COMP5112   Lab 8:   SQL
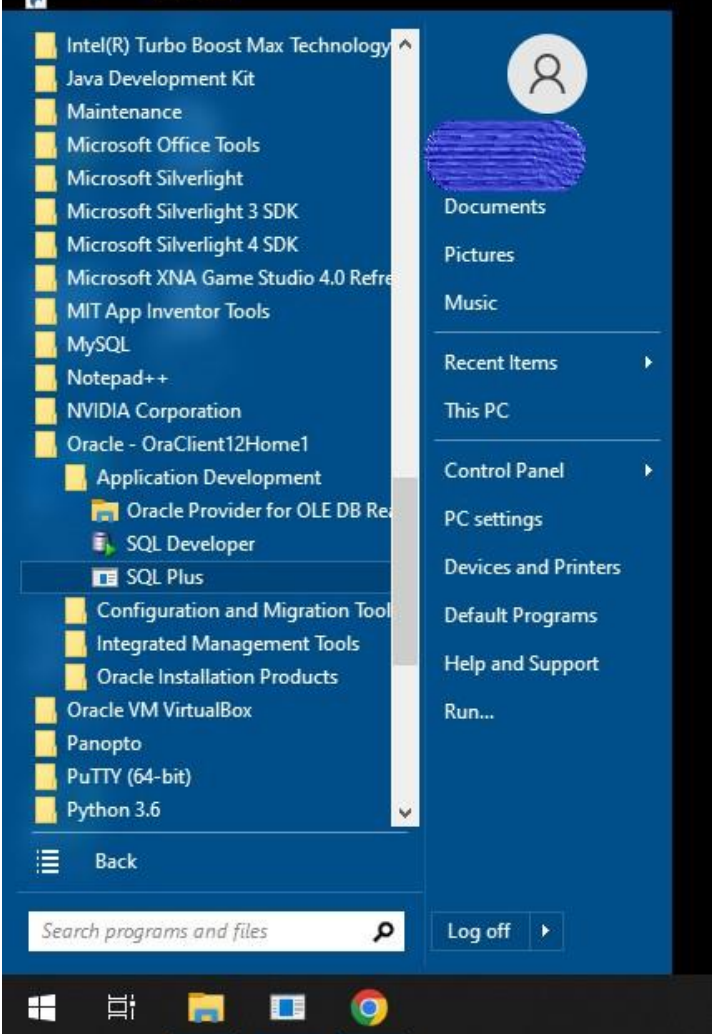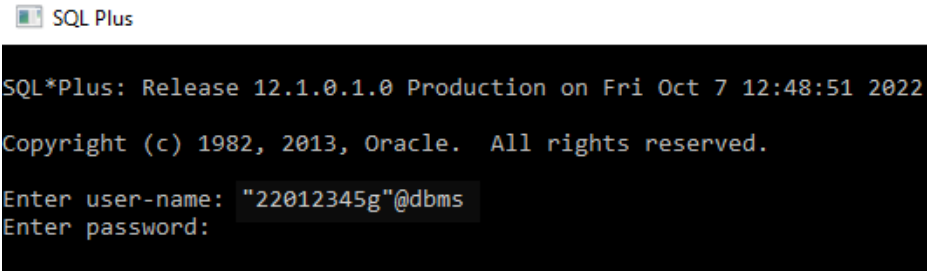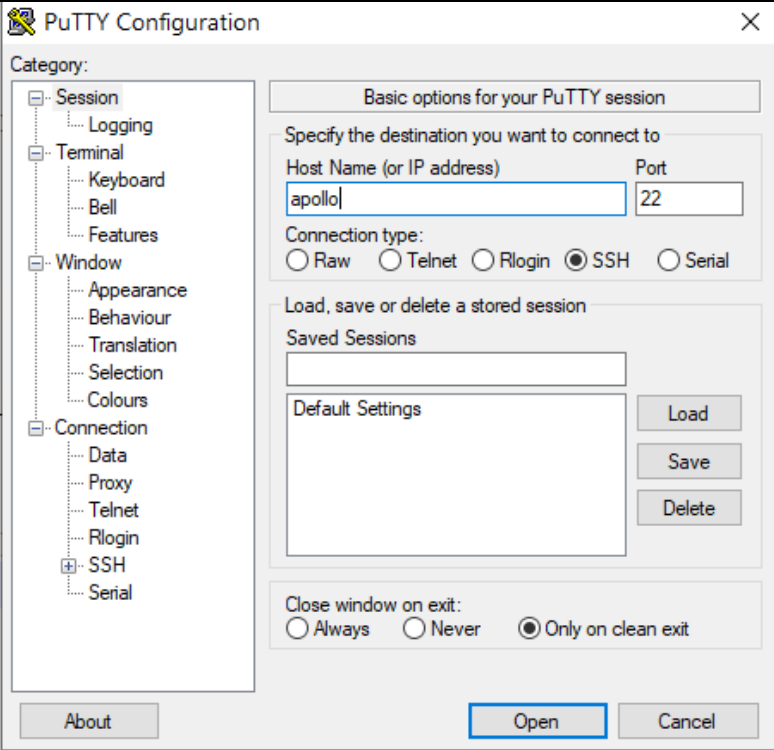
1. Review: Login SQL*Plus

[Login method 1]   If you use "**Lab PC**" in PQ604A,B,C, please follow the instructions below:

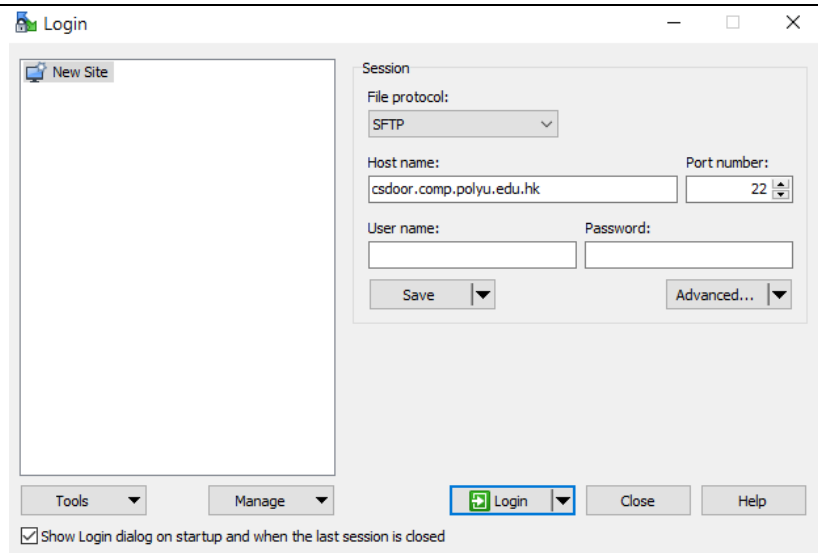|	
[Step 1] Start -> Programs -> Oracle – OraClient12Home1 -> Application Development -> SQL Plus	
[Step 2] Login with your Oracle user-name and password Example of student user-name (double quote): `"22012345g"@dbms`	

[Login method 2] If you use **your computer**, please follow the instructions below:

|	
[Step 1] Use **PuTTY** (or any SSH client program) to connect to **apollo** (if from internet, ssh to **csdoor.comp.polyu.edu.hk** first and then connect to apollo)	PuTTY Configuration screen showing Session category with Host Name "apollo", Port "22", Connection type SSH selected

[Step 2]
 	
Enter the following two commands
 	
`source /compsoft/app /oracle/dbms.bashrc`
 	
`sqlplus`
	Terminal output:
	
	csmlyiu@apollo ~
	$ source /compsoft/app/oracle/dbms.bashrc
	
	csmlyiu@apollo ~
	$ sqlplus
	
	SQL*Plus: Release 12.1.0.1.0 Production on Tue Oct 18 14:11:37 2022
	
	Copyright (c) 1982, 2013, Oracle. All rights reserved.
	
	Enter user-name:

[Step 3] Login with your Oracle user-name and password	Please refer to "Step 2" in the "Login method 1"

| [Step 4]

Use **WinSCP** (or any SFTP client) to connect to **csdoor.comp.polyu.edu.hk**

Then, you can upload files to our department's server.	 If successful, you will see:
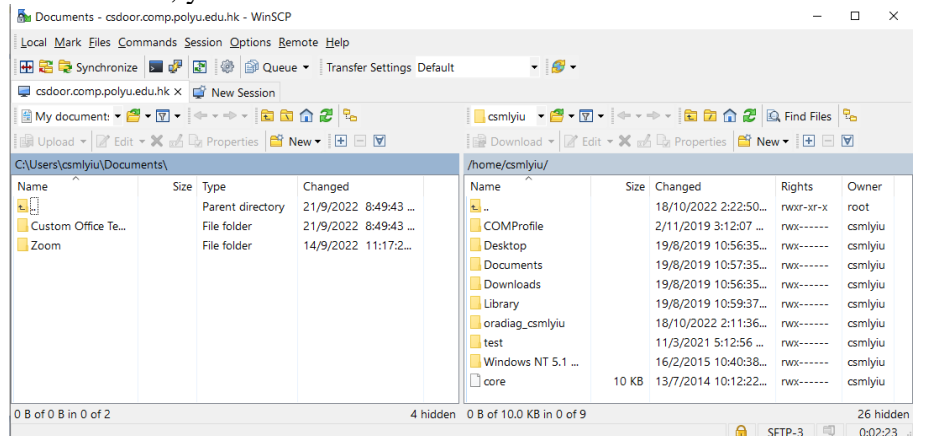
Examples of commands in SQL*Plus:

Description	Command
Execute the list of commands in a "SQL file" one by one	`@<absolute_path_of_sql_file>`
Display table information	`SELECT table_name FROM user_tables;`
Drop table	`DROP TABLE <your_table_name>`
Insert data	`INSERT INTO <table_name> VALUES <data_information>`
Query	`SELECT <column_name> FROM <table_name> WHERE <condition>`
Exit	`exit`

More details can be found in
https://docs.oracle.com/en/database/oracle/oracle-database/21/sqpug/SQL-Plus- command-reference.html#GUID-177F24B7-D154-4F8B-A05B-7568079800C6

2. Tables in this lab

We will reuse the following five tables as in the "Lab 6".

Table name	Table content
Employees	<table><tr><th>FNAME</th><th>MINIT</th><th>LNAME</th><th>CPR</th><th>BDATE</th><th>ADDRESS</th><th>SEX</th><th>SALARY</th><th>DNO</th></tr><tr><td>Lars</td><td>T</td><td>Andersen</td><td>123</td><td>1955-12-10</td><td>Klarup</td><td>M</td><td>15,000</td><td>12</td></tr><tr><td>Kristian</td><td>C</td><td>Bohr</td><td>456</td><td>1965-10-05</td><td>Tylstrup</td><td>M</td><td>18,000</td><td>11</td></tr><tr><td>Charlotte</td><td>F</td><td>Kierkegaard</td><td>789</td><td>1975-08-06</td><td>Vejgaard</td><td>F</td><td>14,000</td><td>11</td></tr><tr><td>Uffe</td><td>J</td><td>Bajers</td><td>111</td><td>1960-09-07</td><td>Gistrup</td><td>M</td><td>30,000</td><td>12</td></tr><tr><td>Hans</td><td>U</td><td>Brahe</td><td>222</td><td>1970-04-02</td><td>Svenstrup</td><td>M</td><td>20,000</td><td>10</td></tr><tr><td>Helle</td><td>O</td><td>Dreyer</td><td>333</td><td>1950-01-08</td><td>Uttrup</td><td>F</td><td>35,000</td><td>10</td></tr><tr><td>Peter</td><td>P</td><td>Nielsen</td><td>987</td><td>1973-05-30</td><td>Lundby</td><td>M</td><td>23,000</td><td>12</td></tr><tr><td>Niels</td><td>A</td><td>Thorvaldsen</td><td>654</td><td>1953-02-27</td><td>Vodskov</td><td>M</td><td>32,000</td><td>11</td></tr><tr><td>Tina</td><td>C</td><td>Jacobsen</td><td>321</td><td>1963-11-16</td><td>Nytorv</td><td>F</td><td>26,000</td><td>12</td></tr></table>
Departments	<table><tr><th>DNAME</th><th>DNUMBER</th><th>MGRCPR</th><th>MGRSTARTDATE</th></tr><tr><td>ConsProd</td><td>10</td><td>333</td><td>1994-10-01</td></tr><tr><td>InduProd</td><td>11</td><td>654</td><td>1995-05-01</td></tr><tr><td>Research</td><td>12</td><td>111</td><td>1990-06-15</td></tr></table>
Projects	<table><tr><th>PNAME</th><th>PNUMBER</th><th>PLOCATION</th><th>DNUM</th></tr><tr><td>MobilePhone</td><td>1</td><td>Nørresundby</td><td>10</td></tr><tr><td>InteractiveTV</td><td>2</td><td>Nørresundby</td><td>12</td></tr><tr><td>MmedMonitor</td><td>3</td><td>Aarhus</td><td>11</td></tr><tr><td>PalmTop</td><td>4</td><td>Aalborg</td><td>10</td></tr><tr><td>MobileOffice</td><td>5</td><td>Aarhus</td><td>11</td></tr></table>
Locations	<table><tr><th>DNBR</th><th>DLOCATION</th></tr><tr><td>10</td><td>Aalborg</td></tr><tr><td>10</td><td>Nørresundby</td></tr><tr><td>11</td><td>Aarhus</td></tr><tr><td>12</td><td>Nørresundby</td></tr><tr><td>12</td><td>Frederikshavn</td></tr></table>
Allocations	<table><tr><th>ECPR</th><th>PNO</th><th>HOURS</th></tr><tr><td>123</td><td>3</td><td>27</td></tr><tr><td>456</td><td>3</td><td>12</td></tr><tr><td>789</td><td>4</td><td>35</td></tr><tr><td>111</td><td>1</td><td>15</td></tr><tr><td>111</td><td>2</td><td>5</td></tr><tr><td>222</td><td>5</td><td>30</td></tr><tr><td>333</td><td>3</td><td>20</td></tr><tr><td>333</td><td>5</td><td>20</td></tr><tr><td>987</td><td>4</td><td>25</td></tr><tr><td>654</td><td>2</td><td>30</td></tr><tr><td>321</td><td>1</td><td>15</td></tr><tr><td>321</td><td>2</td><td>10</td></tr></table>

3. Tasks

Execute the command   `SELECT TABLE_NAME FROM USER_TABLES;`
to check whether the database contains the above tables in Section 2. If you cannot find any table, please do the data preparation tasks in the Appendix of this document first.

3.1 Query and update

(a) Write a SQL query statement to retrieves Tina's name, cpr, and current salary.
Execute the SQL query statement.
What is her current salary?

(b) Write SQL update statement(s) to raise the salaries of employees as follows:
- Employees who earn less than 30000 will get 20% raise
- Employees who earn 30000 or more will get 15% raise

Execute your SQL update statement(s).

(c) Execute the SQL query statement in part (a) to check Tina's salary again.
Is this result correct or not?

(d) Write a SQL query statement that retrieves the first name and birthday
of all employees born in the 1950-1959.
Execute your SQL query statement.

3.2 Aggregation

Write SQL query statements to do the following them.
Execute your SQL query statements, and find the result.

(a) Retrieve the number of persons working in the department that
is responsible for the most projects.

(b) For each department whose average salary is more than 27K,
retrieve the department name and the number of male employees
working for that department.

(c) For each employee, retrieve the employee CPR number, the department
number, and the maximal salary in this department.

Appendix.   Data preparation tasks used in Lab 6

[Step 0] Extract the content of "Lab6code.zip" to a folder.

[Step 1] Create the tables by executing the CREATE TABLE statements in the "create_table.sql" file.

A convenient way is to use "@<absolute_path_of_sql_file>" command to execute the whole SQL file.

```
SQL> @\\COMPDrive\staff2\cszbian\COMProfile\Desktop\allfiles\create_table.sql

Table created.


Table created.


Table created.


Table created.


Table created.
```

[Step 2] Insert data into tables (shown in part 3) by executing the INSERT statements in the "insert_<table_name>.sql" file.

Note: If there is an error (due to the date format), please run:
            ALTER SESSION SET NLS_DATE_FORMAT = 'YYYY-MM-DD';

Check whether the insertion is successful by executing the command:
            SELECT * FROM <table_name>

```
SQL> @\\COMPDrive\staff2\cszbian\COMProfile\Desktop\allfiles\insert_departments.sql

1 row created.


1 row created.


1 row created.


  COUNT(*)
----------
         3


Commit complete.
```