Phase 4: Requirement Analysis Phase

Project Title: To Supply Leftover Food to the Poor

Introduction

Requirement analysis is a crucial phase that defines what the system should achieve and how it must perform. It helps understand the needs of users — such as food donors, volunteers, and receivers — and converts them into specific technical and functional requirements. For the "To Supply Leftover Food to the Poor" project, this phase outlines all processes involved in collecting, storing, transporting, and distributing leftover food safely and efficiently.

Purpose of Requirement Analysis

The main purpose of this phase is to identify and document all requirements needed to develop a reliable system that connects food donors with volunteers and receivers. It ensures that the system:

- Reduces food wastage by quickly identifying available leftover food.
- Distributes surplus food to needy people before it spoils.
- Tracks donations, deliveries, and recipients effectively.
- Maintains hygiene, safety, and transparency throughout the process.

Methods of Requirement Gathering

To collect system requirements, the following methods were used:

- **Observation:** Studied how restaurants, events, and households handle leftover food.
- **Interview/Discussion:** Interacted with NGO workers and volunteers to understand challenges in collecting and distributing food.
- **Analysis of Existing Systems:** Reviewed existing food donation apps and identified missing features like live tracking and hygiene validation.
- **Brainstorming:** Conducted discussions to design a smooth and safe process from donation to delivery.

Functional Requirements

Functional requirements define what the system must do. The main functions include:

- **Donor Management:**
  - Allow users (restaurants, events, individuals) to register as donors.
  - Add, edit, and manage food donation details such as type, quantity, and pickup time.
- **Volunteer Management:**
  - Notify volunteers about nearby food donations.
  - Assign volunteers for collection and delivery.
- **Receiver Management:**
  - Register NGOs or community kitchens as receivers.
  - Match food supply with receiver needs.
- **Food Tracking System:**
  - Track donation status from pickup to delivery.
  - Generate reports on collected and distributed food.
- **Notifications and Alerts:**
  - Send alerts for new donations and delivery completions.
  - Notify receivers about incoming food deliveries.
- **Reports and Dashboard:**
  - Display daily donations, deliveries, and total beneficiaries served.
  - Generate summary reports for analysis and transparency.

Non-Functional Requirements

Non-functional requirements describe how the system should perform.

- **Performance:**
  - The system must handle multiple donation requests simultaneously.
  - Notifications and updates should be processed in real time.
- **Security:**
  - User accounts should be protected through authentication and encryption.
  - Only verified donors, volunteers, and receivers can access respective modules.

- **Reliability:**
    - The system must operate smoothly without data loss.
    - Backup and restore options should be available for critical data.
- **Usability:**
    - The interface should be user-friendly and accessible to people with basic mobile or computer knowledge.
    - Key functions like posting a donation or accepting delivery should be completed in few steps.
- **Scalability:**
    - The system should handle increased donors, volunteers, and receivers as the network expands.
- **Maintainability:**
    - The system should allow easy updates and integration with new features or partner organizations.

System Requirements

Hardware Requirements:

- Smartphone or computer with internet access.
- Minimum 4 GB RAM for smooth system operation.

Software Requirements:

- Android/iOS or web browser (Google Chrome, Edge).
- Database (MySQL or Firebase) for storing user and food data.
- Word or PDF software for report documentation.

Requirement Validation

Before development, all reqirements were reviewed for technical fesibility and practically the validation confimed that:

- Features are achievable with available technology.
- Processes meet social and operational goals.
- System design supports scalability and real-time coordination.

Conclusion

The Requirement Analysis Phase defines the essential functional and non-functional aspects of the “To Supply Leftover Food to the Poor” system. By outlining modules such as donor, volunteer, and receiver management, this phase ensures that the system will efficiently reduce food wastage and support hunger relief efforts. The result is a clear, structured plan for building a user-friendly, secure, and impactful platform that connects food surplus to those in need.