Phase 3: Project Design Phase

Project Title: To Supply Leftover Food to Poor

Introduction

The design phase is one of the most crucial stages of project development. It focuses on converting planned ideas and gathered requirements into a structured and functional system model. In this phase, the design of the Salesforce-based project "To Supply Leftover Food to Poor" is created to illustrate how the system will operate, what components it includes, and how data will flow between different modules. The main goal of the design phase is to ensure that the system is user-friendly, efficient, and capable of meeting the objectives of minimizing food wastage while ensuring timely food supply to needy individuals.

System Design Overview

The Food Donation Management System is designed using Salesforce CRM tools and follows a modular and scalable approach. The system includes various components such as custom objects, relationships, flows, reports, and dashboards. The design ensures that donors, NGOs, volunteers, and food donations are all interconnected, allowing smooth operation from food registration to delivery tracking. The architecture emphasizes automation, transparency, and efficient communication among all parties.

Architectural Design

The system architecture is based on the Client-Server Model provided by Salesforce's secure cloud infrastructure.

- **Client Side:** Accessed by users such as donors, NGOs, and volunteers through Salesforce's Lightning web interface or mobile app.
- **Server Side:** Salesforce's cloud servers handle all data processing, storage, and reporting functions securely.

All users interact with the Salesforce platform, which manages workflows, automation, and dashboards. This architecture ensures that all operations—from data input to delivery tracking—are performed in real-time without manual intervention.

Entity Relationship (ER) Design

The ER diagram defines the logical structure of the database within Salesforce. The key entities and their relationships are:

- **Donor Object:** Stores details such as Donor Name, Contact Information, Location, and Type (Restaurant, Hostel, Event, etc.).
- **Food Object**: Contains fields like Food Type, Quantity, Expiry Time, and Availability Status.
- **NGO Object**: Stores the name, address, and contact details of recipient organizations.
- **Volunteer Object**: Contains volunteer name, contact, and assigned delivery zones.
- **Delivery Object:** Tracks collection and delivery information such as Pickup Time, Drop Location, and Delivery Status.

Relationships:

- A Donor can provide many Food donations.
- Each Food donation can be collected by one or more Volunteers.
- Each Delivery is associated with one NGO and one Volunteer.
- Each NGO can receive multiple Deliveries.

This structure ensures that every record—from donation to delivery—is properly linked, enabling full traceability of food movements.

Data Flow Design

The data flow of the system can be described in the following steps:

- The Donor registers and adds a new Food Donation record.
- The system automatically alerts nearby NGOs and Volunteers through Salesforce Flow.
- A Volunteer accepts the request and collects the food.
- A Delivery Record is created linking Donor, Volunteer, and NGO details.

- Once the delivery is completed, the system updates the status automatically and generates reports and dashboards showing donation activity and impact.

This design ensures automation, reduces manual effort, and enables real-time tracking of food distribution.

User Interface Design

The user interface is designed using Salesforce Lightning App Builder to make the system easy to navigate and visually clear.

- **Home Page:** Displays summary dashboards such as total donations, volunteers active, and total food delivered.
- **Donor Page:** Allows donors to register, create, and view their food donation history.
- NGO Page: Shows food requests received, accepted, and fulfilled.
- **Volunteer Page:** Lists assigned pickups and delivery routes.
- **Delivery Page:** Displays the status and details of ongoing and completed deliveries.
- **Reports & Dashboards**: Provide graphical summaries of donations, active volunteers, and beneficiaries served.

The interface focuses on simplicity and clarity to ensure usability by users with limited technical knowledge.

Functional Design

The Salesforce system supports the following key functions:

- **Donor Management:** Add, update, and track donor information.
- **Food Donation Management:** Register and manage leftover food details, including quantity and expiration.
- **Volunteer Assignment:** Automatically assign volunteers to nearby donations using workflows.
- **NGO Coordination:** Notify NGOs about available food and track their responses.
- **Delivery Tracking:** Record pickup and delivery details and monitor completion status.
- **Automation:** Salesforce Flows send real-time alerts and update records automatically.
- **Reports and Dashboards:** Generate analytical data to measure impact and performance over time.

Security and Access Design

To ensure secure data handling, the system includes proper access control and permission settings:

- Only authorized users can modify donation or delivery records.
- Admins have full access to all objects and system settings.
- Donors, NGOs, and Volunteers have restricted access based on their roles.
- Salesforce's built-in encryption ensures the confidentiality of personal and food-related data.

This structure guarantees that sensitive information is protected at all times.

Output Design

The expected outputs from the system include:

- Automated dashboards showing total donations, deliveries, and beneficiaries.
- Notifications for new food donations or completed deliveries.
- Summary reports tracking volunteers, NGOs, and donors.
- Impact metrics such as total food saved and number of people fed.

These outputs provide real-time insight into project performance and impact, enabling efficient management and reporting.

Conclusion

The Project Design Phase defines the structure and functionality of the "To Supply Leftover Food to Poor" system. With well-defined entities, relationships, and automation, the design ensures effective coordination between donors, volunteers, and NGOs. By utilizing Salesforce's cloud platform, the system provides a secure, scalable, and user-friendly environment that promotes transparency and accountability. This design forms a solid foundation for implementing a real-world food donation management system that helps reduce hunger and food waste effectively.