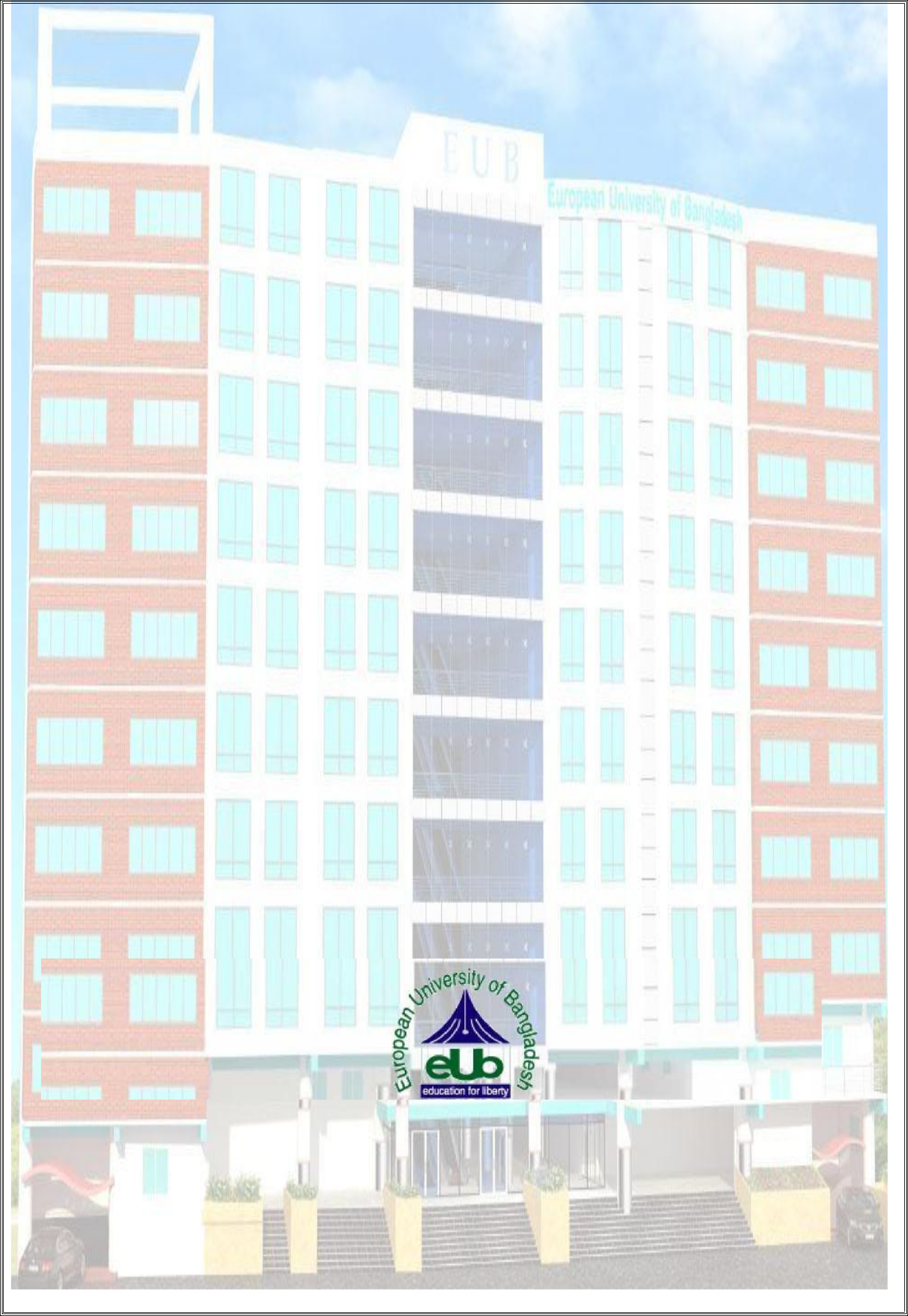
**Project Report**

**On**

**“EUB-APGT”**

**Submitted By**

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**Student Name: Farid Hossain**ID: 180222047

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**Supervised by**

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Sr. Lecturer

Department of Computer Science and Engineering

**A project submitted in partial fulfillment of the requirements for the degree of Bachelor of Science in Computer Science and Engineering.**

**Department of Computer Science and Engineering**

**European University of Bangladesh**

2/4, Gabtoli, Mirpur, Dhaka-1216

January 2022

**CANDIDATES DECLARATION**

This is to certify that the work presented in this project, titled, “**EUB-APGT**”, has been done by us under the supervision of Shraboni Afroz.

We also declare that neither this project nor any part of this project has been submitted anywhere else for the award of any degree, diploma or other qualifications.

Signature

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Sourav Kundu  
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Md Abid Hasan  
ID: 180222048

**CERTIFICATE OF APPROVAL**

This project titled, **“EUB-APGT”**, submitted by the group as mentioned in the candidates’ declaration page has been accepted as satisfactory in partial fulfillment of the requirements for the degree B.Sc. in Computer Science and Engineering in 25thOctober 2021.

**Signature of Supervisor**

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**Shraboni Afroz**

**Sr. Lecturer**

**Department of Computer Science and Engineering**

**European University of Bangladesh, Dhaka, Bangladesh.**

**Signature of Chairman**

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**Md. Obaidur Rahman**

**Associate Professor and Chairman**

**Department of Computer Science and Engineering**

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**Bangladesh**

**ACKNOWLEDGEMENT**

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**ABSTRACT**

The main theme of this project is tracking the employee using an android device and calculating daily payroll for the working hours he worked. From olden days there are many methods for evaluating the attendance, for example, paper and pen method in this method either the supervisor will take the attendance or under his control, the workers used to sing with their names, but this process had many backlogs and many proxies can be generated. Later on, the technology developed to great extent in the similar way the way of taking attendance also developed a lot for example in current days they are using RFID chips, biometric devices, etc. but each of the methods is having a same or different backlogs to eradicate the disadvantages and for accurate result we are introducing attendance method using GPS tracking. Now a day’s people or any organization wants their work to be completed fast without taking any time one of the examples payroll allotments so we also include a module for paying payroll according to the number of days that they worked. This project contains two phases one is the employee phase i.e., android app for field workers for tracking their position in real time and there is an admin panel where the HR and admin will monitor the employees and for security purpose.

**Chapter 1**

**Introduction**

* 1. **Introduction**

Now a day, monitoring, tracking employees had become a major task for the private and for public institutions and companies. From olden days there are many methods for evaluating the attendance, one of the oldest one is pen and paper system there are many drawbacks and disadvantages mainly eradicating the attendance proxy is the main theme of the project to eradicate the proxy attendance and taking attendance in that way takes more time. Day by day there are many changes in rapid technology as the technology changes the way and systems of taking attendance also gradually changed some of the processes are using RFID sensors, electronic tags, biometric devices like eye scanning, face scanning. All these processes have different issues to eradicate all the issues and disadvantages we introduced software called automated payroll with GPS tracking. It will track the employee geographical coordinates in real time and help to calculate the payment detail.

**1.2 Motivation**

Following are some of the motivations for EUB-APGT:

1. Automated payroll.

2. First well organized online payroll app for our country.

3. No need to check employee’s physical activities.

**1.3 Objective**

1. Helps organizations prepare daily employee attendance system

2. Monitoring remote working employees in real time

3. Get live employee’s working location through app

4. Calculating daily remuneration for employees according to their work hour

5. Controlling employees by admin (Remove employee, online payment)

**1.4 Expected Outcome**

Through the application, organizations will get remote employee’s current location by GPS tracker system and pay daily salary counting work hour.

**Chapter 2**

**Background**

**2.1 Introduction**

Employee security and authentication are one among the factors in the current system. Every employee is secured based on their unique user employee identification number. This unique employee identification number is the number which is given in the office to secure their account. The employee identification number along with other information such as current location coordinates saved in the employee’s Android device.

**2.2 Related Works**

EUB-APGT is an android application which is implemented to provide service in GPS tracking and online payroll sector. In Bangladesh, some of the examples of similar applications of Weather Hub are: AC Payroll, Ultimatix Payroll etc.

**2.3 Comparative Studies**

Usually, an application is made to fulfill a certain objective. Most comparison able applications like Kids Solutions are described below:

|  |  |  |
| --- | --- | --- |
| Name | Their Work Principle | Our Work Principle |
| AC Payroll | AC Paytoll is an android application performing employee attendance and salary management system. They did not provide live location tracking. | Our system will provide both employee attendance, hourly salary and live employee location on Map using GPS tracker. |
| Ultimatix Payroll | Ultimatix Paytoll is an android application having same procedure to manage employee salary and check-in, check-out time. They also did not provide live location tracking. | Our system will provide both employee attendance, hourly salary and live employee location on Map using GPS tracker. |

**2.4 Challenges**

Every task has challenges. Some of the main challenges Weather Hub are:

1. Lack of internet connection might be our main challenge as Weather Hub is an online application.

2. We should build our application properly and make sure it works smoothly and also user friendly.

**Chapter 3**

**Requirement Specification**

**3.1 Requirement Collection Analysis**

Admin is the one with the highest power. He can remove and pay remuneration each employee. An employee can view company timeline and check-in, check-out.

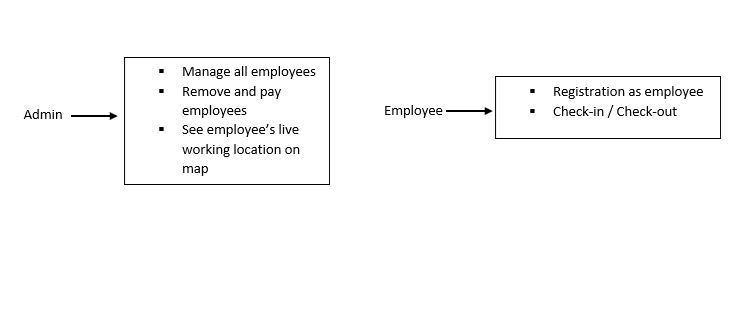


Figure 3.1: Requirement Collection and Analysis.

**3.2 Use Case Modeling and Description**

A use-case model is a model of how different types of users interact with the system to solve a problem.

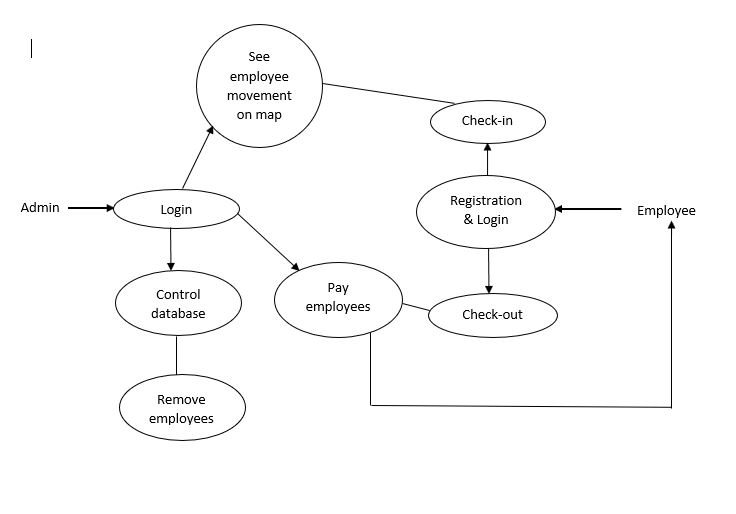


Figure 3.2: Use Case Modeling and Description

**3.3 Logical Data Model**

API will be called and the response will be sent to the application which is shown in Logical Data Model figure and it will be the current time responsible. Data will transfer from database to android application.

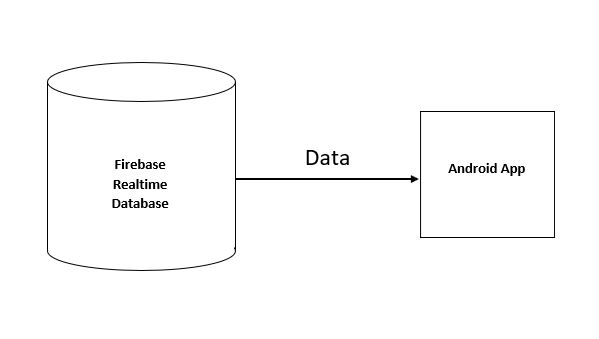


Figure 3.3: Logical Data Model

**3.4 Design Requirements**

Design requirements are very important for mobile application. It attracts the user to use. So, to complete the design, we must have mobile application design skills. For this, we have to know the various types of computer programming languages and design tools like AdobeXd. Market analysis can be a good trick for the design. We have to give proper attention to design the database so that it works appropriately and easily.

**CHAPTER 4**

**Design Specification**

**4.1 Front-End Design**

Front-End is the place where the user interacts. So, considering this factor, we have created a user friendly and smooth design. Every user can easily use this application.

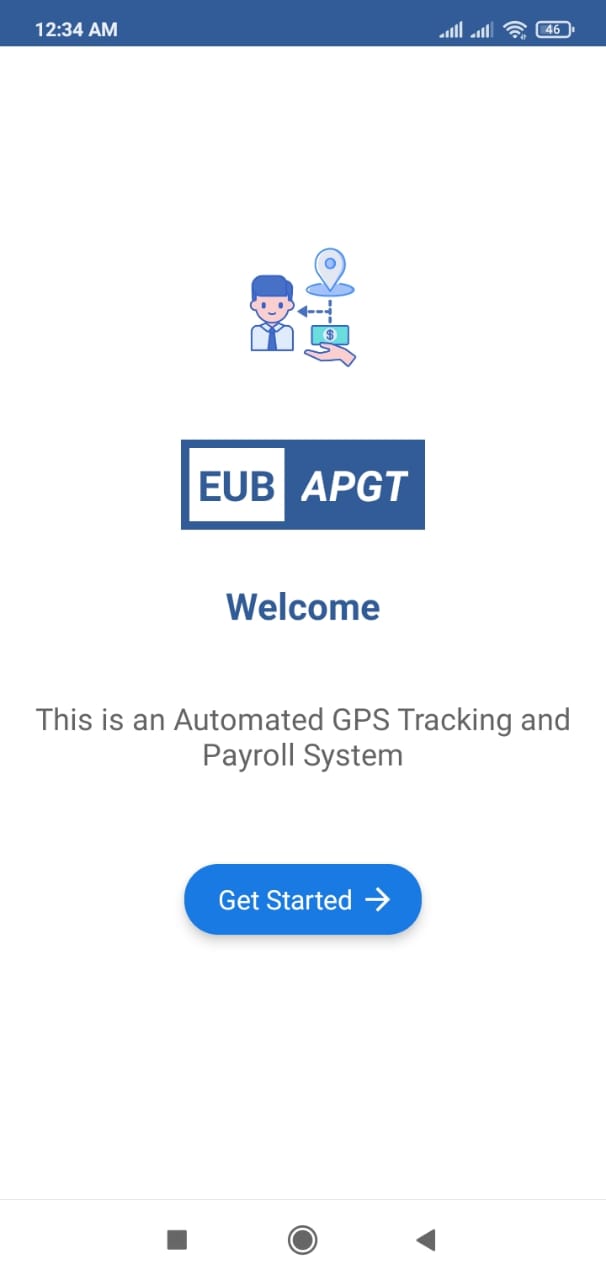


Figure 4.1: Front-End Design.

**4.2 Back-End Design**

Basically, in software development back-end means rendering server side. Usually, the backend programming consists of three parts: application, server and database. For backend database we have used Firebase Realtime Database and other implemented back-end technologies that are Native Android with Java.

**4.3** **Interaction Design and UX**

We have tried to make our project UX design as simple as possible. Because we have researched on the internet and visit various site, used various android applications. Then we made the UX design of our application.

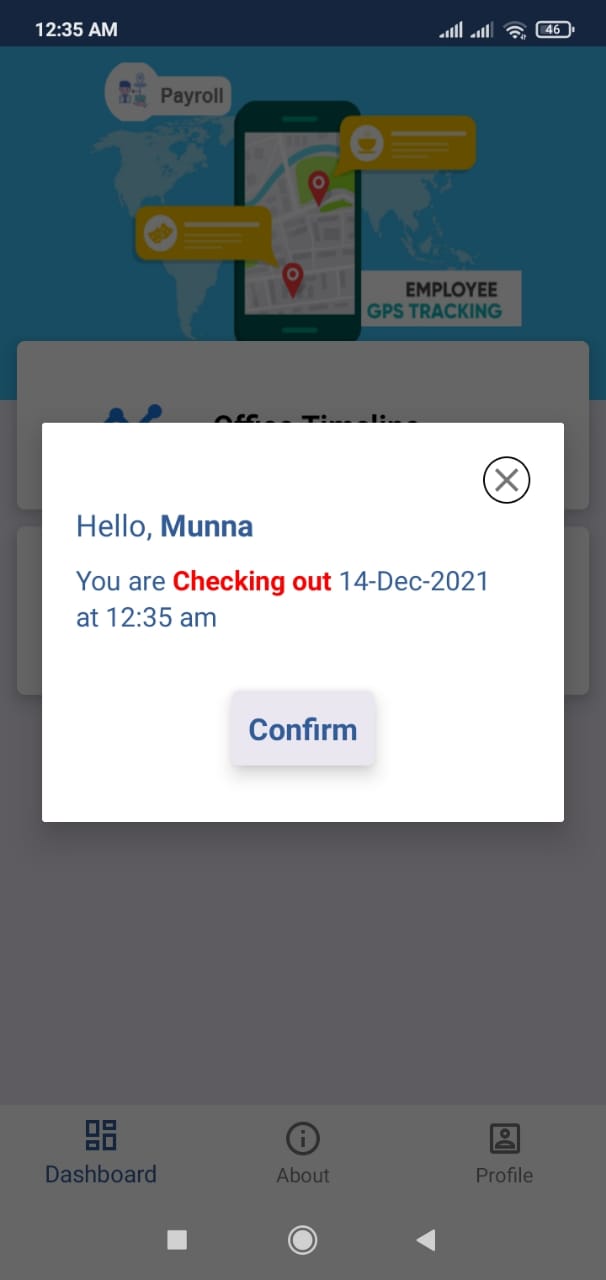


Figure 4.2: Interaction Design and UX

**4.4 Implementation Requirements**

It was our environment & geography related work. So, we had to learn a lot of new technologies and spent a huge time to fulfill all the requirements.

**Chapter 5**

**Implementation and Testing**

**5.1 Implementation of Database**

Implementation of the database was fundamental for this application. In this project, we have used Firebase Auth for user authentication and Firebase Realtime Database for data storage.

**5.2 Implementation of Front-end Design**

Front-end design is very essential because of its visualization to the users. Developing a design for an application, we have to consider user friendly and smooth front end. It is very difficult to make the perfect design that attracts all.

**Welcome Screen**

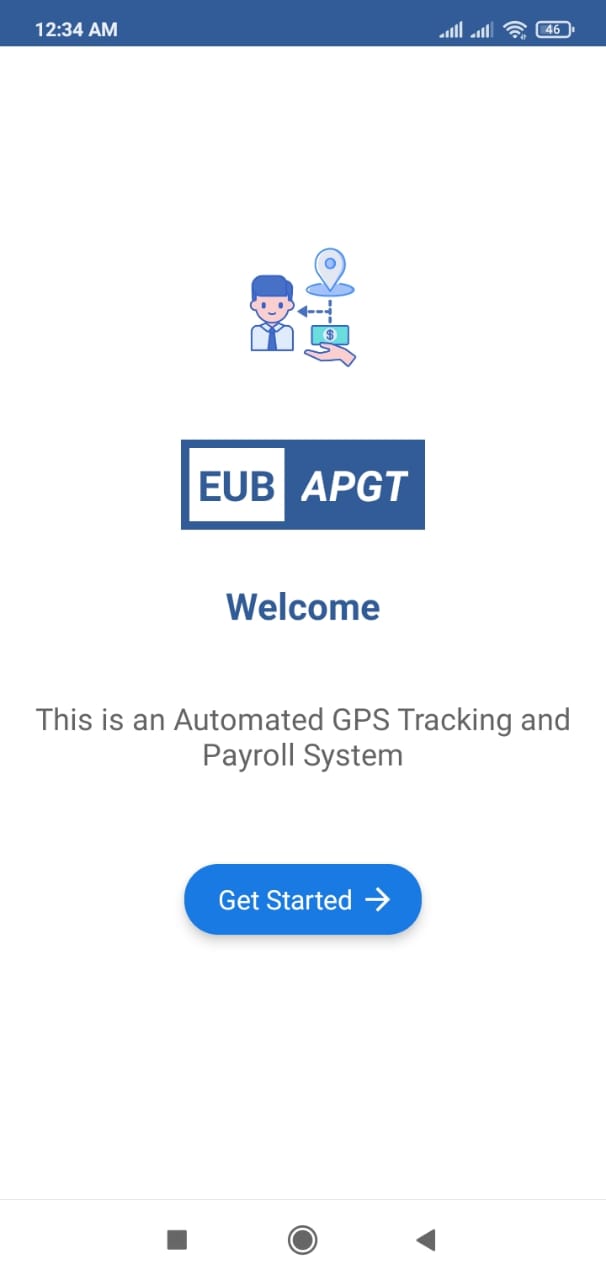


Figure 5.1: Welcome Screen

**Employee Dashboard**

Employee dashboard contains check-in/check-out and office timeline options.

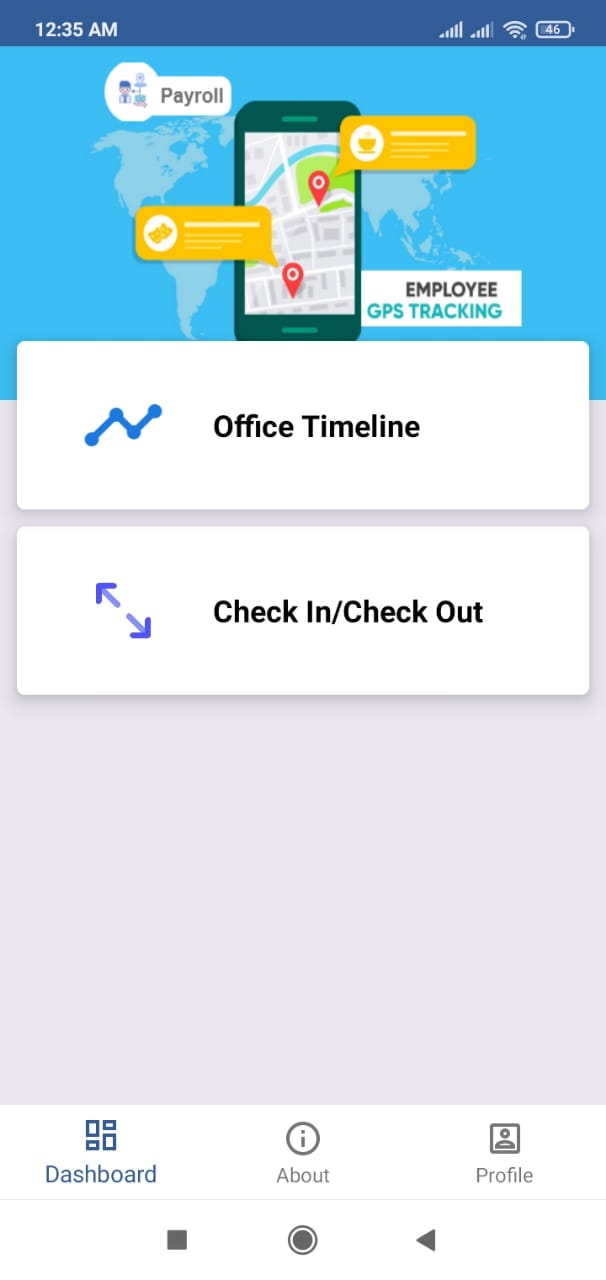


Figure 5.2: Employee Dashboard

**Office Timeline**

User can see work hour, office environment/type, total employees, weekend and other information about company.

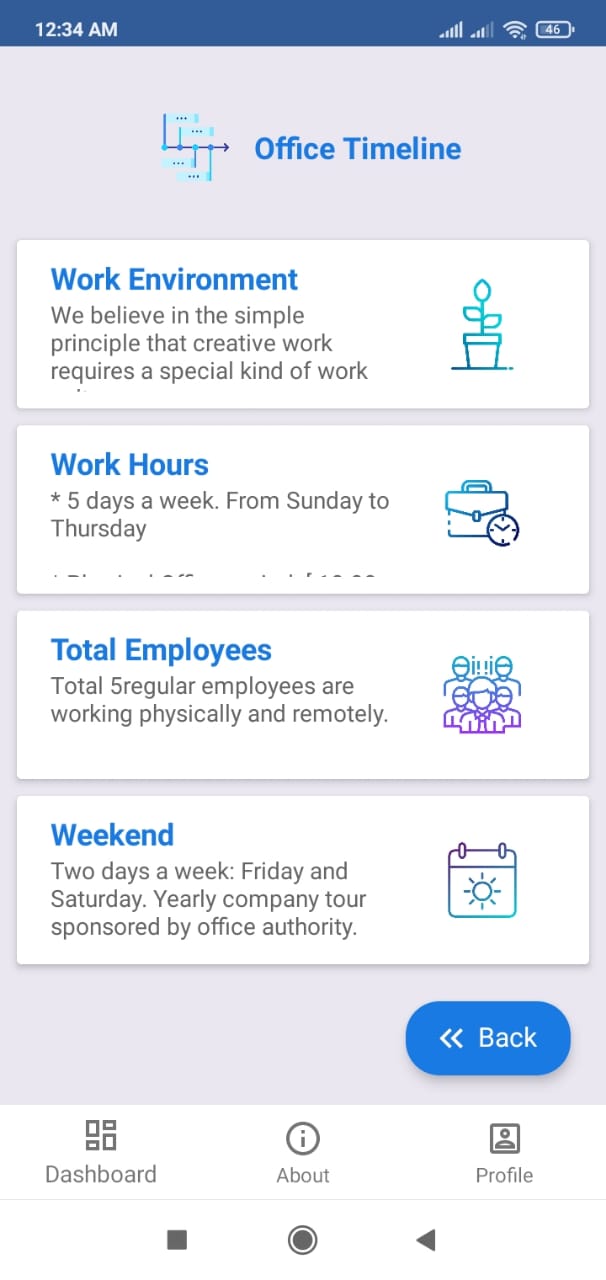


Figure 5.3: Office Timeline.

**Check-In**

Employees can check-in and the system will count the employee’s work hour from his/her check-in time.

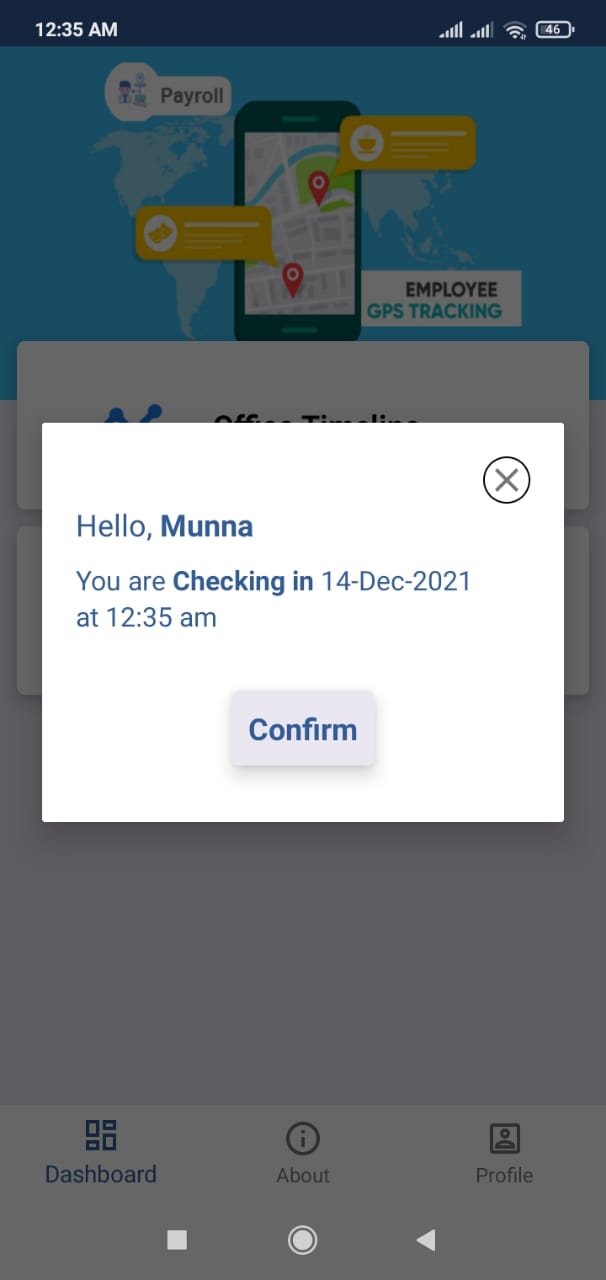


Figure 5.4: Check-in.

**Check-Out**

Employees can check-out any-time after checking in and the system will count the employee’s daily salary according to his/her total work hour.

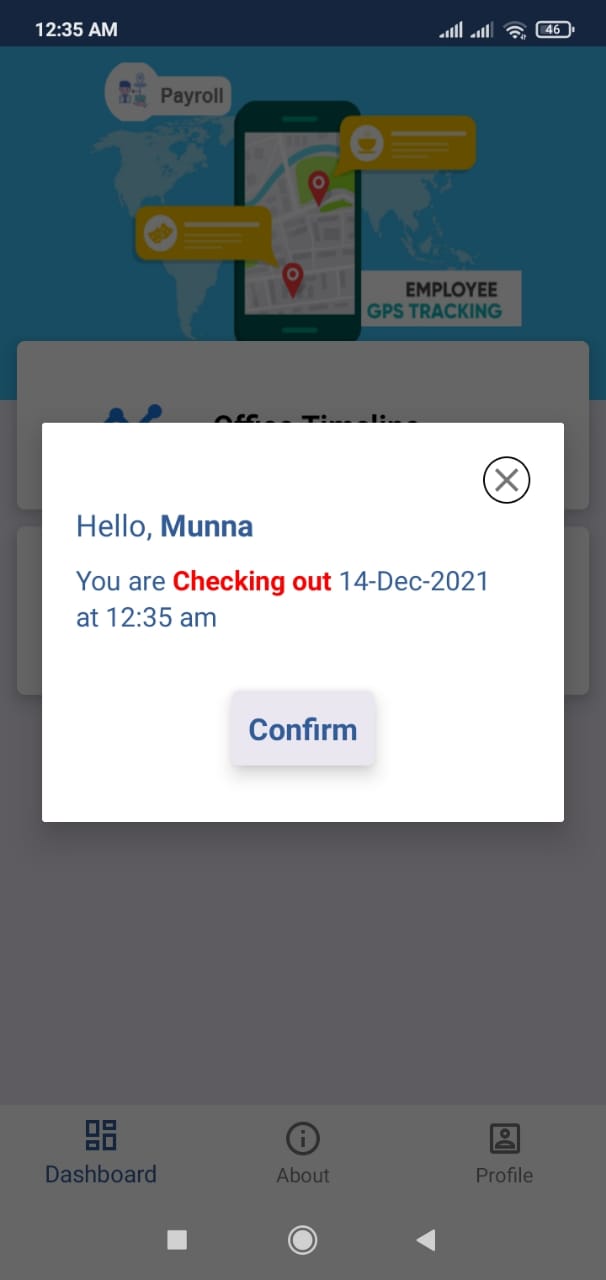


Figure 5.5: Check-out.

**Admin Dashboard**

Admin dashboard contains office timeline, total employees, on field working employees and see their live location on map, payment history.

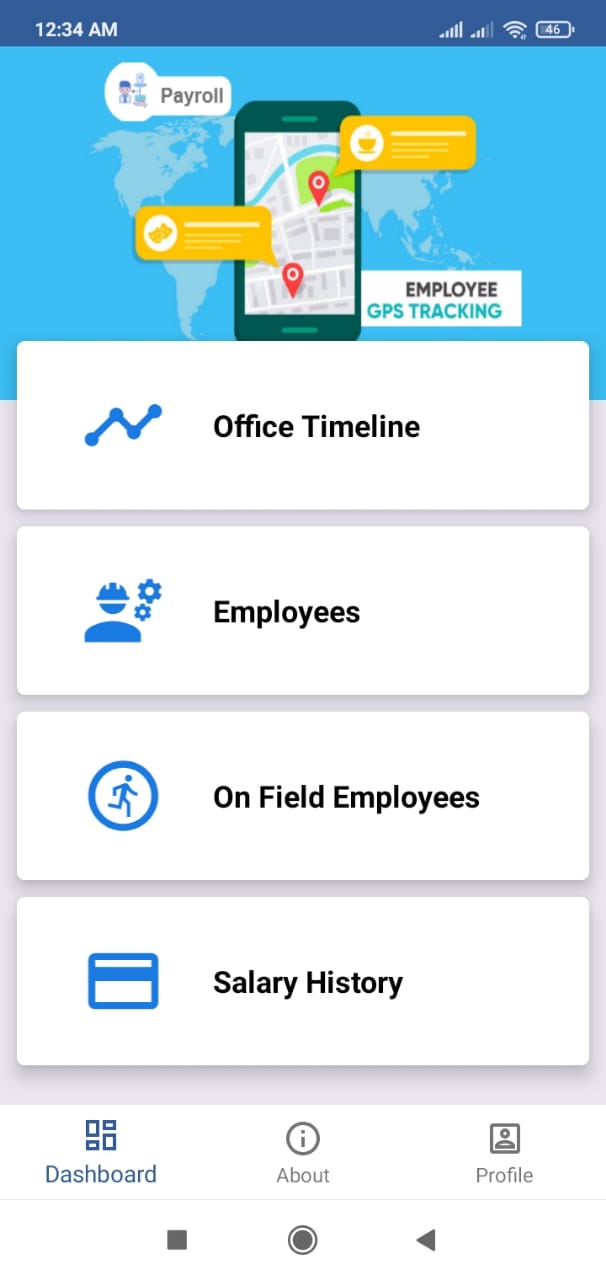


Figure 5.6: Admin Dashboard.

**Total Employee List**

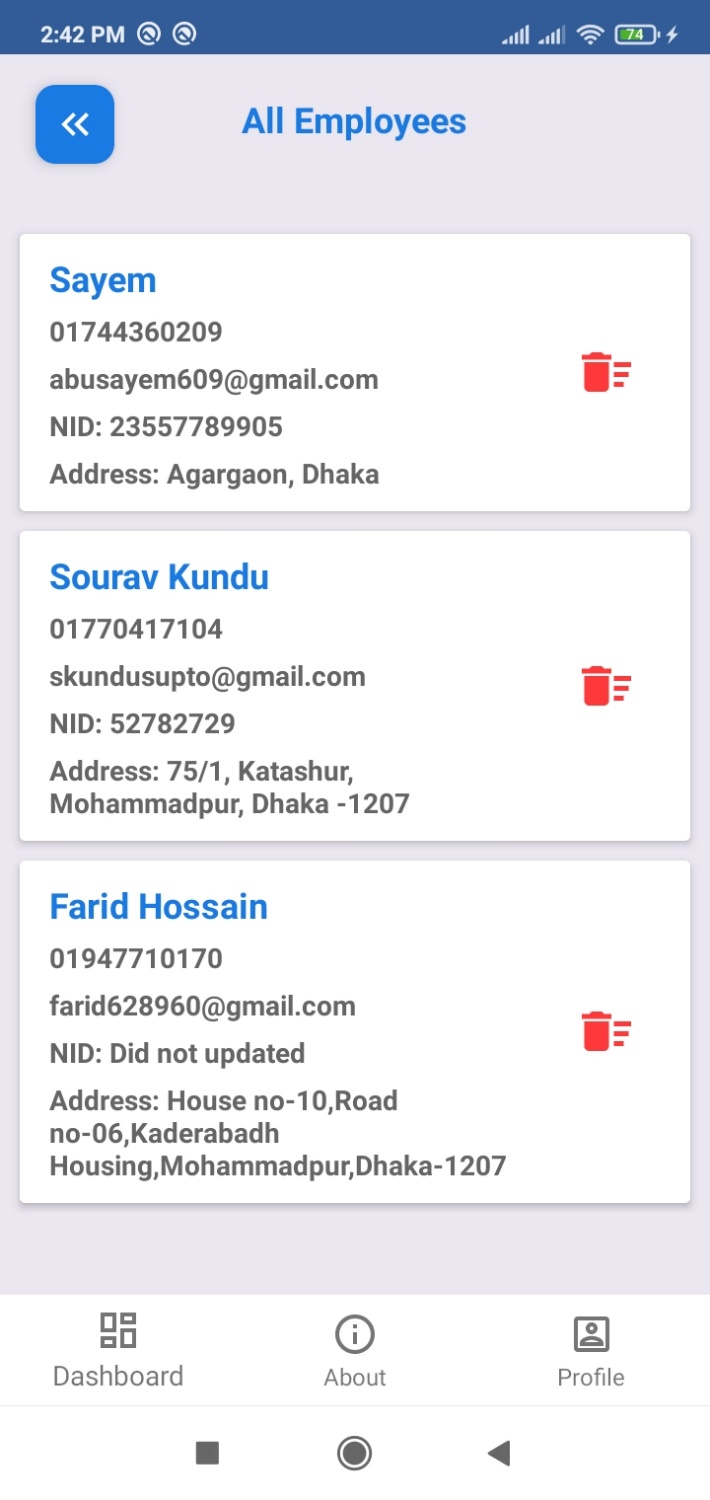


Figure 5.7: Total Employee.

**On Field Employees**

Employee list those are working now.

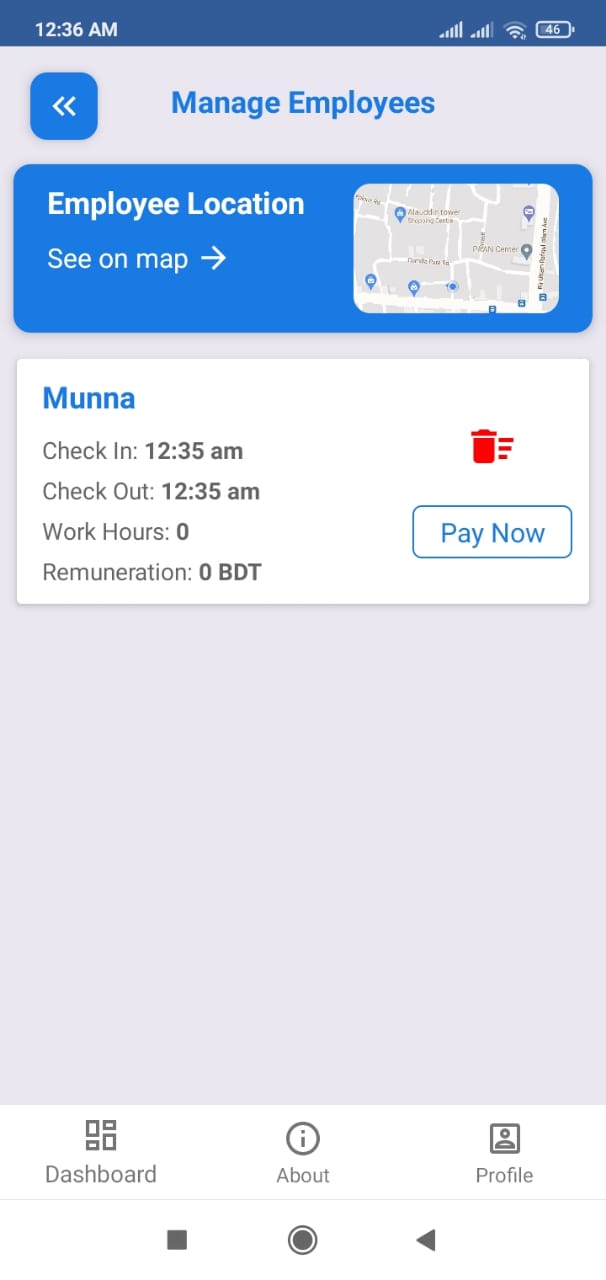


Figure 5.8: On field employees

**Salary History**

List of payment history which employees are being paid.

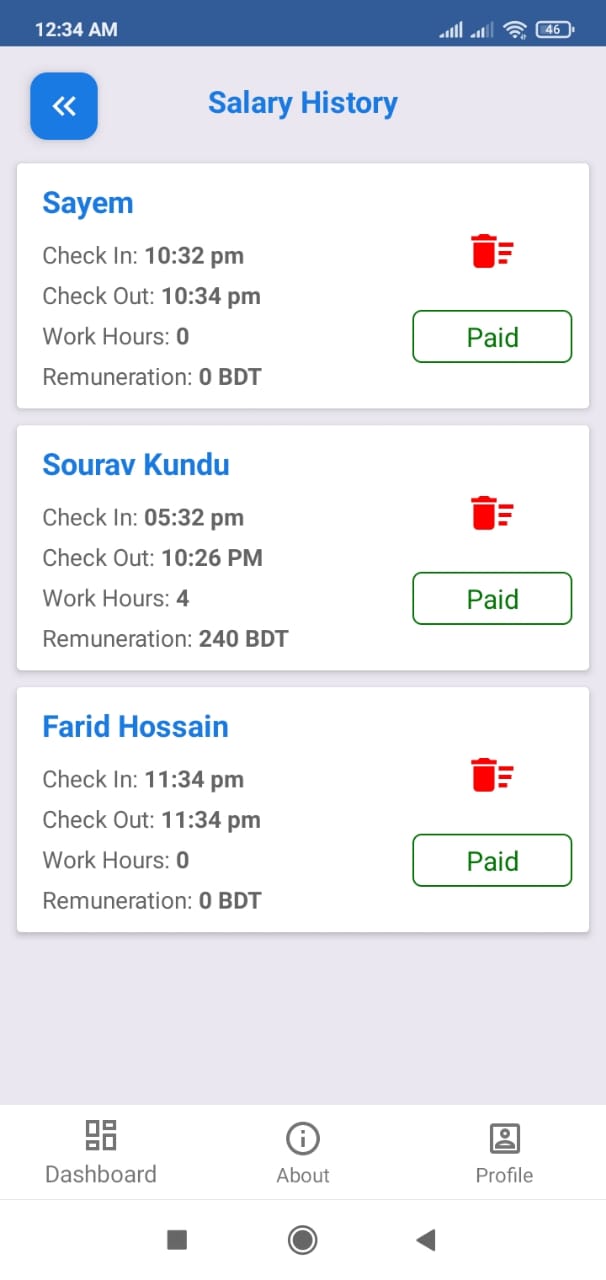


Figure 5.9: Salary history.

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**Employee Location**

Employee’s live movement on map.



Figure 5.10: Employee location

**Profile**

User information in profile section.

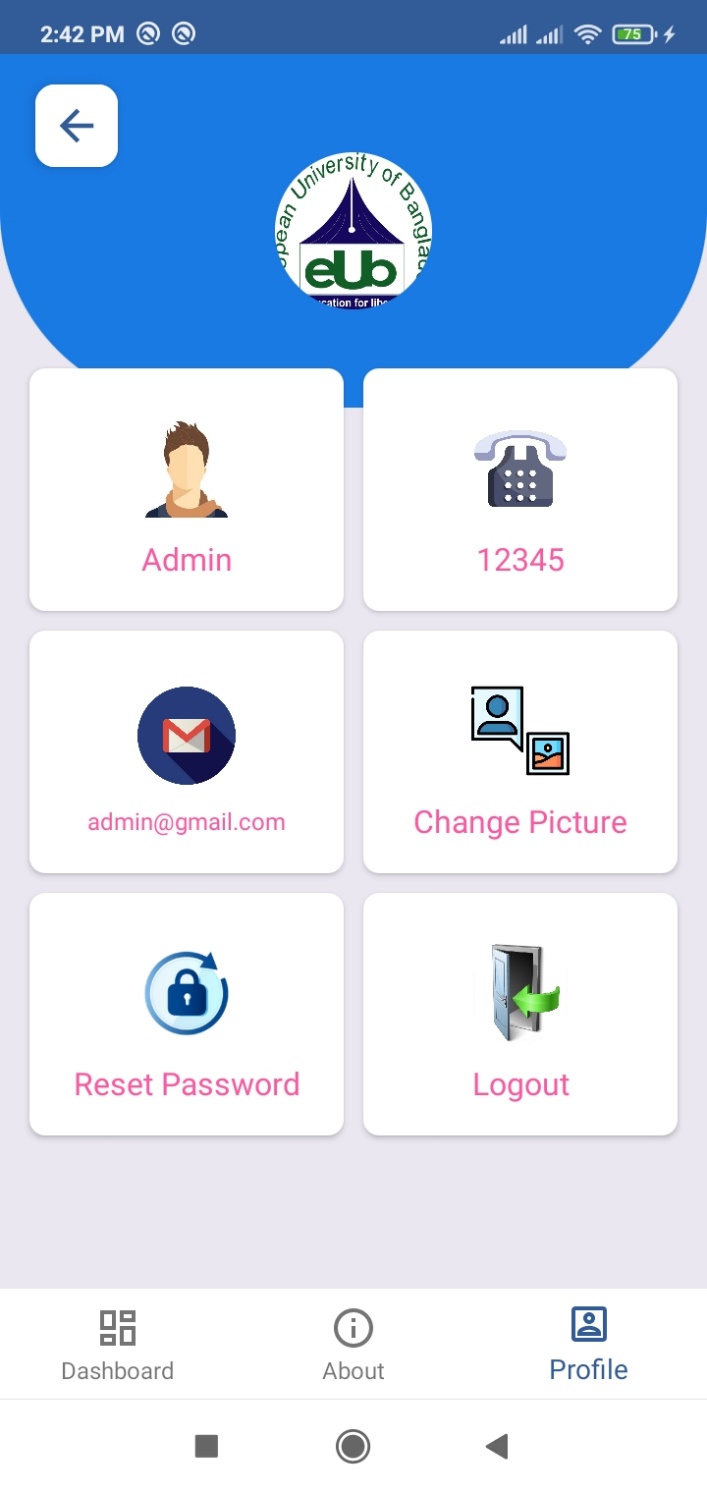


Figure 5.11: Profile

**About**

App title and version name, developers and supervisor information in about section.



Figure 5.12: About

**CHAPTER 6**

**Impact on Society, Environment and Sustainability**

**6.1** **Impact on Society**

This application will be beneficial for any kind of organizations and employees of them.

**6.2 Limitation**

No application is perfect. Every system has some limitations. The limitations of our project are written below:

* Well maintenance of back-end by developing web application.

**6.3 Obstacles & Achievements**

During the development of the application, we have faced a lot of obstacles and successfully overcame most of them. Some of the obstacles were:

* We had to study about office and employee management systems.
* Google map API integration was a bit difficult for locating live workers/employees.

Finally, after developing the project, we have successfully achieved:

* Automated payroll and GPS tracking app which provides office admin to get the current worker’s location/movement on map and pay them with this automated system.

**CHAPTER 7**

**Conclusion and Future Scope**

**7.1 Discussion and Conclusion**

We are introducing automated payroll using GPS location tracking which uses to view an employee by using the employee’s geographical location and locate the longitude and latitude positions and we can view the path the way he travelled throughout the day and calculates the employee salary, it eradicates the proxy attendances and fake salary calculations.

**7.2 Scope for Further Developments**

Due to limitation of time, knowledge and experience, we couldn’t develop some features of our project. In future, we want to develop those features one by one. Those features are:

* Push Notification to let the admin know the live status of their workers.
* Publish the app on Play Store.

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