ASSIGNMENT TITLE

SUBQUERIES ASSIGNMENT

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Course : Data Analytics With AI – September batch Live

Institude : PW Skills

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TABLE 1: Employee

Create Table Query:

Query | Query History

```
CREATE TABLE Employee (
    emp_id INT PRIMARY KEY,
    name VARCHAR(50),
    department_id VARCHAR(10),
    salary INT
);
```

Data Output | Messages | Notifications

```
CREATE TABLE

Query returned successfully in 19 secs 867 msec.
```

Insert Data :

Query | Query History

```
INSERT INTO Employee(emp_id, name, department_id, salary) VALUES
(101, 'Abhishek', 'D01', 62000),
(102, 'Shubham', 'D01', 58000),
(103, 'Priya', 'D02', 67000),
(104, 'Rohit', 'D02', 64000),
(105, 'Neha', 'D03', 72000),
(106, 'Aman', 'D03', 55000),
(107, 'Ravi', 'D04', 60000),
(108, 'Sneha', 'D04', 75000),
(109, 'Kiran', 'D05', 70000),
(110, 'Tanuja', 'D05', 65000);
```

Data Output | Messages | Notifications

```
INSERT 0 10

Query returned successfully in 17 secs 755 msec.
```

TABLE 2: Department

Create Table:

Query | Query History

```
1  CREATE TABLE Department (
2      department_id VARCHAR(10) PRIMARY KEY,
3      department_name VARCHAR(50),
4      location VARCHAR(50)
5  );
6
```

Data Output | Messages | Notifications

```
CREATE TABLE

Query returned successfully in 17 secs 642 msec.
```

Insert Data:

Query | Query History

```
1  INSERT INTO Department VALUES
2  ('D01', 'Sales', 'Mumbai'),
3  ('D02', 'Marketing', 'Delhi'),
4  ('D03', 'Finance', 'Pune'),
5  ('D04', 'HR', 'Bengaluru'),
6  ('D05', 'IT', 'Hyderabad');
7
```

Data Output | Messages | Notifications

```
INSERT 0 5

Query returned successfully in 9 secs 103 msec.
```

TABLE 3: Sales

Create Table:

Query | Query History

```
1  CREATE TABLE Sales (
2      sale_id INT PRIMARY KEY,
3      emp_id INT,
4      sale_amount INT,
5      sale_date DATE
6  );
7
8
```

Data Output | Messages | Notifications

```
CREATE TABLE

Query returned successfully in 13 secs 197 msec.
```

Insert Data:

Query | Query History

```
1  INSERT INTO Sales VALUES
2  (201, 101, 4500, '2025-01-05'),
3  (202, 102, 7800, '2025-01-10'),
4  (203, 103, 6700, '2025-01-14'),
5  (204, 104, 12000, '2025-01-20'),
6  (205, 105, 9800, '2025-02-02'),
7  (206, 106, 10500, '2025-02-05'),
8  (207, 107, 3200, '2025-02-09'),
9  (208, 108, 5100, '2025-02-15'),
10 (209, 109, 3900, '2025-02-20'),
11 (210, 110, 7200, '2025-03-01');
12
```

Data Output | Messages | Notifications

```
INSERT 0 10

Query returned successfully in 21 secs 834 msec.
```

1. Retrieve employees who earn more than the average salary of all employees.

Query:

Query | Query History

```sql
SELECT name, salary
FROM Employee
WHERE salary > (SELECT AVG(salary) FROM Employee);
```

Data Output | Messages | Notifications

Showing rows: 1 to 5

	name character varying (50)	salary integer
1	Priya	67000
2	Neha	72000
3	Sneha	75000
4	Kiran	70000
5	Tanuja	65000

Explanation:

- Subquery calculates the **average salary** of all employees.
- Outer query returns employees whose salary is **greater** than this average.
- This is a scalar subquery because it returns a single value.

2. Find employees who belong to the department with the highest average salary.

Query:

Query | Query History

```
SELECT *
FROM Employee
WHERE department_id = (
    SELECT department_id
    FROM Employee
    GROUP BY department_id
    ORDER BY AVG(salary) DESC
    LIMIT 1
);
```

Data Output | Messages | Notifications

Showing rows: 1 to 2

	emp_id [PK] integer	name character varying (50)	department_id character varying (10)	salary integer
1	109	Kiran	D05	70000
2	110	Tanuja	D05	65000

Total rows: 2 | Query complete 00:00:13.523

Explanation:

- First, subquery finds the **department with the highest avg salary**.
- Outer query returns all employees in that department.
- This is a nested analytical subquery.

3. List employees who have made at least one sale.

Query:

Query | Query History

```
SELECT *
FROM Employee
WHERE emp_id IN (SELECT emp_id FROM Sales);
```

Data Output | Messages | Notifications

Showing rows: 1 to 10

	emp_id [PK] integer	name character varying (50)	department_id character varying (10)	salary integer
1	101	Abhishek	D01	62000
2	102	Shubham	D01	58000
3	103	Priya	D02	67000
4	104	Rohit	D02	64000
5	105	Neha	D03	72000
6	106	Aman	D03	55000
7	107	Ravi	D04	60000
8	108	Sneha	D04	75000
9	109	Kiran	D05	70000
10	110	Tanuja	D05	65000

Explanation:

- Subquery fetches all employee IDs appearing in Sales.
- `IN` checks if employee appears at least once.
- Used for activity/existence checks.

4. Find the employee with the highest sale amount.

Query:

Query | Query History

```sql
SELECT *
FROM Employee
WHERE emp_id = (
    SELECT emp_id
    FROM Sales
    ORDER BY sale_amount DESC
    LIMIT 1
);
```

Data Output | Messages | Notifications

Showing rows: 1 to 1

	emp_id [PK] integer	name character varying (50)	department_id character varying (10)	salary integer
1	104	Rohit	D02	64000

Explanation:

- Subquery finds the emp_id with **highest sale**.
- Outer query returns employee details.
- Classic top-performer identification query.

5. Retrieve employees whose salaries are higher than Shubham's salary.

Query:

Query | Query History

```sql
SELECT name, salary
FROM Employee
WHERE salary > (SELECT salary FROM Employee WHERE name = 'Shubham');
```

Data Output | Messages | Notifications

	name character varying (50)	salary integer
1	Abhishek	62000
2	Priya	67000
3	Rohit	64000
4	Neha	72000
5	Ravi	60000
6	Sneha	75000
7	Kiran	70000
8	Tanuja	65000

Total rows: 8 | Query complete 00:00:17.906

Explanation:

- Subquery returns Shubham's salary.
- Outer query compares everyone's salary with it.
- Example of single-value comparison subquery.

INTERMEDIATE LEVEL

6. Find employees who work in the same department as Abhishek.

Query:

Query | Query History

```
SELECT *
FROM Employee
WHERE department_id = (
    SELECT department_id
    FROM Employee
    WHERE name = 'Abhishek'
);
```

Data Output | Messages | Notifications

	emp_id [PK] integer	name character varying (50)	department_id character varying (10)	salary integer
1	101	Abhishek	D01	62000
2	102	Shubham	D01	58000

Total rows: 2 | Query complete 00:00:20.875

Explanation:

- Subquery identifies Abhishek's department.
- Outer query lists all employees in that department.
- Used for team-based filtering.

7. List departments with at least one employee earning more than ₹60,000.

Query:

Query | Query History

```
SELECT *
FROM Department
WHERE department_id IN (
    SELECT department_id
    FROM Employee
    WHERE salary > 60000
);
```

Data Output | Messages | Notifications

	department_id [PK] character varying (10)	department_name character varying (50)	location character varying (50)
1	D01	Sales	Mumbai
2	D02	Marketing	Delhi
3	D03	Finance	Pune
4	D04	HR	Bengaluru
5	D05	IT	Hyderabad

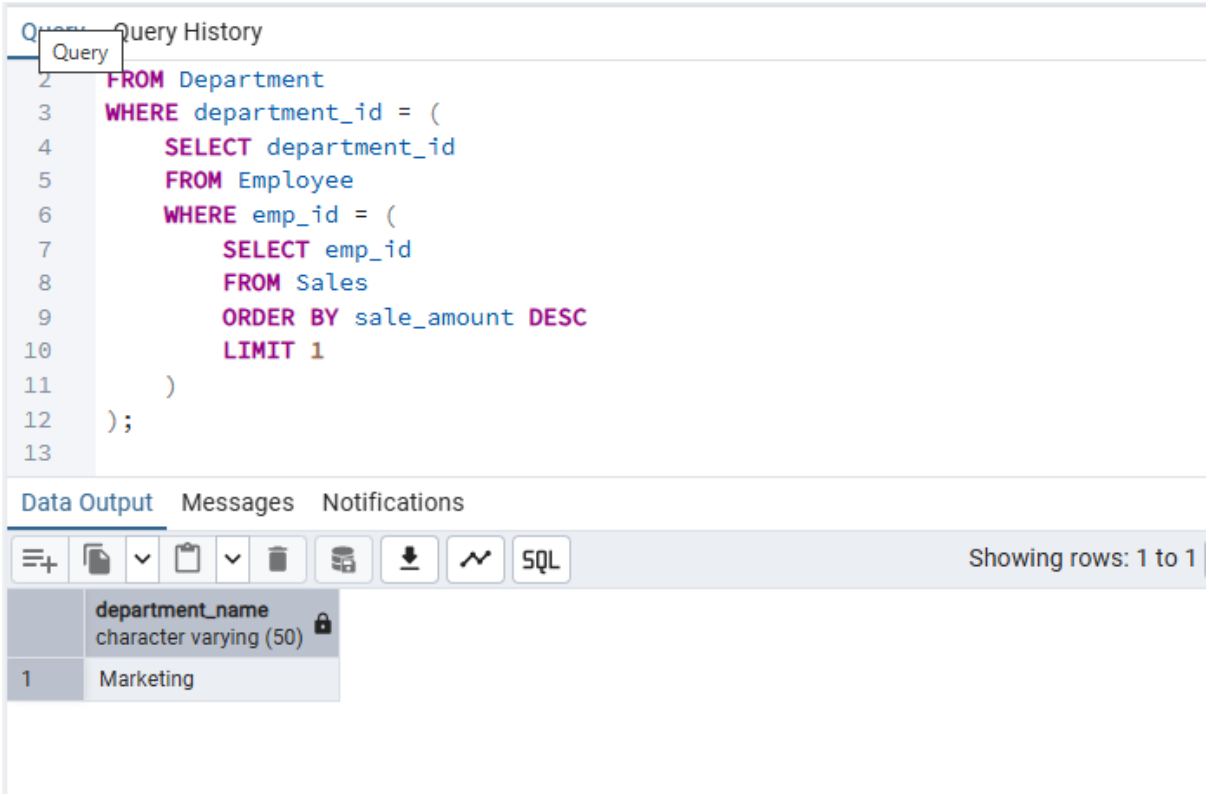
Total rows: 5 | Query complete 00:00:21.761

Explanation:

- Subquery returns department IDs where salary exceeds 60,000.
- Outer query returns matching departments.

8. Find department name of the employee with the highest sale.

Query:



Explanation:

3-step subquery chain:

1. Find employee with highest sale
2. Get their department
3. Fetch department name

9. Employees who made sales greater than the average sale amount.

Query:

Query | Query History

```sql
SELECT name
FROM Employee
WHERE emp_id IN (
    SELECT emp_id
    FROM Sales
    WHERE sale_amount > (SELECT AVG(sale_amount) FROM Sales)
);
```

Data Output | Messages | Notifications

Showing rows: 1 to 5

	name character varying (50)
1	Shubham
2	Rohit
3	Neha
4	Aman
5	Tanuja

Total rows: 5 | Query complete 00:00:11.461

Explanation:

- Subquery calculates average sale.
- Then finds employees whose sale exceeds this average.

10. Total sales made by employees earning above average salary.

Query:

Query | Query History

```sql
SELECT SUM(sale_amount) AS total_sales
FROM Sales
WHERE emp_id IN (
    SELECT emp_id
    FROM Employee
    WHERE salary > (SELECT AVG(salary) FROM Employee)
);
```

Data Output | Messages | Notifications

Showing rows: 1 to 1

	total_sales bigint
1	32700

Total rows: 1 | Query complete 00:00:14.945

Explanation:

- First find employees with above-average salary.
- Then sum their total sales.
- Good example of cross-table metric analysis.

ADVANCED LEVEL

11. Employees who have NOT made any sales.

Query:

Query | Query History

```
1  SELECT name
2  FROM Employee
3  WHERE emp_id NOT IN (SELECT emp_id FROM Sales);
4
5
6
7
8
9
```

Data Output | Messages | Notifications

SQL

name character varying (50)

Total rows: 0 | Query complete 00:00:24.659

Explanation:

- Subquery returns employees who made sales.
- `NOT IN` filters out everyone except non-performers.

12. Departments where average salary is above ₹55,000.

Query:

Query Query History

```sql
SELECT department_name
FROM Department
WHERE department_id IN (
    SELECT department_id
    FROM Employee
    GROUP BY department_id
    HAVING AVG(salary) > 55000
);
```

Data Output Messages Notifications

	department_name character varying (50)
1	Sales
2	Marketing
3	Finance
4	HR
5	IT

Total rows: 5 Query complete 00:00:21.267

Explanation:

- Group employees department-wise.
- Apply HAVING for avg salary filter.
- Outer query matches department names.

13. Departments where total sales exceed ₹10,000.

Query:

Query | Query History

```
SELECT department_name
FROM Department
WHERE department_id IN (
    SELECT E.department_id
    FROM Employee E
    JOIN Sales S ON E.emp_id = S.emp_id
    GROUP BY E.department_id
    HAVING SUM(S.sale_amount) > 10000
);
```

Data Output | Messages | Notifications

Showing rows: 1 to 4

	department_name character varying (50)
1	Sales
2	Marketing
3	Finance
4	IT

Total rows: 4 | Query complete 00:00:21.711

Explanation:

- Join employees with their sales.
- Group by department.
- Filter total sales > 10,000.

14. Employee who made the second-highest sale.

Query:

Query | Query History

```sql
SELECT name
FROM Employee
WHERE emp_id = (
    SELECT emp_id
    FROM Sales
    ORDER BY sale_amount DESC
    LIMIT 1 OFFSET 1
);
```

Data Output | Messages | Notifications

Showing rows: 1 to 1

	name character varying (50)
1	Aman

Explanation:

- ORDER BY DESC → highest at top
- OFFSET 1 → skip the highest
- LIMIT 1 → pick second highest
- Outer query fetches employee name.

15. Employees whose salary is greater than the highest sale amount.

Query:

Query | Query History

```sql
SELECT name
FROM Employee
WHERE salary > (SELECT MAX(sale_amount) FROM Sales);
```

Data Output | Messages | Notifications

Showing rows: 1 to 10

	name character varying (50)
1	Abhishek
2	Shubham
3	Priya
4	Rohit
5	Neha
6	Aman
7	Ravi
8	Sneha
9	Kiran
10	Tanuja

Explanation:

- Subquery computes highest sale amount.
- Outer query finds employees whose salary exceeds that amounts.