MLDS-413 Introduction to Databases and Information Retrieval
Homework 3: Basic SQL Queries

Name 1: _____

NetID 1: _____

Name 2: _____

NetID 2: _____

Instructions

You should submit this homework assignment via Canvas. Acceptable formats are word files, text files, and pdf files. Paper submissions are not allowed and they will receive an automatic zero.

As explained during lecture and in the syllabus, assignments are done in groups. The groups have been created and assigned. Each group needs to submit only one assignment (i.e., there is no need for both partners to submit individually the same homework assignment).

Each group can submit solutions multiple times (for example, you may discover an error in your earlier submission and choose to submit a new solution set). We will grade only the last submission and ignore earlier ones.

Make sure you submit your solutions before the deadline. The policies governing academic integrity, tardiness and penalties are detailed in the syllabus.

Homework Instructions

For this assignment, you will use the program "DB Browser for SQLite" (available at http://sqlitebrowser.org/). This is the same software we have worked with in class. I posted several sample database files on Canvas in the Lecture Slides page. These database files can be opened with the DB Browser for SQLite. The database files we will use for this homework are:

- SalesOrders.sqlite
- SchoolScheduling.sqlite

Using these datasets, please answer each of the questions that follow with one query only. The query can have subqueries, if needed. For every question, we expect to see both your SQL code and the resulting data. Copy and paste both the SQL code and the results into a document and submit it following the submission instructions.

You may find it helpful to use the "Basic SQL Cheat Sheet" posted on Canvas.

Each one of the questions below is worth **10 points**.

EXAMPLE:

Question: Which bikes cost more than $1000?

Answer:

```
SELECT ProductName, RetailPrice
FROM Products
WHERE CategoryID = (SELECT CategoryID
                    FROM Categories
                    WHERE CategoryDescription = "Bikes")
  AND RetailPrice > 1000;
```

Output:

```
"Trek 9000 Mountain Bike"    "1200"
"Eagle FS-3 Mountain Bike"   "1800"
"GT RTS-2 Mountain Bike"     "1650"
```

SchoolScheduling.sqlite

1) How many students are majoring in English or Mathematics?

```
select count(StudentID)
from Students
where StudMajor in (select MajorID
                    from Majors
                    where Major = 'English' or Major = 'Mathematics');
```

Output:
6

2) What is the percentage of students with majors in English or Mathematics?

```
select 100 * sum(num) / (select count(StudentID) from Students)
from (select count(StudentID) as num
      from Students
      where StudMajor in (select MajorID
                          from Majors
                          where Major = 'English' or Major = 'Mathematics'));
```

Output:
33

3) How many unique last names does the staff have?

```
select count(distinct StfLastName)
from Staff;
```

Output:
19

4) Each staff member has a proficiency rating for a number of subjects. For each staff member we can calculate its average proficiency rating (average across all subjects). What is the minimum value of the average proficiency rating of the staff?

```
select Min(AvgRating)
from (select avg(ProficiencyRating) as AvgRating
      from Faculty_Subjects
      group by StaffID);
```

Output:
8.33333333333333

5) In the Staff table, which last names have a length longer than 9 characters?

```
select StfLastName
from Staff
where Length(StfLastName) > 9;
```

Output:
Bonnicksen
Rosales III

SalesOrders.sqlite

6) How many customers live in TX?

```
select count(CustomerID)
from Customers where CustState = 'TX';
```

<u>Output:</u>
6

7) What are the top 5 highest revenue amounts that product number 3 has ever generated in a sale?

```
select QuotedPrice * QuantityOrdered as Revenue
from Order_Details where ProductNumber = 3
order by Revenue desc limit 5;
```

<u>Output:</u>
363.75
225
225
225
225

8) How many orders has a customer named Angel Kennedy placed so far?

```
select count(OrderNumber)
from Orders
where CustomerID = (select CustomerID from Customers
                where CustFirstName = 'Angel' and CustLastName = 'Kennedy');
```

<u>Output:</u>
32

9) What is the total revenue that a customer named Angel Kennedy has brought through product sales?

```
select sum(QuotedPrice * QuantityOrdered)
from Order_Details
where OrderNumber in
    (select OrderNumber from Orders
     where CustomerID = (select CustomerID
                        from Customers
                        where CustFirstName='Angel' and CustLastName='Kennedy'));
```

<u>Output:</u>
186217.65

10) In which state do most customers live? Report both the state name and the number of customers living in that state.

```
select CustState, max(CustCount)
from (select count(CustomerID) as CustCount, CustState
        from Customers
        group by CustState);
```

<u>Output:</u>
CustState   max(CustCount)
WA   11