PHASE IV: PROJECT DESIGN

Date	06 November 2025
Team ID	NM2025TMID08097
Project Name	To supply Leftover Food to Poor
Maximum Marks	4 Marks

Title: Project Design Phase for “ *FoodConnect – To Supply Leftover Food To Poor*”

1. Objective

The objective of the **Design Phase** is to create the **visual, technical, and logical architecture** of the *FoodConnect* application.

This phase translates the requirements defined earlier into a detailed design, ensuring that the system’ s structure, interface, and automation flow align with project objectives — minimizing food waste and optimizing delivery logistics.

This design focuses on:

Interface Design (UI/UX)

Automation Design (Flows and Triggers)

Security Model Integration

Dashboard & Report Visualization

2. Design Overview

The design stage uses Salesforce’ s declarative and programmatic features to model a robust, user-friendly system.

The FoodConnect app design is structured around:

Five Core Custom Objects (Venue, Drop-Off Point, Volunteer, Task, Execution Details)

Automated Flows for data entry and record creation

Apex Triggers for pre-save validations and formula execution

Dashboards for live data visualization

Profiles & Sharing Rules for access management

3. User Interface (UI) Design

3.1 Lightning App Design

A custom Lightning App named “ **FoodConnect”** was created to give NGOs and volunteers a seamless experience.

Steps:

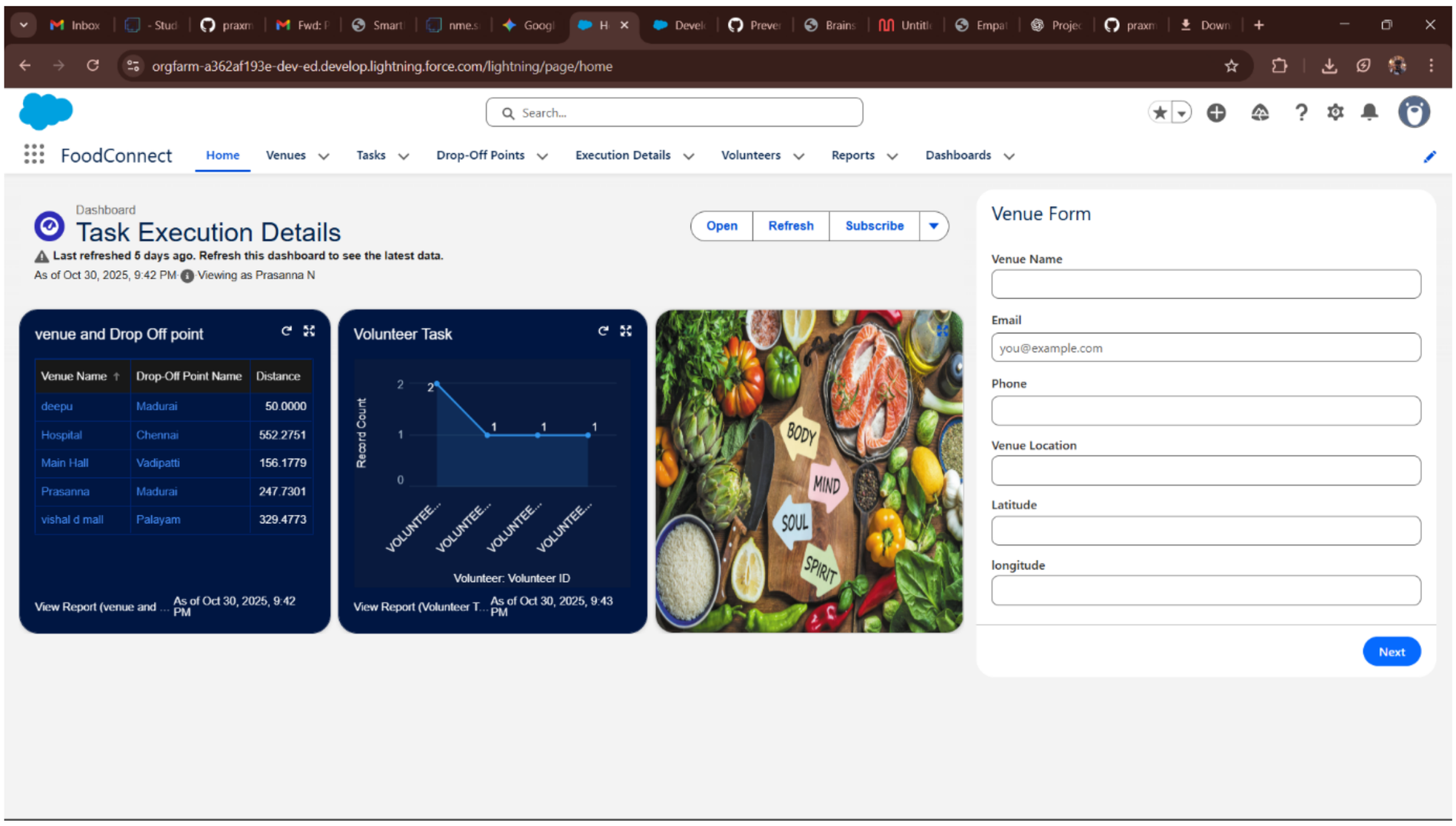
1. Navigate to Setup → App Manager → New Lightning App.
2. Add App Name, Description, and choose the app logo.
3. Configure navigation with the following tabs:
    - Home
    - Venues
    - Drop-Off Points
    - Tasks
    - Execution Details

- Volunteers
- Reports & Dashboards

Design Principle Used:

Minimalist UI: Clean interface, large form spacing for clarity.

Role-based Navigation: Admins access all tabs, volunteers see task-related ones only.



3.2 Home Page Design

The Home Page serves as the operational dashboard and record entry point.

Components Added:

Screen Flow: "Venue Form Flow" for fast record creation.

Embedded Dashboard: Shows total deliveries, distances, and volunteer activity.

Informational Card: Displays a motivational banner image on food donation impact.

4. Automation Design

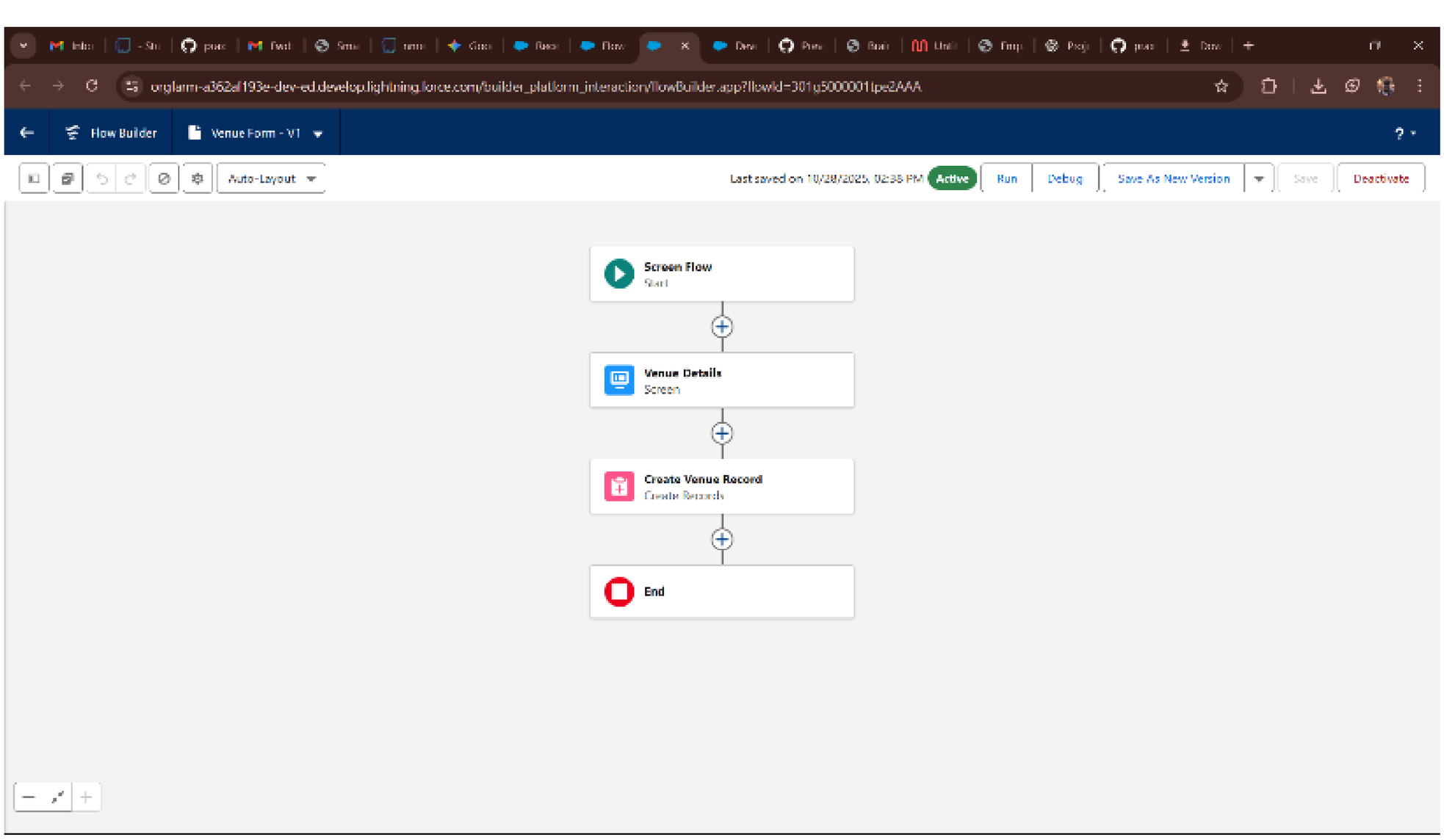
Automation ensures a **hands-free workflow** by minimizing manual interventions and maintaining data accuracy.

4.1 Screen Flow: Venue Form Flow

The “ Venue Form Flow” simplifies data entry for NGO admins.

Flow Steps:

1. Add Screen Elements → Venue Name, Email, Phone, Latitude, Longitude.
2. Use **Create Record Element** → Store data in the Venue Object.
3. Add confirmation screen → “ Venue Record Created Successfully.”



4.2 Apex Trigger Design

A custom **Apex Trigger** was designed on the *Drop-Off Point* object to auto-calculate the **Distance Field** using the formula:

```
DISTANCE(Drop_Off_Point_Location__c, Venue__r.Geolocation__c, 'km')
```

Trigger Steps:

1. Event: *Before Insert*
2. Function: Fetch associated Venue record.
3. Calculate distance dynamically.
4. Store result in “ Distance__c” field.

Rationale:

This ensures every new Drop-Off Point record includes an accurate distance value before saving, enabling precise task assignment.

5. Security Design

The **Security Model** in Salesforce ensures data privacy and controlled access among users.

5.1 Profile-Based Access

Volunteer Profile: Read and Create permissions on Volunteer and Task objects.

NGO Admin Profile: Full CRUD access to all objects.

System Admin: Access to all configurations.

5.2 Criteria-Based Sharing Rules

Two automated rules were defined:

If *Distance < 15 km* → Share with **Isha Volunteers Group**.

If *Distance > 30 km* → Share with **NGO Coordinators Group**.

Benefit:

This allows automatic filtering of records by geographic location, keeping data relevant and clutter-free.

6. Reporting and Dashboard Design

6.1 Reports

Custom report types were created to link:

Venue → Drop-Off Point → Task

Volunteer → Task → Execution Details

6.2 Dashboard Components

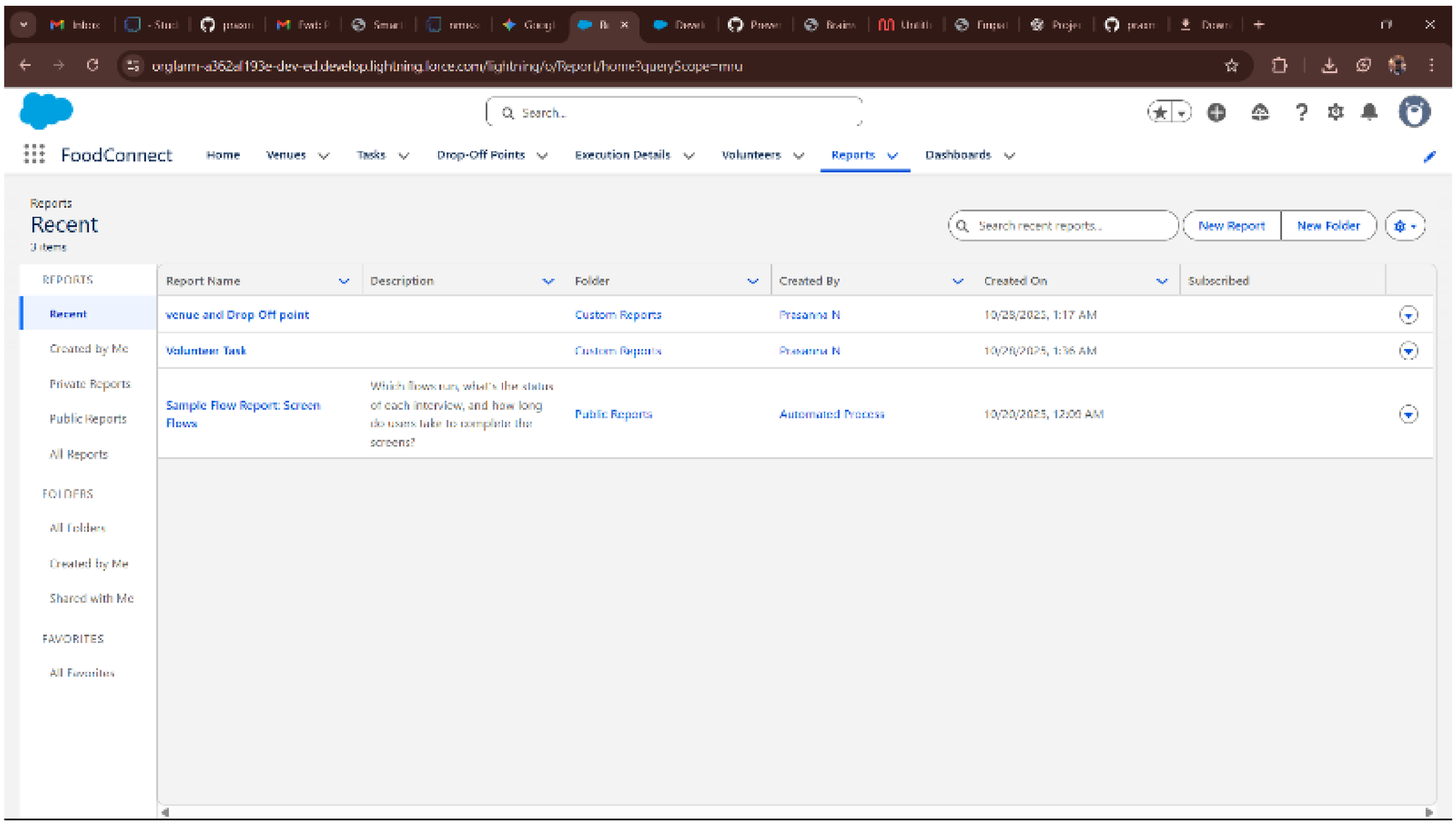
The dashboard visualizes real-time project impact using:

Bar Chart: Total deliveries by volunteers.

Pie Chart: Food category distribution (Veg / Non-Veg).

Line Chart: Monthly volunteer participation trends.

Table View: Task completion details.



7. System Architecture Design

The system architecture integrates UI, automation, database, and reporting modules into one functional ecosystem.

Layer	Component	Function
Presentation Layer	Lightning App UI	User interaction interface
Logic Layer	Apex Triggers, Flows	Automates business logic
Data Layer	Custom Objects, Fields	Manages records and relationships
Analytics Layer	Dashboards, Reports	Provides insights and metrics

8. Design Constraints

Constraint	Impact	Solution
Formula field performance under	Slower computation	Use indexed fields for

Constraint	Impact	Solution
large datasets		faster lookup
User error in Flow inputs	Invalid data records	Add validation rules
Dashboard refresh limits	Slight delay in real-time updates	Schedule refresh every 15 mins

9. Future Design Considerations

1. Integration with **Google Maps API** for advanced geolocation tracking.
2. Development of **Mobile App Interface** using Salesforce Mobile SDK.
3. AI-based **Food Demand Prediction System** for NGOs.

These enhancements will further expand FoodConnect’ s scalability and intelligence.

10. Summary

The **Project Design Phase** transformed theoretical requirements into a **visual and technical framework**.

Through the use of Salesforce Lightning, Flow Builder, Apex, and Dashboards, *FoodConnect* achieves an ideal balance between **automation, user experience, and performance**.

Key Achievements:

Modern, intuitive Lightning App interface

Fully automated data flow through Flows and Triggers

Secure and role-based data accessibility

Real-time reporting with visual dashboards