Specification Documentation - Food Waste Management System

1. Project Overview

• Food Waste Management System connects Restaurants, NGOs, and Volunteers.
• Objective: Reduce food waste by redistributing surplus food to the needy.
• Platform: Web-based application with responsive design.

2. Stakeholders

• Restaurants: Donate surplus food.
• NGOs: Collect and distribute food.
• Volunteers: Assist in collection and distribution.
• Administrators: Manage users, roles, and reports.

3. Functional Requirements

• User Authentication: Register/Login for Restaurants, NGOs, and Volunteers.
• Role-based Dashboards: Different functionalities per role.
• Food Donation Module: Restaurants can list available food.
• Request Management: NGOs can request/claim food donations.
• Volunteer Assignment: Volunteers assist based on location.
• Notifications: Real-time alerts for donation requests and updates.
• Reports: Track donations, distributions, and impact.

4. Non-Functional Requirements

• Performance: Fast response with optimized database queries.
• Scalability: Support large numbers of users and transactions.
• Security: Password encryption, secure authentication.
• Usability: Mobile-first responsive UI.
• Availability: 24/7 access with minimal downtime.

5. Technology Stack

• Frontend: React.js with Tailwind CSS.
• Backend: Spring Boot with REST APIs.
• Database: MySQL.
• Hosting: Cloud deployment (AWS/Heroku).

6. System Modules

• Authentication Module: Register/Login with role selection.
• Donation Module: Add, update, and manage food donations.
• NGO Module: Request food and manage deliveries.
• Volunteer Module: Assign tasks and confirm completion.
• Admin Module: Manage users, monitor donations, and generate reports.

7. Future Enhancements

- Add AI-based prediction for food wastage trends.
- Introduce geo-location based volunteer assignment.
- Mobile app for Android/iOS.
- Integration with payment gateways for donations.