CSE 4701, Fall 2023 Project 1

Part II: Due Oct 8, 2023 (Sun) 11:59 pm at HuskyCT (160 points)

In Part II, you experiment with various features of SQL. MySQL Reference Manual should be handy for doing these problems.

1. Your goal is to test if you can extend the table schema you already created (from Part 1), i.e., you would like to extend PUBLISHER by adding one more attribute City because this information is missing. Use screen capturing of your interaction with MySQL to show your work.

   (a) Use "DESCRIBE" command to show your table schema for PUBLISHER from Part I.
   (b) Use ALTER to modify your existing PUBLISHER schema to add City attribute.
   (c) Use "DESCRIBE" command to show the new schema for PUBLISHER.
   (d) Use SELECT * statement to show the instance of your modified PUBLISHER table.
   (e) Discuss what you find for the attribute values for City, i.e., is it filled with NULL or just blank?

2. Now empty each table in your database Book_Loan_DB. Use SELECT * statement to show each of your table is empty. Use screen capture of your interaction with MySQL to show your work.

3. Download data files available in Project1_Part2_Data and use LOAD DATA statement to "fill" this database. Some code illustrating how to use LOAD DATA is given below but studying MySQL Reference manual should be helpful. No need to show your work as your answers for Problem No. 5 should assume you have done this part.

4. You now show that you successfully uploaded tuples to respective tables. For brevity, you show the number of tuples stored in each table using SQL (i.e., Counting Rows). Use screen capture of your interaction with MySQL to show your work.

5. Specify the following queries in SQL on the database Book_Loan_DB instance you created. You must use terminal mode (command line) to express and run your SQL statements, not using GUI workbench. Use screen capture of your interaction with MySQL to show your work. Your screen capture should include both SQL statement and the result of running your SQL statement.

   a. How many copies of the book titled *The Lost Tribe* are owned by the library branch whose name is 'Sharpstown'?
   b. How many copies of the book titled *The Lost Tribe* are owned by each library branch?
   c. Retrieve the names of all borrowers who do not have any books checked out.
   d. Assume today is 1/3/2023. For each book that is loaned out from the Sharpstown branch, retrieve the book title, the borrower's name, and the borrower's address.
   e. For each library branch, retrieve the branch name and the total number of books loaned out from that branch.
   f. Retrieve the names, addresses, and number of books checked out for all borrowers who have more than two books checked out.
   g. For each book authored (or coauthored) by Stephen King, retrieve the title and the number of copies owned by the library branch whose name is Central.

h. Assume today is 2/2/2023. Find book(s) that cannot be loaned because all copies in the library branch have been completely loaned out. Show book title and branch name. (Hint: B3 in BR3).
i. Find the name and address of the borrower who loaned all the books authored by Henry A Kissinger.

6. You are interested in testing how constraints can be set up in MySQL.

   a. Add a constraint specifying that BOOK_LOANS.Due_date cannot be earlier than BOOK_LOANS.Due_out. Show your SQL statement to add this constraint.
   b. Insert a tuple into BOOK_LOANS that violates this constraint and see how MySQL reacts. Use screen capture to show your insert SQL statement and the reaction by the MySQL database.

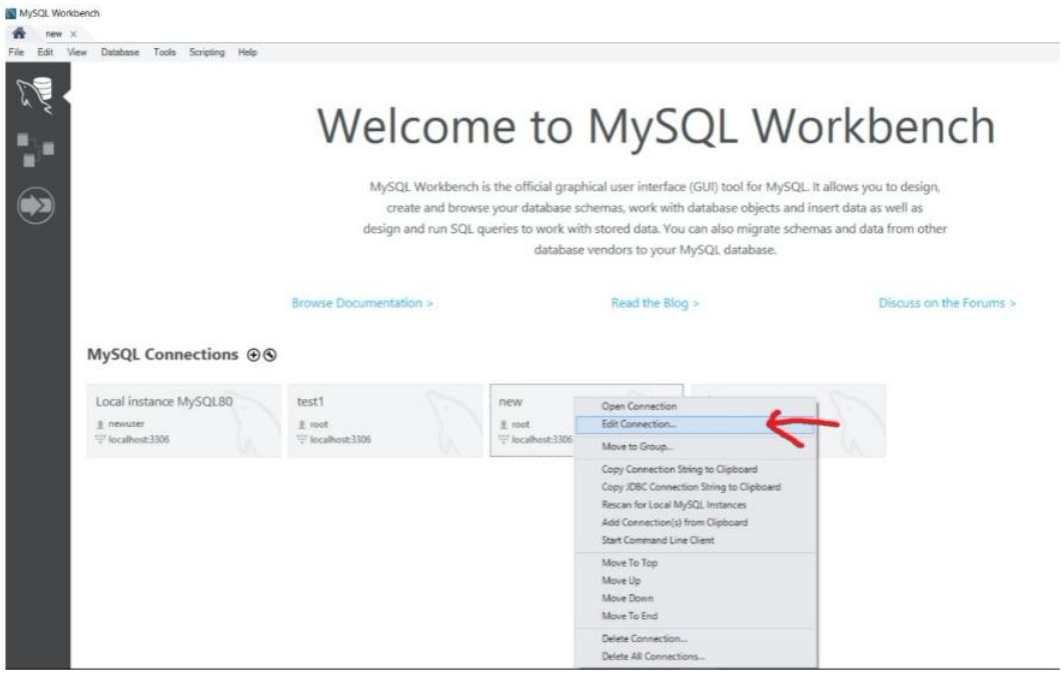
Report Format: Your report must be a PDF document with your full name as the file name (e.g., JohnDoe.pdf). The first line of your report must include "Your full name, Project 1 Part 2" for easy identification for grading purpose.

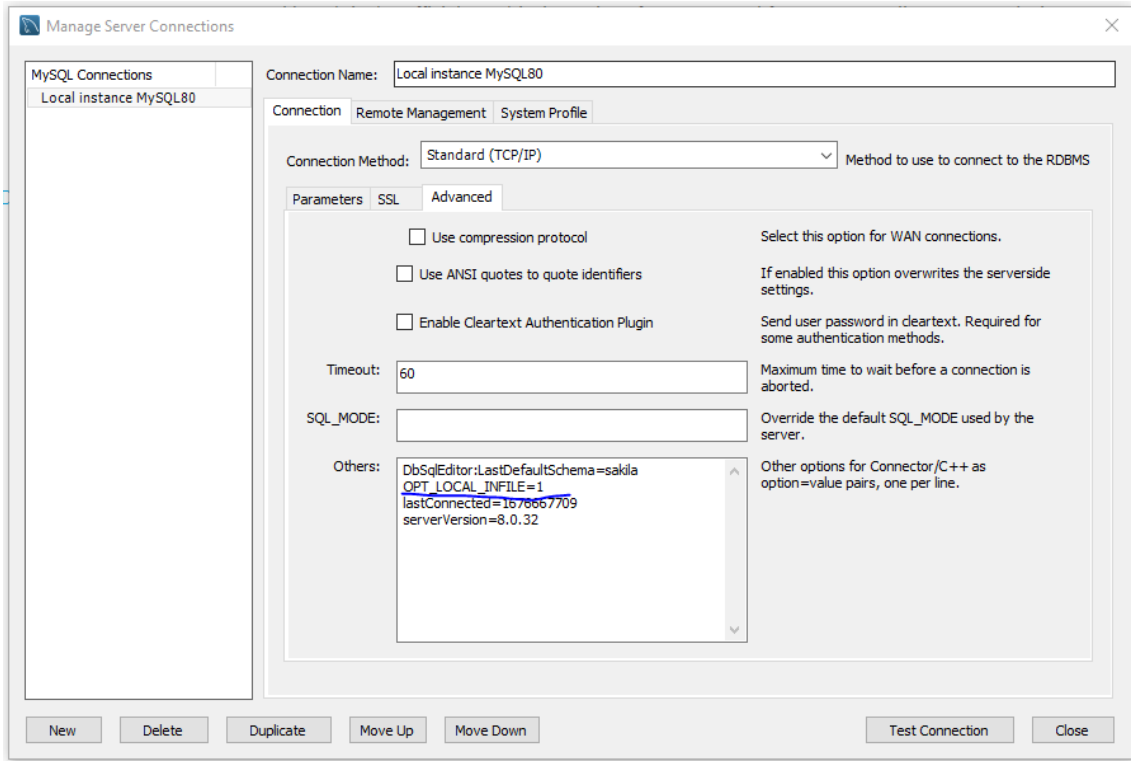
Late submission penalty, **5% off per day**. **Submission cut-off** is 10/15/2023 (Sun) 11:59 pm.

Importing .csv Data Into MySQL Tables

In Project 1 Part 2 (Problems 2-5), you learn how to create a table instance by "bulk uploading" data from a file rather than creating many insert DML statements to add new tuples to a table. Basically you read tuple data in a .csv format and load it all at once into the corresponding MySQL tables. Steps you follow are given below. Additional information is available at: https://stackoverflow.com/questions/31450389/connect-with-local-infile-option-in-mysql-workbench

1. Add this line:
OPT_LOCAL_INFILE=1
Into:





2. Restart the workbench.

3. Download data files in HuskyCT called “Project1_Part2_Data” folder. This folder contains csv files for each of the tables you will be filling.

4. To fill BOOK table, run the following query on the MySQL command line:

```
LOAD DATA LOCAL INFILE 'directory/BOOK.csv' INTO TABLE BOOK
FIELDS TERMINATED BY ',' ENCLOSED BY '"'
LINES TERMINATED BY '\r\n';
```

Make sure to include the correct directory of your .csv file. This query iterates through the .csv file to find delimiters that denote a column attribute or the end of a tuple.

Note: BOOK_LOANS.csv is a txt file created by adding '.csv' at the end of the file name. This formatting is needed to handle DATE data type for Date_out and Due_date. Warning: Do not open these files in Excel as doing so will change the date format and cause SQL loading failures.

5. Repeat this process for the rest of the data tables. Be mindful that all date columns are of datatype “data”, which takes the form of **YEAR/MONTH/DAY**.