

# CSE 5720

## Spring 2023

### Project 1- MySQL

Acknowledgment: The project was originally designed by Dr. Carey with slight modifications tailored for MySQL.

In this project, we are going to create a database and tables using MySQL and import the data into tables. Then you are required to form SQL queries for problem statements shown in step 5.

**Sunday).** Turn in the 2 deliverables to folder “Project 1” on Canvas.

#### Deliverables

1. An SQL script that contains the queries listed in the same order as shown in step 5.
2. .csv files that contain the results obtained.

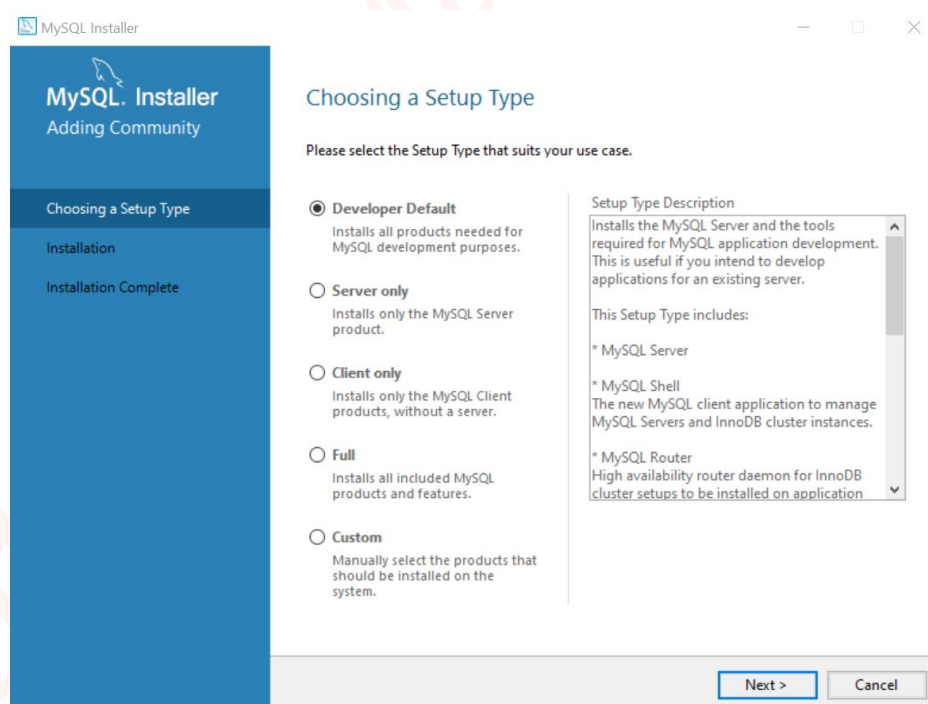
#### STEP 1 - Install MySQL

Go to MySQL download page (<http://dev.mysql.com/downloads/>) to download MySQL Installer for Windows. Select the correct installer based on your system.

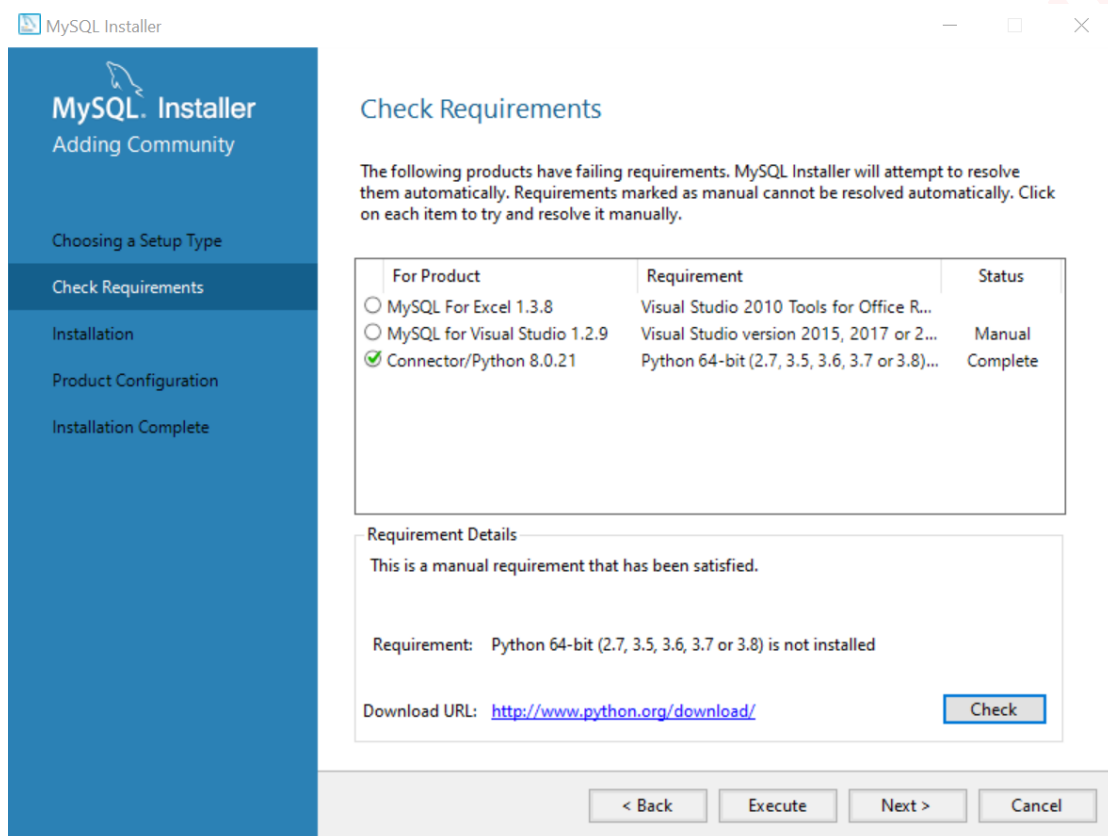
For Mac OS X, download the DMG files, extract it, and install by the order: mysql-8.0.xx-osx10.6-x86\_64.pkg, MySQLStartupItem.pkg, MySQL.prePane

The following description is based on MySQL server 8.0 for Windows.

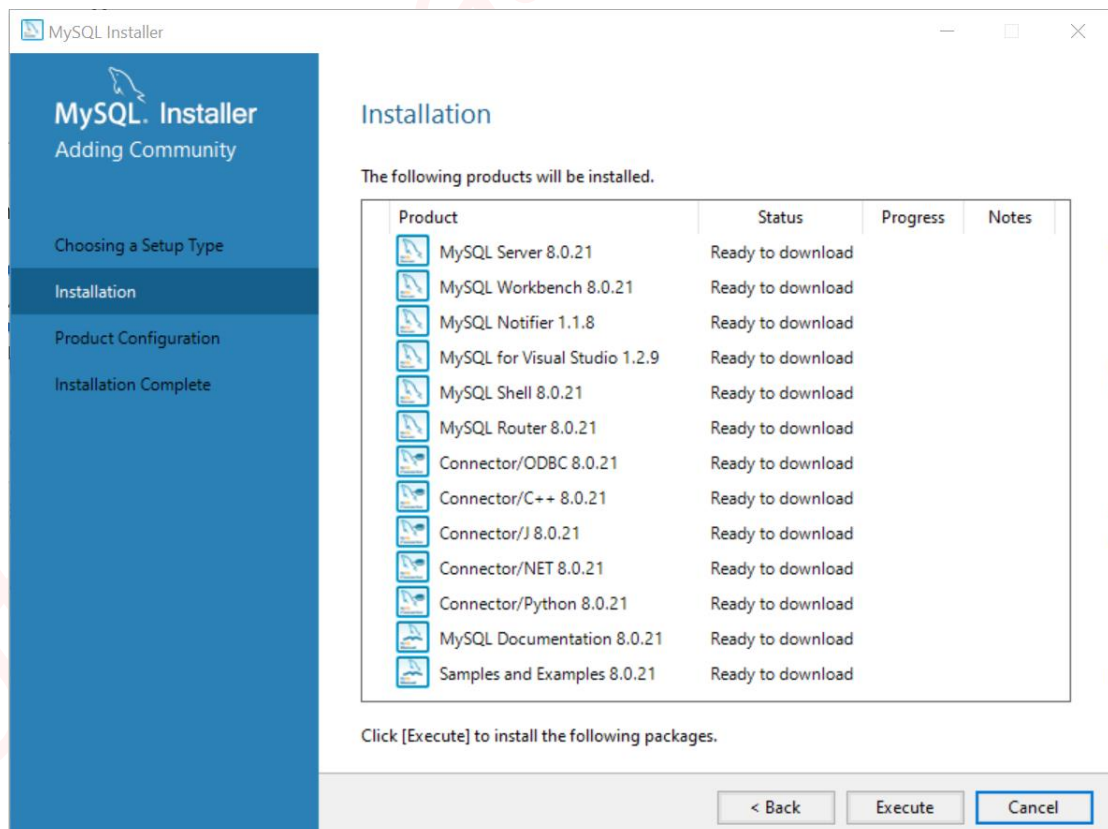
1. Execute the downloaded file and complete the installation, then it will ask you to choose a setup Type. Select ‘Developer default.’



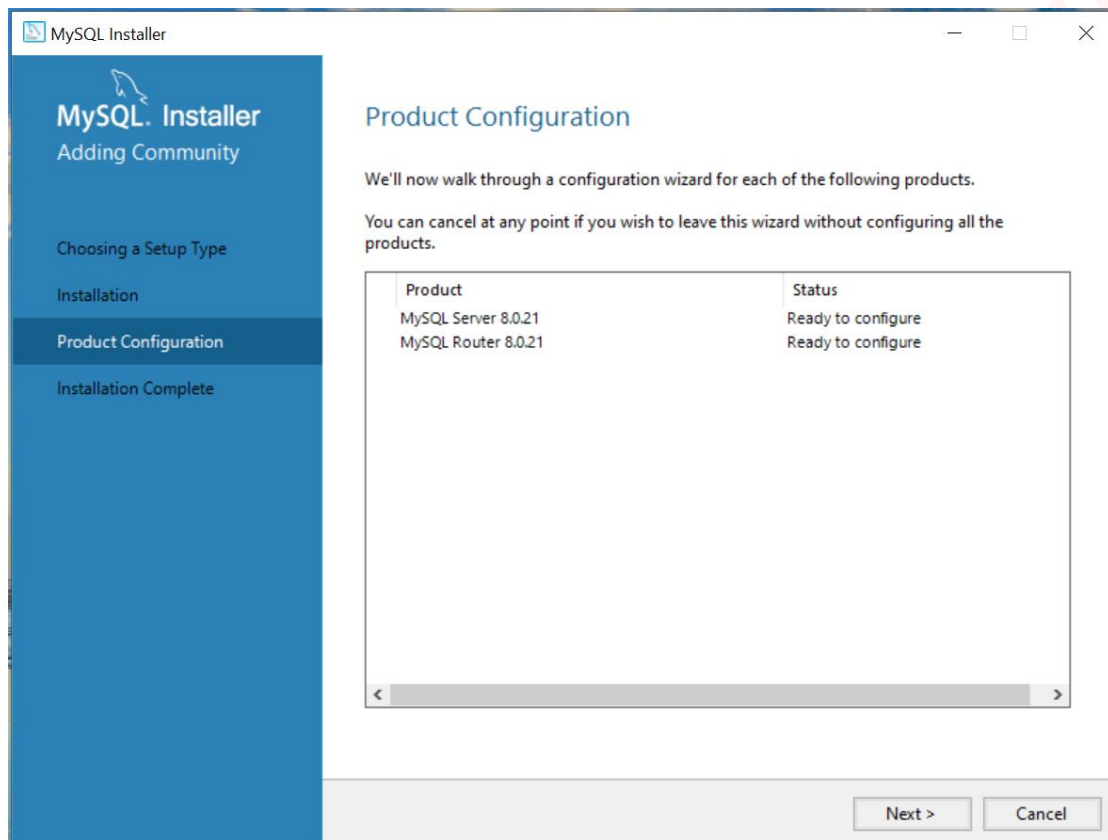
## 2. Check requirements and install the required software.



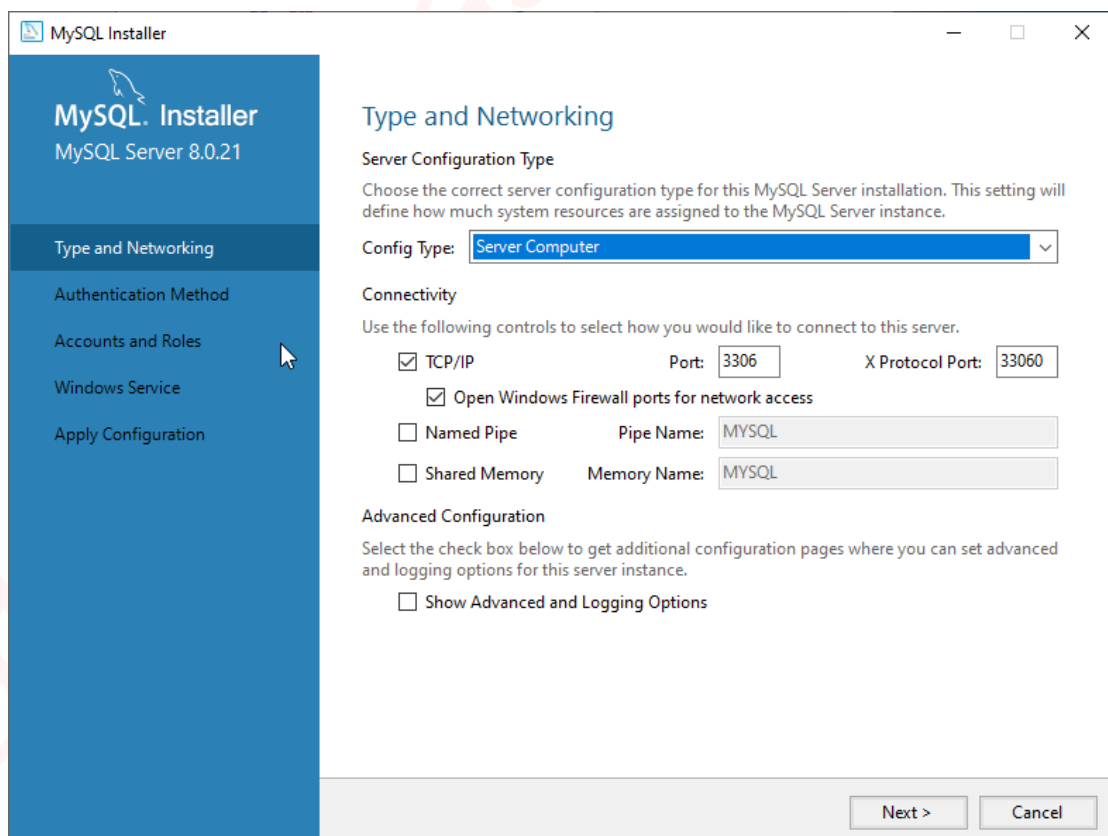
## 3. Install the products.



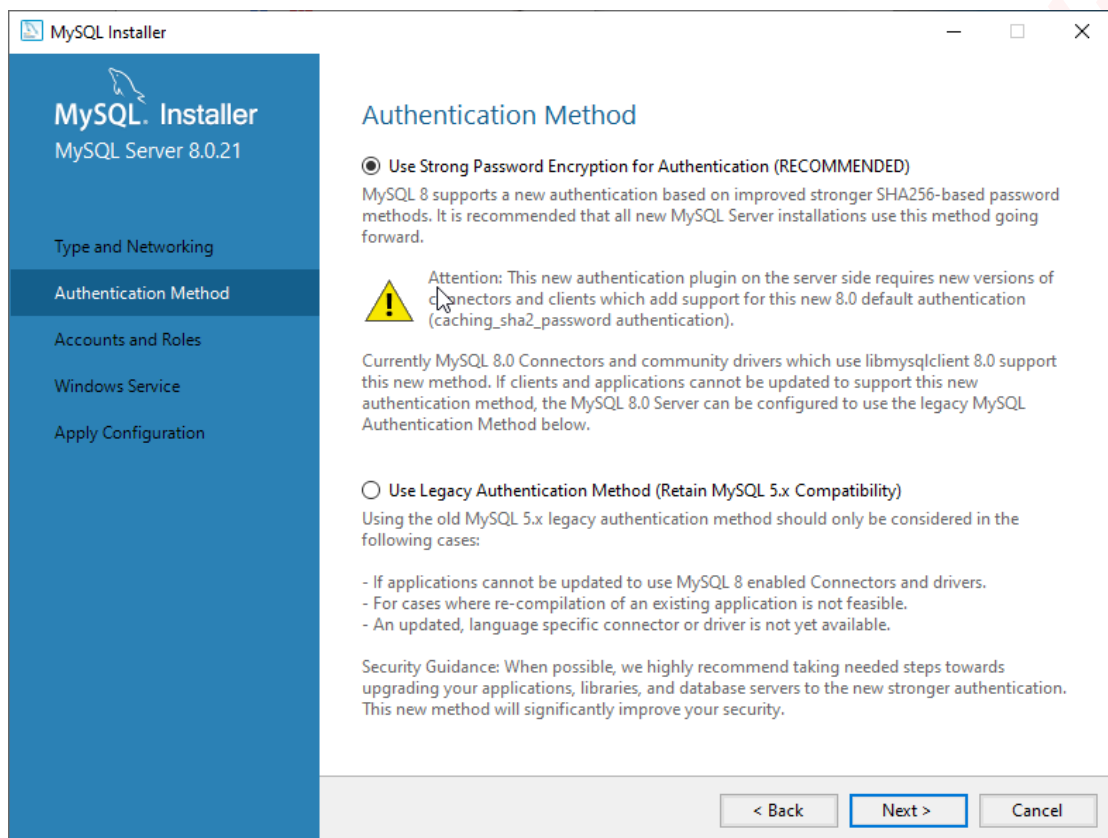
4. Select next for the product configuration.



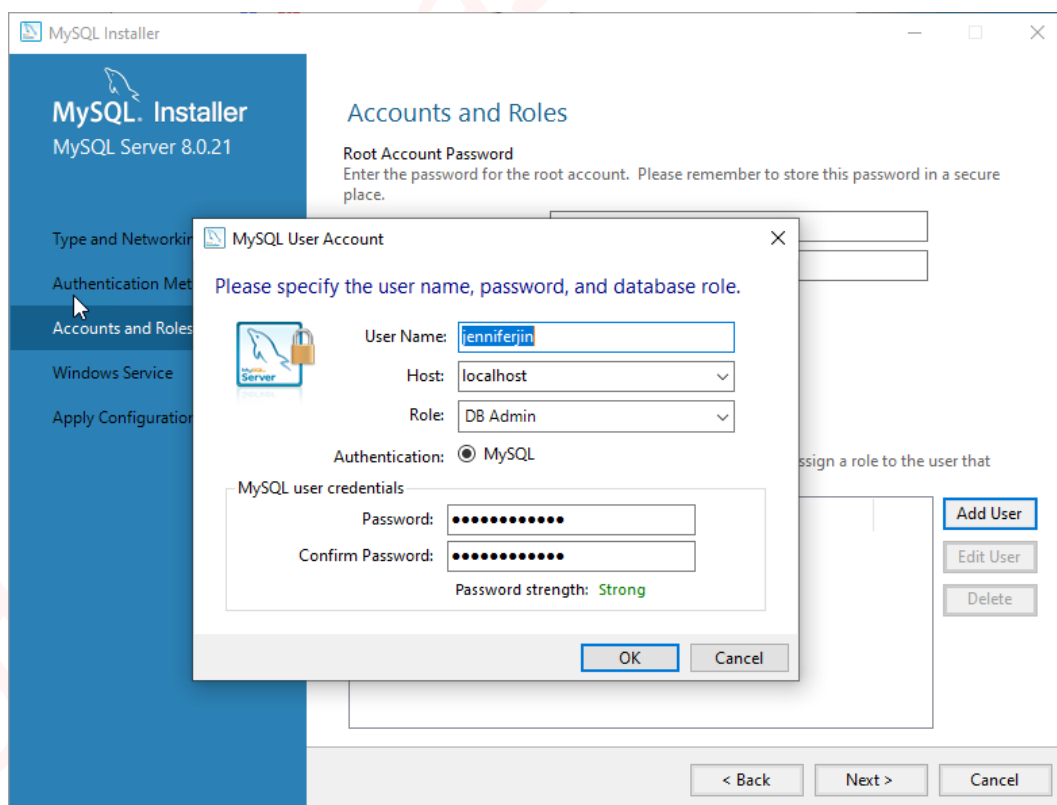
5. Choose 'Server Computer' and select 'TCP/IP' with port number 3306.



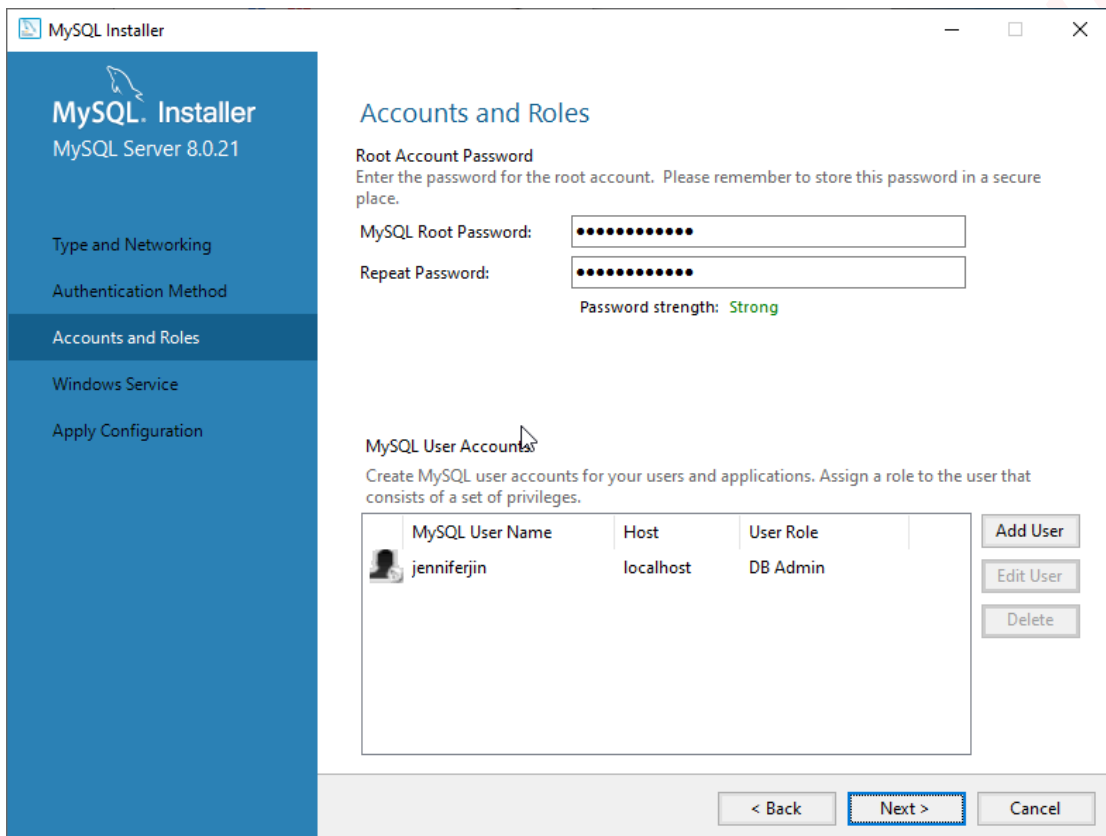
6. Select 'Use strong password encryption for authentication.'



7. Select a user name, choose *localhost* for host, *DB Admin* for Role and type your password.



8. Type your password and click next.



The screenshot shows the 'Accounts and Roles' step of the MySQL Installer for MySQL Server 8.0.21. The left sidebar lists the installation steps: Type and Networking, Authentication Method, Accounts and Roles (selected), Windows Service, and Apply Configuration. The main area is titled 'Accounts and Roles' and contains two sections. The first section, 'Root Account Password', prompts the user to enter a password for the root account, with a 'Repeat Password' field and a 'Password strength: Strong' indicator. The second section, 'MySQL User Accounts', prompts the user to create MySQL user accounts. It features a table with columns for 'MySQL User Name', 'Host', and 'User Role'. A single user, 'jenniferjin', is listed with a host of 'localhost' and a role of 'DB Admin'. To the right of the table are buttons for 'Add User', 'Edit User', and 'Delete'. At the bottom of the window are navigation buttons: '< Back', 'Next >' (highlighted with a blue border), and 'Cancel'.

MySQL Installer

MySQL Server 8.0.21

Type and Networking

Authentication Method

Accounts and Roles

Windows Service

Apply Configuration

### Accounts and Roles

Root Account Password

Enter the password for the root account. Please remember to store this password in a secure place.

MySQL Root Password:

Repeat Password:

Password strength: Strong

MySQL User Accounts

Create MySQL user accounts for your users and applications. Assign a role to the user that consists of a set of privileges.

MySQL User Name	Host	User Role
jenniferjin	localhost	DB Admin

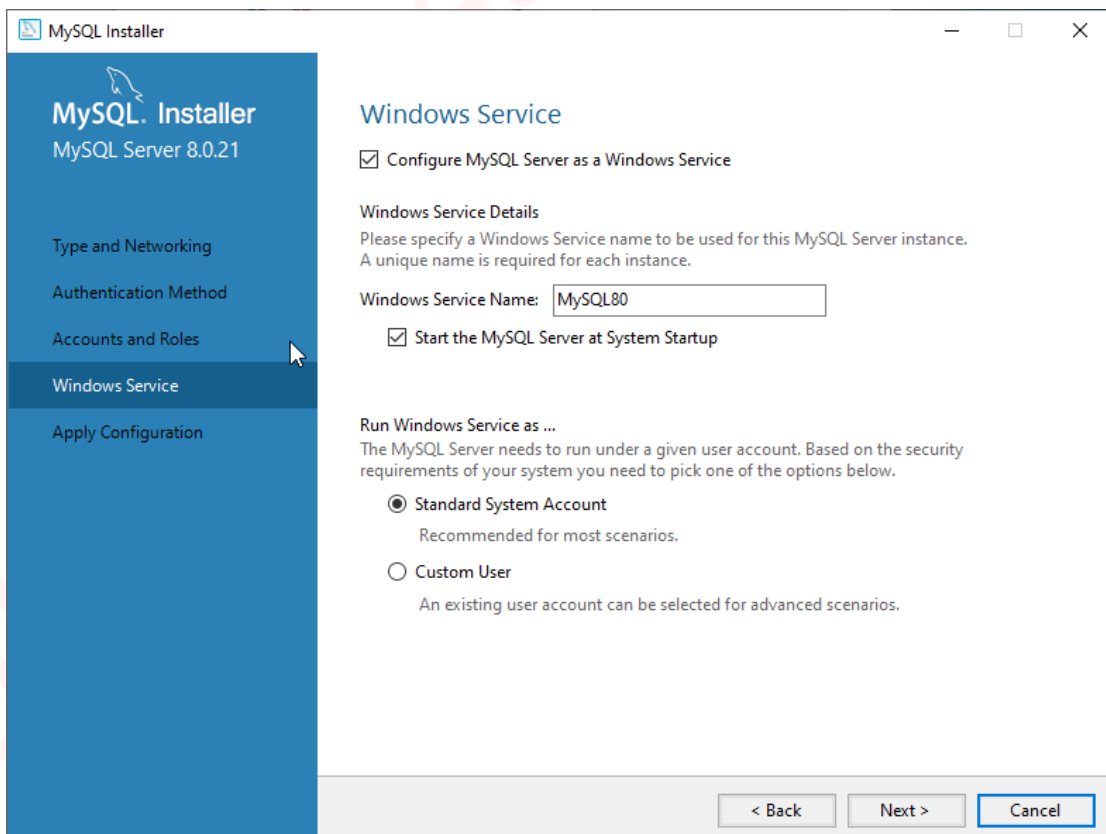
Add User

Edit User

Delete

< Back Next > Cancel

9. Choose a name for Windows Service Name and select *Standard System Account*.



The screenshot shows the 'Windows Service' step of the MySQL Installer for MySQL Server 8.0.21. The left sidebar lists the installation steps: Type and Networking, Authentication Method, Accounts and Roles, Windows Service (selected), and Apply Configuration. The main area is titled 'Windows Service' and contains three sections. The first section, 'Configure MySQL Server as a Windows Service', has a checked checkbox. The second section, 'Windows Service Details', prompts the user to specify a Windows Service name, with a text box containing 'MySQL80'. The third section, 'Start the MySQL Server at System Startup', has a checked checkbox. The fourth section, 'Run Windows Service as ...', prompts the user to select a user account. Two options are available: 'Standard System Account' (selected with a radio button) and 'Custom User' (unselected). Below the 'Standard System Account' option is the text 'Recommended for most scenarios.' and below the 'Custom User' option is the text 'An existing user account can be selected for advanced scenarios.' At the bottom of the window are navigation buttons: '< Back', 'Next >' (highlighted with a blue border), and 'Cancel'.

MySQL Installer

MySQL Server 8.0.21

Type and Networking

Authentication Method

Accounts and Roles

Windows Service

Apply Configuration

### Windows Service

☒ Configure MySQL Server as a Windows Service

Windows Service Details

Please specify a Windows Service name to be used for this MySQL Server instance. A unique name is required for each instance.

Windows Service Name:

☒ Start the MySQL Server at System Startup

Run Windows Service as ...

The MySQL Server needs to run under a given user account. Based on the security requirements of your system you need to pick one of the options below.

☒ Standard System Account

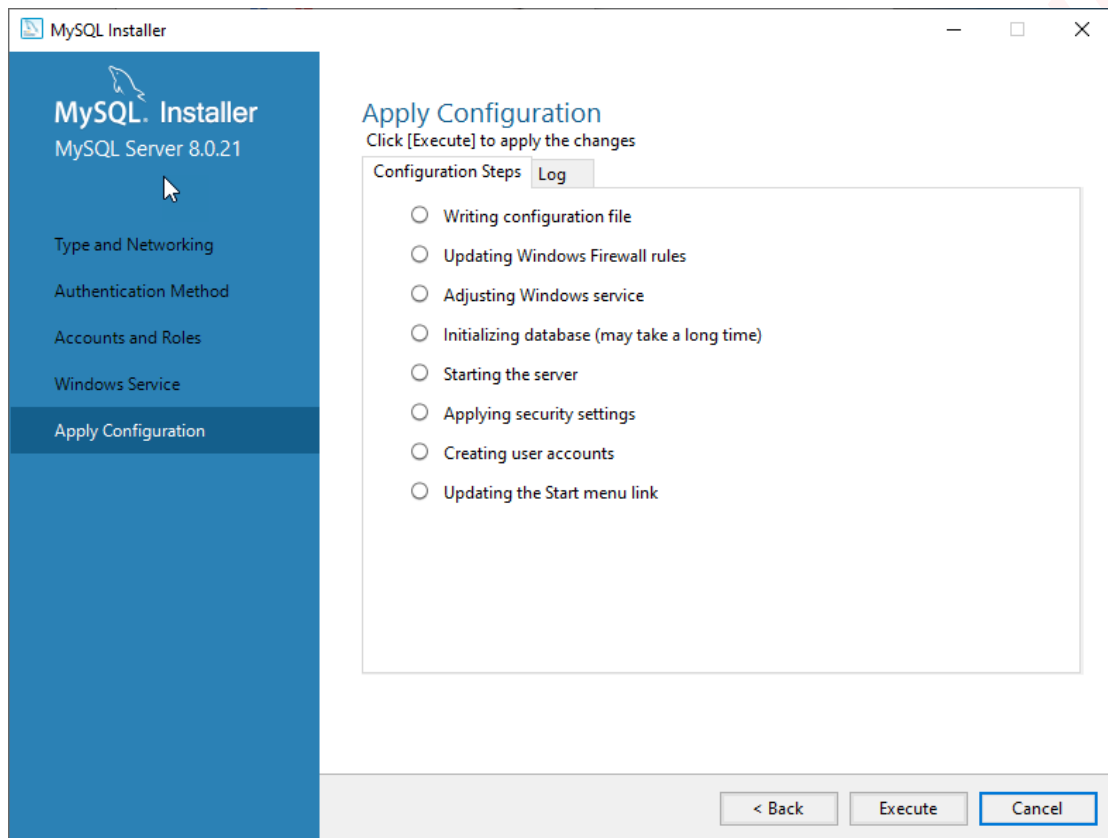
Recommended for most scenarios.

☐ Custom User

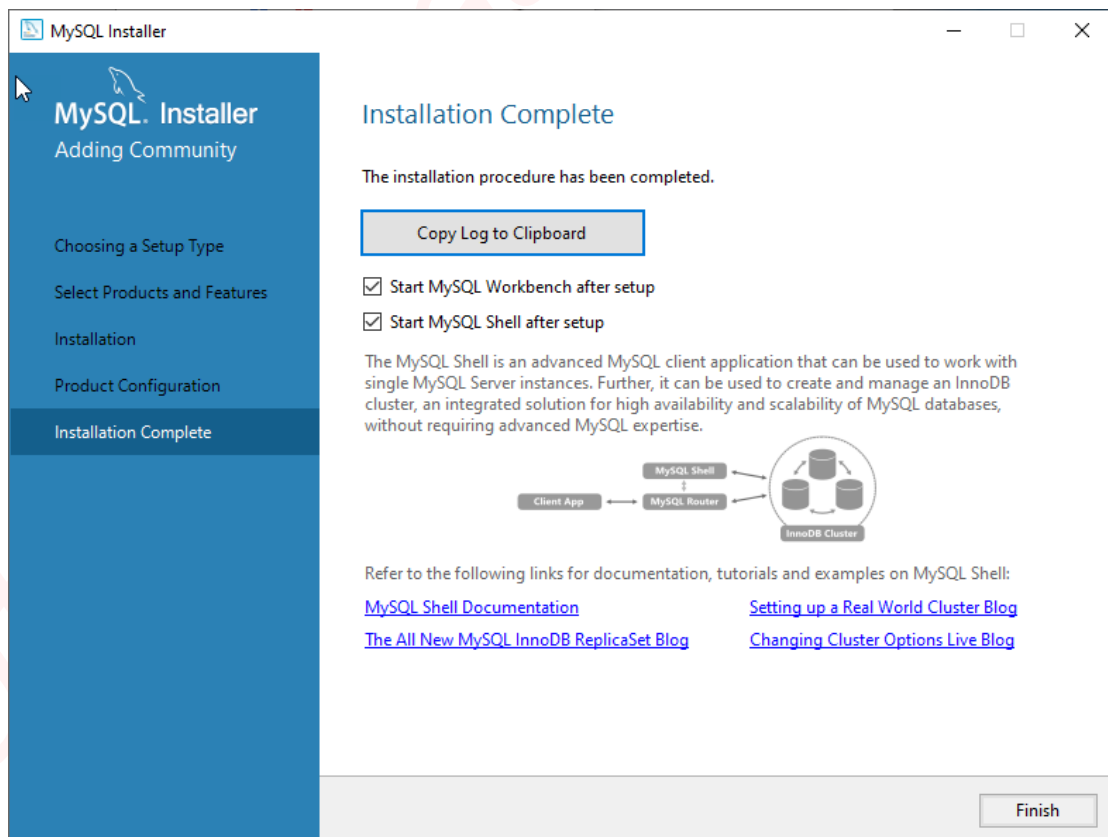
An existing user account can be selected for advanced scenarios.

< Back Next > Cancel

## 10. Apply configuration.

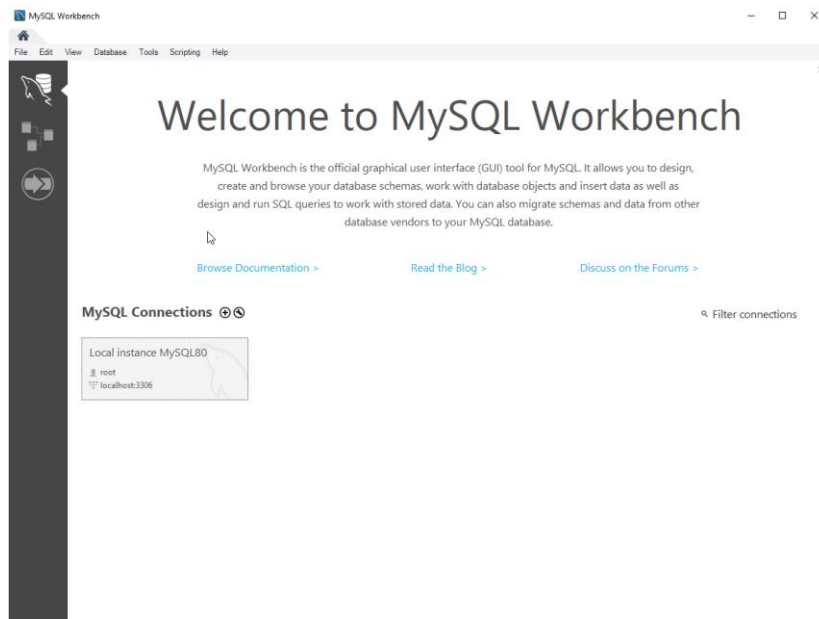


## 11. Installation Complete!



## STEP 2 - A GUI Tool for MySQL – MySQL Workbench

Download the MySQL Workbench from MySQL download page. After the installation, run it and you should see the following:

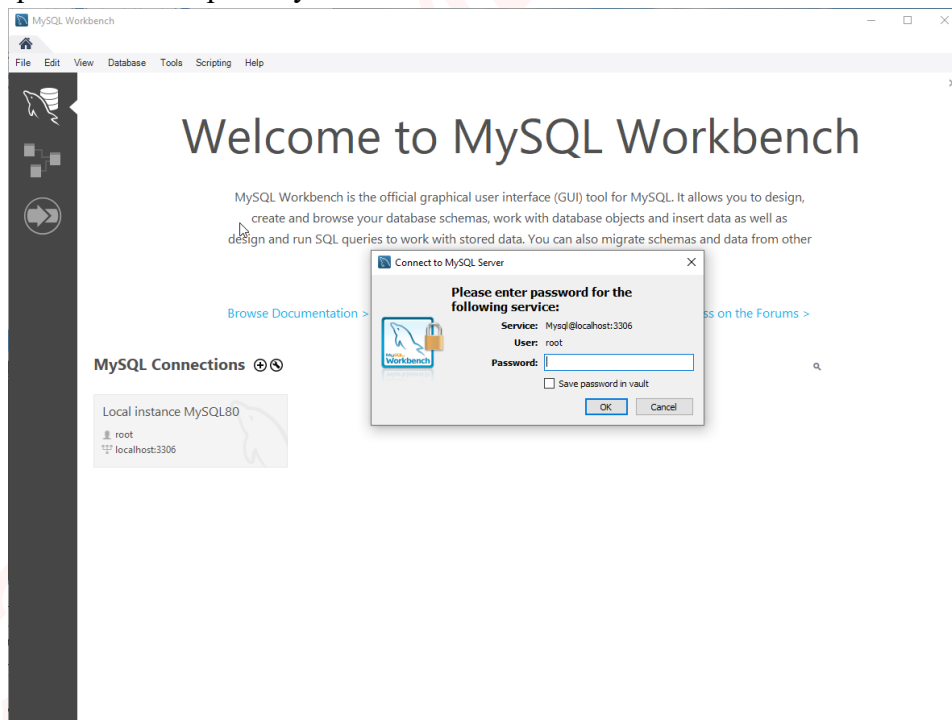


Double click on the local instance. Note that the port should be the same as when you installed MySQL (3306 in the case). If not, edit the connection by:

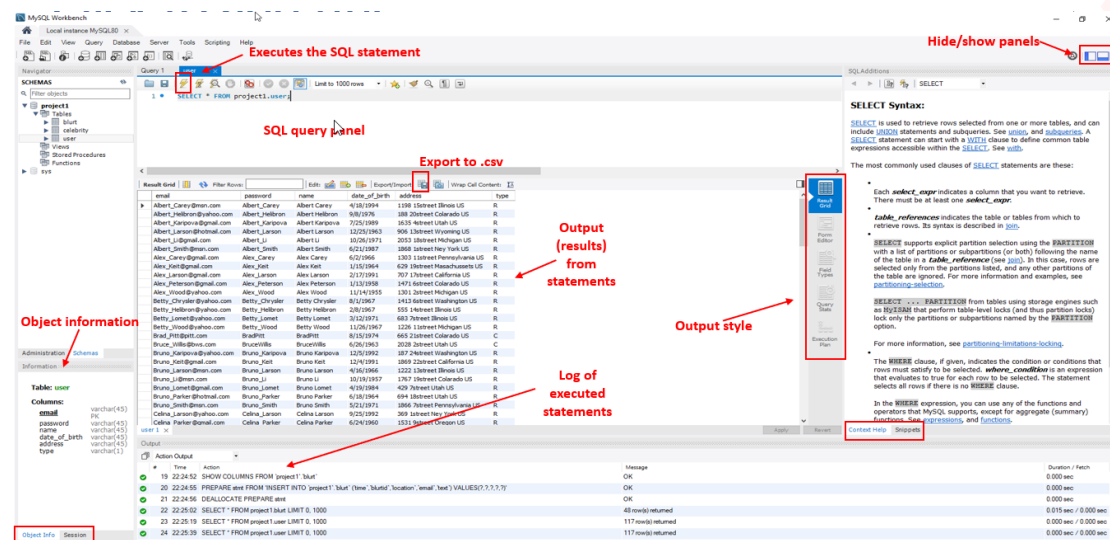
**Windows and Linux:** hover over the right side of a connection title and click the title.

**OS X:** hover over a connection title and click the little (i) in appears in the bottom right corner

Type in your password and connect to the database. Now you can perform queries or manipulate your database:

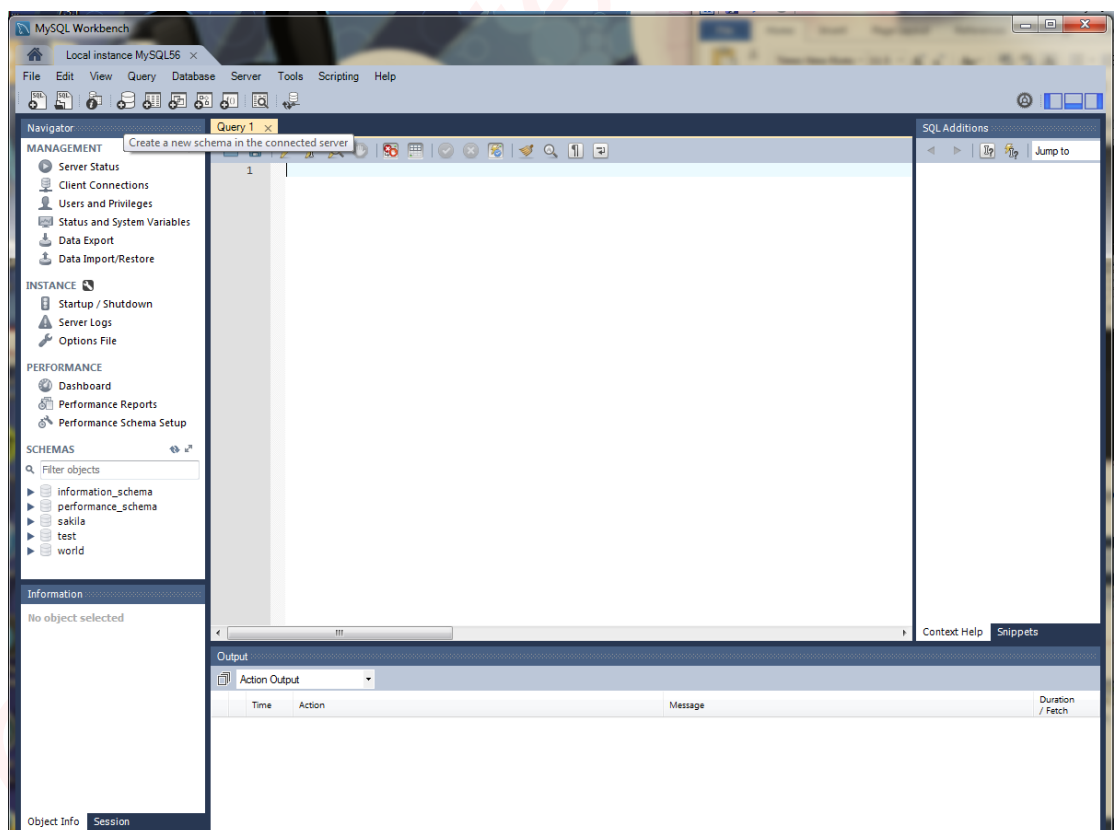


This is the MySQL workbench overview.



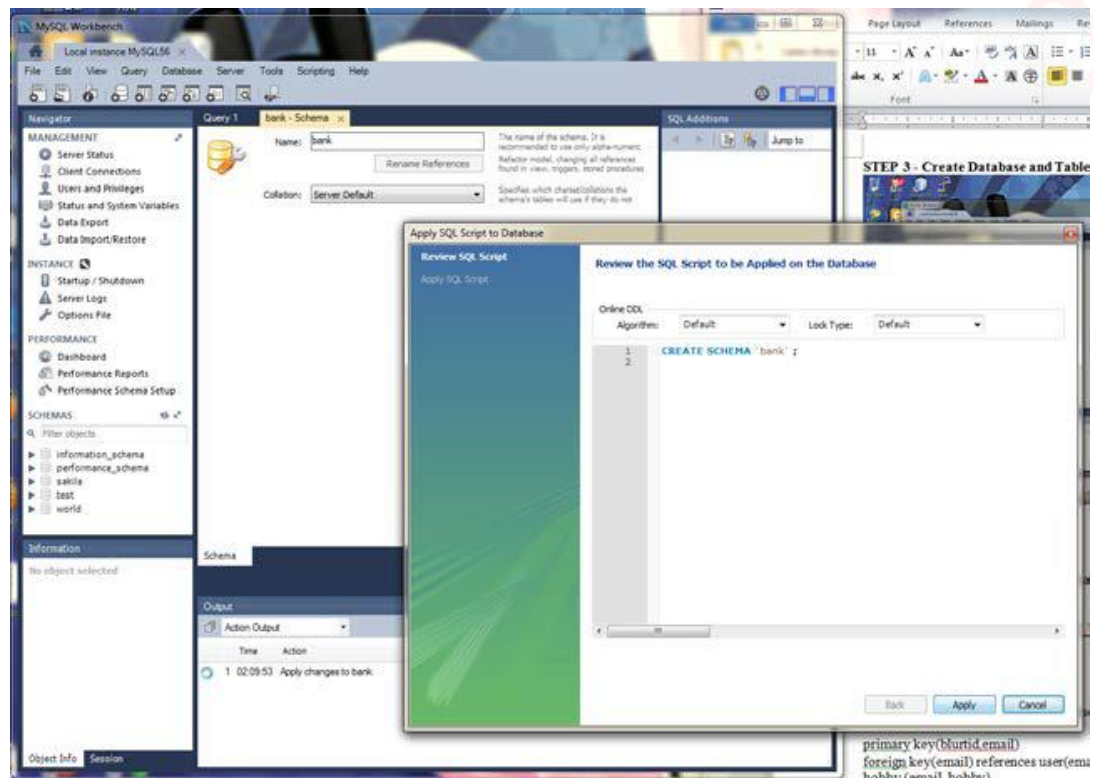
## STEP 3 - Create Database and Tables

1. Click on "Create a new schema in the connected server" icon on the upper left corner.

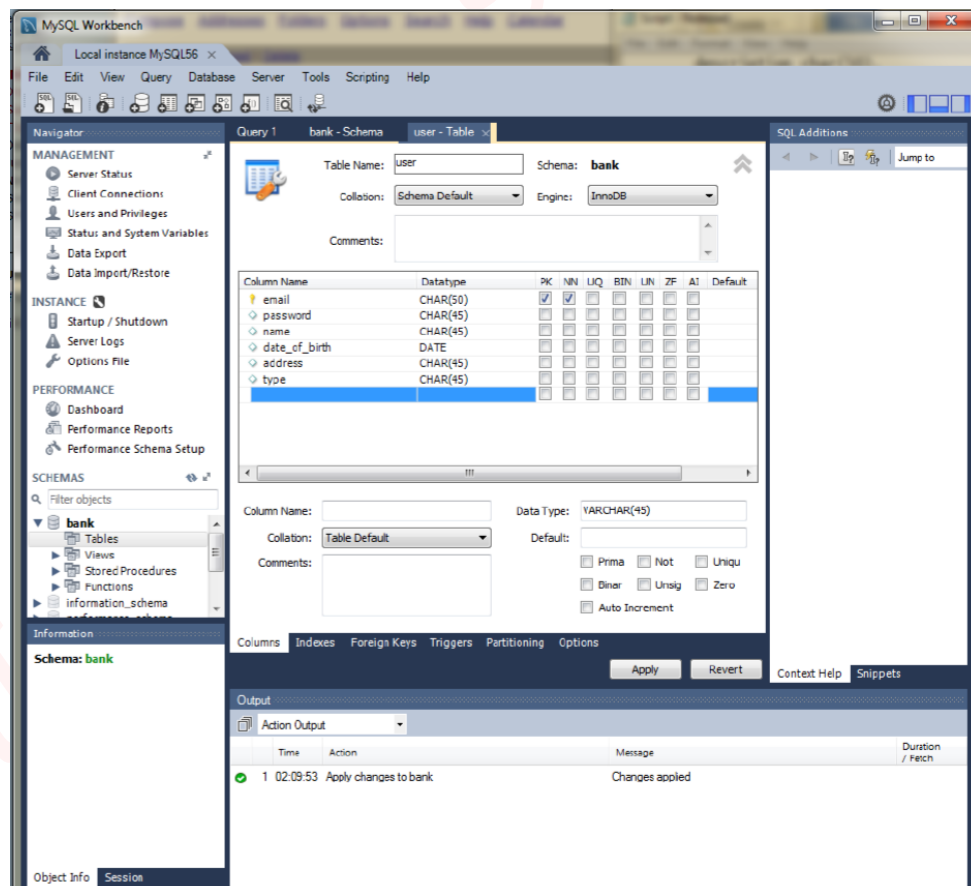




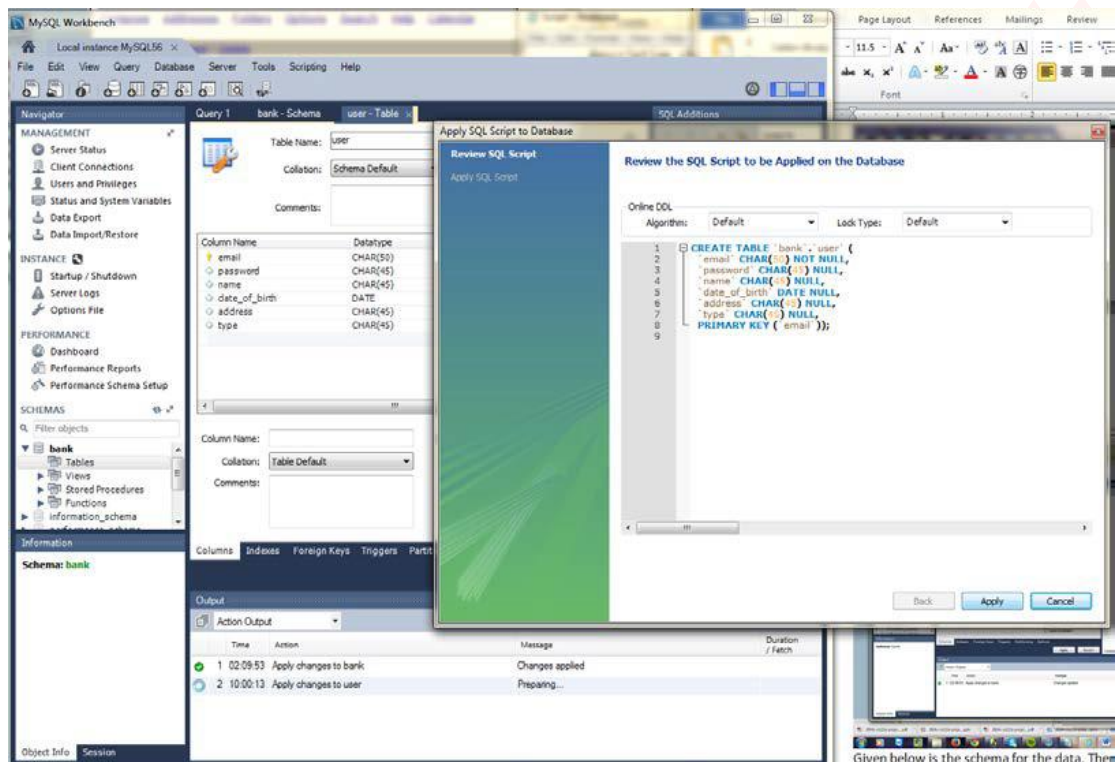
2. Under the schema click on “create a new table in the active schema in connected server”, then click “apply.”



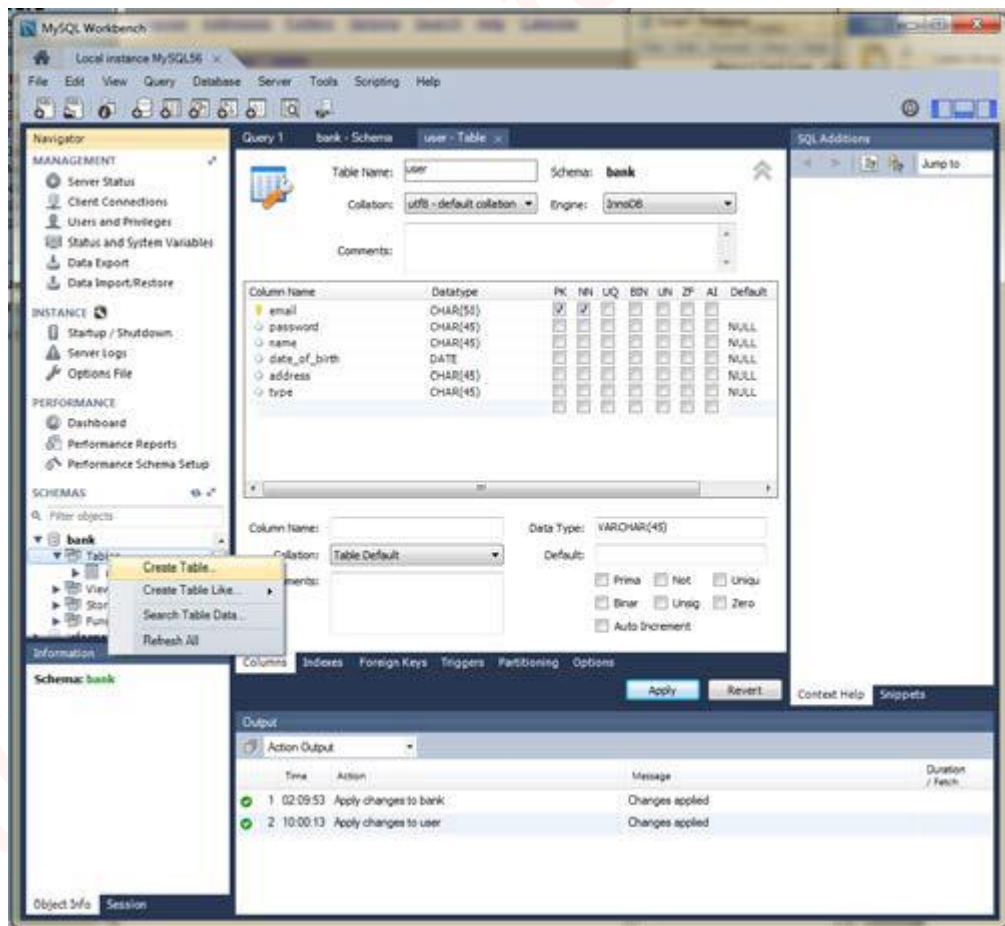
3. Fill in the columns with column name, data type and indicate the primary key(s).



4. Click “apply.”



5. You can right click on the “tables” under the schema to create new tables.



Given below is the schema for the data. There are a total of 12 tables, thus 12 CSV files, each corresponding to a relational table.

user (email, password, name, date\_of\_birth, address, type)  
primary key(email)

celebrity (email, website, kind)  
primary key(email)

blurt (blurtid, email, text, location, time)  
primary key(blurtid,email)  
foreign key(email) references user(email)

hobby (email, hobby)  
primary key(email,hobby)  
foreign key(email) references user(email))

follow (follower, followee)  
primary key(follower, followee)  
foreign key(follower) references user(email)  
foreign key(followee) references user(email))

vendor (id, name)  
primary key(id)

vendor\_ambassador (vendorid, email)  
primary key(vendorid)  
foreign key(email) references user(email)  
foreign key(vendorid) references vendor(id))

topic (id, description)  
primary key(id)

vendor\_topics (vendorid, topicid)  
primary key(vendorid, topicid)  
foreign key(vendorid) references vendor(id)  
foreign key(topicid) references topic(id))

blurt\_analysis (email,blurtid,topicid,confidence,sentiment)

primary key(email, blurtid, topicid)

foreign key(email,blurtid) references blurt(email,blurtid)

foreign key(topicid) references topic(id)

constraint confidence  $\geq 0$  and confidence  $\leq 10$

constraint sentiment  $\geq -5$  and sentiment  $\leq 5$

advertisement (id, content, vendorid)

primary key(id)

foreign key(vendorid) references vendor(id)

user\_ad (email,adid)

primary key(email,adid)

foreign key(email) references user(email)

foreign key(adid) references advertisement(id)

The design model:

Users can post their thoughts in form of short messages that we call “blurts”. When signing up, users need to provide their email and a password of their choice. In addition, they need to enter some basic information – name, date of birth, address, email ID and hobbies. Once signed up, they can (besides blurring) “follow” other users. To “follow” a user means subscribing to his/her “blurts”. Users are categorized into “regular” users and “celebrities”. A celebrity has an associated website url and an attribute called “kind” indicating whether he is a politician, actor, singer, etc. Each blurt by a user (regular or celebrity) is assigned an id. Blurt ids are serial and unique to the “blurts” by a given user; the first blurt by a given user would have blurt id 1 and ids are incremented for each successive blurt by the user. Note that blurt ids are unique only to a user, so blurts by two different users may have the same blurt id. Besides an id, each blurt also has its text, timestamp, and user location as additional attributes. The system should have a pre-defined notion of “topics” that are simply subjects that people may blurt about. Examples of topics might include music, pollution, disease, disaster, sports, weather, etc. A topic has a unique id and description (the name of the topic). Each blurt by a user is analyzed to associate with it zero or more topics. Related blurt-topic pairs are stored in blurt\_analysis table. To account for the possible ambiguity arising from the choice of words or language used by a user, an association with a topic has a corresponding confidence level (an integer ranging from 1 – 10 indicating the strength of the association). For example consider the following blurt: “I absolutely hate the rainy weather, can’t go out, listening to the Beatles, just love them” is analyzed to be

associated with two topics, weather and music (Beatles). For each topic, the associated sentiment is evaluated and quantified as an integral value ranging between -5 and 5, with higher values indicating a more positive sentiment. Considering the example blurt used above, the topic weather would have an associated sentiment of -5 (hate) while for music the corresponding value is 4 (love). **Note: You don't need to implement the value constraint as MySQL doesn't support it.** A vendor has interest in one or more topics and is interested in tracking all users who are blurting about a topic of interest. A vendor may also have a celebrity as its brand ambassador. Vendors create advertisements that have an associated unique id and a textual content. These advertisements are stored in the system and are available to be shown to the regular set of users (that is, not to the celebrities, just to the other "regular" users). Careful matching is done based upon a historical analysis of all blurts by a user. Based upon the analysis, a user may be shown zero or more advertisements.

#### STEP 4 – Import CSV files

Script Template:

```
LOAD DATA LOCAL INFILE "[CSV file name]" INTO TABLE [table name]
COLUMNS TERMINATED BY ',' LINES TERMINATED BY '\n'
```

For each CSV file, replace [CSV file name] and [table name] with actual CSV file name and corresponding table name, e.g.:

```
LOAD DATA LOCAL INFILE "d:\\csvdata\\advertisement.csv" INTO TABLE
advertisement COLUMNS TERMINATED BY ',' LINES TERMINATED BY '\n'
```

Execute 12 scripts using the GUI client

#### STEP 5 - Form SQL Queries

For the following statements, you are required to form SQL queries and execute them using the GUI client. Then export the result using the name "**Query x.csv**", x being the label of each query. Put all the SQL you formed into a file named "**Script.txt**" in the same order. Then archive the file as "**5720project1-xxxxxxxxx.zip**", xxxxxxxxxx being your student id, and turn it in on Canvas. The filenames of your result has to follow the instructions exactly or you may get a deduction in your credit.

- 1) Print the topicid and total number of blurts related to each topic.
- 2) Print the name and address of all celebrities who are a Tennis Player.
- 3) Display every advertisement for each vendor.
- 4) Print email, password, name, date\_of\_birth, kind of all celebrities who are not

following anyone and are movie stars.

5) Print the email of every vendor's brand ambassador and the total number of followers if there are at least 30 and no more than 80. The contents must be in descending order based on the total.

6) Find all pairs of users (A,B) such that both A and B have blurted on a common topic but A is not following B. Your query should print the names of A and B in that order

7) For each celebrity, find the number of blurts. Order the result in decreasing order of the number of blurts. Your query should print the name of the celebrity and the associated count in decreasing order of the count.

8) Print the email of its brand ambassador and the number users who are following the brand ambassador for each vendor. Your SQL query should print vendor name, email and the total number of users who are following it.

9) Print the following: vendor id, vendor name, the vendor ambassador's email, and total amount of advertisements made by the vendor for all vendors.