Oracle SQLPLUS

Some SQLPLUS Commands

1. Using Bitvise SSH Secure Shell to login to CS Systems

Note that if you do not have Bitvise ssh secure shell on your PC, you can download it from http://www.putty.org/.. For instructions on how to download, visit the CS help centre at: http://www.help.cs.uwindsor.ca/en/servers/remote-access/secure-shell/ .

To connect to a CS server, do:

1. Launch the ssh secure shell
2. Click on Quick Connect
3. Enter Host Name eg: cs.uwindsor.ca
4. Enter User Name eg: smith
5. Port Number: 22 (default)
6. Authentication Method: <profile Setting> (default)
7. Then press ENTER
8. Enter Password eg: XXXXXX

When connected to the computer science system cs.uwindsor.ca or a specific cs server, such as alpha.cs.uwindsor.ca, you can use SQLPLUS Oracle's interactive Interface to the database server. SQL statements can be issued at the SQL> prompt and file containing SQL statements can be executed from within SQLPLUS.

2. Oracle SQLPLUS

Oracle's SQLPLUS program provides a convenient interactive environment with the Oracle Database Server. The user may type the commands directly at the SQL> prompt or have SQLPLUS execute commands residing in operating system files.

2.1 Entering and Exiting Oracle SQLPLUS

To enter the SQLPLUS environment, the sqlplus program should be executed (lauched) from Unix/Linus command line in one of the following two ways, where
<**user id**> is the oracle user identification and
<**password**> is the associated password:
- sqlplus <userid>
- sqlplus
The Oracle **userid** and **password** may be different from the **userid** and **password** to get access to the operating system (with the current Oracle DBMS 11g, it is the same password for both your server account and Oracle account).

If the **sqlplus** program is invoked with only <**userid**>, the program prompts the user for the password; if it is invoked without any parameters, the program prompts for the <**userid**> and <**password**>

To Exit the SQLPLUS environment, the **exit** or **quit** command must be entered at the SQL> prompt.

SQL> quit

2.2 Executing Commands in SQLPLUS

Once the user is within the SQLPLUS environment, the system will usually display the prompt SQL> and wait for the user commands. The user may enter three kinds of commands:

- SQL statements, to access the database
- PL/SQL blocks, also to access the database
- SQLPLUS commands, for editing and storing SQL statements and PL/SQL blocks, setting options, and formatting query results.

SQL statements can be entered at the SQL> prompt. A statement may be broken into multiple lines. SQLPLUS displays a line number (starting at 2) after the user presses the RETURN key to go to the next line. The SQL statement may be terminated in one of the three ways:

- With a semicolon (;), indicating to SQLPLUS that it should execute the statement immediately.
- With a slash (/) on a line by itself, also indicating to SQLPLUS that it should execute the statement immediately.
- With a blank line, indicating to SQLPLUS that it should not do anything with the statement. The statement is stored in a buffer and can be executed at a later stage

The following is a screen capture of an SQL statement executed in SQLPLUS from the **CEZEIFE ACCOUNT**

SQL Statement:
SQL> select course_no AS course#, c_title "course title", c_credit " course credit"
 2 from uw_courses;

Figure2.2

```
SQL> select course_no AS course#, c_title "course title", c_credit " course credit"
  2  from uw_courses;

  COURSE# course title                                                              course credit
---------- -------------------------------------------------------------------- --------------
    360100 Key Concepts in Computer Science                                                 3
    360104 Computer Concepts for End-Users                                                  3
    360106 Programming in C for Beginners                                                   3
    360140 Introduction to Algorithms and Programming I                                     3
    360141 Introduction to Algorithms and Programming II                                    3
    360205 Introduction to the Internet                                                     3
    360207 Problem Solving and Information on the Internet                                   3
    360212 Object-Oriented Programming using Java                                           3
    360214 Computer Languages- Grammars and Translators                                     3
    360231 Theoretical Foundations of Computer Science                                      3
    360254 Data Structures and Algorithms                                                   3

  COURSE# course title                                                              course credit
---------- -------------------------------------------------------------------- --------------
    360256 Systems Programming                                                              3
    360265 Computer Architecture I: Digital Design                                          3
    360266 Computer Architecture II: Microprocessor Programming                             3
    360270 Advanced Website Design- Construction and Deployment                             3
    360275 Selected Topics I                                                                3
    360280 Practicum I                                                                      3
    360298 Co-op Work Term I                                                                3
    360305 Cyber-Ethics                                                                     3
    360311 Introduction to Software Engineering                                             3
    360315 Database Management Systems                                                       3
    360322 Object-Oriented Software Analysis and Design                                     3

  COURSE# course title                                                              course credit
---------- -------------------------------------------------------------------- --------------
    360330 Operating Systems Fundamentals                                                   3
    360334 World-Wide Web Information Systems Development                                    3
    360336 World-Wide Web Site Design and Development                                        3
    360342 End-user Interface Programming                                                   3
    360350 Introduction to Multimedia Systems                                               3
    360352 Introduction to Computer Graphics
```

Connected to luna.cs.uwindsor.ca   SSH2 - aes128-cbc

Start | Juno - Value-priced... | Juno | untitled - Paint | oracle_doc_prep - ... | luna.cs.uwindsor....

Figure 2.3

```
  COURSE# course title                                                              course credit
---------- -------------------------------------------------------------------- --------------
    360256 Systems Programming                                                              3
    360265 Computer Architecture I: Digital Design                                          3
    360266 Computer Architecture II: Microprocessor Programming                             3
    360270 Advanced Website Design- Construction and Deployment                             3
    360275 Selected Topics I                                                                3
    360280 Practicum I                                                                      3
    360298 Co-op Work Term I                                                                3
    360305 Cyber-Ethics                                                                     3
    360311 Introduction to Software Engineering                                             3
    360315 Database Management Systems                                                       3
    360322 Object-Oriented Software Analysis and Design                                     3

  COURSE# course title                                                              course credit
---------- -------------------------------------------------------------------- --------------
    360330 Operating Systems Fundamentals                                                   3
    360334 World-Wide Web Information Systems Development                                    3
    360336 World-Wide Web Site Design and Development                                        3
    360342 End-user Interface Programming                                                   3
    360350 Introduction to Multimedia Systems                                               3
    360352 Introduction to Computer Graphics                                                3
    360354 Theory of Computation                                                            3
    360367 Computer Networks                                                                3
    360375 Selected Topics II                                                               3
    360393 Developing Systems for Information Processing                                     3
    360398 Co-op Work Term II                                                               3

  COURSE# course title                                                              course credit
---------- -------------------------------------------------------------------- --------------
    360411 Software Verification and Testing                                                3
    360436 Distributed Computing                                                            3
    360440 Principles of Programming Languages                                              3
    360450 Multimedia System Development                                                    3
    360454 Design and Analysis of Computer Algorithms                                       3
    360460 Digital Design and Computer Architecture                                         3

39 rows selected.

SQL>
```

You can also enter PL/SQL anonymous blocks at the SQL> prompt for execution and issue statements such as **create function** and **create procedure** at the SQL> prompt to create PL/SQL stored objects.

The PL/SQL anonymous block is executed by typing the "run" command at the SQL> prompt.

Besides SQL and PL/SQL, users can also enter SQLPLUS commands at the SQL> prompt. These commands can manipulate SQL commands and PL/SQL blocks, format and print query results, and set various options for SQLPLUS. SQLPLUS must be entered in one line. If the command is long, it may be continued to the next line by typing the hyphen symbol (-) at the end of the line before pressing the RETURN key. Here is an example of an SQLPLUS command that formats a column of the SQL query.

SQL Statement
 SQL> select course_no AS course#, c_title "course title", c_credit " course credit"
  2   from uw_courses;

  SQL> column c_credit format –
          ➢ 99.99 heading "Course Credit"
SQL> run
1 select course_no, c_title, c_credit
2 from uw_courses;

Figure 2.4

```
SQL> column c_credit format -
> 99.99 heading "Course Credit"
SQL> run
  1  select course_no, c_title, c_credit
  2* from uw_courses

 COURSE_NO C_TITLE                                                              Course Credit
---------- -------------------------------------------------------------------- -------------
    360100 Key Concepts in Computer Science                                              3.00
    360104 Computer Concepts for End-Users                                               3.00
    360106 Programming in C for Beginners                                                3.00
    360140 Introduction to Algorithms and Programming I                                  3.00
    360141 Introduction to Algorithms and Programming II                                 3.00
    360205 Introduction to the Internet                                                  3.00
    360207 Problem Solving and Information on the Internet                                3.00
    360212 Object-Oriented Programming using Java                                        3.00
    360214 Computer Languages- Grammars and Translators                                  3.00
    360231 Theoretical Foundations of Computer Science                                   3.00
    360254 Data Structures and Algorithms                                                3.00

 COURSE_NO C_TITLE                                                              Course Credit
---------- -------------------------------------------------------------------- -------------
    360256 Systems Programming                                                           3.00
    360265 Computer Architecture I: Digital Design                                       3.00
    360266 Computer Architecture II: Microprocessor Programming                          3.00
    360270 Advanced Website Design- Construction and Deployment                          3.00
    360275 Selected Topics I                                                             3.00
    360280 Practicum I                                                                   3.00
    360298 Co-op Work Term I                                                             3.00
    360305 Cyber-Ethics                                                                  3.00
    360311 Introduction to Software Engineering                                          3.00
    360315 Database Management Systems                                                   3.00
    360322 Object-Oriented Software Analysis and Design                                  3.00
```

The **column** command formats a particular column in the current query (in this case the

column is formatted and given a different name for display purposes). SQLPLUS commands need not be terminated with semicolon

The following are a few of the more commonly used SQLPLUS commands
- **describe** [**desc**] List the column definitions for a database table. The following is an example of the **describe** command

Figure 2.5

```
SQL> desc uw_courses
 Name                                                                 Null?    Type
 ------------------------------------------------------------------- -------- ---------------
 --------
 COURSE_NO                                                           NOT NULL NUMBER(7)
 C_TITLE                                                             NOT NULL VARCHAR2(100)
 C_CREDIT                                                            NOT NULL NUMBER(1)

SQL> describe uw_courses
 Name                                                                 Null?    Type
 ------------------------------------------------------------------- -------- ---------------
 --------
 COURSE_NO                                                           NOT NULL NUMBER(7)
 C_TITLE                                                             NOT NULL VARCHAR2(100)
 C_CREDIT                                                            NOT NULL NUMBER(1)

SQL>
```

Connected to luna.cs.uwindsor.ca   SSH2 - aes128-cbc

Figure 2.6

```
SQL> help column

 COLUMN
 ------

 Specifies display attributes for a given column, such as:
     - column heading text
     - column heading alignment
     - NUMBER data format
     - column data wrapping

 Also lists the current display attributes for a single column
 or all columns.

 COL[UMN] [{column | expr} [option...] ]

 where option is one of the following clauses:
     ALI[AS] alias
     CLE[AR]
     FOLD_A[FTER]
     FOLD_B[EFORE]
     FOR[MAT] format
     HEA[DING] text
     JUS[TIFY] {L[EFT] | C[ENTER] | C[ENTRE] | R[IGHT]}
     LIKE {expr | alias}
     NEWL[INE]
     NEW_V[ALUE] variable
     NOPRI[NT] | PRI[NT]
     NUL[L] text
     OLD_V[ALUE] variable
     ON|OFF
     WRA[PPED] | WOR[D_WRAPPED] | TRU[NCATED]


SQL>
```
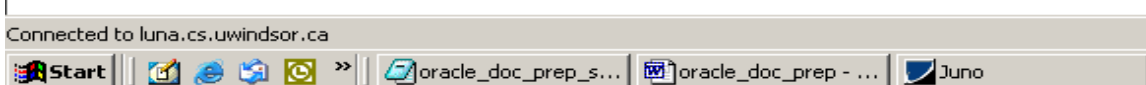
Connected to luna.cs.uwindsor.ca

Start | oracle_doc_prep_s... | oracle_doc_prep - ... | Juno

- **execute**. Execute a single PL/SQL statement. The syntax is

  SQL> execute statement

- **help**. Gets online help for SQLPLUS commands. For example,

  SQL> help column

  Will list the description of the column command. To get a list of all commands use the following command:

  SQL> help <command name>

- **host**. Execute a host operating system command without leaving SQLPLUS. For example,

  SQL> host ls * .sql

Will list all the files in the current directory with a .sql extension. The exclamation key (!) may be used instead of the host command to achieve the same effect.

Figure 2.7
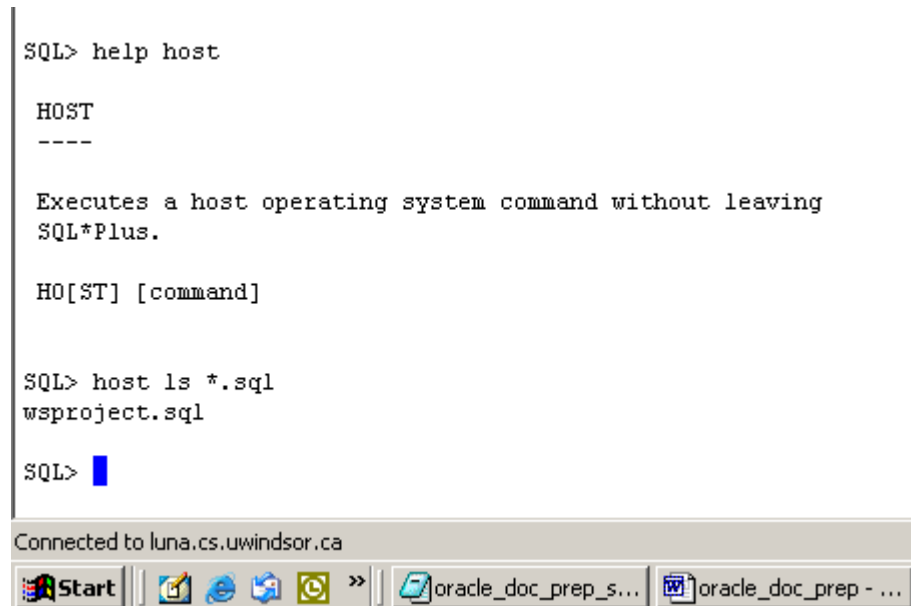
```
SQL> help host

 HOST
 ----

 Executes a host operating system command without leaving
 SQL*Plus.

 HO[ST] [command]


SQL> host ls *.sql
wsproject.sql

SQL>
```

Connected to luna.cs.uwindsor.ca

Start | oracle_doc_prep_s... | oracle_doc_prep - ...

- **remark**. Used for comments. Any line beginning with keyword remark or **rem** or two hyphens (**--**) is treated as a comment and is ignored by SQLPLUS.

- **Run**. Executes the SQL statement present in the buffer. The run command works the same as the slash command, except that it also displays the buffer contents before executing the statement in the buffer.

- **Set**. Sets SQLPLUS system variables. Some of the more useful system variables include

  SQL> set pause on;
  SQL> set autoCommit on;
  SQL> set echo on;

Setting **pause** to **on** causes SQLPLUS to pause at the beginning of each page. The user must press RETURN key to see the next page.

Setting **autoCommit** to **on** informs Oracle to commit any changes to the database immediately after the SQL statement that has caused the changes, is executed.

Setting **echo** to **on** causes SQLPLUS to list each commands in a file when the file is run with the start command. The names of other system variables, along with explanations, can be obtained by using **help** on the **set** command.

Figure 2.8

```
SQL> help spool

 SPOOL
 -----

 Stores query results in an operating system file, or sends the
 file to a printer.

 SPO[OL] [file_name[.ext] | OFF | OUT]


SQL> help start

 START
 -----

 Executes the contents of a command file.

 STA[RT] file_name[.ext] [arg ...]


 STARTUP
 -------

 Starts an Oracle instance with several options, including mounting,
 and opening a database.

 STARTUP [FORCE] [RESTRICT] [PFILE=filename] [EXCLUSIVE]
   [PARALLEL [RETRY]] [SHARED [RETRY]]
   [MOUNT [dbname] | OPEN [open_options] [dbname] | NOMOUNT]

 where open_options has the following syntax:
     READ {ONLY|WRITE [RECOVER]} | RECOVER


SQL>
```
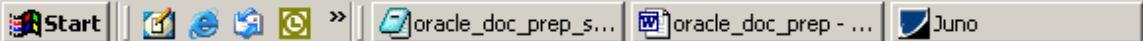
Connected to luna.cs.uwindsor.ca

Start | oracle_doc_prep_s... | oracle_doc_prep - ... | Juno

3 Buffer Manipulation Commands

The most recent command that is entered on the SQL prompt is stored in the
SQLPLUS buffer. It is possible to access, change, append to, and save the contents of
the buffer. The SQLPLUS buffer editing commands are listed below. All the editing
commands (except for the list command) affect only one line, the current line. To

make a particular line the current line, simply list that line by typing the line number the following SQLPLUS session illustrates some of the editing commands.

Figure 3.1

```
SQL> desc uw_courses
 Name                                     Null?    Type
 ---------------------------------------- -------- ----------------------------
 COURSE_NO                                NOT NULL NUMBER(7)
 C_TITLE                                  NOT NULL VARCHAR2(100)
 C_CREDIT                                 NOT NULL NUMBER(1)

SQL> select course_no, c_title
  2  from courses;
from courses
     *
ERROR at line 2:
ORA-00942: table or view does not exist


SQL> 2
  2* from courses
SQL> change /courses/uw_courses/
  2* from uw_courses
SQL> list
  1  select course_no, c_title
  2* from uw_courses
SQL> /

 COURSE_NO
----------
C_TITLE
--------------------------------------------------------------------------------
    360100
Key Concepts in Computer Science

    360104
Computer Concepts for End-Users

    360106
Programming in C for Beginners


 COURSE_NO
----------
```

Figure 3.2

```
SQL> select course_no, c_titl
  2  from uw_courses;
select course_no, c_titl
                  *
ERROR at line 1:
ORA-00904: invalid column name


SQL> l
  1* select course_no, c_titl
SQL> change /tl/tle/
  1* select course_no, c_title
SQL> list
  1  select course_no, c_title
  2* from uw_courses
SQL> /

 COURSE_NO C_TITLE
---------- -------------------------------------------------------
    360100 Key Concepts in Computer Science
    360104 Computer Concepts for End-Users
    360106 Programming in C for Beginners
    360140 Introduction to Algorithms and Programming I
    360141 Introduction to Algorithms and Programming II
    360205 Introduction to the Internet
    360207 Problem Solving and Information on the Internet
    360212 Object-Oriented Programming using Java
    360214 Computer Languages- Grammars and Translators
    360231 Theoretical Foundations of Computer Science
    360254 Data Structures and Algorithms

 COURSE_NO C_TITLE
---------- -------------------------------------------------------
    360256 Systems Programming
    360265 Computer Architecture I: Digital Design
    360266 Computer Architecture II: Microprocessor Programming
    360270 Advanced Website Design- Construction and Deployment
    360275 Selected Topics I
    360280 Practicum I
    360298 Co-op Work Term I
```

Table 3.1 SQLPLUS buffer editing commands.

Command	Abbreviation	Explanation
Append *text*	**A** *text*	Add text to the end of a line
Change */old/new*	**C** */old/new*	Change old to new in a line
Change */text*	**C** /text	Delete text from a line
Clear buffer	**C buff**	Delete all lines
Del		Delete a line
Get file		Load contents of file named file into buffer
Input	**I**	Add one or more lines
Input *text*	**I** *text*	Add a line consisting of text
List	**L**	List all lines in buffer
List n	**L n** or **n**	List one line and make it the current line
List *	**L ***	List the current line
List last	**L last**	List the last line
List m n	**L m n**	List lines m through n
Save file	**Sav** file	Save contents of buffer to file named file.