CURSOR HANDLING

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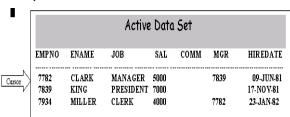Patiala

Definition

- Cursor is a memory (work) area that a oracle engine uses for its internal processing for executing and storing the results of SQL statement, and this work area is reserved for SQL's operations also called Oracle's Private area or CURSOR .
- Example: When a user fires a select statement as:
  SELECT empno, ename, job, sal FROM emp WHERE deptno = 10;
  All the rows returned by the query are stored in the cursor at the Server and will be as displayed at the client end.

When user fires the SQL statement like

    SQL > SELECT empno,ename,job,sal,comm,mgr,hiredate FROM scott.emp WHERE deptno =10 ;

When oracle engine executes the above query as a result some memory area is reserved and is fed with the result of the SQL statement which is shown below: -

Active Data Set						
EMPNO	ENAME	JOB	SAL	COMM	MGR	HIREDATE
7782	CLARK	MANAGER	5000		7839	09-JUN-81
7839	KING	PRESIDENT	7000			17-NOV-81
7934	MILLER	CLERK	4000		7782	23-JAN-82

Cursor →

Types of Cursor

- Implicit Cursors
- Explicit Cursors

Implicit Cursor

- Implicit Cursors are declared by PL/SQL implicitly for all SQL statements. They are opened and managed by Oracle engine internally. So there is no need to open and manage by the users, these are operations are performed automatically.
- Implicit Cursors named "SQL" are declared by PL/SQL implicitly for all SQL statements. Implicit cursors attributes can be used to access information about the status of last insert, update, delete or single-row select statements. This can be done by preceding the implicit cursor attribute with the cursor name (i.e. SQL).

General Cursor Attributes

Attributes	Description
%ISOPEN	It returns TRUE if cursor is open, FALSE otherwise.
%FOUND	It returns TRUE if record was fetched successfully from the opened cursor, and FALSE otherwise.
%NOTFOUND	It returns TRUE if record was not fetched successfully and FALSE otherwise.
%ROWCOUNT	It returns number of records processed from cursor.

Implicit Cursor Attributes

Attributes	Description
SQL%ISOPEN	It is always FALSE because Oracle automatically closes an Implicit cursor after executing its SQL statement.
SQL%FOUND	It is TRUE if the most recently executed DML statement was successful.
SQL%NOTFOUND	It is TRUE if the most recently executed DML statement was not successful.
SQL%ROWCOUNT	It returns the number of rows affected by an INSERT, UPDATE, DELETE, or single row SELECT statement.

Use of SQL%NOTFOUND Attribute

Consider a PL/SQL code to display a message to check whether the record is deleted or not.

Use of SQL%ROWCOUNT Attribute

A PL/SQL code to display a message to give the number of records deleted by the delete statement issued in a PL/SQL block.

Explicit Cursor Handling

Steps:
- Declare the cursor

CURSOR <cursor-name> IS <select statement>;
- Open the cursor

OPEN <cursor-name>;
- Fetch data from the cursor one row at a time into memory variables.

FETCH <cursor-name> INTO <variables>;
- Process the data held in the memory variables as required using a loop.
- Exit from the loop after processing is complete.
- Close the cursor

Close <cursor-name>;

Need

- Select sal into s from emp where deptno=10;

- Select ename into e from emp where deptno=10;

Consider a PL/SQL code to display the empno, ename, job of employees of department number 10.

Consider a PL/SQL code to display the employee number and name of top 5 highest paid employees.

Cursor FOR Loop

- The Cursor FOR Loop implicitly declares its loop index as a record of type %ROWTYPE, opens a cursor, repeatedly fetches rows of the values from the active set into fields in the record, then closes the cursor when all rows have been processed or when the EXIT command is encountered.
- Syntax

FOR <variable name> IN <cursor_name> LOOP

    <statements>;

END LOOP;

Cursor FOR Loop

- A cursor for loop automatically does the following:
- Implicitly declares its loop index or variable_name as a %rowtype record.
- Opens a cursor.
- Fetches a row from the cursor for each loop iteration.
- Closes the cursor when all rows have been processed

A PL/SQL code to display the empno, ename, job of employees of department number 10 with CURSOR FOR Loop statement.

A PL/SQL code to display the employee number and name of top 5 highest paid employees with CURSOR FOR LOOP statement.

Cursors with Parameters

Syntax:

To declare

    CURSOR cursor_name (variable_name datatype) IS

    <SELECT statement…>

To Open

OPEN cursor_name (value/variable/expression);

Consider a PL/SQL code to display the empno, ename, job of employees of a particular department number whose value is passed as a parameter.

Consider a PL/SQL code to display the empno, ename, job of employees of a particular department number whose value is passed as a parameter.

With For Loop