Advance Database Management System

Lecture 05:
Advanced Subqueries

Learning Objectives

To know about:

- Null Values in a Subquery
- Using a Subquery in the FROM Clause
- Correlated Subquery

Null Values in a Subquery


```
SQL> SELECT   employee.ename
  2  FROM     emp employee
  3  WHERE    employee.empno NOT IN
  4                          (SELECT manager.mgr
  5                           FROM   emp manager);
no rows selected.
```

Using a Subquery in the FROM Clause


```
SQL> SELECT  a.ename, a.sal, a.deptno, b.salavg
  2  FROM    emp a, (SELECT   deptno, avg(sal) salavg
  3                  FROM     emp
  4                  GROUP BY deptno) b
  5  WHERE   a.deptno = b.deptno
  6  AND     a.sal > b.salavg;
```

```
ENAME                SAL     DEPTNO      SALAVG
---------- --------- --------- ----------
KING                5000         10  2916.6667
JONES               2975         20       2175
SCOTT               3000         20       2175
...
6 rows selected.
```

Correlated Subquery

- The subquery references a column from a table in the parent query.

```
SELECT column1, column2, ...
FROM   table1  outer
WHERE  column1 operator
                    (SELECT  column1, column2
                     FROM    table2
                     WHERE   expr1 =
                                outer.expr2);
```

Correlated Subquery

- The outer Query is executed first and then the inner query is executed.
- Find the employee list who earn more than the avg salary of their own department
- Example:

Select * from emp x

Where sal > (Select avg(sal) from emp where x.deptno=deptno)

Exists operator

- Find the list of employees who has subordinates.

Select * from emp e

Where exists(select 1 from emp

Where mgr=e.empno);

- Alternative

Select * from emp

Where empno in (select mgr from emp where mgr is not null);

Not Exists

- Find the list of employees who has manager

Select * from emp e

Where not exists(select 1 from emp

Where mgr=e.empno)

- Alternative

Select * from emp

Where empno not in (select mgr from emp where mgr is not null)

Correlated UPDATE

- Use a correlated subquery to update rows in one table based on rows from another table.

```
UPDATE table1 alias1
SET    column = (SELECT expression
                 FROM   table2 alias2
                 WHERE  alias1.column =
                        alias2.column);
```

Using Correlated UPDATE


```
ALTER TABLE emp ADD(department_name
  VARCHAR2(25));

UPDATE emp e SET department_name =(SELECT
  dname FROM dept d WHERE e.deptno =
  d.deptno);
```

Correlated DELETE

- Use a correlated subquery to delete rows in one table based on rows from another table.

```
DELETE FROM table1 alias1
WHERE  column operator
              (SELECT expression
               FROM   table2 alias2
               WHERE  alias1.column = alias2.column);
```

Using Correlated DELETE


```
DELETE FROM emp e where dname
=(SELECT dname FROM dept d WHERE
e.deptno = d.deptno);
```

THANK YOU