

Share and Care: A Food Donation Web Application

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Abstract:- Food is an indispensable necessity for every human being, serving as a fundamental requirement for our survival, growth, and overall well-being. In today's society, a significant number of people are unable to afford or meet their daily food needs. However, in today's fast-paced world, the issue of wasting food has become distressingly common. This Share and Care-Food donation web application is a comprehensive solution designed to address the critical issue of food waste and hunger in the current world. Food donation web application is a comprehensive solution designed to address the critical issue of food waste and hunger in the current world. Food donation web application is a comprehensive solution designed to address the critical issue of food waste and hunger in the current world. This system aims to bridge the gap between the surplus food sources and those in need by facilitating the efficient redistribution of excess amounts of edible food charitable organizations. This the best platform connects the food donors which includes restaurants, caterers, cooperative dining rooms, hotels and even individuals with food rescue organizations like NGOs

Keywords:- Food Donation, Donors, Charitable Organizations, Food wastage, Food Redistribution, Python, Flask Framework.

INTRODUCTION

The Food Donation Management System is a digital platform designed to streamline and enhance the process of donating and distributing surplus food to those in need. In densely populated countries such as India, the problem of food wastage is a distressing concern. In a world where abundance and scarcity existing side by side the effective management of donation of food stands as a beacon of hope for addressing the two critical issues like food waste and hunger. Food management is not merely administrative task, it represents a significant and noble endeavour that unites food donors with charitable organizations, aiming to create a sustainable and compassionate society. This collaborative effort seeks to bridge the gap between surplus food resources and those in need, thereby addressing the pressing challenges of both food wastage and hunger in a socially responsible and compassionate manner. This Website is a cutting-edge website technology solution which provides and enhance the efficient management of surplus food resources, mitigating food wastage and alleviating food insecurity. It is a structured approach to minimize, handle, and repurpose food waste generated across various sectors, including households, restaurants, and industries.

It plays a pivotal role in order to achieve the donor coordination, and the equitable allocation of food resources. In today's world people are wasting more food than they consuming. In countries like India 795 million, nearly 7.6 billion people, don't have enough food to lead a healthy life. That is approximately one out of nine people on earth. India ranks 6th in food wasting and about 1.3billions tons of food is being wasted per year. This system serves as the bulwark that connects surplus food resources with the ever-present demand for nourishment, ensuring that no edible food goes to waste and no one goes to bed hungry.

I. LITERATURE SURVEY

Ref [1]: "Ayesha Anzer, Hadeel A. Tabaza, and Wedad Ahmed, Hassan Hajj Diab" introduces the "Food Reduction App" to address food waste in the UAE. The mobile application connects restaurants with surplus food to individuals in need, reducing waste and improving food security. It utilizes the Android platform, Firebase services for authentication and data management, and image processing algorithms. The app allows restaurant and user logins, food listings, cart management, and requests for food pickup. Future enhancements may include support for various donating users, geolocation services, date and time tracking, and cross-platform compatibility.

Ref[2]: "Yasith Chandula, Akila Kavinda, Thushal Shaminda, Sachintha Gunaratne, D.I. De Silva and Dulanji Cooray"-The "Food-For-All Web Application for Donation Management" is a web-based platform designed to address food insecurity by connecting individuals and organizations willing to donate with those in need. This system allows users to create donations, post requests for food, and organize fundraisers. Admin approval is required for organizations to register and for the creation of fundraiser programs to maintain reliability and prevent fraudulent activities. The system aims to enhance trust and transparency, ultimately working towards ending hunger and promoting sustainable agriculture. It utilizes technologies like ReactJS, NodeJS, and MongoDB. In conclusion, this system serves as an effective tool to combat food insecurity and has the potential to make a significant impact.

Ref [3]: Mrigank Mathur, Ishan Srivastava, Vaishnavi Rai, Assistant Prof. Mr. S. Kalidass Aahar - Food Donation App" has proposed mobile application aiming to reduce food waste by connecting donors with those in need, particularly in restaurants and social gatherings. The app includes three main modules: Food Donor, Food Receiver, and Admin. While it offers several advantages, such as cost-effectiveness and 24/7 service, it requires internet access and

may have some security challenges. Overall, the application seeks to efficiently address the issue of food waste and provide a platform for donating various items, including food, clothing, books, and utensils.

[4] "Kruthika V, Lavanya H.R, Mahalakshmi E.H, Ranju P.S.R, Ms. H.L Priyanka, Ms. K.S Sindhu-Integrated approach for food donation system, restaurant food demanding forecasting using machine learning, and global food waste analysis"-The research paper presents an innovative approach to combat food waste, incorporating a food donation website and machine learning for sales predictions. It facilitates the connection between food donors, NGOs, and individuals to efficiently redistribute surplus food. Machine learning models like XGBoost and Gradient Boosting Regressor enhance inventory management through accurate sales forecasts. Additionally, global food waste patterns are analyzed for insights. This technology-driven solution aims to mitigate the food waste crisis by bridging the gap between excess food and those in need, offering a sustainable approach.

[5]"Dr.T. Sankar, R.Raghavi -Review in Food Wastage Reduction Through Donation Application" -This article discusses a proposed system for reducing food wastage and facilitating donations through a mobile application. The system aims to connect donors and recipients, helping to prevent food waste while efficiently distributing excess food. It addresses the problem of food wastage, particularly in densely populated countries like India, and simplifies the process of food donation. The article describes the system's architecture, user interfaces, and benefits, emphasizing the potential to reduce food wastage and provide resources to those in need.

II. METHODOLOGY

The project embraces the Agile software development methodology, which emphasizes a flexible and adaptable approach. It involves breaking down the development process into smaller, independent segments, allowing for the addition of new features and adjustments as the project advances. Agile development promotes an iterative cycle, which means that work is continuously refined, and the project can evolve organically based on user input and evolving needs. This dynamic and responsive approach is well-suited for a project like this, ensuring that it remains adaptable and efficient throughout its development.

The technology stack chosen for the system plays a pivotal role in ensuring its effectiveness and efficiency. The Python Flask framework serves as the backbone, providing a micro web framework that is well-suited for the project's scale. This framework facilitates the development of web applications with simplicity and flexibility. For the user interface, Bootstrap, CSS, and HTML are employed to create an appealing and user-friendly design. This frontend combination enhances the overall visual experience and ensures accessibility across different devices. The management of user details and food donation information is handled by a MySQL database, designed meticulously to organize and retrieve data effectively. XAMPP server acts as a robust

connection point between the system and the database, ensuring seamless data flow.

The management of user details and food donation information is handled by a MySQL database, designed meticulously to organize and retrieve data effectively. XAMPP server acts as a robust connection point between the system and the database, ensuring seamless data. Flask-SQLAlchemy is utilized to simplify database interactions through Pythonic code. This integration streamlines the process of accessing and manipulating data, contributing to the overall efficiency of the system.

- **Requirement Analysis:** In the initial stage of developing a food donation management system, the journey commences with a comprehensive understanding of the project's requirements. The development team identifies the essential features and functionalities necessary for the efficient management of food donations. These may encompass functionalities such as NGO login, food types, expire date, map for overall searching.
- **Planning:** Once the requirements for the food donation management system are well-understood and defined, the project moves into the planning phase, employing an Agile methodology with focused development cycles called sprints. The development team compiles a backlog of user stories, categorizing them based on their importance and relevance to both food donors and NGOs. This Agile planning approach ensures that the project maintains flexibility and adaptability while prioritizing the most valuable and relevant features to the food donation process.
- **Design:** Instead of pre-designing the entire system, Agile promotes a just-in-time design approach, concentrating on the immediate tasks within the current sprint. In the context of food donation management, this approach involves creating wireframes or prototypes for the user interface, defining the data structures for storing food donation information, and establishing the interaction mechanisms between different system components. By doing so, Agile enables the project team to focus on designing elements essential for the ongoing sprint, ensuring that each phase of development remains closely aligned with the evolving requirements.
- **Development:** During the development phase, the Agile team focuses on coding and building the software. They take the user stories and features outlined for the sprint and translate them into functional software components. For the food donation management system, this phase involves developing the features for streamlined food donation, creating the necessary database structure to store data related to food donations, and implementing the processes for managing food donation listings. This development process is iterative and adaptable, ensuring that the evolving requirements and priorities are addressed effectively.
- **Testing:** As developers work on features and complete user stories, automated tests are frequently run to ensure that new code doesn't introduce regressions or issues. Manual testing is conducted to validate that the software meets the acceptance criteria defined in the user stories.

This ongoing testing process helps maintain the quality of the software throughout development. In the context of food donation management, similar testing practices are employed to ensure that the system functions as intended, with a focus on features related to food donation, tracking, and user interactions

- **Review:** At the end of each sprint, stakeholders have the opportunity to provide feedback on the work done. Simultaneously, a retrospective meeting is held to reflect on what went well and what could be improved in the next sprint. These meetings are essential for continuous improvement and alignment with user needs. In the context of food donation management, similar feedback and retrospective meetings are conducted to ensure that the system evolves effectively, addresses the needs of food donors and NGOs, and continues to improve in subsequent iterations.
- **Deployment:** Following successful development and testing, the new features and updates are deployed to our project. This approach enables frequent releases and allows users to benefit from new features quickly.
- **Feedback:** Feedback collection is a fundamental aspect of the Agile approach. Gathering input from users and stakeholders is vital for shaping the application further and addressing any encountered issues. In the context of food donation management, the collection of feedback from donors, NGOs, and other stakeholders plays a crucial role in refining the system and ensuring it effectively meets the requirements of all involved parties.
- **Continuous Improvement:** Continuous improvement is a cornerstone of Agile methodology, promoting ongoing enhancements and adaptability throughout the software development process. In the context of food donation management, this Agile approach allows for a flexible and user-centric system that evolves and improves based on user feedback and changing requirements. It ensures that the food donation system remains relevant, effective, and aligned with the needs of food donors and NGOs.

III. EXISTING SYSTEM

In existing system, users face several challenges. They often have to depend on their social network or external websites to find information about available food options. This reliance on others or third-party websites adds an extra layer of manual effort, making the process less efficient and user-friendly. The lack of user-friendliness becomes a significant hurdle as users struggle to access essential home details and arrange to collect food from them. This challenge is further compounded by the fact that the information provided by administrators may vary depending on the location of the home, leading to confusion and inefficiency. Additionally, finding nearby homes that offer the desired type of food in a timely manner is another obstacle users encounter in the existing system. Many of the existing applications do not offer a substantial database for storing and managing food details, further limiting the system's capability to provide a comprehensive solution. These limitations highlight the need for an improved and

more user-friendly system for managing food donations and reducing food wastage.

IV. PROPOSED SYSTEM

In Proposed System, a web application, developed using HTML, CSS, JavaScript, Bootstrap as front-end and Python-Flask as Backend and server Xampp Server and MySQL for data storage and requires internet connection. This an application consists of two phases one is Donor Module and NGO Module. It rather conventional systems that require cumbersome logins and complex registration procedures, our Food Donation System offers a user-friendly and efficient platform where donors can contribute surplus food without any need for prior registration. This simplicity is central to our mission, as it encourages more individuals and organizations to participate in the noble cause of food donation.

At the heart of our system is the belief that anyone, at any time, should be able to extend a helping hand to those in need. Donors can seamlessly input details about their food donations, including item descriptions, quantities, and their contact information, all in a matter of moments. No prior commitments or memberships are required – it's a one-click process that empowers everyone to make a positive impact.

For our network of non-governmental organizations (NGOs), we've introduced a unique feature&an interactive map that simplifies the process of locating and collecting food donations. NGOs can easily search for available donations in their vicinity, filtering by location, food type, and pickup availability, and view them on a map. This innovation is aimed at expediting the food donation process, ensuring that surplus food gets to those who need it promptly and efficiently.

On the technical side, the back-end is powered by Python-Flask, a robust and versatile framework. This choice of technology ensures that the system operates smoothly and handles data efficiently. The data generated and processed within the system is stored in a MySQL database, a reliable and widely-used database management system. This not only ensures data security but also allows for effective data retrieval and management.

For the system to function seamlessly, an internet connection is necessary. This enables real-time data exchange and interaction, making it convenient for both donors and NGOs to participate in the food donation process.

V. IMPLEMENTATION

The success of a food waste management project hinges on effective implementation at every stage of the process. From the initial collection of food scraps and leftovers to donating the food each step demands meticulous execution. In the context of food donation management, the implementation process is crucial for the project's success. The initial step in implementation revolves around

establishing a robust system for food donation, collection, and distribution.

The project begins with defining objectives, assembling a skilled team, and establishing communication channels. Requirements gathering involves identifying essential features, including food donation and inventory management, and creating flexible user stories. Planning includes organizing requirements into a backlog and prioritizing them for sprints. The design phase adopts a just-in-time approach, focusing on immediate needs and creating design elements. Development entails coding features like food donation, inventory tracking, and user interactions. Testing is a continuous process, with automated and manual

tests to ensure quality. Emphasizing ongoing improvement, Agile allows iterations through sprints to add new features and enhance existing ones. Deployment involves preparing the system for production and training users. Maintenance and support address issues and optimize performance, while monitoring and evaluation assess system impact on reducing food waste and supporting charitable organizations. Agile's flexibility ensures that the system evolves in response to user feedback and changing requirements. This ongoing monitoring and improvement cycle is vital to ensure the long-term success of food donation management initiatives. This may involve measuring the reduction in food and feed the hunger.

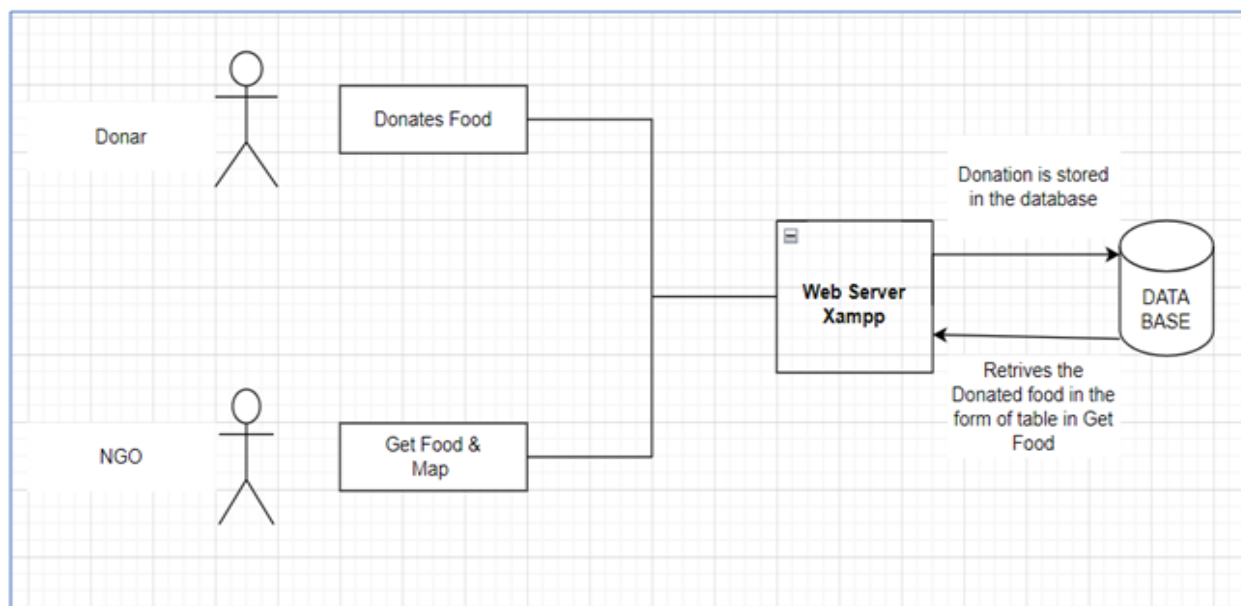


Fig. 1: System Architecture

This website mainly consists of few key features. Here are the following features.

- **Donor Interface:** This interface should be simple and user-friendly, allowing donors to input details about their food donations without complex registration. It should include options for providing item descriptions, quantities, and contact information.
- **NGO Interface:** The NGO interface should enable charitable organizations to search for available food donations, view donor contacts information, and communicate with donors. A map feature can help NGOs locate and coordinate pickups efficiently.
- **Database:** The Food Donation Management System incorporates a MySQL database to systematically store and manage user and food item information, ensuring efficient data organization and retrieval. This tailored database design optimizes functionalities related to tracking donations and fostering communication between donors and NGOs.
- **Database Schema Design:** Creating a database schema was an important stage in the implementation process. It entailed organizing the database tables in order to efficiently handle user information, food information, and other important data.

- **User Interface Development:** To design user interfaces for various functionality, HTML, CSS, and Bootstrap were utilized. Flask links these interfaces to the underlying database via its routing capabilities, allowing users to interact with the system in a seamless manner.
- **Flask scripting in Python:** The core Python file of the Food Donation System utilizes Flask scripting to establish routes, construct models, and establish connections to the MySQL database. This scripting is essential for coordinating the diverse components of the food donation system, ensuring seamless operations and interactions among its various elements.
- **Mapping Integration:** Implement a map that displays the locations of donors, available donations, and charitable organizations. Markers on the map can help users locate donation points easily.
- **Execution:** To initiate the Food Donation Management System (FMS), commence by launching the Flask app within the project directory. Execute the command 'python driver.py' in the terminal, thereby activating the web server and rendering the system accessible through a web browser.

VI. RESULT AND ANALYSIS

This Food Donation Management System was designed with the overarching mission of ensuring food security for individuals who encounter meal-related difficulties. The system's active user engagement in searching for food not only fosters trust but also encourages donors to contribute more generously. For the development of this system, we employed a straightforward technological stack. On the front end, we leveraged the capabilities of HTML5, while the back end was powered by Python-Flask. The server-side scripting was facilitated using phpMyAdmin on an Xampp server, seamlessly integrated with a MySQL database to enable dynamic content management, thereby

securely storing data in the MySQL database. To enhance the functionality of the system, we harnessed several Python-Flask libraries, including render_template, request, flash, redirect, url_for, and SQLAlchemy. Additionally, for a visually appealing and user-friendly interface, we incorporated Bootstrap and other external CSS to stylize the user interface. The interfaces were thoughtfully designed, featuring side navigations, menus, various icons, and buttons for easy navigation and a clear understanding of the system's functionalities.

- **Home Page:** This is a common interface for both Donor and receiver or NGO.

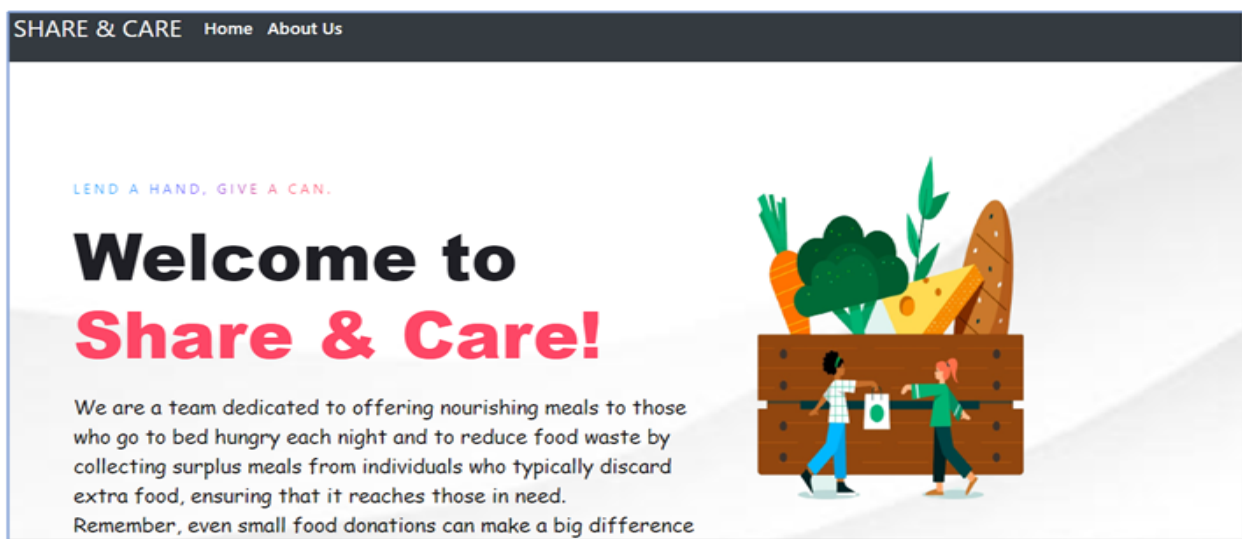


Fig. 2: Home Page

- **Services:** This interface provides the user with respect to entries. Users encounter an intuitive interface offering seamless navigation. Donors can effortlessly access the food donation portal by clicking the 'Donor' button,

while recipients can enter the receiver portal by clicking on the 'Receiver' button, ensuring a user-friendly experience.

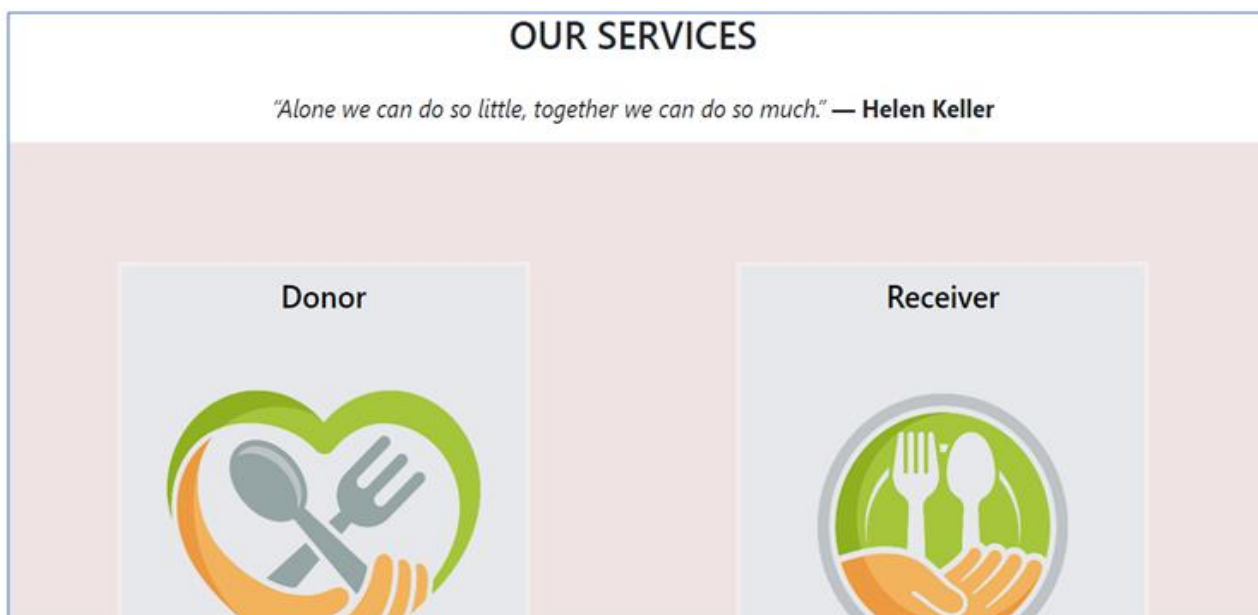


Fig. 3: Services

- **About Us:** This is just an interactive page for Food donation management system. We are dedicated to efficiently managing food donations, connecting surplus

resources with those facing hunger. Our mission is to reduce waste, address food insecurity, and build a more compassionate, sustainable future.

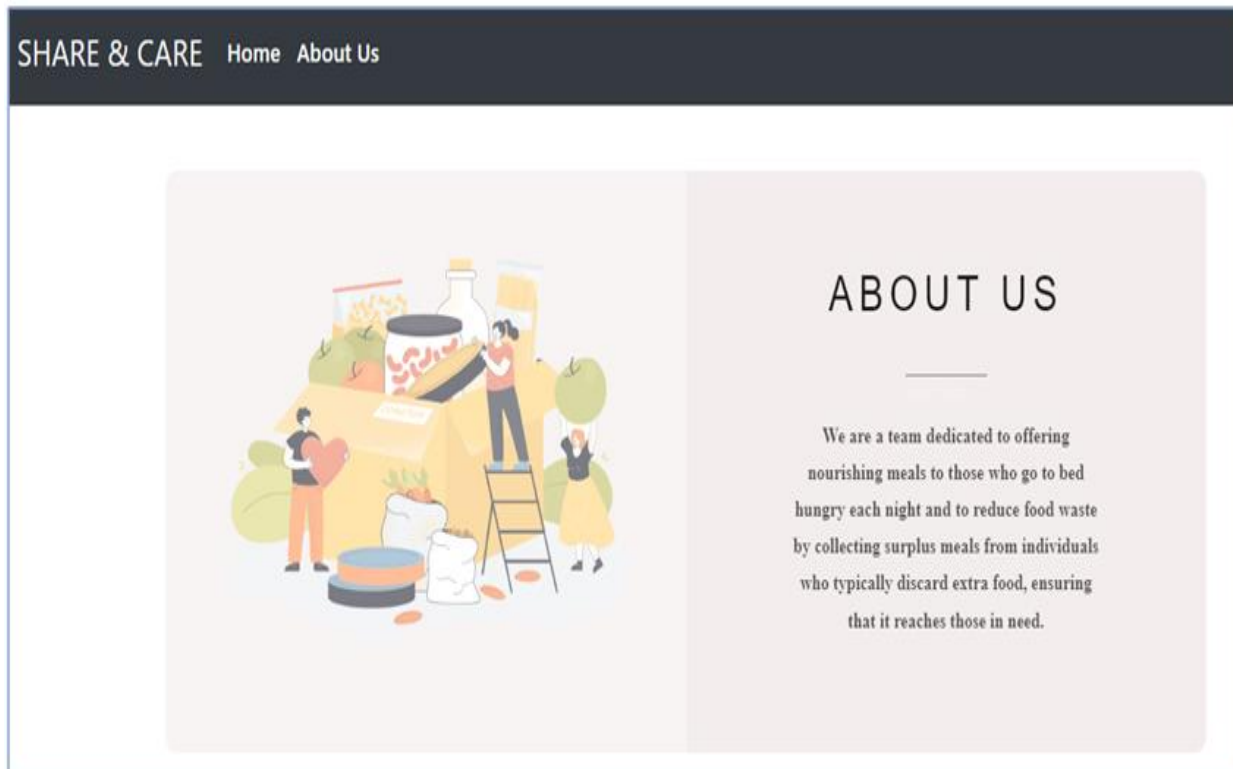


Fig. 4: About us page View

- **Donor:** After clicking on the donor button from our service page it is navigated to this donate food page where the donor can seamlessly access this portal without any login information. Here the donor has to give respective details like name, type of food, donation

date, expiry date of food, quantity, phone number ,location and description of the food and submit it to the food donation management system where this information is stored through my SQL database.

Fig. 5: Donor View

- **Thank you:** This is a thank you page view after the clicking on submit button, the donor is navigated to this

thank you page and the donor can come back to homepage.



Fig. 6: Thank you page view

- **NGO Login:** When users click the "Receive" button on our services page, they are immediately taken to the dedicated NGO login page. At this point, NGOs are prompted to log in, where they input their email address and password for secure access. This login mechanism serves as a gateway, ensuring that only authorized users

can proceed. Once logged in, NGOs gain access to a range of functionalities within the Food Donation Management System, including the exploration of available food options and the seamless management of their interactions within the platform

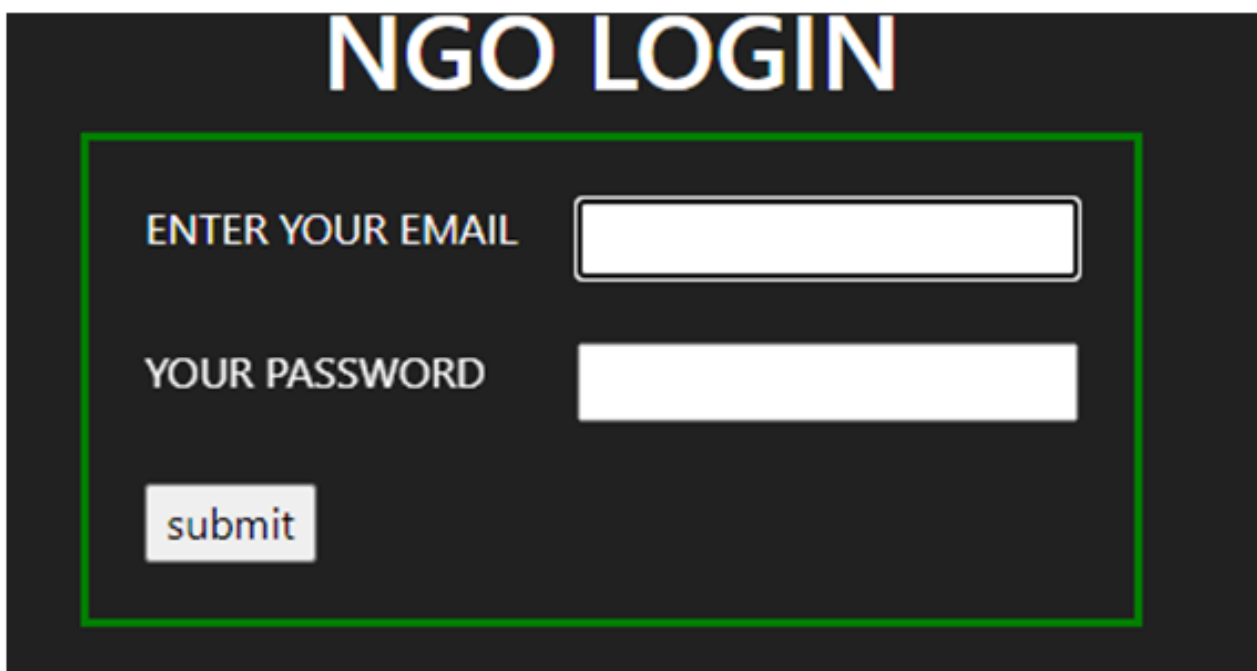


Fig. 7: NGO login portal

- **NGO view:** After successfully logging in, users will be automatically directed to the 'Get Food' portal, providing NGOs with an intuitive interface to browse and select food items that match their preferences. When a donor submits food, the details are displayed in a structured table format within the 'Get Food' portal. To obtain more

information or place an order, NGOs simply need to click on their desired item. Following this action, the selected item will be promptly removed from the 'Get Food' page, ensuring a dynamic and responsive platform where diverse food options are continuously visible for other NGOs to explore and select.

ID	NAME	FOOD	DONATION TIME	EXPIRE TIME	QUANTITY	PHONE NUMBER	LOCATION
1	V.S.Sri Sowmya Lakshmi	Veg	2023-10-24	2023-10-25	12	9123456780	Near Bank colony, Tanuku
2	V V S Prakash	Veg	2023-12-04	2023-12-05	12	9123456780	Tanuku

Fig. 8: Get food portal view

- **MAP:** A map feature is integrated to facilitate the visualization of nearby locations, exclusively accessible to NGOs. This tool allows NGOs to efficiently identify

and navigate geographical areas of relevance within the Food Donation Management System.

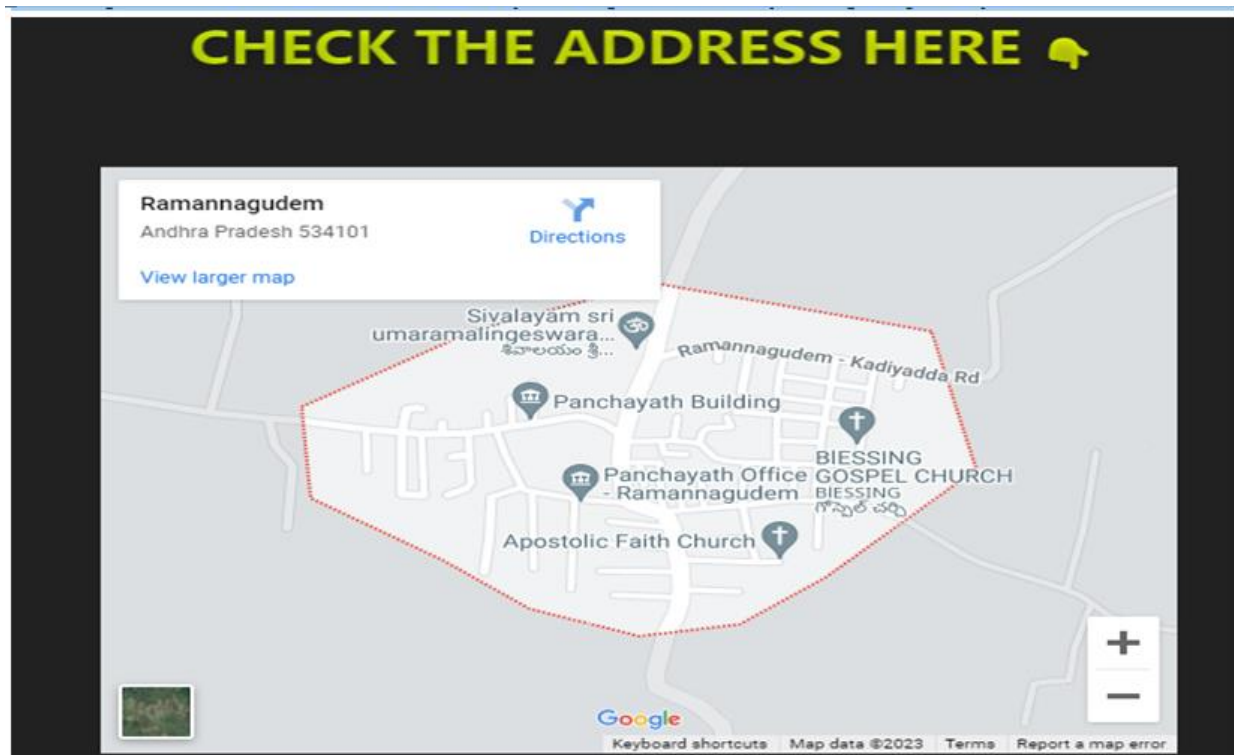


Fig. 9: Map View

VII. CONCLUSION

In conclusion, our project was dedicated to mitigating the critical issue of food wastage by designing a simple and innovative food donation website. This digital platform was designed and implemented to serve as a pivotal solution for efficiently connecting food donors and those in need, thereby reducing the unnecessary wastage of perfectly

edible food resources. The application aims to satisfying the food requirement of needy people through donations and provides simple and informative way to connect those who have extra food and those who need food. Our proposed solution can reduce food wastage by facilitating food sharing in local community using mobile technology. This work is an initial step towards designing a better system to reduce daily food waste.

FUTURE ENHANCEMENT

This effort marks the initial stride in our ongoing mission to create an improved system that effectively curbs daily food waste. Looking ahead, the potential for enhancing this application is vast. In the future, we envision the integration of the following features to further amplify its impact and usability:

- Adding the time and date of each meal shared by users.
- The system will be globalized i.e Make the application available worldwide so anyone can help and find the needed people from anywhere in the world.
- Addition of food banks to our application so if the users cannot find someone to donate, they can give the food to a food bank
- Adding cart for each individual NGOs account.

REFERENCES

- [1]. Ayesha Anzer, Hadeel A. Tabaza, and Wedad Ahmed, Hassan Hajj Diab, "A Food Wastage Reduction Mobile Application" - <https://ieeexplore.ieee.org/document/8488190>
- [2]. Yasith Chandula, Akila Kavinda, Thushal Shaminda, Sachintha Gunaratne, D.I. De Silva and Dulanji Cooray - "Food-For-All Web Application for Donation Management", e-ISSN: 2250-0758 | p-ISSN: 2394-6962 Volume-12, Issue-5 (October 2022) <https://doi.org/10.31033/ijemr.12.5.11>
- [3]. Mrigank Mathur, Ishan Srivastava, Vaishnavi Rai, Assistant Prof. Mr. S. Kalidass Aahar - "Food Donation App" International Journal of Scientific Research & Engineering Trends Volume 7, Issue 3, May-June-2021, ISSN (Online): 2395-566X
- [4]. Kruthika, Lavanya H.R, Mahalakshmi E.H, Ranju P.S.R, Ms. H.L Priyanka, Ms. K.S Sindhu - "Integrated approach for food donation system, restaurant food demanding forecasting using machine learning, and global food waste analysis." DOI: <https://www.doi.org/10.56726/IRJMETS42802>
- [5]. Review in Food Wastage Reduction Through Donation Application <https://www.researchgate.net/publication/347946627>
- [6]. Mobile Application for Excess Food Donation and Analysis http://www.ijirset.com/upload/2018/n3cit/13_CONFERENCE%2030.pdf