

Lab 2: Use of Multiple Tables

Create Database :

Query: CREATE DATABASE CollegeMIS;

USE CollegeMIS;

```
(Messages
Commands completed successfully.

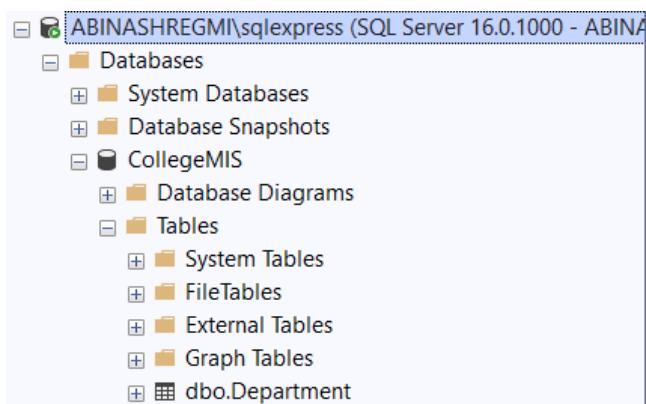
Completion time: 2025-06-19T14:13:01.2845995+05:4)
```

```
100 %   No issues found   Ln: 4
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```

Creating Table:

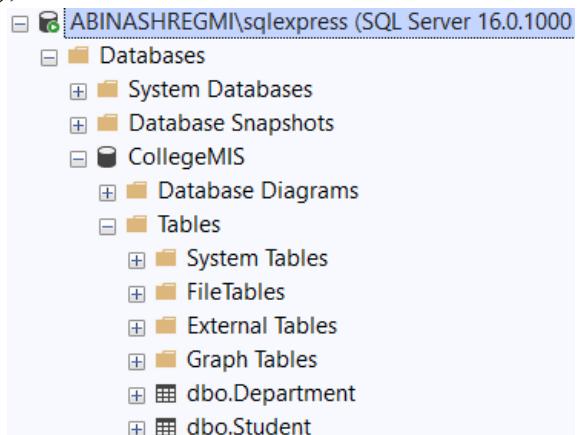
Create Department table:

Query: CREATE TABLE Department (
DepartmentID INT PRIMARY KEY,
DeptName VARCHAR(50)
);



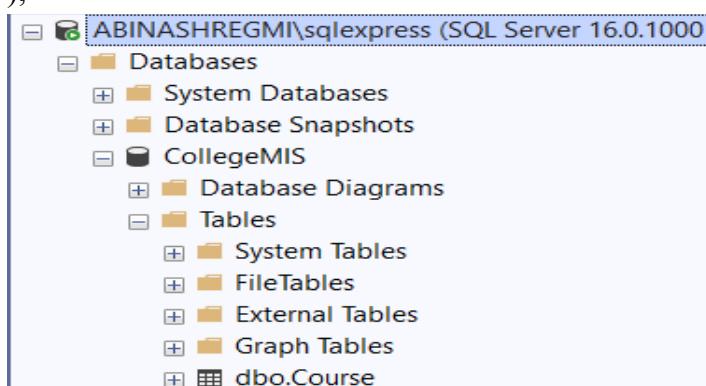
Create Student table:

```
Query : CREATE TABLE Student (
    StudentID INT PRIMARY KEY,
    Name VARCHAR(50),
    Gender CHAR(1),
    DOB DATE,
    DepartmentID INT,
    Email VARCHAR(100),
    FOREIGN KEY (DepartmentID) REFERENCES Department(DepartmentID)
);
```



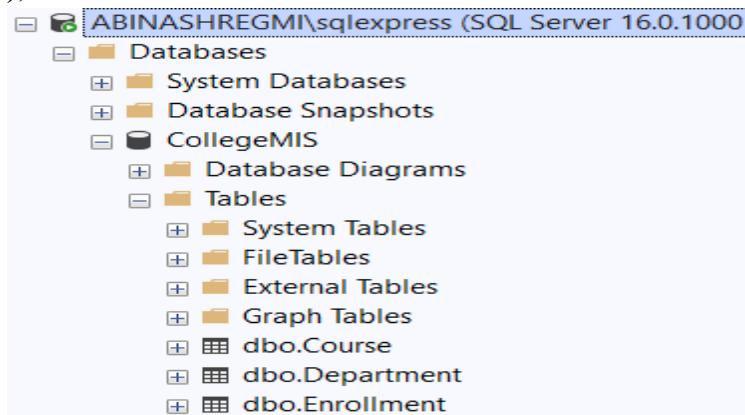
Create Course table:

```
Query : CREATE TABLE Course (
    CourseID INT PRIMARY KEY,
    CourseName VARCHAR(100),
    DepartmentID INT,
    FOREIGN KEY (DepartmentID) REFERENCES
    Department(DepartmentID)
);
```



Create Enrollment table:

```
Query : CREATE TABLE Enrollment (
    EnrollmentID INT PRIMARY KEY,
    StudentID INT,
    CourseID INT,
    Semester VARCHAR(10),
    Marks INT,
    FOREIGN KEY (StudentID) REFERENCES Student(StudentID),
    FOREIGN KEY (CourseID) REFERENCES Course(CourseID)
);
```



Insert sample data into all four tables (Student, Department, Course, Enrollment).

Departments:

```
Query : INSERT INTO Department(DepartmentID,DeptName) VALUES
        (1,'Commerce'),
        (2, 'Computer Technology'),
        (3, 'Business Adminstration'),
        (4, 'Electronics');
```

DepartmentID	DeptName
1	Commerce
2	Computer Technology
3	Business Adminstration
4	Electronics

Students :

Query : INSERT INTO Student (StudentID, Name, Gender, DOB, DepartmentID, Email)

VALUES

```
(201, 'Aayush Bhattarai', 'M', '2003-05-01', '1', 'notaayush@gmail.com'),
(202, 'Albina Tamang', 'F', '2005-04-03', '2', 'albina@yahoo.com'),
(203, 'Chirag Sharma', 'M', '2004-04-09', '1', 'chirag@outlook.com'),
(204, 'Dikshya Gurung', 'F', '2008-04-29', '3', 'dikshyagurung@gmail.com'),
(205, 'Sujal Bajracharya', 'M', '2003-04-04', '2', 'bajracharyasujal@hotmail.com'),
(206, 'Sofiya Lamichhane', 'F', '2004-04-04', '1', 'lamichhansofiya@gmail.com'),
(207, 'Yalin Baidar', 'M', '2003-04-03', '2', 'Baidar123@gmail.com');
```

	StudentID	Name	Gender	DOB	DepartmentID	Email
1	201	Aayush Bhattarai	M	2003-05-01	1	notaayush@gmail.com
2	202	Albina Tamang	F	2005-04-03	2	albina@yahoo.com
3	203	Chirag Sharma	M	2004-04-09	1	chirag@outlook.com
4	204	Dikshya Gurung	F	2008-04-29	3	dikshyagurung@gmail.com
5	205	Sujal Bajracharya	M	2003-04-04	2	bajracharyasujal@hotmail.com
6	206	Sofiya Lamichhane	F	2004-04-04	1	lamichhansofiya@gmail.com
7	207	Yalin Baidar	M	2003-04-03	2	Baidar123@gmail.com

 ABINASHREGMI\sqlexpress (16...) | ABINASHREGMI\dell (56) | CollegeMIS | 00:00:00 | 7 rows
Courses :

Query : INSERT INTO Course (CourseID, CourseName, DepartmentID) VALUES

```
(201, 'Data Structures', 1),
(202, 'Operating Systems', 1),
(203, 'Database Systems', 2),
(204, 'Business Management', 3),
(205, 'Computer Networks', 2),
(206, 'DBMS', 2),
(207, 'Electronics I', 4),
(208, 'Microprocessor', 4);
```

	CourseID	CourseName	DepartmentID
1	201	Data Structures	1
2	202	Operating Systems	1
3	203	Database Systems	2
4	204	Business Management	3
5	205	Computer Networks	2
6	206	DBMS	2
7	207	Electronics I	4
8	208	Microprocessor	4

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Enrollments:

Query : INSERT INTO Enrollment (EnrollmentID, StudentID, CourseID, Semester,

Marks) VALUES

```
(301, 204, 201, 'Semester3', 88),
(302, 201, 202, 'Semester3', 91),
(303, 202, 203, 'Semester3', 85),
(304, 203, 201, 'Semester3', 92),
(305, 203, 204, 'Semester3', 78),
(306, 202, 205, 'Semester4', 82),
(307, 204, 206, 'Semester4', 89),
(308, 206, 206, 'Semester4', 95),
(309, 202, 205, 'Semester4', 73),
(310, 207, 205, 'Semester4', 90);
```

	ENrollmentID	StudentID	CourseID	Semester	Marks
1	301	204	201	Semester3	88
2	302	201	202	Semester3	91
3	303	202	203	Semester3	85
4	304	203	201	Semester3	92
5	305	203	204	Semester3	78
6	306	202	205	Semester4	82
7	307	204	206	Semester4	89
8	308	206	206	Semester4	95
9	309	202	205	Semester4	73
10	310	207	205	Semester4	90

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Display all students with their department name using JOIN.

Query : `SELECT s.StudentID, s.Name, d.DeptName FROM Student s
JOIN Department d ON s.DepartmentID = d.DepartmentID;`

	StudentId	Name	DeptName
1	201	Aayush Bhattarai	Commerce
2	202	Albina Tamang	Computer Technology
3	203	Chirag Sharma	Commerce
4	204	Dikshya Gurung	Business Adminstration
5	205	Sujal Bajracharya	Computer Technology
6	206	Sofiya Lamichhane	Commerce
7	207	Yalin Baidar	Computer Technology

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Show all courses offered by the "Computer Technology" department.

Query : `SELECT c.CourseName FROM Course c
JOIN Department d ON c.DepartmentID = d.DepartmentID
WHERE d.DeptName = 'Computer Technology';`

	CourseName
1	Database Systems
2	Computer Networks
3	DBMS

List all students enrolled in "Data Structures" course.

Query : `SELECT s.Name FROM Student s
JOIN Enrollment e ON s.StudentID = e.StudentID
JOIN Course c ON e.CourseID = c.CourseID
WHERE c.CourseName = 'Data Structures';`

	Name
1	Dikshya Gurung
2	Chirag Sharma

Count the number of students in each department.

Query : `SELECT d.DeptName, COUNT(s.StudentID) AS StudentCount FROM Department d`

`LEFT JOIN Student s ON d.DepartmentID = s.DepartmentID
GROUP BY d.DeptName;`

	DeptName	StudentCount
1	Business Adminstration	1
2	Commerce	3
3	Computer Technology	3
4	Electronics	0

List students who scored more than 80 in any course.

Query : `SELECT DISTINCT s.Name FROM Student s
JOIN Enrollment e ON s.StudentID = e.StudentID
WHERE e.Marks > 80;`

	Name
1	Aayush Bhattarai
2	Albina Tamang
3	Chirag Sharma
4	Dikshya Gurung
5	Sofiya Lamichhane
6	Yalin Baidar

Find the average marks for each course using GROUP BY.

Query : `SELECT c.CourseName, AVG(e.Marks) AS AverageMarks FROM Course c
JOIN Enrollment e ON c.CourseID = e.CourseID
GROUP BY c.CourseName;`

	CourseName	AverageMarks
1	Business Management	78
2	Computer Networks	81
3	Data Structures	90
4	Database Systems	85
5	DBMS	92
6	Operating Systems	91

Display students who have not enrolled in any course.

Query : SELECT s.Name FROM Student s
LEFT JOIN Enrollment e ON s.StudentID = e.StudentID
WHERE e.EnrollmentID IS NULL;

	Name
1	Sujal Bajracharya

List all courses with the number of students enrolled in them.

Query : SELECT c.CourseName, COUNT(e.StudentID) AS EnrolledStudents FROM Course c
LEFT JOIN Enrollment e ON c.CourseID = e.CourseID
GROUP BY c.CourseName;

	CourseName	EnrolledStudents
1	Business Management	1
2	Computer Networks	3
3	Data Structures	2
4	Database Systems	1
5	DBMS	2
6	Electronics I	0
7	Microprocessor	0
8	Operating Systems	1

Find the student with the highest marks in "DBMS" course.

Query : SELECT TOP 1 s.Name, e.Marks FROM Student s
JOIN Enrollment e ON s.StudentID = e.StudentID
JOIN Course c ON e.CourseID = c.CourseID
WHERE c.CourseName = 'DBMS'
ORDER BY e.Marks DESC;

	Name	Marks
1	Sofiya Lamichhane	95

Update a student's department based on StudentID.

Query : UPDATE Student
SET DepartmentID = 3
WHERE StudentID = 109;

After :

	StudentID	Name	Gender	DOB	DepartmentID	Email
1	201	Aayush Bhattacharai	M	2003-05-01	1	notaayush@gmail.com
2	202	Albina Tamang	F	2005-04-03	2	albina@yahoo.com
3	203	Chirag Sharma	M	2004-04-09	1	chirag@outlook.com
4	204	Dikshya Gurung	F	2008-04-29	3	dikshyagurung@gmail.com
5	205	Sujal Bajracharya	M	2003-04-04	2	bajracharyasujal@hotmail.com
6	206	Sofiya Lamichhane	F	2004-04-04	1	lamichhansofiya@gmail.com
7	207	Yalin Baidar	M	2003-04-03	2	Baidar123@gmail.com

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Delete a course from the course list and ensure cascade deletion in enrollment.

Query : DELETE FROM Course

WHERE CourseName = 'Electronics I';

Before:

	CourseName
1	Data Structures
2	Operating Systems
3	Database Systems
4	Business Management
5	Computer Networks
6	DBMS
7	Electronics I
8	Microprocessor

After:

	CourseName
1	Data Structures
2	Operating Systems
3	Database Systems
4	Business Management
5	Computer Networks
6	DBMS
7	Microprocessor

-Abinash Regmi

Find the departments that offer more than 3 courses.

Query : SELECT d.DeptName FROM Department d
JOIN Course c ON d.DepartmentID = c.DepartmentID
GROUP BY d.DeptName
HAVING COUNT(c.CourseID) > 3;

DeptName

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Show the names of students along with total credits they are enrolled in (assuming each course = 3 credits).

Query : SELECT s.Name, COUNT(e.CourseID) * 3 AS TotalCredits FROM Student s
JOIN Enrollment e ON s.StudentID = e.StudentID
GROUP BY s.Name;

	Name	TotalCredits
1	Aayush Bhattarai	3
2	Albina Tamang	9
3	Chirag Sharma	6
4	Dikshya Gurung	6
5	Sofiya Lamichhane	3
6	Yalin Baidar	3

Create a view TopPerformers that shows students with average marks > 85.

Query : GO

```
CREATE VIEW TopPerformers AS
SELECT s.StudentID, s.Name, AVG(e.Marks) AS AvgMarks
FROM Student s
JOIN Enrollment e ON s.StudentID = e.StudentID
GROUP BY s.StudentID, s.Name
HAVING AVG(e.Marks) > 85;
GO
```

Data in the view TopPerformers :

	StudentID	Name	AvgMarks
1	201	Aayush Bhattarai	91
2	204	Dikshya Gurung	88
3	206	Sofiya Lamichhane	95
4	207	Yalin Baidar	90

Create a view StudentDetails to show StudentID, Name, Department, and Email.

Query : GO

```
CREATE VIEW StudentDetails AS
SELECT s.StudentID, s.Name, d.DeptName AS Department, s.Email FROM
Student s
JOIN Department d ON s.DepartmentID = d.DepartmentID;
GO
```

Data in the view StudentDetails :

	StudentID	Name	Department	Email
1	201	Aayush Bhattarai	Commerce	notaayush@gmail.com
2	202	Albina Tamang	Computer Technology	albina@yahoo.com
3	203	Chirag Sharma	Commerce	chirag@outlook.com
4	204	Dikshya Gurung	Business Adminstration	dikshyagurung@gmail.com
5	205	Sujal Bajracharya	Computer Technology	bajracharyasujal@hotmail.com
6	206	Sofiya Lamichhane	Commerce	lamichhansofiya@gmail.com
7	207	Yalin Baidar	Computer Technoloav	Baidar123@mail.com

Write a query to show student name, course name, and marks for all enrollments.

Query : SELECT s.Name AS StudentName, c.CourseName, e.Marks FROM Enrollment e

**JOIN Student s ON e.StudentID = s.StudentID
JOIN Course c ON e.CourseID = c.CourseID;**

	StudentName	CourseName	Marks
1	Dikshya Gurung	Data Structures	88
2	Aayush Bhattacharai	Operating Systems	91
3	Albina Tamang	Database Systems	85
4	Chirag Sharma	Data Structures	92
5	Chirag Sharma	Business Management	78
6	Albina Tamang	Computer Networks	82
7	Dikshya Gurung	DBMS	89
8	Sofiya Lamichhane	DBMS	95
9	Albina Tamang	Computer Networks	73
10	Yalin Baidar	Computer Networks	90

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Find students who have enrolled in courses from more than one department.

**Query : SELECT s.Name FROM Student s
JOIN Enrollment e ON s.StudentID = e.StudentID
JOIN Course c ON e.CourseID = c.CourseID
GROUP BY s.StudentID, s.Name
HAVING COUNT(DISTINCT c.DepartmentID) > 1;**

	Name
1	Chirag Sharma
2	Dikshya Gurung

Display the list of departments that currently have no students.

Query : `SELECT d.DeptName FROM Department d
LEFT JOIN Student s ON d.DepartmentID = s.DepartmentID
WHERE s.StudentID IS NULL;`

	DeptName
1	Electronics

Rename the column DOB in Student to DateOfBirth.

Query : `EXEC sp_rename 'Student.DOB', 'DateOfBirth', 'COLUMN';`

	StudentID	Name	Gender	DateOfBirth	DepartmentID	Email
1	201	Aayush Bhattarai	M	2003-05-01	1	notaayush@gmail.com
2	202	Albina Tamang	F	2005-04-03	2	albina@yahoo.com
3	203	Chirag Sharma	M	2004-04-09	1	chirag@outlook.com
4	204	Dikshya Gurung	F	2008-04-29	3	dikshyagurung@gmail.com
5	205	Sujal Bajracharya	M	2003-04-04	2	bajracharyasujal@hotmail.com
6	206	Sofiya Lamichhane	F	2004-04-04	1	lamichhansofiya@gmail.com
7	207	Yalin Baidar	M	2003-04-03	2	Baidar123@gmail.com

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Find students who are both in the "CT" department and enrolled in "Computer Networks"

Query : `SELECT s.Name FROM Student s
JOIN Department d ON s.DepartmentID = d.DepartmentID
JOIN Enrollment e ON s.StudentID = e.StudentID
JOIN Course c ON e.CourseID = c.CourseID
WHERE d.DeptName = 'Computer Technology' AND c.CourseName =
'Computer Networks';`

	Name
1	Albina Tamang
2	Albina Tamang
3	Yalin Baidar

Find students whose email ends with '@gmail.com'

Query : **SELECT Name FROM Student
WHERE Email LIKE '%@gmail.com';**

	Name
1	Aayush Bhattarai
2	Dikshya Gurung
3	Sofiya Lamichhane
4	Yalin Baidar

Display students who scored more than the average mark of all students.

Query : **SELECT s.Name, e.Marks FROM Student s
JOIN Enrollment e ON s.StudentID = e.StudentID
WHERE e.Marks > (SELECT AVG(Marks) FROM Enrollment);**

	Name	Marks
1	Dikshya Gurung	88
2	Aayush Bhattarai	91
3	Chirag Sharma	92
4	Dikshya Gurung	89
5	Sofiya Lamichhane	95
6	Yalin Baidar	90

Show the average marks of students in each course.

Query : **SELECT c.CourseName, AVG(e.Marks) AS AvgMarks FROM Course c
JOIN Enrollment e ON c.CourseID = e.CourseID
GROUP BY c.CourseName;**

	CourseName	AvgMarks
1	Business Management	78
2	Computer Networks	81
3	Data Structures	90
4	Database Systems	85
5	DBMS	92
6	Operating Systems	91

Show all students with course name and sort by Marks descending.

Query : SELECT s.Name AS StudentName, c.CourseName, e.Marks FROM Student s
JOIN Enrollment e ON s.StudentID = e.StudentID
JOIN Course c ON e.CourseID = c.CourseID
ORDER BY e.Marks DESC;

	StudentName	CourseName	Marks
1	Sofiya Lamichhane	DBMS	95
2	Chirag Sharma	Data Structures	92
3	Aayush Bhattarai	Operating Systems	91
4	Yalin Baidar	Computer Networks	90
5	Dikshya Gurung	DBMS	89
6	Dikshya Gurung	Data Structures	88
7	Albina Tamang	Database Systems	85
8	Albina Tamang	Computer Networks	82
9	Chirag Sharma	Business Management	78
10	Albina Tamang	Computer Networks	73

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