

# Canteen Management System

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**Abstract** - The intent of the web application for the Canteen Management System is to make it easier to operate a canteen in a school or place of business. The application offers a simple user interface for cafeteria employees to handle inventory, customers, and orders. Customers can use the app to track their purchases, check the menu, and place orders. The online application is helpful for both canteen workers and customers because it can be accessed from any device with an internet connection. Additionally, the app provides real-time inventory management, lowering the likelihood of stock shortages and food waste. As a result, the management system offers a trustworthy, convenient, and economical alternative for managing canteen operations.

**Keywords**— Canteen Management System, Database, HTML, SQL

## I. INTRODUCTION

The way the college canteen is currently functioning is that you must pay for the meals then wait for the food in the queue, but the challenge is that each student at a campus gets the same break time, so everyone pours to the cafeteria at the same time creating a lot of difficulties for the canteen staff members and the students, and given that there isn't sufficient time, some students end up squandering or not consuming their food.

This is where the canteen management system applies; it simplifies the process to ensure that students can order their food beforehand via their phones from the website, where users must first enter the email addresses they use before they are prepared to place an e-menu order. The website will alert the kitchen staff as soon as a user places an order so they can start cooking it. In the end, Canteen Management System is going to help in simplifying this entire laborious procedure by changing the conventional ways of doing things.

All data is stored on SQL servers managed by the college. The system features a logging system to track all users' access and ensure to increase the efficiency of the college's canteen management

### A. Purpose

The purpose is to create a college cafeteria website with a user-friendly User Interface, a menu design, and other elements that the canteen management system can use to manage different food outlets. The kitchen and the entire canteen could operate as efficiently and quickly as possible by using such a system.

### B. Objectives

The Objectives of Canteen Database Management are:

- Managing information about the canteen, college students, and food items with prices in various campus stores is the major goal of the project on canteen management system.
- The objective is to create a web application software to lessen the amount of manual effort involved in administering the canteen, students, customers, and food items, among other things.
- The goal of this project is to give administrative staff and various shop managers access to sorting and searching tools based on a variety of factors, such as various campus stores, consumers, food items, and orders.
- Edit, add, and updating records, leading to proper resource management of canteen data, is one of the most important aims.
- All fields in the project, including those for the customer sign-up and log-in, will be validated so that they do not take invalid values.

The application seeks to make maintaining the canteen simpler and more efficient.

## II. SYSTEM DESIGN

The process of developing a strategy or blueprint for a new system or software application that satisfies particular requirements or objectives is referred to as system design. Maintaining the Integrity of the Specifications.

### A. . Data Flow Diagram

A data flow diagram (DFD) is a picture that shows how information moves through a system or procedure. It is a modeling tool used to explain the interactions and data flow between the system's components. The diagram usually includes a number of symbols and arrows that represent the direction and flow of data in the system.

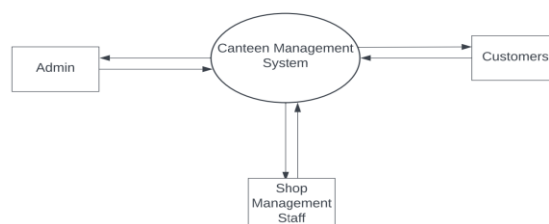


Fig. 1. Data Flow Diagram

**B. Detailed Flow Graph**

A sort of visual representation that explains the logical flow of control and data in a software program is called a detailed flow graph (DFG). It is a thorough and organized depiction of a software program's execution flow, giving a full and accurate picture of the operation of the application's code.

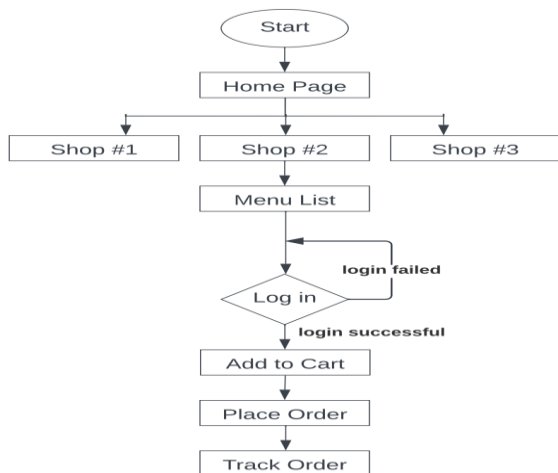


Fig. 2. Detailed Flow Diagram

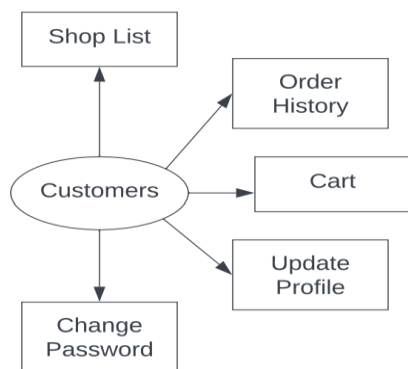


Fig. 3. Data Flow Diagram of Customer

As shown in Fig. 3, a user of a canteen management system, you would have access to a number of tools and options. Here are some options for customers:

- Place Orders: You can look through the menu and order the things you want to buy. The system interface, which can be found on a website or a mobile app, can be used for this.
- Check the Status of Your Orders: You can check the status of your orders to see if they have been delivered, processed, or accepted.
- View Previous Orders: The system allows you to view previous orders and includes information on the things ordered, the date and time of the order, and the total cost.
- Update Your Account: The canteen management system may allow you to update your account, which

may include updating your personal information, resetting your password, or looking over your order history.

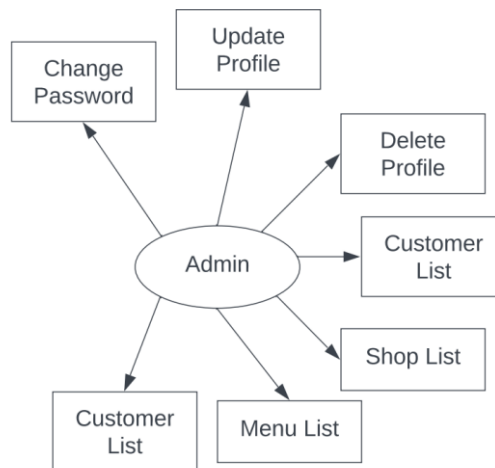


Fig. 4. Detailed Flow Diagram of Admin

As shown in Fig. 4, the duties and responsibilities as an administrator of a canteen management system would be varied. An admin can do the following actions:

- Manage User Accounts: In the canteen management system, you have the ability to create, edit, or delete user accounts for consumers. Additionally, the administrator can use the filters to identify particular users who have signed up.
- Menu Management: You have control over the canteen's menu, including the ability to add new items, change current ones, and set prices.
- Shop Management: You can take control of the campus's stores. Establish their hours and check the menu items in relation to the stores.
- Order management: By looking at different customers who have placed orders, the admin can review the placed orders and modify their status.

The administrator also has the option to deactivate his account, edit his personal information, or even change his password.

**C. Functional Requirement**

Users of the online canteen system, namely canteen customers, must be provided with the following functionalities:

- Creating an account.
- Managing their account.
- Logging into the system.
- Navigating the menu of the canteen system according to the presence of items at that period of time.
- Selecting an item from the menu.
- Options to customize the selected items.
- Adding an item to their current order.

- Reviewing the current order of customers after the modification.
- Providing option ‘Remove’ to discard the items which were added to the current order. We can remove items in a selected manner if needed. Customers can remove all items too.
- Placing the order, the customer will receive the confirmation in the form of an order number. We can check the preparation time by the current order number.
- The Administrator will be granted more authority, including the ability to create, remove, and update the various shops in the canteen system as well as the menu items.

**D. Non-Functional Requirement**

The functional requirements are expanded upon by this collection of requirements. Non-functional needs are implicitly assumed from the software that has been created so far, yet they are not ones that a user requests. It might be considered the application's "efficiency" in terms of performance.

The proposed system that we will create will serve as the primary performance system for the organization, helping it in managing the complete database of the campus shops and the organization's registered customers. Therefore, it is anticipated that the database will functionally meet all of the requirements.

The database may get crashed at any certain time due to virus or operating system failure. Therefore, it is required to take the database backup.

The food must be the one chosen when placing an order for it to be delivered using the canteen system, but many businesses also offer free delivery if it takes longer than 30 minutes. This can be viewed as a non-functional need that goes above and beyond just offering the bare minimum of functionality. In our situation, we can add extras like, free food if the order is not ready by pick-up time.

**E. Database Design Process**

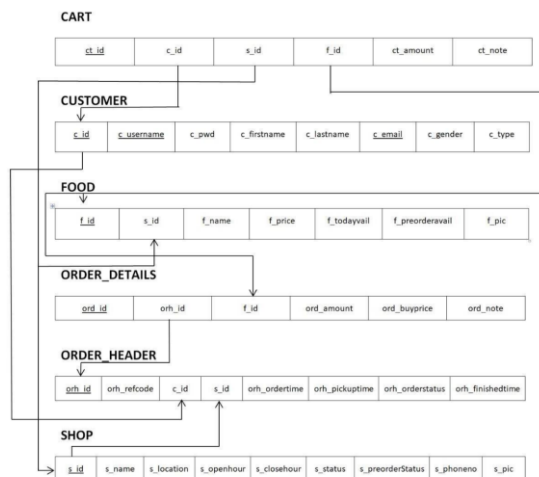


Fig. 5. Schema of Canteen Management System

Fig. 5 shows that the Canteen Management System can store and retrieve data about customers, menu items, shops, customer carts, order headers and order details by developing a database schema that includes these tables. This lets the system streamline operations while enhancing the customer experience.

Also, it is to be noted that, in the Canteen Management System project, the tables are well normalized, which helps to assure data integrity and lowers the chance of data mistakes and inconsistencies.

- Customer entity: This entity represents the canteen's customers, including their customer id, email, name, username and other relevant information.
- Cart entity: This entity represents the items added by customers.
- Order Details entity: This entity represents the extra specifications or notes added by the customers along with order id, food id and other important information.
- Order Header: This entity represents the timing details along with the pickup time and other applicable information.
- Shop entity: This entity represents the phone number of the shop, its location and its timings and other relevant information.
- Food entity: This entity represents the name of the food item, if it's available for pre ordering, its price etc.

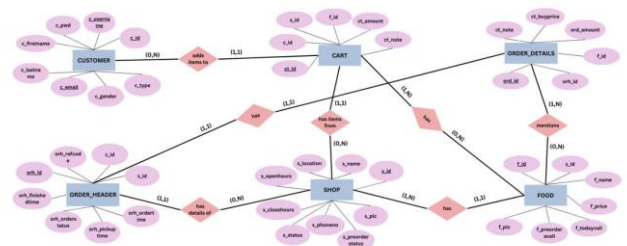


Fig. 6. Entity-Relationship Diagram of Canteen Management System

Fig.6 shows the links between the various entities whose participation and cardinality constraints in a canteen management system can be better understood with the use of an ER diagram that uses (min, max) notation. The entities and relationships that can be shown in the ER diagram are briefly described below:

- Customer entity: This entity represents the canteen's customers, including their customer id, email, name, username and other relevant information.
- Cart entity: This entity represents the items added by customers.
- Order Details entity: This entity represents the extra specifications or notes added by the customers along

with order id, food id and other important information.

- Order Header: This entity represents the timing details along with the pickup time and other applicable information.
- Shop: This entity represents the phone number of the shop, its location and its timings and other relevant information.
- Food entity: This entity represents the name of the food item, if it's available for pre ordering, its price etc.

### III. TECHNOLOGIES USED

In order to envision the proposed approach the technology stack adopted include

MySQL, PHP, HTML, CSS and JavaScript.

#### MySQL

MySQL, a fast, easy-to-use RDBMS is used for database management at the backend.

#### PHP

PHP Hypertext Preprocessor scripting language is used to design interactive web pages since it is a free software by the Free Software Foundation.

#### CSS

CSS, a cornerstone technology of the World Wide Web, alongside HTML and JavaScript is utilized to design the web pages to enable the separation of presentation and content, including layout, colors, and fonts. This separation can improve content accessibility, provide more flexibility and control in the specification of presentation characteristics, enable multiple web pages to share formatting by specifying the relevant CSS in a separate .css file which reduces complexity and repetition in the structural content as well as enabling the .css file to be cached to improve the page load speed between the pages that share the file and its formatting.

#### HTML

Hypertext Markup Language (HTML) is the standard markup language for documents designed to be displayed in a web browser. HTML describes the structure of a web page semantically and originally included cues for the appearance of the document.

#### JAVASCRIPT

JavaScript, abbreviated as JS, programming language that conforms to the ECMAScript specification is used for client side scripting.

### IV. RESULTS

The canteen management system project required a database to store and manages the data related to the customers, menu items, orders, inventory, and cart items. A database schema was designed to define the structure of the database and the relationships between the different tables.

The database structure was built by building the required tables with the proper columns, data types, and constraints using SQL (Structured Query Language). To test the functionality of the database, sample data was added to the tables once they had been constructed.

The canteen management system was able to perform several tasks, including adding and updating customer information, maintaining inventory, taking orders, processing payments, and managing user accounts, thanks to the effective creation and implementation of the database.

The canteen operations became easier and more organized via the database.

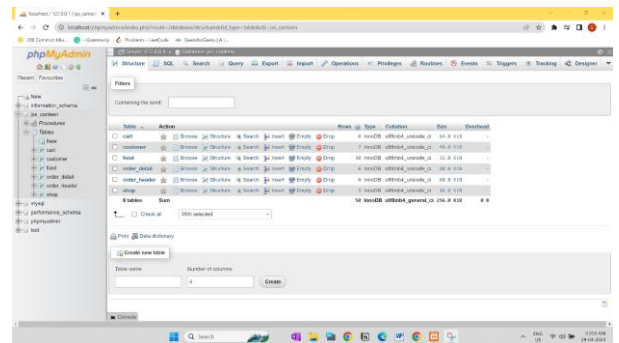


Fig. 7. Tables of Canteen Management System

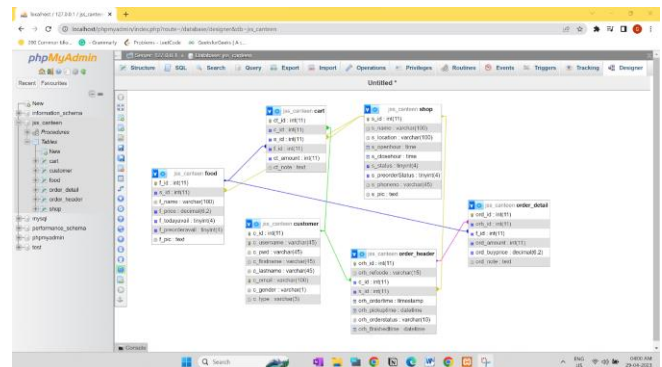


Fig. 8. Schema Design of Canteen Management System

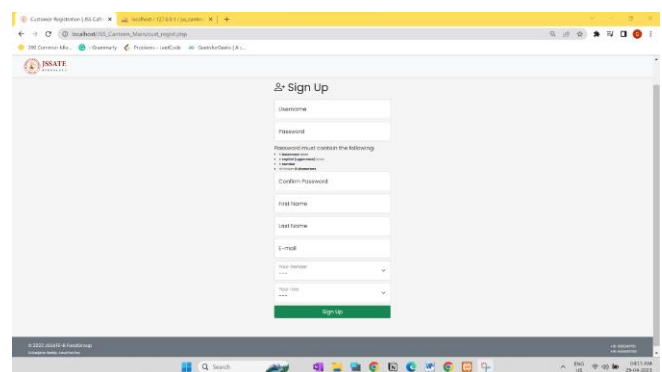


Fig. 9. Sign-Up Page

Fig.9 shows a signup page. A signup page (also known as a registration page) enables users or customers to independently

register and gain access to the canteen application system. There are different fields mentioned in the page to be filled which are validated and the text boxes are provided to take the input from the user.

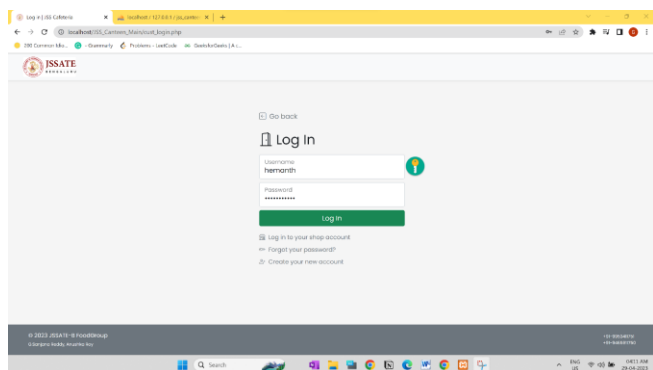


Fig. 10. Login Page

Fig. 10 shows a login page. It is an essential component of any system that requires user authentication to access its features and functionalities. The login page is the first point of contact for users, and it is where they provide their login credentials to gain access to the system.

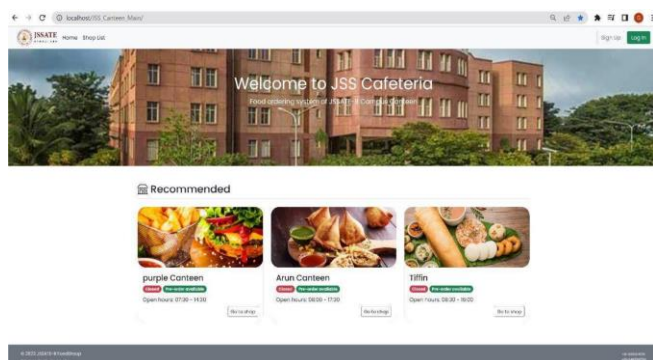


Fig. 11. Homepage Page

Fig. 11 shows the Canteen management system's homepage for the customers.

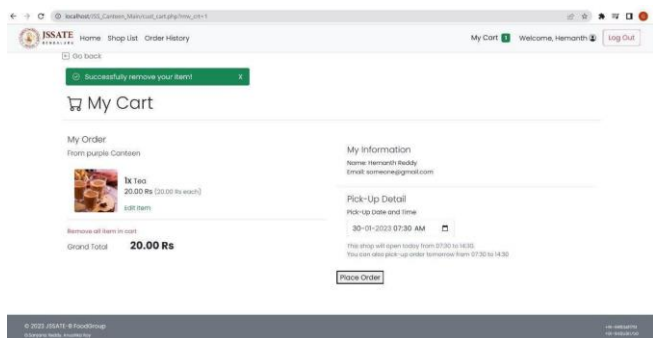


Fig. 12. Customer's Cart

Fig. 12 shows A cart page is an essential part of an e-commerce website. It is the page where users can pile up what they want to buy from the website and then simply checkout by clicking on the button to place the order.

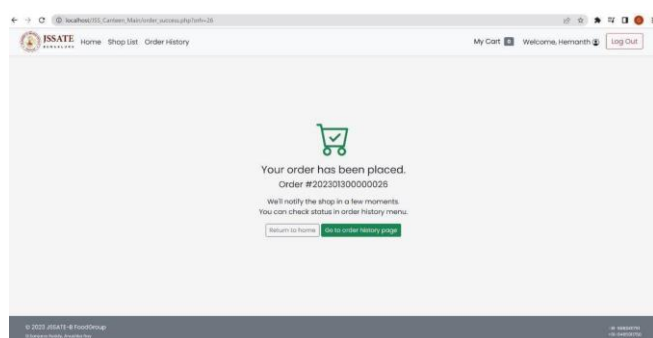


Fig. 13. Order Successful Page

Fig. 13 shows that on clicking on place order, the user is taken to the next page where the user sees the message that says that the order has been placed along with the order id number that is auto-generated. This page is mapped to the next page that is to check the order history.

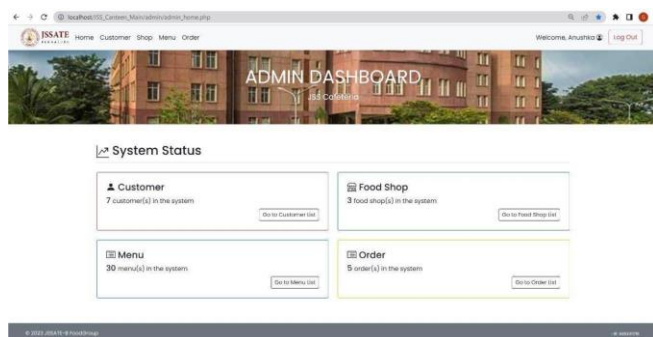


Fig. 14. Admin Dashboard

Fig. 14 shows that the dashboard is the front page of the Administration UI. It provides convenient shortcuts for common management tasks. Review the order updates. The technical status of the platform, details about customer and user profiles, the status of business operations, and many other informational aspects of the system.

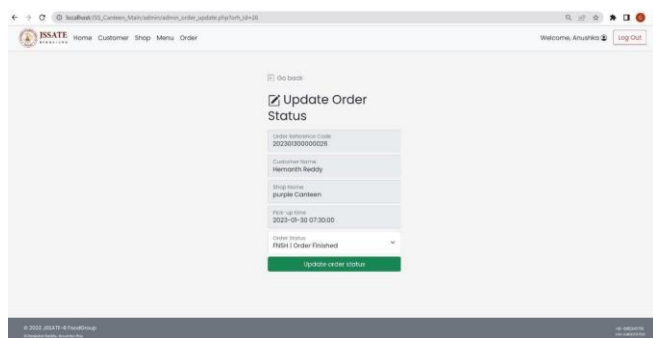


Fig. 15. Admin page to update the status of the order

Fig. 15 shows where we can set the status of the customer's order and the options are finished or accepted. It is a good idea to check the page regularly in case the purchaser didn't make it back to your store after buying. It is possible to change these values in the Admin Order Status page to give a clearer message to the public if they choose to view the status of their order.

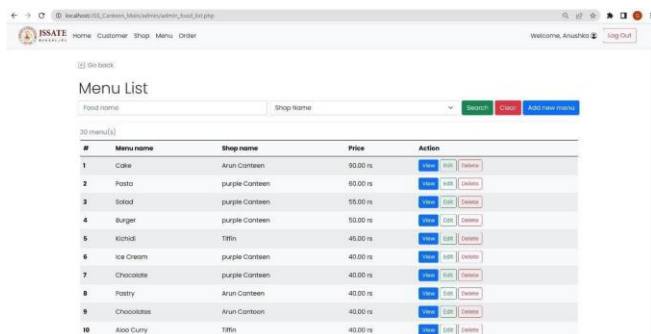


Fig. 16. Admin's Menu List

Fig. 16 shows that the Store administrators can create and manage individual menu items on our canteen management website. Doing so can help organize food items into specific groups, which can ease the distribution of price rules. As store administrators, we can view different food items in different shops from the admin panel. We can view a variety of food item information, such as its availability, its price etc and also make these changes. The Store administrators also can add or delete different food items in different stores.

### V. FUTURE ENHANCEMENT

- To fetch records in the future, we will build longer databases that are more dependable. Additionally, we'll make an effort to offer the best services and online payment options.
- In the future, we'll attempt to update the admin and student profiles. To make it more beneficial for students, some other intriguing features will be introduced.
- The customer's most liked item can also be predicted using machine learning methods. Customers will

provide feedback, which will then be added to the database. This feedback will be assessed using machine learning and data mining techniques, and the most popular food products will be shown to regular consumers online.

- The shortcut techniques employed in the learning algorithms can also be used to update the menu list in accordance with the admin's preferences.

### VI. CONCLUSION

The management of a canteen or other food establishment's operations requires the use of a canteen management system. Customers and workers can both gain from a well-designed canteen management system, which can increase productivity, decrease errors and inconsistencies, and improve customer satisfaction. Additionally, it can aid in optimizing canteen management, allowing owners and managers to concentrate on other areas of their business. A canteen management system often uses a variety of software technologies, including databases, web servers, and user interfaces, in terms of technological implementation.

Any canteen or restaurant that wants to enhance its operations and give customers a better dining experience should consider investing in a canteen management system. Canteen owners and managers may improve operations, cut expenses, and maintain competitiveness in a crowded market by taking advantage of technology.

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