

STUDENT ATTENDANCE MANAGEMENT SYSTEM

Presented by:

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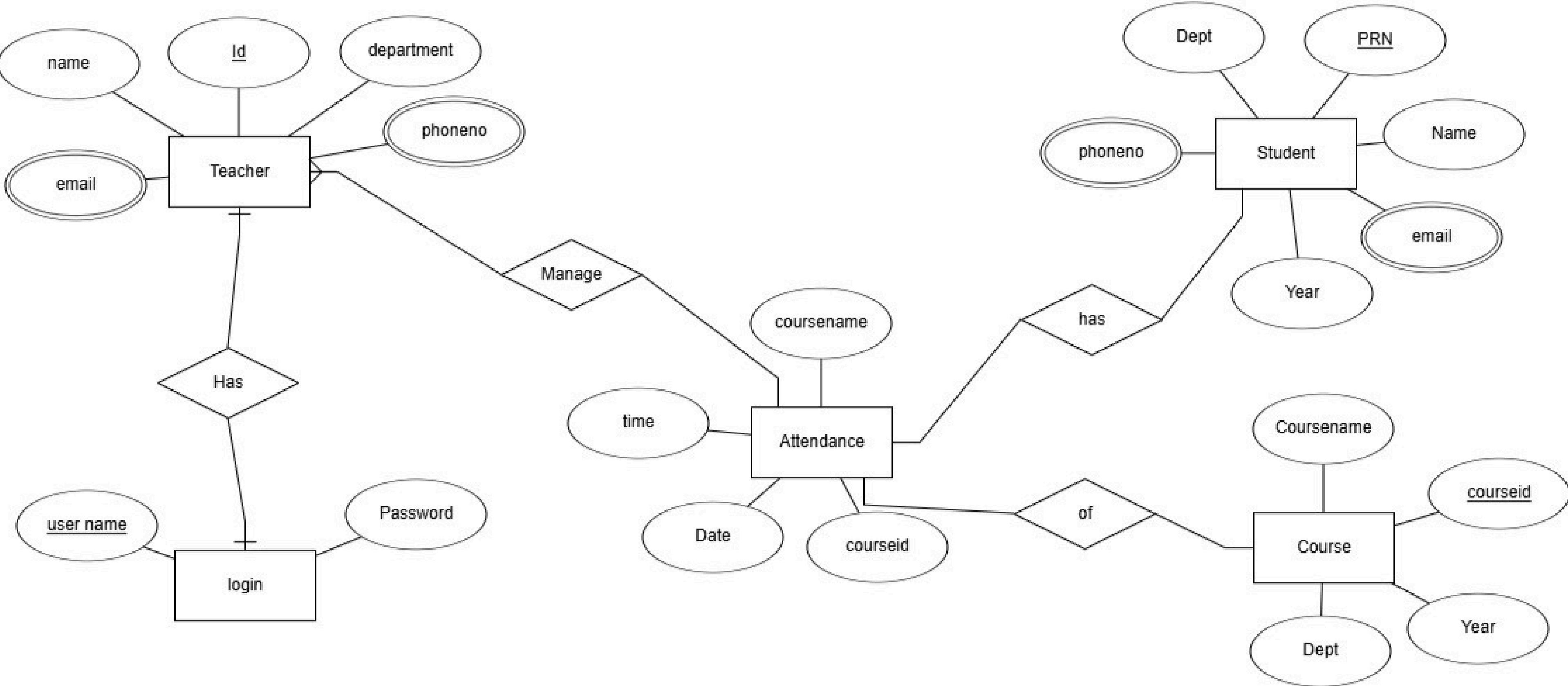


Project Name: Student Attendance Management System

Objective:-

To create a database system for managing student attendance records for a school or college.

ER DIAGRAM:



• Relation Tables From ER-Diagram

• Teacher Table:-

	id	name	email	department	phoneno
▶	1	Ganesh Deshmukh	ganesh.deshmukh@pccoeepune.org	Computer Engineering(RL)	9876501234
	2	Minal Shahakar	minal.shahakar@pccoeepune.org	Computer Engineering(RL)	98763521244
	3	rajesh sharma	rajesh.sharma@pccoeepune.org	Electronics	8872913282

• Login Table:-

	id	teacher_id	username	password
▶	1	1	ganesh123	password123
	2	2	sample23	securepass

• Student Table:-

	prn	name	email	department	year	phoneno
▶	123B1D035	Yadnesh Patil	yadnesh.patil@example.com	Electronics	1	9876543213
	123B1D036	Laxman Patil	laxman.patil@example.com	Electronics	2	9876543214
	123B1D057	Abhay Bormale	abhay.bormale@example.com	Computer Science	2	9876543211
	123B1D058	Onkar Chand	onkar.chand@example.com	Computer Science	3	9876543212

- Course Table:-

	courseid	coursename	department	year
▶	1	Data Structures	Computer Science	2
	2	Microprocessors	Electronics	2
	3	Database Management	Computer Science	3

- Attendence Table:-

	id	student_prn	courseid	date	time	status
▶	1	123B1D057	1	2024-03-10	10:00:00	present
	2	123B1D058	3	2024-03-10	11:00:00	absent
	3	123B1D035	2	2024-03-10	12:00:00	late
	4	123B1D036	2	2024-03-10	12:00:00	present
	HULL	HULL	HULL	HULL	HULL	HULL

DDL

(Data Definition Language)

- CREATE
- DROP
- ALTER
- TRUNCATE

DML

(Data Manipulation Language)

- INSERT
- UPDATE
- DELETE

DCL

(Data Control Language)

- GRANT
- REVOKE

TCL

(Transaction Control Language)

- COMMIT
- ROLLBACK
- SAVEPOINT

DQL

(Data Query Language)

- SELECT

Structured Query Language (SQL)

1. Objectives of the System

- **Automate Attendance Tracking** – Reduce manual effort and human errors.
- **Ensure Data Integrity & Security** – Store attendance records securely.
- **Provide Real-Time Insights** – Generate reports for attendance trends.
- **Enhance Accessibility** – Allow teachers & students to access records remotely.

Features Implemented in SQL Code

1. Database & Table Creation

- **Database: attendance_management**
- **Tables Created:**
 - **teacher** – Stores teacher details.
 - **login** – Stores usernames and passwords.
 - **student** – Stores student details.
 - **course** – Stores course information.
 - **enrollment** – Tracks student-course enrollments.
 - **attendance** – Stores attendance records.
 - **manage** – Maps teachers to courses.

Deleting Data

- Delete attendance records before removing a student (foreign key constraint issue):

```
DELETE FROM attendance WHERE student_prn = '123B1D035';
```

```
DELETE FROM enrollment WHERE prn = '123B1D035';
```

```
DELETE FROM student WHERE prn = '123B1D035';
```

- Delete a course after removing related records:

```
DELETE FROM attendance WHERE courseid = 2;
```

```
DELETE FROM enrollment WHERE courseid = 2;
```

```
DELETE FROM manage WHERE courseid = 2;
```

```
DELETE FROM course WHERE courseid = 2;
```

*Handling Foreign Key Constraints

- Issue: Cannot delete students/courses directly due to dependent records.
- Solution: First delete attendance/enrollment records, then delete the student/course.
- Alternative Fix: Enable ON DELETE CASCADE to automatically delete related records.

Real-Life Use Cases Based on Code

- **Marking Attendance** – Teachers enter attendance records in the attendance table.
- **Fetching Student Attendance** – Admins can query attendance by student or course.
- **Enrolling Students in Courses** – Students must be added to enrollment before attending.
- **Updating Student Details** – If a student changes their email or department.
- **Handling Data Deletion** – Prevent accidental data loss using foreign key constraints.

Unique Features of the Above Attendance Management System . The system has been designed with real-world efficiency, security, and usability in mind. Here are the key unique features that make it stand out from a regular attendance management system:

1) Indexed Database for Faster Performance?

✓ What's Unique?

The use of indexes on PRN, course ID, and teacher ID significantly improves search and retrieval speeds.

This ensures smooth operation, even when handling large student databases.

✓ Real-Life Use Case

Universities & Schools: Institutions with thousands of students can retrieve attendance records instantly without system slowdowns.

Corporate Training Programs: Large organizations can track employee training sessions efficiently.

(2) Secure Login & Activity Tracking

What's Unique?

The login system stores encrypted (hashed) passwords, preventing unauthorized access.

Timestamps on the login table track teacher login history, improving security.

Real-Life Use Case

Colleges & Schools: Helps administrators monitor teacher activity, ensuring accountability.

Online Learning Platforms (EdTech): Can be integrated into LMS (Learning Management Systems) for secure login and attendance tracking.

(3) Multiple Attendance Statuses (Present, Absent, Late)

✓ What's Unique?

Unlike traditional binary (Present/Absent) systems, this allows marking students as "Late".
Useful for tracking punctuality trends over time.

✓ Real-Life Use Case

Corporate Training: HR departments can track employee discipline based on punctuality.
Colleges & Universities: Helps in grading students based on attendance and punctuality.

(4) Teacher-Wise Course Management

✓ What's Unique?

The manage table links teachers to courses, ensuring only authorized faculty can take attendance.

Prevents unauthorized access to attendance records.

 **Real-Life Use Case**

Higher Education Institutions: Professors can access only the courses they are assigned, preventing data misuse.

K-12 Schools: Ensures subject teachers can only manage their respective subjects.

(5) Enrollment Tracking for Dynamic Course Management

 **What's Unique?**

Separate enrollment table tracks student registrations for courses.

Supports students changing courses mid-term without affecting past attendance records.

Real-Life Use Case

Universities with Elective Courses: Students enrolling/dropping electives are automatically managed.

Corporate Training Centers: Employees can shift between training modules while tracking their attendance.

(6) Attendance Analytics & Reports

What's Unique?

Queries for most active students, department-wide attendance, and teacher-wise summaries allow real-time analysis.

Real-Life Use Case

Educational Institutions: Can reward high-attendance students or issue warnings to defaulters.

Corporate Workplaces: HR can track employee engagement during training programs.

(7) Efficient Data Management with Safe Deletion

What's Unique?

Multi-step deletion process prevents accidental data loss.

Attendance and enrollment records are deleted before removing students/courses to maintain data integrity.

Real-Life Use Case

Schools & Colleges: Prevents loss of critical attendance records when students drop out or transfer.

Employee Training Centers: Helps maintain compliance and auditing requirements.

Where Can This System Be Used?

-  Corporate Offices & HR Training Programs
-  Schools, Colleges & Universities
-  Healthcare Training Institutes
-  Online Learning Platforms (EdTech like Coursera, Udemy, etc.)
-  Government Skill Development Programs

Conclusion:

This optimized, scalable, and secure attendance management system can be used in any educational or professional environment that requires structured attendance tracking.

With indexing, security, real-time analytics, and easy scalability, it is better than traditional attendance systems and can handle high-volume data efficiently.

Problem:-We can't directly delete the entries with foreign key constraints

Solution: Delete dependent records first

Advantages of AMS:-

- **Faster attendance tracking**
- **Reduced errors**
- **Easy reporting**

GITHUB LINK: <https://github.com/Abhay-Bormale/SQL/blob/main/Student%20Attendance%20Management%20System.sql>

THANK YOU