Subject: Database Management System & SQL Laboratory

EXPERIMENT NO.: 05

TITLE: Implement the Cursor with all possible operations on it.

LEARNING OBJECTIVES:

1. To study the fundamental concepts of database management.
2. To learn the basic issues of transaction processing and concurrency control.
3. To learn a powerful, flexible and scalable general-purpose distributed database.

THEORY: Cursor attributes (PL/SQL): Each cursor has a set of attributes that enables an application program to test the state of the cursor.

These attributes are %ISOPEN, %FOUND, %NOTFOUND, and %ROWCOUNT.
%ISOPEN: This attribute is used to determine whether a cursor is in the open state. When a cursor is passed as a parameter to a function or procedure, it is useful to know (before attempting to open the cursor) whether the cursor is already open.

%FOUND: This attribute is used to determine whether a cursor contains rows after the execution of a FETCH statement. If FETCH statement execution was successful, the %FOUND attribute has a value of true. If FETCH statement execution was not successful, the %FOUND attribute has a value of false. The result is unknown when:

- The value of *cursor-variable-name* is null
- The underlying cursor of *cursor-variable-name* is not open
- The %FOUND attribute is evaluated before the first FETCH statement was executed against the underlying cursor
- FETCH statement execution returns an error

The %FOUND attribute provides an efficient alternative to using a condition handler that checks for the error that is returned when no more rows remain to be fetched.

%NOTFOUND : This attribute is the logical opposite of the %FOUND attribute.

%ROWCOUNT:This attribute is used to determine the number of rows that have been fetched since a cursor was opened.

Cursor attribute	%ISOPEN	%FOUND	%NOTFOUND	%ROWCOUNT
Before OPEN	False	Undefined	Undefined	"Cursor not open" exception
After OPEN and before 1st FETCH	True	Undefined	Undefined	0
After 1st successful FETCH	True	True	False	1
After *n*th successful FETCH (last row)	True	True	False	*n*
After *n*+1st FETCH (after last row)	True	False	True	*n*
After CLOSE	False	Undefined	Undefined	"Cursor not open" exception

Static cursors (PL/SQL)

A *static cursor* is a cursor whose associated query is fixed at compile time. Declaring a cursor is a prerequisite to using it. Declarations of static cursors using PL/SQL syntax within PL/SQL contexts are supported by the data server.

Description
cursor-name: Specifies an identifier for the cursor that can be used to reference the cursor and its result set.

Query: Specifies a SELECT statement that determines a result set for the cursor.

- **Parameterized cursors (PL/SQL)**
  Parameterized cursors are static cursors that can accept passed-in parameter values when they are opened.
- **Opening a cursor (PL/SQL)**
  The result set that is associated with a cursor cannot be referenced until the cursor has been opened.
- **Fetching rows from a cursor (PL/SQL)**
  The FETCH statement that is required to fetch rows from a PL/SQL cursor is supported by the data server in PL/SQL contexts.

- **Closing a cursor (PL/SQL)**
  After all rows have been retrieved from the result set that is associated with a cursor, the cursor must be closed. The result set cannot be referenced after the cursor has been closed.
- **Using %ROWTYPE with cursors (PL/SQL)**
  The %ROWTYPE attribute is used to define a record with fields corresponding to all
- of the columns that are fetched from a cursor or cursor variable. Each field assumes the data type of its corresponding column.
- **Cursor attributes (PL/SQL)**
  Each cursor has a set of attributes that enables an application program to test the state of the cursor.

NOTE : Please ensure that you also add the Industrial Problem (2) in your submission/document along with the existing content.

References for Theory:

- Silberschatz A., Korth H., Sudarshan S., "Database System Concepts", MGH
- Connally T, Begg C., "Database Systems", Pearson Education
- Raghurama Krishan, "Database Management Systems", McGrawHill
- S.K.Singh, "Database Systems : Concepts, Design and Application", Pearson

CONCLUSION:_____

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