CSCD 327 Project (35 points)

In this project, you will focus on writing SQL queries. In addition, you will embed your SQL queries into Java (using JDBC) to implement a standalone program that answers several queries about the crime database (First, you need to create a new database named ***DBUsername_crimeDB***; then you need to import the tables using *crimeDB.sql*). Please refer to *schema.pdf* to find the partial description of the database.

1. Java Files

You are provided two java files: 'TestMyQuery.java' and 'MyQuery.java'.

TestMyQuery.java

This file provides the main function for running the program. You should only modify three variables (mydatabase, username, and password), replacing them with your own information.

```
String serverName = " 10.219.0.50:3306";
String mydatabase = "DBUserName_crimeDB";
String url = "jdbc:mysql://" + serverName + "/" + mydatabase; // a JDBC url
String username = "DBUsername";
String password = "DBPassword";
```

MyQuery.java

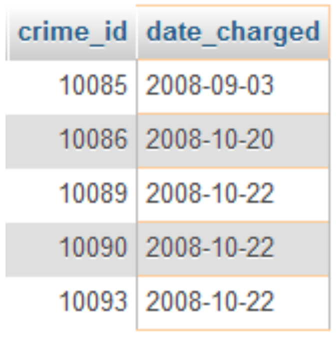
This is the file in which you need to implement the query functions. Feel free to make any modifications to the file.

2. Queries (35 points)

There are 7 queries (Queries 1-7) in this assignment (Query 0 is a sample solution provided by the instructor). The points are evenly distributed (5 points per query). However, the queries may vary in terms of difficulty. If you get stuck on a harder query, try an easier one first, and then come back to the tough one.

Query 0: List all the crimes that have a charge date before October 23, 2008.

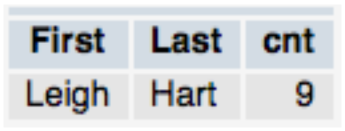
Here is the correct query result for your reference:



crime_id	date_charged
10085	2008-09-03
10086	2008-10-20
10089	2008-10-22
10090	2008-10-22
10093	2008-10-22

Query 1: List the name of each officer who has reported more than the average number of crimes officers have reported.

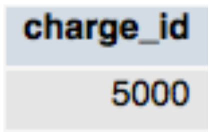
Here is the correct query result for your reference:



First	Last	cnt
Leigh	Hart	9

Query 2: List the information on crime charges for each charge that has had a fine (*fine_amount*) above average and a paid amount (*amount_paid*) below average.

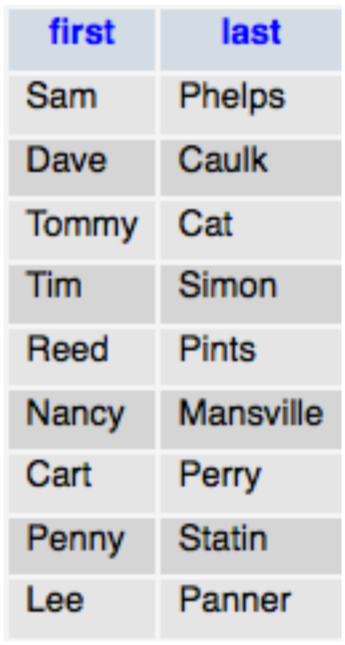
Here is the correct query result for your reference:



charge_id
5000

Query 3: List all the names of all criminals who have had any of the crime code charges involved in crime ID 10089.

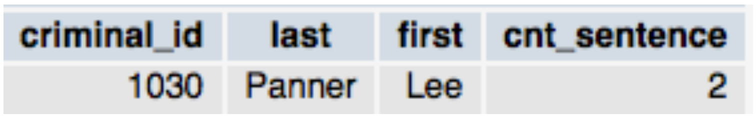
Here is the correct query result for your reference:



first	last
Sam	Phelps
Dave	Caulk
Tommy	Cat
Tim	Simon
Reed	Pints
Nancy	Mansville
Cart	Perry
Penny	Statin
Lee	Panner

Query 4: List criminals (ID and name) who have multiple sentences assigned.

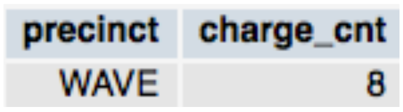
Here is the correct query result for your reference:



criminal_id	last	first	cnt_sentence
1030	Panner	Lee	2

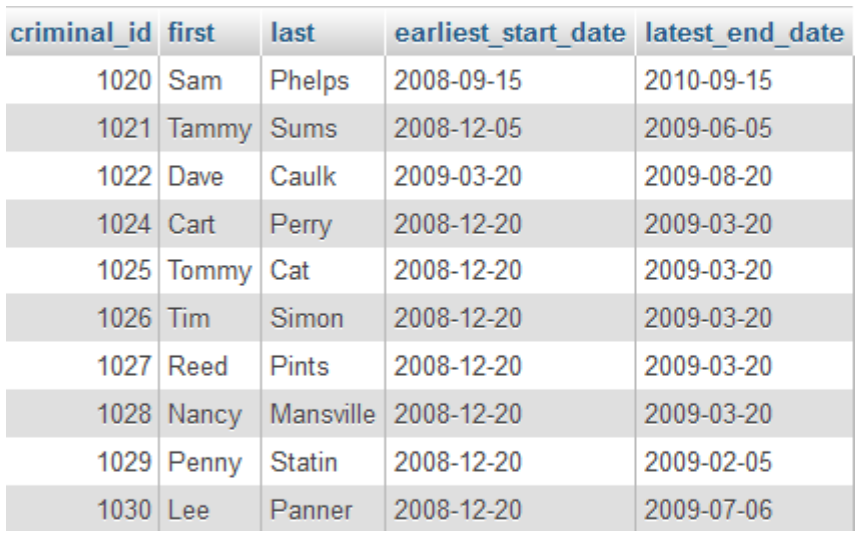
Query 5: List the total number of crime charges successfully defended (i.e, *charge_status = 'GL'*) by precinct. Include only precincts with at least seven guilty charges.

Here is the correct query result for your reference:



precinct	charge_cnt
WAVE	8

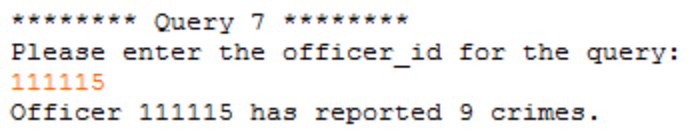
Query 6: For each criminal, list the start_date of the first sentence, and the end_date of the last sentence.



criminal_id	first	last	earliest_start_date	latest_end_date
1020	Sam	Phelps	2008-09-15	2010-09-15
1021	Tammy	Sums	2008-12-05	2009-06-05
1022	Dave	Caulk	2009-03-20	2009-08-20
1024	Cart	Perry	2008-12-20	2009-03-20
1025	Tommy	Cat	2008-12-20	2009-03-20
1026	Tim	Simon	2008-12-20	2009-03-20
1027	Reed	Pints	2008-12-20	2009-03-20
1028	Nancy	Mansville	2008-12-20	2009-03-20
1029	Penny	Statin	2008-12-20	2009-02-05
1030	Lee	Panner	2008-12-20	2009-07-06

Query 7: Write a stored procedure to get the number of crimes reported by an officer.

First you define a stored procedure in *crimeDB* named *getNumber*. This procedure takes an *officer_id* as input, and returns the number of crimes reported by the officer as output. In other words, *getNumber*() has one input parameter and one output parameter. Test this procedure in MySQL Workbench to make sure it functions properly. Next, your application program asks the user to enter an officer_id (e.g., "111115"), and the program should return the number of crimes reported by the officer accordingly. Here is a snapshot of the output.



```
******** Query 7 ********
Please enter the officer_id for the query:
111115
Officer 111115 has reported 9 crimes.
```

3. Compiling and Running Your Code

Eclipse Users

1) Download three files from Canvas:
   a. TestMyQuery.java
   b. MyQuery.java
   c. mysql-connector-java-8.0.19.jar
2) Open TestMyQuery.java using Eclipse
   a. Edit variable *password* in TestMyQuery.java
   b. Go to Project → Properties → Library → Add External Jar, and add *mysql-connector-java-8.0.19.jar* file
   c. Now you should be able to compile and run TestMyQuery without any error messages.

jGRASP Users

1) Download three files from Canvas:
    a. TestMyQuery.java
    b. MyQuery.java
    c. mysql-connector-java-8.0.19.jar
2) Open TestMyQuery.java using jGRASP
    a. Edit variable *password* in TestMyQuery.java
    b. Go to Settings→PATH/CLASSPATH→Workspace, select CLASSPATHS tab, and add a new class path pointing to *mysql-connector-java-8.0.19.jar* file
    c. Now you should be able to compile and run TestMyQuery without any error messages.

IntelliJ Users

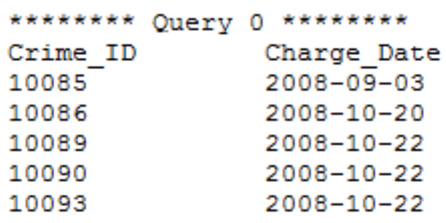
1) Download three files from Canvas:
    a. TestMyQuery.java
    b. MyQuery.java
    c. mysql-connector-java-8.0.19.jar
2) Open TestMyQuery.java using IntelliJ
    a. Edit variable *password* in TestMyQuery.java
    b. Go to **File** from the tool bar → Select **Project Structure** → Select **Modules** at the left panel → Select **Dependencies** tab → Select + icon → Select **1 JARs or directories** option, and add *mysql-connector-java-8.0.19.jar* file.
    d. Now you should be able to compile and run TestMyQuery without any error messages.

4. Submission

You need to submit your work via Canvas. Include the following files into a single .zip file, name it as YourFirstName_YourLastName.zip, and submit this file:

- TestMyQuery.java
- MyQuery.java
- result.txt, result.doc, result.pdf, or result.jpg

You don't need to provide the results in any fancy format, but I hope the results are organized clearly and neatly. Here's the sample output from Query 0:



```
******** Query 0 ********
Crime_ID          Charge_Date
10085             2008-09-03
10086             2008-10-20
10089             2008-10-22
10090             2008-10-22
10093             2008-10-22
```