



## **DATABASE MANAGEMENT SYSTEM**

## **SEMESTER PROJECT**

## **STUDENT MANAGEMENT SYSTEM**

### **GROUP MEMBERS:**

Shahmeer Abid (2278-2021)

Syeda Noreen Zehra (2025-2021)

Muhammad Shoaib Azam (2172-2021)

**(Submitted to Sir Maaz)**

## Introduction

### Overview:

The Student Management System is designed to efficiently manage information related to students, teachers, courses, exams, and attendance within an educational institution.

The system aims to enhance communication, and provide valuable insights into student performance.

## System Architecture

### Components:

Database Schema: Student and Teacher login, Student and Teacher details, Semester, Courses, Exam schedule, Enrollment, Attendance tracking, Marks entry

### Views:

#### StudentLoginView:

```
CREATE VIEW StudentLoginView AS
SELECT
    SL.StudentID,
    SL.Username, -- Consider if this should be included
    SL.Password, -- Consider if this should be included
    SD.FirstName,
    SD.LastName,
    SD.BirthDate,
    S.SemesterName
FROM
    StudentLogin AS SL
JOIN StudentDetails AS SD ON SL.StudentID = SD.StudentID
JOIN Semester AS S ON SD.SemesterID = S.SemesterID;
```

#### StudentAttendanceView:

```
CREATE VIEW StudentAttendanceView AS
SELECT
    A.AttendanceID,
    A.StudentID,
    CONCAT(T.FirstName, ' ', T.LastName) AS TeacherName, -- Use CONCAT for SQL Server
    C.CourseName,
    A.Date AS AttendanceDate,
    A.Status AS AttendanceStatus
FROM
    Attendance AS A
JOIN StudentDetails AS SD ON A.StudentID = SD.StudentID
JOIN TeacherDetails AS T ON A.TeacherID = T.TeacherID
JOIN Courses AS C ON A.CourseID = C.CourseID;
```

### StudentExamsView:

```
CREATE VIEW StudentExamsView AS
SELECT
    SD.StudentID,
    SD.FirstName AS StudentFirstName,
    SD.LastName AS StudentLastName,
    C.CourseID,
    C.CourseName,
    T.FirstName AS TeacherFirstName,
    T.LastName AS TeacherLastName,
    ES.ExamDateTime
FROM
    StudentDetails AS SD
JOIN StudentEnrollCourses AS SEC ON SD.StudentID = SEC.StudentID
JOIN Courses AS C ON SEC.CourseID = C.CourseID
JOIN ExamsSchedule AS ES ON C.CourseID = ES.CourseID
JOIN TeacherCourses AS TC ON C.CourseID = TC.CourseID
JOIN TeacherDetails AS T ON TC.TeacherID = T.TeacherID;
```

### StudentMarksView:

```
CREATE VIEW StudentMarksView AS
SELECT
    SD.StudentID,
    SD.FirstName,
    SD.LastName,
    C.CourseID,
    C.CourseName,
    M.ExamID,
    M.Marks
FROM
    StudentDetails AS SD
JOIN StudentEnrollCourses AS SEC ON SD.StudentID = SEC.StudentID
JOIN Courses AS C ON SEC.CourseID = C.CourseID
LEFT JOIN Marks AS M ON SD.StudentID = M.StudentID AND C.CourseID = M.CourseID;
```

**Triggers:** Two triggers (`AfterStudentLoginInsert` and `AfterStudentDetailsInsert`) are implemented to automate the enrollment process when a student is registered.

#### AfterStudentLoginInsert:

```
CREATE TRIGGER AfterStudentLoginInsert
ON StudentLogin
AFTER INSERT
AS
BEGIN
    INSERT INTO StudentEnrollCourses (StudentID, CourseID)
    SELECT i.StudentID, c.CourseID
    FROM inserted i
    CROSS JOIN Courses c;
END;
```

**AfterStudentDetailsInsert:**

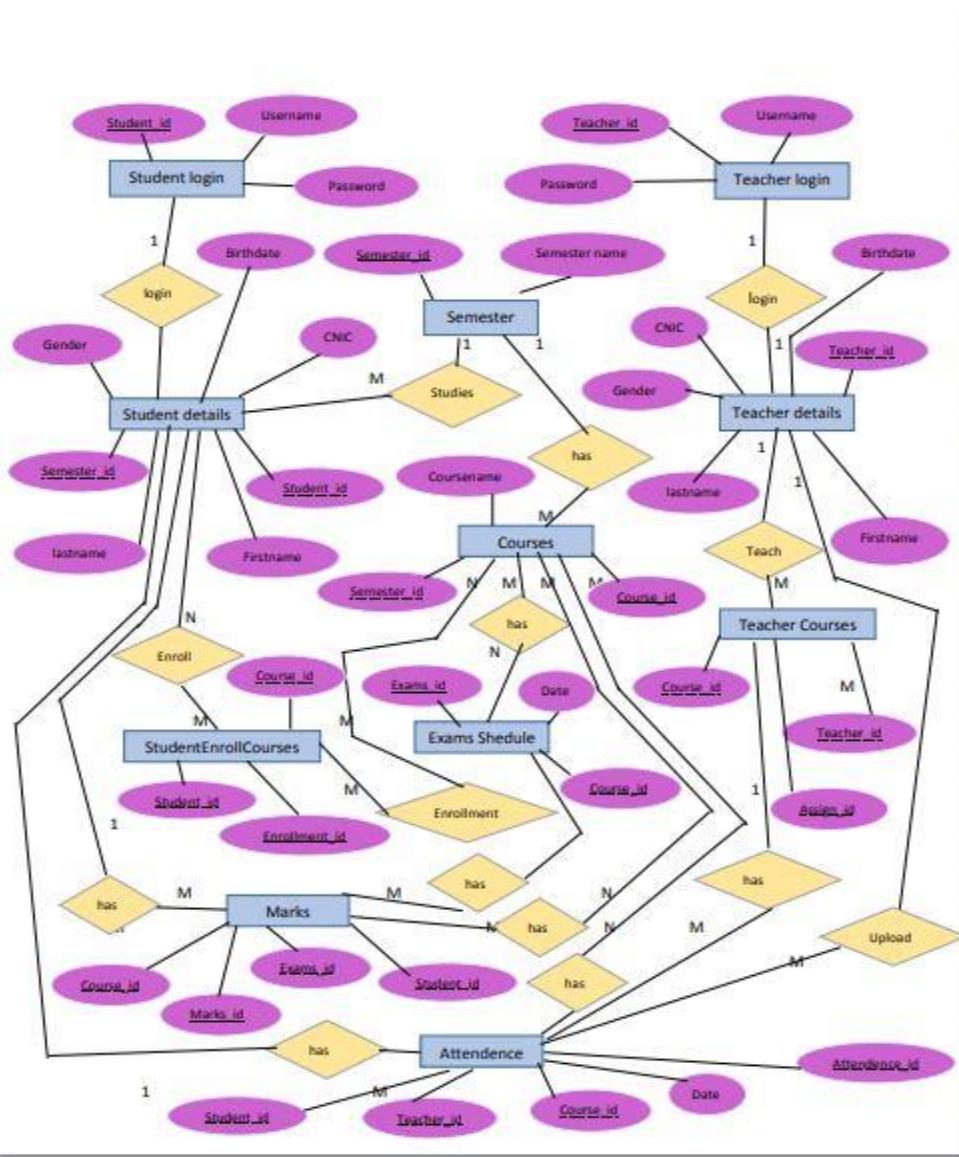
```

CREATE TRIGGER AfterStudentDetailsInsert
ON StudentDetails
AFTER INSERT
AS
BEGIN
    INSERT INTO StudentEnrollCourses (StudentID, CourseID)
    SELECT i.StudentID, c.CourseID
    FROM inserted i
    CROSS JOIN Courses c;
END;

```

**Entity Relationship Diagram (ERD):**

**Code Implementation:** Detailed the development process of the database schema, views, triggers and implemented functionalities.



## Database Schema

**Student and Teacher Logins:** Secure login credentials for both students and teachers to access the system.

### Students:

	StudentID	Username	Password
1	1722	Saqlain	saq1722
2	2122	Abdullah	abd2122
3	2123	Hamza	ham2123
4	2124	Taha	taha2124
5	2125	Shoaib	sh2125
6	2126	Noreen	nor2126
7	2127	Zoya	zoya2127
8	2128	Ayesha	ay2128
9	2129	Mahnoor	mah2129
10	2130	Bisma	bis2130

### Teachers:

	TeacherID	Username	Password
1	2001	Azal Hussain	afzal2001
2	2002	Iqbal uddin	iqbal2002
3	2003	Asim Hussain	asim2003
4	2004	Faheem Ahmed	faheem2004
5	2005	Waqas Pasha	waqas2005

**Student Details:** Storage of personal information for students including names, birthdates, and CNIC.

	StudentID	FirstName	LastName	BirthDate	CNIC	Gender	SemesterID
1	1722	Saqlain	Shahid	2000-03-12	NULL	Male	1
2	2122	Abdullah	Khan	2003-05-02	NULL	Male	3
3	2123	Hamza	Shaikh	2002-11-13	NULL	Male	4
4	2124	Taha	Saeed	2003-02-22	NULL	Male	5
5	2125	Shoaib	Azam	2001-04-30	NULL	Male	2
6	2126	Noreen	Zehra	2002-09-10	NULL	Female	3
7	2127	Zoya	Sayeed	2003-06-25	NULL	Female	4
8	2128	Ayesha	Ikram	2002-03-14	NULL	Female	5
9	2129	Mahnoor	Bhagat	2003-01-03	NULL	Female	2
10	2130	Bisma	Imran	2004-08-20	NULL	Female	3

**Teacher Details:** Storage of personal information for teachers including names, birthdates, and CNIC.

	TeacherID	FirstName	LastName	BirthDate	CNIC	Gender
1	2001	Afzal	Hussain	1980-02-14	NULL	Male
2	2002	Iqbal uddin	Khan	1975-07-21	NULL	Male
3	2003	Asim	Hussain	1970-04-05	NULL	Male
4	2004	Faheem	Ahmed	1990-11-18	NULL	Male
5	2005	Waqas	Pasha	1990-06-26	NULL	male

**Semester :** Include semester ID and Semester name.

	SemesterID	SemesterName
1	1	Semester 1
2	2	Semester 2
3	3	Semester 3
4	4	Semester 4
5	5	Semester 5

**Courses:** A repository for different courses offered in various semesters.

	CourseID	CourseName	SemesterID
1	1	Introduction to Programming	1
2	2	Computer Architecture	1
3	3	Mathematics for Computer Science	1
4	4	Data Structures and Algorithms	4
5	5	Digital Logic Design	3
6	6	Operating Systems	5
7	7	Database Management Systems	5
8	8	Computer Networks	3
9	9	Software Engineering	4
10	10	Artificial Intelligence	4

**Exams Schedule:** Scheduling of exams for each course.

	ExamID	CourseID	ExamDateTime
1	1	1	2024-01-10 09:00:00.000
2	2	2	2024-01-15 14:00:00.000
3	3	12	2023-02-05 10:30:00.000
4	4	13	2023-02-12 13:30:00.000
5	5	14	2023-03-20 11:00:00.000
6	6	8	2023-03-25 15:45:00.000
7	7	9	2023-04-08 08:30:00.000
8	8	10	2023-04-15 12:00:00.000
9	9	7	2023-05-02 14:15:00.000
10	10	11	2023-05-10 09:45:00.000

**Enrollment:** Students enrolled in specific courses, and the system automatically updates the enrollment information.

	EnrollmentID	StudentID	CourseID
1	1	1722	1
2	2	2281	12
3	3	2122	5
4	4	2123	4
5	5	2124	7
6	6	2278	2
7	7	2125	15
8	8	2126	8
9	9	2127	9
10	10	2128	6

**Attendance Tracking:** Recording of student attendance for each course.

	AttendanceID	StudentID	CourseID	TeacherID	Date	Status
1	1	1722	1	2002	2023-01-10	Present
2	2	1722	2	2003	2023-01-15	Present
3	3	2133	3	2005	2023-01-18	Absent
4	4	2133	1	2002	2023-01-24	Present
5	5	2278	3	2005	2023-03-20	Present
6	6	2278	2	2003	2023-03-25	Present
7	7	2138	1	2002	2023-03-02	Present
8	8	2138	3	2005	2023-03-03	Present
9	9	2281	13	2004	2023-02-21	Present
10	10	2281	15	2001	2023-02-09	Absent
11	11	2125	13	2004	2023-02-01	Present

### Marks Entry: Recording and managing student marks for exams.

	MarksID	StudentID	CourseID	ExamID	Marks
1	1	1722	1	1	85
2	2	1722	2	2	78
3	3	2133	1	1	92
4	4	2133	3	11	88
5	5	2278	3	11	76
6	6	2278	2	2	81
7	7	2138	1	1	95
8	8	2138	3	11	90
9	9	2125	13	4	79
10	10	2125	12	3	94

### Database Design:

The database design includes tables such as StudentLogin, TeacherLogin, Semester, StudentDetails, TeacherDetails, Courses, ExamsSchedule, StudentEnrollCourses, TeacherCourses, Marks, Attendance, each serving a specific purpose in storing and organizing the system's data.

### Conclusion:

The Student Management System is a comprehensive solution for educational institutions, providing efficient management of student information, courses, exams, and attendance. The system is designed to enhance administrative processes and improve communication between students and teachers.

This project report provides an overview of the system's key features, its underlying database design, and sample data to illustrate its functionality.