

How to Generating DB Specification from Database>

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Imagine one day, the database administrator in your company has retired and you are appointed to take care of your corporate database. There is no documentation available and everything is in the administrator's mind. Now, your boss asks you to make some changes on the database, what can you do?

With <u>Visual Paradigm</u>, you can reverse your database to Entity-Relationship (ER) models which allows you to analyze and document them by creating context-sensitive Entity-Relationship Diagram (ERD). Then, you can create a detailed database specification out of your model.



With the database specification, your database becomes understandable. In this tutorial, we will use the Online Shop with Microsoft SQL Server database as an example to show you how it works.

Reverse your database to Entity Relationship (ER) Model

The first step to do when creating specification for our database is to reverse it to an ER Model. To do this:

1. Go to Tools > DB > Reverse Database...



2. In the Select Language page of the Database to Data Model window, select Popup entities tree (can drag entities to diagram on demand) in the Result field. Click Next to proceed.

\$	Database to Data Model	×					
Visual Pa Select Lar	radigm Database Reverse nguage	*					
Language :	Java	~					
Result :	Popup entities tree (can drag entities to diagram on demand)	~					
Reverse	Popup entities tree (can drag entities to diagram on demand) Form a new diagram with the reversed entities Do not form diagram with the reversed entities						
Reverse	Stored Procedure						
Reverse	Reverse Trigger						
Group st	tored procedures and triggers in one shape						
Place rever	sed entities to model: <root></root>						

3. Select MS SQL Server (jDTS Driver) in the Driver field.

Database to Data Model					
Visua Data	l Paradigi base Confi	m Database Reverse guration		-	
Driver :		HSQLDB (In-process)		~ ~	
Driver file : IBM Informix (Server) Informix (DataDirect Connect Driver)		IBM Informix (Server) Informix (DataDirect Connect Driver)		^ 🛃	
Connection URL : MS SQL S		MS SQL Server (jTDS Driver) MS SQL Server (Microsoft Driver)	⊳	2	
۲	Database	MS SQL Server 2005 (Microsoft Driver) MS SQL Server (SequeLink Driver)			
0	jdbc:hsql	MS SQL Server (DataDirect Connect Driver) MS SQL Server (WebSphere Connect Driver)		~	
User :		sa	Password :		
✓ Set	as default		Test	Connection	

4. Press the green down arrow button next to **Driver file** field to download the driver in case you don't have one.



• Note that you need to have Internet connection as well as administrator permission in order to download and install the driver file.

5. Fill in the **Hostname, port number, Database name** as well as the **User** name and **Password** for connecting to your database server.

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Visua Data	l Paradigr base Confi <u>c</u>	n Datal guration	ase Reverse				
Driver :	:	v 😵					
Driver f	file :	< <jtd>S</jtd>	1.3.1>>	✓ … <u>↓</u>			
Connec	tion URL :			Production 🧹 🕐			
۲	Hostname	:	dbserver	: 1433			
	Database name : OnlineShop		OnlineShop				
0) jdbc:jtds:sqlserver://dbserver:1433/OnlineShop						
User :	[sa	Password : •	••••			
✓ Set	t as default			Test Connection			

- 6. Click **Test Connection** to confirm the correctness of connection settings. Click **Next** to proceed.
- 7. Choose **Selected Schema** then choose *dbo* In the **Selecting Schemas** page. Click **Next** to proceed.

Database to Data Model	×
Visual Paradigm Database Reverse Selecting Schemas	**
Select Schema : O All Schemas	
guest INFORMATION_SCHEMA	

8. Click **Next** again in the **Selecting Tables** page to reverse all the tables in our database to ER model.

\$	Database to Data Model	×
Visual Paradigm Database Reverse Selecting Tables		8
No. of table(s) found: 9 Available Tables: Filter Table (wildcard = *)	Selected Tables: dbo.Brand dbo.Customer dbo.Order dbo.Order dbo.Payment dbo.PaymentState dbo.Product dbo.Role dbo.Staff >> <<	

9. Have a review on the entities and columns which have been generated, then click **Finish** to complete the process.

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Reverse Database Preview	3 <mark>0</mark>	
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	< Back Finish Cancel Help	

Create Context Sensitive ERDs

Now, your database has been reversed to an ER model in the project. We can then move on to visualize them into an ERD, so that we can have better understanding of it. We can create multiple context sensitive ERDs and each focus on a small part of the database, so that they can be read and understood more easily. To create context sensitive ERDs:

1. By default, a new ERD has been automatically created. Let's rename it to *Order* and use it to model the entities related to the order processing of our shop. With the **Reversed Entities** window opened, double click on the diagram name in breadcrumb and enter *Order* as new name.

🔗 Order	
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- 2. Press **Enter** to confirm the change.
- 3. Uncheck the **Remove selection after drag to diagram** in the **Reversed Entities** window.



4. Drag and drop the entities related to order processing, including *Customer, Order, OrderLine, Payment* and *Product* into diagram.



Visual Paradigm

5. The ERD related to order processing is created and we can touch up its layout.



Now let's move on to create the other ERDs. Click Create ERD in the Reversed Entities 6. window to create a new ERD.

Select All	Select None	Inverse Selection	Create ERD

7. Drag and drop the entities again to create the following ERDs.

ERD	Entities				
Product Brand	Brand, Product				
Admin	Staff, Role				

Close the Reversed Entities window. 8.

Document the details of database

After creating the context sensitive ERDs, we now have a good understanding of our database. We can then start to document its details. To document the database, select the entities in the ERD and then enter the description for the entity in the **Description** pane. You can show the **Description** pane by clicking the Show Description button on the right of the status bar.

	~
Show Descrip	tion 🕀

Then, select the entities one by one and enter their description.

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Repeat the steps to fill in the documentation for the following entities.

Table	Description
Brand	The brand table stores the information about brands, which links to products.
Custome	r This table stores the contact information for customers.
Order	The order table stores the details about the different orders, including the date and time the orders were placed, as well as the special remark(s) of orders.
OrderLine This is a link entity between order(s) and product(s).	
Payment	Each customer can register for multiple credit cards for making payment but each order can only be settled by a single credit card.
Product	This table records all the information about products, including its name and description.
Role	This table stores the user role information.
Staff	This table stores the contact information for all staff.

Produce database specification

Now, we are ready to produce the specification for our database. To produce the specification as PDF:

1. Select **Tools > Doc. Composer** from the application toolbar.



2. Click on Build Doc from Scratch.



3. You are presented the **Diagram Navigator**, **Template Pane** and an empty document (editor). Let's create content in the document. Select the ERD *Order* in **Diagram Navigator**. Then, drag the **Basic** template out from the **Template Pane** and release it on the document to create content. You should see an image of your ERD with its name under it.



4. Keep *Order* selected in **Diagram Navigator**. This time, drag the **Data Dictionary** template onto the document, below the image.

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Diagram Navigator 급 무 ×	$\overrightarrow{i} \sub{i} F = \overrightarrow{i}$	r 🖪 🚃	HH+								•
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Entity Relationship Diz Order Product Brand Order Order Order Order Order Order Order Order Order			the orders were placed, as well as the special remark (s) of orders.								
E- Business Modeling		OrderLine	This is a link	→ OrderId	int	0	true	false	false		
< Business Process Dian			between order(s) and	ProductId	int	0	true	false	false		
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		Payment	Each	Card	varchar	16	false	true	false		
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Data Dictionary			multiple credit cards for making	Customer Id	int	0	false	false	false		
Data Dictionary 2			payment but each order	Exp	varchar	4	false	true	false		
🖫 Details			can only be	1D	int	0	true	false	false		
Project Management			settled by a single credit card.	PaymentS tateId	int	0	false	false	false		
Viewpoint		Product	This table	BrandId	int	0	false	false	false		
			the	Desc	varchar	255	false	true	false		
			products,	1 ID	int	0	true	false	false		
			name and description.	🚺 Name	varchar	255	false	true	false		

- 5. Repeat the previous two steps on diagram *Product Brand* and *Admin*.
- 6. As you can see the table is a bit narrow to fit the entity description nicely. Let's change the orientation of document to landscape. To do this, click on **Document Properties...** above the document editor.



7. Open the Page Setup tab and then select Landscape for Page Orientation.

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iagram name: Document1							
Document Info Options	Page Setup Cover Pag	e Watermark					
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	Page size: 1 Bottom: 0	11.69 x 8.27 .667 inches 숮					
						ОК	Cancel

- 8. Click **OK** to confirm.
- 9. Refresh the document content by clicking on the **Refresh** button above the document editor.



10. Let's export the document as a PDF. Click on the **Export** button at the top right of the document editor and then select **PDF Document...** from the popup menu.



11. In the **Export PDF Doc.** window, enter the output path of the PDF file and the **Document Info** such as **Title**, **Author** and **Subject**.

\$		Export PDF Doc.	×							
Output path: C:\DB	🗹 Launch viewer									
Refresh before export										
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Author:	Peter									
Subject:	Online Shop									
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12. Click Export.

After that, the details of your database are generated to a PDF document, which allows you to have further study or share with your colleagues.

DB_Spec.pdf - Adobe Acrobat Reader DC – 🗖											×			
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Image: second											^			
			Data Dictionary											
			Entity Name	Entity Description	Column Name	Column Description	Data Type	Length	Primary Key	Nullable	Unique			
			Brand	The brand table stores the information	Desc		varchar	255	faise	true	false			
		about brands, which links to products.	1 ID		int	0	true	false	false					
					1 Name		varchar	255	false	true	false			
			Product	This table records all the information	Brandid		int	0	false	false	false			
			about products, including its name an	Desc		varchar	255	false	true	false				
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Download Sample Database

You can <u>download the sample database script</u> to walk through this tutorial.

Watch this Tutorial on YouTube

Here is the video version of this tutorial. How to Produce Database Specification

Related Links

- Database Design tools in Visual Paradigm
- What is Entity Relationship Diagram (ERD)?
- Other Documentation Generation Features in Visual Paradigm



Visual Paradigm home page (https://www.visual-paradigm.com/)

Visual Paradigm tutorials (https://www.visual-paradigm.com/tutorials/)