CanteenConnect

Project Report

Submitted by:

Dipanshu Puri

University Roll No: 2310991818

Department: BE-CSE-2023

Chitkara University

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Abstract

This report documents the development of CanteenConnect, a web-based application designed to improve the experience of canteen users by providing an intuitive platform to browse menus, place orders, and manage transactions seamlessly. The application aims to streamline canteen operations, reduce wait times, and enhance customer satisfaction through an interactive and user-friendly interface.

The project was developed using modern web technologies and focuses on a responsive design, ensuring accessibility across multiple devices. Security and usability were key considerations in the design and implementation phases.

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1. Introduction

The increasing demand for efficient food services in educational institutions has led to the need for digitizing canteen operations. Traditional methods involving manual order taking and billing often result in long queues, errors, and customer dissatisfaction. CanteenConnect addresses these challenges by providing a digital platform that allows users to view menus, customize orders, and make payments online.

This report details the conception, design, implementation, and evaluation of CanteenConnect as a solution to improve the canteen experience for both customers and staff.

Problem Statement

Manual canteen operations are prone to inefficiencies including long waiting times, inaccurate orders, and difficulty in managing transactions. These issues affect customer satisfaction and reduce operational efficiency.

There is a need for a system that simplifies ordering and payment processes, provides real-time updates, and facilitates better management.

2. Literature Review

Several existing solutions aim to digitize food ordering systems, but many lack seamless integration with canteen workflows or do not address the specific needs of academic institutions. This section reviews similar projects, their strengths, and limitations.

- Mobile-based food ordering apps such as Swiggy and Zomato offer extensive features but are designed for commercial restaurants, not institutional canteens.
- University-specific solutions often rely on campus card systems but may lack flexibility in menu updates and customization.
- Emerging trends focus on user experience enhancements and contactless payments, especially relevant post-pandemic.

CanteenConnect incorporates these learnings to create a tailored and effective system.

3. Objectives

The primary objectives of CanteenConnect include:

1. To develop a user-friendly web application for canteen ordering.
2. To reduce order processing time and waiting lines.
3. To facilitate administrative management of orders and inventory.

4. Scope and Limitations

Scope:

- The application supports web-based ordering accessible on desktops and mobile devices.
- Menu management features for canteen administrators.
- Order processing and status update.

Limitations:

- The current version does not include a mobile app.
- Payment integration is simulated; real payment gateways can be integrated in the future.
- Inventory management is basic and may require enhancements.

5. Technology Stack

The project was developed using the following technologies:

- Frontend: HTML5, CSS3, JavaScript
- Hosting: Local server
- Tools: Visual Studio Code, Git for version control

The combination of these technologies ensures a scalable, maintainable, and responsive application.

6. System Design

The system design of CanteenConnect focuses on a modular architecture that separates frontend for now and backend, and database layers in the future. This approach enables efficient development, testing, and future scalability.

6.1 Architecture Diagram

The architecture currently consists of:
Client-side frontend rendering user interface.

6.2 User Flow

1. User logs in and browses menu.
2. User looks for preffered item through search option.
3. Places an order and proceeds to payment.
4. Receives order confirmation and status update.
5. User can place another order or do other things.

This flow aims for simplicity and user engagement.

7. Implementation Details

This section outlines the detailed implementation of CanteenConnect, including the frontend and UI/UX considerations.

7.1 Frontend

The frontend is built using HTML, CSS, and vanilla JavaScript to ensure fast load times and responsiveness. CSS includes custom styling for elements such as the order total, modal dialogs, toast notifications, and responsive design for mobile devices.

Key components include:

- Navigation with intuitive buttons
- Search and filter functionality for menu items
- Cart sidebar optimized for desktop and mobile
- Modals for order confirmation and alerts
- Toast notifications for real-time feedback

7.4 User Interface

The UI emphasizes clarity and ease of use with:

- Consistent color schemes using green (#4b9741) for positive actions
- Clear typography and spacing
- Responsive design adapting to screen sizes
- User-select disabled for UI text to improve experience

8. Challenges Faced and Solutions

Several challenges arose during development:

- Ensuring responsive design across devices was addressed using flexible CSS grids and media queries.
- Creating the search option and making sure the items were sorted correctly upon searching.
- Making sure the cart worked properly.

Through iterative testing and debugging, these challenges were effectively mitigated.

9. Testing and Validation

Testing included:

- UI/UX testing for responsiveness and user flow.
- Functional testing for all major features including order placement and item search and potentially user registration in the future.

User feedback was incorporated to improve usability.

10. Future Enhancements

Planned future improvements include:

- Integration of real payment gateways for secure transactions.
- Development of a dedicated mobile application.
- Advanced inventory and stock management.
- AI-based personalized recommendations.
- Multi-language support.
- Analytics dashboard for canteen administrators.

11. Conclusion

CanteenConnect demonstrates the potential of technology to transform traditional canteen operations by enhancing convenience, efficiency, and user satisfaction. This project lays a strong foundation for future expansion and integration with broader campus systems. The successful completion of the project during the 10X Summer Hack 1.0 hackathon highlights effective planning, teamwork, and technical skill.

12. References

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