AI ATTENDANCE MANAGEMENT SYSTEM

A project Report
Submitted in partial fulfillment of
The requirements for the award of the

BACHELOR DEGREE
In
Computer Application
From
University of Calicut

Submitted By

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Carried out at

Department of Computer Application

Safa College of Arts & Science

POOKKATTIRI
MARCH 2025

Safa College of Arts & Science

POOKKATTIRI

Certificate

This is to certify that the project report entitled "AI ATTENDANCE MANAGEMENT SYSTEM " is a record of the work done by **MUHAMMED ZHIYAD C (SFAWBCA017) , SUHAIL C (SFAWBCA028) , MUHAMMED SHAHAL P (SFAWBCA045)** under our supervision and guidance. The report has been submitted in partial fulfillment of the requirement for the award of the Bachelor Degree in Computer Application from the University of Calicut for the year 2024.

Submitted for the University Exam on:

Head of the department:

Mrs. Asia. P

Project coordinator:

Mrs.Asia. P

Submitted to the project and viva-voce examination held on -----/-----/----

GET INSPIRED

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Date: 11/03/2025

CERTIFICATE

This is to certify that **MUHAMMED ZHIYAD (SFAWBCA017), SUHAIL C (SFAWBCA028), MOHAMED SHAHAL P (SFAWBCA045),** students of **SAFA COLLEGE OF ARTS AND SCIENCE** has successfully completed their academic project entitled **"ATTENDANCE MANAGEMENT SYSTEM"** in **PYTHON with FLUTTER** under the guidance of our senior developers during the period **JUNE 2024 to FEBRUARY 2025.**

During this period they were found hardworking, punctual & efficient. We wish them a successful future.

For RISS TECHNOLOGIES

RISS TECHNOLOGIES MAVOOR ROAD CALICUT -1 C.C. CENTRE

Project Manager

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Web: www.risstechnologies.com, E-mail: risstechnology@gmail.com

Declaration

I hereby declare that the project report entitled "**AI ATTENDENCE MANAGEMENT SYSTEM** " was carried out by me as the Bachelor Degree Project in Computer Application under the guidance **Mrs. ASIA.P** and supervision of **Mrs. ASIA.P** Head of Department of Computer Application, Safa College of Arts & Science and that, to the best of my knowledge and belief, it contains no material previously published or written by another person nor material which has been accepted for the award of any other degree or diploma of the university or other institute of higher learning, except where due acknowledgement has been made in the text.

Date: Signature:

Place

MUHAMMED ZHIYAD C	-	SFAWBCA017
SUHAIL C	-	SFAWBCA028
MUHAMMED SHAHAL P	-	SFAWBCA047

Acknowledgement

The success of the project depends upon the effort invested. At this pleasurable moment of having successfully completed our project. It's our duty to acknowledge and thank the individuals who have contributed to the successful completion of the project.

I wish to express our heartfelt gratitude to **Mrs. ASIA . P, SAFA COLLEGE OF ARTS AND SCIENCE** for her encouragement and inspiring guidance throughout the preparation of the project.

I express our deep sense of gratitude and sincere thanks to the head of department **Mrs. ASIA P** for the valuable guidance to do the project successfully.

I also thankful to our department faculties for their continuous motivation for the successful completion of our project.

I wish to express our love and respect to our parents, for their support, contribution and encouragement which helped us a lot to complete the project successfully.

I am very thankful to our friends for their support and contribution to complete this project successfully.

Abstract

In today's fast-paced educational environment, effective attendance management is essential for student fostering engagement and enhancing academic performance. Traditional methods of tracking attendance, often reliant on manual processes, are prone to errors, time-consuming, and may fail to provide a comprehensive understanding of student participation.

The Attendance Management System (AMS) addresses these challenges by integrating advanced technologies such as face recognition and emotion tracking. This innovative system is designed to automate and streamline attendance processes within educational institutions, ensuring accuracy and security while enhancing communication among students, staff, and administrators. By utilizing real-time face recognition, the AMS can swiftly identify students as they enter the classroom, significantly reducing the time spent on attendance marking. Additionally, the system incorporates emotion tracking to monitor students' emotional states during classes, providing valuable insights that can help educators identify disengagement or distress.

CONTENTS

INTRODUCTION

The Attendance Management System (AMS) is a modern solution designed to automate and streamline attendance tracking in educational institutions using advanced technologies such as face recognition and emotion tracking. Traditional attendance methods, such as manual roll calls and paper-based registers, are often time-consuming, error-prone, and inefficient. The AMS addresses these challenges by leveraging artificial intelligence to identify students in real time as they enter the classroom, eliminating the need for manual attendance marking. Additionally, the system incorporates emotion tracking to analyse students' engagement levels, helping educators gain insights into their well-being and participation.

The AMS consists of multiple modules, including Admin, HOD, Staff, Parent, and Student, each designed to facilitate seamless attendance management and communication within the institution. With features like real-time face recognition, attendance reports, emotion monitoring, video recording, and automated notifications, the system enhances efficiency, accuracy, and security. Built on a client-server architecture, AMS utilizes Django for backend development, Flutter for mobile applications, and MySQL for database management, ensuring scalability, reliability, and seamless integration with existing educational frameworks.

By implementing AMS, educational institutions can significantly reduce administrative workload, minimize attendance fraud, and improve student engagement. The system not only ensures accurate attendance tracking but also promotes a technology-driven learning environment, fostering better communication between students, teachers, and administrators

SYSTEM ANALYSIS

Attendance management is a crucial aspect of educational institutions, ensuring proper monitoring of student participation and engagement. Traditional methods, such as roll calls and manual attendance registers, are often time-consuming, error-prone, and inefficient. With the advancements in artificial intelligence (AI) and automation, modern attendance systems are evolving to provide more accurate and efficient solutions.

The Attendance Management System (AMS) is an innovative approach that leverages face recognition and emotion tracking to automate and enhance the attendance process. By integrating AI-driven facial recognition, AMS ensures accurate identification of students as they enter the classroom, eliminating the need for manual attendance marking. Emotion tracking further enriches the system by analyzing students' engagement levels and emotional well-being, allowing educators to gain insights into classroom dynamics.

The AMS consists of various modules, including Admin, HOD, Staff, Parent, Student, and Camera Module, each serving specific functions to streamline attendance tracking, report generation, and communication among stakeholders. The system is built using Python, Django, MySQL, and web technologies, ensuring a user-friendly and efficient platform.

By adopting AMS, educational institutions can reduce administrative workload, minimize errors, improve attendance tracking, and enhance student engagement, making it a valuable addition to modern smart classrooms.

EXISTING SYSTEM

The existing attendance management system in many educational institutions relies on manual methods like paper registers and spreadsheets, making it time-consuming and error-prone. Teachers have to call out names and record attendance manually, leading to inaccuracies and difficulty in tracking attendance patterns. Additionally, approving leave requests and notifying parents about attendance issues are tedious tasks. The lack of automation also makes it challenging to detect unauthorized students in classrooms, compromising security. Overall, the current system is inefficient, Labor- intensive, and lacks real-time insights.

DRAWBACKS OF THE EXISTING SYSTEM

In existing system is the AMS relies on face recognition, which may be affected by poor lighting, camera quality, or facial obstructions. Additionally, emotion tracking accuracy can vary based on external factors, potentially leading to misinterpretation of student engagement.

PROPOSED SYSTEM

The proposed system automates attendance tracking using face recognition and emotion tracking, ensuring accuracy and real-time monitoring. It enhances communication between students, teachers, and administrators while improving security and engagement analysis.

EXTRA FEATURES: -

- Voice Recognition – Allows attendance marking through voice authentication for added flexibility.
- Geo-Fencing – Ensures students are physically present within the classroom for attendance validation.
- AI-Based Performance Analysis – Uses AI to analyze attendance trends and student engagement levels.
- Mobile App Integration – Provides real-time attendance updates and notifications via a mobile app.
- Smart Alerts & Reminders – Sends automated alerts for low attendance and reminders for upcoming classes.
- Multi-Factor Authentication (MFA) – Enhances security with additional authentication layers for system access.
- Integration with Learning Management Systems (LMS) – Connects with platforms like Moodle or Google Classroom for a seamless experience.
- Offline Mode – Allows attendance marking without an internet connection, syncing data when online.
- Customizable Reports & Dashboards – Generates detailed attendance and engagement analytics for better decision-making.

MODULE DESCRIPTION

Main Modules: -

- ADMIN
- HOD
- STAFF
- PARENT
- STUDENT
- CAMERA

ADMIN:

- login
- Change Password
- Department management
- Course Management
- Staff management
- HOD Management
- View attendance report
- Manage notification
- Manage academic calendar
- View feedback
- View complaint & send reply
-

HOD: -

- Login
- View profile
- Change password

- Subject management
- Subject allocation to staff
- Timetable management
- View attendance report
- View over all emotion of student
- View academic calendar
- View notification from admin
- View detected unauthorized

STAFF: -

- Login
- View profile
- View subject allocated
- View attendance report
- View emotion
- View recorded session
- Manage study materials
- Chat with student
- View notification from admin and hod
- View academic calendar
- Change password

PARENT: -

- Login
- View children's
- View attendance report
- View academic calendar

- View notification from admin and hod
- Change password

STUDENT: -

- Login
- View profile
- View recorded class
- View attendance report
- View academic calendar
- View notification from admin and hod
- Send feed back
- Send complaint & view reply
- View teachers
- Chat with teachers

CAMERA: -

- Attendance marking using face recognition
- Emotion tracking
- Detect unauthorized
- Video recording of class

FUNCTIONS OF DESKTOP APPLICATION

- ✓ AI-powered attendance tracking using facial recognition and AI for automated and secure attendance marking.
- ✓ Admins can manage users, monitor attendance, configure AI settings, and generate reports.
- ✓ Faculty can track student attendance, analyze trends, manually override entries, and send notifications.
- ✓ Students can view attendance records, mark attendance via face recognition, and submit leave requests.
- ✓ Additional features include real-time monitoring, spoof detection, multi-device sync, offline mode, and integration with external systems.

FEASIBILITY STUDY

A feasibility study is a preliminary study undertaken to determine and document a project's viability. The results of this study are used to make a decision whether to proceed with the project. If it indeed leads to a project being approved, it will - before the real work of the proposed project starts - be used to ascertain the likelihood of the project's success. It is an analysis of possible alternative solutions to a problem and a recommendation on the best alternative. It, for example, can decide whether an order processing be carried out by a new system more efficiently than the previous one. The feasibility study proposes one or more conceptual solutions to the problem set for the project. The conceptual solution gives an idea of what the new system will look like. They define what will be done on the computer and what will remain manual. It also indicates what input will be needed by the system and what outputs will be produced.

These solutions should be proven feasible, and a preferred solution is accepted.

1. Technical Feasibility

Proposed system is technically feasible. Because This system is basically developed using python and android, for which the development kit is easily available and free of cost. This involves questions such as whether the technology needed for the system exists, how difficult it will be to build, and whether the firm has enough experience using that technology.

2. Economic Feasibility

This project is economically feasible. Because there is no need for any external equipment to run or work the project. This system is cost effective as well as time effective, thereby making it economically feasible.

3. Operational Feasibility

The project is operationally feasible because, Operational feasibility is a measure of how well a proposed system solves the problems. This reviews the willingness of the organization to support the proposed system.

SOFTWARE ENGINEERING PARADIGM

The software engineering paradigm which is also referred to as a software process model or Software Development Life Cycle (SDLC) model is the development strategy that encompasses the process, methods, and tools. SDLC describes the period that starts with the software system being conceptualized.

AGILE MODEL

The Agile methodology is a project management approach that involves breaking the project into phases and emphasizing continuous collaboration and improvement. Teams follow a cycle of planning, executing, and evaluating.

ADVANTAGES

1. Software is produced early in the software life cycle.
2. Risk handling is one of important advantages of the agile model, it is best Development model to follow due to the risk analysis and risk handling at the whole phase.
3. It is good for large and complex projects.
4. Strong approval and documentation control.
5. Break down the project into multiple, manageable units.

In this project we used agile model for mainly handling the risks when the project is done. Due to this model, we can complete every single unit fully. This is a simple and advanced model in software development. It is very effective in the case of large and complicated projects.

SYSTEM REQUIREMENTS SPECIFICATION

System Specification

Hardware and software requirements for the installation and smooth functioning of this product could be configured based on the requirements needed by the component of the operating environment that works as front-end system here we suggest minimum configuration for both hardware and software components. Working off with this software is requirements concrete on system environments. It includes two phases.

- Hardware Specification
- Software Specification

Hardware Requirements

- Processor : 11th Gen Intel(R) Core (TM) i5
- System Bus : 32Bit or 64Bit
- RAM : 8 GB or Above
- Storage : 20 GB or Above Hard Disk
- Monitor : 14” LCD or Above
- Keyboard : 108 Keys
- Mouse : Any Type of mouse

Software Requirements

- Operating System : Windows 11 Any 32 bit or 64-bit platform
- IDE :PyCharm, android studio
- Framework : Flask
- Database : MySQL Server

SYSTEM DESIGN

System design is the first in the development phase for many engineered products or system. It may define the process of applying various techniques and principles for the purpose of defining a device, a process or system in sufficient detail to permit its physical realization. This phase is the first step in moving from the problem domain to the solution domain. It is an iterative process through which requirements are transmitted into ―blue print‖ for constructing the software initially. Blueprint depicts holistic new software. Some properties for the system design are:

- Verifiability
- Completeness
- Efficiency
- Traceability

1. Input Design

The decisions made during the input design are:

- To provide cost effective method of input
- To achieve the highest possible level of accuracy

Input design is the process of converting user-designated inputs to a computerized format. The input data are collected and organized in to groups of similar data.

2. Output Design

Output design generally refers to the results and information that are generated by the system. The results are of in interactive mode. A common user can also use the application. In output design the emphasis is given to the design of the hard copy and a soft copy of the information needed for the user.

3. Database Design

Database design is the process of producing a detailed data model of a database. This logical data model contains all the needed logical and physical design choices and physical storage parameters needed to generate a design in a data definition language, which can then be used to create a database. The term database design can be used to describe many different parts of the design of an overall database system. Principally, and most correctly, it can be thought of as the logical design of the base data structures used to store the data. In the relational model these are the tables and views. In an object database the entities and relationships map directly to object classes and named relationships. However, the term database design could also be used to apply to the overall process of designing, not just the base data structures, but also the forms and queries used as part of the overall database application within the database management system. The process of doing database design generally consists of a number of steps which will be carried out by the database designer. Usually, the designer must: Determine the relationships between the different data elements and superimpose a logical structure upon the data on the basis of these relationships.

Normalization

Normalization is the process of decomposing a set of relations with anomalies to produce smaller and well-structured relations that contain minimum redundancy. It is a formal process of deciding which attributes should be grouped together in a relation.

First Normal Form

First Normal form (1NF) is now considered to be part of the formal definition of relational model.1NF is designed to disallow multivalve attribute, composite attributes, and their combinations. It states that the domain of an attribute must include only atomic values. A domain is atomic, if elements of the domain are considered to be indivisible units. We say that a relational schema R is in 1NF if the domain of all attributes of _R 'is atomic.

Second Normal Form

The second Normal form (2NF) is based on the concept of functional dependency. A relation R is in 2NF if it is in 1NF, and every non key attribute A of R is fully dependent on the primary key. That is, relation is said to be in 2NF if each attribute An in R meets one of the following criteria:

(a) It appears in the primary key.

(b) It is fully functionally dependent on the primary key.

The tables designed in the proposed system contain a primary key for uniquely identifying each user.

Third Normal Form

Third Normal form (3NF) is based on the concept of transitive dependency. A relation is said to be in 3NF if it is in 2NF and has no transitive dependencies. That is all the non key attributes should be functionally determined by the primary key. In the proposed system all attributes of tables are fully depends on the primary key only that is all non-key attributes are mutually independent.

TABLES

A database is a collection of interrelated data stores with minimum redundancy to serve many users quickly and efficiently. The general objectives are to make information access easy, quick, inexpensive and flexible for the user. In a database environment, common data is available in which several users can use. The concept behind a database is an integrated collection of data and provides a centralized access to the data from the program. The following tables are used in this project.

Login table

id	username	password	type
1	admin@gmail.com	admin1	admin
3	asia@gmail.om	12341	HOD
4	mhdzhiyad9656@gmail.com	8173	Student
5	mhdzhiyad9656@gmail.com	1877	parent
6	irfanath@gmai.com	1234567890	staff
7	gayathri@gmai.com	1234567890	staff
8	shamsu@mail.com	01234567893	staff
9	shamsu@mail.com	8630	HOD
11	mhdzhiyad9656@gmail.com	1319	parent
12	asia@gmail.om	7987	HOD
13	gayathri@gmai.com	1300	HOD
14	mhdzhiyad9656@gmail.com	5941	Student

Department

id	name
1	department of computer applications
2	Department of Business Administration
* (Auto)	(NULL)

Time Table

id	hours	day	SUBJECT_id
1	1st	monday	1
2	second	monday	1
3	1	monday	2
* (Auto)	(NULL)	(NULL)	(NULL)

Feedback

id	feed_back	date	STUDENT_id
(Auto)	(NULL)	(NULL)	(NULL)

Attendance

id	date	hours	STUDENT_id
6	2025-03-12	3	4
8	2025-03-12	0	4
9	2025-03-12	4	5
10	2025-03-16	0	4
11	2025-03-16	4	4
12	2025-03-16	4	5
13	2025-03-16	5	4

Complaint

id	complaint	date	replay	status	STUDENT_id
(Auto)	(NULL)	(NULL)	(NULL)	(NULL)	(NULL)

Subject

id	subject_name	sem	COURSE_id
1	android programing	6th	1
2	android	6th	1
(Auto)	(NULL)	(NULL)	(NULL)

Captured Image

id	image	uploaded_at
(Auto)	(NULL)	(NULL)

Chat

id	date	messege	FROM_id	TO_id
1	2025-03-08	hi	4	3
2	2025-03-08		4	3
3	2025-03-08	koooi	4	3
4	2025-03-08	haiii	6	4
5	2025-03-08	heloooo	6	4
6	2025-03-08	hi	4	3
7	2025-03-08	hi	4	3
8	2025-03-12	hi	18	3
9	2025-03-12	hi	6	18
10	2025-03-12	hi	7	18
11	2025-03-12	hi	18	7
*	(Auto)	(NULL)	(NULL)	(NULL)

Course

id	name	DEPARTMENT_id
1	BCA	1
2	BBA	2
*	(Auto)	(NULL)

Emotion

id	emotion	date	STUDENT_id
12	Fearful	2025-03-12	4
13	Neutral	2025-03-12	4
19	Sad	2025-03-12	4
20	Fearful	2025-03-12	4
21	Neutral	2025-03-12	4
22	Fearful	2025-03-12	4
23	Neutral	2025-03-12	4
24	Happy	2025-03-12	4
25	Fearful	2025-03-12	5
26	Neutral	2025-03-16	4
27	Neutral	2025-03-16	4
28	Happy	2025-03-16	4

Calendar

id	date	event	descreption
1	2025-05-07	Collage union inauguration	All are welcome
(Auto)	(NULL)	(NULL)	(NULL)

Study Material

id	file	SUBJECT_id
2	/media/20250316-142011.pdf	(NULL)
(Auto)	(NULL)	

Unautherised

id	photo	date	timer
(Auto)	(NULL)	(NULL)	(NULL)

Student

id	name	email	phone	place	post	pin	state	district	gender	photo
4	zhiyad	mhdzhiyad9656@gmail.com	09656370958	kadampuzha	kadampuzha	676553	Kerala	Malappuram	Male	/media/20250312-113438.j
5	muhsin	mhdzhiyad9656@gmail.com	09656370958	kadampuzha	kadampuzha	676553	Kerala	Malappuram	Male	/media/20250312-140151.j
(Auto)	(NULL)	(NULL)	(NULL)	(NULL)	(NULL)	(NULL)	(NULL)	(NULL)	(NULL)	(NULL)

Staff

id	name	DOB	email	phone_number	place	post	pin	state	district	gender	qualifi
1	Asia p	1999-05-08	asia@gmail.om	1234325342	perithalmanna	perithalmanna	678546	Kerala	Kannur	Female	PhD
3	gayathri	2005-06-04	gayathri@gmai.com	1234567890	perithalmanna	perinthalmanna	678546	Kerala	Kannur	Female	PhD
4	shamsudheen	2005-09-07	shamsu@mail.com	01234567893	perithalmanna	perinthalmanna	678546	Kerala	Kannur	Male	PhD
(Auto)	(NULL)	(NULL)	(NULL)	(NULL)	(NULL)	(NULL)	(NULL)	(NULL)	(NULL)	(NULL)	(NULL)

Notification

id	date	notification	type	LOGI...
1	2025-03-08	hi	admin	1
5	2025-03-08	hvbfhdf	hod	3
6	2025-03-12	hi	hod	3
7	2025-03-12	hi	admin	1
8	2025-03-12	hi	admin	1
9	2025-03-11	y	admin	1
10	2025-03-12	why	admin	1
11	2025-03-12	my	admin	1
(Auto)	(NULL)	(NULL)	(NULL)	(NULL)

Recorded Section

id	video	date	time
1	C:am (5)ammediavedio20250308140608_video.mp4	2025-03-08	14:07:08
2	C:am (5)ammediavedio20250308141355_video.mp4	2025-03-08	14:14:55
3	C:am (5)ammediavedio20250308141513_video.mp4	2025-03-08	14:16:13
4	C:am (5)ammediavedio20250308141653_video.mp4	2025-03-08	14:17:53
5	C:am (5)ammediavedio20250308141810_video.mp4	2025-03-08	14:19:10
6	C:am (5)ammediavedio20250308141917_video.mp4	2025-03-08	14:20:17
7	C:am (5)ammediavedio20250312112348_video.mp4	2025-03-12	11:24:48
8	C:am (5)ammediavedio20250312112513_video.mp4	2025-03-12	11:26:13
9	C:am (5)ammediavedio20250312112758_video.mp4	2025-03-12	11:28:58
10	C:am (5)ammediavedio20250312113601_video.mp4	2025-03-12	11:37:01
11	C:am (5)ammediavedio20250312133222_video.mp4	2025-03-12	13:33:22
12	C:am (5)ammediavedio20250312133324_video.mp4	2025-03-12	13:34:24

Allocation

id	STAFF_id	SUBJECT_id
1	1	1
2	3	1
3	4	2
(Auto)	(NULL)	(NULL)

ARCHITECTURE DIAGRAMS/DFD

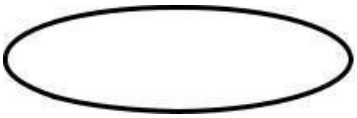
Data flow diagram issued to define the flow of the system audits resources such as information. Data flow diagrams represent one of the most ingenious tools used for structured analysis. A Dataflow diagram or DFD as it is shortly called is also known as a bubble chart. It is the major starting point in the design phase that functionally decomposes the requirement specifications down to the lowest level of details.

In the normal convention, A Data flow diagram has four major symbols.

1. Square: This defines source or destination of data

2. Arrow: which shows data flow

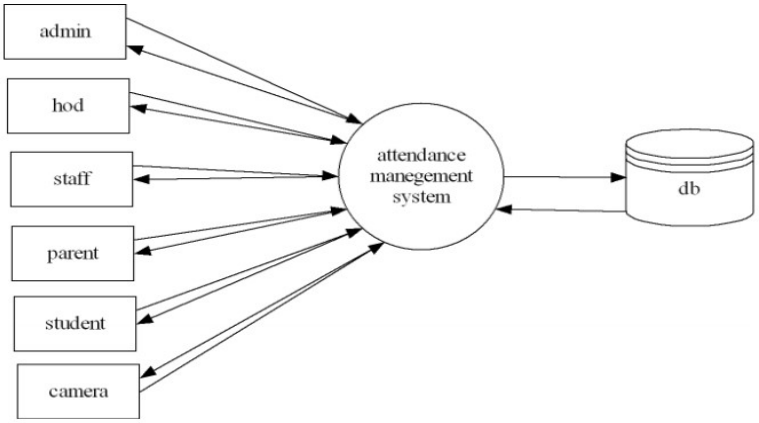
3. Circle: which represent a process that transforms incoming data into outgoing flow



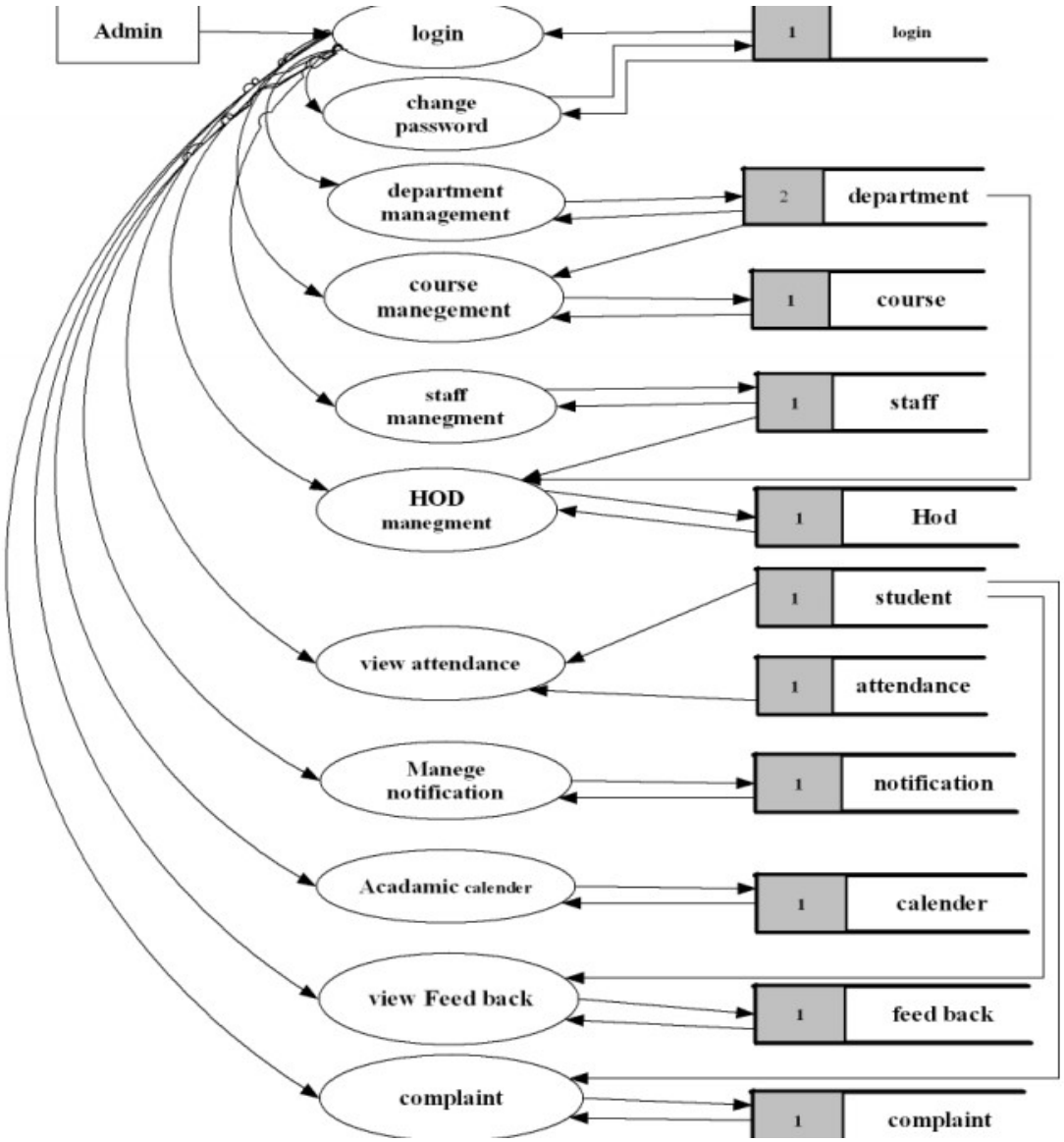
4. Open rectangle: which shows data store.

DATA FLOW DIAGRAM

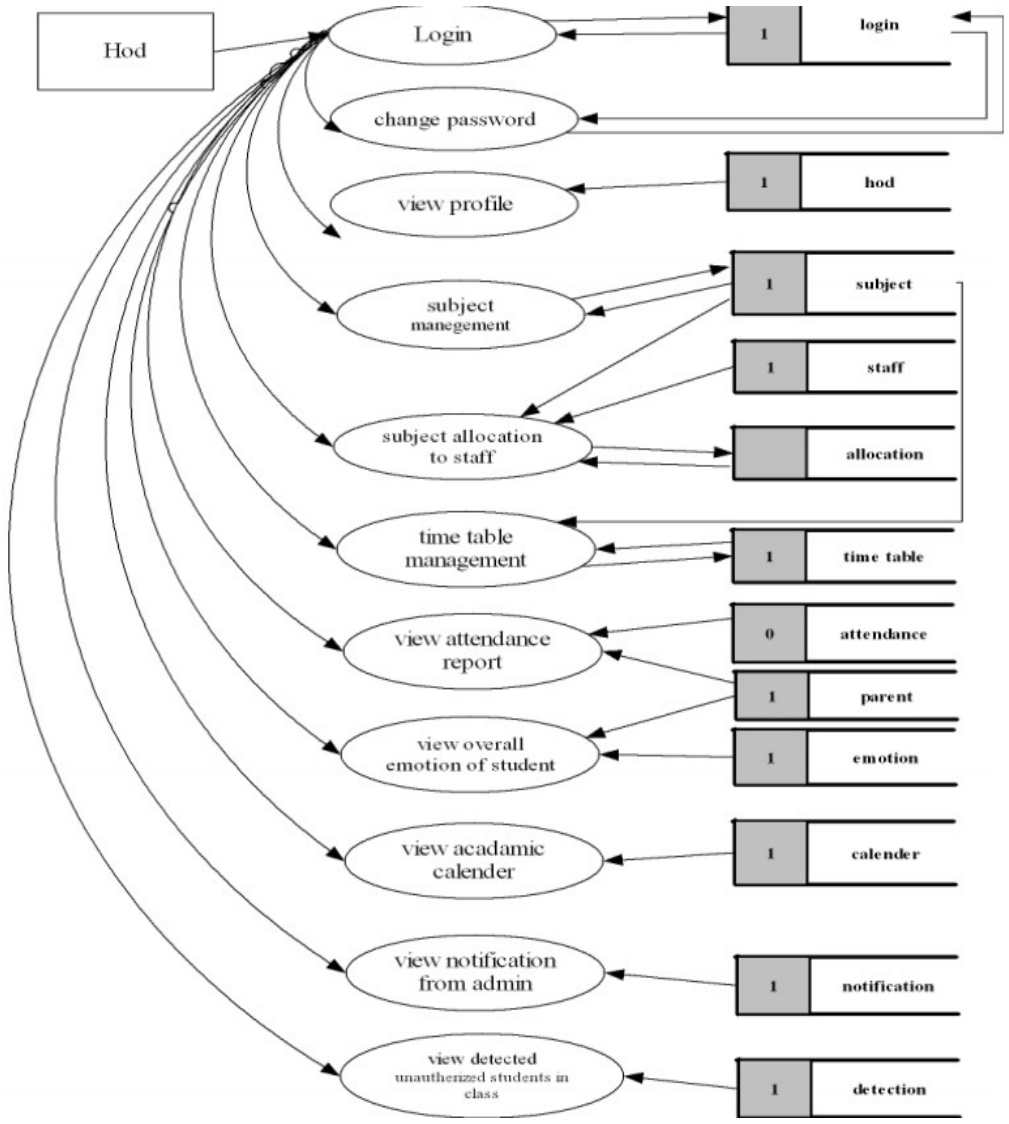
Level 1



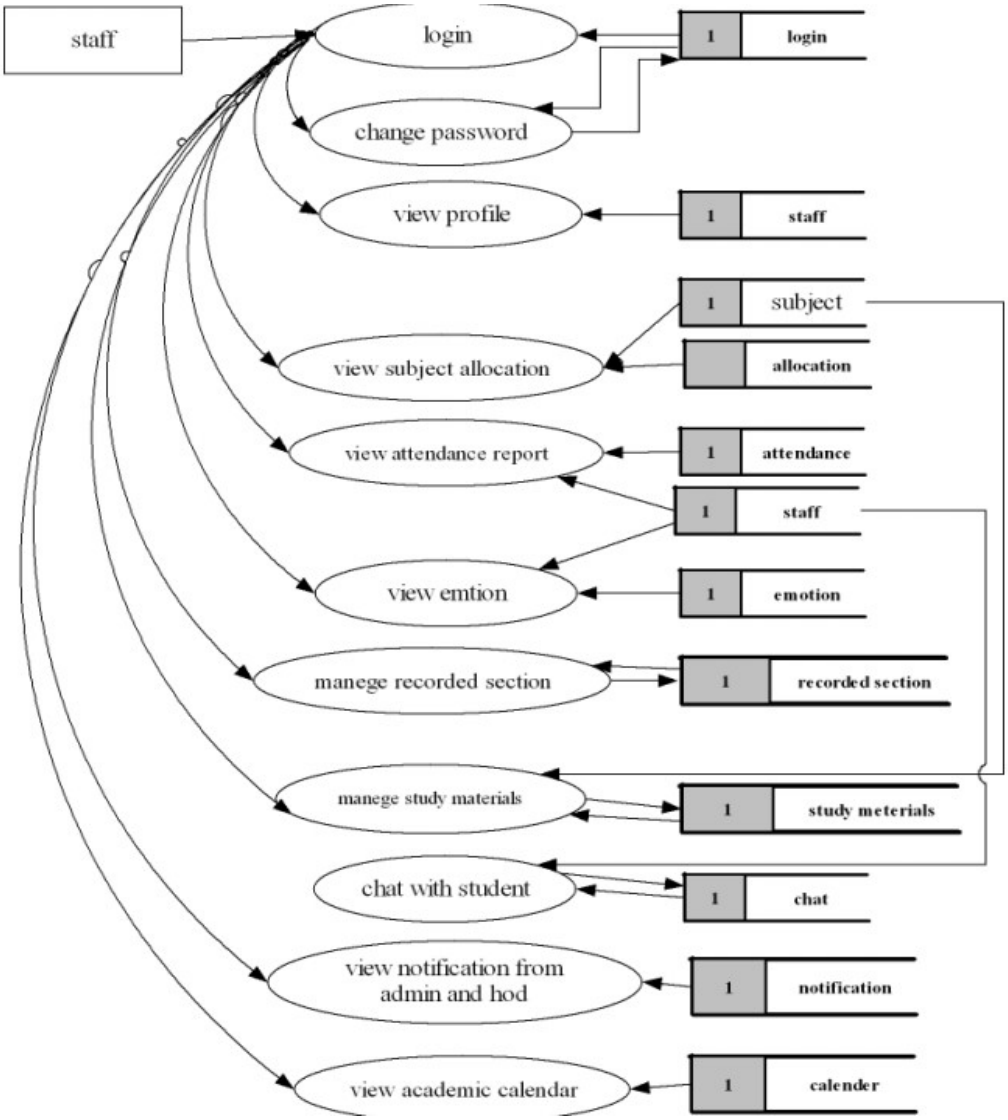
Level 1.1



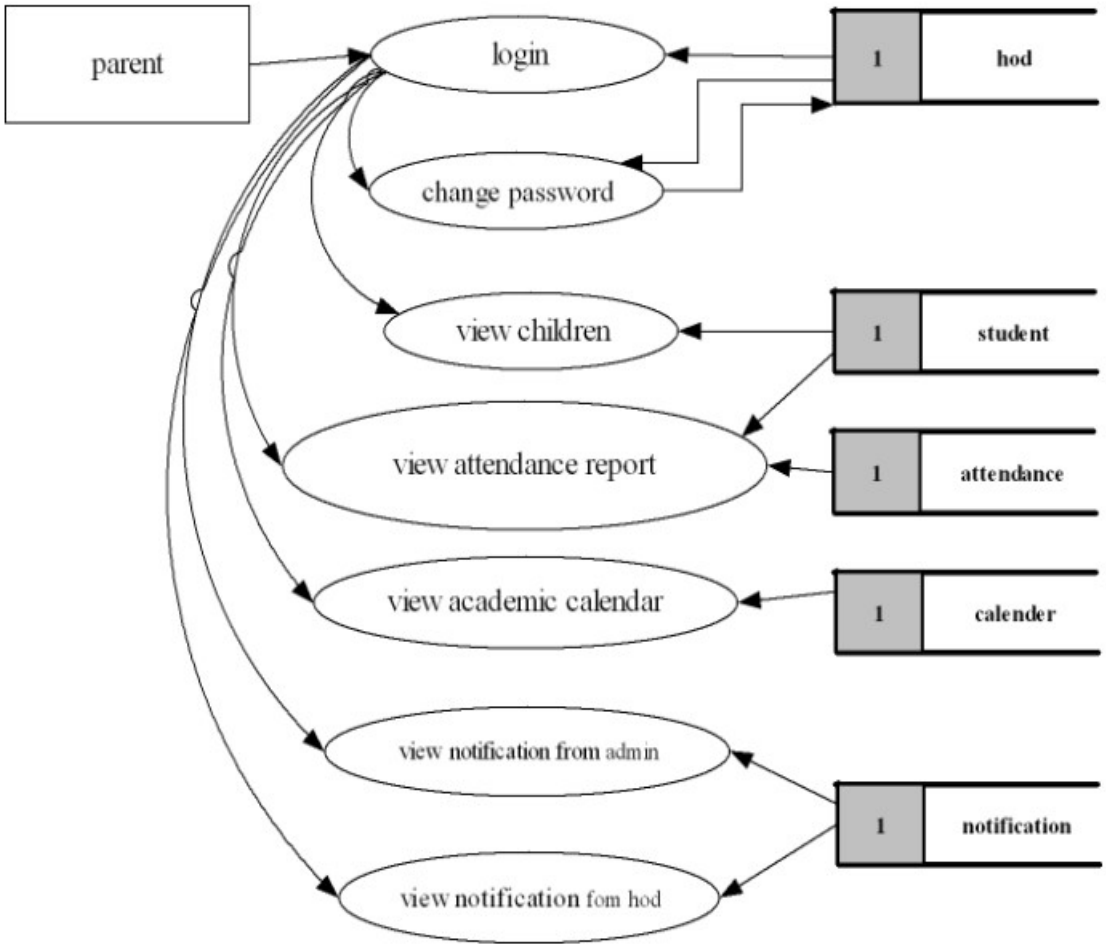
Level 1.2


Hod
Login
change password
view profile
subject
manegement
subject allocation
to staff
time table
management
view attendance
report
view overall
emotion of student
view acadamic
calender
view notification
from admin
view detected
unauthenized students in
class
1
login
1
hod
1
subject
1
staff
allocation
1
time table
0
attendance
1
parent
1
emotion
1
calender
1
notification
1
detection

Level 1.3


staff
login
change password
view profile
view subject allocation
view attendance report
view emtion
manege recorded section
manege study materials
chat with student
view notification from admin and hod
view academic calendar
1
login
1
staff
1
subject
allocation
1
attendance
1
staff
1
emotion
1
recorded section
1
study meterials
1
chat
1
notification
1
calender

Level 1.4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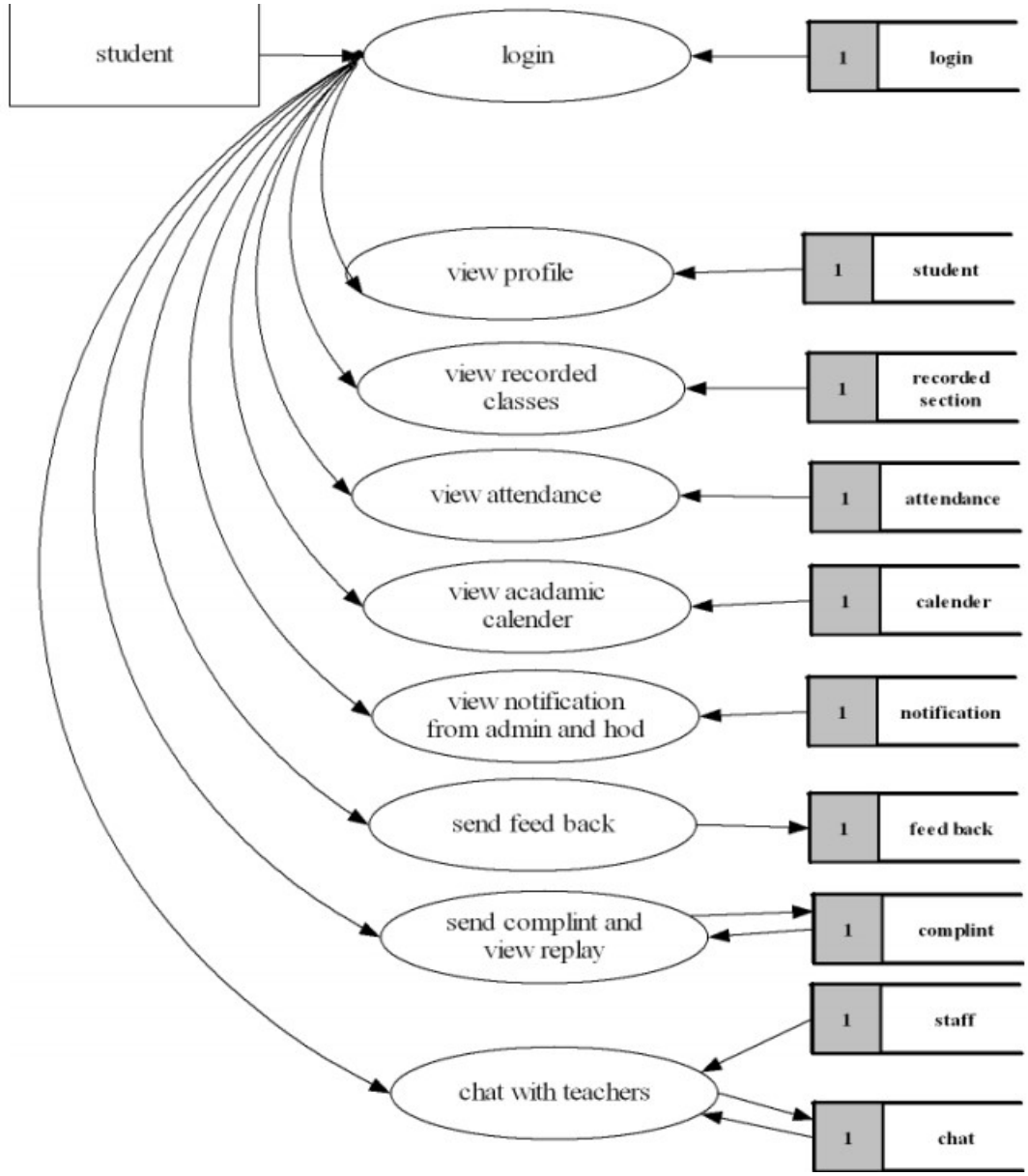
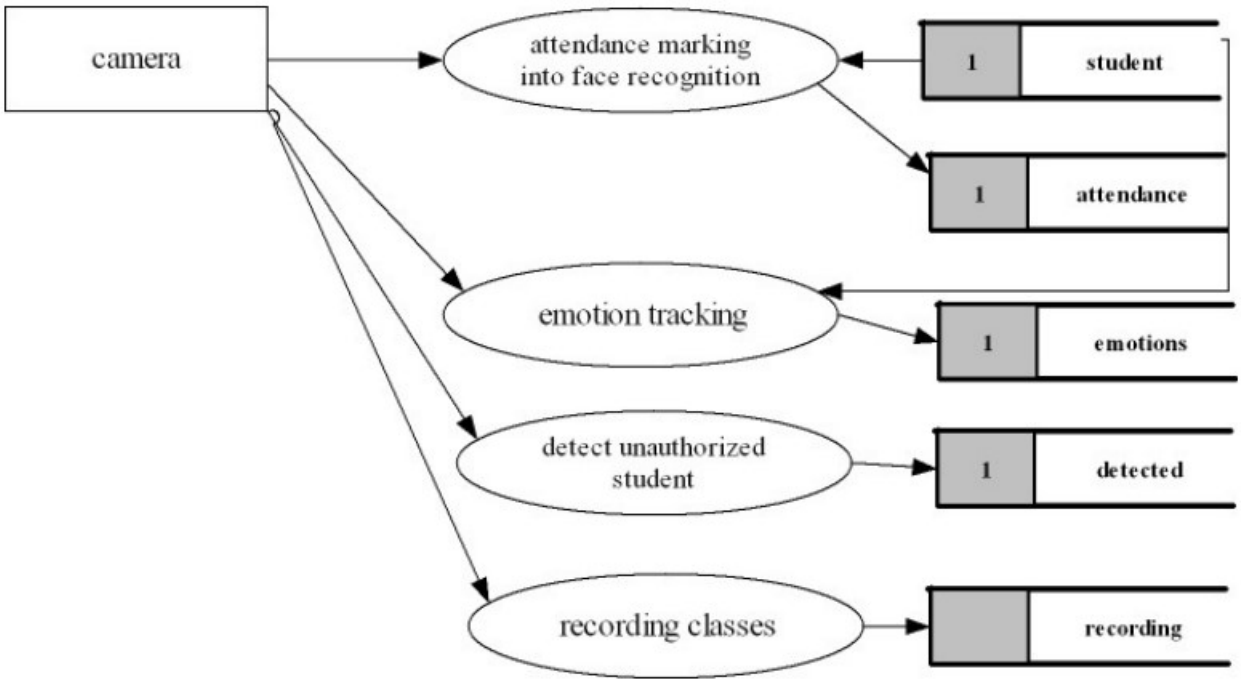
login
change password
view children
view attendance report
view academic calendar
view notification from admin
view notification fom hod
1
hod
1
student
1
attendance
1
calender
1
notification

Level 1.5


student
login
1
login
view profile
1
student
view recorded classes
1
recorded section
view attendance
1
attendance
view acadamic calender
1
calender
view notification from admin and hod
1
notification
send feed back
1
feed back
send complint and view replay
1
complint
1
staff
chat with teachers
1
chat

Level 1.6


camera
attendance marking into face recognition
1
student
1
attendance
emotion tracking
1
emotions
detect unauthorized student
1
detected
recording classes
recording

SYSTEM DEVELOPMENT

System development is a series of operations to manipulate data to produce output from computer system. The principles activities performed during the development phase can be divided into two major related sequences:

.

- External system development
- internal system development

CODING

A code is an ordered collection of symbols designed to provide unique identification of entity or an attribute. Code also shows interrelationship among different items. Codes are used to identify, access, sort, matching records. The code ensures that only one value of code with a single meaning is applied to give entity or attribute as described in various ways.

FRONT END:

Python – An Overview

Python is an interpreter, object-oriented, high-level programming language with dynamic semantics. Its high-level built-in data structures, combined with dynamic typing and dynamic binding, Python's simple, easy to learn syntax emphasizes readability and therefore reduces the Debugging Python programs is easy: a bug or bad input will never cause a segmentation fault. Instead, when the interpreter discovers an error, it raises an exception. Python is meant to be an easily readable language.

.

BACK END:

MySQL Database

Microsoft SQL Server is a relational database management system developed by Microsoft. As a database server, it is a software product with the primary function of storing and retrieving data as requested by other software applications—which may run either on the same computer or on another computer across a network (including the Internet). Structured Query Language is a domain-specific language used in programming and designed for managing data held in a relational database management system (RDBMS), or for stream processing in a relational data stream management system (RDSMS). The scope of SQL includes data insert, query, update and delete, schema creation and modification, and data access control SQL commands are grouped into four major categories depending on their functionality.

- **Data Definition Language (DDL)**

These SQL commands are used for creating, modifying, and
Dropping the structure of database objects. The commands are CREATE, ALTER, DROP, RENAME and TRUNCATE.

- **Data Manipulation Language (DML)**

These SQL commands are used for storing, retrieving, modifying, and deleting data. These Data Manipulation Language commands are: SELECT, INSERT, DELETE AND UPDATE.

SYSTEM TESTING

Testing is an important step in the software engineering process that could view rather than constructive. Testing is the process of executing a program with the intent of finding an error. A good test is that has the probability to find an as yet undiscovered error. Software testing is a critical element of software quality assurance and represents the ultimate review of specification, design and coding. **Testing Strategy:**

Unit Testing

Unit testing focused verification efforts on the smallest unit of software design, the module. This is also known as —module testing. The modules are tested separately. This testing is carried out during the programming stage itself. In this testing step each module is found to be working satisfactorily as regard to the expected output from the module.

Integration Testing

The integration testing is a systematic testing for constructing the program's structure, while at the same time conducting tests to uncover errors associated within the interface. The objective is to take unit tested modules and build a program structure. All the modules are combined and tested as a whole. Here correction is difficult because the vast expenses of the entire program complicate the isolation of causes.

System Testing

After performing the validation testing, the next step is output testing of the proposed system since no system could be useful if it doesn 't produces the required data in the specific format. The output displayed or generated by the system under consideration is tested.

IMPLEMENTATION

Implementation is the stage of project, when theoretical design is turned into a working system. The most crucial stage is achieving a successful system and confidence that the new system will work effectively. Implementation means converting a new or revised system design into an operational one.

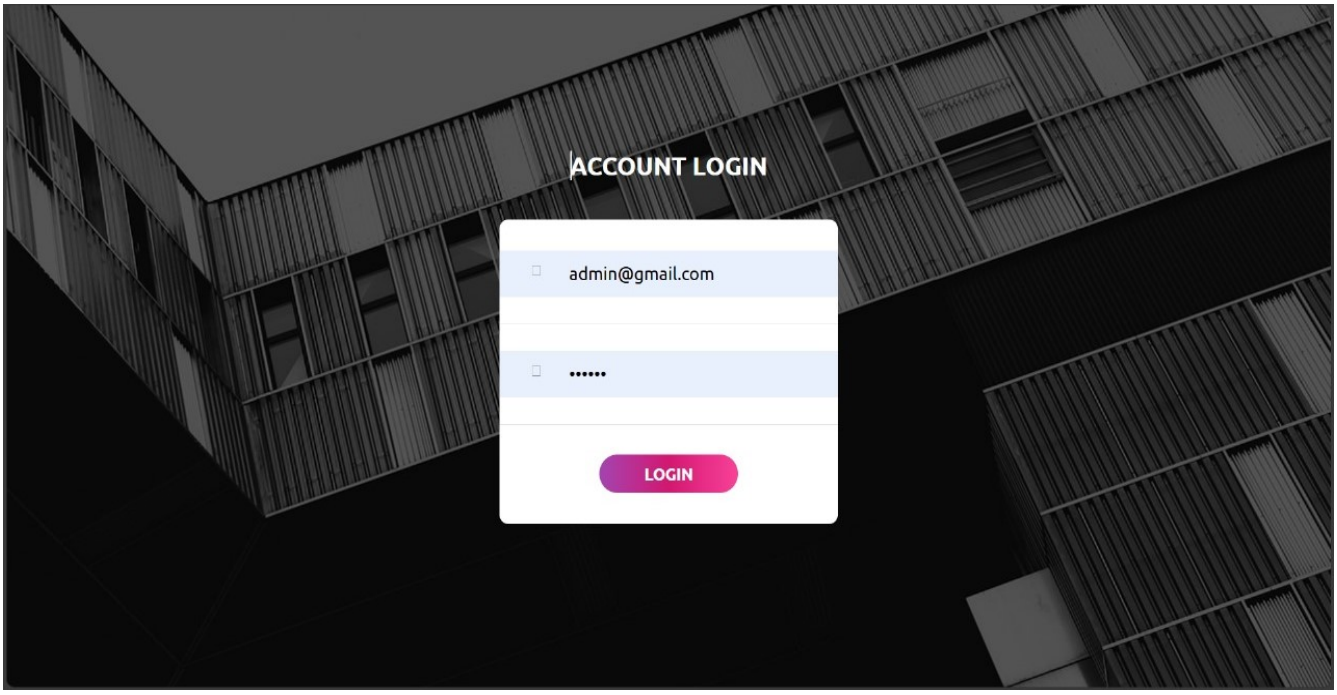
There are several activities involved while implementing a project:

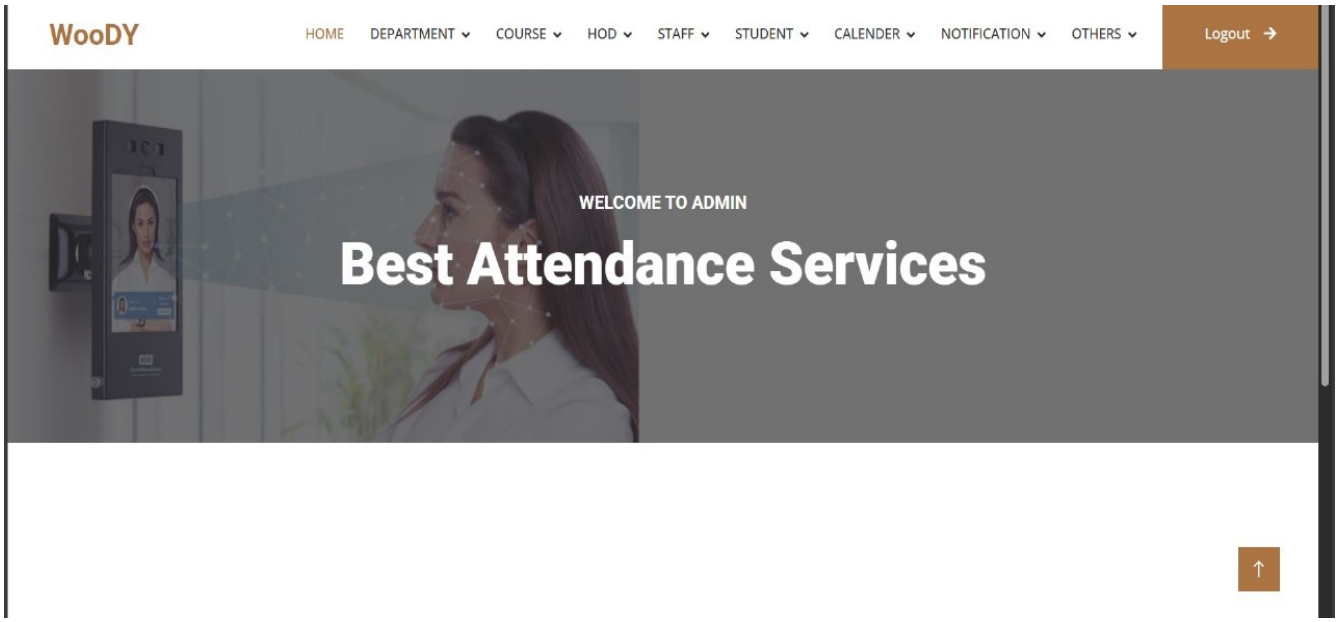
- Careful planning.
- Investigating the current system and its constraints on implementation.
- Design methods to achieve the changeover.
- Training of the staff in the changeover procedure and evaluation of change over

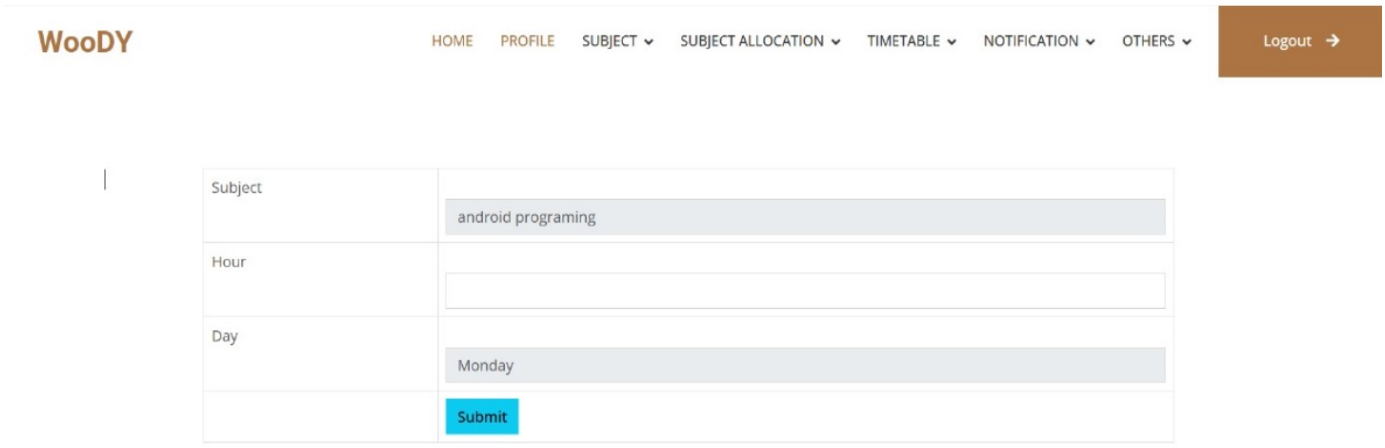
Method Implementation is the final stage, and it is an important phase. The first task in implementation planning, which is deciding on methods to be adopted. After the system was implemented successfully, training of the user was one of the most important sub tasks of the developer.

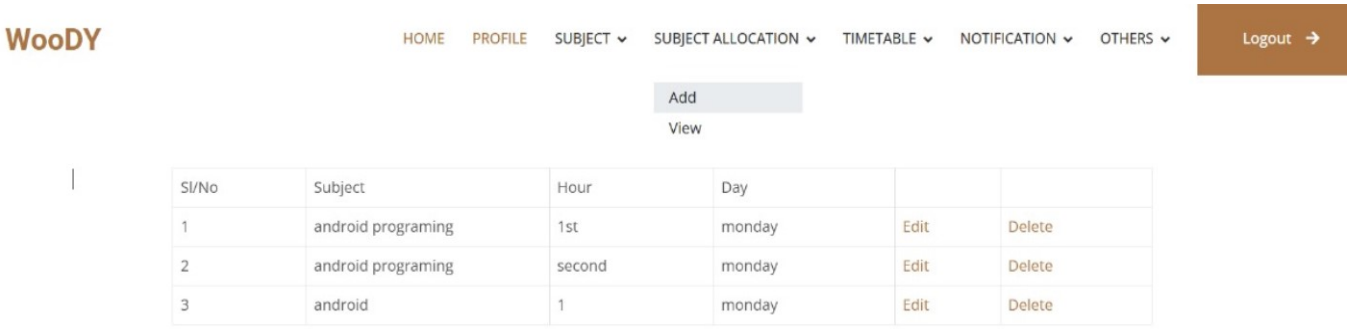
APPENDIX

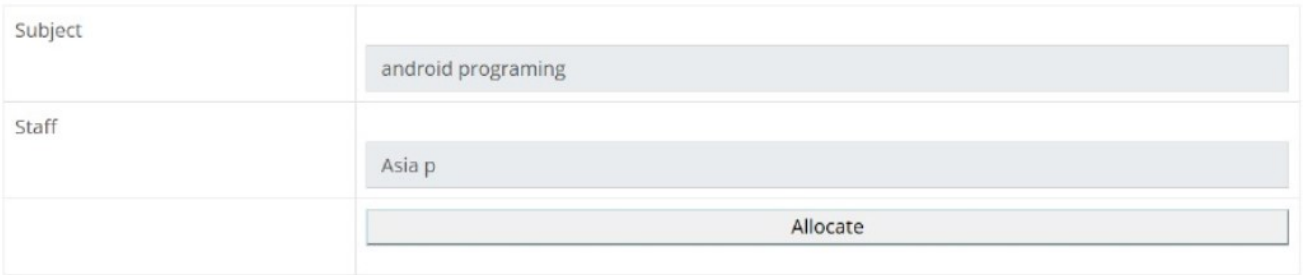
WEB APPLICATION SCREEN SAMPLES











Date	event	description		
May 7, 2025	Collage union inauguration	All are welcome	Edit	Delete

Si/NO	Course	student name	Email	DOB	Gender	Phone	State	district	Photo	Parent name	Parent number		
1	BCA	zhiyad	mhdzhiyad9656@gmail.com	March 10, 2025	Male	09656370958	Kerala	Malappuram		kunhimuhammed	9656370958	Edit	Delete
2	BCA	muhsin	mhdzhiyad9656@gmail.com	March 3, 2025	Male	09656370958	Kerala	Malappuram		kunhimuhammed	9656370958	Edit	Delete

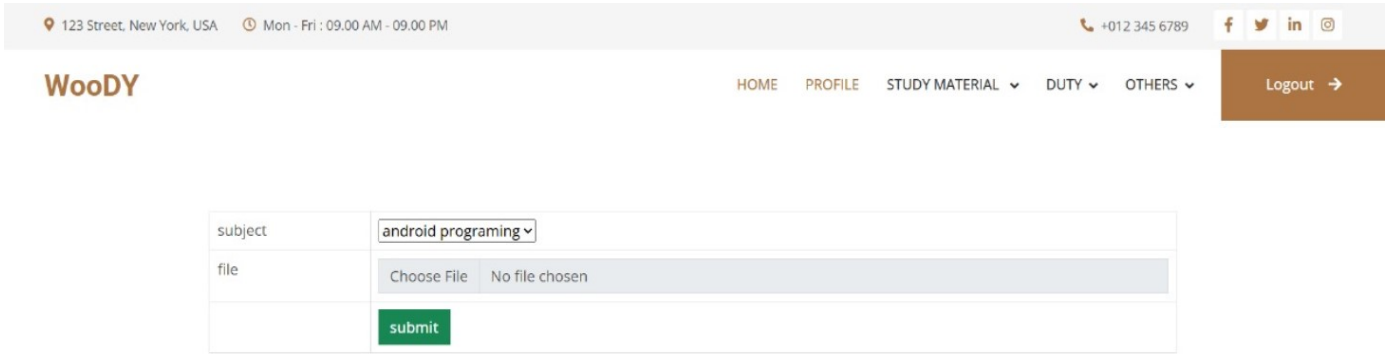
Search

Si/No.	Staff Name	Email	DOB	Gender	Phone	Place	Post	Pin	State	District	Qualification	Photo		
1	Asia p	asia@gmail.om	May 8, 1999	Female	1234325342	perithalmanna	perithalmanna	678546	Kerala	Kannur	PhD		Edit	Delete
2	gayathri	gayathri@gmai.com	June 4, 2005	Female	1234567890	perithalmanna	perinthalmanna	678546	Kerala	Kannur	PhD		Edit	Delete
3	shamsudheen	shamsu@mail.com	Sept. 7, 2005	Male	01234567893	perithalmanna	perinthalmanna	678546	Kerala	Kannur	PhD		Edit	Delete

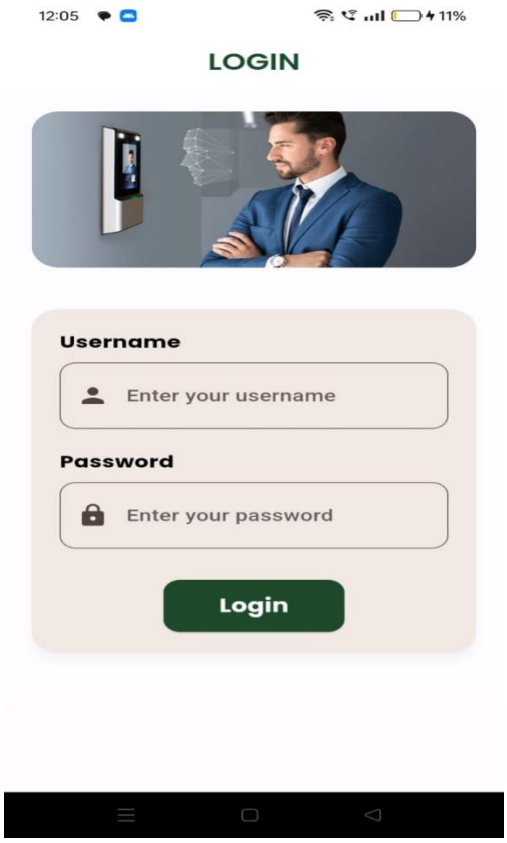
Sl/No	Subject	file		
1	android programing	view file	Edit	Delete

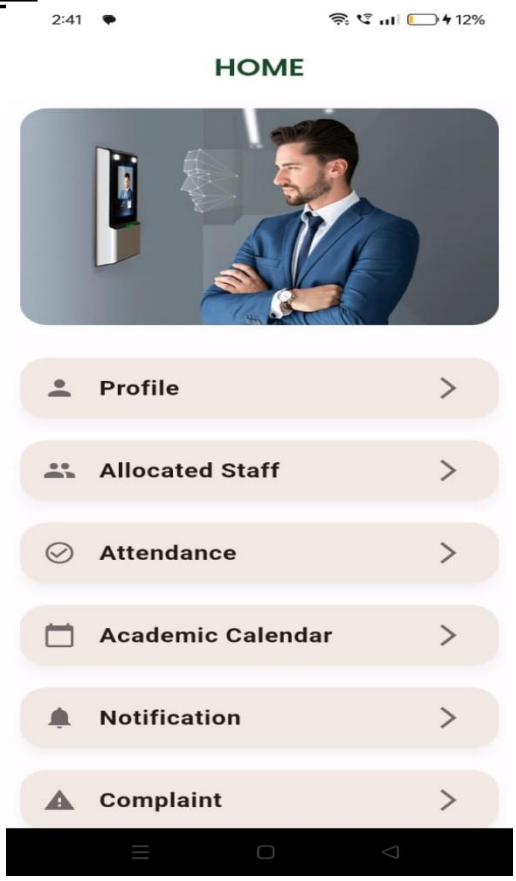
Sl/No	Date	Student info	Hours	Status
1	March 12, 2025	zhiyad	3	
2	March 12, 2025	zhiyad	0	
3	March 12, 2025	muhsin	4	
4	March 16, 2025	zhiyad	0	
5	March 16, 2025	zhiyad	4	
6	March 16, 2025	muhsin	4	
7	March 16, 2025	zhiyad	5	
8	March 21, 2025	zhiyad	3	
9	March 21, 2025	zhiyad	0	
10	March 21, 2025	zhiyad	4	

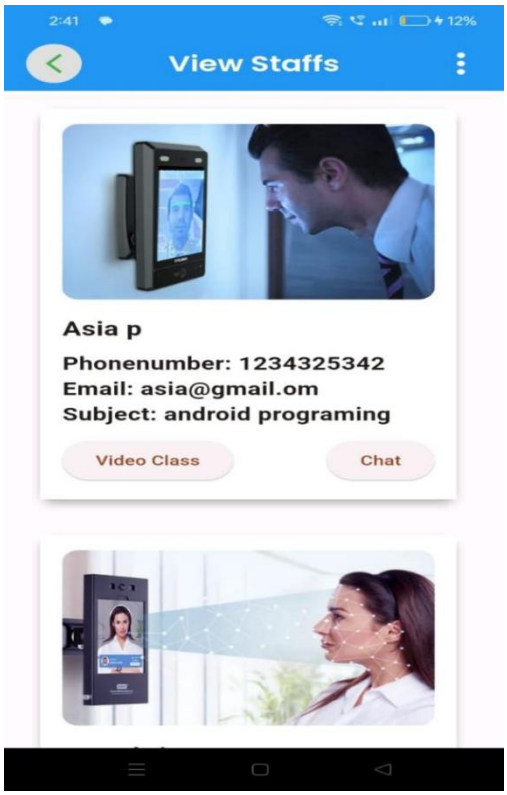
SL/NO	DATE	NAME	EMOTION
1	March 12, 2025	zhiyad	Fearful
2	March 12, 2025	zhiyad	Neutral
3	March 12, 2025	zhiyad	Sad
4	March 12, 2025	zhiyad	Fearful
5	March 12, 2025	zhiyad	Neutral
6	March 12, 2025	zhiyad	Fearful
7	March 12, 2025	zhiyad	Neutral
8	March 12, 2025	zhiyad	Happy
9	March 12, 2025	muhsin	Fearful
10	March 16, 2025	zhiyad	Neutral
11	March 16, 2025	zhiyad	Neutral
12	March 16, 2025	zhiyad	Happy
13	March 16, 2025	zhiyad	Happy

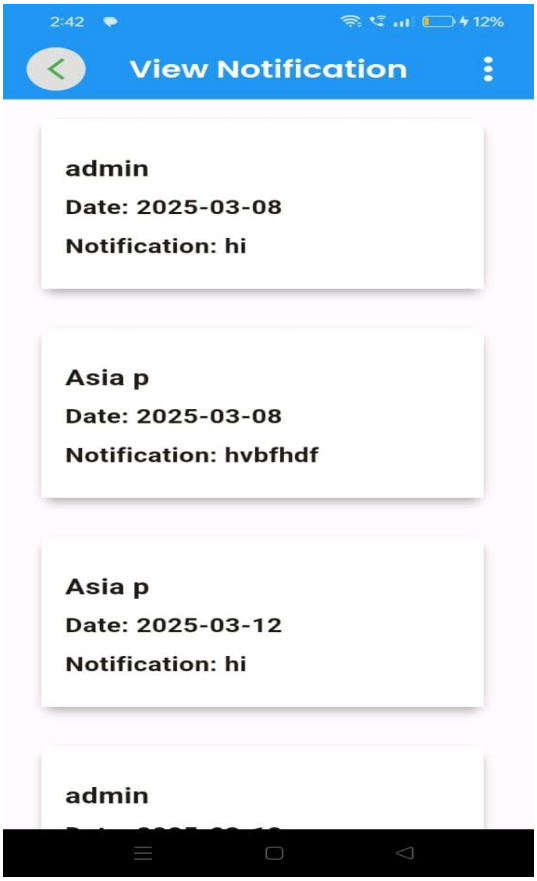


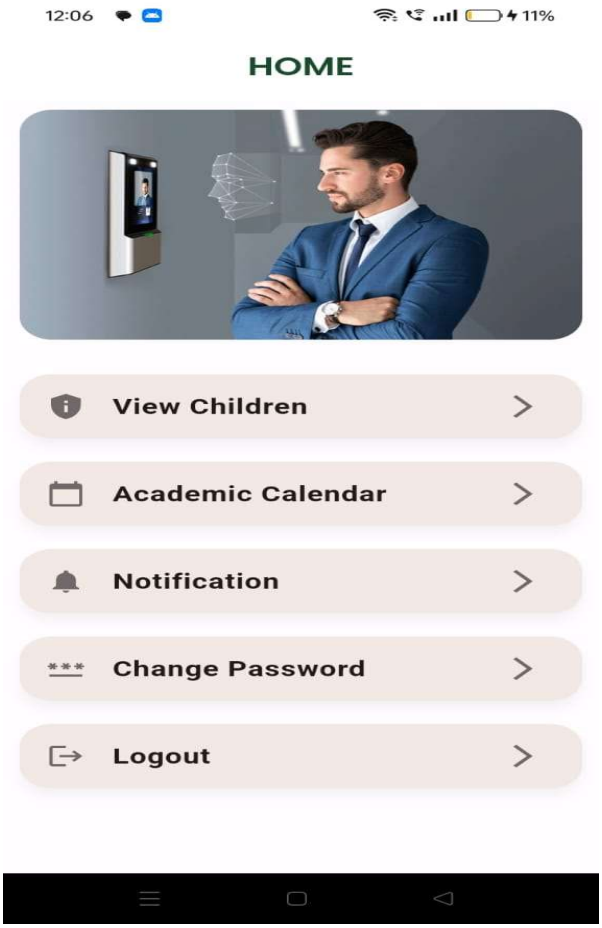
ANDROID APPLICATION SCREEN SAMPLE

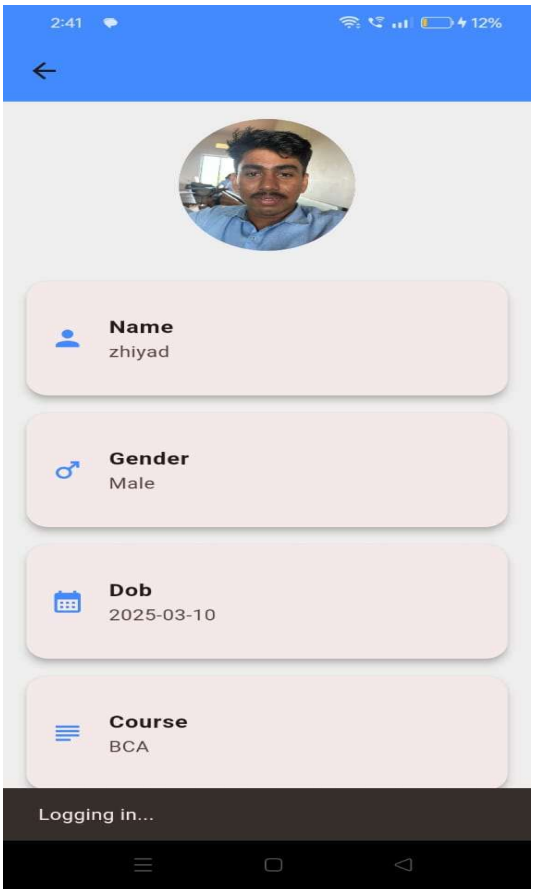


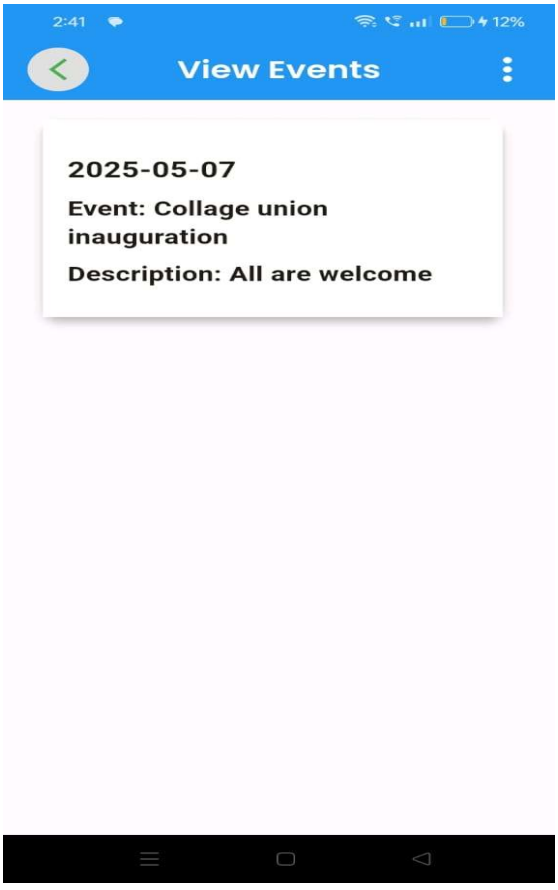





2:42
12%
View Notification
admin
Date: 2025-03-08
Notification: hi
Asia p
Date: 2025-03-08
Notification: hvbfhdf
Asia p
Date: 2025-03-12
Notification: hi
admin


12:06
11%
HOME
View Children
Academic Calendar
Notification
Change Password
Logout


2:41
12%
Name
zhiyad
Gender
Male
Dob
2025-03-10
Course
BCA
Logging in...


2:41
12%
View Events
2025-05-07
Event: Collage union inauguration
Description: All are welcome

FUTURE ENHANCEMENT

✧ Integration with Access Control Systems

✓Link attendance data with smart doors or gates to automatically grant or deny access based on attendance records.

✧ Real-Time Monitoring & Alerts

✓Send real-time alerts if an unauthorized person tries to mark attendance.

✓Notify admins if a student/employee is frequently absent or late.

✧ Liveness Detection & Anti-Spoofing

✓Implement anti-spoofing techniques to prevent attendance fraud (e.g., detecting if a face is from a printed photo or a deepfake video).

✧ Offline Mode

✓Enable attendance tracking without internet and sync data once the connection is restored.

✧ IoT & Wearable Device Integration

✓Use smartwatches or RFID wristbands for seamless attendance tracking.

CONCLUSION

The AI Attendance system revolutionizes traditional attendance tracking by leveraging artificial intelligence and automation. By implementing facial recognition (or other AI-based methods), the system eliminates manual errors, reduces fraudulent attendance marking, and enhances efficiency. It not only streamlines the attendance process but also improves security, accuracy, and real-time monitoring for educational institutions workplaces, and other organizations.

Looking ahead, the system can be enhanced with multi-factor authentication, cloud integration, real-time analytics, IoT connectivity, and anti-spoofing techniques to further improve its reliability and scalability. By adopting such advancements, the AI Attendance system can become a comprehensive smart attendance management solution that ensures seamless operations and contributes to a tech-driven future.

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- https://stackoverflow.com/
- https://github.com/