



DEPARTMENT OF

COMPUTER SCIENCE & ENGINEERING

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EXPERIMENT - 1

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Semester: 5	Date of Performance: 22/05/2025
Subject: ADBMS	Subject Code: 23CSP-333

Question 1 : Easy-Level Problem

Problem Title: Author-Book Relationship Using Joins and Basic SQL Operations

Task:

You are required to design and query a relational database involving two tables:

1. Create two tables:
 - Authors (to store details like author ID, name, and country)
 - Books (to store details like book ID, title, and author ID)
2. Establish a foreign key relationship between the Books table and the Authors table using the author_id.
3. Insert at least three sample records into each table.
4. Write an SQL INNER JOIN query that retrieves:
 - Book title
 - Author name
 - Author's country

Expected Output:

The output of the join should display each book's title along with the name and country of its respective author.

Solution :



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Program Code:

```
CREATE TABLE Authors (  
    author_id INT PRIMARY KEY,  
    name VARCHAR(100),  
    country VARCHAR(100)  
);
```

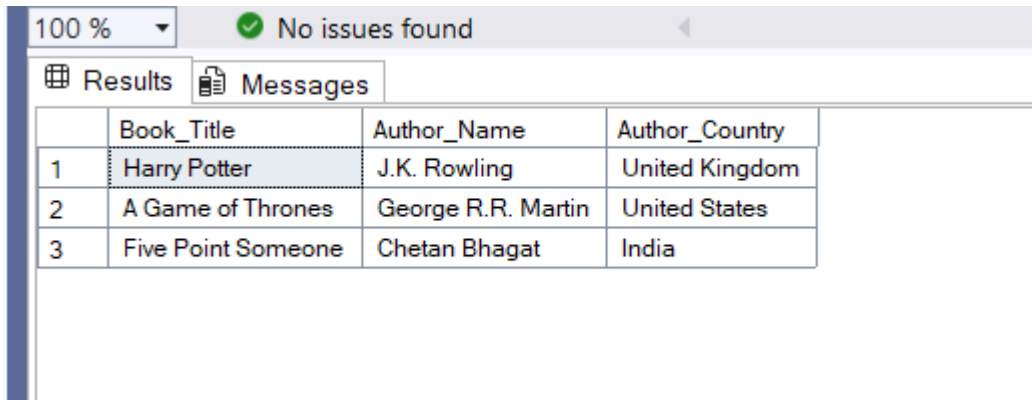
```
CREATE TABLE Books (  
    book_id INT PRIMARY KEY,  
    title VARCHAR(100),  
    author_id INT,  
    FOREIGN KEY (author_id) REFERENCES Authors(author_id)  
);
```

```
INSERT INTO Authors (author_id, name, country) VALUES  
(1, 'J.K. Rowling', 'United Kingdom'),  
(2, 'George R.R. Martin', 'United States'),  
(3, 'Chetan Bhagat', 'India');
```

```
INSERT INTO Books (book_id, title, author_id) VALUES  
(101, 'Harry Potter', 1),  
(102, 'A Game of Thrones', 2),  
(103, 'Five Point Someone', 3);
```

```
SELECT Books.title AS Book_Title,  
Authors.name AS Author_Name,  
Authors.country AS Author_Country  
FROM Books  
INNER JOIN  
Authors ON Books.author_id = Authors.author_id;
```

Output:



	Book_Title	Author_Name	Author_Country
1	Harry Potter	J.K. Rowling	United Kingdom
2	A Game of Thrones	George R.R. Martin	United States
3	Five Point Someone	Chetan Bhagat	India

Question 2 : Medium - Level Problem

Problem Title: Department-Course Subquery and Access Control

Task:

You are required to design a relational database schema involving departments and the courses they offer.

1. Create two normalized tables:
 - Departments: to store department details.
 - Courses: to store course details and associate each with a department.
2. Establish a **foreign key relationship** between Courses and Departments.
3. Insert **at least five departments** and **ten or more courses** across those departments.
4. Write an SQL **subquery** to count the number of courses offered by each department.
5. Retrieve the **names of only those departments** that offer **more than two courses**.
6. Finally, grant **SELECT-only access** on the Courses table to a specific user (e.g., readonly_user).



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Expected Output:

A list of department names that have more than two associated courses in the system.

Solution :

Program Code:

```
CREATE TABLE Department (  
    dept_id INT PRIMARY KEY,  
    dept_name VARCHAR(100)  
);  
  
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 (dept_id, dept_name) VALUES  
(1, 'Computer Science'),  
(2, 'Electronics'),  
(3, 'Mechanical'),  
(4, 'Mathematics'),  
(5, 'Civil');  
  
INSERT INTO Course (course_id, course_name, dept_id) VALUES  
(101, 'Data Structures', 1),  
(102, 'Algorithms', 1),
```



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(103, 'Operating Systems', 1),
(104, 'Digital Electronics', 2),
(105, 'Microprocessors', 2),
(106, 'Thermodynamics', 3),
(107, 'Fluid Mechanics', 3),
(108, 'Calculus', 4),
(109, 'Linear Algebra', 4),
(110, 'Structural Engineering', 5);

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

create login login_users with password = 'Neha@123';

create user neha_103 for login login_users;

grant select on courses to neha_103;
```



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Output:

100 %	✓ No issues found
Results	Messages
	dept_name
1	Computer Science