



DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

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Experiment 1

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1. Problem Statement & SQL Code:

Q1) Author-Book Relationship Using Joins and Basic SQL operations

Design two tables — one for storing author details and the other for book details. Ensure a foreign key relationship from the book to its respective author. Insert at least three records in each table.

Perform an INNER JOIN to link each book with its author using the common author ID.

Select the book title, author name, and author's country.

Solution:

```
CREATE TABLE AUTHOR(  
    AUTHOR_ID INT PRIMARY KEY,  
    AUTHOR_NAME VARCHAR(20),  
    COUNTRY VARCHAR(20)  
)
```

```
CREATE TABLE BOOK (  
    BOOK_ID INT PRIMARY KEY,  
    BOOK_TITLE VARCHAR(20),  
    AUTHOR_ID INT  
    FOREIGN KEY (AUTHOR_ID) REFERENCES AUTHOR(AUTHOR_ID)  
)
```



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```
INSERT INTO AUTHOR (AUTHOR_ID, AUTHOR_NAME, COUNTRY)
VALUES (1, 'J.K. Rowling', 'UK'),
(2, 'George R.R. Martin', 'USA'),
(3, 'Premchand', 'India');
```

```
INSERT INTO BOOK (BOOK_ID, BOOK_TITLE, AUTHOR_ID) VALUES
(101, 'Harry Potter', 1),
(102, 'Game of Thrones', 2),
(103, 'Godaan', 3);
```

```
SELECT A.AUTHOR_NAME, A.COUNTRY , B.BOOK_TITLE
FROM AUTHOR AS A
INNER JOIN
BOOK AS B
ON
A.AUTHOR_ID = B.AUTHOR_ID
```

OUTPUT:

| | AUTHOR_NAME | COUNTRY | BOOK_TITLE |
|---|--------------------|---------|-----------------|
| 1 | J.K. Rowling | UK | Harry Potter |
| 2 | George R.R. Martin | USA | Game of Thrones |
| 3 | Premchand | India | Godaan |

Q2) 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.



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Grant SELECT-only access on the courses table to a specific user.

Solution:

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

```
CREATE TABLE Course (
    CourseID INT PRIMARY KEY,
    CourseName VARCHAR(100),
    DeptID INT,
    FOREIGN KEY (DeptID) REFERENCES Department(DeptID)
);
```

```
INSERT INTO Department (DeptID, DeptName) VALUES
(1, 'Computer Science'),
(2, 'Physics'),
(3, 'Mathematics'),
(4, 'Chemistry'),
(5, 'Biology');
```

```
INSERT INTO Course VALUES
(101, 'Data Structures', 1),
(102, 'Operating Systems', 1),
(103, 'Quantum Mechanics', 2),
(104, 'Electromagnetism', 2),
(105, 'Linear Algebra', 3),
(106, 'Calculus', 3),
(107, 'Organic Chemistry', 4),
(108, 'Physical Chemistry', 4),
(109, 'Genetics', 5),
(110, 'Molecular Biology', 5);
```



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```
SELECT DeptName
  FROM Department
 WHERE DeptID IN (
    SELECT DeptID
      FROM Course
     GROUP BY DeptID
    HAVING COUNT(*) > 2
);
```

```
CREATE LOGIN Sohitcpp
WITH PASSWORD = 'Sohit1825'
```

```
CREATE USER Sohit
FOR LOGIN Sohitcpp
```

```
EXECUTE AS USER = 'Sohit'
GRANT SELECT ON DEPARTMENT TO Sohit
```

```
REVOKE SELECT ON DEPARTMENT FROM Sohit
```

| | DEPTNAME |
|---|------------------|
| 1 | Computer Science |
| 2 | Physics |
| 3 | Mathematics |
| 4 | Chemistry |
| 5 | Biology |