

Student Name: Tejas Bhat
Branch: AIT-CSE
Semester: 4
Subject Name: DBMS

UID: 24BAI70851
Section/Group: 24AIT_KRG-G2

WORKSHEET 4

AIM: To design and implement PL/SQL programs utilizing conditional control statements such as IF-ELSE, IF-ELSIF-ELSE, ELSIF ladder, and CASE constructs in order to control the flow of execution based on logical conditions and to analyze decision-making capabilities in PL/SQL blocks.

S/W Requirement:

- Database Management System: PostgreSQL / Oracle Database Express Edition
- Database Administration Tool: pgAdmin

OBJECTIVES:

- To understand and implement conditional control statements in PL/SQL
- To analyze decision-making using IF-ELSE, ELSIF ladder, and CASE statements
- To enhance logical thinking using PL/SQL blocks

PROBLEM STATEMENT:

Develop and execute PL/SQL programs that demonstrate the use of conditional control statements. The programs should employ IF-ELSE, IF-ELSIF-ELSE, ELSIF ladder, and CASE statements to evaluate given conditions and control the flow of execution accordingly.

1. PROBLEM STATEMENT – IF-ELSE STATEMENT

Write a PL/SQL program to check whether a given number is positive or non-positive using the IF-ELSE conditional control statement and display an appropriate message.

PROGRAM:

DECLARE

 num NUMBER := -7;

BEGIN

IF num > 0 THEN

 DBMS_OUTPUT.PUT_LINE('The number is Positive');

ELSE

 DBMS_OUTPUT.PUT_LINE('The number is Non-Positive');

END IF;

END;

2. PROBLEM STATEMENT – IF–ELSIF–ELSE STATEMENT

Write a PL/SQL program to evaluate the grade of a student based on obtained marks and display the corresponding grade.

PROGRAM:

DECLARE

 marks NUMBER := 79;

BEGIN

 IF marks >= 90 THEN

 DBMS_OUTPUT.PUT_LINE('Grade: A');

 ELSIF marks >= 75 THEN

 DBMS_OUTPUT.PUT_LINE('Grade: B');

 ELSIF marks >= 60 THEN

 DBMS_OUTPUT.PUT_LINE('Grade: C');

 ELSE

 DBMS_OUTPUT.PUT_LINE('Grade: Fail');

 END IF;

END;

3. PROBLEM STATEMENT – ELSIF LADDER

Write a PL/SQL program to determine the performance status of a student based on marks using an ELSIF ladder.

PROGRAM:

DECLARE



marks NUMBER := 66;

BEGIN

IF marks >= 85 THEN

DBMS_OUTPUT.PUT_LINE('Performance: Excellent');

ELSIF marks >= 70 THEN

DBMS_OUTPUT.PUT_LINE('Performance: Very Good');

ELSIF marks >= 55 THEN

DBMS_OUTPUT.PUT_LINE('Performance: Good');

ELSIF marks >= 40 THEN

DBMS_OUTPUT.PUT_LINE('Performance: Average');

ELSE

DBMS_OUTPUT.PUT_LINE('Performance: Poor');

END IF;

END;

4. PROBLEM STATEMENT – CASE STATEMENT

Write a PL/SQL program to display the name of the day based on a given day number using the CASE statement.

PROGRAM:

DECLARE

day_num NUMBER := 4;

day_name VARCHAR2(20);

BEGIN

CASE day_num

WHEN 1 THEN day_name := 'Sunday';

WHEN 2 THEN day_name := 'Monday';

WHEN 3 THEN day_name := 'Tuesday';

WHEN 4 THEN day_name := 'Wednesday';

WHEN 5 THEN day_name := 'Thursday';

WHEN 6 THEN day_name := 'Friday';



```
WHEN 7 THEN day_name := 'Saturday';
ELSE day_name := 'Invalid Day Number';
END CASE;
```

```
DBMS_OUTPUT.PUT_LINE('Day is: ' || day_name);
END;
```

LEARNING OUTCOMES:

1. Understood the use of conditional control statements in PL/SQL.
2. Learned to apply IF–ELSE and IF–ELSIF–ELSE statements for decision-making.
3. Implemented ELSIF ladder for evaluating multiple conditions.
4. Used CASE statements to simplify complex conditional logic.
5. Improved logical reasoning and procedural programming skills in PL/SQL.

OUTPUT :

FreeSQL Worksheet Library 23ai Connect to the Database Help and Feedback Sign Out

Navigator Files

My Schema Tables Search objects

```
[ SQL Worksheet ]* 
1 2 3 4 5 6 7 8 9 10 11
1 DECLARE
2     num NUMBER := -7;
3 BEGIN
4     IF num > 0 THEN
5         DBMS_OUTPUT.PUT_LINE('The number ' || num || ' is Positive');
6     ELSE
7         DBMS_OUTPUT.PUT_LINE('The number ' || num || ' is Non-Positive');
8     END IF;
9
10 END;
11 /
```

Query result Script output DBMS output Explain Plan SQL history

BEGIN
IF num > 0 THEN...
Show more...

The number -7 is Non-Positive

PL/SQL procedure successfully completed.

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Navigator Files

My Schema Tables Search objects

```
[ SQL Worksheet ]* 
1 2 3 4 5 6 7 8 9 10 11
1 DECLARE
2     marks NUMBER := 79;
3 BEGIN
4     IF marks >= 90 THEN
5         DBMS_OUTPUT.PUT_LINE('Grade: A');
6     ELSIF marks >= 75 THEN
7         DBMS_OUTPUT.PUT_LINE('Grade: B');
8     ELSIF marks >= 60 THEN
9         DBMS_OUTPUT.PUT_LINE('Grade: C');
10    ELSE
11        DBMS_OUTPUT.PUT_LINE('Grade: Fail');
```

Query result Script output DBMS output Explain Plan SQL history

Grade: B

PL/SQL procedure successfully completed.

Elapsed: 00:00:00.008

The screenshot shows the FreeSQL interface with the following components:

- Top Bar:** Includes the FreeSQL logo, Worksheet, Library, 23ai, Connect to the Database, Help and Feedback, Sign Out, and a language switcher set to English.
- Left Sidebar (Navigator):** Shows "My Schema" selected, with "Tables" and a search bar for "Search objects".
- SQL Worksheet:** Displays a PL/SQL procedure that declares a variable `marks` and uses a series of IF-ELSIF statements to output performance levels based on marks. The code is as follows:

```
1 DECLARE
2     marks NUMBER := 66;
3 BEGIN
4     IF marks >= 85 THEN
5         DBMS_OUTPUT.PUT_LINE('Performance: Excellent');
6     ELSIF marks >= 70 THEN
7         DBMS_OUTPUT.PUT_LINE('Performance: Very Good');
8     ELSIF marks >= 55 THEN
9         DBMS_OUTPUT.PUT_LINE('Performance: Good');
10    ELSIF marks >= 40 THEN
11        DBMS_OUTPUT.PUT_LINE('Performance: Average');
```

- Query Result:** Shows the output of the procedure: "Performance: Good".
- Script Output:** Shows the message: "PL/SQL procedure successfully completed."
- Timing:** Shows the elapsed time: "Elapsed: 00:00:00.008".

The screenshot shows the FreeSQL Worksheet interface. On the left, the Navigator panel displays 'My Schema' and 'Tables'. A search bar for 'Search objects' is also present. The main workspace is titled '[SQL Worksheet]*' and contains the following PL/SQL code:

```
1  DECLARE
2      day_no NUMBER := 4;
3      day_name VARCHAR2(20);
4  BEGIN
5      day_name := CASE day_no
6          WHEN 1 THEN 'Sunday'
7          WHEN 2 THEN 'Monday'
8          WHEN 3 THEN 'Tuesday'
9          WHEN 4 THEN 'Wednesday'
10         WHEN 5 THEN 'Thursday'
11         WHEN 6 THEN 'Friday'
```

Below the code, there are tabs for 'Query result', 'Script output' (which is selected), 'DBMS output', 'Explain Plan', and 'SQL history'. The 'Script output' tab shows the result of running the procedure: 'Day: Wednesday'. It also indicates that the 'PL/SQL procedure successfully completed.' and the 'Elapsed: 00:00:00.007'.

CONCLUSION:

This experiment provided hands-on experience with conditional control statements in PL/SQL. The use of IF-ELSE, ELSIF ladder, and CASE statements helped in understanding decision-making mechanisms and control flow within PL/SQL programs.