Ex. No 15

Creation of Cursors

AIM
Create a PL/SQL Cursors

Cursors

A *cursor* is a named control structure used by an application program to point to and select a row of data from a result set. Instead of executing a query all at once, you can use a cursor to read and process the query result set one row at a time.

Implicit Cursors:
An implicit cursor is a session cursor that is constructed and managed by PL/SQL. PL/SQL opens an implicit cursor every time you run a `SELECT` or DML statement. You cannot control an implicit cursor, but you can get information from its attributes.

Explicit Cursors:
Explicit Cursors are Created by Users whenever the user requires them. Explicit Cursors are used for Fetching data from Table in Row-By-Row Manner.

Implicit cursors are automatically created when select statements are executed.	Explicit cursors need to be defined explicitly by the user by providing a name.
They are capable of fetching a single row at a time.	Explicit cursors can fetch multiple rows.
Closes automatically after execution.	Need to close after execution.
They are more vulnerable to errors such as Data errors, etc.	They are less vulnerable to errors(Data errors etc.)
Provides less programmatic control to the users	User/Programmer has the entire control.
Implicit cursors are less efficient.	Comparative to Implicit cursors, explicit cursors are more efficient.
Implicit Cursors are defined as:	Explicit cursors are defined as:

How to create Explicit Cursor:

Declare Cursor Object.

Syntax : DECLARE cursor_name CURSOR FOR SELECT * FROM table_name

DECLARE s1 CURSOR FOR SELECT * FROM studDetails

Open Cursor Connection.

Syntax : OPEN cursor_connection

OPEN s1

Fetch Data from cursor.

There are total 6 methods to access data from cursor. They are as follows :

FIRST is used to fetch only the first row from cursor table.
LAST is used to fetch only last row from cursor table.
NEXT is used to fetch data in forward direction from cursor table.
PRIOR is used to fetch data in backward direction from cursor table.

ABSOLUTE n is used to fetch the exact nth row from cursor table.
RELATIVE n is used to fetch the data in incremental way as well as decremental way.
Syntax : FETCH NEXT/FIRST/LAST/PRIOR/ABSOLUTE n/RELATIVE n FROM cursor_name

FETCH FIRST FROM s1
FETCH LAST FROM s1
FETCH NEXT FROM s1
FETCH PRIOR FROM s1
FETCH ABSOLUTE 7 FROM s1
FETCH RELATIVE -2 FROM s1

Close cursor connection.

Syntax : CLOSE cursor_name
CLOSE s1

Deallocate cursor memory.

Syntax : DEALLOCATE cursor_name
DEALLOCATE s1

For all experiments, we will be using the CUSTOMERS table we had created in Ex No 14

id	name	age	address	sal	hiredata
1	Alice	20	Address1	10000	01-JAN-21
2	Bob	30	Address2	20000	01-JAN-20
3	Cindy	40	Address3	30000	01-JAN-19
4	Sam	50	Address4	40000	01-JAN-18
5	Eric	60	Address5	50000	01-JAN-17
6	Tom	20	Address6	60000	01-JAN-16
7	John	30	Address7	70000	01-JAN-15
8	Sari	40	Address8	80000	01-JAN-14
9	Timo	50	Address9	90000	01-JAN-13
10	Skove	60	Address10	100000	01-JAN-12

Experiment – 1

Write a pl/sql program using cursor to display the id, name, age, salary, and date of join of all employees in Customer table.

```
DECLARE CURSOR cursor0 IS

SELECT id, name, age, sal , hiredate FROM Customer;

   --variable definition

   e_name Customer.name%type;

   e_id Customer.id%type;

   e_sal Customer.sal%type;

   e_age Customer.id%type;

   e_date Customer.hiredate%type;

BEGIN
```

```
    -- open cursor
    OPEN cursor0;
    LOOP
      FETCH cursor0 INTO e_id, e_name, e_age, e_sal, e_date;
      -- exit condition
      EXIT WHEN cursor0%NOTFOUND;

      -- print employee info
      dbms_output.put_line('Employee Id:'||e_id);
      dbms_output.put_line('Employee Name:'||e_name);
      dbms_output.put_line('Employee Age:'||e_age);
      dbms_output.put_line('Salary :'||e_sal);
      dbms_output.put_line('Hire Date:'||to_char(e_date));
      dbms_output.put_line('==============================');
    END LOOP;
    -- close cursor
    CLOSE cursor0;
  END;
```

Experiment - 2

To write a Cursor to Update the salary of the employee by 1000 rupees if the experience >= 5 years else update salary by 500 rupees

Experiment - 3

To write a Cursor to display the list of 5 highest paid Employees and their Total Salary