Apex Institute of Technology

Computer Science & Engineering

Experiment 3

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Branch: B.E. CSE (AIML) **Section: 24AIT_KRG-G1**

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Subject Name: Database Management System **Subject Code: 24CSH-298**

AIM: To understand the basic structure of a PL/SQL program by creating and executing a simple PL/SQL block that includes **declaration** and **execution** sections, and to display output using built-in procedures.

OBJECTIVES:

- To create a simple PL/SQL program demonstrating **Declaration Section** and **Execution Section**.
- To understand the use of conditional statements (like IF-ELSE, IF–ELSIF–ELSE) in PL/SQL for performing decision-based operations.

SOFTWARE REQUIREMENTS:

- Oracle FreeSQL
- Oracle SQL Developer

PRACTICAL/EXPERIMENT STEPS:

1. Study the problem statement and understand the requirement to assign grades based on student marks.
2. Declare required variables such as student ID, student name, marks, and grade using appropriate PL/SQL data types.

3. Initialize the variables with sample values for testing the program.
4. Use DBMS_OUTPUT.PUT_LINE statements to display student details like ID, name, and marks.
5. Implement conditional logic using IF, ELSIF, and ELSE statements to determine the grade according to the marks obtained.
6. Assign grades based on the following conditions:
    a. Marks greater than or equal to 85 → Grade A
    b. Marks greater than or equal to 70 → Grade B
    c. Marks greater than or equal to 50 → Grade C
    d. Marks less than 50 → Grade F
7. Display the calculated grade using DBMS_OUTPUT.PUT_LINE.
8. Execute the PL/SQL block and verify the output in the DBMS Output window.
9. Modify input values (marks) to test different grade conditions and re-execute the program.
10. Observe and record the results obtained for each execution.

PROCEDURE:

1. Start the Oracle FreeSQL environment.
2. Write the following code to declare the variables.


```
1   DECLARE
2       student_id NUMBER := 70153;
3       student_name VARCHAR2(50) := 'Jaskaran';
4       marks NUMBER := 78;
5       grade CHAR(1);
```

3. Inside the BEGIN block, write the following code to display the student data using DBMS_OUTPUT.PUT_LINE.

```
6   BEGIN
7       DBMS_OUTPUT.PUT_LINE('Student ID: ' || student_id);
8       DBMS_OUTPUT.PUT_LINE('Student Name: ' || student_name);
9       DBMS_OUTPUT.PUT_LINE('Marks: ' || marks);
10
```

4. Use IF-ELSIF-ELSE conditional statement to determine the Grade based on the students marks.

```
11      IF marks >= 85 THEN
12          grade := 'A';
13      ELSIF marks >= 70 THEN
14          grade := 'B';
15      ELSIF marks >= 50 THEN
16          grade := 'C';
17      ELSE
18          grade := 'F';
19      END IF;
```

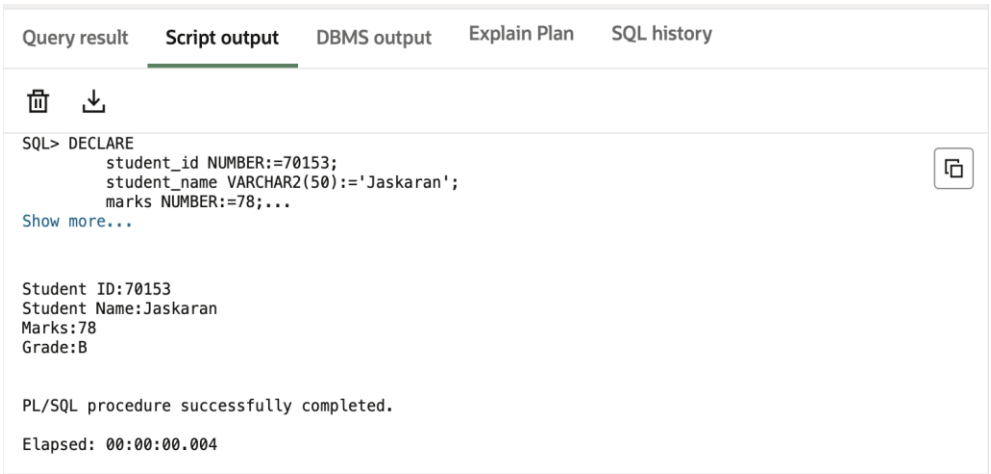
5. Display the final grade of student using DBMS_OUTPUT.PUT_LINE.

```
20      DBMS_OUTPUT.PUT_LINE('Grade: ' || grade);
```

6. End the PL/SQL block using the END; statement and execute the program.

```
21  END;
```

7. Verify the output displayed on the screen.



CODE:

```
DECLARE
   student_id NUMBER:=70153;
   student_name VARCHAR2(50):='Jaskaran';
```

```
    marks NUMBER:=78;
    grade CHAR(1);
BEGIN
    DBMS_OUTPUT.PUT_LINE('Student ID:' || student_id);
    DBMS_OUTPUT.PUT_LINE('Student Name:' || student_name);
    DBMS_OUTPUT.PUT_LINE('Marks:' || marks);

    IF marks >= 85 THEN
        grade:='A';
    ELSIF marks >= 70 THEN
        grade:='B';
    ELSIF marks >= 50 THEN
        grade:='C';
    ELSE
        grade:='F';
    END IF;
    DBMS_OUTPUT.PUT_LINE('Grade:' || grade);
END;
```

I/O ANALYSIS:

Input:

- Student ID: 70153
- Student Name: Jaskaran
- Marks: 78

Output:

- Student ID: 70153
- Student Name: Jaskaran
- Marks: 78
- Grade: B

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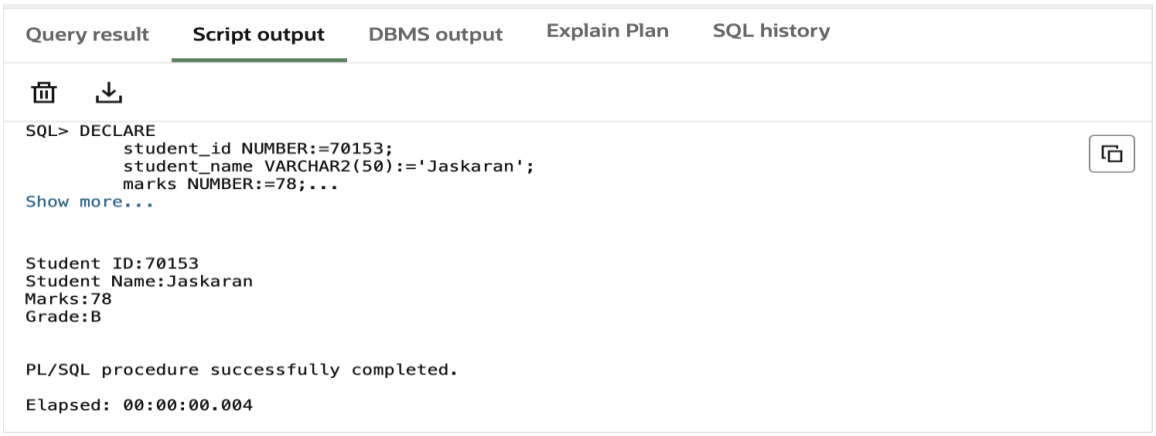

LEARNING OUTCOMES:

- How to declare and use variables in PL/SQL
- How to apply conditional logic using IF–ELSIF–ELSE
- How to display formatted output using DBMS_OUTPUT
- Practical exposure to writing and executing PL/SQL programs
- Learned how to calculate Grade of a student in PL/SQL