Assignment-8

Stream : IT
Subject : Database Management System Lab

Subject Code: IT-691

Write PL/SQL code segments:

1. To read several input values and compute their average.

```
WITH InputValues AS (
    SELECT 10 AS value UNION ALL
    SELECT 20 UNION ALL
    SELECT 30 UNION ALL
    SELECT 40 UNION ALL
    SELECT 50
)
SELECT AVG(value) AS average_value
FROM InputValues;
```

2. To take radius as input and calculate area and perimeter of a circle. Insert radius, area and perimeter in a table (already created before)

```
-- Assuming the table CircleData is already created with the following structure:
-- CREATE TABLE CircleData (
--     radius DECIMAL(10, 2),
--     area DECIMAL(10, 2),
--     perimeter DECIMAL(10, 2)
-- );

DECLARE @radius DECIMAL(10, 2);
SET @radius = 5; -- Example radius input

DECLARE @area DECIMAL(10, 2);
DECLARE @perimeter DECIMAL(10, 2);

SET @area = PI() * POWER(@radius, 2); -- Area = π * r^2
SET @perimeter = 2 * PI() * @radius;    -- Perimeter = 2 * π * r

INSERT INTO CircleData (radius, area, perimeter)
VALUES (@radius, @area, @perimeter);
```

3. To display the number of faculties in each department. Also update the salary by 10% if number of faculties is less than 10 in the department, else update salary by 5%

```
 -- Step 1: Display the number of faculties in each department
```

```
SELECT department_id, COUNT(*) AS number_of_faculties
FROM Faculty
GROUP BY department_id;

-- Step 2: Update salary based on the number of faculties
UPDATE Faculty
SET salary = CASE
    WHEN department_id IN (
        SELECT department_id
        FROM Faculty
        GROUP BY department_id
        HAVING COUNT(*) < 10
    ) THEN salary * 1.10    -- Increase salary by 10%
    ELSE salary * 1.05      -- Increase salary by 5%
END;
```

4. Find the sum upto 10^{th} term of the following series:

```
1 + 2 + 3 + ……
-- Using a Common Table Expression (CTE)
WITH Numbers AS (
    SELECT ROW_NUMBER() OVER (ORDER BY (SELECT NULL))
AS number
    FROM master..spt_values    -- This is a system table in SQL Server;
you can use any large table
)
SELECT SUM(number) AS sum_of_first_10_terms
FROM Numbers
WHERE number <= 10;
```

5. Find the sum of the digits of a number .(number is user input)

```
CREATE FUNCTION dbo.SumOfDigits(@number INT)
RETURNS INT
AS
BEGIN
    DECLARE @sum INT = 0;
    DECLARE @digit INT;

    WHILE @number > 0
    BEGIN
        SET @digit = @number % 10;    -- Get the last digit
        SET @sum = @sum + @digit;      -- Add it to the sum
        SET @number = @number / 10;    -- Remove the last digit
    END

    RETURN @sum;
END;
```

6. Find the sum of first n numbers using while loop & for loop.

```
DECLARE @n INT = 10;    -- Example value for n
DECLARE @sum INT = 0;
DECLARE @i INT = 1;

WHILE @i <= @n
BEGIN
    SET @sum = @sum + @i;    -- Add the current number to the sum
    SET @i = @i + 1;             -- Increment the counter
END

SELECT @sum AS SumOfFirstN;
```

```
DO $$
DECLARE
    n INT := 10;    -- Example value for n
    sum INT := 0;
BEGIN
    FOR i IN 1..n LOOP
        sum := sum + i;    -- Add the current number to the sum
    END LOOP;

    RAISE NOTICE 'Sum of first % numbers is %', n, sum;
END $$;
```

7. *Find the 3rd maximum salary among the faculties.*

```
SELECT DISTINCT salary
FROM Faculty
ORDER BY salary DESC
OFFSET 2 ROWS FETCH NEXT 1 ROWS ONLY;
```