Task-6

Objective:

To enhance your SQL skills by using subqueries (also known as nested queries) in different clauses like SELECT, WHERE, and FROM. You'll practice both **scalar subqueries** and **correlated subqueries**.

Tools:

You can use:

- **DB Browser for SQLite** (offline, light, good for small projects)
- **MySQL Workbench** (robust, supports full SQL features)

Deliverables:

You'll write **SQL queries** that demonstrate:

- Nested logic using subqueries
- Retrieval and filtering of data using inner queries

Hints / Mini Guide:

1 Subqueries in SELECT:

Used to return a **single value (scalar)** and include it as a column.

```
SELECT name,
       (SELECT AVG(salary) FROM employees) AS avg_salary
FROM employees;
```

2 Subqueries in WHERE:

Used for **filtering rows**.

```
-- Example with IN
SELECT name FROM employees
WHERE dept_id IN (SELECT id FROM departments WHERE location = 'New York');

-- Example with EXISTS
SELECT name FROM employees e
WHERE EXISTS (
    SELECT 1 FROM projects p WHERE p.emp_id = e.id
);
```

3 Subqueries in FROM:

Used to create **derived tables** (temporary result sets).

```
SELECT dept, avg_salary FROM (
    SELECT dept_id AS dept, AVG(salary) AS avg_salary
    FROM employees
    GROUP BY dept_id
) AS dept_avg;
```

4 Correlated Subqueries:

Inner query depends on data from the outer query.

```
SELECT name, salary FROM employees e
WHERE salary > (
    SELECT AVG(salary) FROM employees WHERE dept_id = e.dept_id
);
```

☑ Outcome

By completing this, you'll gain:

- A **strong grip on nested logic**
- Confidence in using **advanced SELECT queries**
- Ability to break down problems using **step-by-step subquery-based filtering**

☑ Included in the SQL File:

1. **Sample Tables**:
   - `employees`
   - `departments`
   - `projects`
2. **Sample Data** (with enough variety to enable nested queries)
3. **Practice Queries**:
   - Subqueries in `SELECT`
   - Subqueries in `WHERE` with `IN`, `EXISTS`, `=`
   - Subqueries in `FROM`
   - Scalar and correlated subqueries

SQLite `.sql` file is attached in the git repository

This file includes:

- Table creation (`departments`, `employees`, `projects`)
- Sample data

- Subquery examples in `SELECT`, `WHERE`, and `FROM` clauses
- Scalar and correlated subqueries

We can open it directly in **DB Browser for SQLite** → *File → Import → Database from SQL file*.