Lab 0: Setting Up DB Environment (10 points)

Due: 11:59pm on September 28, 2020

1. Download and install Docker Desktop
   - Go to https://www.docker.com/products/docker-desktop
   - Once installed, Docker is added to your path.
   - If you have Mac or Unix system, you can skip the rest of Step 1 and go to Step 2.
   - If you have Windows, you may need to the use of WSL (Windows Subsystems for Linux) as a consideration for running Docker.
     - How to find out if you need to install WSL or not? Simply run Docker Desktop and it will tell you if you need to install or update WSL.
     - Follow the instruction provided by Docker to install or update WSL.
     - More information can be found: https://docs.microsoft.com/en-us/windows/wsl/install-win10
2. Install MySQL in Docker
   - Reference: https://hub.docker.com/r/mysql/mysql-server/
   - Start Docker Desktop application if it has not been started. If it is already started, you should be able to see the  icon on the task bar.
   - Launch a command prompt and download the image with the following command (I left the tag off to pull down the latest MySQL 8.0):

     docker pull mysql/mysql-server
   - Once downloaded, launch a container from the image using:

     docker run --name=mysqltest -p 3306:3306 -d mysql/mysql-server
     - Breakdown of the command: I start a container from the mysql/mysql-server image and give it the name *mysqltest*.
     - I specify that I want the MySQL instance to be accessible outside the container by adding the ports w/ -p parameter. This is going to make the MySQL instance accessible to localhost address @ 127.0.0.1.
     - The -d parameter tells Docker to run the container in the background which is important because a random root password for MySQL is generated.
   - Grep the logs to get the random root password using:

     docker logs mysqltest 2>&1 | grep GENERATED
   - The log output will include an entry that has a line …

     [Entrypoint] GENERATED ROOT PASSWORD: <random password>
   - Copy that randomly generated root password to your clipboard and then log into the container's MySQL instance with the *docker exec* command:

     docker exec -it mysqltest mysql -u root –p or

     docker exec -it mysqltest mysql -uroot –p

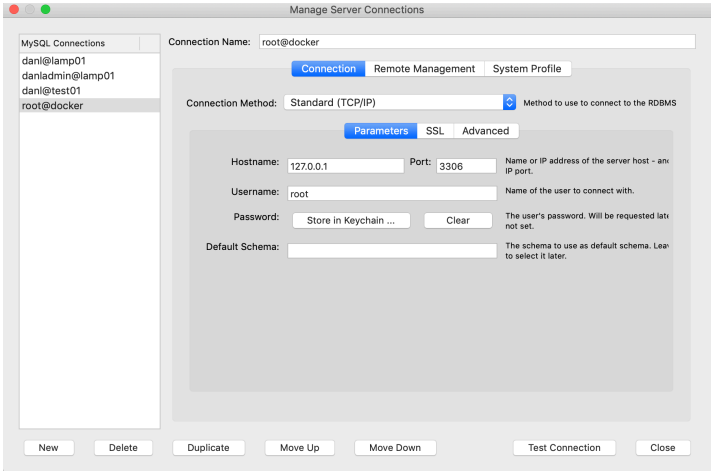
     When prompted, paste the password from your clipboard.
   - Once into MySQL, change the root password from the randomly generated password (e.g., MySQL 8.0 syntax for this example).

     alter user 'root'@'localhost' identified by 'newpassword';

Important Note: You are the only who know this password, so please make sure you can remember it. Don't ask me if you need to reset your password because I have zero control on your system.

- Now, MySQL instance is accessible inside the container via the mysql command line interface, e.g., you may try command: *show databases;*
- Next, we want to access the MySQL instance from outside the container via MySQL GUI tools. To do so, we need to tell MySQL to allow the user (root in this case) access from outside:
  update mysql.user set host = '%' where user = 'root';
- Exit the container's mysql shell using:
  exit;
- Restart mysqltest container:
  docker restart mysqltest

3. Install MySQL Workbench
   - Now we are ready to connect from MySQL Workbench to the instance. Since this is MySQL 8.0 which uses sha2_password authentication, we have to use My SQL Workbench 8.0 which can be downloaded from: https://dev.mysql.com/downloads/workbench/
   - If you use Windows system, during installation, MySQL Workbench may ask you to install prerequisites, follow the instruction to install them. More information can be found: https://mysqlworkbench.org/faq/faq-3/
   - Once MySQL Workbench is installed, run it and create a new connection:



DB Host: 127.0.0.1 (that's your local host IP address)
DB Username: root (unless you have created other users)
DB Password: the one you've changed when setting up the environment
Port: 3306 (the default number)

   - Click "Test Connection" button, and save a screen copy that shows you have successfully connected to your MySQL server.
   - Submit this screen copy as a jpeg or word or pdf file via Canvas.

4. Congratulation! You have successfully set up MySQL Server on your own computer.
5. Docker commands reference: https://docs.docker.com/engine/reference/commandline/docker/
6. Docker tutorials are available to EWU students via LinkedIn Learning: https://support.ewu.edu/support/solutions/articles/10000030698-linkedin-learning-previously-lyndacampus-or-lynda-com