Clean Pakistan App

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COMSATS UNIVERSITY ISLAMABAD

ATTOCK CAMPUS – PAKISTAN

SESSION 2019-2021

Clean Pakistan App

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SESSION 2019-2021

UNDERTAKEN

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Certified that we have read this project report submitted by Mr. (Baqir Ali and Muhammad Arshad) and it is, in our judgment, of sufficient standard to warrant its acceptance by the Department of Computer Science, Comsats University of Islamabad, Attock Campus, for the Master in Computer Science.

Committee:

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Date:

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PROJECT BRIEF

PROJECT NAME	Clean Pakistan App
ORGANIZATION NAME	Comsats University Islamabad
OBJECTIVE	To ease the users to Clean Environment
UNDERTAKEN BY	Muhammad Arshad Baqir Ali
SUPERVISED BY	Mehreen Wahab Lecturer Department of Computer science Comsats University Islamabad
STARTED ON	15- SEPT
COMPLETED ON	CONTINUE
COMPUTER USED	HP
SOURCE LANGUAGE	JAVA
OPERATING SYSTEM	WINDOWS
TOOLS USED	Android Studio, Figma , Star UML

ABSTRACT

The “Clean Pakistan App” automate the whole system of solid waste management. It aim to facilitate the government institute like TMAs authorities to check the performance of their employees as well as the condition of solid waste in their area. The “Clean Pakistan App” is completely android based application which help the TMAs authorities, common people and volunteer and other all actors to communicate with each other for. All the actors participating in the system will have their proper account to the system through which they enter to the system via sign in/sign up and upload info according to their degree of nature.

This application is completely android based mobile application and is available free of cost to every user who wishes to use it. Basic aim of developing this application is to find a better and an easy way for the communication between the different actors of the system like TMA officers User etc.

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Chapter 1
Introduction

1.1 Introduction:

Pakistan generates about 48.5 million tons of solid waste a year, which has been increasing more than 2 percent annually. Like other developing countries, Pakistan lacks waste management infrastructure, creating serious environmental problems. Most municipal waste is either burned, dumped, or buried on vacant lots, threatening the health and welfare of the general population. The Government of Pakistan (GOP) estimates that 87,000 tons of solid waste are generated per day, mostly from major metropolitan areas. Karachi, Pakistan's largest city, generates more than 13,500 tons of municipal waste daily. All major cities face enormous challenges on how to manage urban waste. Bureaucratic hurdles, lack of urban planning, inadequate waste management equipment, and low public awareness contribute to the problem. Existing Solid Waste Management System in Pakistan. Groundwater is contributing about one-third of the total water resources of Pakistan and is a sole source of water supplies in major municipalities. In Pakistan, the main contributors to surface and groundwater pollution are the byproducts of various industries. The discharge of industrial effluents, municipal sewage, farm, and urban wastes carried by drains and canals to rivers worsens and broadens water pollution.

The government has taken various steps to eradicate garbage. But more work is needed because the government employee does not do their duties according to the expectation of the public. To address this issue, we need to improve the TMA's sanitation sector and make it more active. We involve the common people to improve the cleanliness in their cities. With the help of providing a platform for common people to communicate with the responsible person of these departments. The sectary of the officers doesn't point out the actual problem in their cities. PA only points out those areas in which they have an influence.

People do not have any awareness of cleanliness because the illiteracy level high they have no internal discipline to properly manage the garbage. Many people think that it is all right to litter as sweepers must keep the area clean. Some think that since they are visiting for a few hours only, it does not matter what condition they leave the place in. Others feel too lazy to walk up to a trash can to deposit rubbish in it and some just do not think at all while tossing a sticky chewing gum or an empty juice bottle on the roadside.

In this sector, the government has limited resources and limited manpower to overcomes this waste in big cities government needs more manpower and resources but they can't afford .there are many unemployed peoples in this sector but they are motivated and want to make

their reputations but there this no platform to provide job opportunity to those peoples in private sectors. There are many private sectors but people don't know about them and these sectors provide their service to limited areas. The private sector wants to expand their bossiness but they did not have any platform to meet their wish.

1.1 Objective:

The objective of this app is based on Cost Effective, Time Saving and Responsiveness.

1.1.1. Cost Effective and Time Saving:

This application is saving the time of the user, TMA officers and the volunteer in efficient manner. If any user see garbage anywhere, he will send the location and photo of the place to TMA. If TMA already appointed the employee tor this area then they take notice of their employee laziness and ensure this cant happened in the future. If there is not appointment of employee for this area TMA will appoint its employee for this place.

If a citizen wants to provide his services as a Volunteer, he can do so. The "clean Pakistan" app provides the facility to register themselves to provide services in those areas where TMA does not access to clean those areas. These all facilities will be cost effective and time saving for the users of the application.

1.1.2. Responsiveness:

We are using the DBMS named for Firebase maintaining records of all the module using real time database. Firebase is much faster and efficient than other DBMS via handling the records. It is very crucial for the system for maintaining all the record and make communication between users, TMA and volunteer. The system will response as soon as possible for an ease for all actors.

1.2 Problem Statement:

Sanitation is a big and important issue in our country. There is pile of garbage laying in every street for many days. The government and the citizen do not pay attention to the way garbage is

causing various disease in their lives. The government has taken various steps to eradicate garbage. But more work is needed because the government employee does not do their duties according to the expectation of the public.

1.3 Proposed Solution:

The better possible solution for utilizing the available resources in an effective, efficient, and organized way should be deposited. The **"clean Pakistan"** app is introduced to cope with this problem**.** The communication is the biggest issue which is going to be solved with the android application. The people who want to become a volunteer will be able to upload their related detail in this application. TMA officials can check the performance of their worker. The user will contact with the TMA official in easy way if he see the bad condition of their street.

1.4 Scope of the Project:

User gives their information to the system by the following methods provided in the application. Whenever user makes a search all the result based on this information. Furthermore, required technologies for this software are internet connection for fetching data. System data resides and maintained in a database, which is located on a cloud-server.

1.5 Hardware Requirements:

The “Clean Pakistan App” is android based mobile application whish help user like TMA officials, user and volunteer to communicate each other and find each other easily. This application is available at mobile application stores or similar services, so that user can download it without any cost

User must have an android device with data connection.

1.6 Software Requirements:

Android version of the device must be lollipop or above this.

1.7 Tools:

1.8.1 Android Studio:

Android studio is the officials Integrated Development Environment (IDE) for developing all the android application. It is the much faster tool for developing android application than others and has many build-in feature support. In this tool, Java or JavaScript is used for implementing logic and XML is used for designing the interface. It has different kind of Emulator for testing the app you have developed with different size and nature.

1.8.2 Figma:

We use Figma as backend tool for designing interfaces. All the backgrounds are designed in the Figma. The Figma provide many build-in features for designing and creating backgrounds. You can insert text as well as images. It provides the facilities to draw circles, lines, ellipse, rectangles etc. of different sizes.

1.8.3 Firebase:

The firebase is used as to store all the data of the app as real-time database. Data is stored as JSON in the firebase. The firebase allows you to develop responsive, efficient and accurate app. The firebase require your Email, address and internet connection to be used as database.

1.8.4 Star UML:

Star UML is drawing tool that we used to create diagram for the system for the system developed. Use case, Data Flow Diagram, ERD and activity Diagram etc. can be drawn efficiently in an easy way in this tool.

Chapter 2

Literature Review

2.1 Literature Review:

The application “Clean Pakistan App” automate the system of the solid waste. If any user fined garbage in anywhere he send picture and location of the garbage to the TMA. If the TMA already appointed the employee for this area then they take notice of their employee laziness and ensure that this problem can't appear in the future. If there is no appointment of the employee for this area TMA will appoint its employees to clean the place. If a citizen wants to provide his services as an employee, he can do so. The "clean Pakistan" app provides the facility to register themselves to provide services in those areas where TMA does not access to clean those areas.

2.2 Existing System:

There is an app available on play store named “Clean and Green Pakistan” which provides a facility to handle this problem with the level of government to cope with this problem. This is app main focus on the plantation in country. But over app involve volunteer services and private sector services to cope the cleanness problem in country. This app cannot provide the facility to become a volunteer but our app provide this facility.

2.3 Proposed System:

To overcome the problem of the existing system, we created our app namely “Clean Pakistan app”. Our proposed system has many facilities for all the actors like user, volunteer and TMA officials. All the modules and actors can register themselves via same app with different layouts. The location of the garbage will be provided with the help of Google map. If any employee cannot do their work then user have a facilities to complaint to the higher authorities. TMA official can check the performance of the employee. A person who want to become a volunteer our app can provide a platform to register themselves. If government want to start any campaign so they will not need to higher any employee because volunteer can help the government by using this app.

Chapter 3

Requirement Specification

3.1 Requirement:

A Requirement is need of proposed system to be build. A Requirement is a statement an entity demand on another explicitly and implicitly. It is most essential part and must be met to all relation to full fill the requirement of all the entities of the system. Gathering Requirement of the system is the most important part as no other part is as difficult as this. Simply it is statement of the system service or constraint. The process of establishing the service that the customer require from a system and the constraint under which operate and is developed is known as Requirements engineering.

3.2 Functional Requirement:

The statements or services that the system should do or the functional Requirements of the proposed system. Functional Requirements also describes that what the system should not do. Functional Requirements are the statements that must be clear, unambitious, and consistent. They are written in such a language which should be easy to read and understand and clearly highlighting its purpose without creating any confusion. Use cases are used describe the functional requirement of the system.

3.2.1. Sign Up:

Table3.1

Name:	FR-1 Sign Up
Description:	To use this app, every user must have to Sign Up to app for register himself.
Rational:	Without Signing Up, no one can use this application. Registration or Signing Up is functional part of the system.
Fit Criterion:	For Signing Up, the following information is mandatory for the system. • All the fields must be empty before the user write anything in the fields. • Then the user will enter his/her correct Name and password. After authentication or validity, the system will then grant access to the app. • If the user enters incorrect Name or Password or both then the system will not grant access to the app to the user.
Dependencies:	If the user does not register or Sign Up to the system, then the other functionality will not be performed for the user.

3.2.2. Sign In:

Table 3.2

Name:	FR-2: Sign In
Description:	If the user needs to use this app many times, he/she has to Sign In to app by entering his/her valid email and Password.
Rational:	The system will perform the authentication technique to ensure whether the entered Name and Password are valid or not for the pre-existing users in the system. After authentication and ensuring the entered Name and Password are correct, the system will grant access to pre-existing users to the system whether he/she is Farm Owner or the User. If the authentication is invalid i.e., the user enters wrong Name and Password, then the system will not grant access to the app.
Fit Criterion	For Signing In, the user has to enter the following details to the system. **I. Email:** The data type of Name is String. The user can enter his/her Name in any format i.e., in lower case, in upper case or in toggle case etc. The Name should not exceed 30 character. **II. Password:** The data type of password is also String. The user can enter any password consisting of alphabets, numbers or any special character without exceeding 30 characters.
Dependencies:	If the user does not perform sign in to the system, then the other functionality will not be performed and the system will not perform any access to the system.

3.2.3 Complain:

Table 3.3

Name:	FR-3 Complain
Description:	The volunteer can complain when he see garbage anywhere in his area. The TMA officials can check the complaint and assign the employee to fulfill the complaint.
Rationale:	When the user enter the complaint TMA officials can see detail of these complains and assign employee to solve these complains and when the employee fulfill these complain TMA can send a done message.
Fit Criterion	When volunteer enter a complaint then he can also send a picture of garbage and pin the location of the area where he see the garbage
Dependencies	The function of complaint can depend on the location of the user.

3.2.4 User Account:

Table 3.4

Name	Managing User Account
Description	The TMA officials can see the data of employee/User but user and volunteer can't see each other data.
Rational	The TMA officials can see the data of the user and volunteer because he can check who many user and volunteer are registered on this app. The volunteer can take part in the events set by the TMA.
Fit Criterion	TMA can check all the details of the users. They can check account detail and also the detail of the data that the user uploads. If TMA will not check then management issue can occur.
Dependencies	If TMA cannot check users account management problem is occurred.

3.2.5 Update Account:

Table 3.5

Name	Update Account
Description	A user of system (TMA, User and Volunteer) would update their information for example Name Email.
Rational	Updating information is necessary because can enter wrong details like mistake in user name and email then user can easily edit.
Fit criterion	For Update profile information, User must put their personal information which is little bit wrong or need to update by the user and there is an update option to perform update action.
Dependencies	This functionality depend on all user , TMA and volunteer accounts.

3.2.6 Events Notification:

Table 3.6

Name	Events Notification
Description	When TMA organize any event then the notification must be delivered to the Employee as well as to the Volunteer.
Rational	The notification is received to the volunteer and user that are registered in the app.
Fit Criterion	Event is organized when some special occasions billion three tsunami error so volunteer is needed to help the user/employee
Dependencies	This function depend on the account of the user and volunteer.

3.3 Non-Functional Requirement:

3.3.1Performance:

Table 3.7

Name:	NF-1: Performance
Description:	Storing and retrieving data must be very fast. The performance is measured in response time.
Rationale:	If the storing and retrieving data is not fast then the time wastes and the user will avoid using this app. Moreover the decreasing in performance will decrease the efficiency of the app.
Requirement:	If the Internet is available then the retrieving information is measured in 2s.

3.3.2Reliability:

Table 3.8

Name:	FR-2: Reliability
Description:	The system should be reliable in the sense that it should not damage or crash to load of data in its database.
Rationale:	If the system or app is not reliable then the robustness of the system will be increased and the whole record will put on risk. The system should not crash in any load.
Requirement:	The system should have best hardware and use best modern tools.

3.3.3Availability:

Table 3.9

Name:	NF-3: Availability
Description:	Make sure this app should available at any time. If Internet is available user should use this app 24/7 hours in a weak.
Rationale:	If the system is not online 24/7 then the user will not use this application due to availability /server/internet problem.
Requirement:	The system should be online because having database.

3.3.4Accuracy:

Table 3.10

Name:	NF-4: Accuracy
Description	All the data stored in the database must be accurate i.e., all the info must be correct and unambiguous.
Rationale:	If the stored information is not accurate then the system will have wrong and inaccurate record of users. As a consequence, the app will lost its progress. The farm owner will not be able to manage the record.
Requirement:	The system should have specified tool for storing accurate information.

3.3.5 User-Friendly:

Table 3.11

Name:	NR-5: User-Friendly
Description:	Make sure that the system is user friendly that everyone can use it.
Rationale:	• The user easily use it. • The user properly understand it.
Requirement:	The system should support English language and have meaning full words and concise words.

3.3.6 Security:

Table 3.12

Name:	NR-6: Security
Description:	Make sure the app should be secure i.e., only valid and authorized user can use the app via authentication.
Rationale:	If the system is not secure then its security will be put to risk. As a consequence, the unauthorized and non-registered users can use the app.
Requirement:	The user has to mention his/her correct Name and password before using this app.

3.3.7 Portability:

Table 3.13

Name:	**NR-7: Portability**
Description	Make user this app should be portable to every user's device. It should run on all the Android devices.
Rationale:	If the system is not portable then some users having Android devices with different nature will refuse or avoid using the app.
Requirement:	The system should be designed in a way it should run on all the Android base devices.

Chapter 4

System Design

4 System Design:

System design is a software engineering process used for analyzing the system. Its application is to analyses the system for troubleshooting or development system. It is concerned to information technology, where computer-based system require defined analysis according to their makeup and design. In system design modules, interfaces and data for a system is defined to satisfy the requirement. This chapter will describe the analysis model of system. It explains the requirement of the system, problem areas, use cases and actor, dataflow diagrams, sequence diagrams and activity diagrams of the system. The good approach is to gather and define the requirements without ambiguity, so that the risks are identified and the user is satisfied when the end application is finally workable or deliverable.

4.1 Use Case Diagram:

Use cases diagrams are usually show the behavior of the system. It is an approach used in system analysis to identify, clarify and organize system requirements. In use case an actor can be a human or external system. Use case show that who different actor can interact with the system and accomplish a goal. Use case also defines boundaries of the system. It gives the detail about the actions that some entities should or can perform by some actor. Each use case shows an action performed by an actor and must be associated with any actor or the system that perform it.

- **Actors**

  There are three actors in the use case diagrams of the system.

  - Volunteer
  - Employee
  - TMA

4.1.1 Volunteer Use Case:

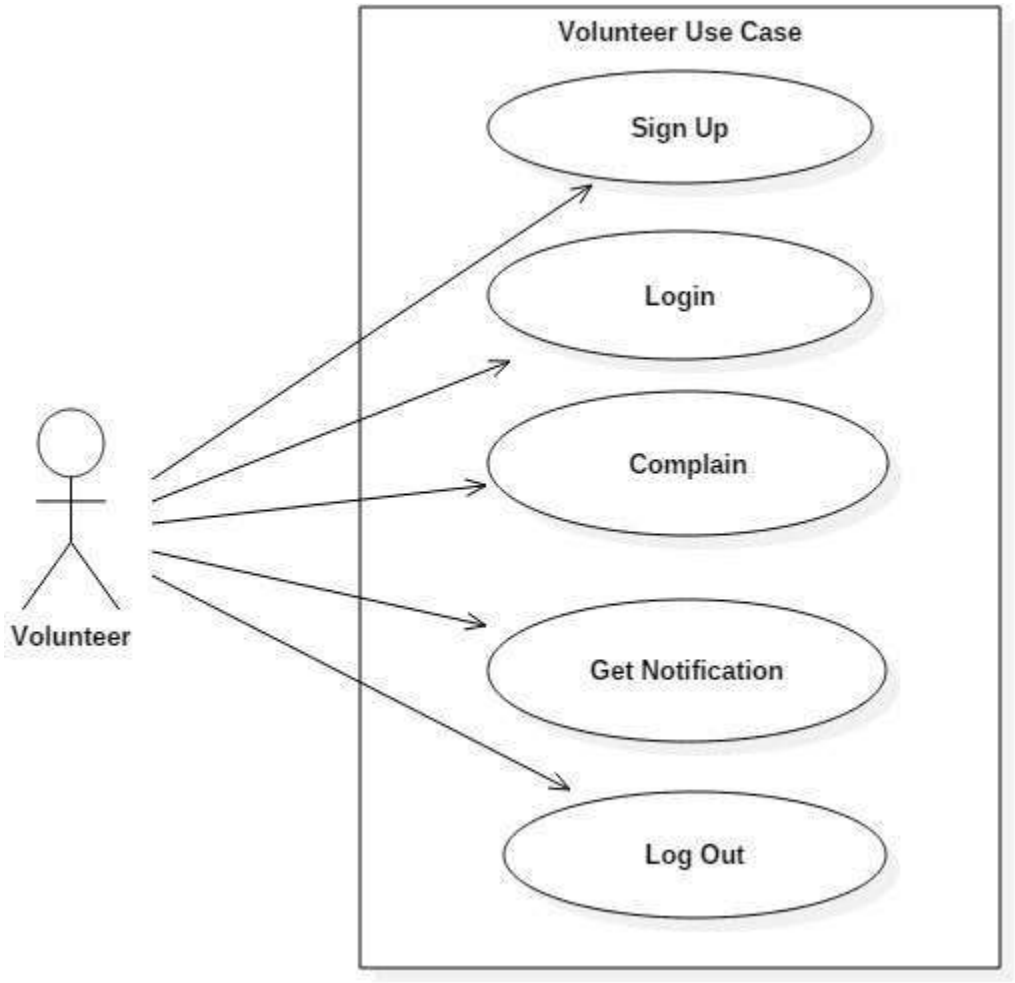

Figure 4.1

Table 4.1

Use Case	Description
Signup	Volunteer has to Sign Up with the system. Without Sign Up he has no access to the system. Because this application access to only authorizes user.
Login	The Volunteer has to login to use the application.
Complain	Volunteer can complain by adding a picture of garbage and pin the location of garbage on app.
Get Notification	When TMA organize any event then a notification will be delivered to the Volunteer.
Logout	Volunteer has to logout after using the application.

4.1.2 Employee:

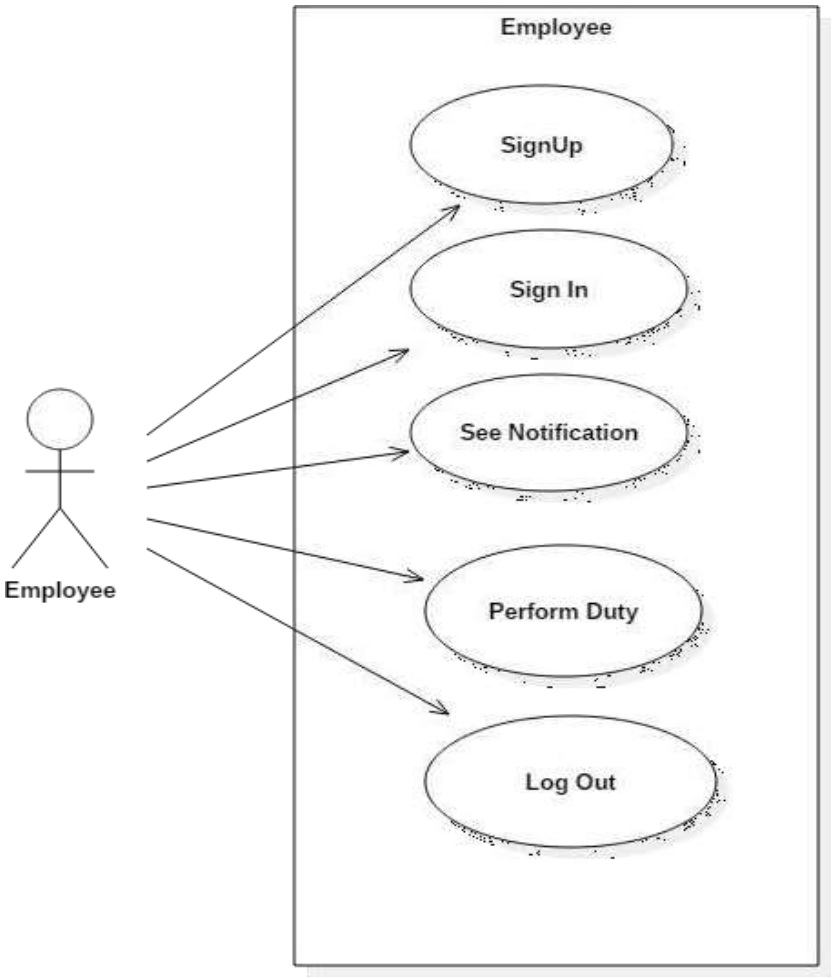

Figure 4.2

Table 4.3

Use Case	Description
Sign Up	Employee has to Sign Up with the system. Without Sign Up he has no access to the system. Because this application access to only authorizes user.
Sign In	The Employee has to login to use the application.
See Notification	When the TMA official's assign duty to the Employee then a notification is deliver to the Employee
Perform Duty	Employee perform duty assign to him and send done message when task is performed.
Log Out	Employee has to logout after using the application.

4.1.3 TMA:

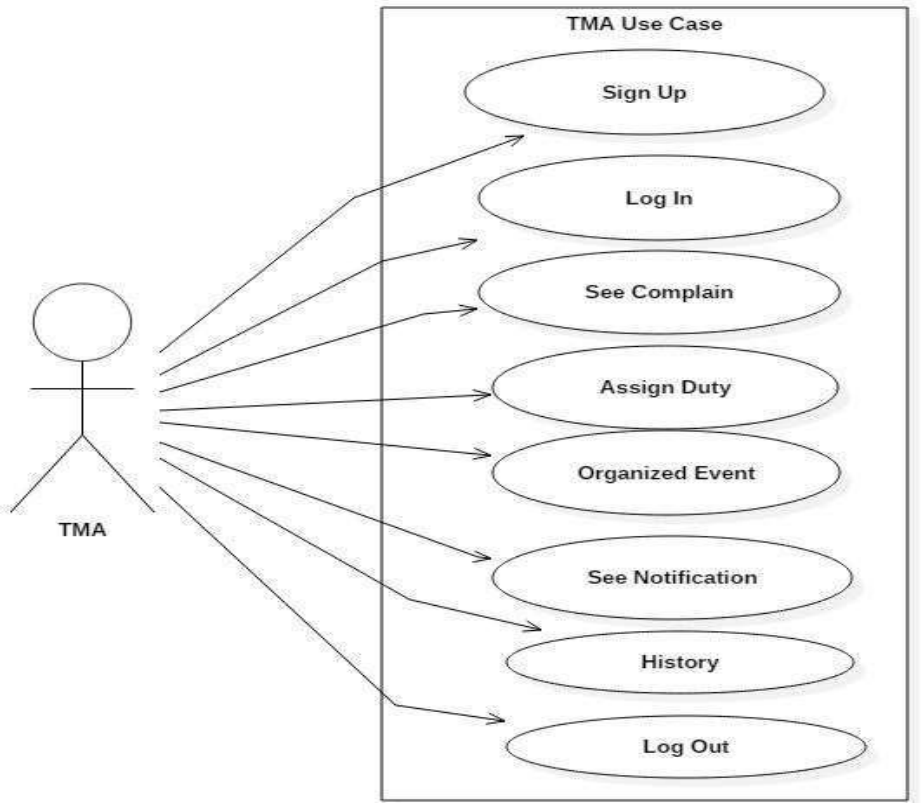

Figure 4.3

Table 4.3

Use Case	Description
Sign up	TMA official's has to Sign Up with the system. Without Sign Up he has no access to the system. Because this application access to only authorizes user.
Login	The TMA official's has to login to use the application.
See Complain	When any volunteer can enter any complain then TMA officials can see the list of complains.
Assign Duty	TMA official's assign the duty to the employee that are near to the location of the complaint.
Organize Event	When any specials seasons like plantation campaign are started then TMA officials can organize events.
See Notification	When any volunteer can enter any complain or any employee can done his assign duty then TMA officials will get a notification.
History	TMA officials can see the history of register employees and volunteers.
Logout	TMA official's has to logout after using the application.

4.2 Activity Diagram

4.2.1 Employee Activity Diagram:

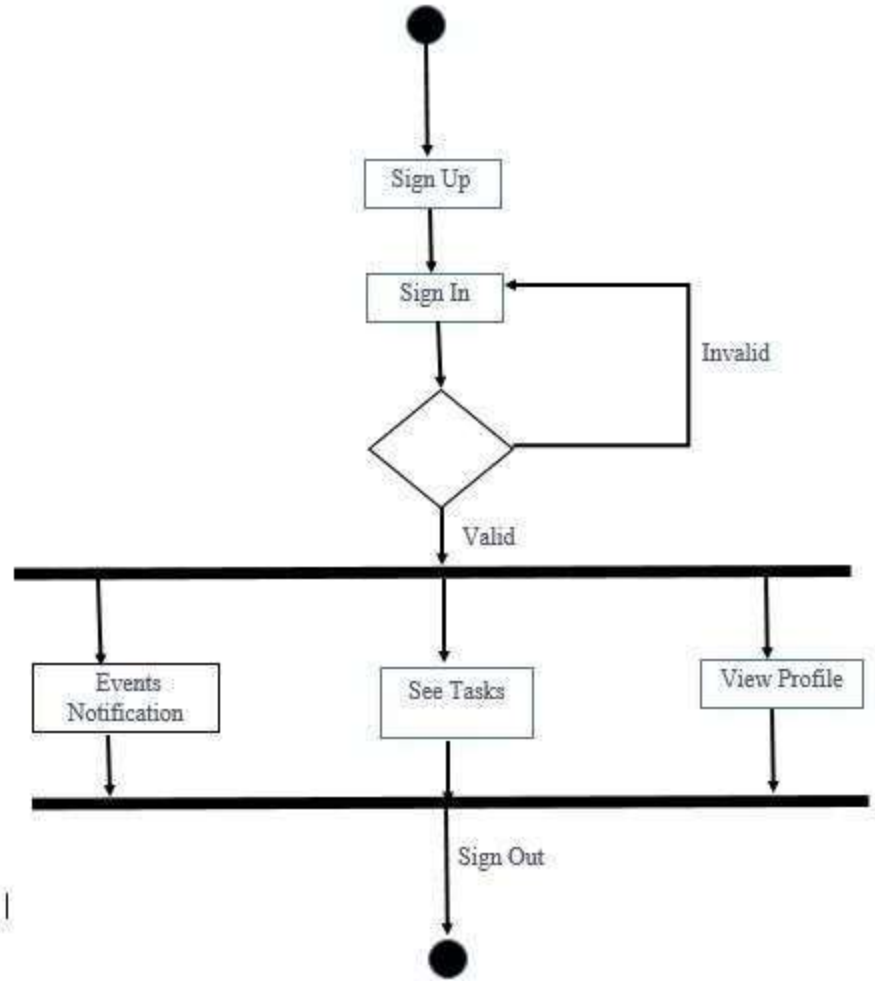

Figure 4.4

Figure shows the activity diagram for user. The user will to the system. After the Authentication the Employee will see notification, see the task assign to him and response after the completing the assign task.

4.2.2 TMA Activity Diagram:

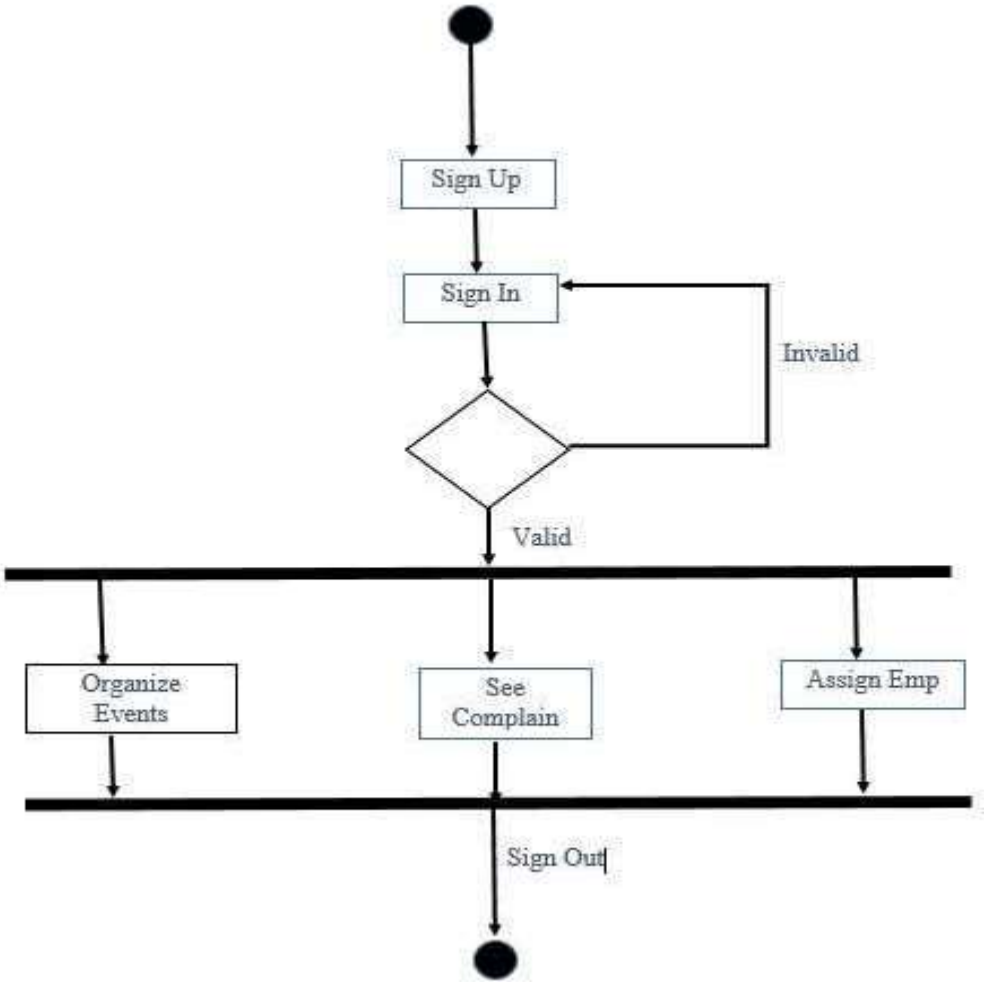

Figure 4.5

Figure shows that TMA officer will login to the system. The TMA official's will see the complaint, assign employee for the complaint and organize the events.

4.2.3 Volunteer Activity Diagram

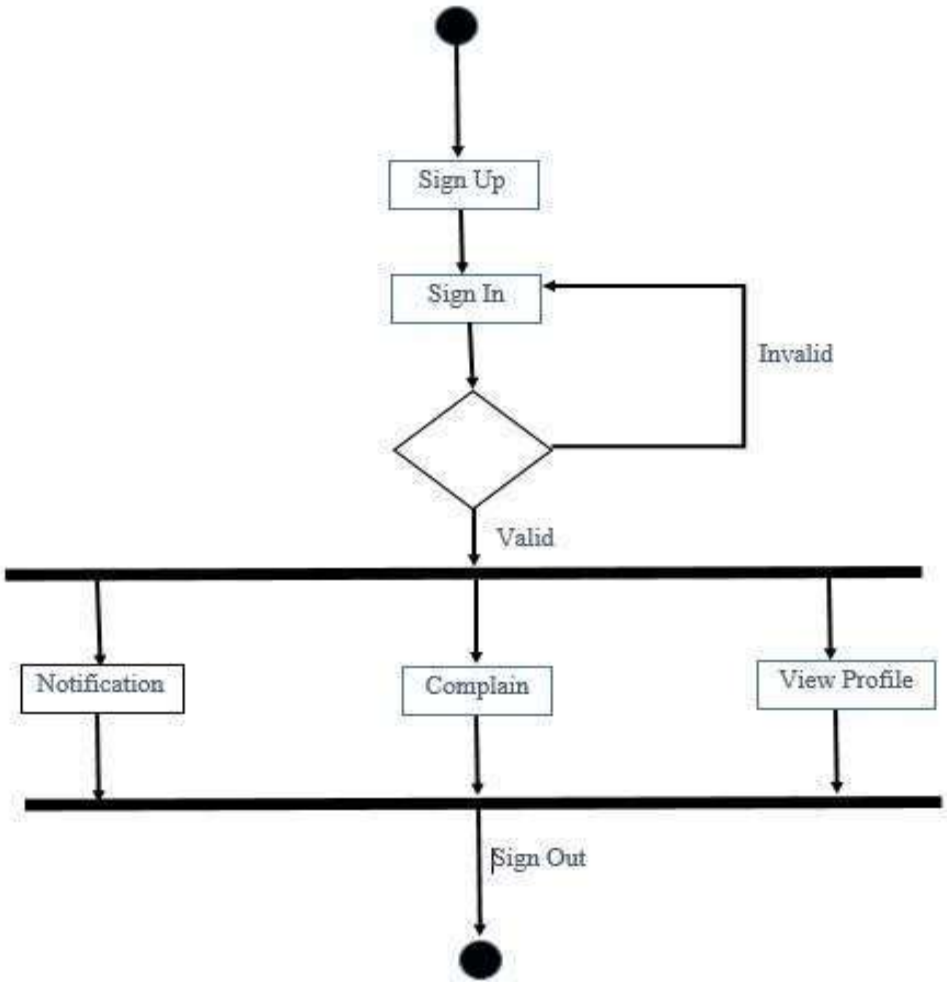

Figure 4.6

Figure shows that volunteer will login to the system. After the login volunteer can complain, see notification and logout.

4.3 Class Diagram for Clean Pakistan App:

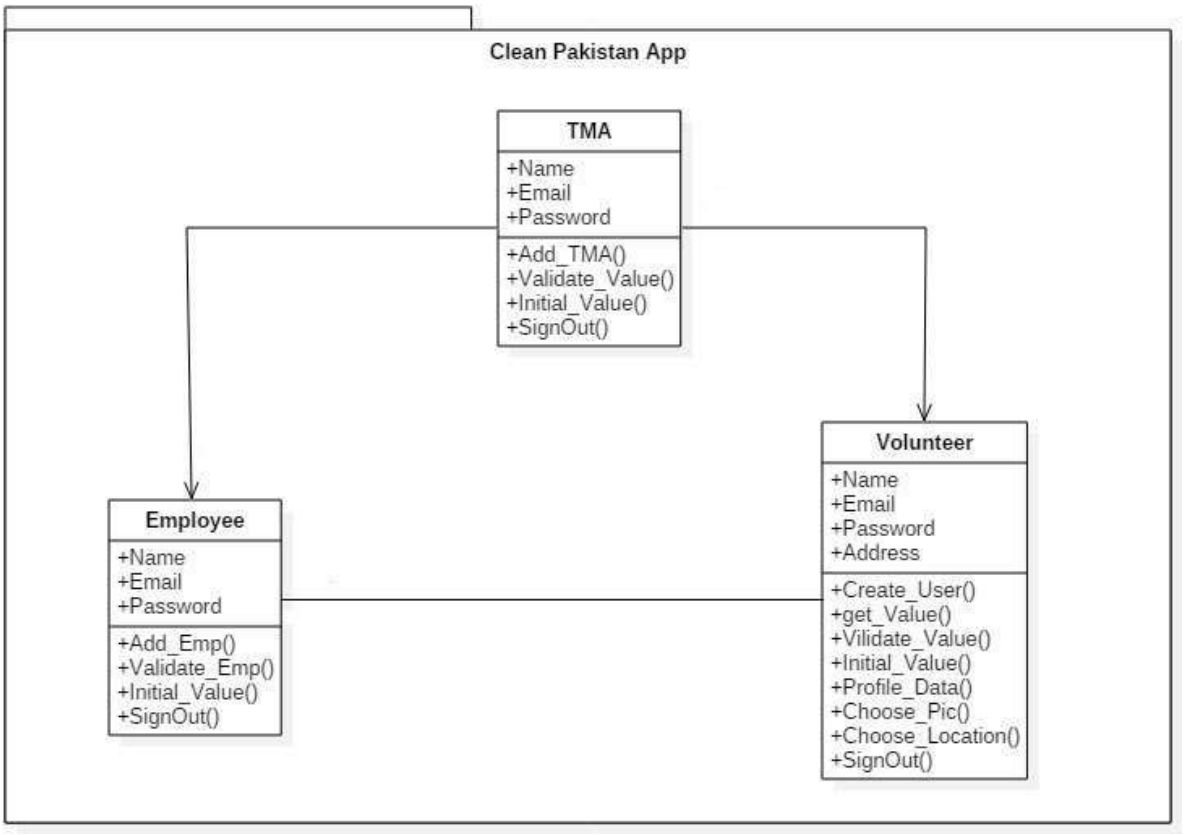

Figure 4.7

4.4 Sequence Diagram

4.4.1 TMA Sequence diagram

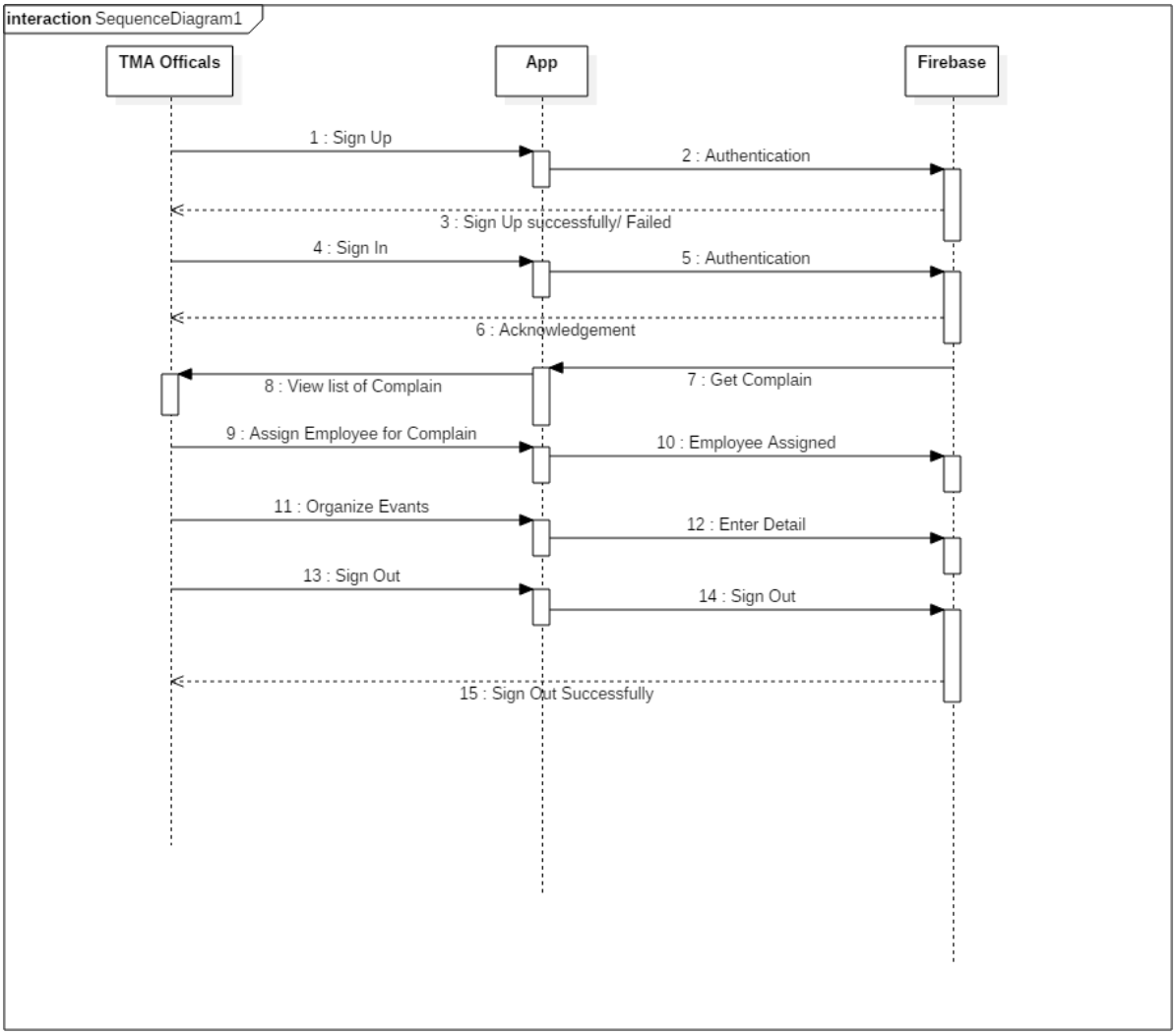

Figure 4.8

Figure shows that the TMA officials will login into the system by providing email and password after authentication, the officials will be able get complains, assigned Employee, Organize events and then logout.

4.4.2 Employee Sequence Diagram

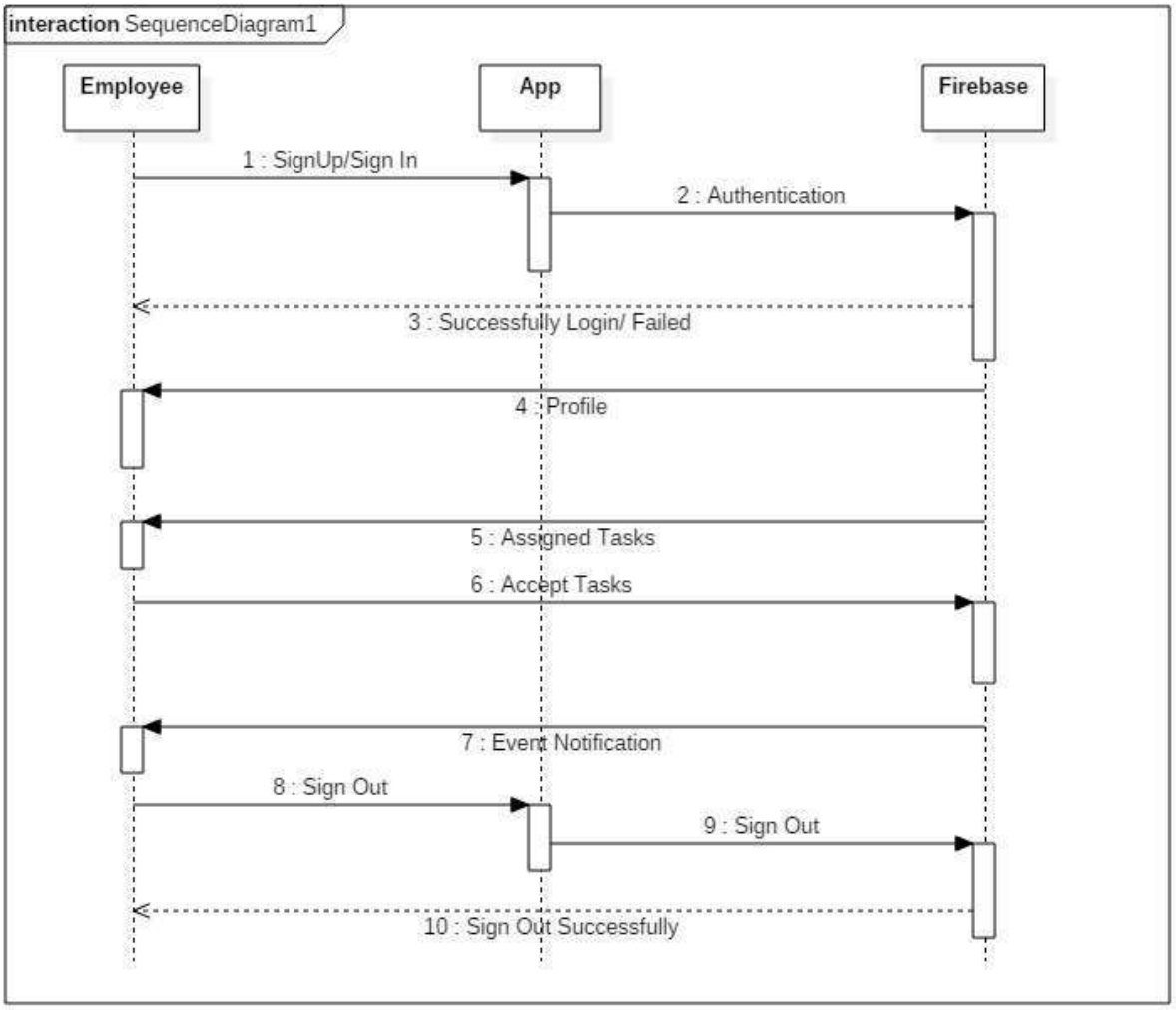

Figure 4.9

Figure shows that the Employee will login into the system by providing email and password after authentication, the Employee will be able to sell tasks, Accept task, see events notification, and logout.

4.4.3 Volunteer Sequence Diagram

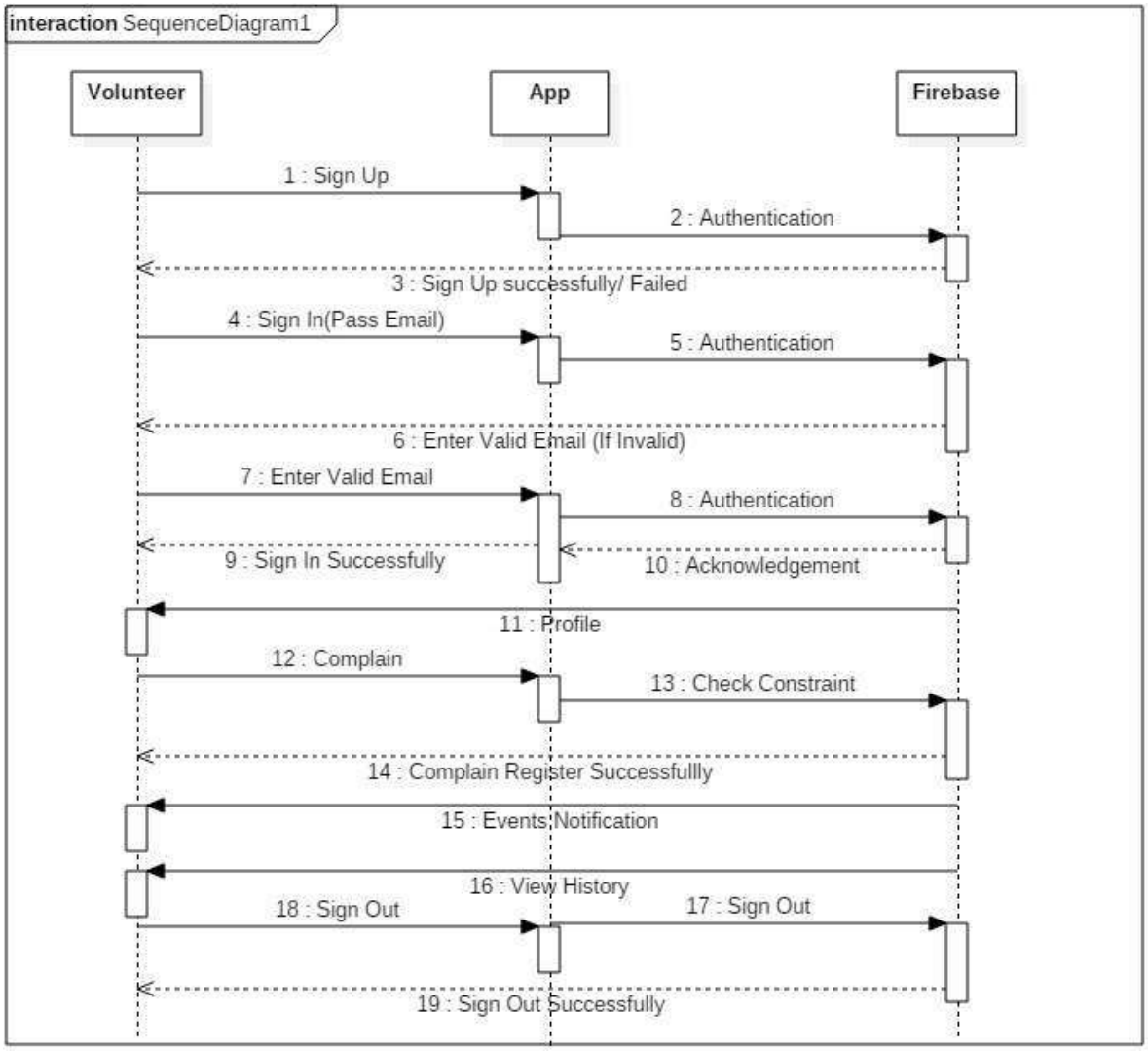

Figure 4.10

Figure shows that the Volunteer will login into the system by providing email, password and address after authentication, the Volunteer will be able to send complain, see events notification, view history and logout.

4.5 Data flow Diagram

4.5.1 Level-0

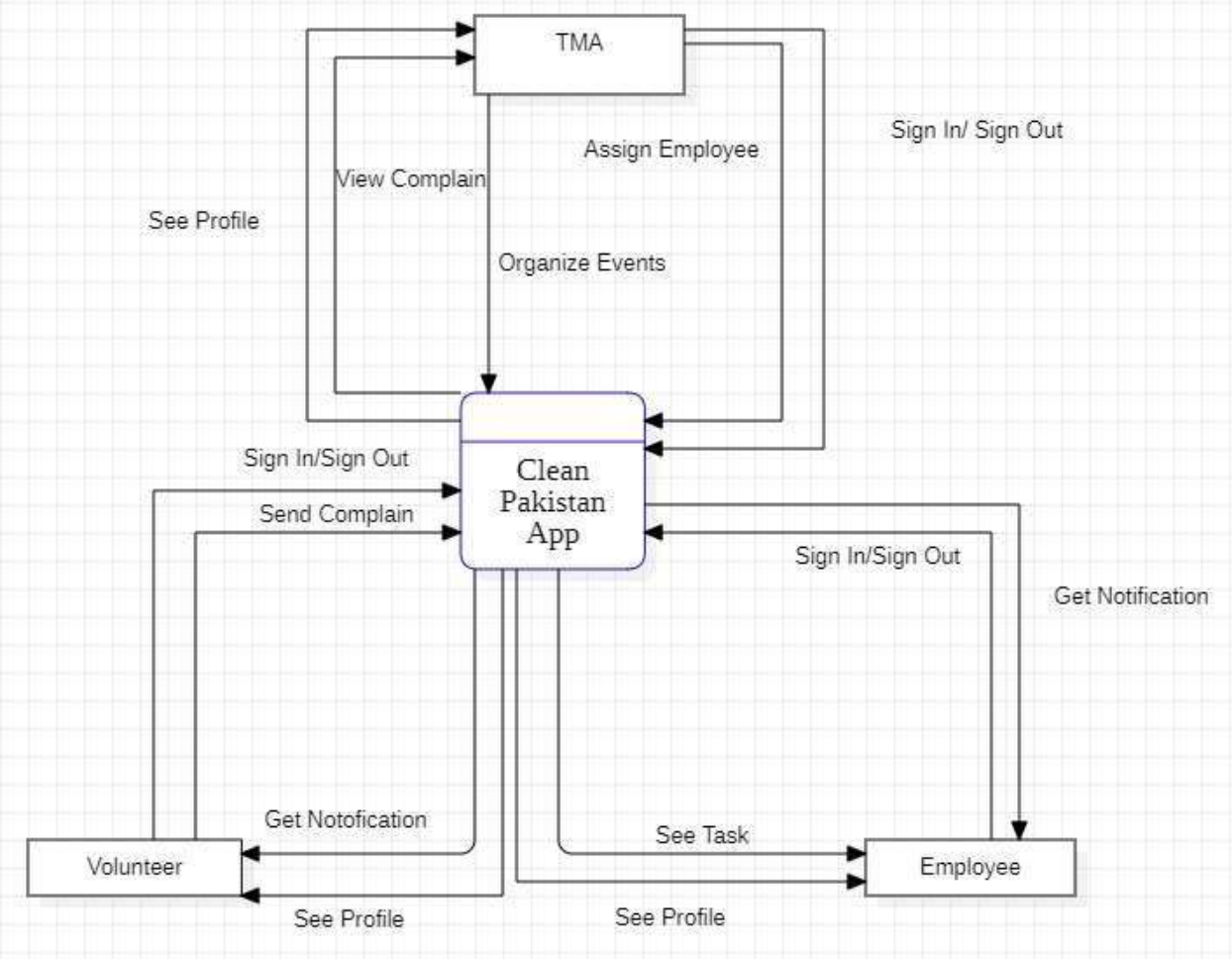

Figure 4.12

Figure shows that basic functionality of the users in the system user can sign up then after doing this users are TMA official's, Employee or Volunteer.

Chapter 5

Implementation

5.1 Implementation

In the development of software lifecycle implementation is important phase where the developer gives the physical existence thought and ideas. The result of successful implementation is our desired application. During this phase the developer makes source code of conceptual model.

5.2 Tools

5.2.1. Tools:

• Android Studio

5.2.2. Languages:

• Java (and JavaScript)

• XML

• HTML and CSS

5.2.3. Data Access:

• Firebase

• Google Map

5.3. Software Requirement:

• MS Word (for documentation)

• MS PowerPoint (for presentation)

• Star UML (for diagrams)

5.4. Hardware Requirements:

• Intel® Core™ i5 (Laptop or PC)

• Android Smart phone or Emulator

5.5. User Interface:

The user interface of the project should be interactive and simple, so everyone can use the system easily without facing any difficulty. Below are some interfaces (screen shorts) of our project that made our project more interactive and efficient.

5.5.1 Splash Screen:

Figure 5.1 Splash Screen

Figure 5.1 shows the Splash screen of Clean Pakistan App.Which will appear After 2 sec.

5.5.2 Select Form:

Figure 5.2 Select Form

Figure 5.2 shows the Select Form. User use this according to its need or nature of job.

5.5.3 Sign Up:

Figure 5.3 Sign Up

Figure 5.3 shows the sign up activity for the Employee, Chairman and Volunteer which require user name and password.

5.5.4 Sign In:

Figure 5.4 Sign In

Figure 5.4 shows the sign in activity for Employee, Chairman and Volunteer which require user name and password for signing in to the system.

5.5.5 Registration Form:

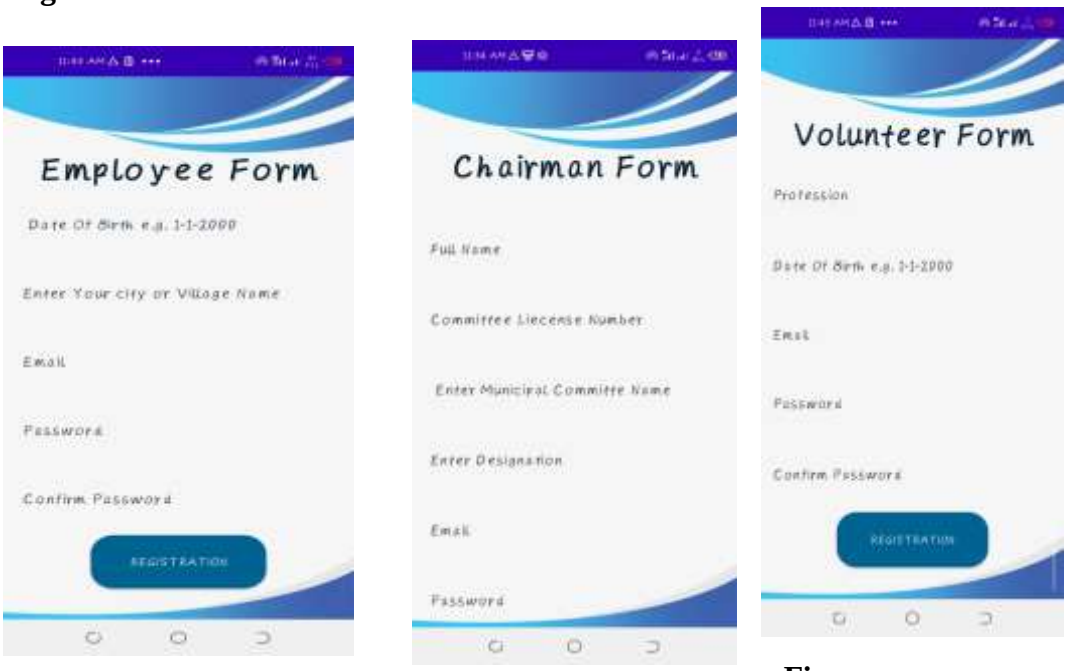

Figure 5.5 Registration Form

Figure 5.5 shows Registration Activity. The new user who want to register in the application can make account here and then he can login to the system.

5.5.6 User Profile:

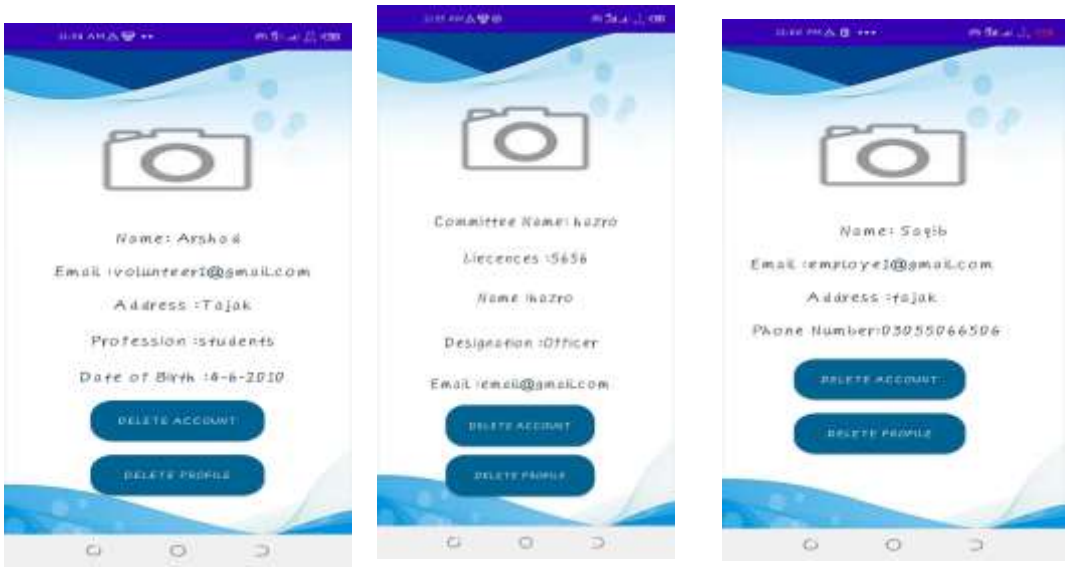

Figure 5.6 User Profile

Figure 5.5 shows the user profile of user. The user can delete account or delete profile from here.

5.5.7 Dashboard:

Figure 5.7

Figure 5.7 shows the Dashboard. All the user can see their profile, see notification, Event and Logout from here.

5.5.8 Event:

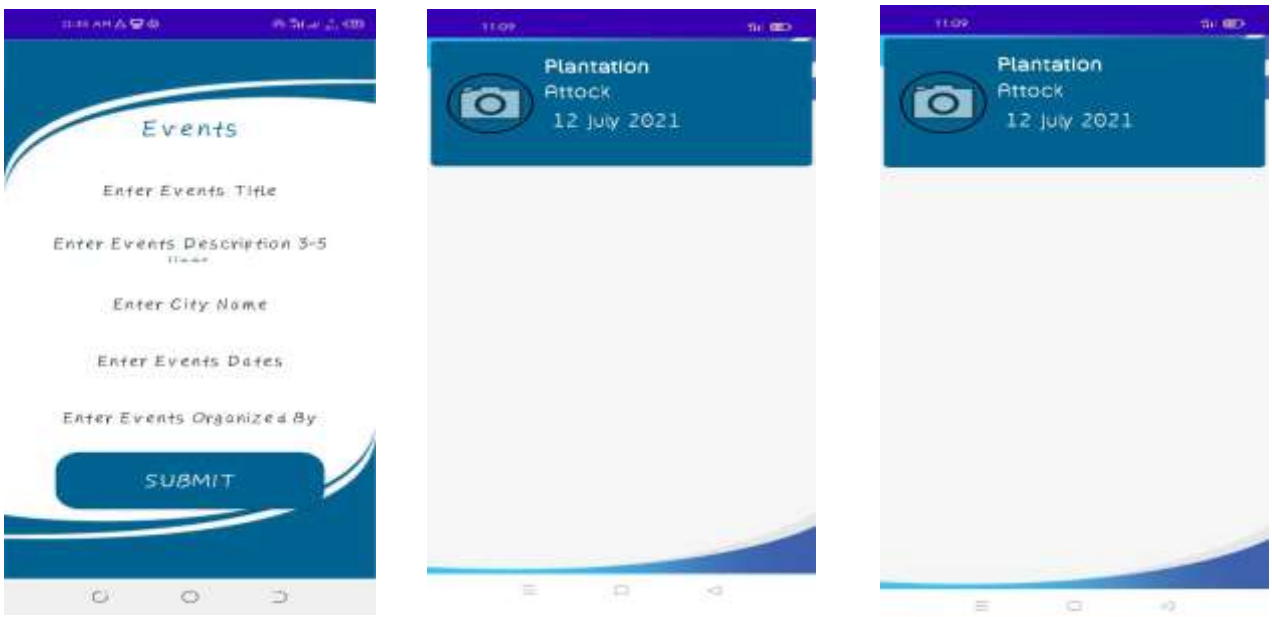

Figure 5.8 Events

Figure 5.8 shows events activity. The chairman can organized event from here and the Employee and Volunteer can see Events by Click on the event button on dashboard.

5.5.9 Complain:

Figure 5.9 Complain

Figure 5.9 shows complain activity. The volunteer can select whether he complain to Employee or to Chairman.

5.5.9.1 Complain for Chairman:

Figure 5.10 Complain to chairman

Figure 5.10 shows complain to the chairman. The volunteer can take picture add location describe it in some line and submit the complain.

5.5.9.2 Complain for Employee:-

Figure 5.11 Complain for Employee

Figure 5.11 shows complain to the Employee. The volunteer can take picture add location describe it in some line and submit the complain

5.5.9.3 Location:

Figure 5.12 Location

Figure 5.13 shows the location. Volunteer can add location with their complain from here.

5.5.9.4 Complain Processed Notification:

Figure 5.13 Complain Processed

Figure 5.12 shows the complain Processed. When task is completed against the Complain then the notification is delivered.

5.5.10 Notification To employee and Chairman:

Figure 5.14

Figure 5.14 shows the notification that receive to the users.

5.5.11 List of Municipal Committees:

Figure 5.15

Figure 5.15 shows the list of the municipal committee

5.5.12 List of Employees:

Figure 5.16 List of Employee

Figure 5.16 shows the list of the all Employee.

5.5.13 History:

Figure 5.17 History

Figure 5.17 shows the history of complain.

Chapter 6

Evaluation

6.1 Evaluation:

In this chapter, we will evaluate our proposed system by applying different testing strategies to check the normal working of the application.

6.2 Testing:

Testing is very important phase in the development of an application. Testing is the process of analyzing proposed system to check whether the system meets all its functional and non-functional requirement or not. It is also used to detect bugs (error) in the system if exists. Testing should be addresses continuously throughout the development of the app rather than at the end. In evaluation we evaluate our application with unit testing, integration testing and system testing.

6.2.1 Unit Testing:

In unit testing each module of the system is tested individually. After applying unit testing, you must insure that all the modules are working well with any deficiency or problem.

6.2.2 Integration Testing:

In integration testing, distinct software modules are collected and tested in the form of group .It is applied after the unit testing. Integration testing walks as input each module in unit testing and batches them and provides its output to be prepared for system testing.

6.2.3 System Testing:

System testing of software is testing led on entire integrated system to assess the system's agreement with its agreed requirements. System testing is a more restricted type of testing; it pursues to detect defects both within the "inter-assemblages" and also within the entire system.

6.3 Test Cases:

The tests cases are executed during the project development. They are used to test the functional and nonfunctional requirements of the project.

6.3.1 Test Case 1 (Sign In):

Table 6.1 Test Case1 (Sign In)

Test No.	Test Conditions	Expected Results	Actual Outputs	Status
Test 1	Click on Sign in button without entering Email and password	Toast is displayed Please Enter Required Info	Toast is displayed Please Enter Email	Pass
Test 2.	Enter Invalid Email and click on Sign in Button.	Toast is displayed Invalid Email.	Toast is displayed Sign in Failed.	Pass
Test 3.	Enter Valid Email and password and click on Sign in button	Sign in Successfully	Sign in Successfully	Pass

6.3.2 Test Case 2 (Registration):

Table 6.2 Test Case2 (Registration)

Test No.	Test Conditions	Expected Results	Actual Outputs	Status
Test 1	For new user Click on signup and select user category without Email and Password	Toast is displayed Enter Required Info	Toast is displayed Please enter information	Pass
Test 2.	Enter Invalid Email and password click on Signup button.	Toast is displayed Enter valid Email input	Toast is displayed Enter valid Email input	Pass
Test 3.	Enter Valid Email and password and click on Register button	Registration is Successfully	Registration is Successfully	Pass

6.3.3 Test Case 3 (Complain):

Table 6.3 Test Case3 (Complain)

Test No.	Test Conditions	Expected Results	Actual Outputs	Status
Test 1	Click Submit button without entering the information about Complain.	Toast is displayed Select picture and location.	Toast is displayed Select picture and location	Pass
Test 2	Enter location and Select the Picture and click Submit button.	Complaint submit successfully.	Complaint submit successfully.	Pass

6.3.4 Test Case 4 (Events):

Table 6.4 Test Case4 (Event)

Test No.	Test Conditions	Expected Results	Actual Outputs	Status
Test 1	Click Submit button without entering the information about Events.	Toast is displayed for Fill the Required field.	Toast is displayed Fill the Required field.	Pass
Test 2.	Enter All the field and click on Submit button.	Events Create Successfully.	Events Create Successfully.	Pass

Chapter 7

Conclusion and Future Work

7.1 Conclusion and Future Work:

In this chapter, we will discuss the conclusion and future work of our project after the completion of Implementation and evaluation phases.

7.1.1 Conclusion:

We have developed android application in full working condition having expected functionalities. We have achieved our target goal. “Clean Pakistan" is responsive android application which can easily accessed by user in his/her smart phone. It was our primary goal to develop such kind of application with sufficient performance. This app can be used by Employee, Chairman and Volunteer. We have provided multiplicity in this app. So, a user can access the application anywhere and at any time. The communication is the biggest issue which is going to be solved with the android application. The people who want to become a volunteer will be able to upload their related detail in this application. TMA officials can check the performance of their worker. The user will contact with the TMA official in easy way if he see the bad condition of their street.

. The location of the garbage will be provided with the help of Google map. If any employee cannot do their work then user have a facilities to complaint to the higher authorities. TMA official can check the performance of the employee. A person who want to become a volunteer our app can provide a platform to register themselves.

7.2 Future Work:

Now our application is automating the solid waste by the coordination of Public and Government. In future we can further improve our android application through several ways like add Image Enhancement Techniques to improve the quality of the pictures and then we can divide the garbage into categories to improve the movement of the garbage to the dumping stations.

Chapter 8

References

8.1 References:

[1] https://developer.android.com/about/versions/11?gclid=Cj0KCQjw7pKFBhDUARIsAFUoMDbIfp-zJh5rQ6Sx_FgNH0KbqzCX_a4PFeYqilmaT7NFYt9ZlCW8muQaAsUSEALw_wcB&gclsrc=aw.ds

[2] Google Maps - Wikipedia

[3] https://firebase.google.com/

[4] System testing - Wikipedia

[5] Read and Write Data on Android | Firebase Realtime Database (google.com)