (masked with asterisks), an unchecked 'Use Private Key for authentication' checkbox, and an 'SSH key file' field with a browse button. At the bottom are 'OK', 'Cancel', and 'Help' buttons.

The application prompts you to specify host [connection parameters](#)<sup>[91]</sup> to access the specified host: *user name*, *password*, *role*, and [SSH tunneling](#)<sup>[96]</sup> settings (if used).

**Note:** The **SSH login info** group is available only if [SSH tunneling](#)<sup>[920]</sup> is used for the host connection.

The **Login Database** dialog appears each time a connection request is sent to a database which requires authentication, i.e. on attempt to [connect](#)<sup>[88]</sup> to a database if no password was specified to authorize the user or if the **Login prompt before connection** option is enabled on the [Options](#)<sup>[118]</sup> page of the [Database Registration Info](#)<sup>[115]</sup> dialog.



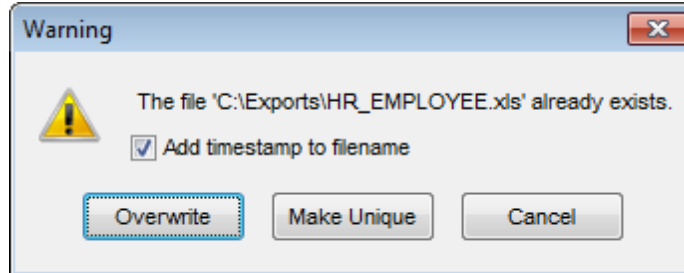
The application prompts you to specify host [connection parameters](#)<sup>[109]</sup> to access the specified database: *user name*, *password*, *role*, and [SSH tunneling](#)<sup>[96]</sup> settings (if used).

**Note:** The **SSH login info** group is available only if [SSH tunneling](#)<sup>[920]</sup> is used for the database connection.



## 15.25 Overwriting existing output file

If a file having the same name as specified for an output file generated by **SQL Manager** already exists, a warning dialog is displayed.

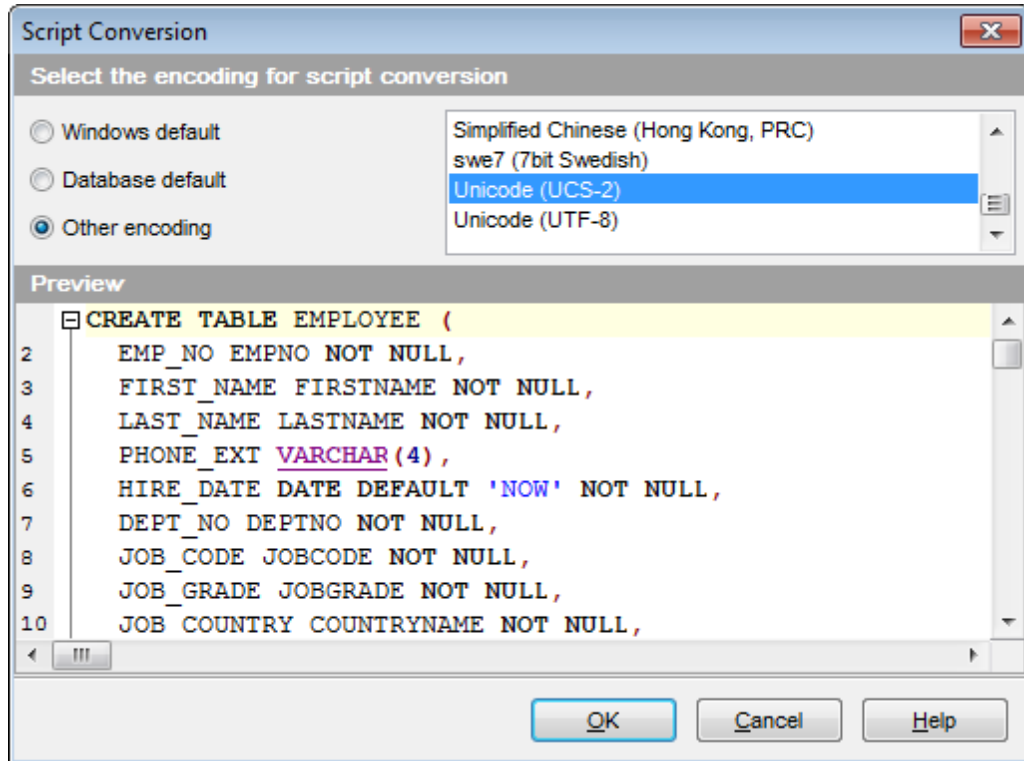


You can **Overwrite** the file, **Make** it **Unique**, or **Cancel** both and change the path or file name manually.

The application makes the file unique by adding the current timestamp to the specified file name if the  **Add Timestamp to filename** option is enabled, or by adding a simple numeric postfix to the file name if this option is disabled.

## 15.26 Script conversion

The **Script conversion** dialog allows you to select encoding to be used for script conversion upon loading script to one of **SQL Manager** editors ([Query Data](#)<sup>[330]</sup>, [Execute Script Editor](#)<sup>[542]</sup>) from an external file.



**Windows default**

Specifies that the standard Windows encoding will be used for the script conversion.

**Database default**

Specifies that the default encoding of the database will be used for the script conversion.

**Other encoding**

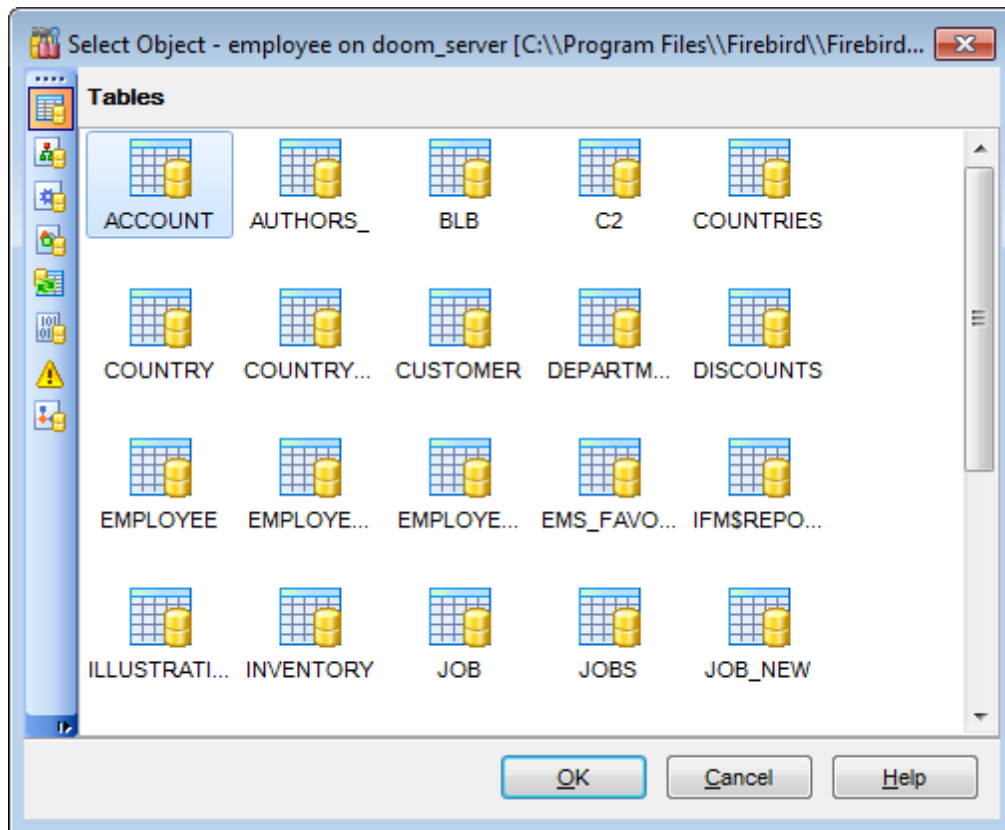
Allows you to select the encoding that will be used for the script conversion.

**Preview**

This area displays the script with the current encoding parameters applied.

## 15.27 Select Object dialog

The **Select Object** dialog appears each time the application requests a database object selection, e.g. upon a root object selection for the [Dependency Tree](#)<sup>[534]</sup> tool, or when choosing an object to be added to a [Favorite Objects](#)<sup>[76]</sup> folder.



First select the object type in the list on the left-hand side of the window. Pick the object you need and click **OK** to apply your selection.

## 15.28 SQL Manager shortcuts

### Database management

- Shift+Ctrl+R* Register a InterBase/Firebird host using [Register Host Wizard](#)<sup>[90]</sup>
- Shift+Alt+R* Register a database using [Register Database Wizard](#)<sup>[107]</sup>
- Shift+Alt+U* Unregister the selected database
- Shift+Ctrl+C* [Connect](#)<sup>[67]</sup> to a database
- Shift+Ctrl+D* Disconnect from a database

### Database objects management

- Ctrl+N* Create a new object (the object type depends on the current selection)
- Ctrl+O* Edit the selected object in its editor
- Ctrl+R* Rename the selected object
- Shift+Del* Drop the selected object
- Ctrl+Shift+C* Collapse the current [DB Explorer](#)<sup>[63]</sup> tree branch and switch selection to the parent tree node
- F9* Execute a procedure
- Shift+Ctrl+F9* Debug a procedure

### SQL Manager tools

- F11* View/hide [Database Explorer](#)<sup>[63]</sup>
- Ctrl+F* Search for an item in the [DB Explorer](#)<sup>[63]</sup> tree
- Shift+Ctrl+T* Open the [To-Do List](#)<sup>[913]</sup> window
- F12* Show [Query Data Editor](#)<sup>[330]</sup>
- Shift+F12* Open a new instance of [Query Data Editor](#)<sup>[330]</sup>
- Shift+Ctrl+M* Open [SQL Monitor](#)<sup>[539]</sup>
- Shift+Ctrl+S* Open [Execute Script Editor](#)<sup>[542]</sup>
- Shift+Ctrl+L* Open [Localization Editor](#)<sup>[821]</sup>
- Ins* Add a new table subobject (the subobject type depends on the current tab selection)

### Data Grid

- Ctrl+Shift+0* Set the selected column value to NULL

### Query Data and Execute Script (fixed and default)

- F9* Execute query/script
- Alt+F9* Execute selected only
- Ctrl+Alt+F9* Execute under cursor
- Ctrl+Alt+F2* Reset execution point (Query Data only)
- Shift+Ctrl+<di>* Toggle bookmark # <digit>
- git>*
- Ctrl+<digit>* Go to bookmark # <digit>
- Ctrl+Q,N* Go to next bookmark
- Ctrl+Q,P* Go to previous bookmark
- F2* Drop marker to current position
- Ctrl+Z;* Undo
- Alt+BkSp*
- Shift+Ctrl+Z;* Redo
- Shift+Alt+BkS*
- p*
- Ctrl+F* Search for text using the [Find Text](#)<sup>[901]</sup> dialog
- Ctrl+R* Replace text using the [Replace Text](#)<sup>[903]</sup> dialog
- F3* Search next

*Ctrl+I* Start incremental search  
*Alt+G* Go to line number (an input number dialog prompts for the number)  
*Ctrl+L* Load a script from an external file  
*Ctrl+S* Load the script to an external file  
*Shift+Ctrl+Q* Save text as [Favorite](#)<sup>[345]</sup>  
*Shift+Ctrl+F* Format SQL text using SQL Formatter  
*Alt+<symbol>* Switch to the query with *<symbol>* in its name (Query Datacx` only)  
*Ctrl+J* Insert a [keyboard template](#)<sup>[825]</sup>  
*Shift+Ctrl+F* Format SQL  
*Ctrl+Alt+Left* Switch to the next tab of [Query Data](#)<sup>[330]</sup>  
*Ctrl+Alt+Right* Switch to the previous tab of [Query Data](#)<sup>[330]</sup>  
*Ctrl+Alt+PgUp* Switch to the last tab of [Query Data](#)<sup>[330]</sup>  
*Ctrl+Alt+PgDo* Switch to the first tab of [Query Data](#)<sup>[330]</sup>  
*wn*  
*Shift+Ctrl+Lef*Select the previous word  
*t*  
*Shift+Ctrl+Rig*Select the next word  
*ht*  
*Shift+Home* Select text to the beginning of the line  
*Shift+End* Select text to the end of the line  
*Shift+PageUp* Select one page up  
*Shift+PageDo* Select one page down  
*wn*  
*Shift+Ctrl+Pa* Select text to the first line on the page  
*geUp*  
*Shift+Ctrl+Pa* Select text to the last line on the page  
*geDown*  
*Shift+Ctrl+Ho* Select text to the absolute beginning  
*me*  
*Shift+Ctrl+En* Select text to the absolute end  
*d*  
*Shift+Alt+Left* Select column symbol-by-symbol to the left  
*Shift+Alt+Righ*Select column symbol-by-symbol to the right  
*t*  
*Shift+Alt+Up* Select column upwards  
*Shift+Alt+Dow*Select column downwards  
*n*  
*Shift+Alt+Ho* Select column to the first char of line  
*me*  
*Shift+Alt+End* Select column to the last char of line  
*Shift+Alt+Pag* Select column to the beginning of the page  
*eUp*  
*Shift+Alt+Pag* Select column to the end of the page  
*eDown*  
*Shift+Ctrl+Alt* Select column from the current cursor position to the beginning of the first  
*+Home* line  
*Shift+Ctrl+Alt* Select column from the current cursor position to the beginning of the last  
*+End* line  
*Ctrl+Up* Scroll up one line with cursor position unchanged  
*Ctrl+Down* Scroll down one line with cursor position unchanged  
*Alt+Down,* Toggle case of a current word  
*Alt+Up*  
*Ctrl+G,Ctrl+F* Collapse block at current line  
*Ctrl+G,Ctrl+E* Expand block at current line  
*Ctrl+G,Ctrl+M* Collapse all blocks in the text

<i>Ctrl+G, Ctrl+P</i>	Expand all blocks in the text
<i>Ctrl+=</i>	Collapse/expand the nearest block
<i>Esc</i>	Collect marker (jump back)
<i>Shift+Esc</i>	Swap marker to current position
<i>Shift+Ctrl+B</i>	Jump to matching bracket (change range side)
<i>Shift+Ctrl+I</i>	Indent selected block
<i>Shift+Ctrl+U;</i>	Unindent selected block
<i>Shift+Tab</i>	
<i>Ctrl+/</i>	Comment/uncomment selected block
<i>Ctrl+Space</i>	Show code completion
<i>Ctrl+Shift+Sp</i>	Call a hint listing parameters for added <a href="#">procedures</a> <sup>[253]</sup> and <a href="#">UDFs</a> <sup>[272]</sup>
<i>ace</i>	
<i>Ctrl+Alt+Spac</i>	Show character map
<i>e</i>	
<i>Ctrl+Alt+P</i>	Show <a href="#">procedures</a> <sup>[253]</sup>
<i>Ctrl+Alt+V</i>	Show <a href="#">views</a> <sup>[242]</sup>
<i>Ctrl+Alt+T</i>	Show <a href="#">tables</a> <sup>[178]</sup>
<i>Ctrl+Alt+G</i>	Show <a href="#">triggers</a> <sup>[281]</sup>
<i>Ctrl+Alt+U</i>	Show <a href="#">UDFs</a> <sup>[272]</sup>
<i>Ctrl+Alt+Ente</i>	Show table in <a href="#">SQL Assistant</a> <sup>[80]</sup>
<i>r</i>	
<i>Ctrl+Alt+M</i>	Show <a href="#">domains</a> <sup>[172]</sup>
<i>Ctrl+Alt+E</i>	Show <a href="#">generators</a> <sup>[293]</sup>
<i>Ctrl+Alt+X</i>	Show <a href="#">exceptions</a> <sup>[289]</sup>
<i>Ctrl+Alt+R</i>	Show <a href="#">roles</a> <sup>[722]</sup>
<i>Ctrl+C;</i>	Copy selection to Clipboard
<i>Ctrl+Ins</i>	
<i>Ctrl+X;</i>	Cut selection to Clipboard
<i>Shift+Del</i>	
<i>Ctrl+V;</i>	Paste Clipboard to current position
<i>Shift+Ins</i>	
<i>Ctrl+T</i>	Delete from cursor to the next word
<i>Ctrl+BkSp</i>	Delete from cursor to the beginning of the word
<i>Ctrl+B</i>	Delete from cursor to the beginning of the line
<i>Shift+Ctrl+Y</i>	Delete from cursor to the end of the line
<i>Ctrl+Y</i>	Delete the current line
<i>Ctrl+O,N</i>	Normal selection mode
<i>Ctrl+O,C</i>	Column selection mode
<i>Ctrl+O,L</i>	Line selection mode
<i>Ctrl+M;</i>	Break line at current position, move caret to a new line
<i>Enter;</i>	
<i>Shift+Enter</i>	
<i>Ctrl+Alt+I</i>	Insert Tab char
<i>F5</i>	Toggle breakpoint
<i>Shift+F5</i>	Enable/disable brakpoint

### Print Data View

<i>Ctrl+O</i>	Load a printing report from a file
<i>Ctrl+S</i>	Save the report to file
<i>Ctrl+P</i>	Open the <a href="#">Print</a> <sup>[421]</sup> dialog
<i>Ctrl+Home</i>	Go to the first page
<i>Ctrl+Up</i>	Go to the previous page
<i>Ctrl+Down</i>	Go to the next page
<i>Ctrl+End</i>	Go to the last page
<i>Ctrl+D</i>	Open <a href="#">Report Formatter</a> <sup>[405]</sup>

<i>Ctrl+\</i>	Zoom 100%
<i>Ctrl+0</i>	Zoom page width
<i>Ctrl+1</i>	Whole page
<i>Ctrl+2</i>	Two pages
<i>Ctrl+4</i>	Four pages
<i>Ctrl+W</i>	Widen to source width
<i>Ctrl+M</i>	Show/hide margins
<i>Ctrl+K</i>	Set background color for the report

### **Working with windows, menus and tabs**

<i>Ctrl+Tab</i>	Switch to the next <a href="#">tab</a> <sup>[58]</sup>
<i>Ctrl+Alt-0</i>	Open <a href="#">Windows List</a> <sup>[915]</sup>
<i>Ctrl+Alt+D</i>	Set defaults to all windows
<i>Ctrl+F6</i>	Switch to the previous window
<i>F6</i>	Switch to the next window
<i>Ctrl+W</i>	Close the active window
<i>Ctrl+Down</i>	Expand a collapsed menu
<i>Ctrl+Shift+N</i>	Move to the next <a href="#">tab</a> <sup>[73]</sup> in DB Explorer
<i>Ctrl+Shift+P</i>	Move to the previous <a href="#">tab</a> <sup>[73]</sup> in DB Explorer

# Credits

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