

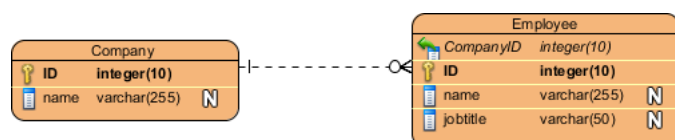


## How to Keep ERD and Data Dictionary Synchronized?

Written Date : January 20, 2014

### What is Data Modeling?

Data modeling is the process of representing data objects and their relationships to other objects. Data modeling is performed to define the data requirements of an information system in supporting business processes.



### What is a Data Dictionary?

A data dictionary is a textual description of data objects and their inter-relationships. It is commonly used to confirm data requirements and for database developers to create and maintain a database system. A data dictionary describes the physical attributes of a data element. What is the data type (string, boolean, integer, etc.)? What is the maximum length? What is the format?

#### 1.1. Data Dictionary

Entity Name	Entity Description	Column Name	Column Description	Data Type	Length	Primary Key	Nullable	Unique
Employee	An employee is someone who work in a company	CompanyID		integer	10	false	false	false
		ID	For the unique identification of employee records.	integer	10	true	false	false
		name	Name of the employee.	varchar	255	false	true	false
		jobtitle	The position of the employee in a company.	varchar	50	false	true	false

### What is this Tutorial About?

This is a data modeling tutorial written to outline the steps you need to take to perform data modeling and produce a data dictionary in Visual Paradigm.

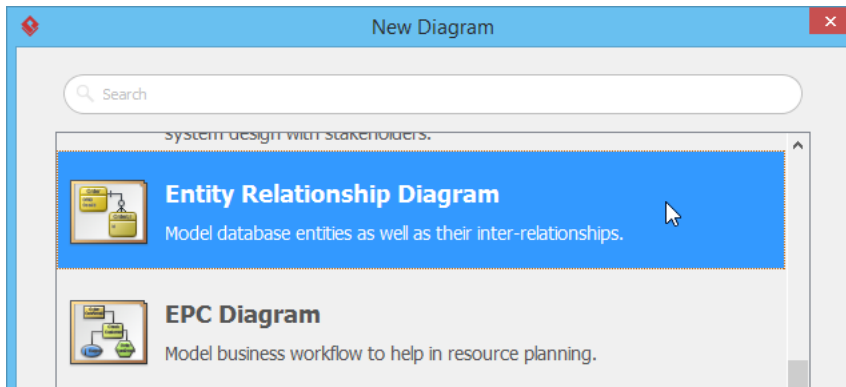
### Preparation

To complete this tutorial, make sure you have Visual Paradigm downloaded and installed. [Click here to download Visual Paradigm](#) if you do not have it installed.

### Part I - Data Modeling

In this section, we will use the ERD tools to create a simple database design.

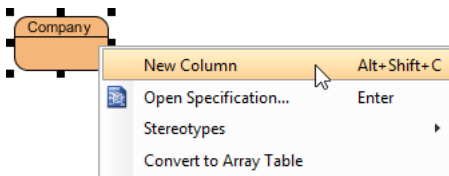
1. Create a new project in Visual Paradigm. You can create a project by selecting **File > New Project** from the main menu.
2. To create an Entity Relationship Diagram, select **Diagram > New** from the toolbar.
3. In the **New Diagram** window, select **Entity Relationship Diagram** and click **Next**. Give the diagram a name and click **OK** to confirm.



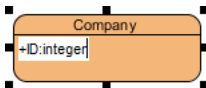
4. Draw a *Company* entity. To draw an entity, select **Entity** from the diagram toolbar (on the left-hand side of the diagram) and click on the blank area of the ERD to create one.



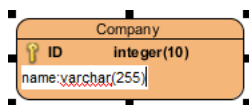
5. Right-click on the *Company* entity and select **New Column** from the popup menu.



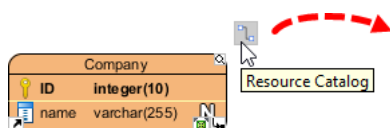
6. Enter **+ ID : integer**. The "+" stands for a primary key, while *ID* is the name of the column and *integer* is its type.



- Press **Enter** and create another column: *name* : *varchar(255)*. This column is not a primary key, so you don't need to add a "+" before it. It's a *varchar* with a length of 255.



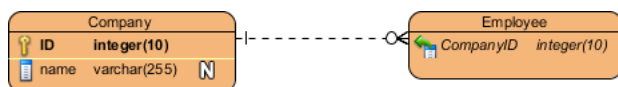
- Press **Enter** to confirm editing.
- Press **Esc** to complete column creation.
- Let's create one more entity. Move your mouse pointer over the *Company* entity. Click on the **Resource Catalog** icon at the top right and drag it out.



- Release the mouse button in the empty space on the right-hand side. Select **One-to-Many Relationship -> Entity** from the Resource Catalog.

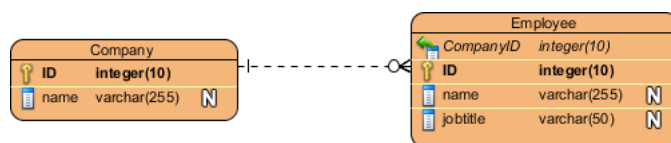


- Enter *Employee* as the entity name.

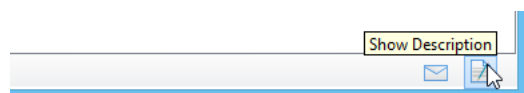


- Right-click on the *Employee* entity and select **New Column** from the popup menu.
- Again, enter *+ID* : *integer* to create a primary key for this entity.
- Press **Enter** and create another column: *name* : *varchar(255)*.
- Press **Enter** and create another column: *jobtitle* : *varchar(50)*.
- Press **Enter** to confirm the edit.

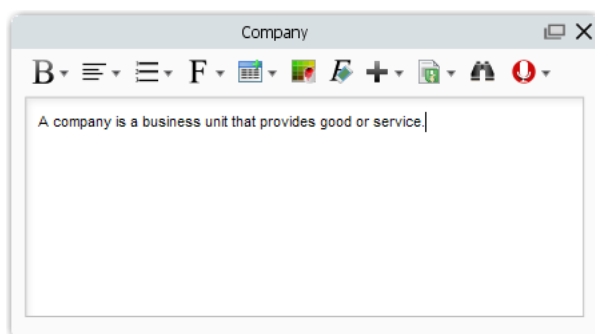
18. Press **Esc** to complete column creation.



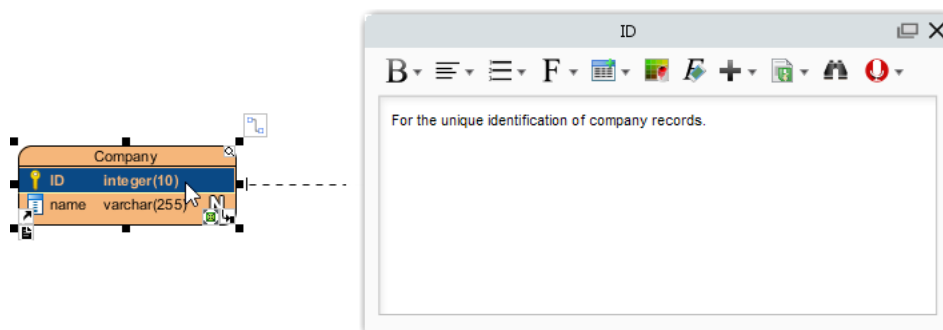
19. Let's describe the entities and columns in detail. Open the **Description Pane** by clicking the **Show Description** button at the bottom right of the application window.



20. Click on the *Company* entity and enter its description: "A company is a business unit that provides goods or services."



21. Similarly, click on *Employee* and enter its description: "An employee is someone who works in a company."
22. Repeat the steps for the columns in the *Company* entity:  
*ID* - For the unique identification of company records.  
*name* - The name of the company.

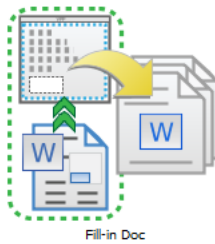
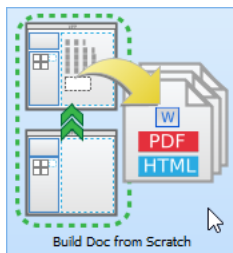


23. Repeat the steps for the columns in the *Employee* entity:  
*ID* - For the unique identification of employee records.  
*name* - The name of the employee.  
*jobtitle* - The position of the employee in a company.

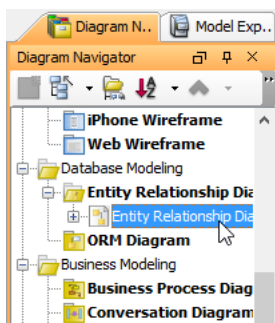
## Part II - Producing a Data Dictionary

Time to produce a data dictionary! There are several reporting tools you can select to produce a data dictionary. In this tutorial, let's try Doc. Composer.

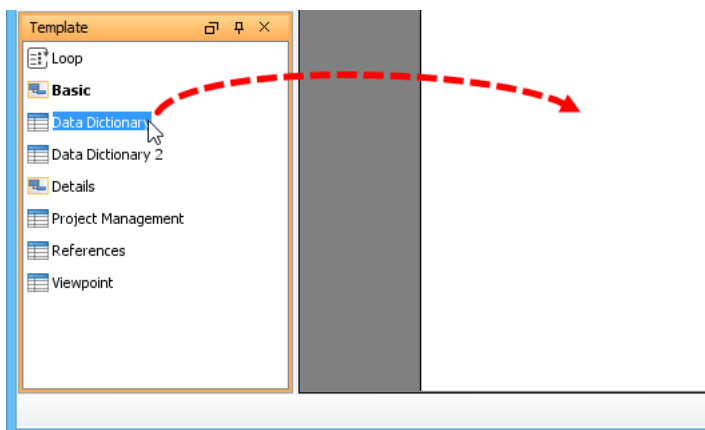
1. Select **Tools > Doc. Composer** from the toolbar.
2. Select **Build Doc from Scratch** in Doc. Composer.



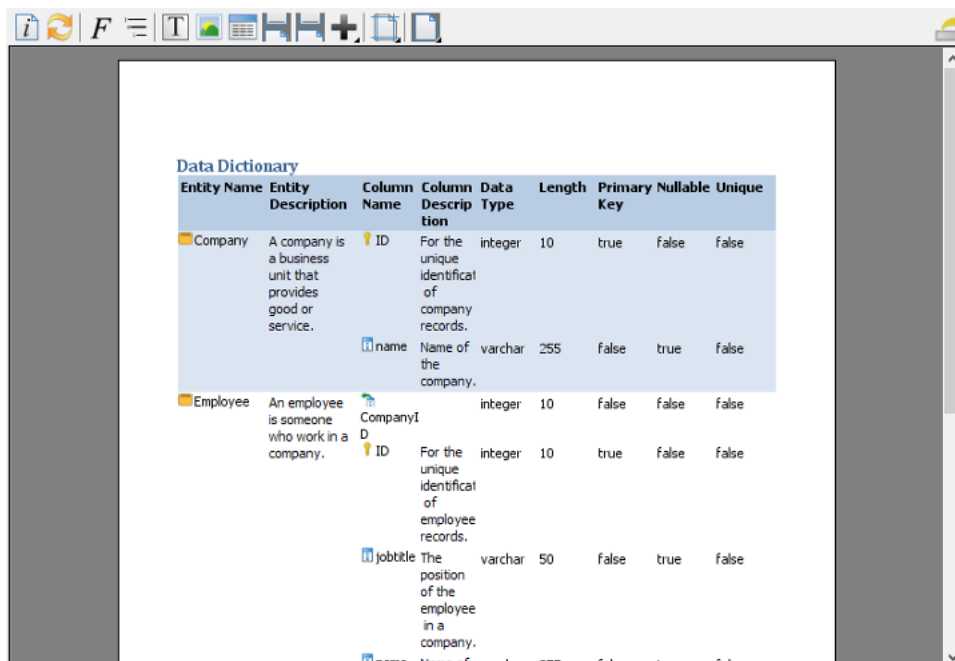
3. This creates an empty report. You need to fill it with content. In this tutorial, the data dictionary. Now, click on the ERD listed under the **Diagram Navigator**.



4. The **Template Pane** (at the bottom left of the application window) lists the available templates for an ERD. Select **Data Dictionary** and drag it to the document.

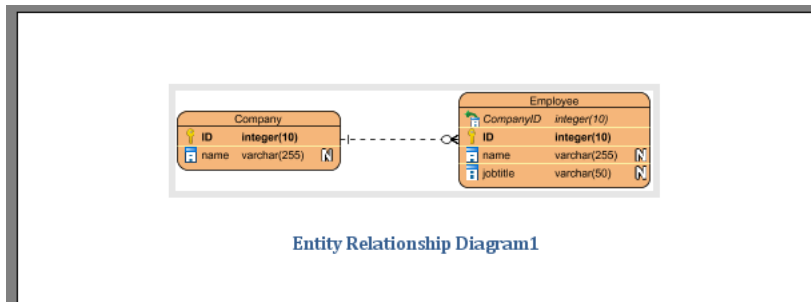


5. Release your mouse button to produce the content of the data dictionary.



6. Are you happy with the content? Let's try something different. Create a new document. Again, select **Tools > Doc. Composer** from the toolbar and then select **Build Doc from Scratch** in Doc. Composer.
7. Click on the ERD listed under the **Diagram Navigator**.

8. This time, select the **Basic** template and drag it onto the document.



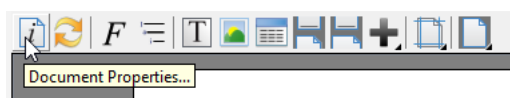
9. Select the **Data Dictionary 2** template and drag it onto the document, under the ERD image.

Entity Relationship Diagram1

**Data Dictionary**

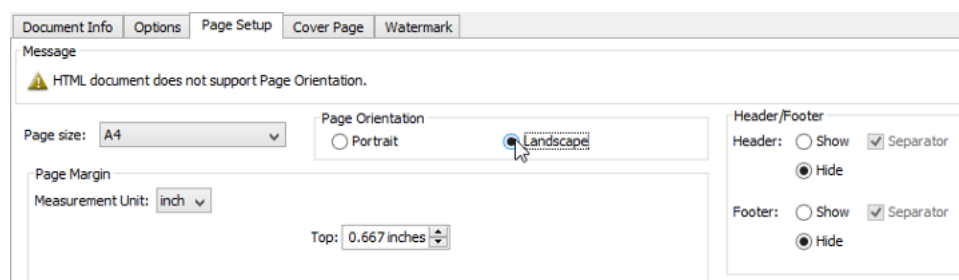
Entity Name	Entity Description					
Column Name	Column Description	Data Type	Length	Primary	Nullable	Unique Key
Company	A company is a business unit that provides good or service.					
ID	For the unique identification of company records.	integer	10	true	false	false
name	Name of the company.	varchar	255	false	true	false
Employee	An employee is someone who work in a company.					
CompanyID		integer	10	false	false	false
ID	For the unique identification of employee records.	integer	10	true	false	false
jobtitle	The position of the employee in a company.	varchar	50	false	true	false
name	Name of the employee.	varchar	255	false	true	false

10. Let's change the pages to show in landscape. Click on **Document Properties...** in the toolbar.



11. In the **Document Properties** window, open the **Page Setup** tab.

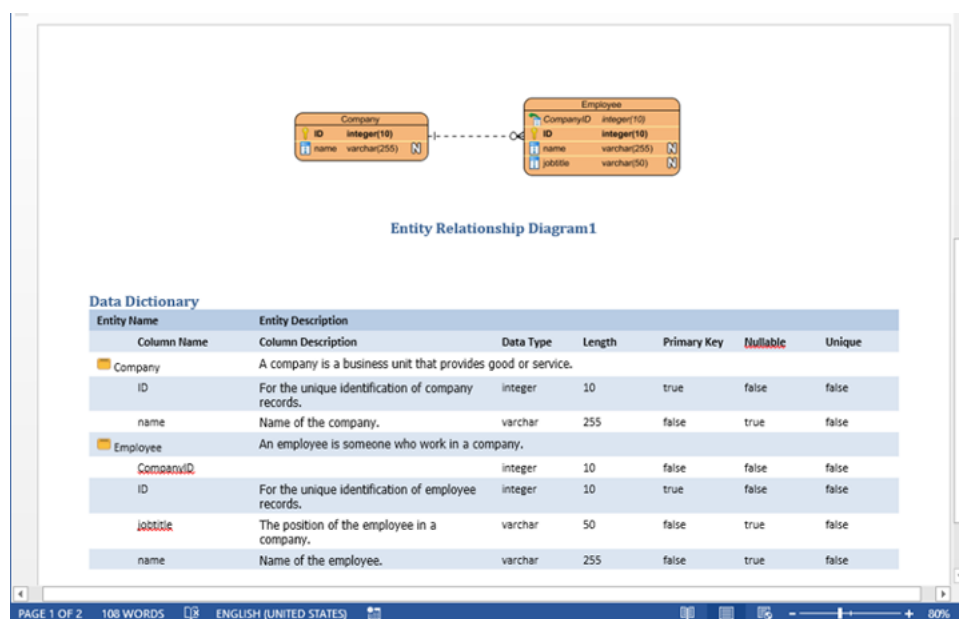
12. Select **Landscape** for **Page Orientation**.



13. Click **OK** to return to Doc. Composer. Looks pretty nice now, doesn't it?

14. Now, let's produce a Word document from Doc. Composer. Click the **Export** button at the top right corner of Doc. Composer, and then select **Word Document...** from the popup menu.

15. In the **Export Word Doc.** window, specify the output path of the Word file and click **Export**.



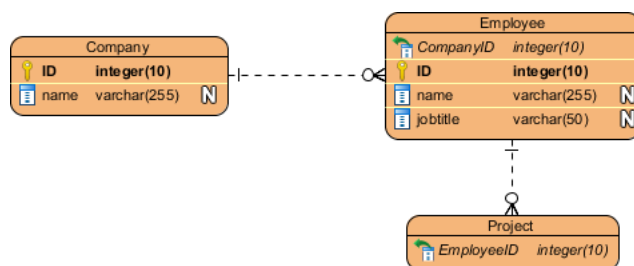
You now have a Word document of your data dictionary. In practice, you can send this to your client, the database administrator, or anyone who needs to refer to it.

### Part III - Keeping the Data Dictionary Up-to-Date

One of the most important, yet challenging, parts of documenting a design is keeping the document up-to-date, showing the latest changes made in the design. Imagine if you have added more entities to the ERD, or have updated the definition of some entities. You will probably need to update the data dictionary to reflect the latest changes. The Doc. Composer provides a 'refresh' function to accomplish this. Let's try it.

1. Open your ERD.

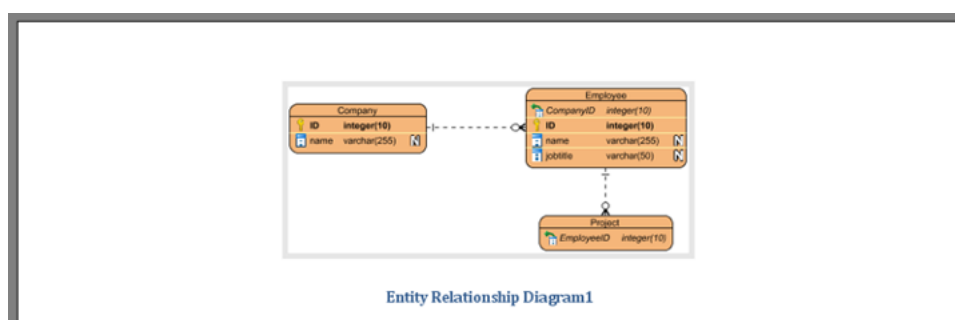
2. Add an entity named *Project* from the *Employee* entity, with a one-to-many relationship in between.



3. Now, go back to your document with the data dictionary. On top of the document, there is a toolbar. Click the **Refresh** button.



4. You should see the document content updated to show the new entity in the image.



So now, you can export an updated data dictionary and send it to anyone who needs it. :-)

#### Resources

1. [Company-and-Employee-ERD.vpp](#)
2. [sample-data-dictionary.docx](#)

#### Related Links

- [User's Guide - Drawing entity relationship diagram](#)
- [User's Guide - Developing a report in Report Composer](#)
- [Tutorial - How to Customize Element Templates in Doc. Composer?](#)

- [What is Entity Relationship Diagram \(ERD\)?](#)



[Visual Paradigm home page](https://www.visual-paradigm.com/)  
(<https://www.visual-paradigm.com/>)

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