UNIVERSITY OF SARGODHA

DEPARTMENT OF COMPUTER SCIENCE AND IT

Food Delivery Management

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FOOD DELIVERY SYSTEM:

(TECHNICAL IMPLEMENTATION REPORT)

1. Executive Summary:

Using an integrated digital platform, this paper details the deployment of an integrated food delivery system that links users, restaurants, delivery riders, and administrators. The system is meant to provide easy ordering and delivery of food while keeping all parties involved in communication.

2. Overview of the System:

The four primary user interfaces of the food delivery platform each have distinct stakeholder needs:

- User Interface
- Restaurant Interface
- Rider Interface
- Administrative Interface

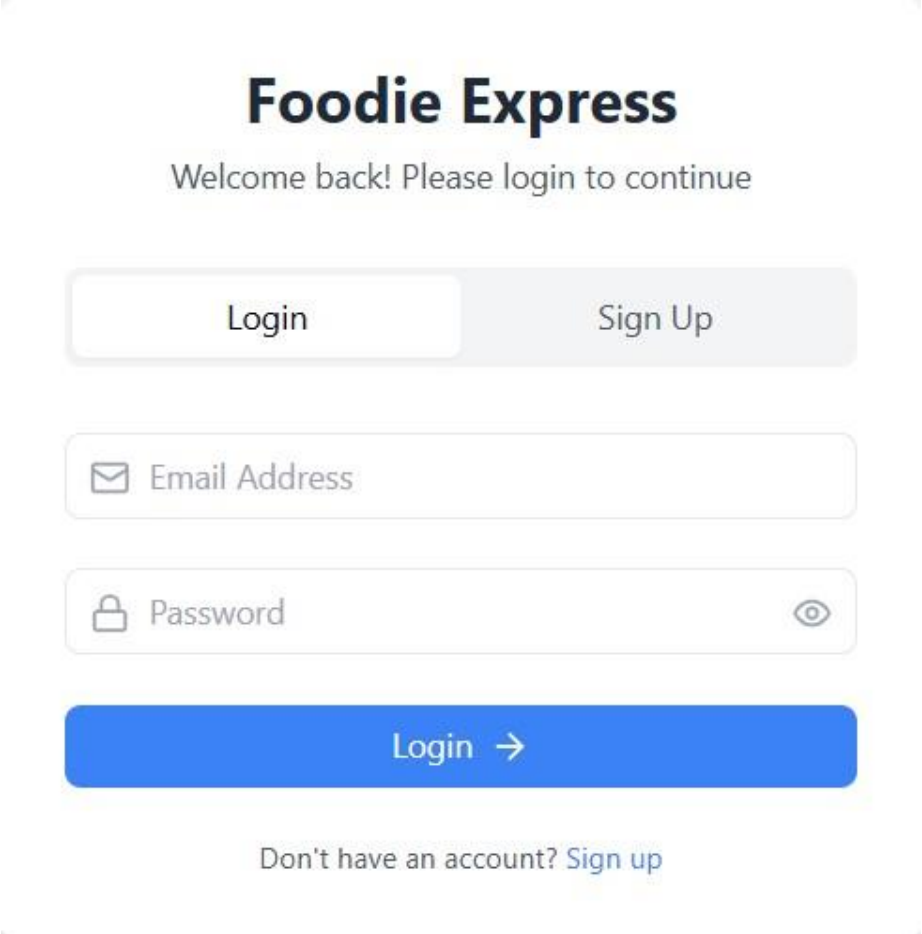


Figure 1: Authentication Interface

3. User Interface Implementation:

Authentication System:

The platform will use an effective authentication mechanism that makes it easy and convenient for users of all backgrounds to log in. The login screen provides:

- User-friendly input fields
- Secure password management
- Role-based access control
- Password recovery options

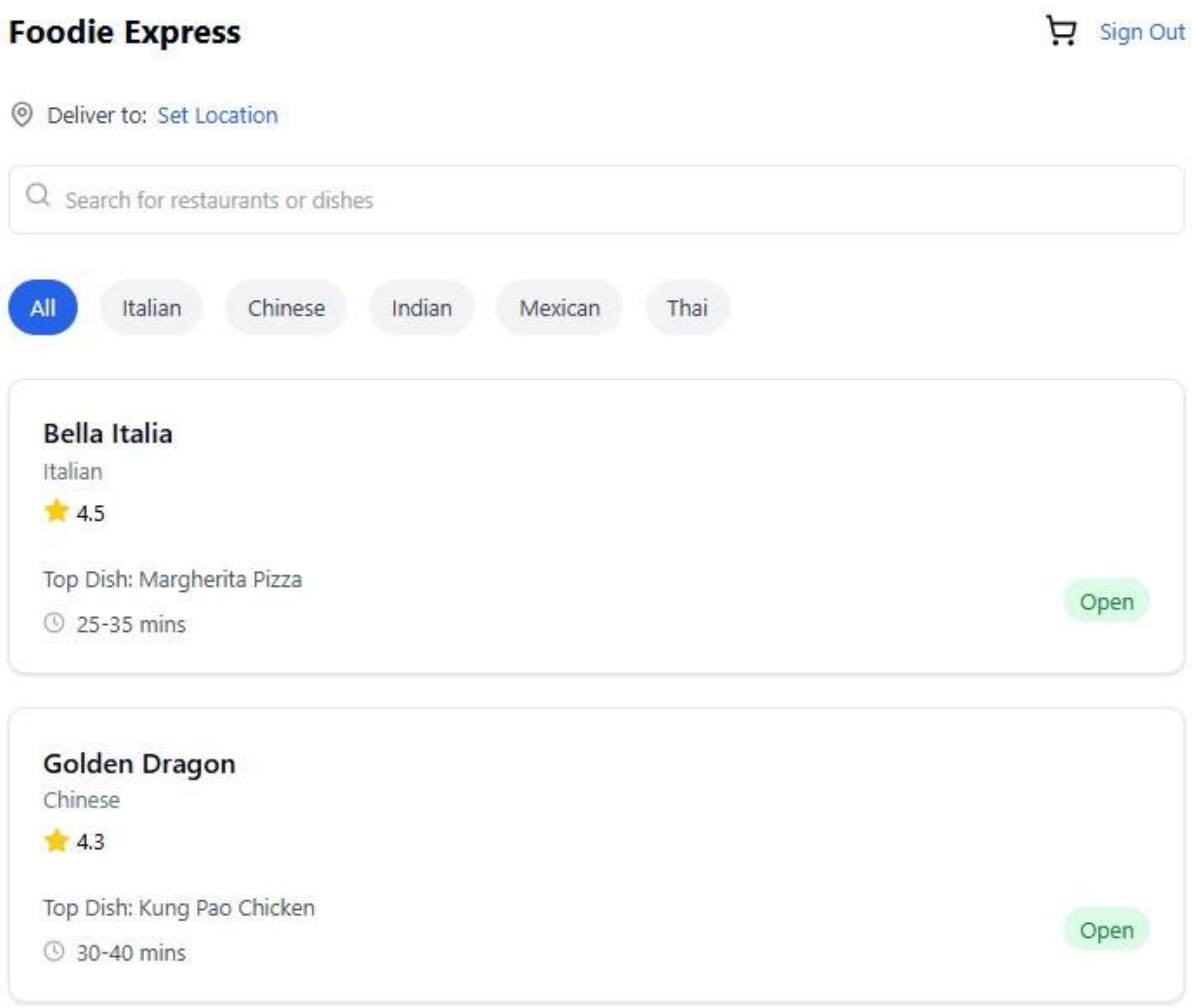


Figure 2: User Home Page Interface

Core User Features:

The homepage serves as the primary hub for user interaction and includes the following essential elements:

- Intuitive navigation design
- Restaurant discovery interface
- Search and filter capabilities
- Personalized recommendations

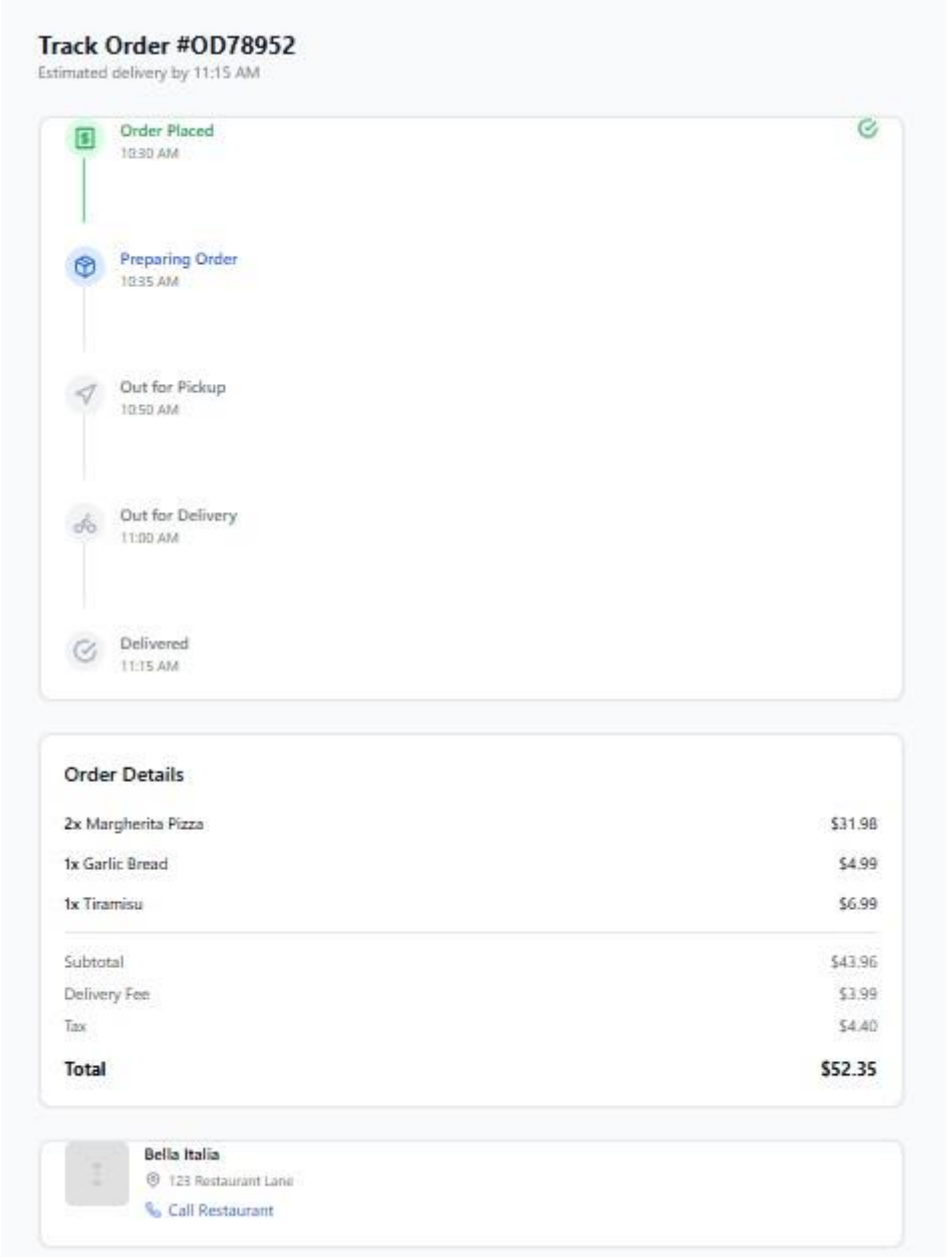


Figure 3: Order Tracking System

Order Management:

The following details will be available to users via the order tracking interface:

- Order status changes in real time
- Visualization of delivery progress
- Expected delivery durations
- Direct lines of communication for them

4. Implementation of Rider Interface:

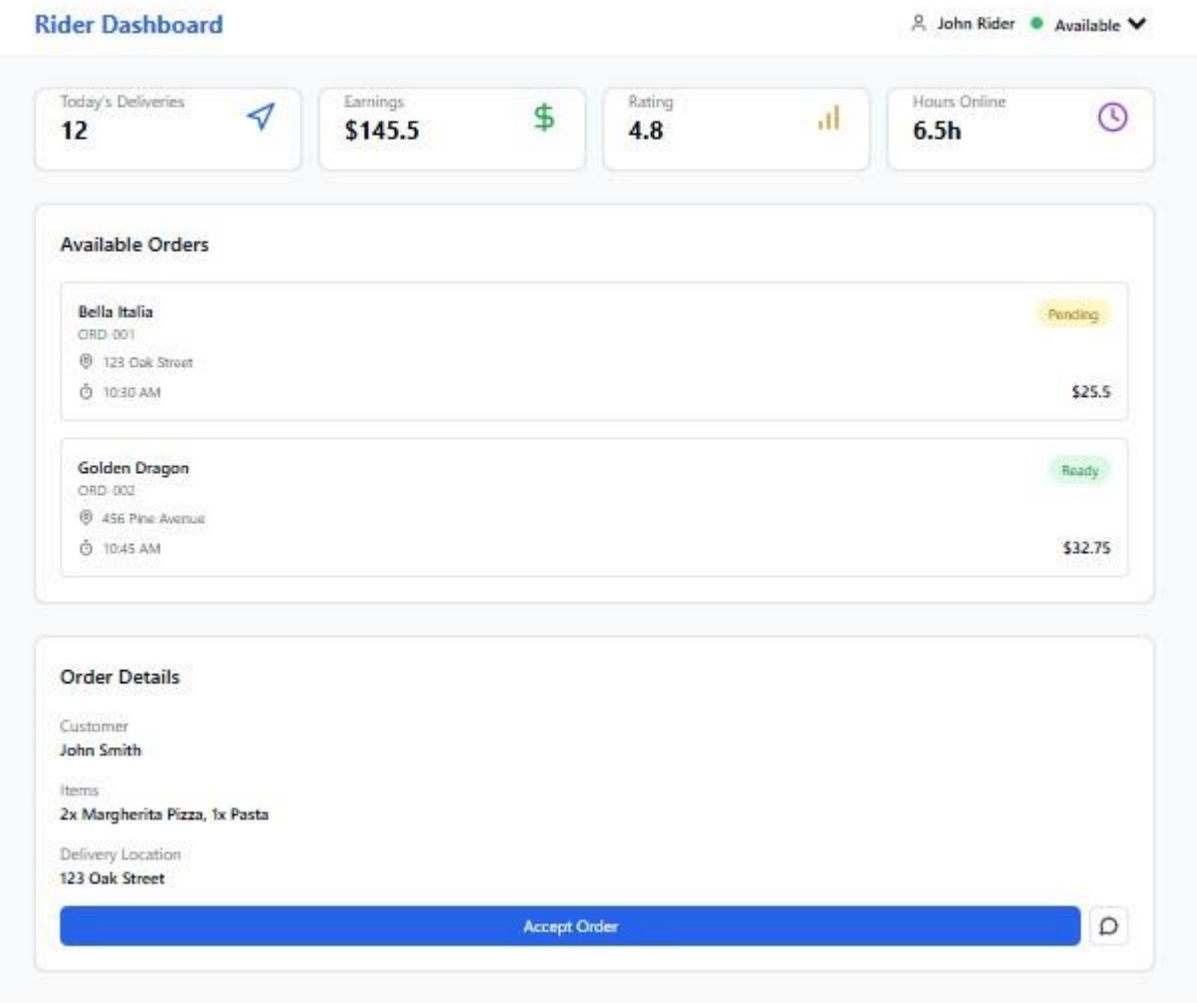


Figure 4: Rider Dashboard

Features of the Rider Dashboard:

The rider will be able to efficiently handle his deliveries thanks to the rider interface by:

- Acceptance of orders
- Optimization of routes
- Facilities for communicating with customers
- Update on the status of the order

5. Implementation of the Admin System:

Figure 5: Administrative Dashboard

Administrative Controls:
Complete control over platform management is available through this admin interface on:

- Management of users
- Verification of restaurants
- Management of riders
- Monitoring of system performance

6. Technical Implementation Notes:

Interface Design Principles:

The following is the interface design:

- Principles of responsive design
- Compatibility between platforms
- Usability
- Using a consistent design language

Security Features:

Numerous security features are available in the system, including:

- Safe user authentication
- Gateways for safe payments
- Encrypting private information
- Security of location data

Integration of Systems:

The platform combines the elements.

- Synchronization of data in real time
- Status updates that happen automatically
- Channels of integrated communication
- Order management that is centralized

Upcoming Enhancements:

The following are some enhancements that could be made to the system:

- Application of advanced analytics
- Using machine learning to optimize orders
- Individualization of the user
- More ways for making payments

7. Diagrams:

- **Use Case Diagram:**

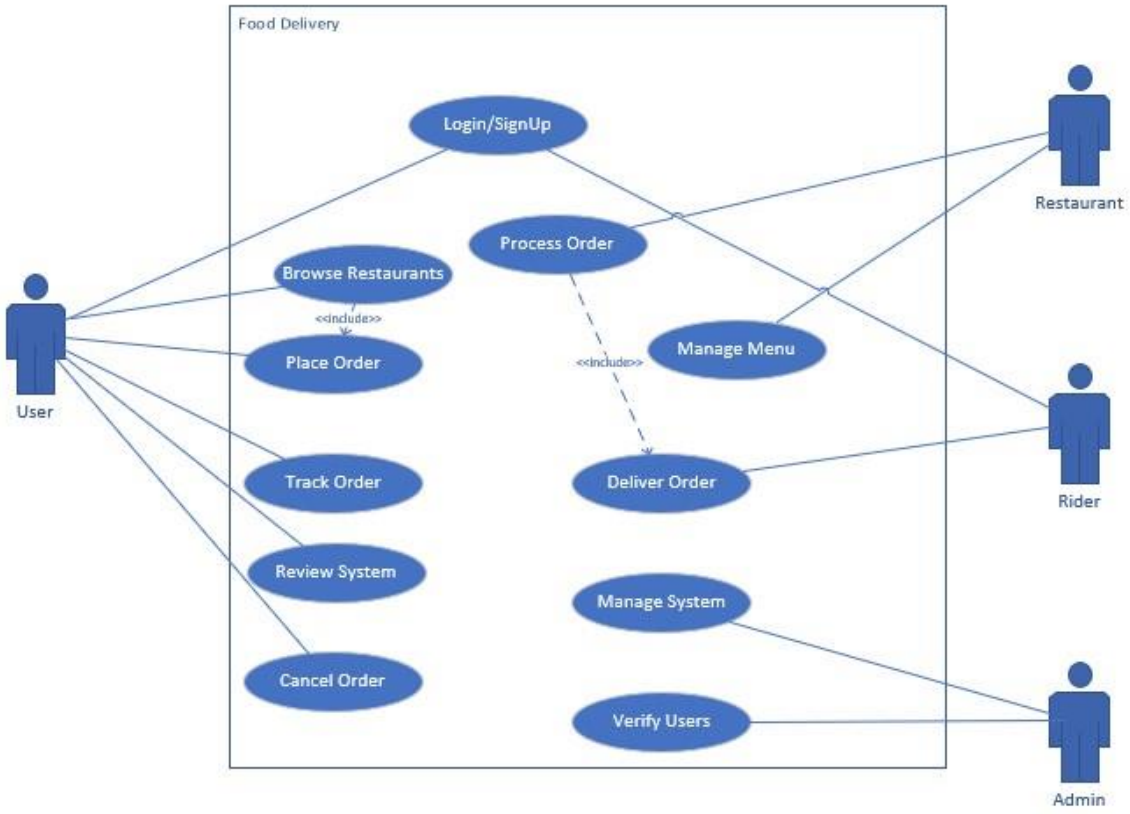
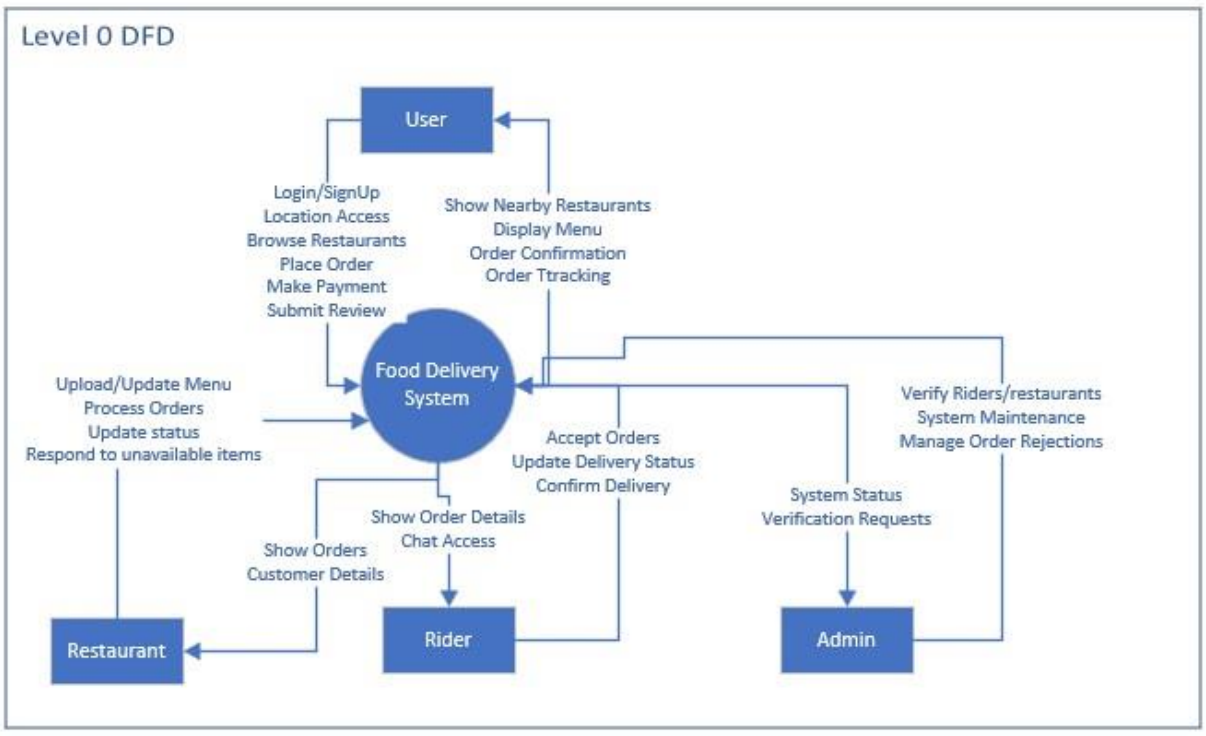


Figure 6: Use Case Diagram

The Use Case Diagram addresses the basic use cases of the food delivery management software and there are four actors for the system, which are: User (customer), Restaurant (restaurant owner), Rider (who does the delivery), and Admin. Users may take basic actions such as logging in, searching or viewing different restaurants, placing or making an order and following the delivery. Restaurants take care of the order, riders deliver the items, and the admin manages the system.

- **Data Flow Diagram:**



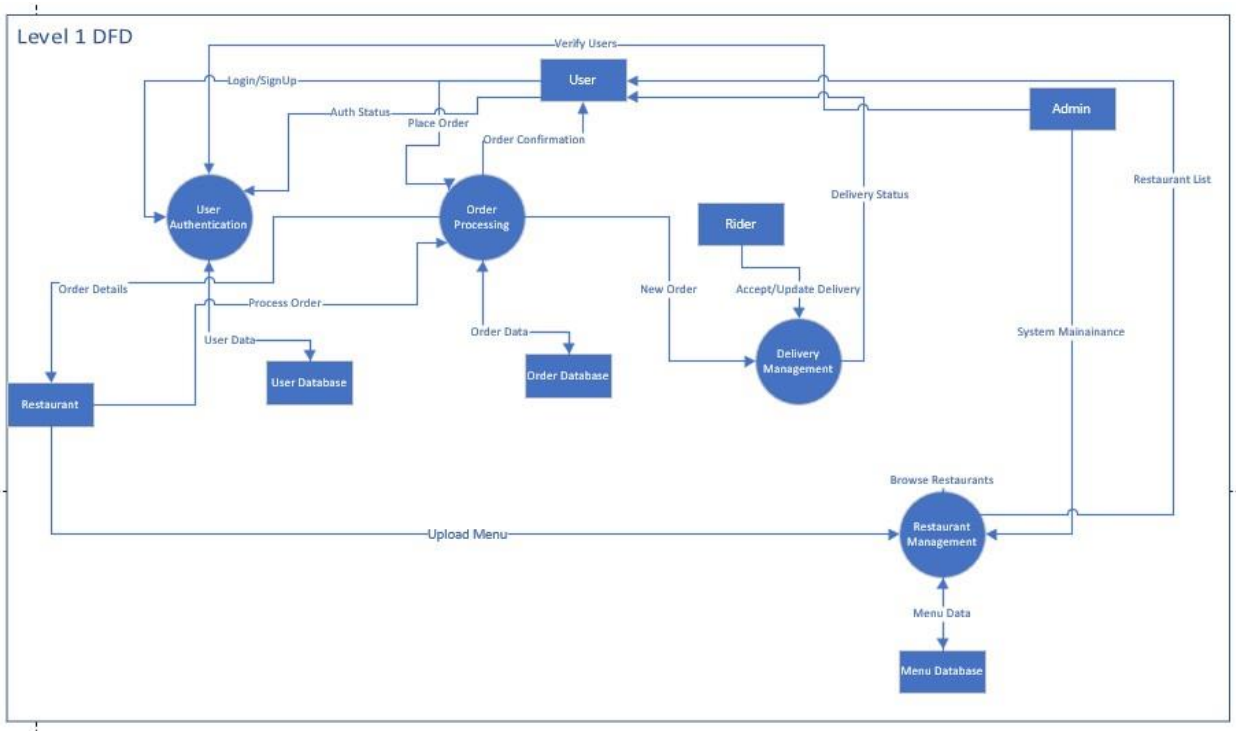


Figure 7: Level 0 and Level 1 DFD Diagram

The Level 0 and Level 1 Data Flow Diagrams (DFD) show how information flows in a food delivery management system. The context of the level 0 DFD includes the system and the external entities (User, Restaurant, Rider, and Admin) and how they relate to the central system. It describes flows of information such as user log on, management of meals in the restaurant, management of the ordering, and control by the administrator. The level 1 DFD divides the system into smaller units (User Authentication, Order Management, Delivery Management, and Restaurant Management) and identifies major data repositories (User Database, Order Database, and Menu Database). It explains the activities involved in converting the data into usable forms, storing it and accessing it in a stipulated manner that enhances security and operational effectiveness.

- **Class Diagram:**

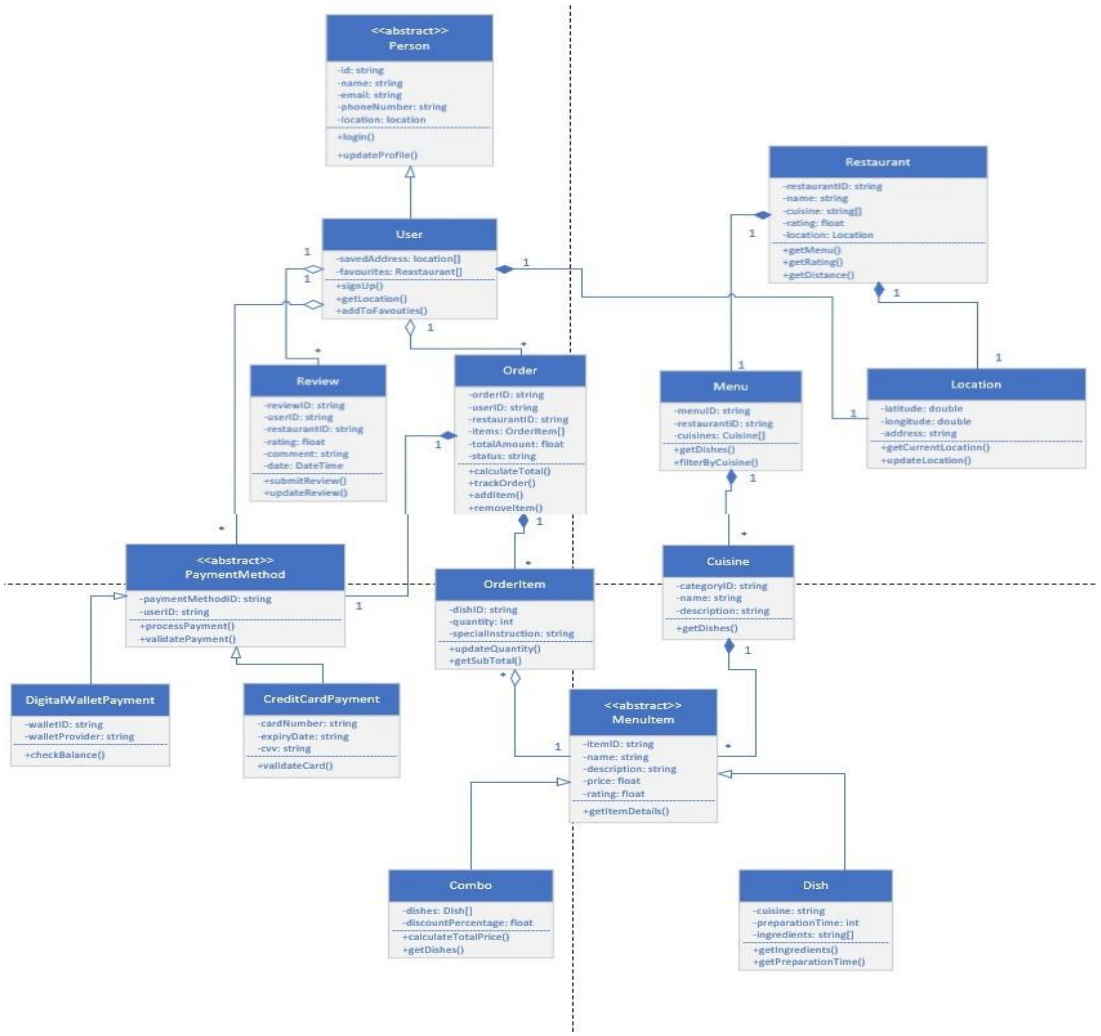


Figure 8: Class Diagram

The focus of the class diagram is to thoroughly show the object-oriented approach of a food delivery management system. Essentially, the classes Person, Restaurant, Menu, and PaymentMethod are analyzed more in detail in this section. The most basic class is the Person class and it enables the users to order, review, and favorite restaurants. It bulldozes competitors' menus by collaborating its Menu and Location classes, enabling restaurants to be easily managed. The former class is linked to the next two classes: Cuisine and a special for launching MenuItem into Combo and Dish, who target at `marked' different types of food. All methods of paying are through an abstract Payment tab that assists the system in retaining an uniform interface despite enabling multiple payment methods.

- **Sequence Diagram:**

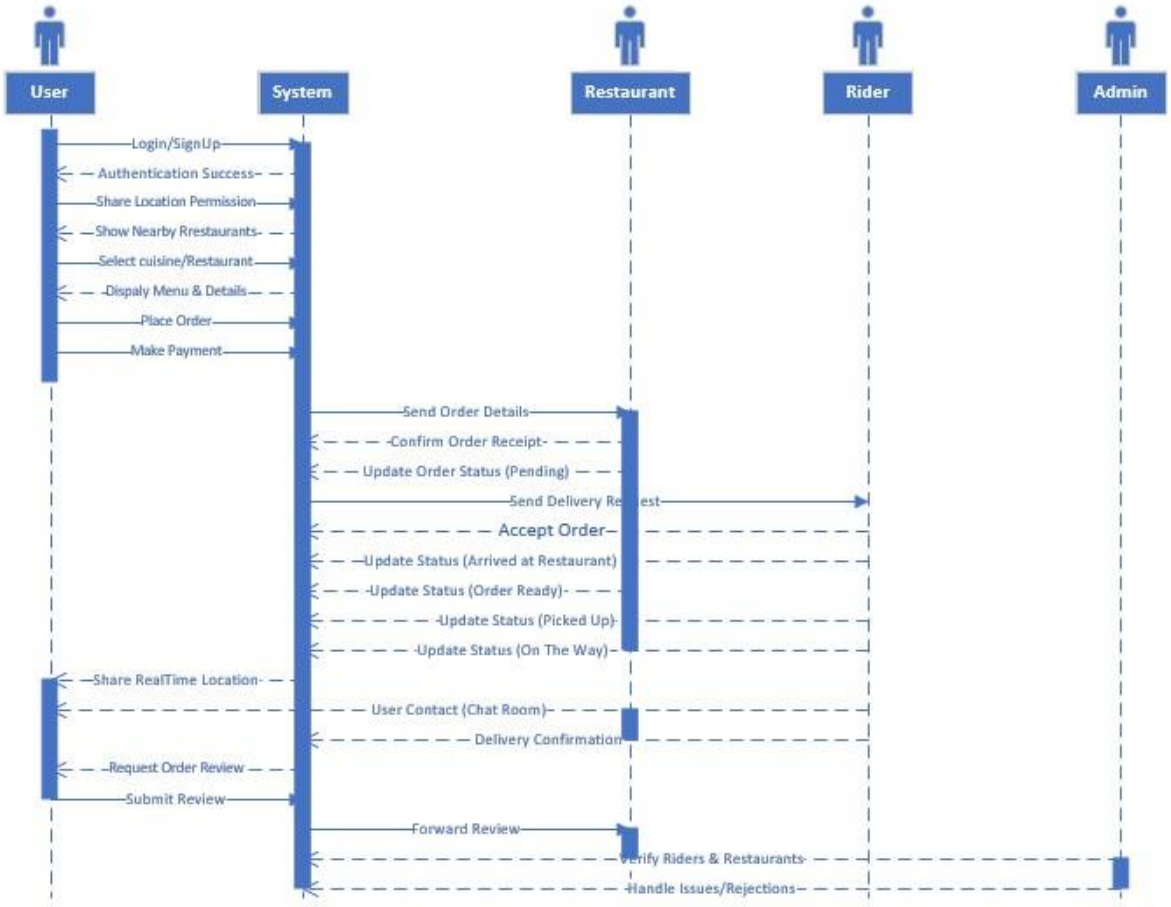


Figure 9: Sequence Diagram

The sequence diagram does cover the complete processes of a food delivery management system, beginning at logging in to the system, the process of the ordering, delivering and after the order service. It begins from the point of authentification by the user and the location permissions for

the system to search and show the usable restaurants and their menus which are in proximity. The system helps to order and pay for and then the system starts a fast track of ordered communications between the restaurant and rider. The system categorizes the orders in the order of their status such as that of placing the order, that of the assignment of a rider and finally, that of the delivery of the product. For communication purposes within deliveries, there is location sharing and chat room facilities.

- **Activity Diagram:**

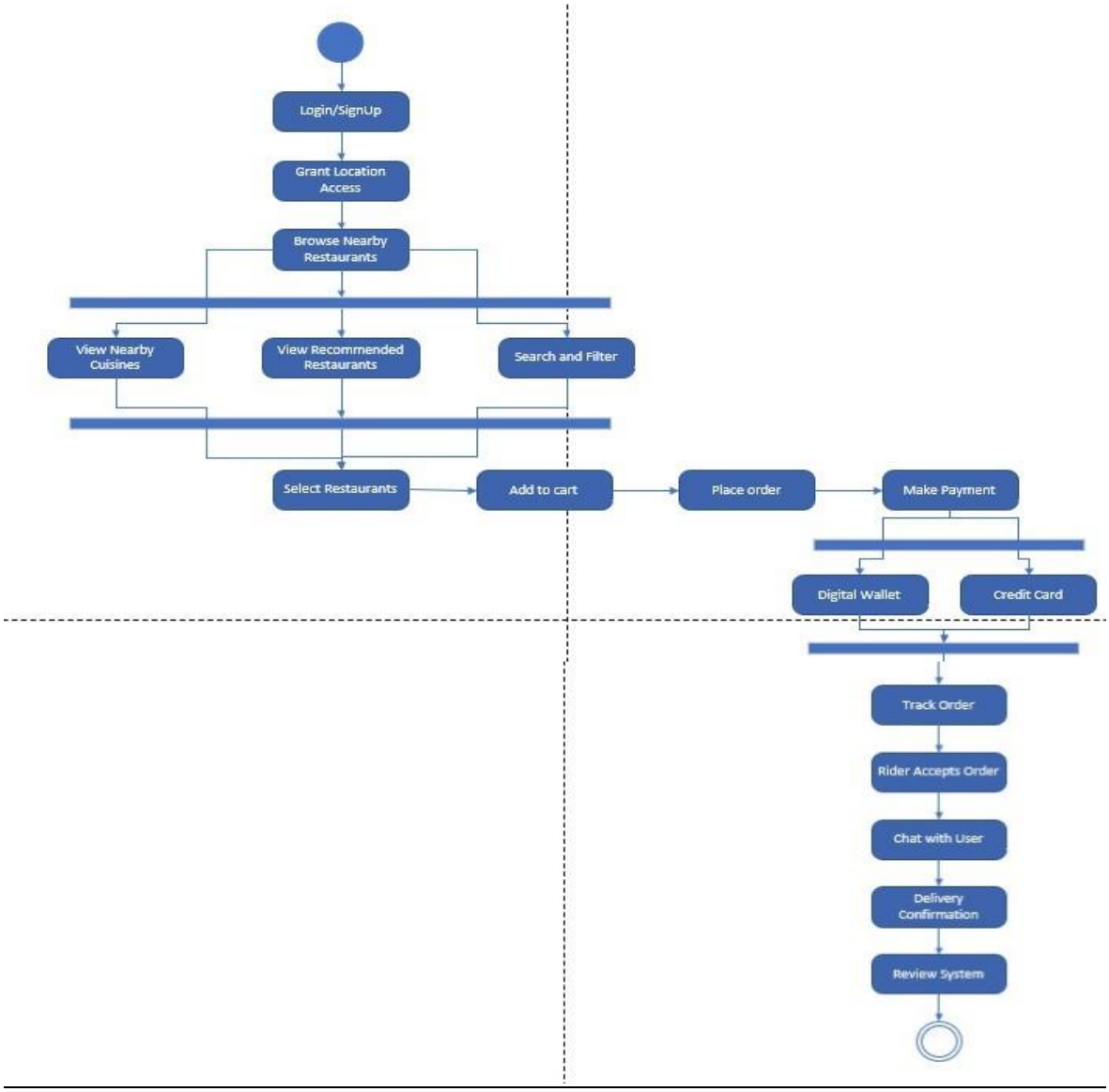


Figure 10: Activity Diagram

The ordered activity diagram presents the workflow engaged in by food delivery clients when ordering food. It takes the user through a sequence, beginning with their logins and provision of access to neighbouring regions. Users can find restaurants within close proximity by one of three ways: looking at available nearby food, restaurants that have been recommended, or searching through and filtering various options. Upon selecting a certain restaurant, the process then continues on, adding things to a shopping basket, making an order and finally having to pay. After the payment is received, the order moves through the subsequent stages of order taking, assigning the rider, and communication aspects of the order. It ends with the users confirming delivery of the food and reviewing it, which indicates there was a problem-free intuitive flow of the system in terms of discovering restaurants and making payments for them.

- **Swim-Lane Diagram:**

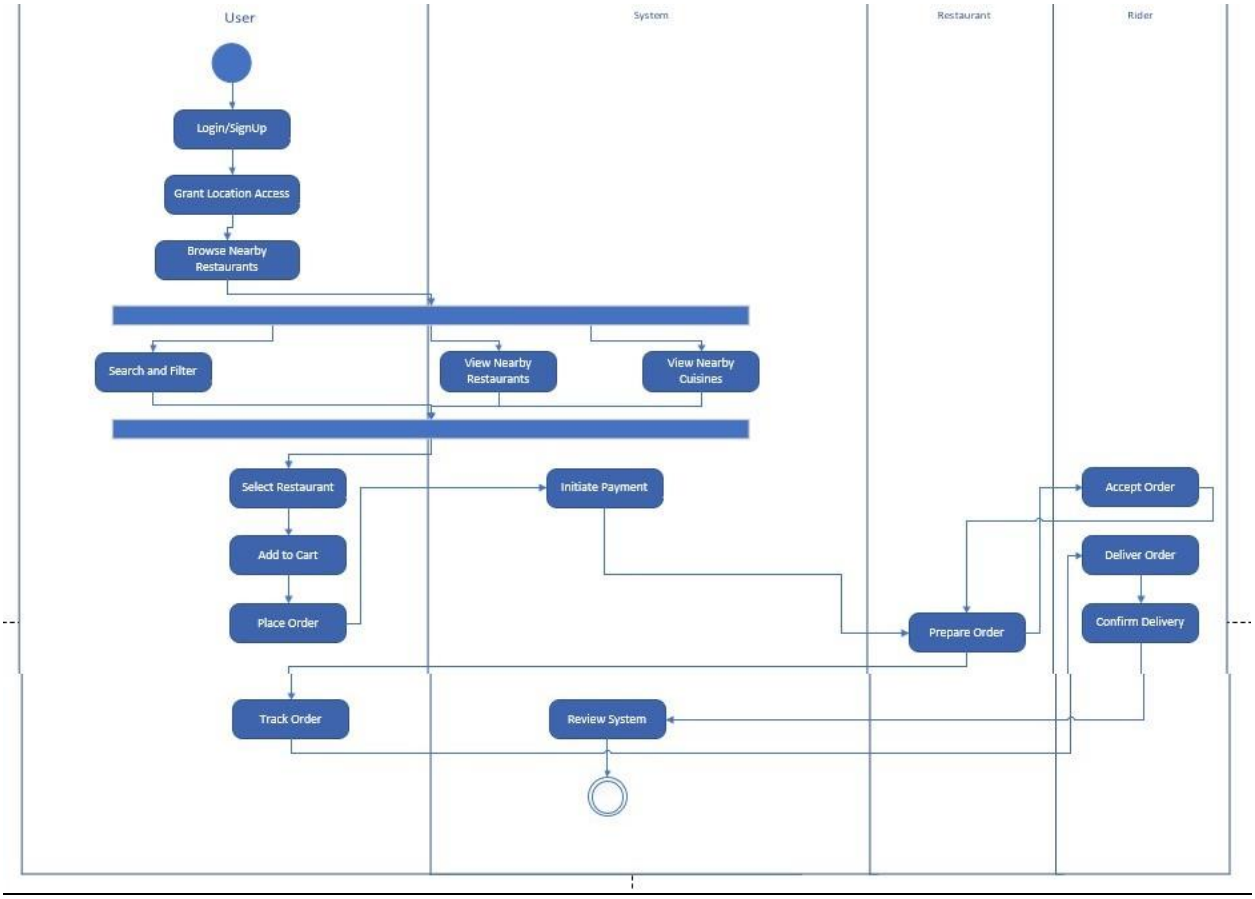


Figure 11: Swim-Lane Diagram

The swimlane diagram is a food delivery system constructed so as to express visually the fertility of four people, the user the system, the restaurant, and the rider. It describes what people do in

their specific lanes and so the processes are identifiable and ownership is now defined. The starting line of the system's flow begins with the log-in of the user and granting permission to search and thereafter comes the options for the searching of restaurants. The Position Of System Implements The Other And Missing Elements That Many hhstakeholders Have And Which Include The Transitionists From Starting The Selling Process To Making The Internet Order And Movement To The Stage Of Its Distribution. The drawing ends with the evaluative elements, which show the purpose of the whole procedure, that there is feedback after the order completion.

- **Collaboration Diagram:**

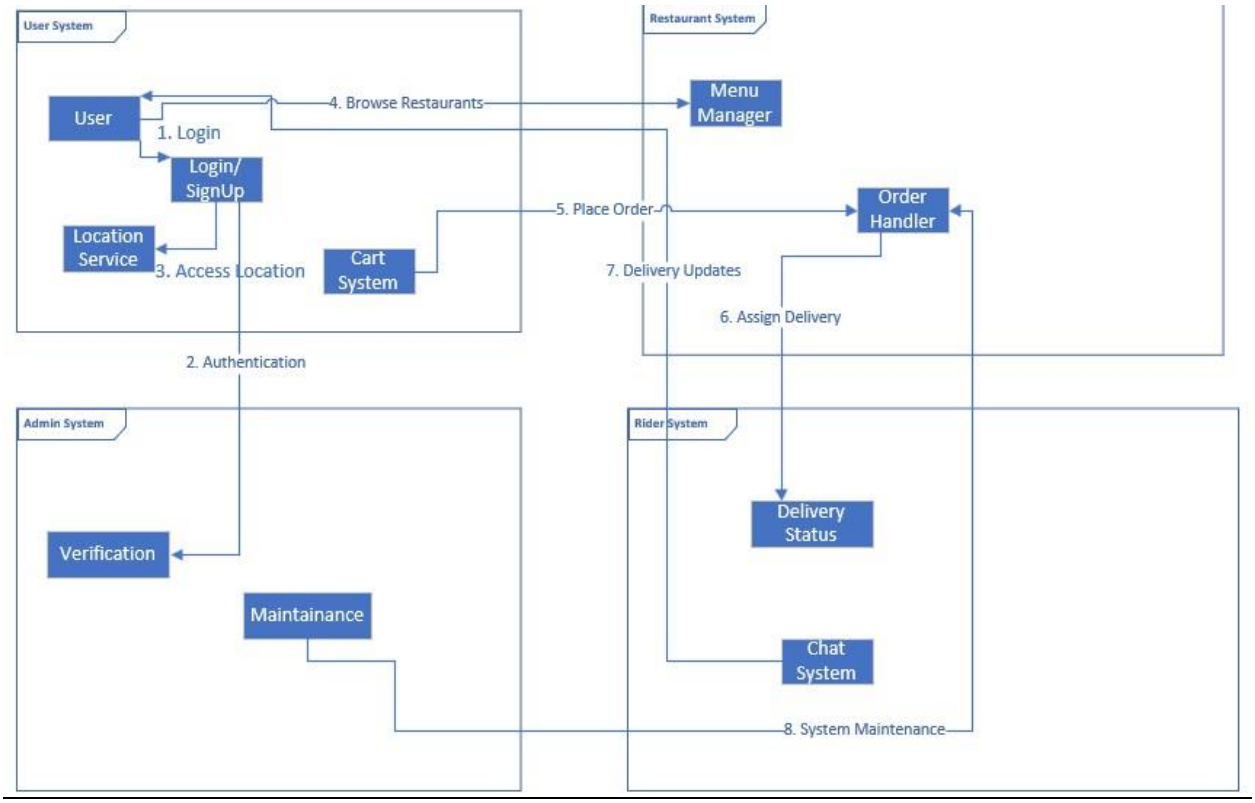


Figure 12: Collaboration Diagram

The food delivery management platform's collaboration diagram depicts the order fulfillment process, indicating the active roles the various subsystems play in executing and completing the process. The flow begins with user verification, which is linked to the Verification sector within the Admin System. The Location Service is required as it causes the Browse Restaurants equipment to leverage geospatial information. Cart System allows clients to place orders, assigns orders for delivery and continuously updates the order status so as to reflect the delivery status. The Rider System includes Delivery Status and Chat System for communication and tracking. The Admin System monitors maintenance of the system, thus completing the operational cycle of the platform, as shown in the illustration.

- **State Diagram:**

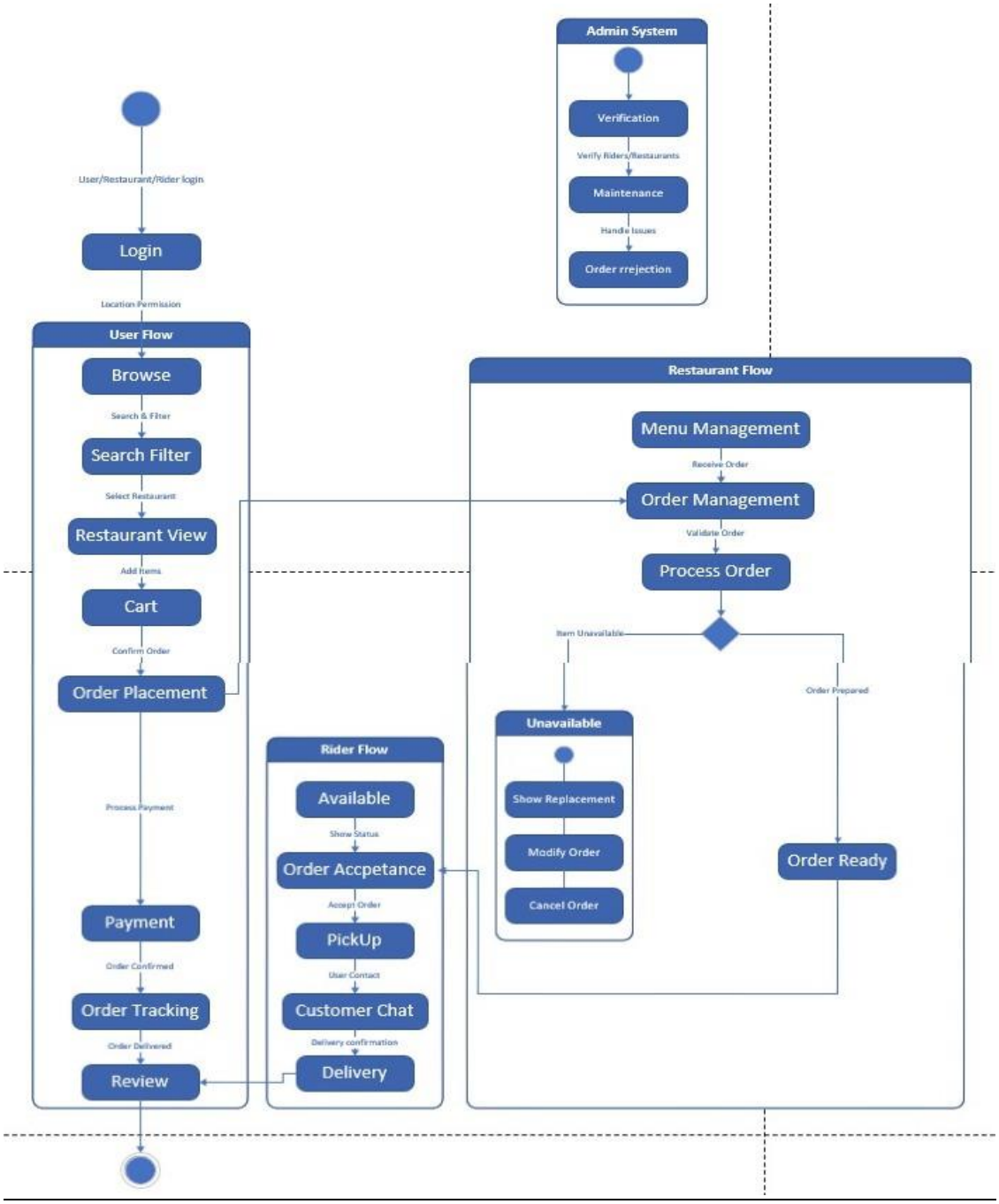


Figure 13: State Diagram

The state diagram has been constructed with food delivery system based on states and transitions available which are user flow, restaurant flow and rider flow. The first scenario dealt with user verification and progressed into browsing, searching, making an order, making payment. In the Restaurant Flow there are states telling the order management, ordering and there is a decision to be made in the order process state. The Rider Flow highlights the delivery chain, from being available to accepting delivery, collecting the order and delivering it. An Admin System helps to control the system and its defects by order of verification, maintenance and order rejection states.

8. End Matter:

Conclusion:

In addition to guaranteeing effective delivery services, the food delivery system offers a strong platform for bringing customers and businesses together. Future scaling and feature enhancement are made possible by the modular architecture, which also preserves system security and stability.

Thank You.