Food Waste Redistribution

First Year Mini Project Report (2024–2025)

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Abstract

In a world where over 800 million people suffer from hunger, it's ironic that a third of all food produced is wasted. Food wastage not only contributes to environmental degradation but also reflects a social imbalance. This project addresses the challenge of food surplus and its redistribution. The Food Waste Redistribution System is a web-based application that enables food donors such as restaurants, households, and caterers to connect with food receivers like NGOs and shelters. It allows for timely donation, minimizing spoilage, and ensures the food reaches those in need. The system promotes sustainable development, encourages community participation, and reduces the logistical gap in food sharing.

Objectives

The main objectives of this project are:

- To minimize food wastage by creating a bridge between donors and receivers.
- To build an accessible platform that anyone can use to either donate or receive surplus food.
- To promote social awareness about hunger and responsible consumption.
- To support sustainable practices in food management and distribution.
- To enable real-time food tracking to ensure timely collection and reduce spoilage.
- To offer administrative oversight through a dashboard for monitoring the donation flow.

The system is built with ease of use in mind, focusing on simplicity and practicality, so even non-technical users can engage effectively.

Existing System

The current approach to food donation is fragmented and uncoordinated. Most food donations happen informally—either through personal networks or occasional NGO drives. Here are some challenges in the current system:

Lack of centralization: No single platform that brings together donors and receivers.

Time delays: Food often goes bad before it can be distributed.

No tracking: No way to know where or how the food is being used.

Limited reach: Only a few people are aware of how to donate or request food.

These issues highlight the need for a system that standardizes the process and expands the scope of redistribution.

Proposed System

The proposed Food Waste Redistribution System addresses all major shortcomings of the existing system. It is designed to be a centralized, user-friendly platform that enables efficient redistribution of surplus food.

Key features include:

Donor Registration: Restaurants, event organizers, or individuals can register and list food details.

Receiver Dashboard: NGOs or shelters can view available food and request pickups.

Admin Panel: Admins can verify users, monitor transactions, and ensure smooth operations.

Notifications: Both donors and receivers are notified of listings and approvals in real-time.

Location Filtering: Receivers can find food nearby to reduce travel and speed up pickup.

The system runs on a responsive web interface and uses a database to store and track listings and requests.

Modules Description

1. User Management Module

Handles user sign-up and login based on role (donor, receiver, admin).

2. Food Listing Module

Donors can post food items with quantity, type, expiry info, and location.

3. Receiver Request Module

Receivers can view and request food listings, which are timestamped and status-tracked.

4. Admin Dashboard

Admins can manage users, approve listings, and generate reports for accountability.

5. Notification System

Email/SMS/Popup-based notifications for actions like approval, request updates, and alerts on expiry.

Technologies Used

This project combines both frontend and backend technologies, making it a full-stack application.

Frontend:

HTML5 for structure

CSS3 and Bootstrap for design

JavaScript for interactivity

Backend:

Routing and form handling

Firebase

Database:

MySQL for storing user data, food listings, and requests

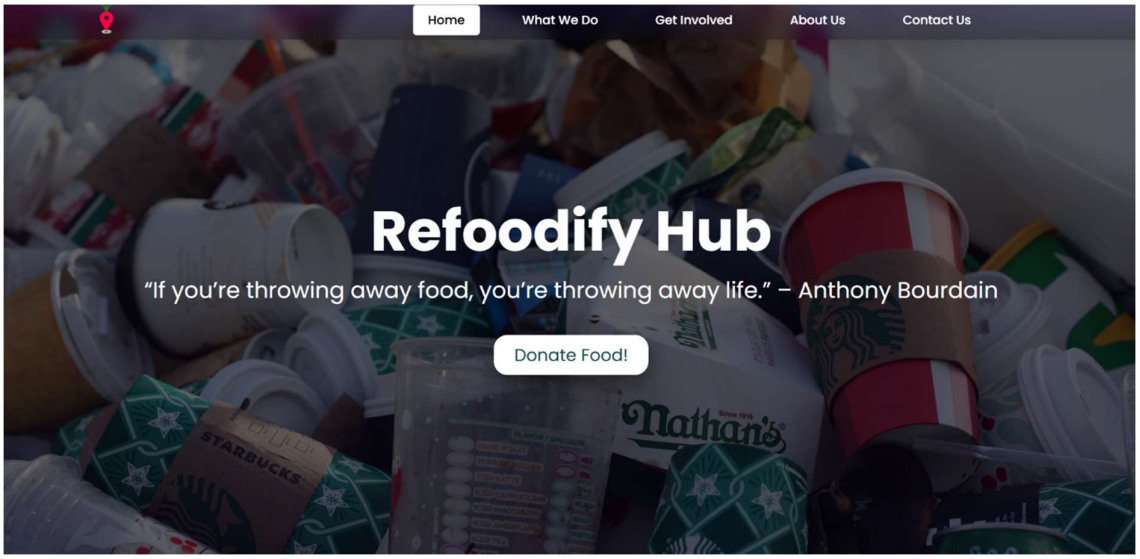
Structured schemas for clean data retrieval

Version Control:

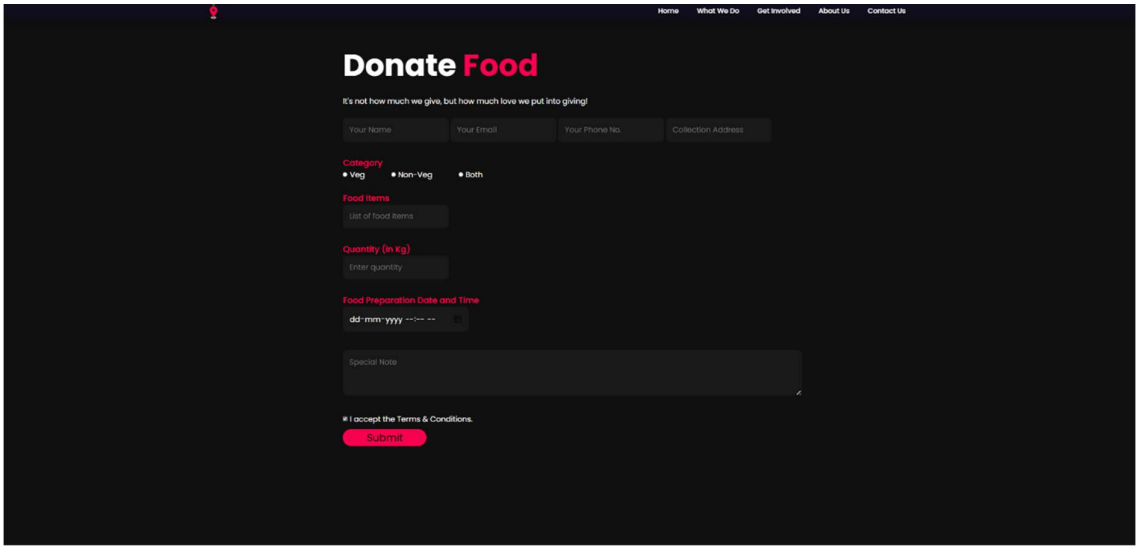
Git and GitHub for project collaboration, tracking, and submission

Interface & Screenshots

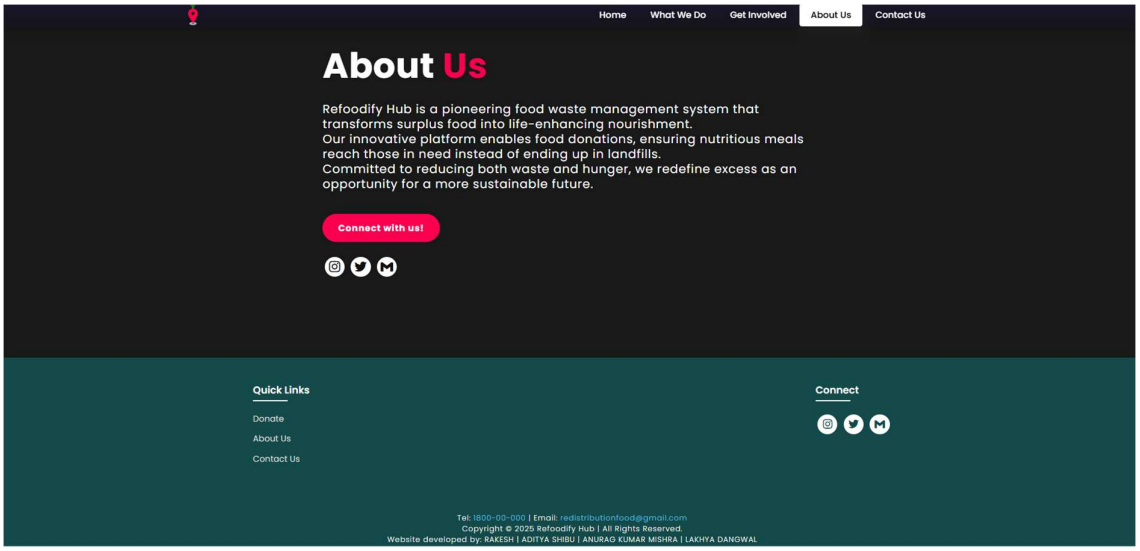
Homepage: Clean, informative landing page for all users



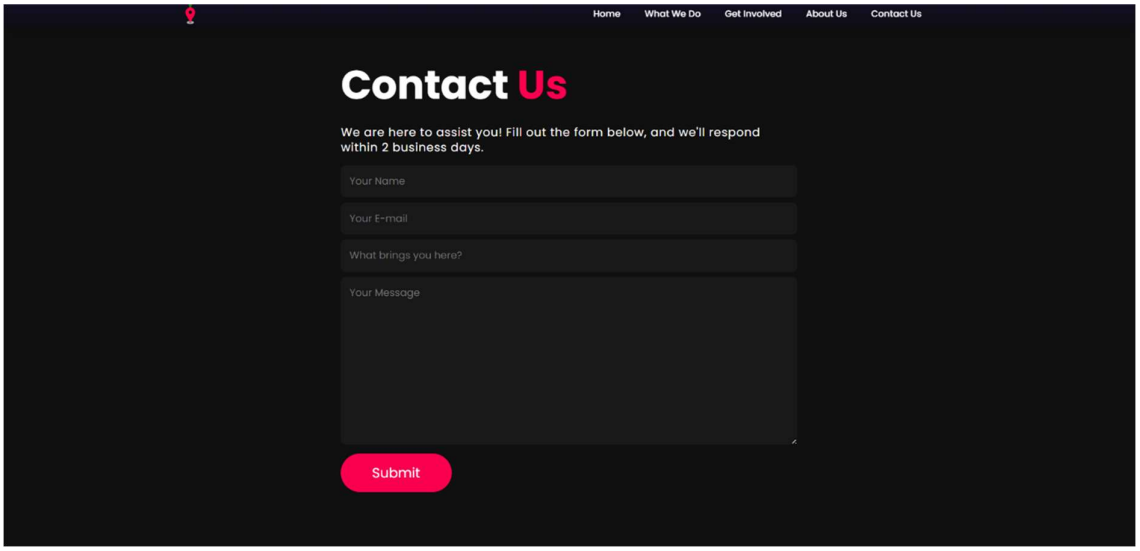
Donor Dashboard: Form to list new food items



About Us: Innovative solutions for modern challenges.

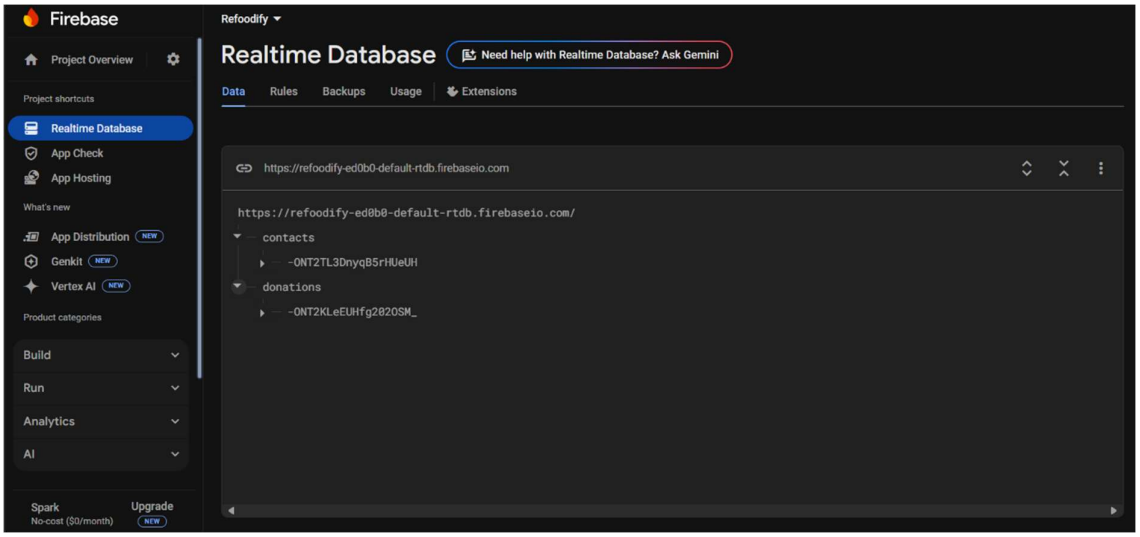


Contact Us: Get in touch with us today.



Backend:

Powered by Firebase for scalability.



Advantages of the System

- Reduces large-scale and household food waste
- Promotes community-driven social welfare
- Easy to use for both donors and receivers
- Encourages real-time donations and pickups
- Supports transparency through admin oversight
- Can be scaled to work with municipal and corporate donors

This platform not only prevents waste but also creates a culture of sharing and social accountability.

Limitations

While the system is functional and impactful, it has a few limitations:

Internet dependency: Cannot function offline or in rural areas with poor connectivity

Reliance on voluntary action: If people don't list food or respond quickly, food may go to waste

Verification Challenges: Difficult to verify the authenticity of some users

No live tracking: Does not include GPS-based delivery/pickup integration (yet)

Future Enhancements

The project has great potential for scaling and enhancement. Some ideas for future improvements include:

- Developing a mobile app version with push notifications
- Adding Google Maps integration for real-time tracking of pickup/delivery
- Introducing AI-based prediction of food demand vs. supply
- Collaboration with municipal bodies and large organizations for food logistics
- Partnering with NGOs for automated pickup services
- Adding QR-code-based tagging for safe food collection

Conclusion

The Food Waste Redistribution System provides a practical solution to the dual challenges of food wastage and hunger. By facilitating real-time connections between surplus providers and those in need, it ensures efficient resource utilization. The project is scalable, socially impactful, and technically viable. With continued development and community engagement, this system has the potential to contribute meaningfully to the global fight against hunger and waste.

References

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Flask Framework Docs: https://flask.palletsprojects.com

GitHub Tutorials: https://docs.github.com

HTML/CSS Guides: https://www.w3schools.com