

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.
 - iii. use `set sqlblanklines on;` to ignore blank lines in the file.
 - 1. when you see errors saying "unknown command beginning ..." in sqlplus
- 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;
```

Setting up VPN connections

-- **Instruction sites**

The following links provide information about how to setup VPN:

<https://www.technology.pitt.edu/help-desk/how-to-documents/pitt-vpn-pulse-secure-connect-ipsec-linux>

<https://www.technology.pitt.edu/help-desk/how-to-documents/pitt-vpn-pulse-secure-connect-ipsec-mac>

<https://www.technology.pitt.edu/help-desk/how-to-documents/pitt-vpn-pulse-secure-connect-ipsec-windows>

<https://www.technology.pitt.edu/help-desk/how-to-documents/pitt-vpn-pulse-secure-connect-pulse-secure-client>

-- **Group name and pre-shared key**

In the setting up process, you will be asked for a group name (name: compsci_class) and a pre-shared key (key: c0mp5c1), which can also be found under question 3 in "Software and Procedures" section of

<https://tech.cs.pitt.edu/faqs>

After setting up the VPN, you'll be able to connect to class3 server outside the campus.