CS 325 - Week 7 Lab Exercise

Deadline

You can find the due date and time for Lab 7 in the Assignment tab on Canvas, listed under your specific lab section.

Purpose

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

How to submit

EACH person in the pair/trio should submit a copy of `325lab7.zip` on Canvas.

Important notes

- **I have included an example** `325lab7-out.pdf` **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:
  - Course Slides
  - SQL Reading Packet 4 - Sub-selects, concatenating columns, and projecting literals
- For this lab exercise, you are required to work in pairs - 2-person (a single 3-person team will be allowed if there are an odd total number of students in the lab). The point here is to have teams discuss the answers to be given below – if nobody in the team knows the answer, please consult the lecture slides, posted readings, and online documentation for guidance. Ask the team next to you ONLY if you have exhausted these other options first!
- **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 `325lab7`, protect it, and go to it:

```
mkdir 325lab7
chmod 700 325lab7
cd 325lab7
```

- **IF** you do not already have tables `empl`, `dept`, and `customer`, **PUT** the SQL script (`set-up-ex-tbls.sql` under week 6 lab module on canvas) to your 325lab6 directory on nrs-projects through **sftp** (with a **put** command):

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

Lab Exercise tasks

- Then, begin a SQL script **`325lab7.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 **`325lab7-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 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 2`**, 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 3`**, 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 4`**, 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 5`**, 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 `325lab7-out.pdf`.
- Write a `prompt` command outputting **`lab part 6`**, 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, zip the `325lab7` folder, submit the `325lab7.zip` on Canvas, your folder should contain at least the following files:

  - `325lab7.sql`
  - `325lab7-out.txt`

Once your lab exercise files have been submitted, you may leave the lab if you wish.