Experiment 14: To understand the concepts of function and procedure in PL/SQL.

Objective: Students will be able to implement the Pl/SQL programs using function and procedure.

- **Implement the above experiments of PL/SQL using functions and procedures.**
  1. **Write a PL/SQL code to accept the value of A, B & C display which is greater.**

     INPUT:

```
1  CREATE OR REPLACE PROCEDURE Find_Greatest(A IN NUMBER, B IN NUMBER, C IN NUMBER) IS
2  BEGIN
3      IF A > B AND A > C THEN
4          DBMS_OUTPUT.PUT_LINE('A is the greatest: ' || A);
5      ELSIF B > C THEN
6          DBMS_OUTPUT.PUT_LINE('B is the greatest: ' || B);
7      ELSE
8          DBMS_OUTPUT.PUT_LINE('C is the greatest: ' || C);
9      END IF;
10 END;
11 /
```

```
Results  Explain  Describe  Saved SQL  History

Procedure created.

0.01 seconds
```

     OUTPUT:

```
1  BEGIN
2      Find_Greatest(10, 20, 15);
3  END;
4  /
```

```
Results  Explain  Describe  Saved SQL  Hi

B is the greatest: 20

Statement processed.

0.01 seconds
```

2. **Using PL/SQL Statements create a simple loop that display message "Welcome to PL/SQL Programming" 20 times.**

INPUT:

```
1   CREATE OR REPLACE PROCEDURE Display_Message IS
2   BEGIN
3       FOR i IN 1..20 LOOP
4           DBMS_OUTPUT.PUT_LINE(i || ': Welcome to PL/SQL Programming');
5       END LOOP;
6   END;
7   /
```

Results | Explain | Describe | Saved SQL | History

```
Procedure created.

0.03 seconds
```

OUTPUT:

```
1   BEGIN
2       Display_Message;
3   END;
4   /
```

Results | Explain | Describe | Saved

```
1: Welcome to PL/SQL Programming
2: Welcome to PL/SQL Programming
3: Welcome to PL/SQL Programming
4: Welcome to PL/SQL Programming
5: Welcome to PL/SQL Programming
6: Welcome to PL/SQL Programming
7: Welcome to PL/SQL Programming
8: Welcome to PL/SQL Programming
9: Welcome to PL/SQL Programming
10: Welcome to PL/SQL Programming
11: Welcome to PL/SQL Programming
12: Welcome to PL/SQL Programming
13: Welcome to PL/SQL Programming
14: Welcome to PL/SQL Programming
15: Welcome to PL/SQL Programming
16: Welcome to PL/SQL Programming
17: Welcome to PL/SQL Programming
18: Welcome to PL/SQL Programming
19: Welcome to PL/SQL Programming
20: Welcome to PL/SQL Programming
```

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3. **Write a PL/SQL code block to find the factorial of a number.**

INPUT:

Using Function:

```
1  CREATE OR REPLACE FUNCTION Factorial(N IN NUMBER) RETURN NUMBER IS
2      F NUMBER := 1;
3  BEGIN
4      FOR i IN 1..N LOOP
5          F := F * i;
6      END LOOP;
7      RETURN F;
8  END;
9  /
```

Results | Explain | Describe | Saved SQL | History

```
Function created.

0.03 seconds
```

Using Procedure:

```
1  CREATE OR REPLACE PROCEDURE Display_Factorial(N IN NUMBER) IS
2  BEGIN
3      DBMS_OUTPUT.PUT_LINE('Factorial of ' || N || ' is: ' || Factorial(N));
4  END;
5  /
```

Results | Explain | Describe | Saved SQL | History

```
Procedure created.

0.02 seconds
```

OUTPUT:

```
1  BEGIN
2      Display_Factorial(5);
3  END;
4  /
```

Results | Explain | Describe | Saved

```
Factorial of 5 is: 120

Statement processed.

0.02 seconds
```

4. **Write a PL/SQL program to generate Fibonacci series.**

INPUT:

```
1   CREATE OR REPLACE PROCEDURE Fibonacci_Series(N IN NUMBER) IS
2       a NUMBER := 0;
3       b NUMBER := 1;
4       c NUMBER;
5   BEGIN
6       DBMS_OUTPUT.PUT_LINE('Fibonacci Series: ');
7       FOR i IN 1..N LOOP
8           DBMS_OUTPUT.PUT_LINE(a);
9           c := a + b;
10          a := b;
11          b := c;
12      END LOOP;
13  END;
14  /
```

Results | Explain | Describe | Saved SQL | History

```
Procedure created.

0.04 seconds
```

OUTPUT:

```
1   BEGIN
2       Fibonacci_Series(10);
3   END;
4   /
```

Results | Explain | Describe | Saved

```
Fibonacci Series:
0
1
1
2
3
5
8
13
21
34

Statement processed.

0.01 seconds
```

5. Write a PL/SQL code to fund the sum of first N numbers

INPUT:

Using Function:

```
1  CREATE OR REPLACE FUNCTION Sum_N(N IN NUMBER) RETURN NUMBER IS
2      SUM_RESULT NUMBER := 0;
3  BEGIN
4      FOR i IN 1..N LOOP
5          SUM_RESULT := SUM_RESULT + i;
6      END LOOP;
7      RETURN SUM_RESULT;
8  END;
9  /
```

Results | Explain | Describe | Saved SQL | History

```
Function created.

0.05 seconds
```

Using Procedure:

```
1  CREATE OR REPLACE PROCEDURE Display_Sum(N IN NUMBER) IS
2  BEGIN
3      DBMS_OUTPUT.PUT_LINE('Sum of first ' || N || ' numbers is: ' || Sum_N(N));
4  END;
5  /
```

Results | Explain | Describe | Saved SQL | History

```
Procedure created.

0.04 seconds
```

OUTPUT:

```
1  BEGIN
2      Display_Sum(10);
3  END;
4  /
```

Results | Explain | Describe | S

```
Sum of first 10 numbers is: 55

Statement processed.

0.01 seconds
```