How to Generate Redshift Database from ERD?

Written Date : April 08, 2016

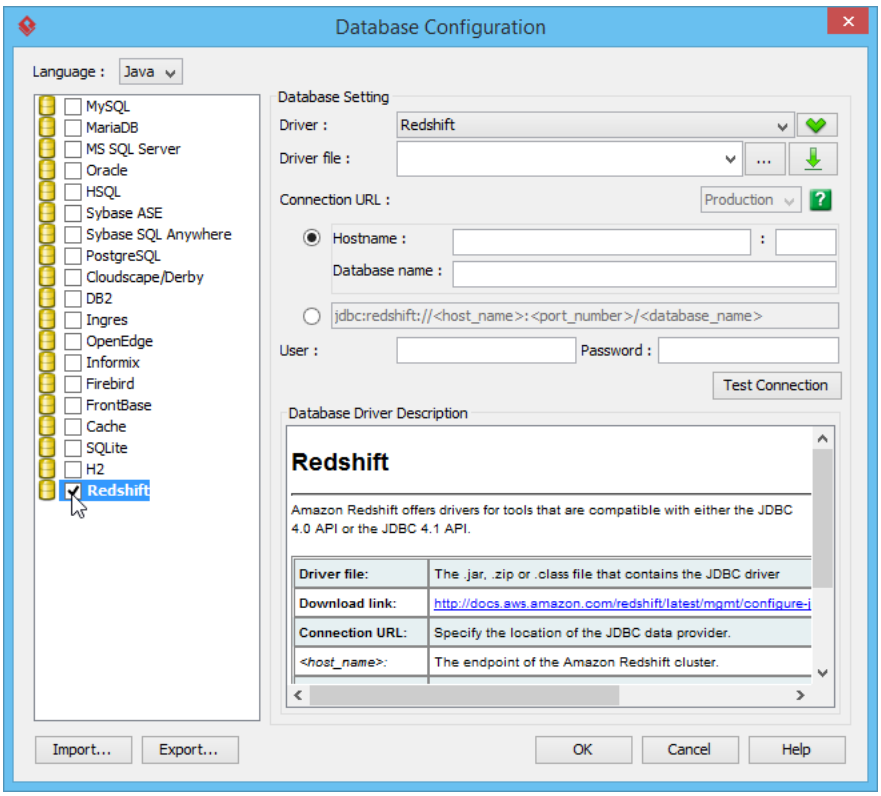
Create a Database in Redshift

To walk through this tutorial, please set up a new database in Redshift first. In this tutorial, we will interact with a database named *Tutorial01*. You may use any name you like.

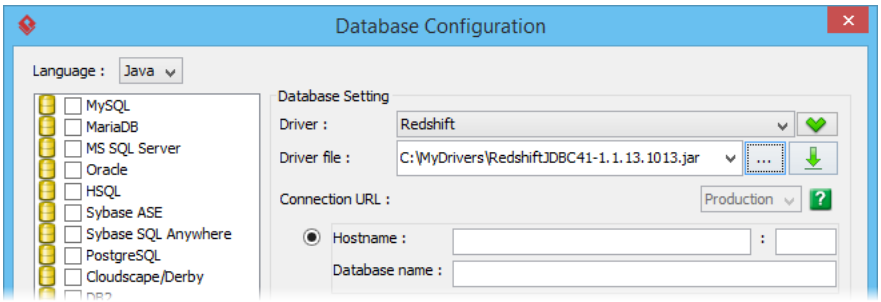
Configure the Default Database for Your Project

Visual Paradigm supports database modeling for multiple DBMS. As you know, different DBMS support different sets of data types. Some of them are compatible with other DBMS, while some are DBMS-specific. Before you start, it is important to select Redshift as your default database so that you can use its data types when designing the database. To configure the default database:

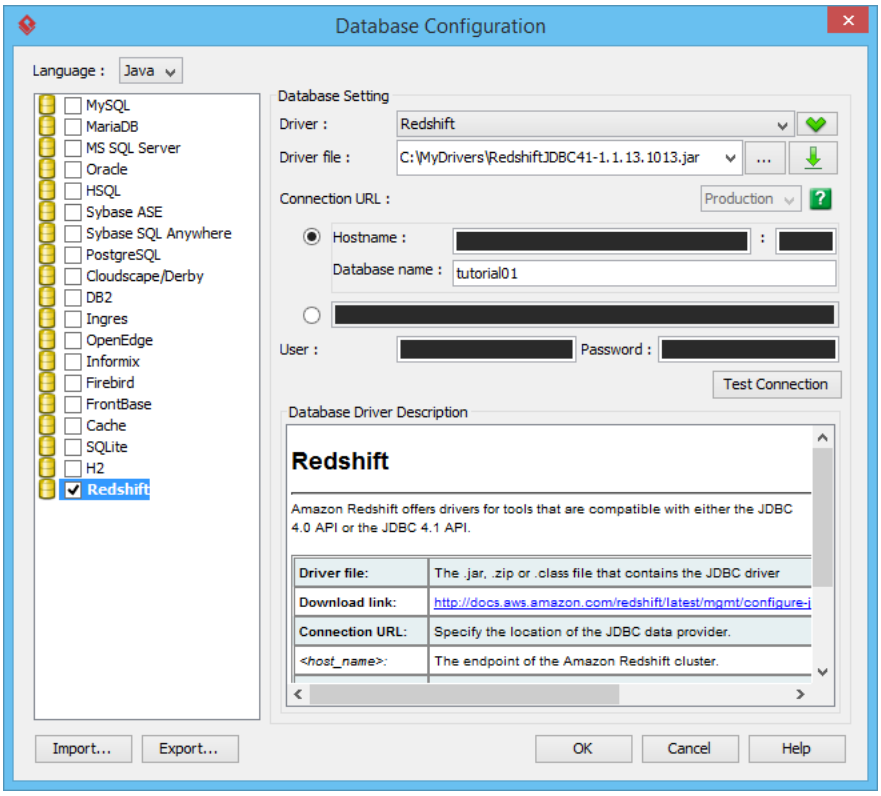
1. Select **Tools > DB > Database Configuration** from the application toolbar.
2. In the **Database Configuration** window, select **Redshift** from the list of databases on the left-hand side.



3. Provide the JDBC **Driver File**. You may click here to download the Amazon Redshift JDBC driver.



4. Fill in the hostname, port, username, and password for your Redshift database. Again, in this tutorial, we are using a database named *tutorial01*.

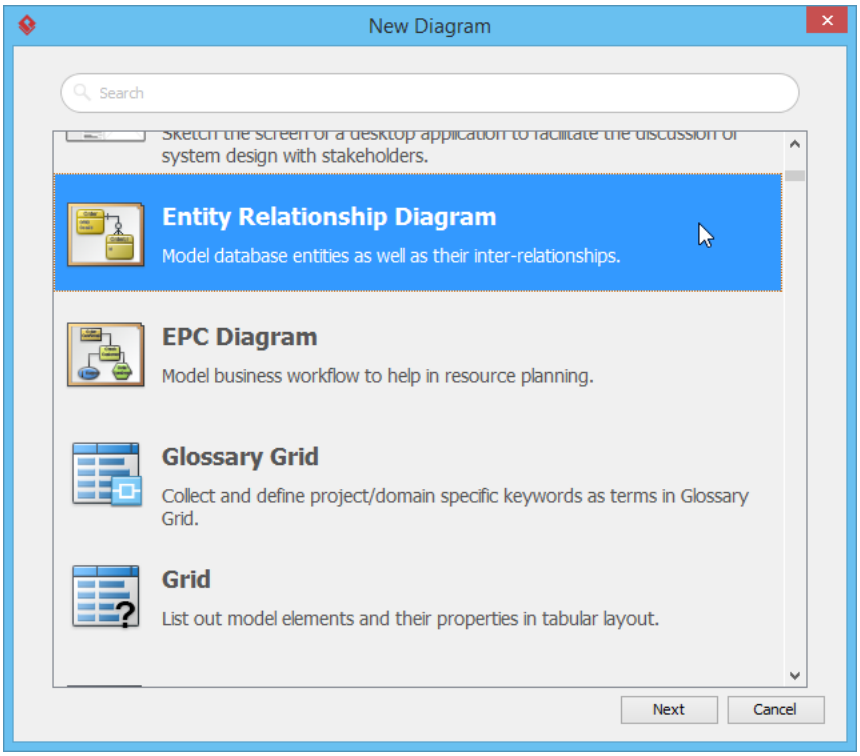


5. Click **Test Connection** to make sure your settings are all correct and Visual Paradigm can connect with your database. Now, we are ready for database design.

Designing Your Redshift Database with ERD

Let's design a "bike store" database with an ERD.

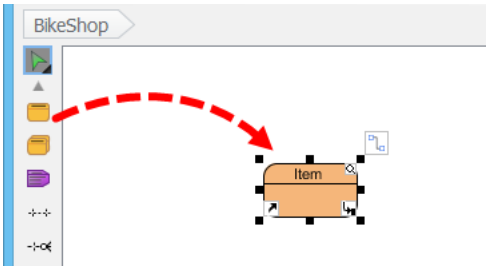
1. Create an ERD by selecting **Diagram > New** from the application toolbar. In the **New Diagram** window, select **Entity Relationship Diagram** and click **Next**.



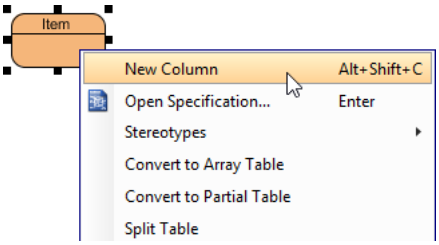
2. Enter *BikeShop* as the diagram name and then click **OK** to create the diagram.

3. On the right-hand side of the diagram, you will be prompted to select a model type. Just keep **Physical** selected. Only entities under the physical model will be processed in database exporting.

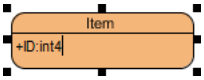
4. Select **Entity** from the diagram toolbar. Then, click on the diagram to create an entity. Name it *Item* and press **Enter** to confirm editing.



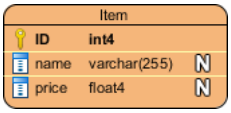
5. Right-click on the *Item* entity and select **New Column** from the popup menu.



6. Enter *+ID : int4* and press **Enter** to create a primary key column *ID* with an int4 type.

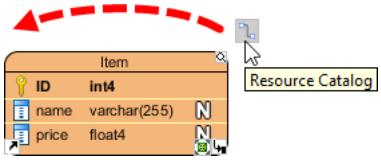


7. By default, a new column will be created upon the confirmation of the previous column. Now enter *name : varchar(255)* and *price : float4* for the next two columns.

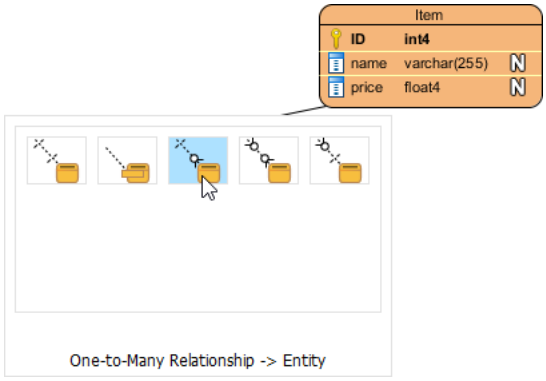


8. Press **Esc** to stop adding further columns.

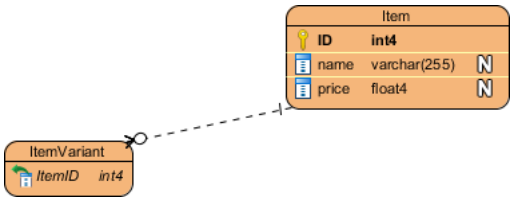
9. An *Item* may have different styles; for example, a bike jersey will have different sizes and colors. Let's create an *ItemVariant* entity from the *Item* entity with a one-to-many relationship. Move the mouse pointer over the *Item* entity. Click on the **Resource Catalog** icon at the top right of the shape and drag it out.



10. Release the mouse button. Select **One-to-Many Relationship -> Entity** in the Resource Catalog.



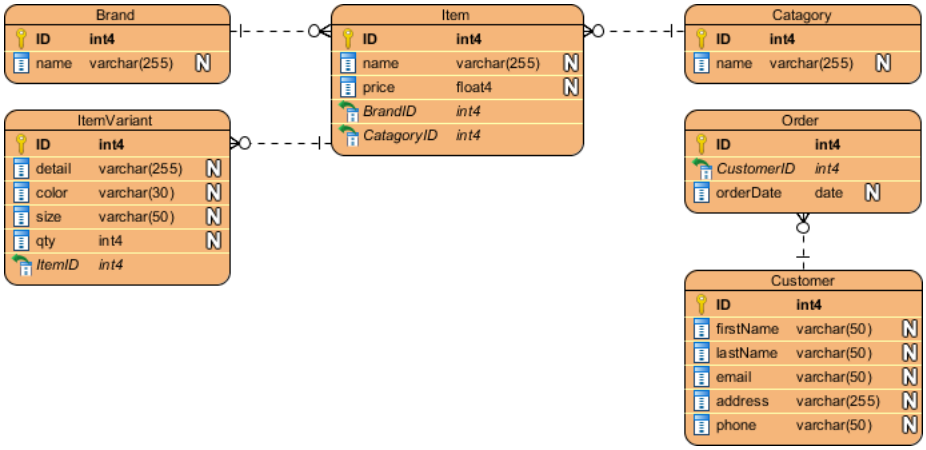
11. Enter *ItemVariant* as the entity name.



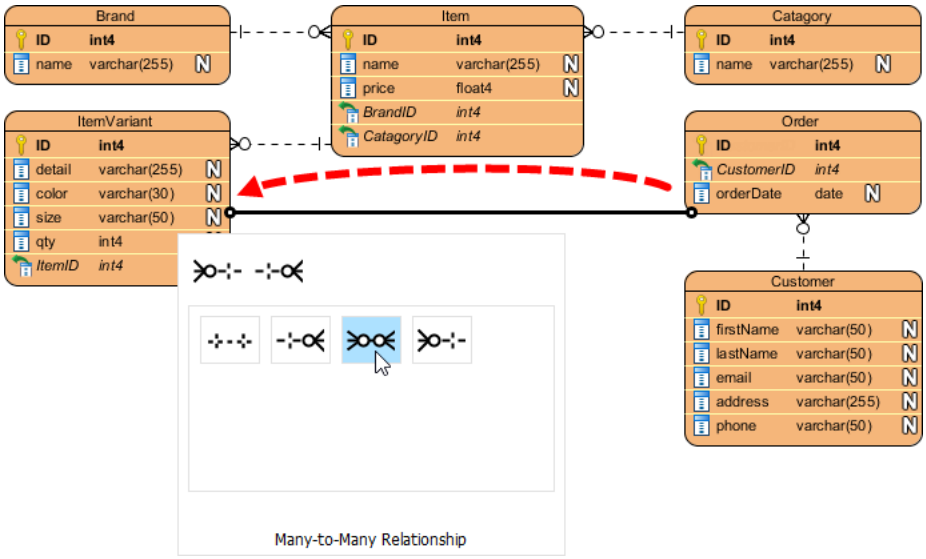
12. Right-click on the *ItemVariant* entity and select **New Column** from the popup menu, then enter the following columns.

Column Name	Type
+ID	int4
detail	varchar(255)
color	varchar(30)
size	varchar(50)
qty	int4

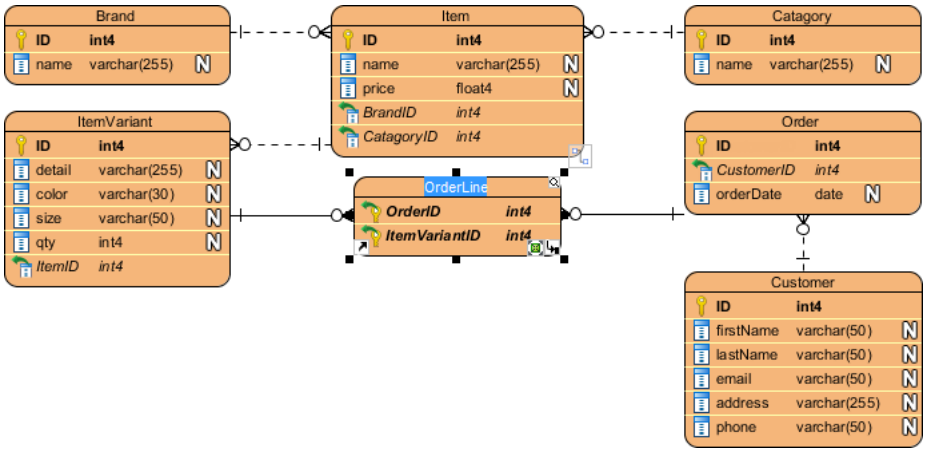
13. Repeat the steps above to create the ERD as below.



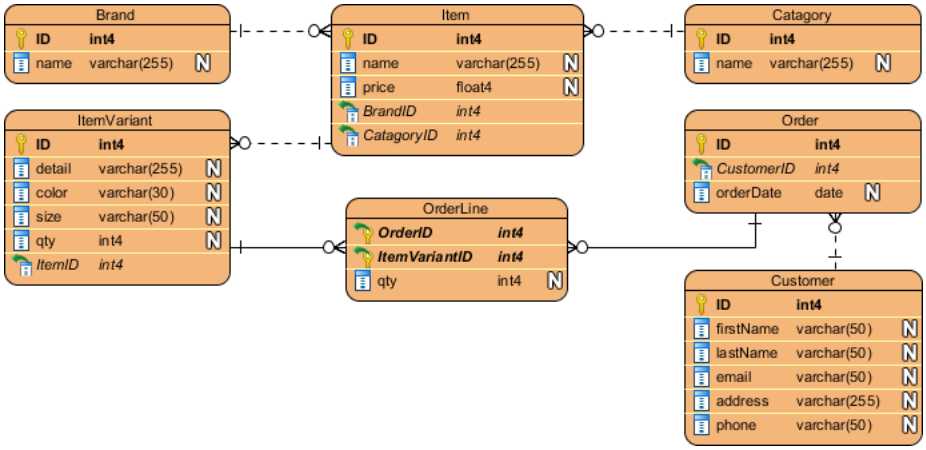
14. Finally, we have to store the items purchased in each order. We should relate the *Order* with *ItemVariant* instead of *Item* since *ItemVariant* is the entity storing the actual item. As each *Order* can have multiple *ItemVariant*, and each *ItemVariant* can be involved in multiple *Orders*, therefore it is a many-to-many relationship. Move the mouse pointer over the *Order* entity. Click on the **Resource Catalog** icon, drag to *ItemVariant*, and release your button. In Resource Catalog, select **Many-to-Many Relationship -> Entity**.



15. A link entity is created between *Order* and *ItemVariant*. Rename it to *OrderLine*.



16. Right-click on *OrderLine* and select **New Column** from the popup menu, then enter *qty : int*.



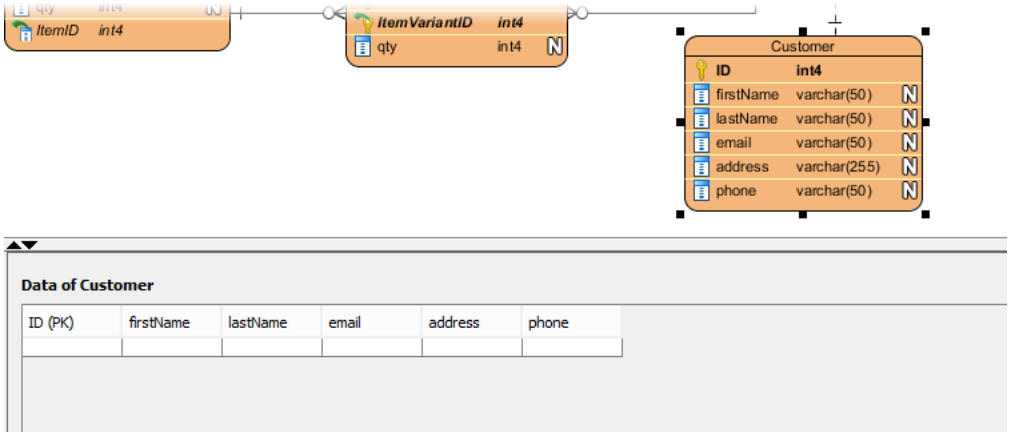
Now our ERD is ready, and we can start defining the sample data for our database.

Entering Sample Data

Sample data enables your team to have a basic idea of the kind of data that will be stored. Sample data can also be generated in a database during database generation, thus saving your time to prepare the sample in order to trial run your database. To enter sample data for your database design:

1. Right-click on the blank area of your ERD and select **Show Table Record Editor or View Editor**.

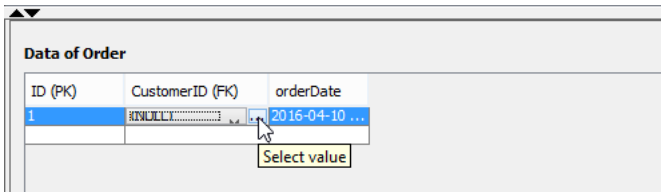
2. Select the entity *Customer* in the diagram. Now you will see the **Table Record Editor** listing the columns of the *Customer* entity.



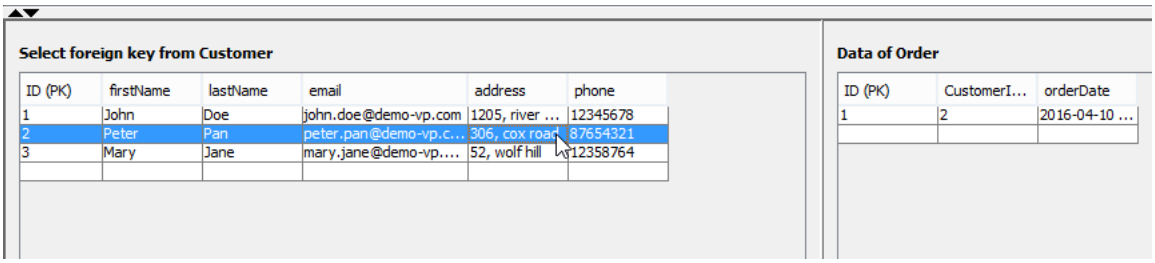
3. Enter the following customer details into the Table Record Editor.

ID (PK)	firstName	lastName	email	address	phone
1	John	Doe	john.doe@demo-vp.com	1205, river side	12345678
2	Peter	Pan	peter.pan@demo-vp.com	306, cox road	87654321
3	Mary	Jane	mary.jane@demo-vp.com	52, wolf hill	12358764

4. Let's move on to the *Order* entity. Since an *Order* must be placed by someone, we can pick a *Customer* record when filling in the sample data for *Order*. Press the **...** button in the FK cell in the **Table Record Editor**.



5. This will bring up the sample data we entered for *Customer*. Choose *Peter* from the list. The FK value for *Peter* will be filled in for you in the *Order* record.



6. Repeat the above steps to enter the following sample data.

Order

ID (PK)	date	CustomerID (FK)
1	2016-04-10 17:30:15	2
2	2016-04-10 18:20:22	1

Brand

ID (PK)	name
1	3R
2	Red Line

Category

ID (PK)	name
1	Components
2	Cloths

Item

ID (PK)	name	price	CategoryID (FK)	BrandID (FK)
1	Handle Bar	799	1	1
2	Head Set	999	1	2
3	Jersey	299	2	1

4	Shpes	1599	2	1

ItemVariant

ID (PK)	detail	color	size	qty	ItemID (FK)
1	full carbon	black	NA	50	1
2	NA	black	NA	40	2
3	NA	pink	NA	40	2
4	short sleeve	white	M	150	3
5	short sleeve	white	L	150	3
6	short sleeve	white	XL	50	3
7	short sleeve	white	S	100	3
8	short sleeve	blue	M	150	3
9	short sleeve	blue	L	150	3
10	short sleeve	blue	XL	50	3
11	short sleeve	blue	5	80	3
12	short sleeve	blue	XS	20	3
13	road	black	39	40	4
14	road	white	39	20	4

OrderLine

OrderID (PK)	ItemVariantID(PK)	qty
1	1	1
1	4	1
2	13	1

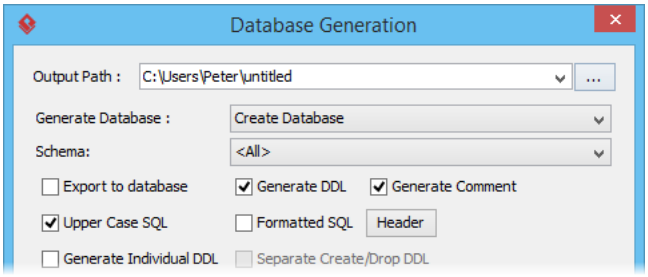
2	9	1
2	3	1

Once everything is ready, we can then move on to generating the database.

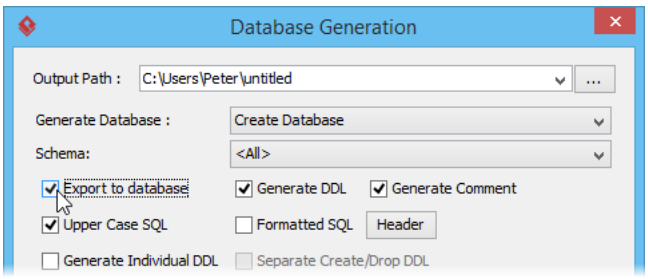
Generate database

The database design is done. Let's generate a Redshift database from it. To generate database:

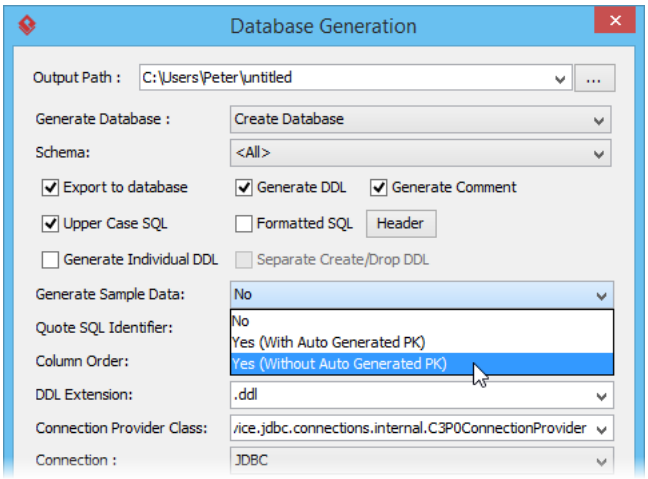
1. Select **Tools > DB > Generate Database...** from the application toolbar.
2. Specify the **Output Path** if you wish to keep the DDL file for your database.



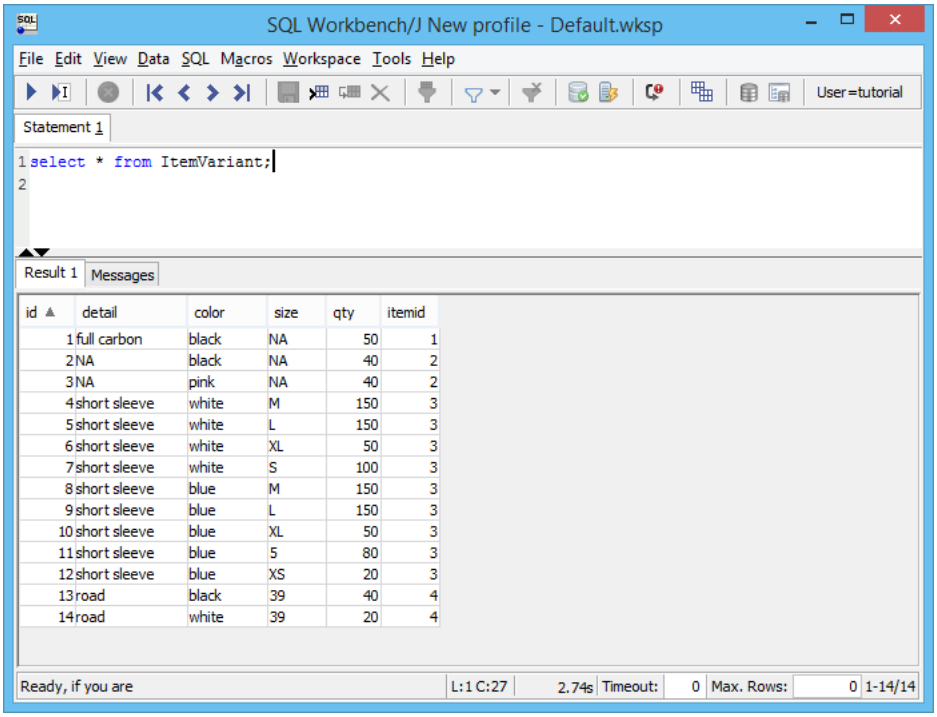
3. In the **Generate Database** field, keep **Create Database** selected.
4. Select **Export to database** to let Visual Paradigm directly execute the DDL script to your database. In practice, if you want to execute changes manually, uncheck this, but for this tutorial, check it first.



5. In **Generate Sample Data** field, select **Yes (Without Auto Generated PK)**.



6. Click **OK** to proceed. When finished generation, you can check Redshift and you should find the database tables created and with sample records inserted.



Related Links

- Reverse Engineering ERD from Redshift Database
- How to Produce Database Specification
- Provide Default Data for Database Design

- What is Entity Relationship Diagram (ERD)?

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