



DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

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Experiment 1

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Branch: B.E.CSE

Semester: 5th

Subject Name: ADBMS

UID: 23BCS10225

Section/Group: 23BCS-KRG-2B

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1. Aim:

(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

2. Objective:

- To understand the process of creating relational tables and defining primary and foreign key constraints.
- To learn how to use INNER JOIN to combine data from multiple tables based on common attributes.
- To comprehend and apply GROUP BY and HAVING clauses for aggregating and filtering data.
- To gain proficiency in writing subqueries for advanced data retrieval and filtering.
- To strengthen skills in designing and querying relational databases for real-world scenarios.



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3.DBMS script and output:

```
-- EXPERIMENT : 1

-- Q1: Easy Level
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;
```

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

```
-- Q2: Medium Level
CREATE TABLE Departments_tbl (
    DeptID INT PRIMARY KEY,
    DeptName VARCHAR(100) NOT NULL
);

CREATE TABLE Courses_tbl (
    CourseID INT PRIMARY KEY,
```



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```
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  
);
```

Output:

	DeptName
1	Computer Science

4. Learning outcomes:

- Design and implement relational database tables, including the proper use of primary and foreign keys to establish relationships.
- Perform data retrieval by effectively using INNER JOIN to combine information from related tables.
- Apply aggregate functions with GROUP BY and HAVING clauses to analyze and summarize data.
- Construct and execute subqueries to solve more complex data filtering and reporting problems.