CPSC 304: Introduction to Relational Databases
Tutorial #5: Introduction to SQL Using Oracle's SQL*Plus

General Notes

1. Be sure to complete these tutorials. Most tutorials are not for marks, and will not be handed in, but a substantial part of the quizzes and course content are based on them.

2. Tutorials answers are generally released at the start of when the next tutorial is released.

Instructions

Here are some basic steps that you can follow to run Oracle's SQL*Plus product on the undergraduate server, and to be able to load data into a sample database.

1. Use SSH to connect to remote.students.cs.ubc.ca using your CWL ID:

   ```
   ssh cwl@remote.students.cs.ubc.ca
   ```

2. Download bookbiz.sql from the URL https://www.students.cs.ubc.ca/~cs-304/resources/sql-scripts/bookbiz.sql and copy it to a folder of your choice in your account on remote.students.cs.ubc.ca. How?
   - Windows users: Use xftp (part of XManager).
   - Mac users: Use the scp command or FileZilla or Cyberduck.

3. Browse through the `bookbiz.sql` file and examine its contents. You can either use the `cat` command on the undergrad server (e.g., `cat bookbiz.sql`) or open up the `bookbiz.sql` file on your computer using an application like Notepad++ (for Windows) or TextEdit (for Macs).

4. From the directory where you put `bookbiz.sql`, log in to SQL*Plus by typing the command:

   ```
   sqlplus ora_CWLid@stu
   ```

   You will be asked to provide your username and password. They will be in the following format:

   - **Username:** ora_CWLid (note: replace the characters "CWLid" with your actual CWL userid and don't forget the @stu after your CWL userid!)
   - **Password:** a12345678 (note: replace the digits "12345678" with your student number)

   For more information about how to log in to SQL*Plus, visit this tutorial:

   https://www.students.cs.ubc.ca/~cs-304/resources/sql-plus-resources/sql-plus-setup.html

5. After successfully logging into SQL*Plus, load the bookbiz.sql data into your database by typing the command:

   ```
   start bookbiz.sql
   ```

6. Now that your data has been loaded into the database, you can start exploring SQL by trying out some SQL statements. The following statement, **ending with a semi-colon**, will query the Oracle system catalog to show you the tables in your databases:

   - `SQL> select table_name from user_tables;`

   Suppose you have a table named authors. Then, you can check the schema of this table by executing the following command:

   - `SQL> describe authors;`

   You can display all the data (i.e., all the row instances or record instances) in this table by executing the following SQL DML statement:

   - `SQL> select * from authors;`

7. **Before you start working on the questions, be sure to read through the SQL*Plus instructions in the link provided in Step 4.**

   You can also use any other SQL tool of your choice.

SQL Questions

Create SQL queries to answer each of the following questions:

1. Show all columns and rows in the authors table.

2. (This one requires an SQL*Plus statement or command, rather than an SQL statement.) Display the schema of the titles table.

3. Display the first and last names of all authors, and make the column headings (labels at the top) "FirstName" and "LastName" (with no blanks). Use column *aliases* for this.

4. Which authors live in Walnut Creek? Show all columns of the table in your result.

5. Determine the orders that are incomplete. In particular, list the title_id and the number of titles that still have to be shipped before the order is complete. Show only those rows where not as many titles have been shipped as have been ordered. Use the salesdetails table for this.

6. Which business books cost between $20 and $30, inclusive? List the title and price of each such book.

7. List the last names of all authors who have the letter 'y' or 'Y' somewhere in their last name.

8. List all titles followed by the name of their publisher. Order them alphabetically by title.

9. List the first and last names of all authors of the book called "Secrets of Silicon Valley".

10. List the titles of books that have more than one author. Only list the title once for each book.

11. Create a SQL query of your own choice that is substantially different from the queries above. Your query should join 3 tables and explicitly sort the results in a meaningful way (e.g., ascending or descending order by one or more of the attributes).