Experiment 1

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Branch: CSE **Section/Group: KRG-3A**

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

1. Problem Statement & SQL Code:

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

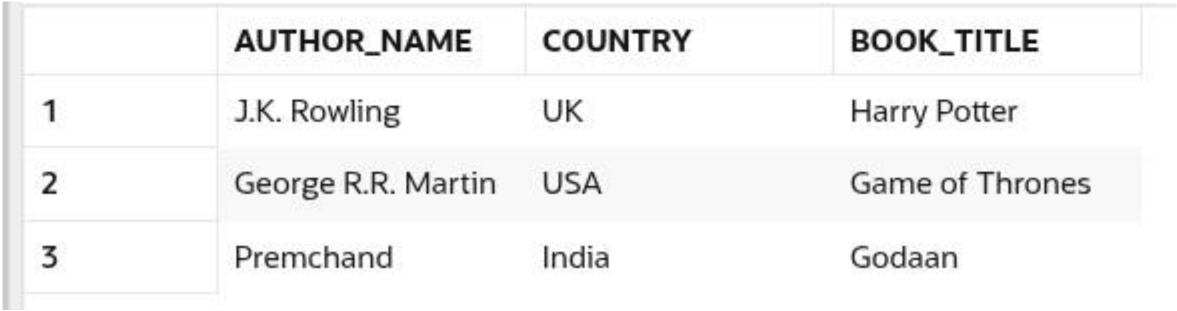
Design two tables — one for storing author details and the other for book details.
Ensure a foreign key relationship from the book to its respective author.
Insert at least three records in each table.
Perform an INNER JOIN to link each book with its author using the common author ID.
Select the book 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)
)


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

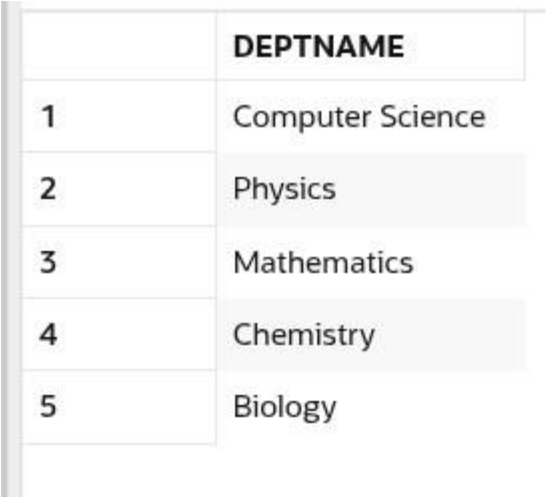
Q2) Department-Course Subquery and Access Control

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.
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);

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


CREATE LOGIN Gautamcpp
WITH PASSWORD = 'Gautam1825'

CREATE USER Gautam
FOR LOGIN Gautamcpp

EXECUTE AS USER = ‘Gautam’
GRANT SELECT ON DEPARTMENT TO Gautam

REVOKE SELECT ON DEPARTMENT FROM Gautam
```



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