Jaypee Institute of Information Technology, Noida

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING AND INFORMATION TECHNOLOGY

Project Title: College Management System

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Program: B. Tech. CSE

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CHAPTER 1

1.1 Problem Statement

As a college administrator, I often find myself overwhelmed with manual tasks, such as student registration, attendance tracking, and announcement dissemination. This not only consumes valuable time but also leads to errors and inefficiencies in managing college operations. Faculty members, like Mary in the Computer Science department, struggle with managing multiple batches of students and ensuring seamless communication of assignments and attendance records. Meanwhile, students like Ronny face challenges in tracking their attendance and submitting assignments punctually due to the lack of an efficient platform.

Our college desperately needs a modern, automated system to streamline administrative tasks, enhance communication between faculty and students, and empower individuals like Mary, and Ronny to focus on their core responsibilities without being bogged down by manual paperwork.

Suggestions for a Software Solution:

- **Automated Student Registration:** Implement a system for students to register online, reducing the paperwork and time required for enrollment.
- **Efficient Attendance Tracking:** Develop a digital platform for faculty to easily record and monitor student attendance, providing real-time insights to students and administrators.
- **Seamless Assignment Management:** Create a centralized system for faculty to assign, collect, and evaluate student assignments, facilitating better organization and timely feedback.
- **Clear Announcement Dissemination:** Establish a channel for administrators and faculty to broadcast important announcements and updates to students in a timely manner.
- **User-Friendly Interface:** Design an intuitive interface that caters to the diverse needs of administrators, faculty, and students, ensuring ease of use and accessibility.

1.2 Sub-problems

- **User Authentication and Access Control:** Develop secure login mechanisms for administrators, faculty, and students to access relevant features and data.
- **Database Management:** Implement robust databases to store student information, attendance records, assignment details, and announcements securely.
- **Frontend Development:** Design responsive and user-friendly interfaces for different user roles, ensuring seamless navigation and interaction.

- **Functional Modules:** Develop individual modules for student registration, attendance tracking, assignment management, announcement dissemination, and user profile management.
- **Integration and Testing:** Integrate all modules into a cohesive system and conduct thorough testing to ensure reliability, security, and usability.

By addressing these sub-problems, we aim to create a comprehensive software solution that revolutionizes college management, benefiting administrators, faculty, and students alike.

CHAPTER 2

2.1 BUSINESS GOALS

Business Goal 1: Efficient Administrative Processes
Sub-goal 1.1: Automated Student Registration
Task 1.1.1: Develop an Online Registration System
Algorithm: Form validation and database integration
Description: Create an intuitive online platform for students to register, reducing paperwork and manual processing time.

Sub-goal 1.2: Efficient Attendance Tracking
Task 1.2.1: Implement Real-Time Attendance Monitoring
Algorithm: Data synchronization and event-driven updates
Description: Enable faculty to track student attendance digitally and receive real-time insights, enhancing efficiency and accuracy.

Business Goal 2: Enhanced Communication Channels
Sub-goal 2.1: Timely Announcement Dissemination
Task 2.1.1: Establish Broadcast Channel for Important Updates
Algorithm: Push notification delivery and message prioritization
Description: Provide administrators and faculty with a channel to broadcast announcements and updates to students promptly, ensuring timely communication.

Business Goal 3: User-Friendly Interface Design
Sub-goal 3.1: Intuitive Interface for All Users
Task 3.1.1: Design Responsive User Interfaces
Algorithm: User experience research and iterative design
Description: Create user-friendly interfaces tailored to the diverse needs of administrators, faculty, and students, ensuring ease of navigation and accessibility.

2.2 ENUMERATED FUNCTIONAL REQUIREMENTS

Requirement Label	Priority Weight	Requirement Description
REQ-1	High	The system must allow administrators to authenticate securely before accessing administrative functionalities.
REQ-2	High	The system must provide a secure and user-friendly interface for staff members to log in and access relevant features such as grading, and attendance tracking.
REQ-3	Medium	Faculty members should be able to create, modify, and view timetables for their classes efficiently within the system.
REQ-4	Medium	Staff and students must have the capability to update their profiles with accurate information, ensuring data integrity and reliability.
REQ-5	High	The system should maintain accurate and up-to-date attendance records for students, allowing faculty to view and track attendance easily.
REQ-6	High	It should be compatible with modern web browsers and rely on web technologies such as HTML, CSS, and JavaScript for user interface development.
REQ-7	High	The system must ensure high availability and reliability, minimizing downtime and disruptions to users' access to system resources and services.
REQ-8	High	Regular updates and maintenance should be performed to address vulnerabilities, improve performance, and enhance user experience.
REQ-9	Medium	The system should demonstrate the college's commitment to innovation and technology adoption, enhancing its reputation and attracting prospective students and faculty.

2.3 ENUMERATED NON-FUNCTIONAL REQUIREMENT

1. Security:
   Priority Weight: High
   Description: The system must adhere to industry-standard security protocols to protect sensitive student data from unauthorized access, ensuring confidentiality, integrity, and availability.

2. Usability:
   Priority Weight: High
   Description: The user interface should be intuitive and user-friendly, allowing users to navigate the system easily and perform tasks efficiently, thus enhancing user satisfaction and productivity.

3. Performance:
   Priority Weight: High
   Description: The system should be capable of handling concurrent user requests and large volumes of data efficiently, ensuring optimal performance and responsiveness under peak load conditions.

4. Compatibility:
   Priority Weight: Medium
   Description: The system should be compatible with a wide range of devices and operating systems, enabling users to access it seamlessly from desktops, laptops, tablets, and smartphones.

5. Reliability:
   Priority Weight: High
   Description: The system should have built-in redundancy and failover mechanisms to ensure high availability and reliability, minimizing downtime and data loss in case of hardware or software failures.

6. Scalability:
   Priority Weight: Medium
   Description: The system should be scalable to accommodate future growth in user base and data volume, allowing for seamless expansion without significant performance degradation or architectural changes.

7. Accessibility:
   Priority Weight: High
   Description: The system should comply with accessibility standards such as WCAG (Web Content Accessibility Guidelines), ensuring equal access and usability for users with disabilities.

8. Maintainability:
   Priority Weight: Medium
   Description: The system should be designed and implemented using modular and well-documented code, facilitating ease of maintenance, updates, and enhancements by developers and administrators.

CHAPTER 3
USE CASES

3.1 STAKEHOLDERS

1. Administrators: Manage system operations, configure settings, and generate reports.
2. Faculty Members: Create and manage assignments, record attendance, and access student information.
3. Students: Register for courses, submit assignments, check grades and attendance.
4. IT Department: Responsible for system maintenance, updates, and technical support.
5. College Management: Oversee overall system performance and strategic decisions related to system implementation and enhancement.

3.2 ACTORS AND GOALS

Actor: ADMIN

Goal 1: Manage System Operations

- Authenticate into the system securely.
- Configure system settings and preferences.
- Monitor system health and performance.
- Manage user accounts and permissions.
- Generate and export reports for analysis and decision-making.

Actor: SYSTEM

Goal 1: Facilitate Interactions

- Receive inputs from initiating actors (ADMIN, STUDENT, STAFF MEMBER).
- Perform necessary actions based on inputs.
- Ensure data integrity and security.
- Provide responses and feedback to actors as required.

Actor: STUDENT

Goal 1: Academic Management

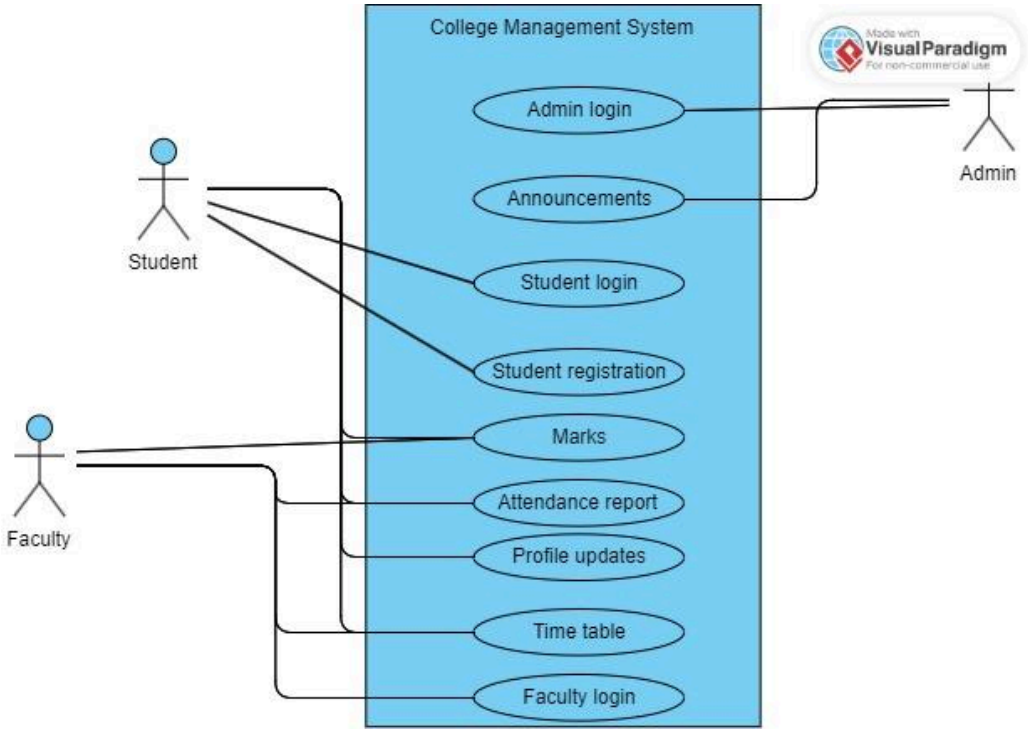
- Log in to the system securely.
- Register for courses offered by the college.
- View course schedules and syllabi.
- Submit assignments before deadlines.
- View grades and attendance records for enrolled courses.
- Access course materials and resources provided by faculty.

Actor: STAFF MEMBER

Goal 1: Course Management

- Log in to the system securely.
- Create, update, and delete assignments for courses.
- Record attendance for class sessions.
- Provide feedback and grades to students.
- Communicate announcements and important information to students.
- Access and update student information as necessary.

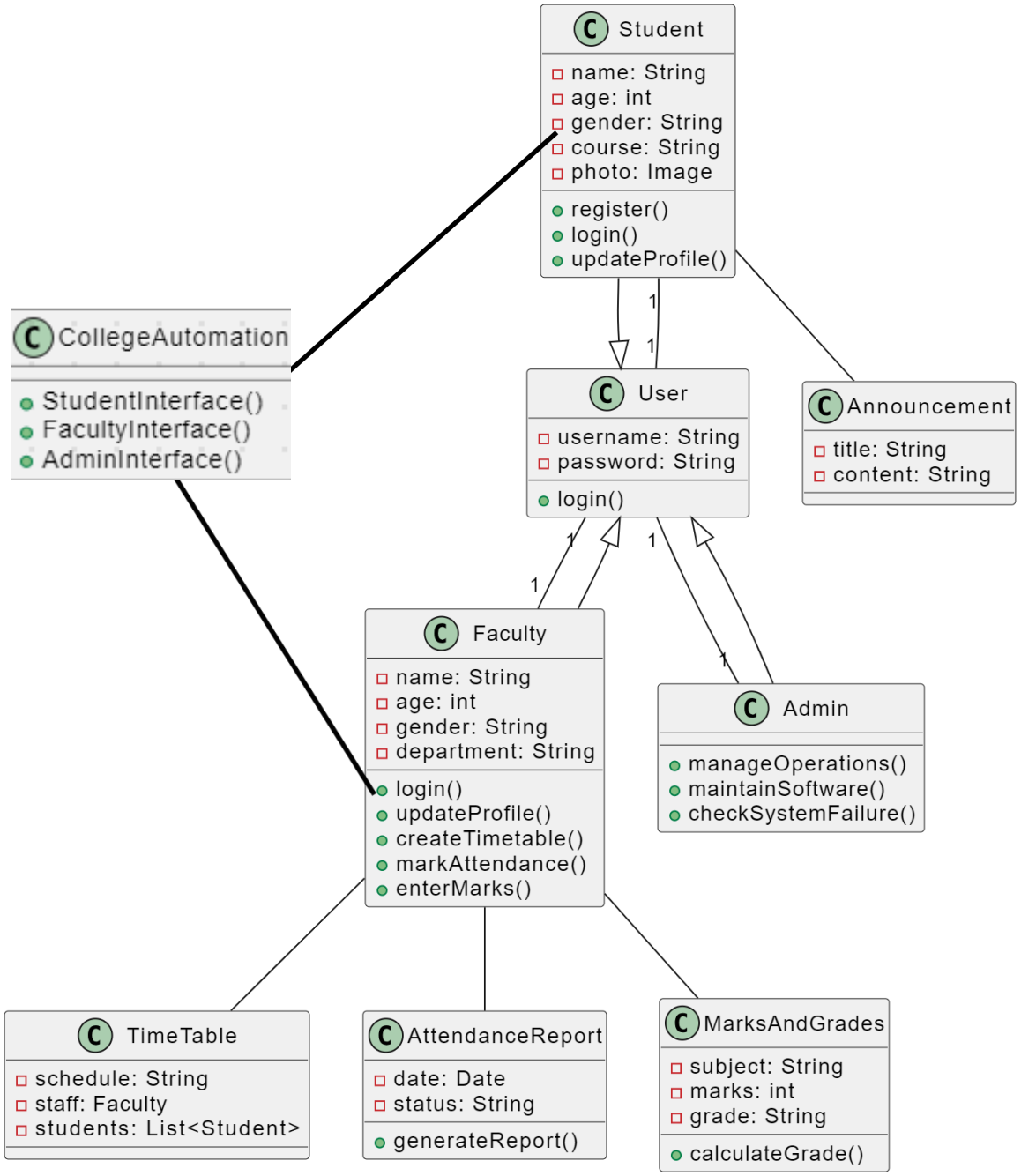
3.3 USE CASE DIAGRAM



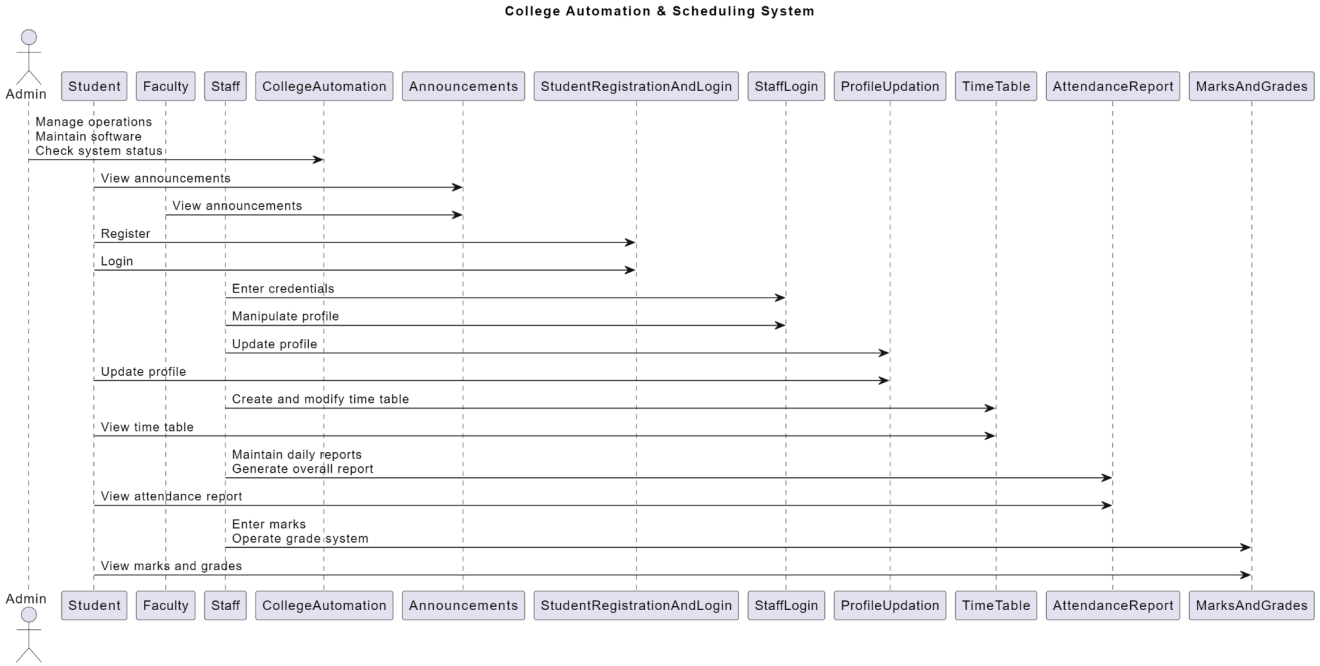
CHAPTER 4

4.1 DESIGN DIAGRAMS

4.1.1 CLASS DIAGRAM



4.1.2 SEQUENCE DIAGRAM



4.2 IMPLEMENTATION

Main.php - Below is the code for main page of our project

```
<link rel="stylesheet" href="">

<style>



.button {

    border: none;

    color: white;

    padding: 20px 34px;

    text-align: center;
```

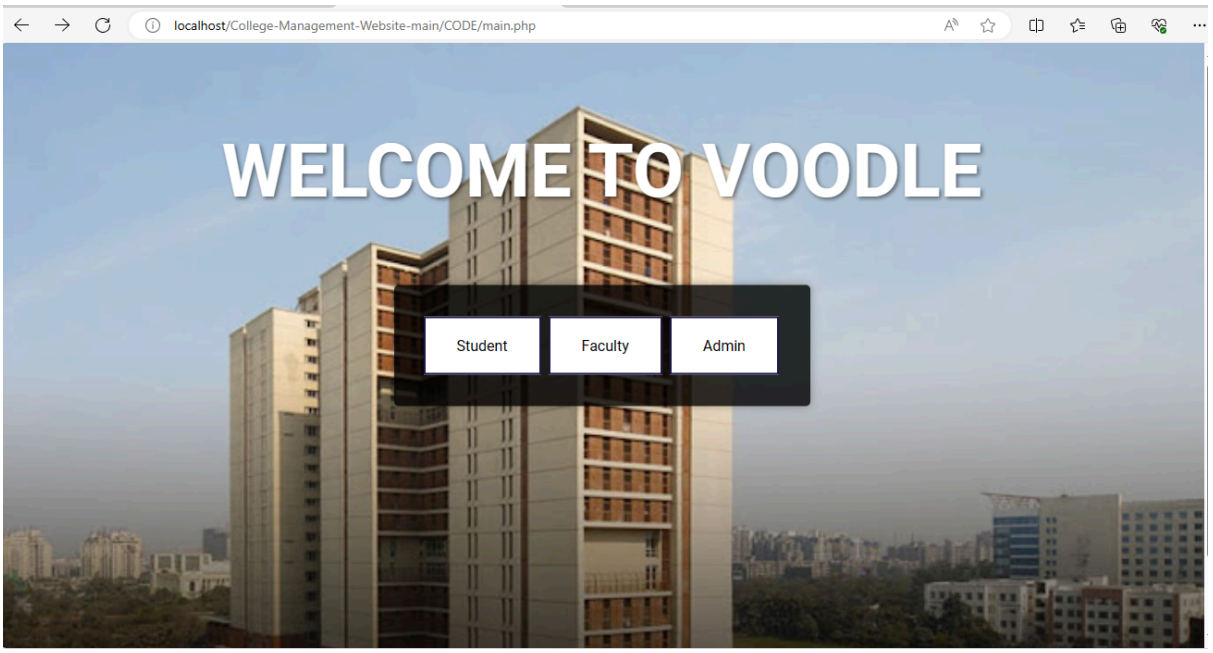
```
  text-decoration: none;

  display: inline-block;

  font-size: 16px;

  margin: 4px 2px;

  transition-duration: 0.4s;

  cursor: pointer;

}



.button1 {

  background-color: white;

  color: black;

  border: 2px solid #221b4b;

}



.button1:hover {

  background-color:  #221b4b;

  color: white;

}

@import url('https://fonts.googleapis.com/css?family=Roboto');
```

```css
*{
  margin: 0;
  padding: 0;
  box-sizing: border-box;
  outline: none;
  font-family: 'Roboto', sans-serif;
}

body{
  background: url('jiit.jpg') no-repeat top center;
  background-size: cover;
  height: 100vh;
}

.wrapper{
  position: absolute;
  top: 50%;
  left: 50%;
```

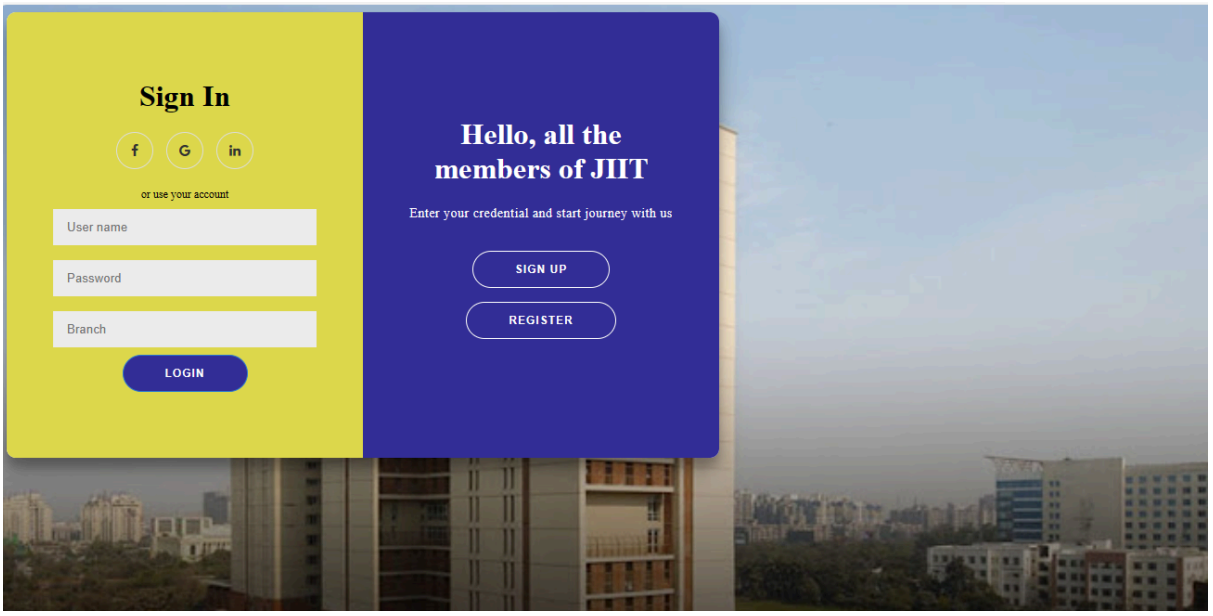
```
  transform: translate(-50%, -50%);

  width: 100%;

  max-width: 450px;

  background: rgba(0,0,0,0.8);

  padding: 30px;

  border-radius: 5px;

  box-shadow: 0 0 10px rgba(0,0,0,0.3);

}

h1 {

  position: relative;

  color: white; /* White text color for contrast */

  margin: 90px auto; /* Center the heading horizontally */

  font-size: 80px;

  text-align: center;

  font-weight: bold; /* Make the text bold */

   text-shadow: 2px 2px 4px rgba(0, 0, 0, 0.5); /* Add a subtle shadow
for depth */

}
```

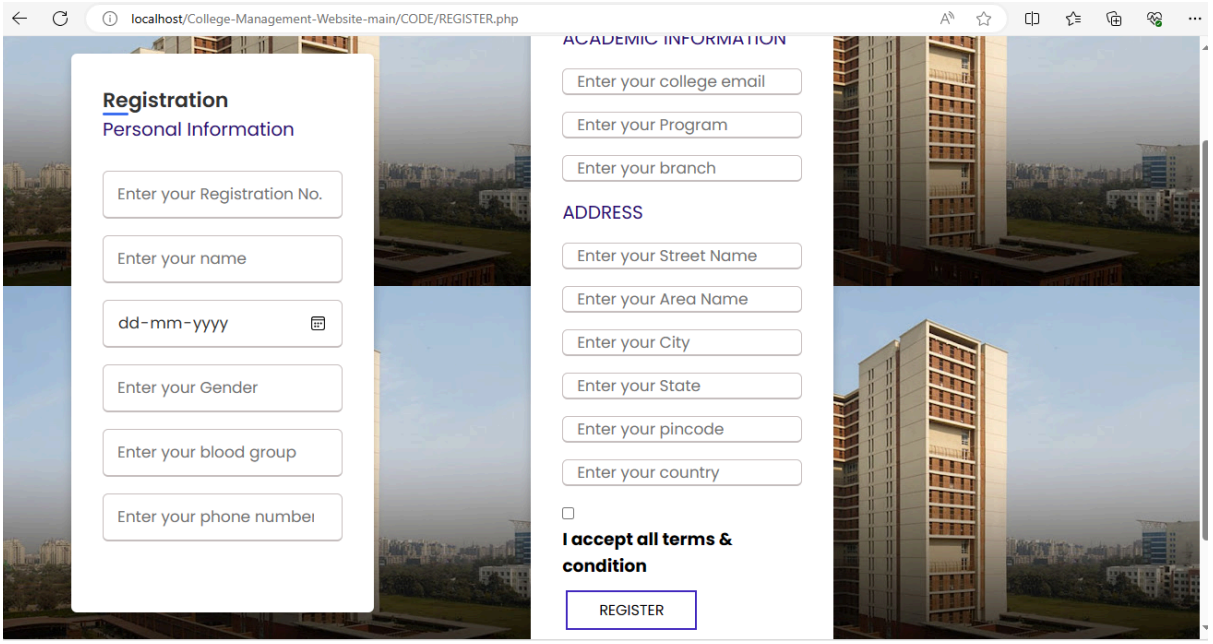
```
  </style>

<h1> WELCOME TO VOODLE </h1>

<div class="wrapper">

            <td><a    href="STUDENT_LOGIN.php"    ><button    class="button
button1">Student</button></a></td>

                <td><a     href="STAFF.php"     ><button     class="button
button1">Faculty</button></a></td>

              <td><a    href="ADMIN_LOGIN.php"    ><button    class="button
button1">Admin</button></a></td>

  </div>
```

SCREENSHOTS



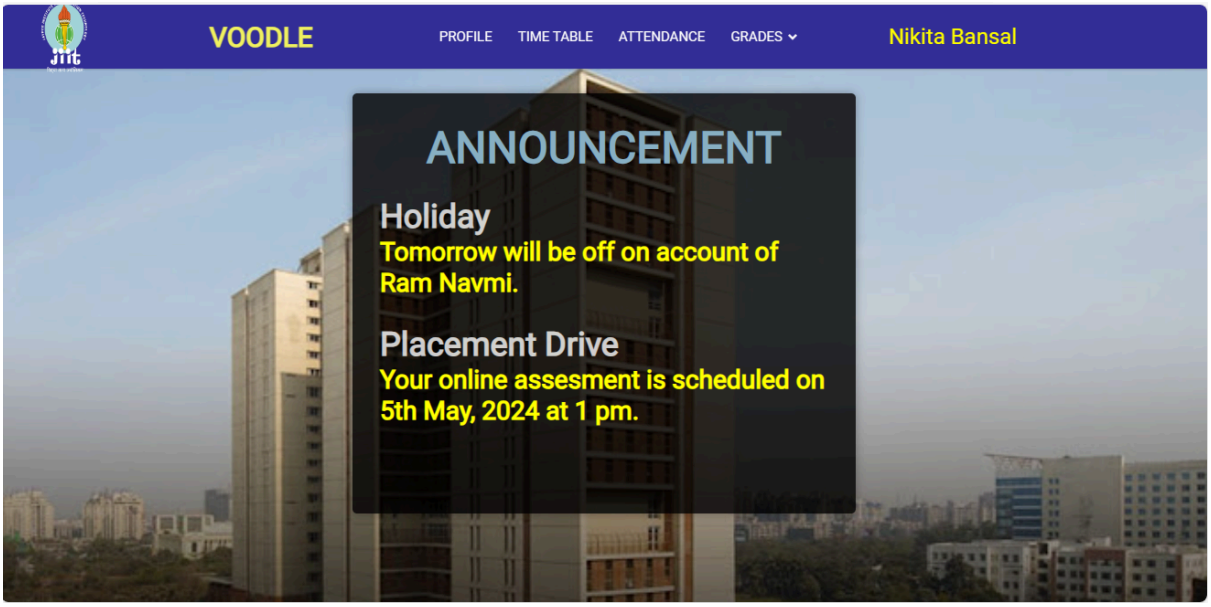
This is the home page of our college automation & scheduling system with admin, student & faculty interface.





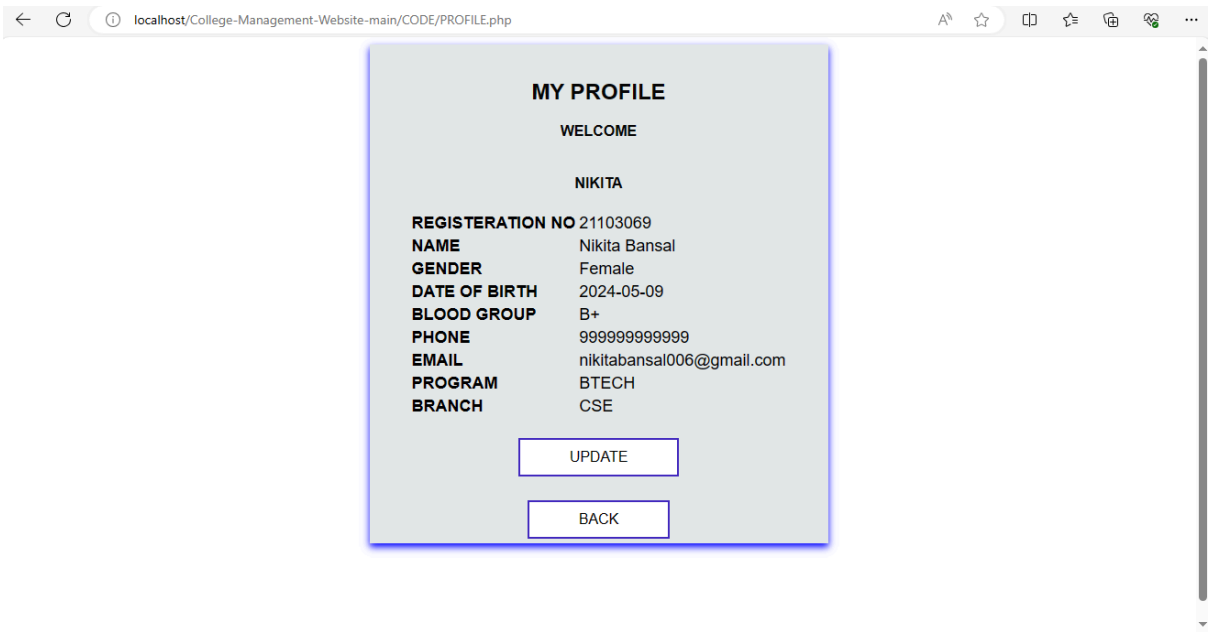
The above two screenshots are of student interface. Students need to register themselves into the system. Registered students can access the system by logging into it

SPECIFICATION (Register): Place holders for Name, Age, Gender, Course and all other information required. A button to save changes/Submit. SPECIFICATION (Login): Place holders for username & password. A submit button.



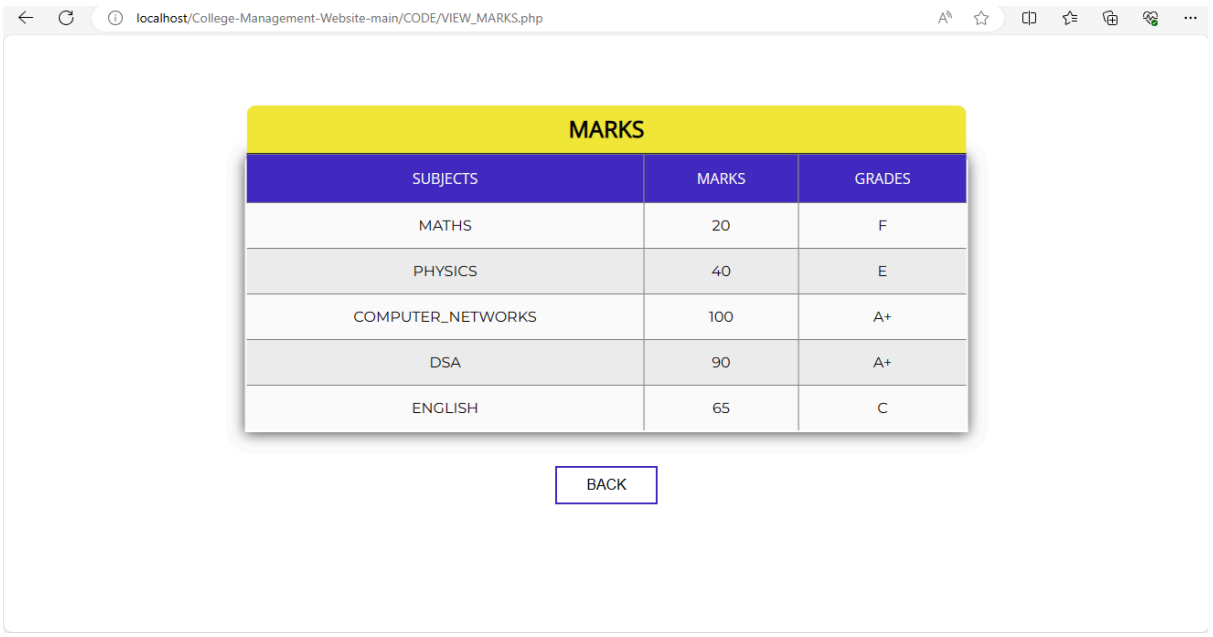
Here the students can view all the important information regarding any current events or academic announcements in this section.

SPECIFICATION: Announcement as title, all entered announcements to be displayed in bulletin points.

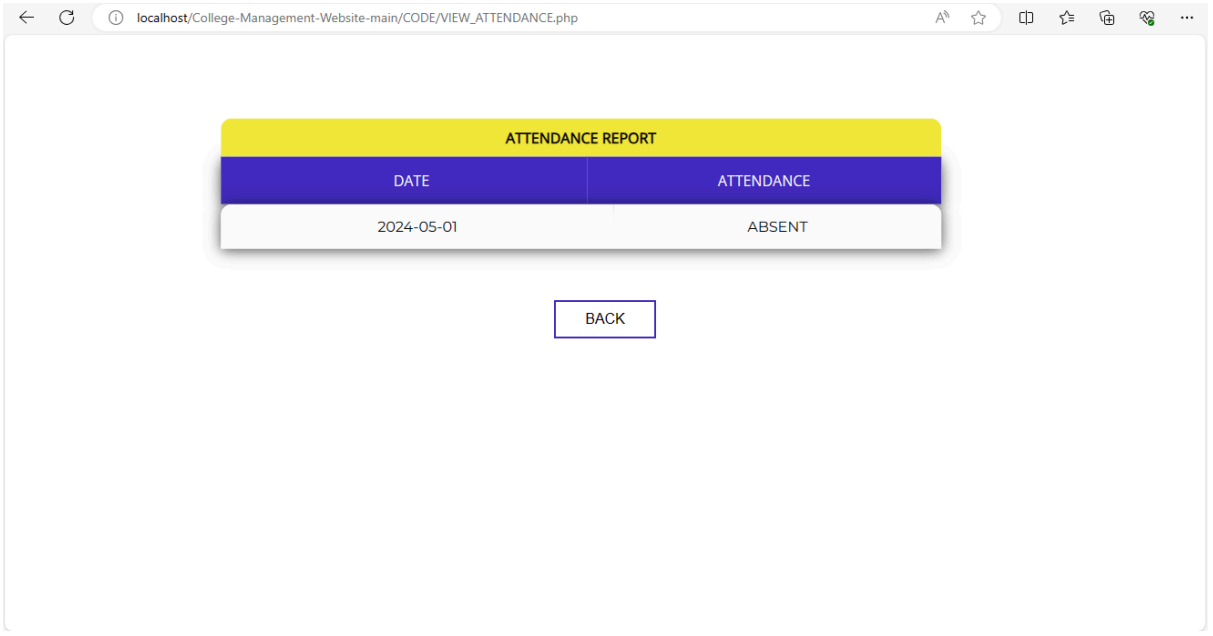


The system allows the Students to update their profile.

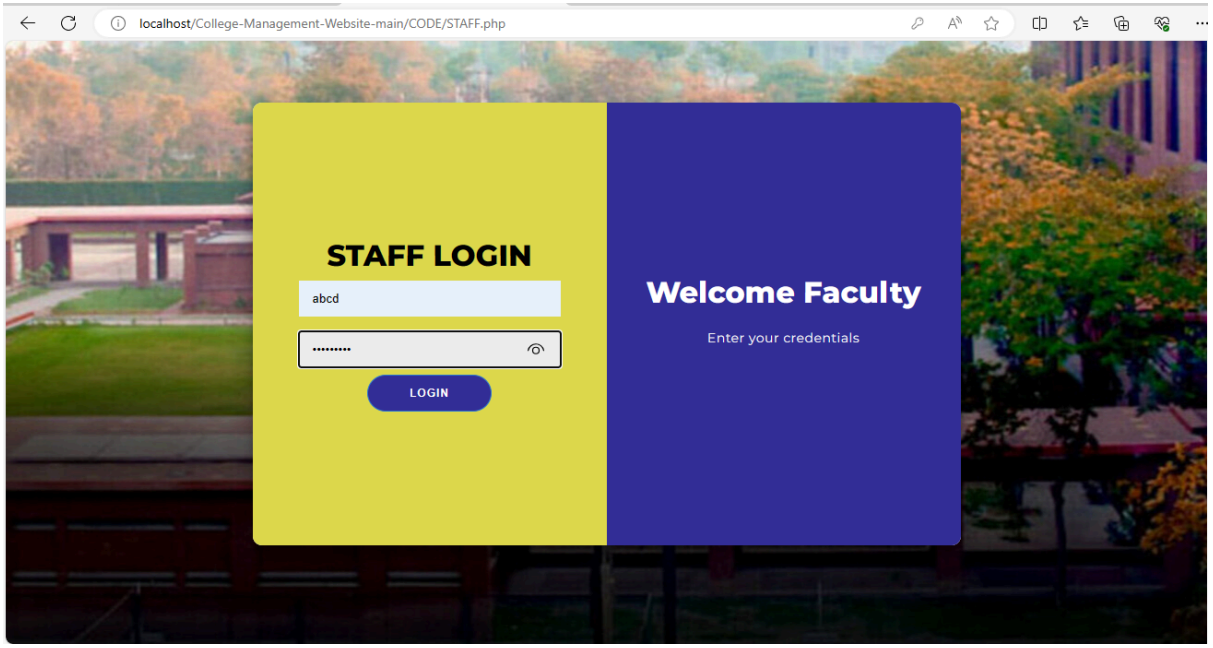
SPECIFICATION: Displays profile. Modify Button. If clicked it allows to modify the data. Save changes button.



Here the students will be able to see the marks of their respective streams chosen.

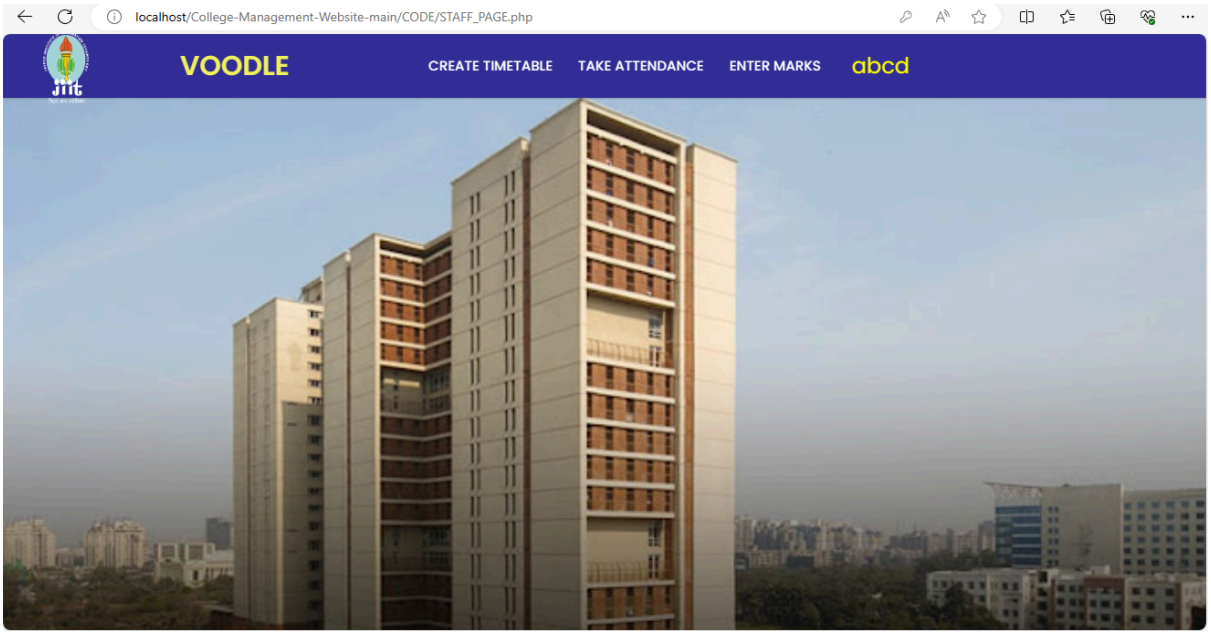


Here the students will be able to see their attendance of different subjects.

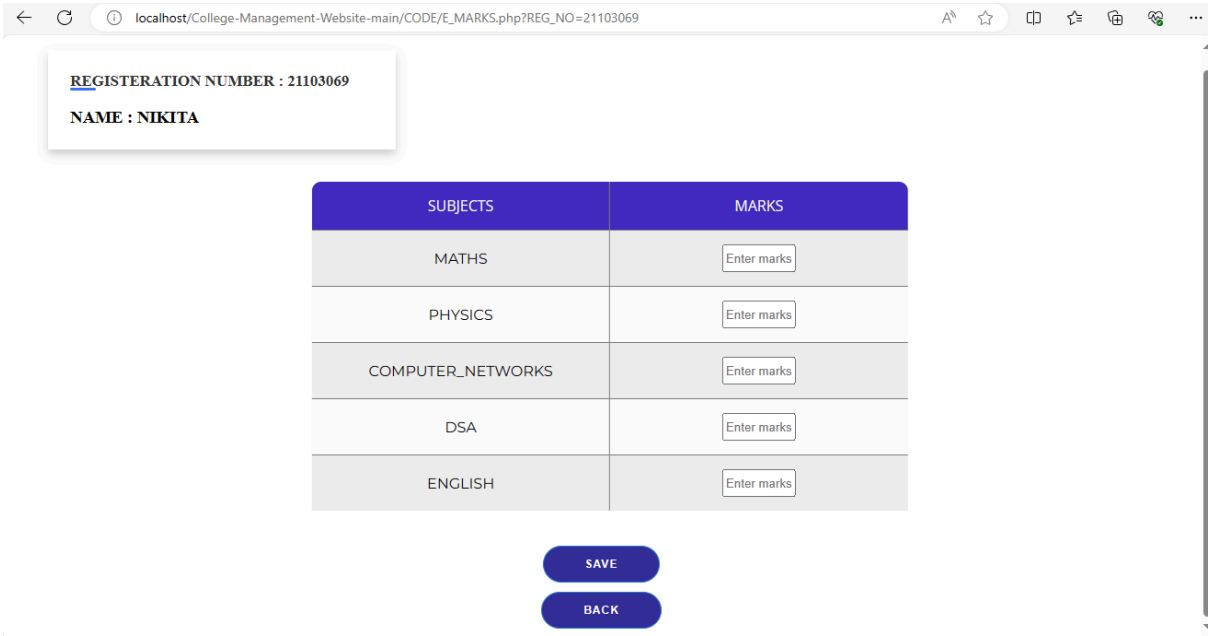


The registered staff members can enter their credentials.

SPECIFICATION: Place holders for username & password. A submit button.

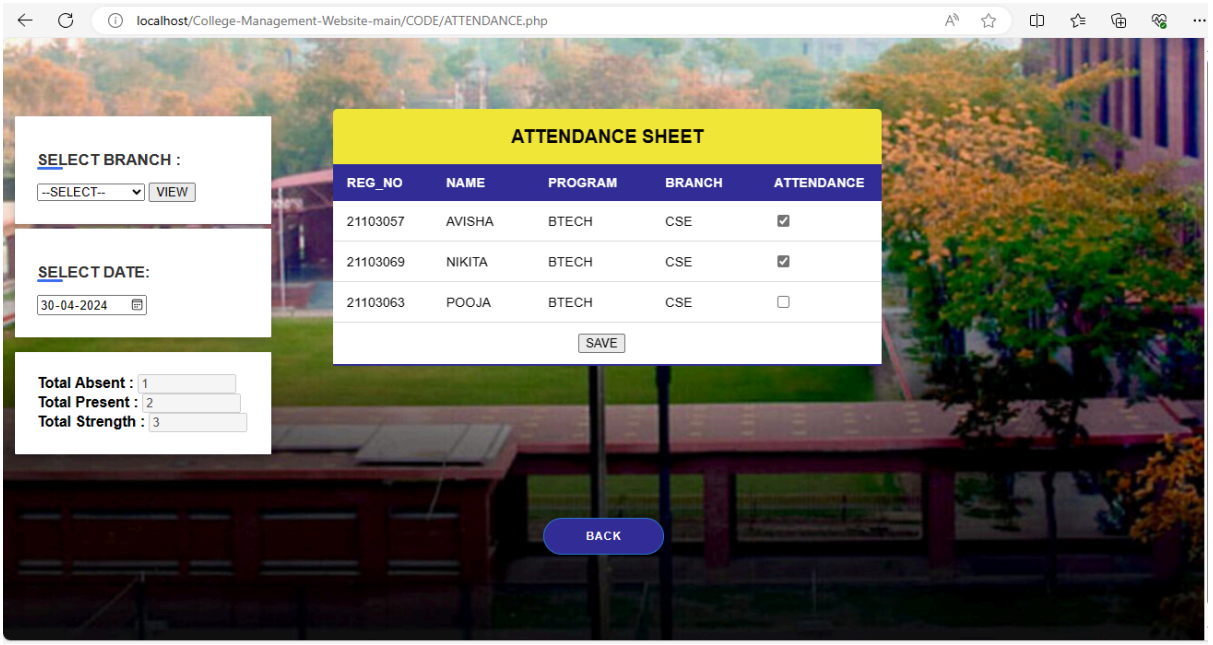


This is dashboard of faculty members where they can create timetable, take attendance and enter marks of students.



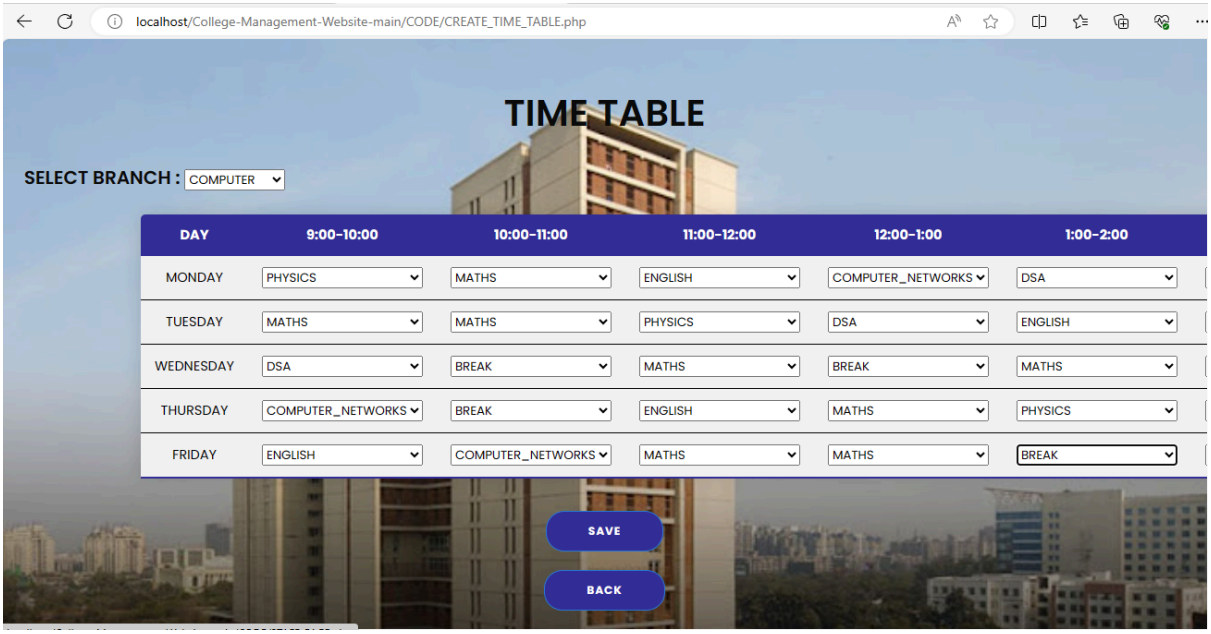
Here the system will allow the staff members to enter marks of the students subject wise or also individual student wise. The Grade system will operate automatically based on entered marks and class average.

SPECIFICATION (staff): Class/Subject wise categories. Entry of marks of students. Displaying student name and other details. Placeholder to enter marks.



It will maintain daily attendance reports and generate automated overall report students wise.

SPECIFICATION (staff): List of students and a drop down by side of it. It will contain options of Present and Absent.



The staff can create and modify the time table of particular students under them. Both the staff and students can view the time table.

SPECIFICATION: Displays time table created by staff in a tabular form.

CHAPTER 5

TEST CASE REPORT

1. Authentication for Administrators:

Test Case 1: Verify that administrators can authenticate securely.

Expected Result: Administrator successfully logs in with valid credentials.

Result: Pass

2. Login & Signup for Students:

Test Case 2: Verify that students can authenticate securely.

Expected Result: Students successfully registers & logs in with valid credentials.

Result: Pass

3. User Login for Staff Members:

Test Case 3: Ensure that staff members can log in securely.

Expected Result: Staff member successfully logs in with valid credentials.

Result: Pass

4. Profile Update for Students:

Test Case 4: Verify that students can update their profiles.

Expected Result: Students updates profile information successfully.

Result: Pass

5. Attendance Tracking

Test Case 5: Verify that students can see their attendance of various subjects.

Expected Result: Students can view attendance successfully.

Result: Pass

6. Confirm that students can view their marks

Test Case 6: Verify that students can see their marks of various subjects.

Expected Result: Students can view marks successfully.

Result: Pass

7. Confirm that students can view timetable

Test Case 7: Verify that students can see their timetable.

Expected Result: Students were not able to view timetable.

Result: Fail

8. Faculty Timetable Management:

Test Case 8: Verify that faculty members can create timetables for their classes.

Expected Result: Faculty member creates a timetable successfully.

Result: Pass

9. Confirm that faculty is able to mark attendance of students:

Test Case 9: Verify that faculty can mark attendance easily.

Expected Result: Faculty member accesses attendance records without any issues.

Result: Pass

10. Confirm that faculty is able to enter marks of students of different branches:

Test Case 10: Verify that faculty can enter marks of students.

Expected Result: Faculty member can enter marks without any issues.

Result: Pass

Summary:

Total Pass: 9

Total Fail: 1

CONTRIBUTION OF EACH TEAM MEMBER

Avisha - Faculty login, faculty update marks, student profile update

Nikita - Student login, Student register, faculty take attendance, faculty update time-table

Samyak - Student sign-up, student view marks, student view attendance

REFERENCES

1. https://solarman.in/college-automation-system.html
2. https://www.ijirset.com/upload/2022/november/146_Engineering_NC.pdf
3. https://www.academia.edu/24351218/College_Automation_System
4. https://www.ijcseonline.org/spl_pub_paper/32-IJCSE-PCMT-31.pdf