

# **DELHI TECHNOLOGICAL UNIVERSITY**

(Formerly Delhi College of Engineering)



**DEPARTMENT OF COMPUTER SCIENCE ENGINEERING**

## **COLLEGE ERP MANAGEMENT SYSTEM**

**DBMS PROJECT REPORT**

**ACADEMIC YEAR : 2024-25**

**SUBMITTED TO:**

Prof. Rajni Jindal  
Professor  
CSE Department

**SUBMITTED BY:**

Aryan Sood(23/CS/87)  
Aryav Gupta(23/CS/88)  
Atharva Gandhi(23/CS/95)  
Ayush R Nair (23/CS/107)

## **Abstract**

The successful development of the College ERP System has achieved its primary goals of simplifying academic record management and improving communication among students, faculty, and administrators. By automating core tasks such as attendance tracking, marks entry, and student data management, the system reduces manual errors, saves time, and ensures reliable access to real-time information.

Built using Django, the system features a modular and scalable architecture supported by secure database practices, including encrypted storage and role-based access. Its flexibility allows for easy integration with other institutional tools and future expansion to include features like exam scheduling, fee management, and performance analytics.

Overall, the College ERP System provides a dependable and adaptable solution that meets current academic needs while laying the groundwork for future digital growth in educational institutions.

In addition to its core functionalities, the system promotes transparency and accountability by ensuring that stakeholders have timely access to accurate academic information. Faculty can easily update student records, students can track their academic progress, and administrators can generate reports for informed decision-making. This level of accessibility and efficiency contributes to a more organized and responsive academic environment, ultimately enhancing the overall educational experience.

# CONTENTS

## **1. Introduction**

- a. Introduction to problem domain
- b. Aim of the problem

## **2. Requirement Engineering**

- a. Inception
  - i. What is the purpose of this project?
  - ii. Why do we need ERP?
  - iii. Identification of stakeholders
  - iv. Viewpoints
- b. Elicitation Summary
  - i. Teachers
  - ii. Student
  - iii. Administrator
- c. Negotiation

## **3. Specification and Design**

- a. Function Features
- b. Non- Functional Requirements

## **4. Roles and Functionalities**

- a. Student Role
- b. Teacher Role
- c. Administrator Role

## **5. System Design**

- a. Architectural Style
- b. ER diagrams and Class Diagrams

## **6. Testing and Result Analysis**

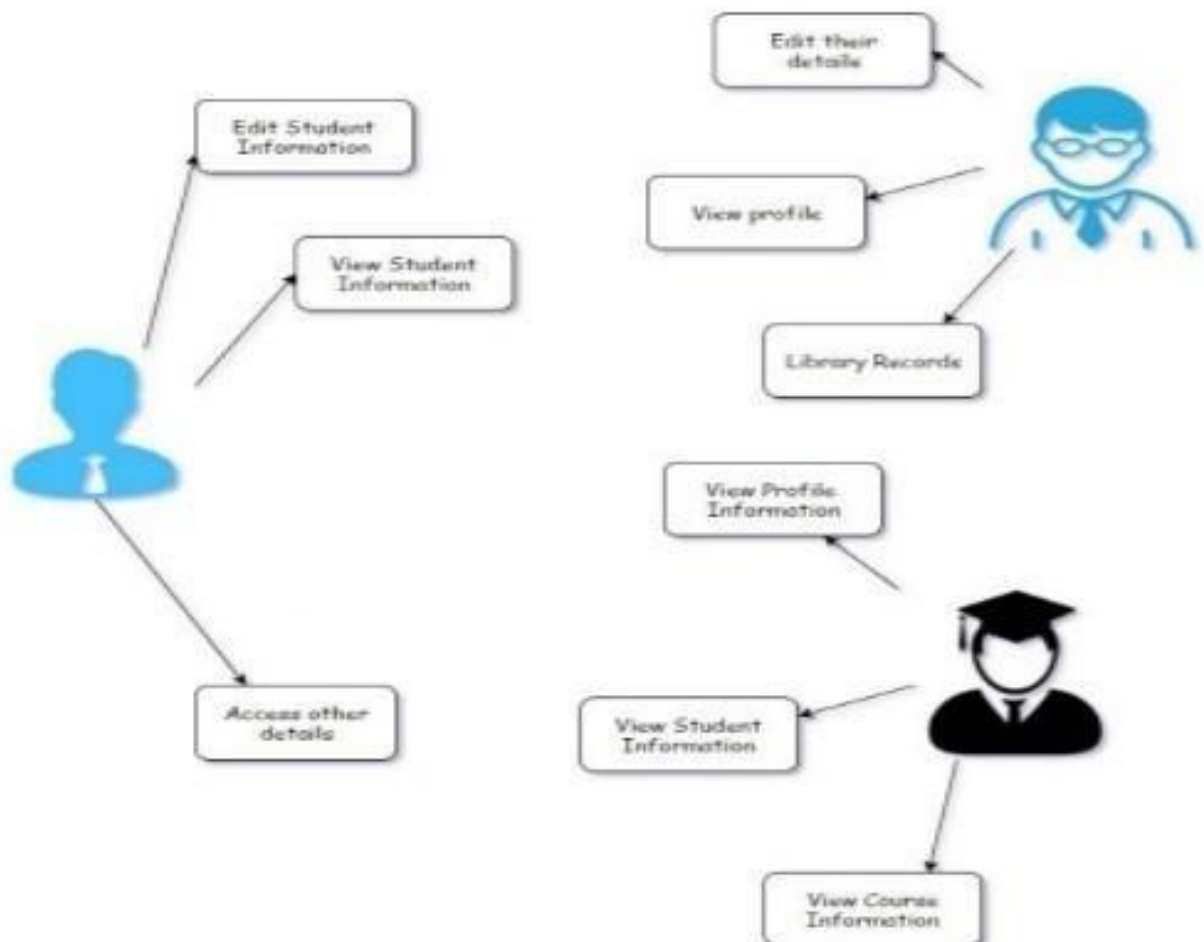
- a. Testing Types
- b. Testing Outcome

## **7. Conclusion**

## 1. Introduction

The College ERP System is designed to simplify and automate various academic and administrative tasks within an educational institution. The goal is to assist administrators in managing student records and provide faculty and students with a central platform for day-to-day academic tracking. With features such as attendance and marks management, timetable access, and internal communication, the system reduces paperwork and enhances operational efficiency.

By maintaining a centralized database, the system ensures quick access to student data and provides accurate information at all times. It is a comprehensive solution suitable for colleges seeking to digitalize and integrate their academic processes.



## **1.1 Problem Domain**

In most colleges today, different departments operate using separate systems for managing attendance, exams, student records, and events. This fragmentation creates inefficiencies and communication gaps. Manual handling of data also increases the chance of errors and delays.

The lack of integration results in poor user experience for faculty and students, who often struggle with outdated interfaces and rigid systems.

## **1.2 Aim**

The primary aim of this project is to create a unified College ERP platform that:

- Allows teachers to manage attendance, marks, and schedules.
- Lets students view academic information like attendance and internal marks.
- Enables administrators to manage records, assign courses, and oversee system-wide data.

This system is built to be scalable, user-friendly, and reliable, focusing on real-time data accuracy and efficient data access.

## **2. Requirement Engineering**

### **2.1 Inception**

The purpose of this project is to improve upon the limitations of the existing college ERP system by implementing a more user-friendly and functional alternative. Our objective is to provide essential ERP features while maintaining simplicity and performance.

### **2.2 Why ERP?**

Managing academic records manually or across disconnected systems can be time-consuming and error-prone. A centralized ERP system allows for:

- Unified student and teacher records.
- Automation of attendance and marks.

- Real-time communication and updates.
- Department-wide access control and streamlined workflows.

## 2.3 Stakeholders and Their Roles

Stakeholder	Role and Responsibilities
Teachers	Mark attendance, enter internal/exam marks, manage classes, apply for leave.
Students	View attendance, marks, and timetable. Interact via forums.
Administrator	Add/remove students, teachers, manage course assignments, access all data.

## 2.4 Viewpoints

- **Teacher:** Needs an efficient interface to update attendance and marks with minimal effort.
- **Student:** Should have an intuitive view of their academic progress and notifications.
- **Administrator:** Requires full system access to manage data efficiently across departments.

## 2.5 Elicitation Summary

Through interviews with teachers, students, and administrators, the following key points were observed:

- Teachers prefer the ability to mark attendance quickly and assign classes when on leave.
- Students requested better visualization of attendance (e.g., calendar view), and interactive forums for doubt clearing and collaboration.
- Administrators need fast search and filter features due to the large volume of student data.

## 2.6 Negotiation

Some requested features, like a full social network or real-time student feedback mechanisms, were considered out of scope due to project constraints. However, basic forum and messaging features were retained. Conflicts (e.g., teachers wanting less burden vs. students requesting mark recheck) were resolved by prioritizing ease of use for faculty.

## 3. Specification

### 3.1 Functional Features

Module	Description
--------	-------------

Student	View attendance, marks, timetable, and announcements.
---------	---

Teacher	Enter/edit attendance, marks, view reports, apply for leave.
---------	--

Admin	Add/update users, assign courses, manage entire database.
-------	---

### 3.2 Non-Functional Requirements

- **Security:** Role-based access control; sensitive data is protected.
- **Usability:** Clean interface using Bootstrap; easy navigation.
- **Portability:** Works on desktops, laptops, and mobile browsers.
- **Availability:** System should be accessible at all times for all users.

## Roles and Functionalities

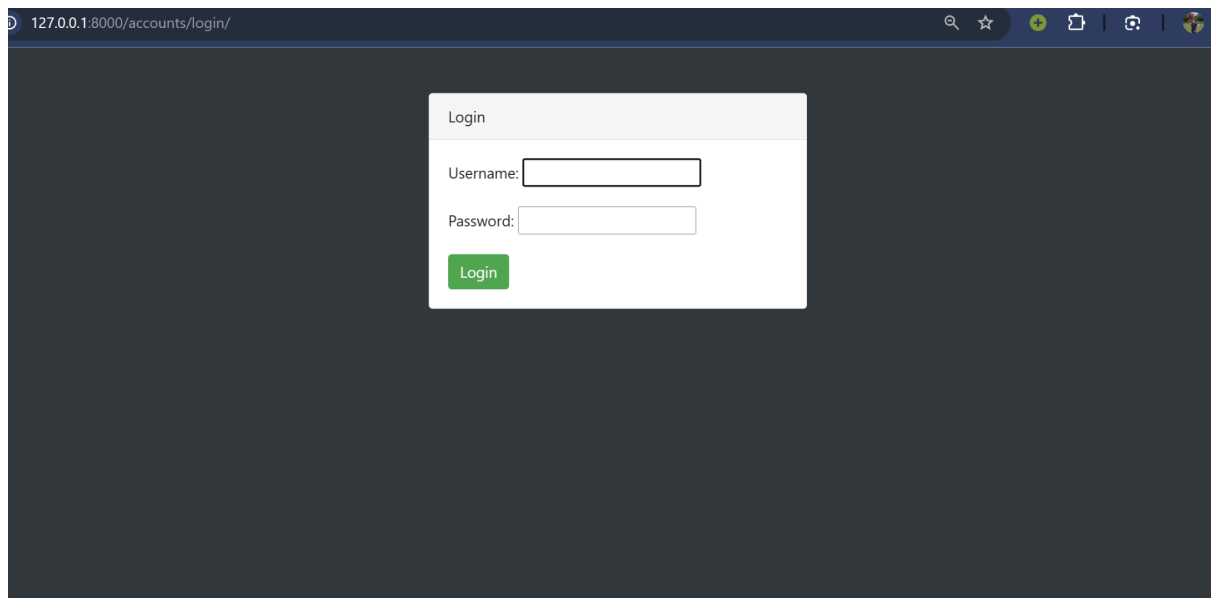
The College ERP System defines separate roles for different user classes. Each role has specific access rights and functional capabilities based on their responsibilities within the college environment.

## 1. Student Role

The student is the end-user who accesses the ERP system to stay updated with academic activities and performance.

### Functional Modules:

- **Login:**
  - Students log in using a unique ID (USN) and password generated by the admin.
  - Credentials can be changed after the first login.

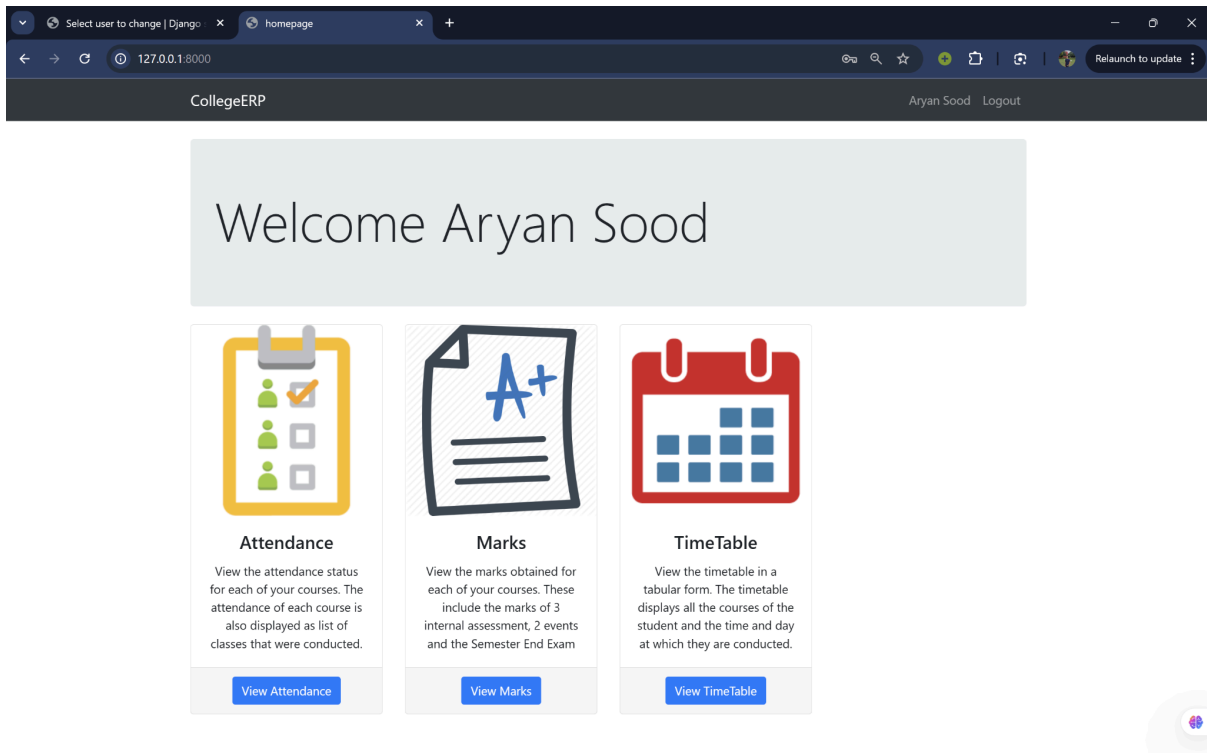


Student Login Page



- **Homepage:**

- Displays key sections: Attendance, Marks, Timetable.



### Student Home Page

- **Attendance:**

- Students can view attendance status for each course.
- Each entry shows attended classes, total classes, and percentage.
- Shortage (below 75%) is highlighted in red; sufficient attendance in green.
- Option to view attendance in a **calendar format**, showing daily status.

Course ID	Course name	Attended classes	Total classes	Attendance %	Classes to attend
CS210	Database Management System	0	1	0.0	3

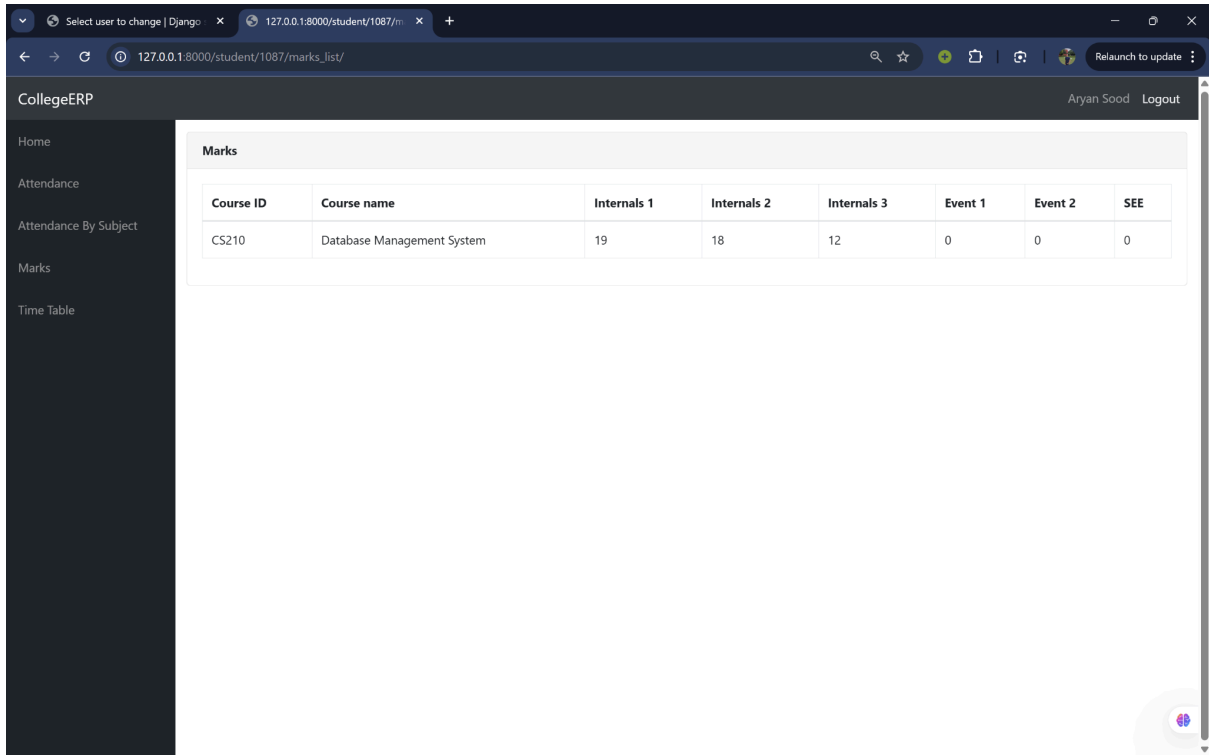
Student Attendance Page

#	Date	Day	Status
1	April 9, 2025	Wednesday	Absent

Student Attendance Detail Page

- **Marks:**

- Displays internal marks (3 internals), 2 events (quizzes/projects), and final SEE marks.
- All marks are shown per subject in a structured tabular view.



The screenshot shows a web browser window with the URL `127.0.0.1:8000/student/1087/marks_list/`. The page is titled "CollegeERP" and has a dark sidebar with navigation links: Home, Attendance, Attendance By Subject, Marks, and Time Table. The main content area is titled "Marks" and displays a table with the following data:

Course ID	Course name	Internals 1	Internals 2	Internals 3	Event 1	Event 2	SEE
CS210	Database Management System	19	18	12	0	0	0

Student Marks Page

- **Timetable:**

- Weekly view showing subjects and time slots.
- Automatically generated based on class-course-teacher mapping.

127.0.0.1:8000/student/CSE2/timetable/

Relaunch to update

CollegeERP

Aryan SoodLogout

Home

Attendance

Attendance By Subject

Marks

Time Table

Timetable

	7:30 - 8:30	8:30 - 9:30	9:30 - 10:30	Break	11:00 - 11:50	11:50 - 12:40	12:40 - 1:30	Lunch	2:30 - 3:30	3:30 - 4:30	4:30 - 5:30
Monday											
Tuesday					CS210						
Wednesday											
Thursday											
Friday											
Saturday											

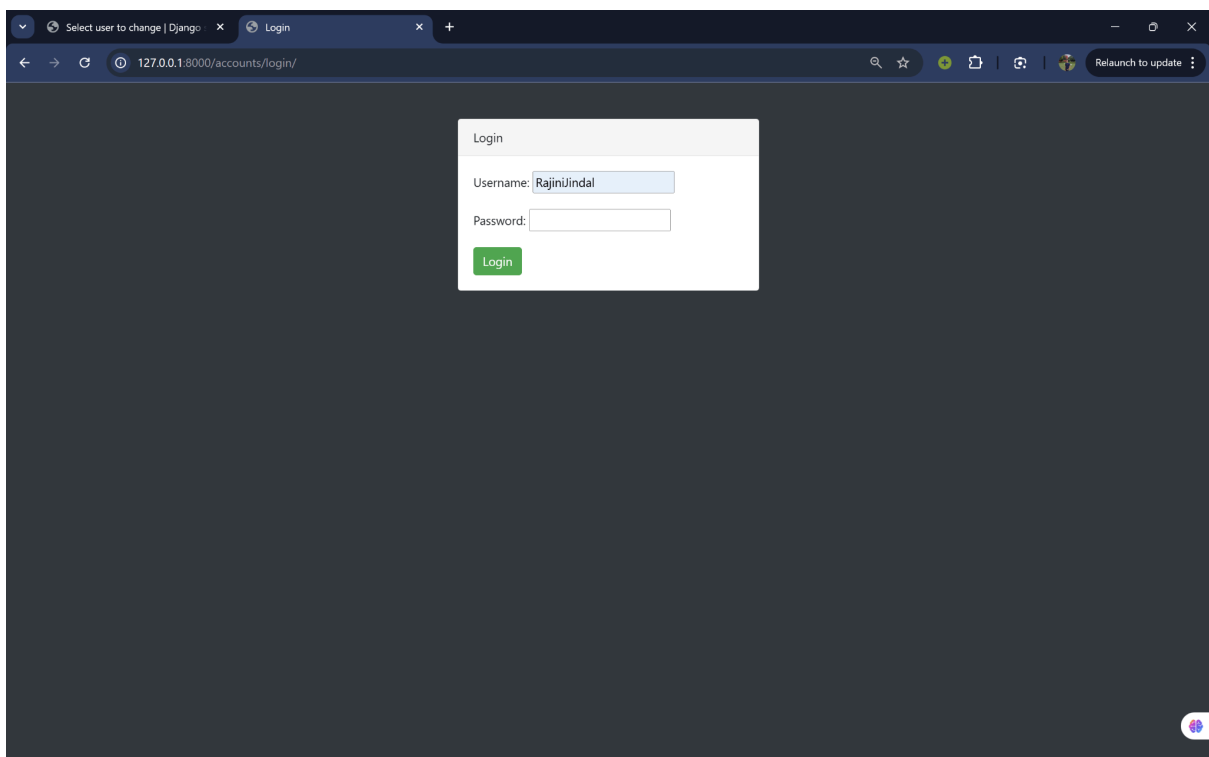
Student Timetable

## 2. Teacher Role

Teachers are responsible for inputting and managing academic data for their assigned students and classes.

### Functional Modules:

- **Login:**
  - Secure login using a teacher ID (provided by admin).



Teacher Login

- **Homepage:**

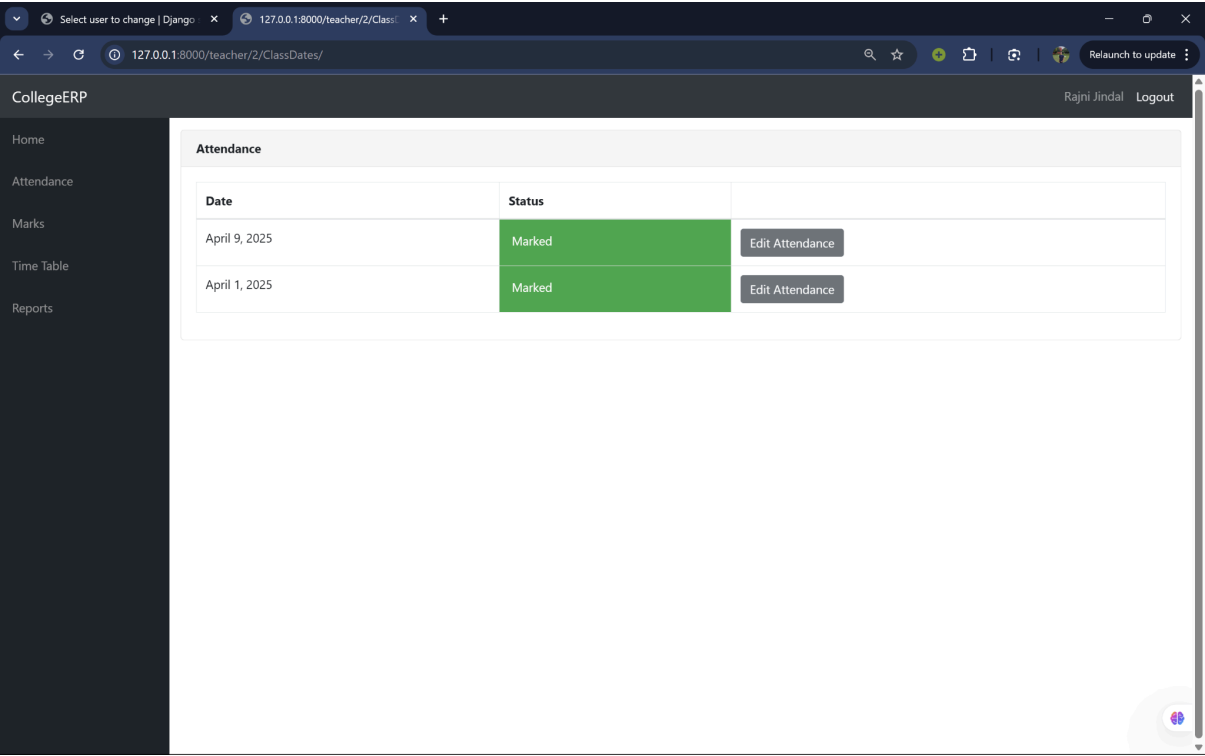
- Main sections: Attendance, Marks, Timetable, Reports.



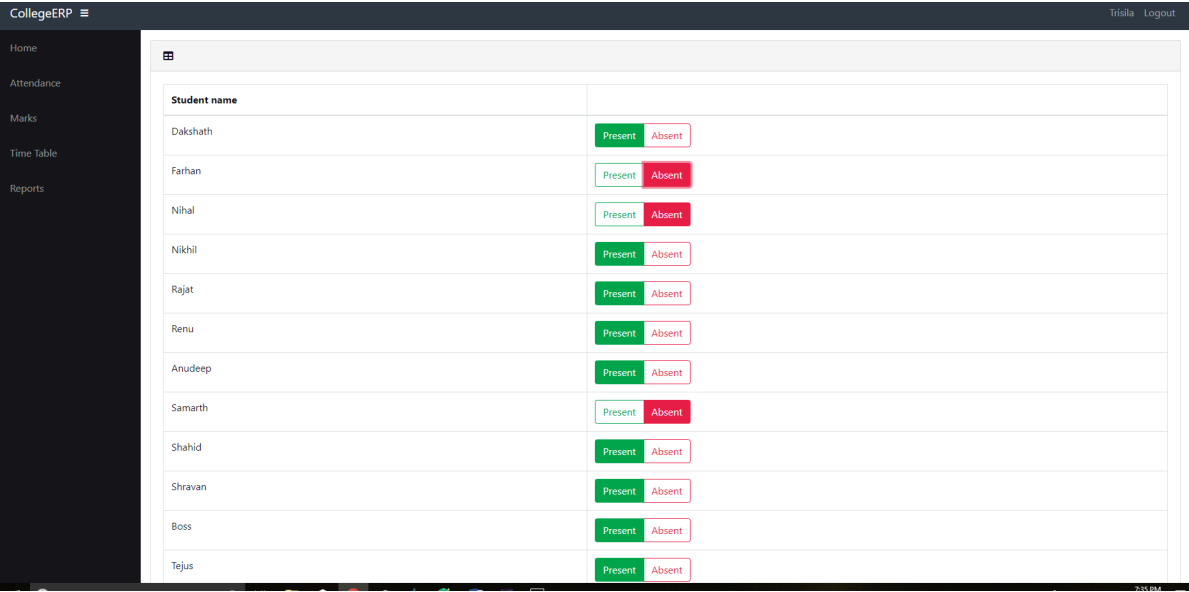
Teacher homepage

- **Attendance Management:**

- Enter and edit daily attendance for assigned classes.
- View pending/unmarked sessions (color-coded: red for pending, green for marked).
- Mark **extra classes** outside scheduled time.
- View **student-wise attendance summary**.
- View and edit **detailed attendance history** for individual students.



View attendance



Edit Attendance

CollegeERP		Trisila Logout			
Home		Attendance			
Attendance					
Marks					
Time Table					
Reports					
USN	Student name	Attended classes	Total classes	Attendance %	Classes to attend
CS01	Dakshath	8	10	80.0	0
CS02	Farhan	10	10	100.0	0
CS03	Nihal	7	10	70.0	2
CS04	Nikhil	8	10	80.0	0
CS05	Rajat	10	10	100.0	0
CS06	Renu	10	10	100.0	0
CS07	Anudeep	8	10	80.0	0
CS08	Samarth	8	10	80.0	0
CS09	Shahid	10	10	100.0	0
CS10	Shravan	7	10	70.0	2
CS11	Boss	10	10	100.0	0
CS12	Tejus	9	10	90.0	0
CS13	Vijeth	8	10	80.0	0

Attendance of students in a class

CollegeERP		Trisila Logout		
Home		Software Engineering		
Attendance				
Marks				
Time Table				
Reports				
#	Date	Day	Status	
1	Oct. 26, 2018	Friday	Absent	Change
2	Oct. 29, 2018	Monday	Present	Change
3	Oct. 31, 2018	Wednesday	Present	Change
4	Nov. 1, 2018	Thursday	Present	Change
5	Nov. 2, 2018	Friday	Present	Change
6	Nov. 7, 2018	Wednesday	Present	Change
7	Nov. 8, 2018	Thursday	Absent	Change
8	Nov. 9, 2018	Friday	Present	Change
9	Nov. 12, 2018	Monday	Present	Change
10	Nov. 15, 2018	Thursday	Present	Change

Attendance details of an individual student



- **Marks Management:**

- Enter/edit marks for 3 internal tests, 2 events, and 1 final SEE exam.
- Status indicators for each test (red = not entered, green = completed).
- After student confirmation, marks can be **locked** to prevent changes.
- View **student-wise marks breakdown** in tabular form.

Name	Status	
Internal test 1	Marked	Edit Marks
Internal test 2	Marked	Edit Marks
Internal test 3	Marked	Edit Marks
Event 1	Not Marked	Enter Marks
Event 2	Not Marked	Enter Marks
Semester End Exam	Not Marked	Enter Marks

Entering marks

CollegeERP Rajni Jindal Logout

Home  
Attendance  
Marks  
Time Table  
Reports

Student Name	Total Marks	Enter Marks
Aryan Sood	20	<input type="text" value="18"/>
Ayush R Nair	20	<input type="text" value="18"/>

Editing marks

CollegeERP Rajni Jindal Logout

Home  
Attendance  
Marks  
Time Table  
Reports

Marks							
Student USN	Student Name	Internals 1	Internals 2	Internals 3	Event 1	Event 2	SEE
1087	Aryan Sood	19	18	12	0	0	0
1107	Ayush R Nair	19	18	10	0	0	0

Marks of all the students in a class

- **Reports:**

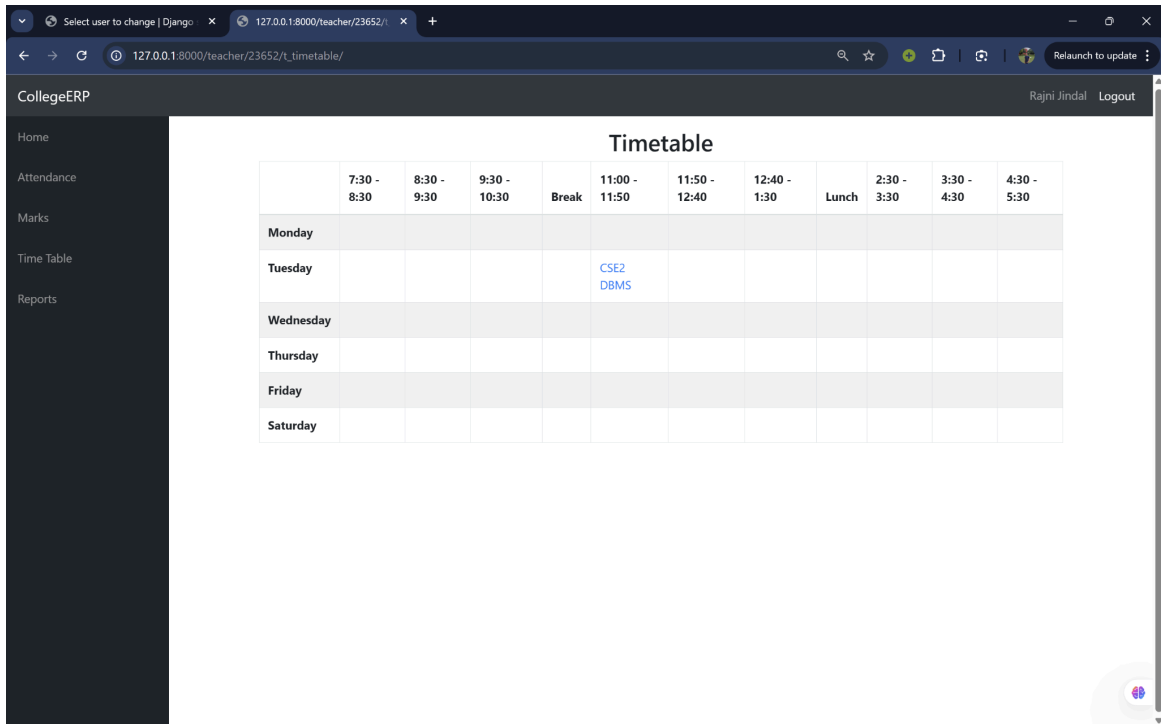
- Generate consolidated reports for classes.
- View CIE (out of 50) and attendance %.
- Highlights students with CIE < 25 or attendance < 75%.

Marks			
Student USN	Student Name	Attendance	CIE
1087	Aryan Sood	0.0	25
1107	Ayush R Nair	100.0	24

CIE and attendance for a class of students

- **Timetable:**

- Tabular view of teaching schedule.
- Automatically populated from class-course assignments.



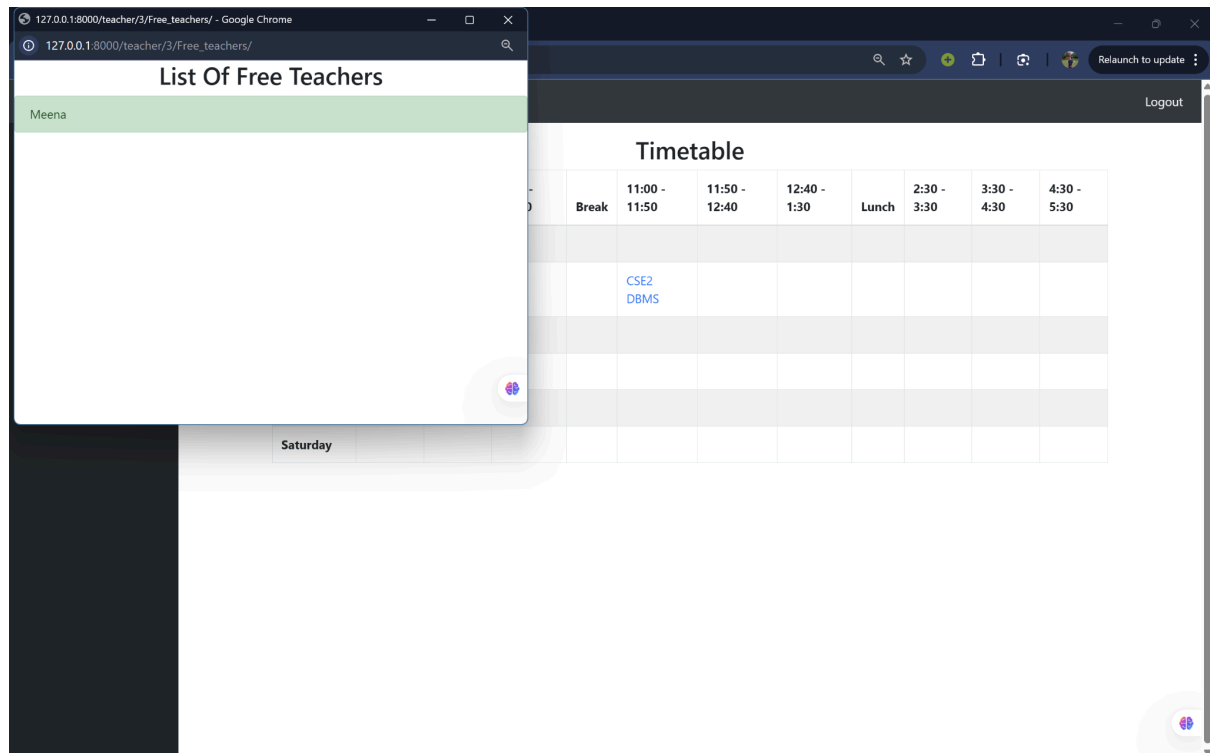
The screenshot displays the 'CollegeERP' interface with a sidebar menu on the left containing 'Home', 'Attendance', 'Marks', 'Time Table', and 'Reports'. The main content area is titled 'Timetable' and shows a weekly schedule grid. The grid has columns for time slots: 7:30 - 8:30, 8:30 - 9:30, 9:30 - 10:30, Break, 11:00 - 11:50, 11:50 - 12:40, 12:40 - 1:30, Lunch, 2:30 - 3:30, 3:30 - 4:30, and 4:30 - 5:30. The rows represent the days of the week: Monday, Tuesday, Wednesday, Thursday, Friday, and Saturday. The Tuesday row shows 'CSE2' and 'DBMS' in the 11:00 - 11:50 slot. The interface includes a top navigation bar with a user profile 'Rajni Jindal' and a 'Logout' button, and a bottom status bar with a 'Relaunch to update' button.

	7:30 - 8:30	8:30 - 9:30	9:30 - 10:30	Break	11:00 - 11:50	11:50 - 12:40	12:40 - 1:30	Lunch	2:30 - 3:30	3:30 - 4:30	4:30 - 5:30
Monday											
Tuesday					CSE2 DBMS						
Wednesday											
Thursday											
Friday											
Saturday											

Teacher Timetable

- **Free Teachers Finder:**

- Lists available teachers during any time slot.
- Helps in **alternate class management** when on leave.



List of free teachers for a time slot

### 3. Administrator Role

The administrator has complete access to the ERP system and manages all backend data and configurations.

#### Functional Modules:

- **User Management:**

- Add/edit/delete students, teachers, classes, and courses.
- Create user credentials for teachers and students.

- **Assignments:**

- Assign teachers to specific courses and classes.
- Schedule classes with timing using the **Assign Table**.

- **Academic Record Access:**

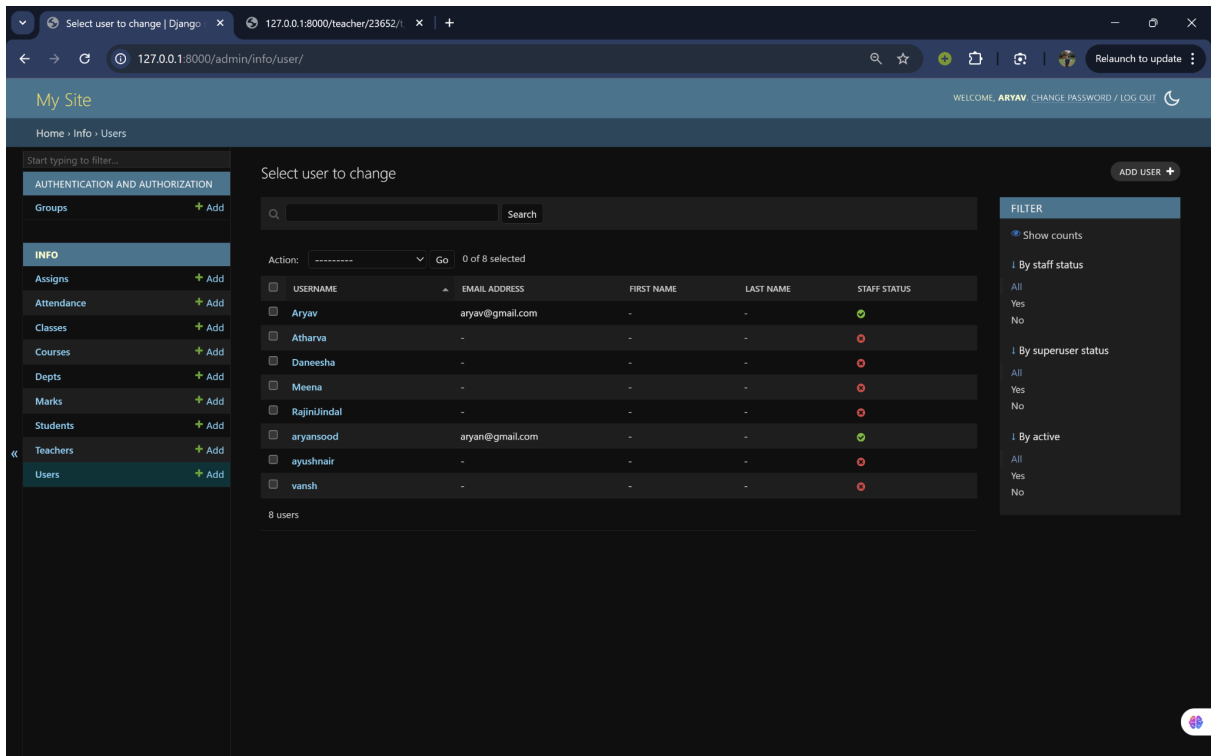
- View and update student marks and attendance.
- Perform overrides in special cases.

- **Search & Filter:**

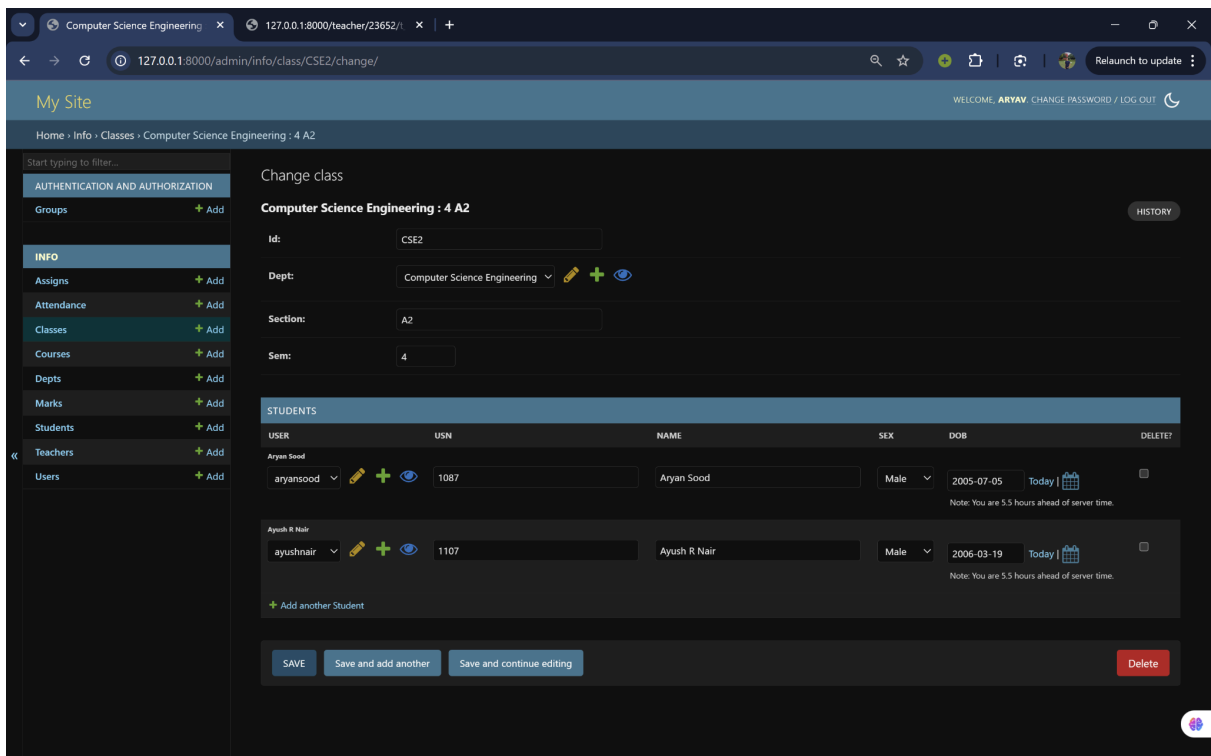
- Search tables (students, teachers, classes) using name, ID, department, etc.
- Apply filters for efficient data retrieval.

- **Database Operations:**

- Manage data consistency across all tables.
- Handle bulk data updates and ensure referential integrity.



Admin homepage



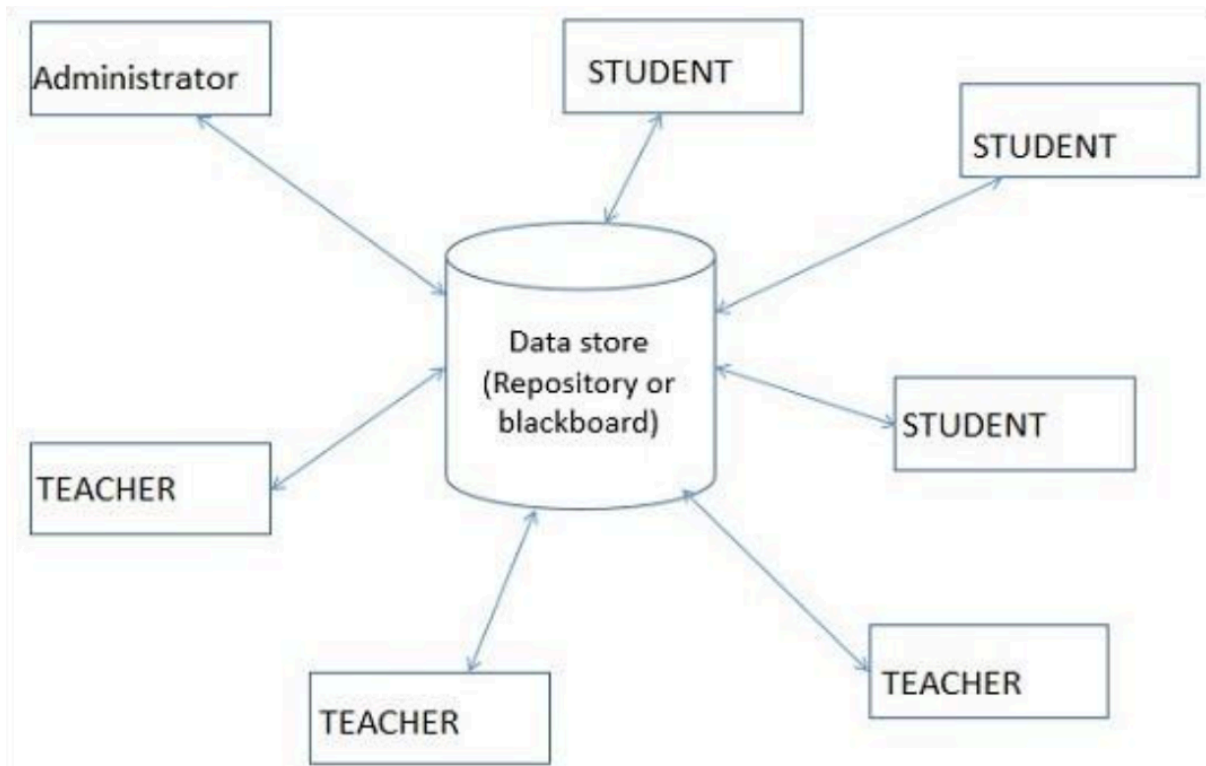
Admin students table page

## 4. System Design

### 4.1 Architectural Style

The system follows a **data-centric architecture** with three primary layers:

- **Frontend:** HTML/CSS/Bootstrap
- **Backend:** Django (Python)
- **Database:** SQLite (default with Django)

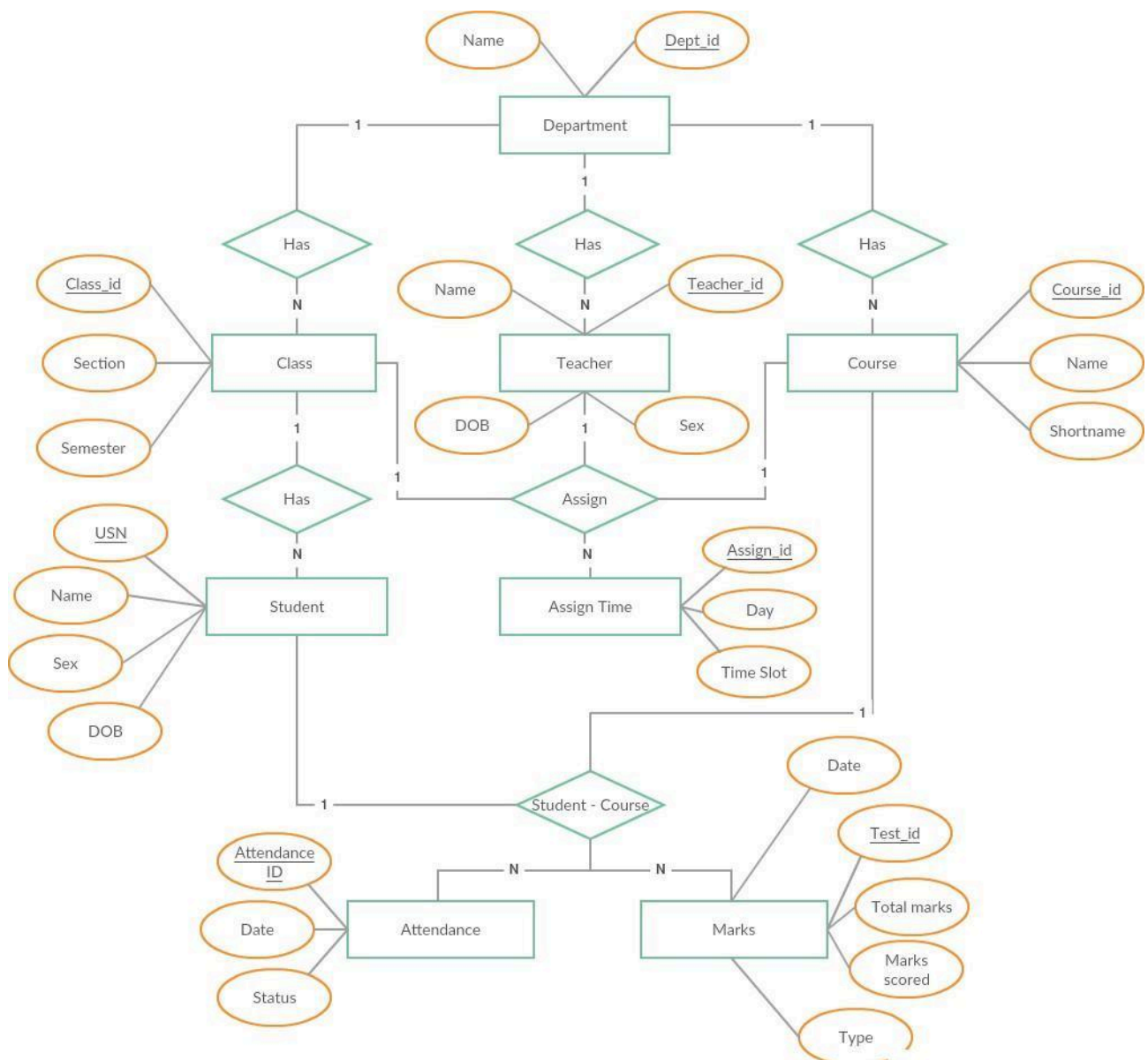


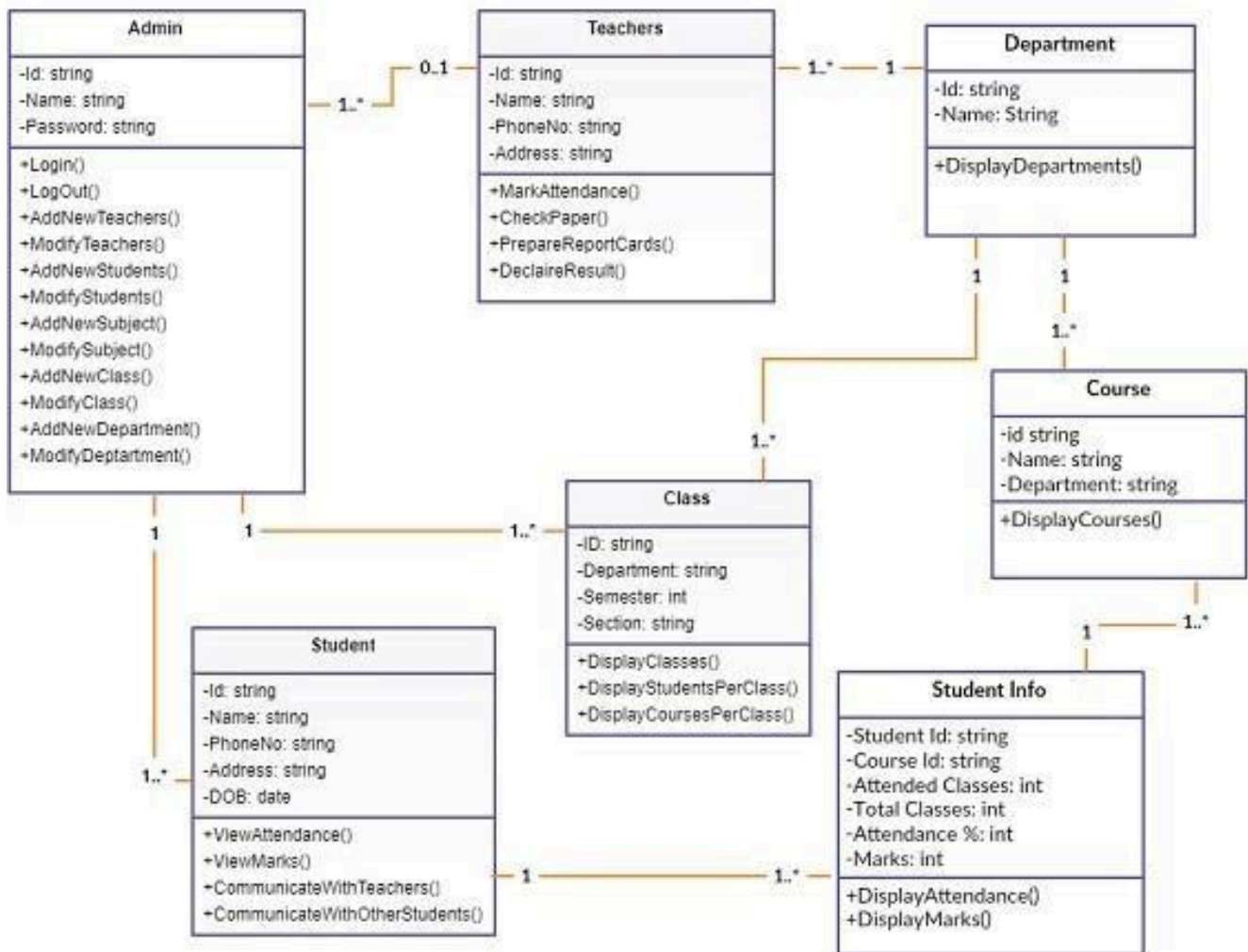
This architecture ensures modularity and scalability.



## 4.2 ER Diagram and Class Diagram

- **ER Diagram:** Shows relationships between student, teacher, course, department, and class tables.
- **Class Diagram:** Defines class structure for major entities like Student, Teacher, Admin with their attributes and methods.





## 5. System Implementation

- **Login:** Students and teachers log in with unique IDs.
- **Homepage:** Each user sees a custom dashboard.
- **Attendance:** Teachers can mark attendance and edit records.
- **Marks:** Teachers can enter internal marks and SEE scores.
- **Timetable:** Automatically generated from assigned courses.

- **Reports:** Teacher can generate reports of student performance.
- **Admin Panel:** Admin has access to full CRUD operations and search/filter options.

## 6. Testing and Result Analysis

### 6.1 Testing Types

- **White Box Testing:** Django's built-in `test.py` used to test backend models, views, and forms.
- **Black Box Testing:** UI tested from teacher, student, and admin perspectives using real test cases.
- **Acceptance Testing:** Project was demoed to a college faculty member and feedback was collected.

### 6.2 Testing Outcome

All core modules function as expected:

- Accurate attendance and marks display.
- Login and access control working.
- Responsive design on all devices.
- Test cases passed (you can include a table of test cases if required).

## **7. Conclusion**

The College ERP System successfully fulfills its objectives of simplifying academic processes and enhancing communication among stakeholders. By automating tasks such as attendance, marks entry, and student record management, it reduces manual errors and improves efficiency. Real-time data access ensures transparency and timely decision-making across departments.

Developed using Django, the system features a modular, secure, and scalable architecture that supports future expansion. With role-based access and encrypted data handling, it ensures data privacy and protection. Its design also allows easy integration with other institutional tools, making it a robust foundation for the digital transformation of academic operations.

The system not only addresses current administrative challenges but also aligns with the broader goal of fostering a digitally empowered academic ecosystem. Its intuitive interface and user-centric design make it accessible to all users, reducing the learning curve and encouraging consistent usage. By bridging communication gaps and streamlining daily tasks, the ERP system contributes to a more efficient, transparent, and future-ready educational environment.