

Navicat™ 11

User Guide

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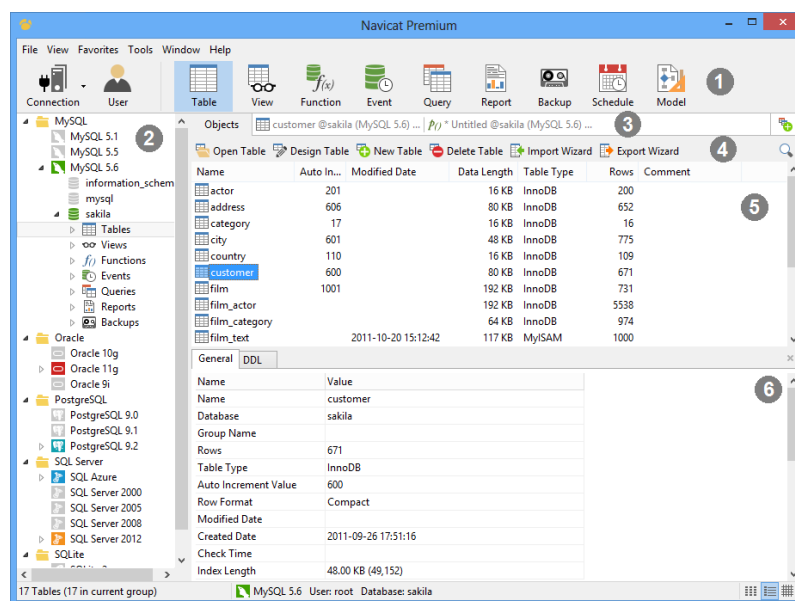
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Getting Started

Navicat is a multi-connections Database Administration tool allowing you to connect to MySQL, Oracle, PostgreSQL, SQLite and/or SQL Server databases, making database administration to multiple kinds of database so easy. Features in Navicat are sophisticated enough to provide professional developers for all their specific needs, yet easy to learn for users who are new to database server. With its well-designed Graphical User Interface(GUI), Navicat lets you quickly and easily create, organize, access and share information in a secure and easy way.

Navicat is available on three platforms - Microsoft Windows, Mac OS X and Linux. It can connect users to local/remote server, providing several utility tools such as Data Modeling, Data Transfer, Data/Structure Synchronization, Import/Export, Backup/Restore, Report Builder and Schedule to facilitate the process for data maintenance. For details, visit our web-site:

<http://www.navicat.com>



1 Navicat Main Toolbar

Navicat Main Toolbar allows you to access basic objects and features, such as connections, users, tables, backup, schedule and more. To use small icons or hide the caption, simply right-click the toolbar and disable **Use Big Icons** or **Show Caption**.

2 Connection Tree

Connection Tree is the basic way to navigate with connections, databases and database objects. It employs tree structure which allows you to take action upon the database and their objects through their popup menus quickly and easily. To view or hide Connection Tree, choose **View -> Connection Tree** from main menu.

3 Tab Bar

Tab Bar allows you to switch among Object List and the tabbed windows. You can also choose to always display pop-ups on a new tab, or to always display them in a new window. If you have multiple tabs open, you can use CTRL+TAB to easily switch to other tabs. See also [Options](#).

4 Object List Toolbar

Object List Toolbar provides other controls that you can use to manipulate the objects.

5 Object List

Object List displays a list of objects, such as tables, views, queries and so on.

6 Object Information

Object Information shows the detailed information of the server objects and Navicat objects. To view or hide the Object Information, choose **View -> Object Information** from main menu.

System Requirements

System Requirements for Windows

- Microsoft Windows XP SP2, Vista, Windows 7, Windows 8, Server 2003, Server 2008, Server 2012
- 32-bit or 64-bit systems

System Requirements for Mac OS X

- Mac OS X 10.6 Snow Leopard, 10.7 Lion or 10.8 Mountain Lion
- Intel CPU

System Requirements for Linux

- Compatible with i386 PC
- Supports 32-bit and 64-bit Linux platform
- Supports Linux kernel version 2.2 or higher
- Supports Glibc 2.4 or above
- Supports GNOME and KDE

Note: You need to install all 32-bit libraries before working on 64-bit Linux.

Registration

To make it economic and efficient for you to purchase our products, over 95% of customers order Navicat via our [Online Shop](#) using major Credit Cards - MasterCard, Visa, Euro card, JCB and American Express. All Online orders are processed by **PayPal** and **WorldPay**. The VeriSign Certificate for SSL transactions provided will ensure you a secured Online transactions.

If you have ordered Navicat software and would like to review your order information, or if you have questions about ordering, payments, or shipping procedures, please contact our [Navicat Sales Department](#).

After purchase you will obtain a **Registration Key** to activate your licensed Navicat by e-mail within 24 hours after we received your order. Please make sure to enter a valid e-mail address in your order. If you have not received the keys within 24 hours, it is probably that the e-mail we sent was blocked by your email spam filter. To resend your download information and keys, please submit your registered email address to our [Customer Center](#). If you get no reply from the resend form, please contact our [Navicat Sales Department](#).

Besides, if you feel uncomfortable with providing your personal information over the Internet, we accept Purchase Order and Bank/Wire Transfer. Please visit our [Offline Order](#).

Installation

We strongly suggest that you shut down any opened applications. This will help ensure a smooth installation.

Note: Installing Navicat does not include the server installation. You should download and install the server manually.

For user who has been trying our unregistered version, just simply key in the **Registration Key** (16 digit) on the pop up Registration screen.

Installation for Download Version

1. Open or Save the **.exe** file.
2. Click **Next** at the Welcome Screen.
3. Read the License Agreement. Accept it and click **Next**.
4. Accept the location of the program icons by clicking **Next**. If you wish to change the destination of the folder for Navicat program click **Browse**.
5. Follow the remaining steps.
6. After installed, key in the **Registration Key** (16 digit) on the pop up Registration screen and click **Activate** to online activate the key.

Installation for CD Version

1. Load the Navicat CD Installation disk into the CD-ROM drive.
2. Open the **.exe** file.
3. Click **Next** at the Welcome Screen.
4. Read the License Agreement. Accept it and click **Next**.
5. Accept the location of the program icons by clicking **Next**. If you wish to change the destination of the folder for Navicat program click **Browse**.
6. Follow the remaining steps.
7. After installed, key in the **Registration Key** (16 digit) on the pop up Registration screen and click **Activate** to online activate the key.

Migrate Navicat to new computer

1. In Navicat, choose **File -> Export Connections**. The exported file (.ncx) contains all your connection settings.
2. Backup the exported file (.ncx).
3. In Navicat, choose **Help -> Registration** and click **Deactivate** to online deactivate the key.
4. Uninstall Navicat from the existing computer.
5. Re-install Navicat in the new computer.
6. Open Navicat and choose **File -> Import Connections** in the new computer.

When a new connection is being established, Navicat will create a subfolder under the [Settings Location](#). Most files are stored within this subfolder. To look for the path, right-click the connection and choose **Connection Properties -> Advanced -> Settings Location**.

Moreover, all your saved profiles are stored under [profiles](#). To look for the path, choose **Tools -> Options -> Miscellaneous -> Profiles Location**.

Maintenance/Upgrade

How to purchase the maintenance plan?

Navicat Software Maintenance Plan allows Navicat users to receive priority email support, receiving software upgrades and receiving bug fix releases at no additional cost during the protected period.

Subscription to the Maintenance Plan is done at the time of your software license purchase or within 90 days as of your purchase date - it cannot be added to a previously purchased product at a later date. For details, please [click here](#).

How to upgrade your Navicat?

If you want to upgrade installed copy of Navicat to the latest release, please choose **Help -> Check For Updates** to start the Updater. It will automatically check your installed version. If there is a new version, simply follow the steps in the Updater to upgrade your Navicat. It will replace your previous Navicat and your current settings will remain unchanged.

Or, you can submit your registered email address on the [Customer Center](#) to download the latest version installer.

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Connection

To start working with your server in Navicat, you should first establish a connection or several connections using the connection window. If you are new to the server or 'Net in general' and are not quite sure how things work, you may want to look at:

- [MySQL User Manual](#)
- [Oracle Database Documentation](#)
- [PostgreSQL User Manual](#)
- [SQLite User Manual](#)
- [SQL Server MSDN Library](#)

To create a new connection, click  or choose **File -> New Connection**. Then, enter the necessary information in Connection Properties window.

After you have created your connections, your databases/schemas appear in the connection tree on the left. If the **Show objects in connection tree** option is checked at the [Options](#) window, all database/schema objects are also displayed in the tree. To connect to a database/schema, simply double-click it in the tree.

Note: Navicat authorizes you to make connection to remote servers running on different platforms, i.e. Windows, Mac, Linux and UNIX.

You can edit the connection information by right-click the connection and choose **Connection Properties**. To open a connection settings location, right-click the connection in the connection tree and choose **Open Settings Location** or press CTRL+G.

Flush MySQL Connection

Flush has several variant forms that clear or reload various internal caches, flush tables, or acquire locks. To execute Flush, you must have the *Reload* privilege, see [MySQL Security](#).

Right-click the connection and select **Flush** from the popup menu.

| | |
|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Privileges | Reload the privileges from the grant tables in the <i>mysql</i> database. |
| Hosts | Empty the host cache tables. You should flush the host tables if some of your hosts change IP number or if you get the error message <i>Host 'host_name' is blocked</i> . When more than <i>max_connect_errors</i> errors occur in a row for a given host while connection to MySQL server, MySQL assumes something is wrong and blocks the host from further connection requests. Flushing the host tables allow the host to attempt to connect again. |
| Logs | Close and reopens all log files. If you have specified the update log file or a binary log file without an extension, the extension number of the log file will be incremented by one relative to the previous file. If you have used an extension in the file name, MySQL will close and reopen the update log file. |
| Status | Reset most status variables to zero. This is something one should only use when debugging a query. |
| Tables | Close all open tables and forces all tables in use to be closed. |

SQL Azure Firewall Settings

You cannot connect to SQL Azure until you have granted your client IP access. To access SQL Azure database from your computer, ensure that your firewall allows outgoing TCP communication on TCP port 1433. You must have at least one firewall rule before you can connection to SQL Azure.

Right-click the SQL Azure connection and select **SQL Azure Firewall Rules** from the popup menu. You can add new rule by providing a range of IP address.

Testing Account

Navicat provides evaluated accounts for testing purpose.

The remote MySQL server connection settings are:

- Host Name/IP Address: server1.navicat.com
- Port: 4406
- User Name: navicat
- Password: testnavicat

The remote PostgreSQL server connection settings are:

- Host Name/IP Address: server1.navicat.com
- Port: 5432
- Initial Database: HR
- User Name: navicat
- Password: testnavicat

General Settings

To successfully establish a new connection to local/remote server - no matter via SSL, SSH or HTTP, set the connection properties in the General tab. If your Internet Service Provider (ISP) does not provide direct access to its server, Secure Tunneling Protocol (SSH) / HTTP is another solution. Enter a friendly name to best describe your connection in **Connection Name** text box.

MySQL Connection

You can connect to your MySQL server remotely however for security reasons native remote direct connections to the MySQL server are disabled. Therefore, you cannot use Navicat Premium or other similar MySQL admin applications running on your computer to connect to the remote server directly unless the [User Privileges](#) has been configured.

By default, MySQL gives "root" as username and leave the password field blank.

Host Name/IP Address

A host name where the database is situated or the IP address of the server.

Port

A TCP/IP port for connecting to the database server.

User Name

User name for connecting to the database server.

Password

Password for connecting to the server.

Oracle Connection

Navicat supports 2 types of Oracle server connection. In **Basic** mode, Navicat connects to Oracle through the Oracle Call Interface (OCI). OCI is an application programming interface that allows an application developer to use a third-generation language's native procedure or function calls to access the Oracle database server and control all phases of SQL statement execution. OCI is a library of standard database access and retrieval functions in the form of a dynamic-link library.

In **TNS** mode, Navicat connects to Oracle server using an alias entry from a tnsnames.ora file through the Oracle Call Interface (OCI). OCI is an application programming interface that allows an application developer to use a third-generation language's native procedure or function calls to access the Oracle database server and control all phases of SQL statement execution. OCI is a library of standard database access and retrieval functions in the form of a dynamic-link library.

By default, Oracle created a number of user accounts upon installation. Administrative accounts: SYS, SYSTEM, SYSMAN, and DBSNMP. Sample schema accounts: SCOTT, HR, OE, OC, PM, IX and SH.

Connection Type

| | |
|-------|--------------------------------------------------------------------------------------------------------------------------------------------|
| Basic | Host Name/IP Address A host name where the database is situated or the IP address of the server. |
| | Port A TCP/IP port for connecting to the database server. |
| | Service Name/SID Set the Service Name/SID which the user connects when making connection. Select the corresponding radio button. |
| TNS | User needs to provide the Net Service Name . |

User Name

User name for connecting to the database server.

Password

Password for connecting to the server.

See also:

[OCI Options](#)

PostgreSQL Connection

For security reasons native remote direct connections to the PostgreSQL server are disabled. Therefore, you may not be able to use Navicat Premium or other similar PostgreSQL admin applications running on your computer to connect to the remote server. By default, PostgreSQL only allows connections from the local machine using TCP/IP connections. Other machines will not be able to connect unless you modify *listen_addresses* in the *postgresql.conf* file, enable host-based authentication by modifying the *\$PGDATA/pg_hba.conf* file, and restart the server. For more information: [Client Authentication](#)

By default, PostgreSQL gives "postgres" as username and leave the password field blank.

Host Name/IP Address

A host name where the database is situated or the IP address of the server.

Port

A TCP/IP port for connecting to the database server.

Initial Database

The initial database to which user connects when making connection.

User Name

User name for connecting to the database server.

Password

Password for connecting to the server.

SQLite Connection

You can choose the **Type** of the SQLite database and specify the file path.

Existing Database File

Connect an existing database in the **Database File**.

New SQLite 3

Create a new SQLite 3 database in the **Database File**.

New SQLite 2

Create a new SQLite 2 database in the **Database File**.

Database File

Specify the initial database file. If the HTTP Tunnel is enabled, you need to enter an absolute file path of the database file in your web server.

SQL Server Connection

Host Name/IP Address

A host name where the database is situated or the IP address of the server.

Authentication

SQL Server uses two ways to validate connections to SQL Server databases: **SQL Server Authentication** and **Windows Authentication**.

| | |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SQL Server Authentication | SQL Server Authentication uses login records to validate the connection. Users must provide their server login: User Name and Password . |
| Windows Authentication | When a user connects through a Windows user account, SQL Server validates the account name and password using the Windows principal token in the operating system. This means that the user identity is confirmed by Windows. SQL Server does not ask for the password, and does not perform the identity validation. |

Advanced Settings

Settings Location

When a new connection is being established, Navicat will create a subfolder under the Settings Location. Most files are stored within this subfolder:

| Navicat Objects | Server Types | File Extensions |
|-----------------------------|------------------------------|----------------------------------------|
| Query | All | .sql |
| Export Query Result Profile | MySQL | .npeq |
| | Oracle | .nopeq |
| | PostgreSQL | .nppeq |
| | SQLite | .nlpeq |
| | SQL Server | .nspeq |
| Export View Result Profile | MySQL | .npev |
| | Oracle | .nopev |
| | PostgreSQL | .nppev |
| | SQLite | .nlpev |
| | SQL Server | .nspev |
| Backup | MySQL, PostgreSQL and SQLite | compressed (.psc), uncompressed (.psb) |
| Backup Profile | MySQL | .npb |
| | PostgreSQL | .nppb |
| | SQLite | .nlpb |
| | SQL Server | .nspb |
| Report | All | .rtm |
| Import Wizard Profile | MySQL | .npi |
| | Oracle | .nopi |
| | PostgreSQL | .nppi |
| | SQLite | .nlpi |
| | SQL Server | .nspi |

| | | |
|----------------------------------|------------|--------|
| Export Wizard Profile | MySQL | .npe |
| | Oracle | .nope |
| | PostgreSQL | .nppe |
| | SQLite | .nlpe |
| | SQL Server | .nspe |
| Export Materialized View Profile | Oracle | .nopem |
| ER Diagram File | All | .ned |
| Data Pump Export Profile | Oracle | .exp |

Other files are located in the **profiles** directory. To look for the path, choose **Tools -> Options -> Miscellaneous -> Profiles Location**.

| Other Files | Server Types | File Extensions |
|---------------------------|------------------------|------------------------------------------------------|
| Data Transfer | MySQL | .npt |
| | Oracle | .nopt |
| | PostgreSQL | .nppt |
| | SQLite | .nlpt |
| | SQL Server | .nspt |
| | Premium (Cross Server) | .napt |
| Data Synchronization | MySQL | .npd |
| | Oracle | .nopd |
| | PostgreSQL | .nppd |
| | SQLite | .nlpd |
| | SQL Server | .nspd |
| Structure Synchronization | MySQL | .nps |
| | Oracle | .nops |
| | PostgreSQL | .npps |
| | SQL Server | .nsps |
| Batch Job | MySQL | .npj |
| | Oracle | .nopj |
| | PostgreSQL | .nppj |
| | SQLite | .nlpj |
| | SQL Server | .nspj |
| | Premium (Cross Server) | .napj |
| Model File | All | .ndm |
| Virtual Grouping | All | vgroup.xml - stores how the objects are categorized. |

See also:

[Log Files](#)

Auto Connect

With this option on, Navicat automatically open connection with the registered database at application startup.

MySQL Connection

Encoding

Choose a codepage to communicate with MySQL Server while MySQL character set not being employed.

Keepalive Interval (sec)

This option allows you to keep the connection with the server alive by pinging it. You can set the period between pings in the edit field.

Use MySQL character set

This option should be enabled if employing MySQL 4.1 or above.

Use Compression

This option allows you to use compression protocol. It is used if both client and server support zlib compression, and the client requests compression.

Use Named Pipe, Socket

With this option on, Navicat uses socket file for localhost connection.

Oracle Connection

Role

Indicate that the database user is connecting with either the **Default**, **SYSOPER** or **SYSDBA** system privilege.

Keepalive Interval (sec)

This option allows you to keep the connection with the server alive by pinging it. You can set the period between pings in the edit field.

OS Authentication

With this option on, Oracle Database uses Windows user login credentials to authenticate database users.

PostgreSQL Connection

Keepalive Interval (sec)

This option allows you to keep the connection with the server alive by pinging it. You can set the period between pings in the edit field

SQLite Connection

Encrypted

Enable this option and provide **Password** when connecting to an encrypted SQLite database.

Attached Database

To attach or detach databases in the connection.

SQL Server Connection

Initial Database

The initial database to which user connects when making connection.

Keepalive Interval (sec)

This option allows you to keep the connection with the server alive by pinging it. You can set the period between pings in the edit field.

Use Encryption

This option allows you to use encryption.

Advanced Database Properties for MySQL and PostgreSQL

Set the advanced database properties, which are not obligatory. To start working with advanced database settings, check the **Use Advanced Connections**. The detailed description is given below:

To show the selected databases in the **close** state in the connection tree, click the preferable databases in the Databases list box.

The check box will show as ☐

To show the selected databases in the **open** state in the connection tree, double-click the preferable databases in the Databases list box. The check box will show as ☒

To add a hidden database

1. Click **Add DB to List** button.
2. Enter the database name.
3. Select the newly added database in the Databases list box.

To remove a database, select the database in the Databases list box and click **Remove DB from List** button.

Note: The database will be just removed from the Databases list box, it will still exist in the server.

Advanced Database Properties for SQLite

You can click **Attach Database** button to attach a database file.

| Option | Description |
|---------------|-------------------------------------------------------------------------------------------------|
| Database File | Set the file path for a database. |
| Database Name | Enter the database name which displays in Navicat. |
| Encrypted | Enable this option and provide Password when connecting to an encrypted SQLite database. |

To detach a database, select it from the list and click **Detach Database** button.

SSL Settings

Secure Sockets Layer(SSL) is a protocol for transmitting private documents via the Internet. To get a secure connection, the first thing you need to do is to install OpenSSL Library and download Database Source.

Note: Available only for MySQL and PostgreSQL.

Support from PostgreSQL 8.4 or later.

MySQL Connection

To provide authentication details, enable **Use Authentication** and fill in the required information:

Client Key

The SSL key file in PEM format to use for establishing a secure connection.

Client Certificate

The SSL certificate file in PEM format to use for establishing a secure connection.

CA Certificate

The path to a file in PEM format that contains a list of trusted SSL certificate authorities.

Specified Cipher

A list of permissible ciphers to use for SSL encryption.

PostgreSQL Connection

Choose the **SSL Mode**:

| | |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| require | Only try an SSL connection. |
| verify-ca | Only try an SSL connection, and verify that the server certificate is issued by a trusted CA. |
| verify-full | Only try an SSL connection, verify that the server certificate is issued by a trusted CA and that the server hostname matches that in the certificate. |

To provide authentication details, enable **Use Authentication** and fill in the required information:

Client Key

The path of the client private key.

Client Certificate

The path of the client certificate.

CA Certificate

The path of the trusted certificate authorities.

Certificate Revocation List

The file path of the SSL certificate revocation list (CRL).

SSH Settings

Secure SHell (SSH) is a program to log in into another computer over a network, execute commands on a remote server, and move files from one machine to another. It provides strong authentication and secure encrypted communications between two hosts, known as **SSH Port Forwarding (Tunneling)**, over an insecure network. Typically, it is employed as an encrypted version of Telnet.

In a Telnet session, all communications, including username and password, are transmitted in plain-text, allowing anyone to listen-in on your session and steal passwords and other information. Such sessions are also susceptible to session hijacking, where a malicious user takes over your session once you have authenticated. SSH serves to prevent such vulnerabilities and allows you to access a remote server's shell without compromising security.

Note: Available only for MySQL, Oracle, PostgreSQL and SQL Server.

Please make sure that the parameter - "AllowTcpForwarding" in the Linux server must be set to value "yes", otherwise, the SSH port forwarding will be disabled. To look for the path: **/etc/ssh/sshd_config**. By default, the SSH port forwarding should be enabled. Please double check the value settings.

****** Even the server support SSH tunnel, however, if the port forwarding being disabled, Navicat cannot connect via SSH Port 22.

Host Name/IP Address

A host where SSH server is activated.

Port

A port where SSH server is activated, by default it is 22.

User Name

A user on SSH server machine. (It is not a user of database server.)

Authentication Method

| | |
|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Password | Provide the SSH server user Password . |
| Public Key | Private Key It is used together with your public key. The private key should be readable only by you. Passphrase A passphrase is exactly like a password, except that it applies to the keys you are generating and not an account. |

Note: Navicat host name at the General tab should be set relatively to the SSH server which provided by your database hosting company.

HTTP Settings

HTTP Tunneling is a method for connecting to a server that uses the same protocol (http://) and the same port (port 80) as a web server does. It is used while your ISPs do not allow direct connections, but allows establishing HTTP connections.

Note: Available only for MySQL, PostgreSQL and SQLite.

Uploading the Tunneling Script

To use this connection method, first thing you need to do is to upload the tunneling script to the web server where your server is located.

Note: `ntunnel_mysql.php`, `ntunnel_pgsql.php` or `ntunnel_sqlite.php` is available in the Navicat installation folder.

Setting up HTTP Tunnel

The following instruction guides you through the process of configuring a HTTP connection.

1. Select the HTTP tab and enable **Use HTTP Tunnel**.
2. Enter URL of the tunneling script, e.g. `http://www.navicat.com/ntunnel_mysql.php`.
3. If your server installed a Web Application Firewall, you can check the **Encode outgoing query with base64** option.
4. If the tunneling script is hosted in a password protected server or you have to access internet over a proxy server, you can provide the required authentication details in **Authentication** or **Proxy** tab.
5. Navicat host name at the General settings page should be set relatively to the HTTP server which provided by your database hosting company.

Note: HTTP Tunnel and SSH Tunnel cannot function simultaneously. The SSH Tunnel is disabled when you select the HTTP Tunnel and vice versa.

Server Objects

Navicat provides powerful tools to manage server objects, such as databases, tables, views, functions, etc.

Note: Before working with the server objects in Navicat, you should establish the connection first.

MySQL Objects

To start working with the server objects, you should create and open a connection. If the server is empty, you need to right-click the connection in the connection tree and choose **New Database** to create a new database.

To edit an existing database properties, right-click the database in the connection tree and choose **Database Properties**. Please notice that MySQL does not support renaming database through its interface at this moment. Access the directory in which databases being stored. By default, all databases store within a directory called **data** under MySQL Installation folder. For example: **C:\mysql5\data**.

Note: You must stop MySQL before you can rename the database.

Database Name

Set the name for a new database.


Character set



Specify the default database character set.

Collation

Specify the default database collation.

MySQL Tables

Relational databases use tables to store data. All operations on data are done on the tables themselves or produce another table as the result. A table is a set of rows and columns, and their intersections are fields. From a general perspective, columns within a table describe the name and type of data that will be found by row for that column's fields. Rows within a table represent records composed of fields that are described from left to right by their corresponding column's name and type. Each field in a row is implicitly correlated with each other field in that row. Click  to open an object list for **Table**.







When open a table with graphical fields, right-click a table and select  **Open Table (Quick)** from the popup menu. Faster performance for opening the graphical table, as BLOB fields (images) will not be loaded until you click on the cell. If you do wish Navicat loads all your images while opening the table, use  **Open Table**.

You can create a table shortcut by right-click a table in object list and select **Create Open Table Shortcut** from the popup menu. This option is used to provide a convenient way for you to open your table for entering data directly without activating the main Navicat.

To empty a table, right-click the selected table and choose **Empty Table** from the popup menu. This option is only applied when you wish to clear all the existing records without resetting the auto-increment value. To reset the auto-increment value while emptying your table, use **Truncate Table**.

MySQL Table Fields

In the **Fields** tab, just simply click a field for editing. A right-click displays the popup menu or using field toolbar, you can create new, insert, move and drop the selected field. To search a field name, choose **Edit** -> **Find** or press CTRL+F.

| Button | Description |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
|  Add Field | Add a field to the table. |
|  Insert Field | Insert a field above an existing field. Note: Support from MySQL 3.22 or later. |
|  Delete Field | Delete the selected field. |
|  Primary Key | Set the field as a Primary Key. |
|  Move Up/  Move Down | Move the selected field up/down. Note: Support from MySQL 4.0.1 or later. |

To add a new field with modification as one of the existing fields, you can right-click and select the **Duplicate Field** from the popup menu.

Use the **Name** edit box to set the field name. Note that the name of the field must be unique among all the field names in the table.

The **Type** dropdown list defines the type of the field data. See [MySQL Data Types](#) for details.

Use the **Length** edit box to define the length of the field and use **Decimals** edit box to define the number of digits after the decimal point (the scale) for Floating Point data type.

Note: Be careful when shortening the field length as losing data might be caused.

Not null

Check this box to not allow the NULL values for the field.



Primary Key

A Primary Key is a single field or combination of fields that uniquely defines a record. None of the fields that are part of the primary key can contain a null value.

Field's Properties

Note: The following options depend on the field type you are chosen.

Default

Set the default value for the field.

Comment

Set any optional text describing the current field.

Character set

A character set is a set of symbols and encodings.

Collation

A collation is a set of rules for comparing characters in a character set.

Note: MySQL chooses the column character set and collation in the following manner:

- If both CHARACTER SET X and COLLATE Y were specified, then character set X and collation Y are used.
- If CHARACTER SET X was specified without COLLATE, then character set X and its default collation are used.
- Otherwise, the table character set and collation are used.

Key Length

The edit box will be enabled when Primary Key is set.

Binary

As of MySQL 4.1, values in CHAR and VARCHAR fields are sorted and compared according to the collation of the character set assigned to the field.

Before MySQL 4.1, sorting and comparison are based on the collation of the server character set; you can declare the field with the BINARY attribute to cause sorting and comparison to be based on the numeric values of the bytes in field values. BINARY does not affect how field values are stored or retrieved.

Auto Increment

The AUTO INCREMENT attribute can be used to generate a unique identity for new rows. To start with the AUTO INCREMENT value other than 1, you can set that value in Options tab.

Unsigned

UNSIGNED values can be used when you want to allow only non-negative numbers in a field and you need a bigger upper numeric range for the field.

As of MySQL 4.0.2, floating-point and fixed-point types also can be UNSIGNED. Unlike the integer types, the upper range of column values remains the same.

Zerofill

The default padding of spaces is replaced with zeros. For example, for a field declared as INT(5) ZEROFILL, a value of 4 is retrieved as 00004; for a field declared as FLOAT(20,10) ZEROFILL, a value of 0.1 is retrieved as 000000000.1000000015.

Note: If you specify ZEROFILL for a numeric type, MySQL automatically adds the UNSIGNED attribute to the field.

On Update Current_Timestamp

As of 4.1.2, you have more flexibility in deciding which TIMESTAMP field automatically is initialized and updated to the current timestamp.



Values

Use this edit box to define the members of SET/ENUM.


MySQL Table Indexes

Indexes are organized versions of specific columns in your tables. MySQL uses indexes to facilitate quick retrieval of records. With indexes, MySQL can jump directly to the records you want. Without any indexes, MySQL has to read the entire data file to find the correct record(s).

In the **Indexes** tab, just simply click an index field for editing. By using the index toolbar, you can create new, edit and delete the selected index field.

| Button | Description |
|------------------------------------------------------------------------------------------------|----------------------------|
|  Add Index | Add an index to the table. |
|  Delete Index | Delete the selected index. |

Use the **Name** edit box to set the index name.

To include field(s) in the index, just simply double-click the **Fields** field or click  to open the editor for editing. Select the field(s) from the list. To remove the fields from the index, uncheck them in the same way. You can also use the arrow buttons to change the index field(s) order. The **Sub Part** edit box(s) is used to set index KEY LENGTH.

Note: Some of data types do not allow indexing by several fields. For example: BLOB

Index Type

Define the type of the table index.

| | |
|-----------|-------------------------------------------------------------------------------------------------------------------------------|
| Normal | NORMAL indexes are the most basic indexes, and have no restraints such as uniqueness. |
| Unique | UNIQUE indexes are the same as NORMAL indexes with one difference - all values of the indexed column(s) must only occur once. |
| Full Text | FULL TEXT indexes are used by MySQL in full-text searches. |

Index method

Specify an index type when creating an index, BTREE or HASH.

Comment

Set any optional text describing the current index.

Note: Support from MySQL 5.5.3 or later.



MySQL Table Foreign Keys

A foreign key is a field in a relational table that matches the primary key column of another table. The foreign key can be used to cross-reference tables.

In the **Foreign Keys** tab, just simply click a foreign key field for editing. By using the foreign key toolbar, you can create new, edit and delete the selected foreign key field.


Note: Foreign Key support from MySQL 3.23.44 or later.

Editing foreign key is supported from MySQL 4.0.13 or later.

| Button | Description |
|------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  Add Foreign Key | Add a foreign key to the table. Note: Both tables must be <i>InnoDB</i> type (or <i>solidDB</i> type if you have solidDB for MySQL). In the referencing table, there must be an index where the foreign key columns are listed as the first columns in the same order. Starting with MySQL 4.1.2, such an index will be created on the referencing table automatically if it does not exist. |
|  Delete Foreign Key | Delete the selected foreign key. Note: Support from MySQL 4.0.13 or later. |

Use the **Name** edit box to enter a name for the new key.

Use the **Referenced Database** and **Referenced Table** dropdown lists to select a foreign database and table respectively.

To include field(s)/referenced field(s) to the key, just simply double-click the **Fields/Referenced Fields** field or click  to open the editor(s) for editing.

The **On Delete** and **On Update** dropdown list define the type of the actions to be taken.

| | |
|-----------|--------------------------------------------------------------------------------------------------------------------|
| CASCADE | Delete the corresponding foreign key, or update the corresponding foreign key to the new value of the primary key. |
| SET NULL | Set all the columns of the corresponding foreign key to NULL. |
| No ACTION | Does not change the foreign key. |
| RESTRICT | Produce an error indicating that the deletion or update would create a foreign key constraint violation. |

Related topic:



[Foreign Keys Data Selection](#)

MySQL Table Triggers

A trigger is a named database object that is associated with a table and that is activated when a particular event occurs for the table.

In the **Triggers** tab, just simply click a trigger field for editing. By using the trigger toolbar, you can create new, edit and delete the selected trigger field.

Note: Trigger is supported from MySQL 5.0.2 or later.

| Button | Description |
|----------------------------------------------------------------------------------------------------|------------------------------|
|  + Add Trigger | Add a trigger to the table. |
|  - Delete Trigger | Delete the selected trigger. |

Use the **Name** edit box to set the trigger name.

Use the **Fires** dropdown list to define the trigger action time. It can be **Before** or **After** to indicate that the trigger activates before or after the statement that activated it.

Insert

The trigger is activated whenever a new row is inserted into the table. For example, **INSERT**, **LOAD DATA**, and **REPLACE** statements.

Update

The trigger is activated whenever a row is modified. For example, **UPDATE** statement.

Delete

The trigger is activated whenever a row is deleted from the table. For example, **DELETE** and **REPLACE** statement. However, **DROP TABLE** and **TRUNCATE** statements on the table do not activate the trigger.

The **Definition** tab defines the statement to execute when the trigger activates. To include your statement, just simply click to write. If you want to execute multiple statements, use the **BEGIN ... END** compound statement construct. Example:

```
BEGIN
    set new.capacity = new.capacity + 100;
    set new.amount = new.amount + 100;
END
```

MySQL Table Options

Engine

Define the engine of the table.

Character set

Define the type of the character set for table.

Collation

Choose the collation for the table.

Auto Increment

Set/Reset the **Auto Increment** value in the edit field. The auto increment value indicates the value for next record.

Checksum *(only for MyISAM table)*

Check this option if you want MySQL to maintain a live checksum for all rows.

Row Format

Defines how the rows should be stored.

Avg. Row Length

An approximation of the average row length for your table. You need to set this only for large tables with variable-size rows.

Max Rows

The maximum number of rows you plan to store in the table. This is not a hard limit, but rather a hint to the storage engine that the table must be able to store at least this many rows.

Min Rows

The minimum number of rows you plan to store in the table.

Key Block Size

This option provides a hint to the storage engine about the size in bytes to use for index key blocks. The engine is allowed to change the value if necessary. A value of 0 indicates that the default value should be used.

Pack Keys *(take effect only with MyISAM table)*

Set this option to 1 if you want to have smaller indexes. This usually makes updates slower and reads faster. Setting the option to 0 disables all packing of keys. Setting it to **DEFAULT** tells the storage engine to pack only long *CHAR*, *VARCHAR*, *BINARY*, or *VARBINARY* columns.

Delay Key Write *(only for MyISAM table)*

Check this option if you want to delay key updates for the table until the table is closed.

Data Directory

To specify where the MyISAM storage engine should put a table's data file.

Index Directory

To specify where the MyISAM storage engine should put a table's index file.

Union *(only for MRG_MYISAM table)*

UNION is used when you want to access a collection of identical *MyISAM* tables as one. This works only with *MERGE* tables. You must have *SELECT*, *UPDATE*, and *DELETE* privileges for the tables you map to a *MERGE* table.

Insert Method *(only for MRG_MYISAM table)*

If you want to insert data into a *MERGE* table, you must specify with *INSERT_METHOD* the table into which the row should be inserted. *INSERT_METHOD* is an option useful for *MERGE* tables only. Use a value of **FIRST** or **LAST** to have inserts go to the first or last table, or a value of **NO** to prevent inserts.

Connection *(only for FEDERATED table)*

To create the local table that will be federated to the remote table. You can create the local table and specify the connection string (containing the server name, login, password) to be used to connect to the remote table using the **Connection** edit box.

The CONNECTION string contains the information required to connect to the remote server containing the table that will be used to physically store the data. The connection string specifies the server name, login credentials, port number and database/table information.

The format the connection string is as follows:

scheme://user_name[:password]@host_name[:port_num]/db_name/tbl_name

Sample of connection strings:

CONNECTION='mysql://username:password@hostname:port/database/tablename'

CONNECTION='mysql://username@hostname/database/tablename'

CONNECTION='mysql://username:password@hostname/database/tablename'

Tablespace *(only for ndbcluster table)*

To specify the tablespace for the storage.

Note: Support from MySQL 5.1.6 or later.

Storage *(only for ndbcluster table)*

To specify type of storage used (disk or memory), and can be one of **DISK**, **MEMORY**, or **DEFAULT**.

Note: Support from MySQL 5.1.6 or later.

Partition


Set the Partition options.

Note: Support from MySQL 5.1 or later.




| Option | Description |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Partition By | Select the function that is used to determine the partition: HASH , KEY , LINEAR HASH , LINEAR KEY , RANGE and LIST . |
| Partitions | Set the partition number. |
| Subpartition By | Select the function that is used to determine the subpartition: Hash and Key . |
| Subpartitions | Set the subpartition number. |
| Partition Definition | Use + or - Partition to add or delete the partition. Use + or - Subpartition to add or delete the subpartition. |
| Values | For range partitioning, each partition must include a VALUES LESS THAN clause; for list partitioning, you must specify a VALUES IN clause for each partition. This is used to determine which rows are to be stored in this partition. |
| Engine | Select the storage engine for both partition and subpartition. |
| Data Directory | The directory where the data for this partition are to be stored. |

| | |
|-----------------|----------------------------------------------------------------------|
| Index Directory | The directory where the indexes for this partition are to be stored. |
| Max Rows | The maximum number of rows to be stored in the partition. |
| Min Rows | The minimum number of rows to be stored in the partition. |
| Tablespace | Designate a tablespace for the partition. Used for Falcon only. |
| Node Group | Set the Node Group. |
| Comment | Enter the comment for the partition. |

MySQL Views

Views (including updatable views) are implemented in MySQL Server 5.0 and available in binary releases from 5.0.1 and up. 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). For access control to columns, you can also use the sophisticated privilege system in MySQL Server. Click  to open an object list for **View**.

You can create a view shortcut by right-click a view in object list and select **Create Open View Shortcut** from the popup menu. This option is used to provide a convenient way for you to open your view directly without activating the main Navicat.

| Button | Description |
|--------------------------------------------------------------------------------------------------|------------------------------------------------------------|
|  Preview | Preview the result of the view. |
|  Explain | Show the Query Plan of the view. |
|  Beautify SQL | Format the codes with the Beautify SQL settings in Editor. |

Note: You can choose to show the Result tab below the editor or in a new tab by selecting **View -> Show Result -> Below Query Editor** or **In a New Tab**.

View Builder (Available only in Full Version)

View Builder allows you to build views visually. It allows you to create and edit views without knowledge of SQL. See [Query Builder](#) for details.

Definition

You can edit the view definition as SQL statement (SELECT statement it implements).

Hint: To customize the view of the editor and find out more features for sql editing, see [Editor Advanced Features](#).

Advanced Properties

Algorithm

| | |
|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Undefined | MySQL chooses which algorithm to use. It prefers Merge over Temptable if possible, because Merge is usually more efficient and because a view cannot be updatable if a temporary table is used. |
| Merge | The text of a statement that refers to the view and the view definition are merged such that parts of the view |

| | |
|-----------|--------------------------------------------------------------------------------------------------------------|
| | definition replace corresponding parts of the statement. |
| Temptable | The results from the view are retrieved into a temporary table, which then is used to execute the statement. |

Definer

The default Definer value is the user who executes the *CREATE VIEW* statement. (This is the same as `DEFINER = CURRENT_USER.`) If a user value is given, it should be a MySQL account in 'user_name'@'host_name' format (the same format used in the *GRANT* statement). The user_name and host_name values both are required.

Security

The SQL SECURITY characteristic determines which MySQL account to use when checking access privileges for the view when the view is executed. The legal characteristic values are **Definer** and **Invoker**. These indicate that the view must be executable by the user who defined it or invoked it, respectively. The default Security value is Definer.

Check option


| | |
|----------|----------------------------------------------------------------|
| Local | Restrict the Check option only to the view being defined. |
| Cascaded | Cause the checks for underlying views to be evaluated as well. |

View Viewer


View Viewer displays the view data as a grid. Data can be displayed in two modes: **Grid View** and **Form View**. See [Table Viewer](#) for details.

Note: Transaction is only available for updatable views.

MySQL Functions/Procedures

Stored routines (procedures and functions) are supported in MySQL 5.0. A stored routine is a set of SQL statements that can be stored in the server. Once this has been done, clients do not need to keep reissuing the individual statements but can refer to the stored routine instead. Click  to open an object list for **Function**.

Function Wizard

Click the  **New Function** from the object list toolbar. The **Function Wizard** will pop up and it allows you to create a procedure/function easily. You are allowed not to show the **Function Wizard** when create new procedure/function.

1. Select the type of the routine: **Procedure** or **Function**.
2. Define the parameter(s). Set the parameter **Mode**, **Name** and/or **Type** under corresponding columns.
3. If you create a function, select the **Return Type** from the list and enter the corresponding information: **Length**, **Decimals**, **Character set** and/or **Enum**.

Hint: Once uncheck the **Show wizard next time**, you can go to [Options](#) to enable it.

Definition

Definition consists of a valid SQL procedure statement. This can be a simple statement such as *SELECT* or *INSERT*, or it can be a compound statement written using *BEGIN* and *END*. Compound statements can contain declarations, loops, and other control structure statements.

Hint: To customize the view of the editor and find out more features for sql editing, see [Editor Advanced Features](#).

Parameter

Define function/procedure parameter.

Return Type

This text box will be enabled only for creating a function. It indicates the return type of the function.

Type

Select the stored routines you wish to create from the drop-down list, i.e. **PROCEDURE** and **FUNCTION**.

Advanced Properties

Security

Specify whether the routine should be executed using the permissions of the user who creates the routine or the user who invokes it.

Definer

The default Definer value is the user who executes the *CREATE PROCEDURE* or *CREATE FUNCTION* statement. (This is the same as *DEFINER = CURRENT_USER*.) If a user value is given, it should be a MySQL account in 'user_name'@'host_name' format (the same format used in the *GRANT* statement). The user_name and host_name values both are required.

Data Access


Several characteristics provide information about the nature of data use by the routine.

| | |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| Contains SQL | Indicate that the routine does not contain statements that read or write data. It is the default if none of these characteristics is given explicitly. |
| No SQL | Indicate that the routine contains no SQL statements. |
| Reads SQL Data | Indicate that the routine contains statements that read data, but not statements that write data. |
| Modifies SQL Data | Indicate that the routine contains statements that may write data. |

Deterministic


A procedure or function is considered deterministic if it always produces the same result for the same input parameters, and not deterministic otherwise.

Result

To run the procedure/function, click  **Run** on the toolbar. If the SQL statement is correct, the statement will be executed and, if the statement is supposed to return data, the **Result** tab opens with the data returned by the procedure/function. If an error occurs while executing the procedure/function, execution stops, the appropriate error message is displayed. If the function/procedure requires input parameter, the **Input Parameters** box will popup. Use ',' to separate the parameters.

Hint: Navicat supports to return 10 resultsets.

MySQL Events

MySQL Event Scheduler was added in MySQL 5.1.6. MySQL Events are tasks that run according to a schedule. Therefore, we sometimes refer to them as scheduled events. When you create an event, you are creating a named database object containing one or more SQL statements to be executed at one or more regular intervals, beginning and ending at a specific date and time. Conceptually, this is similar to the idea of the Windows Task Scheduler. Click  to open an object list for **Event**.

Definition

Definition consists of a valid SQL statement. This can be a simple statement such as *SELECT* or *INSERT*, or it can be a compound statement written using *BEGIN* and *END*. Compound statements can contain declarations, loops, and other control structure statements.

Hint: To customize the view of the editor and find out more features for sql editing, see [Editor Advanced Features](#).

Definer

Specify the user account to be used when checking access privileges at event execution time. The default DEFINER value is the user who executes the *CREATE EVENT* statement. (This is the same as DEFINER = CURRENT_USER.) If a user value is given, it should be a MySQL account in 'user_name'@'host_name' format (the same format used in the GRANT statement). The user_name and host_name values both are required.

STATUS

You can create an event but keep it from being active using the *DISABLE* keyword. Alternatively, you may use *ENABLE* to make explicit the default status, which is active.

ON COMPLETION

Normally, once an event has expired, it is immediately dropped. You can override this behavior by specifying *ON COMPLETION PRESERVE*. Using *ON COMPLETION NOT PRESERVE* merely makes the default non-persistent behavior explicit.

Schedule

AT

AT timestamp is used for a one-time event. It specifies that the event executes one time only at the date and time, given as the *timestamp*, which must include both the date and time, or must be an expression that resolves to a datetime value. Use

+INTERVAL to create an event which occurs at some point in the future relative to the current date and time.

EVERY

For actions which are to be repeated at a regular interval, you can use an *EVERY* clause which followed by an *interval*. (**+INTERVAL** is not used with *EVERY*.)

STARTS

An *EVERY* clause may also contain an optional *STARTS* clause. *STARTS* is followed by a *timestamp* value which indicates when the action should begin repeating, and may also use **+INTERVAL** interval in order to specify an amount of time "from now".

For example: **EVERY 3 MONTH STARTS CURRENT_TIMESTAMP + 1 WEEK** means "every three months, beginning one week from now".

ENDS

An *EVERY* clause may also contain an optional *ENDS* clause. The *ENDS* keyword is followed by a *timestamp* value which tells MySQL when the event should stop repeating. You may also use **+INTERVAL** interval with *ENDS*.

For example: **EVERY 12 HOUR STARTS CURRENT_TIMESTAMP + INTERVAL 30 MINUTE ENDS CURRENT_TIMESTAMP + INTERVAL 4 WEEK** is equivalent to "every twelve hours, beginning thirty minutes from now, and ending four weeks from now".

P.S. The *timestamp* must be in the future - you cannot schedule an event to take place in the past.


The *interval* portion consists of two parts, a quantity and a *unit of time.

*YEAR | QUARTER | MONTH | DAY | HOUR | MINUTE |

WEEK | SECOND | YEAR_MONTH | DAY_HOUR | DAY_MINUTE |

DAY_SECOND | HOUR_MINUTE | HOUR_SECOND | MINUTE_SECOND

Oracle Objects

To start working with the server objects, you should create and open a connection. When you create a user account, you are also implicitly creating a schema for that user. A schema is a logical container for the database objects (such as tables, views, triggers, and so on) that the user creates. The schema name is the same as the user name, and can be used to unambiguously refer to objects owned by the user. Other user schemas are showed under  **Schemas**.


Hint: Oracle interprets non-quoted object identifiers as uppercase. In Navicat, all objects identifier will be quoted. That is, Navicat saves exactly what you have inputted.

Oracle Data Pump (Available only in Full Version)

Oracle Data Pump technology enables very high-speed movement of data and metadata from one database to another. It includes two utilities: Data Pump Export and Data Pump Import.

Data Pump Export is a utility for unloading data and metadata into a set of operating system files called a dump file set. The dump file set can be imported only by the Data Pump Import utility. The dump file set can be imported on the same system or it can be moved to another system and loaded there.

Data Pump Import is a utility for loading an export dump file set into a target system. The dump file set is made up of one or more disk files that contain table data, database object metadata, and control information. The files are written in a proprietary, binary format. During an import operation, the Data Pump Import utility uses these files to locate each database object in the dump file set.

Click  to open an object list for **Data Pump**.

You can change the [Directory](#) of the dump file set by right-click anywhere in the object list and select **Change Directory** from the popup menu.

Note: Support from Oracle 10g or later.

Data Pump requires SYSDBA Role and the dump file set is stored in the server.

Oracle Data Pump Export

Before execute the Data Pump Export, click **Generate SQL** button to review the SQL. Then, you can click **Execute** button to run it.

You can save the Data Pump Export settings to a profile. Simply click the **Save** button.

Hint: The profiles(.exp) are saved under the [Settings Location](#).

To show the hidden tabs (advanced options), check the **Show Advanced Options** box.

General Properties

Job Name

The name of the job.

Mode

| | |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| FULL | In a full database export, the entire database is unloaded. This mode requires that you have the EXP_FULL_DATABASE role. |
| TABLESPACE | In tablespace mode, only the tables contained in a specified set of tablespaces are unloaded. If a table is unloaded, its dependent objects are also unloaded. Both object metadata and data are unloaded. |
| SCHEMAS | If you have the EXP_FULL_DATABASE role, then you can specify a list of schemas and optionally include the schema definitions themselves, as well as system privilege grants to those schemas. If you do not have the EXP_FULL_DATABASE role, you can export only your own schema. |
| TABLE | In table mode, only a specified set of tables, partitions, and their dependent objects are unloaded. You must have the EXP_FULL_DATABASE role to specify tables that are not in your own schema. All specified tables must reside in a single schema. |

Content

| | |
|-----------|--------------------------------------------------------------------------|
| ALL | Unload both data and metadata. |
| DATA_ONLY | Unload only table row data; no database object definitions are unloaded. |

| | |
|---------------|-------------------------------------------------------------------------|
| METADATA_ONLY | Unload only database object definitions; no table row data is unloaded. |
|---------------|-------------------------------------------------------------------------|

Export Data

Select the objects to export. If you select TABLE mode, choose the schema in the **Export Schema(Table Mode)** dropdown list.

Dump Files

Add dump files to the dump file set for the export.

Metadata Filter

Include or **Exclude** a set of objects from the Export operation. Choose the **Object Type** and specify the **Name Clause**.

Data Filter

Query

Specify a subquery that is added to the end of the SELECT statement for the table.

Sample

Specify a percentage for sampling the data blocks to be moved.

Remap Data

Table schema

The schema containing the column to be remapped.

Table name

The table containing the column to be remapped.

Column Name

The name of the column to be remapped.

Package Schema

The schema of the package.

Package Name

The name of the package.

Package Function

A PL/SQL package function which is called to modify the data for the specified column.

Encryption

Encryption Content

Specify what to encrypt in the dump file set.

| | |
|-----|----------------------------------------------------------------------|
| ALL | Enable encryption for all data and metadata in the export operation. |
|-----|----------------------------------------------------------------------|

| | |
|------------------------|------------------------------------------------------------------------------|
| DATA_ONLY | Only data is written to the dump file set in encrypted format. |
| ENCRYPTED_COLUMNS_ONLY | Only encrypted columns are written to the dump file set in encrypted format. |
| METADATA_ONLY | Only metadata is written to the dump file set in encrypted format. |
| NONE | No data is written to the dump file set in encrypted format. |

Encryption Algorithm

Identify which cryptographic algorithm should be used to perform encryption.

Encryption Mode

| Option | Description |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Transparent | Allow an encrypted dump file set to be created without any intervention from a database administrator (DBA), provided the required Oracle Encryption Wallet is available. |
| Encryption Password | Provide a password when creating encrypted dump file sets. |
| Dual | Create a dump file set that can later be imported using either the Oracle Encryption Wallet or the password that was specified with the ENCRYPTION_PASSWORD parameter. |

Encryption Password

Specify a key for re-encrypting encrypted table columns, metadata, or table data so that they are not written as clear text in the dump file set.

Confirm Password

Re-type your password.

Advanced Properties

Thread Number

The maximum number of worker processes that can be used for the job.

Reuse File

A preexisting file will be overwritten.

Enable XMLCLOBS

Check this box to enable data options for XMLCLOBS.

Version

The version of database objects to be extracted.

| | |
|------------|------------------------------------------------------------------------------------------------------------------------------|
| COMPATIBLE | The version of the metadata corresponds to the database compatibility level and the compatibility release level for feature. |
| LATEST | The version of the metadata corresponds to the database version. |

Compression Type

| | |
|---------------|----------------------------------------------------|
| ALL | Compress both user data and metadata. |
| DATA_ONLY | Compress only user data in the dump file set. |
| METADATA_ONLY | Compress only metadata in the dump file set. |
| NONE | Store the dump file set in an uncompressed format. |

Transportable

Operate on metadata for tables (and their dependent objects) within a set of selected tablespaces to perform a transportable tablespace export.

Database Link

The name of a database link to the remote database that will be the source of data and metadata for the current job.

Estimate

Specify that the estimate method for the size of the tables should be performed before starting the job.

Log File Directory

Choose the log file directory.

Log File Name

Enter the name of the log file.

Flashback SCN

System change number (SCN) to serve as transactionally consistent point for reading user data.

Flashback Time

Either the date and time used to determine a consistent point for reading user data or a string of the form TO_TIMESTAMP(...).

Oracle Data Pump Import

Before execute the Data Pump Import, click **Generate SQL** button to review the SQL. Then, you can click **Execute** button to run it.

To show the hidden tabs (advanced options), check the **Show Advanced Options** box.

General Properties

Job Name

The name of the job.

Mode

| | |
|------|--------------------------------------------------------------------------------------------------------------------------|
| FULL | In a full database export, the entire database is unloaded. This mode requires that you have the EXP_FULL_DATABASE role. |
|------|--------------------------------------------------------------------------------------------------------------------------|

| | |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| TABLESPACE | In tablespace mode, only the tables contained in a specified set of tablespaces are unloaded. If a table is unloaded, its dependent objects are also unloaded. Both object metadata and data are unloaded. |
| SCHEMAS | If you have the EXP_FULL_DATABASE role, then you can specify a list of schemas and optionally include the schema definitions themselves, as well as system privilege grants to those schemas. If you do not have the EXP_FULL_DATABASE role, you can export only your own schema. |
| TABLE | In table mode, only a specified set of tables, partitions, and their dependent objects are unloaded. You must have the EXP_FULL_DATABASE role to specify tables that are not in your own schema. All specified tables must reside in a single schema. |

Content

| | |
|---------------|--------------------------------------------------------------------------|
| ALL | Unload both data and metadata. |
| DATA_ONLY | Unload only table row data; no database object definitions are unloaded. |
| METADATA_ONLY | Unload only database object definitions; no table row data is unloaded. |

Table Exists Action

Specify the action to be performed when data is loaded into a preexisting table.

| | |
|----------|----------------------------------------------------------------------------------------------------------------|
| SKIP | The preexisting table is left unchanged. |
| APPEND | New rows are added to the existing rows in the table. |
| TRUNCATE | Rows are removed from a preexisting table before inserting rows from the Import. |
| REPLACE | Preexisting tables are replaced with new definitions. Before creating the new table, the old table is dropped. |

Import Data

Select the objects to import. If you select TABLE mode, specify the schema in the **Schema** text box.

Dump Files

Add dump files to the dump file set for the import.

Network

Database Link

The name of a database link to the remote database that will be the source of data and metadata for the current job.

Estimate

Specify that the estimate method for the size of the tables should be performed before starting the job.

Flashback SCN

System change number (SCN) to serve as transactionally consistent point for reading user data.

Flashback Time

Either the date and time used to determine a consistent point for reading user data or a string of the form TO_TIMESTAMP(...).

Transportable

Operate on metadata for tables (and their dependent objects) within a set of selected tablespaces to perform a transportable tablespace export.

DataFile Path

Specify the full file specification for a datafile in the transportable tablespace set.

Filter

Include/Exclude

Include or **Exclude** a set of objects from the Import operation. Choose the **Object Type** and specify the **Name Clause**.

Query

Specify a subquery that is added to the end of the SELECT statement for the table. If you specify a WHERE clause in the subquery, you can restrict the rows that are selected.

Remap Data

Remap Data

| Fields | Description |
|------------------|----------------------------------------------------------------------------------------|
| Table Schema | The schema containing the column to be remapped. |
| Table name | The table containing the column to be remapped. |
| Column Name | The name of the column to be remapped. |
| Package Schema | The schema of the package. |
| Package Name | The name of the package. |
| Package Function | A PL/SQL package function which is called to modify the data for the specified column. |

Remap DataFiles

Specify a remapping to be applied to objects as they are processed in the specified job. Enter the **Source DataFile** and **Target DataFile**.

Remap Objects

Remap Schemas

Specify a remapping to be applied to schemas as they are processed in the specified job. Enter the **Source schema** and choose the **Target schema**.

Remap TableSpaces

Specify a remapping to be applied to tablespaces as they are processed in the specified job. Enter the **Source TableSpace** and choose the **Target TableSpace**.

Remap Tables

Specify a remapping to be applied to tables as they are processed in the specified job. Enter the **Source Table** and choose the **Target Table**.

Advanced Properties

Thread Number

The maximum number of worker processes that can be used for the job.

Reuse DataFiles

Check this box to reuse existing datafiles for tablespace creation.

Skip Unusable Indexes

Check this box to skip loading tables that have indexes that were set to the Index Unusable state (by either the system or the user).

Streams Configuration

Check this box to import any general Streams metadata that may be present in the export dump file.

Data Options

A bitmask to supply special options for processing the job.

Partition Options

Specify how partitioned tables should be handled during an import operation.

| | |
|-------------|------------------------------------------------------------------------------------------------------------------|
| NONE | Partitioning is reproduced on the target database as it existed in the source database. |
| DEPARTITION | Each partition or subpartition that contains storage in the job is reproduced as a separate unpartitioned table. |
| MERGE | Each partitioned table is re-created in the target database as an unpartitioned table. |

Version

The version of database objects to be extracted.

| | |
|------------|------------------------------------------------------------------------------------------------------------------------------|
| COMPATIBLE | The version of the metadata corresponds to the database compatibility level and the compatibility release level for feature. |
| LATEST | The version of the metadata corresponds to the database version. |

Encryption Password

Specify a key for re-encrypting encrypted table columns, metadata, or table data so that they are not written as clear text in the dump file set.

Segment Attributes

Designate the segment attribute to which the transform applies.

Storage

Designate the storage to which the transform applies.

OID

Designate the OID to which the transform applies.

PCTSpace

Specify a percentage multiplier used to alter extent allocations and datafile sizes. Used to shrink large tablespaces for testing purposes.

Log File Directory

Choose the log file directory.

Log File Name

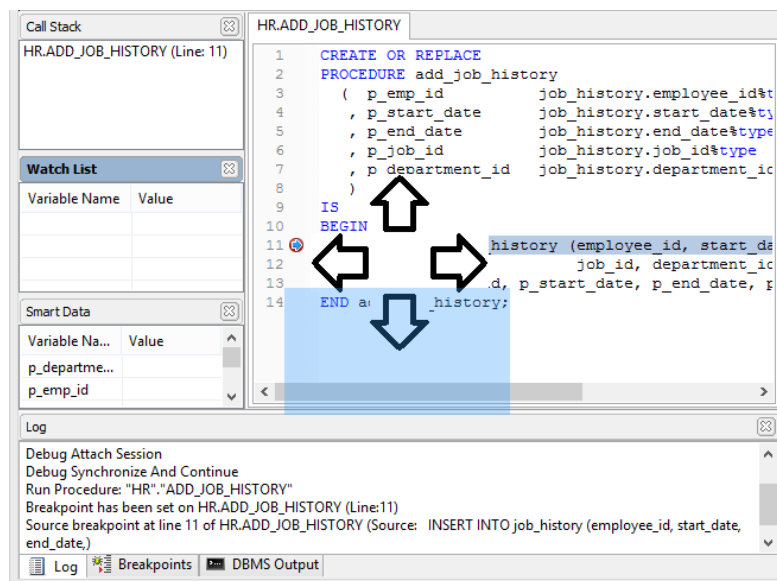
Enter the name of the log file.

Oracle Debugger (Available only in Full Version)





Navicat provides Oracle PL/SQL debugger for debugging Oracle functions, procedures, packages and queries.



To re-arrange the workspace items, click on any pane in the workspace, then hold down your cursor and drag the pane to the desired area, and release the cursor. The selected pane will appear in its new position.


Hint: As you drag a pane to its new position, a **Pane Sticker** will appear and a bright blue indicator will mark the insertion point.



You can perform the most commonly used actions for debugging on the toolbar or menu:

| Button | Description |
|-----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  Run | Start running code in debug mode. The debugger executes your code until the end of the code or the next breakpoint is reached. Keyboard shortcut: F9 |
|  Step Over | Resume the execution. The current line will be executed. If the line is a procedure or function call, it will bypass the procedure or function. The counter will then move to the next line of code. Keyboard shortcut: F8 |
|  Step In | Resume the execution. The current line will be executed. If the line is a procedure or function call, the counter goes to the first statement in the procedure or function. Otherwise, the counter will move to the next line of code. Keyboard shortcut: F7 |
|  Step Out | Resume the execution. The remaining part of the code within the current procedure or function will be executed. |

| | |
|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| | Keyboard shortcut: SHIFT+F7 |
|  Step End | Resume the execution. The counter will jump to the last line of the procedure or function. |
|  Stop | Stop stepping the code. The execution will stop and cannot resume it. |

The **Code Window** shows the code of the procedure/function. You can add/remove breakpoints for debugging by clicking  in the grey area beside each statement. To add a variable to the watch list, right-click the highlighted code and choose **Add to watch list**. To show the debug tips, mouse-over the code.

The **Breakpoints** pane displays all the breakpoints which allowing you to delete, enable or disable breakpoints. To enable/disable a breakpoint, check/uncheck the check box. Also, you can delete a breakpoint or all breakpoints, right-click a breakpoint and choose **Remove Breakpoint** or **Remove All Breakpoints**. To jump to the line of a breakpoint, right-click it and choose **Goto Function**.

The **Call Stack** pane displays the procedure or function calls of the current line. To jump to a procedure or function, right-click it and choose **Goto Function**.

The **DBMS Output** pane displays the results after the function or procedure has completed the execution.

The **Log** pane shows the message log when debugging the code.

The **Smart Data** pane displays information about the variables associated with breakpoints. To add a variable to the watch list, right-click a variable and choose **Add to watch list**. You can adjust the value of a watch variable by right-click the variable and choose **Adjust Value**.

The **Watch List** pane displays information about the variables being watched, allowing you to add, delete or edit watch variables. To add a watch variable, right-click anywhere of Watch List view and choose **Add Variable**. Then, enter the **Variable Name**. Also, you can right-click the highlighted code in the Code Window or the variable in the Smart Data view and choose **Add to watch list**. You can adjust the value of a watch variable by right-click the variable and choose **Adjust Value**. To delete a watch variable or all watch variables, right-click a variable and choose **Remove Variable** or **Remove All Variable**.

Oracle Physical Attributes/Default Storage Characteristics

% Free

Specify a whole number representing the percentage of space in each data block of the database object reserved for future updates to rows of the object.

% Used

Specify a whole number representing the minimum percentage of used space that Oracle maintains for each data block of the database object. A block becomes a candidate for row insertion when its used space falls below this value.

Initial Transactions

Specify the initial number of concurrent transaction entries allocated within each data block allocated to the database object.

Maximum Transactions

Specify the maximum number of concurrent update transactions allowed for each data block in the segment.

Initial

Specify the size of the first extent of the object. Use the dropdown list K, M, G, T, P or E to specify the size in kilobytes, megabytes, gigabytes, terabytes, petabytes, or exabytes.

Next

Specify the size of the next extent to be allocated to the object. Use the dropdown list K, M, G, T, P or E to specify the size in kilobytes, megabytes, gigabytes, terabytes, petabytes, or exabytes.

Min Extents

Specify the total number of extents to allocate when the object is created.

Max Extents

Specify the total number of extents, including the first, that Oracle can allocate for the object. Check **Unlimited** if you want extents to be allocated automatically as needed.

Max Size

Specify the maximum size of the storage element. Use the dropdown list K, M, G, T, P or E to specify the size in kilobytes, megabytes, gigabytes, terabytes, petabytes, or exabytes. Check **Unlimited** if you do not want to limit the disk space of the storage element.

% Increase

Specify the percent by which the third and subsequent extents grow over the preceding extent.

Freelists

For objects other than tablespaces and rollback segments, specify the number of free lists for each of the free list groups for the table, partition, cluster, or index.

Freelist Groups

Specify the number of groups of free lists for the database object you are creating.


Optimal



Specify an optimal size for a rollback segment. Use the dropdown list K, M, G, T, P or E to specify the size in kilobytes, megabytes, gigabytes, terabytes, petabytes, or exabytes. Check **Null** for no optimal size for the rollback segment.



Buffer Pool

| | |
|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DEFAULT | Choose this to indicate the default buffer pool. This is the default for objects not assigned to KEEP or RECYCLE. |
| KEEP | Choose this to put blocks from the segment into the KEEP buffer pool. Maintaining an appropriately sized KEEP buffer pool lets Oracle retain the schema object in memory to avoid I/O operations. KEEP takes precedence over any NOCACHE clause you specify for a table, cluster, materialized view, or materialized view log. |
| RECYCLE | Choose this to put blocks from the segment into the RECYCLE pool. An appropriately sized RECYCLE pool reduces the number of objects whose default pool is the RECYCLE pool from taking up unnecessary cache space. |

Oracle Tables

Relational databases use tables to store data. All operations on data are done on the tables themselves or produce another table as the result. A table is a set of rows and columns, and their intersections are fields. From a general perspective, columns within a table describe the name and type of data that will be found by row for that column's fields. Rows within a table represent records composed of fields that are described from left to right by their corresponding column's name and type. Each field in a row is implicitly correlated with each other field in that row. Click  to open an object list for **Table**.

To create a new table, click the  **New Table** from the object list toolbar together with the  down arrow to choose the type **Normal / External / Index Organized**.

When open a table with graphical fields, right-click a table and select  **Open Table (Quick)** from the popup menu. Faster performance for opening the graphical table, as BLOB fields (images) will not be loaded until you click on the cell. If you do wish Navicat loads all your images while opening the table, use  **Open Table**.

You can create a table shortcut by right-click a table in object list and select **Create Open Table Shortcut** from the popup menu. This option is used to provide a convenient way for you to open your table for entering data directly without activating the main Navicat.

To empty a table, right-click the selected table and choose **Empty Table** from the popup menu. This option is only applied when you wish to clear all the existing records without resetting the auto-increment value. To reset the auto-increment value while emptying your table, use **Truncate Table**.




Oracle Normal Tables

Tables are the basic unit of data storage in an Oracle database. Data is stored in rows and columns. You define a table with a table name and set of columns.

In a normal (heap-organized) table, data is stored as an unordered collection (heap).

Oracle Table Fields

In the **Fields** tab, just simply click a field for editing. A right-click displays the popup menu or by using the field toolbar, you can create new and drop the selected field. To search a field name, choose **Edit -> Find** or press CTRL+F.

| Button | Description |
|--------------------------------------------------------------------------------------------------|---------------------------------|
|  Add Field | Add a field to the table. |
|  Delete Field | Delete the selected field. |
|  Primary Key | Set the field as a Primary Key. |

Use the **Name** edit box to set the field name. Note that the name of the field must be unique among all the field names in the table.

The **Type** dropdown list defines the type of the field data. See [Oracle Built-in Datatypes](#) for details.

Use the **Length** edit box to define the **precision** (total number of digits) of the field and use **Scale** edit box to define the **scale** (number of digits to the right of the decimal point) for **numeric** column.

Note: Be careful when shortening the field length as it might result in data loss.

Not null

Check this box to not allow the NULL values for the field.



Primary Key

A Primary Key is a single field or combination of fields that uniquely defines a record. None of the fields that are part of the primary key can contain a null value.

Field's Pop-up Options

| | |
|------------------|------------------------------------------------------------------|
| Duplicate Field | Add a new field with modification as one of the existing fields. |
| Primary Key Name | Enter the primary key constraint name. |

Field's Properties

Note: The following options depend on the field type you are chosen.

Default

Set the default value for the field.

Comment

Set any optional text describing the current field.

Leading Field Precision

Set the number of digits in the leading field.

Fractional Seconds Precision

Set the number of digits in the fractional part of the SECOND datetime field.

Year Precision

Set the number of digits in the year.

Unit

Set the unit either in BYTE or CHAR.

Object Schema

Set the object schema for the field type.

Object Type



Set the object type for the field.

Oracle Table Indexes


Indexes are optional structures associated with tables and clusters. You can create indexes on one or more columns of a table to speed SQL statement execution on that table. An Oracle Database index provides a faster access path to table data. Indexes are the primary means of reducing disk I/O when properly used.

You can create many indexes for a table as long as the combination of columns differs for each index. You can create more than one index using the same columns if you specify distinctly different combinations of the columns.

In the **Indexes** tab, just simply click an index field for editing. By using the index toolbar, you can create new, edit and delete the selected index field.

| Button | Description |
|------------------------------------------------------------------------------------------------|----------------------------|
|  Add Index | Add an index to the table. |
|  Delete Index | Delete the selected index. |

Use the **Name** edit box to set the index name.

To include field(s) in the index, just simply double-click the **Fields** field or click  to open the editor for editing.

Index Type

Define the type of the table index.

| | |
|------------|------------------------------------------------------------------------------------------------------------|
| Non-unique | Non-unique indexes do not impose the restriction of unique indexes on the column values. |
| Unique | Unique indexes guarantee that no two rows of a table have duplicate values in the key column (or columns). |
| Bitmap | In a bitmap index, a bitmap for each key value is used instead of a list of rowids. |

Parallel With Degree

Parallel indexing can improve index performance when you have a large amount of data, and have multiple CPUs. Enter the degree that determines the number of separate indexing processes.

Tablespace

The tablespace in which to create the index. An index can be created in the same or different tablespace as the table it indexes.

Schema

The schema in which to create the index.

Note: To create an index in your own schema, at least one of the following conditions must be true:

- The table or cluster to be indexed is in your own schema.
- You have INDEX privilege on the table to be indexed.
- You have CREATE ANY INDEX system privilege.



To create an index in another schema, all of the following conditions must be true:

- You have CREATE ANY INDEX system privilege.
- The owner of the other schema has a quota for the tablespaces to contain the index or index partitions, or UNLIMITED TABLESPACE system privilege.

Oracle Table Foreign Keys

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. We say this maintains the referential integrity between two related tables.

In the **Foreign Keys** tab, just simply click a foreign key field for editing. By using the foreign key toolbar, you can create new, edit and delete the selected foreign key field.

| Button | Description |
|------------------------------------------------------------------------------------------------------|----------------------------------|
|  Add Foreign Key | Add a foreign key to the table. |
|  Delete Foreign Key | Delete the selected foreign key. |

Use the **Name** edit box to enter a name for the new key.

Use the **Referenced Schema**, **Referenced Table** and **Referenced Constraint** dropdown lists to select a foreign schema, table and constraint respectively.

To include field(s) to the key, just simply double-click the **Fields** field or click  to open the editor(s) for editing.

The **On Delete** dropdown list defines the type of the actions to be taken.

| | |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| No Action | This is the default action. Referenced key values will not be updated or deleted. |
| CASCADE | Delete any rows referencing the deleted row, or update the value of the referencing column to the new value of the referenced column, respectively. |
| SET NULL | Set the referencing column(s) to null. |

Enable

You can choose whether to enable/disable the foreign key constraint by checking/unchecking the box.



Related topic:

[Foreign Keys Data Selection](#)

Oracle Table Uniques

Unique constraints ensure that the data contained in a column or a group of columns is unique with respect to all the rows in the table.

In the **Uniques** tab, just simply click an unique field for editing. By using the toolbar below, allowing you to create new, edit and delete the selected unique field.

| Button | Description |
|-------------------------------------------------------------------------------------------------|-----------------------------|
|  Add Unique | Add an unique to the table. |
|  Delete Unique | Delete the selected unique. |

Use the **Name** edit box to set the unique name.

To set field(s) as unique, just simply double-click the **Fields** field or click  to open the editor(s) for editing.



Enable

You can choose whether to enable/disable the unique constraint by checking/unchecking the box.

Oracle Table 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.

In the **Checks** tab, just simply click a check field for editing. By using the check toolbar, you can create new, edit and delete the selected check field.

| Button | Description |
|--------------------------------------------------------------------------------------------------|----------------------------|
|  Add Check | Add a check to the table. |
|  Delete Check | Delete the selected check. |

Use the **Name** edit box to set the check name.

Check

Set the condition for checking, e.g. "field_name1 > 0 AND field_name2 > field_name1" in the **Check** edit box. A check constraint specified as a column constraint should reference that column's value only, while an expression appearing in a table constraint may reference multiple columns.

Definition

Type in the definition for the check constraint.



Enable

You can choose whether to enable/disable the check constraint by checking/unchecking the box.

Oracle Table Triggers

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

In the **Triggers** tab, just simply click a trigger field for editing. By using the trigger toolbar, you can create new, edit and delete the selected trigger field.

| Button | Description |
|----------------------------------------------------------------------------------------------------|------------------------------|
|  + Add Trigger | Add a trigger to the table. |
|  - Delete Trigger | Delete the selected trigger. |

Name

Set the trigger name.

Compound

Check to set the trigger as a compound trigger.

Note: Support from Oracle 11g or later.

Row trigger

Check to set the trigger as a row trigger.

Fires

Specify the trigger timing whether the trigger action is to be run before or after the triggering statement.

Insert

Fire the trigger whenever an INSERT statement adds a row to a table or adds an element to a nested table.

Update

Fire the trigger whenever an UPDATE statement changes a value in one of the columns specified in **Update Of Fields**. If no **Update Of Fields** are present, the trigger will be fired whenever an UPDATE statement changes a value in any column of the table or nested table.

Delete

Fire the trigger whenever a DELETE statement removes a row from the table or removes an element from a nested table.

Update Of Fields

Specify the fields for UPDATE statement trigger upon necessary.

Enable

You can choose whether to enable / disable the trigger constraint by checking / unchecking the box.

Definition

Type in the definition for the trigger. Example:

```
BEGIN
    add_job_history(:old.employee_id, :old.hire_date, sysdate,
        :old.job_id, :old.department_id);
END;
```

When Clause

Specify the trigger condition, which is a SQL condition that must be satisfied for the database to fire the trigger. This condition must contain correlation names and cannot contain a query.

Referencing Old

Specify correlation names. The default correlation name is OLD.

Referencing New

Specify correlation names. The default correlation name is NEW.

Follows

Specify the relative firing order of triggers of the same type.

Note: Support from Oracle 11g or later.

Schema

Define the trigger on the current schema.

Oracle Table Options

Tablespace

Define a tablespace different from the default tablespace to create a table.

Logging

Specify whether creation of a database object will be logged in the redo log file (LOGGING) or not (NOLOGGING).

Compression

Specify whether to compress data segments to reduce disk use. It is valid only for heap-organized tables.

| | |
|-------------------------------------|-----------------------------------------------------------------------------------------------|
| COMPRESS | Enable table compression. |
| COMPRESS FOR ALL OPERATIONS | Attempt to compress data during all DML operations on the table. |
| COMPRESS FOR DIRECT_LOAD OPERATIONS | Attempt to compress data during direct-path INSERT operations when it is productive to do so. |
| NOCOMPRESS | Disable table compression. |

Cache

Indicate how blocks are stored in the buffer cache.

| | |
|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CACHE | Indicate that the blocks retrieved for this table are placed at the most recently used end of the least recently used (LRU) list in the buffer cache when a full table scan is performed. |
| NOCACHE | Indicate that the blocks retrieved for this table are placed at the least recently used end of the LRU list in the buffer cache when a full table scan is performed. |

Parallel With Degree

Specify the degree of parallelism, which is the number of parallel threads used in the parallel operation.

Row Movement

With the option on, it allows the database to move a table row. It is possible for a row to move, for example, during table compression or an update operation on partitioned data.

Physical Attributes

Refer to [Physical Attributes/Default Storage Characteristics](#).



Oracle External Tables

External tables access data in external sources as if it were in a table in the database. While creating external tables, you are actually creating metadata in the data dictionary that enables you to access external data.

Note that external tables are read only. No DML operations are possible and no index can be created.

Fields for Oracle External Tables

In the **Fields** tab, just simply click a field for editing. A right-click displays the popup menu or by using the field toolbar, you can create new and drop the selected field. To search a field name, choose **Edit** -> **Find** or press CTRL+F.

| Button | Description |
|--------------------------------------------------------------------------------------------------|----------------------------|
|  Add Field | Add a field to the table. |
|  Delete Field | Delete the selected field. |

To add a new field with modification as one of the existing fields, you can right-click and select the **Duplicate Field** from the popup menu.

Use the **Name** edit box to set the field name. Note that the name of the field must be unique among all the field names in the table.

The **Type** dropdown list defines the type of the field data. See [Oracle Built-in Datatypes](#) for details.

Use the **Length** edit box to define the **precision** (total number of digits) of the field and use **Scale** edit box to define the **scale** (number of digits to the right of the decimal point) for **numeric** column.

Note: Be careful when shortening the field length as it might result in data loss.

Field's Properties

Note: The following options depend on the field type you are chosen.

Leading Field Precision

Set the number of digits in the leading field.

Fractional Seconds Precision

Set the number of digits in the fractional part of the SECOND datetime field.

Year Precision

Set the number of digits in the year.

Unit

Set the unit either in BYTE or CHAR.

Object Schema

Set the object schema for the field type.

Object Type

Set the object type for the field.

External Properties for Oracle External Tables

Default Directory

Specify the default directory for the external table.

Directory

Set the external directory.

Location

Set the external source location.

Access Driver

Specify the access driver for the external table. The default type for external tables is ORACLE_LOADER.

Reject Limit

Specify the limit on the number of errors that can occur during a query of the external data.

Parallel With Degree

Check to enable parallel query on the data sources and specify the degree of parallel access.

Access Parameters for Oracle External Tables

Describe the mapping of the external data to the Oracle Database data columns.

Using CLOB

Check this option to get a CLOB data value of the returned query.

Oracle Index Organized Tables

An index-organized table has a storage organization that is a variant of a primary B-tree. Data for an index-organized table is stored in a B-tree index structure in a primary key sorted manner. Each leaf block in the index structure stores both the key and nonkey columns.

Index-organized tables have full table functionality. They support features such as constraints, triggers etc with additional features such as key compression.

Note: The Table Designer for **Index Organized Tables** differs from **Normal Tables** only on the **Options** tab. Therefore, you can refer to the [Normal Table](#) on the similar tabs.

Options for Oracle Index Organized Tables

Tablespace

Define a tablespace different from the default tablespace to create a table.

Logging

Specify whether creation of a database object will be logged in the redo log file (LOGGING) or not (NOLOGGING).

Parallel With Degree

Specify the degree of parallelism, which is the number of parallel threads used in the parallel operation.

Row Movement

With the option on, it allows the database to move a table row. It is possible for a row to move, for example, during table compression or an update operation on partitioned data.

Physical Attributes

Refer to [Physical Attributes/Default Storage Characteristics](#).

Key Compress

Check this option to enable key compression. Upon necessary, you can also specify the prefix length (as the number of key columns), which identifies how the key columns are broken into a prefix and suffix entry.

Mapping Table

Specify if there is a mapping table for the index-organized table. Note that a mapping table is required for creating bitmap indexes on an index-organized table.

% Threshold

When an overflow segment is being used, it defines the maximum size of the portion of the row that is stored in the index block, as a percentage of block size.

Overflow Properties

Check to enable an overflow storage area.

Note: After saving the table, this option cannot be unchecked.

Overflow Column

Specify the column to be put in a separate overflow data segment.

Overflow Tablespace

Specify the tablespace in which the overflow segment to be stored.

Overflow Logging


Specify whether creation of a database object will be logged in the redo log file (LOGGING) or not (NOLOGGING).

Overflow Physical Attributes




Refer to [Physical Attributes/Default Storage Characteristics](#).

Oracle 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). Click  to open an object list for **View**.

You can create a view shortcut by right-click a view in object list and select **Create Open View Shortcut** from the popup menu. This option is used to provide a convenient way for you to open your view directly without activating the main Navicat.

| Button | Description |
|--------------------------------------------------------------------------------------------------|------------------------------------------------------------|
|  Preview | Preview the result of the view. |
|  Explain | Show the Query Plan of the view. |
|  Beautify SQL | Format the codes with the Beautify SQL settings in Editor. |

Note: You can choose to show the Result tab below the editor or in a new tab by selecting **View -> Show Result -> Below Query Editor** or **In a New Tab**.

View Builder (Available only in Full Version)

View Builder allows you to build views visually. It allows you to create and edit views without knowledge of SQL. See [Query Builder](#) for details.

Definition

You can edit the view definition as SQL statement (SELECT statement it implements).

Hint: To customize the view of the editor and find out more features for sql editing, see [Editor Advanced Features](#).

Advanced Properties

Restrict Query

Specify the name. If you omit this identifier, then Oracle automatically assigns a name of the form SYS_Cn, where n is an integer that makes the constraint name unique within the database.

Read Only

Indicate that the table or view cannot be updated.

Check option

Indicate that Oracle Database prohibits any changes to the table or view that would produce rows that are not included in the subquery.


Force On Create

Check this option if you want to create the view regardless of whether the base tables of the view or the referenced object types exist or the owner of the schema containing the view has privileges on them.


View Viewer

View Viewer displays the view data as a grid. Data can be displayed in two modes: **Grid View** and **Form View**. See [Table Viewer](#) for details.

Oracle Functions/Procedures

A procedure or function is a schema object that consists of a set of SQL statements and other PL/SQL constructs, grouped together, stored in the database, and run as a unit to solve a specific problem or perform a set of related tasks. Procedures and functions are identical except that functions always return a single value to the caller, while procedures do not. Click  to open an object list for **Function**.

Function Wizard

Click the  **New Function** from the object list toolbar. The **Function Wizard** will pop up and it allows you to create a procedure/function easily. You are allowed not to show the **Function Wizard** when create new procedure/function.







1. Specify the **Name** of the routine and select the type of the routine: **Procedure** or **Function**.
2. Define the parameter(s) of the procedure/function. Set the parameter **Name**, **Type**, **Mode** and **Default Value** under corresponding columns.
3. If you create a function, select the **Return Type** from the list.

Hint: Once uncheck the **Show wizard next time**, you can go to [Options](#) to enable it.

Definition


The **Code Outline** window displays information about the function/procedure including parameter, code body, etc. To show the **Code Outline** window, simply choose **View** -> **Code Outline**.

Note: Available only in Full Version.

| Button | Description |
|-----------------------------------------------------------------------------------|-------------------------------------------|
|  | Refresh the code outline. |
|  | Show the detail view of the code outline. |
|  | Turn mouse over highlight on or off. |
|  | Expand the selected item. |
|  | Collapse the selected item. |
|  | Toggle sorting by position. |


Hint: To customize the view of the editor and find out more features for sql editing, see [Editor Advanced Features](#).


Result

To run the procedure/function, click  **Run** on the toolbar. If the SQL statement is correct, the statement will be executed and, if the statement is supposed to return data, the **DBMS Output** tab opens with the data returned by the procedure/function. If an error occurs while executing the procedure/function, execution stops, the appropriate error message is displayed. If the function/procedure requires input parameter, the **Input Parameters** box will popup.


Hint: Navicat supports to return 10 resultsets.

Debug (Available only in Full Version)

To debug the function/procedure, click  **Debug** on the toolbar to launch the [Oracle Debugger](#). Enter the Input Parameters if necessary.

You can add/remove breakpoints for debugging by clicking  in the grey area beside each statement.

Oracle Database Links

Database link is a named schema object that describes a path from one database to another and are implicitly used when a reference is made to a global object name in a distributed database. After you have created a database link, you can use it to refer to tables and views on the other database. Click  -> **Database Link** to open an object list for **Database Link**.

General Properties

Service Name

Specify the service name of a remote database.

User Name

The user name used to connect to the remote database using a fixed user database link.

Password

The password for connecting to the remote database.


Current user

With this option checked, a current user database link is created. The current user must be a global user with a valid account on the remote database.

Shared

Fill in **Authentication username** and **Authentication password** when Shared option is enabled.

Oracle Indexes

Index provides a faster access path to table data. It is created using one or more columns of a table to speed SQL statement execution on that table. Click  -> **Index** to open an object list for **Index**.

You can choose the index **Type**:

| | |
|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Normal | A normal index does not impose restrictions on the column values. |
| Unique | A unique index indicates that no two rows of a table have duplicate values in the key columns. |
| Bitmap | A bitmap index created with a bitmap for each distinct key, rather than indexing each row separately. Bitmap indexes store the rowids associated with a key value as a bitmap. Each bit in the bitmap corresponds to a possible rowid. |
| Domain | A domain index is an index designed for a specialized domain, such as spatial or image processing. Users can build a domain index of a given type after the designer creates the indextype. |
| Cluster | A cluster index is an index designed for a cluster. |

General Properties for Normal and Unique Indexes

Table schema

The schema that contains the index.

Table name

The table name.

Columns

Use the **Name** dropdown list to select the field name and **Order** dropdown list to define the order of the index (ASC or DESC).

General Properties for Bitmap Index

Table schema

The schema that contains the index.

Table name

The table name.

Bitmap Join Index

In addition to a bitmap index on a single table, you can create a bitmap join index, which is a bitmap index for the join of two or more

tables. A bitmap join index is a space efficient way of reducing the volume of data that must be joined by performing restrictions in advance.

Columns

Use the **Schema**, **Table** and/or **Name** dropdown lists to select the schema, table and/or field name and **Order** dropdown list to define the order of the index (ASC or DESC).

Bitmap Join

Use the **InnerSchema**, **InnerTable**, **InnerField**, **OuterSchema**, **OuterTable** and **OuterField** dropdown lists to select joined schemas, tables and fields respectively.

General Properties for Domain Index

Table schema

The schema that contains the index.

Table name

The table name.

Column

The column which the index is based.

Schema

The schema of the indextype.

Type

Select the created or built-in indextypes.

Parameters

Information about the path table and about the secondary indexes corresponding to the components of XMLIndex.

General Properties for Cluster Index

Table schema

The schema that contains the index.

Cluster name

The name of the cluster.

Advanced Properties

Unusable

An unusable index must be rebuilt, or dropped and re-created, before it can be used.

Tablespace

The name of the tablespace to hold the index.

Compress

To enable key compression, which eliminates repeated occurrence of key column values and may substantially reduce storage.

Note: No compression for Bitmap Indexes.

Parallel

The creation of the index will be parallelized.

Reverse

To store the bytes of the index block in reverse order, excluding the rowid.

Logging

Choose **Logging** to log the creation of the index in the redo log file. Or, choose **No Logging** for no log.

Visibility

Specify the index is **Visible** or **Invisible** to the optimizer.

Online

To indicate that DML operations on the table will be allowed during creation of the index.


No Sort

To indicate to the database that the rows are already stored in the database in ascending order, so that Oracle Database does not have to sort the rows when creating the index.

Physical Attributes

Set the [physical attributes](#) of an index.

Oracle Java

Java is an object-oriented programming language efficient for application-level programs. You can write and load applications within the database. Click  -> **Java** to open an object list for **Java**.

You can choose the **Type**: Java Source, Java Class or Java Resource.

General Properties for Java Source

BFile

Select the **Directory** and type the **Server Filename**.

Load from file

Browse the **File Path** of Java source file.

Plain source

Type the source code in the **Source** box.

General Properties for Java Class and Java Resource

BFile

Select the **Directory** and type the **Server Filename**.

Load from file

Browse the **File Path** of Java class or Java resource file.

Advanced Properties

Invoker Rights

Select **CURRENT_USER** to indicate that the methods of the class execute with the privileges of CURRENT_USER or **DEFINER** to indicate that the methods of the class execute with the privileges of the owner of the schema in which the class resides, and that external names resolve in the schema where the class resides.

Resolver

Specify a mapping of the fully qualified Java name to a Java schema object.

Compile or Resolve

Check this to specify that Oracle Database should attempt to resolve the Java schema object that is created if this statement succeeds.




No Force

Check this to roll back the results of the CREATE command of Java if you have enabled Compile or Resolve and the resolution or compilation fails. If you do not specify this option, then Oracle Database takes no action if the resolution or compilation fails, and the created schema object remains.

Oracle Materialized Views

Materialized view is a schema object that can be used to summarize, compute, replicate, and distribute data. Click  -> **Materialized View** to open an object list for **Materialized View**.

You can create a view shortcut by right-click a materialized view in object list and select **Create Open Materialized View Shortcut** from the popup menu. This option is used to provide a convenient way for you to open your materialized view directly without activating the main Navicat.

| Button | Description |
|--------------------------------------------------------------------------------------------------|------------------------------------------------------------|
|  Preview | Preview the result of the materialized view. |
|  Explain | Show the Query Plan of the materialized view. |
|  Beautify SQL | Format the codes with the Beautify SQL settings in Editor. |

Note: You can choose to show the Result tab below the editor or in a new tab by selecting **View -> Show Result -> Below Query Editor** or **In a New Tab**.

View Builder (Available only in Full Version)

View Builder allows you to build views visually. It allows you to create and edit views without knowledge of SQL. See [Query Builder](#) for details.

Definition

You can edit the view definition as SQL statement (SELECT statement it implements).

Hint: To customize the view of the editor and find out more features for sql editing, see [Editor Advanced Features](#).

Advanced Properties

When

| | |
|-----------|----------------------------------------------------------------------------------------------------------------------------------|
| Demand | The materialized view will be refreshed on demand by calling one of the three DBMS_MVIEW refresh procedures. |
| Commit | A fast refresh is to occur whenever the database commits a transaction that operates on a master table of the materialized view. |
| Automatic | The database automatically refresh the materialized view with the automatic refresh time. |
| Never | The materialized view will not be refreshed with any Oracle Database refresh mechanism or packaged procedure. |

Method

| | |
|----------|----------------------------------------------------------------------------------------------------------------------------------------------|
| FORCE | When a refresh occurs, Oracle Database will perform a fast refresh if one is possible or a complete refresh if fast refresh is not possible. |
| FAST | A incremental refresh method, which performs the refresh according to the changes that have occurred to the master tables. |
| COMPLETE | A complete refresh method, which is implemented by executing the defining query of the materialized view. |

Start On

A datetime expression for the first automatic refresh time.

Next

A datetime expression for calculating the interval between automatic refreshes.

Note: To edit the datetime, just simply click ... and choose / enter the desired data.

Type

| | |
|-------------|----------------------------------|
| Primary Key | A primary key materialized view. |
| Row ID | A rowid materialized view. |

Master

The remote rollback segment is used at the remote master site for the individual materialized view.

Local

The remote rollback segment is used for the local refresh group that contains the materialized view.

Constraints

| | |
|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Enforced | Oracle Database use enforced constraints during the refresh operation. |
| Trusted | Oracle Database use dimension and constraint information that has been declared trustworthy by the database administrator but that has not been validated by the database. |

No Index

Check this to suppress the creation of the default index.

Build Type

| | |
|-----------|-------------------------------------------------------------------------|
| Immediate | The materialized view is to be populated immediately. |
| Deferred | The materialized view is to be populated by the next refresh operation. |
| Prebuilt | To register an existing table as a preinitialized materialized view. |

Reduced Precision

| | |
|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| With | To authorize the loss of precision that will result if the precision of the table or materialized view columns do not exactly match the precision returned by subquery. |
| Without | To require that the precision of the table or materialized view columns match exactly the precision returned by subquery, or the create operation will fail. |

Compress

Data segments are compressed to reduce disk and memory use.

Parallel

Choose **NOPARALLEL** for serial execution or **PARALLEL** if you want Oracle to select a degree of parallelism equal to the number of CPUs available on all participating instances times the value of the `PARALLEL_THREADS_PER_CPU` initialization parameter.

With Degree

Set the default degree of parallelism for queries and DML on the materialized view after creation.

Logging

Choose **LOGGING** for logging the creation of Materialized view in the redo log file. Choose **NOLOGGING** for no logging.

Tablespace

Choose the tablespace in which the materialized view is to be created.

Physical Attributes

Set the [Physical Attributes](#) of the materialized view.

Enable Cache

The blocks retrieved for the table are placed at the most recently used end of the least recently used (LRU) list in the buffer cache when a full table scan is performed.

For Update

Check this to allow a subquery, primary key, object, or rowid materialized view to be updated. When used in conjunction with Advanced Replication, these updates will be propagated to the master.

Enable Query Rewrite

The materialized view is used for query rewrite.


Using Index Clause

| Option | Description |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------|
| Tablespace | Choose the tablespace of the index. |
| Physical Attributes | Set the Physical Attributes for the default index Oracle Database uses to maintain the materialized view data. |

View Viewer

View Viewer displays the view data as a grid. Data can be displayed in two modes: **Grid View** and **Form View**. See [Table Viewer](#) for details.

Oracle Materialized View Logs

Materialized view log is a schema object that records changes to a master table's data so that a [Materialized View](#) defined on the master table can be refreshed incrementally. Click  -> **Materialized View Log** to open an object list for **Materialized View Log**.

General Properties

Table

The table of the materialized view log.

Tablespace

The tablespace of the materialized view log.

Logging

To specify either **LOGGING** or **NOLOGGING** to establish the logging characteristics for the materialized view log.

Cache

| | |
|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CACHE | The blocks retrieved for this log are placed at the most recently used end of the least recently used (LRU) list in the buffer cache when a full table scan is performed. |
|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

| | |
|---------|-----------------------------------------------------------------------|
| NOCACHE | The blocks are placed at the least recently used end of the LRU list. |
|---------|-----------------------------------------------------------------------|

New Values

| | |
|-----------|----------------------------------------------------|
| INCLUDING | To save both new and old values in the log. |
| EXCLUDING | To disable the recording of new values in the log. |

Parallel With Degree

To determine the number of parallel threads used in the parallel operation.

Physical Attributes

Set the [Physical Attributes](#) of a materialized view log.

Object ID

The system-generated or user-defined object identifier of every modified row should be recorded in the materialized view log.

Primary Key

The primary key of all rows changed should be recorded in the materialized view log.

Row ID

The rowid of all rows changed should be recorded in the materialized view log.


Sequence

A sequence value providing additional ordering information should be recorded in the materialized view log.

Fields





Choose the fields whose values you want to be recorded in the materialized view log for all rows that are changed.



Oracle Packages

Packages are encapsulated collections of related procedures, stored functions, and other program objects stored together in the database. Package bodies, specified subsequently, defines these objects. An package consists of two parts: a specification and a body. Click  -> **Package** to open an object list for **Package**.



The **Code Outline** window displays information about the package/package body including function, procedure, parameter, code body, etc. To show the **Code Outline** window, simply choose **View** -> **Code Outline**.

Note: Available only in Full Version.

| Button | Description |
|-------------------------------------------------------------------------------------|-------------------------------------------|
|  | Refresh the code outline. |
|  | Show the detail view of the code outline. |
|  | Turn mouse over highlight on or off. |
|  | Expand the selected item. |


| | |
|-----------------------------------------------------------------------------------|-----------------------------|
|  | Collapse the selected item. |
|  | Toggle sorting by position. |

Package's Definition

Enter the package's definition. After saving the package, you can edit the Package Body. Just click  **New Package Body** or  **Design Package Body** to open the Package Body Designer.


Hint: To customize the view of the editor and find out more features for sql editing, see [Editor Advanced Features](#).

Package Body's Definition


Enter the package body's definition. To edit the Package Specification, click  **Design Package Specification** to open the Package Designer.


Hint: To customize the view of the editor and find out more features for sql editing, see [Editor Advanced Features](#).

Result


To run the package click  **Run** on the toolbar. If the SQL statement is correct, the statement will be executed and, if the statement is supposed to return data, the **DBMS Output** tab opens with data returned by the package. If an error occurs while executing the package, execution stops, the appropriate error message is displayed. Select the function/procedure and enter the parameter(s) if the function/procedure has input parameter(s).

Debug (Available only in Full Version)

To debug the package click  **Debug** on the toolbar to launch the [Oracle Debugger](#). Select the function/procedure and enter the parameter(s) if the function/procedure has input parameter(s).

You can add/remove breakpoints for debugging by clicking  in the grey area beside each statement.

Oracle Sequences

Sequence involves creating and initializing a new special single-row table. It is usually used to generate unique identifiers for rows of a table. Click  -> **Sequence** to open an object list for **Sequence**.

General Properties

Increment

To specify which value is added to the current sequence value to create a new value. A positive value will make an ascending sequence, a negative one a descending sequence. The default value is 1.

Start with

To specify the first sequence number to be generated.

Minimum

The minimum value a sequence can generate.

Maximum

The maximum value for the sequence.

Cache

To specify how many values of the sequence the database preallocates and keeps in memory for faster access. The minimum value for this parameter is 2.

No Cache

This option indicates that values of the sequence are not preallocated.


Cycled

This option allows the sequence continues to generate values after reaching either its maximum or minimum value. After an ascending sequence reaches its maximum value, it generates its minimum value. After a descending sequence reaches its minimum, it generates its maximum value.

Order

This option guarantees that sequence numbers are generated in order of request.

Oracle Synonyms

Synonym is an alias for any table, view, materialized view, synonym, procedure, function, package, type, Java class schema object, user-defined object type, or another synonym. Because a synonym is simply an alias, it requires no storage other than its definition in the data dictionary. Click -> **Synonym** to open an object list for **Synonym**.

General Properties

Object Database Link

A complete or partial database link to create a synonym for a schema object on a remote database where the object is located.

Object Schema

The schema in which the object resides.


Object Type

The object type.

Object

The object for which the synonym is created.

Oracle Triggers

Triggers are similar to procedures. A trigger stored in the database can include SQL and PL/SQL or Java statements to run as a unit and can invoke procedures. Click -> **Trigger** to open an object list for **Trigger**.

See [Triggers](#) for details.

You can choose the **Trigger Type**: TABLE, VIEW, SCHEMA or DATABASE.

General Properties for Table Trigger

Enable

An enabled trigger runs its trigger action if a triggering statement is issued and the trigger restriction (if any) evaluates to true.

Table schema

The table schema of the trigger.

Table name

The table you wish to create the trigger.

Compound

A compound trigger is a single trigger on a table that allows you to specify actions for each of four timing points:

| Timing Point | Section |
|-------------------------------------------------------|------------------|
| Before the triggering statement executes | BEFORE STATEMENT |
| After the triggering statement executes | AFTER STATEMENT |
| Before each row that the triggering statement affects | BEFORE EACH ROW |
| After each row that the triggering statement affects | AFTER EACH ROW |

Note: Support from Oracle 11g or later and you can edit the SQL in Trigger Definition.

Fire

When defining a trigger, you can specify the trigger timing - whether the trigger action is to be run **BEFORE** or **AFTER** the triggering statement.

For Each

Oracle Database fires a **ROW** trigger once for each row that is affected by the triggering statement and fires a **STATEMENT** trigger only once when the triggering statement is issued if the optional trigger constraint is met.

When

To specify the trigger condition, which is a SQL condition that must be satisfied for the database to fire the trigger.

Insert

The trigger is activated whenever adding a row to a table or adds an element to a nested table.

Delete

The trigger is activated whenever removing a row from the table or removes an element from a nested table.

Update

The trigger is activated whenever changing a value in one of the fields selected in **Update Of Fields**.

General Properties for View Trigger

Enable

An enabled trigger runs its trigger action if a triggering statement is issued and the trigger restriction (if any) evaluates to true.

Table schema

The view schema of the trigger.

Table name

The view you wish to create the trigger.

Nested Table Field

To select the nested table field.

Compound

To specify the Instead Of Trigger.

Note: Support from Oracle 11g or later and you can edit the SQL in Trigger Definition.

Insert

The trigger is activated whenever adding a row to a table or adds an element to a nested table.

Delete

The trigger is activated whenever removing a row from the table or removes an element from a nested table.

Update

The trigger is activated whenever changing a value in a row.

General Properties for Schema Trigger

Enable

An enabled trigger runs its trigger action if a triggering statement is issued and the trigger restriction (if any) evaluates to true.

Table schema

The table schema of the trigger.

Fire

When defining a trigger, you can specify the trigger timing - whether the trigger action is to be run **BEFORE** or **AFTER** the triggering statement.

When

To specify the trigger condition, which is a SQL condition that must be satisfied for the database to fire the trigger.

Events

The kind of statement that activates the trigger.

General Properties for Database Trigger

Enable

An enabled trigger runs its trigger action if a triggering statement is issued and the trigger restriction (if any) evaluates to true.

Fire

When defining a trigger, you can specify the trigger timing - whether the trigger action is to be run **BEFORE** or **AFTER** the triggering statement.

When

To specify the trigger condition, which is a SQL condition that must be satisfied for the database to fire the trigger.

Events

The kind of statement that activates the trigger.

Advanced Properties for Table and View Trigger

Referencing Old

Correlation names of the old nested table.

Referencing New

Correlation names of the new nested table.

Referencing Parent

Correlation names of the parent table.

Follows


To indicate that the trigger should fire after the specified triggers. Use the **Schema** dropdown list to select the schema name and **Trigger** dropdown list to select the trigger.

Note: Support from Oracle 11g or later.

Definition







You can edit valid SQL or procedure statements in the trigger definition inside *BEGIN* and *END*.

Oracle Types



Type is an user-defined datatype that model the structure and behavior of the data in an application. An object type consists of two parts: a specification and a body. The type body always depends on its type specification. A collection type is a named varying array (varray) or a nested table type. Click -> **Type** to open an object list for **Type**.

The **Code Outline** window displays information about the object type/object type body including declaration, etc. To show the **Code Outline** window, simply choose **View** -> **Code Outline**.

Note: Available only in Full Version.


| Button | Description |
|-----------------------------------------------------------------------------------|-------------------------------------------|
|  | Refresh the code outline. |
|  | Show the detail view of the code outline. |
|  | Turn mouse over highlight on or off. |
|  | Expand the selected item. |
|  | Collapse the selected item. |
|  | Toggle sorting by position. |

Object Type's Definition

Enter the object type's definition. After saving the object type, you can edit the Object Type Body. Just click  **New Object Type Body** or  **Design Object Type Body** to open the Type Body Designer.

Hint: To customize the view of the editor and find out more features for sql editing, see [Editor Advanced Features](#).

Object Type Body's Definition

Enter the object type body's definition. To edit the Object Type Specification, click  **Design Object Type Specification** to open the Object Type Designer.

Hint: To customize the view of the editor and find out more features for sql editing, see [Editor Advanced Features](#).

Collection Type

Nested table

Create a nested table type.

VArray

Create a varray type.

Array Size

Determine the array size of the varray type.


Data Type

Select the Oracle Database built-in datatype or user-defined type of the attribute.

Data Type Parameter

Determine the corresponding data type parameters.

Oracle XML Schemas

XML Schema is a schema definition language written in XML. It can be used to describe the structure and various other semantics of conforming instance documents. Click  -> **XML Schema** to open an object list for **XML Schema**.

Schema Doc

Enter a valid XML schema document under the **Schema Doc** tab.

Advanced Properties

Local

Check this to register as local schemas.

Force on schema registration

Check this to ignore errors generated during schema evolution.

Object Types

Check this to enable the schema compiler to generate object types.

Java Beans

Check this to enable the schema compiler to generate Java beans.

Default Tables

Check this to enable the schema compiler to generate default tables.

REGISTER_NODOCID

Check this to prevent the creation of this column if the user wishes to optimize on storage.

REGISTER_BINARYXML

Check this to register the schema for Binary XML.

REGISTER_NT_AS_IOT

Check this to store nested tables created during schema registration as index organized tables.

REGISTER_AUTO_OOL


Check this to automatically move large types out of line.

Enable Hierarchy


| | |
|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| ENABLE_HIERARCHY_NONE | Enable hierarchy will not be called on any tables created while registering that schema. |
| ENABLE_HIERARCHY_CONTENTS | Enable hierarchy will be called for all tables created during schema registration with hierarchy_type as DBMS_XDBZ.ENABLE_CONTENTS. |
| ENABLE_HIERARCHY_RESMETADATA | Enable hierarchy will be called on all tables created during schema registration with hierarchy_type as DBMS_XDBZ.ENABLE_RESMETADATA. |

Oracle Recycle Bin


Recycle bin is actually a data dictionary table containing information about dropped objects. Dropped tables and any associated objects such as indexes, constraints, nested tables, and the likes are not removed and still occupy space. They continue to count

against user space quotas, until specifically purged from the recycle bin or the unlikely situation where they must be purged by the database because of tablespace space constraints. Click -> **Recycle Bin** to open an object list for **Recycle Bin**.

To restore a table

1. Choose a table in recycle bin.
2. Click  **Flashback Table** from the object list toolbar.

To remove an object

1. Select an object for purging in the object list.
2. Click  **Purge Object** from the object list toolbar.
3. Confirm deleting in the dialog window.


To remove all objects

1. Right-click and select the **Purge Recycle Bin** from the popup menu.
2. Confirm deleting in the dialog window.

To remove all objects of any users

1. Log in a user has the **SYSDBA** privilege.
2. Right-click and select **Purge DBA Recycle Bin** from the popup menu.
3. Confirm deleting in the dialog window.

Oracle Directories


A directory object specifies an alias for a directory on the server file system where external binary file LOBs (BFILEs) and external table data are located. All directories are created in a single namespace and are not owned by an individual schema. Click -> **Directory** to open an object list for **Directory**.

General Properties

Directory Path

Specify the full path name of the operating system directory of the server where the files are located. The path name is case sensitive.

Oracle Tablespaces

Tablespaces are the allocation of space in the database that can contain schema objects. Click -> **Tablespace** to open an object list for **Tablespace**.

General Properties

Tablespace Type

| | |
|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PERMANENT | A permanent tablespace contains persistent schema objects. Objects in permanent tablespaces are stored in datafiles. |
| TEMPORARY | A temporary tablespace contains schema objects only for the duration of a session. Objects in temporary tablespaces are stored in tempfiles. |
| UNDO | An undo tablespace is a type of permanent tablespace used by Oracle Database to manage undo data if you are running your database in automatic undo management mode. |

Name

Set the name of the datafile/tempfile.

Size

Set the size of the datafile/tempfile.

Unit

Define the size unit of the datafile/tempfile. Specify the maximum disk space allowed for automatic extension of the datafile. Use the dropdown list K, M, G, T, P or E to specify the size in kilobytes, megabytes, gigabytes, terabytes, petabytes, or exabytes.

Reuse

To allow Oracle to reuse an existing file.

Path

Specify the path of the datafile/tempfile.

Auto Extend

To **ON** (enable) or **OFF** (disable) the automatic extension of a new or existing datafile or tempfile.

Next Size

Specify the size in bytes of the next increment of disk space to be allocated automatically when more extents are required. The default is the size of one data block. Use the dropdown list K, M, G, T, P or E to specify the size in kilobytes, megabytes, gigabytes, terabytes, petabytes, or exabytes.

Unlimited Max

Unlimited disk space that Oracle can allocate to the datafile or tempfile.

Max Size

Specify the maximum disk space allowed for automatic extension of the datafile. Use the dropdown list K, M, G, T, P or E to specify the size in kilobytes, megabytes, gigabytes, terabytes, petabytes, or exabytes.

Storage

File Type

| | |
|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| BIGFILE | A bigfile tablespace contains only one datafile or tempfile, which can contain up to approximately 4 billion (2^{32}) blocks. The maximum size of the single datafile or tempfile is 128 terabytes (TB) for a tablespace with 32K blocks and 32TB for a tablespace with 8K blocks. |
| SMALLFILE | A smallfile tablespace is a traditional Oracle tablespace, which can contain 1022 datafiles or tempfiles, each of which can contain up to approximately 4 million (2^{22}) blocks. |

Min Extent Size

The minimum size of an extent in the tablespace. Use the dropdown list K, M, G, T, P or E to specify the size in kilobytes, megabytes, gigabytes, terabytes, petabytes, or exabytes.

Block Size

The block size for the tablespace.

Default Storage Options

Set the [default storage characteristics](#) for objects created in the tablespace.

Table Compression

Use the dropdown list to select the type of compressing data segments to reduce disk use.

Manual Segment Management

To manage the free space of segments in the tablespace using free lists.

Extent Management

| | |
|------------|-------------------------------------------|
| DICTIONARY | Extent management by the data dictionary. |
| LOCAL | Extent management by the bitmaps. |

Local Extent

| | |
|--------------|---------------------------------------------------------|
| AUTOALLOCATE | The tablespace is system managed. |
| UNIFORM | The tablespace is managed with uniform extents of size. |

Uniform Size

The size of uniform extent. The default size is 1 megabyte. Use the dropdown list K, M, G, T, P or E to specify the size in kilobytes, megabytes, gigabytes, terabytes, petabytes, or exabytes.

Advanced Properties

Logging

| | |
|---------|-------------------------------------------------------------|
| LOGGING | Log all objects within the tablespace in the redo log file. |
|---------|-------------------------------------------------------------|

| | |
|-----------|---------------------------|
| NOLOGGING | No operations are logged. |
|-----------|---------------------------|

Force Logging

Oracle Database will log all changes to all objects in the tablespace except changes to temporary segments, overriding any NOLOGGING setting for individual objects.

Offline

The tablespace is unavailable immediately (offline) after creation.

Retention Guarantee

Oracle Database should preserve unexpired undo data in all undo segments of tablespace even if doing so forces the failure of ongoing operations that need undo space in those segments.

Tablespace Group

To determine whether tablespace is a member of a tablespace group.

Flashback

| | |
|-----|----------------------------------------------------------------------------------------------------------------------------------------|
| ON | Oracle Database will save Flashback log data for this tablespace and the tablespace can participate in a FLASHBACK DATABASE operation. |
| OFF | Oracle Database will not save any Flashback log data for this tablespace. |

Use Encryption

Enable the encryption properties of the tablespace.

Algorithm

To select the encryption algorithm.

Oracle Public Database Links


Public database Link is a database link created by a *DBA* on a local database that is accessible to all users on that database. Click



-> **Public Database Link** to open an object list for **Public Database Link**.

See [Database Link](#) for details.

Oracle Public Synonyms

Public synonym is a synonym owned by the special user group named *PUBLIC* and every user in a database can access it. Click 

-> **Public Synonyms** to open an object list for **Public Synonyms**.

See [Synonyms](#) for details.

PostgreSQL Objects

To start working with the server objects, you should create and open a connection. If the server is empty, you need to right-click the connection in the connection tree and choose **New Database** to create a new database.

General Properties

To create a database, you must have the **Can create database** (usecreatedb) right. Refer to [Role Designer](#) or [User Designer](#) on how to set user properties.

Database Name

Define the name of the database.

Encoding

Define the encoding for the database. If omitted, the default is the encoding of the template database.

Owner

Define the owner for the database. If omitted, defaults to the user executing the command. Only superusers may create database owned by users other than themselves.

Template

Create the database from a template database.

Note: It is essential that the source database be idle (no data-altering transactions in progress) for the duration of the copying operation. CREATE DATABASE will check that no session (other than itself) is connected to the source database at the start of the operation, but this does not guarantee that changes cannot be made while the copy proceeds, which would result in an inconsistent copied database. Therefore, it is recommended that databases used as templates be treated as read-only.

Tablespace

Define the tablespace for the database. If omitted, defaults to pg_default.

PostgreSQL Schemas

A schema is essentially a namespace: it contains named objects (tables, data types, functions, and operators) whose names may duplicate those of other objects existing in other schemas. The schema name must be distinct from any existing schema name in the current database.

General Properties


Schema Name



The name of a schema to be created. The name cannot begin with pg_, as such names are reserved for system schemas.

Owner

The name of the user who will own the schema. If omitted, defaults to the user executing the command.

PostgreSQL Tables

Relational databases use tables to store data. All operations on data are done on the tables themselves or produce another table as the result. A table is a set of rows and columns, and their intersections are fields. From a general perspective, columns within a table describe the name and type of data that will be found by row for that column's fields. Rows within a table represent records composed of fields that are described from left to right by their corresponding column's name and type. Each field in a row is implicitly correlated with each other field in that row. Click  to open an object list for **Table**.




When open a table with graphical fields, right-click a table and select the  **Open Table (Quick)** from the popup menu. Faster performance for opening the graphical table, as BLOB fields (images) will not be loaded until you click on the cell. If you do wish Navicat loads all your images while opening the table, use  **Open Table**.

You can create a table shortcut by right-click a table in object list and select **Create Open Table Shortcut** from the popup menu. This option is used to provide a convenient way for you to open your table for entering data directly without activating the main Navicat.

To empty a table, right-click the selected table and choose **Empty Table** from the popup menu. This option is only applied when you wish to clear all the existing records without resetting the auto-increment value. To reset the auto-increment value while emptying your table, use **Truncate Table** below.

PostgreSQL Table Fields

In the **Fields** tab, just simply click a field for editing. A right-click displays the popup menu or using the field toolbar, you can create new and drop the selected field. To search a field name, choose **Edit** -> **Find** or press CTRL+F.

| Button | Description |
|--------------------------------------------------------------------------------------------------|---------------------------------|
|  Add Field | Add a field to the table. |
|  Delete Field | Delete the selected field. |
|  Primary Key | Set the field as a Primary Key. |

Use the **Name** edit box to set the field name. Note that the name of the field must be unique among all the field names in the table.

The **Type** dropdown list defines the type of the field data. See [PostgreSQL Data Types](#) for details.

Use the **Length** edit box to define the length of the field and use **Decimals** edit box to define the number of digits after the decimal point (the scale) for Floating Point data type.

Note: Be careful when shortening the field length as losing data might be caused.

Not null

Check this box to not allow the NULL values for the field.

Primary Key

A Primary Key is a single field or combination of fields that uniquely defines a record. None of the fields that are part of the primary key can contain a null value.

Field's Pop-up Options

| | |
|------------------|---------------------------------------------------------------------------------------------|
| Duplicate Field | Add a new field with modification as one of the existing fields. |
| Primary Key Name | Enter the primary key constraint name. |
| Fill Factor | Enter the storage parameter. The fillfactor for a table is a percentage between 10 and 100. |

Field's Properties

Note: The following options depend on the field type you are chosen.

Default

Set the default value for the field.

Comment

Set any optional text describing the current field.

Collation

Set the collation of the column (which must be of a collatable data type). If not specified, the column data type's default collation is used.

Note: Support from PostgreSQL 9.1 or later.

Dimensions

Set the dimensions of array specifiers.

Object Schema

Set the object schema for the field.



Object Type

Set the object type for the field.


PostgreSQL Table Indexes

Indexes are primarily used to enhance database performance (though inappropriate use can result in slower performance). An index field can be an expression computed from the values of one or more columns of the table row. This feature can be used to obtain fast access to data based on some transformation of the basic data.

In the **Indexes** tab, just simply click an index field for editing. By using the index toolbar, you can create new, edit and delete the selected index field.

| Button | Description |
|------------------------------------------------------------------------------------------------|----------------------------|
|  Add Index | Add an index to the table. |
|  Delete Index | Delete the selected index. |

Use the **Name** edit box to set the index name. No schema name can be included here; the index is always created in the same schema as its parent table.

To include field(s) in the index, just simply double-click the **Fields** field or click  to open the editor for editing.

Note: Some of field types do not allow indexing by several fields.

The **Index method** dropdown list defines the type of the table index.

Unique

Makes index unique, causes the system to check for duplicate values in the table when the index is created (if data already exist) and each time data is added.

Clustered

CLUSTER instructs PostgreSQL to cluster the table specified by tablename based on the index specified by indexname. The index must already have been defined on tablename.

When a table is clustered, PostgreSQL remembers on which index it was clustered. The form *CLUSTER* tablename reclusters the table on the same index that it was clustered before.

Tablespace

The tablespace in which to create the index.

Constraints

If you wish to create partial index, enter constraint condition in this edit box. A partial index is an index that contains entries for only a portion of a table, usually a portion that is more useful for indexing than the rest of the table.

Comment

Define the comment for the index.

Fields Editor

Select the field(s) from the **Name** list. You can also use the arrow buttons to change the index field(s) order.

Collation

Choose the collation for the index.

Note: Support from PostgreSQL 9.1 or later.

Sort Order

Specify the sort order: ASC or DESC.



Nulls Order

Specify that nulls sort before(NULLS FIRST)/after(NULLS LAST) non-nulls.

PostgreSQL Table Foreign Keys


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. We say this maintains the referential integrity between two related tables.

In the **Foreign Keys** tab, just simply click a foreign key field for editing. By using the foreign key toolbar, you can create new, edit and delete the selected foreign key field.

| Button | Description |
|------------------------------------------------------------------------------------------------------|----------------------------------|
|  Add Foreign Key | Add a foreign key to the table. |
|  Delete Foreign Key | Delete the selected foreign key. |

Use the **Name** edit box to enter a name for the new key.

Use the **Referenced Schema** and **Referenced Table** dropdown lists to select a foreign schema and table respectively.

To include field(s)/referenced field(s) to the key, just simply double-click the **Fields/Referenced Fields** field or click  to open the editor(s) for editing.

The **On Delete** and **On Update** dropdown list define the type of the actions to be taken.

| | |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| RESTRICT | Produce an error indicating that the deletion or update would create a foreign key constraint violation. This is the same as NO ACTION except that the check is not deferrable. |
| NO ACTION | Produce an error indicating that the deletion or update would create a foreign key constraint violation. If the constraint is deferred, this error will be produced at constraint check time if there still exist any referencing rows. This is the default action. |
| CASCADE | Delete any rows referencing the deleted row, or update the value of the referencing column to the new value of the referenced column, respectively. |
| SET NULL | Set the referencing column(s) to null. |
| SET DEFAULT | Set the referencing column(s) to their default values. |



Related topic:

[Foreign Keys Data Selection](#)

PostgreSQL Table Uniques

Unique constraints ensure that the data contained in a column or a group of columns is unique with respect to all the rows in the table.

In the **Uniques** tab, just simply click an unique field for editing. By using the unique toolbar, you can create new, edit and delete the selected unique field.

| Button | Description |
|-------------------------------------------------------------------------------------------------|-----------------------------|
|  Add Unique | Add an unique to the table. |
|  Delete Unique | Delete the selected unique. |

Use the **Name** edit box to set the unique name.

To set field(s) as unique, just simply double-click the **Fields** field or click  to open the editor(s) for editing.

Tablespace

Allow setting a tablespace different from the default tablespace.

Comment

Define the comment for the unique.

Fill Factor



The fillfactor for an unique is a percentage between 10 and 100. 100 (complete packing) is the default.

Note: Support from PostgreSQL 8.2 or later.

PostgreSQL Table 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.

In the **Checks** tab, just simply click a check field for editing. By using the check toolbar, you can create new, edit and delete the selected check field.

| Button | Description |
|--------------------------------------------------------------------------------------------------|----------------------------|
|  Add Check | Add a check to the table. |
|  Delete Check | Delete the selected check. |

Use the **Name** edit box to set the check name.

Check

Set the condition for checking, e.g. "field_name1 > 0 AND field_name2 > field_name1" in the **Check** edit box. A check constraint specified as a column constraint should reference that column's value only, while an expression appearing in a table constraint may reference multiple columns.

Definition

Enter the definition for the check.

Comment



Enter the comment for the check.

PostgreSQL Table Excludes

A exclude constraint guarantees that if any two rows are compared on the specified column(s) or expression(s) using the specified operator(s), not all of these comparisons will return TRUE.

In the **Excludes** tab, just simply click an exclude field for editing. By using the exclude toolbar, you can create new, edit and delete the selected exclude field.

Note: Exclude is supported from PostgreSQL 9.0 or later.

| Button | Description |
|--------------------------------------------------------------------------------------------------|------------------------------|
|  Add Exclude | Add an exclude to the table. |
|  Delete Exclude | Delete the selected exclude. |

Use the **Name** edit box to set the exclude name.

Index method

The name of the index access method to be used.

Element

Choose the element(s) to be excluded and specify the operator(s).

Tablespace

The tablespace in which to create the index.

Fill Factor

The fillfactor for an index is a percentage that determines how full the index method will try to pack index pages.

Predicate

Specify an exclusion constraint on a subset of the table.

Comment



Define the comment for the exclude.

PostgreSQL Table Rules

The PostgreSQL rule system allows one to define an alternate action to be performed on insertions, updates, or deletions in database tables. Roughly speaking, a rule causes additional commands to be executed when a given command on a given table is executed.

Note: You must be the owner of a table to create or change rules for it.

In the **Rules** tab, just simply click a rule field for editing. By using the rule toolbar, you can create new, edit and delete the selected rule field.

| Button | Description |
|-----------------------------------------------------------------------------------------------|---------------------------|
|  Add Rule | Add a rule to the table. |
|  Delete Rule | Delete the selected rule. |

Use the **Name** edit box to set the rule name. This must be distinct from the name of any other rule for the same table. Multiple rules on the same table and same event type are applied in alphabetical name order.

Event

The event is one of *SELECT*, *INSERT*, *UPDATE*, or *DELETE*.

Do instead

This indicates that the commands should be executed instead of the original command. Otherwise, the commands should be executed in addition to the original command.

Condition

Any SQL conditional expression (returning boolean). The condition expression may not refer to any tables except NEW and OLD, and may not contain aggregate functions.

Definition

The command or commands that make up the rule action. Valid commands are *SELECT*, *INSERT*, *UPDATE*, *DELETE*, or *NOTIFY*.

Within condition and command, the special table names NEW and OLD may be used to refer to values in the referenced table. NEW is valid in ON INSERT and ON UPDATE rules to refer to the new row being inserted or updated. OLD is valid in ON UPDATE and ON DELETE rules to refer to the existing row being updated or deleted.

Comment



Define the comment for the rule.

PostgreSQL Table Triggers

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

In the **Triggers** tab, just simply click a trigger field for editing. By using the trigger toolbar, you can create new, edit and delete the selected trigger field.

Note: To create a trigger on a table, the user must have the [TRIGGER](#) privilege on the table.

| Button | Description |
|----------------------------------------------------------------------------------------------------|------------------------------|
|  Add Trigger | Add a trigger to the table. |
|  Delete Trigger | Delete the selected trigger. |

Use the **Name** edit box to set the trigger name. This must be distinct from the name of any other trigger for the same table.

Row trigger

This specifies whether the trigger procedure should be fired once for every row affected by the trigger event, or just once per SQL statement. If unchecked, *FOR EACH STATEMENT* is the default.

Fires

Define the trigger action time. It can be **Before** or **After** to indicate that the trigger activates before or after the statement that activated it.

Insert

The trigger is activated whenever a new row is inserted into the table.

Update

The trigger is activated whenever a row is modified.

Delete

The trigger is activated whenever a row is deleted from the table.

Update Of Fields

Specify a list of columns. The trigger will only fire if at least one of the listed columns is mentioned as a target of the UPDATE command.

Note: Support from PostgreSQL 9.1 or later.

When Clause

Specify a Boolean WHEN condition, which will be tested to see whether the trigger should be fired.

Note: Support from PostgreSQL 9.0 or later.

Trigger Function Schema and Trigger Function

A user-supplied function that is declared as taking no arguments and returning type trigger, which is executed when the trigger fires.

Arguments

An optional comma-separated list of arguments to be provided to the function when the trigger is executed. The arguments are literal string constants. Simple names and numeric constants may be written here, too, but they will all be converted to strings. Please check the description of the implementation language of the trigger function about how the trigger arguments are accessible within the function; it may be different from normal function arguments.

Comment

Define the comment for the trigger.

PostgreSQL Table Options

Unlogged

The table is created as an unlogged table. Data written to unlogged tables is not written to the write-ahead log, which makes them considerably faster than ordinary tables.

Note: Support from PostgreSQL 9.1 or later.

Owner

Define the user to own this table.


Tablespace

Define a tablespace different from the default tablespace to create a table.

Note: Support from PostgreSQL 8.0 or later.

Inherits from

This option specifies a list of tables from which the new table automatically inherits all columns. Use of inheritance creates a persistent relationship between the new child table and its parent table(s). Schema modifications to the parent(s) normally propagate to children as well, and by default the data of the child table is included in scans of the parent(s).

To set the new table to be inherited from one or several existing tables, just simply click  to open the editor(s) for editing.

Has Oids

Check this option if you want to specify whether rows of the new table should have OIDs (object identifiers) assigned to them.


Fill Factor

The fillfactor for a table is a percentage between 10 and 100. 100 (complete packing) is the default. When a smaller fillfactor is specified, INSERT operations pack table pages only to the indicated percentage; the remaining space on each page is reserved for updating rows on that page. This gives UPDATE a chance to place the updated copy of a row on the same page as the original, which is more efficient than placing it on a different page. For a table whose entries are never updated, complete packing is the best choice, but in heavily updated tables smaller fillfactors are appropriate.




Note: Support from PostgreSQL 8.2 or later.

PostgreSQL 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). Click  to open an object list for **View**.

You can create a view shortcut by right-click a view in object list and select **Create Open View Shortcut** from the popup menu. This option is used to provide a convenient way for you to open your view directly without activating the main Navicat.

| Button | Description |
|--------------------------------------------------------------------------------------------------|------------------------------------------------------------|
|  Preview | Preview the result of the view. |
|  Explain | Show the Query Plan of the view. |
|  Beautify SQL | Format the codes with the Beautify SQL settings in Editor. |

Note: You can choose to show the Result tab below the editor or in a new tab by selecting **View -> Show Result -> Below Query Editor** or **In a New Tab**.

View Builder (Available only in Full Version)

View Builder allows you to build views visually. It allows you to create and edit views without knowledge of SQL. See [Query Builder](#) for details.

Definition

You can edit the view definition as SQL statement (SELECT statement it implements).

Hint: To customize the view of the editor and find out more features for sql editing, see [Editor Advanced Features](#).

Rules

Use the **Name** edit box to set the rule name.

Event

The event is one of *SELECT*, *INSERT*, *UPDATE*, or *DELETE*.

Do instead

This indicates that the commands should be executed instead of the original command. Otherwise, the commands should be executed in addition to the original command.

Condition

Any SQL conditional expression (returning boolean). The condition expression may not refer to any tables except NEW and OLD, and may not contain aggregate functions.

Definition

The command or commands that make up the rule action. Valid commands are *SELECT*, *INSERT*, *UPDATE*, *DELETE*, or *NOTIFY*.

Within condition and command, the special table names NEW and OLD may be used to refer to values in the referenced table. NEW is valid in ON INSERT and ON UPDATE rules to refer to the new row being inserted or updated. OLD is valid in ON UPDATE and ON DELETE rules to refer to the existing row being updated or deleted

Comment

Define the comment for the rule.

Advanced Properties

Owner

The owner of the view.


View Viewer

View Viewer displays the view data as a grid. Data can be displayed in two modes: **Grid View** and **Form View**. See [Table Viewer](#) for details.


PostgreSQL Functions

PostgreSQL provides four kinds of functions:

- query language functions (functions written in SQL)
- procedural language functions (functions written in, for example, PL/Tcl or PL/pgSQL)
- internal functions
- C-language functions

Every kind of function can take base types, composite types, or combinations of these as arguments (parameters). In addition, every kind of function can return a base type or a composite type. Many kinds of functions can take or return certain pseudo-types (such as polymorphic types), but the available facilities vary. Click  to open an object list for **Function**.

Function Wizard

Click the  **New Function** from the object list toolbar. The **Function Wizard** will pop up and it allows you to create a function easily. You are allowed not to show the **Function Wizard** when create new function.

1. Define the parameter(s) of the function. Set the parameter **Mode**, **Type Schema**, **Type**, **Name** and **Default Value** under corresponding columns.
2. Select the **Schema** and **Return Type** from the list.

Hint: Once uncheck the **Show wizard next time**, you can go to [Options](#) to enable it.

Definition

Definition consists of a valid SQL procedure statement. This can be a simple statement such as *SELECT* or *INSERT*, or it can be a compound statement written using *BEGIN* and *END*. Compound statements can contain declarations, loops, and other control structure statements.

Hint: To customize the view of the editor and find out more features for sql editing, see [Editor Advanced Features](#).

Parameter

Define function parameter.

Return type schema and Return Type

The return type of the function.

Advanced Properties

Owner

The owner of the function.

Note: Support from PostgreSQL 8.0 or later.

Language

The name of the language that the function is implemented in. May be SQL, C, internal, or the name of a user-defined procedural language. For backward compatibility, the name may be enclosed by single quotes.

Volatility

These attributes inform the query optimizer about the behavior of the function. At most one choice may be specified. If none of these appear, VOLATILE is the default assumption.

| | |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| IMMUTABLE | The function cannot modify the database and always returns the same result when given the same argument values; that is, it does not do database lookups or otherwise use information not directly present in its argument list. If this option is given, any call of the function with all-constant arguments can be immediately replaced with the function value. |
| STABLE | The function cannot modify the database, and that within a single table scan it will consistently return the same result for the same argument values, but that its result could change across SQL statements. This is the appropriate selection for functions whose results depend on database lookups, parameter variables (such as the current time zone), etc. Also note that the <code>current_timestamp</code> family of functions qualify as stable, since their values do not change within a transaction. |
| VOLATILE | The function value can change even within a single table scan, so no optimizations can be made. Relatively few database functions are volatile in this sense; some examples are <code>random()</code> , <code>curval()</code> , <code>timeofday()</code> . But note that any function that has side-effects must be classified volatile, even if its result is quite predictable, to prevent calls from being optimized away; an example is <code>setval()</code> . |

Security of definer

Specify that the function is to be executed with the privileges of the user that created it.

Returns Set

Indicate that the function will return a set of items, rather than a single item.

Strict

Indicate that the function always returns null whenever any of its arguments are null. If this parameter is specified, the function is not executed when there are null arguments; instead a null result is assumed automatically.

Estimated cost

A positive number giving the estimated execution cost for the function, in units of `cpu_operator_cost`. If the function returns a set, this is the cost per returned row. If the cost is not specified, 1 unit is assumed for C-language and internal functions, and 100 units for functions in all other languages. Larger values cause the planner to try to avoid evaluating the function more often than necessary.

Note: Support from PostgreSQL 8.3 or later.

Estimated rows

A positive number giving the estimated number of rows that the planner should expect the function to return. This is only allowed when the function is declared to return a set.


Note: Support from PostgreSQL 8.3 or later.

Configuration parameter

The specified configuration parameter to be set to the specified value when the function is entered, and then restored to its prior value when the function exits.


Note: Support from PostgreSQL 8.3 or later.

Result

To run the function, click  **Run** on the toolbar. If the SQL statement is correct, the statement will be executed and, if the statement is supposed to return data, the **Result** tab opens with the data returned by the function. If an error occurs while executing the function, execution stops, the appropriate error message is displayed. If the function requires input parameter, the **Input Parameters** box will popup. Use ',' to separate the parameters.

Hint: Navicat supports to return 10 resultsets.

PostgreSQL Aggregates

Aggregate functions in PostgreSQL are expressed as state values and state transition functions. That is, an aggregate can be defined in terms of state that is modified whenever an input item is processed. To define a new aggregate function, one selects a data type for the state value, an initial value for the state, and a state transition function. The state transition function is just an ordinary function that could also be used outside the context of the aggregate. A final function can also be specified, in case the desired result of the aggregate is different from the data that needs to be kept in the running state value. Click  -> **Aggregate** to open an object list for **Aggregate**.

Properties

Owner

The owner of the aggregate function.

Note: Support from PostgreSQL 8.0 or later.

Input type

An input data type on which this aggregate function operates.

Note: Support from PostgreSQL 8.2 or later. For versions below 8.2, just select the **Input type schema** and **Input type** from the dropdown lists.

State Type Schema and State type

The data type for the aggregate's state value.

State Function Schema and State function

The state transition function to be called for each input row. For an N-argument aggregate function, the state function must take N+1 arguments, the first being of type *state_data_type* and the rest matching the declared input data type(s) of the aggregate. The

function must return a value of type *state_data_type*. This function takes the current state value and the current input data value(s), and returns the next state value.

Final Function Schema and Final function

The final function called to compute the aggregate's result after all input rows have been traversed. The function must take a single argument of type *state_data_type*. The return data type of the aggregate is defined as the return type of this function. If final function is not specified, then the ending state value is used as the aggregate's result, and the return type is *state_data_type*.

Initial condition


The initial setting for the state value. This must be a string constant in the form accepted for the data type *state_data_type*. If not specified, the state value starts out null.

Sort operator schema and Sort operator

The associated sort operator for a MIN- or MAX-like aggregate. The operator is assumed to have the same input data types as the aggregate (which must be a single-argument aggregate).

Note: Support from PostgreSQL 8.1 or later.

PostgreSQL Conversions

Conversion defines a new conversion between character set encodings. Conversion names may be used in the convert function to specify a particular encoding conversion. Also, conversions that are marked DEFAULT can be used for automatic encoding conversion between client and server. For this purpose, two conversions, from encoding A to B and from encoding B to A, must be defined. Click -> **Conversion** to open an object list for **Conversion**.

Properties

Owner

The owner of the conversion function.

Note: Support from PostgreSQL 8.0 or later.

Source encoding

The source encoding name.

Target encoding

The destination encoding name.

Schema of function and Function

The function used to perform the conversion. The function name may be schema-qualified. If it is not, the function will be looked up in the path.

The function must have the following signature:


```
conv_proc(  
integer, -- source encoding ID
```

```
integer, -- destination encoding ID
cstring, -- source string (null terminated C string)
internal, -- destination (fill with a null terminated C string)
integer -- source string length
) RETURNS void;
```

Default

Check this box to indicate that this conversion is the default for this particular source to destination encoding. There should be only one default encoding in a schema for the encoding pair.

PostgreSQL Domains

A domain is essentially a data type with optional constraints (restrictions on the allowed set of values). The user who defines a domain becomes its owner. Domains are useful for abstracting common constraints on fields into a single location for maintenance. For example, several tables might contain email address columns, all requiring the same *CHECK* constraint to verify the address syntax. Define a domain rather than setting up each table's constraint individually. Click -> **Domain** to open an object list for **Domain**.

General Properties

Underlying Type Category

Choose the underlying data type category: **Base Type**, **Composite Type**, **Enum Type** and **Domain**.

Note: Support from PostgreSQL 8.2 or later.

Underlying Type Schema

Select schema of the underlying data type.

Underlying Type

Select the underlying data type of the domain from the drop-down list.

Dimensions

The dimensions of array specifiers.

Length and Scale

Use the **Length** edit box to define the length of the field and use **Scale** edit box to define the number of digits after the decimal point. (if required for the selected data type)

Default

The *DEFAULT* clause specifies a default value for columns of the domain data type. The value is any variable-free expression (but subqueries are not allowed). The data type of the default expression must match the data type of the domain. If no default value is specified, then the default value is the null value.

The default expression will be used in any insert operation that does not specify a value for the column. If a default value is defined for a particular column, it overrides any default associated with the domain. In turn, the domain default overrides any default value associated with the underlying data type.

Not null

Values of this domain are not allowed to be null.

Owner

The owner of the domain function. The user who defines a domain becomes its owner.


Note: Support from PostgreSQL 7.4 or later.

Checks

The **Checks** tab is provided for managing domain checks. It allows you to create new, edit, or delete the selected check.

CHECK clauses specify integrity constraints or tests which values of the domain must satisfy. Each constraint must be an expression producing a Boolean result. It should use the key word *VALUE* to refer to the value being tested.

PostgreSQL Indexes

Index provides a faster access path to table data. It is created using one or more columns of a table to speed SQL statement execution on that table. Click  -> **Index** to open an object list for **Index**.

General Properties

Unique

Makes index unique, causes the system to check for duplicate values in the table when the index is created (if data already exist) and each time data is added.

Table name

The name (possibly schema-qualified) of the table to be indexed.

Method

Define the type of the index.

Name/Expression

The name of a column of the table. Or, an expression based on one or more columns of the table.

Collate

Choose the collation for the index.

Note: Support from PostgreSQL 9.1 or later.

Operator Class Schema and **Operator Class**

The schema and name of an operator class.

Sort Order *(only for B-Tree index)*

Specify the sort order: ASC or DESC.

Nulls Order *(only for B-Tree index)*

Specify that nulls sort before(NULLS FIRST)/after(NULLS LAST) non-nulls.

Advanced Properties

Clustered

CLUSTER instructs PostgreSQL to cluster the table specified by tablename based on the index specified by indexname. The index must already have been defined on tablename.

When a table is clustered, PostgreSQL remembers on which index it was clustered. The form *CLUSTER* tablename reclusters the table on the same index that it was clustered before.

Concurrently

When this option is used, PostgreSQL will build the index without taking any locks that prevent concurrent inserts, updates, or deletes on the table; whereas a standard index build locks out writes (but not reads) on the table until it's done.

Tablespace

The tablespace in which to create the index.

Fill Factor (%)

The fillfactor for an index is a percentage that determines how full the index method will try to pack index pages.

Fast Update


This setting controls usage of the fast update technique.

Note: Support from PostgreSQL 8.4 or later.

Constraint

If you wish to create partial index, enter constraint condition in this edit box. A partial index is an index that contains entries for only a portion of a table, usually a portion that is more useful for indexing than the rest of the table.

PostgreSQL Operators

PostgreSQL supports left unary, right unary, and binary operators. Operators can be overloaded. At least one of *LEFTARG* and *RIGHTARG* must be defined. For binary operators, both must be defined. For right unary operators, only *LEFTARG* should be defined, while for left unary operators only *RIGHTARG* should be defined. Click  -> **Operator** to open an object list for **Operator**.

Note: *LEFTARG* = Left type; *RIGHTARG* = Right type.

General Properties

Owner

The owner of the operator function.

Note: Support from PostgreSQL 8.0 or later.

Schema of left type and Left type

The data type of the operator's left operand, if any. This option would be omitted for a left-unary operator.

Schema of right type and Right type

The data type of the operator's right operand, if any. This option would be omitted for a right-unary operator.

Schema of operator function and Operator function

The function used to implement this operator.

Advanced Properties

Schema of restrict function and Restrict function

The restriction selectivity estimator function for this operator.

Schema of join function and Join function

The join selectivity estimator function for this operator.

Schema of commutator and Commutator

The commutator of this operator.

Schema of negator and Negator

The negator of this operator.

Hash

The operator can support a hash join if this option on.

Merge

The operator can support a merge join if this option on.

Additional Advanced Properties for PostgreSQL Version below 8.3

Schema of left sort operator and Left sort operator

If this operator can support a merge join, the left sort operator that sorts the left-hand data type of this operator.

Schema of right sort operator and Right sort operator

If this operator can support a merge join, the right sort operator that sorts the right-hand data type of this operator.


Schema of less than operator and Less than operator

If this operator can support a merge join, the less-than operator that compares the input data types of this operator.

Schema of greater than operator and Greater than operator

If this operator can support a merge join, the greater-than operator that compares the input data types of this operator.

PostgreSQL Operator Classes

An operator class defines how a particular data type can be used with an index. The operator class specifies that certain operators will fill particular roles or "strategies" for this data type and this index method. The operator class also specifies the support procedures to be used by the index method when the operator class is selected for an index column. All the operators and functions used by an operator class must be defined before the operator class is created. Click -> **Operator Class** to open an object list for **Operator Class**.

Note: Two operator classes in the same schema can have the same name only if they are for different index methods.

The **Comment** tab is supported from PostgreSQL 8.0 or later.

General Properties

Owner

The owner of the operator class function.

Note: Support from PostgreSQL 8.0 or later.

Schema of Data Type and Data Type

The column data type that this operator class is for.

Index method

The name of the index method this operator class is for.

Schema of Storage Type and Storage type

The data type actually stored in the index. Normally this is the same as the column data type, but some index methods (*GIN* and *GiST* for now) allow it to be different. The *STORAGE* clause must be omitted unless the index method allows a different type to be used.

Operator family

The name of the existing operator family to add this operator class to. If not specified, a family named the same as the operator class is used (creating it, if it doesn't already exist).

Note: Support from PostgreSQL 8.3 or later.

Default operator class

With this option selected, the operator class will become the default operator class for its data type. At most one operator class can be the default for a specific data type and index method.

Operators

Strategy number

The index method's strategy number for an operator associated with the operator class.

Schema of operator and Operator name

The operator associated with the operator class.

Recheck

With this option selected, the index is "lossy" for this operator, and so the rows retrieved using the index must be rechecked to verify that they actually satisfy the qualification clause involving this operator.

Note: Before PostgreSQL 8.4, the OPERATOR clause could include a RECHECK option. This is no longer supported because whether an index operator is "lossy" is now determined on-the-fly at runtime. This allows efficient handling of cases where an operator might or might not be lossy.

Functions


Support number

The index method's support procedure number for a function associated with the operator class.

Schema of function and Function name

The function that is an index method support procedure for the operator class.

PostgreSQL Sequences

Sequence involves creating and initializing a new special single-row table. It is usually used to generate unique identifiers for rows of a table. Click  -> **Sequence** to open an object list for **Sequence**.

General Properties

Owner

The owner of the sequence function.

Note: Support from PostgreSQL 8.0 or later.

Increment

Specify which value is added to the current sequence value to create a new value. A positive value will make an ascending sequence, a negative one a descending sequence. The default value is 1.

Current value

The starting value of the sequence.

Minimum

Determine the minimum value a sequence can generate.

Maximum

Determine the maximum value for the sequence.

Cache

Specify how many sequence numbers are to be preallocated and stored in memory for faster access.

Cycled


This option allows the sequence to wrap around when the maxvalue or minvalue has been reached by an ascending or descending sequence respectively. If the limit is reached, the next number generated will be the minvalue maxvalue, respectively. Otherwise, any calls to nextval after the sequence has reached its maximum value will return an error.

Add owned by

Choose the **Owned by table** and **Owned by column** so that the sequence is associated with a specific table column, such that if that column (or its whole table) is dropped, the sequence will be automatically dropped as well. The specified table must have the same owner and be in the same schema as the sequence.

Note: Support from PostgreSQL 8.2 or later.

PostgreSQL Triggers

Triggers are database operations that are automatically performed when a specified database event occurs. Click  -> **Trigger** to open an object list for **Trigger**.

See [Triggers](#) for details.

General Properties

Constraint

Check this box to create a constraint trigger.

Trigger Type

Choose the type of the trigger: Table or View.

Note: Support from PostgreSQL 9.0 or later.

Table name or View name

Choose a table or view.

BEFORE

The trigger can be specified to fire before the operation is attempted on a row.

AFTER

The trigger can be specified to fire after the operation is attempted on a row.

INSTEAD OF

The trigger can be specified to fire instead of the operation is attempted on a row.

INSERT/UPDATE/DELETE

Choose the events that activate the trigger.

Insert

The trigger is activated whenever a new row is inserted.

Update

The trigger is activated whenever a row is modified.

Delete

The trigger is activated whenever a row is deleted.

TRUNCATE

Trigger defined to fire for TRUNCATE.

Update Of Fields

Specify a list of columns. The trigger will only fire if at least one of the listed columns is mentioned as a target of the UPDATE command.

STATEMENT

Specify the trigger procedure should be fired once per SQL statement.

ROW

Specify the trigger procedure should be fired once for every row affected by the trigger event.

When

Specify a Boolean WHEN condition, which will be tested to see whether the trigger should be fired.

Note: Support from PostgreSQL 9.0 or later.

Function Schema and Function name

A user-supplied function that is declared as taking no arguments and returning type trigger, which is executed when the trigger fires.

Function Arguments

An optional comma-separated list of arguments to be provided to the function when the trigger is executed. The arguments are literal string constants. Simple names and numeric constants may be written here, too, but they will all be converted to strings. Please check the description of the implementation language of the trigger function about how the trigger arguments are accessible within the function; it may be different from normal function arguments.

Constraint

Deferrable

The constraint can be deferred.

Initially Immediate

The constraint is checked after each statement.

Initially Deferred


The constraint is checked only at the end of the transaction.

Referenced Table Schema and Referenced Table Name

The schema and the name of another table referenced by the constraint.

PostgreSQL Trigger Functions

Trigger Function can be created with PL/pgSQL and referenced within a PostgreSQL trigger definition. The term "trigger function" is simply a way of referring to a function that is intended to be invoked by a trigger. Triggers define operations that are performed when a specific event occurs within the database. A PL/pgSQL trigger function can be referenced by a trigger as the operation to be performed when the trigger's event occurs.

The definition of a trigger and the definition of its associated trigger function are two different things. A trigger is defined with the SQL *CREATE TRIGGER* command, whereas trigger functions are defined using the SQL *CREATE FUNCTION* command. Click -> **Trigger Function** to open an object list for **Trigger Function**.

See [Triggers](#) for details.

Definition

Definition consists of a valid SQL procedure statement. This can be a simple statement such as *SELECT* or *INSERT*, or it can be a compound statement written using *BEGIN* and *END*. Compound statements can contain declarations, loops, and other control structure statements.

Parameter

Define trigger function parameter.

Return type schema and Return Type

The return type of the trigger function.

Hint: To customize the view of the editor and find out more features for sql editing, see [Editor Advanced Features](#).

Advanced Properties

Owner

The owner of the trigger function.

Note: Support from PostgreSQL 8.0 or later.

Language

The name of the language that the function is implemented in. May be C, internal, or the name of a user-defined procedural language. For backward compatibility, the name may be enclosed by single quotes.

Volatility

These attributes inform the query optimizer about the behavior of the function. At most one choice may be specified. If none of these appear, VOLATILE is the default assumption.

| | |
|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| IMMUTABLE | The function cannot modify the database and always returns the same result when given the same argument values; that is, it does not do database lookups or otherwise use information not directly present in its argument list. If this option is given, any call of the function with all-constant arguments can be immediately replaced with the function value. |
| STABLE | The function cannot modify the database, and that within a single table scan it will consistently return the same result for the same argument values, but that its result could change across SQL statements. This is the appropriate selection for functions whose results depend on database lookups, parameter variables (such as the current time zone), etc. Also note that the current_timestamp family of functions qualify as stable, since their values do not change within a transaction. |
| VOLATILE | The function value can change even within a single table scan, so no optimizations can be made. Relatively few database functions are volatile in this sense; some examples are random(), curval(), timeofday(). But note that any function that has side-effects must be classified volatile, even if its result is quite predictable, to prevent calls from being optimized away; an example is setval(). |

Security of definer

Specify that the function is to be executed with the privileges of the user that created it.

Returns Set

Indicate that the function will return a set of items, rather than a single item.

Strict

Indicate that the function always returns null whenever any of its arguments are null. If this parameter is specified, the function is not executed when there are null arguments; instead a null result is assumed automatically.

Estimated cost

A positive number giving the estimated execution cost for the function, in units of cpu_operator_cost. If the function returns a set, this is the cost per returned row. If the cost is not specified, 1 unit is assumed for C-language and internal functions, and 100 units for functions in all other languages. Larger values cause the planner to try to avoid evaluating the function more often than necessary.

Note: Support from PostgreSQL 8.2 or later.

Estimated rows

A positive number giving the estimated number of rows that the planner should expect the function to return. This is only allowed when the function is declared to return a set.


Note: Support from PostgreSQL 8.2 or later.

Configuration parameter

The specified configuration parameter to be set to the specified value when the function is entered, and then restored to its prior value when the function exits.

Note: Support from PostgreSQL 8.2 or later.

PostgreSQL Types

Type registers a new data type for use in the current database. If a schema name is given then the type is created in the specified schema. Otherwise it is created in the current schema. The type name must be distinct from the name of any existing type or domain in the same schema. (Because tables have associated data types, the type name must also be distinct from the name of any existing table in the same schema.) Click -> **Type** to open an object list for **Type**.

Base types are those, like int4, that are implemented below the level of the SQL language (typically in a low-level language such as C). They generally correspond to what are often known as abstract data types. PostgreSQL can only operate on such types through functions provided by the user and only understands the behavior of such types to the extent that the user describes them. Base types are further subdivided into scalar and array types. For each scalar type, a corresponding array type is automatically created that can hold variable-size arrays of that scalar type.

Composite types, or row types, are created whenever the user creates a table; it's also possible to define a "stand-alone" composite type with no associated table. A composite type is simply a list of base types with associated field names. A value of a composite type is a row or record of field values. The user can access the component fields from SQL queries.

Enumerated (Enum) types are data types that are comprised of a static, predefined set of values with a specific order. They are equivalent to the enum types in a number of programming languages. An example of an enum type might be the days of the week, or a set of status values for a piece of data.

Note: Enum Type was added in PostgreSQL 8.3.

General Properties for Base Type

Input Schema and Input

The function that converts data from the type's external textual form to its internal form.

Output Schema and Output

The function that converts data from the type's internal form to its external textual form.

Length

A numeric constant that specifies the length in bytes of the new type's internal representation. The default assumption is that it is variable-length.

Variable

Check this option if the type length is unknown.

Default

The default value for the data type. If this is omitted, the default is null.

Element

The type being created is an array; this specifies the type of the array elements.

Delimiter

The delimiter character to be used between values in arrays made of this type.

Alignment

The storage alignment requirement of the data type. If specified, it must be char, int2, int4, or double; the default is int4.

Storage

The storage strategy for the data type. If specified, must be plain, external, extended, or main; the default is plain.

Pass by value

Indicate that values of this data type are passed by value rather than by reference.

Owner

The owner of the type.

Note: Support from PostgreSQL 8.0 or later.

Advanced Properties for Base Type

The **Advanced** tab is supported from PostgreSQL 7.4 or later.

Receive Schema and **Receive**

The function that converts data from the type's external binary form to its internal form.

Send Schema and **Send**

The function that converts data from the type's internal form to its external binary form.

Analyze Schema and **Analyze**

The function that performs statistical analysis for the data type.

Note: Support from PostgreSQL 8.0 or later.

Type Modifier Input Schema and **Type Modifier Input**

The function that converts an array of modifier(s) for the type into internal form.

Note: Support from PostgreSQL 8.3 or later.

Type Modifier Output Schema and **Type Modifier Output**

The function that converts the internal form of the type's modifier(s) to external textual form.

Note: Support from PostgreSQL 8.3 or later.

General Properties for Composite Type

Name

The name of an attribute (column) for the composite type.

Type

The name of an existing data type to become a column of the composite type.

Length and Scale

Use the **Length** edit box to define the length of the field and use **Scale** edit box to define the number of digits after the decimal point.
(if required for the selected data type)

Dimensions

The dimensions of array specifiers.

Owner

The owner of the type.

Note: Support from PostgreSQL 8.0 or later.

General Properties for Enum Type


Label

A string literal representing the textual label associated with one value of an enum type.

Owner

The owner of the type.

PostgreSQL Tablespaces

A tablespace allows superusers to define an alternative location on the file system where the data files containing database objects (such as tables and indexes) may reside. Click -> **Tablespace** to open an object list for **Tablespace**.

Note: Tablespace was added in PostgreSQL 8.0.

The **Comment** tab is supported from PostgreSQL 8.2 or later.

General Properties


Location

The directory that will be used for the tablespace. The directory must be empty and must be owned by the PostgreSQL system user.
The directory must be specified by an absolute path name.

Owner

The name of the user who will own the tablespace. If omitted, defaults to the user executing the command. Only superusers may create tablespaces, but they can assign ownership of tablespaces to non-superusers.

PostgreSQL Casts

A cast specifies how to perform a conversion between two data types. Click -> **Cast** to open an object list for **Cast**.

Note: The **Comment** tab is supported from PostgreSQL 8.0 or later.

General Properties

Schema of source type and Source type

The schema and name of the source data type of the cast.

Schema of target type and Target type

The schema and name of the target data type of the cast.

Schema of function and Function

The function used to perform the cast. The function name may be schema-qualified. If it is not, the function will be looked up in the schema search path. The function's result data type must match the target type of the cast.

If no function is specify, indicates that the source type and the target type are binary compatible, so no function is required to perform the cast.


Implicit

Indicate that the cast may be invoked implicitly in any context.

Assignment

Indicate that the cast can be invoked implicitly in assignment contexts.

PostgreSQL Languages

Language can register a new procedural language with a PostgreSQL database. Subsequently, functions and trigger procedures can be defined in this new language. The user must have the PostgreSQL superuser privilege to register a new language. Click -> **Language** to open an object list for **Language**.

Note: The **Comment** tab is supported from PostgreSQL 8.0 or later.

General Properties

Owner

The owner of the language.

Note: Support from PostgreSQL 8.3 or later.

Schema of handler and Handler

Call Handler is the name of a previously registered function that will be called to execute the procedural language functions. The call handler for a procedural language must be written in a compiled language such as C with version 1 call convention and registered with PostgreSQL as a function taking no arguments and returning the *language_handler* type, a placeholder type that is simply used to identify the function as a call handler.

Schema of validator and Validator

Validator function is the name of a previously registered function that will be called when a new function in the language is created, to validate the new function. If no validator function is specified, then a new function will not be checked when it is created. The validator function must take one argument of type oid, which will be the OID of the to-be-created function, and will typically return void.

A validator function would typically inspect the function body for syntactical correctness, but it can also look at other properties of the function, for example if the language cannot handle certain argument types. To signal an error, the validator function should use the ereport() function. The return value of the function is ignored.

Trusted

Specify that the call handler for the language is safe, that is, it does not offer an unprivileged user any functionality to bypass access restrictions. If this key word is omitted when registering the language, only users with the PostgreSQL superuser privilege can use this language to create new functions.

SQLite Objects

To start working with the server objects, you should create and open a connection.

You can attach a database, right-click the opened connection and choose **Attach Database** and enter the following information.

| Option | Description |
|---------------|-------------------------------------------------------------------------------------------------|
| Database File | Set the file path for a database. |
| Database Name | Enter the database name which displays in Navicat. |
| Encrypted | Enable this option and provide Password when connecting to an encrypted SQLite database. |


To detach a database, right-click it in the connection tree and choose **Detach Database**.



If you want to encrypt or decrypt a database, simply right-click it in the connection tree and choose **Encrypt Database** or **Decrypt Database**.

A special table named sqlite_master stores the complete database schema. To view the sqlite_master table, right-click the database and select **View Master Table** from the popup menu.

SQLite Tables

Relational databases use tables to store data. All operations on data are done on the tables themselves or produce another table as the result. A table is a set of rows and columns, and their intersections are fields. From a general perspective, columns within a table

describe the name and type of data that will be found by row for that column's fields. Rows within a table represent records composed of fields that are described from left to right by their corresponding column's name and type. Each field in a row is implicitly correlated with each other field in that row. Click  to open an object list for **Table**.







When open a table with graphical fields, right-click a table and select the  **Open Table (Quick)** from the popup menu. Faster performance for opening the graphical table, as BLOB fields (images) will not be loaded until you click on the cell. If you do wish Navicat loads all your images while opening the table, use  **Open Table**.

You can create a table shortcut by right-click a table in object list and select **Create Open Table Shortcut** from the popup menu. This option is used to provide a convenient way for you to open your table for entering data directly without activating the main Navicat.

To empty a table, right-click the selected table and choose **Empty Table** from the popup menu.

SQLite Table Fields

In the **Fields** tab, just simply click a field for editing. A right-click displays the popup menu or using field toolbar, you can create new, insert, move and drop the selected field. To search a field name, choose **Edit** -> **Find** or press CTRL+F.

| Button | Description |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|
|  Add Field | Add a field to the table. |
|  Insert Field | Insert a field above an existing field. |
|  Delete Field | Delete the selected field. |
|  Primary Key | Set the field as a Primary Key. |
|  Move Up/  Move Down | Move the selected field up/down. |

Use the **Name** edit box to set the field name. Note that the name of the field must be unique among all the field names in the table.

The **Type** dropdown list defines the type (storage class) of the field data. See [SQLite 2 Data Types](#) and [SQLite 3 Data Types](#) for details.

Use the **Length** edit box to define the length of the field and use **Decimals** edit box to define the number of digits after the decimal point (the scale).

Not null

Check this box to not allow the NULL values for the field.

Primary Key

A Primary Key is a single field or combination of fields that uniquely defines a record. None of the fields that are part of the primary key can contain a null value.

Field's Properties

Note: The following options depend on the field type you are chosen.

Default

To set the default value for the field.

Collation

To specify the text collating function to use when comparing text entries for the column.

| | |
|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| BINARY | Compare string data using memcmp(), regardless of text encoding. |
| NOCASE | The same as binary, except the 26 upper case characters of ASCII are folded to their lower case equivalents before the comparison is performed. Note that only ASCII characters are case folded. SQLite does not attempt to do full UTF case folding due to the size of the tables required. |
| RTRIM | The same as binary, except that trailing space characters are ignored. |

Note: Support in SQLite 3.

Not null ON CONFLICT

To specify an algorithm used to resolve constraint conflicts if **Not null** option is checked.

| | |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ROLLBACK | When a constraint violation occurs, an immediate ROLLBACK occurs, thus ending the current transaction, and the command aborts with a return code of SQLITE_CONSTRAINT. If no transaction is active (other than the implied transaction that is created on every command) then this algorithm works the same as ABORT. |
| ABORT | When a constraint violation occurs, the command backs out any prior changes it might have made and aborts with a return code of SQLITE_CONSTRAINT. But no ROLLBACK is executed so changes from prior commands within the same transaction are preserved. This is the default behavior. |
| FAIL | When a constraint violation occurs, the command aborts with a return code SQLITE_CONSTRAINT. But any changes to the database that the command made prior to encountering the constraint violation are preserved and are not backed out. For example, if an UPDATE statement encountered a constraint violation on the 100th row that it attempts to update, then the first 99 row changes are preserved but changes to rows 100 and beyond never occur. |
| IGNORE | When a constraint violation occurs, the one row that contains the constraint violation is not inserted or changed. But the command continues executing normally. Other rows before and after the row that contained the constraint violation continue to be inserted or updated normally. No error is returned when the IGNORE conflict resolution algorithm is used. |
| REPLACE | When a UNIQUE constraint violation occurs, the pre-existing rows that are causing the constraint violation are removed prior to inserting or updating the current row. Thus the insert or update always occurs. The command continues executing normally following REPLACE. No error is returned by the REPLACE conflict resolution. If a NOT NULL constraint violation occurs, the NULL value is replaced by the default value for that column. If the column has no default value, then the ABORT algorithm is used. If a CHECK constraint violation occurs then the IGNORE algorithm is used. |



Auto Increment

The AUTO INCREMENT attribute can be used to generate a unique identity for new rows. To start with the AUTO INCREMENT value other than 1, you can set that value in Options tab.


SQLite Table Indexes

Index provides a faster access path to table data. It is created using one or more columns of a table to speed SQL statement execution on that table.

In the **Indexes** tab, just simply click an index field for editing. By using the index toolbar, you can create new, edit and delete the selected index field.

| Button | Description |
|------------------------------------------------------------------------------------------------|----------------------------|
|  Add Index | Add an index to the table. |
|  Delete Index | Delete the selected index. |

Use the **Name** edit box to set the index name.

To include field(s) in the index, just simply double-click the **Fields** or click  to open the editor for editing.

Unique

All values of the indexed column(s) must only occur once.

Fields Editor

Select the field(s) from the **Name** list. You can also use the arrow buttons to change the index field(s) order.

Collation

To define a collating sequence used for text entries in that column. The default collating sequence is the collating sequence defined for that column.

| | |
|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| BINARY | Compares string data using memcmp(), regardless of text encoding. |
| NOCASE | The same as binary, except the 26 upper case characters of ASCII are folded to their lower case equivalents before the comparison is performed. Note that only ASCII characters are case folded. SQLite does not attempt to do full UTF case folding due to the size of the tables required. |
| RTRIM | The same as binary, except that trailing space characters are ignored. |

Note: Support in SQLite 3.



Sort Order

To indicate sort order - ascending "ASC" or descending "DESC".

SQLite Table Foreign Keys


A foreign key is a field in a relational table that matches the primary key column of another table.

In the **Foreign Keys** tab, just simply click a foreign key field for editing. By using the foreign key toolbar, you can create new, edit and delete the selected foreign key field.

| Button | Description |
|------------------------------------------------------------------------------------------------------|----------------------------------|
|  Add Foreign Key | Add a foreign key to the table. |
|  Delete Foreign Key | Delete the selected foreign key. |

Use the **Name** edit box to enter a name for the new key.

Use the **Referenced Table** dropdown list to select a foreign table.

To include field(s)/referenced field(s) to the key, just simply double-click the **Fields/Referenced Fields** field or click  to open the editor(s) for editing.

The **On Delete** and **On Update** dropdown list define the type of the actions to be taken.

| | |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| RESTRICT | The "RESTRICT" action means that the application is prohibited from deleting (for ON DELETE RESTRICT) or modifying (for ON UPDATE RESTRICT) a parent key when there exists one or more child keys mapped to it. |
| NO ACTION | Configuring "NO ACTION" means just that: when a parent key is modified or deleted from the database, no special action is taken. |
| CASCADE | A "CASCADE" action propagates the delete or update operation on the parent key to each dependent child key. For an "ON DELETE CASCADE" action, this means that each row in the child table that was associated with the deleted parent row is also deleted. For an "ON UPDATE CASCADE" action, it means that the values stored in each dependent child key are modified to match the new parent key values. |
| SET NULL | If the configured action is "SET NULL", then when a parent key is deleted (for ON DELETE SET NULL) or modified (for ON UPDATE SET NULL), the child key columns of all rows in the child table that mapped to the parent key are set to contain SQL NULL values. |
| SET DEFAULT | The "SET DEFAULT" actions are similar to "SET NULL", except that each of the child key columns is set to contain the columns default value instead of NULL. |

Deferred

Deferred foreign key constraints are not checked until the transaction tries to COMMIT.


Related topic:


[Foreign Keys Data Selection](#)

SQLite Table Uniques

Unique constraints ensure that the data contained in a column or a group of columns is unique with respect to all the rows in the table.

In the **Uniques** tab, just simply click an unique field for editing. By using the unique toolbar, you can create new, edit and delete the selected unique field.

| Button | Description |
|------------------------------------------------------------------------------------------------|-----------------------------|
|  Add Unique | Add an unique to the table. |

| | |
|-------------------------------------------------------------------------------------------------|-----------------------------|
|  Delete Unique | Delete the selected unique. |
|-------------------------------------------------------------------------------------------------|-----------------------------|

Use the **Name** edit box to set the unique name.

To set field(s) as unique, just simply double-click the **Fields** field or click  to open the editor(s) for editing.

ON CONFLICT

To specify an algorithm used to resolve constraint conflicts.

| | |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ROLLBACK | When a constraint violation occurs, an immediate ROLLBACK occurs, thus ending the current transaction, and the command aborts with a return code of SQLITE_CONSTRAINT. If no transaction is active (other than the implied transaction that is created on every command) then this algorithm works the same as ABORT. |
| ABORT | When a constraint violation occurs, the command backs out any prior changes it might have made and aborts with a return code of SQLITE_CONSTRAINT. But no ROLLBACK is executed so changes from prior commands within the same transaction are preserved. This is the default behavior. |
| FAIL | When a constraint violation occurs, the command aborts with a return code SQLITE_CONSTRAINT. But any changes to the database that the command made prior to encountering the constraint violation are preserved and are not backed out. For example, if an UPDATE statement encountered a constraint violation on the 100th row that it attempts to update, then the first 99 row changes are preserved but changes to rows 100 and beyond never occur. |
| IGNORE | When a constraint violation occurs, the one row that contains the constraint violation is not inserted or changed. But the command continues executing normally. Other rows before and after the row that contained the constraint violation continue to be inserted or updated normally. No error is returned when the IGNORE conflict resolution algorithm is used. |
| REPLACE | When a UNIQUE constraint violation occurs, the pre-existing rows that are causing the constraint violation are removed prior to inserting or updating the current row. Thus the insert or update always occurs. The command continues executing normally following REPLACE. No error is returned by the REPLACE conflict resolution. If a NOT NULL constraint violation occurs, the NULL value is replaced by the default value for that column. If the column has no default value, then the ABORT algorithm is used. If a CHECK constraint violation occurs then the IGNORE algorithm is used. |

Fields Editor

Select the field(s) from the **Name** list. To remove the fields from the unique, uncheck them in the same way. You can also use the arrow buttons to change the unique field(s) order.

Collation

To define a collating sequence used for text entries in that column. The default collating sequence is the collating sequence defined for that column.

| | |
|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| BINARY | Compares string data using memcmp(), regardless of text encoding. |
| NOCASE | The same as binary, except the 26 upper case characters of ASCII are folded to their lower case equivalents before the comparison is performed. Note that only ASCII characters are case folded. SQLite does not |

| | |
|-------|-----------------------------------------------------------------------------|
| | attempt to do full UTF case folding due to the size of the tables required. |
| RTRIM | The same as binary, except that trailing space characters are ignored. |

Note: Support in SQLite 3.

Sort Order



To indicate sort order - ascending "ASC" or descending "DESC".

SQLite Table Checks

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

In the **Checks** tab, just simply click a check field for editing. By using the check toolbar, you can create new, edit and delete the selected check field.

Note: Checks are supported from SQLite version 3.3.0 or later.

| Button | Description |
|-------------------------------------------------------------------------------------------------|----------------------------|
|  Add Check | Add a check to the table. |
|  Delete Check | Delete the selected check. |

Use the **Name** edit box to set the check name.

Check

Set the condition for checking, e.g. "field_name1 > 0 AND field_name2 > field_name1" in the **Check** edit box.



Definition

Type in the definition for the check constraint.

SQLite Table Triggers

A trigger is a database operation that is automatically performed when a specified database event occurs.

In the **Triggers** tab, just simply click a trigger field for editing. By using the trigger toolbar, you can create new, edit and delete the selected trigger field.

| Button | Description |
|----------------------------------------------------------------------------------------------------|------------------------------|
|  Add Trigger | Add a trigger to the table. |
|  Delete Trigger | Delete the selected trigger. |

Name

Set the trigger name.

Fires

Determine when the trigger actions will be executed relative to the insertion, modification or removal of the associated row.

Insert

Fire the trigger whenever an INSERT statement adds a row to a table.

Update

Fire the trigger whenever an UPDATE statement changes a value in one of the columns specified in **Update Of Fields**. If no **Update Of Fields** are present, the trigger will be fired whenever an UPDATE statement changes a value in any column of the table.

Delete

Fire the trigger whenever a DELETE statement removes a row from the table.

Update Of Fields

Specify the fields for UPDATE statement trigger upon necessary.

Definition

Type in the definition for the trigger.

When Clause

Specify the trigger condition, which is a SQL condition that must be satisfied for the database to fire the trigger.

SQLite Table Options

Primary Key ON CONFLICT

To specify an algorithm used to resolve primary key constraint conflicts.


| | |
|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ROLLBACK | When a constraint violation occurs, an immediate ROLLBACK occurs, thus ending the current transaction, and the command aborts with a return code of SQLITE_CONSTRAINT. If no transaction is active (other than the implied transaction that is created on every command) then this algorithm works the same as ABORT. |
| ABORT | When a constraint violation occurs, the command backs out any prior changes it might have made and aborts with a return code of SQLITE_CONSTRAINT. But no ROLLBACK is executed so changes from prior commands within the same transaction are preserved. This is the default behavior. |
| FAIL | When a constraint violation occurs, the command aborts with a return code SQLITE_CONSTRAINT. But any changes to the database that the command made prior to encountering the constraint violation are preserved and are not backed out. For example, if an UPDATE statement encountered a constraint violation on the 100th row that it attempts to update, then the first 99 row changes are preserved but changes to rows 100 and beyond never occur. |
| IGNORE | When a constraint violation occurs, the one row that contains the constraint violation is not inserted or changed. But the command continues executing normally. Other rows before and after the row that contained the constraint violation continue to be inserted or updated normally. No error is returned when the IGNORE conflict resolution algorithm is used. |
| REPLACE | When a UNIQUE constraint violation occurs, the pre-existing rows that are causing the constraint violation are |

removed prior to inserting or updating the current row. Thus the insert or update always occurs. The command continues executing normally following REPLACE. No error is returned by the REPLACE conflict resolution. If a NOT NULL constraint violation occurs, the NULL value is replaced by the default value for that column. If the column has no default value, then the ABORT algorithm is used. If a CHECK constraint violation occurs then the IGNORE algorithm is used.




Auto Increment

Set/Reset the **Auto Increment** value in the edit field. The auto increment value indicates the value for next record.

SQLite Views

Views are useful for allowing users to access a set of 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). Click  to open an object list for **View**.

You can create a view shortcut by right-click a view in object list and select **Create Open View Shortcut** from the popup menu. This option is used to provide a convenient way for you to open your view directly without activating the main Navicat.

| Button | Description |
|--------------------------------------------------------------------------------------------------|------------------------------------------------------------|
|  Preview | Preview the result of the view. |
|  Explain | Show the Query Plan of the view. |
|  Beautify SQL | Format the codes with the Beautify SQL settings in Editor. |

Note: You can choose to show the Result tab below the editor or in a new tab by selecting **View -> Show Result -> Below Query Editor** or **In a New Tab**.

View Builder (Available only in Full Version)

View Builder allows you to build views visually. It allows you to create and edit views without knowledge of SQL. See [Query Builder](#) for details.

Definition


You can edit the view definition as SQL statement (SELECT statement it implements).

Hint: To customize the view of the editor and find out more features for sql editing, see [Editor Advanced Features](#).

View Viewer

View Viewer displays the view data as a grid. Data can be displayed in two modes: **Grid View** and **Form View**. See [Table Viewer](#) for details.

SQLite Indexes

Index provides a faster access path to table data. It is created using one or more columns of a table to speed SQL statement execution on that table. Click  to open an object list for **Index**.

General Properties

Type

The types of the index.

| | |
|--------|-------------------------------------------------------------------------------------------------|
| Normal | A normal index does not impose restrictions on the column values. |
| Unique | An unique index indicates that no two rows of a table have duplicate values in the key columns. |

Table name

The table that contains the index.

Name

To define the field.

Collate

To define a collating sequence used for text entries in that column. The default collating sequence is the collating sequence defined for that column.


| | |
|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| BINARY | Compare string data using memcmp(), regardless of text encoding. |
| NOCASE | The same as binary, except the 26 upper case characters of ASCII are folded to their lower case equivalents before the comparison is performed. Note that only ASCII characters are case folded. SQLite does not attempt to do full UTF case folding due to the size of the tables required. |
| RTRIM | The same as binary, except that trailing space characters are ignored. |

Note: Support in SQLite 3.

Sort Order

To indicate sort order - ascending "ASC" or descending "DESC".

SQLite Triggers

Triggers are database operations that are automatically performed when a specified database event occurs. Click  to open an object list for **Trigger**.

See [Triggers](#) for details.

General Properties

Trigger Type

Define the trigger type: TABLE or VIEW.

Table name or View name

Choose a table or view.

BEFORE

The trigger can be specified to fire before the operation is attempted on a row.

AFTER

The trigger can be specified to fire after the operation is attempted on a row.

INSTEAD OF

The trigger can be specified to fire instead of the operation is attempted on a row.

When

Specify the trigger condition for the database to fire the trigger.

Insert

The trigger is activated whenever adding a row to a table.

Delete

The trigger is activated whenever removing a row from the table.

Update

The trigger is activated whenever changing a value in one of the fields selected in **Update Of Fields**.

Update Of Fields

Specify the fields for UPDATE statement trigger upon necessary.

Definition

You can edit valid SQL statements in the trigger definition inside *BEGIN* and *END*.

SQL Server Objects

To start working with the server objects, you should create and open a connection. If the server is empty, you need to right-click the connection in the connection tree and choose **New Database** to create a new database.

Note: SQL Azure does not support **Comment** tab.

General Properties for SQL Azure

Database Name

Define the name of the database.

Edition

Choose the edition of the database: web or business.

Max Size

Choose the maximum size of the database.

General Properties for SQL Server

Database Name

Define the name of the database.

Owner

Choose the owner of the database.

Collation

Choose the default collation for the database. Collation name can be either a Windows collation name or a SQL collation name. If not specified, the database is assigned the default collation of the instance of SQL Server. A collation name cannot be specified on a database snapshot.

Recovery Model

Control database recovery options and disk I/O error checking.

| | |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| FULL | Provide full recovery after media failure by using transaction log backups. If a data file is damaged, media recovery can restore all committed transactions. |
| BULK_LOGGED | Provide recovery after media failure by combining the best performance and least amount of log-space use for certain large-scale or bulk operations. |
| SIMPLE | A simple backup strategy that uses minimal log space is provided. Log space can be automatically reused when it is no longer required for server failure recovery. |

Compatibility Level

Choose the version of SQL Server with which the database is to be made compatible.

Filegroups Properties for SQL Server

Filegroups

Add or delete a filegroup. PRIMARY filegroup cannot be deleted.

FILESTREAM Filegroups

Add or delete a FILESTREAM filegroup.

Note: Support from SQL Server 2008 or later.

Files Properties for SQL Server

Name

Specify the logical name for the file.

Type

Choose the file type.

Filegroup

Choose the filegroup.

File Directory

The path used by the operating system when you create the file.

File Name

The file name used by the operating system when you create the file.

Size

Specify the size of the file.

Allow Auto Growth

Check this option if you want to allow automatic growth.

Growth

Specify the automatic growth increment of the file.

Max Size

Specify the maximum size to which the file can grow.

Unlimited

Specify that the file grows until the disk is full. In SQL Server, a log file specified with unlimited growth has a maximum size of 2 TB, and a data file has a maximum size of 16 TB.

Advanced Properties (State) for SQL Server

Database Read-Only

If this option is on, users can read data from the database but not modify it.

Database State

Choose the state of the database.

| | |
|---------|---------------------------------------------------------------------------------------------------------------------|
| OFFLINE | The database is closed, shut down cleanly, and marked offline. The database cannot be modified while it is offline. |
|---------|---------------------------------------------------------------------------------------------------------------------|

| | |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ONLINE | The database is open and available for use. |
| EMERGENCY | The database is marked READ_ONLY, logging is disabled, and access is limited to members of the sysadmin fixed server role. EMERGENCY is primarily used for troubleshooting purposes. |

Restrict Access

Control user access to the database.

| | |
|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SINGLE_USER | Specifies that only one user at a time can access the database. |
| RESTRICTED_USER | RESTRICTED_USER allows for only members of the db_owner fixed database role and dbcreator and sysadmin fixed server roles to connect to the database, but does not limit their number. |
| MULTI_USER | All users that have the appropriate permissions to connect to the database are allowed. |

Encryption Enabled

Check this option if you want to encrypt the database.

Note: Support from SQL Server 2008 or later.

Advanced Properties (SQL) for SQL Server

ANSI Null Default

Check this option if you want to determines the default value as NULL.

ANSI Nulls Enabled

If this option is on, all comparisons to a null value evaluate to UNKNOWN.

ANSI Padding Enabled

If this option is on, strings are padded to the same length before conversion or inserting to a varchar or nvarchar data type.

ANSI Warnings Enabled

If this option is on, errors or warnings are issued when conditions such as divide-by-zero occur or null values appear in aggregate functions.

Arithmetic Abort Enabled

If this option is on, a query is ended when an overflow or divide-by-zero error occurs during query execution.

Concatenate Null Yields Null

If this option is on, the result of a concatenation operation is NULL when either operand is NULL.

Numeric Round Abort

If this option is on, an error is generated when loss of precision occurs in an expression.

Quoted Identifiers Enabled

If this option is on, double quotation marks can be used to enclose delimited identifiers.

Recursive Triggers Enabled

If this option is on, Recursive firing of AFTER triggers is allowed.

Advanced Properties (Cursor) for SQL Server

Close Cursor On Commit Enabled

If this option is on, any cursors open when a transaction is committed or rolled back are closed.

Default Cursor

| | |
|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| LOCAL | When LOCAL is specified and a cursor is not defined as GLOBAL when created, the scope of the cursor is local to the batch, stored procedure, or trigger in which the cursor was created. The cursor name is valid only within this scope. The cursor can be referenced by local cursor variables in the batch, stored procedure, or trigger, or a stored procedure OUTPUT parameter. The cursor is implicitly deallocated when the batch, stored procedure, or trigger ends, unless it was passed back in an OUTPUT parameter. If the cursor is passed back in an OUTPUT parameter, the cursor is deallocated when the last variable that references it is deallocated or goes out of scope. |
| GLOBAL | When GLOBAL is specified, and a cursor is not defined as LOCAL when created, the scope of the cursor is global to the connection. The cursor name can be referenced in any stored procedure or batch executed by the connection. |

Advanced Properties (Automatic) for SQL Server

Auto Close

If this option is on, the database is shut down cleanly and its resources are freed after the last user exits.

Auto Create Statistics

If this option is on, the query optimizer creates statistics on single columns in query predicates, as necessary, to improve query plans and query performance.

Auto Shrink

If this option is on, the database files are candidates for periodic shrinking.

Auto Update Statistics

Specify that the query optimizer updates statistics when they are used by a query and when they might be out-of-date.

Auto Update Statistics Asynchronously

Specify that statistics updates for the AUTO_UPDATE_STATISTICS option are asynchronous. The query optimizer does not wait for statistics updates to complete before it compiles queries.

Note: Support from SQL Server 2005 or later.

Advanced Properties (Recovery) for SQL Server

Page Verify

Discover damaged database pages caused by disk I/O path errors. Disk I/O path errors can be the cause of database corruption problems and are generally caused by power failures or disk hardware failures that occur at the time the page is being written to disk.

| | |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| NONE | Database page writes will not generate a CHECKSUM or TORN_PAGE_DETECTION value. SQL Server will not verify a checksum or torn page during a read even if a CHECKSUM or TORN_PAGE_DETECTION value is present in the page header. |
| TORN_PAGE_DETECTION | Save a specific 2-bit pattern for each 512-byte sector in the 8-kilobyte (KB) database page and stored in the database page header when the page is written to disk. |
| CHECKSUM | Calculate a checksum over the contents of the whole page and stores the value in the page header when a page is written to disk. |

Advanced Properties (Service Broker) for SQL Server

Note: Support from SQL Server 2005 or later.

Broker Enabled

Specify that Service Broker is enabled for the specified database. Message delivery is started, and the `is_broker_enabled` flag is set to true in the `sys.databases` catalog view. The database retains the existing Service Broker identifier.

Honor Broker Priority

Send operations take into consideration the priority levels that are assigned to conversations. Messages from conversations that have high priority levels are sent before messages from conversations that are assigned low priority levels.

Note: Support from SQL Server 2008 or later.

Advanced Properties (Change Tracking) for SQL Server

Note: Support from SQL Server 2008 or later.

Change Tracking Enabled

Enable change tracking for the database.

Retention Period

Specify the minimum period for keeping change tracking information in the database. Data is removed only when **Auto Clean Up** is checked.

Auto Clean Up

Change tracking information is automatically removed after the specified retention period.

Advanced Properties (Miscellaneous) for SQL Server

Note: Support from SQL Server 2005 or later.

Cross Database Ownership Chaining Enabled

If this option is on, database can be the source or target of a cross-database ownership chain.

Trustworthy

If this option is on, database modules (for example, user-defined functions or stored procedures) that use an impersonation context can access resources outside the database.

Date Correlation Optimization Enabled

SQL Server maintains correlation statistics between any two tables in the database that are linked by a FOREIGN KEY constraint and have datetime columns.


Parameterization

| | |
|--------|--------------------------------------------------------------------------|
| SIMPLE | Queries are parameterized based on the default behavior of the database. |
| FORCED | SQL Server parameterizes all queries in the database. |

VarDecimal Storage Enabled

Indicate that decimal and numeric data types are stored by using the vardecimal storage format.

SQL Server Backup/Restore (Available only in Full Version)

You can backup and restore your SQL Server databases. The SQL Server backup and restore component provides an important safeguard for protecting critical data. Click  to open an object list for **SQL Server Backup**.

Note: The backup file is stored in the server.

SQL Server Backup

Before starting the backup process, click **Generate SQL** button to review the SQL. Then, you can click the **Backup** button to run it. If you want to backup with the setting of an existing backup file, you can right-click a backup file in the object list and choose **Backup From This Setting**.

You can save the backup settings to a profile. Simply click the **Save** button.

Hint: The profiles(.nspb) are saved under the [Settings Location](#).

To show the hidden tabs (advanced options), check the **Show Advanced Options** box.

General Properties

Backup Set Name

Specify the name of the backup set.

Description

Specify the free-form text describing the backup set.

Backup Type

| | |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| Full Backup | Perform a full backup. |
| Differential Backup | Specify that the database or file backup should consist only of the portions of the database or file changed since the last full backup. |
| Transaction-Log Backup | Specify a backup of the transaction log only. Note: Support from SQL Server 2012 or later and SQL Azure. |

Copy-only

Specify that the backup is a copy-only backup, which does not affect the normal sequence of backups.

New Media Set

Create a new media set for the backup. To add a [Backup Device](#) or file to the list, click the **Add device** button.

Existing Media Set

Choose an existing media set for the backup.

File and Filegroups Properties for Full and Differential Backups

Choose the **Backup Components: Full Database Backup, Partial Backup** or **Specify files and filegroups**.

Advanced Properties

Expire After Days

Specify the number of days that must elapse before this backup media set can be overwritten.

Expire On

Specify when the backup set expires and can be overwritten.

Password

Set the password for the backup set.

Format media set

Specify that a new media set be created.

New Name

The name of the new media set.

Description

Specify the free-form text description of the media set.

Overwrite all backups

Specify that all backup sets should be overwritten, but preserves the media header.

Check media name and backup set expiration

Control whether a backup operation checks the expiration date and time of the backup sets on the media before overwriting them.

Media Set Name

Specify the media name for the entire backup media set.

Password

Set the password for the media set.

Truncate the transaction log

Choose this option to truncate the transaction log.

Backup the tail log and set database to recovery state

Choose this option to back up the tail of the log and leaves the database in the RESTORING state.

Verify backup

Check this options to verify the backup.

Perform checksum

Enable the backup checksums.

Continue on error

Instruct backup to continue despite encountering errors such as invalid checksums or torn pages.

Compression

Specify whether backup compression is performed on this backup.

Note: Support from SQL Server 2008 or later and SQL Azure.

SQL Server Restore

Before starting the restore process, click **Generate SQL** button to review the SQL. Then, you can click the **Restore** button to run it. If you want to restore from a file that is not listed in the object list, you can right-click anywhere in object list and choose **Restore From File**.

General Properties for Restore Backup

Restore to database

Select the database to restore.

General Properties for Restore from File

Restore to database

Select the database to restore.

Source of backup set

To add a [Backup Device](#) or file to the list, click the **Add device** button.

Latest possible

Choose this option if do not have the restore point.

Specific time

Specify that the database be restored to the state it was in as of the date and time.

Marked transaction

Specify recovery to a specified recovery point.

Include marked transaction

The specified transaction is included in the recovery, but it is committed only if it was originally committed when the transaction was actually generated.

Restore plan

Select the database backup files in the list.

Advanced Properties

Restore database files to

Specify that the data or log file should be moved by restoring it to the location specified in **Restore To**.

WITH REPLACE

Specify that SQL Server should create the specified database and its related files even if another database already exists with the same name.

WITH RESTRICTED_USER

Restrict access for the newly restored database to members of the db_owner, dbcreator, or sysadmin roles.

WITH KEEP_REPLICATION

KEEP_REPLICATION should used when setting up replication to work with log shipping.

RECOVERY

Roll back all uncommitted transactions. After the recovery process, the database is ready for use.

NORECOVERY

Do not roll back the uncommitted transactions.

STANDBY

Specify a **Standby file** that allows the recovery effects to be undone.

SQL Server Schemas

A schema contains named objects (tables, views, functions, etc) whose names may duplicate those of other objects existing in other schemas. The schema name must be distinct from any existing schema name in the current database.

Note: SQL Server 2000 or below does not support edit, create and delete schema.

SQL Azure does not support the **Comment** tab.

General Properties


Schema Name



The name of a schema which is identified within the database.

Owner

The name of the database-level principal that will own the schema. This principal may own other schemas, and may not use the current schema as its default schema.

SQL Server Tables

Tables are database objects that contain all the data in a database. A table definition is a collection of columns. In tables, data is organized in a row-and-column format similar to a spreadsheet. Each row represents a unique record, and each column represents a field within the record. Click  to open an object list for **Table**.

When open a table with graphical fields, right-click a table and select the  **Open Table (Quick)** from the popup menu. Faster performance for opening the graphical table, as BLOB fields (images) will not be loaded until you click on the cell. If you do wish Navicat loads all your images while opening the table, use  **Open Table**.




You can create a table shortcut by right-click a table in object list and select **Create Open Table Shortcut** from the popup menu. This option is used to provide a convenient way for you to open your table for entering data directly without activating the main Navicat.

To empty a table, right-click the selected table and choose **Empty Table** from the popup menu.

Note: SQL Azure does not support the **Storage** and **Comment** tab.

SQL Server Table Fields

In the **Fields** tab, just simply click a field for editing. A right-click displays the popup menu or using the field toolbar, you can create new and drop the selected field. To search a field name, choose **Edit** -> **Find** or press CTRL+F.

| Button | Description |
|------------------------------------------------------------------------------------------------|---------------------------------|
|  Add Field | Add a field to the table. |
|  Delete Field | Delete the selected field. |
|  Primary Key | Set the field as a Primary Key. |

Use the **Name** edit box to set the field name. Note that the name of the field must be unique among all the field names in the table.

The **Type** dropdown list defines the type of the field data. See [SQL Server Data Type](#) and [SQL Azure Support Data Type](#) for details.

Use the **Length** edit box to define the length of the field and use **Scale** edit box to define the number of digits after the decimal point (the scale) for Floating Point data type.

Note: Be careful when shortening the field length as losing data might be caused.

Not null

Check this box to not allow the NULL values for the field.



Primary Key

A Primary Key is a single field or combination of fields that uniquely defines a record. None of the fields that are part of the primary key can contain a null value.

Field's Pop-up Options

| | |
|--------------------------|------------------------------------------------------------------|
| Duplicate Field | Add a new field with modification as one of the existing fields. |
| Primary Key Name | Enter the primary key constraint name. |
| Design Primary Key Index | Design the primary key index. |

Field's Properties

Note: The following options depend on the field type you are chosen.

Identity

Indicate that the new column is an identity column.

Row GUID

Indicate that the new column is a row GUID column. Only one uniqueidentifier column per table can be designated as the ROWGUIDCOL column.

Note: SQL Azure does not support.

Collation

Specify the collation for the column.

Column Set For All Sparse Columns

Combine all of the sparse columns of a table into a structured output.

Note: Support from SQL Server 2008 or later.

File Stream

Specify FILESTREAM storage for the varbinary(max) BLOB data.

Note: Support from SQL Server 2008 or later.

User Defined Type Schema

Set the schema of the user defined type.

User Defined Type

Set the user defined type.

Computed Expression

Set an expression that defines the value of a computed column.

Persisted

Specify that the SQL Server Database Engine will physically store the computed values in the table, and update the values when any other columns on which the computed column depends are updated.

Default

Set the default value for the field.

With Values

Check this to enable the with values option.

Sparse

Indicate that the column is a sparse column.

Note: Support from SQL Server 2008 or later.

Comment



Set any optional text describing the current field.

Note: SQL Azure does not support.


SQL Server Table Indexes

Indexes are optional structures associated with tables. You can create indexes on one or more columns of a table to speed SQL statement execution on that table.

In the **Indexes** tab, just simply click an index field for editing. By using the index toolbar, you can create new, edit and delete the selected index field.

| Button | Description |
|------------------------------------------------------------------------------------------------|----------------------------|
|  Add Index | Add an index to the table. |
|  Delete Index | Delete the selected index. |

Use the **Name** edit box to set the index name.

To include field(s) in the index, just simply double-click the **Fields** field or click  to open the editor for editing.

Note: Some of data types do not allow indexing. For example: text

The **Index Type** dropdown list defines the type of the table index.

| | |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Clustered | Create an index in which the logical order of the key values determines the physical order of the corresponding rows in a table. |
| Non-Clustered | Create an index that specifies the logical ordering of a table. With a nonclustered index, the physical order of the data rows is independent of their indexed order. |
| Spatial | Create a spatial index on a specified table and column. An index can be created before there is data in the table. Note: Support from SQL Server 2008 or later and SQL Azure. |
| XML | Create an XML index on a specified table. An index can be created before there is data in the table. Note: Support from SQL Server 2005 or later. |

Unique

Create a unique index on a table.

Comment



Specify the comment of the index.

Note: SQL Azure does not support.

SQL Server Table Foreign Keys


A foreign key is a field in a relational table that matches the primary key column of another table. The foreign key can be used to cross-reference tables.

In the **Foreign Keys** tab, just simply click a foreign key field for editing. By using the foreign key toolbar, you can create new, edit and delete the selected foreign key field.

| Button | Description |
|--------------------------------------------------------------------------------------------------------|----------------------------------|
|  Add Foreign Key | Add a foreign key to the table. |
|  Delete Foreign Key | Delete the selected foreign key. |

Use the **Name** edit box to enter a name for the new key.

Use the **Referenced Schema** and **Referenced Table** dropdown lists to select a foreign schema and table respectively.

To include field(s)/referenced field(s) to the key, just simply double-click the **Fields/Referenced Fields** field or click  to open the editor(s) for editing.

The **On Delete** and **On Update** dropdown list define the type of the actions to be taken.

| | |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| No Action | The Database Engine raises an error and the delete or update action on the row in the parent table is rolled back. |
| Cascade | Corresponding rows are deleted from or updated in the referencing table if that row is deleted from or updated in the parent table. |
| Set Null | All the values that make up the foreign key are set to NULL when the corresponding row in the parent table is deleted or updated. |
| Set Default | All the values that make up the foreign key are set to their default values when the corresponding row in the parent table is deleted or updated. |

Enable

You can choose whether to enable/disable the foreign key constraint by checking/unchecking the box.

Not For Replication

The constraint is not enforced when replication agents perform insert, update, or delete operations.

Note: SQL Azure does not support.

Comment

Specify the comment of the foreign key.

Note: SQL Azure does not support.



Related topic:

[Foreign Keys Data Selection](#)

SQL Server Table Uniques

Unique constraints ensure that the data contained in a column or a group of columns is unique with respect to all the rows in the table.

In the **Uniques** tab, just simply click an unique field for editing. By using the unique toolbar, you can create new, edit and delete the selected unique field.

| Button | Description |
|---------------------------------------------------------------------------------------------------|-----------------------------|
|  Add Unique | Add an unique to the table. |
|  Delete Unique | Delete the selected unique. |

Use the **Name** edit box to set the unique name.

To set field(s) as unique, just simply double-click the **Fields** field or click  to open the editor for editing.

Clustered

Indicate that a clustered index is created for the unique constraint.

Comment



Specify the comment of the unique.

Note: SQL Azure does not support.

SQL Server Table Checks

A check a constraint that enforces domain integrity by limiting the possible values that can be entered into a column or columns.

In the **Checks** tab, just simply click a check field for editing. By using the check toolbar, you can create new, edit and delete the selected check field.

| Button | Description |
|------------------------------------------------------------------------------------------------|----------------------------|
|  Add Check | Add a check to the table. |
|  Delete Check | Delete the selected check. |

Use the **Name** edit box to set the check name.

Check

Set the condition for checking, e.g. "field_name1 > 0 AND field_name2 > field_name1" in the **Check** edit box.

Enable

You can choose whether to enable/disable the check constraint by checking/unchecking the box.

Not For Replication

The constraint is not enforced when replication agents perform insert, update, or delete operations.

Note: SQL Azure does not support.

Definition

Type in the definition for the check constraint.

Comment



Specify the comment of the check.

Note: SQL Azure does not support.

SQL Server Table Triggers

A trigger is a special kind of stored procedure that automatically executes when an event occurs in the database server.

In the **Triggers** tab, just simply click a trigger field for editing. By using the trigger toolbar, you can create new, edit and delete the selected trigger field.

| Button | Description |
|---------------------------------------------------------------------------------------------------|------------------------------|
|  +Add Trigger | Add a trigger to the table. |
|  -Delete Trigger | Delete the selected trigger. |

Use the **Name** edit box to set the trigger name.

Use the **Fires** dropdown list to define the trigger action time.

| | |
|------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| AFTER | Specify that the DML trigger is fired only when all operations specified in the triggering SQL statement have executed successfully. |
| INSTEAD OF | Specify that the DML trigger is executed instead of the triggering SQL statement, therefore, overriding the actions of the triggering statements. |

Insert

The trigger is activated whenever a new row is inserted into the table.

Update

The trigger is activated whenever a row is modified.

Delete

The trigger is activated whenever a row is deleted from the table.

Enable

You can choose whether to enable/disable the trigger constraint by checking/unchecking the box.

The **Definition** tab defines the statement to execute when the trigger activates. To include your statement, just simply click to write. If you want to execute multiple statements, use the **BEGIN ... END** compound statement construct.

Execute As

Specify the security context under which the trigger is executed.

Note: Support from SQL Server 2005 or later and SQL Azure.

User

Choose a user that the trigger executes in.

Note: Support from SQL Server 2005 or later and SQL Azure.

Encrypted

Obfuscate the text of the CREATE TRIGGER statement.

Note: Support from SQL Server 2005 or later.

Not For Replication

Indicate that the trigger should not be executed when a replication agent modifies the table that is involved in the trigger.

Note: SQL Azure does not support.

With Append

Specify that an additional trigger of an existing type should be added.

Note: SQL Azure does not support.

Definition Type

Choose the type of definition.

Note: Support from SQL Server 2005 or later.

Comment

Specify the comment of the trigger.

Note: SQL Azure does not support.

SQL Server Table Options

Table Lock Escalation

Specify the allowed methods of lock escalation for a table.

Note: Support from SQL Server 2008 or later.

Identity Seed

The value used for the very first row loaded into the table.

Identity Increment

The incremental value added to the identity value of the previous row loaded.

Current Identity Value

Set the current identity value.

Note: SQL Azure does not support.

Not For Replication

Values are not incremented in identity columns when replication agents perform inserts.

Note: SQL Azure does not support.

Change Tracking Enabled

Specify change tracking is enabled for the table.

Note: Support from SQL Server 2008 or later.

Track Columns Updated

Specify the Database Engine tracks which change tracked columns were updated.

Note: Support from SQL Server 2008 or later.

SQL Server Table Storage

On Filegroup

| Option | Description |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| Filegroup | Choose a filegroup that storing the table. |
| Text/Image Filegroup | Choose a filegroup for storing text, ntext, image, xml, varchar(max), nvarchar(max), varbinary(max), and CLR user-defined type columns. |
| File Stream Filegroup | Choose a filegroup for FILESTREAM data. Note: Support from SQL Server 2008 or later. |

On Partition Scheme

| Option | Description |
|------------------------------|-------------------------------------------------------------------------------------------------------|
| Partition Scheme | Choose a partition scheme that storing the table. |
| Partition Column | Choose a partition column name. |
| File Stream Partition Scheme | Choose a partition scheme for FILESTREAM data. Note: Support from SQL Server 2008 or later. |


Note: Support from SQL Server 2005 or later.

Data Compression

Specify the data compression option for the specified table, partition number, or range of partitions. Choose the **Type** for the partition.




Note: Support from SQL Server 2008 or later.

SQL Server Views

A view can be thought of as either a virtual table or a stored query. Unless a view is indexed, its data is not stored in the database as a distinct object. What is stored in the database is a SELECT statement. The result set of the SELECT statement forms the virtual table returned by the view. A user can use this virtual table by referencing the view name in Transact-SQL statements the same way a table is referenced. Click  to open an object list for **View**.

You can create a view shortcut by right-click a view in object list and select **Create Open View Shortcut** from the popup menu. This option is used to provide a convenient way for you to open your view directly without activating the main Navicat.

Note: SQL Azure does not support the **Comment** tab.

| Button | Description |
|------------------------------------------------------------------------------------------------|------------------------------------------------------------|
|  Preview | Preview the result of the view. |
|  Explain | Show the Query Plan of the view. |
|  Beautify SQL | Format the codes with the Beautify SQL settings in Editor. |

Note: You can choose to show the Result tab below the editor or in a new tab by selecting **View -> Show Result -> Below Query Editor** or **In a New Tab**.

View Builder (Available only in Full Version)

View Builder allows you to build views visually. It allows you to create and edit views without knowledge of SQL. See [Query Builder](#) for details.

Definition

You can edit the view definition as SQL statement (SELECT statement it implements).

Hint: To customize the view of the editor and find out more features for sql editing, see [Editor Advanced Features](#).

Advanced Properties

Encrypted

Encrypt the entries in sys.syscomments that contain the text of the CREATE VIEW statement.

Note: SQL Azure does not support.

Schema Bound

Bind the view to the schema of the underlying table or tables.

View Metadata

Specify that the instance of SQL Server will return to the DB-Library, ODBC, and OLE DB APIs the metadata information about the view, instead of the base table or tables, when browse-mode metadata is being requested for a query that references the view.


With Check Option

Force all data modification statements executed against the view to follow the criteria set within select_statement.

View Viewer

View Viewer displays the view data as a grid. Data can be displayed in two modes: **Grid View** and **Form View**. See [Table Viewer](#) for details.

SQL Server Functions/Procedures


A user-defined function, which is a Transact-SQL or common language runtime (CLR) routine that accepts parameters, performs an action, such as a complex calculation, and returns the result of that action as a value. The return value can either be a scalar (single) value or a table. Click  to open an object list for **Function**.

Stored procedures are similar to procedures in other programming languages in that they can:

- Accept input parameters and return multiple values in the form of output parameters to the calling procedure or batch.
- Contain programming statements that perform operations in the database, including calling other procedures.
- Return a status value to a calling procedure or batch to indicate success or failure (and the reason for failure).

Note: SQL Azure does not support the **Comment** tab.

Function Wizard

Click the  **New Function** from the object list toolbar. The **Function Wizard** will pop up and it allows you to create a procedure/function easily. You are allowed not to show the **Function Wizard** when create new procedure/function.

1. Specify the **Name** of the routine and select the type of the routine: **Procedure** or **Function**.
2. Define the parameter(s) of the procedure. Set the parameter **Name**, **Type Schema**, **Type**, **Default Value**, **Output** and/or **Read Only** under corresponding columns.
3. If you create a function, select the **Function type** from the dropdown list. Then, choose the **Schema** and the **Return Type** from the list if necessary.
4. Set the advanced options:







| Option | Description |
|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Encryption | The database will convert the CREATE statement to an obfuscated format. Note: SQL Azure does not support. |
| Recompile | Instruct the database not to cache a plan for the procedure. Note: Available only for procedure. |
| Schema binding | The function is bound to the database objects that it references. Note: Available only for function. |
| NULL on NULL Input | Indicate the server can return null without invoking the function body. Note: Available only for function and support from SQL Server 2005 or later. |
| Execute As | Specify the runtime user of the function. Note: Support from SQL Server 2005 or later and SQL Azure. |
| For replication | Stored procedures created for replication cannot be executed on the Subscriber. Note: Available only for procedure and SQL Azure does not support. |

Hint: Once uncheck the **Show wizard next time**, you can go to [Options](#) to enable it.

Definition


The **Code Outline** window displays information about the function/procedure including parameter, code body, etc. To show the **Code Outline** window, simply choose **View -> Code Outline**.

Note: Available only in Full Version.

| Button | Description |
|-----------------------------------------------------------------------------------|-------------------------------------------|
|  | Refresh the code outline. |
|  | Show the detail view of the code outline. |
|  | Turn mouse over highlight on or off. |
|  | Expand the selected item. |
|  | Collapse the selected item. |
|  | Toggle sorting by position. |


Hint: To customize the view of the editor and find out more features for sql editing, see [Editor Advanced Features](#).

Result

To run the procedure/function, click  **Run** on the toolbar. If the SQL statement is correct, the statement will be executed and, if the statement is supposed to return data, the **Result** tab opens with the data returned by the procedure/function. If an error occurs while executing the procedure/function, execution stops, the appropriate error message is displayed. If the function/procedure requires input parameter, the **Input Parameters** box will popup.

Hint: Navicat supports to return 10 resultsets.

SQL Server Indexes

An index in a database lets you quickly find specific information in a table or indexed view. An index contains keys built from one or more columns in the table, or view, and pointers that map to the storage location of the specified data. You can significantly improve the performance of database queries and applications by creating well-designed indexes to support your queries. Indexes can reduce the amount of data that must be read to return the query result set. Indexes can also enforce uniqueness on the rows in a table, ensuring the data integrity of the table data. Click  -> **Index** to open an object list for **Index**.

Note: SQL Azure does not support the **Comment** tab.

You can choose the index **Type**: Nonclustered, Clustered, XML or Spatial.

Note: XML index is supported from SQL Server 2005 or later.

Spatial index is supported from SQL Server 2008 or later and SQL Azure.

General Properties for Nonclustered and Clustered Indexes

Unique

A unique index is one in which no two rows are permitted to have the same index key value.

Table / View

Choose to create a table index or a view index.

Table name or View Name

Select a table or a view.

Columns

Select the column or columns on which the index is based and the sorting order.

Included Columns *(only for Nonclustered Index)*

Select the non-key columns to be added to the leaf level of the nonclustered index.

Note: Support from SQL Server 2005 or later and SQL Azure.

Filter Properties for Nonclustered Index

To create a filtered index, specify which rows to include in the index.

Note: Support from SQL Server 2008 or later and SQL Azure.

Advanced Properties for Nonclustered and Clustered Indexes

Ignore duplicate key values

A warning message will occur when duplicate key values are inserted into a unique index. Only the rows violating the uniqueness constraint will fail.

Recompute statistics

Enable automatic statistics updating.

Allow row locks

Row locks are allowed when accessing the index. The Database Engine determines when row locks are used.

Note: Support from SQL Server 2005 or later.

Allow page locks

Page locks are allowed when accessing the index. The Database Engine determines when page locks are used.

Note: Support from SQL Server 2005 or later.

Fill Factor (%)

Specify a percentage that indicates how full the Database Engine should make the leaf level of each index page during index creation or rebuild.

Note: SQL Azure does not support.

Pad Index

The percentage of free space that is specified by fillfactor is applied to the intermediate-level pages of the index.

Note: Support from SQL Server 2005 or later.

Sort in tempdb

Specify to store temporary sort results in tempdb.

Note: SQL Azure does not support.

Online

Long-term table locks are not held for the duration of the index operation.

Note: Support from SQL Server 2005 or later and SQL Azure.

Max. degree of parallelism

Override the max degree of parallelism configuration option for the duration of the index operation.

Note: Support from SQL Server 2005 or later.

Storage Properties for Nonclustered and Clustered Indexes

Note: SQL Azure does not support this tab.

On Filegroup

| Option | Description |
|-----------------------|------------------------------------------------------------------------------------------------|
| Filegroup | Choose a filegroup that storing the index. |
| File Stream Filegroup | Choose a filegroup for FILESTREAM data. Note: Support from SQL Server 2008 or later. |

On Partition Scheme

| Option | Description |
|------------------------------|-------------------------------------------------------------------------------------------------------|
| Partition Scheme | Choose a partition scheme that storing the index. |
| Partition Column | Choose a partition column name. |
| File Stream Partition Scheme | Choose a partition scheme for FILESTREAM data. Note: Support from SQL Server 2008 or later. |

Note: Support from SQL Server 2005 or later.

Data Compression

Specify the data compression option for the specified index, partition number, or range of partitions. Choose the **Type** for the partition.

Note: Support from SQL Server 2008 or later.

General Properties for XML Index

Table / View

Must be TABLE.

Table name

Select a table.

XML Column

Select the xml column on which the index is based.

XML Index Type

| | |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PRIMARY | A clustered index is created with the clustered key formed from the clustering key of the user table and an XML node identifier. |
| PATH secondary | Create a secondary XML index on columns built on path values and node values in the primary XML index. In the PATH secondary index, the path and node values are key columns that allow efficient seeks when searching for paths. |
| VALUE secondary | Create a secondary XML index on columns where key columns are (node value and path) of the primary XML index. |
| PROPERTY secondary | Create a secondary XML index on columns (PK, path and node value) of the primary XML index where PK is the primary key of the base table. |

Primary XML Index

Specify the primary XML index to use in creating a secondary XML index.

Advanced Properties for XML Index

Recompute statistics

Enable automatic statistics updating.

Allow row locks

Row locks are allowed when accessing the index. The Database Engine determines when row locks are used.

Allow page locks

Page locks are allowed when accessing the index. The Database Engine determines when page locks are used.

Fill Factor (%)

Specify a percentage that indicates how full the Database Engine should make the leaf level of each index page during index creation or rebuild.

Pad Index

The percentage of free space that is specified by fillfactor is applied to the intermediate-level pages of the index.

Sort in tempdb

Specify to store temporary sort results in tempdb.

Max. degree of parallelism

Override the max degree of parallelism configuration option for the duration of the index operation.

General Properties for Spatial Index**Table / View**

Must be TABLE.

Table name

Select a table.

Spatial Column

Select a spatial column which the index is based.

Tessellation Scheme

The tessellation scheme for the spatial index.

Min. Coordinates

Specify the x-coordinate (X) and y-coordinate (Y) of the lower-left corner of the bounding box.

Max. Coordinates

Specify the x-coordinate (X) and y-coordinate (Y) of the upper-right corner of the bounding box.

Level 1

Specify the first (top) level grid.

Level 2

Specify the second-level grid.

Level 3

Specify the third-level grid.

Level 4

Specify the fourth-level grid.

Cells Per Object

Specify the number of tessellation cells per object that can be used for a single spatial object in the index by the tessellation process.

Advanced Properties for Spatial Index

Recompute statistics

Enable automatic statistics updating.

Allow row locks

Row locks are allowed when accessing the index. The Database Engine determines when row locks are used.

Note: SQL Azure does not support.

Allow page locks

Page locks are allowed when accessing the index. The Database Engine determines when page locks are used.

Note: SQL Azure does not support.

Fill Factor (%)

Specify a percentage that indicates how full the Database Engine should make the leaf level of each index page during index creation or rebuild.

Note: SQL Azure does not support.

Pad Index

The percentage of free space that is specified by fillfactor is applied to the intermediate-level pages of the index.

Note: SQL Azure does not support.

Sort in tempdb

Specify to store temporary sort results in tempdb.


Note: SQL Azure does not support.

Max. degree of parallelism

Override the max degree of parallelism configuration option for the duration of the index operation.

Note: SQL Azure does not support.

SQL Server Synonyms

A synonym is an alternative name for a schema-scoped object. Client applications can use a single-part name to reference a base object by using a synonym instead of using a two-part, three-part, or four-part name to reference the base object. Click  **Synonym** to open an object list for **Synonym**.

Note: SQL Azure does not support the **Comment** tab.

General Properties

Object Linked Server

The name of the server on which base object is located.

Note: SQL Azure does not support.

Object Database

The name of the database in which the base object is located.

Object Schema

The name of the schema of the base object.


Object Type

The object type.

Object

The name of the base object that the synonym references.

SQL Server Triggers

A trigger is a special kind of stored procedure that automatically executes when an event occurs in the database server. Click  -> **Trigger** to open an object list for **Trigger**.

See [Triggers](#) for details.

Note: SQL Azure does not support the **Comment** tab.

General Properties

Trigger Type

Choose Table or View on which the DML trigger is executed.

Enable

Check this option to enable the trigger.

Table name or View name

Choose a table or a view.

AFTER

Specify that the DML trigger is fired only when all operations specified in the triggering SQL statement have executed successfully.

INSTEAD OF

Specify that the DML trigger is executed instead of the triggering SQL statement, therefore, overriding the actions of the triggering statements.

Insert

The trigger is activated whenever a new row is inserted into the table.

Delete

The trigger is activated whenever a row is deleted from the table.

Update

The trigger is activated whenever a row is modified.

SQL Statement

Specify additional criteria in Definition tab.

Note: Support from SQL Server 2005 or later.

Assembly

Specify the method of an assembly to bind with the trigger.

Note: Support from SQL Server 2005 or later.

Advanced Properties**Caller**

Specify the statements inside the module are executed in the context of the caller of the module.

Note: Support from SQL Server 2005 or later and SQL Azure.

Owner

Specify the statements inside the module executes in the context of the current owner of the module.

Note: Support from SQL Server 2005 or later and SQL Azure.

Self

Specify the statements inside the module are executed in the context of the specified user is the person creating or altering the module.

Note: Support from SQL Server 2005 or later and SQL Azure.

User

Specify the statements inside the module execute in the context of the user.

Note: Support from SQL Server 2005 or later and SQL Azure.

Encrypted

Obfuscate the text of the CREATE TRIGGER statement.

Note: Support from SQL Server 2005 or later.

Not For Replication

Indicate that the trigger should not be executed when a replication agent modifies the table that is involved in the trigger.

Note: SQL Azure does not support.

With Append


Specify that an additional trigger of an existing type should be added.

Note: SQL Azure does not support.

Definition

This tab will appear when the **Definition Type** is set to **SQL Statement** in General tab or when connecting to SQL Azure. Enter valid SQL statements.

SQL Server Backup Devices

During a backup operation on a SQL Server database, the backed up data (the backup) is written to a physical backup device. This physical backup device is initialized when the first backup in a media set is written to it. The backups on a set of one or more backup devices compose a single media set. Click  -> **Backup Device** to open an object list for **Backup Device**.

General Properties

Name

Enter the name of the backup device.


Type

The type of the backup device: DISK.

Physical name

Specify the physical file name or path of the backup device.

SQL Server Linked Servers

A linked server configuration enables SQL Server to execute commands against OLE DB data sources on remote servers. Click  -> **Linked Server** to open an object list for **Linked Server**.

Linked servers offer the following advantages:

- Remote server access.
- The ability to issue distributed queries, updates, commands, and transactions on heterogeneous data sources across the enterprise.
- The ability to address diverse data sources similarly.

Note: SQL Azure does not support.

General Properties

You can choose the **Server Type: SQL Server** or **Other Data Source**. If you choose **Other Data Source**, define the required information:

Provider

Choose the unique programmatic identifier (PROGID) of the OLE DB provider corresponding to the data source.

Product Name

Define the product name of the OLE DB data source to add as a linked server.

Data Source

Define the name of the data source as interpreted by the OLE DB provider.

Provider String

Define the OLE DB provider-specific connection string that identifies a unique data source.

Location

Define the location of the database as interpreted by the OLE DB provider.

Catalog

Define the catalog to be used when making a connection to the OLE DB provider.

Security

In this tab, add or delete a mapping between logins on the local instance of SQL Server and remote logins on the linked server.

Local Login

Choose a login on the local server.

Impersonate

Check this option to specify that logins use their own credentials to connect to the linked server.

Remote Login

Enter the username used to connect the linked server.

Remote Password

Enter the user password.

Set the action when a login not defined in the list:

- Not be made
- Be made without using a security context
- Be made using the login's current security context
- Be made using the following security context

Set the **Remote Login** and **Password**

Advanced Properties

Connect Timeout

Define the time-out value for connecting to a linked server.

Query Timeout

Define the time-out value for queries against a linked server.

Data Access

Check this option to enable a linked server for distributed query access.

Collation Compatible

If this option is checked, SQL Server assumes that all characters in the linked server are compatible with the local server, with regard to character set and collation sequence (or sort order). This enables SQL Server to send comparisons on character columns to the provider.

Use Remote Collation

If this option is checked, the collation of remote columns is used for SQL Server data sources, and the collation specified in collation name is used for non-SQL Server data sources.

Collation

Specify the name of the collation used by the remote data source if Use Remote Collation is checked and the data source is not a SQL Server data source. The name must be one of the collations supported by SQL Server.

Lazy Schema Validation

If this option is checked, skip schema checking of remote tables at the beginning of the query.

Publisher

Check this option to enable publisher.

Subscriber

Check this option to enable subscriber.

Distributor

Check this option to enable distributor.

RPC

Check this option to enable RPC from the given server.

RPC Out


Check this option to enable RPC to the given server.

Promotion of Distributed Transactions for RPC

Use this option to protect the actions of a server-to-server procedure through a Microsoft Distributed Transaction Coordinator (MS DTC) transaction.

Note: Support from SQL Server 2005 or later.

SQL Server Server Triggers

A server trigger can be a DDL or logon trigger for current server. DDL triggers execute in response to a variety of data definition language (DDL) events. These events primarily correspond to Transact-SQL CREATE, ALTER, and DROP statements, and certain system stored procedures that perform DDL-like operations. Logon triggers fire in response to the LOGON event that is raised when a user sessions is being established. Click -> **Server Trigger** to open an object list for **Server Trigger**.

Note: Support from SQL Server 2005 or later.

General Properties

Trigger Type

Choose the trigger type.

Enable

Check this option to enable the trigger.

SQL Statement

Specify additional criteria in Definition tab.

Assembly

Specify the method of an assembly to bind with the trigger.

Events

Check the DDL event from the list.

Advanced Properties

Caller

Specify the statements inside the module are executed in the context of the caller of the module.

Self

Specify the statements inside the module are executed in the context of the specified user is the person creating or altering the module.

User

Specify the statements inside the module execute in the context of the user.


Encrypted

Obfuscate the text of the CREATE TRIGGER statement.

Definition

This tab will appear when the **Definition Type** is set to **SQL Statement** in General tab. Enter valid SQL statements.

SQL Server Assemblies

An assembly is a managed application module that contains class metadata and managed code as an object in an instance of SQL Server. By referencing this module, common language runtime (CLR) functions, stored procedures, triggers, user-defined aggregates, and user-defined types can be created in the database. Click  -> **Assembly** to open an object list for **Assembly**.

Note: Support from SQL Server 2005 or later.

General Properties

Owner

Specify the name of a user or role as owner of the assembly.

Permission set

Specify a set of code access permissions that are granted to the assembly when it is accessed by SQL Server. If not specified, **SAFE** is applied as the default.


Assembly

Specify the local path or network location where the assembly that is being uploaded is located, and also the manifest file name that corresponds to the assembly.

Dependent Assemblies

Upload a file to be associated with the assembly, such as source code, debug files or other related information, into the server and made visible in the sys.assembly_files catalog view.

SQL Server Database Triggers

A database trigger is a DDL trigger to the current database. DDL triggers execute in response to a variety of data definition language (DDL) events. These events primarily correspond to Transact-SQL CREATE, ALTER, and DROP statements, and certain system stored procedures that perform DDL-like operations. Click  -> **Database Trigger** to open an object list for **Database Trigger**.

Note: Support from SQL Server 2005 or later and SQL Azure.

SQL Azure does not support the **Comment** tab.

General Properties

Trigger Type

Trigger type must be Database Trigger.

Enable

Check this option to enable the trigger.

SQL Statement

Specify additional criteria in Definition tab.

Note: SQL Azure does not support.

Assembly

Specify the method of an assembly to bind with the trigger.

Note: SQL Azure does not support.

Events

Check the DDL event from the list.

Advanced Properties

Caller

Specify the statements inside the module are executed in the context of the caller of the module.

Self

Specify the statements inside the module are executed in the context of the specified user is the person creating or altering the module.

User

Specify the statements inside the module execute in the context of the user.

Encrypted


Obfuscate the text of the CREATE TRIGGER statement.

Note: SQL Azure does not support.

Definition

This tab will appear when the **Definition Type** is set to **SQL Statement** in General tab. Enter valid SQL statements.

SQL Server Partition Functions

A partition function is a function in the current database that maps the rows of a table or index into partitions based on the values of a specified column. Click  -> **Partition Function** to open an object list for **Partition Function**.

Note: Support from SQL Server 2005 or later.

General Properties

Input Parameter Type

Choose the data type of the column used for partitioning.

Length

Specify the length of the data type if necessary.

Decimals

Specify the decimals of the data type if necessary.

Collation

Specify the collation of the data type if necessary.


Boundary values belong to right interval

Specify to the right of each boundary value interval.

Boundary Values

Specify the boundary values for each partition of a partitioned table or index that uses `partition_function_name`.

SQL Server Partition Schemes

A partition scheme is a scheme in the current database that maps the partitions of a partitioned table or index to filegroups. The number and domain of the partitions of a partitioned table or index are determined in a partition scheme. Click  -> **Partition Scheme** to open an object list for **Partition Scheme**.

Note: Support from SQL Server 2005 or later.

General Properties

Partition Function


Choose the partition function.

Filegroup Mapping

Specify the filegroups to hold the partitions specified by `partition_function_name`.

SQL Preview

The **SQL Preview** tab shows the CREATE statement and necessary SQL statements of the database or schema object.

For some database or schema objects, you can use the below dropdown list to show the SQL which will be run when pressing **Save** or  **Save As** button.

Maintain

Navicat provides a complete solution for maintaining databases and their database objects in MySQL, Oracle, PostgreSQL, SQLite and SQL Server.

To maintain server objects, you can right-click it and select **Maintain** from the popup menu.

Maintain MySQL

Maintain Table

Analyze Tables

Analyze and store the key distribution for the table. During the analysis, the table is locked with a read lock for MyISAM and BDB. For InnoDB the table is locked with a write lock. Currently, MySQL supports analyzing only for MyISAM, BDB, and InnoDB tables.

Check Tables

Check a table or tables for errors. Currently, MySQL supports checking only for MyISAM, InnoDB and ARCHIVE tables. For MyISAM tables, the key statistics are updated as well.

| | |
|----------|-----------------------------------------------------------------------------------------------------------------------------|
| Normal | Run the CHECK TABLE statement without an extra option. |
| Quick | Don't scan the rows to check for wrong links. |
| Fast | Check only tables that have not been closed properly. |
| Changed | Only check tables which have been changed since last check or haven't been closed properly. |
| Extended | Do a full key lookup for all keys for each row. This ensures that the table is 100 % consistent, but will take a long time. |

Optimize Tables

The main reason for optimizing your table is to reclaim unused space and to defragment the data file. You should optimize a table if you have deleted a large part of a table or if you have made many changes to a table with variable-length rows (tables that have VARCHAR, BLOB, or TEXT columns). Deleted records are maintained in a linked list and subsequent INSERT operations reuse old row positions. Currently, MySQL supports optimizing only for MyISAM, InnoDB and BDB tables.

Repair Tables

Repair a possibly corrupted table and returns a result set.

| | |
|----------|------------------------------------------------------------------------------------------|
| Quick | Repair Table tries to repair only the index tree. |
| Extended | MySQL creates the index row by row instead of creating one index at a time with sorting. |

Get Rows Count

Count the number of rows in the table.

Maintain Oracle

Maintain Table

Enable Table Lock

Choose Enable Table Lock to enable table locks, thereby allowing DDL operations on the table. All currently executing transactions must commit or roll back before Oracle Database enables the table lock.

Disable Table Lock

Choose Disable Table Lock to disable table locks, thereby preventing DDL operations on the table.

Enable Row Movement

Choose Enable Row Movement to allow the database to move a row, thus changing the rowid.

Disable Row Movement

Choose Disable Row Movement if you want to prevent the database from moving a row, thus preventing a change of rowid.

Shrink Space

Shrink Space is to compact the table segment. This clause is valid only for segments in tablespaces with automatic segment management. By default, Oracle database compacts the segment, adjusts the high water mark, and releases the recuperated space immediately.

Compacting the segment requires row movement. Therefore, you must enable row movement for the table you want to shrink before shrink space. Further, if your application has any rowid-based triggers, you should disable them before issuing this clause.

Move

Move relocates data of a nonpartitioned table or of a partition of a partitioned table into a new segment, optionally in a different tablespace, and optionally modify any of its storage attributes.

Collect Statistics

Collect Statistics analyzes the contents of tables. When you analyze a table, the database collects statistics about expressions occurring in any function-based indexes as well. Therefore, be sure to create function-based indexes on the table before analyzing the table.

Validate Structure

Validate Structure verifies the integrity of the structure of a table. The statistics collected by this clause are not used by the Oracle database optimizer. If the structure is valid, no error is returned. However, if the structure is corrupt, an error message will be shown.

For a table, Oracle database verifies the integrity of each of the data blocks and rows.

Maintain View

Compile

To recompile the view specification or body.

Maintain Function/Procedure

Compile

To recompile the function/procedure specification or body.

Compile for Debug

To recompile the function/procedure specification or body and instruct the PL/SQL compiler to generate and store the code for use by the PL/SQL debugger.

Maintain Index

Rebuild

To re-create an existing index or one of its partitions or subpartitions. If the index is marked unusable, then a successful rebuild will mark it usable.

Make Unusable

To make the index unusable. An unusable index must be rebuilt, or dropped and re-created, before it can be used.

Coalesce

To instruct Oracle database to merge the contents of index blocks where possible to free blocks for reuse.

Compute Statistics

To compute the statistics of the index.

Monitoring Usage

To begin monitoring the index. Oracle Database first clears existing information on index use, and then monitors the index for use until choosing No Monitoring Usage.

No Monitoring Usage

To terminate monitoring of the index.

Maintain Java

Compile or Resolve

To resolve the primary Java class schema object.

Set AuthID Current User

Set the invoker rights to AUTHID CURRENT_USER.

Set AuthID Definer

Set the invoker rights to AUTHID DEFINER.

Maintain Materialized View

Enable Row Movement

To enable row movement.

Shrink

To compact the materialized view segment. By default, Oracle database compacts the segment, adjusts the high water mark, and releases the recuperated space immediately.

Compile

To explicitly revalidate a materialized view. If an object upon which the materialized view depends is dropped or altered, then the materialized view remains accessible, but it is invalid for query rewrite. You can choose this option to explicitly revalidate the materialized view to make it eligible for query rewrite.

Force Refresh

To perform a refresh.

Maintain Materialized View Log

Enable Row Movement

To enable row movement. Row movement indicates that rowids will change after the flashback occurs.

Disable Row Movement

To disable row movement.

Shrink Space

To compact the materialized view log segments. By default, Oracle database compacts the segment, adjusts the high water mark, and releases the recuperated space immediately.

Maintain Package

Compile

To recompile the package specification or body.

Compile Debug

To recompile the package specification or body and instruct the PL/SQL compiler to generate and store the code for use by the PL/SQL debugger.

Maintain Trigger

Enable

To enable the trigger.

Disable

To disable the trigger.

Compile

To explicitly compile the trigger, whether it is valid or invalid. Explicit recompilation eliminates the need for implicit run-time recompilation and prevents associated run-time compilation errors and performance overhead.

Compile for Debug

To recompile the trigger and instruct the PL/SQL compiler to generate and store the code for use by the PL/SQL debugger.

Maintain Type

Compile

To compile the type specification and body.

Compile Debug

To recompile the type specification or body and instruct the PL/SQL compiler to generate and store the code for use by the PL/SQL debugger.

Maintain XML Schema

Compile

To re-compile an already registered XML schema. This is useful for bringing a schema in an invalid state to a valid state.

Purge

To remove the XML Schema completely from Oracle XML DB in Oracle 11g.

Maintain Tablespace

Read Only

To place the tablespace in transition read-only mode. In this state, existing transactions can complete (commit or roll back), but no further DML operations are allowed to the tablespace except for rollback of existing transactions that previously modified blocks in the tablespace.

Read Write

To indicate that write operations are allowed on a previously read-only tablespace.

Online

To take the tablespace online.

Offline

To take the tablespace offline.

| | |
|-----------|-------------------------------------------------------------------------------------------------------------------------------------|
| Normal | To flush all blocks in all datafiles in the tablespace out of the system global area (SGA). |
| Temporary | Oracle database performs a checkpoint for all online datafiles in the tablespace but does not ensure that all files can be written. |
| Immediate | Oracle database does not ensure that tablespace files are available and does not perform a checkpoint. |

Coalesce

To combine all contiguous free extents into larger contiguous extents for each datafile in the tablespace.

Shrink Space

To reduce the amount of space the tablespace is taking. This is valid only for temporary tablespaces in Oracle 11g.

Maintain User

Expire Password

To set password of user account will expire.

Lock Account

To lock user account.

Unlock Account

To unlock user account.

Maintain PostgreSQL

Maintain Database and Table

Analyze Database and Analyze Tables

Collect statistics about the contents of tables in the database, and stores the results in the system table *pg_statistic*. Subsequently, the query planner uses these statistics to help determine the most efficient execution plans for queries. **Analyze Database** examines every table in the current database.

When VERBOSE is specified, ANALYZE emits progress messages to indicate which table is currently being processed. Various statistics about the tables are printed as well. It is enabled in Navicat by default.

Vacuum Database and Vacuum Tables

Reclaim storage occupied by deleted tuples. In normal PostgreSQL operation, tuples that are deleted or obsoleted by an update are not physically removed from their table; they remain present until a Vacuum is done. Therefore it's necessary to do Vacuum periodically, especially on frequently-updated tables. **Vacuum Database** examines every table in the current database.

When VERBOSE is specified, VACUUM emits progress messages to indicate which table is currently being processed. Various statistics about the tables are printed as well. It is enabled in Navicat by default.

| | |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Vacuum | Run the VACUUM VERBOSE statement without extra options. |
| Vacuum Analyze | Update statistics used by the planner to determine the most efficient way to execute a query. |
| Vacuum Full | Select "full" vacuum, which may reclaim more space, but takes much longer and exclusively locks the table. |
| Vacuum Full Analyze | Select "full" vacuum, which may reclaim more space, but takes much longer and exclusively locks the table. Update statistics used by the planner to determine the most efficient way to execute a query. |
| Vacuum Freeze | Select aggressive "freezing" of tuples. |
| Vacuum Freeze Analyze | Select aggressive "freezing" of tuples. Update statistics used by the planner to determine the most efficient way to execute a query. |

Reindex Database and Reindex Tables

Rebuild an index using the data stored in the index's table, replacing the old copy of the index. There are several scenarios in which to use Reindex:

- An index has become corrupted, and no longer contains valid data.
- An index has become "bloated", that it contains many empty or nearly-empty pages.

- You have altered a storage parameter (such as fill factor) for an index, and wish to ensure that the change has taken full effect.
- An index build with the CONCURRENTLY option failed, leaving an "invalid" index.

Maintain SQLite

Maintain Database and Table

Analyze Database and Analyze Tables

Gather statistics about tables and indexes and stores the collected information in internal tables of the database where the query optimizer can access the information and use it to help make better query planning choices.

Vacuum Database

Rebuild the entire database. VACUUM only works on the main database. It is not possible to VACUUM an attached database file.

Reindex Database and Reindex Tables

Delete and recreate all indexes in database or attached to the tables from scratch. This is useful when the definition of a collation sequence has changed.

Maintain Index

Reindex

Delete and recreate the index from scratch. This is useful when the definition of a collation sequence has changed.

Maintain SQL Server

Maintain Assembly

Set Visible

To show the assembly.

Set Invisible

To hide the assembly.

Maintain Index

Rebuild

To rebuild and enable the index.

Reorganize

To reorganize the enabled index.

Disable

To disable the index.

Maintain Trigger

Enable

To enable the server trigger, database trigger or trigger.

Disable

To disable the server trigger, database trigger or trigger.

Maintain Login

Enable

To enable the login.

Disable




To disable the login.

Table Viewer

Table Viewer displays the table data as a grid. Data can be displayed in two modes: **Grid View** and **Form View**.

The toolbars of Table Viewer provides the following functions for managing data:

- **Begin Transaction/Commit/Rollback**

Click  **Begin Transaction** to start a transaction. To make permanent all changes performed in the transaction, click  **Commit**. Or, click  **Rollback** to undo work done in the current transaction.

Hint: The **Commit** and **Rollback** buttons are available only when **Auto Begin Transaction** is enabled under [Options](#) or after clicking the **Begin Transaction** button.

- [Edit TEXT/BLOB/BFile](#)

Allow you to view and edit the content of TEXT, BLOB and BFile fields.

Note: Only Oracle supports BFile.

- [Filter Data](#)

Allow you to filter records by creating and applying filter criteria for the data grid.

- [Sort Records](#)

Sort Records by custom order of multi fields.


- [Import Data](#)

Import data from files.

- [Export Data](#)

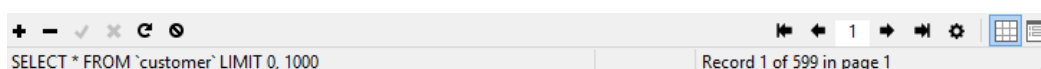
Export data to files.

Grid View







The  Grid View allows you to view, update, insert, or delete data in a table. The popup menu of the grid provides the following additional functions: set the field value as Null/Empty String, use current field value as a filter, format grid view, and more.

Using Navigation Bar





Table Viewer provides a convenient way to navigate among the records/pages using **Record/Page Navigation Bar** buttons. All buttons are used to navigate left and right to the previous or the next records/pages.



Record Navigation Bar








| Button | Description |
|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | New record: enter a new record. At any point when you are working with your table in the grid view, click on this button to get a blank display for a record. |
|  | Delete record: delete an existing record. |
|  | Apply changes: apply the changes. |
|  | Cancel changes: remove all edits made to the current record. |
|  | Refresh: refresh the table. |
|  | Stop: stop when loading enormous data from server. |

Extra Record Navigation Bar Button for Form View

| Button | Description |
|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
|  | First Record: move to the first record. |
|  | Previous Record: move one record back (if there is one) from the current record. |
|  | Next Record: move one record ahead. |
|  | Last Record: move to the last record. |

Note: The SQL statement shows under the Record Navigation Bar indicates any statement has just been executed.

Page Navigation Bar










| Button | Description |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------|
|  | First Page: move to first page. |
|  | Previous Page: move to previous page. |
|  | Next Page: move to next page. |
|  | Last Page: move to last page. |
|  | Limit Record Setting: set number of records showing on each page. |
|  | Grid View: switch to grid view. |
|  | Form View: switch to form view. |

Use the **Limit Record Setting**  button to enter to the edit mode.

Limit Records records per page

Check this option if you want to limit the number of records showed on each page. Otherwise, all records will be displayed in one single page. And, set the **records per page** value in the edit field. The number representing the number of records showed per page.

Note: This setting mode will take effect on current table only. To adjust the global settings, see [Options](#).

| | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|       | <input checked="" type="checkbox"/> Limit Records <input type="text" value="1000"/> records per page    |
| SELECT * FROM `customer` LIMIT 0, 1000 | Record 1 of 599 in page 1 |

Record a of b in page c





The Record/Page Indicator displays the numbers representing the selected record and page.

- a. the selected record.
- b. number of records in the current page.
- c. the current page.


Editing Records

The navigation bar allows you to switch the records quickly, insert, update or delete records. View data as a grid is most helpful for entering new records and editing old records in a table.

To add a record

1. Make sure that your cursor is situated in the first blank cell on the table, then enter the desired data. If you are adding the new record into an existing table, just simply click on an existing record and click the  from the navigation bar or press CTRL+N to get a blank display for a record.
2. Watch the graphics symbol in the record selectors box just to the left of your record. It will change from the , which indicates that it is the current record, to , which indicates that you are editing this record.
3. Just simply move to another record to save the record or click the  from the navigation bar.

To edit a record

1. Select the record that you wish to edit by clicking in the specific field you want to change.
2. Type in the new data for that field.
3. Just simply move to another record, the new data will overwrite the previous data or click the  from the navigation bar.


Note: Close the table is another way to save the records.

To edit multiple cells with same data

1. Select a block of cells in the data grid.
2. Type in the new data.

Note: Changes will apply to multiple fields with compatible data type.

To delete a record

1. Select the record that you wish to delete.
2. Just simply right-click and select **Delete Record** or click the  from the navigation bar.

Edit Records with Special Handling

To set **Empty String** for the cell, right-click the selected cell and select **Set to Empty String**.

To set **Null** value for the cell, right-click the selected cell and select **Set to NULL**.

To edit the text field record, just simply click **Show Memo In Grid** from the **View** menu.




Note: Available only for MySQL, Oracle and PostgreSQL.

| CustNo | Company | Addr1 |
|--------|---------------------------|------------|
| 1221 | Kauai Dive Shoppe | (WIDEMEMO) |
| ▶ 1231 | Unisco | (WIDEMEMO) |
| 1351 | Sight Diver | (WIDEMEMO) |
| 1354 | Cayman Divers World Unlim | (WIDEMEMO) |


Hint: To view/edit the text field record in an ease way, see [Memo Editor](#).

To view images in the grid, just simply click **Show Image In Grid** from the **View** menu.

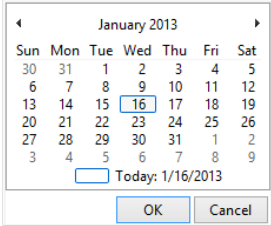
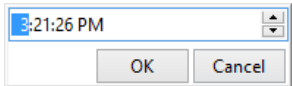
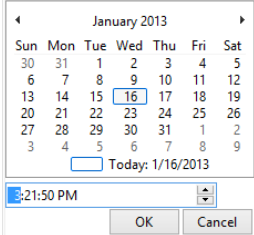
Note: Available only for MySQL, Oracle, PostgreSQL and SQL Server.

| id | image |
|-----|-----------------------------------------------------------------------------------|
| ▶ 1 |  |
| 2 |  |
| 3 |  |

Hint: To view/edit the image in an ease way, see [Image Editor](#).

To edit a Date/Time record, just simply click  or press CTRL+ENTER to open the editor for editing. Choose/enter the desired data. The editor used in cell is determined by the field type assigned to the column.


Note: Available only for MySQL, Oracle, PostgreSQL and SQL Server.

| Date | Time | DateTime/Timestamp |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|  |  |  |

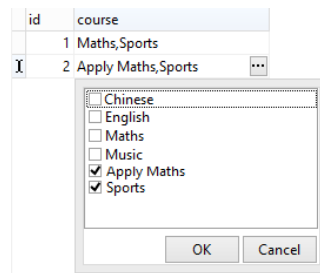
To edit a Enum record, just simply choose the record from the drop-down list.

Note: Available only for MySQL.

| id | course |
|-----|---------------------------------------------------------------------|
| 1 | English |
| ▶ 2 | <div> Chinese English Maths Music Sports </div> |

To edit a Set record, just simply click  or press CTRL+ENTER to open the editor for editing. Select the record(s) from the list. To remove the records, uncheck them in the same way.

Note: Available only for MySQL.



To view BFile content, just simply enable **Preview BFile** under the **View** menu.


Note: Available only for Oracle.

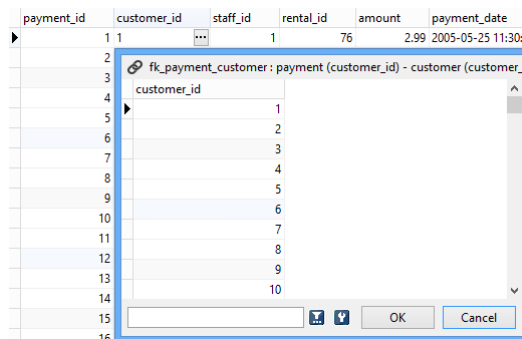
To generate UUID/GUID, right-click the selected cell and select **Generate UUID**.

Note: Available only for PostgreSQL and SQL Server.

Edit Records with Foreign Key (Foreign Key Data Selection - Available only in Full Version)

Foreign Key Data Selection is a useful tool for letting you to get the available value from the reference table in an easy way. It allows you to show additional record(s) from the reference table and search for a particular record(s).


To include data to the record, just simply click  or press CTRL+ENTER to open the editor for editing.

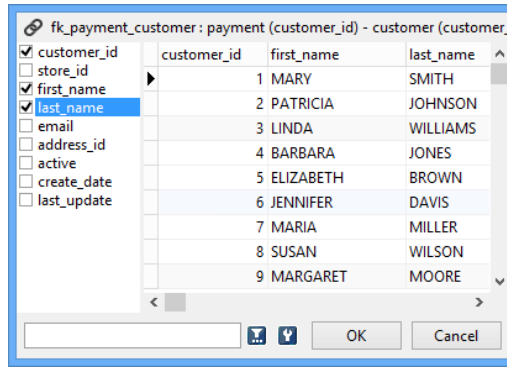




Just simply double-click to select the desired data.

Hint: By default, the number of records showed per page is **100**. To show all records, right-click anywhere on the grid and select **Show All**. To adjust the global settings, see [Options](#).

To refresh the record, right-click anywhere on the grid and select **Refresh** or press F5.

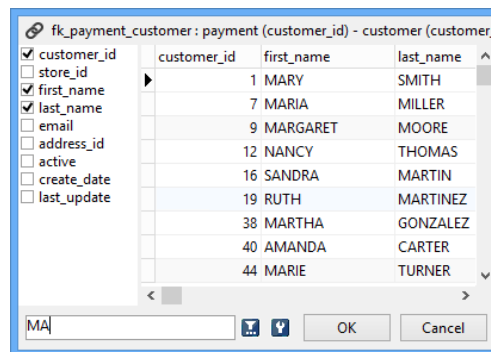
Click  to open a panel on the left for showing a list of column name(s). Just simply click to show the additional column. To remove the column(s), uncheck them in the same way.



Hint: To set column in ascending or descending mode, right-click anywhere on the column and select **Sort** ->  **Sort Ascending** /  **Sort Descending**.

To find for the text in the editor window, right-click anywhere on the grid and select **Find** or press CTRL+F.

Enter a value into the edit box and click  to filter for the particular record(s).



Hint: To remove the filter results, right-click anywhere on the grid and select **Show All**.

Copy Data from Navicat

Data that being copied from Navicat goes into the windows clipboard with the fields delimited by tabs and the records delimited by carriage returns. It allows you to easily paste the clipboard contents into any application you want. Spreadsheet applications in general will notice the tab character between the fields and will neatly separate the clipboard data into rows and columns.

To select data using **Keyboard Shortcuts**

| | |
|-------------|--------------------------------------------------------------------------------|
| CTRL+A | Toggles the selection of all rows and columns in a data grid. |
| SHIFT+ARROW | Toggle the selection of cells as you move up/down/left/right in the data grid. |

To select data using **Mouse Actions**


- Select the desired records by holding down the CTRL key while clicking on each row.
- Select a block of cells.

Note: After you have selected the desired records, just simply press CTRL+C or right-click and select the  **Copy** from the popup menu.

Paste Data into Navicat

Data is copied into the clipboard will be arranged as below format:

- Data is arranged into rows and column.
- Rows and columns are delimited by carriage returns/tab respectively.
- Columns in the clipboard have the same sequence as the columns in the data grid you have selected.

When pasting data into Navicat, you can replace the contents of current records and append the clipboard data into the table. To replace the contents of current records in a table, you must select the cells in the data grid whose contents must be replaced by the data in the clipboard. Just simply press CTRL+V or right-click and select the  **Paste** from the popup menu. Navicat will paste all the content in the clipboard into the selected cell. The paste action cannot be undone if you do not enable transaction.

Copy Records as Insert/Update Statements

To copy records as Insert/Update statement, select the records and click **Edit -> Copy As -> Insert Statement** or **Update Statement** from the menu. Then, you can paste the statements in any editor.

Save Data as a File

You can save the data in the table grid to a file. Simply right-click a cell and choose **Save Data As**. Enter the file name and file extension in the Save As dialog.

Note: Not available when multiple selection.

Sorting/Finding/Replacing Records

Sorting Records


Server stores records in the order they were added to the table. Sorting in Navicat is used to temporarily rearrange records, so that you can view or update them in a different sequence.

Move over the column caption whose contents you want to sort by, click the right side of the column and select the **Sort Ascending**, **Sort Descending** or **Remove Sort**.

| customer_id | store_id | first_name | last_name |
|-------------|----------|------------|-----------|
| 1 | | | TH |
| 2 | 1 | | INSON |
| 3 | | | LIAMS |
| 4 | | | JES |
| 5 | 1 | ELIZABETH | BROWN |

To sort by custom order of multi fields, click the  **Sort** from the toolbar.

Finding Records

The **Find** Dialog is provided for quick searching for the text in the editor window. Just simply click **Edit ->  Find** from the menu or press CTRL+F. Then, choose **Find Data** and enter a search string.

customer @sakila (MySQL 5.6) - Table

File Edit View Window Help

Begin Transaction Memo Filter Sort Import Export

| customer_id | store_id | first_name | last_name | email | address_i |
|-------------|----------|------------|-----------|---------------------------|-----------|
| 1 | 1 | MARY | SMITH | MARY.SMITH@sakilacustom | |
| 2 | 1 | PATRICIA | JOHNSON | PATRICIA.JOHNSON@sakila | |
| 3 | 1 | LINDA | WILLIAMS | LINDA.WILLIAMS@sakilacus | |
| 4 | 2 | BARBARA | JONES | BARBARA.JONES@sakilacus | |
| 5 | 1 | ELIZABETH | BROWN | ELIZABETH.BROWN@sakila | |
| 6 | 2 | JENNIFER | DAVIS | JENNIFER.DAVIS@sakilacust | |
| 7 | 1 | MARIA | MILLER | MARIA.MILLER@sakilacusto | |
| 8 | 2 | SUSAN | WILSON | SUSAN.WILSON@sakilacust | |
| 9 | 2 | MARGARET | MOORE | MARGARET.MOORE@sakila | |
| 10 | 1 | DOROTHY | TAYLOR | DOROTHY.TAYLOR@sakilac | |
| 11 | 2 | LISA | ANDERSON | LISA.ANDERSON@sakilacust | |
| 12 | 1 | NANCY | THOMAS | NANCY.THOMAS@sakilacu | |

Find Data: MA Next Highlight All Replace

SELECT * FROM 'customer' LIMIT 0, 1000 Record 1 of 599 in page 1

The search starts at the cursor's current position to the end of the file. There will not have differentiates when performing a uppercase or lowercase search.

To find for the next text, just simply click **Next** or press F3.

Replacing Records

To open the **Replace** Dialog, simply check the **Replace** box and enter the text you want to search and replace.

Click **Replace** or **Replace All** button to replace the first occurrence or all occurrences automatically.

If you clicked **Replace All** button, you can click **Apply** button to apply the changes or **Cancel** button to cancel the changes.

Find Data: MA Next Highlight All ☒ Replace

SA Replace Replace All

Finding Columns

To search a column, just simply click **Edit -> Find** from the menu or press CTRL+F. Then, choose **Find Column** and enter a search string.

customer @sakila (MySQL 5.6) - Table

File Edit View Window Help

Begin Transaction Memo Filter Sort Import Export

| customer_id | store_id | first_name | last_name | email | address_i |
|-------------|----------|------------|-----------|---------------------------|-----------|
| 1 | 1 | MARY | SMITH | MARY.SMITH@sakilacustom | |
| 2 | 1 | PATRICIA | JOHNSON | PATRICIA.JOHNSON@sakila | |
| 3 | 1 | LINDA | WILLIAMS | LINDA.WILLIAMS@sakilacus | |
| 4 | 2 | BARBARA | JONES | BARBARA.JONES@sakilacus | |
| 5 | 1 | ELIZABETH | BROWN | ELIZABETH.BROWN@sakila | |
| 6 | 2 | JENNIFER | DAVIS | JENNIFER.DAVIS@sakilacust | |
| 7 | 1 | MARIA | MILLER | MARIA.MILLER@sakilacusto | |
| 8 | 2 | SUSAN | WILSON | SUSAN.WILSON@sakilacust | |
| 9 | 2 | MARGARET | MOORE | MARGARET.MOORE@sakila | |
| 10 | 1 | DOROTHY | TAYLOR | DOROTHY.TAYLOR@sakilac | |
| 11 | 2 | LISA | ANDERSON | LISA.ANDERSON@sakilacust | |
| 12 | 1 | NANCY | THOMAS | NANCY.THOMAS@sakilacu | |



Find Column: name Next Highlight All Replace

first_name
last_name

SELECT * FROM 'cust' Record 1 of 599 in page 1

Filtering Records (Available only in Full Version)

Use either of the following methods to filter the data in the grid:

- Right-click a field and select the **Filter** from the popup menu to filter records by the current value of the selected column.
- The **Custom Filter** Dialog is provided for quick building a simple filter. Just simply right-click a field and select the **Filter** -> **Custom Filter** from the popup menu. Use character '_' to represent any single symbol in the condition and use character '%' to represent any series of symbols in the condition.
- You can also customize your filter in a more complicated way by right-click a field and selecting the **Filter** ->  **Filter** from the popup menu or clicking the  **Filter** from the toolbar. The Filter Wizard becomes visible at the top of grid, where you can see the active filtering condition and easily enable or disable it by clicking a check box at the left.

Manipulating Raw Data

Navicat normally recognize what user has input in grid as normal string, any special characters or functions would be processed as plain text (that is, its functionality would be skipped).

Editing data in **Raw Mode** provides an ease and direct method to apply server built-in function. To access the Raw Mode function, just simply select **View** -> **Raw Mode** from the menu.

Note: Available only for MySQL, PostgreSQL, SQLite and SQL Server.

| customer_id | store_id | first_name | last_name |
|-------------|----------|--------------------|------------|
| '1' | '1' | 'MARY' | 'SMITH' |
| '2' | '1' | 'PATRICIA' | 'JOHNSON' |
| '3' | '1' | CONCAT('LIN','DA') | 'WILLIAMS' |
| '4' | '2' | 'BARBARA' | 'JONES' |

Formatting Table Grid

Use the following methods to format the table grid:

Move Columns

1. Click on the column header and hold down the left mouse button.
2. Move the pointer until a double black line appears in the desired location.
3. Release the mouse and the column will move.

| customer_id | store_id | first_name | last_name |
|-------------|----------|------------|-----------|
| 1 | 1 | MARY | SMITH |
| 2 | 1 | PATRICIA | JOHNSON |
| 3 | 1 | LINDA | WILLIAMS |
| 4 | 2 | BARBARA | JONES |
| 5 | 1 | ELIZABETH | BROWN |

Freeze Selected Column

If there are many columns in the table and you want to freeze one or more columns to identify the record. Just simply right-click the column you want to freeze and select **Display -> Freeze Selected Column** or select **View -> Freeze Selected Column** from the menu.

The frozen column(s) will move to the leftmost position in the table grid. This action will locks the frozen column(s), preventing them from being edited.

To unfreeze the columns, just simply right-click anywhere on the table grid and select **Display -> Unfreeze Columns** or select **View -> Unfreeze Columns** from the menu.

Set Display Format

The **Set Display Format** Dialog is provided for you to customize format applied to exported data on the selected column. Just simply right-click the column you want to edit its format and select **Display -> Set Display Format** or select **View -> Set Display Format** from the menu. Edit the format style to adjust the result format in the way you need. For example: dd-mm-yyyy.

Hint: This action applies on the selected column only. To adjust the global settings, see [Options](#).

Set Column Width

Click right border at top of column and drag either left or right.

Double-click right border at top of column to obtain the best fit for the column.

Right-click the column you want to set the column width with and select **Display -> Set Column Width** or select **View -> Set Column Width** from the menu. Specify width in the **Set Column Width** Dialog. The default value is 120.

Hint: The result only applies on the selected column. To adjust the global settings, see [Options](#).

Set Row Height

Right-click anywhere on the table grid and select **Display -> Set Row Height** or select **View -> Set Row Height** from the menu. Specify row height in the **Set Row Height** Dialog. The default value is 17.

Hint: This action applies on the current table grid only. To adjust the global settings, see [Options](#).

Show/Hide Columns

If there are many columns in the table and you want to hide some of them from the table grid. Just simply right-click anywhere on the table grid and select **Display -> Show/Hide Columns** or select **View -> Show/Hide Columns** from the menu. Select the columns that you would like to hide.

The hidden column(s) will disappear from the table grid.

To unhide the columns, just simply right-click anywhere on the table grid and select **Display -> Show/Hide Columns** or select **View -> Show/Hide Columns** from the menu. Select the columns that you would like to redisplay.

| | | | | |
|-------------------------------------------------|-------------|----------|-----------|------------|
| <input checked="" type="checkbox"/> customer_id | customer_id | store_id | last_name | address_id |
| <input checked="" type="checkbox"/> store_id | 1 | 1 | SMITH | 5 |
| <input type="checkbox"/> first_name | | | | |
| <input checked="" type="checkbox"/> last_name | 2 | 1 | JOHNSON | 6 |
| <input type="checkbox"/> email | 3 | 1 | WILLIAMS | 7 |
| <input checked="" type="checkbox"/> address_id | 4 | 2 | JONES | 8 |
| <input checked="" type="checkbox"/> active | | | | |
| <input checked="" type="checkbox"/> create_date | 5 | 1 | BROWN | 9 |


Show/Hide ROWID

If you want to display or hide the rowid (address) of every row, right-click anywhere on the table grid and select **Display -> Show/Hide ROWID** or select **View -> Show/Hide ROWID** from the menu.

The column **ROWID** will be showed in the last column.

Note: Available only for Oracle and SQLite.

Form View (Available only in Full Version)

The  Form View allows you to view, update, insert, or delete data as a form, which the current record is displayed: field name and its value. The popup menu of the form provides the following additional functions: set the field value as Null/Empty String, use current field value as a filter, format form view, and more.

The navigation bar allows you to switch the records quickly, insert, update or delete records.

Related topic:




[Sorting/Finding/Replacing Records](#)

[Filtering Records](#)


[Manipulating Raw Data](#)


[Formatting Table Grid](#)

Assistant Editors

Navicat provides Memo/Hex/Image/Web pane to view and edit TEXT/BLOB/BFile fields content. The editor allows you to view, update, insert, or delete data in a table. Click  **Memo**,  **Hex**,  **Image** and  **Web** from the toolbar to activate the appropriate viewer/editor.

Note: Oracle BFile fields cannot be edited.

The **Memo** pane allows you to edit data as a simple text. To change the syntax highlight, simply right-click the empty space and choose **Language**. Use the  button on the navigation bar to update the changed records to the table.


The **Hex** pane allows you to edit data in hexadecimal mode. Use the  button on the navigation bar to update the changed records to the table.

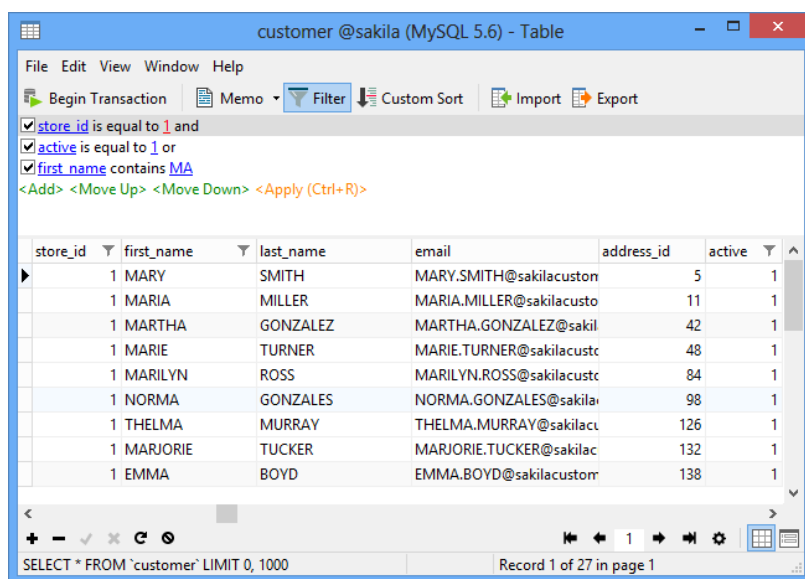
Note: Use the INSERT key on the keyboard to switch between Insert and Overwrite modes.

The **Image** pane allows you to show data as image. Use the  **Load**,  **Save to disk** and  **Clear** button to load/remove the image from a file, or save the image to a table.

The **Web** pane allows you to show data with HTML codes as in a web browser.

Filter Wizard (Available only in Full Version)

Filter Wizard allows you to facilitate creating and applying filter criteria that you specify for the table grid. Moreover, it allows you to save filter criteria as a profile for future use. Click  **Filter** from the toolbar to activate the editor.



1. To add a new condition to the criteria, just simply click the **<Add>**.
2. To choose the column, click on the column box (next to the check box) and select an item from the dropdown list.
3. Click on the filter operator box (next to the column box) and select an item from the dropdown list.



| Filter Operator | Result |
|---------------------------------|------------------------------------|
| is equal to <?> | My_Field = 'your_value' |
| is not equal to <?> | My_Field <> 'your_value' |
| is less than <?> | My_Field < 'your_value' |
| is less than or equal to <?> | My_Field <= 'your_value' |
| is greater than <?> | My_Field > 'your_value' |
| is greater than or equal to <?> | My_Field >= 'your_value' |
| contain <?> | My_Field LIKE '%your_value%' |
| does not contain <?> | NOT (My_Field LIKE '%your_value%') |
| begin with <?> | My_Field LIKE 'your_value%' |
| end with <?> | My_Field LIKE '%your_value' |
| is null | My_Field IS NULL |
| is not null | My_Field IS NOT NULL |

| | |
|------------------------|---------------------------------------------------------------|
| is empty | My_Field = " |
| is not empty | My_Field <> " |
| is between <?> <?> | ((My_Field >= your_value1) and (My_Field <= your_value2)) |
| is not between <?> <?> | NOT ((My_Field >= your_value1) and (My_Field <= your_value2)) |
| is in list <?> | My_Field in ('aaa','bbb',...) |
| is not in list <?> | My_Field not in ('aaa','bbb',...) |






- Click on the criteria values box (next to the filter operator box) to activate the appropriate editor and enter the criteria values. The editor used in criteria value boxes is determined by the editor type assigned to the corresponding column.
- Repeat step 1-4 to add another new condition.
- Click the **<Apply (Ctrl+R)>** or press CTRL+R to see the result of the filtering you made.

Hint: You are allowed to save filter criteria to and load them from the profiles for future use. Just simply right-click on the Filter Wizard and select **Save Profile/Open Profile**.

Query

A query is used to extract data from the database in a readable format according to the user's request. Navicat provides two powerful tools for working with the SQL queries: Query Editor for editing the query text directly and Query Builder for building queries visually. You can save your queries for setting [schedule](#). Click  to open an object list for **Query**. Or, you can simply click  button in the main window to open the Query Builder or the Query Editor.

Hint: Queries(.sql) are saved under the [Settings Location](#).

| Button | Description |
|----------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|
|  Run | Execute the query: Run, Run Selected or Run a statement from here. |
|  Stop | Stop the query. |
|  Explain | Show the Query Plan of the query. |
|  Beautify SQL | Format the codes with the Beautify SQL settings in Editor. |
|  Export | Export the result of the query. |

Query Builder (Available only in Full Version)

Navicat provides a useful tool called **Query Builder** for building queries visually. It allows you to create and edit queries without knowledge of SQL. The database objects are displayed in left pane. Whereas in the right pane, it is divided into two portions: the upper **Diagram Design** pane, and the lower **Syntax** pane.

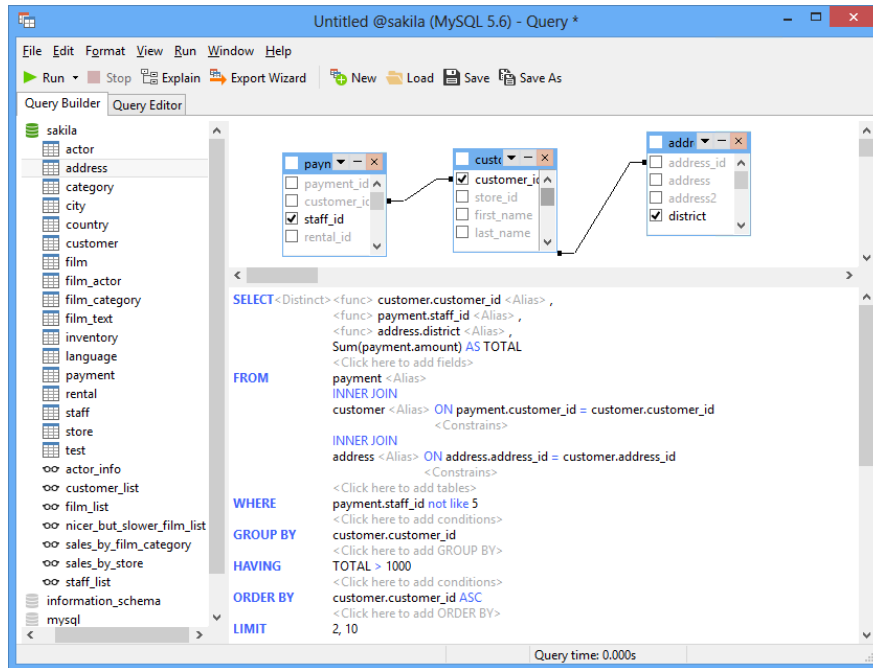
Note: Query Builder supports *SELECT* statement only. Use Query Editor for creating complex queries.

Drag a table from the left pane to the Diagram Design pane or double-click it to add it to query. To include a table field in the query, check the left of the field name in the Diagram Design pane. To include all the fields, click at the left of the object caption.

To remove the object from the Diagram Design pane, click the cross button at the object caption.

To add the table alias, simply double-click the table name and enter the alias in the Diagram Design pane.

Hint: You are also allowed to set criteria by right-click any fields from the Diagram Design pane.



Setting Field Association

To associate database objects by two fields, just drag one field from the object list to another and a line will appear between the linked fields.

Hint: To delete all the links of some object, click button '-' next to the object alias.

Go to the Syntax pane to change the association between the links, click the operator and choose the properties item from the popup menu. You can change the association condition by choosing it from the list (=, <>, <, <=, >, >=). Click **OK** to confirm the changes you made. Also you can change the type of Join.

Setting Output Fields

The fields you have selected in the Diagram Design pane will be displayed in the Syntax pane which allows you to set their displaying order and modify the output fields of the query using **<Distinct>**, **<func>** and **<Alias>**.

<Distinct>

Enable this option if you wish the repeated records are not included into the query result.

<func>

Set the aggregate functions (SUM, MAN, MIX, AVG, COUNT) for each field.

<Alias>

Change the output query field name.

Setting Criteria

To add a condition, click the **<--> = <-->** from the **WHERE** clause in the Syntax pane. Click **<-->** to choose the field from the list of all the table fields, available in the query. To define your own criteria, type your values directly in the Edit Tab. Clicking **=** to set condition operator.

Setting Grouping Criteria

You can set the conditions for grouping query records from the **GROUP BY** clause in the Syntax pane. They are set in the same way as setting criteria. The conditions will be included into the **HAVING** statement of the current query.

Setting Sorting Criteria

When you query your database/schema, you can sort the results by any field in an ascending or descending order by just adding *ORDER BY* at the end of your query.

In Query Builder, you can set the way of sorting query records from the **ORDER BY** clause in the Syntax pane. To change the sorting direction, click on either **ASC** or **DESC**.

Setting Limit Criteria

LIMIT clause is used to limit your query results to those that fall within a specified range. You can use it to show the first X number of results, or to show a range from X - Y results. It is phrased as Limit X, Y and included at the end of your query. X is the starting point (remember the first record is 0) and Y is the duration (how many records to display).

Note: Available only for MySQL, PostgreSQL and SQLite.

Query Editor

Navicat provides a useful tool called **Query Editor** for creating and executing queries. It allows you to create and edit SQL text for a query, prepare and execute selected queries.

Hint: Query text will be automatically generated while you build in Query Builder.

You are allowed to run selected portion of query, just simply right-click the highlighted query and select **Run Selected**.

You can define multiple SQL statements in one Editor window, and the editor let you run the current statement your cursor is on (place your cursor in the front of the desired statement). Just simply select **Run a statement from here** or press F7.

Note: Select **Run a statement from here** or press F7, the next statement will continue to run.

Editor Advanced Features

Navicat provides a wide range advanced features, such as compelling code editing capabilities, smart code-completion, sql formatting, and more.

SQL Formatting

To change the SQL statement format, simply choose from the **Format** menu -

Indent

Increase/decrease indent for the selected lines of codes.

Comment

Comment/uncomment the selected lines of codes.

Convert Case

Format the selected codes into upper/lower case.

Beautify SQL (Available only in Full Version)

Format the selected codes with the Beautify SQL settings.

Beautify SQL With (Available only in Full Version)

Change the Beautify SQL settings.

| Option | Description |
|---------------------|--------------------------------------------------------------------------------|
| Use tab character | Check this option to use tab character. |
| Tab size | Set the tab size. |
| Short brace length | Set the length of the short brace. |
| Upper case keywords | Format all the SQL keywords to upper case. |
| Save settings | Save the SQL beautify options settings after you click Beautify button. |

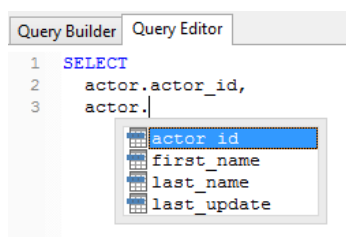
Minify SQL (Available only in Full Version)

Minify the format of the SQL in the SQL Editor.

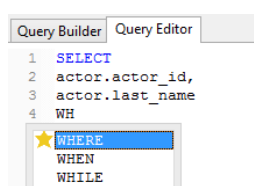
Code-Completion (Available only in Full Version)

Code-completion in Navicat displays information in drop-down lists as you type your SQL statement in the editor, it assists you with statement completion and the available properties of database objects, for example databases, tables, fields, views etc with their appropriate icons.

To activate the code-completion, just simply press '.' for the available properties of database object currently in the scope.



Hint: You may invoke code-completion by typing two characters or pressing CTRL+SPACE on your keyboard for SQL keywords.



Hint: Smart code-completion will pop-up a list of variants for the word completion automatically.





Note: Code-completion can be also applied on View, Functions/Procedures, etc.

Related topic:

[Code Insight Options](#)

Code Folding

Code folding feature enables you to collapse blocks of code such that only the first line of the block appears in **Editor**.

A block of code that can be folded is indicated by an icon  to the left of the first line of the block. A vertical line extends from the icon to the bottom of the foldable code. In contrast, a folded block of code is indicated by an icon  to left of the code block. You can fold the block by clicking  or expand it by clicking  in **Editor**.

```
1  CREATE OR REPLACE
2  FUNCTION get_max_checkpoint(sessionnum IN NUMBER)
3                                     RETURN number IS
4      ckpt number;
5  BEGIN
6      select ckpt_scn into ckpt
7      from
8          (...)
12     where rownum = 1 ;
13     return ckpt;
14 END get_max_checkpoint;
```

Brace Highlight

Navicat supports to highlight the matching brace in the editor, i.e. (), Begin...End .

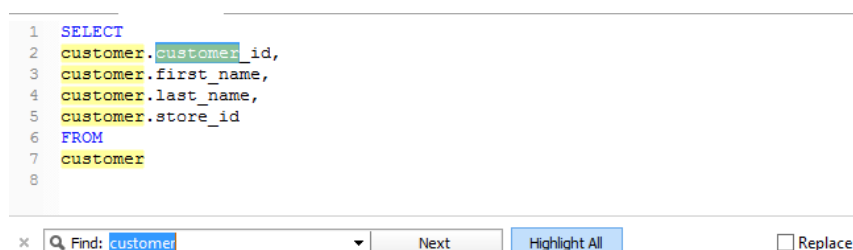
Note: The cursor must be on a brace to show the highlight.

```
1  CREATE OR REPLACE
2  procedure      subptxt(name varchar2, subname varchar2, usr varchar2,
3                                     txt in out varchar2) is
4  begin
5      subptxt2(name, subname, usr, null, null, txt);
6  end;
```

Find and Replace

Find

The **Find** Dialog is provided for quick searching for the text in the editor window. Just simply click **Edit** -> **Find** from the menu or press CTRL+F and enter a search string.



The search starts at the cursor's current position to the end of the file. There will not have differentiates when performing a uppercase or lowercase search.

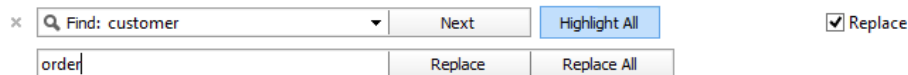
To find for the next text, just simply click **Next** or press F3.

Replace

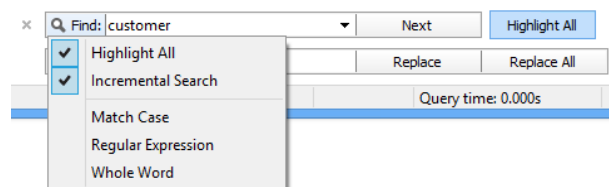
To open the **Replace** Dialog, simply check the **Replace** box and enter the text you want to search and replace.

Click **Replace** button to replace the first occurrence.

Click **Replace All** button to replace all occurrences automatically.



There are some additional **Options** for Find and Replace:



Copy with Quotes

To copy the SQL statement with quotes, just simply right-click the highlighted SQL. Then, select **Copy with quotes** and choose the format.

Note: Only available in Query, View and Materialized View.

Zoom In/Zoom Out


Navicat has the ability to zoom in or zoom out the SQL in the editor. The zooming options are available from the **View** menu. The same effect can be achieved with keyboard shortcuts.

- Zoom In: [CTRL+=]
- Zoom Out: [CTRL+-]
- Reset: [CTRL+0]

Hint: Range from -10 to +20.

Note: Files are opened in different tabs will not be effected by the zoom.

Query Results


To run the query, click  **Run** on the toolbar. If the query statement is correct, the query executes and, if the query statement is supposed to return data, the **Result** tab opens with the data returned by the query. If an error occurs while executing the query, execution stops, the appropriate error message is displayed.

The **Result** tab displays the result data, returned by the query, as a grid. Data can be displayed in two modes: **Grid View** and **Form View**. See [Table Viewer](#) for details.

Hint: Navicat supports to return 10 resultsets.

Note: You can choose to show the Result tab below the editor or in a new tab by selecting **View -> Show Result -> Below Query Editor** or **In a New Tab**.

Query Profile and Status (Available only for MySQL)

To show the profile and status when running the query, simply choose **View -> Show Profile and Status** and click  **Run** on the toolbar.

The **Profile** tab displays the query profile: Table lock, System lock, Statistic, etc.

Note: For MySQL 5.0, support from 5.0.37 or above.

For MySQL 5.1, support from 5.1.24 or above.


The **Status** tab displays the query status: Bytes received, Bytes sent, etc.

Query Parameters

Query Builder and Query Editor both support using of parameters inside the query text. You can set query parameters to add variable values to a query each time you run it. The parameter should appear as an identifier with **\$** at its beginning, quote with [], e.g. [\$any_name].


Execute the query and the **Input Parameter** Dialog is provided for you to enter the desired data you wish to search.

Debugging Oracle Query (Available only in Full Version)

To debug the Oracle query click  **Debug** on the toolbar to launch the [Oracle Debugger](#).

Enter the parameter(s) if the query has input parameter(s).

Model (Available only in Navicat Premium and Enterprise Version)

Model is a powerful tool for creating and manipulating database models. Click  to open an object list for **Model**. Some of key features are listed here:

- Create and manipulate a model graphically.
- Reverse engineer a database/schema or table(s) to a model.
- Forward engineer a model to a sql file or database/schema.
- Create and edit table structures directly.

Sidebar Panel

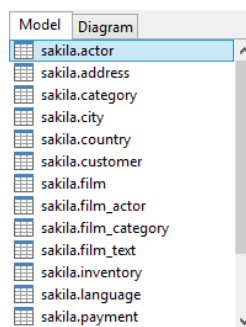
In the **Sidebar** panel, all objects of your model/diagram(s), their properties and action history are listed. To show/hide the sidebar, simply choose **View** -> **Sidebar** from the main menu.

The Sidebar consists of the following components:

- Model Tree Palette
- Diagram Tree Palette
- Properties Palette
- History Palette

Model Tree Palette

Model Tree holds all the tables in the model, including the tables used in each individual diagram.



The popup menu options of the table in model tree include:

Design Table

Edit an existing table in model tree.

New Table

Create a new table in model tree.

Delete Table

Delete a table in model tree.

Add Table To Diagram

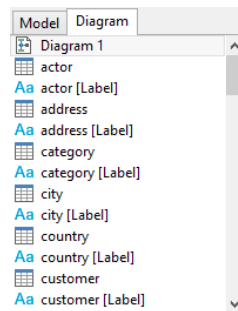
Add the table to the active diagram.

Rename

Change the name of the table.

Diagram Tree Palette

Diagram Tree holds all the objects (tables, layers, notes, images and relations) added to the active diagram.



The popup menu options of the diagram in diagram tree include:

New

Create a new object (table/layer/note/image) in diagram tree.

Paste

Paste the content from the clipboard into the diagram.

Select All

Select all the objects in the diagram.

Rename

Change the name of the diagram.

Diagram Notation

Change the notation of the diagram.

Diagram Dimensions

Change the number of pages used in the diagram.

Properties Palette

The **Properties** palette is used to display and edit the properties of diagram and its objects.

Black and White

Check this box to change the diagram color to black and white.

Bold

Check this box or press CTRL+B to bold the table or relation.

Color

The color of the object.

Diagram Notation

The notation of the diagram. The value for this can be Default, Simple, IDEF1X, UML or Crow's Foot.

Font Bold

Check this box to bold the note font.

Font Color

The font color of the note.

Font Italic

Check this box to apply an italic style to the note font.

Font Name

The font name of the note.

Font Size

The font size of the note.

Height

The height of the object.

Height (pages)

The height of the diagram (number of papers).

Left

The number of pixels from the object to the left side of the canvas.

Name

The name of the object.

Opacity

The transparency of the image. The value for this can be between 0 to 100. Use 100 for opacity and 0 for transparent.

Referenced Cardinality

The relation cardinality of referenced (parent) table.

Referencing Cardinality

The relation cardinality of referencing (child) table.

Schema Name

The schema names of the table.

Show Description

Check this box to show the linked description label of the table/layer/relation.

Show Schema Name

Check this box to show the schema names of the tables in the diagram.

Style

The style of the note. The value for this can be Note or Label.

Table Font Name

The font name of the tables.

Table Font Size

The font size of the tables.

Top

The number of pixels from the object to the top of the canvas.

Visible

Check this box to show the relation lines.

Width

The width of the object.


Width (pages)

The width of the diagram (number of papers).


History Palette

The **History** palette shows all the actions that you have taken. Simply double-click a action to restore that state.

Diagram Editor

Diagram Editor consists of a canvas and a vertical toolbar for you to design the diagram, such as adding objects, formatting diagrams and printing models, etc. Simply click the  **New Diagram** button to create a new diagram.

Create Tables

To create a new table, click the  button from the diagram toolbar and click anywhere on the canvas. You can add existing table(s) from the model tree to the diagram, simply drag and drop the selected table(s) from model tree to the canvas. To show/hide the linked description label, simply check/uncheck the **Show Description** option in Properties Palette.

Note: If you right-click a field, you can choose to add, insert, delete, rename field and set the field as primary key.

The popup menu options of the table object in canvas include:

Design Table

Edit the table structure in a designer, e.g. fields, indexes, foreign keys, etc. The tabs and options in the designer depend on the diagram database type you are chosen. For the settings of different tabs, see [Server Objects](#).

Add Related Tables

Add all related tables to the selected table.

Add Field

Add fields to the existing table.

Cut

Remove the table from the diagram and put it on the clipboard.

Copy

Copy the table from the diagram to the clipboard.

Paste

Paste the content from the clipboard into the diagram.

Select All Tables

Select all the tables in the diagram.

Delete

Delete a table from the diagram or from both diagram and model.

Rename

Change the name of the table.

Color

Change the color of the table.

Size to Fit

Resize the table automatically to fit its contents.


Bring to Front

Bring table to the foreground.

Send to Back

Move table to the background.

Create Layers

Layers are used to help organize objects (e.g. tables, notes, images, etc) on the canvas. You can add all related objects to the same layer. For example, you may choose to add all your sales related tables to one layer. To create a new layer, click the  button from the diagram toolbar and click anywhere on the canvas. To show/hide the linked description label, simply check/uncheck the **Show Description** option in Properties Palette.

The popup menu options of the layer object in canvas include:

Cut

Remove the layer from the diagram and put it on the clipboard.

Copy

Copy the layer from the diagram to the clipboard.

Paste

Paste the content from the clipboard into the diagram.

Select All Layers

Select all the layers in the diagram.

Delete

Delete a layer from the diagram.

Color

Change the color of the layer.

Size to Fit

Resize the layer automatically to fit its contents.


Bring to Front

Bring layer to the foreground.

Send to Back

Move layer to the background.

Create Notes and Labels

Notes or Labels are typically used to help document the diagram design process. For example, to explain a grouping table objects. To create a new note or label, click the  button from the diagram toolbar and click anywhere on the canvas.

The popup menu options of the note object in canvas include:

Edit

Change the content of the note.

Style

Choose the style of the note: Note or Label.

Cut

Remove the note from the diagram and put it on the clipboard.

Copy

Copy the note from the diagram to the clipboard.

Paste

Paste the content from the clipboard into the diagram.

Select All Notes

Select all the notes in the diagram.

Delete

Delete a note from the diagram.

Color

Change the color of the note.

Size to Fit

Resize the note automatically to fit its contents.


Bring to Front

Bring note to the foreground.

Send to Back

Move note to the background.

Create Images

To create a new image, click the  button from the diagram toolbar and click anywhere on the canvas.

The popup menu options of the image object in canvas include:

Reset Size

Reset the size of the image to its original size.

Reset Aspect Ratio

Maintain image original width to height ratio.

Cut

Remove the image from the diagram and put it on the clipboard.

Copy

Copy the image from the diagram to the clipboard.

Paste

Paste the content from the clipboard into the diagram.

Select All Images

Select all the images in the diagram.

Delete

Delete an image from the diagram.


Bring to Front

Bring image to the foreground.

Send to Back

Move image to the background.

Create Relations

To add a relation, click the  button from the diagram toolbar and drag and drop a field from one table to another. To show/hide the linked description label, simply check/uncheck the **Show Description** option in Properties Palette.

The popup menu options of the relation object in canvas include:

Design Relation

Edit the relation in a designer. The options in the designer depend on the diagram database type you are chosen. For the settings, see [Server Objects](#).

Cardinality on table_name1

Set the cardinality on table_name1: None, One and Only One, Many, One or Many, Zero or One, Zero or Many.

Cardinality on table_name2

Set the cardinality on table_name2: None, One and Only One, Many, One or Many, Zero or One, Zero or Many.

Add Vertex

Add a vertex on a relation connector.

Delete Vertex

Delete a vertex on a relation connector.

Delete All Vertices

Delete all vertices on a relation connector.

Paste

Paste the content from the clipboard into the diagram.

Select All Relations

Select all the relations in the diagram.

Delete from Diagram and Model

Delete a relation from the diagram and model.

Color

Change the color of the relation.

Format Diagram

Show Grid

To turn the grid on in the diagram canvas, choose **View** -> **Show Grid** from the menu.

Snap to Grid

To align objects on the canvas with the grid, choose **View** -> **Snap To Grid** from the menu.

Change Database Type

To change the database type of the diagram, choose **Model** -> **Database** and select the type from the menu. Choose **Generic** if you do not decide the database type.

Change Diagram Notation

To change the notation of the diagram, choose **Model** -> **Diagram Notation** and select the notation from the menu.

| | |
|------------------|---------------------------------------------------------------------|
| Default | The default notation style used in Navicat. |
| Simple | A simple notation style. The table objects will only show the name. |
| Crow's Foot | Crow's Foot notation style. |
| IDEF1X | The ICAM DEFinition language information modeling method. |
| UML | Universal Modeling Language style. |
| Black and White | Change the color of the diagram to black and white. |
| Show Schema Name | Show the schema names of the tables in the diagram. |

Change Diagram Dimensions

To change the number of pages used in the diagram, choose **Model** -> **Diagram Dimensions** from the menu and set the Width and Height.

Align Objects

To align objects on the canvas, select more than one object (table/note/image), then right-click and choose **Alignment** -> **Align Left/Align Center/Align Right/Align Top/Align Middle/Align Bottom**.


Change the Objects Distribution

To distribute objects on the canvas, select more than one object (table/note/image), then right-click and choose **Distribute** -> **Horizontal/Vertical**.

Change Page Setup

To change paper size, orientation and margins, choose **File** -> **Page Setup**.

Apply Auto Layout

To automatically arrange objects on the canvas, click  **Auto Layout** from the toolbar. To change the Auto Layout format, simply choose **Tools** -> **Auto Layout with** from the menu and set the following options:

| Option | Description |
|-------------------------|------------------------------------------------------|
| Auto Diagram Dimension | Choose the suitable diagram dimension automatically. |
| Auto Size Tables to Fit | Resize the table to fit its content automatically. |
| Quality | The quality of the auto layout output. |
| Object Distance | The distance between the objects in the diagram. |

Zoom In/Zoom Out

To zoom in or zoom out the selected area of the diagram, adjust the slider of the **Navigator**. If the Navigator is hidden, choose **View** -> **Navigator** from the menu. Same effect can be achieved with keyboard shortcuts:


Zoom In: [CTRL++] or [CTRL+Mousewheel Up]

Zoom out: [CTRL+-] or [CTRL+Mousewheel Down]

Preview and Print Model

To preview the pages before printing, simply click the  **Print Preview** button. The model can be printed to the printer or to various file formats.

Print to a printer

Choose **File** ->  **Print** to send your diagram directly to the printer. You can set the printer option in the popup window.

Print to a file (PDF/PNG/SVG)




Choose **File** -> **Print As** -> **PDF/PNG/SVG** to create a PDF/PNG/SVG file of your diagram.

Reverse Engineering

Reverse Engineering is one of the key features of Model. This feature allows you to load already existing database structures to create new diagrams. It supports to import MySQL, PostgreSQL, Oracle, SQLite, SQL Server databases/tables.

Navicat provides a step-by-step wizard for you to complete the task:

1. Select **Tools** -> **Import from Database**.
2. Select a connection.
3. Choose databases, schemas or tables you want to import.
4. Click **Start**.

You can also simply create a new model using reverse engineering in the Navicat main window. Right-click an opened database/schema or table(s) and select  **Reverse Database to Model**,  **Reverse Schema to Model** or  **Reverse Tables to Model** from the popup menu.

Script Generation

After finishing your model, you can save table structures and relations from the model into a script file. The **Export SQL** feature generates a SQL file for the script. Select **Tools** -> **Export SQL**.

General Settings for Export SQL

File

Set the output file name and location.

Tables

Choose tables in current model you wish to export.

Advanced Settings for Export SQL

The following options depend on the diagram database type you are chosen: Generic, MySQL, Oracle, PostgreSQL, SQLite and SQL Server.

Server Version

Select server version for the SQL file.

Include Schema

Include entered schema name in file with this option is on. Otherwise, only table name is included in SQL statements.

Include Drop SQL

Include drop table SQL statements in file with this option in on.

Include Drop with CASCADE

Include drop table SQL statements with cascade option in file with this option in on.

Include Primary Keys

Include primary keys in file with this option is on.

Include Foreign Keys

Include foreign keys in file with this option is on.

Include Uniques

Include uniques in file with this option is on.

Include indexes

Include indexes in file with this option is on.

Include character set

Include table and field character set in file with this option is on.

Include auto increment

Include table auto increment values in file with this option is on.

Include Collation

Include table collation in file with this option is on.

Forward Engineering

Forward engineering is one of the key features of Model. This feature allows you to compare the model and existing schemas/tables, states the differences between their structures, and offer synchronizing the structures in model to the target connection.

Navicat provides a step-by-step wizard for you to complete the task.

1. Select **Tools** -> **Synchronize to Database**.
2. Select the synchronization type.
3. Select the source schemas/tables.
4. Select the target connection from existing connections and edit synchronization properties.
5. Click **Compare** to generate a set of scripts that show the differences between source and target tables.
6. Select the scripts you want to run.
7. Click **Run Query**.

Selecting Synchronization Type

Sync with selected schemas

Set the synchronization to work on all tables in schemas.

Sync with selected tables

Set the synchronization to work on tables only.

Selecting Schemas/Tables

Choose one or more schemas/tables in model to compare to the target schemas/tables in this step. If tables in model are from existing schemas, you can select the existing schemas. Otherwise, enter a target schema name for the source model tables to compare to.

Selecting Target Connection

Connection

Choose target connection and database from existing connections.

The following options depend on the diagram database type you are chosen: MySQL, Oracle, PostgreSQL, SQLite and SQL Server.

Compare Identifier With Case Sensitive

Check this option if you want to compare table identifier with case sensitive option.

Compare Primary Keys

Check this option if you want to compare table primary keys.

Compare Foreign Keys

Check this option if you want to compare table foreign keys.

Compare Indexes

Check this option if you want to compare indexes.

Compare Character Set

Check this option if you want to compare character set of tables.

Compare Auto Increment Value

Check this option if you want to compare auto increment values of tables.

Compare Uniques

Check this option if you want to compare uniques.

Compare Collation

Check this option if you want to compare collation of tables.

SQL for objects to be created

Check this option to include all related SQL statements if new database objects will be created in the target.

SQL for objects to be changed

Check this option to include all related SQL statements if database objects will be changed in the target.

SQL for objects to be dropped

Check this option to include all related SQL statements if database objects will be dropped from the target.

Continue on error

Ignore errors that are encountered during the synchronization process.

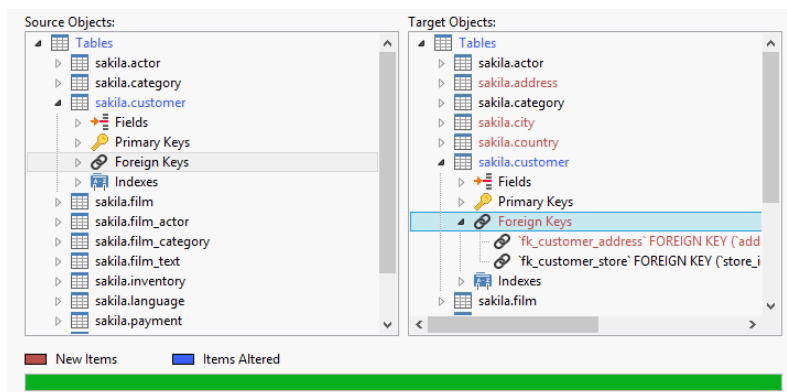
Viewing Comparison Result

Source Objects/Target Objects

The tree view shows the differences between model and database tables after the comparison of their structures, providing with the detailed SQL statements shown in the **Queries for Modification** list.

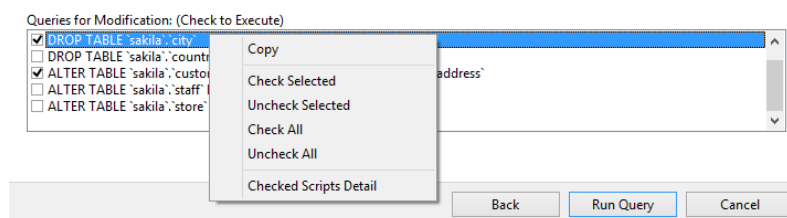
The red item represents the non-existence for the other database/schema.

The blue item represents the existence for the other database/schema, but different definition detected.



All the scripts are unchecked in the **Queries for Modification** list by default. Check the scripts you want to apply to the target.

You can highlight multiple lines of scripts, and then right-click to show the popup menu. Choose **Checked Scripts Detail** to view the full SQL statements you selected.





Click **Run Query** button to execute the selected query.

Model Hints and Tips

Navicat provides some useful hints to work on the model more effectively.

| Action | Description |
|--------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Locate Object in Diagram Editor | <ul style="list-style-type: none"> - Object selected in Diagram Tree will be highlighted in Diagram Editor. - Double-click an object in Diagram Tree will jump to the corresponding object. |
| Delete Table from Model Tree Palette | <ul style="list-style-type: none"> - Select table in Diagram Editor and press SHIFT+DELETE. |
| Open Table Designer | <ul style="list-style-type: none"> - Double-click a table in Model Tree/Diagram Editor. |

| | |
|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Add table from Navicat Main | - Drag table from Navicat main window and drop to the Diagram Editor. |
| Get Table Structure (SQL Statement) | - Select and copy the table in Diagram Editor, and paste it to text editor, e.g. Notepad. |
| Design Field without Table Designer | <p>- Select and click the table name and press TAB/DOWN ARROW to add/edit fields.</p> <p>Navicat will predict field types according to field names you entered.</p> <p>INTEGER/int/int4/NUMBER</p> <ul style="list-style-type: none"> - suffix "id", "no" (if it is the first column, it will be predicted as a primary key) - suffix "num" - "qty", "number" - exactly "age", "count" <p>DECIMAL(10,2)/decimal(10,2)/NUMBER/REAL/money</p> <ul style="list-style-type: none"> - suffix "price", "cost", "salary" <p>FLOAT/double/float8/NUMBER/REAL/float</p> <ul style="list-style-type: none"> - "size", "height", "width", "length", "weight", "speed", "distance" <p>DATE/datetime/date/TEXT/datetime2</p> <ul style="list-style-type: none"> - "date", "time" <p>VARCHAR(255)/varchar(255)/VARCHAR2(255)/TEXT</p> <ul style="list-style-type: none"> - other field names <p>Enter * before the field name to recognize as primary key. e.g. *itemNo:int.</p> <p>Enter : between field name and field type to custom field type, e.g. itemName:varchar(255).</p> |
| Reorder Field | - Select table in Diagram Editor, then press and hold the SHIFT key. Use  to drag the field to a desired location. |
| Delete Field | - Select table in Diagram Editor, then press and hold the SHIFT key. Use  to drag the desired field out of the table. |
| Add Vertex to Relation | - Select relation in Diagram Editor, then press and hold the SHIFT key. Click on the relation to add vertex. |
| Delete Vertex on Relation | - Select relation in Diagram Editor, then press and hold the SHIFT key. Click on the vertex. |
| Delete Relation from Model | - Select relation in Diagram Editor and press SHIFT+DELETE. |
| Switch to Hand Mode | - Press and hold the SPACE key, then move the diagram. |
| Select a Page in Print Preview | <p>- Press and hold the SHIFT key, then point to a page to show the page number.</p> <p>- Press and hold the SHIFT key, then click a page to jump to the corresponding page in Diagram Editor.</p> |

Advanced Tools

Navicat provides a number of powerful tools for working with data, which includes **Import Wizard**, **Export Wizard**, **Dump SQL File**, **Execute SQL File** and more.

Import Wizard

Import Wizard allows you to import data to tables from CSV, TXT, XML, DBF and more. You can save your settings as a profile for setting schedule.

Note: Navicat Essentials version only supports to import text-based files, such as TXT, CSV, HTML, XML and JSON file.

To open the Import Wizard, click  **Import Wizard** from the table object list toolbar.

Hint: You can drag a supported file to the table object list or a database/schema in the connection tree. Navicat will popup the **Import Wizard** window. If existing table is highlighted, Navicat will import the file to the highlighted table. Otherwise, import the file to a new table.

Setting Import File Format (Step 1)

Select one of the available import types for the source file.

Note: The Excel file format is according to the Microsoft Office version installed in your computer.

Setting Source File Name (Step 2)

Browse the source file name. The file extension in the **Import from** text box changes according to the selected import type in step

1. Select the **Encoding** for the source file.

Note: For TXT and XML file, you can select more than one file to import.

Excel

Sheets will be shown in the **Tables** list.

Access

If there is security settings, i.e. database password and user level security in your access file, you are required to input the necessary information. Click **Security** button for more settings:

System Database File

Locate the system security file of the Access file, e.g. D:\Temp\Security.mdw.

Database Password

Enter the password for the database if any.

Logon Name

Enter the user name set by the user level security.

Logon Password


Enter the password of that user.

ODBC

Setting up an ODBC Data Source Connection

1. In Control Panel, select **Administrative Tools**.
2. Select **Data Sources (ODBC)**.
3. Click **Add** button in **User DSN** tab.
4. Select the appropriate ODBC driver, such as **Microsoft ODBC for Oracle** and click **Finish** button.
5. Enter required information.
6. Click **OK** button to see your ODBC Driver in the list.

Connecting to ODBC Data Source in Navicat

1. Click  in **Import from** in step 2 of the Import Wizard.
2. In **Provider** tab, select the appropriate ODBC driver, such as **Microsoft OLE DB Provider for ODBC Drivers**.
3. Under **Connection** tab, choose the data source from the **Use data source name** drop-down list and provide valid username and password.
4. All available tables will be included in the **Tables** list if connection is success.

Hint: If you are importing from Access and ODBC, the **Add Query**, **Delete Query** and **Modify Query** buttons open the **Add Query** dialog where you can construct query to import only certain rows from your source tables. In other words, import only rows that satisfy the criteria set by you. Tables and queries will be shown in the **Tables** list.

Setting Delimiter (Step 3) - TXT, XML

TXT

Define **Record Delimiter**, **Field Delimiter** and **Text Qualifier** for file.

Choose **Fixed Width** to import the text file with fixed width format. To delimit the source column bounds, click on the desired position to create a break line. Simply drag it to move it or double-click it to remove it.

☐ Delimited - Characters such as comma or tab separate each field

☒ Fixed Width - Fields are aligned in columns with spaces between each field

Lines with arrows signify field breaks. To CREATE a break line, click at the desired position. To DELETE a break line, double click on the line. To MOVE a break line, click and drag it

| u_id | name | location |
|------|------|----------|
| 0001 | chan | hk |
| 0002 | yuen | hk |
| 0003 | kong | uk |
| 0004 | fung | nz |
| 0005 | wong | cn |
| 0006 | hong | us |

XML

Define tag to identify table row.

Consider tag attributes as table field

For example:

```
<row age="17">
<id>1</id>
<name>size</name>
</row>
```

With this option is on, Navicat will recognizes "age" as a table field together with "id" and "name", otherwise, only "id" and "name" will be imported as table fields.

Note: Navicat does not support multiple level of XML file.

Setting Additional Options (Step 4) - TXT, XML, Excel, HTML

The following options depend on the file format chose in step 1.

Field Name Row

Field name row indicates which row should Navicat recognize as Column Title.

First Data Row

First data row indicates which row should Navicat start reading the actual data.

Last Data Row

Last data row indicates which row should Navicat stop reading the actual data.

Note: If no column title are defined for the file, enter **1** for First data row and **0** for Field name row.

Date Order, Date Delimiter, Time Delimiter, DateTime Order

Define the formats of date and time.

Decimal Symbol

Define the format of decimal number.

Binary Data Encoding

Set binary data is imported as **Base64** encoded or **None** encoding from file.

Setting Target Table (Step 5)

You are allowed to define a new table name or choose to import into an existing table from the drop-down list.

Note: If you type a new table name in **Target Table**, the box in **New Table** will be checked automatically.

| Source Table | Target Table | New Table |
|--------------|--------------|-------------------------------------|
| parts | part | <input checked="" type="checkbox"/> |

For importing multiple tables, all tables will be shown in the list.

| Source Table | Target Table | New Table |
|--------------|--------------|--------------------------|
| parts | parts | <input type="checkbox"/> |
| plbiolife | plbiolife | <input type="checkbox"/> |

Adjusting Field Structures and Mapping Fields (Step 6)

Navicat will make assumption on the field types and length in the source table. You are allowed to choose desired type from the drop-down list.

Hint: For importing multiple tables, select other tables from the **Source Table** drop-down list.

| | |
|---------------------------------------------------|---------------------------------------------------------------------------------------------------|
| Source Table: | job_history |
| Target Table: | countries departments duty_time employees job_history jobs locations regions |
| <input checked="" type="checkbox"/> EMPLOYEE_ID | |
| <input checked="" type="checkbox"/> START_DATE | |
| <input checked="" type="checkbox"/> END_DATE | |
| <input checked="" type="checkbox"/> JOB_ID | varchar 30 0 |
| <input checked="" type="checkbox"/> DEPARTMENT_ID | double 0 0 |

If you are importing data into existing table(s), you might need to map the source field names manually to the destination table or right-click and select **Smart Match All**, **Direct Match All** and **Unmatch All** from the popup menu for quick mapping.

| Target Field | Source Field | Primary Key |
|--------------|--------------|-------------|
| Species No | | |
| Category | | |
| Common_Name | | |
| Species Name | Species No | |
| Length (cm) | Category | |
| Length_In | Common_Name | |
| Graphic | Species Name | |
| | Length (cm) | |
| | Length_In | |

| Target Field | Source Field | Primary Key |
|--------------|--------------|-------------|
| Species No | | |
| Category | | |
| Common_Name | | |
| Species Name | | |
| Length (cm) | | |
| Length_In | | |
| Graphic | | |

If you are importing via ODBC, the **Condition Query** button opens the **WHERE** dialog where you can specify a *WHERE* clause to import only certain rows from your source tables. In other words, import only rows that satisfy the criteria set by you.

Hint: Do not include the word *WHERE* in the clause.

Selecting Import Mode (Step 7)

Select the import mode that defines how the data being imported.

Import mode

☒ Append: add records to the destination table
☐ Update: update record in destination with matching record from source
☐ Append/Update: if record exists in destination, update it. Otherwise, add it
☐ Delete: delete records in destination that match records in source
☐ Copy: delete all records in destination, repopulate from the source

Advanced

Hint: To activate the remaining options, you must enable Primary Key in step 6.

| Target Field | Source Field | Primary Key |
|--------------|--------------|-------------|
| Species No | Species No | |
| Category | Category | |
| Common_Name | Common_Name | |
| Species Name | Species Name | |
| Length (cm) | Length (cm) | |
| Length_In | Length_In | |
| Graphic | Graphic | |

Click **Advanced** button for more settings:

The following options depend on the database type you are chosen: MySQL, Oracle, PostgreSQL, SQLite and SQL Server.

Run multiple queries in each execution

Check this option if you want to run multiple queries in each execution.

Use extended insert statements

Insert records using extended insert syntax.

Example:

```
INSERT INTO `users` VALUES ('1', 'Peter McKindy', '23'), ('2', 'Johnson Ryne', '56'), ('0', 'Katherine', '23');
```

Use empty string as NULL

Import **NULL** value if the source data field contains empty string.

Use Foreign Key constraint

Add foreign key if there is foreign key relations between tables.

Continue on error

Ignore errors that are encountered during the import process.

Include Unique, Index and Foreign Key

Include Unique, Index and foreign key during the import process.

Note: Support only when file type is MS Access database or ODBC.

Create Auto Increment Fields

Create Auto Increment Fields during the import process.

Note: Support only when file type is MS Access database, Paradox file or DBase file.

Import Deleted Records

Import the deleted records in the DBase file during the import process.

Note: Support only when file type is DBase file.

Saving and Confirming Import (Step 8)

Click **Start** button to start the import process. You can view the running process indicating success or failure. These messages are saved in file - LogImport.txt.

Hint: Click **Save** button to save your settings as a profile for setting schedule.

You can click **Log** button to view the log file.

Export Wizard

Export Wizard allows you to export data from tables, views, or query results to any available formats. You can save your settings as a profile for setting schedule.

Note: Navicat Essentials version only supports to export text-based files, such as TXT, CSV, HTML, XML and JSON file.

To open the Export Wizard, click  **Export Wizard** from the object list toolbar.

Setting Export File Format (Step 1)

Select one of the available export formats for the target file.

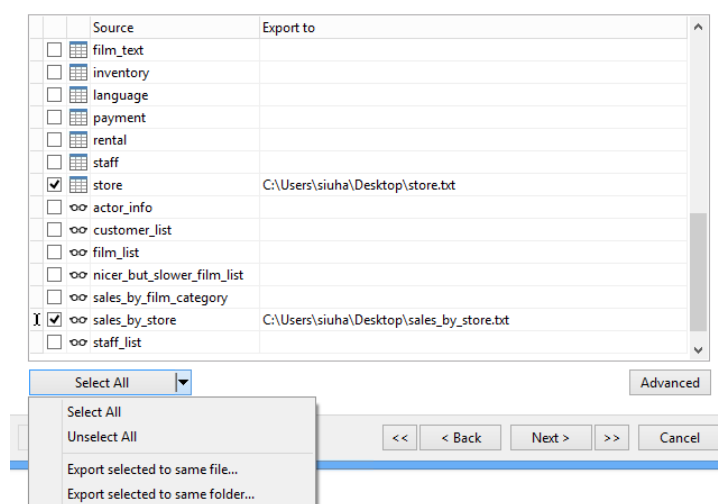
Note: The Excel file format is according to the Microsoft Office version installed in your computer.

Navicat 64-bit version does not support exporting to .mdb file.

Setting Destination File Name (Step 2)

Set exported file name and location. You can check the box next to table name in **Source** directly to assign a default file name and location. If existing table is highlighted, it will be checked automatically and assigned a default file name and location. The file extension in the **Export to** text box changes according to the selected export type in step 1.

Note: For exporting query result, ensure the query is saved before running the Export Wizard. Otherwise, no source table displayed in here.



In Vista or above, you can select/unselect all source tables from **Select All** button.

If you are exporting selected tables into the same target file, you can select **Export selected to same file** from **Select All** button for quick mapping.

If you are exporting selected tables into the same directory, you can select **Export selected to same folder** from **Select All** button for quick mapping.

Click **Advanced** button for more settings:

Encoding

Select the encoding for the exported file.

Add timestamp

Check this option if you want your file name specifies the timestamp of the export is run. Select the date/time format from the drop-down list.

Selecting Fields for Export (Step 3)

Select table fields for export. All the fields are selected in the **Available Fields** list by default. If you want to omit some fields to be exported, uncheck the box **All Fields** first and then uncheck those fields in the **Available Fields** list.

Note: For exporting query result, the wizard will skip this step.

Setting Additional Options (Step 4)

The following options depend on the file format chose in step 1.

Include column titles

Field names will be included into the exported file if this option is on.

Append

Append records to the existing file. If you select **Export selected to same file** option for multiple tables in step 2, checks this option to append the records.

Continue on error

Ignore errors that are encountered during the export process.

Use Attributes Format in XML

| Attributes Format |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <RECORDS> <RECORD OrderNo="1003" ItemNo="1" PartNo="1313" Qty="5" Discount="0"></RECORD> <RECORD OrderNo="1004" ItemNo="1" PartNo="1313" Qty="10" Discount="50"></RECORD> </RECORDS> |
| Non-Attributes Format |
| <RECORDS> <RECORD> <OrderNo>1003</OrderNo> <ItemNo>1</ItemNo> <PartNo>1313</PartNo> <Qty>5</Qty> <Discount>0</Discount> </RECORD> <RECORD> <OrderNo>1004</OrderNo> <ItemNo>1</ItemNo> <PartNo>1313</PartNo> <Qty>10</Qty> <Discount>50</Discount> </RECORD> </RECORDS> |

Define **Record Delimiter**, **Field Delimiter** and **Text Qualifier** for file.

Date Order, Date Delimiter, Zero Padding Date, Time Delimiter

Define the formats of date and time.

Decimal Symbol

Define the format of decimal number.

Binary Data Encoding

Set binary data is exported as **Base64** encoded or **None** encoding in file.


Saving and Confirming Export (Step 5)

Click **Start** button to start the export process. You can view the running process indicating success or failure. These messages are saved in file - LogExport.txt.

Hint: Click **Save** button to save your settings as a profile for setting schedule.

You can click **Open** button to open the exported file or the log file.

Data Transfer (Available only in Full Version)

Navicat allows you to transfer database objects from one database and/or schema to another, or to a sql file. The target database and/or schema can be on the same server as the source or on another server. You can save your settings as a profile for setting schedule. Select **Tools** ->  **Data Transfer** from the main menu.

Hint: You can drag tables to a database/schema in the connection tree. If the target database/schema is within the same connection, Navicat will copy the table directly. Otherwise, Navicat will popup the **Data Transfer** window.

To open a saved profile, select the profile and click **Load** button or double-click it in **Profiles** tab.

General Settings for Data Transfer

Source

Define connection, database and/or schema for the source.

All the database objects are selected in the **Database Objects** list by default. If you do not want some database objects to be transferred, uncheck them.

☒ With this option is on, only the checked database objects will be transferred. However, if you add any new database objects in the source database and/or schema after you create your data transfer profile, the newly added database objects will not be transferred unless you manually modify the **Database Objects** list.

☐ Choose this option if you wish all the database objects being transferred to the target database/schema, all newly added database objects will also be transferred without amending the data transfer profile.

Target

Connection

Transfer your selected database objects directly to a connection, database and/or schema.

File

Transfer your selected database objects directly to a text file. You can select different **SQL Format** and **Encoding** for the file.

Advanced Settings for Same Server Type Data Transfer

The following options depend on the database type you are chosen: MySQL, Oracle, PostgreSQL, SQLite and SQL Server.

Create tables

Create tables in the target database and/or schema with this option is on.

Suppose this option is unchecked and tables already exist in the target database/schema, then all data will be appended to the destination tables.

Include indexes

Include indexes in the table with this option is on.

Include foreign key constraints

Include foreign keys in the table with this option is on.

Include engine/table type

Include table type with this option is on.

Include character set

Include character set in the table with this option is on.

Include auto increment

Include auto increment in the table with this option is on.

Include other table options

Include other options in the table with this option is on.

Include unique constraints

Include uniques in the table with this option is on.

Include rules

Include rules in the table with this option is on.

Include check constraints

Include checks in the table with this option is on.

Include triggers

Include triggers in the table with this option is on.

Include excludes

Include exclusion constraints in the table with this option is on.

Convert object name to

Check this option if you require convert object names to **Lower case** or **Upper case** during the process.

Insert records

Check this option if you require all records to be transferred to the destination database and/or schema.

Lock target tables

Lock the tables in the target database and/or schema during the data transfer process.

Use transaction

Check this option if you use transaction during the data transfer process.

Use complete insert statements

Insert records using complete insert syntax.

Example:

```
INSERT INTO `users` (`ID Number`, `User Name`, `User Age`) VALUES ('1', 'Peter McKindy', '23');  
INSERT INTO `users` (`ID Number`, `User Name`, `User Age`) VALUES ('2', 'Johnson Ryne', '56');  
INSERT INTO `users` (`ID Number`, `User Name`, `User Age`) VALUES ('0', 'katherine', '23');
```

Use extended insert statements

Insert records using extended insert syntax.

Example:

```
INSERT INTO `users` VALUES ('1', 'Peter McKindy', '23'), ('2', 'Johnson Ryne', '56'), ('0', 'Katherine', '23');
```

Use delayed insert statements

Insert records using *DELAYED* insert SQL statements.

Example:

```
INSERT DELAYED INTO `users` VALUES ('1', 'Peter McKindy', '23');  
INSERT DELAYED INTO `users` VALUES ('2', 'Johnson Ryne', '56');  
INSERT DELAYED INTO `users` VALUES ('0', 'katherine', '23');
```

Run multiple insert statements

Check this option if you want to run multiple insert statements in each execution, which will make the data transfer process faster.

Use hexadecimal format for BLOB

Insert BLOB data as hexadecimal format.

Continue on error

Ignore errors that are encountered during the transfer process.

Lock source tables

Lock the tables in the source database and/or schema so that any update on the table is not allowed once the data transfer is triggered off.

Drop target objects before create

Check this option if database objects already exist in the target database and/or schema, the existing objects will be deleted once the data transfer starts.

Create target database/schema if not exist

Create a new database/schema if the database/schema specified in target server does not exist.

Use DDL from SHOW CREATE TABLE

If this option is on, DDL will be used from show create table.

Use DDL from sqlite_master

If this option is on, DDL will be used from the *SQLITE_MASTER* table.

Advanced Settings for Cross Server Data Transfer (Available only in Navicat Premium)

Navicat Premium supports transferring table with data across different server types, e.g. from MySQL to Oracle.

The following options depend on the database type you are chosen: MySQL, Oracle, PostgreSQL, SQLite and SQL Server.

Create tables

Create tables in the target database and/or schema with this option is on.

Suppose this option is unchecked and tables already exist in the target database/schema, then all data will be appended to the destination tables.

Include indexes

Include indexes in the table with this option is on.

Include foreign key constraints

Include foreign keys in the table with this option is on.

Convert object name to

Check this option if you require convert object names to **Lower case** or **Upper case** during the process.

Insert records

Check this option if you require all records to be transferred to the destination database and/or schema.

Lock target tables

Lock the tables in the target database and/or schema during the data transfer process.

Use transaction

Check this option if you use transaction during the data transfer process.

Use complete insert statements

Insert records using complete insert syntax.

Example:

```
INSERT INTO `users` (`ID Number`, `User Name`, `User Age`) VALUES ('1', 'Peter McKindy', '23');
```

```
INSERT INTO `users` (`ID Number`, `User Name`, `User Age`) VALUES ('2', 'Johnson Ryne', '56');
```

```
INSERT INTO `users` (`ID Number`, `User Name`, `User Age`) VALUES ('0', 'katherine', '23');
```

Use extended insert statements

Insert records using extended insert syntax.

Example:

```
INSERT INTO `users` VALUES ('1', 'Peter McKindy', '23'), ('2', 'Johnson Ryne', '56'), ('0', 'Katherine', '23');
```

Use delayed insert statements

Insert records using *DELAYED* insert SQL statements.

Example:

```
INSERT DELAYED INTO `users` VALUES ('1', 'Peter McKindy', '23');
```

```
INSERT DELAYED INTO `users` VALUES ('2', 'Johnson Ryne', '56');
```

```
INSERT DELAYED INTO `users` VALUES ('0', 'katherine', '23');
```

Run multiple insert statements

Check this option if you want to run multiple insert statements in each execution, which will make the data transfer process faster.

Use hexadecimal format for BLOB

Insert BLOB data as hexadecimal format.

Continue on error

Ignore errors that are encountered during the transfer process.

Lock source tables

Lock the tables in the source database and/or schema so that any update on the table is not allowed once the data transfer is triggered off.


Drop target objects before create

Check this option if database objects already exist in the target database and/or schema, the existing objects will be deleted once the data transfer starts.

Create target database/schema if not exist

Create a new database/schema if the database/schema specified in target server does not exist.

Data Synchronization (Available only in Full Version)

Navicat allows you to transfer data from one database and/or schema to another with detailed analytical process. In other words, Navicat provides the ability for data in different databases and/or schemas to be kept up-to-date so that each repository contains the same information. You are not only authorized to rollback the transferring process, but also insert, delete and update records to the destination. You can save your settings as a profile for setting schedule. Select **Tools ->  Data Synchronization** from the main menu.

All tables must contain primary keys and all table structures must be identical between the source and target. You could apply Structure Synchronization before Data Synchronization.

The messages indicate the running process success or failure are saved in file - LogSynchronize.txt.

To open a saved profile, select the profile and click **Load** button or double-click it in **Profiles** tab.

Note: SQL Server 2000 does not support.

For Oracle server, BLOB, CLOB, NCLOB, LONG and LONG RAW data are skipped during the data synchronization process. TIMESTAMP primary key cannot synchronize (insert, update) with Database Link to 9i server. RAW primary key cannot synchronize (insert, update, delete) with Database Link to any server, without error.

General Settings for Data Synchronization

Source/Target

Define connection, database and/or schema for the source and target.

Note: For Oracle server, you need to create [Public/Private](#) Database Link to the target Oracle database before.

Source Table/Target Table

Only tables which contain identical table names between the source and target are mapped in the list by default. If you do not want some tables to be synchronized, disable them manually from the drop-down list.

Hint: You can preview the outcome before execution.

Advanced Settings for Data Synchronization

Use Transaction

Rollback all data when error occurs.

Show synchronization detail


Check this option if you want to list the details process in **Message Log** tab during the synchronization.

Note: The process will be faster if this option is unchecked.

Insert records, Delete records, Update records

Check these options to performing such actions to the target when data are synchronized.

Structure Synchronization (Available only in Full Version)

Navicat allows you to compare and modify the table structures with detailed analytical process. In other words, Navicat compares tables between two databases and/or schemas and states the differential in structure. Select **Tools ->  Structure Synchronization** from the main menu.

To open a saved profile, select the profile and click **Load** button or double-click it in **Profiles** tab.

Note: Available only for MySQL, Oracle, PostgreSQL and SQL Server.

General Settings for Structure Synchronization

The following options depend on the database type you are chosen: MySQL, Oracle, PostgreSQL and SQL Server.

Source/Target

Define connection, database and/or schema for the source and target.

Compare Tables

Check this option if you want to compare tables between the source and target.

Compare Primary Keys

Check this option if you want to compare table primary keys.

Compare Foreign Keys

Check this option if you want to compare table foreign keys.

Compare Character Set

Check this option if you want to compare character set of tables.

Compare Auto Increment Value

Check this option if you want to compare auto increment values of tables.

Compare Partitions

Check this option if you want to compare table partitions.

Compare Uniques

Check this option if you want to compare uniques.

Compare Checks

Check this option if you want to compare checks.

Compare Excludes

Check this option if you want to compare exclude constraints.

Compare Collation

Check this option if you want to compare collation of tables.

Compare Identity Last Value

Check this option if you want to compare table identity last values.

Compare Views

Check this option if you want to compare views.

Compare Functions

Check this option if you want to compare functions.

Compare Events

Check this option if you want to compare events.

Compare Definer

Check this option if you want to compare definer.

Compare Indexes

Check this option if you want to compare indexes.

Compare Sequences

Check this option if you want to compare sequences.

Compare Triggers

Check this option if you want to compare triggers.

Compare Rules

Check this option if you want to compare rules.

Compare Tablespace and Physical Attributes

Check this option if you want to compare tablespace and physical attributes.

Compare Storage

Check this option if you want to compare storage.

SQL for objects to be created

Check this option to include all related SQL statements if new database objects will be created in the target.

SQL for objects to be changed

Check this option to include all related SQL statements if database objects will be changed in the target.

SQL for objects to be dropped

Check this option to include all related SQL statements if database objects will be dropped from the target.

Drop with CASCADE

Check this option if you want to cascade to drop the dependent database objects.

Compare after execution

Compare tables after the synchronization is executed.

Continue on error

Ignore errors that are encountered during the synchronization process.

Create inheriting parent

Create tables of inheriting parents during the synchronization process.

Structure Synchronization Result

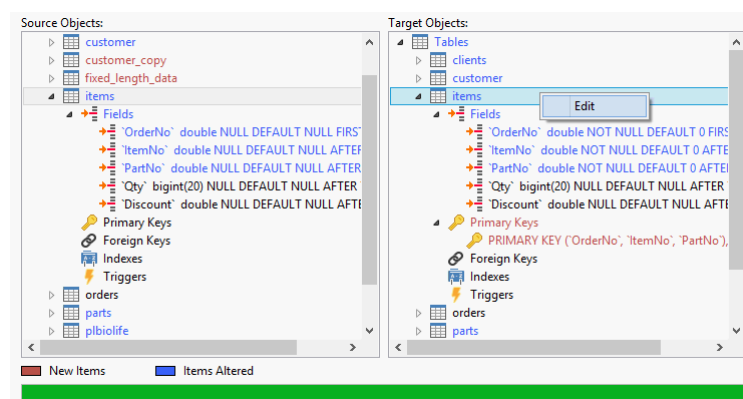
Source Objects/Target Objects

The tree view shows the differences between the source and target database and/or schema after the comparison of their structures, providing with detailed SQL statements shown in the **Queries for Modification** list.

The red item represents the non-existence for the other database/schema.

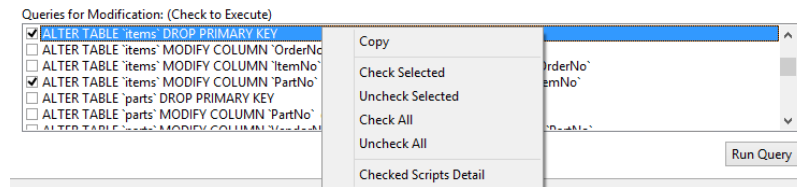
The blue item represents the existence for the other database/schema, but different definition detected.

You are allowed to edit object structure manually, right-click the object in the tree view and select **Edit** from the popup menu to open the relevant designer.



All the scripts are unchecked in the **Queries for Modification** list by default. Check the scripts you want to apply to the target.

You can highlight multiple lines of scripts, and then right-click to show the pop-up menu. Choose **Checked Scripts Detail** to view the full SQL statements you selected.




Click **Run Query** button to execute the selected query.

Backup/Restore (Available only in Full Version)

A secure and reliable server is closely related to performing regular backups, as failures will probably occur sometimes - caused by attacks, hardware failure, human error, power outages, etc.

Navicat allows you to backup/restore database objects for your database. You can save your settings as a profile for setting schedule.

Click  to open an object list for **Backup**.

Hint: Backup files are stored under [Settings Location](#).

Note: Available only for MySQL, PostgreSQL and SQLite. To backup Oracle, see [Oracle Data Pump](#). To backup SQL Server, see [SQL Server Backup/Restore](#).

Backup

General Properties

You can enter comment for the backup file.

Object Selection

Choose database objects you wish to backup.

Advanced Properties

The following options depend on the database type you are chosen: MySQL, PostgreSQL and SQLite.

Compressed

Check this option if you want to produce smaller backup file.

To compress or decompress the backup file in the backup object list, right-click the backup file and select **Compress Backup** or **Decompress Backup** from the popup menu.

Hint: compressed (.psc), uncompressed (.psb).

Lock All Tables

Lock all objects while backup is being processed.

Use Single Transaction (InnoDB only)


If a table uses InnoDB storage engine, with this option is on, Navicat uses transaction before the backup process starts.


Use specify file name

Define your file name for backup. Otherwise, your backup file will be named as **"2007-05-10 17:38:20"** for example.

Restore

Restore feature will firstly drop the selected objects of the database, then recreate the new objects according to your backup. Finally, inserting the data.

To restore a backup to an existing database, open a database and select an existing backup file. Click  **Restore Backup** from the backup object list toolbar.

To restore a backup to a new database, create and open a new database and click  **Restore Backup** from the backup object list toolbar. Browse the backup file.

Note: You must have Create, Drop and Insert privileges ([MySQL](#) or [PostgreSQL](#)) to run the restore.

General Properties

Show information of the backup file.

Object Selection

Choose database objects you wish to restore.

Advanced Properties

The following options depend on the database type you are chosen: MySQL, PostgreSQL and SQLite.

Use Transaction

Rollback all data when error occurs.

Continue on error

Ignore errors that are encountered during the restore process.

Lock tables for write

Lock the tables to prevent user to modify tables during the restore process.

Use extended insert statements

Insert records using extended insert syntax.

Example:

```
INSERT INTO `users` VALUES ('1', 'Peter McKindy', '23'), ('2', 'Johnson Ryne', '56'), ('0', 'Katherine', '23');
```

Run multiple queries in each execution

Check this option if you want to run multiple queries in each execution, which will make the restore process faster.

Create tables

Create tables during the restore process with this option is on.

Create records

Restore table records with this option is on. Otherwise, only table structures will be restored.

Create indexes

Create indexes for the restored table with this option is on.

Create triggers

Create triggers for the restored table with this option is on.

Overwrite existing tables

Overwrite if tables already exist in the database/schema.

Overwrite existing views

Overwrite if views already exist in the database/schema.

Overwrite existing functions

Overwrite if functions already exist in the database/schema.

Overwrite existing events

Overwrite if events already exist in the database/schema.

Overwrite existing sequences

Overwrite if sequences already exist in the database/schema.

Overwrite existing indexes

Overwrite if indexes already exist in the database/schema.

Overwrite existing triggers


Overwrite if triggers already exist in the database/schema.

Insert Auto Increment Values


Insert auto increment values in the database/schema.

Extract SQL

Extract SQL allows extracting SQL into a SQL file from your backup file.

To extract SQL from a backup file, open a database and select an existing backup file. Click  **Extract SQL** from the backup object list toolbar.

Batch Job/Schedule (Available only in Full Version)

Navicat allows you to create a batch job for setting schedule to execute at one or more regular intervals, beginning and ending at a specific date and time using **Windows Task Scheduler**. Batch job can be created for Query, Report printing, Backup, Data Transfer, Data Synchronization, Import and Export from databases. You can define a list of actions to be performed within one batch job, either run it manually or at the specified time/periodically. Click  to open an object list for **Schedule**.


The messages indicate the running process success or failure are saved in file - LogCmd.txt.



Click  **Set Task Schedule** to set schedule for batch job.

Note: Please save the batch job before setting schedule. Passwords must be saved in [Connection Properties](#) and Windows Scheduler before running your schedule.

| Connection Properties | Windows Scheduler |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>User Name: <input type="text" value="root"/></p> <p>Password: <input type="password" value="•••••"/></p> <p><input checked="" type="checkbox"/> Save Password</p> | <p>Start in: <input "="" type="text" value="C:\Program Files (x86)\PremiumSoft\Navicat Premium\"/></p> <p>Comments: <input type="text"/></p> <p>Run as: <input type="text" value="siuha-win8\siuha"/> <input data-bbox="1190 954 1350 981" type="button" value="Set password..."/></p> |

General Settings for Batch Job/Schedule



Move objects from the **Available Jobs** list to the **Selected Jobs** list by using  **Select** button, double-clicking or dragging them. To delete the objects from the selected jobs list, remove them in the same way. You are allowed to run profiles from different servers in a single batch job/schedule.

To rearrange the sequence of the selected jobs, use  **Move Up** or  **Move Down** buttons.

To backup whole server, you can select the connection and choose **Backup Server xxx**. (To backup your connection settings, see [Migrate Navicat to new computer](#).)

Report can be printed to physical printer or in various formats, e.g. Excel, HTML, PDF and more. Select the report to the **Selected Jobs** list will allow you to set **Report Type**.

To edit this setting later, right-click the report and select **Adjust Parameter** from the popup menu.

Exported file or printed report can be added to the batch job as mail attachment. Select the job in the **Selected Jobs** list and click  **Add Attachment** or  **Remove Attachment** to add or remove the mail attachment.

To find Data Transfer or Data Synchronization profile, choose  **Navicat** at the top on the left panel.

Advanced Settings for Batch Job/Schedule

Send Email

Navicat allows you to generate and send personalized e-mails with results returned from a schedule. The resultset(s) can be emailed to multiple recipients. Check this option and enter required information.

From

Specify e-mail address of sender. For example, someone@navicat.com.

To, CC

Specify e-mail addresses of each recipient, separating them with a comma or a semicolon (;).

Subject

Specify the email subject with customized format.

Body

Write email content.

Host (SMTP Server)

Enter your Simple Mail Transfer Protocol (SMTP) server for outgoing messages.

Port

Enter the port number you connect to your outgoing e-mail (SMTP) server. Default value is **25**.

Use Authentication

Check this option and enter **User Name** and **Password** if your SMTP server requires authorization to send email.

Secure Connection

Specify the connection to use **TLS**, **SSL** secure connection or **Never**.

Send test mail

Navicat will send you a test mail indicating success or failure.

Batch Job Converter (Available only in Navicat Premium)

Navicat Premium allows you to convert saved batch jobs from either Navicat for MySQL, Navicat for Oracle, Navicat for PostgreSQL, Navicat for SQLite and Navicat for SQL Server to it. Right-click in the schedule object list and select **Batch Job Converter** from the popup menu.

In Vista or above, You can select all batch jobs from all or either one Navicat from **Select All** button.

Delete original batch jobs

Check this option if you want to delete the original batch jobs in Navicat. If the original batch job is deleted, the scheduled batch job will not work until it is set again in Navicat Premium or the original application.

Overwrite existing batch jobs

Check this option if you want to overwrite the existing batch jobs in Navicat Premium.

Append when batch job exists

Check this option and enter the name of existing batch job if you want to append the details to the existing batch jobs in Navicat Premium.

Click **Start** button to start the import process.

Dump SQL File/Execute SQL File




Navicat allows you to backup and restore your database/schema/table(s) using the **Dump SQL File** and **Execute SQL File** features.

To backup your database/schema/table(s), right-click it and select **Dump SQL File** from the popup menu. If you select table(s), you can choose **Structure And Data** or **Structure Only**.


To restore your database/schema/table(s) or execute SQL file, right-click and select **Execute SQL File** from the popup menu.

Hint: You can drag a .sql file to the table object list or a database/schema in the connection tree. Navicat will popup the **Execute SQL File** window.

Print Database/Schema/Table Structure (Available only in Full Version)

Navicat allows you to view and print database, schema and table structures. Right-click the database/schema/table(s) and select  **Print Database** or  **Print Schema** or  **Print Tables** from the popup menu.

Console


Console allows you to use a command-line interface. In other words, it provides interactive text-based screen for you to query input and result output from database. Open the connection and select **Tools** ->  **Console** from the main menu or press F6.

Hint: You are allowed to open multiple console windows which each represents different connection.

Note: For Oracle server, you have to have **SQL*Plus** executable in order to get this works. By default, Navicat will look for the SQL*Plus under client folder (e.g. ORACLE_HOME\bin). However, if Navicat cannot locate SQL*Plus under the [SQL*Plus default path](#), you are prompted to locate the executable.

SQL*Plus does not support Unicode.

Report (Available only in Navicat Premium and Enterprise Version)

Report feature helps to deliver data in your database in a presentable manner and to turn it into valuable information. Various kinds of reports can be built easily such as invoice, statistics, mailing labels and more. You can save your reports for setting [schedule](#). Click  to open an object list for **Report**.

Hint: Report files(.rtm) are saved under the [Settings Location](#).

To view an archive report

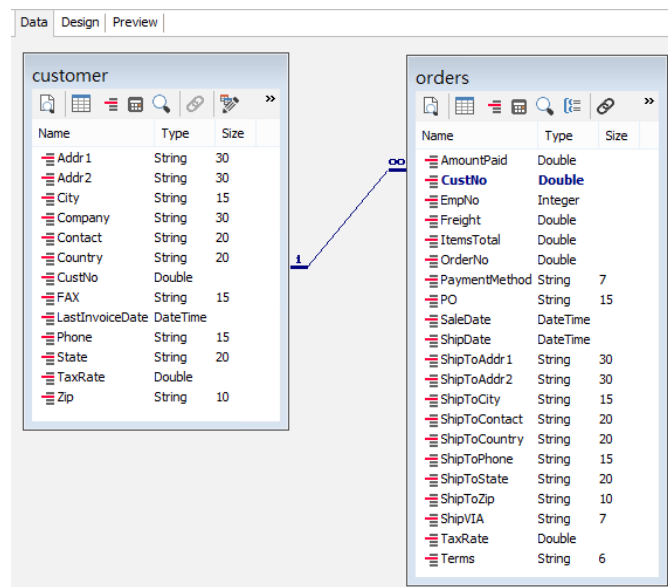
1. Click the  **Open Report Archive** from the object list toolbar.
2. Browse your archive file.

To print report to file (PDF, HTML, Excel or Archive)

1. Select the report for printing in the connection tree/object list.
2. Right-click and select **Print Report As** from the popup menu.

Report Data

The **Data** tab allows you to select and manipulate the data needed for a report. These tasks are accomplished via two visual tools: the **Query Wizard** and the **Query Designer**. These tools greatly simplify the often-difficult task of data selection by giving you the ability to select data without requiring an in-depth knowledge of databases.



Report Query Wizard

You can select data from your database using an SQL query. This functionality is provided via query-based dataviews, which can be visually created using the **Query Wizard** and visually maintained using the Query Designer. To open the Query Wizard, select **File** -> **New** under Data tab and double-click the **Query Wizard** icon.

1. Select the tables for the query. If you select more than one table, it will pop-up the Join dialog for selecting the field join.
2. Select the fields for the query.
3. Add calculated fields to the query.
4. Select common field for grouping.
5. Set searching criteria for the query.
6. Set the order for the query.
7. Enter the query (data pipeline) name.

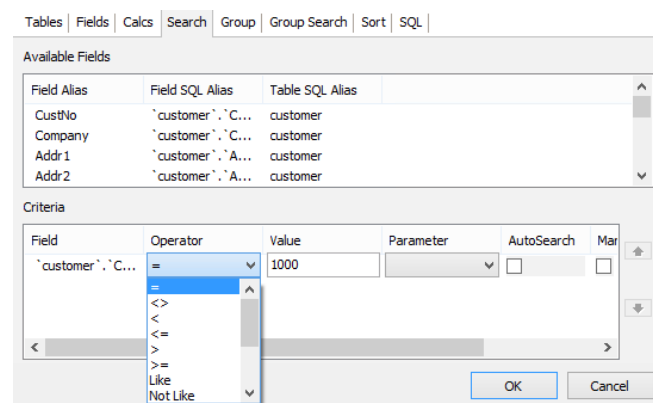
Report Query Designer

The **Query Designer** is used to modify query-based dataviews created by Query Wizard. The Query Designer presents a series of notebook tabs; each tab represents a different part of the query. To create the data pipeline using the Query Designer, select **File** -> **New** under Data tab and double-click the **Query Designer** icon. Or, you can edit the data pipeline, click the following buttons in the data pipeline:



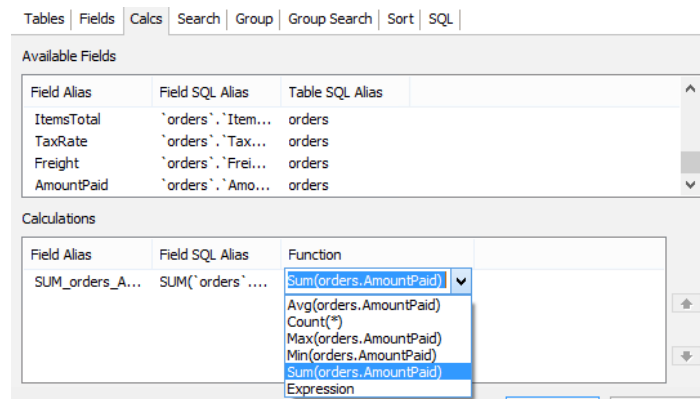
To Add Search Criteria

In the **Search** tab, click on the field that has been added to the list of Criteria at the bottom. Then, select the **Operator** and set the **Value**.



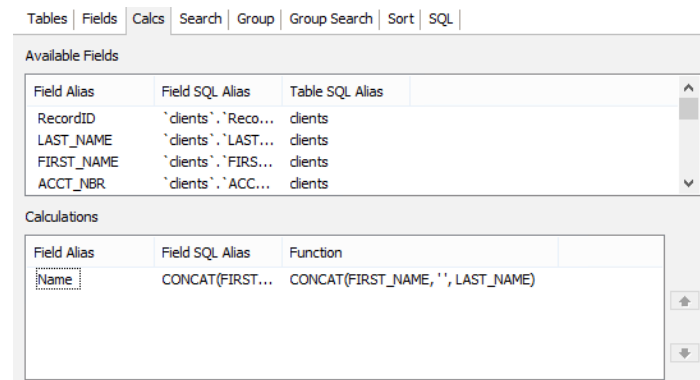
To Create a Group Sum

In the **Calcs** tab, click on the field that has been added to the list of Calculations at the bottom. Then, select the **Function** and enter the **Field Alias** you would like to use for this calculated field.



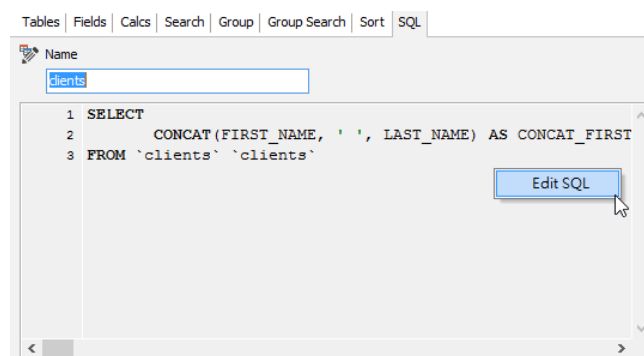
To Concatenate Fields

In the **Calcs** tab, click on the field that has been added to the list of Calculations at the bottom. Then, select **Expression** as the **Function** type for the calculation and enter the expression, such as `CONCAT(FIRST_NAME, ' ', LAST_NAME)`.



To Edit SQL

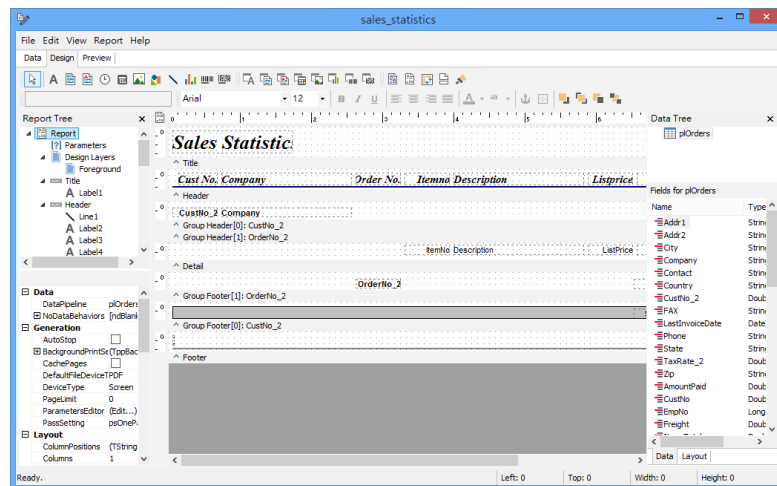
There may be times when you need to utilize advanced features of SQL that cannot be accessed via the visual interface of the Query Designer. In these cases, you can edit the SQL manually in the Query Designer. Once you have edited the SQL manually, you must always use the SQL tab of the Query Designer to make future modifications and no longer use the visual design tabs to modify the query. In the **SQL** tab, right-click over the SQL text and choose **Edit SQL**.



Report Design

The **Design** tab allows you to build and design reports. The design workspace is divided into two areas: the workbench and the canvas. The workbench is comprised of toolbars, component palettes, rulers, and other tools that can be used to manipulate the

canvas. The canvas is the area that contains the report layout. This is where we place the bands and components that will ultimately control the content of each page of the report.



Report Wizard

The **Report Wizard** is one of the many parts of ReportBuilder that reflects a level of professionalism and attention to detail found in no other reporting product. If you or your end users have utilized standard Windows wizards in other products, then you will be able to quickly recognize and use the ReportBuilder Report Wizard.

The Report Wizard can be accessed via the **File -> New** menu option of the **Design** tab. A series of screens are presented, each requesting information about the report. When the last page is reached, either a preview or design option can be selected. When the Finish button is clicked, it causes a report to be created and displayed as requested.

1. Select the data pipeline and fields.
2. Select common fields for grouping.
3. Select the report layout and orientation.
4. Select the style.
5. Select Design or Preview and Finish.

Report Design Toolbars

The various toolbars accessible from the design workspace are documented in this section. The toolbars are dockable. The toolbars are accessible from the **View -> Toolbars** menu option of the Report Designer or by right-clicking on the docking area at the top of the Report Designer.

Standard Component Toolbar

This toolbar will assist in creating the most commonly used report components.

A Label

Used to display text. Assign the Caption property to control the text value. To resize the label automatically so it fits a changing caption, set the Auto-Size property to True.



Memo

Print multiple lines of plain text in a report. To set the value, assign a string list to the Lines property. To dynamically resize the memo during printing, set the Stretch property to True. Use the ShiftRelativeTo property to define dynamic relationships with other stretchable objects.



RichText

Print formatted text. To set the value, assign the RichText property or use the LoadFromFile or LoadFromRTFStream methods. Use the ShiftRelativeTo property to define dynamic relationships with other stretchable objects. At design-time you can use the ReportBuilder's built-in RTF Editor to load, modify, and save rich text data stored in files.



SystemVariable

Used to display common report information such as page number, page count, print date and time, date, time, etc. The type of information displayed is controlled by the VarType property. The format is controlled by the DisplayFormat property.



Variable (Navicat Report does not support this control)

Used for calculations via an Object Pascal event handler assigned to the OnCalc event or a RAP event handler assigned to the OnCalc event. Access the Calculations dialog (via the speed menu) or the Calc tab of the Report Designer to code a RAP calculation for this component.



Image

Used to display bitmaps and windows metafiles in reports. Assign the Picture property of this component in order to place an image in your report. Use the Report Designer's built-in picture dialog to load images at design-time.



Shape

Use this component to print various shapes (squares, rectangles, circles, ellipses). Set the Shape property to select a type of shape. Use the Brush and Pen properties to control the color and border respectively.



Line

Display single and double lines (either vertical or horizontal.) Set the Style property to control whether the line is single or double. Set the Weight property to control the line thickness in points. Set the Position property to control whether the line is vertical or horizontal.



Chart

Used to display standard (non-data-aware) Charts. This component enables you to use Chart inside the Report Designer. You can access the Chart editor via a popup menu.



BarCode

Used to render barcodes. The string value assigned to the Data property is encoded based on the Bar-CodeType. If the data to be encoded is in a database, use DBBarCode. The following symbologies are supported: Codabar, Code 128, Code 39, EAN-13, EAN-8, FIM A,B,C, Interleaved 2 of 5, Post-Net, UPC-A, UPC-E.



2DBarCode

Used to render two-dimensional barcode symbologies. Supports PDF417 and MaxiCode barcode types.

Data Component Toolbar

This toolbar will assist in creating data-aware report components.

DBText

Used for displaying values from all types of database fields. Use the DisplayFormat property to format the value.

DBMemo

Used to print plain text from a memo field of a database table. This control will automatically word-wrap the text. Set the Stretch property to True and the component will dynamically resize to print all of the text. Use the ShiftRelativeTo property to define dynamic relationships with other stretchable objects.

DBRichText

Used to print formatted text from a memo or BLOB field of a database table. This control will automatically word-wrap the text. Set the Stretch property to True and the component will dynamically resize to print all of the text. Use the ShiftRelativeTo property to define dynamic relationships with other stretchable objects.

DBCalc

Used for simple database calculations (Sum, Min, Max, Count and Average). The value can be reset when a group breaks using the ResetGroup property.

DBImage

Used to print bitmaps or windows metafiles, which are stored in a database BLOB field.

DBChart

Allow data-aware Charts to be placed within a report.

DBBarcode

Used to render barcodes based on the BarCode-Type and the value supplied via the DataField property. The following symbologies are supported: Codabar, Code 128, Code 39, EAN-13, EAN-8, FIM A,B,C, Interleaved 2 of 5, PostNet, UPC-A, UPC-E.

DB2DBarcode

Used to render two-dimensional barcode based on the BarCode Type and the value supplied via the DataField property. The following symbologies are supported: PDF417, MaxiCode.

Advanced Component Toolbar

This toolbar will assist in creating advanced report components.

Region

Used to logically group components together. Use the ShiftRelativeTo property to move the region in relation to another dynamically resizing component (such as Memo, RichText, or child-type Sub-Report).

SubReport

Used to handle multiple master details, create side-by-side reporting effects, and hook reports together as one. If you need a report

to print within the context of a band, use a child-type subreport. If you need to hook reports together, use a section type subreport. The PrintBehavior property determines the subreport type.

CrossTab

Used to present summarized data in a grid format.

PageBreak

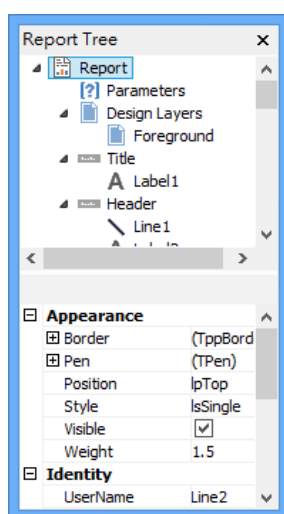
The TppPageBreak component is a report control that allows the user to force a new page during report generation. Placing a TppPageBreak component on a report will cause all objects created after the PageBreak (Z-Order) to be moved to the next page in the report relative to the PageBreak object's top position.

PaintBox

Create a paintbox area for drawing.

Report Tree

This tool window is dockable on the left and right sides of the Report Designer. It can be used to organize components within each band. Components selected in the Report Tree are selected in the report layout. The upper portion of the Report Tree shows the main report object and any subreports nested within it. This feature can be helpful for organizing your subreports.

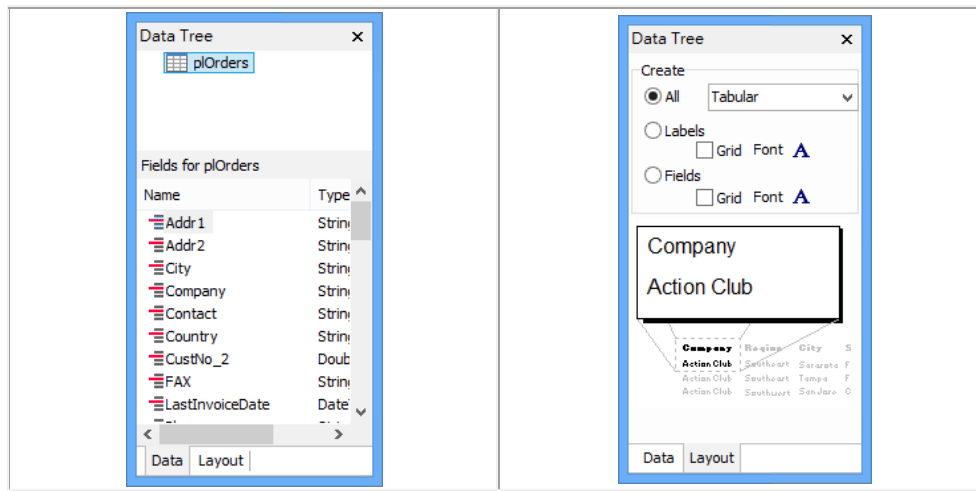


Data Tree

This tool window is dockable on the left and right sides of the Report Designer. It can be used to create components within any band. Simply select a set of fields and drag the selection into the band. A set of corresponding data-aware components will be created.

In the top tree view of **Data** tab, it contains a list of data pipelines to which the report has access. In the bottom list view, all of the fields for the currently selected data pipeline are displayed. Fields can be selected from the bottom list view and dragged to any part of the report layout. The data-aware component that is appropriate for the given field will then be created along with a label and border.

The **Layout** tab allows you to control drag-and-drop behavior. A label and border are created for each data-aware component by default. You can turn the label and the border off, control the color of the label or border, and control the font of the label and data-aware component from this tab. Once you've set the drag-and-drop behavior, it will be retained for future design sessions.



Align or Space Toolbar

This toolbar will assist in positioning components relative to one another and relative to the band in which they appear.

Align Left

Align a group of components with the leftmost position of the component that was selected first.

Align Middle

Center a group of components based on the horizontal center of the component that was first selected.

Align Right

Align a group of components with the rightmost position of the component that was selected first.

Align Top

Align a group of components with the topmost position of the component that was selected first.

Align Center

Align a group of components based on the vertical center of the component that was first selected.

Align Bottom

Align a group of components with the bottommost position of the component that was selected first.

Space Horizontally

Space a set of components based on the leftmost position of the first component selected and the rightmost position of the last component selected.

Space Vertically

Space a set of components based on the topmost position of the first component selected and the bottommost position of the last component selected.

Center Horizontally in Band

Center a component horizontally within a band.



Center Vertically in Band

Center a component vertically within a band.

Size Toolbar

This toolbar will assist in setting the size of components.



Shrink Width to Smallest

Determine the minimum width of all the selected components, and then sets the width of the components to that value.



Grow Width to Largest

Determine the maximum width of all the selected components, and then sets the width of the components to that value.



Shrink Height to Smallest

Determine the minimum height of all the selected components, and then sets the height of the components to that value.



Grow Height to Largest

Determine the maximum height of all the selected components, and then sets the height of the components to that value.

Nudge Toolbar

This toolbar will assist in setting the position of components.



Nudge Up

Move all selected components one pixel up.



Nudge Down

Move all selected components one pixel down.



Nudge Left

Move all selected components one pixel to the left.



Nudge Right

Move all selected components one pixel to the right.

Draw Toolbar

This toolbar will assist in setting the colors and borders of components.



Fill Color

For shapes, lines, and region components only. Set the Brush.Color property. To set the color of a textual component, check the Highlight Color action of the Format toolbar.



Line Color

For shapes, lines, and region components only. Set the Pen.Color property.

Gradient

For use with a Shape component only. Set the Gradient property.

Line Thickness

For use with a Line component only. Set the Weight property.

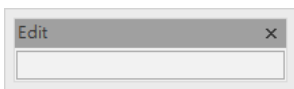
Line Style

For use with a Line component only. Set the Pen.Style property.

Edit Toolbar

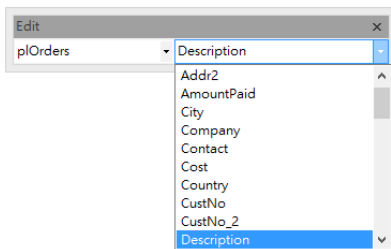
This toolbar will assist in setting the most important property or properties for the currently selected component.

No component selected



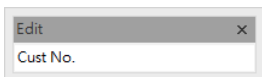
Data-aware component selected

This configuration allows the data pipeline and data field for the component to be set. The drop-down list on the left shows the data pipeline. The drop-down list on the right shows the field name.



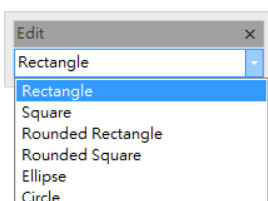
Label component selected

Here a label component has been selected in the Report Designer. The Edit toolbar displays an edit box from which the label's caption can be set.



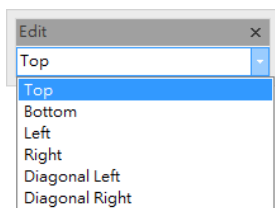
Shape component selected

Here a shape component has been selected in the Report Designer. The Edit toolbar displays the different shape types.



Line component selected

This configuration allows you to move the line to the top, bottom, left, or right within the line's selection handles.



Standard Toolbar

This toolbar will assist with saving the report layout, accessing the print and print preview options, and accessing the cut and paste operations.



New

Create a blank report layout.



Open

Display the Open dialog, allowing you to open an existing report layout.



Save

Save a report layout to file.



Print

Display the Print dialog before sending the report to the printer.



Print Preview

Display the Print Preview window.



Cut

Cut the currently selected components into the clipboard.



Copy

Copy the currently selected components into the clipboard.



Paste

Paste the components in the clipboard into the report.

Format Toolbar

This toolbar will assist with setting the font and colors. It will also assist with layering the components.

Font Name

Select the font name for textual components.

Font Size

Select the font size. You can also type in this box to set the font size exactly.

Bold

Set the font to bold.

Italic

Set font to italic.

Underline

Set font to underline.

Left Justify

Left justify the text in the component.

Center

Center the text in the component.

Right Justify

Right justify the text in the component.

Justify

Justify the text in the component.

Font Color

Set the font color.

Highlight Color

Set the background color of the textual component.

Anchors

Specify how a report component is anchored to its parent. Use Anchors to ensure that a report element maintains its current position relative to an edge of its parent control (i.e. Band/Region), even if the parent is resized.

Border

Specify which of the outside border lines of a report component are rendered.

Bring Forward

Bring the component one step forward.

Bring to Front

Bring the component to the front. The components in the front print last, and the components in the back print first. Use the Report Tree to see the exact layering of components within the band.

Send Backward

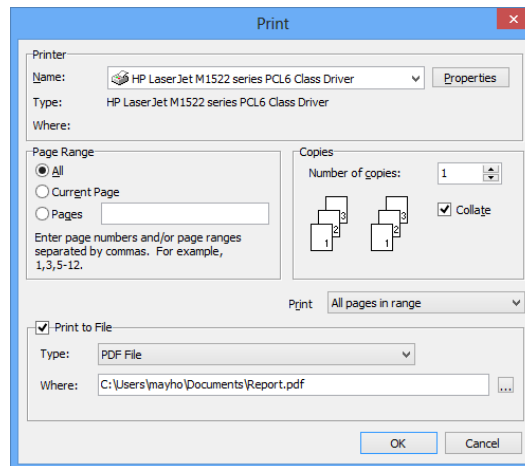
Send the component one step backward.

Send to Back

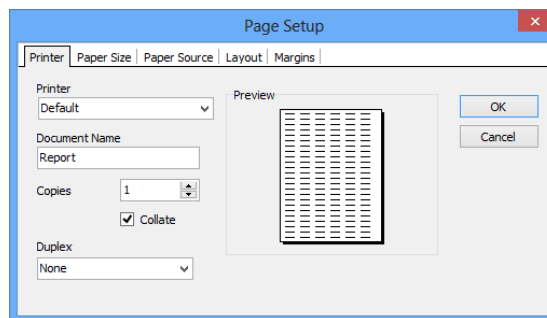
Send the component to the back. The components in the front print last, and the components in the back print first. Use the Report Tree to see the exact layering of components within the band.

Report Dialogs

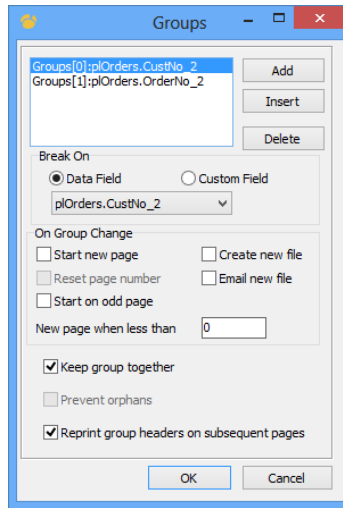
The **Print** dialog is automatically displayed when the report is sent to the printer, allowing you to select the pages, number of copies, and printer for the report. When the **AllowPrintToFile** or **AllowPrintToArchive** properties of the Report are enabled, this dialog displays additional print to file options. To open this dialog, select the **File -> Print** menu option from the Report Designer.



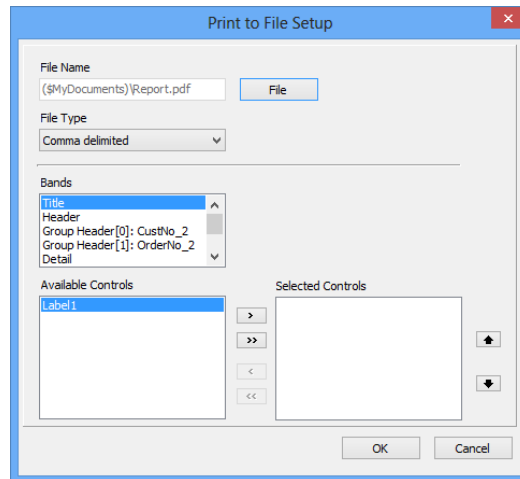
The **Page Setup** dialog can be accessed from the **File -> Page Setup** menu option of the Report Designer. You can set the printer, page size, paper source, layout and margins properties from within the Page Setup dialog.



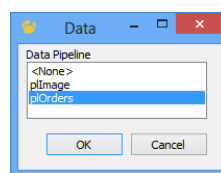
The **Groups** dialog is accessible via the **Report -> Groups** menu option of the Report Designer. You can separate your report into different sections using groups. A number of options are available to control the behavior of each group. For example, you may want each group to start on a new page or to reprint the group header when the group continues on additional pages. Another powerful feature is the Keep group together option, which can be used to ensure that all of the information for a group fits on a page.



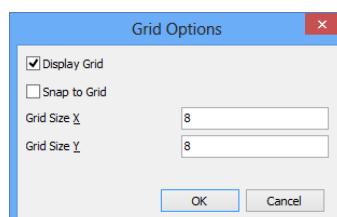
The **Print to File Setup** dialog is accessible via the **File -> Print to File Setup** menu option of the Report Designer. This dialog is used to specify the format and content of the ASCII file that will be created if the report is printed to file.



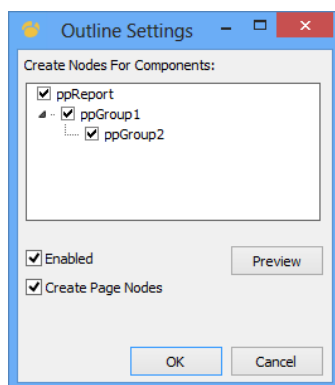
The **Data** dialog can be accessed from the **Report -> Data** menu option of the Report Designer. It can be used to specify the data pipeline for the report.



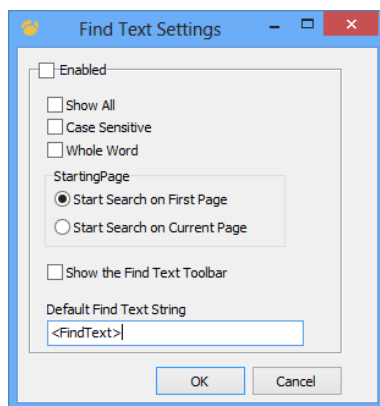
The **Grid Options** dialog is accessible via the **View -> Grid Options** menu of the Report Designer. Use the Grid Options dialog to control how the workspace grid is drawn and whether layout elements automatically snap to the grid points.



The **Outline Settings** dialog is accessible via the **Report -> Outline Settings** menu option of the Report Designer. Use this dialog to control the behavior of report outline generation. When enabled, an outline tree structure is dynamically generated by the report engine and rendered by the report previewer.



The **Find Text Settings** dialog is accessible via the **Report -> Find Text Settings** menu option of the Report Designer. Use this dialog to configure the find text options used by the report previewer. When enabled, the previewer can be used to find and highlight text that appears in the pages of the report.



Report Layout

There are many special options to set the layout. You can simply right-click the components and enable the following options:

AutoDisplay

Determine whether to automatically display the contents of a BLOB in a database field in a Memo or Image component.

AutoSize

The report component resizes the width and length.

AutoSizeFont

Set the human readable text to a standard accepted font size based on the size of the barcode component.

Child

The report prints to completion, using the subreport components width as the page width and stretching over several pages until printing is complete.

DirectDraw

Indicate the image will be sent directly to the printer or to an intermediate bitmap and then copied to the printer.

Fixed

A single page prints based on the dimensions and position of the subreport component.

MaintainAspectRatio

Maintain image original width to height ratio.

NewPrintJob

Determine whether a new print job is started when the subreport is sent to the printer.

GraphicType

Indicate the kind of the graphic object: Bitmap, GIF, Icon, JPEG and Metafile.

KeepTogether

Control the pagination of the component when the contents cannot fit on the current page.

LookAhead

Display summary calculations in the title band, page footer calculations in the page header band, group footer calculations in the group header band and column footer calculations in the column header.

ParentHeight

Force the height of the component to match height of the parent component. The parent may be either a band or a region.

ParentWidth

Force the width of the component to match width of the parent component.

ParentPrinterSetup

Determines whether the values for the PrinterSetup property should be copied from the parent report.

PrintHumanReadable

Output the human readable version of the bar code (i.e. the actual letters or numbers).

ReprintOnOverflow

Use to print non-stretching components when stretching components are printing on additional pages.

ReprintOnSubsequent

Use in conjunction with the SuppressRepeatedValues property. When SuppressRepeatedValues is set to True, and detail lines have overflowed onto a new page, you can force the value to reprint on the first detail line of the new page by setting ReprintOnSubsequent to True.

ResetPageNo

Enable subset page numbering. In subset page numbers, the page numbers and page count of the subreport are displayed instead of the master report page numbers.

Section

The report prints as a separate section, starting a new page when it begins and finishing the last page when it ends. The PrinterSetup property is used to determine the page size and printer settings.

ShiftRelativeTo

Use to specify the vertical positioning that should take place between multiple stretching components in a band.

Stretch

Determine whether the image is scaled to fit inside the component.

StretchWithParent

Allow a shape or line to expand or contract based on the change in height of the band or region in which it is contained.


SuppressRepeatedValues

When the value of a field (as determined by the DataField property) is the same across several records, the SuppressRepeatedValues property allows you to print the value only once each time the field value changes.

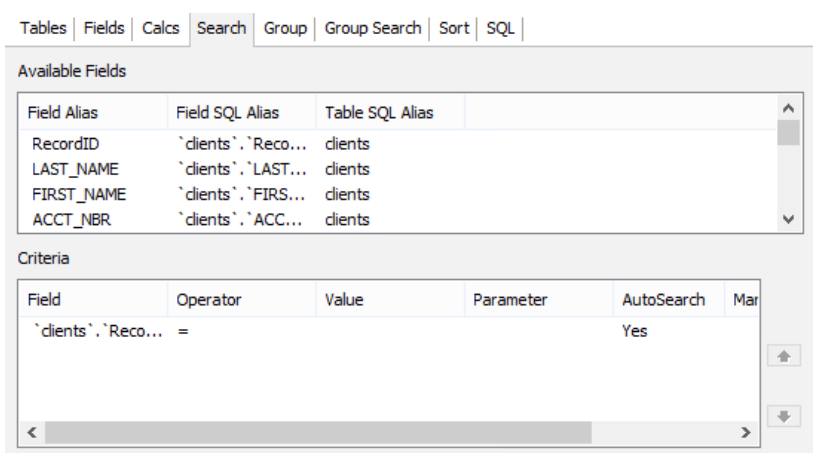
TraverseAllData

Indicate that the subreport will continue to print (print on additional pages in the same exact position) until all data is traversed. By default the fixed type subreport truncates the data.

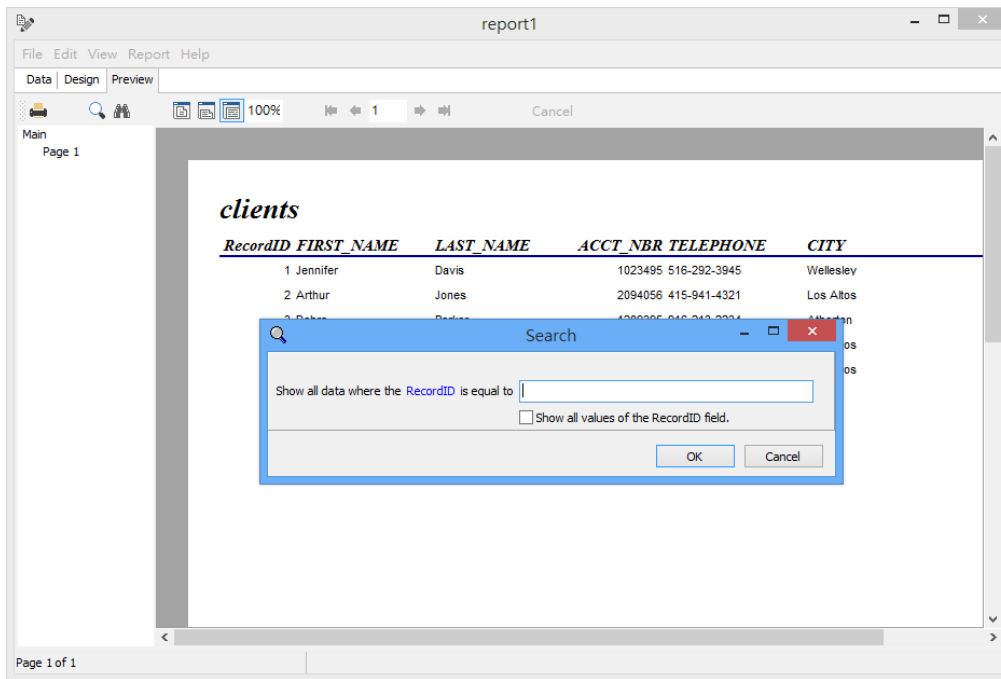
Report Preview

The **Preview** tab contains the rendered report. You can to control and view report output. An outline of page nodes is displayed on the left side of the form, adjacent to the page viewer. Use the  **Print** button to send report output to the printer or to an output file, such as PDF.


To create a **Search Report**, enable the **AutoSearch** option in the **Query Designer**.



Then you can click the  **Search Data** icon to enter the searching criteria.



Server Security

Navicat provides security management tool for MySQL, Oracle, PostgreSQL and SQL Server. You can add, edit, delete users, grant/revoke privileges on the selected database and their database objects. Click  to open an object list for **User**. The user object list displays all users that exist in the server.

MySQL Security

Information about user privileges is stored in the **user**, **db**, **host**, **tables_priv**, **columns_priv**, and **procs_priv** tables in the **mysql** database (that is, in the database named mysql). The MySQL server reads the contents of these tables when it starts.

MySQL access control involves two stages when you run a client program that connects to the server:

Stage 1: The server checks whether it should allow you to connect.

Stage 2: Assuming that you can connect, the server checks each statement you issue to determine whether you have sufficient privileges to perform it. For examples: Create table privilege, Drop table privilege or Alter table privilege.

The server uses the **user**, **db**, and **host** tables in the **mysql** database at both stages of access control.

MySQL User Designer

General Properties

User name

Set name for user.

Host

A host name where the database is situated or the IP address of the server.

Password

Set **Password** and re-type it in the **Confirm Password** text box.

Advanced Properties

Max queries per hour, Max updates per hour, Max connections per hour

These options limit the number of queries, updates, and logins a user can perform during any given one-hour period. If they are set as 0 (the default), this means that there is no limitation for that user.

Max user connections

This option limits the maximum number of simultaneous connections that the account can make. If it is set as 0 (the default), the *max_user_connections* system variable determines the number of simultaneous connections for the account.

Use OLD_PASSWORD encryption

The password hashing mechanism was updated in MySQL 4.1 to provide better security and to reduce the risk of passwords being

intercepted. However, this new mechanism is understood only by MySQL 4.1 (and newer) servers and clients, which can result in some compatibility problems. A 4.1 or newer client can connect to a pre-4.1 server, because the client understands both the old and new password hashing mechanisms. However, a pre-4.1 client that attempts to connect to a 4.1 or newer server may run into difficulties.

Enable this option if you wish to maintain backward compatibility with pre-4.1 clients under circumstances where the server would otherwise generate long password hashes. The option does not affect authentication (4.1 and later clients can still use accounts that have long password hashes), but it does prevent creation of a long password hash in the *user* table as the result of a password-changing operation.

SSL Type

MySQL can check X509 certificate attributes in addition to the usual authentication that is based on the username and password. To specify SSL-related options for a MySQL account, use the *REQUIRE* clause of the *GRANT* statement.

| | |
|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANY | This option tells the server to allow only SSL-encrypted connections for the account. |
| X509 | This means that the client must have a valid certificate but that the exact certificate, issuer, and subject do not matter. The only requirement is that it should be possible to verify its signature with one of the CA certificates. |
| SPECIFIED | <p>Issuer</p> <p>This places the restriction on connection attempts that the client must present a valid X509 certificate issued by CA <i>issuer</i>. If the client presents a certificate that is valid but has a different issuer, the server rejects the connection. Use of X509 certificates always implies encryption, so the SSL option is unnecessary in this case.</p> |
| | <p>Subject</p> <p>This places the restriction on connection attempts that the client must present a valid X509 certificate containing the subject <i>subject</i>. If the client presents a certificate that is valid but has a different subject, the server rejects the connection.</p> |
| | <p>Cipher</p> <p>This is needed to ensure that ciphers and key lengths of sufficient strength are used. SSL itself can be weak if old algorithms using short encryption keys are used. Using this option, you can ask that a specific cipher method is used to allow a connection.</p> |

Server Privileges

In the grid, check **Granted** option against the server privilege listed in **Privilege** to assign this user to have that privilege. Multiple privileges can be granted.

Privileges

To edit specific object privileges for user, click  **Add Privilege** to open the window and follow the steps below:

1. Expand the node in the tree view until reaching to the target object.
2. Check the object to show the grid on the right panel.
3. In the grid, check **State** option against the privilege listed in **Privilege** to assign this user to have that privilege. Multiple privileges can be granted.

Oracle Security

Oracle manages database access permissions using users and roles. Users own schema objects (for example, tables, views) and can assign privileges on those objects to other users to control who has access to which objects.

In addition to the user accounts that you create, the database includes a number of user accounts that are automatically created upon installation. Administrative accounts: **SYS**, **SYSTEM**, **SYSMAN**, and **DBSNMP**. Administrative accounts are highly privileged accounts to perform administrative tasks such as starting and stopping the database, managing database memory and storage, creating and managing database users, and so on. Your database may also include sample schemas (**SCOTT**, **HR**, **OE**, **OC**, **PM**, **IX** and **SH**), which are a set of interlinked schemas that enable Oracle documentation and Oracle instructional materials to illustrate common database tasks.

When you create a database object, you become its owner. By default, only the owner of an object can do anything with the object. In order to allow other users to use it, privileges must be granted. (However, users that have the superuser attribute can always access any object.)

Ordinarily, only the object's owner (or a superuser) can grant or revoke privileges on an object. However, it is possible to grant a privilege **Admin Option/Grant Option**, which gives the recipient the right to grant it in turn to others. If the grant option is subsequently revoked then all who received the privilege from that recipient (directly or through a chain of grants) will lose the privilege.

Note: The special name **PUBLIC** is accessible to every database user, all privileges and roles granted to **PUBLIC** are accessible to every database user.

Oracle User Designer

General Properties

User name

Set name for user.

Authentication

Select the authentication method.

| | |
|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Password | Password Set Password and re-type it in the Confirm Password text box. Expire Password Expire the user's password. This setting forces the user or the DBA to change the password before the user can log in to the database. |
| External | An external user must be authenticated by an external service, such as an operating system or a third-party service. |
| Global | A global user must be authorized by the enterprise directory service (Oracle Internet Directory). X.500 Name |

| | |
|--|-------------------------------------------------------------------------------------|
| | Enter the X.509 name at the enterprise directory service that identifies this user. |
|--|-------------------------------------------------------------------------------------|

Default Table Space

Choose the default tablespace for objects that the user creates.

Temporary Table Space

Choose the tablespace or tablespace group for the user's temporary segments.

Profile

Choose the profile that assign to the user.

Lock Account

Lock the user's account and disable access.

Member of

In the grid, check **Granted**, **Admin Option** or **As Default** option against the role listed in **Role Name** to assign this user to be a member of selected role. Multiple roles can be granted.

Quotas

In the grid, specify the maximum amount of space the user can allocate in the tablespaces. Enter the **Quota** and choose the **Unit** of the **Tablespace**. **Unlimited** lets the user allocate space in the tablespace without bound. Multiple tablespaces can be set.

Server Privileges

In the grid, check **Granted** or **Admin Option** option against the server privilege listed in **Privilege** to assign this user to have that privilege. Multiple privileges can be granted.

Privileges

To edit specific object privileges for user, click  **Add Privilege** to open the window and follow the steps below:

1. Expand the node in the tree view until reaching to the target object.
2. Check the object to show the grid on the right panel.
3. In the grid, check **Granted** or **Grant Option** option against the privilege listed in **Privilege** to assign this user to have that privilege. Multiple privileges can be granted.

Oracle Role Designer

General Properties

Role name

Set name for role.

Authentication

Select the authentication method.

| | |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| Password | Password Set Password and re-type it in the Confirm Password text box. |
| External | An external user must be authenticated by an external service, such as an operating system or a third-party service, before enabling the role. |
| Global | A global user must be authorized to use the role by the enterprise directory service before the role is enabled at login. |
| Not Identified | The role is authorized by the database and that no password is required to enable the role. |

Member of

In the grid, check **Granted** or **Admin Option** option against the role listed in **Role Name** to assign this role to be a member of selected role. Multiple roles can be granted.

Members

In the grid, check **Granted** or **Admin Option** option against user listed in **Member** to assign the selected user to be a member of this role. Multiple users can be granted.

Server Privileges

In the grid, check **Granted** or **Admin Option** option against the server privilege listed in **Privilege** to assign this role to have that privilege. Multiple privileges can be granted.

Privileges

To edit specific object privileges for role, click  **Add Privilege** to open the window and follow the steps below:

1. Expand the node in the tree view until reaching to the target object.
2. Check the object to show the grid on the right panel.
3. In the grid, check **Grant** option against the privilege listed in **Privilege** to assign this role to have that privilege. Multiple privileges can be granted.

PostgreSQL Security

PostgreSQL manages database access permissions using users and groups. Users own database objects (for example, tables) and can assign privileges on those objects to other users to control who has access to which objects.

Note: Starting from PostgreSQL version 8.1, users and groups were no longer distinct kinds of entities, now there are only roles. Any role can act as a user, a group, or both. The concept of roles subsumes the concepts of users and groups.

Only a superuser (a user who is allowed all rights) can add/delete users. PostgreSQL installs a single superuser by default named **postgres**. All other users must be added by this user, or by another subsequently added superuser.

When you create a database object, you become its owner. By default, only the owner of an object can do anything with the object. In order to allow other users to use it, privileges must be granted. (However, users that have the superuser attribute can always access any object.)

Ordinarily, only the object's owner (or a superuser) can grant or revoke privileges on an object. However, it is possible to grant a privilege **With Grant Option**, which gives the recipient the right to grant it in turn to others. If the grant option is subsequently revoked then all who received the privilege from that recipient (directly or through a chain of grants) will lose the privilege.

Note: The special name **public** can be used to grant a privilege to every role (user/group) on the system.

PostgreSQL Server 7.3 to 8.0

PostgreSQL version 7.3 to 8.0 manages database access permissions using **Users** and **Groups**.

PostgreSQL User Designer

General Properties

User name

Set name for user.

User ID

Specify an ID for the user. This is normally not necessary, but may be useful if you need to recreate the owner of an orphaned object. If this is not specified, the highest assigned user ID plus one (with a minimum of 100) will be used as default

Password

Set **Password** and re-type it in the **Confirm Password** text box.

Note: If you do not plan to use password authentication you can omit this option, but then the user will not be able to connect if you decide to switch to password authentication.

Password Encryption

This option control whether the password is stored **ENCRYPTED** or **UNENCRYPTED** in the system catalogs. (If neither is specified, the default behavior is determined by the configuration parameter *password_encryption*.)

Expiry Date

Set a date and time after which the user's password is no longer valid. If this clause is omitted the password will be valid for all time.

Superuser

Check this option to define the user as a superuser.

Can create database

Check this option to define the user to be allowed to create databases.

Member of

In the grid, check **Granted** option against the group listed in **Group Name** to assign this user to be a member of selected group. Multiple groups can be granted.

Privileges

To edit specific object privileges for user, click  **Add Privilege** to open the window and follow the steps below:

1. Expand the node in the tree view until reaching to the target object.
2. Check the object to show the grid on the right panel.
3. In the grid, check **Granted** or **Grant Option** option against the privilege listed in **Privilege** to assign this user to have that privilege. Multiple privileges can be granted.

PostgreSQL Group Designer

General Properties

Group name

Set name for group.

Group ID

Specify an ID for the group. This is normally not necessary, but may be useful if you need to recreate a group referenced in the permissions of some object. If this is not specified, the highest assigned group ID plus one (with a minimum of 100) will be used as default.

Members

In the grid, check **Granted** option against the user listed in **Member** to assign selected user to be a member of this group. Multiple users can be granted.

Privileges

To edit specific object privileges for group, click  **Add Privilege** to open the window and follow the steps below:

1. Expand the node in the tree view until reaching to the target object.
2. Check the object to show the grid on the right panel.
3. In the grid, check **Grant** option against the privilege listed in **Privilege** to assign this group to have that privilege. Multiple privileges can be granted.

PostgreSQL Server 8.1 to 9.2

Starting from PostgreSQL version 8.1, users and groups were no longer distinct kinds of entities, now there are only **Roles**. Any role can act as a user, a group, or both. The concept of roles subsumes the concepts of users and groups.

PostgreSQL Role Designer

General Properties

Role Name

Set name for role.

Role ID

Specify an ID for the role. This is normally not necessary, but may be useful if you need to recreate the owner of an orphaned object. If this is not specified, the highest assigned role ID plus one (with a minimum of 100) will be used as default.

Note: In PostgreSQL versions 8.1 or above, the specified ID will be ignored, but is accepted for backwards compatibility.

Can login

Check this option to create a role that allow to login. A role having this option can be thought of as a user. Roles without this attribute are useful for managing database privileges, but are not users in the usual sense of the word.

Password

Set **Password** and re-type it in the **Confirm Password** text box.

Note: If you do not plan to use password authentication you can omit this option, but then the role will not be able to connect if you decide to switch to password authentication.

Password Encryption

This option control whether the password is stored **ENCRYPTED** or **UNENCRYPTED** in the system catalogs. (If neither is specified, the default behavior is determined by the configuration parameter *password_encryption*.)

Connection Limit

If role can log in, this specifies how many concurrent connections the role can make. -1 (the default) means no limit.

Expiry Date

Set a date and time after which the role's password is no longer valid. If this clause is omitted the password will be valid for all time.

Superuser

Check this option to determine the new role is a superuser, who can override all access restrictions within the database.

Can create database

Check this option to define a role's ability to create databases.

Can create role

Check this option to allow creating roles.

Inherit privileges

Check this option to determine whether a role inherits the privileges of roles it is a member of.

Can update system catalog

Check this option to allow a role's ability to update system catalog.

Member of

In the grid, check **Granted** or **Admin Option** option against the role listed in **Role Name** to assign this role to be a member of selected role. Multiple roles can be granted.

Member

In the grid, check **Granted** or **Admin Option** option against the role listed in **Member** to assign the selected role to be a member of this role. Multiple roles can be granted.

Privileges

To edit specific object privileges for role, click  **Add Privilege** to open the window and follow the steps below:

1. Expand the node in the tree view until reaching to the target object.
2. Check the object to show the grid on the right panel.
3. In the grid, check **Granted** or **Grant Option** option against the privilege listed in **Privilege** to assign this role to have that privilege. Multiple privileges can be granted.

SQL Server Security

The SQL Server **sa** log in is a server-level principal. By default, it is created when an instance is installed. In SQL Server 2005 or above, the default database of **sa** is **master**. This is a change of behavior from earlier versions of SQL Server.

By default, the database includes a **guest** user when a database is created. Permissions granted to the **guest** user are inherited by users who do not have a user account in the database. The **guest** user cannot be dropped, but it can be disabled by revoking its **CONNECT** permission. The **CONNECT** permission can be revoked by executing *REVOKE CONNECT FROM GUEST* within any database other than **master** or **tempdb**.

In SQL Server, the concept for permissions is using principals and securables. Principals are the individuals, groups, and processes granted access to SQL Server. Securables are the server, database, and objects the database contains. Principals can be arranged in a hierarchy. To easily manage the permissions in your databases, SQL Server provides several roles which are security principals that group other principals. Database-level roles are database-wide in their permissions scope.

Windows-level principals

- Windows Domain Login
- Windows Local Login

SQL Server-level principal

- SQL Server Login

Database-level principals

- Database User
- Database Role
- Application Role

Login

SQL Server uses two ways to validate connections to SQL Server databases: Windows Authentication and SQL Server Authentication. SQL Server Authentication uses login records to validate the connection. A Login object exposes a SQL Server login record.

Server Role

Server-level roles are also named fixed server roles because you cannot create new server-level roles and the permissions of fixed server roles cannot be changed. You can add SQL Server logins, Windows accounts, and Windows groups into server-level roles. Each member of a fixed server role can add other logins to that same role.

Database User

To gain access to a database, a login must be identified as a database user. The database user is usually known by the same name as the login, but you can create a database user (for a login) with a different name.

Database Role

Fixed database roles are defined at the database level and exist in each database. You can add any database account and other SQL Server roles into database-level roles. Each member of a fixed database role can add other logins to that same role.

Application Role

An application role is a database principal that enables an application to run with its own, user-like permissions. You can use application roles to enable access to specific data to only those users who connect through a particular application. Unlike database roles, application roles contain no members and are inactive by default.

SQL Server Login Designer

General Properties for SQL Server 2000

Login Name

Set name for login.

Authentication Type

Select the authentication type.

| | |
|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SQL Server Authentication | Password Set Password and re-type it in the Confirm Password text box. Specify Old Password Check this option to enter the old password used by this account. |
|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

| | |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| | Default Database Select the default database when login. Default Language Select the default display language when login. |
| Windows Authentication | Default Database Select the default database when login. Default Language Select the default display language when login. |

Enabled

Check to enable the login.

General Properties for SQL Server 2005 or later

Login Name

Set name for login.

Authentication Type

Select the authentication type.

| | |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SQL Server Authentication | Password Set Password and re-type it in the Confirm Password text box. Specify Old Password Check this option to enter the old password used by this account. Enforce Password Policy You can check this option to force password to follow password policy of SQL Server. Enforce Password Expiration You can check this option to force password to have expiry date. User Must Change Password at Next Login You can check this option to force user to change password every time when login. Default Database Select the default database when login. Default Language Select the default display language when login. |
| Windows Authentication | Default Database Select the default database when login. |

| | |
|--------------------------|----------------------------------------------------------------------------|
| | Default Language Select the default display language when login. |
| Mapped to Certificate | Certificate Name Select the certificate name. |
| Mapped to Asymmetric Key | Asymmetric Key Name Select the asymmetric key name. |

Note: SQL Server contains features that enable you to create and manage certificates and keys for use with the server and database. You can use externally generated certificates or SQL Server can generate certificates. Certificates and asymmetric keys are both ways to use asymmetric encryption. There is no difference between the two mechanisms for the cryptographic algorithm, and no difference in strength given the same key length.

Enabled

Check to enable the login.

Credential

You can add credential on specific role for this login. A credential is a record that contains the authentication information (credentials) required to connect to a resource outside SQL Server. This information is used internally by SQL Server.

General Properties for SQL Azure

Login Name

Set name for login.

Password

Set **Password** and re-type it in the **Confirm Password** text box.

Specify Old Password

Check this option to enter the old password used by this account.

Enabled

Check to enable the login.

Roles

In the grid, check the server role to assign this server login to be a member of selected server role. Multiple roles can be granted.

Note: Every SQL Server login belongs to the **public** server role. When a server principal has not been granted or denied specific permissions on a securable object, the user inherits the permissions granted to **public** on that object. Only assign **public** permissions on any object when you want the object to be available to all users.

SQL Azure does not support.

User Mapping

In the Grid, check the **Database** and enter the **User** and **Default Schema** to create user for login the database and specify the first schema will be searched by the server.

Note: SQL Azure does not support.

Server Permissions

You can check **Grant**, **With Grant Option** or **Deny** against the server permissions listed in **Permission** to assign this login to have that permission. Multiple permissions can be granted.

Note: Support from SQL Server 2005 or later.

Endpoint Permissions

You can check **Alter**, **Connect**, **Control**, **Take Ownership** or **View Definition** against the endpoint listed in **Endpoint** to assign this login to have that endpoint permission. Multiple permissions can be granted.

Note: Support from SQL Server 2005 or later.

Login Permissions

You can check **Alter**, **Control**, **Impersonate** or **View Definition** against the server login listed in **Login** to assign this server login to have that login permission. Multiple permissions can be granted.

Note: Support from SQL Server 2005 or later.

SQL Server Server Role Designer

General Properties

In the **Role Membership** grid, check the server role to assign the selected server role to be a member of this server role. Multiple roles can be granted.

Note: SQL Azure does not support server role.

SQL Server Database User Designer

General Properties for SQL Server 2000

User Name

Set name for database user.

Login Name

Assign SQL Server login that this database user uses. When this SQL Server login enters the database, it will retrieve the information of this database user.

General Properties for SQL Server 2005 or later and SQL Azure

User Name

Set name for database user.

User Type

Select the type for database user.

| | |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| For Login | Login Name Assign SQL Server login that this database user uses. When this SQL Server login enters the database, it will retrieve the information of this database user. Default Schema You can specify the first schema that will be searched by the server for this database user. |
| For Certificate | Certificate Name Specify the certificate for this database user. Note: SQL Azure does not support. |
| For Asymmetric Key | Asymmetric Key Name Specify the asymmetric key for this database user. Note: SQL Azure does not support. |
| Without Login | Default Schema You can specify the first schema that will be searched by the server for this database user. |

Roles

In the grid, check the role to assign this database user to be a member of selected database role. Multiple roles can be granted.

Every database user belongs to the **public** database role. When a user has not been granted or denied specific permissions on a securable, the user inherits the permissions granted to **public** on that securable.

Owned Schemas

You can check the schema listed in **Owned Schemas** tab to change schema ownership to this database user.

Note: Support from SQL Server 2005 or later and SQL Azure.

Database Permissions

In the grid, check **Grant**, **With Grant Option** or **Deny** against the database permission listed in **Permission** to assign this database user to have that permission on the database. Multiple permissions can be granted.

Object Permissions

To edit specific object permission for database user, click  **Add Permission** to open the window and follow the steps below:

1. Expand the node in the tree view until reaching to the target object.
2. Check the object to show the grid on the right panel.
3. In the grid, check **Grant**, **With Grant Option** or **Deny** against the permission listed in **Privilege** to assign this database user to have that permission. Multiple permissions can be granted.

SQL Server Database Role Designer

General Properties

Role name

Set name for database role.

Owner

You can enter the owner for this database role. This owner can be database user or database role. If the owner is not specified, this database role will be owned by the user who executes the *CREATE ROLE*.

Note: Support from SQL Server 2005 or later and SQL Azure.

In the **Role Membership** grid, check the database user to assign the selected database user to be a member of this database role. Multiple roles can be granted.

Owned Schemas

You can check the schema listed in **Owned Schemas** tab to change schema ownership to this database role .

Note: Support from SQL Server 2005 or later and SQL Azure.

Object Permissions

To edit specific object permission for database role, click  **Add Permission** to open the window and follow the steps below:

1. Expand the node in the tree view until reaching to the target object.
2. Check the object to show the grid on the right panel.
3. In the grid, check **Grant**, **With Grant Option** or **Deny** against the permission listed in **Privilege** to assign this database role to have that permission. Multiple permissions can be granted.

SQL Server Application Role Designer

General Properties

Role name

Set name for role.

Default Schema

You can specify the first schema that will be searched by the server for this application role.

Note: Support from SQL Server 2005 or later.

Password

Set **Password** and re-type it in the **Confirm Password** text box.

Owned Schemas

You can check the schema listed in **Owned Schemas** tab to change schema ownership to this application role .

Note: Support from SQL Server 2005 or later.

Object Permissions


To edit specific object permission for application role, click  **Add Permission** to open the window and follow the steps below:


1. Expand the node in the tree view until reaching to the target object.
2. Check the object to show the grid on the right panel.
3. In the grid, check **Grant, With Grant Option** or **Deny** against the permission listed in **Privilege** to assign this application role to have that permission. Multiple permissions can be granted.

Note: SQL Azure does not support application role.

Privilege Manager

Besides setting privileges in each user, the **Privilege Manager** provides another view on privileges in connection and its database objects.


Click  **Privilege Manager** from the user object list toolbar and follow the steps below:


1. Expand the node in the tree view until reaching to the target object.
2. Choose the object and click  **Add Privilege** to open the window.
3. Check the user to show the grid on the right panel.
4. In the grid, check the relevant privilege against the privilege listed in **Privilege** to assign the selected user to have that object privilege. Multiple privileges can be granted.

Useful Tools

Navicat provides variety of tools that improve user experience when using Navicat, which are **Object Information**, **Connection Colorings**, **Search Filter** and more.

List/Detail/ER Diagram View


Navicat provides three types of views for objects in the main window. By default, Navicat uses the **List** view in the object list. It only shows object names. You can select **View -> List** from the main menu or click  at the bottom right hand corner.

Detail view shows several properties of objects in columns. To change to Detail view, select **View -> Detail** from the main menu or click  at the bottom right hand corner.

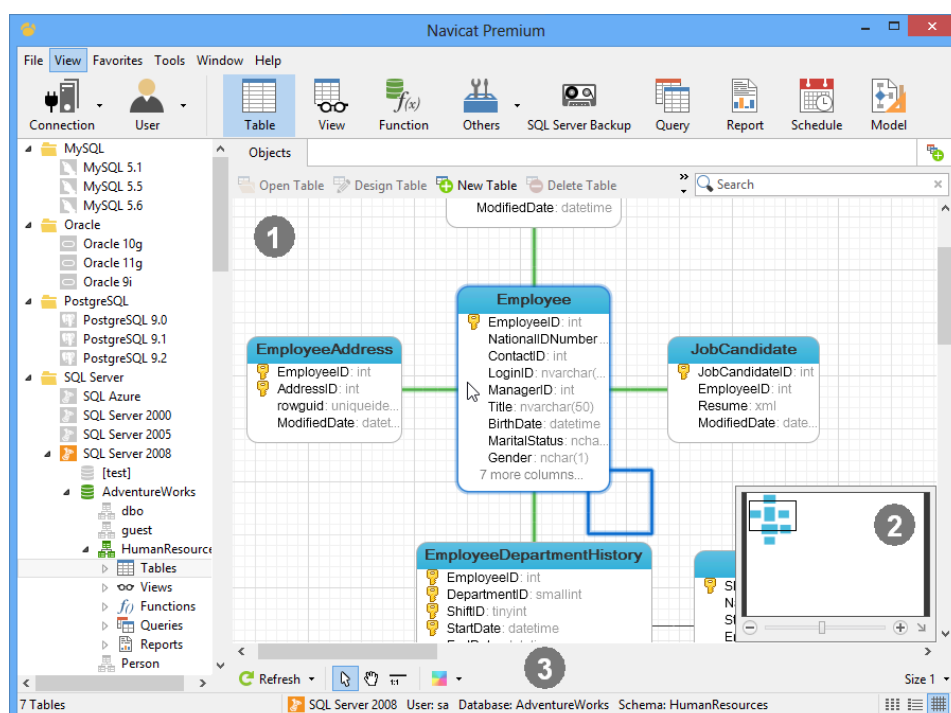
To change the display columns of properties, select **View -> Choose Columns** from the main menu and select display columns for different objects from the popup window.

Besides List and Detail views, Navicat enhances table viewing to a new **ER Diagram** view. In this ER Diagram view, you can view table fields and relationships between tables in a database/schema graphically. It also allows adding foreign key constraints to tables directly.

Note: Available only in Full Version. Only tables provide ER Diagram view. Other database objects only provide List view and Detail view.

Select **View -> ER Diagram** from the main menu or click  at the bottom right hand corner. An ER diagram will be created automatically if the selected database/schema contains tables.

Hint: ER Diagram files are stored under [Settings Location](#).



Object List

Display table fields and relationships between tables in a database/schema.

Note: Double-click a table in ER Diagram view will open the Table Designer, while double-click a table in List view and Detail view will open the Table Viewer. The tabs and options in the designer depend on the diagram database type you have chosen. For the settings of different tabs, see [Server Objects](#).

To add a relation, click  from the bottom toolbar. Drag the source table field and drop to the target table field.

To edit a relation, right-click a relation and select **Design Foreign Key** from the popup menu.

To delete a relation, right-click a relation and select **Delete Foreign Key** from the popup menu.

Select relation in diagram, then press and hold the SHIFT key. Click on the relation to add vertex to relation.

Select relation in diagram, then press and hold the SHIFT key. Click on the vertex to delete vertex on relation.

Navigator

To zoom in or zoom out the selected area of the diagram, adjust the slider of the Navigator. Same effect can be achieved with keyboard shortcuts:

Zoom In: [CTRL++] or [CTRL+Mousewheel up]


Zoom Out: [CTRL+-] or [CTRL+Mousewheel down]

Toolbar

Refresh

Click to refresh the ER Diagram.

Regenerate ER Diagram

Choose **Regenerate ER Diagram** from  **Refresh** button. It regenerates the ER Diagram with using auto layout feature.

Move Diagram

Click to switch to hand mode. Press and hold the SPACE key, then move the diagram.

New Relation

Click to create a relation between two table fields.

Color

Set color to selected tables and relations.

Paper Size

Select paper size from drop-down list, corresponding paper size will reflect in Navigator.

Object Information

In the object list, you can also view information of selected object. Select **View -> Object Information** from the main menu or right-click the object and select **Object Information** from the popup menu.

Note: The tabs depend on the object type you have chosen.

General

Show the object information.

DDL

Show the DDL statement of the object.

Using

Show the objects that the current object used.

Used by

Show the current object used by whom.

Objects

Show the objects in the tablespace.

Preview

Show the sql statement in the query.


Member of

Show the roles that the user or the role assigned to.

Members

Show the members of the role.

Server Monitor (Available only in Full Version)

Navicat provides **Server Monitor** to view properties of selected server(s). Select **Tools ->  Server Monitor** and select the preferred server type from the main menu.

Note: Available only for MySQL, Oracle, PostgreSQL and SQL Server. SQL Azure does not support.

Process List

Display a list of processes from all servers selected.

To stop the selected process, click  **End Process** button.

Auto refresh

If you want to take action on auto-refreshing the server in assigned seconds, choose **View** -> **Set Auto Refresh Time** and enter an auto refresh value. To disable auto refresh feature, choose **View** -> **Auto Refresh**.

Note: Effect will take once you assign the value.


The process list provides the following information depends on the database type you are chosen: MySQL, Oracle, PostgreSQL and SQL Server.

- Server name that is given while setting the connection.
- Process ID on the server.
- Serial number of the process.
- Current user who log in to the server.
- Host from which the user is connected.
- Database that the user is currently used.
- Last command that was issued by the user.
- Time, state and info of the process.
- CPU Time and state of the process.

Variables

Display the list of all server variables and their values.

Note: Available only for MySQL, Oracle and PostgreSQL.

Hint: To edit variable value in MySQL and Oracle servers, click  or press CTRL+ENTER to open editor for editing. The value in PostgreSQL server cannot be edited here. (Those variables can be set using the *SET* statement, by editing the *postgresql.conf* configuration file.)

Status

Display the list of all server status and their values.

Note: Available only for MySQL, Oracle and PostgreSQL.

Virtual Grouping (Available only in Full Version)

Virtual Group aims to provide a platform for logical grouping objects by categories, so that all objects are effectively preserved.

Virtual Grouping can be applied on Connection, Table, View, Function, Query, Report, Backup, Schedule and Model.

Right-click in the connection tree/object list and select **New Group** or **Manage Group** -> **New Group** from the popup menu to create a new group.

To move object(s) to a group, right-click the object(s) and select **Manage Group -> Move To** from the popup menu or drag and drop the object(s) into the group.

To move object(s) back to the top-level, right-click the object(s) and select **Manage Group -> Exclude From Group** from the popup menu or drag and drop the object(s) to target level in the connection tree.

Select **View -> Flatten Connection Tree/Flatten Object List** from the main menu to hide connection/object groups.

Connection Colorings

Navicat provides highlighting connections by colors for identifying connections and their database objects. The highlighted color displays in the connection tree and menu bar in its database object window.

To highlight a connection, right-click the connection and select **Color** from the popup menu.

Favorites (Available only in Full Version)

Favorites are links to database objects that you visit frequently. By adding a path to your favorites list, you can go to that database objects with a single click, instead of having to navigate the connection and database and/or schema in the connection tree.

To add a link to the favorites list, open a database object and choose **File -> Add To Favorites** or press SHIFT+CTRL+#. If database object is opened in tabbed window, you can also right-click the tab and select **Add To Favorites** from the popup menu. Enter **Favorite Name** and select **Favorite ID**.

To open a database object from the favorites list, select **Favorites -> favorite_name** from the main menu or press CTRL+#.

Select **Favorites -> Clear Favorites -> favorite_name** from the main menu to remove a link from the favorites list.

Select **Favorites -> Clear Favorites -> Clear All** from the main menu to remove all links from the favorites list.

Note: # represents 0, 1, 2, 3, 4, 5, 6, 7, 8 or 9.

Find in Database/Schema (Available only in Full Version)


Navicat provides a **Find in Database/Schema** feature offers searching table and view records within a database and/or schema. Select **Tools -> Find in Database/Schema** from the main menu.

Select a target connection, database and/or schema, enter keyword and select the search criteria. Click **Find** button and then double-click table/view in the **Find Results** list to view the record.

Search Filter

Navicat provides filters for your objects in the object list and connections in the connection tree.

Object Filter allows you to filter objects in the object list or model that names contain the filter string.

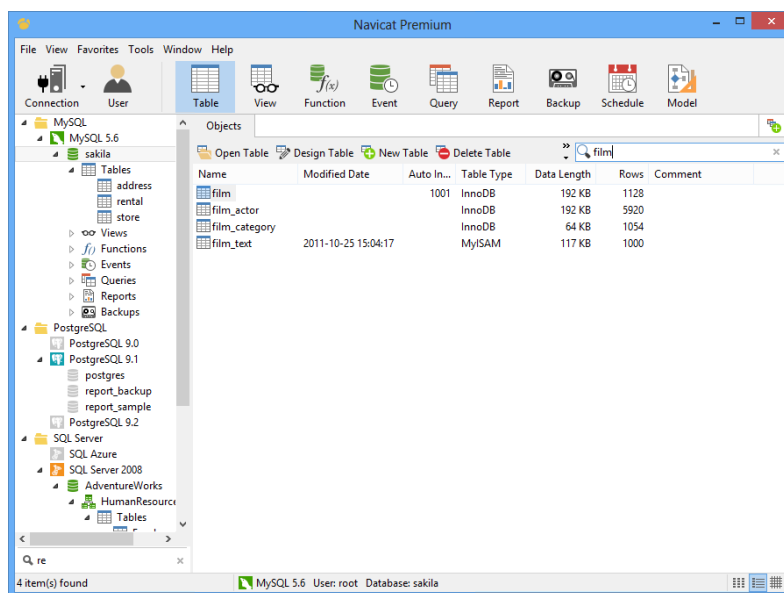
Click  and specify a filter string in the Navicat main window or Model Designer.

To remove the filter, simply delete the filter string.

Tree Filter allows you to filter connection in the connection tree that names contain the filter string.

Click on the connection tree to focus and specify a filter string directly. If connection has opened, the filter will also apply to its database objects.

To remove the filter, simply delete the filter string.



Options

Navicat provides a complete user interface customization with various options for all tools. Select **Tools** -> **Options** from the main menu.

General Options

Windows in taskbar

Every new window that is opened automatically is shown on the Windows Taskbar. With this option is disabled, all instances (e.g. tables, queries) will be closed while main Navicat exits.

Hint: Restart Navicat to take effect.

Allow Multiple Form Instances

With this option is on, you allow opening multiple instances of the same selected window.

Allow Multiple Navicat Instances

Uncheck this item means that clicking on the Navicat shortcut will re-activate the running instance of Navicat and not launch a new copy.

Click to refresh

Refresh the object list whenever you click on the objects.

Show function wizard

Display the function wizard ([MySQL](#), [Oracle](#), [PostgreSQL](#) or [SQL Server](#)) when you create a new function/procedure.

Ask to save new queries/profiles before closing

With this option is on, Navicat will prompt you to save new queries or profiles every time when you quit the relevant sub-window.

Docking

Open Windows

Open new windows to **main window** or **dock window** or **as a new window**.

Code Insight (Available only in Full Version)

Use Code Completion

When you type the . (dot) symbol between the object names, SQL Editor will offer you a popup list that showing some variants for the code completion, see [Code Completion](#).

Delay

You can change the time the popup list takes to appear.

Use Word Completion

When you type the first character of words, SQL Editor will offer you a popup list that showing some variants for the word completion.

Delay

You can change the time the popup list takes to appear.

Use Syntax Highlighting

Syntax highlight helps viewing codes clearly. Codes are highlighted in SQL Editor with different colors and fonts according to the categories they belong to. The syntax highlighting feature can be limited by setting the maximum file size (e.g. 10) in **Apply Syntax Highlighting for statement size below (MB)** to increase performance.

Auto Save

Use Auto Save

Save automatically after modifications in SQL Editor by defining the **Auto Save Interval (s)** (e.g. 30).

Appearance Options

Show toolbar caption

Show text on toolbar buttons in sub-windows. Otherwise, only buttons will be presented.

Hint: Restart Navicat to take effect.



Show main toolbar caption

Show text on toolbar buttons in the main window. Otherwise, only buttons will be presented.

Use big icons for main toolbar

Use large icons on toolbar buttons in the main window.

Font

Grid Font

Define the font and its size used by grid in Table Viewer.

Editor Font

Define the font and its size used by editors.

Console Font

Define the font and its size used in Console.

ER Diagram Font

Define the font and its size used in ER diagram.

Color

Grid Colors

Define the background colors of the table grid.

Use three colors

Display the table grid background by using three different colors respectively for viewing data clearly.

Text Colors

This color settings allows you to format your SQL queries in SQL Editor with colored syntax highlighting for your SQL statements to improve readability.

Set font colors of the SQL Editor uses to mark out different text fragments: Common, Keywords, Comments, Strings and Numbers. Just simply click on the color boxes and choose your desired color from the **Color-Selection** dialog window.

Main Window

Show table hint

While you roll the mouse pointer over a table within the object list, you could get a popup hint giving details about the table structure.

Show objects in connection tree

Display database objects using the tree structure in the connection tree. To expand node, click the plus sign (+) or double-click the node.

Hint: Reopen the database/schema to take effect.

Use Customized Connection Order

Check this option to customize the connection tree order in the connection tree. (using drag and drop method)

Show system items (PostgreSQL, SQL Server)

Check this option to show all the system objects such as *information_schema* and *pg_catalog* schemas.

Hint: Reopen the database/schema to take effect.

Show auto index (SQLite)

Check this option to show auto index generated for SQLite table in the index object list.

Editor

Show Line Number

Display line numbers at the side of the editor for easily reference.

Use Code Folding

Code folding allows codes to collapse as a block and only the first line displayed in the editor, see [Code Folding](#).

Use Brace Highlighting

Highlight the pair of braces when your cursor moves to either one brace for easily reference, see [Brace Highlight](#).

Tab Width

Enter the number of characters that a tab occupies, e.g. 5.

Data & Grid

Show TEXT Blob fields in data grids

If this option is on, data which set as TEXT field type is visible in table grid. Otherwise, [\(WIDEMEMO\)](#) will be shown.

Limit Records

Check this option if you want to limit the number of records showed on each page in table grid/foreign key data selection globally. Otherwise, all records will be displayed in one single page.

☐

records per page

Set the **records per page** value (e.g. 1000) in the edit field. The number representing the number of records showed per page in table grid.

Note: To adjust the settings for particular table, see [Table Viewer](#).

☐

records per page in foreignkey editor

Set the **records per page in foreignkey editor** value (e.g. 100) in the edit field. The number representing the number of records showed per page in [Foreign Key Data Selection](#).

Synchronize current record

When updating/inserting a row in table grid (if primary key exists), it will reload this record from server.

For example: a table with 3 columns - id, name and timestamp. If you update the name column, the timestamp will update immediately in the grid.

Row height

Define the height of the row (e.g. 17) used in editor.




Note: To adjust the settings for particular table, see [Formatting Table Grid](#).

Column Width

Define the width of the column (e.g. 150) used in editor.

Note: To adjust the settings for particular table, see [Formatting Table Grid](#).

Auto Begin Transaction

Check this option if you require auto commit of changing records in table grid. Otherwise, click  **Commit** or  **Rollback** buttons from the  **Begin Transaction** button to commit or rollback the changes. See [Table Viewer](#).

Display Formats

Data of types integer, float, date, time and datetime can be formatted when displayed on data grids. Type the format here to change the format. If the formats are left blank, default format will be used. For date, time and datetime fields, default formats will be the system datetime formats.

| Display formats | |
|-----------------|--------------------------------------------------|
| Integer: | <input type="text" value="#.###"/> |
| Float: | <input type="text" value="#.00"/> |
| Date: | <input type="text" value="dd/mm/yyyy"/> |
| Time: | <input type="text" value="hh:mm:ss am/pm"/> |
| DateTime: | <input type="text" value="dd/mm/yyyy hh:mm:ss"/> |
| Example: | 16/1/2013 18:23:50 |
| Output: | 16/01/2013 18:23:50 |

Formats are defined by constructing a string using these format specifiers:

Numeric fields

| Specifier | Represent |
|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0 | Digit placeholder. If the value being formatted has a digit in the position where the "0" appears in the format string, then that digit is copied to the output string. Otherwise, a "0" is stored in that position in the output string. (e.g. with 0000 placed in the Integer field, all the integer output from the table will have 0012 in format) |
| # | Digit placeholder. If the value being formatted has a digit in the position where the "#" appears in the format string, then that digit is copied to the output string. Otherwise, nothing is stored in that position in the output string. (e.g. with ## ## placed in the Integer field, all the integers output from the table will have 12 34 in format) |
| . | Decimal point. The first "." character in the format string determines the location of the decimal separator in the formatted value; any additional "." characters are ignored. The actual character used as a the decimal separator in the output string is determined by the DecimalSeparator global variable. The default value of DecimalSeparator is specified in the Number Format of the Region and Language Options section in the Windows Control Panel. |
| , | Thousand separator. If the format string contains one or more "," characters, the output will have thousand separators inserted between each group of three digits to the left of the decimal point. The placement and number of "," characters in the format string does not affect the output, except to indicate that thousand separators are wanted. The actual character used as a the thousand separator in the output is determined by the ThousandSeparator global variable. The default value of ThousandSeparator is specified in the Number Format of the Region and Language Options section in the Windows Control Panel. |
| E+ | Scientific notation. If any of the strings "E+", "E-", "e+", or "e-" are contained in the format string, the number is formatted using scientific notation. A group of up to four "0" characters can immediately follow the "E+", "E-", "e+", or "e-" to determine the minimum number of digits in the exponent. The "E+" and "e+" formats cause a |

| | |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | plus sign to be output for positive exponents and a minus sign to be output for negative exponents. The "E-" and "e-" formats output a sign character only for negative exponents. |
| 'xx'/'xx' | Characters enclosed in single or double quotes are output as-is, and do not affect formatting. |
| ; | Separates sections for positive, negative, and zero numbers in the format string. |

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.

The number being formatted is always rounded to as many decimal places as there are digit placeholders ("0" or "#") to the right of the decimal point. If the format contains no decimal point, the value being formatted is rounded to the nearest whole number.

If the number being formatted has more digits to the left of the decimal separator than there are digit placeholders to the left of the "." character in the format string, the extra digits are output before the first digit placeholder.

The following table shows the effect of various format strings:

| Display Format | Value | Result | Comment |
|----------------|-------|--------|-----------------------------------------------------------------------------|
| #.## | 12.2 | 12.2 | Note extra digit to left of decimal still appears. |
| #.00 | 2.5 | 2.50 | Note extra zero: field will always show two decimal places. |
| 00.## | .006 | 00.01 | Note extra 0s to right of decimal point and rounding to two decimal places. |

To allow different formats for positive, negative, and zero values, the format string can contain between one and three sections separated by semicolons.

One section: The format string applies to all values.

Two sections: The first section applies to positive values and zeros, and the second section applies to negative values.

Three sections: The first section applies to positive values, the second applies to negative values, and the third applies to zeros.

If the section for negative values or the section for zero values is empty, that is, if there is nothing between the semicolons that delimit the section, the section for positive values is used instead.

If the section for positive values is empty, or if the entire format string is empty, the value is formatted using general floating-point formatting with 15 significant digits. General floating-point formatting is also used if the value has more than 18 digits to the left of the decimal point and the format string does not specify scientific notation.

Date Time fields

| Specifier | Represent |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| c | The date using the format given by the ShortDateFormat global variable, followed by the time using the format given by the LongTimeFormat global variable. The time is not displayed if the fractional part of the DateTime value is zero. |
| d | The day as a number without a leading zero (1-31). |
| dd | The day as a number with a leading zero (01-31). |
| ddd | The day as an abbreviation (Sun-Sat) using the strings given by the ShortDayNames global variable. |

| | |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| dddd | The day as a full name (Sunday-Saturday) using the strings given by the LongDayNames global variable. |
| dddddd | The date using the format given by the ShortDateFormat global variable. |
| dddddd | The date using the format given by the LongDateFormat global variable. |
| m | The month as a number without a leading zero (1-12). If the m specifier immediately follows an h or hh specifier, the minute rather than the month is displayed. |
| mm | The month as a number with a leading zero (01-12). If the mm specifier immediately follows an h or hh specifier, the minute rather than the month is displayed. |
| mmm | The month as an abbreviation (Jan-Dec) using the strings given by the ShortMonthNames global variable. |
| mmmm | The month as a full name (January-December) using the strings given by the LongMonthNames global variable. |
| yy | The year as a two-digit number (00-99). |
| yyyy | The year as a four-digit number (0000-9999). |
| h | The hour without a leading zero (0-23). |
| hh | The hour with a leading zero (00-23). |
| n | The minute without a leading zero (0-59). |
| nn | The minute with a leading zero (00-59). |
| s | The second without a leading zero (0-59). |
| ss | The second with a leading zero (00-59). |
| t | The time using the format given by the ShortTimeFormat global variable. |
| tt | The time using the format given by the LongTimeFormat global variable. |
| am/pm | The time using the 12-hour clock for the preceding h or hh specifier, followed by "am" for any hour before noon, or "pm" for any hour after noon. The am/pm specifier can use lower, upper, or mixed case, and the result is displayed accordingly. |
| a/p | The time using the 12-hour clock for the preceding h or hh specifier, followed by "a" for any hour before noon, or "p" for any hour after noon. The a/p specifier can use lower, upper, or mixed case, and the result is displayed accordingly. |
| ampm | The time using the 12-hour clock for the preceding h or hh specifier, followed by the contents of the TimeAMString global variable for any hour before noon, or the contents of the TimePMString global variable for any hour after noon. |
| / | The date separator character given by the DateSeparator global variable. |
| : | The time separator character given by the TimeSeparator global variable. |
| 'xx'/"xx" | Characters enclosed in single or double quotes are displayed as-is, with no formatting changes. |

Format specifiers may be written in uppercase or lowercase letters; both produce the same result.

Model Options (Available only in Full Version)

Highlight Objects

With this option is on, when a mouse cursor hovers over an object, Navicat will highlight its border with blue color.

Hint: Restart Navicat to take effect.

Highlight with Relation

With this option is on, when a mouse cursor hovers over a relation, Navicat will highlight it with blue or green color indicating relationships between tables.

Hint: Restart Navicat to take effect.

Guess Field Type

With this option is on, Navicat will predict field types when you [design fields without using Table Designer](#).

Hint: Restart Navicat to take effect.

Miscellaneous Options

Process Priority

Priority indicates the priority used when scheduling the thread. Adjust the priority higher or lower as needed.

Files Location

You can change the folder for different types of files. By default, most of the files are stored in [Settings Location](#). However, some files are located in the [profiles](#) directory and all the [log files](#) are stored in the **logs** directory.

File Association (Available only in Full Version)

File associations are what the Navicat uses to open its [saved files](#) with Navicat. For example, a .npt file (Data Transfer profile) will open with Data Transfer windows, and a .npi (Import Wizard profile) will open by default with Import Wizard.

Note: In Vista or above, you need to click **File Association** button to open the list. In XP or below, file association is listed in here.

Activation & Updater

Check for updates on startup

Check this option to allow Navicat checks for new version when it starts.

Use Proxy

Check this option to use proxy for the activation process and enter **Host**, **Port**, **User Name** and **Password**.

OCI (Available only for Oracle)

OCI library (oci.dll)

Choose the **Oracle Client** / **Oracle Instant Client** folder that includes the OCI library (oci.dll) for [Basic/TNS](#) connection. It has already included in Navicat installation folder. You can locate it directly.

Hint: Restart Navicat to take effect.

SQL*Plus

Specify the location for SQL*Plus used in [console](#) of Oracle connection. **SQL*Plus** is included in **Oracle Client** / **Oracle Instant Client**.

Oracle Instant Client is the simplest way to deploy a full Oracle Client application built with OCI, OCCI, JDBC-OCI, or ODBC drivers. It provides the necessary Oracle Client libraries in a small set of files. You can also download **Oracle Client** / **Oracle Instant Client** through -

Oracle Client

<http://www.oracle.com/technetwork/database/enterprise-edition/downloads/index.html>

Oracle Instant Client

<http://www.oracle.com/technetwork/database/features/instant-client/index-097480.html>

Download the appropriate Instant Client packages for your platform and the CPU. All installations REQUIRE the Basic or Basic Lite package. Unzip the packages and set the path points to it.

Oracle Client Installation Guide

http://download.oracle.com/docs/cd/B28359_01/install.111/b32302/toc.htm

Commands (Available only in Full Version)

Navicat Premium

| Navicat Objects | Server Type | Command Lines |
|---------------------------------|------------------------------|----------------------------------------------------------------------------------------------------|
| Backup | MySQL, PostgreSQL and SQLite | Navicat.exe /backup ConnectionType ConnectionName DatabaseName SchemaName |
| Backup Database | PostgreSQL | Navicat.exe /backupdatabase pgsql ConnectionName DatabaseName |
| Backup Server | MySQL, PostgreSQL and SQLite | Navicat.exe /backupserver ConnectionType ConnectionName |
| Backup Profile | MySQL, PostgreSQL and SQLite | Navicat.exe /backupprofile ConnectionType ConnectionName DatabaseName SchemaName ProfileName |
| Import | All | Navicat.exe /import ConnectionType ConnectionName DatabaseName SchemaName ProfileName |
| Export Table | All | Navicat.exe /export ConnectionType ConnectionName DatabaseName SchemaName ProfileName |
| Export View Result | All | Navicat.exe /exportview ConnectionType ConnectionName DatabaseName SchemaName ProfileName |
| Export Materialized View Result | Oracle | Navicat.exe /exportmview ora ConnectionName SchemaName ProfileName |
| Export Query Result | All | Navicat.exe /exportquery ConnectionType ConnectionName DatabaseName SchemaName ProfileName |
| Query Execution | All | Navicat.exe /query ConnectionType ConnectionName DatabaseName SchemaName QueryName |
| Data Transfer | All | Navicat.exe /datatransfer ProfileType ProfileName |
| Data Synchronization | All | Navicat.exe /datasync ConnectionType ProfileName |
| Batch Jobs | All | Navicat.exe /batchjob BatchJobName |
| Print Report | All | Navicat.exe /report ConnectionType ConnectionName DatabaseName SchemaName ReportName Param1 Param2 |

Note:

ConnectionType - type of the connection: mysql, ora, pgsql, sqlite or mssql

ProfileType - type of the data transfer profile: mysql, ora, pgsql, sqlite, mssql or premium

Param1 - file type: pdf, htmlfile or excelfile

Param2 - printer name or target file path, e.g. C:\Users\Guest\Desktop\report_sample.pdf

Navicat for MySQL

| Navicat Objects | Command Lines |
|----------------------|--------------------------------------------------------------------------|
| Backup | Navicat.exe /backup ConnectionName DatabaseName |
| Backup Server | Navicat.exe /backupserver ConnectionName |
| Backup Profile | Navicat.exe /backupprofile ConnectionName DatabaseName ProfileName |
| Import | Navicat.exe /import ConnectionName DatabaseName ProfileName |
| Export Table | Navicat.exe /export ConnectionName DatabaseName ProfileName |
| Export View Result | Navicat.exe /exportview ConnectionName DatabaseName ProfileName |
| Export Query Result | Navicat.exe /exportquery ConnectionName DatabaseName ProfileName |
| Query Execution | Navicat.exe /query ConnectionName DatabaseName QueryName |
| Data Transfer | Navicat.exe /datatransfer ProfileName |
| Data Synchronization | Navicat.exe /datasync ProfileName |
| Batch Jobs | Navicat.exe /batchjob BatchJobName |
| Print Report | Navicat.exe /report ConnectionName DatabaseName ReportName Param1 Param2 |

Note:

Param1 - file type: pdf, htmlfile or excelfile

Param2 - printer name or target file path, e.g. C:\Users\Guest\Desktop\report_sample.pdf

Navicat for Oracle

| Navicat Objects | Command Lines |
|---------------------------------|-------------------------------------------------------------------------|
| Import | Navicat.exe /import ConnectionName SchemaName ProfileName |
| Export Table | Navicat.exe /export ConnectionName SchemaName ProfileName |
| Export View Result | Navicat.exe /exportview ConnectionName SchemaName ProfileName |
| Export Materialized View Result | Navicat.exe /exportmview ConnectionName SchemaName ProfileName |
| Export Query Result | Navicat.exe /exportquery ConnectionName SchemaName ProfileName |
| Query Execution | Navicat.exe /query ConnectionName SchemaName QueryName |
| Data Transfer | Navicat.exe /datatransfer ProfileName |
| Data Synchronization | Navicat.exe /datasync ProfileName |
| Batch Jobs | Navicat.exe /batchjob BatchJobName |
| Print Report | Navicat.exe /report ConnectionName SchemaName ReportName Param1 Param 2 |

Note:

Param1 - file type: pdf, htmlfile or excelfile

Param2 - printer name or target file path, e.g. C:\Users\Guest\Desktop\report_sample.pdf

Navicat for PostgreSQL

| Navicat Objects | Command Lines |
|----------------------|-------------------------------------------------------------------------------------|
| Backup | Navicat.exe /backup ConnectionName DatabaseName SchemaName |
| Backup Database | Navicat.exe /backupdatabase ConnectionName DatabaseName |
| Backup Server | Navicat.exe /backupserver ConnectionName |
| Backup Profile | Navicat.exe /backupprofile ConnectionName DatabaseName SchemaName ProfileName |
| Import | Navicat.exe /import ConnectionName DatabaseName SchemaName ProfileName |
| Export Table | Navicat.exe /export ConnectionName DatabaseName SchemaName ProfileName |
| Export View Result | Navicat.exe /exportview ConnectionName DatabaseName SchemaName ProfileName |
| Export Query Result | Navicat.exe /exportquery ConnectionName DatabaseName SchemaName ProfileName |
| Query Execution | Navicat.exe /query ConnectionName DatabaseName SchemaName QueryName |
| Data Transfer | Navicat.exe /datatransfer ProfileName |
| Data Synchronization | Navicat.exe /datasync ProfileName |
| Batch Jobs | Navicat.exe /batchjob BatchJobName |
| Print Report | Navicat.exe /report ConnectionName DatabaseName SchemaName ReportName Param1 Param2 |

Note:

Param1 - file type: pdf, htmlfile or excelfile

Param2 - printer name or target file path, e.g. C:\Users\Guest\Desktop\report_sample.pdf

Navicat for SQLite

| Navicat Objects | Command Lines |
|----------------------|--------------------------------------------------------------------------|
| Backup | Navicat.exe /backup ConnectionName DatabaseName |
| Backup Server | Navicat.exe /backupserver ConnectionName |
| Backup Profile | Navicat.exe /backupprofile ConnectionName DatabaseName ProfileName |
| Import | Navicat.exe /import ConnectionName DatabaseName ProfileName |
| Export Table | Navicat.exe /export ConnectionName DatabaseName ProfileName |
| Export View Result | Navicat.exe /exportview ConnectionName DatabaseName ProfileName |
| Export Query Result | Navicat.exe /exportquery ConnectionName DatabaseName ProfileName |
| Query Execution | Navicat.exe /query ConnectionName DatabaseName QueryName |
| Data Transfer | Navicat.exe /datatransfer ProfileName |
| Data Synchronization | Navicat.exe /datasync ProfileName |
| Batch Jobs | Navicat.exe /batchjob BatchJobName |
| Print Report | Navicat.exe /report ConnectionName DatabaseName ReportName Param1 Param2 |

Note:

Param1 - file type: pdf, htmlfile or excelfile

Param2 - printer name or target file path, e.g. C:\Users\Guest\Desktop\report_sample.pdf

Navicat for SQL Server

| Navicat Objects | Command Lines |
|----------------------|-------------------------------------------------------------------------------------|
| Import | Navicat.exe /import ConnectionName DatabaseName SchemaName ProfileName |
| Export Table | Navicat.exe /export ConnectionName DatabaseName SchemaName ProfileName |
| Export View Result | Navicat.exe /exportview ConnectionName DatabaseName SchemaName ProfileName |
| Export Query Result | Navicat.exe /exportquery ConnectionName DatabaseName SchemaName ProfileName |
| Query Execution | Navicat.exe /query ConnectionName DatabaseName SchemaName QueryName |
| Data Transfer | Navicat.exe /datatransfer ProfileName |
| Data Synchronization | Navicat.exe /datasync ProfileName |
| Batch Jobs | Navicat.exe /batchjob BatchJobName |
| Print Report | Navicat.exe /report ConnectionName DatabaseName SchemaName ReportName Param1 Param2 |

Note:

Param1 - file type: pdf, htmlfile or excelfile

Param2 - printer name or target file path, e.g. C:\Users\Guest\Desktop\report_sample.pdf

Hot Keys

Navicat Main Window

| Keys | Action |
|------------------------------|----------------------------------------|
| CTRL+G | Settings Location Folder |
| CTRL+# (# represents 0 to 9) | Open Object Window from Favorites List |
| F6 | Console |
| CTRL+H | History Log |
| CTRL+Q | New Query |

Common

| Keys | Action |
|------------------------------------|----------------------|
| CTRL+N | New Object |
| SHIFT+CTRL+# (# represents 0 to 9) | Add to Favorites |
| F8 | Navicat Main Window |
| CTRL+TAB or SHIFT+CTRL+TAB | Next Window |
| F1 | Help |
| CTRL+F1 | Online Documentation |

Table Designer

| Keys | Action |
|----------|---------------------|
| CTRL+O | Open Table |
| CTRL+F | Find Field |
| F3 | Find Next Field |
| SHIFT+F3 | Find Previous Field |

Table Viewer/View Viewer

| Keys | Action |
|------------------|-------------------------------------|
| CTRL+D | Design Table/Design View |
| CTRL+Q | Query Table/Query View |
| CTRL+F | Find Text |
| F3 | Find Next Text |
| CTRL+G | Go to Row |
| CTRL+LEFT ARROW | First Data Column of Current Record |
| CTRL+RIGHT ARROW | Last Data Column of Current Record |
| CTRL+HOME | First Data Row of Current Column |
| CTRL+END | Last Data Row of Current Column |

| | |
|-----------------------------------|----------------------------------|
| CTRL+PAGE UP or CTRL+UP ARROW | First Data Row of Current Window |
| CTRL+PAGE DOWN or CTRL+DOWN ARROW | Last Data Row of Current Window |
| CTRL+R | Apply Filter in Filter Wizard |
| SHIFT+ARROW | Select Cells |
| CTRL+ENTER | Edit Data with Opening Editor |
| INSERT or CTRL+N | New Record |
| CTRL+DELETE | Delete Record |
| CTRL+S | Apply Record Changes |
| ESC | Cancel Record Changes |
| CTRL+T | Stop Loading Data |

View/Query

| Keys | Action |
|--------------|------------------------------|
| CTRL+O | Load View/Load Query |
| CTRL+/ | Comment Line |
| SHIFT+CTRL+/ | Uncomment Line |
| CTRL+E | View Definition/Query Editor |
| CTRL+R | Run |
| SHIFT+CTRL+R | Run Selected |
| F7 | Run a Statement from Here |
| CTRL+T | Stop |

SQL Editor

| Keys | Action |
|--------------------------------|----------------|
| CTRL+F | Find Text |
| F3 | Find Next Text |
| CTRL+= or CTRL+Mousewheel Up | Zoom In |
| CTRL+- or CTRL+Mousewheel Down | Zoom Out |
| CTRL+0 | Reset Zoom |

Oracle Debugger

| Keys | Action |
|----------|-----------|
| F9 | Run |
| F8 | Step Over |
| F7 | Step In |
| SHIFT+F7 | Step Out |

Report

| Keys | Action |
|-----------|------------------------------|
| CTRL+O | Open Report in Report Design |
| CTRL+P | Print in Report Design |
| CTRL+G | Groups in Report Design |
| PAGE DOWN | Next Page |
| PAGE UP | Previous Page |
| END | Last Page |
| HOME | First Page |

Model

| Keys | Action |
|--------------------------------|---------------------------------|
| CTRL+D | New Diagram in Model |
| CTRL+P | Print |
| ESC | Select |
| H | Move Diagram |
| T | New Table |
| L | New Layer |
| N | New Note |
| I | New Image |
| R | New Relation |
| CTRL+B | Bold Selected Table or Relation |
| CTRL+= or CTRL+Mousewheel Up | Zoom In |
| CTRL+- or CTRL+Mousewheel Down | Zoom Out |
| CTRL+0 | Reset Zoom |

Log Files

Navicat provides number of log files to keep track on the actions have been performed in Navicat and they are located in the **logs** directory, e.g. C:\Users\Guest\Documents\Navicat\Premium\logs\. You are allowed to change the log files location under [Options](#).

HttpDump.log

Store information which response from your HTTP Server.

LogHistory.txt

Store all SQL statements of all the operations executed over databases and database objects in Navicat. Select **Tools** -> **History Log** from the main menu or press CTRL+H to open the LogHistory.txt file in the History Log Viewer.

Note: This log will be overwritten while Navicat is being restarted.

LogImport.txt

Record detailed information on every error (indicating success or failure) that occurred during the import process.

LogExport.txt

Record detailed information on every error (indicating success or failure) that occurred during the export process.

LogSynchronize.txt

Record detailed information on every error (indicating success or failure) that occurred during the data synchronization process.

Note: This log will be overwritten on each synchronization.

LogCmd.txt

Store information for Navicat command line process and all operations while running schedule.