Lab 1: SQL Practice

Due date: Monday, April 8, 11:59pm.

MySQL and MySQL accounts

MySQL Accounts

These setup instructions refer to running mysql client from the CSL linux machines, such as the ones found in the CSL or in 14-256. They also should work when you are working on one of the CSL servers (`unix1, unix2`, etc.)

Our MySQL server. You will be working on the MySQL (MariaDB) server running on `ambari-head.csc.calpoly.edu`. You **do not need** to ssh to `ambari-head` in order to complete the assignment, but you **do need** to set up your CSL `mysql` client to connect to the `ambari-head` server.

As of this moment all of you should have accounts on the `ambari-head` MySQL server. If you took a class with Dr. Stanchev (or Dr. Buckalew?), the account persisted from that class. Otherwise, the account was created for you. I will pass around the account information for any newly created accounts. The accounts are protected by a password. Instructions for modifying the password are found further in this document. Your MySQL account name is the same as your CalPoly loginId.

`mysql` client. The `mysql` client prgram is installed on all machines in CSL and on all CSL servers.

```
dekhtyar@csclnx11:~ $ which mysql
bin/mysql
```

In order to correctly access the CSC 365 MySQL server, you shall type the following

```
$ mysql -h ambari-head.csc.calpoly.edu -p
```

or

```
$ mysql -h ambari-head.csc.calpoly.edu -u <username> -p
```

where <username> is your Cal Poly login id.

Alternatively, create a file my.cnf in the root directory of your Cal Poly account. Put the following content in it:

```
[mysql]
host=ambari-head.csc.calpoly.edu
user=<calPolyLoginId>
password
```

Here, <calPolyLoginId> is your Cal Poly login Id.

After that, execute the following command:

```
alias mysql='mysql --defaults-extra-file=~/my.cnf'
```

or add this command to your .bashrc file, and execute

```
$ source .bashrc
```

command in your home directory.

After this, you can connect to the ambari-head server by simply typing

```
$ mysql
```

Once logged into the MySQL server, switch to the database you will be using for this lab:

```
mysql[none]> use ebakery
Database changed
mysql[ebakery]>
```

You are now ready to work on the assignment.

For more information on working with mysql command line client, please see the CSC 365 handouts that can be found on the instructor's web site.

Assignment Preparation

This is an individual lab. Each student has to complete all work required in the lab, and submit all required materials **exactly as specified** in this assignment.

The assignment uses an EXTENDED BAKERY database. For those familiar with the CSC 365 BAKERY database, the EXTENDED BAKERY database removes the portion of the old BAKERY dataset, and replaces it with some new structures. The full description of the dataset is distributed as a separate document.

Rules

We use the same conventions concerning the use of SQL in this course as I use in CSC 365. In particular:

- Queries must be written using ONLY the information contained in the text description of the information needs. You are not allowed to look up keys in the database and use them - this what joins are for.
- MySQL's SELECT ... ORDER BY <X> LIMIT 1 construct **CANNOT BE USED** in the outer query implementing a "find objects with minimal/maximal amount of some property" types of queries.
- You may choose between the use of JOIN syntax or the use of cartesian product syntax in the FROM clauses of your SELECT statements.
- Remember that MySQL has UNION operator, but does not have INTERSECTION and DIFFERENCE (or MINUS) operators.
- Where possible, privelege the use common SQL syntax rather than MySQL-specific syntax.
- Specifically, if your query contains a GROUP BY clause, the use in SELECT clause of attributes *not mentioned* in the GROUP BY clause (that is - direct use w/o aggregates) is **absolutely prohibited**. Your query will score 0 if you do it regardless of whether it returns correct answer.

  (Example: the query below is **WRONG AND WOULD RECEIEVE A SCORE OF 0**

  ```
  SELECT Id, Name, COUNT(*)
  FROM People
  GROUP BY Id;
  ```

)
- use AS for aliasing columns in SELECT clause. Use no keywords for aliasing tables in the FROM clause. For example:

```
SELECT Id, Salary+Bonus AS TotalCompensation
FROM Employees e
WHERE e.Department = 'Research';
```

- use `LIMIT` only where proscribed in the query.

If in doubt regarding the use of a specfic SQL feature – ask me.

SQL queries

For this assignment you will prepare a number of SQL queries.

EBAKERY dataset

Write an SQL script containing SQL statements answering the following information requests. Name your file `lab1-ebakery.sql`.

1. Find all employees for the San Luis Obispo store. Report their names and positions.
2. Report all dates on which the San Luis Obispo store had at least one sale of `Raspberry Lemonade`. Order the dates chronologically, and report each date only once.
3. Report all sales that occurred in the San Luis Obispo store on January 22, 2000. For each sale, report the receipt number and the name of the employee who conducted the sale.
4. List all the least expensive items on the menu. For each type of item list its name (Flavor, Food) and type (drink or pastry).
5. For each Los Angeles location list the total number of recorded sales (receipts) in the database. For each location supply store number, street address and city. Output the results ordered by the total number of sales.
6. For each store with more than three employees report the total sales amount. Report the store number, city and state and the total sales amount. Sort the output by the total sales amount.
7. Find the bakery/bakeries that sold the largest number of `Walnut Cookies`. Report store number, city, state, street address and the number of cookies sold.
8. For each type (the value of `Food` attribute) of pastry (but not drink)[1], report the total amount in sales from California stores. Sort results in descending order by the total sales amount.

[1] Check the values in the `Goods.Type` attribute

9. Find the employee(s) responsible for the largest number of sales. Report their name(s) and location(s) (store number, city, state, street).

10. For each Arizona and Nevada store report the most popular pastries (that is, the pastry/pastries that the store sold more than other pastries). Report the city, state, street address for the store and the flavor and food type for the pastry.

11. Report, as a single record, the total number of days during which the Arizona stores outsold (total revenue) the Nevada stores, and the total number of days during which the Nevada Stores outsold the Arizona stores. Reminder: do it as a single SQL query.

Submission Instructions

Submit one file: `lab1-ebakery.sql`. Make sure that the file contains a header comment with your name and email address. Each query needs to be prefaced by a comment that *at least* states the query number.

Submit the file using `handin` as follows:

```
handin dekhtyar lab01 <files>
```