STSCI 5060 Lab Session 1

(10/15/2018)

After you have learned how to analyze and design a relational database, now finally it is time to get your feet wet with the SQL language. As we have discussed in the lecture, Oracle is the most popular RDBMS in the industry and has the largest market share. Thus, we have a good reason to use Oracle to learn SQL. We use Oracle XE 11g in this class. Oracle uses SQL*Plus, which is the default and the most basic Oracle utility. It has a basic command-line interface (an interactive interface), commonly used by database users, administrators, and programmers. So, our journey starts with the SQL*Plus' command-line interface. Have fun!

Keep your command-line interface always on. At the end of your lab practice, you will copy out all the contents from this interface and create a file called *LastName_FirstName_Lab1.log*. You submit this file to the course website for grading. It is due at 11:59pm, 10/16/2018.

1. **Log on to Oracle 11g XE.**
   A. I suppose that you are using Windows 10 Professional. Click the "Start" button (the Windows icon) → Type in "cmd" → Press the "Enter" key → The Windows command-line interface (called Command Prompt) opens.
   B. At the prompt, type in "**sqlplus**" → Press the "Enter" key.
   C. Enter "**system**" as the user-name.
   D. Enter the password you created when you were installing Oracle.
   E. If you are at the "**SQL>**" prompt, you have successfully logged onto the Oracle system. It should display "Connected to: Oracle Database 11g Express Edition …"
2. **Do some initial settings by typing in the following at the SQL> prompt:**

```
SELECT Sysdate FROM Dual;
SET pagesize 250
SET linesize 250
```

3. **Create two users.**

   While you are logged in as a system user, you have the privilege to create users.

   A. Create the first user with your first name and assign a password of your choice (I suggest you write it down). If you forget it, you will not be able to log onto the database under this user name.
   B. Enter the following statement:

```
CREATE USER first_name IDENTIFIED BY your_password;
```

Then it displays "User created." As mentioned in the lecture, Oracle automatically created a schema for this user.

C. For simplicity, grant all the privileges to the new user.

GRANT ALL PRIVILEGES TO *user_name;*

Then it displays "Grant succeeded."

D. Create the second user with your last name by following steps A and B stated in Step 3, and then only grant "**create session**" to the second user.

4. Exit SQL.

Type "**exit**" or "**quit**"

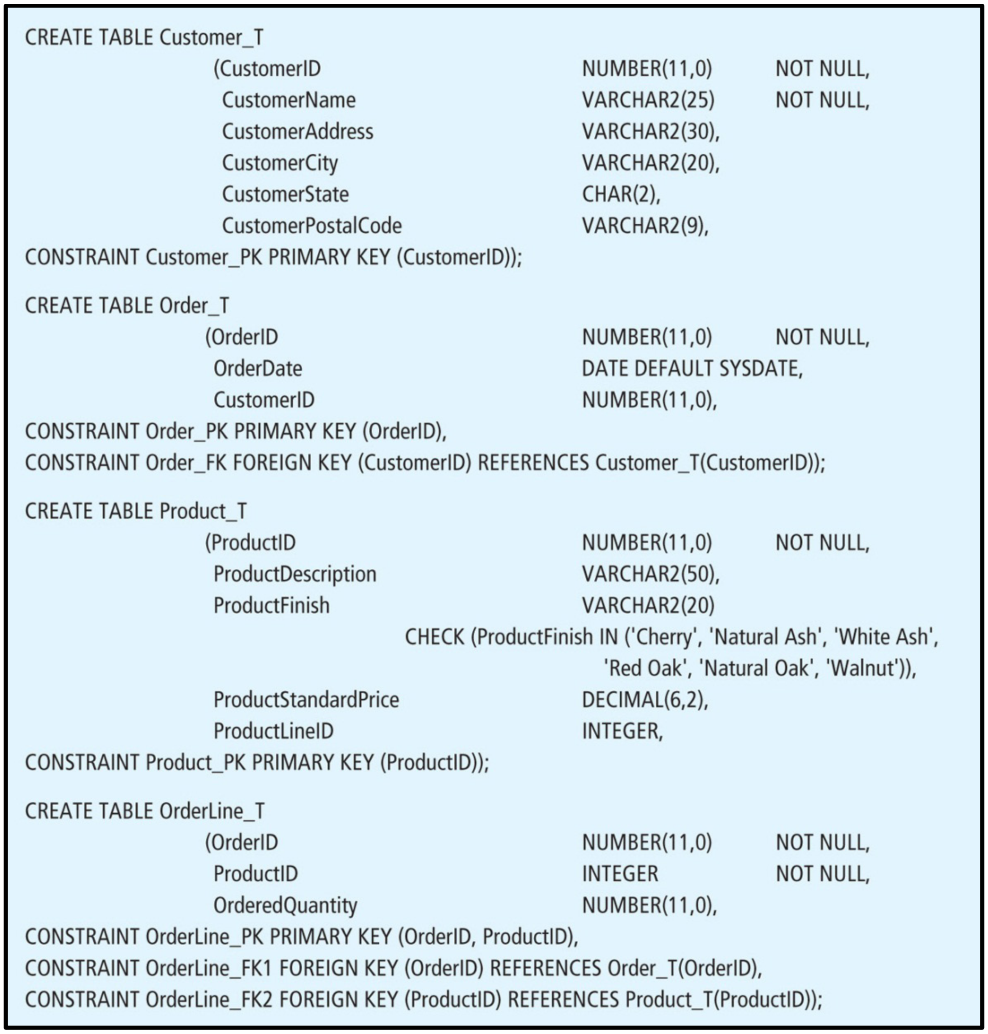
5. Log on with the first new user name you just created (your first name) and its password.

Enter "**sqlplus**" at the prompt and log on with your new user name and password.

You can check to see who the user is by typing the "**show user**" command.

6. Practice.

A. Create four tables by typing in the SQL code in the following image.



```
CREATE TABLE Customer_T
                    (CustomerID                     NUMBER(11,0)      NOT NULL,
                     CustomerName                   VARCHAR2(25)      NOT NULL,
                     CustomerAddress                VARCHAR2(30),
                     CustomerCity                   VARCHAR2(20),
                     CustomerState                  CHAR(2),
                     CustomerPostalCode             VARCHAR2(9),
CONSTRAINT Customer_PK PRIMARY KEY (CustomerID));

CREATE TABLE Order_T
                    (OrderID                        NUMBER(11,0)      NOT NULL,
                     OrderDate                      DATE DEFAULT SYSDATE,
                     CustomerID                     NUMBER(11,0),
CONSTRAINT Order_PK PRIMARY KEY (OrderID),
CONSTRAINT Order_FK FOREIGN KEY (CustomerID) REFERENCES Customer_T(CustomerID));

CREATE TABLE Product_T
                    (ProductID                      NUMBER(11,0)      NOT NULL,
                     ProductDescription             VARCHAR2(50),
                     ProductFinish                  VARCHAR2(20)
                                   CHECK (ProductFinish IN ('Cherry', 'Natural Ash', 'White Ash',
                                             'Red Oak', 'Natural Oak', 'Walnut')),
                     ProductStandardPrice           DECIMAL(6,2),
                     ProductLineID                  INTEGER,
CONSTRAINT Product_PK PRIMARY KEY (ProductID));

CREATE TABLE OrderLine_T
                    (OrderID                        NUMBER(11,0)      NOT NULL,
                     ProductID                      INTEGER           NOT NULL,
                     OrderedQuantity                NUMBER(11,0),
CONSTRAINT OrderLine_PK PRIMARY KEY (OrderID, ProductID),
CONSTRAINT OrderLine_FK1 FOREIGN KEY (OrderID) REFERENCES Order_T(OrderID),
CONSTRAINT OrderLine_FK2 FOREIGN KEY (ProductID) REFERENCES Product_T(ProductID));
```

After each table is created, use the **DESCRIBE** command to check if you have created the right table.

DESCRIBE *table_name*

For example, **DESCRIBE** *Customer_T*

It should display the table definition of Customer_T table.

B. Make changes to tables.

a. Add a new column CustomerType to the Customer_T table, data type is VARCHAR2, the length is 12 bytes. Refer to the lecture slides of Chapter 6 if needed.

   Use the DESCRIBE command to check if the new column was added successfully.

b. Add a new column, CustomerPhoneNumber, to the Customer_T to store customers' phone numbers (suppose these are US phone numbers). You need to decide the data type and length of this new attribute. Use the DESCRIBE command to check if the new column was added.

c. Drop the column CustomerType.

   Use the DESCRIBE command to check if the column was dropped.

d. Modify the data type and length of a column, say CustomerPhoneNumber. Change these to VARCHAR2(20) (suppose you did not use the same type and length in Step 6b). Hint: use alter_table _action MODIFY.

   Use the DESCRIBE command to check if the column was modified.

e. Add another new column, CustomerSex, to the Customer_t table, data type = CHAR, length = 1. Describe Customer_t.

f. Drop the newly added columns in Customer_T, CustomerSex and CustomerPhoneNumber, together in one SQL statement. Use the DESCRIBE command to see if you have restored the original table.

C. List all the tables you have created so far. Type:

select * from cat;

Or

```
select * from tab;
Or
select table_name from user_tables;
```

D. **Create a schema by copying the code from Slide 19 of Chapter 6. Change oe to your first name user and hr to your last name user.**

E. **Log out from the first account (named with your first name) and log onto Oracle with your second account (named with your last name).**

- **What result do you get by issuing the following command?**
  `DESCRIBE new_product_view`
- **Try the following commands, and answer why you get these results. Note that you must replace first_name in the following commands with your real first name.**
  - `DESCRIBE first_name.new_product_view`
  - `DESCRIBE first_name.new_product`

F. **Log out from the second account and log back to the first account. List all the tables or views (see if there is any difference in the query results, compared to those you saw earlier in Step 6C):**

- `select * from cat;`
- `select * from tab;`
- `select table_name from user_tables;`
- `select view_name from user_views;`

G. **Enter the following at SQL> prompt:**

```
SELECT TO_CHAR(SYSDATE, 'DD-MON-YY HH:MM:SS') FROM DUAL;
```

H. **Copy out all the contents from your command-line interface and create report for submission.**

- Click the little icon (with text C:\. inside) in the upper left corner of the command-line interface window and follow Edit → Select All.
- Click the same icon and follow Edit → Copy.
- Paste the contents to a text editor (Notepad or Notepad++, etc.) and to the end of this file add any answer(s) to the question(s) and any comments that you may have for the previous steps, each of which should start with a specific step number, e.g., Step 6C.
- Save this file with a name called **LastName_FirstName_Lab1.log**.