INT 2080 Final Project (200 marks)

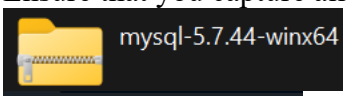
Database Server 1
(MySQL instance 1)

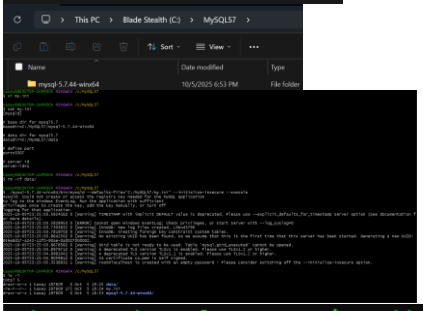
Database Server 2
(MySQL instance 2)

This project will be testing MySQL database upgrade from version 5.5 to version 8/9. Here are the instructions:

- You will be upgrading database from one version to another.
- Database 1 must be a lower version from 5.x (any version in 5.x)
- Database 2 must be higher version from 8.x (any version after MySQL 8.x)
- You can use the same computer to install both software. You can also use separate computers if available and use flash disk to copy backup files.

1. Set up Database 1:
    a. To set up Server 1, download MySQL 5.x Software and install it on your PC. Ensure that you capture all screens during your installation.





```
C:\MySQL57\mysql-5.7.44-winx64\bin>mysqld --install MySQL57 --defaults-file="C:\MySQL57\my.ini"
Service successfully installed.
C:\MySQL57\data>net start MySQL57
The MySQL57 service is starting.
The MySQL57 service was started successfully.
```

b. From commandline, login to Database Server 1 and create a database named “students”.

```
kasey@DESKTOP-1NFROCN MINGW64 /c/MySQL57/mysql-5.7.44-winx64/bin
$ mysql -u root -P 3307 -h localhost
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 3
Server version: 5.7.44 MySQL Community Server (GPL)

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owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> SHOW DATABASES;
+--------------------+
| Database           |
+--------------------+
| information_schema |
| #mysql50#innodb_redo |
| #mysql50#innodb_temp |
| mysql              |
| performance_schema |
| sys                |
+--------------------+
6 rows in set (0.027 sec)

mysql> CREATE DATABASE students;
Query OK, 1 row affected (0.015 sec)

mysql> SHOW DATABASES;
+--------------------+
| Database           |
+--------------------+
| information_schema |
| #mysql50#innodb_redo |
| #mysql50#innodb_temp |
| mysql              |
| performance_schema |
| students           |
| sys                |
+--------------------+
7 rows in set (0.021 sec)
```
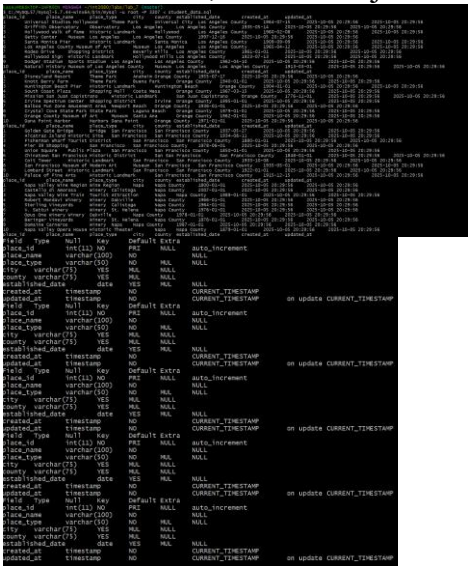

c. Create a script to create 5 tables with 10 values each. Each table must contain auto increment and primary keys.

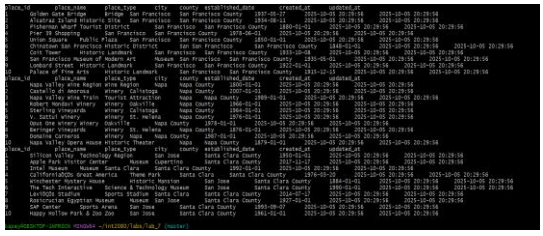
```
$ ls -l
total 16
drwxr-xr-x 1 kasey 197609     0 Oct  5 18:03 documentation/
-rw-r--r-- 1 kasey 197609 14523 Oct  5 20:11 student_data.sql
```

d. From commandline, run the script created in 1c and take screenshots.

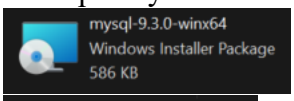
```
kasey@DESKTOP-1NFROCN MINGW64 ~/int2080/labs/lab_7 (master)
$ ls -l
total 16
drwxr-xr-x 1 kasey 197609     0 Oct  5 18:03 documentation/
-rw-r--r-- 1 kasey 197609 14495 Oct  5 20:29 student_data.sql

kasey@DESKTOP-1NFROCN MINGW64 ~/int2080/labs/lab_7 (master)
$ C:/MySQL57/mysql-5.7.44-winx64/bin/mysql -u root -P 3307 < student_data.sql
```

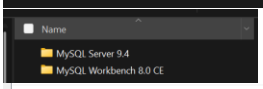
e. From commandline, run commands to display all objects created. Using MySQL Workbench also, show all objects created.

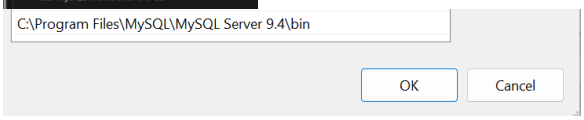


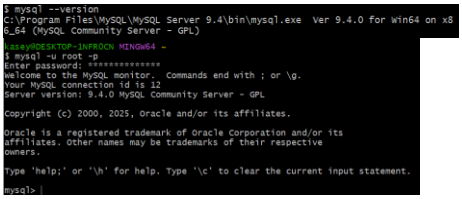


2. Set up Database Server 2:
    a. To set up Database Server 2, download and install MySQL 8.x or higher. Capture all steps in your screenshots.

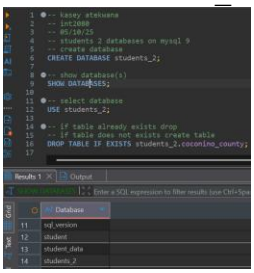




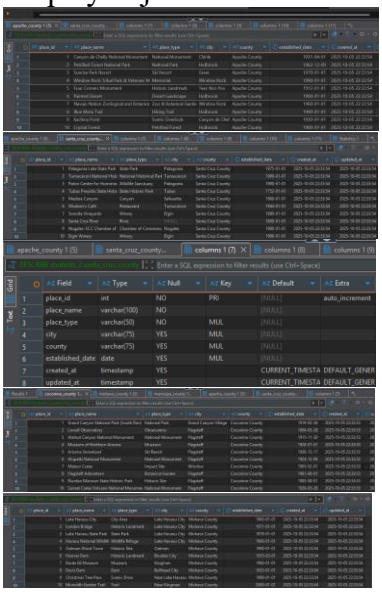




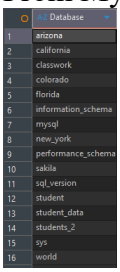
    b. Connect to Database Server 2 from MySQL Workbench and create a database named “students_2”.



    c. Display objects created in 2b from MySQL Workbench.

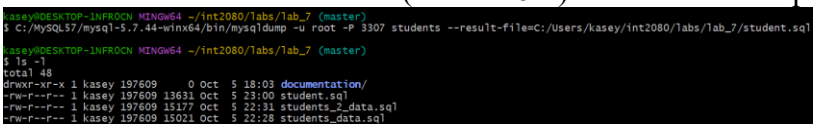


d. From MySQL Workbench, display all databases on Server 2.

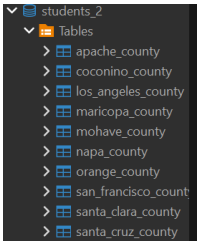


3. Perform database export and restore

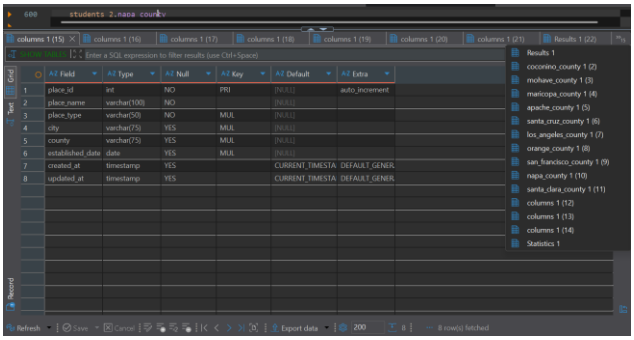
a. Using mysqldump utility from commandline, take a backup of the "students" database on Database Server 1 (Version 5.x). Name the backupfile "student.sql".



b. Using MySQL Workbench, restore the backup file from 3a ("student.sql") into the "students_2" database in the Database Server 2 (Version 8.x and higher) MySQL instance that was created in 2b.



c. Using MySQL Workbench, display the new content of the Database Server 2 instance.

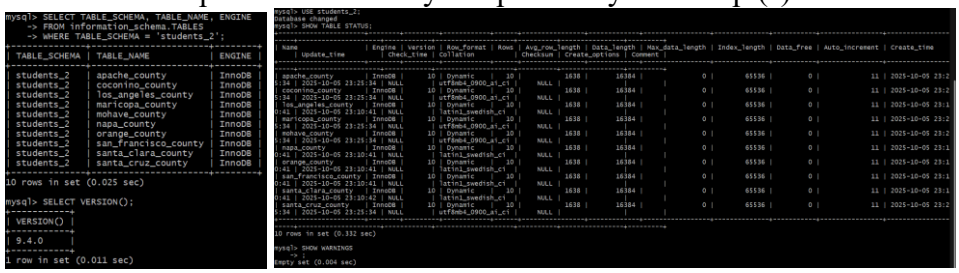


d. Compare content of Server 1 (student database) and Server 2 (student_2 database). Are they different? Explain.

No, they are identical because the student_2 database is a direct backup and restore of student database despite coming MySQL 5.7 to MySQL 9.4.

4. Run required scripts to update the tables in Database Server 2. Read documentation about this step. Attach scripts to your submission.

   4a. Did the script run successfully? Explain why this script(s) is needed.



   Yes, the script ran successfully with no compatibility issues found. All 5 tables are accessible and fucntioning properly on MySQL 9.4, confirming the upgrade was a success.

   4b. What precautions did you take while running the script?
   Before running the update script, I created a backup of the original database, restored it into a separate database to avoid overwriting existing data. Verified the correct port numbers for each MySQL instance. And lastly, I checked for errors/warnings after each step to ensure data integrity during the migration process.

5. What precautions did you take while completing all these tasks (database upgrade)?
   The most important step is that I backed up my database before migrating. I also tested the store on a separate database instead of overwriting the original. Verified data integrity by comparing row counts between source and destination. And lastly, using the correct port number to connect to MySQL server.

6. What other strategy could be used to complete database upgrade?
   Another strategy a database administrator can use to upgrade a database is using strategies such as in-place upgrades, side-by-side migrations, or replications to minimize downtime and risk.

NOTE:

- Screenshots and explanation must be created for all steps in Q1-3. Insert all screenshots in a MS Word or similar document and convert to pdf.
- All screenshots must be full screen showing dates on the taskbar
- Attach script created in 1c to your submission
- Answer all questions