Bilkent University

Department of Computer Engineering

CS 491 - Senior Design Project I

Foodie

Project Specifications Report

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1. Introduction

Thousands of people around the world die from malnutrition. While there is not enough food in one part of the world, the amount of food waste reaches very high figures in developed countries. Food waste is defined as the loss or waste of food suitable for consumption as a result of wrong habits of consumers and food businesses. According to the report prepared by the World Health Organization in 2014, while approximately 1 billion people in the world are struggling with hunger, 2.8 million people lose their lives every year due to their excess weight[1].

Considering the studies conducted in Turkey, it has been observed that although the majority of individuals eat at home, food is wasted unconsciously in mass consumption areas such as restaurants and cafeterias. Considering the causes of waste, there are many factors such as not knowing the standard sizes of the portions in mass consumption areas, not knowing about the expiry dates and recommended consumption dates of the foods and making the prices of the products more affordable and making a large number of purchases[2].

While hunger and food waste have become an important problem in the world, as a group of senior students, we decided to develop an application called "Foodie" in order to prevent food waste. Our aim in developing this application is to ensure that leftover food in mass consumption areas is delivered to the people without wasting.

With this project specifications report, we aim to explain the description of our application, constraints, requirements, professional and ethical issues about our senior project, Foodie.

1.1 Description

Foodie is a mobile application where people can buy leftover food from restaurants or cafes at a lower price. There are two different types of users in the application. The first is restaurants and cafes which sell leftover food and the second is customers who want to buy leftover food.

Customers can list restaurants close to their location that sell leftover food and also view those restaurants on a map. Customers can add the meals they want to buy to their cart, pay through the application and receive the food from the restaurant. In addition, customers can view their pending purchases and past purchases. In this way, they can control their spending and see how much money they have saved. Besides, customers will be able to add their favorite restaurants to their "Favorites" list. This way, they will receive notifications when their favorite restaurants list discounted meals.

Restaurants list the leftover food in the application by uploading a photo of the food, selecting the recommended expiry date, condition and category of food. In addition, restaurants will be able to see pending orders and previously delivered leftover food. In this way, they will be able to see how much food and money they have saved.

1.2 Constraints

1.2.1 Economic Constraints

- Foodie will be a free and easy access application.
- It will require only an android smartphone or tablet and stable internet connection.
- Our plan for implementation is using free libraries and APIs.

1.2.2 Implementation Constraints

- Foodie project will be available on Android platforms.
- We will use Android Studio and GitHub to work in collaboration.
- Java will be used in the project.
- Firebase Authentication will be used for login operations.
- Firestore Database will be used for the database.
- Firebase Storage will be used for storing images.
- Google Pay API will be used for online payments.
- Google Maps API will be used for displaying restaurants in the map.

1.2.3 Ethical Constraints

- We will follow code of ethics in every step of our development process.
- Foodie will ask users for permission to access users' cameras and locations. These accesses will be protected and will not be used for tracking people.

1.2.4 Language Constraints

- Foodie will support English (EN) and Turkish (TR) languages.

1.2.5 Sustainability Constraints

- Found bugs and problems will be fixed regularly in updates.
- There will be regular maintenance for Foodie.
- User feedback will be collected and the application will be updated according to this feedback.

1.2.6 Social Constraints

- Users will be asked to share their location in order to show users more accurate results.
- There will be a chat feature where restaurants and customers can communicate in order to make shopping more seamless.

1.2.7 Environmental Constraints

- Foodie ensures that the meals to be thrown are delivered to the people and aims to minimize the food waste.

1.3 Professional and Ethical Issues

1.3.1 Professional Issues

- There will be regular meetings about the project.
- Each decision about the project will be determined by the contribution of each group member.
- Source code will be kept private.

1.3.2 Ethical Issues

- Since we need to get location information of the user, this situation can cause a problem. However, users will be informed that their location information will be private and safe. Furthermore, payment data will not be stored and any kind of user, even the creators of Foodie App, will not be able to reach this information.

2. Requirements

2.1 Functional Requirements

2.1.1 Authentication

- There will be login and register features to have authentication.
- Users should have a valid e-mail address to log in to the application properly.
- Users will be able to log in to the application with their Google account.
- There will be “remember me” and “forgot my password” options to increase functionality.

2.1.2 Customer User

Foodie customer users should be able to:

- list restaurants with deals near their location.
- show restaurants selling discounted food on the map.
- display the discounted foods when a restaurant is selected.
- use different types of payment methods.
- chat with the restaurants.
- display the total savings.
- locate their address using location services on their phone.
- use online payment methods via the app.
- evaluate restaurants with given points.
- add their favorite restaurants to the “Favorites” list.
- edit their profile information.

2.1.3 Restaurant User

Foodie restaurant users should be able to:

- list their discounted foods.
- see orders placed by customers.
- update the stock of the food they sell.
- choose the time interval in which they sell the food.
- choose which payment methods that they want (online payment via Credit card or cash payment).
- chat with customers.
- view their previous sales so they can see how much food and money they have saved.
- edit their restaurant information.

2.2 Non-Functional Requirements

2.2.1 Security

- Authentication system will be used to login to the application. Therefore, users' email, phone numbers and passwords will not be visible to other users.
- Users' passwords will be stored in Firebase in an encrypted format.
- User's card information will not be stored after in-app payment.

2.2.2 Usability

- After opening the application for the first time, a user manual will be displayed explaining how to use the application.
- Foodie will provide its users a simple and convenient interface that they can use easily.
- Foodie will be developed to run on different phone and tablet resolutions.

2.2.3 Accessibility

- Foodie should be available for all people who have an android device and are located in Turkey.
- Foodie can be downloaded for free from the Google Play Store.

2.2.4 Scalability

- According to the free version of Firebase, 10.000 users can sign up for the app. If the number of users exceeds 10.000, the paid version of Firebase is available.

2.2.5 Performance

- Foodie will be implemented using the most trendy and efficient layouts and views to increase the performance of the application.

2.2.6 Extendibility

- Foodie's layered architecture will make it easier to implement new features and improve the interface.
- In order for Foodie to be a maintainable application, a procedural way should be followed when naming variables, classes, layout files, activities and layers.

3. References

[1] “Losing 25,000 to Hunger Every Day” [Online] Available at https://www.un.org/en/chronicle/article/losing-25000-hunger-every-day

[2] TMO. 2013.”Türkiye’de Ekmek İsrafı Araştırması”. Toprak Mahsulleri Ofisi Genel Müdürlüğü, Ankara