



SUBQUERY



- A subquery is a query inside another query.
- Subquery Syntax: -

```
• SELECT select_list
  FROM table
 WHERE expr operator
        (SELECT select_list
          FROM table);
```



Subquery



- The subquery (inner query) executes once before the main query.
- The result of the subquery is used by the main query (outer query).
- The subquery is often referred to as a nested SELECT, sub-SELECT, or inner SELECT statement.

Hints Of Using Subquery



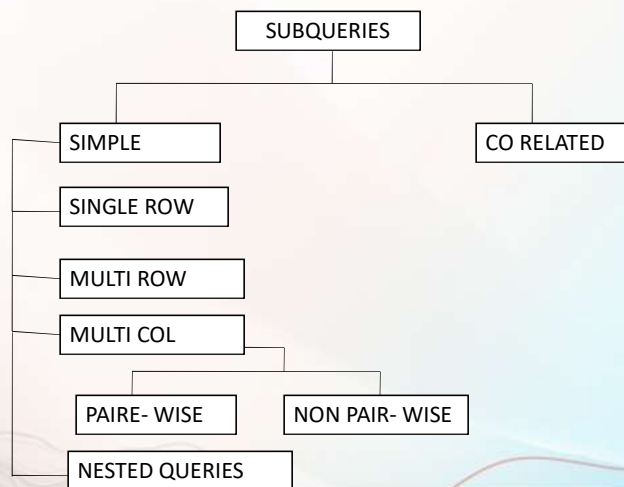
1. Whenever a 'WHERE' Clause has derived value for comparison, then use subqueries
2. Whenever an Aggregate Value is required with Non Aggregate col.
3. Place subqueries on the right side of the comparison condition.
4. Do not use order by clause in Subquery
5. Use single and multi row operator

Subquery



- You can place the subquery in a number of SQL clauses, including:
 - The WHERE clause
 - The HAVING clause
 - The FROM clause
- *operator in the syntax includes a comparison condition such as >, =, or IN*

Types Of Subqueries



Single Row Subqueries



- This Type of inner query executes only once giving results to the outer query.
- This query must be **Full proof** of time & date

Different Examples Of Subquery Positions



1. Subquery in 'WHERE' clause

```
SELECT ename,sal
FROM emp
WHERE sal<(SELECT sal FROM emp WHERE
           ename='CLARK');
```

2. Subquery in 'HAVING' clause

```
SELECT deptno, MIN(sal)
FROM emp
GROUP BY deptno
HAVING MIN(sal) >
           (SELECT MIN(sal)
            FROM emp
            WHERE deptno = 20)
```

/

Operators Of Single Row Subquery



Operator	Meaning
=	Equal to
>	Greater than
>=	Greater than or equal to
<	Less than
<=	Less than or equal to
<>	Not equal to

Multiple-row subquery



- Queries that return more than one row from the inner SELECT statement.



What is Wrong with this Statement?

```
SELECT empno, ename
FROM emp
WHERE sal=
      (SELECT MIN(sal)
       FROM emp
       GROUP BY deptno);
```



Will this Statement Return Rows?

```
SELECT last_name, job_id
FROM employees
WHERE job_id =
      (SELECT job_id
       FROM employees
       WHERE last_name = 'Haas')
```

NULL

no rows selected



Multiple-Row Subqueries



- Use multiple-row comparison operators

Operator	Meaning
IN / =ANY	Equal to any member in the list
ANY	Compare value to each value returned by the subquery
ALL	Compare value to every value returned by the subquery
<ANY	Less than the maximum
>ANY	More than the minimum
<ALL	Less than minimum
>ALL	More than the maximum

Multi Row Subqueries With 'ANY' Operator



```
SELECT empno, ename, job, sal
FROM emp
WHERE sal < ANY
      (SELECT sal
       FROM emp WHERE job= 'CLERK')
AND JOB != 'CLERK';
```


Multiple Row Subqueries With 'ALL' Operator



- ```
SELECT empno, ename, job, sal
FROM emp
WHERE sal < ALL
 (SELECT sal
 FROM emp
 WHERE job = 'ANALYST')
```

## Multi Column Subquery



- It is simple subquery, but comparison in 'where' clause will be against multiple columns instead of single,

## Multi Column Subqueries



- Pair wise
- Non -pair wise

- Non-pair wise -
- Individual Condition has it's own subquery
- In the beginning subqueries are executed individually & then Parent query.
- Preferred when multi column query has multiple comparisons/resultsets coming from different tables OR operators like > etc are used
- So the table is queried 3 times.
- Affects performance of query



## Pairwise Subquery



- Pair- wise subquery

It is a simple subquery, but in the where clause, Multiple Columns will be compared at once.

Because of this single query, performance is more  
=, <>, IN, NOT IN Can only be used

## Example Of Non Pair Wise Comparison



```
• SELECT empno, mgr, deptno
 FROM emp WHERE mgr IN
 (SELECT mgr
 FROM emp
 WHERE empno IN (7521,7900))
 AND deptno IN
 (SELECT deptno
 FROM emp
 WHERE empno IN (7521,7900))
 AND empno NOT IN(7521,7900);
```

## Example Of Pairwise Comparison



- ```
SELECT EMPNO, ENAME, JOB, SAL, DEPTNO
FROM EMP
WHERE (SAL, DEPTNO) IN
      (SELECT SAL, DEPTNO FROM EMP
       WHERE SAL BETWEEN 1000 AND 3000
        AND DEPTNO BETWEEN 10 AND 40)
```

Nested Subquery



- To display records having salary above the highest salaries for the job of Miller.

```
SELECT * FROM EMP
WHERE SAL > (SELECT MAX(SAL)
             FROM EMP
             WHERE JOB = (SELECT JOB
                           FROM EMP
                           WHERE ENAME =
                           'MILLER')) ;
```

Physical Presence




The map highlights three regions: USA (North America), UAE (Middle East), and INDIA (South Asia). Each region is marked with a red dot and a label. The USA label is in a green box, the UAE label is in a red box, and the INDIA label is in a green box. Dotted lines connect the labels to their respective locations on the map.

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