

Creating Data Model Diagrams in MySQL Workbench

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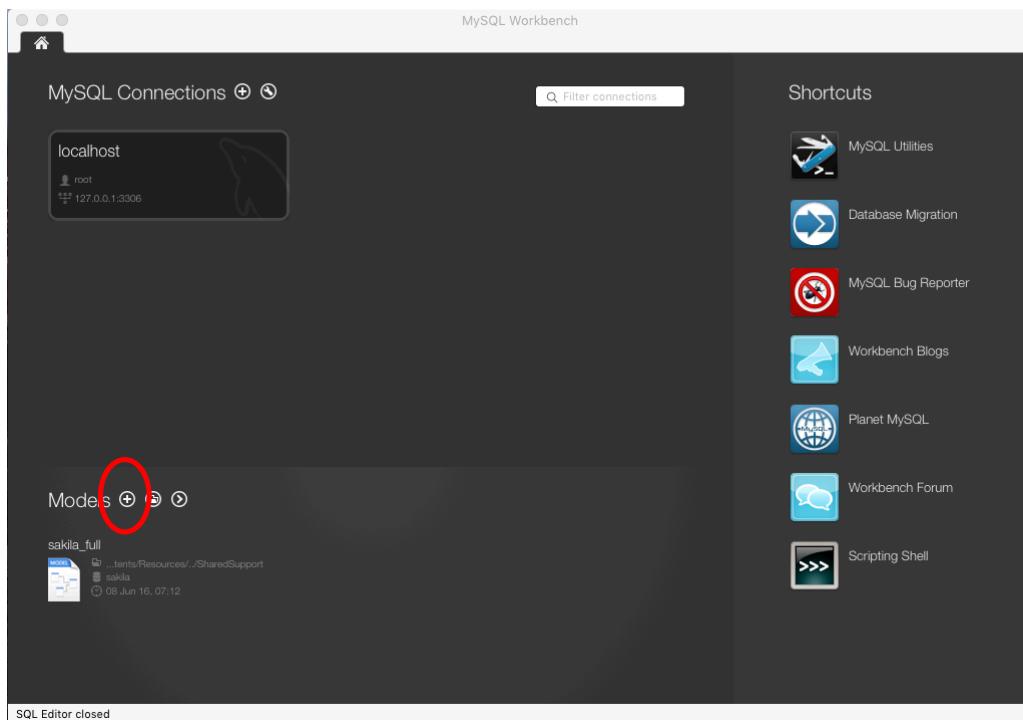
MySQL Workbench is a software application that contains tools for creating and managing databases using the MySQL database engine. The following sections provide details for how to create a data model entity-relationship diagram using MySQL Workbench.

Creating a New Data Model Diagram

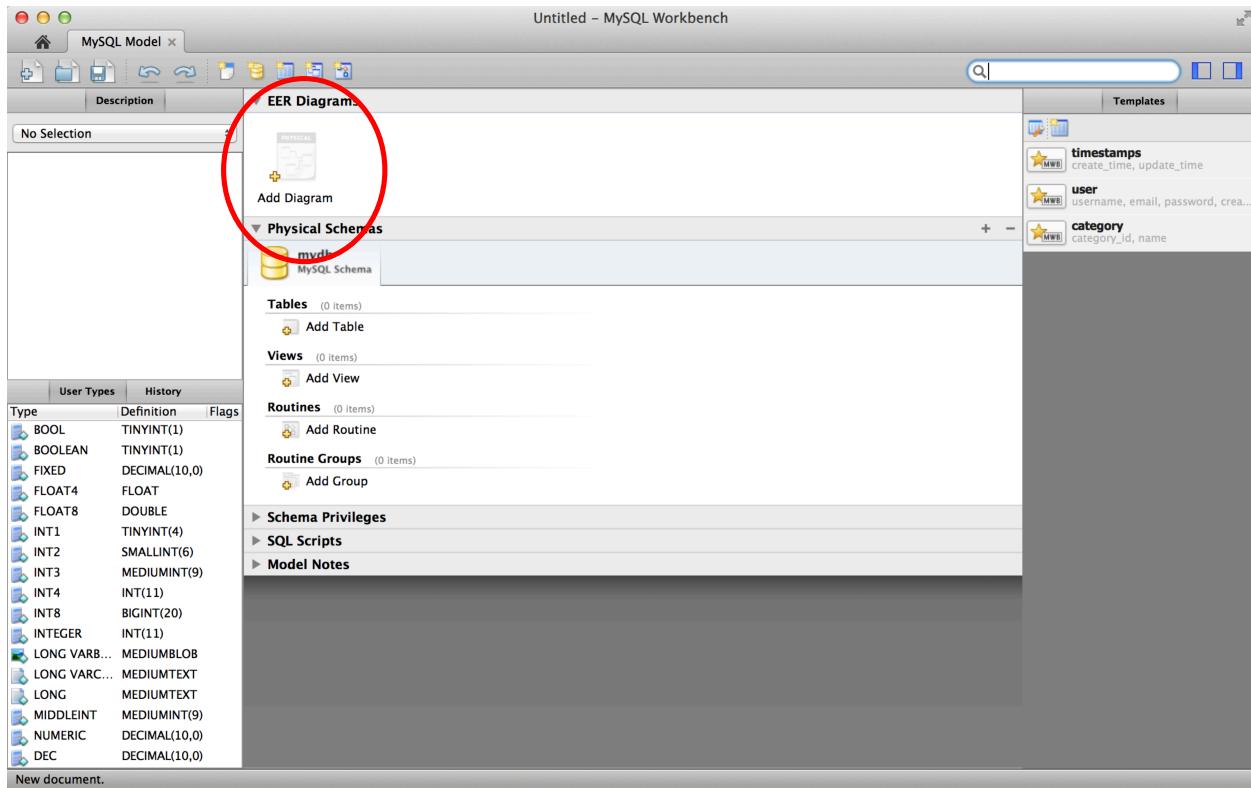
Windows Users: Open MySQL Workbench by clicking Start → All Programs → MySQL → MySQL Workbench.

Mac Users: Open MySQL Workbench by double clicking on the MySQL Workbench icon in your Applications folder.

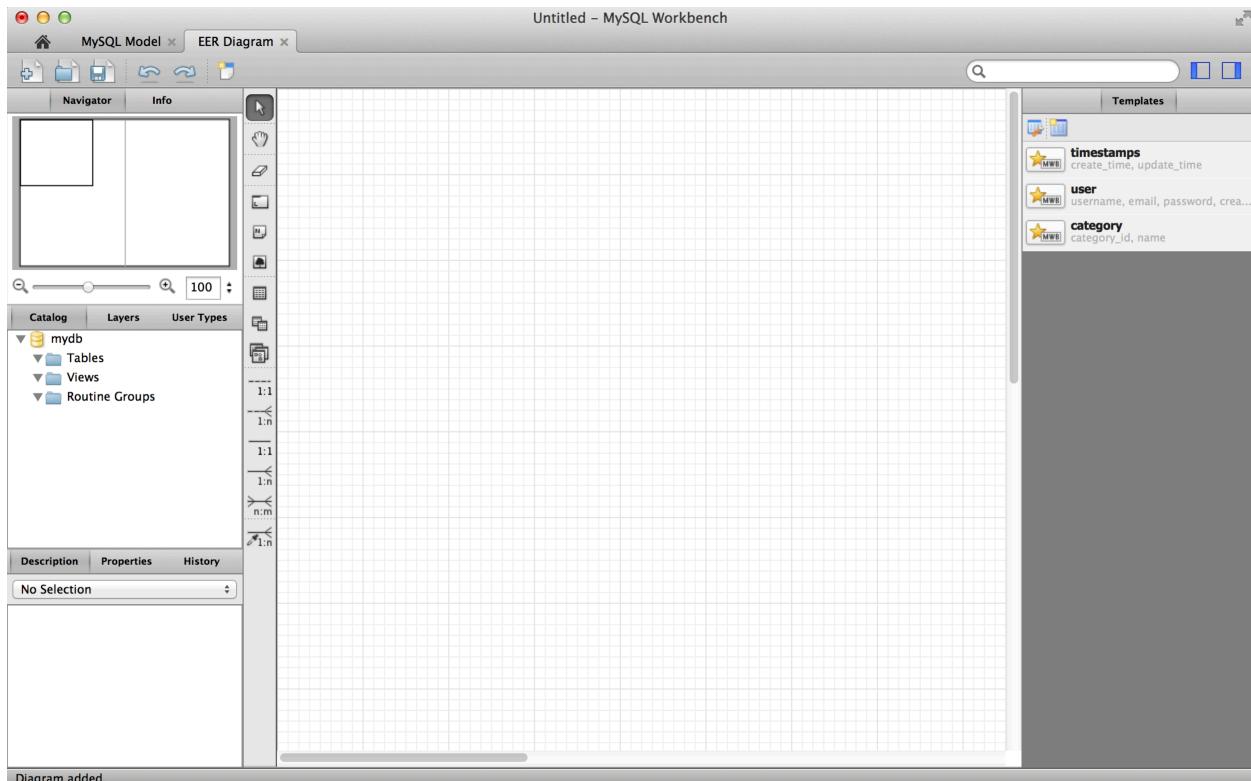
MySQL Workbench will open and You will see the following window:



Near the bottom left of the window, click on the “New Model” button (the plus sign next to Models – see the red circle above. The following window will open:

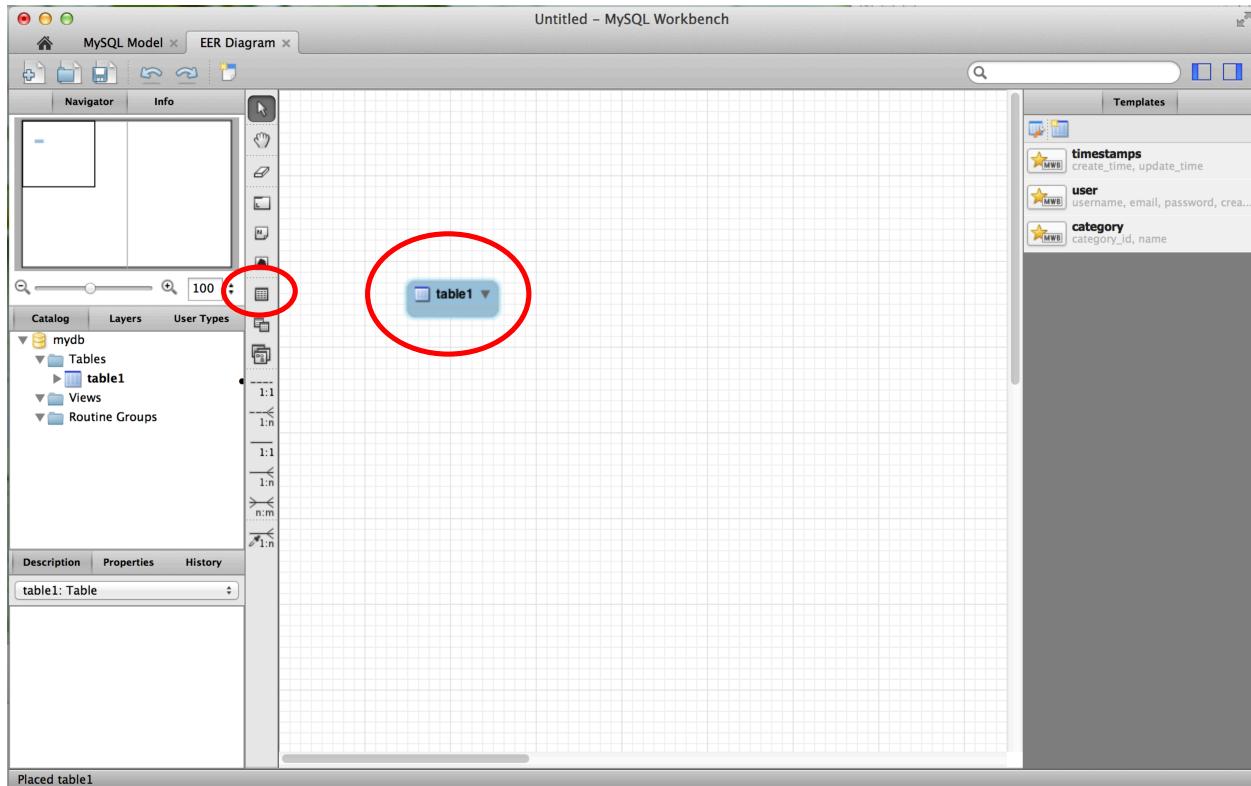


Double click on the “Add Diagram” icon. Your window should now look like the following:



Creating Entities

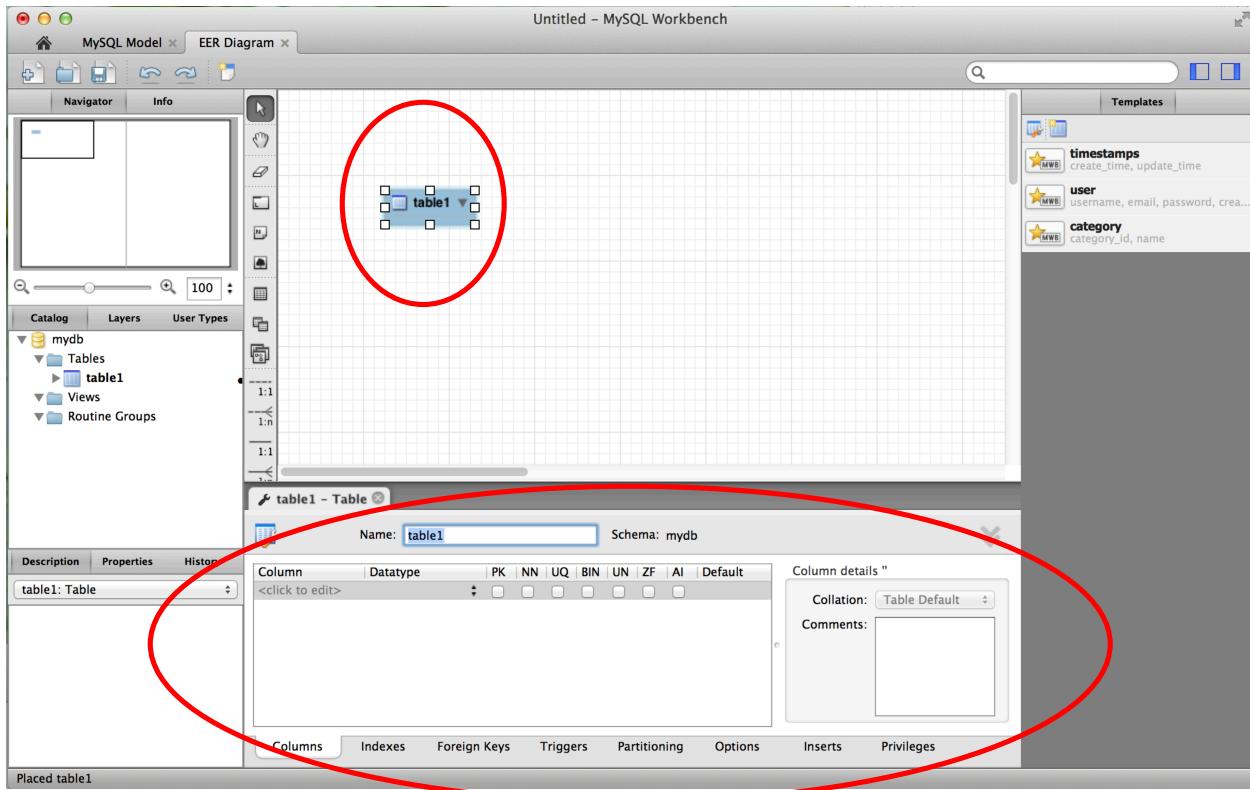
To create new entities in your drawing, click on the “New Table” button on the toolbar just to the left of the gridded canvas. Then click on the canvas. You will see a new table/entity show up. Since MySQL is a relational database management system, entities in MySQL Workbench are called tables.



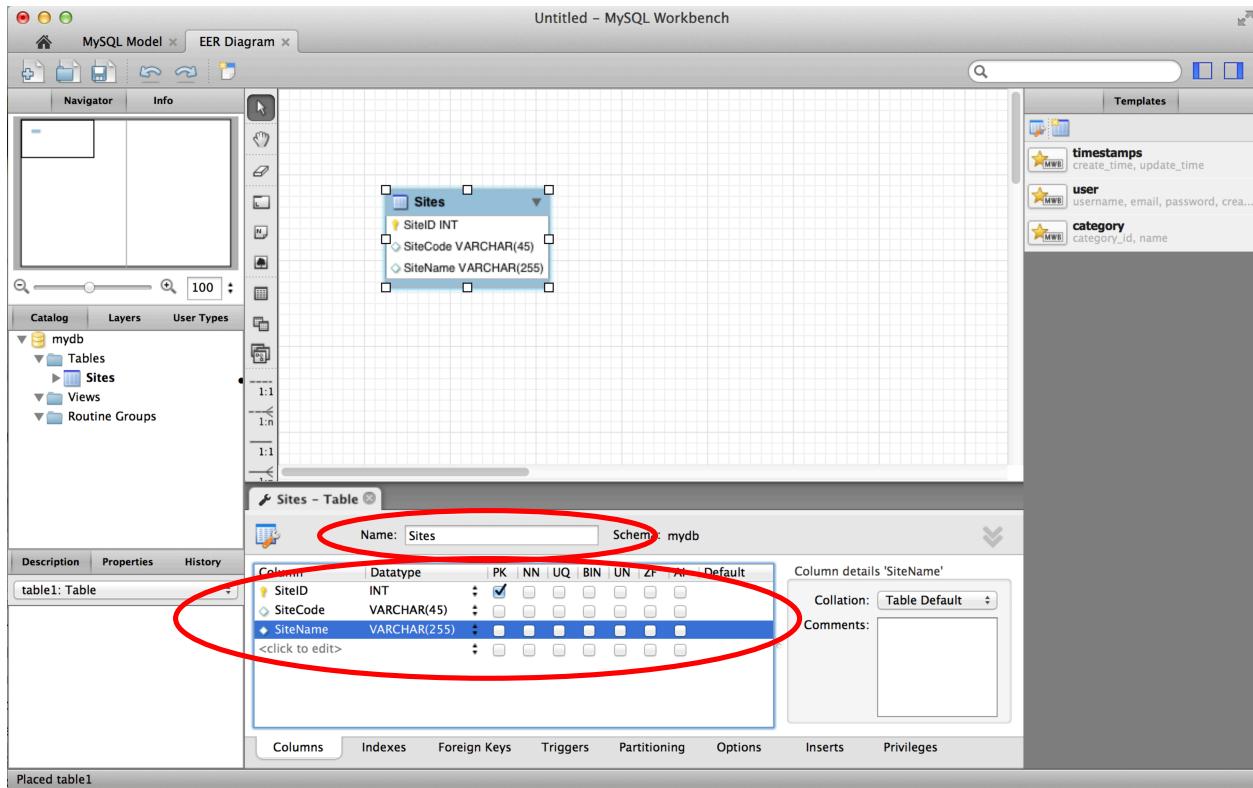
To adjust the location of an entity on your drawing, make sure the pointer tool is selected on the toolbar and then click on an entity and drag it to a new location.

Naming and Adding Attributes to Entities

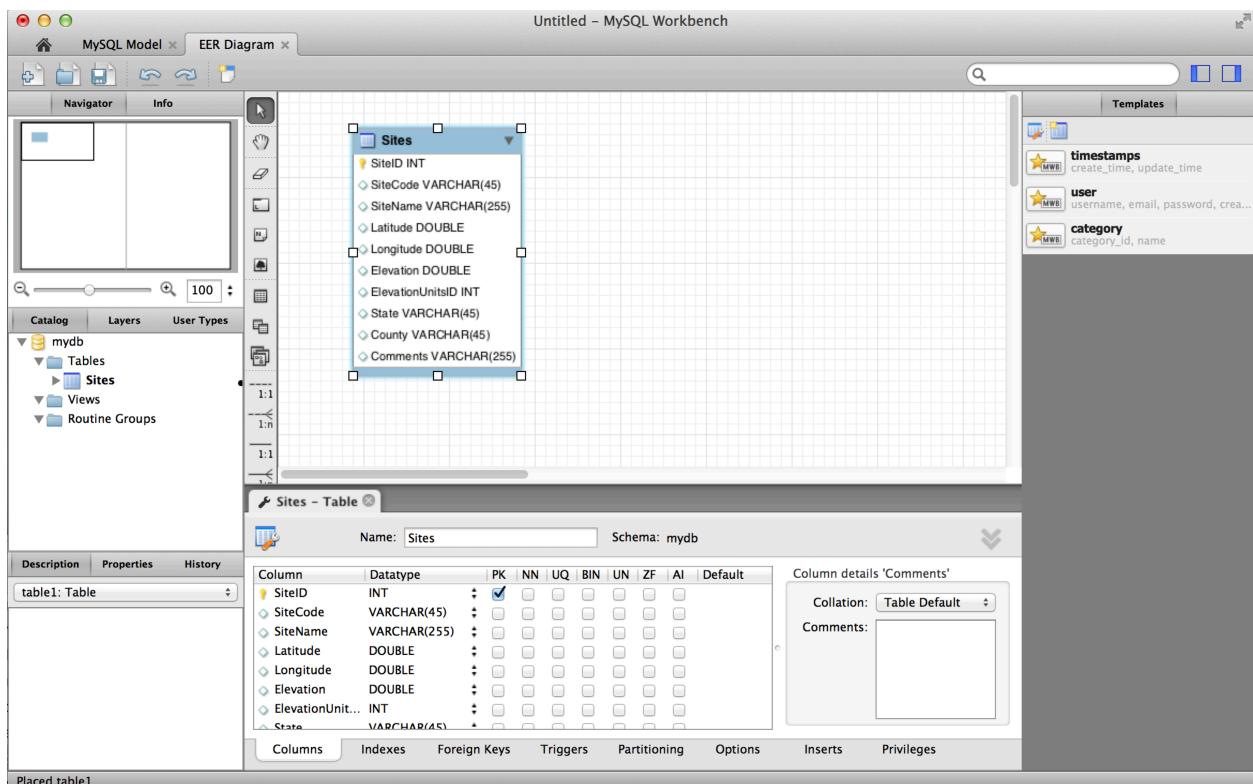
When you double click on an entity in the drawing you will notice that it becomes selected and the panel at the bottom of the window will reflect the properties of the selected entity.



To set the name of an entity, click in the Name text box and type in a name for the entity. To add attributes to your entity, click in the gray area under the “Column” header near the bottom of the window. Create a name for the attribute that you want to add and then select an appropriate data type from the drop down list under “DataType.” You can also choose whether the attribute should be used as the Primary Key (PK). You can add additional attributes at any time by double clicking on the entity and then typing an attribute name in the next empty row in the table.

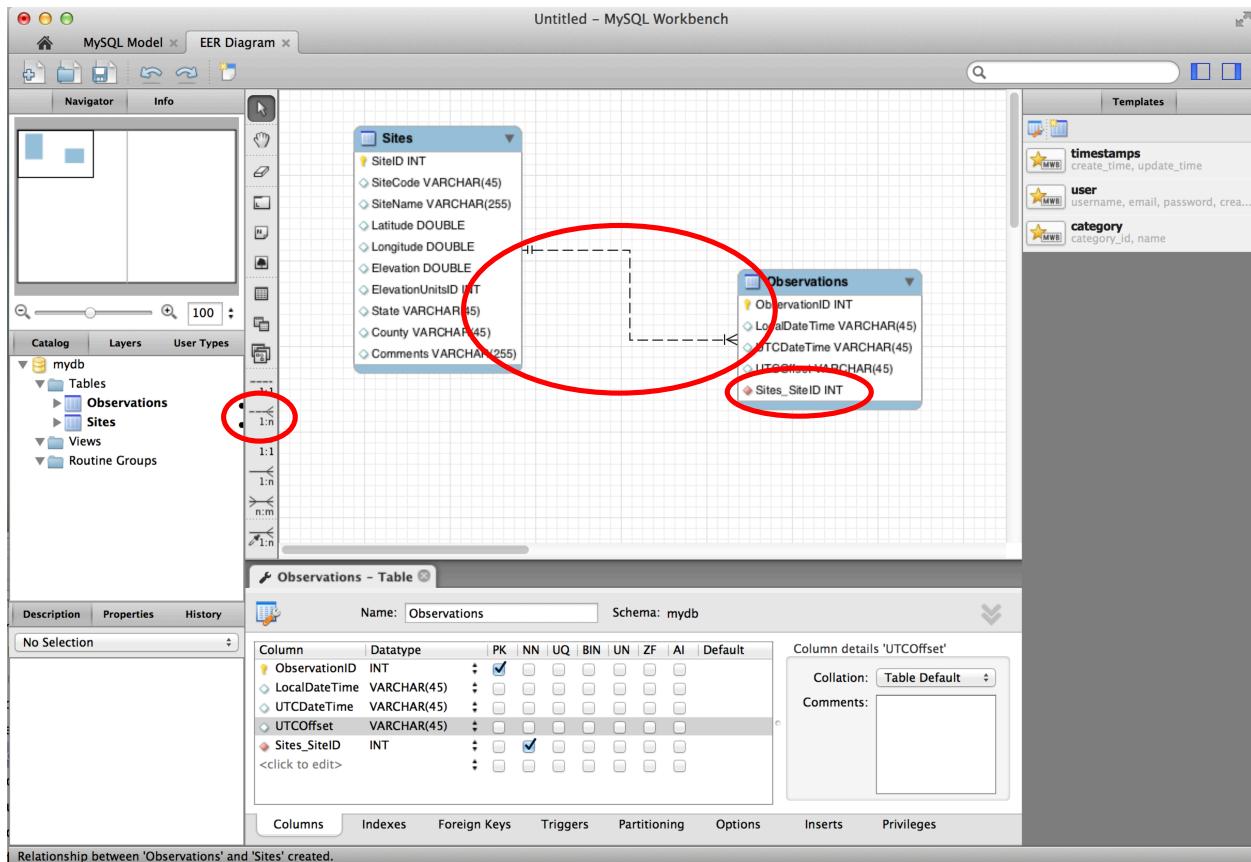


A finished “Site” entity might look like the following. The primary key attribute is designated at the top of the entity.

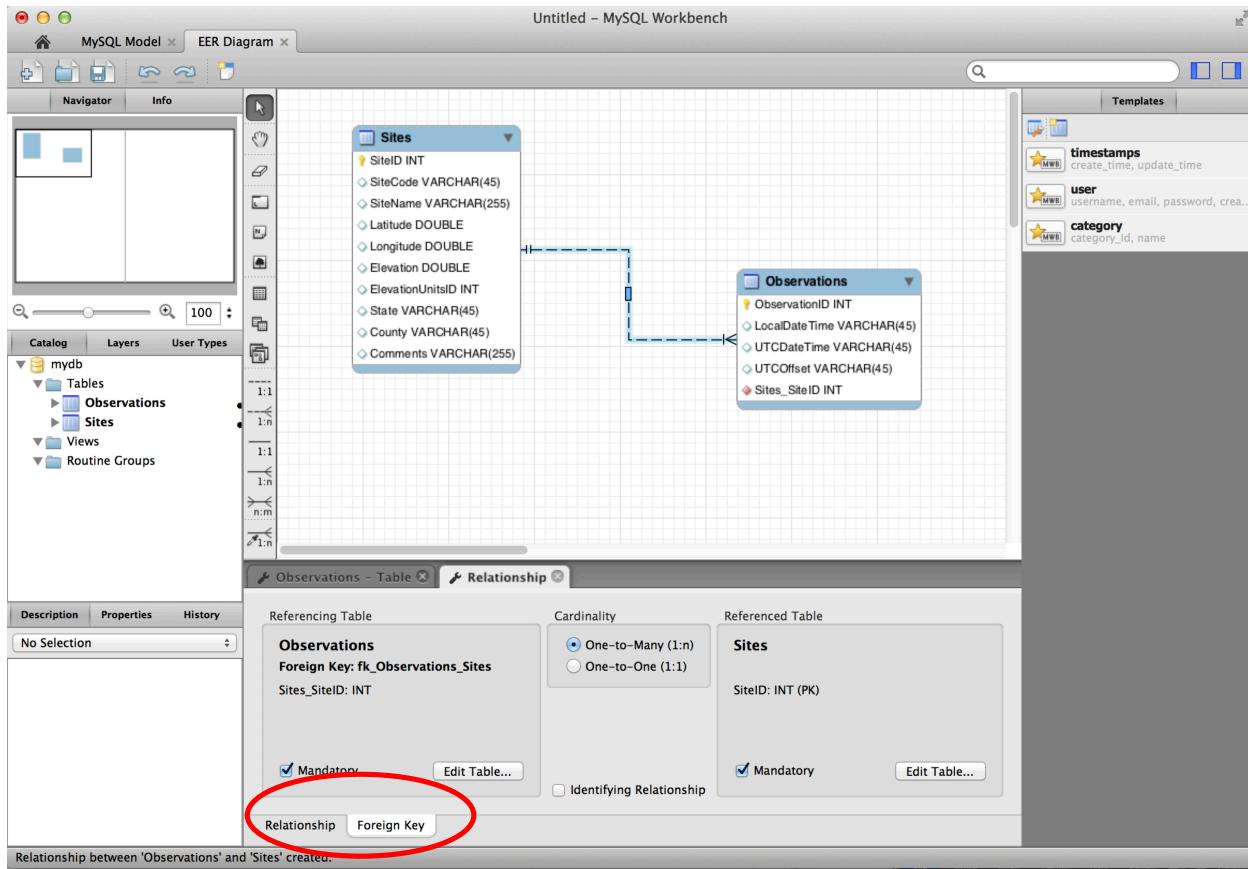


Creating Relationships

Before you create a relationship between two entities, you need to first create a primary key for each entity. You can then create a relationship by first clicking on the desired type of relationship on the toolbar and then clicking first on the child table (Observations) followed by the parent table (Sites). You will notice that the relationship is created and a foreign key is added to the child table. If you mess up, just right click on the relationship and select “Delete” from the context menu.



Next, if you double click on the relationship, its properties will be shown in the panel at the bottom of the window. If you click on the “Foreign Key” tab at the bottom, you can use the available options to modify the Cardinality and Participation for the relationship.



In the example above, you would be telling MySQL Workbench how a “Site” entity is related to “Observations.” In this example, the most likely relationship is for one “Site” to be related to “Zero or more” “observations.” So, you would want to uncheck the check box next to the “Mandatory” label on the “Observations” side of the relationship.

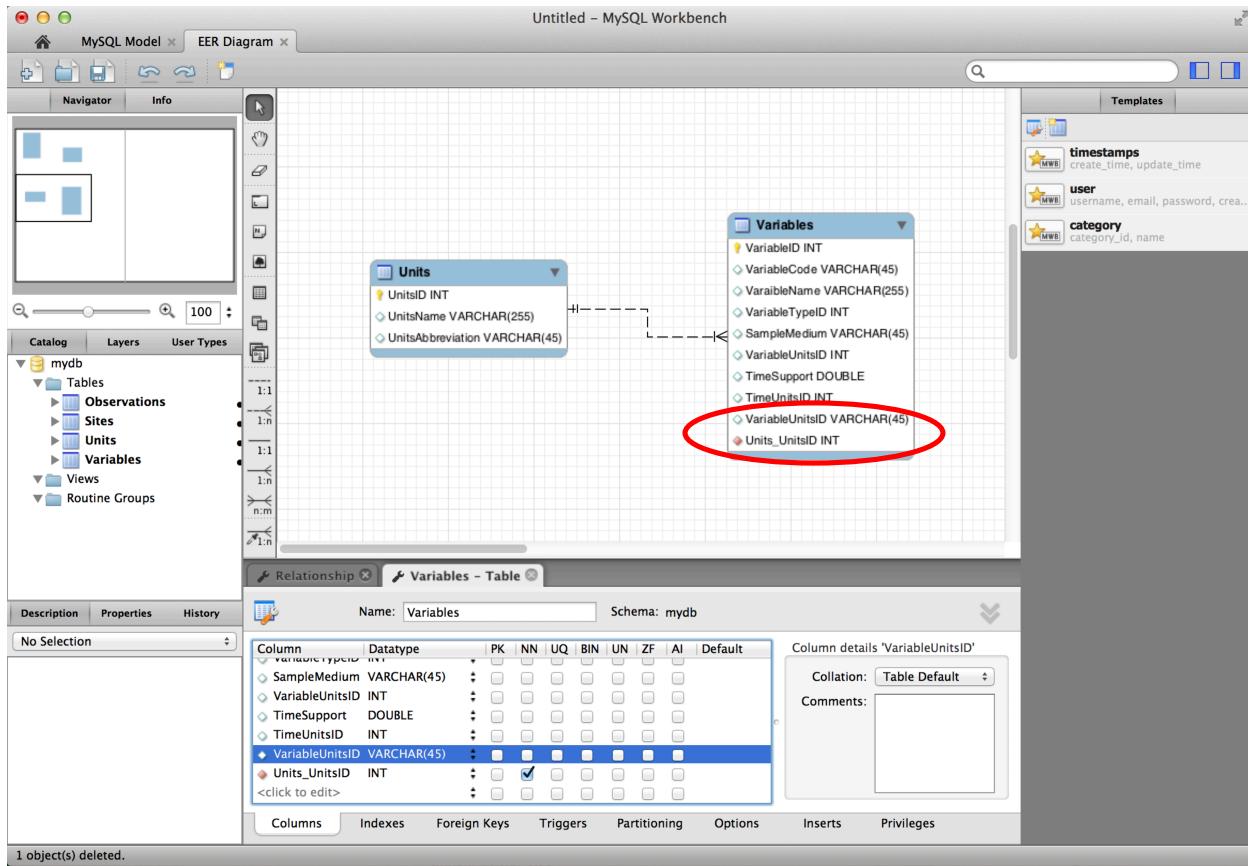
Changing the Way Objects are Displayed

To change the way the objects are displayed on your diagram, you can set options under the “Model” pull down menu. My recommendations for the assignment are the following:

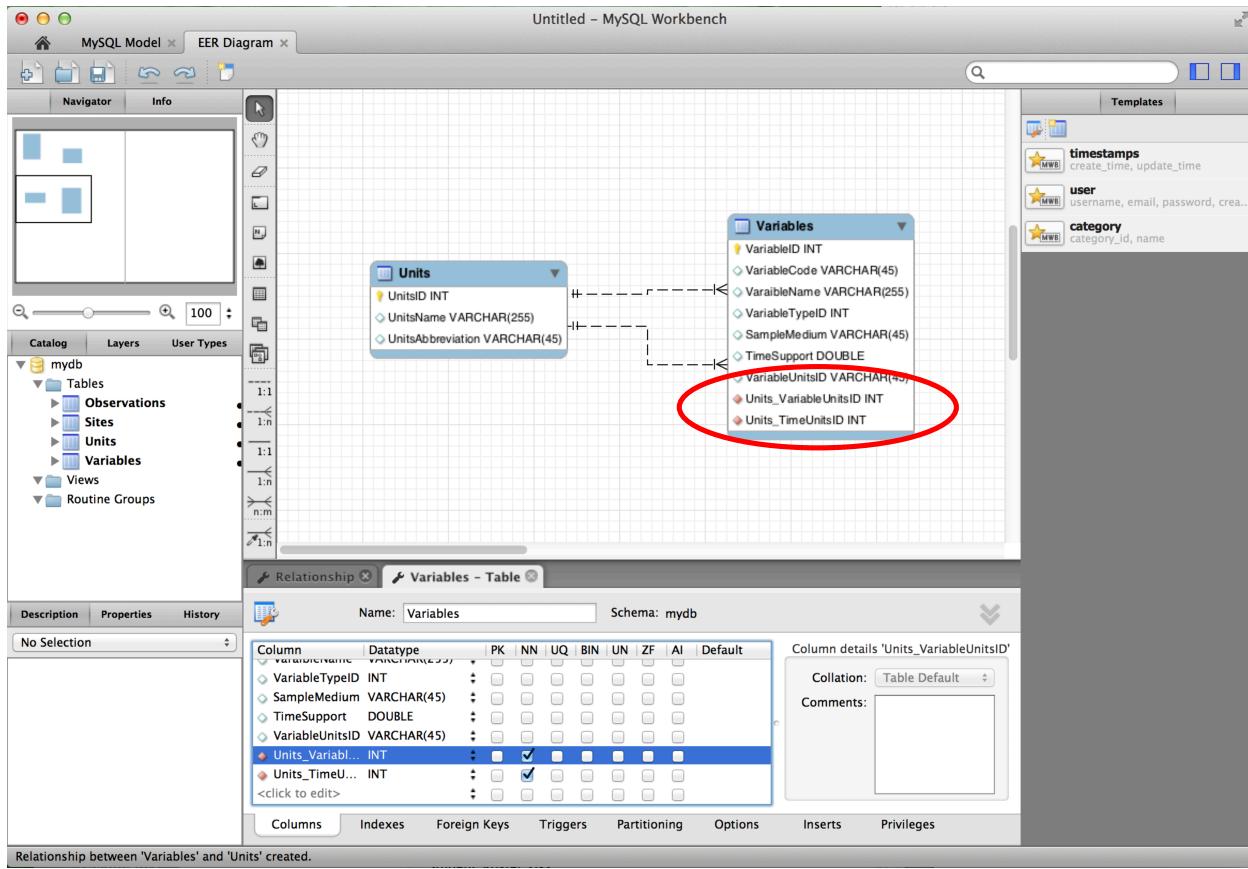
Model → Object Notation → Workbench (Simplified)
 Model → Relationship Notation → Crow’s Foot (IE)

Modifying Relationships

You may find it necessary at some point to modify what MySQL Workbench creates by default when you add relationships between entities. Or, you may want to be able to create multiple relationships between two entities. For example, you may have defined a “Variables” entity that has attributes called “VariableUnitsID” and “TimeSupportUnitsID” that you want to relate to an entity that defines attributes of Units. This will require two relationships between the two entities. When you add the first relationship between the Units entity and the Variables entity (see the following example), MySQL Workbench will automatically add an attribute called “Units_UnitsID” to the Variables entity.



You can rename the attribute that was added to the Variables table as the foreign key to something like “Units_VariableUnitsID”. Then you can repeat the steps to create a second relationship between the two entities. Your result would then look something like the following:



Saving and Exporting the Diagram

When you finish your model, you will want to save it and then export it as an image so you can paste it into a Word document as an appendix. At the top of the MySQL Workbench window, click the “File” menu and then click “Save Model.” Select where you want to save your model file, give it a name, and then click “Save.”

To export your model as an image, click on the “File” menu and then select Export → Export as PNG. Select where you want to save your PNG file, give it a name, and then click “Save.” You can then insert the PNG file into a Word document.