**Network Directory Services Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**SQL Concepts/Practice Lab**

**Learning activity summary:** This lab activity is intended to get you familiar with how database structure works, interacting with the data that are stored in them, and performing data tasks that you may be asked to do in a future IT position.

**Section 1: Database server setup.** For this section you will need to have a MySQL database server running in order to proceed with later steps. An easy way to get one up and running is to use a Docker container, which is a tool that we have explored before. Something like this should work:

*docker run -d -e MYSQL\_ROOT\_PASSWORD=Password1 -p 3306:3306 --name mysql mysql*

**Section 2: Log into your MySQL Server (if needed).** The command to do that might be as simple as the following:

docker exec –it <container ID> /bin/bash #if running mysql in a Dcoker container

*mysql -u root –p*

Note: Once you have logged in, you should see a mysql prompt (*mysql>*).

**Section 3: Creating a test database for our purposes.** Run the following command at the mysql prompt:

*create database ndstest;*

**Section 4: Use the database we just created.** Run the following command at the prompt:

*use ndstest;*

**Section 5: Creating a table, which we will use to store our test information.** Run the following command at the mysql prompt:

*CREATE TABLE students (*

*ID int NOT NULL PRIMARY KEY,*

*LastName VARCHAR(50) NOT NULL,*

*FirstName VARCHAR(50) NOT NULL,*

*Address VARCHAR(50) NOT NULL,*

*City VARCHAR(50) NOT NULL,*

*State CHAR(2) NOT NULL,*

*PostalCode VARCHAR(12) NOT NULL,*

*Email VARCHAR(75) NOT NULL*

*);*

**Section 6: MySQL has built-in help…just in case you need it!** Run the following command:

*HELP CREATE; /\* CREATE can be something else…INSERT, UPDATE, SHOW, etc.) \*/*

**Section 7: Creating or inserting some test data records in our students table.** Run the following commands into the mysql prompt:

*INSERT INTO students VALUES (1234,'Mickelson','Tom','309 South Barstow Street','Eau Claire','WI','54701','mickelsont@charter.net');*

*INSERT INTO students VALUES (3333,'Benoist','Melissa','987 Kryptonite St','Houston','TX','77001','melissa@supergirl.com');*

*INSERT INTO students (ID,LastName,FirstName,Address,City,State,PostalCode,Email) VALUES(5555,'Doe','John','999 Hampton Ave','Houston','TX','77001','john.doe@hampton.net');*

*INSERT INTO students (ID,LastName,FirstName,Address,City,State,PostalCode,Email) VALUES(1111,'Dunham','Jeff','1337 Comedy Blvd','Los Angeles','CA','90001','jeff@dunham.com');*

**Section 8: Show what we just created.** We can select or show what we just did using the following command:

*SELECT \*FROM students;*

**Section 9: We can also show specific of information from the table.** Run the following command:

*SELECT FirstName, LastName, Email FROM students;*

**Section 10: Create more test records for yourself**. Have at least 10 records. If you need help coming up with some test data…you can use a service like Mockaroo (https://www.mockaroo.com/) to generate some. Be sure to have a couple records that have the same first and last names. Also, you might want to keep track of what *INSERT* lines you use…just in case something goes wrong in later steps.

**Section 11: Updating some records.** Using a variation of the following command, try updating a couple of your records:

*UPDATE students SET FirstName = 'Thomas' WHERE FirstName = 'Tom' AND LastName = 'Mickelson';*

**Section 12: Deleting records.** Using a variation of the following command, try deleting a couple of your records:

*DELETE FROM students WHERE LastName = ‘Mickelson’*

**Section 13: Dropping tables and database (total destruction is at hand**). Run the following commands when you are absolutely sure you are done!

*DROP TABLE students;*

*DROP DATABASE ndstest;*

**Section 14: Creating and running a SQL script.** A script is nothing more than a set of SQL statements that are contained in a file that ends with a *.sql* extension (ex. loadtestdata.sql). In this section, design a script that will create a database, use the database, create a table for test data, and populate that table with some test data. Finally, run your script using a variation of the following:

*mysql -u root -p < /path/to/script.sql*

Note: If you’re running a container, be sure the script is inside of the container!

**Section 15: Creating a backup of the database.** Notice how mysql has tools that help us do this.

Schema and data: *mysqldump –d mysql -u root -p > mysql-full-backup.sql*

The “No data” way: *mysqldump -d mysql --no-data -u root -p > mysql-schema-backup.sql*

**Section 16: Done! Get me outta here!** Verify with your instructor that your script worked and that your test data was populated inside of the table you created within the script.

**Instructor sign-off: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**