Experiment 1

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

1. Aim:

a) 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.

b) 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.

2. Objective:

- To understand how to use JOINS in SQL.
- To understand the basic SQL Queries.
- To learn how to use Sub-Queries in SQL.

3. DBMS script and output:

```
1.
use assessment;

CREATE TABLE Departments (
    dept_id INT PRIMARY KEY,
    dept_name VARCHAR(100) NOT NULL
);
```

```
CREATE TABLE Courses (
    course_id INT PRIMARY KEY,
    course_name VARCHAR(100) NOT NULL,
    dept_id INT,
    FOREIGN KEY (dept_id) REFERENCES Departments(dept_id)
);

INSERT INTO Departments (dept_id, dept_name) VALUES
(1, 'Computer Science and Engineering'),
(2, 'Electrical and Electronics Engineering'),
(3, 'Electronics and Communication Engineering'),
(4, 'Mechanical Engineering'),
(5, 'Civil Engineering'),
(6, 'Chemical Engineering'),
(7, 'Artificial Intelligence and Data Science'),
(8, 'Information Technology'),
(9, 'Robotics and Automation'),
(10, 'Biomedical Engineering');


INSERT INTO Courses (course_id, course_name, dept_id) VALUES
(201, 'Data Structures and Algorithms', 1),
(202, 'Operating Systems', 1),
(203, 'Digital Logic Design', 2),
(204, 'Power Systems', 2),
(205, 'Analog and Digital Communication', 3),
(206, 'VLSI Design', 3),
(207, 'Thermodynamics', 4),
(208, 'Fluid Mechanics', 4),
(209, 'Structural Analysis', 5),
(212, 'Process Control', 6),
(213, 'Machine Learning', 7),
(215, 'Web Technologies', 8),
(216, 'Network Security', 8),
(217, 'Robotics and Control Systems', 9),
(220, 'Medical Imaging Systems', 10),
(221, 'Computer Networks', 1),
(222, 'Computer Architecture', 1),
(224, 'Fluid Chemistry', 4);


SELECT
       dept_name
FROM
       Departments
WHERE
       dept_id IN (
              SELECT dept_id
              FROM Courses
              GROUP BY dept_id
              HAVING COUNT(*) > 2
       );

GRANT SELECT ON Courses TO readonly_user;
```

	dept_name
▶	Computer Science and Engineering
	Mechanical Engineering

```
2.
use assessment;

CREATE TABLE AUTHOR_DETAILS(
	authID INT,
	authName VARCHAR(100),
	authCountry VARCHAR(100)
);

CREATE TABLE BOOK_DETAILS(
	bookTitle VARCHAR(100),
	authID INT
);

INSERT INTO AUTHOR_DETAILS(authID, authName, authCountry) VALUES
(1, 'J.K. Rowling', 'United Kingdom'),
(2, 'Stephen King', 'United States'),
(3, 'Haruki Murakami', 'Japan'),
(4, 'Chinua Achebe', 'Nigeria'),
(5, 'Margaret Atwood', 'Canada');


INSERT INTO BOOK_DETAILS(bookTitle, authID) VALUES
('Harry Potter and the Philosopher\'s Stone', 1),
('Harry Potter and the Chamber of Secrets', 1),
('The Shining', 2),
('IT', 2),
('Norwegian Wood', 3),
('Kafka on the Shore', 3),
('Things Fall Apart', 4),
('No Longer at Ease', 4),
('The Handmaid\'s Tale', 5),
('Oryx and Crake', 5);


SELECT
    B.bookTitle AS "Book Title",
    A.authName AS "Author Name",
    A.authCountry AS "Author Country"
FROM
    AUTHOR_DETAILS AS A
INNER JOIN
    BOOK_DETAILS AS B
ON
    A.authID = B.authID;
```

Book Title	Author Name	Author Country
Harry Potter and the Philosopher's Stone	J.K. Rowling	United Kingdom
Harry Potter and the Chamber of Secrets	J.K. Rowling	United Kingdom
The Shining	Stephen King	United States
IT	Stephen King	United States
Norwegian Wood	Haruki Murakami	Japan
Kafka on the Shore	Haruki Murakami	Japan
Things Fall Apart	Chinua Achebe	Nigeria
No Longer at Ease	Chinua Achebe	Nigeria
The Handmaid's Tale	Margaret Atwood	Canada
Oryx and Crake	Margaret Atwood	Canada

4. Learning outcomes:

- You will be able to write basic SQL queries.
- You will learn to perform JOINS in SQL.
- You will understand how to implement foreign keys.