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PEACE - WORK - FATHERLAND

FACULTY OF ENGINEERING AND TECHNOLOGY

COMPUTER ENGINEERING DEPARTMENT

CEF 440: INTERNET PROGRAMMING (J2EE) AND MOBILE PROGRAMMING

TASK 5: UI DESIGN AND IMPLEMENTATION FOR A BIOMETRIC STUDENT ATTENDANCE SYSTEM

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1. Introduction

1.1. Purpose of the Report

The purpose of this report is to document the user interface (UI) design and implementation process for a mobile attendance system. This system aims to streamline the attendance management process through the integration of biometric authentication, real-time tracking, and comprehensive reporting. This report will cover the design principles, research methodologies, wireframing, prototyping, and final implementation details.

1.2. Scope of the UI Design and Implementation

The scope of the UI design and implementation encompasses:

Development of a mobile application interface for administrators, instructors, and students.

Integration of multibiometric authentication for secure attendance marking.

Real-time attendance tracking and reporting.

User-friendly design to ensure ease of use and accessibility.

Implementation of responsive and adaptive design techniques for compatibility across various devices.

1.3. Overview of the Mobile Attendance System

The mobile attendance system is designed to automate and secure the attendance process in educational institutions. Key features include:

Biometric authentication (fingerprint and facial recognition).

Real-time attendance marking and tracking.

Automated attendance reports.

Push notifications, reminders, and alerts.

Customization options for different institution requirements.

2. UI Design Principles

2.1. User-Centric Design Approach

This is an iterative design process in which designers focus on the users and their needs in each phase of the design process. Here, design teams involve users throughout the design process via a variety of research and design techniques, to create highly usable and accessible products for them.

2.2. Accessibility Considerations

Accessibility is a broad term in UI/UX design. Making a design accessible means that all the members of the target audience group have equal access to the product or service. It also means that the design is usable and useful in multiple settings, meeting the varying needs of users.

3. Wireframing and Prototyping

3.1. Tools and Technologies

We started with wireframing where we put down our ideas on paper and later tried to adjust it so as to meet our users need.

Wireframing Tools: Canva, Figma

Prototyping Tools: Canva, Figma

3.2. Wireframes for Key Screens

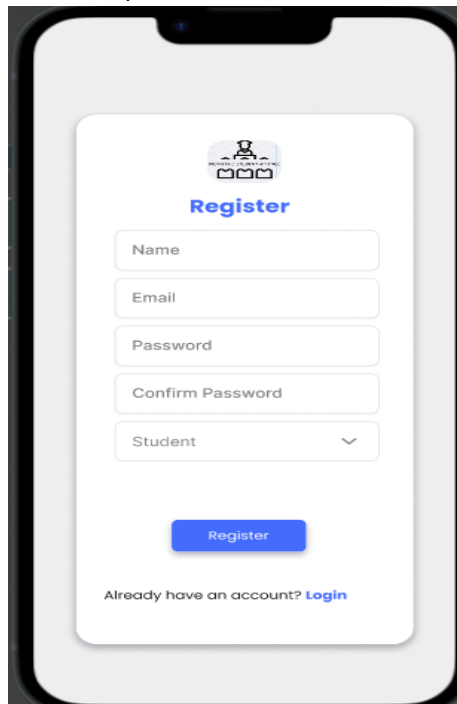
3.2.1. Registration Screen

In this screen users provide their information so as to be registered into the system.

This screen is used by students and instructors.

Simple and clean layout.

Fields for Name, email, password, confirm password user type (student or instructor).

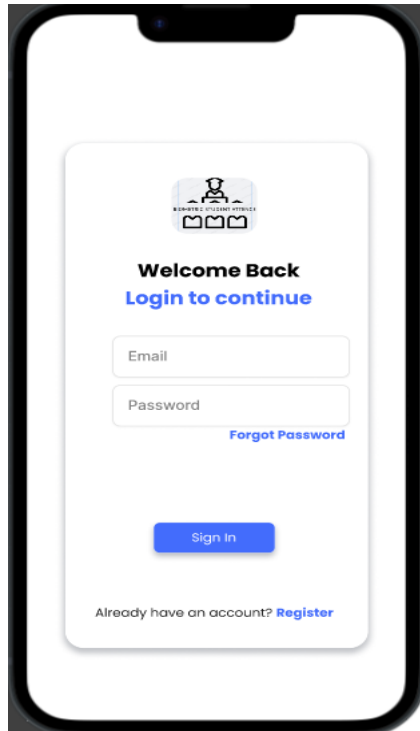
A wireframe of a mobile registration screen. At the top, there is a small icon of a person with a graduation cap. Below the icon, the word "Register" is written in blue. The screen contains five input fields: "Name", "Email", "Password", "Confirm Password", and a dropdown menu labeled "Student" with a downward arrow. Below these fields is a blue button labeled "Register". At the bottom, there is a link that says "Already have an account? Login".

3.2.2. Login Screen

This screen is used for registered users to gain access to their accounts. This screen is used by students and instructors.

Simple and clean layout.

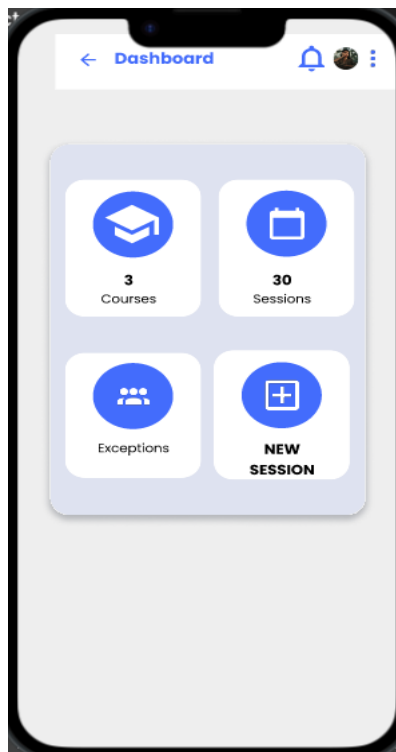
Fields for email/username and password.



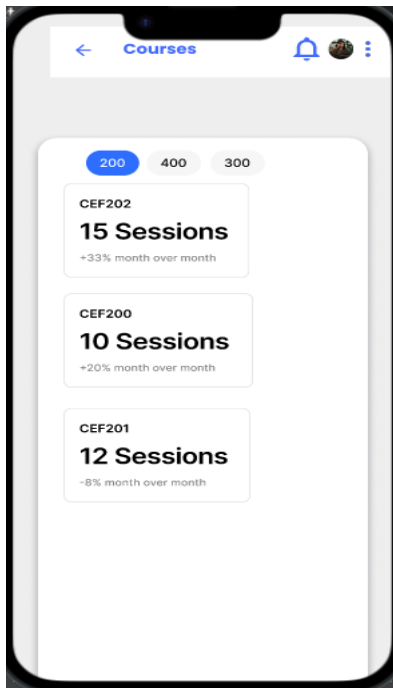
3.2.3. Instructor's Dashboard

Overview of attendance statistics.

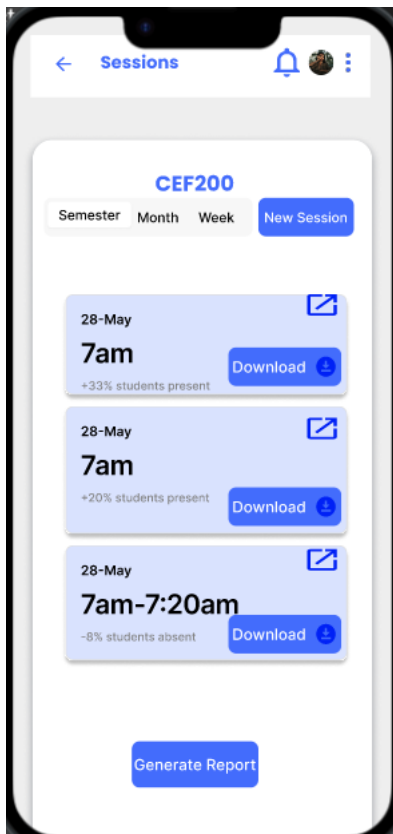
Quick access to attendance sessions, reports, courses and notifications.



Courses is where the instructor sees all of his/her courses.



Sessions is where the instructors have access to all of their past sessions.



New Session is for the instructor to create an attendance session for students to mark to attendance for that session.

The screenshot shows a mobile application interface for confirming a new session. At the top, there is a navigation bar with a back arrow, the text "New Session", a bell icon, and a profile icon. Below the navigation bar, the title "Confirm New Session" is displayed in blue. The main content area contains a rounded rectangle with the title "New CEF200 Session" in blue. Inside this rectangle, there are three input fields: "Course" with the value "CEF 200", "Date & Time" with the value "Now", and "Ends In" with the value "20 mins". At the bottom of the rounded rectangle, there are two buttons: "Cancel" and "Start".

Exception is for the instructor to update the student's attendance in case of unforeseen circumstances such as phone being powered off or due to health issues.

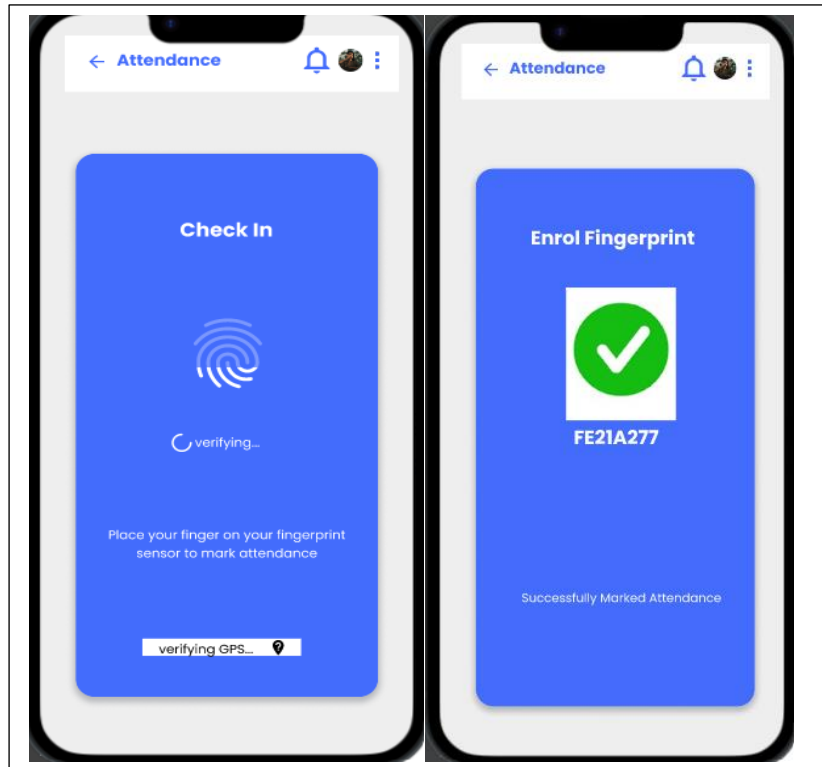
The screenshot shows a mobile application interface for handling an exception. At the top, there is a navigation bar with a back arrow, the text "Handle exception", a bell icon, and a profile icon. Below the navigation bar, there is a rounded rectangle containing two input fields: "Student Matricule" and "Session" with a dropdown arrow. Below the rounded rectangle, there is a blue button labeled "Confirm".

3.2.4. Attendance Marking

Easy-to-use interface for marking attendance.

The student only inputs his fingerprint and his/her attendance is taken.

Integration with biometric authentication and GPS verification.



3.2.5. Report Generation

This under the Session screen and is used to by the instructors for generating their reports. The report can be in different timeframes such as weekly and at the end of the semester.

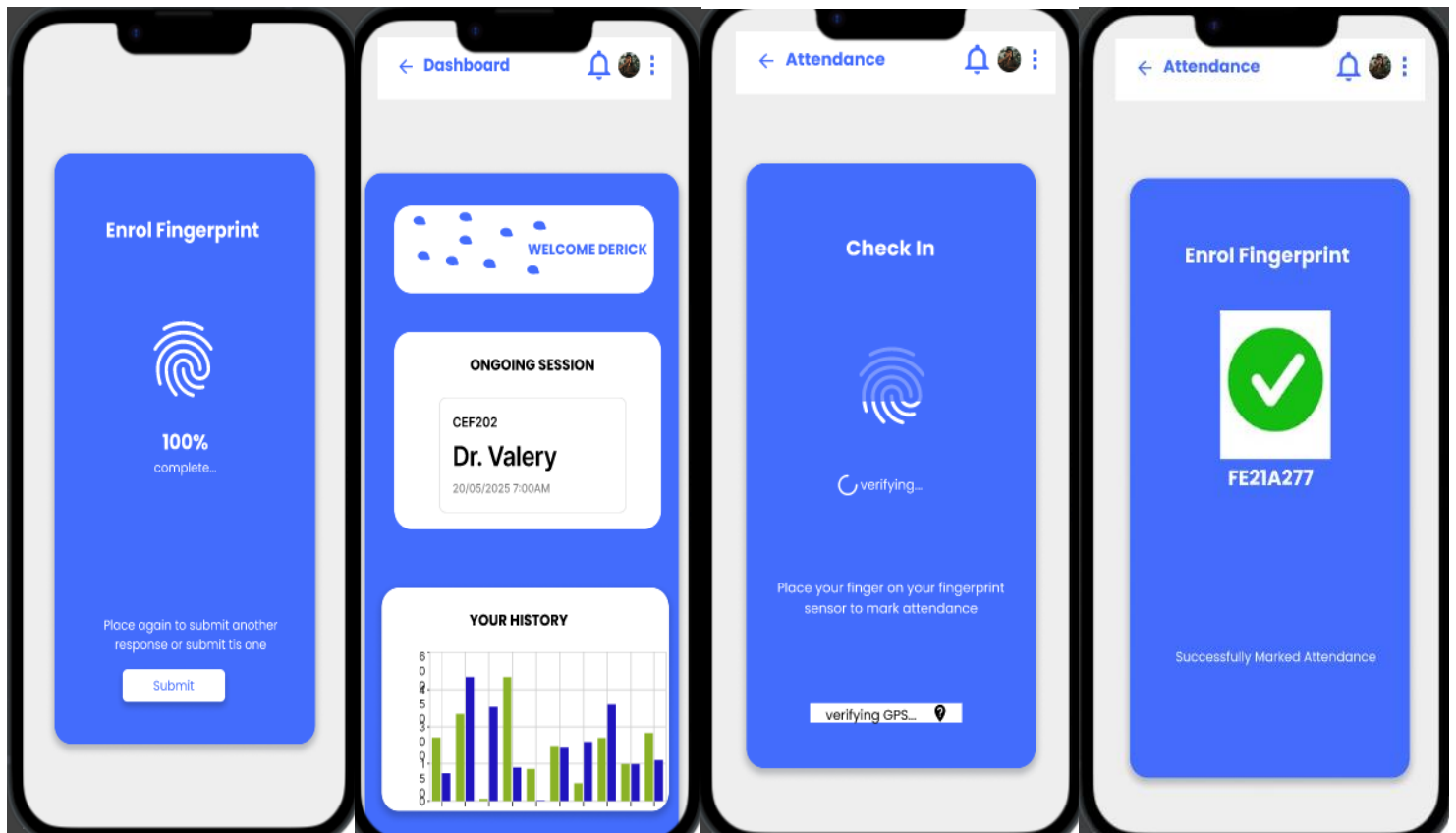
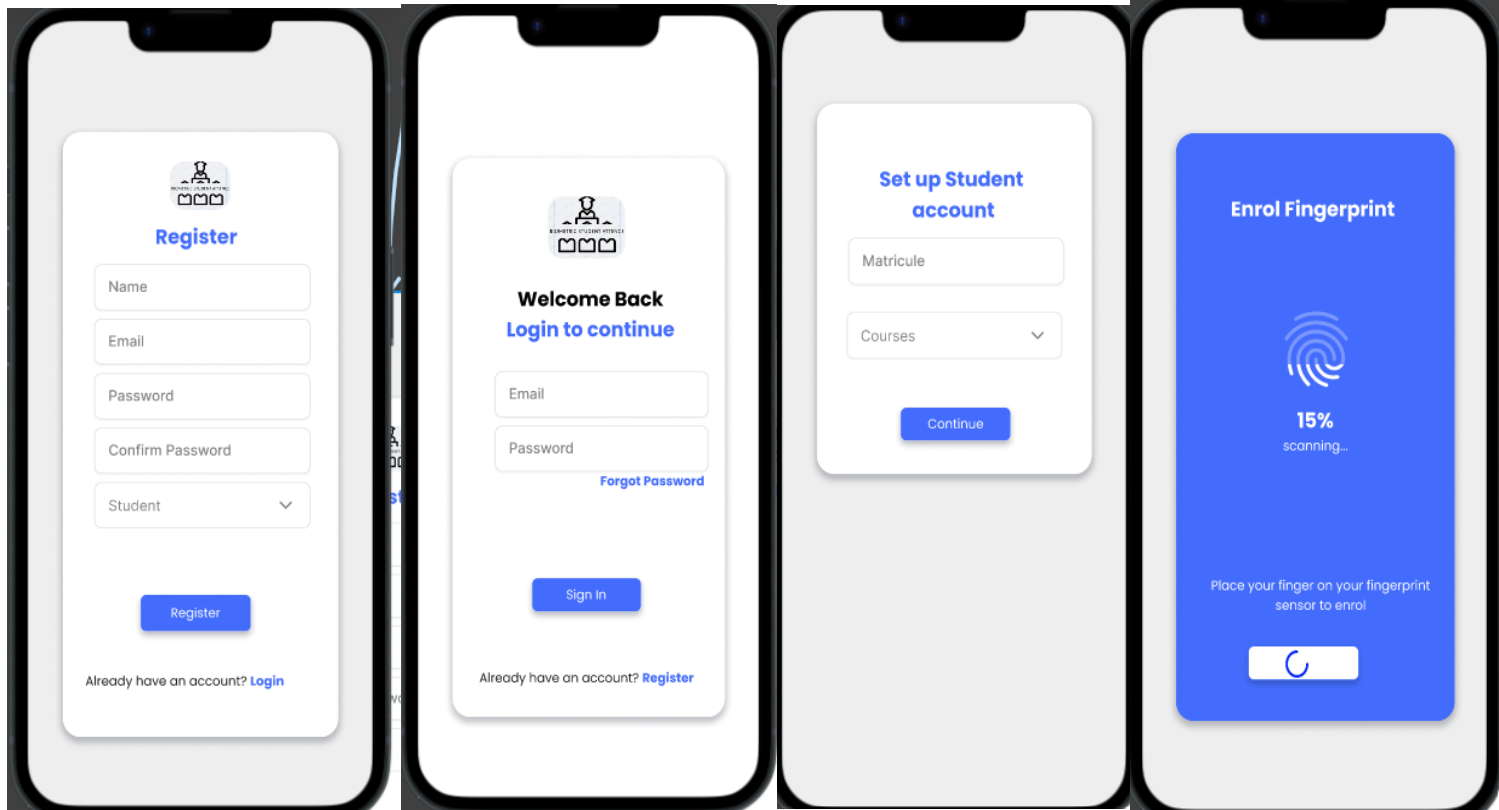
3.2.6. Notifications Management

This is acts as some sort of reminder to the instructors to take create their attendance session.

3.3. Interactive Prototypes

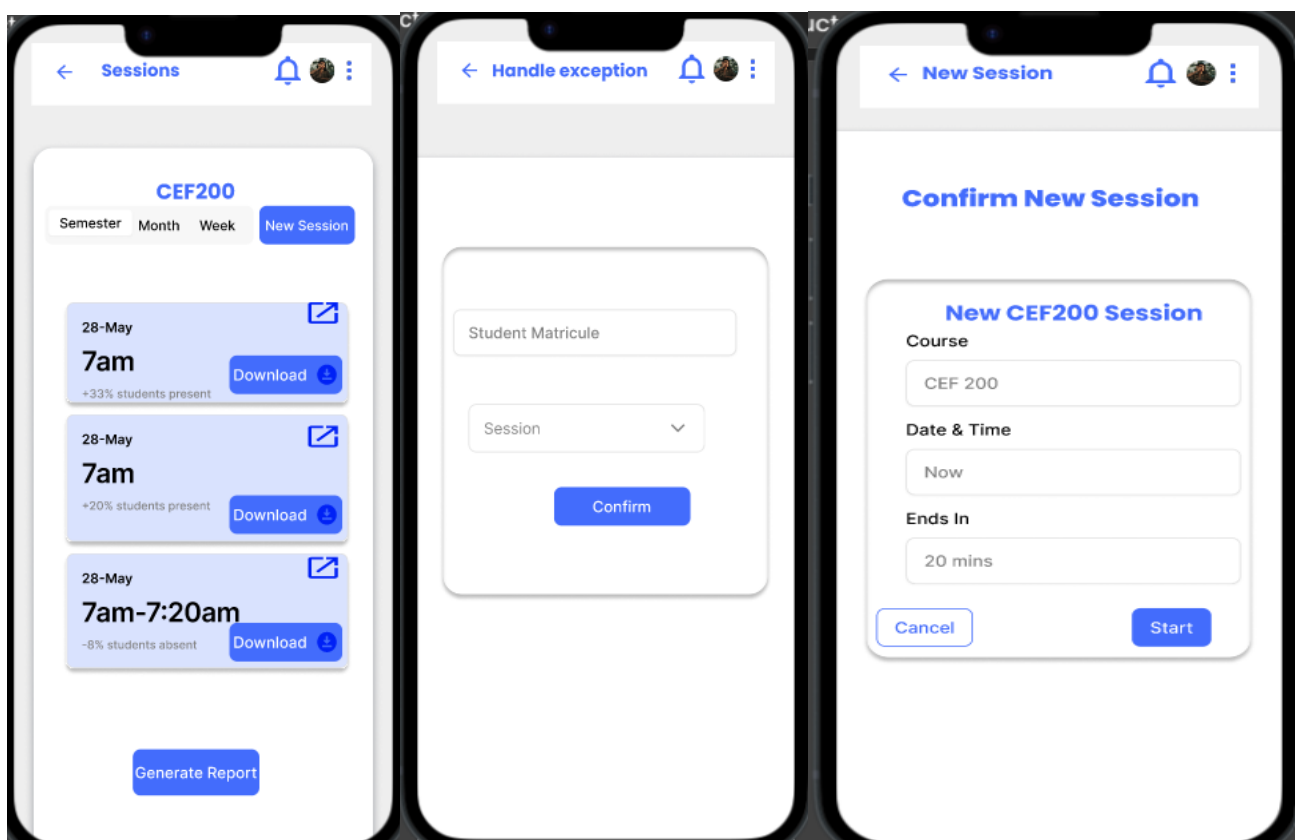
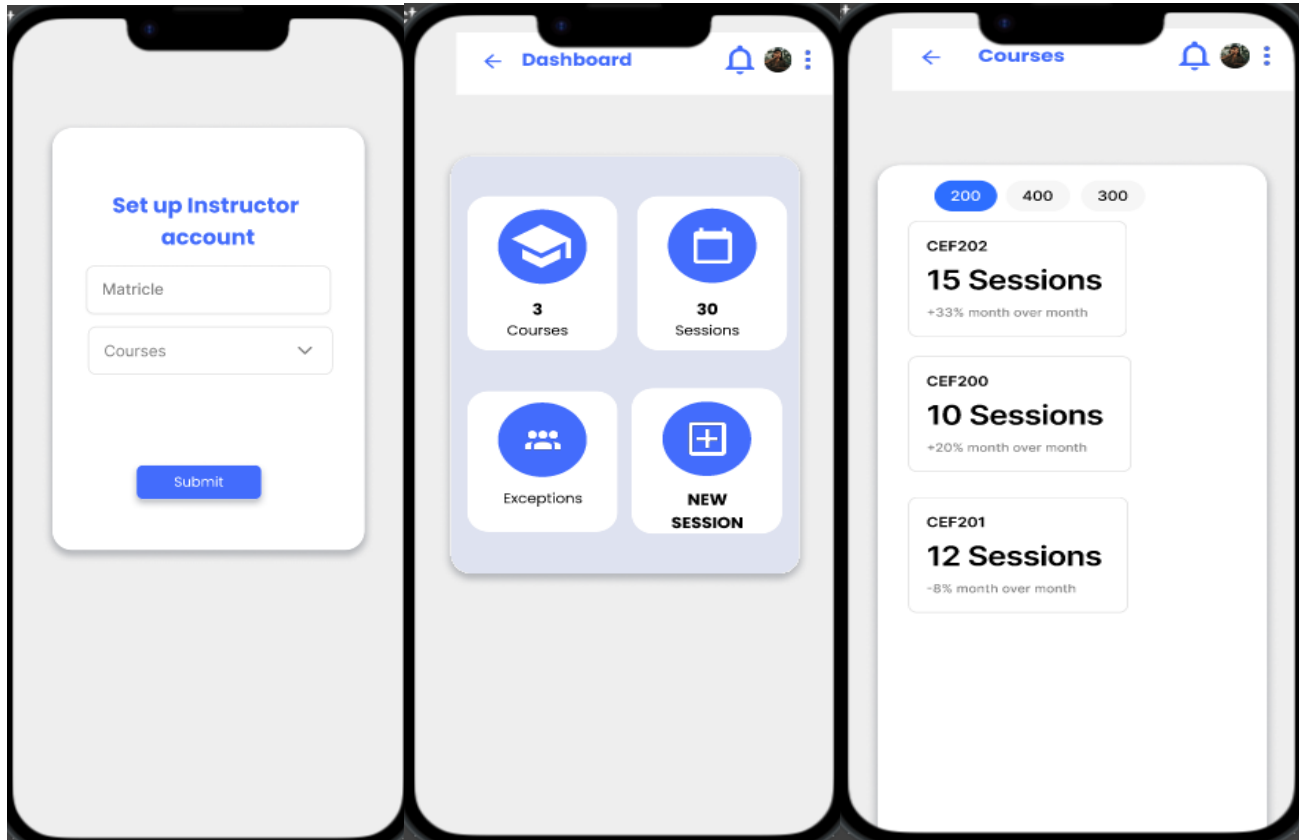
Here, the prototypes are made based on the specific user. Students and Instructors have different user journeys as illustrated below.

The student's journey goes from left to right



The instructors have a whole different user journey.

The instructor's journey goes from left to right



4. Conclusion

4.1. Summary of the UI Design and Implementation Process

Identifying our target users (instructors, students).

Understand their needs and pain points regarding attendance marking.

Consider factors like accessibility and varying technical skills.

After selecting the user's and coming up the UI design of each user we did a clear and simple design.

4.2. Key Achievements and Outcomes

We were able to come up with a detailed outline of each user's journeys and what they can and can't do at each step of their journey through out their life in the application.

4.3. Future Work and Enhancements

In the next section of our work, we are going to do some actual implementation of code and databases so as to come out with some actual prototype or a sort of initial/beta release of the application.