| **Aspect** | **Nested Query (Simple Subquery)** | **Correlated Query** |
| --- | --- | --- |
| **Definition** | A query inside another query, executed **once**. | A query inside another query that **depends on the outer query** for each row. |
| **Execution** | The subquery runs **independently** of the outer query. | The subquery is executed **repeatedly for each row** of the outer query. |
| **Dependency** | No reference to outer query columns. | References columns from the outer query. |
| **Performance** | Generally **faster** as subquery is executed once. | Can be **slower** due to multiple executions. |
| **Use Case** | Used when the subquery can be resolved without outer query data. | Used when subquery needs data from the outer query to execute. |
| **Example** | sql SELECT \* FROM employees WHERE department\_id IN (SELECT id FROM departments WHERE location = 'NY'); | sql SELECT e.name FROM employees e WHERE EXISTS (SELECT 1 FROM departments d WHERE d.id = e.department\_id AND d.location = 'NY'); |
| **Simplification** | Can often be **rewritten as JOINs**. | Harder to rewrite as JOINs because of dependency. |

**Summary**

* **Nested Query:** Independent of the outer query, runs once.
* **Correlated Query:** Dependent on the outer query, runs per outer row.

LIMIT clause-

The **LIMIT clause** is used to restrict the number of rows returned by the query.  
It is often written as:

LIMIT offset, count

 **offset** = number of rows to **skip**.

 **count** = number of rows to **return** after skipping.

Ex-

SELECT \* FROM product

ORDER BY qty DESC

LIMIT 2,1;

 **ORDER BY qty DESC** → sorts the products by **quantity in descending order**.

 **LIMIT 2,1** → skips the **first 2 rows**, then returns **1 row**.

Example-

| **Product** | **Qty** |
| --- | --- |
| A | 50 |
| B | 40 |
| C | 30 |
| D | 20 |

### ****Find the N-th Topmost Product by Quantity****

You can find the **N-th highest (qty) product** using:

SELECT \* FROM product

ORDER BY qty DESC

LIMIT N-1, 1;

### 🔍 Example: Find 3rd highest quantity product

SELECT \* FROM product

ORDER BY qty DESC

LIMIT 2, 1;

Here, 2 = N - 1 = 3 - 1, and 1 = number of records to return.