**CREATE DATABASE & TABLES FOR JIONS**

**📌 Step 1: Create a database**

CREATE DATABASE school\_db;

USE school\_db;

**📌 Step 2: Create tables**

**1. students**

CREATE TABLE students (

student\_id INT PRIMARY KEY AUTO\_INCREMENT,

name VARCHAR(50) NOT NULL,

age INT,

email VARCHAR(100)

);

**2. courses**

CREATE TABLE courses (

course\_id INT PRIMARY KEY AUTO\_INCREMENT,

course\_name VARCHAR(100) NOT NULL,

credits INT

);

**3. enrollments (Many-to-Many relation between students and courses)**

CREATE TABLE enrollments (

enrollment\_id INT PRIMARY KEY AUTO\_INCREMENT,

student\_id INT,

course\_id INT,

grade VARCHAR(5),

FOREIGN KEY (student\_id) REFERENCES students(student\_id),

FOREIGN KEY (course\_id) REFERENCES courses(course\_id)

);

**4. teachers**

CREATE TABLE teachers (

teacher\_id INT PRIMARY KEY AUTO\_INCREMENT,

name VARCHAR(50) NOT NULL,

subject VARCHAR(100)

);

**5. course\_teacher (Assigns teachers to courses)**

CREATE TABLE course\_teacher (

ct\_id INT PRIMARY KEY AUTO\_INCREMENT,

course\_id INT,

teacher\_id INT,

FOREIGN KEY (course\_id) REFERENCES courses(course\_id),

FOREIGN KEY (teacher\_id) REFERENCES teachers(teacher\_id)

);

**📌 Step 3: Insert Sample Data**

**Students**

INSERT INTO students (name, age, email) VALUES

('Amit Sharma', 20, 'amit@example.com'),

('Priya Singh', 22, 'priya@example.com'),

('Rahul Verma', 21, 'rahul@example.com'),

('Neha Gupta', 23, 'neha@example.com');

**Courses**

INSERT INTO courses (course\_name, credits) VALUES

('Database Systems', 4),

('Operating Systems', 3),

('Computer Networks', 3),

('Data Structures', 4);

**Enrollments**

INSERT INTO enrollments (student\_id, course\_id, grade) VALUES

(1, 1, 'A'),

(1, 2, 'B'),

(2, 1, 'A'),

(2, 3, 'C'),

(3, 4, 'B'),

(4, 2, 'A'),

(4, 3, 'B');

**Teachers**

INSERT INTO teachers (name, subject) VALUES

('Dr. Meena', 'Database Systems'),

('Mr. Rakesh', 'Operating Systems'),

('Ms. Kavita', 'Computer Networks'),

('Dr. Arjun', 'Data Structures');

**Course-Teacher Mapping**

INSERT INTO course\_teacher (course\_id, teacher\_id) VALUES

(1, 1),

(2, 2),

(3, 3),

(4, 4);

**📌 Step 4: Practice JOIN Queries**

✅ **INNER JOIN**

SELECT s.name, c.course\_name, e.grade

FROM students s

INNER JOIN enrollments e ON s.student\_id = e.student\_id

INNER JOIN courses c ON e.course\_id = c.course\_id;

✅ **LEFT JOIN**

SELECT s.name, c.course\_name

FROM students s

LEFT JOIN enrollments e ON s.student\_id = e.student\_id

LEFT JOIN courses c ON e.course\_id = c.course\_id;

✅ **RIGHT JOIN**

SELECT s.name, c.course\_name

FROM students s

RIGHT JOIN enrollments e ON s.student\_id = e.student\_id

RIGHT JOIN courses c ON e.course\_id = c.course\_id;

✅ **CROSS JOIN**

SELECT s.name, c.course\_name

FROM students s

CROSS JOIN courses c;

✅ **SELF JOIN** (Example: teachers teaching same subject)

SELECT t1.name AS Teacher1, t2.name AS Teacher2, t1.subject

FROM teachers t1

INNER JOIN teachers t2 ON t1.subject = t2.subject

WHERE t1.teacher\_id < t2.teacher\_id;