CANTEEN MANAGEMENT SYSTEM

A Mini Project Report

Submitted by

KRISH RUPAREL TB40

SAUMYA SHARMA TB48

ADITYA SWAMI TB57

THIRD YEAR COMPUTER ENGINEERING

Department of Computer Engineering
International Institute of Information Technology
Hinjawadi, Pune – 411057

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TABLE OF CONTENTS

ABSTRACT

Our online dining solution project represents a paradigm shift in the food service industry, tailored to empower small food enterprises and enhance the dining experience for customers. This innovative platform addresses key challenges faced by these enterprises and modernizes the way customers interact with them.

Key features of our solution include:

1. Digital Menu Showcase: Small food businesses often lack an effective online presence. Our platform allows them to exhibit their menus, prices, and descriptions, thereby attracting a wider customer base.
2. Efficient Online Ordering: Customers can place orders seamlessly, catering to the contemporary preference for digital interactions, eliminating the need for physical menus, and streamlining the ordering process.
3. In-App Wallet Integration: We've incorporated a convenient in-app wallet system, enabling quick and hassle-free payments, reducing the reliance on traditional payment methods.
4. Dine-In Convenience: The platform caters to dine-in and takeout customers, offering the convenience of settling bills through the app without waiting for a waiter.
5. Monthly Mess Subscription: In addition to core features, a unique subscription service offers monthly meal plans, enhancing convenience for consistent diners.

Our project revolutionizes operations for small food enterprises, improving labor efficiency and transparency. Customers benefit from a more efficient dining experience, and businesses enjoy increased visibility and reduced costs. This project embodies innovation and enhances the dining landscape for both small food enterprises and their patrons.

INTRODUCTION

The Canteen Management System (CMS) project is a transformative solution aimed at modernizing and optimizing canteen operations within educational institutions and corporate environments. The primary objective of this project is to enhance the overall efficiency and convenience of canteen management by leveraging digital technologies and streamlined processes.

The project focuses on several key areas, including digital order processing, efficient menu management, inventory control, and secure financial transactions. By digitizing the canteen's operations, the CMS project is set to bring about a host of benefits, such as an improved customer experience, reduced operational costs, and the ability to make data-driven decisions for better canteen management.

The user base for this project is diverse, encompassing students, employees, and visitors who utilize canteen services, as well as canteen staff and administrators responsible for overseeing daily operations. The system is designed with an array of features, including a user-friendly interface for ordering, real-time order tracking, secure payment integration, and robust reporting and feedback mechanisms.

2.1 SCOPE

1. Order Processing :The project includes the automation of order processing, allowing users to place orders for food and beverages digitally.

2. Menu Management: It covers the management of the canteen's menu, including adding, updating, and customizing items, as well as setting prices and availability.

3. Inventory Control: The project involves tracking and managing the inventory of food and supplies to ensure items are in stock and available.

4. Payment Integration: It includes the integration of secure payment methods, both cashless and traditional, to facilitate transactions.

5. Order Tracking: Users can monitor the real-time status of their orders, and canteen administrators can oversee the order queue for efficient processing.

2.2 REQUIREMENT ANALYSIS

User Management:

User Registration: Allow users (students, employees, visitors) to register with the system.

User Authentication: Provide a secure login mechanism for user access.

User Roles: Differentiate between user roles (e.g., customer, admin) with distinct privileges.

Menu Management:

Item Listing: Display a list of menu items with details, prices, and categories.

Add/Update Items: Enable canteen staff to add new items and update existing ones.

Item Availability: Track and display item availability (in stock or out of stock).

Order Processing:

Order Placement: Allow users to select menu items, customize their orders, and place orders.

Security and Privacy:

Data Protection: Implement robust security measures to protect user data and financial transactions.

User Privacy: Ensure the privacy of user information and order history.

User Interface:

User-Friendly Interface: Design an intuitive and user-friendly interface for both users and canteen staff.

Accessibility: Ensure the system is accessible to users with different devices and abilities.

Administrative Tools:

User Management: Allow administrators to manage user accounts, roles, and resolve issues.

Menu Customization: Provide tools for administrators to customize the menu.

Order Management: Enable canteen staff to manage and fulfil orders efficiently.

2.3 SOFTWARE AND HARDWARE DETAILS:

Software Components:

User Interface: The software should have a user-friendly interface for both customers and canteen staff. It can be a web application or a mobile app.

User Authentication: Implement a secure login system for both customers and canteen staff. This can include username/password authentication or more secure methods like two-factor authentication.

Menu Management: This module should allow canteen administrators to input and update the menu items, including their prices, descriptions, and availability. It should also support categorization and customization of items.

Ordering System:Customers should be able to browse the menu, select items, and place orders. This should include features like adding/removing items, specifying quantities, and confirming orders.

Order Tracking: Customers should be able to track the status of their orders (e.g., cooking, out for delivery, delivered).

Inventory Management: Keep track of the available stock of ingredients and items in the canteen. Automatically update inventory levels when orders are placed.

Hardware Components:

Point of Sale (POS) System: For in-person orders, a POS system with hardware components like a computer, cash register, barcode scanner, and receipt printer may be needed.

Mobile Devices: Canteen staff may use tablets or smartphones to manage orders and interact with the software.

Internet Connectivity: Ensure a stable and secure internet connection for online order processing and payment transactions.

2.4 FEATURES / FUNCTIONALITIES:

The system has two types of accessing modes:

User-Facing Features:

User Registration and Authentication: Allow users to create accounts and log in securely.

Menu Access: Provide a user-friendly interface for browsing the canteen menu with details and prices.

Order Placement: Enable users to select items from the menu, customize orders, and place them.

Order History: Maintain a record of past orders for reference and reordering.

Administrative Features:

Menu Management: Allow canteen administrators to update menus, add new items, and adjust prices.

Inventory Management: Track inventory levels in real-time and receive alerts when items are low in stock.

General Functionality:

Scalability: Design the system to accommodate growth and adapt to changing needs.

Offline Capabilities: Ensure that the system can continue to operate during internet outages.

Accessibility: Ensure the system is accessible to users with various devices and abilities.

Customization: Allow for customization of the system to suit the specific needs of the canteen or institution.

Cost Management: Provide insights into expenses and revenues to optimize cost management.

These features and functionalities together create a comprehensive Canteen Management System that improves the user experience, streamlines canteen operations, and enhances data-driven decision-making for administrators.

The project utilizes a combination of PHP, HTML, CSS, JavaScript, and MySQL to implement several key features and functionalities:

1. HTML: It is used to create the structure and content of the web pages, like home login page, admin login page, user login page, etc.
2. CSS: It is used for styling and designing the web pages.
3. JavaScript: Used to provide functionality to the web pages.
4. MySQL: Used to create databases.
5. PHP: Used to connect the created databases with the web pages.

The major features of this system are as follows:

- User Authentication: Users can log in using their credentials.

- Real-time Database: MySQL is used to store customer information and order records.

- Admin Panel: An admin interface allows authorized personnel to manage users and cart data, view orderss, and add or remove users.

- User-Friendly Interface: The project provides an intuitive and easy-to-use interface for customers, users and admins.

DATABASE DESIGN

1. List of Entities:
    - Customer
    - Orders
    - Menu
    - Cart
    - Payment
    - Staff
2. Relationships:
    - Users and Orders: One-to-Many relationship (One user can place multiple orders)
    - Orders and Order Details: One-to-Many relationship (One order can have multiple order details for different items)
    - Menu Items and Inventory: One-to-One relationship (Each menu item corresponds to an inventory item)
3. Constraints:

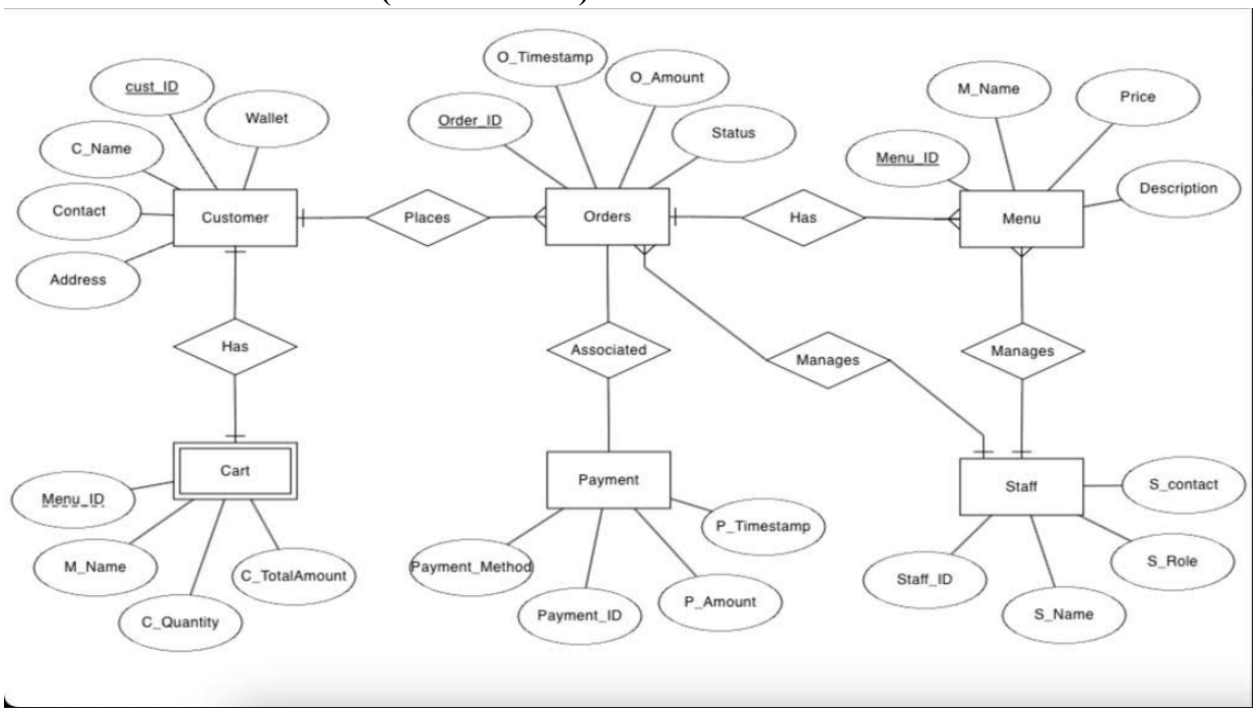
    Users:
    - Unique Username Constraint: Ensure that each username is unique to prevent duplicate user accounts.

    Menu :
    - Positive Price Constraint: Ensure that the price of a menu item is always positive.
    - Availability Constraint: Ensure that the availability of a menu item is limited to predefined values (e.g., "In Stock" or "Out of Stock").

    Orders:
    - Minimum Order Total Constraint: Ensure that the total amount of an order is always greater than or equal to a minimum value (if necessary).
    - Status Constraint: Limit the order status to predefined values (e.g., "Placed," "Preparing," "Delivered").

    Cart:
    - Quantity Constraint: Ensure that the quantity of each menu item in an order is greater than zero.

3.1 DATA MODELLING (ER MODEL)



RELATIONAL MODEL:

- customer table: cust_id (primary key),c_name,contact,address,wallet
- orders: order_id(primary key),cust_id(Foreign Key), Menu_id(Foreign Key),o_timestamp,o_amount,o_status
- menu: menu_id(primary key), m_name, price, description
- cart: cust_id(Foreign Key), menu_id(foreign key),m_name, c_quantity, c_totalamount
- payment: payment_id(primary key), order_id(Foreign Key), payment method, p_amount, p_timestamp
- Staff: staff_id(primary key),S_name, S_role, S_contact

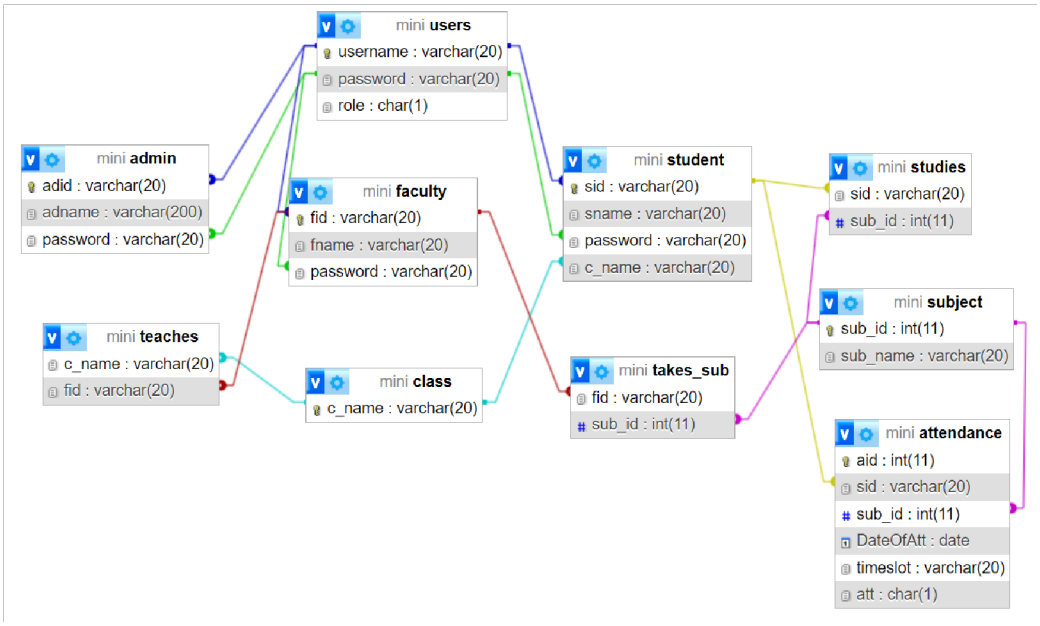
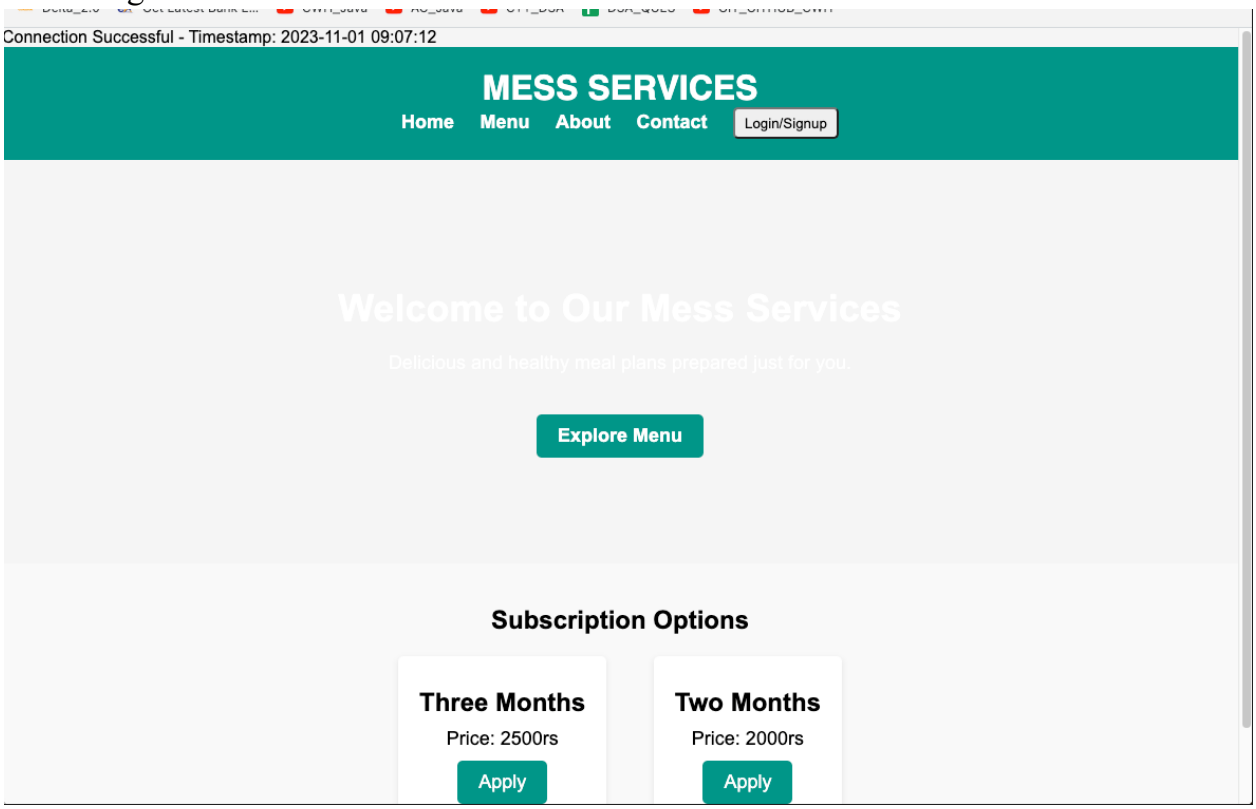


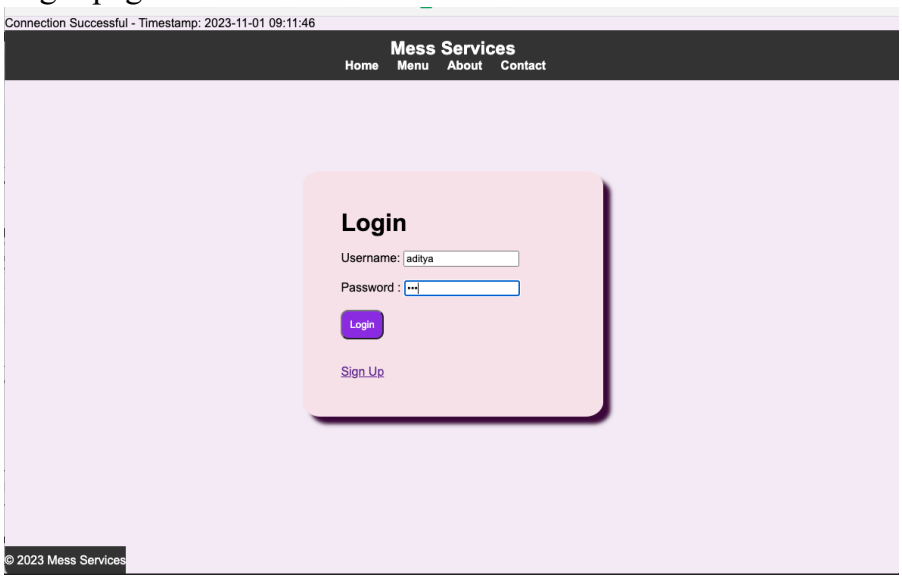
Fig 1: Data Model

GRAPHICALUSERINTERFACE

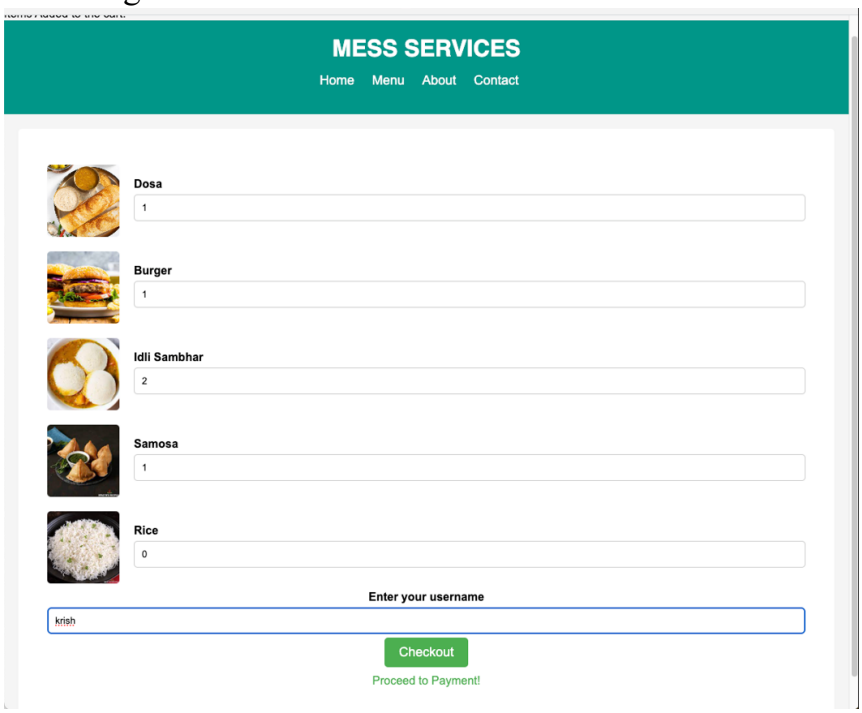
Home Page:



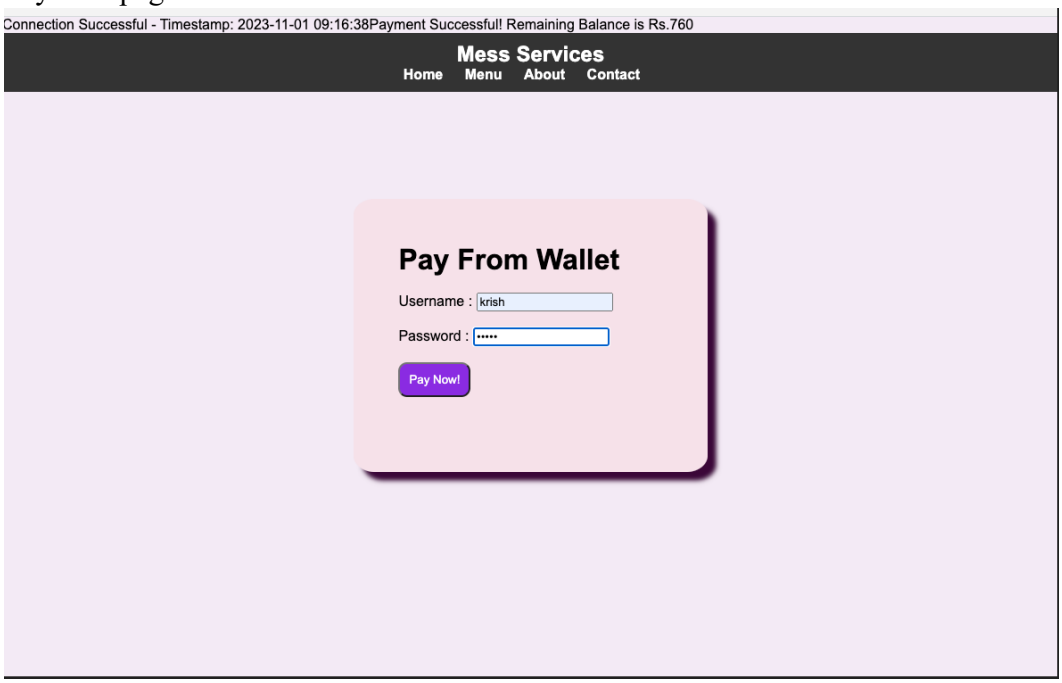
Login page:

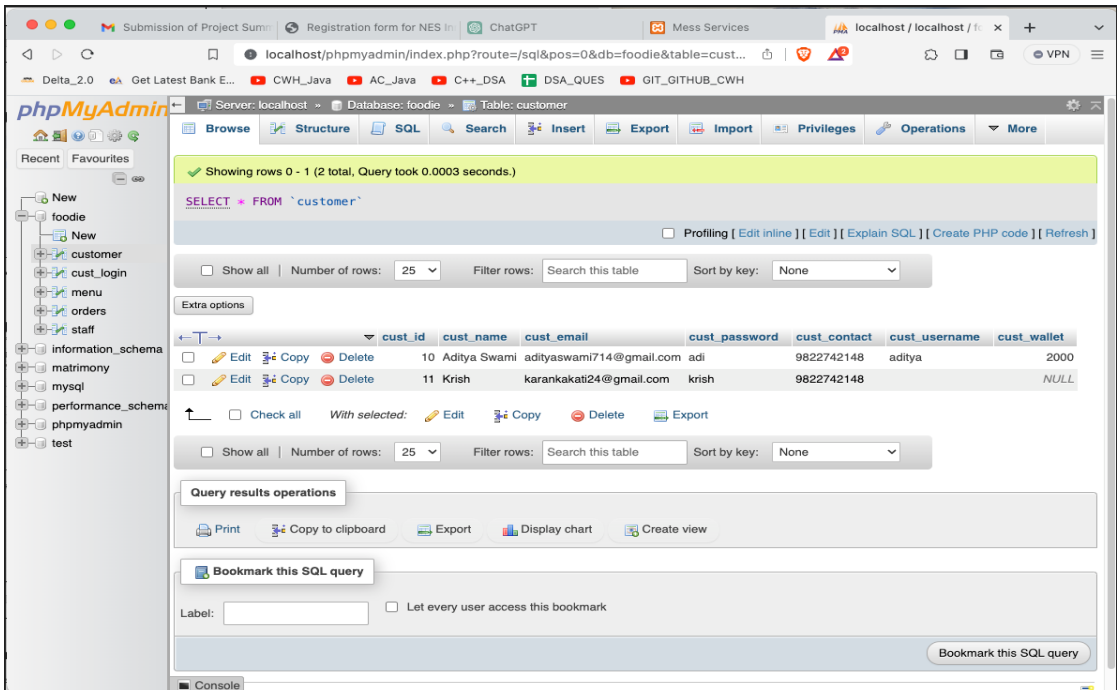


Menu Page:

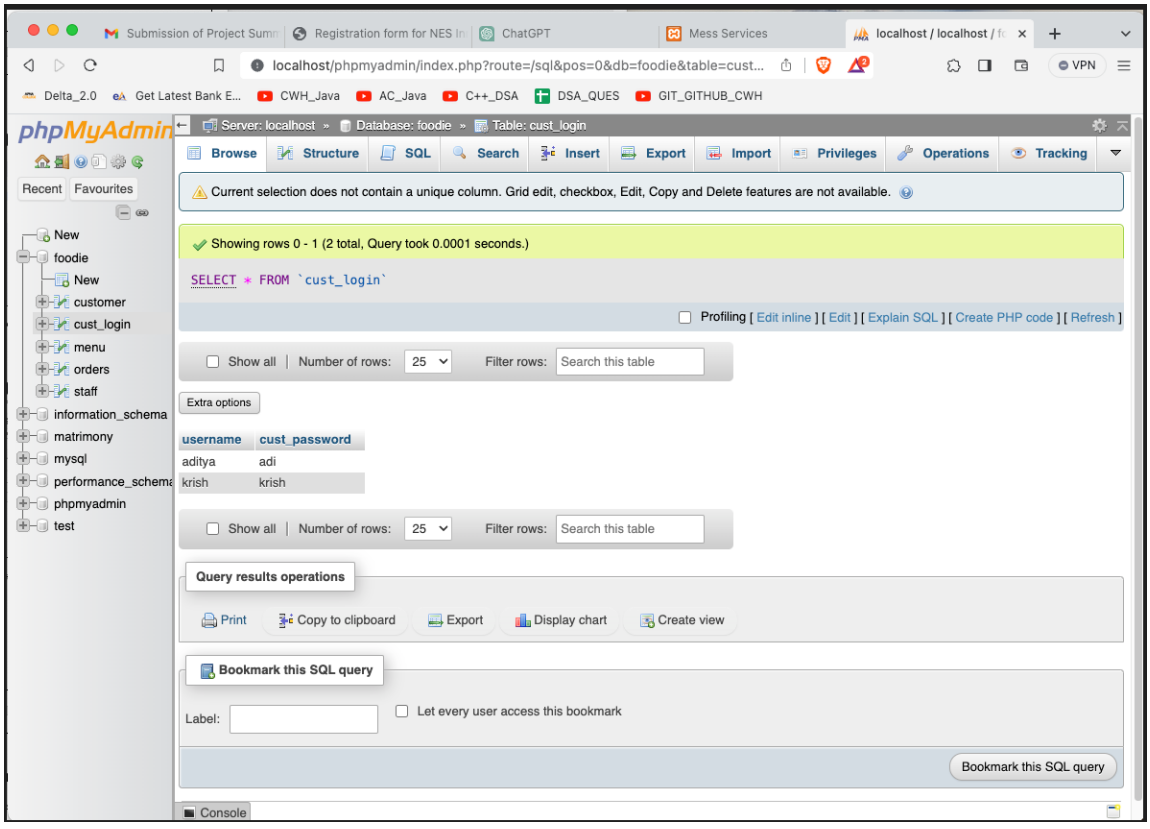


Payment page:





Database entries:



CONCLUSION

Our project, designed to enhance the dining experience for small food enterprises, is a powerful testament to the potential of innovative technology solutions in the modern world. In a rapidly evolving digital landscape, the need for businesses to adapt and stay competitive is more crucial than ever. The key elements that make our project a success can be summarized as follows:

1. **Digital Menu Showcase**: Our platform empowers small food enterprises to establish a compelling online presence, enabling them to display their menus in an organized and visually appealing format. This not only enhances their visibility but also attracts a broader customer base.

2. **Online Food Ordering**: We have streamlined the ordering process, catering to the contemporary preference for digital interactions. This feature allows customers to easily place their orders, customize their meals, and reduce their dependency on traditional menus and waitstaff.

3. **In-App Wallet Integration**: To simplify payments and further streamline the dining experience, we have integrated an in-app wallet system. Customers can load funds and complete transactions seamlessly, eliminating the need for physical payment methods.

4. **Dine-In Convenience**: Our solution is designed to cater to both dine-in and takeout customers. For dine-in patrons, the in-app wallet allows them to settle their bill swiftly, reducing the traditional labor-intensive aspects of the dining experience.

5. **Monthly Mess Subscription**: We've introduced a unique subscription service, allowing customers to subscribe to monthly meal plans, making dining even more convenient and predictable for those with consistent dining needs.

In conclusion, our project is a comprehensive solution that equips small food enterprises to embrace modern dining preferences, optimize their operations, and cater to the changing needs of customers. The benefits are evident in labor efficiency, transparency, time efficiency, and expanded market reach. As the digital age continues to reshape how we interact with the world, our project offers a valuable tool for small food enterprises to remain competitive and thrive in the modern marketplace. The innovative features of our website collectively work to redefine and enhance the dining experience, benefiting both businesses and patrons alike.