SMART ATTENDANCE SYSTEM

Developed By

Namra Javaid 3521/FBAS/BSCS/F17-A

Kainat Shabbir 3559/FBAS/BSCS/F17-A

Supervised by Panel 5

Dr. Almas Abbasi

Dr. Salma Imtiaz

Department of Computer Science, Software Engineering and Information Technology Faculty of Basic and Applied Sciences

International Islamic University, H-10 Islamabad.

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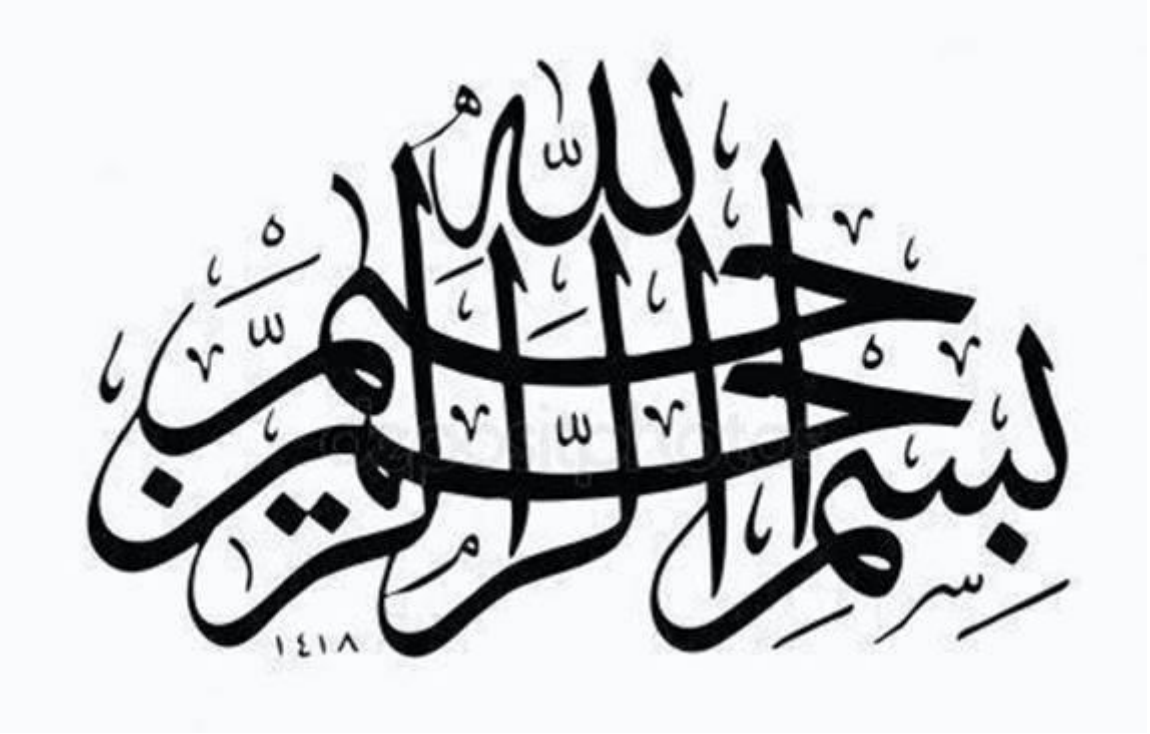

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Final Approval

Date: _____, 2021.

It is certified that we have read the project report submitted by **Namra Javaid (3521/FBAS/BSCS/F17-A)** and **Kainat Shabbir(3559/FBAS/BSCS/F17-A)** and it is our judgment that this project is of sufficient standard to warrant its acceptance by the International Islamic University, Islamabad for the BS Degree in Computer Science.

Panel Members:

Dr. Almas Abbasi Signature: _____

Assistant Professor

Department of Computer Science and Software Engineering

Faculty of Basic and Applied Sciences

International Islamic University, Islamabad

Dr. Salma Imtiaz Signature: _____

Assistant Professor

Department of Computer Science and Software Engineering

Faculty of Basic and Applied Sciences

International Islamic University, Islamabad

Dedications

We think that we should dedicate project, means the hard work of our day and night to someone who has helped us most or encourage us most. So, most who encouraged us and helped us throughout is first our guardian

“ALLAH”.

We also dedicate this project to our beloved Parents who have always fulfilled our needs, respected teachers especially to our supervisor (Panel 5) who was accommodating the project and to all those who prayed for our success and remained patient with us throughout the development period.

Dissertation

A dissertation submitted to the Department of Computer Science & Software Engineering, International Islamic University, Islamabad, as a partial fulfillment of the requirements for the award of the degree of bachelor's in Computer Science.

Declaration

We hereby declare that this Software, neither as a whole nor as a part thereof has been copied out from any source. It is further declared that We have developed this Software entirely based on our personal efforts made under the sincere guidance of our teachers.

No portion of the work presented in this report has been submitted in support of any application for any other degree or qualification of this or any other university or institute of learning.

Namra Javaid **3521/FBAS/BSCS/F17-A**
Kainat Shabbir **3559/FBAS/BSCS/F17-A**

Acknowledgement

The success and outcome of this project required a lot of guidance and assistance from many people and We extremely fortunate to have get this all along the completion of our project work. Whatever We have done is only due to such guidance and assistance and We would not forget to thank them.

First, we thank Almighty Allah for providing us with everything that we required in completion of this project.

We would like to thank our parents for showing great patience, support and understanding throughout the project time. We are very grateful to our friends; who always gave us ideas and advices to keep us on the right tracks.

We own our profound gratitude to Mr. Yasir who took keen interest in our project work and guided us all along till the completion of our project work by providing all the necessary information for developing a good system.

Finally, we would like to extend our gratitude to everyone who has been helping us directly or indirectly from the beginning until the final stage of this project. All the helps and cooperation from various parties are truly appreciated.

Project in Brief

Project Title:	SMART ATTENDANCE SYSTEM
Objective:	The main objective of this project is to provide an application which mark the attendance on the basis of location along with face recognition factor.
Undertaken By:	Namra Javaid 3521/FBAS/BSCS/F17-A Kainat Shabbir 3559/FBAS/BSCS/F17-A
Supervised By:	Dr. Salma Imtiaz and Dr. Almas Abbasi Lecturer, Department of Computer Science and & Software Engineering.
Date Started:	January,2021
Date Completed:	
Tools Used:	• Android studio • XAMPP • JAVA

Abstract

Now a days, mobile applications have become an integral part of every business domain and personal life. Business of all kind, whether small, medium or large is taking advantages of customized mobile applications as it helps them to increase productivity.

Educational institutes are growing at very fast pace in Pakistan. Employees and institution operations have always been one of the essentials for any organization; attendance is one of those operations. Many important decisions of administration links directly to the attendance of the employees. Managing attendance of employees on manual registers could be quite hectic and time consuming. Operation of attendance of employees could be replaced by interactive android application.

Smart Attendance System is design to solve this problem. With the help of SAS user can mark their attendance with just clicking a button on their mobile devices without going physically to attendance register, and attendance will be marked on the base of their facial and their location identification. The application is also providing much other functionality to employees as well as admin. For example, employees can ask Queries from admin regarding any issue. On the other side admin will be able to see those queries and can add his response on those queries which will be received on the employee end. Similarly, employees can ask for leave without going by themselves. Admin will receive leaves of employees. As Queries admin will also be able to add response on leave as accept or reject which will be known by employee through notification. Employees will also be capable of viewing their timetable. Application will also generate report on the attendance of employee, which will be receiving by both admin and employees. On the admin end admin will be able to Add Employees in the database and will also be able to edit any employee. Admin will also be able to add timetable of employees. Providing all these functionalities is helping admin as well as employees in many effective and efficient manners. Smart Attendance System is giving institute an effective alternative to manage these operations more smoothly.

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Introduction

1.1 Introduction

Smart attendance is a mobile application which provides a platform to the users (employees of Excel College) to mark their attendance on the base of their location and their facial identification. Along with marking their attendance employees will be able to have the accountability of their attendance with the help pf reports that will be generating by the application. Employees will also be able to send any queries to admin regarding marking their attendance or their daily lectures.

This application shall also allow admin to set the time table for employees in the applications. Employees especially teachers will be notified through notification about their daily lectures. Application is also providing leave management to admin

1.2 About Institute

Excel College of Sciences and Commerce is private institute on Kohat Road Fateh Jang. The institute provides variety of programs to fulfill educational needs of students. The institute contains fairly good number of staff members and employees who serve students with their teaching skills

1.3 Purpose

The purpose of Smart Attendance System is to replace manual attendance system of the institute with digital system on their smart phones. Because it could become difficult for any institute to manage the attendance of their employees on registers.

One more drawback of records on registers is that it is difficult to analyze that data and more difficult is to take any particular decision for employees on that data. Smart attendance system is also overcoming that drawback of manual system. One more motive of the application is to make employees mark their attendance as soon as the reach in the institute boundary.

1.4 Scope of the Project

The project created by us is an android base application which helps the user in marking their attendance as soon as they reach the entrance gate of the institute.

The user will be able to mark their attendance on the base of their location which is compulsory to be the location of the institute and on the base of their facial identification. Admin will make sign up the employees by providing essential information of theirs. Reports will be generated by the system that can be use by both admin and employees in order to take better decisions.

Employees will also be able to ask for leave in case of any absentee. The admin will be able to see those leaves and also will be able to answer through application. Similarly employees will also be able to ask any query and admin will get and respond on them. Users of the application will also be able to give feedback of the application.

1.5 Problem in Existing System

The institute is using manual system for maintaining the attendance of their employees. The Employees are marking their attendance on registers. In case of any leave ask by employee, there is no proper way in manual system to manage leaves. In addition if employees wants to ask any query from admin they has to wait for their response or admin could also forgets to respond. So, all described problems, it is very difficult for admin to manage manual attendance, queries and leaves and these are very time consuming task to do. So, in order to make the tasks easier for admin as well as for employees the institute needs an android application which could do all these task faster and with more efficiency.

The Problem of	Employees face problem in marking attendance manually, Similarly administration also face problem managing those manual attendance records
Affects	Employees and administration
Impact of Which	Employees facing difficulty in marking attendance manually through registers, and admin facing difficulty in managing all the manual records
Possible Solution	The project will allow the users to perform all the operations via mobile application just by providing their face identification and location information, similarly admin will be able to manage those details

Figure 1.1 Problem Statement

1.6 Solutions

The broad-based objectives of the application are as follows:

- Allowing employees of the institute to mark their attendance using application on base of their location and facial identification.
- Allowing admin to manage and respond queries of the employees
- Allowing admin to manage leaves ask by employees
- Allowing admin as well as employees to see reports of their attendance, which could help them avoiding their extra leaves in attendance.

1.7 Objectives

The specific objectives of the system are as follows:

1. To overcome the existing problems.
2. To preserve maintain the data of the employees.
3. To ensure Accuracy of the attendance data.
4. To ensure authentication of the employees while marking attendance
5. To save the time of user.
6. To save the time of the admin
7. To give facility of queries, leave and attendance
8. To give a best system for marking employees attendance.
9. To provide facility of feedback to employees

Chapter 2
Existing System

2.1 Existing System

We are making an android mobile application of location-based attendance for Excel College of Sciences and commerce fateh jang. The organizations are using either manual or bio metric system for marking attendance and keeping records of their employees. In manual system, data is stored through manual resources that ultimately have many drawbacks. In Bio-metric identification we need to go at a certain point to mark our attendance which is time consuming, and that palm detection may also be the cause of Covid-19 (the pandemic) the world is suffering now. Now Excel College of Sciences and commerce needs an application which can mark the attendance of their employees via an application.

2.2 Drawbacks of Existing System

The existing system works well but , in the time, where people need to keep themselves safe in this pandemic by making lesser interaction with each other. In this case both manual and bio metric attendance fails as these require either interaction with the common machine or a manual register to mark their attendance.
Following are the drawbacks that are presented in existing system, which provide a justification in replacing the existing system.

- Existing system is time consuming as it requires to go at a certain point to mark the attendance.
- Employees cannot see their previous record of attendance unless they ask for a report.
- Employees don't find themselves safe from the pandemic.
- Employees cannot ask for a day off digitally and cannot give feedback in existing system.
- For any query employees must visit the college office. Which is time consuming.

2.3 Basic Concepts of Proposed System

The system we are designing will replaces the traditional attendance system by a mobile application. The application needs to be installed on users/employees mobile. A unique user ID and password will be given to each user via which they will login Every organization has a specific location, which is determined

by the GPS. The application will access the GPS location of the employee and if that location matches with the organization saved location then his attendance will be marked.

2.3.1 Basic Characteristics

It includes the core functions such as “to serve as database”. The database holds all the information of the system. It gives an idea to the college admin that how many new employees have joined the college and how many users are punctual to their time, admin can also respond to employees queries as well as their leave applications, admin can also see the feedback given by different employees and also set the weekly timetable for all the employees. In short, this application will help the college administration to keep track of the attendance and situation with the employee

2.3.2 Importance

Excel College of Sciences and commerce was managing the attendance of all the employees manually. So, it was so difficult for them to maintain the data of all the employees, generating their reports. Also, there was security issues. It was so challenging to have proof if some employee confirms booking of some tour without informing higher authorities. But, in the existing system, all information is saved with employee or admin id. Also, system has some reports e.g., financial reports, seasonal reports and customer satisfaction reports for administration to see the company progress from them.

Chapter 3

System Analysis

3.1 System Analysis

It is a process of collecting and interpreting facts, identifying the problems, and decomposition of a system into its components. System analysis is conducted for the purpose of studying a system or its parts in order to identify its objectives.

3.2 Software Requirement Specification

3.2.1 Problem Areas

Now days, mobile applications have become an integral part of every business domain and personal life. Business of all kind, whether small, medium or large is taking advantages of customized mobile applications as it helps them to increase productivity.

Educational institutes are growing at very fast pace in Pakistan. Employees and institution operations have always been one of the essentials for any organization; attendance is one of those operations. Many important decisions of administration links directly to the attendance of the employees. Managing attendance of employees on manual registers could be quite hectic and time consuming. Operation of attendance of employees could be replaced by interactive android application.

Smart Attendance System is design to solve this problem. With the help of SAS user can mark their attendance with just clicking a button on their mobile devices without going physically to attendance register, and attendance will be marked on the base of their facial and their location identification. The application is also providing much other functionality to employees as well as admin. For example, employees can ask Queries from admin regarding any issue. On the other side admin will be able to see those queries and can add his response on those queries which will be received on the employee end. Similarly, employees can ask for leave without going by themselves. Admin will receive leaves of employees. As Queries admin will also be able to add response on leave as accept or reject which will be known by employee through notification. Employees will also be capable of viewing their timetable. Application will also generate report on the attendance of employee, which will be receiving by both admin and employees. On the admin end admin will be able to Add Employees in the database and will also be able to edit any employee. Admin will also be able to add timetable of employees. Providing all these functionalities is helping admin as well as employees in many effective and efficient manners. Smart Attendance System is giving institute an effective alternative to manage these operations more smoothly.

3.2.2 System Analysis

System Analysis is a product building undertaking that process over any barrierbetween

framework level necessities building and programming plan. Issue or framework will be decayed into its parts with the goal that planned procedure made turn out to be simple. Any technique might be polished from programming building area to depict the examination procedure.

3.2.3 Importance of System Analysis

In this stage, the products general structure and its modules are characterized. A few apparatuses, methods and models are utilized to record and investigate the present framework and new necessities of clients.

The major tools used in structural system analysis include

- Use case
- Sequence Diagram
- Activity Diagram
- State Diagram

When building up a framework, most associations utilized a standard of steps called the system development lifecycle. System development lifecycle incorporates stages, for example,

- Planning
- Analysis
- Design
- Implementation
- Maintenance
- Testing

3.2.4 Requirement and analysis techniques

- Feasibility Study
- Requirements Elicitation
- Analyzing Requirements
- Software Requirements Specification
- Requirements Management

3.2.5 Feasibility Study

App is worthwhile and it is cost friendly. It is completed using the resources available (android studio), Institute operational analysis, schedule, technical resources etc. App is secure from the risks

3.2.6 Requirement elicitation

Requirements of a system are collected from Employees and admin of institutes. Interviews, questionnaires, user observation, workshops, brainstorming and other techniques are used to gather requirements.

3.2.7 Analyzing Requirements

The needs or conditions are determined to meet new or altered product.

3.2.8 Requirement management

Requirements management is the process of documenting, analyzing, tracing, prioritizing and agreeing on requirements and then controlling change and communicating to relevant stakeholders.

3.2.9 Specific Functional Requirements

In our project the user will use a Mobile and internet connection.

System will provide two type of interfaces:

- For Registered Employees
- For Admin

3.2.9.1 Graphic User Interface (GUI) For Registered Employees

- There are multiple functionalities and interfaces for registered employees.
- First Employee will has to choose employee option after splash screen
- Next employees will has to login into application by assigned Email and password.
- Next interface for employee is to mark attendance by clicking on button “IN”, which will then ask for location match and facial identification match. These parameters must be matched in order to mark attendance.
- Same interface also contain button “OUT”, which will be clicked by employee on departure time for marking attendance.
- Employee is also given with interface where he/she can click on button to ask for Queries, same interface will show employee his previous Queries.
- Employee is also given with interface where he/she can click on button to ask for Leaves, same interface will show employee his previous Leaves.
- There is separate interface where employee can ask new Query.
- Similarly there is separate interface where employee can ask for new leave.
- There is an interface where employee can see reports of his attendance.
- Interface of timetable is also given to employee where he/she can see his/her timetable assigned by admin.
- Employees can also customize their profile

3.2.9.2 Graphic User Interface (GUI) for Admin

- Interface for admins will also be managed on application.
- First Admin will has to choose “Login as Admin” option after splash screen in order to get login as Admin.
- After that admin will provide his/her email and password for moving further
- Later on there are five type of areas in which admin can perform their operation: Manage Employees, Manage Queries, Manage Leaves, Manage Timetable and Manage Reports.

3.2.9.2.1 Manage Employees:

- Admin can Add/Update/Delete Employee.
- Admin will click on “Add New Employee” in order to add new Employee by providing all necessary information.
- List of existing employees will be shown to admin, by clicking any of the employees from the list, admin will be able to perform updation operation.
- There will be Delete button in updation interface from where admin can delete any employee.

3.2.9.2.2 Manage Queries:

- Admin can view queries on the base of their status.
- Admin will also capable of giving his response on asked queries by choosing any query from the list.
- Admin will also have option to accept any query or to reject it. After accepting or rejecting the status of the particular query will also change.

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3.2.9.2.3 Manage Leaves:

- Admin can also view leaves on the base of their status.
- Admin will also capable of giving his response on asked leaves by choosing any leave from the list.
- Admin will also have option to accept any leave or to reject it. After accepting or rejecting the status of the particular leave will also change.

3.2.9.2.4 Manage Timetable:

- Admin can add timetable, view timetable, modify timetable or delete timetable.
- Admin will have “ADD TIMETABLE” button to add timetable of new employee
- By choosing on “Add New” admin will be able to add more fields in timetable to existing employee.
- Admin can modify timetable by choosing existing field or subject of assigned timetable.
- There will be a button to delete if admin wants to delete any row of existing timetable while modifying.

3.2.9.2.5 Manage Reports:

- Admin will be able to view generate report by choosing “generate report button”
- Admin can also view report of any employee.

3.2.10 Non-Functional Requirements

In systems engineering and requirements engineering, a non-functional requirement is a requirement that specifies criteria that can be used to judge the operation of a system, rather than specific behaviors. This should be contrasted with functional requirements that define specific behavior or functions.

3.2.10.1 Time Saving

As Employees can mark their attendance without going to attendance register, it also saves time of employee as they can ask their queries, leaves through application and will also be able to see their timetable and reports of their attendance without going anywhere. In addition the time of admin is also saving as admin can manage queries, leaves timetable, reports and employees without going through any manual procedures.

3.2.10.2 Cost Saving

The application is saving cost of paper and attendance registers, because now attendance , reports, timetable will be manage through application, so it will eliminate cost of paper

3.2.10.3 User Friendly

This application is easy to use for all type of users. System contains all the information in a very easy way that is easily understandable by all type of employees of the institute. The system will providethe users with facility to navigate freely through the application.

3.2.10.4 Better Customer Service:

This system allows Admin to keep an extensive record of users' information. All the detailsof users are stored in database.

3.3 Use case Diagram

A use case diagram is a graphic illustration of the communications among the elements of a system. In this each sequence represents the interactions of things outside the system (*actors*) with the system itself and perceptions. Use cases only represents the functional requirements of the system non-functional requirements must be given somewhere else. A use case diagram has four major components:

1) A boundary that defines the system.

2) The actors, usually characters involved with the system that has some role to be played their roles.

3) The use cases, which the specific roles are played by the actors within the system.

4) Finally, relationships, between the actors and the use cases of overall system

Usecase for Admin and Employee:

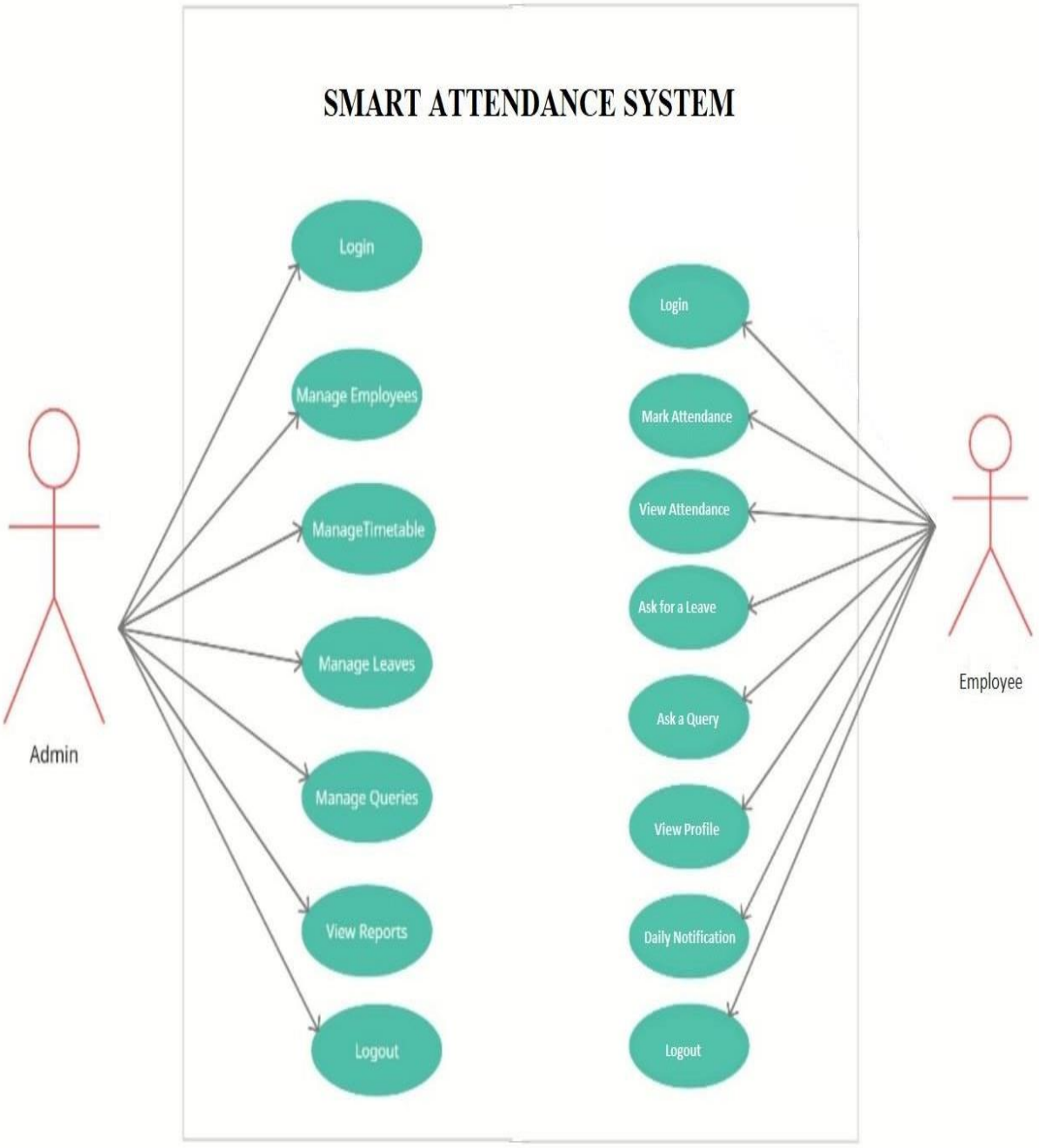


Fig 3.3.1 Usecase for Admin and Employee

3.4 Extended Usecase Model

UML **Use Case Extend**. **Extend** is a directed relationship that specifies how and when the behavior defined in usually supplementary (optional) extending **use case** can be inserted into the behavior defined in the **extended use case**.

Usecase For Users(Employees)

3.4.1 Login

- **Scope:** Smart Attendance
- **Level:** Employee goal
- **Primary Actor:** Employee added by admin
- **Stakeholder and interests:** Registered Employee want to login.
- **Pre-condition:** Employee must download the application and must be added by admin.
- **Success Guarantee (Post-condition):**
  Success message is displayed, and the system directs to employee homepage where employee can use the system and performs intended actions.
- **Main success scenario:**

User action	System Response
1. Employee provide Username and Password	System verifies that this employee exists by verifying email and password and logs in the employee and display homescreen.

- **Extensions:**

User action	System Response
1. Any of the field (i.e., username or password) is empty	System will give a message that please fill in those fields
2. Employee provides incorrect email	System will give a message that the password is incorrect
3. Employee provides Incorrect password	System will give a message that the password is incorrect

Table 3.4.1 Login

- **Frequency of occurrence**: Medium

3.4.2 IN Attendance

- **Scope:** Smart Attendance
- **Level:** Employee goal
- **Primary Actor:** Employee added by admin
- **Stakeholder and interests:** Employee wants to mark his in time.
- **Pre-condition:** Employee must be login and must be in organization Coordinates.
- **Success Guarantee (Post-condition):**
  IN Attendance is marked successfully.
- **Main success scenario:**

User action	System Response
1. Employee clicks on IN button to mark his attendance, gives camera access for authentication	System verifies that the employee is in organization's coordinates and attendance will be marked and his IN time will be stored in database

- **Extensions:**

User action	System Response
1. Employee is out of organization's coordinates	System will give a message that you are out of coordinates.

Table 3.4.2 IN Attendance

- **Frequency of occurrence**: Medium

3.4.3 OUT Attendance

- **Scope:** Smart Attendance
- **Level:** Employee goal
- **Primary Actor:** Employee added by admin
- **Stakeholder and interests:** Employee wants to mark OUT attendance.
- **Pre-condition:** Employee must be login and must be in organization Coordinates.
- **Success Guarantee (Post-condition):**

OUT Attendance is marked successfully.

- **Main success scenario:**

User action	System Response
1 Employee clicks on OUT button to mark his attendance, gives camera access for authentication	System verifies that the employee is in organization's coordinates and attendance will be marked and his OUT time will be stored in database

- **Extensions:**

User action	System Response
2. Employee is out of organization's coordinates	System will give a message that you are out of coordinates.

Table 3.4.3 OUT Attendance

- **Frequency of occurrence**: Medium

3.4.4 Attendance History

- **Scope:** Smart Attendance System
- **Level:** Employee user goal
- **Primary Actor:** Employee
- **Stakeholder and interests:** Employee wants to see his attendance history
- **Pre-condition:** Employee must be log in.
- **Success Guarantee (Post-condition):** Attendance history will be displayed.
- **Main success scenario:**

User action	System Response
1. Employee select the dates between which he wants to view the attendance history	Attendance history between those dates will be displayed.

Table 3.4.4 Attendance History

- **Extension:** None

- **Frequency of occurrence**: High

3.4.5 Daily Notification

- **Scope:** Smart Attendance System
- **Level:** Employee user goal
- **Primary actor:** Employee
- **Stakeholder and interests:** Login Employee marks his attendance and gets a notification of todays classes.
- **Pre-condition:** Employee must be log in.
- **Success Guaranteed (Post Condition)**
  The information is displayed in the form of notification
- **Main success scenario:**

User action	System Response
1. Employee Marks IN his time.	System displays the notification to the user.

Table 3.4.5 Daily Notification

- **Extensions:** None.
- **Frequency of occurrence**: high

3.4.6 Leaves

- **Scope:** Smart Attendance System
- **Level:** User goal
- **Primary Actor:** Employee
- **Stakeholder and interests:** Employee want to apply for a leave
- **Pre-condition:** Employee must be log in.
- **Success Guarantee (Post-condition):**
  Leave Application sent successfully
- **Main success scenario:**

User action	System Response
1. Employee click on ask for leave	Leave application will be sent to admin and employee will be notified.

- **Extensions:**

User action	System Response

1. Employee cancel the confirmation message	Leave application will not be sent.

Table 3.4.6 Leaves

- **Frequency of occurrence**: Medium

3.4.7 Query

- **Scope:** Smart Attendance System
- **Level:** User goal
- **Primary Actor:** Employee added by admin
- **Stakeholder and interests:** Employee want to view his previous queries or ask a query from admin.
- **Pre-condition:** Employee must be log in.
- **Success Guarantee (Post-condition):**
  List of queries displayed or query sent successfully.
- **Main success scenario:**

User action	**System Response**
1. Employee click on ask Query	Query will be sent to admin and employee will be notified.
2. Employee select status to view his previous asked queries	List of previous asked queries will be displayed.

- **Extensions:**

User action	**System Response**
2. Employee cancel the confirmation message	Query will not be sent.

Table 3.4.7 Query

- **Frequency of occurrence**: Medium

3.4.8 Timetable

- **Scope:** Smart Attendance
- **Level:** Employee goal
- **Primary Actor:** Employee added by admin

- **Stakeholder and interests:** Employee wants to view his timetable
- **Pre-condition:** Employee must be login.
- **Success Guarantee (Post-condition):**
  Day wise timetable will be displayed on screen.
- **Main success scenario:**

User action	System Response
1. Employee clicks on Timetable	System fetches the timetable of that employee from database and display.

Table 3.4.8 Timetable

- **Extensions:** None
- **Frequency of occurrence**: Medium

3.4.9 Logout

- **Scope:** Smart Attendance
- **Level:** Employee Goal
- **Primary actor:** Registered User
- **Stakeholder and interests:** Registered Employee wants to logout.
- **Pre-condition:** Employee must be logged in.
- **Success Guarantee (Post-condition):** Employee loggedout successfully.
- **Main success scenario:**

User action	System Response
1. Employee clicks logout	System logged out employee.

Table 3.4.9 Logout

- **Extensions:** None
- **Frequency of occurrence**: high

Use case for Admin

3.4.10 Login

- **Scope:** Smart Attendance

- **Level:** Admin goal
- **Primary Actor:** Admin
- **Stakeholder and interests:** Admin want to login
- **Pre-condition:** My SQL.
- **Success Guarantee (Post-condition):** Log in successfully
- **Main success scenario:**

User action	System Response
1. Admin log in into application by entering email and password	System will accept credentials and automatically redirect to their dashboard.

- **Extensions:**

User action	System Response
3. Any of the field (i.e. username or password) is empty	System will give a message that please fill in those fields
4. Admin provides incorrect email	System will give a message that the password is incorrect
5. Admin provides Incorrect password	System will give a message that the password is incorrect

Table 3.4.10 Login

- **Frequency of occurrence**: high

3.4.11 Logout

- **Scope:** Smart Attendance
- **Level:** Admin goal
- **Primary Actor:** Admin
- **Stakeholder and interests:** Admin wants to logout
- **Pre-condition:** Must be login
- **Success Guarantee (Post-condition):** Logout successfully
- **Main success scenario:**

User action	System Response

1. Admin clicks on logout	System logout admin.

Table 3.4.11 Logout

- **Extensions:** None
- **Frequency of occurrence**: Medium

3.4.12 Manage Employees(add/view/update)

- **Scope:** Smart Attendance
- **Level:** Admin goal
- **Primary Actor:** Admin
- **Stakeholder and interests:** Admin want to add/view/update Employee details.
- **Pre-condition:** Admin must be login
- **Success Guarantee (Post-condition):** Add/view/update employee successfully
- **Main success scenario:**

User action	**System Response**
1. Admin clicks on add/update in Manage Employee module.	System will add new employee or edit the changes made by admin

- **Extensions:**

User action	**System Response**
1. Employee cannot be added • Admin leave any required field empty. • Add an employee that's present before. • Admin enter invalid information.	Employee will not be added.

Table 3.4.12 Manage Employees (add/view/update)

- **Frequency of occurrence**: Medium

3.4.13 Manage Employees(delete)

- **Scope:** Smart Attendance
- **Level:** Admin goal
- **Primary Actor:** Admin
- **Stakeholder and interests:** Admin want to delete Employee details.
- **Pre-condition:** Admin must be login
- **Success Guarantee (Post-condition):**
  Employee delete successfully
- **Main success scenario:**

User action	System Response
1. Admin clicks on delete in Manage Employee module.	System will delete the selected employee.

- **Extensions:**

User action	System Response
1. Admin cancel the confirmation	Employee will not be deleted.

Table 3.4.13 Manage Employees (delete)

- **Frequency of occurrence**: Medium

3.4.14 Manage Timetable (add/update)

- **Scope:** Smart Attendance
- **Level:** Admin goal
- **Primary Actor:** Admin
- **Stakeholder and interests:** Admin want to add/view/update timetable of Employees
- **Pre-condition:** Admin must be login
- **Success Guarantee (Post-condition):**
  Add/view/update timetable successfully

- **Main success scenario:**

User action	**System Response**
1. Admin clicks on add/update in manage timetable module.	Timetable is added or updated, and the admin will be notified.

- **Extensions:**

User action	**System Response**
1. Timetable is not added • Admin leave any required field empty. • Add a timetable which is already added 2. Timetable is not updated (admin cancel the confirmation message by mistake)	Timetable will not be added, and admin will be notified

Table 3.4.14 Manage Timetable (add/update)

- **Frequency of occurrence**: Medium

3.4.15 Manage Timetable (delete)

- **Scope:** Smart Attendance
- **Level:** Admin goal
- **Primary Actor:** Admin
- **Stakeholder and interests:** Admin want to delete timetable of Employees
- **Pre-condition:** Admin must be login
- **Success Guarantee (Post-condition):**
  Timetable deleted successfully
- **Main success scenario:**

User action	**System Response**
1. Admin clicks on delete in manage timetable module.	Timetable is deleted and the admin will be notified.

- **Extensions:**

User action	System Response
1. Admin cancel the confirmation	Timetable will not be deleted.

Table 3.4.15 Manage Timetable (delete)

- **Frequency of occurrence**: Medium

3.4.16 Manage Queries

- **Scope:** Smart Attendance
- **Level:** Admin goal
- **Primary Actor:** Admin
- **Stakeholder and interests:** Admin want to view the queries bases on their status either completed in progress or pending and add response accordingly.
- **Pre-condition:** Admin must be login
- **Success Guarantee (Post-condition):**
  Query answered successfully
- **Main success scenario:**

User action	System Response
1. Admin select status of queries to view queries.	List of queries will be displayed
Admin click on add response in manage leaves	Response added successfully.

- **Extensions:**

User action	System Response
1. If admin cancel the confirmation message	Response will not be added

Table 3.4.16 Manage Queries

- **Frequency of occurrence**: Medium

3.4.17 Manage Leaves

- **Scope:** Smart Attendance
- **Level:** Admin goal
- **Primary Actor:** Admin
- **Stakeholder and interests:** Admin want to view leave applications and add response.
- **Pre-condition:** Admin must be login
- **Success Guarantee (Post-condition):** View/response added successfully
- **Main success scenario:**

User action	System Response
1. Admin view the leave applications.	List of leave applications will be displayed
2. Click on add response in manage leaves	Response added successfully.

- **Extensions:**

User action	System Response
1. If admin cancel the confirmation message	Response will not be added

Table 3.4.17 Manage Leaves

- **Frequency of occurrence**: Medium

3.4.18 View Reports

- **Scope:** Smart Attendance
- **Level:** Admin goal
- **Primary Actor:** Admin
- **Stakeholder and interests:** Admin want to view reports.
- **Pre-condition:** Admin must be login
- **Success Guarantee (Post-condition):** Reports generated successfully

- **Main success scenario:**

User action	**System Response**
1. Admin clicks on generate reports.	System will show the generated reports.

Table 3.4.18 Generate Reports

- **Extensions: None**
- **Frequency of occurrence**: Medium

3.5 Sequence Diagrams

In Computer Science, a sequence diagram (SSD) is a diagram that shows, for a scenario of a use case, the events that external actors generate, their order, and possible inter-system events.

A sequence diagram should specify and show the following:

- External actors
- Messages (methods) invoked by these actors
- Return values (if any) associated with previous message
- Indication of any loops or iteration area

Sequence diagrams to illustrate how certain tasks are done between users and the system. These tasks may include repetitive, simple, or complex tasks. The purpose is to illustrate the use case in a visual format.

This sequence which we make of our project is illustrating the sequence of how different actors are interacting with the system.

3.5.1 Admin-Login

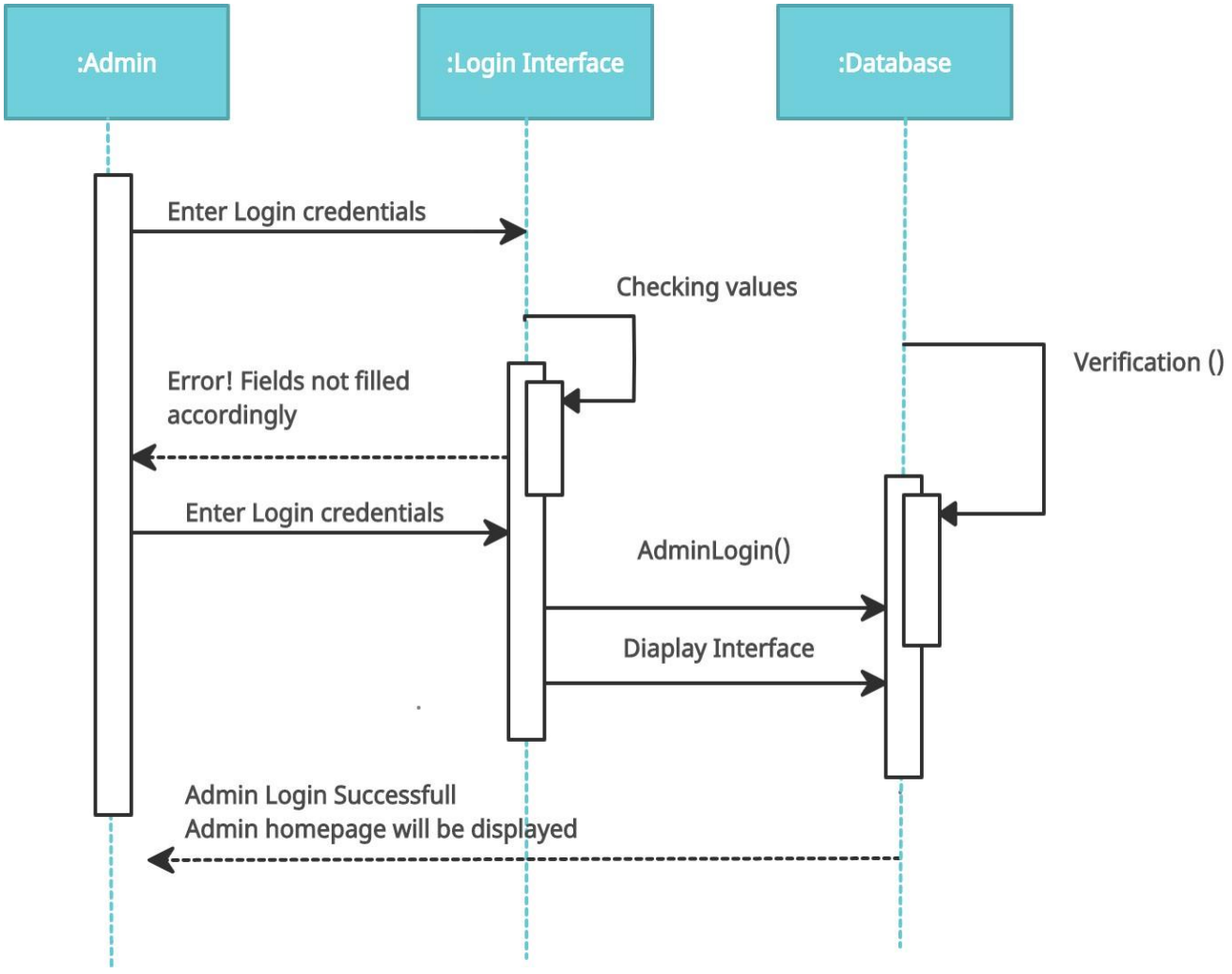


Fig 3.5.1 Admin-Login

3.5.2 Admin-Manage Employees

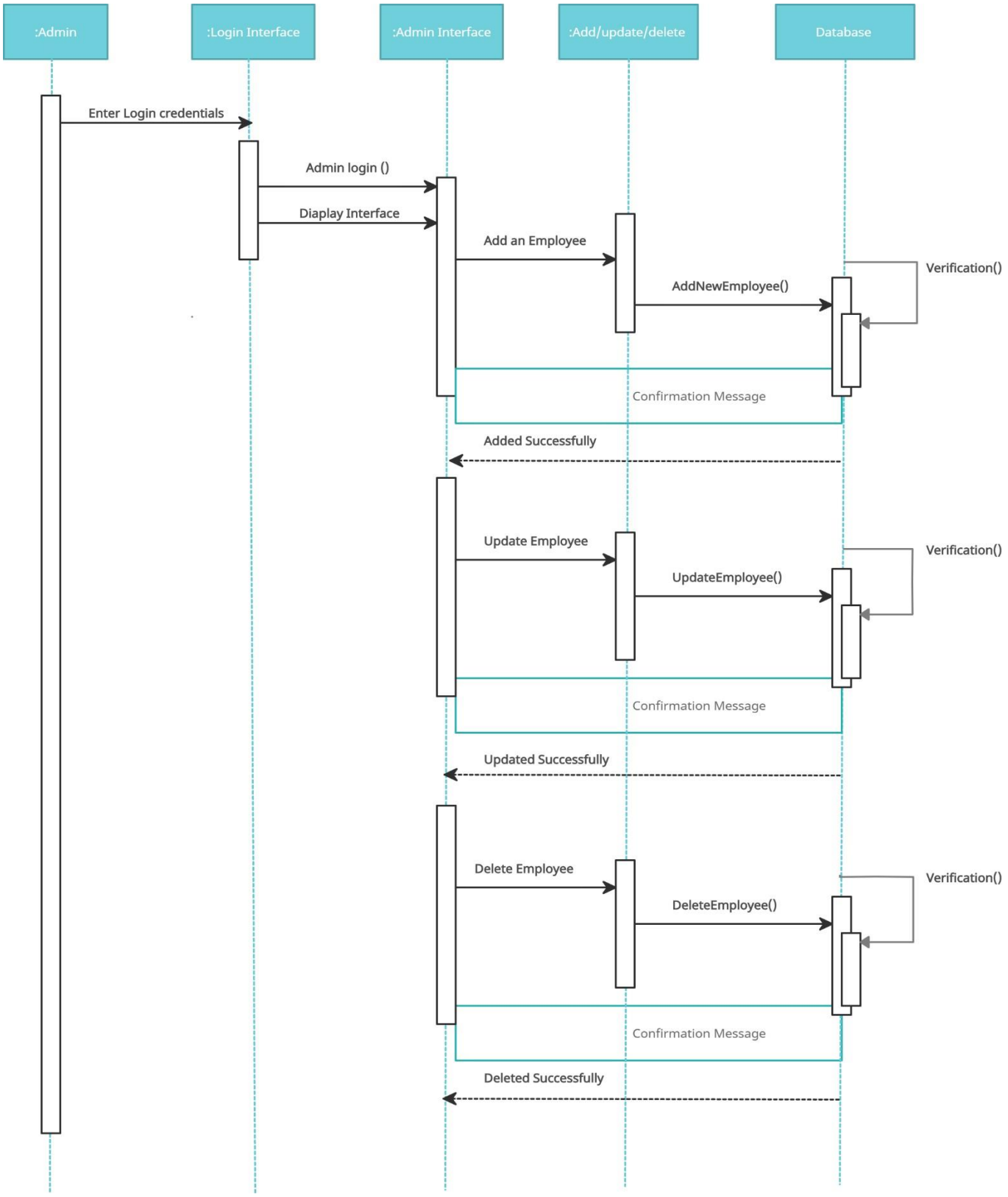


Fig 3.5.2 Admin-Manage Employees

3.5.3 Admin-Manage Timetable

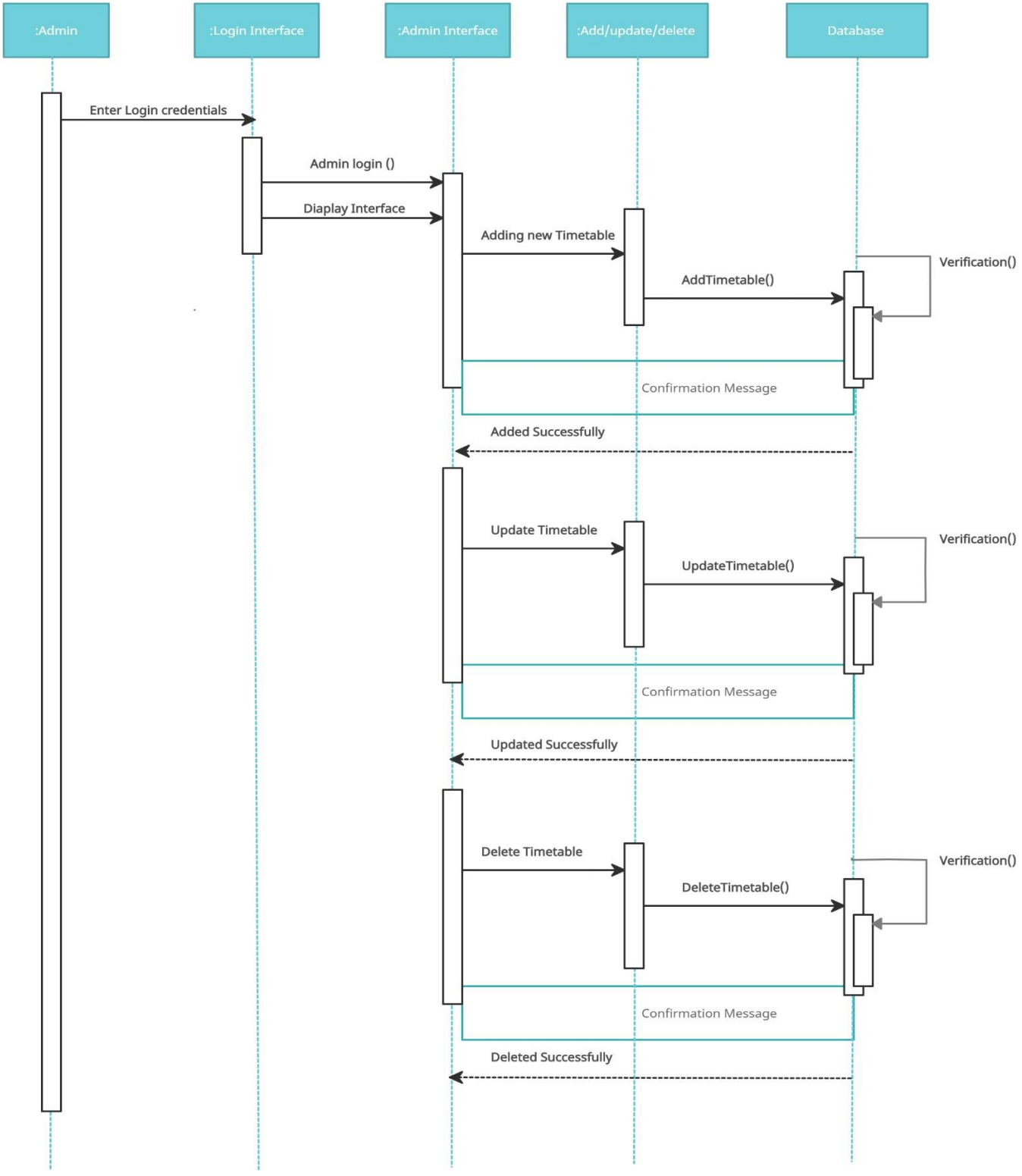
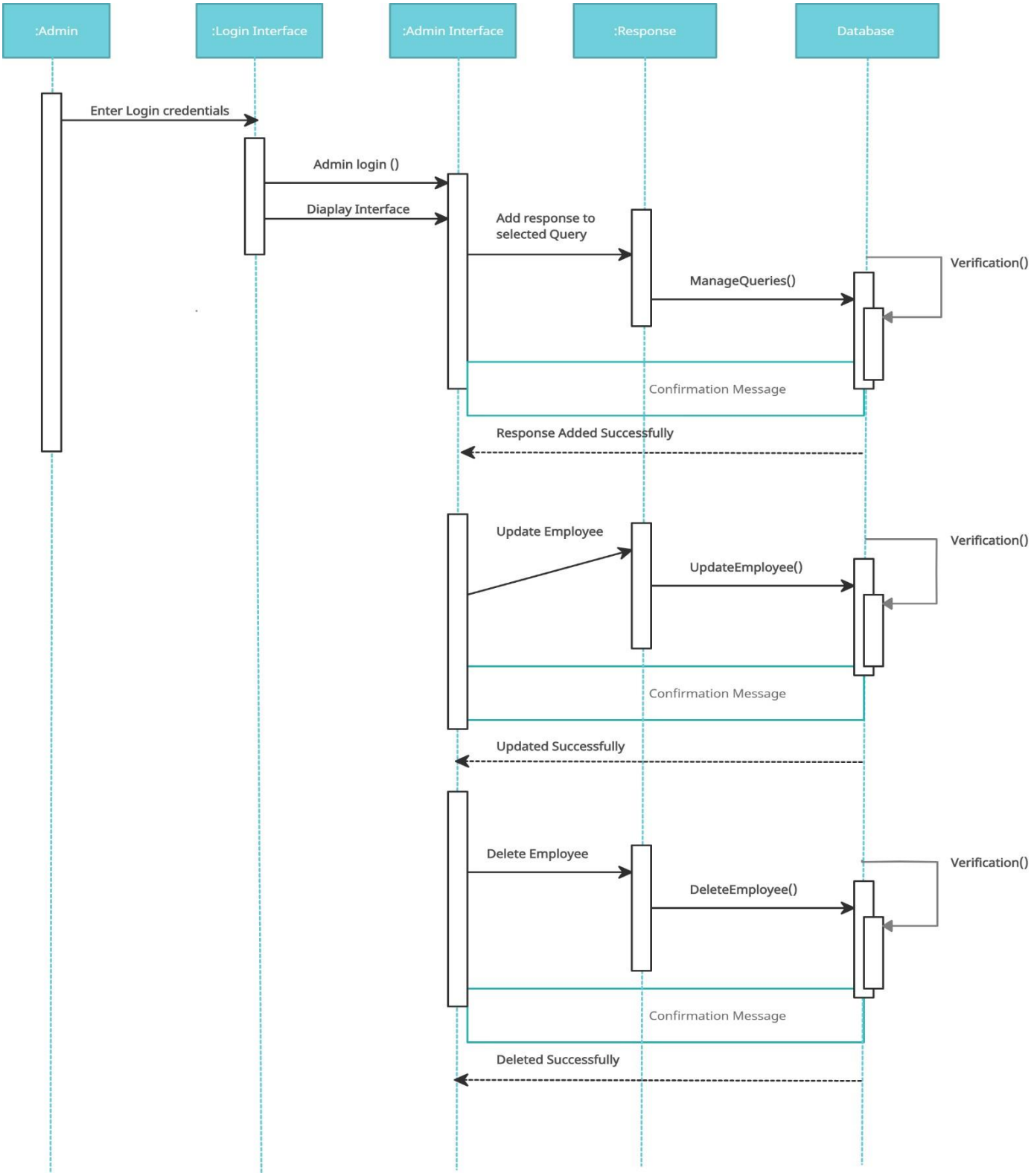


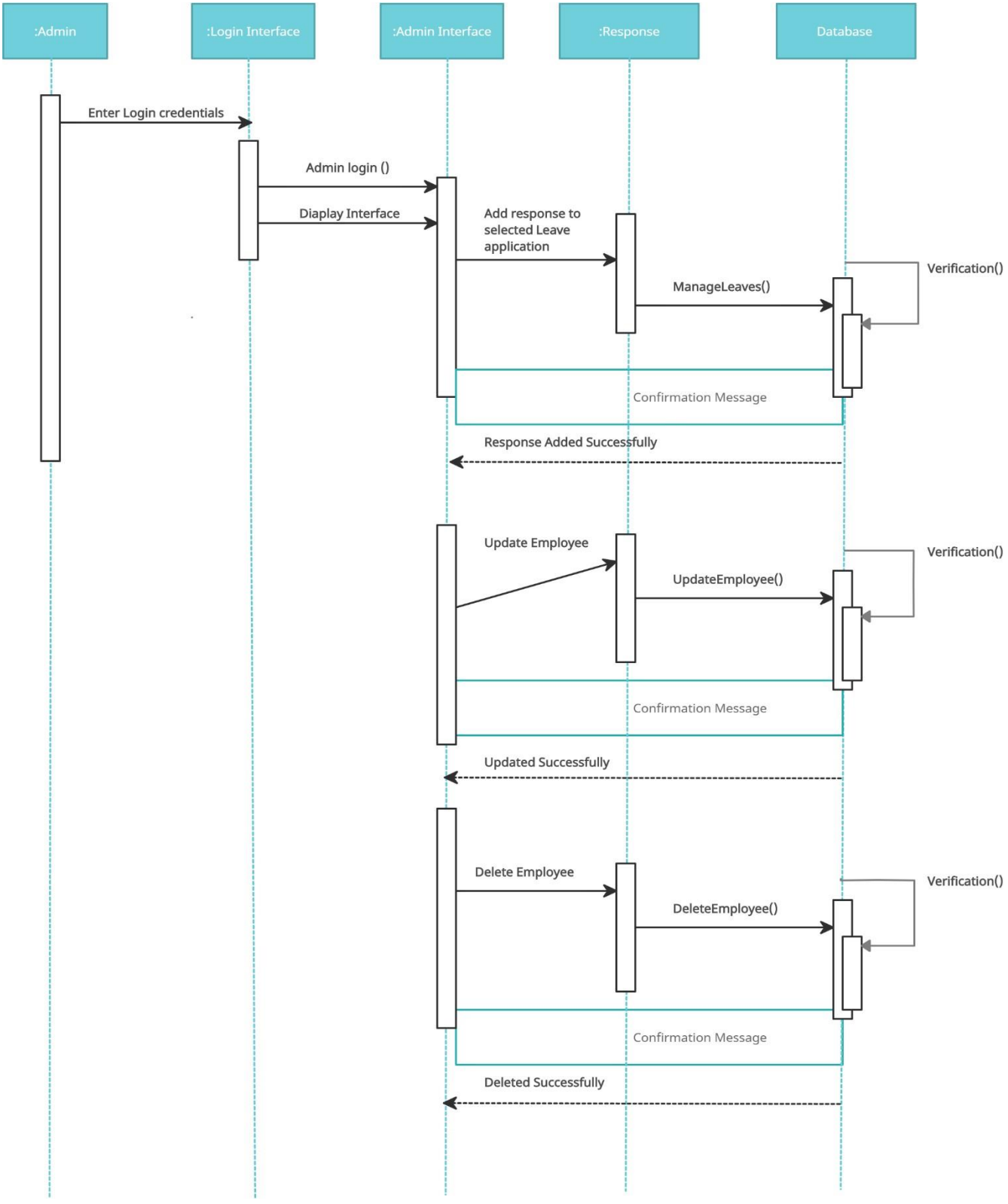
Fig 3.5.3 Admin-Manage Timetable

3.5.4 Admin-Manage Queries



3.5.4 Admin-Manage Queries

3.5.5 Admin-Manage Leaves



3.5.5 Admin-Manage Leave

3.5.6 View Reports

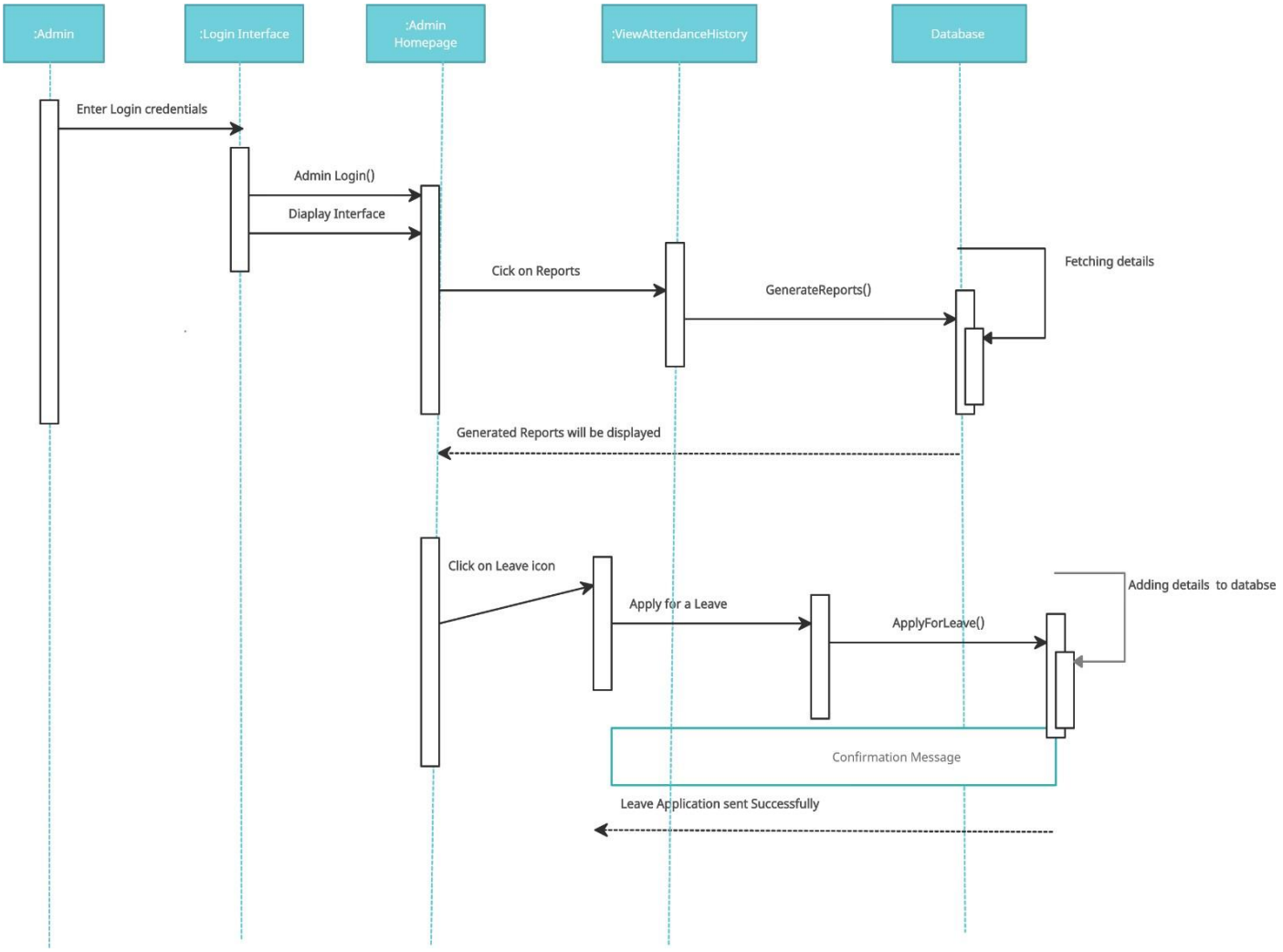


Fig 3.5.6 View Reports

3.5.7 User(Employee)- Login

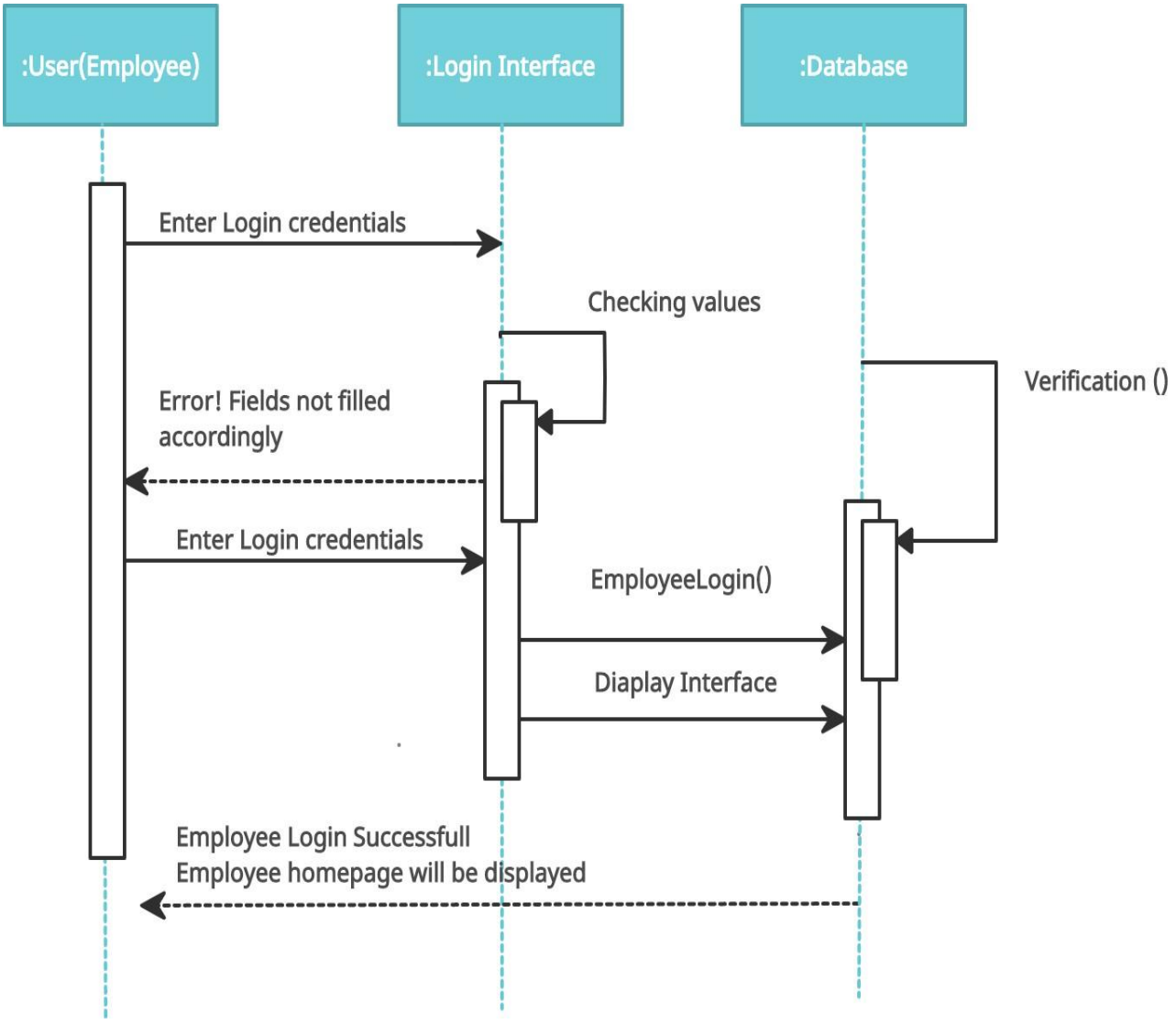


Fig 3.5.7 User(Employee)-Login

3.5.8 User(Employee)- Login

«message»

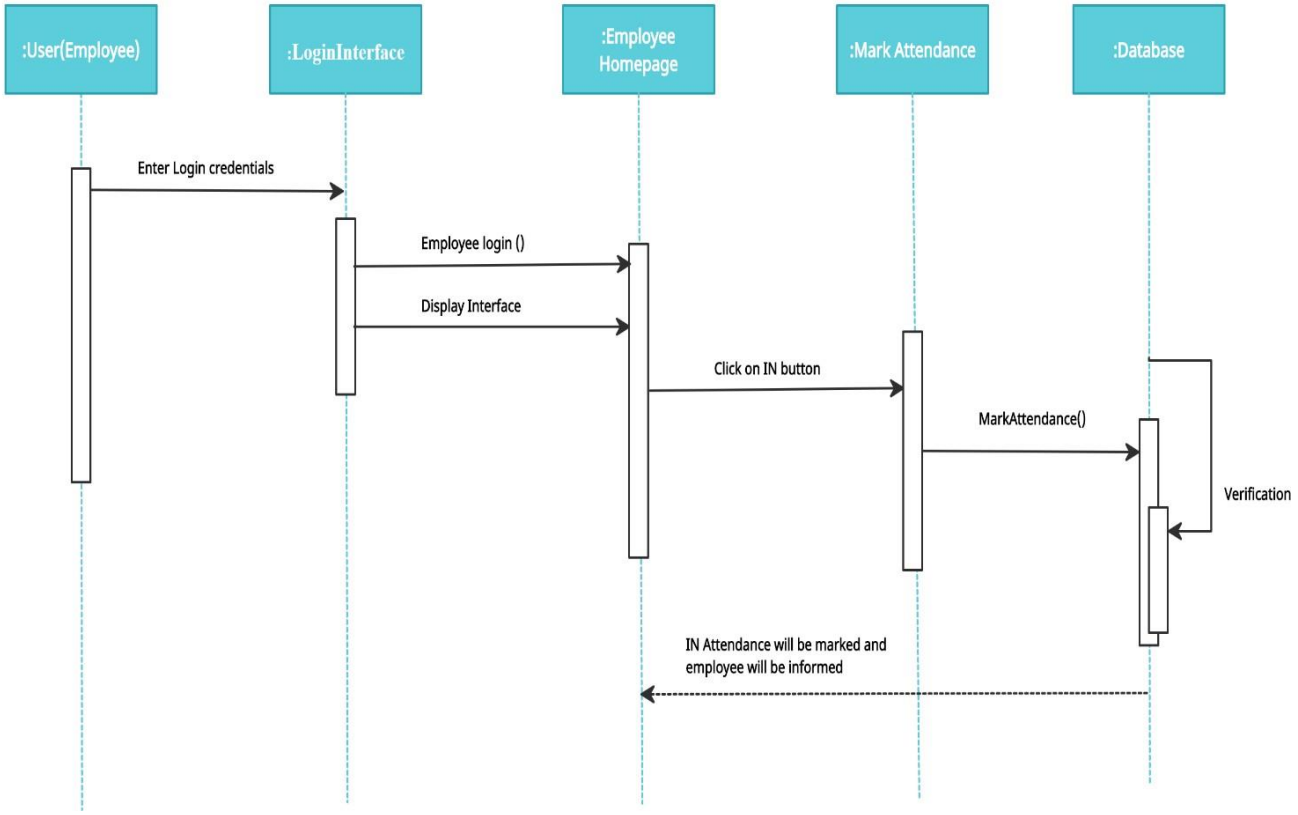


Fig 3.5.8 Employee-IN-Attendance

3.5.9 Employee – OUT-Attendance

«message»

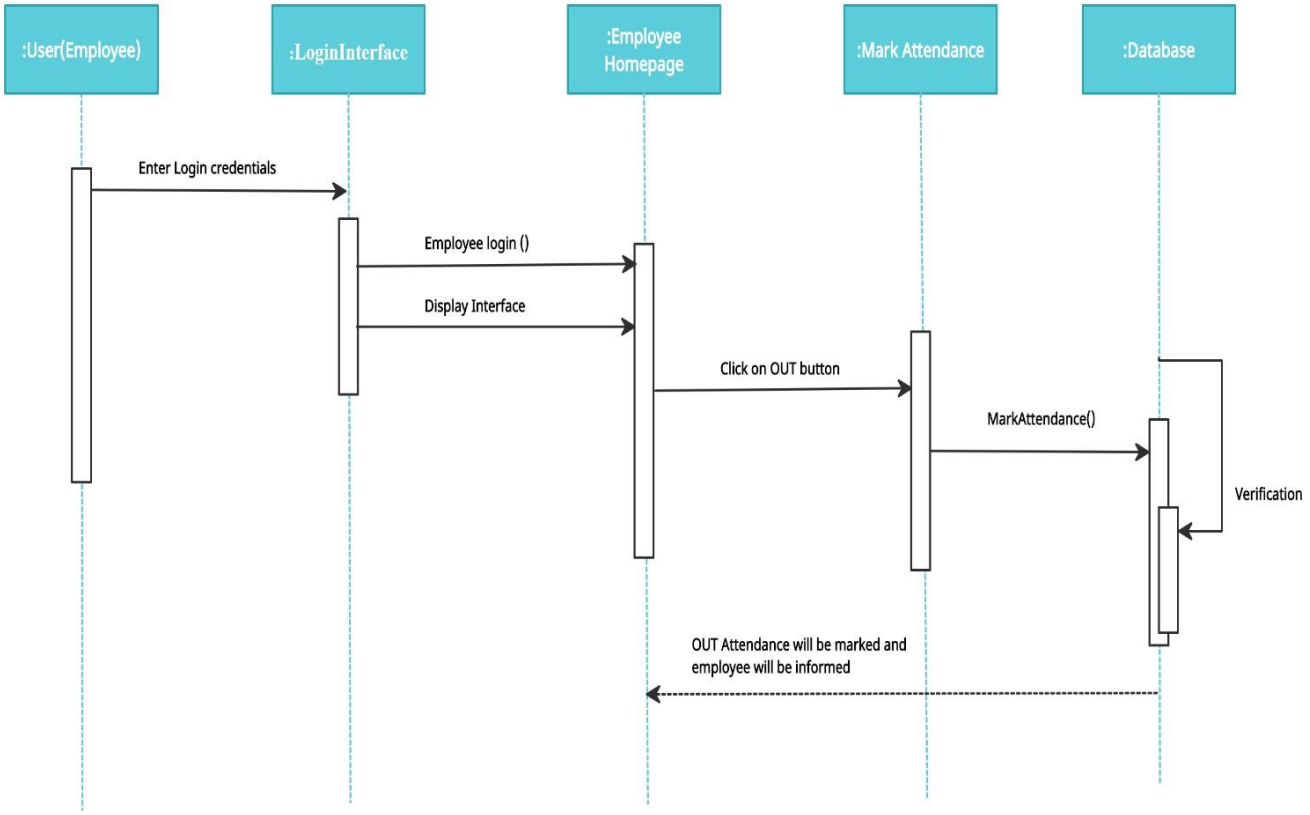


Fig 3.5.9 Employee-OUT-Attendance

3.5.10 Employee - Leaves

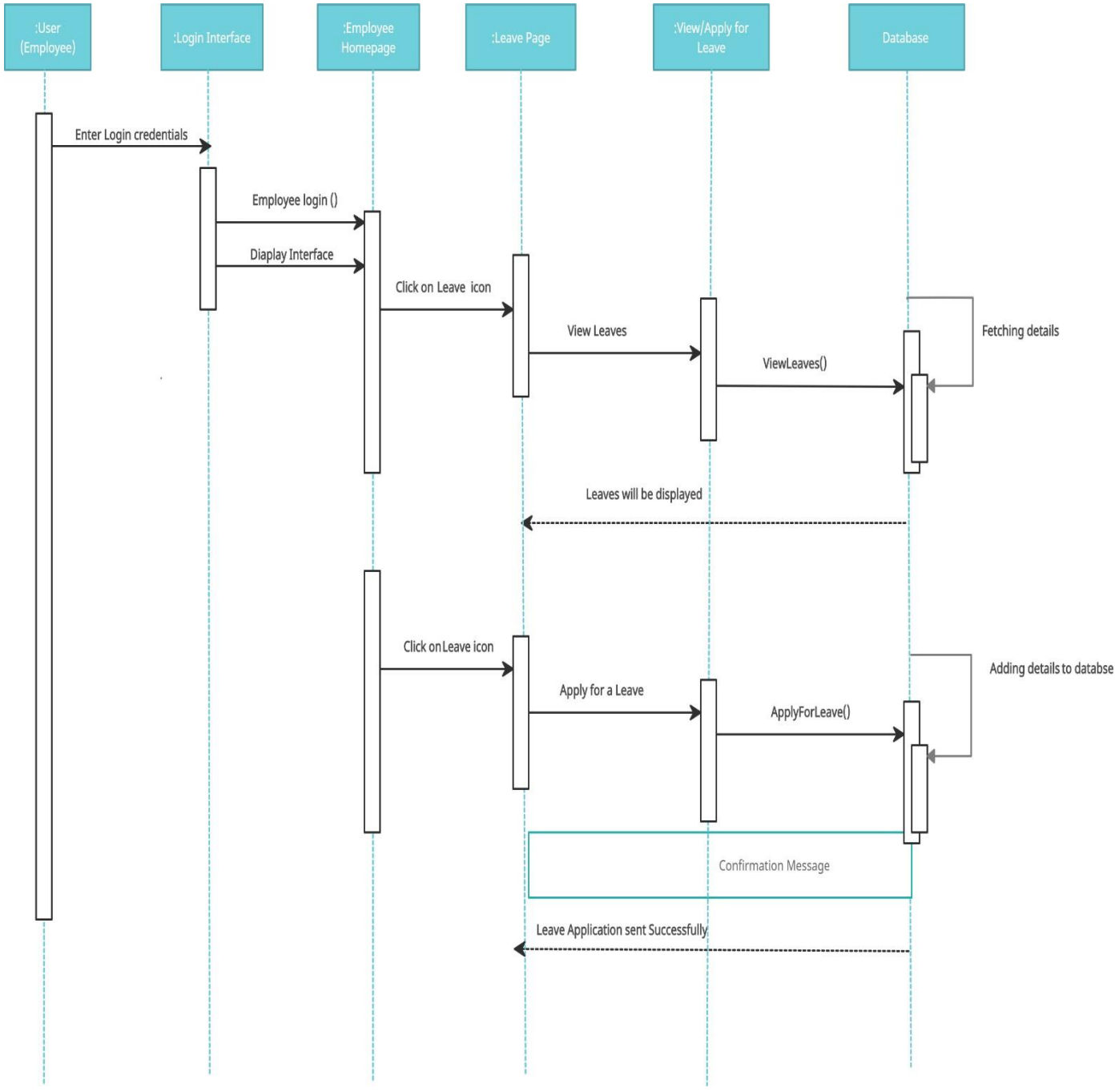


Fig 3.5.10 Employee-Leaves

3.5.11 Employee- Query

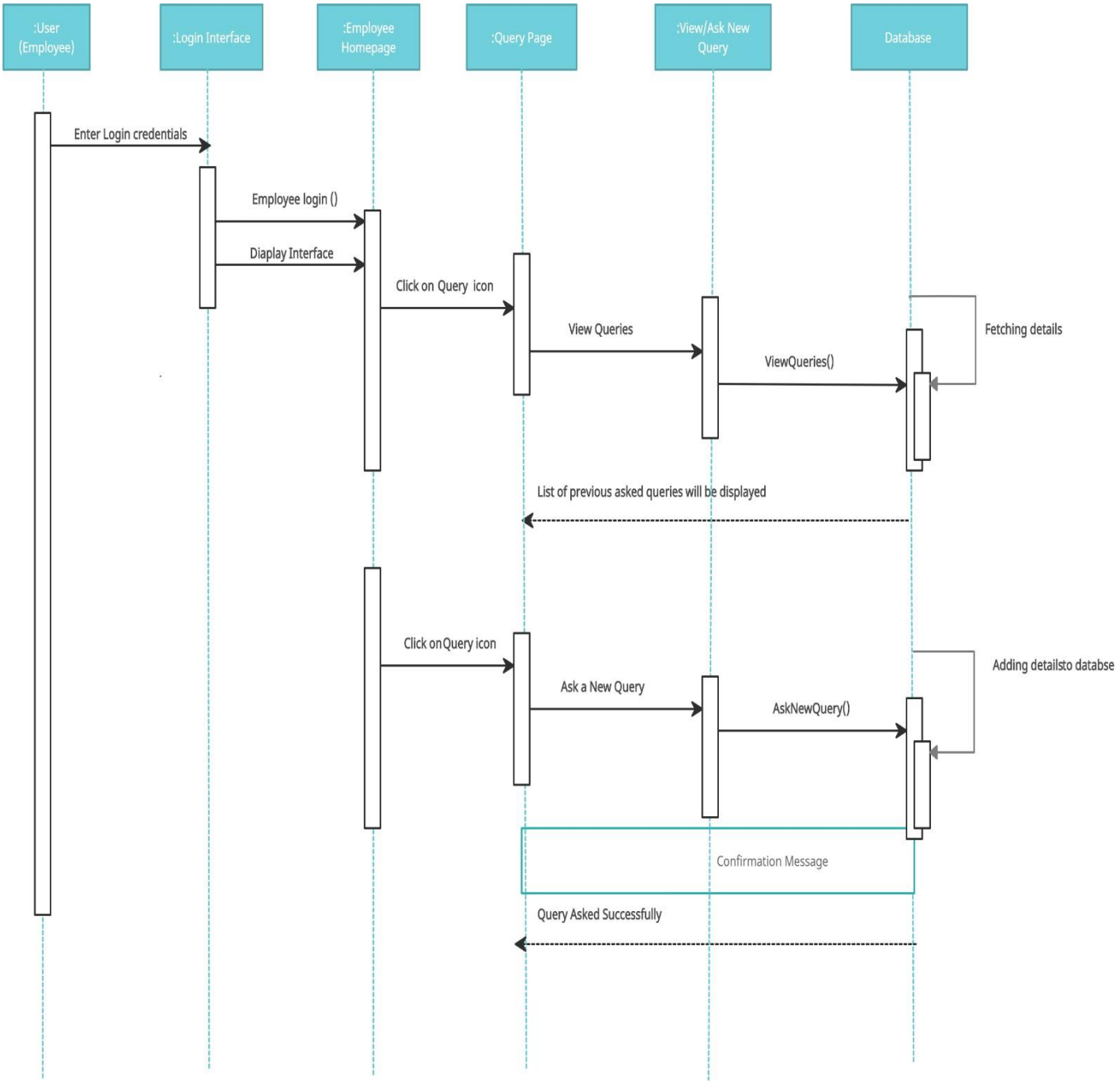


Fig 3.5.11 Employee-Query

3.5.12 Employee-Attendance History

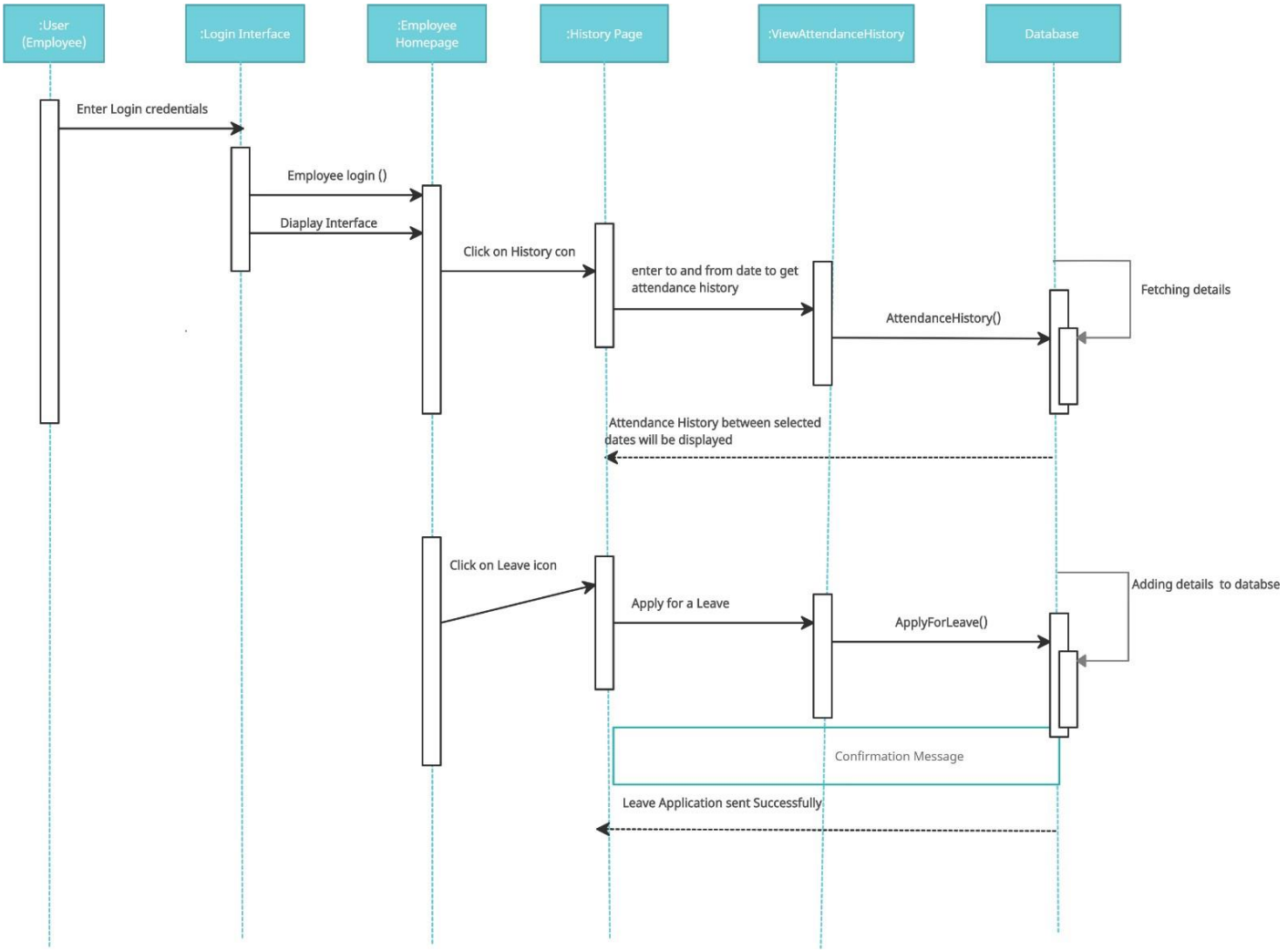


Fig 3.5.12 Employee-Attendance History

3.5.13 Employee-Timetable

«message»

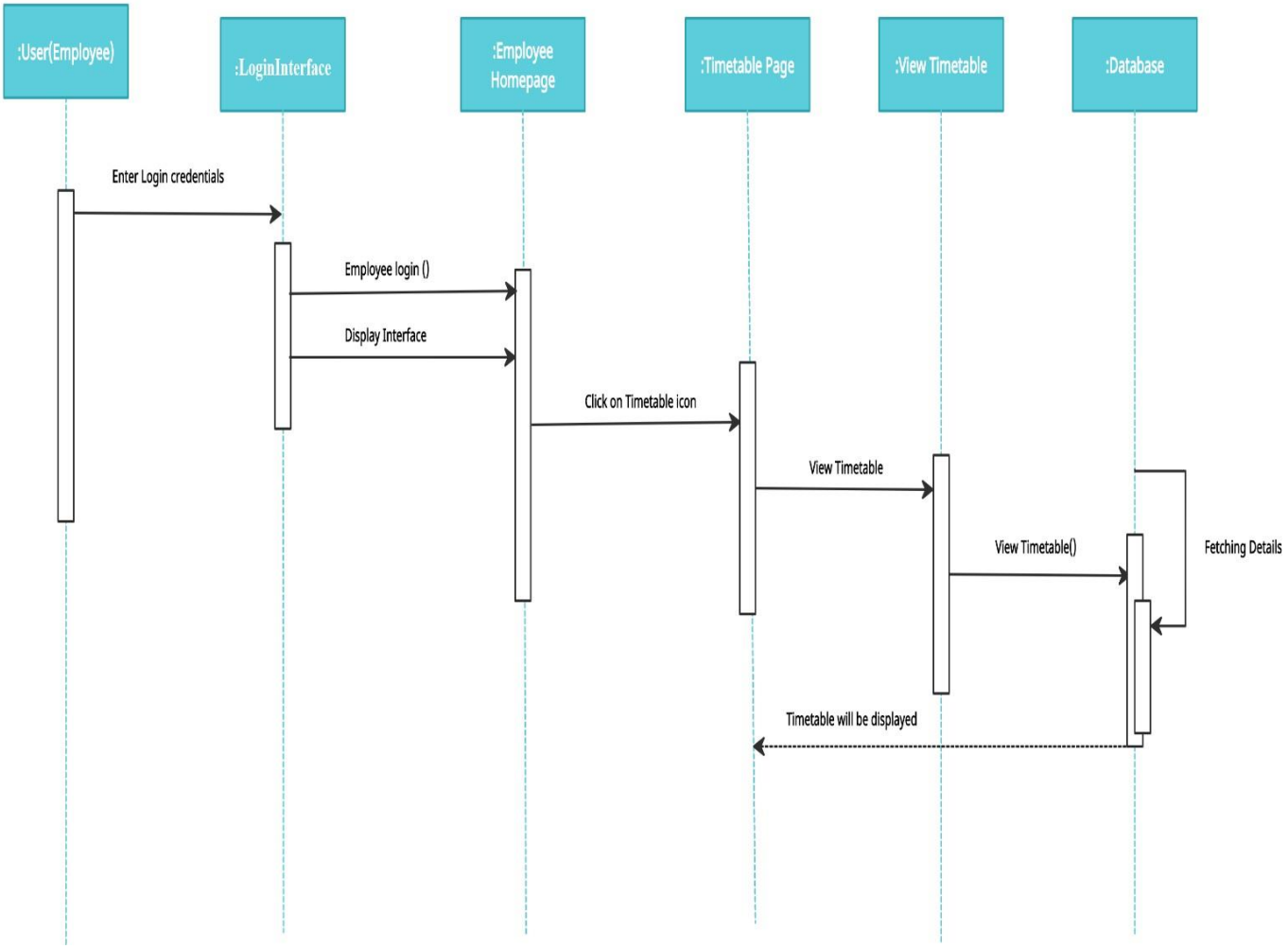


Fig 3.5.13 Employee-Timetable

3.5.14 Employee – Logout

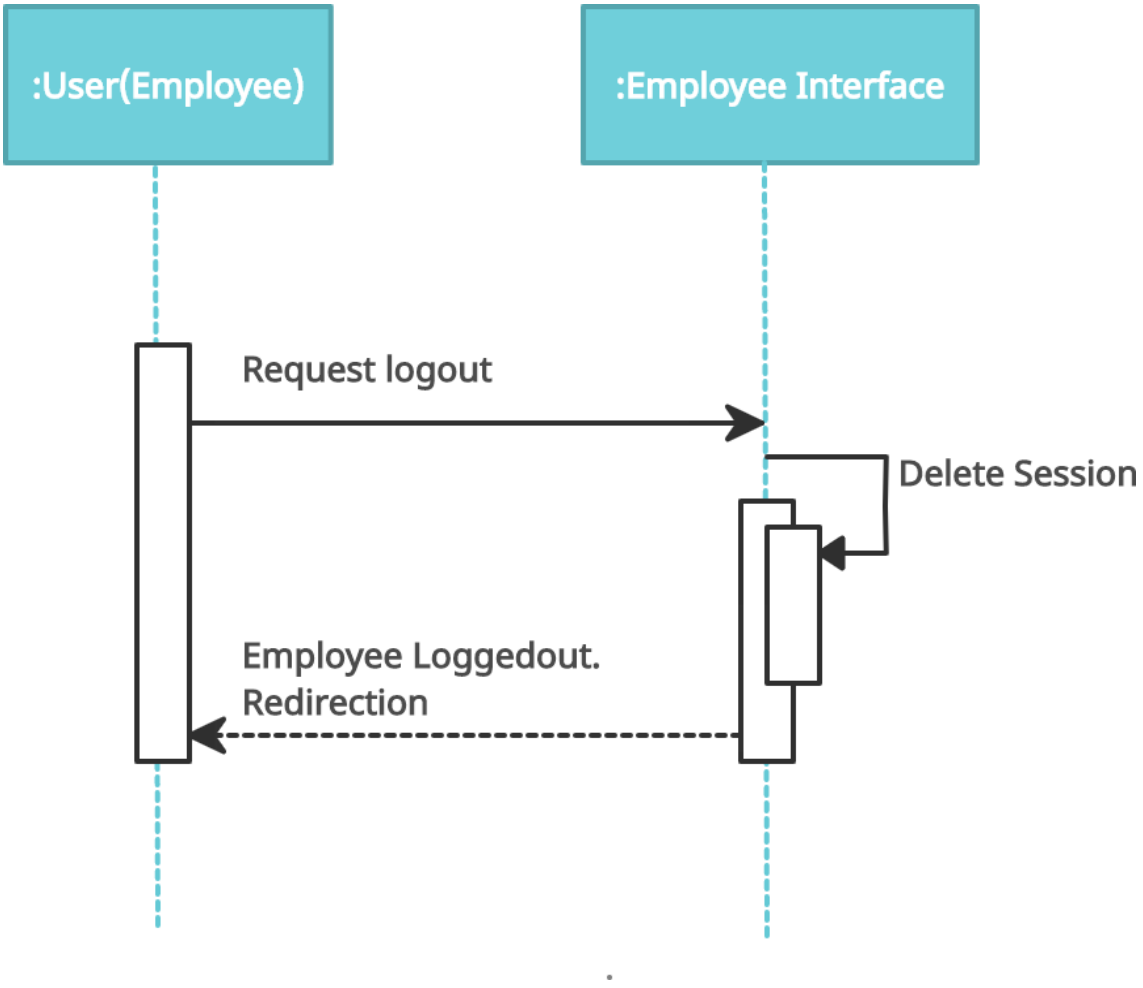


Fig 3.5.14 Employee- Logout

3.6 Domain Model

A domain model is a conceptual model of the domain that incorporates both behavior and data. Domain model is a formal representation of a knowledge domain with concepts, roles, data types, individuals, and rules, typically grounded in description logic.

Domain Model of Admin and Employees:

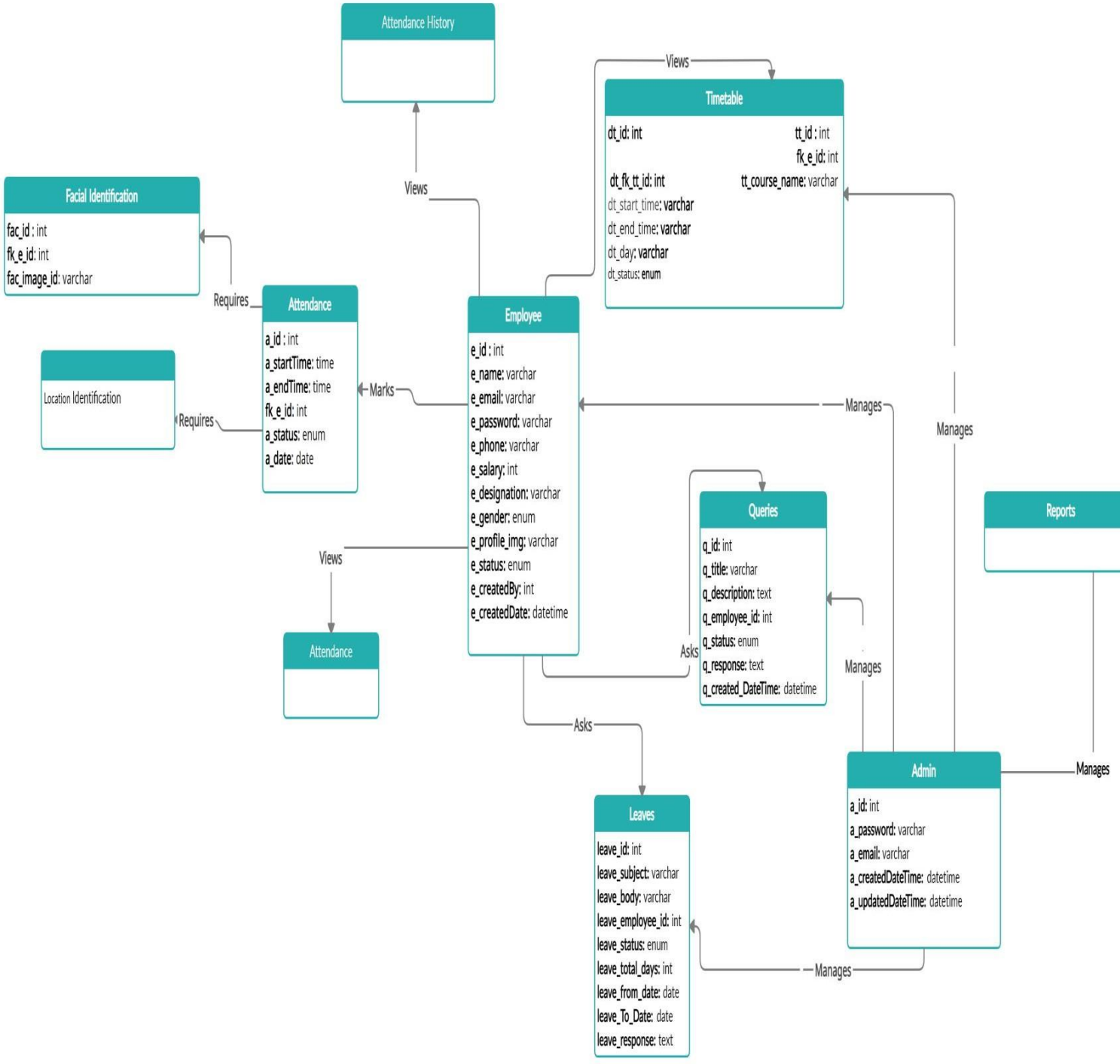


Fig 3.6.1 Domain Model of admin and employee

Chapter 4

4.1 System Design

In any engineering system design is the first step in the development phase. It is the process of applying various principles and techniques for defining a device, a process or a system in required detail to permit its physical realization. Design is a goal oriented decision-making activity. The designer goal is to produce a model or representation of an entity that will be built. The process by which the model is developed combines institution and judgment based on experience in building similar entities, a set of principles or heuristics that guide the way in which a model evolves and a process of iteration that ultimately leads to a final design representation. A system that is badly designed never results in an efficient system, irrespective of the effort put into it. The software design is the process through which requirements are translated into a representation of software. During design we have to make decisions that will ultimately affect the success of software construction and the ease with which software can be maintained.

4.2 Class Diagram

A class diagram in the Unified Modeling Language (UML) is a type of static structure diagram that describes the structure of a system by showing the system's classes, their attributes, operations (or methods), and the relationships among objects. Class diagram shows static structure of classifiers in a system. Diagram provides a basic notation for other structure diagrams prescribed by UML. Helpful for developers and other team members too. Business Analysts can use class diagrams to model systems from a business perspective.

Class Diagram for Administration and Employees:

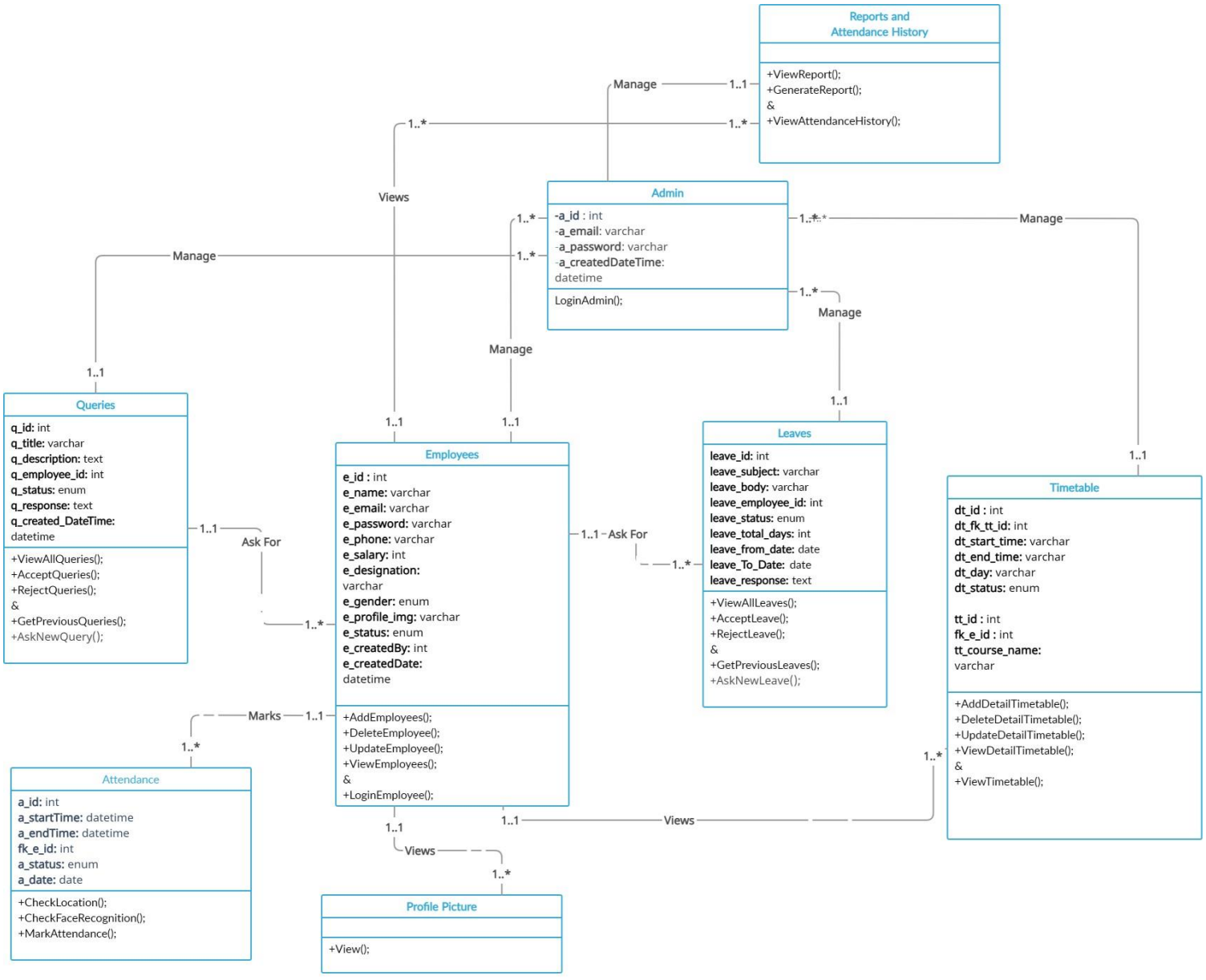


Fig 4.2.1 Class Diagram for Admin and Employee

4.3 Activity Diagram

Activity diagrams are graphical representations of workflows of activities and actions with support for choice, iteration and concurrency. In the unified modelling language, activity diagrams are intended to model both computational and organizational processes. Activity diagrams show the overall flow of control.

Activity diagram for Admin:

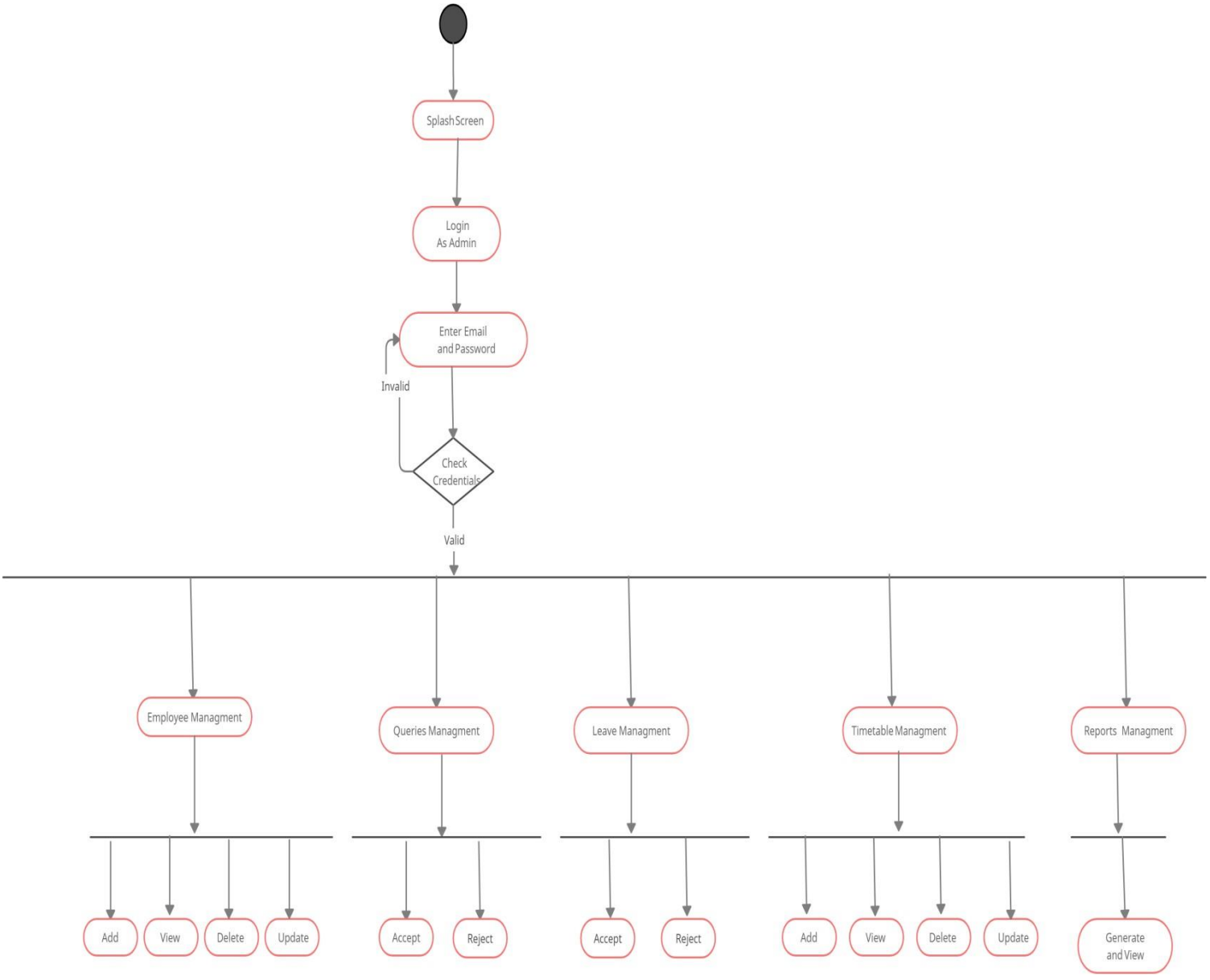


Fig 4.3.1 Activity Diagram for Admin

Activity Diagram for Registered Users:

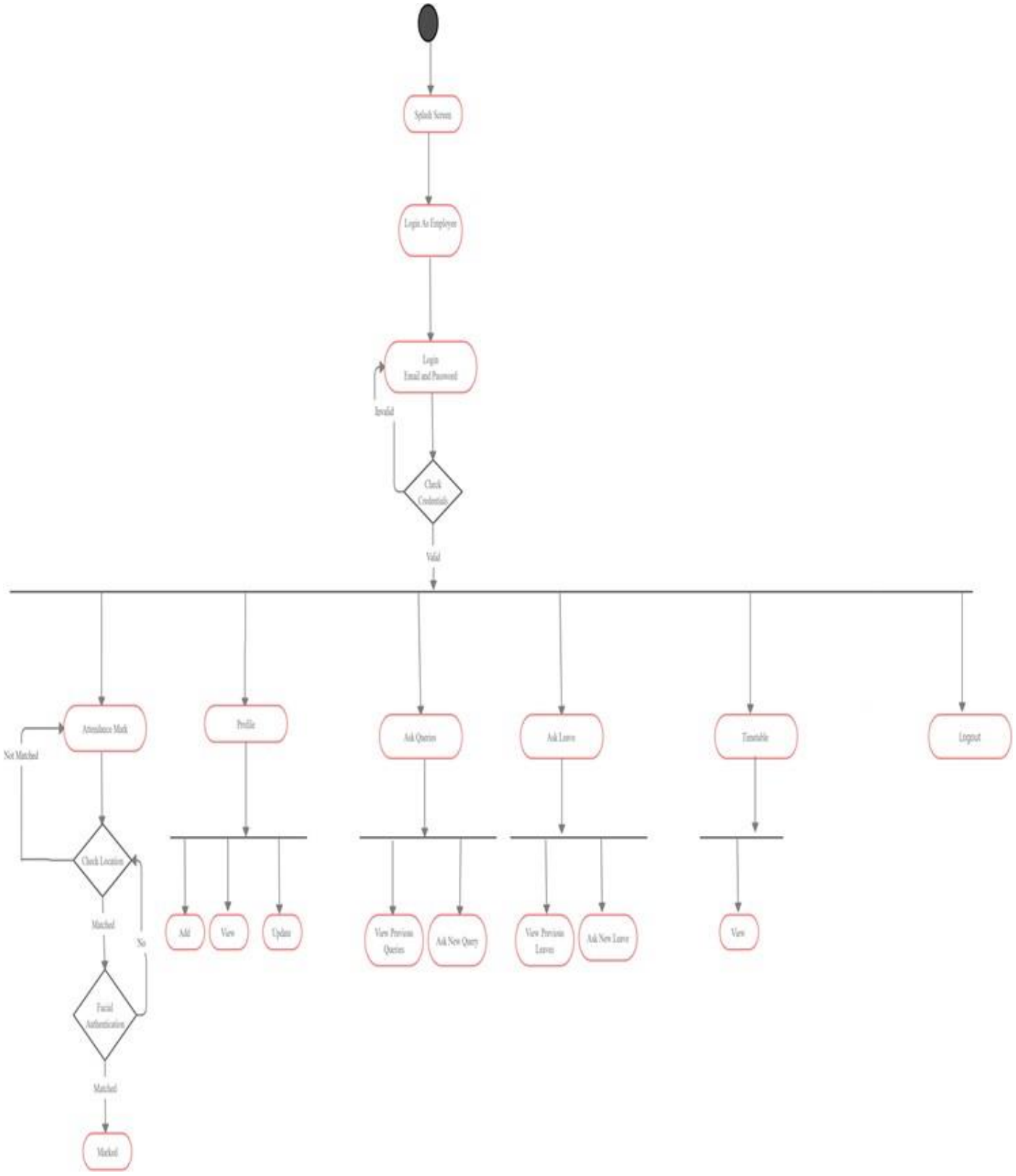


Fig 4.3.2 Activity Diagram for Registered Users

Chapter 5
Implementation

5.1 Implementation

After the design phase, implementation phase begins. Design phase includes the high-level design of the system whereas implementation phase brings that high-level design into the actual code through some programming languages under some specific development environment. Logical thinking and coding are required at the development of the application. A lot of research has been done to enhance the efficiency while coding**.**

In this chapter the tools to implement the design should be mentioned and reasons for selecting the tool will also be discussed. The modules will be being translated into the implementation should be described. Implementation is the action that must follow any preliminary thinking for something to happen.

This phase involves the construction of the actual project result. Programmers are occupied with coding, designers are involved in developing graphical material, contractors are building, and the actual reorganization takes place. It is the phase in which outsiders can see interface of the application to whom it may appear that the project has just began. The implementation phase is the doing phase.

5.2 Tools and Languages:

Selection of tools assumes a crucial part in building up an application

Following are the tools used for proposed system development:

- Android Studio
- JAVA
- XAMPP
- MySQL
- phpMyAdmin
- Visual Studio Code

5.3 Reasons for Selecting these Tools and Languages:

5.3.1 Android Studio:

Android software development is the process by which applications is created for the Android operating system. Applications are developed in the Java programming

Language using the Android Software Development Kit, but other development tools is available.

Android Studio is the official integrated development environment (IDE) for Android application development. It is based on the IntelliJ IDEA, a Java integrated development environment for software, and incorporates its code editing and developer tools.

To support application development within the Android operating system, Android Studio uses a Gradle-based build system, emulator, code templates, and GitHub integration. Every project in Android Studio has one or more modalities with source code and resource files. These modalities include Android app modules, Library modules, and Google App Engine modules.

The software was first announced at Google I/O in May 2013, and the first stable build was released in December 2014. Android Studio is available for Mac, Windows, and Linux desktop platforms. It replaced Eclipse Android Development Tools (ADT) as the primary IDE for Android application development. Android Studio and the Software Development Kit can be downloaded directly from Google.

Benefits:

- Faster Deployment of Fresh Builds. Bringing incremental changes to an existing appcode or resource is now easier and faster. ...
- Faster Programming and Testing. ...
- Inclusive App Development. ...
- Gradle support
- Dedicated Emulator
- Clean layout based on IntelliJ IDEA
- Android Studio 3.0 comes with adaptive icon support for Android 8.0+
- Dedicated command line
- Easy connection and integration with dedicated assistants with Firebase, Kotlin andGoogle Cloud
- Android studio is specially made for making an android app, so all tools are used formaking only android. so, there is no confusion like eclipse or visual studio
- Every new update gives you better function and methods that can reduce your

codingtime. You just need to know that.

5.3.2 JAVA:

Java is a programming language that produces software for multiple platforms. When a programmer writes a Java application, the compiled code (known as byte code) runs on most operating systems (OS), including Windows, Linux and Mac OS. Java derives much of its syntax from the C and C++ programming languages.

Java was designed to have the look and feel of the C++ programming language but is simpler to use and enforces an object-oriented programming model. Java can be used to create complete applications that may run on a single computer or be distributed among servers and clients in a network. It can also be used to build a small application module or applet for use as part of a webpage.

Benefits:

- Java offers higher cross- functionality and portability as programs written in one platform can run across desktops, mobiles, embedded systems.
- Java is free, simple, object-oriented, distributed, supports multithreading and offers multimedia and network support.
- Java is a mature language, therefore more stable and predictable. The Java ClassLibrary enables cross-platform development.
- Being highly popular at enterprise, embedded and network level, Java has a largeactive user community and support available.

5.3.3 XAMPP:

XAMPP is a free and open-source cross-platform web server solution stack package developed by Apache Friends, consisting mainly of the Apache HTTP Server, MariaDB database and interpreters for scripts written in the PHP and Perl programming languages. Since most actual web server deployments use the same components as XAMPP, it makes transitioning from a local server to a live server possible.

XAMPP is a software distribution which provides the Apache web server, MySQL database (actually MariaDB), Php and Perl (as command-line executables and Apache modules) all in one package. It is available for Windows, MAC and Linux systems. No configuration is necessary to integrate Php with MySQL.

Benefits:

- You can start and stop the whole webserver and database stack with one command.

- XAMPP is portable so you can carry it around on a thumb drive.

- The security settings are strict by default, nobody but you will be able to access the webserver.

- Php error reporting is enabled by default, which helps when debugging scripts.

- It is a great fit for this course and provides a relatively painless installation and way to manage the configuration changes. Also provided is PhpMyAdmin which gives a GUI tool for managing your MySQL databases.

5.3.4 MySQL:

MySQL is an open-source relational database management system (RDBMS). Its name is a combination of “My”, the name of co-founders Michael Widenius's daughter, and "SQL", the abbreviation for Structured Query Language. A relational database organizes data into one or more data tables in which data types may be related to each other; these relations help structure the data. SQL is a language programmers use to create, modify and extract data from the relational database, as well as control user access to the database. In addition to relational databases and SQL, an RDBMS like MySQL works with an operating system to implement a relational database in a computer's storage system, manages users, allows for network access and facilitates testing database integrity and creation of backups.

MySQL is free and open-source software under the terms of the GNU General Public License, and is also available under a variety of proprietary licenses. MySQL has stand-alone clients that allow users to interact directly with a MySQL database using SQL, but more often, MySQL is used with other programs to implement applications that need relational database capability. MySQL is a component of the LAMP web application software stack (and others), which is an acronym for *Linux, Apache, MySQL, Perl/PHP/Python*. MySQL is used by many database-driven web applications, including Drupal, Joomla, phpBB, and WordPress.

Benefits:

1. Data Security:

MySQL is globally renowned for being the most secure and reliable database management system. The data security and support for transactional processing that accompany the recent version of MySQL can greatly benefit any business especially if it is an ecommerce business that involves frequent money transfers.

2. On Demand Scalability:

MySQL offers unmatched scalability to facilitate the management of deeply embedded apps using a smaller footprint even in massive warehouses that stack terabytes of data. On-demand flexibility is the star feature of MySQL.

3. High Performance:

MySQL features a distinct storage-engine framework that facilitates system administrators to

configure the MySQL database server for a flawless performance. MySQL is designed to meet even the most demanding applications while ensuring optimum speed, full-text indexes and unique memory caches for enhanced performance.

4. Complete Workflow Control:

Whether the platform is Linux, Microsoft, Macintosh or UNIX, MySQL is a comprehensive solution with self-management features that automate everything from space expansion and configuration to data design and database administration.

5. The Flexibility of Open Source:

The secure processing and trusted software of MySQL combine to provide effective transactions for large volume projects. It makes maintenance, debugging and upgrades fast and easy while enhancing the end-user experience.

5.3.5 phpMyAdmin:

phpMyAdmin is a free software tool written in PHP, intended to handle the administration of MySQL over the Web. phpMyAdmin supports a wide range of operations on MySQL and MariaDB. Frequently used operations (managing databases, tables, columns, relations, indexes, users, permissions, etc) can be performed via the user interface, while you still have the ability to directly execute any SQL statement.

Benefits:

- Intuitive web interface
- Support for most MySQL features:
- browse and drop databases, tables, views, fields and indexes
- create, copy, drop, rename and alter databases, tables, fields and indexes
- maintenance server, databases and tables, with proposals on server configuration

- execute, edit and bookmark any SQL-statement, even batch-queries
- manage MySQL user accounts and privileges
- manage stored procedures and triggers

5.3.6 Visual Studio Code:

Visual Studio Code is a lightweight but powerful source code editor which runs on your desktop and is available for Windows, macOS and Linux. It comes with built-in support for JavaScript, TypeScript and Node.js and has a rich ecosystem of extensions for other languages (such as C++, C#, Java, Python, PHP, Go) and runtimes (such as .NET and Unity).

Benefits:

1. Cross-Platform Support:

Visual Studio Code is cross-platform. So it can work on all three platforms. Also, the code works on all three platforms; else, the open-source and proprietary software codes used to be different.

2. Intelli-Sense:

It can detect if any snippet of code is left incomplete. Also, common variable syntaxes and variable declarations are made automatically. Ex: If a certain variable is being used in the program and the user has forgotten to declare, intelli-sense will declare it for the user.

3. Improving Code:

Some code snippets can be declared a bit differently, which might help the user in the code. This function prompts the user, wherever necessary, to change it to the suggested option.

4. Terminal Support:

Many of the times, the user needs to start from the root of the directory to start with a particular action, in-built terminal or console provides user support to not to switch in-between two screens for the same.

5. Light weight:

Having so much functionality visual studio is a very light weight software. It does not slow down the system.

5.4 Package Diagram:

Package diagram, a kind of structural diagram, shows the arrangement and organization of model elements in middle to large scale project. Package diagram can show both structure and dependencies between sub-systems or modules, showing different views of a system.

Package diagrams are used to structure high level system elements. Packages are used for organizing large system which contains diagrams, documents and other key deliverables.

- Package Diagram can be used to simplify complex class diagrams, it can group classesinto packages.
- A package is a collection of logically related UML elements.
- Packages are depicted as file folders and can be used on any of the UML diagrams.

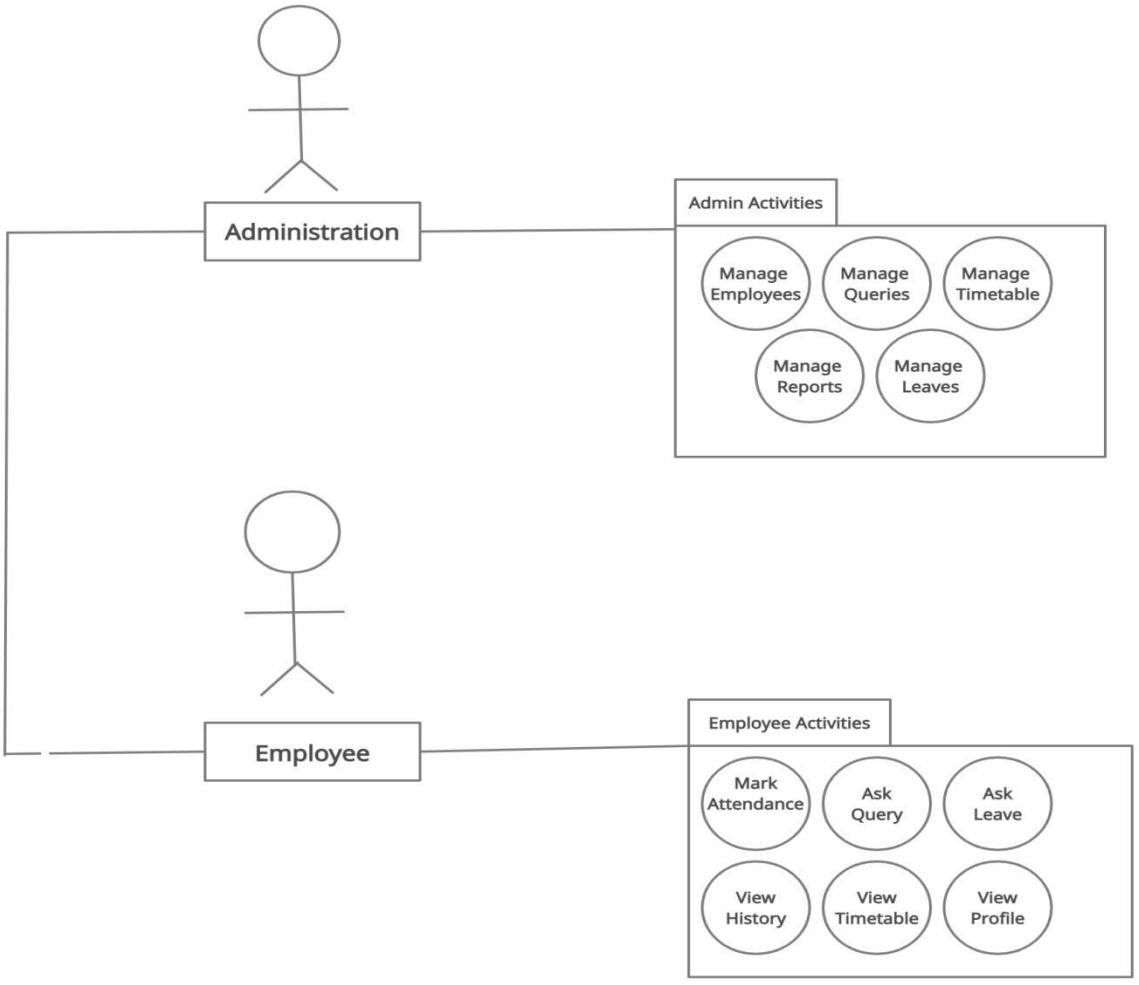


Fig 5.4.1 Package Diagram

5.5 Deployment Diagram:

A deployment diagram is a diagram that shows the configuration of run time processing nodes and the components that live on them. Deployment diagrams are a kind of structure diagram used in modeling the physical aspects of an object-oriented system.

They are often be used to model the static deployment view of a system.

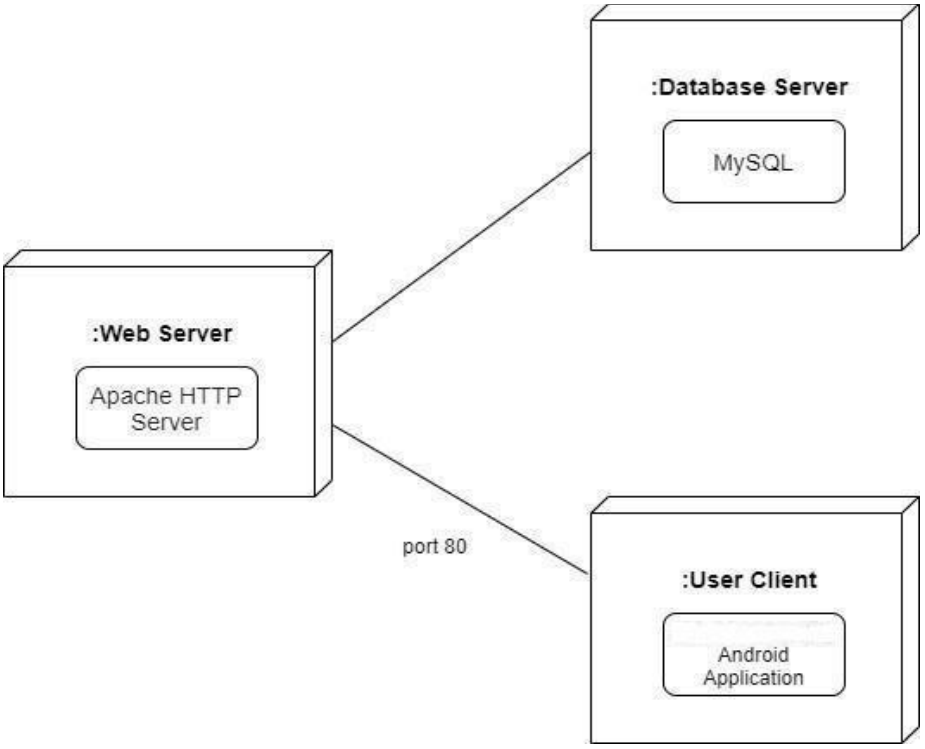


Fig 5.5.1 Deployment Diagram

Chapter 6
Testing

6 Testing

Testing is defined as an activity to check whether the actual results match the expected results and to ensure that the software system is error free. It involves execution of a software component or system component to evaluate one or more properties of interest.

Testing also helps to identify errors, gaps or missing requirements in contrary to the actual requirements. It can be either done manually or using automated tools. Some prefer saying Software testing as a White Box and Black Box Testing.

In simple terms, Software Testing means Verification of Application Under Test (AUT).

6.1 Test Cases

A test case is a set of conditions or variables under which a tester will determine whether a system under test satisfies requirements or works correctly. The process of developing test cases can also help find problems in the requirements or design of an application.

6.1.1 Adding Employee

Test case ID	TC01	
Test Case name	Adding Employee	
System	Android platform for Smart Attendance Application	
Short Description	Test that whether employee can be added by admin or not.	
Pre-condition: Admin adding valid email address for new employee. Internet service should be available at application side.		
Action	**Expected System Response**	**Pass/fail**
Admin adding an employee with already added employee email address.	System will not allow the admin to add this employee.	Fail
Admin adding an employee with new and valid email address.	System will accept it and allow the admin to add an employee.	Pass
Post condition It displays the admin homescreen.		
Date	9 June,2021	
Tester Name	Namra Javaid	

Table 6.1.1 Test Case of adding Employee

6.1.2 Login

Test case ID	TC02
Test Case name	Login
System	Android platform for Smart Attendance System

Short Description	Test that employee can login to the application after being added by admin.	
Pre-condition Employee must be added by admin. Internet service should be available at application side.		
Action	**Expected System Response**	**Pass/fail**
User enter correct email address and wrong password.	System will not allow the user to login.	Fail
User enters wrong email with correct password.	System will not allow the user to login.	Fail
User enters wrong email and wrong password	System will not allow the user to login.	Fail
User enters correct email and right password	System will allow the user to login to the application.	Pass
Post condition It displays the employee's home screen.		
Date	9 June,2021	
Tester Name	Kainat Shabbir	

Table 6.1.2 Test Case of Login

6.1.3 Mark Attendance

Test case ID	TC03
Test Case name	Mark Attendance
System	Android platform for Smart Attendance Application
Short Description	Test that employee can mark his attendance
Pre-condition Employee must be login. Internet service should be available	

Action	**Expected System Response**	**Pass/fail**
Employee is not in college coordinates.	System will display the message that he is out of coordinates	Fail
Employee is in college coordinates and face is not recognized.	System will display the message that face is not recognized	Fail
Employee is in college coordinates and face is recognized.	System will display the confirmation message that attendance is marked	Pass
Post condition It displays the employee's home screen.		
Date	10 June,2021	
Tester Name	Kainat Shabbir	

Table 6.1.3 Test Case of Mark Attendance

6.1.4 Ask Leave

Test case ID	TC04	
Test Case name	Ask for a leave	
System	Android platform for Smart Attendance System	
Short Description	Test that user can ask for a leave.	
Pre-condition Employee must be login. Internet service should be available		
Action	**Expected System Response**	**Pass/fail**
Employees click on ask leave by adding all the required fields.	System will display the confirmation message	Pass

If employee does not fill the required fields.	System will display the error message.	Fail
Post condition Leave application will be sent and it will be added in leave list.		
Date	9 June,2021	
Tester Name	Kainat Shabbir	

Table6.1.4 Test Case of Asking leave

6.1.5 Asking a Query

Test case ID	TC05
Test Case name	Asking a query
System	Android platform for Smart Attendance System
Short Description	Test that Employee can ask a query.

Pre-condition Employee must be login. Internet service should be available		
Action	**Expected System Response**	**Pass/fail**
Employee click on ask query	System will display the confirmation message.	Pass
Provide incomplete information	System will display the error message.	Fail
Post condition Query will be sent, and it will be added in query list.		
Date	9 June,2021	
Tester Name	Kainat Shabbir	

Table 6.1.5 Test Case of Asking a query

6.1.6 View Attendance History

Test case ID	TC06	
Test Case name	Viewing attendance history between selected dates	
System	Android platform for Smart Attendance System	
Short Description	Test that Employee can view his attendance history.	
Pre-condition Employee must be login. Internet service should be available		
Action	**Expected System Response**	**Pass/fail**
Employee click on get data	System will display the confirmation message.	Pass
Provide incomplete information	System will display the error message.	Fail
Post condition History screen will be displayed		
Date	10 June,2021	
Tester Name	Kainat Shabbir	

Table6.1.6 Test Case of Viewing attendance history

6.1.7 View Timetable

Test case ID	TC07
Test Case name	Viewing employee timetable
System	Android platform for Smart Attendance System
Short Description	Test that Employee can view his timetable of all days.

Pre-condition Employee must be login. Internet service should be available.		
Action	**Expected System Response**	**Pass/fail**
Employee select the day	System will display the classes of that day.	Pass
Post condition List of classes along with start and end time will be displayed		
Date	9 June,2021	
Tester Name	Kainat Shabbir	

Table6.1.7 Test Case of Viewing timetable

6.1.8 Get Notification

Test case ID	TC08	
Test Case name	Displaying notification of today's classes	
System	Android platform for Smart Attendance System	
Short Description	Test that Employee is getting a notification of todays' classes	
Pre-condition Employee must be login. Internet service should be available.		
Action	**Expected System Response**	**Pass/fail**
Employee click on the get notification button	System will send an application notification to employee.	Pass
Post condition An application notification will be displayed when user click on that it will open the interface showing classes of that day		
Date	10 June,2021	
Tester Name	Kainat Shabbir	

Table6.1.8 Test Case of Viewing timetable

6.1.9 Logout

Test case ID	TC09	
Test Case name	Logout of application	
System	Android platform for Smart Attendance System	
Short Description	Test that user can logout	
Pre-condition User must be logged in. Internet service should be available.		
Action	**Expected System Response**	**Pass/fail**
User click on Logout button	System will display the confirmation message	Pass
Post condition: System displays the login screen		
Date	10 June,2021	
Tester Name	Kainat Shabbir	

Table6.1.9 Test Case of Logout

6.1.10 Update an Employee

Test case ID	TC010	
Test Case name	Admin updating an Employee	
System	Android platform for Smart Attendance System	
Short Description	Test that admin can update the existing Employee	
Pre-condition Admin must be logged in.		
Action	**Expected System Response**	**Pass/fail**
Admin update the employee information	System updates the employee and display the confirmation message	Pass
Admin provides incomplete information	System displays the error message and employee will not be added	Fail
Post condition: System displays manage employee interface.		
Date	10 June,2021	
Tester Name	Namra Javaid	

Table6.1.10 Test Case of Updating an Employee

6.1.11 Manage Timetable

Test case ID	TC011	
Test Case name	Admin managing timetable	
System	Android platform for standard travel and tours	
Short Description	Test that admin can manage timetable	
Pre-condition Admin should be logged in.		
Action	**Expected System Response**	**Pass/fail**
Admin click on add course.	System will display the confirmation message.	Pass
Admin click on employees' existing courses to make changes	System will display the confirmation message	Pass
Post condition: System displays the list of employees for admin to further add a course or update their existing timetable.		
Date	9 June,2021	
Tester Name	Namra Javaid	

Table6.1.11 Test Case of Manage Timetable

6.1.12 View Leaves

Test case ID	TC012	
Test Case name	View Leaves depending on status. (Completed /Rejected/Pending)	
System	Android platform for Smart Attendance System	
Short Description	Test that admin can view list of leaves after selecting status from spinner.	
Pre-condition Admin must be logged in.		
Action	**Expected System Response**	**Pass/fail**
Admin selects pending from spinner.	System will display all the pending leaves in a listview.	Pass
Admin selects completed from spinner.	System will display all the completed leaves in a listview.	Pass
Admin selects rejected from spinner.	System will display all the rejected leaves in a listview.	Pass
Post condition: System displays manage leaves interface.		
Date	9 June,2021	
Tester Name	Namra Javaid	

Table6.1.12 Test Case of View Leaves

6.1.13 Accept/Reject Leaves

Test case ID	TC013	
Test Case name	Accept/Reject Leaves	
System	Android platform for Smart Attendance System	
Short Description	Test that admin can accept/reject leaves	
Pre-condition Admin must be logged in. There must be a leave application to manage		
Action	**Expected System Response**	**Pass/fail**
Admin click on accept or reject leaves application or add response.	System will display the confirmation message.	Pass
Post condition: System displays manage leaves interface.		
Date	9 June,2021	
Tester Name	Namra Javaid	

Table6.1.13 Test Case of Accept/Reject Leaves

6.1.14 View Queries

Test case ID	TC014	
Test Case name	View queries depending on status. (Completed /Rejected/Pending)	
System	Android platform for Smart Attendance System	
Short Description	Test that admin can view list of queries by selecting status from spinner.	
Pre-condition Admin must be logged in.		
Action	**Expected System Response**	**Pass/fail**
Admin selects pending from spinner.	System will display all the pending queries in a listview.	Pass
Admin selects completed from spinner.	System will display all the completed queries in a listview.	Pass
Admin selects rejected from spinner.	System will display all the rejected queries in a listview.	Pass
Post condition: System displays manage queries interface.		
Date	9 June,2021	
Tester Name	Namra Javaid	

Table6.1.14 Test Case of View Queries

6.1.15 Accept/Reject Queries or add response

Test case ID	TC012	
Test Case name	Accept/Reject Queries	
System	Android platform for Smart Attendance System	
Short Description	Test that admin can accept/reject queries and add a response.	
Pre-condition Admin must be logged in. There must be a query to manage		
Action	**Expected System Response**	**Pass/fail**
Admin click on accept or reject query or add response.	System will display the confirmation message	Pass
Post condition: System displays manage queries interface.		
Date	9 June,2021	
Tester Name	Namra Javaid	

Table6.1.15 Test Case of Accept/Reject Queries

6.1.16 Generate Reports

Test case ID	TC016	
Test Case name	Generate Reports	
System	Android platform for Smart Attendance System	
Short Description	Test that admin can generate reports of employees.	
Pre-condition Admin must be logged in. There must be a query to manage		
Action	**Expected System Response**	**Pass/fail**
Admin click on generate reports	System will display the reports	Pass
Post condition: System displays generated reports		
Date	10 June,2021	
Tester Name	Namra Javaid	

Table6.1.16 Test Case of generating reports

Chapter 7
Conclusion / Future Work

7.1 Conclusion

Now a days, mobile applications have become an integral part of every business domain and personal life. Business of all kinds, whether small, medium or large is taking advantages of customized mobile applications as it helps them to increase productivity.
Attendance is something which is used everywhere whether it is an institute or any other organization, making admin to manage their employees and students' attendance. The days of manual attendance are gone and replaced with either biometric or mobile applications for keeping track of the attendance.

Smart Attendance Application is designed to manage the attendance of employees. It is a system that will mark the attendance of employees based on their location and face recognition. Employee can ask any query and for a leave and can get to know his timetable and can view his attendance history using this mobile application. Employee will be notified of his todays' classes. Admin will manage the employees, leaves, queries and timetable. Admin can generate reports to see the detailed attendance of his employees. So, this application provides a platform to both admin and employees to mark and manage attendance easily.

7.2 Future Work

We will further work on this application in future and will bring new updates in our application.

7.3 Limitations

- It requires an android mobile to run an application.
- It requires an admin to manage admin activities.
- Needs internet connection.

Appendix A

User Manual

Appendix A

1. Splash Screen

This is the main page of our application. It displays application logo and name. It will take two seconds to proceed further in the application.

Figure 1 (Splash Screen)

2. Categories

User will select that whether he is the admin or employee, based on his selection he will be logged in.

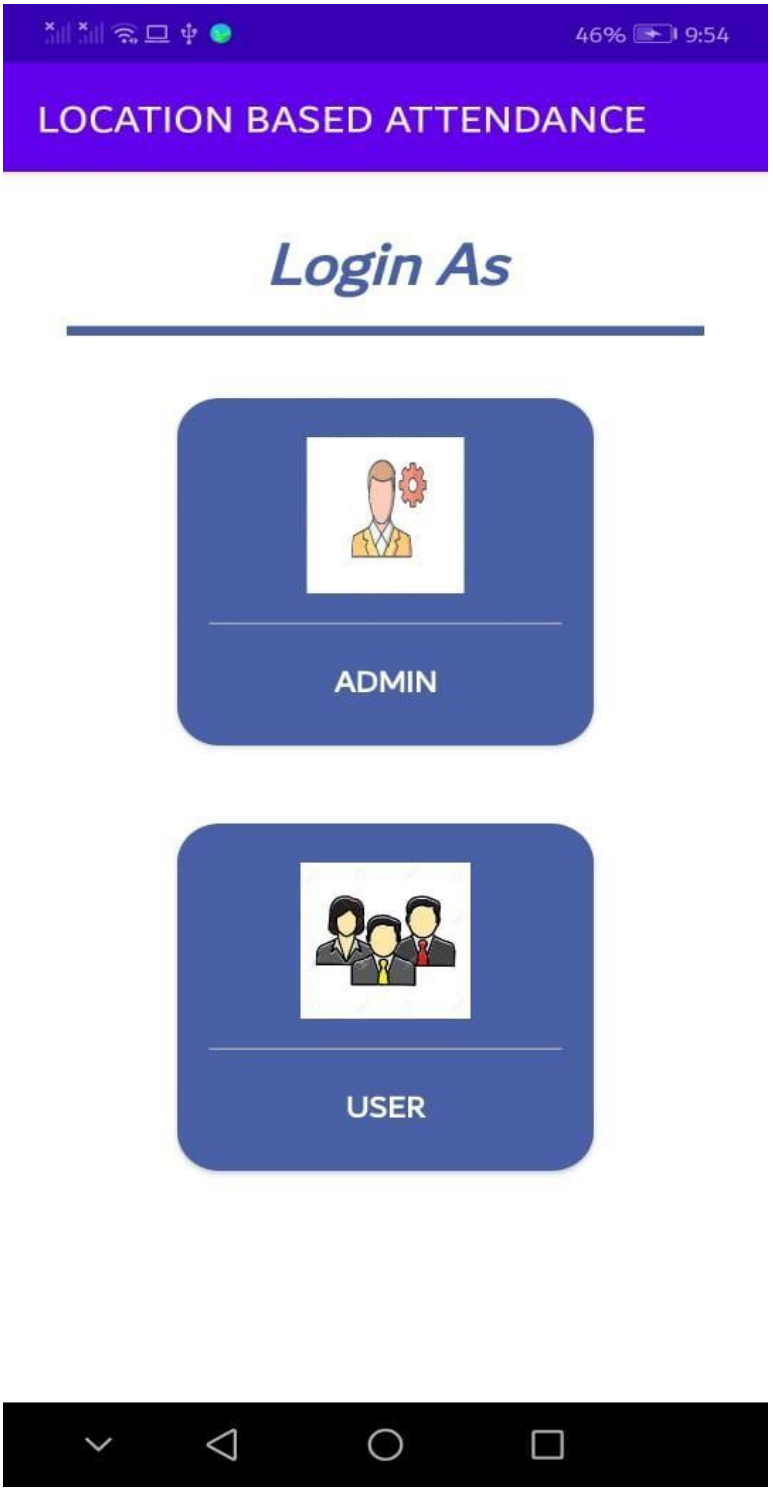


Figure 2 (Categories)

3. Login

This is the screen where user login to proceed for operational tasks. Employee and admin have the same login pages.

Figure 3 (Login)

4. Employee Home Page

This is home screen and it is accessible to the employee which is added by admin. Homepage have map displaying two pins one on the organization and other pin show the current location of that employee. When user click on IN or OUT button to mark attendance application will check that whether the employee is in coordinates or not.

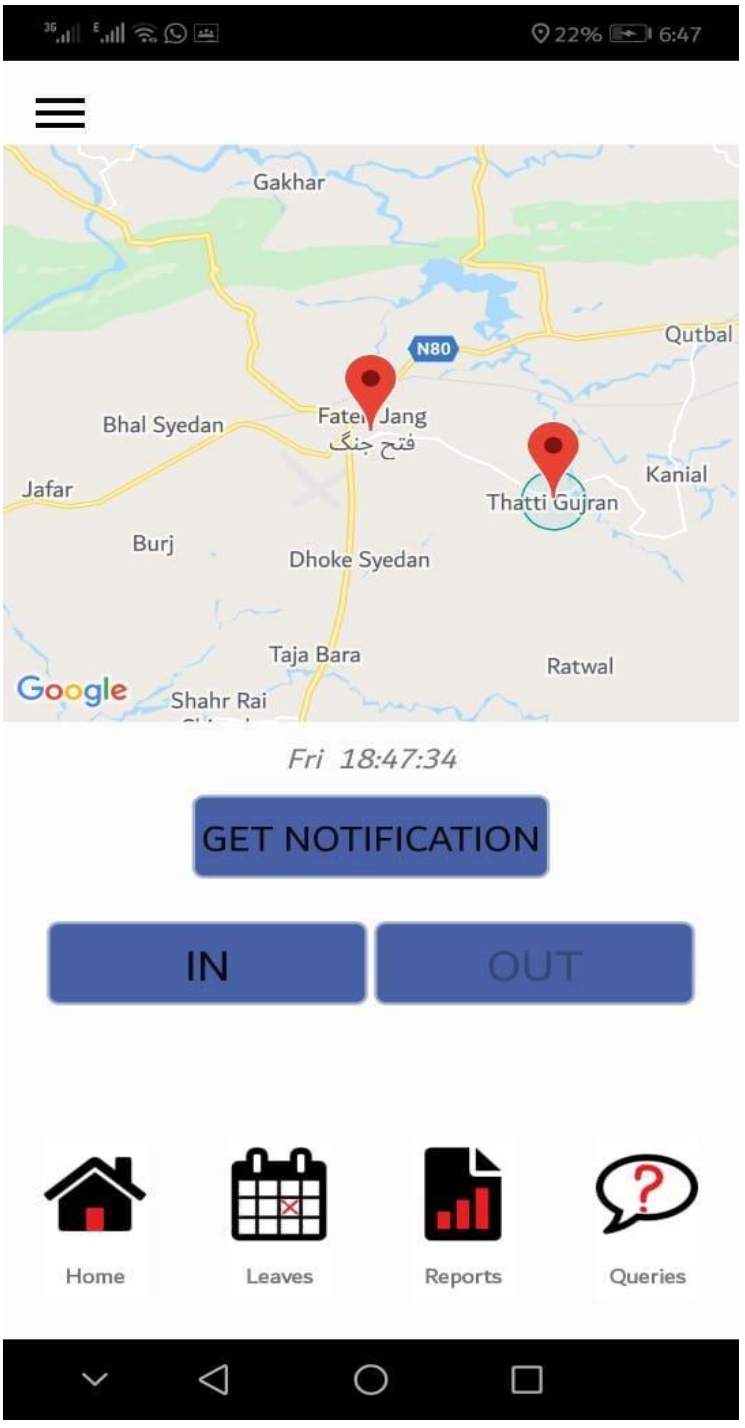


Figure 4 (Employee Home Page)

5. Employee Face Authentication

When the user is in organization's coordinates then the next step is to recognize the face of the employee and mark his attendance. Employee captures the pictures; system matches that picture with the one in database. If matched successfully his attendance will be marked and employee will be redirecting to employee homepage.

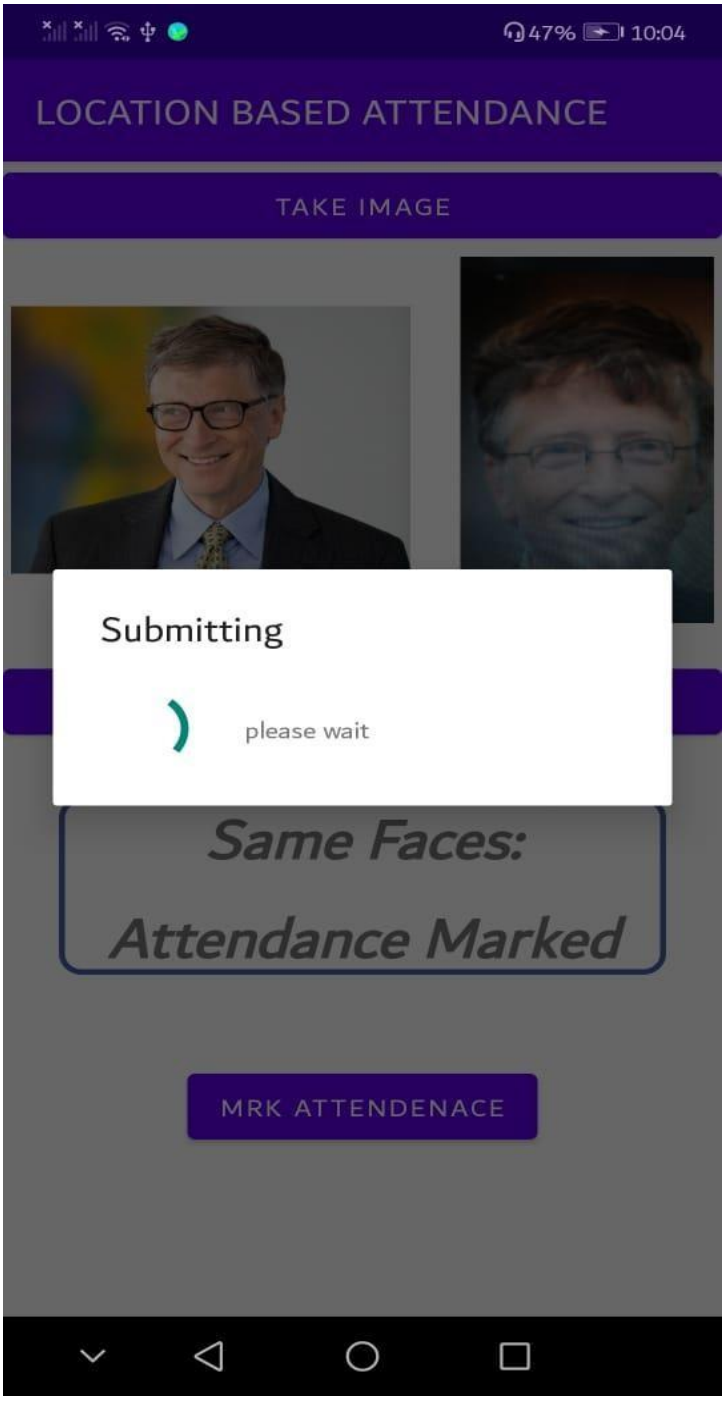


Figure 5 (Employee Face Authentication)

6. Attendance history page

In this screen, user can select to and from date to view the attendance history between these dates.

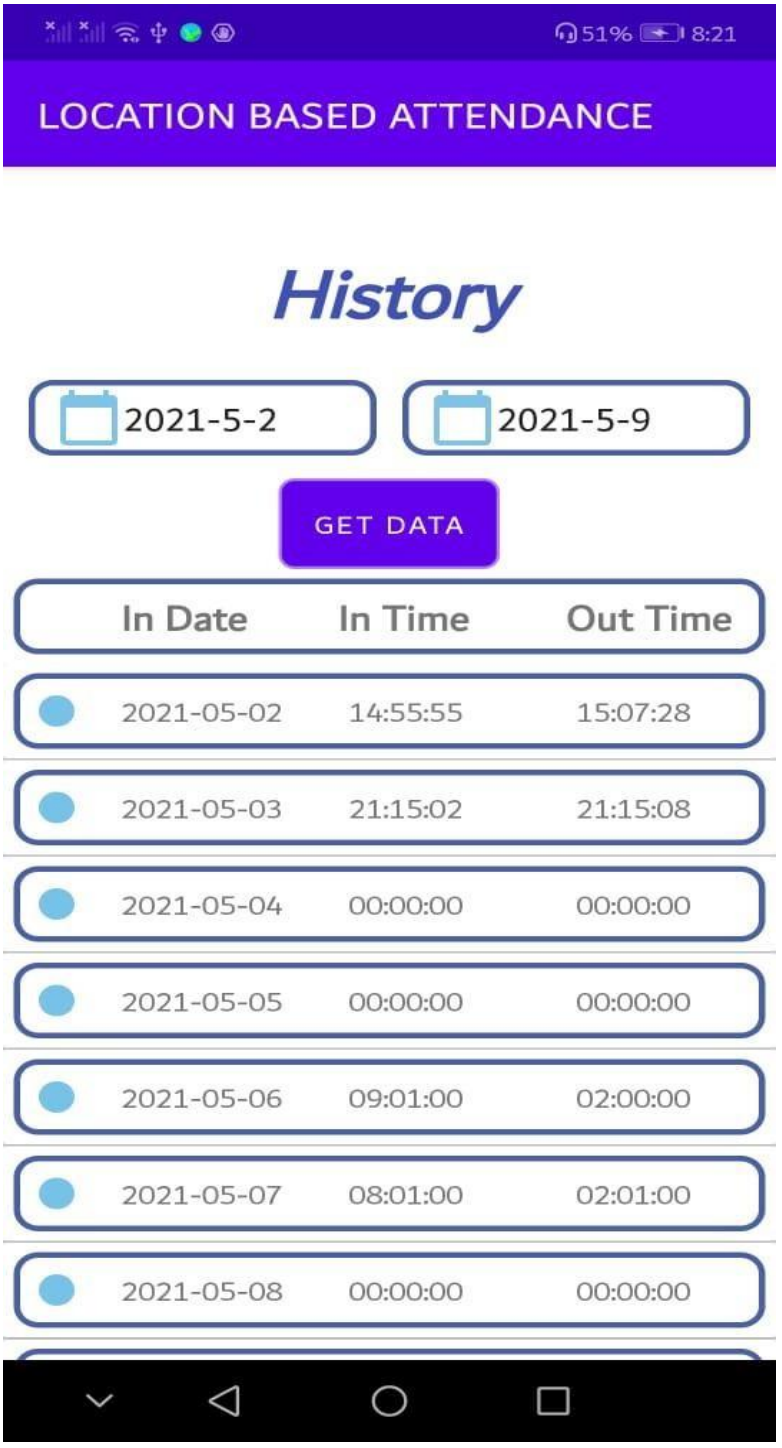


Figure 6 (Attendance History Page)

7. Leaves Page

In this screen employee can see his previous leaves along with the status of those application i.e. either completed or pending or rejected.

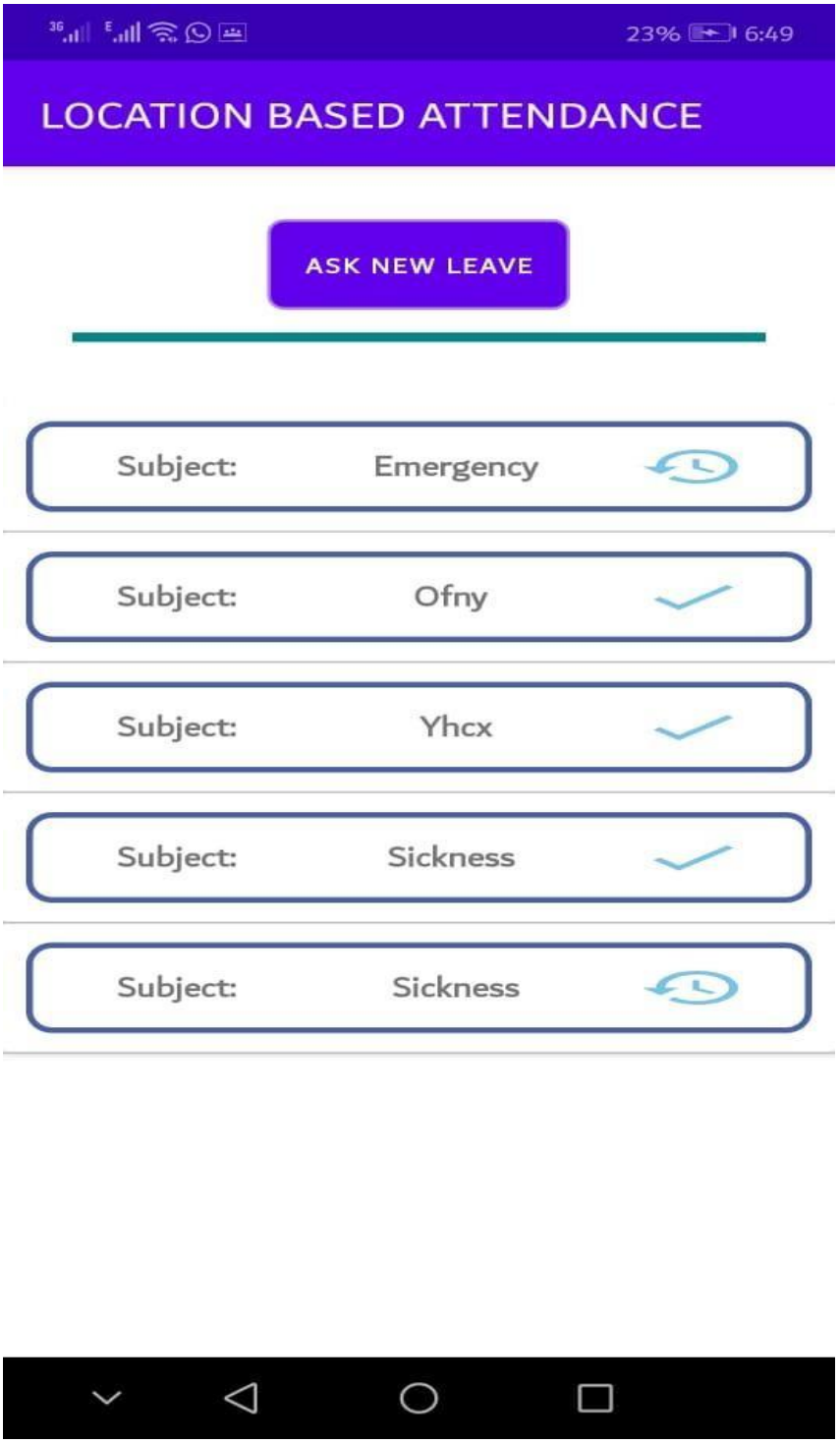


Figure 7 (Leaves Page)

8. Ask for a Leave Interface

The employee fill the required fields and send the leave application to admin.

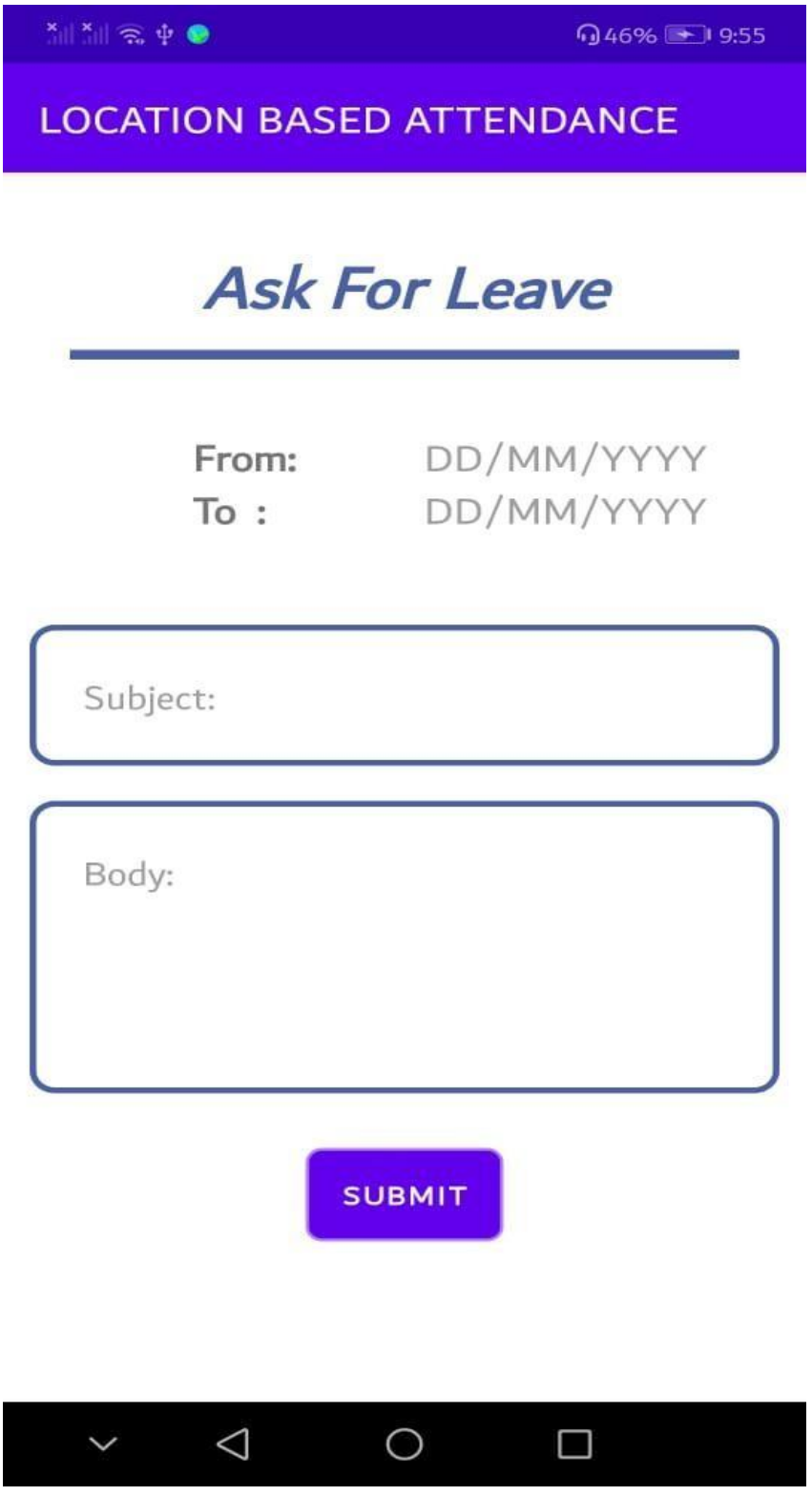


Figure 8 (Ask for a leave interface)

9. Query Page

In this screen employee can see his previous queries along with the status of those application i.e. either completed or pending or rejected.

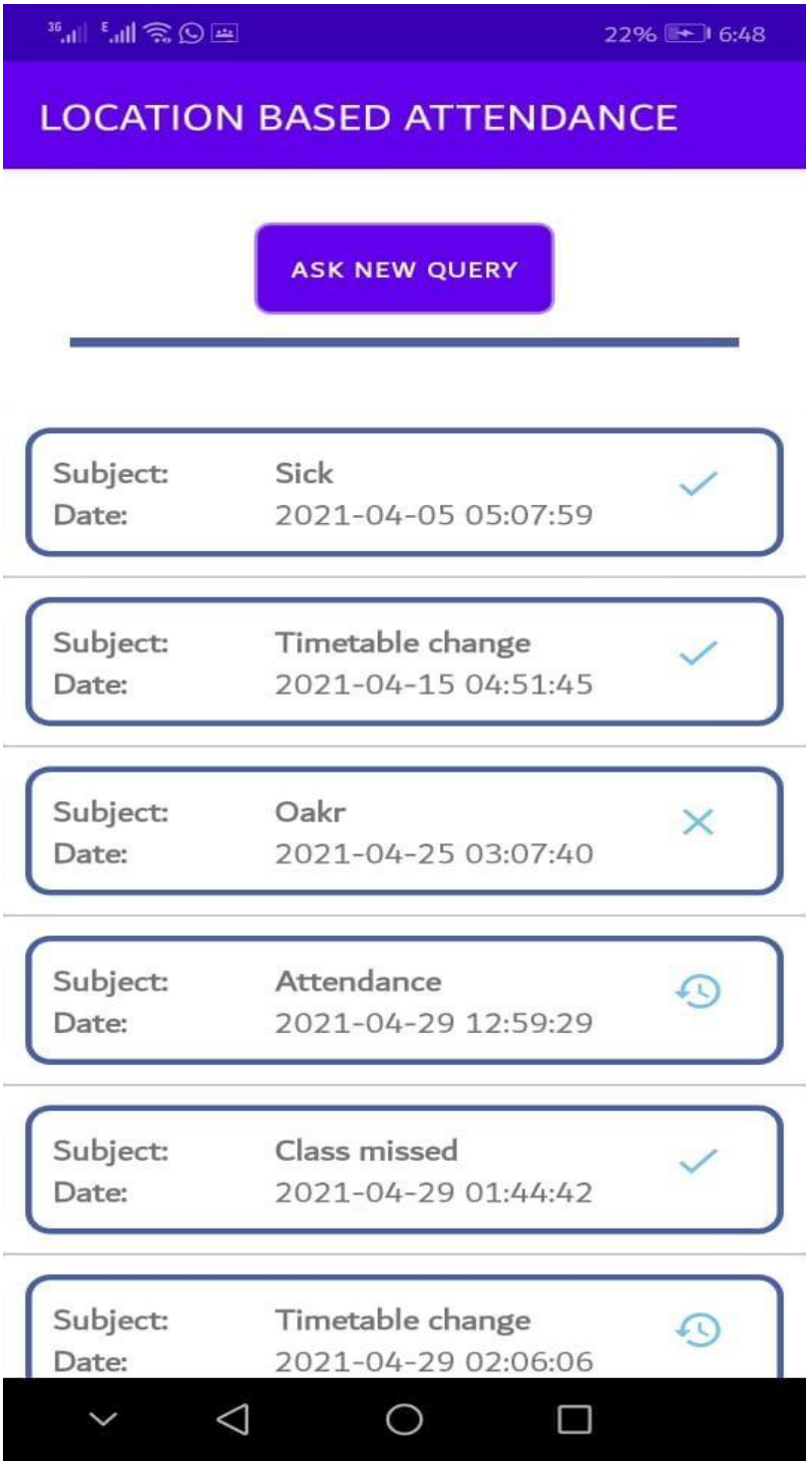


Figure 9 (Query Page

10. Ask a Query interface

The employee fill the required fields and send the query to admin.

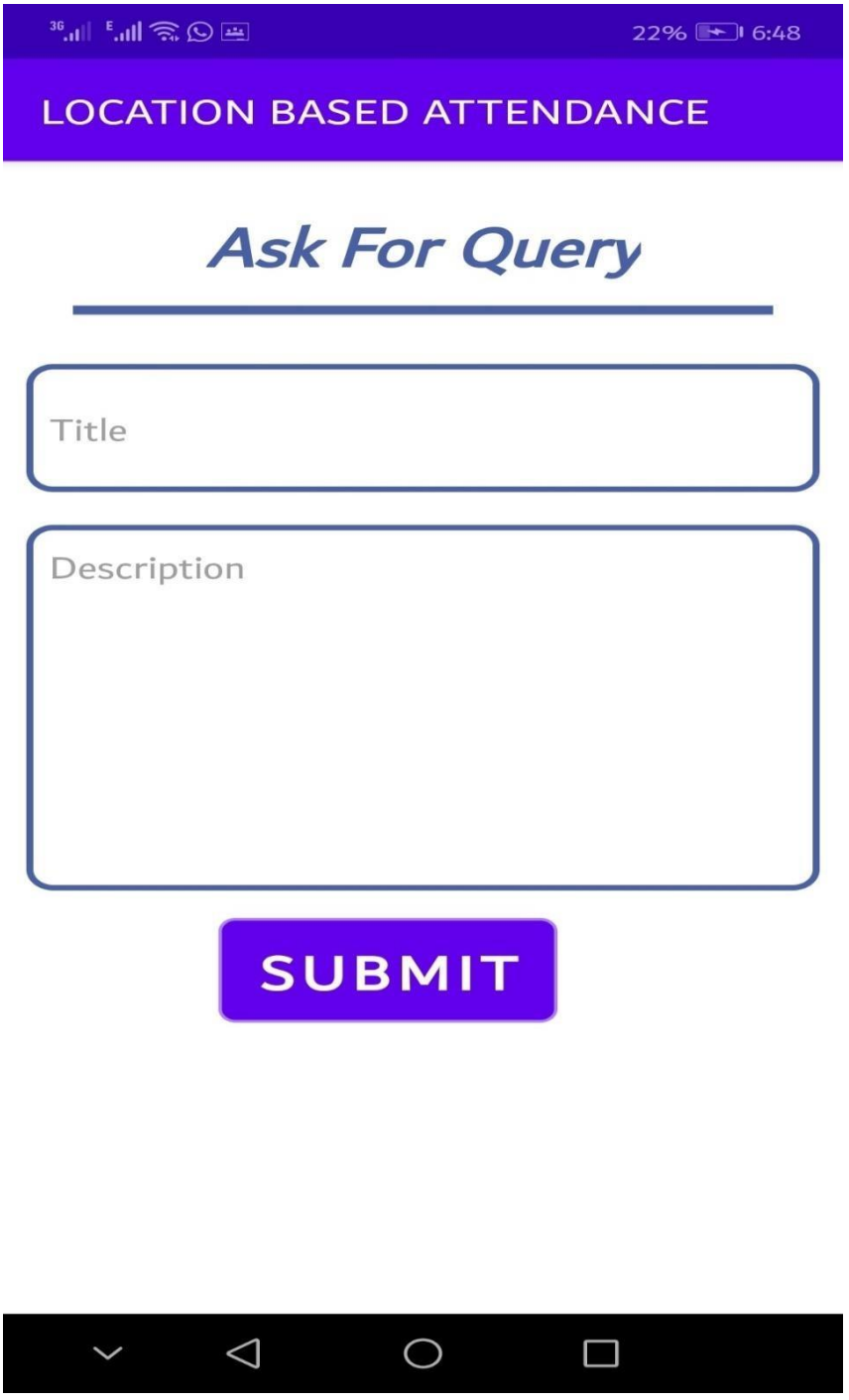


Figure 10 (Ask a query Interface

11. View Timetable

Employee select a specific day and the classes employee have on that day will be displayed with timings.

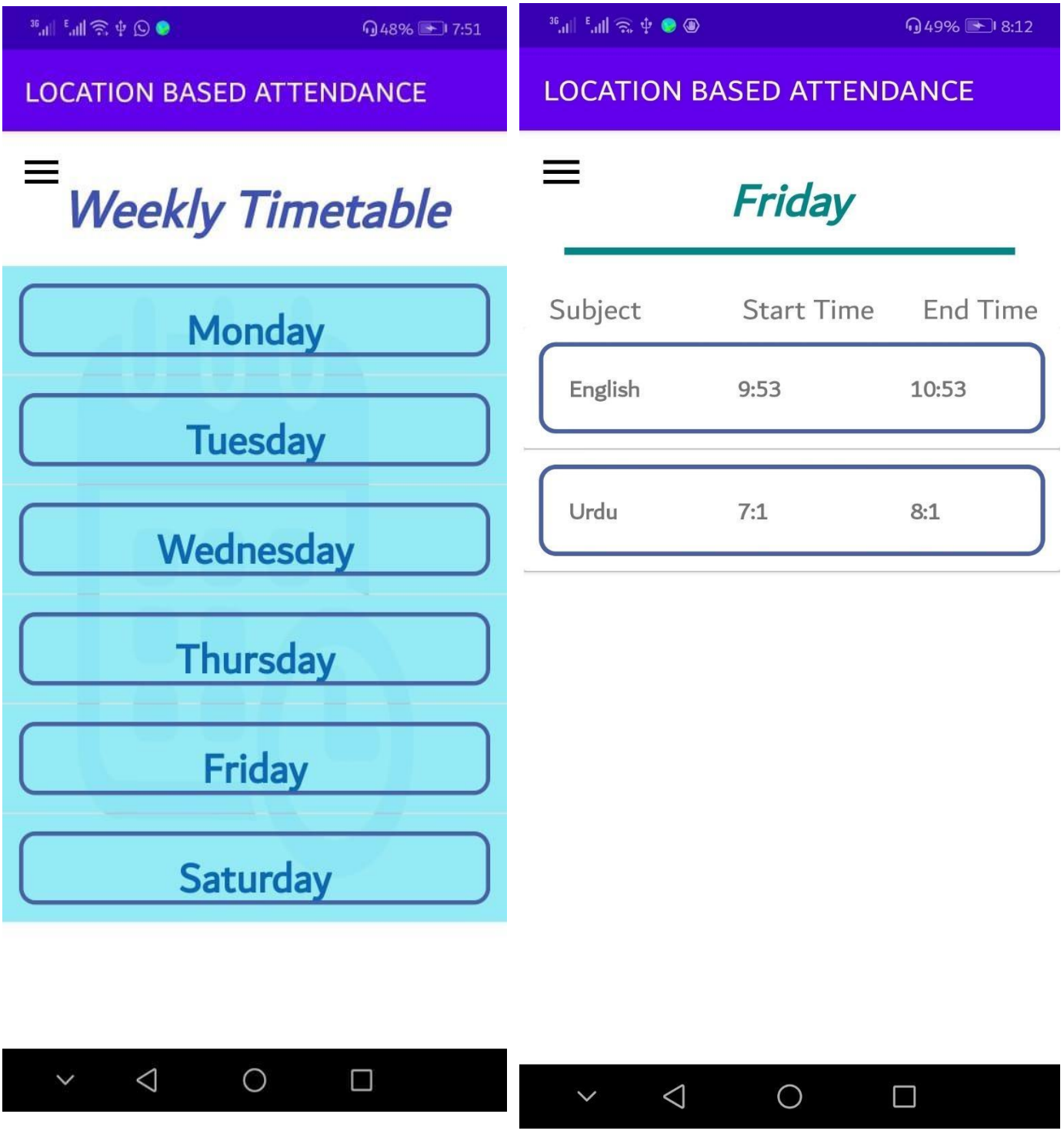


Figure 11 (View Timetable)

12. Navigation Drawer

Navigation drawer at employees side

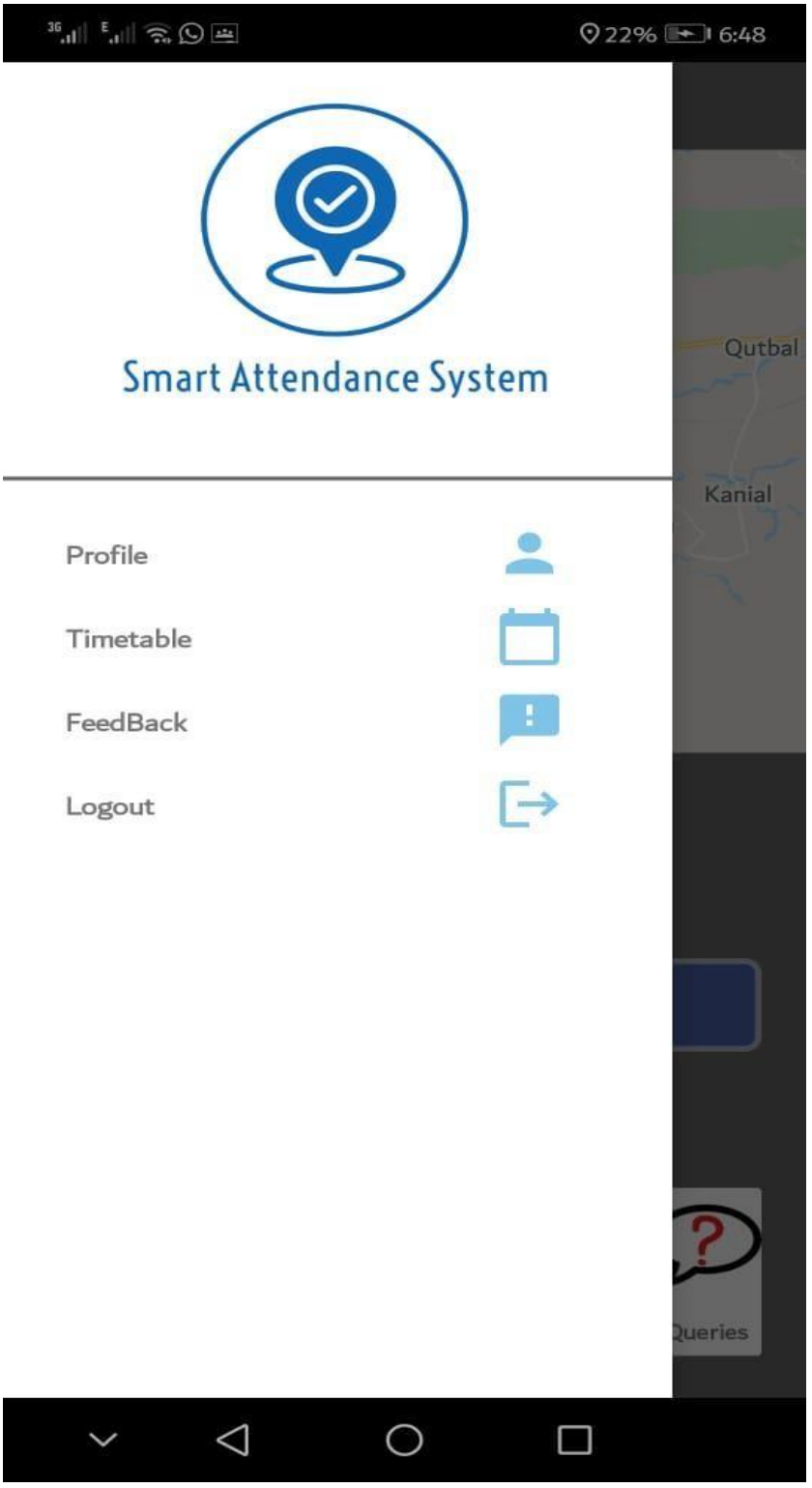


Figure 12 (Navigation Drawer)

13. Logout

User can easily logout.

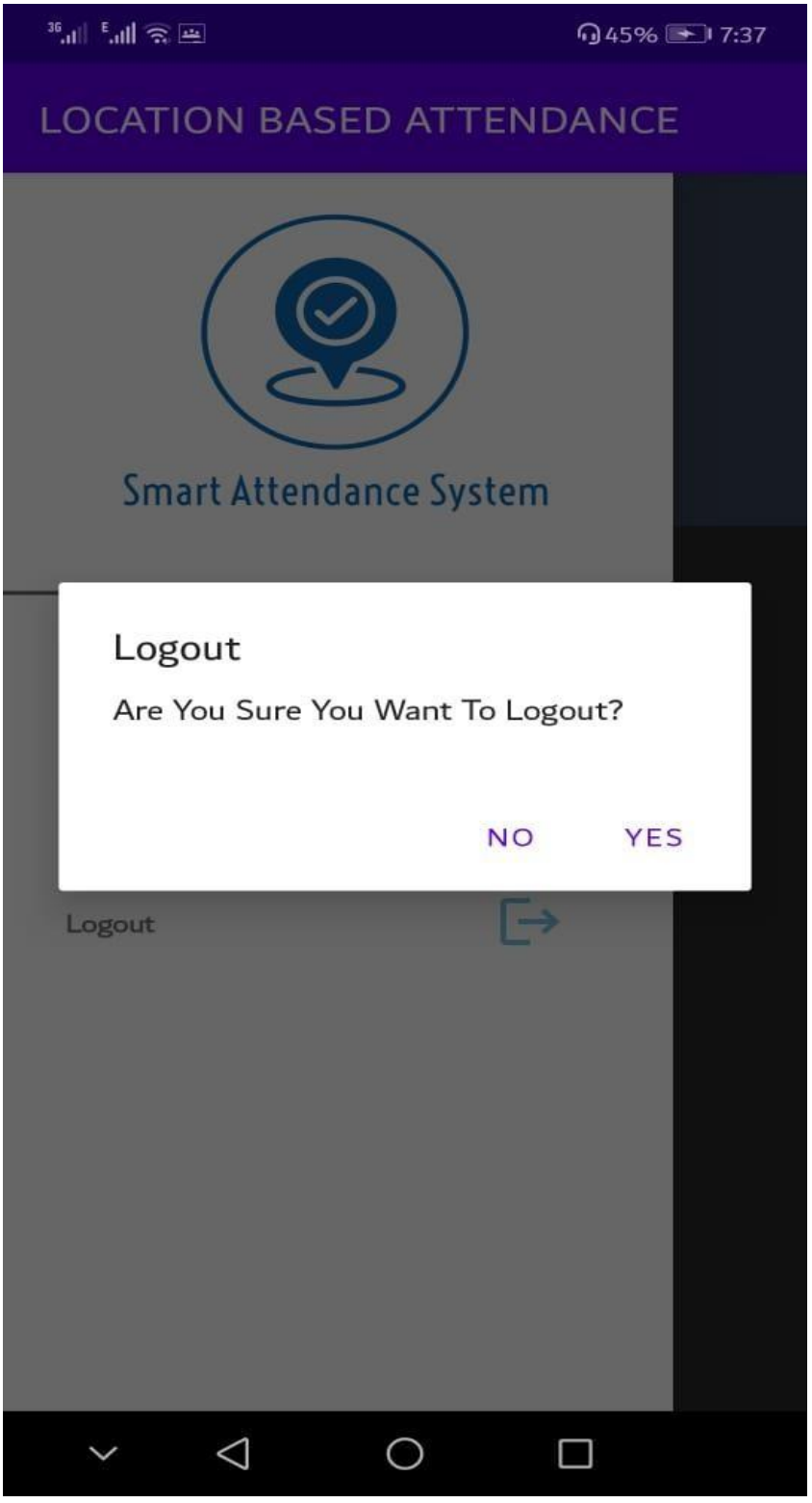


Figure 13 (Logout)

14. Manage Employees

Admin can add/view and update employees.

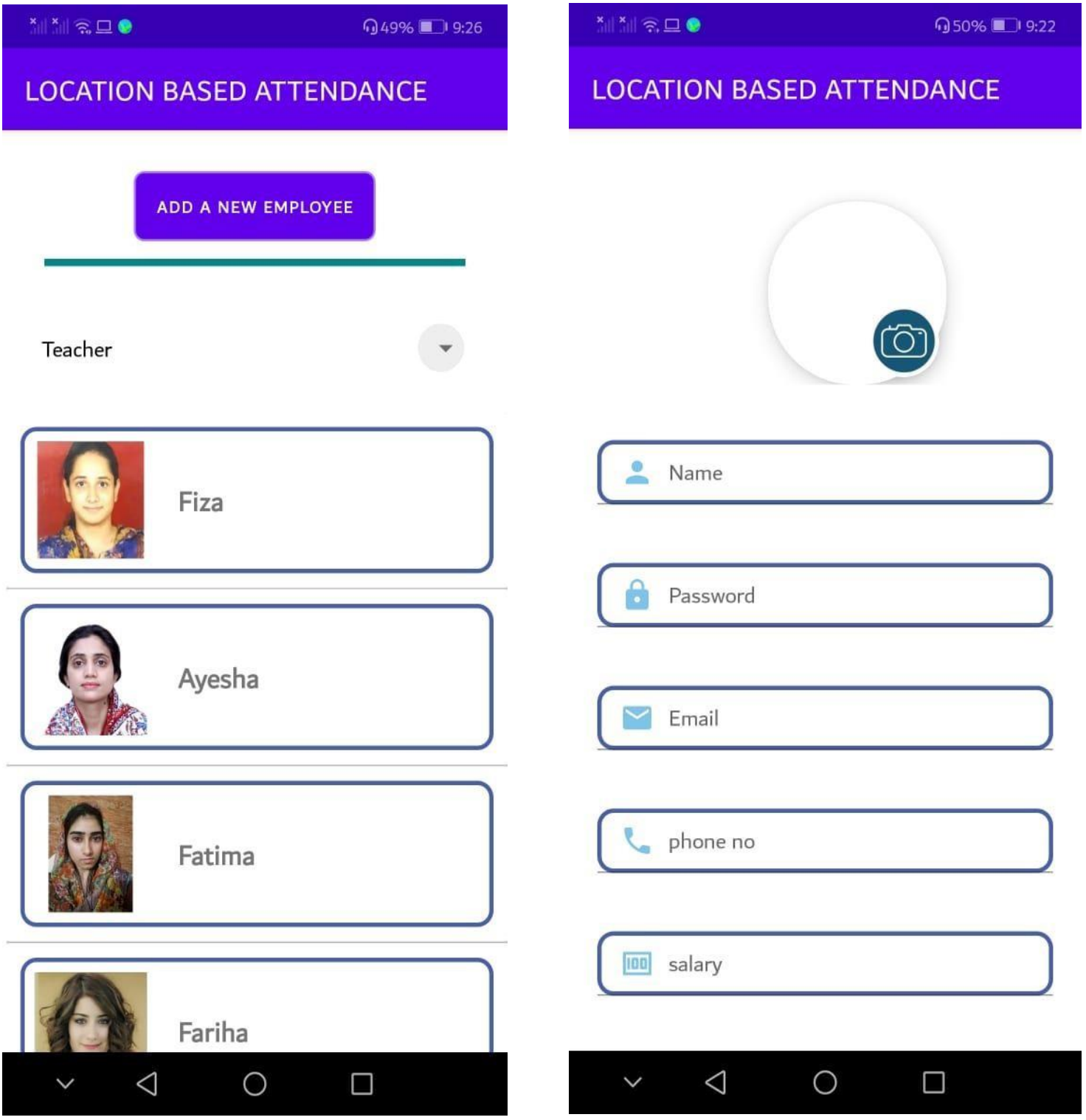


Figure 14 (Manage Employees)

15. Manage Queries

Admin is shown the list of queries.

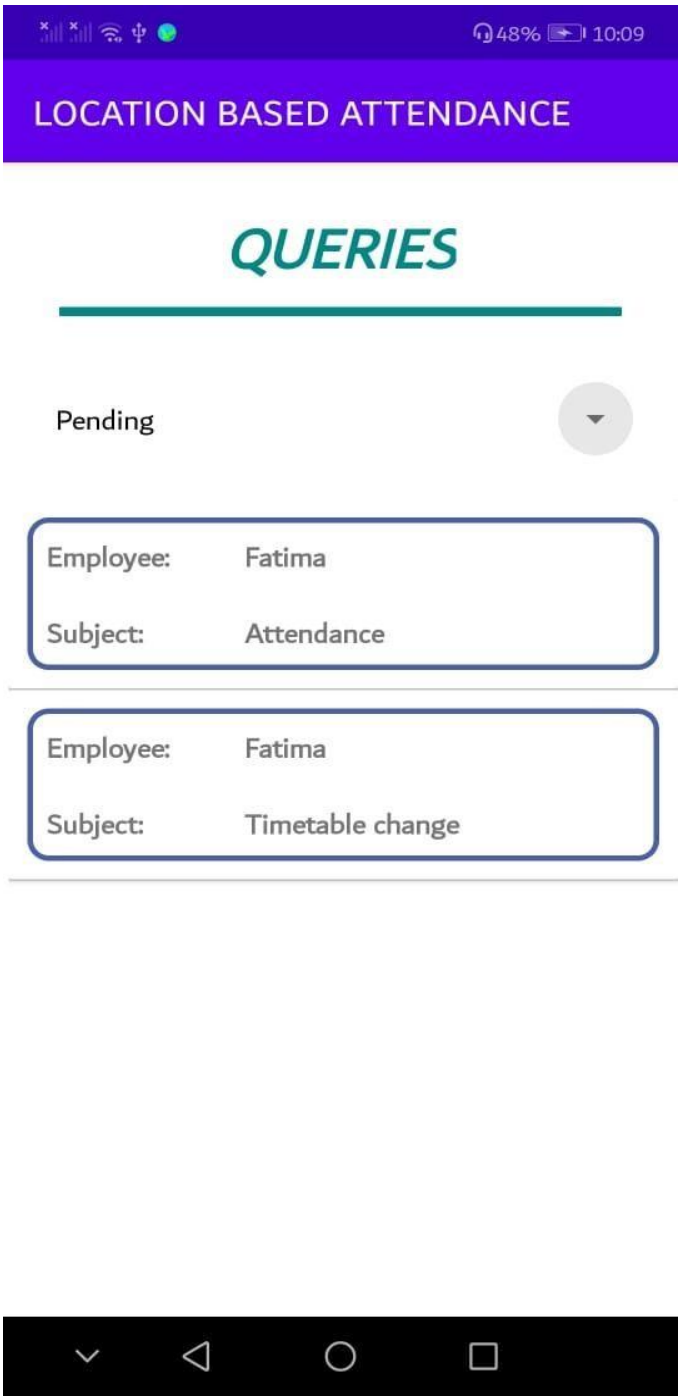


Figure 15 (Manage Queries)

16. Manage Leaves

Admin can view and add response to leaves sent by employees.

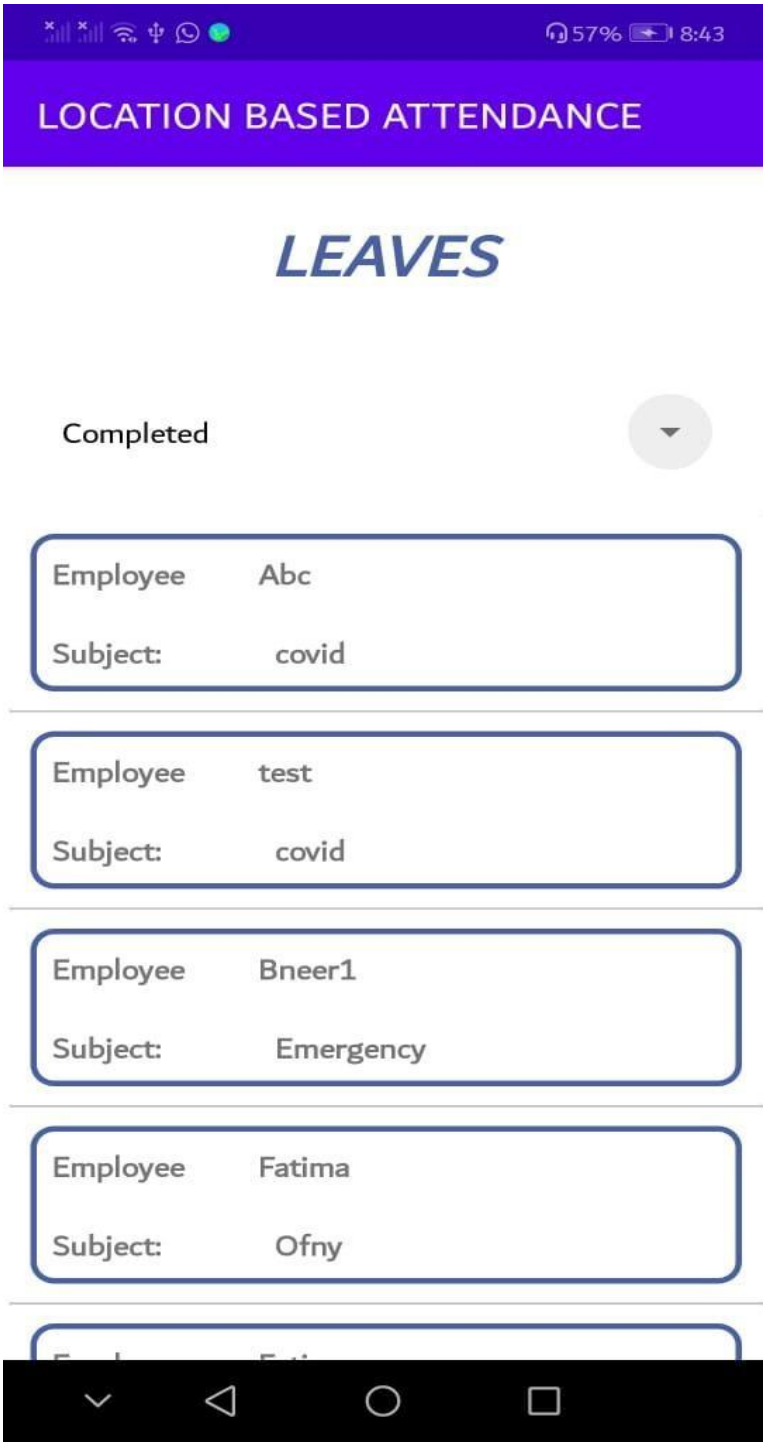


Figure 16 (Manage Leaves)

17. Manage Timetable

Admin can view and add course and can update the existing timetable of employee

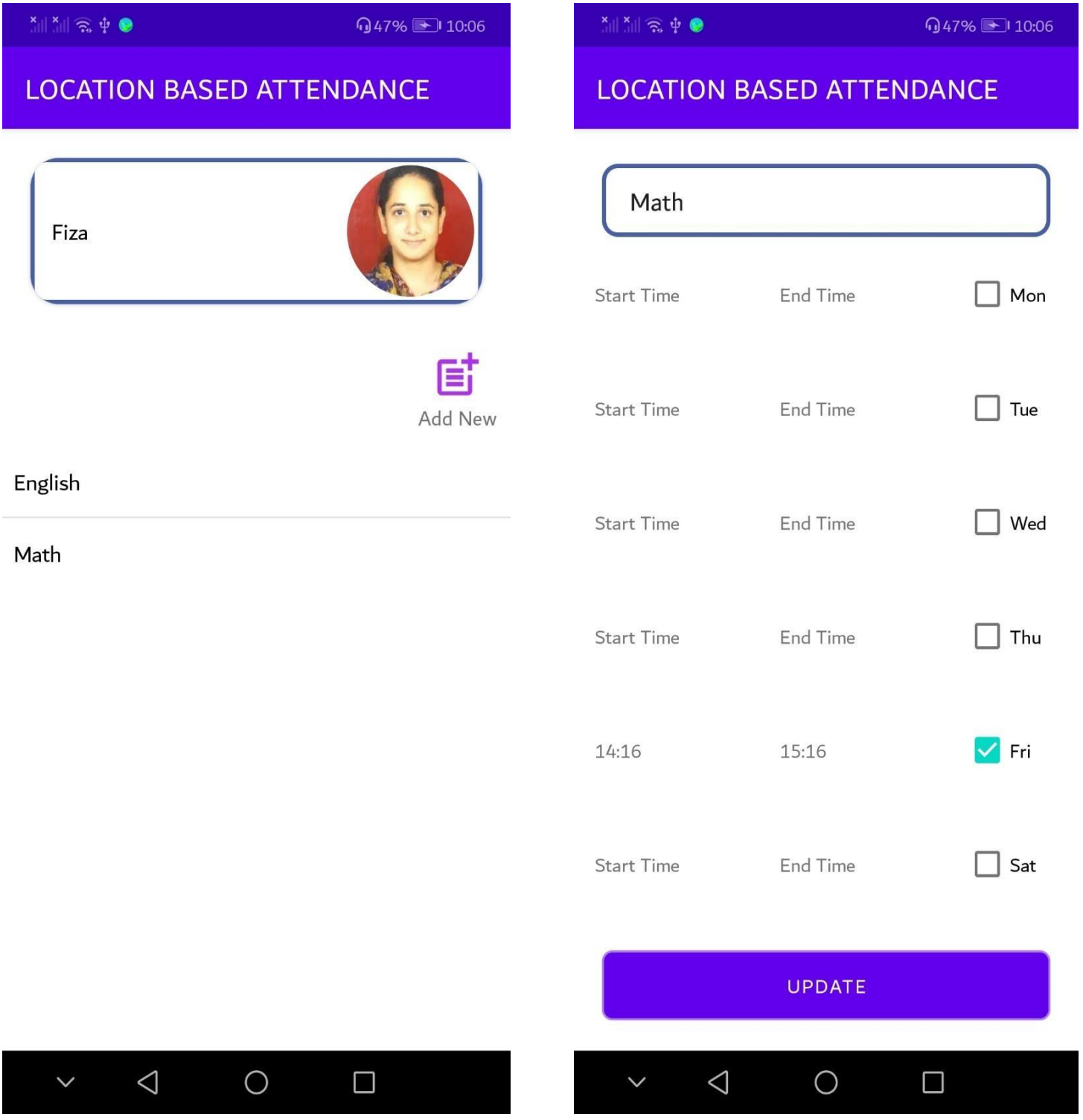


Figure 17 (Manage Timetable)

18. Reports

User will be able to pay using Jazz cash after booking place and package request. User must have to enter valid credentials to send payment and reserve bookings.

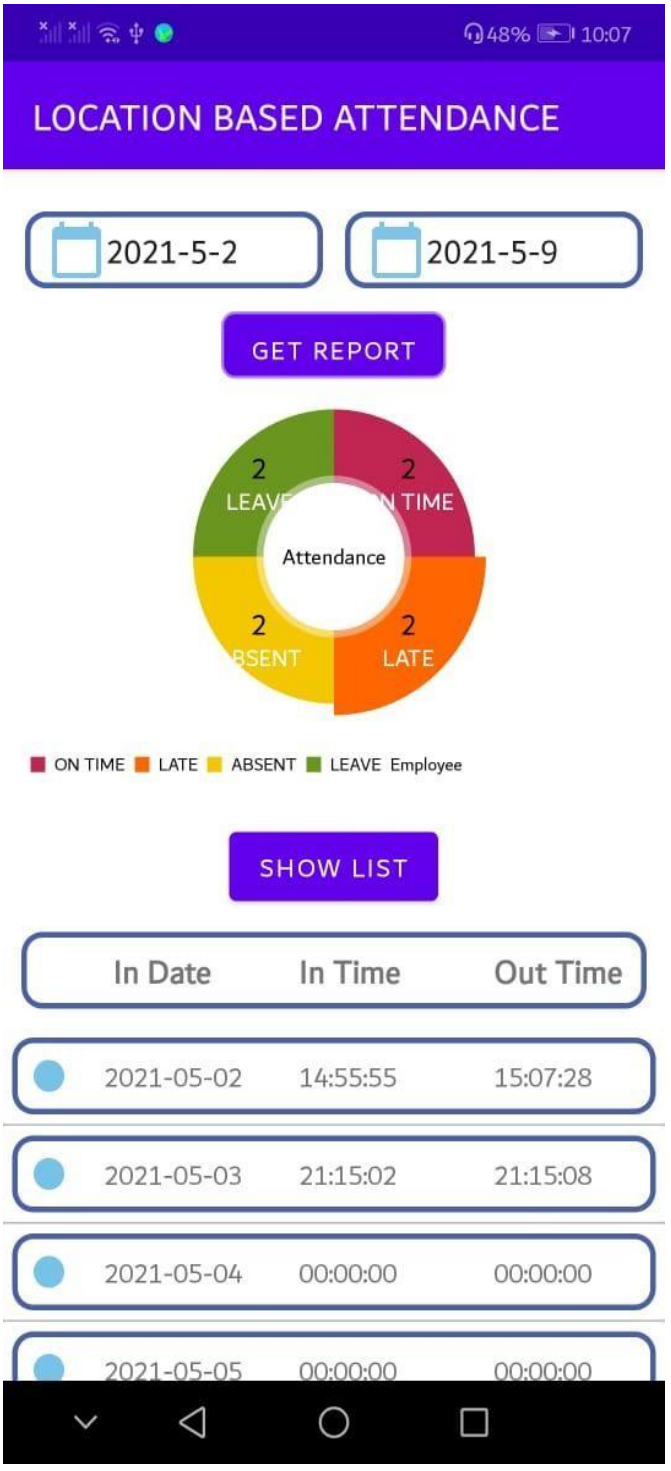


Figure 18 (Reports)

Appendix B

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