

FoodConnect

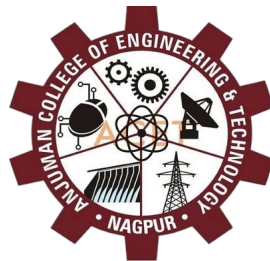
A Synopsis

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ABSTRACT

Food waste is a global issue with significant environmental and social consequences. While tons of surplus food go to waste daily, many underprivileged communities struggle with food insecurity [1]. While this vast quantities of edible food are discarded daily, many vulnerable populations, such as orphans, face chronic hunger. To bridge this gap, this project proposes a digital platform designed to efficiently connect food donors, including caterers and restaurants, with orphanages in need.

Initially focusing on a single orphanage partnership, the app streamlines the donation process by enabling food providers to easily notify the orphanage of available surplus food. Once a donation is accepted, arrangements are made for the food to be collected by either an orphanage representative or a designated third-party service. By optimizing food redistribution, this mobile application not only reduces environmental impact but also ensures vital nutritional support for orphaned individuals.

Moreover, this report outlines a comprehensive development roadmap to expand the app's capabilities to serve multiple orphanages. By leveraging technology's potential, the project seeks to significantly increase its reach and impact. Ultimately, this initiative strives to foster a more sustainable and compassionate society through collaborative efforts between food providers and orphanages.

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INTRODUCTION

In a world battling food insecurity and unequal resource distribution, This project emerges as a radiant ray of hope[1]. This initiative, soon to be a user-friendly mobile application in addition to its current website format, bridges the gap between those with a surplus of food and those struggling to find enough to eat. As we witness the heartbreaking reality of tons of perfectly good food going to waste. This project aims to redirect this abundance towards alleviating hunger and fostering a stronger sense of community responsibility.

This project tackles food waste in India by creating a bridge between those with extra food and those who need it most, like orphanages. A staggering 40% of food produced daily in India goes to waste[2]. This project is a lifeline, ensuring this surplus food reaches orphanages. This ongoing project was born from a request by Aashray Balagruha, an orphanage in the Bhandara district.

This project's story starts with a simple observation: countless establishments, from bustling restaurants and well-intentioned households to event organisers, routinely discard significant quantities of edible food. All the while, numerous individuals and families worldwide face the daily challenge of food insecurity.

This project aims to address this disparity by harnessing the power of technology to create a dynamic platform. This platform facilitates the efficient and timely redistribution of surplus food, acting as a beautiful fusion of compassion and cutting-edge innovation. Imagine a world where a simple tap on your smartphone screen can transform leftover meals from restaurants or forgotten ingredients in your fridge into nourishing nourishment for those in need. This project empowers everyone to be a part of the solution.

LITERATURE REVIEW

In the paper - OneWorldGiving: Uniting NGOs and Donors for a Better World by Shreya Pandey, Afaq Shaikh, Siddhi Keni, Uma Garodiya, and Ayush Yadav; from the International Journal of Scientific Research in Computer Science, Engineering and Information Technology - aims to bridge the gap between donors and NGOs in India by providing a platform that enhances efficiency, transparency, and cooperation. The mechanism involves a Donation Registration component, a Firebase database for storing registered products, and a User Management feature for overseeing contributions. Advantages of the application include promoting accountability and openness in the donation process, simplifying coordination between NGOs and donors, and supporting community engagement. However, it faces disadvantages such as reliance on internet access, platform-specific requirements, and the need for expertise in Flutter programming [4].

In the paper - Mobile Application: Donate Day by Chit Su Mon, Kam Yao Cheng and Abdul Samad Shibghatullah Faculty of Business and Information Science, UCSI University, Jalan Menara Gading, 56000 Cheras, Kuala Lumpur, Malaysia[5], is designed to facilitate donations to charitable organizations in Malaysia. The app was developed using the Rapid Application Development (RAD) approach, which allows for quick prototyping and iterative user feedback. It operates on Android devices with API 21 (Lollipop) or higher and utilizes Java and SQLite for its database. Advantages of the app include its user-friendly interface and the ability to donate items conveniently via mobile devices. However, the prototype has limitations, such as the need for improved interface design, additional features, and the inclusion of online banking services for monetary donations. The RAD approach enabled swift development and easy modifications based on user feedback, though the app still requires significant enhancements to meet user needs fully[5].

The Akshaya Patra Foundation, Primarily focused on mid-day meals for school children, offers insights into large-scale food service logistics potentially applicable to orphanages. This foundation has garnered recognition for its large-scale, efficient delivery of mid-day meals to millions of school children across India. The Akshaya Patra Foundation has experience in managing a complex supply chain, ensuring a steady flow of ingredients and preparing meals for numerous locations[6].

National Food Security Mission (NFSM): This government-driven program, focuses on strengthening India's food security infrastructure. The NFSM's two-pronged approach aims to: Enhance Food Production: By investing in agricultural practices, infrastructure, and technology, the NFSM seeks to increase overall food production in the country. This addresses the root cause of food insecurity at a national level. Improve Distribution Systems: The NFSM recognizes that food production alone doesn't guarantee food security. It also prioritizes improving distribution systems to ensure food reaches those who need it most [7].

In the paper SeVa: A Food Donation App for Smart Living by Christina Varghese, Drashti Pathak and Aparna S. Varde from the Department of Computer Science, Montclair State University, Montclair, NJ, USA. From the 2021 IEEE 11th Annual Computing and Communication Workshop and Conference (CCWC) presents a food donation app designed to reduce food waste and combat hunger by connecting food suppliers, such as restaurants and grocery stores, with consumers in need. The app employs principles of Human-Computer Interaction (HCI) to create an intuitive user interface and utilizes Android Studio for development with SQLite for data storage. Key features include constraint satisfaction for matching suppliers and consumers based on time and distance, and it allows easy data entry and retrieval. Advantages of SeVa include its potential to alleviate food insecurity, particularly in post-COVID times, and its contribution to the United Nations Sustainable Development Goals (UN SDGs). However, it is currently a prototype with limited data handling capabilities and lacks advanced search functionalities[8].

Feeding India stands as a prominent player in the fight against hunger. Their mission to eradicate hunger aligns perfectly with FoodConnect's goals. Feeding India boasts a well-established network of food donors like restaurants and hotels, alongside NGOs and shelters supporting underprivileged communities. They efficiently manage food redistribution through a dedicated volunteer force, the "Hunger Heroes". Additionally, Feeding India operates its kitchens to provide cooked meals directly [9].

Sr. No	Existing Application/ Research paper	Name of Method / Algorithm	Advantages	Disadvantages
1	OneWorldGiving: Uniting NGOs and Donors for a Better World [4]	The platform uses cloud-based flutter mobile apps, automated donation procedures, specialised Android apps, community project apps, cross-platform development, and NGO portals to enhance NGO operations and donor interactions.	Improves functionality, accessibility, efficiency, resource distribution, teamwork, accountability, community engagement; quick development cycles, and reusable code.	Dependence on the internet, reduced capabilities vs. desktop apps, fees, specialized knowledge, restricted focus, scalability issues, user engagement, and platform upkeep.
2	Mobile application: donate a day [5]	Uses the RAD approach emphasizes quick development and iterative prototyping with end-user feedback for continuous improvement.	The RAD approach enables rapid prototyping, ensures alignment with user needs through continuous feedback, and allows easy implementation of changes.	RAD demands substantial user and developer involvement, is prone to scope creep, and is unsuitable for projects requiring high control or complex architectures.
3	Akshaya Patra Foundation[6]	Focuses on government-run school meal programs and collaborations to deliver nutritious meals to underprivileged children.	Fights childhood hunger by providing nutritious meals to millions of school children in India.	Its reach might be limited to government schools, potentially excluding vulnerable children outside the program.

4	National Food Security Mission[7]	A centrally sponsored scheme was launched by the Indian government in 2007 to address food security concerns in the country.	It includes boosting food production, farm income, and soil health, while its disadvantages involve potential neglect of dietary diversity, water stress, subsidy dependence, and implementation challenges.	The NFSM offers a positive impact on food security but requires attention to ensure sustainable practices and efficient execution. Includes limited focus, water stress, subsidy reliance, and implementation challenges.
5	SeVa: A Food Donation App for Smart Living[8]	The SeVa app uses HCI principles for its design and implementation on Android, employing Android Studio and SQLite.	It includes a user-centric design, ease of use, and cost-effective development using freeware tools.	The complexity of iterative design processes and the limitations of basic CSP concepts, potentially affect efficiency and scalability.
6	Feeding India[9]	Feeding India prioritizes partnerships but uses online tools for communication, logistics, and measuring impact.	Tackling hunger through food support, and non-profit partnerships.	Dependency on Partnerships

Summary:

Existing platforms like OneWorldGiving, Donate Day, and SeVa have demonstrated the potential of technology in bridging the gap between donors and NGOs or those in need. While these platforms have shown promise, they also highlight challenges such as limited scope, technological dependencies, and interface limitations. The Akshaya Patra Foundation and the National Food Security Mission offer valuable insights into large-scale food management and distribution, which can inform the development of robust logistics for food donation platforms. FoodConnect aims to build upon these foundations by addressing identified shortcomings and incorporating best practices to create a comprehensive, user-friendly, and effective solution for food donation and distribution.

PROBLEM STATEMENT

The world faces a heartbreaking situation: food scarcity exists alongside a mountain of wasted edible food[3]. This situation calls for a user-friendly mobile application to streamline food donation. Many individuals and businesses yearn to help by donating surplus food to children and those struggling with hunger. However, the lack of a centralised, tech-powered platform creates a barrier between potential donors and orphanages dedicated to fighting hunger.

Our solution? FoodConnect - A comprehensive food donation mobile application that bridges the gap between those with excess food and orphanages distributing it to children and the needy. This app will tackle challenges like logistical coordination, real-time communication, and fostering trust among donors, orphanages, and recipients.

AIM & OBJECTIVES

Our mission is to address food waste and hunger by creating a bridge between orphanages and sources of surplus food from businesses and individuals. Through our mobile application, we facilitate the regular delivery of nutritious meals to children in need, ensuring they receive consistent and healthy food. Additionally, we strive to educate the community about the importance of reducing food waste and aim to build long-term, sustainable relationships between donors and orphanages.

Objectives:

- **Streamline the donation process:** Simplify the process for businesses and individuals to donate surplus food, ensuring efficiency and ease of use.
- **Develop and support volunteers:** Provide training and resources to volunteers to enhance their skills and effectiveness in supporting our mission.
- **Utilise data analytics:** Use data to monitor donation trends, user engagement, and orphanage needs, allowing for informed decision-making and improved service delivery.
- **Develop feedback mechanisms:** Create systems to gather and incorporate user feedback, continuously improving the platform based on users' experiences and suggestions.
- **Partnership with Governments and NGOs:** By partnering with government agencies, we can access additional resources, expand our reach to a wider audience, and align our initiatives with national policies.

PROPOSED SYSTEM

"FoodConnect" is an innovative mobile application designed to combat food waste and ensure that vulnerable children receive nutritious meals. By creating a seamless link between businesses with surplus food and orphanages in need, the app plays a crucial role in addressing both food security and sustainability.

The application allows restaurants, cafes, and other food establishments to list details about their excess food. Donors can specify the type of food available, the quantity, the exact location for pick-up, the preferred pick-up time, and the estimated number of people the food can feed. This detailed information helps orphanages to plan and coordinate pick-ups efficiently.

Orphanages receive these food offers in real-time through the app, enabling them to manage donations more effectively. This real-time communication ensures that food is distributed quickly, minimising waste and maximising freshness. Additionally, by having access to a variety of food donations, orphanages can provide more diverse and balanced meals for the children they care for, enhancing their nutrition and overall well-being.

"FoodConnect" not only helps in reducing food waste and feeding hungry children but also fosters a community spirit of giving and support. By connecting donors and recipients directly, the app promotes a sustainable and collaborative approach to solving food insecurity.

The different modules for the project are:

1. FoodConnect – application development

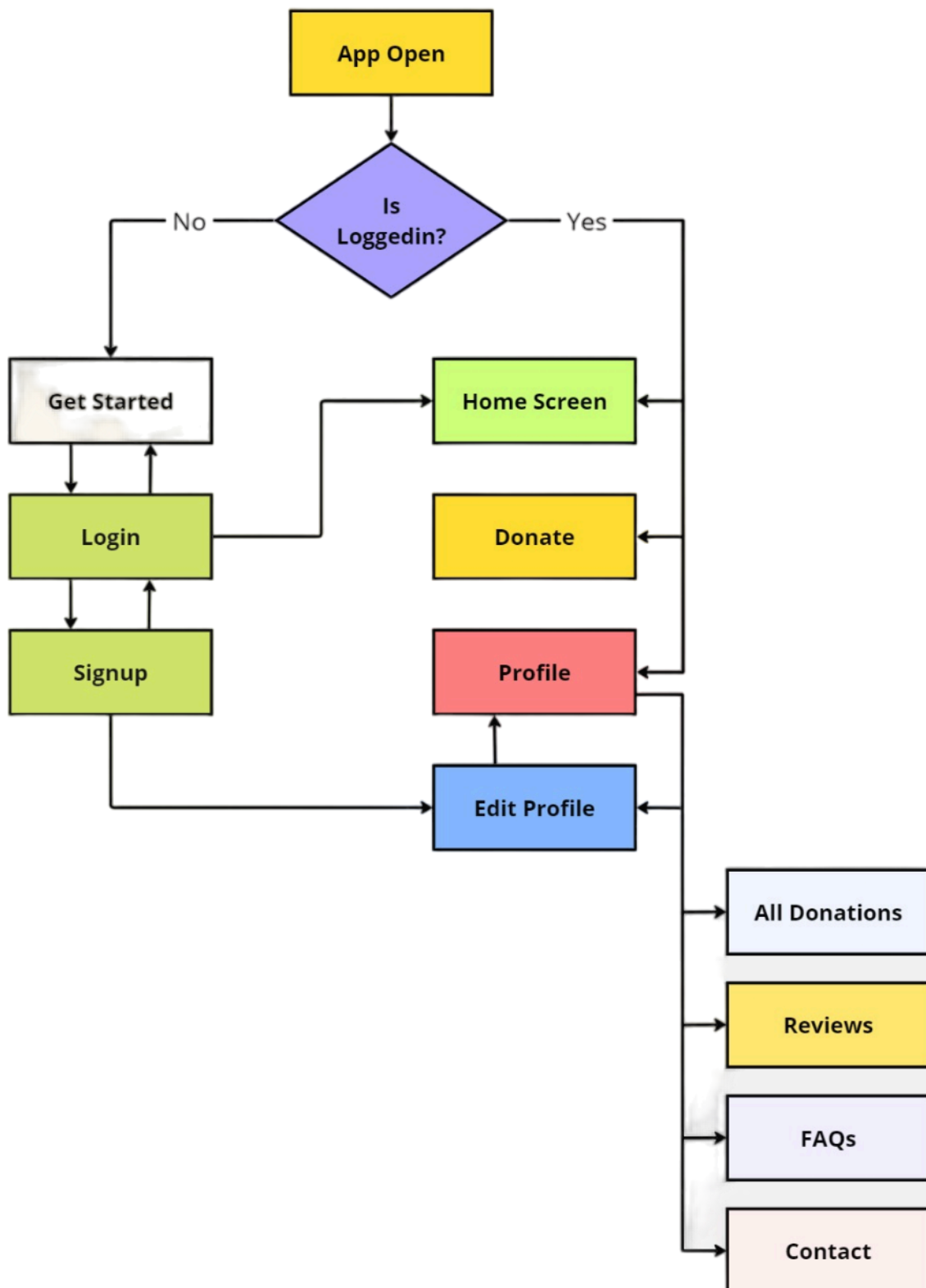
- This will further consist of the following modules:
 - User Authentication and Authorization
 - Donor Module
 - Orphanage Module
 - Food Listing and Details
 - Pickup and Delivery Management
 - Notification System
 - Rating and Feedback
 - Reports and Analytics
 - Help Center

2. Deployment of “FoodConnect” application.

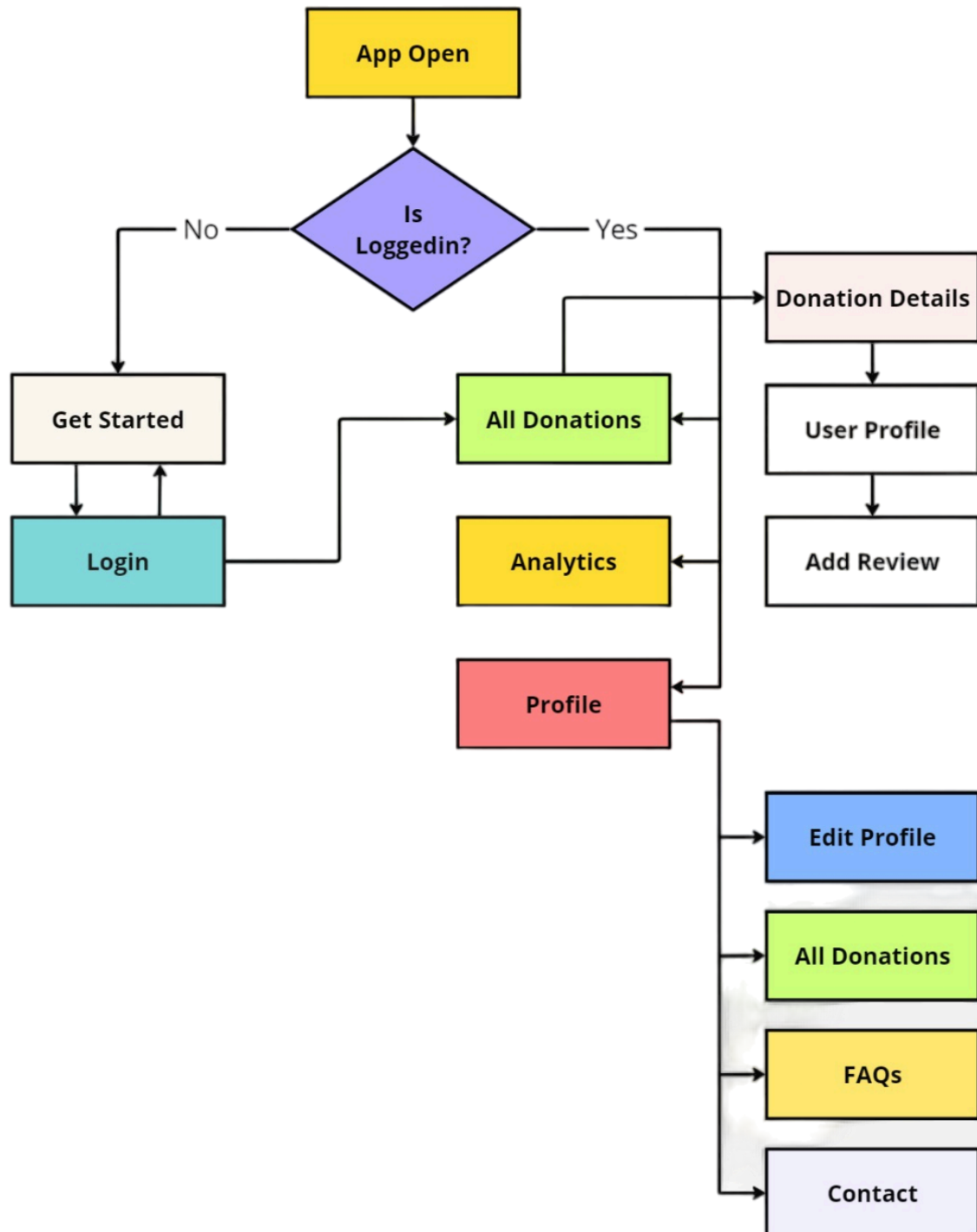
3. Conducting campaigns for penetration and implementation of applications in areas in the vicinity of the respective orphanage.

4. Connecting with philanthropists for better usage of applications.

User Module Flow Diagram:



Orphanage Module Flow Diagram:



ADVANTAGES OF PROPOSED SYSTEM

- **Reduced Food Waste:** By redirecting surplus food from businesses to orphanages, "FoodConnect" helps minimise the amount of edible food that ends up in landfills, promoting a more sustainable food system.
- **Improved Food Security for Orphans:** The app ensures that orphanages receive consistent supplies of nutritious meals, enhancing the food security and health of vulnerable children.
- **Increased Transparency and Efficiency:** The real-time updates and detailed food donation listings provided by the app streamline the donation process, making it more transparent and efficient for both donors and recipients.
- **Positive Societal Impact:** By addressing food waste and hunger simultaneously, "FoodConnect" fosters a culture of community support and social responsibility, benefiting society as a whole.
- **Reduced Orphanage Expenses:** Receiving donated food helps orphanages cut down on their food-related costs, allowing them to allocate resources to other essential needs and services.
- **Data-Driven Insights:** The app leverages data analytics to monitor donation patterns, user engagement, and the specific needs of orphanages, enabling continuous improvement and informed decision-making.
- **Scalability:** Designed for growth, "FoodConnect" can easily expand to connect more orphanages and businesses across different regions, amplifying its impact.
- **Increased Visibility:** The platform increases awareness of both food waste and orphanage needs, encouraging more businesses and individuals to participate in charitable giving and community support.

APPLICATIONS

- **Fulfil social responsibility:** "FoodConnect" empowers businesses and individuals to fulfil their social responsibility by donating surplus food, and contributing to community welfare and environmental stewardship.
- **Secure consistent meals:** Orphanages benefit from reliable, consistent meal supplies through the app, ensuring that vulnerable children have access to nutritious food daily.
- **Reduce food costs:** By receiving donated food, orphanages can significantly reduce their expenses on purchasing food, allowing them to allocate resources to other critical needs and services.
- **Combat hunger:** The app directly addresses food insecurity among orphaned children by providing them with essential meals that they might otherwise go without.
- **Promote sustainability:** Redirecting surplus food to orphanages reduces overall food waste, promoting environmental sustainability and responsible resource management.
- **Facilitate social connection:** "FoodConnect" fosters connections between donors and orphanages, building a sense of community and shared responsibility for social causes.
- **Volunteer opportunities:** The app offers volunteers meaningful opportunities to contribute to their community by assisting with food distribution and other supportive tasks at orphanages, promoting active engagement and social cohesion.

SYSTEM REQUIREMENT

- **Mobile Device:** Users need a smartphone or tablet to access and use the "FoodConnect" mobile application, enabling them to interact with the platform's features such as listing surplus food or receiving donation offers.
- **Internet Connection:** A stable internet connection is essential for users to communicate in real-time with the app, ensuring that donors can list food items and orphanages can receive and manage donation offers promptly.
- **GPS (Optional):** While not mandatory, GPS functionality enhances user experience by enabling precise location tracking for food pick-ups and deliveries. This feature can streamline logistics and improve efficiency in managing food donations.

FUTURE SCOPE

While FoodConnect's current focus is on connecting donors with one respective orphanage, its future holds immense potential to broaden its reach and impact in the fight against hunger and food waste. Here are some exciting possibilities:

- **Scaling geographically:** FoodConnect's success in a specific region can be a springboard for expansion into other cities and states within India. This nationwide reach would connect even more surplus food with those in need.
- **Integration with logistics providers:** Partnering with delivery services or creating an in-house logistics network would ensure efficient and timely pick-up and delivery of surplus food, minimizing spoilage and maximizing impact.
- **Building a volunteer network:** A network of volunteers could be established to assist with food collection, sorting, and packaging, further streamlining the food donation process.
- **Data analysis and impact measurement:** FoodConnect could leverage data analytics to track food donations, identify areas with high food insecurity, and measure the platform's overall impact on hunger reduction and food waste diversion.
- **Promoting sustainability:** The app could educate users about the environmental consequences of food waste, motivating them to reduce their food footprint and participate in the solution.
- **Building a knowledge base:** The platform could become a resource centre for food preservation tips, recipes for using up leftovers, and information on healthy eating habits, empowering users to make informed choices that contribute to a more sustainable food system.

By implementing these future-oriented strategies, FoodConnect can become a powerful force in creating a world where hunger is alleviated, food waste is minimized, and a sense of community responsibility thrives.

CONCLUSION

FoodConnect - mobile application emerges as a powerful solution in the fight against hunger and food waste. This innovative app bridges those with surplus food – from restaurants and households to event organisers – with individuals and institutions facing food insecurity. Imagine leftover meals at restaurants or forgotten ingredients in your fridge being transformed into nourishing sustenance for those in need. Through FoodConnect's user-friendly mobile application, this becomes a reality. By leveraging technology, FoodConnect creates a dynamic platform that facilitates the efficient redistribution of surplus food. This reduces the staggering amount of perfectly good food that goes to waste while simultaneously addressing hunger, particularly among vulnerable populations like orphans. The impact extends beyond immediate relief. FoodConnect fosters a stronger sense of community responsibility, encouraging everyone to play a part in creating a more sustainable and equitable world.

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