

FOODIE FREDDY: Surplus Food Donation Android App

Mrs. Jayashubha J¹, Sidapara Nancy Arvindkumar², Yashitha T³, Samyuktha Madhav⁴,
Vibha M⁵

Associate Professor, Student, Student, Student, Student

Department of Computer Science and Engineering, KSSEM, Bengaluru, Karnataka, India

¹jayashubha@kssem.edu.in, ²nancy5sayshi@gmail.com, ³yashitha359@gmail.com, ³samyukthamadhav19@gmail.com,
⁴vvibha526@gmail.com

Abstract:

The intention of this project is to design a smartphone application that can efficiently handle leftovers and facilitate donations, thus confronting the acute issues of food waste and scarcity. By connecting food donors with charitable groups, the app streamlines the donation process by providing an intuitive interface for visualizing available food supplies in local locations, utilizing principles from the field of human-computer interaction (HCI). The smartphone app for Android makes use of mobile technology to let recipients and establishments to give away additional supplies to those in need. Logging in allows users to specify the type, quantity, and location of food that is offered. An agent stationed nearby can log in, obtain the donor's information, and retrieve the food after being alerted. Both the agent and the donor have separate accounts for privacy. This endeavour aids in tackling the concerns of unused food and food poverty by redistributing extra food to orphans and other charitable organizations.

Keywords — Food Waste Management, Mobile Application Development, Android Studio, Human Computer Interaction (HCI), Java, Android application, Location-Based Services.

I. INTRODUCTION

The Food and Agriculture Organization (FAO) predicts that 1.3 billion tons of foodstuffs get wasted yearly, making food loss a major global problem. This waste makes issues like hunger and malnourishment worse, and it's especially evident at events like weddings, galas, and hotel stays. The severity of the problem is indicated by research suggesting that up to 40% of food produced in India is wasted every day.

Developing a thorough surplus food management and food donation application is essential to addressing the dual problems of excessive food waste and ongoing hunger. In order to solve the two main challenges of hunger and food waste, this project focuses on creating an Android application that will give users a platform to engage and receive information about the availability of food resources in their areas. The goal of the food donation Android app is to make it simple for people to give extra food to those in need and to foster a shared relationship between volunteers from NGOs and donors. A report creation tool that displays the amount of food supplied by each restaurant and awards reward points for it will be part of the system. The application seeks to solve hunger and food poverty while reducing food waste by creating a link between individuals with excess food and those in need.

II. LITERATURE SURVEY

An effective way to cut down on food waste and help those in need is the growing popularity of Android applications that facilitate food donations. According to the body of research on the topic, these applications have a great deal of promise to

improve food security and reduce food waste. To solve this pressing issue, a great deal of research on technological solutions and food waste management has been done.

Current systems have been studied and modified as a result of recent investigations. A comprehensive review by Smith, Johnson, and Williams (2019) looked at how well various technologies work to reduce food waste throughout the supply chain. The results demonstrated how technology, in particular donation platforms and inventory management systems, has a great deal of potential to enhance food waste management procedures. The complicated problems associated with food waste at various stages of the supply chain can be successfully addressed by the application of technological solutions. Controlling unnecessary food waste at the consumer level is nevertheless a top goal, even in the absence of conclusive evidence. Recently, the United Nations Sustainable Development Goals (SDG) proposed a new challenge in sustainable consumption, namely goal 12.3, which aims to cut food waste by 50% at retail and consumer levels by 2030. Consumers are considered the most wasteful step in the food supply chain, particularly in high-income or industrialized nations.

III. TECHNOLOGY STACK

Java - Java is an object-oriented, versatile programming language that is platform-neutral. It is widely utilized in many different applications, including as corporate systems, mobile, and web. Java's "write once, run anywhere" philosophy enables programmers to design apps that can be executed on any device that has the Java Virtual Machine (JVM) installed.

Because of its many libraries and adaptability, it is a well-liked option for developers everywhere.

Android - Android is an open-source mobile operating system developed by Google that powers many smartphones and tablets. The Linux kernel serves as the foundation for Google's Android operating system, which is primarily made for touchscreen mobile devices like tablets and smartphones. It offers a robust application architecture that enables programmers to design inventive and captivating mobile apps. Android is the most popular mobile operating system in the world, and the Google Play Store has millions of apps for it.

XML - An HTML-like markup language intended for data is called XML (eXtensible Markup Language). It is commonly used for data storage, configuration files, and system communication since it is self-descriptive and simple to grasp. Because of its versatility and interoperability, XML is the best option for presenting structured data in an understandable manner.

HCI - The goal of the field of human-computer interaction (HCI) is to improve computer-based systems' usability and user experience through the design, testing, and deployment of interactive computing systems. It includes a number of fields, such as design, cognitive psychology, and computer science. HCI is essential to making technology usable, effective, and pleasurable for people.

opening the application, users can seamlessly register or log in, ensuring authentication. Once authenticated, donors are prompted to select their role within the application, after which they can input essential information such as contact details and food specifications. Crucially, donors are required to enter the expiry time for each food item, ensuring that the recipient is aware of its freshness. This data is securely transmitted to the backend server for storage, ensuring the integrity of donation records. An important feature is the automatic removal of unaccepted food items from the available list after 5 hours or within the specified time provided by the donor. Finally, donors can effortlessly logout, effectively concluding their interaction with the application.

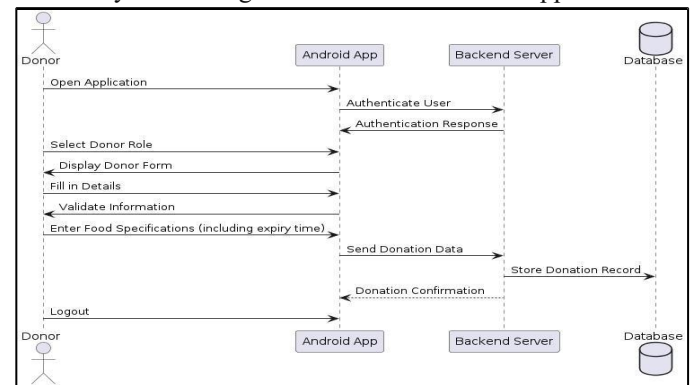


Fig 2: Design of Donor Module

Receiver Module - The Receiver module provides users with a seamless experience in accessing and interacting with available food donations. Upon accessing the application, users can register or log in to authenticate themselves. Following authentication, receivers select their role within the application, enabling them to proceed to view the available food items. Receivers can then choose from a list of actions, including accepting the food item, opting for Dunzo delivery, or viewing the donor's location. Notably, if the receiver selects Dunzo delivery, a message is sent to the donor informing them of the delivery request, with the donor bearing the delivery charges. The chosen interaction with the food item is then processed by the application and communicated to the backend server for further action. The server responds accordingly, confirming the receiver's action.

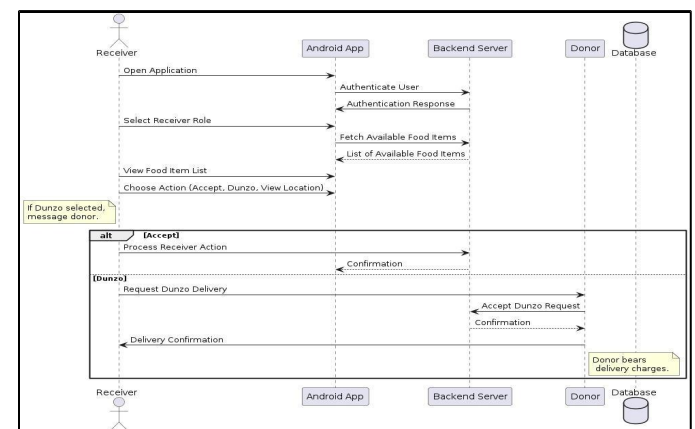


Fig 3: Design of Receiver Module

IV. SYSTEM ARCHITECTURE

Three-tier architecture will be used in the system's development and as the name suggests it has three layers:

Presentation Layer (UI): Pages with extensions like.aspx or windows forms make up the Presentation Layer (UI), which displays data to the user or gathers user input.

Business Access Layer (BAL) or Business Logic Layer: Business logic, validations, and calculations related to the data are contained in the Business Logic Layer (BAL) or Business Access Layer (BAL), as needed.

Data Access Layer (DAL): Methods from the Data Access Layer (DAL) help the business layer link the data and take the necessary actions, such as returning data or changing it.

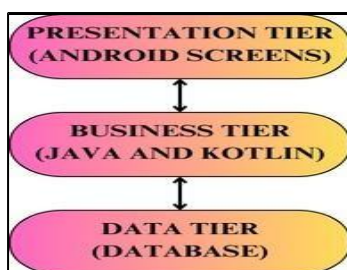
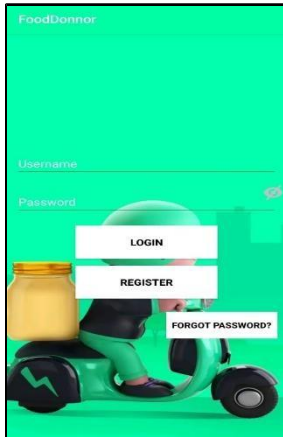


Fig 1: Three Tier Architecture

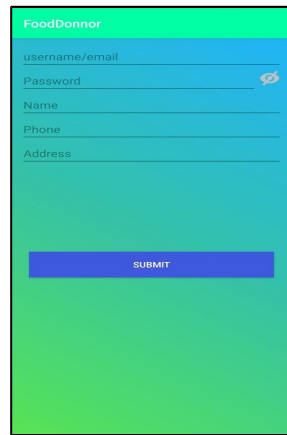
V. PROPOSED SYSTEM

Donor Module - The Donor module facilitates the efficient engagement of users through a streamlined process. Upon

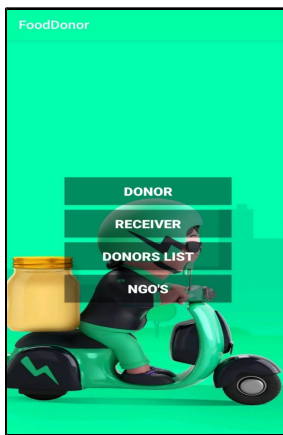
VI. RESULTS AND SNAPSHOTS



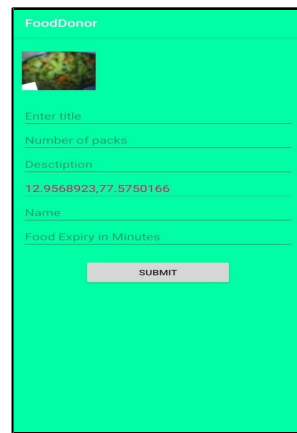
Login Page



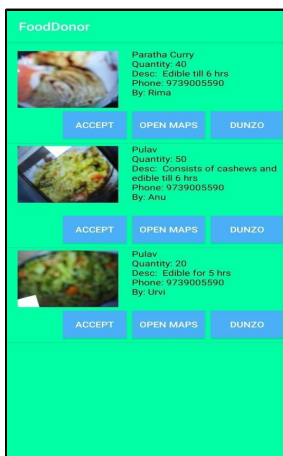
Registration Page



Home Page



Donor Page



Food List Page



NGO List Page

VII. CONCLUSION

By giving necessary information about their donations, contributors can easily contribute to the community by facilitating easy registration and login processes. By

guaranteeing the safekeeping of donor data, the application improves accountability and transparency throughout the donation process. In doing so, this application meets the requirements of disadvantaged communities and reduces food waste, making it a useful tool. In the end, both contributors' and recipients' continued participation and support are essential to this application's success. We can optimize the effects of surplus food management and food donation by promoting broad involvement and awareness, which will foster a more welcoming and encouraging community. We may endeavour to ensure that there is no food waste and that everyone has access to a brighter, more sustainable future by continuing to be innovative and dedicated to this goal.

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