

Lab Class 1

Objective:

1. To provide basic hands-on skills PL/SQL Programming and SQL Developer
2. To discover how to implement simple interactions with an oracle DB
3. Examples 1 and 2: These two examples are meant for providing quick understanding. You can copy the programs provided in these two examples to see the output.
4. Questions 1 to 10: you need to write PL/SQL programs on your own and test the output.

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Example #1 Objective: Learning how to use SQL Developer with a simple example of 'Area of Circle' and use of insert and dbms_output statements

Run the following script in the SQL Developer to create a table 'circle'

```
DROP TABLE circle;
```

```
CREATE TABLE circle(  
radius NUMBER(5,3),  
diameter NUMBER(6,4),  
area NUMBER(9,4));
```

Try the program below to verify if it works on the table 'circle'

```
DECLARE
```

```
    r      NUMBER (5,2);  
    a      NUMBER (6,4);  
    dia    NUMBER (6,4);  
    pi     NUMBER (6,4);
```

```
BEGIN
```

```
r := 1.0;  
dia := r*2;  
pi := 22.0/7.0;  
a := pi * r * r;
```

```
INSERT INTO circle VALUES(r,dia,a);  
DBMS_OUTPUT.PUT_LINE ('Radius = '|| r || ' Diameter = '||dia || ' Area = '||a);  
END;
```

Did you see the output?

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Example #2 This example demonstrates the use of the 'select into' statement to delete rows in the table. Use the same table 'circle' as problem #1.

Run the script for the program below in SQL developer

```
DECLARE
nrows NUMBER(3);
BEGIN
DBMS_OUTPUT.PUT_LINE ('Example on Deleting the rows from Tables');
SELECT COUNT(*) INTO nrows
FROM circle;
DBMS_OUTPUT.PUT_LINE ('Number of rows in the table before : '||nrows);

DELETE FROM circle WHERE radius = 1;

SELECT COUNT(*) INTO nrows
FROM circle;
DBMS_OUTPUT.PUT_LINE ('Number of rows in the table after deleting : '||nrows);

END;
```

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There are 10 problems listed below. Some of these problems use database tables and some do not. You need to write PL/SQL programs for all the problems and test the output in SQL Developer.

1.

In case the table movie is not created in your environment, please execute the SQL script provided in the course's ENT web site.

Write a PL/SQL program which computes the average length of movies of a particular genre and displays the value on the screen. In case there is no such genre, your program will display an appropriate message.

2.

Write a PL/SQL program which increases the net worth of all the movie executives by a specific amount (say 100 Euros). Your program should display the number of rows updated.

Please rollback the changes done in the movie table after the completion of your program.

3.

See the program below, to determine the time in seconds between two instants of time. Execute the program below and observe the output.

SET SERVEROUTPUT ON

DECLARE

time1 DATE;

time2 DATE;

BEGIN

time1 := SYSDATE;

DBMS_LOCK_SLEEP(10); -- sleep about 10 seconds approximately

time2 := SYSDATE;

DBMS_OUTPUT.PUT_LINE('The time between the two instants is'|| (time2-time1));

END;

What should be the output of the program? Modify the program to display the time difference in seconds.

4.

Write a PL/SQL program to display the difference between the birthdate of the oldest and youngest moviestars. Display both dates with the format DD/MM/YYYY, and determine the difference in terms of number of days, months and years.

5.

Area of Rectangle and

Use of insert/ update statements –

Use of Anchor variables

Run the following script to create a table 'rectangle'

DROP TABLE rectangle;

```
CREATE TABLE rectangle(  
id NUMBER PRIMARY KEY,  
leng NUMBER(6,3),  
widt NUMBER(6,3),  
area NUMBER(6,3));
```

```
INSERT INTO rectangle (id, leng, widt) VALUES (122, 4,3);  
COMMIT;
```

Write a PL/SQL program which will update appropriately the column area of the table rectangle. This will be done for one row only, the rectangle being uniquely identified by the value of its "id".
In case there is no such row in the table, an appropriate message will be displayed.

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6. Using built-in Trigonometric functions

Write a PL/SQL Program to prove that $\sin(x) \cdot \sin(x) + \cos(x) \cdot \cos(x)$ is unity, for any value of x. [Take x as 45 degrees]

Use $\sin(x)$ and $\cos(x)$ built-in functions.

Comments: The output might be very long like 0.999999999999. What modification is needed in the program so that answer will be just 1?

Hint: Use the Oracle built-in library function 'round' to make this output to be displayed as 1.

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7.

Write a PL/SQL Program to determine the distance covered by a car in 10 minutes using the formula

Distance = initial_velocity * time + 0.5 * acceleration * time * time

Input data:

initial_velocity = 5 meter/second

acceleration = 10 meter/(sec*sec)

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8.

A bank has given 5,000 Euros as loan at an interest 5% per annum for three years.

- a) Design a database table (name of the table: “customer_loan”) with customer number, name, amount of loan taken, date of loan taken
 - b) Design another database table (name of the table: “interest_on_loan”) with customer number and amount of interest to be paid after 1 yr,
amount of interest to be paid after 2 yrs, amount of interest to be paid after 3 yrs,
amount of interest to be paid after 4 yrs, amount of interest to be paid after 5 yrs.
 - c) insert some meaningful data into the first table 1.
 - d) write a PL/SQL program to update the second table from the first table values.
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9.

Create the tables show_shw and date_show_dsh (SQL script available in the course’s ENT web site)

Write a PL/SQL program which computes the number of dates for a particular show (hypothesis : show titles are unique), displays that number, delete the show and displays the numbers of rows deleted. In case there is no such show in the database, an appropriate message will be displayed.

10.

Consider a general quadratic equation

$$ax^2 + bx + c = 0$$

The roots are given by the formulae given as under

$$root1 = \frac{-b + \sqrt{b^2 - 4ac}}{2.a}; \quad root2 = \frac{-b - \sqrt{b^2 - 4ac}}{2.a} \text{ and only one root will be}$$

there if a is 0, which is given by $root = (-c/b)$

The quantity $(-b + \sqrt{b^2 - 4ac})$ is known as ‘discriminant’ of the equation.

Now, design a simple database table with the coefficients a, b, c, discriminant, root1, root2 and remarks. Then insert the following data for the three coefficients and NULLs for the other columns.

a	b	c
1	5	6
0	10	10
10	0	40
1	4	5
1	4	4

Write a PL/SQL program to determine the roots for each set and also update the data table. Remarks should be 'Roots are Equal', 'Roots are imaginary' etc.

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