# **EXPERIMENT-01**

- AIM: To design and manipulate a University Database using SQL that involves creating relational tables for Students, Courses, Enrollments, and Professors, inserting and retrieving data using JOINs, managing access control with GRANT/REVOKE, and handling transaction control using COMMIT and ROLLBACK.
- THEORY: Relational databases store data in tables with relationships among them. SQL (Structured Query Language) allows data manipulation and definition. This experiment demonstrates:
- ➤ Table creation using CREATE TABLE
- ➤ Data insertion using INSERT INTO
- ➤ Data retrieval using SELECT and JOIN
- ➤ Access control using GRANT and REVOKE
- ➤ Transaction control using COMMIT and ROLLBACK

## • CODE:

#### 1. CREATING TABLES:

```
CREATE TABLE Students (
student_id INT PRIMARY KEY,
name VARCHAR(100),
age INT,
major VARCHAR(50)
);

CREATE TABLE Professors (
professor_id INT PRIMARY KEY,
name VARCHAR(100),
department VARCHAR(50)
);
```

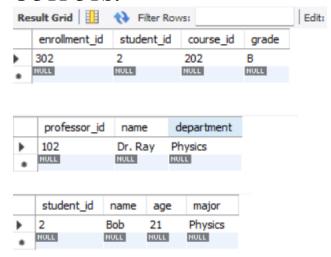
```
CREATE TABLE Courses (
    course id INT PRIMARY KEY,
    course name VARCHAR(100),
    professor id INT,
    FOREIGN
                          (professor id)
                 KEY
                                          REFERENCES
  Professors(professor id)
  );
  CREATE TABLE Enrollments (
    enrollment id INT PRIMARY KEY,
    student id INT,
    course id INT,
    grade CHAR(2),
                           (student id)
    FOREIGN
                  KEY
                                          REFERENCES
  Students(student id),
    FOREIGN
                           (course id)
                  KEY
                                          REFERENCES
  Courses(course id)
2. INSERTING TABLES:
  -- Students
  INSERT INTO Students VALUES (1, 'Alice', 20, 'Computer
  Science');
  INSERT INTO Students VALUES (2, 'Bob', 21, 'Physics');
  -- Professors
  INSERT INTO Professors VALUES (101, 'Dr. Smith',
  'Computer Science');
  INSERT INTO Professors VALUES (102, 'Dr. Ray', 'Physics');
  -- Courses
  INSERT INTO Courses VALUES (201, 'DBMS', 101);
  INSERT INTO Courses VALUES (202, 'Quantum Mechanics',
```

## -- Enrollments

102);

INSERT INTO Enrollments VALUES (301, 1, 201, 'A'); INSERT INTO Enrollments VALUES (302, 2, 202, 'B');

## • OUTPUTS:



## • LEARNING OUTCOMES:

- > Understand relational table creation.
- ➤ Learn SQL INSERT and JOIN operations.
- ➤ Apply GRANT and REVOKE for access control.