COMP 2714 – RELATIONAL DATABASE SYSTEMS

Lab01 – Getting Acquainted with Oracle SQL*Plus

This lab exercise provides an introduction to using Oracle via the command-line client application SQL*Plus.

There are 2 ways to interact with SQL*Plus: (1) interactively, and (2) running a SQL script (.sql) file. The first part of this lab introduces the use of SQL*Plus to execute SQL commands / statements interactively against the Oracle database. This approach is useful for one-off SQL statements, such as testing one specific solution to an assignment question.

Since SQL*Plus is a command line interface, there are some tips that one needs to get acquainted with in order to work effectively, especially as it relates to the preparation of the assignment result SPOOL text files (.txt file extension) for submission. Part 2 of this lab demonstrates the use of SQL script (.sql) files. A script file has .sql file extension by common convention, and usually contains a number of tested SQL statements that will be run in a batch together. One such occasion is doing a final run on a completed assignment to create a submission SPOOL text (.txt) file.

Some Useful Pointers

1. **Look before you jump! Read all the instructions before jumping into the exercise or assignment.**

2. Oracle does not like spaces and most special characters in the path names and file names. It is better to keep the path short and avoid spaces and special characters. To separate parts of a name for readability, use the (_) underscore character. If necessary, enclose names with double-quotes (" ").

3. Do not leave a complete blank line embedded inside a single SQL statement. Put 2 hyphens at the start of line (--) to make it a comment line. Otherwise, Oracle will complain.

4. Inside the SQL*Plus environment, do note and distinguish between SQL statements and SQL*Plus commands.

5. Ensure you use .sql extension for your SQL script file, and .txt extension for your SPOOL text file; otherwise, you may accidentally wipe out your script file if you used .sql also for your SPOOL text file.

6. SQL*Plus 11.2 User's Guide and Reference -> Quick Start and Getting Started sections are good sources of more information. Also, a SQL*Plus Quick Reference pdf can be downloaded. All are from docs.oracle.com.

7. After an initial submission, any subsequent submission can be made by adding a version suffix (e.g. Lab01_<lastname><initial>**V1**.txt, etc.). Only the one with the highest version number will be graded.

1. Preparation

1. Login to the lab workstation. If necessary, change settings to display file extension in File Explorer:
   View (menu tab) -> Options (DropDown arrow) -> Change folder and search options -> View (tab)
   ->Uncheck 'Hide extensions for known file types' -> Click OK

2. If necessary, you may need to first start the database, using the start menu:
   Start -> O (section) -> Oracle Database 11g Express Edition -> Start Database.
   This step may not be needed if the Oracle service is started already. However, there is no harm done if this is run multiple times; Oracle recognizes that it is started already, and just skips the steps.

3. Take a copy of the sample sql script file (Lab01_sample.sql) and put it into the working folder on your computer (e.g. create one named D:\WORK\2714). Rename the script file to using your lastname and intial: Lab01_<lastname><initial>.sql.

4. Open the script file using a text editor such as notepad or Notepad++, and read through the comment lines (lines starting with 2 hyphens --) to understand the script file commands together with the corresponding notes.

5. Make necessary changes to the content to reflect your own personal information, such as name, student ID and email address, etc. and your workstation's folder structure, such as D:\WORK\2714, etc.

2. Using SQL*Plus Interactively

1. Start up the Windows command prompt: (Do NOT use the 'Run SQL Command Line' link)
   a. Right-click Start Icon-> Run -> Open: cmd (type in) -> OK
   b. Change to your working folder (e.g. D:<Enter> and then cd D:\WORK\2714<Enter>)
   c. At the command prompt (e.g. D:\WORK\2714>) type **sqlplus**<Enter>.
      For 'Enter user-name:', type in system. For 'Enter password:', type in oracle1

2. Typing directly in SQL*Plus the following SQL statement (remember to use the space bar, not tabs):

```
CREATE TABLE Customer
(CustNo  CHAR(4)        NOT NULL
,Name    VARCHAR(20)    NOT NULL
,Balance DECIMAL(9,2)   NOT NULL
,PRIMARY KEY (CustNo)
);
```

   and hit Enter. Observe what is Oracle's response.

3. Typing in SQL*Plus the same SQL statement a second time, and hit Enter. Observe Oracle's response. Can you explain why? (Hint: read carefully the message from Oracle)

4. At the `SQL>` command prompt, type in: **edit** and hit enter. This will invoke the default text editor with whatever content is in SQL*Plus' buffer. Usually it is the last command or SQL statement typed.
   a. Change the table name to Customer2.
   b. Save and exit. If running notepad, use alt-f then s to save, alt-f then x to exit.
   c. At the `SQL>` prompt, type in / (the forward slash character, must be in the very first position) and hit enter. This will execute the content in the SQL*Plus buffer. What is Oracle's response? Why?

5. Before moving on to the next step, let us clean up by removing the two tables just created:
   a. `DROP TABLE Customer;` and hit enter
   b. `DROP TABLE Customer2;` and hit enter.

6. An alternative approach is to type out the SQL statement in a script file using a text editor, and then copy and paste it into the SQL*Plus window to execute:
   a. Open the Lab01_<lastname><initial>.sql script file with notepad or Notepad++ (as if you have just type it).
   b. Use the mouse to highlight the complete CREATE TABLE Customer statement (up to and including the ending semi-colon). Ctrl-C to copy.
   c. Right-click the SQL*Plus window title bar, and in the pop-up window, Edit -> Paste; <Enter> if needed.
   d. What is Oracle's response?

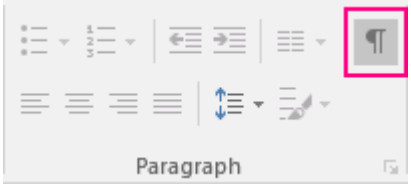
3. Running SQL Script in SQL*Plus

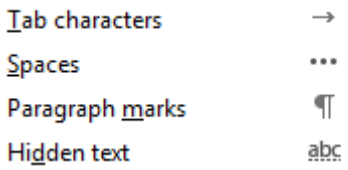
1. Make sure you have completed the Preparation section above, read and understand the comments in the provide sample script file, and made the necessary changes as required. Note the folder the script file is saved.

2. Execute your script file Lab01_<lastname><initial>.sql using the START command, and examine the content of the output SPOOL text file. Compare it side-by-side with the original script file and :
   a. **Explain** which parts of the script file show up in the output spool file.
   b. **Explain** which parts of the script file do not show up in the output spool file. Why?
   c. **Explain** which parts of the output spool file do not have direct counterpart in the script file.

   Add your answers to questions 2a, 2b and 2c to the end of your .txt spool file as comment lines.
   A line or two of writing to each part is sufficient.

3. Create a Microsoft Word document named Lab01_<lastname><initial>.docx. Insert into this .docx file your complete output SPOOL .txt file. Format according to the following requirements:
   a. [tab] PAGE LAYOUT -> Margins -> Narrow
   b. Ctrl-A to select the complete document, and while it is all selected, perform the following formatting:
   c. Ctrl-D and specifies: Font: Courier New Font style: Bold Size: 12 and OK
   d. Shift-F10 -> Paragraph… and specifies: Spacing Before & After: 0 pt Line spacing: Single and OK
   e. Turn on / Show formatting marks by clicking on the Paragraph icon





   f. Review the code visually to ensure that the coding style is not messed up; touch-up if necessary
   g. If there is line wrapping, change the document orientation from Portrait to Landscape
   h. Compare the output from Q.8 and Q.9. Though the 2 SELECT queries are identical in coding, the output from each look different. **Explain why? And write your answer to 3h (a line or two) to the end of the .docx file**

   Save the .docx file for submission

4. Read carefully the sample code provided:
   a. Take note of the suggested coding style and format, especially the levels of indentations and levels alignment, use of white space, etc.
   b. Write out the given sample database schema in Relations Schema format.

   Add your answer to 4b to the end of your .docx file. Ensure same font type and size.

5. Experiment with your own SQL commands, including CREATE TABLE, ALTER TABLE, DROP TABLE, INSERT, DELETE, UPDATE statements.

6. **Submission**: **Before the end of the 2-hr lab period, or as instructed by your lab instructor:**
   Submit to D2L dropbox the following 3 files [do not zip!!]:
   - Lab01_<lastname><initial>.sql script file
   - Lab01_<lastname><initial>.txt spool file
   - Lab01_<lastname><initial>.docx

   PLUS [by 10:30am next day of your Lab]
   Submit to assignment dropbox, a 'stapled' printed copy of selected pages of your .docx file
   - 1st page [with identifications and preferred email address] and
   - the last 1 or 2 page(s) with your answers to questions 2a, 2b, 2c, 3h, and 4b.

   Duplex printing (on both sides of a sheet of paper) is fine.

7. For the remaining time, find a partner **and inform your instructor!** Get started with assignment 1.