Application for a Cafe Management System

Café De Bliss

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2022

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Diploma in Software Engineering

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November 2022

"This project is submitted in partial fulfillment of the requirements of the Diploma in Software Engineering of National institute of Business Management"

DECLARATION

We affirm that the report titled "Application for a Cafe Management System" was prepared and finalized by us under the supervision and direction of Ms. Nadeeshani N. Gunasekara, IT Lecturer at the National Institute of Business Management. This report has not been submitted to any other university or organization previously for any academic certificate, diploma, or degree.

We hereby warrant that the work we have presented does not breach any existing copyright.

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ACKNOWLEDGMENT

We have taken efforts in this project, it is indeed with a great pleasure and an immense sense of gratitude that we acknowledge the help and support of many individuals. We are highly grateful to our Course Director Mrs. Nadeeshani Gunasekara for the supervision and guidance provided to accomplish this DSE final project. She has been a constant source of inspiration for us and we are very deeply thankful to her for her immense support and valuable pieces of advice. We would like to express our gratitude towards National Institute of Business Management staff members, Lab instructors, and Non-teaching staff members for their cooperation and encouragement throughout the completion of the project. Finally, we are humbled to express our heart full of thanks and gratitude to all of our colleagues who helped us in the successful completion of this project.

ABSTRACT

Our Application, The rapid growth of the food and beverage industry has increased the demand for efficient management systems to streamline operations and enhance the overall customer experience. This system presents the development and implementation of a Cafe Management System (CMS) designed to address the challenges faced by cafes in their day-to-day operations. The primary objective of the CMS is to optimize various aspects of cafe management, including order processing, inventory management, employee scheduling, and customer relationship management. By utilizing a centralized database and integrated modules, the CMS enables cafes to automate and simplify these critical tasks, ultimately improving productivity and profitability.

The system outlines the key features and functionalities of the CMS, which include a user-friendly interface for both cafe Manager and customers, menu management, real-time order placement, and integrated review system. Furthermore, the CMS incorporates analytics and reporting capabilities to provide valuable insights into sales performance, customer preferences, and inventory trends, empowering cafe owners to make data-driven decisions. The development process involved extensive research, system design, and implementation using modern software development techniques and technologies. Agile methodologies were adopted to ensure flexibility and adaptability to evolving cafe requirements. The system was then thoroughly tested and refined to guarantee its reliability, security, and scalability.

Through a series of user acceptance tests and pilot implementations in multiple cafes, the CMS demonstrated significant improvements in operational efficiency, reduction in errors, and enhanced customer satisfaction. The feedback and observations from customers provide valuable insights into the system's effectiveness and areas for further enhancement. The successful implementation of the CMS showcases its potential to revolutionize cafe management practices, enabling cafes to better serve their customers and stay competitive in the dynamic food and beverage industry. This system serves as a comprehensive guide for cafe owners, software developers, and researchers interested in developing and implementing similar management systems to optimize cafe operations and create exceptional dining experiences.

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CHAPTER 1- INTRODUCTION

1.1 Background

The cafe industry has witnessed significant growth and competition in recent years, driven by changing consumer preferences and the rising demand for unique dining experiences. Cafe owners face numerous challenges in effectively managing their operations, such as streamlining the ordering process, optimizing inventory management, ensuring efficient order placing, and providing exceptional customer service. To address these challenges, a Cafe Management System (CMS) called "Cafe De Bliss" has been developed. "Cafe De Bliss" aims to revolutionize the way cafes manage their day-to-day activities by providing an integrated and user-friendly software solution. This system combines the power of technology with effective management strategies to enhance operational efficiency, reduce errors, and ultimately improve customer satisfaction.

The CMS offers several key features tailored specifically for cafes. First, it provides a user-friendly interface for both café Manager and customers, enabling seamless interactions throughout the ordering and dining process. Customers can easily browse the menu, place orders, and make reservations, while cafe Manager can efficiently manage incoming orders, track their progress, and ensure timely service. Inventory management is another critical aspect of cafe operations that the CMS addresses. It enables cafe owners to keep track of automatically generates alerts for low inventory, and manage reports. By optimizing inventory management, cafes can minimize waste, and improve overall cost-effectiveness.

In conclusion, the "Cafe De Bliss" CMS offers a comprehensive solution to address the challenges faced by cafes in managing their operations effectively. By leveraging technology, optimizing processes, and enhancing customer experiences, the CMS aims to empower cafe owners to run their businesses efficiently and thrive in a highly competitive industry.

1.2 Statement of Problems

The Cafe de Bliss management system aims to address several key challenges faced by cafes in their day-to-day operations. These problems include:

- Inefficient Order Processing: Many cafes struggle with manual order processing systems, which often lead to errors, delays, and a decline in customer satisfaction. Lack of a streamlined process for order taking, tracking, and fulfillment can result in miscommunication and poor service quality.
- Manual Inventory Management: Traditional methods of inventory management, such as manual record-keeping and physical stock checks, are time-consuming and prone to errors. Inadequate inventory control can lead to stockouts, wastage, and increased costs.
- Limited Customer Relationship Management: Many cafes struggle to effectively manage customer relationships and provide personalized experiences. Without a dedicated system to capture customer data, track preferences, and offer tailored promotions, cafes may miss out on opportunities to build customer loyalty and increase customer satisfaction.
- Lack of Data-driven Decision-making: Without access to real-time and historical data on sales, inventory, and customer behavior, cafe owners may struggle to make informed decisions. The absence of analytics and reporting capabilities hinders the ability to identify trends, optimize operations, and capitalize on opportunities for growth.
- Security and Privacy Concerns: As cafes increasingly rely on digital systems, data security and privacy become crucial concerns. Without adequate measures in place, cafes are vulnerable to breaches, data loss, and compromised customer information.

By addressing these problems, the Cafe de Bliss management system aims to streamline operations, improve customer service, optimize inventory management, enhance employee scheduling, enable effective customer relationship management, facilitate data-driven decision-making, and ensure robust security measures are in place.

1.3 Aim and Objectives

1.3.1 Aim

Build an Application so that it will be a new, streamlined outing experience for the everyday customer. We assure that the application is safe and secure to use, efficient, and prove that it's a comfortable solution that leads consumers locally to strive to do more better dining in life and save time without regretting and getting exhausted. As everything evolutes, a smart dining experience is the next step in an upgraded life to suit people's lives today. Additionally, to always be the first choice of customers and to make sure that customers stick with Café De Bliss. Therefore, the system of Café De Bliss will always be customer-centric.

1.3.2 Objectives

The development of a café management system that sells pastries and delicacies. This Streamline Order Processing: Develop a user-friendly interface for customers to place orders seamlessly and efficiently. Enable real-time order tracking and notifications for both customers and cafe staff to minimize errors and delays in order processing. Optimize Inventory Management: Implement a centralized inventory management system that enables cafes to track stock levels, automate inventory replenishment and provide accurate real-time inventory reports. Minimize waste and enhance cost-effectiveness. Efficient Enable Data-driven Decision-making: Incorporate analytics and reporting capabilities to provide cafes with valuable insights into sales performance, customer preferences, and inventory trends. Ensure Data Security and Privacy: Implement robust security measures to protect sensitive customer information, ensure data integrity, and comply with relevant data protection regulations. User-Friendly Interface: Design an intuitive and user-friendly interface for both cafe staff and customers, ensuring ease of use and quick adoption of the management system. Develop the Cafe De Bliss management system to be scalable and adaptable to the specific needs of different cafes. Accommodate future growth, accommodate changing requirements, and integrate with other software systems as necessary.

1.4 Scope of Study

Application for a Café Management System attempts to enhance admittance to care and improve the continuousness and good organization of services. Depends on the particular setting and local case executives are responsible for a diversity of tasks, position from linking clients to the services to really providing intensive shop and delivery facilities themselves. Our project aims at Business process automation. We have to try to computer use various processes of the food ordering system.

The website would include the following contents:

- A homepage that will include the customer options available like placing an order, check order, add a review or even logout.
- Loyalty Customers get the opportunity to get offers for their respective total bills
- Pictorial samples of some of the available goods
- Customers can select the item name and load the data to retrieve all the data related to the item and add it to the cart and view their respective subtotals
- The prices of baked products and other consumer pastries
- Shop by varieties of Categories in the grocery (like Desserts, Fast foods, Beverages, etc...)
- Login and Register Options along with a log out option
- A separate tab called My Cart to store all the users chosen products to be checked out
- The opportunity to view the Prices of the products in the cart along with their total price
- The Customer is capable to either continue shopping or remove products from the cart for the required preferences
- An interactive interface to satisfy user requirements
- An understandable and easier access interface
- Be expandable and feel ease in performing operations

System Module:

- Login: The Manager can log from his own username and password. After logging into the system, they can view the users and orders placed along with that they can add, update delete products accordingly. Also the Manager can add offers and view the generated reports. Further, the customer can register themselves first to place orders and if they already possess credentials they can easily purchase goodies once accessed.
- My Cart: All the preferred products chosen by the customer gets stored up in the cart where the opportunity to proceed to check out the goods can be done and once added to cart the Grand total gets displayed beneath
- Category: Allows customers to shop by the category relatively based on the type of products the customer desires.
- Order: When an order is being placed the relevant user details along with the products purchased are being save right into the database.
- Customer: Check the all products and give order of products. Along with the invoice number, the goodies chosen by all the categories get display in the bill interface and once the calculate bill option is clicked the Grand total gets displayed for the payment checkout. Check order status and see recently add cart products. Through the My Cart option they can view the products they already added to the cart and update them according to their preferences and checkout the listed stuff.
- Product: Detailed information about the product which is provided by Manager. Specially a description about the products and the cost of it.
- Loyalty Customers: gets the opportunity to get discounts for their grand total bills offered by the Manager.

1.5 Methodology

Project management methodology is a strictly defined combination of practices regarding logic, methods, and processes that determine how best the developers have planned, developed, and controlled a project along the continuous process of its implementation and successful completion. Project management provides the planning framework, realizes, and provides projects of any kind, size, nature, and type throughout the implementation process of the website for the grocery store.

Advantages of the Proposed System:

1. Convenience and Accessibility:

Customers can shop for goodies anytime, without the need to physically inform the staff about the order. The system offers 24/7 access, allowing customers to place orders at their convenience. Customers can easily browse through a wide range of products and make purchases with a few clicks.

2. Time and Effort Savings:

Café Management System eliminates the need for extra staff and employee wages cost, saving time and effort. Customers can quickly search for specific products and use filters to narrow down their options. The checkout process is streamlined, reducing time spent waiting in queues and sorting out and listing orders.

3. Expanded Product Selection:

Café Management System can offer a larger product selection compared to a physical Menu card, as they are not limited by physical shelf space. Customers have access to a wide range of products, including categories with admirable pastries from Fast foods, Desserts and Beverages. This self service allows customers to purchase their requirements acquiring time rather than listing out their order to the staff.

4. Personalization and Recommendations:

Café Management System can utilize customer data to personalize the dining experience. Customers can receive personalized product recommendations based on their past purchases or preferences.

5. Environmental Benefits:

Café Management System can contribute to reducing carbon emissions associated with transportation. Reduced reliance on staff and reduce the employment for the staff can utilize customer data to personalize the shopping experience. Customers can receive personalized product recommendations based on their past purchases or preferences.

The Basic layout of Project Management Methodology

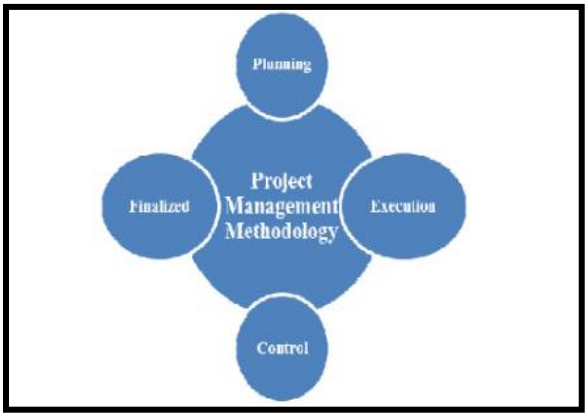


Figure 1: Basic Layout of Project Management Methodology

The SDLC (System Development Life Cycle) model is one of the priority models used in implementing our website.

1. Initiation (Tender Specifications Requirements)
2. Planning and Designing
3. Implementation (Construction and Coding)
4. Control and Integration
5. Validation (Testing and Debugging)
6. Installation and Maintenance

1.6 Gantt chart

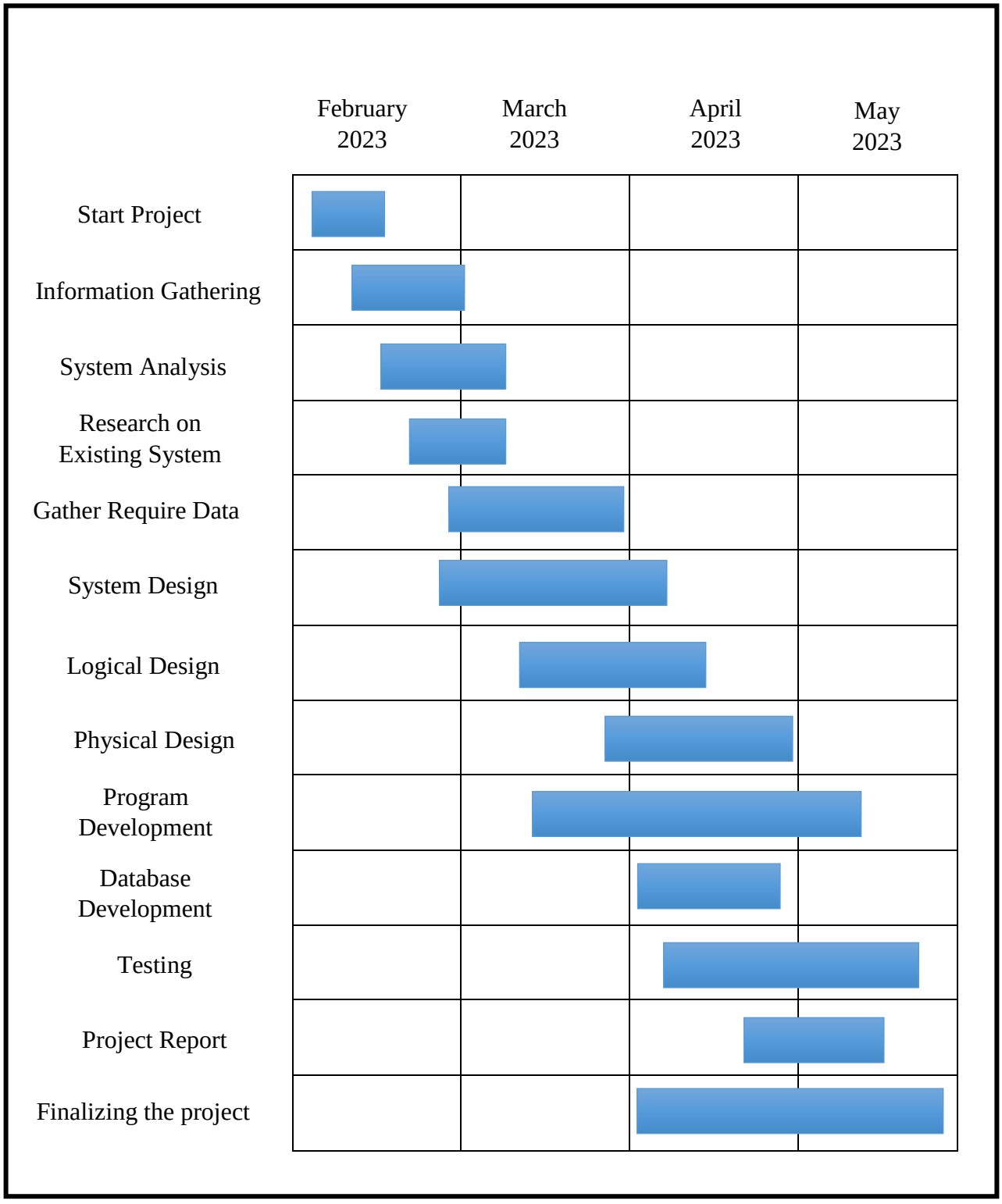


Figure 2: Gantt chart

CHAPTER 2 - ANALYSIS

2.1 Existing System

Currently, the business run in a Traditional way which is limited to a particular geographical area with unnecessary need for staff and employment. Customers have been purchasing essentials manually which utilizes much of their time. The company has been using traditional marketing or advertising strategies for them to market their business. Inventory is managed manually; stock maintenance was done book wise.

- Manual Order Taking and Processing:

Many cafes rely on handwritten orders or manual order-taking methods, which can lead to errors, miscommunications, and slower service. Manual processing also poses challenges in tracking order status, managing modifications, and maintaining an efficient workflow.

- Spreadsheet-Based Inventory Management:

Some cafes utilize spreadsheets or manual record-keeping methods to manage their inventory. This approach is prone to human errors, inconsistent updates, and difficulties in tracking stock levels, resulting in potential stockouts or excess inventory.

- Traditional Employee Scheduling Methods:

Cafe owners often use manual methods such as pen-and-paper or spreadsheets to schedule employee shifts. These methods can be time-consuming, prone to errors, and lack automated features like availability tracking and conflict resolution.

- Limited Customer Relationship Management (CRM):

Cafes may lack a dedicated system to capture and analyze customer data, leading to missed opportunities for personalized promotions and targeted marketing. Without a CRM system, cafes struggle to maintain comprehensive customer profiles, track purchase history, and nurture customer relationships.

- Inefficient Reporting and Analytics:

Many cafes rely on manual data collection and analysis, making it challenging to derive meaningful insights and identify trends in sales, inventory, and customer behavior. The absence of robust reporting and analytics capabilities hinders data-driven decision-making and optimization of cafe operations.

- Security and Data Privacy Concerns:

Some existing systems may lack sufficient security measures, exposing cafes to risks such as data breaches, unauthorized access, and compromised customer information. Data privacy regulations and best practices might not be adequately implemented or adhered to.

- Lack of Integration with External Systems:

Existing systems used by cafes may lack integration capabilities with other essential systems such as POS, accounting, or payment gateways. This results in manual data entry, potential errors, and inefficiencies in transferring information between systems.

2.2 Major Activities & Functions

To give a solution for the drawbacks of current paper-based Cafe Management System, we expect to introduce the new system called “Application for a Cafe Management System” which is comprised with many useful digital technological and high-tech concepts. By using this system, we hope to present all the activities and ongoing procedures of the café just as a self–service without the need for a staff to place a customer order to a computer-based platform where everything will be centered in one platform to manage grocery works much more efficiently and interactively.

- Order Management:

Receive and process customer orders efficiently, either through a self-service Application platform. Track and manage orders placing the order by themselves without a staff.

- Menu and Pricing Management:

Create and maintain a digital menu with customizable items, descriptions, and pricing. Update menu items, availability, and pricing in real-time. Offer customization options, such as add-ons or substitutions.

- Inventory Management:

Track and manage inventory levels for ingredients, beverages, and other supplies. Set up offers for loyalty customers. Generate purchase orders and manage supplier relationships.

- CRM and Customer Engagement:

Capture and store customer data, including contact information, preferences, and order history. Implement loyalty programs, rewards, and personalized promotions. Engage both the staff and the customer through attractive interfaces.

- Reporting and Analytics:

Generate comprehensive reports on sales, revenue, and inventory. Analyze data to identify trends, patterns, and opportunities for improvement. Utilize dashboards and visualizations for data-driven decision-making.

- Security and Data Privacy:

Implement robust security measures to protect customer data and ensure system integrity. Enforce user access controls and authentication mechanisms. Comply with data privacy regulations and industry best practices.

2.3 Drawback of Existing System

- Limited Automation:

  Existing systems often lack automation, requiring manual input and processing of orders, inventory management, and other tasks. Manual processes are time-consuming, prone to errors, and can result in inefficiencies and delays.

- Fragmented Data Management:

  Many cafes use multiple systems or spreadsheets to manage different aspects of their operations, resulting in fragmented data storage. This fragmentation makes it difficult to obtain a holistic view of the cafe's performance and hinders data analysis and decision-making.

- Lack of Integration:

  Existing systems may not integrate well with other essential tools or software, such as POS systems, accounting software, or third-party platforms. Lack of integration leads to manual data entry, duplication of efforts, and potential data inconsistencies.

- Inefficient Reporting and Analytics:

  Reporting capabilities in existing systems are often limited or lack comprehensive analytics functionality. Generating reports requires manual compilation and analysis, making it time-consuming and prone to errors. Limited insights and analytics capabilities hinder data-driven decision-making and optimization of cafe operations.

- Poor User Experience:

  Existing systems may have outdated interfaces, complex navigation, and unintuitive workflows. Poor user experience results in a steep learning curve for new staff, decreased efficiency, and potential user frustration.

- Data Security and Privacy Concerns:

  Some existing systems may lack robust security measures to protect sensitive customer information and ensure data privacy. Inadequate security measures can result in data breaches, unauthorized access, or compromise of customer data.

- Lack of Scalability:

  Existing systems may not scale well to accommodate the growth or changing needs of a cafe. As cafes expand or introduce new services, existing systems may struggle to handle increased demands, leading to performance issues or limitations.

- Limited Customer Relationship Management (CRM):

  Traditional systems may lack dedicated CRM functionalities to manage customer data, preferences, and engagement. Without a comprehensive CRM system, cafes miss opportunities for personalized marketing, customer retention, and loyalty programs.

- Ineffective Inventory Management:

  Many existing systems rely on manual tracking or basic inventory management features.
  Limited inventory visibility, Customer dissatisfaction towards the staff when placing the order.

- Technological Obsolescence:

  Some existing systems may be outdated or built on obsolete technologies, making it difficult to keep up with evolving business needs and advancements in the industry.
  A lack of regular updates and support can result in compatibility issues and hinder the system's overall functionality.

2.4 UML Diagrams

2.4.1 Use Case Diagram

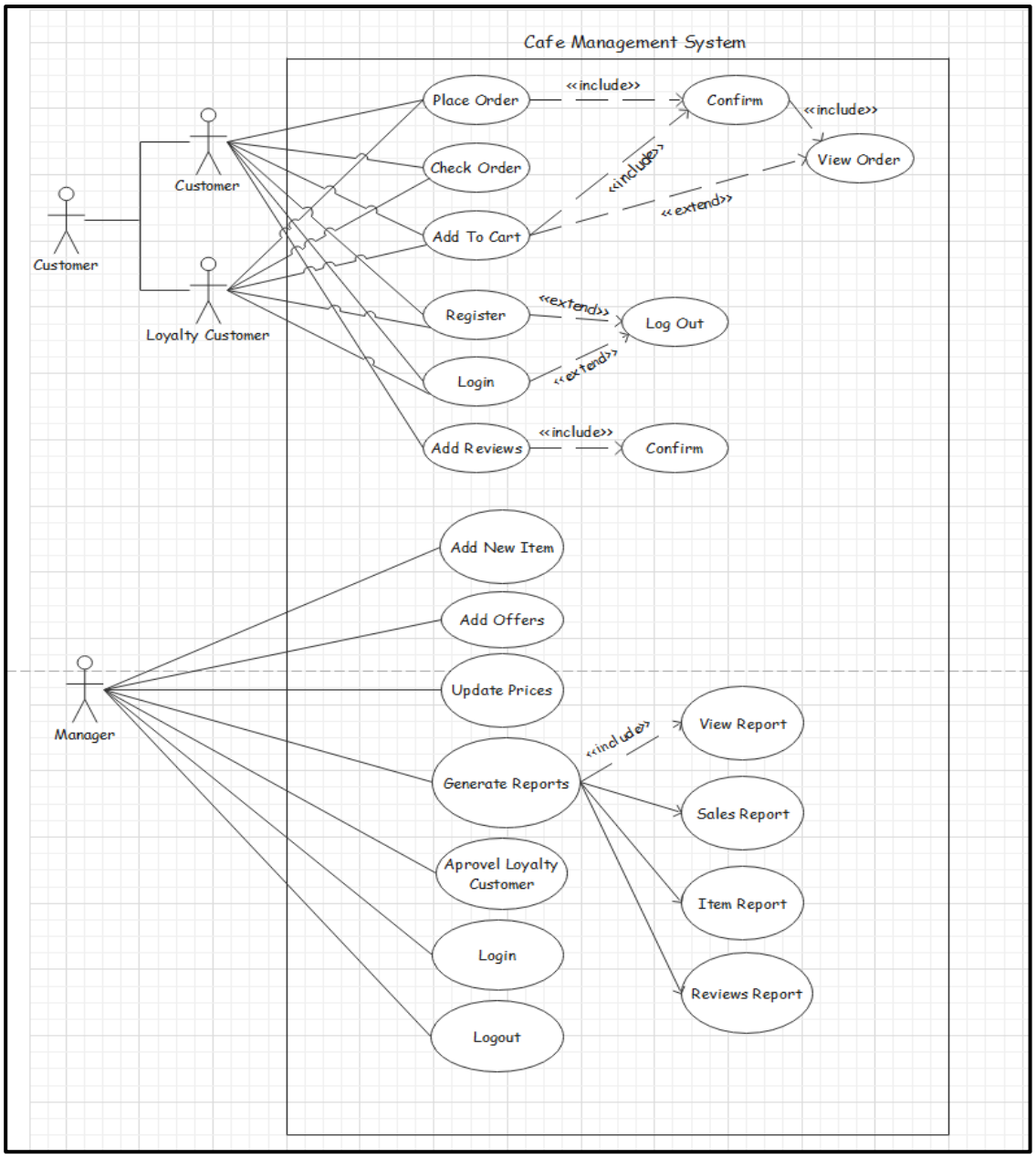


Figure 3: Use Case Diagram

2.4.2 Activity Diagrams

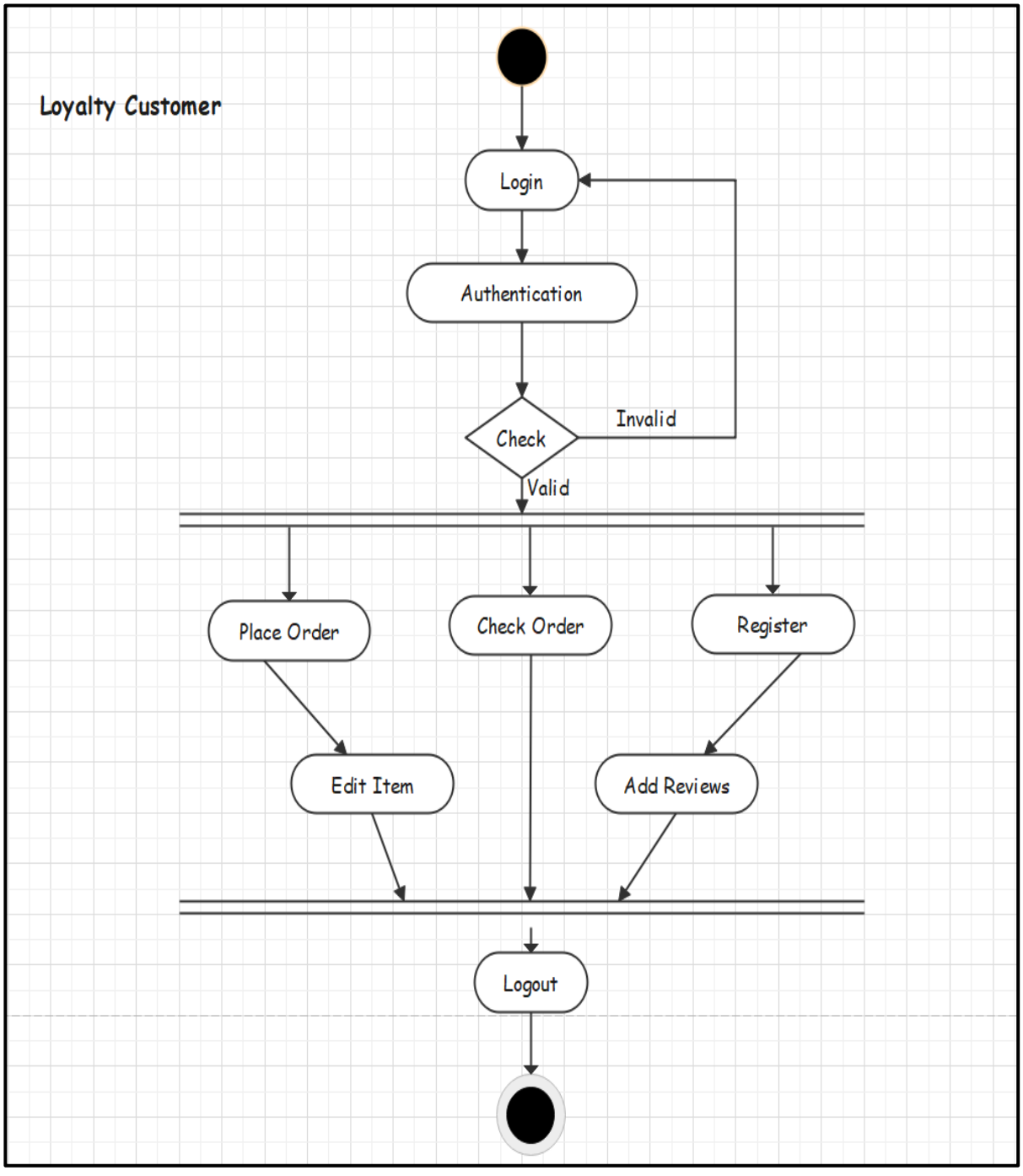


Figure 4: Loyalty Customer Activity Diagram

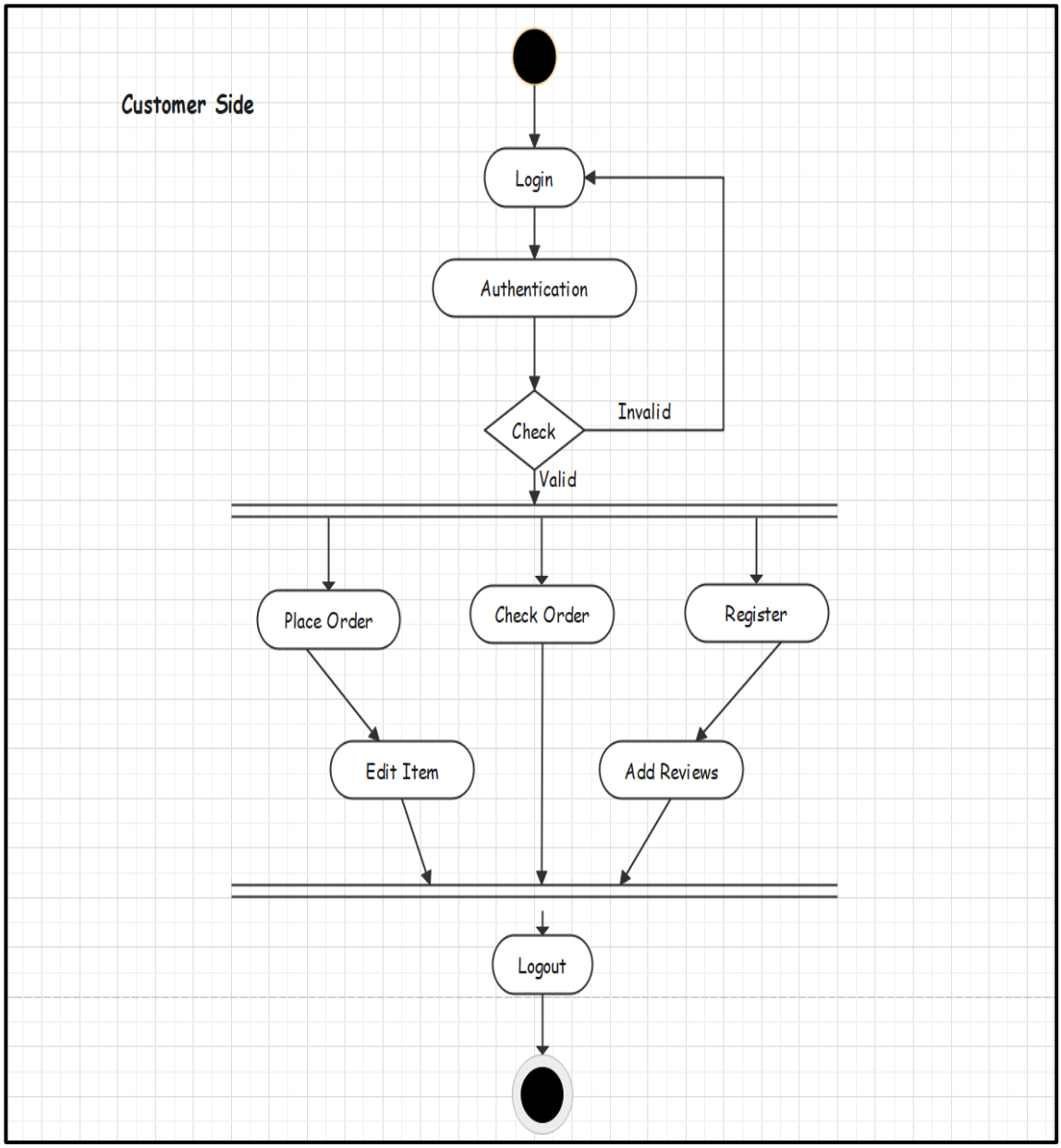


Figure 5: Customer Activity Diagram

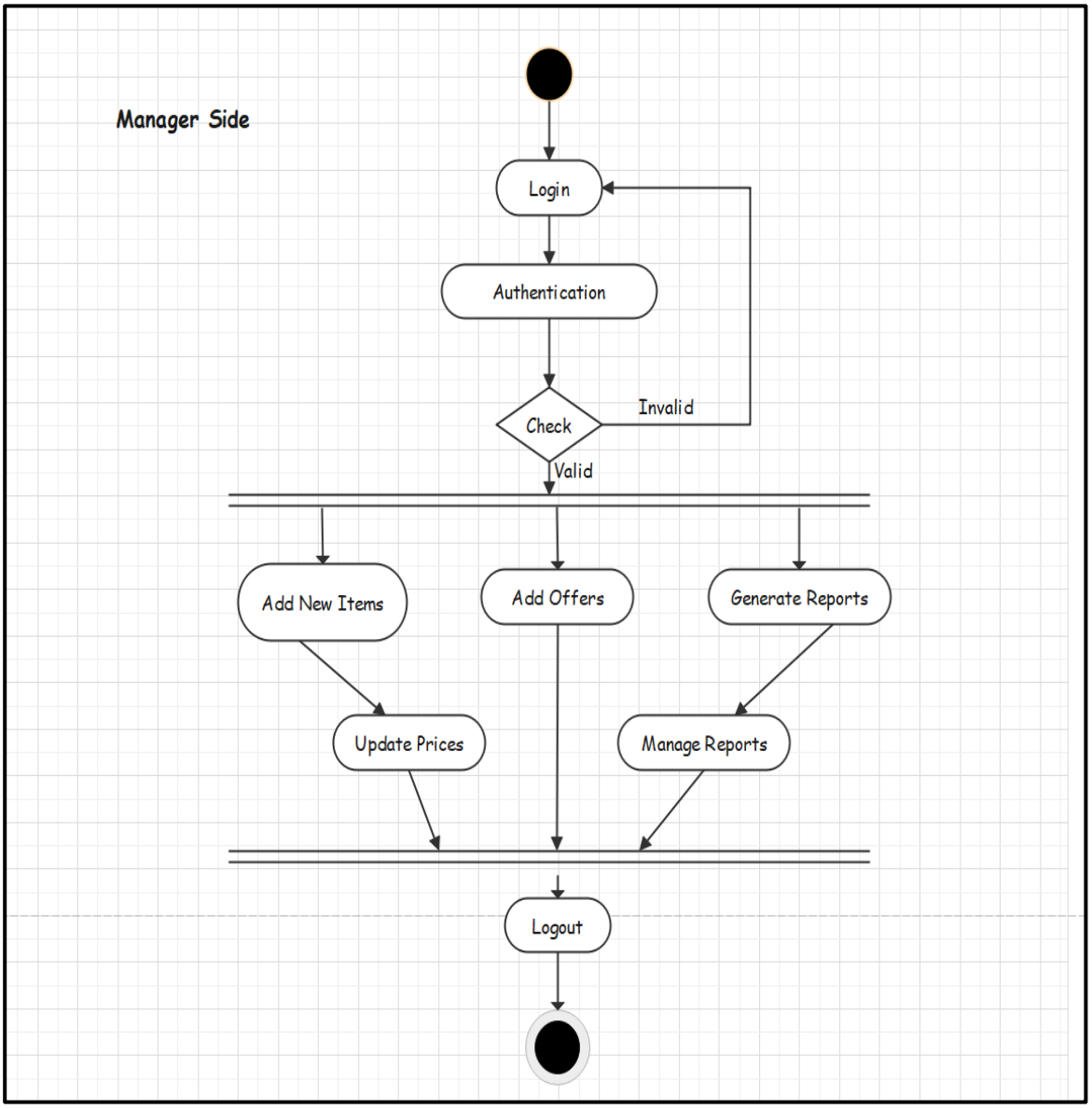


Figure 6: Manager Activity Diagram

2.4.3 Class diagram

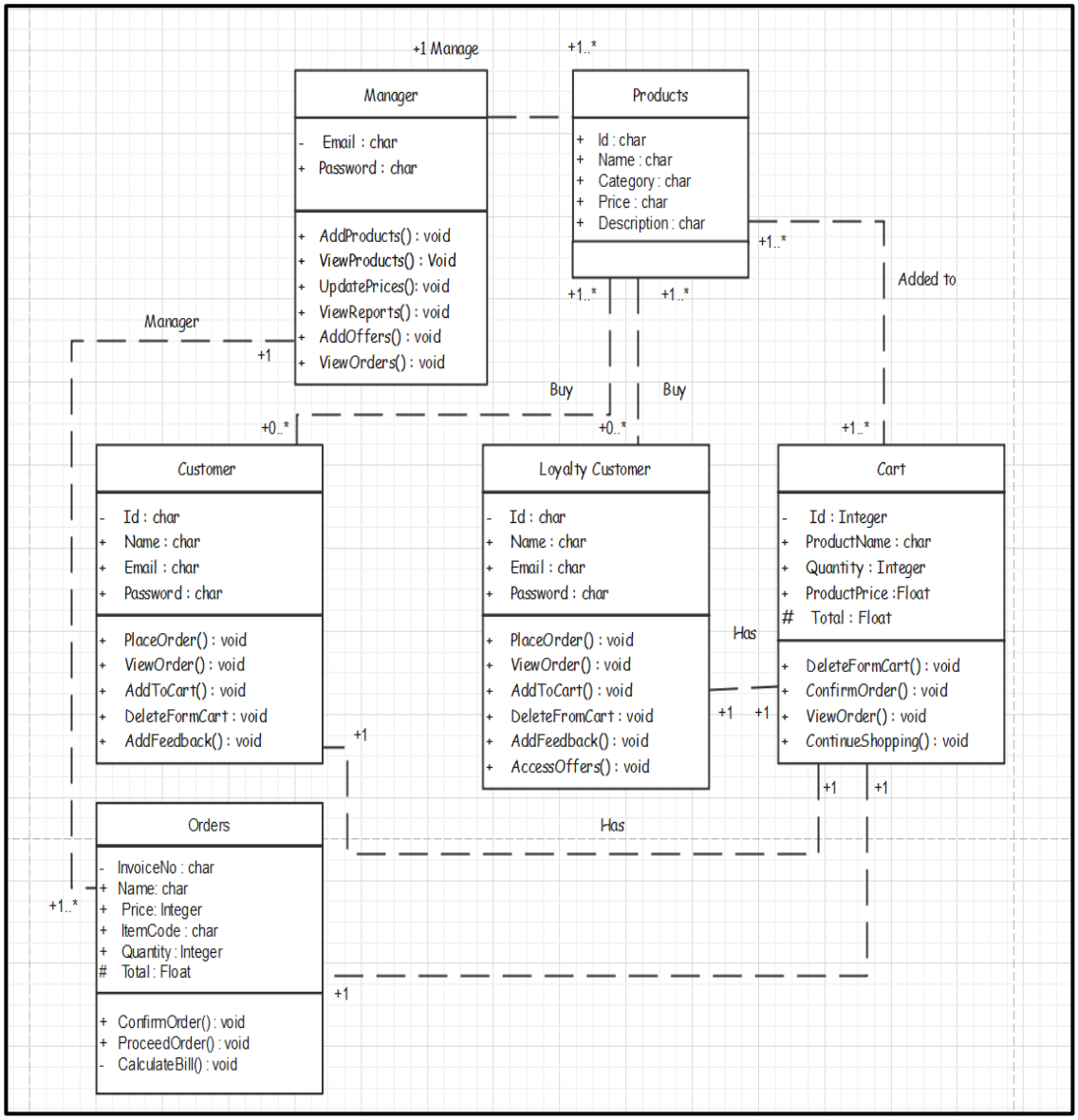


Figure 7: Class Diagram

2.4.4 Sequence Diagram

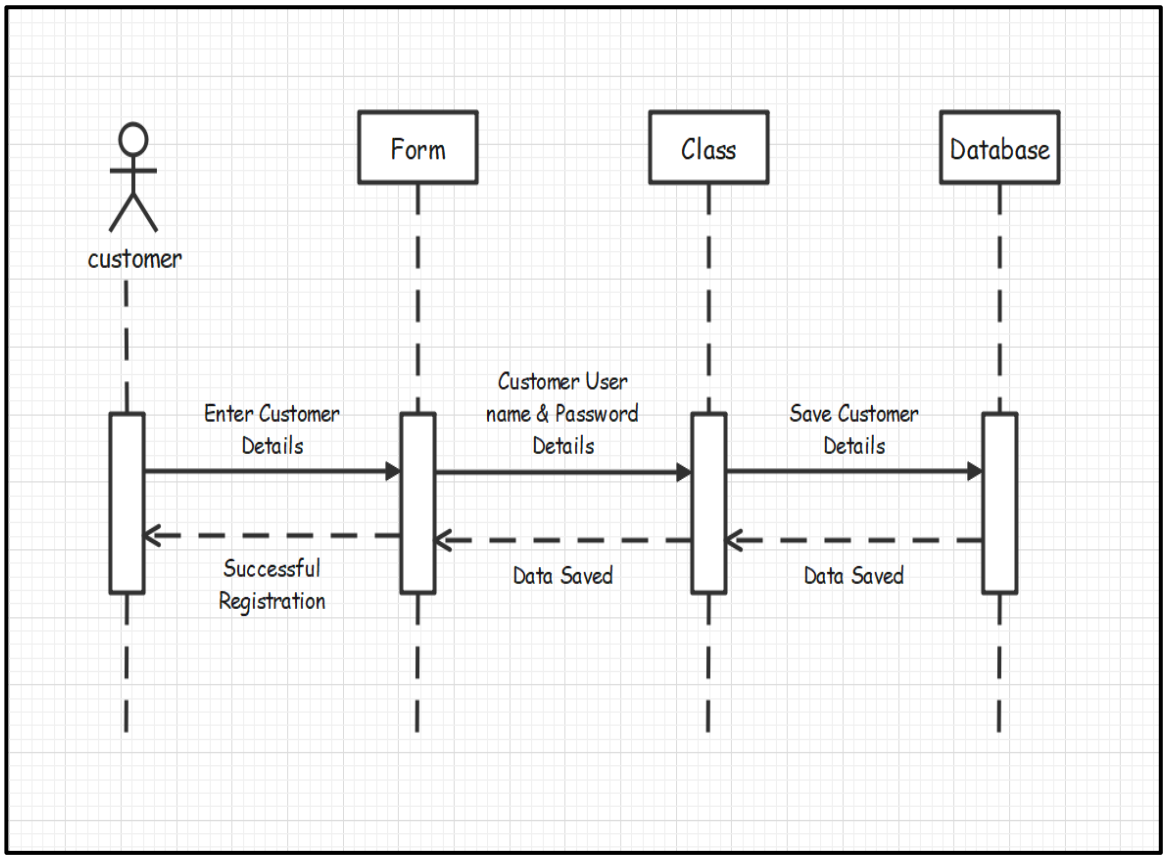


Figure 8: Register Sequence Diagram

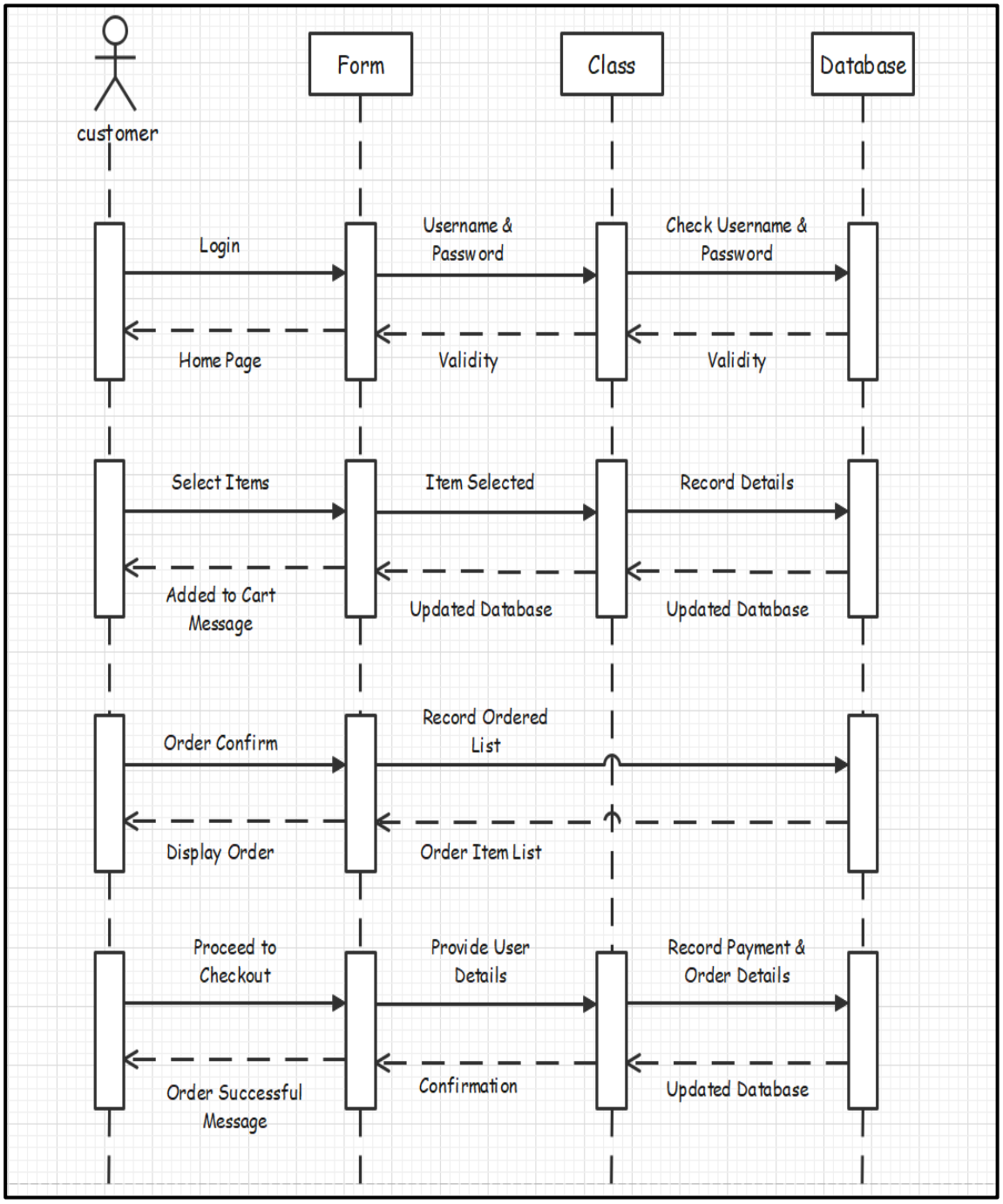


Figure 9: Customer Place Order Sequence Diagram

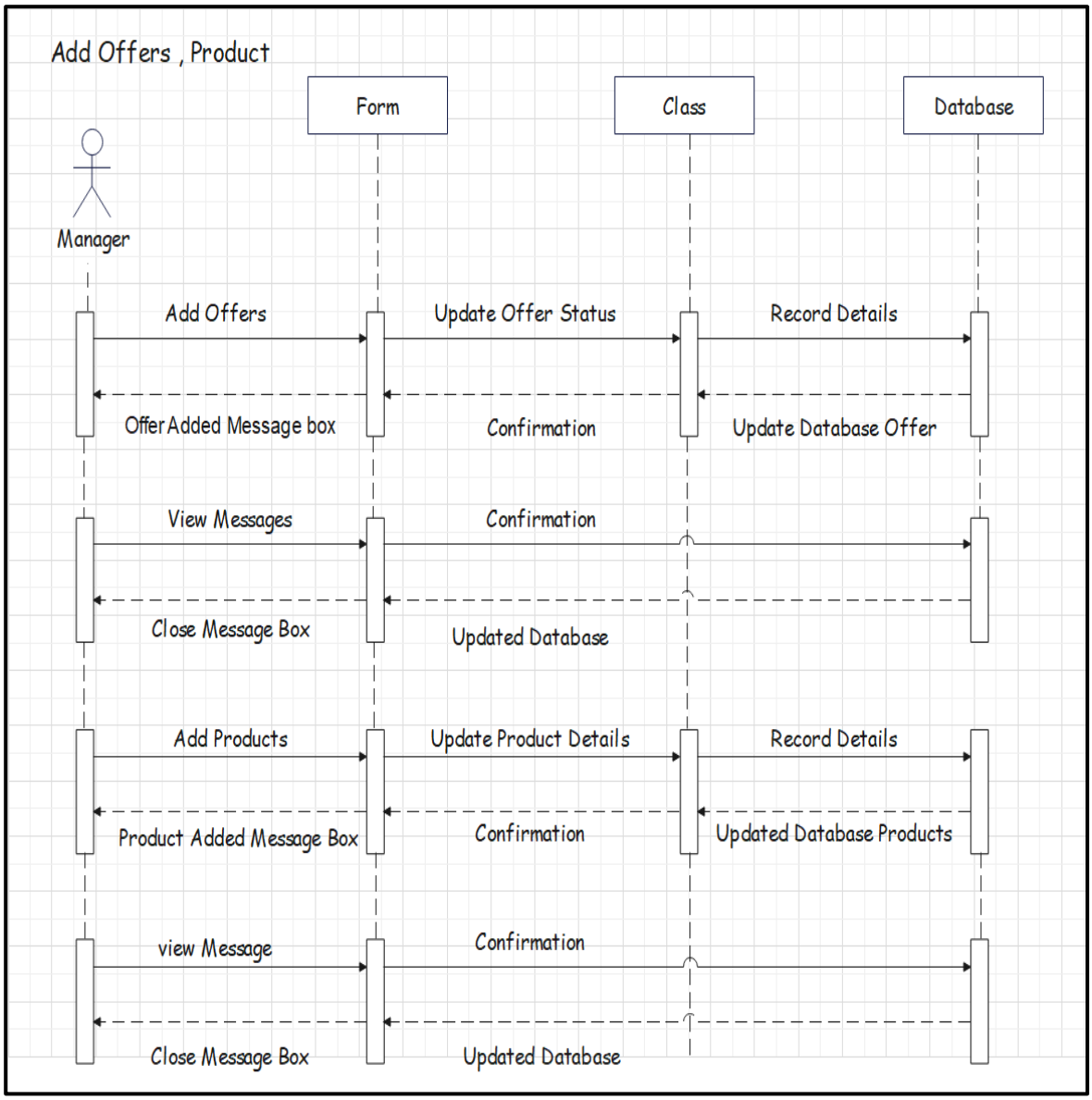


Figure 10: Add Offers, Products Sequence Diagram

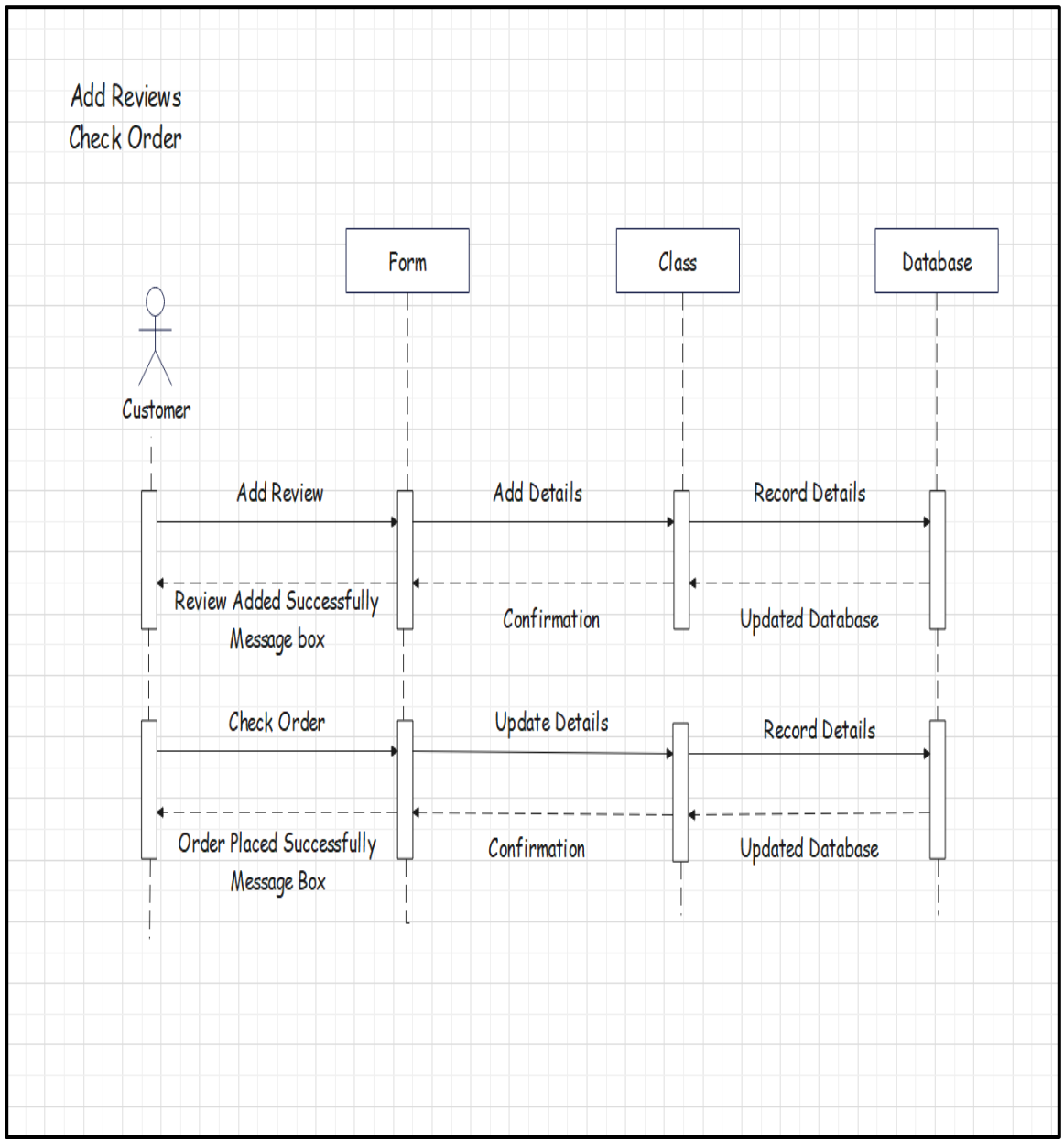


Figure 11: Add Reviews, Check Order Sequence Diagram

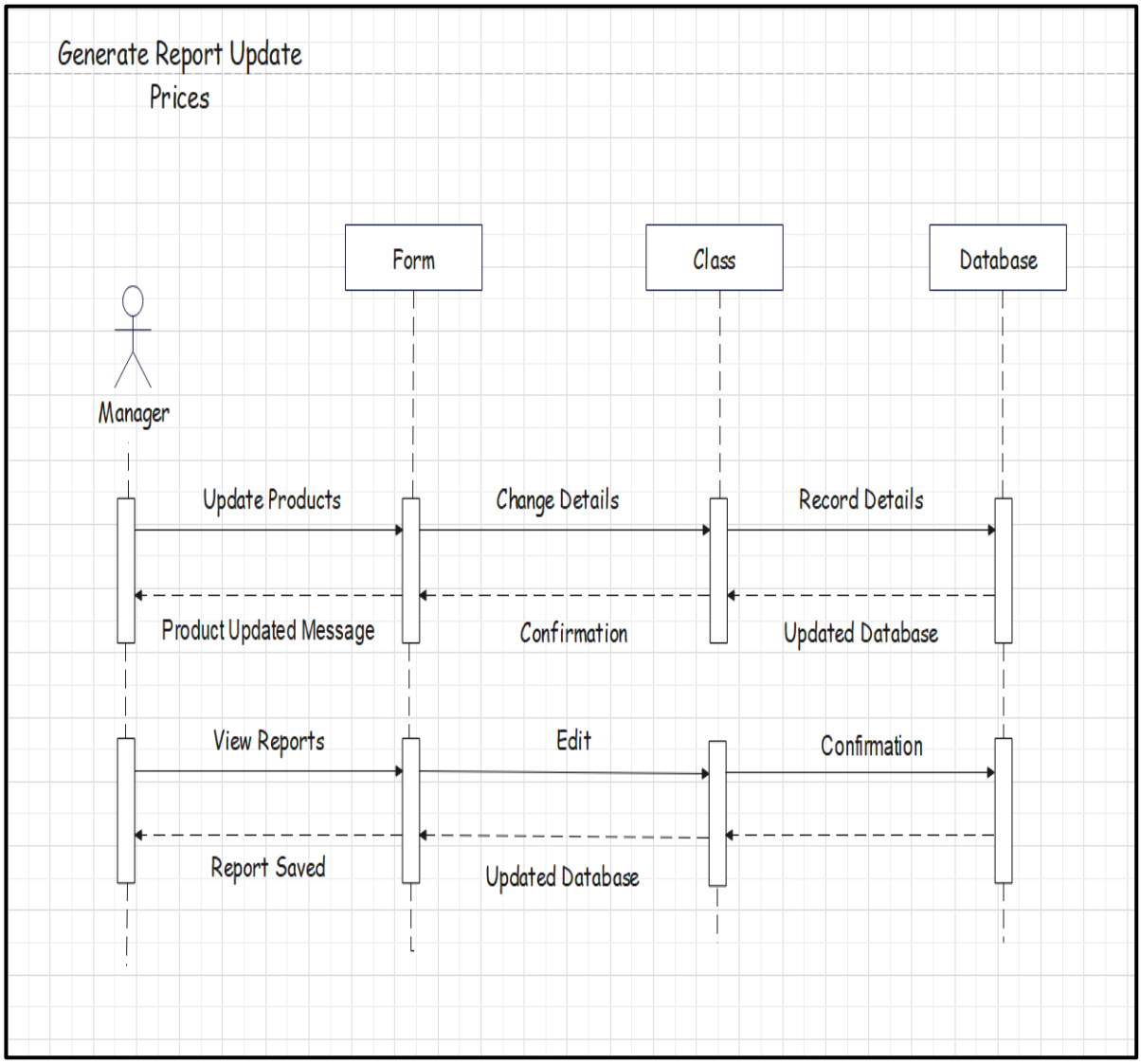


Figure 12: Generate Reports and Update Prices Sequence Diagram

2.4.5 ER Diagram

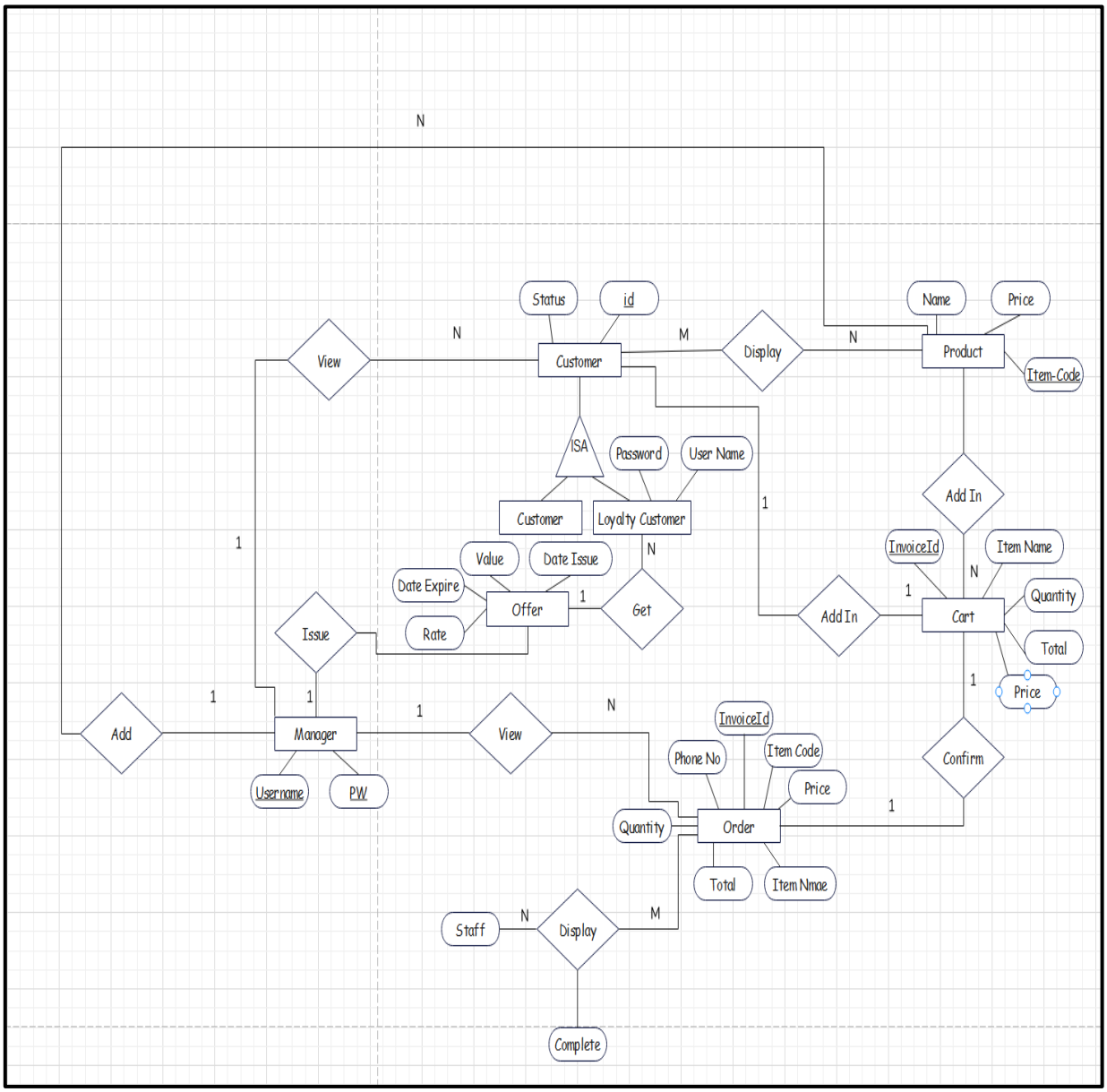


Figure 13: ER Diagram

CHAPTER 3 - ANALYSIS

3.1 Proposed System

3.1.1 System Requirements

Hardware Requirements:

CPU: Intel Core 2 Quad CPU Q6600 @2.4 GHZ(4CPUs)/AMD Phenom 9850 Quad Core Processor(4CPUs) @2.5 GHz

RAM: 8GB

OS: Windows 10, Windows 8, Windows XP, Windows Vista

Free Disk Space: 1.5GB

Software Requirements:

JDBC Driver: MySQL Database

Language: C#

Framework: Guna2 Framework

Other Requirements: .NET Framework/Runtime

C# Application Dependencies

Crystal Report Runtime

3.2 Database Design

Column Name	Data Type	Description
Status	varchar(50)	Status of the User
Username	varchar(50)	User's Name
Password	varchar(50)	User's Password

Table 1: Table tblCredentials

Column Name	Data Type	Description
Invoice_No	varchar(50)	Invoice No of the Bill

Table 2: Table tblInvoice

Column Name	Data Type	Description
Item_Code	varchar(50)	Item id
Item_Name	varchar(50)	Item Name
Item_Price	Numeric(18,0)	Item Price

Table 3: Table tblItems1

Column Name	Data Type	Description
Date_Issue	datetime	Offer Issue Date
Date_Expire	datetime	Offer Expiry Date
Offer	Decimal(18,2)	Offer Amount
Value	Decimal(18,2)	Bill Value

Table 4: Table tblOffers

Column Name	Data Type	Description
Username	varchar(50)	Customer Id
Review	varchar(50)	Customer Review

Table 5: Table tblreviews

Column Name	Data Type	Description
Invoice_id	varchar(50)	Bill Invoice Id
Item_Code	varchar(50)	Item Id
Item_Price	varchar(50)	Item Price
Quantity	Numeric(18,0)	Item Quantity
Price	Numeric(18,0)	Item's Price
Total	Numeric(18,0)	Total Amount

Table 6: Table tblOrders

Column Name	Data Type	Description
Item_Code	varchar(50)	Item ID
Item_Name	varchar(50)	Item Name
Quantity	Numeric(18,0)	Item Quantity
Price	Numeric(18,0)	Items Price
Total	Numeric(18,0)	Total Price of Items

Table 7: Table tblSales

Column Name	Data Type	Description
Name	varchar(50)	Loyalty Customer Name
Username	varchar(50)	Loyalty Customer Username
Password	varchar(50)	Loyalty Customer Password
Telephone_No	varchar(50)	Loyalty Customer ContactNo

Table 8: Table tblLoyaltyCustomer

3.3 Interface Design

Figure 14: Status Page

Figure 15: Customer Dashboard

Figure 16: Products Category Page

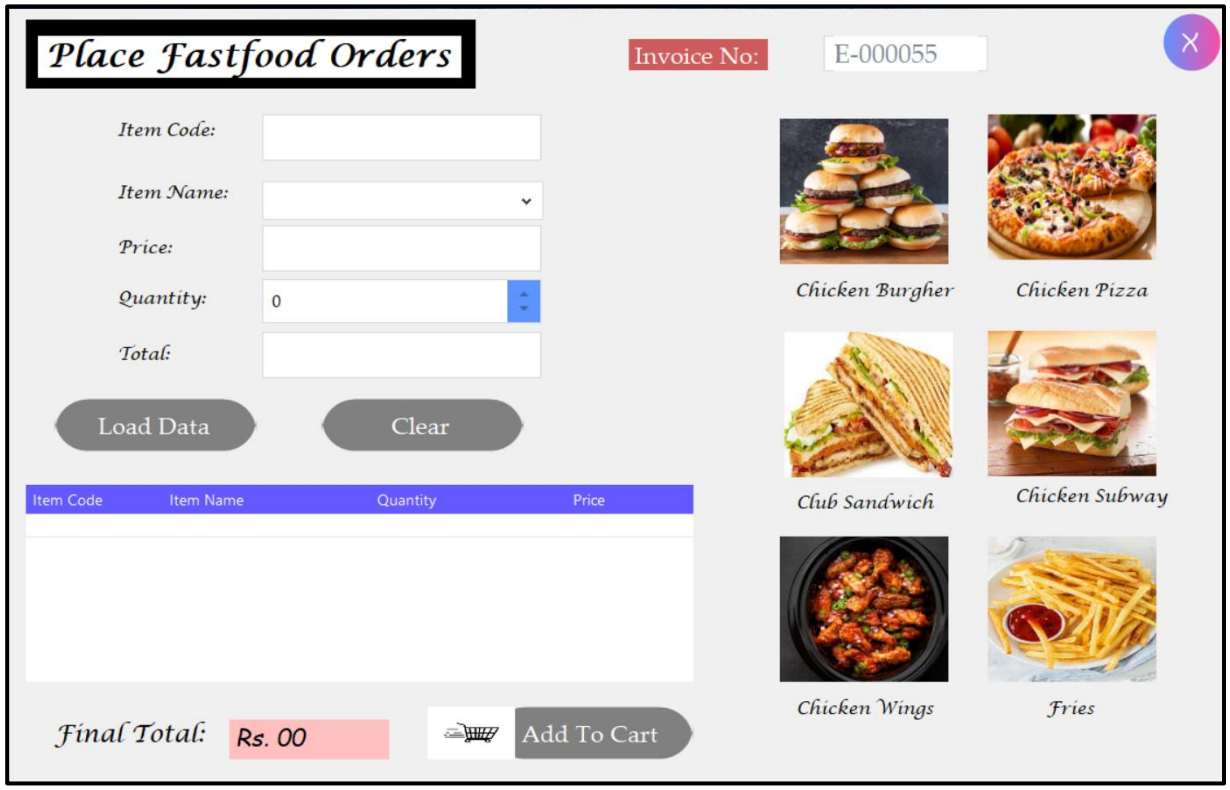


Figure 17: Place Fast-food Order Page

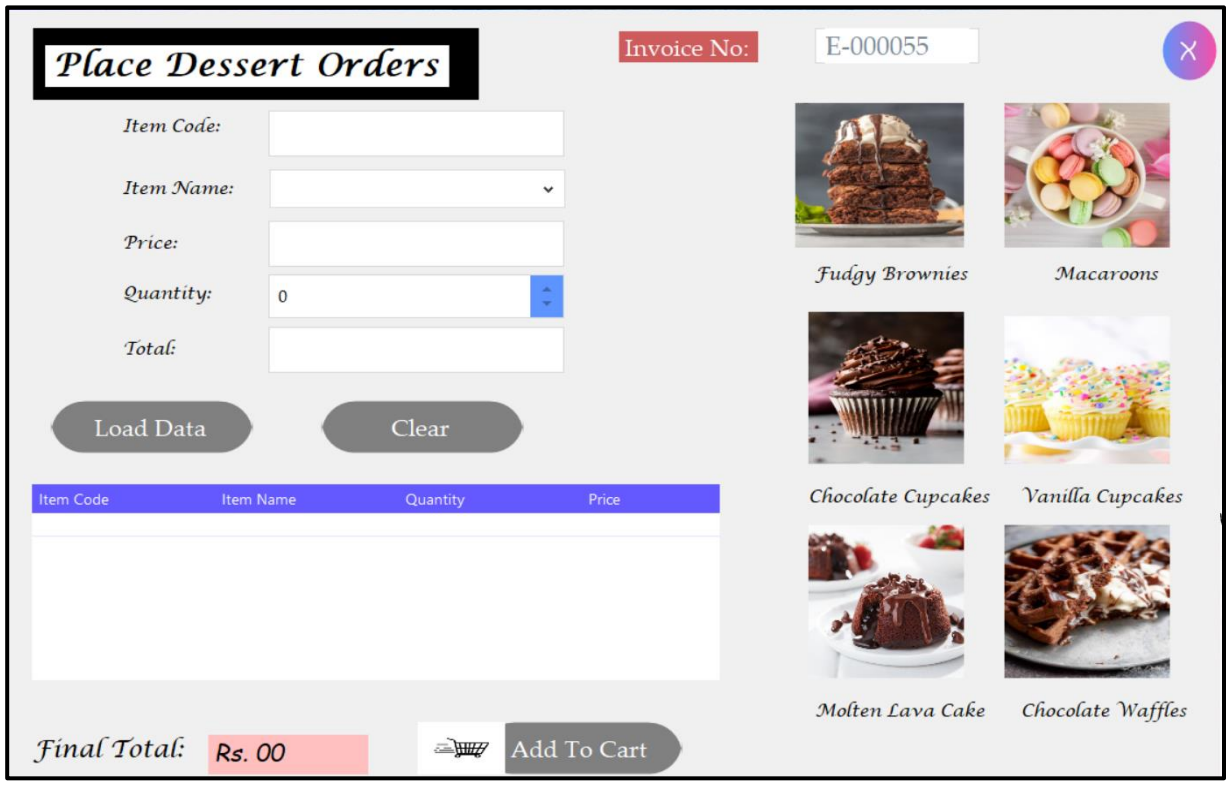


Figure 18: Place Desserts Order Page

Figure 20: Loyalty Customer Registration

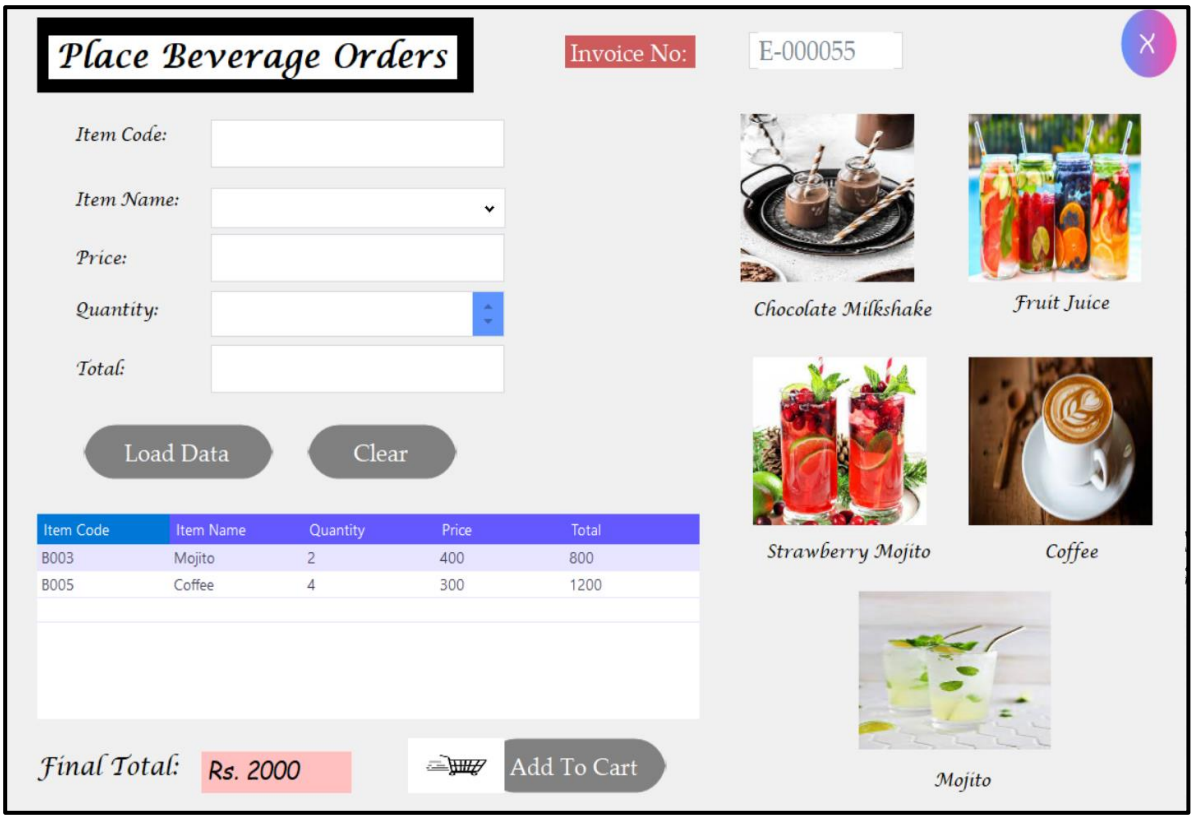


Figure 19: Place Beverage Orders Page

Figure 21: Bill Receipt Page

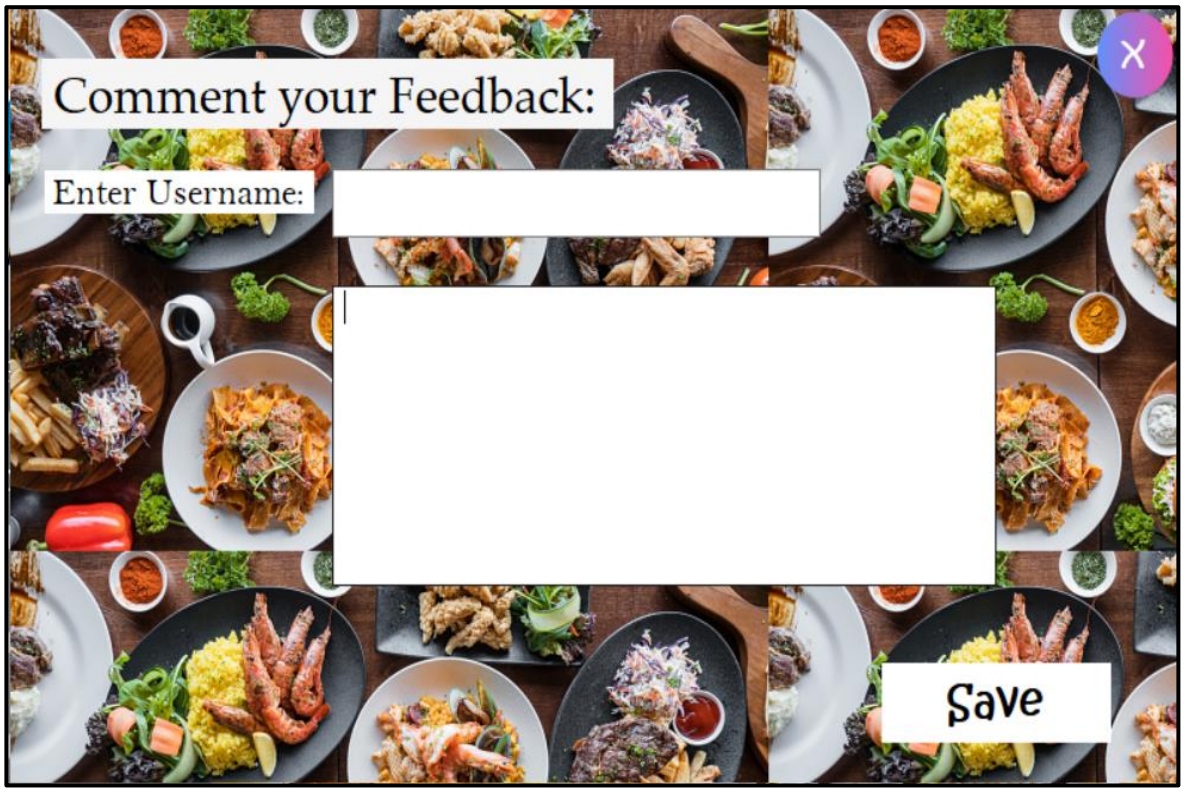


Figure 22: Customer Feedback Page

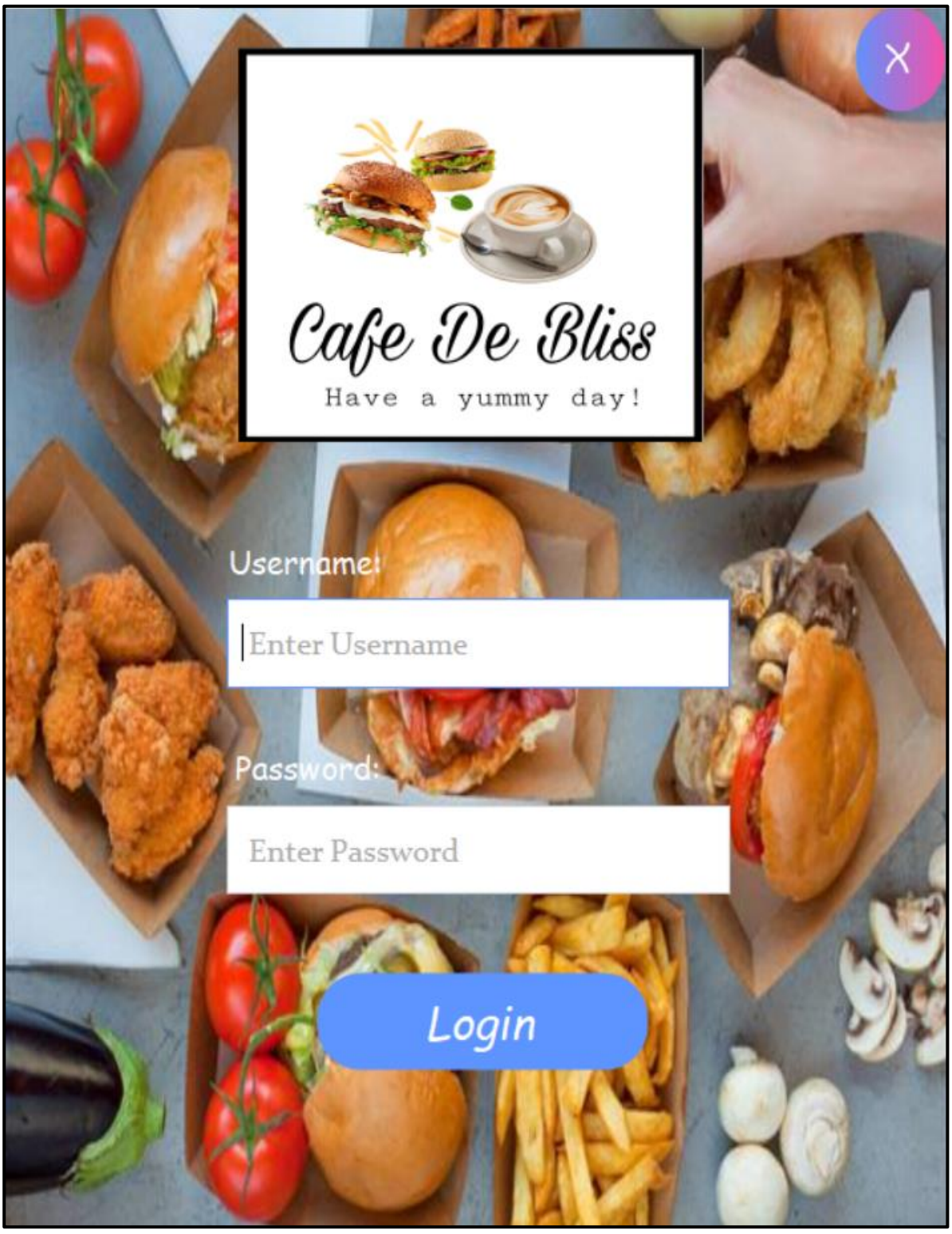


Figure 23: Login Page

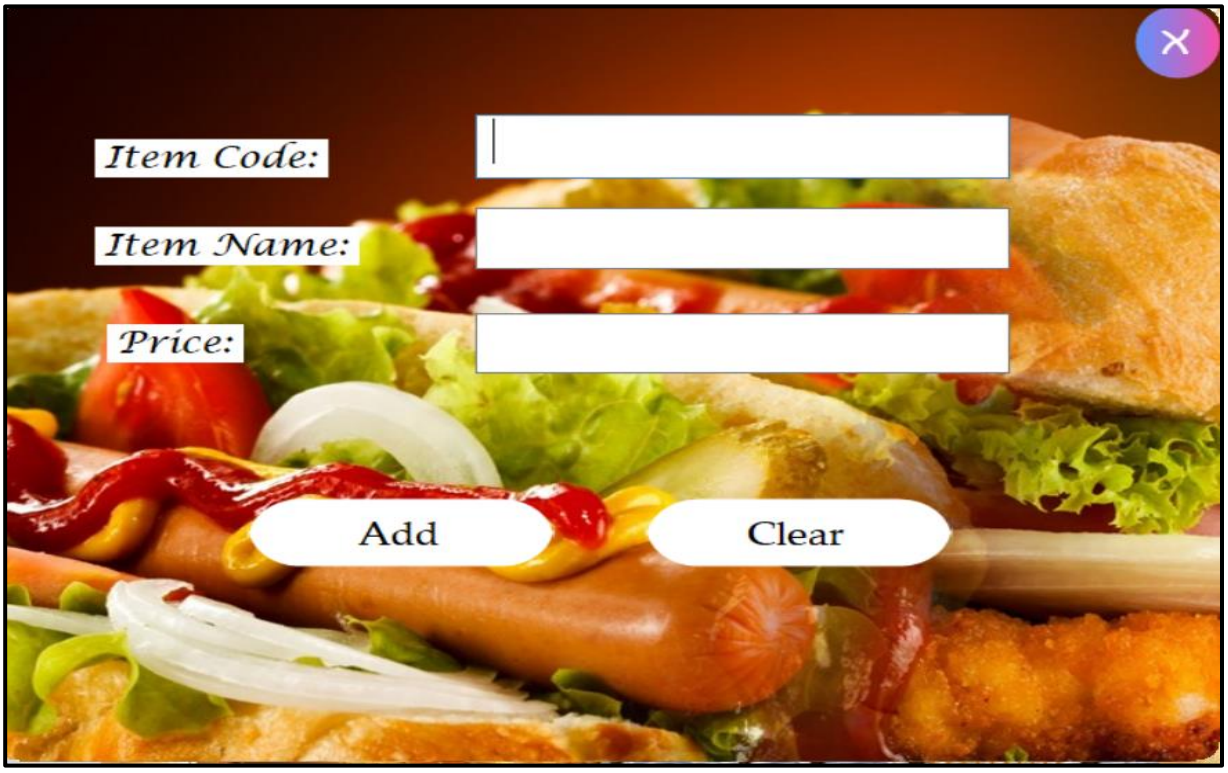


Figure 24: Add New Product Page

Figure 25: Manager Dashboard

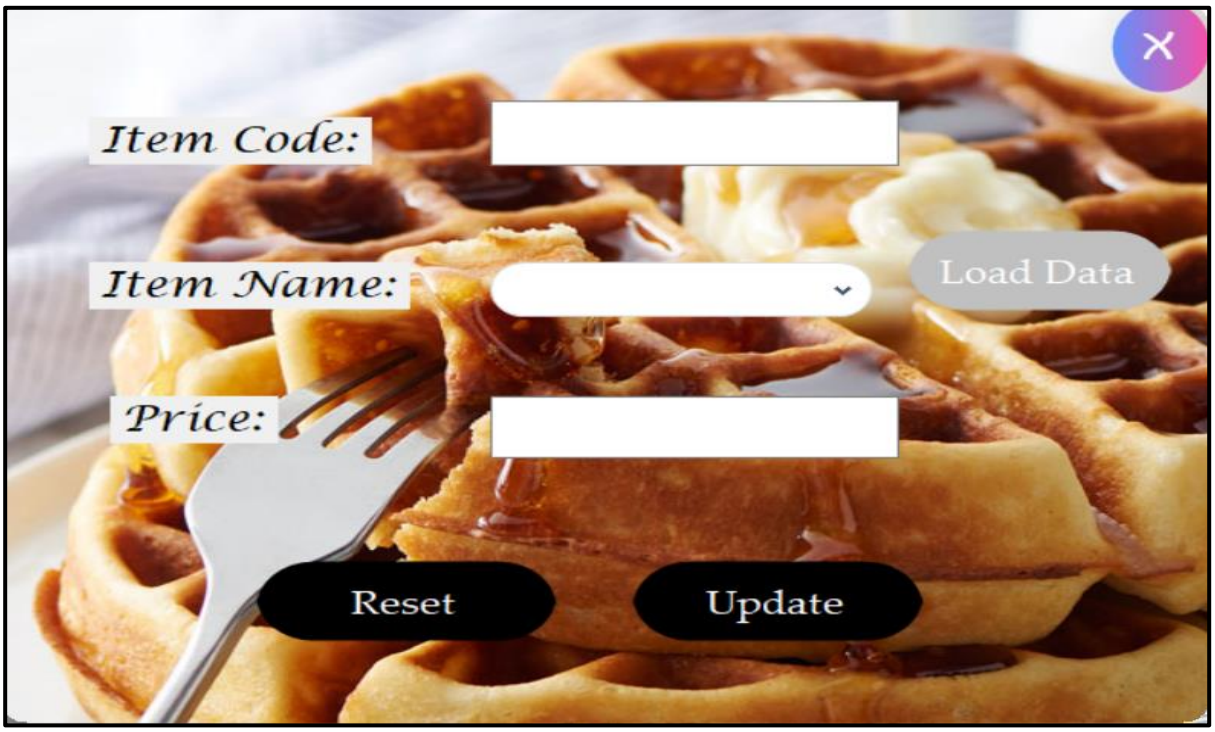


Figure 26: Update Products Page

Figure 27: Add Offer Page

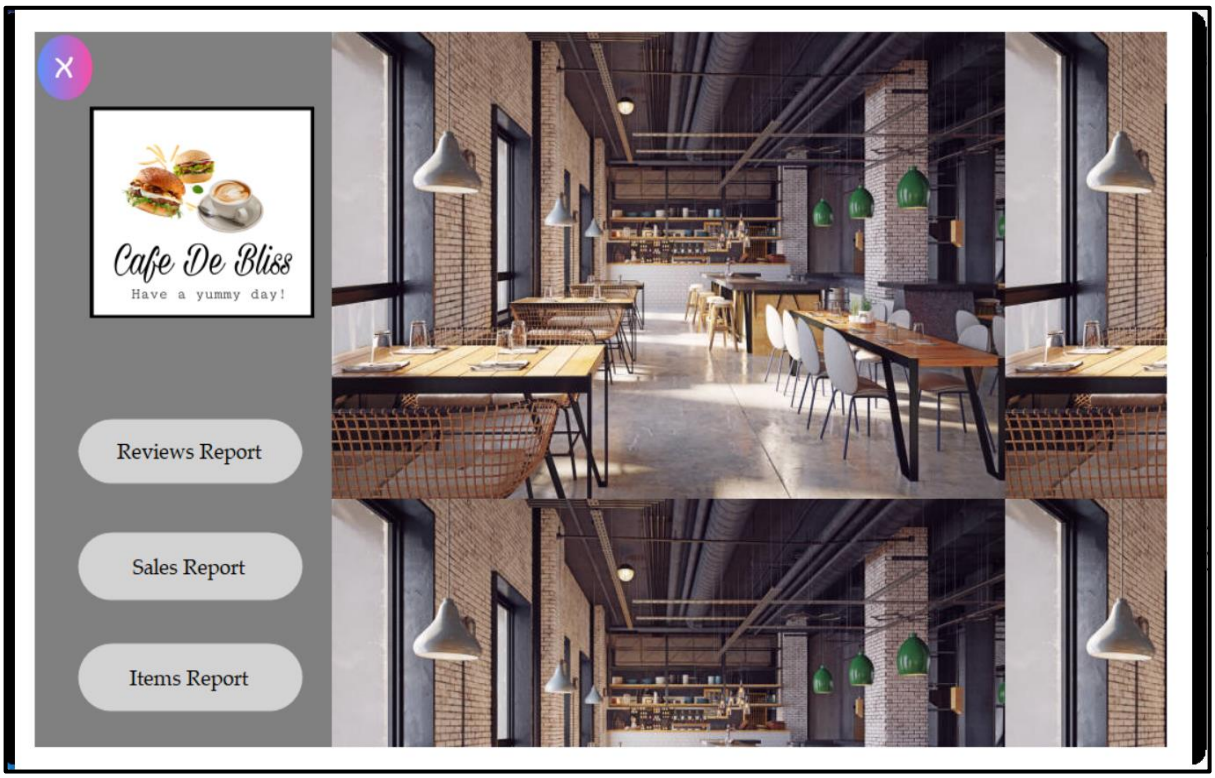


Figure 28: Generate Reports Page

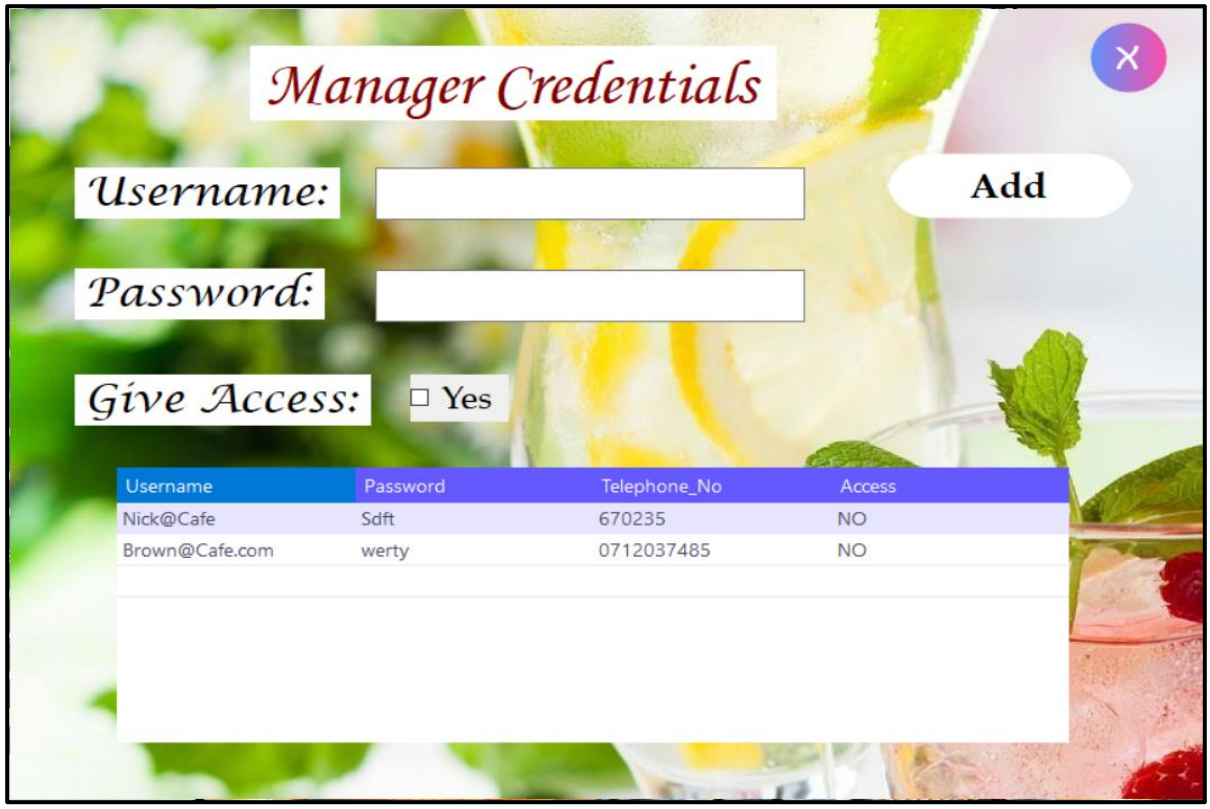
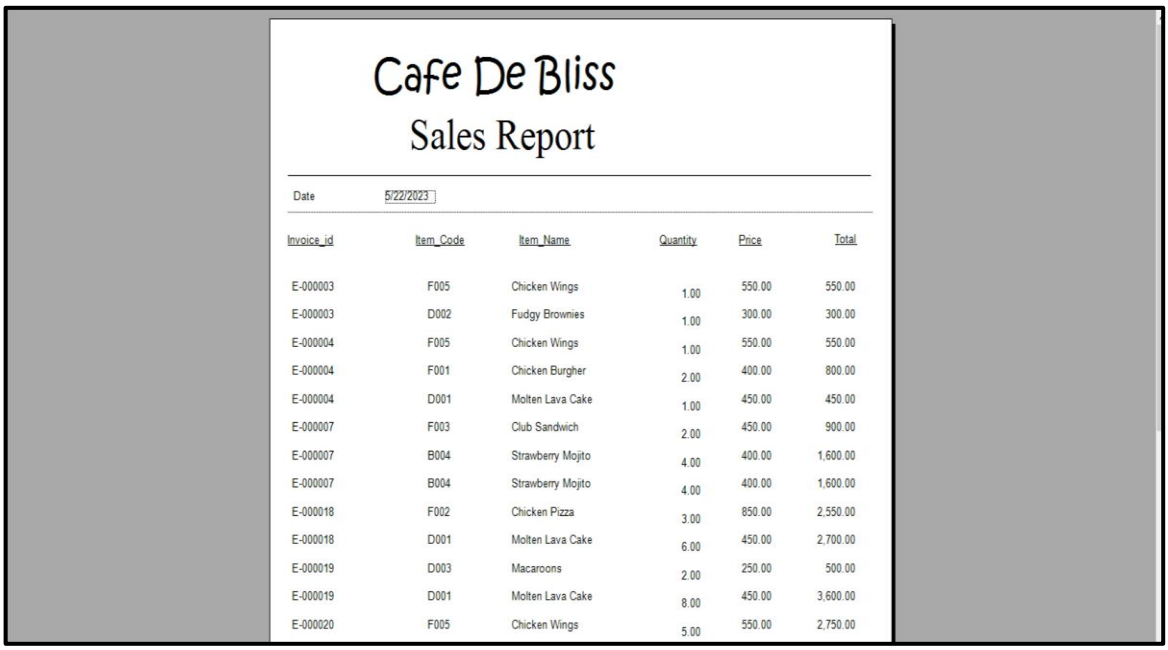


Figure 29: Manager Issue Credentials Page



Cafe De Bliss

Sales Report

Date 5/22/2023

Invoice_id	Item_Code	Item_Name	Quantity	Price	Total
E-000003	F005	Chicken Wings	1.00	550.00	550.00
E-000003	D002	Fudgy Brownies	1.00	300.00	300.00
E-000004	F005	Chicken Wings	1.00	550.00	550.00
E-000004	F001	Chicken Burgher	2.00	400.00	800.00
E-000004	D001	Molten Lava Cake	1.00	450.00	450.00
E-000007	F003	Club Sandwich	2.00	450.00	900.00
E-000007	B004	Strawberry Mojito	4.00	400.00	1,600.00
E-000007	B004	Strawberry Mojito	4.00	400.00	1,600.00
E-000018	F002	Chicken Pizza	3.00	850.00	2,550.00
E-000018	D001	Molten Lava Cake	6.00	450.00	2,700.00
E-000019	D003	Macaroons	2.00	250.00	500.00
E-000019	D001	Molten Lava Cake	8.00	450.00	3,600.00
E-000020	F005	Chicken Wings	5.00	550.00	2,750.00

Figure 30: Sales Report

Figure 31: Review Report

Figure 32: Loyalty Customer Dashboard

3.4 Message Boxes

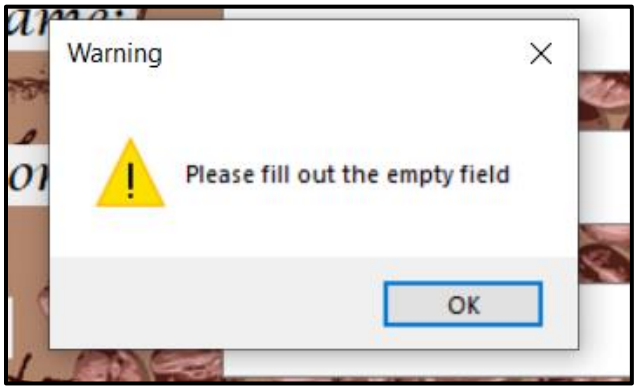


Figure 33: Fill out Empty Spaces Error Message

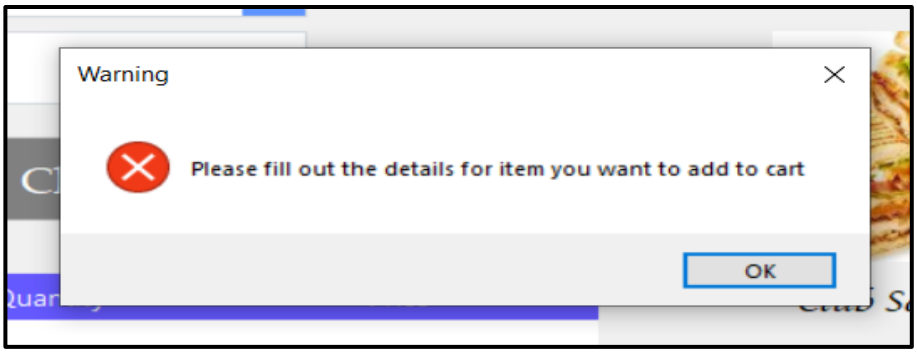


Figure 35: Enter Details Error Message

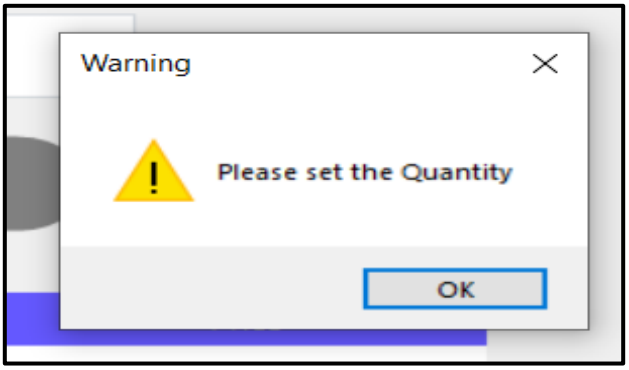


Figure 34: Set Quantity Error Message

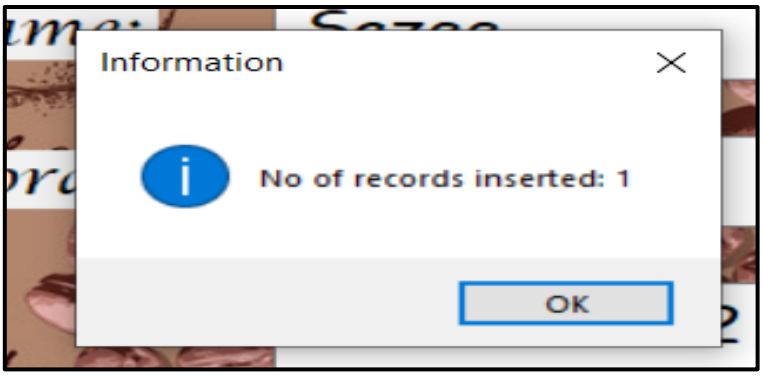


Figure 36: Data Inserted Message Box

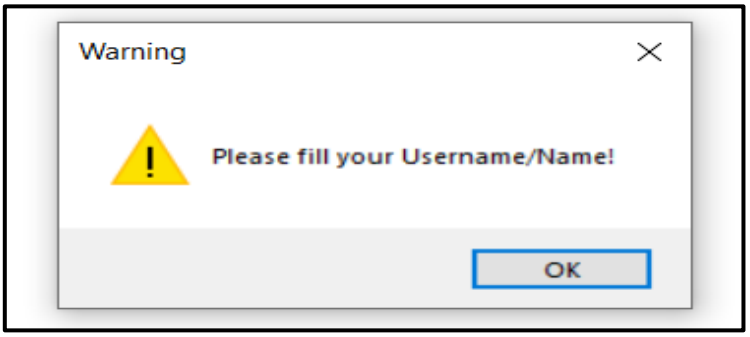


Figure 37: Enter Username and Password Warning Message Box

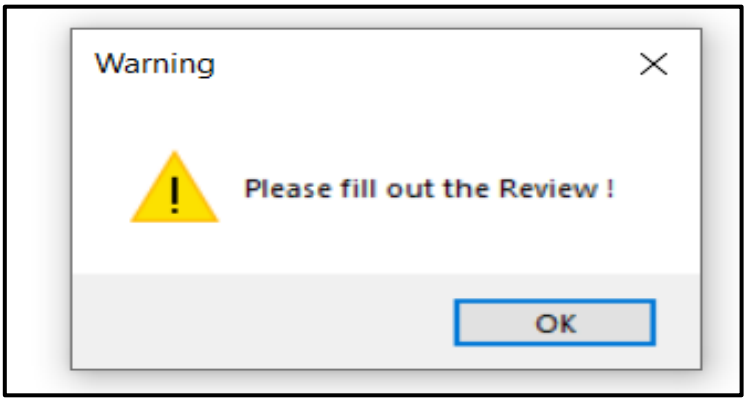


Figure 38: Empty Review Warning Box

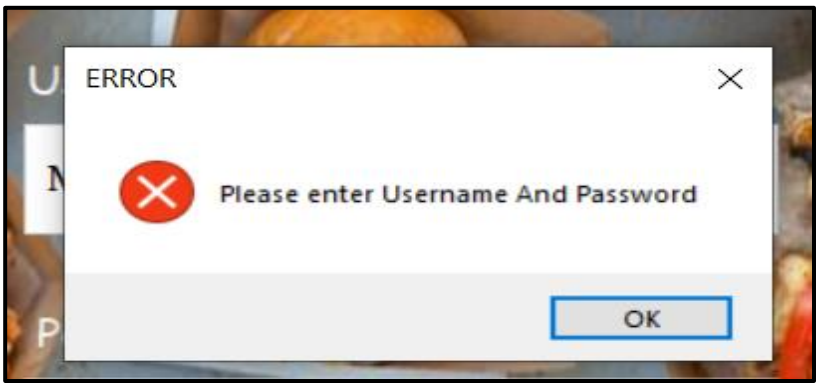


Figure 39: Wrong Username and Password Error Box

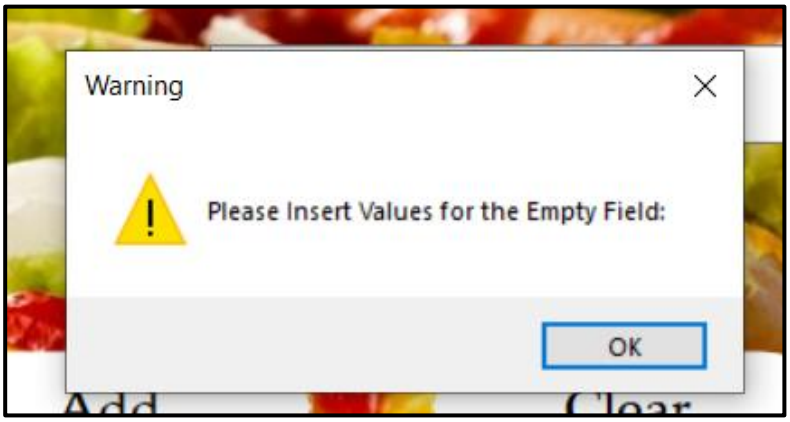


Figure 40: Fill Empty Details Warning Message

CHAPTER 4 - CONCLUSION

4.1. Summary

In conclusion, the Cafe De Bliss Management System, developed using C#, offers numerous benefits and enhancements for efficient and effective cafe operations. The system effectively manages various aspects of the cafe, including customer orders, menu management, employee scheduling, and inventory control. With the Cafe De Bliss Management System, the cafe experiences improved order accuracy and faster order processing, resulting in enhanced customer satisfaction. The system allows customers to place orders seamlessly, while providing real-time updates on order status. This ensures a streamlined workflow and reduces the chances of errors or delays.

The menu management feature of the system allows cafe owners to easily update and customize the menu, adding new items or modifying existing ones. This flexibility enables the cafe to adapt to changing customer preferences and seasonal offerings, leading to increased customer engagement and revenue. Efficient employee scheduling is another crucial aspect of the system. It simplifies the process of creating work schedules, considering factors like employee availability, skills, and preferences. This automation reduces scheduling conflicts and ensures adequate staffing, resulting in a well-organized and productive workforce.

Furthermore, the inventory control module of the system enables the cafe to effectively manage stock levels, monitor ingredient usage, and generate timely alerts for restocking. This helps in reducing waste, optimizing inventory turnover, and minimizing costs associated with overstocking or understocking. The Cafe De Bliss Management System demonstrates its ability to improve cafe operations, enhance customer experiences, and streamline administrative tasks. Its user-friendly interface, robust functionalities, and reliable performance make it an ideal choice for cafe owners seeking to optimize their business processes and drive growth. By implementing this system, Cafe De Bliss can position itself as a technologically advanced and customer-centric cafe, ultimately leading to increased profitability and success in the competitive market.

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