Experiment 1

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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.

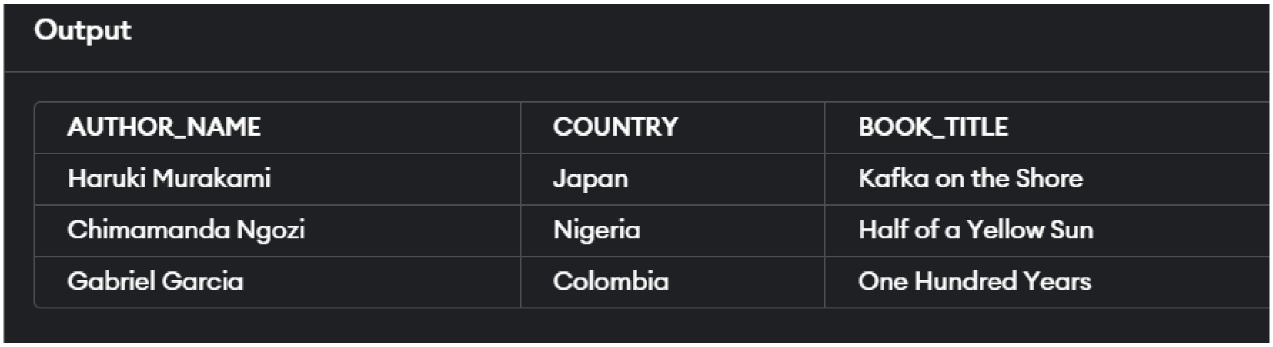
Perform an INNER JOIN to link each book with its author using the common author ID.

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, 'Haruki Murakami', 'Japan'),
(2, 'Chimamanda Ngozi', 'Nigeria'),
(3, 'Gabriel Garcia', 'Colombia');

INSERT INTO BOOK (BOOK_ID, BOOK_TITLE, AUTHOR_ID) VALUES
(101, 'Kafka on the Shore', 1),
(102, 'Half of a Yellow Sun', 2),
(103, 'One Hundred Years', 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:



Output

AUTHOR_NAME	COUNTRY	BOOK_TITLE
Haruki Murakami	Japan	Kafka on the Shore
Chimamanda Ngozi	Nigeria	Half of a Yellow Sun
Gabriel Garcia	Colombia	One Hundred Years

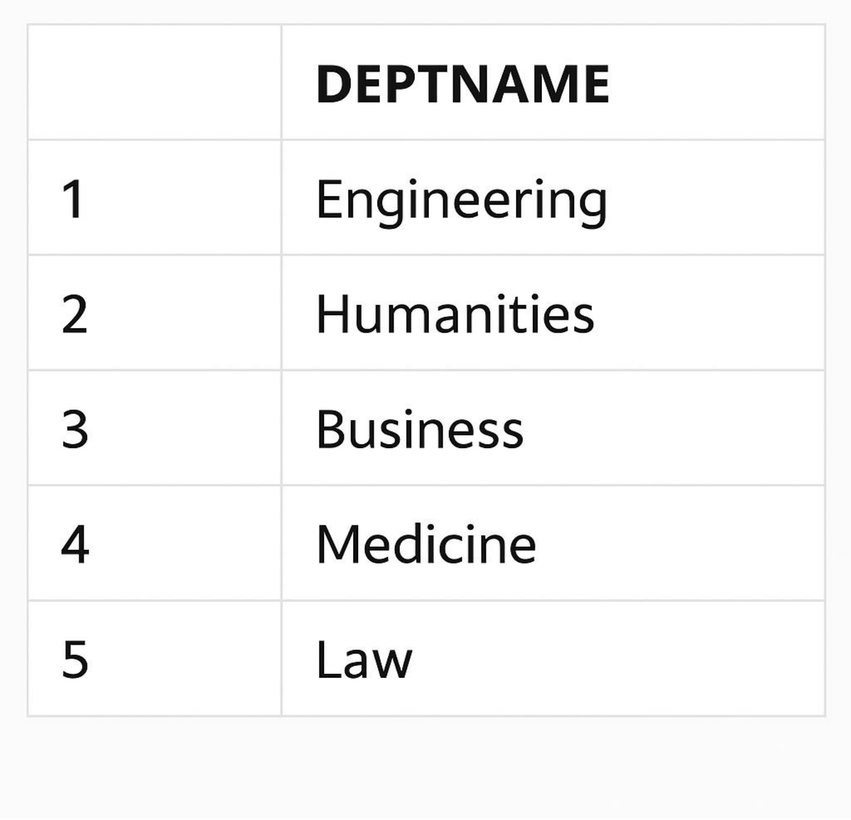
Q2) Department-Course Subquery and Access Control

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, 'Engineering'),

  (2, 'Humanities'),
  (3, 'Business'),

  (4, 'Medicine'),

  (5, 'Law');


INSERT INTO Course VALUES

(101, 'Data Structures', 1),

(102, 'Operating Systems', 1),

(103, 'Computer Networks', 1),

(104, 'Algorithms', 1),

(105, 'World History', 2),

(106, 'Philosophy', 2),

(107, 'Accounting', 3),

(108, 'Marketing', 3),

(109, 'Anatomy', 4),

(110, 'Physiology', 4),

(111, 'Constitutional Law', 5),

(112, 'Criminal Law', 5);


SELECT DeptName
```

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


CREATE LOGIN Piyushcpp
WITH PASSWORD = 'Piyush2005';


CREATE USER Piyush
FOR LOGIN Piyushcpp;


EXECUTE AS USER = 'Piyush';


GRANT SELECT ON Department TO Piyush;
REVOKE SELECT ON Department FROM Piyush;
```



	DEPTNAME
1	Engineering
2	Humanities
3	Business
4	Medicine
5	Law