CS 325 - Week 8 Lab Exercise

Deadline

Due by the end of lab on 2021-10-15.

Purpose

To practice writing more SQL `select` statements, including some using nested selects/sub-selects, concatenation, `union`, and `&` for interactive input.

How to submit

JUST this "driver" for each pair should use `~st10/325submit` to submit the pair's copy of this lab exercise's files, with a lab number of **88**

Important notes

- **I have included an example `325lab8-out.txt` along with this lab exercise handout, for comparison purposes.**
  - This is both to let you know if you are on the right track, AND to hopefully encourage DEBUGGING of your SQL `select` statements if you see significant differences.
- You may find the following useful for this lab exercise:
  - NOTE that on the course Canvas site, under Modules, in the "Class Recordings" section, the FIRST link in that section leads to the public course web site's "In-class Examples" section.
  - SQL Reading Packet 4 - Sub-selects, concatenating columns, and projecting literals
  - `328lect08-2.sql` - the SQL script "built" during the Week 8 Asynchronous Material
- You are required to work in **pairs** for this lab exercise. If you are not pair-programming, then you may not receive full credit for your lab exercise.
  - If there are an odd number of students attending lab, or too many students with connectivity issues, some teams may have 3 students.
- **RECOMMENDATION:** RUN your script-in-progress FREQUENTLY as you are developing it -- do not create the entire script before running it for the first time.

Lab Exercise set-up

- On nrs-projects, **CREATE** a directory `325lab8`, protect it, and go to it: `mkdir 325lab8`
  `chmod 700 325lab8`
  `cd 325lab8`

- **IF** you do not already have tables `empl`, `dept`, and `customer`, COPY the following script to your directory:

```
cp ~st10/set-up-ex-tbls.sql  .  # remember the space and period
```

...and **run** it in `sqlplus` to get your own versions of these tables.

Lab Exercise tasks

- Then, begin a SQL script **325lab8.sql** with comment(s) including at least **BOTH (all)** of your **names** and **today's date**. Add commands for the following into this SQL script.

- Start spooling to a file **325lab8-out.txt**.

- Write a `prompt` command to print a message to the screen containing **both** of your names.

- Write a `prompt` command outputting **lab query 1**, then write a query that projects the last name and hiredate of employees with the job title of `'Manager'` who make more than the average salary of employees with the job title of `'Manager'`.

  - (note: this involves `job_title`, it does **NOT** involve the `mgr` attribute)

- Write a `prompt` command outputting **lab query 2**, then write a query, **using an appropriate subselect**, and **not** using a join, that projects the hiredates of the employees whose department location is New York.

- Write a `prompt` command outputting **lab query 3**, then write a query, **using an appropriate subselect**, that projects the employee last names and hiredates for **all** employees that were hired after the latest-hired employee who has the job title of `'Manager'`.

  - (note: again, this involves `job_title`, it does **NOT** involve the `mgr` attribute)

- Write a `prompt` command outputting **lab query 4**, then write a query that projects two columns: the employee last name, with column alias `"Employee"`, and the **name** of the department they work in concatenated with a blank, a `(`, the location of that department, and another `)`, giving that column the column alias `"Department (Location)"`.

- Write a `prompt` command outputting **lab query 5**, then write a query, **appropriately** using `EXISTS` and a correlated subquery, to show the names of departments including at least one employee making $3000 or more in salary.

- Write a `prompt` command outputting **lab query 6**, then write a query, **appropriately** using `NOT EXISTS` and a correlated subquery, to show the last names of employees with a job title of `'Sales'` for which there does **not** exist a customer that they represent.

- Write a `prompt` command outputting **lab query 7**, then write a query that uses the `union` operator appropriately to perform the union of the employee last names, job titles, and hire dates of employees hired after January 1, 2018 and the employee last names, job titles, and hire dates of employees who work in a department whose location is Dallas.

- Write a `prompt` command outputting **lab query 8**, then write a query that uses `&` to project the employee last name and job title of employees assigned to the department whose department name is that entered by the user when prompted.

  - I happened to enter `'Research'` during the run that resulted in the posted example `325lab8-out.txt`.

- Write a `prompt` command outputting **lab part 9**, then think of at least one question you could ask about employees, departments, and/or customers, that you think you can answer using **at least one of**:
  - nested select/sub-select
  - concatenation
  - union
  - interactive input

  ...(although it is fine if it could use more than one of these!) (It should ask something **different** than is answered by any of the queries above.)

  Then:
  - Write a `prompt` command printing at least one such question you decided on.
  - Then write a query answering each such question you give. (For lab exercise purposes, make sure the result has at least one row in it.)

- Turn off spooling.

- When you believe your SQL script is working properly, submit your `325lab8.sql` and `325lab8-out.txt` files using `~st10/325submit` with a homework number of **88**.
  - (Once you have submitted your lab exercise files, you may leave lab if you wish. Or, you can ask questions, (noting that lab-exercise-related questions need to receive 1st priority), work on the CS 325 Project Scenario Selection milestone, etc.)