Al Yamamah University Introduction to Database system (CIS221)

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Lab #1 – E-R Model

# In this lab you will learn

1. how to design a database with an ER diagram tool namely MySQL Workbench data modeling tool
2. how to define primary keys and data types
3. how to generate the relational schema (sql statements for creating the database)
4. how to populate the database (add entities to tables).

# Some videos to see before starting:

1. MySQL Workbench Tutorial

Here is a video on how to install MySQL Workbench on your laptop: <https://www.youtube.com/watch?v=2om3byn2lxs>

Here is a video tutorial: <https://www.youtube.com/watch?v=X_umYKqKaF0>

MySQL Workbench (full documentation): <https://dev.mysql.com/doc/workbench/en/> (online)

2. Create an ER diagram with MySQL data modeling tool

This is a video tutorial: <https://www.youtube.com/watch?v=nbTBw7iV6KA>

# Create the following ER Diagram

1. MySQL database provides a GUI application called “MySQL Workbench” for issuing and executing queries. You can find it from “Start Menu 🡪 All Programs 🡪 MySQL 🡪 MySQL Workbench 8.0 CE
2. Connect to MySQL and login
3. Once you have successfully logged in, the main Workbench GUI will appear as in Figure 1.



**Figure 1: MySQL Workbench database GUI**

The MySQL Workbench database GUI (Figure 3) contains 5 main areas:

1. Navigator window for accessing and editing table-level information, contains the “MANAGEMENT”, “INSTANCE”, “PERFORMANCE” and “SCHEMAS” sections
2. Query window for creating and editing SQL queries
3. SQL Additions window shows built-in, local, and shared custom snippets, which can be inserted into the SQL editor or the system's clipboard
4. Object Information window gives full details of the object selected in the Navigator window
5. Output window for displaying query results

Full details on MySQL Workbench can be found at: <http://dev.mysql.com/doc/workbench/en/index.html>

# The Library database

We will be working with a simple library database. The following are the requirements.

A library includes books that can be borrowed by students. A book is identified by its isbn, and includes the following data: title, author and domain. Students can borrow books from the library. Students are identified by sid that is a unique identifier. The database records also the name, the department and the major of each student. Students borrow books for a period of time that needs to be recorded.

1. Draw the ER diagram for this database

Sketch the ER diagram from the data requirements provided about the library database.

1. Create a new model (File 🡪 New Model 🡪 Click on “Add Diagram” twice)
2. Create the tables using the data modeling tool
3. Create the relationship between the two tables
4. Rename the model (with current name “mydb”) to “Library”
5. Create the database schema using “Forward Engineering” option
6. Rename the schema to “Library”
7. Insert data into the Library Database

Enter 4 records for every table.