Project Design Phase-II

Technology Stack (Architecture & Stack)

Date: 30 October 2025
Team ID: NM2025TMID01177
Project Name: To Supply Leftover Food and Poor
Maximum Marks: 4 Marks

Technical Architecture:

The deliverable includes an architectural diagram and the technology stack information as described below.

Guidelines:

- Include all processes as application logic or technology blocks.
- Provide infrastructural demarcation (Local / Cloud).
- Indicate external interfaces (Third-party APIs, integrations).
- Indicate data storage components or services.
- Indicate any interface to AI or ML models (if applicable).

Example Reference:
Food redistribution and logistics system for sustainable communities.
Reference: *Adapted from open-source food management systems and cloud-based delivery architectures.*

Table-1: Components & Technologies

S.No.	Component	Description	Technology
1	User Interface	Donors, NGOs, and volunteers interact via web and mobile dashboards.	React.js Web UI, Flutter Mobile App
2	Application Logic-1	Handles donor registration, volunteer assignment, and pickup scheduling.	Node.js (Backend), Express.js

S.No.	Component	Description	Technology
3	Application Logic-2	Validates available food donations and volunteer locations.	REST APIs, MongoDB Queries
4	Application Logic-3	Sends notifications to NGOs and volunteers for pickup and delivery.	Firebase Cloud Messaging (FCM), Twilio SMS API
5	Database	Stores donor, volunteer, NGO, and food item details.	MongoDB (Cloud Database)
6	Cloud Database	Managed on scalable cloud infrastructure.	AWS Atlas Cloud Database
7	File Storage	Stores images of donated food and proof of delivery.	AWS S3 Bucket
8	External API-1 (Optional)	Integration with Google Maps for real-time route tracking.	Google Maps API
9	External API-2	Integration with NGO databases for verified beneficiaries.	RESTful API Integration
10	Machine Learning Model	Predicts food demand and optimizes delivery routes (future enhancement).	TensorFlow Lite, Python ML API
11	Infrastructure (Server / Cloud)	Hosted on a scalable and secure cloud platform.	AWS Cloud Infrastructure (EC2, Lambda)

Table-2: Application Characteristics

S.No.	Characteristics	Description	Technology
1	Open-Source Frameworks	Built using open-source technologies for scalability and flexibility.	React.js, Node.js, MongoDB
2	Security Implementations	Role-based access control for admins, donors, and NGOs.	JWT Authentication, HTTPS

S.No.	Characteristics	Description	Technology
3	Scalable Architecture	Microservices-based and horizontally scalable architecture.	Docker, Kubernetes, AWS Auto Scaling
4	Availability	High uptime through cloud redundancy and distributed hosting.	AWS Cloud Infrastructure
5	Performance	Optimized APIs with caching and asynchronous processing.	Redis Cache, Node.js Async Flows