7

Advanced Explicit Cursor Concepts

Objectives

After completing this lesson, you should be able to do the following:

- Write a cursor that uses parameters
- Determine when a `FOR UPDATE` clause in a cursor is required
- Determine when to use the `WHERE CURRENT OF` clause
- Write a cursor that uses a subquery

Cursors with Parameters

Syntax:

```
CURSOR cursor_name
  [(parameter_name datatype, ...)]
IS
  select_statement;
```

- Pass parameter values to a cursor when the cursor is opened and the query is executed.
- Open an explicit cursor several times with a different active set each time.

```
OPEN  cursor_name(parameter_value,.....) ;
```

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Cursors with Parameters

Pass the department number and job title to the `WHERE` clause, in the cursor `SELECT` statement.

```
DECLARE
  CURSOR emp_cursor
  (p_deptno NUMBER, p_job VARCHAR2) IS
     SELECT employee_id, last_name
     FROM   employees
     WHERE  department_id = p_deptno
     AND    job_id = p_job;
BEGIN
  OPEN emp_cursor (80, 'SA_REP');
  . . .
  CLOSE emp_cursor;
  OPEN emp_cursor (60, 'IT_PROG');
  . . .
END;
```

The FOR UPDATE Clause

Syntax:

```
SELECT ...
FROM           ...
FOR UPDATE [OF column_reference][NOWAIT];
```

- Use explicit locking to deny access for the duration of a transaction.
- Lock the rows *before* the update or delete.

The FOR UPDATE Clause

Retrieve the employees who work in department 80 and update their salary.

```
DECLARE
  CURSOR emp_cursor IS
    SELECT employee_id, last_name, department_name
    FROM   employees,departments
    WHERE  employees.department_id =
           departments.department_id
    AND employees.department_id = 80
    FOR UPDATE OF salary NOWAIT;
```

The WHERE CURRENT OF Clause

Syntax:

```
WHERE CURRENT OF cursor ;
```

- Use cursors to update or delete the current row.
- Include the FOR UPDATE clause in the cursor query to lock the rows first.
- Use the WHERE CURRENT OF clause to reference the current row from an explicit cursor.

The WHERE CURRENT OF Clause

```
DECLARE
CURSOR sal_cursor IS
 SELECT e.department_id, employee_id, last_name, salary
 FROM   employees e, departments d
 WHERE  d.department_id = e.department_id
  and   d.department_id = 60
 FOR UPDATE OF salary NOWAIT;
 BEGIN
 FOR emp_record IN sal_cursor
LOOP
  IF emp_record.salary < 5000 THEN
       UPDATE employees
       SET    salary = emp_record.salary * 1.10
       WHERE CURRENT OF sal_cursor;
  END IF;
END LOOP;
END;
/
```

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Cursors with Subqueries

Example:

```
DECLARE
  CURSOR my_cursor IS
    SELECT t1.department_id, t1.department_name,
           t2.staff
    FROM   departments t1, (SELECT department_id,
                                   COUNT(*) AS STAFF
                            FROM employees
                            GROUP BY department_id) t2
    WHERE t1.department_id = t2.department_id
    AND   t2.staff >= 3;
...
```

Summary

In this lesson, you should have learned to:

- Return different active sets using cursors with parameters.
- Define cursors with subqueries and correlated subqueries.
- Manipulate explicit cursors with commands using the:
  - `FOR UPDATE` clause
  - `WHERE CURRENT OF` clause

Practice 7 Overview

This practice covers the following topics:

- Declaring and using explicit cursors with parameters
- Using a `FOR UPDATE` cursor

Topik Latihan 7
Topik dari latihan bab 7 ini adalah membuat cursor dengan parameter

Latihan 7
1. Buat program PL/SQL yang menggunakan cursor untuk menampung data nomer departemen (department_id) dan nama departemen (department_name) dari tabel DEPARTMENTS untuk yang nilai DEPARTMENT_ID nya kurang dari 100. Kemudian lewatkan nomer departemen yang ada pada cursor pertama menjadi parameter dari cursor kedua. Dimana cursor kedua ini akan menampung nilai data pegawai dari tabel EMPLOYEES yang terdiri dari nama belakang pegawai (last name), pekerjaan (job_id), tanggal masuk kerja (hire_date) dan gaji (salary) dari pegawai yang memiliki nomer pegawai (EMPLOYEE_ID) kurang dari 120 dan bekerja pada departemen seperti nomer departemen yang dilewatkan atau menjadi parameter/argument dari cursor kedua.

2. Modifikasi program soal latihan 4 nomer 4 berikut ini dengan menggunakan cursor yang dilengkapi dengan fungsionalitas FOR UPDATE dan WHERE CURRENT OF. Masukkan nomer pegawai (employee_id) = (176,174,104) untuk memeriksa hasilnya

```
DEFINE p_empno = 104
DECLARE
   V_empno EMP.EMPLOYEE_ID%TYPE := TO_NUMBER(&p_empno);
   V_star      EMP.STARS%TYPE := NULL;
   V_sal       EMP.SALARY%TYPE;
BEGIN
  SELECT NVL(ROUND(SALARY/1000),0)
  INTO  v_sal FROM EMP WHERE EMPLOYEE_ID=v_empno;
  FOR I IN 1..v_sal LOOP
      v_star := v_star || '*';
  END LOOP;
  UPDATE EMP
  SET STARS=v_star
  WHERE EMPLOYEE_ID=v_empno;
  COMMIT;
END;
/
```