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Programme: B.Tech CSE (Spec. AI&ML) (Batch 5)

Course: Advanced Database Management Systems

LAB 9

Title: To understand the concepts of PL/SQL programming.

Objective: Students will be able to implement the basic concepts of PL/SQL.

1. Write a PL/SQL code to accept the value of A, B & C display which is greater.

Ans.1.

```
declare
a number:=3;
b number:=4;
c number:=12;
begin
dbms_output.put_line('a='||a||' b='||b||' c='||c);
if a > b and a > c then
  dbms_output.put_line('a is the greatest');
else
  if b > a and b > c then
    dbms_output.put_line('b is the greatest');
  else
    dbms_output.put_line('c is the greatest');
  end if;
end if;
end;
```

The screenshot displays the 'Live SQL' web interface. At the top, there's a navigation bar with a hamburger menu, the 'Live SQL' logo, and links for 'Feedback', 'Help', and a user profile 'thelazycrazywizard@gmail.com'. Below this is a 'SQL Worksheet' section with a toolbar containing 'Clear', 'Find', 'Actions', 'Save', and a 'Run' button. The main area shows the PL/SQL code from the previous block, with line numbers 1 through 17. The code is syntax-highlighted. Below the code editor, the output of the execution is shown: 'Statement processed.', 'a=3 b=4 c=12', and 'c is the greatest'. At the bottom, there's a footer with the Oracle logo, 'Integrated Cloud Applications & Platform Services', copyright information '© 2020 Oracle Corporation', and links to 'Privacy' and 'Terms of Use'. It also includes 'Oracle Learning Library · Ask Tom · Dev Gym · Database Doc 19c, 18c, 12c · Follow on Twitter', the version 'Live SQL 20.3.1, running Oracle Database 19c Enterprise Edition - 19.8.0.0.0', and 'Built with ❤️ using Oracle APEX'.

```
1 declare
2 a number:=3;
3 b number:=4;
4 c number:=12;
5 begin
6 dbms_output.put_line('a='||a||' b='||b||' c='||c);
7 if a > b and a > c then
8   dbms_output.put_line('a is the greatest');
9 else
10   if b > a and b > c then
11     dbms_output.put_line('b is the greatest');
12   else
13     dbms_output.put_line('c is the greatest');
14   end if;
15 end if;
16 end;
17
```

Statement processed.
a=3 b=4 c=12
c is the greatest

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

Ans.2.

```
DECLARE
a number := 0;
BEGIN
WHILE a < 20
LOOP
    DBMS_OUTPUT.PUT_LINE(a+1||' Welcome to PL/SQL Programming');
    a := a + 1;
END LOOP;
END;
```

The screenshot shows the 'Live SQL' web application interface. At the top, there's a navigation bar with 'Live SQL' and user information. Below it, the 'SQL Worksheet' section contains a code editor with the following PL/SQL code:

```
1 DECLARE
2   a number := 0;
3 BEGIN
4   WHILE a < 20
5   LOOP
6     DBMS_OUTPUT.PUT_LINE(a+1||' Welcome to PL/SQL Programming');
7     a := a + 1;
8   END LOOP;
9 END;
```

Below the code editor, the output area displays the results of the execution:

Statement processed.

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.

Ans.3.

```
DECLARE
n number := 8;
a number := 1;
factorial_result number := 1;
BEGIN
WHILE a <= n
LOOP
    factorial_result := factorial_result * a;
    a := a + 1;
END LOOP;
DBMS_OUTPUT.PUT_LINE('Factorial of '||n||' is '||factorial_result);
END;
```

The screenshot displays the Oracle Live SQL interface. At the top, there's a navigation bar with 'Live SQL' and user information. Below it, the 'SQL Worksheet' section contains a code editor with the following PL/SQL code:

```
1 DECLARE
2   n number := 8;
3   a number := 1;
4   factorial_result number := 1;
5 BEGIN
6   WHILE a <= n
7   LOOP
8     factorial_result := factorial_result * a;
9     a := a + 1;
10  END LOOP;
11  DBMS_OUTPUT.PUT_LINE('Factorial of '||n||' is '||factorial_result);
12 END;
```

Below the code editor, the execution results are shown: 'Statement processed.' and 'Factorial of 8 is 40320'. The footer includes Oracle branding, copyright information (© 2020 Oracle Corporation), and links to the Oracle Learning Library and other resources.

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

Ans.4.

DECLARE

x number := 0;

y number := 1;

temp number := 0;

a number := 0;

n number := 10;

BEGIN

WHILE a < n

LOOP

DBMS_OUTPUT.PUT_LINE(x||' ');

temp := y;

y := x + y;

x := temp;

a := a + 1;

END LOOP;

END;

The screenshot shows the Oracle Live SQL web interface. At the top, there's a navigation bar with the 'Live SQL' logo and user information. Below this is a sidebar with icons for home, SQL Worksheet, and other tools. The main area is titled 'SQL Worksheet' and contains the PL/SQL code from the previous block, numbered 1 to 16. To the right of the code editor are buttons for 'Clear', 'Find', 'Actions', 'Save', and 'Run'. Below the code editor, the output window shows the message 'Statement processed.' followed by a list of numbers: 0, 1, 1, 2, 3, 5, 8, 13, 21, 34, which are the Fibonacci sequence values. At the bottom, there's a footer with Oracle branding, copyright information, and links to the Oracle Learning Library and Twitter.

Live SQL

SQL Worksheet

Clear Find Actions Save Run

```
1 DECLARE
2   x number := 0;
3   y number := 1;
4   temp number := 0;
5   a number := 0;
6   n number := 10;
7 BEGIN
8   WHILE a < n
9   LOOP
10      DBMS_OUTPUT.PUT_LINE(x||' ');
11      temp := y;
12      y := x + y;
13      x := temp;
14      a := a + 1;
15   END LOOP;
16 END;
```

Statement processed.

0
1
1
2
3
5
8
13
21
34

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

Ans.5.

DECLARE

sum_result number := 0;

a number := 0;

n number := 8;

BEGIN

WHILE a <= n

LOOP

sum_result := sum_result + a;

a := a + 1;

END LOOP;

DBMS_OUTPUT.PUT_LINE('SUM upto '||n||' is '||sum_result);

END;

The screenshot shows a web-based SQL editor interface. At the top, there's a dark header with a hamburger menu, the text "Live SQL", and links for "Feedback", "Help", and a user profile "thelazycrazywizard@gmail.com". Below the header, the main area is titled "SQL Worksheet". It contains a code editor with a PL/SQL program to calculate the sum of the first 8 numbers. The code is as follows:

```
1 DECLARE
2     sum_result number := 0;
3     a number := 0;
4     n number := 8;
5 BEGIN
6     WHILE a <= n
7     LOOP
8         sum_result := sum_result + a;
9         a := a + 1;
10    END LOOP;
11    DBMS_OUTPUT.PUT_LINE('SUM upto '||n||' is '||sum_result);
12 END;
```

Below the code editor, there's a status bar that says "Statement processed." and "SUM upto 8 is 36". On the right side of the code editor, there are buttons for "Clear", "Find", "Actions", "Save", and a green "Run" button with a play icon.