# SQLite Maestro

## User's guide

# Table of Contents

# 1 Welcome to SQLite Maestro!

**SQLite Maestro** is the premier Windows GUI admin tool for SQLite development and management. It allows you to make all the database operations easy and fast.

## Basic SQLite Maestro features

### Support of the latest SQLite features

Use SQLite Maestro to work with SQLite 2.8/3.x. Among other features and objects implemented in the latest versions of the server, our software supports pragma commands, "on conflict" actions that were implemented in SQLite 3.0, and a lot of other useful things.

### Easy database management

SQLite Maestro allows you to work with remote servers 14 with restricted access via HTTP tunneling. SQLite Maestro allows you to create new databases and drop existing ones. Database profiles give you the opportunity to connect to databases in one touch and work with the selected databases only. See the Database Management 23 for details.

### Powerful database object management

SQLite Maestro provides you with an ability to manage database objects in various ways. For example, you can perform operations with a group of objects as well as with a single object in Object Manager 57, sort, group and filter the database objects within Object Browser 55, copy an object from one database to another by a drag-and-drop operation inside the explorer tree, use Windows clipboard to copy a set of objects and so on. For details turn to the Database Object Management 60 section.

### Working with tables and table subobjects

SQLite Maestro wizards and editors allow you to create, edit and drop tables as well as their *fields, indexes,* and *foreign keys* in a couple of simple operations. See the Tables 61 section to learn more.

### Building and executing queries

SQLite Maestro provides two powerful tools which allow you either to edit query text directly with syntax highlighting and code completion or to build a query diagram visually selecting tables and fields, setting links between tables and so on. You can find the detailed description in the Queries 93 section.

### Powerful data management tools

SQLite Maestro puts at your disposal a complete set of data management tools with viewing, editing, grouping, sorting and filtering abilities, lookup editors, master-detail data view, BLOB Viewer/Editor, data export, data import and SQL dump modules and more. See the Data Management 109 to learn the details.

### Wide choice of additional tools

SQLite Maestro provides you with a number of tools for working with database metadata and SQL scripts, including Script Runner, SQL Script Editor with code folding and script explorer. Moreover, it gives such tools as Schema Designer, BLOB Viewer, Diagram Viewer, Data Analysis, Dependency Tracker, SQL Generator, Report Designer, and a lot of others. To learn more, see the Database Tools 144 section.

**Full customization according to your preferences and needs**

In SQLite Maestro you can customize the behavior of all its tools, select a user interface scheme and set a lot of other preferences. All the options and their meanings are listed within the Options 190 dialog description.

## 1.1 System Requirements

**Client environment**

- Pentium PC or higher;
- Windows NT4/2000/XP/Vista/Windows 7/Windows 8/Windows 10/Windows 11;
- 512 MB RAM (1 GB recommended);
- 25 MB of free hard disk space;
- SVGA-compatible video adapter.

**Server environment**

- SQLite 2.8/3.x.

## 1.2 Installation

To install **SQLite Maestro** for the first time on your PC:

- download the SQLite Maestro distribution package from the download page at our site;
- run setup.exe from the local folder and follow the instructions of the installation wizard;
- find the SQLite Maestro shortcut in the corresponding program group of the Windows Start menu after the installation is completed.

To upgrade the installed copy of SQLite Maestro to the latest version:

- download the SQLite Maestro executable file from the download page at our site;
- unzip downloaded file to any local folder, e.g. *c:\unzipped*;
- exit from SQLite Maestro if it is running;
- replace previous version of SQLite Maestro by copying unzipped files to the SQLite Maestro folder;
- run SQLite Maestro using its shortcut in the Windows Start menu.

You can also use the full distribution package to upgrade your current version of SQLite Maestro. In this case you should repeat the steps of the first-time installation. Note that the full distribution package is larger than a single executable file.

## 1.3 How can I purchase SQLite Maestro?

Thank you for your interest in purchasing **SQLite Maestro**!

You can select licensing options and register SQLite Maestro at its on-line order page. It is possible to purchase on-line, by fax, mail, toll-free phone call, or place a purchase order. We send the software activation key by email within 24 hours after completion of the order process. If you have not received the activation key within this period, please contact our sales department.

All our products and bundles are shipped with 12 months of free upgrades (minor and major ones) or with 36 months of free upgrades for a quite small additional fee. After this period you may renew your license for the next 12(36) months with a 50% discount.

SQLite Maestro has a free 30-day trial. Upon purchasing the product you confirm that you have tested it and you are completely satisfied with its current version.

To obtain technical support, please visit the appropriate section on our website or contact us by email to support@sqlmaestro.com.

## 1.4 License Agreement

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## 1.5 About SQL Maestro Group

**SQL Maestro Group** is a privately-held company producing high-quality software for database administrators and developers. The united team of eminently qualified developers is pleased to create new software products for commercial, academic and government customers worldwide. We do our best to design and develop products that remove complexity, improve productivity, compress time frames, and increase database performance and availability. We are glad to realize that our products take usual chores upon themselves, so that our customers could have more time left for their creative work.

The company was founded in 2002 as an essential partner for every business that is trying to harness the explosive growth in corporate data. SQL Maestro Group employs an international team concentrating their efforts on cutting-edge DBA tools development.

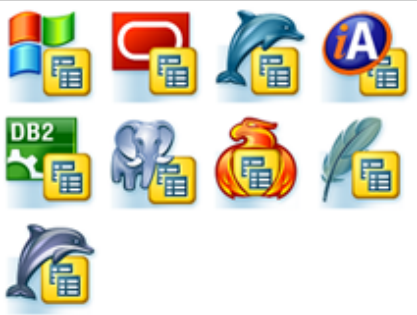
The slogan of our company is **The Shortest Path to SQL**. It is aimed to denote that we set to create easy-to-use products meant for those who appreciate comfort, friendly program interface and support when working with SQL servers.

- We are pleased to facilitate your job.
- We aim at being of considerable assistance to our clients.
- We feel contented doing our beloved work.

At present, our company offers a series of Windows GUI admin tools for SQL management, control and development of the following servers: **MySQL, Microsoft SQL Server, PostgreSQL, Oracle, SQL Anywhere, DB2, SQLite, Firebird,** and **MaxDB**. We also produce universal tools to be used for administering any database engine accessible via ODBC driver or OLE DB provider. Such products may be the clear-cut decision for those who constantly work with several database servers.

**SQL Maestro** is the premier Windows GUI admin tool for database development, management, and control.

It provides you with the ability to perform all the necessary database operations such as creating, editing, copying, extracting and dropping database objects; moreover, you can build queries visually, execute queries and SQL scripts, view and edit data including BLOBs, represent data as diagrams, export and import data to/from most popular file formats, manage users and their privileges (if possible), and use a lot of other tools designed for making your work with your server comfortable and efficient.

| | |
|---|---|
| **SQL PHP Generator** is a powerful tool for creating database-driven web applications visually. It allows you to generate high-quality PHP scripts for working with tables, views and queries through the web. You needn't have any programming background to use it. |  |
| **SQL Data Wizard** is a high-capacity Windows GUI utility for managing your data.<br><br>It provides you with a number of easy-to-use wizards for performing the required data manipulation easily and quickly. The tool allows you to export data from SQLite tables and queries to most popular formats, import data into the tables, generate SQL dump of selected tables, and export/ import BLOB fields from/to files. |  |
| **SQL Code Factory** is a premier GUI tool aimed at the SQL queries and scripts development.<br><br>It allows you to manage SQL queries and scripts using such useful features as code folding, code completion and syntax highlighting, build query visually, execute several queries at a time, execute scripts from files, view and edit result data with filtering, sorting and grouping abilities, export data to as many as 14 file formats including Excel, RTF and HTML, import data from Excel, CSV, XML and text files, view and edit BLOBs in various way, build diagrams based on Oracle data, and much more. |  |
| **Database Converter** is a user friendly tool to migrate any local or remote ADO-compatible database to SQLite .<br><br>Such tools transfer database schema and data and are equipped with native support for the most popular database servers. |  |
| **Data Sync** is a powerful and easy-to-use tool for database contents comparison and synchronization.<br><br>Such tools can be useful for database administrators, developers and testers that need a quick, easy and reliable way to compare and synchronize their data. |  |

The software products are constantly optimized for the latest server versions support.

You can use the following contact information if necessary:

Our web-site www.sqlmaestro.com

Postal address: **SQL Maestro Group**
140 Broadway, Suite 706
New York City, New York 10005
United States

**Thank you for your interest to our company!**

## 1.6 What's new

Please find out the latest SQLite Maestro news at http://www.sqlmaestro.com/products/sqlite/maestro/news/

# 2 Getting Started

The topics in this section provide some basic information about SQLite Maestro, what it is for and what you can do with it.

**How to get started:**

- Connect to a database with SQLite Maestro 13
- Explaining user interface 16
- How SQLite Maestro looks when you start it for the first time 17
- Shortcut keys 22

**Learning more:**

- Study the **Overview of Database Object Management** 41 section for detailed instructions on using SQLite Maestro.
- See **Database Tools** 144 and **Queries** 93 sections for instructions on more advanced procedures!
- Find out more about **Working with Data in SQLite Maestro** 109.
- Customize the way SQLite Maestro works, see **Program Options** 190 for full details.

## 2.1 Connect to a database

To manage an existing database with SQLite Maestro, you have to create the according database profile 27 first. A profile stores database connection settings, and some additional options to customize the way the software works with the database. After the creation database profiles appear as nodes in the Explorer tree on the left (profile properties can be later changed with Database Profile Editor 30).

When the profile is created you can connect to the database. To do so, select the database in the Explorer tree 52, or either select the Database | Connect to Database main menu item or use the Connect to Database item of the popup menu. You can also double click the database node in the explorer tree. If connection succeeds, the database node expands displaying the tree of database objects (tables, views, procedures, etc). The database becomes ready for your activities.

### How can I disconnect from a database?

In order to disconnect from a database you should first select the database in the explorer tree, then either

- select the Database | Disconnect from Database main menu item

or

- use the Disconnect from Database item of the popup menu.

See also: Connection parameters 14

## 2.2 Connection parameters

As SQLite is implemented as an embedded database engine contained in a single DLL, SQLite databases usually are stored locally or in the shared folders. To connect to such database, you should provide only a full database file name (e.g. C:\Data\SQLite \MyDatabase.db3) and a password (only for encrypted databases).

To read and write encrypted databases, SQLite Maestro uses the free wxSQLite3 library that is included into the installation package. This means it can operate only with encrypted databases created by itself or by any other tool that uses the same library. Unfortunately, our software cannot connect to databases encrypted by any other library because different SQLite security extensions use different algorithms, which are not compatible with each other.

SQLite engine does not support network connections, however SQLite Maestro allows you to manage remote SQLite databases using the HTTP tunneling technique. For this purpose, you need to have a webserver running on a computer that stores the database file. Of course this webserver should be accessible from your workstation and you should be able to upload files there.

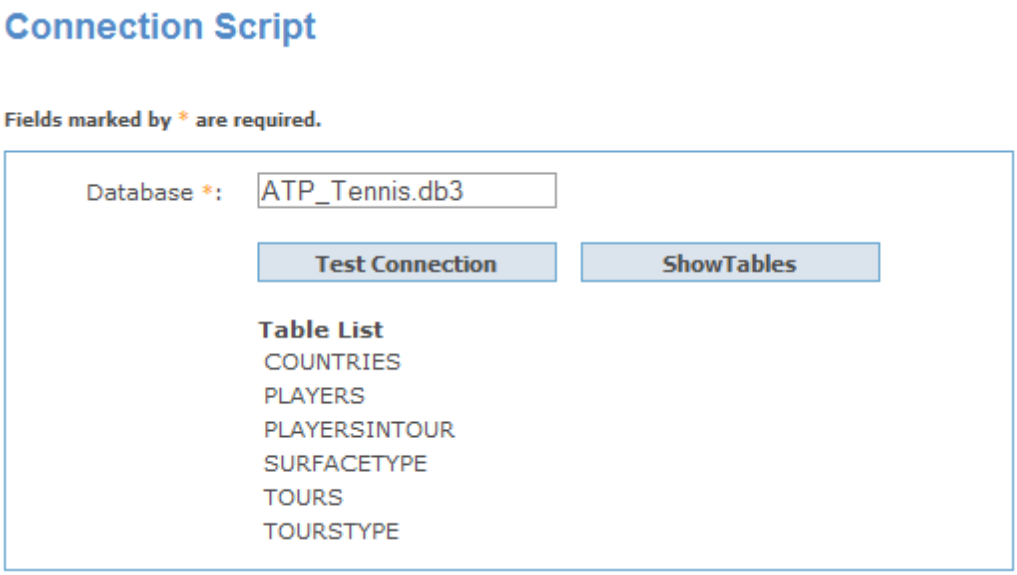
### More about connection via HTTP tunnel

To connect to a remote SQLite database using an HTTP tunnel, you need to:

1. Upload the connection PHP script to your website. The scripts are named *sqlite_tunnel.php* and *sqlite3_tunnel.php* for SQLite databases versions 2 and 3 accordingly and can be found under the installation folder, usually *C:\Program Files\SQL Maestro Group\SQLite Maestro*.

2. Turn ON the I have to use HTTP tunneling checkbox.

3. Enter the connection PHP script URL, e.g. *www.yoursite.com/files/sqlite_tunnel.php*. You can test the connection before the profile is created. Just use Test script using default browser to open connection script in your browser, enter all the required connection parameters and use the Test connection button.




4. In case using of a proxy server use Configure tunnelling options to open the HTTP tunnelling options window and specify your proxy server connection parameters and HTTP authentication.

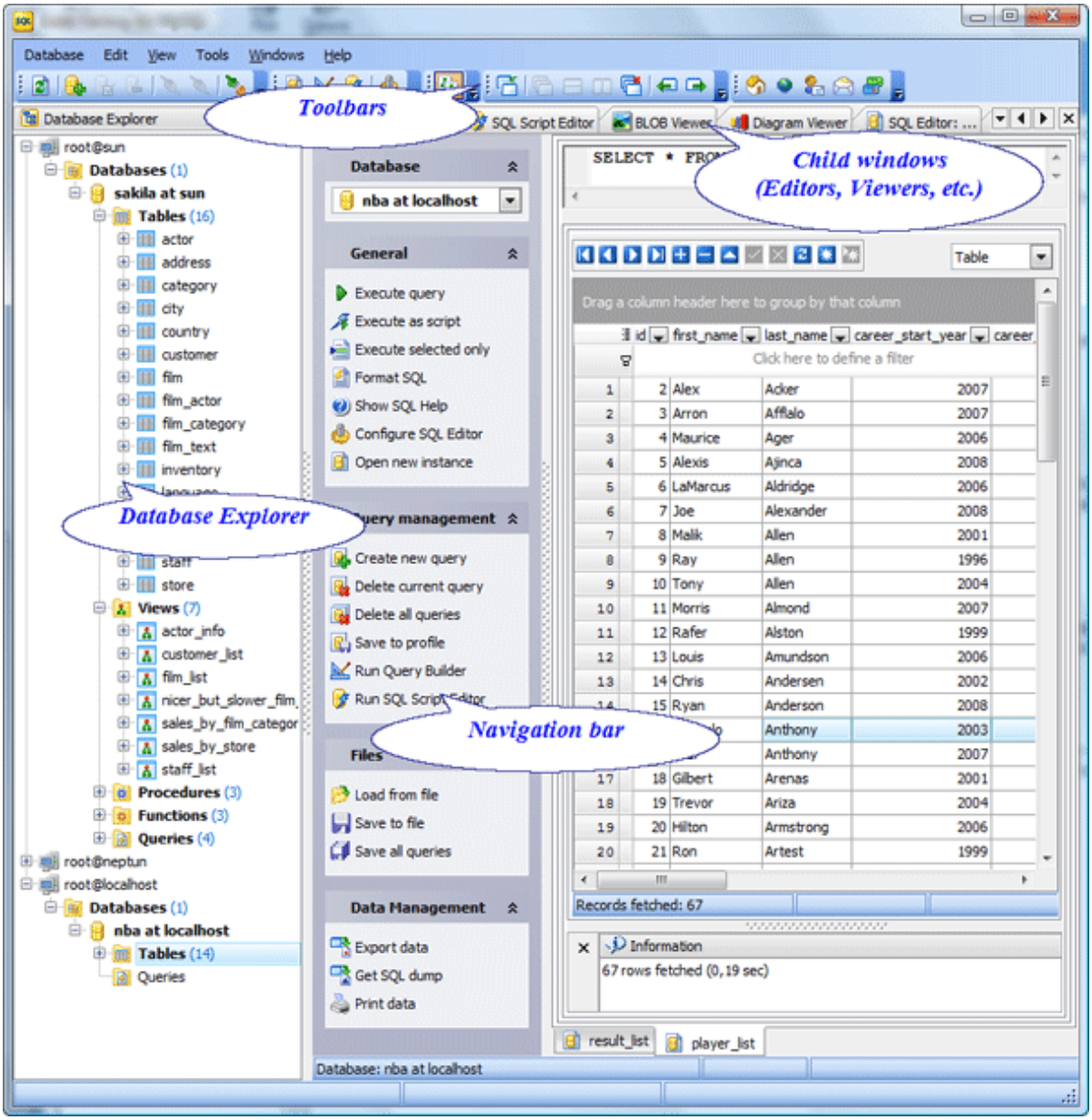
**Note 1.** Do not forget to enable read/write permissions for a database file and read/write/execute permissions for the directory where the database file is stored.

**Note 2** (only for SQLite 3 databases). The webserver PDO_SQLite library must be compatible (not earlier in the most cases) with the library the database was created with. If they are not compatible, you will get an error message "Could not retrieve table list from _database_name_ ... " on getting a table list at the connection script. If you've got the message, check the PDO_SQLite library version using, for example, the *phpinfo()* function, download a compatible library from the SQLite official website, get an SQL dump of the database and create a new one from the dump file with this library.

## 2.3 Explaining user interface

The SQL Maestro Group products are famous for their clear and intuitive user interface. The programs are built around the three-pane workspace that includes the database explorer and child windows consisting of the navigation bar and work area.

This topic provides a brief guide to the components of SQLite Maestro's user interface. For detailed descriptions, see below.




### Database Explorer

The Database Explorer occupies the left side of SQLite Maestro main window. It represents all the connected databases objects including system objects.

The explorer provides the fastest way to reach the object properties, to perform the following operations with database profiles using the popup menu:

- create new objects (database profiles, database objects, table objects...);
- edit currently selected objects;
- remove currently selected objects from the explorer tree;
- duplicate objects;
- rename objects if available and edit object comments out of the object editor.

See also: Filtering explorer content 55

**Editors and Viewers**

According to the MDI style implementation the SQLite Maestro tools and editors are opened in appropriate windows. Each window consists of a navigation bar and work area. The software supports Classic and Tabbed MDI.

See also: Switching between windows 20, Tabbed MDI 18

**Navigation bar**

The Navigation Bar contains a set of logically grouped links provided to realize the corresponding actions. Just position the mouse over a link and wait for a second to display the appropriate action shortcut making it possible for experienced users to control the program almost entirely with the keyboard.

See also: Shortcut keys 22

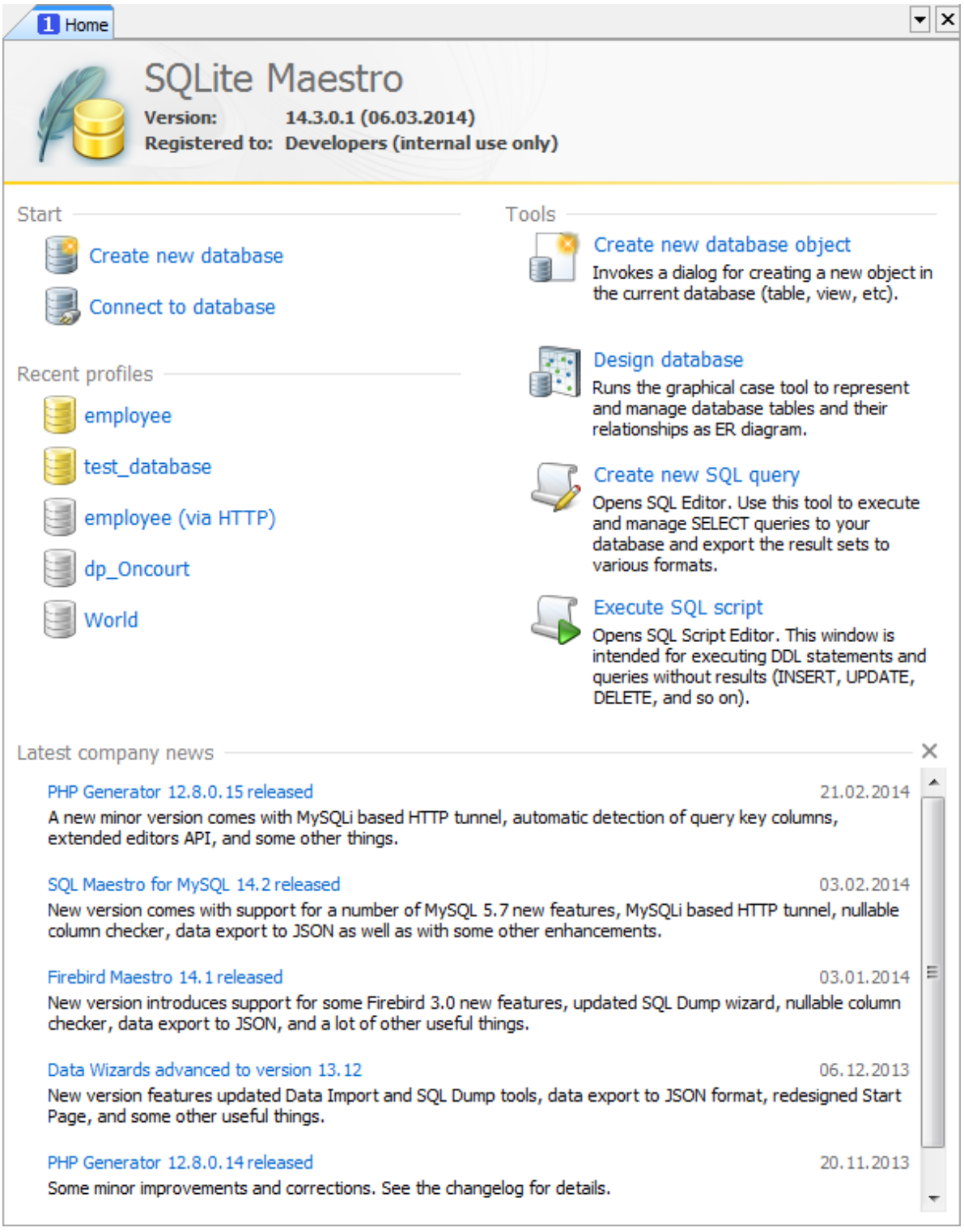
**Toolbars**

The bars occupy the top of the main window. The Toolbars provide quick access to the most frequently-used functions. Just position the mouse over a tool and wait for a second to display a brief text describing what it is for.

### 2.3.1 First time started

This is how SQLite Maestro looks when you run it for the first time. The Create new database 37 and Connect to database 27 links allow you to start working with anew and existing databases.

The window provides you with quick access to the Create Database Object 42 dialog, Schema Designer 178, SQL Editor 95, and SQL Script Editor 146 recently used database profiles. At the bottom of the page the latest company news and current discount programs are represented.

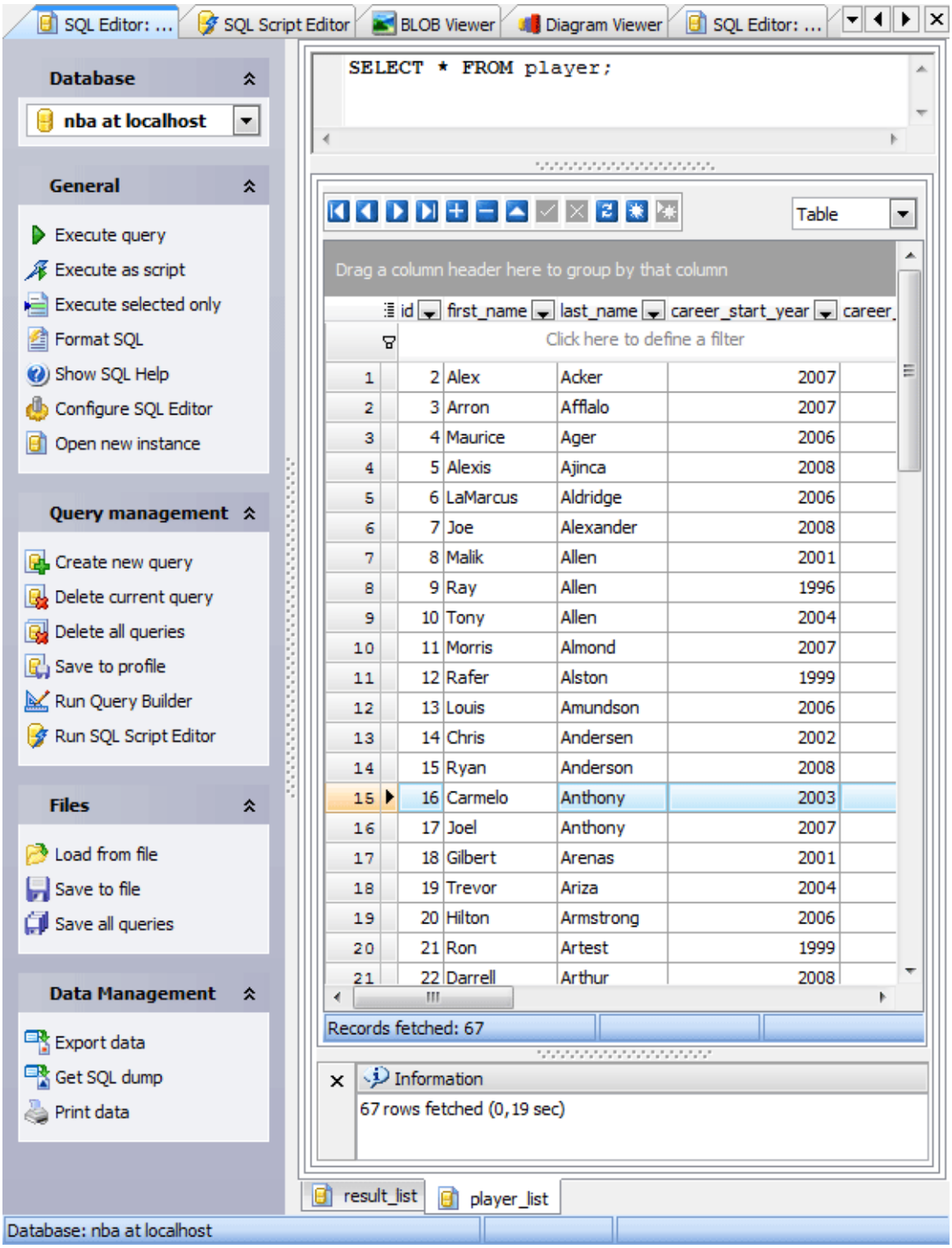



### 2.3.2 Tabbed MDI

SQLite Maestro provides you with a possibility to choose (Options|Application) your favorite UI. Among the **classic MDI style** the **tabbed MDI style** is also available.

Applying the style you'll get all the objects editors opening on separate sheets. You can move from one sheet to another by clicking the sheet tabs at the bottom of the working area. The tab for the active sheet is underlined in the color you choose; tabs for inactive sheets are fully colored.

You can switch between the sheets with corresponding sheet tabs or using **Ctrl+Tab**. If you don't see the tool you want, click the tab scrolling buttons to display the tab, and then click the tab. You can also move the sheets.

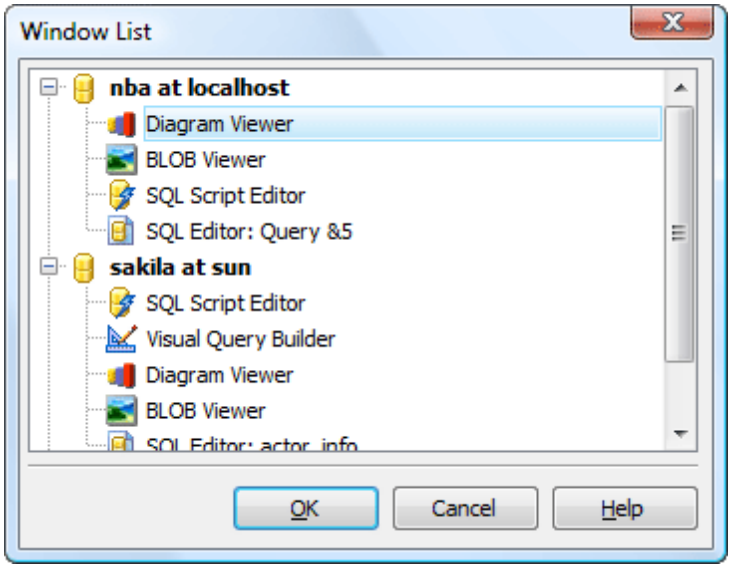



### 2.3.3 Switching between windows

The Window List dialog allows you to switch the child application windows quickly. To open the dialog select the Windows | Window List... item of the main menu or use the

**Alt+0** hot keys combination.

Most of the windows are linked according to their active databases and displayed in the form of a tree, e.g. Table Editor, SQL Editor, Diagram Viewer, etc. Windows which are common for the entire program are shown as separate nodes of the tree.




To activate the window you need, select one of the window tree items and click the **OK** button.

## 2.4 Shortcut keys

The following table describes the default shortcut keys in SQLite Maestro.

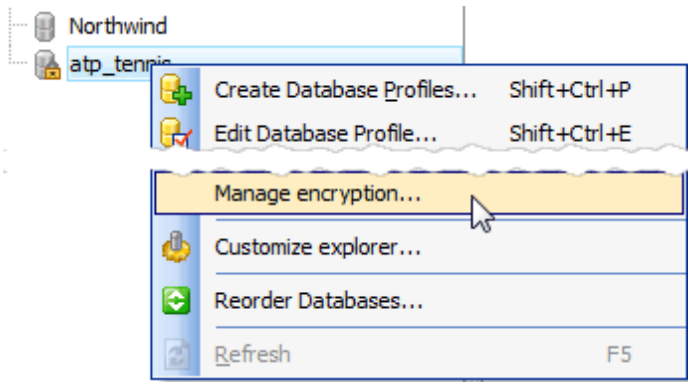
| | |
|---|---|
| **Interface** 16 | |
| Window list | **Alt+0** |
| Previous Window | **F6** |
| Next Window | **Ctrl+F6** |
| Show Database Explorer | **F11** |
| Refresh | **F5** |
| Exit | **Alt+F4** |
| SQLite Maestro help | **F1** |
| **Clipboard** | |
| Cut | **Ctrl+X** |
| Copy | **Ctrl+C** |
| Paste | **Ctrl+V** |
| Select all | **Ctrl+A** |
| Find | **Ctrl+F** |
| Replace | **Ctrl+H** |
| Search again | **F3** |
| Undo | **Ctrl+Z** |
| Redo | **Shift+Ctrl+Z** |
| **SQL Editors** 95 | |
| Open SQL Editor | **Ctrl+E** |
| Open SQL Script Editor | **Ctrl+R** |
| Open Visual Query Builder | **Ctrl+Q** |
| Execute query | **(F9) or (F8)** |
| Execute query as script | **(Shift+F9) or (Shift+F8)** |
| Execute selected only | **(Alt+F9) or (Alt +F8)** |
| Go to line | **Ctrl+G** |
| Format selected SQL | **Ctrl+Alt+F** |
| Create new query | **Ctrl+N** |
| Delete current query | **Ctrl+Alt+D** |
| Load script from file | **Ctrl+O** |
| **Database management** 23 | |
| Create a new database profile | **Shift+Ctrl+P** |
| Edit an existing database profile | **Shift+Ctrl+E** |
| Rename a database profile (object) | **F2** |
| Remove database profile | **Shift+Ctrl+R** |
| Connect to the database | **Shift+Ctrl+C** |
| Disconnect from the database | **Shift+Ctrl+D** |
| Create a database object | **Shift+Ctrl+N** |
| Object Browser | **Shift+Ctrl+O** |
| Open BLOB Viewer | **Ctrl+B** |

# 3 Databases and Database Profiles

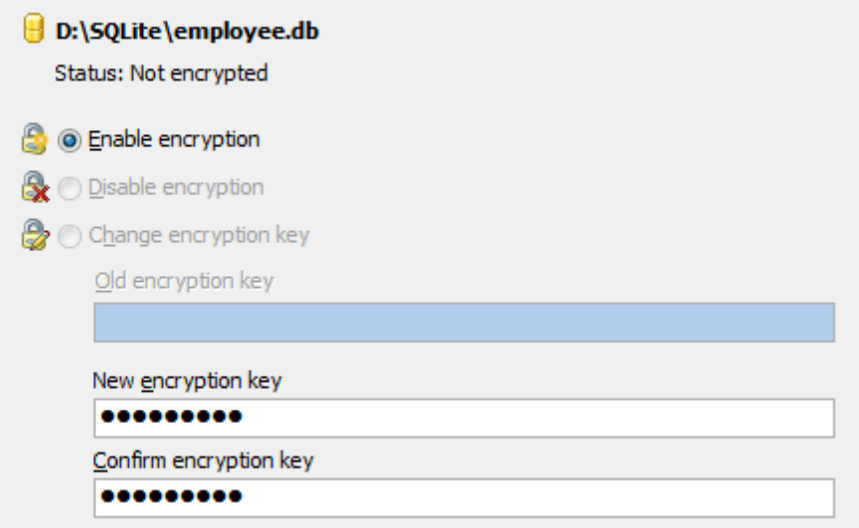
SQLite Maestro allows you to manipulate databases by means of database profiles. Profile contains database connection settings and a set of options to automatize common manipulations with databases (a possibility to connect to the database at SQLite Maestro startup, login prompt before connection, etc.). To start working with databases in SQLite Maestro, you should create database profile(s) first.

SQLite Maestro supports transparent database encryption. You can use either SQLite Encryption Extension by Hwaci (if you have it) or a free wxSQLite3 library, which is already included into the SQLite Maestro installation package. The libraries are compatible with each other by API calls, but a database encrypted using one library cannot be read by another one.

To apply the database file encryption, follow the Manage encryption... link on the database node's popup menu at the Explorer tree 52 as shown below. The action is available only for disconnected databases.




By default wxSQLite3 library with *128 bit AES* encryption will be used. To use the power of SQLite Encryption Extension by Hwaci or another encryption library compatible with it by API calls, disable encryption first, than copy the library to the installation folder as *sqlite3.dll* and change encryption key in the Manage encryption window and enable encryption back.




Use the following links for details:

### How can I create a new database?

Use for this purpose Create Database Wizard 37. In order to run the wizard you should either

- select the Database | Create New Database... main menu item

or

- use the Create New Database... item of the popup menu.

Using Create Database Wizard set the Create profile after creating the database option to create a new profile and open the Database Profile Properties dialog after the database is created.

### How can I change attributes of an existing database?

To edit a database:

- select the database to edit in the explorer tree;
- edit database properties within the appropriate tabs of Database Editor 39.

### How can I drop an existing database?

In order to drop a database you should first select the database to drop in the explorer tree and establish connection (if you are not connected to the database yet), then either

- select the Database | Drop Database main menu item

or

- use the Drop Database item of the popup menu

and confirm dropping in the dialog window to complete the operation.

### How can I create new database profiles?

In SQLite Maestro database profiles are created within Create Database Profiles Wizard 27. In order to run the wizard you should either

- select the Database | Create Database Profiles... main menu item

or

- use the Create Database Profiles... item of the popup menu.

Using Create Database Profiles Wizard set the necessary connection and authorization options and click the Ready button to complete the operation.

### How can I edit existing database profile options?

Database connection properties and profile options are edited within the Database Profile Properties 30 dialog window. In order to open the dialog for the selected database profile you should either

- select the Database | Edit Database Profile... main menu item

or

- use the Edit Database Profile... item of the popup menu.

### How can I remove database profiles?

In order to remove a database profile you should first select the database profile in the explorer tree, then either select the Database | Remove Database Profile main menu item, or use the Remove Database Profile item of the popup menu and confirm removing profile in the dialog window to complete the operation.

### How can I connect to a database?

In order to connect to a database you should first select the database in the explorer tree, then either

- select the Database | Connect to Database main menu item

or

- use the Connect to Database item of the popup menu.

### How can I disconnect from a database?

In order to disconnect from a database you should first select the database in the explorer tree, then either

- select the Database | Disconnect from Database main menu item

or

- use the Disconnect from Database item of the popup menu.

## 3.1 Creating Database Profiles

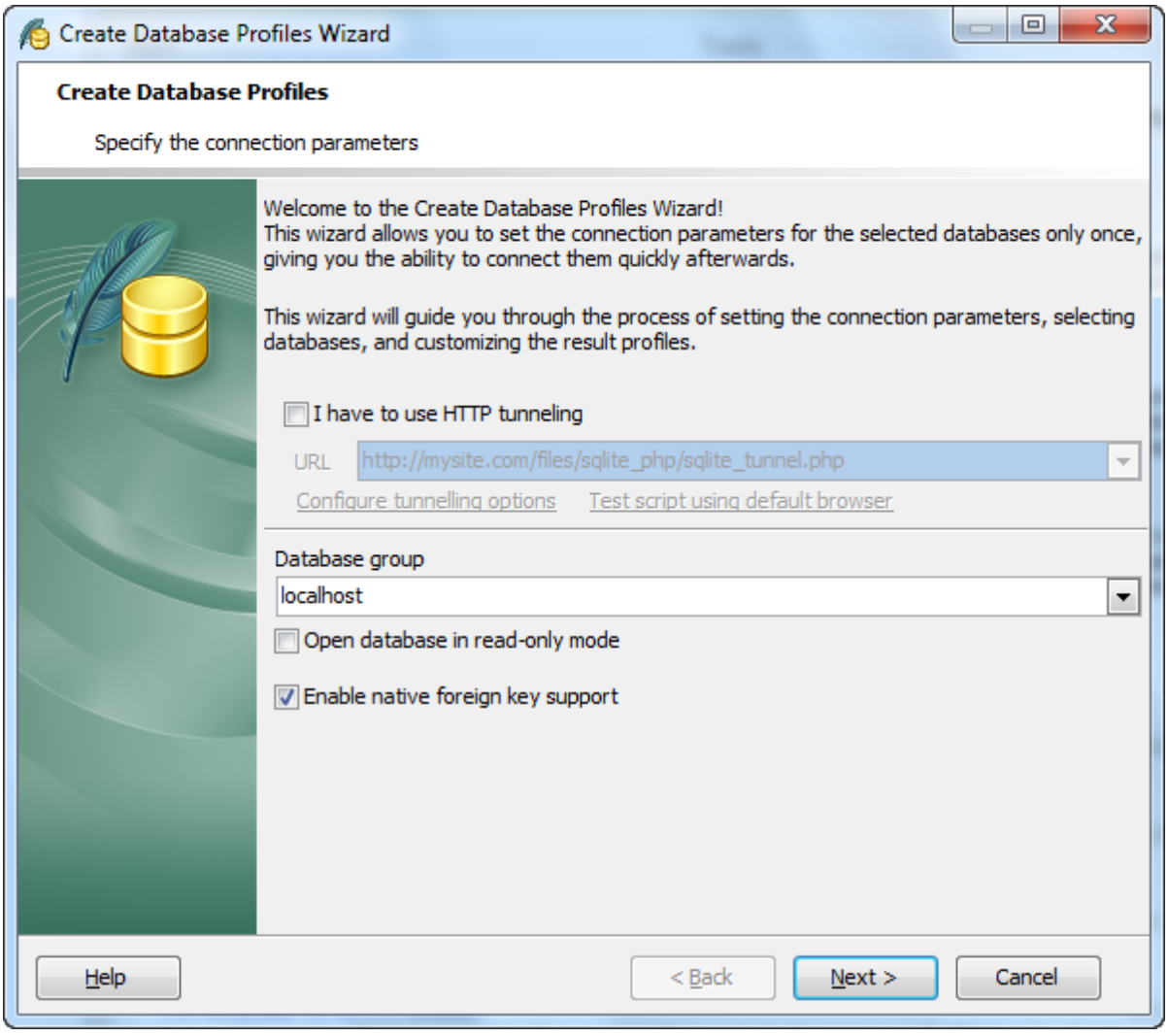
Create Database Profiles Wizard allows you to create a single database profile or several profiles from one host. To run the wizard, select the Database | Create Database Profiles... main menu item, or press the **Shift+Ctrl+P** hot keys combination. You can also use the Create Database Profiles button of the main toolbar.

- Set connection properties 27
- Specify database profile options 28

**See also:** Edit Database Profile Dialog 30

### 3.1.1 Setting connection properties

Specify SQLite connection properties 14 to be used on further connections.

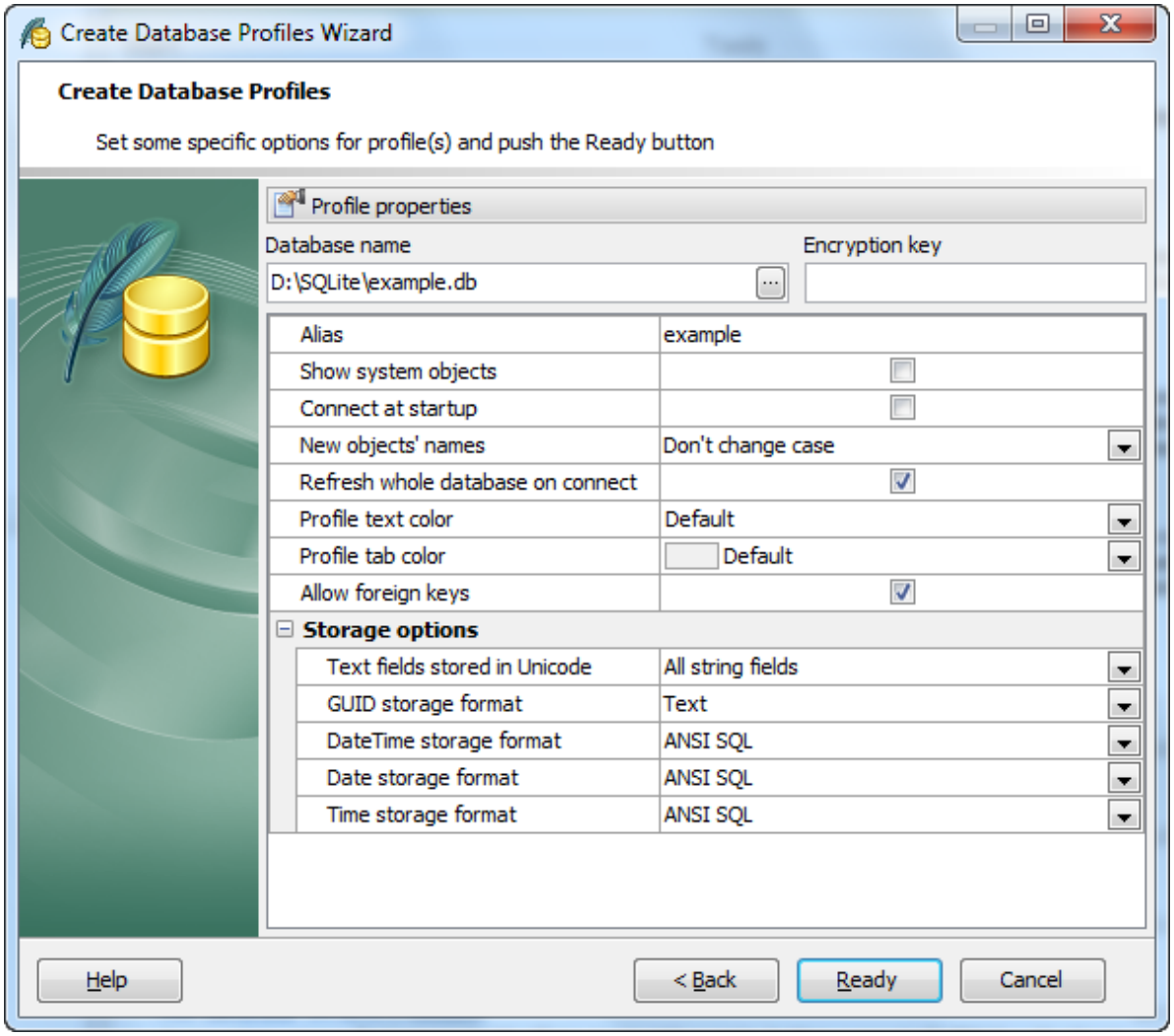



☑ Enable native foreign key support

This option affects the automatic creation of referential integrity triggers: they are NOT created if it is turned ON and vice versa. Foreign keys are supported by SQLite 3.6.19 and higher.

### 3.1.2 Setting profile options

To create a new profile, specify a path to the database (for local and shared files) or specify a path relative to the directory storing the *sqlite_tunnel.php* script (for HTTP tunnel connections).




☑ Show system objects
Check the box to make system objects visible. For example, use this option to see the "shadow" FTS tables.

☑ Connect at startup
With this option on connection to the profile database is automatically established at the application startup.

New objects' names (Don't change case, Convert to upper case, Convert to lower case)
The option allows you to specify the newly created objects case.

☑ Refresh whole database on connect
Use the option along with the Show empty schemas explorer options to hide/show empty schemas in the explorer tree.

Profile text color
Select the color to be used to represent the database profile name at the Explorer tree. For example this option may be useful to mark development and production databases in different colors in order to prevent casual metadata or data changes in the production.

Text fields stored in Unicode
Select data to store in Unicode: All string fields or Only nvarchar fields.

Allow foreign keys
SQLite does not enforce foreign key constraints. Use the checkbox to allow SQLite Maestro to generate referential integrity triggers automatically.

Use Storage options to define the way data is stored in the database. These options determine the correct work of SQLite Maestro with text and GUID columns, and also Date, Time and Datetime stored as Julian or Unix time.

Click the Ready button when done to start working with the selected databases in SQLite Maestro.

## 3.2 Editing Database Profile

Use the Edit Database Profile dialog to edit the profile properties set on its creation. To open the dialog, select the database in the explorer tree, then select the Database | Edit Database Profile... main menu item or press the **Shift+Ctrl+E** hot key combination. You can also use the Edit Database Profile button of the main toolbar.

Instead of manual profile options editing you can copy all the options from the another existing profile with the Copy profile button.

- Editing database connection properties 30
- Settings database options 31
- Setting default directories for database tools 33
- Editing obligatory scripts to execute 33
- Setting log options and file names 34

**See also:** Create Database Profile Wizard 27

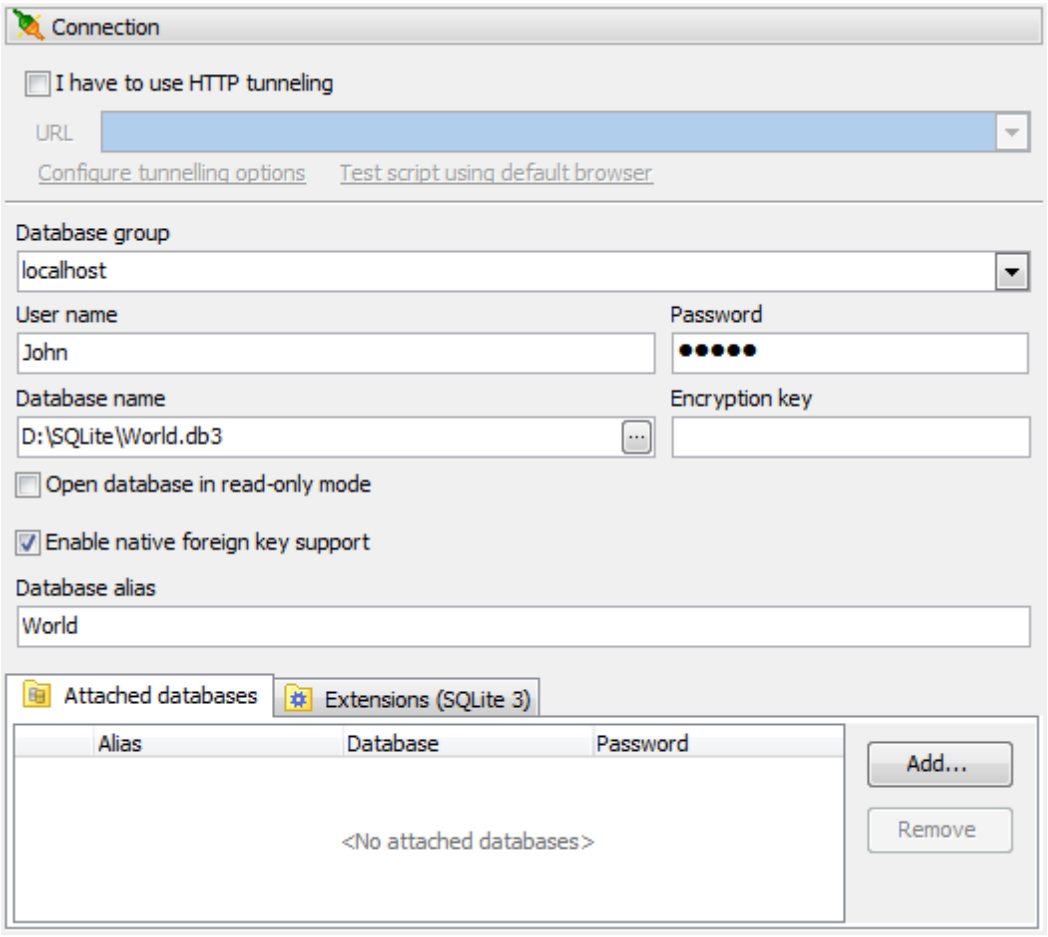
### 3.2.1 Editing connection properties

The tab allows you to change connection properties 14 of an existing database profile. Here you can change the database group, database info and edit the database alias, an optional name to display the database in the Explorer tree and in all the application tools.

☑ Enable native foreign key support
This option affects the automatic creation of referential integrity triggers: they are NOT created if it is turned ON and vice versa. Foreign keys are supported by SQLite 3.6.19 and higher.

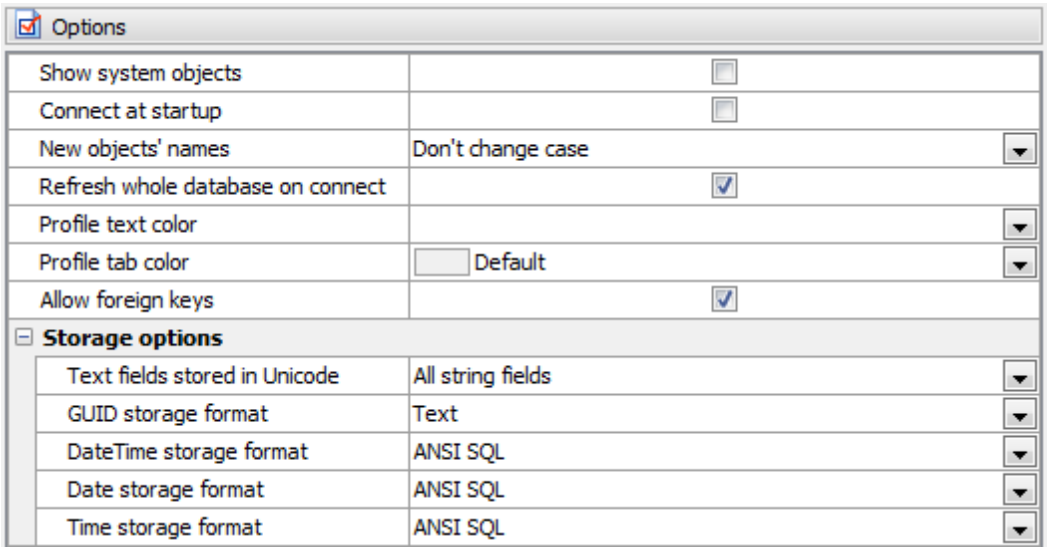
Attached databases
The list of database files to be automatically added to each connection established by the software. Find out more on attached databases at SQLite official documentation.

Extensions (SQLite 3)
The list of extensions to be loaded automatically for each connection established by the software.




### 3.2.2 Setting profile options

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




☑ Show system objects

Check the option to make system objects visible.

☑ Connect at startup
With this option on connection to the profile database is automatically established at the application startup.

New objects' names (Don't change case, Convert to upper case, Convert to lower case)
Use the option to change the case for newly created objects.

☑ Refresh whole database on connect
Use the option along with the Show empty schemas 196 explorer options to hide/show empty schemas in the explorer tree.

You can also change here the font color the profile name is represented at the Explorer tree.

Allow foreign keys
Uncheck this option to completely disable support of foreign keys in the software to increase the performance (useful for legacy databases that do not use foreign key constraints).

Storage options
These options determine the way values of text, GUID, Date, Time and Datetime columns will be processed.

Text fields stored in Unicode

GUID storage format

DateTime, Date, Time storage format
An SQLite database is suppose to store and retrieve data and it should not matter to the database what format that data is in. For example, the following formats may be used for columns of date, time, and datetime data types:

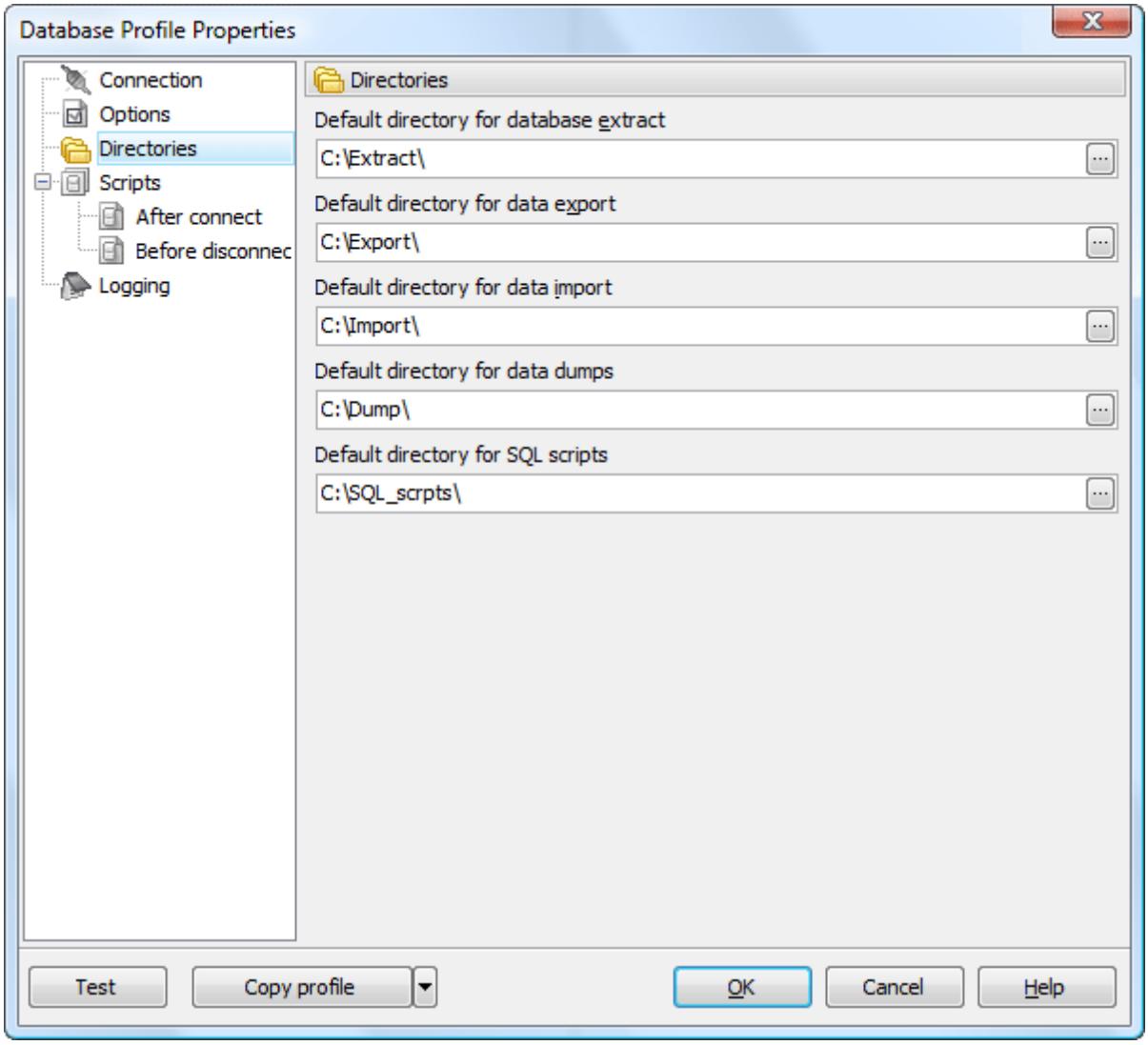
| Format | Data types | Example |
|---|---|---|
| ANSI SQL (default) | date, time, datetime | 2014-03-05 19:48:15 |
| Julian datetime | date, time, datetime | 2456722.325173611 |
| Unix time in seconds | date, datetime | 1394048895 |
| Unix time in microseconds | date, datetime | 1394048895000000 |
| Number of seconds | time | 25 |
| Number of microseconds | time | 25000000 |

It happens that different SQLite tools read and write data in different formats. All is OK when working with one application, but there may be difficulties on retrieving data by another one. The usual situation is the new application retrieves a string like "1394048895" and needs to interpret it as datetime that is very hard without any information about the format used on the string inserting.

By default SQLite Maestro uses ANSI SQL to read and write values of these data types. To change the data storage mode, use the corresponding drop-down list.

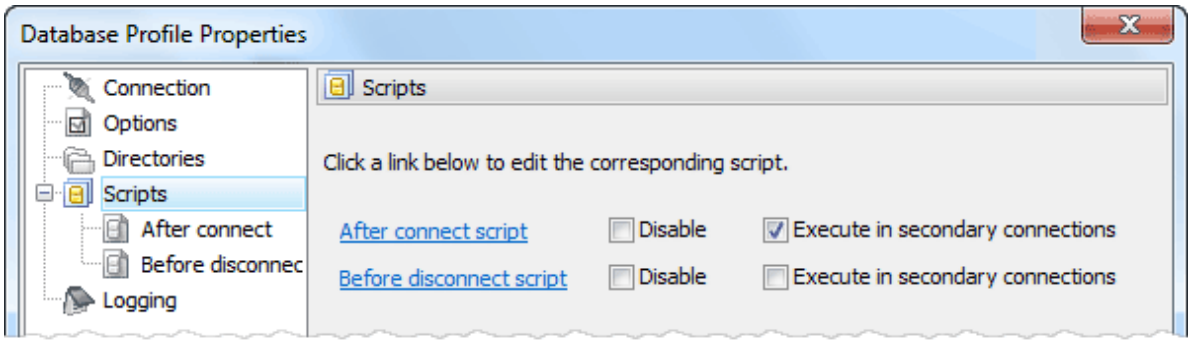
### 3.2.3 Setting default directories

Use the tab to specify the default directories respectively for database extract, data export, data import, and data dump.

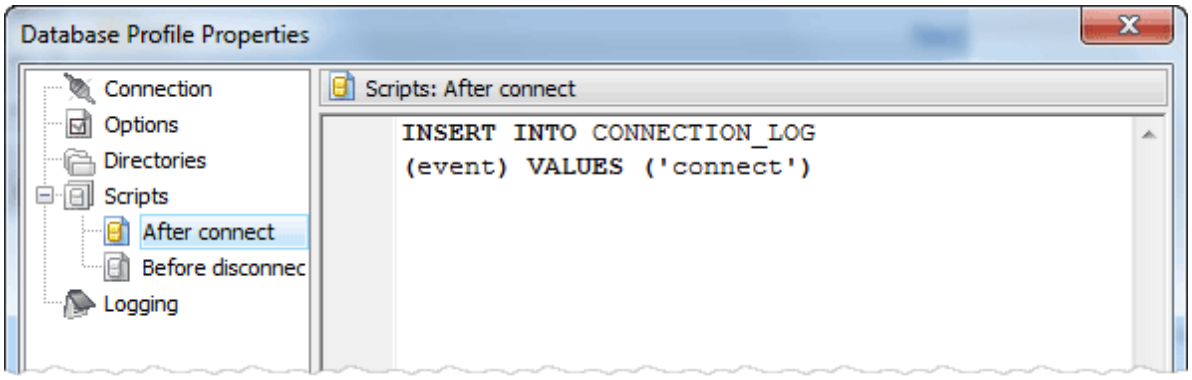



### 3.2.4 Editing obligatory scripts to execute

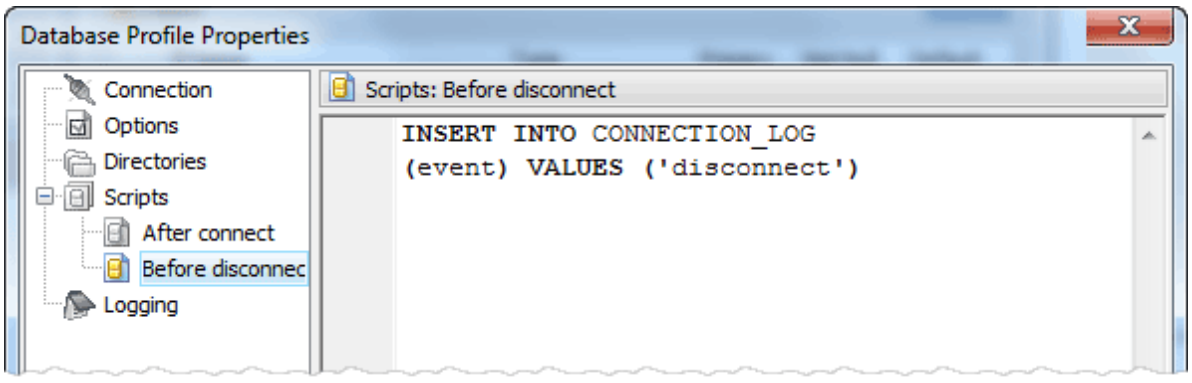
Use the tab to specify the obligatory scripts to execute in all database connections established by the software (on executing queries, browsing objects data, etc.). There is a possibility to enable/disable a written script.




Below you can find an example of an obligatory script to execute after SQLite Maestro will connect to the database. The script writes a connect time to the log table.

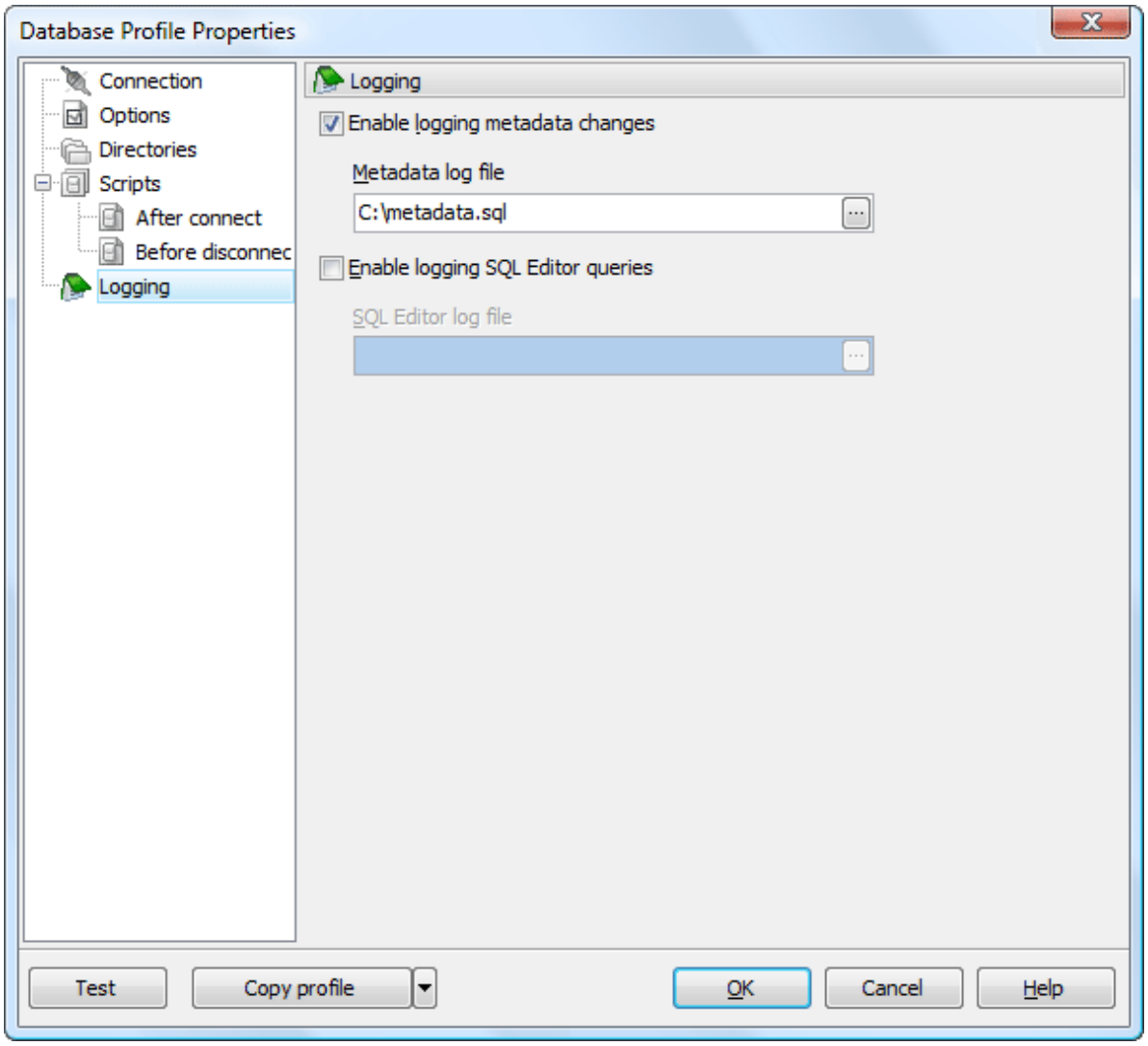



The next screen represents the example of an obligatory script to execute before SQLite Maestro will disconnect from the database. The script writes a disconnect time to the log table.



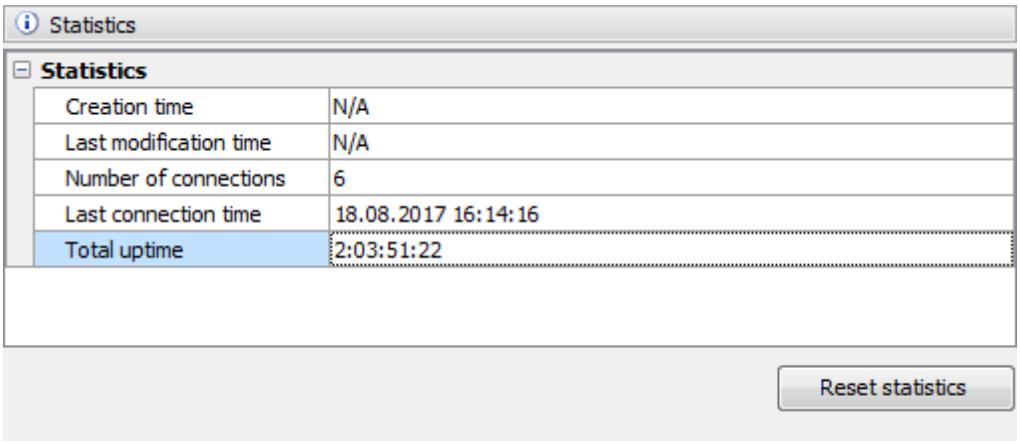

### 3.2.5 Setting log options

Enable/disable metadata changes logging and SQL query logging and specify the corresponding log file names if necessary.




### 3.2.6 Statisitcs

This tab allows you to view usage statistics for the current profile. Click the **Reset Statistics** button to clear all the displayed values.



## 3.3 Create Database Wizard

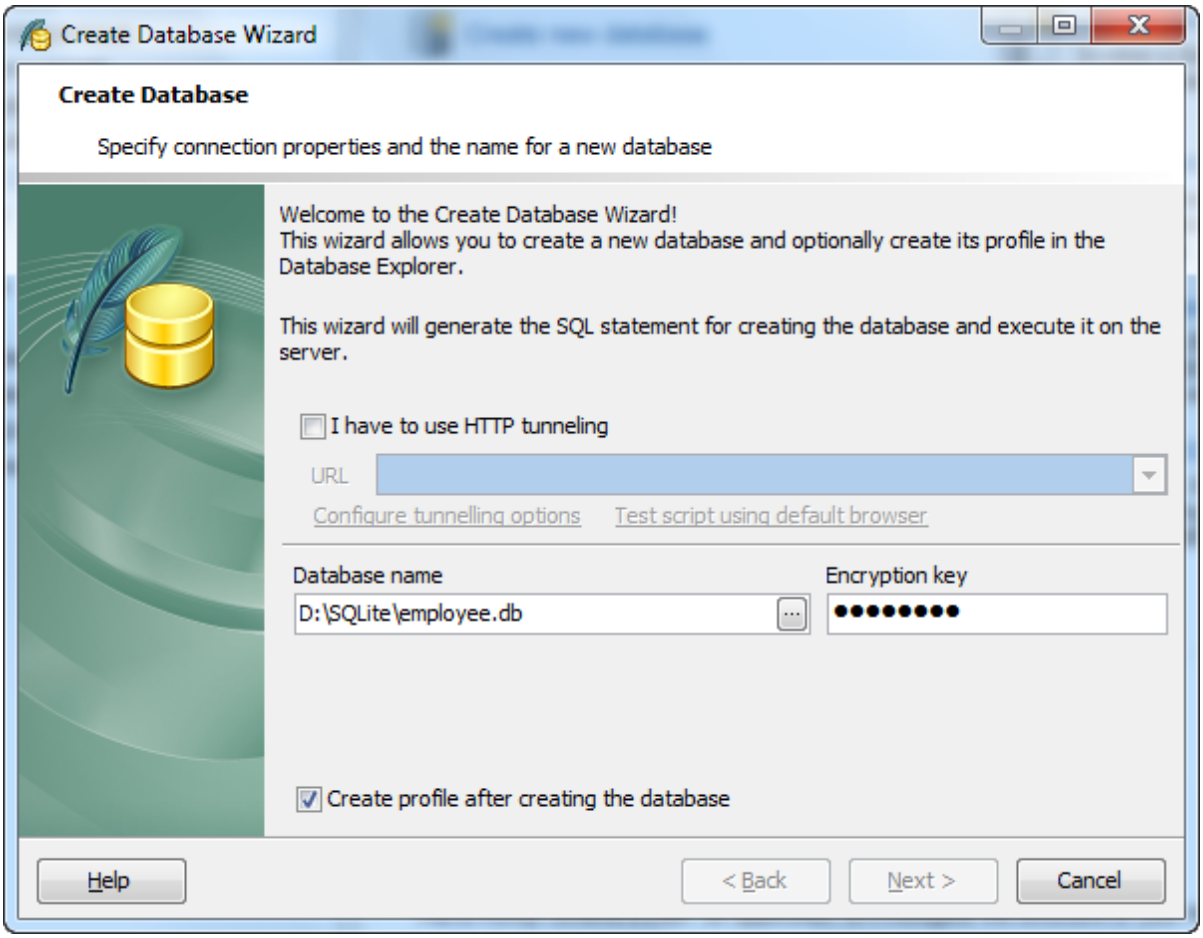
To run the Create Database Wizard, select the Database | Create New Database... main menu item or click the Create New Database button on the main toolbar.

- Setting database connection properties 37
- Specifying database properties 37

**See also:** Database Editor 39

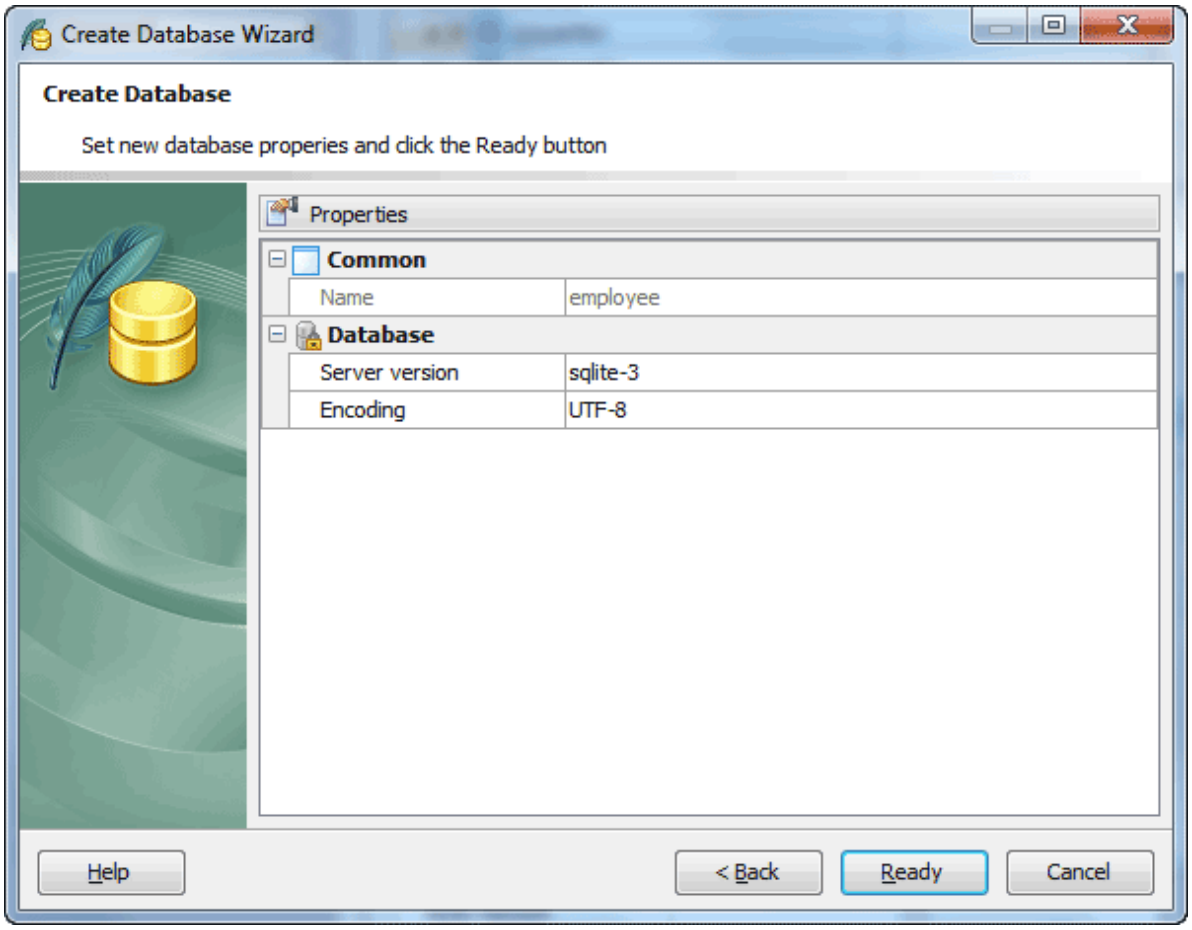
### 3.3.1 Setting connection properties

Set the connection properties 14 of the new database. If the Create profile after creating the database option is checked, the Edit Database Profile 30 dialog is opened after the new database is created.




### 3.3.2 Specifying database properties

**The next wizard step** allows you to set common database options. All fields below are optional, i.e. it is not obligatory for you to fill them.




### Server version

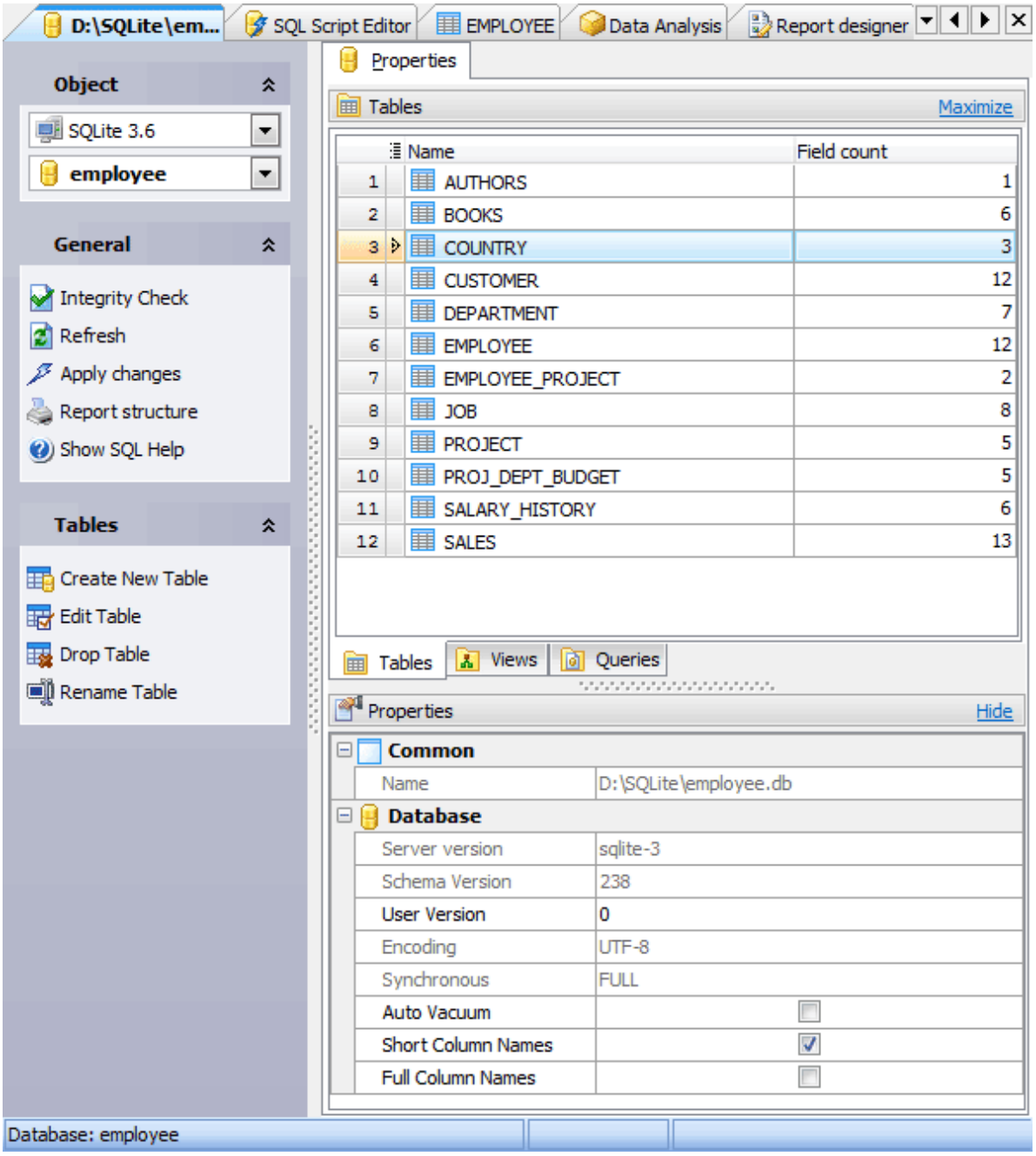
You should specify the version of SQLite Server. The 3.x version of the server is recommended because it supports new features (such as the PRAGMA command), that was not realized in the 2nd one.

You can also specify the encoding (UTF-8 or UTF-16) for the new database.

## 3.4 Database Editor

Database Editor allows you to browse, add, edit and delete all objects of the selected database and its main properties.

To open the editor, use popup menu of the database node at the Explorer tree.




### Subitems

Every tab is intended for managing corresponding database objects (e.g. *tables, views, queries*, etc.). Open the object in its editor by double-clicking or pressing the **Enter**

key. The popup menu allows you to create new, edit or drop the selected database objects. Using this menu you can also create a copy of the object.

You can operate on several objects at a time. For this you have to select database objects with the **Shift** or the **Ctrl** key pressed. After the group of objects is selected, you can operate on it, e.g. delete several objects at once, as it was a single object.

The Properties tab displays available database parameters. Below you can find some of their descriptions.

### Schema version
This field is used to view and change the value of the schema version. The schema version is usually manipulated internally only by SQLite. It is incremented by SQLite whenever the database schema is modified (by creating or dropping a table or index). The schema version is used by SQLite every time a query is executed to ensure that the internal cache of the schema used while compiling the SQL query matches the schema of the database against which the compiled query is actually executed. Modification of the schema version is potentially dangerous and may lead to program crashes or database corruption. Use the option with caution!

### User version
This field is used to view and change the value of the user version. The user version is not used internally by SQLite. It may be used by applications for any purpose.

### Encoding
Defines database encoding.

### Synchronous
This pragma was available in version 2.8 but later in version 3.0 it was removed. It is a dangerous pragma and its use is discouraged. To caution users of version 2.8 against employing this pragma, the documentation will not tell you what it does.

### ☑ Auto vacuum
Ordinarily, when a transaction that deletes data from a database is committed, the database file remains the same size. Unused database file pages are marked as such and reused later on, when data is inserted into the database. If checked, the database file shrinks when a transaction that deletes data is committed.

### ☑ Short column names
This flag affects the way SQLite names columns of data returned by SELECT statements when the expression for the column is a table-column name or the wildcard "*". If checked, such columns are always named *<column-name>* regardless of whether or not a join is performed.

### ☑ Full column names
This flag affects the way SQLite names columns of data returned by SELECT statements when the expression for the column is a table-column name or the wildcard "*". If checked, such columns are always named *<table-name/alias> <column-name>* regardless of whether or not a join is performed.

**Note:** If both the short column names and full column names are set, the behaviour associated with the full column names flag is exhibited.

# 4 Database Object Management

SQLite Maestro provides you with several tools to manage and navigate SQLite objects. To browse and modify objects, at least one connection to a database should be established.



The options to create or edit an object in SQLite Maestro follow the parameters defined by SQLite . If you need clarification on what an option means or how it should be used, see SQLite 's documentation for more information. The documentation provides detailed description of objects, including their purpose, properties, and restrictions. The SQLite Maestro manual provides you with only brief review of SQLite objects.

# 4.1 Create Objects

SQLite Maestro provides a number of Create Object Wizards to accomplish the most facile SQLite object creation.

There are several ways to invoke the necessary Create Object Wizard:

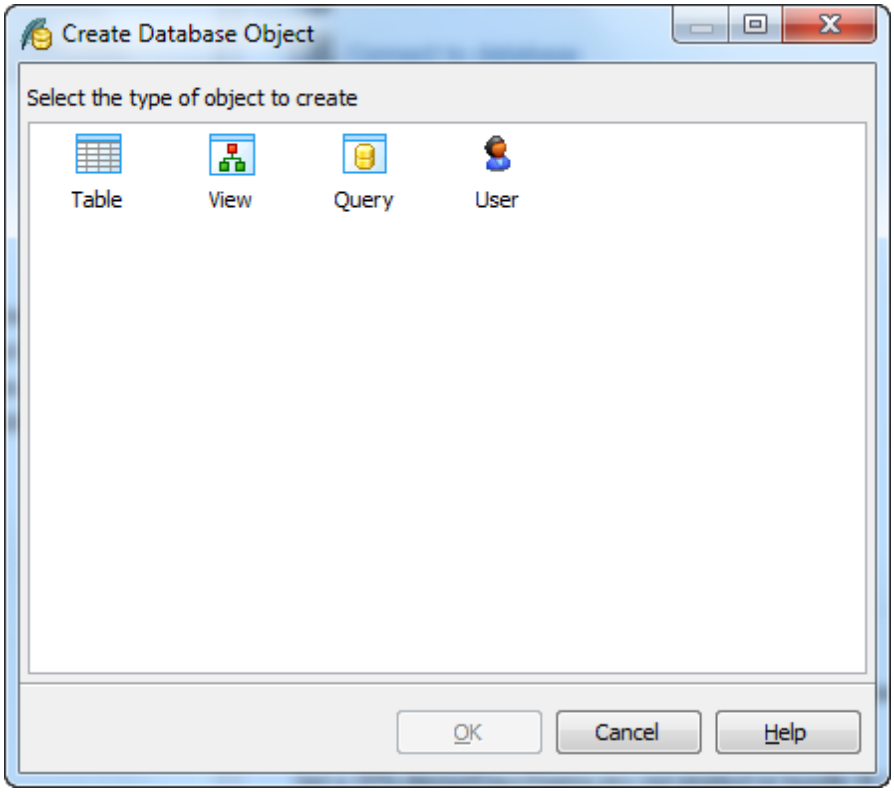
- select the Object | Create Database Object... main menu item;
- select the necessary icon (table, query, view, trigger, etc.) in the Create Database Object dialog

or

- select the object list (Tables, Views, Triggers, etc.) or any object from that list in the Explorer tree (Object Manager and Object Browser);
- select the Create New Table (View, Trigger, etc.)... item from the popup menu or press **Insert**.

## 4.1.1 Create Database Object Dialog

The Create Database Object dialog allows you to create any type of database object supported by SQLite Maestro. To open the dialog select the Object | Create Database Object... main menu item or use the **Shift+Ctrl+N** hot keys combination. Select an object type icon and click the OK button to invoke the corresponding wizard or dialog.




## 4.1.2 Overview of Create Objects Wizards

Several steps of Create Object Wizards are common for all of them. This part purpose is the formulation of the basic principles for the Create Object Wizard organization.

- On the first wizard step 43 you need to specify the new object name.
- On the second one you have to define all the object properties. To clear up the object properties meanings see the appropriate topic of the respective Create Object Wizard section.
- Some objects has subitems (e.g. each table contains fields, indexes, procedures have parameters, etc). In this case the next step allows you to manage such subobjects of the object being created. We recommend you to store the following shortcuts in order to speed your work: the Ins key adds a new subobject, the Enter key displays the subobject's editor, and the Del key drops the subobject.
- The next wizard step 44 is final. It is provided to sum up the Create Object Wizard operation.

**Note:** There are some objects to have an additional Create Object Wizard steps. The detailed description of the steps you can find at the appropriate topic of the corresponding section.

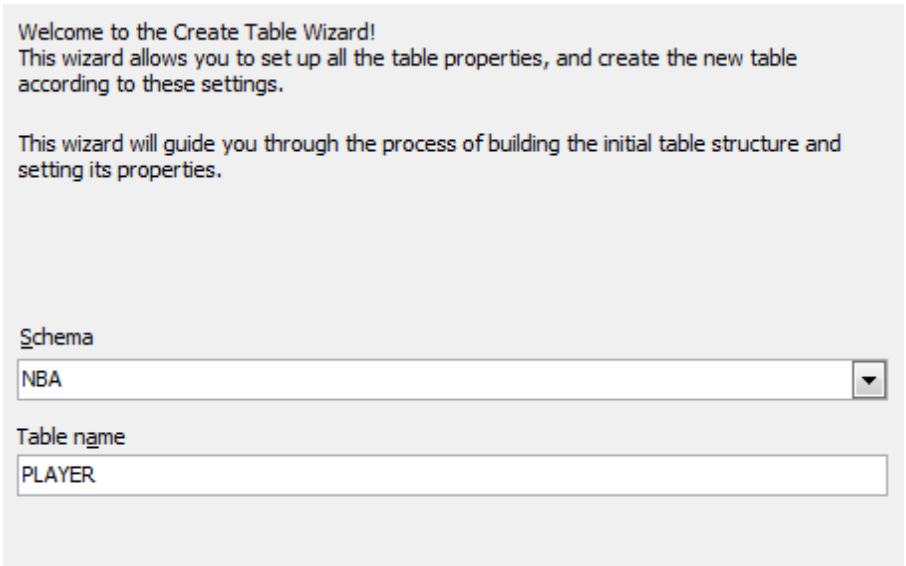
**See also:**

- Create Table Wizard 62
- Create View Wizard 84
- Creation of a New Query 93

#### 4.1.2.1 Setting object name

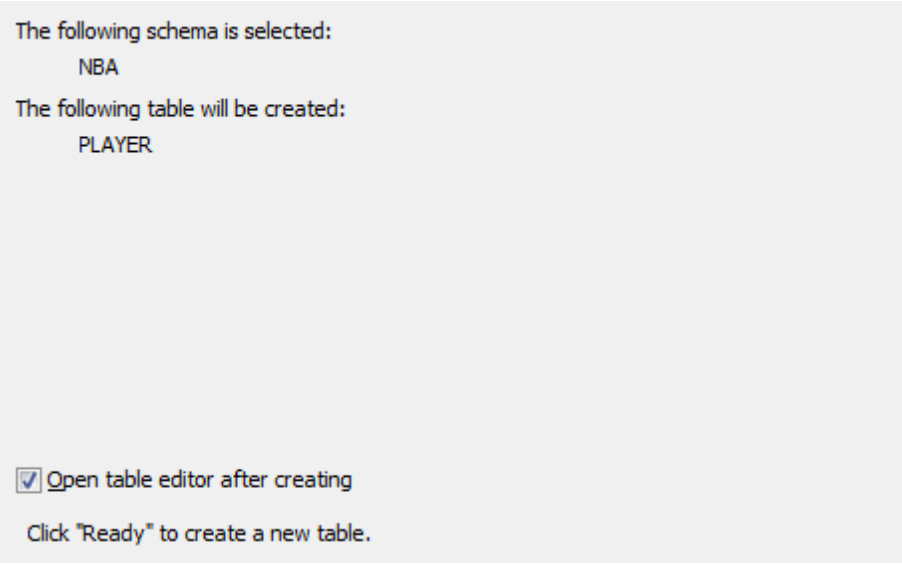
Select the container (table, schema, database, etc.) for the new object from the list of available containers and enter the new object name in the respective box.

**Note:** the name of the object must be unique among all the object names in its container. Moreover, all the objects that are source of data need unique names among themselves. You can use any identifier that is allowed by SQLite server.



#### 4.1.2.2 Viewing common information

At this step common information about the object to be created is displayed. Select the Open object editor after creating option to open the appropriate Object Editor after the new object is created. Click the Ready button to complete creation of the object.



## 4.2 Edit Objects

SQLite Maestro allows you to view and modify existing database objects in several ways:

- briefly view and modify object properties 46;
- view and modify the object including subitems within the object editor.

To open an Object Editor 45, just double click its node in the Database Explorer tree. Of course this action is also available through popup menus, navigation bars, and so on.

### 4.2.1 Overview of Object Editors

Database Object Editors are the basic SQLite Maestro tools for working with existing objects. The proper editor can be opened automatically after the object is created. You can also open the necessary object editor with the corresponding items of popup menus of the Explorer Tree 52, Object Manager 57 or Object Browser 55.

The editors consist of a several tabs. Some tabs are similar for all editors. This part purpose is to formulate the basic principles of all Object Editors in SQLite Maestro.

- To edit object options such as name, owner, etc. use the Properties tab. To understand an option, see the appropriate topic of the corresponding Object Editor manual section and SQLite documentation.

  This tab also allows you to manage objects belonging to the selected one. To reset any tab to default settings, open it when holding the **Ctrl** key.

- Most of objects have a possibility to be created from an SQL script (SQL definition). If so, the corresponding script is available at the SQL 45 tab of the editor.

**Note:** Some object editors have additional tabs. The detailed description of them you can find at the appropriate topic of the corresponding section.

To apply the changes, select the Apply Changes item in the Navigation bar or use **Ctrl +F9** or **Ctrl+F7** shortcut keys.

It is also possible to modify object properties without opening the object editor: use the Object Properties item of the popup menu of the selected object from the explorer tree.

**See also:**
- Table Editor 64
- View Editor 88

#### 4.2.1.1 SQL Definition

The SQL tab displays the SQL definition for the object with all its properties. Bear in mind that 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 SQL Editor or SQL Script Editor.

The SQL definition window allows you to browse the text effectively. The popup menu

and the extensive system of hot keys give you the opportunity to search expressions within the text, to select the whole text for copying it to the Windows Clipboard, to save the definition to the **.sql* or **.txt* files, to print the document, etc.

You can customize the displayed definition using the Editors & Viewers 213 options.

The Properties item of the popup menu displays the Options dialog in which you can establish optional settings concerning the current database.

The Code Folding item group makes it possible to view either the whole text or its logical parts (regions). Each region can be collapsed and extended.

In extended mode the whole text is displayed (set by default)

In collapsed mode the text is hidden behind one text line denoting the first line of the collapsed region.

Navigation Bar on the SQL tab allows you to copy the object's SQL definition (DDL) to the SQL Script Editor for future modifications.

### 4.2.2 Modify Object Properties

You can rename all objects those can be renamed with the corresponding option of the popup menu of the object at the Explorer tree. To edit other properties of the selected object without opening its editor, use the Object Properties dialog. To open this dialog, select the according item of the same popup menu. To clear up the object properties meanings, see the appropriate topic of the respective Object Editor section.

## 4.3 Duplicate Objects

SQLite Maestro offers several ways of objects duplicating.

1. **Duplicate Object Wizard.** The wizard is the most flexible tool of the coping. Along with a possibility to adjust the new object definition it allows you to copy data (for tables). But it consists of several steps 47 and takes more time than other manners.

2. **Duplicate Object** window allows you to attune new object's SQL definition. It is preferred for creation a copy of selected object. Here 49 you can find some additional info.

3. By **Drag-n-Drop** 50 **operation.**

### 4.3.1 Duplicate Object Wizard

The Duplicate Object Wizard allows you to create a new database object with the same properties as the existing one. It is the most flexible tool of copying objects provided by SQLite Maestro. It also allows you to copy data of the selected table to the new one.

To run the wizard select the Object | Duplicate Database Object... main menu item.

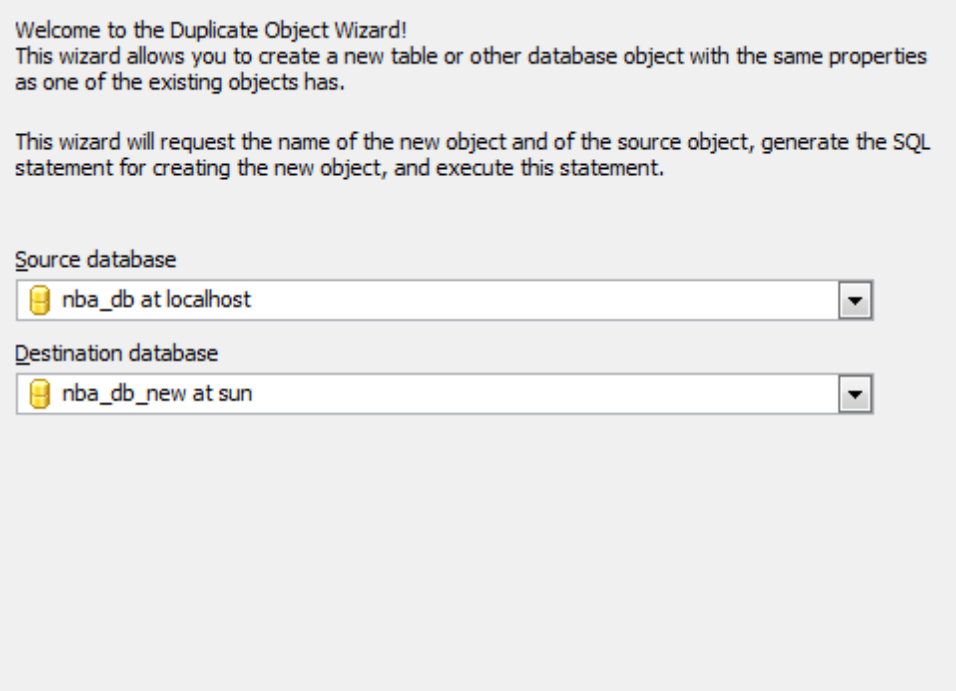
- Selecting source and destination databases 47
- Selecting object to duplicate 48
- Modifying definition of a new object 49

**See also:** Create Database Object 42

#### 4.3.1.1 Selecting source and destination databases

Select the database containing a source object from the list of connected databases, and then specify the database for the duplicated object.

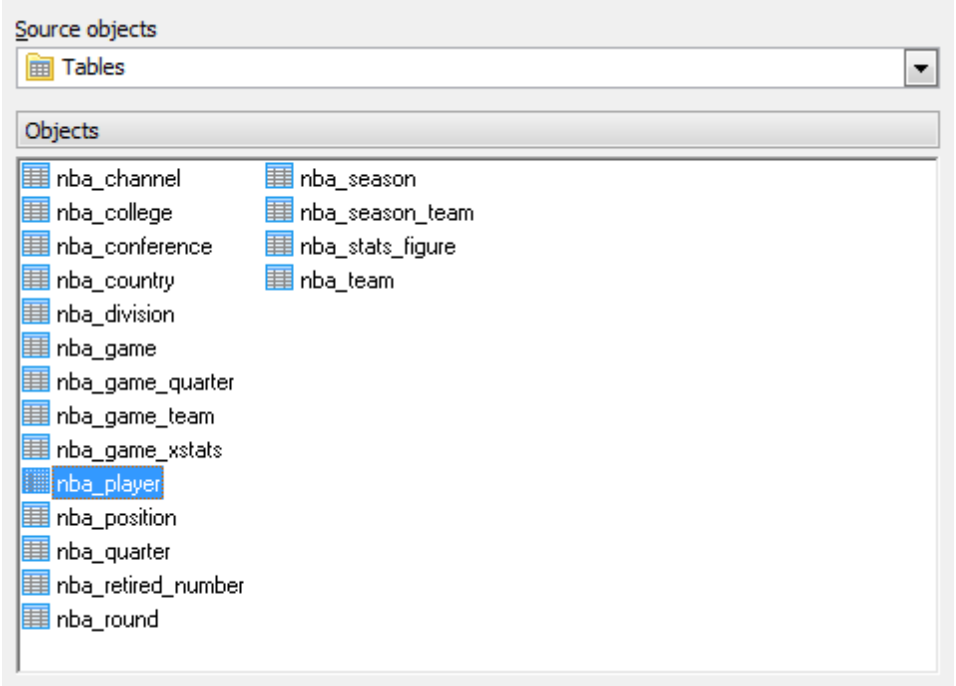
You should connect to the destination database beforehand (see Database Management 23).




#### 4.3.1.2 Selecting object to duplicate

Specify a database object (only tables or views can be in the list of source objects) to create the new one with the same properties.

1. Select the type of the object to duplicate from the Source objects drop-down list.
2. Pick up the necessary object from the list.



#### 4.3.1.3 Modifying new object definition

The last wizard step allows you to edit the new object definition directly.

Use this step to edit the name of object been creating (New Object Name). By default SQLite Maestro generates the new object definition with the same name if the duplicating is to the source database, or like "%SOURCE_OBJECT_NAME%01" otherwise.

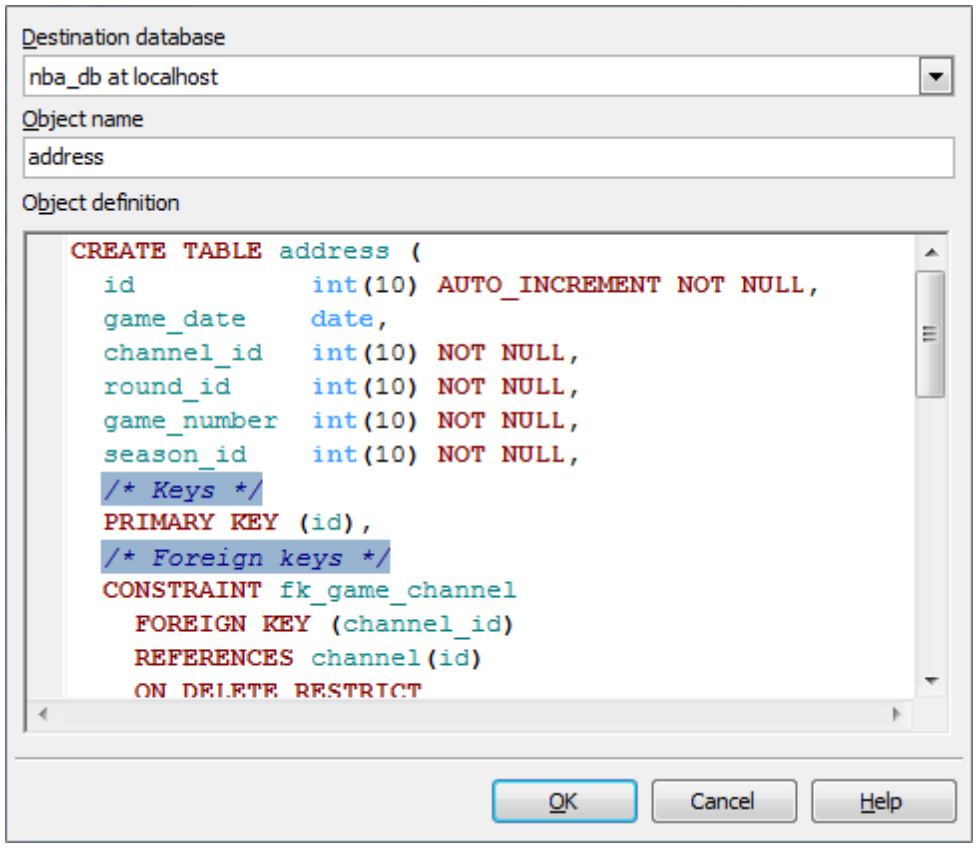
**Note:** the name of the object must be unique among all the object names in its container. Moreover, all the objects that are source of data need unique names among themselves. You can use any identifier that is allowed by SQLite server.

You can edit the result SQL statement manually, add or remove fields, change field types, using the New object definition text area. Click the Ready button to complete the operation.
Check the according boxes to Copy Data (only for tables) and to Open Object Editor after the duplicating.


### 4.3.2 Duplicate Selected Object

Within the Duplicate Object window you can duplicate a selected object fast and with some modifications.

It is available from the corresponding link of the object's popup menu at the Database Explorer.




Select the database for a new object from the list of connected databases first.

Enter the name for the new object.

**Note:** the name of the object must be unique among all the object names in its container. Moreover, all the objects that are source of data need unique names among themselves. You can use any identifier that is allowed by SQLite server.

You can also edit the SQL definition of the object if necessary (add or remove fields, change field types, etc.).

### 4.3.3 Copy, Paste and Drag-n-Drop features

SQLite Maestro provides you with an ability of copying database objects within the database or even from one database to another (in this case you should connect to both the source and the destination databases first).

To copy an object, just drag the object in a source window (such as Database Explorer, Object Manager, Object Browser) and drop it to the target container in another window. You also can use the Edit | Copy and the Edit | Paste main menu items or the **Ctrl+C**/ **Ctrl+V** hot keys combinations respectively. Copying several objects at a time is also available.

It is also possible to drag and drop objects between Database Explorer, Object Manager, Object Browser and SQL Editor or SQL Script Editor. This works as follows:

SQL Editor: after dropping the object you will get a query to retrieve object data (e.g. SELECT * FROM table_name) or the full name of the object if it doesn't contain data (domains, indexes, etc.).

SQL Script Editor: after dropping the object you will get its SQL definition if applicable.

**See also:** Database Explorer, Object Manager, and Object Browser

## 4.4 Browse Objects

SQLite Maestro allows to browse objects stored in a Remote Server database in several ways:

- Database Explorer 52: objects are represented as a hierarchy (grouped by kind and listed under the according SQLite database node, provided with subobjects if exist)
- Object Browser 55: an extension of explorer with ability to sort, group, filter and multiple select objects.
- Object Manager 57: an extension of the explorer with ability to select several objects at a time (to copy, drop, etc.)

All tool allows you to drag-and-drop between them and to perform all necessary operations upon database objects.

### 4.4.1 Database Explorer

Database Explorer is the basic feature of SQLite Maestro which allows you to perform practically all necessary operations upon databases and their objects. The Database Explorer area occupies the left side of the SQLite Maestro main window. All the objects at the Explorer tree are grouped by kind and listed under the according SQLite database node.

To start working with a database you need to create its profile first. The conception of database profiles gives you an opportunity to connect to databases in one touch and work with the selected databases only.

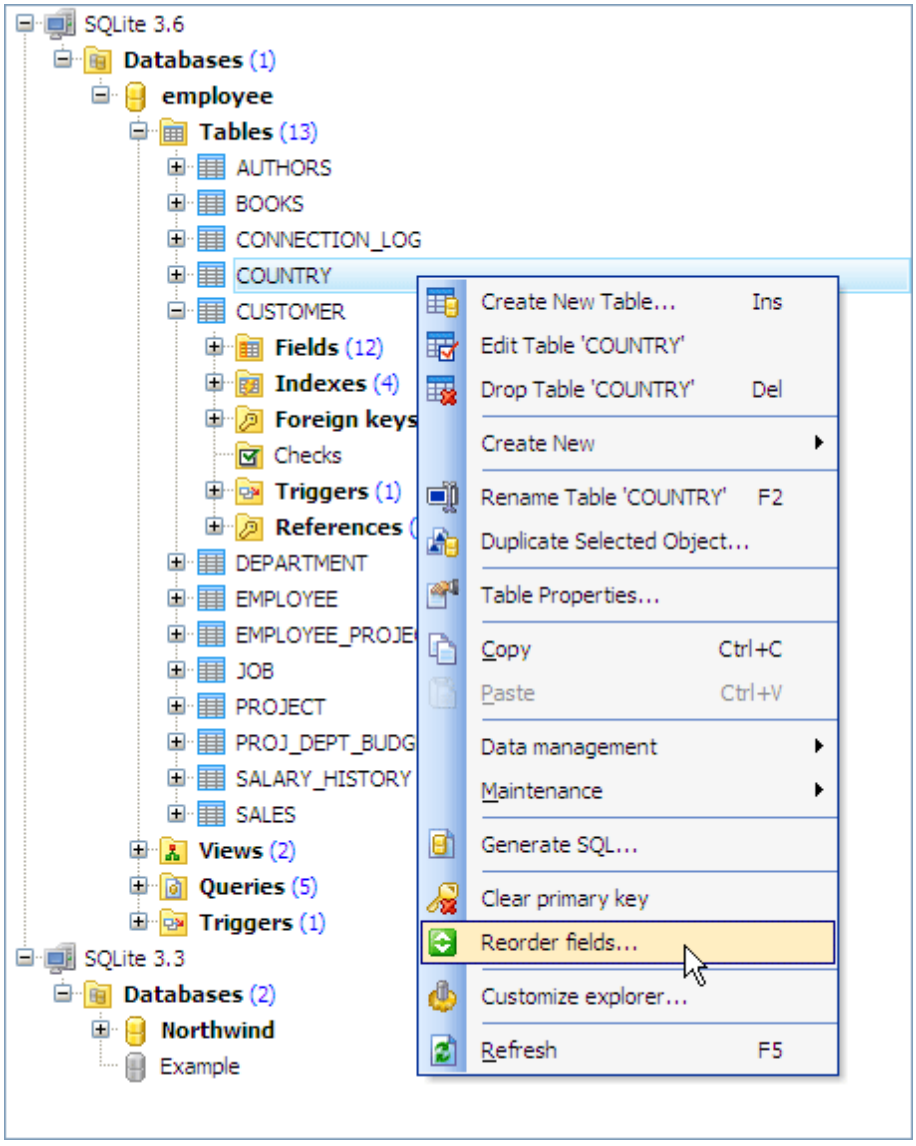
**See also:** Object Manager 57, Object Browser 55

**Note:** In case your databases have a large quantity of objects you can speed up the object search by typing first letters of the object name in the explorer area.

**Note:** Explorer options 196 allow you to hide/display table subobjects, represent system objects in different color, etc.

The sections below describe each of these actions in detail.

- What operation can I accomplish upon database profiles within the Explorer Tree? 53
- How can I connect to a database? 52
- How can I disconnect from a database? 54
- What operations can I accomplish upon database objects within the Explorer Tree? 54
- Can I copy a database object from one database to another? 54
- Can I filter Explorer content? 55
- How can I create new/drop a database? 54




**Operations upon database profiles in the Explorer Tree**
Using popup menu of the Explorer area you can realize the following operations:

- create new database profiles 27 (the Create Database Profiles... item);
- rename currently selected database profile (the Rename Database Profile... item);
- edit currently selected database profile 30 (the Edit Database Profile... item);
- reorder existing database profiles (the Reorder Databases...item of Databases node's popup menu or using drag-n-drop);
- reorder servers (the Reorder Servers...item of a server's popup menu);
- remove currently selected database profile from the explorer tree (the Remove Database Profile item);
- remove all profiles of selected server (the Remove all Profiles item of Databases node's popup menu).

In addition to these operations, Database Explorer gives you an ability to reorder existing

profiles by performing drag-and-drop operations within the explorer tree.

**How can I connect to a database?**
You can establish connection to a database in Database Explorer by selecting the database profile and double-clicking it or pressing the Enter key (alternatively, you may use the Shift+Ctrl+C hot key combination). The same operation is also available through the Connect to Database item from the explorer popup menu, or through the Database | Connect to Database main menu item.

**How can I disconnect from a database?**
You can abort connection from a database in Database Explorer by selecting the database profile and pressing the Shift+Ctrl+D hot key combination. The same operation is also available through the Disconnect from Database item from the explorer popup menu, or through the Database | Disconnect from Database main menu item.

**Operations upon database objects**
Database Explorer allows you to perform the following operations with database objects using its popup menu (note that the popup menu contains object-specific items only when some database object is currently selected in the explorer tree):

- create a new database object (the Create New Object... item);
- edit currently selected database object (using the Edit Object... item, pressing the Enter key or double-clicking the database object);
- drop the selected object from the database (the Drop Object... item);
- rename the selected database object (the Rename Object... item);
- edit the database object properties (the Object properties ... item);
- duplicate the selected object (the Duplicate Object... item).
- run the Object Browser tool (the Browse ... item).

**Can I copy a database object from one database to another?**
Database Explorer provides you with an ability of copying database objects from one database to another. To perform this operation, you should connect to both the source and the destination databases first. After the connection is established, simply drag and drop an object to copy from the source database to the corresponding node (Tables, Queries, etc.) of the destination database.

**Note:** You also can use the Edit | Copy and the Edit | Paste main menu items to copy/paste a database object using Windows clipboard (alternatively, you may use the Ctrl+C/Ctrl+V hot keys combinations respectively).

**How can I create new/drop a database?**
To create a new SQLite database (not existing on your SQLite server) with Database Explorer, select the Create New Database... item from the popup menu and set all the necessary options within the Create Database Wizard 37.

To drop an existing database using Database Explorer, connect to the database you wish to drop, select the Drop Database item from the popup menu of the database and confirm

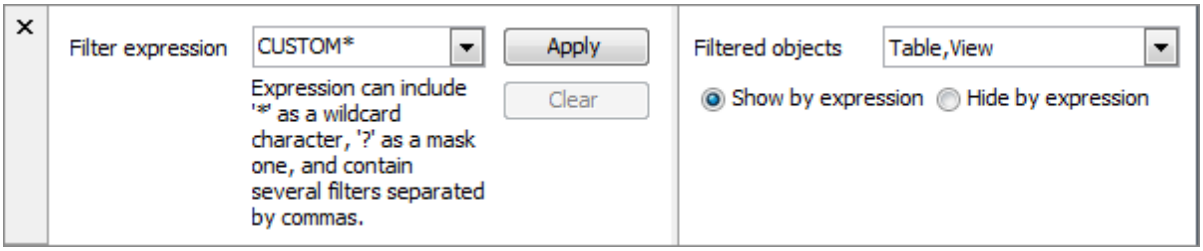
dropping in the dialog window.

**Note:** Alternatively, you can use the Database | Create New (Drop) Database main menu item to perform these operations.

#### 4.4.1.1 Filtering explorer content

SQLite Maestro allows you to reduce the number of represented objects in the explorer tree. To hide seldom usable objects, filter your explorer content.

Filter Panel is available through the View | Show Filter Panel main menu item.



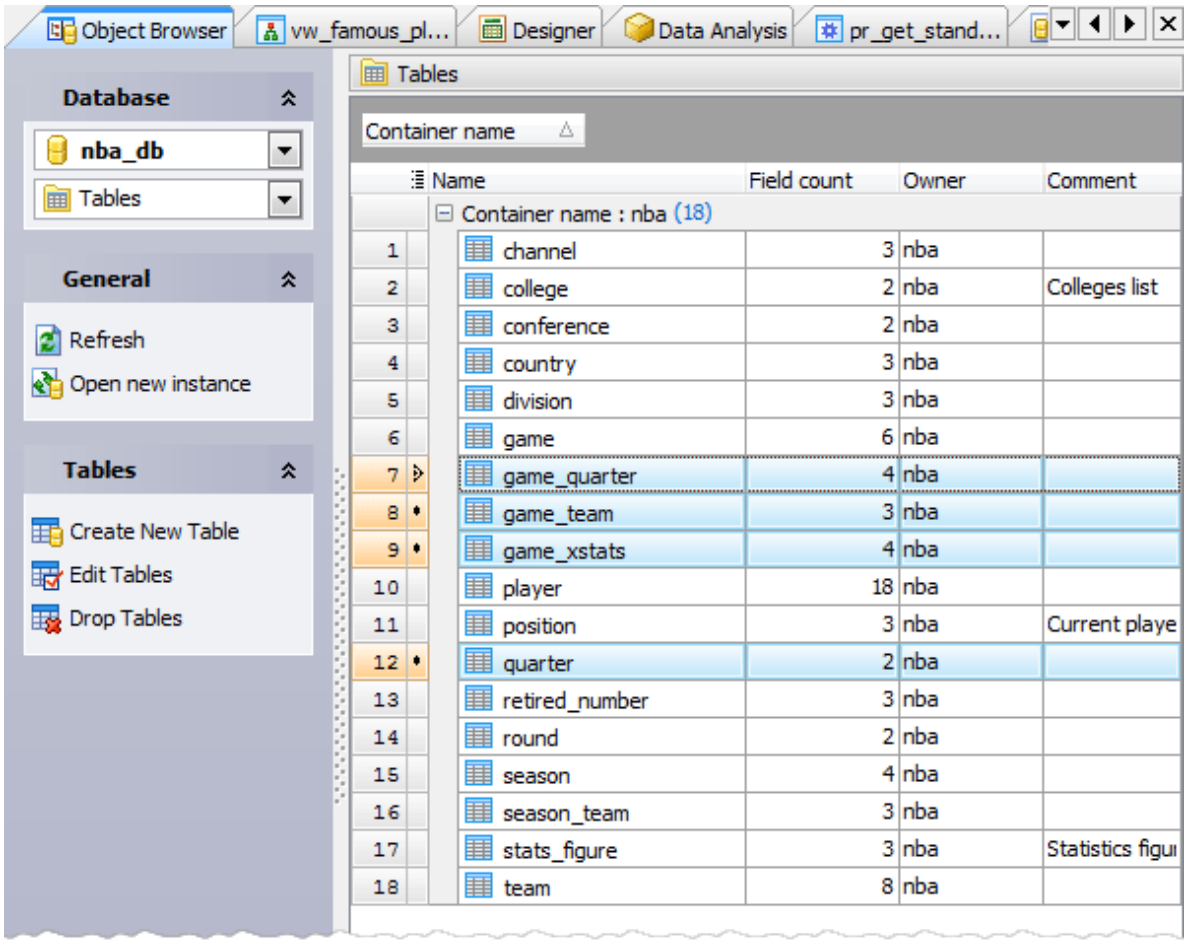

- Specify the Filter expression. The expression can contain any part of object name combined with an asterisk ('*') as a wildcard character and a question-mark ('?') as a mask character.
- Define the Filtered objects, object types for filtering in the explorer tree.
- Check the according radio button (Show by expression, Hide by expression) to define whether database objects will be shown or hidden in accordance with the filter expression.
- Click Apply button.

**Note:** A filter expression, if applied to the content of Database Explorer, is applied to the content of Object Manager 57 and Object Browser 55 as well.

### 4.4.2 Object Browser

Object Browser is a tool for operating on database objects designed as an extension of Database Explorer 52 with ability to *sort, group* and *filter* the database objects. It also provides such operation as multiple selecting of objects (for *copying*, *dropping*, etc.) and the ability of using drag-and-drop operations between Object Browser and Database Explorer. To open Object Browser select the Object | Object Browser main menu item.

**Note:** At least one connection to a database should be established to make Object Browser available.




**Sorting database objects**

Object Browser represents database objects in a grid. The object kind to display is defined on the top of the Navigation bar. The columns correspond to the objects properties and rows correspond to the objects. Click the column caption to sort objects by the values of this column in the ascending or descending mode. The navigation buttons allow you to open current object editor, create new or drop the existing one.

As Object Manager the browser allows you to operate on several objects at a time. You have an opportunity to select a batch of objects and after the object group is selected, you can operate on it (e.g. *drop several objects at once*) as if it were a single object.

The unique feature of the SQLite Maestro is an opportunity of drag-and-drop operations between Object Browser and SQL Editor, SQL Script Editor. After the action objects are represented in SQL Editor as SQL queries (if they contain data) or as their full name in the database otherwise. SQL Script Editor displays the objects as SQL definition.

**Grouping database objects**

You can group grid objects by any of the columns by dragging the column header to the destination area. Now all the records are displayed as subnodes to the grouping row value as shown in the picture. To reverse grouping, just drag the column name from the upper area back.

**Filtering database objects**
You can filter objects in the grid using one of the following methods:

- use the drop-down button in the column caption area to filter objects by the value of the selected column
- click the drop-down button in the column caption area, then select the Custom item and build a simple filter within the dialog in the following way: select a logical operator for checking the column values (like is less than, is greater than, etc) and set the value to be checked by this operator in the neighboring box; then set the second condition if necessary in the following way and set the relation between these two conditions, whether both of them should be matched or just one of them; use the '_' character to represent any single symbol in the condition and the '%' character to represent any series of symbols in the condition

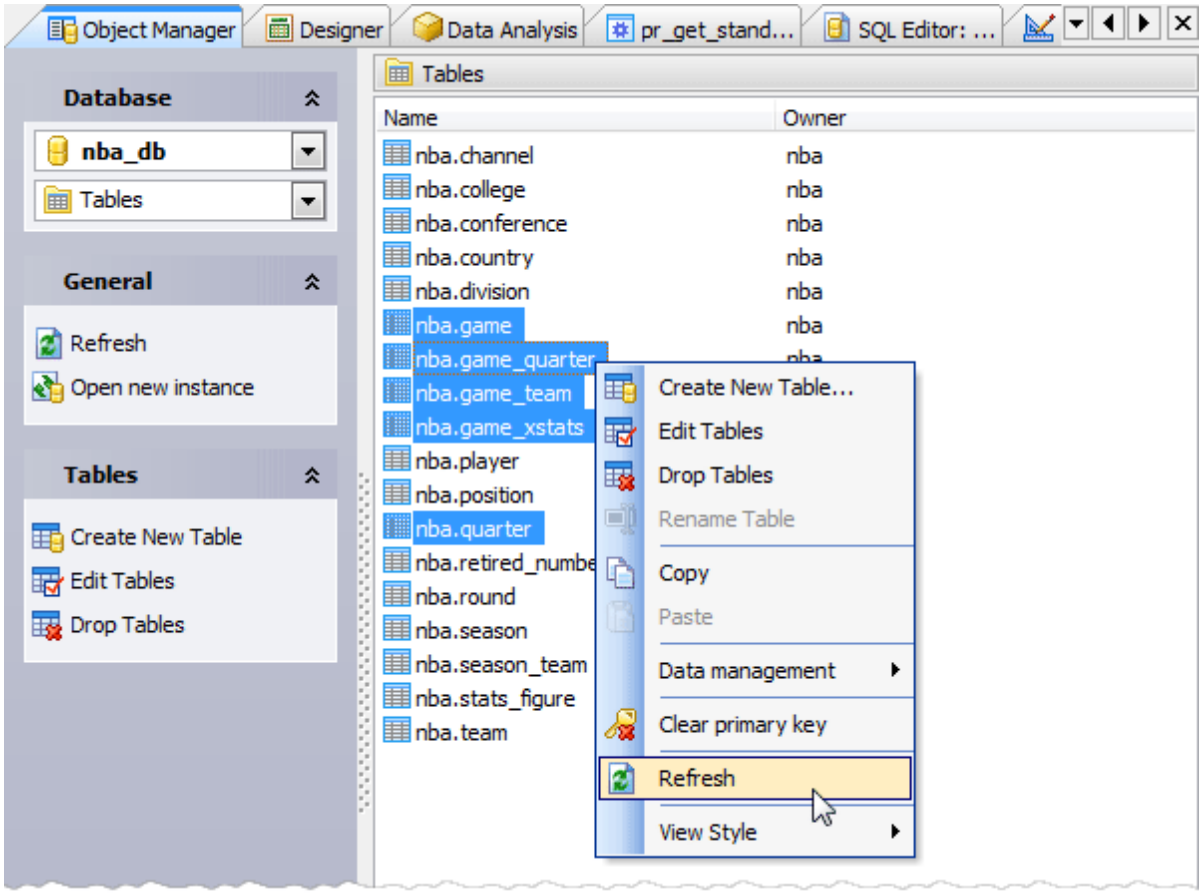
After you set a filter, the filtering panel becomes visible at the bottom of the grid where you can see the active filtering condition and easily enable or disable it by clicking the check box on the left. Using this panel you can also customize your filter in a more complicated way by clicking the Customize button and building your filter within the Filter Builder dialog.

**See also:** Object Manager 57, Data View 110

### 4.4.3 Object Manager

Object Manager is a tool for operating on database objects designed as an extension of the Database Explorer 52 with advanced features, such as multiple selecting of objects (for *copying*, *dropping*, etc.) and the ability of using drag-and-drop operations between Object Manager and Database Explorer as well as between two instances of the Object Manager. To open Object Manager select the Object | Object Manager main menu item.

**Note:** At least one connection to a database should be established to make Object Manager available.




**Using popup menu**

The popup menu of Object Manager may have different content depending on the current selection. The common menu items allow you to switch the object list view between four standard modes *(large icons, small icons, list* and *report*), refresh the current view, and select all the objects in the view. If none of objects are currently selected, other menu items are unavailable to use, except of the one for creating a new object. If one or more objects are selected, clipboard operations (such as copy and paste) become available as well as the items for editing and dropping selected object(s). If the current object type of the Object Manager is *"Tables"*, the *Empty Table(s)* menu item is also available.

**Multiple selecting of database objects**

Object Manager allows you to operate on several objects at a time. You have an opportunity to select a batch of objects and after the object group is selected, you can operate on it (e.g. *drop several objects at once*) as if it were a single object.

**See also:** Object Browser 55

## 4.4.4 Filter Builder Dialog

Filter Builder Dialog allows to limit represented objects according to specified conditions. It may be useful for filtering records in data grids of Table Editors, SQL Editor or Visual Query Builder as well as to filter database objects in Object Browser, and on setting a condition on anew view creating. All these cases are similar, see how it works on the

following example.

# 5 Database Objects

The following list contains database objects supported by SQLite Maestro. To work with database objects you should connect to the database 13 first.

- Tables 61
- Views 83

# 5.1 Tables

SQLite Maestro allows you to manipulate tables with easy: add new tables to the database, modify existing ones, browse table options and data. The sections below describe each of these actions in detail.

### How can I add a new table?

New tables are created within Create Table Wizard 62. In order to run the wizard you should either

- select the Object | Create Database Object... main menu item;
- select the Table icon in the Create Database Object dialog

or

- select the Tables list or any object from that list in the explorer tree;
- select the Create New Table... item from the popup menu.

To create a new table with the same properties as one of the existing tables has:

- select the Object | Duplicate Database Object... main menu item;
- follow the instructions of Duplicate Object Wizard.

### How can I work with an existing table?

Tables can be edited within Table Editor 64. In order to run the editor you should either

- select the table for editing in the explorer tree (type the first letters of the table name for quick search);
- select the Edit Table... item from the popup menu

or

- open Schema (Database) Editor and the Tables tab there;
- select the table to edit;
- press the **Enter** key or select the Edit Table item from the popup menu (alternatively, you may use the corresponding link of the Navigation Bar).

You can also view and edit table properties without launching Table Editor:

- select the table for editing in the explorer tree (type the first letters of the table name for quick search);
- select the Table Properties... item from the popup menu;
- edit table properties within the Table Properties dialog.

You can change the name of the table using the Rename Table dialog. To open the dialog you should either

- select the table to rename in the explorer tree;

- select the Rename Table item from the popup menu

or

- open Schema (Database) Editor and the Tables tab there;
- select the table to rename;
- select the Rename Table item from the popup menu (alternatively, you may use the corresponding link of the Navigation Bar).

### How can I drop the existing table?

To drop a table:

- select the table to drop in the explorer tree;
- select the Drop Table item from the popup menu

or

- open Schema (Database) Editor and the Tables tab there;
- select the table to drop;
- press the **Delete** key or select the Drop Table item from the popup menu (alternatively, you may use the corresponding link of the Navigation Bar)

and confirm dropping in the dialog window.

Table Editor allows you to work with table data including master-detail views 66, generate simple SQL statements 182.

## 5.1.1 Create Table Wizard

Create Table Wizard guides you through the process of creating a new database table. The basic principles of Create Object Wizards in SQLite Maestro are explained in a separate topic 42. Below you will find a description of wizard steps that are unique for the current object.

Name
The name of the table being created as it was specified at the previous step.

The wizard allows you to create special tables with a built-in full-text index (also known as FTS tables). The full-text index allows the user to efficiently query the database for all rows that contain one or more words, even if the table contains many large documents. On such table creating, three additional system tables ("shadow" tables) will be created. To create a new FTS table supporting a full text search, turn the Enable full-text indexing option ON. Find out more about FTS tables, modules and other such stuff at SQLite documentation.

Note, that FTS "shadow" tables (%_content, %_segdir, etc) are considered as system ones. So, to get them at the Explorer tree, turn on the Show system tables option in the Edit Database Profile 31 dialog.

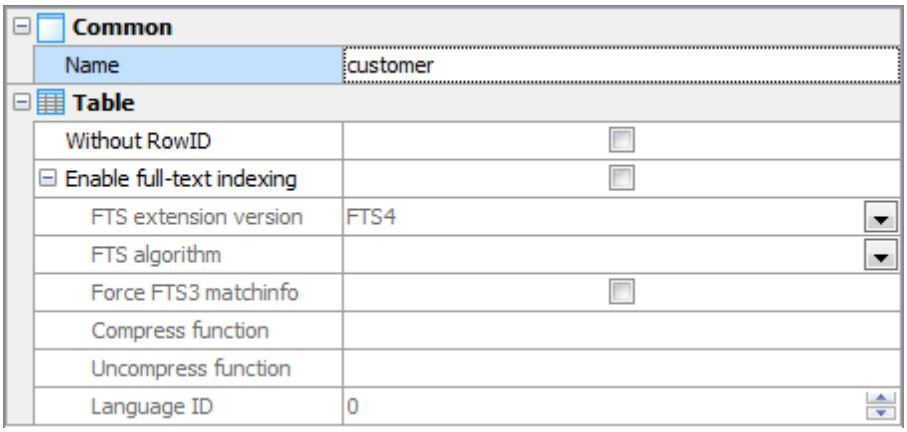
Select the FTS extension version. The differences between F3 and F4 are described in the appropriate section.

Select FTS tokenizer as FTS algorithm. An FTS tokenizer is a set of rules for extracting terms from a document or basic FTS full-text query. There are two types of FTS tokenizers: simple and porter. If the tokenizer have not been set, simple one is used. Full description of the both types may be found at the corresponding topic.

If the Force FTS3 matchinfo box is checked, some of the extra information stored by FTS4 is omitted. This reduces the amount of disk space consumed by an FTS4 table until it is almost the same as the amount that would be used by the equivalent FTS3 table, but also means that the data accessed by passing the 'l' flag to the matchinfo() function is not available. The matchinfo function provides the user with metrics that may be useful for filtering or sorting query results according to relevance.

For FTS4 tables specify the compress and uncompress functions to store data in the database in a compressed form.

The Language ID option causes the FTS4 table to have an additional hidden integer column that identifies the language of the text contained in each row. The use of the languageid option allows the same FTS4 table to hold text in multiple languages or scripts, each with different tokenizer rules, and to query each language independently of the others.

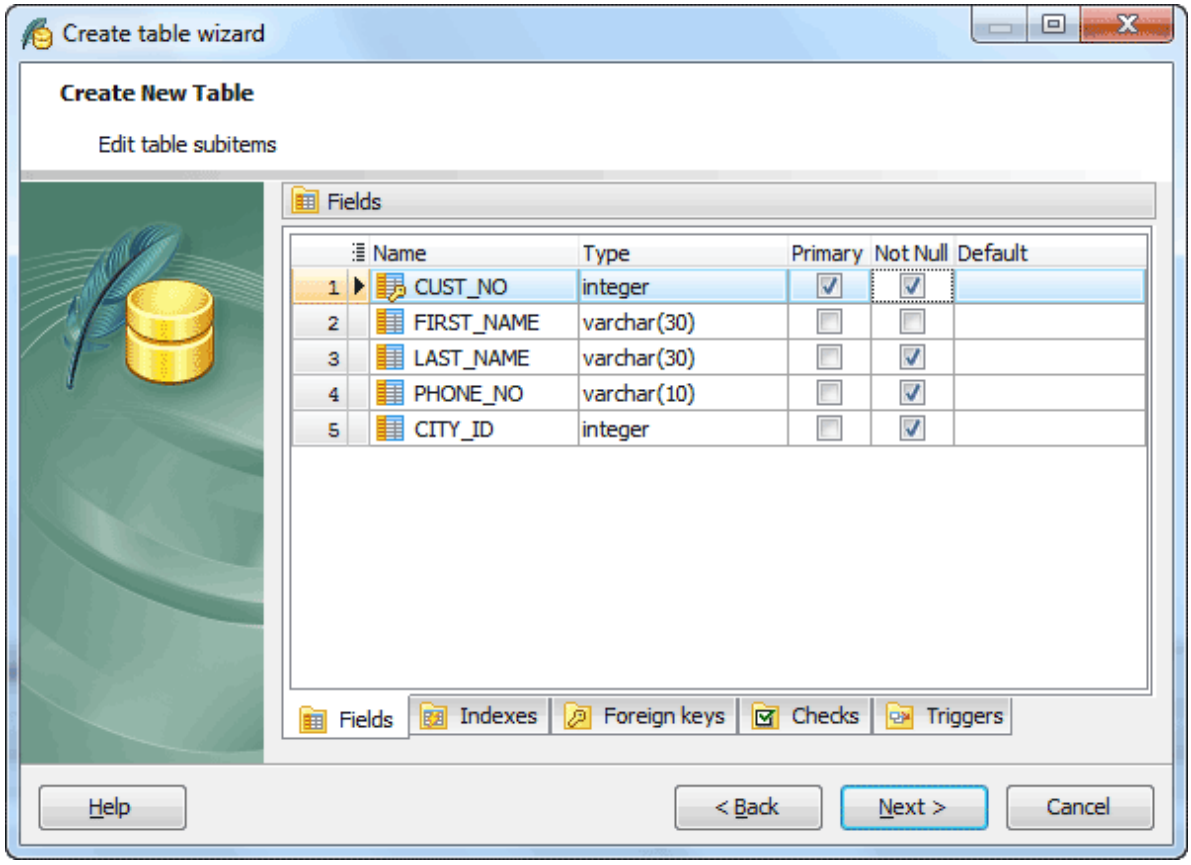



**Adding table subitems**

On this step of the wizard you can fullfill the new table with fields, indexes, and foreign keys. To add a new object:

- Choose the necessary page (Fields - to add table fields, Indexes - table indexes, and so on);
- Follow the corresponding link of the tab's pop-up menu;
- Specify properties of the new object. To find the description of field 68, foreign key 72, check 74 (since SQLite 3.3), trigger 77 (since SQLite 2.5), and index 70, follow the according link.

The popup menu of each tab allows to edit, drop, reorder, and rename specified objects, etc.




Click Add All or Add to include table(s) to table definition. Use the Remove or Remove All items to exclude table(s) from the list.

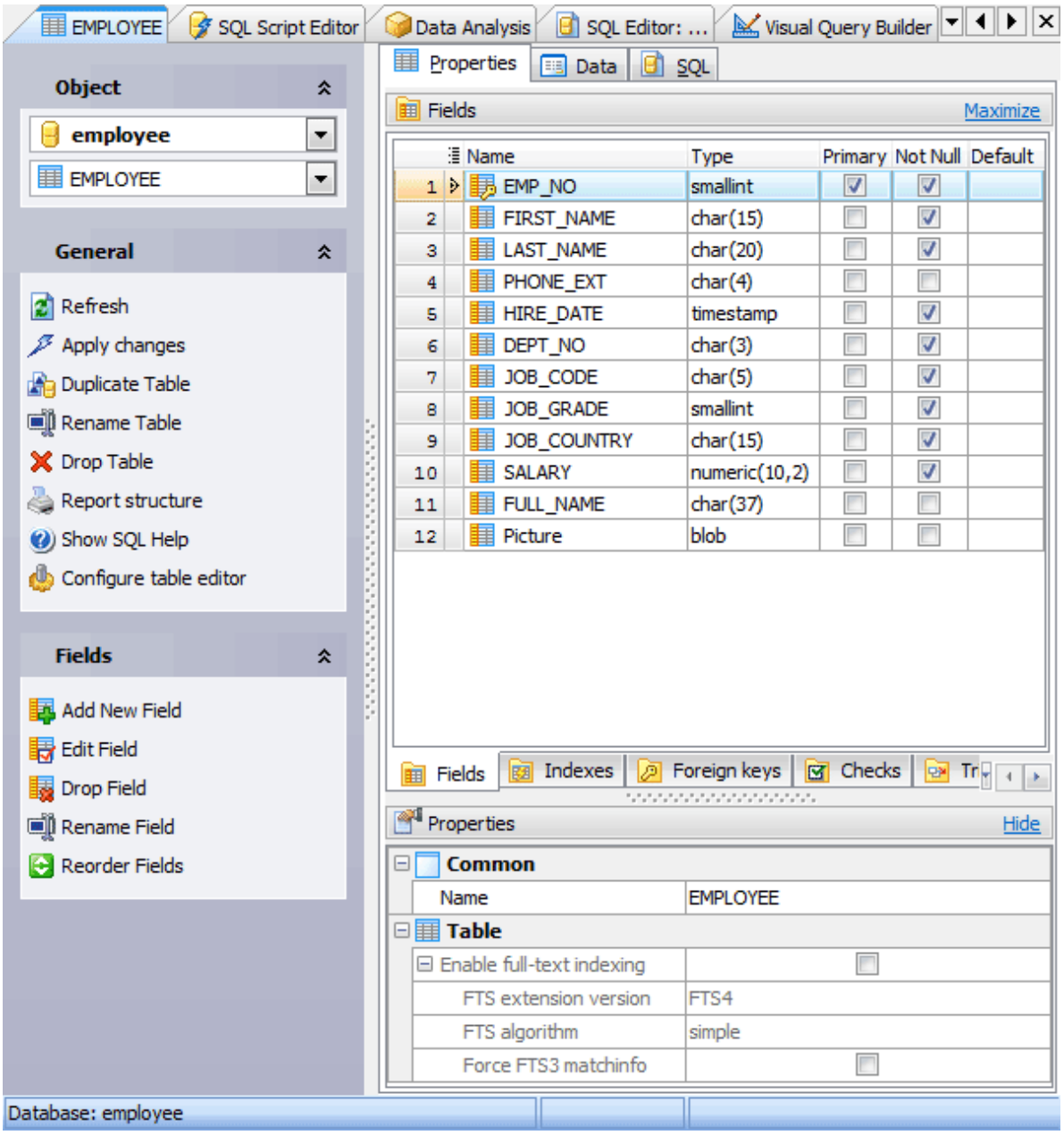
## 5.1.2 Table Editor

Table Editor allows you to create, edit and drop table fields, indexes, manage table data and other table subobjects. It can be opened automatically after the table is created and is available on editing the table. To open Table Editor, double-click the corresponding node at the Explorer Tree or Object Manager.
The basic principles of Object Editors in SQLite Maestro are explained in a separate topic 45. Below you will find a description of editor tabs that are unique for the current object.

- Editing table properties 64
- Viewing table data 66

### 5.1.2.1 Editing table properties

The Properties section allows you to view general table properties and also to modify the table name.




## Subitems

Every tab is intended for work with defined objects (*fields*, *indexes,* etc.). To modify any object, double click it or use grid's popup menu. The menu also allows you to add new, rename, describe, copy/paste, and drop selected objects. To operate with several objects at a time, select them with the **Shift** or the **Ctrl** key pressed. After a group of objects is selected you can operate with it, e.g. *delete several objects at once*, as if it is a single object.

The full-text search (FTS) options of the table are represented at the bottom of the editor. If the Enable full-text indexing option is ON, the table is the virtual FTS table that supports a full text search. FTS algorithm contains the FTS tokenizer, a set of rules for extracting terms from a document or basic FTS full-text query, that is used on working with the table. If the Force FTS3 matchinfo box is checked, some of the extra

information stored by FTS4 is omitted. Find out more about FTS tables, modules and other such stuff at SQLite documentation.

**See also:** Fields 68, Foreign Keys 72, Triggers 79, and Indexes 70.

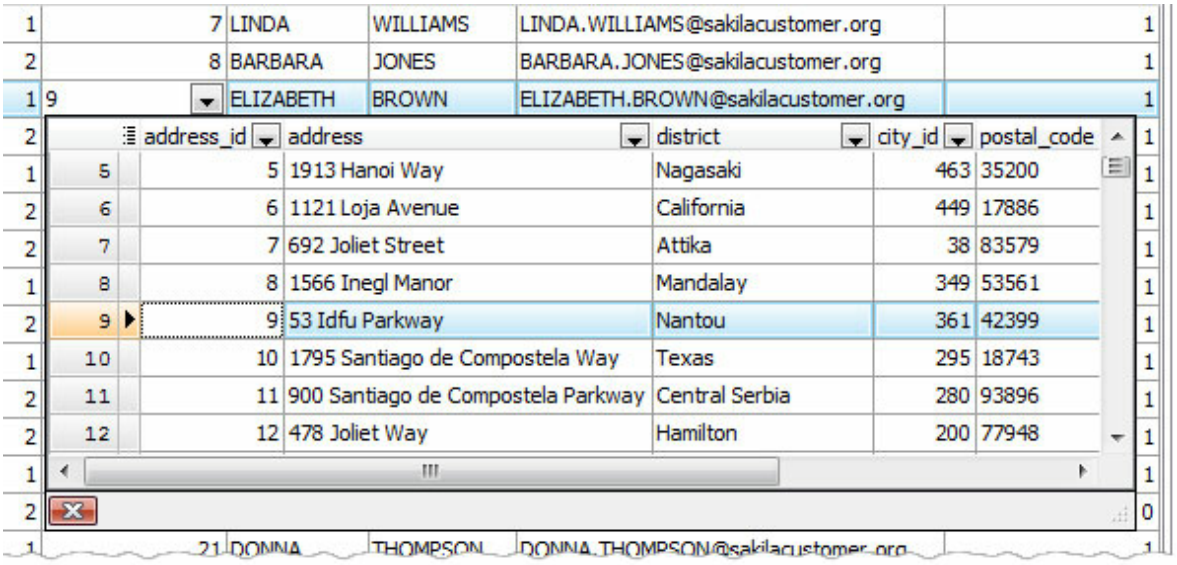
To apply the changes, select the Apply Changes item in the Navigation bar or use **Ctrl +F9** or **Ctrl+F7** shortcut keys.

It is also possible to modify object properties without opening the object editor: use the Object Properties item of the popup menu of the selected object from the explorer tree.

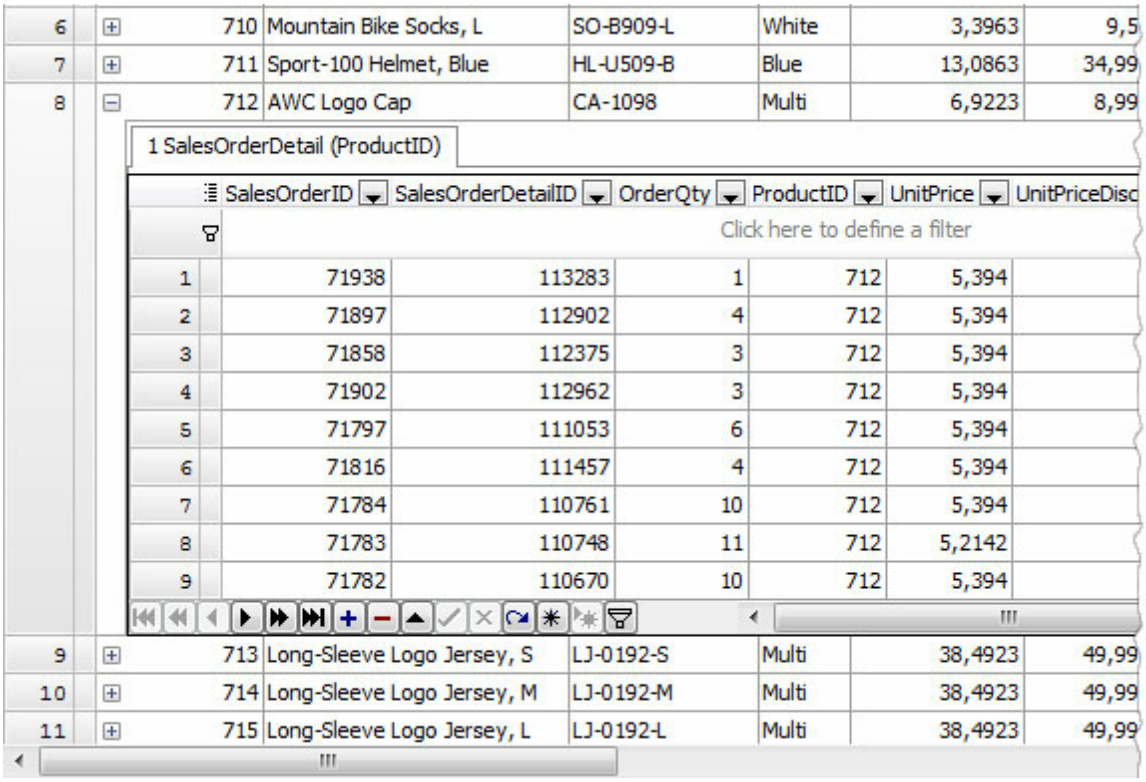
#### 5.1.2.2 Managing table data

The Data tab displays the table data as a grid or as info cards (see Data View 110 for details). To edit/add a table record, use Data Input Form or type the new data directly in the grid (card). To export/import/get SQL dump of the table data, invoke corresponding modules from the grid's popup menu. To view and edit the content of BLOB columns, run BLOB Editor 121.

**Lookup editors**
Lookup editor displays the content of parent table's columns within the drop-down window. SQLite Maestro enables a lookup editor for a column linked by a foreign key with a single column from another table. To get the corresponding data, double click the field or use **F2** shortcut and press **Alt+Down Arrow Key**.




**Master-Detail Data View**
To get data in the master-detail view mode (multiple detail pages are displayed for a single master row), use the Show/Hide details link at the editor's navigation bar. This mode allows you add/edit/delete data of detail pages. To open/close the appropriate detail page click the +/- icon or use **+/-** shortcuts.



| | | | | | | |
|---|---|---|---|---|---|---|
| 6 | 710 | Mountain Bike Socks, L | SO-B909-L | White | 3,3963 | 9,5 |
| 7 | 711 | Sport-100 Helmet, Blue | HL-U509-B | Blue | 13,0863 | 34,99 |
| 8 | 712 | AWC Logo Cap | CA-1098 | Multi | 6,9223 | 8,99 |

1 SalesOrderDetail (ProductID)

| | SalesOrderID | SalesOrderDetailID | OrderQty | ProductID | UnitPrice | UnitPriceDisc |
|---|---|---|---|---|---|---|
| | Click here to define a filter | | | | | |
| 1 | 71938 | 113283 | 1 | 712 | 5,394 | |
| 2 | 71897 | 112902 | 4 | 712 | 5,394 | |
| 3 | 71858 | 112375 | 3 | 712 | 5,394 | |
| 4 | 71902 | 112962 | 3 | 712 | 5,394 | |
| 5 | 71797 | 111053 | 6 | 712 | 5,394 | |
| 6 | 71816 | 111457 | 4 | 712 | 5,394 | |
| 7 | 71784 | 110761 | 10 | 712 | 5,394 | |
| 8 | 71783 | 110748 | 11 | 712 | 5,2142 | |
| 9 | 71782 | 110670 | 10 | 712 | 5,394 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 9 | 713 | Long-Sleeve Logo Jersey, S | LJ-0192-S | Multi | 38,4923 | 49,99 |
| 10 | 714 | Long-Sleeve Logo Jersey, M | LJ-0192-M | Multi | 38,4923 | 49,99 |
| 11 | 715 | Long-Sleeve Logo Jersey, L | LJ-0192-L | Multi | 38,4923 | 49,99 |

**Import from Clipboard**

SQLite Maestro supports data import from clipboard. It is supposed that columns within the data block are separated by the tabulation symbol, records are separated by newlines and the first line of the data block contains column headers.

Example:
ColHeader1 ColHeader2
R1C1 R1C2
R2C1 R2C2

The same data format is supported by a lot of other applications, so the ability allows you to copy data from MS Excel, another table or view, or even from a data set from a different DBMS especially if it is opened with an appropriate our product.

**Uploading files as BLOBs**

SQLite Maestro allows you to upload files as BLOBs into a table. For this purpose the file names must contain the information on the record they need to be placed to: the files need to be named in the same manner and include content of one or several table columns that can uniquely identify each row. To import files, specify the file name template using filed name tags (i.e. %id%, %user%, where 'id' and 'user' are the fact table columns). You can also set the default file to be uploaded to NULL fields.

Example:
Suppose we have a table 'employee' with Non-Blob data as follows:
Id User
1 Max
2 July

And we need to import the 1.jpg and 2.jpg files to a BLOB column of the table. The files are stored in the "D:\Images" directory. In this case we need to specify the "D:\Images\%Id%.jpg" file name template.

### 5.1.3 Fields

Table columns are created and edited within the Field Editor.

#### How to add a new column to a table?

To add a new table column, you should either:

- open the table in Table Editor and the Fields tab there;
- press the **Insert** key or select the Add New Field... item from the popup menu (alternatively, you may use the corresponding link of the Navigation Bar)

or

- select the table in the explorer tree and use the Create New Field popup menu item

or

- select the table Fields node or any field within the table in the explorer tree and use the Add New Field... popup menu item.

#### How to edit an existing table field?

Table fields are edited within the Field Editor dialog window. In order to open the dialog you should either

- open the table in Table Editor and the Fields tab there;
- press the **Enter** key or select the Edit Field item from the popup menu (alternatively, you may use the corresponding link of the Navigation Bar)

or

- select the field to edit in the explorer tree and use the Edit Field popup menu item.

You can change the name of the field using the Rename Field dialog. To open the dialog you should either

- select the field to rename in the explorer tree;
- select the Rename Field item from the popup menu

or

- open the table in Table Editor and the Fields tab there;
- select the field to rename;
- select the Rename Field item from the popup menu (alternatively, you may use the corresponding link of the Navigation Bar).

#### How to drop an existing table field?

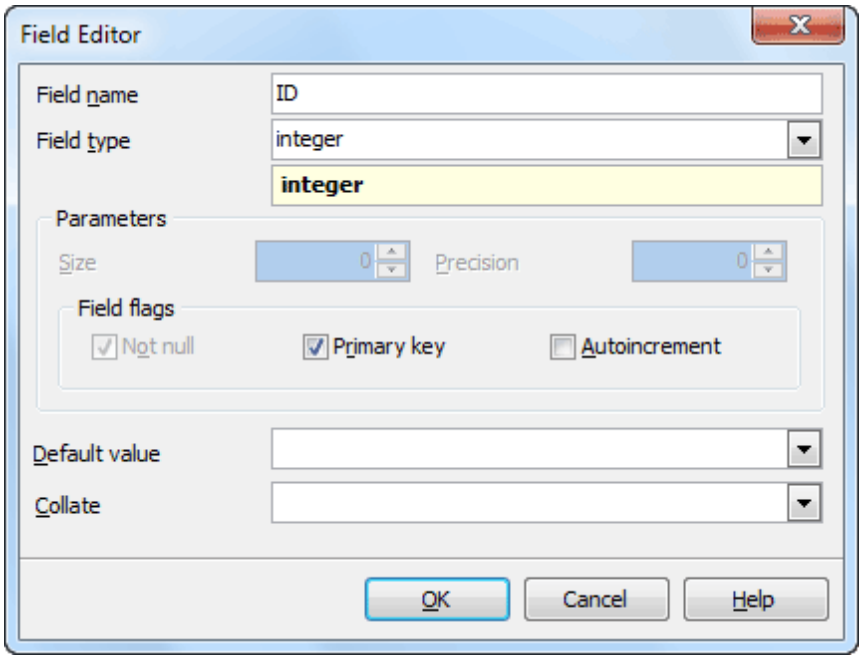
To drop the table field:

- select the field to drop in the explorer tree;
- select the Drop Field item from the popup menu

or

- open the table in Table Editor and the Fields tab there;
- press the **Delete** key or select the Drop Field item from the popup menu (alternatively, you may use the corresponding link of the Navigation Bar)

and confirm dropping in the dialog window.




To specify the Data Type, select it from the drop-down list.

**Note:** the name of the object must be unique among all the object names in the table. You can use any identifier that is allowed by SQLite server.

**Parameters**

Use the Size edit box to define the length of the field value for integer, float, char and other data types and use Precision to define the precision of the field value, e.g. for *float* data type.

**Field flags**

☑ Not Null

Forbids the NULL values for the field.

☑ Primary Key

With this option checked the field becomes the only field with a primary key. If you check this field, you will not be able to set this attribute for any other field in the table. Hence if you want to create a compound primary key, do not check this field but create a primary key through the Indexes tab of Table Editor 64 or the appropriate step of Create Table Wizard 62.

Autoincrement
If this option is checked then whenever you insert a *NULL* into this column of the table, the *NULL* is automatically converted into an integer which is one greater than the largest value of this column over all other rows in the table, or 1 if the table is empty. Autoincrement is not allowed on *WITHOUT ROWID* tables or on any table column other than *INTEGER PRIMARY KEY*. To learn more about the implementation of autoincrement columns in SQLite, see the SQLite documentation.

Collate
Establishes the default sorting behavior for the column.

Unique constraints are added on the Indexes 70 tab.

Default value
Within the box you can assign a default value for the field column. The action is optional. If the default value was specified during the new row created and no values is specified for some of the columns, the columns will be filled with their respective default values.

### 5.1.4 Indexes

Indexes are primarily used to enhance database performance (though inappropriate use may result in slower performance). The key field(s) for the index are specified as column names. Multiple fields can be specified if the index method supports multicolumn indexes.

#### How can I create a table index?

Table indexes are created within the Index_Properties 70 dialog window. In order to open the dialog you should either

- open the table in Table Editor and the Indexes tab there;
- press the **Insert** key or select the Add New Index... item from the popup menu (alternatively, you may use the corresponding link of the Navigation Bar)

or

- select the table in the explorer tree and use the Create New Index popup menu item

or

- select the table Indexes node or any index within the table in the explorer tree and use the Add New Index... popup menu item.

#### How can I edit an existing index?

Table indexes are edited within the Index_Properties 70 dialog window. In order to open the dialog you should either

- open the table in Table Editor and the Indexes tab there;
- press the **Enter** key or select the Edit Index item from the popup

menu (alternatively, you may use the corresponding link of the Navigation Bar)

or

- select the index to edit in the explorer tree and use the Edit Index popup menu item.

You can change the name of the index using the Rename Index dialog. To open the dialog you should either

- select the index to rename in the explorer tree;
- select the Rename Index item from the popup menu

or

- open the table in Table Editor and the Indexes tab there;
- select the index to rename;
- select the Rename Index item from the popup menu (alternatively, you may use the corresponding link of the Navigation Bar).

### How can I drop a table index?

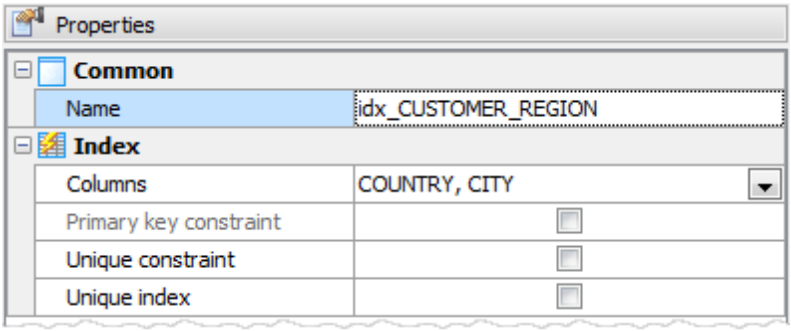
To drop the table index:

- select the index to drop in the explorer tree;
- select the Drop Index item from the popup menu

or

- open the table in Table Editor and the Indexes tab there;
- press the **Delete** key or select the Drop Index item from the popup menu (alternatively, you may use the corresponding link of the Navigation Bar)

and confirm dropping in the dialog window.




Use the Columns drop-down list to select a key field(s) for the index.

☑ Primary key constraint
With this option checked this field becomes a compound primary key. It is useful in case the table has more than one primary key.

☑ Unique constraint

Check the option to permit no duplicate values. A unique column must also define the NOT NULL attribute. A table can have one or more unique keys.

Unique Index
If checked, creates a unique index for the table, i.e. the database system ensures that no two rows of the specified table have the same values in the indexed columns. In this way, if two rows both contain the NULL value for all columns of an index, the two index values are not considered to be identical. If at least one column does not contain the NULL value, two rows that have the same value in all non-NULL columns are considered to be identical.

### 5.1.5 Foreign Keys

A foreign key is a field (or collection of fields) in one table that uniquely identifies a row of another table. In other words, a foreign key is a column or a combination of columns that is used to establish and enforce a link between the data in two tables.

#### How can I add a new foreign key?

Foreign keys are created within the Foreign Key Properties 72 dialog window. In order to open the dialog you should either

- open the table in Table Editor and the Foreign Keys tab there;
- press the **Insert** key or select the Add New Foreign Key... item from the popup menu (alternatively, you may use the corresponding link of the Navigation Bar)

or

- select the table in the explorer tree and use the Create New Foreign Key popup menu item

or

- select the table Foreign Keys node or any foreign key within the table in the explorer tree and use the Add New Foreign Key... popup menu item.

#### How can I edit an existing foreign key?

Foreign Keys are edited within the Foreign Key Properties 72 dialog window. In order to open the dialog you should either

- open the table in Table Editor and the Foreign Keys tab there;
- press the **Enter** key or select the Edit Foreign Key item from the popup menu (alternatively, you may use the corresponding link of the Navigation Bar)

or

- select the foreign key to edit in the explorer tree and use the Edit Foreign Key popup menu item.

You can change the name of the foreign key using the Rename Foreign Key dialog. To open the dialog you should either

- select the foreign key to rename in the explorer tree;
- select the Rename Foreign Key item from the popup menu

or

- open the table in Table Editor and the Foreign Keys tab there;
- select the foreign key to rename;
- select the Rename Foreign Key item from the popup menu (alternatively, you may use the corresponding link of the Navigation Bar).

### How can I drop a foreign key?

To drop the foreign key:

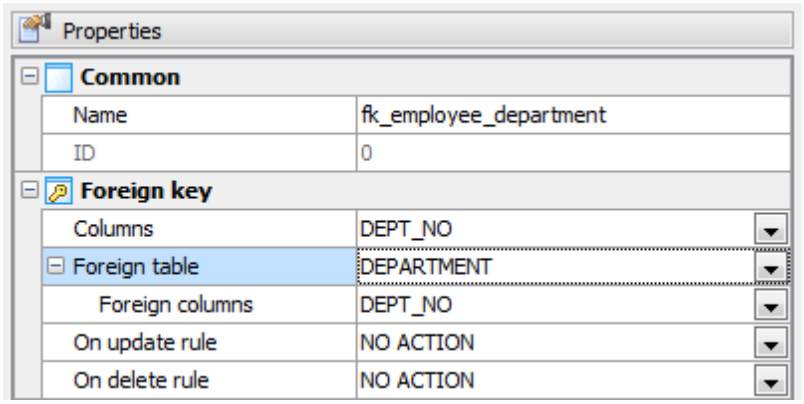
- select the foreign key to drop in the explorer tree;
- select the Drop Foreign Key item from the popup menu

or

- open the table in Table Editor and the Foreign Keys tab there;
- press the **Delete** key or select the Drop Foreign Key item from the popup menu (alternatively, you may use the corresponding link of the Navigation Bar)

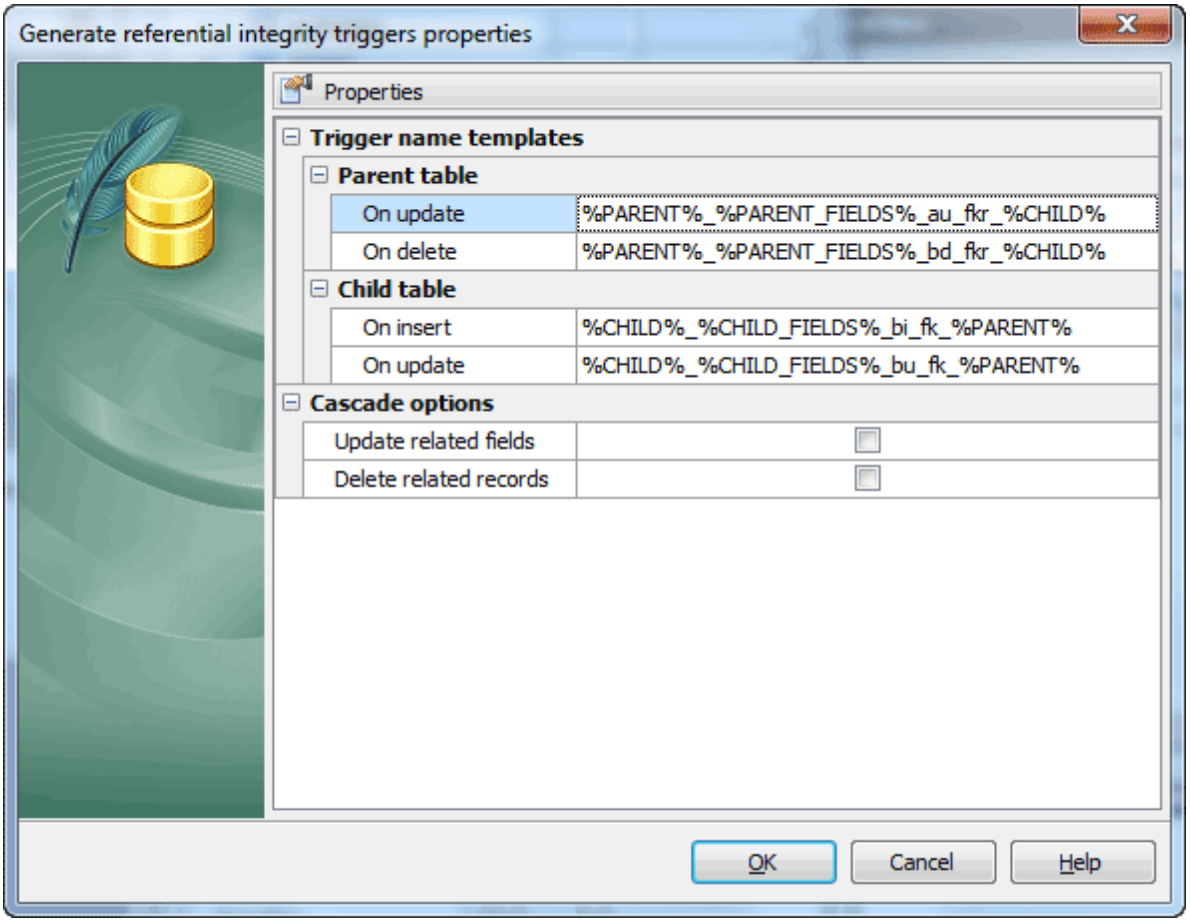
and confirm dropping in the dialog window.

Select Columns from the Available Fields list to include into the foreign key, select the Foreign Table Name from the drop-down list and its fields from the list to include, and apply the changes by clicking the OK button.




All the fields which are included into the Foreign Key must be included into indexes as well. See Indexes 70 for details.

SQLite Maestro allows you to enforce foreign key constraints using referential integrity triggers. To generate such triggers to a foreign key, use the Generate referential integrity triggers link of the foreign key node' popup menu at the Explorer tree. This command is provided to generate 4 triggers: 2 triggers will accomplish the referential integrity in the parent table (on update and on delete) and 2 triggers - on the child one (on insert and on update). Use the opened window to specify the triggers names and set foreign key Cascade options.




### 5.1.6 Checks

A check constraint is the most generic constraint type. It allows you to specify that the value in a certain column must satisfy a Boolean (truth-value) expression.

Check constraints were implemented in SQLite 3.3.

The Check Properties editor allows you to add a new check constraint or edit an existing one. This dialog can be invoked from Table Editor 64, or via the popup menu of the corresponding nodes of the explorer tree.

#### How can I add a new check?

Checks are created within Check Properties 74. In order to run the wizard you should either

- open the table in Table Editor and the Checks tab there;
- press the **Insert** key or select the Add New Check... item from the popup menu (alternatively, you may use the corresponding link of the Navigation Bar)

or

- select the table in the explorer tree and use the Create New Check... popup menu item

or

- select the table Checks node or any check within the table in the explorer tree and use the Add New Check... popup menu item.

### How can I edit an existing check?

Checks are edited within the Check Properties 74 dialog window. In order to open the dialog you should either

- open the table in Table Editor the Checks tab there;
- press the **Enter** key or select the Edit Check item from the popup menu (alternatively, you may use the corresponding link of the Navigation Bar)

or

- select the check to edit in the explorer tree and use the Edit Check popup menu item.

You can change the name of the check using the Rename Check dialog. To open the dialog you should either

- select the check to rename in the explorer tree;
- select the Rename Check item from the popup menu

or

- open the table in Table Editor and the Checks tab there;
- select the check to rename;
- select the Rename Check item from the popup menu (alternatively, you may use the corresponding link of the Navigation Bar).

### How can I drop a check?

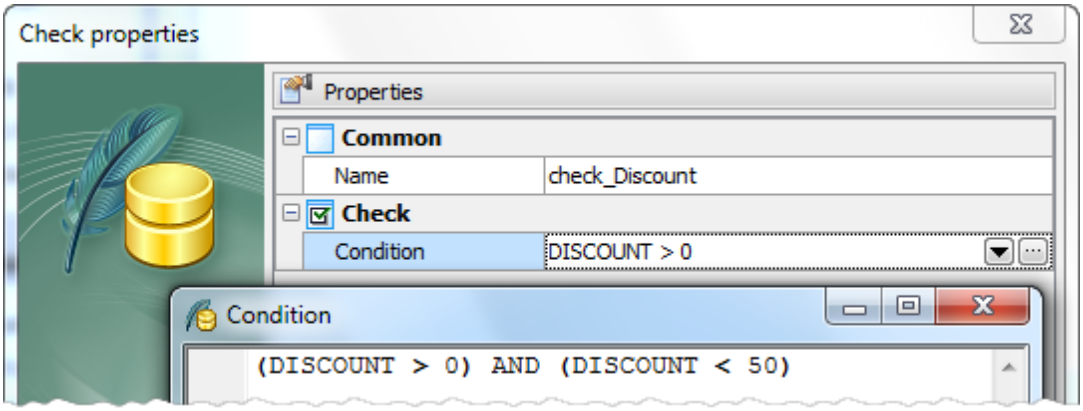
To drop the check:

- select the check to drop in the explorer tree;
- select the Drop Check item from the popup menu

or

- open the table in Table Editor and the Checks tab there;
- press the **Delete** key or select the Drop Check item from the popup menu (alternatively, you may use the corresponding link of the Navigation Bar)

and confirm dropping in the dialog window.




Name
The name of the check constraint.

Condition
Specify 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. In case 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.

## 5.1.7 Triggers

A trigger is a specification that the database should automatically execute a particular function whenever a certain type of operation is performed. A trigger can be defined to execute before or after an INSERT, UPDATE, UPDATE OF or DELETE operation, either once per modified row, or once per SQL statement. If a trigger event occurs, the trigger fires.

### How can I add a new trigger?

Triggers are created within Create Trigger Wizard 77. In order to run the wizard you should either

- open the table in Table Editor and the Triggers tab there;
- press the **Insert** key or select the Add New Trigger... item from the popup menu (alternatively, you may use the corresponding link of the Navigation Bar)

or

- select the table in the explorer tree and use the Create New Trigger... popup menu item

or

- select the table Triggers node or any trigger within the table in the explorer tree and use the Add New Trigger... popup menu item.

### How can I edit an existing trigger?

Triggers are edited within the Trigger Editor 79 dialog window. In order to open the dialog you should either

- open the table in Table Editor and the Triggers tab there;
- press the **Enter** key or select the Edit Trigger item from the popup menu (alternatively, you may use the corresponding link of the Navigation Bar)

or

- select the trigger to edit in the explorer tree and use the Edit Trigger popup menu item.

You can change the name of the trigger using the Rename Trigger dialog. To open the dialog you should either

- select the trigger to rename in the explorer tree;
- select the Rename Trigger item from the popup menu

or

- open the table in Table Editor and the Triggers tab there;
- select the trigger to rename;
- select the Rename Trigger item from the popup menu (alternatively, you may use the corresponding link of the Navigation Bar).

### How can I drop a trigger?

To drop the trigger:

- select the trigger to drop in the explorer tree;
- select the Drop Trigger item from the popup menu

or

- open the table in Table Editor and the Triggers tab there;
- press the **Delete** key or select the Drop Trigger item from the popup menu (alternatively, you may use the corresponding link of the Navigation Bar)

and confirm dropping in the dialog window.

#### 5.1.7.1 Create Trigger Wizard

Create Trigger Wizard guides you through the process of creating of a new table trigger.

The basic principles of Create Object Wizards in SQLite Maestro are explained in a separate topic 42. Below you will find a description of wizard steps that are unique for the current object.

**Specifying trigger properties**

To define a new trigger, you need to set itsType *(Before, After).* This option determines whether the function is called before or after the event.

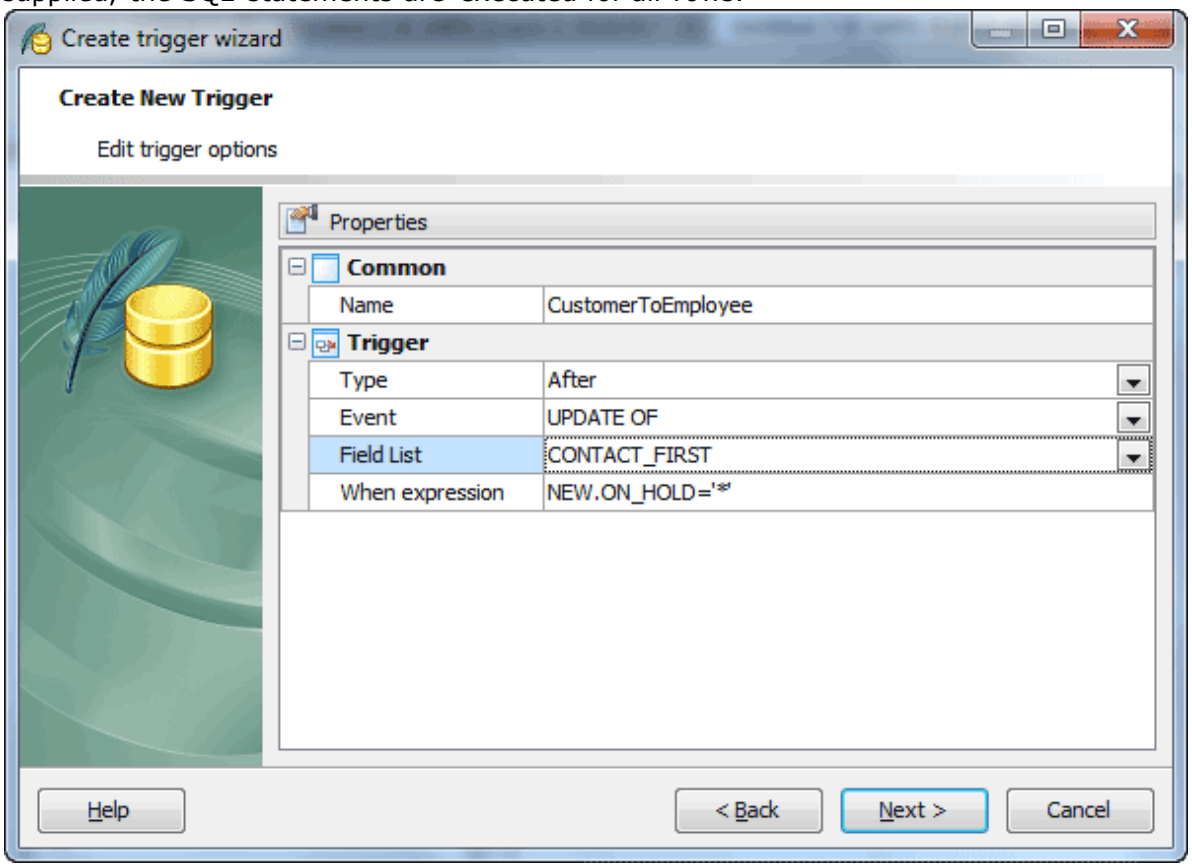
Event
One of *Insert, Update,* or *Delete*; this specifies the event that will fire the trigger.

Field list

This is available when Update of option is selected in Event select. You can specify which fields are to be updated to cause the trigger being fired.

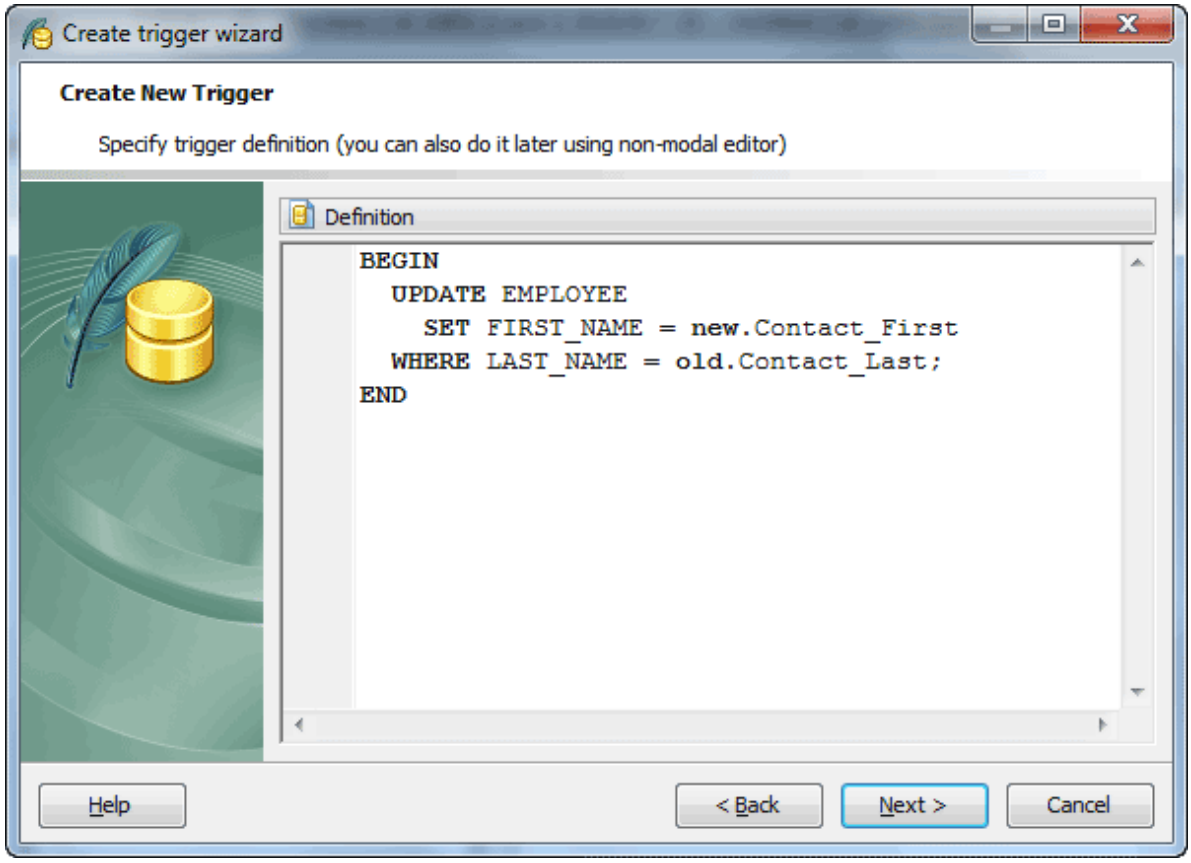
### When expression

If you supply when expression, the SQL statements specified as trigger steps are only executed for those rows for which the WHEN clause is true. If no WHEN clause is supplied, the SQL statements are executed for all rows.



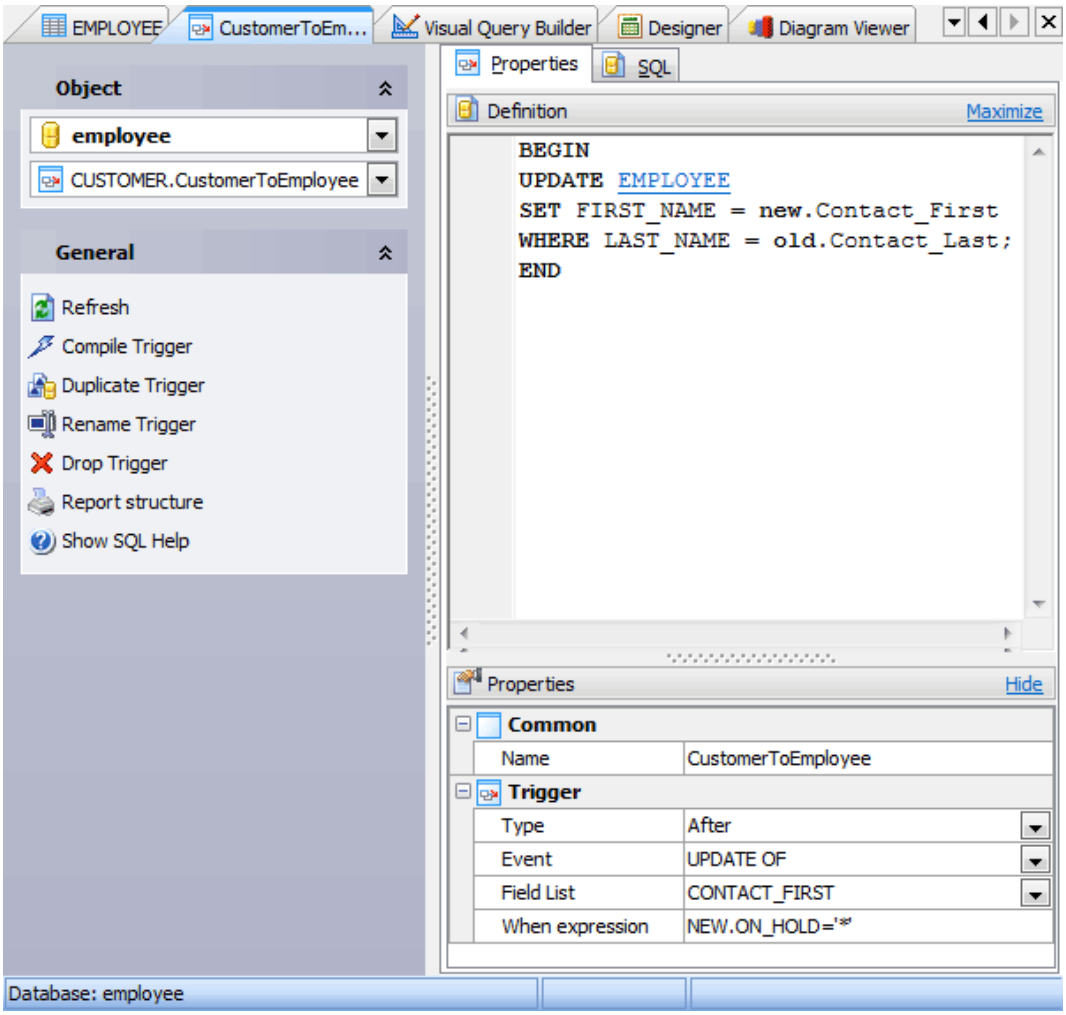

**Specifying trigger definition**

Here you can specify the trigger definition. Specify the trigger steps to be executed when the trigger fires. Trigger steps can be SQL statements (update, select, insert, or delete). The step is optional: you can do it later using a non-modal editor.




#### 5.1.7.2 Trigger Editor

Trigger Editor can be opened automatically after the trigger is created and is available on editing the trigger.
The basic principles of Object Editors in SQLite Maestro are explained in a separate topic 45. Below you will find a description of editor tabs that are unique for the current object.




The main tab of the editor consists of several parts:, trigger definition, and trigger properties.

**Definition**
Defines the trigger conditions and actions. Trigger steps can be SQL statements (update, select, insert, or delete).

**Properties**
Name
Here you can view and change the trigger name.

**Note:** the name of the object must be unique among all the object names in its container. Moreover, all the objects that are source of data need unique names among themselves. You can use any identifier that is allowed by SQLite server.

Type*(Before, After)*
Determines whether the function is called before or after the event. When trigger is

created on view, you should specify INSTEAD OF type. The real tables underlying the view are not modified (except possibly explicitly, by a trigger program).
To apply the changes, select the Apply Changes item in the Navigation bar or use **Ctrl +F9** or **Ctrl+F7** shortcut keys.

It is also possible to modify object properties without opening the object editor: use the Object Properties item of the popup menu of the selected object from the explorer tree.

### 5.1.8 Foreign Key References

A foreign key specifies that the values in a column (or a group of columns) must match the values appearing in some row of another table. The Foreign Key References tab allows you to manage foreign keys created in other tables and reference for columns of the current one. Table objects are managed within the corresponding tab of Table Editor 64. Unlike *tables* or *views,* Foreign Key References are actually not database objects. These are only references to foreign keys. They are designed specially for easy foreign keys management.
**See also:** Foreign Keys 72

#### How can I add a new foreign key reference?

Table foreign key references are edited within the Foreign Key Editor 72 dialog window. In order to open the dialog you should either

- open the table in Table Editor;
- open the Subitems item and the Foreign Keys References tab there;
- press **Enter** key or select the Edit Foreign Key item from the popup menu

or

- select the foreign key to edit in the appropriate table group of the explorer tree and use the Edit Foreign Key popup menu item.

#### How can I edit an existing foreign key reference?

Table foreign key references are edited within the Foreign Key Editor 72 dialog window. In order to open the dialog you should either

- open the table in Table Editor;
- open the Subitems item and the Foreign Keys References tab there;
- press **Enter** key or select the Edit Foreign Key item from the popup menu

or

- select the foreign key to edit in the appropriate table group of the explorer tree and use the Edit Foreign Key popup menu item.

#### How can I drop a foreign key reference?

To drop the foreign key reference:

- open the table in Table Editor;
- open the Subitems item and the Foreign Keys References tab there;
- press **Delete** key or select the Drop Foreign Key item from the popup menu;

or

- select the foreign key to drop in the appropriate table group of the explorer tree and use the Drop Foreign Key popup menu item.

and confirm dropping in the dialog window.

## 5.2 Views

Views are useful for allowing users to access a set of relations (tables) 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). You cannot COPY, INSERT or UPDATE a view. Views are read-only.

### How can I create a new view?

New views are created within Create View Wizard 84. In order to run the wizard you should either

- select the Object | Create Database Object... main menu item;
- select the View icon in the Create Database Object dialog

or

- select the Views list or any object from that list in the explorer tree;
- select the Create New View... item from the popup menu

or

- open Schema (Database) Editor and the Views tab there;
- press the **Insert** key or select the Create New View item from the popup menu (alternatively, you may use the corresponding link of the Navigation Bar).

To create a new view with the same properties as one of the existing views has:

- select the Object | Duplicate Database Object... main menu item.
- follow the instructions of Duplicate Object Wizard.

### How can I edit an existing view definition?

Views can be edited within View Editor 88. In order to run the editor you should either

- select the view for editing in the explorer tree (type the first letters of the view name for quick search);
- select the Edit View... item from the popup menu

or

- open Schema (Database) Editor and the Views tab there;
- select the view to edit;
- press the **Enter** key or select the Edit View item from the popup menu (alternatively, you may use the corresponding link of the Navigation Bar).

You can change the name of the view using the Rename View dialog. To open the dialog you should either

- select the view to rename in the explorer tree;
- select the Rename View item from the popup menu

or

- open Schema (Database) Editor and the Views tab there;
- select the view to rename;
- select the Rename View item from the popup menu (alternatively, you may use the corresponding link of the Navigation Bar).

#### How can I drop a view?

To drop a view:

- select the view to drop in the explorer tree;
- select the Drop View item from the popup menu

or

- open Schema (Database) Editor and the Views tab there;
- select the view to drop;
- press the **Delete** key or select the Drop View item from the popup menu (alternatively, you may use the corresponding link of the Navigation Bar)

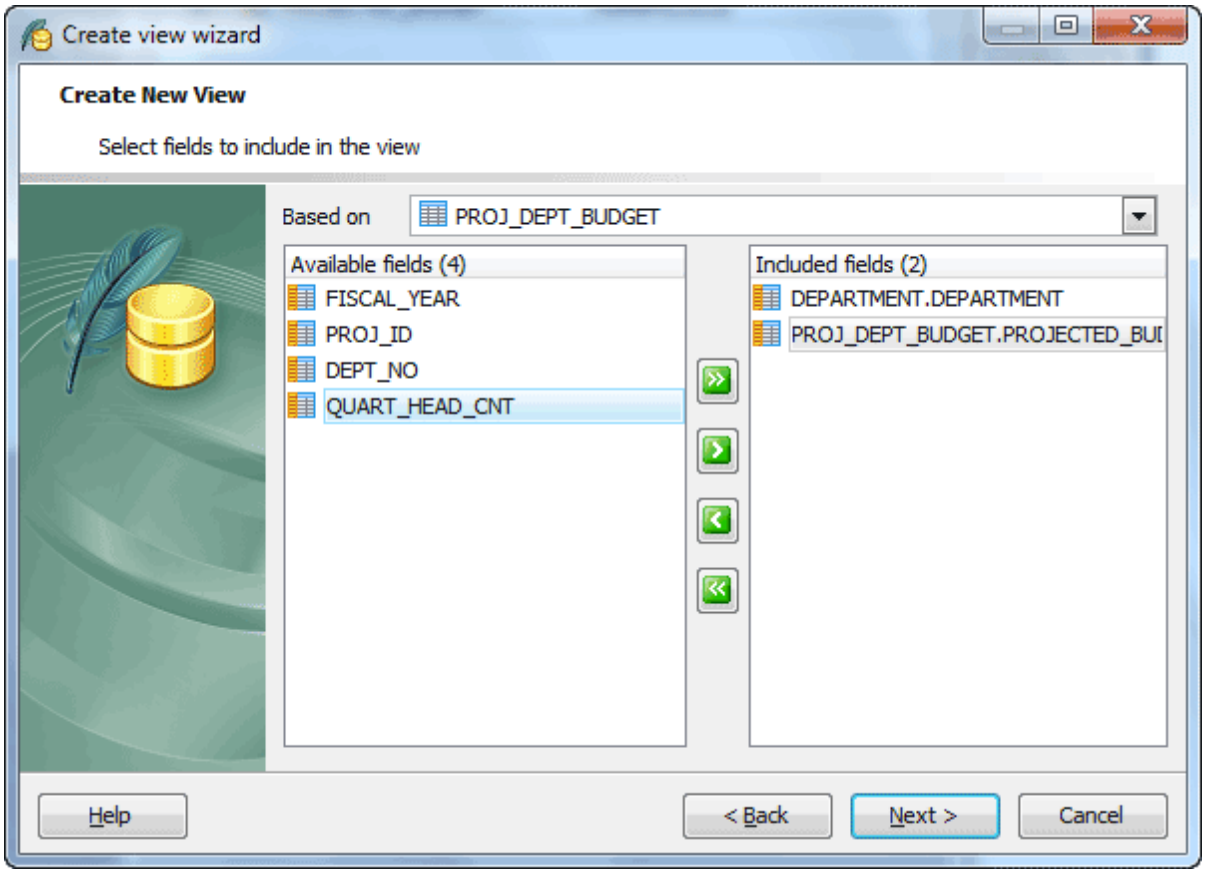
and confirm dropping in the dialog window.

### 5.2.1 Create View Wizard

Create View Wizard guides you through the process of creating a new view. See How To Create View 83 to learn how to run this wizard.

The basic principles of Create Object Wizards in SQLite Maestro are explained in a separate topic 42. Below you will find a description of wizard steps that are unique for the current object.

**Selecting fields for a new view**
Select a table or a view from the Based on drop-down menu. Then specify which fields will be used in the new view. Use Add All or Add Selected buttons to include field(s) into view definition. Use the Remove Selected or Remove All items to exclude field(s) from the view's field list. Click the Next button to proceed.

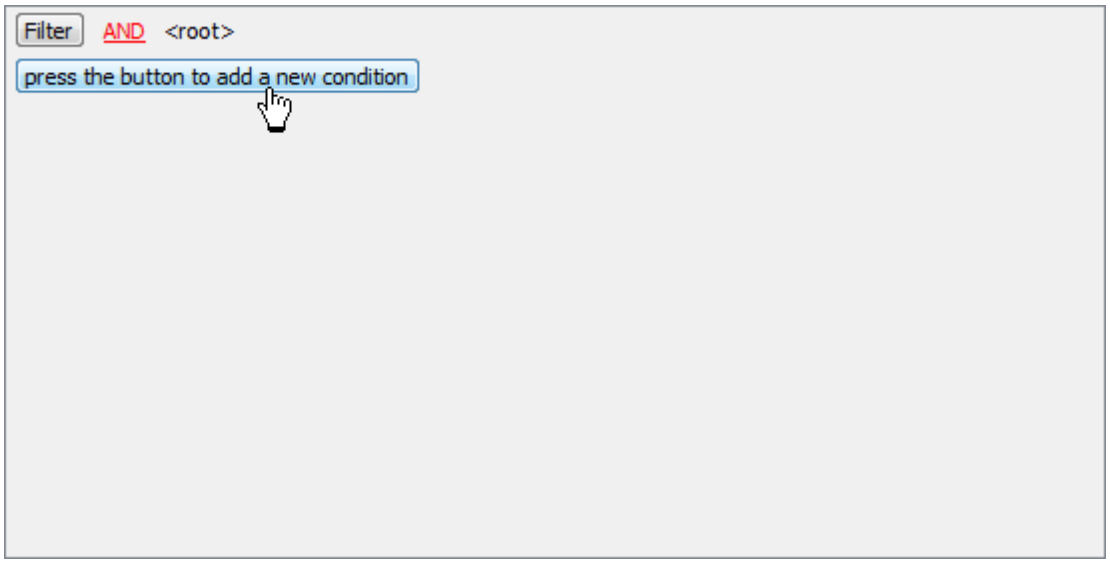



**Specifying the WHERE condition**

SQLite Maestro provides the Filter Builder dialog to facilitate a creating of the WHERE condition.

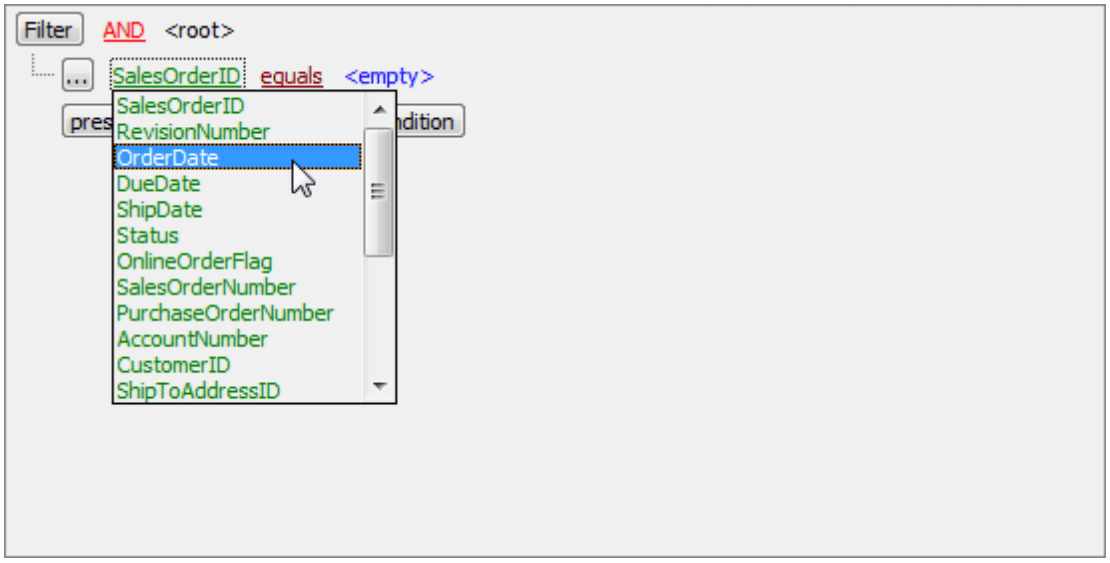
### Adding a new condition to the filter

Suppose we need to select orders from the sample table *Orders* made between 01.02.2010 and 10.02.2010. These criteria are applied to the *OrderDate* column. Press the button to add this condition. Alternatively, you can use the Filter button and select the Add Condition option from the drop-down menu.



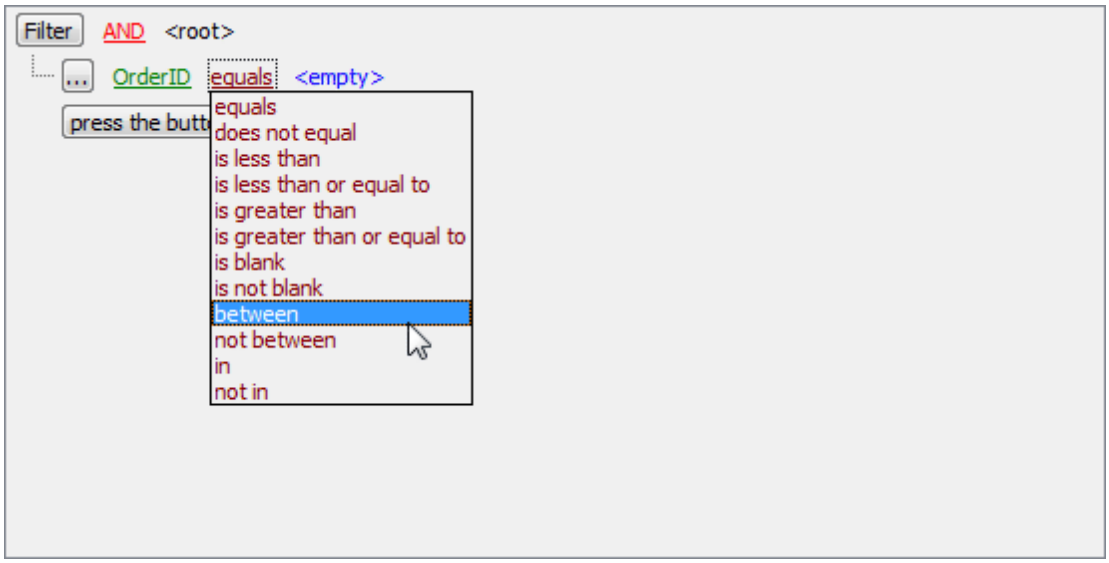

### Setting a filter criteria in the condition

Select the *OrderDate* column in the drop-down list of the available columns.




### Setting an operator in the condition

Set the proper operator. In our example it is BETWEEN.




### Setting criteria values in the condition

Next, you need to specify the range values for the selected operator. The editor used in value boxes is determined by the editor type assigned to the corresponding column.

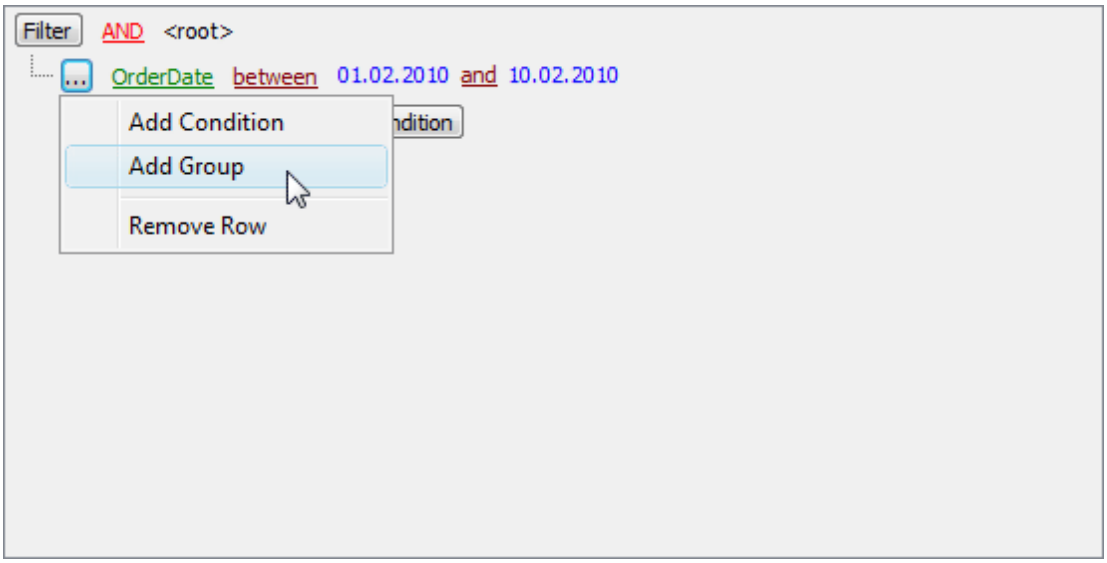

Now use the Apply button to see the filter result.

You can add additional conditions to the same root level to be combined by the AND operator.

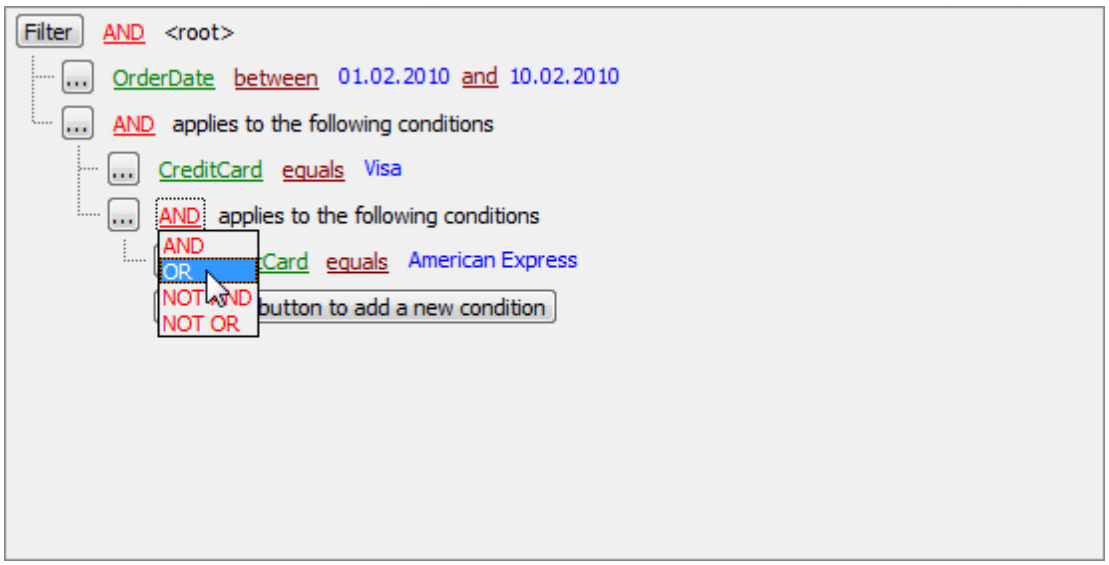
### Adding a new group

Suppose we need to select orders made between 01.02.2010 and 10.02.2010 and payed via 'Visa' or 'American Express'. This is a complex filter condition combining

two simple conditions with the OR operator. Conditions from the same root level are combined by the AND operator. To add a condition combined with the previous one with the OR (NOT AND, NOT OR) operator, use a new group of conditions.




The next screen represents the finished filter conditions for this example.




**Adding view subitems**

On this step of the wizard you can specify triggers of the new view.

To add a new object:

Press Insert or use pop-up menu to open the Create Trigger Wizard 77;

- Specify new object properties.

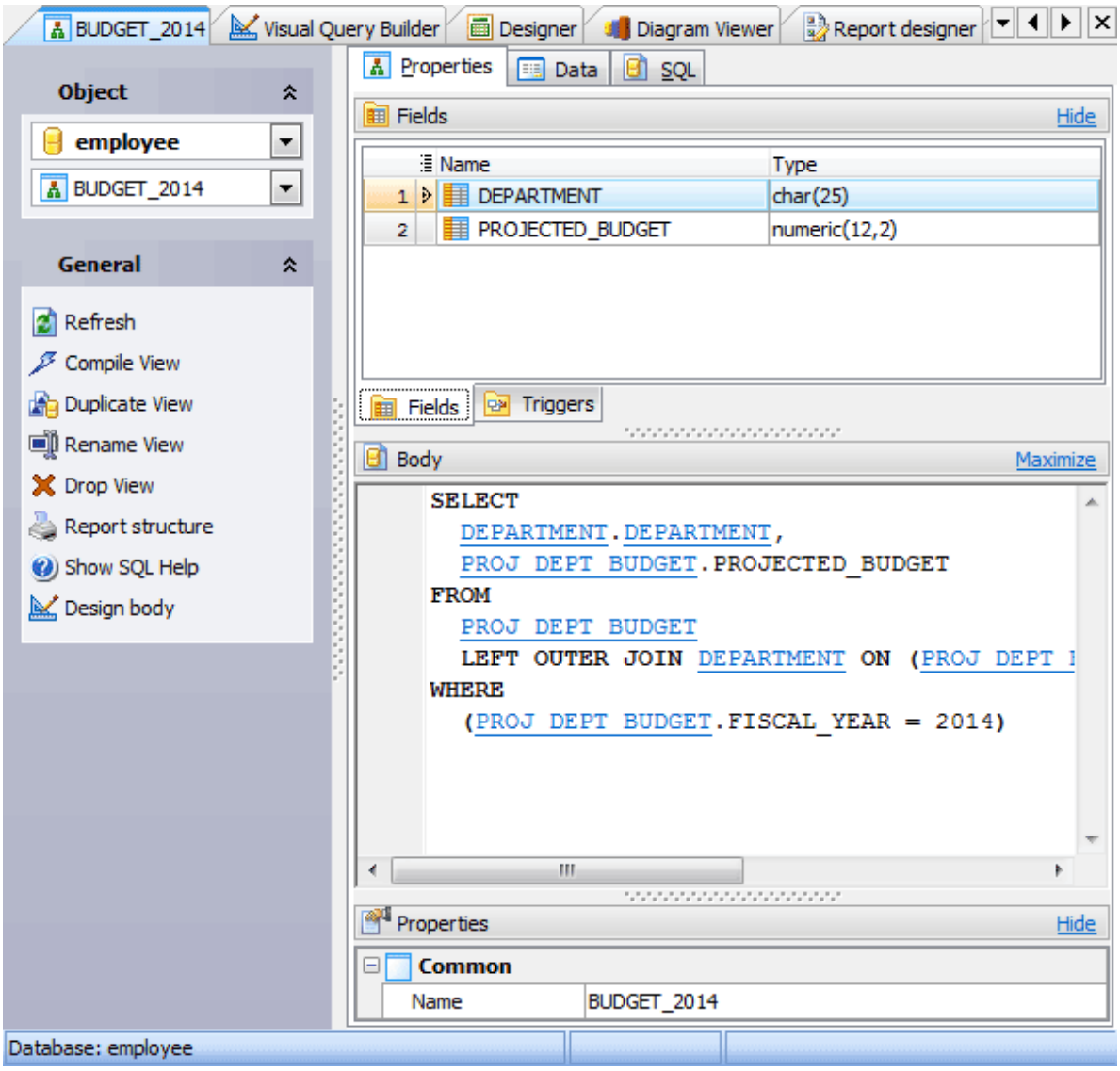
## 5.2.2 View Editor

View Editor allows you to edit the existing view definition (view name and the SELECT statement it implements).

The basic principles of Object Editors in SQLite Maestro are explained in a separate topic 45. Below you will find a description of editor tabs that are unique for the current object.

- Editing view properties 89
- Viewing data 90

**See also:** Create View Wizard 84




### 5.2.2.1 Editing view properties

View Editor provides you with an ability to edit view properties. The Properties tab allows you to change the view name, view definition.

Subitems

Every tab is intended for managing some view subitems (e.g. *fields, triggers*). Each

object can be opened in its editor. Use grid's popup menu to create new, edit or drop the selected view subitems. Using the popup menu you can also copy the selected objects to clipboard or paste previously copied objects.
You can operate on several objects at a time. For this you have to select view objects with the **Shift** or the **Ctrl** key pressed. After a group of objects is selected you can operate on it, e.g. *delete several objects at once*, as if it were a single object.

**See also:** Fields 68 , Triggers 76

Body
You can edit the view definition in this box.

Use the Name field to specify the view name.

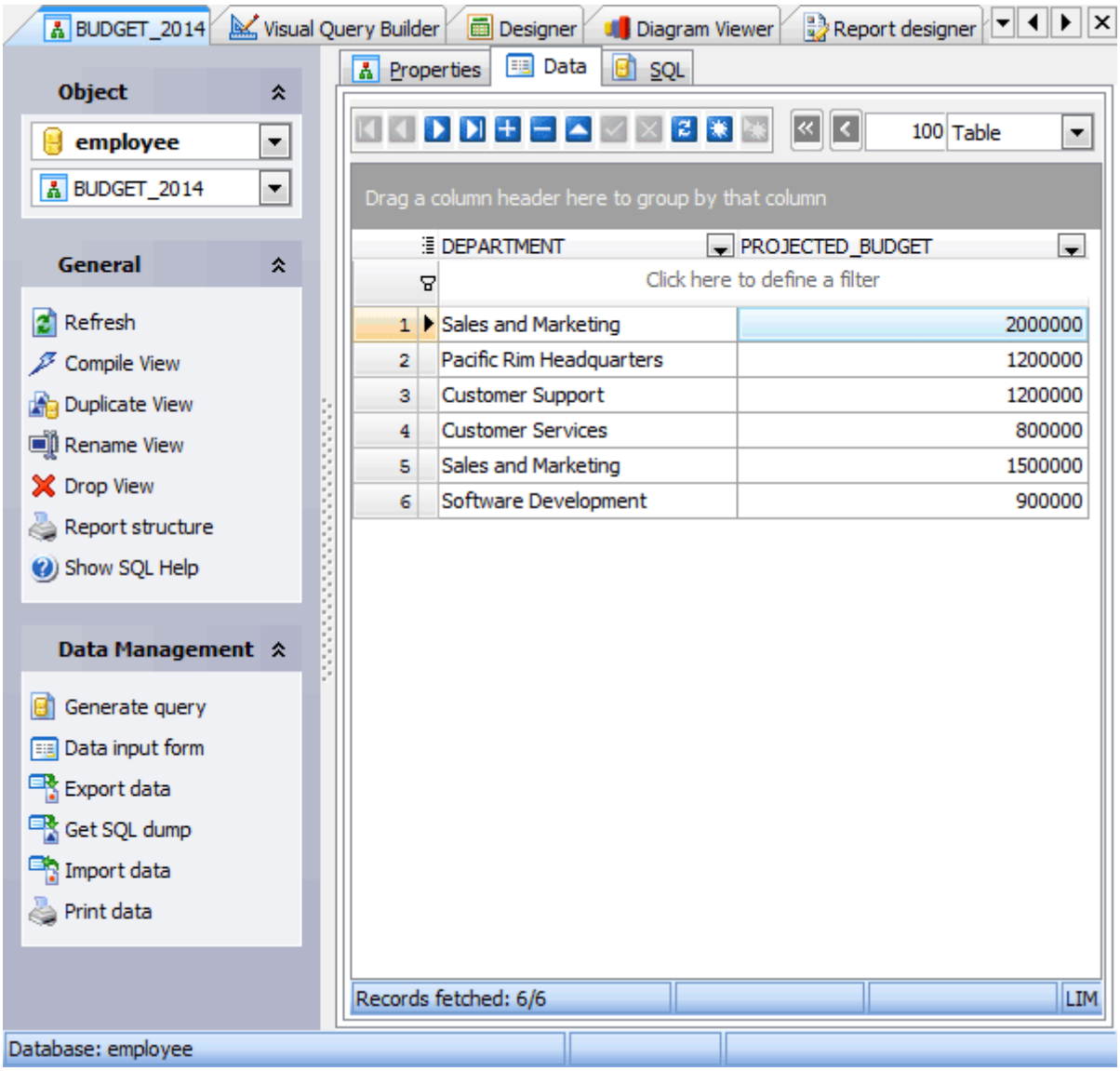
**Note:** the name of the object must be unique among all the object names in its container. Moreover, all the objects that are source of data need unique names among themselves. You can use any identifier that is allowed by SQLite server.

To apply the changes, select the Apply Changes item in the Navigation bar or use **Ctrl +F9** or **Ctrl+F7** shortcut keys.

It is also possible to modify object properties without opening the object editor: use the Object Properties item of the popup menu of the selected object from the explorer tree.

#### 5.2.2.2 Viewing data

The Data tab displays the data represented in the view as a grid (see Data View for details). The popup menu of this tab and the Data Management navigation bar allow you to export data, get SQL dump, set the value of the selected record to *Null* or to *Now* (for Date values). In tables with BLOB fields you can also call BLOB Editor to view and edit the BLOB fields.



## 5.3 Users

Activate the user authentication logic by including the ext/userauth/userauth.c source code file in the build and adding the -DSQLITE_USER_AUTHENTICATION compile-time option. With this extension, a database can be marked as requiring authentication. By default a database does not require authentication. To find out more about SQLite authentication, see the official SQLite website.

To create a new user,

- select the Users list or any object from that list in the explorer tree;
- select the Create New User... item from the popup menu;
- specify the Name of the new user, check the Is admin option to give the new user admin privilege, and enter the Password to be associated with the new user.

Any user can change their own password. Only an admin user can change another users login credentials or admin privilege setting. No user may change their own admin privilege setting.

To change users login credentials or admin privilege setting,

- select the user for editing in the explorer tree (type the first letters of the user name for quick search);
- select the Edit User ... item from the popup menu;
- modify user setting within the User Editor.

# 6 Queries

SQLite Maestro provides several tools for working with SQL queries:

- SQL Editor 95 for editing the query text directly and executing SELECT queries;
- Visual Query Builder 100 for building SELECT, INSERT, UPDATE and DELETE queries visually;
- SQL Script Editor 146 for executing SQL scripts.

Both SQL Editor and Visual Query Builder supports parameters in queries 99

Save frequently used queries to profiles and manage them in the same way as if they were database objects. This means that you can view queries in the explorer tree, in Object Manager and Object Browser, use them in BLOB Viewer and Diagram Viewer, perform drag-and-drop operation upon them, and copy them to clipboard like you copy an object.

### How can I create a new SQL query?

New queries can be created either in SQL Editor or in Visual Query Builder.

To create a new query in SQL Editor:

- select the Tools | SQL Editor main menu item;
- select the Create New Query item from the navigation bar;
- edit the query text on the Editor tab of SQL Editor.

To create a new query in Query Builder:

- select the Tools | Visual Query Builder main menu item;
- build the query on the Diagram tab of Visual Query Builder.

SQLite Maestro also provides you with SQL Generator, a tool to create simple SQL statements.

### How can I save a query to a file/profile?

To save an existing query from the editor:

- to save the query to profile, use the Save to profile link from the Navigation bar.
- to save the current query to an **.sql* file, select the Save to file item from the Navigation bar;
- to save all the opened queries to one file, select the Save all queries item from the Navigation bar;
- to save the designed diagram, select the Save diagram item from the Navigation bar of the Diagram tab of Visual Query Builder.

### How can I edit an existing SQL query?

Queries can be opened either in SQL Editor or in Visual Query Builder.

You can open the query directly from the Explorer tree with a double click or using popup menu. By default it will be opened in SQL Editor.

To edit a query from file, open SQL Editor (the Tools | SQL Editor main menu item) and use Load From File from the Navigation Bar of SQL Editor to load a query from an **.sql* file.

To edit a query in Query Builder, open the builder (the Tools | Visual Query Builder main menu item) and then perform one of the following operations:

- to edit a query from a profile, drag it from the Explorer and drop on the Editor tab;
- to load a previously saved diagram, use the Load Diagram item from the Navigation Bar;
- to load a query from an **.sql* file, open the Editor tab and select the Load query item from the Navigation Bar .

On the Query Builder opening the Diagram tab contains the last edited query.

### How can I execute an SQL query?

To execute a query:

- create a new query or open the existing one;
- select the Execute Query item from the navigation bar of SQL Editor or Visual Query Builder respectively;
- view/edit the returned data on the Result tab.

## 6.1 SQL Editor

SQL Editor is a tool for creating and executing SELECT queries. It allows you to create and edit SQL text for the query, prepare and execute queries, and view the results of execution. To open SQL Editor, select the Tools | SQL Editor main menu item. The most popular query management actions (creating, editing, deleting) are covered by the corresponding topic 93.

To use the editor for working with several queries, open new query tab with the Create new query link on the Navigation bar. With the tabs' popup menu you can create a new query, close existing one, save the query to profile, etc even if editor's navigation bar is closed. Queries' tabs can been 197 displayed at the all sides of the editor (bottom, top, left or right).

For more information about query executing and working with query result see the corresponding topic 97.

### Working with query text

The popup menu of the editing area provides you with standard operations for working with text such as *Cut* (**Ctrl+X**), *Copy* (**Ctrl+C**), *Paste* (**Ctrl +V**), *Undo* (**Ctrl +Z**), *Redo* (**Shift+Ctrl+Z**) along with a possibility to convert selected text to different cases (*lower, UPPER,* and *NameCase*).

You can also comment/uncomment selected text (**Shift+Ctrl+.** and **Shift+Ctrl+,** shortcuts respectively). If no text is selected, the whole line will be commented. By the way, it is not necessary to select commented text to uncomment it, just press **Shift+Ctrl+,** having the cursor inside the commented text. Both kinds of comments (single-line and multi-line) are supported. SQL Formatter 96 is also at your disposal.

SQL Editor allows you to use Visual Query Builder 100 modal instance to design query visually and load the result query text directly in the editor area. For this purpose use the Design query link of the editor area's popup menu.

### Code completion

SQLite Maestro provides you with code completion (as on the screen below) to select from a list of tables, columns, views, or other objects without having to manually enter the object's name in the editor. You can activate the completion list by pressing the **Ctrl+Space** key combination.

### Syntax highlighting

Database objects are highlighted in the text. You can open the proper object editor by clicking the object name in the text with the **Ctrl** key pressed or with the Find Object link on the Navigation bar. To adjust the highlighting settings, use SQL highlight options 217.

### Line modification markers

Lines of code that have been edited during the current session are indicated with a yellow line in the left margin of the editor. When you save the file, the yellow markers turn green. Thus at any time, yellow markers show changed but unsaved

lines of code, and green markers show changes in this session that have been saved.

#### Find and replace text

Use find and replace to search for, and optionally, replace text in the SQL Editor. To open Find text/Replace text window, use Edit | Find/Replace main menu item, corresponding link of popup menu, or **Ctrl+F/Ctrl+H** shortcut. You can also use the Search again link to apply recent Find text dialog.

#### Transaction management

SQL Editor supports the explicit transaction management. You can execute queries either in autocommit mode (default behavior) or manage transactions manually. In the second case you have to issue the *BEGIN TRANSACTION* statement to start a transaction and explicitly end the transaction by *COMMIT* or *ROLLBACK* statements (it is also possible to use the corresponding links at the editor's navigation bar).

#### PRAGMA command executing

Using SQL Editor you can execute the PRAGMA command, that is not a part of SQL standard. The PRAGMA command is a special command used to modify the operation of the SQLite library or to query the library for internal (non-table) data. Using the PRAGMA command you can set the auto-vacuum flag in the database, change the maximum number of database disk pages that SQLite will hold in memory simultaneously, change the count-changes flag, etc.

#### Managing the query text

To load query from .sql file, use the corresponding link on the Navigation bar. You can also find there links allowing you to save query text to file, export the contents of the editor to RTF and HTML formats (to file or to clipboard), copy the selected text from to clipboard as a ready-to-use string written in one of the following programming languages: C#, C++, Delphi (Object Pascal), and Java, and also print/preview the contents of the editor.

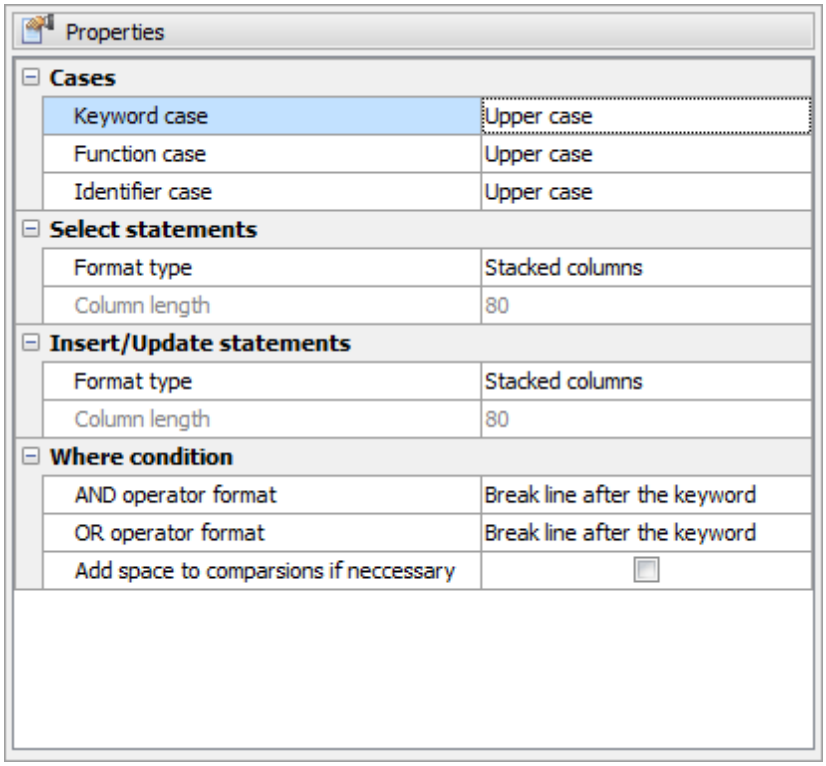
**See also:** Visual Query Builder 100, SQL Script Editor, SQL Editor Options 197

### 6.1.1 SQL Formatter

SQLite Maestro provides you with SQL Formatter for DML statements (*SELECT*, *INSERT*, *UPDATE* and *DELETE*). It can be invoked through the Format SQL link on the SQL Editor's navigation bar (**Ctrl+Alt+D** shortcut).

The following options allows you to tune up SQL scripts according to your preferences.

- Cases (for keywords, functions, and identifiers);
- Format type and column length for *INSERT/UPDATE*, and *SELECT* statements;
- *AND* and *OR* operators format.




### 6.1.2 Executing query

SQL Editor provides you with several variants of the query executing.

- To execute all statements of the text area with result data, click the Execute query item of the Navigation bar or use **F5**, **F8**, or **F9** shortcuts. Statements of each tab of SQL Editor are executed together in a separate thread in order to continue your work with the software while the query is executing.

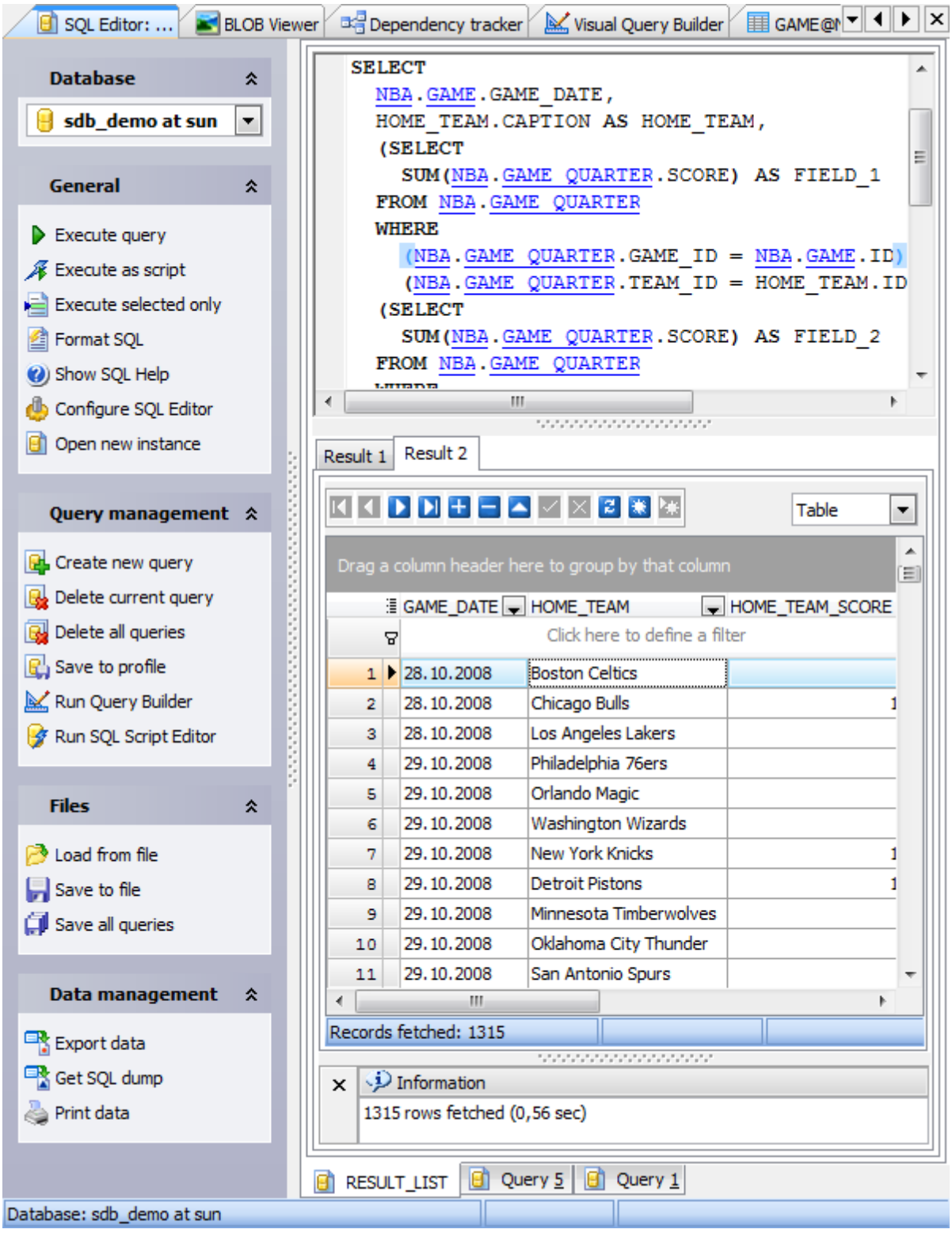
- You can also execute query as script (**Shift+F5**, **Shift+F8**, **Shift+F9**). In this case the query does not return data.

- To execute only a selected part of the query text, use Execute selected only or the **Alt+F5**, **Alt+F8**, **Alt+F9** shortcuts.

- There is also a possibility to execute a statement at the cursor position. For this purpose, use the Execute at cursor link at the Navigation bar or use the **Ctrl+F5**, **Ctrl+F8**, or **Ctrl+F9** shortcuts.

If the query text is correct, the query is executed, and if the query statement is supposed to return data (e.g. SELECT statement), the Result tab opens with the data returned by the query. If an error occurs while executing the query, execution stop is stopped and the appropriate error message is displayed in the Information tab.

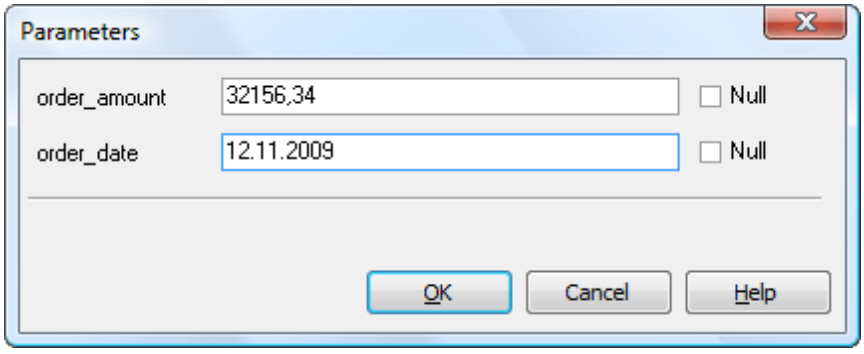
The Result area displays the result data in grid. All principles of working with data you can find in Data Management 109 section.



### 6.1.3 Query Parameters

Both SQL Editor 95 and Visual Query Builder 100 admit to using parameters inside the query text. A parameter is a kind of variable. Its value can be specified just before the query execution in the Parameters window. In the query text the parameter should appear as an identifier with a colon (':') at its beginning, e.g. :*param1*.

The Parameters dialog is used to specify the query parameters as well as values of the input parameters of procedures or functions before the execution. Enter parameter values and click the OK button to apply the values and execute the query or use the Cancel button to abort the execution.




**Note:** To allow use parameters in query text, check the corresponding option at the Tools 194 tab of SQLite Maestro Options.

## 6.2 Visual Query Builder

Visual Query Builder is provided for building data manipulation statements visually. It allows you to create and edit queries without knowledge of SQL, prepare and execute queries, and view the results of the execution. Builder can produce *INSERT*, *UPDATE* and *DELETE* statements as well as the *SELECT* statements containing subqueries and/or *UNIONs*. One instance of the builder can be used only for one query at a time. To open Visual Query Builder, select the Tools | Query Builder main menu item.

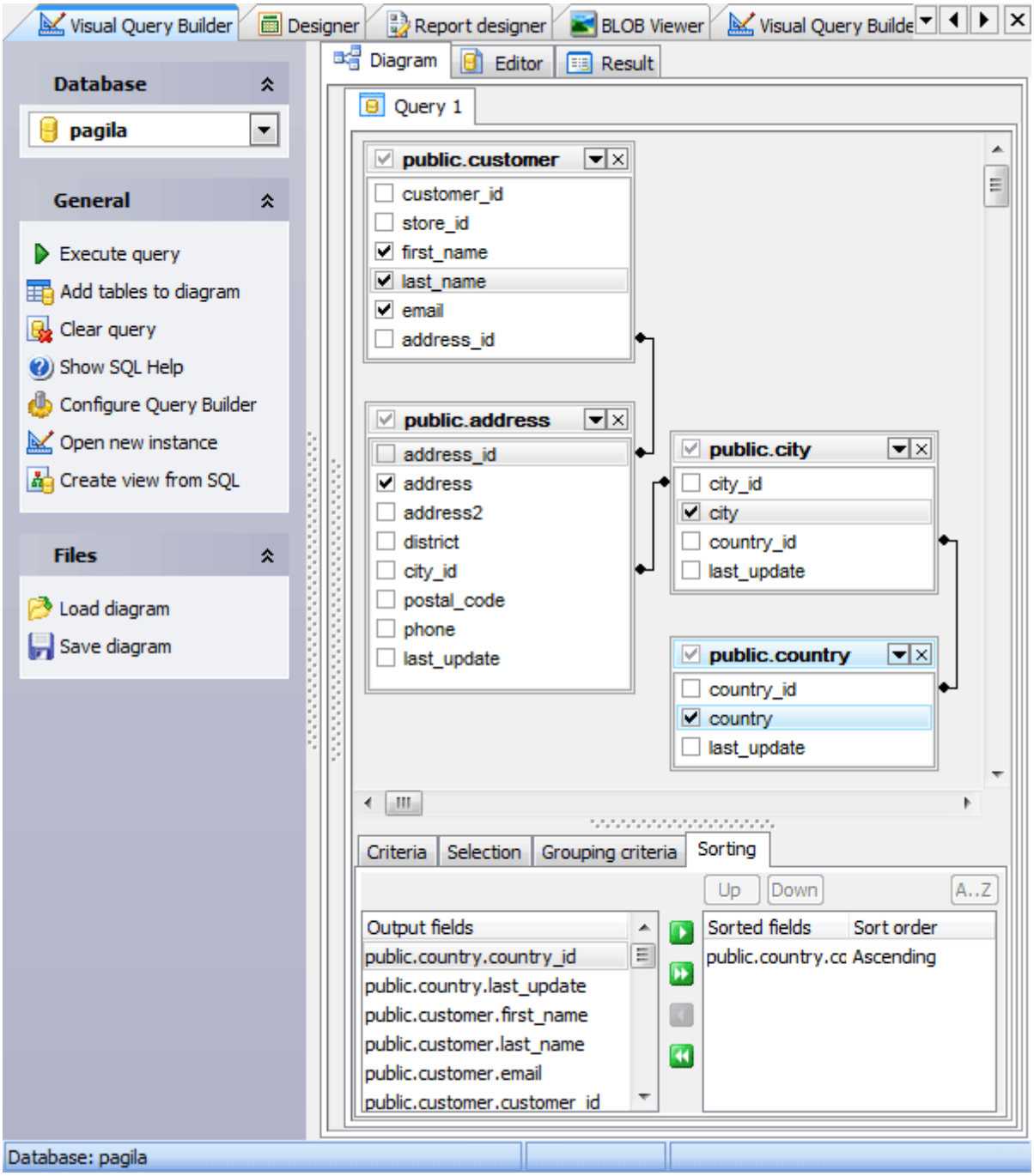
The most popular query management actions (creating, editing, deleting) are covered by the corresponding topic 93.

Builder consists of 3 tabs:

- Diagram 101 - to create a query from a graphical interface,
- Editor 106 – to modify the query text before its executing,
- Result 107 (appears after the query executing) – for working with data the query returns.

The builder also allows you to create a view based on the prepared query. For this purpose after the query creating and possibly testing use the Create view from SQL link at the Navigation bar to invoke the corresponding window, and specify view properties 84.

**See also:** SQL Editor 95, Visual Query Builder Options 199, Query Parameters 99




## 6.2.1 Creating query diagram

The Diagram tab is the main area of Visual Query Builder. Using its graphical interface you can select tables and views, join or select columns, and add conditions to the statement.

The Query Explorer field occupies the left side of Visual Query Builder main window. All the queries included in the result query (unions, subqueries) are represented at the Query Explorer for prompt access. They are grouped by kind and listed under the according node.

Below step-by-step description of query diagram creating.

- **Select the statement type** from the drop-down list at the top of the Diagram tab ( *SELECT, INSERT, UPDATE, DELETE*).

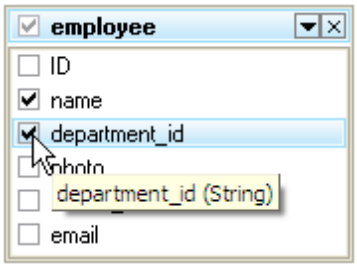
### Add required tables to the Diagram area.

Use the Add Table(s) link of the area popup menu and select tables from the opened window (Use **Ctrl** or **Shift** pressed to select several tables).
To add only one table, simply drag it from the Database Explorer or from Object Manager/Browser to the Diagram area.

To remove the object, close its window or select the object and press the **Delete** key.

### Pick up columns with data to output

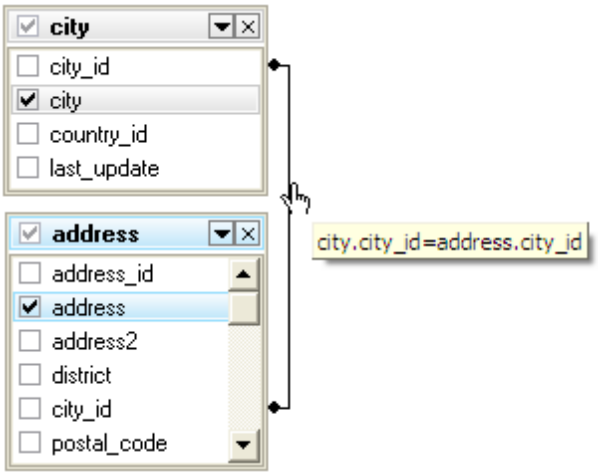
To include a table field to the query, tick off the option box to the left of the field name in the list or double-click it to see the blue icon next to the field name.



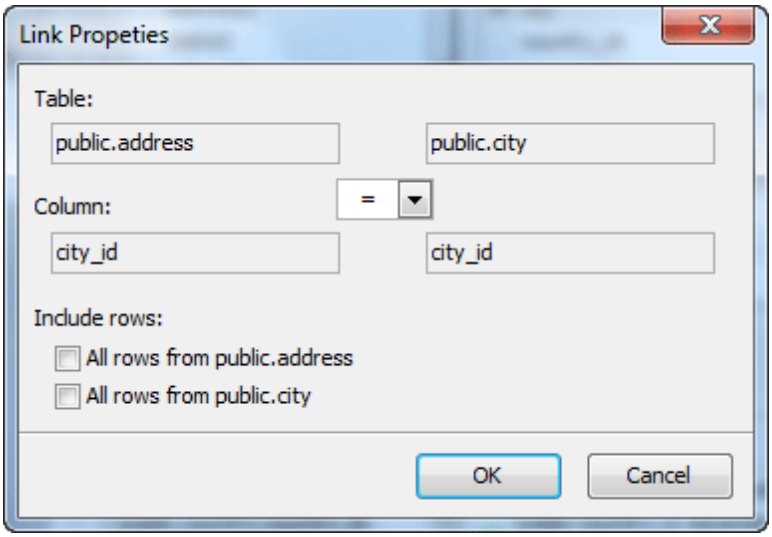

To include all the table fields, tick off the option box to the left of the table caption. In case none fields is included, the SQL statement is generated as SELECT * FROM <Table_Name>, i.e. all the fields are selected.
To remove the fields from the query, uncheck the corresponding boxes.

### Join tables if necessary

Visual Query Builder supports *INNER JOIN, LEFT OUTER JOIN*, and *RIGHT OUTER JOIN*. To associate database objects by two fields, drag a field from the first object's field list to a field from another object's field list. This will set a link between these objects by the selected fields. After you finish dragging, a line will appear between the linked fields. By default *INNER JOIN* syntax will be used.




You can view the properties of the object association from the query tab directly. Just set the cursor to the link line. A hint containing the association condition will appear.
To edit the properties, select the Properties item from the popup menu. A dialog window will appear, there you can change the association condition by selecting it from the list (=, >, <, >=, <=, <>). To create *LEFT OUTER JOIN / RIGHT OUTER JOIN* statements, check All rows from first_table/All rows from second_table from the window.




To remove a link between objects, select the Delete Link item from the popup menu.

To delete all the links of an object, click the '-' button next to the object alias. To insert a point to the link line, select the Insert Point item from the popup menu, and the new point will appear. Using the point you can move the link line. It does not cause any changes in the query but makes the diagram performance vivid and the visual building more obvious.

### Specify WHERE condition

Criteria tab allows you to set the selection conditions. To add a condition, click the button on the left and select the Add condition item in the popup menu. Edit the condition by clicking its parts and setting their values. Clicking the button to the left of the condition string activates the popup menu which allows you to add a new condition of the same enclosure level, add a new enclosure level, delete the current condition, open or close the condition if it is composite.

A simple condition string contains three fields: an argument, a condition and a second argument (if required for the condition). Clicking each field allows you to set its value. Clicking the argument field make it possible to edit the argument as a text field. You can set a table name or a definite value in this field. The popup menu of the field in the editing mode which contains the Insert Field function (also called by the **Shift+Enter** hot keys combination).

This function allows you to choose a field from the list of all the table fields available in the query. The popup menu of the condition field allows you to specify the condition you need. The way of proceeding the condition is set in the upper string of the area (*All, Any, None,* or *Not all* of the following are possible variants). Click the underlined word to modify it.

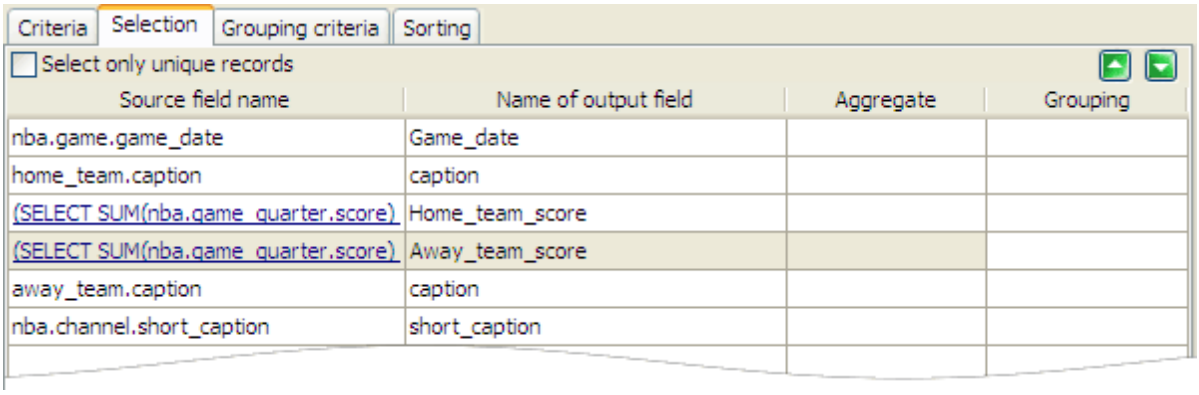

### Create subquery if necessary

You can add one or more subqueries to further limit the tables and records returned from a *SELECT* statement when setting a *WHERE* condition in the query builder. To add subquery:
- open Criteria tab;
- click the button on the left and select the Add condition item in the popup menu;
- right click on an argument field and use the Insert query link of the popup menu;
- build the subquery in the new query tab that have appeared in the Diagram area,

or
- open Selection tab;
- use the Insert query link of the popup menu;
- build the subquery in the new query tab that have appeared in the Diagram area.

### Use column aliases

You can set/edit the object alias directly from the query tab by double-clicking the object caption.




In case the alias is used as the expression's column name use the Selection tab displays the output fields of the query. It allows you to edit the names of the query or CASE output fields, set their displaying order and set the aggregate functions (*SUM, MIN, MAX, AVG*, etc.) for each field.

| | |
|---|---|
| *AVG* | Returns the average of the values in a group |
| *BIT_AND* | Returns the bitwise AND of all bits in the expression. |
| *BIT_OR* | Returns the bitwise OR of all bits in the expression. |
| *COUNT* | Returns the total number of items in a column. This function does not ignore NULL values when calculating results. |
| *GROUP_CONCAT* | Returns a string result with the concatenated non-NULL values from a group. |
| *MAX* | Returns the maximum value for the column. |
| *MIN* | Returns the minimum value for the column. |
| *STD* | Returns the population standard deviation of the expression. |
| *STDDEV* | Returns the sample standard deviation of a numeric expression evaluated over a set. |
| *SUM* | Returns the sum of all the values in the expression. |
| *VARIANCE* | Returns the population standard variance of the expression. |

To remove the field from the list, select the Delete current row item from the popup menu of the field row.
To modify the input query field, double-click it and then type the field name or select one from the drop-down list.
To modify the output query field name, double-click it and enter the field name.

### DISTINCT option

To specify removal of duplicate rows from the result set, open the Selection tab and check the Select only unique records box.

### Add HAVING statement

Set the conditions to be included into the HAVING statement within the Grouping Criteria tab. They are set in the same way as the *WHERE* conditions. To set the aggregate function for the field, double-click the field row in the Aggregate column and then type the function name or select one from the drop-down list.

### ORDER BY clause

Set the way of sorting the query records within the Sorting tab. The field list on the left represents all the output query fields; the list on the right contains fields by which the query records will be sorted. To move the field from one list to another, drag the selected field or use the Add and Remove buttons. To change the sorting order, select a field in the right list and move it using the Up and Down buttons.

To change the sorting direction, select a filed in the right list and switch the direction (*Ascending, Descending*) using the A..Z/Z..A button.

#### Create UNIONs

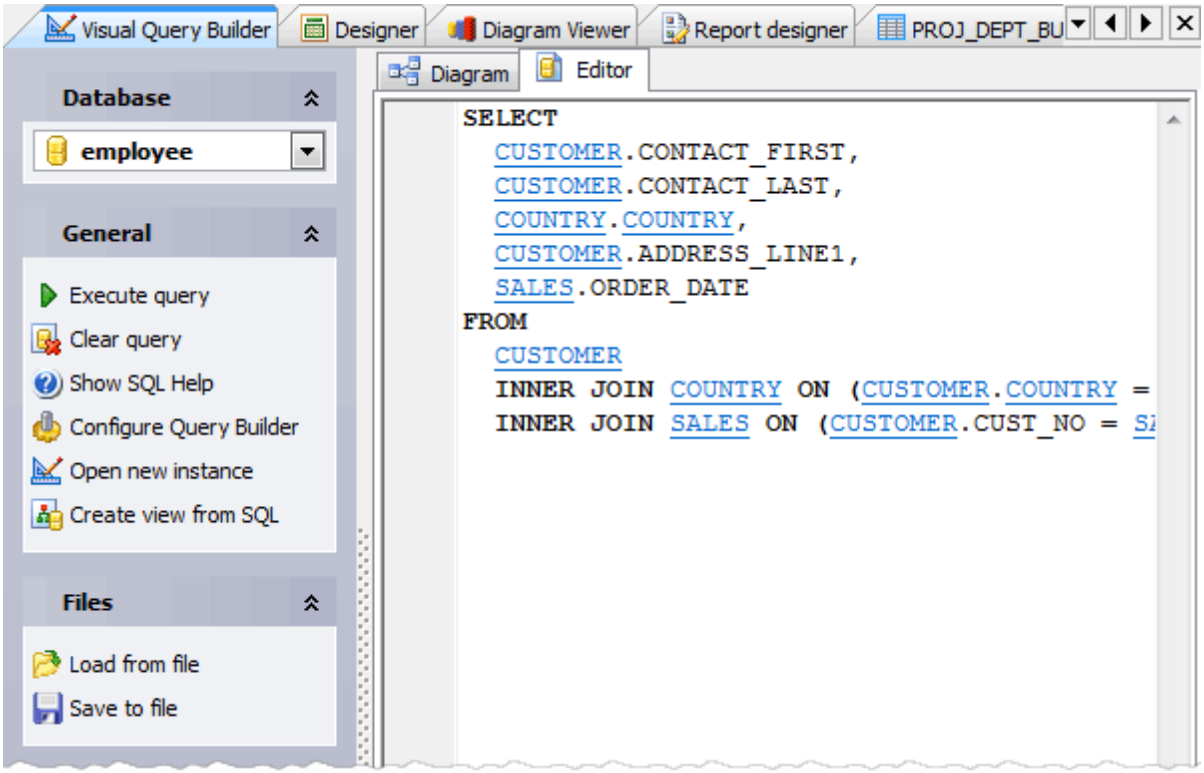
To combine the result from multiple SELECT statements into a single result set, use the Add union link of the Query Explorer popup menu.

**Note:** The column names from the first SELECT statement are used as the column names for the results returned.
Selected columns listed in corresponding positions of each SELECT statement should have the same data type.

### 6.2.2 Working with editor area

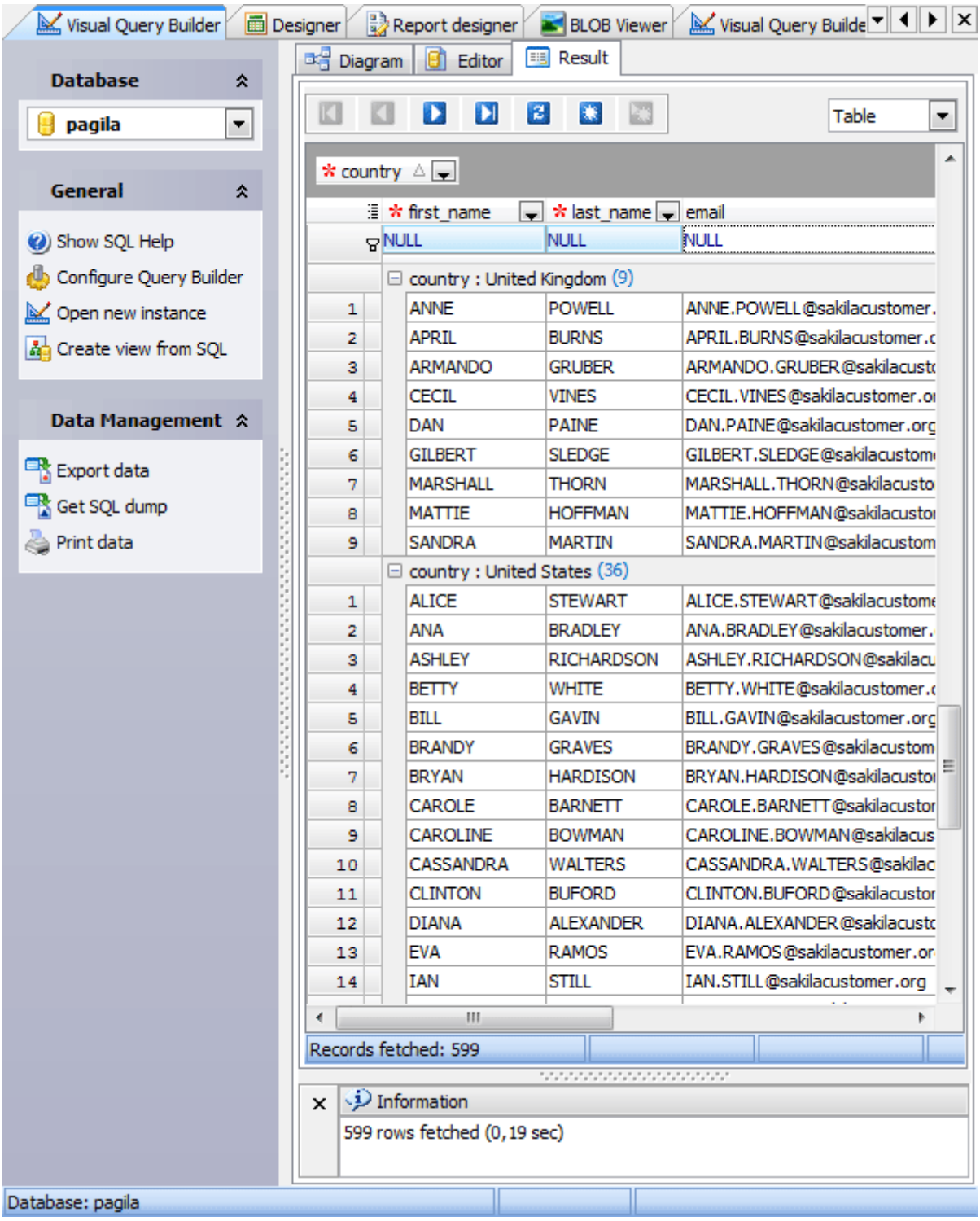
In the Editor area the query text is automatically generated while you are building the query.

You can edit this text according to the rules of SQL, and all the changes will be displayed on the Diagram page of Visual Query Builder.



### 6.2.3 Executing query

To execute the query select the Execute item in the navigation bar. After that the Result tab is displayed. This page contains the result data returned by the query, as a grid (see Data View for details). The popup menu of this tab and the items of the navigation bar allow you to export data and get SQL dump.



# 7 Data Management

Query results and table data are displayed on the Data 66 or Result 97 tabs of Table Editor 64, SQL Editor 95 or Visual Query Builder 100.

Data are displayed as a grid (or as info cards) which provide a lot of useful features such as editing, grouping, sorting, filtering, etc. See Data View 110 for details.

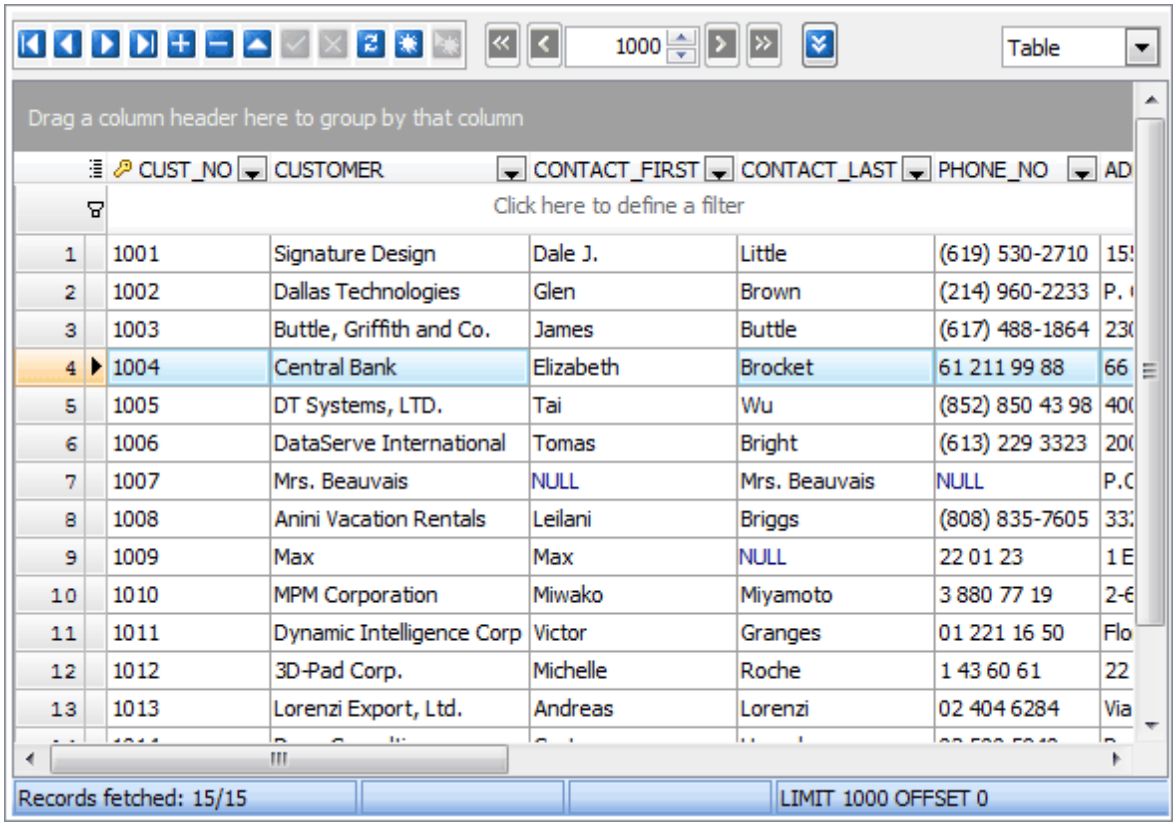
Navigation bars of these tabs as well as popup menus of their working areas places at your disposal the following functions for managing data:

- Export Data 126 allows you to export data to various formats, including MS Excel, MS Access, RTF, HTML, PDF and more.
- Get SQL Dump 133 exports data to the SQL script as a number of INSERT statements.
- Import Data 136 provides you with possibility to import data from MS Excel, MS Access, DBF, XML, TXT, and CSV.
- Edit BLOB 121 allows you to view and edit the content of BLOB and TEXT fields.

## 7.1 Data View

SQLite Maestro represents all data (stored in tables and views, results of queries and procedures) in grid 111 or in info cards 116. By default, data is displayed in a grid - tabular view of data. To change the type of the data representation, use the drop-down list at the top of the tab. Both of the data representations support UNICODE/UTF-8 data. The status bar displays the number of records in the current data set. To reset grid to default settings, open the Data tab when holding the **Ctrl** key.

**Note:** For databases in UTF-8 encoding it is necessary to specify, which string fields are used to store Unicode data (available options are "Only nvarchar(xx) fields" and "All the string fields"). For databases in UTF-16 encoding no such actions are required.




**Navigation buttons**
Both data representations are equipped with navigation buttons. They are represented at the top of the data tab and allow you to navigate between records and to accomplish common operations:

- To add a new record, use the *Plus* button or the **Insert** shortcut.
- To delete a new record, use the *Minus* button or the **Delete** shortcut.
- To edit an existing record, push the corresponding button or invoke the Data Input Form 117 using popup menu of the necessary record, with **Ctrl+Alt+D** shortcut, or with the corresponding link at the Navigation bar. To edit a field value, click it and enter the new one inline.

The pagination option allows you to limit the number of browsed records. By default, the

number of records represented in grid at once is 1000. To change the number of records represented in the current grid, enter the necessary value in the pagination bar. To specify the default one or to disable pagination, use the data grid option 206.

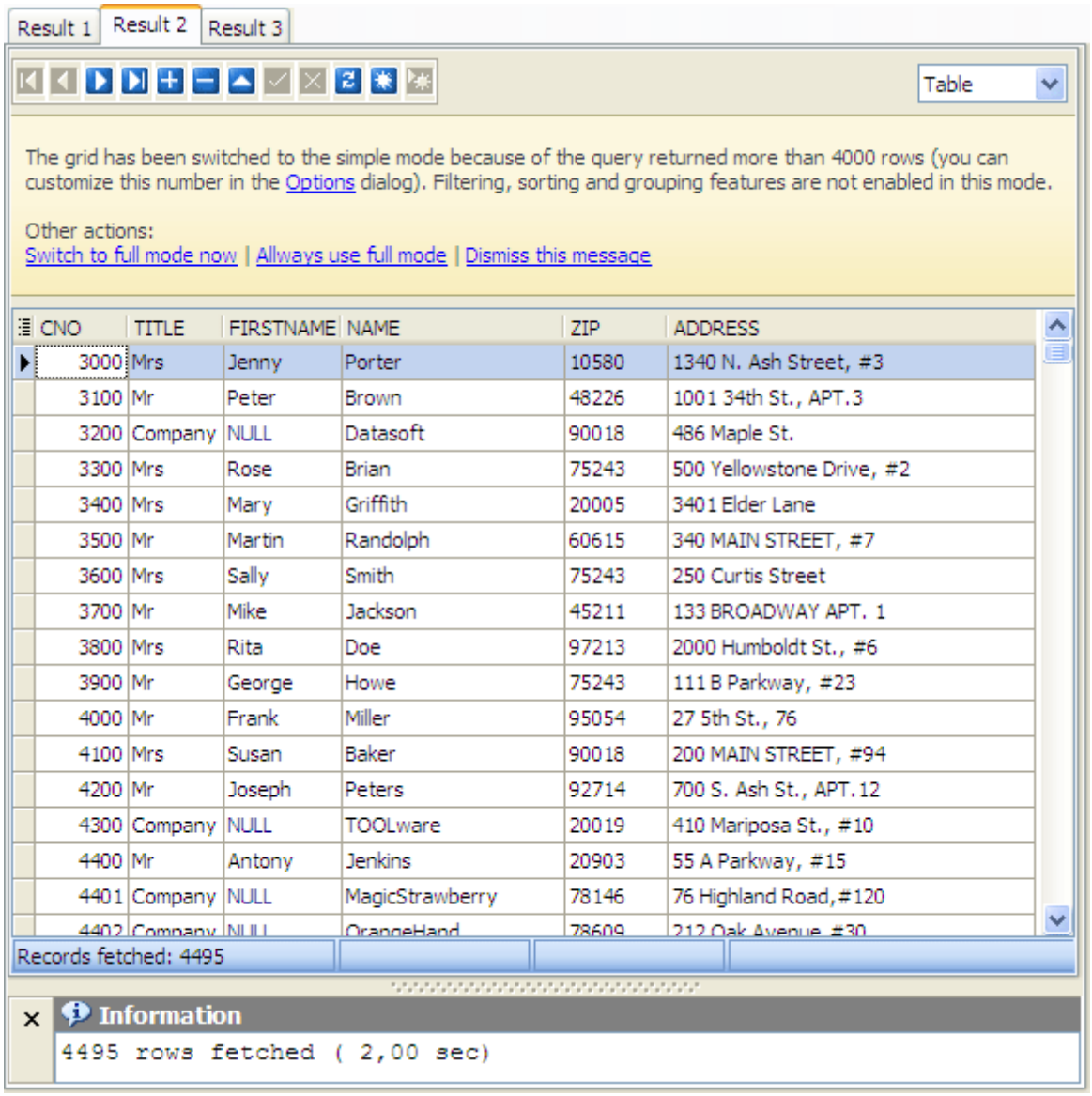
**Navigation bar**
The Data management group of the Navigation bar allows to invoke Data Input Form 117, SQL Editor 95 with SELECT query, Data Export 126, and Data Import 136 modules using corresponding links, also get SQL dump 133 of the current data set and print current data with enabled preview in WYSIWYG mode.

**See also:** Table Editor 64, SQL Editor 95, Visual Query Builder 100

### 7.1.1 Working with data grid

Our software offers two grid modes:

- the full grid mode is a fully functional data representation equipped with abilities to filter and to sort data;
- the simple grid mode is provided for working with large number of records. For speed-up data fetching, filtering and sorting abilities are not enabled in this mode. The notification bar at the top of the grid (see the picture below) announces that the grid has been switched to the simple mode.



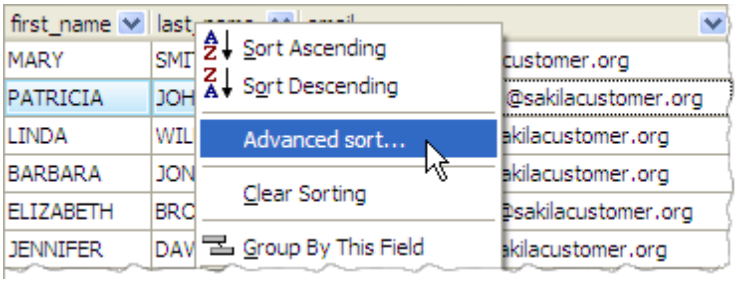

By default, the grid automatically switches to the simple mode for queries returning more than 5000 records (the number can be customized in the Options 206 dialog).

The following abilities are not available in the simple grid mode:

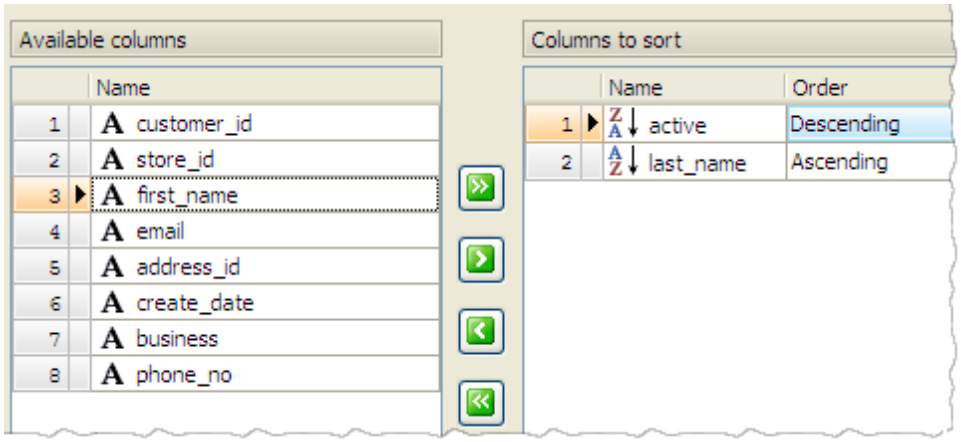
### Sorting data (only in the full grid mode)

Click the column caption to sort data by the values of this column. To select sort order (ascending or descending), use popup menu of the column caption.

To sort data on a combination of grid columns, use the Advanced sort... link of the popup menu of the grid's header. The Advanced sorting window will be shown.




Select there the columns you want to sort from the Available columns list in the order of priority. Specify the sort order if necessary and click OK.



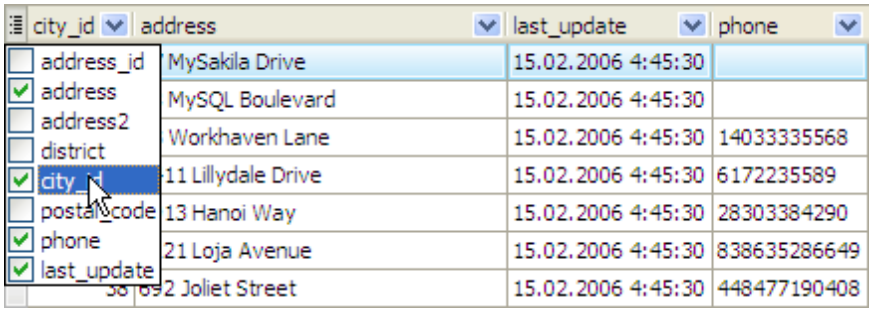

To cancel the sorting order, press **Ctrl** and click on the sorted column caption.

## Filtering represented records (only in the full grid mode)

There are several ways to filter data represented in grid. See the corresponding topic 118 to find out their descriptions.

## Hiding selected columns

You can show/hide columns using a button in the left top corner of the grid. Just check/uncheck the column in the drop-down list.

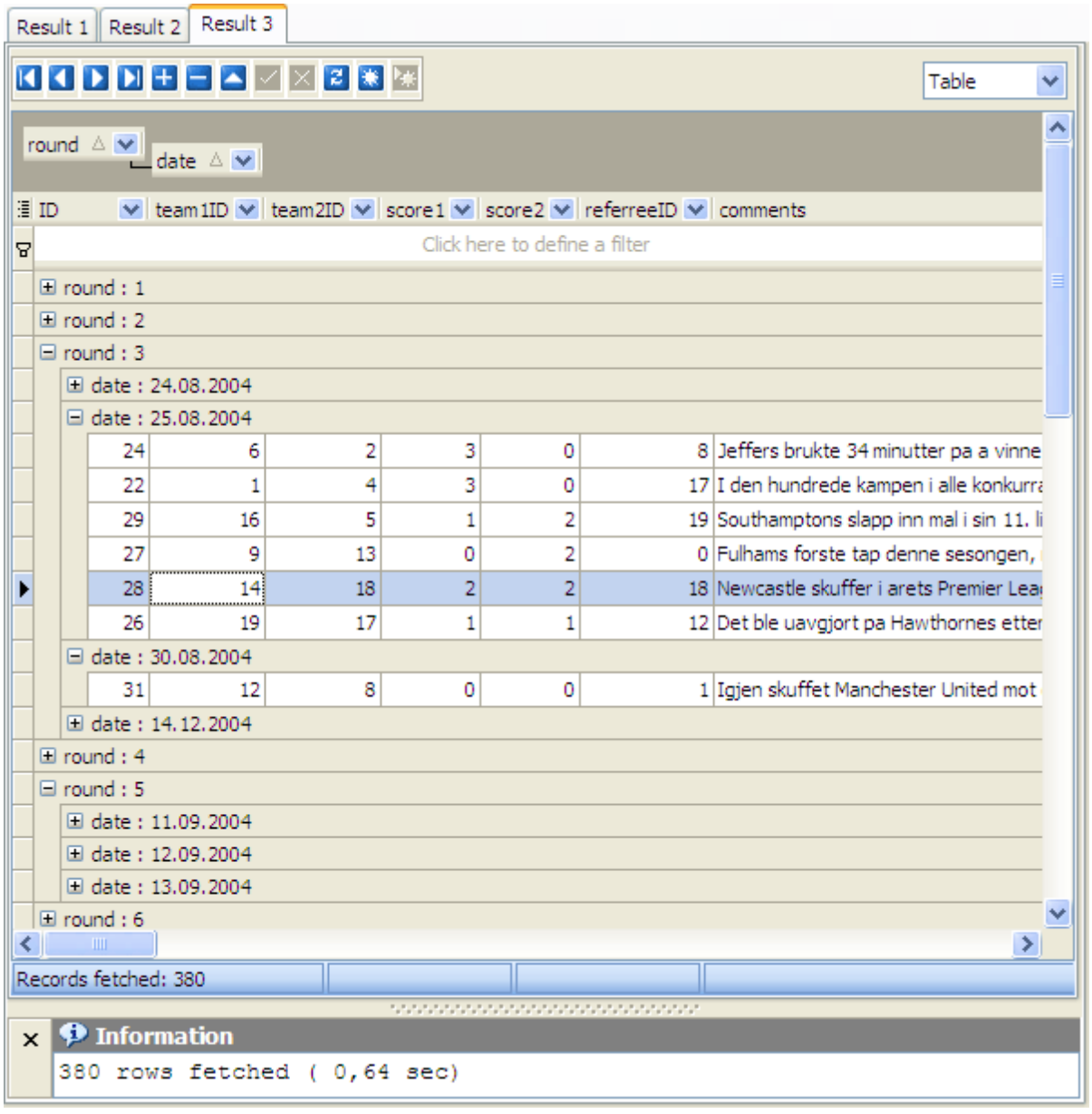



## Columns reordering

To reorder columns, use drag-n-drop.

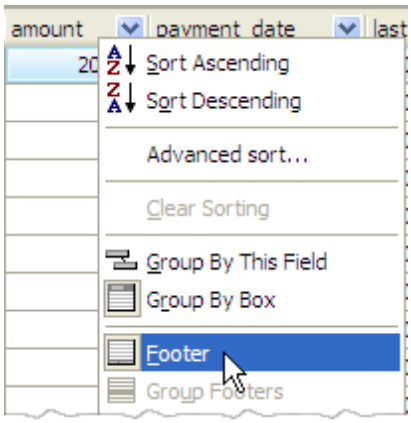
## Grouping records

You can group grid data by any of the columns by dragging the column header to the destination area. Now all the records are displayed as subnodes to the grouping row value as shown in the picture. To reverse grouping, just drag the column name from the upper area back.

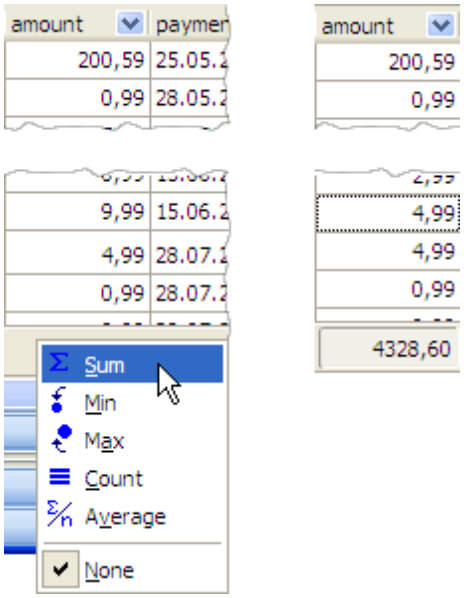



## Using aggregate functions

To get a sum of column values, a min or a max value, an average column value or an amount of records, use Data Grid Footer. Select the Footer item at the grid caption's popup menu.




It will be shown at the bottom of the grid. The popup menu of the footer allows you to get an aggregate function result calculated with the corresponding column values.



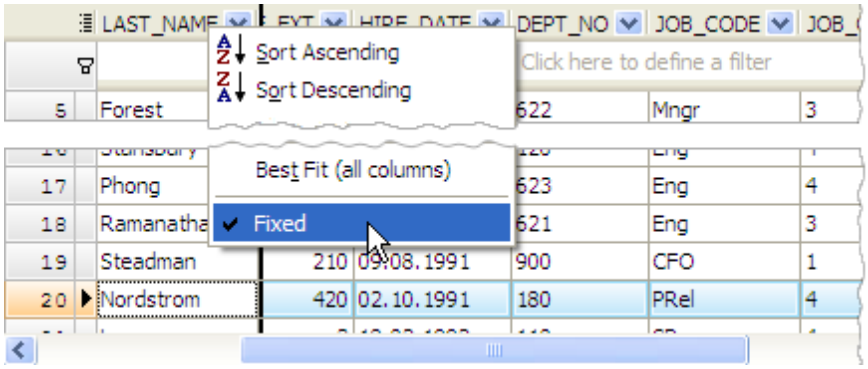

For grouped data use Group Footers.

## Data alignment

The grid's header popup menu allows to align column data. Use the Alignment link and select the alignment type.

## Fixing columns

You can fix grid columns to view them permanently when working with other grid data. To fix a column, choose the corresponding item from the grid's header popup menu.

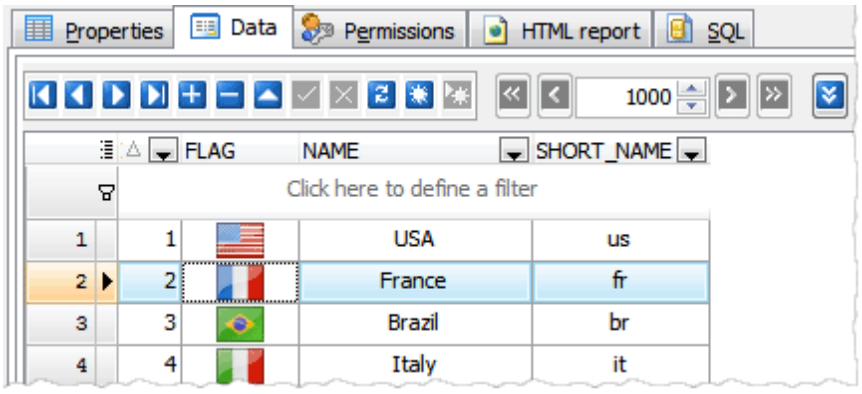



### Row numbering

There is also a possibility to display row numbers in grids. You can adjust 207 the corresponding column to yours liking.

### Inline images

It is possible to display images directly in the grid as on the picture below.



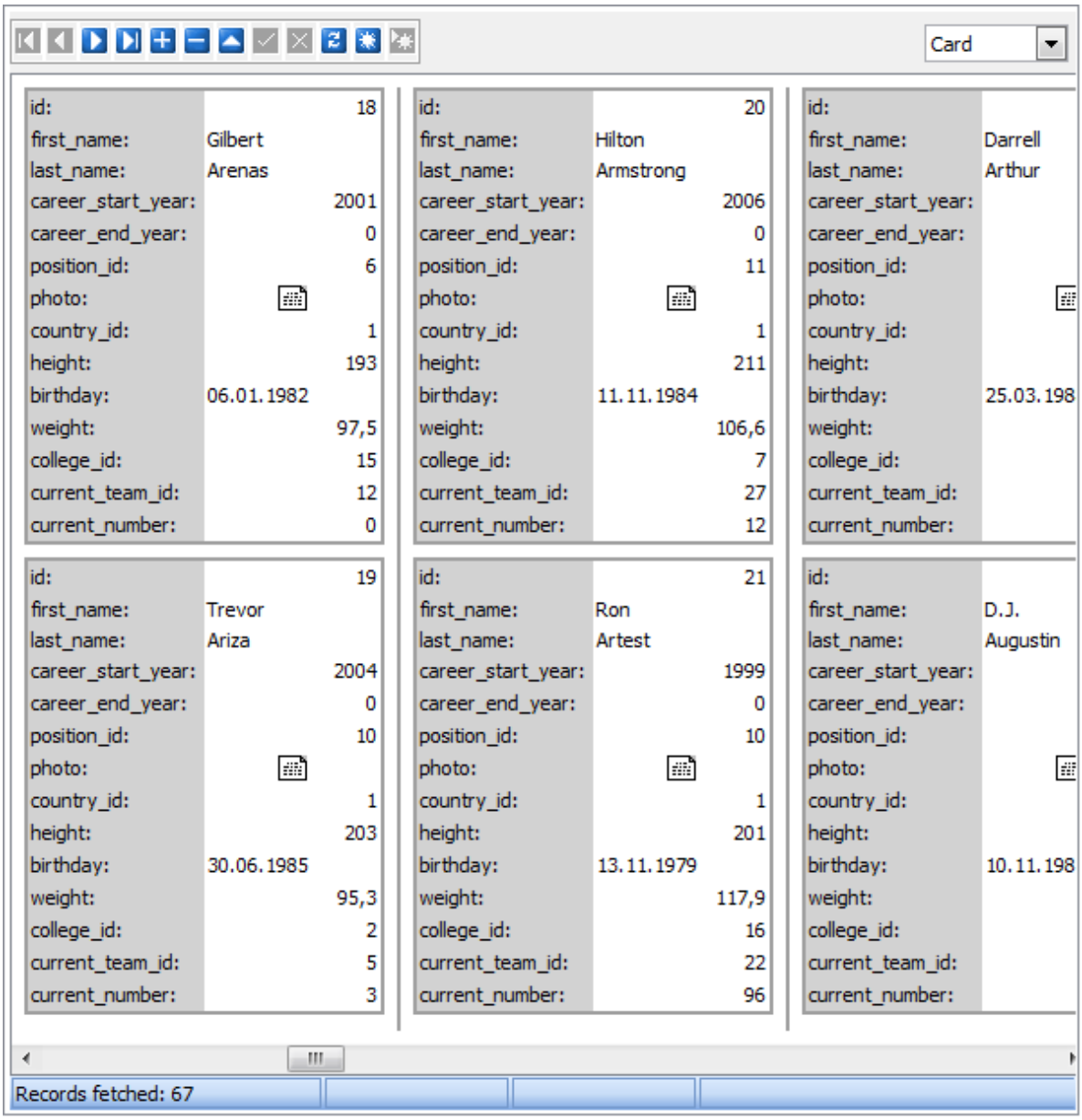

To enable/disable this view mode, open the *Enable inline images* window using the *Manage inline images* item of the column popup menu. The window options allow to set or change the image fitting and specify the row height. To add new images or change existing ones, use BLOB Editor 121 (see below).

### Working with BLOBs

To edit a BLOB field 121, double click the field, or use the corresponding popup menu item. There are also possibilities to export all BLOBs stored in the table column to files and import BLOBs from a directory to the table columns. In this case you need to set the Target directory, specify the template to be used for file names and the column BLOBs to be exported from (imported to).

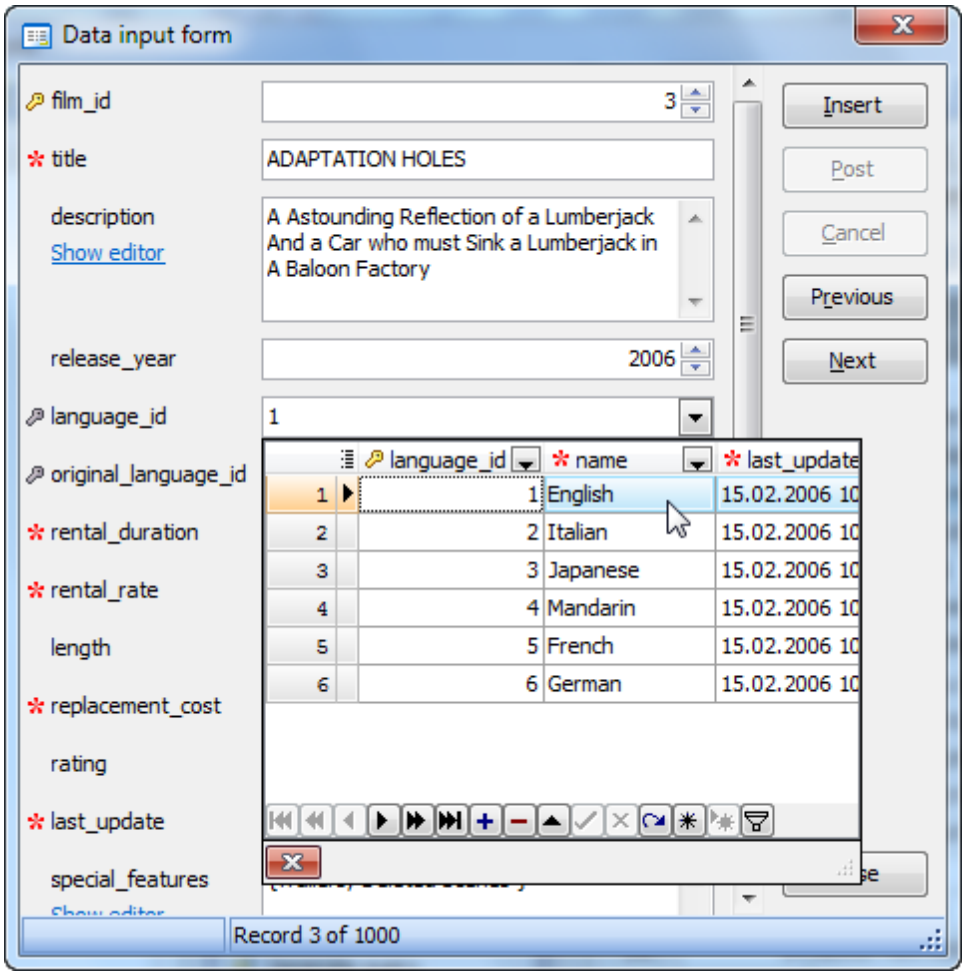
## 7.1.2 Working with info cards

**Info cards** correspond to the records. You can filter records by custom conditions 118 and edit data directly in info cards or with Data Input Form 117.




### 7.1.3 Data input form

Use Data Input Form to add new records or edit existing ones. To invoke the dialog, use the corresponding link from the popup menu or **Ctrl+Alt+D** shortcut.




The dialog's fields contain the values of the current grid row. Use the Insert button to enter values of a new record and the Post button to update the current row. The Cancel button reverts all the field values within a form to their initial values (or to the last posted values). The Previous and Next buttons allow you to switch between grid records without closing the dialog.

Controls containing values of primary and foreign key columns are marked with the 'gold key' and 'silver key' images accordingly. Controls containing values of required (NOT NULL) columns are marked with a red asterisk.

There are possibilities to use lookup editors on working with columns linked with foreign keys, a calendar for *timestamp* columns and a calculator for *decimal* ones.

### 7.1.4 Data filtering

SQLite Maestro support filtering records by the following methods:

- **Filter by a column value**

  Select the Use as Filter item from the field popup menu to filter records by the current column value.

- **Filter by several column values**

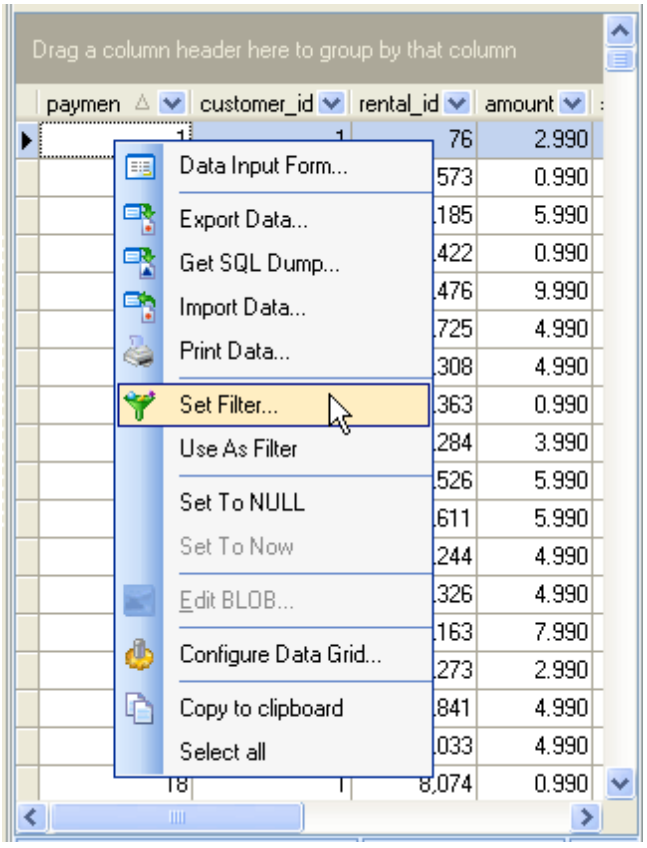
Use the drop-down button in the column caption area to filter records by the selected column value(s) or enter the filter condition directly in the filter row 211.

### Filter by two operators

Invoke simple filter dialog using the Custom item of the column caption area drop-down list. Select a logical operator for checking the column values (like "is less than", "is greater than", etc.) and set the value to be checked by this operator in the next box; then set the second condition if necessary in the following way and set the relation between these two conditions, whether both of them should be matched or just one of them; use the '_' character to represent any single symbol in the condition and the '%' character to represent any series of symbols in the condition.

### Filter by any custom criteria

To filter data according to more difficult custom conditions, use the Filter Builder dialog. To invoke the dialog, use the Set Filter link of popup menu or click the Customize button on the Filter panel. This panel is visible if any filtering is already applied to the grid (you can use column header menu or grid menu for quick filtering).




The dialog also allows to save filter criteria to an external file for future use.

After you set a filter, the filtering panel becomes visible at the top/bottom of the grid

where you can see the active filtering condition and easily enable or disable it by clicking the check box on the left. To customize the filtering process, use filter options 211.

The Copy current filter as SQL condition to clipboard feature is useful in case the same compound filter is applied several times. Just once apply the filter, copy to clipboard as SQL condition, paste to SQL Editor 95 and save as a query. You can also use Generate query link on the Navigation bar.

**See also:** Data View 110, Table Editor 64, SQL Editor 95, Visual Query Builder 100

## 7.2 BLOB Editor

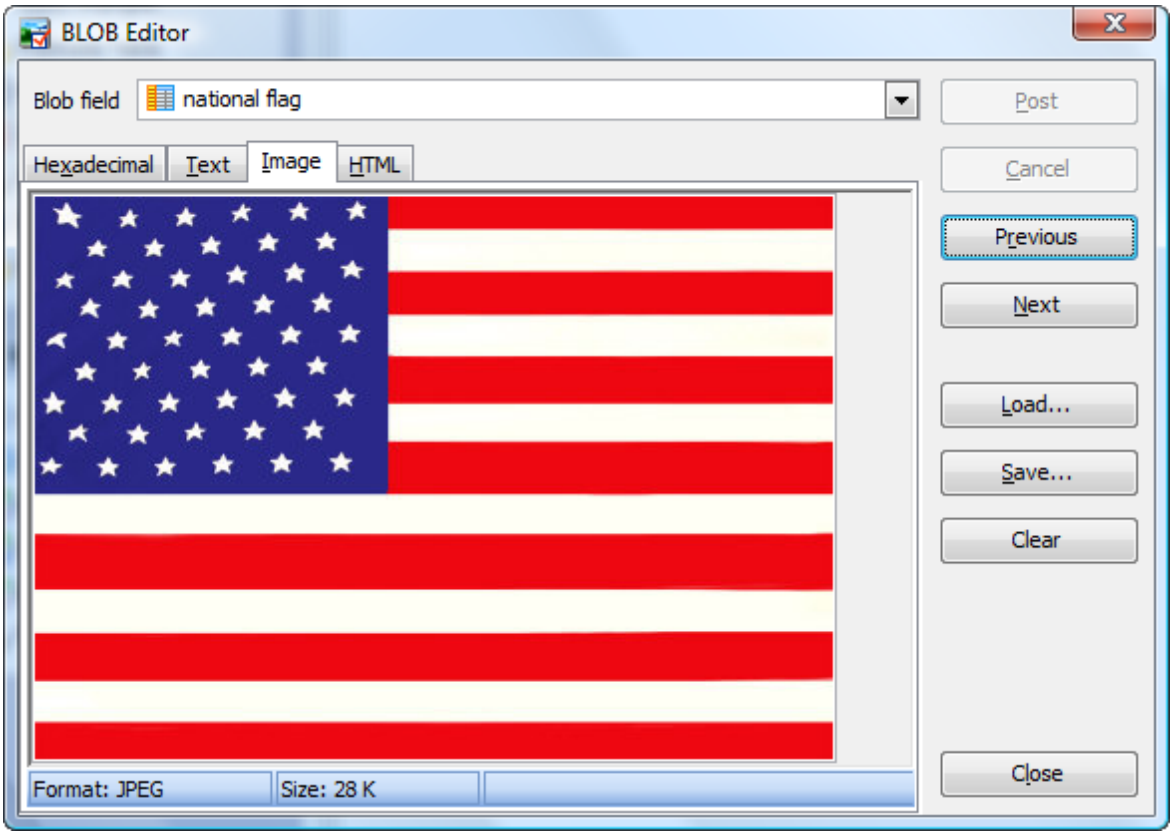
BLOB Editor is a tool to view and edit BLOB data in the following ways: hexadecimal dump 122, plain text 122, graphical image 121, HTML page 123, or PDF document 124. BLOB Editor is invoked from data grid 110 of any table editor 64 or the result tab of SQL Editor 95 and Visual Query Builder 100 by double clicking of the BLOB field to be edited or with the Edit BLOB link of the field's popup menu. The editor also can be called from BLOB Viewer 156 with the Edit current BLOB button.

With BLOB Editor you can work with all BLOB columns of the grid. To switch between columns, select the necessary one from the BLOB field list.

BLOB Editor allows you to navigate between the grid records using the Previous and Next buttons. You can load the new BLOB content and save or clear it using corresponding buttons. After changes are made, click the Post button to apply the changes or the Cancel button to discard them.

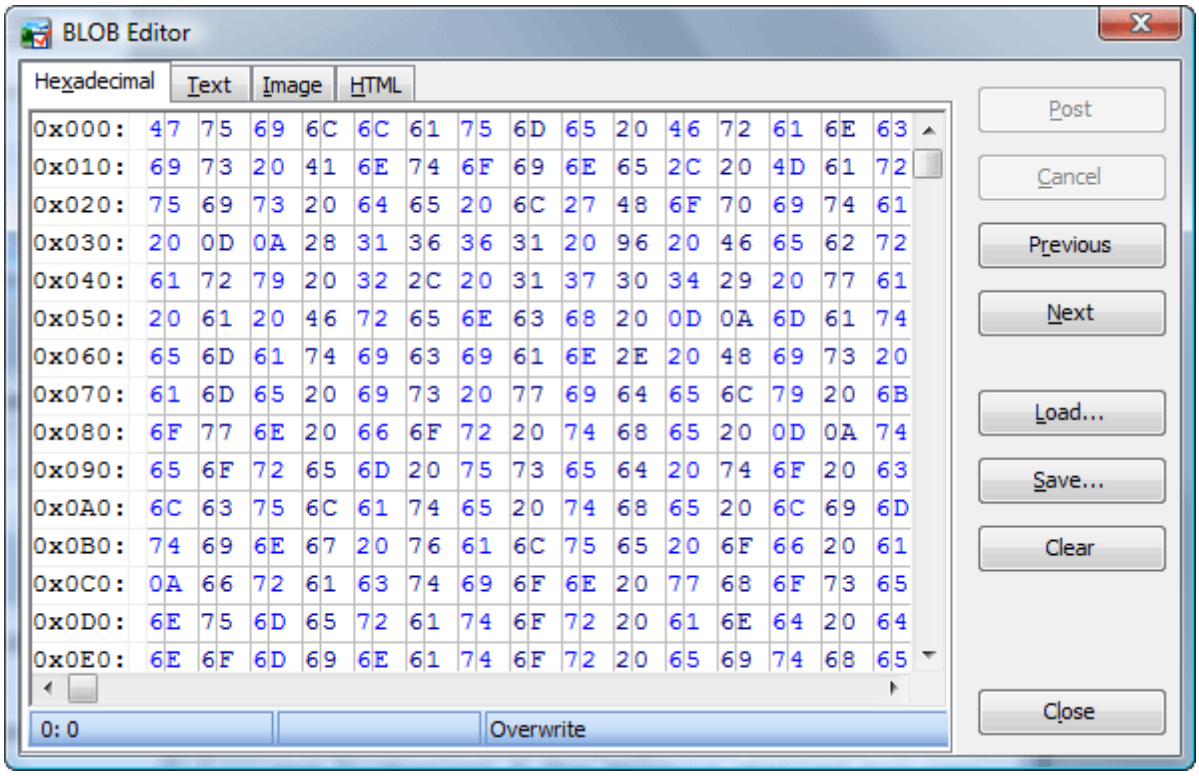
### 7.2.1 Editing as image

The Image panel of BLOB Editor displays field data as graphical image. Use the Save and Load buttons to save the image to a file or load an image from a file. A graphical representation of BLOB data supports five image formats: BMP, Windows metafile, JPEG, GIF and PNG.



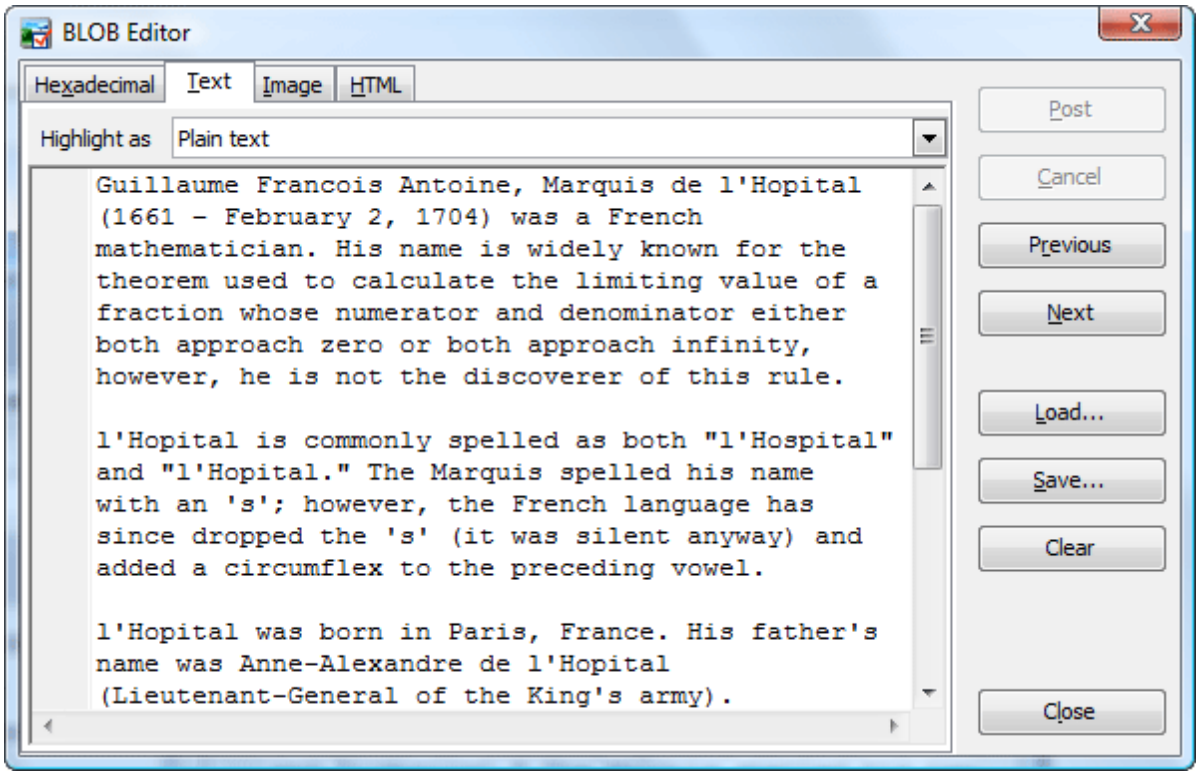
### 7.2.2 Editing as hexadecimal dump

The Hexadecimal panel allows you to edit data in hexadecimal mode. To load/save a hexadecimal dump from/to a file, use the corresponding buttons. Use the Insert key to switch between Insert and Overwrite modes.



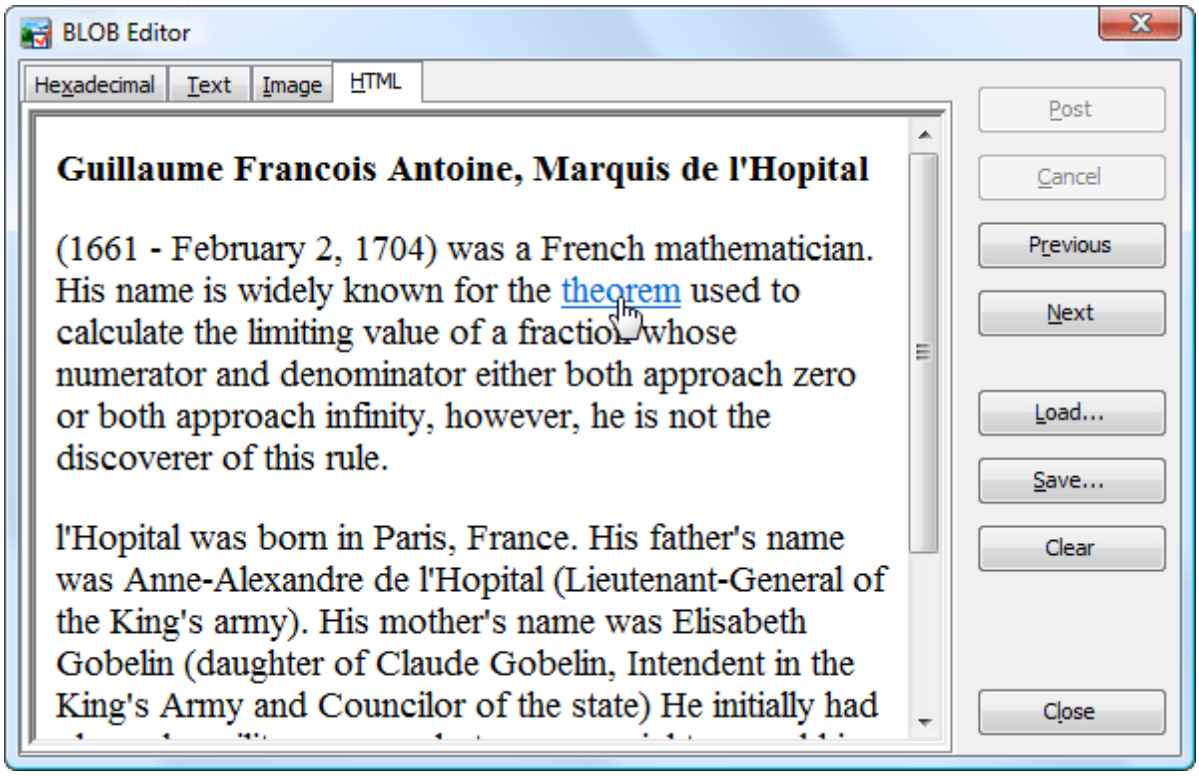

### 7.2.3 Editing as plain text

The Text panel allows you to edit data as a simple text. Several types of text highlighting are available (*Plain text, SQL, XML, Java, VBScript, JScript, Cmd batch, PHP, CSS, UnixShell Script, INI,* and *HTML*). The popup menu of the panel allows you to invoke Find Text, Replace Text and Go to line dialogs.



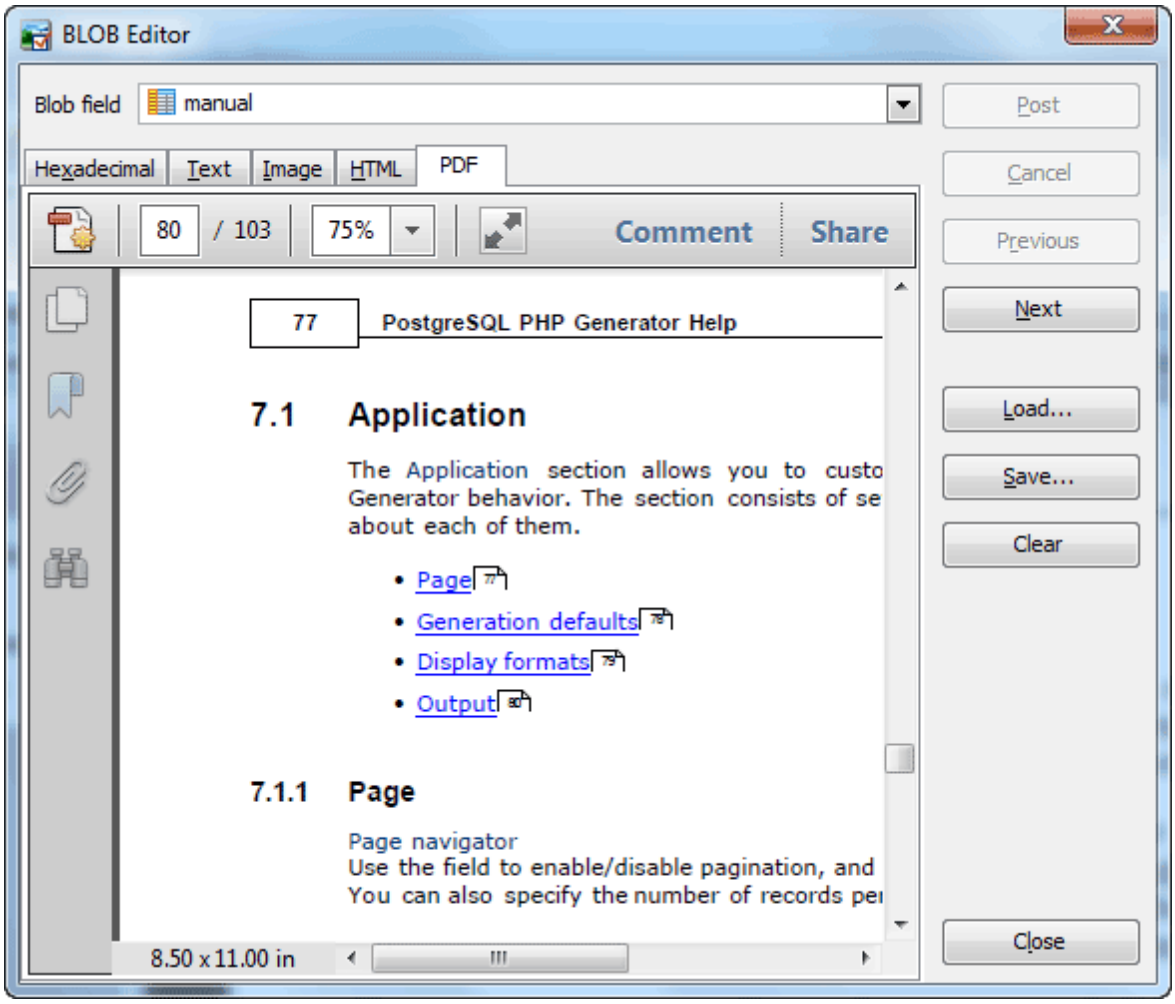

### 7.2.4 Editing as HTML

The HTML panel presents field data as HTML. You can load a new content of the current field from a .html file or type it manually within the Text tab of the editor.




### 7.2.5 Editing as PDF document

The PDF panel presents field data as PDF document. To accomplish common operations with data, use the Adobe Reader toolbar.



## 7.3 Export Data Wizard

Data Export wizard is a tool to save data from SQLite tables, views, and queries to the most popular formats. It allows you to fully customize output files including header and footer, fonts, colors, and data formats.

Export Data tool supports:

- Microsoft Office Excel 97-2003, 2007
- CSV
- HTML
- XML
- Text
- Microsoft Office Word 97-2003, 2007
- Microsoft Office Access
- OpenDocument Spreadsheet
- OpenDocument Text
- DBF
- PDF
- RTF
- DIF
- SYLK
- LaTex.

In order to run the wizard you should either

- open the table in Table Editor;
- go on to the Data tab

or

- open and execute the query in SQL Editor or Query Builder;
- proceed to the Result tab

and select the Export Data item from the Navigation Bar.

To export your data,

- Set the format and the name 126 of the destination file;
- Specify such additional options of the result file as header and footer 127, formats applied to exported data 128 and some format-specific options 129;
- Select columns 128 you want to include into result files;
- Specify other export options 132.

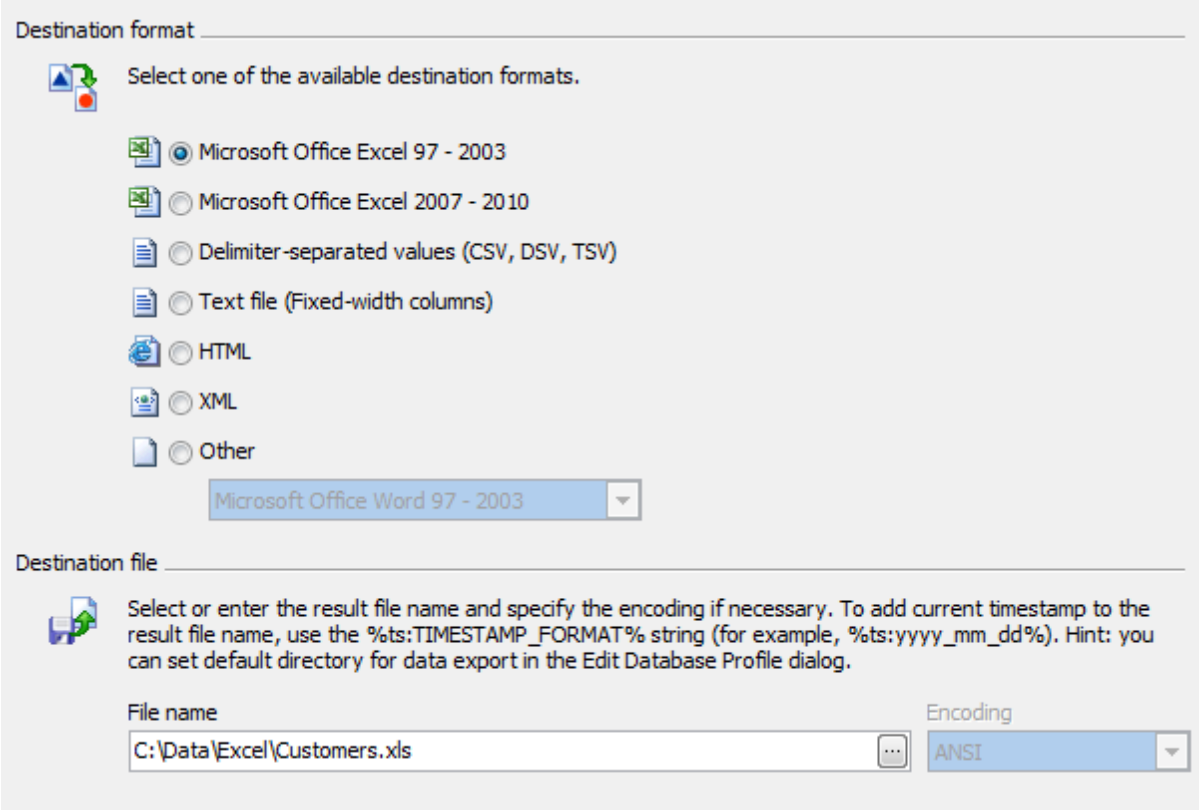
**See also:** Get SQL Dump, Import Data Wizard 136

### 7.3.1 Setting destination file name and format

Select one of the available destination formats and set the name for the result file. The file name extension in the Destination file name box varies according to the selected export type.

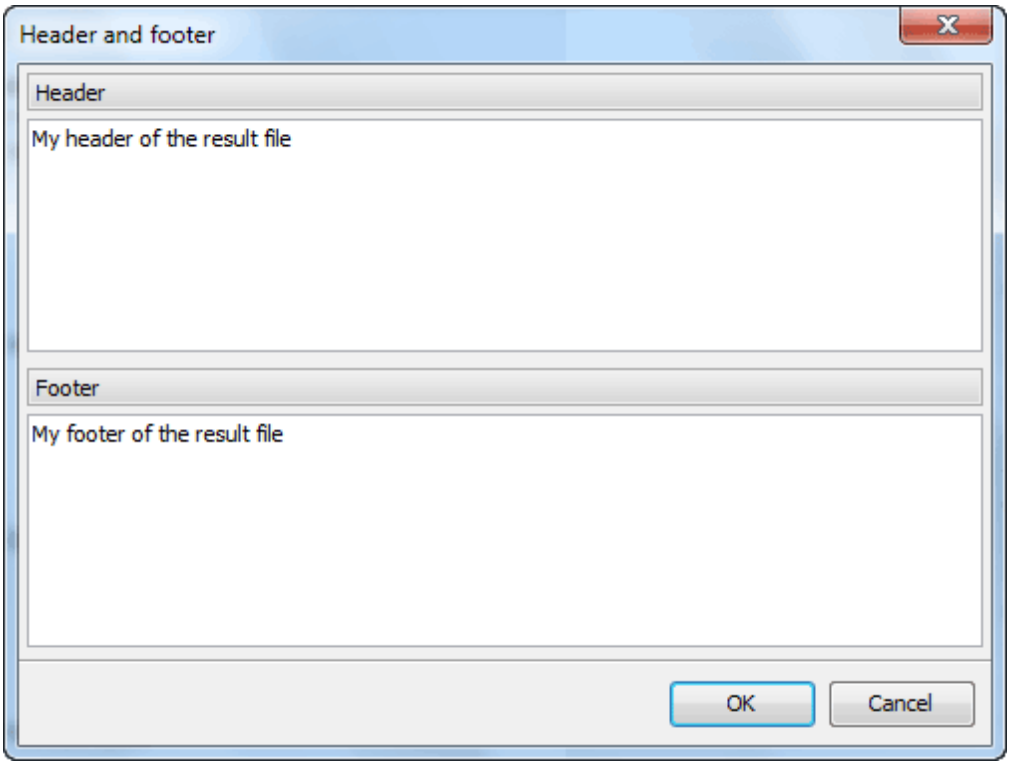
The file name may contain current timestamp with the %ts:TIMESTAMP_FORMAT% string. Examples of valid log file names:

*dbname_export_%ts:yyyy_mm_dd%.log*
*export_%ts:yyyy_mm_dd_hh_mm%.log*
*%ts:yyyy_mm_dd_hh_mm_ss%.log*



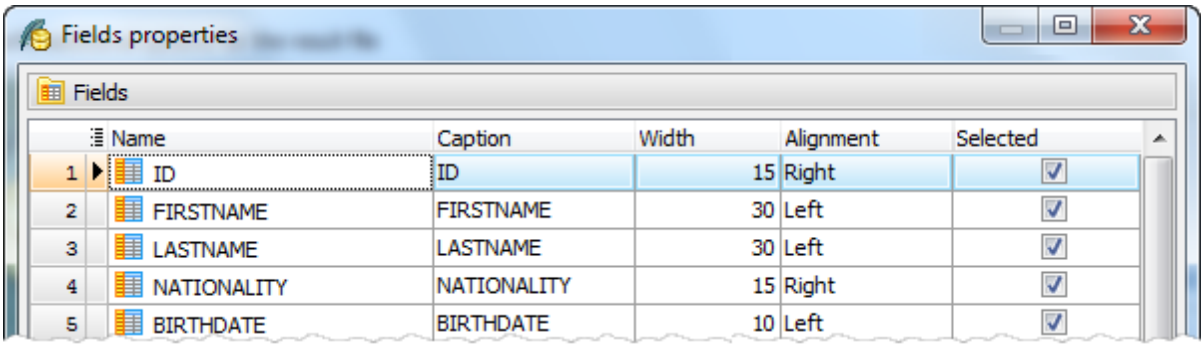

### 7.3.2 Setting header and footer

To specify the result file's header and footer, double click the corresponding button and complete fields of the Header and Footer window.



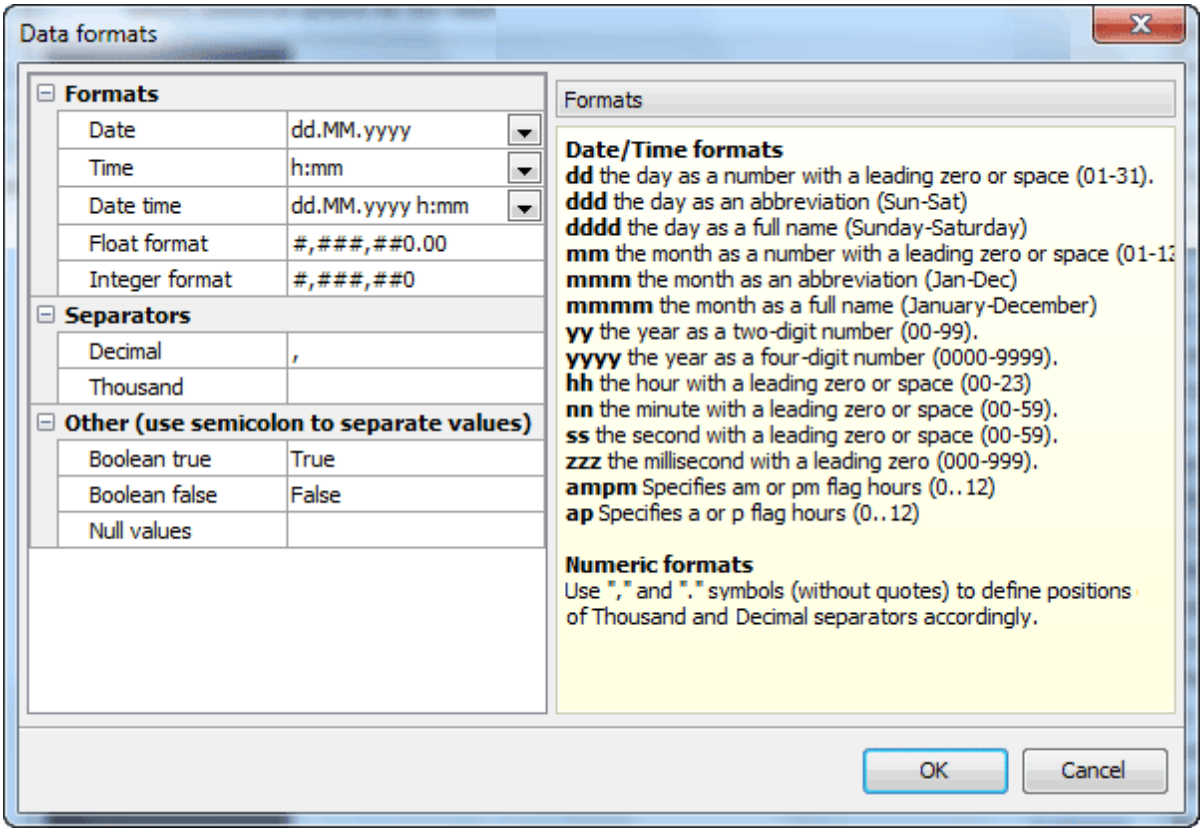

### 7.3.3 Selecting fields for export

Uncheck the Selected box to exclude the corresponding field from the export, specify a Caption to be used for the result column, and also width, and alignment for output columns (when applicable).




### 7.3.4 Adjusting data formats

This step allows you to customize formats applied to exported data. Edit the format masks to adjust the result format in the way you need.




### 7.3.5 Setting format-specific options

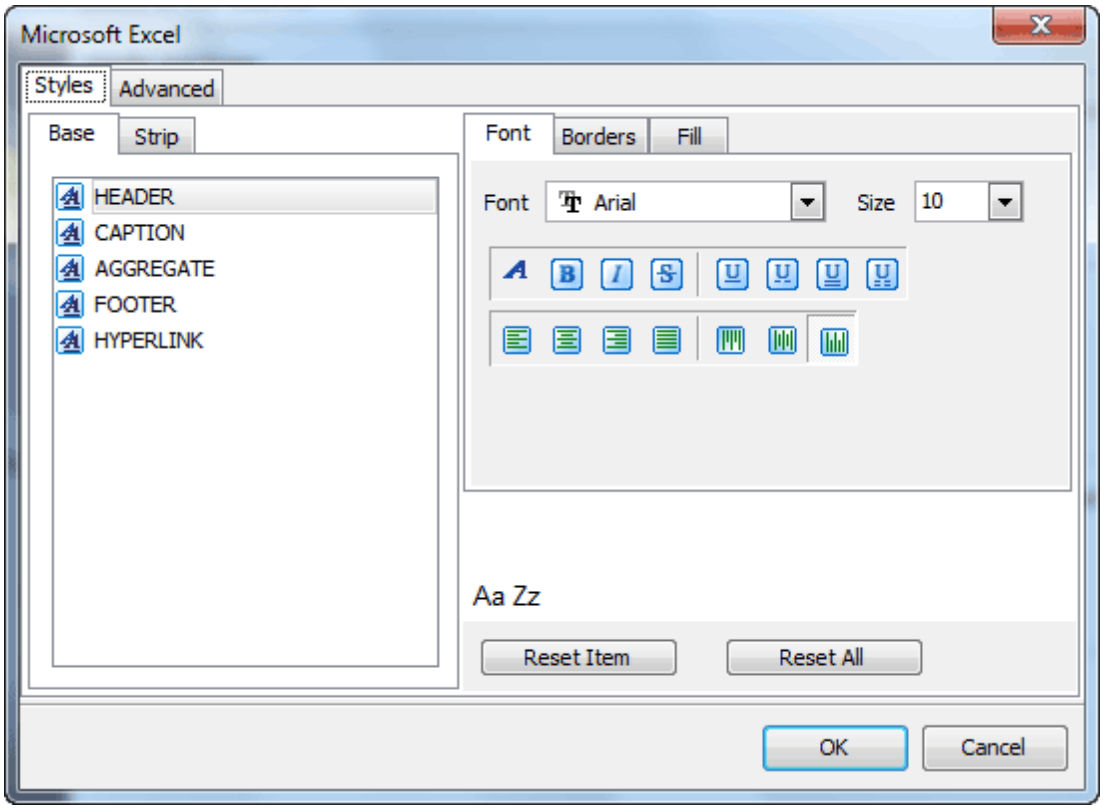
Each format supposes corresponding additional export options. Use the wizard option to adjust export properties depending on the target file format you have selected earlier. The following formats are at your disposal: Microsoft Excel 129, Microsoft Excel 2007, CSV 131, Text 131, HTML 130, XML 131, Microsoft Word, Microsoft Word 2007, Microsoft Access, OpenDocument Spreadsheet, OpenDocument Text, DBF, PDF, RTF, DIF, SYLK, and LaTeX.

Microsoft Excel

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 target Excel file be striped by columns or rows (the Styles tab).

The Extensions tab provides a possibility to add hyperlinks and notes to any cell of target file. Click the Plus button to add a new hyperlink or note to target Excel sheet and adjust its parameters. Click the Minus button to delete added hyperlink or note.

The Advanced tab allows you to define page header, page footer and title for target Excel sheet.



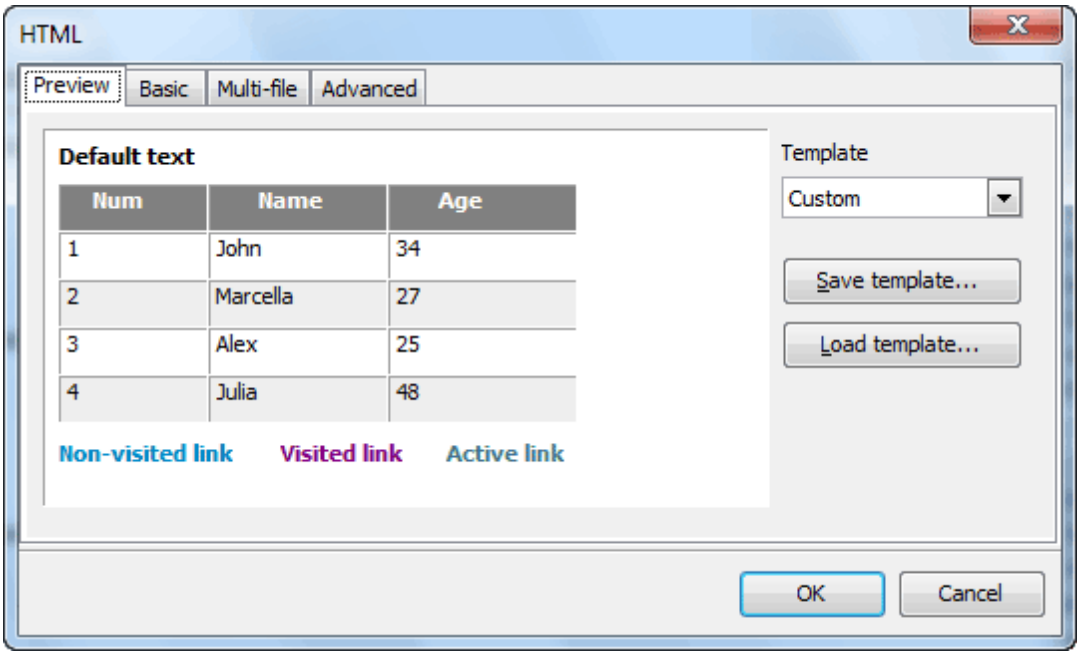

HTML

The Preview tab allows you to select the style of HTML file from a number of built-in templates provided by the Templates combo box. You can choose any of these templates, customize it by clicking on objects in the preview panel, and save it as a custom template using the Save template button. Use the Load template button to load previously saved custom templates from hard disk.

The Basic tab allows you to specify basic parameters of target HTML file, such as its title, cascade style sheet options, etc.

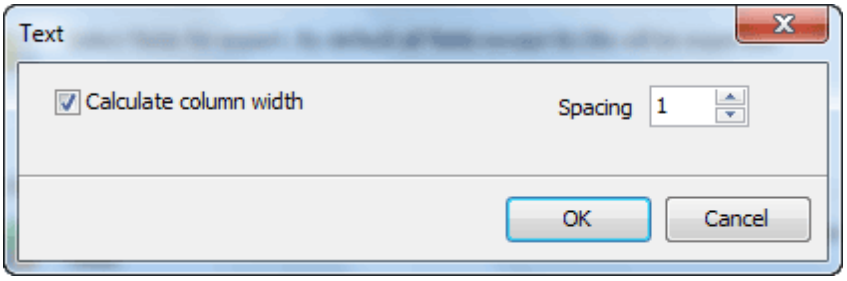
The Multi-file tab provides you with a possibility to split target HTML file into several separated files. This tab allows you to specify the record count for a single file, set an option to generate an index HTML file, and add an ability of navigation between each other to each of exported files.

The Advanced tab contains such HTML options as default font, background, cell padding and spacing, etc.



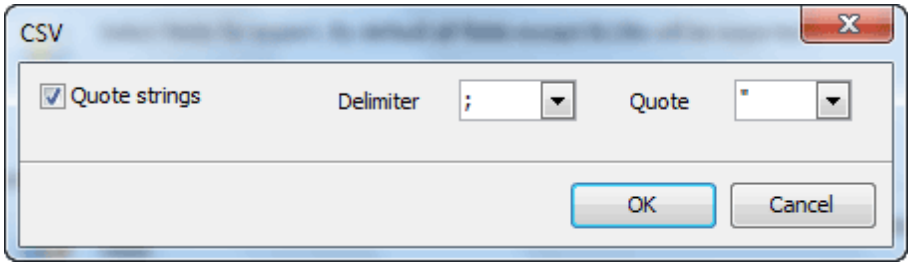

## Text files

Set the Calculate column width options on if you want each column of 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.



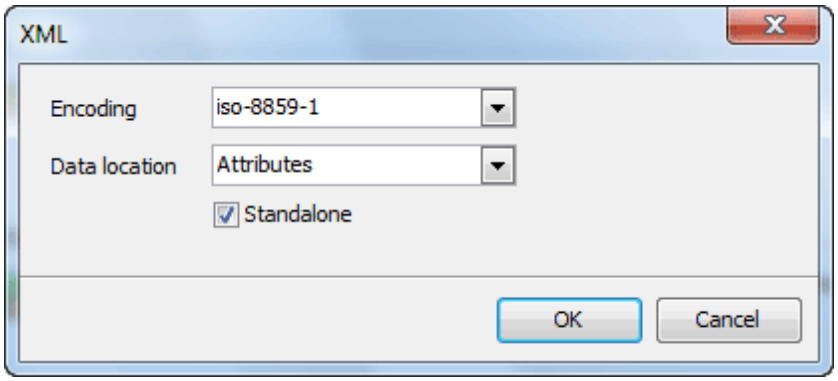

## CSV files

You can specify column separator and optional values quote character for the target file on this step.




## XML documents

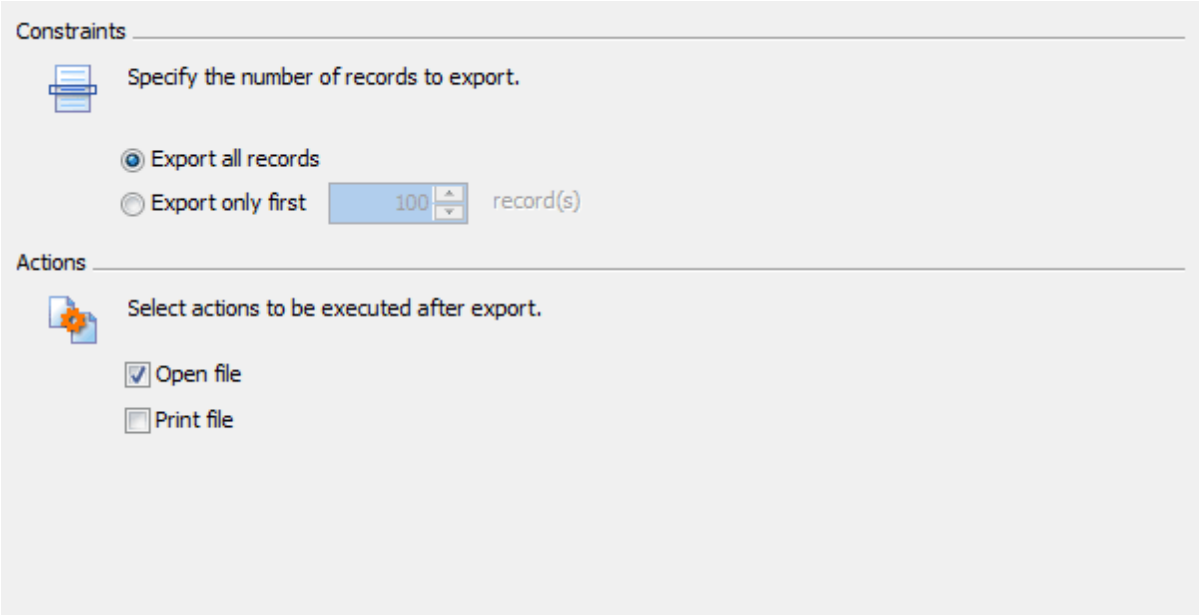
Specify XML document encoding in the Encoding edit box and set the Standalone option on if you wish the target document to be standalone.




### 7.3.6 Setting common export options

Use this step to specify options to be applied to all exported data:

- Select the number of records to be exported from each table: a fixed number or all records.
- Specify actions to be executed after the export. To open the result files in the associated program (MS Excel, Notepad, default browser, etc), check the Open file box. To send the result files to the default printer, use the Print file checkbox.



## 7.4 Get SQL Dump

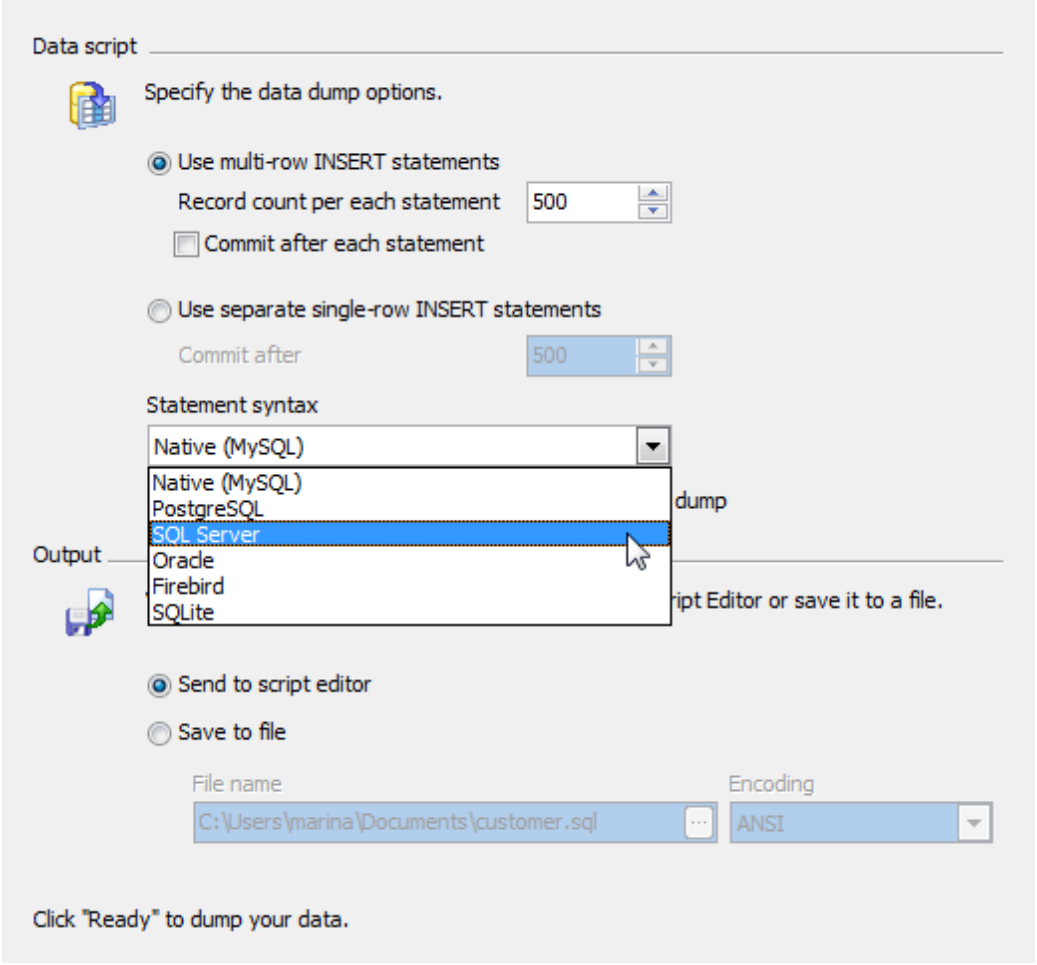
Get SQL Dump Wizard allows you to export data from a table or a query result to the SQL script as a number of INSERT statements.

In order to get a SQL dump from a table or a query:

- open the table in Table Editor or open and execute query in SQL Editor or Query Builder;
- open the Data tab or the Result tab respectively;
- use the Get SQL Dump item of the Navigation Bar.

- Selecting fields to include in the result INSERT statement 133
- Specifying dump options 134

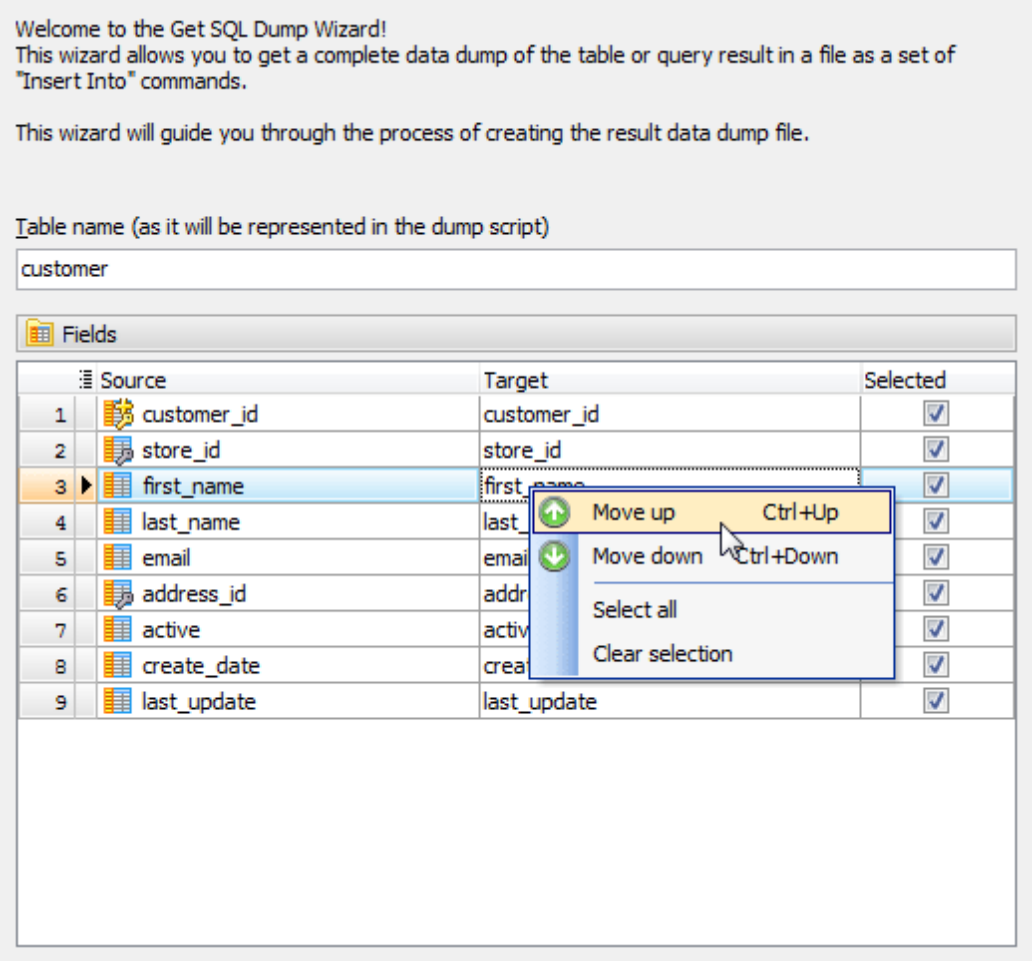
**See also:** Export Data Wizard 126, SQL Script Editor 146




### 7.4.1 Selecting fields

The first wizard step allows you to specify the table name as it will be included in the result script.

You can also select the fields to be included in the result *INSERT* statement. All the table fields are included into the Selected fields list by default. If you do not want some fields to be exported, move them back to the Available fields list. *Text*, *GUID*, *Date*, *Time*, and *DateTime* columns are included in the result INSERT statements according to the Storage Options of the Database Profile 31.



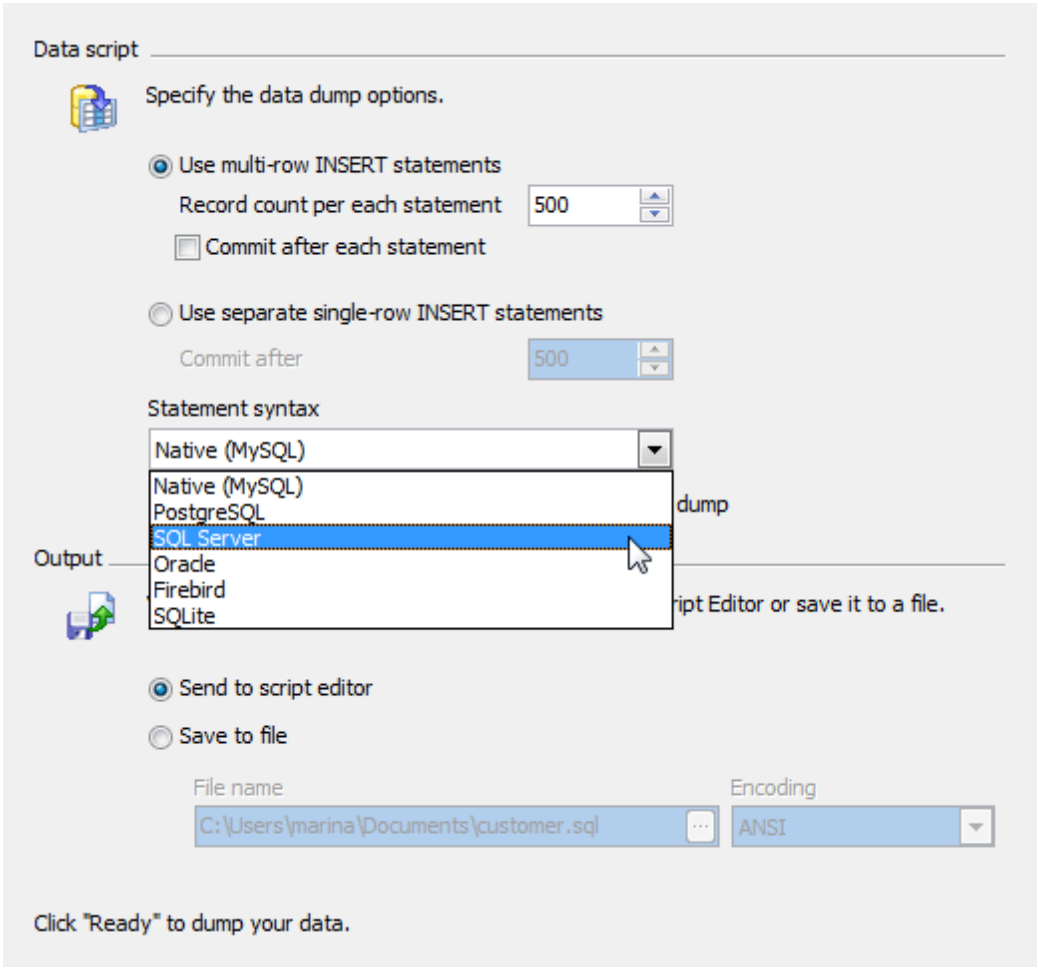

## 7.4.2 Specifying dump options

Select the data dump mode to be used (Multi-row INSERT statements or separate single-row INSERT statements) and specify commits' frequency.

To add the "CREATE TABLE" to the top of the dump, check the corresponding box.

Get SQL Dump Wizard allows you to send the result script to SQL Script Editor 146 or to save it to a specified file. Select the Send to script editor option to load the result to the editor. To save the result to the file, enter the script file name (*.*sql*).

Click the Ready button to start the process.


Data script
Specify the data dump options.
Use multi-row INSERT statements
Record count per each statement
500
Commit after each statement
Use separate single-row INSERT statements
Commit after
500
Statement syntax
Native (MySQL)
Native (MySQL)
PostgreSQL
SQL Server
Oracle
Firebird
SQLite
dump
Output
ript Editor or save it to a file.
Send to script editor
Save to file
File name
C:\Users\marina\Documents\customer.sql
Encoding
ANSI
Click "Ready" to dump your data.

## 7.5 Import Data Wizard

Import Data Wizard provides you with a graphical user interface to import data from the most popular files formats into existing SQLite tables. It allows you to adjust data formats, empty target tables, execute custom SQL scripts, etc.

Import Data tool supports:

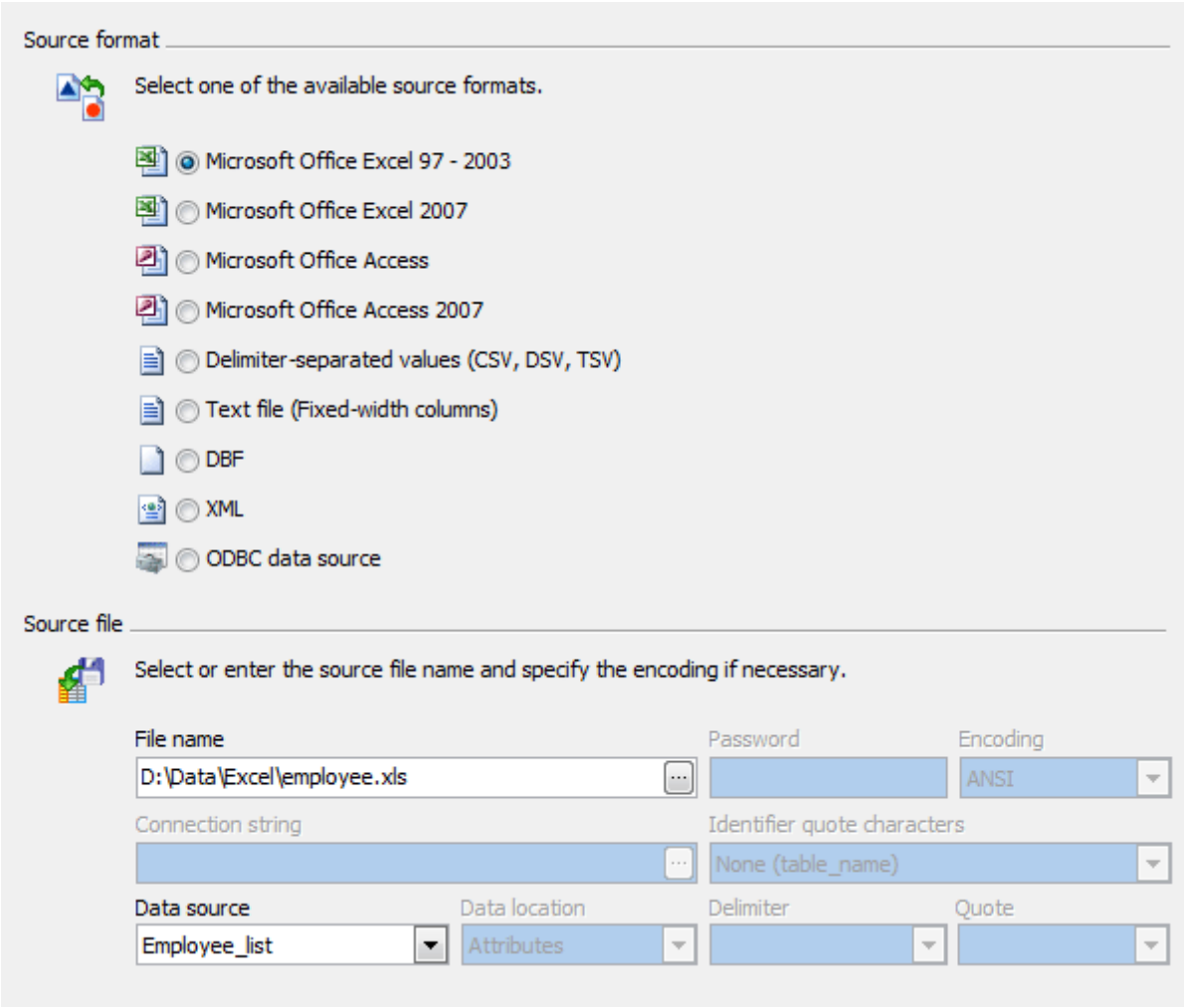
- Microsoft Office Excel 95-2003
- Microsoft Office Excel 2007
- Microsoft Office Access
- Microsoft Office Access 2007
- Delimiter-separated values (CSV, DSV, TSV)
- DBF
- Text files
- XML
- ODBC data sources (any database accessible via an ODBC driver or OLE DB provider, such as SQL Server, MySQL, Oracle, MS Access, Sybase, DB2, PostgreSQL, etc.)

In order to run the wizard you should

- open the table in Table Editor;
- go on to the Data tab;
- select the Import Data item from the Navigation Bar.

To import data,

- Set the format 137 of the input data and the source file name;
- Map source file columns and target table fields 139;
- Specify other import options 142.




**See also:** Export Data Wizard 126

## 7.5.1 Setting source file name and format

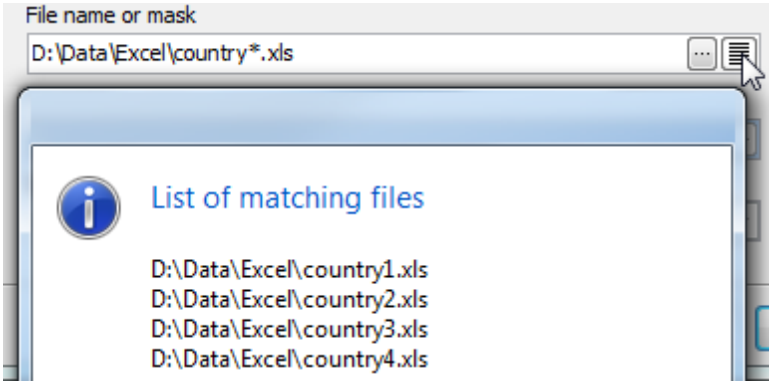
1. Select the format of the source file.

2. Specify the file you want to import. The file name extension in the File name box varies according to the selected import type. The wizard allows you to import data from several files at a time.

To import data from multiple files with the same structure, set the mask of the file names to the corresponding field. To see the list of matching files, use with the button on the right.

**Example 1:**

Suppose, you need to import data from the following tables:
*D:\Data\Excel\country1.xls*
*D:\Data\Excel\country2.xls*
*D:\Data\Excel\country3.xls*
*D:\Data\Excel\country4.xls*
The mask for these file names is *D:\Data\Excel\country*.xls*.




3. For ODBC data sources specify the connection string to be used to connect to the data source.

4. Select the data source to import: a table of MS Access database or a spreadsheet of MS Excel.

5. Enter the password to the database (MS Access).

6. For CSV file set the delimiter and quote characters.

7. Select source file Encoding.

8. For .XML files, define the XPath to the data to be imported to the selected table and select whether data is stored in Attributes or in Subnodes.

**Example 2:**
To import data from the following .xml file, use XPath=*/Employees/Employee* and Data location=*Subnodes*

```
<?xml version="1.0" encoding="utf-8"?>
<Employees>
  <Employee>
    <ID>1</ID>
    <FirstName>Klaus</FirstName>
    <LastName>Salchner</LastName>
    <PhoneNumber>410-727-5112</PhoneNumber>
  </Employee>
  <Employee>
     <ID>2</ID>
    <FirstName>Peter</FirstName>
    <LastName>Pan</LastName>
    <PhoneNumber>604-111-1111</PhoneNumber>
  </Employee>
</Employees>
```

**Example 3:**
To import data from the .xml file below, use XPath=*DATAPACKET/Data/Item* and Data location=*Attributes*

```
<?xml version="1.0"?>
```

```
<DATAPACKET Version="2.0">
<Data>
    <Item ID="1" FirstName="Klaus" LastName="Salchner" PhoneNumber="410-727-
5112" />
  <Item ID="2" FirstName="Peter" LastName="Pan" PhoneNumber="604-111-1111" />

</Data>
</DATAPACKET>
```

### 7.5.2 Setting the accordance between source and target columns

The wizard provides you with several ways to map input data to the target table columns.

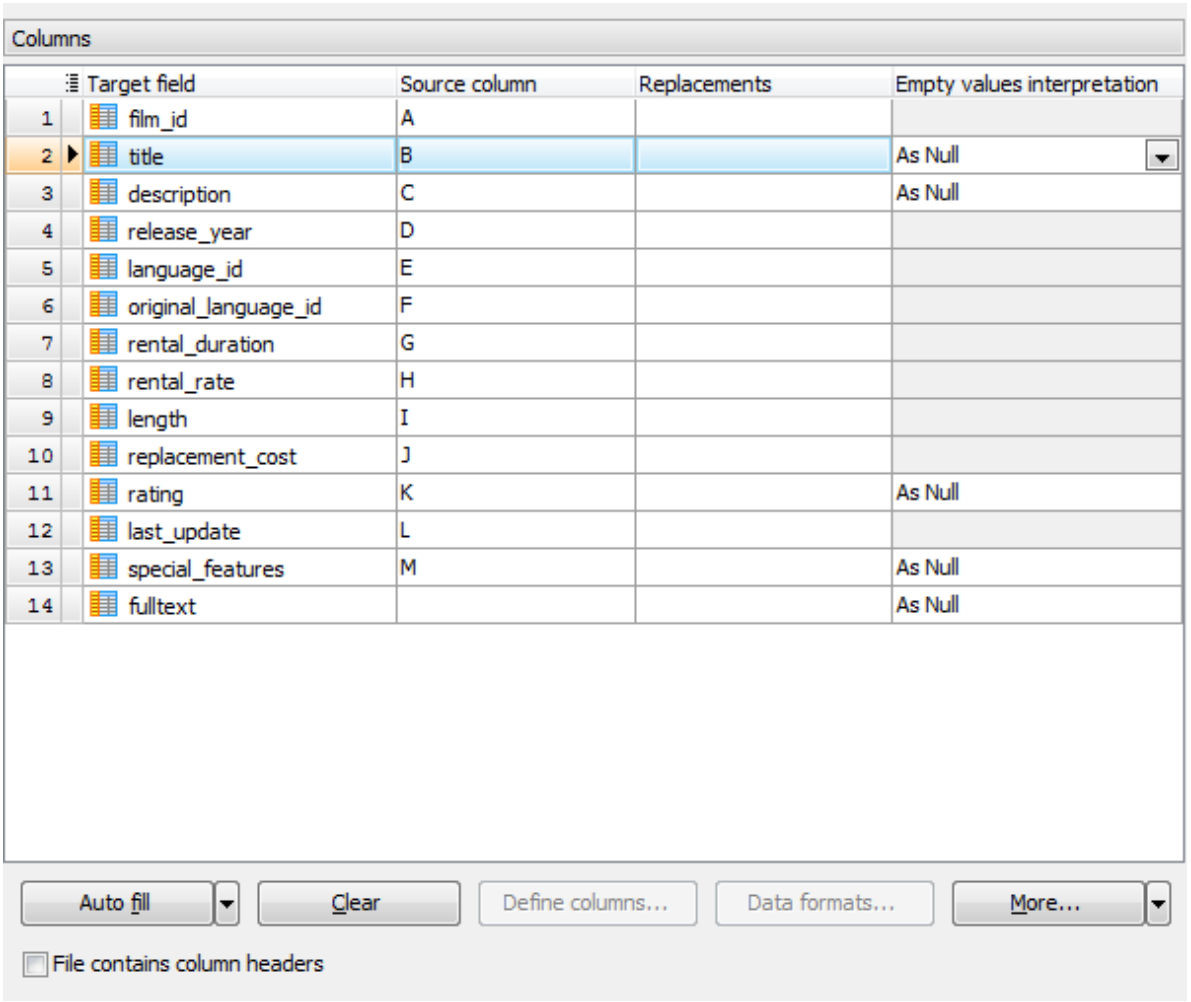
- You can map columns automatically by order with the Auto Fill and Auto fill all maps buttons.
- You can do it manually using the drop-down list of Source column fields.
- To map columns visually, open Map builder 140 with the Build map link.

It's useful to save a specified map to a file for further using it in the next wizard sessions. To save a map, use the More... button and follow the Save map link.

To see the 100 first rows of input file or output table, use the More... button and follow the View source data or Preview results links respectively.

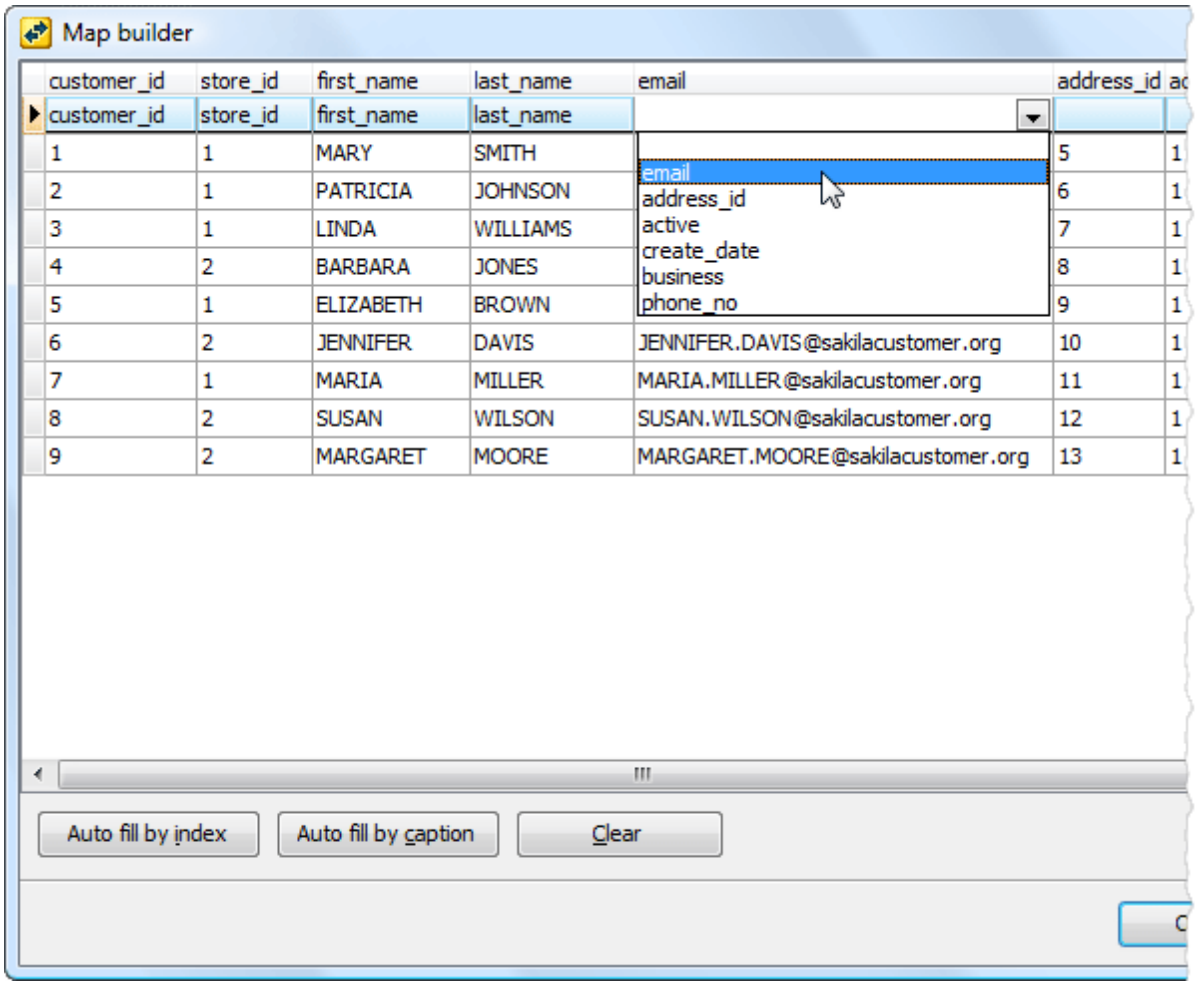
You can also specify Replacements to be applied to the selected column before the import and data format masks 141 used for the input file.

To exclude the first file row, use the File contains column header checkbox.

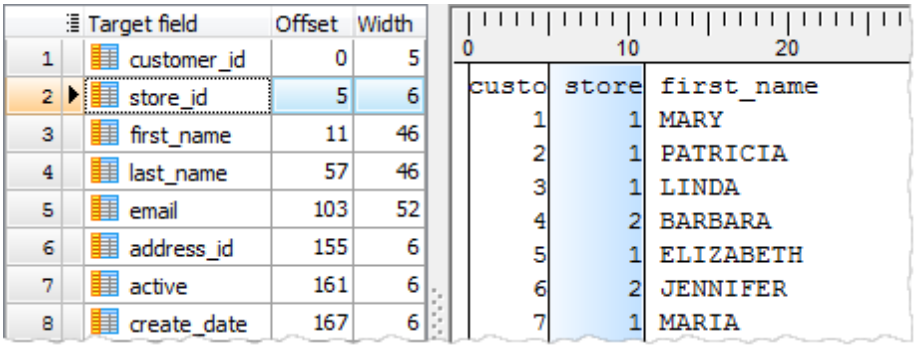



#### 7.5.2.1 Map builder

To specify the accordance between source and target columns visually, use popup menu of the upper row to map source file columns to target table fields.




For text files define columns bounds first. To add a bound, double-click near the column data in the builder area. To map a column to a target table field, select the field in the Target field list and then click between the bounds.




### 7.5.2.2 Data formats

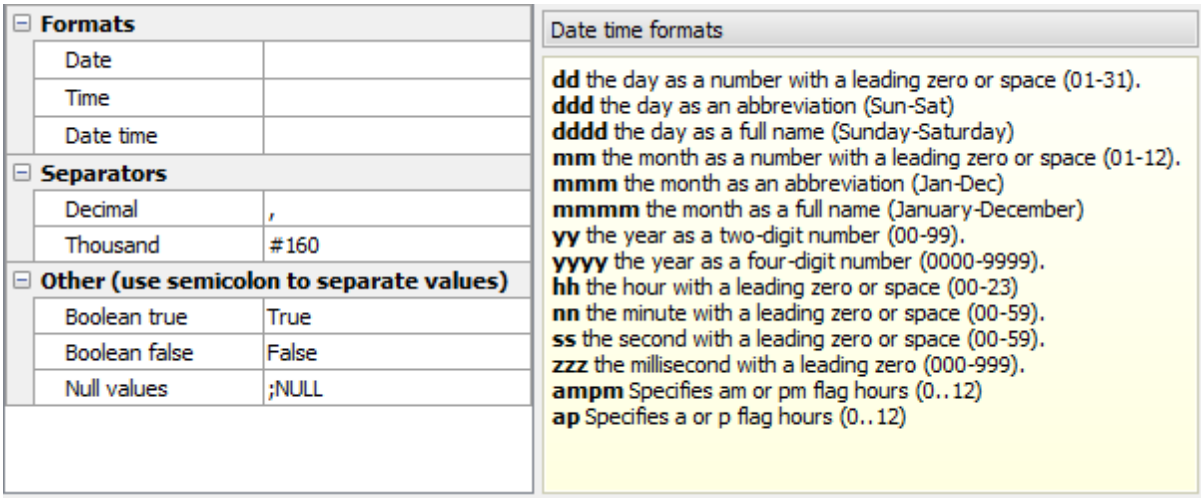
Use the window fields to indicate format masks of the source data imported to the table. It allows the application to import data correctly.

The components of the date time format mask are represented at the window. Compose

your date, time, and date time format mask of this components and separators. The following table contains some types of input fields and suggests masks to import them.

| To import these input data correctly | Use these format masks |
|---|---|
| June 29 | mmm dd |
| Jun 29, 2009 | mmmm dd, yyyy |
| Tue Jun 14 16:50:49 | dddmmm dd hh:nn:ss |
| 01/15/09 08:26 AM | mm/dd/yy h:nn ampm |

You can also set decimal and thousand separators, and custom NULL,TRUE and FALSE values. If you have several values to be imported to NULL(TRUE, FALSE) value, use semicolons to separate them.




### 7.5.3 Customizing common options

On the wizard step you can set the number of records to import, whether the tool import all table records or only the specified number. In the second case you can set the number of records to skip.

#### Logging

This options group let you to manage logging of the import process.

#### Scripts

There are many cases where the import process is necessary to correct with additional scripts. So to disable table indexes before the importing, specify the corresponding scripts to be executed before and after the process.

The typical example of usage of the Before each table and After each table scripts is the import data to autoincrement columns of several tables. In this case it's neseccary to set the corresponding scripts:
*SET IDENTITY_INSERT %table_name% ON*
and
*SET IDENTITY_INSERT %table_name% OFF*
to be executed before and after import data to each table correspondingly.

### Import mode

If the Update existing records option is turned ON, the records will be either updated or inserted: an UPDATE will be performed when a target row exists in the table and an INSERT is performed when the target row does not exist.

# 8 Database Tools

**SQLite Maestro** provides a number of powerful tools for working with databases.

The following tools are available:

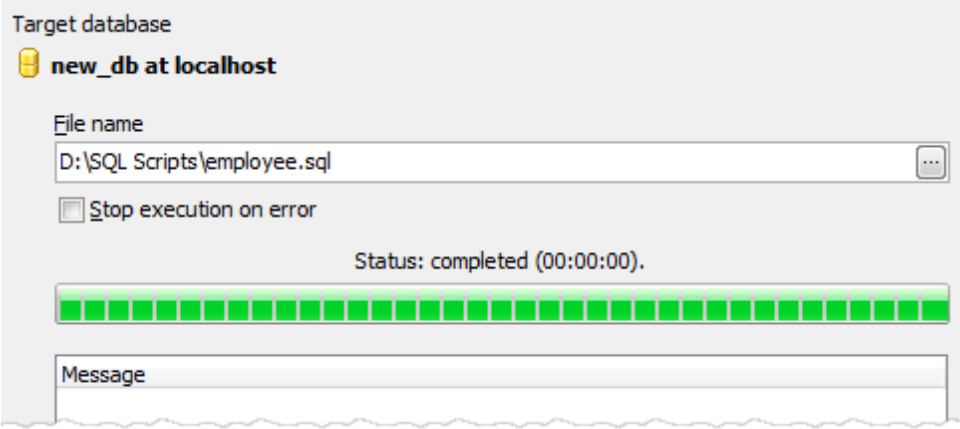
- **SQL Editor** 95
  Creates and executes SQL queries.
- **Visual Query Builder** 100
  Builds queries visually.
- **Script Runner** 145
  Executes SQL scripts to the database.
- **SQL Script Editor** 146
  Allows to edit and execute SQL scripts.
- **Extract Database Wizard** 149
  Extracts the database objects and data to the SQL script, which can be executed later to reserve the database structure and data.
- **Generate Database Report Wizard** 154
  Generates the database HTML or PDF report for structure of selected object in a whole or partially.
- **Backup Database** 148
  Allows to create a copy of the database.
- **BLOB Viewer** 156
  Displays a content of BLOB fields in different representations.
- **Diagram Viewer** 162
  Represents data from a table or a query as a diagram in various ways.
- **Data Analysis** 166
  Allows to slice and dice information efficiently according your business rules.
- **Report Designer** 171
  Prepares data for reading, viewing, and printing in a polished look.
- **Schema Designer** 178
  Allows to represent database tables and relationships as ER diagrams.
- **SQL Generator** 182
  Provides you with a set of simple SQL statements.
- Simple tools for and **Updatable views** 183

## 8.1 Script Runner

Script Runner is designed for executing of SQL scripts that don't require modifications. The window can be invoked from the Tools menu or with the Execute script from file link of SQL Script Editor 146.

Script Runner allows to execute .sql files as well as archived scripts directly from .zip files. In case archived files this tool unpacks zip archives to temporary files by itself for further executing.The tool neither starts any implicit transactions before executing the script nor issues COMMIT or ROLLBACK commands after the executing.

To execute a script with Script Runner, set the file name and the Stop execution on error option value. This option allows to view all the execution errors (OFF). The specified script will be executed immediately on the database which name is represented at the top of the window.

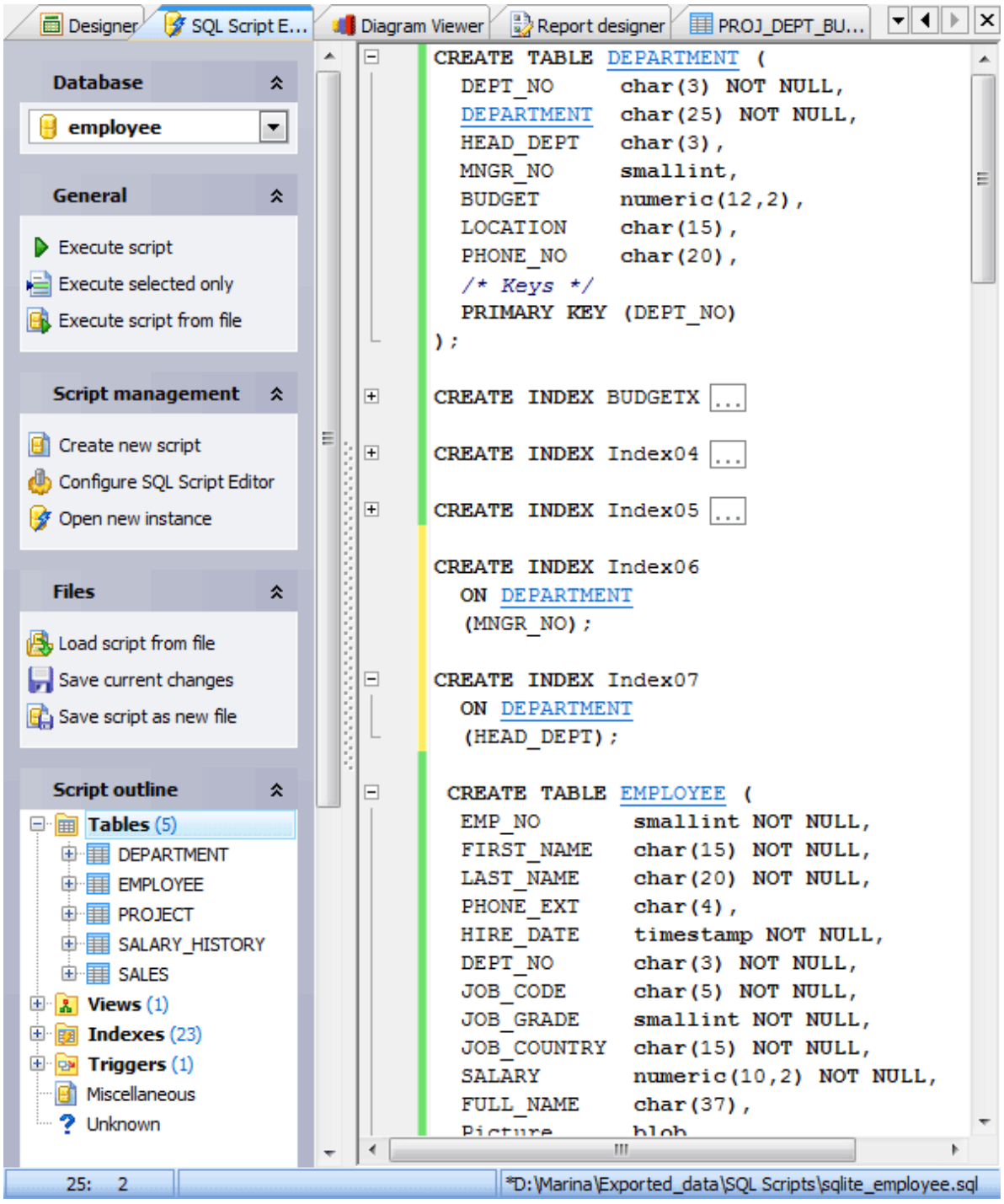


## 8.2 SQL Script Editor

SQL Script Editor is designed for SQL scripts editing and executing. The editor does not display results of SELECT queries. To work with such queries' data, use SQL Editor 95. If you have a script that is ready to use, execute it with Script Runner 145. To open SQL Script Editor, select the Tools | SQL Script Editor main menu item.

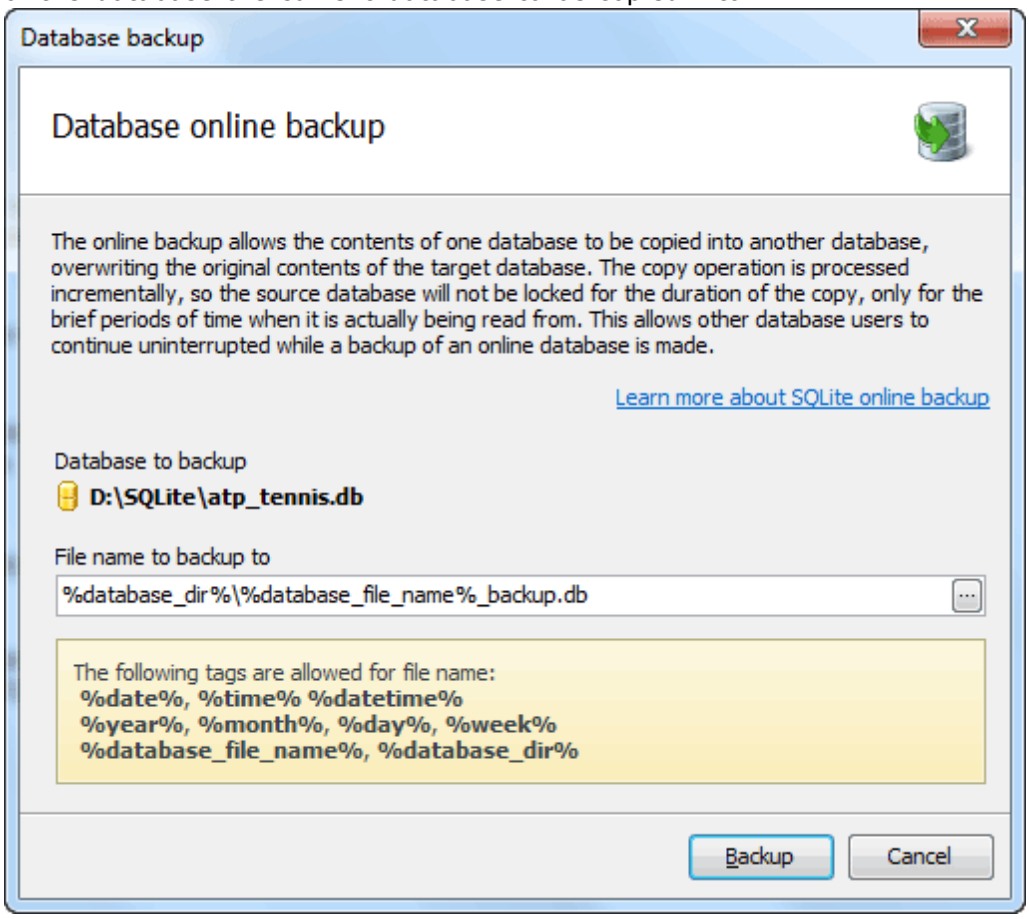
To work with a script within SQL Script Editor, load it from an *.sql* file or type it in the editor area directly. To prevent mistakes in SQL syntax, the editor supports syntax highlighting, code completion and divides the script text into logical parts that can be individually collapsed or expanded (code folding). All the logical parts are represented at the Explorer at the Navigation bar. It allows you to transfer to the proper script fragment quickly by clicking the corresponding node in the tree.

SQL Script Editor allows you to execute the whole SQL script or only its selected part. To make the executing of a large script much faster, execute the script directly from a file with Script Runner 145. By default, if a user opens a file larger than 100K, SQL Script Editor will suggest him to execute the script file without opening it in the editor. This file size may be changed at the editor's options 198 tab.



## 8.3 Backup Database

SQLite Maestro allows you to create **online backups** (copies) of SQLite databases. This type of backups allows other database users to continue uninterrupted while a backup of an online database is made. To get the copy of the database, invoke the corresponding window with the Tools | Backup Database main menu item and specify the name of the database the current database to be copied into.



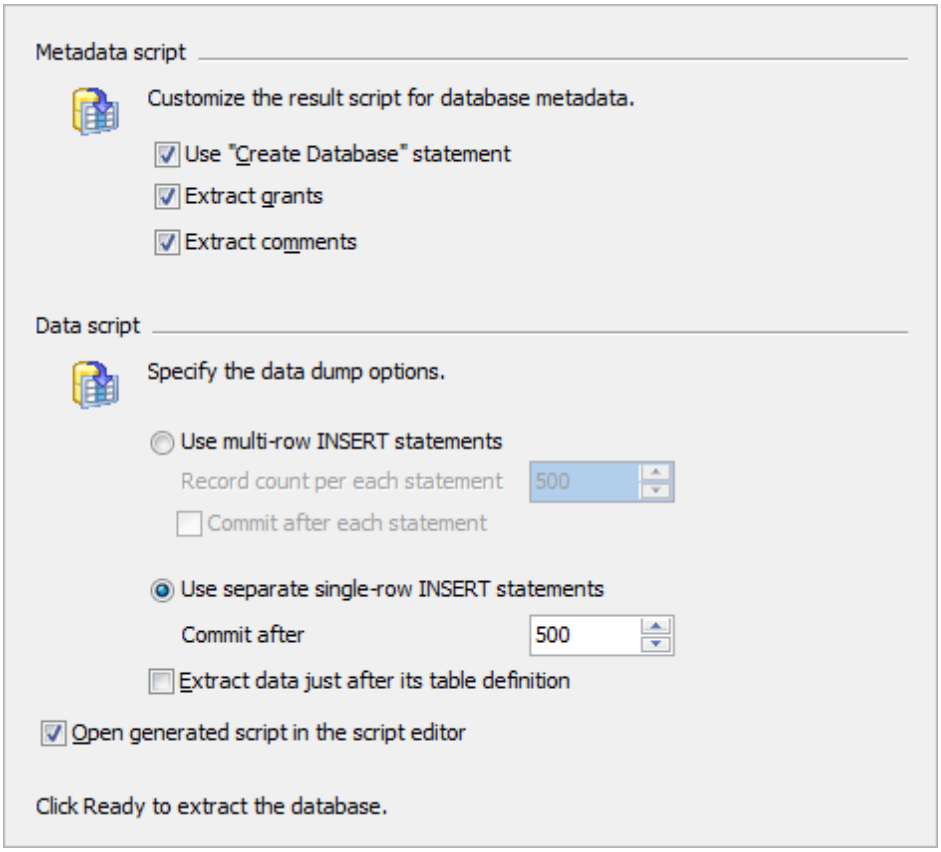
## 8.4 Extract Database

Using Extract Database Wizard you can extract database objects and data to a SQL script, e.g. for backup purposes. To run this wizard select the Tools | Extract Database main menu item.

Use the More... button to save the extract configuration for future use or to load the previously saved configuration for faster extract.

- Selecting database to extract and the target script file name 149
- Selecting database objects to extract their structure 150
- Selecting database objects to extract their data 151
- Customizing script options 152

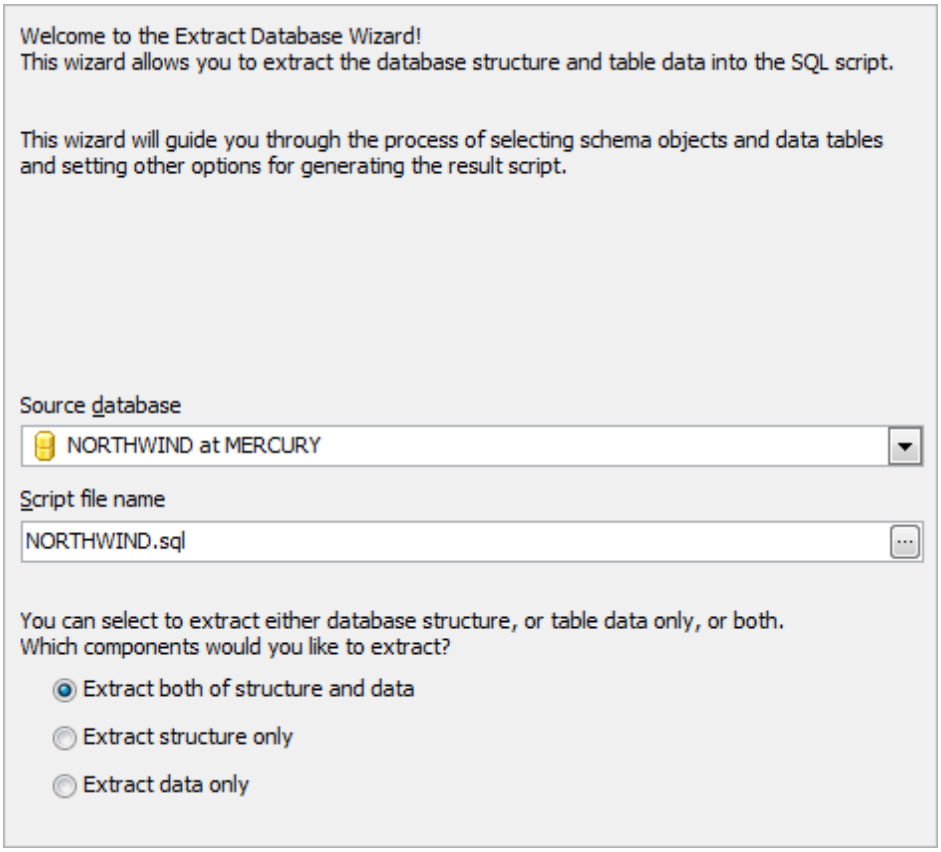
**See also:** Get SQL Dump Wizard 133




### 8.4.1 Selecting the database and the target file name

Select the source database to extract and set the target script file name.

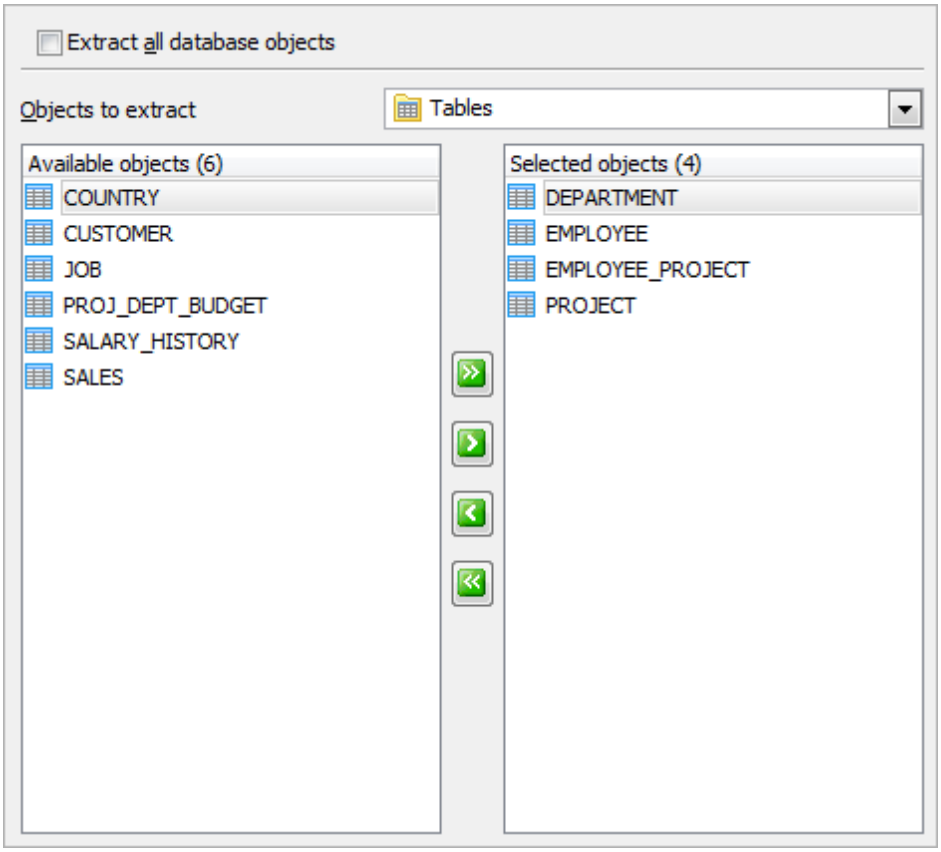
Select the components to be extracted: object definitions, table data or both.




### 8.4.2 Selecting objects to extract their structure

Select the database object to be extracted or check the Extract all database objects option to extract all objects from the database.

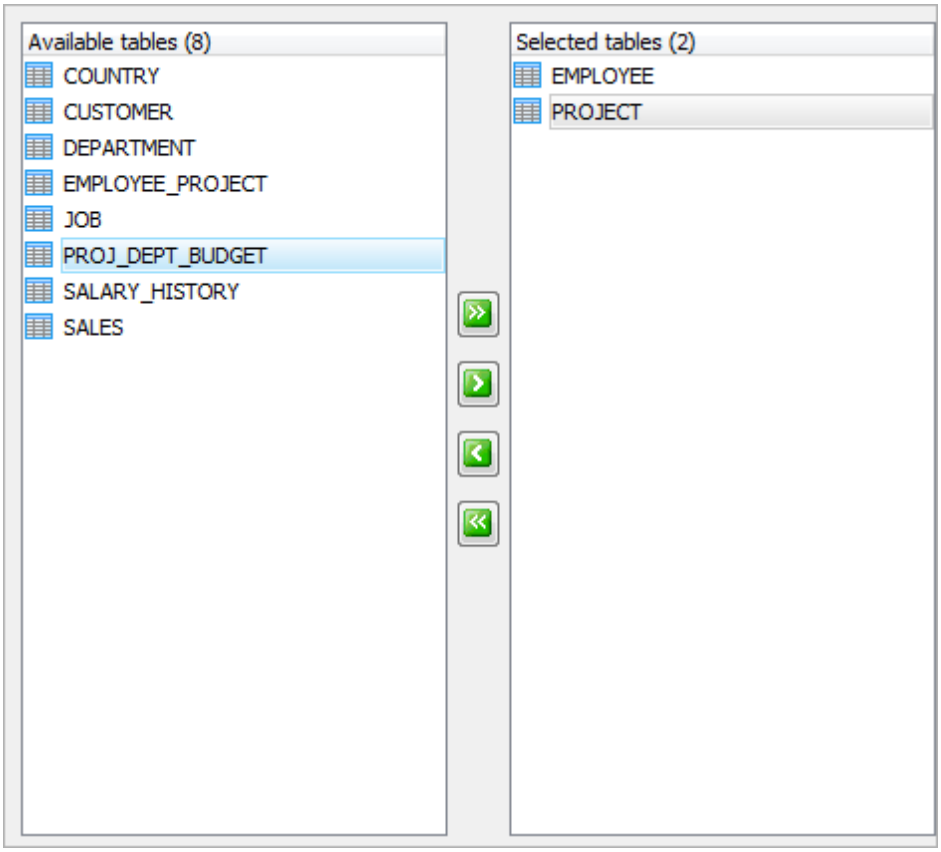
**Note:** this step is not available if you select the extract data only mode when selecting components to be extracted 149.




### 8.4.3 Selecting objects to extract their data

Select the tables to extract their data by moving them from the Available tables list to the Selected tables list.

**Note:** this step is not available if you select the extract structure only mode when selecting components to be extracted 149.




### 8.4.4 Customizing script options

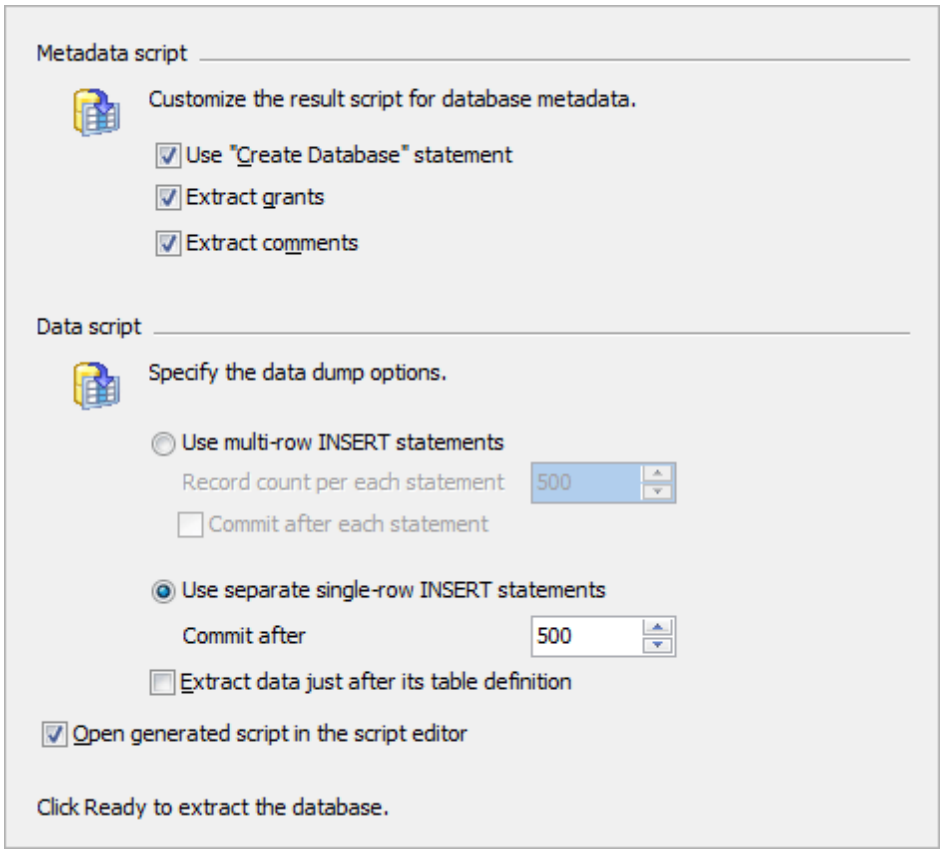
Adjust the result script for database metadata according to your needs. To include/exclude the following statements into the script, check the corresponding boxes: *CREATE DATABASE*, *DROP DATABASE IF EXISTS*, *DROP IF EXISTS* statements for database objects, and foreign key checks.

Select the data dump mode to be used (Multi-row INSERT statements or separate single-row INSERT statements) and specify commits' frequency.

You can also set extract data after its table definition.

Fill the Open generated script in the script editor box to load the result script to SQL Script Editor 146.

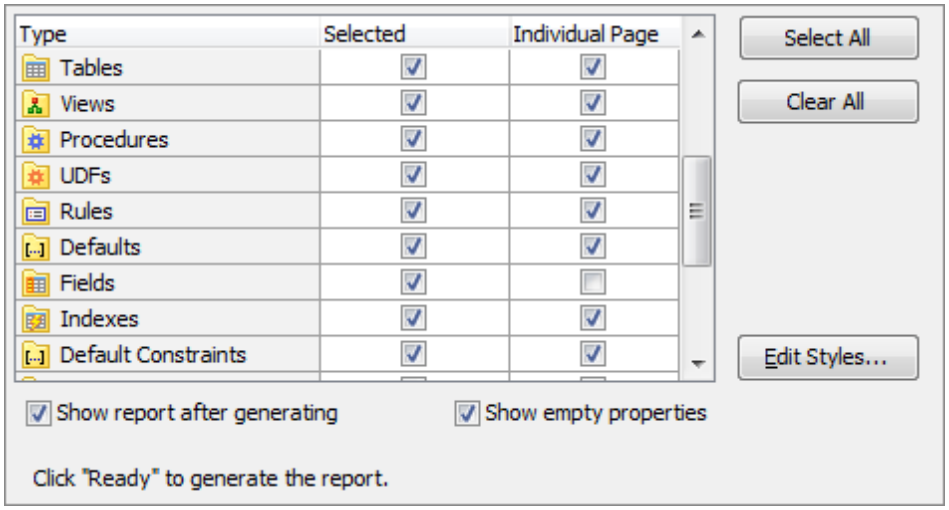
Click the Ready button to start the extraction process.



## 8.5 Generate Database Report

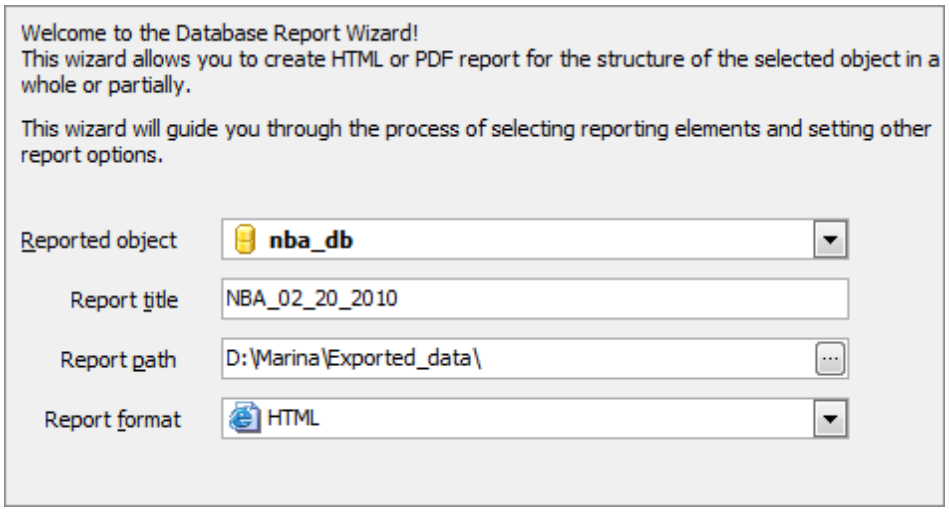
With the help of Generate Database Report Wizard you can create HTML or PDF report for the structure of the selected object in the whole or partially. To run this wizard select the Tools | Generate Database Report main menu item.

- Selecting reporting elements and setting other report options 154
- Specifying reporting objects and editing styles 154




### 8.5.1 Selecting reporting elements and setting other report options

Select the report object and the report format items, set the report title and the report path options in the respective boxes.



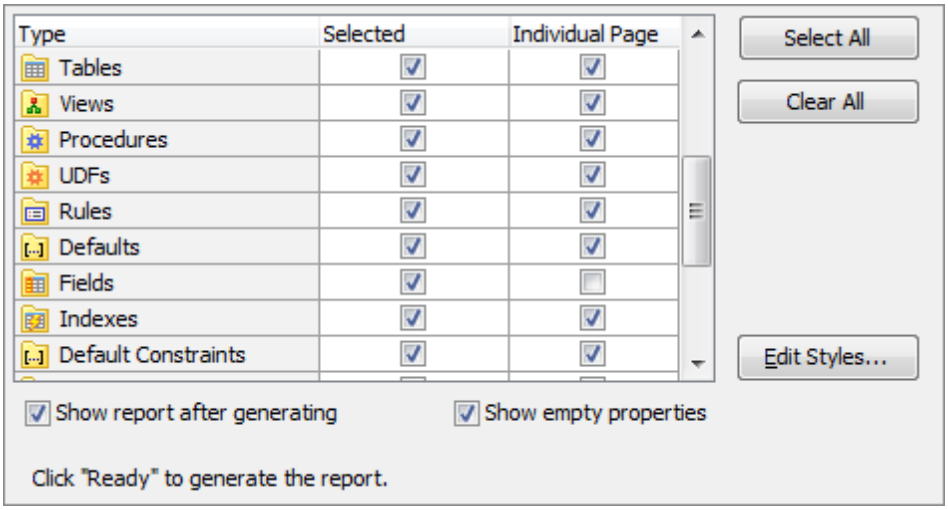

### 8.5.2 Reporting objects and editing styles options

This step allows you to select the essential objects to report and to specify the output format and style using Report Style Editor 155.

☑ Show report after generating

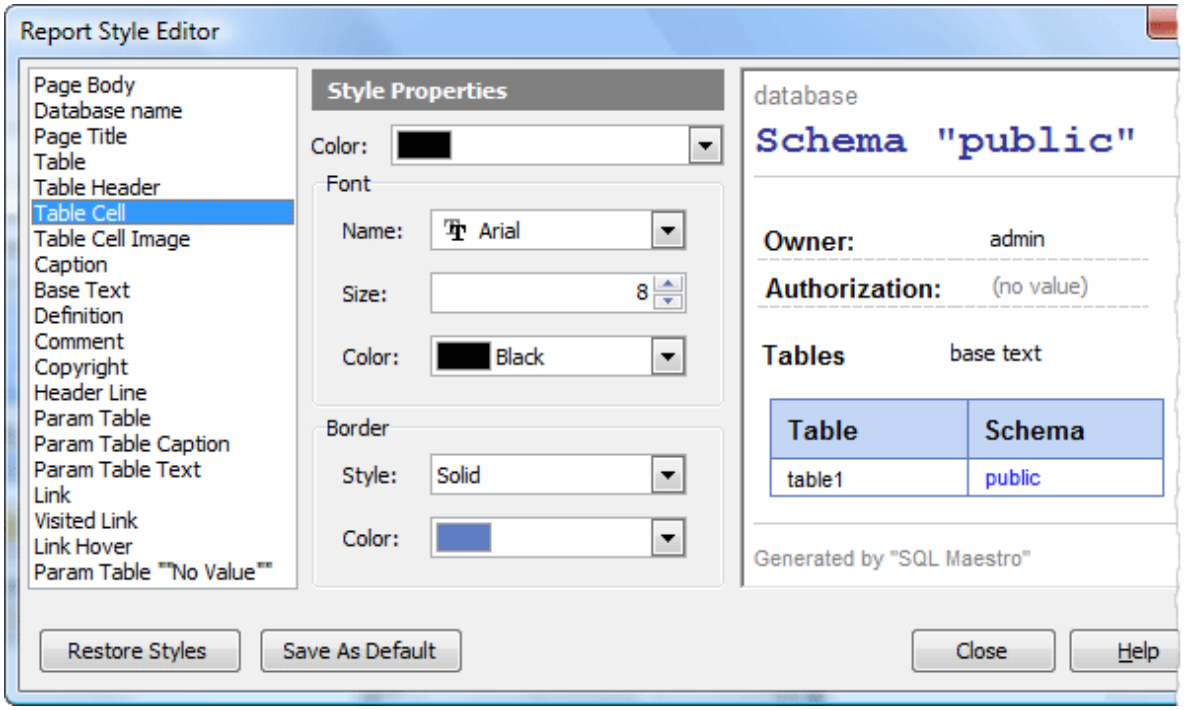
If checked, opens the result files in the associated program after making the report.

☑ Show empty properties
If checked, allows you to report objects even if they are empty.




### 8.5.3 Editing database report style

Using Report Style Editor you can specify style properties of a report including font size, color and name for different elements.



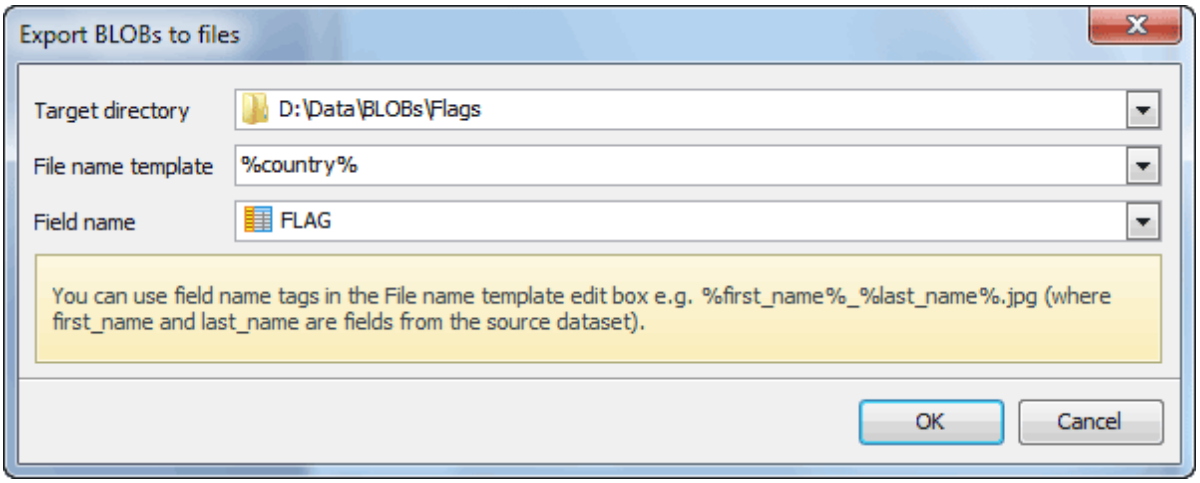
## 8.6 BLOB Viewer

BLOB Viewer allows you to view the content of the BLOB fields in various representations.

- Viewing BLOB field as hexadecimal dump 156
- Viewing BLOB field as plain text 157
- Viewing BLOB field as graphical image 158
- Viewing BLOB field as HTML 159
- Viewing BLOB field as PDF 160

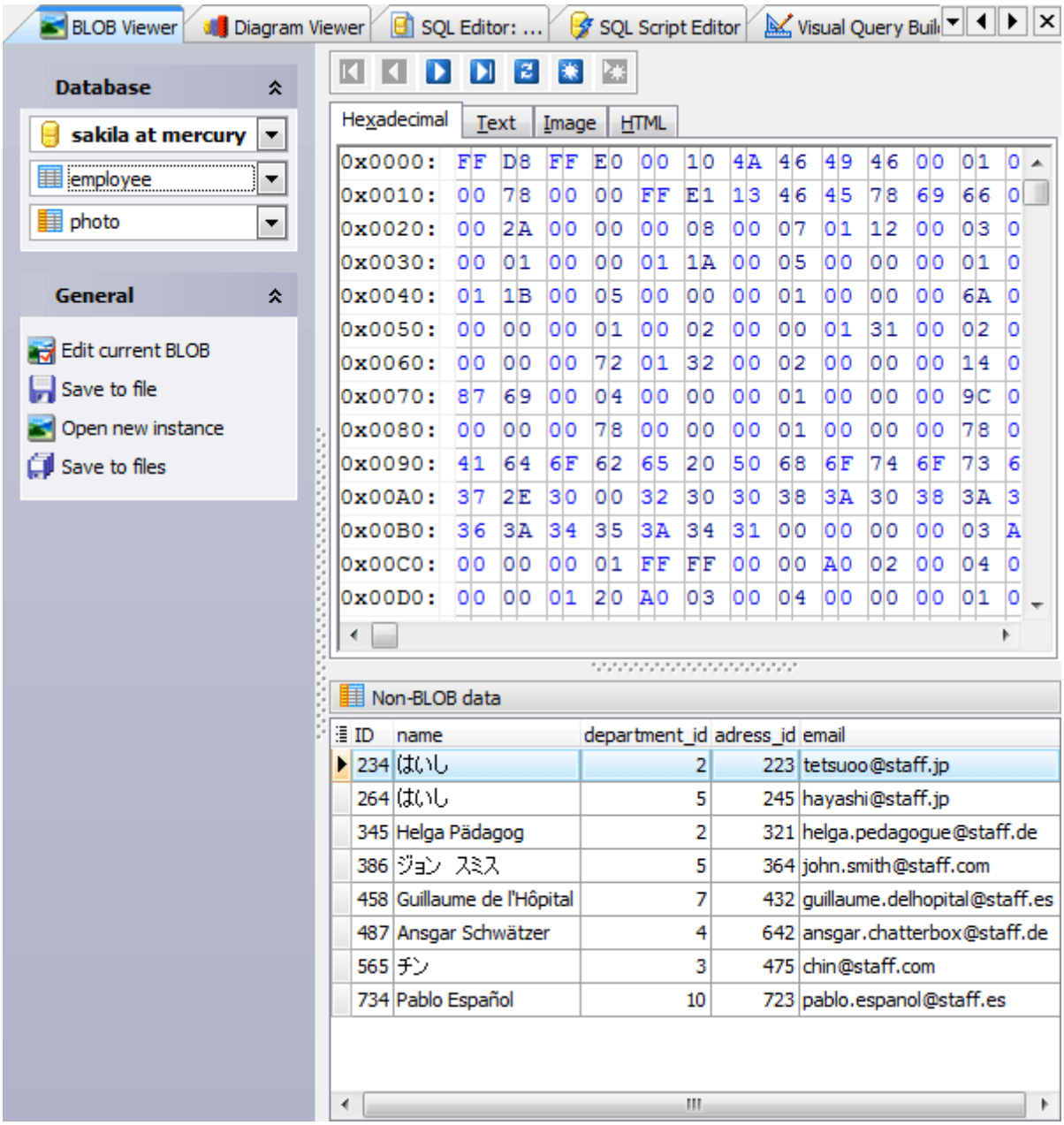
**See also:** BLOB Editor 121

BLOB Viewer also allows you to save all BLOBs from a table or view to a given directory. Just click Save to files on the Navigation bar and fill all fields in the Export BLOBs window shown below. You can use table columns' names enclosed in % as a file name template.



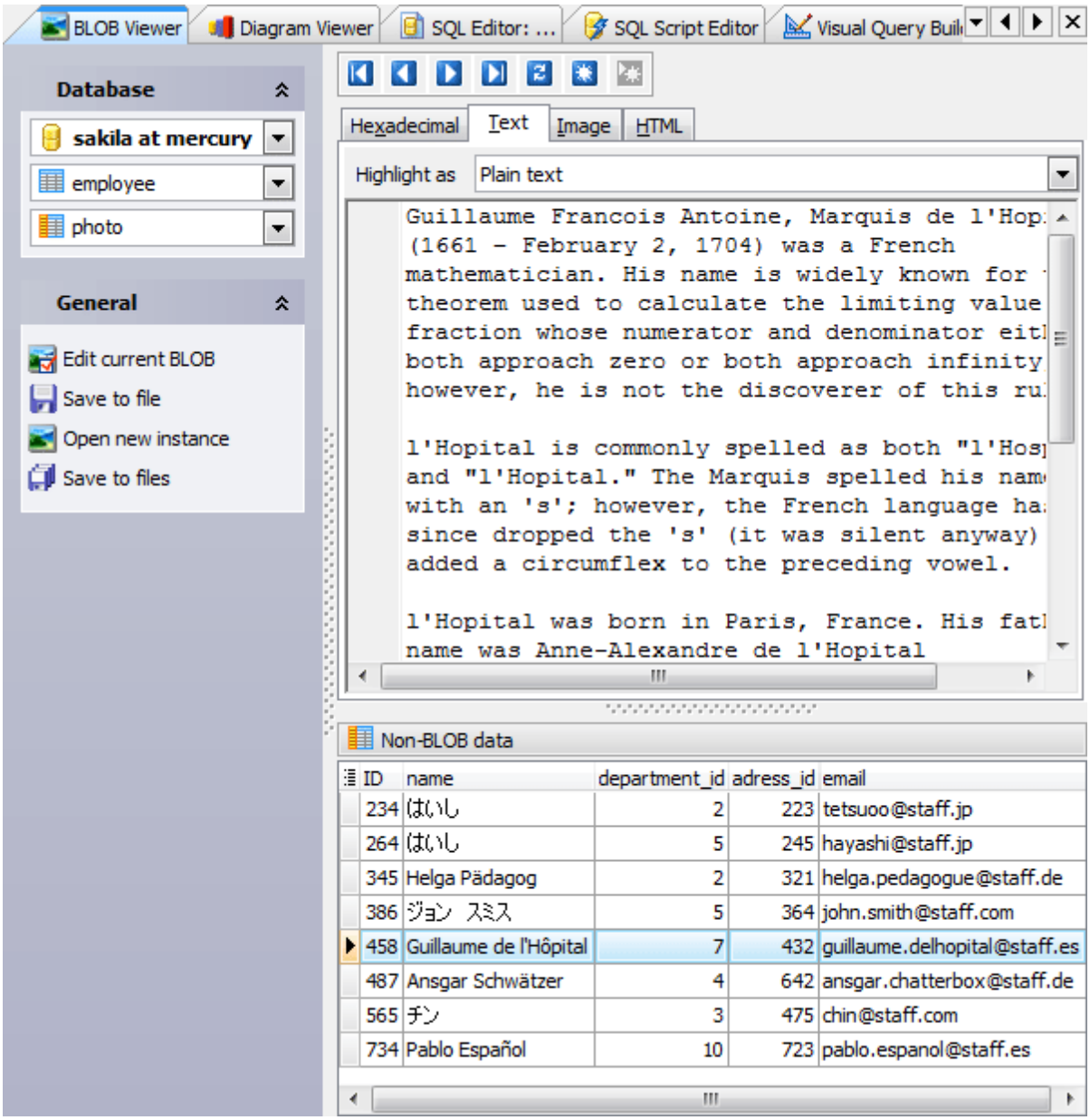

### 8.6.1 Viewing as hexadecimal dump

The Hexadecimal panel allows you to view data in hexadecimal mode.



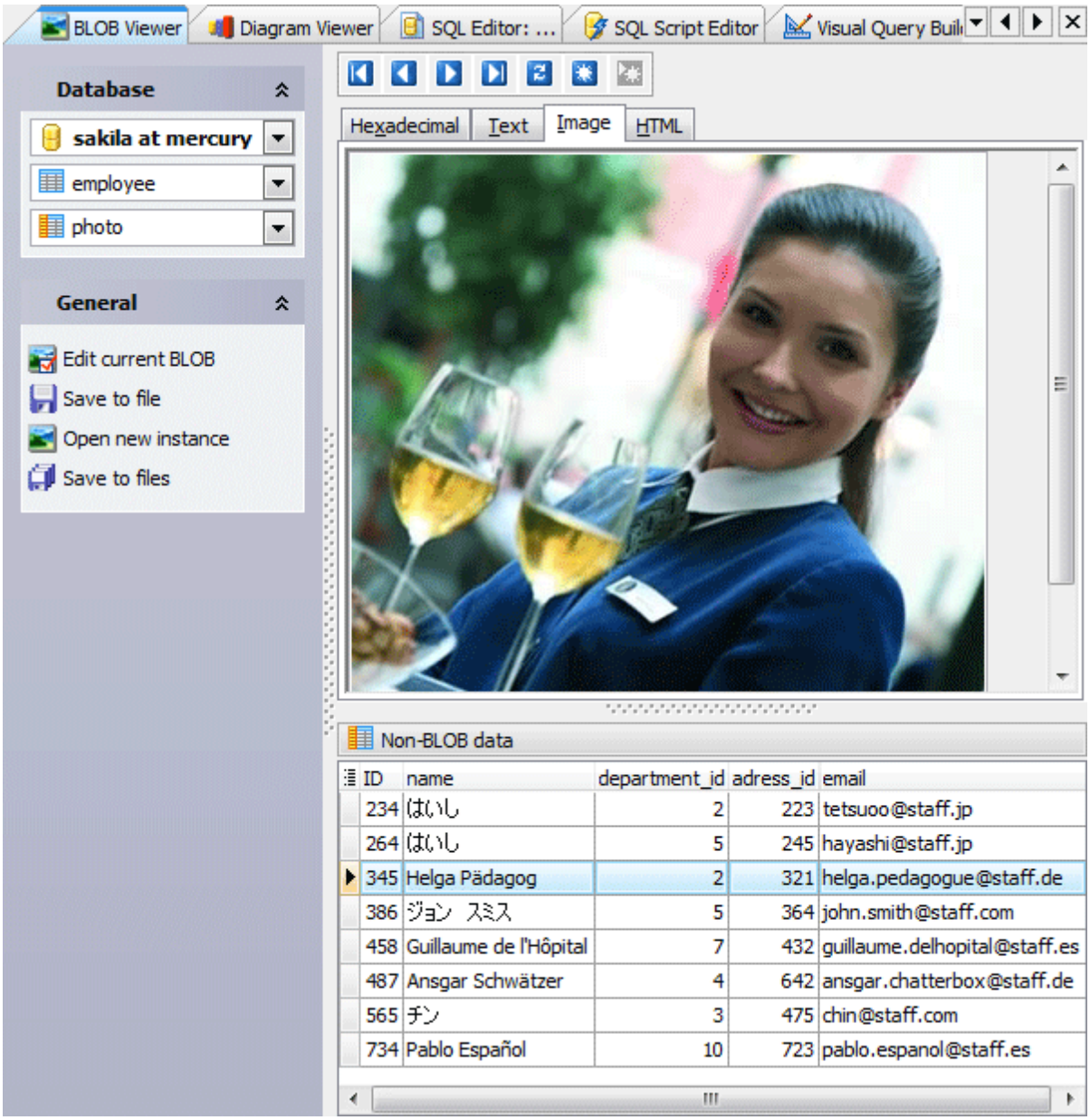

## 8.6.2 Viewing as plain text

The Text panel allows you to view data as simple text. For your convenience several types of text highlighting are available (*Plain text, HTML, JScript, CSS, PHP, XML, SQL,* and *SQLite DDL*). The popup menu of the panel provides you to Find or Replace a necessary text fragment.



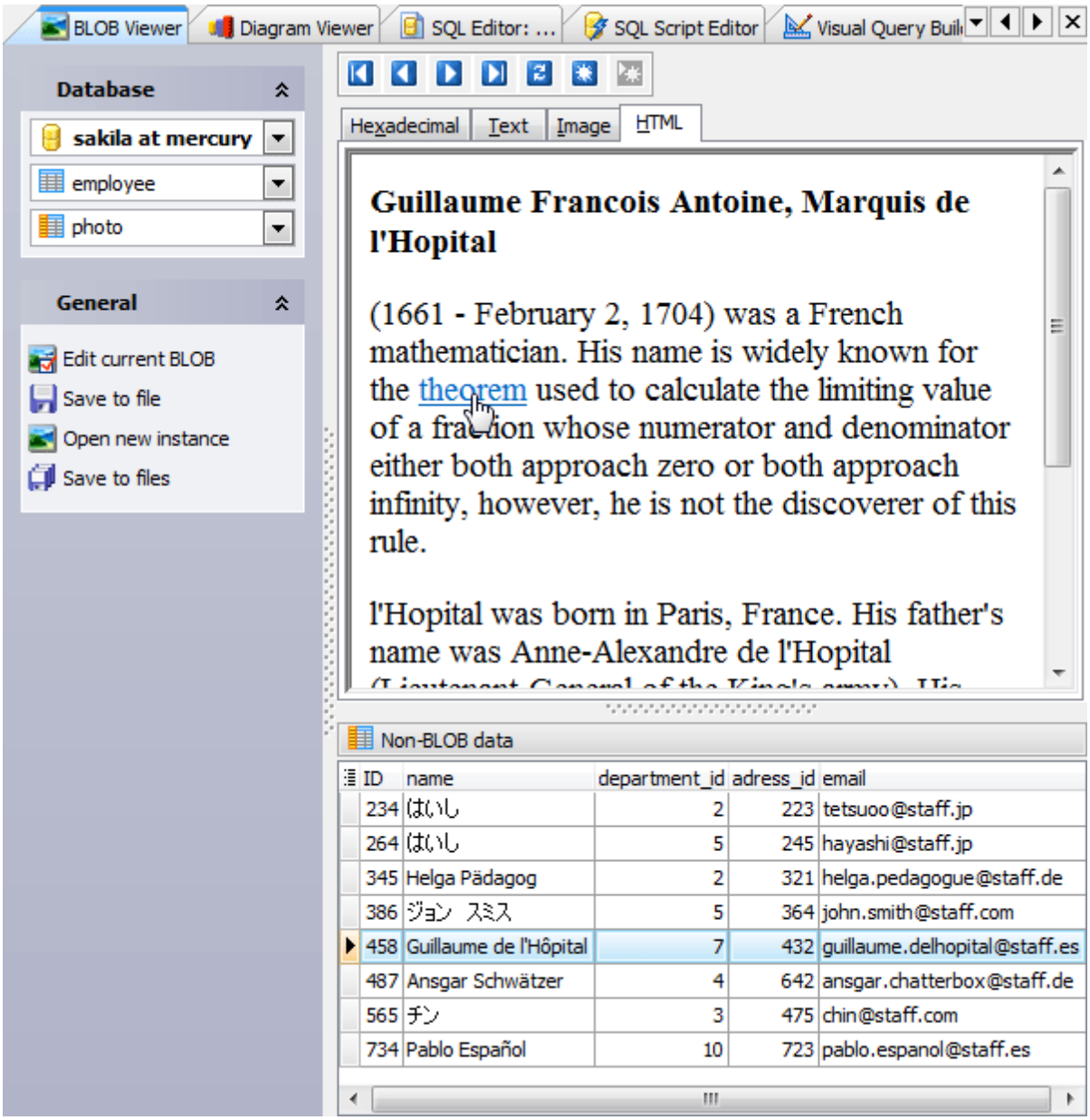

### 8.6.3 Viewing as image

The Image panel displays field data as image.



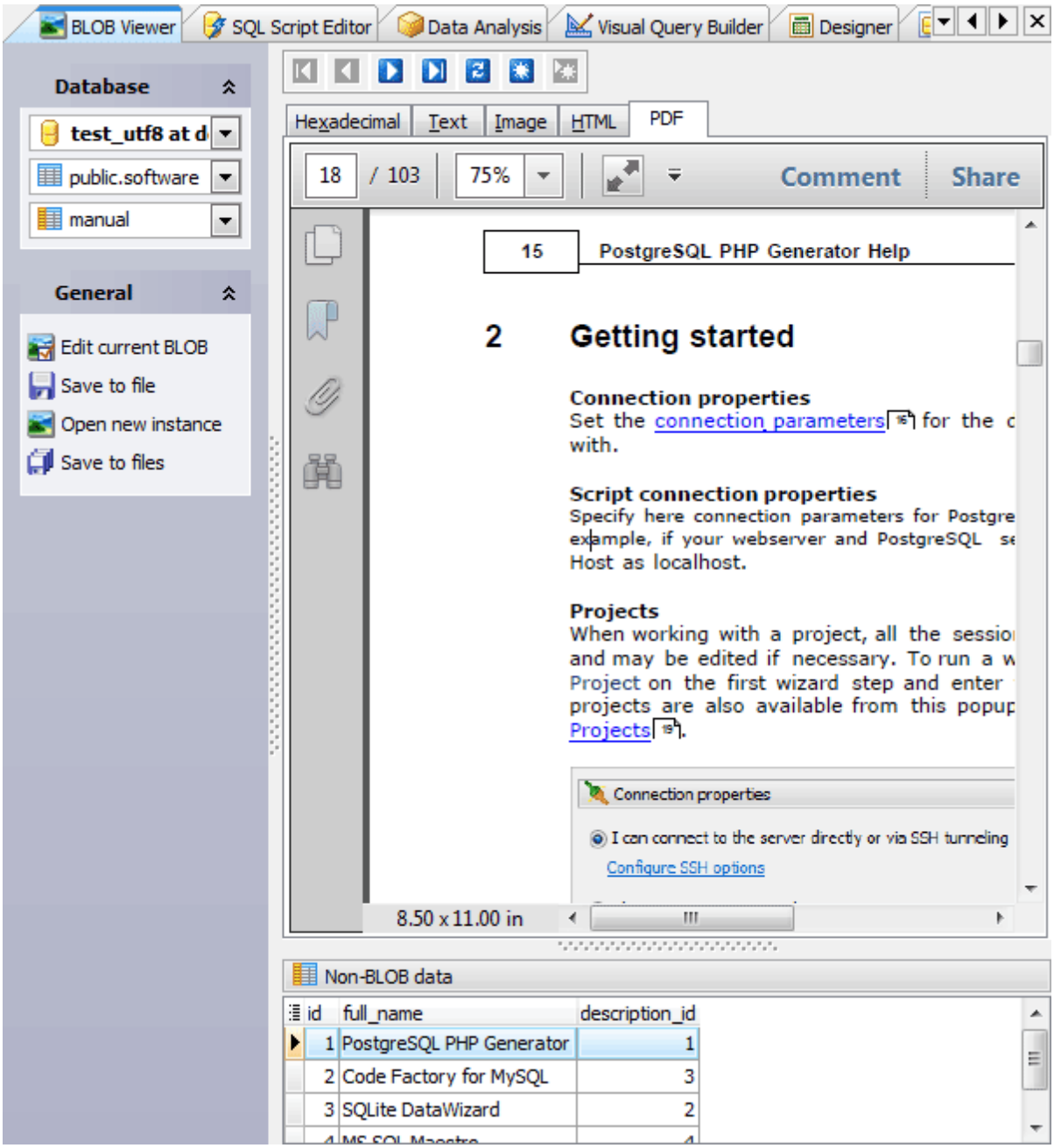

### 8.6.4 Viewing as HTML

The HTML panel displays field data as HTML.




### 8.6.5 Viewing as PDF

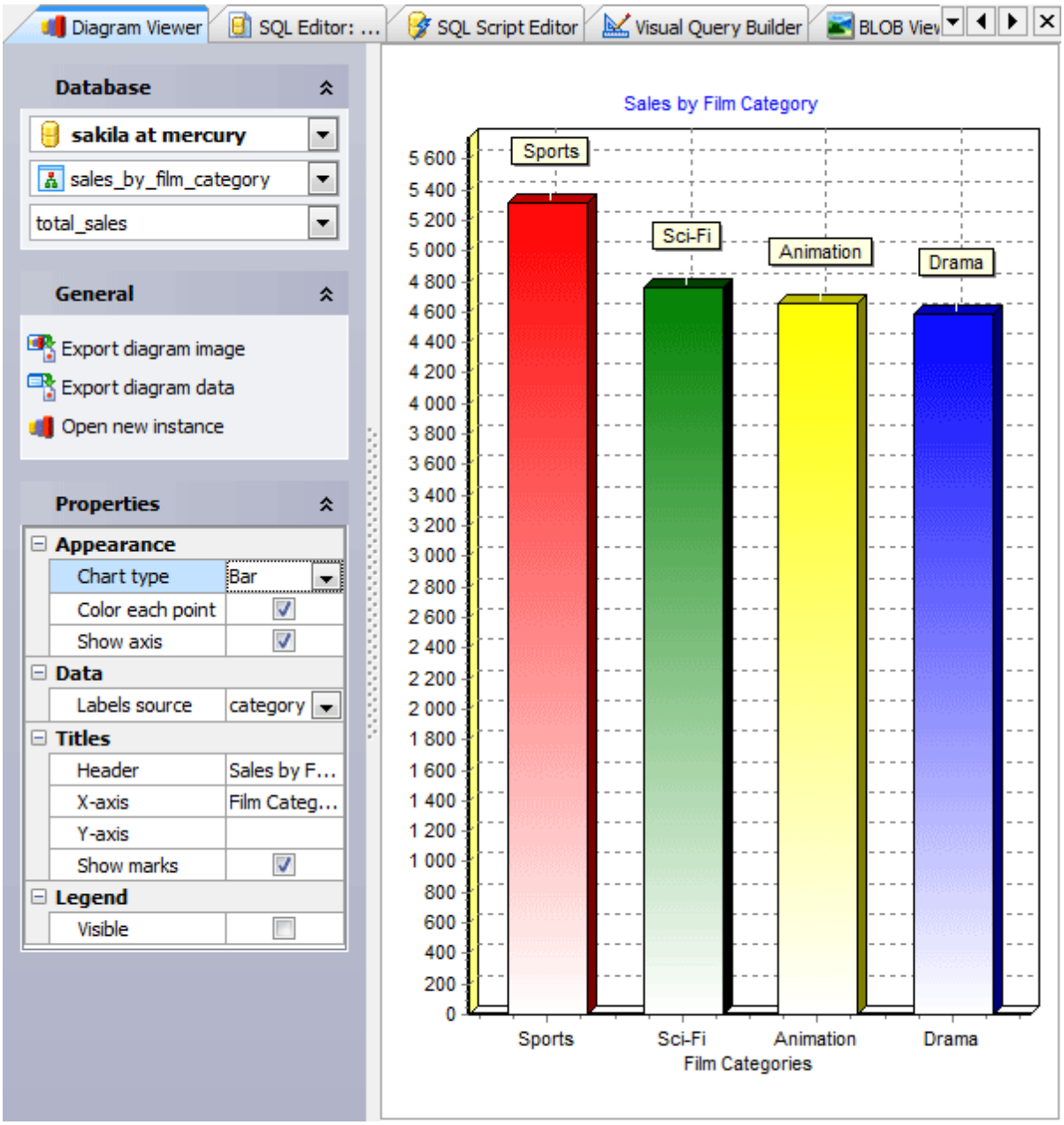
The PDF panel allows you to browse PDF data stored in the database.



## 8.7 Diagram Viewer

Diagram Viewer is a tool for representing data from a table or a query as a diagram in various ways. This means you can build a diagram represented as bars, lines, areas, points or pies, colored or not, with axis visible or not; specify axis labels source, diagram header and more. The Diagram Viewer also has the Export diagram image 164 and the Export diagram data features implemented, with a lot of formats supported.

- Customizing diagram options 163
- Exporting diagram as a graphical image 164



### 8.7.1 Customizing diagram properties

To build a diagram in Diagram Viewer, you should select the source field(s) to be represented in the diagram first. Only numeric types of fields can be used in the diagram, and each selected field corresponds to a separated diagram series. Fields are selected by checking items in the third combo box from the top in the Database group of the Navigation Bar. If the combo box is empty then either data source is not yet selected or it contains no numeric fields.

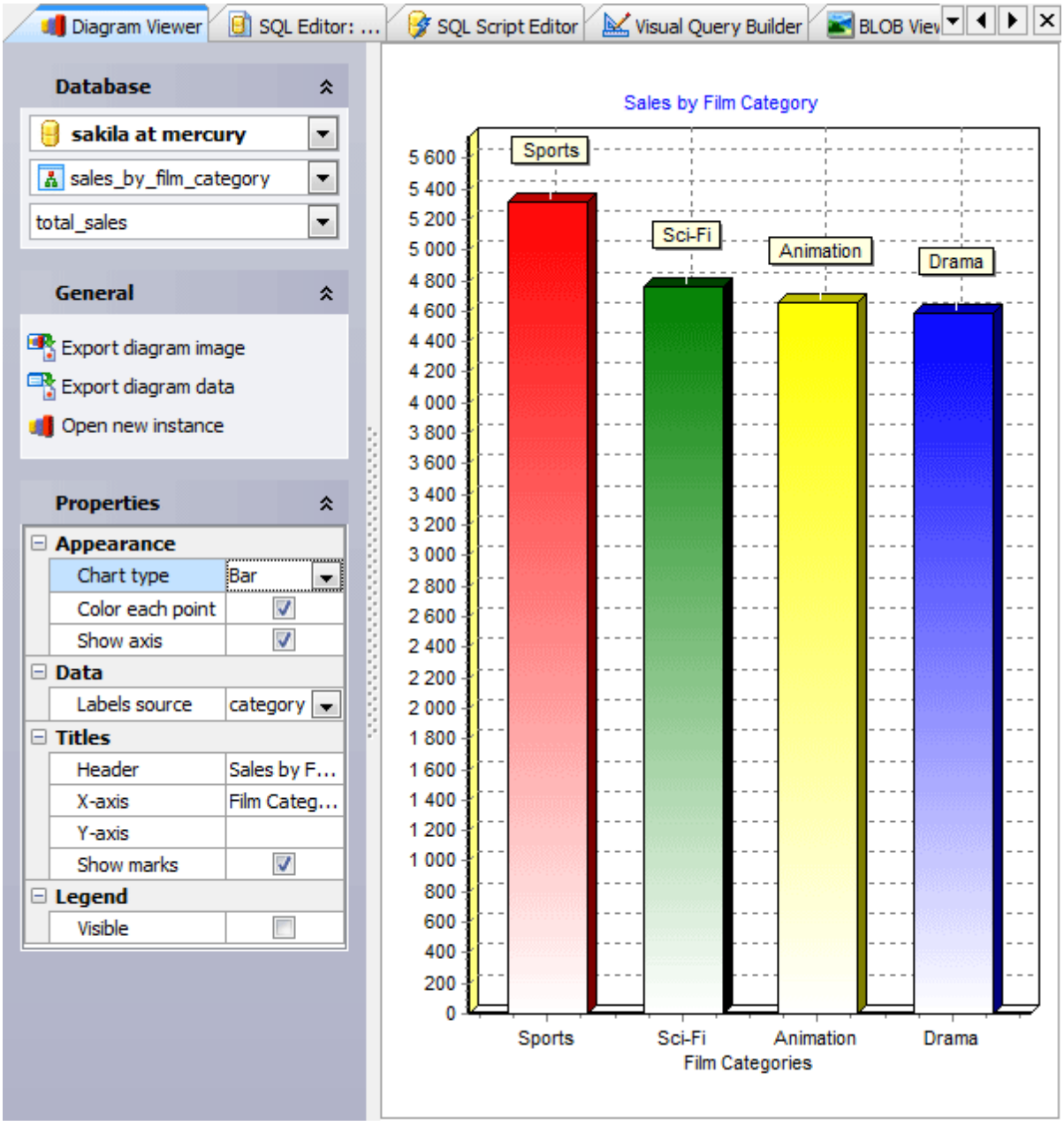



Diagram Viewer provides a special control for customizing the diagram properties. This control is located in the Properties group of the Navigation Bar and consists of four separate subgroups:

Appearance
Contains properties responsible for major diagram appearance:

- Chart type - defines a way of how the diagram will be represented: as bars, lines, areas, points, pies, or fast lines
- Color each points - if checked, each bar, point, line or sector of the diagram has an individual color; if not checked, all the points are colored red
- Show axis - defines if the diagram has the axis and background grid or not

Data
Contains the Labels source property which allows you to specify the field for X-axis labels as well as for diagram point marks .

Titles
Contains properties for defining titles for different parts of the diagram:

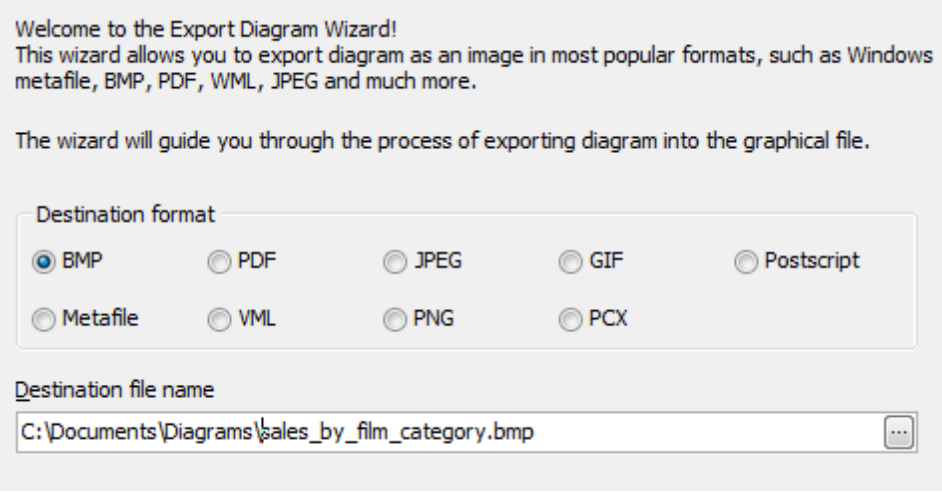
- Header - defines the title appeared on the top of the diagram
- X-axis and Y-axis - define the titles for diagram axis
- Show marks - defines if the diagram point marks are visible or not

Legend
The only Visible property of this subgroup specifies whether the legend rectangle should be represented on the right side of the diagram or not.

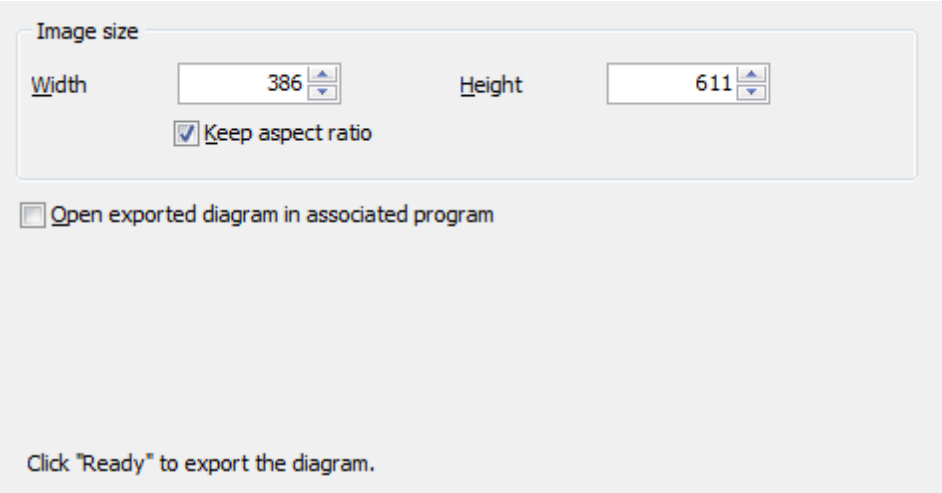
### 8.7.2 Exporting diagram image

Diagram Viewer provides an ability to export current diagram to a file as graphical image. This ability is constituted in Export Diagram Wizard which can be invoked by the Export diagram image item of the Navigation Bar.

Select the desired graphical format in the Destination format radio group and specify the file name in the Destination file name box.




Set the destination width and height by the corresponding spin edits. Check or uncheck the Keep aspect ratio option to keep the image ratio for exported image or not. Check the Open exported image in associated program option to view the image after the export is done.



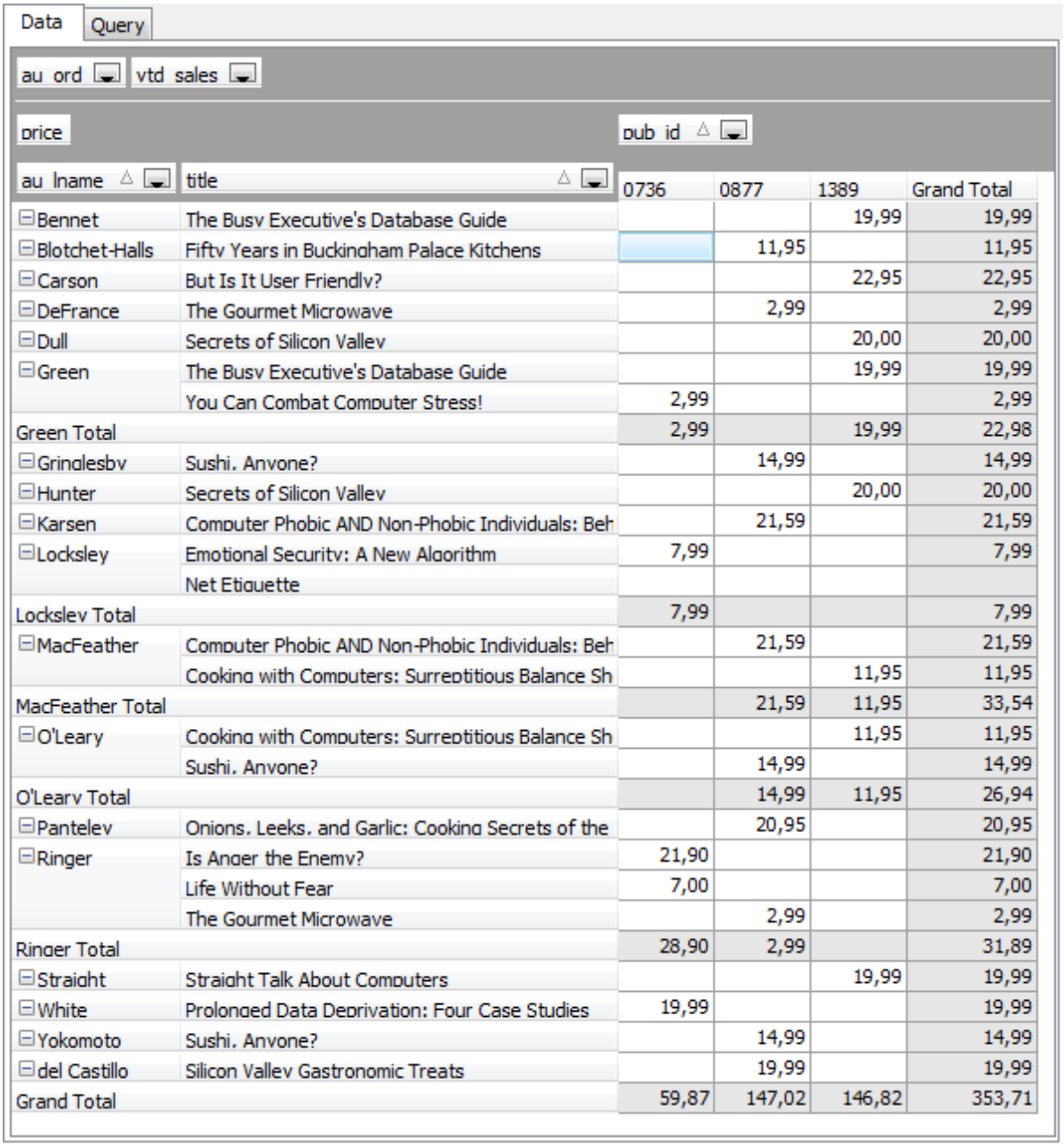
## 8.8 Data Analysis

Data Analysis is a tool to define a multidimensional model with analytic calculations to analyze information also called OLAP cube. Such cubes could effectively be re-oriented. So the tool allows you to view data in various ways, such as displaying all the cities down the page and all the products across a page and then immediately view it in another way. Because this re-orientation involves re-summarizing very large amounts of data, this new view of the data has to be generated efficiently to avoid wasting the analyst's time, i.e. within seconds, rather than the hours a relational database and conventional report-writer might have taken. It allows you to focus on business rules rather than creating dozens and dozens of reports. To run Data Analysis, choose Tools | Data Analysis main menu item.

To get an OLAP cube:

- Input SELECT query 167 in the Query window or load it from the .cub file.
- Manage report data 168 in the Data window.

The Data Analysis tool allows you to save the created OLAP cube to .cub file, print it, or export it to Excel, HTML, XML, and text file.



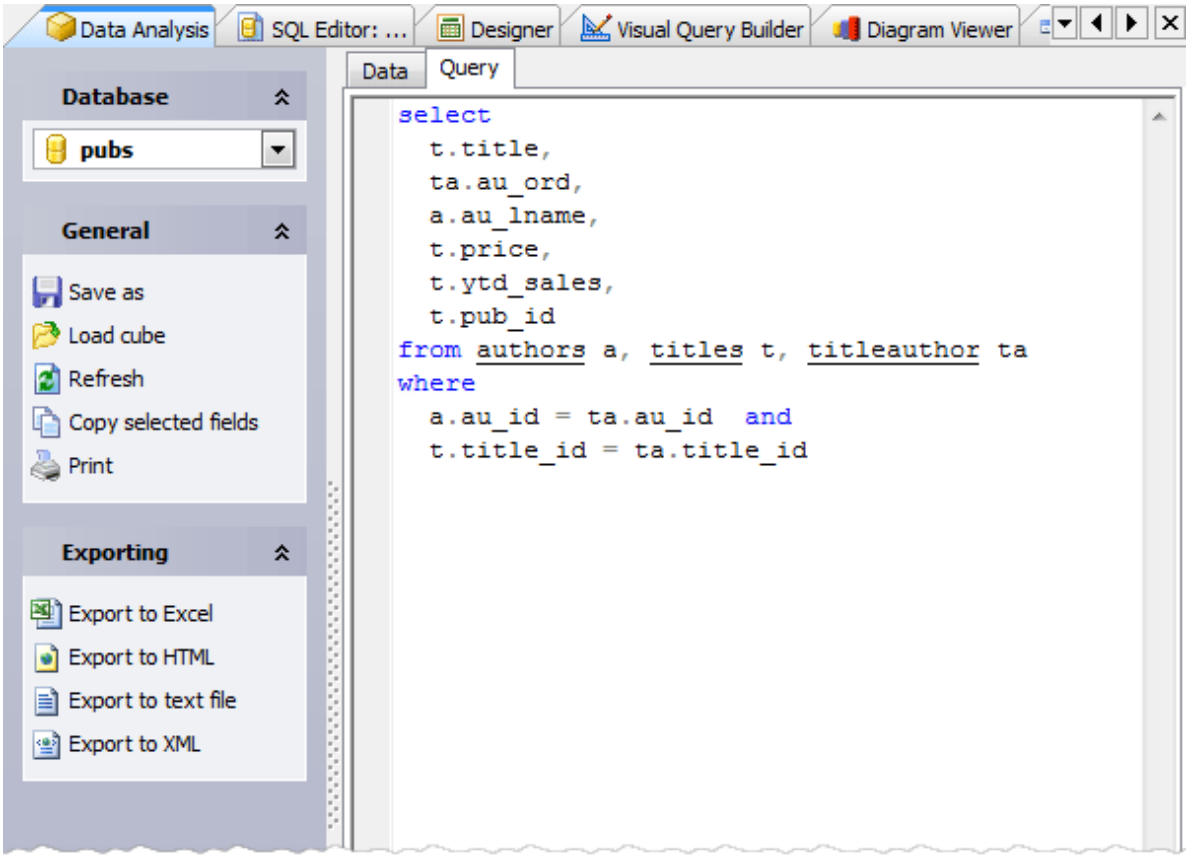
Data | Query

au_ord | vtd_sales | price | pub_id

| au_lname | title | 0736 | 0877 | 1389 | Grand Total |
|---|---|---|---|---|---|
| Bennet | The Busy Executive's Database Guide | | | 19,99 | 19,99 |
| Blotchet-Halls | Fifty Years in Buckingham Palace Kitchens | | 11,95 | | 11,95 |
| Carson | But Is It User Friendly? | | | 22,95 | 22,95 |
| DeFrance | The Gourmet Microwave | | 2,99 | | 2,99 |
| Dull | Secrets of Silicon Valley | | | 20,00 | 20,00 |
| Green | The Busy Executive's Database Guide | | | 19,99 | 19,99 |
| | You Can Combat Computer Stress! | 2,99 | | | 2,99 |
| Green Total | | 2,99 | | 19,99 | 22,98 |
| Gringlesby | Sushi, Anyone? | | 14,99 | | 14,99 |
| Hunter | Secrets of Silicon Valley | | | 20,00 | 20,00 |
| Karsen | Computer Phobic AND Non-Phobic Individuals: Beh | | 21,59 | | 21,59 |
| Locksley | Emotional Security: A New Algorithm | 7,99 | | | 7,99 |
| | Net Etiquette | | | | |
| Locksley Total | | 7,99 | | | 7,99 |
| MacFeather | Computer Phobic AND Non-Phobic Individuals: Beh | | 21,59 | | 21,59 |
| | Cooking with Computers: Surreptitious Balance Sh | | | 11,95 | 11,95 |
| MacFeather Total | | | 21,59 | 11,95 | 33,54 |
| O'Leary | Cooking with Computers: Surreptitious Balance Sh | | | 11,95 | 11,95 |
| | Sushi, Anyone? | | 14,99 | | 14,99 |
| O'Leary Total | | | 14,99 | 11,95 | 26,94 |
| Panteley | Onions, Leeks, and Garlic: Cooking Secrets of the | | 20,95 | | 20,95 |
| Ringer | Is Anger the Enemy? | 21,90 | | | 21,90 |
| | Life Without Fear | 7,00 | | | 7,00 |
| | The Gourmet Microwave | | 2,99 | | 2,99 |
| Ringer Total | | 28,90 | 2,99 | | 31,89 |
| Straight | Straight Talk About Computers | | | 19,99 | 19,99 |
| White | Prolonged Data Deprivation: Four Case Studies | 19,99 | | | 19,99 |
| Yokomoto | Sushi, Anyone? | | 14,99 | | 14,99 |
| del Castillo | Silicon Valley Gastronomic Treats | | 19,99 | | 19,99 |
| Grand Total | | 59,87 | 147,02 | 146,82 | 353,71 |

### 8.8.1 Input SELECT query

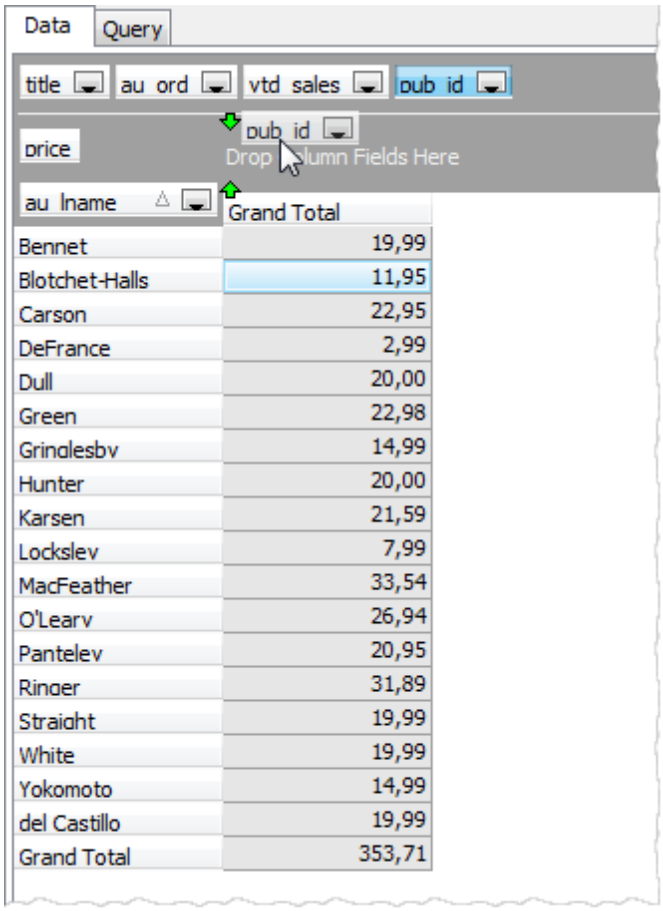
To get an OLAP cube 168, enter SELECT query as a snowflake schema, represented by centralized fact tables (with numeric data) which are connected to multiple dimensions (the numeric data to be categorized by). Input the query text in the SQL Editor area directly or use "drag-n-drop" operation SQL Editor or Visual Query Builder areas and the Query tab of Data Analisis.



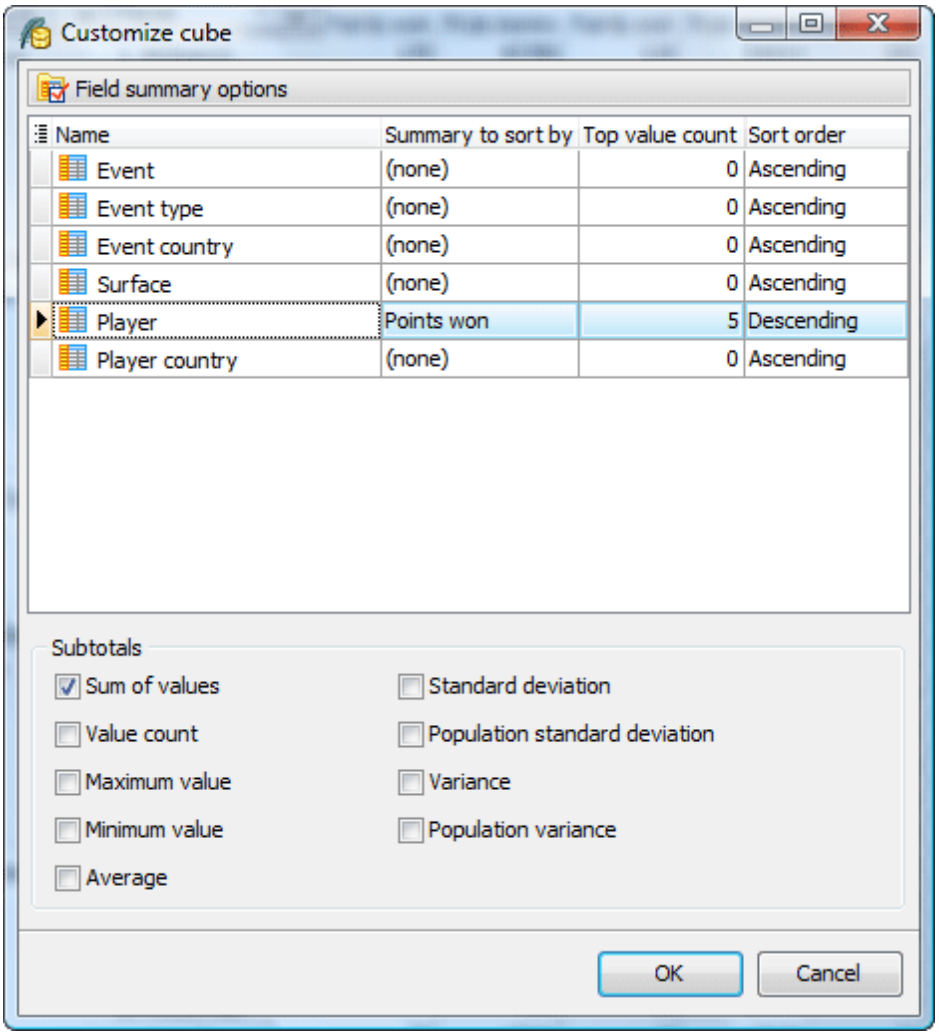

## 8.8.2 Managing report data

The Data tab allows you to manipulate the created OLAP cube appearance. At the beginning all the query 167 columns are arranged at the top of the tab. Put them according to your business rules: drag numeric columns to be filtered and summarized corresponding to the chosen columns and rows to the Data Fields area; place necessary columns to Column Fields / Row Fields areas respectively.

**Note:** Use for the Data Fields area only numerical columns.




To set the aggregates calculated on the numeric columns, use the Customize cub window opened with the corresponding link at the Navigation bar. The window provides you also with an ability to specify columns the summary to be sorted by, the sort order and the max number of records represented in grid.



## 8.9 Report Designer

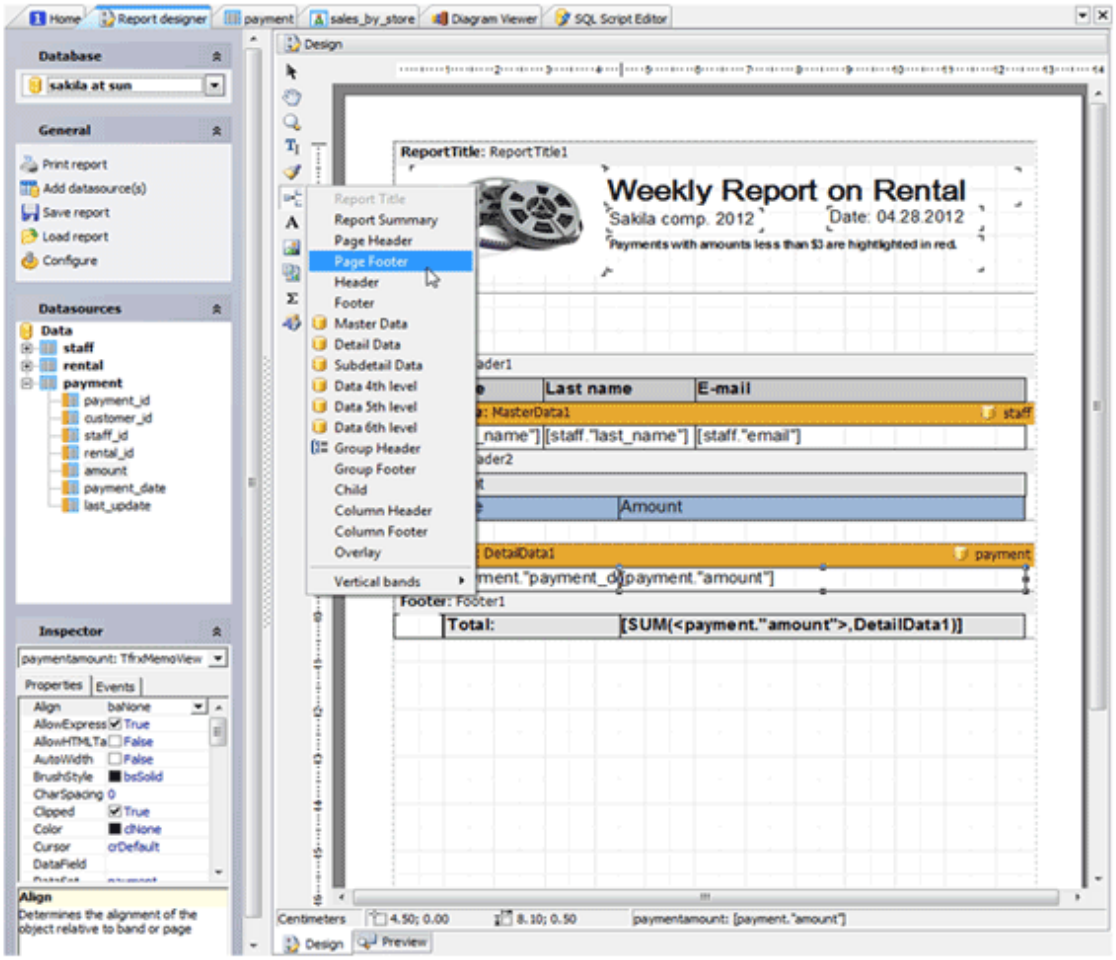
**Report Designer** allows you to create database reports, define reports appearance in your own style, equip it with master-detail data views, aggregate functions, and images and control the result with the ability of simultaneous previewing. To run Report Designer, choose Tools | Report Designer main menu item.

To create a report, you need to:

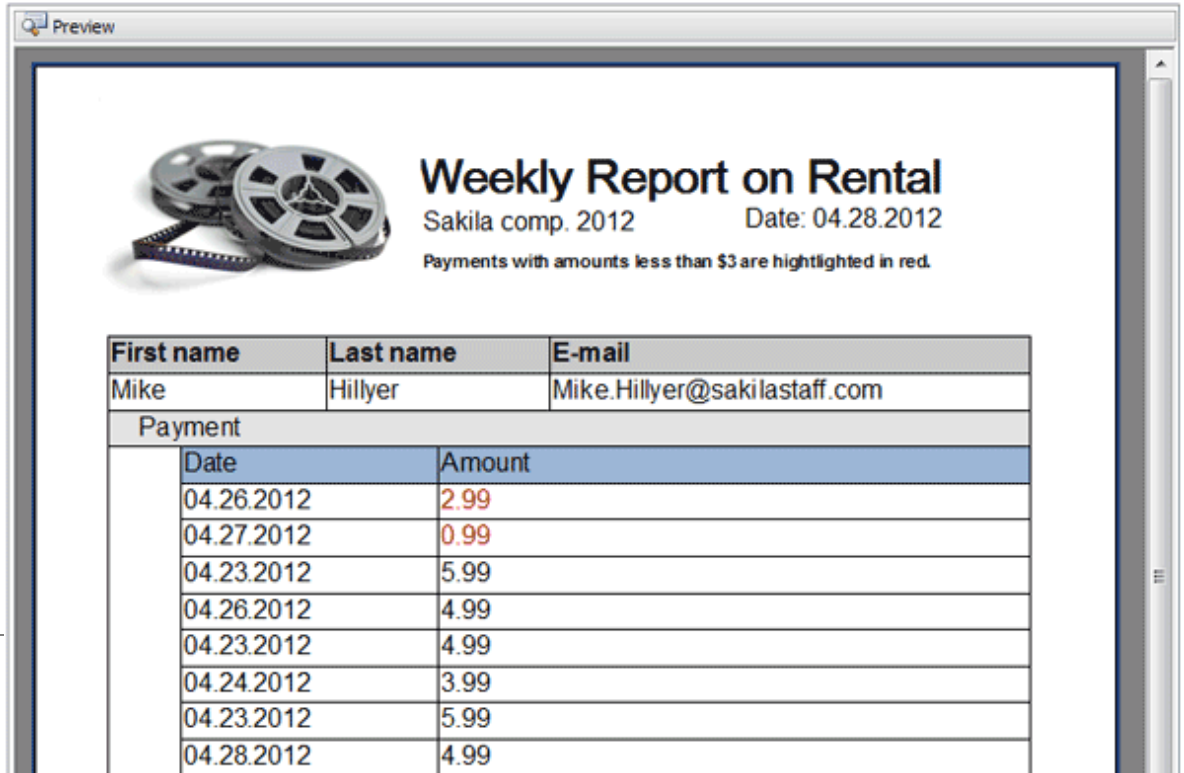
- specify data sources 173 for the data to be used in the report;
- add all necessary objects 173 to the report template;
- set the objects' format within the Inspector window 175.

The prepared report pages are available immediately at the Preview window where you can browse it, save to it an .smr file, or print.

## Report Designer in Action




## Report Preview



### 8.9.1 Designer Tools and Objects

A blank report is presented as a paper page. At any place on the page, a user is able to add objects, which can display different information (such as text and/or graphics), as well as to define report's appearance. There is a possibility to use rulers and a grid with a specified size in the Design tab. To enable/disable these options, follow the Configure link at the Navigation Bar and check the corresponding boxes.

**Datasources**
To use content of a table (view) column data in a report,

- check the necessary database is selected as Database at the Navigation Bar;
- drag the table which data to be used in the report to the Datasources pane at the Navigation Bar;
- drag the necessary column from this pane and drop it to the necessary location on a report page.

**Designer tools:**
Select tool
The standard tool to select objects, modify their sizes, etc.

Hand tool
The tool allows dragging a report page.

Zoom tool
When the button is pressed, clicking on the left button doubles the zoom (adds 100%), while clicking the right one zooms out by 100%. When holding the left mouse button while dragging,the selected area would be zoomed.

Edit text tool
Clicking on the text object allows editing its contents right on the report page. If you hold the left mouse button when moving the cursor, the text object appears in the selected place, and then its editor launches.

Copy format tool
The button becomes enabled when the text object is selected. When clicking on the text object with the left button, it copies formatting, which has the previously selected text object, into the object.

**Available objects:**
Band objects allow to specify where, when, and how to display data and information in reports. Bands are used for logically placing the objects it contains at a location on the output page. Insert Band adds an area with definite behaviour according to it's type such basic bands as Header, Footer, Title, and Summary, and databands whose allow to print data from database tables such as Master Data, Detail Data, etc.

Text object displays one or several text lines within the rectangular area.

Picture object displays a graphic file in BMP, JPEG, ICO, WMF, or EMF format.

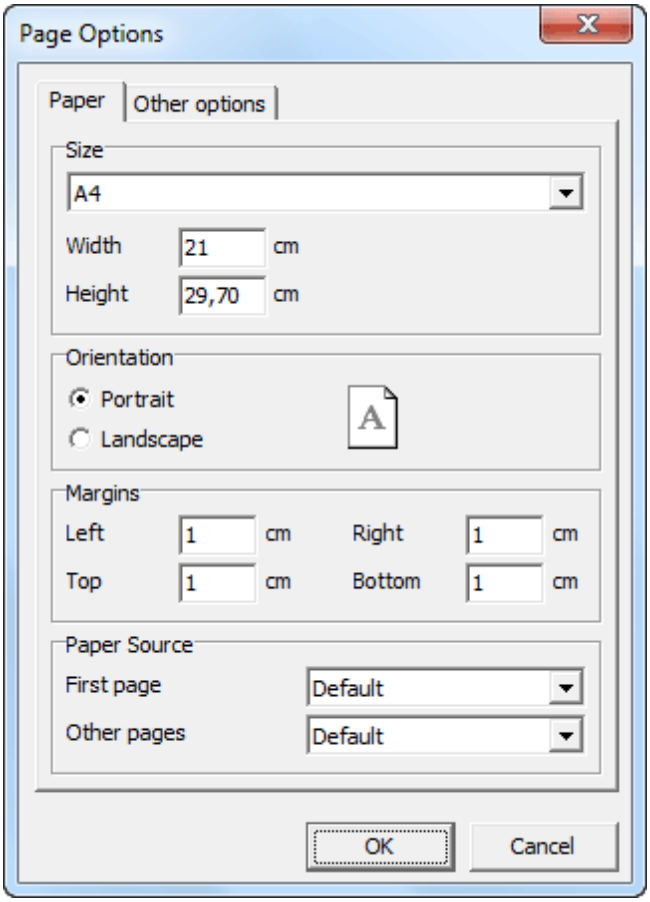
Subreport object allows inserting an additional report design page inside the basic one.

System text displays service information (date, time, page number, etc), as well as aggregate values.

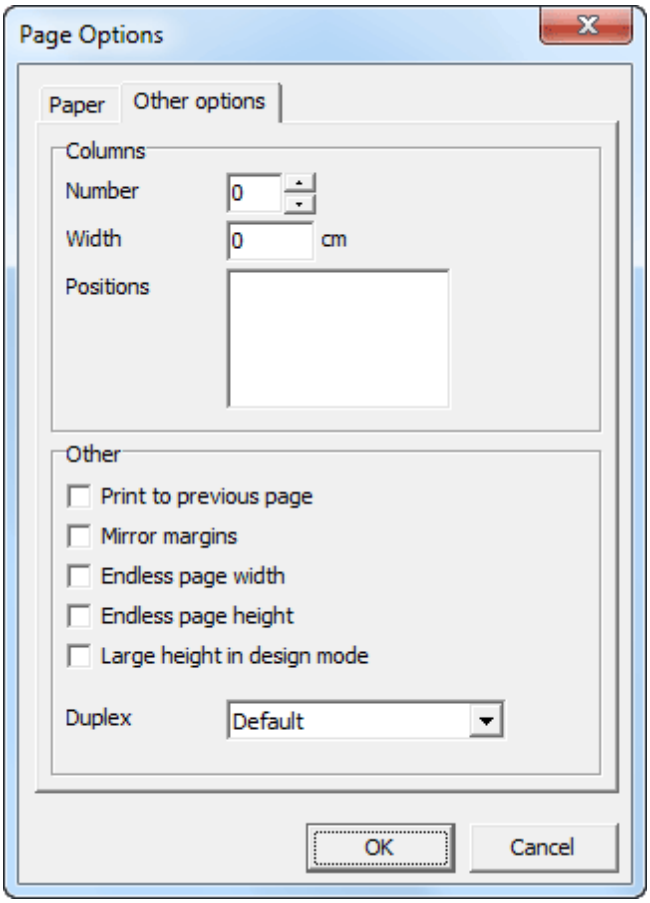
Draw object represents different geometrical figures (diagonal line, rectangle, rounded rectangle, ellipse, triangle, and diamond).

**Page options**

This dialogue allows you to set the page settings of the prepared. To invoke the window, use the Edit... link of the page blank space popup menu. The dialogue has two pages: Paper and Other options. On the Paper page, you can select size and alignment of paper, as well as set margins. In Paper source drop-down lists you can select a printer tray for the first page and the rest of the report pages.




On Other Options you can set the number of columns for multi-column reports' printing. The current settings are displayed in the designer.




The Print to previous page flag allows you to print pages, beginning from blank space of the previous page. This option can be used in case when a report template consists of several pages or when printing batch (composite) reports.

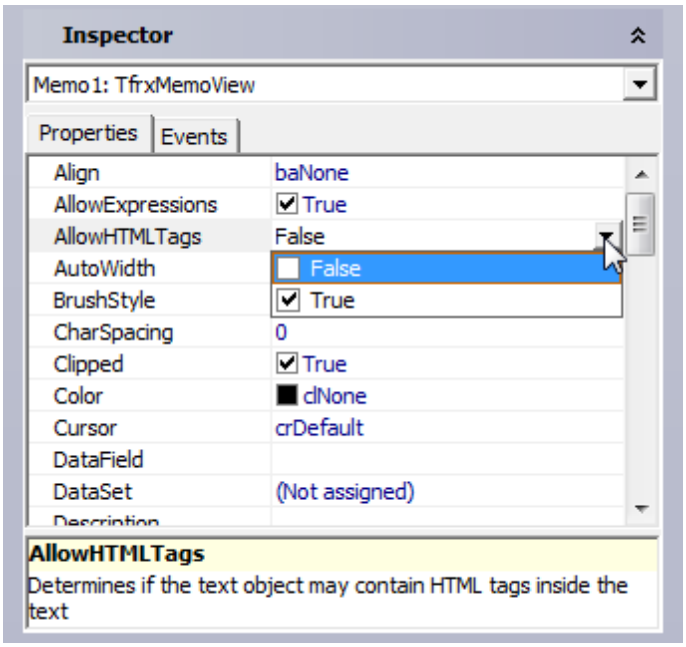
The Mirror margins option switches right and left margins of page for even pages during previewing or printing a report.

The Endless page width & height option increases page's sizes depending on number of data records on the page (when running a report). In this case you will see one big page in the preview window instead of several standard size pages.

The Large height in design mode option increases page's height several times more. This feature can be useful if many bands are located in the page, and must be used when working with the overlay band. This only effects the page height in design mode.

### 8.9.2 Object Inspector

Object Inspector pane allows you to specify the appearance of each report object in detail. To setup object properties, select it at the Design area or select it from the popup menu at the top of the pane. Now all the properties of the object are available for editing. The most of properties are provided by a set of available values. The description of the selected option is displayed at the bottom of the pane.




Below you can find a brief description of several options.

Align - set here the align option of the object according to the list.

AllowExpressions - enables the ability to display not only a static text, but expressions as well.

AllowHTMLTags - Enables using some simple HTML tags inside the text of an object. This option is disabled by default.Here is the list of supported tags:

<b> - bold text;
<i> - text in italic;
<u> - underlined text;
<sub> - subscript;
<sup> - superscript;
<font color> - font color;
<nowrap> - text which does not get broken up when using WordWrap, but gets transported wholly.

Font: there are abilities to specify the charset, font color, font name, and font size, and also set the bold, italic, underline, strike out attributes.

Frame: You can set as the color, the style and the shadow for all the frame, as well as for each frame line.

BrushStyle – type of object filling.

CharSpacing – space between symbols in pixels.

GapX, GapY – text indents from object's left and top boundaries (in pixels).

LineSpacing – space between lines (in pixels).

ParagraphGap – the first paragraph line indent (in pixels).

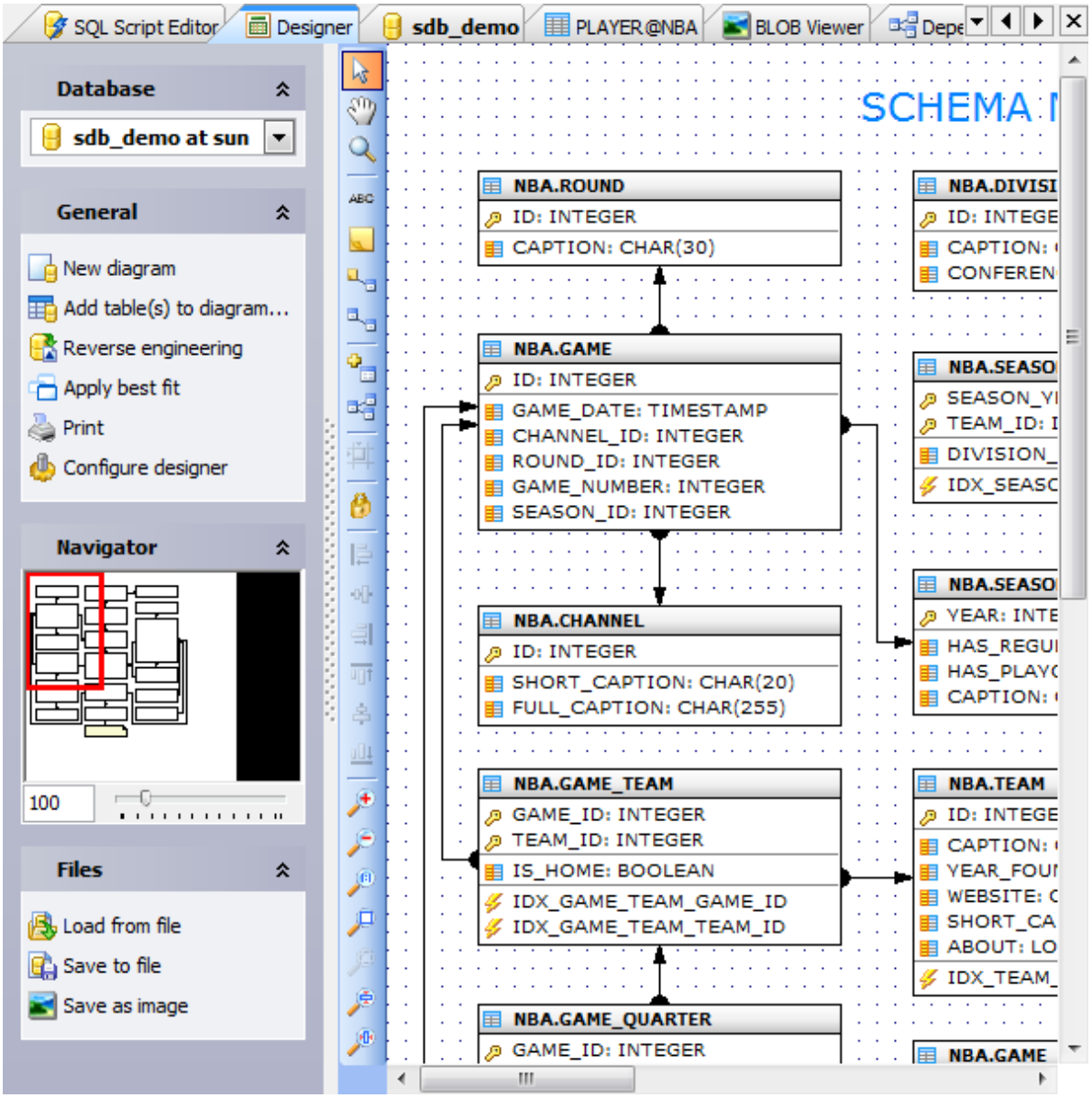
Rotation - specify the angle of the text rotation in the field.

WordWrap - if it is disabled, the long lines will be simply cut off.

## 8.10 Schema Designer

Schema Designer allows you to create physical Entity Relationship Diagram that will represent objects in your SQLite database. A diagram represents the tables of your database. The tool is intended for reverse engineering and database modification in an easy and powerful way. It helps you to simplify database maintenance.

A diagram of your database can help you define operational aspects of your application logic that you might otherwise overlook. Also, a well-defined data diagram that accurately represents your tasks can be helpful in orienting employees to goals and operations. The data diagram can also serve as an invaluable communications tool for both internal and external constituents.




Below you can find answers for the following questions:

- How can I add a table to a diagram? 179
- How can I delete a diagram object? 179
- How can I work with diagram objects? 179

**See also:** Designer Navigation bar 179, Schema Designer Toolbox 180.

**Adding a table**
You can add an existing SQLite table to the diagram using popup menu in the working area, or with the corresponding link on the Navigation bar 179.

To create a new table, use the appropriate item of the popup menu in the working area. The table will be created in the current database.

Tables also may be dragged on the diagram from Explorer and the similar to Explorer tools like Object Manager and Object Browser.

All the diagram objects are available for editing. Just double click the object (table or relationship) to view/edit its properties within the corresponding editor.

**Deleting of the diagram objects**
To hide a table (several tables), select the objects and click Remove selection link of the popup menu or Navigation bar. You can also use the **Del** key for this purpose.

It's also possible to physically delete a table from the database: just select the object to delete and use the appropriate item of the popup menu.

**Editing of a diagram appearance**
Movement of a table/several tables along the diagram is realized with dragging or pressing **Ctrl**+arrows. You can use **Shift**+arrows to change width/height of table/several tables representation.

Designer also allows you to edit shape of the line representing logical relations. In order to break the line you should

- Select the relationship.
- Press **Ctrl** and click on the necessary line section to create a new node.
- Position the node by dragging.

You can also delete a node on the line. Thereto

- Select the relationship.
- Press **Alt** and click the node to delete. In that case the near nodes will be united by a straight line.

### 8.10.1 Designer Navigation Bar

The Navigation Bar of Schema Designer provides you the following opportunities:

Use the Database drop-down list to move around your SQLite databases.

There are also links for adding a New diagram or an existing table to diagram quickly.

Reverse engineering
The link provides you to create a new diagram with all the database tables and

Apply best fit
Use the link to dispose tables on the diagram in the most clear manner.

Remove selection
The link cancels current object selection.

Use Print to see the print preview of the diagram.

Certainly, it's possible to customize Schema Designer with Configure designer. For more information see Schema Designer Customization 203.

The Navigator part allows you to adjust the scale of the diagram and the position of the visible part.

Besides the Navigation bar allows you to Load a diagram from file, Save to file, and Save as image (Bitmap, GIF and JPEG formats are supported).

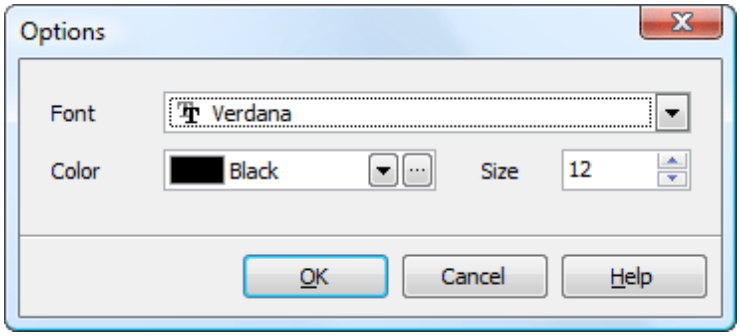
### 8.10.2 Schema Designer Toolbox

The toolbox is located on the left side of the Schema Designer's working area.

 Move
The tool is intended for selection of diagram objects. Use the tool then click anywhere inside of the object. Double click opens the corresponding Object Editor.

To select multiple objects, use the tool then click and drag a selection rubber-band so that the rubber-band box encompasses the objects you want to select, and then release the mouse button.
To add objects to the list of already selected objects again, use the Move tool then click anywhere inside of the object holding the **Shift** button. To quick launch of the tool, use **M** shortcut.

 Use Create text box to add title and comments on your diagram. Click on the necessary place and double-click on the appeared box to enter a text. You can also tune up the text font, color and size with Text options of the box popup menu. To quick launch of the tool, use **XX** shortcut.




Moreover you can add notes and also links between them and diagram elements using  Create note and Create link to note links. To quick launch of the tools, use **N** and **L** shortcuts accordingly.

 Lock
The tool to locking/unlocking diagram objects. This feature prevents your diagram from unforeseen changes: when the diagram is locked, you can neither move/resize/delete existing objects nor add new ones.

 Hand tool moves a diagram within its window. To quick launch of the tool, use **H** shortcut.

 Zoom magnifies and reduces the view of a diagram. To zoom out, hold the Alt key. To quick launch of the tool, use **Z** shortcut.

There are also tools allowing to  Create table and  Create relation directly from the Designer. To quick launch of the tool, use **T** and **R** shortcut.

Below you can find toolset for aligning the selected objects by left and right edges, by horizontal and vertical centers, tops and bottoms.

Click the Zoom in button in the options bar to magnify to the next preset percentage. When the image has reached its maximum magnification level, the command is dimmed.

Click the Zoom out button in the options bar to reduce to the previous preset percentage. When the image has reached its maximum reduction level, the command is dimmed.

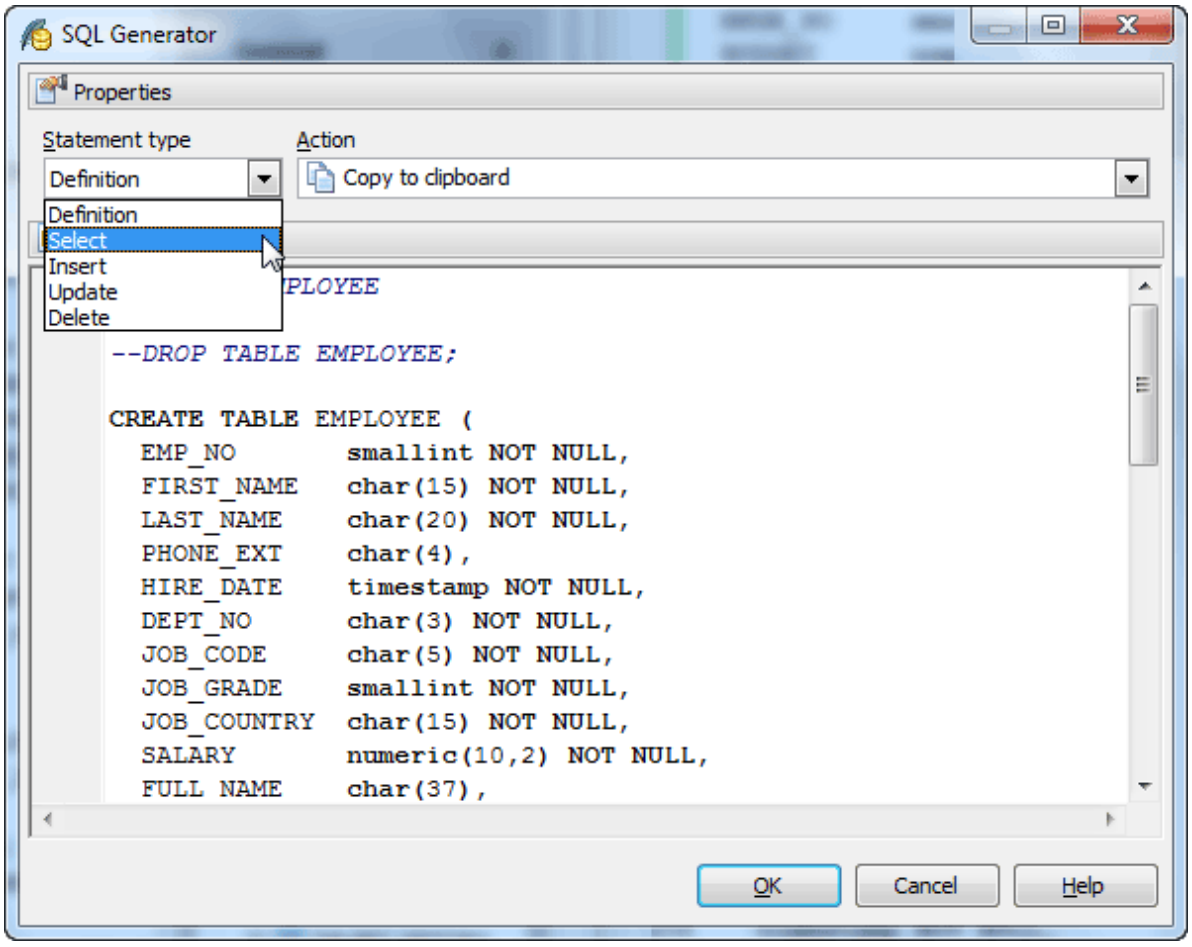
Click the Zoom 1:1 button to display a diagram at 100%.

Pay attention to the Fit diagram function, that pick-up properly scaling factor to display your diagram fully. For your convenience the Fit selected, Fit height, and Fit width were added.

## 8.11 SQL Generator

Among other features SQLite Maestro provides you with SQL Generator, a tool to create simple SQL statements. Just choose a database object, select statement type (Definition, Select, Insert, Update, or Delete) and the destination device (Clipboard, File, SQL Editor, SQL Script Editor).

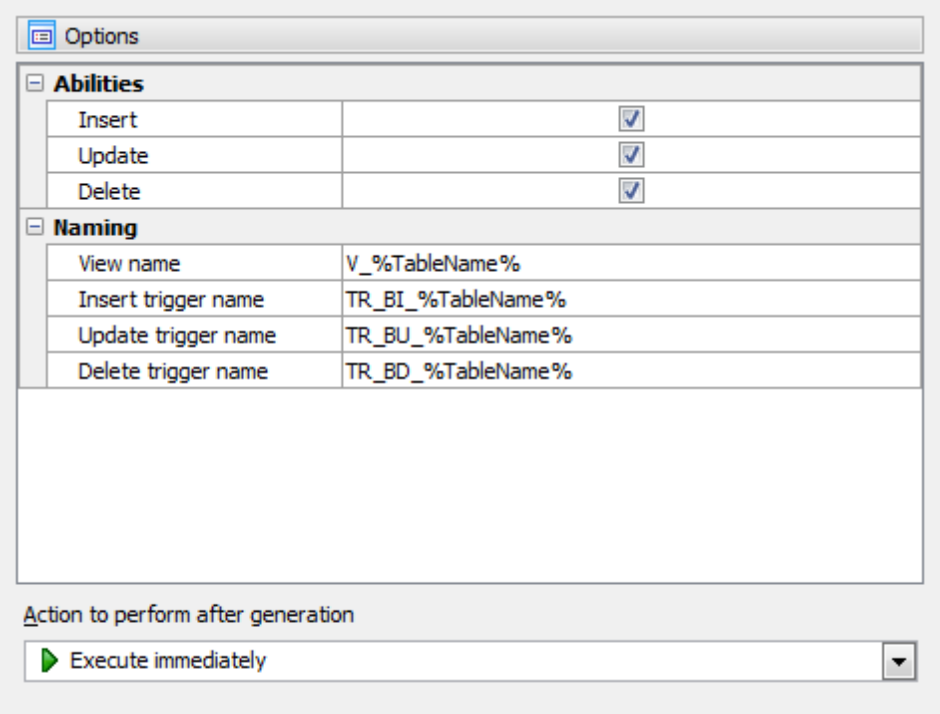
The SQL Generator window can be invoked from the Explorer tree.



## 8.12 Generation of updatable views

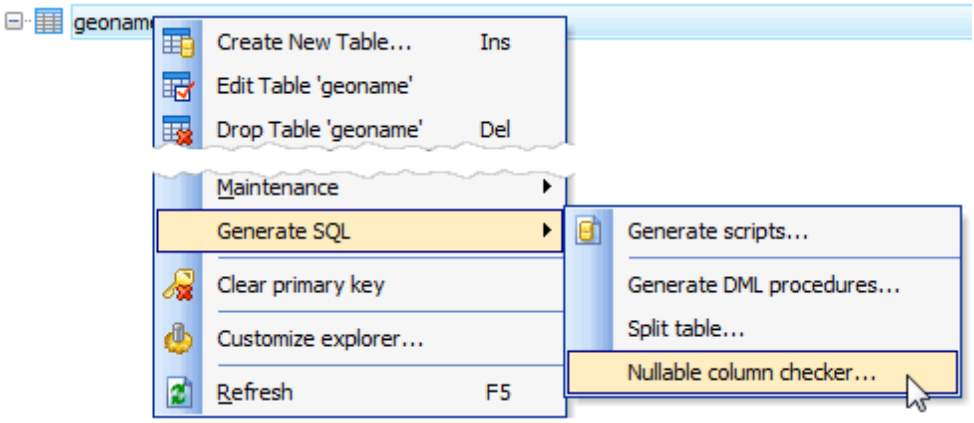
To generate updatable view,

- select the Object | Generate updatable views... main menu item (to create views for several tables) or use the corresponding popup menu item of the table's node at the Explorer tree (to create a view for one table).
- Specify tables the views will be created for (in case of several tables).
- Specify the abilities to be available on working with the view data. By default the views are generated for inserting, updating, and deleting of table data.
- Adjust the name templates of views and corresponding triggers.
- Select the action to perform after the generation. The created definitions can be copied to Clipboard, saved to a file, sent to SQL Script Editor or executed immediately.

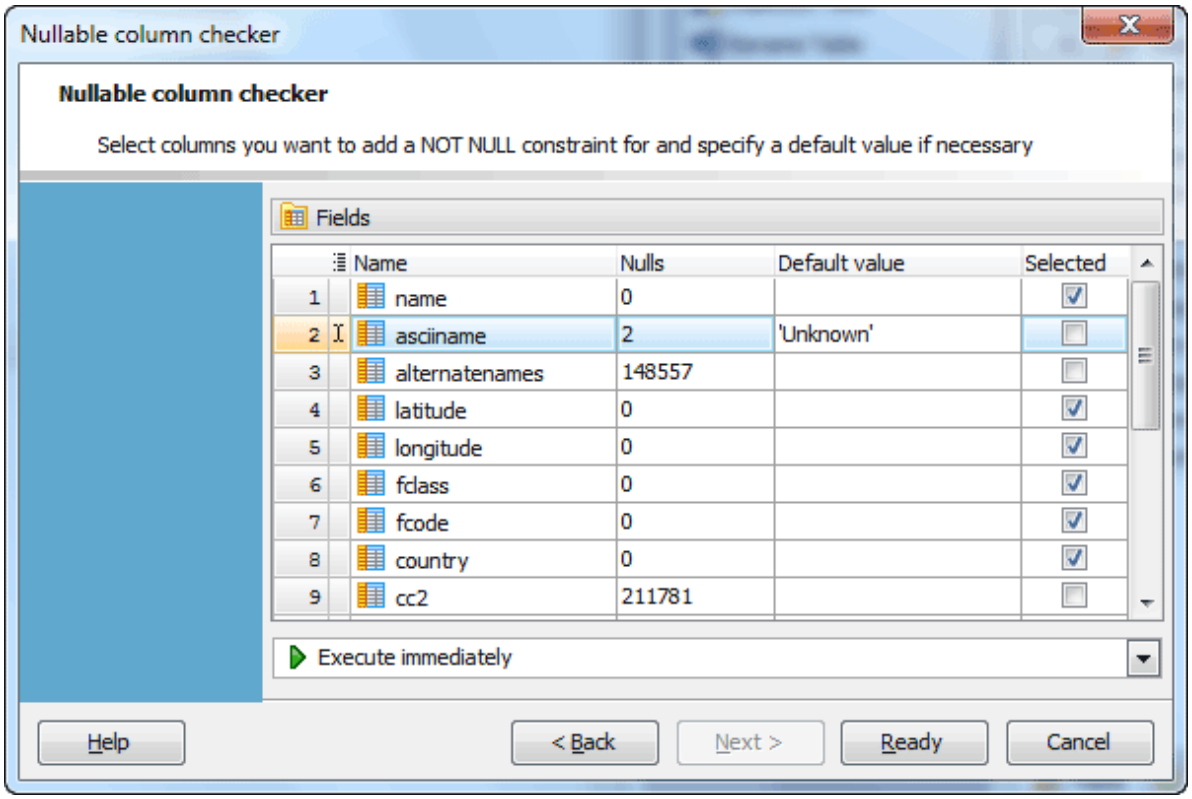


## 8.13 Nullable Column Checker

Nullable Column Checker allows you to refactor your database schema by enforcing NOT NULL constraints to all necessary table columns. It suggests candidates for NOT NULL columns among columns of the selected table and generates SQL script to replace all NULL values of selected columns with specified default values and to add the NOT NULL constraint to these columns. To invoke the wizard, follow the corresponding link of the Generate SQL section of popup menu of the selected table at the Explorer tree.



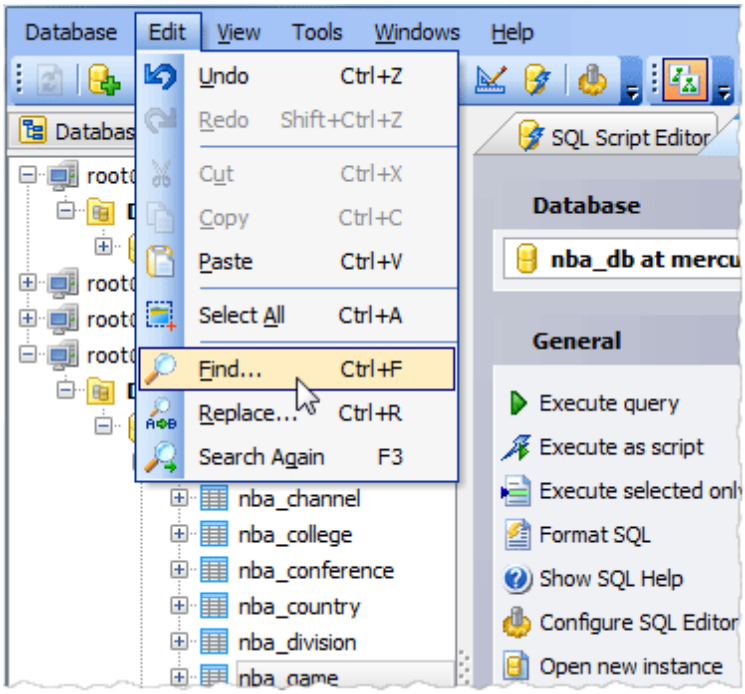

To get SQL scripts enforcing NOT NULL constraints to columns of an existing table, select the necessary columns, specify the default values to be used instead of existing columns NULLs and select the action to perform after the generation. The created scripts can be copied to Clipboard, saved to a file, sent to SQL Script Editor 146 or executed immediately.



## 8.14 Dialogs

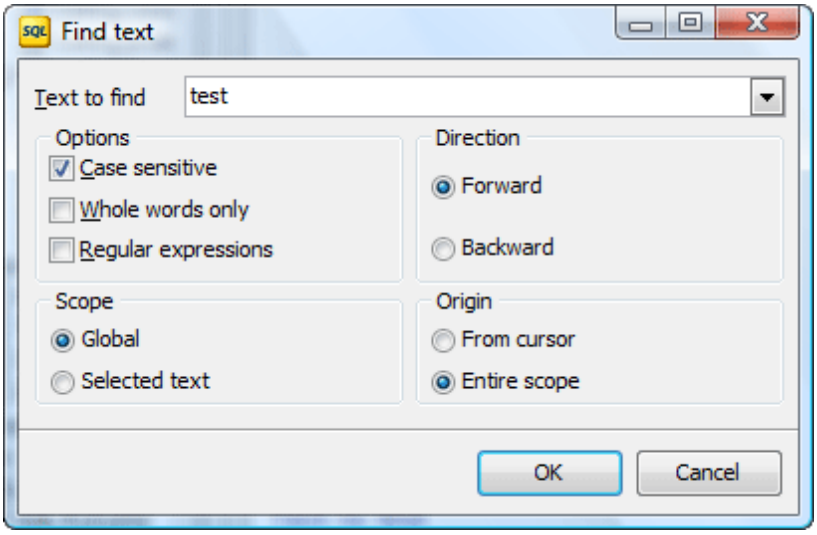
SQLite Maestro provides two dialogs for searching and replacing text in the editor areas of the database tools. Both of them are available through the popup menu of the editor area.

- Find Text dialog 186
- Replace Text dialog 187




### 8.14.1 Find Text dialog

The Find Text dialog is provided for quick search for certain text.



Text to find
Enter a search string or click the down arrow next to the input box to select from a list of previously entered search strings.

☑ Case sensitive
Differentiates uppercase from lowercase when performing a search.

☑ Whole words only
Searches for words only. (With this option off, the search string might be found within longer words.)

☑ Regular expressions
Recognizes regular expressions in the search string.

Forward
Searches from the current position to the end of the file. Forward is the default.

Backward
Searches from the current position to the beginning of the file.

Global
Searches the entire file, in the direction specified by the Direction setting. Global is the default scope.

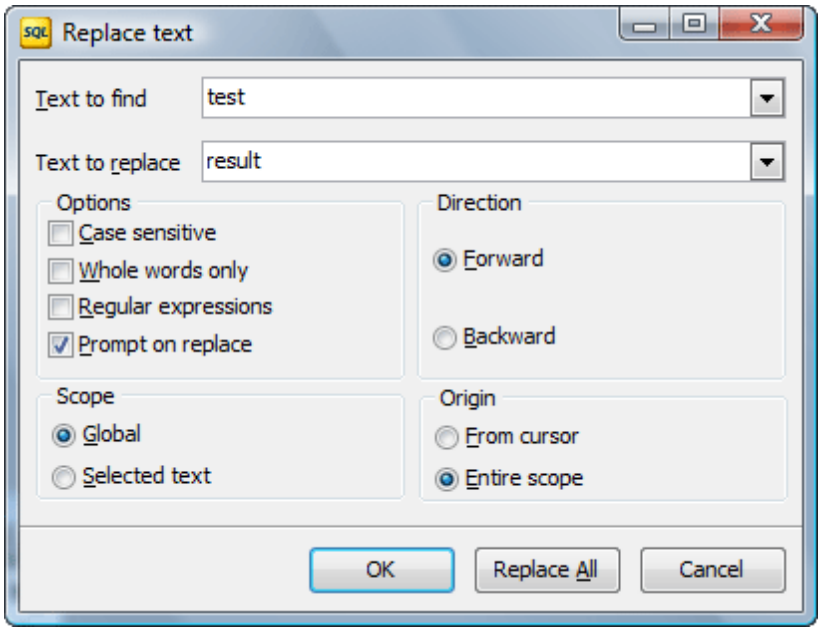
Selected text
Searches within the selected text only, in the direction specified by the Direction setting. You can use the mouse or block commands to select a block of text.

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. From Cursor is the default setting.

Entire scope
The search covers either the entire block of selected text or the entire file (no matter where the cursor is), depending upon the Scope options.

### 8.14.2 Replace Text dialog

The Replace Text dialog is provided for searching and replacing text in the editor window.




### Text to find
Enter a search string. To select from a list of previously entered search strings, click the down arrow next to the input box.

### Text to replace
Enter the replacement string. To select from a list of previously entered search strings, click the down arrow next to the input box. To replace the text with nothing, leave this input box blank.

### ☑ Case sensitive
Differentiates uppercase from lowercase when performing a search.

### ☑ Whole words only
Searches for words only. (With this option off, the search string might be found within longer words.)

### ☑ Regular expressions
Recognizes specific regular expressions in the search string.

### ☑ Prompt on replace
Prompts you before replacing each occurrence of the search string. When Prompt on replace is off, the editor automatically replaces the search string.

### Forward
Searches from the current cursor position, to the end of the file. Forward is the default Direction setting.

### Backward
Searches from the current cursor position, to the beginning of the file.

### Global
Searches the entire file, in the direction specified by the Direction setting. Global is the

default scope.

From cursor
The search starts at the cursor's current position, and proceeds either forward to the end of the scope, or backward to the beginning of the scope depending on the Direction setting. From cursor is the default Origin setting.

Entire scope
The search covers either the entire block of selected text or the entire file (no matter where the cursor is in the file), depending upon the Scope options.

Replace All
Click Replace all to replace every occurrence of the search string. If you check Prompt on replace, the Confirm dialog box appears on each occurrence of the search string.

# 9 Options

SQLite Maestro allows you to customize the way it works within the Options dialog. To open the dialog, select the Tools | Options main menu item.

The window allows you to customize the options grouped by the following sections:

- **Application** 191
  General SQLite Maestro options: environment style, confirmations, window restrictions, explorer tree, SQL Editor, Visual Query Builder, etc.

- **Editors & Viewers** 213
  Customizing of all the SQL editors - SQL Editor, SQL Script Editor, etc.

- **Appearance** 221
  Customizing program interface - bars, trees, menus, etc.

Besides, the Options dialog allows you to export all program settings to a **.reg* file for future use, e.g. on another PC (see Export Settings 230 for details).

It is a good idea to check through these settings before you start working with SQLite Maestro. You may be surprised at all the things you can adjust and configure!

## 9.1 Application

The Application section allows you to customize common rules of SQLite Maestro behavior. The section consists of several tab; follow the links to find out more about each of them.



### 9.1.1 Preferences

User interface area allow you to select your favorite UI style according to your preferences.

☑ Display splash screen at startup
Displays the splash screen on SQLite Maestro startup.

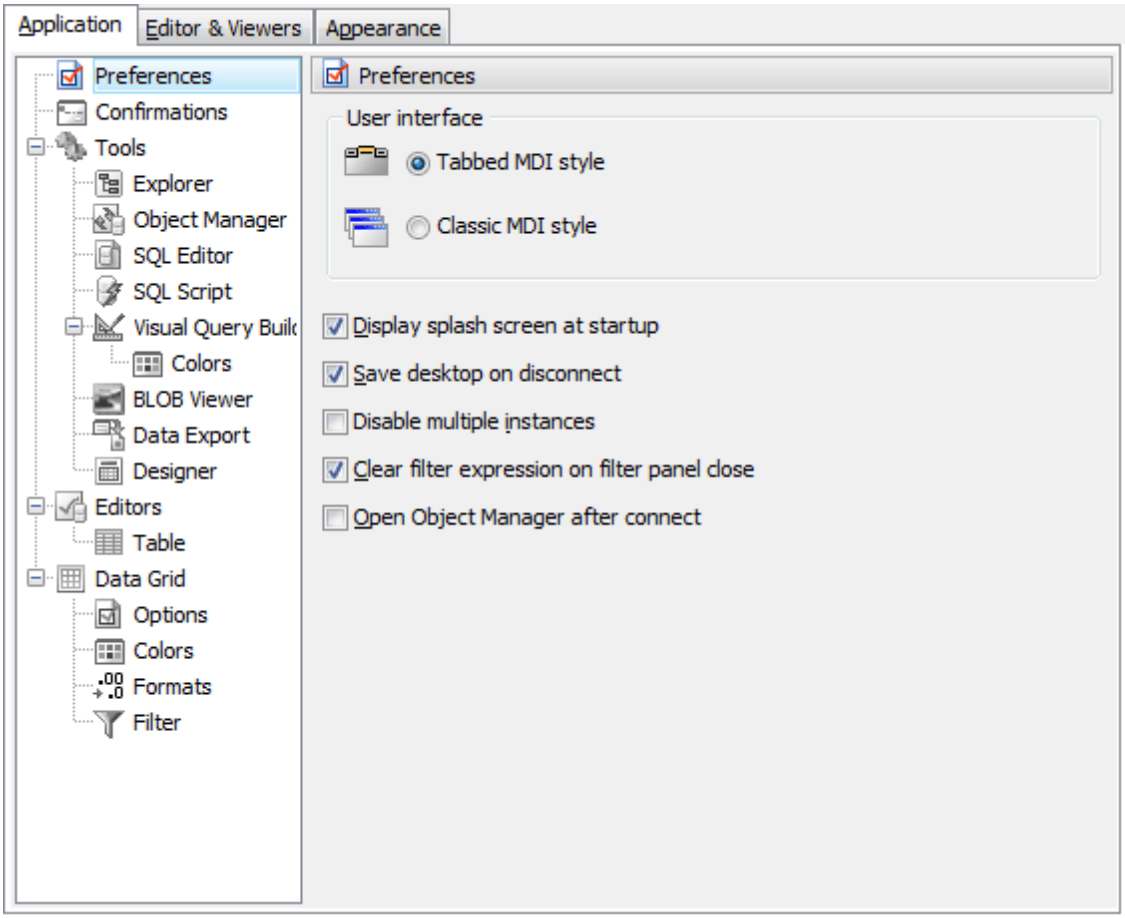
☑ Save desktop on disconnect
Saves all the database windows and their positions on disconnecting from the database.

☑ Disable multiple instances
Prohibits running multiple instances of SQLite Maestro.

☑ Open Object Manager after connect
Opens the Object Manager window after connection is established.

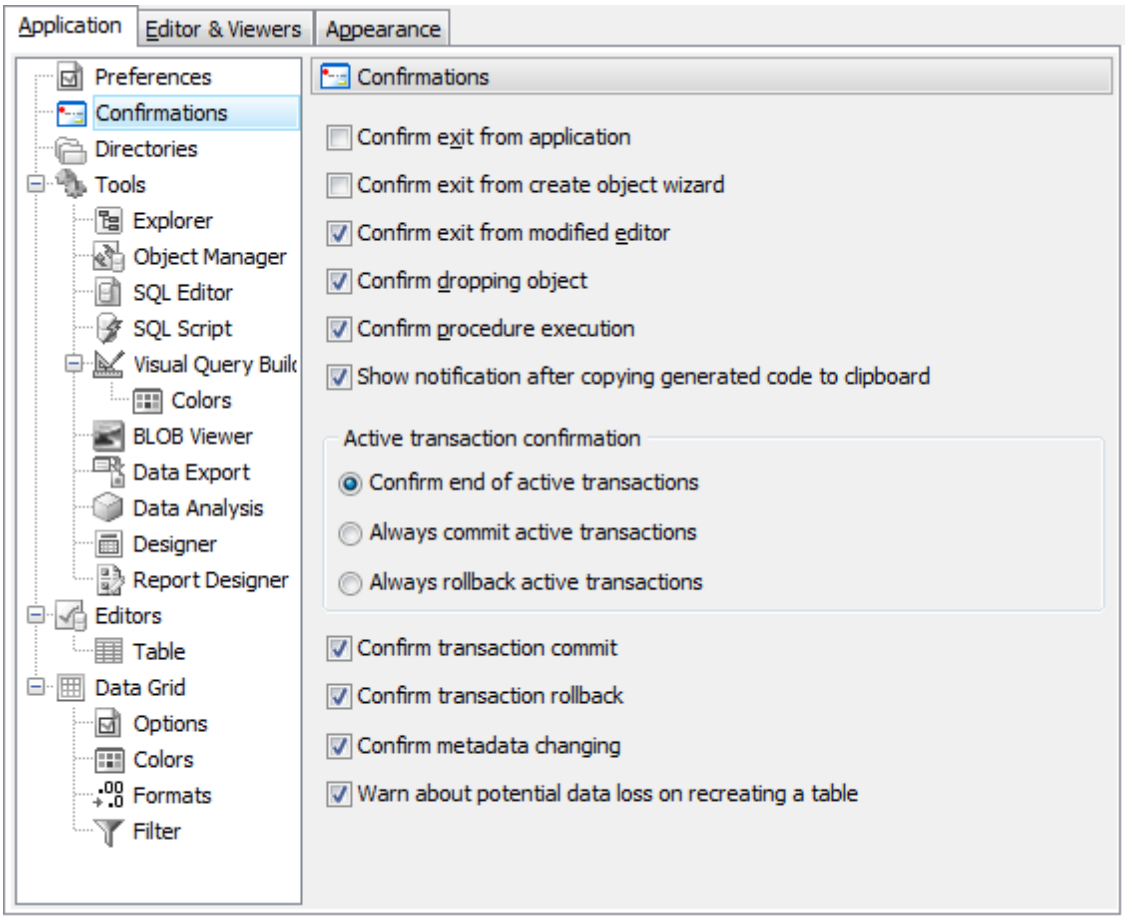
☑ Clear filter expression on filter panel close
Clears the filter applied to the explorer tree and all the instances of Object Manager

after the filter panel is closed.




### 9.1.2 Confirmations

Use this tab to manage application confirmations.




### Confirm exit from Create Object Wizard

If this option is checked, the program requires confirmation each time you want to exit the Create Object Wizard.

### Confirm exit from modified editor

If this option is checked, the program asks you to confirm exit from the editor, if you have made any changes.

### Confirm dropping object

If this option is checked, the program requires confirmation for dropping database object.

### Confirm exit from application

If this option is checked, the program requires confirmation when you want to exit <% PRODUCT_NAME%.

### Transaction confirmation

Select whether you will be prompted to commit or rollback active transaction or SQLite Maestro will commit or rollback transactions without asking.

### Confirm metadata changing

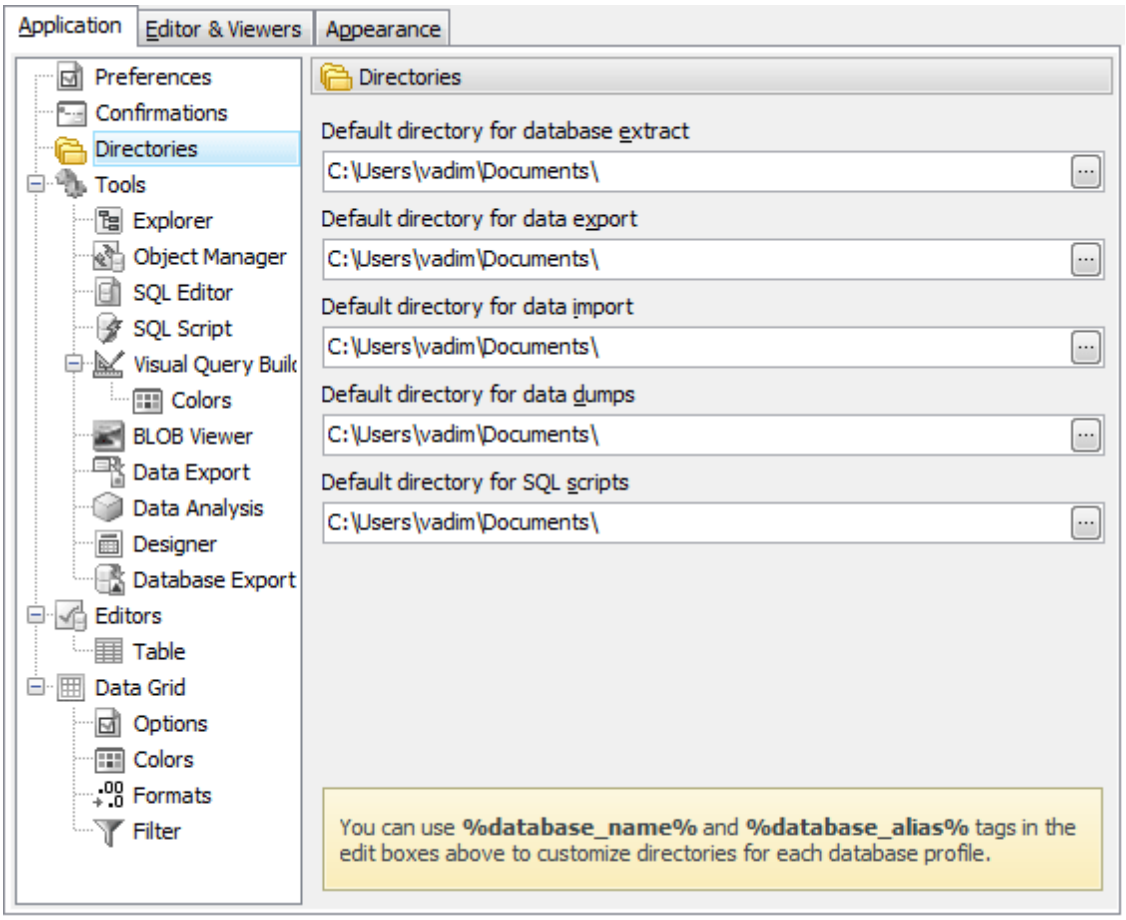
If this option is checked, the program requires confirmation for changing metadata.

### 9.1.3 Directories

The tab allows you to specify default directories to be used on database profiles creating. You can use such variables as %database_name%, %database_alias%, and %user_name%.

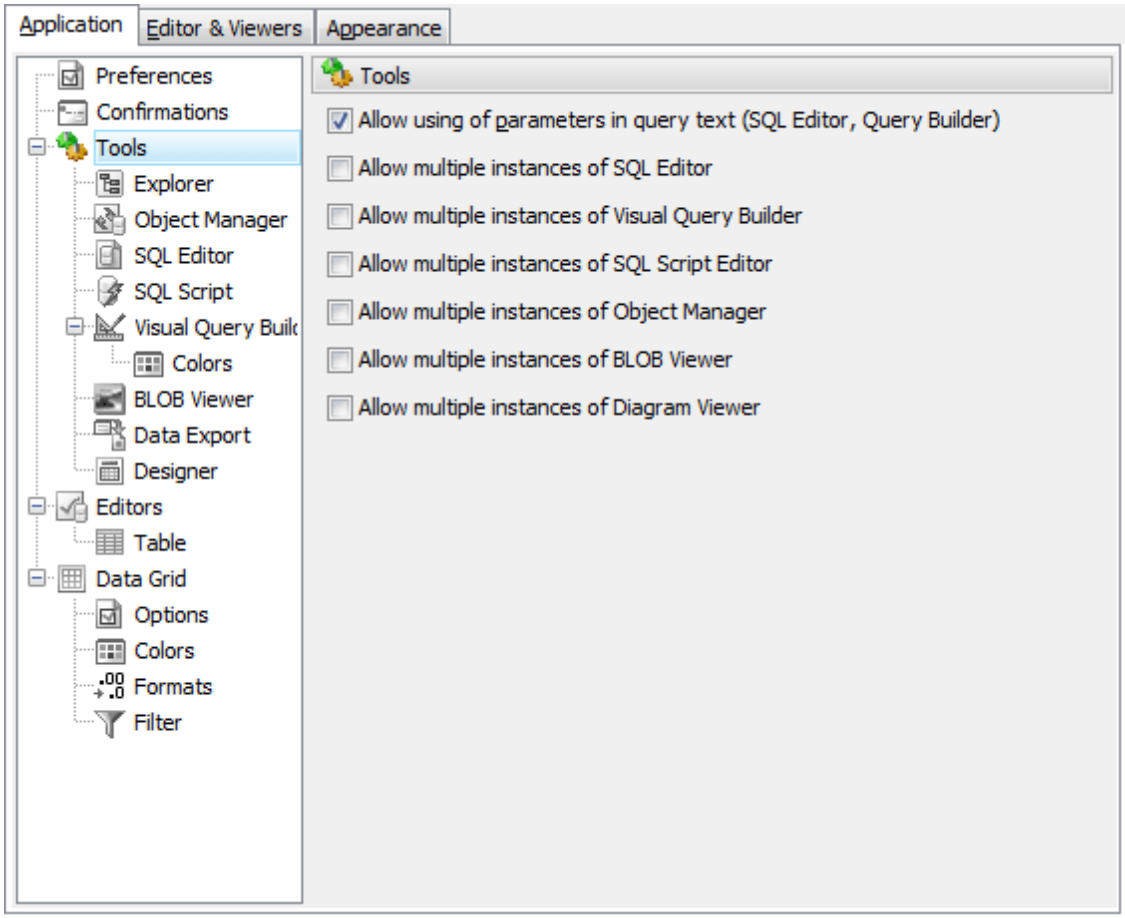
**Example:**
To store all SQL scripts in folders sorted by databases in the "C:\SQL Scripts\" directory, specify the default directory for SQL scripts as follows:

*C:\SQL Scripts\%database_name%*




### 9.1.4 Tools

Below you will find a detailed decryption of the following tools options.




### Allow using of parameters in query text

Check this option to be able to use query parameters in SQL Editor 95 and Visual Query Builder 100.

### Allow multiple instances of SQL Editor

Check this option to be able to use multiple instances of SQL Editor 95 simultaneously.

### Allow multiple instances of Visual Query Builder

Check this option to be able to use multiple instances of Visual Query Builder 100 simultaneously.

### Allow multiple instances of SQL Script Editor

Check this option to be able to use multiple instances of SQL Script Editor 146 simultaneously.

### Allow multiple instances of Object Manager

Check this option to be able to use multiple instances of Object Manager simultaneously.

### Allow multiple instances of BLOB Viewer

Check this option to be able to use multiple instances of BLOB Viewer 156 simultaneously.

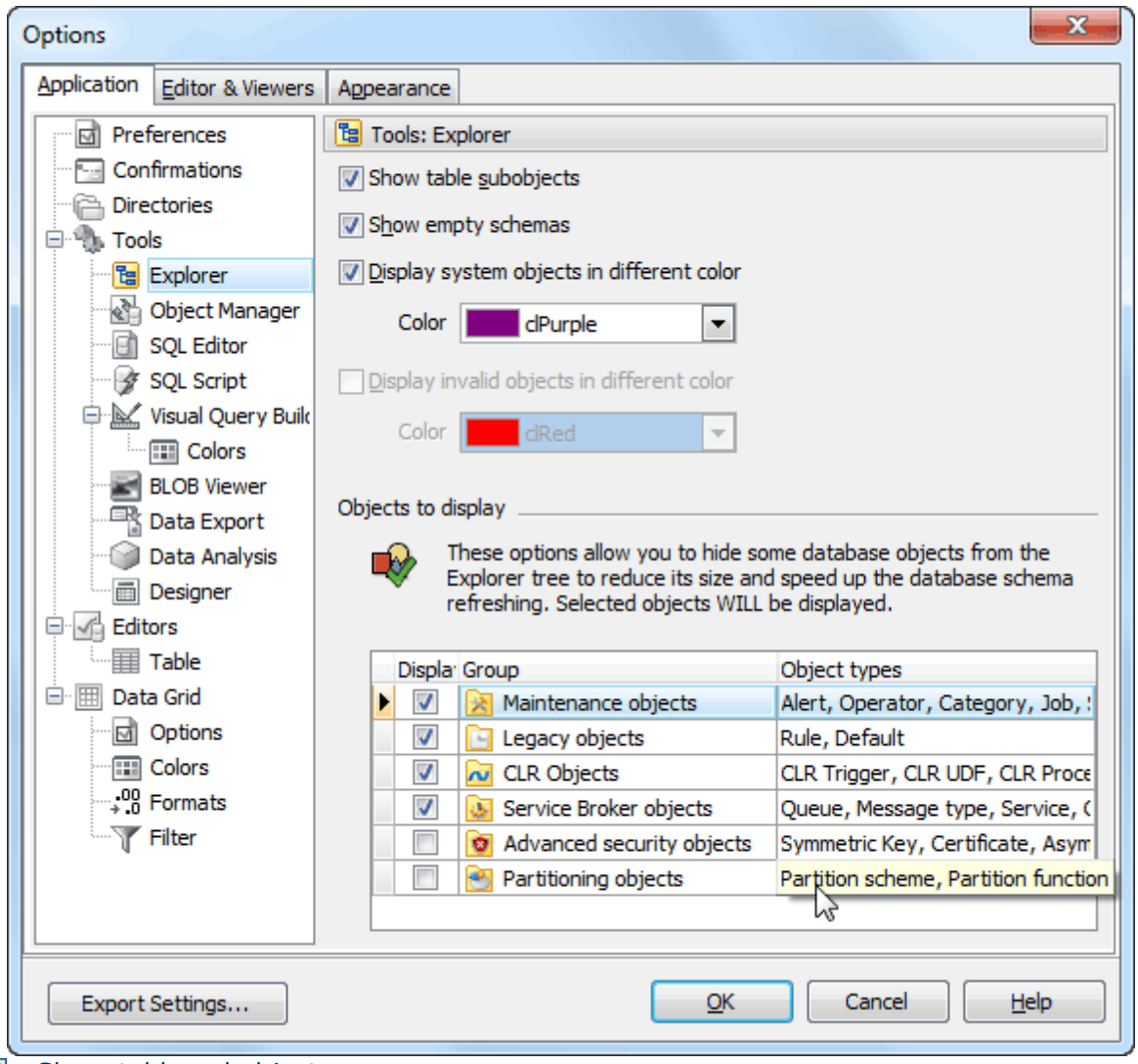
### Allow multiple instances of Diagram Viewer

Check this option to be able to use multiple instances of Diagram Viewer 162

simultaneously.

#### 9.1.4.1 Explorer

Below you will find a detailed decryption of the following explorer options.




☑ Show table subobjects
Shows/hides table subobjects (fields and indexes) in the explorer tree.

☑ Sort profiles by aliases
Sorts profile aliases alphabetically in the explorer tree.

☑ Expand the "Tables" node after connection
Shows all database tables in the explorer tree after connecting to the database.

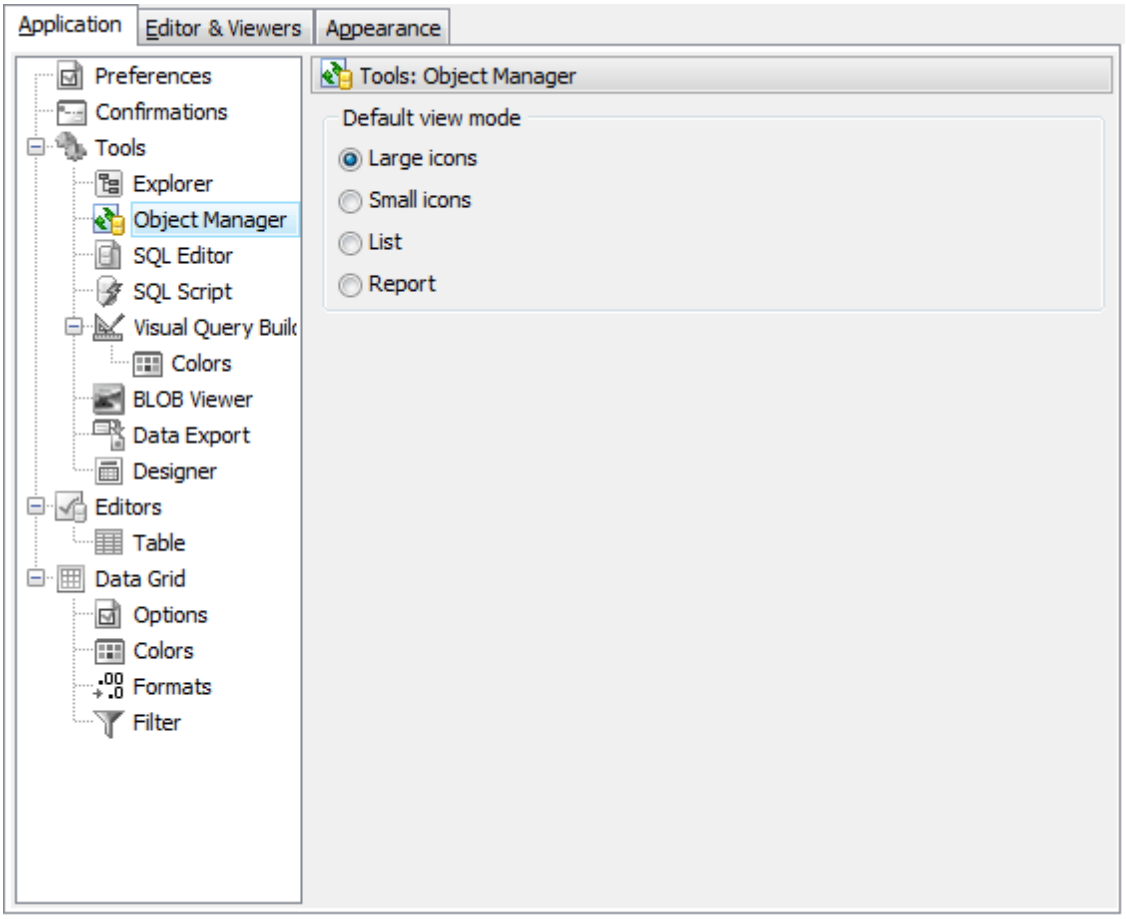
☑ Expand the "Queries" node after connection
Shows all database queries in the explorer tree after connecting to the database.

☑ Display system objects in different color
Represents all system objects in selected color.

You can also exclude/include rarely used objects from/to the Explorer tree. Manage object groups to be displayed at Explorer with corresponding checkboxes.

#### 9.1.4.2 Object Manager

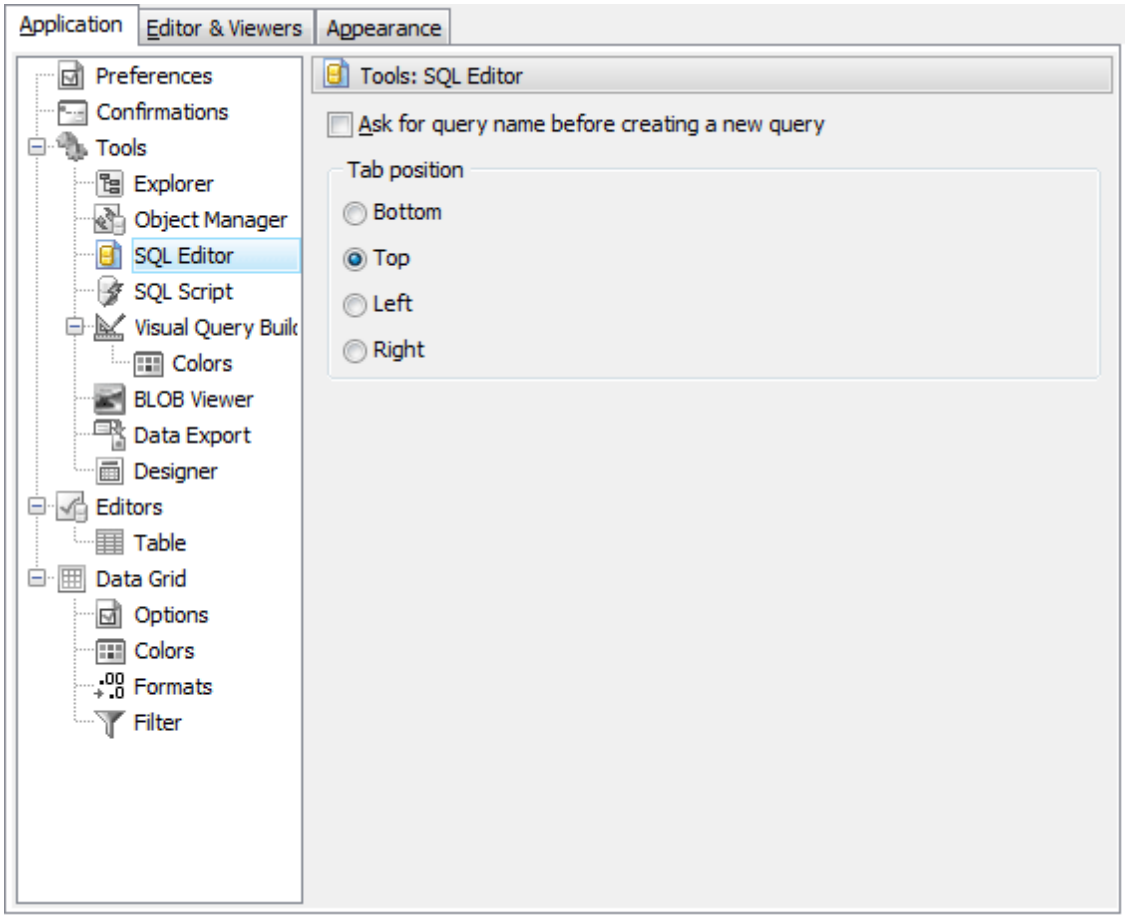
Below you will find a detailed decryption of the following Object Manager options.




Default view mode
Defines which view mode (*large icons*, *small icons*, *list* or *report*) is applied to Object Manager by default.

#### 9.1.4.3 SQL Editor

Below you will find a detailed decryption of the following SQL Editor options.




☑ Ask for query name before creating a new query

If this option is checked, SQL Editor 95 asks for a query name each time you create a new query.

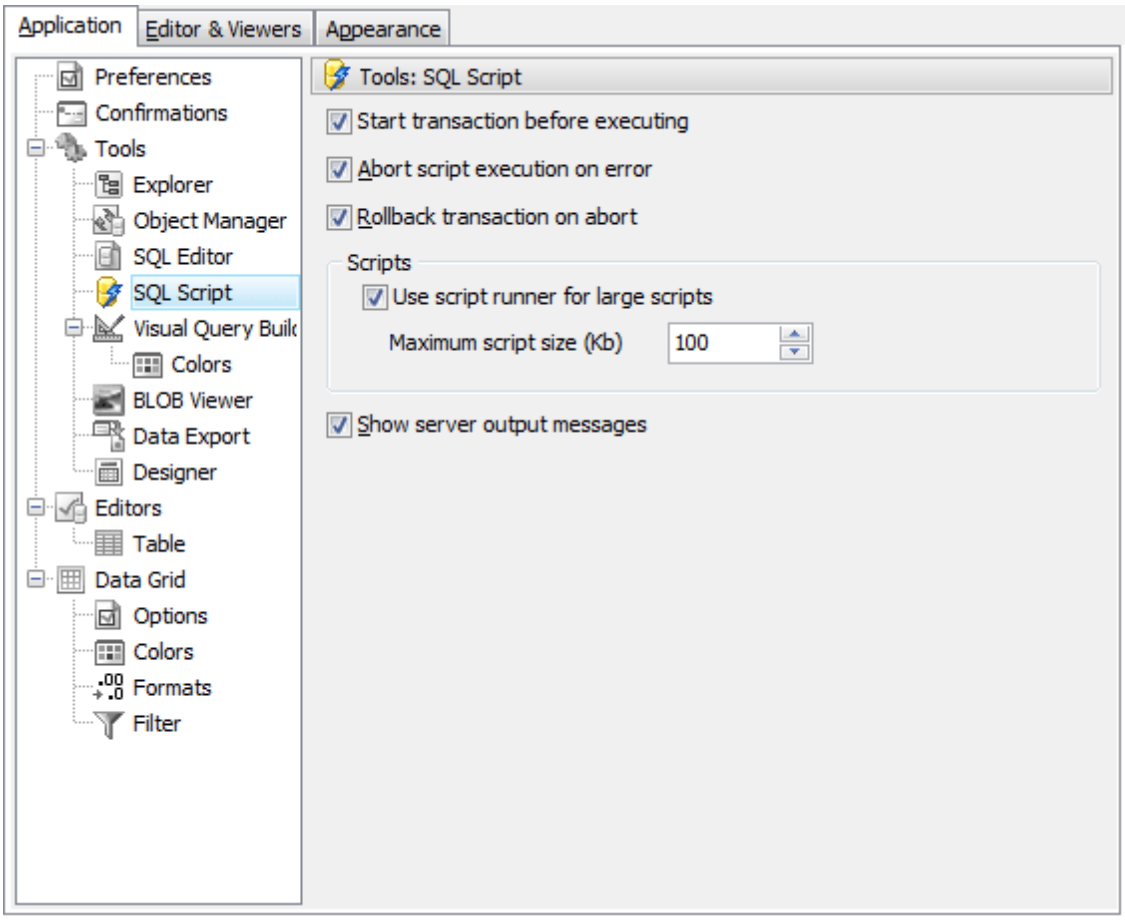
☑ Auto commit

Check the option to execute queries in autocommit mode (default value) or leave it blank to manage transactions manually.

You can also select position of query tabs.

#### 9.1.4.4 SQL Script Editor

Below you will find a detailed decryption of the following SQL Script Editor options.




### ☑ Abort script execution on error

If this option is checked, script execution aborts when an error occurs.

### ☑ Rollback transaction on abort

This option evokes automatic rollback on script execution abort.

### ☑ Use script runner for large scripts

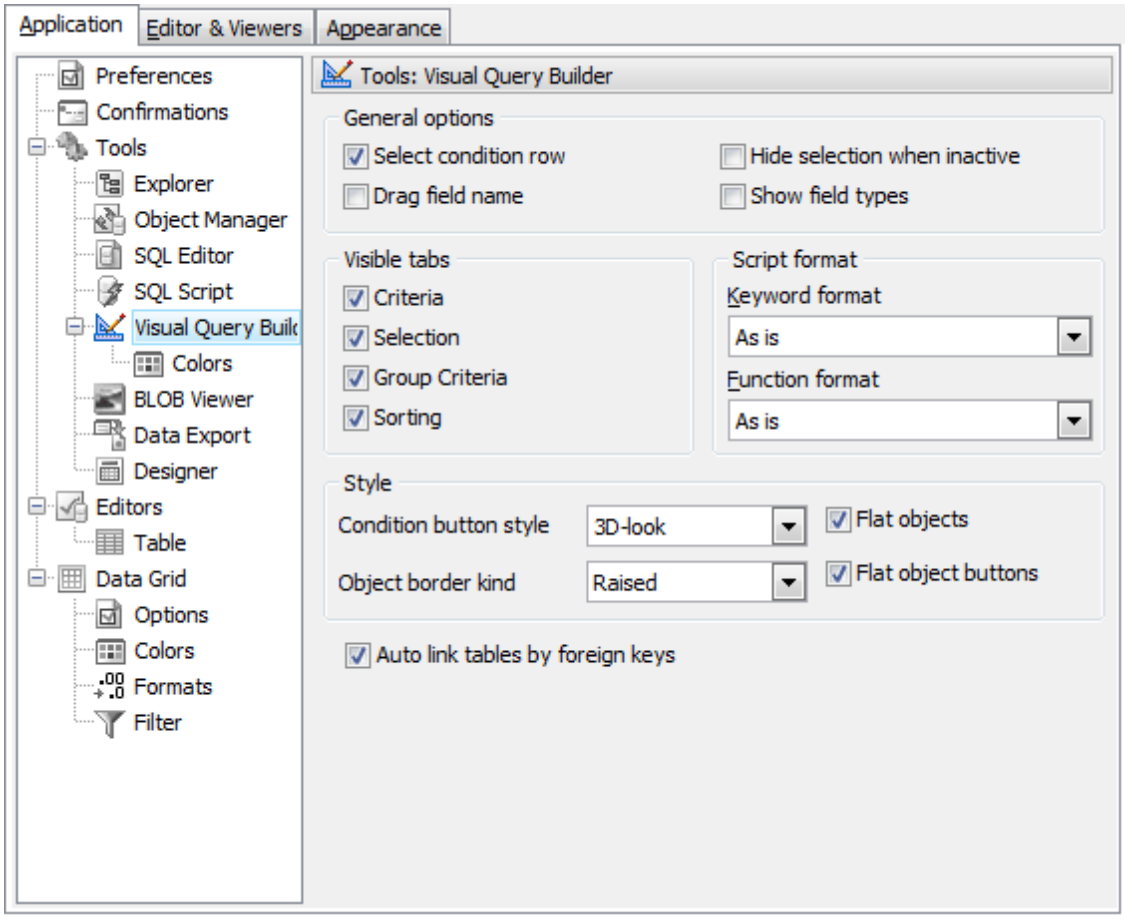
Check the box to execute large script in the fastest way. You can change the maximum size of a script to execute without script runner.

### ☑ Show server output messages

Turn the option ON to see warning messages generated by the server.

#### 9.1.4.5 Query Builder

Below you will find a detailed decryption of the following Query Builder options.




### Select condition row

Displays the selected condition in different row on the Criteria and Grouping Criteria tabs of Visual Query Builder 100.

### Drag field name

Displays the dragged field name in the Builder area.

### Hide selection when inactive

Hides the selection when the query builder is inactive.

### Show field types

Displays the field type next to the field in the table box.

### Visible tabs

These options specify which the query builder tabs are available and which are not. Check them to make the appropriate tabs visible.

### Script format

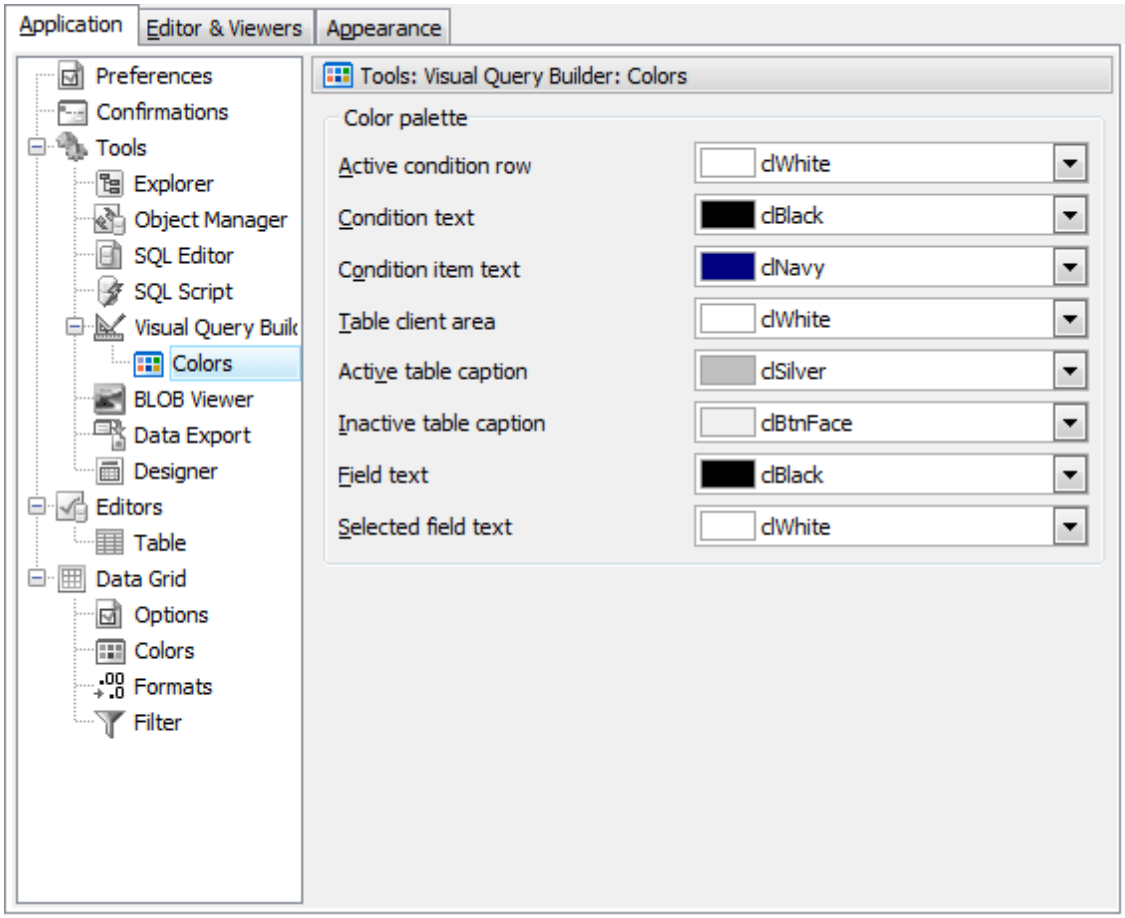
These options specify the case formatting of keywords and functions in query text on the Edit tab. As is saves the original case, Uppercase sets all the keywords/functions to upper case, Lowercase sets all the keywords/functions to lower case, and First upper sets the first letters of all keywords/functions to upper case.

### Style

These options specify how different the Query Builder objects look like - 3D, flat, etc.

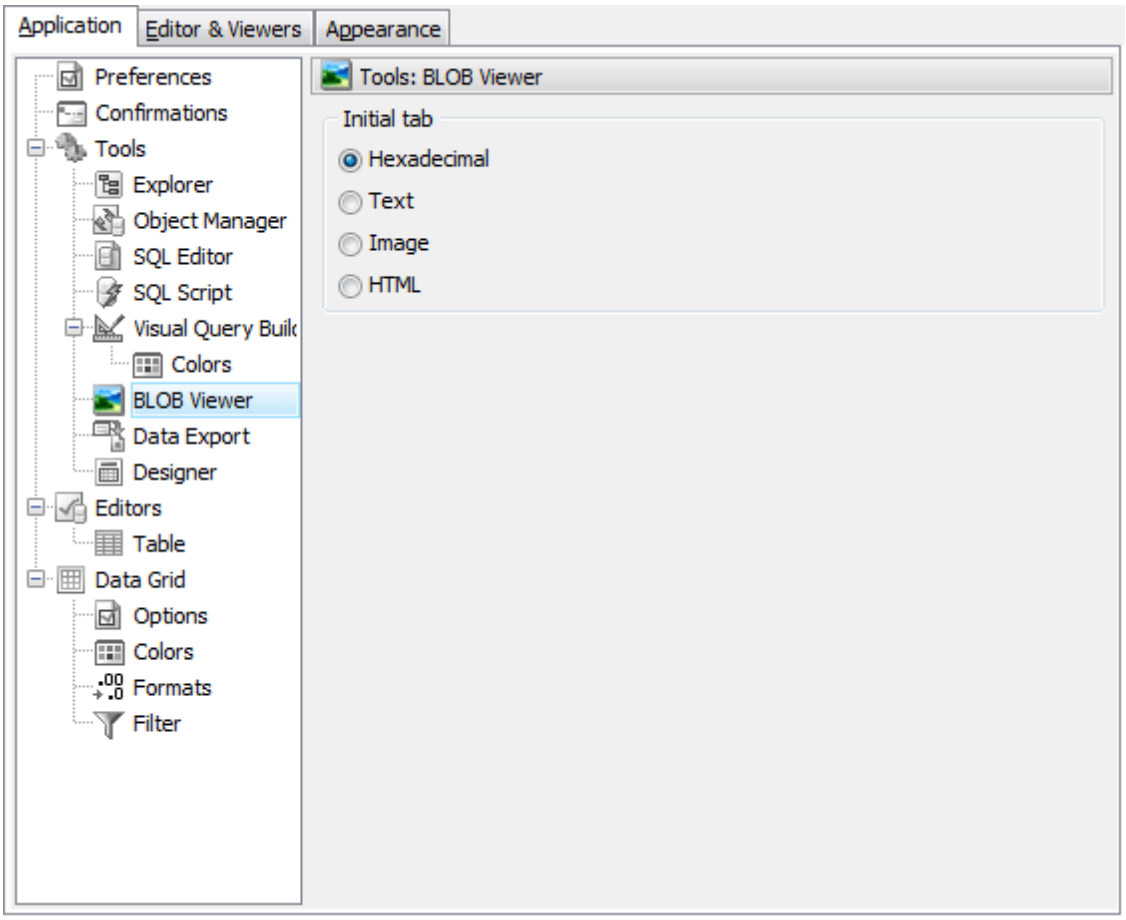
#### 9.1.4.5.1 Colors

The tab is provided to editing of the Query Builder color schema. Customize colors for all editor element according to your preferences.




### 9.1.4.6 BLOB Viewer

Below you will find a detailed decryption of the following BLOB Viewer 156 options.




Initial tab
Specifies which tab of BLOB Viewer should be active when it is initially opened.

### 9.1.4.7 Data Export

This window allows you to customize formats applied to exported data. Edit the format masks to adjust the result format in the way you need.

In *numeric* formats using digit placeholder (# or 0) you can specify the format of number. For example, integer 1234567890 with # ### ##0 integer format is represented like 1 234 567 890. The locations of the leftmost '0' before the decimal point in the format string and the rightmost '0' after the decimal point in the format string determine the range of digits that are always present in the output string.

Conversion and their description for *date*, *time* and *date time* format:

| | |
|---|---|
| dd | day of the month, represented by 1 or 2 symbols. For example, the first day of month is 1 |
| DD | day of the month, represented only by 2 symbols. For example, the first day of month is 01 |
| mm | minutes |

| | |
|---|---|
| MM | month |
| yy | year, represented by 2 symbols. For example, 2006 year will be 06 |
| yyyy | year, represented by 4 symbols. For example, 2006 |
| h | hour, represented by 1 or 2 symbols. For example, 2 |
| hh | hour, represented only by 2 symbols. For example, 02 |

"**.**", ",", "**:**" symbols can be placed as separators in format masks for *integer, float, date, time, date time, currency* types.

☑ Auto save format strings
Auto saves format strings when they are changed (e.g. at the Adjusting data formats step in Export Data Wizard 126).

Using Set defaults button, you can set default values of data formats.

#### 9.1.4.8 Database Designer

The following topic provides a shot Database Designer 178 retrofitting's description.

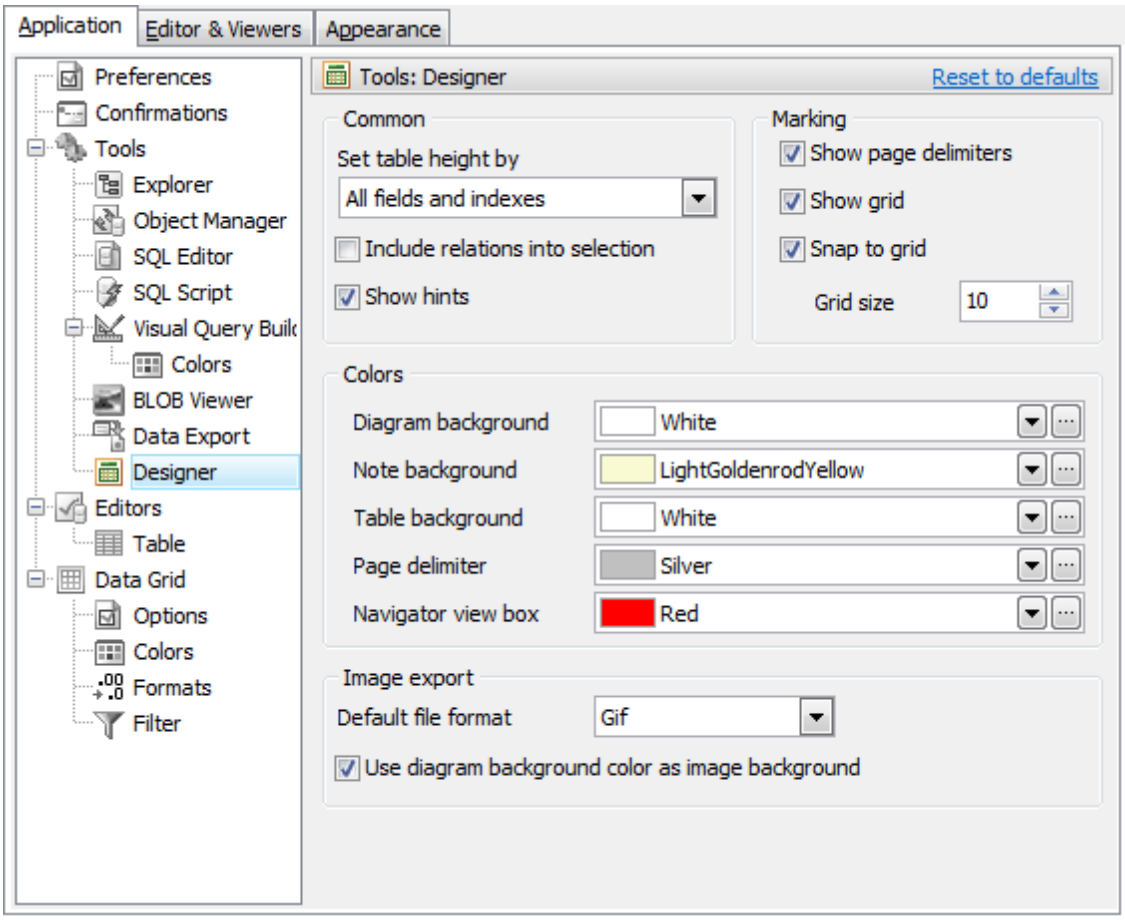
The Set table height option determines what the table attributes will be represented at the diagram (Caption only, Key fields, All fields or All fields and indexes).

Frequently it is necessary to line up some tables and objects on the diagram in a column. One of the ways that you may find convenient to do this is to take advantage of the grid. You can enable showing of the grid by checking the Show grid clause at the Marking options. Then diagram will be covered by points disposed on the same interval between.

If you enable snap to grid function by using the Snap to grid checkbox, when you move the table or other object, its upper left corner "snaps" to the nearest grid point. This feature will assist you to line up objects both horizontally and vertically. Diagram objects moved on a diagram can be automatically snapped to the grid points even if the grid is not displayed on the diagram.

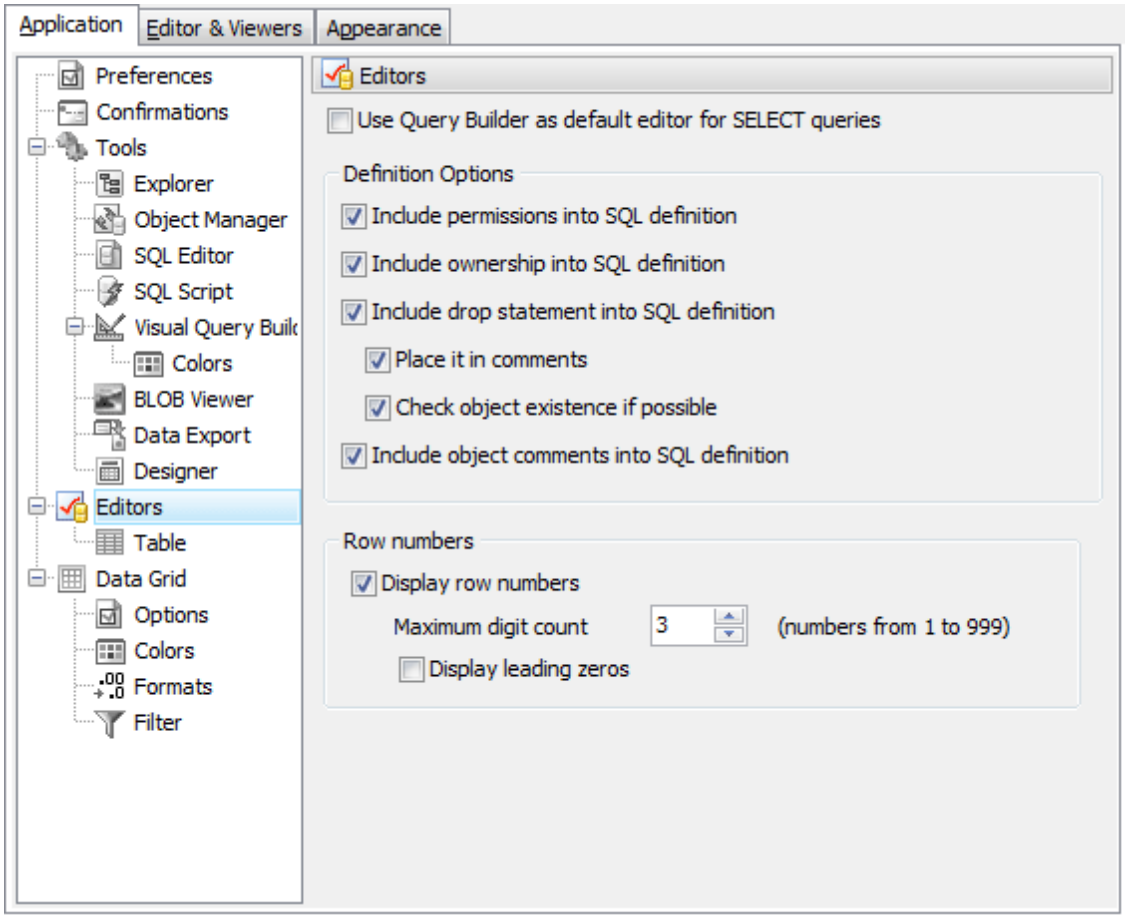
Interval between grid points can be changed as grid size.

The Colors options are to attune the Designer appearance to your taste. Here you change diagrams and tables background colors, the colors of page delimiter and Navigator view box.




### 9.1.5 Object Editors

Below you will find a detailed description of the following object editors options.




### Open each object editor in a new window

With this option checked a new child window opens each time you open an object for editing, otherwise the edited object is being changed in the existing object editor (except the existing object editor is in modified state).

### Use Query Builder as default editor for SELECT queries

With this option enabled all the SELECT queries will be opened in Visual Query Builder 100 instead of SQL Editor 95.

### Include drop statement

If checked, the SQL definition includes the drop statement.

### Place it in comments

With this option drop statement will be placed in comments of the SQL definition.

### Include object comments into SQL definition

With this option enabled comments that are specified for the object and object subitems are placed in SQL definition.

### Row numbers

This options group allows you to manage the row numbering of the subobjects lists such as fileds, indexes, parameters and so on.
To enable/disable the numbering, use Display row numbers checkbox. You can set the

number columns width with Maximum digit count. (I.e. for the value '3' the max column number will be 999).
For uniformity you can use the Display leading zeros option. With this option enabled and maximum digit count '3' you numbering column will be of the form: '001, 002, 003, ...'.

#### 9.1.5.1 Table

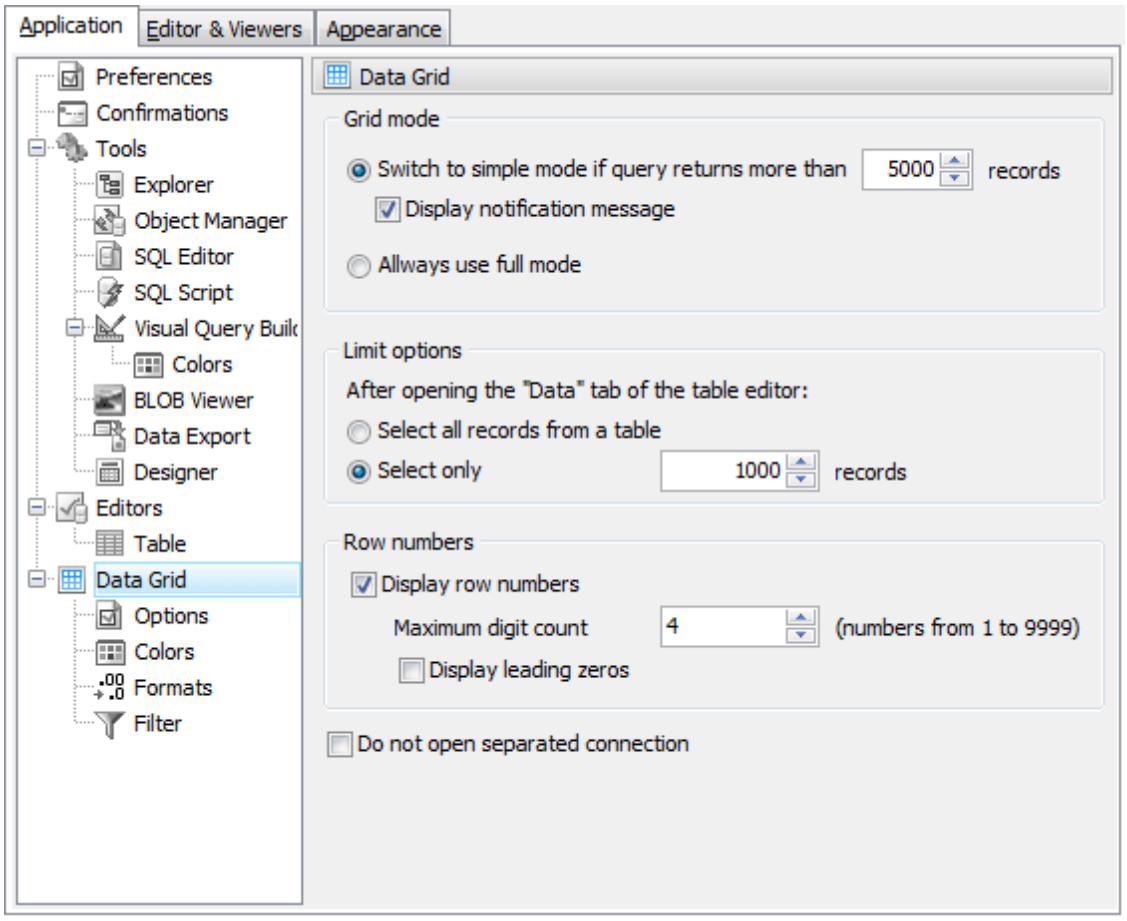
Initial tab
Specifies which tab of Table Editor 64 should be active when it is initially opened.

☑ Retrieve record count before loading data in the data grid
With this option enabled all the SELECT COUNT(*)... query is executed before loading data in the data grid.

Default field type
Specifies the field type appearing in Field Editor 68 by default.

### 9.1.6 Data Grid

Below you will find a detailed description of the following data grid options.




SQLite Maestro provides you with two grid modes 111 of viewing data:
- Fool grid mode allows you to group, filter and sort data in a usual way.
- Simple mode is provided for working with large records number. For data fetching speed-up, filtering, sorting, and grouping features are not enabled in this mode.

You can use notification message to indicate simple mode.

Set the number of records to switch to simple mode automatically or select Always use full mode.

Limit options
Allows you either to select all records from table after opening the Data tab, or select only specified number of rows on one page with an ability to rotate pages and view all data.

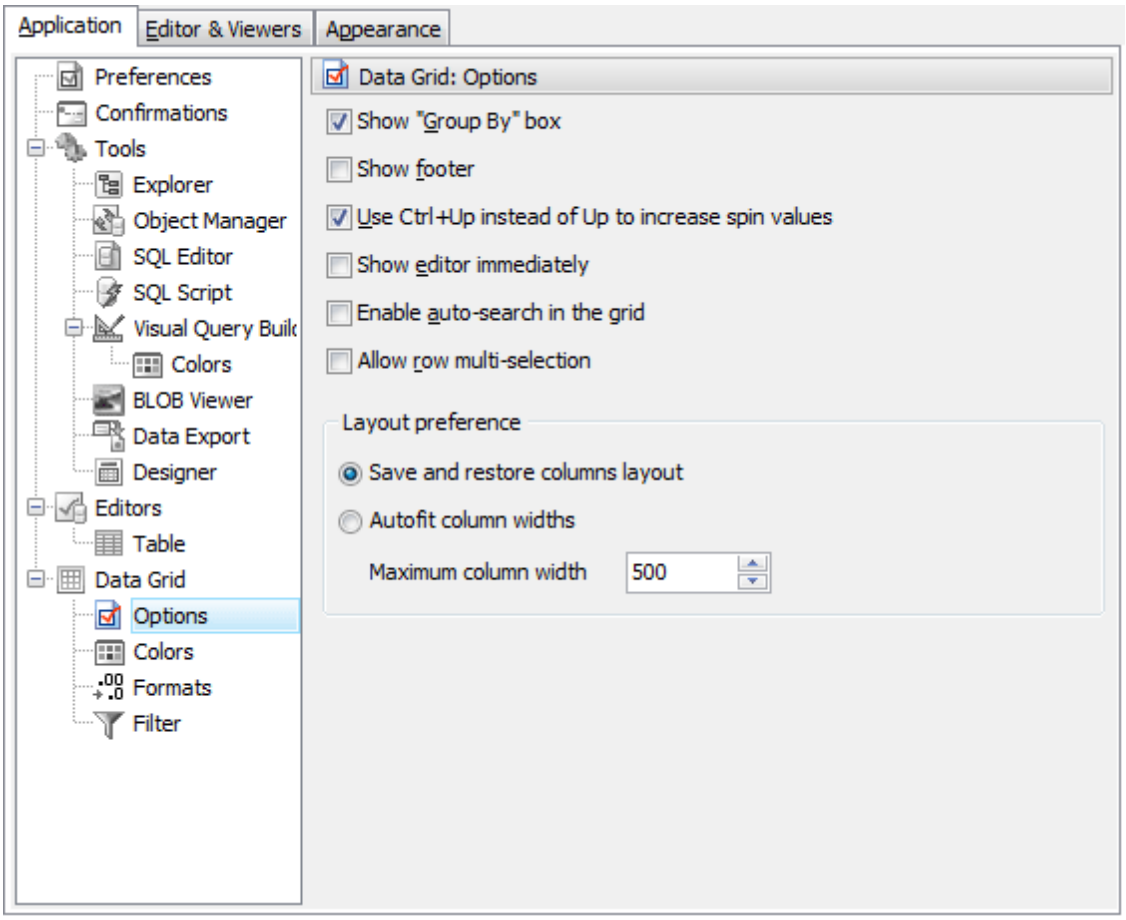
Row numbers
This options group allows you to manage grid rows numbering.
To enable/disable the numbering, use Display row numbers checkbox. You can set the number columns width with Maximum digit count. (I.e. for the value '3' the max column number will be 999).
For uniformity you can use the Display leading zeros option. With this option enabled and maximum digit count '3' you numbering column will be of the form: '001, 002, 003, ...'.

☑ Do not open separated connection
With this option enabled a new connections for fetching data is not opened. This gives you an ability to work with data a little bit faster, because time for opening a new connections is not demanded.

☑ Display TEXT fields as ordinary strings
Specify the option to view the TEXT fields as ordinary strings.

#### 9.1.6.1 Options

Below you will find a detailed decryption of the data grid options.




### Show "Group By" box

Shows the box on the top of the grid view for grouping data by fields.

### Show footer

Shows the footer on the bottom of the grid view.

### Use Ctrl+Up instead of Up to increase spin values

Allows you to use Ctrl+Up and Ctrl+Down key combinations for editing the spin for numeric fields.

### Show editor immediately

Allows editing the cell value right after the cell is clicked.

### Enable auto-search in the grid

Allows you to search records in the grid by the first letters.

### Allow row multi-selection

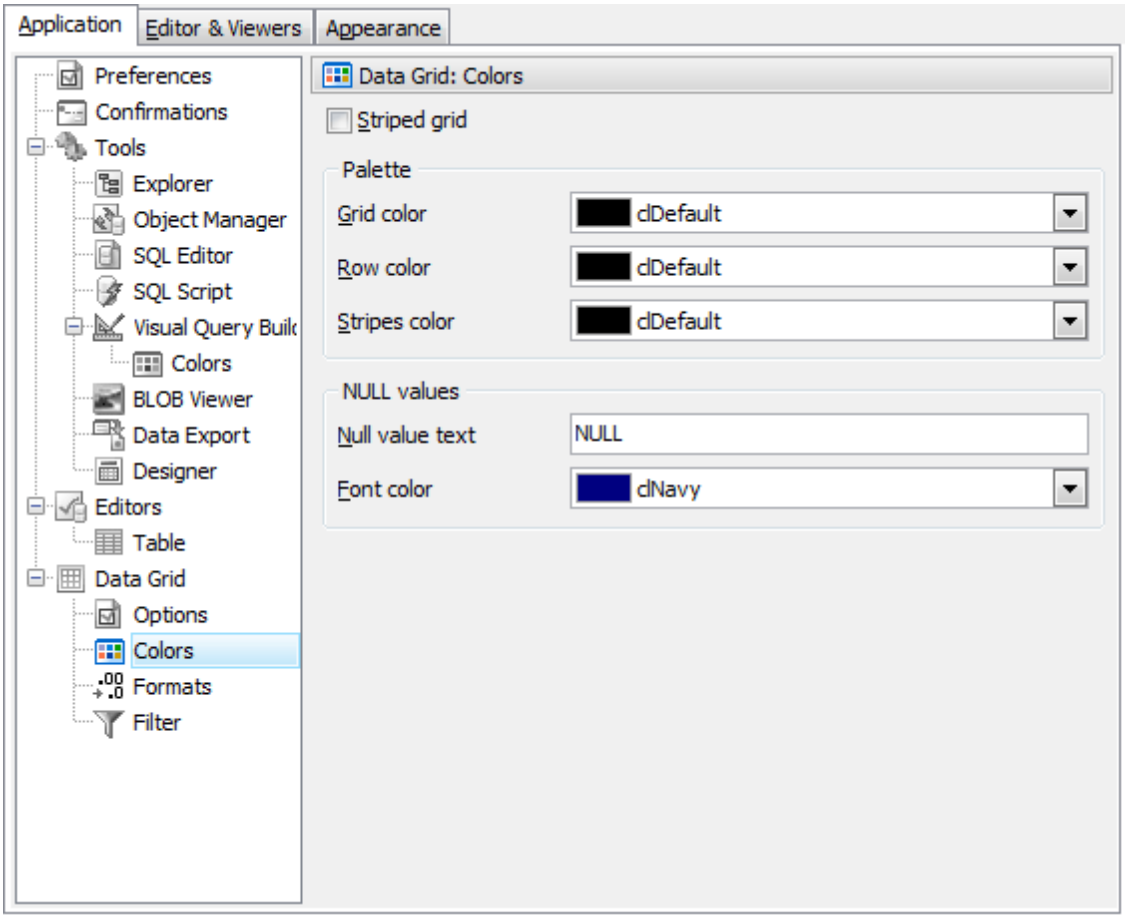
Allows you to select multiple records using the Ctrl and Shift keys.

### Layout preference

Select whether SQLite Maestro should remember the column positions for the grids or fit them automatically.

### 9.1.6.2 Colors

Below you will find a detailed decryption of the following colors options.




Striped grid
Displays the odd grid rows in a different color defined by the Stripes color option.

Grid color
Defines the background color of the data grid.

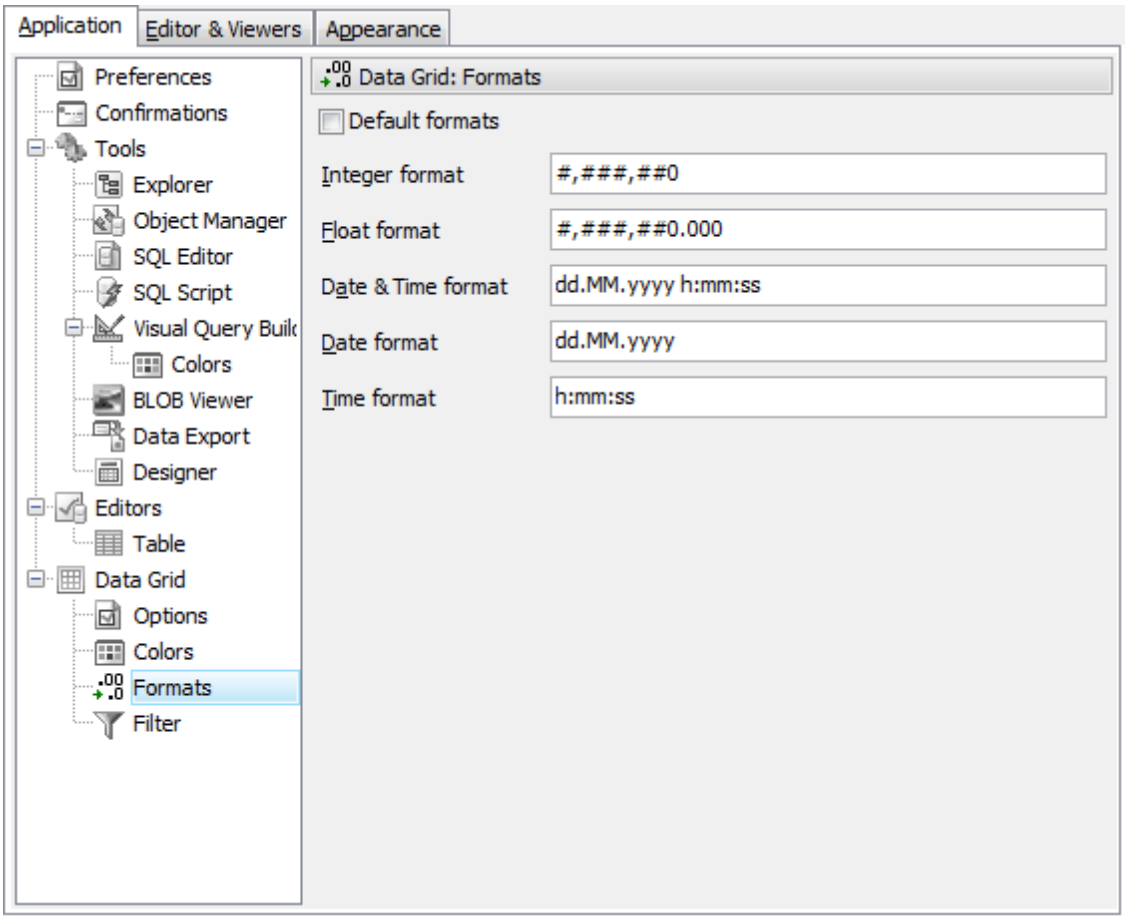
Row color
Defines the color of the selected row in the data grid.

Stripes color
Defines the color of the odd rows if the Striped Grid option is on.

Null values
Use Null value text to define the text that stand for the NULL value and use Font color to set the color for displaying this text.

### 9.1.6.3 Formats

Below you will find a detailed decryption of the following formats options.




This window allows you to customize formats applied to data in grid. Edit the format masks to adjust the result format in the way you need.

In *numeric* formats using digit placeholder (# or 0) you can specify the format of number. For example, integer 1234567890 with # ### ##0 integer format is represented like 1 234 567 890. The locations of the leftmost '0' before the decimal point in the format string and the rightmost '0' after the decimal point in the format string determine the range of digits that are always present in the output string.

Conversion and their description for *date*, *time* and *date time* format:

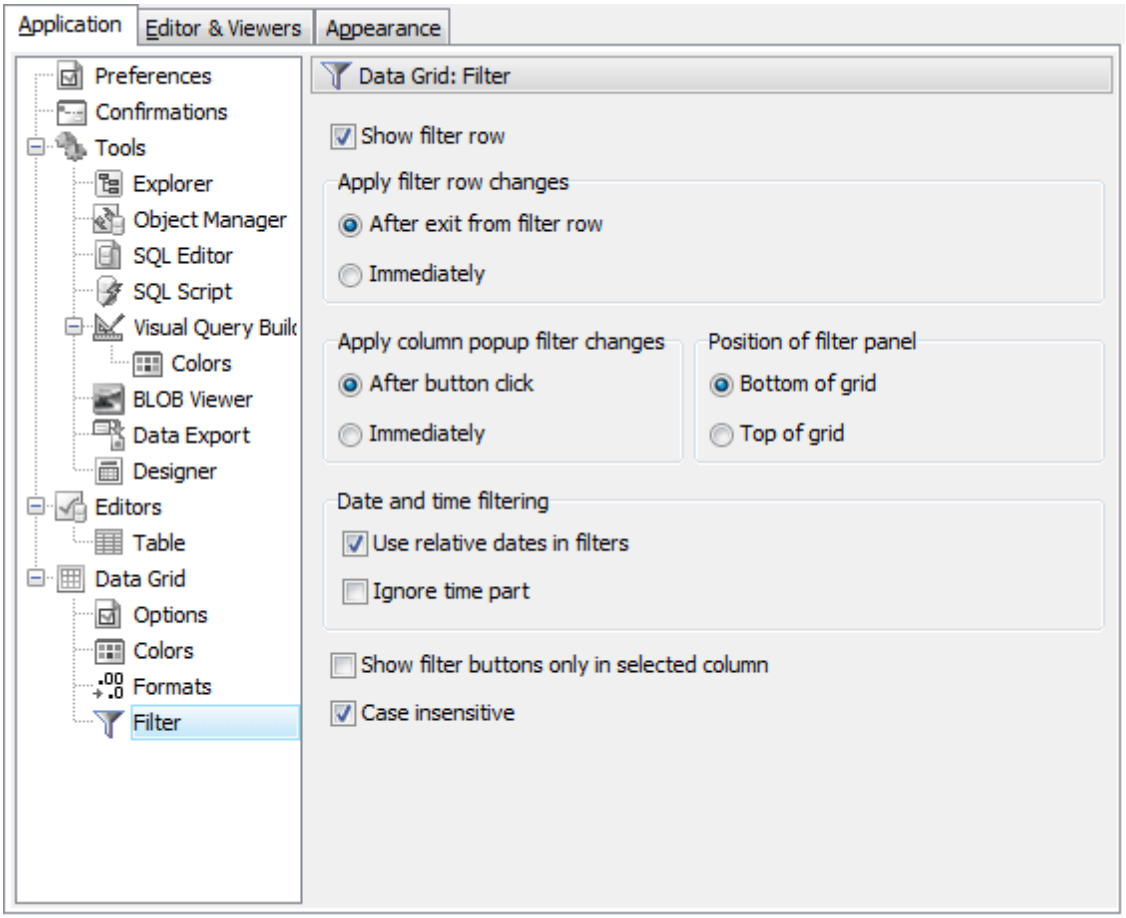
| | |
|---|---|
| dd | day of the month, represented by 1 or 2 symbols. For example, the first day of month is 1 |
| DD | day of the month, represented only by 2 symbols. For example, the first day of month is 01 |
| mm | minutes |
| MM | month |
| yy | year, represented by 2 symbols. For example, 2006 year will be 06 |

| | |
|---|---|
| yyyy | year, represented by 4 symbols. For example, 2006 |
| h | hour, represented by 1 or 2 symbols. For example, 2 |
| hh | hour, represented only by 2 symbols. For example, 02 |

"**.**", "**,**", "**:**" symbols can be placed as separators in format masks for *integer, float, date, time, date time, currency* types.

#### 9.1.6.4 Filter

These options allows you to customize data filtering in grids.




Show filter row
When checked the filter row is always represented in the data grid as an additional row.

Apply filter row changes and Apply column popup filter changes allows you to manage the speed of the data filtering. To speed-up the process select Immediately as the time the filter you are set will be applied.

Change the Position of filter panel and customize timestamp data filtering: check the Use relative dates in filters box to include in column popup filter such options as "Yesterday",

"Today", "Tomorrow", "Last 30 day", "Last week", "Next week", and others; check the Ignore time part box to neglect time part of timestamp data under the filtering.

By default filter buttons are shown at all columns header, to show filter button only in selected column, check the corresponding option.

You can specify the case sensitivity of the grid filter with the Case insensitive checkbox (ON by default).

## 9.2 Editors & Viewers

The Editors & Viewers section allows you to set the parameters of viewing and editing the SQL statements within SQLite Maestro.



**See also:** SQL Editor 95, SQL Script Editor 146, Visual Query Builder 100, Table Editor 64.

### 9.2.1 General

If the Auto indent option is checked, each new indention is the same as the previous when editing SQL text.

☑ Insert mode
If this option is checked, insert symbols mode is default on.

☑ Use syntax highlight
Enables syntax highlight in the object editor window.

☑ Always show links
If this option is checked, hyperlinks are displayed in the editor window. To open a link click it with the **Ctrl** button pressed.

☑ Show line numbers
If this option is checked, line numbers are displayed in the editor window.

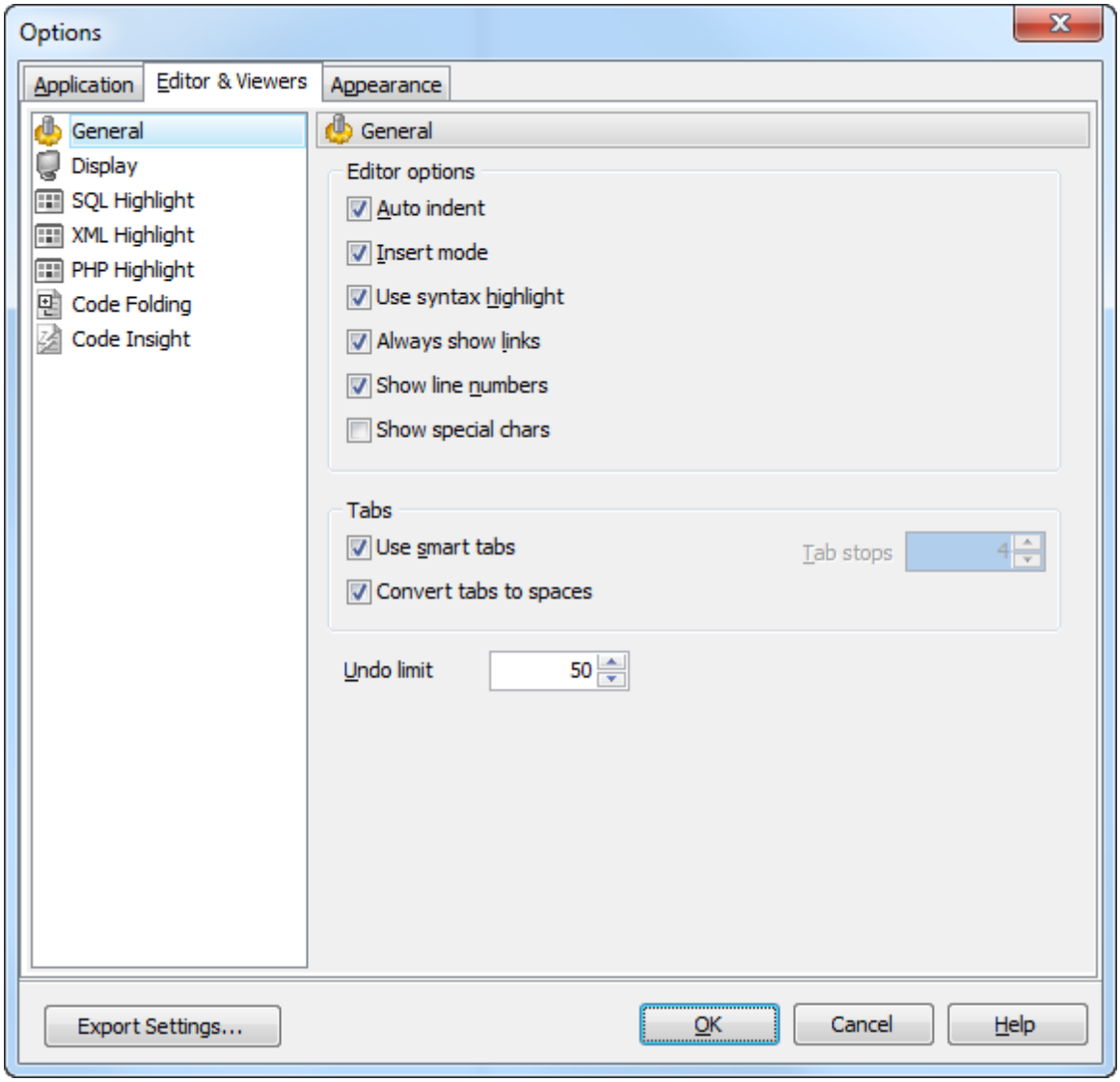
☑ Show special chars
If this option is checked, special chars (like line breaks) are displayed in the editor window.

☑ Use smart tabs
With this option on the number of tab stops is calculated automatically, depending on the previous line tab.

☑ Convert tabs to spaces
If this option is checked, each time you press the Tab key, the appropriate number of spaces will be added to the edited text.

Tab Stops
Defines the tab length, used when editing text.

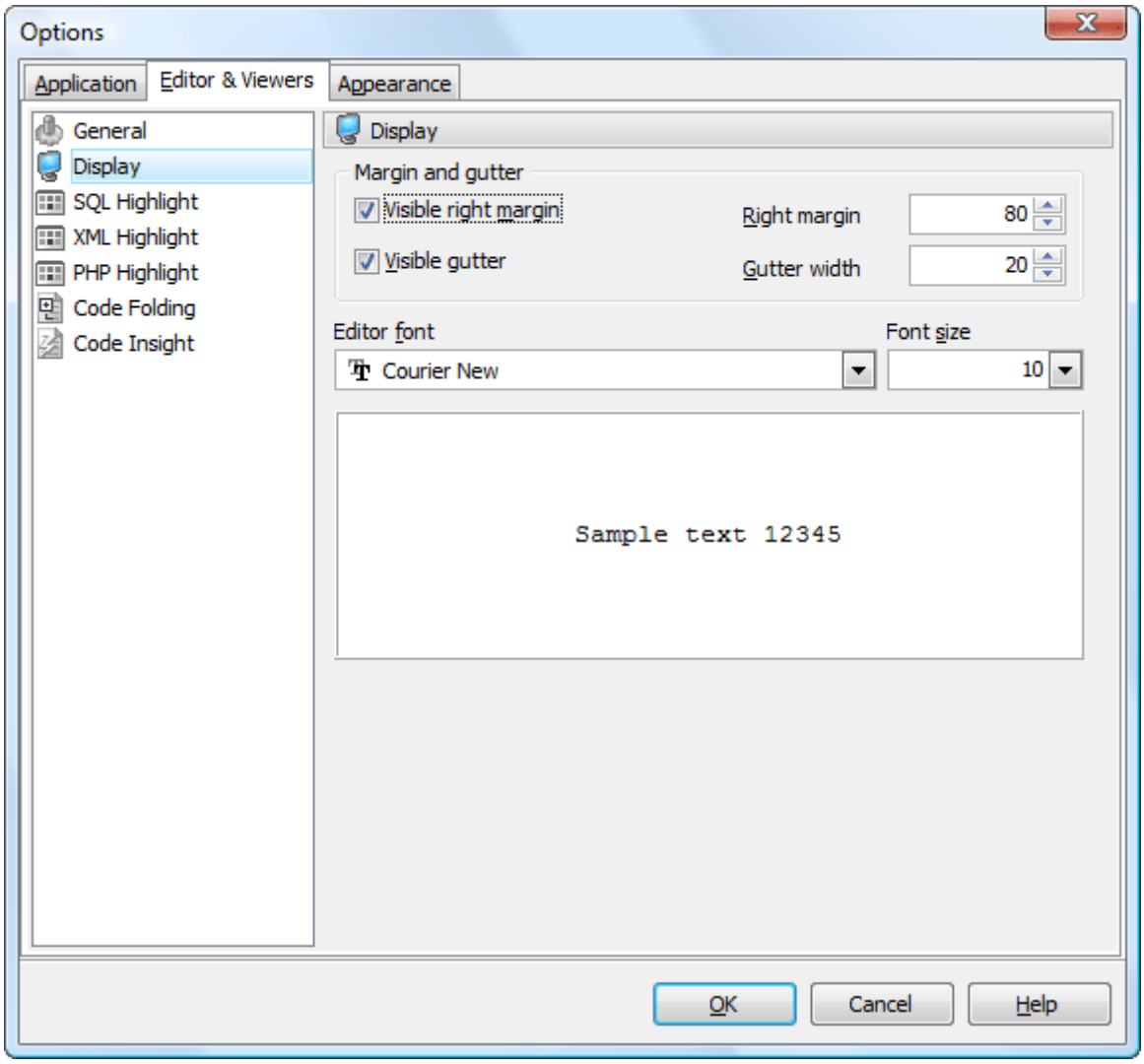
Undo Limit
Defines the maximum number of changes possible to be undone.




## 9.2.2 Display

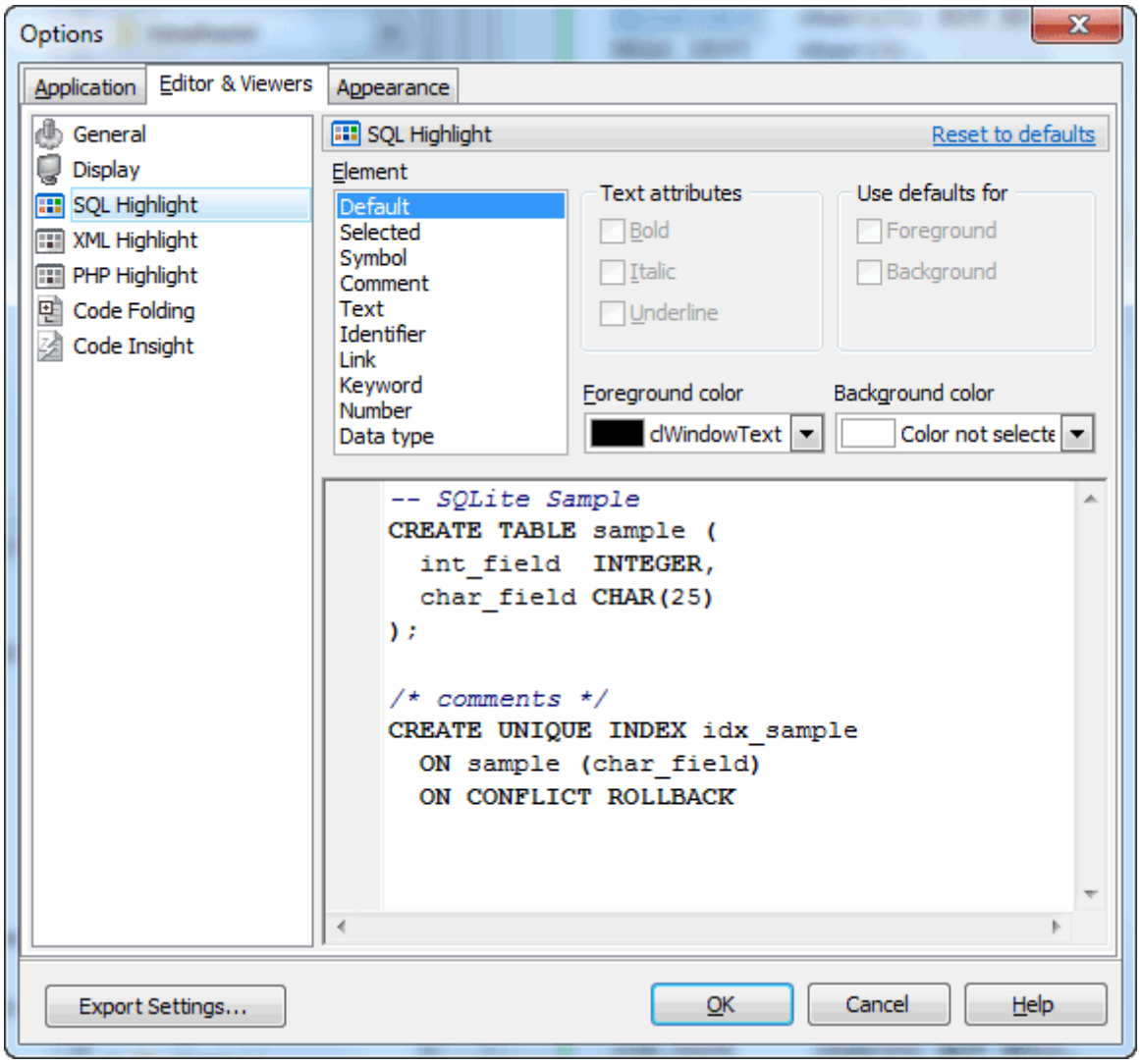
You can disable/enable the right text margin and the gutter of the editor area, set the position of the right text margin as Right margin, and the Gutter width.

Use the Editor font and Font size to define the font used in all program editors and viewers. The panel below displays the sample of the selected font.



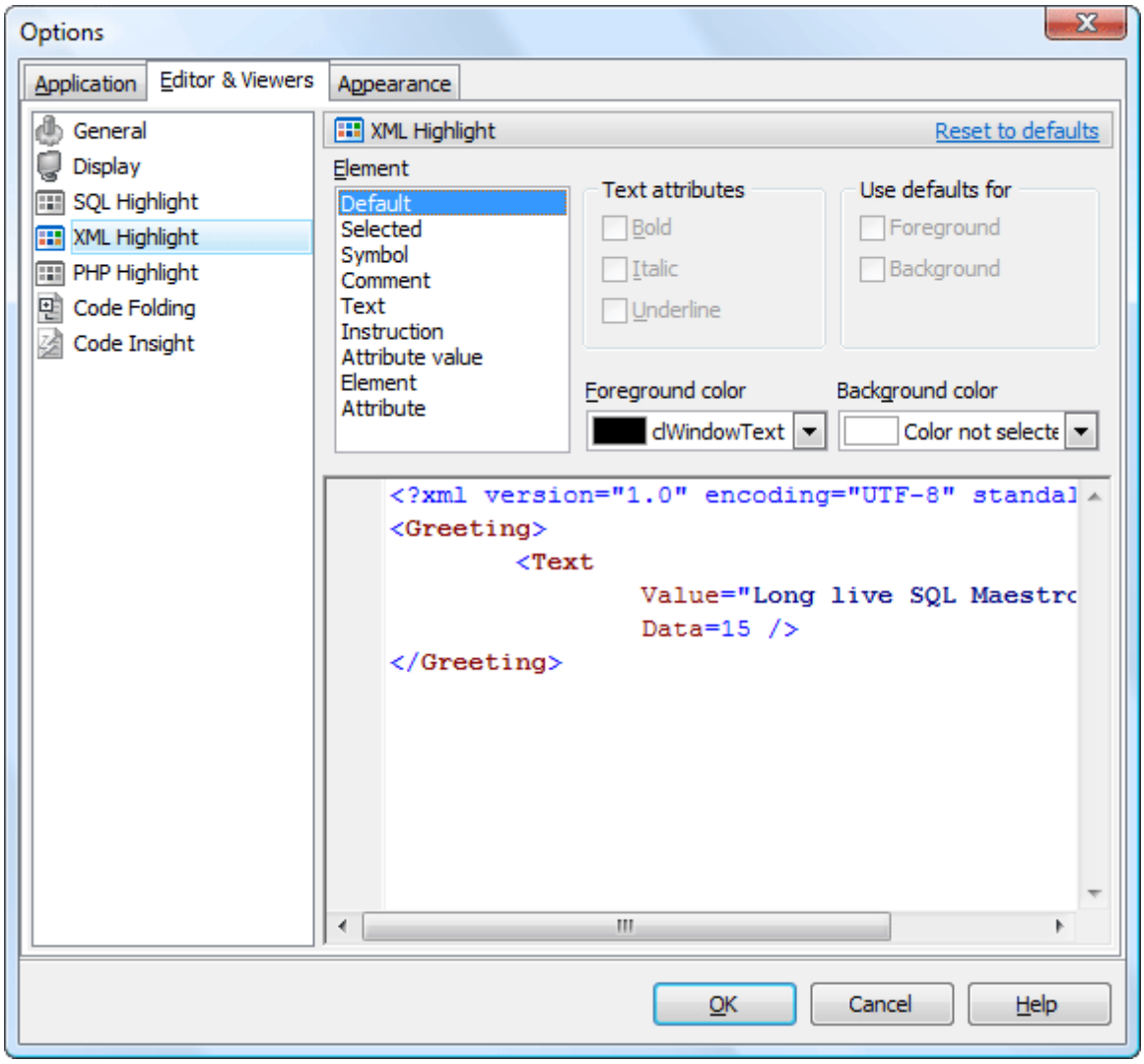

### 9.2.3 SQL highlight

Use the SQL highlight item to customize syntax highlight in all SQL editors and viewers, e.g. in SQL Editor, Query Builder, Table Editor and others. Select the text element from the list, e.g. *comment* or *SQL keyword* and adjust its foreground color, background color and text attributes according to your preferences.



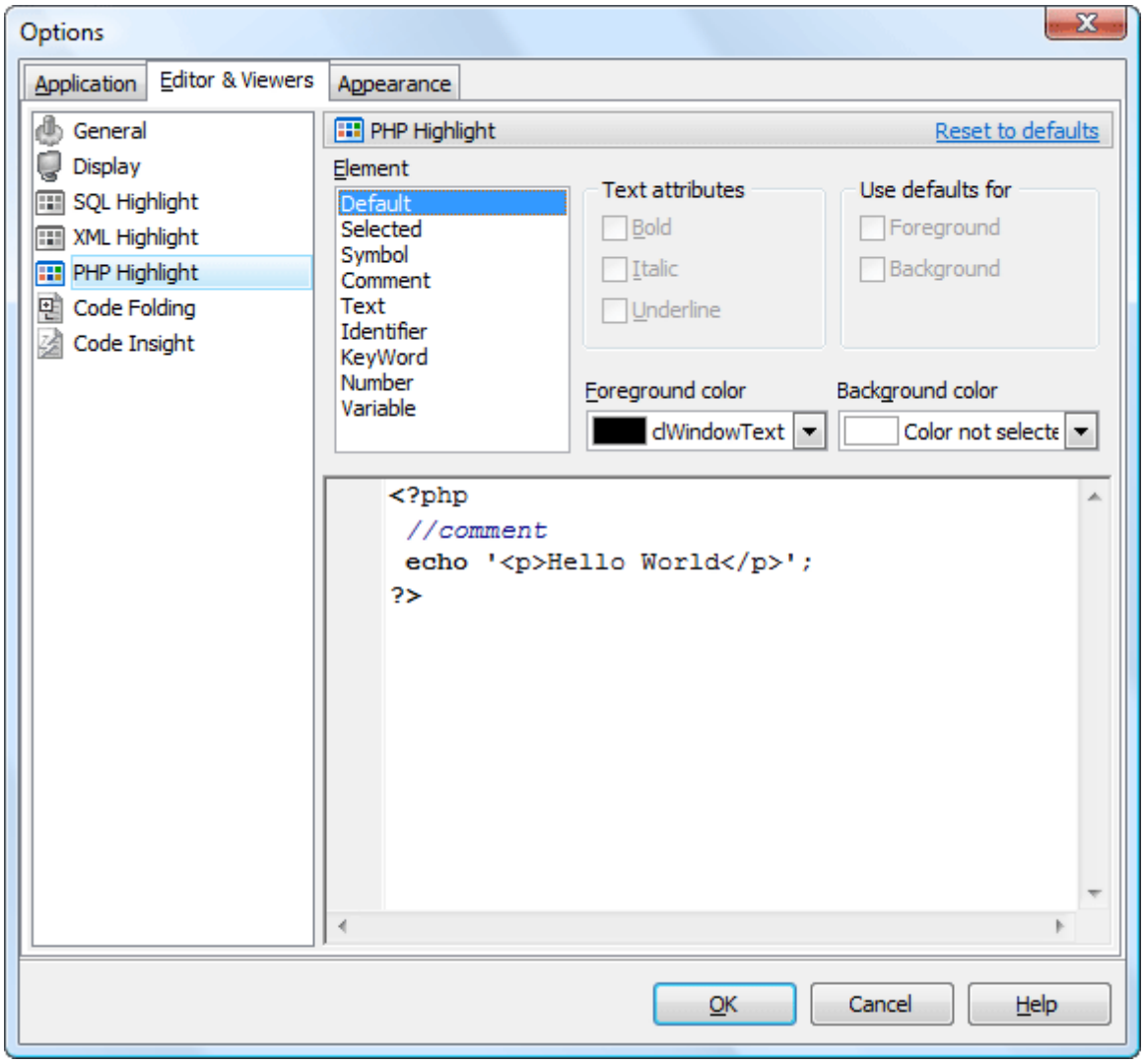

### 9.2.4 XML highlight

Use the XML highlight item to customize XML syntax highlight for the text representation of BLOBs in BLOB Viewer/Editor. Select the text element from the list, e.g. attribute or attribute value and adjust its foreground color, background color and text attributes according to your wishes.



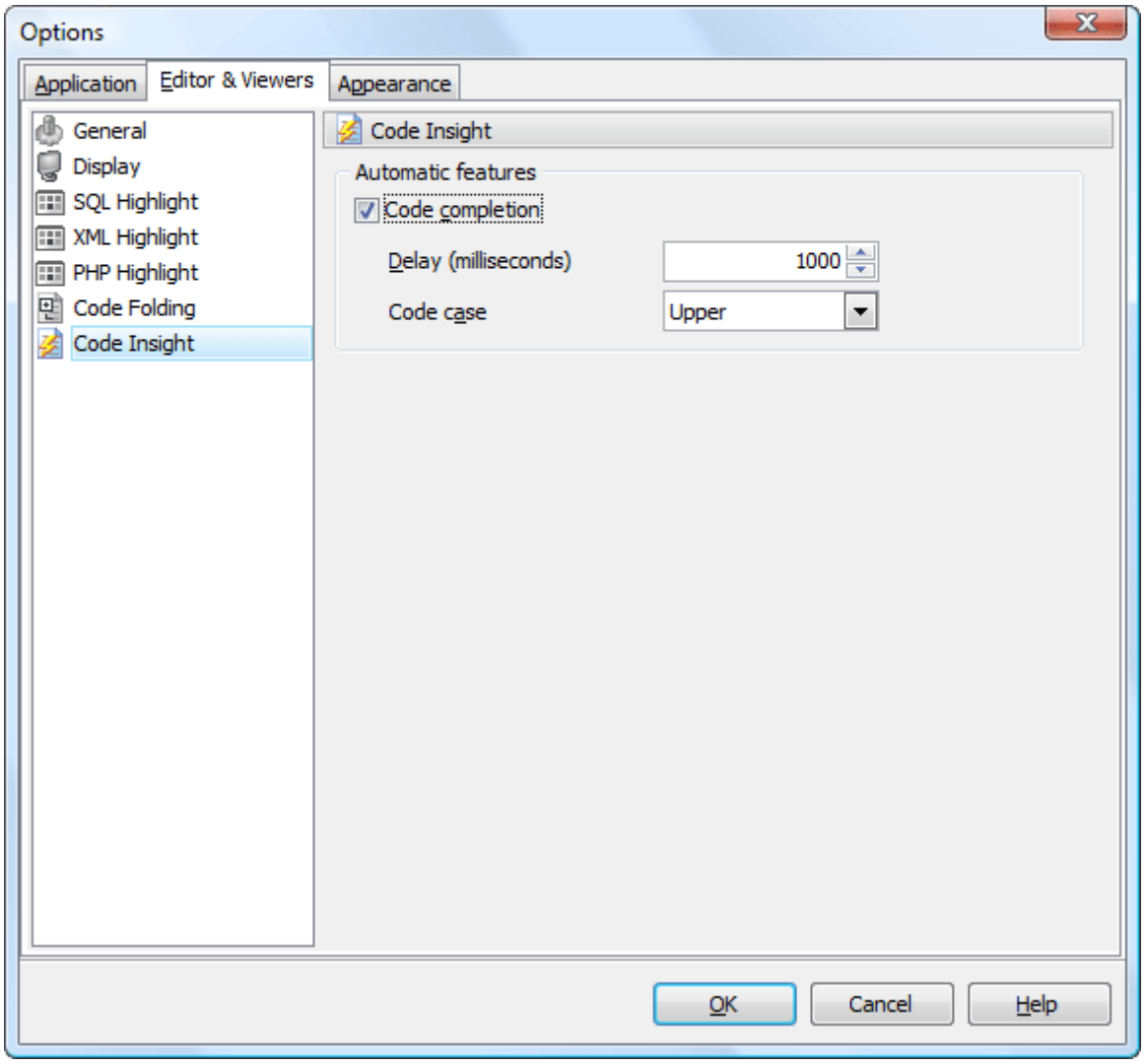

### 9.2.5 PHP highlight

Use the PHP highlight item to customize PHP syntax highlight for the text representation of BLOBs in BLOB Viewer/Editor. Select the text element from the list (e.g. Keyword, Comment, Identifier), and adjust its foreground color, background color and text attributes according to your wishes.



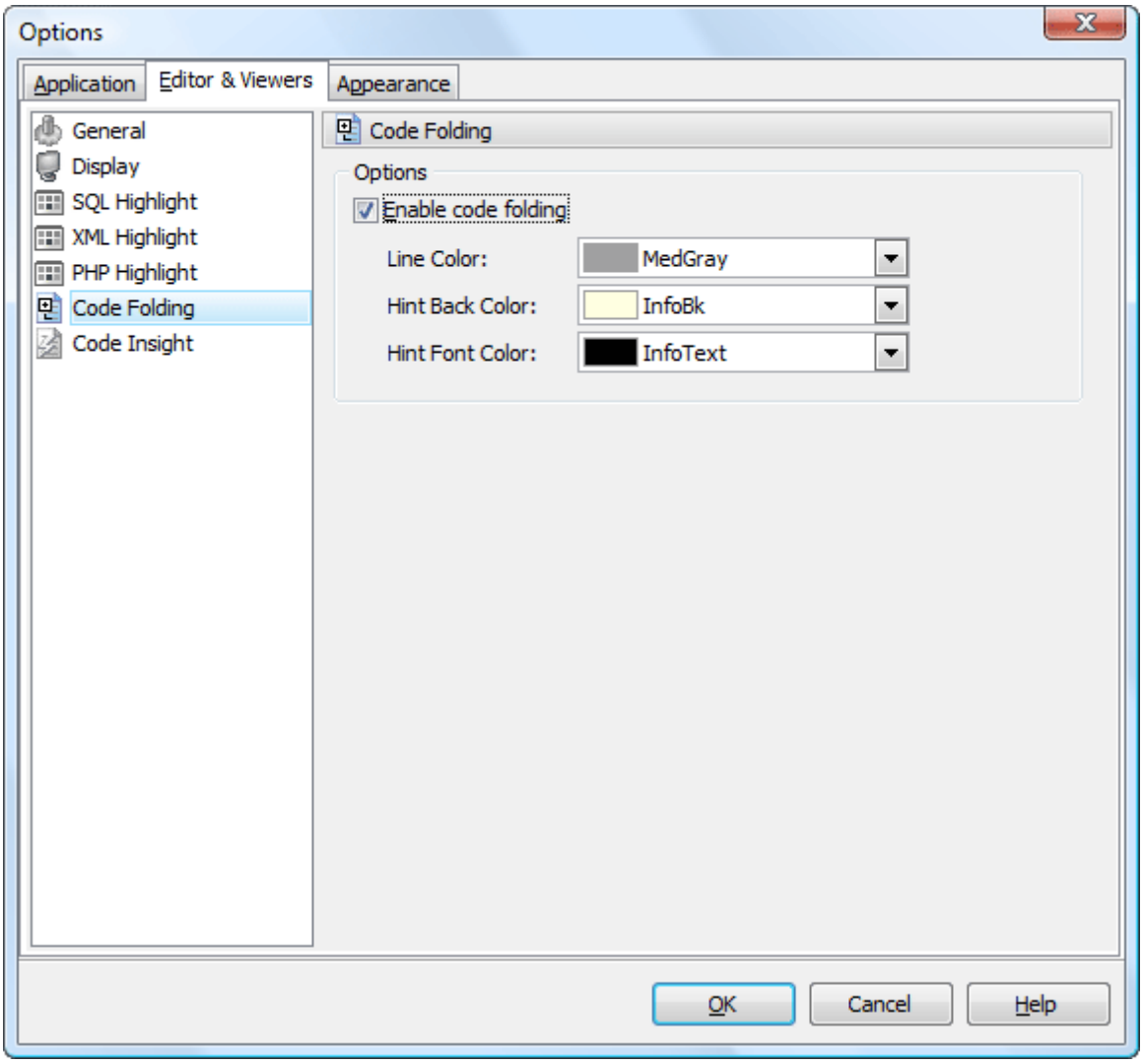

### 9.2.6 Code Insight

You can disable/enable the code completion with the corresponding option and also set the time is appears as Delay, and case of words inserted automatically.




### 9.2.7 Code Folding

The Code Folding item group makes it possible both to view the whole text and to divide it into logical parts (regions). Each part can be collapsed and extended. In extended mode the whole text is displayed (set by default), in collapsed mode the text is hidden behind one text line denoting the first line of the collapsed region.




You can enable/disable code folding in SQL editors and viewers and customize the colors of its items.

## 9.3 Appearance

The Appearance section allows you to customize the application interface style to your preferences.

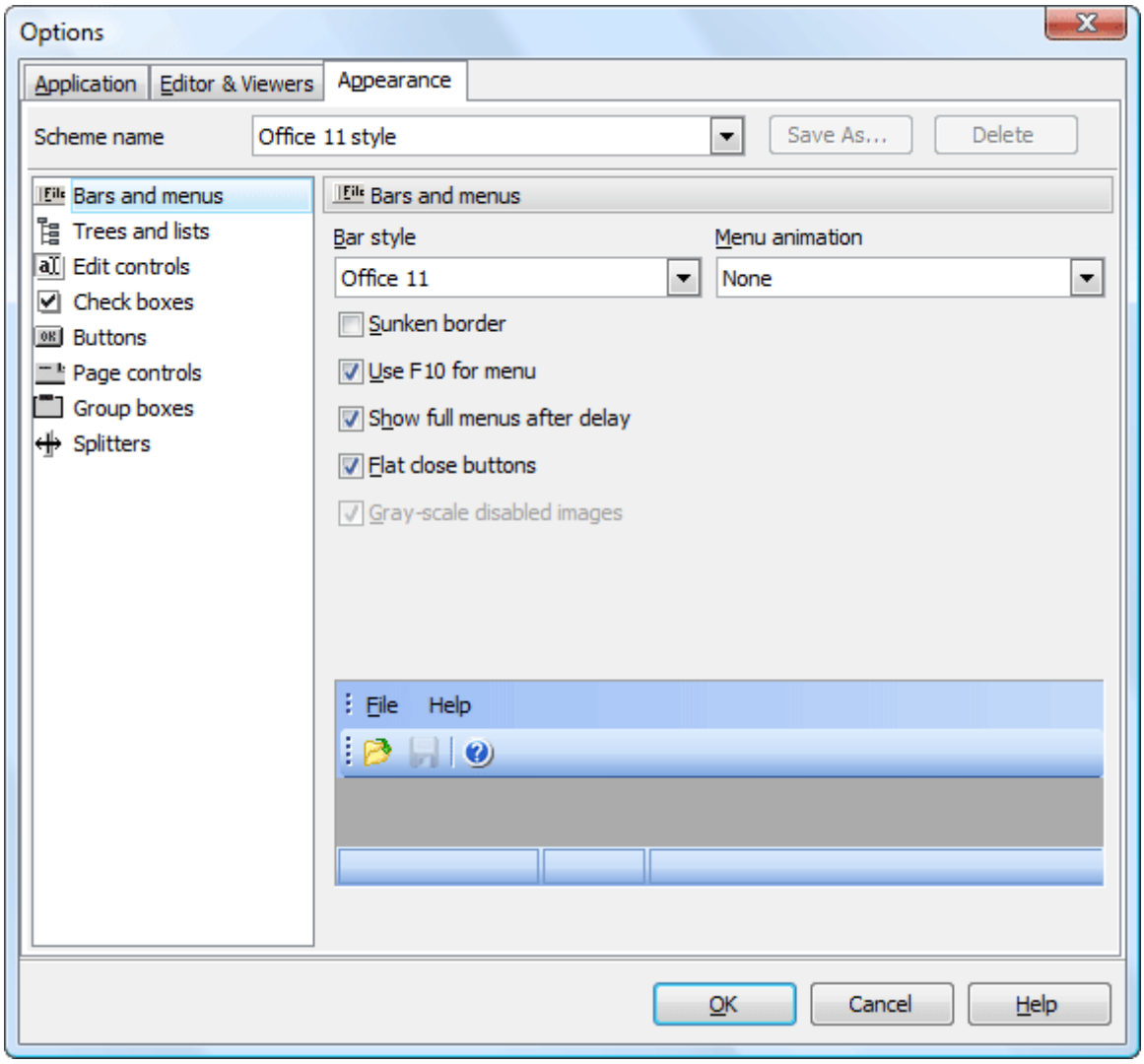
Use the Scheme name box to select the interface scheme you prefer: *Office XP style*, *Windows XP native style*, etc. You can create your own interface schemes by customizing any visual options (Bars and menus, Trees and lists, Edit controls, Check boxes, Buttons, etc.) and clicking the Save As button. All the customized options are displayed on the sample panel.



### 9.3.1 Bars and menus

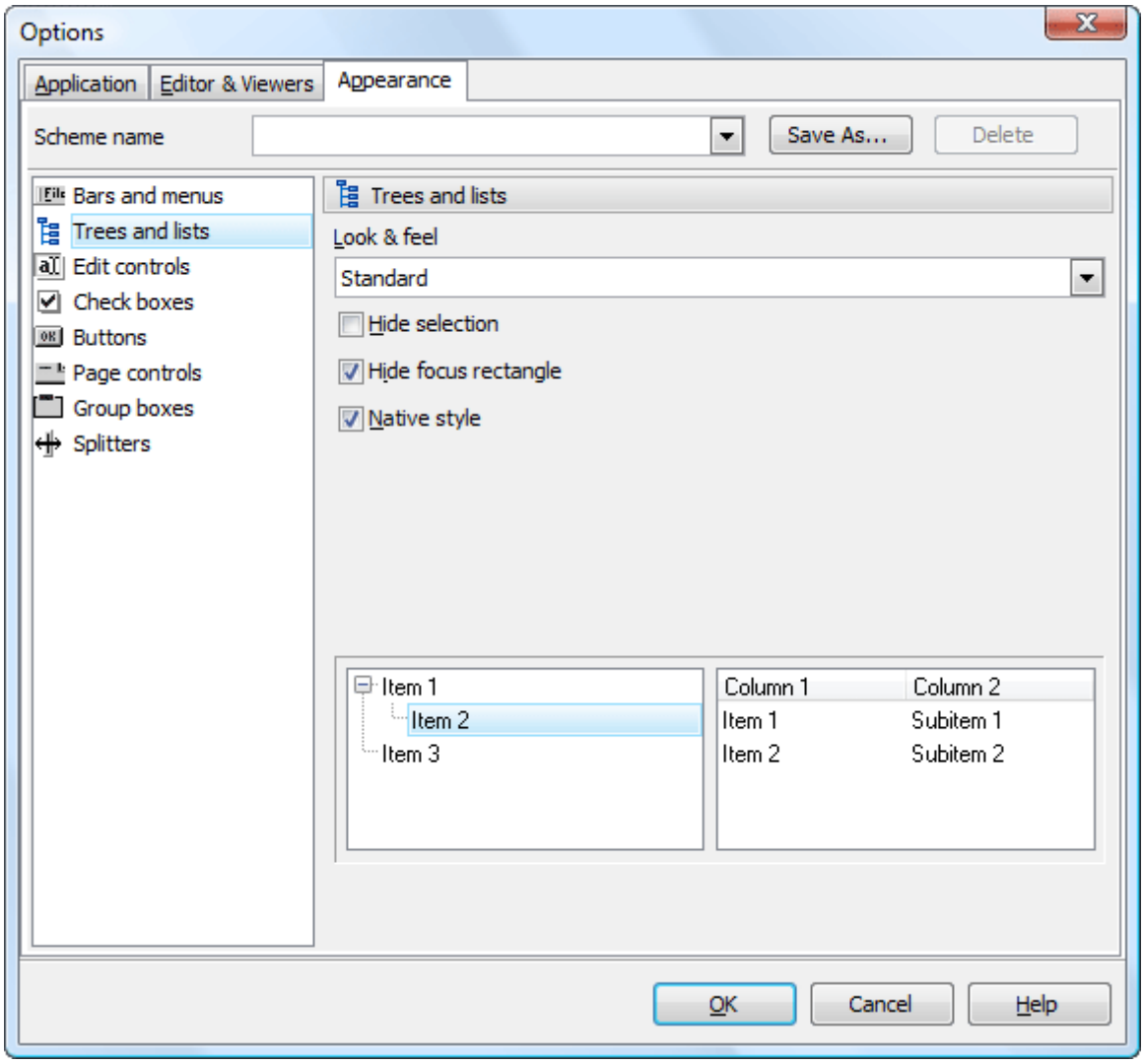
Use the Bars and menus item to customize SQLite Maestro toolbars style and menus animation.

The item allows you to select Bar style and menu animation from the corresponding drop-down lists and to enable or disable such options as sunken border, F10 key for opening menu, viewing full menus after delay, flat close buttons, gray-scale images.



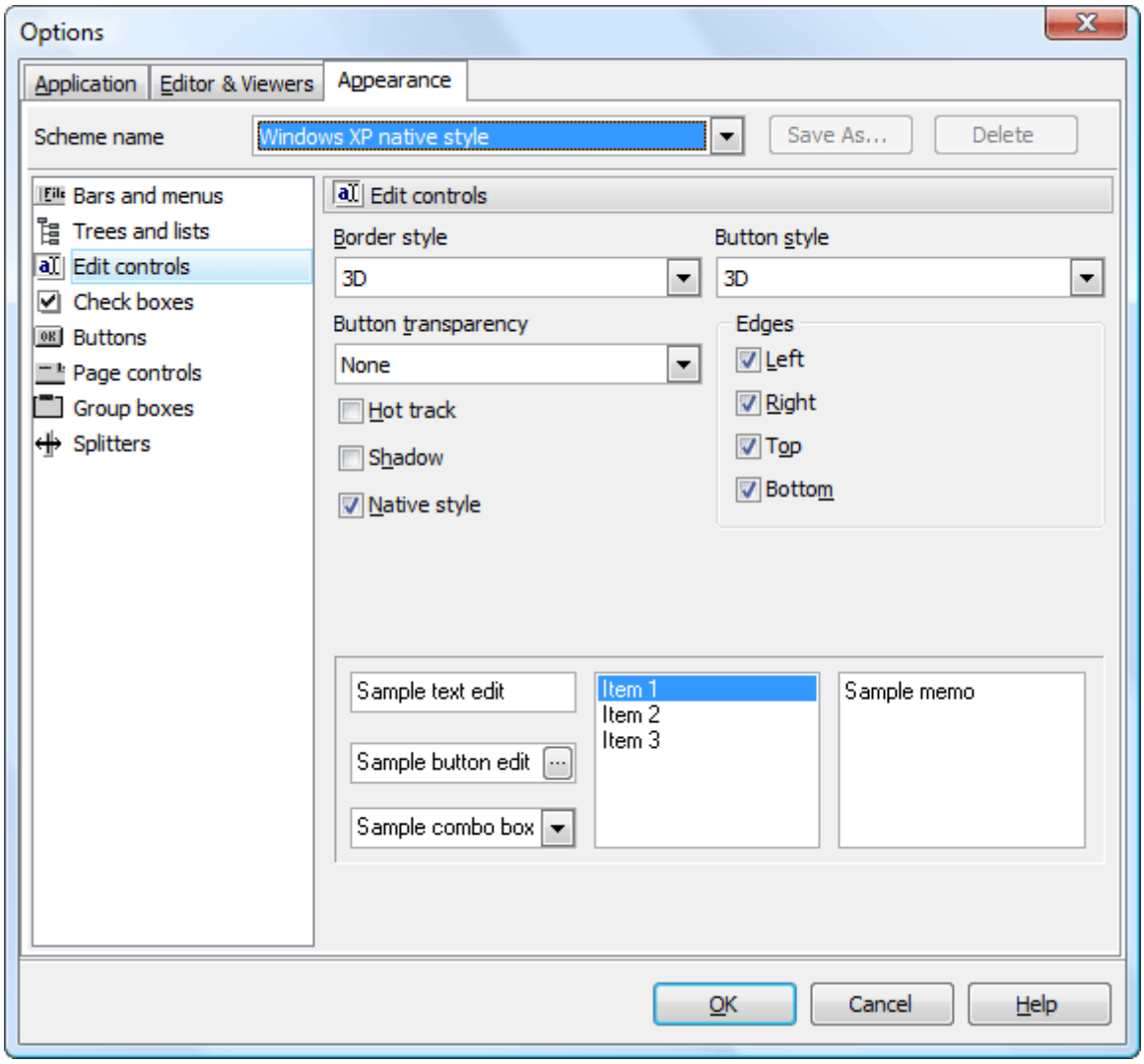

### 9.3.2 Trees and lists

Use the Trees and lists item to select various tree view options. Use the item to select *standard*, *flat* or *ultraflat* styles, check or uncheck the *hide selection*, *hide focus rectangle* and *native style* options.



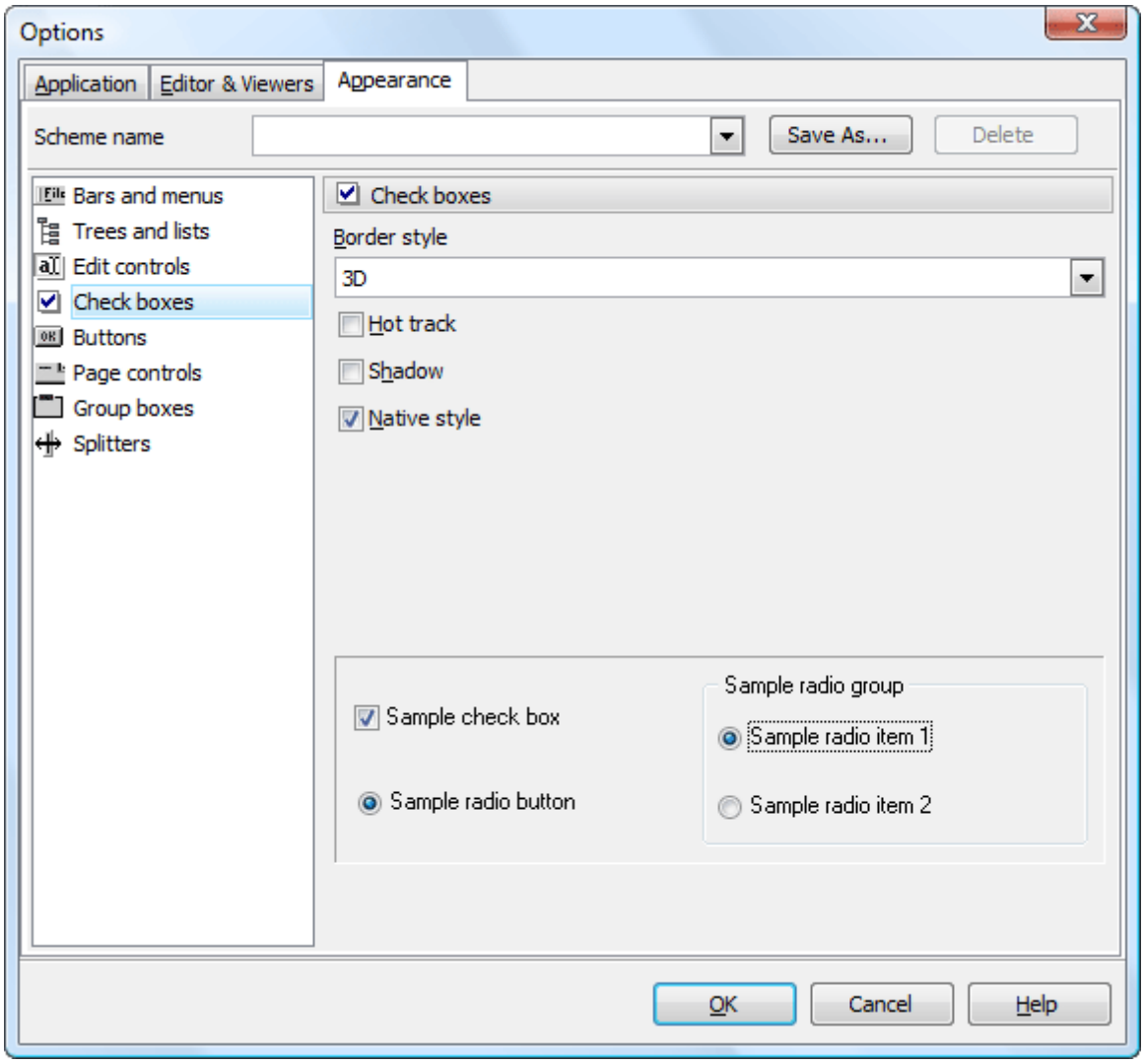

### 9.3.3 Edit controls

Use the Edit controls item to customize the appearance of different SQLite Maestro edit controls. The tab allows you to select the edit controls border style, button style and transparency, enable/disable hot tracks, shadows, native style and customize edges. It is also possible to define samples for the text edit, button edit and combo box controls.



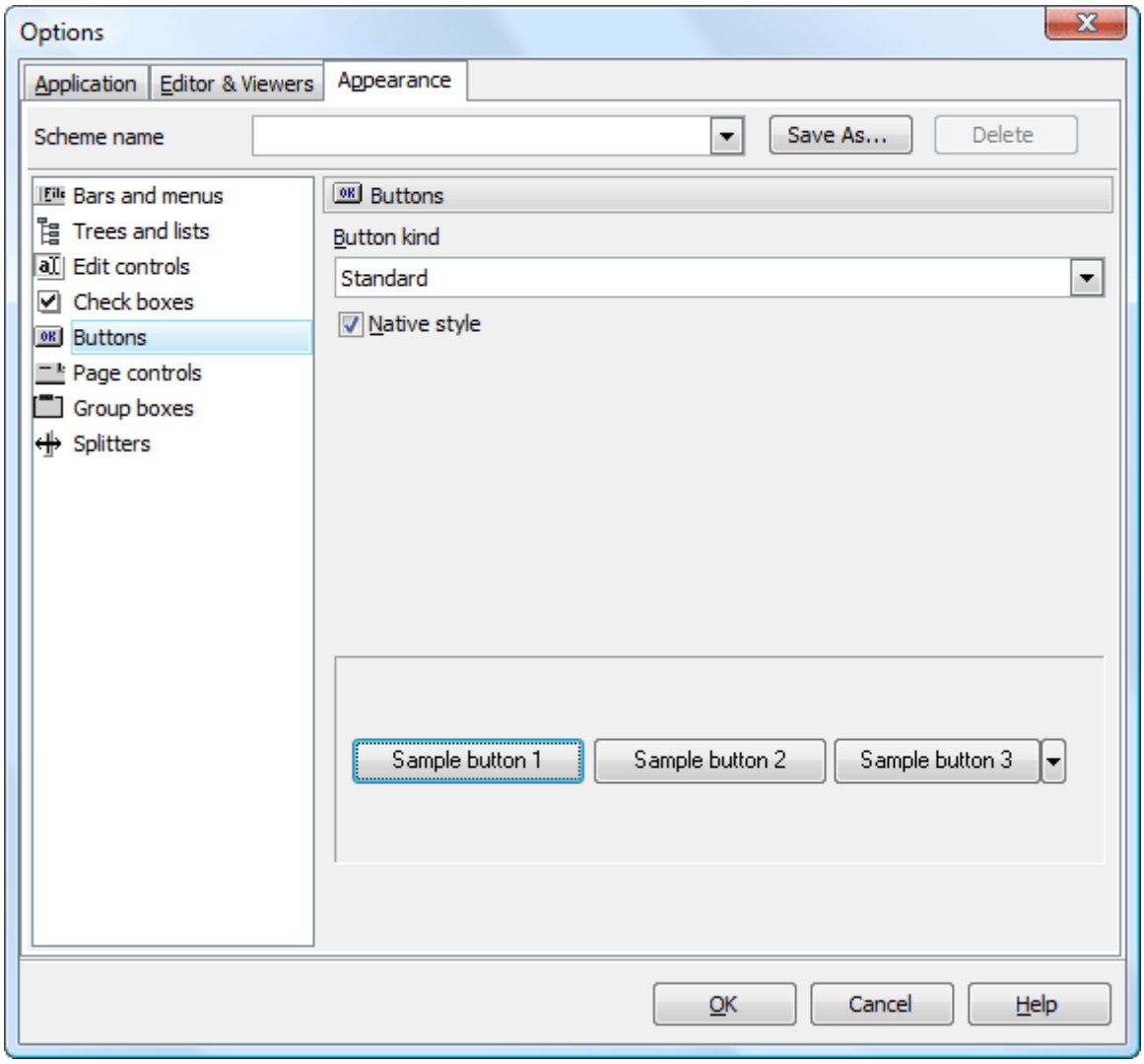

## 9.3.4 Check boxes

The Check boxes item allows you to customize the appearance of check boxes and radio buttons. The tab allows you to customize the appearance of check boxes: set border style, enable/disable hot tracks, shadows, native style. It is also possible to define samples for check boxes and radio buttons.



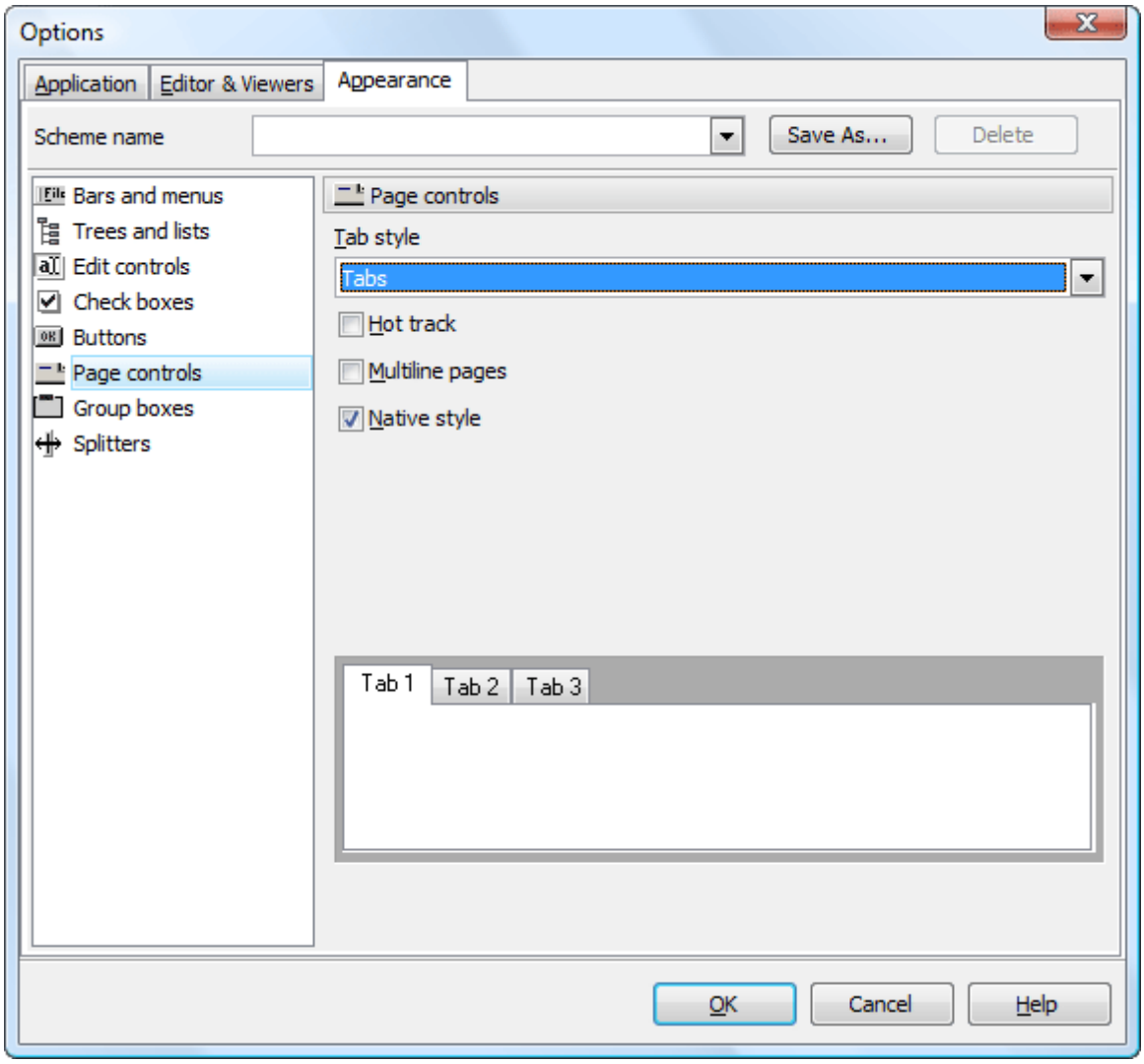

### 9.3.5 Buttons

Use the Buttons item to customize SQLite Maestro buttons. The tab allows you to adjust the appearance of buttons and define sample buttons as well.



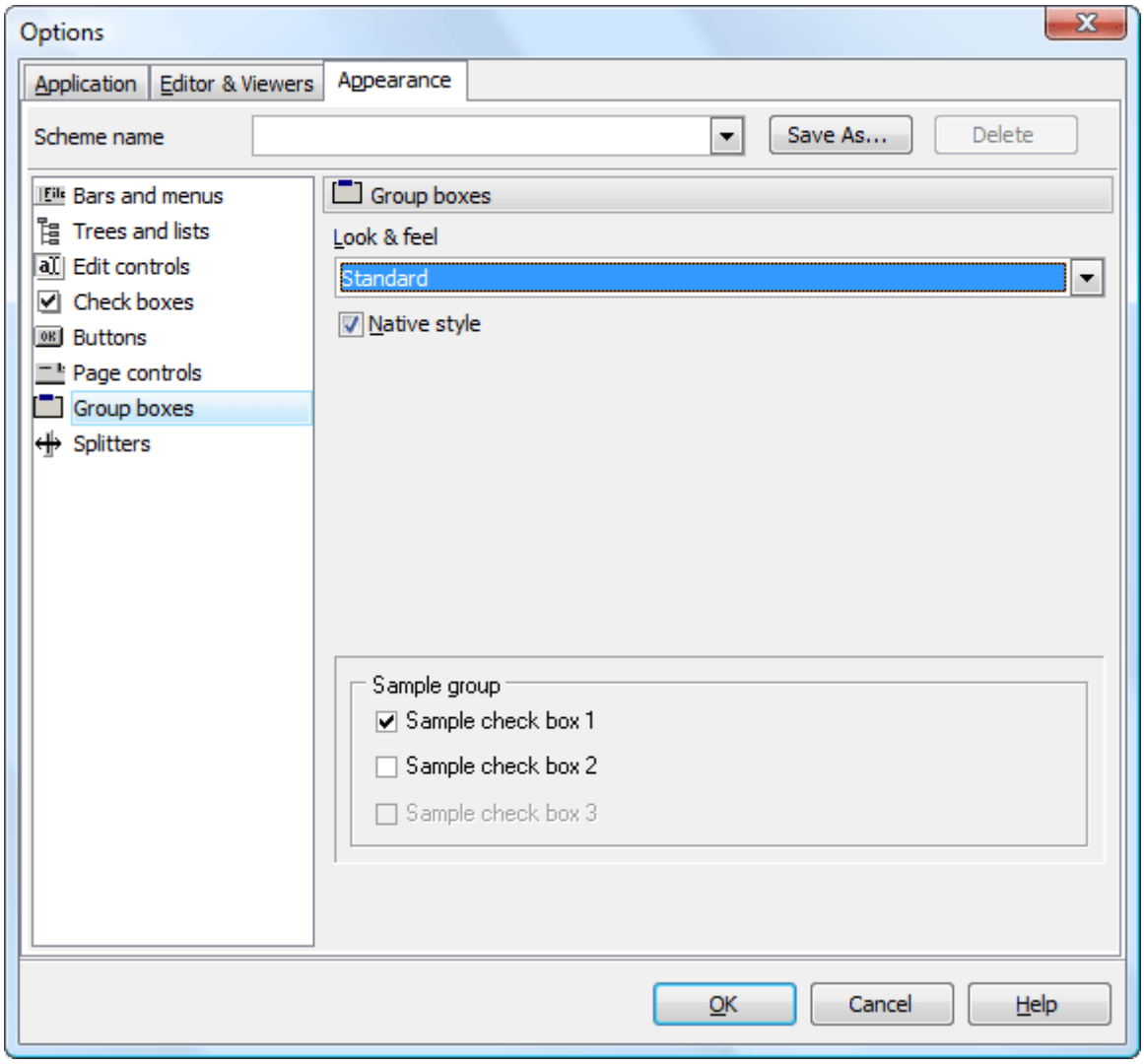

### 9.3.6 Page controls

The Page controls item allows you to customize the style of all SQLite Maestro page controls. The tab allows you to select tab styles, enable/disable hot track, multi-line pages and native style.



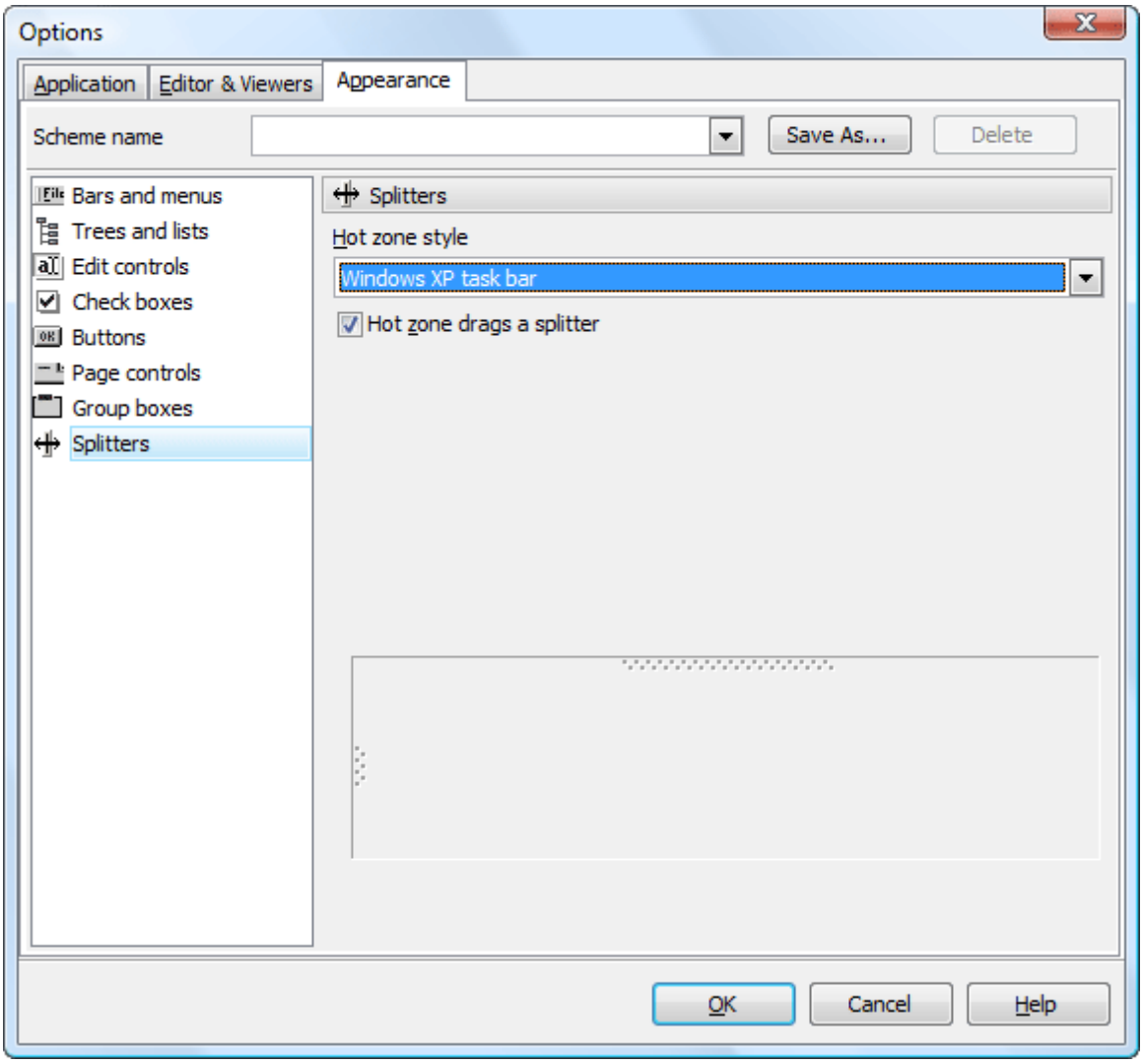

### 9.3.7 Group boxes

Use the Group boxes item to customize all SQLite Maestro group boxes according to your preferences. Use tab to apply styles for group boxes, enable/disable native style and define samples.




### 9.3.8 Splitters

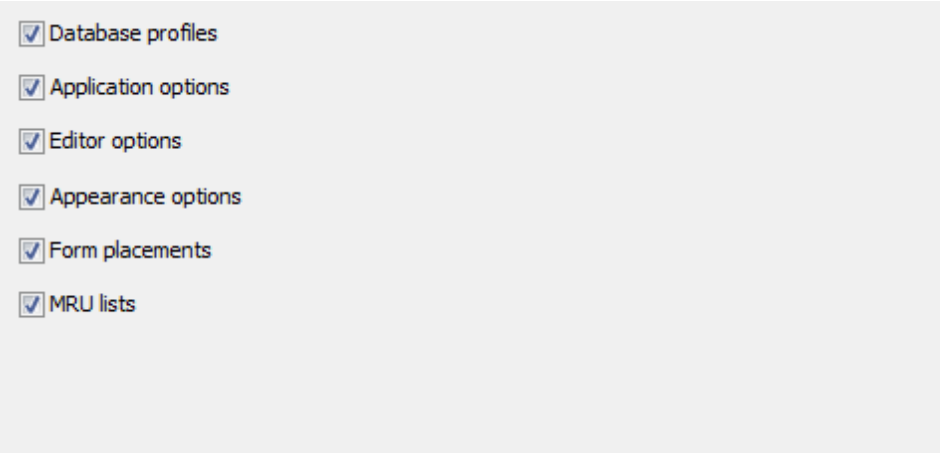
Use the Splitters item to customize all SQLite Maestro splitters according to your preferences. Use the tab to select hot zone style (*Windows XP task bar*, *Media Player 8*, *Media Player 9*, *Simple* or *none*) and specify the Hot zone drags a splitter option.



## 9.4 Export Settings

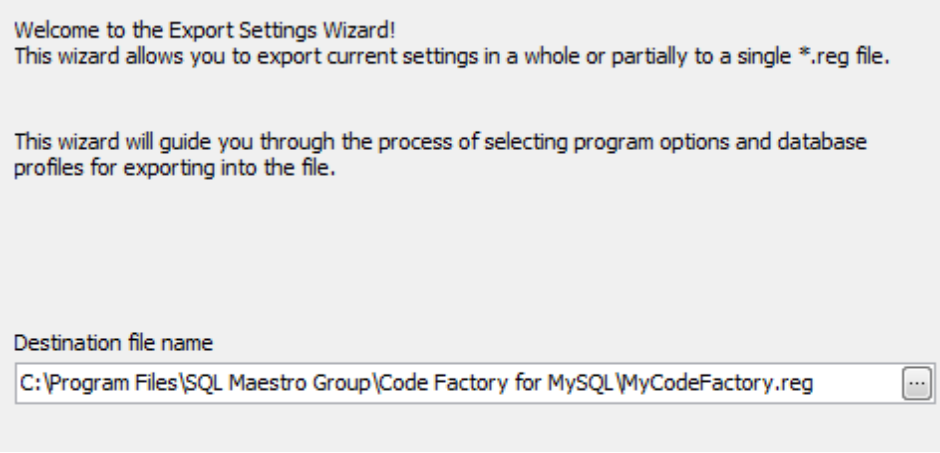
Export Settings Wizard allows you to export all or partial SQLite Maestro settings to single **.reg* file which can be applied to the application of SQLite Maestro installed on another machine or used to backup previous settings. To run the wizard, select the Tools | Options main menu item and click Export Settings in the Options 190 dialog.

- Specifying destination file to save settings to 230
- Specifying settings categories to save 230
- Select database profiles to save 231
- Saving settings 231



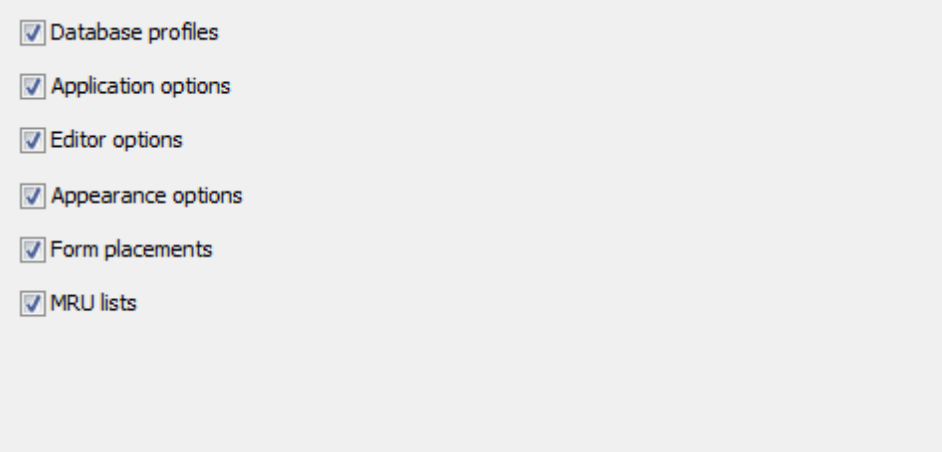

### 9.4.1 Specifying destination file

Specify a **.reg* file to extract SQLite Maestro setting to.



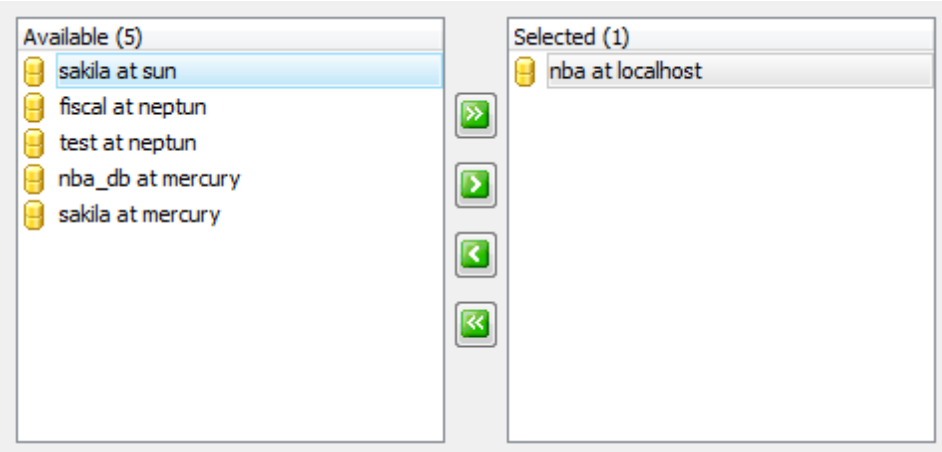

### 9.4.2 Selecting setting categories

The options of this step specify the information saved to the result file, e.g. Database profiles, Application options 191, etc.



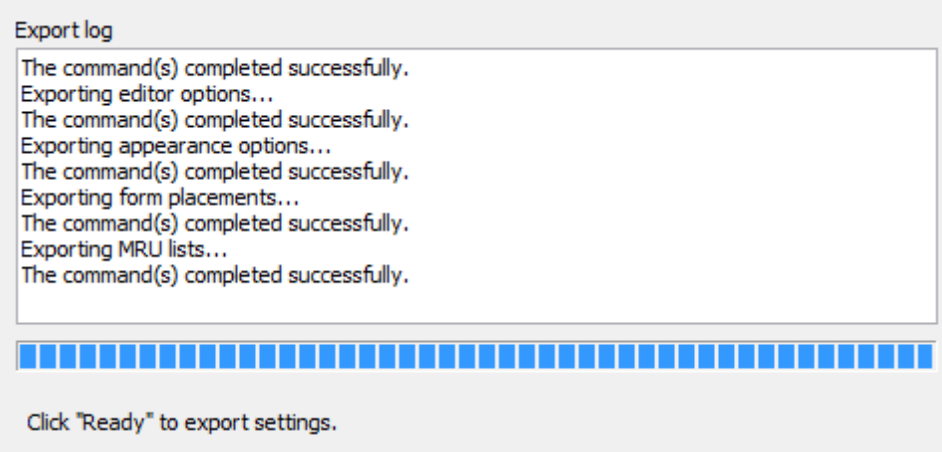

### 9.4.3 Selecting database profiles

Select database profiles to save their settings by moving them from the Available Databases list to the Selected Databases one.




### 9.4.4 Saving settings

Click the Ready button to start the extracting. The process log is displayed in the Export log box.


Export log
The command(s) completed successfully.
Exporting editor options...
The command(s) completed successfully.
Exporting appearance options...
The command(s) completed successfully.
Exporting form placements...
The command(s) completed successfully.
Exporting MRU lists...
The command(s) completed successfully.
Click "Ready" to export settings.

# Index

## - A -



## - B -



## - C -



## - D -

# - E -



# - F -



# - G -



# - I -



# - L -



# - O -

# - P -



# - Q -



# - R -



# - S -



# - T -

# - U -



# - V -



# - W -