



Experiment 1

Student Name: Sanampreet Singh

Branch: CSE

Semester: 5th

Subject Name: ADBMS

UID: 23BCS13053

Section/Group: KRG_2B

Date of Performance: 21/07/25

Subject Code: 23CSP-333

1. Aim:

- To design and implement normalized relational database schemas for different real world scenarios using SQL, establish foreign key relationships, insert relevant data, and retrieve specific information using JOINS and subqueries.

Part A – Easy Level:

- To create tables for AUTHOR1 and BOOKS1, capturing author and book details.
- To implement a foreign key relationship between books and their respective authors.
- To retrieve and display book name, author name, and country using an INNER JOIN.

Part B – Medium Level:

- To create tables for DEPARTMENT and COURSE, maintaining referential integrity.
- To populate the tables with department and course data.
- To use a correlated subquery to count the number of courses per department.
- To filter and display departments offering **more than two** courses.

2. Objective:

To understand and apply the concepts of relational database design by creating normalized tables with primary and foreign key constraints.

To insert meaningful real-world data into related tables representing entities such as authors, books, departments, and courses.

To retrieve and manipulate data using SQL operations like INNER JOIN and correlated subqueries.

To display relevant information by combining data from multiple tables and applying filtering conditions.

To strengthen knowledge of referential integrity, data relationships, and query-based data analysis in SQL Server.



DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

Discover. Learn. Empower.

3. ADBMS script and output:

EASY-LEVEL PROBLEM

```
CREATE TABLE AUTHOR1 (  
    AUTHOR_ID INT PRIMARY KEY,  
    AUTHOR_NAME VARCHAR(100),  
    COUNTRY VARCHAR(50)  
);
```

```
CREATE TABLE BOOKS1 (  
    BOOK_ID INT PRIMARY KEY,  
    BOOK_NAME VARCHAR(100),  
    AUTHOR_ID INT,  
    FOREIGN KEY (AUTHOR_ID) REFERENCES AUTHOR1(AUTHOR_ID)  
);
```

```
INSERT INTO AUTHOR1 (AUTHOR_ID, AUTHOR_NAME, COUNTRY) VALUES  
(1, 'George Orwell', 'United Kingdom'),  
(2, 'Haruki Murakami', 'Japan'),  
(3, 'Isabel Allende', 'Chile'),  
(4, 'Fyodor Dostoevsky', 'Russia');
```



DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

Discover. Learn. Empower.

```
INSERT INTO BOOKS1 (BOOK_ID, BOOK_NAME, AUTHOR_ID) VALUES
```

```
(201, '1984', 1),
```

```
(202, 'Kafka on the Shore', 2),
```

```
(203, 'The House of the Spirits', 3),
```

```
(204, 'Crime and Punishment', 4);
```

```
SELECT
```

```
B.BOOK_NAME,
```

```
A.AUTHOR_NAME,
```

```
A.COUNTRY
```

```
FROM
```

```
BOOKS1 B
```

```
INNER JOIN
```

```
AUTHOR1 A
```

```
ON B.AUTHOR_ID = A.AUTHOR_ID;
```

MEDIUM LEVEL PROBLEM:

```
CREATE TABLE DEPARTMENT (
```

```
DEPT_ID INT PRIMARY KEY,
```

```
DEPT_NAME VARCHAR(100)
```

```
);
```

```
CREATE TABLE COURSE (
```

```
COURSE_ID INT PRIMARY KEY,
```

```
COURSE_NAME VARCHAR(100),
```



DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

Discover. Learn. Empower.

```
DEPT_ID INT,  
FOREIGN KEY (DEPT_ID) REFERENCES DEPARTMENT(DEPT_ID)  
);
```

```
INSERT INTO DEPARTMENT (DEPT_ID, DEPT_NAME) VALUES  
(1, 'Computer Science'),  
(2, 'Electronics'),  
(3, 'Mathematics'),  
(4, 'Communication'),  
(5, 'General Studies');
```

```
INSERT INTO COURSE (COURSE_ID, COURSE_NAME, DEPT_ID) VALUES  
(101, 'Operating Systems', 1),  
(102, 'Computer Networks', 1),  
(103, 'Competitive Programming', 1),  
(104, 'Microcontroller', 2),  
(105, 'Embedded Systems', 2),  
(106, 'Mathematics I', 3),  
(107, 'Mathematics II', 3),  
(108, 'Communication Skills', 4),  
(109, 'English Literature', 4),  
(110, 'DAA', 1);
```

```
SELECT  
DEPT_NAME
```

FROM

DEPARTMENT

WHERE

(SELECT COUNT(*))

FROM COURSE

WHERE COURSE.DEPT_ID = DEPARTMENT.DEPT_ID) > 2;

OUTPUTS:

	BOOK_NAME	AUTHOR_NAME	COUNTRY
1	1984	George Orwell	United Kingdom
2	Kafka on the Shore	Haruki Murakami	Japan
3	The House of the Spirits	Isabel Allende	Chile
4	Crime and Punishment	Fyodor Dostoevsky	Russia

Figure 1 : Easy level Problem

	DEPT_NAME
1	Computer Science

Figure 2: Medium level Problem