Experiment No 19: Implement PL/SQL program using Iterative Statements

I. **Practical Significance:**

The PL/SQL loops are used to repeat the execution of one or more statements for a specified number of times. These are also known as iterative control statements. The iterative statement can be embedded in a PL/SQL procedure, function, or anonymous block statement. In PL/SQL we have three different loop options to choose from when we want to execute a statement repeatedly in our code block. They are:

a. Basic loop.

b. For loop

c. While loop

II. **INDUSTRY / EMPLOYER EXPECTED OUTCOME:**

To implement conditional statements in PL/SQL to make better decisions and to improve problem-solving skills.

III. **COURSE LEVEL LEARNING OUTCOMES (COS):CO4**
- Implement PL/SQL codes for given application.

IV. **LABORATORY LEARNING OUTCOME:**

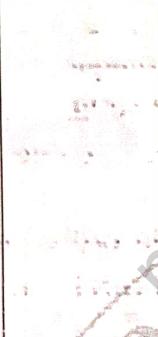Implement PL/SQL program using Iterative Statements.

V. **Relevant Affective Domain related outcome(s)**

a. Follow precautionary measures.

b. Follow installation steps.

c. Follow ethical practices.

VI. **Relevant Theoretical Background**

Title	Explanation	Syntax	Example Program

Basic loop	Basic loop or simple loop is preferred in PL/SQL code when there is no surety about how many times the block of code is to be repeated.	Loop
		sequence of statements
		end loop;
			set serveroutput on;
			DECLARE i int;
			BEGIN i := 1;
			LOOP
			if i>10 then
			exit;
			end if;
			dbms_output.put_line(i);
			i := i+1;
			END LOOP;
			END;

For	This loop is used when some statements in PL/SQL code block are to be repeated for a fixed number of times.	FOR counter_variable IN start_value..end_value LOOP
		statement to be executed
		END LOOP;
			set serveroutput on;
			DECLARE
			i number(2);
			BEGIN
			FOR i IN 1..10 LOOP
			dbms_output.put_line(i);
			END LOOP;
			END;

while	It is an entry-controlled loop which means that before entering in a while loop first the condition is tested,	WHILE <test_condition> LOOP <action>	set serveroutput on; DECLARE num int: =1; BEGIN

	if the condition is TRUE the statement or a group of statements get executed and if the condition is FALSE the control will move out of the while loop.	END LOOP;	while (num <= 10) LOOP
			
			dbms_output.put_line("|| no);
			
			num: = num+2;
			
			END LOOP;
			
			END;

VII. **Required Resources/apparatus/equipment with specifications**

Sr.No	Equipment Name with Broad Specifications	Relevant LLO Number
1	Computer system with all necessary components like; motherboard, random access memory (RAM), read-only memory (ROM), internal hard disk drives, Mouse, Keyboard, and RDBMS applications such as Oracle Express Edition,MySql,SQLite,Oracle Apex etc.	All

VIII. **Procedure**

Implement PL/SQL program based on the given problem

IX. **Result(s)**

In this Practical we Studied to implement PL/sol program using iterative statement.

X. **Practical related questions (Provide space for answers)**

Note: Below are a few sample questions for reference. Teacher must design more suchquestions to ensure the achievement of identified CO.

1. List Iterative statement in PL/SQL.

2. Write PL/SQL program using any one Iterative statement.

(Space for answer)

Iterative statements are

1] Basic Loop

2] For

3] While

2] ⟶

```
Set Serveroutput on;
DECLARE
i number (2);
Begin
For i IN 1..10
Loop

dbms_output.put_line (i);
END loop;
END;
/
```

output:

1	6
2	7
3	8
4	9
5	10

XI. **Exercise**

a. Write a PL/SQL program to display multiplication table of 5 using FOR loop.

b. Write a PL/SQL program to calculate factorial of 10 by using PL/SQL WHILE LOOP statement.

c. Write a PL/SQL program to calculate the prime numbers between 1 to 50.

XII. **References/Suggestions for further reading: include websites/links**

1. https://www.youtube.com/watch?v=yGU4YfSSjdM

Maharashtra State Board of Technical Education ('K Scheme')

* Exercise.

1) →

```
Set Serveroutput on;
Declare
i NUMBER;

n NUMBER := 5;

BEGIN
for i IN 1..10 LOOP
DBMS_OUTPUT. PUT_LINE (n||'*'|| i||' ='|| n*i);
END LOOP;
END;
/
```

Output:

$5 * 1 = 5$

$5 * 2 = 10$

$5 * 3 = 15$

$5 * 4 = 20$

$5 * 5 = 25$

$5 * 6 = 30$

$5 * 7 = 35$

$5 * 8 = 40$

$5 * 9 = 45$

$5 * 10 = 50$

b] ⟶

```
Set Serverpoint on;
DECLARE
n NUMBER := 10;
Factorial NUMBER := 1;

BEGIN
While n > 0 loop
Factorial := Factorial * n;
n := n-1;
END Loop;
DBMS_OUTPUT.PUT_LINE ('Factorial of 10 is:'
                              || Factorial);
END;
/
```

Output:
Factorial of 10 is : 3628800

3] →

```
DECLARE
i NUMBER;
j NUMBER;
is_Prime Boolean;
BEGIN
DBMS_OUTPUT.PUT_LINE ('prime numbers between
                                1 and 50 are:');
for i IN 2..50 Loop
is_Prime := True;
for j IN 2..FLOOR (SORT(i)) Loop
IF MOD (i,j) = 0 THEN
is_Prime := False;
EXIT;
END IF;
END LOOP;
IF is_Prime THEN
DBMS_OUTPUT.PUT_LINE (i);
END IF;
END LOOP;
END;
```

Output:

Prime numbers between 1 and 50 are:

2
3

5
7

11

13

17

19

23

29

31

37

41

43

47