National University of Computer and Emerging Sciences

Deliverable #2

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Legendary Sentinel of Attendance

Group Members:

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Fundamentals of Software Engineering
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Department of Computer Science
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Introduction

This document outlines the deliverables for Sprint 1 of the project titled "Desktop Application for CV Attendance System." The project aims to develop a user-friendly desktop application that facilitates efficient and secure attendance tracking through facial recognition technology. This system will be particularly beneficial for organizations seeking a streamlined method for managing students' attendance.

User Stories

1. User Login

As a user, I want to be able to securely log in to the application using my username and password to access the system functionalities.

Sub-user stories

1.1 Login Interface: The application should provide a login interface with username and password input fields.
1.2 Secure Authentication: The application should securely store passwords using encryption to protect user credentials.
1.3 Login Validation: The application should validate the entered username and password against a user database.
1.4 Successful Login: Upon successful login, the application should redirect me to a personalized dashboard based on my user role.
1.5 Failed Login: In case of incorrect login credentials, the application should display a clear error message without revealing any specific details about the failed attempt.

2. Register New (Through Camera)

As a user, I want to register my face for attendance recognition using the application's webcam, allowing me to participate in the attendance system.

Sub-user stories

2.1 Live Camera Feed: The application should display a live feed from the webcam within the interface.
2.2 Capture Image: I want to be able to capture a clear image of my face using a dedicated capture button within the application.
2.3 Image Confirmation: The application should prompt me to confirm if the captured image is suitable for registration.
2.4 Secure Storage: If I confirm the image, the application should securely store my facial data for future attendance recognition.
2.5 Retake Option: If I cancel registration or the captured image is not suitable, I want the option to retake the image.

3. Attendance++ (Facial Recognition)

As a user, I want the application to utilize facial recognition technology to mark my attendance when I open the attendance system, allowing for a seamless and efficient attendance recording process.

Sub-user stories

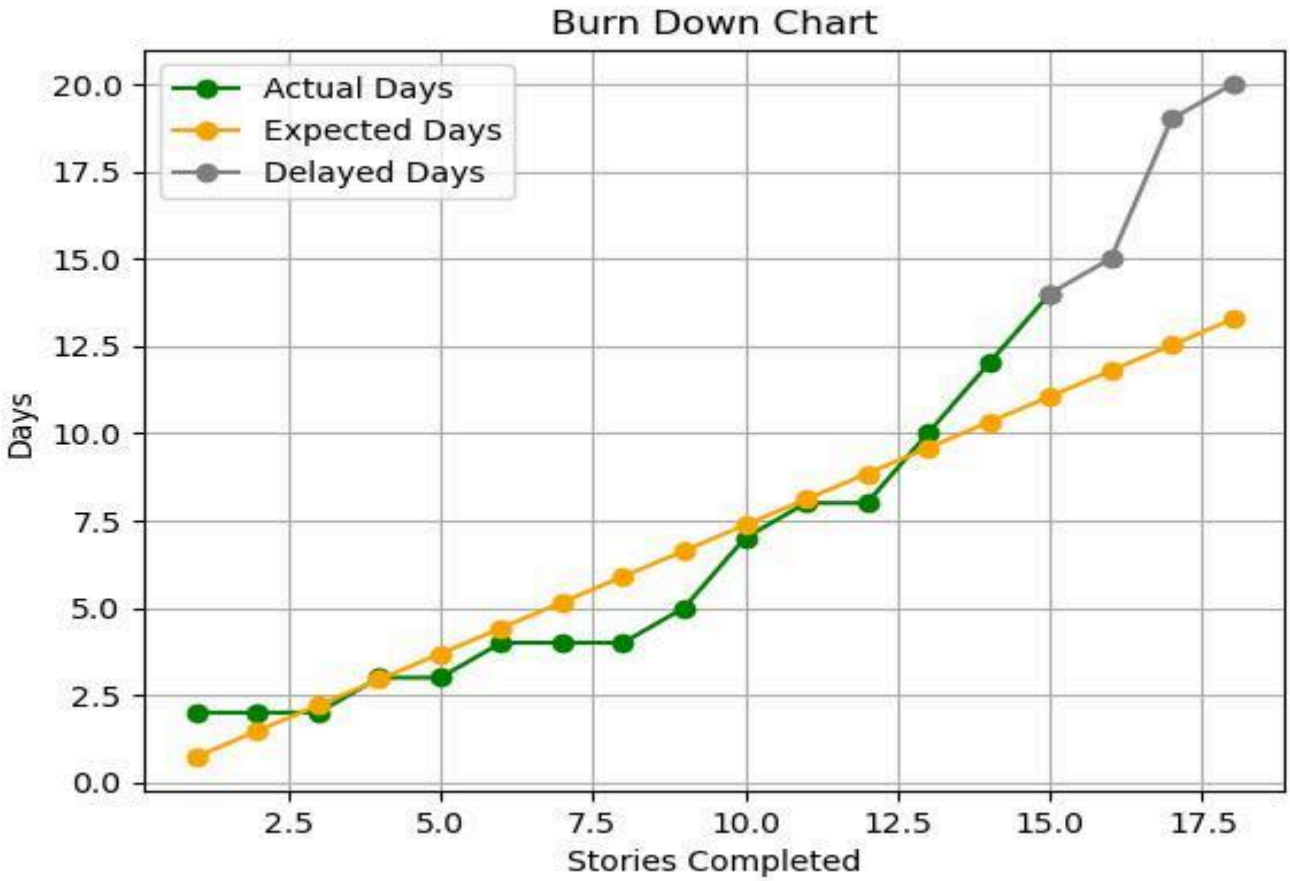
3.1 Activate Webcam: Upon clicking a button, the application should automatically activate the webcam and display a live feed for facial recognition.
3.2 Continuous Face Detection: The application should continuously scan the live feed for faces using the facial recognition library.
3.3 Match with Database: When a face is detected, the application should attempt to match it against the registered user database.
3.4 Successful Recognition: If a successful match is found, the application should automatically mark my attendance for the current date and time.
3.5 Attendance Confirmation: Upon successful attendance marking, the application should display a confirmation message with my name and timestamp.

4. Personalized Dashboard (Might delay it till next sprint)

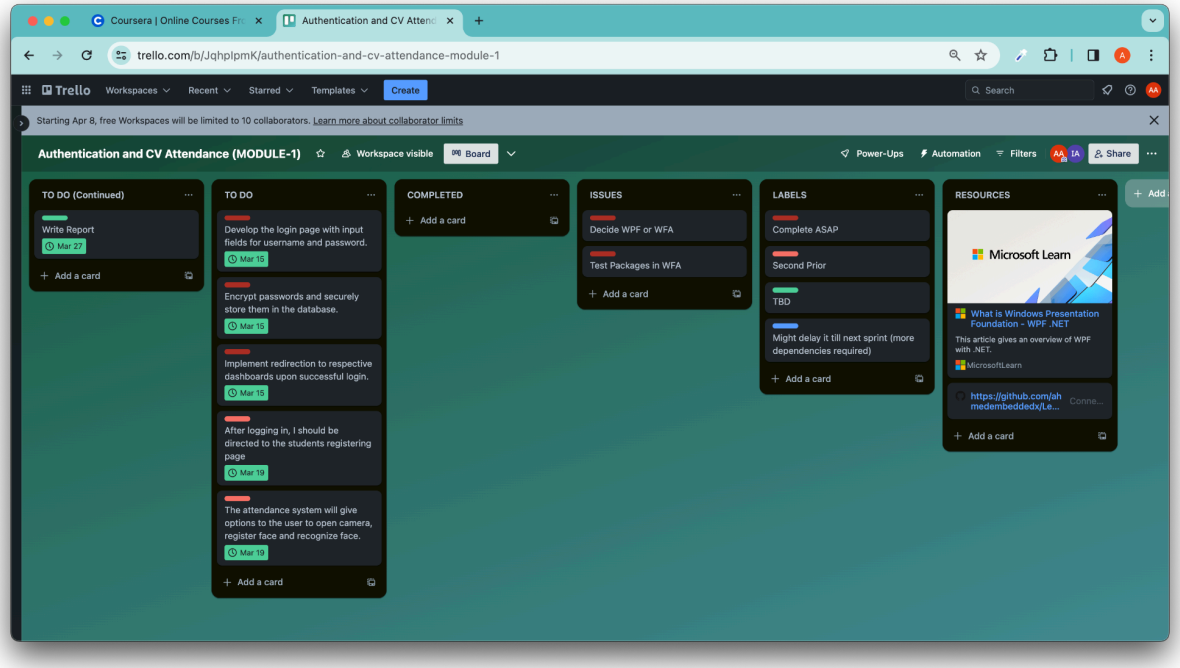
As a teacher, I want to see a dedicated dashboard after successfully logging in that provides me with an overview of my students' attendance and performance, visualized using bar charts and histograms, allowing me to effectively monitor progress and make informed decisions. Additionally, I want to see basic information about myself for quick reference.

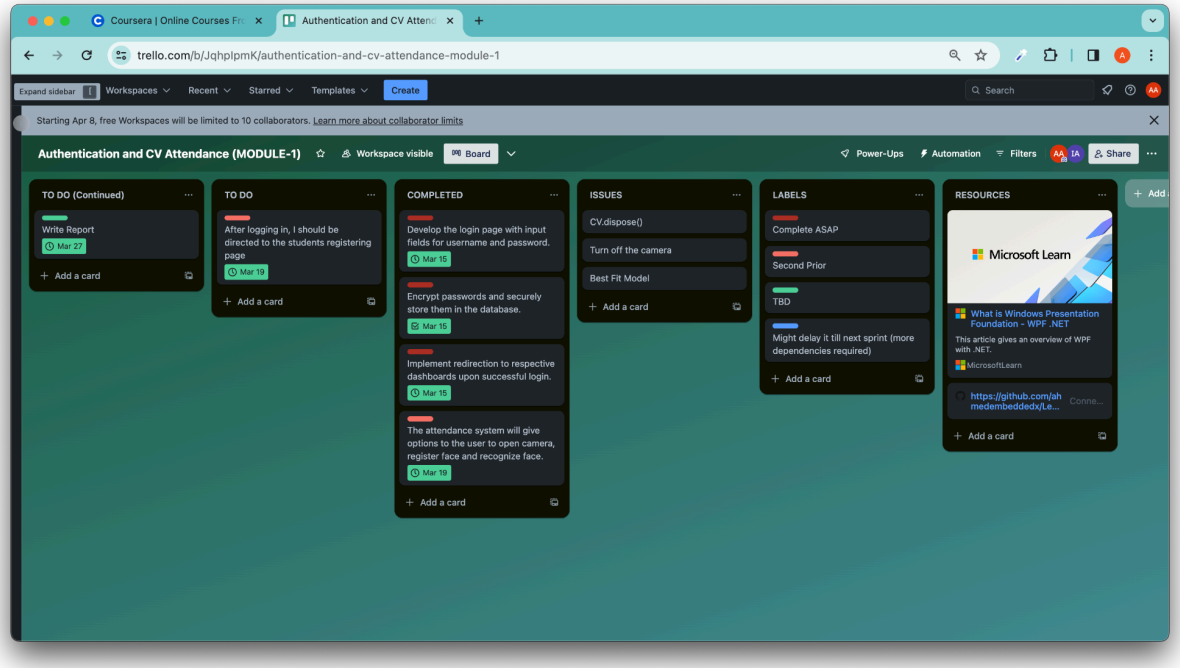
Sub-user stories

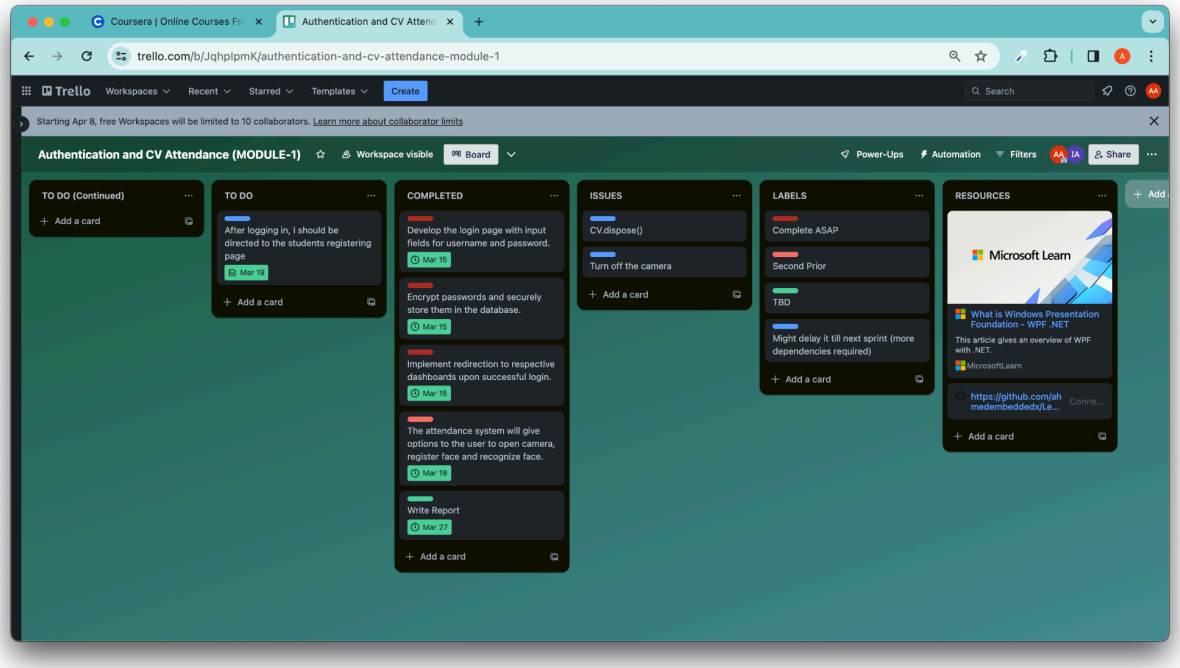
4.1 Teacher Information Panel: The dashboard should display a dedicated panel with my name. The panel should also display the class or subject currently associated with my account (if applicable).
4.2 Student List: The dashboard should display a list of all students enrolled in my classes.
4.3 Attendance Information: The dashboard should include a bar chart representing the overall attendance for each student within a chosen time frame (e.g., weekly, monthly).
4.4 Performance Information: The dashboard could include a histogram representing the distribution of student grades or scores across the class. The histogram should show the frequency of students achieving specific grade ranges (e.g., A-F)



Scrum Board


Authentication and CV Attendance (MODULE-1)
TO DO (Continued)
Write Report
Mar 27
TO DO
Develop the login page with input fields for username and password.
Encrypt passwords and securely store them in the database.
Implement redirection to respective dashboards upon successful login.
After logging in, I should be directed to the students registering page
The attendance system will give options to the user to open camera, register face and recognize face.
COMPLETED
ISSUES
Decide WPF or WFA
Test Packages in WFA
LABELS
Complete ASAP
Second Prior
TBD
Might delay it till next sprint (more dependencies required)
RESOURCES
Microsoft Learn
What is Windows Presentation Foundation - WPF .NET
This article gives an overview of WPF with .NET.


Authentication and CV Attendance (MODULE-1)
TO DO (Continued)
Write Report
Mar 27
TO DO
After logging in, I should be directed to the students registering page
Mar 19
COMPLETED
Develop the login page with input fields for username and password.
Mar 15
Encrypt passwords and securely store them in the database.
Implement redirection to respective dashboards upon successful login.
The attendance system will give options to the user to open camera, register face and recognize face.
ISSUES
CV.dispose()
Turn off the camera
Best Fit Model
LABELS
Complete ASAP
Second Prior
TBD
Might delay it till next sprint (more dependencies required)
RESOURCES
Microsoft Learn
What is Windows Presentation Foundation - WPF .NET
This article gives an overview of WPF with .NET.



Non-Functional Requirements (NFR) Specification

Security

- **User Authentication:** The application must implement secure user authentication using encrypted passwords to prevent unauthorized access.
- **Data Security**: User data, particularly attendance records, must be stored securely in the database to prevent unauthorized access or modification.

Performance

- **Login Response Time:** The login process should be responsive, with a maximum wait time of 5 seconds for successful login attempts.
- **Attendance Recognition Speed:** Facial recognition for attendance marking should be efficient, with a response time of under 3 seconds for successful recognition.

Usability

- **User Interface:** The application interface should be intuitive and user-friendly, catering to users with varying levels of technical expertise.
- **Accessibility:** The application should be accessible to users with disabilities, adhering to relevant accessibility standards.

Reliability

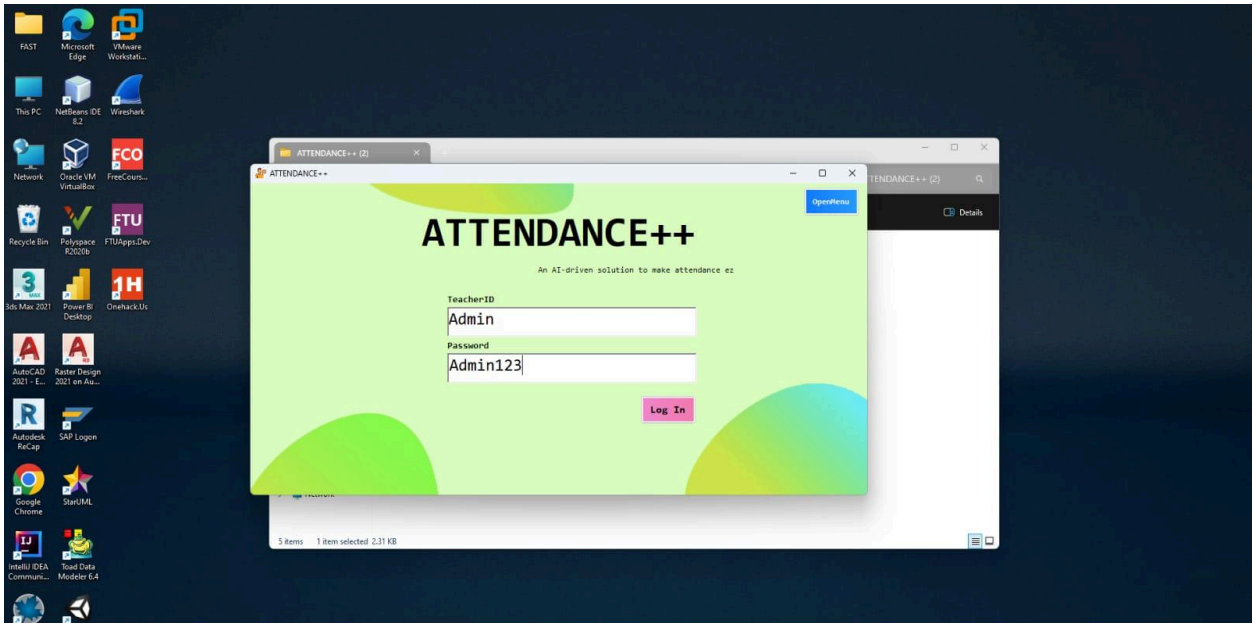
- **System Uptime:** The application should strive for a minimum uptime of 99% to ensure consistent availability for attendance tracking.
- **Data Integrity:** The application must maintain data integrity by ensuring accurate recording and storage of attendance information.

Maintainability

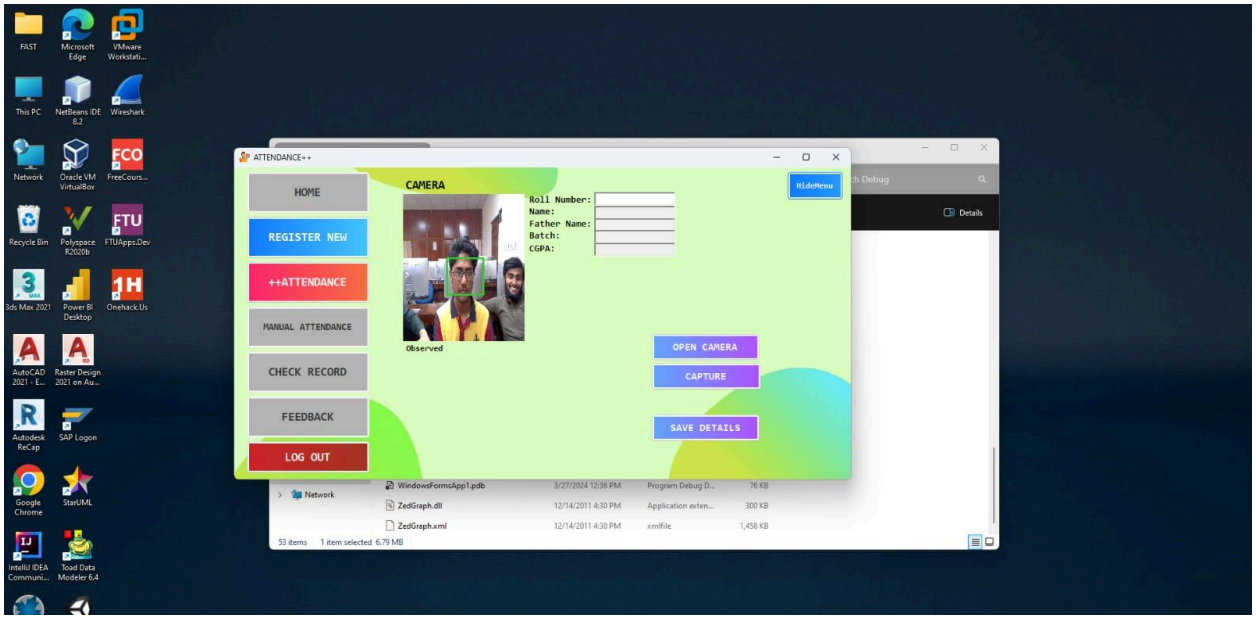
- **Modular Design:** The application code should be well-structured and modular for ease of maintenance and future updates.
- **Documentation:** Clear and concise documentation should be maintained for the codebase to facilitate future modifications and troubleshooting.

Iteration 1 Implementation Screenshot

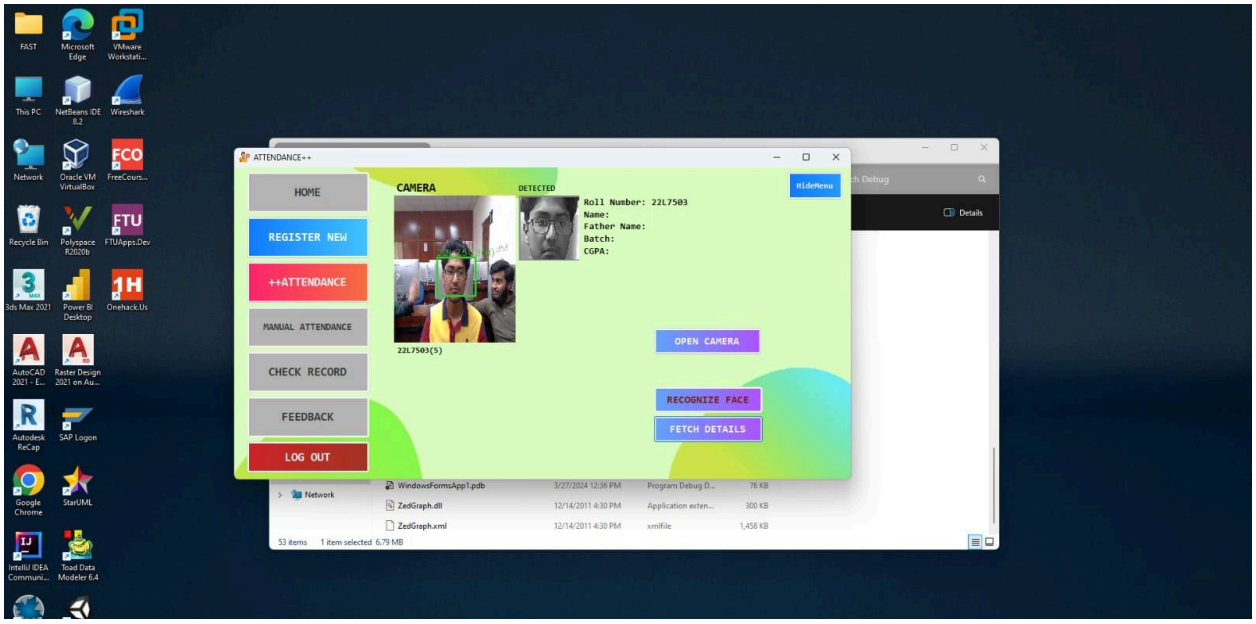
Login/Sign In Authentication



Face Detection and Registering new Student



Face Recognition and retrieving student data



Work Division

Name	Work
Ibtehaj Ali	• Develop login page UI (username, password fields). • Implement user authentication logic. • Handle successful login redirect based on user role. • Content Writing and Documentation
Ahmed Abdullah	• Design the initial attendance system interface (options for camera access, face registration, recognition). • Research and choose a suitable facial recognition library for integration.