A

Mini Project Report on

CafEase: Cafeteria Management System

Submitted in partial fulfillment of the requirements for the

degree

Second Year Engineering – Computer Science Engineering (Data Science)

by

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CERTIFICATE

This to certify that the Mini Project report on **CafEase** has been submitted by **Priyom Ghosh(23107060), Laxmikant Koli(23107028)**, **Dev Maru(23107054)** and **Suman Manik(23107056)** who are bonafide students of A. P. Shah Institute of Technology, Thane as a partial fulfillment of the requirement for the degree in **Computer Science Engineering (Data Science)**, during the academic year **2024-2025** in the satisfactory manner as per the curriculum laid down by University of Mumbai.

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TABLE OF CONTENTS

Chapter 1

Introduction

The In today's fast-paced world, cafeteria management requires an efficient and automated system to streamline order processing, inventory management, and billing. Traditional manual systems often lead to errors, inconsistencies, and delays in serving customers, which affects overall customer satisfaction. To address these challenges, we have developed **CAFEASE – A Cafeteria Management System**, using **Python for the frontend** and **MySQL for database management**.

The **CAFEASE system** is designed to improve the efficiency of cafeteria operations by digitizing order placements, automating bill generation, and ensuring accurate inventory management. This project provides a user-friendly interface where customers can view the menu, place orders, and receive digital receipts. Additionally, it enables cafeteria staff to update menu items, monitor stock levels, and retrieve order history, making the entire process seamless.

1.1. Purpose:

The purpose of this project is to identify a specific real-world problem and develop an efficient, user-friendly solution using appropriate technology. It aims to enhance productivity, accessibility, or convenience within a defined domain by implementing key features and functionalities tailored to user needs. The project will clearly outline its objectives, scope, and expected outcomes while leveraging a suitable technology stack to ensure seamless development and execution. By addressing the identified problem with an innovative approach, the project seeks to provide a practical and impactful solution that can be applied effectively in its intended field.

1.2. Objectives:

- To facilitate cafe billing management by allowing users to input orders for various items, calculate totals, and display service charges and taxes.
- To allow staff to add, update, and remove menu items easily

- Store Data: Save menu and order details in a database.
- To maintain records of orders in database and generate bills

1.3. Scope:

The scope of this project defines its applicability, target audience, and potential impact within its chosen domain. It aims to provide a practical solution that can be implemented in specific areas such as education, healthcare, business, or daily life, depending on the identified problem. The project is designed to benefit a defined group of users, including students, professionals, or general consumers, by improving accessibility, efficiency, or convenience.

Furthermore, the project's scope extends to its technological implementation, ensuring compatibility with relevant platforms and seamless integration with existing systems if necessary. It will focus on delivering a scalable and adaptable solution that can be expanded or enhanced based on future needs. By addressing key challenges and offering user-friendly features, the project will contribute to enhancing workflows, decision-making, or user interactions in its respective field.

Chapter 2

PROBLEM DEFINATION

In today's fast-paced world, various challenges hinder efficiency, accessibility, and user experience across different domains. Many existing solutions may be outdated, inefficient, or lack the necessary features to meet evolving user demands. These gaps create difficulties for individuals and organizations, leading to wasted time, limited access to resources, or a lack of streamlined processes. Identifying and addressing such problems is essential to improving productivity and overall user satisfaction.

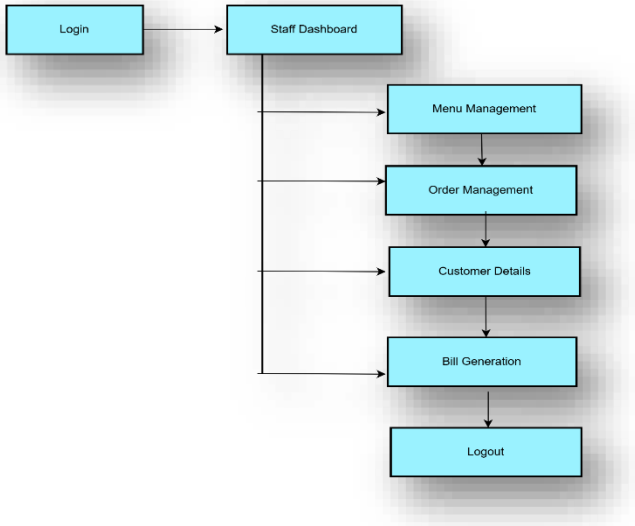
This project aims to tackle a specific real-world problem by analyzing its root causes and designing an innovative solution. By leveraging modern technology, the project seeks to eliminate inefficiencies, enhance accessibility, and provide a user-friendly experience. The proposed solution will focus on key functionalities tailored to the needs of its target users, ensuring practical applicability and ease of use. Through this approach, the project aspires to bridge the existing gaps and deliver a meaningful impact within its chosen domain.

Proposed System

The proposed system offers an efficient, user-friendly, and technologically advanced solution to address the identified problem. It aims to improve productivity, accessibility, and functionality through a structured development approach. By incorporating features like automation, effective data management, and interactive elements tailored to the project's domain, the system will streamline processes and minimize manual work. Emphasis will be placed on ease of use and reliability to ensure a seamless user experience.

Designed for scalability and adaptability, the system will support future updates based on user feedback and changing needs. It will employ a suitable

technology stack for both front-end and back-end development, prioritizing smooth performance, data security, and intuitive navigation. With a focus on simplicity and optimized functionality, the solution seeks to effectively bridge the gap between current challenges and a more innovative, user-centered approach.



2.1. Features and Functionalities:

- QR Generation: To automate bill generation and display.
- Menu Display: Displays the available menu items with prices using PrettyTable.
- Order Management: Handles order placement by accepting the customer's choice of dishes and generates a bill.
- Order History: Enables viewing customer order details

Chapter 3

Project Outcomes

- User Authentication:

Users can securely log in and register using their credentials.

- Search Functionality:
  Users can search for available options based on their preferences.

- Booking System:
  Users can book items/services by providing necessary inputs.

- Data Storage & Retrieval:
  The system securely stores and retrieves user data efficiently.

- User-Friendly Interface:
  A well-designed UI ensures easy navigation and usability.

- Real-Time Updates:
  Users receive instant updates regarding their actions.

- Secure Transactions:
  The system ensures safe and encrypted transactions (if applicable).

- Reporting & Analytics:
  Users can generate reports and analyse data for insights.

Chapter 4

Software Requirements

The project requires specific software for development and deployment, as follows:

Python Programming Language:

Provides the core functionality for the project, handling backend logic, data processing, and interactions with the database.

MySQL Database Server:

Manages and stores project data, handling SQL queries and transactions for backend operations.

Visual Studio Code (VS Code):

Used as the primary Integrated Development Environment (IDE) for writing, testing, and debugging Python code. It provides extensions for better code management and database interaction.

MySQL Workbench:

A graphical tool for database design, management, and maintenance, facilitating schema design and query execution.

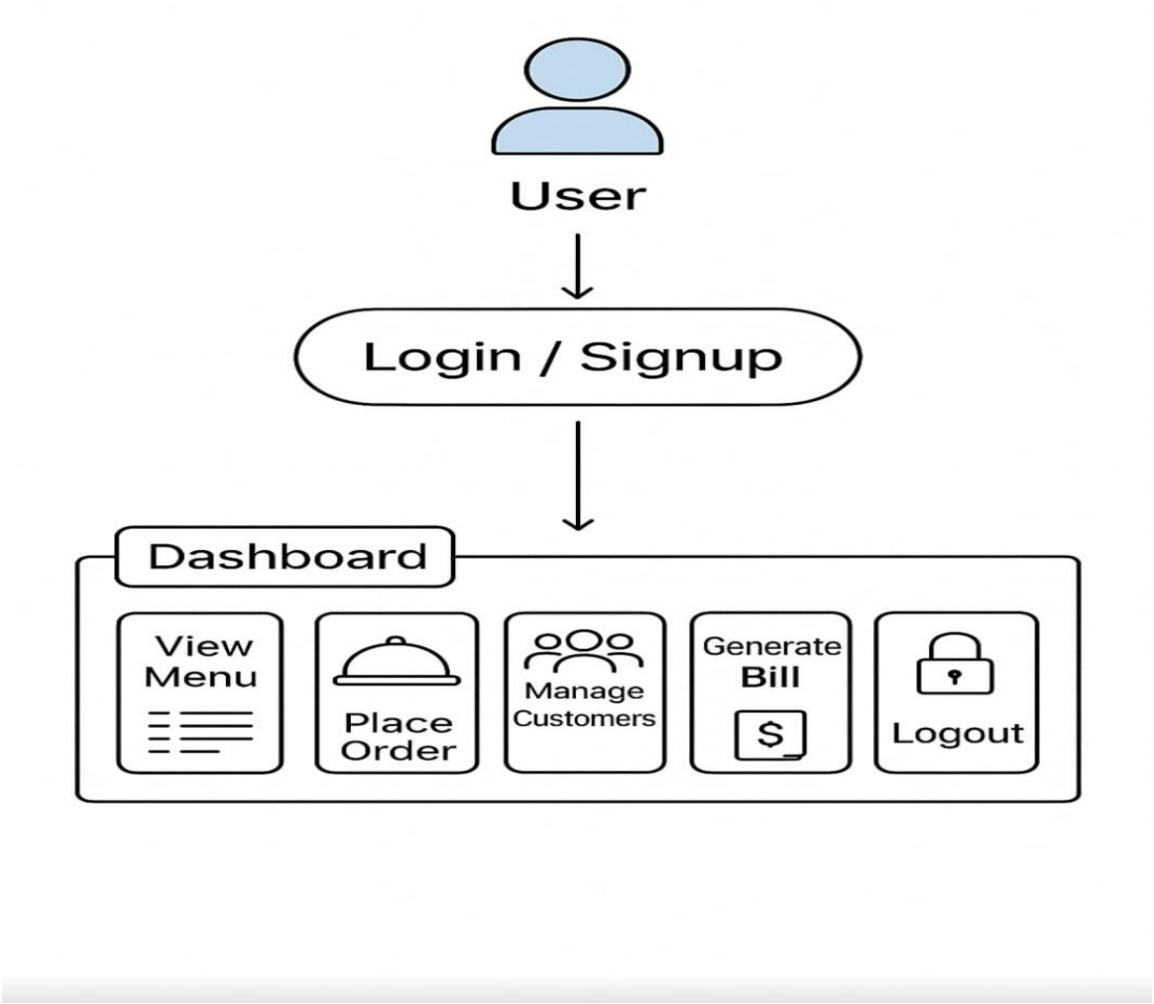
Python Libraries & Frameworks:

Tkinter: Used for designing the graphical user interface (GUI) of the application.

MySQL Connector/PyMySQL: Enables Python to interact with MySQL databases.

Chapter 5

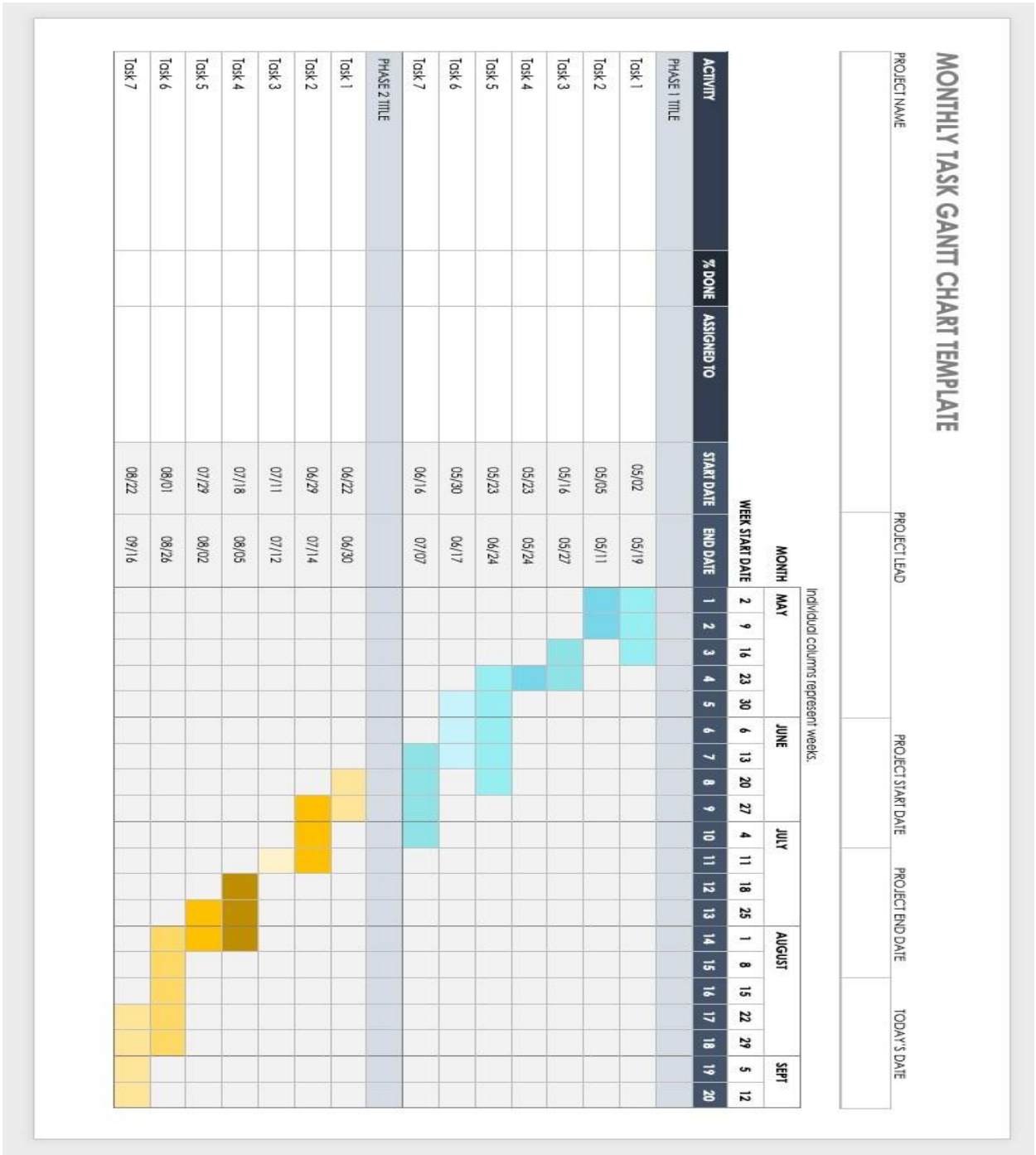
Project Design



In figure 5.1 This image illustrates a **flow design** for a restaurant management system. It outlines the user's journey starting from the login or signup process. Once authenticated, the user is directed to a centralized dashboard that provides access to key functionalities such as viewing the menu, placing orders, managing customer information, generating bills, and logging out. This structured design ensures a smooth and intuitive user experience by organizing essential operations in a clear and accessible interface.

Chapter 6

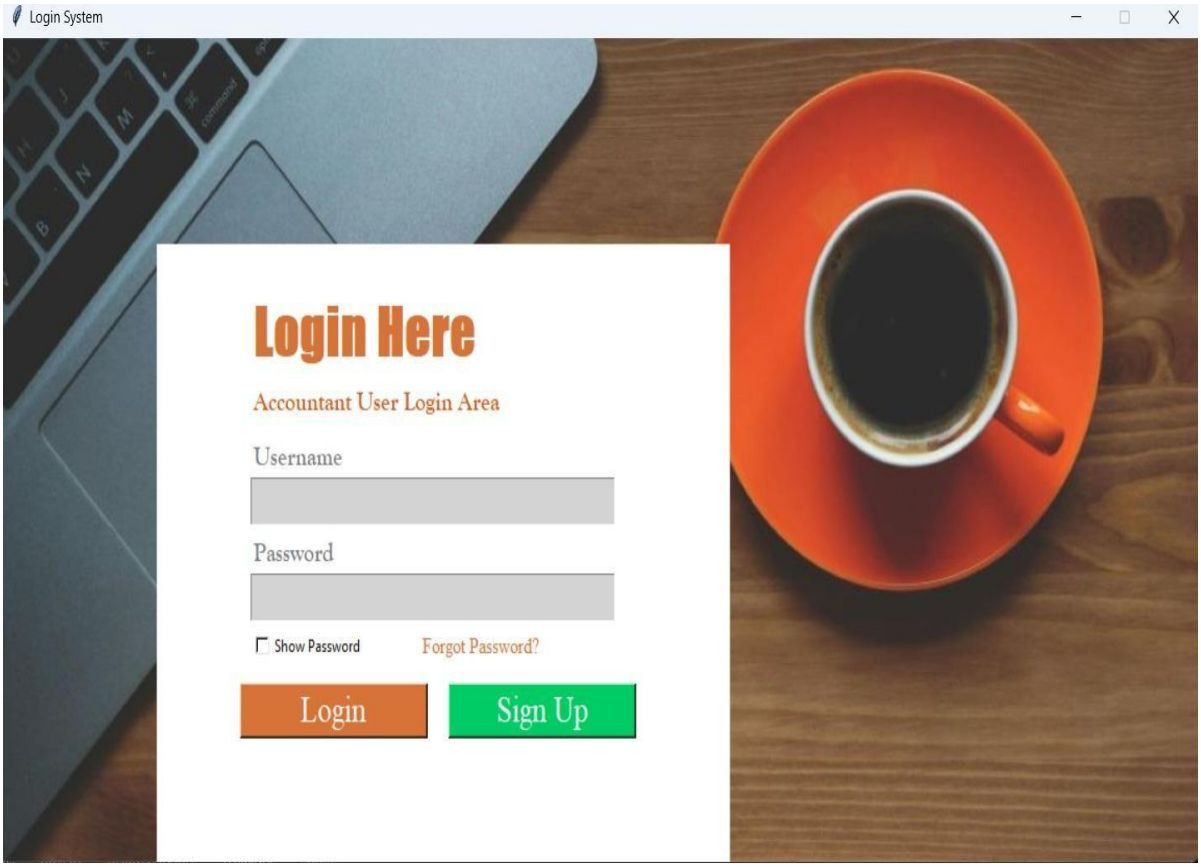
Project Scheduling



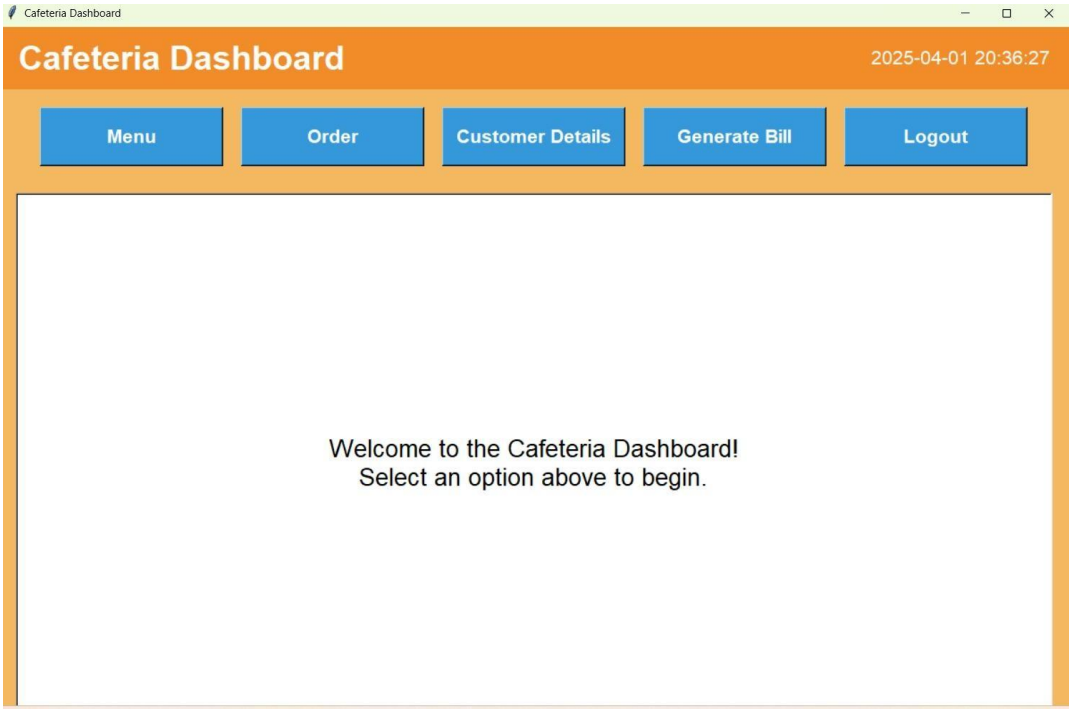
In figure 6.1 we have an overall view of tasks completions handled by the team during the completion of the project which has the Topic finalization frontend and backend implementation

Chapter 7

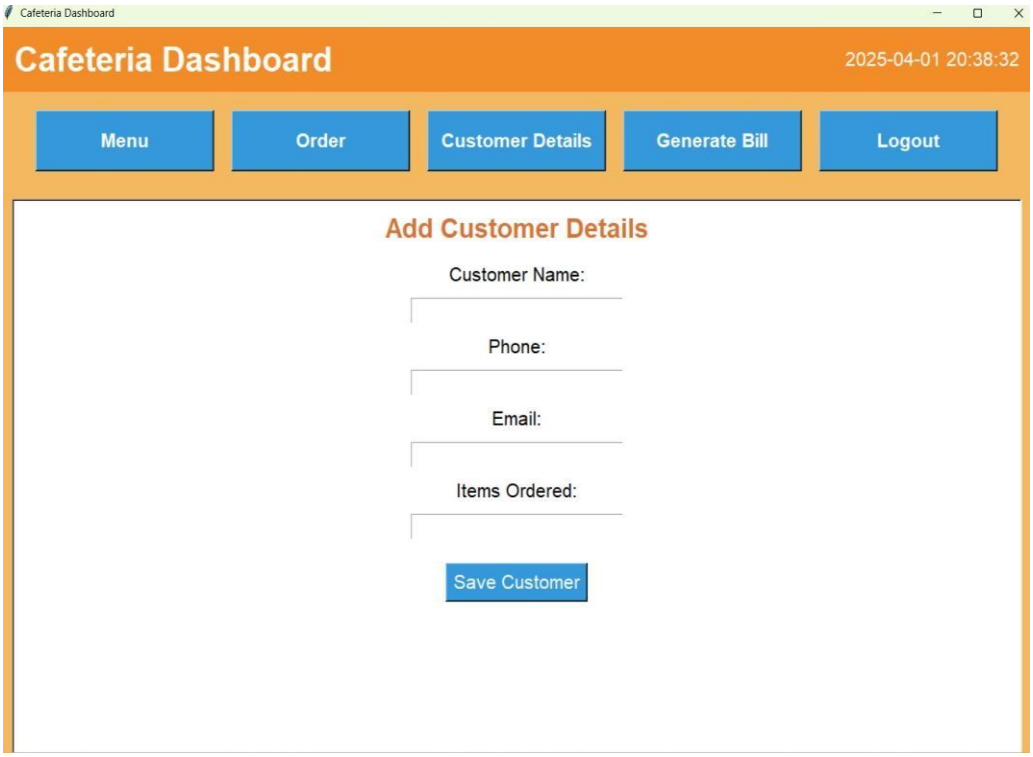
Result



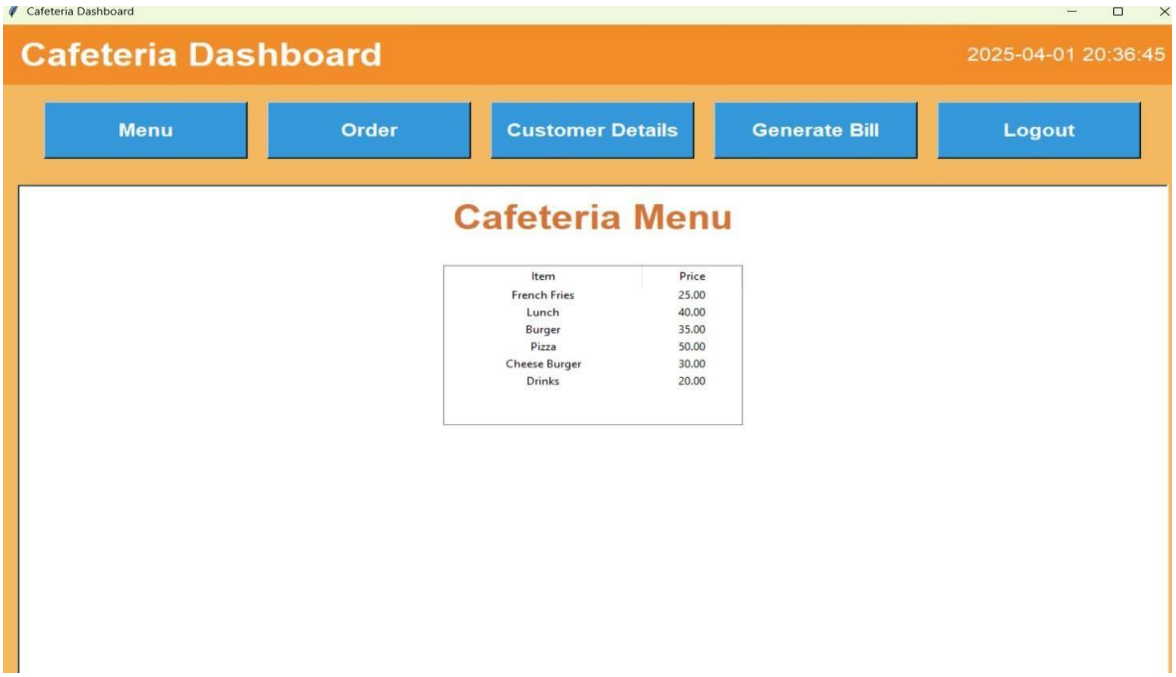
In figure 7.1 This image shows a visually appealing login interface for an accountant user system. On the left side, there's a white login form with fields for Username and Password, along with options to show the password, recover a forgotten password, and buttons for Login and Sign



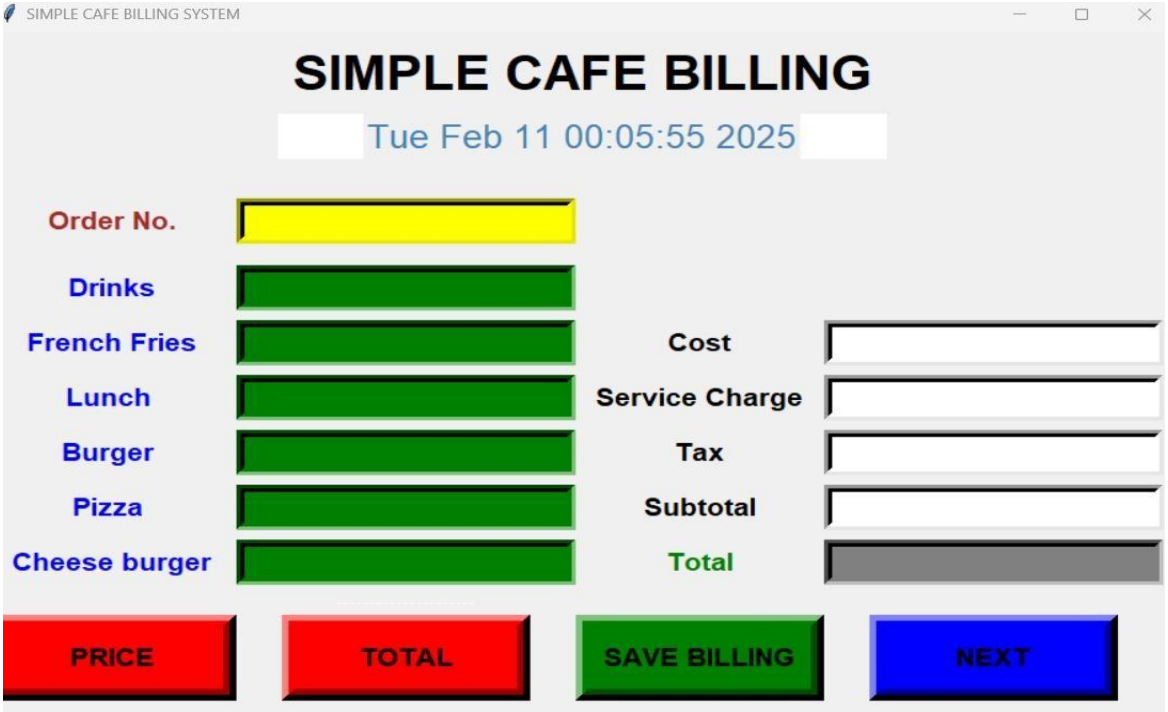
In figure 7.2 This image shows a Cafeteria Dashboard interface with navigation buttons for Menu, Order, Customer Details, Generate Bill, and Logout.



In figure 7.3 This image displays a customer details entry form in the Cafeteria Dashboard, allowing users to input and save customer information



In figure 7.4 This image shows the Cafeteria Menu screen, displaying a list of food items along with their corresponding prices.



In figure 7.5 This image displays a Simple Cafe Billing System interface for calculating food item costs, tax, and generating the total bill.

Chapter 8

Conclusion

The project successfully integrates Python, MySQL, and Tkinter to develop a functional and user-friendly application. By utilizing Tkinter for the graphical user interface, MySQL for efficient data management, and Python for backend logic, the system ensures smooth interaction and data processing.

This project demonstrates the effectiveness of GUI-based applications in handling user input, storing information securely, and improving overall accessibility. The use of VS Code as the development environment, along with essential libraries, enhances coding efficiency and debugging.

In conclusion, the project achieves its objectives by providing a seamless user experience, efficient database management, and a robust application structure. Future improvements could involve adding advanced features like real-time updates, cloud storage integration, or enhanced security measures.

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