In this chapter you can learn how to work with cursors using operations like declare cursor, create procedure, fetch, delete, update, close, set, deallocate.

**Cursor operations**
- Declare cursor
- Create procedure
- Open cursor
- Close cursor
- Fetch cursor
- Deallocate cursor
- Delete
- Update

**Declare cursors**

**Declare cursor Syntax:**

```
DECLARE cursor_name CURSOR [ LOCAL | GLOBAL ]
[ FORWARD_ONLY | SCROLL ]
[ STATIC | KEYSET | DYNAMIC | FAST_FORWARD ]
[ READ_ONLY | SCROLL_LOCKS | OPTIMISTIC ]
[ TYPE_WARNING ]
FOR select_query_statement
[ FOR UPDATE [ OF column_name [ ,...n ] ] ];
```

**Declare simple cursor example:**

```
DECLARE product_cursor CURSOR
FOR SELECT * FROM model.dbo.products;
OPEN product_cursor
FETCH NEXT FROM product_cursor;
```
Create procedure

Create procedure example:

USE model;
GO
IF OBJECT_ID ( 'dbo.productProc', 'P' ) IS NOT NULL
DROP PROCEDURE dbo.productProc;
GO
CREATE PROCEDURE dbo.productProc
    @varCursor CURSOR VARYING OUTPUT
AS
    SET NOCOUNT ON;
    SET @varCursor = CURSOR
    FORWARD_ONLY STATIC FOR
    SELECT product_id, product_name
    FROM dbo.products;
    OPEN @varCursor;
GO

Open cursors

Open cursor Syntax:

OPEN { { cursor_name } | cursor_variable_name }

Open cursor example:

USE model;
GO
DECLARE Student_Cursor CURSOR FOR
SELECT id, first_name, last_name, country
FROM dbo.students WHERE country != 'US';
OPEN Student_Cursor;
FETCH NEXT FROM Student_Cursor;
WHILE @@FETCH_STATUS = 0
BEGIN
    FETCH NEXT FROM Student_Cursor;
END;
CLOSE Student_Cursor;
DEALLOCATE Student_Cursor;
GO

Close cursors

Close cursor Syntax:

CLOSE { { cursor_name } | cursor_variable_name }

Close cursor example:

USE model;
GO
DECLARE Student_Cursor CURSOR FOR
SELECT ID, FIRST_NAME FROM dbo.students;
OPEN Student_Cursor;
FETCH NEXT FROM Student_Cursor;
WHILE @@FETCH_STATUS = 0
BEGIN
  FETCH NEXT FROM Student_Cursor;
END;
CLOSE Student_Cursor;
DEALLOCATE Student_Cursor;
GO

Fetch cursors

Fetch cursor Syntax:

FETCH
[ NEXT | PRIOR | FIRST | LAST
| ABSOLUTE { n | @nvar } ]
| RELATIVE { n | @nvar } ]
FROM
{ { cursor_name } | @cursor_variable_name }
[ INTO @variable_name [ ,...n ] ]

Fetch in cursors example:
USE model;
GO
DECLARE Student_Cursor CURSOR FOR
SELECT id, first_name, last_name, country
FROM dbo.students WHERE country = 'US';
OPEN Student_Cursor;
FETCH NEXT FROM Student_Cursor;
WHILE @@FETCH_STATUS = 0
BEGIN
FETCH NEXT FROM Student_Cursor;
END;
CLOSE Student_Cursor;
DEALLOCATE Student_Cursor;
GO

Deallocate cursors

When the cursor is deallocated, the data structures comprising the cursor are released by Microsoft SQL Server.

Deallocate cursor Syntax:

DEALLOCATE { { cursor_name } | cursor_variable_name }

Deallocate cursor example:

USE model;
GO
DECLARE @CursorName CURSOR
SET @CursorName = CURSOR LOCAL SCROLL FOR
SELECT * FROM dbo.students;

DEALLOCATE @CursorName;

SET @CursorName = CURSOR LOCAL SCROLL FOR
SELECT * FROM dbo.students;
GO
Delete in cursors

Delete in cursors example:

USE model;
GO
DECLARE MyCursor CURSOR FOR
     SELECT *
     FROM dbo.students
     WHERE first_name = 'David' AND last_name = 'BROWN' AND id = 6 ;
OPEN MyCursor;
FETCH FROM MyCursor;
DELETE FROM dbo.students WHERE CURRENT OF MyCursor;
CLOSE MyCursor;
DEALLOCATE MyCursor;
GO

Update in cursors

Update in cursors example:

USE model;
GO
DECLARE test_cursor CURSOR LOCAL FOR
     SELECT id, first_name, last_name, section
     FROM dbo.students WHERE id = 2;
OPEN test_cursor;
FETCH test_cursor;
UPDATE dbo.students
SET section = 'Medicine'
FROM dbo.students
WHERE CURRENT OF test_cursor;
GO

SELECT id, first_name, last_name, section FROM dbo.students;
GO

Resources:

www.tsqI.info/cursors/cursors.php