

# 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 ;
```