ANDROID-BASED TOURISM APPLICATION

TAKE TOUR

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This Report Presented in Partial Fulfillment of the Requirements for the Degree of
Bachelor of Science in Computer Science and Engineering

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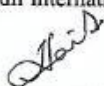**DHAKA, BANGLADESH**

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APPROVAL

This Project titled **"Take Tour"**, submitted by Md.Ashikul Reza Aurzo, Raisul Islam and Gazi Rafsun Sany, ID No: 151-15-4866, 151-15-5132 and 151-15-4715 to the Department of Computer Science and Engineering, Daffodil International University has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on 12th December 2018.
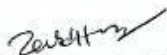
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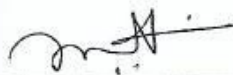Daffodil International University

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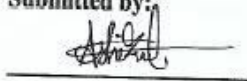Jahangirnagar University

DECLARATION

We hereby declare that, this project has been done by us under the supervision of **Zerin Nasrin Tumpa, Lecturer, Department of CSE, Daffodil International University.** We also declare that neither this project nor any part of this project has been submitted elsewhere for award of any degree or diploma.
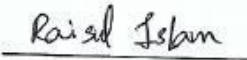
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ABSTRACT

Mobile devices now become a part of our daily life. People are using mobile based application for many purposes such as commerce, entertainment and education. These applications are also helpful to deliver information about a city or region. Because of the easy portability and ability to deliver information where there is internet access, tourism based applications are becoming popular day by day. Again, tourism is a growing field in Bangladesh with lots of possibilities. Every year many foreigners come to visit Bangladesh for its natural beauty. Hence, this tourism based project "Take Tour" is developed which will work as a guide for a traveler.This project represents a total solution to find places from internet, weather report, calculating event budget and save moments. The traveler can see the event through this application and identify the preferable spots using Global Positioning System (GPS) in the tourist area. A tourist can find their nearest police station, hotel, ATMs, hospital and other important places within a selected area also. This application will be beneficial for Travel agencies as well. For developing the application, Java and xml are used and Google APIs are used for tracking the location, nearby places and weather update. Moreover, ''Take Tour'' is already used in various real android devices and found working successfully.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

We have interested on travelling. We already visited so many places in our country. We face many difficulties while traveling. There are many thing that encourage us to do. Then we finally decided to accept the project. Finally, we reached to the point and found android platform as pretty good. Operating System based on mobile application. We decided to develop an application, which will able to help to find places from internet, weather report, and calculating event budget, save moments, keep in touch with friends.

We started from this point of view, but then we think there are already many travel-based applications in the market. Then we decided we had to do something different so our application could be different from other. The unique part of our application is that user can create an event where user can add place, evaluate budget, nearby mapping, Geofencing, weather information, and communicate with friends. We use Geofencing that user can get an alarm for user selected destination (where user wants to go). When user will enter the area it will be notified to user that he comes at his desired location.

The Android application is a navigator; it collects user's current location and displays real-time navigation. This application will be more effective to evaluate budget, search and get to the right location.

1.2 Motivation

Budget is the most important thing for a traveler. A traveler should have concerns about his budget. Because if he spends his money on irregularities, he will face financial problems later. Since the place is completely new to him and a lack of people is familiar to help him that is why he needs to remember everything about where the cost is spent. However, it is painful when he travels, think about the cost calculations. Also seeking other important places like hospitals, hotels, police stations, post offices, markets,

restaurants, banks, ATMs, he need help from local people. It is difficult to find help from others in remote areas. The most important thing is to know about weather condition. The user's internet connection will not be need to calculate the cost. We have encountered such real motions. Therefore, we have taken the initiative ideas to make this application inspired by these.

1.3 Objectives

The objectives of our mobile application are mentioning below:

- ✓ Save the budget records in offline.
- ✓ Help users see the current location of the map in the GPS view.
- ✓ To provide a platform for the user for specific positions.
- ✓ Forecasts of the weather conditions.
- ✓ ATMs, Schools, etc. provide nearby places.
- ✓ User fix to set an alarm in specific places.
- ✓ Keep in touch with the friends.

1.4 Expected Outcome

"Take Tour" is an Android-based application that is optimize for location-based services and notified in preferred locations. The basic results of this application are very easy using the user interface to find nearby places and reduce the complexity of finding new places and financial controls. Our main goal is to increase the visitors in global market. We hope that finding new places will no longer be a problem by using the app.

1.5 Report Layout

Chapter 1: Introduction

In this chapter, we introduce our project and discuss its motivation, objective and the expected results of the purpose.

Chapter 2: Background

We talk about our project background scenarios. We also talk about the related work, the scope of the project and the challenges, compared to many other candidate systems.

Chapter 3: Requirement specification

We appointed the requirement of this project. In this section, we described Software requirements, Technology, Hardware, System Development Life Cycle Model, Logical and system design, case diagram and Use class diagram. We talk about nonfunctional, functioning, and design needs.

Chapter 4: Design Specification

We describe the front-end design of our project through some screenshots and we specified about Installing, Configuration and all support tools.

Chapter 5: Implementation and Testing

We have demonstrated the implementation of the whole project.

Chapter 6: Conclusion and the future opportunities

We discussed about the conclusions and opportunities for further development of our project

CHAPTER 2

BACKGROUND

Usually the project background mean by the traditional documentation of the project. In this section, we hope to analyze the related work done by others and analyze their work to find new targets.

2.1 Introduction

In the 21st Century, we are very dependent on technology. We found the technology in every corner of our life. In this era, the smartphone has a huge impact on our daily life. This is like our daily life partner. The fact is people may not help each other as like before. Therefore, we must either help us or get help from our technology. Sometimes people are looking for a few steps ahead but no one can help, in the situation your smartphone can be your guide. No need to take paper to write down the expenses and calculate them or remind in memory.

2.2 Related Work

As Android has Open Source and there are millions of Android Developers in the world, we have found some applications similar to our project in Google Play store to provide travel guide service.

Here we have listed some high indicator apps that we found in the Google Play Store

- Tour Mate
- GPS Location Alarm
- Arrived Location Alarm
- Bangladesh travel guide

These applications work quite well.
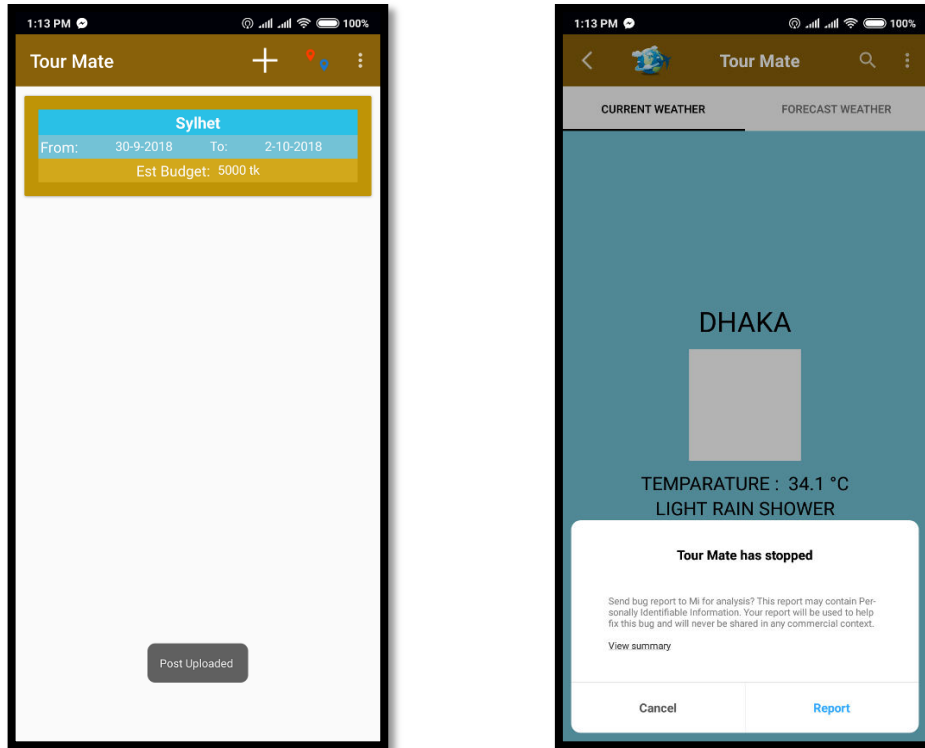
Fig 2.2: Screenshot Related Work

2.3 Comparative Studies

When we started looking for a useful travel guide service, we could not find the expected results in the above-mentioned applications. Most of them gave wrong information, some apps are not working and less features. Users can track costs during their tour. They can capture special moments with others. Geofencing is totally a special feature in this app Users can find them on map and find weather news. This app will provide low cost and more services.

2.4 Scope the Problem

We have already seen that there is some problem with existing systems and they can be more user-friendly. In this situation, we wanted to create an application that would not

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only be a travel guide, but also create a location alarm application, which would provide less internet access and more location information. Google APIs can be a great solution to implement Google Map services. As we wanted to make a location alert service to choose the place. Google Maps needs to load the internet load so that in the alarms segment, we can use the service in spite of the map to collect location information, we show the distances between the user's current location and destination that are not available. Users cannot easily access information related to places and its Advantages. The application is developing specifically for travelers because they need it for preparing their tour.

2.5 Challenges

While performing any activity, we have to do some interruption. No work can be completely smooth. We have to face some challenges to develop our project. This platform has many applications. It will be very difficult for the user.

Our main challenge is to ensure user satisfaction. In this case, we absolutely have to

Maintain the following requirements-

- UX design
- User interface
- Authorization
- Security
- Performance
- Evaluate expenses

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CHAPTER 3

REQUIREMENT SPECIFICATION

In the Requirements specification section, we try to create documents that capture the full details of how our system will run.

3.1 SDLC (Software Development Life Cycle)

One of the fundamental concepts of software development is development lifecycle model or just SDLC models. SDLC is s continuous process that starts from the moment, when it decides to launch the project and it ends at the time of complete removal of the exploitation. There is no single SDLC model and they are dividing into main features, each of its characteristics and weaknesses. It does not matter what kind of SDLC model is select, each of them is in basic level [1]
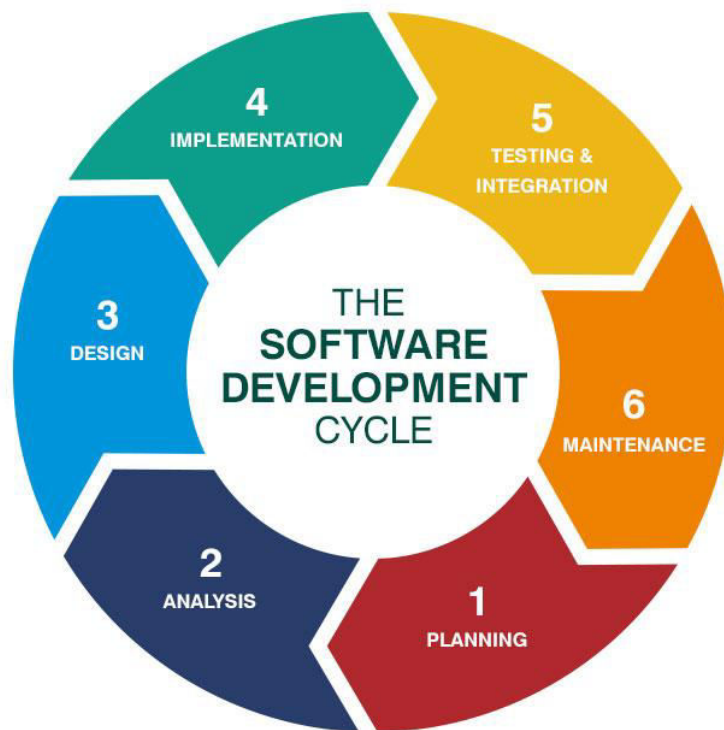
The Structure of SDLC Model given below:

Fig 3.1: SDLC model

SDCL Models

The most commonly used, popular and important SDLC models are:

- ❖ Waterfall Model
- ❖ Iterative Model
- ❖ Agile Model
- ❖ RAD Model
- ❖ Spiral Model
- ❖ Big Bang Model
- ❖ V-Model

The waterfall model works in some sequences, we developed the same software. We develop our system through the Waterfall model. Therefore, we already know all the stages needed during the development [2]

Waterfall Model

Waterfall is a Cascade SDLC model, which looks like a flow of development process, gradually progressing systematically in the analysis phase, projecting, perception, testing, implementation and support. This SDLC model completely includes the execution of each stage. This process is strictly documented and predetermined with the expected features of each phase of this software development cycle lifecycle.[3]

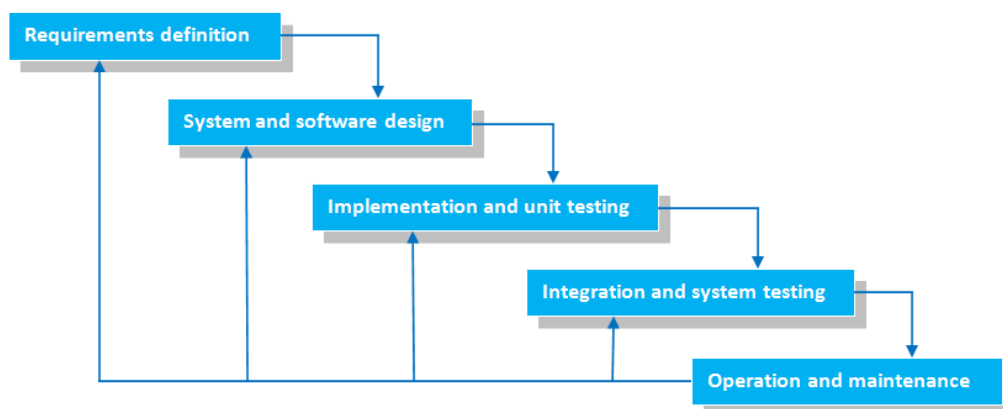The structure represents the graphical representation of Waterfall Model:

Fig 3.2: Waterfall model

Requirements Definition: We collected some requirements as well as some information about our application on 2 May 2018

System and Software Design: In this step, we define a roadmap of our plan and try to bring the best software model suitable for our project. By analyzing our system related issues, our system related issues and the changes made in the previous system, we identify and influence of our project on organizations and staff. We start our first work from 9 May 2018.

Implementation and Unit Testing: Our system is based on Android. After the end of the exam, we ran it on a mobile. It works normally and we develop its design several times. We examine 75% of our system development process. Some errors occur. However, we are those who happen with our efforts and hard work on 10 June 2018.

Operation and Maintenance: If we need any updates, our system maintains the time we update it at this stage, we face hidden bugs and real world implementation on 19 July 2018.

3.2 Business Process Modeling

Business process modeling is finding ways to mapping regular business processes and improving them. It is a part of the practice of business process management. Process modeling software gives an analytical presentation of an 'as is' process in an organization and makes it conflict with 'to-be' processes to make them more effective. We are using a UML Use Case Model as a business process model [4]

3.3 Requirement Collection & Analysis

There are some basic requirements gathered during implementation

 Of software and information collection. Here are some things to do –

- Tour budget assessment
- To register and create an account.

- Login required.

- Need a valid email

- Check the events.

- Easy to check event

- Check Google Map.

- Places are easy to check

3.3.1 Use Case

A method used to identify, explain, and organize system systems used in system analysis in a case. In a special environment in use, a set of possible sequences of interactions between the system and the users is created and a specific goal is related. It has a group of elements (for example, classes and interfaces) that can be used together which will have a greater impact than the sum of the separate components [5]

In the use case, there are two main elements, cases and actors. Any entity that performs a role in a given system, which is actor.

In this figure, show that-

☐ User is actors.

☐the attributes are associated with actor.

☐these attributes include some sub-attributes. Actors is associated with particular attributes
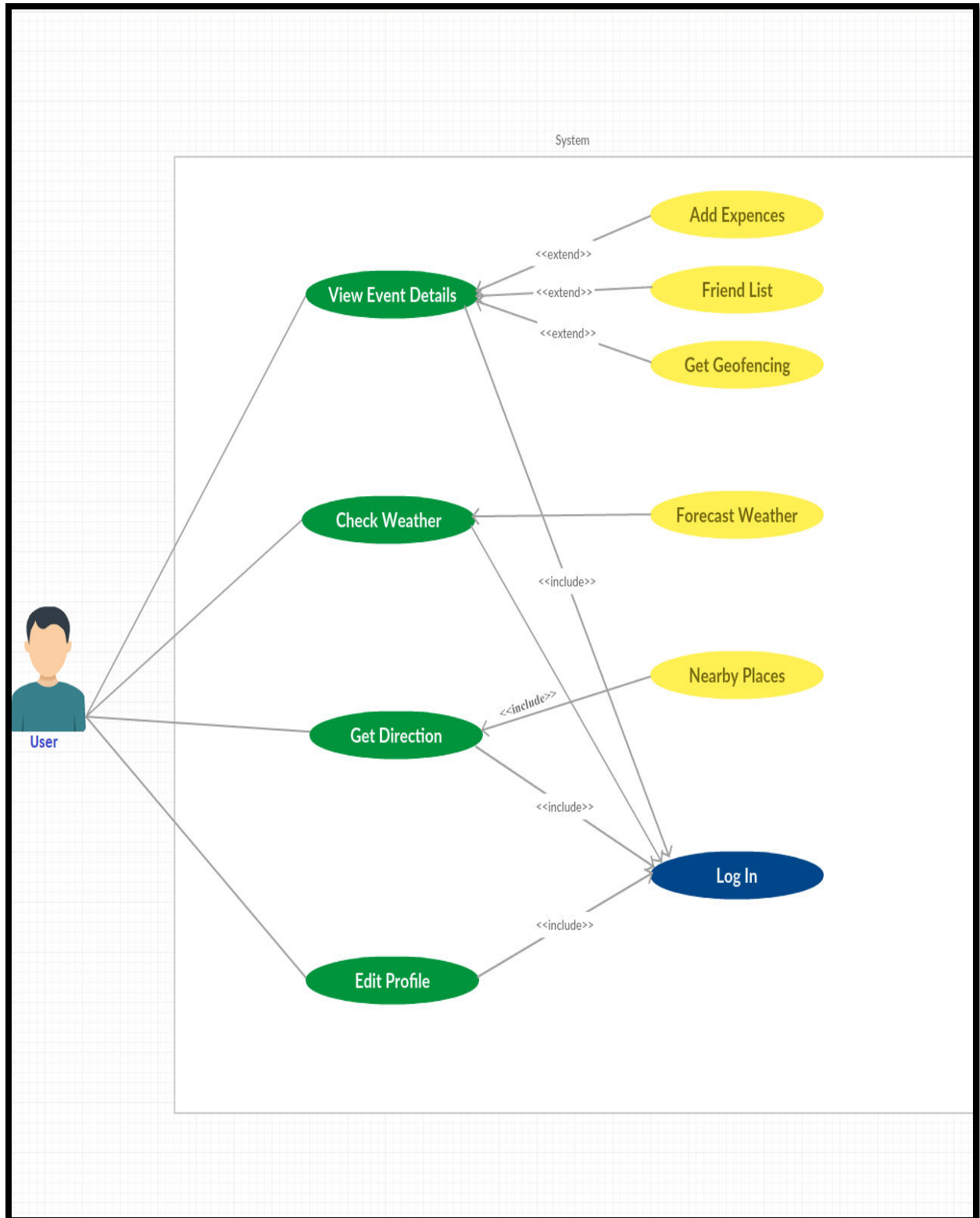
Use Case:

Fig 3.3: Use case diagram

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3.3.2 Use Case Description

Table 3.1 contains detail about the process **"login"** and gives an understanding of the working methodology of this process in this project. Enter this process requires a pre-condition. It contains four scenarios and one post condition.

Table 3.1: Use case description of login

Use Case	Login
Primary Actor	Traveler
Secondary Actor	Null
Pre-condition	Registration
Scenario	1.Enter full name 2.Ender valid email address 3.Enter the password minimum 8 character 4.Sign up
Post-condition	Login successfully completed or failed

Table 3.2 defines about the process **"View Event"** and gives an understanding how the process works in this project. It contains four scenarios and one post condition.

Table 3.2: Use case description of view event

Use Case	View Event
Primary Actor	Traveler
Secondary Actor	Null
Pre-condition	Login
Scenario	1.Check the expenditure 2.Take moments 3.View friend list 4.Add Geofencing
Post-condition	Event successfully completed

Table 3.3 defines about the process **"Check Weather"** and gives an understanding how the process works in this project. It contains three scenarios and two-post condition.

Table 3.3: Use case description of Weather

Use Case	Check Weather
Primary Actor	Traveler
Secondary Actor	Null
Pre-condition	Login
Scenario	1.Seach the current weather 2.Check the forecast weather 3.Convert weather in °C or °F
Post-condition	Weather checking successfully done or failed weather converting procedure successfully completed or failed

Table 3.4 defines about the process **"Get Direction"** and gives an understanding how the process works in this project. It contains four scenarios and one post condition.

Table 3.4: Use case description of get direction

Use Case	Get Direction
Primary Actor	Traveler
Secondary Actor	Null
Pre-condition	Login
Scenario	1.Seach nearest places 2.Select area category 3.Select range of the area 4.Click find
Post-condition	Area successfully found or failed

Table 3.5 defines about the process **"Edit Profile"** and gives an understanding how the process works in this project. It contains four scenarios and one post condition.

Table 3.5: Use case description of Edit Profile

Use Case	Edit Profile
Primary Actor	Traveler
Secondary Actor	Null
Pre-condition	Login
Scenario	1.Update the profile 2.Change the password
Post-condition	Profile successfully updated

3.3.3 Class Diagram

Class Diagram is the most efficient for Unified Modeling Language. It properly designs the structure of a specific system in the term of combination between its objects, activities, attributes and classes. This class diagram shows how to create images, plan and understand of a class [6]
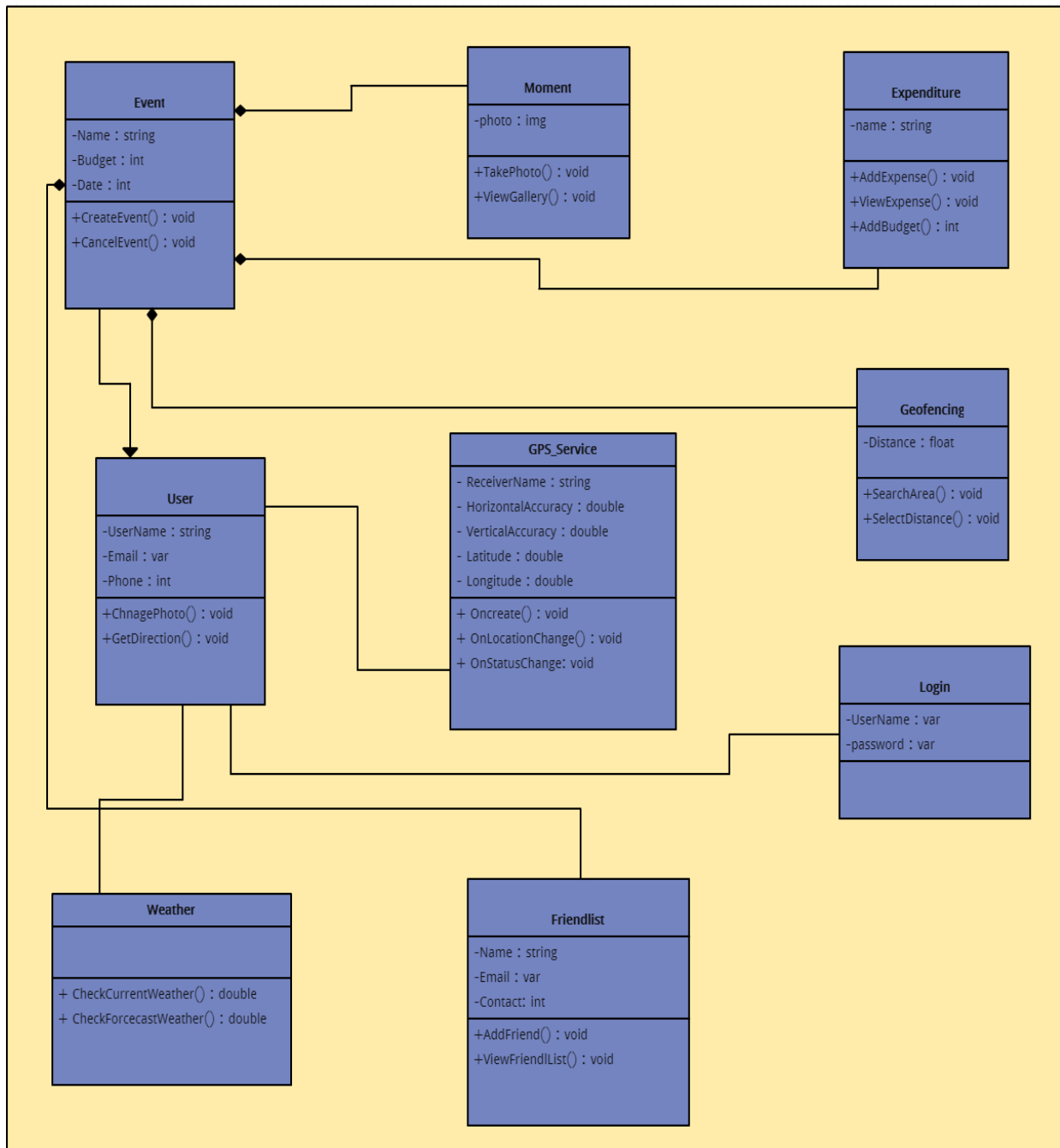
Class diagram of our project:

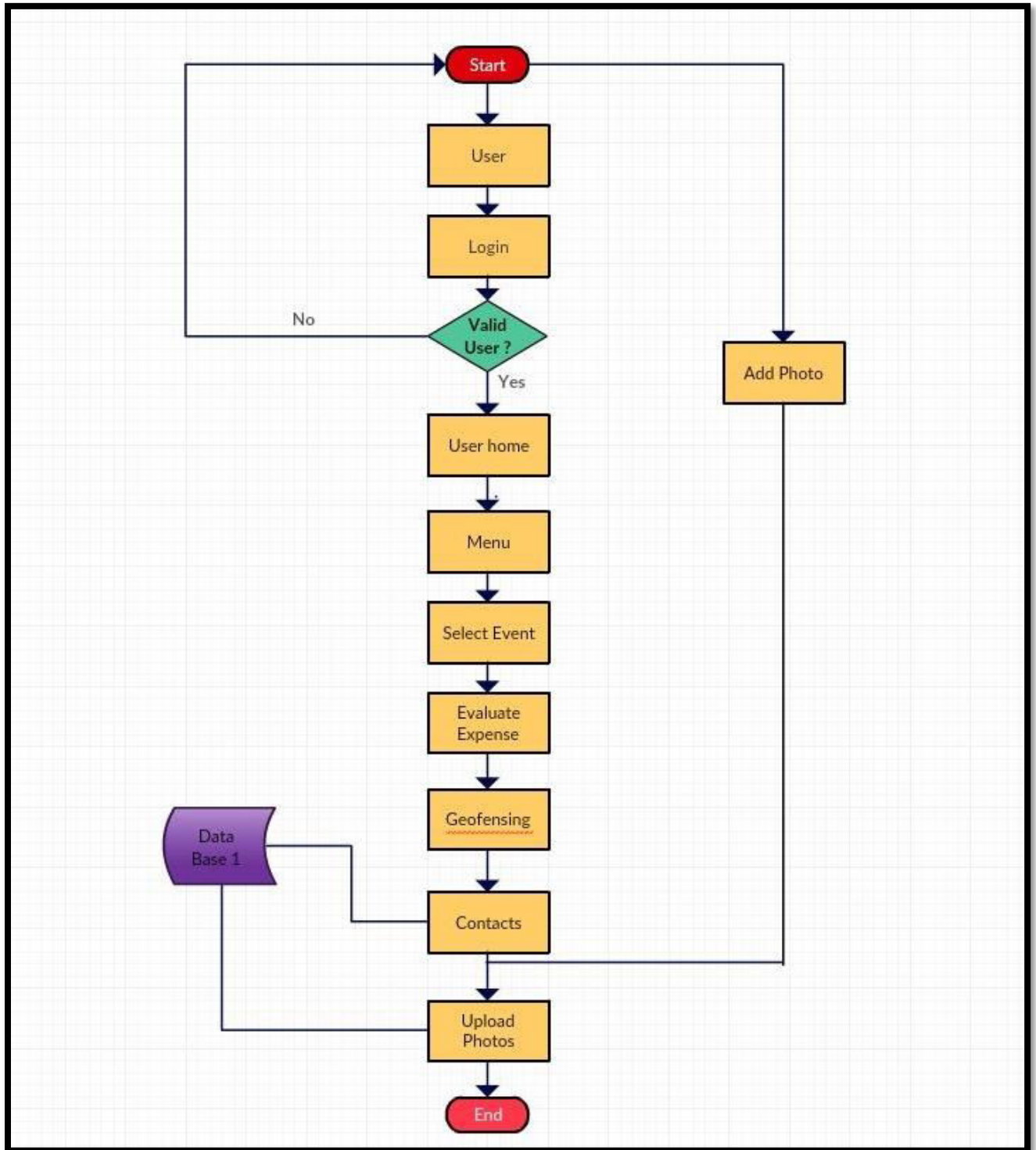Fig 3.4: Class Diagram

3.3.4 Flow Chart

Fig 3.5: Flow chart

3.3.5 Menu Tree

Menu tree represents the relationship between the parents and child component to define a menu vertically or horizontally, have menu item, and sub menu.

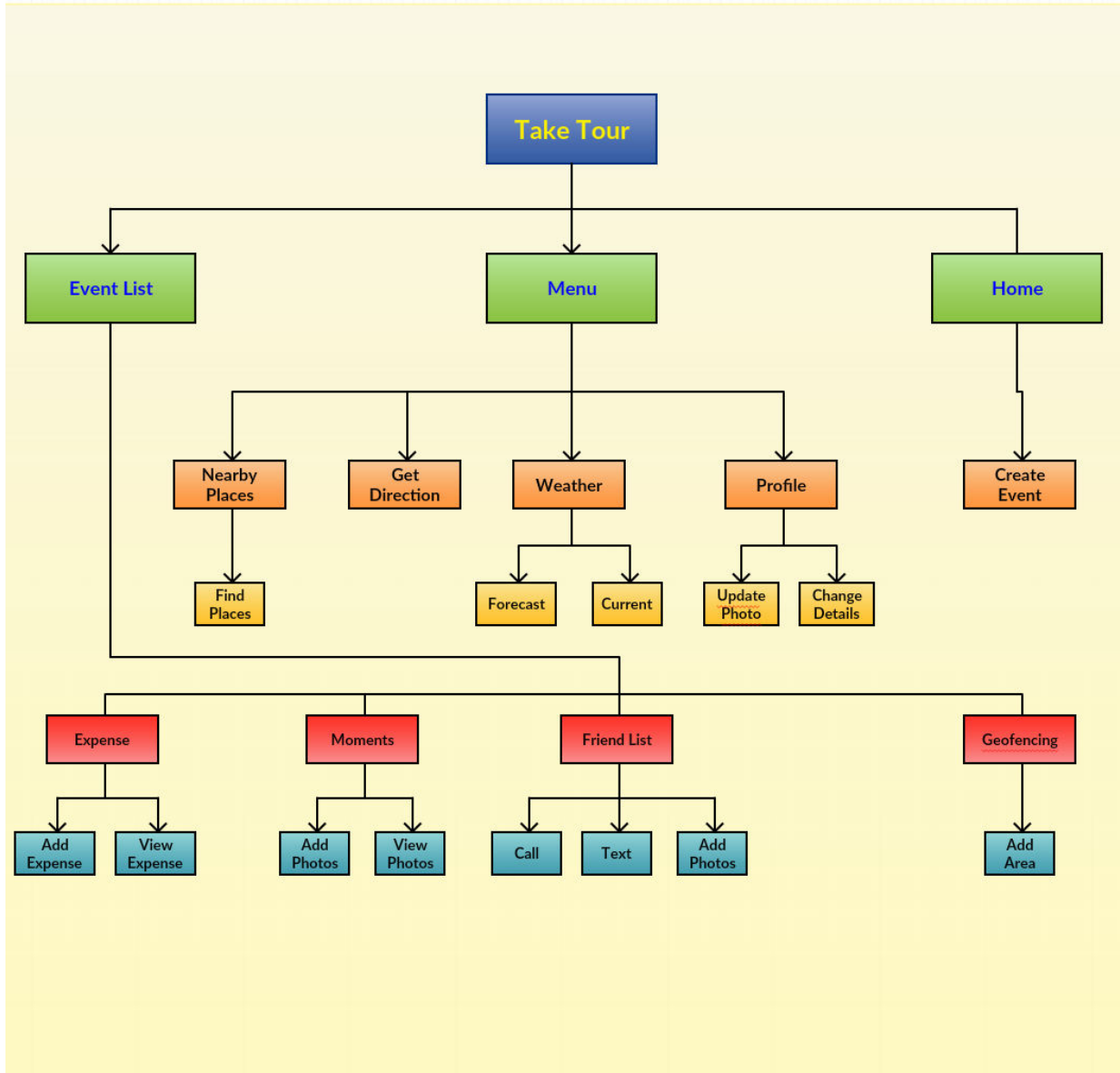This is the menu tree of our project given below-

Fig 3.7: Menu Tree

3.3.6 Work flow (Event)

When user sign up then the system starts to execute. Then user can see the activity home and switch to menu. Here the system is showing the event details how the work flows.
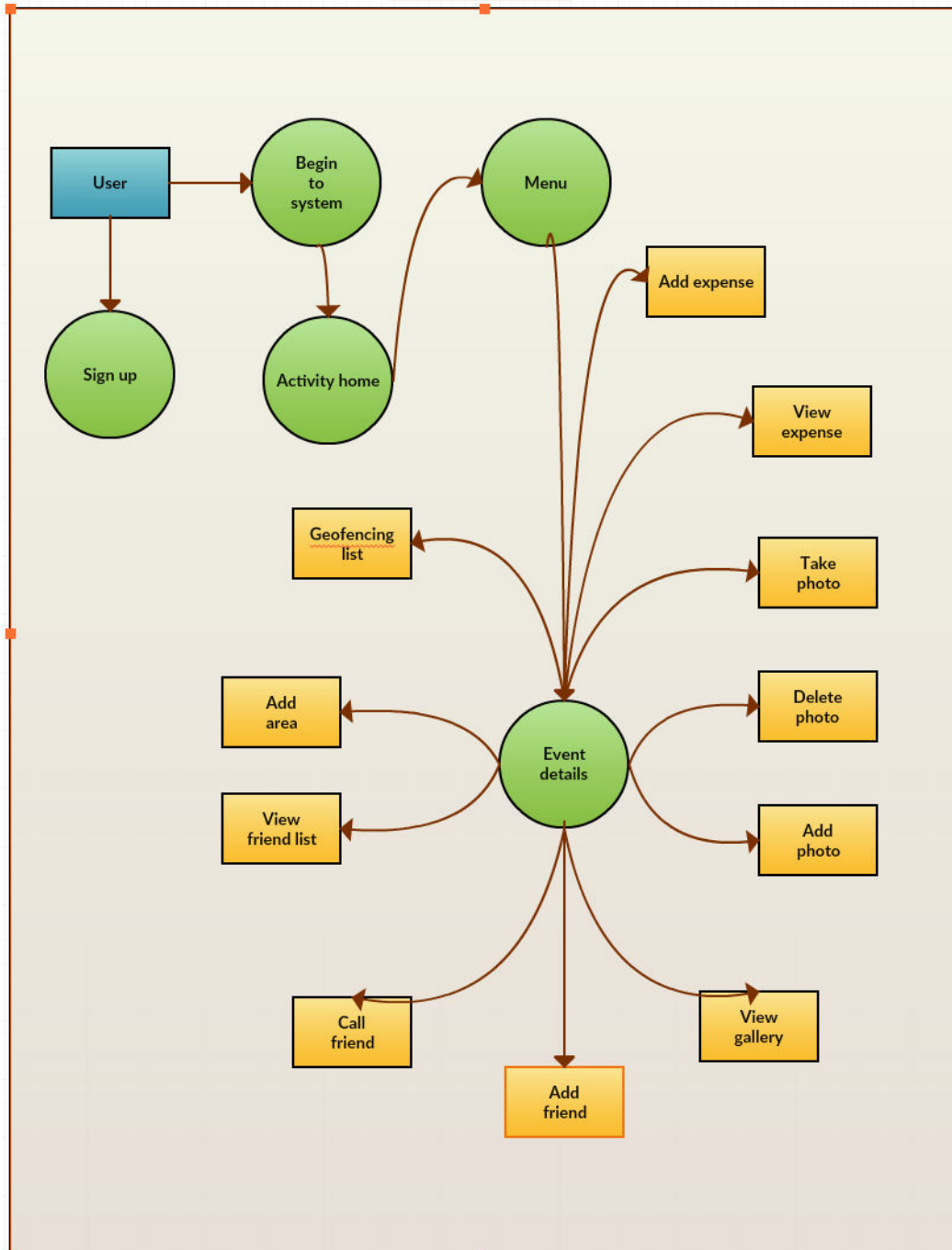

Fig 3.8: Event work flow (YC)

3.4 Design Requirement

A framework of an application is a platform where generic functionality with general code can specified by users or developers. This is the basic framework of our full project.

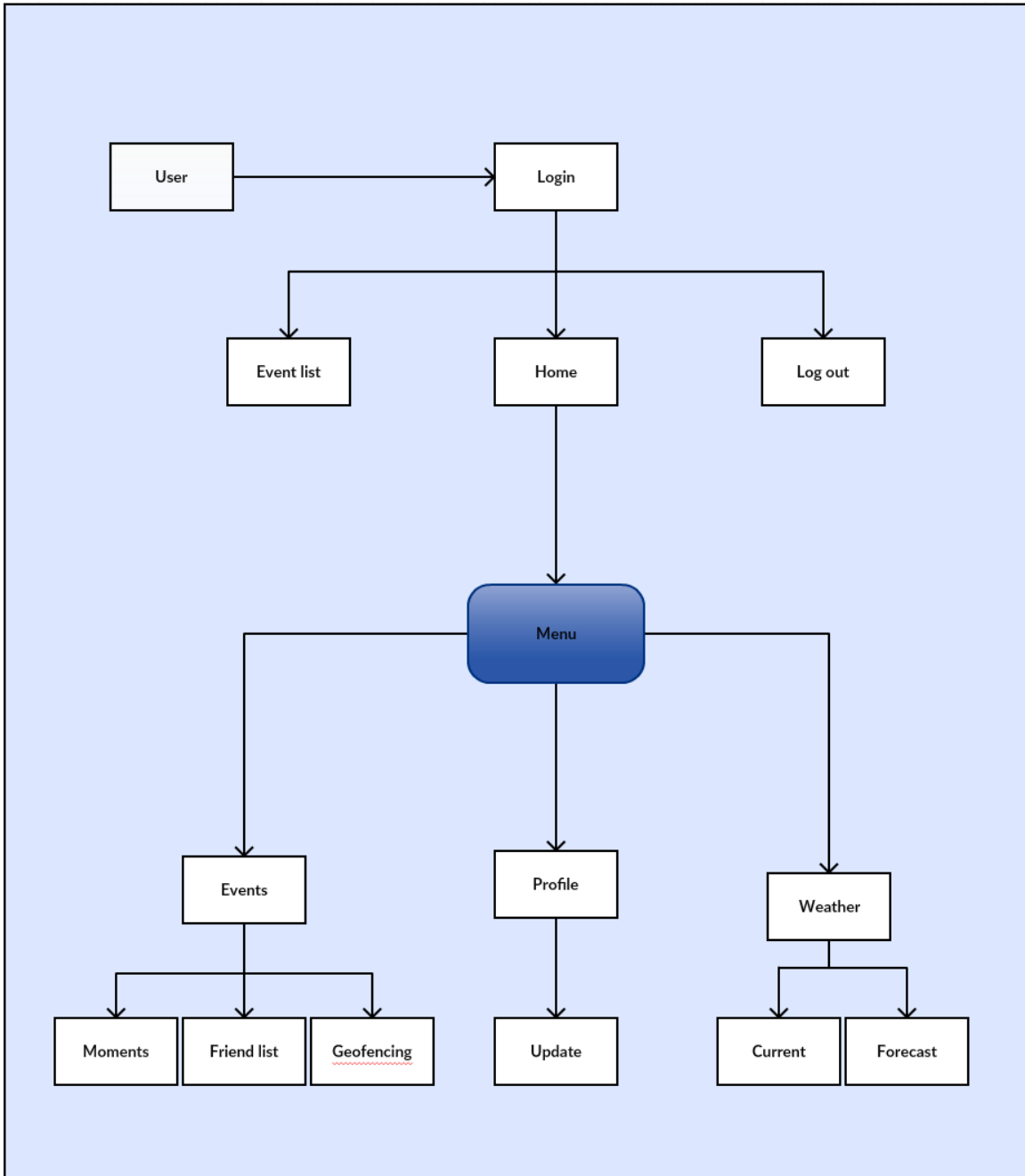Fig 3.9: Framework of Design Requirement

Proper design of an Android application is very relevant to each other. It makes the application easy to understand and user-friendly. Some important things for designing the requirements for an application given below:

- o Login
- o Create Event
- o Add Photos
- o Add contact
- o Select Geofencing
- o Check Weather
- o Update Profile
- o Change password
- o Logout

CHAPTER 4

DESIGN SPECIFICATION

Design specification means how the developer develops a design of an application. In this part of design specification, we are trying to describe the design of our project application. We also discussed about the layout, tools and platforms that we use to execute our project.

4.1 Application Design Layouts
Content Main

User interface is the main layout in the beginning. This layout contains a home button where user can go to home page by clicking it. The layout also has a menu where user can navigate so many options. In this layout the main part is create event button

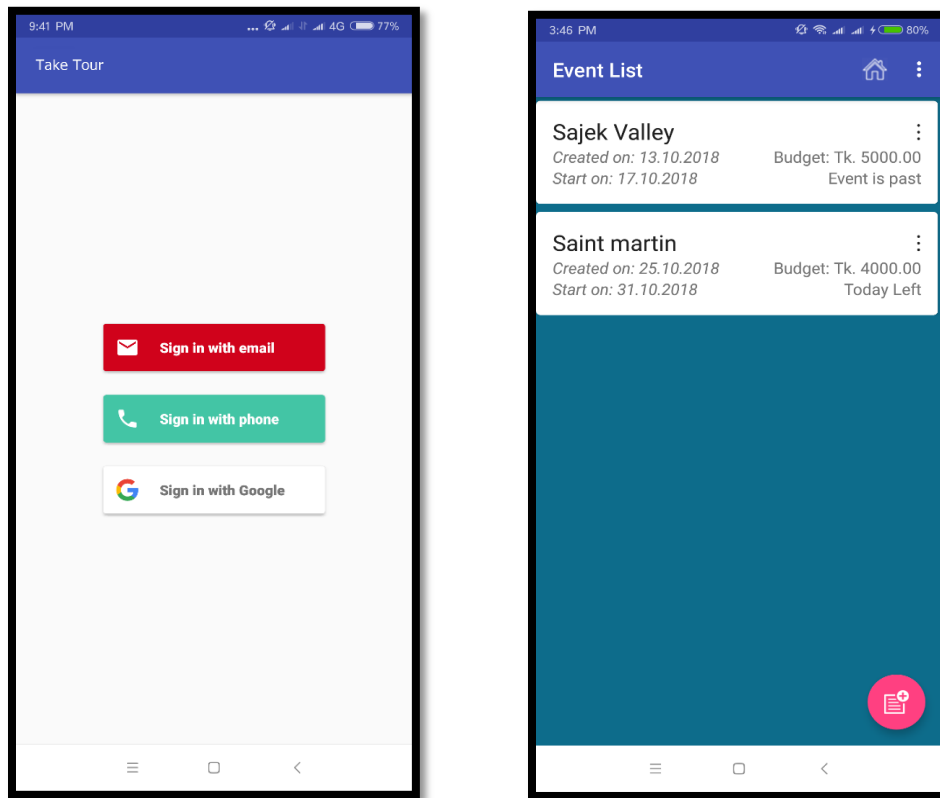Fig 4.1: Home layout

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Navigation Drawer

Here user can see the options like Events, Location map, Nearby Place, Get Direction, Weather Information, My profile, and logout.
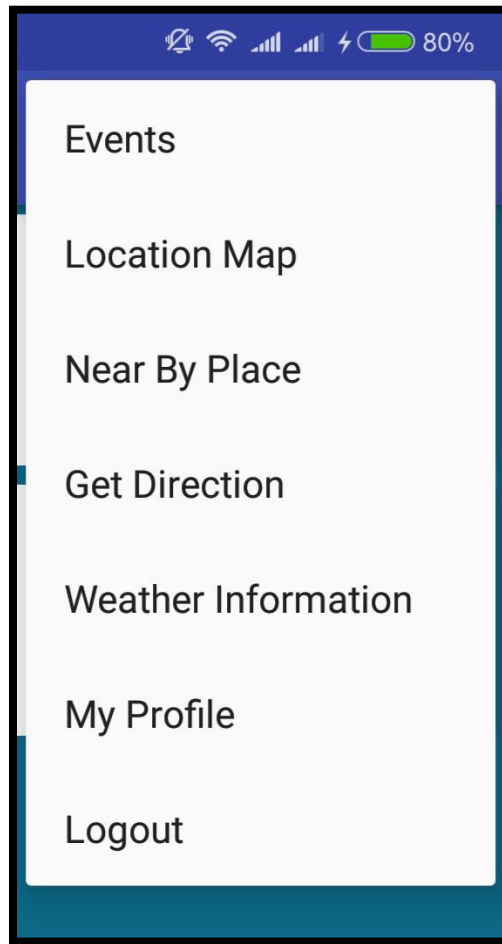
Fig 4.2: Navigation drawer Layout

Create Event

This layout requires the new event where user enter event name, add budget, select the event date. After fulfill all the information correctly, he can save the new event either cancel it.

Fig 4.3: Create event layout

Event Detail

Suppose user created an event named **Sajek Valley** and his budget is 5000tk. It will show on this layout and a budget status bar will show the expenditure by the percentage. First, it will show 0% if he would start to spend his amount from the budget, the status bar will increase and show the remaining percentage from his given budget.

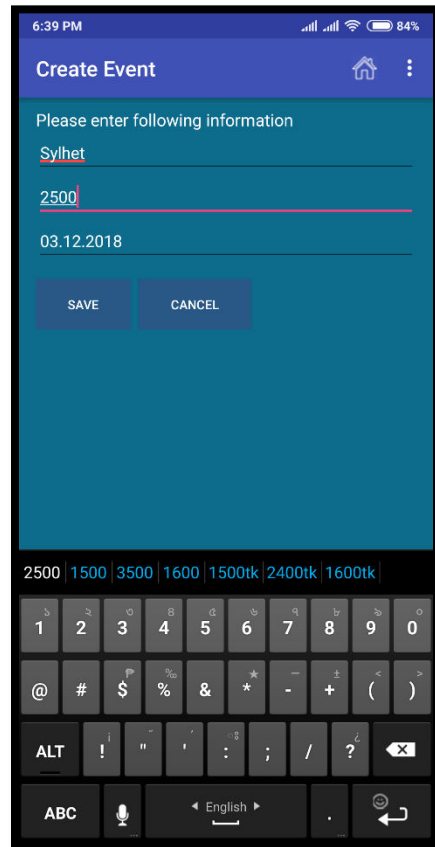There are four buttons in the event detail. First one is expenditure, under this button there are three sub buttons- Add New Expense, View All Expense, Add More Budget. In Add New Expense user can add new expense in the traveling time. Then can also see all his expenses by clicking the button of View All Expense. User can add more budget if he needs   to.

Most important part of this event in Geofencing. Geofencing is virtual geographic boundary which defined by GPS. Geo-fencing allows an administrator to set up triggers so when a device enters (or exits) the boundaries defined by the administrator, an alert is issued. When users enter or exits a **geofenced** area, a targeted push notification is send directly to their device. [9]
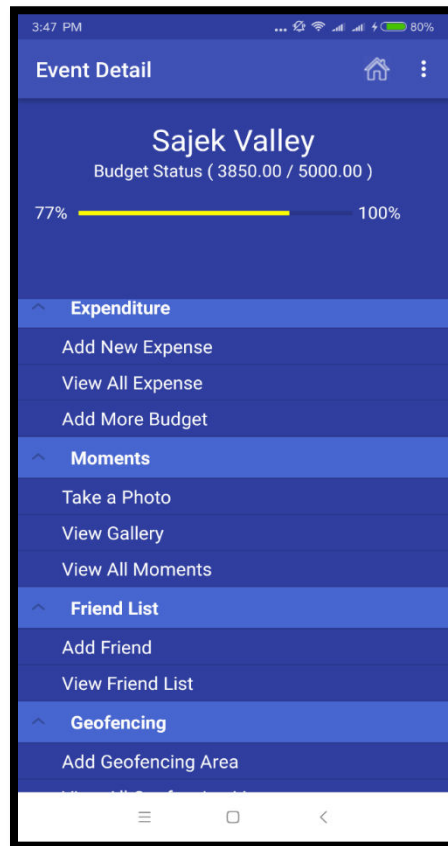

Fig 4.4: Event Detail layout

Moments

User can capture special moments by clicking the Take a Photo button. He does not need to open the camera separately. In View Gallery user can view all photos what he captured. This application has moments with the function below the name:

+ Take a photo

+ View gallery

+ View all moments
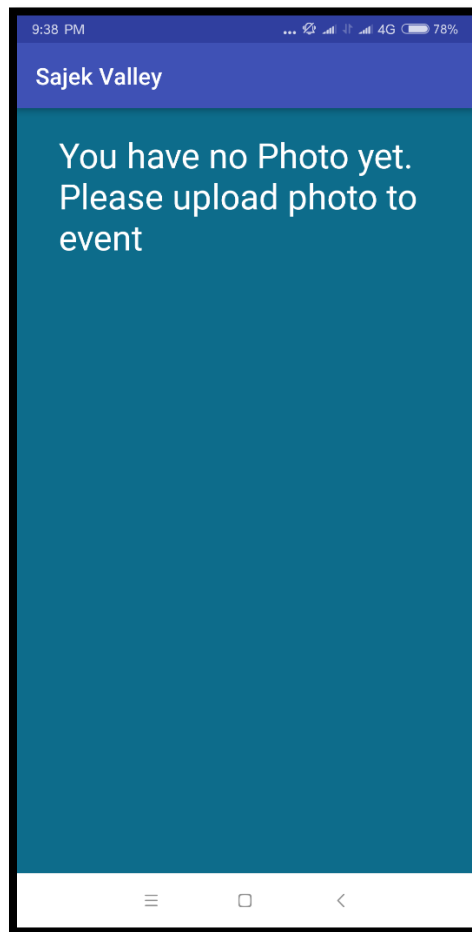

Fig 4.5: Gallery layout

Friend List

In Friend List, tourist can add his tour mates contact number and email. He can call or text the tour buddies. In View, Friend List the tourist can see the entire added person in the list. This application has friend list with the function below the name:

+ Add friend

+ View friend list

+ Call, Text or E-mail
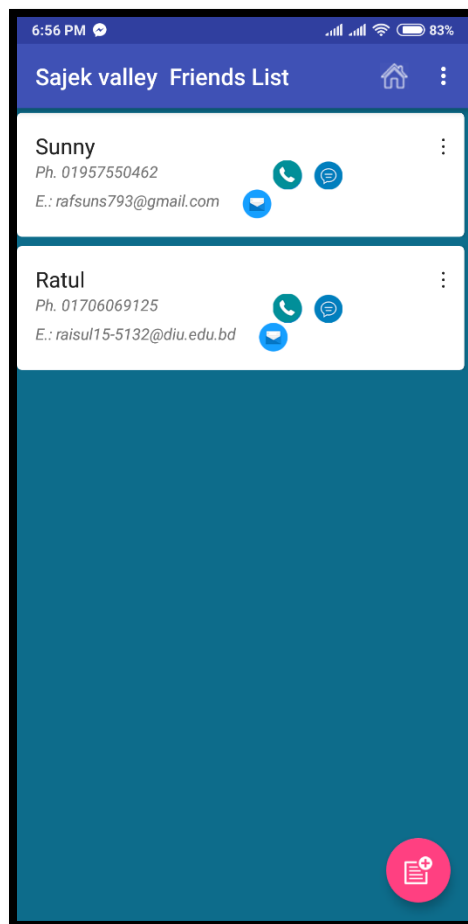
Fig 4.6: Friend List layout

Expense list

In this layout user can see all the expenses at a glance. Here user can see where he used and how much he spent his money. Our fast user spent his money from his budget for bus, food, hotel, chander gari etc. it also shows the date. This application has the expense list with the function below the name:

+ Add new expense

+ View all expense

+ Add more budget

+ Edit or delete expense
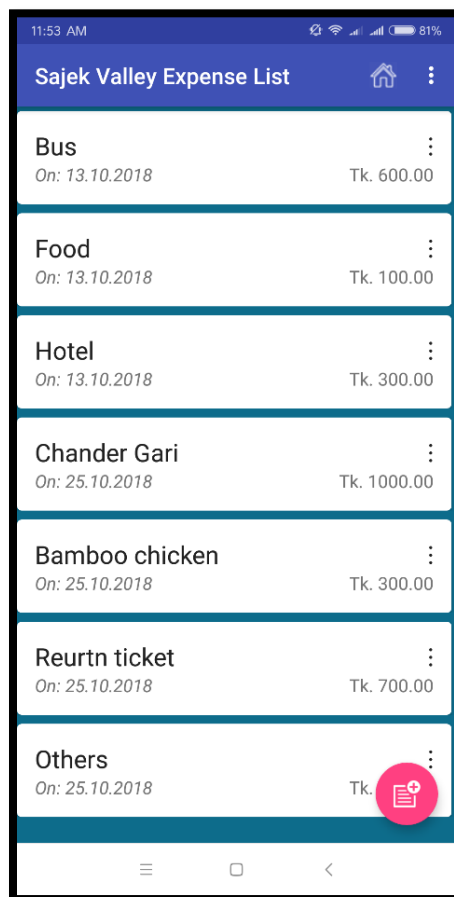
Fig 4.7: Expense list

Add Geofencing

Two buttons here Geofencing name and area in meter. User select the Geofencing name by typing the name the google map will show the destination button. In addition, it shows his present position. Then he adds the range in meter to set up triggers so when his device enters or exits the boundaries he will be notify. This application has Geofencing with the function below the name:

+ Area name

+ Select area in meter

+ Add Geofencing
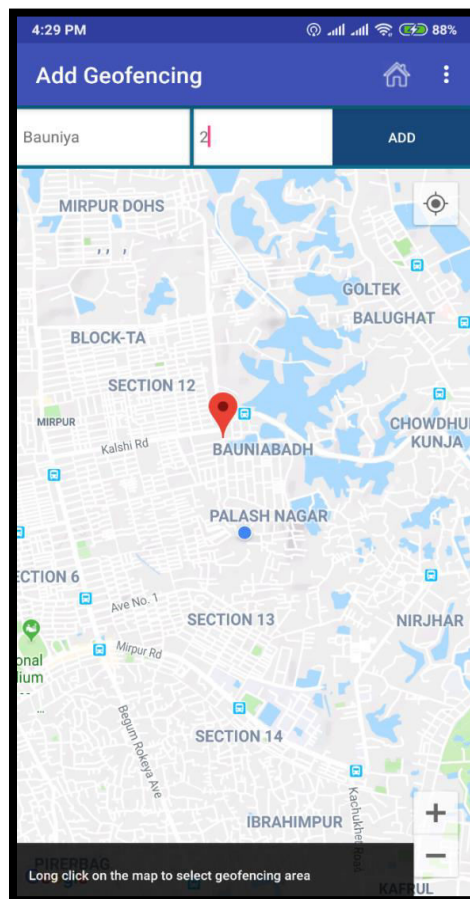
Fig 4.8: Geofencing Layout

Geofence List

All the Geofencing area selected by the user from the app will show here. With its latitude and longitude. User can delete and edit that is area. This application has the Geofencing list with the function below the name:

+ Remove Geofence
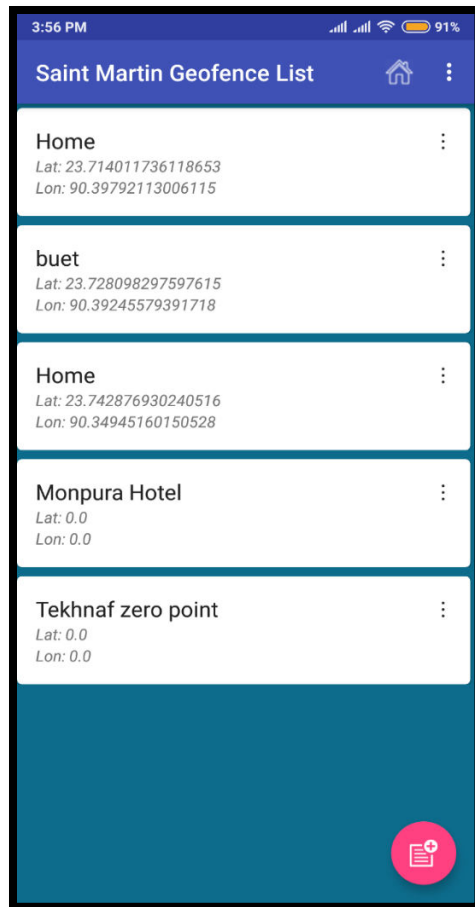
Fig 4.9: Geofencing list Layout

Location map

Location map will help to find routes or places nearby. Users can get help quickly from applications. This application has the location map with the function below the name:

+ Show current user location in the map.
+ Search place
+ Pick place
+ Find the route
+ Find nearby places
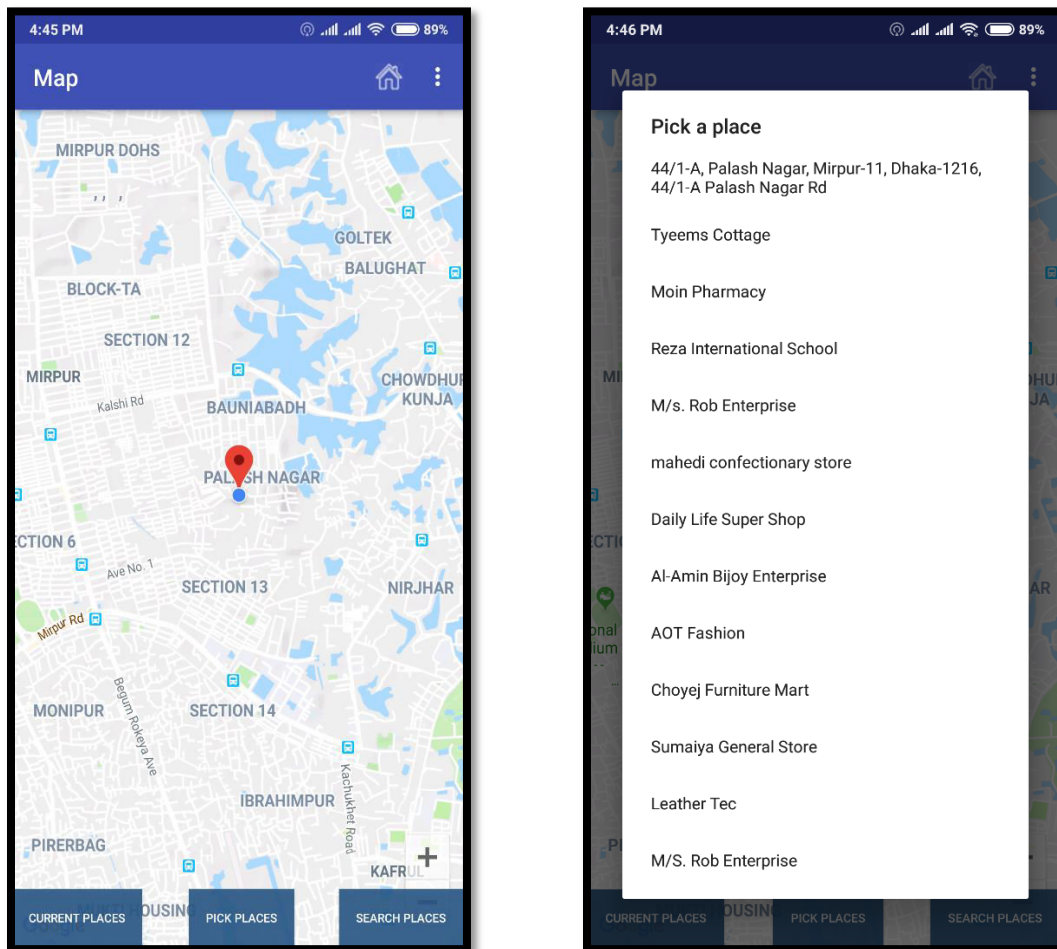
Fig 4.10: Location Map

Nearby Places

It will show the near places from the global position of the user. Here user can see the nearby hospital, police station, hotels, post office, bank, stadium, institute, market, restaurants etc.
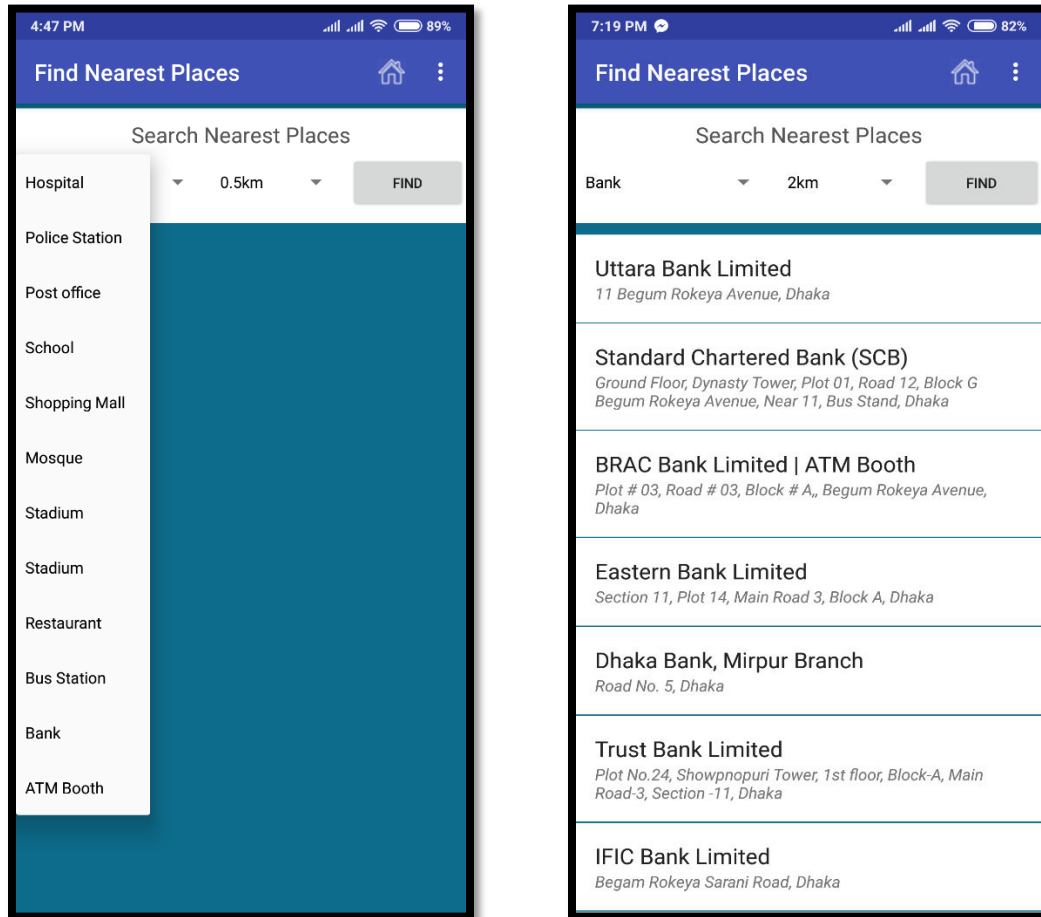
Fig 4.11: Nearby Layout

Weather Report

In weather report user can see the current weather and forecast weather. Weather report has many features:

+ Global weather

+ Full report. Location time and date, max temperature, min temperature, atmospheric pressure, weather condition, relative humidity, wind speed

+ Live weather forecast

+ Today, tomorrow, hourly, 7 days' later weather
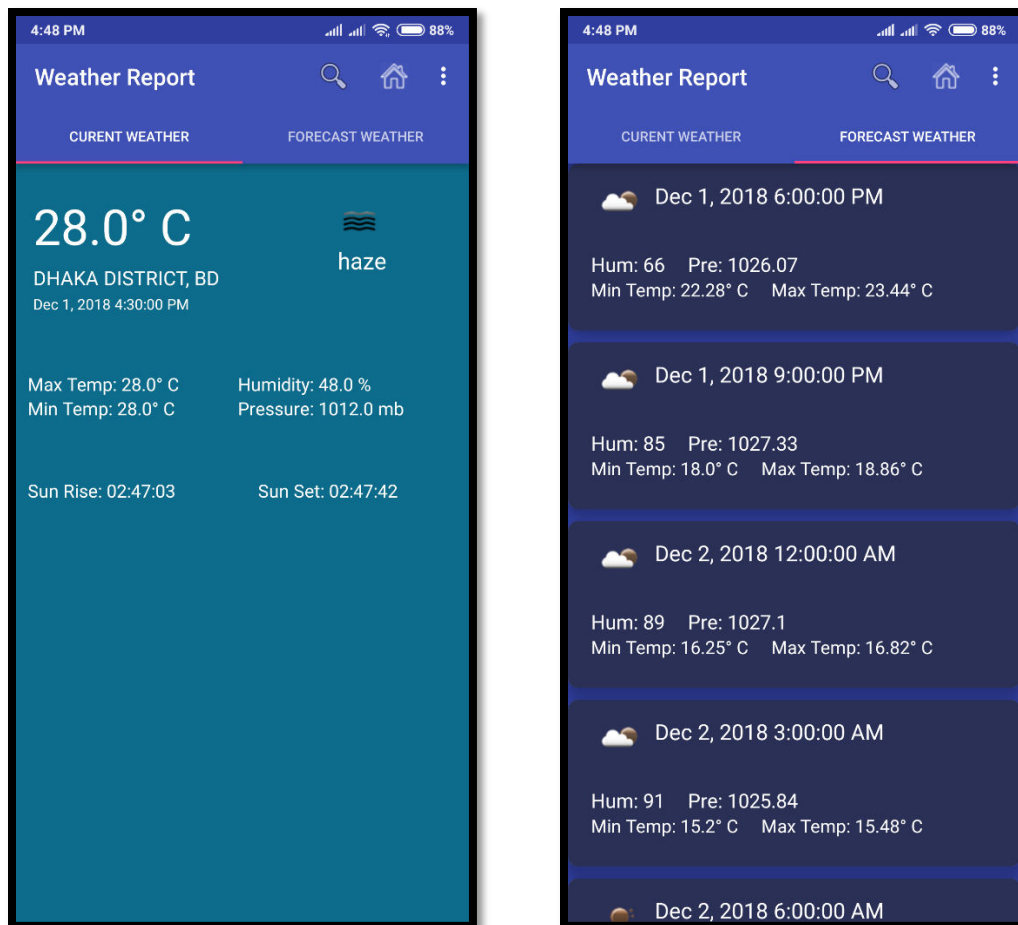
Fig 4.12: Weather report Layout

© Daffodil International University

Profile Details

In this layout user can his profile information and also update his profile photo, update his profile and lastly change his password. This application has profile details with the function below the name:

+ Update user profile

+ Change password
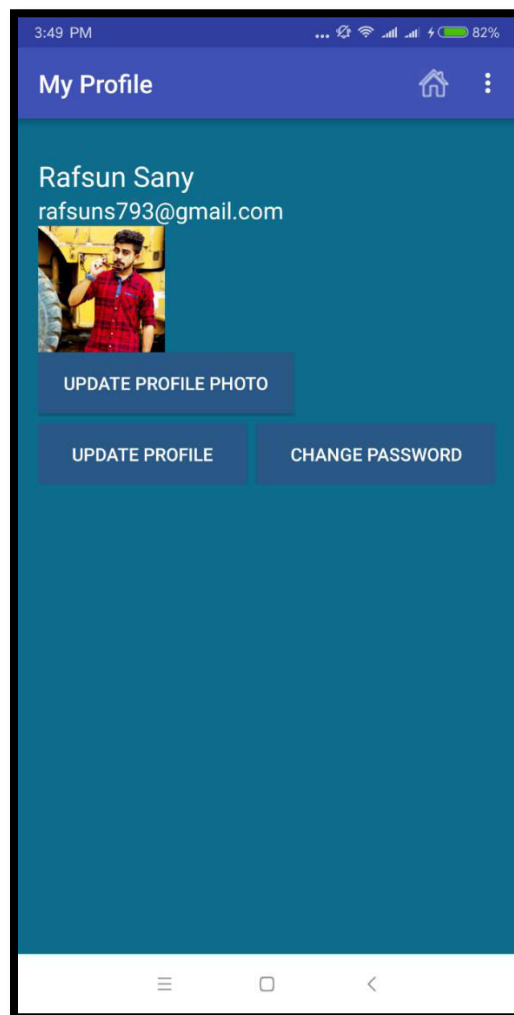
Fig 4.13: Profile Layout

4.2 Interaction Design and UX

Interaction design is a discipline that monitors the interaction between its user and a system. Interaction design users understand problem domain, problem processing and find out results, perform tasks by the given results and solve problems. In our system, we try to make good interaction between system and user for better performance [10]

4.3 Implementation Requirement

4.3.1 Installing and Configuring All Support Tools

Now we will talk about the Android, but before, we needed to configure and install some tools, including SDKs:

- Java JDK: The foundation for the Android SDK.
- Android Studio IDE (integrated development environment): With the help of Android SDK, Java and Android ADT (Android Development Tools) provides tools to write Android programs.
- To get access Android libraries Android SDK help us and allows developing for Android application.

The main benefit of open-source software is that most of the time, we can get all the tools to develop a software very free. Android has no exception rule. To develop a Android applications all the tools that I need are free and no extra charge needed.

4.3.2 Installing the JDK

Developing an android application installing java JDK is most important. Work with android 5.0.1 or higher it is not important to install specific JDK version. Beyond android version, 2.0.1 is no longer to check so any JDK version can be installed. For our project, we used currently update version of JDK 11 for our project.

4.3.3 Installing the Android SDK

The Android SDK is workings a debugger, a device emulator, Android libraries, sample code and documentation. We downloaded the android android-studio-ide-181.5056338-windows, which is SDK version 28.0.3. For our project, we installed version 5.1 and downloaded with Android version 5.1 for documentation and samples through the SDK Manager.

4.3.4 Installing the Android Studio

Android studio is the official IDE (Integrated Development Environment) for android operation system. We installed Android Studio 3.1.2 at initial state for our project.

4.3.5 Basic Android Overview

Android provides a complete set of software for mobile devices. It is supported by Google and own by Open Handset Alliance. Android is a wide platform, which means it is a complete software to develop application for a mobile device. It provides all the tools framework free for developers to develop quickly and easily mobile applications.

CHAPTER 5

IMPLEMENTATION AND TESTING

5.1 Implementation of APIs

"Take Tour" is an   Android based on Google APIs. We add APIs to our app. In addition, another one is for Weather APIs. For GPS we firstly use Google place API for debug apk, secondly we use Google place API for release apk, thirdly use Google place API for nearby places and last one is for picking place from map for Google place picker APIs.

5.2 Implementation of Front-end Design

As Android devices are small, the design must be identified with the key components of the system. For developing a fantastic front-end design, it is very challenging. To   create a design for Android devices, it considers the display level of the Android device; it is very difficult to adjust the design with the size of the Android display. The User Interface design for interactive designs,   we try to design some elements to make the project easier. The most challenging part is to be independent of the device, because there are kind of smartphones that support Android, some of them devices have weak headwear, with small presses, and those devices behave weird.

5.3 Implementation and Interaction

A software system of architecture defines a system's structure, behavior and conceptual model. The interaction can be found almost everywhere in the real world. Interaction is key to making a system interesting to users and dynamic. To make the system interactive it is very necessary.

5.4 Testing Implementation

"Take Tour" works fine with Android devices, which is the same as the Android version 5.1   or greater and also need 512mb RAM. The interface is dynamic so it does not cause

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any problems with different sizes of Android devices. It works fine on almost every Android device.

5.5 Test Result and Reports

The results of the test are formally required, which gives an opportunity quickly guess the test results. This document records the information obtained from an organization for the evaluation test, describes operating conditions, and compares the results of the test with objective results. The feature of the application given below-

- o Good User Interface for interaction
- o Some innovative concepts
- o Good quality applications
- o Easy to use
- o The application is more easily accepted
- o Minimizes information for new users

Test result

Our application has not been published yet in the market. We tested our applications by some of our friends, recently they visited **Sajek Valley** and they use this application. They gave us some feedback and advised us to add some features. They also said that it was very user friendly to them. We appreciate their feedback. Their review helped us to make our applications more interesting. We hope that we will be able to fulfill the needs of the people based on their recommendations, suggestions and opinions.

Table 5.1: Test result

Test Case	Test Input	Expected Outcome	Obtained Outcome	Pass/Fail	Test On
1.Login	Login In Android Device	Successfully Login	Successfully Login	PASS	23-07-2018
2.Registration	Name, Password, Email	Fill up all the fields	Must filed by data	PASS	24-07-2018
3.Password	Incorrect password or empty	Warning the wrong password as empty	Show warning	PASS	25-07-2018
4.Profile	Update profile, View profile	Update and show profile	Successfully show	PASS	20-08-2018
5.Event	Check event and select place	Date is fixed	Successfully selected	PASS	09-09-2018
6.Map	Choose nearby places	Show areas	Successfully showed	PASS	30-11-2018
7.Weather	Search current weather	Search the weather	Weather successfully searched	PASS	20-10-2018
8.Logout	Click logout	Logout from the account	Logged Out Successfully	PASS	20-10-2018

Decision

To make our applications even better, the opinions of our friends were very important. We try to work through their response. The public can easily access our applications. In future, we will develop more of our application so that it can be used extensively and the public can get more benefits from the application.

CHAPTER 6

CONCLUSION

6.1 Discussion and Conclusion

At this conclusion from the project, we all know that Android is much popular Mobile and Tablet operating system in this era. Originally Android Inc. in 2005 Google bought it developed it, still 2007 Android was unveiled but next year 2008, the first commercial Android device was launched. So today's Android programming has huge opportunities and these opportunities will grow further in the future. Therefore, we are very proud of being an Android developer. We think that this work related to creativity and more exciting. Millionaire and millions android apps are Stored in Google Play Store. We build a project on android as well. In our project, we tried to build a complete guide for the travelers. This will help the travelers to keep track of one or many tour events. This will keep track of total budget, show the expenditure, and notify if the budget exceeds. This app will also navigate the place anywhere the traveler goes. When a traveler visits some unknown place, there is not enough time or opportunity to see the Google navigator. We tried do several servings in single app. There are so many applications are used every day in a single device. The technology brings an easy way to do everything through a mobile device. As a developer, it is our job to further develop that, which provides more user service.

6.2 Limitations

There are some limitations in our applications that will be overcome by us in the future.

- The application can't not be operated on Android devices a under version of 5.1
- The interface of this application is very simple.
- User cannot use the google map in online.

6.3 Scope for further development

We use simple interface for our application and we use free API to develop this project, which allow 1000 request per day. We will try to purchase premium APIs if people respond well and will update our application with new features. We will add offline map in next update. If any user suggested significant suggestions, according that we will try to make some changes.

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APPENDIX

As students of computer science and engineering, we decided to build our application. We intended to make a project that can help general people in their daily travel time. From the thought, we make the "Take tour" android-based application that will be helpful for every traveler around the world. We three people contribute in this project Raisul Islam, Md Ashikul Reza Aurzo and Gazi Rafsun Sany. We planned this project in January 2018 and it's finally been completed in November 2018. This process was not easy at all. It was a great pleasure working with honorable Ms Zerin Nasrin Tumpa mam. Without her help, we may not complete this project. The whole project is based on Google APIs, Weather APIs. During the development, we have come to know android has a huge amount of library and coding is much easier by working with these libraries. The experiences we gather through the project was awesome and we hope these experiences will bring some extra benefits for us in our working life.

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