Restaurant Order & Payment Automation System

Group Members:
Mohona Haque - 2121897042
Md. Nafiz Un Nabi Ishan - 2121346042
Nowshin Nure Azad Shihab - 2131330642

Date: March 12, 2025

Contents

1 Introduction

The **Restaurant Order & Payment Automation System** is designed to optimize restaurant operations by automating key processes such as **order-taking, payment processing, and real-time communication** between customers, staff, and administrators. By replacing manual workflows with a **digitally integrated system**, it enhances efficiency, improves accuracy, and ensures a seamless dining experience.

2 Key Objectives

- Automate and streamline the ordering and payment process.
- Reduce wait times and improve overall service efficiency.
- Ensure accuracy in order processing and minimize human errors.
- Enhance customer experience with real-time updates and seamless payments.
- Provide restaurant management with insightful analytics for better decision-making.

3 Core Functionalities

3.1 For Customers

- Browse digital menus via website.
- Place orders seamlessly for **Dine-in, Takeaway, or Delivery**.
- Choose from multiple payment options (Credit/Debit Cards, Online Payment, Cash).
- Receive real-time notifications on order status (e.g., Preparing, Ready, Delivered).
- Apply discounts, promotional codes, or loyalty rewards during checkout.

3.2 For Restaurant Staff

- Manage incoming orders efficiently from a centralized dashboard.
- Update order status (e.g., In Progress, Ready for Pickup, Out for Delivery).
- Coordinate with kitchen staff through automated notifications.
- Track payment confirmations to avoid billing disputes.

3.3 For Administrators

- Monitor and oversee restaurant operations in real-time.
- Manage digital menus (add, update, or remove items).
- Track order history and analyze sales trends for better decision-making.
- Integrate third-party payment gateways for secure transactions.
- Customize discount rules, promotional offers, and loyalty programs.

3.4 End Users

- **Customers**: Place orders, make payments, and receive real-time updates.
- **Staff**: Manage orders, track payments, and update order statuses.
- **Admin**: Oversee the system, manage menus, and integrate third-party services.

3.5 Functional Requirements

- Customers can place orders (Dine-in, Takeaway, Delivery).
- Staff can update order statuses (e.g., Preparing, Ready, Delivered).
- Customers can choose payment methods (Credit Card, Cash, Online).
- Real-time notifications for order updates.
- Integration with third-party payment gateways.
- Dynamic addition of features like discounts or special requests.

3.6 Non-Functional Requirements

- Scalability to handle multiple orders simultaneously.
- Maintainability for easy updates and modifications.
- Security for payment processing and customer data.
- Flexibility to adapt to future changes (e.g., new payment methods).

4 Diagrams

4.1 Entity Relationship Diagram (ERD)

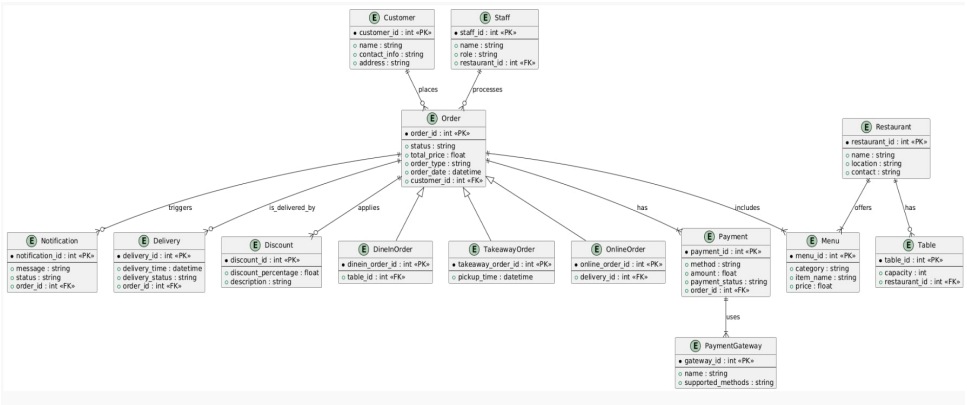

Figure 1: Entity Relationship Diagram

4.2 Use-Case Diagram

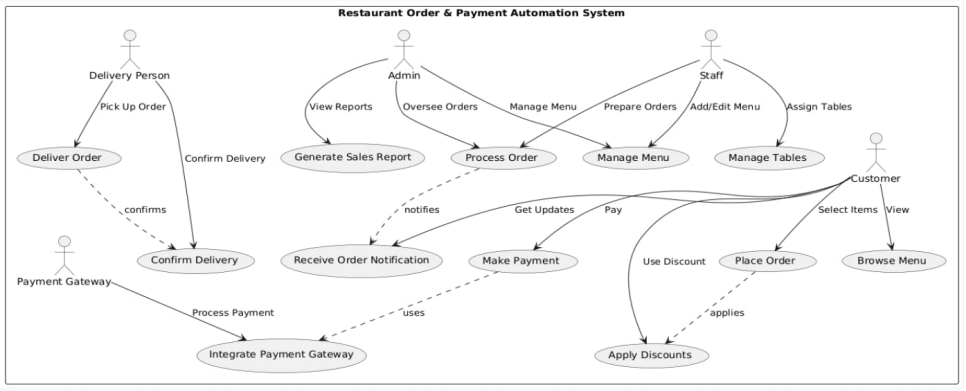

Figure 2: Use-Case Diagram

4.3 Class Diagram

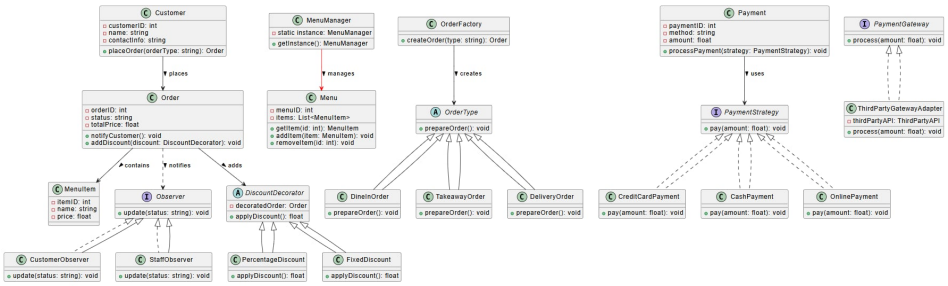

Figure 3: Class Diagram

4.4 Sequence Diagram

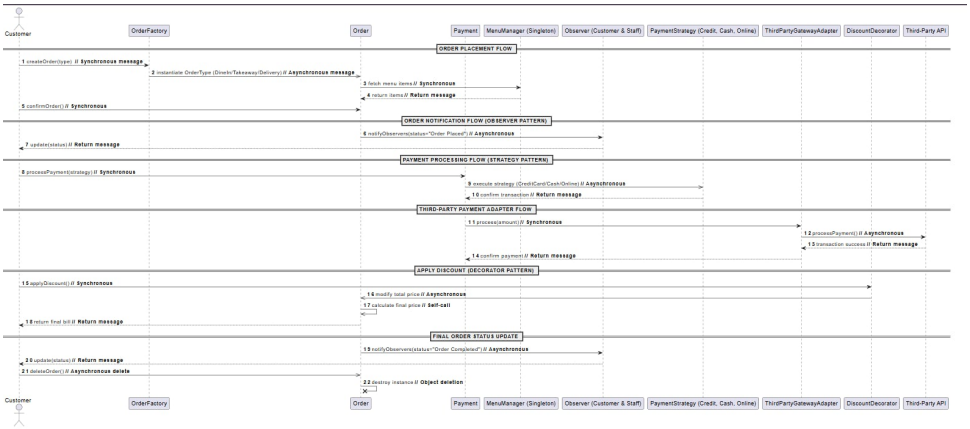

Figure 4: Sequence Diagram

5 Github Link

This project automates restaurant operations using design patterns like Singleton, Factory, Observer, Strategy, Adapter, and Decorator for scalability and flexibility. You can access the project on GitHub: GitHub Repository: Restaurant Order and Payment Automation System.