Lab 3: Potpourri, Part 2

Due date: Tuesday, February 7, 3:00pm

Lab Assignment

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 lab continues the data manipulation tasks from Lab 3-1.

The tasks in this lab use five datasets, BAKERY, CSU, KATZENJAMMER, and AIRLINES, which were not used in Lab 3-1.

Submission filenames. You will submit the following files for each dataset:

- <DATABASE>-setup.sql: your CREATE TABLE statements.
- <DATABASE>-build-<file>.sql: one script per table that inserts all tuples in the table. Each tuple must be inserted using a separate INSERT INTO statement.
- <DATABASE>-insert.sql: basically a script that, when run inserts ALL tuples into all tables of the database. (A script that consists of source <DATABASE>-build-<file>.sql commands usually works. So does a script that is the results of concatenating all <DATABASE>-build-<file>.sql files in the correct order).
- <DATABASE>-cleanup.sql: the DROP TABLE script.
- <DATABASE>-test.sql: the database test script.

In addition, for the datasets mentioned in this part of the assignment, you will submit a <DATABASE>-modify.sql script which performs all the required tasks.
Traceability

Your `<DATABASE-modify.sql>` scripts will consist of a number of SQL DDL and DML commands. Each script must have a top comment specifying your full name and cal poly email (login id).

Additionally, each SQL statement you place into the file must be prefaced with a short comment specifying its purpose. If you are skipping a command (e.g., because you were not able to make it work), place the comment specifying that you skipped a SQL statement into your script. For example, if you are asked to write a SQL command that adds a new attribute `foo` to table `X`, deletes a few records from this table, and then instantiates it `foo` to 10 for all remaining tuples, your script shall have comments similar to the ones shown below (assuming you skip the second command):

```
...
-- Add attribute foo to table X
ALTER TABLE ....
...
;
-- Delete tuples [Not Implemented]
-- Set value of foo to 10
UPDATE ....
...
;
```

Data Manipulation Tasks

The assignments in this part are specific to individual databases you created in Lab 2. Please execute them only on the specified datasets. The assignments may ask you to change both the schemas and the instances of the databases.

[AIRLINES dataset.] Create an SQL script `AIRLINES-modify.sql` which performs the actions described below.

You are modeling corporate takeover of a number of routes from one airport in the database.

1. Remove from the flights database all flights except for those to and from AKI (that’s the airport code).

2. You will be modeling corporate takeover by Continental of all flights except those operated by Virgin and AirTran to and from AKI. For this problem (and this problem ONLY)\(^1\), you will look up the

\(^1\)As opposed to similar questions in future labs.
numeric IDs for each airline, and substitute them for airline names in the commands you need to develop.

3. For all flights NOT operated by Continental, AirTran or Virgin, increase the flight number by 2000 (this will ensure that after the corporate takeover, flight numbers are still unique).

4. First, some context on how the data in the Flights table is organized. All flights in this table come in pairs. The first flight starts at Airport 1 and goes to Airport 2. The second flight goes from Airport 2 to Airport 1 (the return flight). The flight numbers of these two flights are different by 1 - one flight number is even, one is odd.

For all pairs of flights to/from AKI NOT operated by Continental, AirTran, or Virgin, you need to flip the flight numbers. That is, if a flight from AKI to some other airport had an even flight number $N$, it needs to be replaced by $N + 1$, while, the flight number for a return flight will change from $N + 1$ to $N$. Conversely, if a flight from AKI has an odd flight number $N$, it needs to be replaced by $N - 1$, while the flight number of the return flight needs to change from $N - 1$ to $N$.

(In other words, all even-numbered flights need to increase by 1, all odd-numbered flights need to decrease by 1.)

Write a sequence of SQL commands that achieve this result.

**NOTE:** You can use built-in MOD(N,D) function which returns the remainder of deleting $N$ by $D$.

Also, you can perform any temporary operations you want with the Flights table to achieve this task, as long as you clean up after yourself - i.e., as long as after all the commands are completed, the only change in the Flights table is the flipped flight numbers.

5. Complete the corporate takeover. Replace the airline for all flights to and from AKI except for AirTran and Virgin with Continental.

6. Output the contents of the flights table using the following SQL statement:

   ```sql
   SELECT *
   FROM <Flights-table>
   ORDER BY <Airline-column>, <flight-no-column>;
   ```

   replacing <Flights-table> with the name of the flights table in your database, and replacing <Airline-column> and <flight-no-column> with the name of the appropriate columns in that table.

[BAKERY dataset.] Create an SQL script BAKERY-modify.sql which performs the actions below.
1. Remove from the table containing the listing of the pastries, information about all pastries except for Cakes.

2. The bakery manager is looking to adjust the prices of the pastries to accommodate for seasonal changes in the prices of the ingredients.

3. Increase the prices of the chocolate and the Opera Cake by 20%.

4. Reduce the prices of Lemon Cake and Napoleon Cake by $2.

5. Reduce the price of all other cakes by 10%.

6. Show the contents of the table using the following SQL statement:

   ```
   SELECT *
   FROM <Pastry-table>
   ORDER BY GID;
   ```

   replacing <Pastry-table> with the name of the table containing the list of pastries in your database.

[CSU dataset.] Create an SQL script CSU-modify.sql which performs the actions below.

**For this assignment (and this assignment only),** you need to look up the campus ID number for each campus name mentioned below, and the numeric discipline enrollment ID for each discipline mentioned below, and use these Id numbers in the commands where campus identity and/or discipline identity is used.

1. Keep in the table documenting campus enrollments by discipline only the information about the following enrollments:

   - Engineering majors from Cal Poly San Luis Obispo and Cal Poly Pomona.
   - Long Beach State enrollments for disciplines with more than 200 graduate students.
   - All enrollments in Computer and Information Sciences for schools with more than 500 undergraduate majors.

2. Output the remaining contents of the discipline enrollments table using the following SQL statement:

   ```
   SELECT *
   FROM <Discipline-Enrollments-Table>
   ORDER BY <CampusID-column>, <DisciplineId-column>
   ```

   replacing <Discipline-Enrollments-Table> with the name of the discipline enrollments table in your database, and replacing <Campus-ID-column> and <DisciplineId-column> with the names of the appropriate attributes in that table.
3. Keep in the table documenting CSU fees only the information that matches ALL the conditions below:

- The fee is greater than $2,500;
- The year is either 2002 or one of 2004—2006.
- The campus is either Cal Poly San Luis Obispo, Cal Poly Pomona or San Jose State.

4. Output the remaining contents of the fees table using the following SQL command:

```
SELECT *
FROM <Fees-table>
ORDER BY <CampusId-column>, <Year-column>
```

replacing `<Fees-table>` with the name of the CSU fees table in your database, and replacing `<CampusId-column>` and `<Year-column>` with the names of the appropriate columns in that table.

[KATZENJAMMER dataset.] Create a SQL script `KATZENJAMMER-modify.sql` which performs the following actions.

1. In the table specifying which instruments the band members play on each song (we refer to it as the "instruments table" below), replace all occurrences of 'bass balalaika' with 'awesome bass balalaika', and all occurrences of 'guitar' with 'acoustic guitar'. (Please note that you may need to change the length of the instrument name field if it is not long enough in your table - do it using a table schema modification command, rather than in the CREATE TABLE statement).

2. Keep in the instruments table only the information about 'acoustic guitar' players and the information about all instruments Turid (her band member id is 4 - you can use it directly) played on all songs.

3. Run the following SQL query:

```
SELECT *
FROM <instruments-table>
ORDER BY <Song-id>, <Bandmate-Id>;
```

where `<instruments-table>` is the name of your instruments table, and `<Song-id>` and `<Bandmate-Id>` are the columns in this table with the song and band member Ids respectively.

4. Add a new attribute to the table describing the albums released by Katzenjammer. The attribute should store the total number of songs on the album.
5. Based on information stored in the tracklists table (look up the CSV file if you have to), update each record in the albums table to show the correct number of tracks.

6. Run the following SQL query:

```
SELECT *
FROM <albums-table>
ORDER BY <Year>;
```

where `<albums-table>` is the name of your table of Katzenjammer albums, and `<Year>` is the name of the column in the albums table that stores the year of the album release.

**Submission Instructions**

Please, follow these instructions exactly. Up to 10% of the Lab 3-2 grade will be assigned for conformance to the assignment specifications, including the submission instructions.

Please, name your files exactly as requested (including capitalization), and submit all files in a single archive. Correct submission simplifies grading, and ensures its correctness.

Please include your name and Cal Poly email address in all files you are submitting. If you are submitting code/scripts, include, at the beginning of the file, a few comment lines with this information. Files that cannot be authenticated by observing their content will result in penalties assessed for your work.

**Specific Instructions**

You must submit all your files in a single archive. Accepted formats are gzipped tar (.tar.gz) or zip (.zip).

The file you are submitting must be named lab3.zip or lab3.tar.gz.

Inside it, the archive shall contain five dataset directories: AIRLINES, CSU, BAKERY, and KATZENJAMMER. Each directory shall contain all Lab 2 scripts for the given dataset, as well as the appropriate `<DATABASE>`-modify.sql files. All directories must contain the new versions of the database creation, deletion and test files.

In addition, the root of the directory must contain a README file, which should, at a minimum, contain your name, Cal Poly email, and any specific comments concerning your submission.

Submit your archive using the following handin command:

```
handin dekhtyar 365-lab03-2 <file>
```