Food Booking and Multi-Franchise Outlet Management System

1. Phoenix FoodBox

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2. Domain

Full Stack Application Development using Angular and Spring Boot

3. Problem Statement

Large food franchise chains operate multiple outlets across different locations. Most existing food ordering systems are designed for standalone restaurants and do not support centralized franchise control, outlet-level configuration, or role-based operational workflows. They also lack slot-based booking and load-based routing of orders, leading to:

- operational inefficiencies
- outlet overload during peak periods
- inconsistent pricing and menu management
- manual coordination between outlets
- higher order rejection and customer dissatisfaction

There is a need for a unified platform that enables centralized franchise governance, outlet-wise menu and pricing control, slot-based order booking, and intelligent routing of orders based on capacity and availability.

4. Project Objective

To design and develop a full-stack web application that provides a centralized platform for:

1. onboarding and managing multiple food franchise brands
2. managing multiple outlets under each franchise
3. slot-based booking for dine-in and takeaway orders
4. automated order routing based on proximity and outlet load
5. role-based access and operational workflows
6. real-time tracking of order lifecycle and outlet performance

The system aims to improve operational efficiency, reduce congestion during peak hours, and enhance customer experience.

5. Key Features

Customer Features

* Franchise and outlet browsing
* Selection of dine-in reservation, takeaway, or scheduled order
* Slot availability verification
* Menu browsing and cart management
* Order placement and mock payment
* Real-time order status tracking
* Feedback and rating submission

Franchise Owner Features

* Franchise registration and approval workflow
* Outlet onboarding and activation
* Base menu configuration with outlet-level price overrides
* Franchise-level analytics and revenue insights

Outlet Manager Features

* Order acceptance and preparation workflow
* Slot capacity and load monitoring
* Order lifecycle management:
  Placed -> Accepted -> In-Progress -> Ready -> Completed

Platform Admin Features

* Franchise and outlet approval governance
* Audit and monitoring controls
* System-level violations and rule monitoring
* Platform-wide performance analytics

6. System Modules

1. User Authentication and Role Management
2. Franchise Registration and Approval
3. Outlet Management Module
4. Menu and Catalog Management
5. Slot Booking and Scheduling Engine
6. Order Management and Routing Engine
7. Real-Time Order Tracking Module
8. Feedback and Analytics Module
9. Admin Governance and Audit Module

7. Technology Stack

Backend

- Spring Boot
- RESTful Web Services
- Spring Security with JWT
- Hibernate / JPA
- MySQL / PostgreSQL

Frontend

- Angular

8. High-Level System Architecture

The Angular client interacts with the Spring Boot REST API layer, which processes requests through the service and business logic layer and persists data into the relational database. Slot scheduling and order routing logic operate within the service layer to support intelligent allocation of orders and resources.

9. Workflow Summary

1. Franchise owner registers and submits onboarding request
2. Admin reviews and approves franchise and outlets
3. Outlets configure menus and pricing
4. Customer selects franchise, outlet, booking mode, and slot
5. System validates slot availability
6. Order is placed and routed to the optimal outlet
7. Outlet processes order through defined workflow
8. Customer tracks order in real time
9. Feedback is recorded and reflected in analytics

10. Design and Performance Considerations

The system is designed to support:

- scalable multi-franchise expansion
- efficient distribution of orders across outlets
- reduced peak-hour congestion
- centralized control over pricing and operations

11. Project Outcomes

The project demonstrates capability in:

- multi-tenant enterprise application design
- workflow-driven role-based access
- time-slot-based booking and scheduling
- real-time operational monitoring

12. Future Enhancements

- Integration with delivery partner APIs
- Digital payment gateway integration
- Customer loyalty and rewards system
- AI-based demand prediction and outlet load forecasting
- Recommendation-based meal suggestions

13. Conclusion

The Food Booking and Multi-Franchise Outlet Management System provides a scalable and structured solution for franchise-based food businesses by enabling centralized administration, efficient outlet operations, and an improved customer booking and ordering experience.