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	Biology
2	Civil Engineering
3	Chemistry
4	Statistics
5	EVS

course_id	Course_name	dept_id
101	Genetics	1
102	MicroBiology	1
103	Structural Analysis	2
104	Organic Chemistry	3
106	Climate Change	5
107	Cell Biology	1

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, 'Biology'),
(2, 'Civil Engineering'),
(3, 'Chemistry'),
(4, 'Statistics'),
(5, 'Environmental Science');

-- Insert into Course
INSERT INTO Course (course_id, course_name, dept_id) VALUES
(101, 'Genetics', 1),
(102, 'Microbiology', 1),
(103, 'Structural Analysis', 2),
(104, 'Organic Chemistry', 3),
 (106, 'Climate Change', 5);
(107, 'Cell Biology', 1);

-- 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:

dept_name
Biology

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.