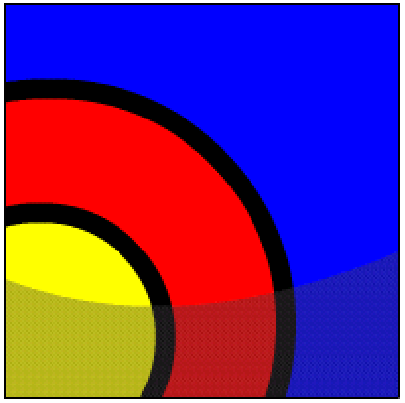
Conditional Control: CASE Statements

What Will I Learn?

In this lesson, you will learn to:

- Construct and use CASE statements in PL/SQL
- Construct and use CASE expressions in PL/SQL
- Include the correct syntax to handle null conditions in PL/SQL CASE statements
- Include the correct syntax to handle Boolean conditions in PL/SQL `IF` and CASE statements



Why Learn It?

In this lesson, you learn how to use CASE statements and CASE expressions in a PL/SQL block.

CASE statements are similar to `IF` statements, but are often easier to write and easier to read.

CASE expressions are functions that return one of a number of values into a variable.

Tell Me/Show Me

Using a CASE Statement

Look at this IF statement What do you notice?

```
DECLARE
   v_numvar    NUMBER;
BEGIN
  ...
  IF    v_numvar = 5  THEN statement_1; statement_2;
  ELSIF v_numvar = 10 THEN statement_3;
  ELSIF v_numvar = 12 THEN statement_4; statement_5;
  ELSIF v_numvar = 27 THEN statement_6;
  ELSIF v_numvar ... – and so on
  ELSE  statement_15;
  END IF;
  ...
END;
```

All the conditions test the same variable v_numvar. And the coding is very repetitive: v_numvar is coded many times.

Tell Me/Show Me

Using a CASE Statement (continued)

Here is the same logic, but using a CASE statement:

```
DECLARE
   v_numvar    NUMBER;
BEGIN
  ...
  CASE v_numvar
    WHEN 5  THEN statement_1; statement_2;
    WHEN 10 THEN statement_3;
    WHEN 12 THEN statement_4; statement_5;
    WHEN 27 THEN statement_6;
    WHEN  ... – and so on
    ELSE statement_15;
  END CASE;
  ...
END;
```

It's much neater, isn't it? `v_numvar` is referenced only once. Easier to write, and easier to read.

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CASE Statements: A Second Example

```
DECLARE
   v_deptid   departments.department_id%TYPE;
   v_deptname departments.department_name%TYPE;
   v_emps     NUMBER;
   v_mngid    departments.manager_id%TYPE := 108;
BEGIN
  CASE  v_mngid
    WHEN  108 THEN
      SELECT department_id, department_name
        INTO v_deptid, v_deptname FROM departments
        WHERE manager_id=108;
      SELECT count(*) INTO v_emps FROM employees
        WHERE department_id=v_deptid;
    WHEN  200 THEN
    ...
  END CASE;
  DBMS_OUTPUT.PUT_LINE ('You are working in the '|| v_deptname||
  ' department. There are '||v_emps ||' employees in this
  department');
END;
```

Tell Me/Show Me

Using a CASE Expression

You want to assign a value to one variable that depends on the value in another variable. Look at this IF statement:

```
DECLARE
  v_out_var   VARCHAR2(15);
  v_in_var    NUMBER;
BEGIN
  ...
  IF    v_in_var = 1  THEN v_out_var := 'Low value';
  ELSIF v_in_var = 50 THEN v_out_var := 'Middle value';
  ELSIF v_in_var = 99 THEN v_out_var := 'High value';
  ELSE                     v_out_var := 'Other value';
  END IF;
  ...
END;
```

Again, the coding is very repetitive.

Tell Me/Show Me

Using a CASE Expression (continued)

Here is the same logic, but using a CASE expression:

```
DECLARE
  v_out_var   VARCHAR2(15);
  v_in_var    NUMBER;
BEGIN
  ...
  v_out_var :=
    CASE v_in_var
      WHEN 1  THEN 'Low value'
      WHEN 50 THEN 'Middle value'
      WHEN 99 THEN 'High value'
      ELSE         'Other value'
    END;
  ...
END;
```

Again, it is much neater than the equivalent `IF` statement.

Tell Me/Show Me

CASE Expressions

A CASE expression selects one of a number of results and returns it into a variable.

In the syntax, *expressionN* can be a literal value, such as 50, or an expression, such as (27+23) or (v_other_var*2).

```
variable_name :=
  CASE selector
    WHEN expression1 THEN result1
    WHEN expression2 THEN result2
    ...
    WHEN expressionN THEN resultN
   [ELSE resultN+1]
  END;
```

Tell Me/Show Me

CASE Expressions: A Second Example

```
DECLARE
   v_grade     CHAR(1) := 'A';
   v_appraisal VARCHAR2(20);
BEGIN
   v_appraisal :=
      CASE v_grade
         WHEN 'A' THEN 'Excellent'
         WHEN 'B' THEN 'Very Good'
         WHEN 'C' THEN 'Good'
         ELSE 'No such grade'
      END;
   DBMS_OUTPUT.PUT_LINE ('Grade: '|| v_grade ||
                         ' Appraisal ' || v_appraisal);
END;
```

```
Grade: A
Appraisal Excellent

Statement processed.
```

Tell Me/Show Me

CASE Expressions: A Third Example

What do you think will be displayed when this block is executed?

```
DECLARE
  v_out_var   VARCHAR2(15);
  v_in_var    NUMBER := 20;
BEGIN
  v_out_var :=
    CASE v_in_var
      WHEN 1        THEN 'Low value'
      WHEN v_in_var THEN 'Same value'
      WHEN 20       THEN 'Middle value'
      ELSE               'Other value'
    END;
  DBMS_OUTPUT.PUT_LINE(v_out_var);
END;
```

Tell Me/Show Me

Searched CASE Expressions

PL/SQL also provides a searched CASE expression, which has the following form:

```
CASE
   WHEN search_condition1 THEN result1
   WHEN search_condition2 THEN result2
   ...
   WHEN search_conditionN THEN resultN
  [ELSE resultN+1]
END;
```

A searched CASE expression has no selector. Also, its WHEN clauses contain search conditions that yield a Boolean value, not expressions that can yield a value of any type.

Tell Me/Show Me

Searched CASE Expressions: An Example

```
DECLARE
  v_grade     CHAR(1) := 'A';
  v_appraisal VARCHAR2(20);
BEGIN
  v_appraisal :=
     CASE                         -- no selector here
       WHEN v_grade = 'A' THEN 'Excellent'
       WHEN v_grade IN ('B','C') THEN 'Good'
       ELSE 'No such grade'
     END;
   DBMS_OUTPUT.PUT_LINE ('Grade: '|| v_grade ||
                         ' Appraisal ' || v_appraisal);
END;
```

Tell Me/Show Me

How are CASE Expressions Different From CASE Statements?

- **CASE expressions** return a value into a variable.
- CASE expressions end with `END;`
- A CASE expression is a single PL/SQL statement.

```
DECLARE
  v_grade     CHAR(1) := 'A';
  v_appraisal VARCHAR2(20);
BEGIN
  v_appraisal :=
    CASE
      WHEN v_grade = 'A' THEN 'Excellent'
      WHEN v_grade IN ('B','C') THEN 'Good'
      ELSE 'No such grade'
    END;
  DBMS_OUTPUT.PUT_LINE ('Grade: '|| v_grade ||
                        ' Appraisal ' || v_appraisal);
END;
```

Tell Me/Show Me

How are CASE Expressions Different From CASE Statements? (continued)

- **CASE statements** evaluate conditions and perform actions
- A CASE statement can contain many PL/SQL statements.
- CASE statements end with END CASE;.

```
DECLARE
   v_grade CHAR(1) := 'A';
BEGIN
  CASE
    WHEN v_grade = 'A' THEN
          DBMS_OUTPUT.PUT_LINE ('Excellent');
    WHEN v_grade IN ('B','C') THEN
          DBMS_OUTPUT.PUT_LINE ('Good');
    ELSE
          DBMS_OUTPUT.PUT_LINE('No such grade');
  END CASE;
END;
```

Tell Me/Show Me

Logic Tables

When using IF and CASE statements you often need to combine conditions using AND, OR, and NOT. The following Logic Tables show the results of all possible combinations of two conditions.

AND	*TRUE*	*FALSE*	*NULL*	OR	*TRUE*	*FALSE*	*NULL*	NOT	
TRUE	TRUE	(1) FALSE	NULL	*TRUE*	TRUE	TRUE	TRUE	*TRUE*	FALSE
FALSE	FALSE	FALSE	FALSE	*FALSE*	TRUE	FALSE	NULL	*FALSE*	TRUE
NULL	NULL	FALSE	NULL	*NULL*	TRUE	NULL	NULL	*NULL*	NULL

Example: (1) TRUE AND FALSE is FALSE

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Boolean Conditions

What is the value of `v_flag` in each case?

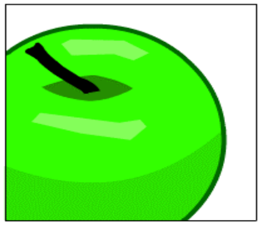
```
v_flag := v_reorder_flag AND v_available_flag;
```

V_REORDER_FLAG	V_AVAILABLE_FLAG	V_FLAG
TRUE	TRUE	?
TRUE	FALSE	?
NULL	TRUE	?
NULL	FALSE	?

Tell Me/Show Me

Terminology

Key terms used in this lesson include:



CASE expression

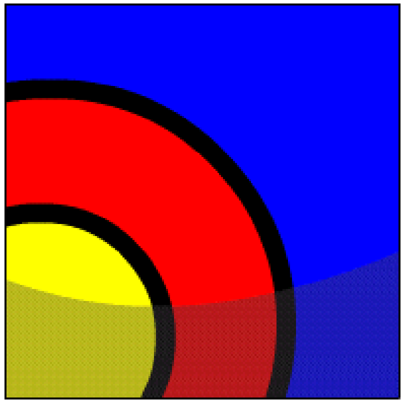
CASE statement

Logic Tables

Summary

In this lesson, you learned to:

- Construct and use `CASE` statements in PL/SQL
- Construct and use `CASE` expressions in PL/SQL
- Include the correct syntax to handle null conditions in PL/SQL `CASE` statements
- Include the correct syntax to handle Boolean conditions in PL/SQL `IF` and `CASE` statements



Try It/Solve It

The exercises in this lesson cover the following topics:

- Constructing and using `CASE` statements
- Constructing and using `CASE` expressions
- Handling null conditions in `CASE` statements
- Handling Boolean conditions in `IF` and `CASE` statements