PREMIER UNIVERSITY
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

A Project Report On

ONLINE FOOD ORDERING SYSTEM

Course Title: Software Development
Course Code: CSE 364

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1. Introduction

The ”Online Food Ordering System” is a digital platform created to simplify the process of ordering food from restaurants. This system replaces the traditional, manual order-taking method with an efficient and user-friendly online solution. Customers can easily browse menus, place orders, and make payments online, with home delivery system from the restaurant.

It is developed by using the Laravel framework and MySQL, the system ensures a sturdy backend, secure data management, and a responsive user interface. It is designed to serve both individual customers and restaurant owners, providing a good experience that increases convenience and accuracy. The system also ensures data security, reducing the risk of data loss and improving overall efficiency.

”Online Food Ordering System” seeks to deliver a fast, accurate, and dependable service, simplifying the food ordering experience for customers while optimizing operations for businesses.

The source code for the Online Food Ordering System can be found on GitHub at the following link:

Click here: QuickBite

2. Problem Statement

The traditional method of ordering food, often involving phone calls or in-person visits, is inefficient, prone to errors, and lacks real-time order tracking. This manual process leads to inaccurate orders, delays, and miscommunication, frustrating customers due to limited menu visibility, payment options, and inconsistent delivery services.

Restaurant owners also struggle with managing orders, inventory, and customer data efficiently, leading to many issues and missed opportunities to improve customer satisfaction.

The ”Online Food Ordering System” aims to address these issues by creating a digital platform for smooth online ordering, secure payments, and efficient business management. This solution increases both customer satisfaction and operational efficiency, helping businesses stay competitive in a fast-paced, convenience-driven market.

3. Objective

- To Develop a User-Friendly Ordering Platform
- To provide To simplify the food ordering process by allowing online browsing, ordering, and payment.
- Enable a Secure Online Payments
- To enhance user experience with an intuitive interface for customers and restaurant owners.
- To enable a flexible menu management and order customization for restaurants.
- To increase accessibility for small vendors and certified home kitchens, broadening customer food options.

4. Methodology

4.1. Requirement identification

1. Existing Systems

- Foodpanda, HungryNaki, and Shohoz Food are the leading platforms offering food delivery services. These platforms provide menu browsing, online payments, and delivery tracking.
- Limitations:
  - Focus on urban areas, excluding rural regions and small vendors.
  - High commission fees impact small businesses.
  - Issues with delivery delays and inconsistent service quality.

2. Academic Literature:

- Consumer Behavior: Studies show a preference for convenience, but delivery delays and reliability are major issues.
- Digital Payment Challenges: Many customers prefer cash-on-delivery due to security concerns with digital payments.

3. Gaps in Existing Systems:

- Exclusion of small vendors and home kitchens.
- Lack of customizable solutions for small businesses.
- Delivery speed and service quality problems.
- High commission rates and limited rural reach.

4. Addressing Gaps in the Proposed Project:

- Inclusion of small vendors and rural regions.

- Customizable vendor solutions and improved logistics.
- More flexible commission fees.
- Enhanced security for digital payments.

4.1.1. Requirement Analysis

The ”Online Food Ordering System” project requires a robust backend using Laravel and MySQL, with a responsive frontend (HTML5, CSS, JavaScript) and integration of secure payment. Key operational needs include multi-role user management, real-time order and inventory tracking, flexible vendor customization, and support for both digital payments and cash-on-delivery. The system should generate detailed reports for vendors. Constraints include limited budget, time, and resource availability, while assumptions focus on vendor adoption, customer trust in digital payments, and growing internet usage in rural areas.

4.1.2. Literature Review

Describing researchers work and drawbacks

—c—p3cm—X—X—

S/N	Name of Researcher	Implemented Work	Drawbacks
1	Researcher 1	This is a flexible-width column. The text wraps as needed to fill the space. Another flexible column.	
2	Researcher 2	Another flexible column for work.	Drawbacks description.

Table 4.1: Literature Review

[1] [2]. [3] [4] [5]

4.2. Feasibility Study

4.2.1. Technical

1. Technology Stack Readiness

- Laravel Framework: Laravel is an ideal choice for a modern web application like an Online Food Ordering System.
- Efficient User Management: Laravel's authentication scaffolding simplifies user roles (admin, customer), registration, and login functionalities.
- Eloquent ORM: Facilitates database interaction, enabling easy manipulation of data like food items, orders, and user information.
- Blade Templating Engine: Streamlines front-end development, offering reusable components for consistent UI and easy data rendering.
- Front-end: Laravel seamlessly integrates with Vue.js, React, or plain JavaScript, offering flexibility to develop responsive, dynamic UIs for customers.
- API and Payment Integration: Laravel offers built-in API tools, simplifying integration with payment gateways like Stripe, PayPal, and third-party services for delivery tracking.

2. System Complexity and Management

- Order Management Workflow: Laravel's routing and middleware system allows precise control over user actions, such as placing orders, managing carts, and handling payments securely.
- Scalability: The modular architecture ensures that new features, such as promotions or loyalty programs, can be added easily without disturbing core functionalities.
- Real-time Updates: Laravel's support for WebSockets enables real-time updates for order status, pushing notifications instantly to customers and restaurants.

3. Team Efficiency

- Developer Experience: With your experience in PHP, MySQL, and Laravel, the learning curve is minimized. Laravel's comprehensive documentation and vibrant community further shorten development time.

- Time-to-Market: Laravel offers out-of-the-box solutions for common tasks like authentication, session management, and form validation, enabling rapid development of critical features.

4. High-Performance Infrastructure

- Database Optimization: Using MySQL with Laravel's Eloquent ORM ensures smooth data handling for high transaction volumes. Indexing and query optimization strategies improve performance under high user loads.
- Caching: Laravel supports Redis and Memcached, which can cache frequently accessed data (e.g., food menus, user profiles), boosting response times and reducing server load.
- Scalability: The application can scale horizontally by adding more servers to handle peak loads (e.g., during lunch/dinner hours or promotions).

5. Security and Compliance

- Built-in Security: Laravel comes with pre-configured solutions to prevent common vulnerabilities like SQL Injection, XSS, and CSRF attacks. Password hashing, two-factor authentication, and encryption ensure secure handling of sensitive data.
- Compliance: Laravel supports data privacy features such as encryption for user data (e.g., addresses, payment information), ensuring compliance with privacy regulations like GDPR.

6. Third-Party Integration Flexibility

- Payment Gateways: Laravel supports seamless integration with bkash ,nagad and other gateways, ensuring safe and secure payment transactions.
- Delivery APIs: Easily integrate Google Maps or other delivery services for real-time tracking and routing of orders.
- Notifications: Services like Twilio and Mailgun can be used to notify users about order updates via SMS or email, improving customer engagement.

7. Future-Proofing

- Modular Design: Laravel's structure allows easy future enhancements. Features such as user reviews, restaurant ratings, and AI-driven recommendations can be added without altering core functionalities.
- Mobile Compatibility: With API-first architecture, Laravel supports mobile app integration (iOS/Android), ensuring a smooth transition if mobile apps are developed in the future

The "Online Food Ordering System" project is technically feasible due to the availability of necessary resources, tools, and expertise. While potential challenges exist, they can be effectively addressed, making the project achievable from a technical perspective.

4.2.2. Operational

1. User Acceptance:

- Customer Perspective:

- Customers today prefer convenient, time-saving solutions like online ordering, especially with the increasing use of smartphones and the internet for daily activities. The system will offer easy browsing, ordering, secure payments, and real-time order tracking, catering to this preference.
- Challenges: Some customers may face difficulties if they are less familiar with technology or online transactions.
- Solutions: The system will feature an intuitive design with simple navigation, making it accessible to users of all ages and tech familiarity. Tutorials, FAQs, and customer support will be available to address any issues.

- Restaurant Owners and Staff:

- Restaurant Owners and Staff: Restaurants will benefit from efficient order management, reduced errors, and streamlined operations, which will increase productivity and accuracy. The system's reporting and inventory management features offer additional value to restaurant operations.
- Challenges: Some restaurant staff may be reluctant to switch from manual processes to a digital platform due to unfamiliarity with the technology or perceived complexity.

- Solutions: Comprehensive training and support will be provided to restaurant staff to facilitate a smooth transition. A user-friendly backend interface will make the system easy to adopt, and support teams will be on hand to troubleshoot any issues during the initial rollout.

2. Compatibility with Existing Systems:

- Restaurant Systems:

- Many restaurants may already have some form of POS (Point of Sale) system, which could create challenges in integrating the new online platform.
- Challenges: Integration with existing POS systems could be complicated, particularly for restaurants that use proprietary or outdated systems.
- Mitigation: Ensure that the platform is designed to integrate with common POS systems and offer APIs for customization. Partner with third-party providers for seamless integration. For smaller establishments without advanced systems, offer the platform as a stand-alone solution.

- Payment Systems:

- Integration with payment gateways is essential for secure and efficient transactions. The platform will need to support multiple payment methods (credit cards, e-wallets, etc.).
- Challenges: Ensuring secure and timely transactions across all platforms, especially for users unfamiliar with digital payments.
- Mitigation: Partner with established payment gateways and implement high-security protocols, such as SSL encryption, to ensure the safety of transactions. Provide clear instructions for users on how to make payments.

The ”Online Food Ordering System” is operationally feasible, given its alignment with modern customer and business needs. User acceptance is likely to be high, given the growing demand for online services, while organizational support can be achieved through clear demonstration of the system’s benefits. Compatibility with existing restaurant systems will be handled through flexible integrations, and operational challenges such as scalability and security can be addressed through cloud infrastructure, regular updates, and strong support systems. By addressing these factors, the project can be successfully implemented in the intended environment, providing both restaurants and customers with a streamlined and efficient solution.

4.2.3. Economic

Cost-Benefit Analysis for the ”Online Food Ordering System” Project:

Table 4.2: Cost-Benefit Analysis of Online Food Ordering System

Item	**Description**	**Cost ($)**	**Benefit ($)**
Development Costs	Software Development	20,000	-
Hardware Costs	Servers and Equipment	7,000	-
Training Costs	User Training Sessions	2,500	-
Maintenance Costs	Annual Maintenance	1,500	-
Total Costs		**31,000**	-
Increased Efficiency	Time Savings	-	40,000
Improved User Satisfaction	User Feedback	-	10,000
Revenue Increase	New Customers	-	10,000
Total Benefits		-	**60,000**
Net Benefit		**31,000**	**29,000**

This shows that the ”Online Food Ordering System” project is economically feasible, offering significant cost savings and revenue potential for participating restaurants, while recouping development and maintenance costs within the first year of operation.

4.2.4. Schedule

The gantt Chart shows the schedule feasibility:

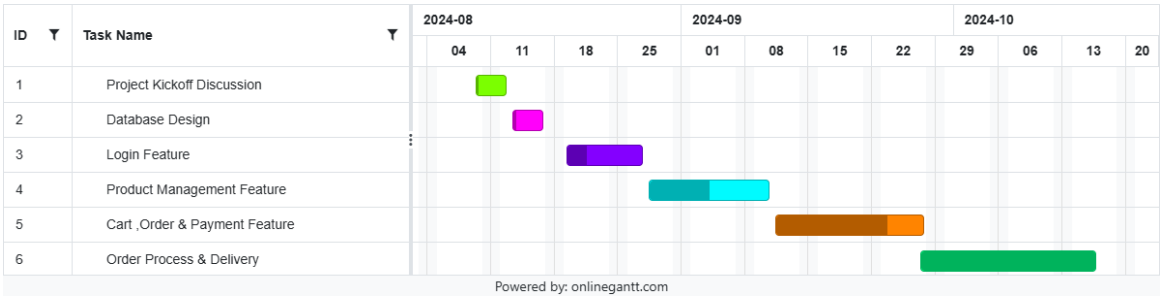

Figure 4.1: Gantt Chart demonstrating schedule feasibility

4.3. High-Level Design of System

4.3.1. Methodology of the proposed system

The system follows the MVC structure (Model-View-Controller). Think of this structure as three parts working together:

- Model: This is like the brain of the system. It stores all the important information, such as customer accounts, restaurant details, and orders. It keeps everything organized so the system can quickly find what it needs.
- View: This is the part users see on the screen, like the website or app. It shows things like restaurant menus, order history, and buttons for ordering food. It's designed to be simple and easy to use so customers can quickly place their orders.
- Controller: This acts like a messenger between the brain (Model) and the interface (View). For example, when a user clicks "Place Order," the Controller takes that action and tells the Model to store the order. It also tells the View to update the user's screen with order confirmation.

4.3.2. Flow Charts/Working Mechanism of Proposed System

Include flowcharts or diagrams that illustrate how the system will function.

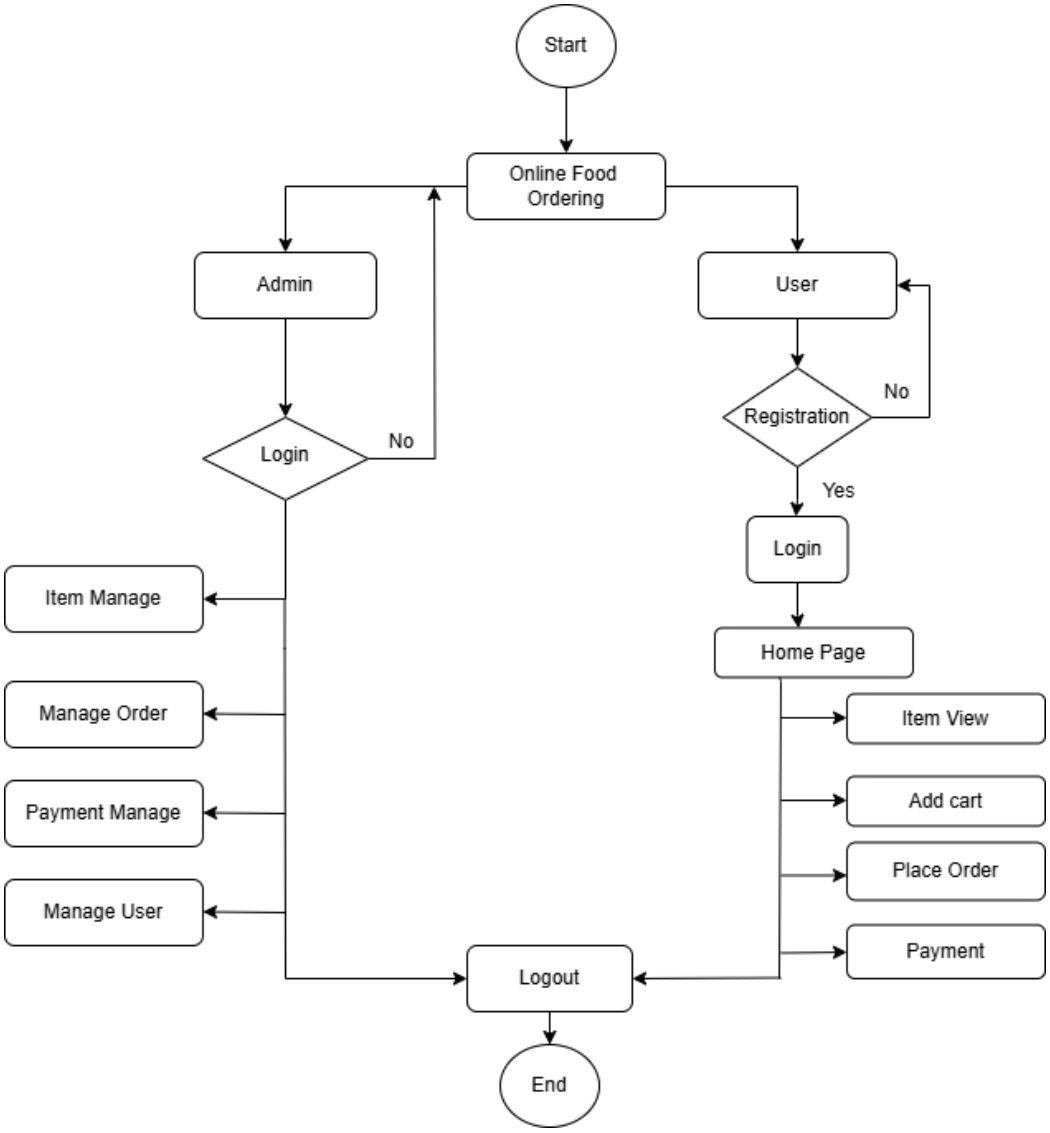

Figure 4.2: Flowchart of Online Food Ordering System

4.3.3. Description of Algorithms

- Login Authentication Algorithm:
  - When a user tries to log in, the system checks if the email and password are correct.
  - The password is stored in a secure way (like a lock), using encryption.
  - If the password matches, the user gets access. If not, they see an error message saying, “Incorrect password.”
- Order Management Algorithm:
  - When a customer places an order, the system first checks if all the items are

available.

  - If the items are in stock, the system confirms the order and notifies the restaurant.
  - The system also updates the order status at every step (like “Preparing” or “Out for Delivery”).

- Payment Gateway Algorithm:
  - Cutomer choose how to pay (like Nagad or Bkash or COD). The system sends payment information to the payment provider (like Bkash) to process the payment.
  - If the payment is successful, your order is confirmed. If not, the system informs you.

5. Expected Output

1. Customer Features:

- User Registration and Login:

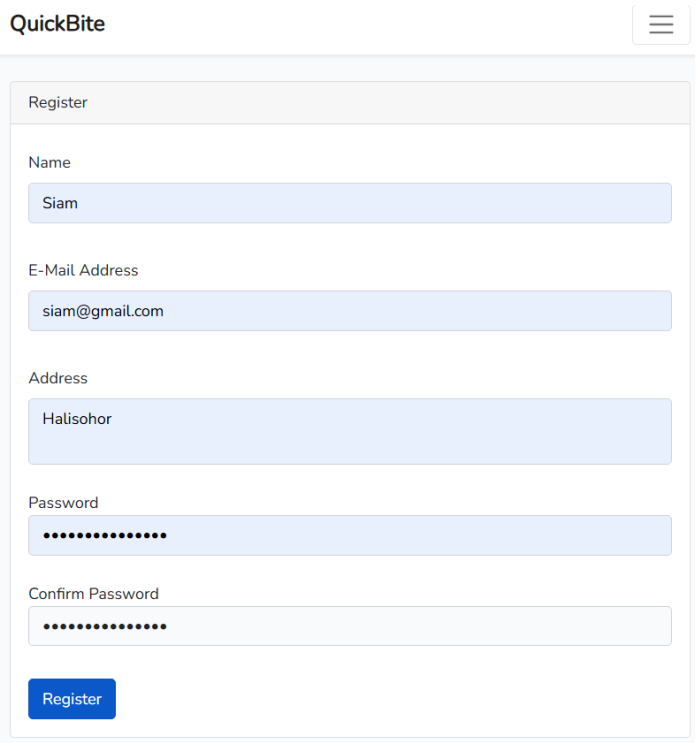

Figure 5.1: User Registration

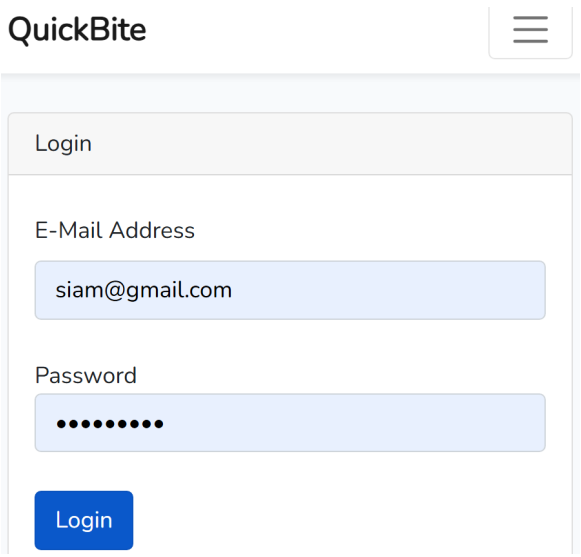

Figure 5.2: User Login

- Expected Output: Customers can create an account by entering their details (name, email, password). Once registered, they can log in to their account securely.

- Menu Browsing:

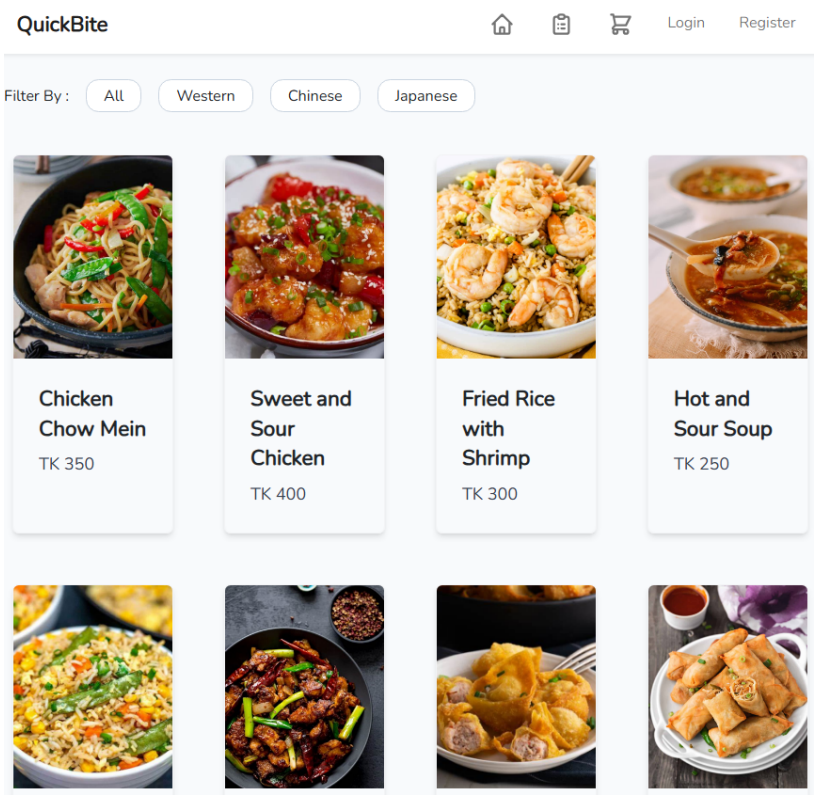

Figure 5.3: Menu browsing

- Expected Output: Customers can view a comprehensive list of available restaurants and their menus. Each restaurant menu displays item names, descriptions, prices, and images. Filters and search functionalities should be available to help users find specific dishes easily.

- Cart Management:

  - Adding Items:

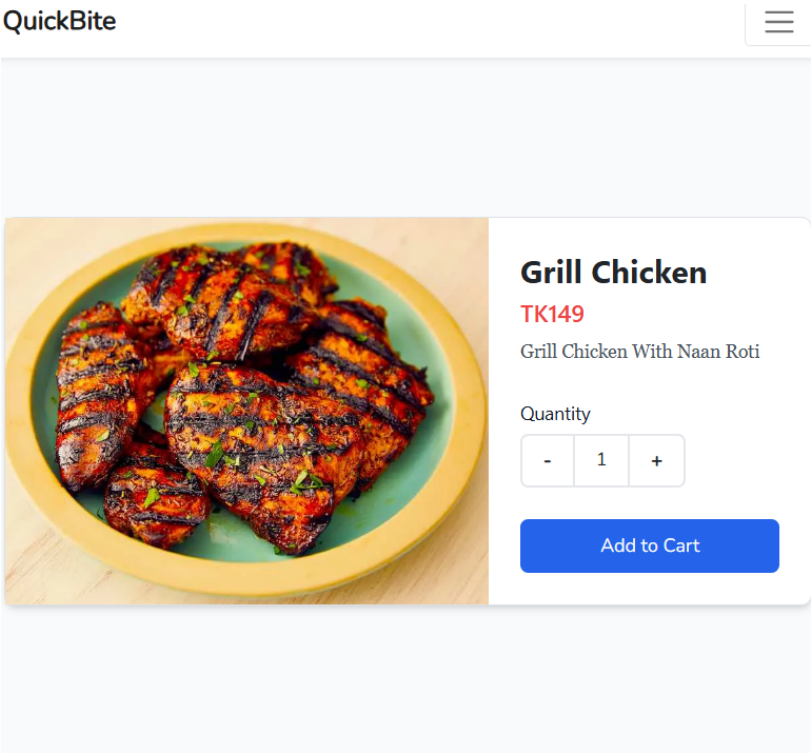

Figure 5.4: Selection for adding to cart

Expected Output: Customers can add selected food items to their cart. The cart interface displays a summary of items, including quantities, prices, and a total amount.

– Checking Out:

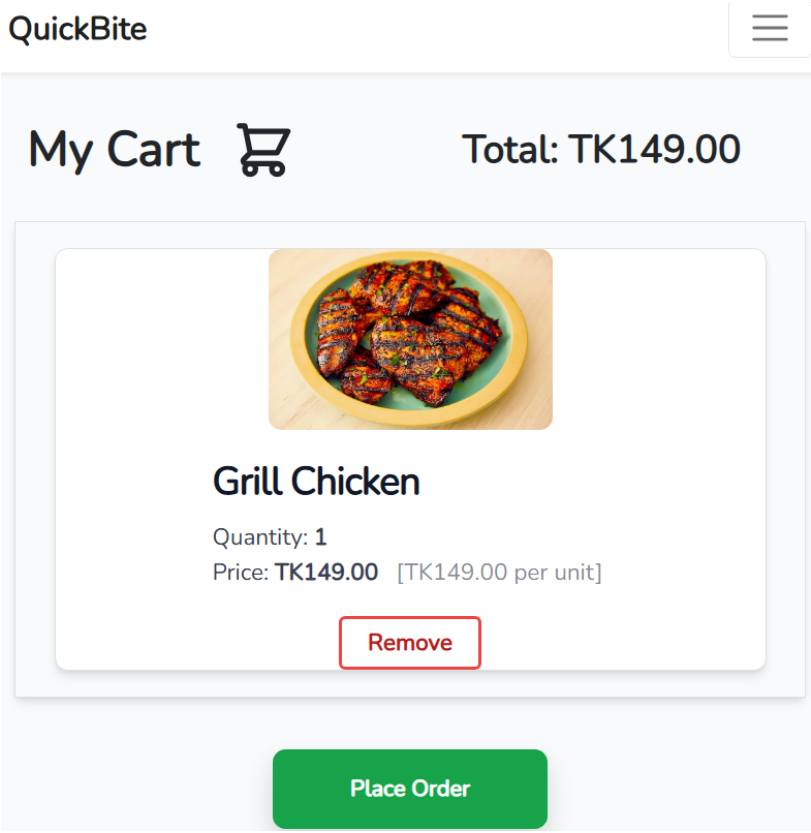

Figure 5.5: Adding to cart

Expected Output: Customers can proceed to checkout, where they enter delivery information, select payment methods (e.g., cash on delivery or online payment), and review their order before final submission.

- Order Placement:

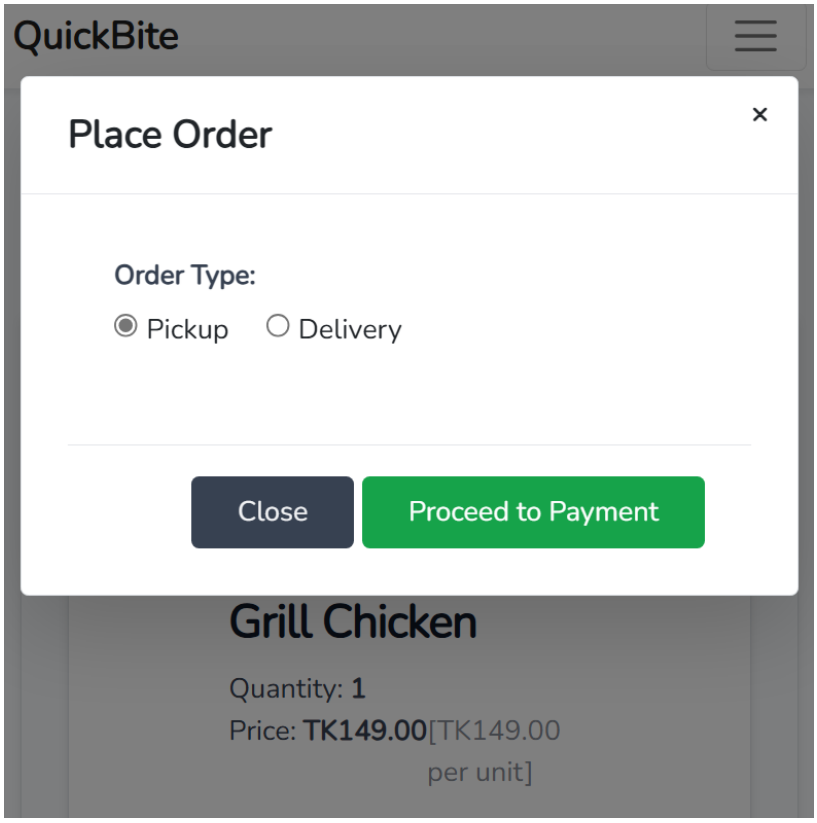

Figure 5.6: Payment Selection

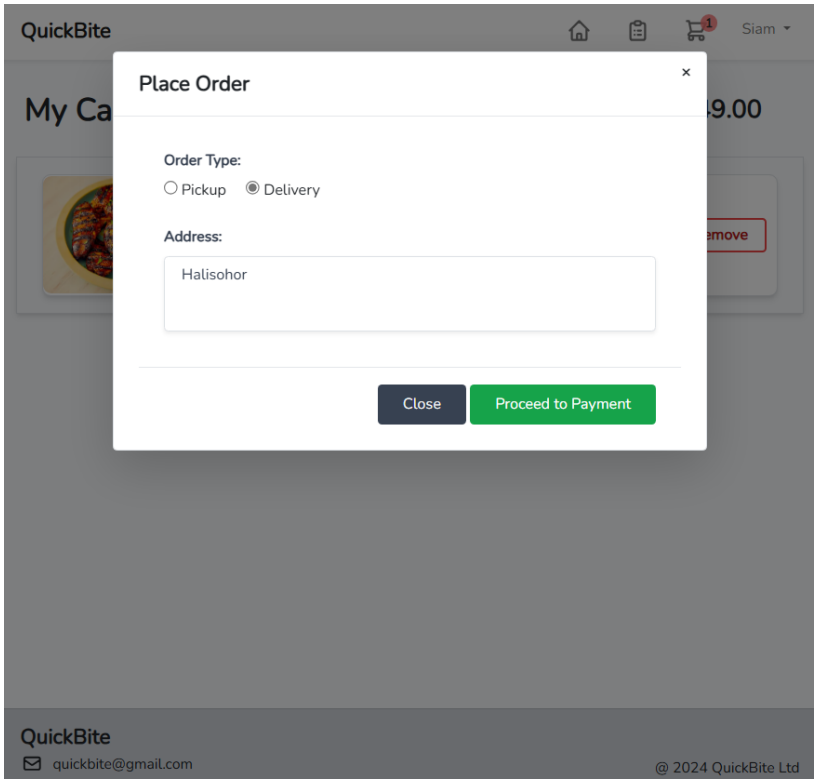

Figure 5.7: Payment Selected

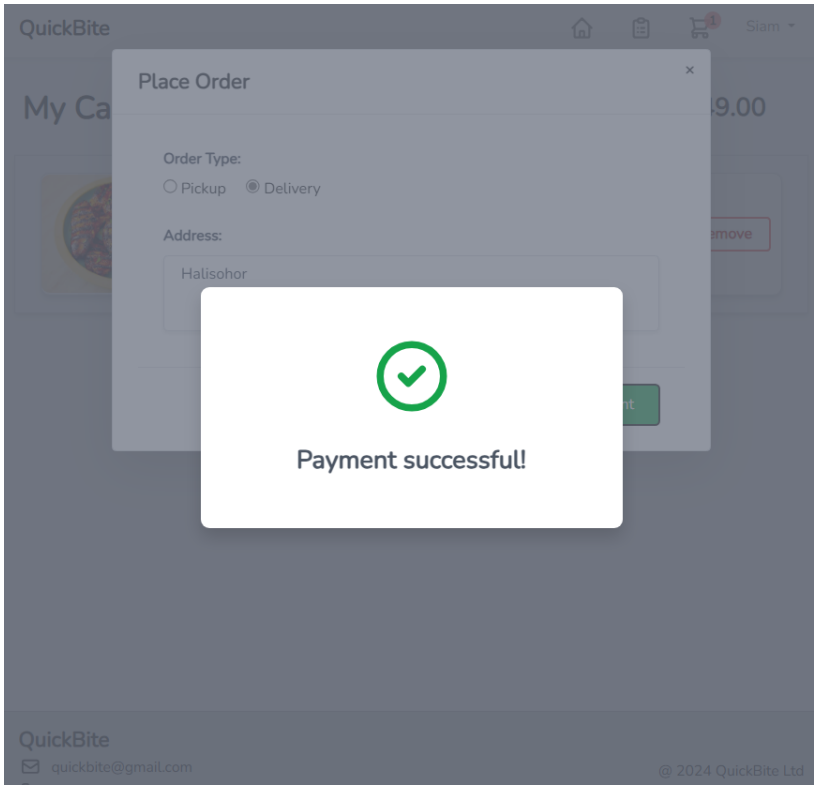

Figure 5.8: Payment Successful message

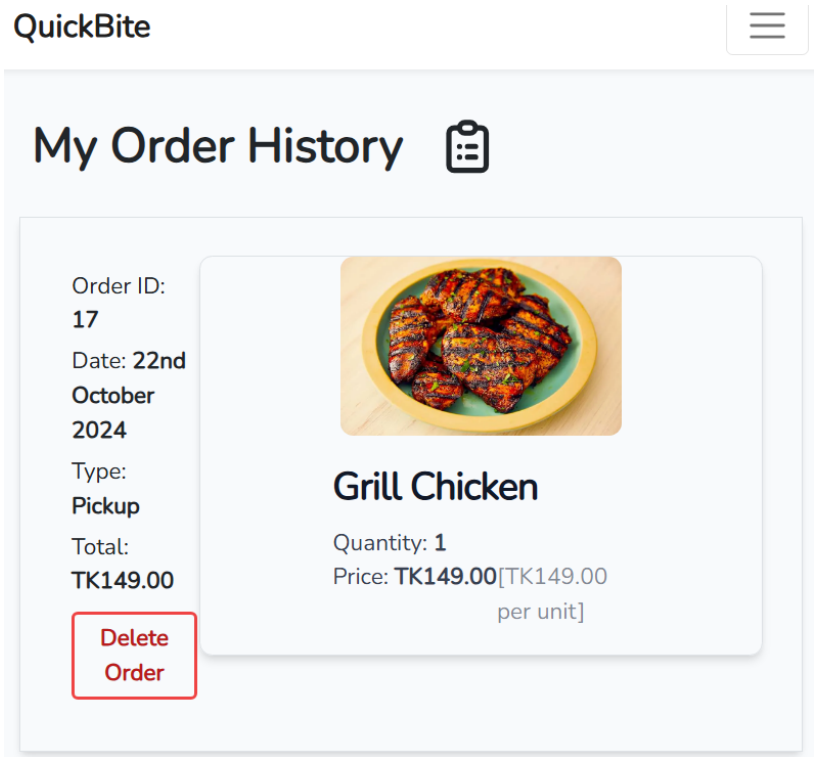

Figure 5.9: Order History Check Out

– Expected Output: After reviewing their cart and providing payment details, customers can place orders. A confirmation message displays. The order number

and estimated payment type and delivery time is shown in order history .

2.Admin Features:

- Admin Login:

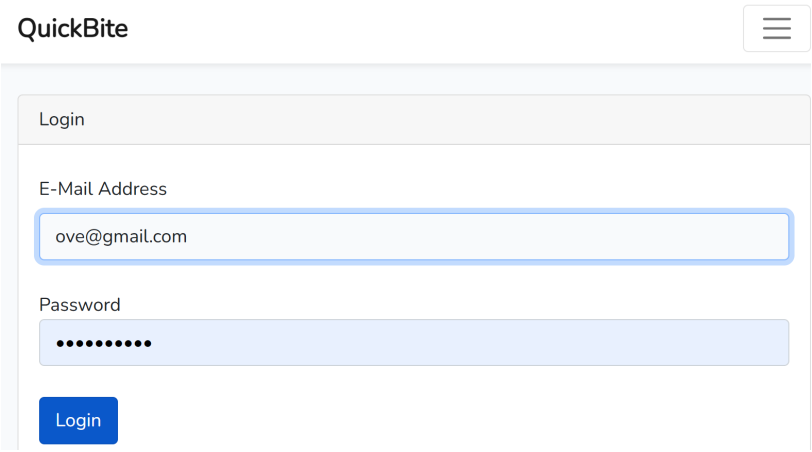

Figure 5.10: Admin login

  - Expected Output: Admins can securely log into their dashboard using credentials. Upon successful login, they have access to the admin panel.

- Menu Management:
  - Adding/Updating Items:

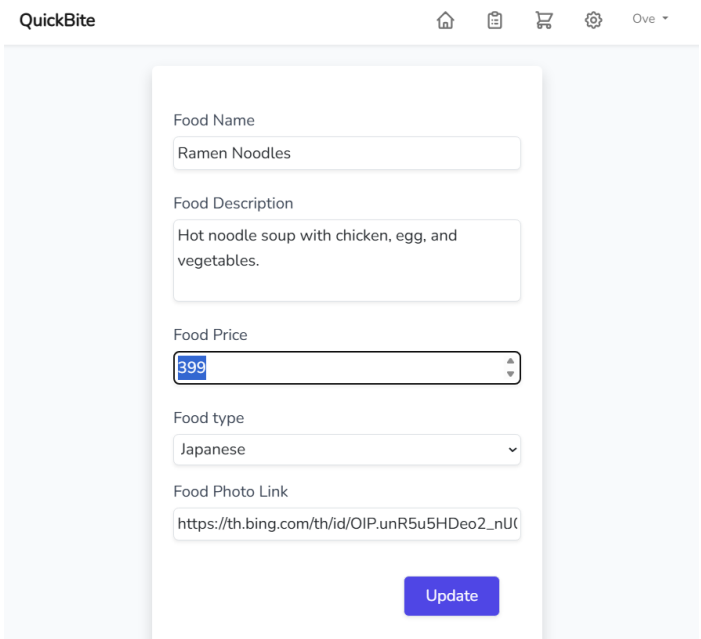

Figure 5.11: Adding a Item

Expected Output: Admins can add new food items to the restaurant menus or update existing items with changes in price, description, or availability. A confirmation message will appear after successful updates.

– Deleting Items:

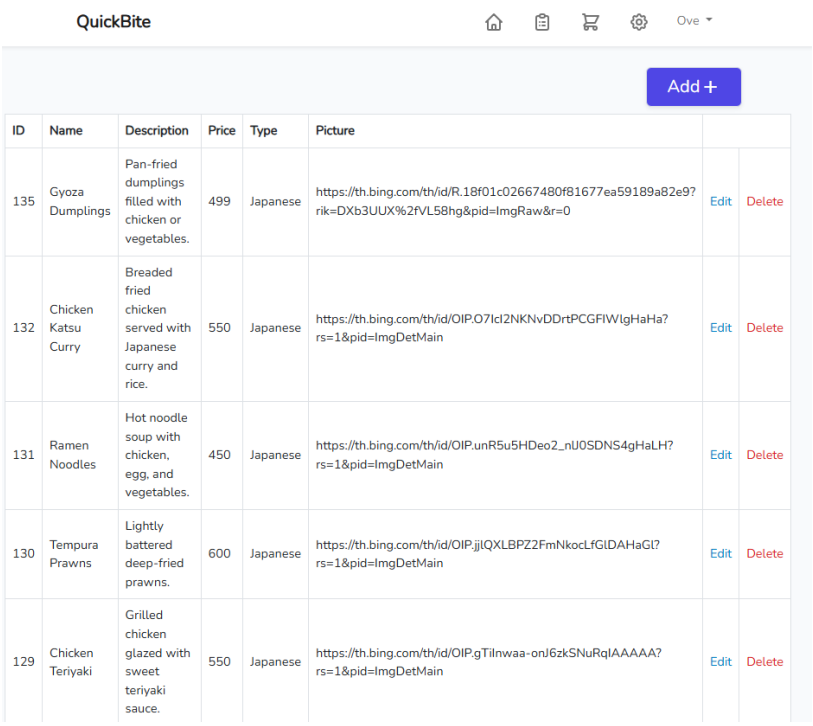

Figure 5.12: Viewing Items

Expected Output: Admins can delete items from the menu, which will no longer be visible to customers.

GitHub

References

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