



DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

Discover. Learn. Empower.

Experiment 1

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Section/Group: KRG-2B

Semester: 5th

Date of Performance: 28th July 2025

Subject Name: ADBMS

Subject Code: 23CSP-333

1. Aim: To explore table normalization, advanced querying using subqueries, filtering aggregate data, and implementing access control in database systems.

2. Objective:

- To create two normalized tables: Departments and Courses, with a foreign key relationship
- To insert multiple departments and associated courses
- To count courses per department using a subquery
- To filter departments having more than two courses
- To learn how to grant SELECT-only permission to a specific user

3. DBMS Script:

```
CREATE TABLE Departments (  
    DeptID INT PRIMARY KEY,  
    DeptName VARCHAR(100)  
);
```

```
CREATE TABLE Courses (  
    CourseID INT PRIMARY KEY,  
    CourseCode VARCHAR(30),  
    CourseName VARCHAR(100),  
    Instructor VARCHAR(100),  
    DeptID INT,  
    FOREIGN KEY (DeptID) REFERENCES Departments(DeptID)  
);
```

```
INSERT INTO Departments VALUES (1, 'Computer Science & Engg');  
INSERT INTO Departments VALUES (2, 'Training & Development');
```

```
INSERT INTO Courses VALUES (1, 'CONT_23CST-303', 'OPERATING SYSTEM', 'Puneet Kaur', 1);  
INSERT INTO Courses VALUES (2, 'CONT_23CST-302', 'COMPUTER NETWORKS', 'Monika', 1);  
INSERT INTO Courses VALUES (3, 'CONT_23CSH-304', 'PROJECT BASED LEARNING IN JAVA', 'Mayank Sharma', 1);  
INSERT INTO Courses VALUES (4, 'CONT_23CSP-339', 'FULL STACK-I', 'Amogh Saxena', 1);
```

```
INSERT INTO Courses VALUES (5, 'CONT_23CSP-333', 'ADBMS', 'Tushar Sood', 1);
INSERT INTO Courses VALUES (6, 'CONT_23CSH-301', 'DESIGN AND ANALYSIS OF ALGORITHMS',
'Richa Dhiman', 1);
INSERT INTO Courses VALUES (7, 'CONT_23CSP-332', 'COMPETITIVE CODING-I', 'Harshal Jain', 1);
INSERT INTO Courses VALUES (8, 'CONT_23TDP-311', 'SOFT SKILLS-III', 'Purnima Sood', 2);
INSERT INTO Courses VALUES (9, 'CONT_23TDT-312', 'APTITUDE-III', 'Manphool Singh', 2);
INSERT INTO Courses VALUES (10, '23TDP-311_23BCS_KRG-2_B_B', 'SOFT SKILLS-III', 'Gurvinder Kaur',
2);
INSERT INTO Courses VALUES (11, '23TDT-312_23BCS_KRG-2_B_B', 'APTITUDE-III', 'Vinay Kumar', 2);
```

```
SELECT DeptName
FROM Departments D
WHERE (
    SELECT COUNT(*)
    FROM Courses C
    WHERE C.DeptID = D.DeptID
) > 2;
```

```
GRANT SELECT ON Courses TO student_user;
```

4. Output:

Data Output

Messages

Notifications

	<div><div>deptname</div><div>character varying (100)</div><div></div></div>
1	Computer Science & Engg
2	Training & Development

5. Learning Outcomes:

- Proficiency in designing normalized tables with foreign key relationships
- Ability to insert and relate dataset entries across tables
- Skills in using subqueries and aggregate functions for complex filtering
- Understanding of access control using SQL GRANT statements
- Enhanced ability for working with real-world university or organizational datasets