

## SESSION-2

Table 1: Student (VTU Number, Name, Email, Phone, Department)

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

Table 2: Course (Course Code, Course Name, Faculty Id, Student ID, Faculty Email)

```
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 minimum 5 records into each table.

### -- Inserting into Student Table

```
INSERT INTO Student VALUES
    ('1', 'Arjun Kumar', 'arjun@mail.com', '9845011223', 'CSE'),
    ('2', 'Sneha Rao', 'sneha@mail.com', '9845022334', 'IT'),
    ('3', 'Rahul Nair', 'rahul@mail.com', '9845033445', 'CSE'),
    ('4', 'Priya Das', 'priya@mail.com', '9845044556', 'ECE'),
    ('5', 'Amit Singh', 'amit@mail.com', '9845055667', 'IT');
```

VTU	NAME	EMAIL	PHONE	DEPARTMENT
1	Arjun Kumar	arjun@mail.com	9845011223	CSE
2	Sneha Rao	sneha@mail.com	9845022334	IT
3	Rahul Nair	rahul@mail.com	9845033445	CSE
4	Priya Das	priya@mail.com	9845044556	ECE
5	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');
```

COURSE_CODE	COURSE_NAME	FACULTYID	STUDENTID	FACULTY_EMAIL
10211CS213	COMPUTER SCIENCE	TTS215	1	prof_smith@vtu.edu
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

3. Select records using different CLAUSE.

### WHERE clause:

```
SELECT * FROM Student WHERE Department = 'CSE';
```

VTU	NAME	EMAIL	PHONE	DEPARTMENT
1	Arjun Kumar	arjun@mail.com	9845011223	CSE
3	Rahul Nair	rahul@mail.com	9845033445	CSE

### ORDER BY Clause (Sorting):

```
SELECT * FROM Course ORDER BY Course_Name ASC;
```

COURSE_CODE	COURSE_NAME	FACULTYID	STUDENTID	FACULTY_EMAIL
10211CS213	COMPUTER SCIENCE	TTS215	1	prof_smith@vtu.edu
IS202	Data Structures	102	1MS23CS002	prof_jones@vtu.edu
CS101	Database Management	101	1MS23CS001	prof_smith@vtu.edu
EC301	Digital Electronics	103	1MS23CS004	prof_kumar@vtu.edu
CS103	Operating Systems	101	1MS23CS003	prof_smith@vtu.edu
IS204	Web Programming	104	1MS23CS005	prof_leila@vtu.edu

### LIKE Clause (Pattern Matching):

```
SELECT Name, Email FROM Student WHERE Email LIKE  
%@mail.com;
```

Name	Email
Arjun Kumar	arjun@mail.com
Sneha Rao	sneha@mail.com
Rahul Nair	rahul@mail.com
Priya Das	priya@mail.com
Amit Singh	amit@mail.com

### LIMIT Clause (Restricting Results):

```
SELECT * FROM Student LIMIT 3;
```

VTU	NAME	EMAIL	PHONE	DEPARTMENT
1	Arjun Kumar	arjun@mail.com	9845011223	CSE
2	Sneha Rao	sneha@mail.com	9845022334	IT
3	Rahul Nair	rahul@mail.com	9845033445	CSE

### GROUP BY & HAVING Clause (Aggregating):

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

Department	Total_Students
CSE	2
IT	2

### SESSION-3

-- Display all students

SELECT \* FROM Student;

VTU	NAME	EMAIL	PHONE	DEPARTMENT
1	Arjun Kumar	arjun@mail.com	9845011223	CSE
2	Sneha Rao	sneha@mail.com	9845022334	IT
3	Rahul Nair	rahul@mail.com	9845033445	CSE
4	Priya Das	priya@mail.com	9845044556	ECE
5	Amit Singh	amit@mail.com	9845055667	IT

-- Display all courses

SELECT \* FROM Course;

COURSE_CODE	COURSE_NAME	FACULTYID	STUDENTID	FACULTY_EMAIL
10211CS213	COMPUTER SCIENCE	TTS215	1	prof_smith@vtu.edu
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

-- Count total number of students

SELECT COUNT(\*) AS Total\_Students FROM Student;

Total_Students
5

-- Count unique departments

SELECT COUNT(DISTINCT Department) AS Department\_Count  
FROM Student;

Department_Count
3

-- Find the highest Faculty ID assigned

SELECT MAX(Faculty\_Id) AS Highest\_Faculty\_ID FROM Course;

COURSE_CODE	COURSE_NAME	FACULTYID	STUDENTID	FACULTY_EMAIL
IS204	Web Programming	104	1MS23CS005	prof_leila@vtu.edu

-- Sort - Ascending order (Default)

SELECT \* FROM Student ORDER BY VTU\_Number ASC;

VTU	NAME	EMAIL	PHONE	DEPARTMENT
1	Arjun Kumar	arjun@mail.com	9845011223	CSE
2	Sneha Rao	sneha@mail.com	9845022334	IT
3	Rahul Nair	rahul@mail.com	9845033445	CSE
4	Priya Das	priya@mail.com	9845044556	ECE
5	Amit Singh	amit@mail.com	9845055667	IT

-- Sort - in Descending order

SELECT \* FROM Student ORDER BY VTU\_Number DESC;

VTU	NAME	EMAIL	PHONE	DEPARTMENT
5	Amit Singh	amit@mail.com	9845055667	IT
4	Priya Das	priya@mail.com	9845044556	ECE
3	Rahul Nair	rahul@mail.com	9845033445	CSE
2	Sneha Rao	sneha@mail.com	9845022334	IT
1	Arjun Kumar	arjun@mail.com	9845011223	CSE

SELECT \* FROM Student WHERE Department = 'CSE';

VTU	NAME	EMAIL	PHONE	DEPARTMENT
1	Arjun Kumar	arjun@mail.com	9845011223	CSE
3	Rahul Nair	rahul@mail.com	9845033445	CSE

**Inner Join:**

```
SELECT s.VTU_Number,  
       s.Name AS Student_Name,  
       c.Course_Name,  
       c.Faculty_Id,c.Faculty_Email
```

FROM Student s INNER JOIN Course c ON s.VTU\_Number = c.Student\_ID;

VTU	Student_Name	Course_name	FacultyId	Faculty_Email
1MS23CS001	Arjun Kumar	Database Management	101	prof_smith@vtu.edu
1MS23CS002	Sneha Rao	Data Structures	102	prof_jones@vtu.edu
1MS23CS003	Rahul Nair	Operating Systems	101	prof_smith@vtu.edu
1MS23CS004	Priya Das	Digital Electronics	103	prof_kumar@vtu.edu
1MS23CS005	Amit Singh	Web Programming	104	prof_leila@vtu.edu

**Left Join:**

**SELECT**

s.VTU\_Number,

s.Name,

c.Course\_Name

**FROM Student s**

**LEFT JOIN Course c ON s.VTU\_Number = c.Student\_ID;**

VTU	Name	Course_Name
1MS23CS001	Arjun Kumar	Database Management
1MS23CS002	Sneha Rao	Data Structures
1MS23CS003	Rahul Nair	Operating Systems
1MS23CS004	Priya Das	Digital Electronics
1MS23CS005	Amit Singh	Web Programming

**Right Join:**

**SELECT**

s.Name,

c.Course\_Code,

c.Course\_Name

**FROM Student s**

**RIGHT JOIN Course c ON s.VTU\_Number = c.Student\_ID;**

Name	Course_Code	Course_Name
NULL	10211CS213	COMPUTER SCIENCE
Arjun Kumar	CS101	Database Management
Sneha Rao	IS202	Data Structures
Rahul Nair	CS103	Operating Systems
Priya Das	EC301	Digital Electronics
Amit Singh	IS204	Web Programming

### **FULL JOIN (Full Outer Join):**

```
SELECT s.Name, c.Course_Name FROM Student s  
LEFT JOIN Course c ON s.VTU_Number = c.Student_ID  
UNION  
SELECT s.Name, c.Course_Name FROM Student s  
RIGHT JOIN Course c ON s.VTU_Number = c.Student_ID;
```

Name	Course_Name
Arjun Kumar	Database Management
Sneha Rao	Data Structures
Rahul Nair	Operating Systems
Priya Das	Digital Electronics
Amit Singh	Web Programming

### **Cross Join(Cartesian Product):**

```
SELECT s.Name, c.Course_Name FROM Student s CROSS JOIN  
Course c;
```

Name	Course_Name
Priya Das	Operating Systems
Priya Das	Digital Electronics
Priya Das	Web Programming
Rahul Nair	COMPUTER SCIENCE
Rahul Nair	Database Management
Rahul Nair	Data Structures
Rahul Nair	Operating Systems
Rahul Nair	Digital Electronics
Rahul Nair	Web Programming
Sneha Rao	COMPUTER SCIENCE
Sneha Rao	Database Management
Sneha Rao	Data Structures
Sneha Rao	Operating Systems
Sneha Rao	Digital Electronics
Sneha Rao	Web Programming