# Experiment-1

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**Subject Name:** ADBMS | **Subject Code:** 23CSP-333

## 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 | Mathematics |
| 5 | Physics |

| 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:

```sql
-- 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, 'Mathematics'),
(5, 'Physics');
-- 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),
```
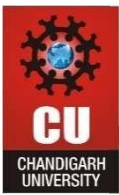
-- Departments with more than 2 courses

```
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:**



## 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.