

## 1. What is a subquery?

A subquery is a query inside another SQL query. It returns data for use by the main query. Subqueries are placed in parentheses and can occur in SELECT, WHERE, FROM, or HAVING clauses.

## 2. Difference between subquery and join?

Subquery: This retrieves data in a separate query and sends it to the main query. It's often used for filtering or calculating values.

Join: This combines rows from two or more tables into one result set based on related columns.

Key difference: Subqueries run independently, while joins merge data sets at once.

## 3. What is a correlated subquery?

A correlated subquery runs once for each row in the outer query because it relies on values from the outer query. It is connected using columns from the outer query in its WHERE clause.

## 4. Can subqueries return multiple rows?

Yes, If multiple rows are returned, the outer query needs to use operators like IN, ANY, or EXISTS.

If the outer query expects only one row, returning multiple rows will result in an error.

## 5. How does EXISTS work?

EXISTS checks if a subquery returns at least one row. If the subquery returns any row, EXISTS is TRUE.

If no rows are returned, it is FALSE.

It is often used to check for existence without retrieving actual data.

## 6. How is performance affected by subqueries?

Simple subqueries can be optimized by the database engine, so performance is generally good.

Correlated subqueries can be slower because they run repeatedly for each row of the outer query.

In many cases, changing subqueries to joins can improve performance.

## 7. What is a scalar subquery?

A scalar subquery returns exactly one value (one row and one column). It can be used anywhere a single value is expected, such as in the SELECT list or in comparisons.

## 8. Where can we use subqueries?

Subqueries can be used in:

- SELECT clause (for calculated values)
- FROM clause (as derived tables)
- WHERE clause (for filtering)
- HAVING clause (for conditional aggregation)

## 9. Can a subquery be in FROM clause?

Yes. This is known as a derived table or inline view. The subquery is treated as a temporary table by the outer query.

## 10. What is a derived table?

A derived table is the result of a subquery in the FROM clause. It exists temporarily during the query execution and can be given an alias, allowing it to be referenced like a regular table.