

Waste Food Management System Using Flutter

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Abstract- Wasting food is a common problem in our society. Food waste management is crucial since it can improve our environmental and economic sustainability. This project tackles the issue of food waste by creating a mobile application that connects people with extra food to charities that help those in need. Users can easily share information about their surplus food, while charities can efficiently manage donation requests and ensure the food reaches those who need it most. This user-friendly application also helps in promoting a more sustainable and compassionate community by reducing food waste and helping those facing hunger. Food is one of the basic necessities of humans, and it stands first among all basic needs- food, shelter and clothing. It is important as it nourishes the human body sustaining the very existence of humans. However, with the rising population and development of this country, food wastage has risen to a new high. There are many people who wish to food to the needy but are unaware of how exactly they can execute that. Our application revolves around helping the needy by connecting NGO'S and common people. The NGO will get the details of the restaurants or orphanages wishing to donate via our application and thus a network is established between donors, people who aim the donors in donating (NGO'S) and the actual needy people to whom the donated items is sent.

1] INTRODUCTION

Food waste is a global problem with staggering consequences. Every year, a significant portion of the food produced is lost or wasted, leading to environmental and social issues. Landfills overflow with decomposing food, releasing harmful methane gas, while millions face hunger. This project proposes a novel solution: a mobile application that tackles food waste at its core. By connecting individuals with surplus food to local charities, the application creates a bridge between abundance and need.

This user-friendly app empowers individuals to become part of the solution, reducing food waste while fostering a more compassionate community. This product is android based application for NGO's it is a platform for donating remaining food for needy people. This app developed a common combination by connecting to a donor and a volunteer from the NGO where the donor adds all the food information which contain food type, location where the food is available, cooking and expiry date/time of food Selecting a Template. In this project the volunteer (donor) can login & enter their Location, amount of food and time of cooking to avoid spoiling. Then a simple request is given to the NGO. After seeing the request, the registered NGO among that the application can accept the request. The donor can hold an account in this application & whenever there is food wastage, he can login and enter the details of food and location. After retrieving the details, the NGO can collect food from the donor and can redistribute to the orphans or others and mark the status of request as completed.

1.1] Motivation

As per the knowledge the technology is going advances and growing day by day. Our main motto is to help needy people. The idea behind over project can be used by many people who wish to donate things to needy organizations. Also, many organizations like to ask for various things required by them such as clothes, food grains, books, utensils, etc

1.2] Objective of the project

Food Donation Project System is a mission to end hunger and no wasting of food to make a hungry-free world. According to the latest survey, 1.3 billion tons of food is thrown as waste every year. Additionally, one-third of the food consumed is stated as leftovers.

The focus of this project is to reduce the amount of food wasted and being used to the needy people.

Therefore, an android-based application is developed by which a person can donate food with their capacity and at the same time the application lets the organization to put their request on their requirements. The basic prerequisite to use this Food Donation Project System application is a smartphone.

1.3] Scope of the project

India is a developing nation and problems such as hunger and other issues are still prevalent to a large degree. We shall try to contribute out best by connecting the people in need with the providers and donors. We shall try and expand our application scope to other platforms such as IOS and also shall try to expand our reach and the amount of help we provide.

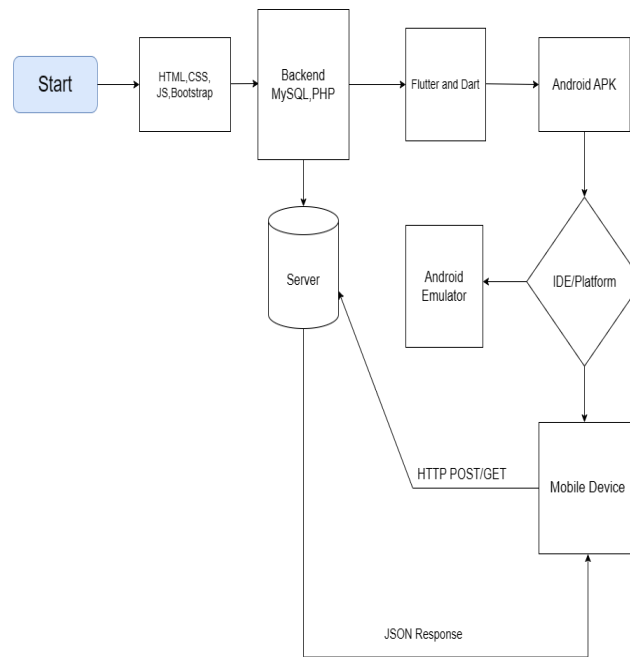


Fig 1: Block Diagram

2] LITERATURE SURVEY

Food is the using up for resource for both animals and humans, but if we did not eat which is said to be food waste. The main cause of food waste is over production, over purchasing and rotten of foods. Some food waste occurs due to lack of transparency and inadequate supply facilities.

More than 40% of food is manufactured which is expended carelessly with no purpose said by “The United Nations Food and Agriculture Organization (FAO)”. 18.7 Kilograms of food is wasted daily in India.

[1] Vikram Anirudh, Bhuvaneshwaran ,Praveen kumar and Suganth kumar , “A Survey on Food Waste Management System”, 2021.

Food loss or food waste is the food that is not eaten by the consumer. By properly analyse and manage the food waste makes our world to economically and environmentally healthy and make the resources available for the future generations. Everyday many students in the college wasting lots of foods. It’s an initiative to develop a web application for college used to keep track and analyse the food waste and to take a better decision by knowing what went wrong and to take the essential steps to avoid the food wastage.

[2] Bagherzadeh M, Inamura M, Jeong H, “Food waste along the food chain”, 2014.

Food waste and loss are sometimes classified into two broad categories – avoidable and unavoidable. For industry, avoidable food waste includes damaged stocks and products that have not been used. Food waste occurs for a number of reasons, including over purchasing, poor preparation, and inadequate storage, and excessive serving sizes. While avoidable food waste could be prevented (for example through better planning), unavoidable food waste consists of unsellable or inedible food. Available technology and economic efficiency also contribute to determine the distinction between avoidable and unavoidable food waste.

[3] Davis C,” Food recovery through donations as a response to food waste”,2014.

In this work, A case study of two grocery stores participating in food recovery program in Boulder. University of Colorado, Boulder, CU Scholar. In other words, food waste represents any food that gets produced for human consumption but goes uneaten.

With nearly half of all food available for consumption in India getting thrown out each year, the issue poses serious environmental, social, and financial implications. From farming to disposal, food waste emerges due to inefficient practices along the food lifecycle that misuse not only the nutritional and monetary values of the final product but also

the various inputs of each step, such as energy and freshwater, while the main disposal practice of landfilling contributes to environmental degradation.

One third of the food produced in the world for human consumption every year — approximately 1.3 billion tonnes get lost or wasted. Food losses and waste amounts to roughly US\$ 680 billion in industrialized countries and US\$ 310 billion in developing countries.

Of the processed/eatable food that gets thrown out 80% is simply because it's not sold at the end of the day and charities have challenges in redistributing due to: small quantities, nature of food, logistical challenges etc.

2.1] Existing System

Food waste is a significant global issue with environmental and social repercussions. To address this challenge, various systems have emerged, each with its strengths and limitations. Here's an overview of some existing approaches:

A) Food Banks and Pantries: These established charities collect surplus food from grocery stores, restaurants, and distributors, then redistribute it to those in need. While effective in alleviating hunger, they often struggle with logistics and limited capacity, focusing primarily on non-perishables.

B) Composting: Composting offers a sustainable solution for diverting food scraps from landfills. Food waste decomposes into nutrient-rich compost, which can be used for gardening or agriculture. However, composting requires dedicated infrastructure and space, limiting its accessibility in urban areas.

Presently people who wish to donate items need to personally visit the organizations and donate foods or other items. Otherwise, they have to search for some websites to donate surplus food. In general, the large manufacturers, wholesalers, and organized community provide food items to food banks or waste tons of foods daily. They must search for some organization that needs food.

This process involves a lot of time to contact the organization to check the requirement. If they do not need the food, then the person must contact another organization. This makes the donor tired and exhausted.

2.2] Proposed System

This project proposes a mobile application designed to combat food waste by facilitating connections between individuals with surplus food (donors) and local charities (NGOs) in need. Built with Flutter for a user-friendly experience, the app offers two primary modules:

1. Donor Module:

User Registration and Profile: Donors can easily register with basic information and specify their location for efficient matching with nearby NGOs.

Food Posting: Donors can post details about their surplus food, including quantity, type (prepared meals, groceries, etc.), dietary restrictions (if applicable), and expiry date (if relevant). Photos can be added for better visual representation.

Location Services: The app utilizes location services to connect donors with nearby NGOs, promoting efficient food pickup or drop-off coordination.

Communication Tools: Donors can directly communicate with chosen NGOs through in-app chat or messaging features to arrange convenient pickup or drop-off times.

Donation History: The app maintains a record of past donations, allowing donors to track their impact and stay motivated.

2. NGO Module:

Registration and Profile: NGOs can register with details about their organization, including their mission, types of food accepted, and service areas.

Food Request Management: NGOs can view available food donations in their vicinity, filter by category or dietary restrictions, and select those that meet their needs.

Communication Tools: NGOs can directly communicate with donors through in-app chat or messaging features to coordinate convenient pickup or provide drop-off instructions.

Volunteer Management (Optional): The app can offer an optional feature for NGOs to manage volunteers who may assist with food collection or distribution.

Donation Statistics: The app can provide NGOs with insights into their food donation activity, allowing them to track progress and optimize their efforts.

Technical Specifications:

Front-End Development: Flutter for a cross-platform mobile application (Android and iOS).

Back-End Development: PHP and MySQL for robust server-side functionalities, user authentication, data storage, and communication management.

Database: MySQL database to store user information, food donation details, and communication history.

Benefits:

Reduced Food Waste: The app connects donors with those in need, diverting surplus food from landfills and promoting its consumption.

Increased Food Security: NGOs can access a wider range of food donations, ensuring a more reliable source of food for their beneficiaries.

Enhanced Community Engagement: The app fosters a sense of community and social responsibility by empowering individuals to contribute to food waste reduction.

Improved Sustainability: By minimizing food waste, the app contributes to a more sustainable food system with reduced environmental impact.

This proposed mobile application offers a user-friendly and efficient solution to tackle food waste by bridging the gap between those with surplus food and those in need. By promoting direct connections and fostering community engagement, the app has the potential to significantly reduce food waste while strengthening social responsibility within local communities.

3] IMPLEMENTATION

Volunteer/Donor Side:

Step 1: User can register using personal details.

Step 2: User can login in his personal account using id and password.

Step 3: Email Verification is done.

Step 4: Create a new food item with details of quantity, location, cooking time, address contact.

Step 5: Post the Request.

Step 6: After adding details about food user can logout the system.

NGO side:

Step 1: NGO can register using personal details.

Step 2: NGO is verified by admin(non-trust/Govt.)

Step 3: NGO can login in their personal account using id and password.

Step 4: Accepting the request from donor side.

Step 5: After collecting the food NGO can manually set their status of food request as completed.

Step 6: NGO can logout the system.

3.1] System Module and Design

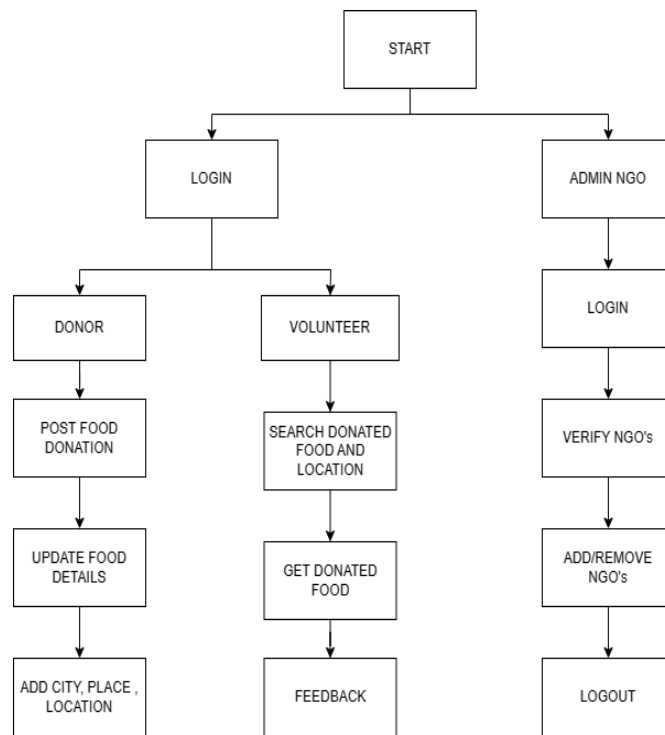
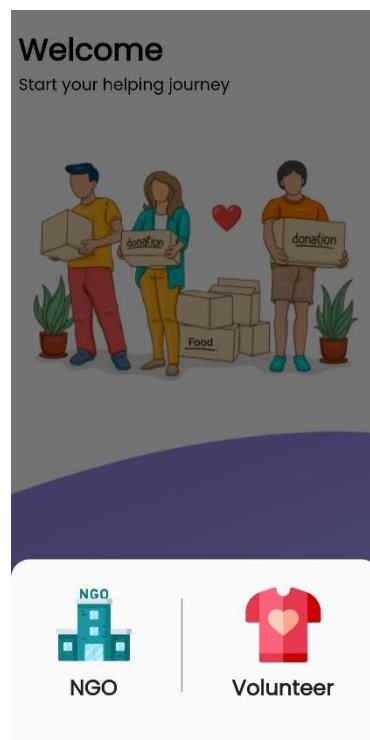


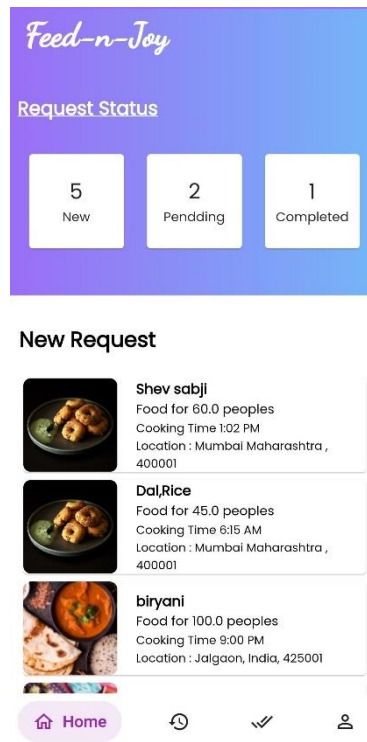
Fig 3: Architecture of the System

4] RESULTS

A] Welcome Page of Application



B) Request Page



5] CONCLUSION

Food waste is a pressing global issue with significant environmental and social consequences. This project has proposed a mobile application as a novel solution to combat this challenge. By connecting individuals with surplus food (donors) to local charities (NGOs) in need, the app fosters a more efficient and sustainable food system. The proposed application offers a user-friendly platform for both donors and NGOs. Donors can easily share their surplus food, while NGOs can efficiently manage food donation requests and ensure the food reaches those who need it most. This direct connection reduces food waste and promotes food security within local communities. The positive impact extends beyond immediate food redistribution. The app fosters a sense of community and shared responsibility for tackling food waste. Users become active participants in the solution, empowered to make a positive impact. This project contributes to the growing body of research on mobile app-based solutions for food waste reduction. By leveraging technology and promoting direct connections, the app has the potential to significantly reduce food waste on a broader scale.

REFERENCES:

- [1] Vikram, Anirudh, Bhuvneshwar, Praveen kumar and Suganthkumar “A Survey on Food Waste Management System” 2021.
- [2] Bagherzadeh M, Inamura M, Jeong H “Food waste along the food chain. OECD Food, Agriculture and Fisheries Papers” 2014.
- [3] Davis C “Food recovery through donations as a response to food waste: A case study of two grocery stores participating in food recovery program in Boulder. University of Colorado, Boulder, CU Scholar” 2014.
- [4] K. Raut, N. Shah and A. Thorat, “Food donation portal”, <http://ijarcet.org/wpcontent/uploads/IJARCET-VOL-5-ISSUE-4-906908.pdf>, 2015.
- [5] D. Shah, A. Ansari and R. Sharma, “Helping hands”, <http://ijsrd.com/Article.php?manuscript=IJSRDV4I110485>, 2016.
- [6] Jadhav NH, Narendrababu CR and Banu Prakash GC” EA New Approach to Reduce Food Wastage using Ubiquitous Technique”, J Food Process Technol 6: 496, 2015.
- [7] Sasikala P#1, Sentiment Analysis of Online Food Reviews using Customer Ratings 2018.
- [8] Anusha Kailas Kogta,” Cross Platform Application for Canteen Food Ordering System” June 2020.
- [9] Mobile Crowd Sensing Services for Tinnitus Assessment, Therapy and Research, in 4th Intl Conf on Mobile Services. 2015.
- [10] Food Waste Management (ijraset.com)
- [11] Payne, Rap. (2019). Using Firebase with Flutter. Doi:10.1007/978-1-4842-5181-2_12.