

Task 6: Subqueries and Nested Queries

Objective: Use subqueries in SELECT, WHERE, and FROM

Tools: DB Browser for SQLite / MySQL Workbench

Deliverables: SQL queries with nested logic

Hints / Mini Guide:

1. Use scalar and correlated subqueries
2. Use subqueries inside IN, EXISTS, =

Outcome: Advanced query logic skills

Example SQL Queries:

1. Subquery in SELECT (Scalar Subquery):

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

2. Subquery in WHERE (IN):

```
SELECT name, department_id FROM Employees WHERE department_id IN (SELECT id FROM Departments WHERE location = 'New York');
```

3. Subquery in WHERE (EXISTS):

```
SELECT name FROM Employees e WHERE EXISTS (SELECT 1 FROM Orders o WHERE o.employee_id = e.id);
```

4. Subquery in FROM (Derived Table):

```
SELECT dept_id, AVG(salary) AS avg_sal FROM (SELECT department_id AS dept_id, salary FROM Employees) AS sub GROUP BY dept_id;
```

5. Correlated Subquery:

```
SELECT name, salary FROM Employees e WHERE salary > (SELECT AVG(salary) FROM Employees WHERE department_id = e.department_id);
```