Prerequisite :

A cursor is a temporary work area created in the system memory when a SQL statement is executed. A cursor contains information on a select statement and the rows of data accessed by it.

This temporary work area is used to store the data retrieved from the database, and manipulate this data. A cursor can hold more than one row, but can process only one row at a time. The set of rows the cursor holds is called the *active* set.

There are two types of cursors in PL/SQL:

1. Implicit cursors

These are created by default when DML statements like, INSERT, UPDATE, and DELETE statements are executed. They are also created when a SELECT statement that returns just one row is executed.

Application

When you execute DML statements like DELETE, INSERT, UPDATE and SELECT statements, implicit statements are created to process these statements.

Oracle provides few attributes called as implicit cursor attributes to check the status of DML operations. The cursor attributes available are %FOUND, %NOTFOUND, %ROWCOUNT, and %ISOPEN.

For example, When you execute INSERT, UPDATE, or DELETE statements the cursor attributes tell us whether any rows are affected and how many have been affected.
When a SELECT... INTO statement is executed in a PL/SQL Block, implicit cursor attributes can be used to find out whether any row has been returned by the SELECT statement. PL/SQL returns an error when no data is selected.

For Example: Consider the PL/SQL Block that uses implicit cursor attributes as shown below:

```
select * from emp;

  SNO FIRST_NAME           LAST_NAME                 SALARY
----- -------------------- -------------------- ----------
    1 Akansha              Goel                       40000
    2 Akshat               Kansal                     80000
    3 Somya                Kansal                     70000
    4 Kartik               Singh                        600
    5 Neha                 Goel                       40000
```

```
SQL> set serveroutput on;
Declare var_rows number(5);
BEGIN
update emp set salary=salary+1000;
if SQL%NOTFOUND then
dbms_output.put_line('None of salaries were updated');
ELSIF SQL% FOUND THEN
var_rows := SQL%rowcount;
DBMS_OUTPUT.PUT_LINE('Salaries for '||var_rows||' employees are updated');
end if;
end;SQL>   2    3    4    5    6    7    8    9   10
 11  /
Salaries for 5 employees are updated

PL/SQL procedure successfully completed.
```

2. Explicit cursors

They must be created when you are executing a SELECT statement that returns more than one row. Even though the cursor stores multiple records, only one record can be processed at a time, which is called as current row. When you fetch a row the current row position moves to next row.

Both implicit and explicit cursors have the same functionality, but they differ in the way they are accessed.

For Example: Consider the PL/SQL Block that uses explicit cursor attributes as shown below:

```
SQL> set serveroutput on;
Declare
cursor emp_cur IS
select * from emp where salary>10000;
emp_rec emp_cur%rowtype;
Begin
if not emp_cur%ISOPEN then
OPEN emp_cur;
end if;
loop
Fetch emp_cur Into emp_rec;
exit when emp_cur%NOTFOUND;
dbms_output.put_line(emp_rec.first_name||' '||emp_rec.last_name||' '||emp_rec.sa
lary);
end loop;
end;SQL>   2    3    4    5    6    7    8    9   10   11   12   13   14
 15  /
Akansha Goel 42000
Akshat Kansal 82000
Somya Kansal 72000
Neha Goel 42000
```