

Oracle SQLPLUS (For 60-315, Fall 2023)

Some SQLPLUS Commands

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

Note that if you do not have Bitwise ssh secure shell on your PC, you can download it from <http://www.putty.org/>. Some instructions have also been provided in the course announcement page on how to install Bitwise SSH or NoMachine for remotely connecting to the CS servers (alpha.cs.uwindsor.ca, bravo.cs.uwindsor.ca, charlie.cs.uwindsor.ca, or delta.cs.uwindsor.ca).

Note that:

1. you ought to have installed GlobalProtect VPN to be able to connect to any of the CS servers through Bitwise SSH or NoMachine.

Information on How to Install or Update GlobalProtect VPN

- **New University VPN Users:** View the [KBAs with instructions on how to install the Global Protect VPN](#).
- **Existing University VPN Users:** Find [Update the VPN per the KBA](#) to see how to remove the old portal networklogin.uwindsor.ca to the new securelogin.uwindsor.ca.
- Should you require help with the VPN, please contact the IT Service Desk by [opening a ticket](#), calling 519-253-3000 ext. 4440 or selecting the chat icon in the bottom right corner of uwindsor.ca/its or uwindsor.ca/itshelp.

2. You ought to have synchronized **your UWindsor email password with the Oracle Sqlplus password (i) every time you change your UWindsor email password, (ii) first time you are logging onto Sqlplus on cs servers, and (iii) any time you are working on Sqlplus on our cs server and got locked out.**

To synchronize, go to <http://cs.uwindsor.ca/password>. Then, follow the appropriate buttons to synchronize.

The characters that can be used for an Oracle/UWindsor password without enclosing it in double quotes are the same as any normal Oracle identifier: only letters, numbers, and the symbols #, _, and \$ are acceptable, and the first character must be a letter. If your password includes any other characters, the entire

password MUST be enclosed in double quotes (for an example strange password, “*%22strange”) for the Oracle login.

3. Connect to any of the CS machines through either Bitwise SSH (<http://www.putty.org/>) or Nomachine (<https://www.nomachine.com/download>). These two software programs can be downloaded from their websites. More details on how to obtain them are provided below.

How To Connect to CS server

To connect to a CS server, do:

1. Launch the ssh secure shell
2. Click on Quick Connect
3. Enter Host Name eg: bravo.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 bravo.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 (launched) from Unix/Linux 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;
```

Figure 2.2

```
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
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
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

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

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

Figure 2.3

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

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
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
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
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> █
```

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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

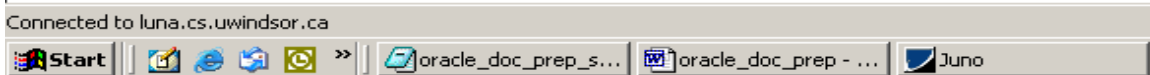
Also lists the current display attributes for a single column
or all columns.

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>

```



- **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
----

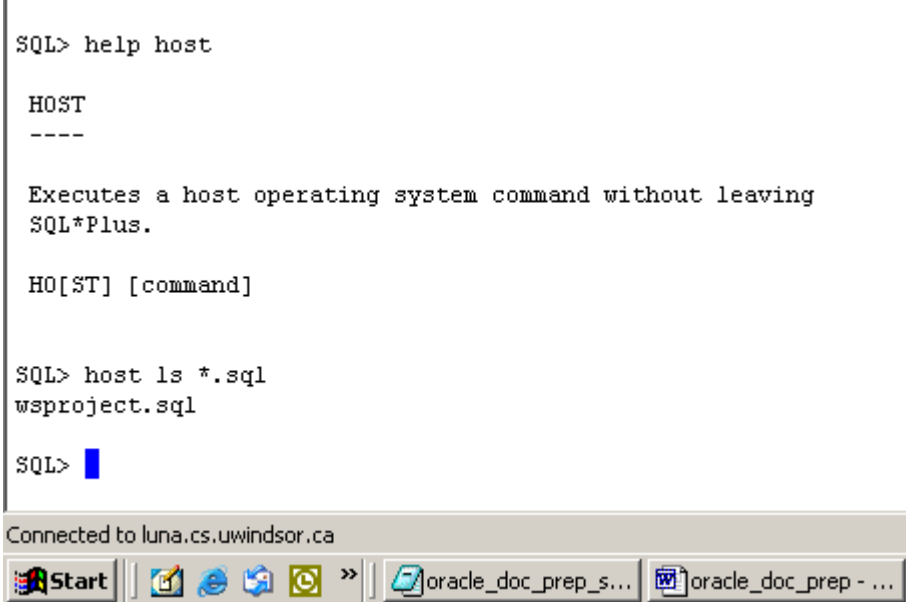
Executes a host operating system command without leaving
SQL*Plus.

HO[ST] [command]

SQL> host ls *.sql
wsproject.sql

SQL>

```



- **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.

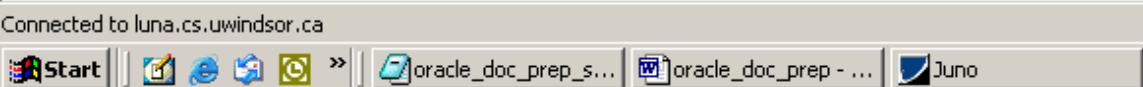
STARTUP [FORCE] [RESTRICT] [PFILE=filename] [EXCLUSIVE]
        [PARALLEL [RETRY]] [SHARED [RETRY]]
        [MOUNT [dbname] | OPEN [open_options] [dbname] | NOMOUNT]

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

SQL>

```

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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> 1
  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 <i>text</i>	A <i>text</i>	Add text to the end of a line
Change <i>/old/new</i>	C <i>/old/new</i>	Change old to new in a line
Change <i>/text</i>	C <i>/text</i>	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 <i>text</i>	I <i>text</i>	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.