CS1555/2055: Working with the CSD's Oracle 12c Enterprise Edition Server

- CSD's Oracle 12c Enterprise Edition Server is accessible from either the CSSD unix machine, which is outside the Pitt firewall or the CSD linux class3 machine, which is inside the Pitt firewall. You can login on either machine using `ssh` with your PittID and password.

  ```
  ssh unixs.cis.pitt.edu
  ssh class3.cs.pitt.edu
  ```

- From outside Pitt, you need to open a VPN connection in order to `ssh class3.cs.pitt.edu.` VPN connection is not required in order to `ssh unixs.cis.pitt.edu,` since unixs is outside the firewall.

- You may need to use `ssh -c aes128-cbc unixs.cis.pitt.edu` to connect to unixs, if you got the cipher not found error.

- In order to set up the Oracle environment,
    - Check the shell (bash or tsch etc) of your terminal using the command `echo $SHELL`

    - Set the environment variables, run the script that matches your shell and your machine using the `source` command:
        - On **unixs**
      ```
      source /afs/pitt.edu/home/p/a/panos/1555/<yourshell>.env.unixs
      ```
        - On **class3**
      ```
      source /afs/pitt.edu/home/p/a/panos/1555/<yourshell>.env.class3
      ```

- Now you are ready to run sqlplus using the command: `sqlplus`
    - Your username is your *Pitt_ID* and your password is your *peopleSoft_ID*.

- Some basic sqlplus commands:
    a. To change the default number of characters per line, use :
        i. `set linesize 2000` --you can replace 2000 with any number that will work the best for you (max. line size is 32000).

    b. To change the default number of lines per page, use :
        i. `set pagesize 2000` --you can replace 2000 with any number that will work the best for you (max. line size is 50000).

    c. To change a column size use :
        i. `COLUMN column_name FORMAT A8` --This will display the values in column *column_name* on 8 characters line is longer, the remaining characters are displayed on the second line.

    d. To change your password: `passw`

    e. To use an external editor use the following:
        i. `define_editor=pico;`
        ii. `edit file_name`

f. Use the following to execute sql commands from a file
   i. use `@<filename>` or `start <filename>` to run the file
   ii. use `--` to comment a line within the file.

g. Record your session into a file
   i. `spool <filename>` //this starts recording,
   ii. then perform your tasks/run your queries, then
   iii. `spool off` //to turn off recording.

h. To display text on the screen
   i. `prompt text`
   ii. `dbms_out.put_line` –to display text from PL/SQL code. In order to work, you need to first use the command:
      1. `set serveroutput on size 30000;`

i. To display time, along with date, alter oracle session using:
   i. `alter session set nls_date_format = 'mm-dd-yyy HH24:MI:SS';`

j. Use `host` in order to execute unix commands from inside SQLPLUS. For example the following command lists all the files in the current directory:
   i. `host ls`

k. Use the following commands to modify the buffer
   i. `edit` to edit the buffer contents. Use this after you define_editor=pico;
      1. if pico is not working for you use: `export TERM=xterm;`

   ii. `a <text>`   to append <text> to the end of the line

   iii. `c /old/new`   to change old to new in a line

   iv. `c /text`   to delete text from a line

   v. `cl buff`   to clear the buffer

   vi. `save <filename>` to save the contents of the buffer in a file

   vii. `list` to list the contents of the buffer

l. You can find more information about sqlplus under Sys Docs of our class' web page.
   http://db.cs.pitt.edu/courses/cs1555/current.term/lab.html

---

NOTE:

1. In order to automatically set the size of the screen, date format, allow blank lines, create an sql file (e.g., *setsize.sql*) and add the following lines:
   a. `set linesize 2000;`
   b. `set pagesize 5000;`
   c. `set serveroutput on size 30000;`
   d. `set sqlblanklines on;`
   e. `alter session set nls_date_format = 'mm-dd-yyyy HH24:MI:SS'`

Useful Schema/Meta-Data SQL Statements

-- List the table names in your database
SELECT *table_name* FROM *user_tables*;
SELECT *table_name* FROM *tabs*;

describe *table_name;*

-- List table attributes. These are stored in the table user_tab_columns
SELECT *column_name*
FROM *user_tab_columns*
WHERE *table_name*='*<table-name>*'
ORDER BY *column_id*;

-- List details of table attributes
SELECT *column_id* "ordinal_position", *column_name*, *data_type*, *nullable*,
 data_default "default", COALESCE(*data_precision, data_length*) *"length"*,
 data_scale "scale"
FROM *all_tab_columns*
WHERE *table_name* = '*<table-name>*'
ORDER BY *column_id*;

Note1: In order to use keywords as column headings, you need to enclose them in double quotes, e.g.,
"default".

Note2: COALESCE is a function which accepts any number of arguments and returns the value of the first not NULL argument. It works like an IF-THEN-ELSIF-ELSE statement with multiple ELSIF clauses.

-- List constraints on a table
SELECT *constraint_name name*
FROM *user_constraints*
WHERE *table_name* = '*<table-name>*';

-- List the views
SELECT *view_name* FROM *user_views*;