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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:

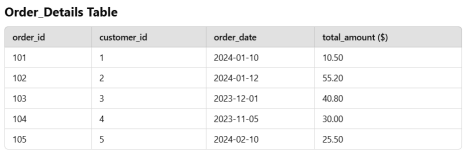
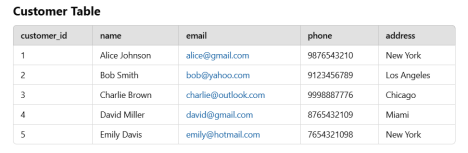
**Customer** (customer\_id, name, email, phone, address)

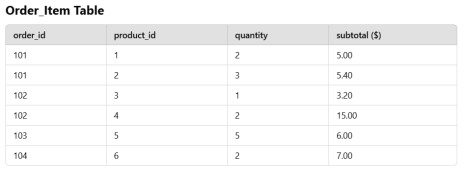
**Product** (product\_id, name, category, price, stock\_quantity)

**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)



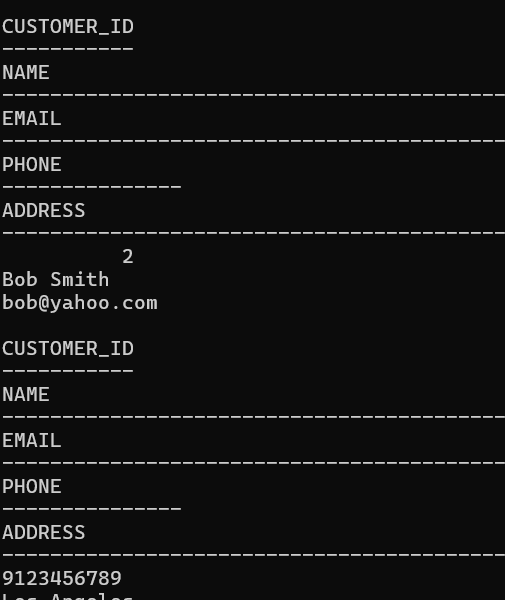


**Examples of Subqueries**

**Find customers who placed orders over $50.00**

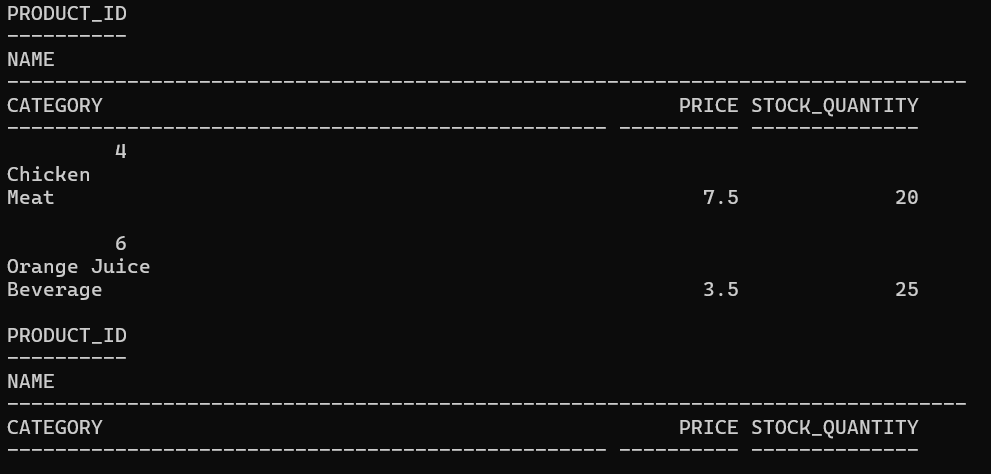
SELECT \* FROM Customer

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 Employee

WHERE salary > (SELECT MIN(salary) FROM Employee WHERE role = 'Manager');

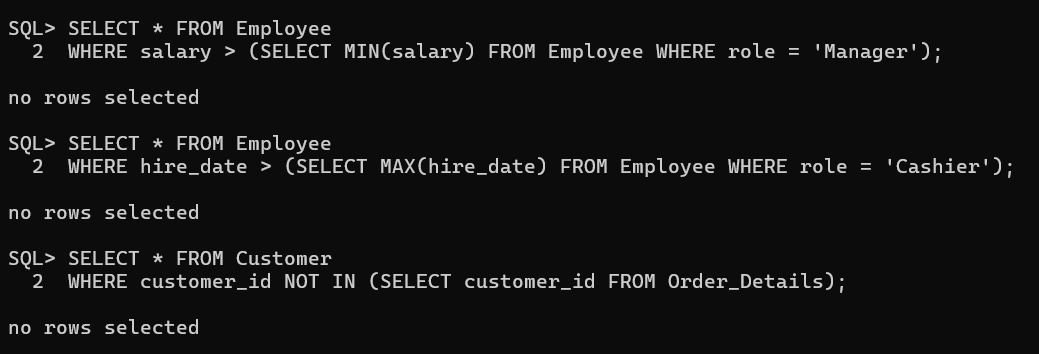
**Find employees hired after the most recent hire date of a cashier** SELECT \* FROM Employee

WHERE hire\_date > (SELECT MAX(hire\_date) FROM Employee WHERE role = 'Cashier');

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

SELECT \* FROM Customer

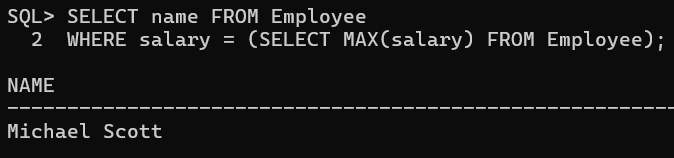
WHERE customer\_id NOT IN (SELECT customer\_id FROM Order\_Details);



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

SELECT name FROM Employee

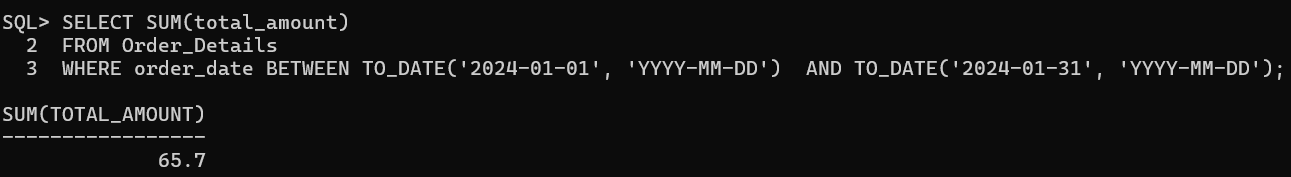
WHERE salary = (SELECT MAX(salary) FROM Employee);



**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

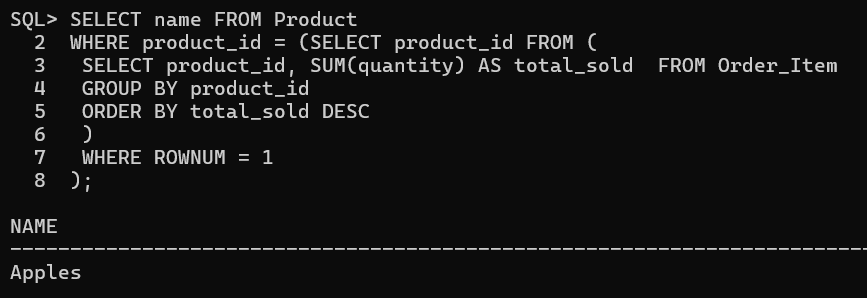
GROUP BY product\_id

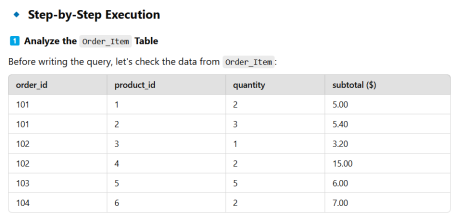
ORDER BY total\_sold DESC

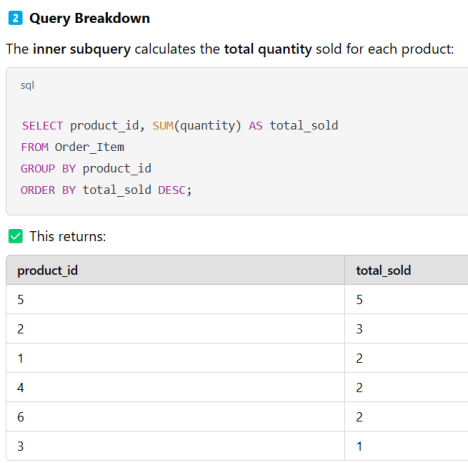
)

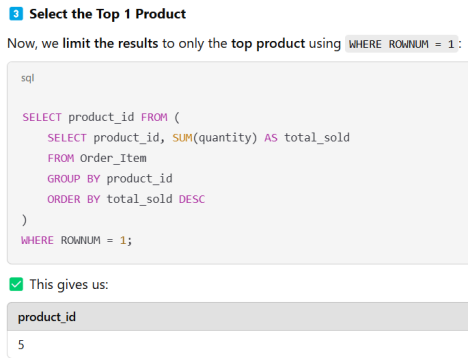
WHERE ROWNUM = 1

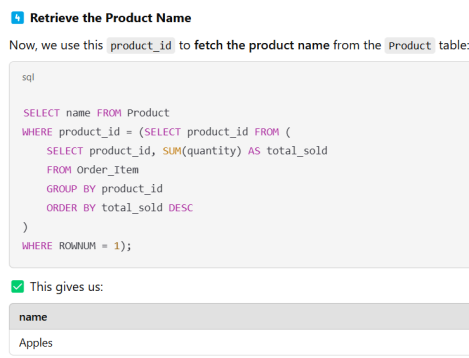
);











**Retrieve employees who earn above the average salary of all employees** SELECT \* FROM Employee

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



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

SELECT \* FROM Customer

WHERE customer\_id IN (

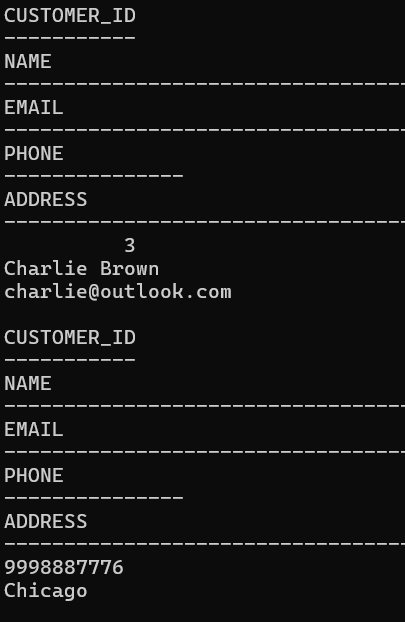
SELECT customer\_id FROM Order\_Details

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 (

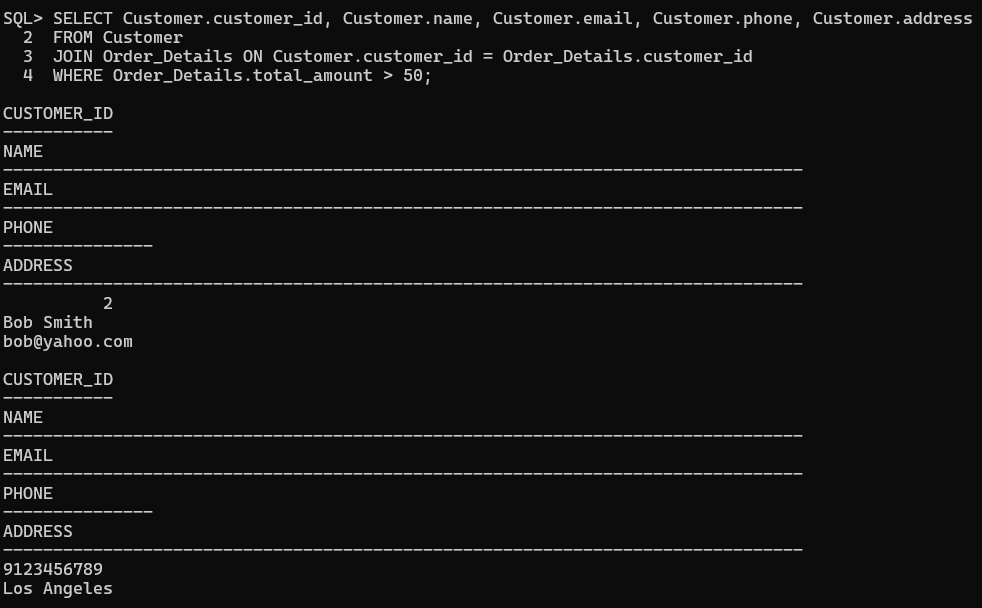
SELECT customer\_id FROM Order\_Details

WHERE order\_date BETWEEN TO\_DATE('2024-01-01', 'YYYY-MM-DD') AND TO\_DATE('2024-12-31', 'YYYY-MM-DD') );

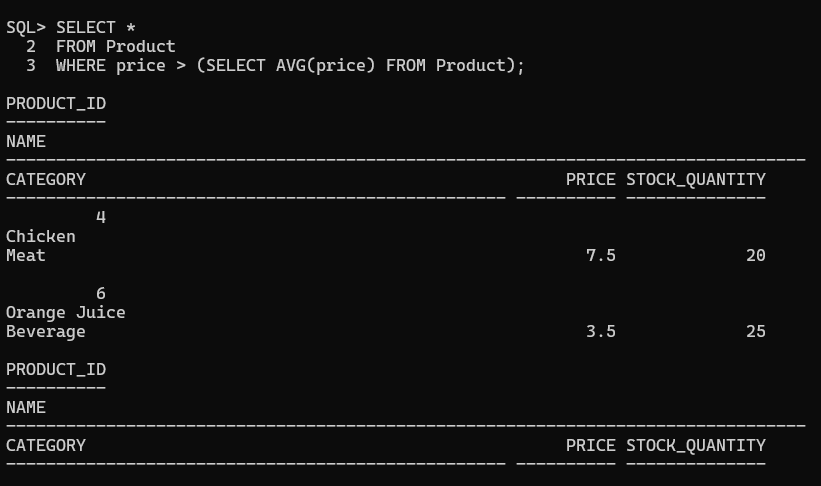


**Subquery Tasks**

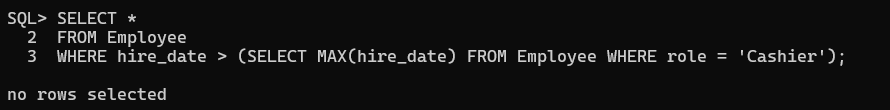
1. Find customers who placed orders over **$50**.



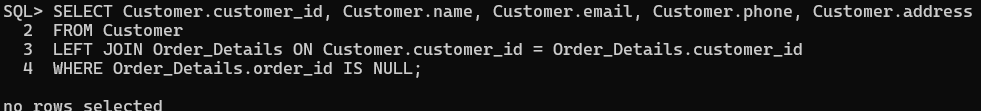
2. Retrieve products that cost more than the **average product price**.



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



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



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

