

Line Buddy – Smart Canteen Queue Management System

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Abstract—LINE BUDDY is a canteen queue management system designed for colleges, offices, and public food courts. It helps reduce long waiting lines at canteens and improves the food ordering process. Traditional token systems and physical queues often create overcrowding, confusion, and time wastage during peak hours. LINE BUDDY is a web-based solution that allows users to view food items, place orders online, and check queue status in real time. The system is developed using Django framework, HTML, CSS, JavaScript, and SQLite database technologies. It supports digital token generation, estimated waiting time calculation, order tracking, and admin panel management. The system is simple, reliable, and cost-effective for institutions and small-scale food service environments.

I. INTRODUCTION

Colleges and universities often face challenges in managing canteen queues due to a large number of students and staff. Traditional queue systems lead to overcrowding, long waiting times, and inconvenience. LINE BUDDY provides a user-friendly queue management platform that enables users to order food online, receive digital tokens, and monitor live queue status from their devices. The system reduces manual work and improves customer experience.

II. OBJECTIVE

The main objective of LINE BUDDY is to design and develop a smart canteen queue management system that improves order handling and reduces waiting time.

Specific Objectives:

- Reduce overcrowding in canteen areas.
- Provide online food ordering facilities.

- Generate digital queue tokens automatically.
- Calculate and display estimated waiting time.
- Improve efficiency in food order management.
- Provide real-time queue tracking for users.
- Reduce errors in token handling.
- Develop a user-friendly web-based solution.

III. METHODOLOGY

The methodology of LINE BUDDY is based on a web-based client-server architecture. The system uses Django framework for backend operations and HTML, CSS, and JavaScript for frontend interaction. Users can log into the system, browse food items, and place orders online. The system automatically generates a token number and stores order details in the database. The admin panel allows canteen staff to manage orders, update order status, add food items, and control queue progression.

IV. HARDWARE AND SOFTWARE REQUIREMENTS

Hardware Requirements:

- Computer or Laptop
- Internet Connection
- Mobile/Desktop for Users
- Minimum 4GB RAM
- Processor: Intel i3 or Higher

Software Requirements:

- Python Programming Language
- Django Framework
- SQLite Database
- HTML, CSS, JavaScript
- Visual Studio Code
- Web Browser (Chrome/Firefox)

V. SYSTEM ARCHITECTURE

The user interacts with the frontend interface to place food orders. The backend server processes requests and stores data in the database. The admin panel manages queue flow and updates order completion status.

VI. EXPERIMENTAL RESULTS

LINE BUDDY was tested in a simulated canteen environment. The system handled multiple user requests simultaneously and maintained proper queue order without conflicts. Experimental results showed a significant reduction in average waiting time. Digital token generation eliminated confusion related to token handling. Users were able to place food orders, view queue position in real time, receive estimated waiting time, track order completion status, and avoid crowding near counters.

VII. CONCLUSION

The LINE BUDDY project successfully demonstrated how modern web technologies can be used to create a smart canteen queue management system. The system reduced overcrowding and simplified food ordering through online ordering, digital token generation, and live queue tracking. It improved convenience for both users and canteen staff while remaining reliable, easy to use, and cost-effective. The project highlights the usefulness of Django and web development technologies in solving real-world problems.

VIII. FUTURE SCOPE

Future improvements for LINE BUDDY may include:

- Adding online payment options
- Developing a mobile application
- Using artificial intelligence to predict waiting times
- Using QR codes for token verification
- Sending real-time SMS or mobile notifications
- Supporting multiple canteens
- Adding voice assistant integration for accessibility
- Using smart display systems

In the future, the system can evolve into a complete smart food management platform capable of handling large-scale operations efficiently.

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