**Canteen Management and Billing System - Project Proposal**

**Team: Vision**

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### **1. Introduction**

In modern-day operations, managing a canteen manually is inefficient and prone to errors. The **Canteen Management and Billing System** aims to automate and streamline operations such as menu management, ordering, and billing. This project provides an efficient solution for canteens by facilitating quick and accurate processing of orders and managing menu items.

The system has been developed with simplicity in mind. It allows the canteen owner to manage the menu, add or delete items, and view current inventory. For customers, the system provides an easy-to-use interface to place orders, view menu items, and receive accurate billing for their orders.

With this system, canteen staff can significantly reduce human errors in managing orders, keeping track of menu items, and generating bills. This will improve both the customer experience and operational efficiency.

### **2. Project Objective**

The primary objective of this project is to create an automated system to improve the efficiency and accuracy of operations in a canteen. The system will:

* Allow the canteen owner to manage the menu, including adding, deleting, and viewing items.
* Enable customers to place orders and receive accurate billing.
* Provide a user-friendly interface for both the owner and customers.
* Simplify the process of handling orders and maintaining the menu.

The goal is to reduce manual work, minimize errors, and enhance the speed and quality of service in the canteen.

### **3. Problem Statement**

Managing a canteen manually involves a series of challenges that hinder productivity and lead to errors. The current manual process often results in:

* **Human errors**: Mistakes in order processing or incorrect menu prices.
* **Slow service**: Processing orders and generating bills manually takes more time, leading to delays.
* **Inventory issues**: Keeping track of stock, menu updates, and sales manually can result in missing or outdated information.
* **Limited reporting**: The absence of automated reporting makes it difficult for owners to track sales and order history.

The **Canteen Management and Billing System** is designed to address these problems by automating key tasks and making operations more efficient.

### **4. System Design**

The system is designed with two primary user sections:

1. **Owner Section**: This allows the owner to log in and manage the canteen menu. Owners can add new items, delete items, and view the current menu. They also have access to manage orders.
2. **Customer Section**: This allows customers to browse the menu, place orders, and receive a bill. Customers can select items based on their ID and choose quantities.

#### **System Flow:**

1. **Login**: The owner logs into the system with a secure password for access to the admin functions.
2. **Menu Management**: The owner can add or remove menu items.
3. **Order Processing**: Customers select items from the menu, specify quantities, and receive a bill. The order is recorded in a text file for record-keeping.
4. **Billing**: The system calculates the total cost of the order and generates a bill.

#### **Data Storage:**

* The menu items and orders are stored in text files, ensuring easy access and simplicity.
* The **canteen.txt** file stores the list of menu items, while **orders.txt** records all customer orders and billing details.

### **5. Project Scope**

The scope of this project includes:

* **Menu Management**: Adding, deleting, and viewing menu items by the owner.
* **Order Management**: Customers can place orders by selecting items and specifying quantities.
* **Billing**: The system automatically calculates the total cost and generates a bill.
* **Security**: Owner login with a password to prevent unauthorized access.

**Exclusions**:

* The system does not handle online payments or integrate with external payment gateways.
* Advanced customer features like loyalty programs or notifications are not included.

### **6. Methodology**

The development of this project follows the **Waterfall Model**, with each phase progressing sequentially. The stages are:

1. **Requirement Gathering**: The needs of the canteen owner and customer were collected and analyzed.
2. **System Design**: The overall structure of the system, including user interfaces and file handling, was designed.
3. **Coding**: Using **C programming language**, the system was coded to manage the menu, process orders, and generate bills.
4. **Testing**: Unit testing was performed on each function to ensure correctness. Additionally, integration testing was done to verify the smooth operation of the system.
5. **Deployment**: Once tested, the system was deployed for use in a test environment to simulate actual operations.

The system was developed using basic C programming techniques, focusing on efficient file handling, input validation, and ensuring a simple user interface.

### **7. Team Members' Roles and Responsibilities**

Each team member played a crucial role in the development and completion of the project:

* **Rojan Bhattarai** (Team Leader): Managed the overall project, coordinated with team members, and created the presentation.
* **Samir Adhikari**: Was responsible for writing the system’s core code, including menu and order management functions.
* **Rishav Jaiswal**: Designed the logic for the menu management system, including the order placement and billing functions.
* **Sandip Jaiswal**: Assisted with gathering materials for the presentation, compiling references, and providing research support for the project.

### **8. Technologies Used**

The system was developed using the following technologies:

* **Programming Language**: **C** was chosen for its efficiency and widespread use in system-level programming.
* **File Handling**: The menu and orders are stored and retrieved using text files to ensure easy access and simplicity.
* **Compiler**: The system was developed using **Code::Blocks** with the **GCC compiler**.

These technologies were selected because they are efficient, lightweight, and well-suited for the purpose of this project.

### **9. Timeline and Milestones**

The project followed a structured timeline to ensure timely completion:

| **Task** | **Timeline** |
| --- | --- |
| Requirement Gathering | Day 1 |
| System Design | Day 1-2 |
| Core Coding (Menu & Orders) | Day 2-4 |
| Testing & Debugging | Day 5 |
| Final Documentation & Presentation | Day 6-7 |

Key milestones:

* **Day 1**: Requirements finalized and project plan prepared.
* **Day 2-3**: Core system functions coded.
* **Day 4**: Testing and bug fixing completed.
* **Day 6-7**: Final documentation and presentation preparation.

### **10. Conclusion**

The **Canteen Management and Billing System** is designed to streamline the operations of a canteen. By automating tasks such as menu management, order processing, and billing, the system will improve efficiency and reduce errors. The project demonstrates the team’s skills in system design, programming, and software development.

This system can be expanded in the future to include additional features such as online ordering or payment integration. However, the current version already offers significant improvements to the canteen’s management system.

### **11. References**

* **Projects from the seniors**
* **C programming books of engineering and class 12**
* W3schools.com
* Chatgpt and deepseek
* Adriana Gridler Youtube channel