



Food Donation Platform

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CEF440 - Internet programming and Mobile programming

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INTRODUCTION

The purpose of this document is to describe a software platform for a food waste management platform. The platform aims to reduce food waste and promote food donation by allowing individuals and businesses to upload their excess food offerings to the platform. Other users can then search for available food and purchase it at a discounted price or receive it for free.

Food waste is a significant problem globally, contributing to environmental pollution, high greenhouse gas emissions, and hunger. In Africa, food waste is estimated to account for up to 50% of household waste, which is a significant issue considering the current food insecurity in the continent. To address this problem, this platform will serve as a food waste management platform and provide users with valuable information on preventing food waste, identifying potential food donors and recipients, and real-time alerts on food donation opportunities. This platform will also promote community building through its social networking feature, allowing users to connect and share ideas on reducing food waste.

1.1 Purpose

The purpose of the problem statement is to propose the design and implementation of a food waste management app, specifically a food donation platform. The aim is to reduce or eliminate food wastage in our society by enabling individuals with surplus food to donate it to others who are willing to accept it at a discounted price or free of charge. The app will enable individuals to upload food items that they no longer need, while others can search for and acquire them. The purpose of the app is to foster community collaboration and reduce food waste in society.

1.2 Scope

The project scope for addressing the food donation problem includes the following:

- Identifying food donors: The project will identify individuals or organisations that have excess food and are willing to donate it.
- Partnering with food banks or organizations: The project will partner with food banks or organizations that address hunger and food insecurity, to facilitate the distribution of donated food to those in need.
- Ensuring food safety: The project will ensure that all donated food is safe and of good quality by adhering to safety regulations and guidelines.
- Developing a communication plan: The project will develop a communication plan to effectively communicate the benefits of food donation, how the system works, and how to get involved.
- Setting up an escrow payment system: The project will set up a reliable and efficient payment system to deliver the money to the donor when the food is gotten.
- Monitoring and evaluation: To ensure the project's success, there will be continuous monitoring and evaluation to track progress towards project goals, and identify areas that may need improvement.
- Raising awareness: The project will raise public awareness about the issue, to encourage more people to donate food and reduce food waste.
- Sustainability plan: The project will develop a sustainability plan to ensure the viability of the project in the long term. This may include securing funding sources, optimizing operations, and creating partnerships with businesses, and other organizations.

Overall, the project aims to create a robust and sustainable system for food donation and reduce food waste while helping those in need.

1.3 Goals and Objectives

The main goals and objectives of the food donation platform are:

- To reduce food waste by promoting the donation of excess food
- To provide a platform where individuals and businesses can upload their excess food offerings
- To provide a platform where individuals and businesses can search for available food
- To provide discounts for food offerings to encourage purchase and reduce waste
- To limit food waste and encourage donations, by setting an expiry date for food offerings

- To protect ozone layer by reducing green house gases in the environment
- To reduce hunger which is among the United Nations Sustainable Goals
- To raise awareness about the issue of food waste and food insecurity. By educating the public about the benefits of food donation and the importance of reducing food waste, the project can encourage people to contribute to the cause.
- To increase the GDP of the country

1.4 Overview

The problem that this project aims to solve is the waste of food in our society. There are many people who have excess food and are willing to donate it, but the lack of a suitable platform to facilitate these donations often results in the food going to waste. This project seeks to address this issue by creating a food waste management app that serves as a platform for food donations. The app will allow people to upload details and pictures of available food items that they are willing to donate. These food items can be listed at a discounted price or for free. Other users can then browse the app for available food items and claim them. The app will be designed to be user-friendly and accessible to both donors and recipients, with a focus on ensuring that all donations are safe and edible. Overall, the goal of this project is to create a sustainable solution to food waste while also providing a means of helping those in need.



Software Requirements

2.1 Functional Requirements

Here are some functional requirements for the food donation platform:

- User registration: The platform should allow users to create an account and register as a donor, requester, or guest. The registration process should collect the user's name, email, password and verify the user's email address.
- Donor upload: The platform should allow donors to upload details of excess food items such as name, short description, expiry date, availability, and discounted price or free.
- Search and browse: The platform should allow users to search for available food items by name or keyword, filter food items by categories such as location, availability, and discounted price or free. The platform should also display a list of available food items that match the search criteria.
- Request for food item: The platform should allow users to request a food item, and the request will be sent to the donor for approval.
- Approval of request: The platform should allow donors to approve or reject a request made by a user. The donor should provide feedback on the reason for the rejection of a request.
- Payment: The platform should have a payment gateway where users can make payment for food items that are not free.
- Transaction history: The platform should keep a record of all transactions, including the donor, requester's name, date of transaction, food ID and amount paid.
- Expiry date management: The platform should manage the expiry date of each item uploaded by donors and mark them as unavailable when expired.
- User feedback: The platform should allow users to provide feedback on the platform's functionality, usability, and user experience.
- User account management: The platform should allow users to modify their account information, including their name, email and password.
- Admin controls: The platform should have an administrator account that can manage user accounts, review transactions, and handle disputes between users.

- Messaging: The platform should allow users to communicate with each other via messages to find out more about the food
- Notification system: The platform notifies donors when a user requests an item on discount and also notifies users when donors around them upload new food items.

Overall, the functional requirements will ensure that the platform provides a comprehensive platform for managing food waste and encourages food donation for the betterment of the society.

2.2 Non-Functional Requirements

To ensure users and donors have a seamless experience while using this platform, the following properties are considered

- Usability: The platform should be easy to use and understand for all users, including those who are not tech-savvy.
- Performance: The platform should be fast and responsive, and not lag or crash during use.
- Security: The platform should ensure the privacy and security of user data by using encryption and other security measures.
- Reliability: The platform should be reliable and available 24/7, with minimal downtime or maintenance required.
- Accessibility: The platform should be accessible to all users, including those with disabilities, by implementing features such as text-to-speech and screen reader support.
- Scalability: The platform should be able to handle a large number of users and transactions simultaneously without compromising performance.
- Availability: The platform should be available on multiple platforms and devices, such as iOS and Android, and accessible through a web browser.
- Compliance: The platform should comply with all relevant laws and regulations, such as data protection laws, and adhere to industry standards for software development and data management.
- User experience: The platform should provide an excellent user experience, with an intuitive interface and clear navigation, ensuring users can complete tasks easily.
- Localization: The platform should support multiple languages and be adaptable to local cultures and customs.
- Maintenance: The software system's has to be maintained over time with minimal effort to ensure its efficient and effective operation.

- Legal and regulatory requirements: Legal and regulatory requirements are non-functional requirements that refer to the legal and regulatory obligations that the food donation system should comply with.

Overall, the non-functional requirements are essential to ensure the platform is easy to use, trustworthy, and performs optimally for all users, resulting in a positive user experience.



Survey

Link to survey questions -

https://docs.google.com/forms/d/e/1FAIpQLSfgeb0axjas-MCnEQlgOjqC9hTjGzIVnWRnvt8VsblccTLXTA/viewform?vc=0&c=0&w=1&flr=0&usp=mail_form_link

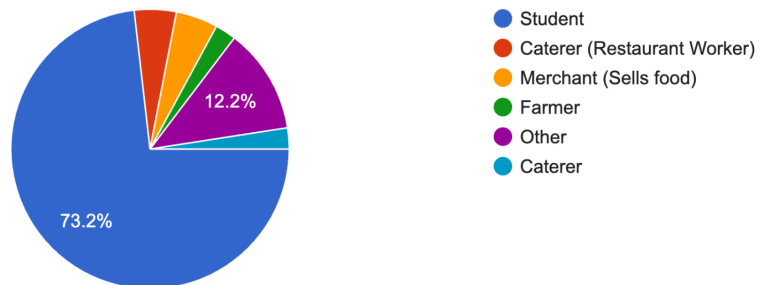
Link to responses -

https://docs.google.com/spreadsheets/d/1EP9kea_jn8D293ZVxHMoUwAacKtG2H_jiJtRMcqMhw0/edit?usp=sharing

3.1 Survey Charts

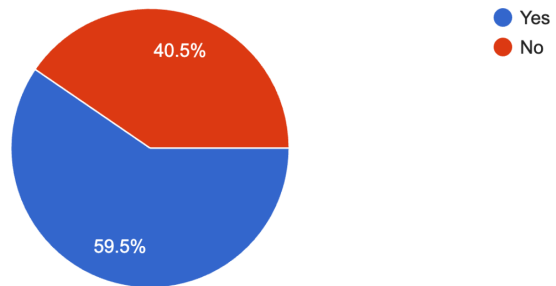
Profession

41 responses



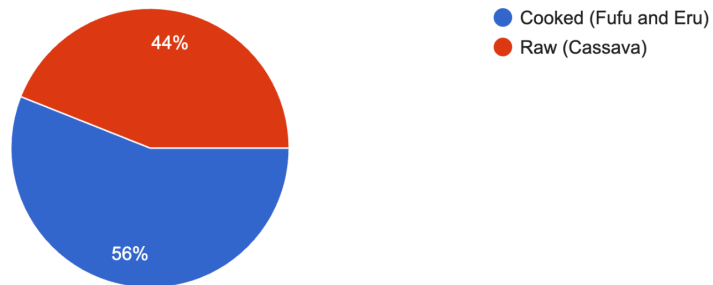
Have you had excess food in your possession?

42 responses



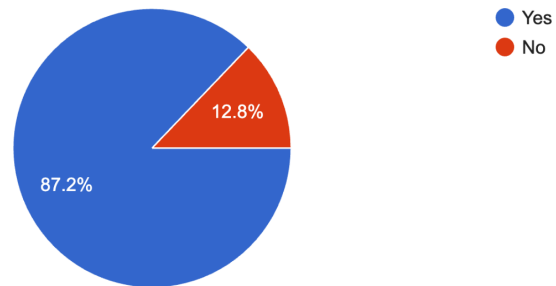
If yes, Was the food

25 responses



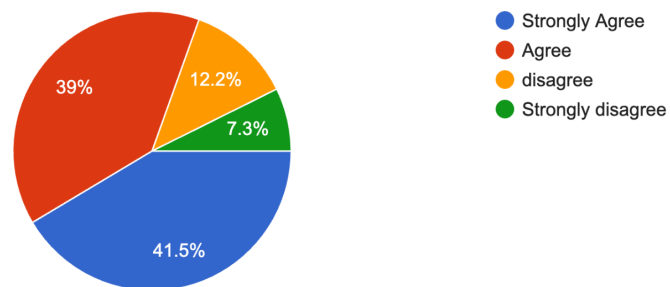
If you have, would you willing to give it out for free or at a discounted price?

39 responses



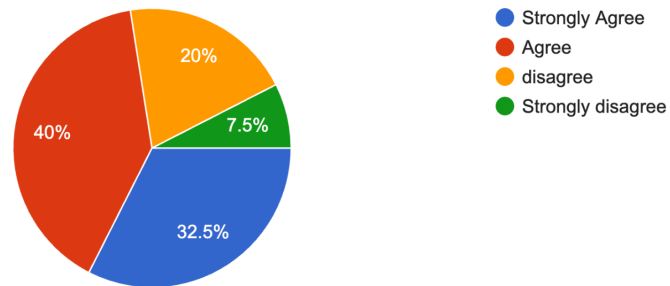
You would be willing to give if it is for free

41 responses



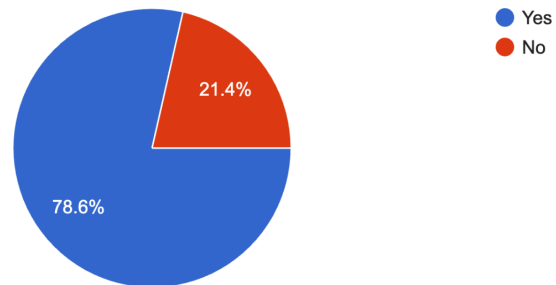
You would be willing to give if it is for a discounted price

40 responses



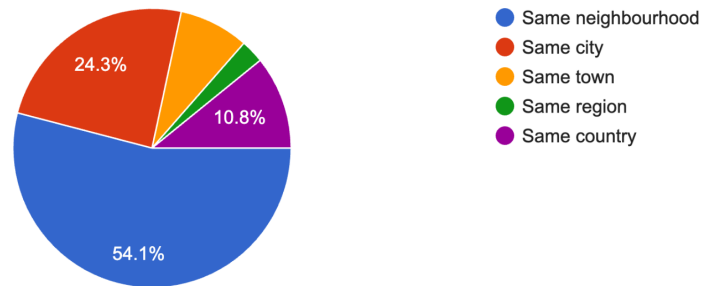
Would you be willing to take food from someone for free or at a discounted price?

42 responses



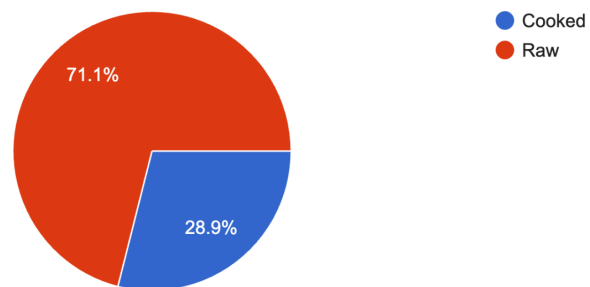
If yes, how far should the person be?

37 responses



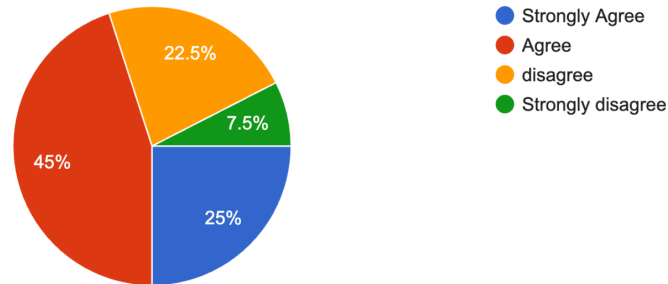
If yes, what is your preferable kind of food....

38 responses



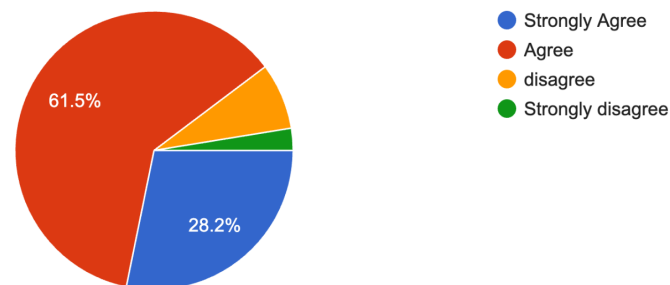
You would be willing to take if it is for free

40 responses



You would be willing to take if it is for a discounted price

39 responses



3.2 Analysis

From the above survey, we came to a number of results:

- Most participants have excess food in their possession
- Most of the excess food they have are cooked
- Almost all participants are willing to give excess food out for free or at a discounted price
- Majority of the participants are willing to give excess food for free

- 78% of the participants are willing to take food from a donor for free or at a discounted price
- Most of the participants will be willing to take food if it is from a person in the same city as them
- Majority of the participants are more willing to take raw food rather than cooked food
- Majority of the participants are willing to take food at a discounted price than if it is free



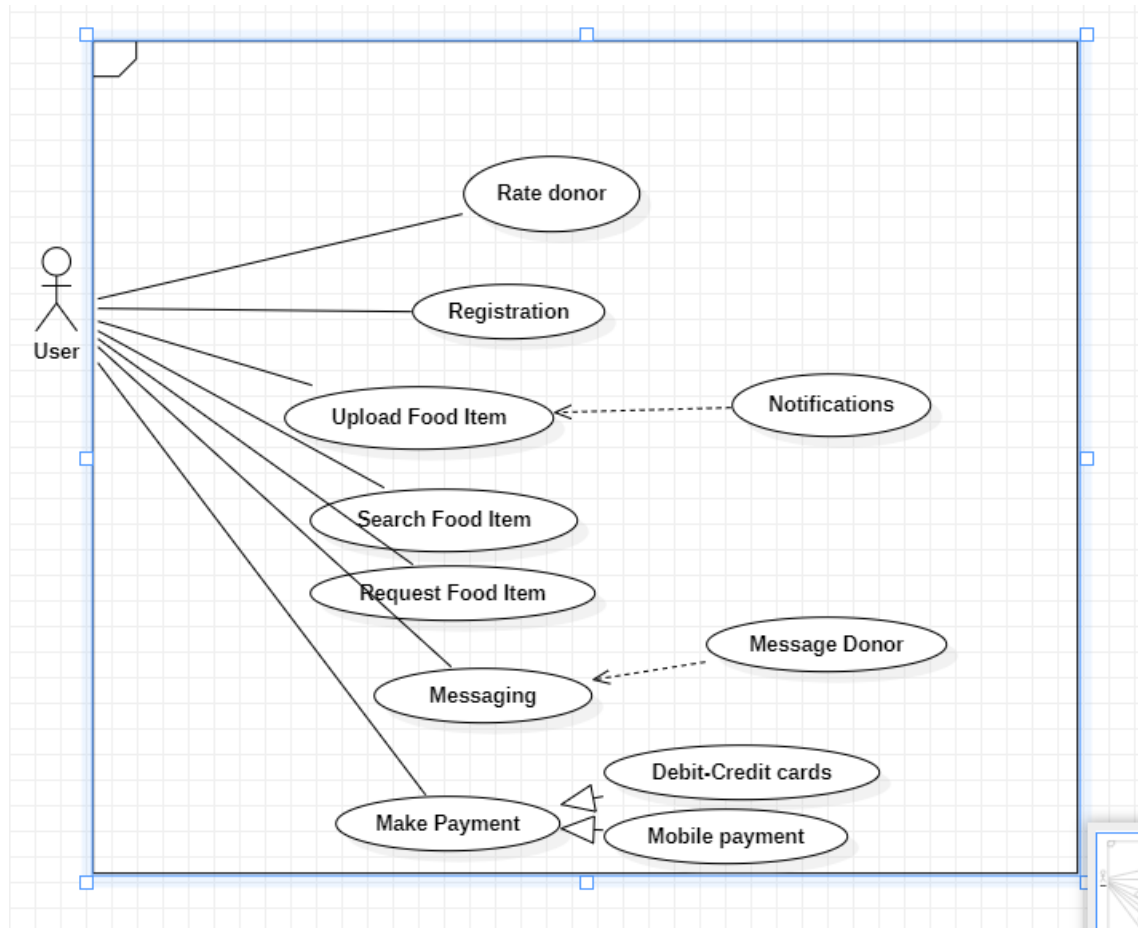
SYSTEM MODELS

4.1 Scenarios

Here are some scenarios for the platform:

1. A family has unused or close to expiring food items in their pantry that they will not be able to consume before the expiration date. They can take a picture of the food items and post them on the app to be donated to others.
2. A caterer has excess food from an event and wants to donate it instead of letting it go to waste. The app can allow them to upload information about the food items, including quantity, type, and expiration date, so that recipients in the area can search for and request the food items.
3. A restaurant has leftover food at the end of the day. Rather than throwing it away, the restaurant can use the app to donate the food to individuals or organizations in need.
4. A food bank wants to notify the community of the items they are in desperate need of. They can use the app to post requests for specific items, giving individuals and businesses an opportunity to make donations.
5. Schools or other institutions with a cafeteria can use the app to notify students, faculty, and the surrounding community of food items that are available for donation or at a discounted price, reducing food waste and providing affordable meals.

4.2 Use Case Diagram





Conclusion

This software design document outlines the architecture and design of a food waste management app. The proposed design aims at reducing food waste by allowing individuals and businesses to upload their excess food offerings on the app for other users to purchase or receive for free. The app aims at encouraging donation and limiting food waste, saving costs and generating revenue.