



Hybrid secure institution access control system

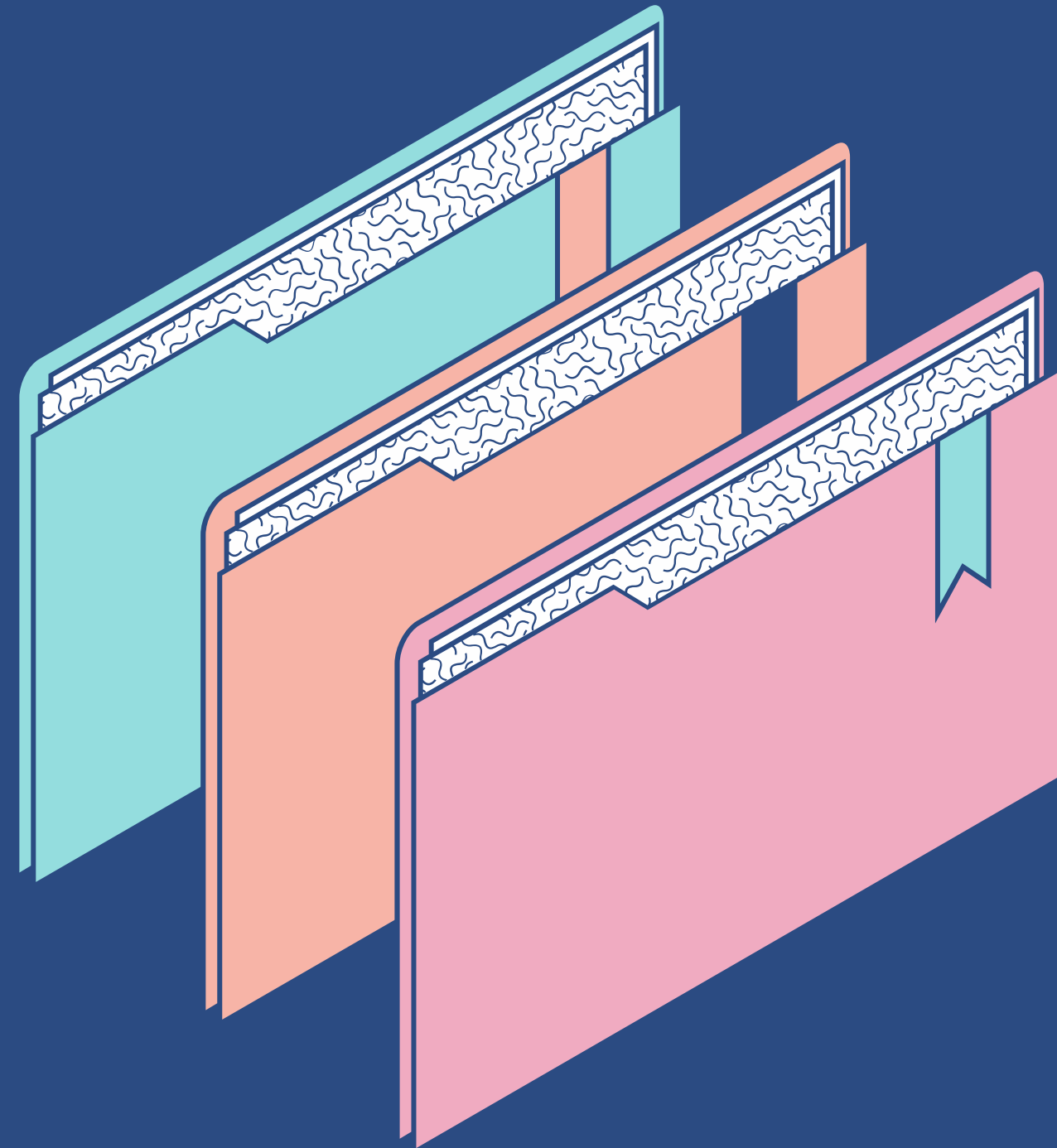
(Li-Guard)

Supervised By

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Dr/ Heba Kandil



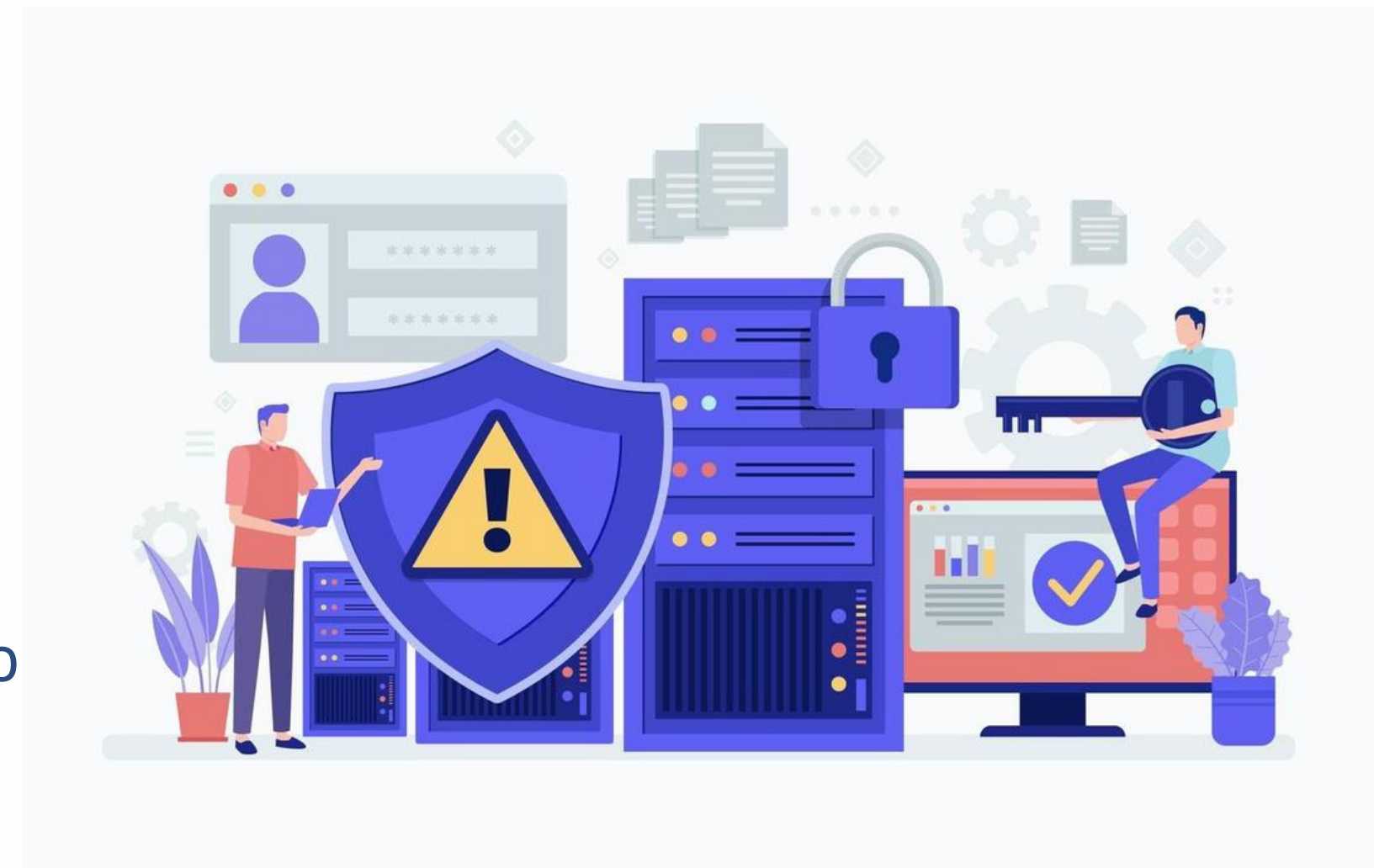


Outlines

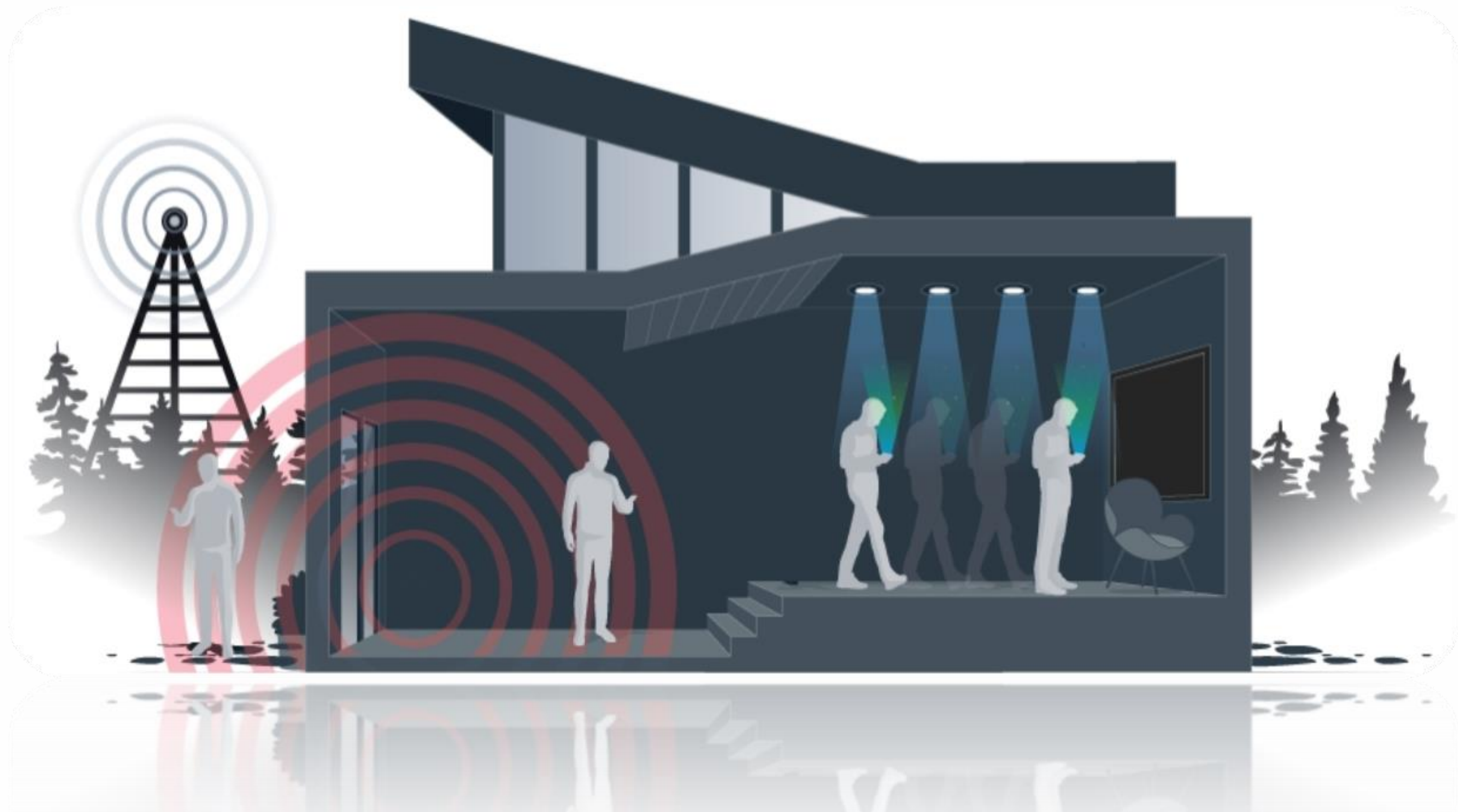
- Introduction
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Introduction

- Some companies and institutions need to control their entries to reduce the human factor in control the merits of the institution.
- And this is what we did by using two factor authentication , which are a password and facial recognition using artificial intelligence, in addition to the technology that through it we secured the data called (LIFI).



LIFI: What Is It & How Does It Work & what is the difference between it and WIFI?



Lifi VS Wi-Fi

S.No.	Parameter	Li-fi	Wi-fi
1.	Speed	> 1 GB/s	Around 150mb/s
2.	Medium of data transfer	Use light as carrier	Use radio spectrum
3.	Spectrum range	Visible light has 10000 times more	Having less spectrum range than VLC
4.	Cost	Cheaper	Expensive
5.	Network topology	Point-to-Point	Point-to-Point
6.	Operating Frequency	Hundreds of Tera Hz	2.4 GHz



Problem Statement

MANY INSTITUTIONS SUFFER FROM DIFFICULTY IN SECURING AND MANAGING THEIR ENTRANCES IN TERMS OF:

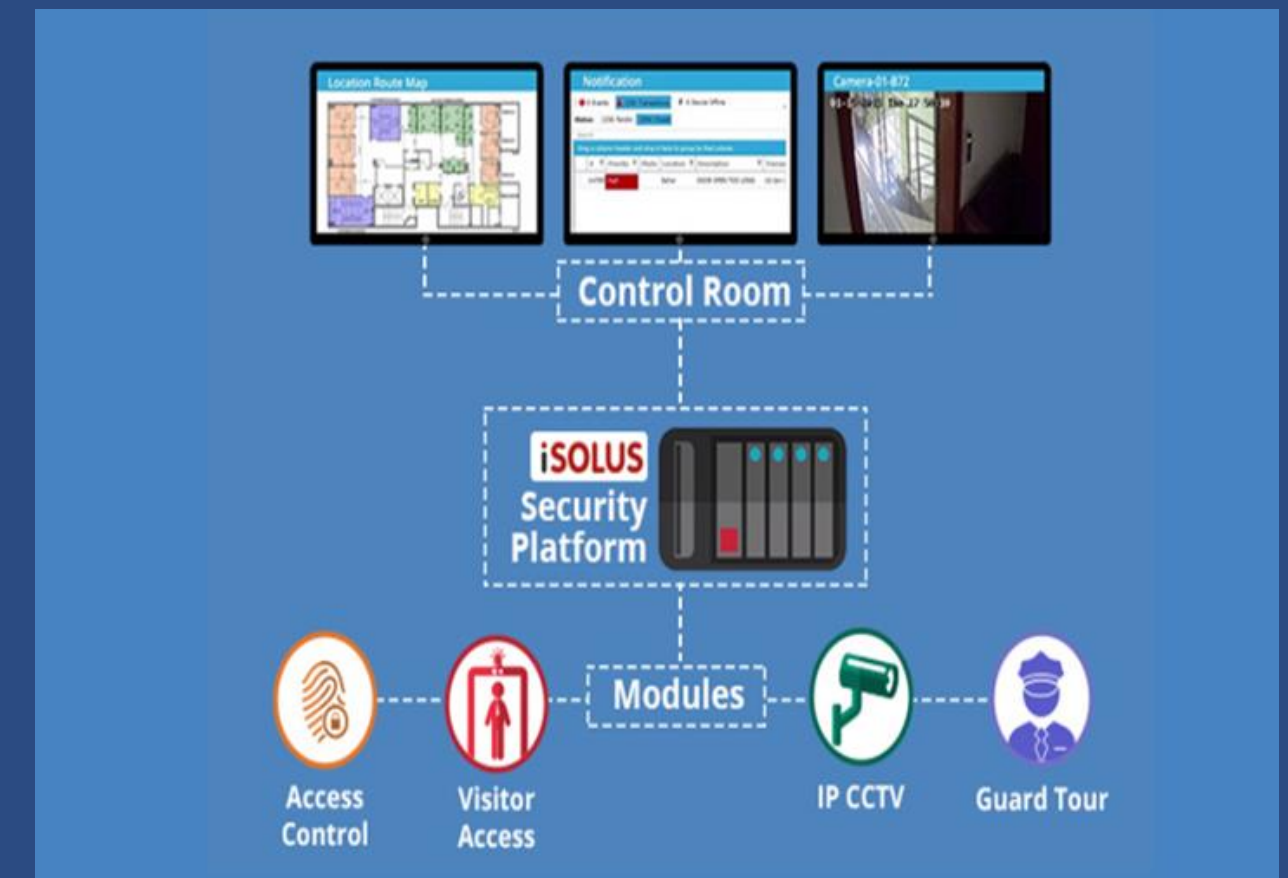
- Entry of unauthorized persons.
- Lack of control over the presence of people inside the institution.
- Record the attendance of employees and members who enter the institution.
- Track people within the institution and follow their whereabouts and movements.
- Do not restrict visitor movement permissions within the institution

Related Work

SOLUS protects and secures enterprises with advanced systems, both hardware, and software. SOLUS makes and markets.

- Access Control using fingerprint.
- Time and Attendance.
- Human guard for handling visitor management cycle.
- IP Video Management Integration System

(There is No visitor management system)



Related Work

ACRES multiple access control systems control the movement of staff and visitors within a building's structure.

- Door access with face recognition.
- Access control QR code readers .
- Bluetooth access control card readers.
- Mobile credentials for access control.

(There is No visitor management system)

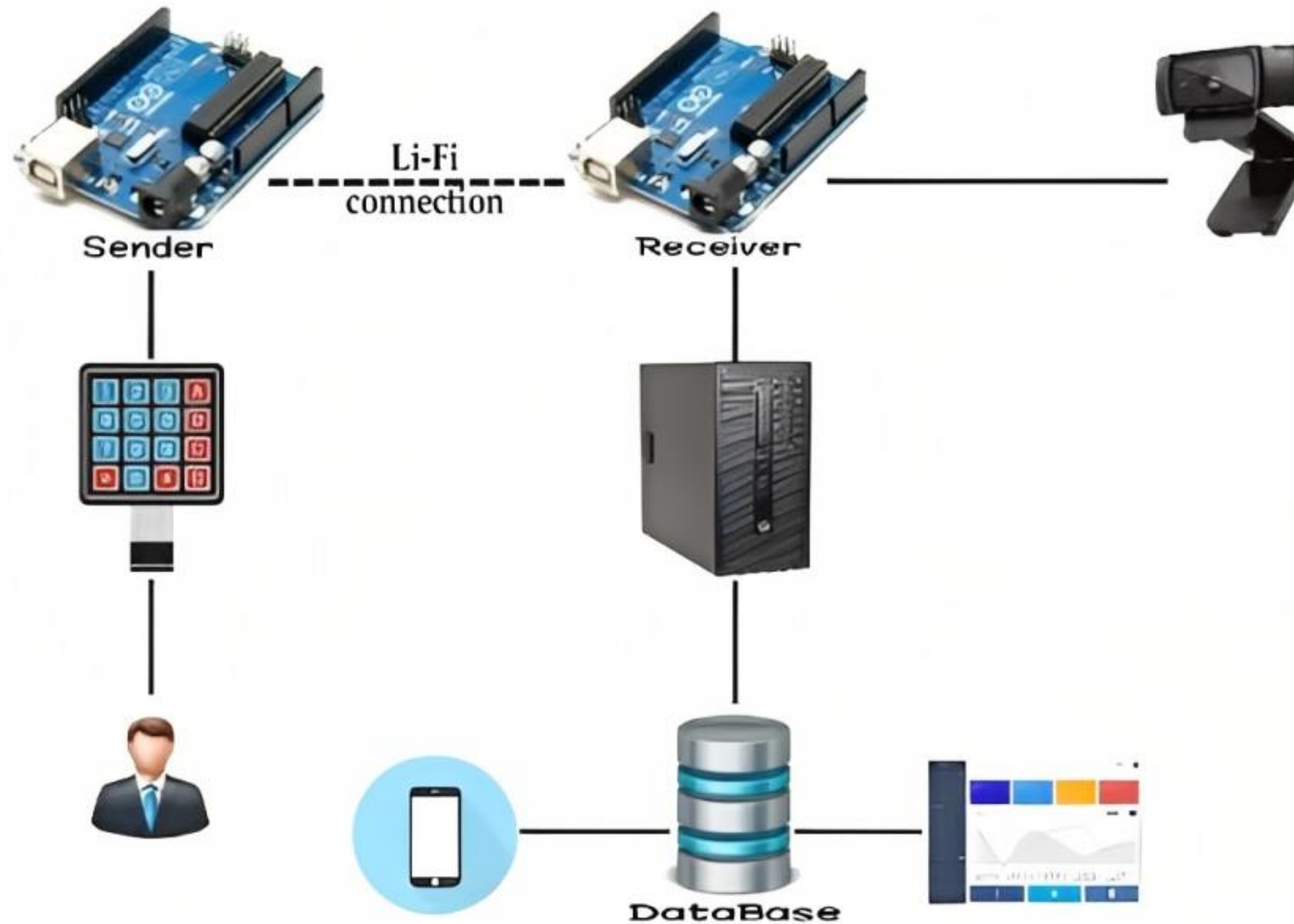




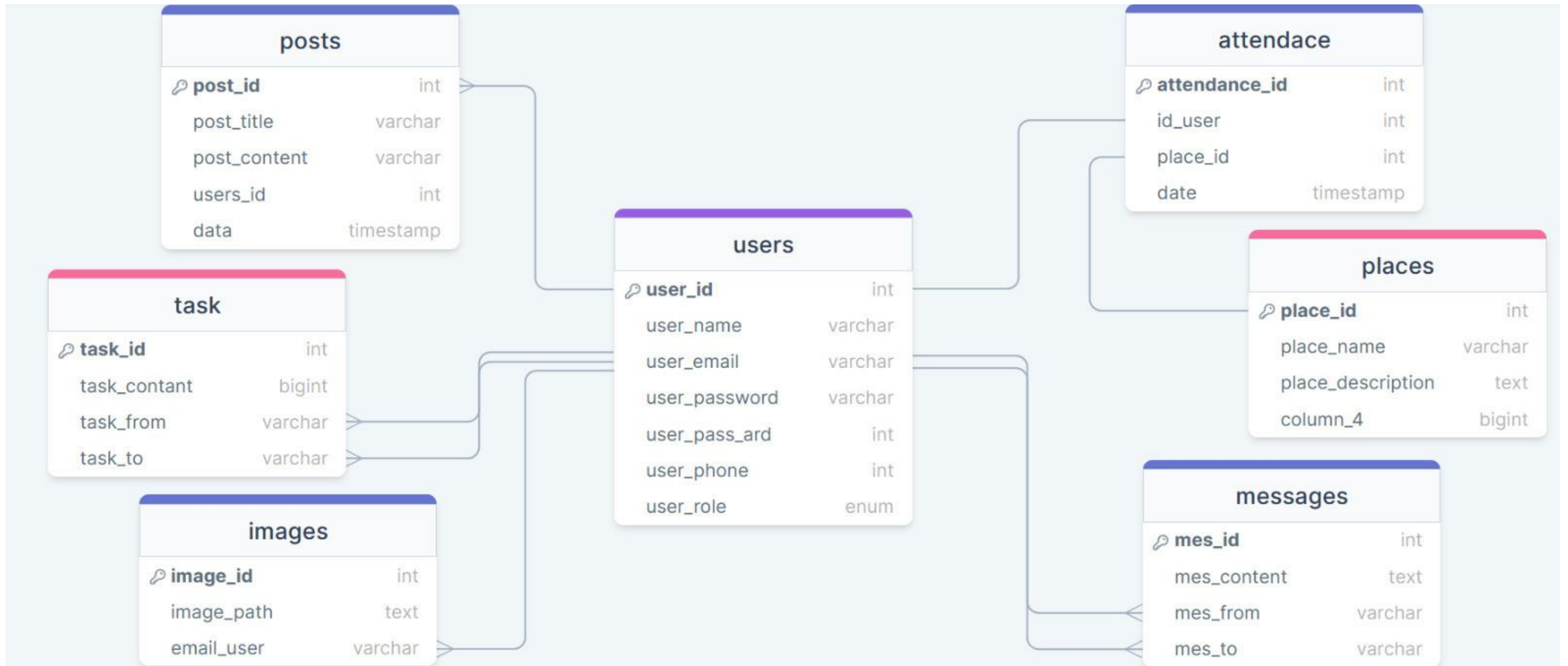
Objectives

- High security and assurance.
- Spoof proof Biometrics are hard to fake or steal.
- Track the location of each employee in the company in a high-quality manner.
- Reducing the human factor in controlling the management or insurance of the institution in general.
- Restricting unauthorized persons from being in certain places.

System Architecture



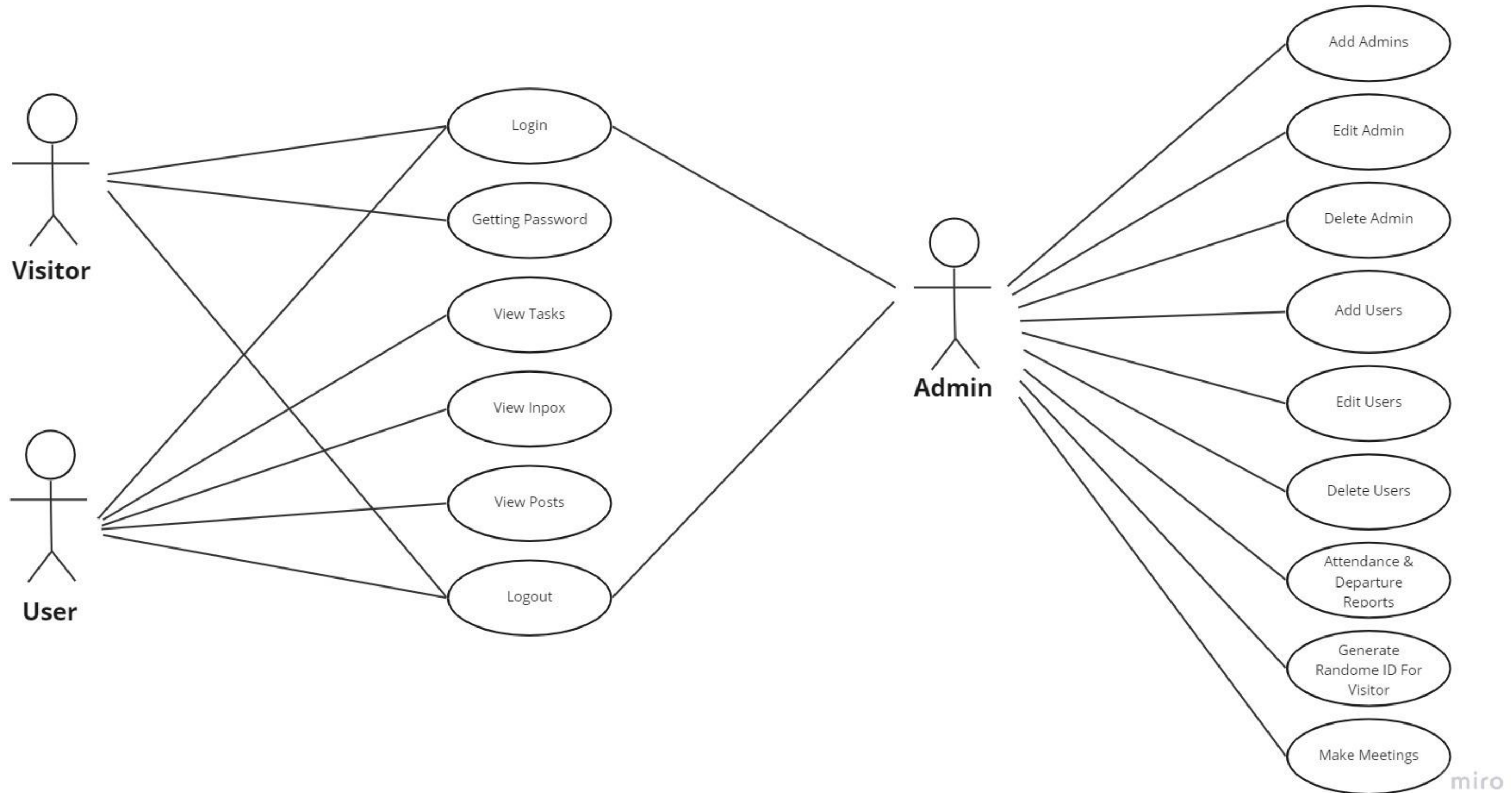
System ERD



UML Diagrams

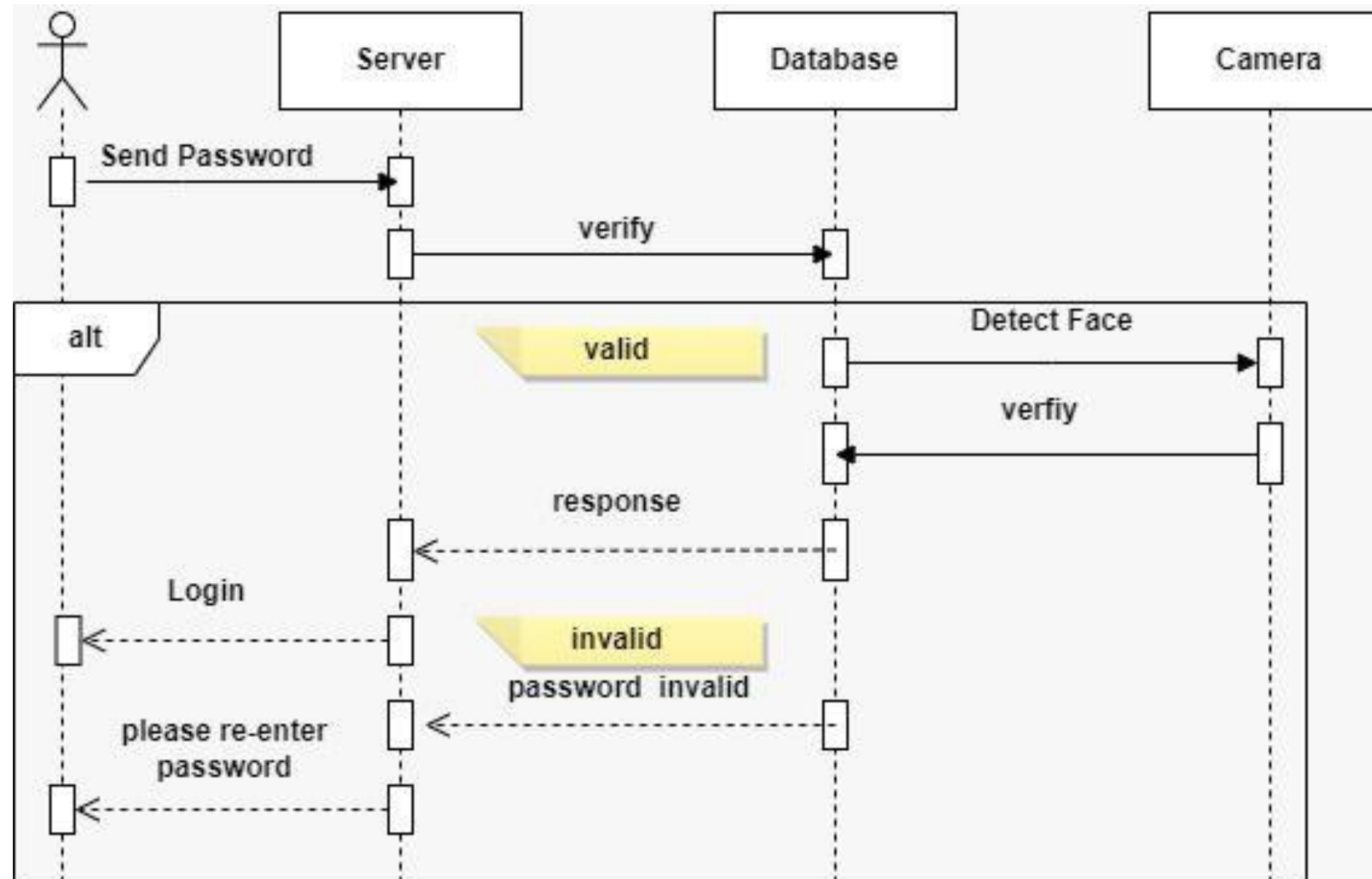


Use Case



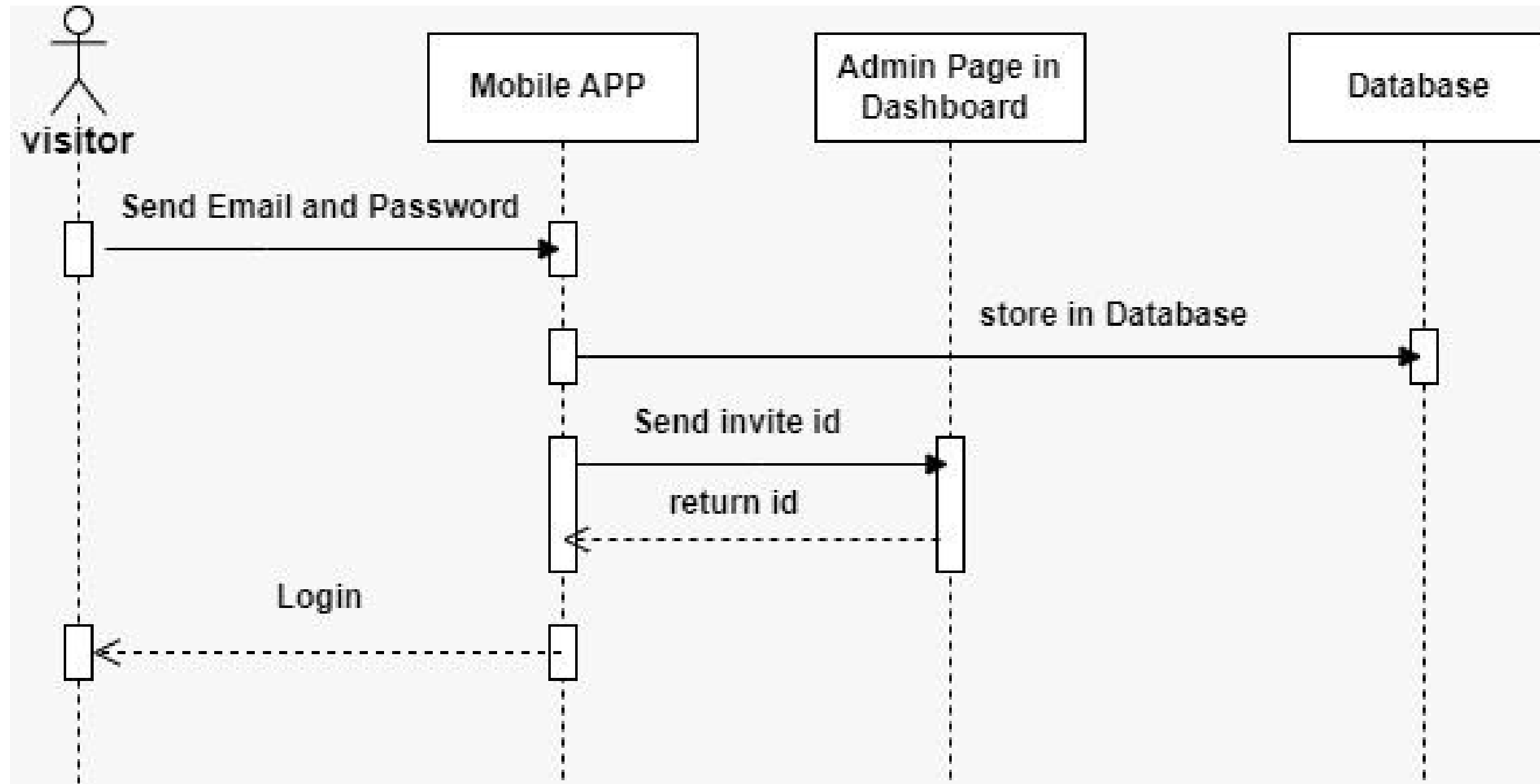
Sequence Diagram

(user)



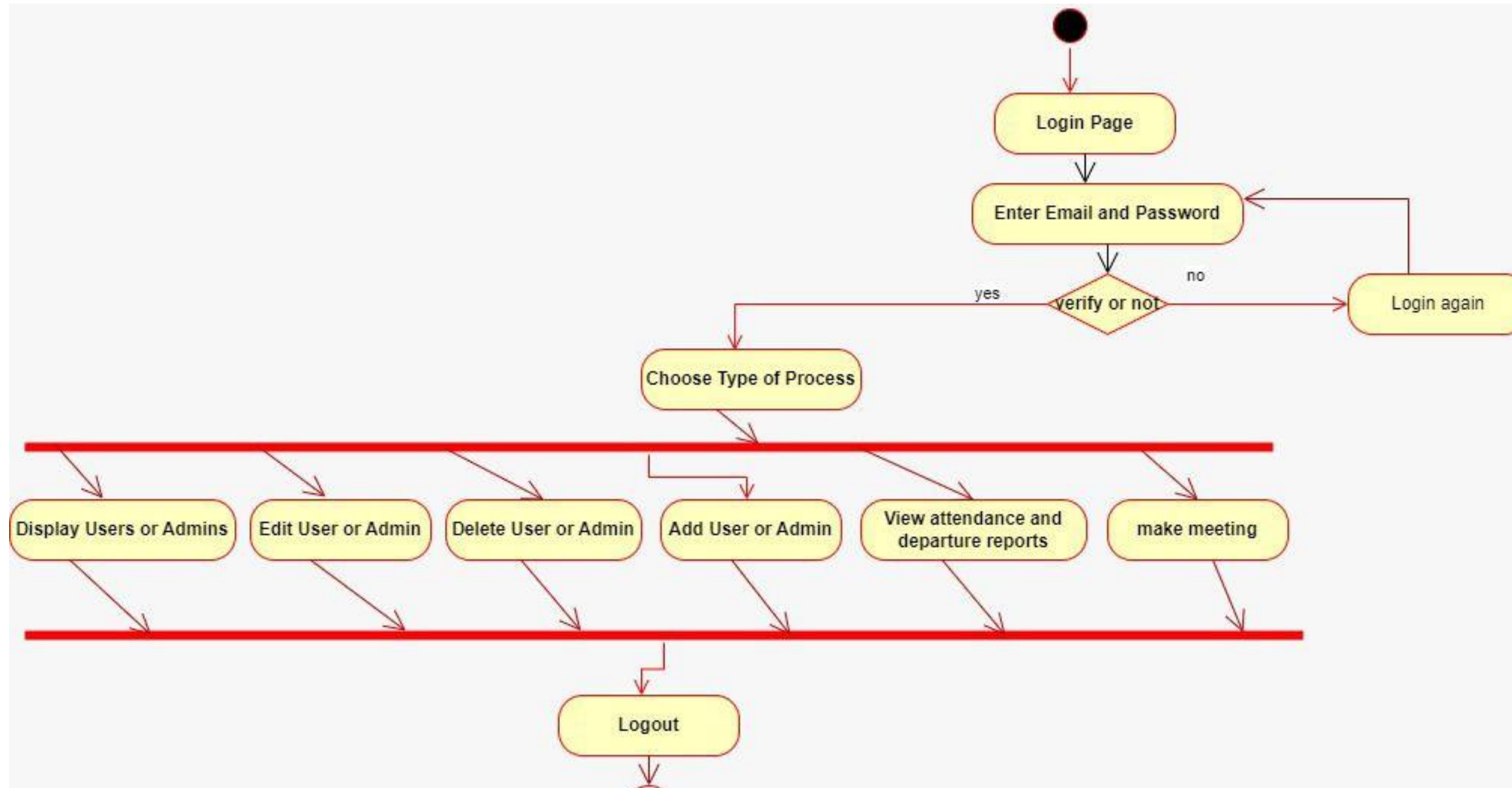
Sequence Diagram

(visitor)

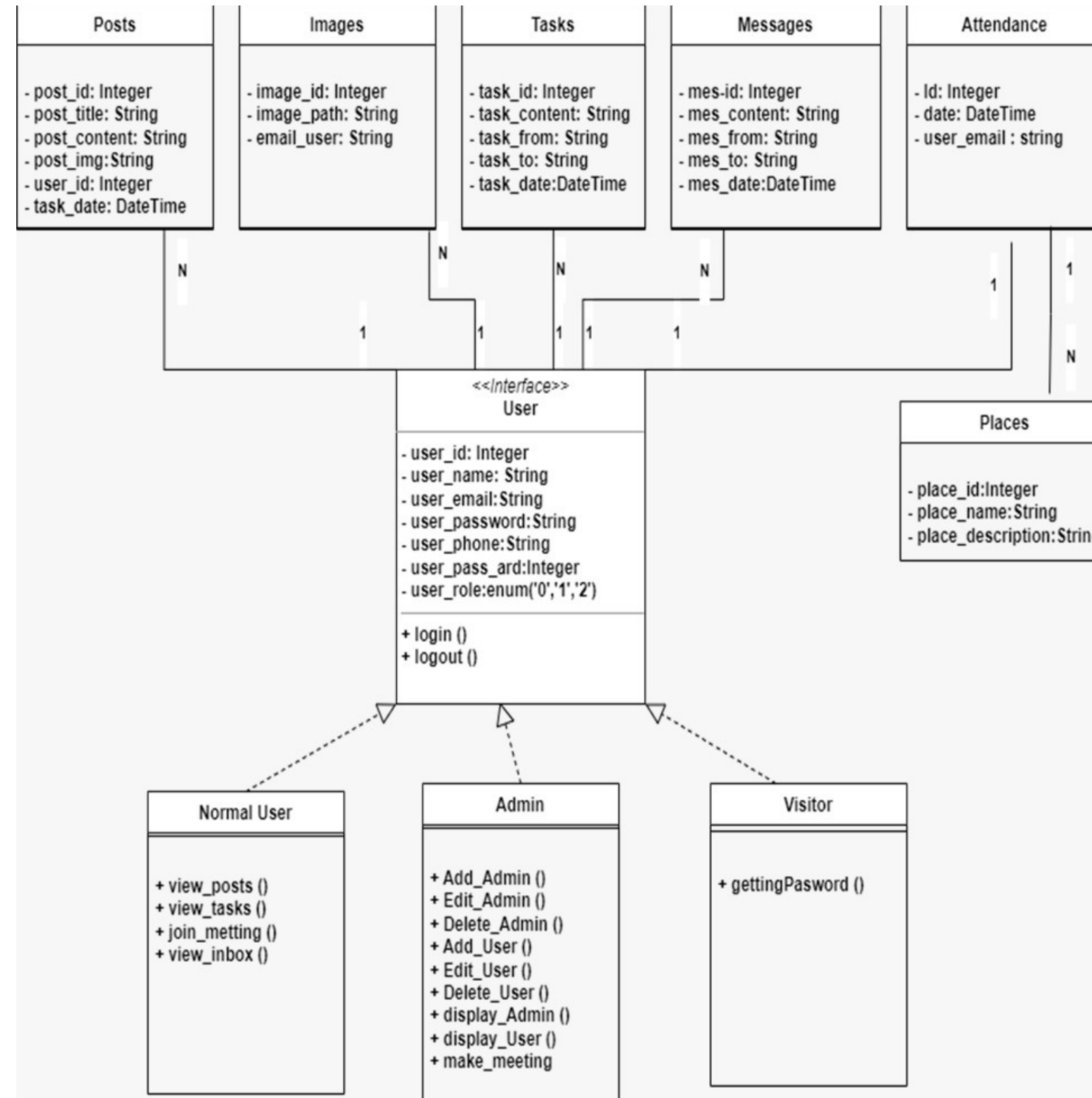


Activity Diagram

(admin)



Class Diagram



Business Model Canvas

KEY PARTNERS

- Companies manufacturing keypad
- Companies to install and maintain cameras
- Government and international bodies that assume access to their license

KEY ACTIVITIES

- A smart system for institution management and its insurance using artificial intelligence to verify the validity of entry

KEY RESOURCES

- Engineers
- Cameras
- Keypad

VALUE PROPOSITIONS

- Tracking people from entry to the exit of the institution
- Using the keypad to log in and log out
- Using cameras to check the person's affiliation with the institution or not

CUSTOMER RELATIONSHIPS

- Always communicate with the customer in case of error via social media or the website

CHANNELS

- Website
- Social Media
- Face to face

CUSTOMER SEGMENTS

- Bank
- Hospitals
- Software companies
- Educational institutions
- The military facility
- Traffic Management
- Petrochemical
- plants and Mines

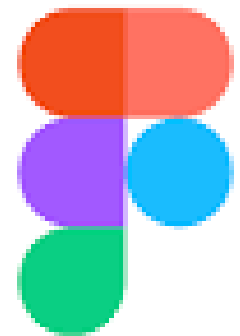
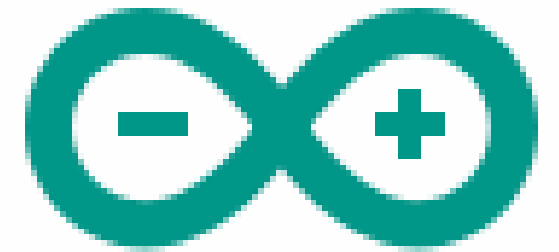
COST STRUCTURE

- Engineers' salary, Marketing, keypad equipment, camera equipment, and maintenance services

REVENUE STREAMS

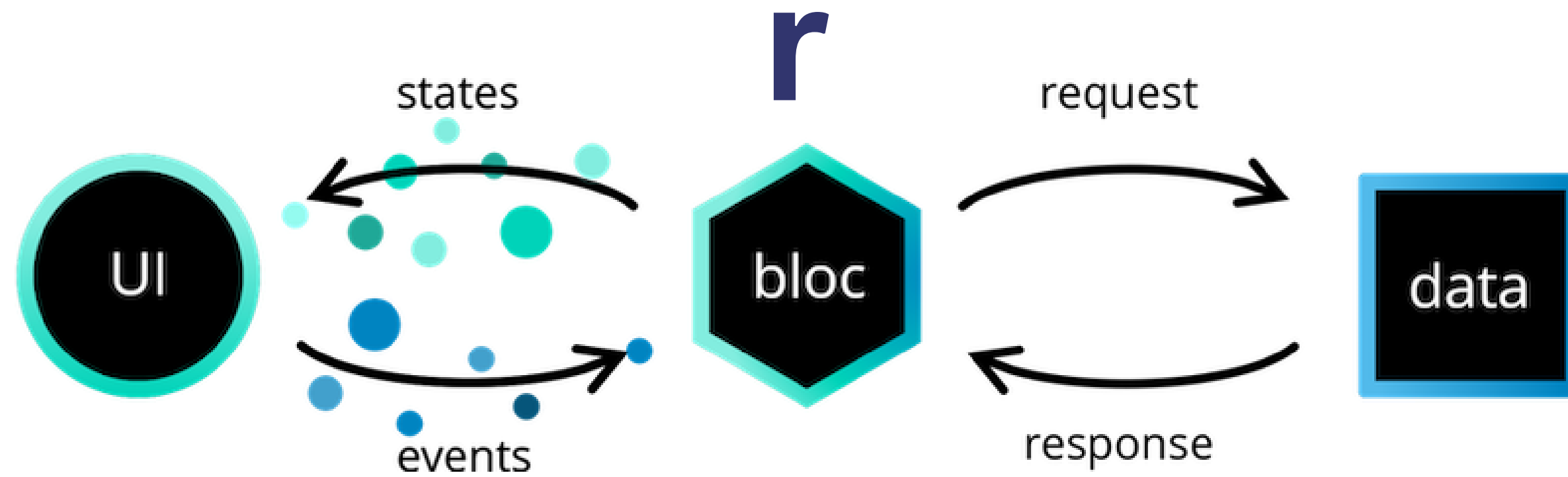
- Freemium The minimum offer is provided with the software being used entirely free of charge to the customer segment for 7 days, Subscription fees The customers pay a fixed amount of money over 30 or 365 days of use for access to the service, License fees The company does not sell you the entire service, it is a license to use it, and that is where you pay once

Programming Languages and Tools





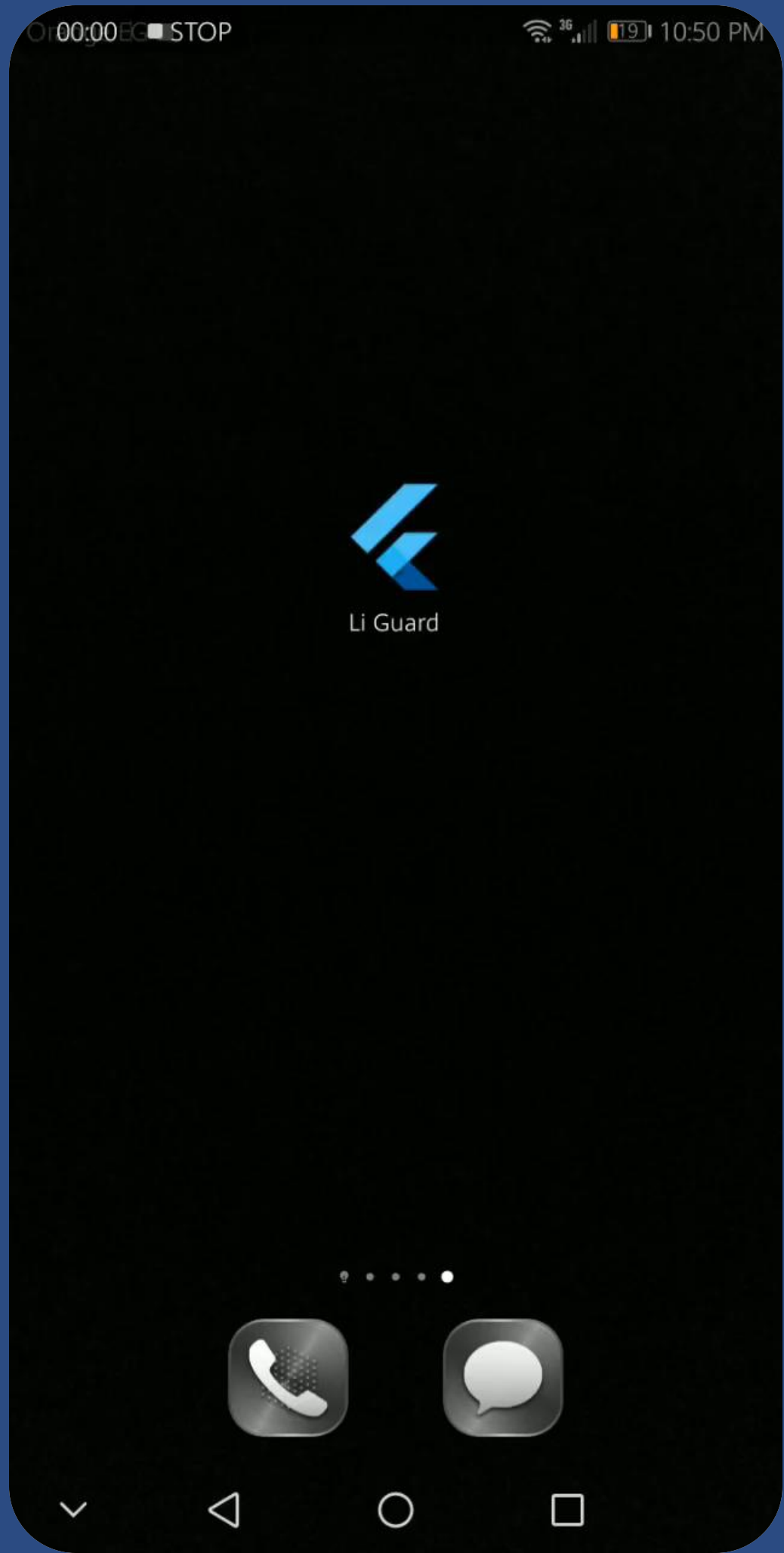
Flutter



Dart

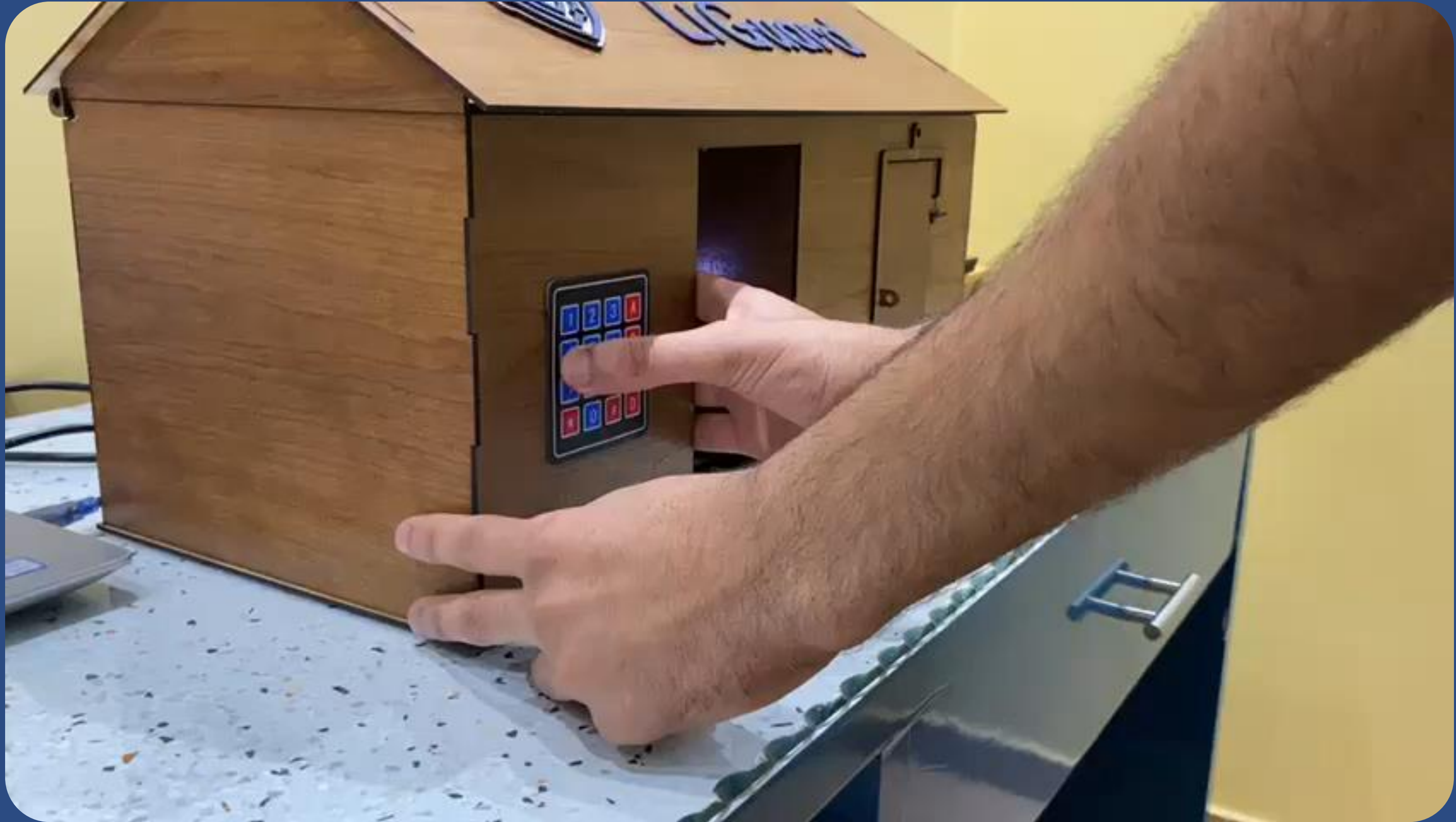
Mobile Demo





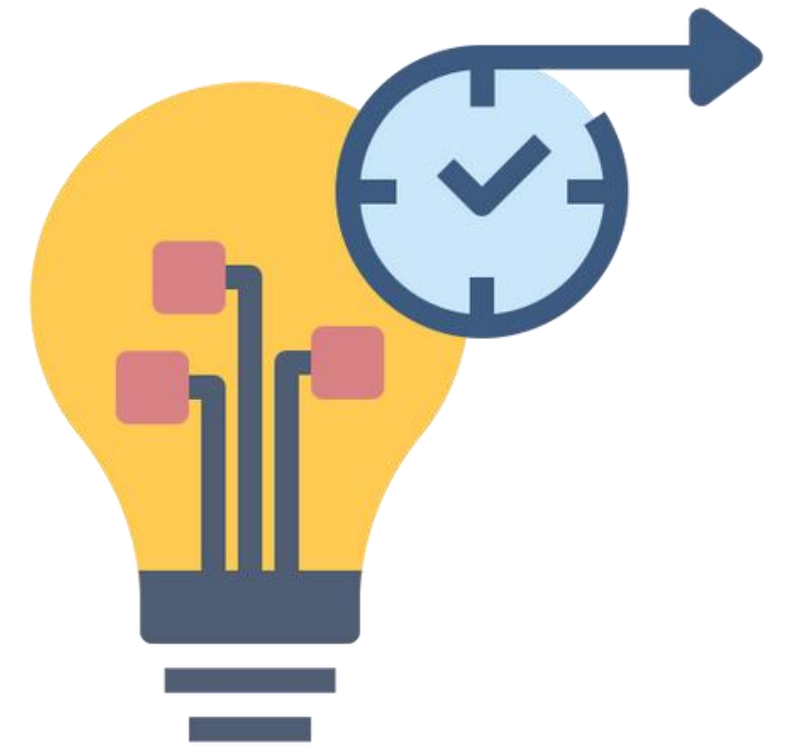
Prototype



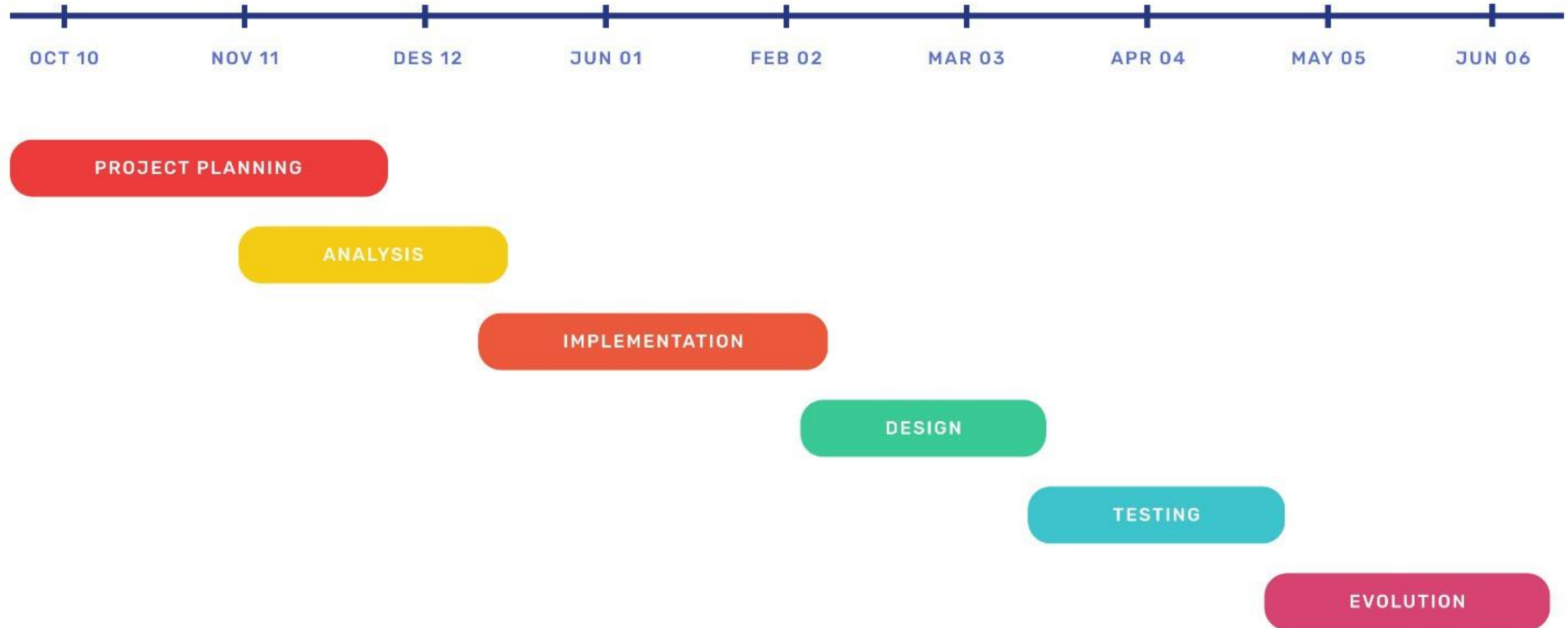


Future Work

- It fully allows IOT, which allows authentication to be done over the phone, provided you connect to the internal network.
- Scalability: Implementing the system in the full image by replacing the local server with another on the network, similarly to the database.
- Improve the accuracy of the face recognition algorithm.
- We will an encryption algorithm to protect the data sent by LIFI.
- We will track people through the camera using computer vision and integrate it with our LIFI-tracking system to fully cover all places inside the institution.



Project Timeline





Abdallah Adel
UI & UX
Designer



Ahmed Alaa
Embedded Systems



Ahmed Naga
Embedded Systems

Team Members



Ahmed Abd Ellatif
Flutter
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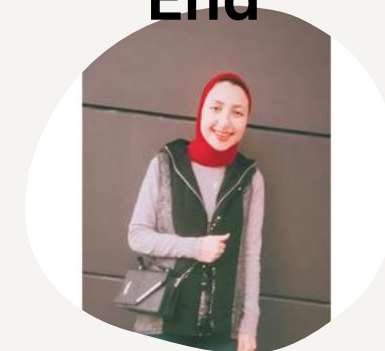
Ahmed Abd Elsalam
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Mohamed Yasser
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Doha Seif
Back-End



Mai Ebrahim
UI & UX



Mohamed Ismail
Back-End



THANK YOU