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**Aim of Practical 5: Write and execute SQL queries- subqueries, joins.**

**Practical 5 part**

**1**

# SQL Subqueries

**What is a Subquery?**

A **subquery** is a query inside another query, used to retrieve intermediate results before executing the main query.

**Types of Subqueries:**

1. **Single-row subqueries** → Return a single value.
2. **Multi-row subqueries** → Return multiple values.
3. **Correlated subqueries** → Reference columns from the outer query.

## Example Database: Supermarket

Use a **SupermarketDB** with the following tables:

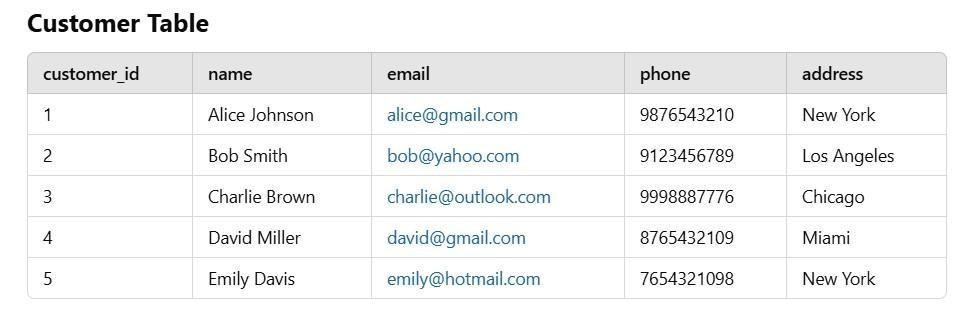
**Customer** (customer\_id, name, email, phone, address)

**Product** (product\_id, name, category, price, stock\_quantity)

**Order\_Details** (order\_id, customer\_id, order\_date, total\_amount)

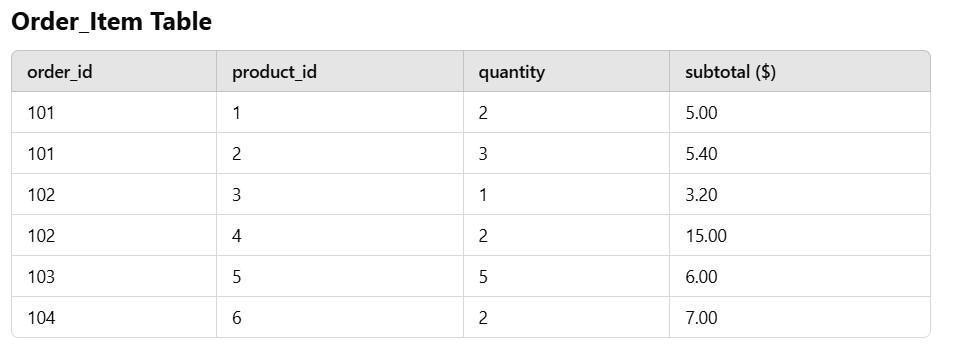
**Order\_Item** (order\_id, product\_id, quantity, subtotal)

**Employeee** (employee\_id, name, role, salary, hire\_date)











## Examples of Subqueries

### Find customers who placed orders over $50.00

SELECT \* FROM Customer

WHERE customer\_id IN (SELECT customer\_id FROM Order\_Details

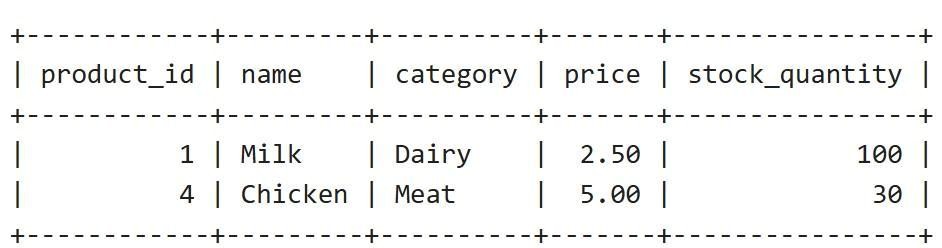
WHERE total\_amount > 50);



### Retrieve products that cost more than the average product price

SELECT \* FROM Product

WHERE price > (SELECT AVG(price) FROM Product);



### Find employees earning more than the lowest manager’s salary

SELECT \* FROM Employeee

WHERE salary > (SELECT MIN(salary) FROM Employeee WHERE role =

'Manager');



### Find employees hired after the most recent hire date of a cashier

SELECT \* FROM Employeee

WHERE hire\_date > (SELECT MAX(hire\_date) FROM Employeee WHERE role

= 'Cashier');



### Find customers who haven’t placed any orders

SELECT \* FROM Customer

WHERE customer\_id NOT IN (SELECT customer\_id FROM

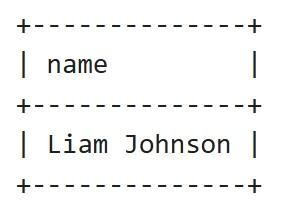
Order\_Details);



### Find the name of the highest-paid employee

SELECT name FROM Employeee

WHERE salary = (SELECT MAX(salary) FROM Employeee);



### Retrieve the total revenue generated from orders placed in January 2024

SELECT SUM(total\_amount)

FROM Order\_Details

WHERE order\_date BETWEEN TO\_DATE('2024-01-01', 'YYYY-MM-DD') AND TO\_DATE('2024-01-31', 'YYYY-MM-DD');



### Find the most ordered product

SELECT name FROM Product

WHERE product\_id = (SELECT product\_id FROM (

SELECT product\_id, SUM(quantity) AS total\_sold

FROM Order\_Item

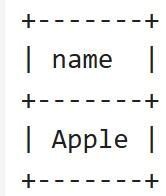
GROUP BY product\_id

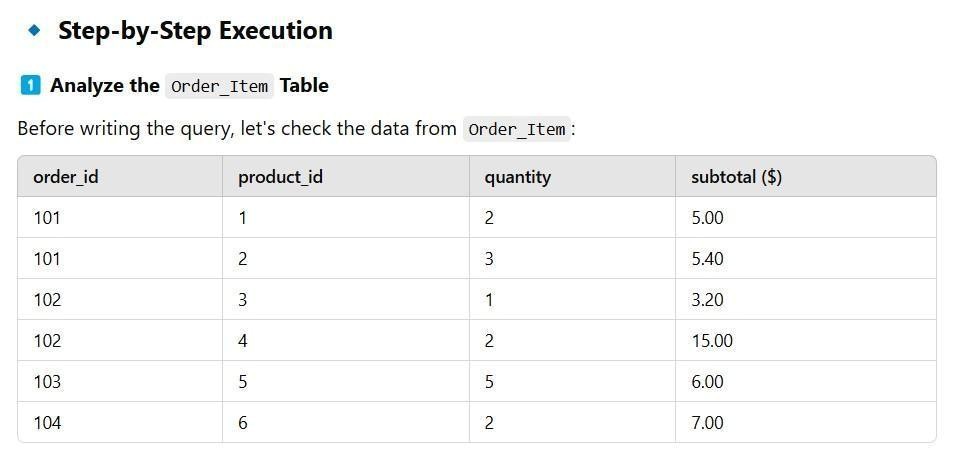
ORDER BY total\_sold DESC

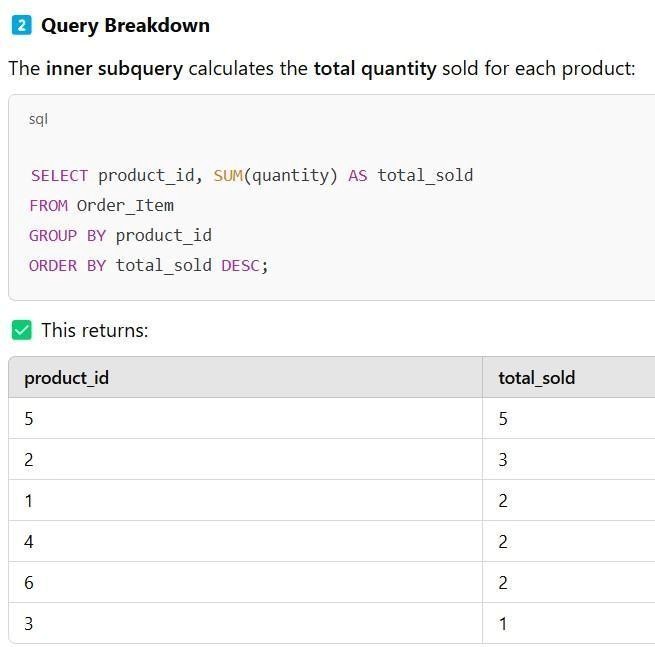
)

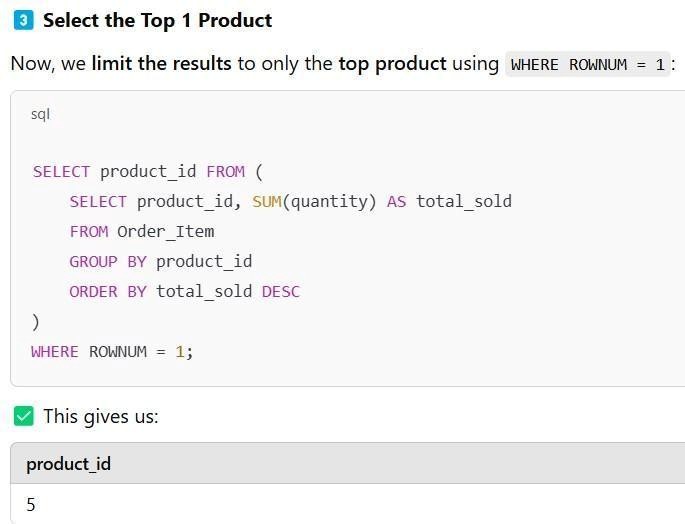
WHERE ROWNUM = 1

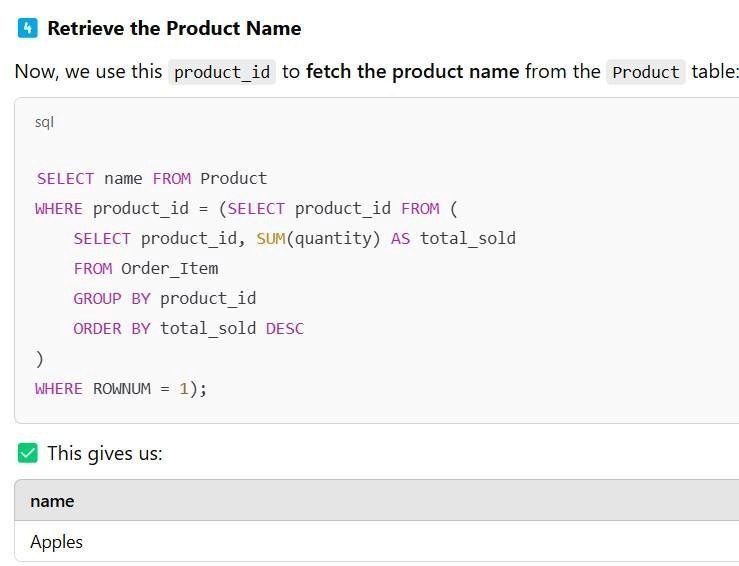
);







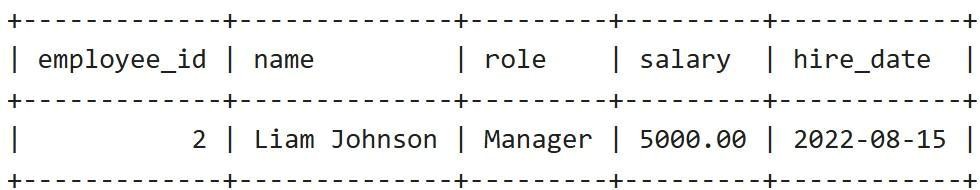




### Retrieve employees who earn above the average salary of all employees

SELECT \* FROM Employeee

WHERE salary > (SELECT AVG(salary) FROM Employeee);



### Find customers who placed orders only in 2023 but not in 2024

SELECT \* FROM Customer

WHERE customer\_id IN (

SELECT customer\_id FROM Order\_Details

WHERE order\_date BETWEEN TO\_DATE('2023-01-01', 'YYYY-MM-DD')

AND TO\_DATE('2023-12-31', 'YYYY-MM-DD')

)

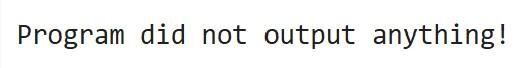
AND customer\_id NOT IN (

SELECT customer\_id FROM Order\_Details

WHERE order\_date BETWEEN TO\_DATE('2024-01-01', 'YYYY-MM-DD')

AND TO\_DATE('2024-12-31', 'YYYY-MM-DD')

);



### Subquery Tasks

1. Find customers who placed orders over **$50**.

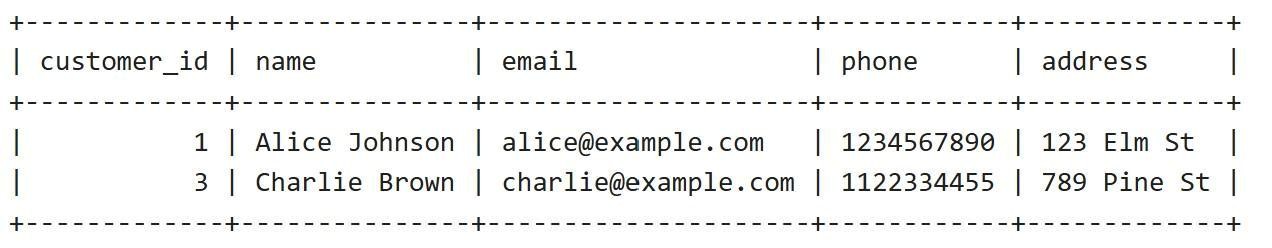
SELECT \* FROM Customer

WHERE customer\_id IN (

SELECT customer\_id FROM Order\_Details

WHERE total\_amount > 50

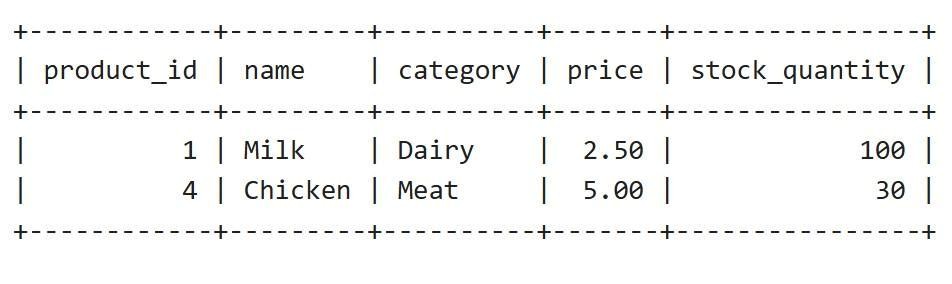
);



1. Retrieve products that cost more than the **average product price**.

SELECT \* FROM Product

WHERE price > (SELECT AVG(price) FROM Product);



1. Find employees hired after the **most recent hire date of a cashier**.

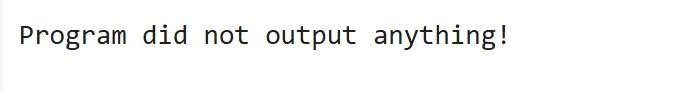
SELECT \* FROM Employeee

WHERE hire\_date > (

SELECT MAX(hire\_date) FROM Employeee

WHERE role = 'Cashier'

);



1. List customers who **haven’t placed any orders**.

SELECT \* FROM Customer

WHERE customer\_id NOT IN (

SELECT DISTINCT customer\_id FROM Order\_Details

);



1. Retrieve employees who earn **above the average salary**.

SELECT \* FROM Employeee

WHERE salary > (SELECT AVG(salary) FROM Employeee);

