Sub Queries

Sub query

- A query within another query is called a sub query. We can define any number of sub queries with in a query. But the system executes the inner most query first. Based on the output of inner query, outer query will be executed.
- The inner query must be enclosed in parenthesis.
- The inner query must be on the right hand side of the condition.

Different Types Of Sub Queries

- Single row sub queries
- Multi row sub queries
- Multiple sub queries
- Correlated sub queries
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Single row Sub queries:

- In single row sub query, it will return one value. The following operators are used with single row sub queries.=,< , >, <=, >=, !=
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1. Display all the employees who belongs to smith employee department

Sql>select * from emp where deptno=(select deptno from emp where ename='smith');

SQL> select eno,ename,job sal,deptno from emp where deptno=(select deptno from emp where ename='smith');

ENO	ENAME	SAL	DEPTNO
101	smith	clerk	20
105	Ramesh	manager	20

- SQL> select deptno from emp where ename='smith';

  DEPTNO

  20

```
SQL> select eno,ename,job,deptno from emp
  where deptno=20;

ENO ENAME          JOB                 DEPTNO
---------- -------------------- --------------- ----------
101 smith          clerk               20
105 Ramesh         manager             20
```

2. *Display all the employees whose job same as allen job.*

```
Sql>select * from  emp where job=(select job
  from emp where ename='allen')

     ENO ENAME                SAL        JOB
---------- -------------------- ---------- ---------------
       102 allen                16000      salesman
       103 ward                 12500      salesman
```

SQL> select job from emp where ename='allen';

JOB

_____

Salesman

- SQL> select eno,ename,sal,job from emp where job='salesman';

```
     ENO ENAME                          SAL JOB
---------- -------------------- ---------- ---------
     102 allen                       16000 salesman
     103 ward                        12500 salesman
```

- **3. Display details of employees whose getting salary more than the scott employee.**

Sql>select * from emp where sal> (select sal from emp where ename='scott');

SQL> select eno,ename,job,sal from emp where sal>(select sal from emp where ename='scott');

ENO	ENAME	JOB	SAL
101	smith	clerk	20000
111	king	manager	43750
105	Ramesh	manager	25000

```
SQL> select sal from emp where ename='scott';

       SAL
----------
     18750
SQL> select eno,ename,job,sal from emp where sal>18750;

       ENO ENAME                JOB              SAL
---------- -------------------- --------------- ----------
       101 smith                clerk            20000
       111 king                 manager          43750
       105 Ramesh               manager          25000
```

4. Display details of employee whose senior to ward.

```
Sql>select * from emp where hiredate < (select hiredate
    from emp where ename='scott');
SQL> select eno,ename,sal,hdate from emp where
    hdate<'09-jan-11';
```

ENO	ENAME	SAL	HDATE
101	smith	20000	17-DEC-10
102	allen	16000	20-FEB-10
110	scott	18750	09-MAR-09
111	king	43750	08-AUG-09
105	Ramesh	25000	09-AUG-10

```
SQL> select hdate from emp where ename = 'ward';

HDATE
---------
09-MAR-09
SQL> select eno,ename,sal,hdate from emp where hdate<'09-jan-11';

     ENO ENAME                 SAL         HDATE
---------- -------------------- ---------- ---------
     101 smith                 20000       17-DEC-10
     102 allen                 16000       20-FEB-10
     110 scott                 18750       09-MAR-09
     111 king                  43750       08-AUG-09
     105 Ramesh                 25000      09-AUG-10
```

5. Display details of employee whose job not same as scott employee.

```
SQL> select ename, job,sal from emp where job<>(select job from emp where
     ename='scott');
ENAME              JOB                SAL
-------------------- -------------- ----------
smith              clerk              20000
allen              salesman                      16000
ward               salesman                      12500
SQL> select job from emp where ename='scott';
JOB
---------------
Manager
SQL> select ename,job,sal from  emp where job<>'manager';
ENAME              JOB                SAL
-------------------- -------------- ----------
smith              clerk              20000
allen              salesman                      16000
ward               salesman                      12500
```

Multi row sub queries:

- In multi row sub query, it will return more than one value. In such cases we should include operators like any, all, in or not in between the comparison operator and the sub query.
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SQL> select * from emp where sal > any (select sal from emp where sal between 20000 and 30000);

ENO	ENAME	JOB	MGR	HDATE	SAL	COMM	DEPTNO
111	king	manager	111	08-AUG-09	43750		10
105	Ramesh	manager	110	09-AUG-10	25000		20

2. Retrive that dname in which dname does not have any employee.

```
SQL> select *from dept where deptno not in
  (select distinct(deptno) from emp);

   DEPTNO DNAME          LOC
 ---------- ------------------- ---------
       40 operations         boston
```

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Dept wise min sal

```
SQL> select eno,ename ,sal,deptno from emp
  where sal in (select min (sal) from emp group
  by deptno);

   ENO ENAME                    SAL     DEPTNO
 --------- -------------------- ---------- ----------
   102 allen                    16000       30
   101 smith                    20000       20
   103 ward                     12500       10
```

Multiple sub queries:

There is no limit on the number of sub queries included in a where clause. It allows nesting of a query within a sub query.

Example

SQL> select * from emp where sal = (select max(sal) from emp where sal < (selectmax(sal) from emp));

ENO	ENAME	JOB	MGR	HDATE	SAL	COMM	DEPTNO
105	Ramesh	manager	110	09-AUG-10	25000		20

Correlated sub queries:

Correlate sub queries are used for row-by-row processing .Each sub query is executed once for every row of the outer query.

Example:

Top five sal

```
select * from (select * from emp order by sal desc) where
    rownum<=5;
```

- List the employee details from emp table , who earn salary greater than the average salary for their department.
- Select *from emp e where sal> (select avg(sal)from emp where e.deptno);

SQL> select distinct deptno from emp e where 3<=(select count(ename) from emp where e.deptno=deptno);

DEPTNO

10

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