Navicat
Data Modeler

Version 4 User Guide

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Chapter 1 - Introduction

About Navicat Data Modeler

Navicat Data Modeler is a powerful and easy-to-use GUI tool for creating and manipulating database models. It enables users to design database structures, generate data dictionaries, reverse engineer, forward engineer, compare models, generate SQL/script files and print diagrams to files, etc.

Navicat Data Modeler is available on three platforms - Microsoft Windows, macOS and Linux. Here are some highlights of Navicat Data Modeler:

- Create and manipulate conceptual/logical/physical models.

- Support various database systems: MySQL, MariaDB, Oracle, PostgreSQL, SQLite, SQL Server and MongoDB (including cloud databases like Amazon RDS, Amazon Redshift, Alibaba Cloud, Microsoft Azure).

- Reverse engineer databases/schemas to a model.

- Forward engineer a physical model to a SQL/Script file or a database/schema.

- Compare two model workspaces.

- Create and edit table structures directly.

- Generate data dictionaries from models.

- Support Navicat Cloud and Navicat On-Prem Server.

For details, visit our website: https://www.navicat.com

System Requirements

Windows

- Microsoft Windows 7, Windows 8, Windows 8.1, Windows 10, Windows 11, Server 2012, Server 2016, Server 2019, Server 2022

macOS

- macOS 11 Big Sur, macOS 12 Monterey, macOS 13 Ventura, macOS 14 Sonoma, macOS 15 Sequoia

Linux

x86_64

- Debian 10, Debian 11, Debian 12, Ubuntu 20.04, Ubuntu 22.04, Ubuntu 24.04, Fedora 38, Fedora 39, Fedora 40, Linux Mint 20, Linux Mint 21, Deepin 20, KylinOS Desktop 10

aarch64

- Debian 11, Debian 12, Ubuntu 22.04, Ubuntu 24.04, Fedora 38, Fedora 39, Fedora 40, Linux Mint 20, Linux Mint 21, KylinOS Desktop 10

Supported Databases

- MySQL 3.23 or above

- PostgreSQL 7.3 or above

- Oracle 8i or above

- SQLite 3

- SQL Server 2000 or above and SQL Azure

- MariaDB 5.1 or above

- MongoDB 2.6 or above

- Redshift 1.0

- OceanBase Community 3.1 or above and Enterprise 3.2 or above (Enterprise Oracle Mode is not available in macOS Edition)

Installation

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

Installation for Download Version

1. Download Navicat Data Modeler macOS version.

2. Open the **.dmg** file.

3. Drag Navicat Data Modeler to your Applications folder to install.

Installation for CD Version

1. Load the Navicat Data Modeler CD Installation disk into the CD-ROM drive.

2. Open the **.dmg** file.

3. Drag Navicat Data Modeler to your Applications folder to install.

Registration

When the trial period is finished, Navicat Data Modeler requires a license key or a subscription plan to continue using the features.

Note: Perpetual License and Subscription Plan cannot be used at the same Navicat Data Modeler. Before changing the registration method, you need to deactivate the license key or sign out your Navicat ID.

Perpetual License

If you have purchased a perpetual license, you will receive a license key for activating Navicat Data Modeler.

In the **Perpetual License** section, paste your license key (16 digits) and click the **Activate** button. Navicat Data Modeler contacts our licensing server to activate the license key. If the activation process is successful, the license key details are displayed.

Manual Activation

Manual activation is available when your computer does not have an internet connection. You will need another computer with an internet connection to complete this activation process.

1. If the online activation is failed, click **Manual Activation**.

2. Copy the Request Code in the **Copy the Request Code Here:** box.

3. Open web browser on a computer with an internet connection and then go to https://customer.navicat.com/manual_activate.php.

4. Paste/Enter the Request Code into the left box.

5. Click **Get Activation Code**.

6. Copy the generated Activation Code in the right box.

7. Go back to the computer where you are activating Navicat Data Modeler.

8. Paste the Activation Code into the **Paste the Activation Code Here:** box.

9. Click **Activate**.

Subscription Plan

If you have subscribed a plan, you can sign in your Navicat ID to use Navicat Data Modeler during the subscription term.

Note: Navicat ID is the Email address that you used to subscribe the plan.

In the **Subscription** section, provide your **Navicat ID** and **Password**. After signed in, the subscription plan details are displayed.

Navicat Data Modeler contacts our licensing server once per hour to auto reload the plan by default. If you have updated your plan in the portal site, you can use the **Reload Plan** button to force reloading the new plan.

Note: Each Navicat ID can connect to only one Navicat Data Modeler. If you sign in your Navicat ID in another Navicat Data Modeler, you will be signed out from the current Navicat Data Modeler.

Migration / Upgrade

Migrate Navicat Data Modeler to a new computer

1. In Navicat Data Modeler, choose **Navicat Data Modeler** -> **Registration**.

2. [Perpetual License] Click **Deactivate** to online deactivate the license key.

3. [Subscription Plan] Click **Sign Out** to sign out your Navicat ID.

4. Uninstall Navicat Data Modeler from the existing computer.

5. Re-install Navicat Data Modeler in the new computer.

Upgrade Navicat Data Modeler

If you want to upgrade an installed copy of Navicat Data Modeler to the latest release, please choose **Navicat Data Modeler** -> **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 Data Modeler. It will replace your previous Navicat Data Modeler 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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Chapter 2 - User Interface

Main Window
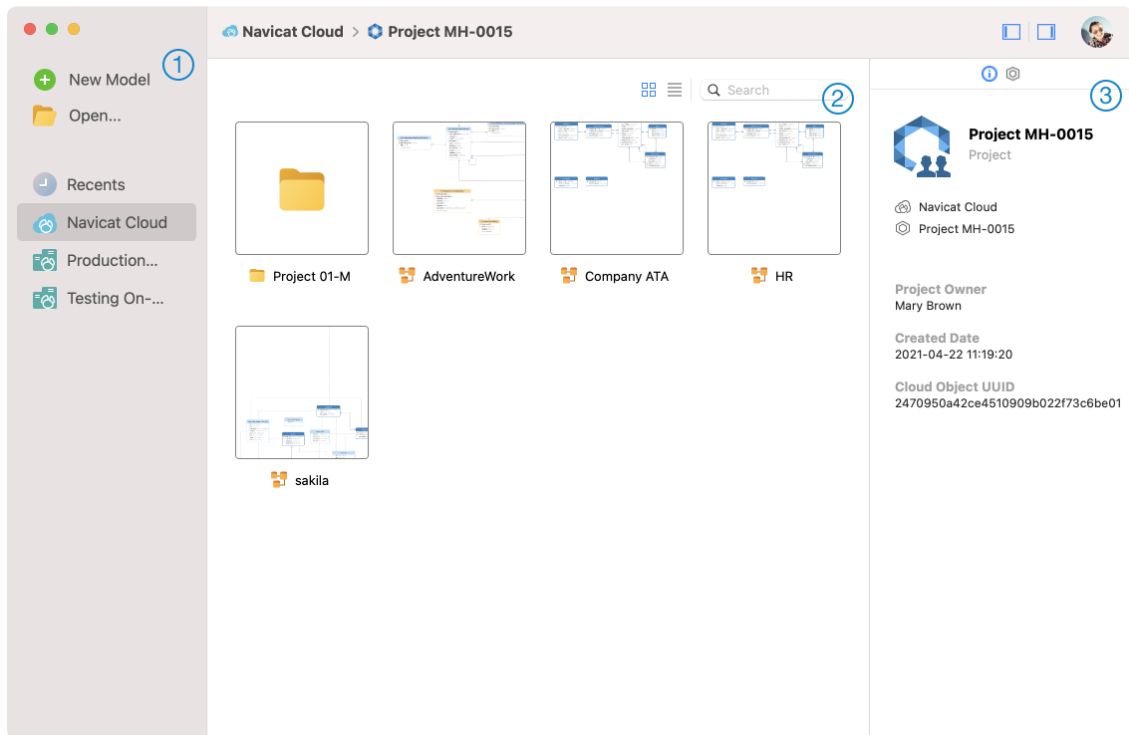
① **Navigation Pane**

The Navigation pane allows you to create new models, open local model files, recently opened model files, or model files in Navicat Cloud / On-Prem Server. If the Navigation pane is hidden, choose **View** -> **Show Navigation Pane** from the menu bar.

② **Content Pane**

The Content pane contains the models that are in the selected section of the Navigation pane. Use the ☰ **Detail** or ⊞ **Icon** buttons to change the view.

③ **Information Pane**

The ⓘ **General** tab shows the general information of the model or the selected item.

The ◎ **Project** tab shows the project members and the project activities done by the members. Click **+** to add members to the project.

If the Information pane is hidden, choose **View** -> **Show Information Pane** from the menu bar.

Chapter 3 - Collaboration

About Collaboration

Navicat Data Modeler allows you to synchronize connection settings, model workspaces and virtual group information from Navicat Data Modeler, other Navicat family members, different machines and different platforms. You can use Navicat Cloud to host the files. Or, if you have installed our another product, Navicat On-Prem Server, in your environment, you can hosts everything in-house.

Our collaboration feature allows you to give your teammates access to your projects when they log into their accounts. That way, you and your teammates can work on the same project without revealing your username and password. You can even choose to restrict the type of access your teammates have to your project.

Manage Cloud

Navicat Cloud

Navicat Cloud is a cloud service provided by PremiumSoft for synchronizing connection settings, queries, aggregation pipelines, snippets, model workspaces, BI workspaces and virtual group information.

Navicat Cloud could not connect and access your databases. By which it means, it could only store your connection settings, queries, aggregation pipelines, snippets, model workspaces, BI workspaces and virtual group information; your database passwords and data (e.g. tables, views, etc) will not be stored to Navicat Cloud.

Note: You can only sign in to one Navicat Cloud account in the software. PremiumSoft will keep all synchronized files strictly confidential, and all employees are prohibited from viewing/accessing content of files you may store in your Navicat Cloud account.

Create Navicat Cloud Account

1. In the menu bar, choose **Navicat Data Modeler** -> **Manage Cloud**.

2. In the Manage Cloud window, select **Navicat Cloud**.

3. Click **Create Navicat ID**.

4. Enter the required information and click **Sign Up**. A verification email will send to your email address.

5. Click the link in the email to verify the new account.

Hint: You can sign in with the same Navicat ID you use for the Navicat Customer Center.

Sign In Navicat Cloud

1. In the menu bar, choose **Navicat Data Modeler** -> **Manage Cloud**.

2. In the Manage Cloud window, select **Navicat Cloud**.

3. Enter your **Navicat ID** and **Password**.

4. Click **Sign In**.

5. If you enabled two-step verification in [Navicat Cloud Portal](#), a code will be sent to your phone via your mobile app. Enter the received code to sign in.

Sign Out Navicat Cloud

1. Close all models in Navicat Cloud.

2. At the top right, click your avatar.

3. In the Manage Cloud window, select **Navicat Cloud**.

4. Click **Sign Out**.

View Usage

1. At the top right, click your avatar.

2. In the Manage Cloud window, select **Navicat Cloud**.

3. Your usage and current plan will be shown.

Change Your Picture

1. At the top right, click your avatar.

2. In the Manage Cloud window, select **Navicat Cloud**.

3. Click your avatar.

4. Choose an image file.

Manage Your Account

You can change your password, enable Two-Step Verification, upgrade Cloud Plan, etc in [Navicat Cloud Portal](#).

1. At the top right, click your avatar.

2. In the Manage Cloud window, select **Navicat Cloud**.

3. Click **Manage Account**.

4. A web browser will automatically open up to Navicat Cloud Portal.

On-Prem Server

Navicat On-Prem Server is an on-premise solution that provides you with the option to host a cloud environment for storing Navicat objects (connection settings, queries, aggregation pipelines, snippets, model workspaces, BI workspaces and virtual group information) internally at your location.

Before you can add an On-Prem Server, you must first set up Navicat On-Prem Server in your environment.

Add New On-Prem Server

1. In the menu bar, choose **Navicat Data Modeler** -> **Manage Cloud**.

2. In the Manage Cloud window, click **+ New On-Prem Server** -> **New On-Prem Server**.

3. Enter your On-Prem Server login information.

Option	Description
Host	The host name or IP address of your On-Prem Server.
Port	The port number of your On-Prem Server.
Verify Server Certificate	Enable this option to verify the server certificates.
Enable Push Synchronization	Navicat Data Modeler receives a silent push notification whenever its files stored in your On-Prem Server changes.

4. Click **OK**.

Add New On-Prem Server with URI

1. In the menu bar, choose **Navicat Data Modeler** -> **Manage Cloud**.

2. In the Manage Cloud window, click **+ New On-Prem Server** -> **New On-Prem Server with URI**.

3. Paste your On-Prem Server URI.

4. Click **OK**.

Note: The URI can be copied from your On-Prem Server portal site.

Sign In On-Prem Server

1. In the menu bar, choose **Navicat Data Modeler** -> **Manage Cloud**.

2. In the Manage Cloud window, select the On-Prem Server.

3. Enter your **Username** and **Password**.

4. Click **Sign In**.

5. If you enabled two-step verification, a code will be sent to you via the verification method you have selected. Enter the received code to sign in.

Sign Out On-Prem Server

1. Close all models in your On-Prem Server.

2. At the top right, click your avatar.

3. In the Manage Cloud window, select the On-Prem Server.

4. Click **Sign Out**.

Edit On-Prem Server

1. Close all models in your On-Prem Server.

2. At the top right, click your avatar.

3. In the Manage Cloud window, select the On-Prem Server.

4. Click **Sign Out**.

5. Control-click your server and select **Edit On-Prem Server**.

6. Edit the On-Prem Server information.

7. Sign in your server.

Rename On-Prem Server

1. Close all models in your On-Prem Server.

2. At the top right, click your avatar.

3. In the Manage Cloud window, select the On-Prem Server.

4. Click **Sign Out**.

5. Control-click your server and select **Rename**.

6. Enter the name to describe your On-Prem Server.

7. Sign in your server.

Remove On-Prem Server

1. Close all models in your On-Prem Server.

2. At the top right, click your avatar.

3. In the Manage Cloud window, select the On-Prem Server.

4. Click **Sign Out**.

5. Control-click your server and select **Remove On-Prem Server**.

6. Click **Delete**.

View Usage

1. At the top right, click your avatar.

2. In the Manage Cloud window, select the On-Prem Server.

3. Your usage will be shown.

Change Your Picture

1. At the top right, click your avatar.

2. In the Manage Cloud window, select the On-Prem Server.

3. Click your avatar.

4. Choose an image file.

Manage Your Account

You can change your password, enable Two-Step Verification, etc in your On-Prem Server web portal.

1. At the top right, click your avatar.

2. In the Manage Cloud window, select the On-Prem Server.

3. Click **Manage Account**.

4. A web browser will automatically open up to your On-Prem Server web portal.

Push Synchronization

Push Synchronization enables Navicat Data Modeler to receive a silent push notification whenever the files stored in Navicat Cloud or On-Prem Server changes.

Enable Push Synchronization

1. At the top right, click your avatar.

2. In the Manage Cloud window, control-click Navicat Cloud or your On-Prem Server.

3. Turn on **Enable Push Synchronization**.

Disable Push Synchronization

1. At the top right, click your avatar.

2. In the Manage Cloud window, control-click Navicat Cloud or your On-Prem Server.

3. Turn off **Enable Push Synchronization**.

Cache and Local Copies

When you logged into Navicat Cloud or your On-Prem Server, Navicat Data Modeler saves the cloud object files and some information in the local computer. The cache and local copies use to make sure your changes are saved in the cloud.

Clear Cache and Local Copies

1. At the top right, click your avatar.

2. In the Manage Cloud window, select Navicat Cloud or your On-Prem Server.

3. Click **Sign Out**.

4. Control-click Navicat Cloud or your On-Prem Server and select **Clear Cache and Local Copies**.

5. Click **Clear**.

Show In Finder

1. In the main window, select Navicat Cloud or your On-Prem Server.

2. Open your project.

3. Control-click anywhere in the project and select **Show In Finder**.

Projects

Work With Projects

A project is a way to structure and organize Navicat objects. You can put related objects in one project, and then share the project with other accounts for collaboration if necessary.

Create New Projects

1. In the main window, select **Navicat Cloud** or your On-Prem Server.

2. Click **+ New Project**.

3. Enter the name of the new project.

4. Click **OK**.

Manage Existing Projects

To rename a project

1. In the main window, control-click the project and select **Rename**.

2. Enter a new project name.

Note: Only the project owner and the members with the *Can Manage & Edit* right can rename the project.

To delete a project

1. In the main window, control-click the project and select **Delete Project**.

2. Click **Delete**.

Note: Only the project owner can delete the project.

Note: Before you delete the project, you must remove all objects in the project.

To quit a project

1. In the main window, control-click the project and select **Quit Project**.

2. Click **Quit**.

Manage Members

Add Members

1. In the main window, control-click the project and select **Manage Members**.

2. Click **Add Members**.

3. [Navicat Cloud] Enter the member's Navicat ID and press ENTER.

4. [On-Prem Server] Check the boxes of the users that you want to add.

5. Select the member right.

6. Click **Add**.

Member Rights	Privileges
Can Manage & Edit	Read Objects, Write Objects, Manage Members and Rename Projects
Can Edit	Read Objects and Write Objects
Can View	Read Objects

Manage Existing Members

To edit the right of a member

1. In the main window, control-click the project and select **Manage Members**.

2. Use the drop-down list next to the member to change the right.

3. Click **Apply**.

To remove a member from a project

1. In the main window, control-click the project and select **Manage Members**.
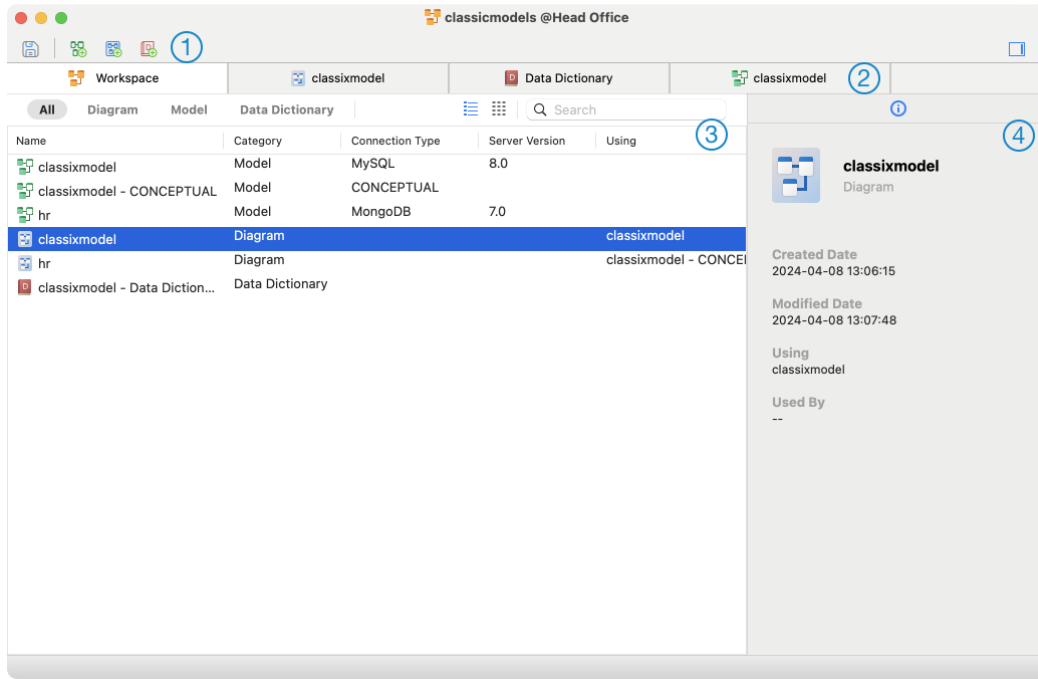
2. Click the **X** icon next to the member.

3. Click **Apply**.

Chapter 4 - Workspace

About Workspace

A workspace is the place that comprises models, diagrams and data dictionaries. You can create multiple models, diagrams and data dictionaries in a workspace.

① **Workspace Toolbar**

The Workspace Toolbar provides controls that you can use to create models, diagrams and data dictionaries.

② **Tab Bar**

The Tab Bar allows you to switch among the opened items.

③ **Content Pane**

The Content pane shows all items in the workspace. To change the view, click the ≣ **Detail** or ⊞ **Icon** button at the bottom of the window.

Detail View displays additional information about each item. You can sort items in Detail View, click the column header by which you want to sort the items.

Icon View displays your items as a grid of thumbnail images. You can filter the items by clicking a category (All, Model, Diagram, Data Dictionary) in this view.

④ **Properties Pane**

The ⓘ **General** tab shows the general information of the workspace or the selected item.

If the Properties pane is hidden, choose **View** -> **Show Properties** from the menu bar.

Create Workspace

Local Workspace File

The essential steps to create a workspace are:

1. In the main window, click ➕ **New Workspace**.

2. Create models, diagrams and data dictionaries.

3. Choose **File** -> **Save**.

4. Enter the file name and choose the save path.

5. Click **Save**.

Cloud Workspace File

If you have logged into Navicat Cloud / On-Prem Server, you can store the workspace in a project.

The essential steps to create a workspace are:

1. In the main window, click ➕ **New Workspace**.

2. Create models, diagrams and data dictionaries.

3. Choose **File** -> **Save**.

4. Enter the workspace name and choose the project.

5. Click **Save**.

Chapter 5 - Model

About Model

A model is a collection of database objects that can be effectively utilized within diagrams. These objects can be reused across various diagrams, thereby increasing efficiency and consistency in the design and presentation of database structures.
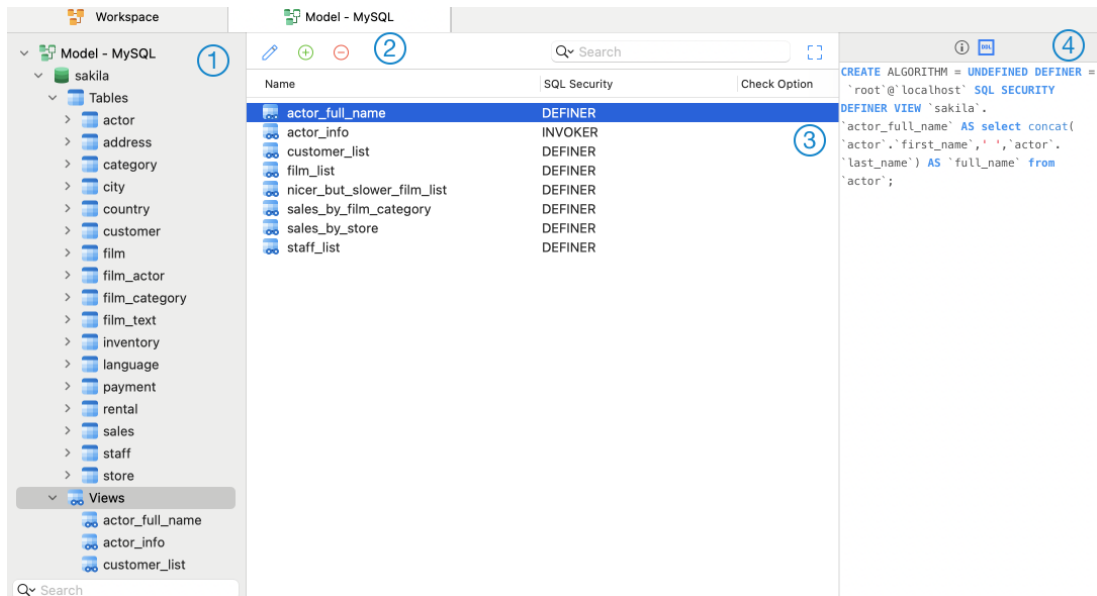
① **Model Pane**

The Model pane is the basic way to navigate with databases/schemas, tables, views, functions or entities.

② **Object Toolbar**

The Object Toolbar provides controls that you can use to manipulate the object.

③ **Object Pane**

The Object pane shows the objects you created in the model.

④ **Properties Pane**

The ⓘ **General** tab shows the general information of the selected object.

The [DDL] **DDL** tab shows the DDL of the selected object.

If the Properties pane is hidden, choose **View** -> **Show Properties** from the menu bar.

Create Model

The essential steps to create a model are:

1. In the Workspace window, click ➕ **New Model**.

2. Enter the name of the model and select a model type, target database, and database version.

3. Click **OK**.

4. A tab will open for you to edit the model.

Add Database / Schema

When creating a new model, a database (named default) is automatically created and it is the default database.

You can view all databases/schemas with their objects as tree structure on the Model pane.

To create a new database

1. On the Model pane, control-click the model name or database and select **New Database**.

2. Enter the name of the database.

3. Click **OK**.

To create a new schema

1. On the Model pane, control-click the database or schema and select **New Schema**.

2. Enter the name of the schema.

3. Click **OK**.

Create Table

The essential steps to create a table are:

1. On the Model tab, select Tables in the Model pane.

2. Click ⊕, or click the down arrow and choose the table type.

3. Enter the name of the table.

4. Click **OK**.

5. A tab will open for you to edit the table.

Create RDBMS View

Create View

The essential steps to create a view are:

1. On the Model tab, select Views in the Model pane.

2. Click ⊕.

3. Enter the name of the view.

4. Click **OK**.

5. A tab will open for you to edit the view.

View Editor

In **SQL Editor** tab, you can create and edit the SELECT statement SQL for a view. Navicat Data Modeler provides a wide range advanced features for editing the view definition, such as compelling code editing capabilities, smart code-completion, sql formatting, and more.

Hint: SELECT statement will be automatically generated while you build in View Builder.

Beautify SQL

To format messy SQL code into a well-structured script, you can click the ⚡ button. To minify SQL code by removing spaces, tabs and newlines, control-click the editor and select **Minify SQL**.

Code Completion

Code completion feature in Navicat Data Modeler pops up a list of suggestions 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 and information.

To invoke code completion, just simply press '.' for the available properties of database object currently in the scope.

When the suggestion list appears, press TAB to insert the first item. You can also select the needed item using UPPER ARROW or DOWN ARROW and then press TAB or ENTER.
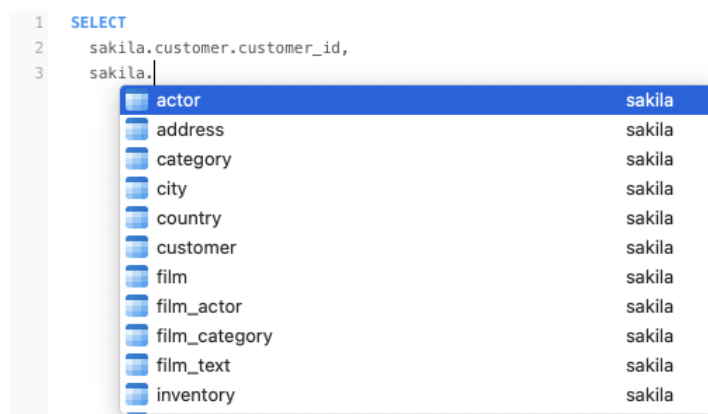
In addition, code completion can be invoked by typing a character or pressing ESC on your keyboard for SQL keywords/database objects.

If you select a snippet name from the list, the saved code will be inserted to the editor.

Hint: Resize the suggestion list by dragging the lower right corner.

You can enable or disable the code completion feature in [Settings](#).

Clipboard Stack

When you copy or cut some codes as usual in the editor, the copied content will also be added to Clipboard Stack. Clipboard Stack can store up to 10 items and use the last-in-first-out logic. To paste an item from Clipboard Stack, you can press COMMAND-SHIFT-V. Press COMMAND-SHIFT-V multiple times to cycle through Clipboard Stack.

Code Folding

Code folding feature enables you to collapse blocks of code such that only the first line of the block appears in the 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 ⊞.

```
 1   SELECT
 2 ⊟   IFNULL(
 3 ⊟     SUM(
 4         IF
 5 ⊞        (( ...
10           0
11 └     ) INTO v_overfees
12   FROM
13     rental,
14     inventory,
15     film
16   WHERE
17     film.film_id = inventory.film_id
18     AND inventory.inventory_id = rental.inventory_id
19     AND rental.rental_date <= p_effective_date
20     AND rental.customer_id = p_customer_id;
```

Syntax Highlight

Navicat Data Modeler uses syntax highlighting which depending on the database associated with the query. Different databases have different sets of reserved keywords. You can configure the associated colors for different text fragments in [Settings](#).

Brace Highlight

Navicat Data Modeler supports to highlight the matching brace in the editor, i.e. () .

Note: The cursor must be on a brace to show the highlight.

```
 1   SELECT
 2 ⊟   IFNULL(
 3 ⊟     SUM(
 4         IF
 5 ⊟        ((
 6              TO_DAYS( rental.return_date ) - TO_DAYS( rental.rental_date )) > film.rental_duration,
 7              (( TO_DAYS( rental.return_date ) - TO_DAYS( rental.rental_date )) - film.rental_duration ),
 8                0
 9 └         )),
10           0
11 └     ) INTO v_overfees
12   FROM
```

Find and Replace

Find

The Find bar is provided for quick searching for the text in the editor. Just simply choose **Edit** -> **Find** from the menu or press COMMAND-F, and then enter a search string.

Incremental searching is used here. As you type, the matched text is found and highlighted instantly. This saves your time from typing the entire text.

The search starts at the cursor's current position to the end of the file.

To find the previous or next occurrence, just simply click ◀ or ▶ .

Replace

To open the Replace bar, simply choose **Edit** -> **Find** -> **Find and Replace** from the menu bar or press OPTION-COMMAND-F. Then, enter the text you want to search and replace.

Click the **Replace** button to replace the first occurrence.

Click the **Replace All** button to replace all occurrences automatically.

There are some additional options for Find and Replace, click :

Option	Description
Regular Expression	Search regular expressions.
Match Case	Enable case sensitive search.
Whole Word	Return the objects that match the entire word of the search string.

Copy with Quotes

To copy the SQL statement with quotes, just simply control-click the highlighted SQL. Then, select **Copy with Quotes** and choose the format.

Zoom In/Zoom Out

Navicat Data Modeler has the ability to zoom in or zoom out the SQL in the editor.

Zoom In: [COMMAND-+]

Zoom Out: [COMMAND--]

Reset: [COMMAND-0]

View Builder (Available only in Enterprise Edition)

Navicat Data Modeler provides a useful tool called **View Builder** for building views visually. It allows you to create and edit views without knowledge of SQL. Even if you are familiar with SQL, the convenient and fluent graphical interface makes it easier to create relations and visualize the view.

In View Designer, click the ⏁ button to open the visual View Builder.

All database objects are displayed on the left **Object** pane. Whereas on the middle pane, it is divided into two portions: the upper **Diagram** pane, and the lower **Criteria** pane. When building the view, you can view the auto-generated SQL on the right **SQL** pane.
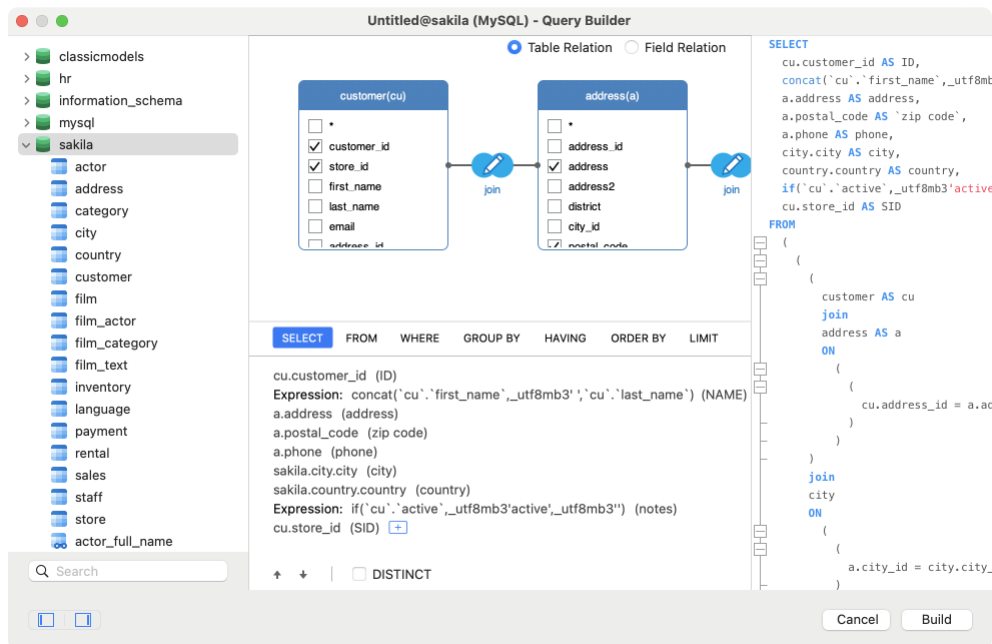
Add Objects to View

The first step is to decide which tables and views you need to add to the view.

To add tables and views to the view, use one of the following methods:

- Drag them from the Object pane to the Diagram pane.

- Double-click them on the Object pane.

You can set aliases for tables, views and subqueries by double-clicking the object title on the Diagram pane and entering the name to use as an alias for the object name.

After you have added objects to the diagram, you can use the **FROM** tab to adjust the view to your needs.

- To change the object, click the object and select an identifier.

- To add the table alias, click **<Alias>**.

You can control-click an object on the Diagram pane and select **Remove**, or simply press DELETE key to remove the selected object from the view.

When you remove an object, View Builder automatically removes joins that involve that object.

Choose Output Fields

To include fields in the view, use one of the following methods:

- Check the left checkbox of a field name you want to add to the view on the Diagram pane.

- To include all the fields for an object, check the * checkbox on the Diagram pane.

- To add all fields for all objects, click ⊞ on the **SELECT** tab and select **All fields(*)**.

The selected fields display on the **SELECT** tab. You can specify additional output field options.

- Check the **DISTINCT** checkbox to force the view to return distinct results.

- To add the field alias, click **<Alias>** and enter the name.

- Click the identifier and select the **Aggregate** function.

- Use the up arrow and down arrow buttons to change the order of fields.

Set Field Association

View Builder will automatically join the tables as per the foreign key relations. If you want to associate database objects manually, just select a field from an object and drag it to a field in another object. A connector line appears between the two objects to visually represent the relationship and the join type.

There are two views to show the connector lines: Table Relation and Field Relation. The **Field Relation** view allows you to identify matching fields in two tables, while the **Table Relation** view displays the join relationship between the two tables.

All joins are initially created as INNER JOIN by default. To change the association, click or double-click the connector line on the Diagram pane or click the JOIN keyword on the **FROM** tab, and then select a join type. If a join type is not listed, you can enter a customized one in the **Custom** textbox.
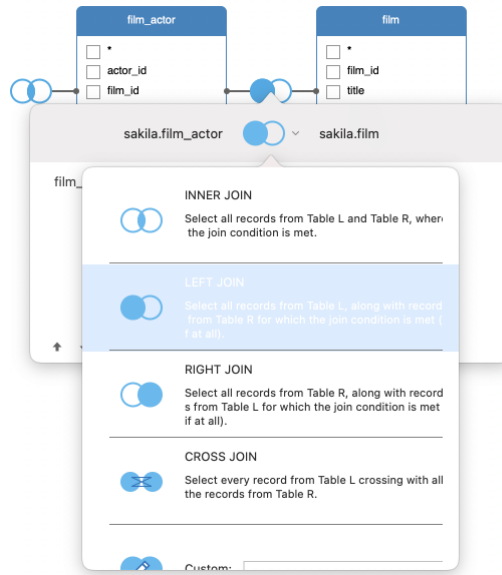
To remove a join, control-click the connector line and select **Remove**.

To modify the join condition, control-click a connector line and select **Edit Join**, or click the condition on the **FROM** tab.
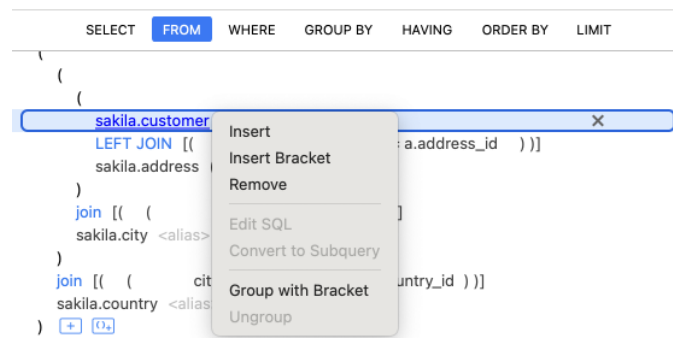
The pop-up menu options of the FROM tab:

Option	Description
Insert	Add an identifier, an expression or a subquery.
Insert Bracket	Add a pair of parentheses.
Remove	Remove the identifier, expression or subquery.
Edit SQL	Edit the subquery.
Convert to Subquery	Convert the condition to a subquery.
Clear and Convert to USING Clause	Remove the ON condition and convert it to USING clause.
Clear and Convert to ON Clause	Remove the USING condition and convert it to ON clause.
Group with Bracket	Add parentheses to group the selected conditions.
Ungroup	Remove the parentheses.

Set Filter Criteria

When retrieving data, you may want to set up a filtering expression. To filter data returned by the view, control-click a field on the Diagram pane and select **Add Field To** -> **WHERE** and an operator.

The condition is added to the **WHERE** tab. You can edit the value there by clicking **<Value>**. If you want to add a condition with parentheses, click 〔〕₊. You can change a logical operator (and/or) by clicking it. Use the up arrow and down arrow buttons to change the order of conditions.
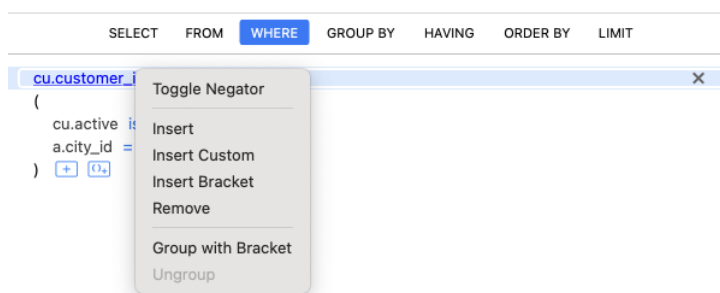
The pop-up menu options of the WHERE tab:

Option	Description
Toggle Negator	Reverse the meaning of the condition.
Insert	Add a condition.
Insert Custom	Add a custom condition.
Insert Bracket	Add a pair of parentheses.
Remove	Remove the condition.
Group with Bracket	Add parentheses to group the selected conditions.
Ungroup	Remove the parentheses.

Group Resulting Data

You can set the conditions for grouping records by control-clicking a field in the Diagram pane and selecting **Add Field To** -> **GROUP BY** -> **Add Field**.

The condition is added to the **GROUP BY** tab. Use the up arrow and down arrow buttons to change the order of fields.

On the **HAVING** tab, you can filter summarized data or grouped data. Select the identifiers, operators, aggregate or enter expressions to include in the condition. Use the up arrow and down arrow buttons to change the order of conditions.

The pop-up menu options of the HAVING tab:

Option	Description
Toggle Negator	Reverse the meaning of the condition.
Insert	Add a condition.
Insert Custom	Add a custom condition.
Insert Bracket	Add a pair of parentheses.
Remove	Remove the condition.
Group with Bracket	Add parentheses to group the selected conditions.
Ungroup	Remove the parentheses.

Sort Resulting Data

You can set the way of sorting records by control-clicking a field on the Diagram pane and selecting **Add Field To** -> **ORDER BY** -> **ASC** or **DESC**. The condition will be added to the ORDER BY tab.

Limit Resulting Data

On the **LIMIT** tab, you can limit your view results to those that fall within a specified range.

Offset

Specify the number of records to be skipped. It is optional.

Limit

Specify the number of records to be displayed.

Note: Available only for MySQL, PostgreSQL, SQLite and MariaDB.

Add Expressions/Subqueries

You can add an expression or a subquery to further limit the view results. On the **FROM** tab, click ⊞ and select the **Expression/Subquery** tab.

After entered an expression or a subquery, confirm editing by pressing the ENTER key. It will be added to the Diagram pane indicates that the statement contains an expression or a subquery and identifies the columns it is on.
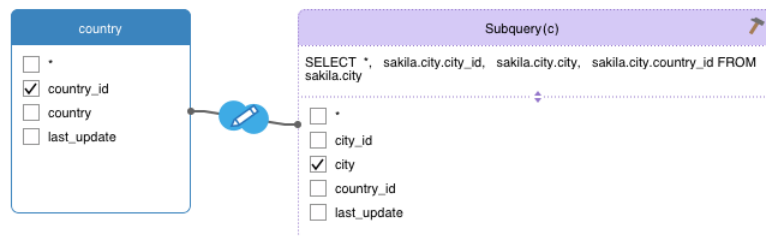
By clicking the 🔧 button, you will be switched to a subquery layer where you can build it visually in the same way as the main query.

You can always go back to the main query by clicking **(Main Query)**.

View Generated SQL

The **SQL** pane presents a read-only, formatted representation of the SQL generated by View Builder. You can copy the SQL that appears in the SQL pane for use in other tools. In a subquery layer, you can enable **Show Current Layer Only** to show the subquery SQL.

Code Snippets

Code Snippets provide an easy way for you to insert reusable code into editor when writing statements or scripts. The Code Snippet pane is on the right side of the editor.

The library includes built-in and user-defined snippets. Choose a label from the drop-down list or enter a search string in the Search box to filter the list. If you want to show the available snippets according to your database type, you can control-click anywhere on the library and disable **Show Snippets For Other Database Type**.
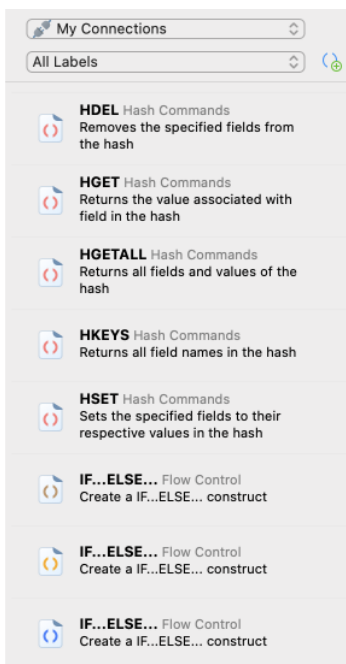
Built-in snippets are non-editable. A user-defined snippet can be edited by double-clicking it in the library. If you want to hide the built-in snippets, you can control-click anywhere on the library and disable **Show Preset Snippets**.

Use Code Snippets

There are two ways to insert a snippet into the editor.

- You can start typing the name of a snippet in the editor. Smart code completion will pop up a list of suggestions for the word completion automatically. Select a snippet name from the list, the saved code will be inserted to the editor.
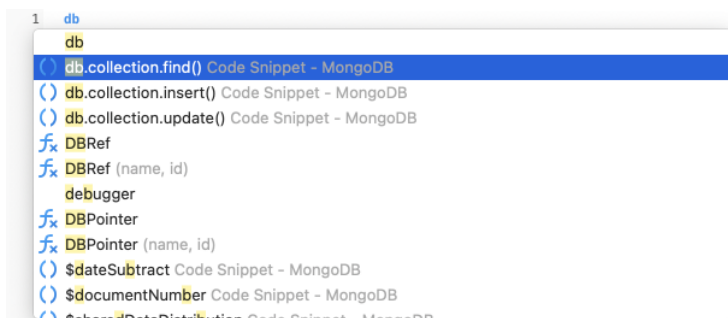
- You can simply drag and drop a snippet from the library into the editor.

After inserting the snippet with placeholders to the editor, you can easily navigate to them by clicking on one of the placeholders, and then using the TAB key and entering the information.

```
1  ┌CASE case_value
2  │   WHEN when_value THEN
3  │      statement_list
4  │   ELSE
5  │      statement_list
6  └END CASE;
7
```

Create Code Snippets

You can create your own code snippets and add them to the library. To create a code snippet, select your desired code in the editor, then control-click and select **Create Snippet**.

Alternatively, click ⟲⊕ in the Code Snippet pane. If you use this method, you must manually enter the code in the New Snippet window; code selected in the editor is not automatically added to the Code box.

Hint: Code snippets (.nsnippet) are stored under the default path, e.g. ~/Library/Application Support/PremiumSoft CyberTech/Navicat CC/Common/Snippet.

Option / Button	Description
Untitled text box	Enter the name of the snippet that displays in the library and the code completion list.
Database Type	Choose the database server type of the snippet.
Label	Choose an existing label or enter a new label name for the snippet.
Remarks	Enter a description for the snippet that displays in the library.
Code	Enter the code.
⊕	Add a placeholder by highlighting any words in the code and click this button. The placeholder will be highlighted in light green.
⊖	Remove a placeholder by highlighting it in the code and click this button.

Move / Copy Snippet To Project

If you have logged in to Navicat Cloud or On-Prem Server, you can synchronize the custom snippet in My Connections to a project.

1. Control-click a snippet and select **Move Snippet To** or **Copy Snippet To**.

2. Select an existing project.

3. The snippet will be moved or copied to the project.

Hint: You can move / copy a snippet in a project to My Connections in a similar way.

Create Function / Procedure

The essential steps to create a function/procedure are:

1. On the Model tab, select Functions in the Model pane.

2. Click ⊕.

3. **Function Wizard** will pop up and it allows you to create a function/procedure easily.

4. Click **Finish**.

5. A tab will open for you to edit the function/procedure.

Create Collection

The essential steps to create a collection are:

1. On the Model tab, select Collections in the Model pane.

2. Click ⊕, or click the down arrow and choose the collection type.

3. Enter the name of the collection.

4. Click **OK**.

5. A tab will open for you to edit the collection.

Add Embedded Document

1. Click ⊕.

2. Enter the name of the field and select **object** data type.

3. Click the arrow icon left to the field name.

4. Click ⊕ and define the item.

Add Embedded Array of Documents

1. Click ⊕.

2. Enter the name of the field and select **object** data type.

3. Enable **Is Array**.

4. Click the arrow icon left to the field name.

5. Click ⊕ and define the item.

Add Predefined Object

1. Click ⊕.

2. Enter the name of the field and select **(Predefined Object)** data type.

3. Choose the predefined object.

Create Predefined Object

A predefined object refers to a specific document structure that is predefined or preconfigured. It is a predetermined schema or template that defines the fields and their data types within a MongoDB document. You can use predefined objects in any collection in the model to help maintain data integrity and establish consistent document structures.

The essential steps to create a predefined object are:

1. On the Model tab, select Predefined Object in the Model pane.

2. Click ⊕.

3. Enter the name of the predefined object.

4. Click **OK**.

5. A tab will open for you to edit the predefined object.

Create MongoDB View

Create View

The essential steps to create a view are:

1. On the Model tab, select Views in the Model pane.

2. Click ⊕.

3. Enter the name of the view.

4. Click **OK**.

5. A tab will open for you to edit the view.

Pipeline Builder

Pipeline Builder allows you to build a simple aggregation pipeline by defining stage operators. It consists of the following sections: Pipeline, Stage Editor.
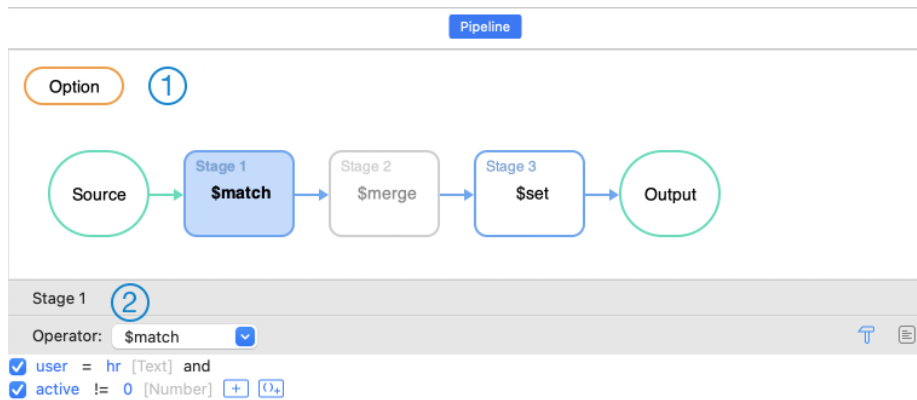
① Pipeline

A diagram to illustrate the aggregation pipeline. You can see all stages at a glance and add, delete, and move them as needed.

② Stage Editor

The Stage Editor is where you edit the selected stage.

Choose Source Collection

The source input of the pipeline is a single collection or view. Select **Source** in the pipeline and choose the **Source Collection**.

Work with Aggregation Pipeline Stage

You can break down a complex view into easier stages. In each stage, you complete a different operation on the data, such as filtering, grouping, sorting, and transforming. There is no limit to the number of stages used in the view, or how you combine them.

Add Stage

1. Hover over an arrow.

2. Click the ⊕ icon.

Move Stage

1. Hover over a stage.

2. Click and hold the ⫴ icon.

3. Move it to the desired location.

Enable / Disable Stage

1. Hover over a stage.

2. Turn on or off the stage.

Delete Stage

1. Control-click a stage and select **Delete**.

Modify Pipeline Settings

You can click **Option** to view and change pipeline settings.

Create Entity

The essential steps to create an entity are:

1. On the Model tab, select Entities in the Model pane.

2. Click ⊕.

3. Enter the name of the entity.

4. Click **OK**.

5. A tab will open for you to edit the entity if your model is a logical model.

Chapter 6 - Diagram

About Diagram

A diagram is a visual representation of the relationships and structure of a data model. It depicts the tables, fields, collections, entities, attributes, and relationships between them in a clear and concise manner. You can use it in database design and development processes to communicate and document the logical organization of data within your system.
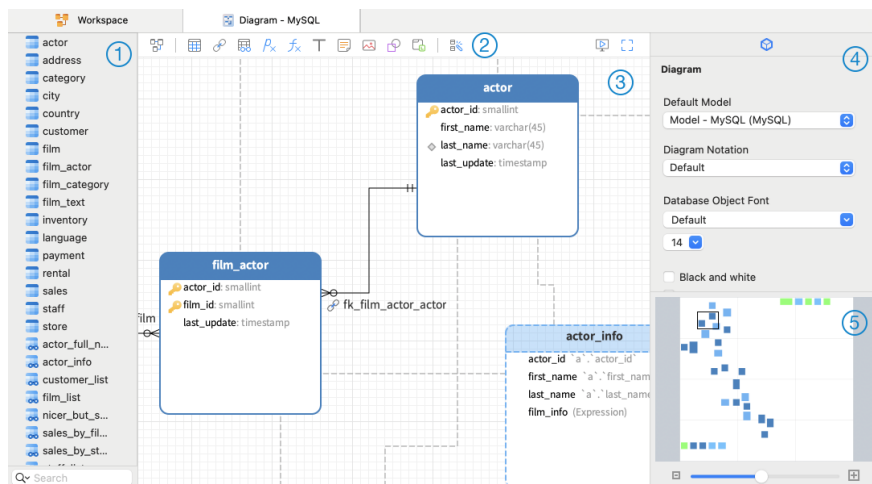
① Object Pane

The Object pane displays a list of all objects used in the diagram.

② Toolbar

The Toolbar is located near the top of the diagram. The buttons display in the toolbar depend on the model type (physical, logical and conceptual) and server type. You can use the toolbar to perform some basic tasks, such as adding tables, views, functions, collections or entities, applying Auto Layout feature, etc.

③ Canvas

You can design your diagram on the Diagram Canvas. All added objects can be moved (by dragging them with mouse or by keyboard), resized, aligned to the grid, etc.

④ Properties Pane

The ⬡ **Properties** tab includes the basic layout settings, object settings and so on. The properties vary with the type of the object selected.

The 🔲 **DDL** tab shows the DDL of the selected object.

⑤ Overview Pane

The Overview pane displays the whole active diagram in the canvas. To zoom in or zoom out the selected area of the diagram, adjust the slider. Same effect can be achieved with keyboard shortcuts:

Zoom In: [COMMAND-+] or [COMMAND-Mousewheel Up]

Zoom out: [COMMAND--] or [COMMAND-Mousewheel Down]

Create Diagram

The essential steps to create a diagram are:

1. In the Workspace window, click .

2. Enter the name of the diagram.

3. Click **OK**.

4. A tab will open for you to edit the diagram.

Properties

Once you have selected the diagram canvas, you can customize the diagram by changing its properties:

Option	Description
Diagram	
Default Model	Choose the default model of the diagram. All objects created in the diagram belong to the default model.
Diagram Notation	Choose the notation of the diagram.
Database Object Font	Set the font style of the database objects.
Black and white	Change the diagram color to black and white.
Show database object comments	Show object comments in the diagram.
Show table field comments	Show field comments in the diagram.
Show collection subfields	Show subfields in MongoDB collections.
Show database names	Show the database names of objects in the diagram.
Paper Size	Set the paper size of the canvas.
Pages	Set the Width and Height (pages) of the canvas.

Add Model Objects

If you have already created a model, you can add existing objects in the model to the diagram.

The essential steps to add a model object are:

1. In the Diagram tab, click .

2. Choose a model.

3. Double-click the object you want to insert into the diagram, or use the drag-and-drop method.

Add Tables

To add a new table

1. Click the ⊞ button from the toolbar.

2. Place it on the canvas.

3. Double-click the table to open the designer.

Hint: The new table will also add to the default model.

For Default diagram notation, the 🔑 icon means the field is a primary key. The ◇ icon indicates that the field serves as an index.

The pop-up menu options of the table object in the canvas include:

Option	Description
Design Table	Edit the table structure in a table designer, e.g. fields, indexes, foreign keys, etc. The tabs and options in the designer depend on the diagram database type you are chosen.
Add Related Objects	Add all related objects to the selected table.
Add Field	Add a field at the end of the table.
Insert Field	Add a field above the selected field.
Delete Field	Delete the selected field.
Primary Key	Set the selected field as primary key.
Rename Field	Change the name of the selected field.
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.
Save as Image	Save the table as a PNG file.
Select All Connected Objects	Select all objects in the diagram that are connected to the table.
Select All Tables	Select all tables in the diagram.
Delete from Diagram / Delete from Diagram and Model	Delete the 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 the table to the foreground.
Send to Back	Move the table to the background.

Group / Ungroup	Group or ungroup the table and other objects in the diagram.
Lock / Unlock	Lock or unlock the table in the diagram.

Properties

Once you have selected the table, you can customize the table by changing its properties:

Option	Description
Table	
Table Name	Enter the name of the table.
Database Name	Enter the name of the database to which the table belongs.
Model Name	Show the name of the model to which the table belongs.
Position	Customize the position of the table.
Size	Customize the size of the table.
Style	Choose the style of the table. Auto - Auto-arrange the table into a compact or standard style when resizing. Standard - Show the table name and its fields. Compact - Show a table icon with its name below the icon.
Constrain proportions	Maintain the aspect ratio (the ratio of width to height) when resizing.
Color	Set the color of the table.
Bold	Make the table border bold.
Group / Ungroup	Group or ungroup the table and other objects in the diagram.
Lock / Unlock	Lock or unlock the table in the diagram.

Add Collections

To add a new collection

1. Click the ⊞ button from the toolbar.

2. Place it on the canvas.

3. Double-click the collection to open the designer.

Hint: The new collection will also add to the default model.

For Default diagram notation, the 🔑 icon means the field is a primary key. The ◇ icon indicates that the field serves as an index.

The pop-up menu options of the collection object in the canvas include:

Option	Description
Design Collection	Edit the collection structure in a collection designer, e.g. fields, indexes, relations, etc.

Add Related Objects	Add all related objects to the selected collection.
Add Field	Add a field at the end of the collection.
Insert Field	Add a field above the selected field.
Delete Field	Delete the selected field.
Primary Key	Set the selected field as primary key.
Rename Field	Change the name of the selected field.
Cut	Remove the collection from the diagram and put it on the clipboard.
Copy	Copy the collection from the diagram to the clipboard.
Paste	Paste the content from the clipboard into the diagram.
Save as Image	Save the collection as a PNG file.
Select All Connected Objects	Select all objects in the diagram that are connected to the collection.
Select All Collections	Select all collections in the diagram.
Delete from Diagram / Delete from Diagram and Model	Delete the collection from the diagram or from both diagram and model.
Rename	Change the name of the collection.
Color	Change the color of the collection.
Size to Fit	Resize the collection automatically to fit its contents.
Bring to Front	Bring the collection to the foreground.
Send to Back	Move the collection to the background.
Group / Ungroup	Group or ungroup the collection and other objects in the diagram.
Lock / Unlock	Lock or unlock the collection in the diagram.

Properties

Once you have selected the collection, you can customize the collection by changing its properties:

Option	Description
Collection	
Collection Name	Enter the name of the collection.
Database Name	Enter the name of the database to which the collection belongs.
Model Name	Show the name of the model to which the collection belongs.
Position	Customize the position of the collection.
Size	Customize the size of the collection.
Style	Choose the style of the collection. Auto - Auto-arrange the collection into a compact or standard style when resizing. Standard - Show the collection name and its fields. Compact - Show a collection icon with its name below the icon.
Constrain proportions	Maintain the aspect ratio (the ratio of width to height) when resizing.
Color	Set the color of the collection.

Bold	Make the collection border bold.
Group / Ungroup	Group or ungroup the collection and other objects in the diagram.
Lock / Unlock	Lock or unlock the collection in the diagram.

Add Foreign Keys

To add a foreign key

1. Click the $\mathscr{O}$ button from the toolbar.

2. Drag and drop the field of the child table/collection to the field of the parent table/collection.
   OR
   Drag and drop the child field to the empty space of the parent table/collection. The referenced field will be automatically created in the parent table/collection.

3. Double-click the foreign key connector to open the designer.

Hint: When you hover over a foreign key line, the referenced fields and the referencing fields are highlighted.

The pop-up menu options of the foreign key in the canvas include:

Option	Description
Design Foreign Key	Edit the foreign key in a table designer. The options in the designer depend on the diagram database type you are chosen.
Go to	Go to and select the connected table/collection.
Reroute Connectors	Reroute the connector to the closest points between two connected objects.
Copy	Copy the foreign key from the diagram to the clipboard.
Paste	Paste the content from the clipboard into the diagram.
Save as Image	Save the foreign key as a PNG file.
Select All Connected Objects	Select all objects in the diagram that are connected by the foreign key.
Select All Relations	Select all foreign keys in the diagram.
Delete from Diagram and Model	Delete a foreign key from both diagram and model.
Color	Change the color of the foreign key.
Group / Ungroup	Group or ungroup the foreign key and other objects in the diagram.
Lock / Unlock	Lock or unlock the foreign key in the diagram.

Properties

Once you have selected the foreign key, you can customize the foreign key by changing its properties:

Option	Description
Foreign Key	
Name	Enter the name of the foreign key.

Position	Customize the position of the line.
Offset	Customize offset values for the start and end of the line.
Show name	Display the name of the foreign key.
Font	Set the font style of the name.
Bold	Apply a bold style to the name.
Italic	Apply an italic style to the name.
Color	Set the color of the line.
Line Width	Choose the thickness of the line.
Cardinality	Specify the relationship cardinality of the table/collection.
Visible	Show the connector.
Group / Ungroup	Group or ungroup the foreign key and other objects in the diagram.
Lock / Unlock	Lock or unlock the foreign key in the diagram.

Add Views

To add a new view

1. Click the ⊞ button from the toolbar.

2. Place it on the canvas.

3. Double-click the view to open the designer. See RDBMS View or MongoDB View

Hint: The new view will also add to the default model.

The pop-up menu options of the view object in the canvas include:

Option	Description
Design View	Edit the view structure in a view designer. The tabs and options in the designer depend on the diagram database type you are chosen.
Add Related Objects	Add all related objects to the selected view.
Cut	Remove the view from the diagram and put it on the clipboard.
Copy	Copy the view from the diagram to the clipboard.
Paste	Paste the content from the clipboard into the diagram.
Save as Image	Save the view as a PNG file.
Select All Views	Select all views in the diagram.
Delete from Diagram / Delete from Diagram and Model	Delete the view from the diagram or from both diagram and model.
Rename	Change the name of the view.
Color	Change the color of the view.
Size to Fit	Resize the view automatically to fit its contents.

Bring to Front	Bring the view to the foreground.
Send to Back	Move the view to the background.
Group / Ungroup	Group or ungroup the view and other objects in the diagram.
Lock / Unlock	Lock or unlock the view in the diagram.

Properties

Once you have selected the view, you can customize the view by changing its properties:

Option	Description
View	
View Name	Enter the name of the view.
Database Name	Enter the name of the database to which the view belongs.
Model Name	Show the name of the model to which the view belongs.
Position	Customize the position of the view.
Size	Customize the size of the view.
Style	Choose the style of the view.
	Auto - Auto-arrange the view into a compact or standard style when resizing.
	Standard - Show the view name and its content.
	Compact - Show a view icon with its name below the icon.
Constrain proportions	Maintain the aspect ratio (the ratio of width to height) when resizing.
Color	Set the color of the view.
Bold	Make the view border bold.
Group / Ungroup	Group or ungroup the view and other objects in the diagram.
Lock / Unlock	Lock or unlock the view in the diagram.

Add Functions / Procedures

To add a new function/procedure

1. Click the f_x or P_x button from the toolbar.

2. Place it on the canvas.

3. Double-click the function/procedure to open the designer.

Hint: The new function/procedure will also add to the default model.

The pop-up menu options of the function/procedure object in the canvas include:

Option	Description
Design Function / Design Procedure	Edit the function/procedure structure in a function/procedure designer. The tabs and options in the designer depend on the diagram database type you are chosen.

Cut	Remove the function/procedure from the diagram and put it on the clipboard.
Copy	Copy the function/procedure from the diagram to the clipboard.
Paste	Paste the content from the clipboard into the diagram.
Save as Image	Save the function/procedure as a PNG file.
Select All Functions	Select all functions/procedures in the diagram.
Delete from Diagram / Delete from Diagram and Model	Delete the function/procedure from the diagram or from both diagram and model.
Rename	Change the name of the function/procedure.
Color	Change the color of the function/procedure.
Size to Fit	Resize the function/procedure automatically to fit its contents.
Bring to Front	Bring the function/procedure to the foreground.
Send to Back	Move the function/procedure to the background.
Group / Ungroup	Group or ungroup the function/procedure and other objects in the diagram.
Lock / Unlock	Lock or unlock the function/procedure in the diagram.

Properties

Once you have selected the function/procedure, you can customize the function/procedure by changing its properties:

Option	Description
Function / Procedure	
Function Name / Procedure Name	Enter the name of the function/procedure.
Database Name	Enter the name of the database to which the function/procedure belongs.
Model Name	Show the name of the model to which the function/procedure belongs.
Position	Customize the position of the function/procedure.
Size	Customize the size of the function/procedure.
Style	Choose the style of the function/procedure. Auto - Auto-arrange the function/procedure into a compact or standard style when resizing. Standard - Show the function/procedure name and its content. Compact - Show a function/procedure icon with its name below the icon.
Constrain proportions	Maintain the aspect ratio (the ratio of width to height) when resizing.
Color	Set the color of the function/procedure.
Bold	Make the function/procedure border bold.
Group / Ungroup	Group or ungroup the function/procedure and other objects in the diagram.
Lock / Unlock	Lock or unlock the function/procedure in the diagram.

Add Entities

To add a new entity

1. Click the ⊞ button from the toolbar.

2. Place it on the canvas.

3. [Logical Model] Double-click the entity to open the designer.

Hint: The new entity will also add to the default model.

For Default diagram notation, the 🔑 icon means the attribute is a primary key. The ◇ icon indicates that the attribute serves as an index.

The pop-up menu options of the entity object in the canvas include:

Option	Description
Design Entity	Edit the entity structure in an entity designer, e.g. attributes, indexes, relations, etc. Only for Logical Model.
Add Related Objects	Add all related objects to the selected entity.
Add Attribute	Add an attribute at the end of the entity.
Insert Attribute	Add a attribute above the selected attribute.
Delete Attribute	Delete the selected attribute.
Primary Key	Set the selected attribute as primary key.
Rename Attribute	Change the name of the selected attribute.
Cut	Remove the entity from the diagram and put it on the clipboard.
Copy	Copy the entity from the diagram to the clipboard.
Paste	Paste the content from the clipboard into the diagram.
Save as Image	Save the entity as a PNG file.
Select All Connected Objects	Select all objects in the diagram that are connected to the entity.
Select All Entities	Select all entities in the diagram.
Delete from Diagram / Delete from Diagram and Model	Delete the entity from the diagram or from both diagram and model.
Rename	Change the name of the entity.
Color	Change the color of the entity.
Size to Fit	Resize the entity automatically to fit its contents.
Bring to Front	Bring the entity to the foreground.
Send to Back	Move the entity to the background.
Group / Ungroup	Group or ungroup the entity and other objects in the diagram.
Lock / Unlock	Lock or unlock the entity in the diagram.

Once you have selected the entity, you can customize the entity by changing its properties:

Option	Description
Entity	
Entity Name	Enter the name of the entity.
Database Name	Enter the name of the database to which the entity belongs.
Model Name	Show the name of the model to which the entity belongs.
Position	Customize the position of the entity.
Size	Customize the size of the entity.
Style	Choose the style of the entity. Auto - Auto-arrange the entity into a compact or standard style when resizing. Standard - Show the entity name and/or its attributes. Compact - Show an entity icon with its name below the icon.
Constrain proportions	Maintain the aspect ratio (the ratio of width to height) when resizing.
Color	Set the color of the entity.
Bold	Make the entity border bold.
Group / Ungroup	Group or ungroup the entity and other objects in the diagram.
Lock / Unlock	Lock or unlock the entity in the diagram.

Add Labels

Labels are typically used to help document the diagram design process. For example, to explain a grouping table objects.

To add a new label

1. Click the ⊤ button from the toolbar.

2. Place it on the canvas.

3. Enter the caption.

The pop-up menu options of the label object in the canvas include:

Option	Description
Cut	Remove the label from the diagram and put it on the clipboard.
Copy	Copy the label from the diagram to the clipboard.
Paste	Paste the content from the clipboard into the diagram.
Save as Image	Save the label as a PNG file.
Select All Labels	Select all labels in the diagram.

Delete from Diagram	Delete a label from the diagram.
Size to Fit	Resize the label automatically to fit its contents.
Bring to Front	Bring the label to the foreground.
Send to Back	Move the label to the background.
Group / Ungroup	Group or ungroup the label and other objects in the diagram.
Lock / Unlock	Lock or unlock the label in the diagram.

Properties

Once you have selected the label, you can customize the label by changing its properties:

Option	Description
Label	
Name	Enter the name of the label.
Position	Customize the position of the label.
Size	Customize the size of the label.
Constrain proportions	Maintain the aspect ratio (the ratio of width to height) when resizing.
Font	Set the font style of the label caption.
Bold	Apply a bold style to the label caption.
Italic	Apply an italic style to the label caption.
URL	Enter URL path to set the text as a hyperlink.
Group / Ungroup	Group or ungroup the label and other objects in the diagram.
Lock / Unlock	Lock or unlock the label in the diagram.

Add Notes

Notes are typically used to help document the diagram design process. For example, to explain a grouping table objects.

To add a new note

1. Click the 🗒 button from the toolbar.

2. Place it on the canvas.

3. Enter the content.

The pop-up menu options of the note object in the canvas include:

Option	Description
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.
Save as Image	Save the note as a PNG file.

Select All Notes	Select all notes in the diagram.
Delete from Diagram	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 the note to the foreground.
Send to Back	Move the note to the background.
Group / Ungroup	Group or ungroup the note and other objects in the diagram.
Lock / Unlock	Lock or unlock the note in the diagram.

Properties

Once you have selected the note, you can customize the note by changing its properties:

Option	Description
Note	
Name	Enter the name of the note.
Position	Customize the position of the note.
Size	Customize the size of the note.
Constrain proportions	Maintain the aspect ratio (the ratio of width to height) when resizing.
Font	Set the font style of the note content.
Bold	Apply a bold style to the note content.
Italic	Apply an italic style to the note content.
Color	Set the color of the note.
Group / Ungroup	Group or ungroup the note and other objects in the diagram.
Lock / Unlock	Lock or unlock the note in the diagram.

Add Images

You can insert images (BMP, JPG, JPEG or PNG files) to your diagram for design or identification purposes.

To add a new image

1. Click the 🖼 button from the toolbar.

2. Place it on the canvas.

3. Select an image file in the Open dialog box.

Hint: You can simply add an image from the clipboard by pressing COMMAND-V.

The pop-up menu options of the image object in the canvas include:

Option	Description
Cut	Remove the image 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.
Save as Image	Save the image as a PNG file.
Select All Images	Select all images in the diagram.
Delete from Diagram	Delete an image from the diagram.
Bring to Front	Bring the image to the foreground.
Send to Back	Move the image to the background.
Group / Ungroup	Group or ungroup the image and other objects in the diagram.
Lock / Unlock	Lock or unlock the image in the diagram.

Properties

Once you have selected the image, you can customize the image by changing its properties:

Option	Description
Image	
Name	Enter the name of the image.
Opacity	Set the opacity of the image.
Position	Customize the position of the image.
Size	Customize the size of the image.
Original Size	Reset the image to its original size.
Constrain proportions	Maintain the aspect ratio (the ratio of width to height) when resizing.
URL	Enter URL path to set the image as a hyperlink.
Group / Ungroup	Group or ungroup the image and other objects in the diagram.
Lock / Unlock	Lock or unlock the image in the diagram.

Add Shapes

Navicat Data Modeler includes some pre-defined shapes for creating database model diagrams: line, arrow, curve, connector, rectangle, ellipse, user, database, cloud, trigger, server, desktop, laptop, mobile, man, woman.

To add a new shape

1. Click the ⬚ button from the toolbar.

2. Select a shape.

3. Place it on the canvas.

To connect objects with a connector

1. Drag one endpoint of the connector to an object until it snaps to the object (a blue outline appears around the object).

2. Drag the other endpoint until the connector snaps to another object.

Hint: Lines, arrows and curves can act as connectors. You can enable the **As connector** option in the Properties pane.

The pop-up menu options of the shape object in the canvas include:

Option	Description
Common	
Cut	Remove the shape from the diagram and put it on the clipboard.
Copy	Copy the shape from the diagram to the clipboard.
Paste	Paste the content from the clipboard into the diagram.
Save as Image	Save the shape as a PNG file.
Select All Shapes	Select all shapes in the diagram.
Delete from Diagram	Delete a shape from the diagram.
Color	Change the color of the shape.
Bring to Front	Bring the shape to the foreground.
Send to Back	Move the shape to the background.
Group / Ungroup	Group or ungroup the shape and other objects in the diagram.
Lock / Unlock	Lock or unlock the shape in the diagram.
Line, Arrow and Curve	
Add Vertex	Add a vertex at the mouse cursor position.
Delete Vertex	Delete a vertex at the mouse cursor position.
Delete All Vertices	Delete all vertices on the selected line.
Go to	Go to and select the connected object.
Connector	
Go to	Go to and select the connected object.
Reroute Connectors	Reroute the connector to the closest points between two connected objects.

Properties

Once you have selected the shape, you can customize the shape by changing its properties:

Option	Description
Common	
Name	Enter the name of the shape.
Position	Customize the position of the shape.
Show name	Display the name label of the shape.
Name Position	Change the label position.
Font	Set the font style of the name.
Bold	Apply a bold style to the name.
Italic	Apply an italic style to the name.
Color	Set the color of the shape.

Group / Ungroup	Group or ungroup the shape and other objects in the diagram.
Lock / Unlock	Lock or unlock the shape in the diagram.
Line, Arrow, Curve and Connecter	
Offset	Customize offset values for the start and end of the line.
Line Width	Choose the thickness of the line.
Cap Style	Choose the cap style of the line.
Dash Style	Choose the dash style of the line.
Join Style	Choose the join style of the line.
Begin Style	Choose the style of the line's back.
End Style	Choose the style of the line's front.
As connector	Allow you to connect objects.
Rectangle, Ellipse, User, Database, Cloud, Trigger, Server, Desktop, Laptop, Mobile, Man and Woman	
Size	Customize the size of the shape.
Constrain proportions	Maintain the aspect ratio (the ratio of width to height) when resizing.
Border Color	Change the color of the shape's border.
Border Width	Choose the thickness of the border.
Shape Style	Change the style of the shape.

Add 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 add a new layer

1. Click the button from the toolbar.

2. Place it on the canvas.

3. Move objects into the layer and select **Add To Layer**.

The pop-up menu options of the layer object in the canvas include:

Option	Description
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.
Save as Image	Save the layer as a PNG file.
Select All Layers	Select all layers in the diagram.
Delete from Diagram	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 the layer to the foreground.
Send to Back	Move the layer to the background.
Group / Ungroup	Group or ungroup the layer and other objects in the diagram.
Lock / Unlock	Lock or unlock the layer in the diagram.

Properties

Once you have selected the layer, you can customize the layer by changing its properties:

Option	Description
Layer	
Name	Enter the name of the layer.
Position	Customize the position of the layer.
Size	Customize the size of the layer.
Constrain proportions	Maintain the aspect ratio (the ratio of width to height) when resizing.
Font	Set the font style of the title.
Title Position	Change the title position.
Color	Set the color of the layer.
Group / Ungroup	Group or ungroup the layer and other objects in the diagram.
Lock / Unlock	Lock or unlock the layer in the diagram.

Work with Diagram Canvas

Show Grid

To turn the grid on in the diagram canvas, choose **View** -> **Show Grid Lines** from the menu bar.

Show Page Border

To turn the page border on in the diagram canvas, choose **View** -> **Show Page Border** from the menu bar.

Snap to Grid

To align objects on the canvas with the grid, choose **View** -> **Snap to Grid** from the menu bar.

Align Multiple Objects

1. Select the objects you want to align.

2. Control-click the selected objects, and then select one of these commands from the **Alignment** menu:

Option	Description
Align Left	Align objects along their left edges.
Align Center	Align objects vertically through their centers.
Align Right	Align objects along their right edges.

Align Top	Align objects along their top edges.
Align Middle	Align objects horizontally through their middles.
Align Bottom	Align objects along their bottom edges.

Arrange Objects Equidistant

1. Select at least three objects.

2. Control-click the selected objects, and then select one of these commands from the **Distribute** menu:

Option	Description
Horizontally	Arrange the objects horizontally.
Vertically	Arrange the objects vertically.

Apply Auto Layout (Available only in Enterprise Edition)

Navicat Data Modeler provides a layout facility for arranging objects on diagrams. Your diagram is reorganized following the specific settings you define. Objects do not overlap and connectors do not cross over one another.

Apply Auto Layout to Entire Diagram

1. Click on the canvas.

2. Click 📇.

Apply Auto Layout to Selected Objects

1. Select the objects you want to apply auto layout.

2. Click 📇.

Apply Auto Layout to All Objects in Layer

1. Select the layer.

2. Click 📇.

Change Auto Layout Settings

To change the Auto Layout format settings, simply choose **View** -> **Auto Layout With** from the menu and set the following options:

Option	Description
Object Distance	The distance between the objects in the diagram.
Quality	The quality of the auto layout output.
Auto diagram dimension	Choose the suitable diagram dimension automatically.

| Auto size tables to fit | Resize the table to fit its content automatically. |

Preview Diagram

You can preview the diagram using the whole screen. The title bar, toolbar, tab bar, Objects pane and Properties pane will be hidden while in this mode. To preview a diagram, click 📺.

To exit the preview mode, press the ESC key and the workspace window will be returned to its previous state.

Print & Export Diagram

Print Diagram

You can print the current diagram to the printer.

1. Choose **File** -> **Print**.

2. Select your print options.

3. Click **OK**.

Export Diagram to File

You can export the current diagram to various types of images and files: PDF, PNG, SVG or JPG.

1. Choose **File** -> **Export To** and choose the file format.

2. Choose the path and enter the file name.

3. Click **Save**.

Chapter 7 - Data Dictionary (Available only in Enterprise Edition)

About Data Dictionary

Data Dictionary serves as a reference for understanding and documenting the structure and semantics of the data model. It provides a comprehensive description of the structure, relationships, and constraints of the objects in the model.

Create Data Dictionary

The essential steps to create a data dictionary are:

1. In the Workspace window, click ![icon].

2. Enter the name of the data dictionary.

3. Click **OK**.

4. A tab will open for you to edit the data dictionary.

5. Click ▷.

Object Selection

In the list, choose objects to include in the data dictionary.

Navicat Data Modeler will generate the data dictionary contents based on the sequence of the objects on the list. You can select the objects and use the arrow buttons to change the order.

Theme

Navicat Data Modeler provides several templates for data dictionary files. You can choose the appropriate template and follow the remaining steps to customize your settings.

Layout Settings

You can adjust the layout of the template and view the preview on the left pane.

Option	Description
Cover	
Include cover	Add a cover page.
Header Logo	Insert a preceding image in the header.
Header	Enter a header that appears once at the top of the cover page.
Title	Enter the title of the data dictionary.

Subtitle	Enter the subtitle of the data dictionary.
Remarks	Enter remarks that appear on the cover page.
Background Image	**Default** - Use the default background image.
	Custom - Insert a background image for the cover page.
	None - Explicitly not insert a background image.
Footer	Enter a footer that appears once at the bottom of the cover page.
Table of Contents	
Include table of contents	Add table of contents to the data dictionary.
Header/Footer	
Include breadcrumbs header	Add a breadcrumbs header that appears at the top of every page except the cover and table of contents.
Heading Font	Set the font style of the heading.
Subheading Font	Set the font style of the subheading.
Include left footer	Add a footer that appears at the bottom left of every page except the cover, table of contents and introduction.
Include page number in right footer	Add page numbers to the right footer of every page except the cover, table of contents and introduction.
Footer Font	Set the font style of the footer.
Main Content	
Include Introduction	Add a page for introducing the data dictionary.
Introduction	Enter the introduction.
Font	Set the font style of the introduction.
Paper	
Paper	Choose the paper size.
Orientation	Select a page orientation (Portrait or Landscape).
Margin (CM)	Set the margins of the document.

File Path

In this tab, set the export file path and other advanced options.

Option	Description
Export To File	Specify the path of the data dictionary file.
Append timestamp to file name	Append timestamp information to the file name to show when the file is created.
Overwrite existing file	Overwrite if the file already exists.
Continue on error	Ignore errors that are encountered during the generation process.

Message Log

After clicking the ▷ button, the Message Log tab will appear. It displays the success or failure messages and the file path information. Click the **Open** button to open the data dictionary file.

Chapter 8 – Connection (Available only in Enterprise Edition)

Manage Connections

You can manage the connections stored in your local machine, or the connections synchronized to Navicat Cloud or your On-Prem Server. In the menu bar, choose **Tools** -> **Manage Connections**.

Create New Connections

1. In the Manage Connections window, select My Connections or a project.

2. Click **New** and select **New Connection**, and then select the server type.

3. Enter the server login information in the New Connection window.

Manage Existing Connections

To edit a connection

1. In the Manage Connections window, control-click a connection and select **Edit Connection**.

2. Change the connection settings.

3. Click **OK**.

To delete a connection

1. In the Manage Connections window, control-click a connection and select **Delete Connection**.

2. Click **Delete** in the confirm dialog.

Import Connection Settings

To import Navicat (e.g. [Navicat Premium](#)) connection settings

1. In the Manage Connections window, control-click My Connections and select **Import Connections from Navicat**.

2. Select the connections and click **OK**.

Note: Available only when Navicat (e.g. Navicat Premium) is installed in the current machine. If the connection exists, the newly created connection will be named as e.g. "connection_name Copy #".

Database Connections

Connect to Database Servers

You can create a connection to connect your server: MySQL, MariaDB, PostgreSQL, Oracle, SQLite, SQL Server, MongoDB.

Note: Navicat Data Modeler authorizes you to make connection to remote server running on different platform, i.e. Windows, macOS, Linux and UNIX.

RDBMS General Settings

To successfully establish a new connection to local/remote server - no matter via SSL, SSH or HTTP, set the database login information 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.

Note: The following options depend on the connection server type and sort in ascending order.

Add to

After you logged in Navicat Cloud or On-Prem Server, you can choose to save the connection to My Connections or a project.

Authentication

SQL Server Authentication	Use 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.

Connection Name

Enter a friendly name to best describe your connection.

Connection Type

Basic	In Basic mode, it connects to Oracle through the Oracle Call Interface (OCI). Enter the **Host** and **Port**. Set the **Service Name/SID** which the user connects when making connection. Select the corresponding radio button.
TNS	In TNS mode, it connects to Oracle server using an alias entry from a tnsnames.ora file through the Oracle Call Interface (OCI). User needs to provide the **Net Service Name**.

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. See also: Environments

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.

Host

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

Initial Database

Set the initial database which user connects when making connection.

OS authentication

Use OS user login credentials to authenticate database users.

Password

Password for connecting to the database server.

Port

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

Role

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

Type

Existing Database File	Connect to 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**.

User Name

User name for connecting to the database server.

MongoDB General Settings

To successfully establish a new connection to local/remote server - no matter via SSL or SSH, set the database login information in the General tab. If your Internet Service Provider (ISP) does not provide direct access to its server, Secure Tunneling Protocol (SSH) is another solution.

Connection Name

Enter a friendly name to best describe your connection.

Add To

After you logged in [Navicat Cloud](#) or [On-Prem Server](#), you can choose to save the connection to My Connections or a project.

Type

The type of your MongoDB server: Standalone, Shard Cluster or Replica Set.

SRV Record

Check this option to connect the server using an SRV Record.

Host

A host name, IP address, or UNIX domain socket of the server.

Port

A TCP/IP port for connecting to the server.

Member

Add or remove the members of replica set or the instances of sharded cluster to the connection.

Read Preference

Choose the replica set read preference for this connection.

Replica Set

The name of the replica set.

Authentication

Choose the authentication mechanism that MongoDB will use to authenticate the connection.

None	No authentication.
Password	Specify the **Authentication Database** name associated with the **User Name** and **Password**.
LDAP	Specify the **User Name** and **Password**.
Kerberos	Set the Kerberos **Service Name** and the user **Principal**.
X.509	x.509 certificate authentication.

Advanced Settings

Note: The following options depend on the connection server type and sort in ascending order.

Cipher Name

Choose the encryption algorithm when connecting to an encrypted SQLite database.

Client Character Set

Choose the session client character set used in Navicat Data Modeler.

Client Driver Version

Choose the client driver used to connect the server. If the default driver does not work, you can change this setting to Legacy.

Compatibility

Enable the Compatibility tab for setting the compatibility mode for MySQL connection.

Encoding

Choose a codepage for converting data to display in Navicat Data Modeler UI.

Encrypt

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

Initial Queries

Specify the initial query commands to be executed when connecting to the server.

Keepalive interval (sec)

Keep the connection with the server alive by pinging it. You can set the period between pings in the edit box.

Limit connection sessions

Specify the maximum number of concurrent connections that the server allows.

Retryable Reads

Disable this option to specify "retryReads=false" in the connection string.

Retryable Writes

Disable this option to specify "retryWrites=false" in the connection string.

TDS Version

Choose the TDS protocol version supported by your server if the connection runs into an incompatibility.

Use compression

Use compression protocol. It is used if both client and server support zlib compression, and the client requests compression.

Use socket file

Use socket file for localhost connection.

Databases Settings

MySQL, Oracle, PostgreSQL, SQL Server, MariaDB, MongoDB

In the **Databases** tab, you can set which databases will be shown in the Import from Database window. It is not obligatory. To start working with custom database settings, check **Use custom database list**. Then, check the preferable databases in the **Name** column.

Add a hidden database to the list

1. Click the **+** button.

2. Enter the database name.

3. Check the newly added database in the database list.

Remove a database from the list

1. Select the database in the database list.

2. Click the **-** button.

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

SQLite

In the **Databases** tab, you can attach SQLite database files to the connection. Click the **+**button and enter the information:

Option	Description
Database Name	Enter the database name which displays in Navicat Data Modeler.
Database File	Choose the file path of a database file.
Encrypt	Check this option and provide the **Password** if the database file is encrypted.

To detach a database, select it from the list and click the **-** 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, PostgreSQL, MariaDB and MongoDB. Support from PostgreSQL 8.4 or later.

MySQL and MariaDB Connections

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

Client Key File

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

Client Certificate File

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

CA Certificate File

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**:

allow	First try a non-SSL connection; if that fails, try an SSL connection.
prefer	First try an SSL connection; if that fails, try a non-SSL connection.
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 Certificate File

The path of the client certificate.

Client Key File

The path of the client private key.

Root Certificate File

The path of the trusted certificate authorities.

Certificate Revocation List File

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

MongoDB 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 Key Password

The password of the key file.

Allow any server SSL certificates

Check this option if your MongoDB server allows any server SSL certificates.

CA Certificate

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

Certificate Revocation List

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

Allow invalid host names

Check this option to allow invalid hostnames in SSL certificates.

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, SQL Server, MariaDB and MongoDB.

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 Data Modeler cannot connect via SSH Port 22.

Host

A host where SSH server is activated.

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

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

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, SQLite and MariaDB.

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: Click the **Export Tunnel Script** button to extract the script file, **ntunnel_mysql.php** (for both MySQL and MariaDB), **ntunnel_pgsql.php** or **ntunnel_sqlite.php**.

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 the tunneling script is hosted in a password protected server, you can provide the required authentication details.

4. If your server installed a Web Application Firewall, you can check the **Encode outgoing query with base64** option.

5. If you have to access internet over a proxy server, click the **Proxy Settings** button and provide the details.

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

Compatibility Settings

If your server is a variant of MySQL or has proxy middleware installed, you can enable compatibility mode and set the corresponding settings for the connection.

Note: Available only for MySQL.

Force lower_case_table_names as

Set the value of the lower_case_table_name system variable.

Force sql_mode as

Set the value of the sql_mode system variable.

Force NDB cluster support as

Include or exclude the support for the NDBCLUSTER storage engine.

Force database listing method as

Use the SHOW DATABASES statement to retrieve the information for listing databases, or select the information from the INFORMATION_SCHEMA database.

Force view listing method as

Use the SHOW FULL TABLES statement to retrieve the information for listing tables, or select the information from the INFORMATION_SCHEMA database.

ODBC Connections

You can create an ODBC connection to connect your ODBC data source. The following instruction guides you through the process of creating a new ODBC connection.

Setting Up an ODBC Data Source Connection

1. To setup the connection of the data source, you need to install the corresponding driver.

2. Then, setup the DSN (Data Source Name) using the ODBC Administrator.

Note: You can consult with the driver provider about how to setup the DSN.

Connecting to ODBC data source in Navicat Data Modeler

Connection Name

A friendly name to best describe your connection.

Data Source

A data source name.

User Name

User name for connecting to the data source.

Password

Password for connecting to the data source.

Chapter 9 - Reverse Engineering (Available only in Enterprise Edition)

About Reverse Engineering

Reverse Engineering is the process of creating a data model from a database/schema. Navicat Data Modeler allows you to load existing database structures to create new models, or synchronize database differences to an existing model.

Synchronize Database to Model

The **Synchronize Database to Model** feature allows you to compare a database or schema with an existing model, states the differences between their structures, and offers synchronizing modifications in the database or schema into the model.

Navicat Data Modeler provides a step-by-step wizard for you to complete the task:

1. In the Workspace window, choose **Tools** -> **Reverse Engineering** -> **Synchronize Database to Model**.

2. Select the source connection, database, schema, and select the target model, database, schema.

3. Click **Options** and select the compare / advanced options.

4. Click **Compare** to show the differences between source and target objects.

5. Select the objects you want to synchronize.

6. Click **Next** to execute the process.

Choose Connections

The first step is to define the source connection and the target model.

Choose Comparing Options

Then, click the **Options** button to select the compare / advanced options for the synchronization process.

Note: The following options depend on the diagram database type you are chosen and sort in ascending order.

Option	Description
Compare auto increment value	Compare the auto increment values of tables.
Compare character set	Compare the character sets of tables.
Compare checks	Compare check constraints.
Compare collation	Compare the collations of tables.

Compare definers	Compare the definers of views.
Compare excludes	Compare exclusion constraints.
Compare foreign keys	Compare the foreign keys of tables.
Compare functions	Compare function and procedure objects.
Compare identity last value	Compare the identity last values of tables.
Compare indexes	Compare table indexes.
Compare owners	Compare the owners of database objects.
Compare partitions	Compare table partitions.
Compare primary keys	Compare the primary keys of tables.
Compare rules	Compare rule objects.
Compare sequences	Compare sequence objects.
Compare sequence last values	Compare the last values of sequences.
Compare storage	Compare table storages.
Compare table options	Compare other table options.
Compare tables	Compare table objects.
Compare triggers	Compare table triggers.
Compare uniques	Compare unique constraints.
Compare views	Compare view objects.
Drop with CASCADE	Drop the dependent database objects with the CASCADE option.
Identifier Case Sensitivity	Ignore or consider the case of identifiers when mapping, or use the server default setting.

Start Comparison

Click the **Compare** button to compare the source database and the target model.

View Comparison Results

After comparing structures, the tree view shows the differences between the source and target databases or schemas. Check the objects you want to apply to the target. You can expand the objects to view the detailed structure.

You can choose to group the objects in the tree views by object types or operations by selecting **Group by Object Type** or **Group by Operation**.

Operation	Description
➡	Object exists in both source and target databases/schemas, but they have different definition. The target object will be modified based on the source object.
✚	Object does not exist in the target database/schema. It will be created in the target.
✖	Object does not exist in the source database/schema. The target object will be deleted.
=	Object exists in both source and target databases/schemas and they have identical definition. No operation will be applied.

When you selected an object in the tree view, the **DDL Comparison** tab shows the DDL statements/scripts of that object in the source and the target, and the **Deployment Script** tab shows the detailed statements/scripts of the object that will be updated in the target model.

Click the **Next** button to execute the process. The window will display the execution progress, execution time, and success or failure messages.

Reverse Database to Model

The **Reverse Database to Model** feature allows you to create a database model from an existing database or schema.

Navicat Data Modeler provides a step-by-step wizard for you to complete the task:

1. In the Workspace window, choose **Tools** -> **Reverse Engineering** -> **Reverse Database to Model**.

2. Select the source connection, database, schema, and select the target model, database, schema. Choose **New Model** and the model type if you want to create a new model.

3. Click **New**.

4. Select the objects you want to import.

5. Enable **Import To Diagram** and select a diagram if you want to add the objects to a diagram. Choose **New Diagram** if you want to import objects to a new diagram.

6. Click **Start**.

Chapter 10 - Forward Engineering (Available only in Enterprise Edition)

About Forward Engineering

Forward engineering is the process of generating the physical database schema from a physical model. Navicat Data Modeler allows you to synchronize model differences to an existing database, or export models to .sql or .script files.

Synchronize Model to Database

The **Synchronize Model to Database** feature allows you to compare a model with an existing database or schema, states the differences between their structures, and offers synchronizing the structures in model to the target connection.

Navicat Data Modeler provides a step-by-step wizard for you to complete the task:

1. In the Workspace window, choose **Tools** -> **Forward Engineering** -> **Synchronize Model to Database**.

2. Select the source model, database, schema, and select the target connection, database, schema.

3. Click **Options** and select the compare / advanced options.

4. Click **Compare** to show the differences between source and target objects.

5. Select the objects you want to synchronize.

6. Click **Next** to generate a set of scripts.

7. Click **Start**.

Choose Connections

The first step is to define the source model and the target connection.

Choose Comparing Options

Then, click the **Options** button to select the compare / advanced options for the synchronization process.

Note: The following options depend on the diagram database type you are chosen and sort in ascending order.

Option	Description
Compare auto increment value	Compare the auto increment values of tables.
Compare character set	Compare the character sets of tables.
Compare checks	Compare check constraints.
Compare collation	Compare the collations of tables.

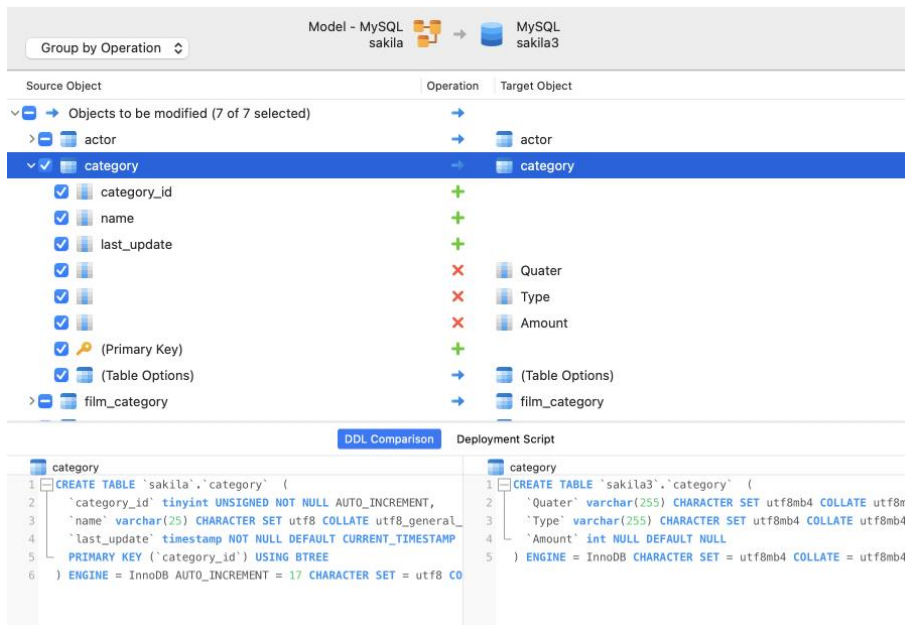|	
Compare definers	Compare the definers of views.
Compare excludes	Compare exclusion constraints.
Compare foreign keys	Compare the foreign keys of tables.
Compare functions	Compare function and procedure objects.
Compare identity last value	Compare the identity last values of tables.
Compare indexes	Compare table indexes.
Compare owners	Compare the owners of database objects.
Compare partitions	Compare table partitions.
Compare primary keys	Compare the primary keys of tables.
Compare rules	Compare rule objects.
Compare sequences	Compare sequence objects.
Compare sequence last values	Compare the last values of sequences.
Compare storage	Compare table storages.
Compare table options	Compare other table options.
Compare tables	Compare table objects.
Compare triggers	Compare table triggers.
Compare uniques	Compare unique constraints.
Compare views	Compare view objects.
Drop with CASCADE	Drop the dependent database objects with the CASCADE option.
Identifier Case Sensitivity	Ignore or consider the case of identifiers when mapping, or use the server default setting.

Start Comparison

Click the **Compare** button to compare the source model and the target database.

View Comparison Results

After comparing structures, the tree view shows the differences between the source and target databases or schemas.
Check the objects you want to apply to the target. You can expand the objects to view the detailed structure.

You can choose to group the objects in the tree views by object types or operations by selecting **Group by Object Type** or **Group by Operation**.

Operation	Description
➡	Object exists in both source and target databases/schemas, but they have different definition. The target object will be modified based on the source object.
➕	Object does not exist in the target database/schema. It will be created in the target.
✖	Object does not exist in the source database/schema. The target object will be deleted.
=	Object exists in both source and target databases/schemas and they have identical definition. No operation will be applied.

When you selected an object in the tree view, the **DDL Comparison** tab shows the DDL statements/scripts of that object in the source and the target, and the **Deployment Script** tab shows the detailed statements/scripts of the object that will be executed in the target databases.

Click the **Next** button to show the scripts of all selected objects.

Edit & Execute Selected Scripts

You can view all scripts that will be executed in the target database in the **Deployment Script** tab.

Deployment Options Button	Description
Deployment Options	**Continue on error** - Ignore errors that are encountered during the execution process if necessary. **Include deployment query in message log** - Show the deployment queries in the Message Log tab during execution.
Edit Script	Open the **Edit Deployment Script** window to rearrange the order of the scripts.

Copy Script to Clipboard	Copy all scripts from the Deployment Script tab to the clipboard.

In the **Edit Deployment Script** window, use the arrow buttons to move the scripts.

Then, click the **Start** button to execute the scripts. The window will display the execution progress, execution time, and success or failure messages.

Export Model to SQL/Script File

After finishing your model, you can save structures and relations from the model into a sql or script file.

Navicat Data Modeler provides a step-by-step wizard for you to complete the task:

1. In the Workspace window, choose **Tools** -> **Forward Engineering** -> **Export Model to SQL/Script File**.

2. Enter the file information and select the objects.

3. Click **OK**.

General Properties

Option	Description
File	Set the location path of the output file.
Model	Choose the model you wish to export.
Schema	Choose the schema you wish to export.
Objects	Choose objects in the model you wish to export.

Advanced Properties

Note: The following options depend on the diagram database type you are chosen and sort in ascending order.

Option	Description
Include auto increment	Include the auto increment values of tables.
Include character set	Include table and field character sets.
Include checks	Include check constraints.
Include collation	Include the collations of tables.
Include Drop SQL	Include drop object SQL statements.
Include Drop With CASCADE	Include drop object SQL statements with the CASCADE option.
Include excludes	Include exclusion constraints.
Include foreign keys	Include the foreign keys of tables.
Include indexes	Include table indexes.
Include primary keys	Include the primary keys of tables.
Include rules	Include rule objects.
Include schema	Qualify object names with the schema name. Otherwise, only object names

	are included in SQL statements.
Include triggers	Include table triggers.
Include uniques	Include unique constraints.
Server Version	Select the server version for the file.

Chapter 11 - Other Advanced Tools

Useful Features

Navicat Data Modeler provides variety of tools that improve user experience when working on models.

- [Compare Model Workspace](#)

- [Model Conversion](#)

- [Virtual Grouping](#)

- [Focus Mode](#)

- [Share via URI](#)

- [Search Filter](#)

Compare Model Workspace (Available only in Enterprise Edition)

Compare Model Workspace is a powerful tool that allows you to compare two model workspaces, view and resolve differences between them.

Navicat Data Modeler provides a step-by-step wizard for you to complete the task:

1. In the Workspace window, choose **Tools** -> **Compare Model Workspace**.

2. Select the workspace you want to sync with the current workspace.

3. Click **Compare** to show the differences between source and target objects.

4. Select the objects you want to synchronize.

5. Click **Apply Changes** to view the number of changes.

6. Click **Apply**.

Choose Source Workspace

The first step is to define the source workspace. You can choose an existing workspace in Navicat Data Modeler or an external workspace file.

Then, click the **Compare** button.

View Comparison Results

After comparing, the tree view shows the differences between the source and target workspaces. Check the objects you want to apply to the target. You can expand the objects to view the detailed structure.

Choose an option from the drop-down list to show the objects.

Option	Description
All Objects	Show all objects in the source and target.
Objects with Difference	Show all objects that are different in the source and target.
Objects To Be Added	Only show the objects that do not exist in the target.
Objects To Be Updated	Only show the objects that exist in both source and target, but they have different structures.
Objects To Be Deleted	Only show the objects that do not exist in the source.

When you selected an object in the tree view, the **DDL Comparison** tab shows the DDL statements/scripts of that object in the source and the target, and the **Reference Script** tab shows the detailed statements/scripts of the object that will be executed in the target database.

Apply Changes

Click the **Apply Changes** button to apply changes to the selected objects.

Model Conversion

Navicat Data Modeler allows you to convert your models from one database type to another database type and also from one model type to another model type, e.g. MariaDB 10.0 physical model to PostgreSQL 9.0 physical model, Oracle 10g physical model to a logical model, a conceptual model to MySQL 5.0 physical model.

Convert a model

1. In the Workspace tab, control-click a model and select **Model Conversion Wizard**.

2. Select the target workspace.

3. Enter the model name.

4. Choose the model type.

5. Choose the target database and version if necessary.

6. If you want to convert all related diagrams, enable **Convert with related Diagram**.

7. Click **Convert**.

8. A tab will open for you to edit the model.

Conversion Behaviour

- All data types are converted automatically.

- When converting from one database type to another, the conversion process does not change the syntax of views, functions, and procedures.

- When converting a physical model to a logical/conceptual model, all views are converted to entities, and all functions and procedures are removed.

- If the target database version is MySQL 4.0 or below, all views are removed.

- If the source database type is MongoDB, all views, functions, and procedures are removed.

- If the target database type is MongoDB, all views, functions, and procedures are removed.

- If the target database type is SQLite, all functions and procedures are removed.

Virtual Grouping

Virtual Group aims to provide a platform for logical grouping objects by categories, so that all objects are effectively preserved. It can be applied on all connections and model workspaces.

Connections

Create a new group

1. In the menu bar, choose **Tools** -> **Manage Connections**.

2. In the Manage Connections window, control-click My Connections or a project and select **New Group**.

3. Enter a name for the new group.

Move a connection to a group

1. In the Manage Connections window, control-click a connection and select **Manage Group** -> **Move To**.

2. Select an existing group.

Move a connection to the top-level

1. In the Manage Connections window, control-click a connection and and select **Manage Group** -> **Exclude From Group**.

Hint: You can also use the drag and drop method to move objects.

Models

Create a new group

1. In the main window, select Navicat Cloud or your On-Prem Server.

2. Open a project.

3. Control-click anywhere in the project and select **New Group**.

4. Enter a name for the new group.

Move a model file to a group

1. In the main window, control-click a model and select **Manage Group** -> **Move To**.

2. Select an existing group.

Move a model file to the top-level

1. In the main window, control-click a model and select **Manage Group** -> **Exclude From Group**.

Hint: You can also use the drag and drop method to move objects.

Focus Mode (Available only in Enterprise Edition)

Focus is a feature that helps you reduce distractions and set boundaries. It removes everything from the screen except the form you are working and enters the full screen mode.

When you want to concentrate on a specific activity, you can turn it on by simply clicking the ⌞⌝ icon.

To exit Focus Mode, you can simply click the ⊣⊢ icon at the top right.

Share via URI

Navicat Data Modeler allows you share a workspace with your teammates by the URL of the workspace. Navicat users can use the generated URI to access the workspace.

Obtain URI

You can obtain the URI of a workspace in the General tab of the Information pane. Simply click **Share** and copy the URI in the popup window. You can enable **Hide host info** to remove the connection host parameter in the URI.

Open Object via URI

1. In the main window, choose **File** -> **Open with Navicat URI**.

2. Paste the URI.

3. Click **OK**.

4. Change the connection mapping by clicking **Other Options** if necessary.

Option	Description
Mapped Connection	Automatically map the connection in the URI to the connection with the most similar information in Navicat.
Existing Connection	Choose an existing connection in Navicat.
New Connection	Create a new connection in Navicat.

5. Open the object.

Search Filter

Navicat Data Modeler provides search filters for searching your objects in the main window, the canvas and tree structures.

Simply enter a search string in the **Search** text box directly.

You can remove the filter by deleting the search string.

Chapter 12 - Configurations

Settings

Navicat Data Modeler provides several options for customizing its user interface and performance.

To open the Settings window, choose **Navicat Data Modeler** -> **Settings** from the menu bar.

General

Main Window

Use safe confirm dialog

With this option is on, Navicat Data Modeler will prompt a double confirmation dialog for safe deletion when deleting objects in the main window.

Usage Data

Share Usage Data

Check this option to let your device sends us information about how you use Navicat Data Modeler to help us improve it. You can view the information being shared by clicking the **Usage Data** button.

Update

Automatically check for updates

Check this option to allow Navicat Data Modeler checks for new version when it starts.

Include anonymous system profile

Check this option to send us your system information, such as your macOS version to improve our Navicat Data Modeler when it checks for updating.

Tabs

Open Tabs

Open new tab in

Set new pop-up windows to open as:

Option	Description
Last Tab Window	Open a new tab in the last opened window.
New Window	Open a new window.

Allow opening multiple forms for same object

Check this option to allow opening multiple instances of an object.

Always show the tab bar

Always show the tab bar when you open a window.

Editor

Disable syntax highlight and code completion if SQL larger than: ☐ **MB**

The highlighting and code completion features can be limited by setting the maximum file size (e.g. 10) to increase performance.

Show

Show line number

Display line numbers at the left 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.

Use brace highlighting

Highlight the pair of braces when your cursor moves to either one brace for easily reference.

Use syntax highlighting

Syntax highlight helps viewing codes clearly. Codes are highlighted in the editor with different colors and fonts according to the categories they belong to.

Text Layout

Tab Width: ☐ **spaces**

Enter the number of characters that a tab occupies, e.g. 5.

Insert spaces when pressing Tab

Insert space characters when the Tab key is pressed.

Use word wrap

Enable the word wrap mode in the editor.

Font and Colors

Font

Define the font and its size used by the editor.

Use default font

Check this option to use the default font settings.

Syntax Colors

Format your queries in the editor with colored syntax highlighting to improve readability. Set font colors to mark out different text fragments: Common, Keyword, String, Number, Comment and Background. Click on the color boxes and choose your desired color from the Colors dialog window.

Code Completion

Use code completion

When you type the . (dot) symbol or a character, the editor will offer you a pop-up list that showing some suggestions for the code completion.

Auto update code completion info

With this option is on, Navicat Data Modeler will get the latest database information for the code completion from your model.

Auto select first suggestion

Select the first item automatically when the suggestion list pops up. Therefore, pressing ENTER or TAB will insert the selected item. Otherwise, you need to use arrow keys to select the suggestion item.

Clear Code Completion Info

Delete the information for code completion feature that stored on your device.

Auto Recovery

Autosave modified models

Save automatically after modifications in model workspaces by defining the interval (e.g. Every 3 minutes).

Environment

Hint: Restart Navicat Data Modeler to take effect.

Executables

SQLite3 Dynamic Library Path

Specify the location of SQLite3 Dynamic Library.

OCI Environment

OCI library (libclntsh.dylib)

Specify the location which contains Oracle libraries for instant client and SQL*Plus (e.g. ORACLE_HOME/lib). Always required.

Use bundled OCI library

Oracle library has already included in Navicat Data Modeler. Check this option to use the bundled library, e.g. /Applications/Navicat Data Modeler.app/Contents/OCI.

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 Instant Client through -

Oracle Instant Client

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_HOME

Specify the location of ORACLE_HOME for full client only. Instant client should leave it blank.

TNS_ADMIN

Specify the location of the tnsnames.ora file (e.g. ORACLE_HOME/network/admin). It is optional. Required when using TNS connection.

Advanced

Logs Location

Logs Location

Specify the location for storing the log files.

Enable diagnostic logging

Generate a log file to assist with tracking down any problems in Navicat Data Modeler.

Hint: Restart Navicat Data Modeler to take effect.

Verify server certificate against CA

Enable this option to verify that the server certificate against the list of trusted CA.

Connectivity Diagnosis

Click **Test Connectivity** to test the network connectivity between the web service and your machine.

Chapter 13 - Hints and Tips

Model Hints and Tips

Navicat Data Modeler provides some useful hints to work on the diagram more effectively.

Locate Object in Diagram Canvas

Double-click an object in the left pane will jump to the corresponding object on the canvas.

Delete Object from Model

Select an object on the canvas and press SHIFT+DELETE.

Open Object Designer

Double-click an object in the left pane or the canvas.

Get Object Statement (Available only in Enterprise Edition)

Select and copy an object on the canvas, and paste it to other text editors.

Add / Edit Field without Object Designer

Select an object and click the object name on the canvas, and then press DOWN ARROW to add/edit fields. Navicat Data Modeler will predict field types according to field names you entered.

INTEGER/int/int4/NUMBER

- suffix "id", "no" (if it is the first column, it will be predicted as a primary key)

- suffix "num"

- "qty", "number"

- exactly "age", "count"

DECIMAL(10,2)/decimal(10,2)/NUMBER/REAL/money

- suffix "price", "cost", "salary"

FLOAT/double/float8/NUMBER/REAL/float

- "size", "height", "width", "length", "weight", "speed", "distance"

DATE/datetime/date/TEXT/datetime2

- "date", "time"

VARCHAR(255)/varchar(255)/VARCHAR2(255)/TEXT

- other field names

Enter * before the field name to recognize as primary key. e.g. *itemNo:int.

Enter : between field name and field type to custom field type, e.g. itemName:varchar(255).

Reorder Field

Select an object on the canvas, then press and hold the SHIFT key. Use to drag the field to a desired location.

Delete Field

Select an object on the canvas, then press and hold the SHIFT key. Use to drag the desired field out of the object.

Add Vertex to Line / Arrow / Curve

Select a line, arrow or curve on the canvas. Press and hold the SHIFT key and click on it to add vertex.

Delete Vertex on Line / Arrow / Curve

Select a line, arrow or curve on the canvas. Press and hold the SHIFT key and click on the vertex.

View Object's Model and Database

Press and hold the SPACE key.

Switch to Hand Mode

Press and hold the SPACE key, then move the diagram.

Chapter 14 - Hot Keys

Model Hot Keys

Keys	Action
Common	
COMMAND-S	Save
COMMAND-Z	Undo
SHIFT-COMMAND-Z	Redo
COMMAND-X	Cut
COMMAND-C	Copy
COMMAND-V	Paste
COMMAND-U	Open with Navicat URI
Diagram	
COMMAND-P	Print
ESC	Select
H	Move Diagram
T	New Table/Collection/Entity
V	New View
R	New Foreign Key/Relation
A	New Label
N	New Note
I	New Image
L	New Layer
COMMAND-+	Zoom In
COMMAND--	Zoom Out
COMMAND-0	Reset Zoom
View Editor	
COMMAND-SHIFT-V	Paste from Clipboard Stack

Chapter 16 - Trace Logs

Log Files

Navicat Data Modeler provides number of log files to keep track on the actions have been performed in Navicat Data Modeler and they are located in the default folder, e.g. ~/Library/Application Support/PremiumSoft CyberTech/Navicat CC/Navicat Data Modeler/Logs. You are allowed to change the log files location under Settings.

File	Description
QueryExec.log	Store the statements or scripts of all operations executed over databases and database objects in Navicat Data Modeler. **Note:** This log will be overwritten while Navicat Data Modeler is being restarted.
navicat_log.txt	Store information to assist with tracking down any problems in Navicat Data Modeler. You can enable this log in Settings. **Note:** This log will be overwritten while Navicat Data Modeler is being restarted.