BARQI BAZAR

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FINAL APPROVAL

It is certified that we have reviewed the project report titled **Barqi Bazar** and it is our judgment that this project is of sufficient standard to warrant its acceptance by the University of Kotli Azad Jammu and Kashmir for BS Software Engineering as a partial fulfilment of the degree requirements. This project is submitted by **Saran Zafar**, registration number **2021-UOK-04232** and **M Ifraheem**, registration number **2021-UOK-04230**.

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DECLARATION

We declare that this report, neither as a whole nor as a part, has been copied from any other source. It is further declared that we have completed our project entirely based on our personal effort made under the sincere guidance of our teachers. No portion of the work presented in this report has been submitted in support of any application for any other degree or qualification of this or any other university or institute of learning. If any part of this project and write-up is proved to be copied out or there is any duplication of code, then we will be responsible for the consequences.

Saran Zafar

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ACKNOWLEDGEMENT

All praise and glory go to Allah, who has blessed us with the courage and knowledge to achieve our goal. We can never thank Him enough for His countless blessings on us. Praise Prophet Mohammad (SAW), who is and will always be a source of guidance and knowledge for humanity.

For us, a milestone of this nature would never have been possible without the support of a galaxy of some truly loving and kind people in our life. No words can fully describe our feelings of respect and gratitude for our affectionate parents, supporting sibling and friends, whose love, encouragement, and prayers invariably buoyed us up. Your concern, love and support can never be paid back.

We owe a lot of sincere gratitude to our respected supervisor, Dr. Khurrum Mustafa Abbasi and our respected teachers, whose true guidance, positive criticism, and sincere encouragement made us get to our destination. He became a source of inspiration for us and kept us moving in the right direction towards our goal.

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ABSTRACT

This project proposes Barqi Bazar, a service oriented smart commerce platform that addresses key challenges in local retail operations, including lack of digital integration, uncontrolled online product listings, and inefficient coordination between stores, customers, and delivery riders. The system integrates an offline capable Point of Sale (POS) system with administrative portals for controlled product approval and a centralized platform for order processing and delivery management. By enabling structured product proposals, stock validation, rider bidding, and city based franchise management, Barqi Bazar provides a scalable and controlled approach to bridge offline retail with online commerce. The proposed system improves operational efficiency, ensures product quality, and supports coordinated delivery services across multiple cities and franchises.

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Chapter 1

Introduction

1.1 Introduction

The increasing demand for digital commerce and faster fulfilment in urban areas has created pressure on local retail stores to connect their physical operations with online marketplaces and delivery networks. Many small and medium sized stores still depend on traditional Point of Sale (POS) setups that work only for in store selling and basic inventory handling. These systems typically operate in isolation, making it difficult for stores to publish products online, manage online orders, and coordinate delivery activities in a structured way. At the same time, common online marketplaces allow open product listing without strong approval control, which can lead to inconsistent product quality and poor standardization across vendors.

Barqi Bazar is proposed as a service oriented smart commerce platform that bridges offline retail operations with online selling and delivery management. The system is designed around a controlled workflow where store administrators manage products and sales using an offline capable POS, while franchise administrators supervise and approve product proposals before products become visible online. Customers can place orders through the platform, and delivery is coordinated through a rider bidding mechanism that supports efficient assignment. In addition, the system supports city and franchise segmentation to manage multi region operations in a structured manner.

The key functionalities of the proposed system include:

- **Offline capable POS Operations:** Store administrators can perform product management and sales transactions through a POS system that remains usable even when connectivity is unreliable, ensuring business continuity.
- **Controlled Product Proposal and Approval:** Products intended for online selling are submitted as proposals by store administrators and reviewed by franchise administrators for acceptance or rejection, ensuring quality control before publishing.
- **Order Processing and Delivery Coordination:** Customer orders follow a structured lifecycle including stock validation, rider bidding, and routing of orders to the appropriate store and rider based on operational rules.

By integrating these features, Barqi Bazar aims to provide a controlled and

scalable environment for local commerce, enabling stores to participate in online selling while maintaining governance through franchise level approval and city based management.

1.2 Related Work

Research and industry solutions in retail technology generally fall into three areas: (i) traditional POS systems, (ii) online marketplaces, and (iii) delivery/logistics platforms. Traditional POS solutions focus on fast billing and local inventory but are limited in their ability to integrate with online selling and centralized management. Online marketplaces provide digital exposure but often do not enforce structured approval workflows. Delivery platforms provide operational delivery support but are typically not integrated with store level inventory and sales processes. Barqi Bazar combines these domains into a controlled, service oriented workflow aligned with real retail operations.

1.2.1 Offline first POS and Retail Operations

Offline first POS systems are designed to allow stores to continue operations during unstable connectivity. Such systems commonly focus on maintaining local operational capability for product handling and sales, and later synchronizing data when connectivity is available. This approach reduces downtime and improves reliability for small stores operating in constrained environments.

1.2.2 Controlled Product Publishing in Marketplaces

Many open marketplaces allow vendors to publish products immediately. While this improves availability, it can reduce platform trust due to inconsistent pricing, poor product descriptions, and lack of verification. Controlled publishing models, where products pass through an approval stage, improve consistency and governance. Barqi Bazar adopts this idea by introducing product proposals and franchise level approval before products become live.

1.2.3 Delivery Assignment and Rider Coordination

Modern commerce platforms require structured delivery coordination to ensure timely fulfilment. Delivery assignment models vary from direct dispatch to bidding

based assignment. Bidding can allow rider participation and support operational flexibility. Barqi Bazar uses rider bidding as a controlled mechanism, allowing the system to select an appropriate rider for delivery jobs after stock validation and order routing.

1.2.4 Multi city and Franchise based Management

Large scale commerce systems require geographical segmentation. City based management supports region specific operations, rider availability control, and routing decisions. Franchise based oversight supports governance across multiple stores and ensures uniform operational rules. Barqi Bazar includes both city and franchise management to support scalability.

1.3 Objectives

The objectives of this project are as follows:

- To develop an offline capable POS system that supports product management and sales transactions for store administrators.
- To implement a controlled product proposal workflow where products are reviewed and approved by franchise administrators before being published online.
- To support customer ordering with a structured order lifecycle including stock validation and order routing.
- To enable delivery coordination using a rider bidding mechanism for efficient and flexible delivery assignment.
- To support multi city and franchise based management for scalable operations and governance.

1.4 Problem Statement

Local retail stores often struggle to participate in online commerce due to disconnected systems. Traditional POS solutions support in store operations but do not provide structured online publishing, centralized approvals, or integrated order fulfilment. Open marketplaces allow product listing without strong governance, resulting in inconsistent product quality and pricing. Furthermore, lack of coordination between stores, riders, and operational regions creates delays and operational confusion. There is a need for a controlled system that bridges offline

retail operations with online selling and structured delivery management under franchise and city based governance.

1.5 Methodology

The development of Barqi Bazar follows a structured software engineering process to ensure clarity, maintainability, and consistent documentation. The project is planned using a waterfall style progression where each phase is completed and validated before moving to the next. This supports strong documentation and clear alignment with the IEEE style report structure.

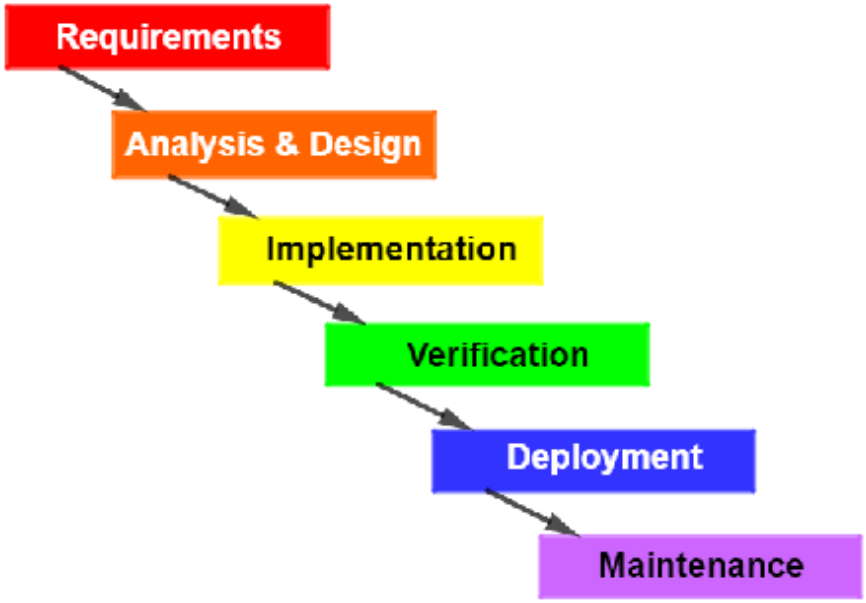

Figure 1.1: Waterfall model

1.5.1 System Architecture

Barqi Bazar follows a **service oriented architecture** where major responsibilities are separated into logical services and platform components. The POS system supports store side operations, the administrative portals support management and approval, and the platform coordinates catalog publishing, order processing, and delivery assignment. This separation improves modularity and allows future enhancements without rewriting the entire system.

1.5.2 Technology Stack

The following technologies are used in the development of this project:

- **Frontend:** Web based interfaces are used for administrative portals and customer access, designed using modern responsive UI practices.
- **POS Application:** The POS component provides store operations and supports offline usage, focusing on product handling and sales.
- **Backend Platform:** A centralized backend platform manages product proposals, approvals, orders, and delivery coordination.
- **Database:** A database is used for storing users, products, proposals, orders, riders, and franchise/city information.

1.5.3 Development Approach

The development approach is divided into the following phases:

1. **Requirement Analysis:** Identify actors (store admin, franchise admin, customer, rider) and define required workflows.
2. **System Design:** Prepare UML diagrams including use case, sequence, component, and ER diagrams to model system structure and behavior.
3. **Implementation:** Develop the POS and portals and integrate platform level workflows for proposals, orders, and delivery coordination.
4. **Testing:** Validate core workflows such as POS login, product management, sales, proposal approval, order processing, and rider bidding.

1.6 System Architecture

Barqi Bazar is structured around a service oriented design that separates store operations from platform governance and delivery coordination. The major parts of the system include:

- **POS System:** Used by store administrators to manage products and sales.
- **Store Admin Portal:** Used to manage and submit product proposals for online publishing.
- **Franchise Admin Portal:** Used to review proposals, approve/reject products, and manage city/franchise operations.
- **Customer Ordering Interface:** Allows customers to place orders through the platform.
- **Rider Interaction Layer:** Supports rider bidding for delivery assignment and delivery coordination.

This architecture supports controlled commerce where store operations remain practical while platform governance ensures quality and consistency.

1.7 Technology Stack

Barqi Bazar is implemented using a modern technology stack suitable for web based systems and service oriented workflows. The system relies on web interfaces for portals, a POS application for store operations, and a backend platform for workflow coordination. A database persists operational records and ensures data consistency across users, products, proposals, and orders.

1.8 Functional Requirements

The following are the key functional requirements of Barqi Bazar, categorized by system responsibilities and actors.

1.8.1 Store Admin (POS Operations)

- The system must allow store administrators to login to the POS securely.
- The POS must allow store administrators to manage product data (add/update).
- The POS must support sales processing and update stock accordingly.
- The POS must allow store administrators to logout and clear session state.

1.8.2 Product Proposal and Approval (Contract Flow)

- The system must allow store administrators to select products and create proposals for online publishing.
- The platform must store proposals and maintain status (submitted/approved/rejected).
- The franchise administrator must be able to review and accept or reject proposals.
- Approved proposals must result in the product becoming live on the online marketplace.

1.8.3 Customer Ordering and Order Processing

- The system must allow customers to place orders through the platform.
- The platform must validate stock availability before confirming the order.
- The platform must route the order to the relevant store for fulfilment.

1.8.4 Rider Bidding and Delivery Assignment

- The system must allow riders to participate in bidding for delivery jobs.
- The platform must assign delivery based on the bidding workflow.
- The system must update delivery assignment status for operational coordination.

1.8.5 Franchise and City Management

- The system must allow franchise administrators to manage franchises and cities.
- The system must support rider assignment and availability under city level operations.

1.9 Comparison with Existing Systems

To highlight the advantages of Barqi Bazar, a comparison is made with common existing systems. The key differences include offline capable POS integration, controlled product approval, and structured delivery assignment.

Table 1.1: Comparison of Existing Systems with Proposed System

Feature	**Existing Systems**	**Proposed System (Barqi Bazar)**
POS Integration	POS works only for in store operations	Offline capable POS integrated with platform workflows
Product Publishing	Open listing or manual coordination	Controlled proposal submission with franchise approval
Order Processing	Limited multi store coordination	Stock validation, routing, and structured order lifecycle
Delivery Assignment	Manual dispatch or non integrated delivery apps	Rider bidding and platform controlled delivery assignment
Governance	Limited standardization across vendors	Franchise and city based management for control and scaling

Chapter 2

Software Requirements Specification

2.1 Introduction

2.1.1 Purpose

The purpose of this Software Requirements Specification (SRS) document is to provide a detailed and structured description of the requirements for the Barqi Bazar system. Barqi Bazar is a service oriented smart commerce platform designed to integrate offline Point of Sale (POS) operations with an online marketplace and delivery coordination system. This document serves as a reference for system designers, developers, testers, and stakeholders to understand the functional and non functional requirements of the system before implementation.

2.1.2 Intended Audience and Reading Suggestions

This document is intended for:

- Software developers responsible for implementing the system.
- Project supervisors and evaluators reviewing the system design.
- Testers responsible for validating system functionality.
- Stakeholders involved in retail, franchise, and delivery operations.

Readers are advised to read the document sequentially, starting from the overall description to system features and non functional requirements, to gain a complete understanding of the system.

2.1.3 Project Scope

Barqi Bazar aims to provide a unified platform that connects physical retail stores with online customers and delivery riders. The system supports offline POS operations, controlled product publishing through franchise approval, customer order placement, stock validation, rider bidding, and order routing. The platform also supports franchise and city based management to enable scalable operations across multiple regions.

2.2 Overall Description

2.2.1 Product Perspective

Barqi Bazar is an independent software product designed to operate as a centralized platform integrating multiple functional components. These components

include a POS system for store operations, web based portals for store and franchise administrators, a customer ordering interface, and a delivery coordination layer for riders. Each component performs specific responsibilities while interacting with others through well defined service interfaces.

2.2.2 User Classes and Characteristics

The system will be used by the following user classes:

- **Super Admin:** Responsible for overall system administration, configuration management, and high level monitoring. The Super Admin manages global settings, oversees platform operations, and ensures system stability and compliance.
- **Store Admin:** Manages store level operations, including product management, sales processing through the POS system, and submission of product proposals for online publishing.
- **Franchise Admin:** Reviews and approves or rejects product proposals, manages franchises and cities, and oversees operational control across multiple stores within assigned regions.
- **Customer:** Places orders through the platform, views available products, and tracks order status.
- **Rider:** Participates in delivery bidding, accepts assigned delivery jobs, and completes order deliveries.

2.2.3 Product Functions

The major functions of Barqi Bazar include:

- Offline capable POS operations for product management and sales.
- Product proposal submission and approval workflow.
- Online product publishing after approval.
- Customer order placement and stock validation.
- Rider bidding and delivery assignment.
- Franchise and city based operational management.

2.2.4 Operating Environment

Barqi Bazar operates on modern web browsers and POS devices. The POS system supports offline usage, while administrative portals and customer interfaces operate over the web. The backend platform runs on a server environment with a centralized database storing user, product, order, proposal, and delivery data.

2.2.5 Design

The system is designed using a **service oriented architecture**, where system responsibilities are divided into logical services such as POS operations, catalog management, order processing, and delivery coordination. This design supports modularity, maintainability, and scalability without exposing internal implementation details.

2.2.6 Assumptions and Dependencies

The system assumes:

- Stable internet connectivity for online operations and synchronization.
- Proper role based access control enforcement.
- Accurate product and stock data provided by stores.
- Availability of riders within operational cities.
- Continuous support of the underlying platform technologies.

2.3 External Interface Requirements

2.3.1 User Interfaces

The system provides the following user interfaces:

- **POS Interface:** Used by Store Admins for product management and sales.
- **Store Admin Portal:** Used to submit and manage product proposals.
- **Franchise Admin Portal:** Used to review proposals and manage cities and franchises.
- **Customer Interface:** Used to browse products and place orders.
- **Rider Interface:** Used to view delivery jobs and submit bids.

All interfaces follow a consistent and user friendly design.

2.3.2 Software Interfaces

The system interacts with:

- A centralized database for data storage.
- Reporting and analytics modules for operational insights.

2.3.3 Communication Interfaces

The system uses:

- HTTP/HTTPS for client server communication.
- Secure authentication tokens for session management.
- Notification services for order and delivery updates.

2.4 System Features

2.4.1 System Administration (Super Admin)

Description and Priority

This feature provides system level administrative control to the Super Admin. It allows centralized management of global system configurations, user roles, and platform wide monitoring. This feature is of high priority as it ensures governance, stability, and proper operation of the Barqi Bazar platform across all franchises and cities.

Functional Requirements

- REQ 0: The system must allow the Super Admin to access a secure administrative interface.
- REQ 1: The Super Admin must be able to manage global system configurations and settings.
- REQ 2: The Super Admin must be able to create, update, enable, or disable user roles across the platform.
- REQ 3: The Super Admin must be able to view platform wide operational data, including stores, franchises, cities, and riders.
- REQ 4: The system must allow the Super Admin to monitor overall system health and activity logs.
- REQ 5: The Super Admin must have the ability to restrict or suspend platform

access in case of policy violations or system misuse.

2.4.2 POS Operations

Description and Priority

This feature allows Store Admins to manage products and perform sales through an offline capable POS. This feature is of high priority.

Functional Requirements

- REQ 1: The system must allow Store Admins to login to the POS.
- REQ 2: The POS must support product creation and updates.
- REQ 3: The POS must record sales transactions.
- REQ 4: The POS must update stock after each sale.

2.4.3 Product Proposal and Approval

Description and Priority

This feature ensures controlled product publishing through franchise approval. Priority is high.

Functional Requirements

- REQ 5: Store Admins must be able to submit product proposals.
- REQ 6: Franchise Admins must approve or reject proposals.
- REQ 7: Only approved products may be published online.

2.4.4 Order Processing

Description and Priority

Handles customer orders, validation, and routing. Priority is high.

Functional Requirements

- REQ 8: Customers must be able to place orders.
- REQ 9: The system must validate stock before confirmation.
- REQ 10: Orders must be routed to the appropriate store.

2.4.5 Rider Bidding and Delivery

Description and Priority

Supports delivery assignment via rider bidding. Priority is medium.

Functional Requirements

- REQ 11: Riders must be able to bid on delivery jobs.
- REQ 12: The system must assign deliveries based on bidding.
- REQ 13: Delivery status must be updated during fulfillment.

2.4.6 Franchise and City Management

Description and Priority

Provides governance and scalability. Priority is medium.

Functional Requirements

- REQ 14: Franchise Admins must manage franchises and cities.
- REQ 15: Riders must be assigned to specific cities.

2.5 Other Nonfunctional Requirements

2.5.1 Performance Requirements

The system must support concurrent users with minimal response time.

2.5.2 Security Requirements

- REQ 16: Secure authentication must be enforced.
- REQ 17: Role based access control must be implemented.
- REQ 18: All data transmission must be encrypted.

2.5.3 Software Quality Attributes

The system must be scalable, reliable, maintainable, and secure.

2.5.4 Business Rules

- REQ 19: Only Franchise Admins can approve products.
- REQ 20: Store Admins cannot publish products directly.
- REQ 21: Riders can only access assigned deliveries.

2.6 Other Requirements

2.6.1 Database Requirements

The system must store users, products, proposals, orders, deliveries, and logs in a centralized database.

2.6.2 Legal Requirements

The system must comply with applicable data protection and privacy regulations.

Chapter 3

Software Design

3.1 Introduction of Design Document

Software design forms the backbone of the Barqi Bazar platform by transforming system requirements into a structured and implementable solution. It plays a critical role in ensuring that the integration of offline POS operations, administrative portals, and online order and delivery workflows is reliable, scalable, and maintainable. A well defined design helps identify potential issues at an early stage, reducing development risks and improving overall system quality.

The design process for Barqi Bazar focuses on defining the system architecture, component responsibilities, data organization, and interaction flows between different system actors. Architectural design establishes the high level structure of the platform, separating concerns such as POS operations, product approval workflows, order processing, and delivery coordination. Data design ensures that information related to users, products, proposals, orders, and deliveries is organized efficiently, while interface design emphasizes usability for different roles including store administrators, franchise administrators, customers, and riders.

The design approach incorporates multiple perspectives to provide a comprehensive understanding of the system. Structural views describe how system components are organized and interact, behavioral views illustrate the sequence of operations across workflows, and interaction views explain how different users communicate with the system. These perspectives allow complex workflows such as product proposal approval and rider based delivery assignment to be analyzed and validated systematically.

Beyond technical considerations, the design document serves as a key communication artifact for Barqi Bazar. It aligns stakeholders, developers, and evaluators by presenting a clear and shared understanding of system behavior and structure. By defining responsibilities, interfaces, and workflows in advance, the design reduces ambiguity and provides a roadmap for implementation and testing. Overall, the design of Barqi Bazar supports a controlled, service oriented commerce platform that is adaptable, user centric, and suitable for real world retail and delivery environments.

3.2 Use Case Diagram

The detailed usecase diagram is given below

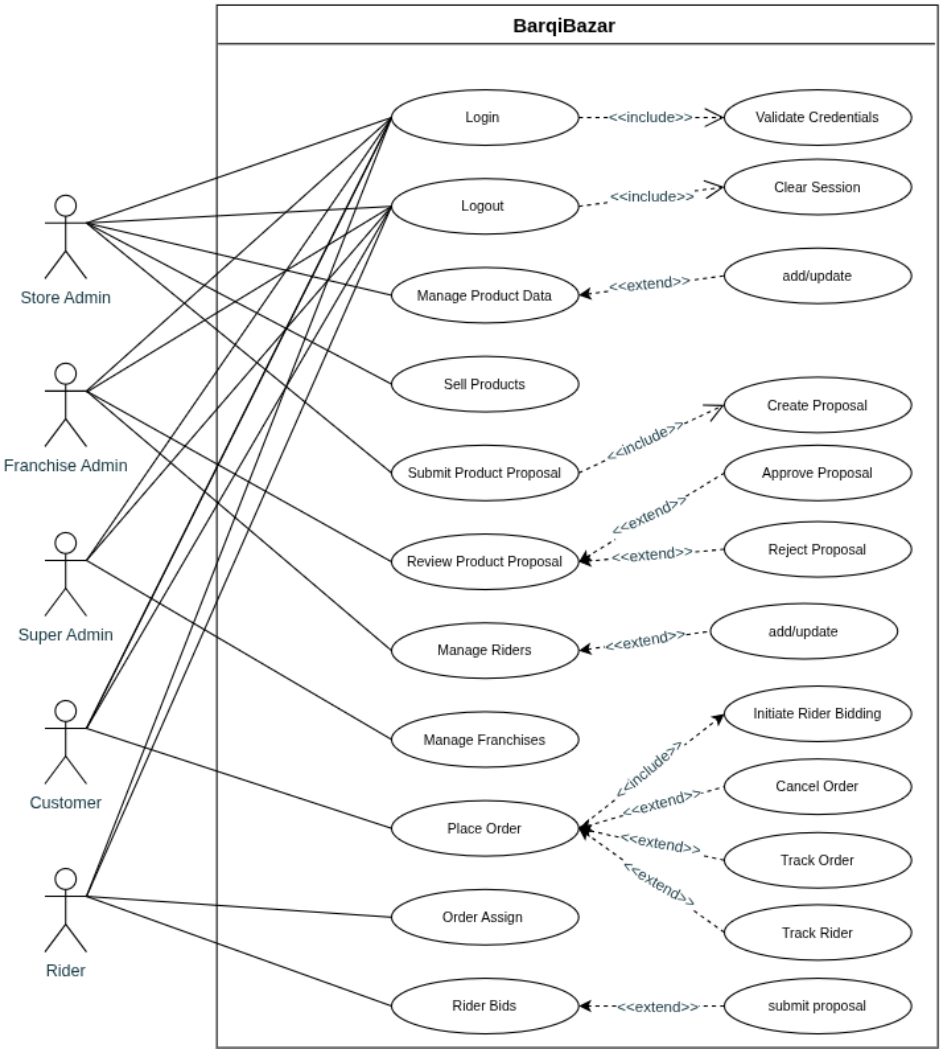

Figure 3.2: Use Case Diagram

3.3 Use Case: Login

Table 3.2: Use Case Description for Login

Description	Allows authorized users to securely access the Barqi Bazar system.
Actors	Store Admin, Franchise Admin, Super Admin

Preconditions	The user must be registered in the system and have valid credentials.
Postconditions	User is authenticated and granted access based on role permissions.
Inputs	Username, Password
Alternative Flow	• If credentials are invalid, an error message is displayed. • If the account is disabled, access is denied.
Basic Flow	1. User opens the login screen. 2. User enters login credentials. 3. System validates credentials. 4. System grants access based on role.
Includes	Validate Credentials
Extends	None

3.4 Use Case: Manage Product Data

Table 3.3: Use Case Description for Manage Product Data

Description	Allows Store Admin to add or update product information using POS.
Actors	Store Admin
Preconditions	Store Admin must be logged in to the POS system.
Postconditions	Product data is saved or updated in the system.
Inputs	Product name, price, category, quantity
Alternative Flow	• If invalid data is entered, system displays an error.
Basic Flow	1. Store Admin selects product management option. 2. Enters or updates product details. 3. System validates and saves data.
Includes	Login

Extends	Add/Update Product

3.5 Use Case: Submit Product Proposal

Table 3.4: Use Case Description for Submit Product Proposal

Description	Submits product proposals for online publishing approval.
Actors	Store Admin
Preconditions	Product must exist in POS system.
Postconditions	Proposal is sent to Franchise Admin for review.
Inputs	Product details, proposed price
Alternative Flow	• If required fields are missing, submission fails.
Basic Flow	1. Store Admin selects product for proposal. 2. Proposal details are entered. 3. System submits proposal.
Includes	Manage Product Data
Extends	None

3.6 Use Case: Review Product Proposal

Table 3.5: Use Case Description for Review Product Proposal

Description	Reviews submitted product proposals for approval or rejection.
Actors	Franchise Admin
Preconditions	Proposal must be submitted by Store Admin.
Postconditions	Proposal status is updated.
Inputs	Proposal data

Alternative Flow	• Proposal may be rejected if criteria not met.
Basic Flow	1. Franchise Admin views proposals. 2. Reviews proposal details. 3. Approves or rejects proposal.
Includes	None
Extends	Approve Proposal, Reject Proposal

3.7 Use Case: Place Order

Table 3.6: Use Case Description for Place Order

Description	Allows customers to place an order for available products.
Actors	Customer
Preconditions	Products must be published and available.
Postconditions	Order is created and processed.
Inputs	Product selection, delivery details
Alternative Flow	• Order is cancelled if stock is unavailable.
Basic Flow	1. Customer selects products. 2. Customer places order. 3. System validates stock. 4. System initiates rider bidding.
Includes	Validate Stock, Initiate Rider Bidding
Extends	Track Order, Cancel Order

3.8 Use Case: Rider Bidding

Table 3.7: Use Case Description for Rider Bidding

Description	Allows riders to bid on delivery jobs.

Actors	Rider
Preconditions	Order must be available for delivery.
Postconditions	Delivery is assigned to a rider.
Inputs	Bid amount, availability
Alternative Flow	• No bids received; system retries.
Basic Flow	1. Rider views available delivery job. 2. Rider submits bid. 3. System assigns delivery.
Includes	None
Extends	Submit Delivery Bid

3.9 Sequence Diagrams

A sequence diagram shows the participants in an interaction and the sequence of messages among them. Each sequence diagram shows the interaction of a system with its actor to perform all or part of a use case. Scenarios for our system are presented below, along with their sequence diagrams.

3.9.1 Sequence diagram for login

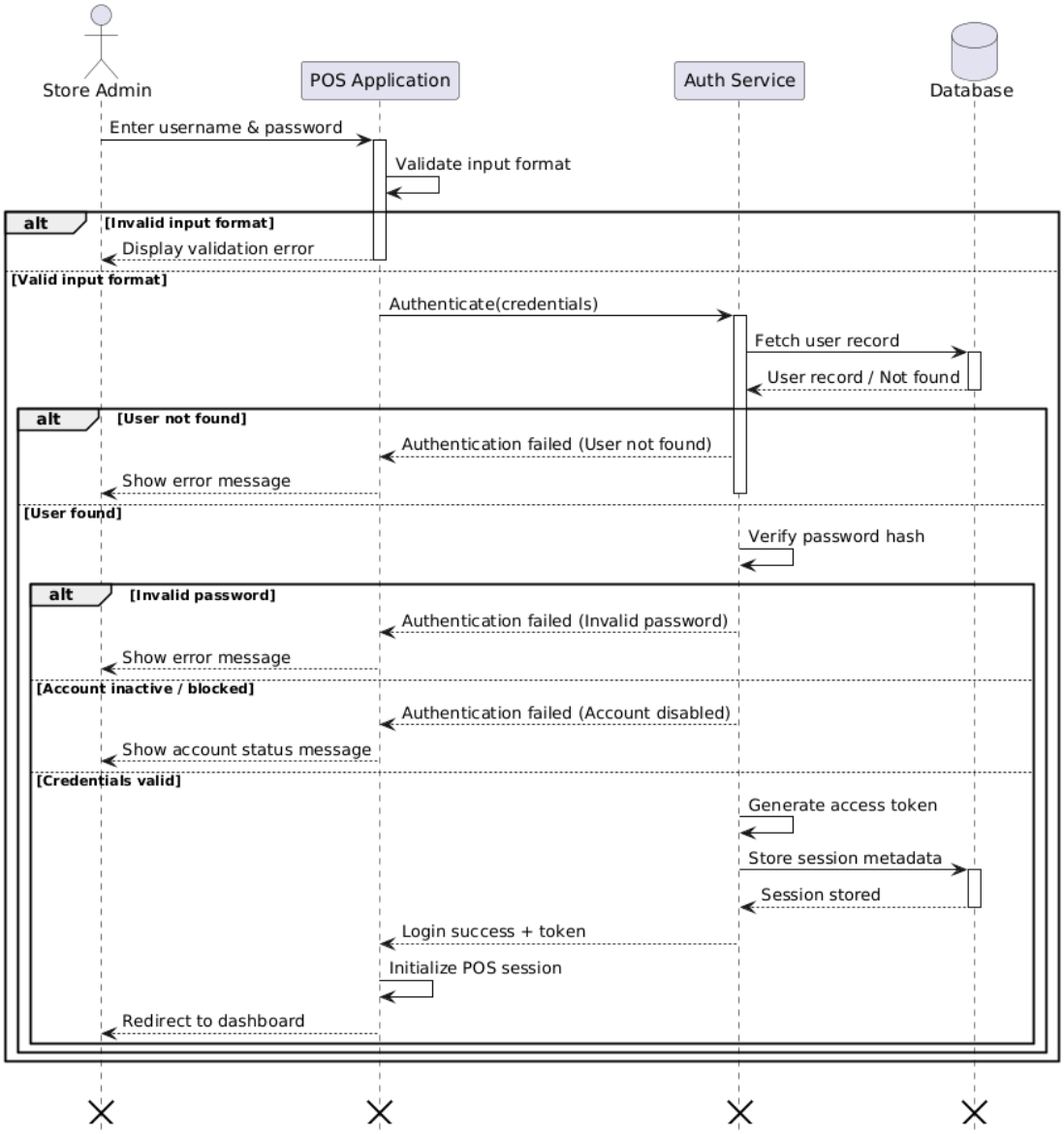

Figure 3.3: Sequence Diagram for login

3.9.2 POS product management sequence diagram

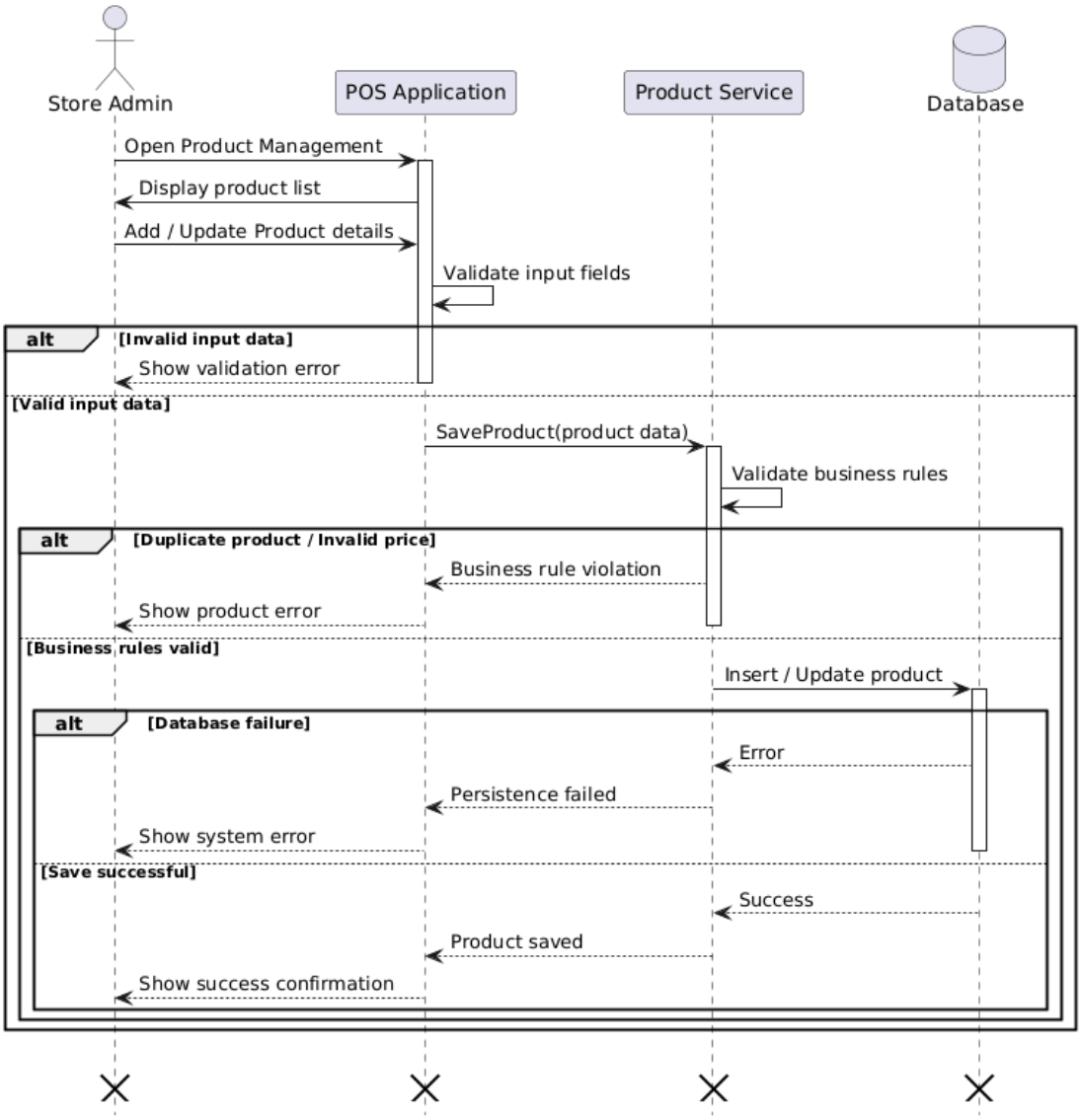

Figure 3.4: POS Product Management Sequence Diagram

3.9.3 POS sell product sequence diagram

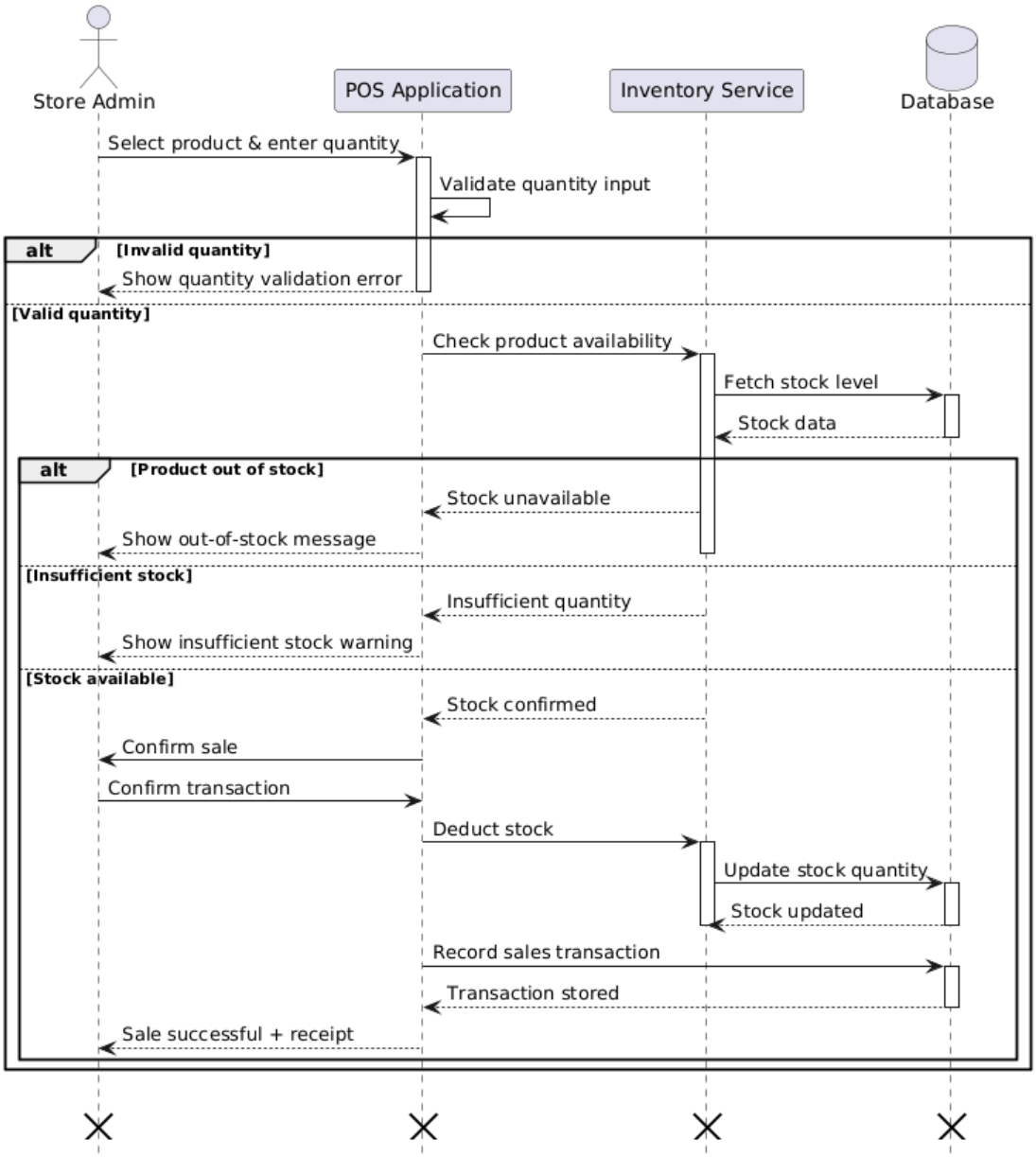

Figure 3.5: POS Sell Product Sequence Diagram

3.9.4 Sequence diagram for logout

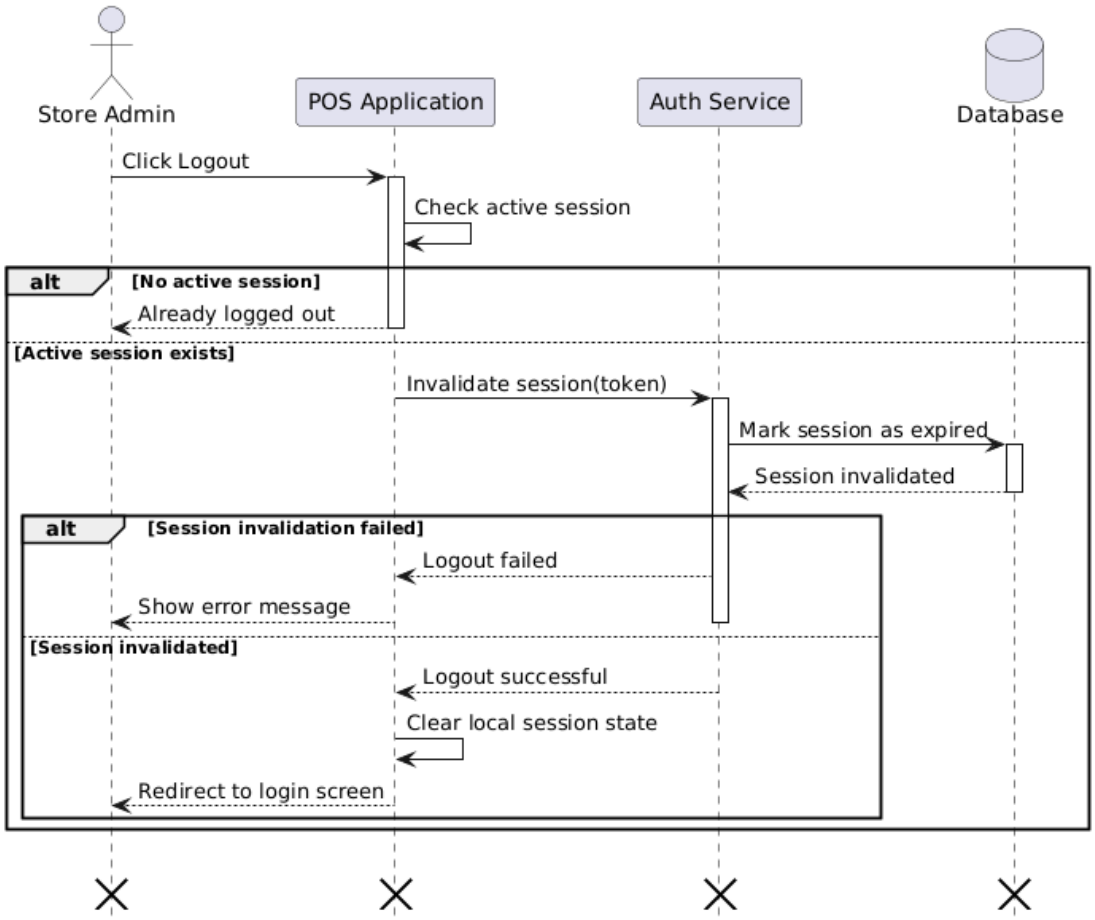

Figure 3.6: Sequence Diagram for logout

3.9.5 Product proposal submission sequence diagram

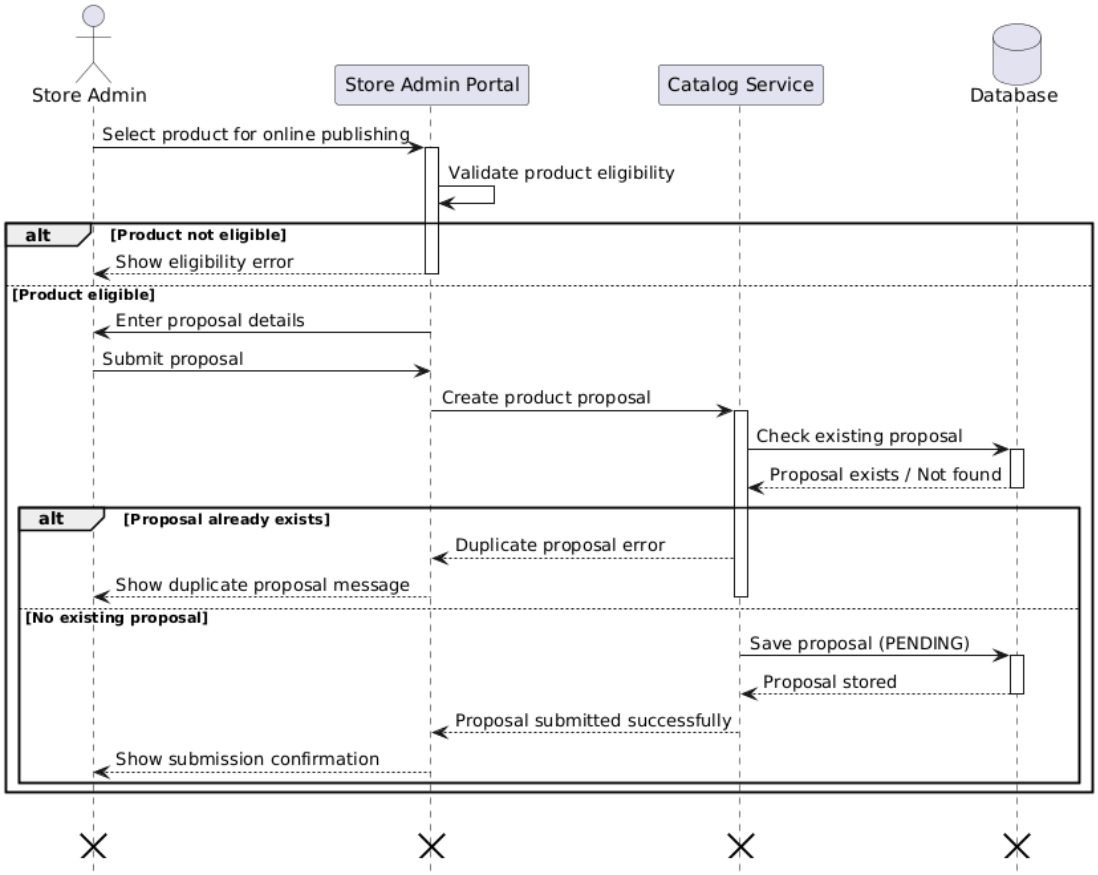

Figure 3.7: Product Proposal Submission Sequence Diagram

3.9.6 Product proposal review and approval sequence diagram

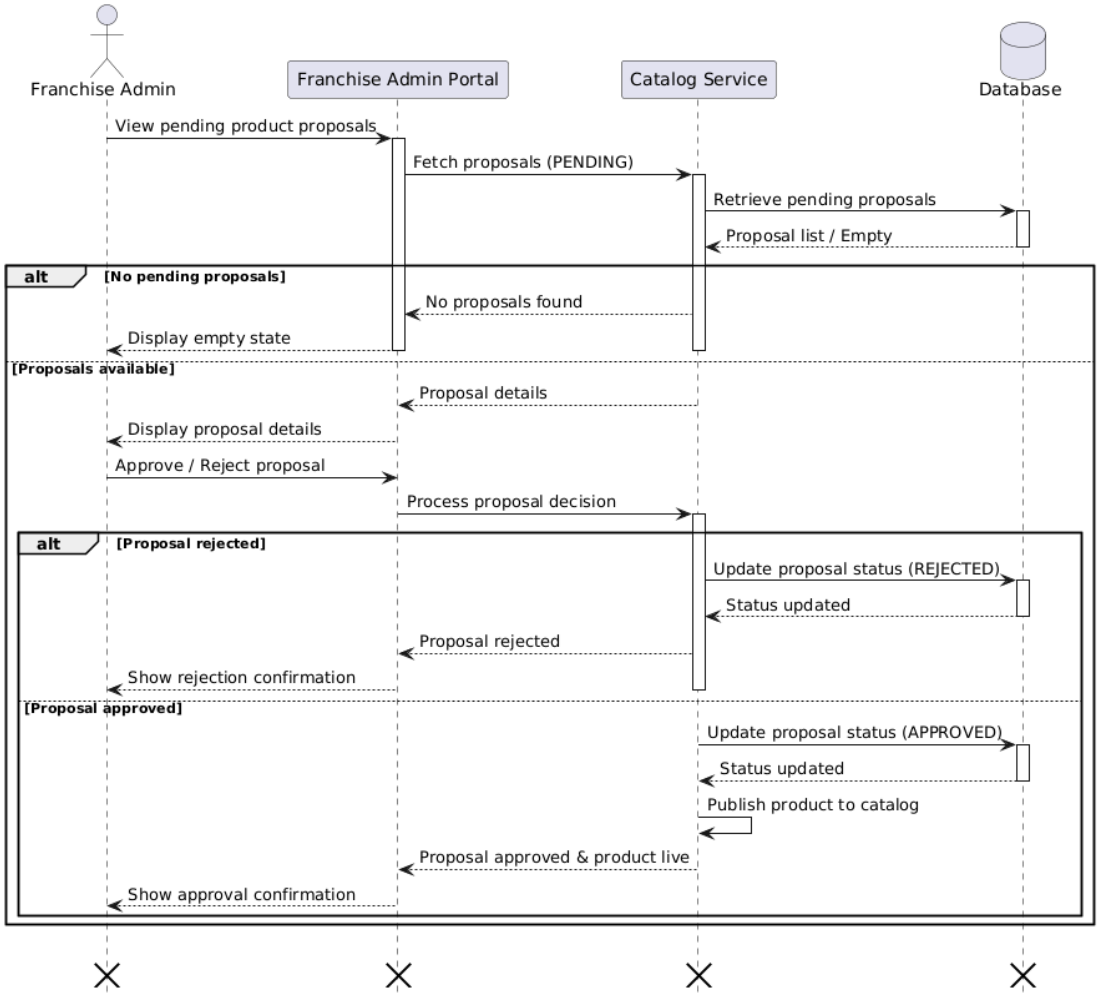

Figure 3.8: Product Proposal Review and Approval Sequence Diagram

3.9.7 Customer place order sequence diagram

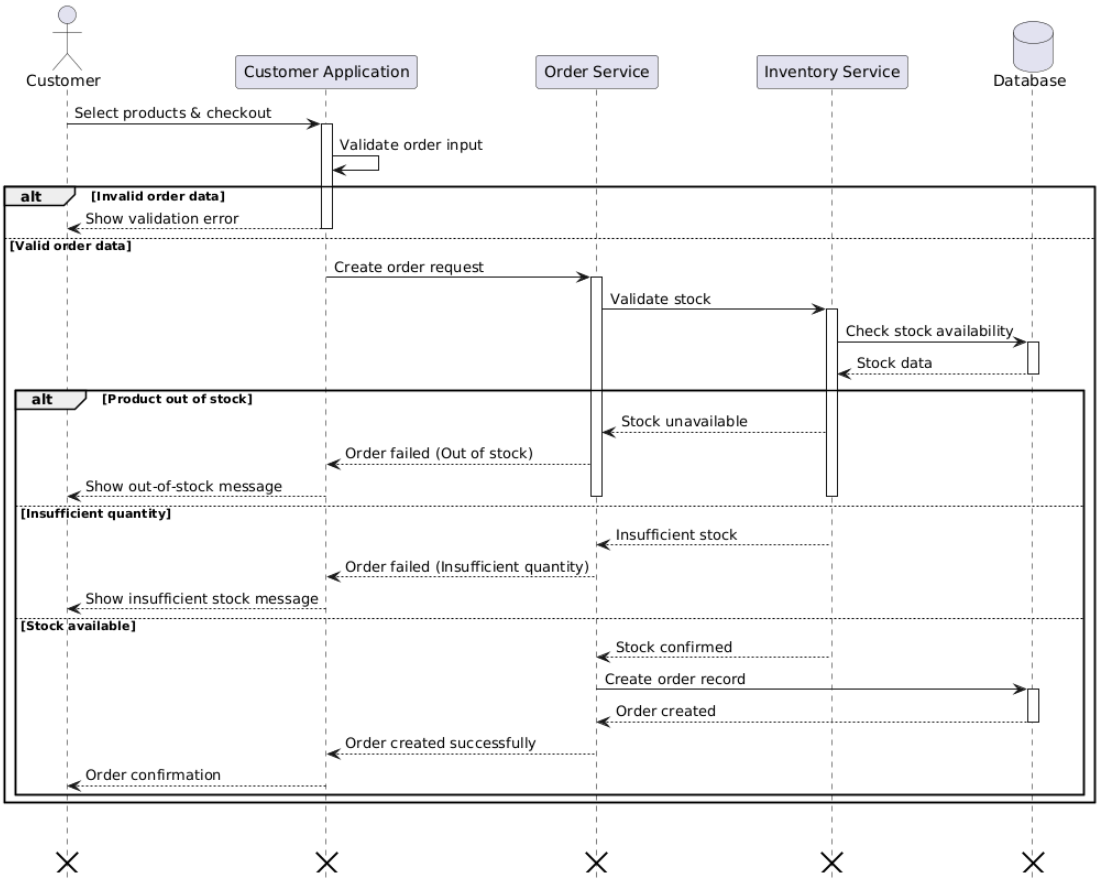

Figure 3.9: Customer Place Order Sequence Diagram

3.9.8 Rider bidding sequence diagram

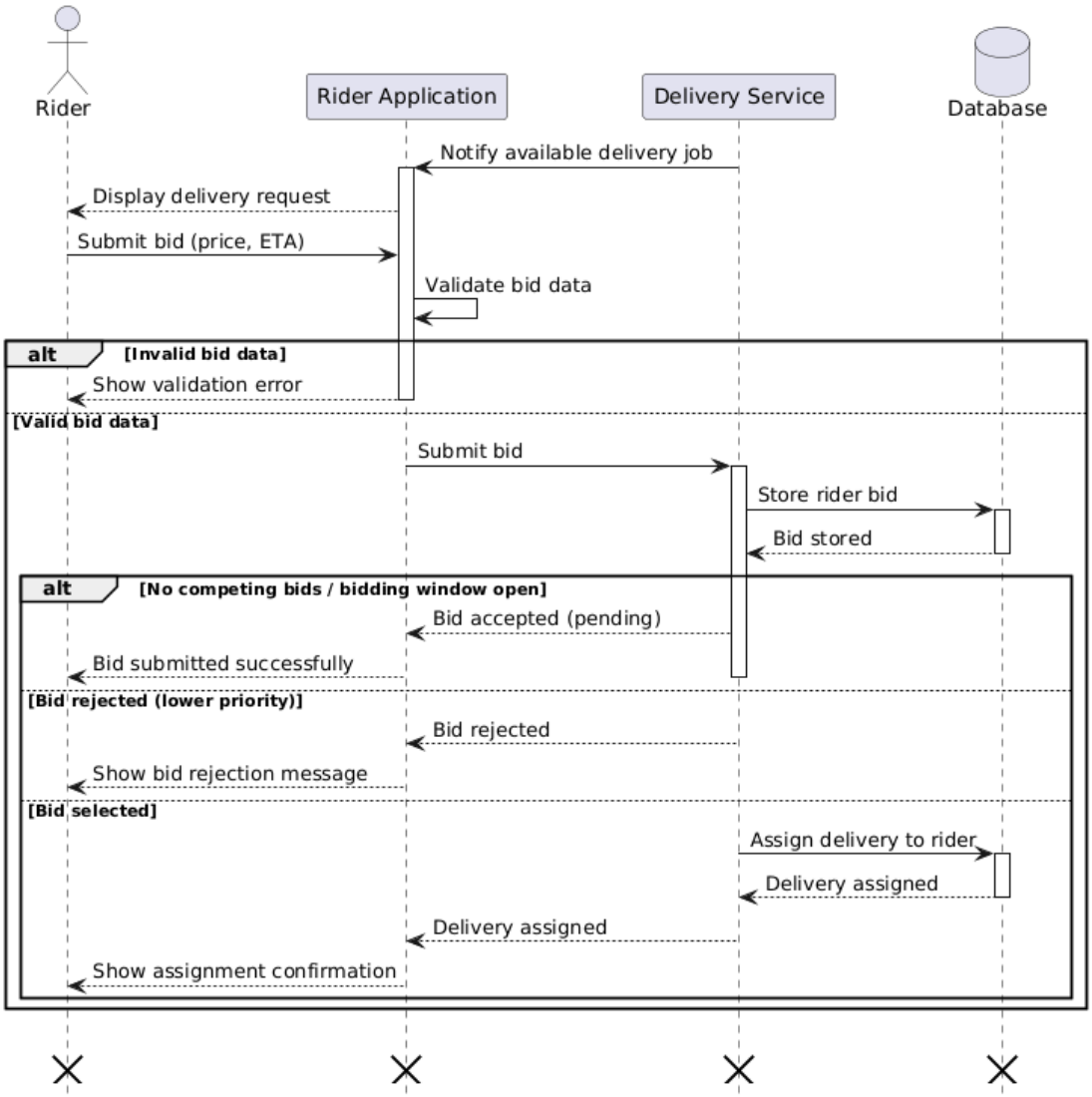

Figure 3.10: Rider Bidding Sequence Diagram

3.9.9 Order routing and delivery assignment sequence diagram

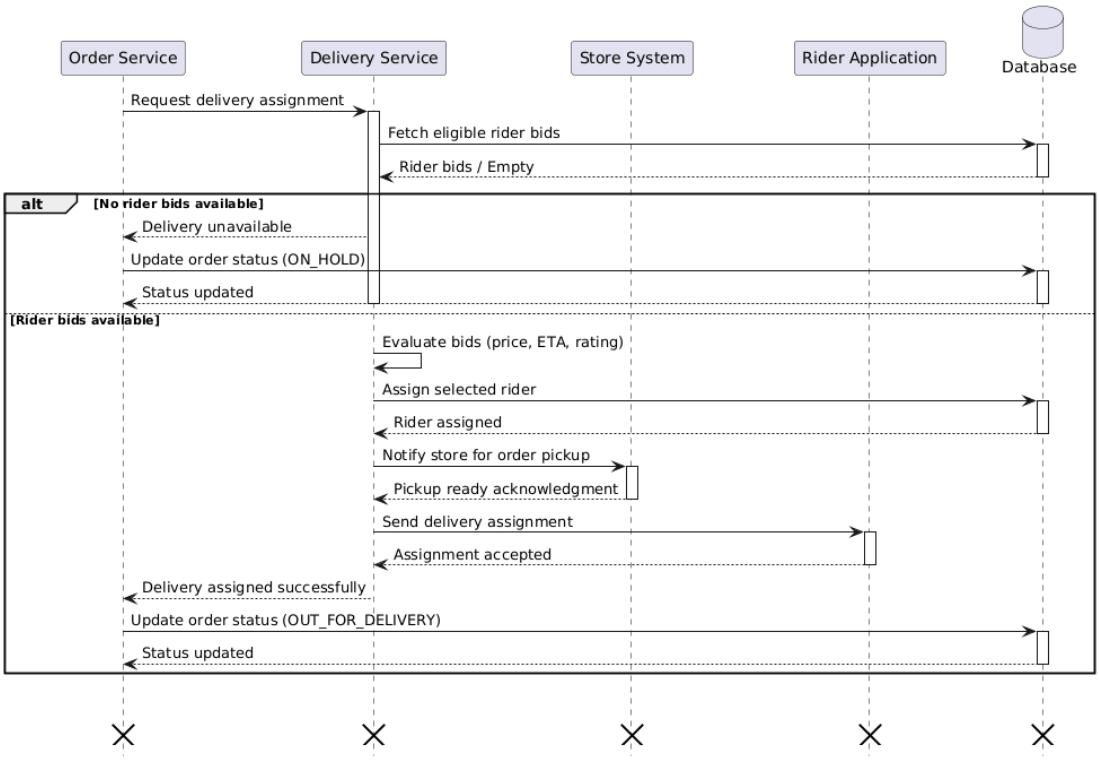

Figure 3.11: Order Routing and Delivery Assignment Sequence Diagram

3.9.10 Order tracking sequence diagram

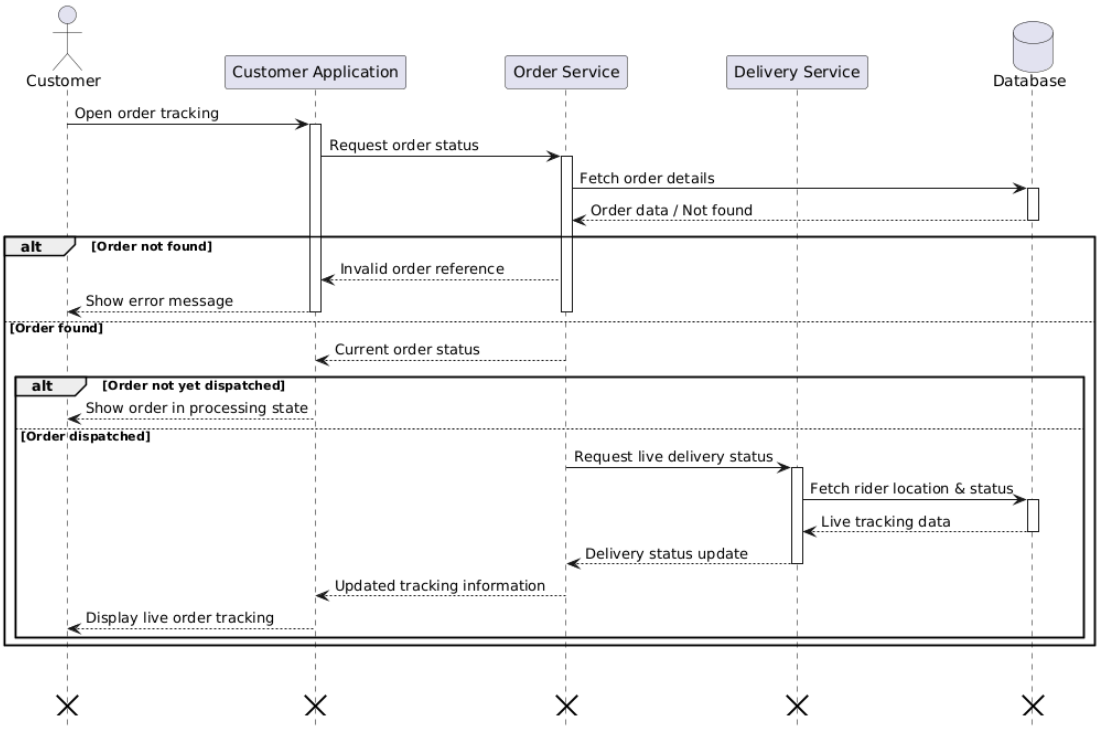

Figure 3.12: Order Tracking Sequence Diagram

3.10 Activity Diagram

An activity diagram visually represents the workflow or sequence of activities in a process. It shows the flow of control from one activity to another, highlighting decision points, parallel activities, and conditions. Activity diagrams are used to model both system level and user level processes, helping to understand and optimize workflows.

3.10.1 Activity diagram for login

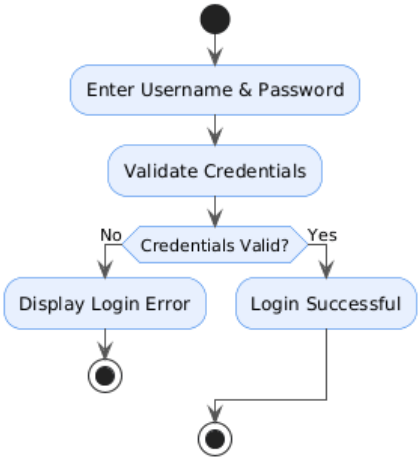

Figure 3.13: Activity Diagram for login

3.10.2 Franchise cities management activity diagram

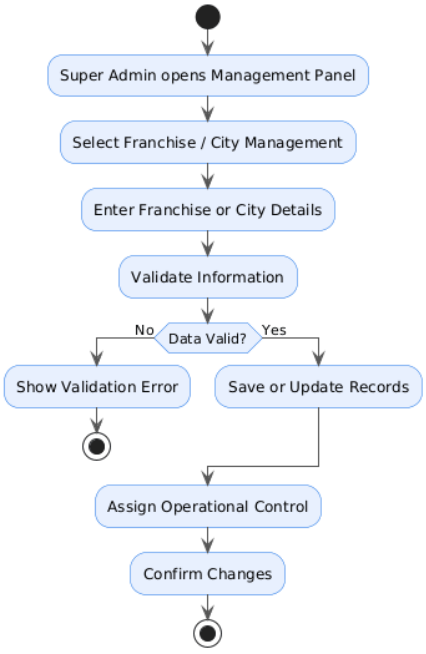

Figure 3.14: Franchise Cities Management Activity Diagram

3.10.3 Product management activity diagram

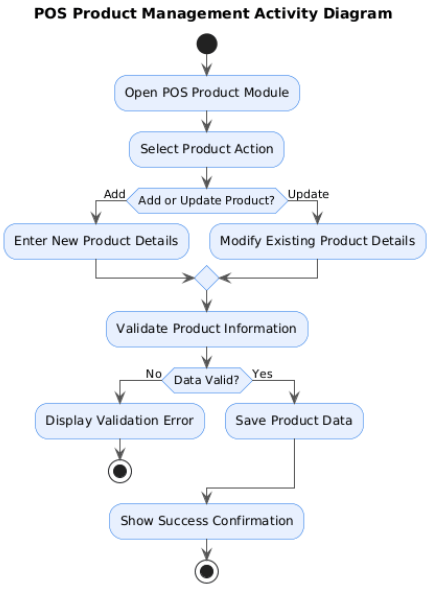

Figure 3.15: Product Management Activity Diagram

3.10.4 Sell product activity diagram

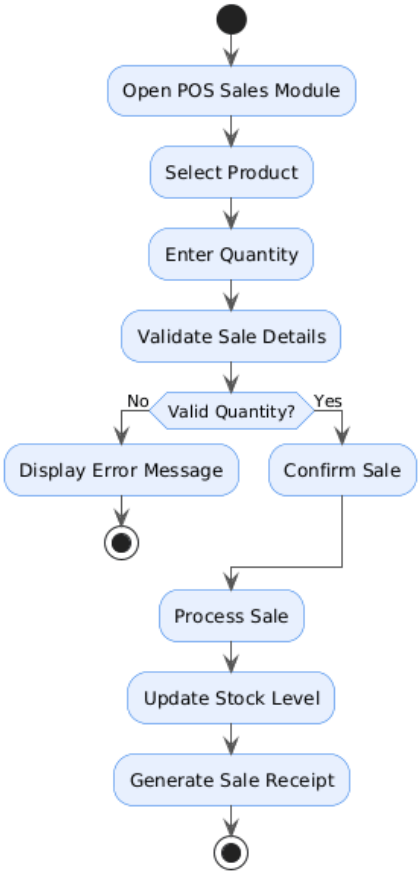

Figure 3.16: Sell Product Activity Diagram

3.10.5 Product proposal activity diagram

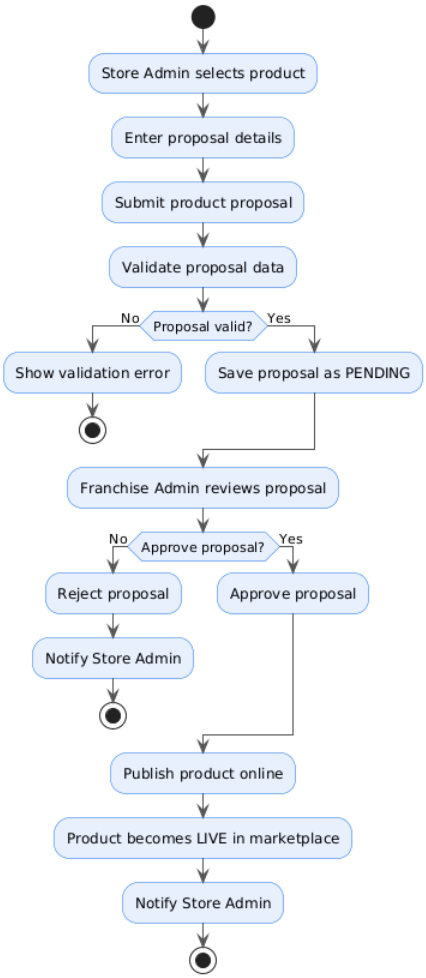

Figure 3.17: Product Proposal Activity Diagram

3.10.6 Customer place order activity diagram

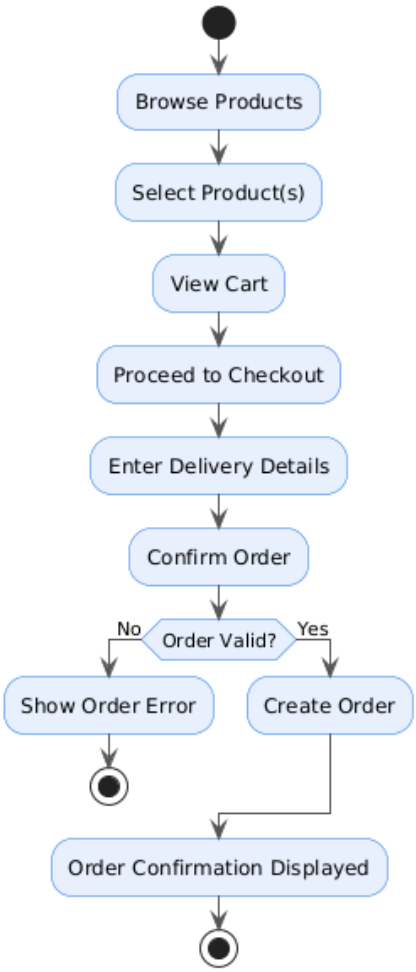

Figure 3.18: Customer Place Order Activity Diagram

3.10.7 Order tracking activity diagram

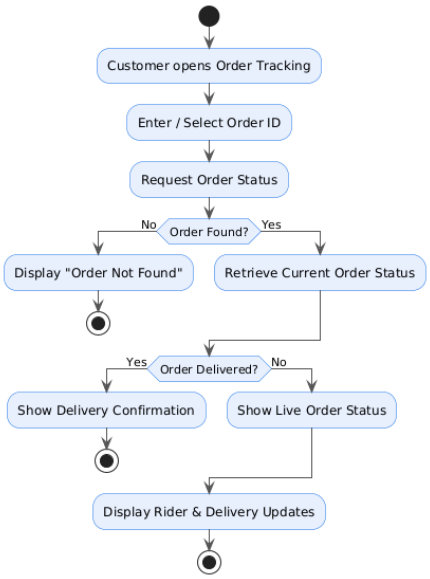

Figure 3.19: Order Tracking Activity Diagram

3.10.8 Rider activity diagram

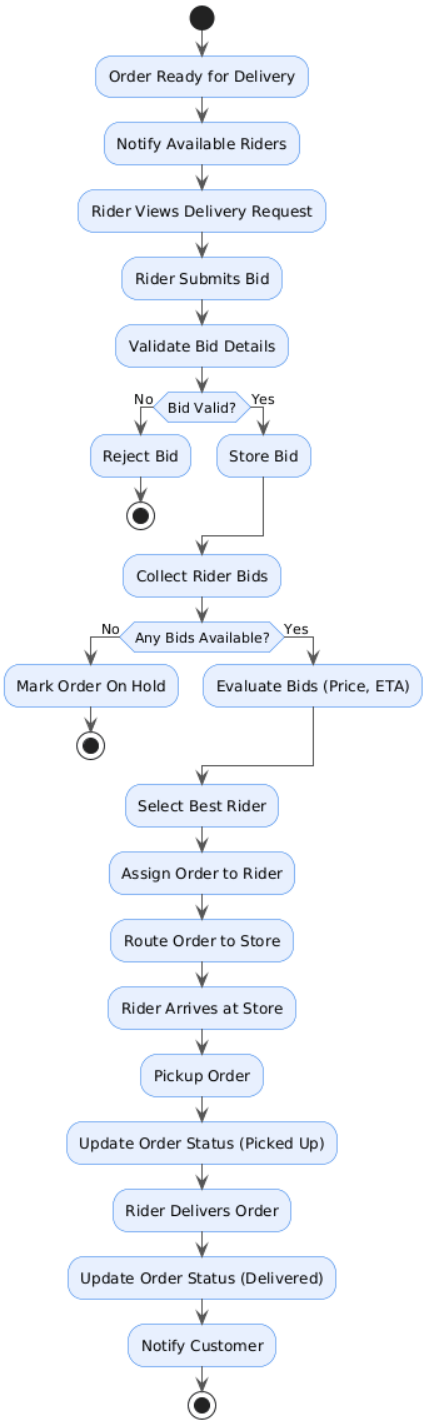

Figure 3.20: Rider Activity Diagram

3.10.9 Rider management activity diagram

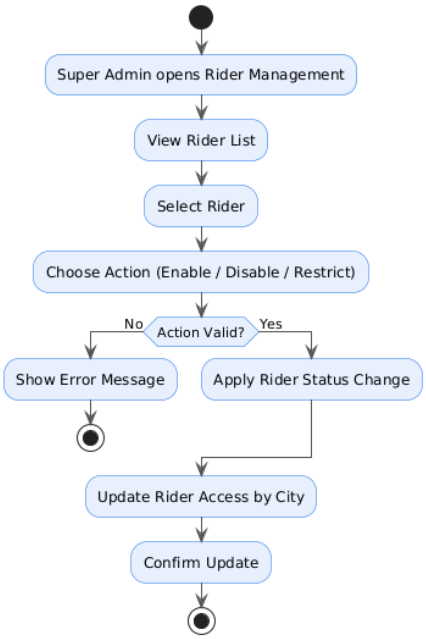

Figure 3.21: Rider Management Activity Diagram

3.11 ER Diagram

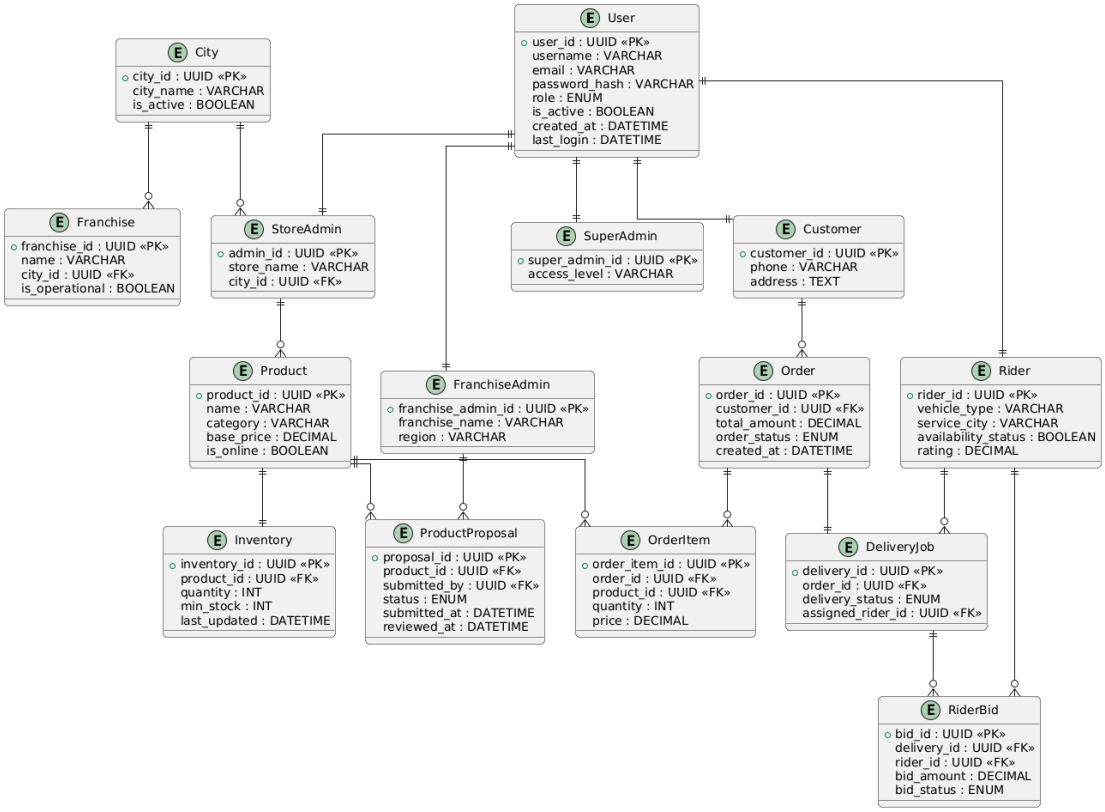

Figure 3.22: Activity Diagram for ER Diagram

Key Entities

The major entities identified in the Barqi Bazar system are described below:

- **User:** Represents all users of the system, including Store Admins, Franchise Admins, Super Admins, Customers, and Riders. It stores authentication credentials, role information, and account status required for secure system access.
- **Store Admin:** Responsible for managing store level activities such as POS operations, product management, and submitting product proposals for online publishing.
- **Franchise Admin:** Reviews product proposals submitted by Store Admins and decides whether to approve or reject them before products are published on the online marketplace.
- **Super Admin:** Manages system wide operations including franchises, cities, and rider control. This role ensures administrative governance and platform

level management.

- **City and Franchise:** These entities define the geographical and operational structure of the system. Each franchise is associated with a city and operates under administrative supervision.
- **Product:** Stores information related to products such as name, category, base price, and online availability status.
- **Inventory:** Maintains stock information for products, including available quantity and minimum stock level. It supports stock validation during POS sales and online orders.
- **Product Proposal:** Represents the workflow for submitting store products to the online marketplace. It tracks proposal status, submission time, and review decisions.
- **Customer:** Places online orders and tracks order and delivery status through the system.
- **Order and Order Item:** The Order entity records overall order details, while Order Item maintains information about individual products within an order, including quantity and price.
- **Delivery Job:** Created after an order is placed to manage delivery execution. It tracks delivery status and the assigned rider.
- **Rider:** Represents delivery personnel who participate in rider bidding and complete assigned delivery jobs.
- **Rider Bid:** Stores bids submitted by riders for delivery jobs, enabling fair and efficientider assignment.

3.12 Workflow Diagram

The workflow diagram illustrates the end-to-end operational flow of the system, showing the interactions between different user roles and system components. It provides a clear overview of how processes are initiated, validated, and completed across the platform.

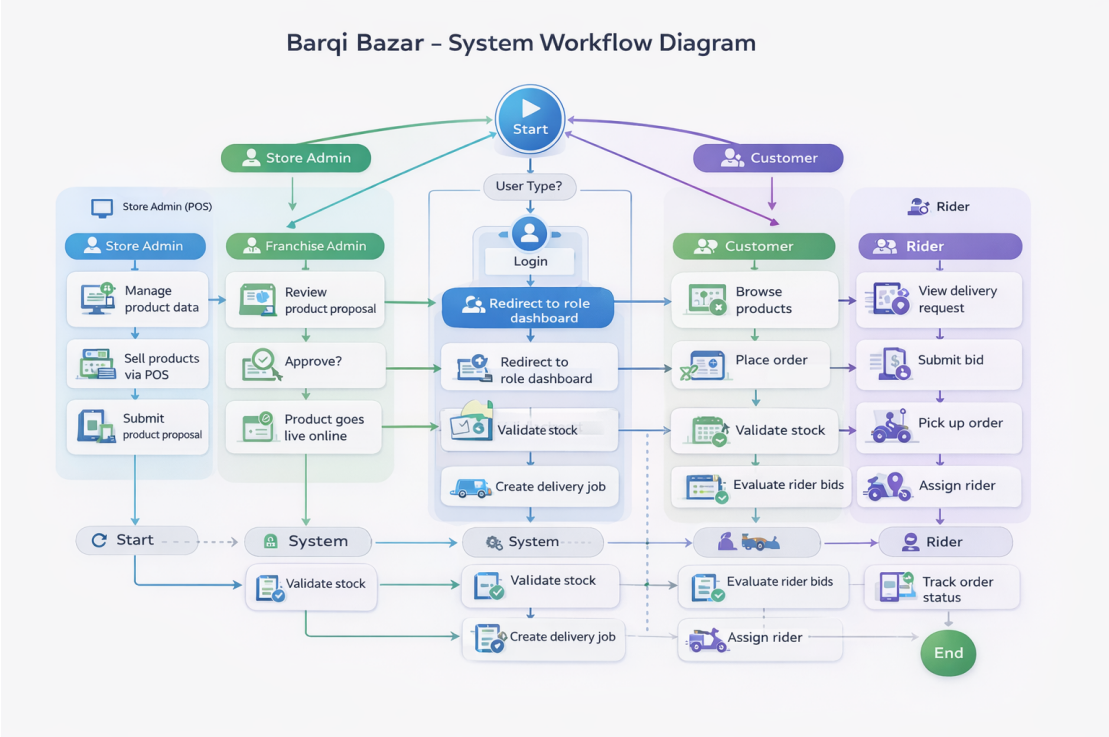

Figure 3.23: System Workflow Diagram

3.13 Architecture diagram

The Architecture diagram depicts the end-to-end system process among the parent, admin, and scheduler subsystems.

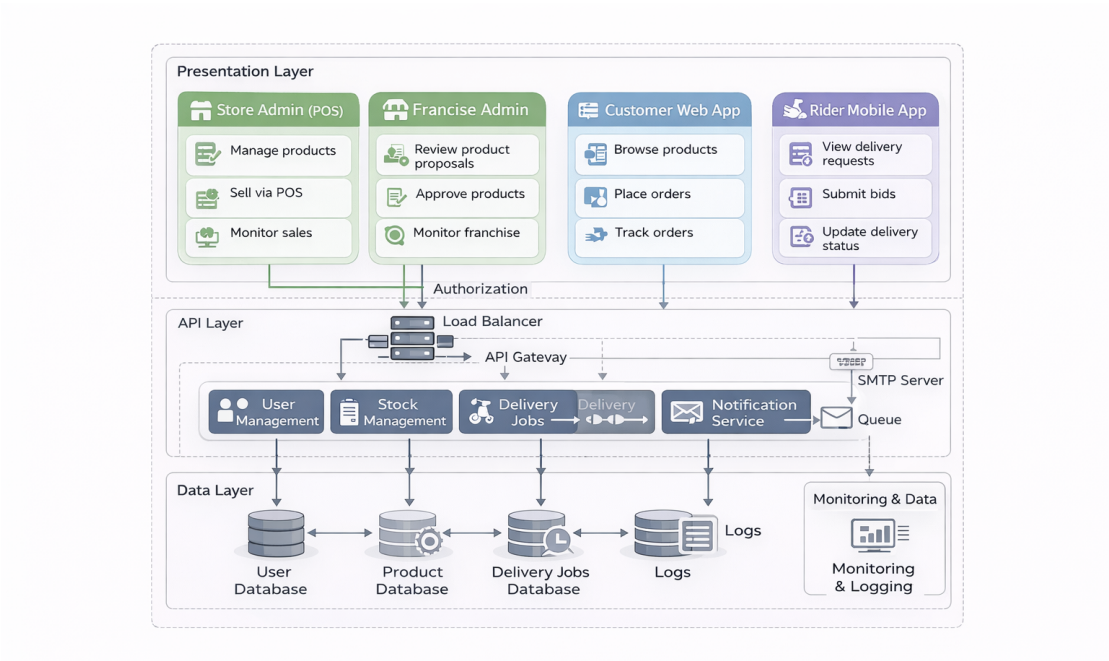

Figure 3.24: System Architecture Diagram

Chapter 4

Project Management

4.1 Project Management Techniques

4.1.1 Gantt Chart

The Gantt Chart is a widely used project management tool that provides a visual representation of project activities over time. It helps in organizing tasks, defining timelines, and monitoring progress throughout the development lifecycle. By breaking the project into smaller tasks and mapping them against a timeline, the Gantt Chart enables effective planning and coordination among team members.

One of the major advantages of using a Gantt Chart is its ability to represent task dependencies clearly. Certain tasks in a software project cannot begin until prerequisite activities are completed. The Gantt Chart highlights these dependencies, helping the project team avoid scheduling conflicts and delays. Additionally, it promotes accountability by clearly assigning responsibilities and deadlines.

In the Barqi Bazar project, the Gantt Chart has been used to plan and track activities such as requirements analysis, system design, implementation of POS and portal modules, testing, and documentation. This structured timeline ensured that all development phases were completed in a logical sequence and within the allocated timeframe.

4.1.2 Critical Path Method (CPM)

The Critical Path Method (CPM) is a project scheduling technique used to identify the most important sequence of tasks that directly impact the overall project completion time. The critical path represents the longest chain of dependent activities, and any delay in these tasks results in a delay of the entire project.

CPM is especially useful for managing software projects with multiple interdependent modules, such as POS operations, order management, rider assignment, and administrative portals. By identifying critical tasks early, project managers can allocate resources more effectively and focus attention on activities that require strict monitoring.

For the Barqi Bazar system, CPM was applied to identify essential milestones such as completion of core system architecture, POS workflow implementation, order processing logic, and integration of rider bidding and delivery assignment. This approach minimized risks, improved coordination, and ensured timely com-

pletion of the project.

4.1.3 Benefits of Gantt Chart and CPM

The combined use of Gantt Charts and the Critical Path Method provides a comprehensive approach to project planning and control. While the Gantt Chart offers a clear visual overview of task schedules, CPM focuses on identifying and managing time critical activities.

These techniques improve communication among team members and stakeholders by presenting project progress in a structured and understandable manner. They also help in early identification of potential delays, enabling corrective actions to be taken promptly.

In the context of Barqi Bazar, these project management techniques contributed to better organization, efficient resource utilization, and timely delivery of system components. Their use ensured that the project remained aligned with academic requirements and development goals.

4.2 Work Breakdown Structure (WBS)

4.2.1 Introduction

The Work Breakdown Structure (WBS) is a hierarchical decomposition of the project into smaller, manageable tasks. It provides a clear framework for organizing project activities and ensures that each phase of development is systematically planned and executed.

By dividing the project into well defined components, the WBS improves task clarity, simplifies progress tracking, and supports effective allocation of resources. It also helps identify dependencies between tasks and reduces the risk of overlooking critical activities.

4.2.2 WBS for the Proposed System

The Work Breakdown Structure for the Barqi Bazar system is presented below:

Table 4.8: Work Breakdown Structure for Barqi Bazar

Level	**Activity**
1	Project Proposal and Planning
2	Requirements Gathering and Analysis
3	System Design (Use Case, Sequence, Activity, ER Diagrams)
4	Implementation of POS, Portals, and Backend Services
5	Integration of Order, Rider, and Delivery Modules
6	System Testing and Validation
7	Documentation and Final Deployment

Each level represents a major phase of the Barqi Bazar project. This structured breakdown enabled systematic execution and ensured that all functional and non functional requirements were addressed efficiently.

4.3 Gantt Chart

4.3.1 Introduction

A Gantt Chart provides a visual timeline of project tasks, showing their start and end dates, durations, and dependencies. It is an effective tool for tracking project progress and ensuring timely completion of activities.

For the Barqi Bazar project, the Gantt Chart was developed to plan stages such as analysis, design, development, testing, and documentation. It ensured smooth progression between phases and helped monitor adherence to the project schedule.

4.3.2 Gantt Chart for the Proposed System

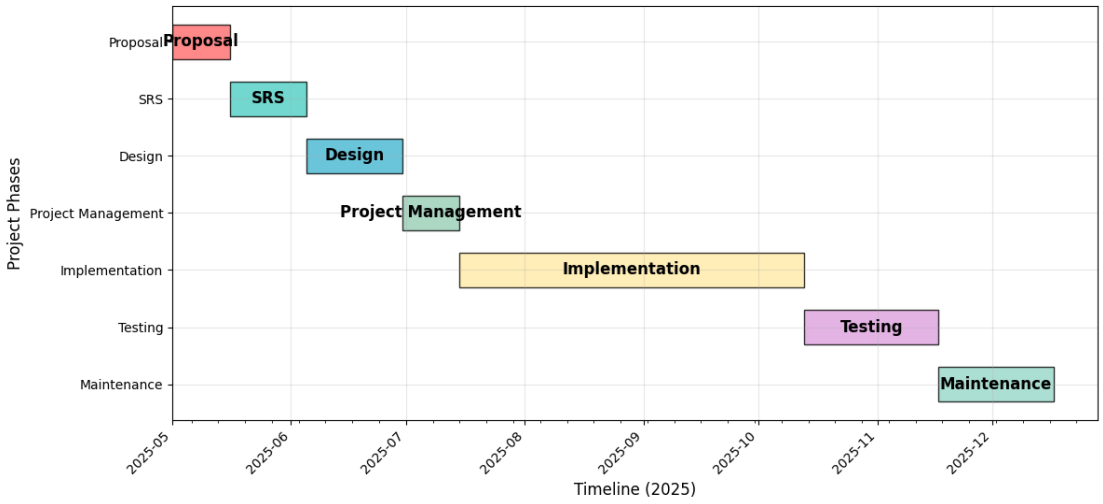

Figure 4.25: Gantt Chart for Barqi Bazar System

The Gantt Chart illustrates the chronological flow of project activities and highlights task dependencies. It serves as a reference for monitoring milestones and ensuring that the project remains on schedule.

4.3.3 Importance of the Gantt Chart

The Gantt Chart plays a crucial role in coordinating project activities and improving collaboration among team members. By providing a clear visual representation of deadlines and progress, it aligns the team toward shared objectives.

Additionally, the chart helps identify potential scheduling issues early, allowing timely adjustments. In the Barqi Bazar project, it supported effective time management and contributed to the successful completion of development and documentation phases.

Chapter 5

Project Implementation

5.1 Chapter Overview

This chapter presents the implementation details of the **Barqi Bazar** system. It explains the development environment, system architecture implementation, authentication mechanism, and the realized user interfaces. The chapter focuses on how core modules such as POS, Franchise Management, Contract Management, and Order Processing were implemented and integrated. Visual evidence of the implemented system is provided through user interface screenshots in later sections.

5.2 Implementation Environment

Barqi Bazar is implemented as a web based, service oriented system. The backend services are developed using modern API driven architecture, while the frontend interfaces are designed to be responsive and role oriented. The implementation environment consists of the following components:

- Backend developed using API based services
- Frontend developed using HTML, CSS, JavaScript, and Bootstrap
- Relational database for persistent data storage
- RESTful APIs for communication between frontend and backend

This environment ensures scalability, maintainability, and clear separation between presentation and business logic.

5.3 System Architecture Implementation

5.3.1 Project Structure and Modularity

The Barqi Bazar system follows a modular and service oriented design. Each major business domain is implemented as a separate module, including POS operations, franchise management, order handling, and contract management. This separation allows independent development and testing while maintaining seamless integration through APIs.

5.3.2 Database Layer

The database layer is designed using a relational schema that supports core entities such as users, products, orders, franchises, riders, and contracts. Relationships

between entities ensure data integrity and support real world workflows such as order placement, product proposals, rider assignment, and franchise level control.

5.4 Authentication and Role Based Access Control

Authentication is enforced across the system to ensure secure access. Users must log in before accessing any protected functionality. After authentication, the system determines the user role and grants access accordingly.

The system supports the following roles:

- Super Admin
- Franchise Admin
- Store Admin
- Customer
- Rider

Each role is restricted to specific modules and operations, ensuring controlled access and secure governance.

5.5 User Interface Results (Role Based Modules)

This section presents the implemented user interfaces of Barqi Bazar. Screenshots are grouped by functional modules to clearly demonstrate system capabilities.

5.5.1 Point of Sale (POS) Module

The Point of Sale (POS) module is a core operational component of the Barqi Bazar system. It enables Store Admins to manage in store product sales, monitor inventory availability, and perform real time transaction processing. This module ensures that physical store operations remain synchronized with the central system and online marketplace.

The POS interface provides a structured dashboard where store administrators can quickly access product listings, initiate sales, and manage daily operations efficiently.

POS Dashboard

The POS dashboard serves as the main entry point for store level operations. It displays key operational data such as available products, pricing, and action controls for sales and inventory management.

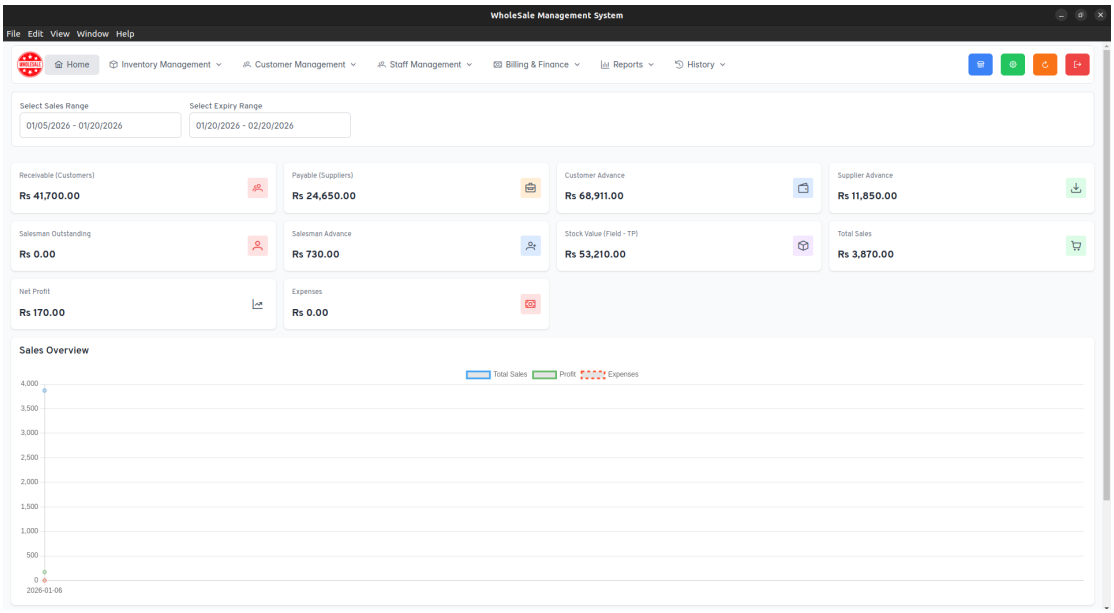

Figure 5.26: POS dashboard showing overview of products and operational controls.

Product Listing and Management

The product listing screen allows Store Admins to view all available products along with their prices, stock status, and availability indicators. This screen supports quick decision making during sales operations.

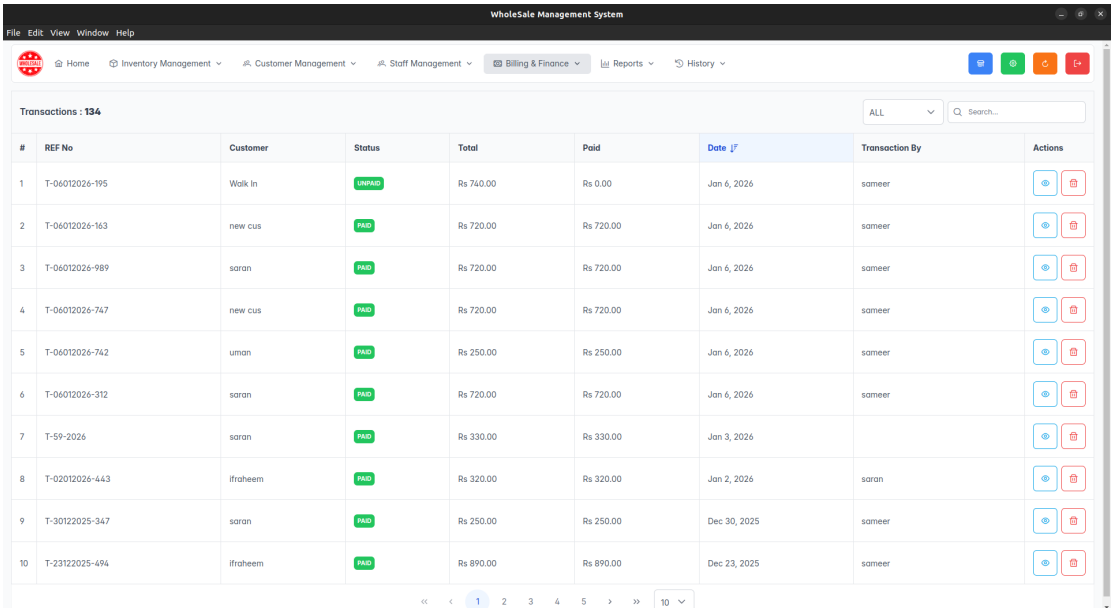

Figure 5.27: POS product listing screen displaying available products and stock status.

Add Product Interface

The add product interface allows Store Admins to register new products into the POS system. Essential details such as product name, category, price, and initial stock quantity are captured to ensure accurate inventory tracking.

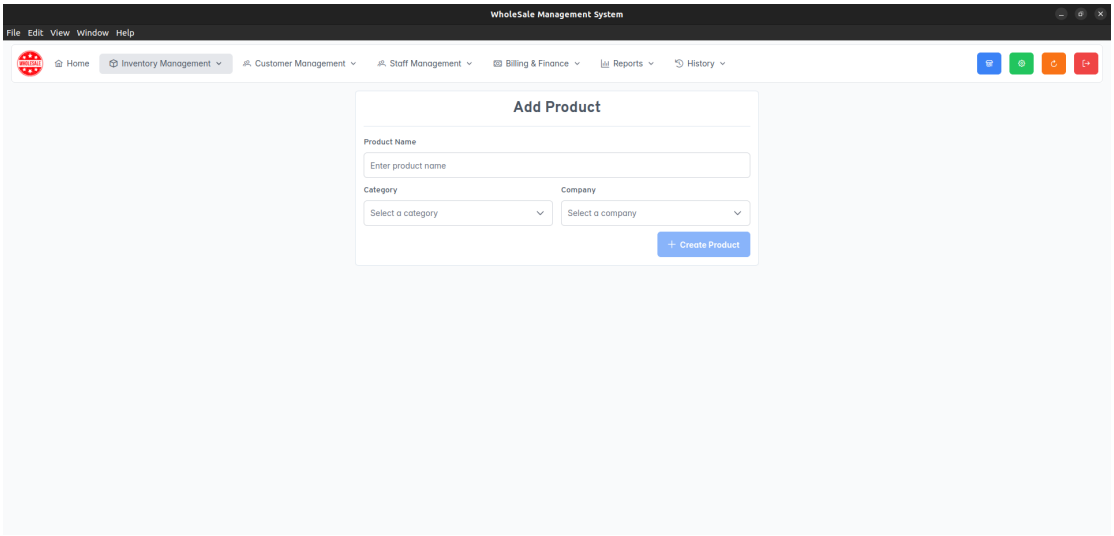

Figure 5.28: POS add product interface used to register new products into the system.

The POS module ensures seamless integration between sales operations and in-

ventory updates. Each completed transaction automatically reflects stock changes, maintaining data consistency across the system.

5.5.2 Franchise Management Module

The Franchise Management module is a core administrative component of the Barqi Bazar system. It enables Super Admins and Franchise Admins to manage franchise records, assign operational regions, and control franchise level activities. This module ensures organized expansion, regional governance, and centralized oversight of franchise operations.

The franchise management interface provides a structured dashboard through which administrators can monitor existing franchises, add new franchises, and manage city level assignments efficiently.

Franchise Dashboard

The franchise dashboard serves as the primary control panel for franchise related operations. It displays a list of registered franchises along with their operational status and management actions, enabling administrators to oversee system wide franchise activities.

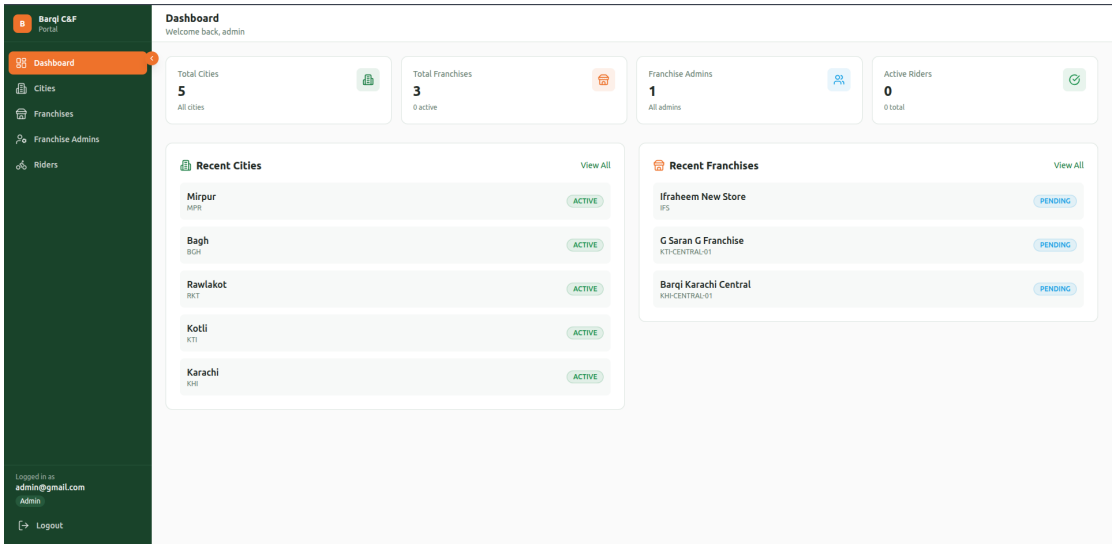

Figure 5.29: Franchise dashboard displaying registered franchises and management controls.

Add Franchise Interface

The add franchise interface allows Super Admins to register new franchises into the system. Key information such as franchise name, administrative credentials, and

operational settings are captured to ensure proper onboarding and access control.

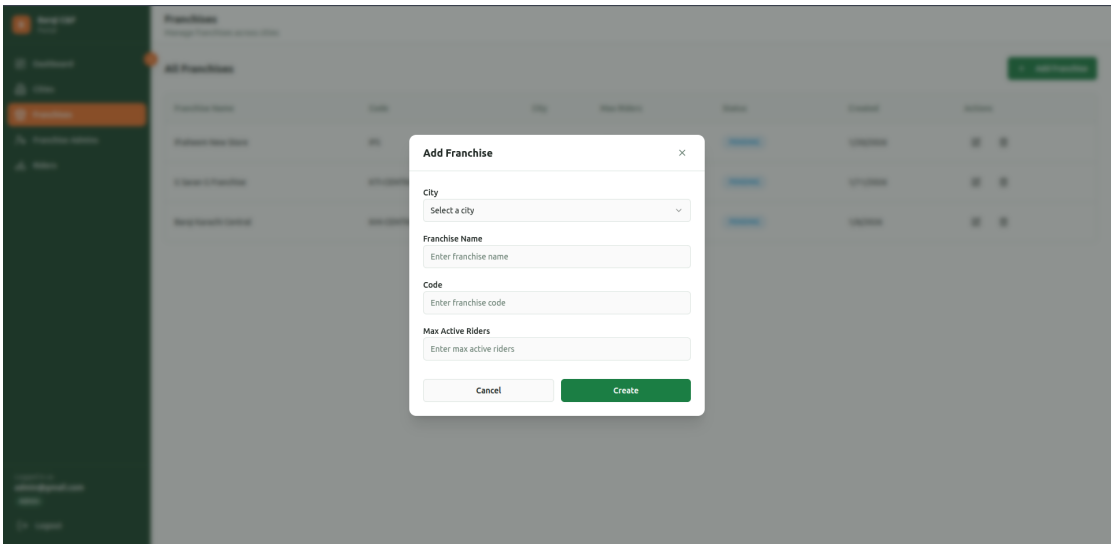

Figure 5.30: Add franchise interface used to register a new franchise in the system.

City Assignment and Management

The city management interface allows administrators to assign cities to franchises, enabling controlled regional expansion. This functionality ensures that each franchise operates within its designated geographical boundaries.

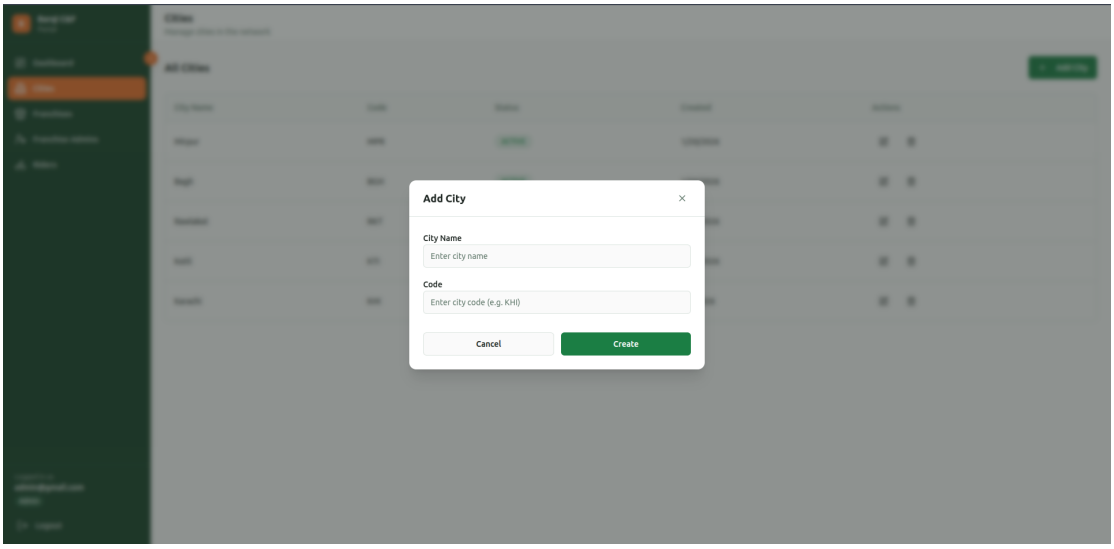

Figure 5.31: City assignment interface for managing franchise operational regions.

The Franchise Management module plays a critical role in maintaining structured growth and operational consistency across regions. By centralizing franchise

and city level controls, the system ensures scalability, governance, and administrative efficiency.

5.5.3 Contract Management Module

The Contract Management module is responsible for handling formal agreements between franchises, stores, and the Barqi Bazar platform. It facilitates contract creation, proposal review, approval workflows, and status tracking to ensure transparency, accountability, and operational compliance across the system.

The module provides administrators with centralized access to all contracts and proposals, enabling efficient monitoring and decision making.

Contract Listing Dashboard

The contract listing dashboard provides an overview of all active, pending, and completed contracts within the system. Administrators can review contract details, monitor statuses, and track contractual relationships between different entities.

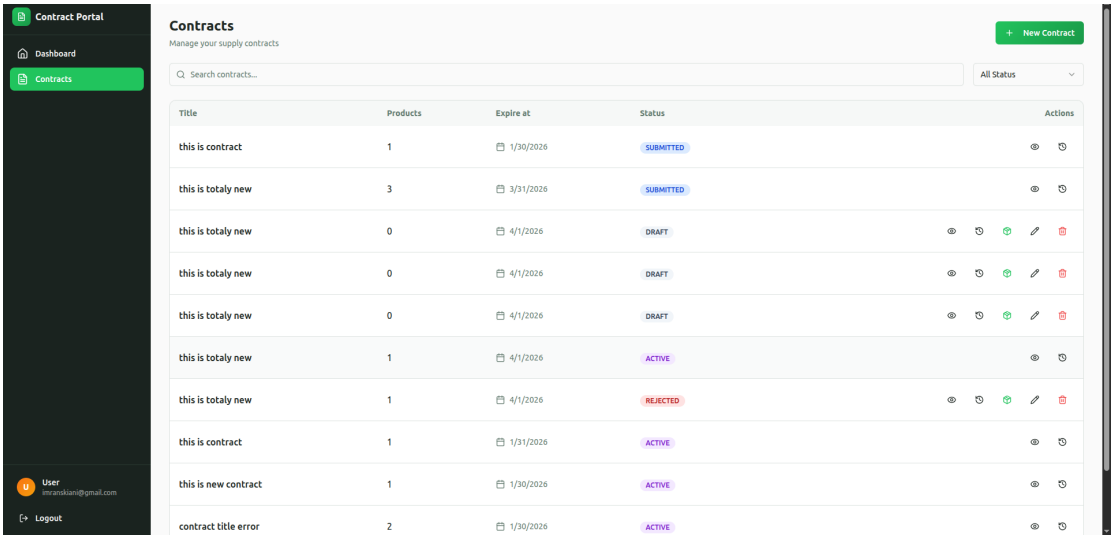

Figure 5.32: Contract listing dashboard showing active and pending contracts.

Proposal Review and Approval

The proposal management interface allows administrators to review contract proposals submitted by franchises or stores. From this interface, proposals can be approved or rejected based on predefined business rules, ensuring controlled and auditable contract approval processes.

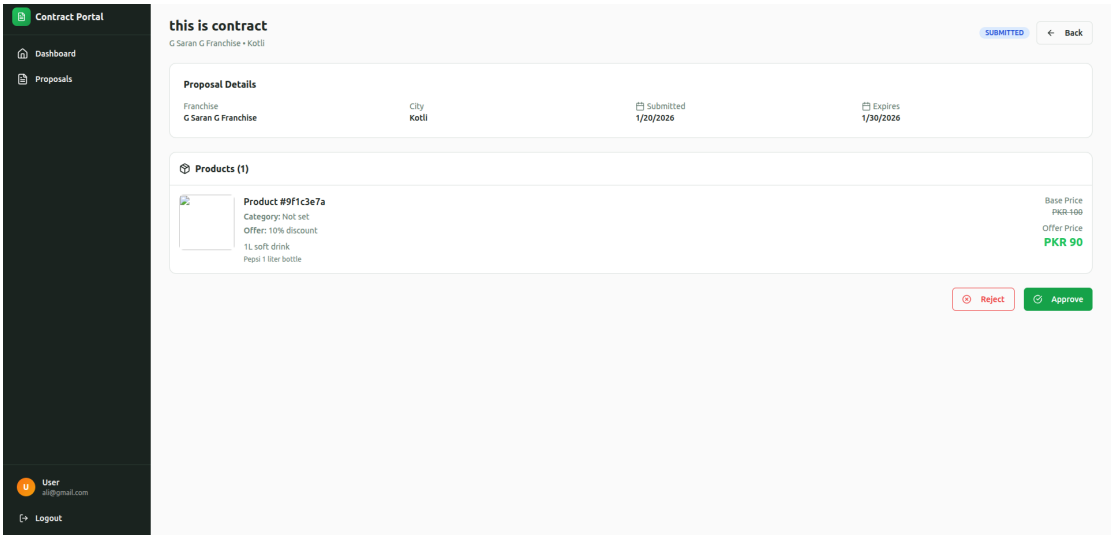

Figure 5.33: Proposal review interface for approving or rejecting contract proposals.

Add Contract Interface

The add contract interface enables administrators to create new contracts by defining contract terms, associated parties, and validity details. This ensures that all contractual agreements are formally recorded and managed within the system.

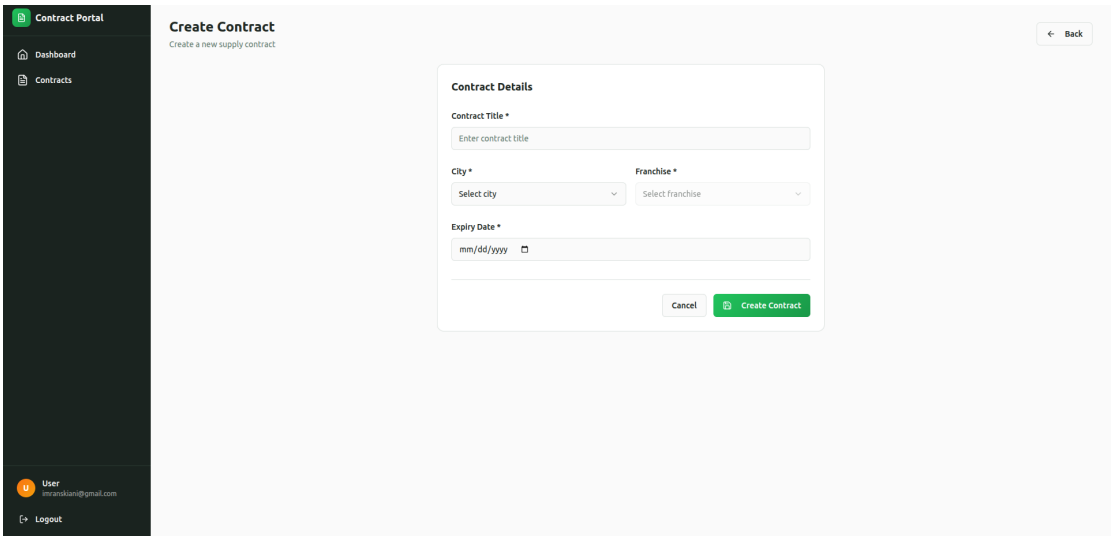

Figure 5.34: Add contract interface used to register new contractual agreements.

The Contract Management module ensures structured agreement handling and reduces manual dependency by digitizing contract workflows. By integrating proposal review, approval, and contract tracking, the system maintains consistency and legal clarity across all operational entities.

5.5.4 Order Management Module

The Order Management module handles the complete lifecycle of orders within the Barqi Bazar system. It enables customers to place orders, allows store managers to process and prepare orders, and provides franchise administrators with centralized monitoring and control over order activities.

This module integrates order placement, status updates, and operational tracking to ensure smooth coordination between customers, stores, and administrative roles.

Order Monitoring Dashboard

The order monitoring dashboard provides franchise administrators with a comprehensive view of all orders across stores. It displays order details, current status, and associated actions, enabling effective oversight and decision making.

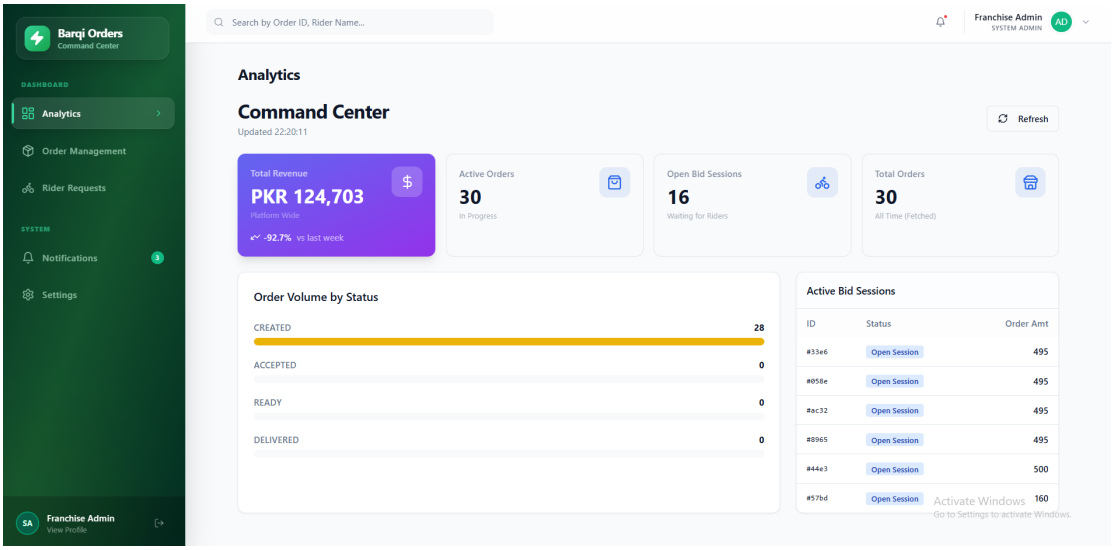

Figure 5.35: Order monitoring dashboard for franchise administrators showing order status and details.

Store Order Processing Interface

The store order processing interface is used by Store Managers to manage incoming orders. It allows store level staff to view order details, update preparation status, and coordinate order fulfillment efficiently.

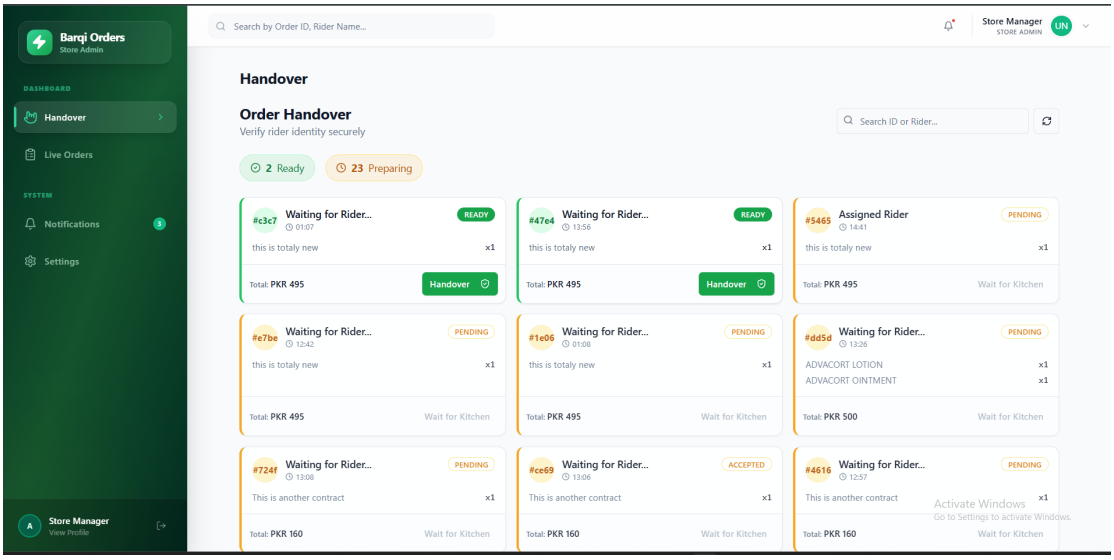

Figure 5.36: Store manager interface for processing and managing customer orders.

Order Details and Status Management

The order details interface provides a detailed view of individual orders, including items, quantities, and current status. This screen supports status updates throughout the order lifecycle, ensuring transparency and real time tracking across the system.

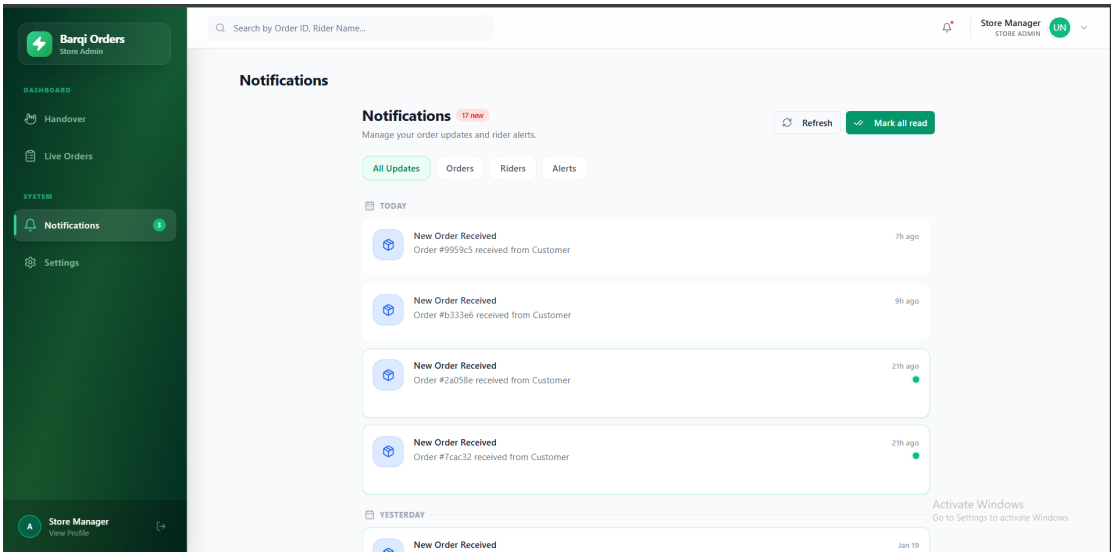

Figure 5.37: Order details interface showing order information and status management options.

The Order Management module ensures seamless coordination between ordering and fulfillment processes. By centralizing order monitoring and enabling role

based interactions, the system improves operational efficiency and enhances overall service reliability.

5.6 Functional Results Summary

Based on the implemented modules and interfaces, the Barqi Bazar system demonstrates the following outcomes:

- Successful implementation of role based authentication and authorization
- Fully functional POS system for in store operations
- Centralized franchise and contract management
- End to end order processing, from placement to delivery

5.7 Testing and Validation

Functional testing was conducted by executing real workflows such as logging in with different roles, managing products through POS, creating and reviewing contracts, placing orders, and tracking delivery status. Each module was tested independently and in integrated scenarios to ensure consistency and correctness.

5.8 Conclusion

This chapter detailed the implementation of the Barqi Bazar system and demonstrated its operational capabilities through implemented modules and user interfaces. The presented results confirm that the system meets its functional requirements and provides a solid foundation for scalable, service oriented digital commerce operations.

Chapter 6

System Testing

6.1 Introduction

Software testing ensures that the Barqi Bazar platform functions accurately, securely, and reliably. Since the system includes multiple administrative modules (Point of Sale, Franchise Management, Contract Management, and Order Management) along with role based access control, thorough testing is required to verify correct behavior across all workflows.

This chapter describes the testing objectives, testing environment, and testing methods applied to validate key operations such as authentication, POS sales, franchise/city management, contract proposal handling, and order processing. It also presents executed test cases and results, confirming that the system is stable and ready for deployment.

6.2 Testing Objectives

The goal of testing in Barqi Bazar is to ensure that all modules function correctly, reliably, and securely under normal and edge case conditions. Testing was performed to verify system workflows from admin side configuration to operational execution.

Key objectives include:

- **Functional Verification:** Confirm each module works as intended (POS, Franchise, Contract, Orders).
- **Integration Validation:** Ensure smooth interaction between frontend dashboards, backend APIs, and database.
- **Data Accuracy:** Maintain consistency across all CRUD operations and transactional updates.
- **Performance Testing:** Validate responsiveness for listing screens and high activity actions (order updates, product search).
- **Security Enforcement:** Verify permission based access and restricted operations for different roles.
- **UI/UX Validation:** Ensure screens are usable, clear, and role appropriate for administrators and managers.
- **Error Handling:** Confirm validation and failure messages appear correctly for invalid inputs.

- **Deployment Readiness:** Confirm platform stability for real operational use.

6.3 Testing Environment

6.3.1 Hardware Environment

- Laptop/PC with at least 8GB RAM and Intel i5 (or equivalent).
- Stable internet connection for API requests and database connectivity.

6.3.2 Software Environment

- **Frontend:** React.js (Admin/Store dashboards), Tailwind CSS.
- **Backend:** REST APIs (project backend services).
- **Database:** PostgreSQL (core data storage).
- **Testing Tools:** Postman (API testing), Browser DevTools (UI/network debugging), pgAdmin/DBeaver (database verification).

6.3.3 Test Data Environment

- Sample accounts for Super Admin, Franchise Admin, and Store Manager roles.
- Sample products, inventory records, and categories for POS testing.
- Sample franchises and cities for management workflows.
- Sample contract proposals and contract records for approval testing.
- Sample orders with different statuses for order lifecycle validation.

6.4 Types of Testing

6.4.1 Unit Testing

Unit testing was applied to validate individual components in isolation such as: API endpoints, form validations, and core business rule functions (e.g., stock deduction, status transitions).

6.4.2 Integration Testing

Integration testing validated communication between:

- Frontend dashboard actions and backend APIs
- Backend services and PostgreSQL persistence
- Multi module dependencies (e.g., POS sale updates inventory; order status updates affect tracking views)

6.4.3 Functional Testing

Functional testing verified complete feature workflows such as:

- Authentication and role based dashboard access
- POS product listing, adding products, and sales execution
- Franchise creation and city assignment
- Contract creation, proposal listing, and approval/rejection
- Order listing, order status updates, and operational tracking

6.4.4 System Testing

System testing validated end to end behavior across modules to ensure: workflow completeness, correct permissions, UI consistency, and stable database state.

6.4.5 Performance Testing

Performance testing focused on:

- Page load time for listing dashboards (products, orders, contracts)
- API response time for search/filter operations
- Stability under repeated operations (bulk order updates, repeated product actions)

6.4.6 Security Testing

Security testing validated:

- Authentication/session handling
- Role based access restrictions (admin only actions blocked for store managers)
- Input validation to prevent invalid or harmful requests

6.4.7 User Acceptance Testing (UAT)

UAT ensured real users could operate the system reliably: navigation clarity, correct module behavior, and predictable outcomes for day to day store operations.

6.5 Test Cases

This section presents key test cases executed to validate Barqi Bazar core workflows including authentication, POS operations, franchise governance, contract processing, and order lifecycle management. Each test case outlines the objective, steps, expected result, and outcome.

6.5.1 Login Test Case (Valid Credentials)

Table 6.9: Test Case TC-01: Login (Valid Credentials)

Test Case ID	TC-01
Brief Description	Login using valid credentials and redirect user to the correct role based dashboard.
Precondition	User account exists and is active in the system.
Steps	Enter valid email/username and password → Click Login.
Expected Result	Login successful and user redirected to role based dashboard (Super Admin / Franchise Admin / Store Manager).
Status	Pass

6.5.2 Login Test Case (Invalid Credentials)

Table 6.10: Test Case TC-02: Login (Invalid Credentials)

Test Case ID	TC-02
Brief Description	Validate login failure when incorrect credentials are entered.
Precondition	Login screen is accessible.
Steps	Enter incorrect email/password → Click Login.
Expected Result	Error message shown and user remains on login screen.
Status	Pass

6.5.3 POS Product Listing Test Case

Table 6.11: Test Case TC-03: POS Product Listing

Test Case ID	TC-03
Brief Description	Verify POS product listing loads correctly with price and stock status.
Precondition	Products exist in database; POS user is logged in.
Steps	Open POS Dashboard → Navigate to Product Listing.
Expected Result	Product list loads successfully; each item shows price and availability/stock status.
Status	Pass

6.5.4 POS Add Product Test Case

Table 6.12: Test Case TC-04: POS Add Product

Test Case ID	TC-04
Brief Description	Validate adding a new product through POS add product interface.
Precondition	POS user has permission to add products; required fields are known.
Steps	Open Add Product → Enter product details → Submit.
Expected Result	Product is created successfully and visible in product listing.
Status	Pass

6.5.5 POS Sale Transaction Test Case

Table 6.13: Test Case TC-05: POS Sale Transaction

Test Case ID	TC-05
Brief Description	Validate that a sale transaction completes and updates inventory correctly.
Precondition	Product stock is available; POS user is logged in.
Steps	Select product → Add to sale → Confirm transaction.
Expected Result	Sale is recorded successfully and product stock quantity is reduced accordingly.
Status	Pass

6.5.6 Franchise Creation Test Case

Table 6.14: Test Case TC-06: Add Franchise

Test Case ID	TC-06
Brief Description	Verify that Super Admin can create a new franchise successfully.
Precondition	Admin account is logged in; required fields are available.
Steps	Open Franchise Module → Add Franchise → Enter details → Save.
Expected Result	Franchise is created and appears in franchise dashboard list.
Status	Pass

6.5.7 City Assignment Test Case

Table 6.15: Test Case TC-07: City Assignment to Franchise

Test Case ID	TC-07
Brief Description	Validate that a city can be assigned to a franchise for controlled regional operations.
Precondition	Franchise exists; Admin has permissions.
Steps	Open City Management → Select franchise → Add/Assign city → Save.
Expected Result	City is linked to the franchise and appears in assigned region list.
Status	Pass

6.5.8 Contract Creation Test Case

Table 6.16: Test Case TC-08: Add Contract

Test Case ID	TC-08
Brief Description	Validate creation of a new contract between platform and franchise/store.
Precondition	Admin account logged in; related franchise/store exists.
Steps	Open Contract Module → Add Contract → Enter terms/details → Save.
Expected Result	Contract is created and visible in contract listing dashboard.
Status	Pass

6.5.9 Contract Proposal Approval/Rejection Test Case

Table 6.17: Test Case TC-09: Approve/Reject Contract Proposal

Test Case ID	TC-09
Brief Description	Verify admin can approve or reject a submitted contract proposal and status is updated.
Precondition	Proposal exists in proposals list; Admin is logged in.
Steps	Open Proposals → Select proposal → Click Approve/Reject.
Expected Result	Proposal status changes accordingly and reflects in proposal/contract listing.
Status	Pass

6.5.10 Order Status Update and Tracking Test Case

Table 6.18: Test Case TC-10: Order Status Update and Tracking

Test Case ID	TC-10
Brief Description	Validate order lifecycle updates and visibility in order management dashboards.
Precondition	Order exists in system; authorized role (Store Manager/Franchise Admin) is logged in.
Steps	Open Orders → Select order → Update status (e.g., Pending → Processing → Completed).
Expected Result	Status updates are saved and reflected in the order listing and order details view.
Status	Pass

6.6 Summary

This chapter presented the software testing process carried out for the Barqi Bazar platform. Testing techniques including unit testing, integration testing, functional testing, performance testing, security testing, and user acceptance testing were applied to validate the correctness and stability of all major workflows.

The executed test cases confirmed that authentication, POS operations, franchise governance, contract management, and order lifecycle handling function as expected. The results demonstrate that the system maintains data accuracy, enforces role based security, and remains stable under normal operational use. Overall, the testing phase confirms that Barqi Bazar is ready for deployment.

Chapter 7

Future Work and Conclusion

7.1 Conclusion

This project successfully designed and implemented **Barqi Bazar**, a service oriented digital marketplace that integrates Point of Sale (POS) operations, administrative portals, and a rider based delivery system into a unified platform. The system enables Store Admins to manage products and perform sales through POS, submit product proposals for online publishing, and maintain local inventory, while Franchise Admins review and approve proposals to ensure centralized control and consistency across regions.

The platform also supports customer order placement, real time order tracking, rider bidding, and automated order routing, which collectively improve operational efficiency and delivery transparency. The inclusion of Super Admin controls for managing franchises, cities, and riders ensures scalability and governance across multiple operational regions.

Through modular design, well defined workflows, and clear separation of responsibilities among system roles, Barqi Bazar demonstrates an effective approach to bridging offline retail operations with online marketplaces and on demand delivery services. The project fulfills its core objectives and provides a solid foundation for a scalable, maintainable, and extensible digital commerce ecosystem.

7.2 Limitations

Despite meeting the primary goals, the system has certain limitations:

- **Dependence on network connectivity:** Real time operations such as order tracking and rider bidding rely on stable internet access.
- **Limited automation in decision making:** Proposal reviews and rider selection are rule based and require manual administrative actions.
- **Basic analytics support:** The current implementation focuses on operational workflows rather than advanced business intelligence.
- **Manual scaling effort:** While service oriented, deployment and scaling require administrative configuration.

7.3 Future Work

Several enhancements can further strengthen Barqi Bazar in future iterations:

7.3.1 Advanced Analytics and Reporting

Future versions may include detailed dashboards for sales trends, inventory forecasting, rider performance metrics, and city wise demand analysis to support data driven decision making.

7.3.2 Smart Rider Assignment

Machine learning techniques can be introduced to automatically evaluate rider bids based on distance, rating, delivery history, and availability, enabling optimized delivery assignment.

7.3.3 Enhanced Mobile Applications

Dedicated mobile applications for customers, riders, and store admins can improve usability, accessibility, and real time interaction across the platform.

7.3.4 Payment and Wallet Integration

Secure digital payment gateways and wallet based transactions can be added to streamline order payments, rider earnings, and franchise settlements.

7.3.5 Scalability and Cloud Deployment

Deploying the system on cloud infrastructure with containerization can improve fault tolerance, scalability, and performance across multiple cities and franchises.

7.3.6 Security and Compliance Enhancements

Future work may include advanced authentication mechanisms, audit logs, and compliance features to meet regulatory and data protection requirements.

Overall, Barqi Bazar has strong potential to evolve into a full scale, intelligent marketplace platform that supports modern retail, logistics, and delivery operations across diverse regions.

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