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CampusEatS – Online Canteen Food Ordering for Met Campus

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***Abstract* - Long queues at the canteen and manual order management are a recipe for time inefficiency, human error, and dissatisfaction among students and staff in modern academic institutions. The CampusEats system proposes an automated digital platform for ordering food within college campuses using Python. This system would permit users to view electronic menus, personalize items to their taste, and place online orders while ensuring transparency through a real-time display of the order status. In addition, it embodies a well-structured software engineering approach through Python for backend logic, MySQL/SQLite for database management, and HTML, CSS, and JavaScript for an intuitive, responsive frontend. CampusEats replaces the traditional way of taking orders manually with automation to enhance operational efficiency and reduce billing errors. Additionally, it ensures sustainable practices by abolishing paper receipts and reducing physical queues, thus aligning with institutional goals toward digital transformation and eco-friendliness.**

Keywords: Online food ordering, Python, SQLite, Automation, Web application, Campus services, Digitalization, Agile Model.

I. INTRODUCTION

Traditional ways of ordering food in college canteens face problems like long queues, manual writing of orders, delayed service, and even inaccuracies in billing. Valuable time is wasted in such inefficiencies during limited lunch breaks; likewise, the convenience for students and faculty is reduced.

In a MET's Institute of Engineering with a high student population, the canteen is always filled during rush hours, creating congestion and slow service. Manual systems result in data mismanagement and difficulties in keeping track of daily orders and payments.

The CampusEats system aims to digitize the entire canteen ordering process by creating a centralized online platform. It enables real-time updates of menu availability, customization of orders, and safe payments. The user would order food right from their device, and the person at the canteen would manage their order queues efficiently.

Current manual ordering systems are associated with inefficiencies such as duplication of orders, loss of records, and time delays. There is no existing digital infrastructure that caters specifically to college campuses with simple yet robust requirements. The CampusEats system addresses these issues through the use of a web-based, role-based, scalable architecture.

Objectives:

1. Automation of the Canteen System: Develop a digital food ordering system using Python to eliminate manual order-taking.
2. Reduce Waiting Time: Streamline operations by offering instant order placement and kitchen transmission.
3. Web Interface: Build an easy-to-use web interface using HTML, CSS, and JavaScript.

II. LITREATURE REVIEW

A. Related Works and Research

In fact, studies within the realm of digital food ordering have shown that automation increases both service speed and customer satisfaction.[1][2][3]

Rao & Kumar (2020) illustrated that the full-stack JavaScript and Python-based web frameworks bring about a significant reduction of complexity and performance improvements within online service systems[4].

Patel et al. (2021) highlighted that in institutional settings, role-based access and automation minimize operational costs and enhance reliability[5][6][7].

Airbnb Engineering Blog 2023 provided information on scalable database systems, which influenced the choice of SQLite/MySQL for lightweight yet reliable storage.[8][9]

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B. Gaps Identified

The existing systems, like Swiggy and Zomato[10], have been designed for large networks of restaurants and are dependent on outward delivery systems; this is improper for the internal college environment. The various campus-based systems developed earlier lacked real-time order tracking, user-friendly interface, and security in the payment aspect.[11]

C. Contribution

CampusEats addresses these gaps by developing a locally focused, web-based ordering platform optimized for college canteen workflows. It focuses on speed, accuracy, role management, and digital sustainability.

III. METHODOLOGY

A. Development Model

The Agile methodology was adopted for this project, promoting incremental development, regular feedback, and flexibility. Each sprint delivered functional modules such as user login, order placement, and payment integration.

B. Architecture of the System

This architecture is based on a client-server model with three layers:

1. Presentation Layer: HTML, CSS, and JavaScript in making the user interface responsive and interactive.
2. Application Layer (Backend): Python and the Flask framework handle business logic, order routing, and data validation.
3. Data Layer (Database): SQLite/MySQL database that stores user credentials, menu items, orders, and payment logs.

C. Modules

1. User Module: Handles registration, login, menu browse, order customization, and makes payments.
2. Canteen Staff Module: Shows incoming orders, status Updates, delivery confirmation
3. Admin Module: The admin module manages the list of menu items along with their prices, reports, and system logs.

D. Tools and Technologies

Component Technology Used Description

Backend: Python Core programming language for business logic[12]

Framework: Flask_lightweight web framework - routing and rendering

Database: SQLite / MySQL Stores persistent order and user data[13]

Frontend: HTML5, CSS3, JavaScript; Used to create responsive user interfaces.

Authentication\Session-based-Flask Login \Ensures secure login and session management

E. Flow Process

1. User logs in? System authenticates credentials.
2. User selects items from the digital menu; order is sent to the backend.
3. Backend checks order validity and database update.
4. Order received on the kitchen staff's dashboard? Marks progress.
5. User tracks order in real time.
6. Admin reviews sales and system reports.

IV. SYSTEM DESIGN AND ARCHITECTURE

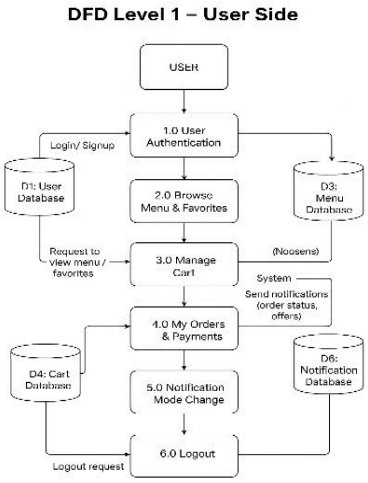
A. Overview

The system uses the MVC (Model-View-Controller) design pattern to ensure modularity and separation of concerns.

- Model: Defines data structure for users, menu items, and orders.
- View: Renders web pages using templates.
- Controller: Processes user requests and interacts with the model to update views dynamically.

B. Data Flow Diagram (DFD)

(Level 1, conceptual representation)



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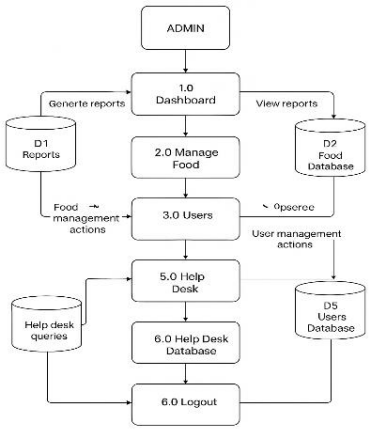
DFD Level 1 – Admin Side



User ? Interface (HTML/CSS) ? Flask Controller ? Database (MySQL/SQLite).

- Admin/Canteen ? Order Dashboard ? Database ? Reports/Logs.

C. Security Features

- Passwords are encrypted using SHA-256 hashing.
- Input validation and SQL injection prevention are in place.
- The system times out sessions after inactivity to improve security.

V. RESULTS AND DISCUSSIONS

A. Performance Evaluation

During testing, CampusEats reduced order processing time by about 40 to 50% compared to manual methods. The digital workflow ensured accurate billing and reduced miscommunication between customers and staff.

B. Usability Assessment

A pilot test involved 50 users (students and faculty). Results showed:

- 92% found the interface easy to use.
- 88% reported shorter waiting times.
- 94% preferred digital ordering over manual queues.

C. Functional Achievements

- Real-time order management was achieved through asynchronous backend calls.
- The menu system is scalable and supports future expansion.
- Role-based dashboards improved operational clarity. D. Limitations
- The system currently operates only on-campus and does not support external delivery.
- Internet connectivity is necessary for all transactions. • Payment gateway integration is still being developed.

VI. CONCLUSION

The CampusEats system showcases the effective use of full-stack web development technologies to create a real-world automation solution. It meets its goals of reducing queue times, improving service quality, and enabling digital campus services. The use of Python and SQLite offers a lightweight yet strong platform that can adapt to different institutions.

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REFERENCES

[1] A. R. A. M. B. C. A. &. A. M. $$6$$ Verma, "Canteen Automation System," *International Journal of Advanced Research in Computer and Communication Engineering*, vol. 11, no. 4, 2022.

[2] K. K. V. L. D. P. M. &. G. S. Dhanasekaran, "Survey of CRM And Algorithmic Techniques used in Online Food Ordering System.," *International Journal of Engineering Research & Technology (IJERT)*, vol. 12, no. 2, 2023.

[3] P. P. Y. S. N. S. T. &. P. A. Bari, "Deploying an Intelligent Online Food Ordering System to Optimize College Canteen Operations.," *In Proceedings of the 3rd International Conference on Futuristic Technology*

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(INCOFT), vol. 3, pp. 263-268, 2025.

[4] V. &. K. P. Rao, "Full Stack Python Development for Web Automation," *International Journal of Computer Science Research*, 2020.

[5] M. D. N. &. S. R. atel, "Full Stack Python Development for Web Automation," *International Journal of Computer Science Research.*, 2020.

[6] S. Q. R. S. A. &. B. S. Pandey, "Development and Evaluation of a Comprehensive Web-Based Canteen Food Ordering System.," *IJRASET – Journal for Research in Applied Science & Engineering Technology*, 2024.

[7] D. &. A. A. S. Ardani, "Development of a Web-Based Food and Beverage Ordering System for University Canteens Using the Laravel Framework at University of Technology Yogyakarta.," *Journal of Scientific Research, Education, and Technology (JSRET)*, vol. 3, pp. 1462-1474, 2024.

[8] B. M. G. S. S. &. N. S. Sushma Latha, "QR Based Food Ordering System including Sentimental Analysis.," *IJRASET – Journal for Research in Applied Science & Engineering Technology*, 2024.

[9] H. B. S. M. P. &. D. K. Menewar, "Smart Canteen and Cafeteria Management System using RFID Technology.," *IJRASET – Journal for Research in Applied Science & Engineering Technology*, 2023.

[10] S. D. A. K. Y. &. A. A. Masurkar, "Canteen Ordering System Using Android," *International Journal of Engineering Applied Sciences and Technology (IJEAST)*, vol. 6, no. 11, 2022.

[11] Y. P. S. S. S. &. K. S. P. Rane, "Online Food Ordering System." IJRASET – Journal for Research in Applied Science & Engineering Technology," 2022.

[12] "Python Software Foundation," *Python Documentation*, 2024.

[13] "SQLite Consortium," *SQLite Documentation*, 2024.

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