MySQL workbench—How to create ER diagram

Last amended: 29th Oct, 2025
My folder: D:\data\OneDrive\Documents\Database systems
MySQL Workbench manual is here

Contents

Given any relational database, here is screen-by-screen help to how to draw its ER-diagram in MySQL server Workbench. We assume you already have '*employees'* database or your database of interest already loaded in MySQL server.

(For Ubuntu OS only: For loading '*employees'* database into mysql server, please first execute the file '*er_diagram.sh*' in your virtual machine's folder: */home/ashok/Documents/erd and normalization exercises/erd_in_workbench* in the Ubuntu_database VM.)

Configuration and shortcuts:

A. All SQL Editor and Workspace bench configuration changes are saved to file:
   C:\Users\ashok\AppData\Roaming\MySQL\Workbench\wb_options.xml

   (A copy saved in file at folder:
   D:\OneDrive\Documents\database_systems\mysql_workbench\workbench_configuration)\

B. Useful Workbench shortcut summary:

Ctrl+T	Open Query tab
Ctrl+SHIFT+O	Open sql script file
Ctrl+SHIFT+ENTER	Execute all queries
Ctrl+ENTER	Execute query in Query Editor
Ctrl+R	Reverse Engineer diablogbox
Ctrl+G	Forward Engineering
Ctrl+SHIFT+G	Write Forward Engineer code to SQL file
Ctrl+S	Save the diagram model as *.mwb (To import it double click on this file)
Ctrl+O	Open model (ERD) file

C. ERD diagram shortcuts summary:

Hit T and click on the workspace	Create table
Ctrl+S	Save the diagram model as *.mdb (To import a model, double click on this file)

Open Workbench

In Windows use Start Menu to open MySQL Workbench (right figure). In VM, click as in left-figure

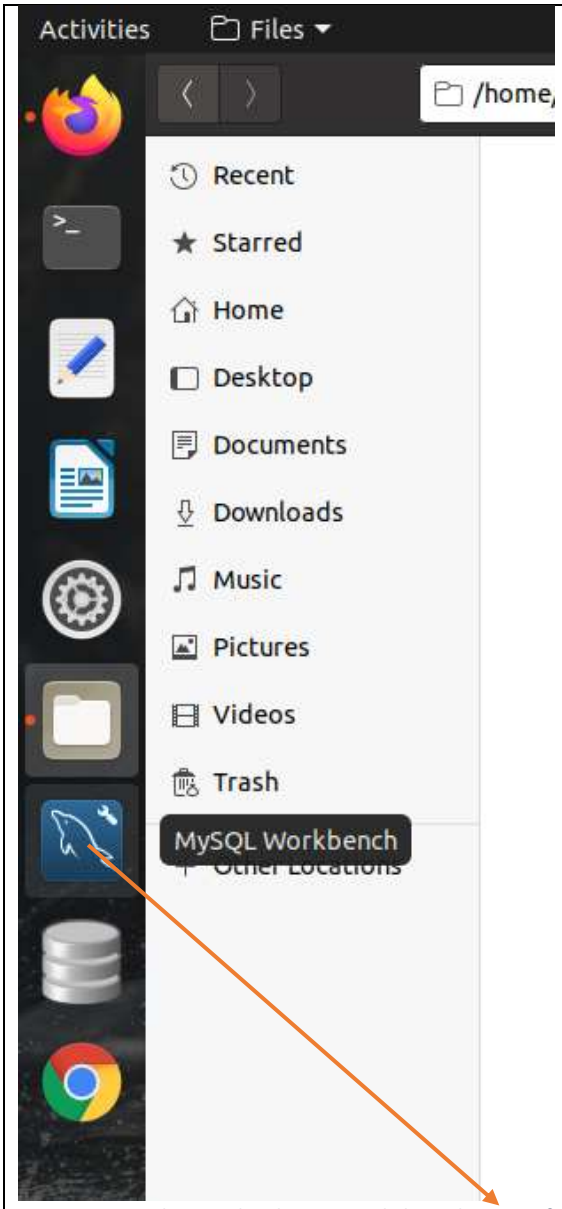

Figure 1: : In Ubuntu_database VM, click on the icon of MySQL Workbench to open it.

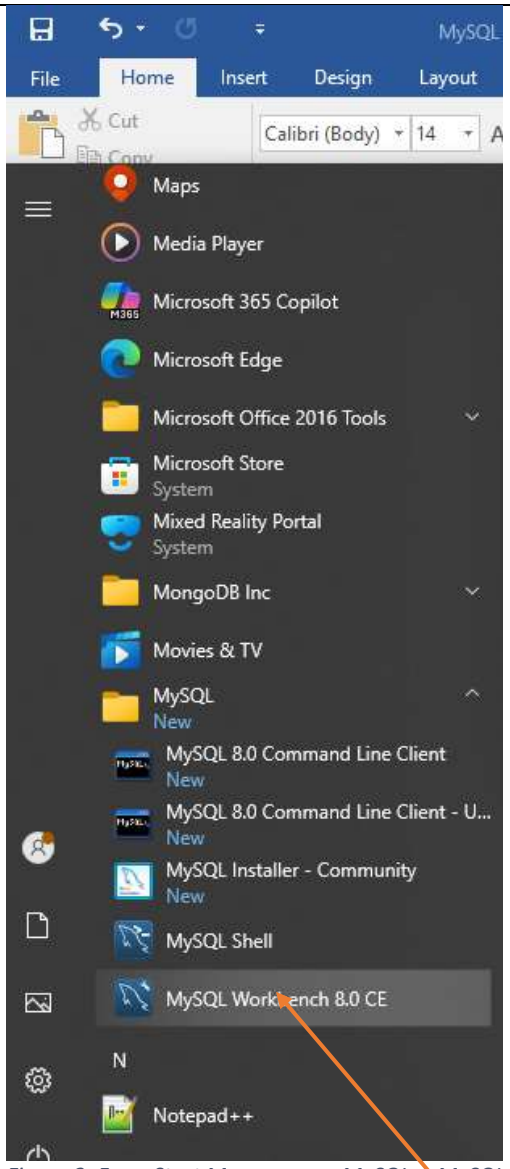

Figure 2: From Start Menu, access MySQL-->MySQL Workbench. Better create a short-cut in the Task Bar.

When MySQL Workbench opens, click on Local Instance or (a server created by you).

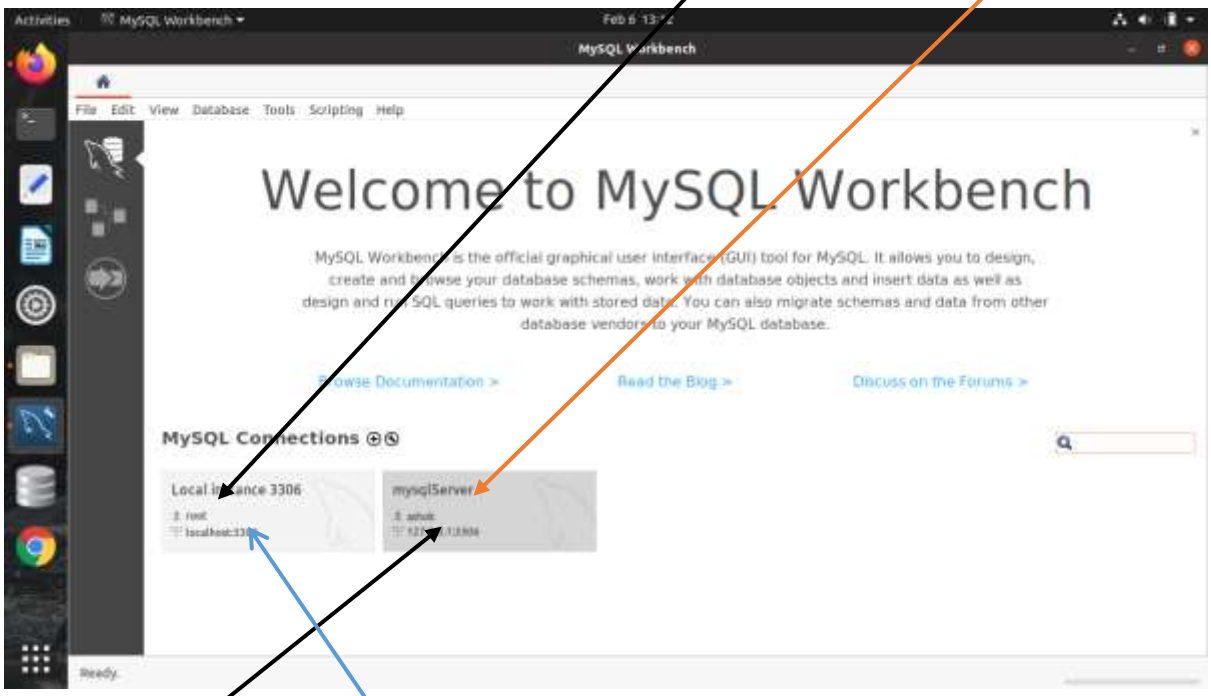

Figure 3: Click mysqlServer OR localhost link to open, as the case may be.

Workbench Configuration changes:

Click *Edit →Preferences →Fonts and Colors*. Set everything to font size of 20. Restart the Workbench.

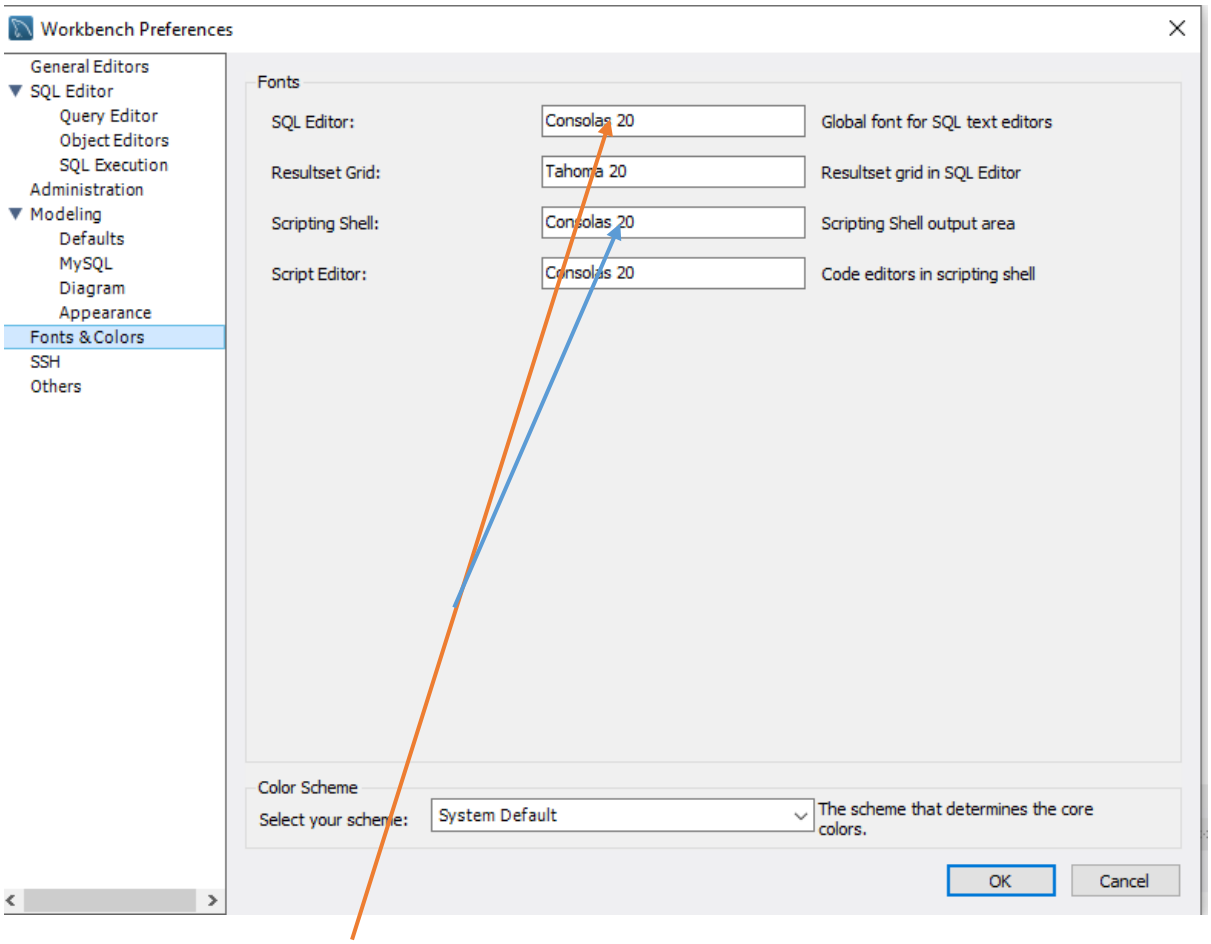

Figure 4: Change all fonts sizes to 20.. And restart Workbench.

Database creation

Press ctrl+T to open Query tab, if not already opened. Just create an empty database, as:

```
Create database college ;
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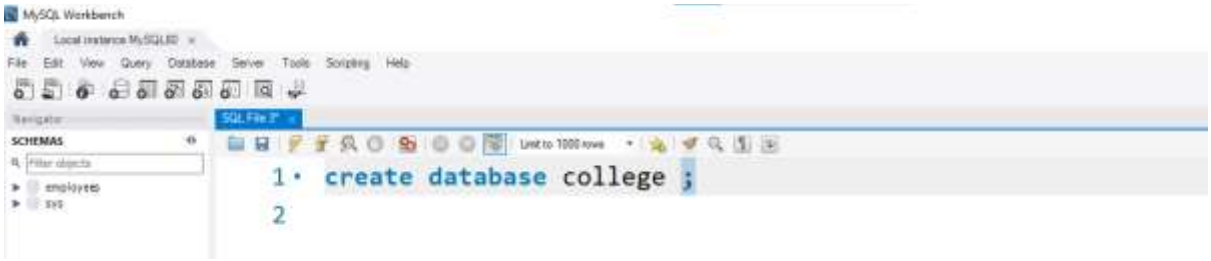

Figure 5: Press ctrl+T to open a query tab. Write create statement and press ctrl+ENTER to execute the query.

1.

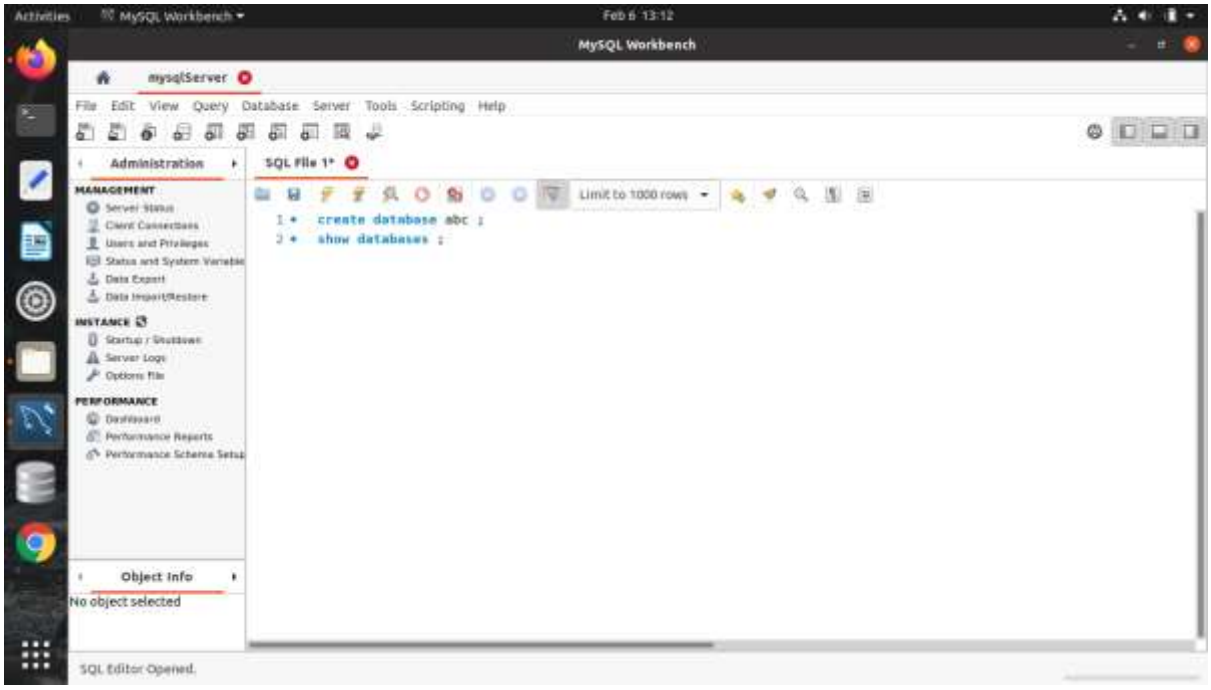

Figure 6: You will be here. Press **ctrl+R** *to open another dialog box; or in the top-menu click on* ***Database-->Reverse Engineer****.*

Reverse Engineering

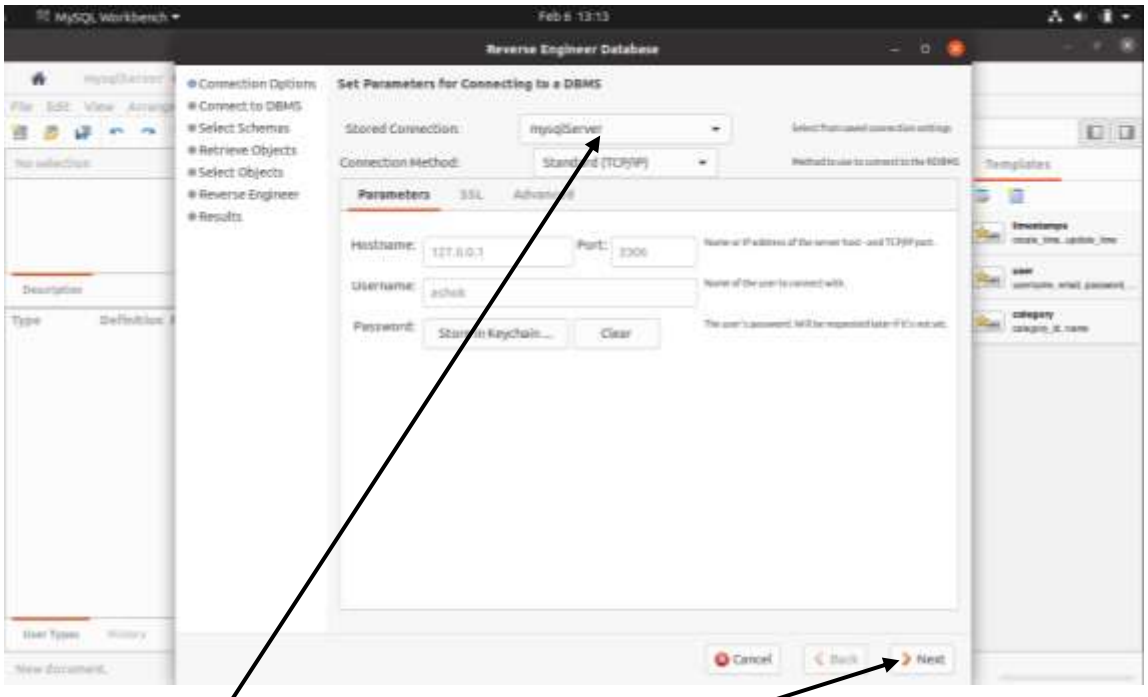

Figure 7: Select mysqlServer in the drop down, if not selected. Then click ***Next*** *button.*

2.

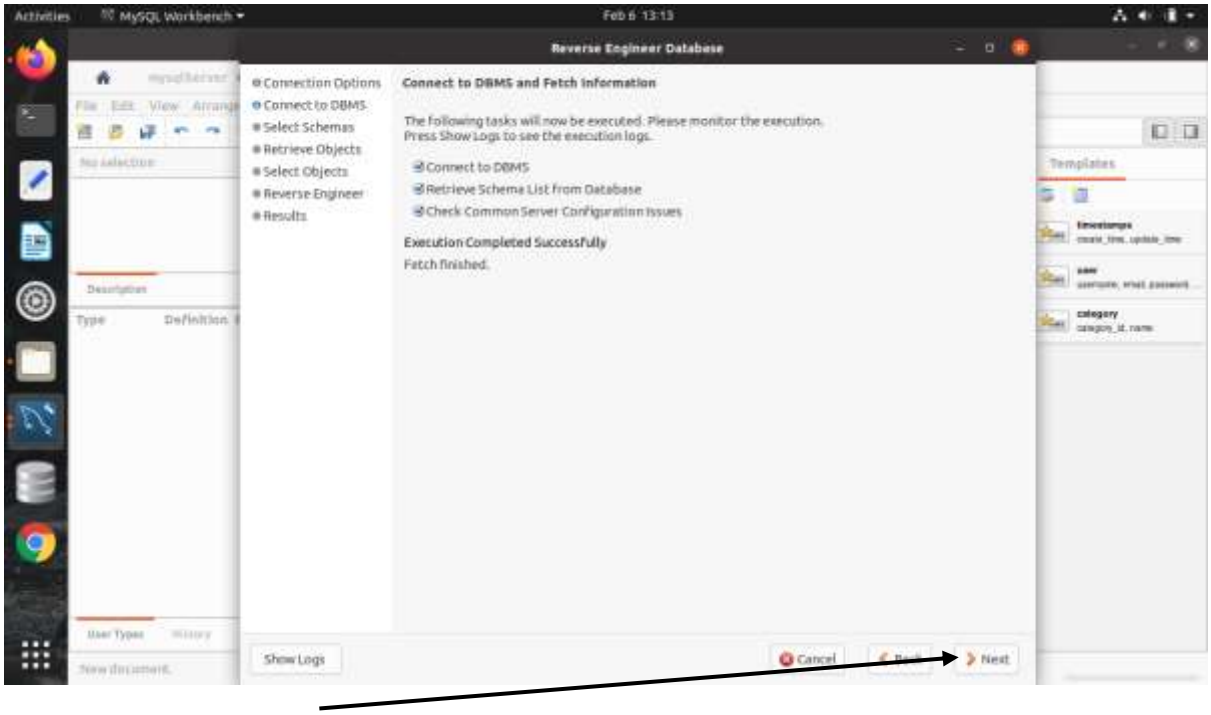

*Figure 8: Nothing to do. Click **Next** button*

3.

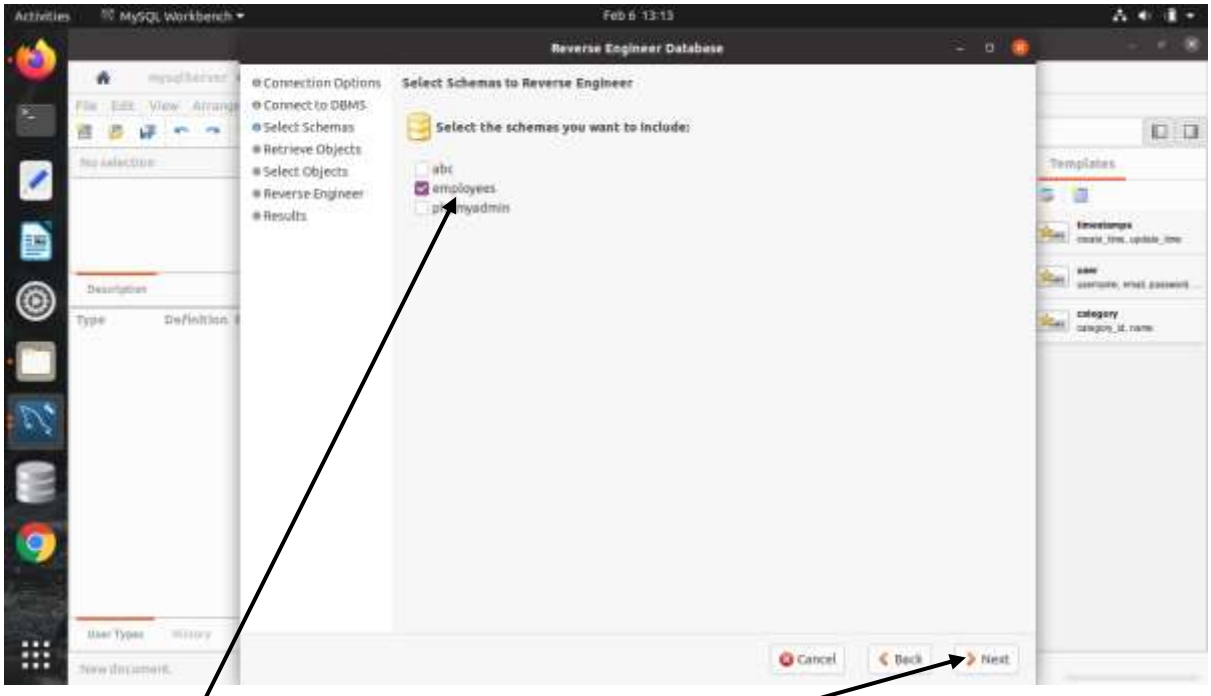

*Figure 9: Select **'employees'** or **'college'** database or your database of interest and click **Next** button.*

4.

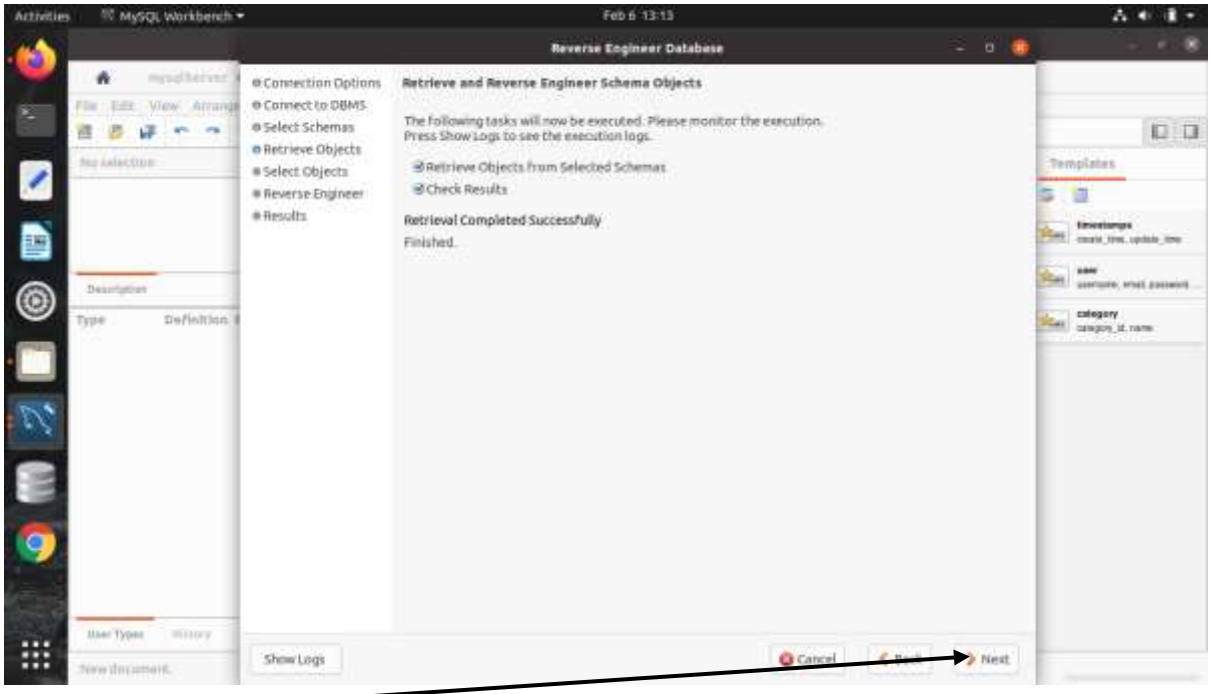

*Figure 10: Click **'Next'** button.*

5.

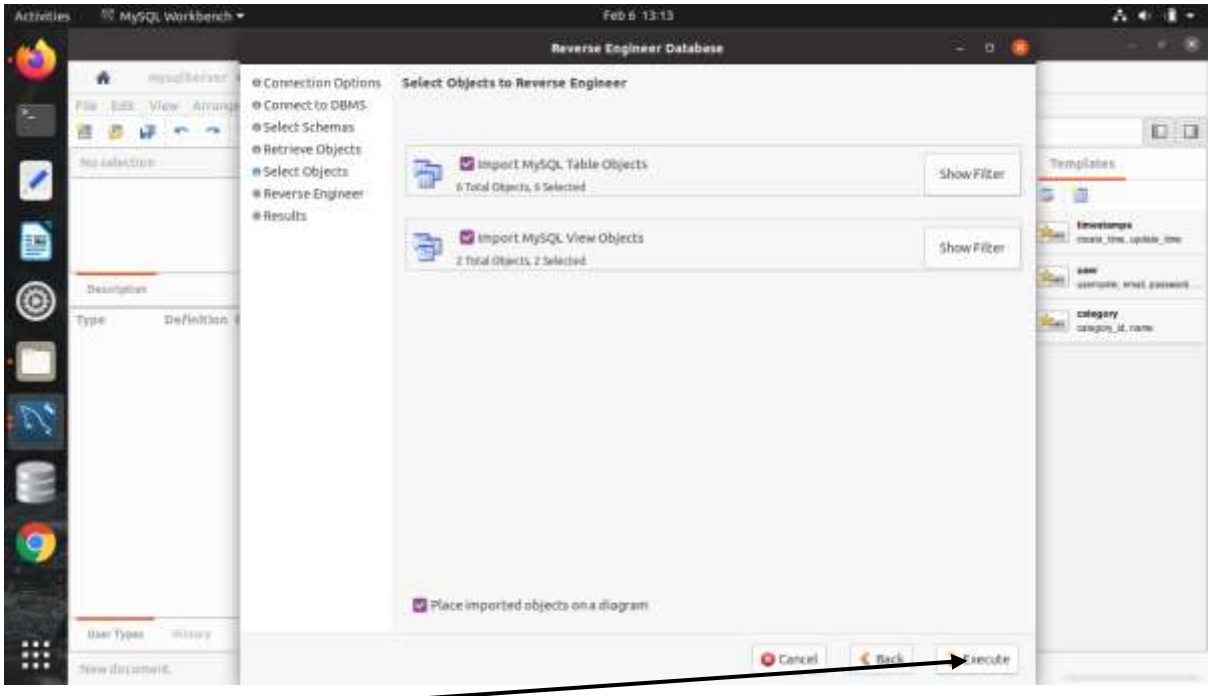

Figure 11: Click 'Execute' button

6.

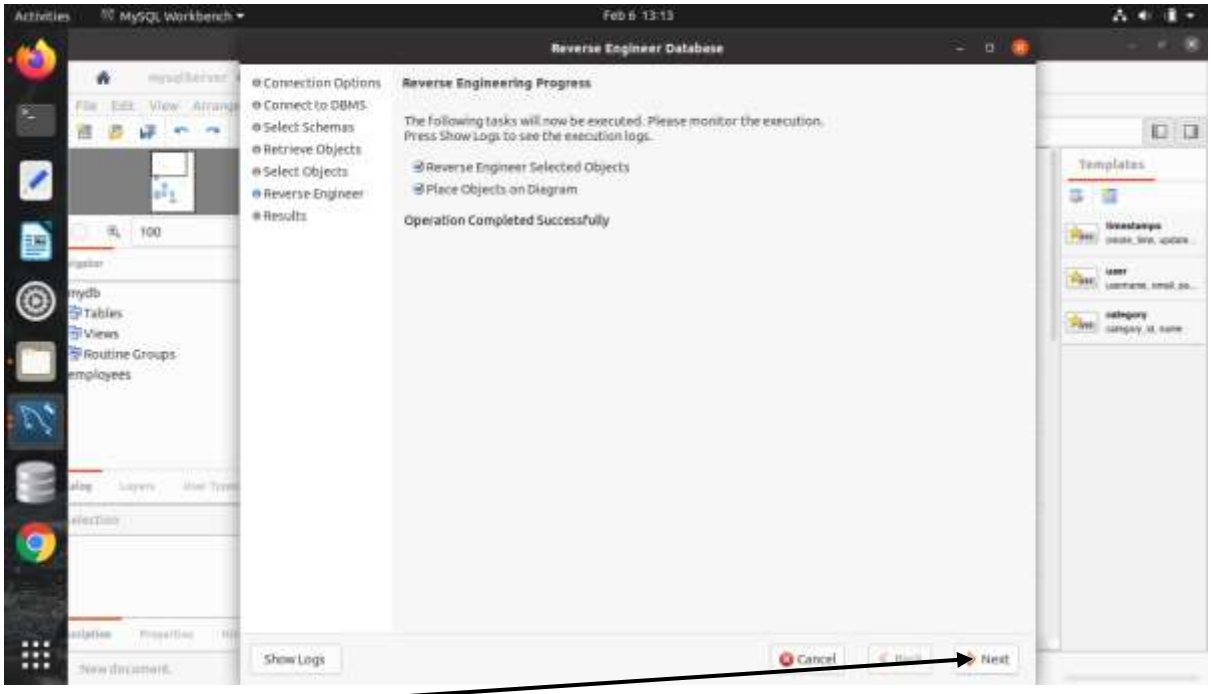

Figure 12: Click Next

7.

Figure 13: Click Close

8.

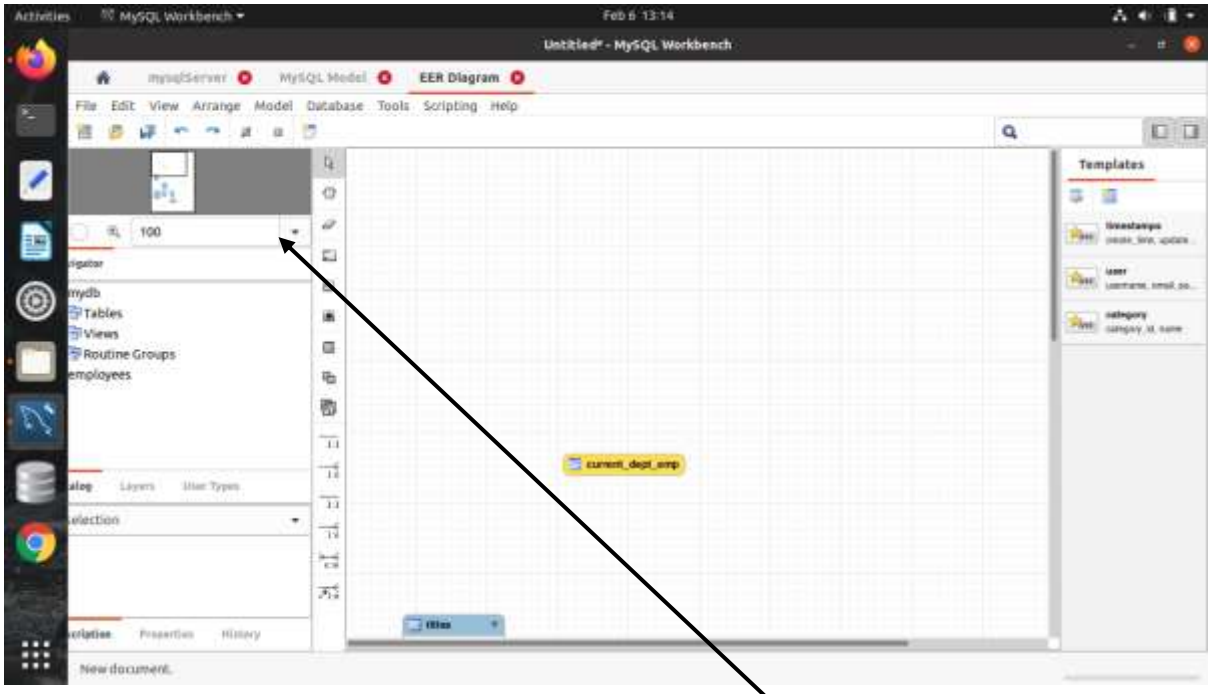

Figure 14: Change zoom level appropriately. In the drop-down, maybe change 100 to 75 to see er diagram.

9.

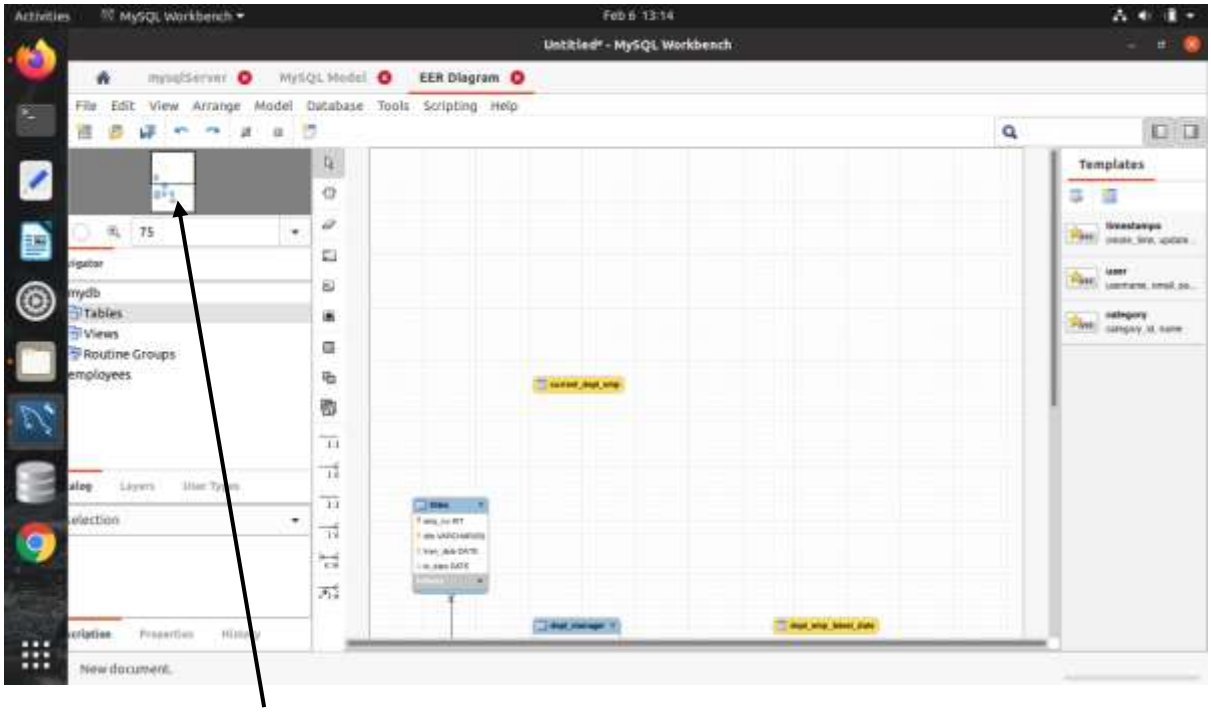

Figure 15: Drag the small rectangle down so that the blue spots are within it. It is a small pre-view of your workbench.

10.

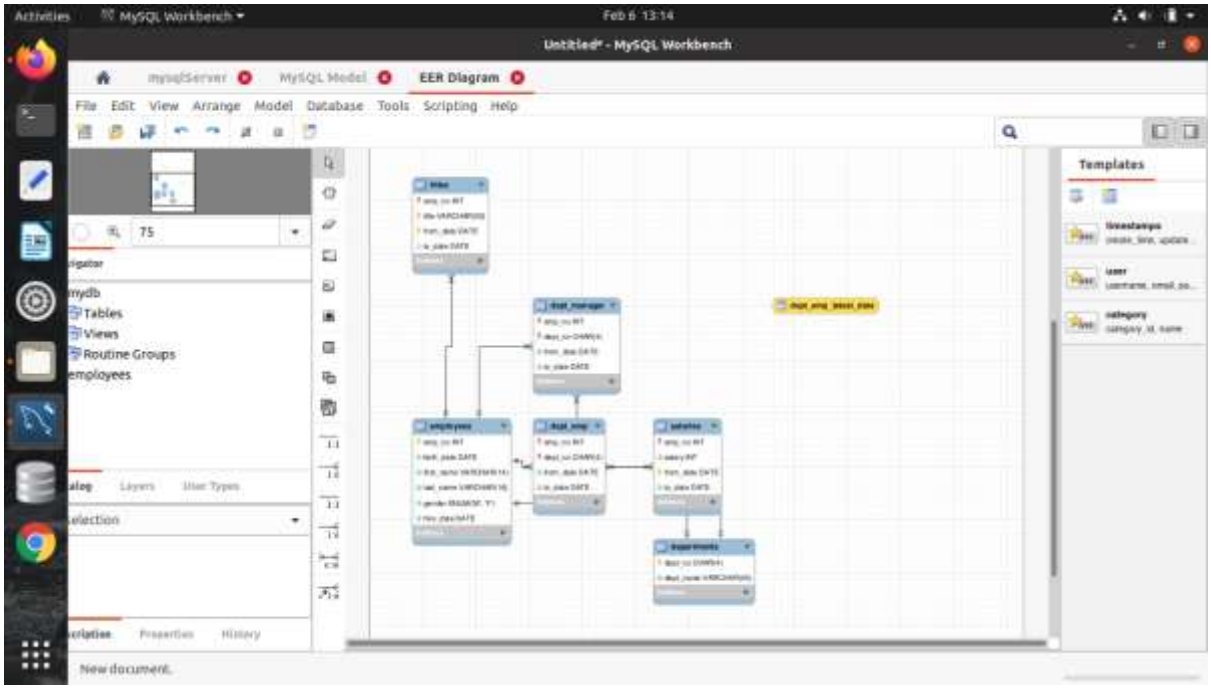

Figure 16: ER diagram. Re-arrange it so that it appears nicely and lines intersect minimum possible.

See below zoomed employees database schema

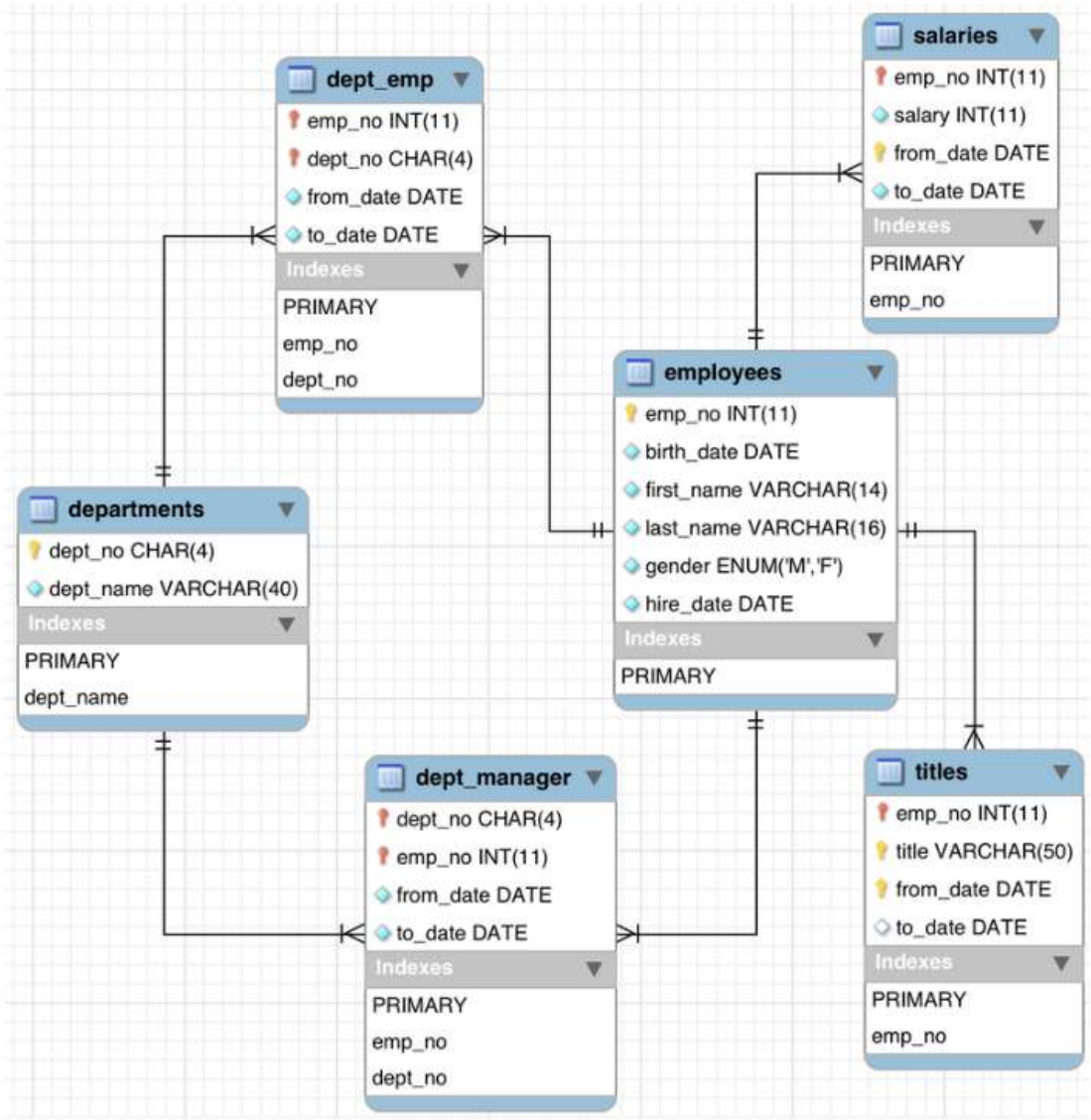

Figure 17: Employees table schema—zoomed

Identifying vs non-identifying relationships

For differences among themselves, please [see this link] in StackOverflow. The code generated in the two cases is different. Select a relationship that suits your needs.

THERE IS NO POINT IN CREATING 1:1 RELATIONSHIP BETWEEN TWO TABLES. For 1:n, generally use **Identifying relationship**.

Figure 18: Dotted relationships are non-identifying. faculty_id is NOT a part of primary key in course table

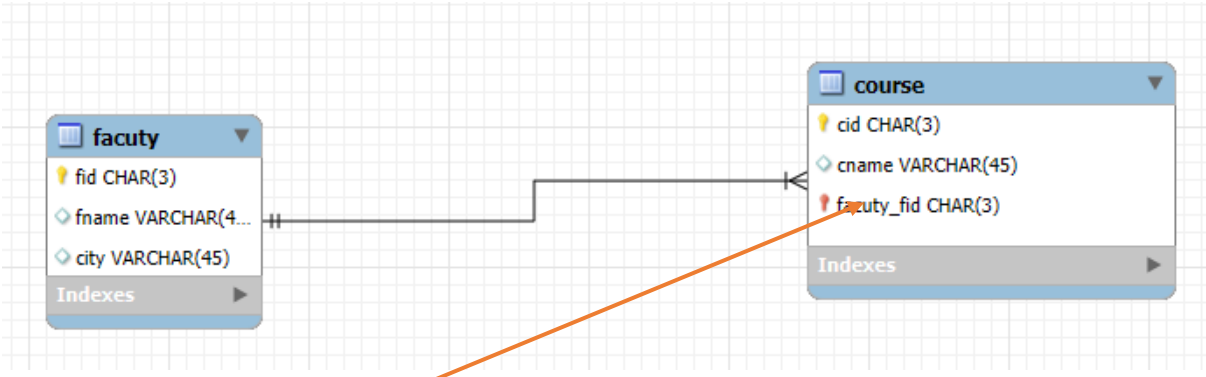

Figure 19: Identifying relationship. faculty_id IS a part of pk in course table.

Figure 20: In the upper diagram, faculty_id is not a part of primary key in course table but in the lower diagram it is. In the upper figure, one course can be taught ONLY by one faculty. ONE-TO-ONE RELATIONSHIPS ARE MEANINGLESS.

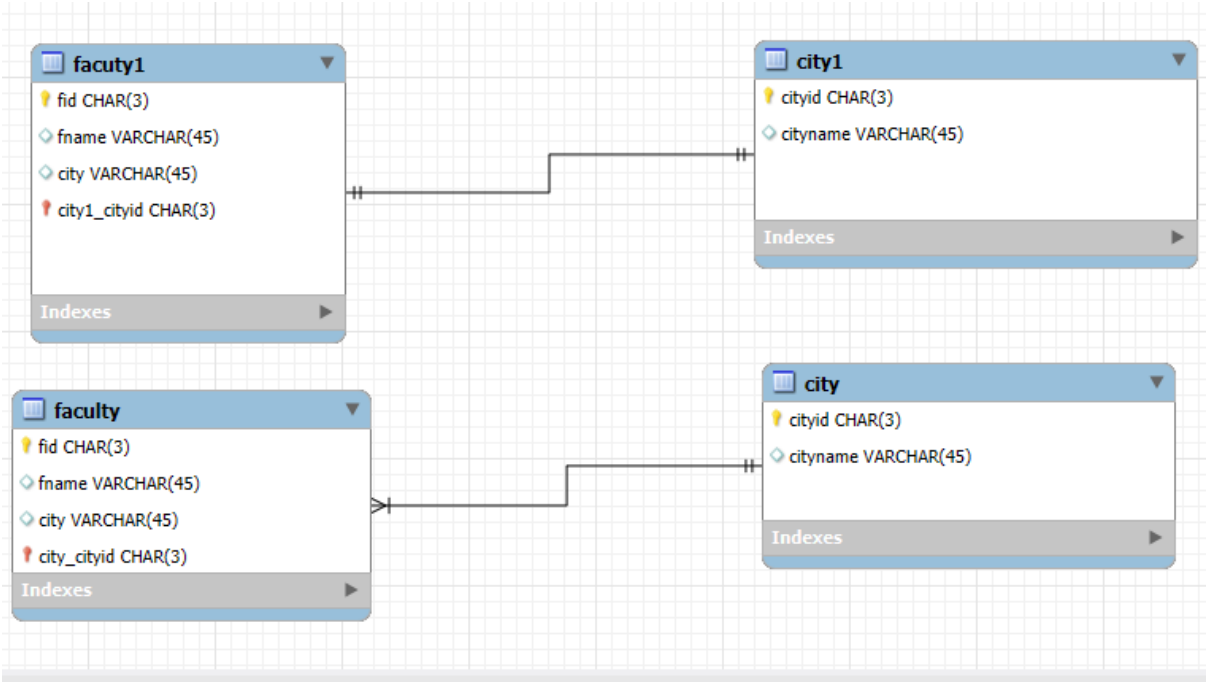

Figure 21: Note that both the above diagrams display the same relationships

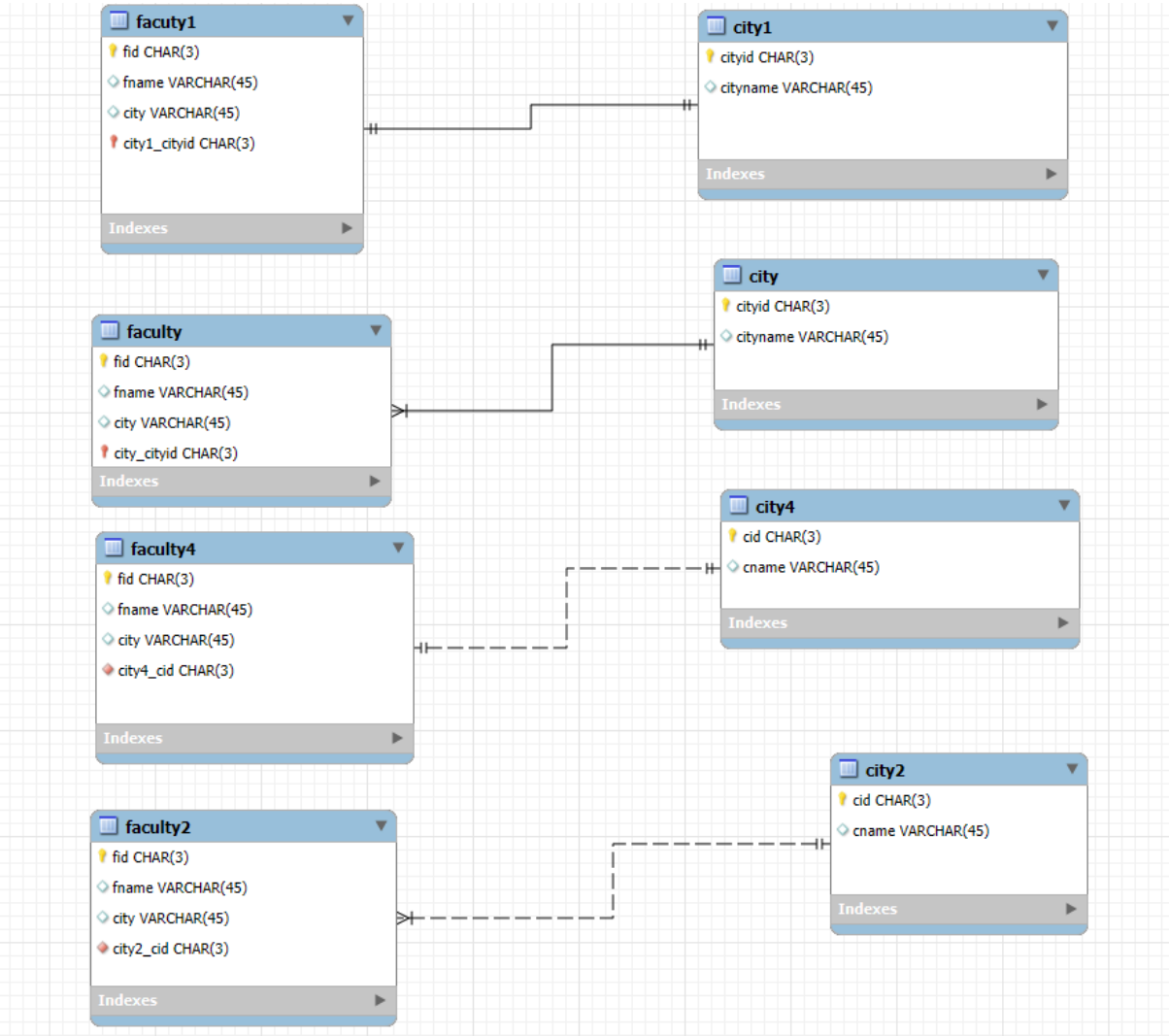

Figure 22: A comparison of different relationships

Faculty-Courses-city ERD

In the following ERD, faculty is the most important entity followed by course. Yet it is the city's table that must be filled up first.

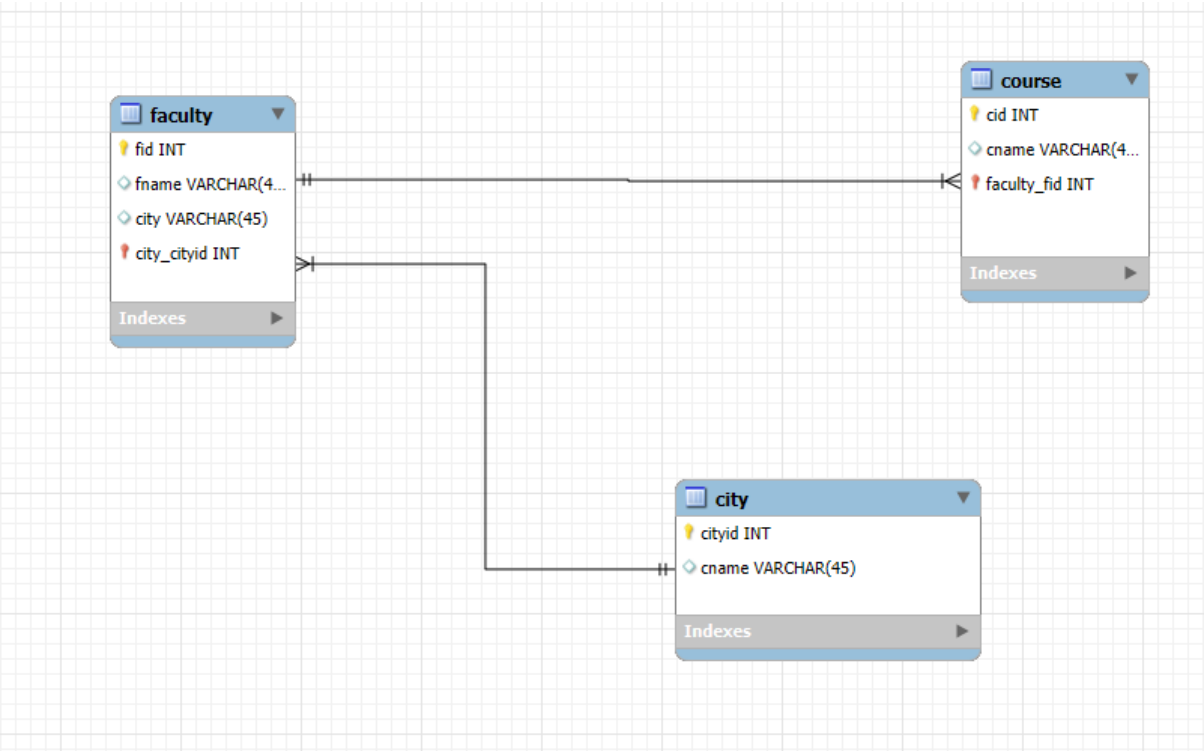

Figure 23:While faculty is the most important entity here, it is the city's table that must be filled up first.

Forward Engineering

Forward Engineering: Press ctrl+G to perform Forward Engineering. And press ctrl+SHIFT+G to save forward engineered script.

Restart Workbench to find the database changed.

Row insertion

To insert a row in any table.

under schemas,
click your database, say, college,
right click on a table, say city,
then click on **Send to SQL Editor→Insert statement**

(See figure below)

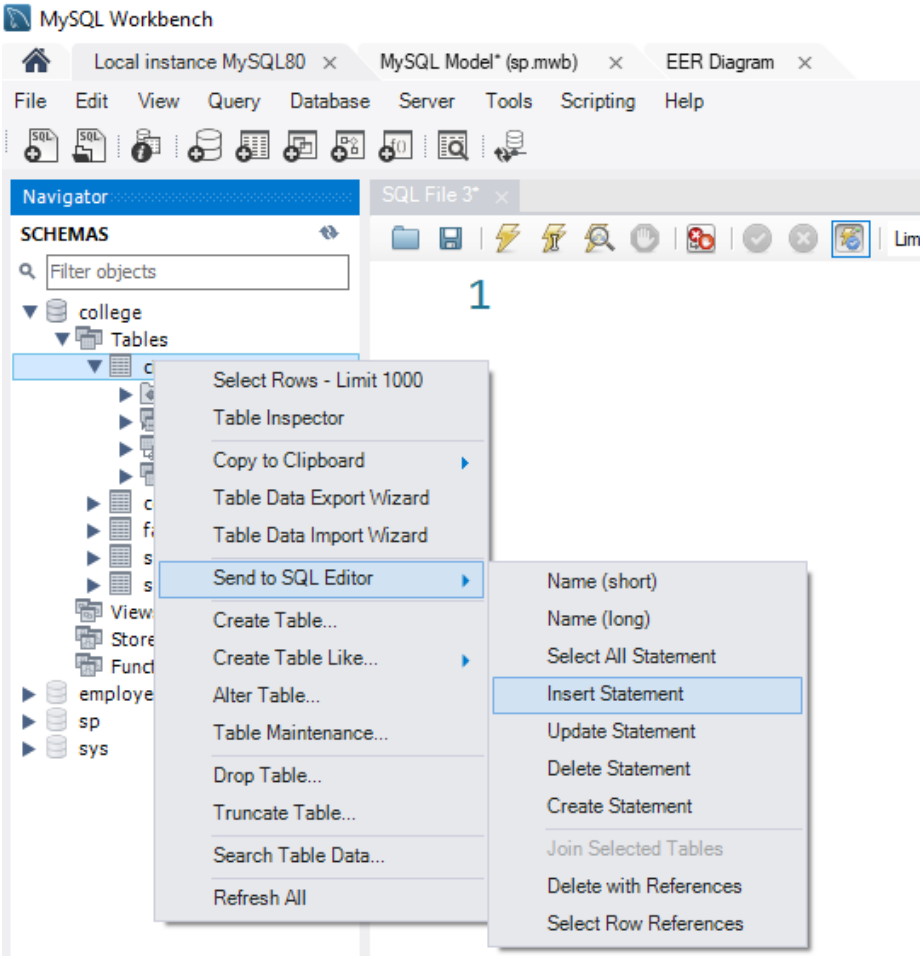

Figure 24: Generating an insert statement in SQL editor for a table

An insert statement appears, fill in values and execute:

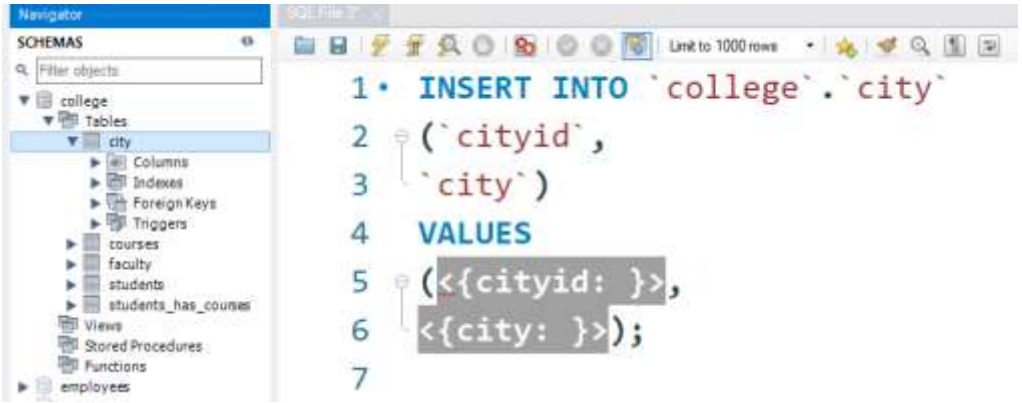

Figure 25: Replace <{cityid:}> and <{city:}> with actual values in insert statement and execute

################## Done ####################