

Faith Chuby Labija

In this project, I was the project manager and a front-end developer for the login and register page. As the project manager, I tracked key deliverables, scheduled meetings, maintained active communication within the team, and resolved potential misunderstandings. In the login and register pages, I focused more on making the pages responsive across multiple devices and connecting the pages in a way that allowed for redirection. The most interesting algorithm I worked on was the dropdown menu that dynamically populated the available departments so that lecturers do not manually have to enter that information when registering on the attendance tracker. This dropdown feature also reduces the likelihood of entering wrong data and scalability if a new department is added. My major challenge was reconciling the backend information with the front end; some features on my front end pages had to be sacrificed for the backend to work. Overall, my experience on this project pushed me to take on more advanced features for my final project, such as review rating and implementing dynamic dropdowns that redirect users to other pages.

Charles Opoku Amankwah

In this project, I served as one of three front-end developers. As a front-end developer, I worked on the faculty dashboard, the registration pages for students and courses, the interface for the pin generation and the attendance tracker to make the user (lecturers) experience as smooth and convenient as possible. The faculty dashboard contained information relating to the classes the lecturer was in charge of (taught), which also gave them access to register students and courses and see the last 5 pictures of students the system took as proof of their attendance in class. To register a course, the faculty needed to input the course name, code and a short description of the course details. For the pin generation interface, I just focused on creating an input box where students could type their respective pins following the colour scheme of the web page.

Registration for students included their name and ID and the attendance tracker provided a colourful representation of the presence and absences of students. The most important design I worked on was the page's responsiveness regarding its ability to resize depending on the screen size the user is using. To tackle this, I used Bootstrap to handle the responsiveness aspect. This project has forced me to learn new software and different ways of creating web pages that enhance a person's user experience. Additionally, it has shown me the various applications and uses of web pages and the different functionalities that could be used to do many exciting projects in the real world.

Emmanuel Soumahoro

In our team project to develop a secure Snap Attendance Tracker, my primary role was to design the logical and EER diagrams. Additionally, I collaborated with Elikem on the backend development aspect of the project, specifically building the backend for the register page and `views/faculty_attendance.php` that auto-generates the PIN for attendance. This feature allows faculty members to easily generate unique PINs for each attendance session, enhancing the security and accuracy of the attendance tracking process. Our project's most important algorithm or design is implementing the `views/faculty_attendance.php` feature that auto-generates the PIN for attendance. This algorithm ensures that every attendance session has a unique PIN, making it secure and reducing the chances of unauthorised attendance. It involves generating a random numeric PIN and associating it with the corresponding attendance session. Throughout the project, we encountered a few challenges that tested our teamwork and problem-solving skills, including time management difficulties in coordinating schedules and meeting deadlines, debugging and troubleshooting technical issues during development, and effectively communicating and coordinating as a team due to different schedules and responsibilities. However, working on this project provided valuable lessons and insights, emphasising the importance of proper planning, effective collaboration, regular communication, and attention to detail for successful project completion.

Fatoumata Waggeh

In our team project to develop a secure Snap Attendance Tracker, I was one of the front-end developers. My main tasks included creating the student dashboard, where students can view the courses they are taking for the semester, and the tracker page, where students could check their past schedules and attendance records. I also designed the student profile page, which displayed the student's picture and details like their name, major, and email. One of the most important aspects of my work was ensuring that the pages could resize properly depending on the device used to access the application. This meant ensuring the pages looked good and worked well on devices like phones and tablets. This project taught me the importance of creating user-friendly and visually appealing web pages. Ensuring the pages looked good and were easy to use encouraged users to engage more with the application. I also realised how crucial it is to design pages that work well on mobile devices, considering their increasing use. Overall, I discovered that front-end development plays a vital role in creating digital products that meet users' needs and expectations. A well-designed frontend can improve user engagement and enhance the success of a business in today's digital world.

Elikem Asudo Tsatsu Gale-Zoyiku

As a backend developer on this project, my key contribution was implementing dynamic functionalities within the attendance management system. Specifically, I focused on personalising user views based on their roles and course enrollments, automated attendance pin generation and validation, and facilitating interaction between faculty, courses they were teaching, students enrolled in those courses, and their attendance records.

I developed these features within the attendance management system:

1. **Dynamic User Views:** Implemented dynamic rendering of user interfaces, ensuring personalised views for each user based on their roles and course enrollments. This involved customising page elements and content to align with the user's data in the database. For example, a student's dashboard only shows the courses they are enrolled in, but for faculty, the dashboard shows the courses they are teaching and a button to create a new course, along with functionality to enrol students in those courses. Additionally, users designated as admins only see an overview of the number of students enrolled in the system, the number of courses being offered, and the functionality to enrol new students in the system.
2. **Automated Attendance Pin Generation:** Developed logic to automate the generation and validation of attendance pins for class sessions. This feature enabled faculty members to set attendance pins within 15 minutes of the class start time. The functionality would only show once the 15-minute threshold was reached. At the same time, students can take attendance only when the 15-minute threshold.

3. Autonomous Attendance Capture: Implemented functionality for students to autonomously take attendance by entering the generated pin. Upon entering the pin, the system activated the front camera, captured the student's picture after a 5-second delay, and stored it in the database as a base64 string.
4. Attendance Records and Image Retrieval: Designed functionality for storing and retrieving attendance records. Faculty can access course attendance data, view student attendance dates, and retrieve images captured during previous sessions to verify student presence.

My most important algorithm design was the algorithm responsible for detecting impending class sessions within 15 minutes and initiating the attendance pin generation process. The class days and times were stored in the course table as ordinary strings. To detect if a class was starting in the next 15 minutes, the information stored in the database had to be compared to the current day and time. I wrote functions to get the current day, hour, and minute in UTC format from the system to do this.

Next, I wrote queries to get the class days and class times from the courses table in the database. These were raw strings, with each relevant item separated by commas, e.g. "Monday, Wednesday", "12:15 – 13:45, 14:45 – 15:50". I used the explode method to separate them along the commas. I then checked if the current day was in the list of days. If it was not, I returned that there was no upcoming class schedule. Else, I selected the class time that corresponded to the current day. I then exploded that time twice: first using the hyphens to obtain the start and end times, then along the colons to get the start and end hours and minutes. I then converted these to minutes and the current time to minutes. These were compared, and if the current time was less than or equal to the start time and the difference was not greater than 15 minutes, then the information would be returned as a JSON string,

which would be used in an asynchronous call in the frontend. In the front end, the JSON string populates the upcoming schedule section and displays a button to start attendance (faculty) or take attendance (students).

Working with JSON data in conjunction with AJAX functions was my biggest challenge during the project. Especially with JSON strings that contained objects within objects, like arrays in an array, errors were often thrown in the success portion of the AJAX call because I was not parsing them correctly. This challenge was solved by research and careful debugging using the console and the network tab to compare and analyse the return values of the asynchronous calls and using that to figure out how to parse the returned data correctly.

Lessons Learned:

- Improved String Manipulation: I gained valuable experience in effectively manipulating and extracting data from string formats, enhancing my string parsing and handling skills through this project.
- Time Management: Developing features related to time calculations and scheduling improved my understanding of time management within software development projects.
- Understanding AJAX: Working on the project helped me realise the importance of AJAX in web development and how it facilitates dynamic and asynchronous communication between the front and backend, contributing to a more seamless user experience.