

# SQL Solutions – Full Stack Application Development (Week 1: Sessions 2–5)

```
----- SESSION 2 -----

CREATE DATABASE fullstack;
USE fullstack;

CREATE TABLE Student (
    VTU_Number VARCHAR(20) PRIMARY KEY,
    Name VARCHAR(100),
    Email VARCHAR(100),
    Phone VARCHAR(15),
    Department VARCHAR(50)
);

CREATE TABLE Course (
    Course_Code VARCHAR(10) PRIMARY KEY,
    Course_Name VARCHAR(100),
    Faculty_Id INT,
    Student_ID VARCHAR(20),
    Faculty_Email VARCHAR(100),
    FOREIGN KEY (Student_ID) REFERENCES Student(VTU_Number)
);

INSERT INTO Student VALUES
('1MS23CS001','Arjun Kumar','arjun@mail.com','9845011223','CSE'),
('1MS23CS002','Sneha Rao','sneha@mail.com','9845022334','IT'),
('1MS23CS003','Rahul Nair','rahul@mail.com','9845033445','CSE'),
('1MS23CS004','Priya Das','priya@mail.com','9845044556','ECE'),
('1MS23CS005','Amit Singh','amit@mail.com','9845055667','IT');

INSERT INTO Course VALUES
('CS101','Database Management',101,'1MS23CS001','prof_smith@vtu.edu'),
('IS202','Data Structures',102,'1MS23CS002','prof_jones@vtu.edu'),
('CS103','Operating Systems',101,'1MS23CS003','prof_smith@vtu.edu'),
('EC301','Digital Electronics',103,'1MS23CS004','prof_kumar@vtu.edu'),
('IS204','Web Programming',104,'1MS23CS005','prof_leila@vtu.edu');

SELECT * FROM Student WHERE Department='CSE';
SELECT * FROM Course ORDER BY Course_Name ASC;
SELECT Name, Email FROM Student WHERE Email LIKE '%@mail.com';
SELECT * FROM Student LIMIT 3;

SELECT Department, COUNT(*) FROM Student GROUP BY Department HAVING COUNT(*)>1;

----- SESSION 3 -----

SELECT * FROM Student;
SELECT * FROM Course;

SELECT COUNT(*) FROM Student;
SELECT COUNT(DISTINCT Department) FROM Student;
SELECT MAX(Faculty_Id) FROM Course;

SELECT * FROM Student ORDER BY VTU_Number ASC;
SELECT * FROM Student ORDER BY VTU_Number DESC;

SELECT * FROM Student WHERE Department='CSE';

SELECT s.VTU_Number, s.Name, c.Course_Name, c.Faculty_Id, c.Faculty_Email
FROM Student s
INNER JOIN Course c ON s.VTU_Number = c.Student_ID;

----- SESSION 4 -----

SELECT Course_Code, COUNT(Student_ID) AS Total_Students
FROM Course
GROUP BY Course_Code;

CREATE TABLE FacultyCourses AS
SELECT Faculty_Id, Course_Code
FROM Course;
```

```
UPDATE Student
SET Phone = CONCAT('+91', Phone)
WHERE Department = 'CSE'
LIMIT 5;
```

----- SESSION 5 -----

```
START TRANSACTION;
UPDATE Student SET Phone='9999999999' WHERE VTU_Number='1MS23CS001';
SAVEPOINT sp1;
UPDATE Student SET Phone='8888888888' WHERE VTU_Number='1MS23CS002';
ROLLBACK TO sp1;
COMMIT;
```

```
DELIMITER //
CREATE FUNCTION add_numbers(a INT, b INT)
RETURNS INT
DETERMINISTIC
BEGIN
    RETURN a + b;
END //
DELIMITER ;
```

```
DELIMITER //
CREATE FUNCTION get_student_count()
RETURNS INT
DETERMINISTIC
BEGIN
    DECLARE total INT;
    SELECT COUNT(*) INTO total FROM Student;
    RETURN total;
END //
DELIMITER ;
```