Experiment 1

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1. Aim:

[EASY] Author-Book Relationships using Joins and basic SQL Operations.

1. Design Two tables – one for storing author details and the other for book details.
2. Ensure Foreign Key relationship from book to its respective author.
3. Insert at least three records in each table.
4. Perform an Inner Join to link each book with its author using the common author ID.
5. Select the book title, author name, and author's country.

2. Tools Used: SQL Server Management Studio

3. Code:

```
-- Q1 -Author-Book Relationship Using Joins and Basic SQL Operations


CREATE TABLE AuthNors{
  WriterID INT PRIMARY KEY,
  FullName VARCHAR(50),
  Region VARCHAR(100)
);


CREATE TABLE Books (
  PubID INT PRIMARY KEY,
  BookTitle VARCHAR(50),
  WriterID INT,
  YearReleased INT,
  CONSTRAINT
fk_writer_book FOREIGN
KEY (WriterID) REFERENCES
Authors(WriterID)
);
```

```
INSERT INTO Authors
(WriterID, FullName,
Region) VALUES
(201, 'Rohan', 'India'),
(202, 'Elena', 'Canada'),
(203, 'Sam', 'Germany');


INSERT INTO Books (PubID,
BookTitle, WriterID,
YearReleased) VALUES
(3001, 'Cognitive Depth',
201, 2020),
(3002, 'Shadows of Code',
202, 2021),
(3003, 'Zero Day Mindset',
201, 2022),
(3004, 'Logic Breaker', 201,
2021),
(3005, 'Quantum Syntax',
203, 2023),
(3006, 'Runtime Diaries',
203, 2022),
(3007, 'Infinite Stack', 202,
2020);


SELECT
B.PubID,B.BookTitle,B.Year
Released,A.FullName AS
WriterName,A.Region
FROM Books B
JOIN Authors A ON
B.WriterID = A.WriterID;
```

4. Output:

PubID	BookTitle	YearReleased	WriterName	Region
3001	Cognitive Depth	2020	Rohan	India
3002	Shadows of Code	2021	Elena	Canada
3003	Zero Day Mindset	2022	Rohan	India
3004	Logic Breaker	2021	Rohan	India
3005	Quantum Syntax	2023	Sam	Germany
3006	Runtime Diaries	2022	Sam	Germany
3007	Infinite Stack	2020	Elena	Canada

5. Learning Outcomes:

- Learnt how to define and create relational databases tables using CREATE TABLE syntax. Understand the use of data types like INT and VARCHAR.
- Gain practical knowledge of establishing a primary key for uniquely identifying records.
- Understand how to create and enforce foreign key relationships to maintain data integrity between related tables (Books - Authors).
- Develop the ability to use INNER JOIN to combine data from multiple tables based on a common key (e.g author_id)

- Understand how to design normalized tables with foreign key constraints for real-world entities like departments and courses.
- Gain proficiency in inserting multiple records into relational tables using INSERT INTO statement.
- Learnt how to use sub-queries with GROUP BY and HAVING to aggregate data and apply conditional logic.
- Apply filtering logic to retrieve records from a parent table based on the results from a subquery on a related child table.