

Nama : Afina Putri Dayanti
NIM : 825200049
Jurusan : Sistem Informasi
Mata Kuliah : Database Design and Management (Praktikum)

Vocabulary

Identify the vocabulary word for each definition below:

IF	Statement that enables PL/SQL to perform actions selectively based on conditions.
LOOP	Control structures – Repetition statements that enable you to execute statements in a PL/SQL block repeatedly.
Condition	An expression with a TRUE or FALSE value that is used to make a decision.
CASE	An expression that determines a course of action based on conditions and can be used outside a PL/SQL block in a SQL statement.

Try It / Solve It

1. What is the purpose of a conditional control structure in PL/SQL?
Answer : Purpose of a conditional control structure is extends the usefulness of programs by allowing the use of simple logical tests to determine which statements are executed
2. List the three categories of control structures in PL/SQL.
Answer : Conditional constructs with the IF statement , CASE expressions, and LOOP control structures
3. List the keywords that can be part of an IF statement.
Answer : IF, THEN, ELSE, ELSIF, END IF
4. List the keywords that are a required part of an IF statement.
Answer : IF condition THEN statement END IF;
5. Write a PL/SQL block to find the population of a given country in the countries table. Display a message indicating whether the population is greater than or less than 1 billion (1,000,000,000). Test your block twice using India (country_id = 91) and United Kingdom (country_id = 44). India's population should be greater than 1 billion, while United Kingdom's should be less than 1 billion.

Answer :

```
declare
  v_name          wf_countries.country_name%type;
  v_population     wf_countries.population%type;
begin
  select country_name, population into v_name, v_population
  from wf_countries
  where country_id = &x;
  if v_population > 1000000000 then
    dbms_output.put_line('Population ' || v_name || ' is greater than 1 billion');
  else
    dbms_output.put_line('Population ' || v_name || ' is less than 1 billion');
  end if;
end;
```

6. Modify the code from the previous exercise so that it handles all the following cases:

- a. Population is greater than 1 billion.
- b. Population is greater than 0.
- c. Population is 0.
- d. Population is null. (Display: No data for this country.)

Answer :

Run your code using the following country ids. Confirm the indicated results.

- China (country_id = 86): Population is greater than 1 billion.
- United Kingdom (country_id = 44): Population is greater than 0.
- Antarctica (country_id = 672): Population is 0.
- Europa Island (country_id = 15): No data for this country.

Answer :

```
Declare
  v_name wf_countries.country_name%type;
  v_population wf_countries.population%type;
begin
  select country_name, population into v_name, v_population
  from wf_countries
  where country_id = &x;
  if v_population > 1000000000 then
    dbms_output.put_line('Population ' || v_name || ' is greater than 1 billion');
  elsif v_population > 0 then
    dbms_output.put_line('Population ' || v_name || ' is greater than 0');
  elsif v_population = 0 then
    dbms_output.put_line('Population ' || v_name || ' is 0');
  else
    dbms_output.put_line(' No data for this country');
  end if;
end;
```

7. Examine the following code :

```
DECLARE
  v_country_id          countries.country_name%TYPE := <a value>;
  v_ind_date            countries.date_of_independence%TYPE;
  v_natl_holiday        countries.national_holiday_date%TYPE;
BEGIN
  SELECT date_of_independence, national_holiday_date INTO v_ind_date, v_natl_holiday
  FROM countries
  WHERE country_id = v_country_id;
  IF v_ind_date IS NOT NULL THEN
    DBMS_OUTPUT.PUT_LINE('A');
  ELSIF v_natl_holiday IS NOT NULL THEN
    DBMS_OUTPUT.PUT_LINE('B');
  ELSIF v_natl_holiday IS NULL AND v_ind_date IS NULL THEN
    DBMS_OUTPUT.PUT_LINE('C');
  END IF;
END;
```

- a. What would print if the country has an independence date equaling NULL and a national holiday date equaling NULL?
Answer : C
- b. What would print if the country has an independence date equaling NULL and a national holiday date containing a value?
Answer : B
- c. What would print if the country has an independence date equaling a value and a national holiday date equaling NULL?
Answer : A
- d. Run a SELECT statement against the COUNTRIES table to determine whether the following countries have independence dates or national holiday dates, or both. Predict the output of running the anonymous block found at the beginning of this question.

Answer :

```
SELECT country_name, date_of_independence, national_holiday_date
FROM wf_countries
WHERE country_id in (672, 964, 34, 1);
```

Country	Country_ID	Independence Date	National Holiday Date	Output should be
Antarctica	672	NULL	NULL	C
Iraq	964	28-Jun-2004	NULL	A
Spain	34	NULL	12-Oct	B
United States	1	4-Jul-1776	4-Jul	A

- e. Finally, run the anonymous block found at the beginning of this question using each of the above country ids as input. Check whether your output answers are correct.

Answer :

Country	Country_ID	Independence Date	National Holiday Date	Output should be
Antarctica	672	NULL	NULL	C
Iraq	964	28-Jun-2004	NULL	A
Spain	34	NULL	12-Oct	B
United States	1	4-Jul-1776	4-Jul	A

8. Examine the following code. What output do you think it will produce?

```
DECLARE
  v_num1    NUMBER(3) := 123;
  v_num2    NUMBER;
BEGIN
  IF v_num1 <> v_num2 THEN
    DBMS_OUTPUT.PUT_LINE('The two numbers are not equal');
  ELSE
    DBMS_OUTPUT.PUT_LINE('The two numbers are equal');
  END IF;
END;
```

Run the code to check if your prediction was correct. What was the result and why?

Modify the code to use various comparison operators to see different results.

Answer : because v_num2 does not have length and value, the condition will always go to ELSE

```

DECLARE
    v_num1 NUMBER(3) := 123;
    v_num2 NUMBER;
BEGIN
    IF v_num1 != v_num2 THEN
        DBMS_OUTPUT.PUT_LINE('The two numbers are not equal');
    ELSE
        DBMS_OUTPUT.PUT_LINE('The two numbers are equal');
    END IF;
END;

```

Script Output x Query Result x

Task completed in 0.003 seconds

PL/SQL procedure successfully completed.

The two numbers are equal

9. Write a PL/SQL block to accept a year and check whether it is a leap year. For example, if the year entered is 1990, the output should be "1990 is not a leap year."

Hint: A leap year should be exactly divisible by 4, but not exactly divisible by 100. However, any year exactly divisible by 400 is a leap year.

Test your solution with the following years:

Year	Result Should Be
1990	Not a leap year
2000	Leap year
1996	Leap year
1900	Not a leap year
2016	Leap year
1884	Leap year

Answer :

```

declare
    v_year number(4) := &x;
begin
    if (v_year mod 4 = 0 and v_year mod 100 != 0) or v_year mod 400 = 0 then
        dbms_output.put_line(v_year || ' is a leap year');
    else
        dbms_output.put_line(v_year || ' is not a leap year');
    end if;
end;

```