S V POLYTECHNIC COLLEGE BHOPAL

SESSION 2024-25

MAJOR PROJECT REPORT
ON
STUDENT MANAGEMENT SYSTEM

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

PROJECT GUIDE

PROF. ISHU SHARMA
DEPT. OF CSE

SUBMITTED BY

DOLLY MAKODE
GHANSHYAM
KHUSHEE MAKODE
JANNAT PRAVIN

S V POLYTECHNIC COLLEGE BHOPAL

SESSION 2022-23

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CERTIFICATE

This is to certify that GHANSHYAM ,DOLLY MAKODE, KHUSHEE MAKODE,JANNAT PRAVIN, student of Three Year Diploma (CSE) III year, VIth semester, (Computer Science and Engineering) has completed the major project titled "STUDENT MANAGEMENT SYSTEM" during the academic session 2024-25 under the guidance & supervision of Prof. ISHU SHARMA.

PROF. Manoj sonkusare
PROJECT SUPERVISOR
DEPT. OF CSE, SVPC

PROF.ISHU SHARMA
PROJECT INCHARGE
lecturer CSE, SVPC

DECLARATION

WE,GHANSHYAM, DOLLY MAKODE ,KHUSHEE MAKODE,JANNAT PRAVIN, hereby declare that this project work entitled "Student Management System " was carried out by me under the supervision of Prof. Ishu Sharma , Department of CSE, S V POLYTECHNIC COLLEGE, Bhopal. This project work is submitted to the Department of Computer Science and Engineering during the academic year 2024-25.

Place: BHOPAL

Date: 03/07/2025

NAME	ROLL NO	SIGANTURE
GHANSHYAM	22013C04026	_____
DOLLY MAKODE	22013C04023	_____
KHUSHEE MAKODE	22013C04031	_____
JANNAT PRAVIN	23013C04204	_____

INDEX

CHAPTER 1

1.1 INTRODUCTION

A Student Management System is a web-based or desktop-based application designed to manage the attendance of students efficiently. This system automates the process of storing, managing, and retrieving student-related data such as personal details, academic records, attendance, and more. It helps in reducing paperwork and manual errors, ensuring smooth functioning within an educational institution.

The system provides role-based access for Teachers and Students to perform specific operations based on their privileges. A key feature of this system is its secure and intelligent attendance mechanism that uses face recognition-based authentication. This ensures that only the authenticated student is marked present, eliminating the chances of proxy attendance and increasing overall reliability.

By integrating face recognition technology with traditional student management functionalities, the system not only enhances security but also improves the speed and accuracy of attendance tracking. The platform is scalable, user-friendly, and tailored to meet the evolving needs of modern educational institutions.

1.2 Objectives

The main objective of this project is to design and implement a secure, efficient, and automated **Student Management System** that uses **face recognition technology** for attendance and provides role-based access for students and teachers. The specific objectives of the system are as follows:

---

1. **To develop a centralized student information system:**
   The project aims to provide a single platform where all student data including personal information, academic records, attendance, and performance can be stored securely and accessed easily when required.

2. **To reduce paperwork and manual record-keeping:**
   Traditional methods involve a lot of paperwork which is time-consuming and error-prone. The system will digitize the student management process, making it more reliable and faster.

3. **To simplify the process of attendance management:**
   Teachers can take attendance digitally through the system, and records can be maintained and accessed in real-time. This also eliminates the need for physical attendance registers.

4. **To allow performance tracking of students:**
   Teachers can input marks, assignment scores, and feedback. Students can track their academic progress through their dashboards, enabling self-assessment and improvement.

5. **To implement role-based access control:**
   The system provides different access levels for Admin, Teacher, and Student. Each role has dedicated functionalities ensuring data privacy and security.

6. **To generate automated reports and visual charts:**
   The system generates attendance reports, performance summaries, and graphical representations such as bar charts or pie charts to make analysis easier and more insightful.

7. **To improve communication between students and teachers:**
   The platform allows students to submit doubts, feedback, or requests directly to teachers through an online form, improving the interaction and support process.

8. **To ensure data security and reliability:**
   By using secure database systems and user authentication, the system prevents unauthorized access and data loss, maintaining the integrity of student records.

9. **To make the system scalable and adaptable:**
   The system is designed to support additional departments, semesters, and modules in the future, making it flexible and reusable across multiple academic programs.

1.3 Scope

The scope of the Student Management System with Face Recognition-based Attendance is vast and adaptable across various educational institutions such as polytechnic colleges, engineering institutes, schools, and universities. The system is designed to automate and digitize the student attendance process with enhanced security and efficiency.

This project covers the following areas:

- Automatic attendance marking using real-time face recognition.
- Role-based login access for Teachers and Students.
- Centralized database to store and manage student data securely.
- Teacher Panel with features to mark attendance, track student performance, and view attendance records.
- Student Panel to view attendance history, performance summary, and submit doubts.
- Real-time authentication to eliminate proxy attendance.
- Improved transparency between students and faculty.
- User-friendly interface accessible from desktops or laptops.

In the future, the system can be extended to include:

- Mobile application support for on-the-go access.
- Admin panel for managing subjects, faculty, and overall reporting.
- Integration with SMS/Email alerts for attendance notifications to parents.
- Monthly and semester-wise automated attendance reports.
- Biometric or RFID-based attendance as an additional backup method.
- Analytics dashboard for visual performance and attendance trends**.**

This project is not limited to academic use but can also be customized for corporate training centers, coaching institutes, and online learning platforms to ensure attendance integrity and management efficiency.

1.4 Description of the Project

The **Student Management System** is a comprehensive web-based application developed to manage academic, attendance, and performance-related data of students in a streamlined and efficient manner. The system is specially designed for diploma-level institutions and provides three user roles: **Teacher**, and **Student** — each with its own dedicated dashboard and functionalities.

The main objective of the project is to automate traditional student record-keeping processes and enhance the interaction between students and teachers by introducing digital tools for attendance tracking, performance monitoring, doubt resolution, timetable management, and subject assignments.

This system consists of two main modules:

1. Teacher Panel:

The **Teacher Panel** is a role-based section of the Student Management System designed specifically for faculty members. After logging into the system using their unique credentials, teachers are redirected to their personalized dashboard where they can manage academic activities related to the subjects and students assigned to them by the teacher.

Key Functionalities of the Teacher Panel:

The Teacher Panel provides access to multiple modules through a neatly structured sidebar menu. These modules include:

1.Dashboard

.Displays a quick overview of today's schedule, pending tasks, announcements, and performance graphs.
.Helps teachers stay updated with important actions and daily activities.

2. My Profile

.Allows teachers to view and update their personal and professional details.
.Profile includes name, designation, assigned subjects, and contact info.

3. Timetable

.Shows the daily or weekly teaching schedule assigned to the teacher.
.Helps in time management and ensures the teacher is aware of upcoming classes.

4. Attendance

.Teachers can mark daily attendance for each class/subject assigned to them.
.Attendance is stored in the database and can be viewed or edited later.
.Option to filter attendance records by date, subject, or student.

5. Students

.Displays a list of students under the teacher's assigned class or subject.
.Teachers can view student details, performance, and attendance status.

6. Subjects (Subject Management Module)

This is one of the most important modules of the Teacher Panel. It allows teachers to:

- View the list of subjects assigned to them.
- See details such as Subject Code, Subject Name, Class, and Assigned Teacher.
- Use View (?) and Edit (□) buttons for managing subject information.
- Clean tabular format with columns for easy navigation and management.

Example Subjects Displayed:

Subject Code	Subject Name	Class	Assigned Teacher
MC501	Mobile Computing	Diploma 3rd Year	Mr. Nishant Chorasiya
ES502	Entrepreneurship and Start-ups	Diploma 3rd Year	Mr. Ishu Sharma
ST503	Software Testing	Diploma 2nd Year	Ms. Tripti Diwadi
PM504	Project Management	Diploma 3rd Year	Ms. Goldi Bajaj
AI505	Artificial Intelligence	Diploma 2nd Year	Ms. Ishu Sharma

- Teachers can click on "Add Subject" to insert a new subject entry if permitted.
- The table interface is responsive and mobile-friendly, improving usability.

2. Student Panel:

- The **Student Panel** is a dedicated and user-friendly dashboard designed for students to access their academic information in an organized and efficient manner. Once a student logs in with their unique credentials, they are greeted with a left-side navigation menu that provides access to several key modules such as Dashboard, Attendance, Timetable, Subjects, Ask Doubt, My Doubts, and Profile.

Key Functionalities of the Student Panel:

1. Dashboard

The Dashboard acts as the main overview page for the student after login. It displays:

- Today's Class Schedule with subject and timing.
- Attendance Summary showing overall attendance percentage or color-coded status.
- Recent Announcements or Notifications from Admin or Teachers (e.g., test dates, holidays, or updates).
- Quick Links to important sections like Timetable or Doubts.

This module helps students plan their day effectively and stay updated.

2. Attendance

This module allows students to track their attendance records in a detailed and transparent manner. Key features include:

- Daily, Weekly, and Monthly Attendance Views
- Subject-wise attendance records with date and status (Present/Absent).
- Percentage calculation for each subject.
- Option to filter attendance by subject or date range.

Students can keep track of low attendance and take corrective action.

3. Timetable

The Timetable module displays the student's weekly class schedule. It helps students know:

- On which day, which subject is scheduled.
- Timings of each class (e.g., 10:00 AM – 11:30 AM).
- Faculty assigned to each subject.

The schedule is shown in a clear tabular format, making it easy to understand and follow.

4. Subjects

The Subjects module lists all the subjects assigned to the student for the current semester. It shows:

- Subject Code
- Subject Name
- Teacher Name
- Scheduled Class Timings

This module gives students an overview of their academic subjects and responsible faculty. It is similar to the “My Subjects” screenshot previously shared.

5. Ask Doubt

This is an interactive feature that allows students to submit academic queries directly to their subject teachers. Features include:

- Selection of subject from a dropdown.
- Textbox to type the doubt clearly.
- Submit button to send the doubt to the respective teacher.

This encourages active communication and quick doubt resolution.

6. My Doubts

This module shows the list of all doubts submitted by the student along with:

- Subject Name
- Date of Submission
- Teacher’s Reply
- Status (Pending/Solved)

Students can track their query progress and re-check teacher feedback anytime.

7. Profile

The Profile section displays the student's personal and academic information, including:

- Name, Roll Number
- Email ID, Contact
- Class and Department
- Subjects enrolled

Students can also update some of their personal details if allowed by admin.

8. Logout

This module securely logs the student out of the system. It ensures that no one else can access the student's data once the session ends. Clicking "Logout" redirects the user back to the login screen.

Technologies Used:

1. Frontend Technologies

These technologies are used to create the user interface of the system that interacts with users (Admin, Teacher, and Student).

- HTML5 (HyperText Markup Language):
  Used for structuring the content of web pages and dashboards. It provides the basic skeleton of the website.
- CSS3 (Cascading Style Sheets):
  Used for styling the application – including layouts, fonts, colors, spacing, etc. CSS3 ensures the system is visually appealing and professional.
- JavaScript:
  Adds interactivity to the web pages like form validations, dynamic data display, dropdowns, and real-time updates.
- Bootstrap (CSS Framework):
  Used for responsive design and layout. Bootstrap allows the website to adapt across different screen sizes like mobile, tablet, or desktop without much effort.

2. Backend Technologies

These handle the application logic, data processing, server-side authentication, and connections with the database.

- Python (Programming Language):
  Python is used due to its simplicity, readability, and strong ecosystem for web development.

- Django Framework:
  A high-level Python web framework that encourages rapid development and clean, pragmatic design.
  Django manages:

  - URL routing
  - Database ORM (Object Relational Mapping)
  - User Authentication (login/logout system)
  - Form handling

3. Database Technology

- SQLite:
  A lightweight, serverless, and self-contained relational database engine.
  It stores:

  - Student and teacher profiles
  - Subject assignments
  - Attendance records
  - Marks and performance data
  - Doubts and replies

For production use, the system can be upgraded to **PostgreSQL** or **MySQL**.

Working Process of Student Management System

The Student Management System follows a structured and role-based working model that defines how different users interact with the system and how data flows between components. The system is primarily used by three types of users — Teachers, and Students — and each user has a specific set of tasks and permissions. Below is a step-by-step explanation of how the system works from login to data operations:

1. **Teacher Workflow**

- Teacher logs in using their credentials.
- Upon login, they see their Dashboard with today's schedule and subject info.
- Teachers can:
    - Take daily attendance for using face recoganization system.
    - Enter marks and performance details of students.
    - Respond to student doubts received via the "Ask Doubt" form.
    - View student lists, class schedules, and manage subjects.
- The system automatically stores the attendance and marks in the backend database.

2. Student Workflow

Students log in securely and land on their Dashboard.

- They can:
- View their attendance records (daily, subject-wise, or monthly).
- See their marks in each subject.
- Access their timetable to know the daily class schedule.
- View their assigned subjects and teachers.
- Submit doubts to teachers using the "Ask Doubt" module.
- Track replies in the My Doubts section.

CHAPTER 2: Requirement Specifications

2.1 Hardware Requirements

The hardware requirements for developing and running the Student Management System are listed below:

Component	Minimum Requirement
Processor	Intel Core i3 or higher
RAM	4 GB (8 GB recommended)
Hard Disk	500 GB (SSD preferred for fast access)
Monitor	14” LED Monitor
Keyboard & Mouse	Standard Keyboard and Optical Mouse
Internet Connection	Required for online deployment & API

2.2 Software Requirements

The software requirements for the system development are listed below:

Software Component	Details
Operating System	Windows 10 or
Programming Language	HTML, CSS, JavaScript, Python
Backend Framework	Django (Python Framework)
Database	SQLite (Development), MySQL (Deployment)
IDE / Code Editor	VS Code
Web Browser	Google Chrome / Firefox
Other Tools	GitHub

CHAPTER 3 – DATA ANALYSIS

3.1 Data Dictionary

Table Name	Field Name	Data Type	Description
StudentProfile	user	OneToOne (User)	Linked to Django's User model
	enrollment_number	CharField(20)	Unique ID for each student
	department	CharField(50)	Student's department
	year	IntegerField	Year of study (1st, 2nd, etc.)
TeacherProfile	user	OneToOne (User)	Linked to Django's User model
	department	CharField(50)	Department of the teacher
	code	CharField(20)	Unique subject code
AttendanceRecord	student	ForeignKey(Student)	Student who is marked
	subject_assignment	ForeignKey(Assign.)	Subject and teacher both linked
	date	DateField	Date of attendance
	status	CharField(10)	Present/Absent
ClassSchedule	subject_assignment	ForeignKey(Assign.)	Which subject/teacher is scheduled
	day	CharField(10)	Weekday (Mon–Sat)
	start_time	TimeField	Start time of class
	end_time	TimeField	End time of class
StudentDoubt	student	ForeignKey(Student)	Doubt submitted by
	subject_assignment	ForeignKey(Assign.)	Related to which subject
	doubt_text	TextField	Student’s doubt

Table Name	Field Name	Data Type	Description
	submitted_at	DateTimeField	Time of doubt submission

3.2 Entity Relationship Diagram (ERD)

User

├── StudentProfile

├── TeacherProfile

TeacherProfile ——< Attendance>—— Subject

StudentProfile ——< AttendanceRecord >—— SubjectAssignment

StudentProfile ——< Performance >—— SubjectAssignment

StudentProfile ——< StudentDoubt >—— SubjectAssignment

3.3 Data Flow Diagram (DFD)

Level 0 DFD (Context Diagram)

[Admin/Teacher/Student]

|

[Student Management System]

|

[Database]

Level 1 DFD

[Teacher] ──> (Mark Attendance) ──> [Attendance Table]

──> (submition Doubts) ──> [submition Table]

[Student] ──> (View Attendance/Performance)

──> (Submit Doubts) ──> [Doubt Table]

Chapter 4: Software Design

4.1 Database Design

The database for the Student Management System is designed to store and manage data such as student profiles, attendance records, performance, and subjects**.**

Main Tables:

1. Student

- student_id (Primary Key)
- name
- email
- class
- contact

2. Teacher

- teacher_id (Primary Key)
- name
- email
- subject_assigned

3. Subject

- subject_id (Primary Key)
- subject_name
- teacher_id (Foreign Key)

4. AttendanceRecord

- id (Primary Key)
- student_id (Foreign Key)

- subject_id (Foreign Key)
- date
- status (Present/Absent)

4.2 Development Model

The Waterfall Model was followed for the development of the project.
Phases:

1. **Requirement Analysis:**
Collected system requirements like attendance tracking, performance management, and role-based login.

2. **System Design:**
Database structure, ER diagrams, and UI designs were created.

3. **Implementation:**
Project was developed using Django, HTML, CSS,javascript and SQLite.

4. **Testing:**
Functional testing was done for login, dashboard, attendance, and performance features.

5. **Deployment:**
Project was hosted locally and can be deployed to cloud platforms later.

6,Maintenance:
Minor bug fixes and future feature upgrades like SMS alerts or mobile app support can be added.

4.3 Key Logic

1. Face Recognition
2. Attendance Marking
3. Teacher Login & Subject Fetch
4. Role-Based Access
5. Student-Teacher Interaction
6. Authentication Logic
   - Login Logic (Role-based)
   - Registration Logic
   - Logout Logic
7. Time Table Display (Class Schedule)

8. Doubt Submission
9. student profile
10. Teacher profile

4.4 Architecture

The architecture of the **Student Management System** is based on a **Three-Tier Web Architecture**, which separates the system into three main layers: **Presentation Layer (Frontend)**, **Application Layer (Backend)**, and **Data Layer (Database)**. This layered structure ensures scalability, security, and easier maintenance of the application.

1. **Presentation Layer:**

This is the user interface part of the system that students, teachers, and admins interact with using a web browser.

- Built With: HTML, CSS, JavaScript, Bootstrap
- Responsibilities:
    - Displaying forms, dashboards, tables, and charts
    - Collecting input from users (login, attendance, marks, doubts)
    - Sending data to backend via HTTP requests
    - Presenting dynamic data returned from the backend

2. Application Layer (Backend)

This is the server-side logic of the system. It processes requests from the frontend, applies business rules, communicates with the database, and returns responses.

- Built With: Django (Python Framework)
- Responsibilities:
    - User authentication (login/signup)
    - Attendance and marks processing
    - Doubt management workflow
    - CRUD operations (create, read, update, delete)
    - Connecting frontend with database

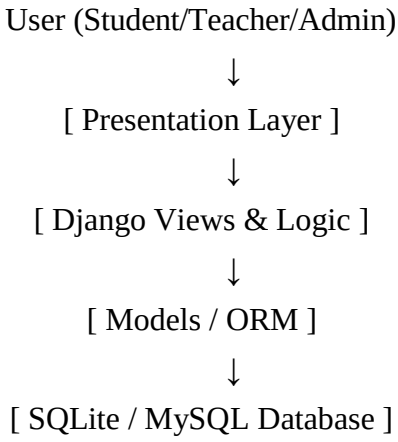
- Managing session and security

3. Data Layer (Database)

This is the storage layer where all data is saved and retrieved. It securely stores the following:

- User credentials and profiles (Admin, Teacher, Student)
- Subject assignments and timetables
- Attendance records
- Marks and performance data
- Doubt messages and replies
- Database Used: SQLite (can be upgraded to PostgreSQL)

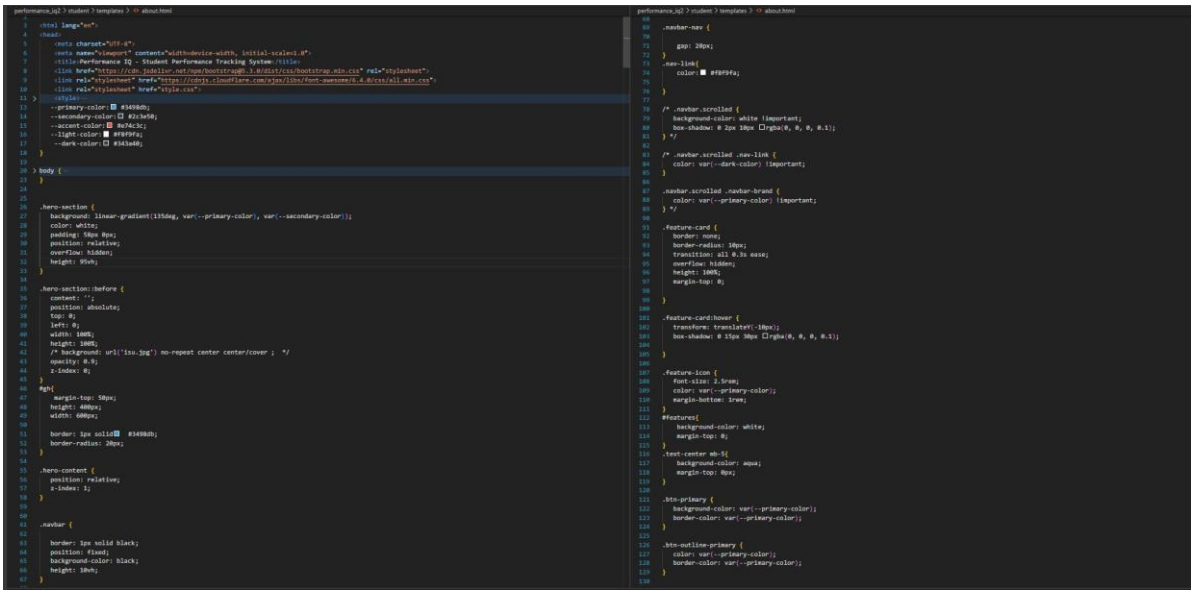
System Architecture Diagram

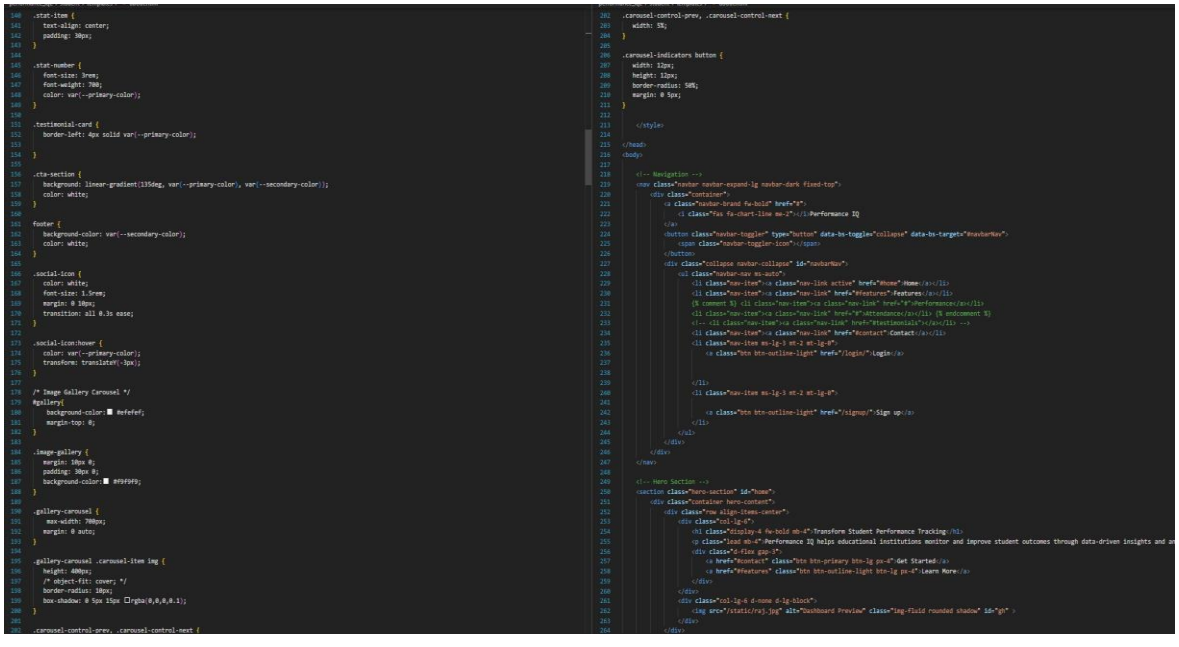


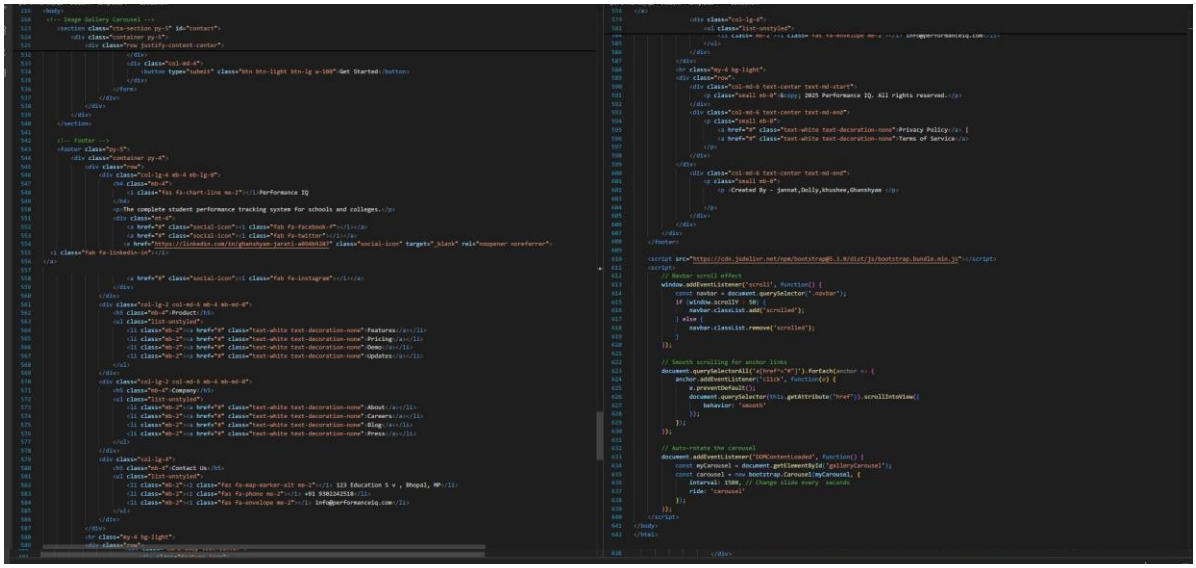
CHAPTER 5 – SNAPSHOTS

5. Input Snapshots

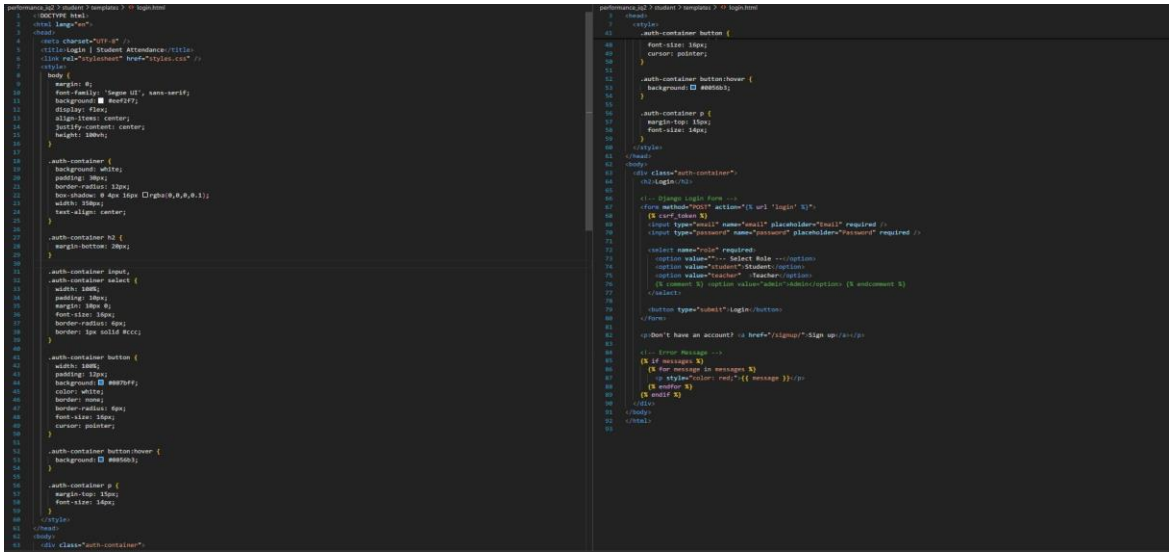
5.1.1 HOME Page



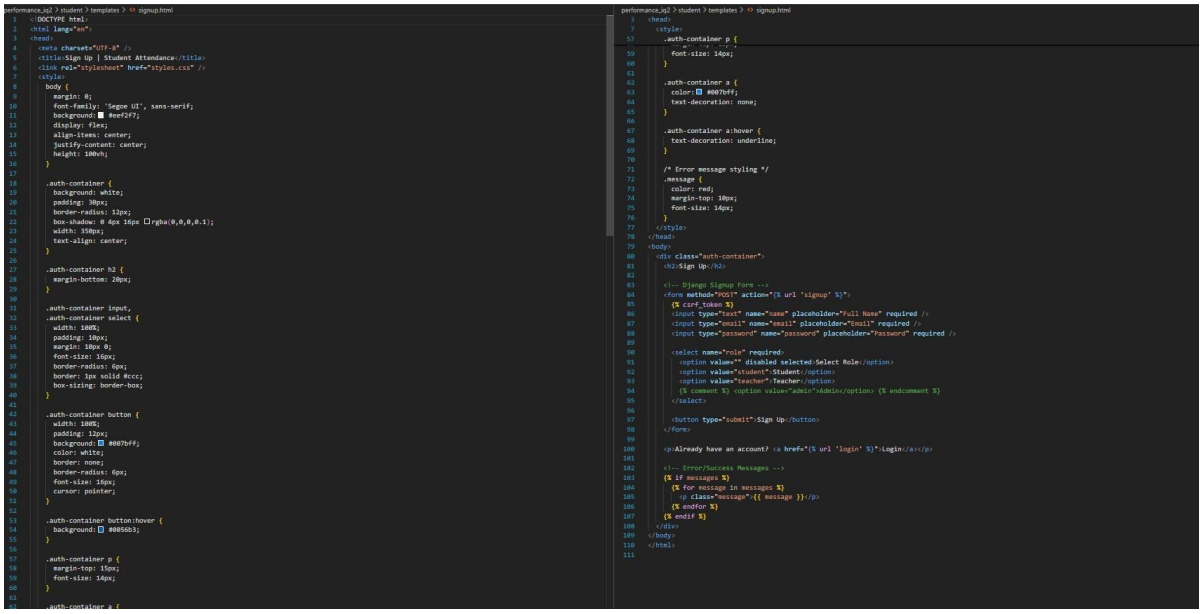




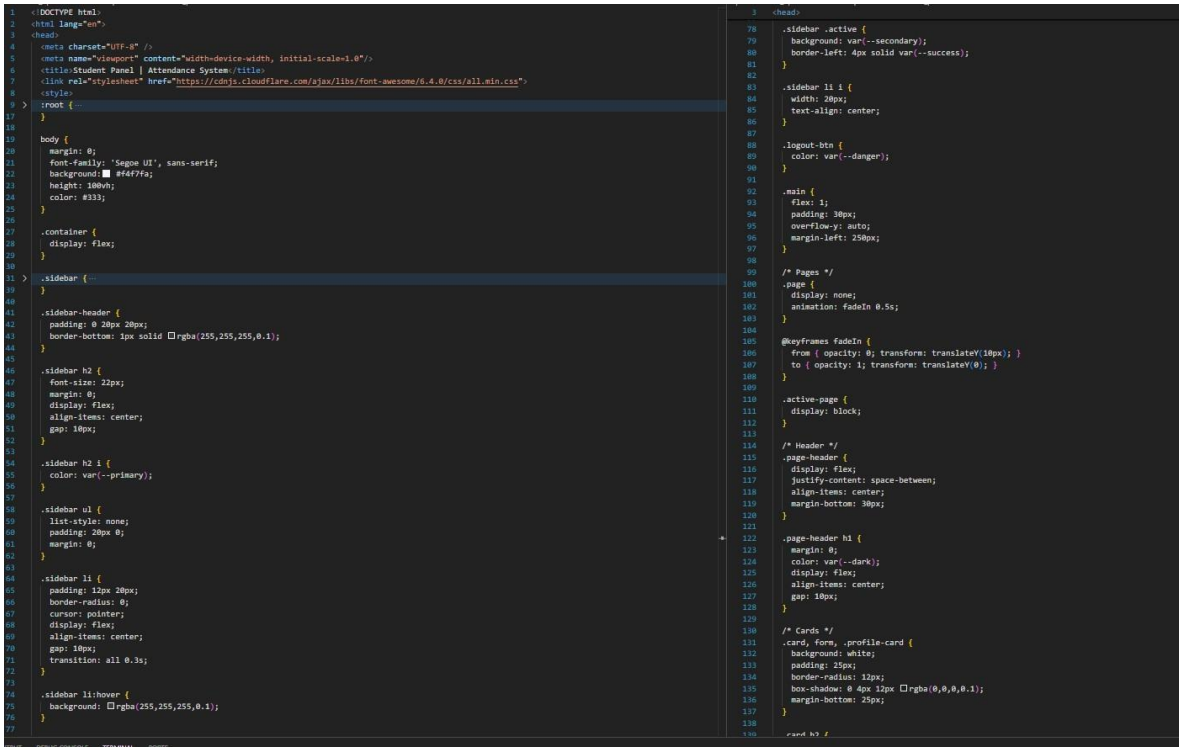
5.1.2 SIGN UP

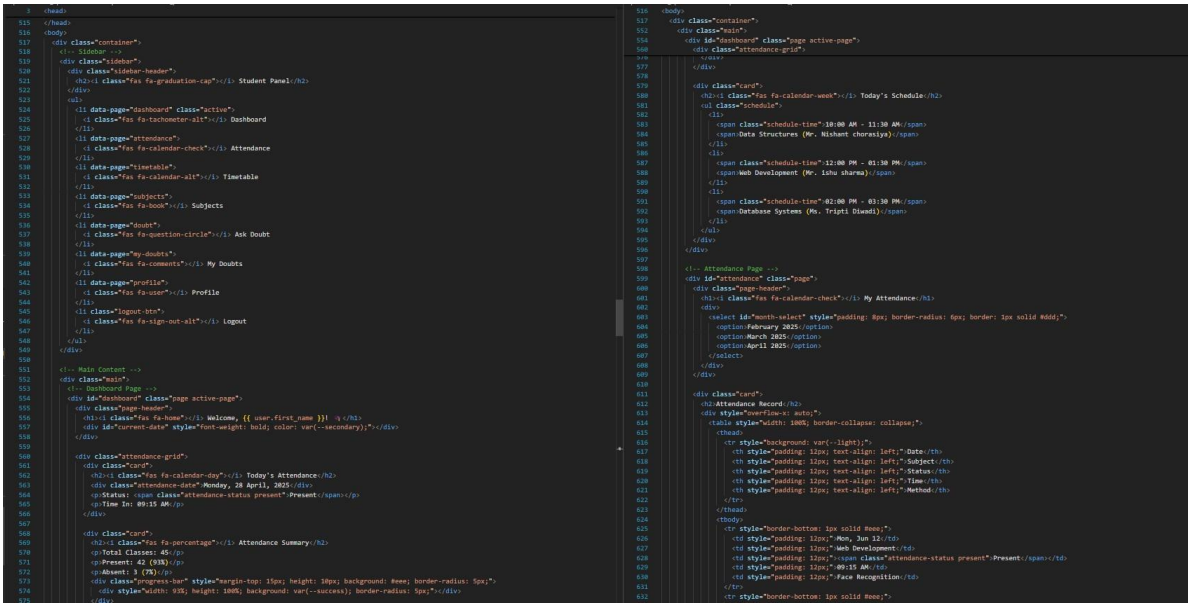


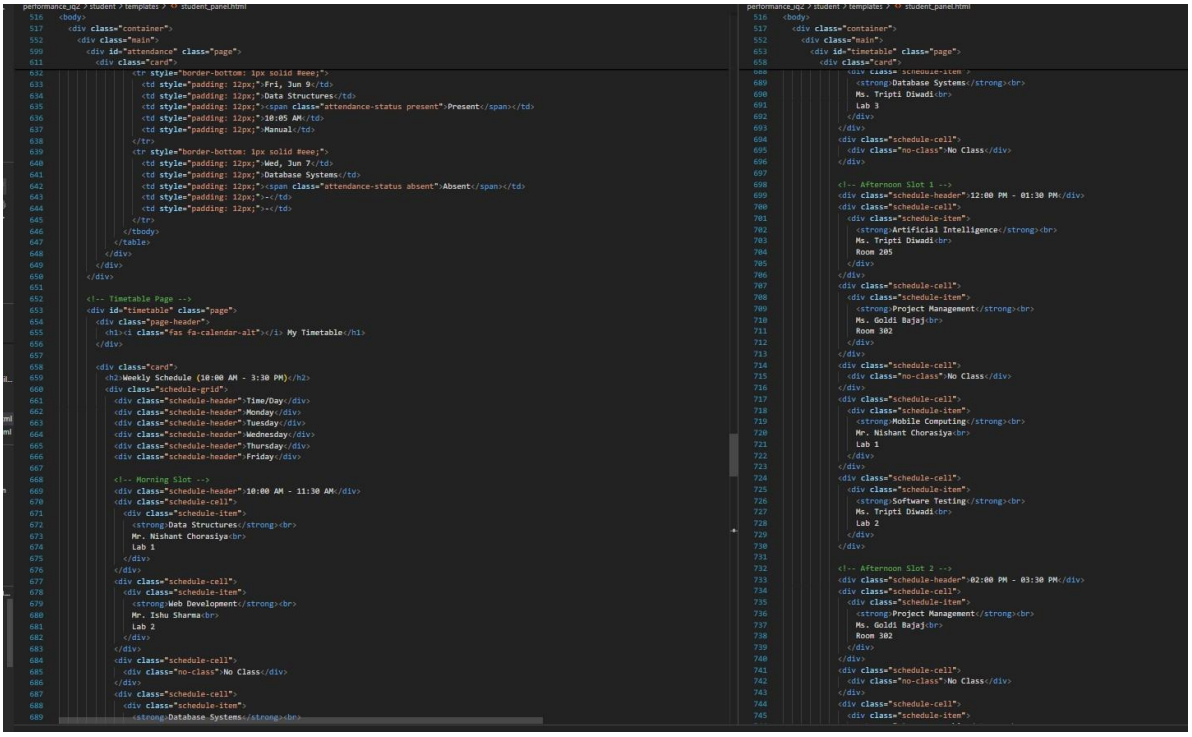
5.1.3 Login Page

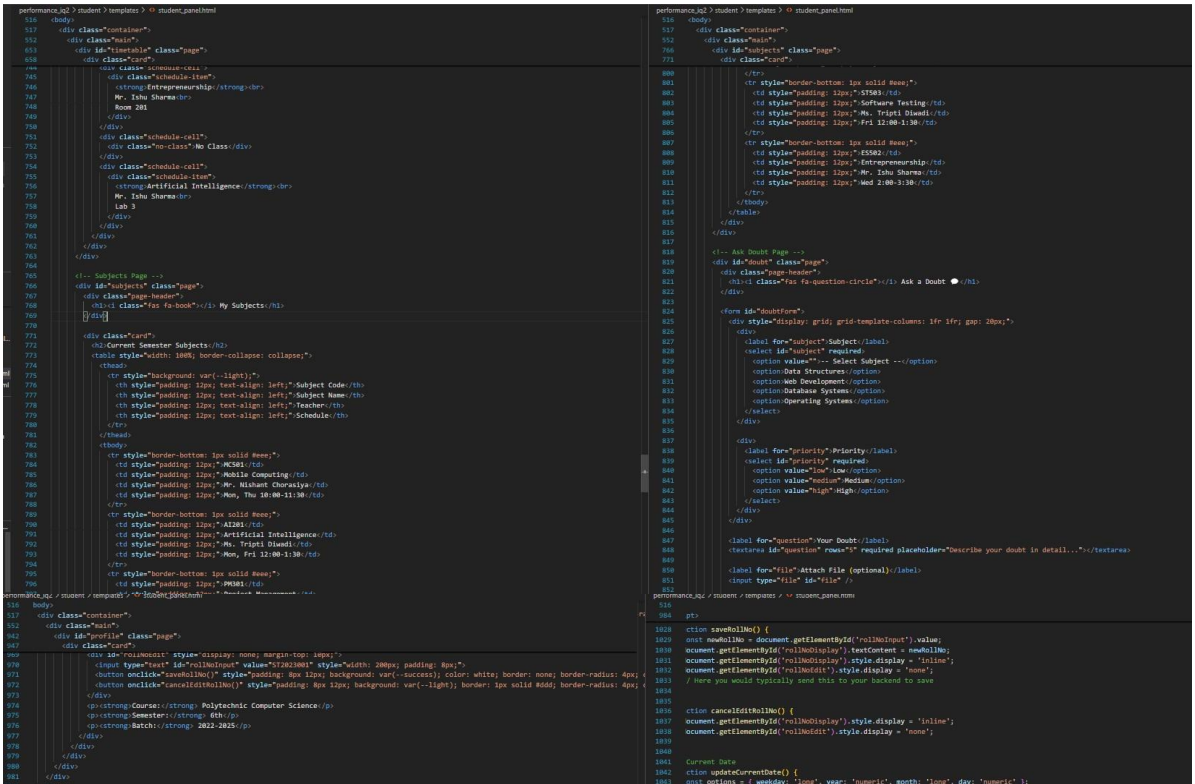


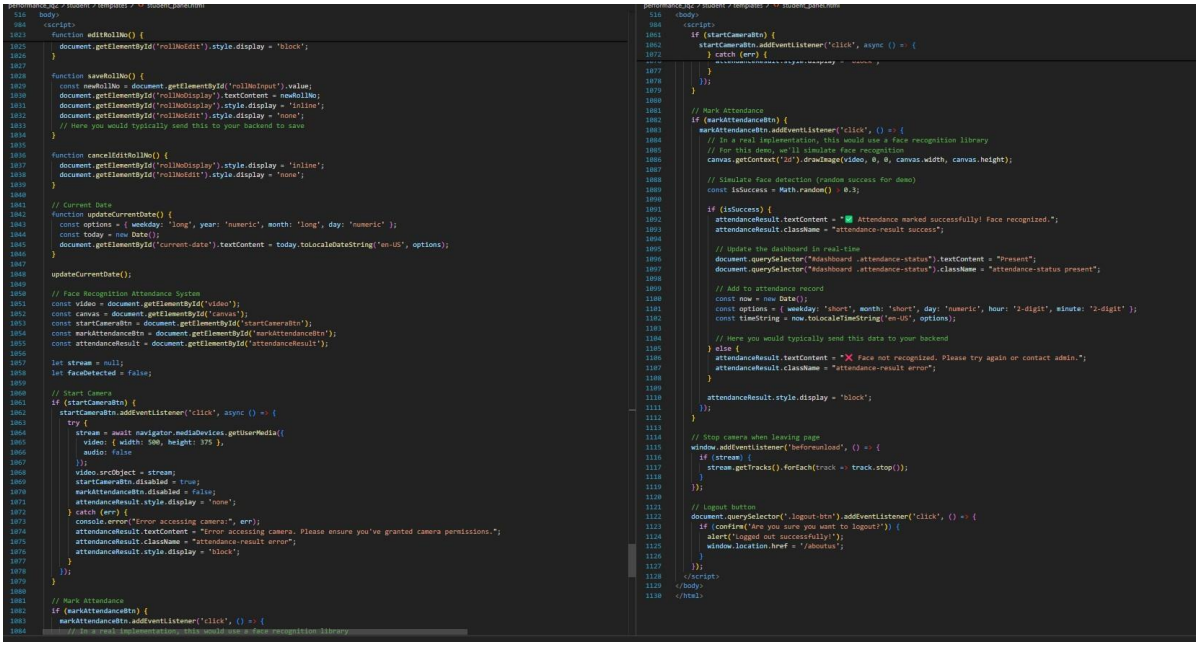
5.1.4 student panel



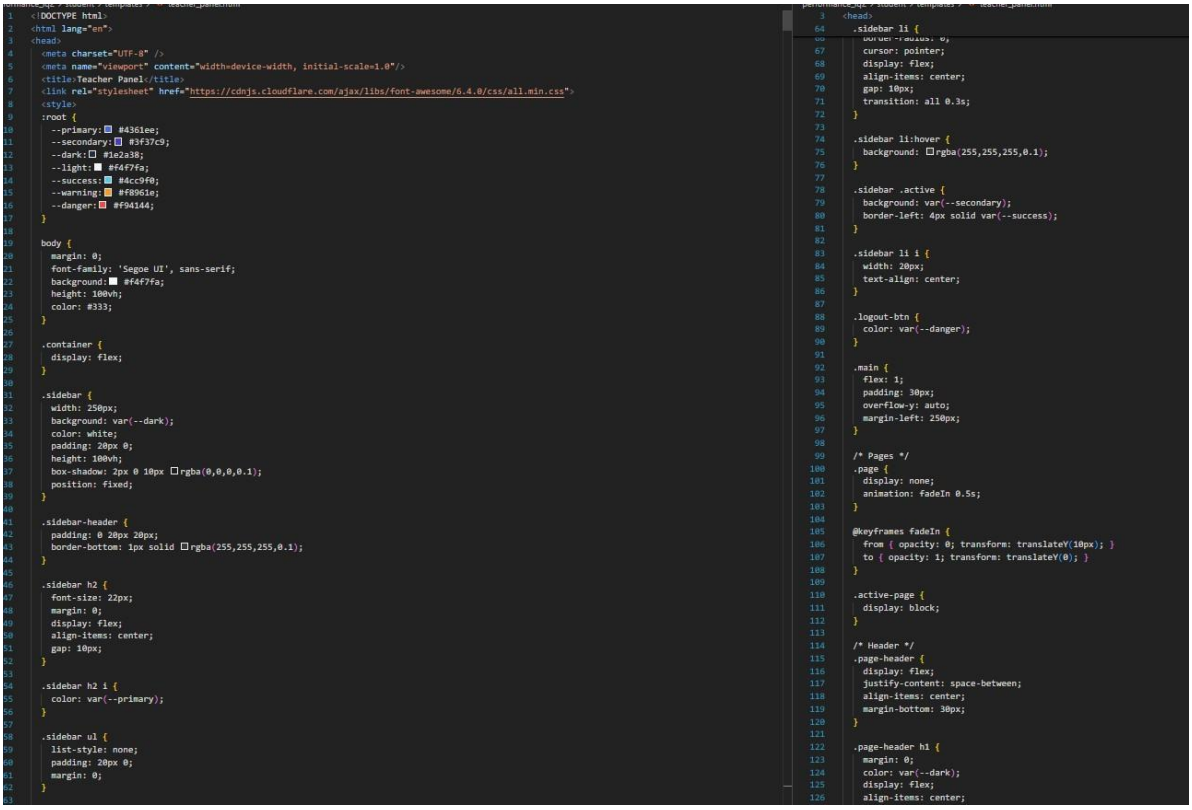


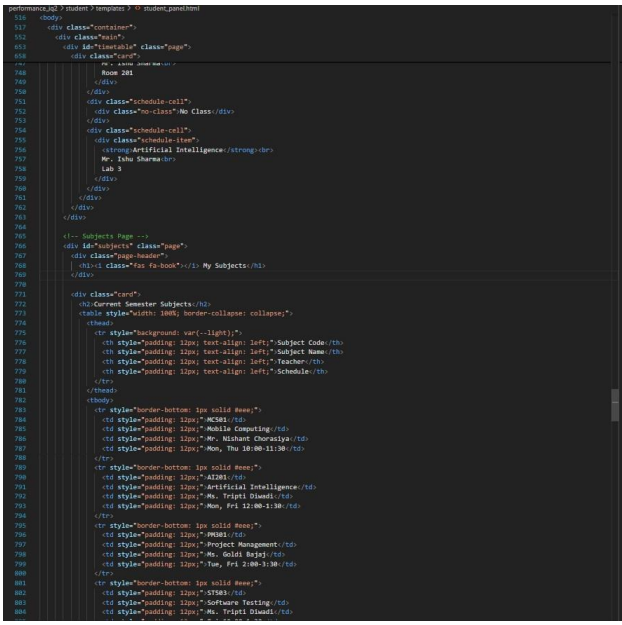


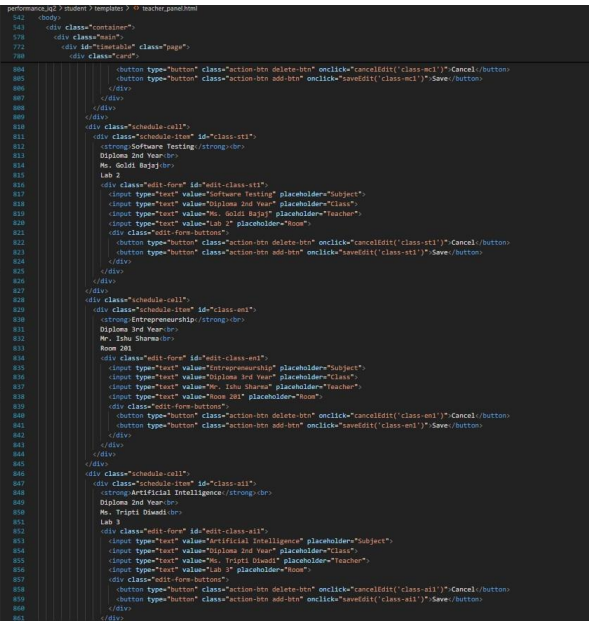


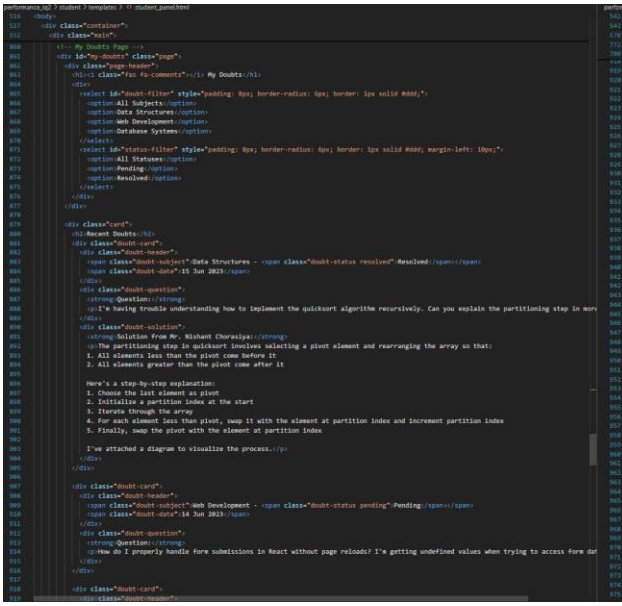


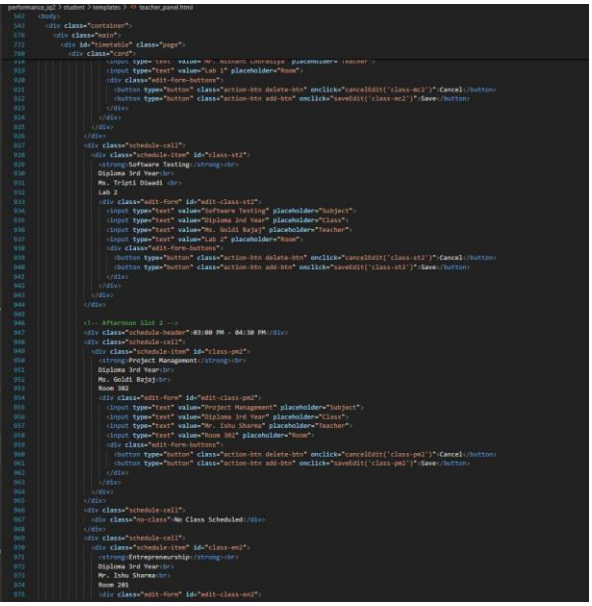
5.1.5 Teacher panel

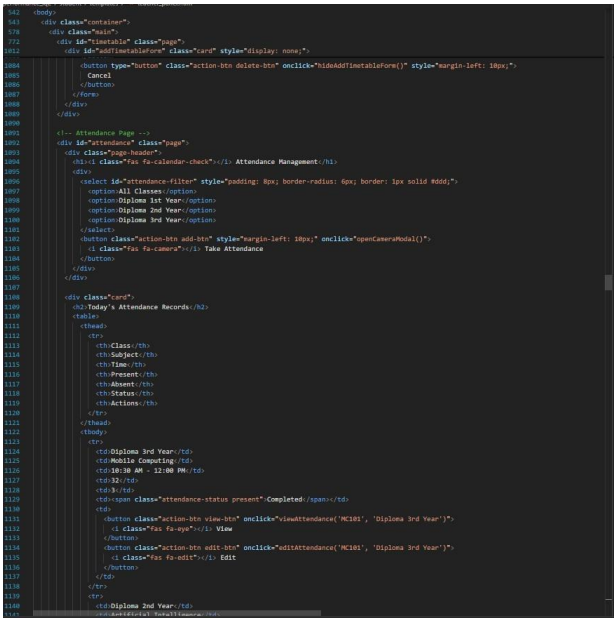


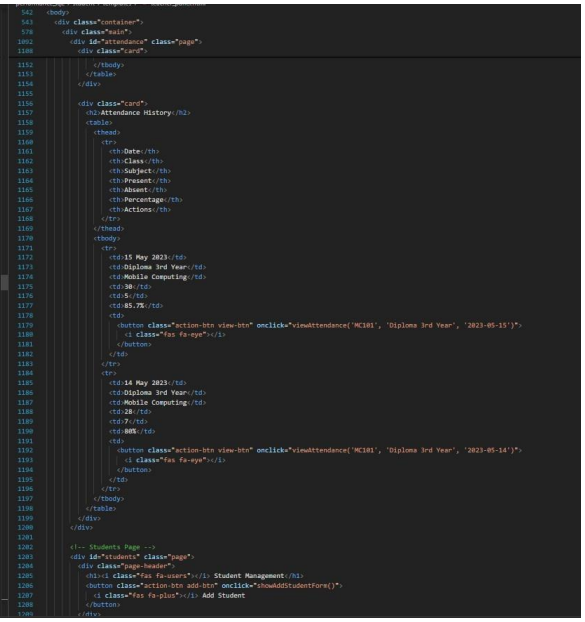


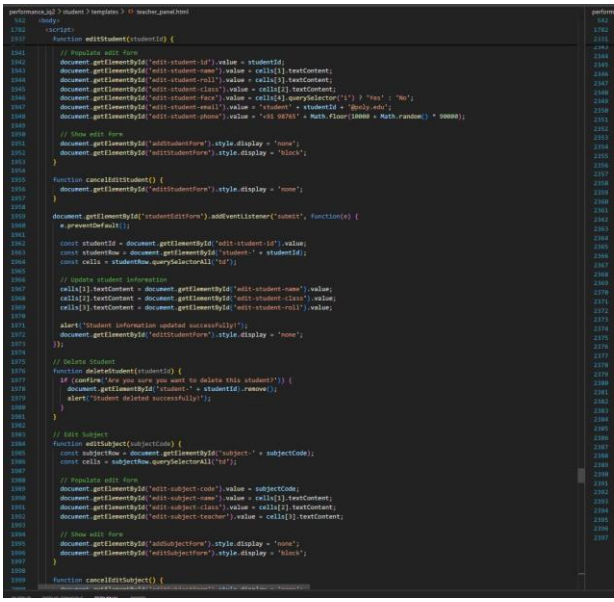


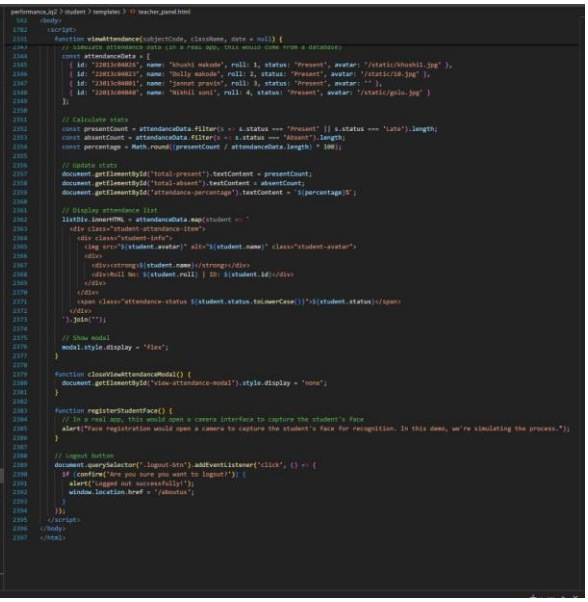






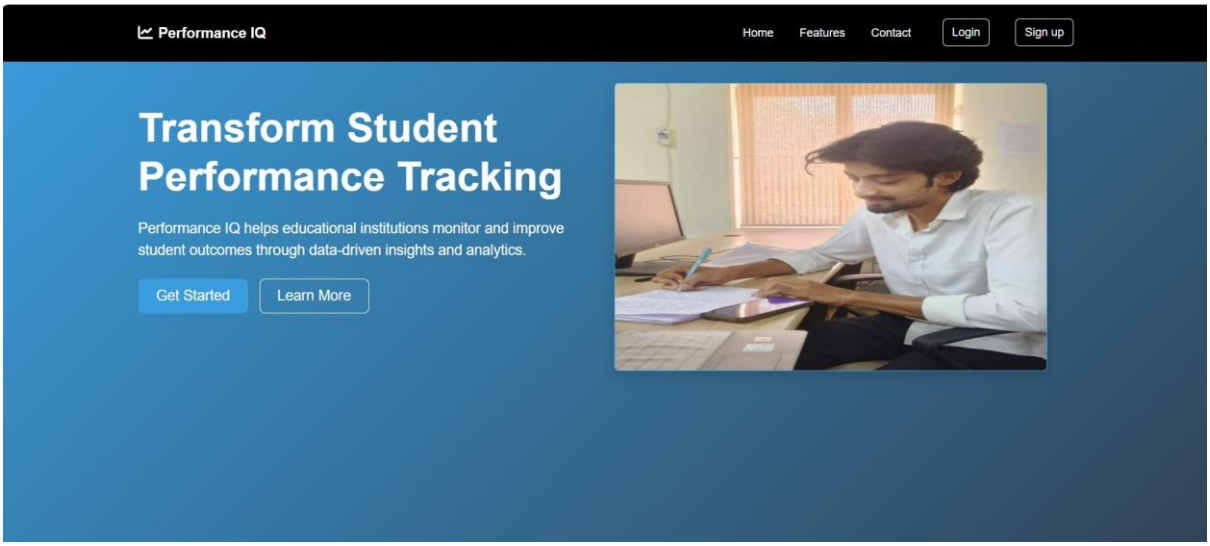




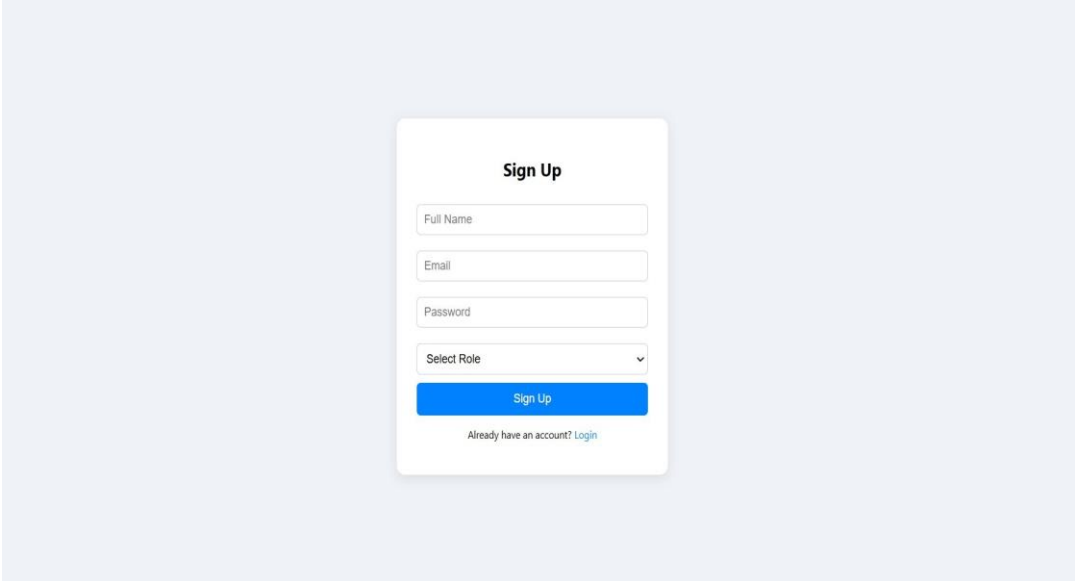


5.2 Output Snapshots

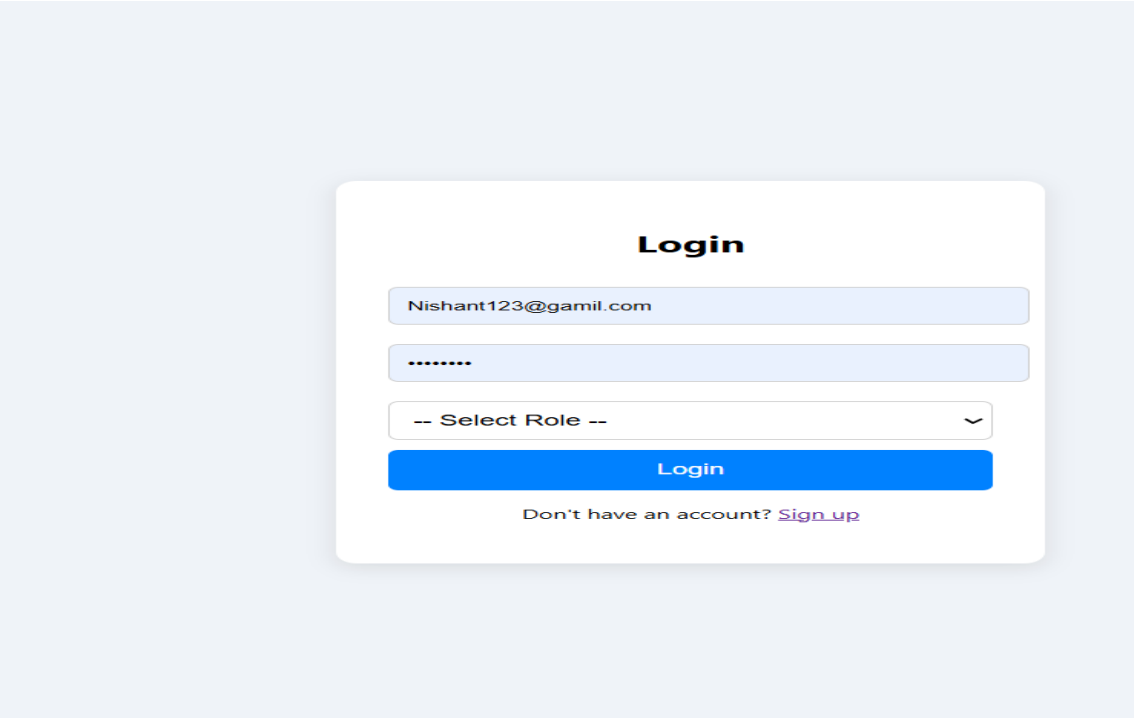
5.2.1 HOME Page



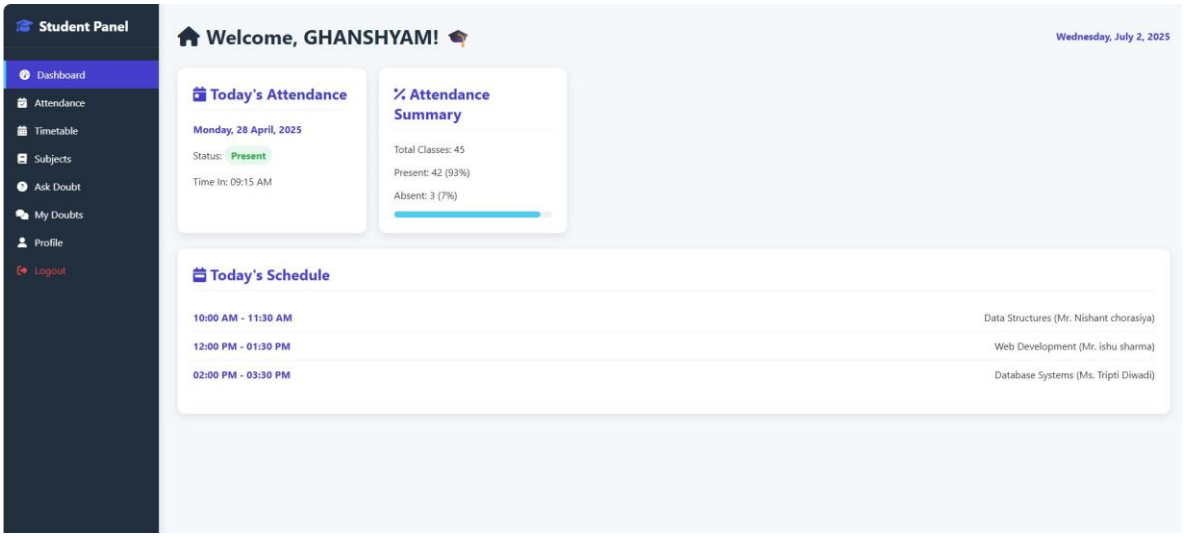
5.2.2 SIGN UP



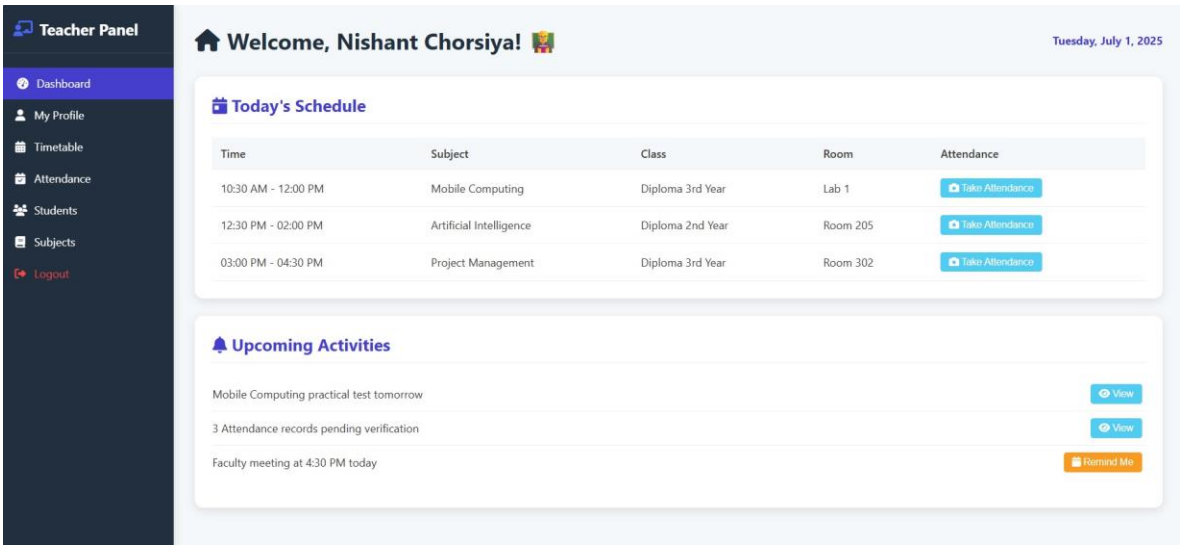
5.3.3 Login Page



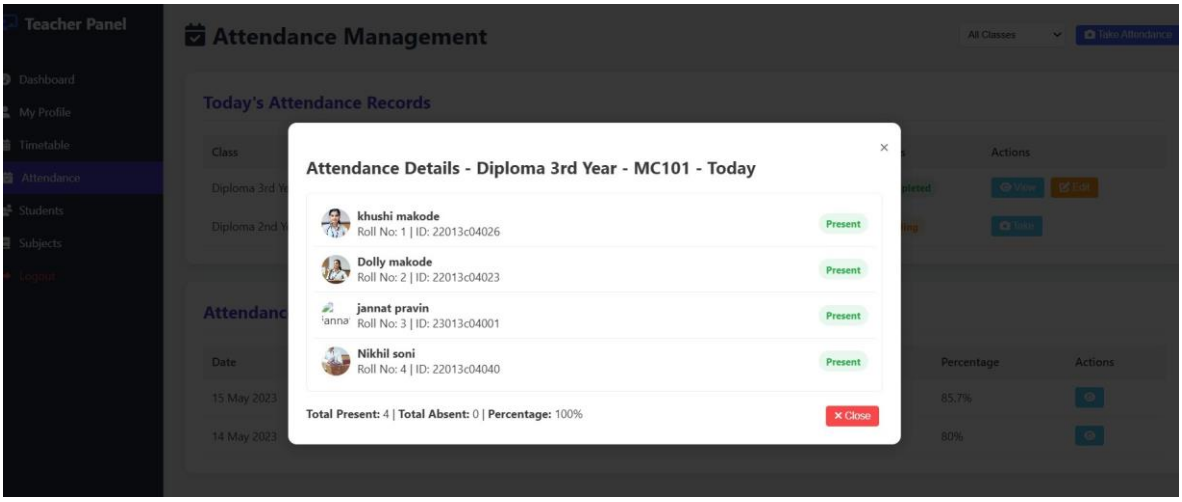
5.4.4 student panel



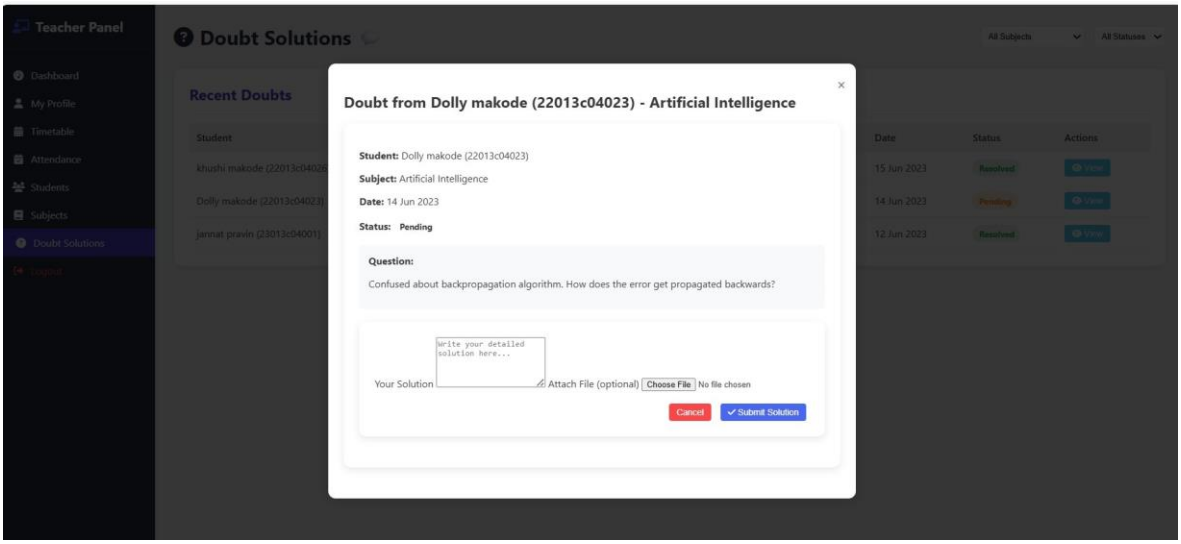
5.2.5 Teacher panel



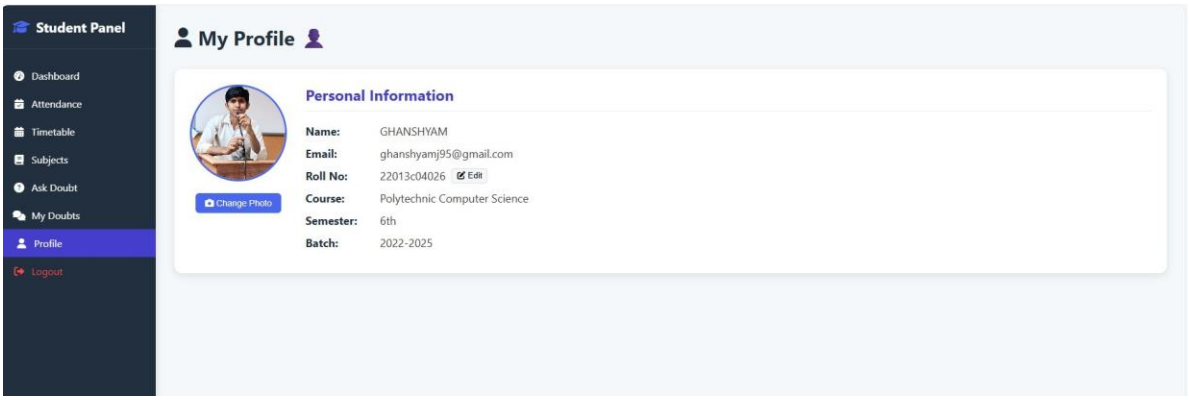
5.2.6 Attendance output Panel



5.2.7 student doubt solution



5.2.68student profile



Chapter 6 : Likely Benefits and Limitations

Benefits of the System

1. Centralized Management:

- The system provides a centralized platform to manage student data, attendance, and communication between teachers and students.

2. Time Saving:

- Automates manual tasks such as attendance tracking, marks recording, and performance analysis, saving valuable time for both students and teachers.

3. Accuracy and Consistency:

- Reduces human errors and maintains consistent data records like attendance , marks, and student profiles.

4. Real-time Access:

- Students and teachers can access the system in real-time to check attendance records, and track performance.

5. Face Recognition Attendance:

- Enhances transparency and reduces proxy attendance through AI-based facial detection.

6. Role-Based Access:

- Teacher, and Student logins ensure data security and functionality access control.

7. Class Scheduling:

- Teachers and students can easily view and manage class schedules.

8. Mobile-Friendly Design:

- Can be accessed via smartphone, making it more convenient for students.

9. Teacher Dashboard:

- Teachers can easily manage their classes, attendance, and student performance in one place.

Limitations :

1. **Internet Dependency:**

- The system requires internet access for real-time data syncing. In areas with poor connectivity, performance may degrade.

2. **Hardware Requirements:**

- For modules like face recognition, high-quality cameras and better computing power are required, which may not be available in all classrooms.

3. **Limited to Institutional Use:**

- Currently designed to manage data within a single institute; scalability for multiple branches or large-scale use may require further development.

4. **Security Concerns:**

- If not hosted securely, there may be risks of unauthorized data access or cyber threats.

5. **Technical Knowledge:**

- Initial training is required for non-technical users (especially admin or teachers unfamiliar with digital systems).

Chapter 7: Conclusion and Future Enhancements

7.1 Conclusion

The **Student Management System** project has been developed with the objective of automating and simplifying student-related academic processes in an educational institution. In the current education system, managing student information manually is time-consuming, prone to errors, and lacks real-time accessibility. This project effectively addresses these limitations by offering a centralized and digital solution to store, retrieve, and manage student data.

Through this project, I have designed and implemented a robust system capable of handling student records, **f**ace recognition-based attendance tracking through the teacher panel, class schedule visibility for both teachers and students, and direct communication between students and teachers. The system reduces dependency on paper-based records, improves accuracy, and increases administrative efficiency.

Moreover, the project was developed using modern web technologies and programming languages. The front end was designed using HTML, CSS, and JavaScript to ensure responsiveness and usability, while the backend logic was implemented using Python (Django framework), which ensures scalability, security, and fast processing. The use of databases such as MySQL or SQLite allowed for reliable storage and retrieval of data. Throughout the course of the project, I gained practical experience in various stages of software development — including requirement analysis, system design, coding, testing, and documentation. I also learned the importance of modular development, user-centric design, and real-time feedback integration.

This project not only helped me apply the theoretical knowledge acquired during my diploma course but also prepared me for real-world software development practices. It enhanced my technical skills, logical thinking, debugging capability, and the ability to work systematically to achieve a larger goal.

In conclusion, the **Student Management System** is a practical, efficient, and scalable solution for modern educational institutions. It is a step forward toward digital transformation in education and demonstrates how technology can simplify and enhance academic management processes.

7.2 Future Enhancements

1. Real-Time Notifications and Alerts

The system can be integrated with SMS and email gateways to send real-time notifications to students and parents. Important alerts like attendance shortages, assignment deadlines, exam schedules, or performance updates can be communicated instantly, ensuring better engagement and awareness.

2. Mobile Application Support

In addition to the web interface, a dedicated mobile app for Android and iOS can be developed. This app would allow students and teachers to access their respective dashboards, view reports, submit doubts, and manage attendance directly from their smartphones.

3. Parent Login Module

A separate login system for parents can be introduced so they can monitor their child's performance, attendance, and teacher feedback. This will encourage parent involvement in academic growth.

4. Chat and Discussion Module

An internal messaging or chat system can be developed to facilitate doubt clarification and academic discussions between students and teachers in a secure environment. This can help build a collaborative and interactive learning system.

5. Online Exam and Evaluation System

The project can be extended to include an online examination system where teachers can create tests, and students can take them online. Results can be generated automatically, saving time and effort.

6. Performance Prediction using AI

Using data analytics and machine learning, the system can be enhanced to predict a student's future performance and provide recommendations for improvement based on past trends and behavior.

8. Multi-language Support

To improve usability among students with different linguistic backgrounds, the system can include multi-language support, especially Hindi and English, allowing students to choose their preferred interface language.

9. Cloud-Based Deployment

For scalability and remote access, the system can be hosted on a cloud platform (like AWS or Firebase). This will improve performance, availability, and data backup.

10. Role Management and Logs

Advanced role management, access logs, and activity tracking can be implemented to monitor user behavior and ensure security and accountability in the system.

CHAPTER 8 :

Bibliography

1. **www.w3schools.com – For HTML, CSS, JavaScript references**
2. **www.geeksforgeeks.org – For backend development and database tutorials**
3. **https://docs.djangoproject.com/ – Official Django documentation**
4. **https://getbootstrap.com/ – For responsive UI design (Bootstrap framework)**
5. **https://www.mysql.com/ – For understanding MySQL database**
6. **Stack Overflow (https://stackoverflow.com/) – For resolving coding errors and logic issues**
7. **VS Code Documentation – For code editor usage**
8. **Python.org – For Python language reference**
9. **OpenAI ChatGPT – For guidance and logic explanation during development**