Experiment-1

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1. Aim:

a.) Department-Course Subquery and Access Control

- Design normalized tables for departments and the courses they offer, maintaining a foreign key relationship.
- Insert five departments and at least ten courses across those departments.
- Use a subquery to count the number of courses under each department.
- Filter and retrieve only those departments that offer more than two courses.
- Grant SELECT-only access on the courses table to a specific user.

dept_id	dept_name
1	Computer Science
2	Mechanical Engineering
3	Electrical Engineering
4	Civil Engineering
5	BioTech

course_id	Course_name	dept_id
101	DSA	1
102	Algorithms	1
103	Operating System	1
104	Fluid Mechanics	2
105	Thermodynamics	2

2. Objective:

- To understand how to use JOINS in SQL.
- To understand the basic SQL Queries.
- To learn how to use Sub-Queries in SQL.

3. DBMS Script:

```
-- Department table
CREATE TABLE Department (
    dept_id INT PRIMARY KEY,
    dept_name VARCHAR(100)
);
-- Course table with a foreign key to Department
CREATE TABLE Course (
    course_id INT PRIMARY KEY,
    course_name VARCHAR(100),
    dept_id INT,
    FOREIGN KEY (dept_id) REFERENCES Department(dept_id)
);
-- Insert into Department
INSERT INTO Department (dept_id, dept_name) VALUES
(1, 'Computer Science'),
(2, 'Mechanical Engineering'),
(3, 'Electrical Engineering'),
(4, 'Civil Engineering'),
(5, 'Biotech');
-- Insert into Course
INSERT INTO Course (course_id, course_name, dept_id) VALUES
(101, 'Data Structures', 1),
(102, 'Algorithms', 1),
(103, 'Operating Systems', 1),
(104, 'Thermodynamics', 2),
(105, 'Fluid Mechanics', 2),
```

```
-- Departments with more than 2 courses
SELECT dept_name
FROM Department
WHERE dept_id IN (
    SELECT dept_id
    FROM Course
    GROUP BY dept_id
    HAVING COUNT(course_id) > 2
);
-- Grant SELECT access
     GRANT SELECT ON Course TO readonly_user;
```

OUTPUT:

Output:

```
+------------------+
| dept_name        |
+------------------+
| Computer Science |
+------------------+
```

4. Learning Outcomes:

- You will be able to write basic SQL queries.
- You will learn to perform JOINS in SQL.
- You will understand how to implement Sub-Queries.

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