IJRDET

International Journal of Recent Development in Engineering and Technology
Website: www.ijrdet.com (ISSN 2347-6435(Online) Volume 15, Issue 02, February 2026)

College Canteen Management System (KIOSK)

Devi Gireesh[1], Noble Sibi[2], Rikkymon Johnson[3], Alvin Sony[4], Rani Saritha R[5]

[1,2,3,4,5]*Department of Computer Applications, Saintgits College of Engineering, Pathamuttom, Kerala, India*

***Abstract*— Food service facilities in colleges are required to handle a high volume of orders within limited time intervals, especially during peak hours. In many institutions, canteen operations are still managed manually, resulting in delayed service, calculation errors, and difficulty in maintaining organized records. To address these challenges,** Kiosk **is developed as a web-based college canteen management system that streamlines food ordering and billing activities. The system is implemented using HTML, CSS, and JavaScript for the user interface, while Python Flask handles server-side operations with SQLite as the database. The application enables customers to view menus, place orders digitally, and obtain system-generated bills. Administrative users are provided with tools to manage menu data, pricing, and order history efficiently. The proposed system reduces manual dependency, improves service speed, and ensures accurate data handling. This paper discusses the system architecture, implementation details, functional components, observed results, and possible future enhancements.**

Keywords—Automation, Canteen Management System, Flask, SQLite, Web Application

I. Introduction

The use of digital systems in educational institutions has increased significantly due to the need for faster service delivery and improved operational accuracy. Among various campus facilities, the college canteen plays an important role by serving students and staff on a daily basis. However, in many colleges, canteen activities such as order placement and billing are still carried out using paper-based or semi-manual methods.

Manual canteen operations often result in extended waiting times, especially during busy periods like lunch breaks. Errors in bill calculation, misplaced order slips, and difficulty in tracking daily sales are common issues faced by canteen staff. These challenges not only reduce service efficiency but also limit the ability of administrators to evaluate performance or plan improvements based on sales data.

Recent advancements in web technologies and the availability of open-source development frameworks make it practical to introduce automated solutions for small-scale service environments. A web-based canteen management system provides centralized access, faster processing, and reliable data storage.

Kiosk is designed to modernize canteen operations by offering an integrated platform for digital ordering, automated billing, and administrative control.

The primary objectives of this project are to minimize manual effort, improve accuracy in billing, reduce customer waiting time, and provide an easy-to-use system for both users and administrators. The solution focuses on simplicity, efficiency, and cost-effectiveness, making it suitable for implementation in college environments.

II. System Overview And Architecture

Kiosk follows a client–server architecture in which users interact with the system through a web browser. The frontend interface is developed using HTML, CSS, and JavaScript, providing a responsive and interactive user experience. The backend is implemented using the Flask framework in Python, which handles routing, business logic, and communication with the database.

SQLite is used as the database management system due to its lightweight nature and ease of integration with Flask. The database stores information related to menu items, prices, and customer orders. When a user places an order, the request is sent to the Flask server, which processes the request, calculates the bill amount, stores the order details in the database, and sends the response back to the client.

The modular architecture of the system ensures maintainability and scalability. Each component of the system is designed to perform a specific function, enabling future enhancements such as online payment integration and inventory management.

III. Materials And Methods

A. *Existing System Limitations*

The existing manual canteen system suffers from several limitations. Order processing is slow and inefficient, billing errors are common, and record maintenance is difficult. During peak hours, the workload on canteen staff increases significantly, leading to delays and reduced customer satisfaction. Additionally, the lack of digital records prevents effective analysis of daily sales and demand patterns.

B. *Proposed System Features*

Smart Canteen addresses these limitations by providing the following features:

1. *Digital Menu Display:* Users can view updated food items and prices through the web interface.
2. *Online Order Placement:* Customers can place orders electronically, reducing waiting time.
3. *Automated Billing:* The system calculates the total cost automatically, eliminating manual errors.
4. *Admin Panel:* Administrators can add, update, or remove menu items and manage pricing.
5. *Order Records:* All orders are stored digitally for future reference and analysis.
6. *Responsive Design:* The system is accessible across desktops, tablets, and mobile devices.

C. *Feasibility Study*

The proposed system is technically feasible as it uses stable and widely supported technologies such as Flask and SQLite. Economically, the system is cost-effective due to the use of open-source tools. Operationally, the system is easy to use and requires minimal training for staff and users.

IV. Results And Discussion

The SmartCanteen system was implemented and tested in a simulated college canteen environment. Functional testing confirmed that all modules operated as intended. Users were able to browse the menu, place orders, and receive accurate bills. Administrators successfully managed menu items and viewed order records.

TABLE I
Module description

Module	Description
User	View menu, place orders, receive bill
Admin	Manage menu items and prices
Billing	Automatic calculation of total cost
Database	Storage of menu and order data
Interface	Responsive and user-friendly UI

The system significantly reduced order processing time compared to manual methods. Automated billing eliminated calculation errors, and digital record keeping improved data organization. While the system performs efficiently for small to medium-scale operations, it currently lacks features such as online payment and inventory tracking, which can be added in future versions.

V. Conclusion And Future Scope

SmartCanteen provides an effective solution for automating college canteen operations. The system successfully reduces manual effort, improves service speed, and ensures accurate billing and data management. By using Flask and SQLite, the project demonstrates how lightweight web technologies can be applied to real-world service automation.

Future enhancements may include integration of online payment gateways, inventory management modules, role-based authentication, and cloud deployment. These additions would further improve scalability, security, and usability of the system.

Acknowledgment

The author expresses sincere gratitude to the project guide and faculty members of the Department of Computer Applications for their guidance and support throughout the development of this project.

References

[1] Pallets Projects, “Flask Documentation,” https://flask.palletsprojects.com/

[2] SQLite Consortium, “SQLite Documentation,” https://www.sqlite.org/docs.html

[3] W3Schools, “HTML, CSS, JavaScript Tutorials,” https://www.w3schools.com/

[4] Python Software Foundation, “Python Documentation,” https://docs.python.org/3/

[5] Pressman, R. S., *Software Engineering: A Practitioner’s Approach*, McGraw-Hill.

[6] Sommerville, I., *Software Engineering*, Pearson Education.

[7] MDN Web Docs, “JavaScript Guide,” https://developer.mozilla.org/

[8] Oracle Corporation, “Database Concepts,” https://docs.oracle.com/

[9] IEEE, “Software Engineering Standards,” IEEE Press.

[10] Fielding, R. T., “Architectural Styles and the Design of Network-based Software Architectures.”