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## FOOD WASTE MANAGEMENT

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### ABSTRACT

To developed mobile application which reduces the amount of food wastage produced in the functions, restaurants and in the mess. The application features the donation of food collection of food and direct contact with the nearby NGOs. For Donation of Food following needs to be provided such as food details, location of where excess food is available, type and also the quantity of food available. Immediate Alerts to nearby NGOs, orphanage, volunteers to collect them. According to the recent survey, 1.3 billion tons of food are wasted each year and only one third of the food is consumed. This application reduces the amount of wastage of food. It also enables the direct contact with the NGOs and volunteers with details of the availability of the food.

**Keywords:** Mobile Application, Excess Food, NGO, Donor, Food Waste, Donation.

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### I. INTRODUCTION

In countries like India 795 million, out of the world population of 7.6 billion people, don't have enough food to lead a healthy or they are undernourished. That is approximately one out of nine people on earth. The reasons can be; firstly, that there is a shortfall in the food produced worldwide or second, there is massive food wastage phenomenon occurring. Looking further into these reasons, today the world is yielding one and half times more for an individual, roughly that is enough to feed close to 10 billion people. Despite this massive number, people across the globe don't have sufficient food, to conclude we can say that the food produced for the consumption of people is being intentionally or unintentionally wasted.

Food waste is an ethical issue of global scale. According to the Food and Agriculture Organization (FAO) of the United Nations, roughly one-third of all the food produced worldwide each year, for human consumptions is either lost or wasted. Every piece of food wasted is an opportunity lost to improve world hunger and global food security. To define food waste, it means food supplies (grains, vegetables, poultry, & meat) or drinks which was predetermined to feed people now lies in landfills as garbage despite it being fit for human consumption. The food thrown is either spoiled or expired chiefly due to economic behavior, poor stock management and neglect. This is happening is developed, developing and underdeveloped countries with each's contribution higher than the other.

### II. LITERATURE SURVEY

A short survey was undertaken by asking relatives, friends, close friends, neighbors, and a couple of more people about their experience of donating food. By doing so, it was found that earlier, almost a decade back, there was an issue in donating food as there were no food banks and NGOs. But then, there came platforms like food banks. Overcoming the limitations of the Food Banks, finding an opportunity to make a start-up, there came in a model: a food web management system.

Although many problems were solved by start-ups of such platforms, through our survey a major issue was found which society is currently facing. The basic concept of this project entitled "Food Wastage App" is to collect the excess/leftover food from donors such as hotels, restaurants, marriage halls, etc. and distribute to the needy people through NGOs. NGOs will collect the leftover or excess food from above mentioned venues for the distribution to the needy people. This application for food waste management can assist in collecting leftover food from hotels, restaurants, marriage halls, social, political functions & religious events to distribute among those who are in need. NGOs, that are helping poor communities to battle against starvation and malnutrition, can raise a request for supply of excess/left-over food from restaurants through this application.

Once the request is accepted, the NGOs can collect the food from the venue for distribution. In this way this web-based app for food waste management will help the donors to reduce food waste and help in feeding the poor and needy people. It is helpful for the restaurants to know how much food they have produced in excess day-by-day. It also helps to donate the leftover/excess food regularly for the needy people. A little deeper survey was done to find if any platform is resolving this issue, but to the best of our knowledge, we could find only a couple of such websites/mobile applications but didn't have a wider reach.

### III. SYSTEM IMPLEMENTATION

#### A. EXPERIMENTAL SETUP

For this project, Android Studio and PHP languages are used. For the database, we have used MySQL. Short descriptions of the platforms required are mentioned below:

- **Android Studio:** Android Studio provides a unified environment where you can build apps for Android phones, tablets, Android Wear, Android TV, and Android Auto. Structured code modules allow you to divide your project into units of functionality that you can independently build, test, and debug.
- **Git & GitHub:** Git is a version control system that allows you to manage and keep track of your source code history. GitHub is a cloud-based hosting service that enables you to manage Git repositories. It is meant for a team of developers to work collaboratively and together for faster development of the product.
- **MySQL:** MySQL is a Relational Database Management System (RDBMS) based on SQL – Structured Query Language. The application is used for a wide range of purposes including data warehousing, e-commerce, and logging applications. The most common use of MySQL is for web databases.
- **PHP:** PHP is a server scripting language, and a powerful tool for making dynamic and interactive Web pages. PHP is a widely-used, free, and efficient alternative to competitors such as Microsoft's ASP.

TABLE 1: Requirements

Sr. No.	Hardware and Software Requirements	
	Name Of Equipment	Specification
1.	Computer System	8GB RAM or more, 8GB of available disk space
2.	Windows	Windows 8 or higher
3.	Git and GitHub	Latest Version
4.	MySQL	8.0.23 version or above

#### B. PROJECT PROCEDURE AND FLOW

- To develop this project efficiently, communicate with the project guide and also a couple of corporate developers.
- First, finalize the features and specifications which shall be implemented in our project.
- After having a clear vision of features design the web app with an intention to have a decent UI UX.
- This includes thinking of where the button shall be placed, a click on the button should display which page, to summarize in short, it aims to make sure the user has a convenient and efficient user experience.
- Once the design is ready and approved, start with the development of the actual project.
- Once the web app is developed and ready, proceed with one of the important things of software development life cycle – testing.
- If any bugs or defects are found, they would be resolved and retested to gain confidence in the project.

#### C. WHAT IS REDISTRIBUTION OF FOOD?

Many anti-food waste movements and organizations focus on redistributing the waste that supermarkets or consumers seemingly inevitably incur. In these cases, wasted food that is still safe to eat and of good quality, but that will no longer be sold in the supermarket or is no longer wanted from a consumer, is redistributed to other people who want the food, generally to food insecure and homeless populations. This can occur internationally (through food aid) or within communities (with food banks).

#### D. WHAT IS FOOD BANKS?

Food banks are charity organizations which accept donated food and redistribute it to those in need, such as food insecure or homeless citizens. Sourced food often comes from surplus/waste food from the food industry

and public donations. Food banks have historically been common in New Zealand and North America; however, they only first became common in the UK in 2007 after the financial crash and subsequent government policies of austerity caused charity organizations to assume more responsibility for welfare type programs. At this point in history, food banks have now become a norm in societies of the developed world. Like food aid, food banks appear to be providing essential benefits to society, by redistributing unwanted food to those who need it. However, the growing spread and general existence of food banks shows that, in fact, these facilities are not productive in actually solving the problem they were created to solve (alleviating food insecurity and hunger in communities). However, it is important for the public to recognize that the existence of food banks is a symbol not of charity, but of society's failure to hold their government accountable for dealing with issues hunger, food insecurity, and poverty.

Food banks exist to fill a space where the state and market have failed. Food banks are also attractive to volunteers by providing them a feeling of 'giving back' and to donating corporations by providing a marketing platform of 'community involvement'. Visits to food banks generally bring only a temporary, unhealthy, and humiliating relief from hunger for food bank users; the experience does not usually provide options to improve social position or self-esteem. Therefore, food banks can offer a food waste management solution while also helping to alleviate food insecurity and food poverty, but they should be managed in a way that provides real benefits to users.

#### E. BASIC FLOW OF ALGORITHM

- Start
- Open the mobile application
- Access your account.
- If you don't have an account, create one by signing into the app.
- Enter valid Email Id or Mobile Number and password and click on LOG IN.
- Upload details of food, view details and also connect to the NGO.
- Stop

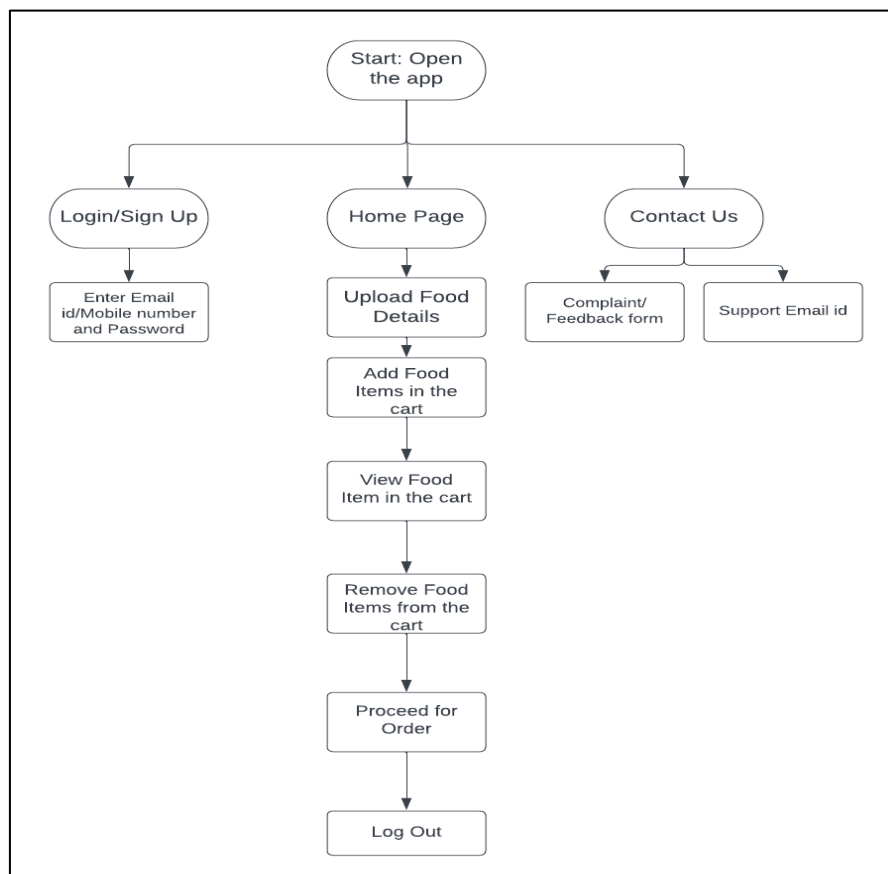


Figure 1: Project Architectural Flow

Figure No. 1 shows the flow of the entire project. Here, the user opens the mobile application and finds an interface directly on the Login/Sign Up page. In this page user needs to login using Email Id or Mobile Number and password or else needs to register for the account. After logging to the account, the user is directed to the Home Page. The Home Page consists of Upload Details, View Details, Contact Us, Connect to an NGO and logout button. After clicking the Button of Upload Details, user is directed to fill the form details such as Name, Email Address, Contact Number, Food Type (Veg/Non-Veg), Quantity of Food, City and any other details related to food. After clicking the Button View Details, user is listed with the details of food available. After clicking on Button Contact Us, User can able to enter their query and feedback with sending us the mail and also contact us with the contact number. After clicking on Button Connect to NGO, user can contact directly with the listed NGO. After clicking the Logout Button, the account is logout.

## F. MODELLING AND ANALYSIS

### • Data Flow Diagram (DFD)

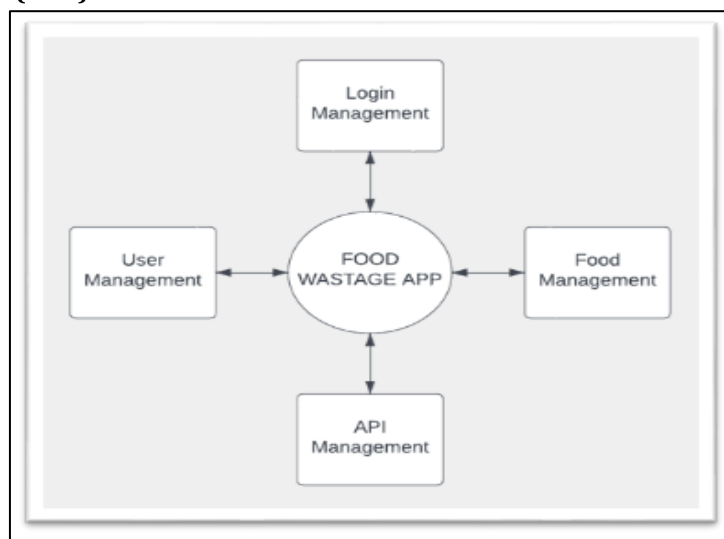


Figure 2: DFD level 0

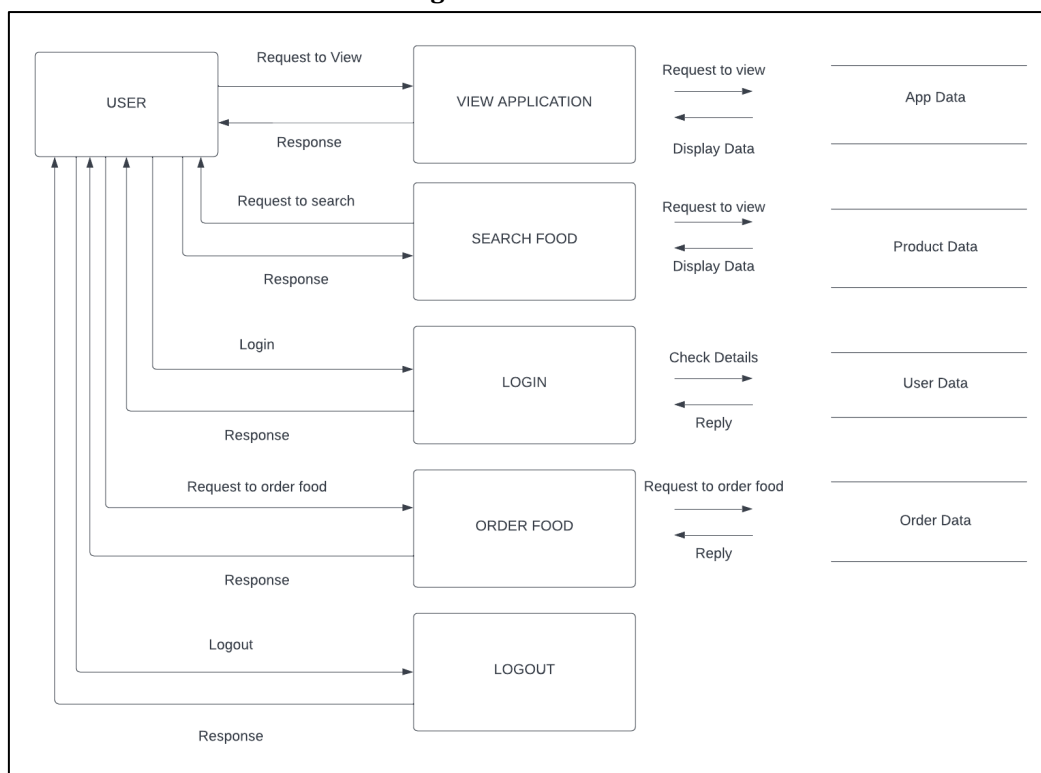


Figure 3: DFD Level 1

# • Use Case Diagram

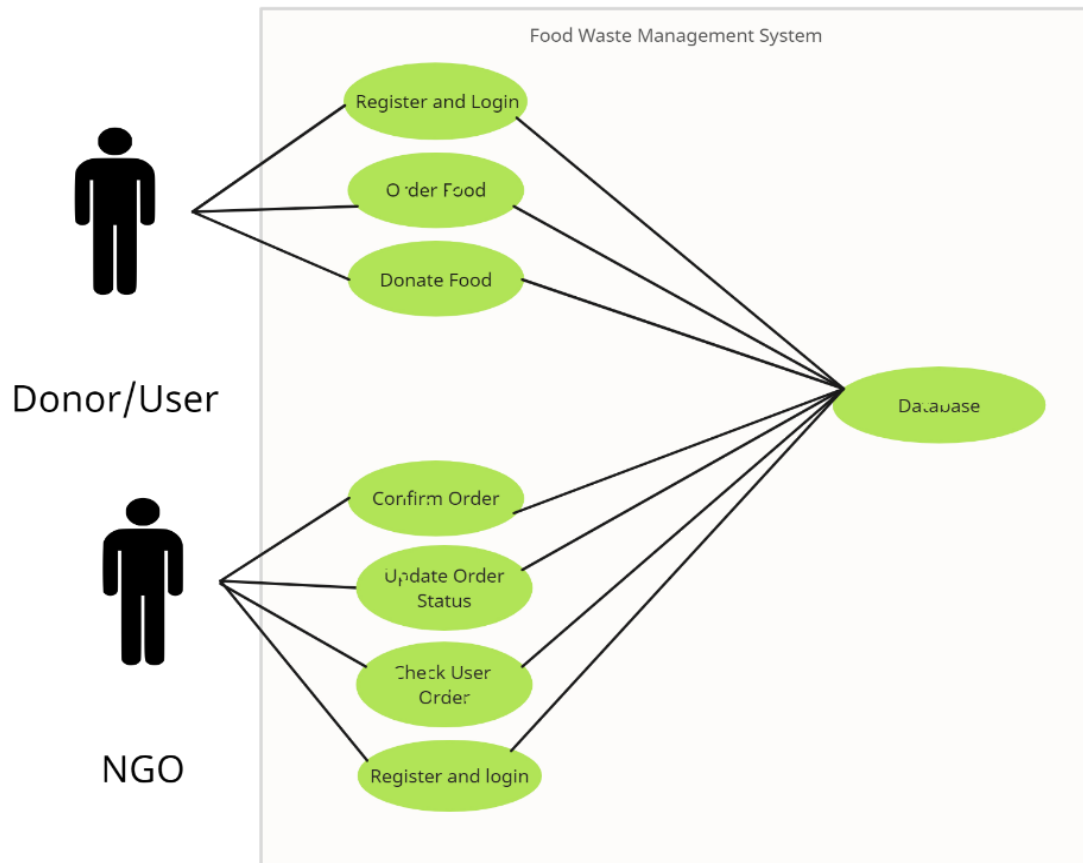


Figure 4: Use Case Diagram

# • E R Diagram

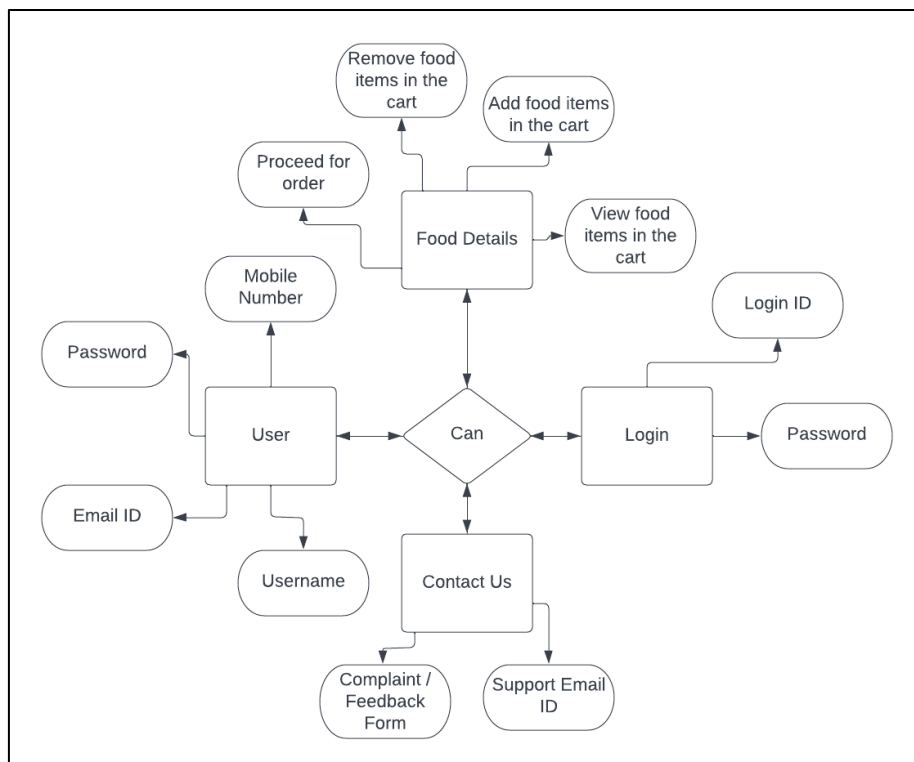
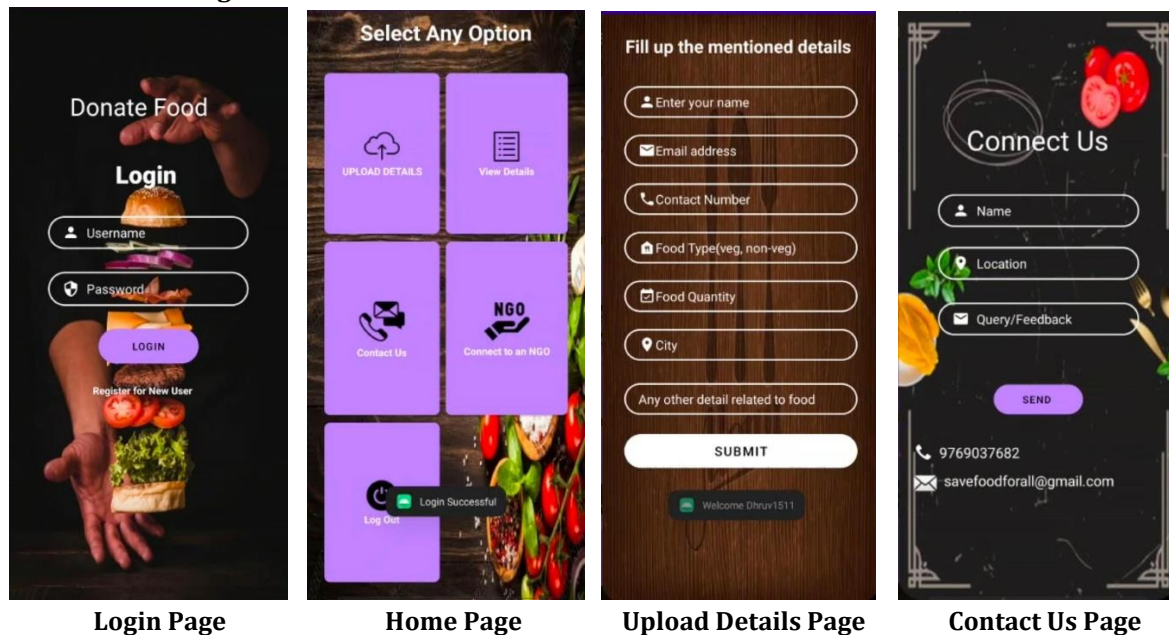


Figure 5: E R Diagram

### • User Interface Diagram



### IV. FUTURE SCOPE

From the research, we understood that people are trying to move more towards donating food via food waste management mobile application, as it saves time from searching online for different websites and collecting NGOs contact information and is much faster. Our plans for this system shall be to transform this mobile application using API for a better user experience. We would also like to expand our project by adding more platforms like contacting delivery companies for collection of food, etc. Another feature that sounds demanding is to show the live location of delivery of food. To simplify, our system shall offer a faster booking process and faster response to user demand which will save time of the user.

### V. CONCLUSION

The complex reasons behind why nearly one-third of all food produced for human consumption is wasted are evident throughout the food supply chain, from production to consumption. While there are many practical strategies which have been discussed to reduce food loss and waste (i.e., improving storage facilities, starting food waste awareness campaigns), these do not solve the underlying causes of why loss and waste still exists to such a large extent in today's world. The largest barrier to eliminating food loss and waste is the corporate control of the global food system. Within this globalized, neoliberal political economy, waste brings profit and power; whether from corporations encouraging unnecessary and unhealthy overconsumption through marketing campaigns, or the governments of the developed world encouraging overproduction of food commodities to use as a mechanism of control through food aid, the global food system relies on creating and profiting from waste. Thus, to truly put an end to food waste, citizens of the world must organize to reshape and rebuild local and global food systems in a way that builds food sovereignty, respects nature, nurtures health and wellbeing of people, and ensures the right to food for all people in a sustainable and resilient manner.

This project entitled "Food Waste Management System" is a mobile application which presents a complete overview of the implementation of an application that helps both Donors and NGOs. The application helps in collecting leftover/excess food from the Donors and distributing the same to those who are in need. This application works properly and is responsive to the users with proper retrieval from the database. Also, there is a help menu available in all user logins which contains FAQ. In this way, this application comes with various features for the effective consumption of waste food by the needy people.

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