FOOD SHARE - AN ANDROID APP: FOOD WASTAGE REDUCTION THROUGH DONATION

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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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APPROVAL

This Project titled **Food Share – An Android App : Food Wastage Reduction through Donation**, submitted by **A M Zobaer**, ID No: 141-15-3170 and **Md. Rezaul Islam**, ID No: 141-15-3080 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 7th May, 2018.

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DECLARATION

We hereby declare that, this project has been done by us under the supervision of **Mr. Shah Md Tanvir Siddiqee, Senior Lecturer,** Department of Computer Science and Engineering (CSE), Daffodil International University and co-supervision of **Mr. Anup Majumder, Lecturer,** Department of Computer Science and Engineering (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

This project is on food wastage reduction through donation. A huge number of world's produced food get wasted everyday however there are one person in every seven remains hungry. So we have built an application to reduce the wastage of food. Restaurants or other users can donate surplus food by using our application. Authorized organization can collect the food through this application and distribute them to hunger people. There are some charity organizations who are doing voluntary work to take the wasted food from restaurants & distribute it to the hunger people manually. This application will make their work easier than before and inspire more organization to do this noble work. Our project will create a digital link between charity organization and restaurants or other users to reduce food wastage and can make a huge difference.

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CHAPTER 1

INTRODUCTION

In this chapter we are going to provide an Introduction of our project, followed by Motivation, Problem statement, Expected output and Report layout.

1.1 Introduction

Food is any substance consumed to provide nutritional support for an organism. It is usually of plant or animal origin, and contains essential nutrients, such as carbohydrates, fats, proteins, vitamins, or minerals. We need food to live. But we waste a lot of food in our daily life.

Across the world, there are restaurants that waste tons of excess food every day. Where millions of people remain hungry. Bangladesh is one of the most densely and highly populated countries in the world. A lot of food get wasted by individual persons and restaurants of the country, where scarcity of food is very strong.

We have developed an android app to establish a link between restaurants and the charity organization to enable excess food donation. Individual person also can donate wasted food through our application. Registered charity organization can pick up the wasted food which is donated by the restaurants or individual users. Then volunteers of the organization will serve the food among hungry people.

We will also create a 'goodwill' points system for restaurants to get rewarded for such a noble deed which they can use for their own marketing efforts by being a responsible social business as well.

To make this project, we have studied related work of android application. We also have analysis about food wasted and food scarcity around the world, especially in Bangladesh. Technically, we have learned JAVA, XML, JSON, Firebase Authentication, Real-time Database, OOP by doing this project.

1.2 Motivation

In Bangladesh there are some charity organization who are doing volunteering work to collect wasted food from restaurant and wedding ceremony. Then they distribute them to hunger people. But they work manually. So this is not much effective way and a few of wasted food can be served by this process. A digital platform will be helpful for them to collect more wasted food.

We have built an android based mobile application. It is very easy to establish link between restaurants or individual users and charity organization through mobile application. In Bangladesh, the total number of Mobile Phone subscriptions has reached 147 million at the end of January 2018 [1]. Most of them are smartphone and runs on android platform. Communication between restaurants and charity organizations will be very easy through mobile application and also authorization will be confirmed. So we have chosen android platform to develop our project and we think our application will be helpful to reduce the wastage of food though donation.

1.3 Objectives

- The main objective of the project is to reduce food wastage through donation.
- To establish a digital communication between restaurants and charity organizations to collect and distribute wasted food.
- To make balance between food surplus and food scarcity.
- To feed the hunger people.
- To make easy the volunteering work of charity organizations who are currently collecting and distributing wasted food.

1.4 Expected Output

Our project is to develop an android application to reduce wasted food though donation. Individual users and restaurant can make a food availability post. The users who want to give away food, do not require to be registered by us. The food availability post will only be available to the registered charity organization. They will take responsibility of collecting and distributing the food among hungry people.

To make a food availability post by any user, he has to post an image and detail information of the food such as quantity, expiration time. He also can set a pickup time. Food availability post will be shown on registered organizations newsfeed. Organizations can pick-up the food according to the pick-up time and location set by the food donor and distribute the food among hungry people. Organization have to post image and details about the distribution after distribute the foods. The posts will appears in everyone's newsfeed. Restaurant will get a 'goodwill' point when they donate a meal. There will be also a ranking of highest donor and highest meal distributed charity organization.

1.5 Report Layout

This report is divided into five chapters. The chapters are summarized below:

(i) Chapter one covers an introduction of our project Food Share along with the motivation behind this work. Objectives, expected output are also included here.

(ii) Chapter two covers the literature review and some previous similar works with comparative studies and challenges of our project.

(iii) Chapter three is mainly highlighted on the described business process model and use case design with design requirement of the project.

(iv) Chapter four is design specification of front-end and back-end design with our implementation requirements.

(v) Chapter five is based on the implementation with the details of the testing of our project.

(vi) Chapter five which is the last one consists of conclusion and future possibilities of our project work.

CHAPTER 2

LITERATURE REVIEW

In this chapter we are going to summarize the statistics we have studied about food wastage followed by some examples of related work performed in this field. We also discuss the challenges and how we overcome them.

2.1 Introduction

Food waste is refers to discarding or alternative use of food that is safe and nutritious for human consumption along the entire food supply chain, from priary production to end household consumption.

Roughly one third of the food which is produced in the world for consumption, get wasted. The amount of the wasted food is 1.3 billion tones. Food losses and waste amounts to roughly US$ 680 billion in industrialized countries and US$ 310 billion in developing countries. The food wasted by the United States and Europe alone could feed the world 3 times over. At the same time, 1 in every 7 people in the world go to bed hungry and more than 20,000 children under the age of 5 die daily from hunger [2].

A 2016 study by the Bangladesh Institute of Development Studies in collaboration with Right to Food, Bangladesh showed that about 5.5% of the procured food being wasted in Bangladesh [3]. So, for a county which is struggling with chronic malnutrition, preventing any food from going to waste can make a huge difference.

2.2 Similar Works:

There are a few number of application and website available regarding this concept. We have study on these application and website. Here, we talk about the most useful application and website and similar to our application.

No Food Waste [4]

'No Food Waste' is an android based application developed for India. This is an edible food recovery project which serves surplus food from wedding, parties and other events to hungry and deprived people of the city in roadsides, slums, orphanages and age care. Donor with large quantity of surplus food, can use this app to tell 'No Food Waste' that it is available for collection. The group picks up the food and redistributes it to homeless people, as well as to slums, orphanages and elderly people. Users can also use map of the app to highlight "hunger points", places where there are people in need of food, for those who want to donate directly. The app asks for food prepared no more than two hours previously and distributes it within an hour of collection. It says it helps to feed around 200 people a day across seven cities, including Delhi and Chennai.

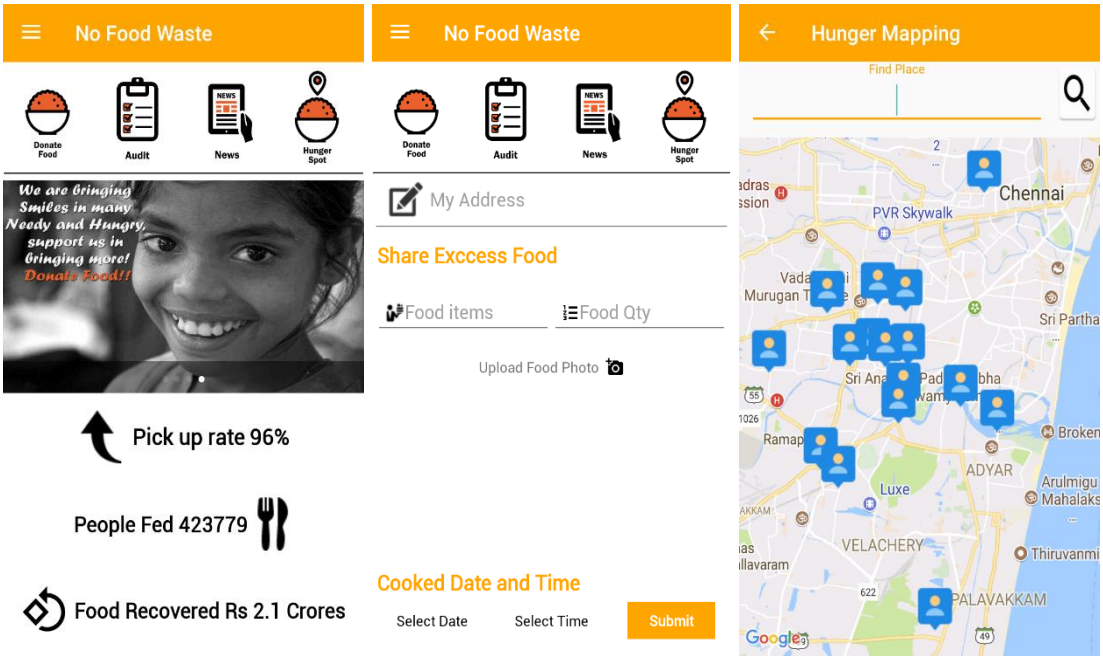


Fig. 2.1: User Interface of No Food Waste Application

OLIO [5]

OLIO is a free app tackling the problem of good food being thrown away by connecting neighbors with each other and with local shops & cafes so that surplus food can be shared, not thrown away. Users simply snap a picture of their surplus food and add it to OLIO, where neighbors receive customized alerts and can request anything that takes their fancy. Pick-up then takes place at the home/store, an OLIO Drop Box, or another agreed location. Since launching UK-wide in January of this year, OLIO has signed up

over 100,000 users and they have together shared 150,000 items of food, equivalent to 30 tons, or 70,000 meals!

OLIO allows users to resell or give away unwanted items, highlight the value in goods that people might otherwise throw away.

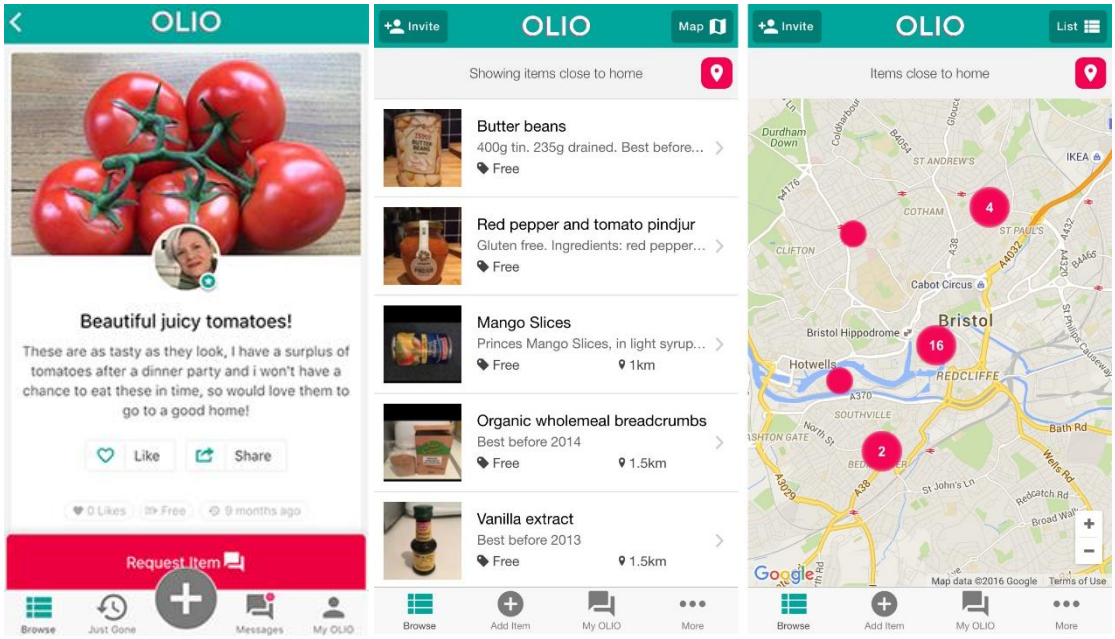


Fig. 2.2: User Interface of OLIO Application

Foodbank [6]

Foodbank is the pantry of Australian charities. They receive food and grocery products from farmers, manufacturers, distributors, retailers and the public and make them available to Australia's hard working charities and community groups. Foodbank is Australia's largest hunger relief organisation, providing 63 million meals a year to over 2,600 charities and 1,750 schools.

Foodbank works with the entire Australian food and grocery industry including farmers, wholesalers, manufacturers and retailers. Donations include stock that's out of specification, close to expiry or excess to requirements. Companies also make donations as part of a commitment to social responsibility or a cause-related marketing campaign. In addition, Foodbank collaborates with suppliers, manufacturers and transporters in programs like the Collaborative Supply Program, to source key staple foods that don't come in sufficient quantities via rescue channels.

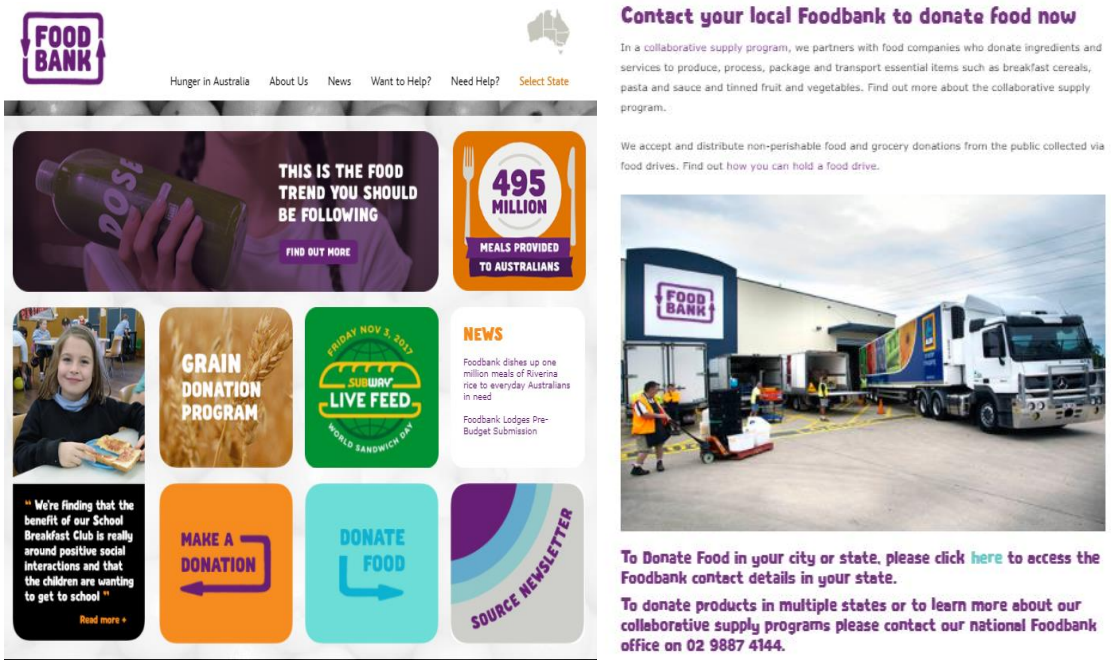


Fig. 2.2: User Interface of Foodbank Website

2.3 Comparative Study

We have studied some application and website regarding the concept of saving food from being wasted. Most of them are developed for the people of UK, South Africa, Australia, USA and India. But unfortunately there is no project in our country existing on this concept, though about 5.5% of the procured food being wasted of Bangladesh. So we have tried to focus on Bangladesh perspectives. 'No Food Waste' is doing the volunteering work to collect and distribute the wasted food among hungry people. But our main target is to establish a link between food donor and charity organizations. The volunteer of charity organization will collect the food using our application and distribute them to hunger people. 'OLIO' is being used for collect good food from neighbors or local shops before it thrown away. So that food is not wasted and surplus food is being shared. There is no involvement of charity organization. So only neighbors are getting benefit from this application but the people live in hunger zone are not getting the food. On other hand 'Foodbank' collect food from farmers, farmers, manufacturers or public and make them available to Australia's hard working charities and community groups. If someone wants to donate food, he or she has to take the food to their selected places. But through our project, anyone can share their excess

food from their home or restaurants. Charity organization will collect foods from their doorstep.

2.4 Scope of the Problem

Our application have some special feature which make our application better than other existing project and solve the problems. Some special features of our application are:

- Verified charity organization.
- Phone number verification.
- Easy to get register as restaurant, individual user or charity organization.
- Established a link between food donor & charity organization.
- Easy to make a food availability post.
- Easy to confirm food pick-up request.
- Navigate pick-up location from current location.
- User friendly UI design.
- Fast loading and high performance.

2.5 Challenges

During different stages of this project we had to face a few challenges. We were able to successfully overcome those challenges. The challenges we faced were,

- We have faced challenge when we want to create a real time database. We have overcome this challenge by using Google firebase.
- Designing and implementing a user friendly and interactive user interface using XML was also challenging for us.
- We also faced challenge to make the project beneficiary for the restaurant. If the application is not beneficiary for them, they will not be interested to use it. We have add ‘goodwill’ point system to solve this problem.
- Some other common challenges was deadline, Requirements analysis, Quality of Code, Performance and efficiency of system.

CHAPTER 3

REQUIRMENTS SPECIFICATION

In this chapter we are going to discuss about all the requirements that will be needed to complete the proposed system. Use case diagram and description, **other requirements are described in this chapter.

3.1 Business Process Model

Business process modeling (BPM) is an assimilation of business process management & system engineering of an organization or enterprise. It describes the analytical representation of any organization or enterprise. It helps to increase business quality and also reduce business cost. Business process modeling can be changed or improved to get new business opportunities.

Business Process Model for Restaurant's Signup:

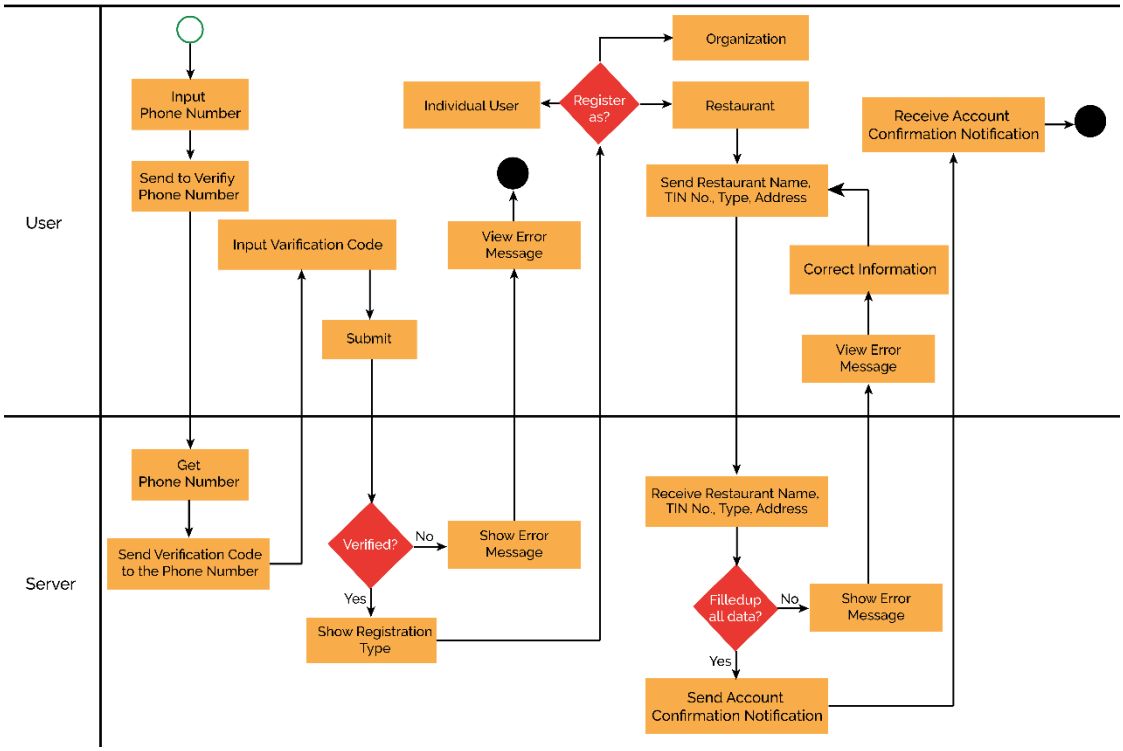


Fig. 3.1: Business Process Model for Restaurant's Signup

Business Process Model for Individual User's Signup:

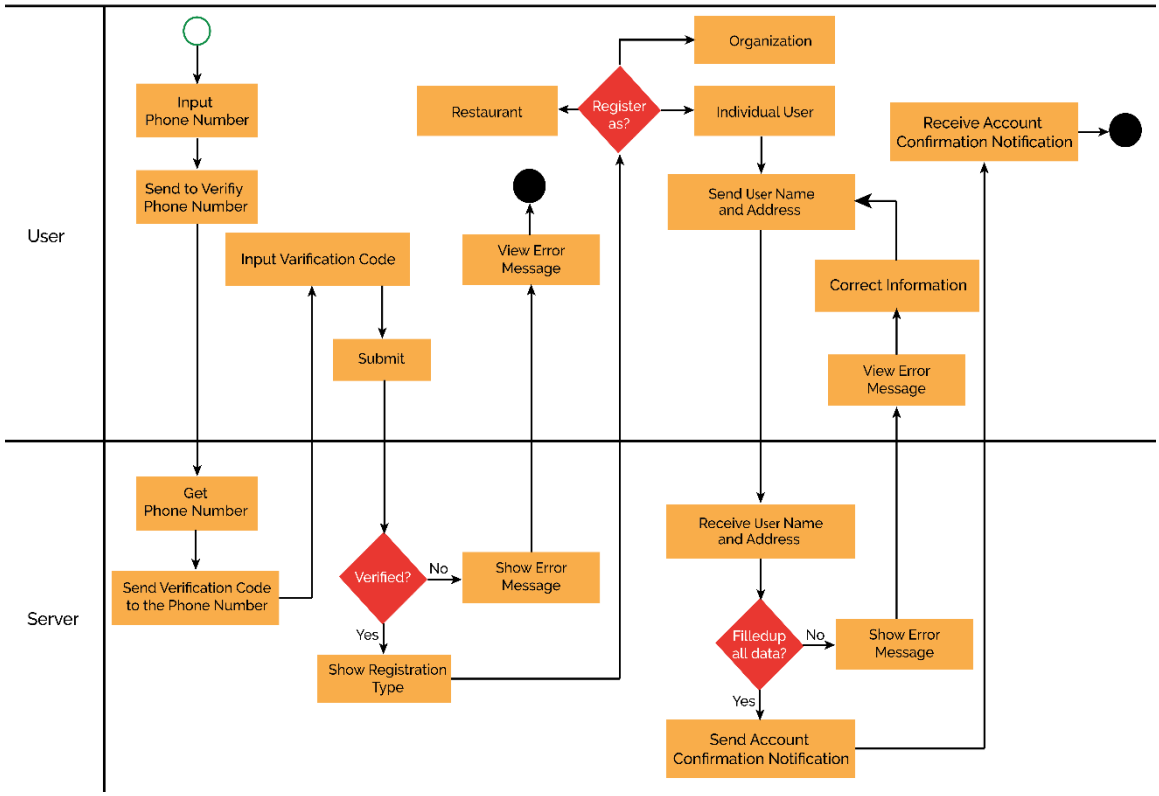


Fig. 3.2: Business Process Model for Individual User's Signup

Business Process Model for Organization's Signup:

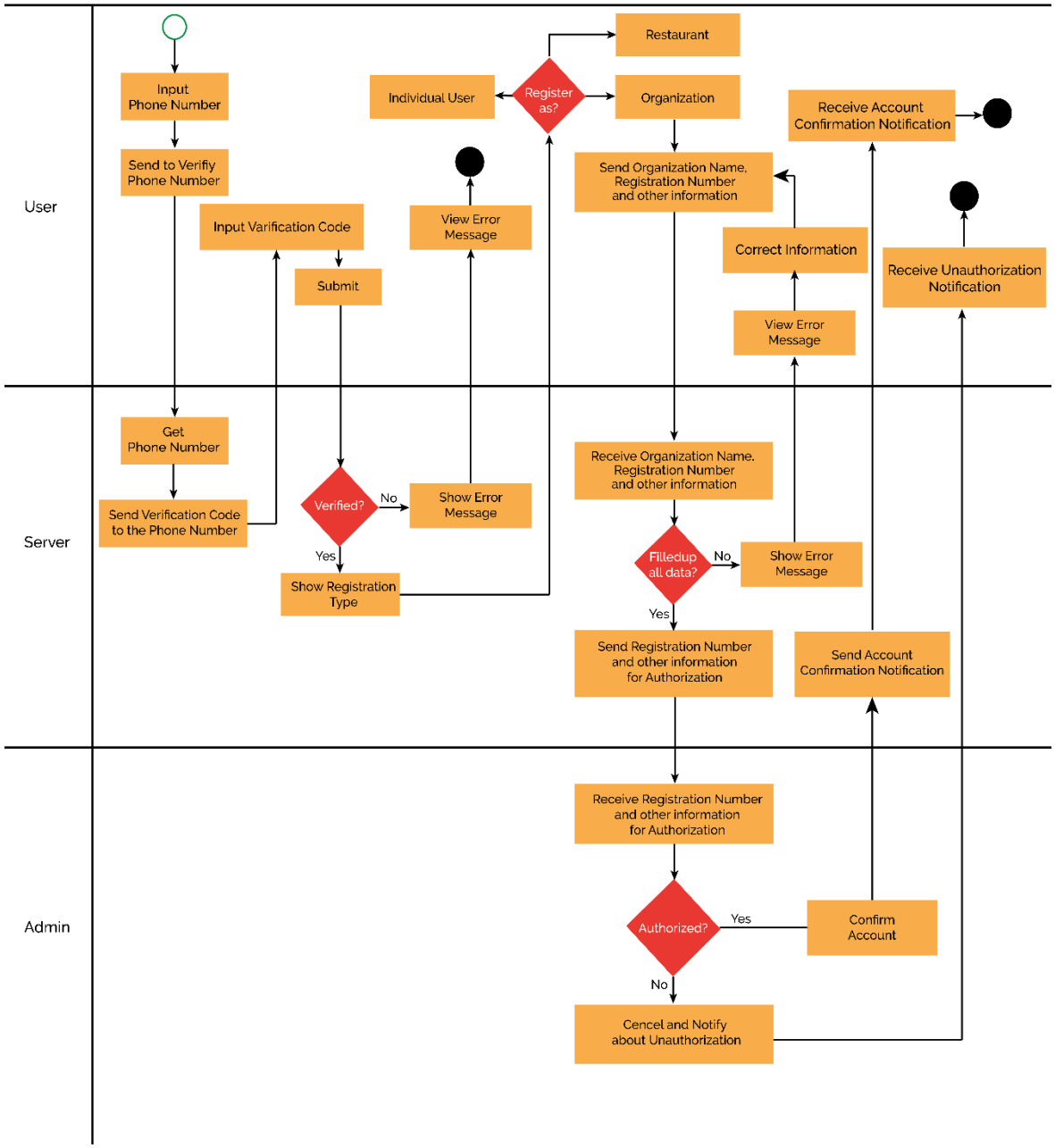


Fig. 3.3: Business Process Model for Organization's Signup

Business Process Model for Login:

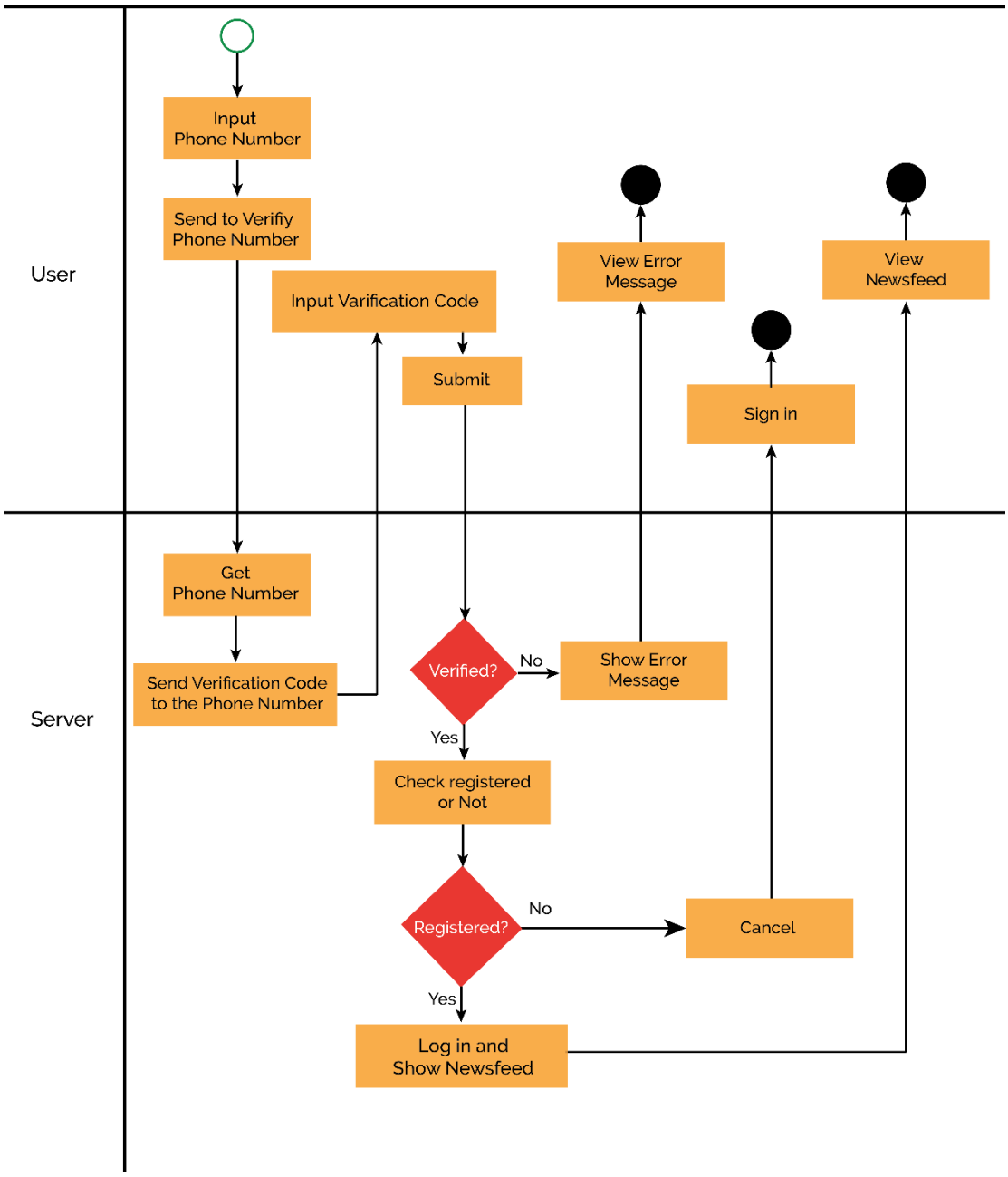


Fig. 3.4: Business Process Model for Login

Business process Model for Make Food Availability Post:

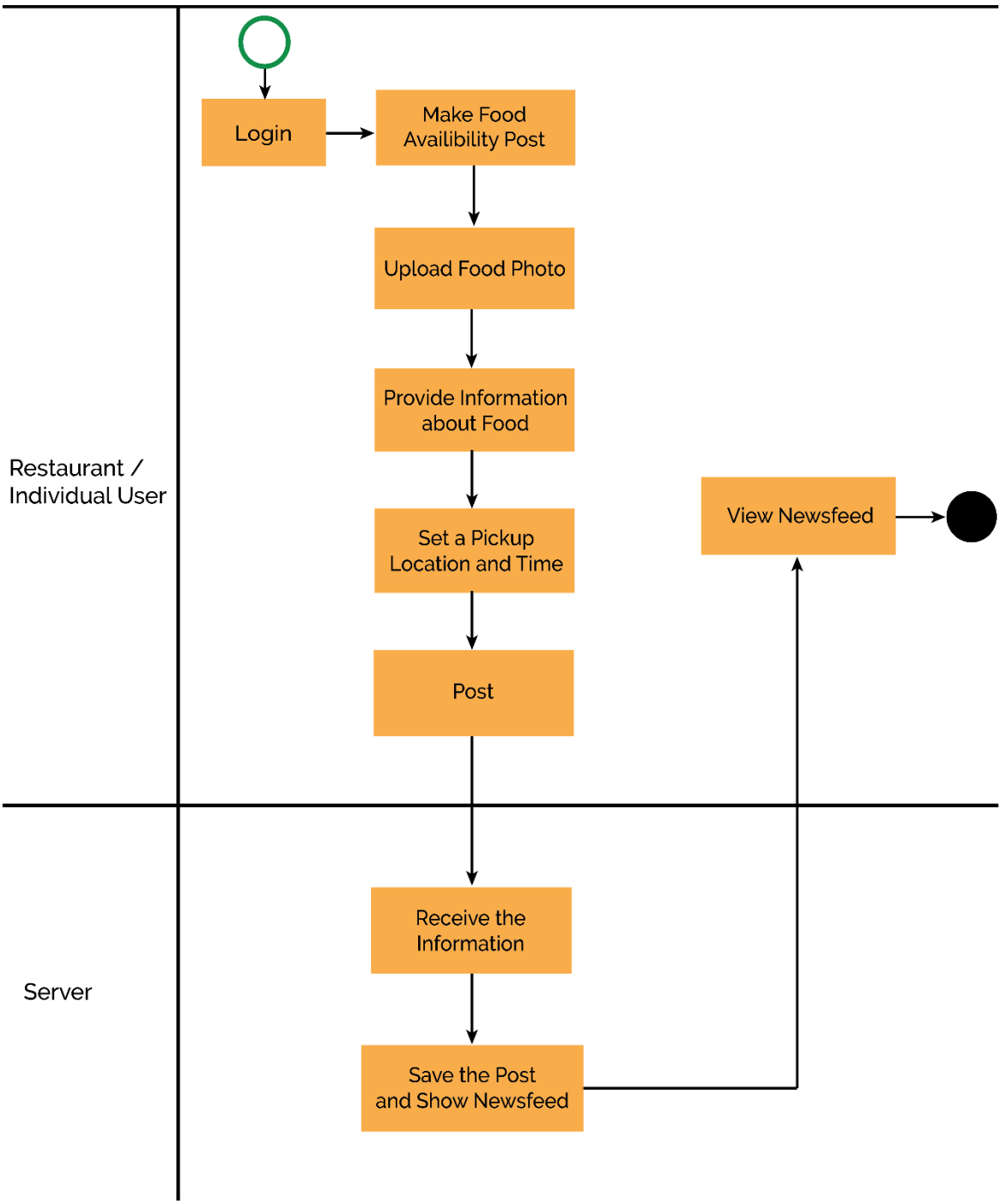


Fig. 3.5: Business process Model for Make Food Availability Post

Business Process Model for Food Pick-up Request & Confirmation:

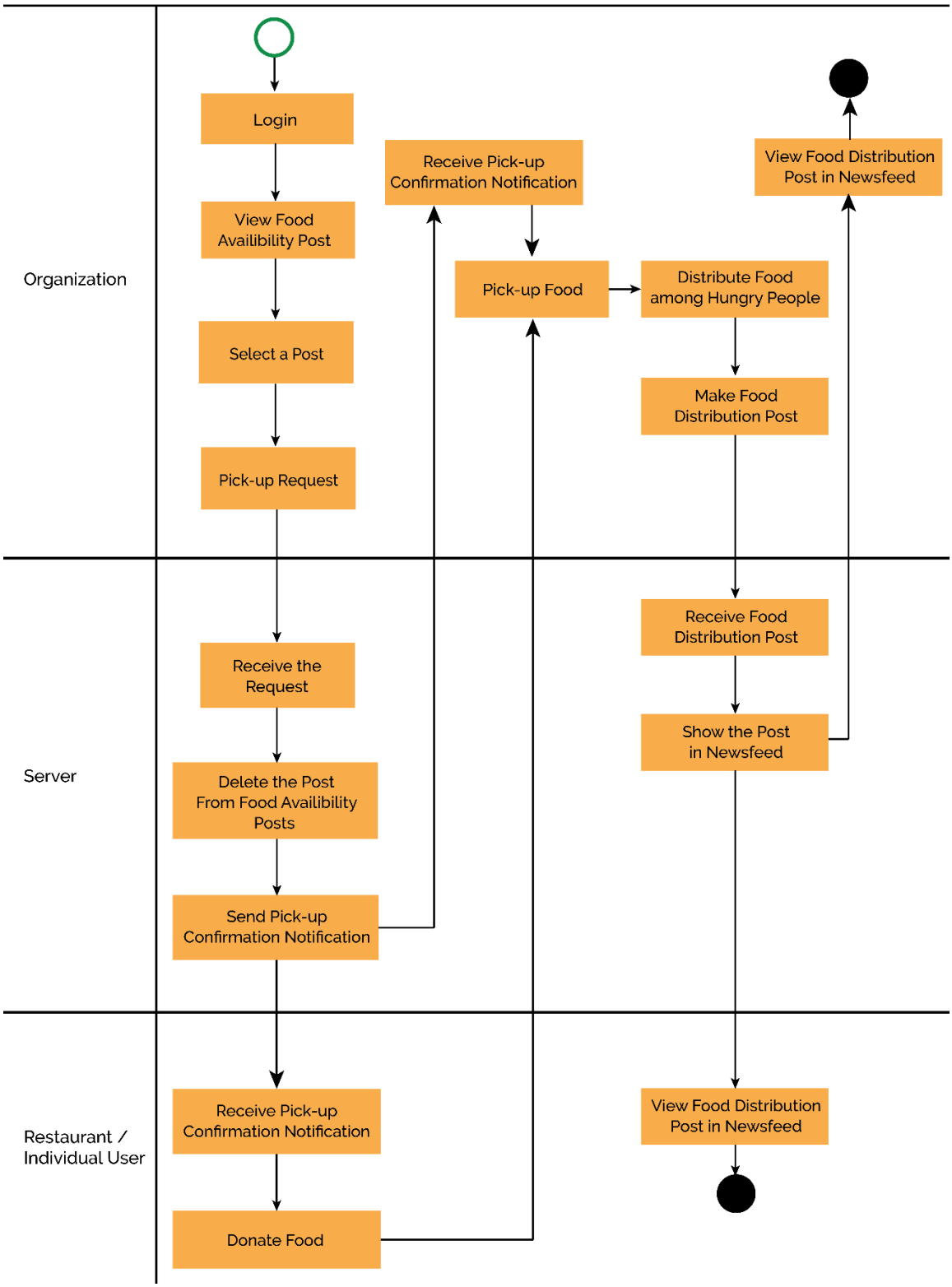


Fig. 3.6: Business Process Model for Food Pick-up and Distribution

3.2 Business Process Model Description:

Restaurants, charity organizations and individual users have to register by providing necessary information. Only charity organization have to be authorized by the admin. Every user can easily login through mobile number verification, if they are registered.

When restaurants, individual users and organizations login, they view the newsfeed. Last donation and served meal appears in newsfeed. If they want to share food, they have to upload picture, details about food and set a pick up time and location. Then they can make food availability post.

Only organizations can view the recent food availability posts. If they want to collect the food, they have to click ‘Pick-up’ button. Server will automatically send pick-up confirmation notification to both organizations and donors and delete the post from food availability post so that other organization can not request for pick-up the same food. After getting pick-up confirmation notification, organization can collect the food in given pick up time and location by the restaurant. After served the food among hungry people, organization have to upload picture and details of food distribution. This post will appears in all users newsfeed.

Restaurant will receive a ‘good will’ point for donating a meal. There will be a rank list for highest meal donor and highest meal served organization of the month.

3.3 Use case Diagram

A use case diagram shows all the action flows of a system along with the primary and secondary users. Where generally primary users are the human users and secondary users are technology based creations.

We attached the use case model for Restaurant, Individual user and Organization separately.

Use case Diagram for Restaurant:

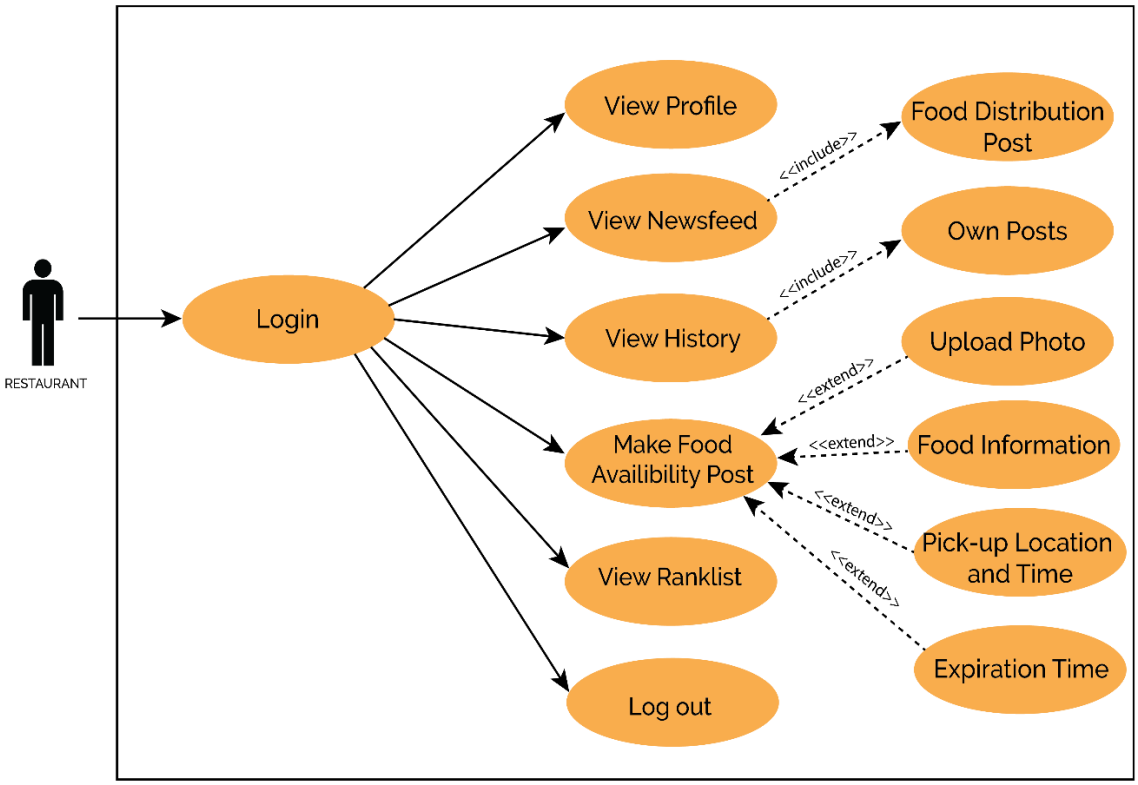


Fig. 3.7 Use case Diagram for Restaurant

Use case Diagram for Individual User:

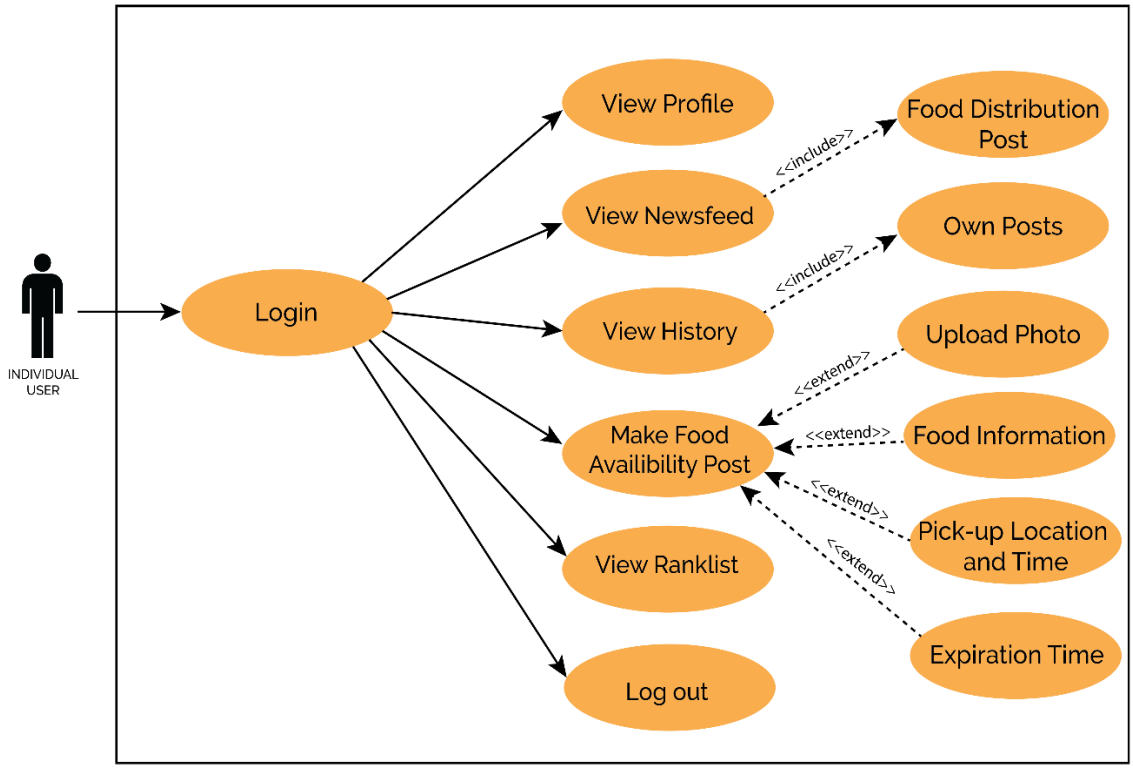


Fig. 3.8 Use case Diagram for Individual User

Use case Diagram for Organization:

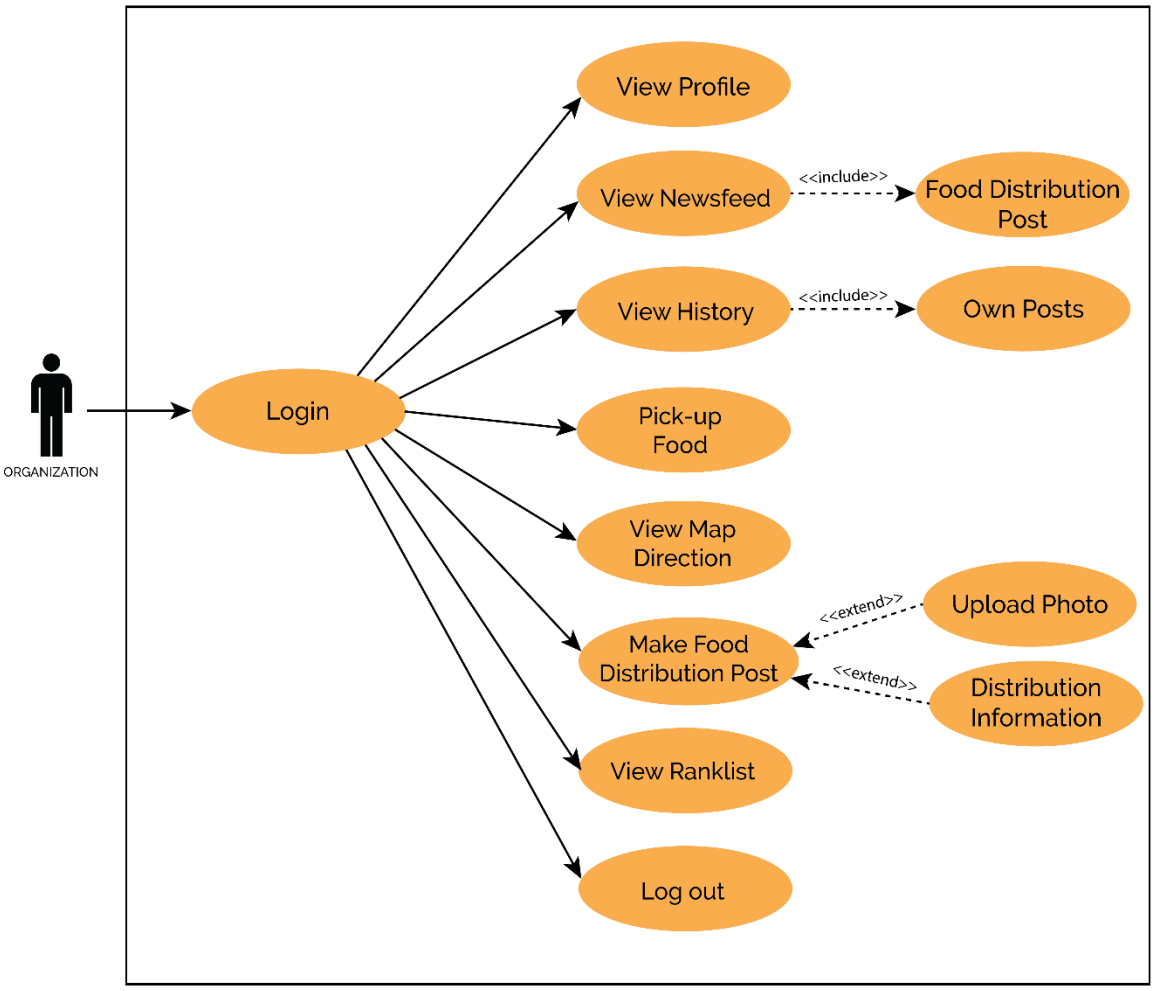


Fig. 3.8 Use case Diagram for Individual User

3.4 Use Case Description

Use care descriptions are made to clarify the actions of the use case diagram. Pre-conditions and post conditions of an action performed are explained in use case description.

Use case descriptions of our project have been attached below.

Table 3.1: Description of Use Case for Login

Use case	Login
Primary Actor	Restaurant, Individual user, Charity organization
Secondary Actor	Server
Actor's Goal	To login to the application
Pre-condition	Provide registered phone number for verification.
Post condition	View newsfeed

Table 3.2: Description of Use Case for View Newsfeed

Use case	View Newsfeed
Primary Actor	Restaurant, Individual user, Charity organization
Secondary Actor	None
Actor's Goal	To view the newsfeed
Pre-condition	Login to the application
Post condition	Restaurant and individual user can make food availability post and organization can make food distribution post.

Table 3.3: Description of Use Case for Make Food Availability Post

Use case	Make food availability post
Primary Actor	Restaurant, Individual user
Secondary Actor	Server
Actor's Goal	To make a food availability post
Pre-condition	Login to the application and upload image, detail information about the food, pick-up location and time, food expiration time
Post condition	View own the post in history

Table 3.4: Description of Use Case for View Food Availability Post

Use case	View food availability post
Primary Actor	Organization
Secondary Actor	Server
Actor's Goal	To view the food availability posts
Pre-condition	Login as an registered organization
Post condition	Can make a pick-up request

Table 3.5: Description of Use Case for Make Pick-up Request

Use case	Make pick-up request
Primary Actor	Organization
Secondary Actor	Server
Actor's Goal	To make a request to pick-up the food
Pre-condition	Select a post from food availability posts and click on 'Pick-up' button
Post condition	Server will send confirmation notification to both food donor and organization and delete the food availability post.

Table 3.6: Description of Use Case for Make Food Distribution Post

Use case	Make food distribution post
Primary Actor	Organization
Secondary Actor	Server
Actor's Goal	To make a food distribution post
Pre-condition	Pick-up and distribute food among hungry people. Upload photos and details about food distribution
Post condition	View the food distribution post in newsfeed

Table 3.7: Description of Use Case for View History

Use case	View history
Primary Actor	Restaurant, Individual user, Charity organization
Secondary Actor	None
Actor's Goal	To view history
Pre-condition	Make a post to view own post in history
Post condition	None

Table 3.8: Description of Use Case for View Ranklist

Use case	View ranklist
Primary Actor	Restaurant, Individual user, Charity organization
Secondary Actor	None
Actor's Goal	To view ranklist
Pre-condition	Donate or distribute food to earn 'goodwill' point. Ranklist will show the 'goodwill' points of food donor and distributor
Post condition	None

3.5 Design Requirements

Design requirement for Restaurant or Individual User

- Able to sign up.
- Login.
- View newsfeed.
- Make food availability post by uploading image and information about food.
- Able to set a pickup location and time.
- View own profile.
- View own 'goodwill' points.
- View the rank list of top donor and food distributor.

Design requirement for Charity Organization

- Able to sign up.
- Login.
- View newsfeed.
- View the food availability posts.
- Make pickup confirmation request.
- View map direction from current location to the pickup location.
- Upload photos after food distribution.
- View own profile.
- View the rank list of top donor and food distributor.

Design requirements for admin

- Full access in database.
- Register charity organization.
- Monitor users.
- Can delete any unwanted posts.
- Block any unexpected user.

CHAPTER 4

DESIGN SPECIFICATION

4.1 Front-end Design

The front-end design is the user interface. When user run the application or website, they only can view the front-end design. So to attract the user, front-end design should be user friendly and simple. Therefore we tried to keep our front-end design as simple as possible and also user friendly.

Our project front-end has mainly designed by XML, which stands for Extensible Markup Language. We have used SVG files and Adobe Photoshop too.

XML : Extensible Markup Language

Extensible Markup Language (XML) is a markup language that defines a set of rules for encoding documents in a format that is both human readable and machine readable. The W3C's XML 1.0 Specification and several other related specification define XML. It is a textual data format with strong support via Unicode for different human languages. XML has come into common use of data over the internet. [7]

We have use XML in our application. It is very easy to use and flexible text format. Our Buttons, layouts, text views, image views are designed by using XML.

SVG: Scalable Vector Graphics

SVG is an XML-based vector image format for two-dimensional graphics with support for interactivity and animation. The SVG specification is an open standard developed by the World Wide Web Consortium (W3C) since 1999. SVG images and their behaviors are defined in XML text files. This means that they can be searched, indexed, scripted, and compressed. As XML files, SVG images can be created and edited with any text editor, as well as with drawing software. [8]

Adobe Photoshop:

Adobe Photoshop is a raster graphics editor developed and published by Adobe Systems for macOS and Windows. Photoshop was created in 1988 by Thomas and John Knoll. Since then, it has become the de facto industry standard in raster graphics editing,

such that the word "photoshop" has become a verb as in "to Photoshop an image," "photoshopping" and "photoshop contest", though Adobe discourages such use. It can edit and compose raster images in multiple layers and supports masks, alpha compositing and several color models including RGB, CMYK, CIELAB, spot color and duotone. Photoshop has vast support for graphic file formats but also uses its own PSD and PSB file formats which support all the aforementioned features. In addition to raster graphics, it has limited abilities to edit or render text, vector graphics (especially through clipping path), 3D graphics and video. Photoshop's feature set can be expanded by Photoshop plug-ins, programs developed and distributed independently of Photoshop that can run inside it and offer new or enhanced features. [9]

4.2 Back-end Design

The back-end design is basically how the server, application and database works, update and maintain. It is not visible to the end users. But it works to support the front-end of the application. So back-end design is most important part of a project.

We have used Java in our back-end design of our project. We also used firebase for real time data parsing.

Java:

Java is a general-purpose computer-programming language that is concurrent, class-based, object-oriented, and specifically designed to have as few implementation dependencies as possible. It is intended to let application developers "write once, run anywhere" (WORA), meaning that compiled Java code can run on all platforms that support Java without the need for recompilation. Java applications are typically compiled to bytecode that can run on any Java virtual machine (JVM) regardless of computer architecture. As of 2016, Java is one of the most popular programming languages in use, particularly for client-server web applications, with a reported 9 million developers. Java was originally developed by James Gosling at Sun Microsystems (which has since been acquired by Oracle Corporation) and released in 1995 as a core component of Sun Microsystems' Java platform. The language derives much of its syntax from C and C++, but it has fewer low-level facilities than either of them. The latest version is Java 10, released on March 20, 2018 [10].

Firebase:

We have used Firebase as our database. Firebase is a realtime database by Google. In firebase, data is stored and synced with NoSQL cloud database. Data is synced across all clients in realtime, and remains available when your app goes offline. The Firebase Realtime Database is a cloud-hosted database. Data is stored as JSON and synchronized in realtime to every connected client. When you build cross-platform apps with our iOS, Android, and JavaScript SDKs, all of your clients share one Realtime Database instance and automatically receive updates with the newest data. [11]

4.3 Interaction Design and UX

Interaction Design is an important component within the giant umbrella of User Experience (UX) design. Interaction design is specifically a discipline which examines the interaction between a system and its user via an interface and User experience (UX) design is the process of creating products that provide meaningful and personally relevant experiences. It may also incorporate design focused on how information should be presented within such a system to enable the user to best understand that information though this is often considered to be the separate discipline of "information design" too. Our application is very user interactive. We have tried to make this application's user interface very easy to understand and use.

4.4 Implementation Requirements

To implement our android application project, we used different types of tools, attributes and components which are helped us to develop our android application project successfully. In Implementation requirements area, we discuss all those tools, attributes and components that we have used to develop our android application project and making attractive to the user.

4.4.1 Android Studio

Android Studio is the official integrated development environment (IDE) for Google's Android operating system, built on JetBrains IntelliJ IDEA software and designed specifically for Android development. There are a lot of features of android

studio as like that Gradle based build support, Android-specific refactoring and quick fixes, Lint tools to catch performance, usability, version compatibility and other problems, App-signing capabilities, Template-based wizards to create common Android designs and components, Android Virtual Device (Emulator) to run and debug apps in the Android studio. The best feature of android is supporting a number of programming languages. All these reason we utilize the Android Studio as our application integrated development environment (IDE) [12].

4.4.1.1 Basic Android Overview

Android is a comprehensive platform, which means it is a complete software stack for a mobile device. It provides all the tools frameworks for developing mobile application simply, quickly and easily. We design our application with Extensible Markup Language (XML), connection with database server with Java Language in Android Studio. Android is also open source platform where developer can make any types of user interface which the developer needs to design his/her application. The developer can write any programming language for his/her application in android studio. So developer can easily develop different types of mobile application by use it for user interaction.

4.4.2 The Emulator

An emulator is an Android Virtual Device (AVD) that represents a specific android device for emulating any types of android application or project. The developer can use an Android emulator as a target platform to run and test his/her Android applications on his/her Personal Computer (PC). By Using Android emulators is optional. We run our application in both our personal device and Android emulator too. The emulator runs the same code base as actual device. The emulator is so pretty for emulating android projects.

4.4.3 Android SDK

Android development starts with Android SDK (Software Development Kit). Android SDK is a set of collection of development tools used to develop and build of any kind of android application for android platform. That means Android SDK is

essential tools for both developing and building any android application. We use Android SDK for both developing our android application and also testing our android application when need to run for seeing output. Minimum SDK version 16 (Android 4.1, Jelly bean) is required to run this application.

4.4.4 Firebase

Firebase is a mobile and web application development platform developed by Firebase Inc. in 2011, then acquired by Google in 2014. Firebase provides a realtime database and backend as a service. The service provides application developers an API that allows application data to be synchronized across clients and stored on Firebase's cloud. The company provides client libraries that enable integration with Android, iOS, JavaScript, Java, Objective-C, swift and Node.js applications. The database is also accessible through a REST API and bindings for several JavaScript frameworks such as AngularJS, React, Ember.js and Backbone.js. The REST API uses the Server-Sent Events protocol, which is an API for creating HTTP connections for receiving push notifications from a server. Developers using the realtime database can secure their data by using the company's server-side-enforced security rules. [13]

4.4.5 Permissions Required

- Read and write access of external storage.
- Internet permission.
- Camera permission.
- Location access permission.

Chapter 5

IMPLEMENTATION AND TESTING

In this chapter we will show demo implementation of our project and test the whole project for its effectiveness and workings.

5.1 Implementation of Database

The implementation phase is where developer installs the Database Management System (DBMS) on the required hardware, optimize the database to run best on that hardware and software platform, and create the database and load the data. The initial data could be either new data captured directly or existing data imported from a DBMS. The developer can establish database security and give the various users that the developer has identified access applicable to their requirements.

5.1.1 Database Design

We have used Firebase as data manager to store data in our android application. When a user make a food availability post, it immediately appears to the registered organization newsfeed. There is no need to refresh the newsfeed. If we used MySQL server instead of firebase, we can not get the benefit of real time database, which means we have to refresh the newsfeed again and again to get updated newsfeed. For getting benefit of real time database, we have used firebase in our project. We have attached some screenshot of back-end database of our project.

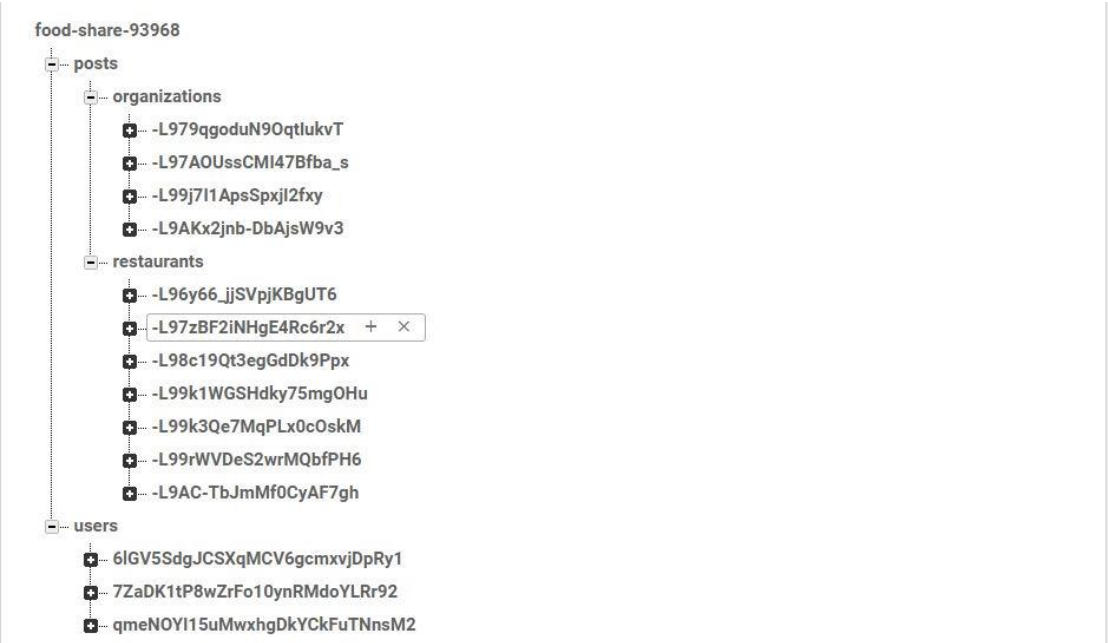
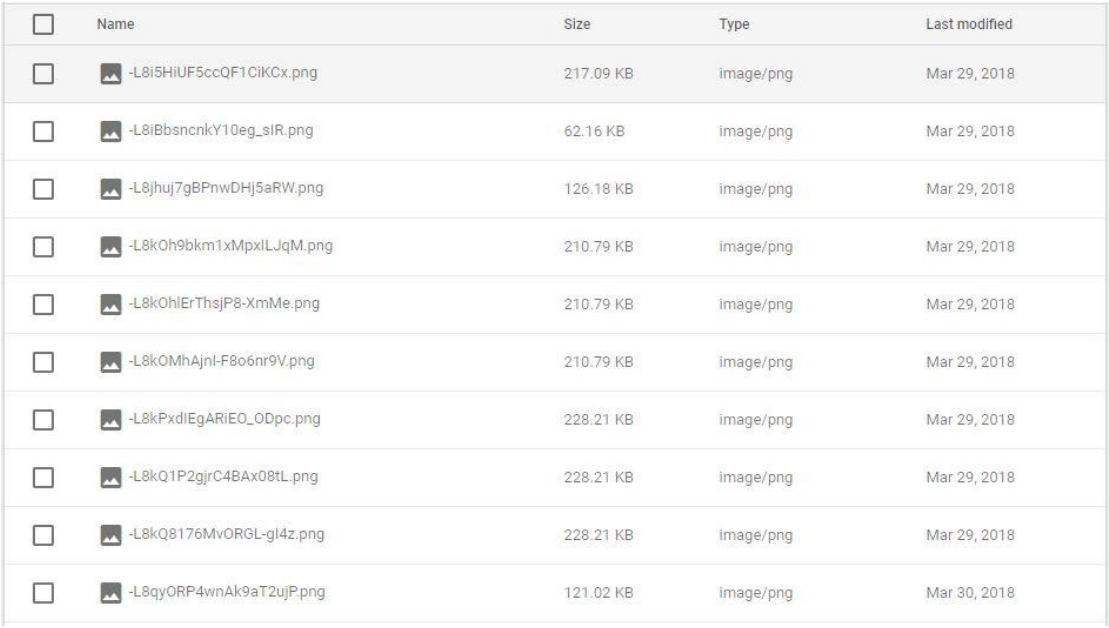


Fig. 5.1 Database Implementation



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-L8iBbsncnkY10eg_sIR.png	62.16 KB	image/png	Mar 29, 2018
-L8jhuj7gBPnwDHj5aRW.png	126.18 KB	image/png	Mar 29, 2018
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-L8kQ8176MvORGL-gI4z.png	228.21 KB	image/png	Mar 29, 2018
-L8qyORP4wnAk9aT2ujP.png	121.02 KB	image/png	Mar 30, 2018

Fig. 5.2 Database Storage

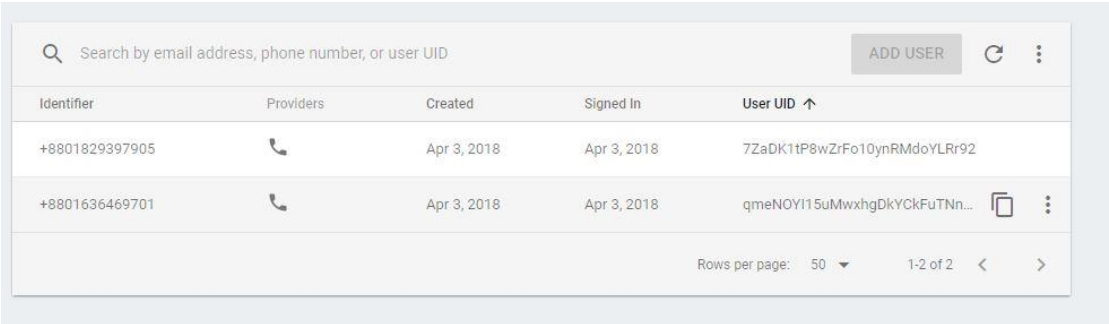

Fig. 5.3 Phone Number Verification

5.2 Implementation of Front-end Design

It was really a big challenge to develop a gorgeous front-end design which will be attracted by the users. For interactive design we have always tried to make a simple and easier user interface design of our android application. Any user can easily understand the presentation of the information. We have used mainly XML to design our front-end. User interface of some pages are attached below.

In figure 5.4, we have attached the screenshot of the starting page of our application with the logo, application name, tagline a continue button. If anyone wants to enter the application, he or she has to click on the button ‘Continue’.

Fig. 5.4 A Screenshot of Intro Activity

Phone number verification activity has attached in figure 5.5. It will automatically take input the phone number. If the desired phone number does not show on the list, anyone can add number by clicking 'NONE OF THE ABOVE'. After fill-up the phone number, when user click on 'VERIFY PHONE NUMBER', user will receive a message with a verification code. Our application will also automatically fill-up the verification code. After submit the code, user can verify his/her phone number. Phone number verification is needed while sign up and login to the application.

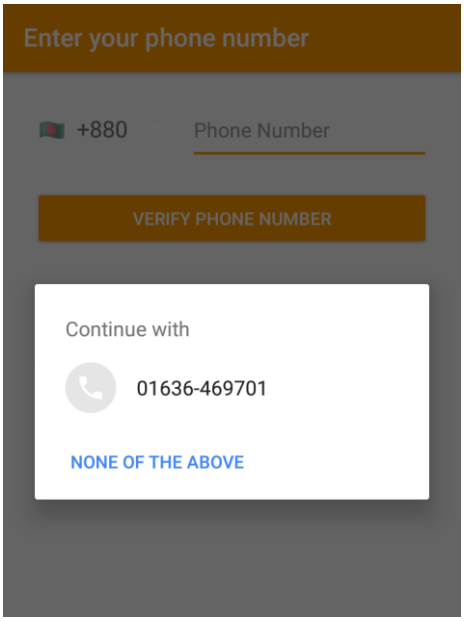

Fig. 5.5 A Screenshot of Phone Number Verification Activity

In figure 5.6, User can select user type while registration. User can register as Restaurant, Individual User or Organization. After selecting user type, registration form for that particular user will be shown.

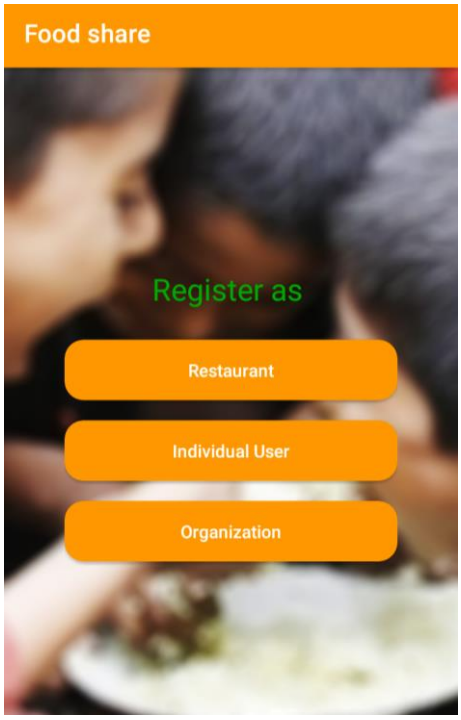

Fig. 5.6 A Screenshot of Select User Type for Registration Activity

The registration form for restaurant has attached in figure 5.7. Restaurant can get registration by providing restaurant name, TIN number, restaurant type and address. By clicking 'SIGN UP' button, they can apply for registration.

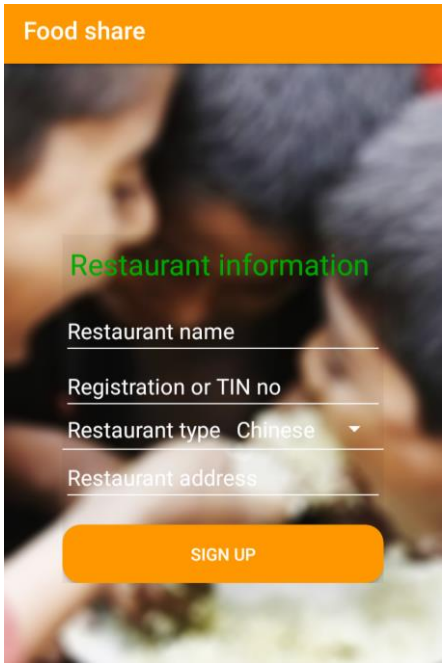

Fig. 5.7 A Screenshot of Restaurant Registration Activity

The registration form for individual user has attached in figure 5.8. Individual user can get registration by providing his/her name and address. By clicking ‘SIGN UP’ button, he/she can apply for registration.

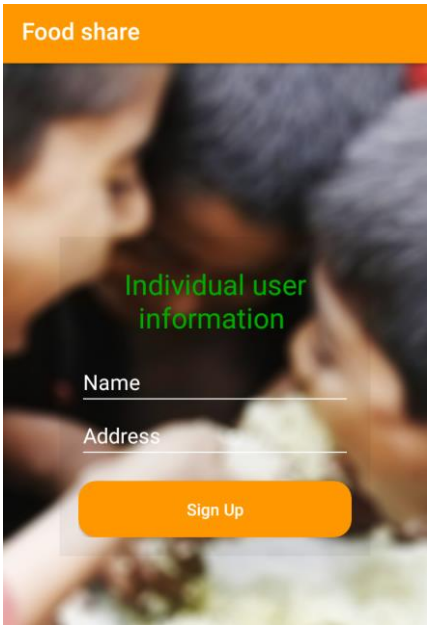

Fig. 5.8 A Screenshot of Individual User Registration Activity

In figure 5.9, the registration form for organization has attached. Charity Organization can get registration by providing its name, registration no., working area, experience and no. of volunteer. By clicking ‘SIGN UP’ button, he/she can apply for registration

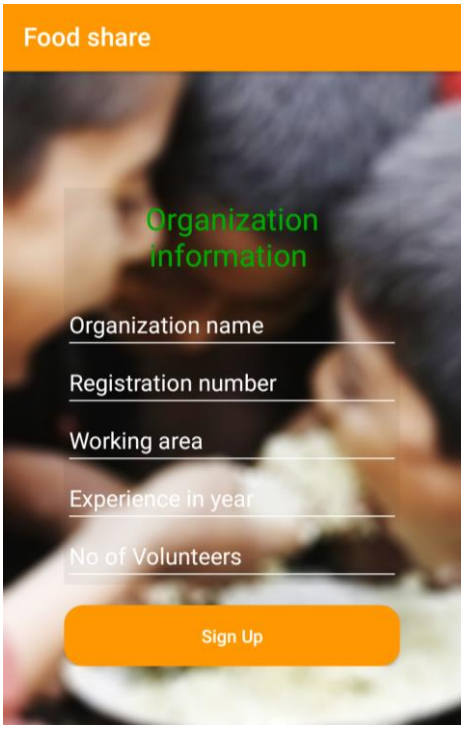

Fig. 5.9 A Screenshot of Restaurant Organization Activity

Every user can view profile, newsfeed, history, share and logout from navigation drawer activity which attached in figure 5.10. Restaurant and individual user can make food availability post whereas charity organization can view all the food availability posts and make food distribution post from navigation drawer.

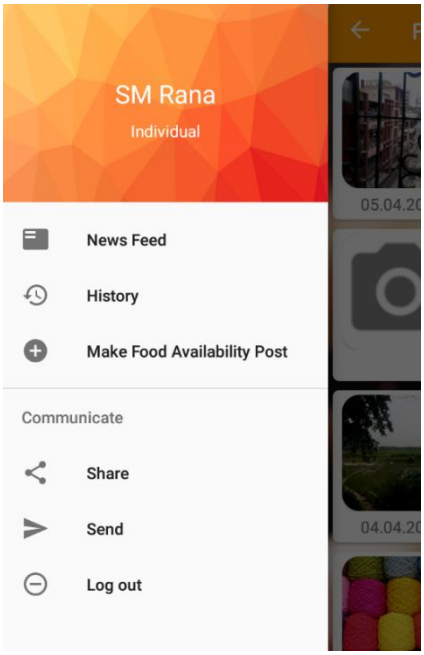

Fig. 5.10 A Screenshot of Navigation Drawer Activity

In figure 5.11, we have attached the newsfeed activity. All user can view how many meal have donated by which restaurant and served by which organization.

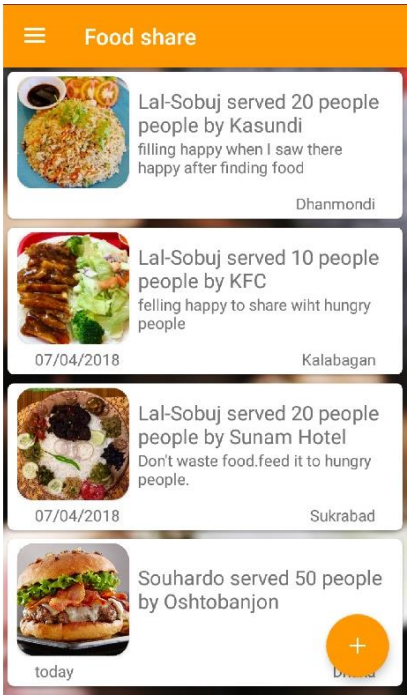

Fig. 5.11 A Screenshot of View Newsfeed Activity

In figure 5.12, activity of making a food availability post activity has been attached. Restaurant or individual user can make food availability post by uploading a image and details about food, setting up a pick up location and end time.

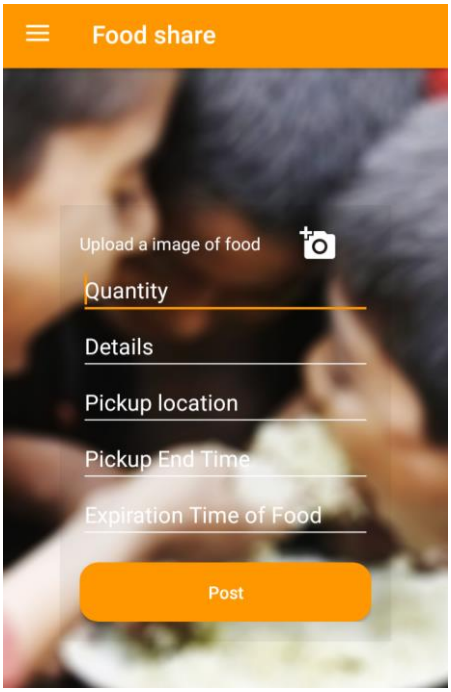

Fig. 5.12 A Screenshot of Make Food Availability Post Activity

Registered organization can view the food availability posts, which is made by restaurants or individual users. This activity is attached in figure 5.13. Organization can view available surplus food details and confirm pick-up by clicking on 'pick up' button. They also can get navigation from its current location to pick-up location.

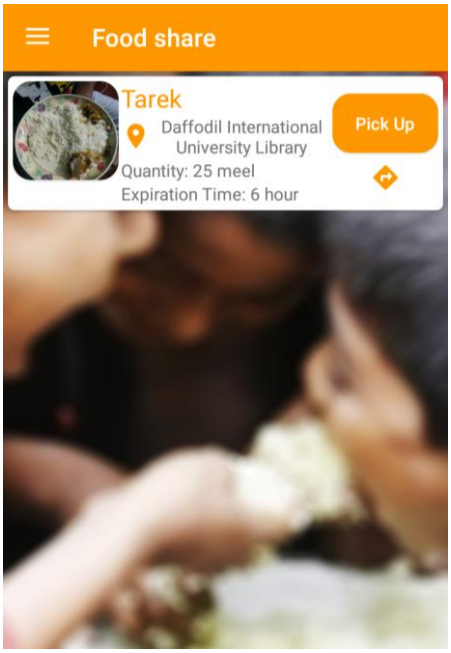

Fig. 5.13 A Screenshot of View Food Availability Post Activity

In figure 5.14, we have attached the activity of making food distribution post. Organization will upload image and details information about food distribution and post it. This post will appears on everyone's newsfeed.

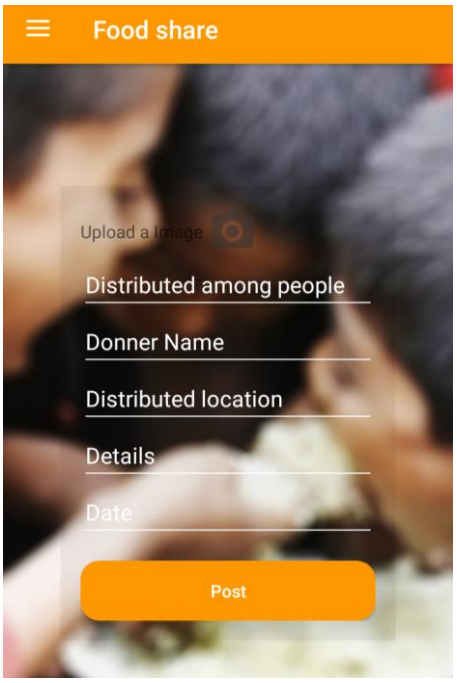

Fig. 5.14 A Screenshot of Make Food Distribution Post Activity

In figure 5.15, we have attached the activity of view rank list of highest food donor. Restaurants get a 'goodwill' point when they donate a meal. The rank list is based on 'goodwill' points. They can use this rank list for their business purpose.

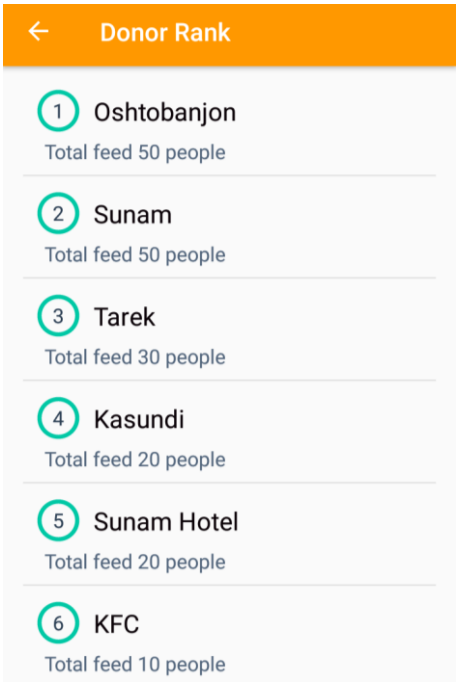

Fig. 5.15 A Screenshot of View Rank List Activity

5.3 Implementation of Interaction Design

Our application is very user interactive. The presentation of information is easy to understand and easy to provide required information. We have discussed some of our key features how we make our application interactive design.

We have used phone number verification to sign up and login, which is secured and easy. Our application can automatically take input the phone number of the phone. When a verification number send to the phone number, our application also can automatically fill-up the verification code. User do not need to type the verification code. The information that we wanted from user while signup, is presented in such a way that user can easily understand and fill-up. User can take a photo or select a photo from gallery when he or she needs to upload a photo. We have also used clock to take pick-up time and map view to select pick-up location. Organization can view map direction from its current location to food pick-up location. This feature makes easier to find the food pick-up location.

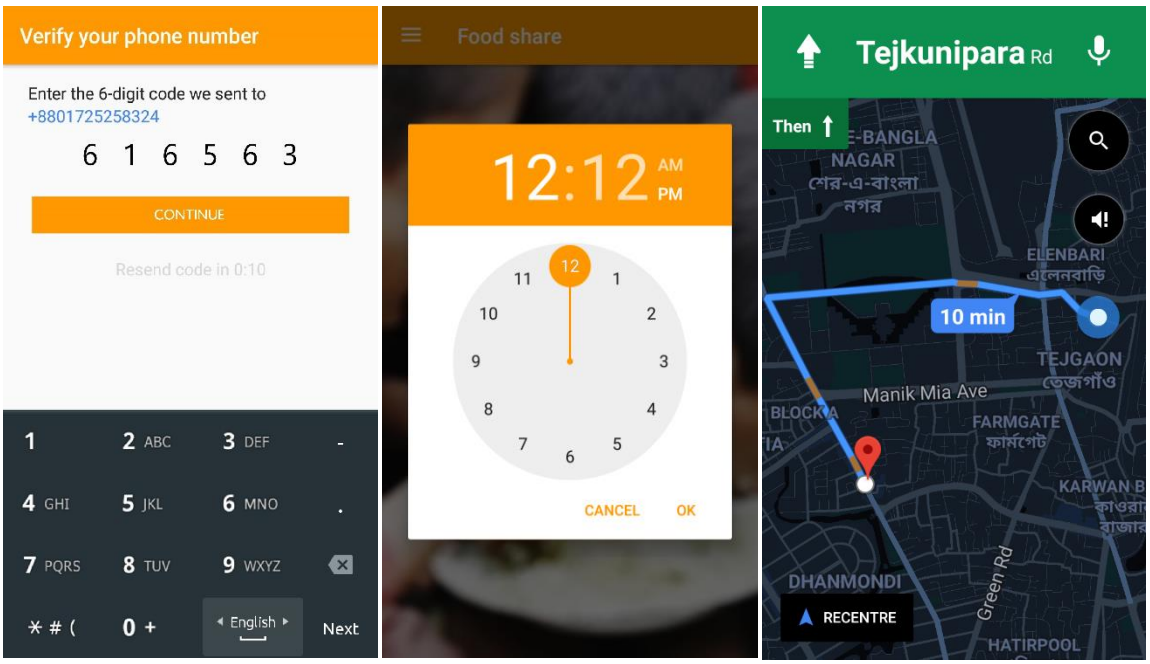

Fig. 5.16 Screenshot of Implementation of Interactive Design

5.4 Testing Implementation

Testing of our project has been implemented. While developing each functions are working fine. For this case we can say unit testing is done. While some part of

project developed we have tested the interactions between pages to pages. Intent to intent. As we don't have professional tester and all the requirements are arranged by us. So we know very well about the user requirements and we have write down the bullet points of user expectation and tested the expectation of users. So we can say each type of testing like unit testing, integration testing and acceptance testing done by our side.

5.5 Test Results and Reports

Every project needs an output as a result. As per our testing experience we have found all expected results. Every user can sign up and login by using phone number verification and providing required information. Restaurant and individual user can successfully make a food availability post and the posts are shown to organization successfully. Organization can request for pick-up food and after getting confirmation notification, the food availability post has been deleted. Organization also can post about the food distribution and this post appears in every user's newsfeed. So every user's requirement has been full filled.

CHAPTER 6
CONCLUSION AND FUTURE SCOPES

6.1 Conclusion

Food waste is one of the issues currently facing the planet as a whole. Necessary steps should be taken to stop food waste, otherwise the people of the world will suffer from food scarcity. If you can save food from being wasted, we can feed the hungry people who has no food to eat.

We have built “Food Share” which is an android application to reduce food wastage through donation. Any restaurant or individual user who has food surplus, can donate food through our application. Our registered charity organization’s volunteer will collect the food and distribute them to hungry people.

We believe that food wastage will be reduced through our project. The surplus food can be donated by our project and also poor or hungry people will get food who have not enough food to eat. So our project can make a huge difference in the society by saving food from being wasted. Our goal is to establish a link between restaurants or individual users who has food surplus and charity organizations who has volunteer to collect the excess food.

6.2 Future Scope

Our future target is to implement this project in our city and mainly inspire restaurants not to throw away the excess food. In the near future we will add some more feature to attract user to use our application for food saving. We can add map view of food availability posts instead of list view, so that organization can view all the food availability post nearby. We also can add a notification system that notify organization’s volunteers if there is any food availability post created nearby. We will connect community centers where different kinds of social or commercial events are organized. We will also arrange campaign to increase awareness against food wastage and inspire people to use our application to save food from being wasted.

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PLAGIARISM REPORT