

Modernizing Food Ordering:Streamlining Canteen Systems for Efficiency and Safety

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*Abstract*The main objective of the online meal delivery system is to streamline restaurant operations while retaining managerial control. By enabling prompt order communication to the kitchen and removing the need for physical trips, it streamlines waiter tasks. This efficiency also extends to managerial duties, giving managers the ability to keep an eye on employee behavior and order data through detailed reports, all while supervising the restaurant. Because less manual labor is required, the system increases its operational speed and precision. Specifically, task automation improves restaurant productivity overall. With just a mouse click, customers can place orders with ease thanks to the website's pre-configured menu. Furthermore, the system makes it easier for the restaurant to maintain and update customer information by streamlining the management of the customer database. As a whole, the online meal delivery service.

Keywords— IT employees, survey data, stress, stress management

I. INTRODUCTION

Offering a smooth and user-friendly experience for patrons, the Smart Restaurant Management System is a paradigm leap in restaurant management software. Customers must create an account when visiting the website in order to speed up the food ordering process. In order to create an account, you must provide a distinctive username, email address, new cellphone number, and strong password. For a seamless meal delivery experience, customers also provide their delivery address.

Users can peruse the wide variety of cuisine options offered by the restaurant after logging in. To make it easier for consumers to navigate and select their favourite foods, the menu is divided into areas such as soups, starters, main course items, and desserts. The system's goal is to increase user happiness and convenience.

Choosing a category, looking for certain items of interest, and adding them to the order are the steps in the food selection process. Customers can alter their dishes to suit

This paper addresses issues in traditional billing approaches for university cafeterias, proposing a machine learning-based smart face recognition-enabled management system. The system allows convenient registration and visits for customers, automating the invoicing process through facial recognition software. The MySQL database stores customer information for machine learning training, distinguishing between registered and non-registered users. The system also enables administrators to monitor unregistered users through automated SMS messages. The study emphasizes quality control and showcases the system's effectiveness in expediting cafeteria operations and ensuring equitable billing procedures.[1]

This paper introduces an application to address the challenges of long queues in school canteens, exacerbated by the COVID-19 pandemic. The application facilitates parents in placing orders for their children, reducing crowding in the canteen. Developed using an agile-based methodology, the application employs object-oriented programming, the Android platform, and Flutter/Dart extensions. The goal is to provide a simple solution to purchase food while minimizing the spread of COVID-19 and automating the ordering process for parents and canteen staff.[2]

Smart Meal is introduced as an application designed for an IT their tastes. After making their selections, clients proceed to confirm the delivery address and submit their orders.

To facilitate secure and efficient transactions, the Smart Restaurant Management System supports a variety of payment methods. Customers have additional options available to them, including:

1. COD (cash on delivery): Customers can pay with cash when the meal is delivered to their door using this traditional payment method.
2. Payments with Credit/Debit Cards: Card payments are a convenient option for users, offering a simple and safe transaction process.
3. Transfers between banks: If customers would prefer to make direct bank transfers, they can select this option to electronically transfer the order amount.
4. Digital wallets: The system's support for electronic wallets makes it possible to do payments swiftly and securely using well-known e-wallet services.
5. UPI Payments: Users have the option to use the Unified Payments Interface (UPI) for quick and simple transactions.

Customers can select the payment option that most closely fits their needs and preferences thanks to its flexibility. The system also computes the total bill amount based on the selected goods, giving customers transparency and clarity.

In conclusion, the Smart Restaurant Management System enhances and modernizes the eating experience for patrons by streamlining the meal ordering process and providing a different of safe and practical payment choices.

II. LITERATURE SURVEY

company, offering a salable solution for lunchtime orders. The application runs on desktop PCs and mobile devices, providing a user-friendly interface for quick and effective meal ordering. It highlights the scalability of the application, ensuring its functionality for an unlimited audience. The user interface prioritizes simplicity, enhancing the overall user experience.[3]

In order to address problems with conventional canteen ordering systems, this study proposes a cloud computing-based remedy. Customers can access data on calorie consumption through the system, which emphasizes enhanced flexibility and dependability. The study highlights the potential for improved efficiency and dependability by providing an overview of modern methods to enhance the canteen ordering process. Among these methods is the utilization of cloud computing.[4]

The "Flask Management System" is presented as an automated solution for efficient cafeteria service, eliminating long queues. The system allows users to order from a diverse menu, pay through credit cards or wallets, and receive culinary recommendations. User registration with OTP verification ensures login security, and administrators can monitor order statuses. The system provides features such as order history and balance checks for enhanced user experience.[5]

This paper addresses the issue of crowded canteens in college breaks, proposing an Android-based application for speedy order placement, social separation, and cashless payments. The app aims to shorten wait times and improve the canteen's overall efficiency by letting users order products and pay with UPIs or e-wallets.[6]

The "Intelligent Cafeteria" application is developed to improve canteen services by accepting online food orders through websites. Users place orders and receive order or booking IDs after making payments, simplifying the process. When a customer visits the canteen, the employees check the ID, which expedites the meal delivery process during peak hours.[7]

This paper introduces a web-based canteen management system utilizing RFID technology. The system offers error-free accounting, cost-effectiveness, security, dependability, and quick service management. RFID cards facilitate cashless payments, saving time for users and staff. The system's web-based approach ensures easy access, retrieval, and manipulation of valuable data.[8]

This paper presents an online dish ordering system that makes use of QR code scanners, LCDs, Wi-Fi, and Raspberry Pis for college canteens. The system aims to automate the manual ordering process, providing a top-notch presentation and better client service.[9]

This paper proposes an automated web-based system for canteen management, emphasizing quick order processing through a website and database. Implemented using XAMPP, Python, HTML, Django, CSS, and MongoDB, the system offers users a seamless experience with features like order placement, payment, and order status tracking.[10]

III. METHODOLOGY

The restaurant management system is implemented using the Django framework. It is a reliable web framework made for building Python-based online applications. The system consists of multiple modules designed to address distinct aspects of restaurant management, including:

1. **Module User:** With role-based access control for both administrators and customers, the User Module is the cornerstone for controlling customer-related operations. Customers are limited to viewing their own data, while administrators have complete power to change client data. This module ensures that user-related actions are carried out in a secure environment by carefully monitoring and managing all client data.

2. **Product Section:** The Product Module is concerned with effectively classifying products into several groups. Administrators have the authority to supervise all actions pertaining to products, such as their addition, modification, or removal. Conversely, customers have the option to browse the product list and make purchases. This module ensures that product information is presented in an organized manner and is available to both administrators and customers.

3. **Member of Order:** To serve restaurant staff and administrative staff, the Order Module is in charge of gathering and presenting all order details. This module makes it easier to retrieve new orders from the database and presents them in an easily understood visual format. Consumers can track orders through the entire process and view specific order information in the "View. Order" section, encouraging openness.

4. **Update Order Status Module:** The Order Status Update Module facilitates real-time order modifications. Order status information can be added to or edited by staff members and administrators. Customers can view updates on the status of their orders in the "Tracker" area. Customers can now stay updated about the status of their orders, which significantly enhances transparency and communication.

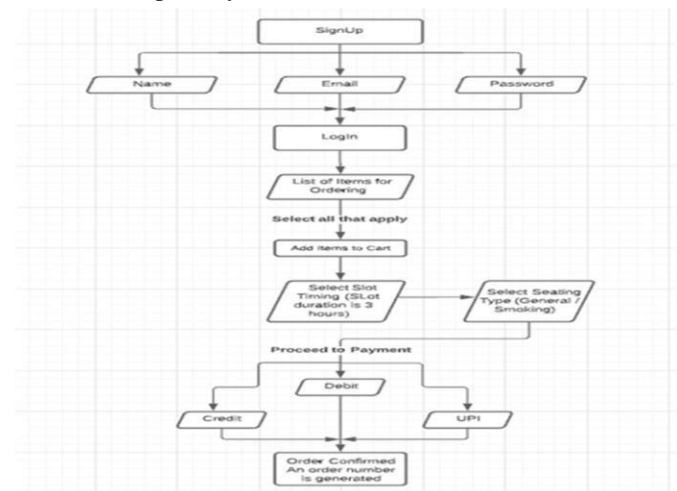


Fig 1: Flowchart depicting working of the system

Implementation Detail:

Database Integration: The database is smoothly integrated with Django's Object-Relational Mapping (ORM).

User Authentication: Safe access to user-specific information and features is guaranteed by Django's strong authentication mechanism. **Views and Templates:** Django's views and templates efficiently organize and present data related to the Model-View-Controller (MVC) architectural paradigm.

Admin Interface: The user, product, and order-related data may be easily managed and tracked using the integrated Django admin interface.

RESTful APIs: Django's ability to create RESTful APIs makes it easier for various modules to communicate with one another. **Security Measures:** Django has built-in security mechanisms that protect against typical online vulnerabilities like cross-site scripting (XSS) and SQL injection.

Furthermore, the user module includes an extensive range of features, including: User registration and login. Seeing the food options- Adding products to the cart;

- Modifying the quantity of goods in the cart;
- Showing the number of items in the cart on the NavBar;
- Accessing the cart page's list of added items.

Making changes or removals from the cart page directly. Order placement with the choice of online or cash payment methods; PayPal integration for safe online payments. Seeing the Orders

page's list of all placed orders. Order status checks: Clicking the "View Details" allows you to access the full order details.

To sum up, the Django implementation guarantees a well-organized and safe restaurant management system, offering administrators and patrons a smooth and effective experience.

IV. EXPERIMENTAL RESULTS

Following the Django project's successful execution according to the given description, you should anticipate the following results:

1. Database Interaction: Django's Object-Relational Mapping (ORM) connection to the database makes it simple to store and retrieve user, product, and order data.
2. User Authentication: Role-based access control will enable users, including administrators and customers, to sign up, log in safely, and access their respective functionalities.
3. Views and Templates: The Model-View-Controller (MVC) architecture pattern will be followed by the application when rendering views and templates. In order to carry out tasks like examining products, managing the cart, and placing orders, users will engage with an intuitive interface.

Fourth, the *Admin Interface*: Administrators can effectively manage and keep an eye on user accounts, products, and orders thanks to the integrated Django admin interface. As needed, administrators can add, edit, or remove entries.

5. RESTful APIs: If put into practice, RESTful APIs would provide smooth communication between various modules, allowing data interchange and component interactions.

6. Security Measures: The Django framework's built-in security features will guard user data and system integrity while protecting the application from common online vulnerabilities.

7. Features of the User Module: Users can safely register and log in. Examine the available items on the menu. Use an easy-to-use interface to add items to the cart. Modify the cart's item quantities. Use the NavBar to see number of items are in the cart. To view and manage added items, go to a special cart page. Orders can be paid for online or with cash. Take advantage of PayPal integration to safely send and receive money online. Go to the Orders page to see a history of orders. Right now, find out the current status of an order. Click the "View Details" button to see comprehensive order information.

Testing: Extensive testing is necessary to ensure that every module and feature operates as intended. This includes testing order processing, real-time order tracking, product management, and user authentication in order to deliver a faultless and error-free customer experience.

V. CONCLUSION AND FUTURE WORK

In conclusion, updating canteen food ordering systems is crucial to improving both productivity and security. We can improve safety in a post-pandemic environment by

streamlining the entire process, cutting down on wait times and human touch, and utilizing technology and digital solutions. Canteen operators can improve operations and inventory management by utilizing mobile apps, self-service kiosks, and online ordering platforms, in addition to offering convenience to customers. Embracing these developments is a win-win approach that ensures canteen businesses' survival and prosperity in the modern era while also meeting the shifting needs of customers. After a lot of adjustments, we have reviewed our work and determined that the system is operational. Although it is of high caliber now, there is always potential for improvement. Nevertheless, considering the amount of time allocated for two individuals to work on this project, we think the overall results are sufficient. The report covers the entire project and includes the required results. In the first few months, the work proceeded more slowly than anticipated.

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