

**Final Major Project
Developing a Business System
Food4Need – Feeding Communities, Reducing Waste
Application**

Course Code: INFO8003

Instructor: Prof. Randall Kozak

**Conestoga College Institute of Technology and Advanced
Learning**

Submitted By:

Anamika Rawat (9087089)
Sukhpal Kaur (9011033)

Submitted On:

05 Dec 2025

Table Of Contents

Table Of Contents	2
Introduction	4
Using a collaborative tool.....	4
Forming a Development Team	4
Task Distribution Table Overview	4
Scrum Roles Table Overview.....	5
Preliminary Research.....	6
Brainstorming	7
Key Brainstormed Features	7
Research – Web Market Analysis.....	8
Existing Applications and Platforms	8
Current Methods People Use	12
Features Needed by Food4Need	12
How Food4Need Differs From Existing Apps.....	12
Why Developing Food4Need Makes Sense	13
Description	13
Preliminary List of Desirable Features	13
Possible Revenue Streams.....	14
Future Goals / Extensions	14
Alignment with Theme.....	15
Technical Requirements	15
1. Special Device Hardware Features.....	15
2. Special Input Controls.....	15
3. Contextual Constraints and Advantages	16
Personas.....	17
Persona 1: Donor	17
Persona 2: Shelter Coordinator.....	18
Persona 3: Volunteer Administrator	18
Use Cases	19
Use Case List Description	19
Use Case Diagram.....	20
Use Case Description	21
Activity Diagram.....	22

Use Case: Post Food Donation Listing	22
Activity Flow:	22
Activity Diagram	23
Entities	23
Entities Table:	23
Relationships Between Entities.....	24
Additional Details:	25
ER-Diagram:.....	25
Content Plans	26
1. Post Donation Page (Donor)	26
2. Claim Donation Page (Shelter / Coordinator)	27
Prototypes.....	28
Donor Page(Donate Now).....	28
Shelter Page(Claim Donations).....	30
Class Diagram	32
Implementation – Developing the Agile Plan	34
Agile and Scrum Approach	34
Assumptions:.....	34
Sprint Breakdown	34
Scrum Roles and Responsibilities.....	35
Agile Plan Notes.....	35
Food4Need Agile Implementation Plan.....	36
AI Assistance	36
Summary.....	36
References	37

Introduction

This assignment focuses on designing a conceptual prototype for **Food4Need**, a mobile application that connects food donors with shelters to reduce waste and support community needs. We developed core features such as posting donations, viewing listings, and claiming available food. As part of the project, we designed screen layouts, planned user interactions, and outlined the structure of the system. The aim is to present a practical and user-friendly concept that supports charitable organizations through effective food redistribution.

Using a collaborative tool

For the **Food4Need** project, the team used **GitHub** as a cloud-based collaborative platform to organize, store, and manage all project materials. Both team members, Anamika Rawat and Sukhpal Kaur, actively contributed by uploading their respective work, including research, use cases, diagrams, Agile planning, and documentation. Each commit clearly reflects the tasks completed by the individual team member. All project materials can be accessed in the repository via the following link:
GitHub Repository: <https://github.com/anamika9898/Food4Need>

Forming a Development Team

Task Distribution Table Overview

This table outlines the various tasks involved in the **Food4Need** project. Although the team consists of only two members, all tasks are collaborative. Each member has a primary responsibility for specific aspects of a task to ensure accountability, efficiency, and professional management of the project.

Tasks	Assigned Members	Primary Responsibilities
Brainstorming	Anamika Rawat, Sukhpal Kaur	Generate ideas for features, functionality, and innovative solutions for the app.
Research	Anamika Rawat, Sukhpal Kaur	Conduct market analysis, study similar apps, gather information on social-benefit organizations and sustainability practices.
Business Model	Anamika Rawat, Sukhpal Kaur	Develop a business model for the app, including potential revenue streams and partnerships with local food banks and organizations.
Market Analysis & Personas	Anamika Rawat, Sukhpal Kaur	Identify target users, create personas representing donors, volunteers, and food bank staff.

Use Cases	Anamika Rawat, Sukhpal Kaur	Develop functional requirements, detailed use cases, and flow of interactions between users and the system.
Entity Relationship Diagram (ERD)	Anamika Rawat, Sukhpal Kaur	Identify entities, relationships, and attributes for the database design of the application.
Class Diagram	Anamika Rawat, Sukhpal Kaur	Model the object-oriented structure including classes, attributes, methods, and inheritance.
Content Plans	Anamika Rawat, Sukhpal Kaur	Design text, input forms, buttons, and features for each screen of the app.
Prototype Mockups	Anamika Rawat, Sukhpal Kaur	Create screen mockups using Figma or similar tools for chosen use cases.
Code Development	Anamika Rawat, Sukhpal Kaur	Plan the coding tasks, simulate implementation, and prepare the development strategy (even if actual coding is not done).
Testing (Unit, Integration, Regression, Acceptance, Usability)	Anamika Rawat, Sukhpal Kaur	Plan testing procedures for the system to ensure quality, usability, and correctness.
Documentation	Anamika Rawat, Sukhpal Kaur	Compile all research, diagrams, use cases, Agile plan, and project deliverables into the final report.

Scrum Roles Table Overview

This table defines the **Scrum development roles** for the project. The **Product Owner** is responsible for defining the product vision and prioritizing tasks, while the **Scrum Master** facilitates agile processes, manages sprint planning, and ensures smooth team collaboration. These roles guide the team through an organized, iterative development process.

Role	Assigned Member	Responsibilities
Product Owner	Anamika Rawat	Define product vision, prioritize tasks, decide on key features, and manage project scope.
Scrum Master	Sukhpal Kaur	Facilitate sprint planning, track progress, resolve blockers, and ensure the team follows Agile practices.

Preliminary Research

The motivation behind Food4Need is anchored in the global imbalance between massive food waste and rising food insecurity. According to the United Nations Environment Programme (UNEP), nearly one-third of all food produced for human consumption—approximately 1.3 billion tonnes per year—is lost or wasted. This level of waste represents not only a loss of valuable resources but also contributes to environmental degradation through increased greenhouse gas emissions and the unnecessary use of land, water, and energy (UNEP).

At the same time, food insecurity in Canada continues to escalate. The 2025 HungerCount Report by Food Banks Canada indicates that monthly food bank visits reached approximately 2.2 million in March 2025, the highest figure recorded to date. The report also notes that food bank usage has nearly doubled since 2019, reflecting rising living costs and widening social inequalities (Food Banks Canada; Newswire; Pollara Strategic Insights).

(Newswire, 2025; Pollara Strategic Insights, 2025)

These two conditions—global food waste and growing domestic demand—highlight a serious systemic gap. Large quantities of surplus food are being discarded even as more individuals rely on community food supports. Current food redistribution mechanisms remain fragmented, often relying on manual coordination, outdated processes, or separate organizational systems that lack real-time communication and transparent tracking.

(CP24, 2024; Feed Ontario, 2024).

A review of recent literature and reports identified several challenges that hinder efficient redistribution:

- Surplus food frequently goes to waste because donors lack a fast, accessible method to broadcast availability in real time.
- Shelters and charitable organizations are increasingly overwhelmed and often unable to access surplus food quickly enough to meet demand (CP24; Feed Ontario).
- Limited transparency, inconsistent verification, and logistical uncertainties discourage many potential donors.
- Perishable food is especially vulnerable to spoilage when communication and pickup systems are slow or uncoordinated.

In response to these challenges, there is a clear social, environmental, and operational need for a centralized, location-aware digital system that connects donors, shelters, food banks, and volunteers. Food4Need addresses this need by enabling real-time posting of surplus food, geolocation-based matching, expiry alerts, and transparent tracking. Such an integrated solution can improve redistribution efficiency, reduce waste, and strengthen community support systems.

(ReFED, 2023)

In summary, preliminary research strongly demonstrates that the conditions in Canada and worldwide justify the development of Food4Need. The evidence confirms that both food waste and food insecurity are at critical levels, and a modern, technology-driven solution has the potential to deliver meaningful impact.

(UNEP, 2021; Food Banks Canada, 2025; ReFED, 2023)

Brainstorming

The brainstorming phase focused on identifying **features**, **user roles**, **benefits**, and **long-term impact** for Food4Need. The goal was to design a system that is **user-friendly**, **socially responsible**, and **operationally effective**.

Key Brainstormed Features

Real-time Donation Listings

- Donors can quickly post available food, including type, quantity, expiry date, and pickup window.
- **Benefit:** Reduces spoilage and ensures shelters receive timely donations.
- **Rationale:** Quick listing reduces wasted food that occurs due to slow communication, (Too Good To Go, 2025; Olio, 2025)

Live Map with Geolocation

- Interactive map shows donor locations, shelters, urgent requests, and volunteer drivers.
- **Benefit:** Enables efficient planning and reduces transportation time and costs.
- **Rationale:** Location-based matching optimizes food recovery and distribution (ReFED, 2023)

Expiry Tracking & Notifications

- System alerts donors when perishable food is approaching expiry and suggests donation options.
- **Benefit:** Minimizes food loss and increases recovery of high-risk perishable items.
- **Rationale:** Studies indicate timely notifications increase donations of perishable items (Second Harvest, 2024)

Claiming System and Scheduling

- Shelters can claim donations and coordinate pickup or delivery times with donors or volunteers.
- **Benefit:** Reduces missed donations and improves accountability.
- **Rationale:** Structured claim workflows improve reliability and prevent duplication (Too Good To Go, 2025).

Transparency and Feedback System

- Donors receive confirmation and feedback from shelters, including ratings and comments.
- **Benefit:** Builds trust and encourages repeat donations.
- **Rationale:** Positive feedback increases engagement and donor retention (Olio, 2025)

Admin Governance & Verification

- Admin verifies new users and approves donation listings to ensure safety and legitimacy.
- **Benefit:** Prevents fraud, ensures compliance, and maintains credibility.
- **Rationale:** Oversight reduces risks in the donation process and encourages participation (Feed Ontario, 2024).

Event Management

- Admins can create campaigns, charity events, and food drives with RSVP tracking and notifications.
- **Benefit:** Increases community engagement and awareness of donation opportunities.
- **Rationale:** Structured events concentrate resources and volunteer efforts effectively.

Community Impact Dashboard

- Displays metrics such as total food saved, meals provided, and active users.
- **Benefit:** Shows tangible results, motivates donors, and helps attract partners/funders.
- **Rationale:** Transparent impact metrics improve accountability and reporting (ReFED, 2023)

Volunteer Integration (Future)

- Volunteers assist with pickup and delivery for donors unable to transport food.
- **Benefit:** Expands reach and flexibility of the redistribution system.
- **Rationale:** Community engagement enhances scalability and ensures all available food is recovered.

Educational & Safety Resources

- Tips and guidelines for safe food handling, storage, and donation procedures.
- **Benefit:** Reduces health risks and informs users about best practices.
- **Rationale:** Safety education improves compliance and donor confidence.

Research – Web Market Analysis

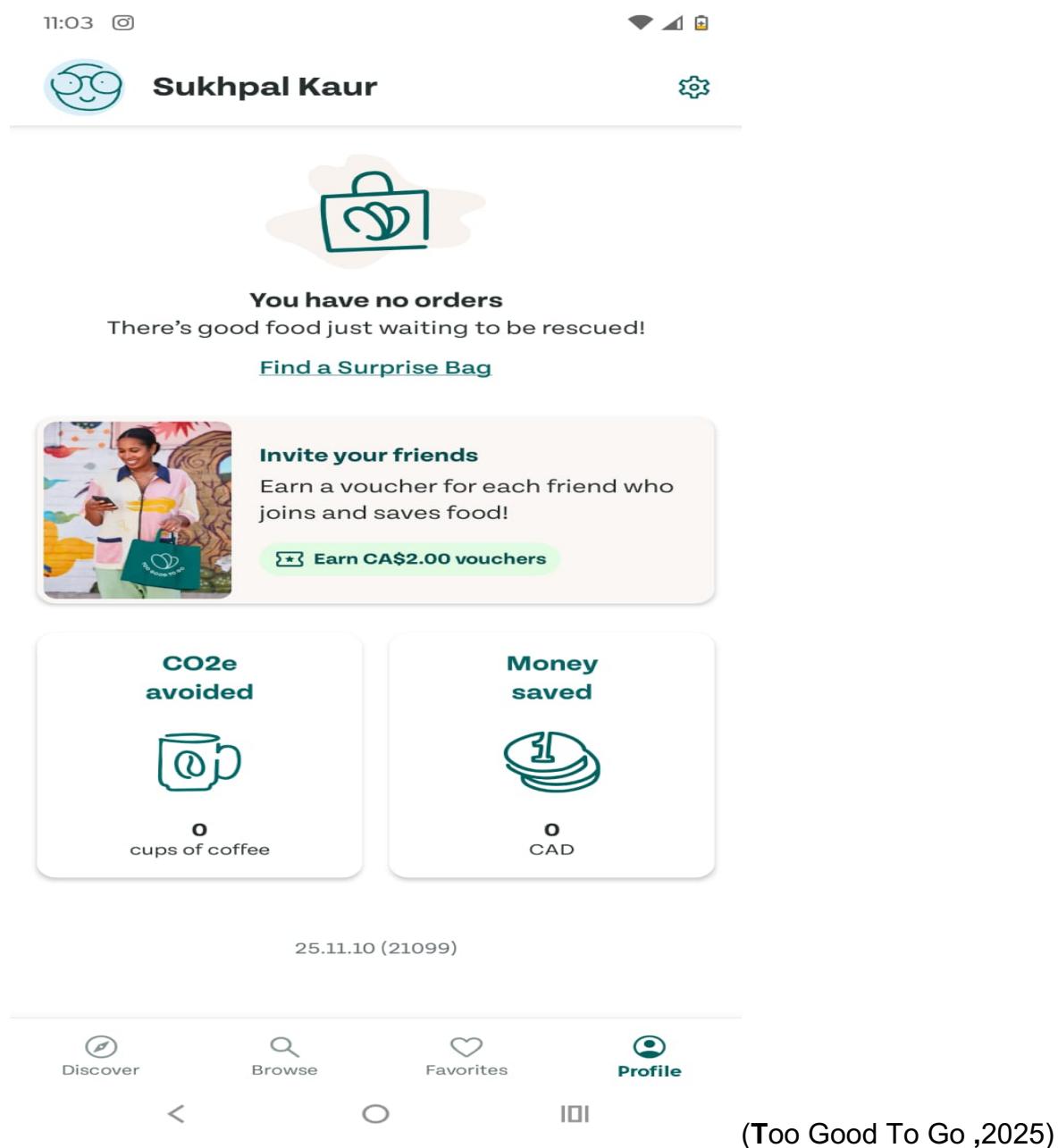
Existing Applications and Platforms

Several apps and platforms currently address food waste and surplus food redistribution, but each has limitations when it comes to donation-focused workflows:

Too Good To Go

- Mobile app connecting restaurants, cafés, and retailers with consumers to sell surplus food at reduced prices.
- **Strengths:** Reduces food waste, large user base, simple interface.
- **Limitations:** Focused on consumer purchases, not charitable donations. No integration with shelters or structured donation verification.

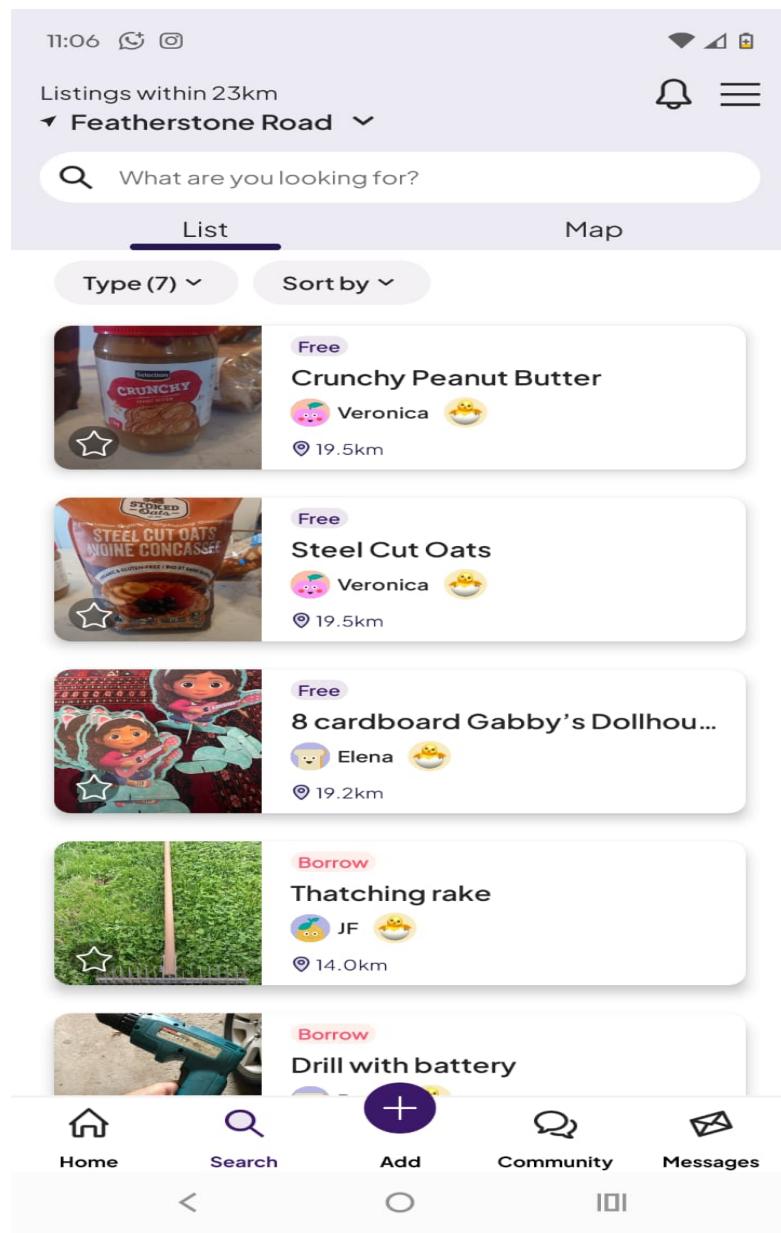
Screenshot:



Olio

- Community-based app for sharing surplus food and other items with neighbors for free.
- **Strengths:** Encourages local sharing, reduces household waste, free for all users.
- **Limitations:** Peer-to-peer only, no integration with food banks or shelters, lacks admin verification, expiry tracking, and delivery scheduling.

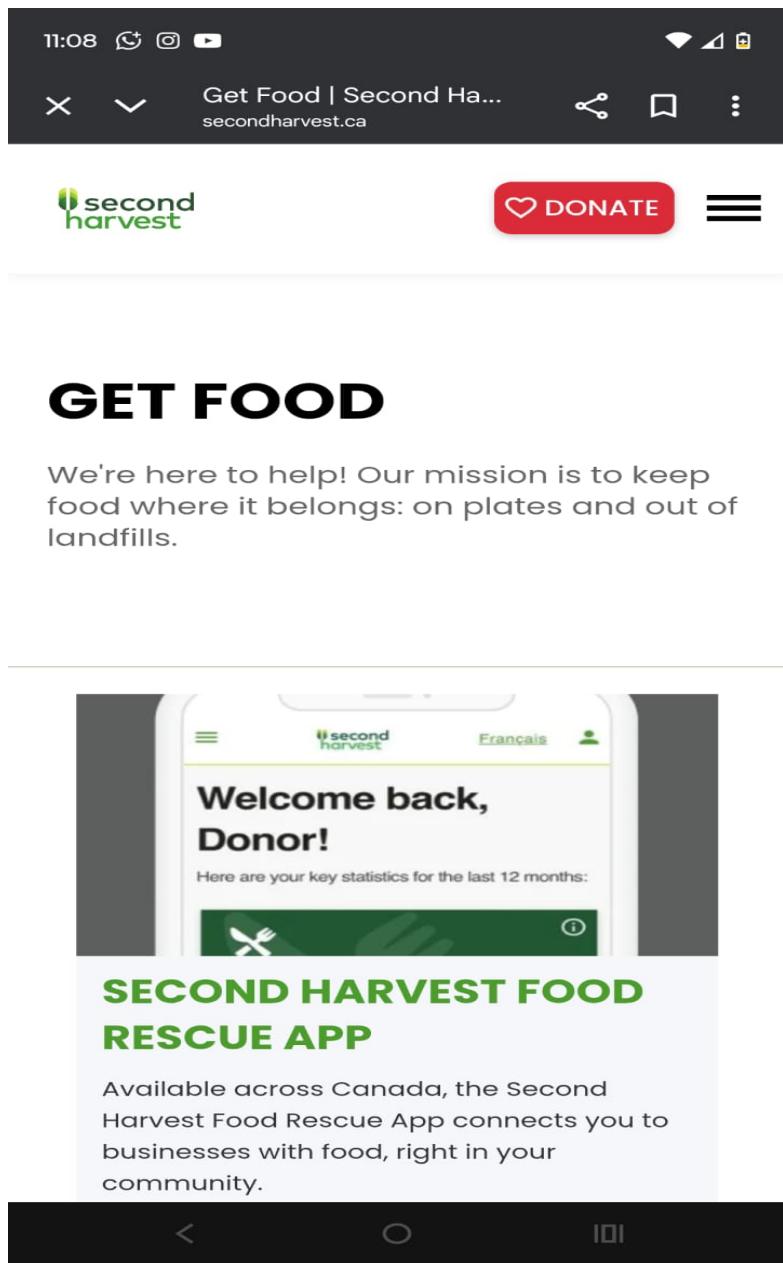
Screenshot:



Local Food Bank or Charity Platforms

- Many food banks and shelters use websites, email, or phone-based systems to coordinate donations.
- **Strengths:** Trusted organizations, targeted help for people in need.
- **Limitations:** Manual coordination, no real-time updates, fragmented processes, limited reach to new donors.

Screenshot:



Current Methods People Use

- Informal drives, phone calls, emails, and local social media groups to arrange donations (CP24; Feed Ontario).
- Apps like Olio or Too Good To Go for surplus food redistribution, but these primarily serve consumers or peer-to-peer sharing (ReFED).
- Traditional charity websites or spreadsheets for food bank management, often slow and uncoordinated (Second Harvest).

Features Needed by Food4Need

Based on gaps in existing apps, Food4Need requires the following features:

- **Real-time Donation Listings:** Donors post surplus food quickly to prevent spoilage.
- **Live Map & Geolocation:** Shelters and volunteers locate nearby donations.
- **Expiry Tracking & Notifications:** Alerts for perishable items approaching expiry.
- **Claiming & Scheduling System:** Shelters can claim donations and schedule pickups or deliveries.
- **Admin Governance & Verification:** Admin approval for users and donations ensures trust.
- **Transparency & Feedback:** Donors receive feedback from shelters to encourage engagement.
- **Event Management:** Admin can create campaigns, food drives, or charity events.
- **Community Impact Dashboard:** Shows total food saved, meals provided, and active users.
- **Volunteer Integration (Future):** Volunteers assist with transport for donations (Second Harvest; ReFED).

How Food4Need Differs From Existing Apps

- Unlike **Too Good To Go**, Food4Need focuses on **donations to shelters**, not consumer purchases.
- Unlike **Olio**, it integrates **verification, scheduling, and accountability**.
- Unlike manual charity coordination, it provides **real-time visibility, geolocation, expiry tracking, and feedback**, improving efficiency and safety.
- Offers a **social and environmental impact dashboard**, which is missing in other apps (ReFED; Second Harvest).

Why Developing Food4Need Makes Sense

1. **Rising Food Insecurity:** Increasing food bank visits indicate strong demand for efficient donation systems (Food Banks Canada).
2. **High Food Waste Levels:** Globally, 1.3 billion tonnes of food are wasted annually (UNEP), highlighting the need for recovery solutions.
3. **Technology Feasibility:** Smartphones enable real-time coordination and geolocation matching for donors, shelters, and volunteers.
4. **Market Gap:** No existing app integrates donation-to-shelter workflows, verification, expiry tracking, logistics, and social impact measurement in a single platform.
5. **Scalability & Sustainability:** Food4Need can grow to include corporate partnerships, volunteers, and community campaigns, creating long-term impact (ReFED; Second Harvest).

Description

Food4Need is a mobile and web-based application designed to reduce food waste while simultaneously supporting food-insecure communities. The platform connects donors—including households, restaurants, and grocery stores—with shelters, food banks, and volunteers in real time. This creates an efficient, transparent, and socially responsible food redistribution ecosystem (UNEP, 2021; Food Banks Canada, 2025).

The application serves both social and business purposes. Socially, it addresses hunger and strengthens community engagement; environmentally, it reduces food wastage and the associated carbon footprint (UNEP, 2021). From a business perspective, Food4Need enables partnerships with retailers, NGOs, and local governments, providing a scalable solution that combines social impact with operational sustainability (Second Harvest, 2022).

The design emphasizes ease-of-use, efficiency, transparency, and measurable social impact, ensuring that surplus food is redirected promptly to those in need while donors receive feedback and recognition for their contributions (ReFED, 2020).

Preliminary List of Desirable Features

1. **Real-time Donation Listings:** Donors can post available food items with type, quantity, expiry date, and location (Olio, 2023).
2. **Live Map & Geolocation:** Shelters and volunteers can locate nearby donors and urgent donations (Too Good To Go, 2023).
3. **Expiry Tracking & Notifications:** Alerts for perishable items approaching expiry to prevent food spoilage (Second Harvest, 2022).

4. **Claiming & Scheduling System:** Shelters can claim donations and arrange pickups or deliveries (Food Banks Canada, 2025).
5. **Admin Governance & Verification:** Admin approval for users and donations ensures legitimacy and trust (ReFED, 2020).
6. **Transparency & Feedback:** Donors receive feedback and ratings from recipients to increase engagement (Second Harvest, 2022).
7. **Event Management:** Admin can organize campaigns, food drives, and charity events (Feed Ontario, 2023).
8. **Community Impact Dashboard:** Displays metrics such as total food saved, meals served, and volunteer participation (UNEP, 2021).
9. **Volunteer Integration (Future):** Volunteers assist with logistics and delivery of donated items (ReFED, 2020).
10. **Educational Resources:** Tips on food preservation, sustainability practices, and community involvement (Second Harvest, 2022).

Possible Revenue Streams

1. **Partnerships with Food Retailers & Restaurants:** Paid listings or subscription-based partnerships for surplus food management (Too Good To Go, 2023).
2. **Sponsorship from NGOs or Corporations:** Brand sponsorship for social impact campaigns and food drives (ReFED, 2020).
3. **Premium Features for Donors or Volunteers:** Advanced analytics, donation tracking, or recognition badges (Olio, 2023).
4. **Government Grants or Social Innovation Funding:** Funding from municipal or federal programs promoting sustainability and food security (Food Banks Canada, 2025).
5. **Event Fees or Donations:** Crowdfunding campaigns, charity events, or in-app donations to support logistics and app maintenance (Feed Ontario, 2023).

Future Goals / Extensions

- **Volunteer Routing & Logistics Optimization:** AI-assisted routes for pickups and deliveries to maximize efficiency (Second Harvest, 2022).
- **Corporate Partnerships & Bulk Donations:** Integration with large retailers or producers for bulk surplus donations (ReFED, 2020).
- **Expanded Geographic Coverage:** Scaling to additional regions or nationwide deployment (Food Banks Canada, 2025).
- **Educational & Community Engagement Modules:** Gamification, awareness campaigns, and workshops (UNEP, 2021).
- **Integration with Local Services:** Health organizations, schools, and shelters to broaden social impact (Feed Ontario, 2023).
- **Advanced Data Analytics:** Predictive analytics for donation patterns, expiry management, and impact forecasting (Second Harvest, 2022).
- **Adaptation for Other Resource Sharing:** Extending to non-food items like clothing or furniture (Olio, 2023).

Alignment with Theme

Food4Need aligns with the course theme of “Developing a Business System with Social and Environmental Impact”. It integrates technology, logistics, and social responsibility to create measurable outcomes, reducing food waste and supporting vulnerable populations (UNEP, 2021; Food Banks Canada, 2025; Second Harvest, 2022).

Technical Requirements

Special Device Hardware Features

Food4Need is designed to run on standard smartphones, tablets, and potentially web browsers, without requiring specialized hardware. However, certain common device features are essential for full functionality:

- **GPS / Location Services:**
The app relies heavily on geolocation to match donors, shelters, and volunteers in real time. GPS enables live maps, nearby donation alerts, and route optimization for pickups and deliveries (Olio, 2023).
- **Camera Access:**
Donors can upload images of food items to improve accuracy of listings and verification. Photos also provide visual proof for shelters and admins, enhancing transparency (Too Good To Go, 2023).
- **Push Notifications:**
Critical for alerting donors and shelters about urgent donations, food approaching expiry, or claimed items, ensuring timely action and reduced waste (Second Harvest, 2022).
- **Internet Connectivity:**
Required for real-time updates, cloud synchronization, and communication between all users. Offline mode could be limited to viewing previous donations or records.

Discussion:

These are all standard features on modern devices, so the app does not demand any specialized hardware. However, functionality may be reduced for users with older devices lacking GPS, camera, or stable internet connectivity.

Special Input Controls

The app is designed for **simple, intuitive input** to accommodate a wide range of users, including non-technical donors and volunteers:

- **Form-based Inputs:** Dropdowns, checkboxes, and text fields for entering food type, quantity, expiry date, and location. This ensures structured and consistent data collection.
- **Interactive Map Controls:** Users can place pins for donor or shelter locations, zoom and pan to view nearby activity, and tap to select donations or pickup points.
- **Claim & Pickup Buttons:** One-touch interface for shelters to claim donations and schedule deliveries.
- **Swipe / Tap Feedback Controls:** Quick feedback or rating system for donors and shelters to provide reviews and comments.
- **Voice Input (Optional Future Feature):** Could assist users with disabilities or when manual entry is inconvenient (UNEP, 2021).
- **Push Notification Interactions:** Actionable notifications allow users to respond directly from alerts, e.g., claim donation or confirm pickup.

Discussion:

The app does not require specialized controllers or hardware inputs beyond standard touchscreen interaction. These controls are designed for accessibility, simplicity, and rapid response.

Contextual Constraints and Advantages

Constraints:

- **Internet Dependence:** Real-time geolocation, notifications, and database updates require connectivity. Users in rural or low-bandwidth areas may face reduced functionality.
- **Device Limitations:** Older smartphones may struggle with map rendering, notifications, or photo uploads.
- **Privacy and Security:** Handling personal and location data requires adherence to privacy regulations (e.g., PIPEDA in Canada, GDPR if expanded globally).
- **Food Safety & Regulatory Compliance:** Users must handle perishable items safely; the app should include reminders for proper food storage and regulatory guidance.

Advantages:

- **Widespread Smartphone Adoption:** Most target users have GPS-enabled devices capable of running the app.
- **Real-Time Location Context:** Geolocation allows efficient matching of donors and shelters, reducing food spoilage and transport time.
- **Community Engagement:** Mobile notifications, maps, and feedback systems enhance volunteer participation and donor retention.
- **Scalability:** Cloud-based infrastructure allows for future growth to larger regions or nationwide use without significant changes in hardware requirements.

- **Environmental Impact:** Real-time coordination reduces food waste and associated greenhouse gas emissions, aligning with sustainability goals (UNEP, 2021; Second Harvest, 2022).

Personas

We have chosen three key personas to represent our target users

Link for persona:

https://www.canva.com/design/DAGzXFo6KjU/xv7nU_sU1Kf4tQUFD6ECdw/edit?utm_content=DAGzXFo6KjU&utm_campaign=designshare&utm_medium=link2&utm_source=sharebutton

Persona 1: Donor

SARAH THOMPSON

PROFILE

Gender	:	Female
Age	:	34
Education	:	MBA
Occupation	:	Owner of "The Cozy Kitchen"
Address	:	200 Featherstone road Milton



I'm a donor passionate about animal welfare and community-focused initiatives, with a strong interest in creating meaningful impact through my contributions.

BIOGRAPHY

Sarah Thompson is a 34-year-old Marketing Specialist who is passionate about sustainability and reducing food waste. Curious and motivated, she seeks efficient ways to contribute surplus food to local shelters while using technology to simplify and track her impact.

MOTIVATIONS

Sarah Thompson is driven by her desire to reduce food waste and make a meaningful impact in her community. She leverages technology and collaborates with local shelters to contribute efficiently while deepening her skills in sustainability and project management.

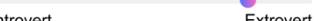
GOALS

- Enhance skills in sustainability and social impact projects
- Uses my skills to make a meaningful impact on social initiatives.
- Gain hands-on experience in social welfare
- Contributes strategically to projects that make a difference

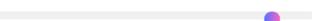
FRUSTRATIONS

- Ensuring contributions make a meaningful impact
- Finding efficient ways to contribute time, resources, or funds
- Few accessible channels to make a real social impact.
- Navigating opportunities to give back in impactful ways

PERSONALITY

Introvert  Extrovert

Thinking  Feeling

Judging  Perceiving

Sensing  Intuition

TECHNOLOGY

Smartphone apps 

Social media platforms 

Communication apps 

BRANDS


Twitter


LinkedIn


Indeed

Persona 2: Shelter Coordinator

AHMED KHAN

PROFILE

Gender	:	Male
Age	:	30
Education	:	Diploma in Social Work
Occupation	:	Shelter Coordinator
Address	:	78 Lane, Mississauga, Ontario



"I'm committed to ensuring that surplus food reaches the people who need it most. It's rewarding to coordinate volunteers and donors, reduce waste, and see the community benefit from our work."

BIOGRAPHY

Ahmed Khan is a 45-year-old professional managing a local food bank. He is passionate about ensuring surplus food reaches those in need efficiently and helping shelters and volunteers work together to reduce community food waste.

MOTIVATIONS

Ahmed is motivated by a strong desire to ensure surplus food reaches those who need it most. He takes pride in coordinating donors and volunteers efficiently, supporting shelters in their operations, and contributing to meaningful community sustainability initiatives.

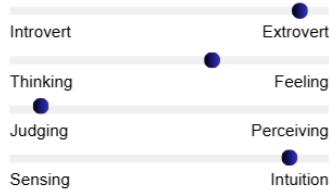
GOALS

- Coordinate volunteers for timely food pickups and deliveries.
- Manage donor-shelter connections efficiently.
- Track and approve incoming food donations promptly.
- Ensure shelters receive surplus food in an organized manner.

FRUSTRATIONS

- Difficulty coordinating volunteers for pickups and deliveries.
- Managing several donation requests at the same time
- Overseeing simultaneous pickup and delivery operations.
- Organizing multiple donation claims and delivery timelines.

PERSONALITY



TECHNOLOGY

- Smartphone / Tablet
- YouTube
- Communication apps

BRANDS



Persona 3: Volunteer Administrator

ALEX MODERATOR

PROFILE

Gender	:	Male
Age	:	35
Education	:	BBA Student
Occupation	:	Volunteer Administrator
Address	:	310 Cambridge Road, Oakville



I'm passionate about coordinating food donations and volunteers to make the process easy and efficient. It's rewarding to ensure that surplus food reaches those in need and that the community benefits from our efforts.

BIOGRAPHY

Alex Moderator is a 35-year-old professional responsible for keeping the Food4Need platform organized and user-friendly. He monitors donation listings and shelters, and ensures smooth communication between volunteers, donors, and shelters while maintaining the quality and reliability of the system.

MOTIVATIONS

Alex is motivated by the desire to create a safe, organized, and efficient platform. He enjoys ensuring that all donation listings are accurate, and facilitating meaningful connections between donors, volunteers, and shelters.

GOALS

- Approve new donor and shelter registrations promptly
- Ensure timely updates and notifications are delivered to all users
- Monitor and approve volunteer sign-ups efficiently
- Confirm legitimacy of donors before they post donations

FRUSTRATIONS

- Manage several user issues and requests simultaneously.
- Respond to multiple donor queries at the same time
- Resolve questions from multiple users while maintaining quality.
- Handle real-time notifications and user concerns effectively.

PERSONALITY



TECHNOLOGY

- Communication apps
- Social Media
- Music Streaming Apps

BRANDS

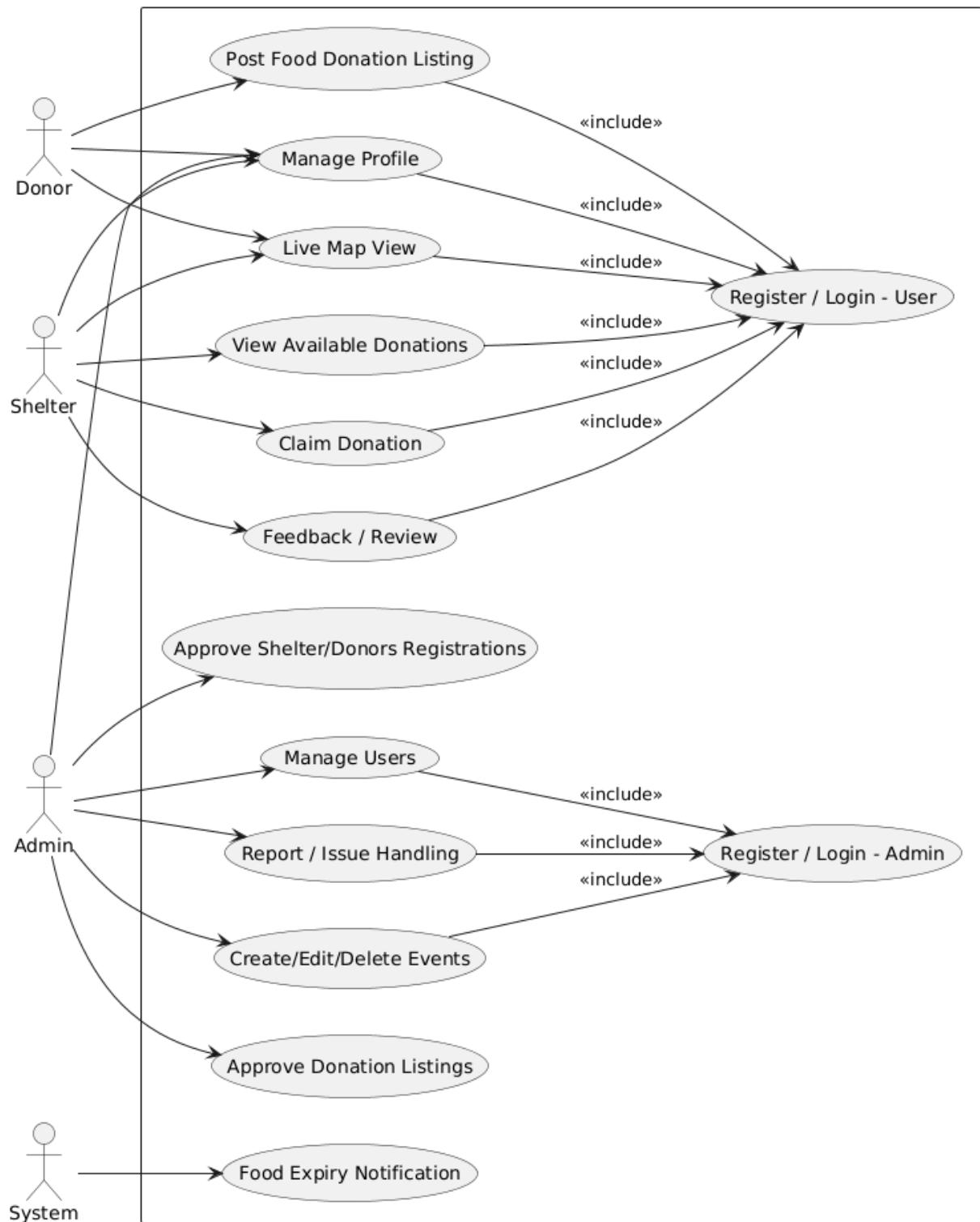


Use Cases

Use Case List Description

Use Case Name	Description
Register / Login - User	Donors and Shelters can create an account and log in to access app features.
Register / Login - Admin	Admin can log in to manage the system and perform administrative tasks.
Manage Profile	Users (Donor, Shelter, Admin) can update personal details, contact info, and preferences.
Post Food Donation Listing	Donors can list food items available for donation with quantity, type, and expiry.
View Available Donations	Shelters can see nearby available donations posted by donors.
Claim Donation	Shelters can claim a donation for pickup or delivery.
Food Expiry Notification	System notifies donors or shelters about perishable food nearing expiry.
Live Map View	Users can see a live map showing nearby donors, shelters, and urgent donation needs.
Feedback / Review	Donors and Shelters can leave feedback or reviews on donation and delivery experiences.
Manage Users	Admin can manage user accounts, approve or deactivate registrations.
Report / Issue Handling	Admin can view and handle system or user-reported issues.
Create/Edit/Delete Events	Admin can manage upcoming events, announcements, or campaigns.
Approve Donation Listings	Admin can approve or reject donation postings before they are visible to shelters.
Approve Shelter/Donors Registrations	Admin can approve or reject new user registrations for the platform.

Use Case Diagram



Use Case Description

1. Post Food Donation Listing

Field	Description	
Use Case Name	Post Food Donation Listing	
Actor	Donor	
Description	Allows a donor to post available food items for donation, including type, quantity, expiry date, and location, and send it to review.	
Pre-condition	Donor is logged into the application with an active profile.	
Post-condition	Donation is successfully submitted; once approved by admin, it becomes visible to shelters.	
Main Flow of Events	Actor Action 1. Logs into the application 2. Navigates to “Post Food Donation” section 3. Fills in donation details: type, quantity, expiry, location 4. Submits the donation 5. Receives approval notification (optional)	System Response 1. Validates credentials and grants access to the dashboard 2. Displays donation form 3. Validates data and allows submission 4. Notifies admin for approval and stores donation 5. Updates donation status to “Approved” and makes it visible to shelters

2. Claim Donation

Field	Description	
Use Case Name	Claim Donation	
Actor	Shelter	
Description	Allows a shelter to claim approved food donations posted by donors and optionally schedule pickup or delivery.	
Pre-condition	Shelter is logged into the application and the donation is approved.	
Post-condition	Donation is successfully claimed; donor is notified; donation status is tracked.	
Main Flow of Events	Actor Action 1. Logs into the application 2. Views available donations. 3. Selects a donation to claim. 4. Confirms claim.	System Response 1. Validates credentials and grants access to the dashboard 2. Displays all approved donations with details. 3. Shows detailed information about the donation 4. Updates donation status to “Claimed” and notifies donor.

Activity Diagram

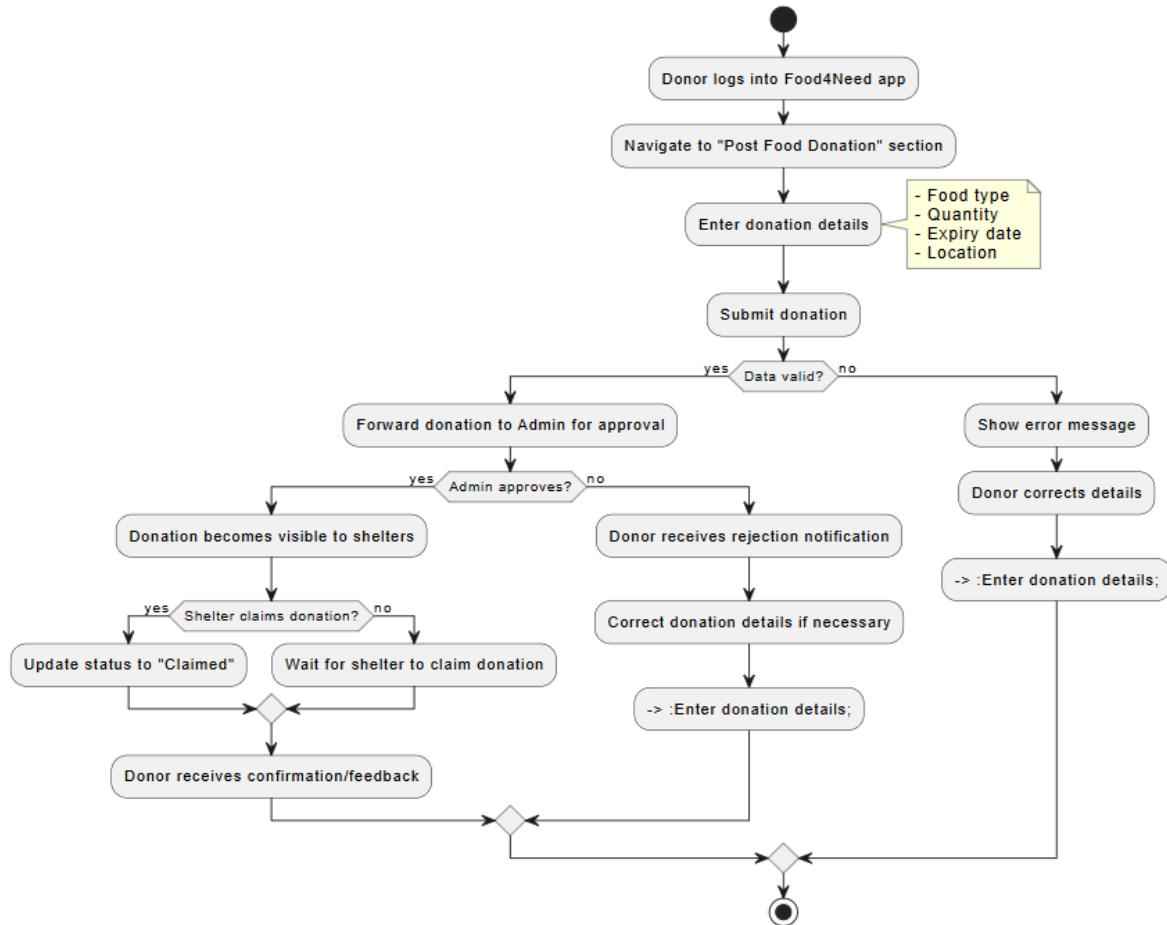
Use Case: Post Food Donation Listing

Actor: Donor

Activity Flow:

1. **Start** – The process begins when a donor decides to donate surplus food.
2. **Login:** Donor logs into the Food4Need app using credentials.
3. **Navigate to Donation Section:** Donor selects the “Post Food Donation” option from the dashboard.
4. **Enter Donation Details:** Donor inputs required information, including:
 - Food type (e.g., fruits, vegetables, packaged goods)
 - Food Description
 - Quantity of each item
 - Expiry date of perishable items
 - Pickup/delivery location (linked to Map Location)
5. **Submit Donation:** Donor clicks submit to send donation for processing.
6. **System Validation:**
 - Checks that all fields are filled correctly and data is consistent.
 - **If invalid:** system displays an error message → donor corrects inputs → returns to step 4.
 - **If valid:** donation is sent to **Admin for approval**.
7. **Admin Approval:**
 - Admin reviews the donation listing for completeness, eligibility, and safety standards.
 - **If approved:** donation becomes visible to shelters and eligible volunteers.
 - **If rejected:** donor receives notification with rejection reason and guidance.
8. **Shelter Interaction:** Shelters view the approved donation listing on the platform.
9. **Claim Donation (Optional):** Shelter claims the donation and schedules pickup or delivery. Donation status is updated to “**Claimed**.”
10. **Donor Confirmation:** Donor receives notifications confirming approval, claims, and any feedback from shelters.
11. **End** – The donation process is completed successfully.

Activity Diagram



Entities

This table presents the core entities of the Food4Need application, detailing their attributes and explaining their purpose in supporting the donation and redistribution process.

Entities Table:

Entity Name	Attributes	Description / Notes
Donor	donorID, name, email, password, contactNumber, address, organizationName	Represents a user who posts food donations. Includes personal and organization details for identification and communication.

Shelter	shelterID, name, email, password, contactNumber, address, capacity	Represents shelters or food banks that claim and receive donations. Capacity attribute helps manage allocation of resources.
Admin	adminID, name, email, password, contactNumber, address, role	Responsible for managing user accounts, approving donations, events, and ensuring platform governance.
FoodDonation	donationID, foodType, quantity, expiryDate, status, location (MapLocation)	Contains details of each food donation, including type, quantity, expiry date, status (Pending, Approved, Claimed), and geographic location.
MapLocation	latitude, longitude, address	Represents the geographic location for donations, donors, and shelters to enable live map tracking and routing.
Event	eventID, eventName, startDate, endDate, description	Represents organized campaigns, food drives, and community events to facilitate coordinated donation efforts.
Notification	notificationID, message, dateTime, type	Stores messages sent to users, such as expiry alerts, approval notifications, and system updates.
Feedback	feedbackID, rating, comment, dateTime	Captures reviews and feedback from donors and shelters to ensure accountability and transparency in the donation process.

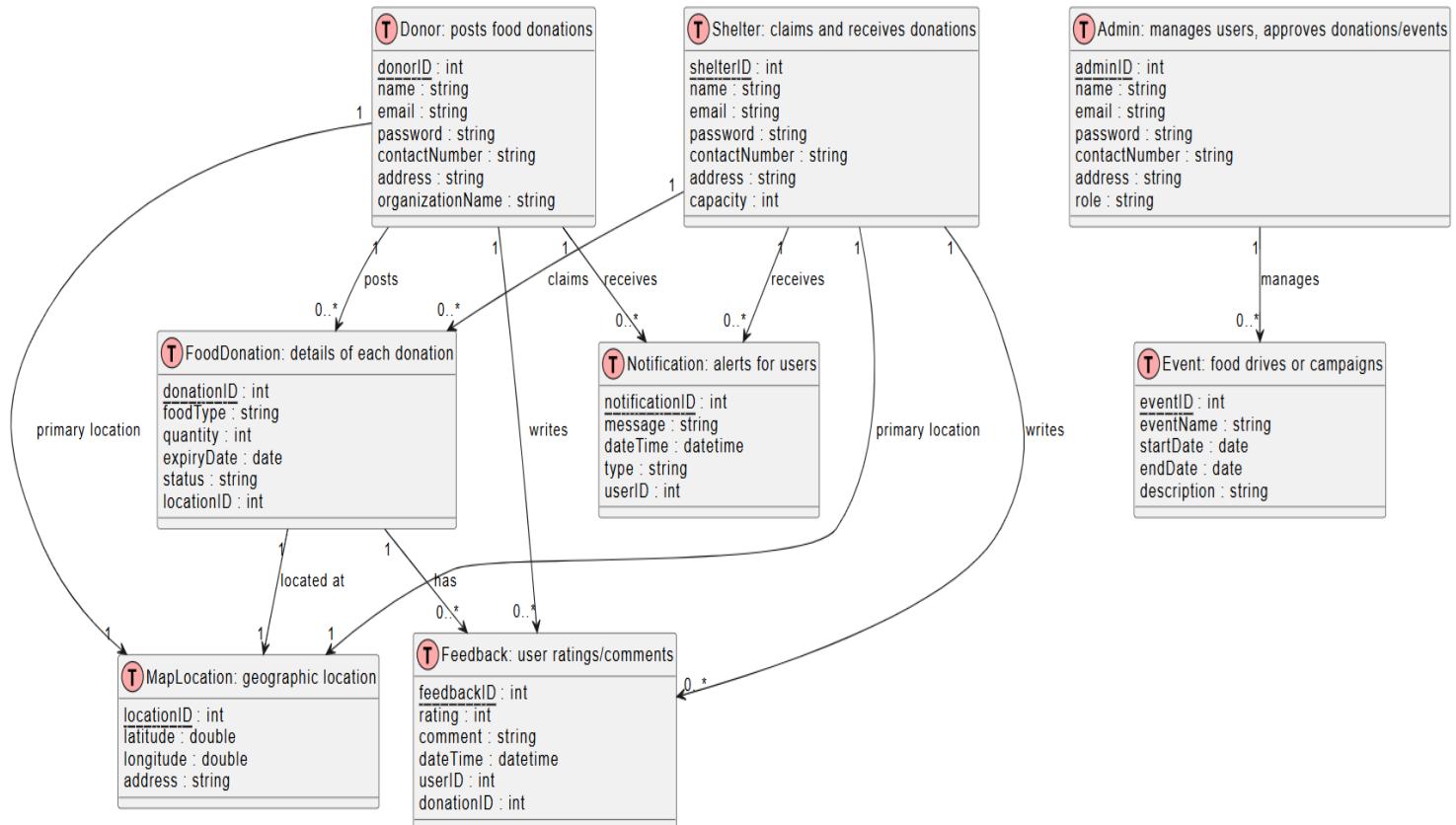
Relationships Between Entities

Relationship	Description
Donor → FoodDonation (1-to-many)	Each donor can post multiple food donations.
Shelter → FoodDonation (1-to-many)	Each shelter can claim multiple donations.
Admin → Event (1-to-many)	Admin can create and manage multiple events or campaigns.
User → Notification (1-to-many)	Users (Donors, Shelters, Admin) can receive multiple notifications.
User → Feedback (1-to-many)	Users can submit multiple feedback entries for donations or events.
FoodDonation → MapLocation (1-to-1)	Each donation is associated with a single location for pickup/delivery.
Donor → MapLocation (1-to-1)	Each donor has a primary location for pickup coordination.
Shelter → MapLocation (1-to-1)	Each shelter has a primary location for delivery and claims tracking.

Additional Details:

- **Donor and Shelter Entities:** Include geolocation and contact info to support real-time mapping, pickup, and notifications.
- **FoodDonation Entity:** The status attribute helps track donations through the workflow (Pending → Approved → Claimed).
- **Admin Entity:** Ensures verification of donors and shelters, and approval of events/donations to maintain trust and accountability.
- **Notification & Feedback Entities:** Support transparency and communication, improving user engagement and system reliability.
- **Event Entity:** Allows coordination of campaigns, enabling bulk donations and community involvement.

ER-Diagram:



Content Plans

1. Post Donation Page (Donor)

Purpose:

Allows donors to list available surplus food to contribute to shelters or food banks.

Landing Page

Text Content:

- **Header:** “Post a Food Donation”
- **Subtext / Instructions:** “Feed Communities, Reduce Waste, Make a Difference
- **Hero Image** – A image with food on the table in a festive season.
- **Button** – A button on the hero image with text post donation.
- **Text** – ““Fill hearts and plates this Christmas—donate food and brighten someone’s day.””

Donate Page

Text Content:

- **Header:** “Start a Food Donation!”
- **Subtext / Instructions:** “Share details to help nearby shelters understand what’s available.
- **Food Type:** “e.g., Bread, Fruits, Sandwiches”
- **Food Description:** “Add details about the food, e.g., ingredients, packaging, condition”
- **Quantity:** “Number of items or weight (kg)”
- **Expiry Date:** “Select the date before which the food should be consumed”

Features / Input Controls:

- **Dropdown Menu:** Food type selection
- **Text Field:** Description input
- **Number Input:** Quantity
- **Date Picker:** Expiry date selection
- **Button:** “Post Donation”
- **Button:** “Cancel”
- **Optional:** Image upload for the food item (to show condition and packaging)
- **Notification:** Confirmation after successful posting

Navigation / Flow:

User clicks Donate Now option on the landing page and then fill out the donation form and click post donation, the donation will then go for review to the admin which after approval will be visible to the shelters.

Claim Donation Page (Shelter / Coordinator)

2. Claim Donation Page (Shelter / Coordinator)

Purpose:

Allows shelters to browse available donations, view details, and claim items for pickup.

Landing Page

Text Content:

- **Header:** “Welcome to FOOD4NEED!”
- **Subtext / Instructions:** “Manage incoming donations and help feed your community.”
- **Hero Image:** Image of volunteers or food being delivered to a shelter.
- **Button:** “Claim Donation” button on the hero image.
- **Text:** “Bring meals to those in need this Christmas—see available donations and claim what your shelter needs.”

Claim Donation Page

Text Content:

- **Header:** “Available food donations near you”
- **Food Cards:** Each card shows:
 - Food Type: “e.g., Bread, Fruits, Sandwiches”
 - Food Description: “Whole wheat bread, 2 loaves, freshly baked”
 - Quantity: “2 loaves / 5 kg / 10 items”
 - Expiry Date: “Valid until: 6 Dec 2025”
 - Pickup Location: “Donor’s location”

Features / Input Controls:

- **Scrollable Cards:** List of donations in compact cards
- **Buttons per Card:**
 - “Claim Donation” (primary action) with box/checkmark icon
- **Search / Filter Bar:** Filter by food type, expiry date, quantity
- **Map View (Optional):** Visual map showing nearby donations
- **Notifications:** Alerts for newly posted donations

Navigation / Flow:

User clicks “Claim Donation” on the landing page → selects a donation from the list →

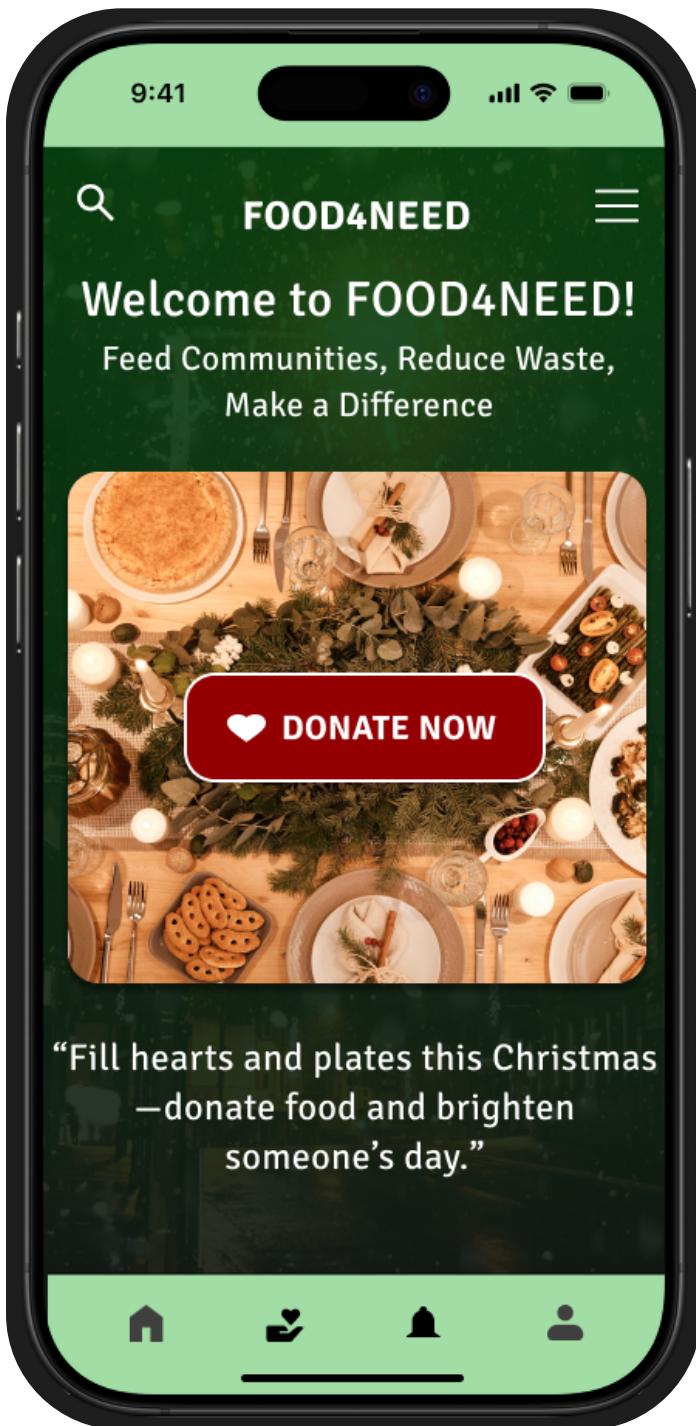
clicks “Claim Donation” button → donation status updates and donor are notified.

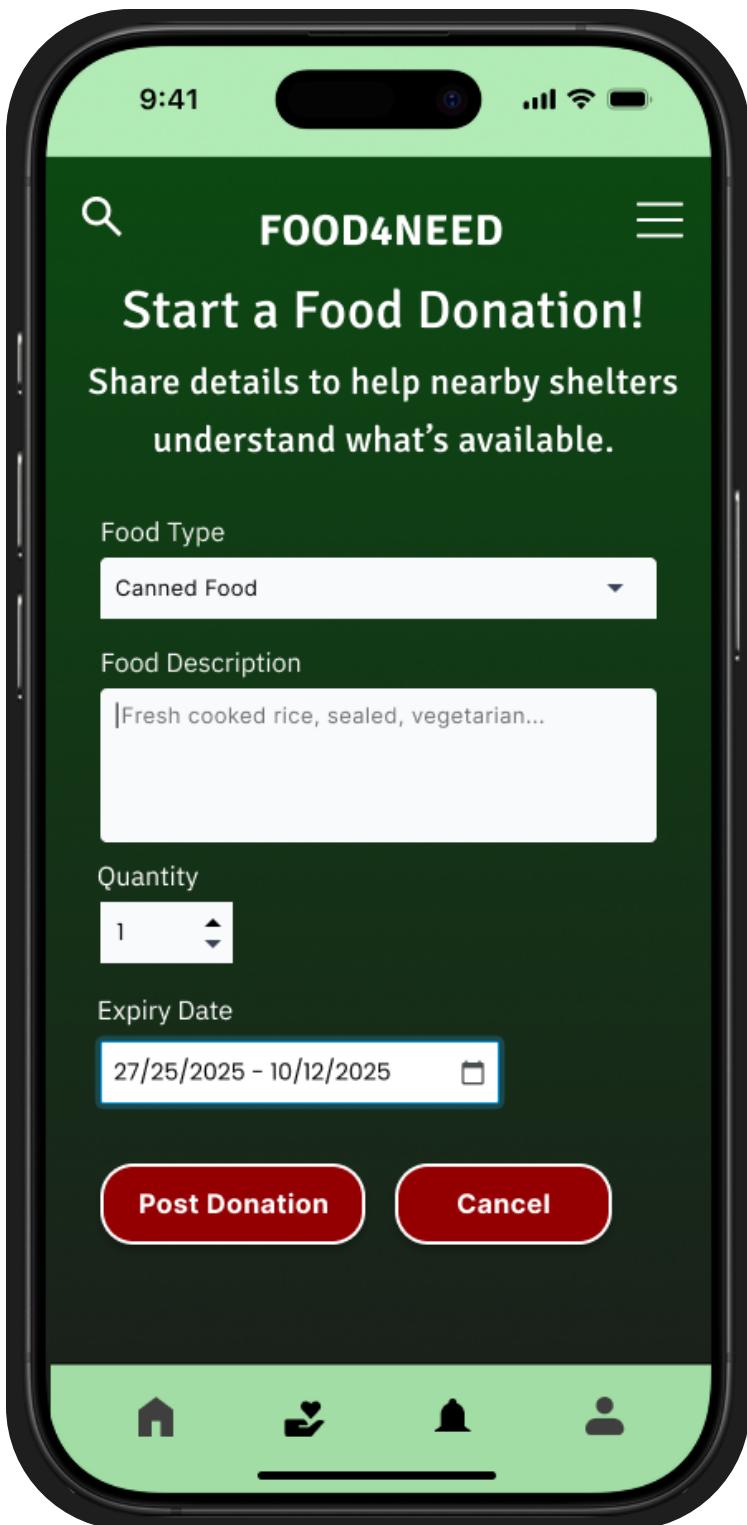
Pickup details can then be coordinated.

Prototypes

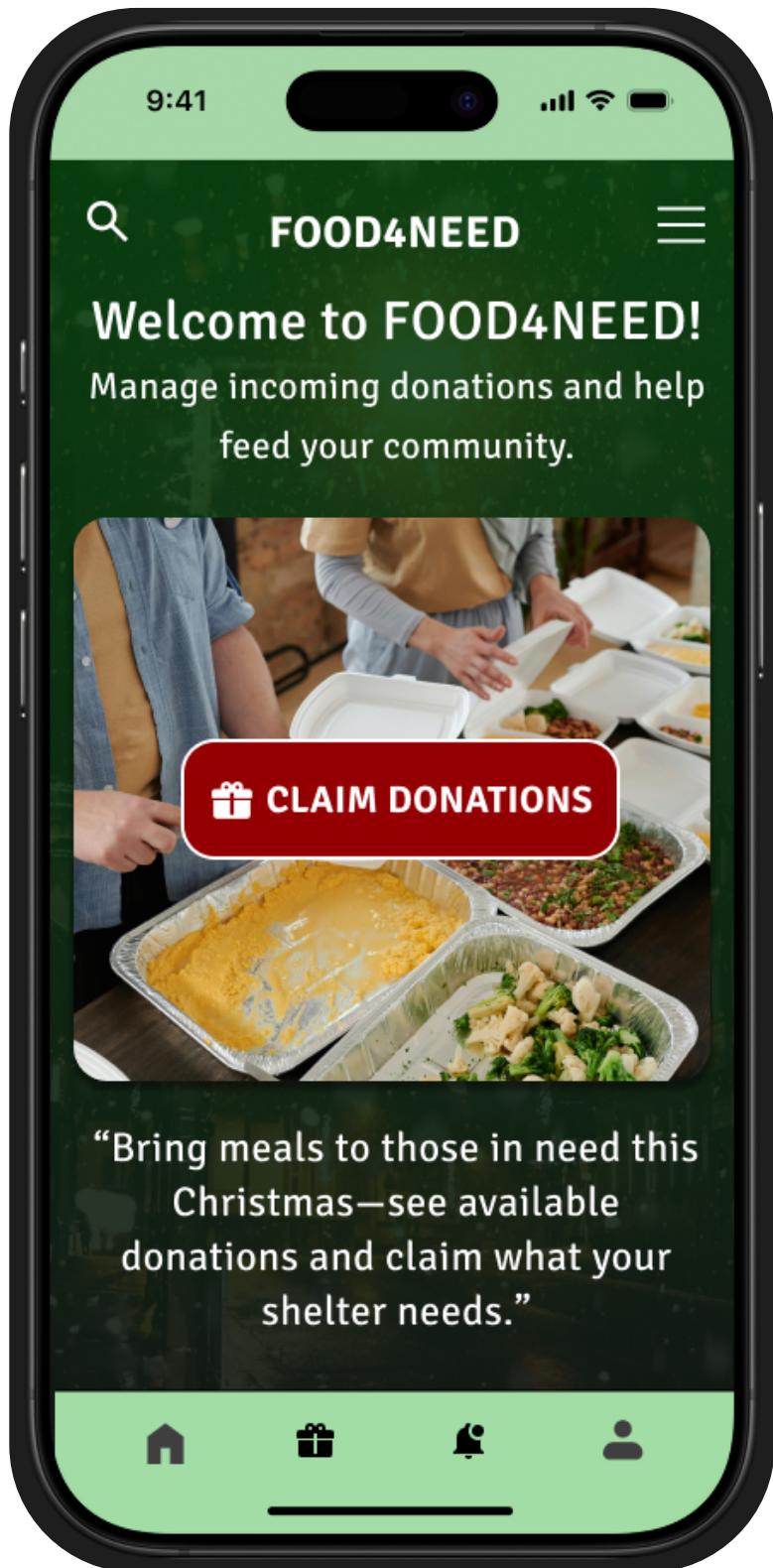
Figma Link - <https://www.figma.com/design/hCo3L1fZF50TmAPn1whVYg/AI-Film?node-id=0-1&t=v66J4AYzv9wcGWEq-1>

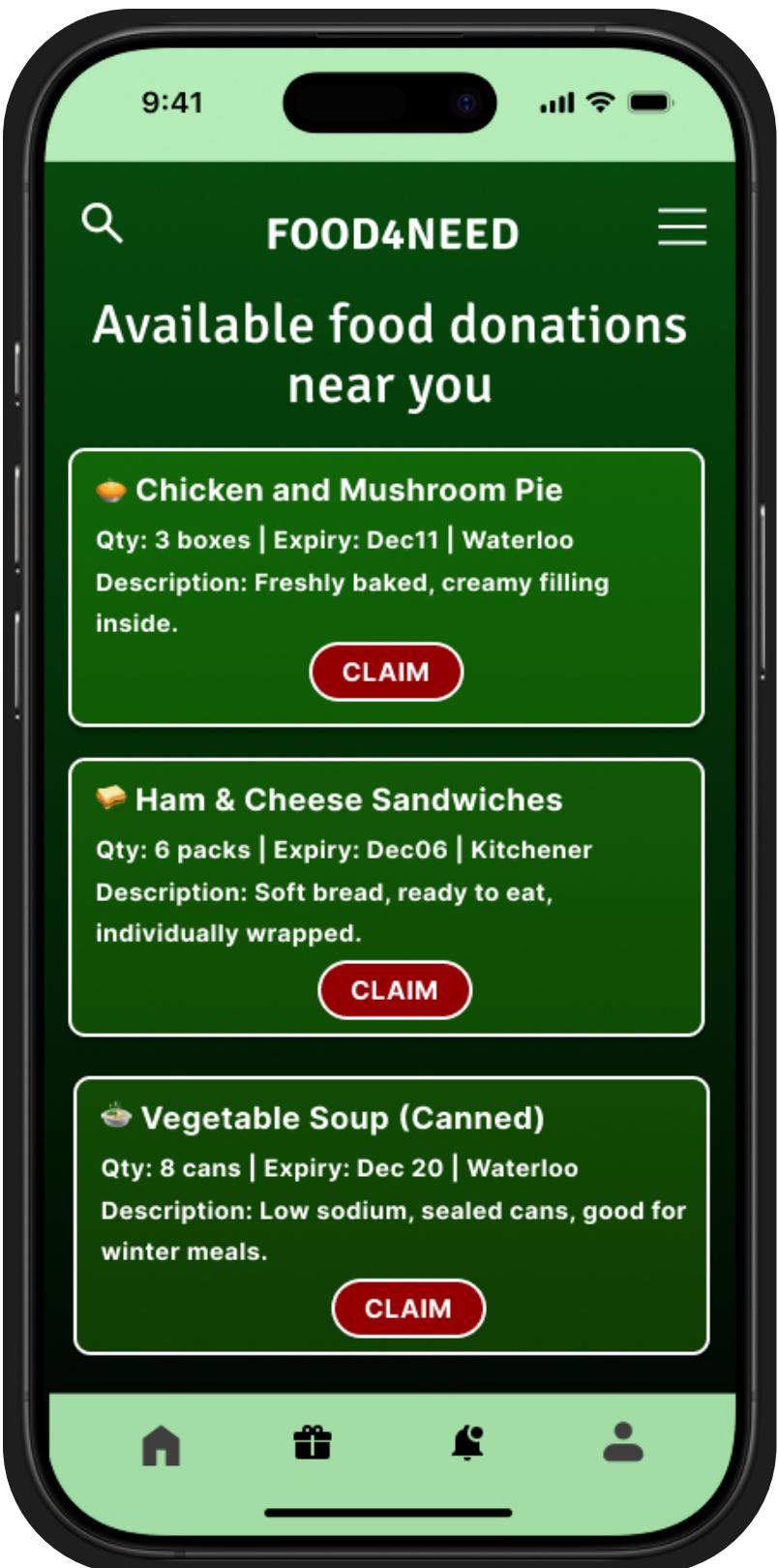
Donor Page(Donate Now)





Shelter Page(Claim Donations)





Class Diagram

The class diagram represents the structure of the application by showing the main classes, their attributes, methods, and relationships.

Class, Attribute and Method Table

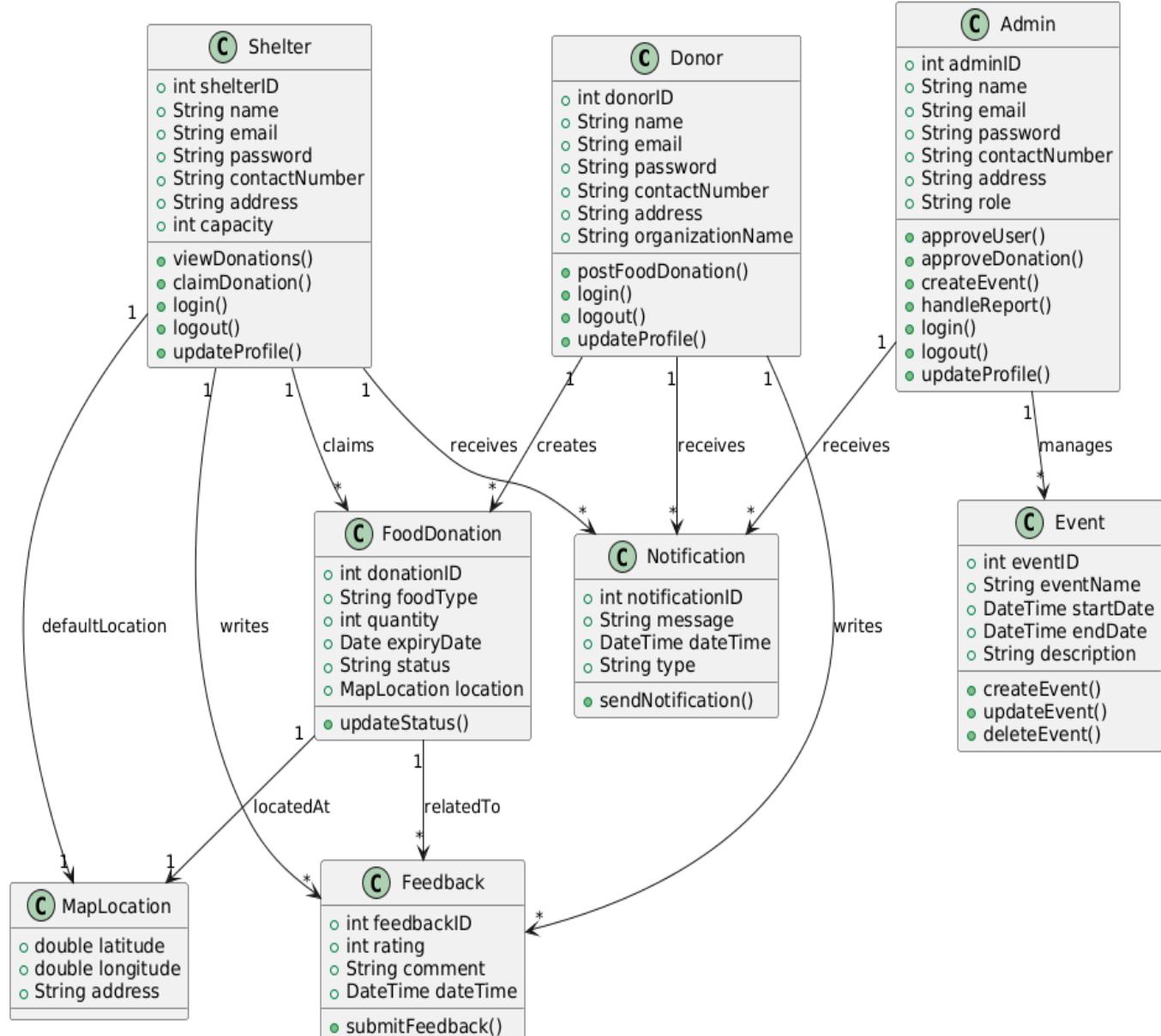
Class Name	Attributes	Methods
Donor	donorID, name, email, password, contactNumber, address, organizationName	postFoodDonation(), login(), logout(), updateProfile()
Shelter	shelterID, name, email, password, contactNumber, address, capacity	viewDonations(), claimDonation(), login(), logout(), updateProfile()
Admin	adminID, name, email, password, contactNumber, address, role	approveUser(), approveDonation(), createEvent(), handleReport(), login(), logout(), updateProfile()
FoodDonation	donationID, foodType, quantity, expiryDate, status, location (MapLocation)	updateStatus()
MapLocation	latitude, longitude, address	—
Event	eventID, eventName, startDate, endDate, description	createEvent(), updateEvent(), deleteEvent()
Notification	notificationID, message, dateTIme, type	sendNotification()
Feedback	feedbackID, rating, comment, dateTIme	submitFeedback()

Relationships

- Donor → FoodDonation (1-to-many)
- Shelter → FoodDonation (1-to-many)
- Admin → Event (1-to-many)
- User → Notification (1-to-many)
- User → Feedback (1-to-many)
- FoodDonation → Feedback (1-to-many)
- FoodDonation → MapLocation (1-to-1)
- Donor → MapLocation (1-to-1)

- Shelter → MapLocation (1-to-1)

Class Diagram



Implementation – Developing the Agile Plan

Agile and Scrum Approach

The development of the **Food4Need** system follows an **Agile Scrum methodology**, with iterative development in **three sprints of three weeks each**. This approach ensures that:

- **Iterative:** Use cases are developed in small, manageable groups so that multiple features can be implemented concurrently.
- **Agile:** The plan remains flexible, allowing changes in response to new information, requirements updates, or external constraints.
- **Scrum:** Specific roles are assigned (Product Owner, Scrum Master, Developers), sprints are planned, and progress is tracked through daily standups and sprint reviews.

Assumptions:

- Each sprint is **three weeks** long.
- The development team consists of **two developers**, a **Product Owner (Anamika)**, and a **Scrum Master (Sukhpal)**.
- The priority is to implement core functionalities first, followed by supporting features and enhancements.

Sprint Breakdown

Sprint	Duration	Use Cases	Tasks	Responsible Members	Expected Deliverables
Sprint 1	Week 1–3	Core user account and donation features	Implement Register/Login for Donors and Shelters Manage Profile Post Food Donation Listing System validation & notifications	Anamika: Frontend forms, UI mockups Sukhpal: Backend validation, database setup	Functional login/register system, donor/shelter profile management, donation submission prototype
Sprint 2	Week 4–6	Donation tracking and claim features	View Available Donations Claim Donation Food Expiry Notification	Anamika: UI updates for donation list and claim	Donation listing with live claim, expiry alerts, admin approval

			Admin approval of donations	Sukhpal: Backend approval workflow, notification system	workflow implemented
Sprint 3	Week 7–9	Advanced features, feedback, events, and dashboard	Feedback/Review submission Live Map View Create/Edit/Delete Events Community impact dashboard Testing & bug fixes	Anamika: Map integration, event UI, dashboard Sukhpal: Backend integration, data analytics, final testing	Fully functional app prototype with donation, claims, map, events, feedback, and dashboard

Scrum Roles and Responsibilities

Role	Member	Responsibilities
Product Owner	Anamika	Define product vision, prioritize backlog, approve features, maintain requirements documentation
Scrum Master	Sukhpal	Facilitate sprint planning, remove blockers, track progress, ensure Agile best practices are followed
Developers	Anamika & Sukhpal	Implement features, perform unit testing, integrate frontend and backend, update documentation

Agile Plan Notes

- Iterative Development:** Each sprint delivers working components that can be reviewed and improved in subsequent sprints.
- Flexibility:** Requirements may change based on client feedback, testing results, or technical feasibility.
- Daily Standups:** Short daily meetings will track progress, discuss challenges, and adjust tasks.
- Sprint Review and Retrospective:** At the end of each sprint, completed features will be reviewed and feedback will be incorporated for the next sprint.
- Testing:** Unit, integration, and usability testing are integrated into each sprint to ensure quality throughout development.

Food4Need Agile Implementation Plan



AI Assistance

AI tools (ChatGPT) were used only for summarizing, refining wording, and organizing content. All research, planning, system design, and development activities were completed by our team.

Summary

In this assignment, we developed a structured prototype for the Food4Need mobile application, focusing on two major features—Post Donation for donors and Claim Donation for shelters. We began by identifying the personas, their needs, and their journey within the application. From that understanding, we translated requirements into screen layouts, defined text content, and selected appropriate input controls that match real-world usage scenarios. The donor journey was designed to allow users to post available surplus food easily, while the shelter side ensured that authorized shelters could browse and request donations based on relevance, expiry dates, and location suitability.

Additionally, system-level planning was completed by designing class diagrams, establishing entity relationships, and defining how different users and their data flow within the platform. STRIDE-based risk analysis helped identify potential security concerns, such as misuse of data, unauthorized access, and incorrect status updates. The final design prototype allowed us to validate that the features work logically, pages connect meaningfully, and both user groups achieve intended outcomes with minimal effort. Ultimately, the assignment demonstrated how a structured approach—from conceptualization to interface design—supports building a clear and functional solution to address food distribution needs within communities.

References

- **United Nations Environment Programme (UNEP).** (2021). *Food Waste Index Report 2021*. Retrieved from <https://www.unep.org/resources/report/unep-food-waste-index-report-2021>
- **Food Banks Canada.** (2025). *HungerCount 2025: Annual Report on Food Bank Usage in Canada*. Retrieved from <https://www.foodbankscanada.ca/HungerCount>
- **Newswire.** (2025). *Food bank visits reach record highs in Canada*. Retrieved from <https://www.newswire.ca>
- **Pollara Strategic Insights.** (2025). *Survey on Food Insecurity Trends in Canada*. Retrieved from <https://www.pollara.com>
- **CP24.** (2024). *Food banks struggling to meet demand as donations lag*. Retrieved from <https://www.cp24.com>
- **Feed Ontario.** (2024). *Challenges in food donation and distribution*. Retrieved from <https://www.feedontario.ca>
- **Too Good To Go.** (2025). *Official Website*. Retrieved from <https://toogoodtogo.com>
- **Olio.** (2025). *Official Website*. Retrieved from <https://olioex.com>
- **ReFED.** (2023). *A Roadmap to Reduce U.S. Food Waste by 20 Percent*. Retrieved from <https://refed.com>
- **Second Harvest.** (2024). *Maximizing Food Recovery through Digital Platforms*. Retrieved from <https://secondharvest.ca>
- **GitHub Repository.** (2025). *Food4Need Project Repository*. Retrieved from <https://github.com/anamika9898/Food4Need>
- **Mermaid.** (2025) <https://mermaid.js.org/>
- **Figma.** (2025) <https://www.figma.com/design/hCo3L1fZF50TmAPn1whVYg/AI-Film?node-id=207-540&t=v66J4AYzv9wcGWEq-1>
- **Canva.** (2025) https://www.canva.com/design/DAGzXFo6KjU/xv7nUsU1Kf4tQUFD6ECdw/edit?utm_content=DAGzXFo6KjU&utm_campaign=designshare&utm_medium=link2&utm_source=sharebutton
- Photo by Nicole Michalou : <https://www.pexels.com/photo/top-view-of-table-set-up-for-christmas-dinner-5779183/>
- Photo by Julia M Cameron: <https://www.pexels.com/photo/people-preparing-food-packs-6995247/>
- OpenAI. (2025). ChatGPT (GPT-5.1 version) [Artificial intelligence model]. <https://chat.openai.com/>