Experiment 1

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Subject Name: ADBMS
Subject Code: 23CSP-333

1. Aim:

(A) To practice SQL table creation, relational constraints, and data retrieval through joins for managing author and book data.

(B) To practice table creation with relationships and advanced querying techniques using grouping and subqueries.

2. Objective:

(A) EASY:

- To create relational tables for storing author and book details.
- To establish a relationship between the tables using primary and foreign keys.
- To retrieve combined information (book title, author name, and country) using an INNER JOIN.
- To practice data insertion and querying with basic joins.

(B) MEDIUM:

- To design departmental and course tables with relational constraints.
- To apply GROUP BY and HAVING to identify departments with more than two courses.
- To demonstrate the use of subqueries for filtering grouped results.
- To strengthen skills in writing advanced SQL queries for real-world scenarios.

3. SQL SCRIPT:

--Program 1

```
CREATE TABLE Authors_tbl (
    AuthorID INT PRIMARY KEY,
    AuthorName VARCHAR(100),
    Country VARCHAR(100)
);
CREATE TABLE Books_tbl (
    BookID INT PRIMARY KEY,
    Title VARCHAR(100),
    AuthorID INT,
```

```
    FOREIGN KEY (AuthorID) REFERENCES Authors_tbl(AuthorID)
);
INSERT INTO Authors_tbl (AuthorID, AuthorName, Country)
VALUES
(1, 'J.K. Rowling', 'United Kingdom'),
(2, 'George R.R. Martin', 'United States'),
(3, 'Haruki Murakami', 'Japan');

INSERT INTO Books_tbl (BookID, Title, AuthorID)
VALUES
(101, 'Harry Potter', 1),
(102, 'Game of Thrones', 2),
(103, 'Norwegian Wood', 3);

SELECT
    B.Title AS BookTitle,
    A.AuthorName,
    A.Country
FROM
    Books_tbl B
INNER JOIN
    Authors_tbl A ON B.AuthorID = A.AuthorID;
```

--Program 2

```
CREATE TABLE Departments_tbl (
    DeptID INT PRIMARY KEY,
    DeptName VARCHAR(100) NOT NULL
);
CREATE TABLE Courses_tbl (
    CourseID INT PRIMARY KEY,
    CourseName VARCHAR(100) NOT NULL,
    DeptID INT,
    FOREIGN KEY (DeptID) REFERENCES Departments_tbl(DeptID)
);
INSERT INTO Departments_tbl (DeptID, DeptName) VALUES
(1, 'Computer Science'),
(2, 'Mechanical Engineering'),
(3, 'Electrical Engineering'),
(4, 'Mathematics'),
(5, 'Physics');
INSERT INTO Courses_tbl (CourseID, CourseName, DeptID) VALUES
(101, 'ADMS', 1),
```

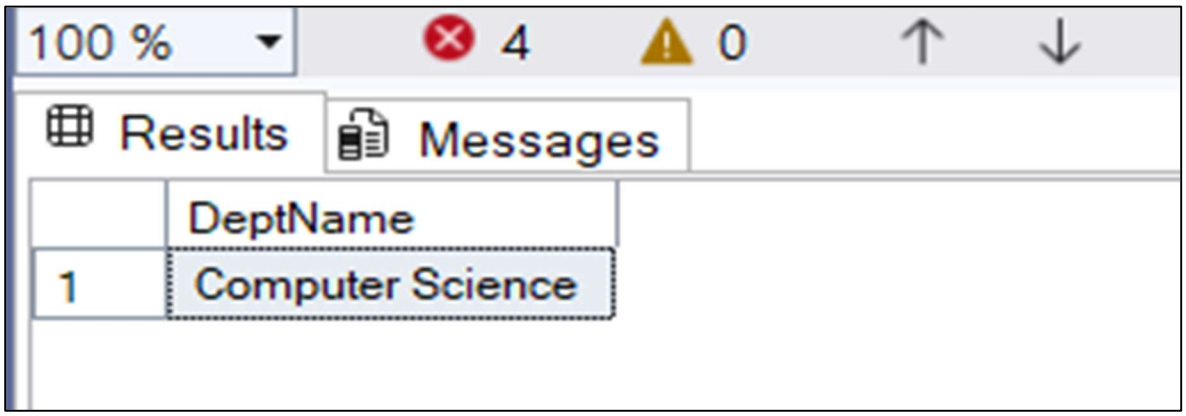
```
(102, 'DSA', 1),
(103, 'Operating Systems', 1),
(104, 'Thermodynamics', 2),
(105, 'Computer Network', 2),
(106, 'Robotics', 3),
(107, 'Signals and Systems', 3),
(108, 'Machine Learning', 4),
(109, 'Quantum Mechanics', 5),
(110, 'Computer Graphics', 5);

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

4. OUTPUT:

Results | Messages

	BookTitle	AuthorName	Country
1	Harry Potter	J.K. Rowling	United Kingdom
2	Game of Thrones	George R.R. Martin	United States
3	Norwegian Wood	Haruki Murakami	Japan



5. Learning Outcomes:

- Understand how to create and manage relational tables using primary and foreign keys.
- Learn to maintain referential integrity between related datasets.
- Gain practical experience in retrieving data from multiple tables using INNER JOIN.
- Develop skills in using GROUP BY and HAVING to analyze grouped data.
- Learn to write subqueries for filtering and extracting specific information.