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Real Time Smart College Food Court Ordering and Management System

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Abstract- — College food courts often struggle with long waiting queues, overcrowding during peak hours, inefficient order management, and the absence of real-time order tracking; these challenges result in increased waiting time for students and difficulty for administrators in managing multiple food orders effectively, especially during busy lunch and break hours. This paper presents a Smart Food Court Ordering and Management System, a web-based platform designed to simplify food ordering and improve food court management within a college environment. The proposed system allows students to view the food menu, which includes food name, image, price, availability status, waiting time, and quality information, and place orders through an online or offline mode. The system also displays the current food court crowd level as high, medium, or low to help students decide the best time to place their orders. An admin management module enables administrators to monitor student orders, update order status such as waiting, preparing, or ready, manage food availability, and update crowd levels through an interactive dashboard. All system data, including student login details, food menu information, order records, order status updates, and food availability, are stored in a MySQL database using phpMyAdmin within the XAMPP control panel. The system operates as a web application without requiring additional hardware and aims to improve efficiency in food ordering, reduce waiting time, and enhance the overall food court experience for both students and administrators within the campus environment.

Keywords -Smart food court system, online food ordering, food court management, order tracking system, crowd level monitoring, web-based application, student food ordering, MySQL database management.

I. INTRODUCTION

College food courts often face challenges such as long waiting queues, overcrowding during peak hours, and inefficient order management. Although food courts provide essential services to students and staff, the traditional method of ordering food by standing in queues can lead to delays and inconvenience. During busy periods such as lunch breaks, students may spend a significant amount of time waiting to place orders and receive their food, highlighting the need for a more efficient and organized food ordering system within the campus environment.

Traditional food ordering systems in many college food courts rely on manual processes where students visit the counter, select food items, and wait until their order is prepared. These approaches often fail to provide information about food availability, waiting time, or order status. As a result, students may experience uncertainty and delays, while food court staff face difficulties in managing a large number of orders simultaneously. This situation can reduce the efficiency of food court operations and affect the overall dining experience for students.

With the increasing use of computers, smartphones, and internet connectivity in educational institutions, web-based applications provide an effective solution for improving service systems. A digital food ordering platform allows students to view the available menu, check food details, and place orders conveniently without standing in long queues. In addition, such systems can provide real-time updates about order status and food availability, helping both students and administrators manage the ordering process more effectively.

This project proposes a Smart Food Court Ordering and Management System that simplifies food ordering and improves food court management. The system allows students to browse the menu, place orders, and track order status, while administrators can manage orders and update food availability through a dashboard.

II. RELATED WORK

A. Online Food Ordering Systems

Various online food ordering systems have been developed to simplify the process of ordering food through digital platforms. Many restaurants and food delivery services use web-based or

mobile applications that allow customers to browse menus, place orders, and track order status. These systems improve convenience and reduce manual work. However, most of these platforms are designed for commercial food delivery services and are not specifically developed for managing food orders within a college food court environment.

B. Web-Based Food Court Management Systems
Williams and Brown examined the use of location- aware social networks for real-time disease surveillance using machine learning approaches. Their research shows that incorporating spatial information with social data improves the accuracy of outbreak detection. However, the system mainly focuses on large geographical regions and does not provide detailed monitoring at smaller community levels such as wards or neighborhoods.

C. Database-Driven Food Ordering Applications
Database-driven applications have been widely used to store and manage food menu information, user details, and order records. These systems use databases such as MySQL to maintain food details, prices, and order information efficiently. While these systems provide reliable data storage and retrieval, they often do not include features that help manage food availability or waiting time during peak hours in food courts.

D .Web Technologies for Food Service Systems
Modern web technologies such as HTML, CSS, JavaScript, and PHP have been widely used to develop interactive food service systems. These technologies enable the creation of dynamic web pages that allow users to interact with the system easily. Although these technologies support efficient system development, many existing applications do not fully utilize them to provide a complete solution for managing food court operations and student orders in real time.

E. Food Availability and Order Tracking Systems
Some food ordering systems include features that allow administrators to update food availability and track order status. These systems help improve communication between customers and service providers. However, many systems lack additional management features such as crowd level monitoring and integrated admin dashboards for handling multiple student orders efficiently in a campus food court environment.

F. Crowd Monitoring in Service Systems
Crowd monitoring has been used in various service environments to manage customer flow and reduce congestion. In food service areas, displaying crowd levels such as high, medium, or low can help users decide the best time to access services. However, this concept is rarely integrated into college food ordering platforms, limiting the ability of students to plan their visits based on food court congestion.

III. G.RESEARCH GAP AND MOTIVATION

From the reviewed literature, it is evident that many existing systems focus on basic online food ordering or database management. However, there is a gap in developing a fully integrated food court management system that combines menu display, online ordering, order tracking, crowd level monitoring, and administrative control in a single platform. This gap forms the motivation for the proposed Smart Food Court Ordering and Management System, which aims to improve efficiency, reduce waiting time, and enhance the overall food ordering experience within a college campus.

IV. PROPOSED METHODOLOGY

The proposed system is a web-based Smart Food Court Ordering and Management System designed to improve food ordering and management within a college food court. It allows students to view available food items, check food details, and place orders through an online platform. The system stores all order information in a database and helps administrators manage food court operations efficiently.

The system collects order details directly from students and stores them in a centralized database. Students can browse the food menu, which includes information such as food name, image, price, availability status, waiting time, and quality details. After selecting the required items, students can place their orders through the system and track the status of their orders in real time.

The system displays the current crowd level of the food court, which is categorized into three levels. Based on the crowd situation, students can decide the best time to place their orders. The levels are classified as:

- High
- Medium
- Low
- Less Crowd

Administrators can access the system through an interactive dashboard to monitor and manage food court activities. The Admin Management Module allows administrators to update order status, manage food availability, and control crowd level information. Automated updates ensure that students receive

real-time information about their orders, helping reduce waiting time and improving the overall food court experience.

V. SYSTEM ARCHITECTURE

A. Overall Architectural Design

The proposed Smart Food Court Ordering and Management System follows a modular web-based architecture designed to provide efficient food ordering, order management, and real-time communication between students and administrators. The architecture consists of multiple layers that support user interaction, application processing, and database management. These layers work together to ensure smooth system operation and Dataflow

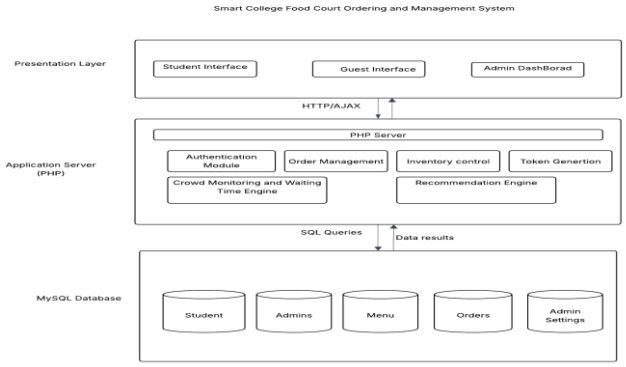

Figure 1 :Architecture Diagram

The architecture mainly consists of three major layers: Presentation Layer, Application Server Layer, and MySQL Database Layer. Each layer performs specific tasks while communicating with other layers through secure HTTP and SQL-based interactions.

A. Presentation Layer

The presentation layer represents the user interface of the system. It includes three main interfaces:

- Student Interface
- Guest Interface
- Admin Dashboard

Students use the student interface to log in, browse the food menu, check food availability, and place orders. Guests may view basic menu information without logging in. The administrator accesses the system through the admin dashboard to manage food items, monitor orders, and update order status. Communication between the presentation layer and the application server takes place through HTTP/AJAX requests, enabling dynamic interaction with the system.

B. Application Server (PHP) Layer

The application server layer handles the core processing of the system and is implemented using PHP. This layer contains several functional modules that manage different system activities.

The Authentication Module verifies login credentials of students and administrators and ensures secure access to the system. The Order Management Module processes orders placed by students and stores them in the database. The Inventory Control Module manages food availability and updates menu items when certain foods are sold out.

The system also includes a Token Generation Module, which generates order tokens for students after placing an order. This token helps in identifying and tracking the order in the food court.

Additionally, a Crowd Monitoring and Waiting Time Engine analyzes the number of current orders and estimates the crowd level and expected waiting time in the food court. A Recommendation Engine may also suggest popular or available food items to students based on system data.

C. MySQL Database Layer

The MySQL database layer is responsible for storing and managing all system data. The database contains several tables that maintain different types of information required by the system.

The Student table stores student login details and basic information. The Admins table stores administrator credentials. The Menu table maintains details of food items including food name, price, and their order status. The Admin Settings table stores configuration details related to system management.

The application server communicates with the database using SQL queries, and the database returns the requested data results to the server for processing.

System Reliability and Data Flow

The layered architecture ensures that each component of the system operates efficiently while maintaining clear separation between user interaction, application logic, and data storage. This structure improves system scalability and simplifies maintenance. By integrating a web-based interface, PHP server

modules, and a MySQL database, the Smart Food Court Ordering and Management System provides an organized and reliable platform for managing food orders and improving the overall food court experience within a college campus.

VI. IMPLEMENTATION DETAILS

A. System Deployment and Architecture

The proposed Smart Food Court Ordering and Management System is implemented as a web-based application that allows students and administrators to access the system through a browser. The system is developed using HTML, CSS, JavaScript, PHP, and MySQL, and it is deployed using the XAMPP server environment. This architecture supports smooth interaction between the user interface, application processing, and database storage. The modular design allows different components such as student ordering, menu management, and order tracking to function independently while still being connected to the central system.

B. Frontend Interface

The frontend interface is designed to be simple and user-friendly so that students can easily interact with the system. Students can log in to the system, view the food menu, select food items, and place orders through the interface. The menu page displays important information such as food name, price, availability, and waiting time. Students can also track the status of their orders after placing them. The administrator interface allows the admin to view orders, update order status, manage menu items, and update crowd levels in the food court

Backend Processing and Security

The backend of the system is developed using PHP, which manages the internal processing of the application. It handles user authentication, request processing, and communication between the frontend interface and the database. When a student logs in or places an order, the request is processed by the server and the data is stored in the database. The system ensures secure access by validating login credentials and controlling access to administrative functions.

C. Order Processing Module

When students select food items and place an order, the system records the order details and stores them in the Orders Table in the database. The order processing module manages the entire order flow, including placing the order, processing payment, and tracking order status. Students can monitor their order progress through stages such as Waiting, Preparing, and Ready, which helps them know when to collect their food.

D. Menu Management Module

The Menu Management Module allows the administrator to manage the food menu stored in the Menu Table. The admin can add new food items, update prices, and change the availability status of food items. When a food item becomes unavailable, the admin can update the menu so that students are informed immediately. These updates are reflected on the student interface in real time.

E. Crowd Level Monitoring Module

The system also includes a Crowd Level Monitoring Module, where the administrator updates the current crowd level of the food court. The crowd level information is displayed on the student dashboard so that students can decide the best time to place.

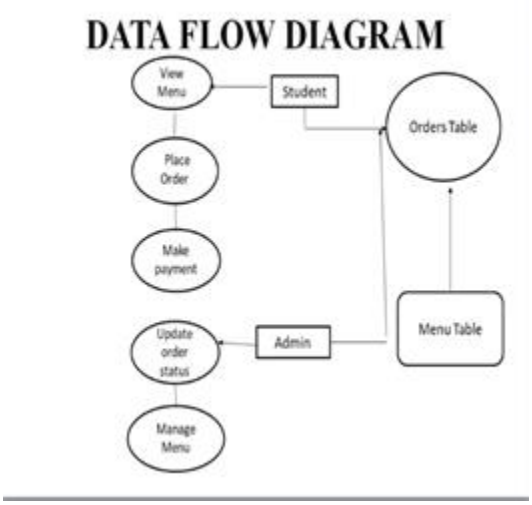

Figure 2 : Data Flow Diagram Level 1

In Data Flow Diagram Level 1, the main interaction occurs between the Student, Admin, Menu Table, and Orders Table. Students first view the menu and select food items. After selecting the items, they place the order and complete the payment process. The order details are then stored in the Orders Table, while menu information is retrieved from the Menu Table. The administrator monitors these orders and updates the order status through the admin interface. The admin can also manage menu items to ensure that students receive accurate information about food availability.

The Data Flow Diagram Level 2 explains the detailed internal process of the system. First, students log in to the system and view the available menu. They then select food items and place their orders. After placing the order, students can make

payment and track their order status through the system. All order information is stored in the Orders Table, while student information is stored in the Student Table.

On the administrator side, the admin logs in to the system and views the list of student orders. The admin updates the order status based on the preparation stage of the food. The administrator can also manage the food menu and update crowd level information. These updates are stored in the database and immediately reflected on the student interface. This continuous flow of data between students, administrators, and database tables ensures efficient food ordering and management within the system.

Overall, the implementation integrates a user-friendly frontend interface, secure backend processing, and efficient database management. The data flow diagrams illustrate how information moves within the system from student order placement to admin management and database storage. This integrated implementation helps reduce waiting time, improves order management efficiency, and provides a better food ordering experience in the college food court

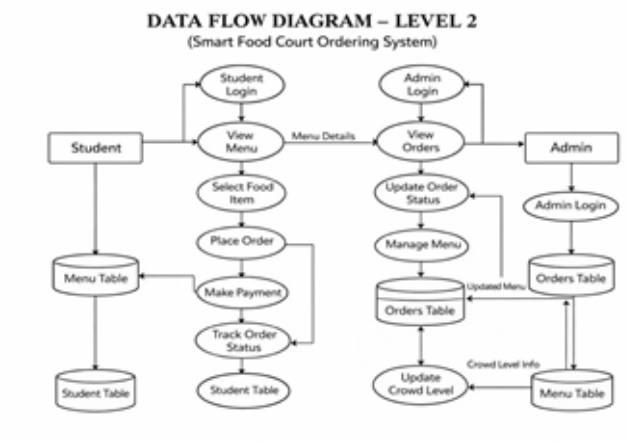

Figure 3 :Data Flow Diagram Level 2

VII. OUTPUT

The Output Page of the Smart Food Court Ordering and Management System displays real-time information related to food orders and food court activity. The system allows students to view the available food menu, select food items, and place orders through the web interface. After placing an order, students can track the status of their order, which is displayed as Waiting, Preparing, or Ready. This helps students know when their food is ready for collection.

Figure 4 :Login Page

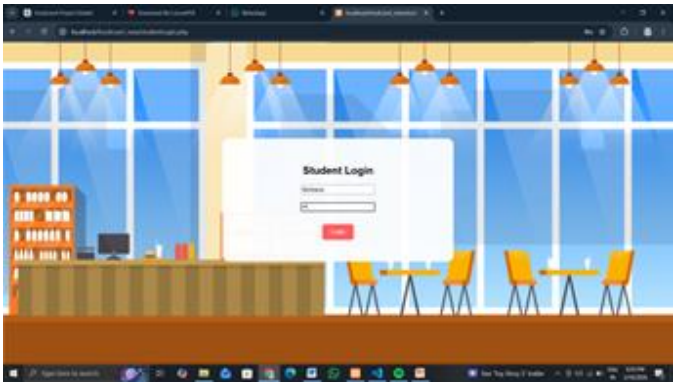

Figure 5 :Student Login

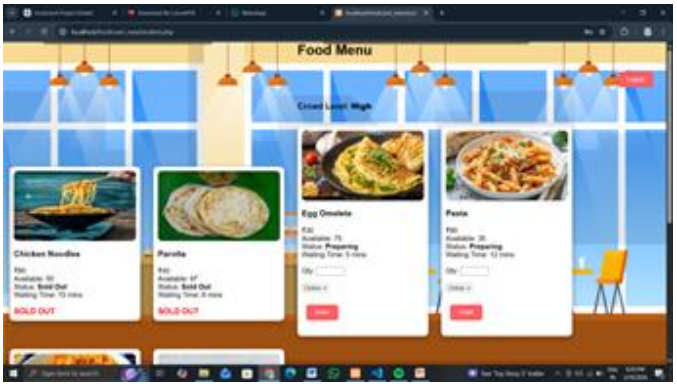

Figure 6 :Food Menu

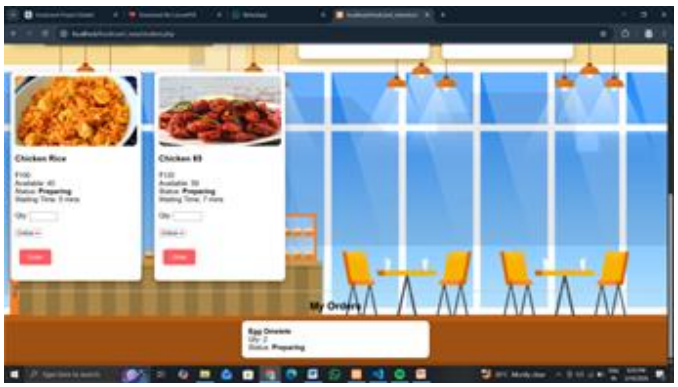

Figure 7 :Food Orders

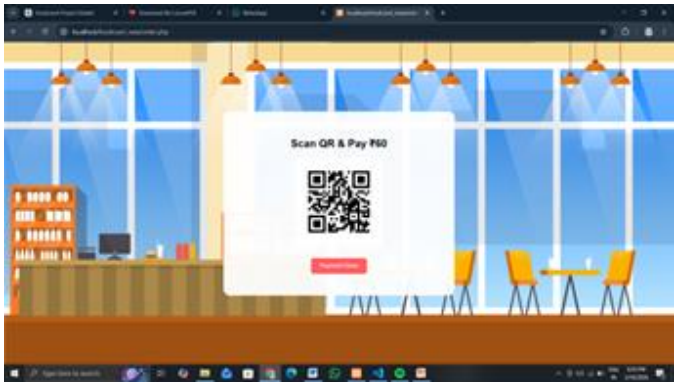

Figure 8 :QR Scan

Figure 9 :Order Notification

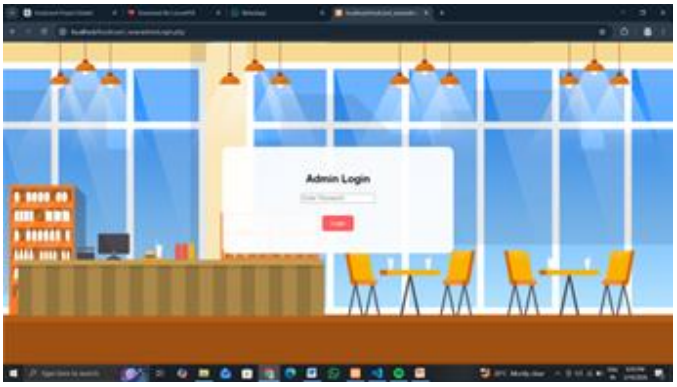

Figure 10 :Admin Login

Figure 11 :Admin Panel

The output also displays the current crowd level of the food court, categorized as High, Medium, or Low, allowing students to decide the best time to place their orders and avoid overcrowded periods. On the administrator side, the admin dashboard displays a list of all student orders along with their order status and food details. The administrator can update the order status, manage menu items, and update food availability. All updates made by the administrator are immediately reflected on the student interface.

Through this real-time interaction between students and administrators, the system provides an organized and efficient food ordering process, reduces waiting time, and improves the overall management of the college food court.

VIII. CONCLUSION AND FUTURE WORK

The Smart Food Court Ordering and Management System proposed in this project demonstrates how web-based applications can improve the efficiency of food ordering and

management within a college food court. The system provides a convenient platform for students to view food menus, place orders, and track their order status in real time. At the same time, administrators can monitor orders, update food availability, and manage the food court operations through an interactive dashboard. This helps reduce long queues, minimize waiting time, and improve the overall food court experience for students and staff.

The integration of menu management, order tracking, and crowd level monitoring helps create a more organized and efficient food service environment. By storing all system data in a centralized MySQL database, the system ensures reliable data management and smooth communication between students and administrators. The web-based design also makes the system easily accessible through standard browsers without requiring additional hardware or complex installations.

Although the current system successfully supports food ordering and order management, there are several possibilities for future improvements. Future enhancements may include integrating online payment systems, mobile application support, automated notifications, and advanced analytics for food demand prediction. Additional features such as AI-based food recommendations and estimated waiting time prediction can further improve user convenience. These future developments will help transform the system into a more intelligent and efficient food court management platform for educational institutions.

REFERENCE

1. K. K. Aggarwal, Y. Singh, and S. Mittal, “A web-based food ordering system for restaurants,” International Journal of Computer Applications, vol. 178, no. 8, pp. 1–6, 2019.
2. R. Buyya, C. S. Yeo, and S. Venugopal, “Market-oriented cloud computing: Vision, hype, and reality for delivering IT services as computing utilities,” Future Generation Computer Systems, vol. 25, no. 6, pp. 599–616, 2009.
3. S. Kumar and M. Gupta, “Online food ordering system using web technologies,” International Journal of Engineering Research and Technology (IJERT), vol. 8, no. 7, pp. 105–110, 2019.
4. P. Kotler and K. L. Keller, Marketing Management, 15th ed., Pearson Education, 2016.
5. N. Jain and S. Sharma, “Design and development of an online food ordering system using web services,” International Journal of Computer Science and Mobile Computing, vol. 7, no. 4, pp. 32–38, 2018.
6. A. K. Soni and R. Mishra, “Web-based restaurant management system,” International Journal of Advanced Research in Computer Science, vol. 8, no. 5, pp. 1102–1107, 2017.
7. S. Laudon and J. Laudon, Management Information Systems: Managing the Digital Firm, 14th ed., Pearson Education, 2018.
8. R. Pressman and B. Maxim, Software Engineering: A Practitioner’s Approach, 8th ed., McGraw-Hill Education, 2015.
9. M. Sommerville, Software Engineering, 10th ed., Pearson Education, 2016.
10. W. Stallings, Database Systems and Design Implementation, Pearson Education, 2017.
11. J. Nielsen, Usability Engineering, Morgan Kaufmann, 2012.
12. I. Sommerville and P. Sawyer, Requirements Engineering: A Good Practice Guide, Wiley, 2014.