Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)

Lab sheet – 8

PL / SQL

(Basics, control structures loop)

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Exercise

1. Check given number is Prime or not.

```
SQL> declare
  2  num number;
  3  a number:=1;
  4  b number:=0;
  5  begin
  6  num:=13;
  7  for a in 1..num
  8  loop
  9  if((mod(num,a))=0)
 10  then
 11  b:=b+1;
 12  end if;
 13  end loop;
 14  if(b>2)
 15  then
 16  dbms_output.put_line(num||' is not prime');
 17  else
 18  dbms_output.put_line(num||' is prime');
 19  end if;
 20  end;
 21  /
13 is prime

PL/SQL procedure successfully completed.

SQL> declare
  2  num number;
  3  a number:=1;
  4  b number:=0;
  5  begin
  6  num:=16;
  7  for a in 1..num
  8  loop
  9  if((mod(num,a))=0)
 10  then
 11  b:=b+1;
 12  end if;
 13  end loop;
 14  if(b>2)
 15  then
 16  dbms_output.put_line(num||' is not prime');
 17  else
 18  dbms_output.put_line(num||' is prime');
 19  end if;
 20  end;
 21  /
16 is not prime
```

2. PL/SQL Program for factorial

```
SQL> declare
  2  fact number:=1;
  3  n number:=5;
  4  begin
  5  while n>0
  6  loop
  7  fact:=n*fact;
  8  n:=n-1;
  9  end loop;
 10  dbms_output.put_line('Factorial is: '||fact);
 11  end;
 12  /
Factorial is: 120

PL/SQL procedure successfully completed.
```

3. PL / SQL procedure to find a given number whether it is Palindrome or not

```
SQL> declare
  2  n number;
  3  m number;
  4  rev number:=0;
  5  rem number;
  6  begin
  7  n:=2002;
  8  m:=n;
  9  while n>0
 10  loop
 11  rem:=mod(n,10);
 12  rev:=(rev*10)+rem;
 13  n:=trunc(n/10);
 14  end loop;
 15  if m=rev
 16  then
 17  dbms_output.put_line('Palindrome number');
 18  else
 19  dbms_output.put_line('Not a Palindrome number');
 20  end if;
 21  end;
 22  /
Palindrome number
```

4. PL/SQL Program to Convert Celsius to Fahrenheit

```
SQL> declare
  2  celcius number;
  3  fahren number;
  4  begin
  5  celcius:=74;
  6  fahren:=(9/5*celcius)+32;
  7  dbms_output.put_line(celcius||' celcius= '||fahren||' fahrenheit');
  8  end;
  9  /
74 celcius= 165.2 fahrenheit

PL/SQL procedure successfully completed.
```

5. PL/SQL Program to Print Table of a Number.

```
SQL> declare
  2  n number;
  3  a number;
  4  begin
  5  n:=5;
  6  for a in 1..10
  7  loop
  8  dbms_output.put_line(n||' x '||a||' = '||n*a);
  9  end loop;
 10  end;
 11  /
5 x 1 = 5
5 x 2 = 10
5 x 3 = 15
5 x 4 = 20
5 x 5 = 25
5 x 6 = 30
5 x 7 = 35
5 x 8 = 40
5 x 9 = 45
5 x 10 = 50

PL/SQL procedure successfully completed.
```

6. Create the following tables:

employee(empid,name,salary,designation,deptid)

department(deptid,name, location, mgrid).

```
SQL> select *
  2  from employee21mia1127;

     EMPID ENAME                                                SALARY
---------- -------------------------------------------------- ----------
DESIGNATION                    DEPTID
------------------------------ ----------
       101 Prashanth                                           19800
Programmer                          2

       102 Divya                                              198000
Programmer Manager                  2

       103 Arvind                                              99000
HR                                  1


     EMPID ENAME                                                SALARY
---------- -------------------------------------------------- ----------
DESIGNATION                    DEPTID
------------------------------ ----------
       104 Arviya                                                990
Programmer Intern                   2

       105 Sam                                                  9900
Part time                           3

       106 Aarya                                              891000
CEO                                 4


     EMPID ENAME                                                SALARY
---------- -------------------------------------------------- ----------
DESIGNATION                    DEPTID
------------------------------ ----------
       107 Aashna                                               9900
Part time                           3


7 rows selected.
```

```
SQL> select *
  2  from department21mia1127;

    DEPTID NAME
---------- --------------------------------------------------
LOCATION                                                MGRID
-------------------------------------------------- ----------
         1 Management
Bengluru                                                 789

         2 Technical
Hyderbad                                                 790

         3 Contract-Job
Chennai                                                  791


    DEPTID NAME
---------- --------------------------------------------------
LOCATION                                                MGRID
-------------------------------------------------- ----------
         4 Head
Bengluru                                                 800
```

(i) Write a PL/SQL program to count the number of employees in each department and check whether the departments having any vacancies or not. Assume that maximum of 45 employees can be placed in each department.

```
SQL> SET SERVEROUTPUT ON
SQL> DECLARE
  2      tot_emp number;
  3  n number;
  4  begin
  5  n:=select count(*) from employee21mia1127
  6  while n>0
  7  loop
  8      SELECT Count(*)
  9      INTO tot_emp
 10      FROM employee21mia1127 e
 11           join department21mia1127 d
 12             ON e.deptid=d.deptid;
 13      IF tot_emp >= 45 THEN
 14        dbms_output.put_line('THERE ARE NO VACANICES IN THE DEPARTMENT ');
 15      ELSE
 16        dbms_output.put_line('THERE ARE VACANICES IN THE DEPARTMENT ');
 17      END IF;
 18  END;
 19  /
```

(ii) Write a PL/SQL procedure to calculate the incentive amount given for each employee if 10% incentive of salary is provided.

```
SQL> declare
  2  begin
  3  update employee21mia1127
  4  set SALARY=SALARY+0.1*SALARY;
  5  end;
  6  /

PL/SQL procedure successfully completed.
```

```
SQL> select * from employee21mia1127;

     EMPID ENAME                                                SALARY
---------- -------------------------------------------------- ----------
DESIGNATION                    DEPTID
------------------------------ ----------
       101 Prashanth                                           21780
Programmer                          2

       102 Divya                                               217800
Programmer Manager                  2

       103 Arvind                                              108900
HR                                  1


     EMPID ENAME                                                SALARY
---------- -------------------------------------------------- ----------
DESIGNATION                    DEPTID
------------------------------ ----------
       104 Arviya                                                1089
Programmer Intern                   2

       105 Sam                                                  10890
Part time                           3

       106 Aarya                                               980100
CEO                                 4


     EMPID ENAME                                                SALARY
---------- -------------------------------------------------- ----------
DESIGNATION                    DEPTID
------------------------------ ----------
       107 Aashna                                               10890
Part time                           3


7 rows selected.
```

PL / SQL Sample Programs

1. Addition of Two Numbers

```
set serveroutput on;
declare
a integer:=2;
b integer:=5;
```

```
c integer;
begin
c:=a+b;
dbms_output.put_line('sum='||c);
end;
/
```

2. **Getting input from user**

```
set serveroutput on;
declare
a number;
b number;
begin
b := &a;
dbms_output.put_line('The value of a is '||b);
end;
/
```

3. **Print an integer and float values**

```
set serveroutput on;
declare
a integer := 30;
b integer := 20;
c integer;
f real;
begin
c:=a+b;
f:=100.0/3.0;
dbms_output.put_line('c : '||c);
dbms_output.put_line('f : '||f);
end;
/
```

4. **Constants**

```
set serveroutput on;
declare
area number(15,11);
pi constant number := 3.141592654;
radius number(5,2) := 9.5;
diameter number(5,2);
circumference number(7,2);
begin
diameter:=radius*2;
circumference:=2*pi*radius;
```

```
area := pi*radius*radius;
dbms_output.put_line('radius: '||radius);
dbms_output.put_line('diameter: '||diameter);
dbms_output.put_line('circumference: '||circumference);
dbms_output.put_line('area: '||area);
end;
/
```

5. **If example**

```
set serveroutput on;
declare
a number(3) := 500;
begin
if( a < 20 ) then
dbms_output.put_line('a is less than 20 ' );
else
dbms_output.put_line('a is not less than 20 ' );
end if;
dbms_output.put_line('value of a is : ' || a);
end;
/
```

6. **While loop**

```
set serveroutput on;
declare
i integer := 1;
begin
while i <= 10
loop dbms_output.put_line(i);
i := i+1;
end loop;
end;
/
```