

A Project Report

CalBalance Bistro: A Comprehensive Implementation of an Innovative Food Ordering System with Enhanced Dietary Systems through Software Development.

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for the Degree of Bachelor of Science in Computer Science of the
Bangladesh University of Business and Technology (BUBT)**



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DECLARATION

We declare that the research works presented in this report entitled “CalorieBalance Bistro: A Comprehensive Implementation of an Innovative Food Ordering System with Enhanced Dietary Systems through Software Development” are the results of our works. We further declare that we have compiled and written the report. No part of this report has been submitted elsewhere for the requirements of any degree, award diploma, or any other purposes except for publications. The materials that are obtained from other sources are duly acknowledged in this thesis.

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APPROVAL

We accept that the research described in this report, titled “CalorieBalance Bistro: A Comprehensive Implementation of an Innovative Food Ordering System with Enhanced Dietary Systems through Software, Development” is based on directions from Md. Masudul Islam is an assistant Professor, at Bangladesh University of Business and Technology’s Department of Computer Science and Engineering. We further declare that no portion of this report has ever been submitted to any organization to be considered for a degree, honor, or diploma or any other reason besides publication. The dissertation's format and content have been approved, and it conforms with all norms and requirements for the degree of Bachelor of Science (B.Sc. Engg.) in Computer Science Engineering

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ABSTRACT

Food ordering systems have assiduously incorporated new features designed to meet the varied needs of customers and stay up with the demands of the fourth industrial revolution in the ever-changing world of online meal ordering. The core goal is still the same: to use a delivery network that spans one city to deliver the delicious food of multiple restaurants right to people's doorsteps. With the launch of our platform, traditional meal ordering methods have undergone a major change that promotes healthier choices. Recognizing the critical role that nutrition plays in overall health, this system provides a sophisticated method of food selection that empowers people with diabetes and other health concerns. The input of daily calorie consumption restrictions by users represents a revolutionary step toward individualized health management. Interestingly, the system alerts users in advance whether some food items exceed recommended calorie boundaries or include added sugars, giving them the knowledge they need to make decisions that support their health objectives. For those with diabetes, keeping an eye on their calorie consumption is crucial to controlling their blood sugar levels. In the same way, following prescribed calorie restrictions is essential for dieters to meet their goals regarding weight and overall health. Our platform creates a new benchmark by ingeniously fusing health-conscious features with convenience, encouraging a careful and inclusive approach to ordering food. This progress is a testament to our dedication to providing people with the means to prioritize their health and fitness while navigating their culinary preferences.

LIST OF ABBREVIATIONS AND ACRONYMS

AJAX	Asynchronous Javascript And XML
CS	Client/Server
CSS	Cascading Style Sheet
DBMS	Database Management System
HTML	Hypertext Markup Language
PHP	Hypertext Preprocessor

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CHAPTER: 1

INTRODUCTION

1.1 Introduction:

Amidst the dynamic nature of the present-day world, the practice of ordering food online has emerged as a flexible and efficient solution to the challenges associated with dining out, as it enables the delivery of meals directly to one's doorstep. The platform functions as a crucial intermediary that effortlessly integrates the consumer experience with diverse cooking alternatives, all the while offering resolutions to contemporary challenges. Throughout this evolutionary process, we implemented a system specifically designed to cater to the demands and requirements of our customers. Particularly those who prioritize their health. In order to enhance our dedication to enhancing health, we provide users with the ability to establish and access the calorie limit functionality, which is particularly beneficial for individuals undergoing diabetes treatment or adhering to a specific dietary regimen. In addition, our platform will now provide notifications to identify meals with high-calorie content or added sugar, enabling users to make well-informed choices and track their dietary patterns. The foundation of our approach is rooted in user-centered design and is informed by thorough research, with a focus on optimizing efficiency and promoting sustainability. This integration not only enhances the efficiency of the process but also contributes to waste reduction, representing a significant stride towards establishing an environmentally sustainable restaurant. We are revolutionizing the food service business by effortlessly incorporating health-oriented elements into our intuitive platform. The emphasis we place on making intelligent, health-conscious decisions and minimizing our ecological footprint reflects our dedication to establishing a peaceful environment for all.

1.2 Motivation:

The integration of an online meal ordering system is driven by a deep comprehension of the digital transformation in the food service industry and a dedication to the health and satisfaction of consumers. Our goal is to promote technology by using web and mobile applications to make decisions and payments more manageable. This will improve efficiency and allow us to reach a larger consumer base that values ease. This project demonstrates our commitment to innovation and client satisfaction in line with our business goals. In addition to our strategic goals, our motivation encompasses dedication to facilitating digital change and tackling health issues within the food chain. We give priority to a holistic solution that not only improves user experience but also incorporates health-conscious functionalities. Our system incorporates notifications for calorie and sugar thresholds, emphasizing our dedication to promoting consumer well-being. With the utilization of cutting-edge technology and a strong emphasis on customer satisfaction, our endeavor seeks to revolutionize the online food service sector, establishing ourselves as frontrunners in an ever-evolving digital era. This transformative journey is the act of leading, combining innovation with accountability for a future in which culinary experiences are enhanced, environmentally friendly, and focused on promoting good health.

1.3 Proposed System:

In response to the evolving landscape of digital food services and a growing emphasis on consumer health, we propose an innovative Online Food Ordering Platform that not only streamlines the ordering process but also prioritizes the well-being of users. This system aims to revolutionize the online food service industry by incorporating cutting-edge technology and health-conscious features.

1. **Seamless Ordering Interface:** User-friendly web application for effortless navigation and ordering. We aim to make it like anyone can use it.
2. **Comprehensive Menu:** A detailed menu containing different dishes. We'll be categorizing the dishes on the menu into separate categories such as appetizers, main courses, side orders, etc.
3. **Secure Payment Processes:** Streamlined and secure payment options for enhanced operational efficiency.
4. **Customizable Dietary Preferences:** User profiles that allow customization based on dietary preferences and health restrictions.
5. **Health Alerts:** Real-time alerts for users approaching or exceeding personalized calorie and sugar limits, promoting conscious food choices.
6. **Search Bar:** Search Bar for searching foods based on user preferences using specific keywords.

1.4 Project Overview:

The focus of our project is to create an advanced Online Food Ordering System that aims to transform the way customers interact with food services in the current technology-driven era. The system offers a smooth and intuitive platform that incorporates state-of-the-art technologies. In addition to fundamental functionalities such as order monitoring and user feedback, our Online Food Ordering System surpasses traditional offers. In response to the increasing awareness of consumer health, our system incorporates cutting-edge health-related features. Furthermore, it integrates proactive notifications for calorie and sugar restrictions while also simplifying food procurement and providing a user-friendly interface. This distinctive feature enables customers to make knowledgeable and health-conscious choices while placing orders, in line with the current focus on wellness. Our solution serves as a connection between consumers and food service providers by integrating the ease of online ordering with a specific emphasis on dietary choices and health requirements. This holistic strategy guarantees that consumers not only encounter a streamlined and tailored meal ordering procedure but also place high importance on their health and well-being during the entire dining experience.

1.5 Project Scope:

The scope of our project is as follows:

1. Identifying the limitations: We've identified some of the current limitations of the online food ordering industry and designed our system to overcome those.
2. Application of health-related options: We've taken the initiative to employ health-related options such as a calorie-based ordering system and sugar alert to make our project more unique and helpful.

3. User-friendly system: We'll be developing a seamless and intuitive web application for online food ordering that prioritizes user experience, security, and accessibility in the platform design.

1.6 Aims and Objectives:

Our overall work on an online food ordering system aims to analyze, design, develop, and operate a powerful, user-friendly platform that is committed to promoting healthy lifestyles. The objectives of our work are as follows:

- Develop a user-friendly online platform integrating a web application effectively.
- Enhance customer convenience through streamlined order processing and secure payment gateways.
- Focus on technological advancements to boost operational efficiency and revenue growth in the digital food industry.
- Promote healthy lifestyles by integrating alerts for high-calorie or added-sugar foods.
- Continuously evolve the platform based on user feedback and performance metrics to meet changing market demands.
- Evaluate scalability, adaptability, and system integration to bolster competitiveness and transform the digital food chain.

1.7 Organization of report:

The project report is meticulously structured, providing a thorough investigation of the Online Food Ordering System - "CalBalance Bistro." The chapters progressively provide a comprehensive comprehension of the project's origin, execution, and potential. The first part of this paper, titled "Introduction," highlights the importance of online food purchasing in the present day. It specifically focuses on the health-conscious aspects and the dedication to sustainability. Following that is Chapter 2, titled "Literature Review," which rigorously evaluates the current body of knowledge in the field of online food ordering. This chapter identifies areas where further research is required and establishes the basis for making well-informed contributions. Chapter 3, titled "Requirement Analysis," delves into the thorough procedure of defining and prioritizing essential requirements for platform development. It also focuses on aligning objectives with customer demands. Subsequently, chapter 4 (System Analysis and Design) provides readers with a structured examination of current processes, identification of user needs, and development of effective design solutions for streamlined information systems. Chapter 5, titled "Implementation and Testing," covers the transition from theoretical design to actual implementation. It provides a comprehensive account of the deployment of hardware, software, and testing procedures to ensure the development of a strong and dependable system. Chapter 6 of the User Manual provides a thorough and detailed guide, presenting visual representations of each page using screenshots. These screenshots are supplemented by clear and precise instructions, ensuring a user-friendly experience. Finally, chapter 7 of the study, titled "Conclusion and Further Work," summarizes the progress made in the project, acknowledges its limitations, and presents future directions. The emphasis is on improving the project through the integration of artificial intelligence, the addition of voice and chatbot features, the introduction of subscription services, and the implementation of predictive systems.

CHAPTER: 2

LITERATURE REVIEW

2.1 Introduction:

Amidst the development of online food ordering systems, it is crucial to comprehend the complex relationship between technical progress, changing consumer habits, and societal requirements. In order to traverse the ever-changing landscape of our project, this literature review thoroughly analyzes existing academic research to shed light on the current level of understanding, highlight areas where further research is needed, and establish a strong basis for our work. The main objective of this chapter is to carefully examine studies undertaken by other researchers in the field, with the purpose of identifying their strengths and faults. Through the synthesis of various contributions, our objective is to obtain a comprehensive grasp of important themes, theories, and empirical findings. This will enable us to explore the domain of the online food ordering system in a detailed and informed manner, contributing significantly to the discourse and expanding our understanding.

2.2 Literature Review:

Azahari, M. H., & Hamid Ali, F. A. et al.[1] created an online food ordering system for JomMakan Restaurant, Setiawangsa, Kuala Lumpur, utilizing HTML, CSS, Javascript, and PHP. Their prototyping method resulted in a two-phase prototype, leading to a functional web-based platform. Geolocation APIs were incorporated for accurate user and technician location tracking, enhancing food purchases, and optimizing customer service.

Adithya R., Abhishek Singh, Salma Pathan, Vaishnav Kanade et al.[2] I developed an online food ordering system at Modern Education Society's College of Engineering. This system streamlines restaurant and mess service purchases, simplifies ordering, enables order tracking, incorporates user feedback, and provides personalized suggestions based on ratings. It utilizes Cloud Computing, Wi-Fi, and Smartphone technologies.

Tan Sin Wei and Debashish Das et al. [3] developed an Online Food Ordering System for university students using Java Server Faces (JSF). The system, inspired by "UI Dining" and "Foodpanda Malaysia," promotes healthier eating habits by providing convenient and nutritious meal ordering. It addresses irregular eating patterns by offering ingredient information, avoiding allergens, and enhancing nutrition awareness through web and mobile applications. The emphasis is on efficiency and an optimal user interface across platforms.

P. Saratha, Dr. G. V. Uma, B. Santhosh, et al. [4] from Anna University utilized formal methods, particularly Z language, to reduce ambiguity in Software Requirements Specification (SRS) for an online food ordering system. Focusing on order accuracy and efficiency, their study addresses the transition from phone-based to online ordering for enhanced customer satisfaction. The research underscores the significance of Z formal specifications in mitigating ambiguity and ensuring a seamless ordering experience.

Sainath Reddy K et al. [5] at SRM University created an Online Food Court Ordering System to optimize restaurant services, prioritizing fast and error-free online ordering. Their system is aimed at operational efficiency, minimizing manual labor, and providing customers with diverse choices through a web-based platform. Focused on swift, seamless food orders and automated billing, the system addresses the contemporary demand for efficiency and convenience in dining experiences.

Leong Wai Hong et al. [6] introduced a computerized food ordering system to modernize the food industry, particularly targeting small to medium enterprises. Their system addresses challenges such as order tracking, rising operational costs, and menu information updates. Leveraging throwaway prototyping, it caters to users unfamiliar with such systems, with the overarching goal of enhancing efficiency, minimizing errors, and improving customer satisfaction.

Madu Ugochukwu Jeff et al. [7] created an online food ordering system for Mountain Top University using UML diagrams and tools like Xampp, HTML, CSS, and PHP. The focus was on improving the ordering process, utilizing surveys, informal interviews, and UML diagrams. MYSQL and PHP powered the backend, while the front end was crafted with HTML and CSS. Key terms included delivery hours, online food ordering, cafeteria, internet, and technology.

Wong Chun Chuan and Chuah Chai Wen et al. [8] presented the Shu Xiang Lou online food ordering system to address wait time, fake order risks, and menu updates. Implemented using a Java-based MVC framework, the system streamlined orders, ensured secure payments, and automated sales reports. Their focus was on efficiency, secure transactions, and operational streamlining, effectively addressing challenges associated with manual orders.

MWANSA MWANSA et al. [9] investigated the gap in Zambia's online food ordering market, emphasizing the importance of small-scale restaurants providing convenient online ordering. Addressing Zambia's economic challenges, heightened by the COVID-19 pandemic, the study explores the impact on restaurants and the limited adoption of online services. Notably, with the emergence of platforms like AfriDelivery, the study advocates for a more extensive integration of online food ordering services in Zambia's food industry.

Huan Kit Joo, Hairulnizam Mahdin, Mohammad Syafwan Arshad, et al. [10] developed a web-based meal ordering system for SJK(C) Chung Hwa Primary School to streamline canteen operations. Addressing the inefficiencies of the manual system, the system facilitates pre-ordering meals. It introduces cashless payments through e-wallets for safety and reduced queuing time. The system also provides a digital menu for informed food choices, minimizing close contact among students.

Shakirat Oluwatosin Haroon-Sulyman and Abdulfatah Aishat et al. [11] implemented an E-Food Ordering and Diet Monitoring System to overcome challenges associated with traditional food ordering methods. It highlights the limitations of verbal-based orders and advocates for electronic transactions in response to the growing internet user base in Nigeria. The proposed system addresses issues like order accuracy, record management, and nutritional information provision.

Christopher R. Gustafson, Eliana Zeballosb, et al. [12] reveal that the rapidly expanding out-of-home consuming sector contributes significantly to food waste. Their study indicates that pre-ordering meals for delivery leads to more impulsive food choices and increased calorie consumption. The proposed system aims to address challenges related to order accuracy, record management, and nutritional information provision, aligning with contemporary concerns in food consumption, such as impulsive choices and calorie intake.

Eric M. VanEpps, Julie S. Downs, George Loewenstein, et al. [13] conducted a study revealing that the presence of calorie counts on restaurant menus significantly influences patrons' selections. American participants ordered 16.31% fewer calories when food items with calorie information on the left (versus the right) were displayed. Despite initial concerns, menu labeling did not significantly affect people with higher disordered eating generally. However,

individuals with binge-eating disorder ordered more calories, while those with anorexia nervosa or bulimia nervosa purchased fewer calories.

Shakirat Oluwaatosin Haroon-Sulyman and Abdulfatah Aishat et al. [14] highlighted inefficiencies and inaccuracies in traditional food ordering methods, especially in crowded places, using paper-based and vocal procedures. The rise of e-commerce and online transactions has revolutionized the food sector. Integrating information technology into restaurant management offers benefits for both patrons and operators, providing comprehensive data on costs and nutritional values. This addresses modern concerns like obesity and overconsumption.

Jonas J Swartz¹, Danielle Braxton, Anthony J Viera¹ et al. [15] highlight the impact of the Patient Protection and Affordable Care Act of 2010, requiring chain restaurants with 20 or more locations to display calorie information on menus. Despite the growing popularity of menu labeling laws, their effectiveness remains uncertain, as evidenced by a 2011 systematic analysis that found little to no influence on consumers' decisions. This emphasizes the need for further investigation and assessment.

James W. Krieger, MD, MPH, Nadine L. Chan, Ph.D., MPH, Brian E. Saelens, PhD, MA, Myduc L. Ta, Ph.D., MPH, David Solet, Ph.D., MS, David W. Fleming, MD et al. [16] attribute the rising incidence of obesity in America to increased calorie intake since 1970. Menu labeling requirements in the United States, adopted in 21 jurisdictions and soon to be statewide, aim to reduce caloric intake by enhancing customer awareness and promoting healthier food choices.

Susan E. Sinclair, MSc; Marcia Cooper, PhD, RD; Elizabeth D. Mansfield, PhD, RD et al. [17] conducted a systematic study investigating the effect of menu-based nutrition information on calorie choice and consumption in restaurants. The findings revealed that adding contextual or interpretive nutrition information to menu labels significantly reduced both the number of calories chosen and consumed. The study underscores the importance of including more information on menus to assist customers in making better-informed and healthier food choices, particularly those with low food and health literacy.

Brenna Ellison, Jayson L. Lusk, David Davis, et al. [18] addressed concerns about diet and overall health, as Americans spent 42% of their food budget on meals away from home in 2009. Responding to the increase in eating out and obesity rates, policymakers are implementing uniform menu labeling regulations. The FDA is expected to mandate chain restaurants to display calorie information on menus and provide additional nutritional information upon request.

Karen Byrd & Barbara Almanza et al. [19] conducted a study evaluating the impact of menu labeling with a unique sodium warning symbol on consumer meal selections, with a focus on the moderating role of time orientation. The findings revealed that neither the new warning symbol nor numerical sodium labeling prompted customers to choose lower-sodium meals. Even without labeling, individuals with a high orientation toward future outcomes tended to select meals lower in calories and sodium.

Nefike Gunden, Cristian Morosan, Agnes DeFranco Conrad N. Hilton et al. [20] highlighted the significant growth of Online Food Delivery Services. The paper identifies research gaps concerning the influence of hedonic design components, which traditionally emphasize useful design elements. The study aims to investigate the impact of these factors on consumers' views, intentions, spending, and tipping, guided by the Elaboration Likelihood Model.

"Emerging Trends in Online Food Ordering Platforms: A Literature Review" (2019): This review by Kim et al.[21] examines the evolution of online food ordering platforms, analyzing user motivations, platform functionalities, impact on restaurants, and future research directions.

"A Review of Online Food Ordering System Research" (2018): This review by Zhou et al.[22] provides a comprehensive overview of research on online food ordering systems, focusing on user behavior, system design, technological advancements, and future trends.

"Factors Influencing Online Food Ordering: A Systematic Review" (2019): This review by Kim et al.[23] systematically analyzes factors influencing online food ordering behavior, including convenience, variety, price, promotions, and platform features.

"Impact of Online Food Ordering on Restaurant Performance: A Literature Review" (2017): This review by Huang et al.[24] explores the impact of online food ordering on restaurant performance, examining factors like order volume, revenue, marketing reach, and operational efficiency.

"The O sharing economy in the food industry: A review of peer-to-peer food delivery platforms" (2019): This review by Liu et al.[25] focuses on peer-to-peer food delivery platforms, analyzing their business models, operational challenges, and potential social and economic impacts.

"Exploring User Reviews on Online Food Delivery Platforms: A Text Mining Approach" (2018): This review by Li et al.[26] uses text mining techniques to analyze user reviews on online food delivery platforms, identifying key themes and areas for improvement in service quality.

"Challenges and Opportunities in Mobile Food Ordering: A Review" (2014): This review by Kim et al.[27] explores the challenges and opportunities associated with mobile food ordering, discussing user preferences, technical limitations, and potential future directions.

"Towards Understanding the User Experience of Online Food Ordering: A Systematic Review" (2016): This review by Choi et al.[28] delves into the user experience of online food ordering systems, analyzing factors influencing satisfaction, loyalty, and usability.

"Big Data in Online Food Ordering Systems: A Survey" (2019): This review by Zhang et al.[29] explores the use of big data in online food ordering systems, focusing on applications like personalized recommendations, demand forecasting, and operational optimization.

"Food Wastage in Online Food Delivery: A Review of Causes and Potential Solutions" (2019): This review by Wang et al.[30] examines the issue of food waste in online food delivery, analyzing contributing factors and potential solutions from both platform and consumer perspectives.

2.3 Problem Analysis:

The studies we examined had a diverse range of deficiencies. These studies jointly address multiple issues in the online meal ordering industry, including inefficiencies in operations, limitations in technology, insufficient health-focused features, environmental concerns, and obstacles in maintaining order accuracy and enhancing consumer experience. The identified problems highlight the necessity for holistic solutions that incorporate cutting-edge technologies, promote user well-being and contentment, optimize operations, reduce environmental footprint, and improve overall customer experience and ease. Tackling these complex difficulties can greatly enhance the digital food service business by fostering efficiency, sustainability, and customer-focused practices.

CHAPTER 3

REQUIREMENT ANALYSIS

3.1 Introduction:

The Requirement Analysis marks a pivotal phase in shaping our innovative Online Food Ordering Platform. This section delves into the meticulous identification, documentation, and prioritization of requirements crucial for the platform's development. Acknowledging the significance of understanding user expectations, technological constraints, and industry standards, this analysis serves as the linchpin connecting conceptualization to execution. It acts as a strategic roadmap, aligning project objectives with our customer's needs and guiding subsequent phases of design and development. Through active literature review, feedback mechanisms, and thorough industry research, we aim to establish a robust foundation. This ensures our platform not only meets but surpasses the expectations of our diverse user base, reflecting our commitment to a purposeful and successful development journey.

3.2 Requirement Analysis:

This requirement analysis serves as a foundational guide for the development team, ensuring a systematic approach to building an efficient, secure, and user-centric Online Food Ordering System. Each element is crucial in meeting the diverse needs of users while maintaining the integrity and performance of the platform. The development of a robust Online Food Ordering System necessitates a comprehensive analysis of key requirements to ensure the platform's effectiveness, security, and seamless functionality. Here's an overview of the essential elements identified for this project:

- **User Devices and Connectivity:**

Ensure compatibility with both computers and smartphones, requiring a stable internet connection for user accessibility.

- **Frontend Development:**

Design an intuitive and user-friendly interface to facilitate a seamless and engaging customer experience.

- **Backend Development:**

Develop a robust backend infrastructure capable of handling order processing, inventory management, and user data securely.

- **Web Development Tools:**

Utilize industry-standard web development tools for efficient coding, debugging, and overall software development life cycle.

- **Hosting and Deployment:**

Select a reliable hosting service and implement a smooth deployment process for seamless accessibility and performance.

- **Security Measures:**

Implement robust security protocols to safeguard user data, payment information, and overall system integrity.

3.3 Hardware Requirement Analysis:

Processor: Preferably 3.0 GHz or Greater.

RAM: 4 GB or Greater.

Disk space: 20 GB or more.

Input devices: Mouse and keyboard

Output devices: Monitor

3.4 Tools and technology Analysis:

3.4.1 PHP:

Originally called "Personal Homepage," PHP was initially a server-side coding language for web development and was later renamed "Hypertext Preprocessor." Created by Rasmus Lerdorf in 1994, PHP originally included the Common Gateway Interface (CGI) binary in C and was designed to manage a web page. At the same time, PHP has become an important tool for web development due to its open nature, compatibility across various operating systems and web servers, and user design. With seamless integration into multiple databases and support from rich communities like Laravel and Symfony, PHP continues to evolve with innovative and continuous improvements to meet business needs.

3.4.2 XAMPP:

XAMPP is an acronym for "Cross-Platform, Apache, MariaDB, PHP and Perl" and is a software package designed to create a web server environment. Developed by Apache Friends, XAMPP integrates most of the basic elements required for web development. It includes Apache as a web server, MariaDB (a derivative of MySQL), PHP and Perl programming languages, and other tools for database management.

3.4.3 MySQL:

MySQL is an open-source relational database management system known for its reliability, performance, and scalability. Oracle Corporation developed MySQL and is widely preferred for database management due to its reliability. MySQL operates through Structured Query Language (SQL), allowing users to create, modify, and manage data, ensuring fast and easy data storage. It manages adaptability and seamless integration across various operating systems. MySQL's popularity stems from its ability to perform complex operations, support multiple programming languages, provide strong community support, and provide continuous improvement, which reinforces its position as the world's leading information management system.

3.4.4 Git Hub:

GitHub is an online platform that serves as a central place for collaboration between software projects and version control. It supports operational efficiency and project management by acting as a repository where developers can store, manage, and track changes to their code. Leveraging the Git version control system, GitHub allows multiple contributors to collaborate on code simultaneously, allowing integration of changes and branches. Features include issue tracking, pull requests, and a wiki to facilitate collaboration, code evaluation, and documentation. GitHub provides a platform for open-source contributions and community leaders while ensuring transparency, efficiency, and collaboration between development teams.

3.4.5 HTML:

HTML, also known as Hypertext Markup Language, is an essential part of the web and is essential for creating web content. Created by Tim Berners-Lee in the early 1990s, HTML is essential for organizing text, images, links, and posts on web pages. From the markup in the right corner, HTML defines the structure and content of the World Wide Web. The syntax allows the direct creation of interactive web pages. It can be extended to include modern features for multimedia integration, structural design, and semantic structure, ensuring Compatibility across multiple devices and platforms. This language, which enables collaboration and easy access to digital content, continues to be important

3.4.6 Bootstrap:

Bootstrap is a powerful web development framework that helps create efficient and mobile-friendly websites. Created by the Twitter team, Bootstrap uses HTML, CSS, and JavaScript components and provides a variety of pre-designed templates, templates, and link elements. Its library includes tools and utilities that allow developers to quickly and easily create intuitive and consistent web interfaces. By focusing on functionality, Bootstrap makes it easy to adapt websites to different screen sizes and devices, making the user experience seamless while improving the development process.

3.4.7 Visual Studio:

Visual Studio was developed by Microsoft as an integrated development environment (IDE) designed for developing software on multiple platforms. Known for its performance, this tool offers many features, such as code editing, debugging, testing, and project management. It supports various programming languages and frameworks and increases design efficiency thanks to its user-friendly interface and various plugins. Visual Studio integrates version control and easy deployment options, making it easy to collaborate on coding and streamline app deployment across multiple platforms.

3.4.8 JavaScript:

JavaScript, often abbreviated as JS, is an indispensable high-level programming language for web development. JS is known for its important role in web browsers and enables efficient and interactive work on web pages. These scripts allow developers to manage web content, increase user interactions, and create flexible user interfaces. It supports data recognition in documents, dynamic content, interactive animations, and complex functions such as games and interactive maps. Known for its adaptability and overall compatibility, JavaScript is an essential part of modern web development and enables the development of web applications and user interfaces.

3.4.9 CSS:

Cascading Style Sheets (CSS for short) are an important element in web development and work well with HTML. CSS is a language required to coordinate the presentation and visual style of HTML content across different pages. It provides granular control over the process and appearance of web content, allowing developers to specify fonts, colors, spacing, and display elements on web pages. CSS allows the creation of web pages that adapt to different devices

and sizes its design capabilities are a variety of tools that enhance the beauty and functionality of web pages and are still an important part of web development today.

3.5 Feasibility Analysis:

Feasibility analysis is an important step in determining the viability and practicality of any project or initiative. For our project, we've drawn out a list of feasibilities we'll be checking to ensure our product's survival and dominance in the market.

3.5.1 Market Feasibility:

- **Market Research:** Evaluation of the demand for online food ordering in our target area. Analyzation of consumer behavior and preferences.
- **Competitive Analysis:** Assessment of existing online food platforms, their services, market share, and user satisfaction.

3.5.2 Technical Feasibility:

- **Technology Requirements:** Identification of the necessary software, hardware, and internet infrastructure for the platform.
- **Resource Availability:** Ensuring access to technical expertise for development, maintenance, and potential upgrades.

3.5.3 Financial Feasibility:

- **Cost Estimation:** Calculation of development, marketing, operational, and maintenance expenses.
- **Revenue Projection:** Forecast potential income based on market analysis, pricing strategies, and projected user base.
- **ROI Analysis:** Assess the return on investment and the timeline for profitability.

3.5.4 Operational Feasibility:

- **Resource Allocation:** Determine if current resources align with the project's needs.
- **Impact on Operations:** Analyze how the platform will integrate with restaurant operations and delivery services.
- **Risk Analysis:** Identify potential risks such as technical issues, market changes, or user adoption challenges.

3.5.5 Legal and Regulatory Feasibility:

- **Compliance:** Ensure compliance with food safety regulations, data protection laws, and online transaction regulations.
- **Intellectual Property:** Assess any potential copyright, trademark, or patent issues related to the platform.

Chapter 4

System Analysis and Design

4.1 Introduction:

System Analysis and Design is a pivotal phase in the journey of translating conceptual ideas into efficient information systems, especially in an era driven by technological innovation. This chapter acts as a guide through the systematic study of existing processes, identification of user requirements, and formulation of design solutions to harmonize technology with organizational objectives. It marks the intersection where organizational needs meet technological solutions, aiming to develop systems that not only meet current requirements but also exhibit scalability and resilience to future changes. The process encompasses methodologies, tools, and frameworks that ensure efficiency, accuracy, and user satisfaction. This chapter highlights the significance of a well-crafted system analysis and design process across diverse sectors, fostering innovation, responsiveness, and a competitive edge. The ability to align technological solutions with organizational goals streamlines processes and enhances adaptability in an ever-evolving digital landscape. In the following pages, we explore the challenges and opportunities in crafting information systems that serve as catalysts for organizational success.

4.2 System Architecture:

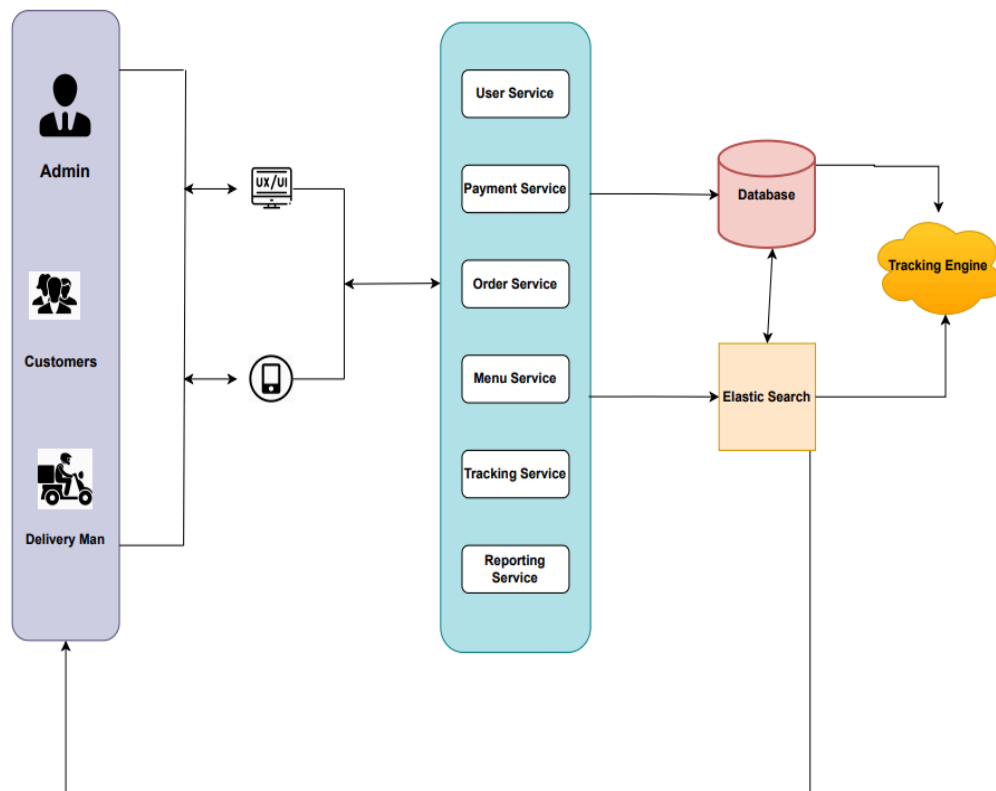


Figure 4.1: System Architecture

The system architecture Figure 4.1 illustrates the various components and layers of our system.

4.3 Use Case Diagram:

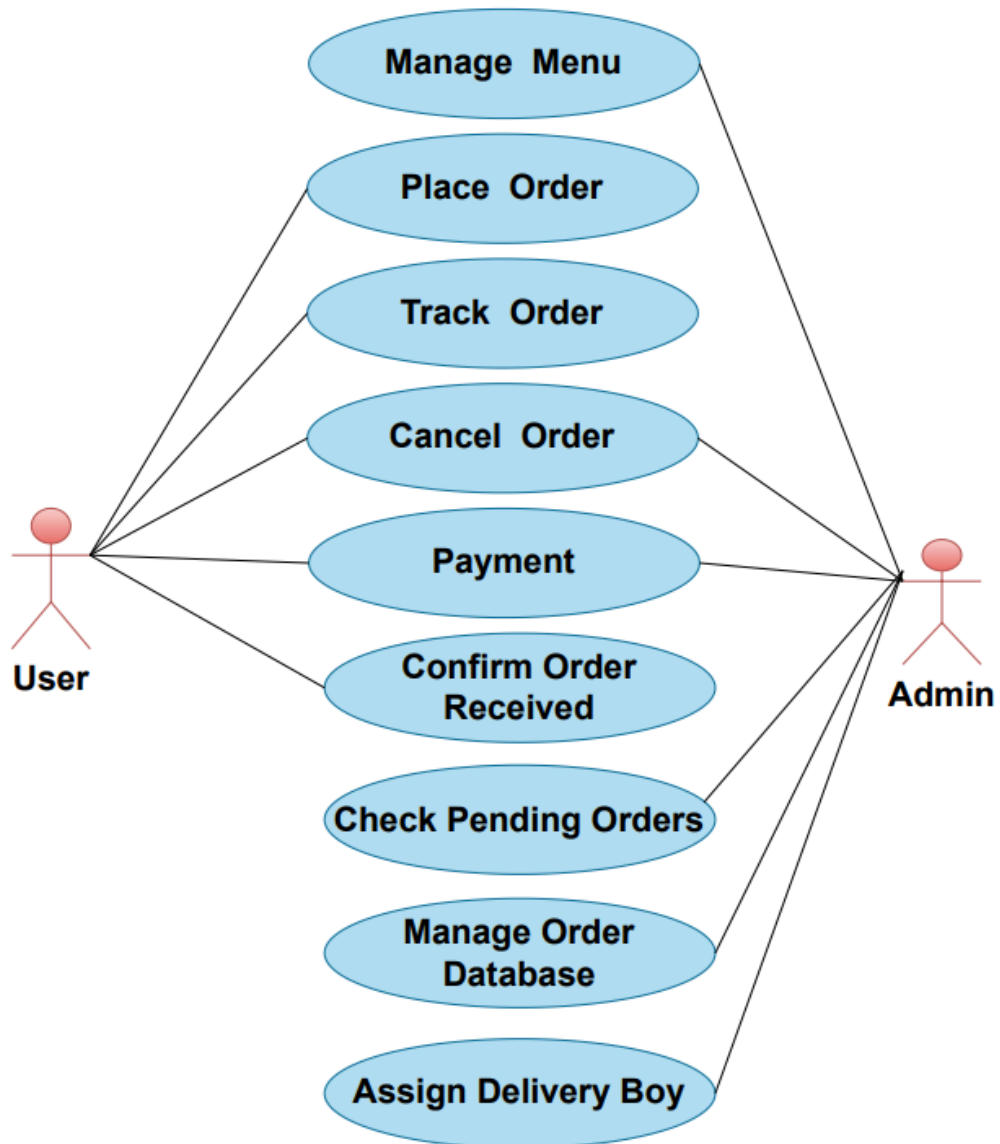


Figure 4.2: Use Case Diagram

Figure 4.2 Use Case Diagram is a graphic depiction of the interactions among the elements of our System. There are two actors and some use cases.

4.4 Features Flowchart:

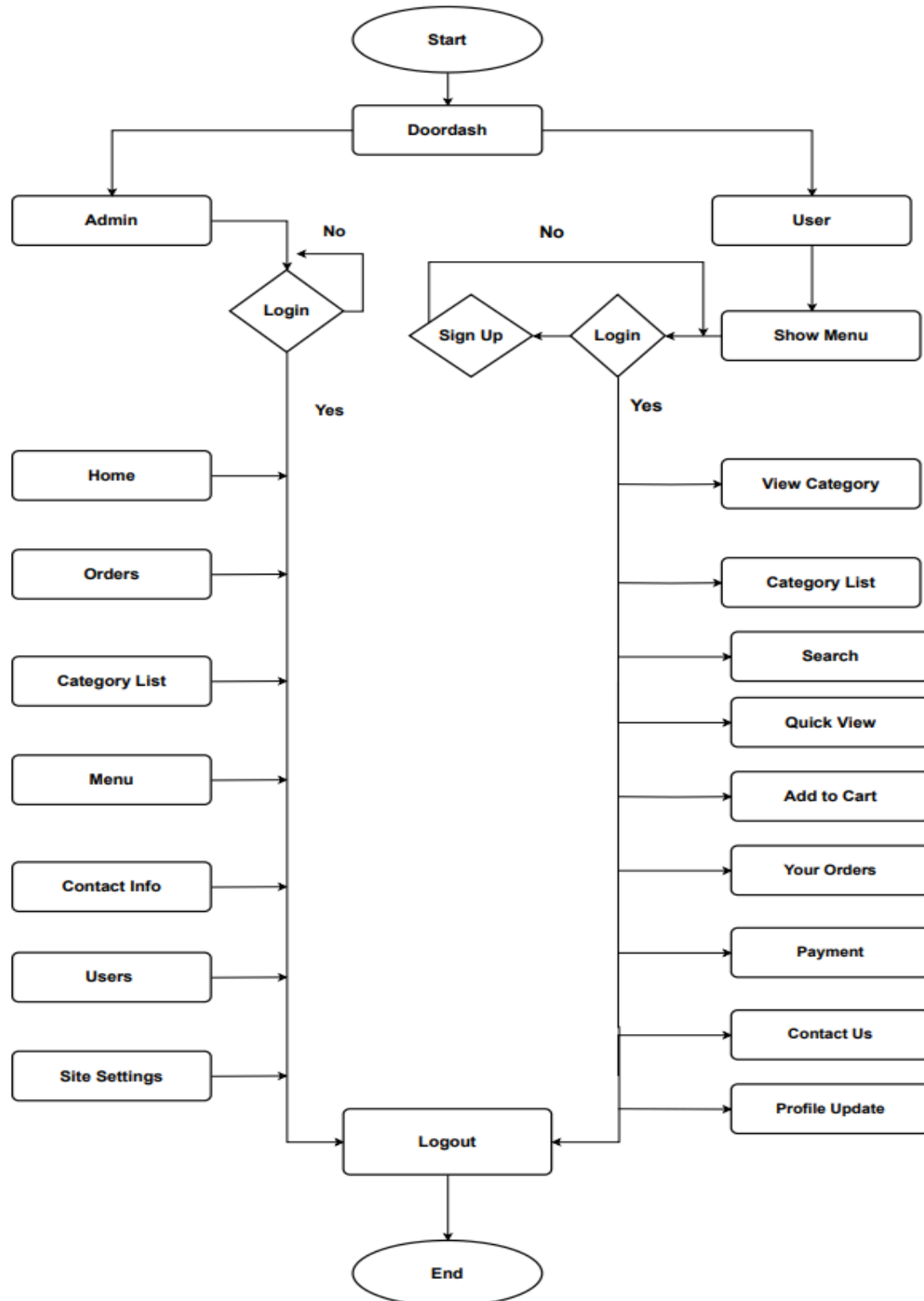


Figure 4.3: Feature Flowchart

Beginning with the login phase for the administrators of the Figure 4.3 feature flowchart diagram, the administrator gains access to the system by entering their credentials. Upon successful login, users will be automatically taken to the Home page, which serves as a central hub for easy navigation, including features such as Orders, Category List, Menu, Contact, Users, and Site Settings. It is specifically tailored for administrators. The Orders section provides a convenient way to access and oversee orders, including their current status and content. Navigate to the "Category List" and then proceed to the "Menu" area. Administrators can search for the meals that are currently available. Meanwhile, the "Contact Information" part is responsible for storing and managing contact details to facilitate quick communication. The user area facilitates administrative tasks such as user administration, access control, and authorization. The Site Group provides administrators with the capability to configure and update sites within the system, enabling them to make changes and updates. This feature streamlines the administrator's user experience by granting access to settings, as well as offering the capability to monitor and optimize.

The voyage commences with the "Sign up" phase in the user interface of the Figure 4.3 feature flowchart when new users establish their accounts by furnishing the requisite information. Next, the user proceeds to the "log in" stage, where they utilize their credentials to gain access to the system. Upon logging in, customers can navigate to the "View Menu" section, which allows them to peruse the comprehensive selection of food items that are currently available. This results in the "View Categories" area, where users can explore and locate particular food items. The Menu, on the other hand, presents a concise overview of each accessible food category, facilitating effortless navigation. The "search" option enables users to locate dishes or categories swiftly. The Quick View feature enables users to access vital food information without the need to exit the premises. Once customers have chosen the desired goods, they can preserve their selection for future purchases by utilizing the "Add to Cart" feature. Upon accessing your orders, you will be able to view the whole record and current status of both previous and ongoing orders. When transitioning to Pay, consumers furnish their payment data to finalize their orders securely. To obtain clarification or aid, individuals may utilize the "Contact Us" feature to establish communication. The Profile Modifications area enables users to modify and oversee their profile to incorporate any modifications or enhancements inside the system.

4.5 DFD:

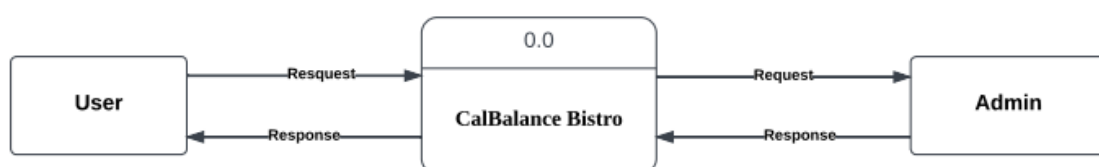


Figure 4.4: DFD Level 0

CalBalance Bistro has the following input:

- Food order is input as the user's order for food.

Food Ordering System has the following output:

- Receipt of the order.
- For further processing of the order, the food order is passed to the admin.

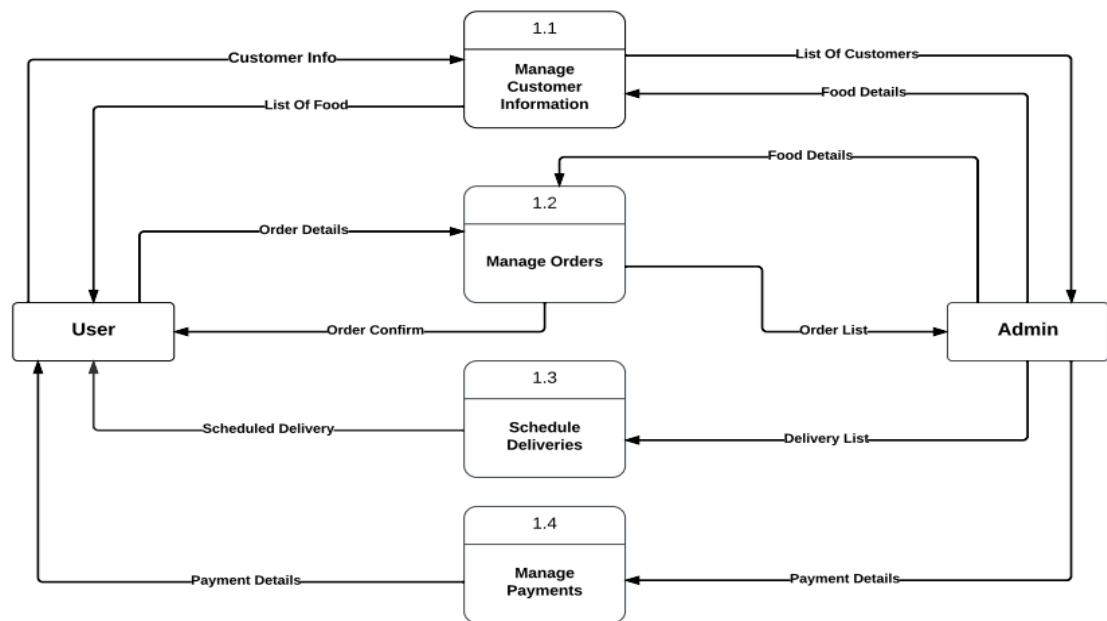


Figure 4.5: DFD level 1

A concise explanation of the Level 1 DFD is:

User:

- Users register or log in.
- Users select items to order.
- Users update personal details.
- Users track order progress.
- Handles payment processing.

Admin:

- Admins update menu items.
- Admins handle incoming orders.
- Admins maintain user accounts.
- Admins create analytical reports.
- Manages order deliveries.

4.6 ERD:

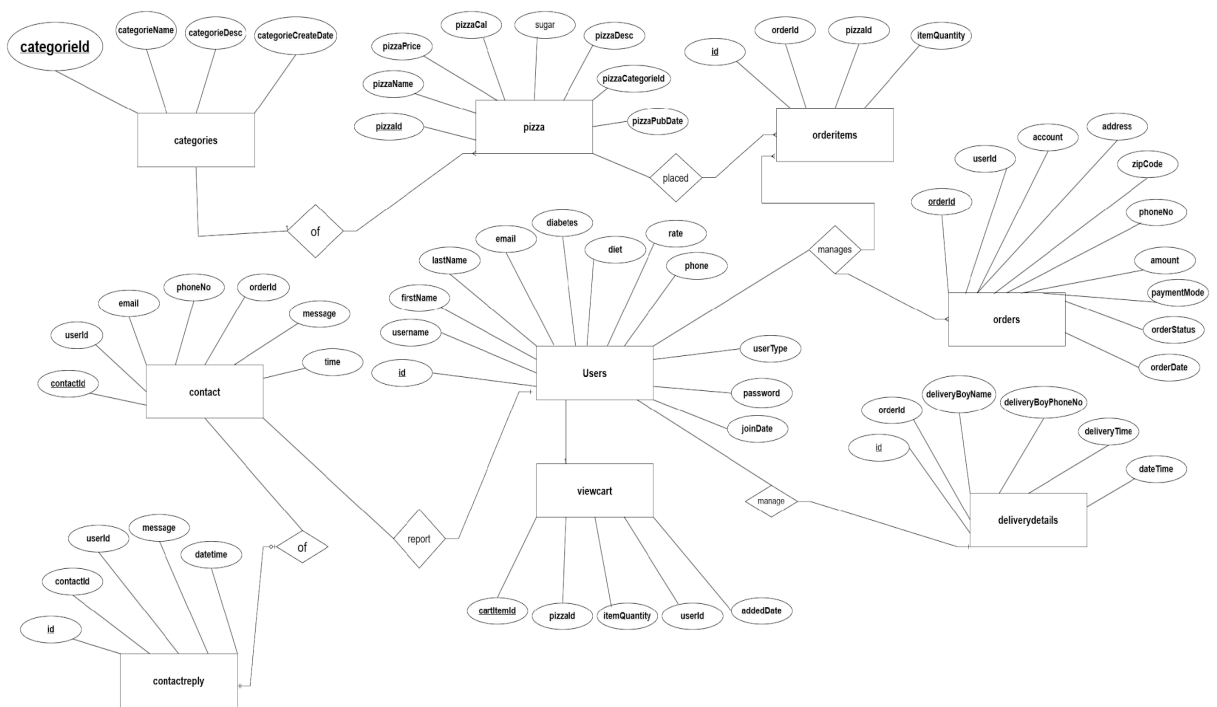


Figure 4.6: ER Diagram

Figure 4.6 ER diagrams are used to represent the E-R model in our database, which makes it easy to convert into relations (tables).

4.7 Schema Diagram:

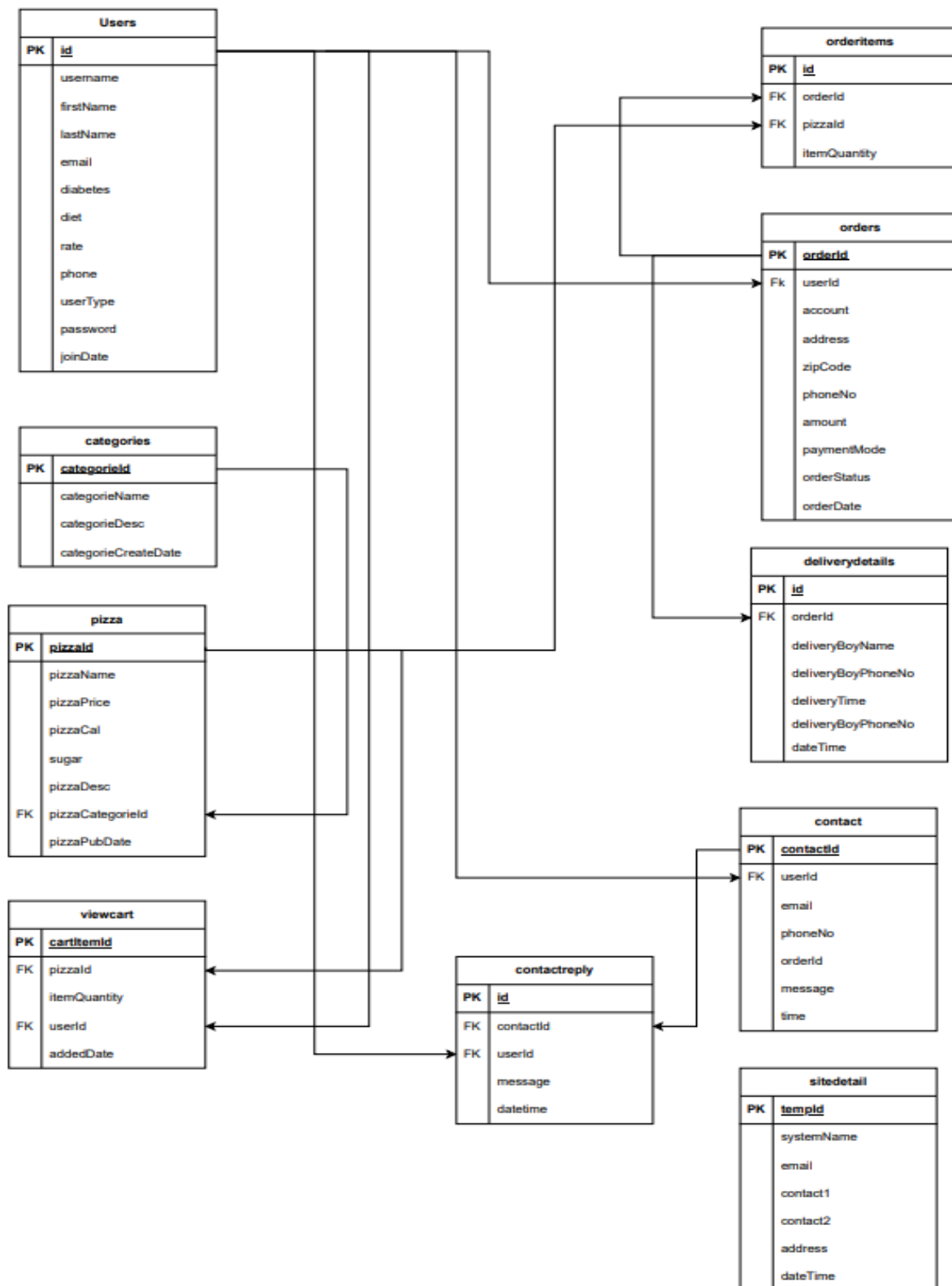


Figure 4.7: Schema Diagram

Figure 4.7 schema diagram tells us about the structural view of our database. It gives us an overall description of the database.

Chapter 5

Implementation and Testing

5.1 Introduction:

The Implementation and Testing chapter is vital in the shift from theoretical system design to practical execution. The process entails transforming intricately designed blueprints into operational components through the seamless integration of hardware, software, and other aspects. This phase encompasses the conversion of code into programs that can be executed, the configuration of databases, and the integration of system components in order to realize the envisioned system successfully. Concurrently, thorough testing confirms that the system's functionality, performance, and security are in line with the design, guaranteeing its dependability. The chapter explores different testing approaches, ranging from unit testing to acceptance testing, in order to establish a resilient and reliable information system. It functions as a crucial intermediary between the process of forming ideas and the process of bringing them to life, tackling practical obstacles encountered in the transition from planning to implementation.

5.2 Frontend:

- **UI/UX Design:**

We started by designing wireframes and mockups to plan our project's layout, navigation, and visual elements. We considered user experience principles to make the ordering process intuitive and enjoyable.

- **HTML/CSS:**

HTML provides the structure of our web pages, while CSS handles the styling and layout. We utilized responsive design techniques to ensure our application looks and works well across different devices and screen sizes.

- **JavaScript:**

To add interactivity to our front end, we used JavaScript. Which allows dynamic features such as updating order summaries, handling form submissions, and displaying alerts.

- **Frameworks and Libraries:**

We chose "Bootstrap" from popular choices, which include Bootstrap, CSS, Semantic UI, and Tailwind CSS for styling and layout.

- **Accessibility:**

We used semantic HTML elements, provided alternative text for images, and ensured keyboard navigation was smooth.

5.3 Backend:

- **Setting up the Environment:**

We installed PHP and MySQL on our server or development environment. We used XAMPP for local development.

- **Database Design:**

Designed MySQL database schema to store essential data such as user accounts, menus, orders, and payments. Created tables for users, menu items, orders, and transactions with appropriate relationships between them.

- **Menu Management:**

We developed functionality for the admin panel to manage the menus. Allowed them to add, update, or delete menu items, along with details like name, description, price, and category. We also implemented CRUD operations for menu items, utilizing PHP scripts to interact with the MySQL database.

- **Order Processing:**

The workflow is designed for placing and processing orders. Customers should be able to add items to their cart, specify quantities, and provide special instructions.

- **Error Handling and Logging:**

We implemented error-handling mechanisms to handle exceptions and unexpected behaviors gracefully. Log errors and system events to facilitate troubleshooting and debugging.

5.4 Database Design:

Database design involves the arrangement and administration of data within the structure of a database model. Next-generation data is crucial for generating and characterizing the interactions across different data sets that need to be kept. Armed with this comprehension, developers can undertake the responsibility of incorporating data with storage models. The significance of database design lies in the categorization of data and the examination of interconnections among diverse data elements.

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
<input type="checkbox"/> 1	id	int(21)			No	None		AUTO_INCREMENT	Change Drop More
<input type="checkbox"/> 2	username	varchar(21)	utf8mb4_general_ci		No	None			Change Drop More
<input type="checkbox"/> 3	firstName	varchar(21)	utf8mb4_general_ci		No	None			Change Drop More
<input type="checkbox"/> 4	lastName	varchar(21)	utf8mb4_general_ci		No	None			Change Drop More
<input type="checkbox"/> 5	email	varchar(35)	utf8mb4_general_ci		No	None			Change Drop More
<input type="checkbox"/> 6	diabetes	varchar(20)	utf8mb4_general_ci		No	None			Change Drop More
<input type="checkbox"/> 7	diet	varchar(20)	utf8mb4_general_ci		No	None			Change Drop More
<input type="checkbox"/> 8	rate	int(20)			No	None			Change Drop More
<input type="checkbox"/> 9	phone	bigint(20)			No	None			Change Drop More
<input type="checkbox"/> 10	userType	enum('0', '1')	utf8mb4_general_ci		No	0	0=user 1=admin		Change Drop More
<input type="checkbox"/> 11	password	varchar(255)	utf8mb4_general_ci		No	None			Change Drop More
<input type="checkbox"/> 12	joinDate	datetime			No	current_timestamp()			Change Drop More

Fig 5.1: User table

Among many tables we used in our project, Fig 5.1 is shown here as an example.

5.5 Testing analysis:

After completing this project, we have successfully created an extensive web-based meal ordering system that is at the forefront of the constantly changing world of online food ordering. This approach not only improves the productivity and efficacy of the food ordering industry but also accommodates the modern tastes of users in our technology-driven society. The robust and efficient verification method guarantees the thorough upkeep of records, fostering trust in the system's dependability. With the growing demand for seamless and effective interactions with data and information, our food ordering system, "CalBalance Bistro," presents itself as the perfect platform. The intuitive design enables consumers to easily find their favorite menu items and place orders with minimal effort, ensuring a smooth and convenient online ordering experience. The expeditious order processing and delivery additionally enhance the overall efficiency of the system. In addition, our idea goes beyond the

scope of food ordering by incorporating novel functionalities that are in line with the fourth industrial revolution. Through our emphasis on health-conscious options, we have implemented a sophisticated method for selecting food that explicitly benefits those with diabetes and others who are mindful of their diet. The use of personalized health management, which enables users to establish daily calorie consumption thresholds, represents a notable advancement in promoting better living. The proactive alerts regarding surpassing calorie limits and additional sugars provide users with crucial data, allowing them to make well-informed decisions that match with their health objectives. This progression demonstrates our dedication to improving both the convenience of food ordering and the well-being of users, establishing a new benchmark for inclusive and mindful culinary experiences.

Chapter 6

User Manual

6.1 Introduction:

The User Manual chapter works as an extensive guide, providing users with a careful step-by-step explanation of the operation of our product. This chapter provides a thorough examination of the system's interface through the inclusion of screenshots for each page. This visual tour seeks to offer consumers a clear and instinctive understanding of the interface. Each screenshot is accompanied by explicit and consecutive instructions, allowing visitors to browse through the project with efficiency. This guidebook is designed to provide a seamless and user-friendly experience, regardless of your level of expertise. The effort aims to enhance user confidence and proficiency by offering comprehensive explanations and visual illustrations for each page. Users are advised to use this chapter as a useful tool to improve their interaction with the system, ensuring a smooth and enjoyable user experience.

6.2 Homepage:

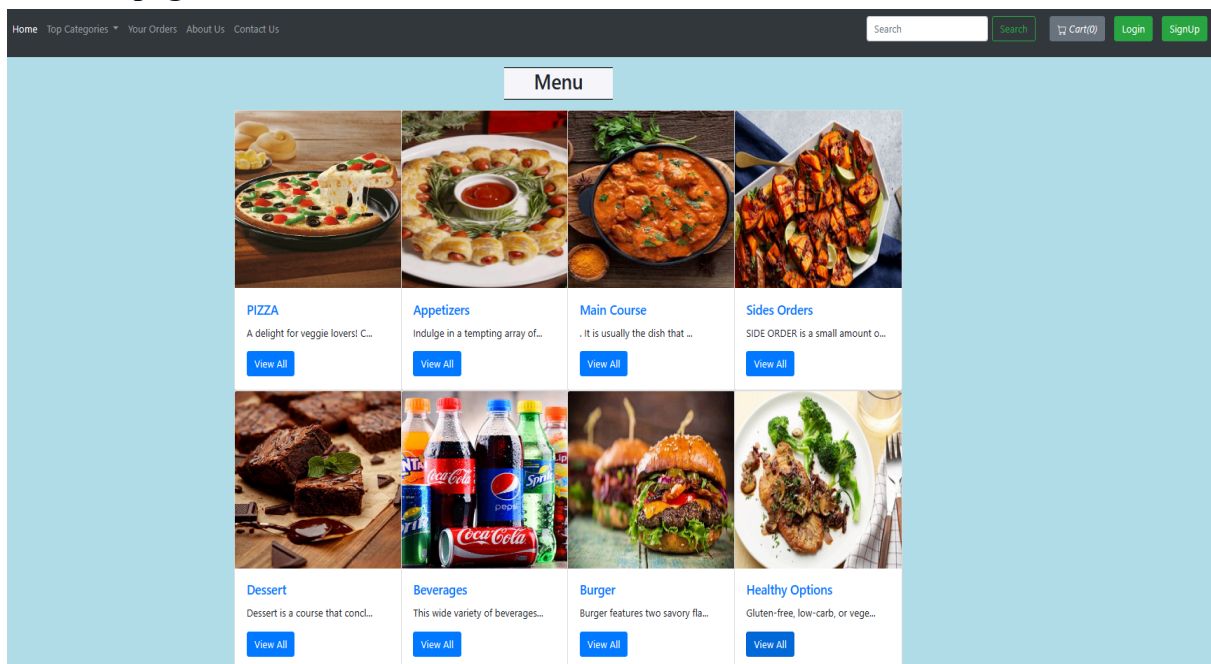
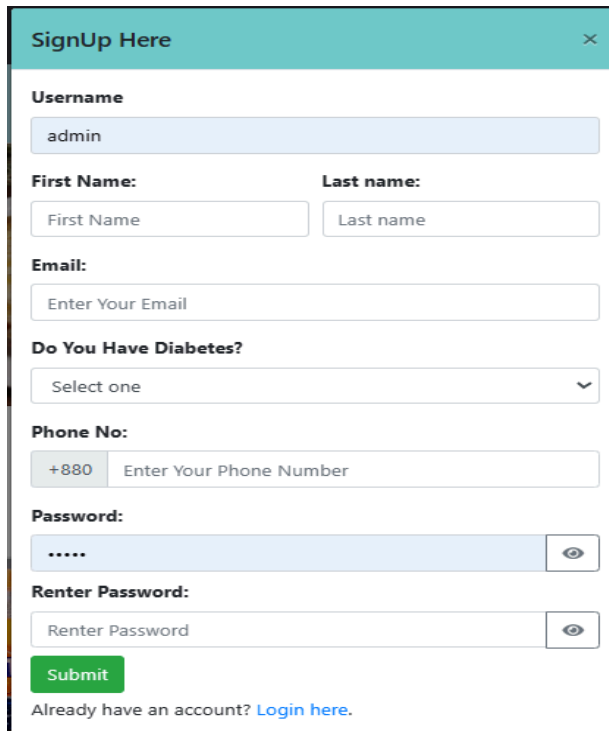


Fig 6.1: Homepage

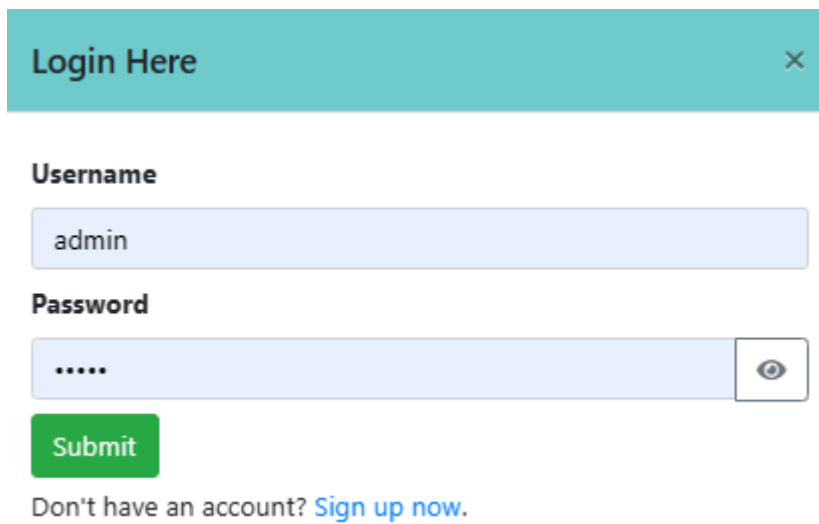
6.3 SignUp:



The screenshot shows a 'SignUp Here' form with a teal header bar containing the title and a close button. The form fields include: 'Username' with the value 'admin'; 'First Name' and 'Last name' as separate input fields; 'Email' with the placeholder 'Enter Your Email'; 'Do You Have Diabetes?' as a dropdown menu currently showing 'Select one'; 'Phone No.' with a '+880' prefix and a placeholder 'Enter Your Phone Number'; 'Password' and 'Renter Password' (likely a typo for 'Repeat Password') as password fields with masked characters and toggle icons. A green 'Submit' button is at the bottom, followed by the text 'Already have an account? [Login here.](#)'

Fig 6.2: Signup page


6.4 Login:



The screenshot shows a 'Login Here' form with a teal header bar containing the title and a close button. The form fields include: 'Username' with the value 'admin'; 'Password' as a password field with masked characters and a toggle icon. A green 'Submit' button is at the bottom, followed by the text 'Don't have an account? [Sign up now.](#)'

Fig 6.3: Login page

6.5 Quick View



Boneless wings

TK. 220/-
Cal. 366

Boneless wings are a popular dish that can be enjoyed as an appetizer or a main course. They are made by removing the bones from chicken wings and then coating them in a seasoned batter before frying or baking them.

[Add to Cart](#)

View

- All Pizza
- All Category

Fig 6.4: Quick View

6.6 My Cart

My Cart

No.	Item Name	Item Price	Quantity	Total Price	Total Calories	Remove All
1	MozzarellaSticks	350	<input type="text" value="7"/>	2450	1848	Remove
2	chicken wings	189	<input type="text" value="3"/>	567	1290	Remove
3	Double Cheese Margherita	199	<input type="text" value="2"/>	398	200	Remove

ORDER SUMMARY


Total Price TK. 3415
Shipping TK. 0

The total amount of (including Tax & Charge) TK. 3415

The total amount of Calories Cal. 3338

PAYMENT METHOD

☐ Cash On Delivery
☐ Online Payment



[go to checkout](#)


Add a discount code (optional) 

Fig 6.5: My Cart

6.7 Payment Details:

Enter Your Details:

×

Address:

mirpur

Address Line 2:

mirpur-2, Dhaka

Phone No:

+880

xxxxxxxxxx

Zip Code:

admin

Password:

.....

👁

Enter Details for Payment

Total Amount:

3415

Choose Payment Option:

bKash

▼

Account Number:

xxxxxxxxxx

Enter Pin:

Enter Pin

👁

Cancel

Order

Fig 6.6: Payment Details

6.8 Search:

Search Result for "water" :

Items:




		
Water... TK. 50/- Cal. 1 This is water...	Strawberry Crunch Po... TK. 145/- Cal. 376 The cake itself is a white ca...	Mushroom burger... TK. 250/- Cal. 434 Combine the ground flax seeds...
<div>Add to CartQuick View</div>	<div>Add to CartQuick View</div>	<div>Add to CartQuick View</div>

Fig 6.7: Search

6.9 Contact Us:

Contact Us

Email:

jovan@gmail.com

Phone No:

+880 1618203325

Order Id:

0

Password:

Enter Password

If your problem is not related to the order(order id = 0).

How May We Help You ?

SUBMIT NOW

HISTORY

ADDRESS

Road-30,Rupnagor Avasikh,Mirpur-2

CALL US

1877501557

1623613548

Fig 6.8: Contact Us

6.10 User Profile:

Remove Image: remove

Change Image: choose Update

@sanjida

atia sanjida (User)

jovan@gmail.com

Logout

Profile (User)

Username:

sanjida

First Name:

atia

Last Name:

sanjida

Email:

jovan@gmail.com

Do You Have Diabetes?

select one

Are you on diet?

select one

How much is your regular calorie intake:

Phone No:

+880 1618203325

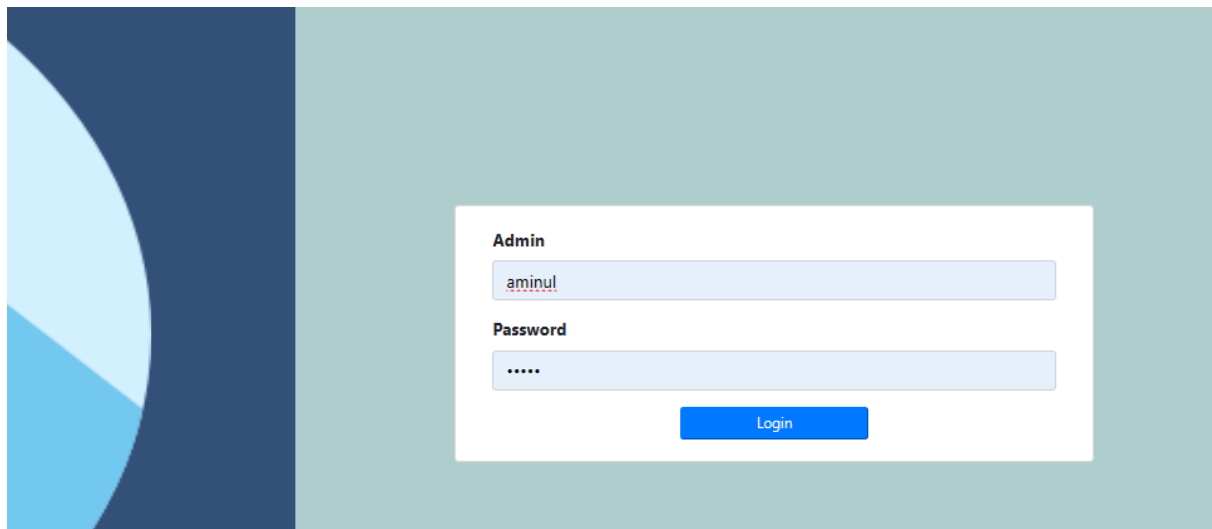
Password:

Enter Password

Update

Fig 6.9: User Profile

6.11 Admin login:



The image shows an admin login interface. On the left, there is a decorative vertical bar with a dark blue background and a light blue circular graphic. The main area has a light teal background. A white login form is centered, containing two input fields: 'Admin' with the text 'aminul' and 'Password' with masked characters '.....'. A blue 'Login' button is positioned below the password field.

Fig 6.10: Admin login

6.12 Admin Homepage:

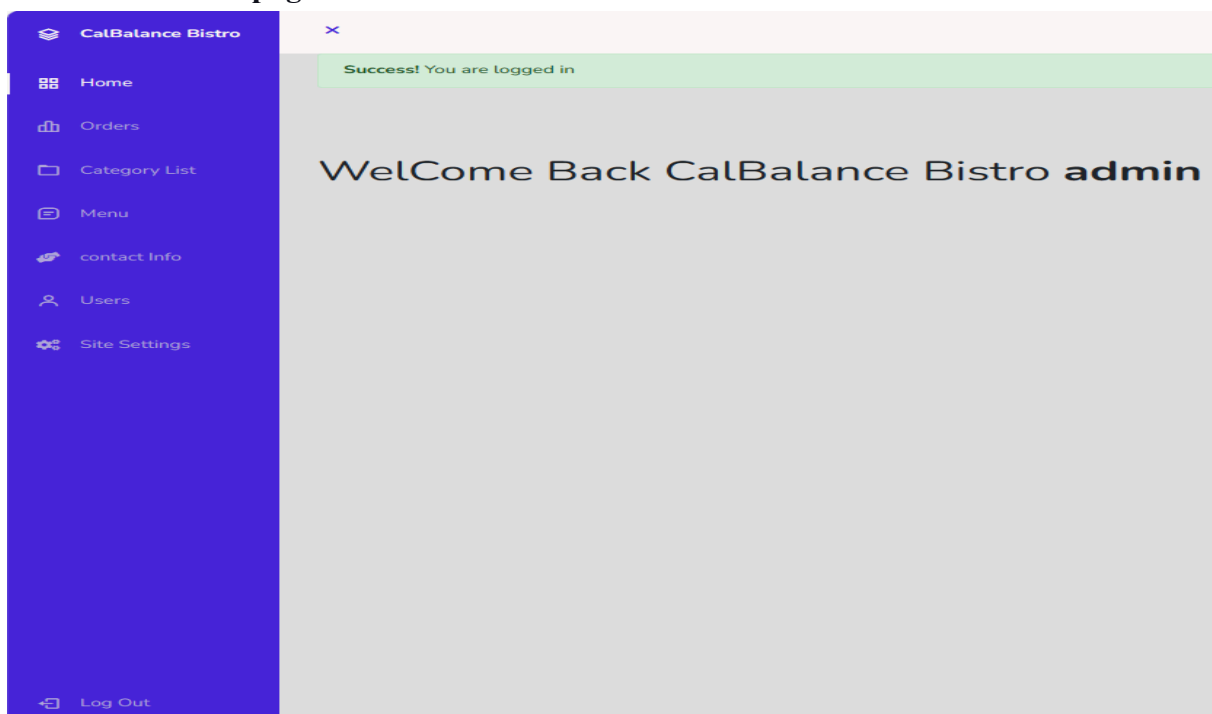


Fig 6.11: Admin homepage

6.13 Orders:



















Order Details								
<div> Print</div> <div> Refresh List</div>								
Order Id	User Id	Address	Phone No	Amount	Payment Mode	Order Date	Status	Items
7	4	dhaka, mirpur1...	1759455612	597	Cash on Delivery	2023-12-21 12:52:46		
8	4	dhaka, mirpur1... mirpur, mirpur1	1877501557	99	Cash on Delivery	2023-12-21 13:30:41		
9	4	mirpur, mirpur1...	1877501557	198	Cash on Delivery	2023-12-21 14:36:47		
10	4	dhaka, mirpur1...	1877501557	297	Cash on Delivery	2023-12-21 15:17:35		
11	4	dhaka, mirpur1...	1877501557	99	Cash on Delivery	2023-12-22 21:20:43		
12	4	dhaka, mirpur1...	1877501557	99	Cash on Delivery	2023-12-22 22:09:44		
13	4	dhaka, mirpur1...	1877501557	99	Cash on Delivery	2023-12-22 22:15:49		
14	4	Road-30,Rupnagar Ava...	1759455612	0	Cash on Delivery	2023-12-22 22:28:43		

Fig 6.12: Orders

6.14 Category List:

Create New Category			
Category Name: <input type="text"/>			
Category Desc: <input type="text"/>			
Image <div><div>Choose File</div>No file chosen <small>Please .jpg file upload.</small></div>			
<div>Create</div>			




Id	Img	Category Detail	Action
1		Name : PIZZA Description : A delight for veggie lovers! Choose from our wide range of delicious vegetarian pizzas, it's softer and tastier	<div><div>Edit</div><div>Delete</div></div>
26		Name : Appetizers Description : Indulge in a tempting array of handcrafted appetizers, each bursting with bold flavors and artful presentation, to elevate your dining experience."	<div><div>Edit</div><div>Delete</div></div>
27		Name : Main Course Description : . It is usually the dish that contains the most protein, such as meat, fish, eggs, or cheese	<div><div>Edit</div><div>Delete</div></div>

Fig 6.13: Category list.

6.15 Menu:

Create New Item

Name:

Description:

Price

Does this food contain sugar?

Calories

Category:

Image

[Choose File](#) | No file chosen

Please .jpg file upload.

[Create](#)

Cat. Id	Img	Item Detail	Action
1		<p>Name : Double Cheese Margherita</p> <p>Description : The ever-popular Margherita - loaded with extra cheese... oodles of it</p> <p>Price : 199</p> <p>Calorie : 100</p> <p>Sugar : yes</p>	Edit Delete
1		<p>Name : Farm House</p> <p>Description : A pizza that goes ballistic on veggies! Check out this mouth watering overload of crunchy, crisp capsicum, succulent mushrooms and fresh tomatoes</p> <p>Price : 149</p> <p>Calorie : 45</p> <p>Sugar : no</p>	Edit Delete
1		<p>Name : Peppy Paneer</p> <p>Description : Chunky paneer with crisp capsicum and spicy red pepper - quite a mouthful!</p> <p>Price : 249</p> <p>Calorie : 40</p> <p>Sugar : yes</p>	Edit Delete
1		<p>Name : Mexican Green Wave</p> <p>Description : A pizza loaded with crunchy onions, crisp capsicum, juicy tomatoes and jalapeno with a liberal sprinkling of exotic Mexican herbs.</p> <p>Price : 149</p> <p>Calorie : 102</p>	Edit Delete

Fig 6.14: Menu

6.16 Contact info:

HISTORY							
Id	Userid	Email	Phone No	Order Id	Message	datetime	Reply
1	4	jovan@gmail.com	1618203325	20	help me	2024-01-22 21:11:28	Reply
2	4	jovan@gmail.com	1618203325	21	help me	2024-01-22 22:14:47	Reply

Fig 6.15: Contact info

6.17 Users:

New user							
Userid	Photo	Username	Name	Email	Phone No.	Type	Action
1		admin	First Name : admin Last Name : admin	admin@gmail.com	1111111111	Admin	Edit Delete
2		aminul	First Name : md Last Name : aminul	aminul@gmail.com	1877501557	user	Edit Delete
3		xor	First Name : xor Last Name : mission	xor@gmail.com	1759455612	user	Edit Delete
4		sanjida	First Name : atia Last Name : sanjida	jovan@gmail.com	1618203325	user	Edit Delete
5		musfiq	First Name : musfiq Last Name : rahman	ms@gmail.cpm	1848610993	user	Edit Delete

Fig 6.16: Users

6.18 Site settings:

CalBalance Bistro

System Name

CalBalance Bistro

Email

jovaniftaaminul1446@gmail.com

Contact-1

1877501557

Contact-2(optional)

1623613548

Address

Road-30,Rupnagor Avasikh,Mirpur-2

Save

Fig 6.17: Site settings

Chapter 7

Conclusion

7.1 Conclusion:

The online meal ordering system "CalBalance Bistro" is a cutting-edge innovation in the food sector, providing a robust and adaptable solution through contemporary food ordering techniques. The system facilitates streamlined and proficient management by equipping managers with comprehensive tools that streamline tasks and enhance overall productivity. This work encompasses a meal ordering procedure that effectively handles the financial resources while also furnishing management with statistical data to assess the company's progress. The system's contemporary features render it the optimal selection for customers. The project's greatest strength lies in its simplicity and its capacity to appeal to a diverse range of users. Even inexperienced users can effortlessly navigate the system. The automation of ordering and billing significantly enhances efficiency and effectiveness. The system executes the processing of items and saves pertinent information in order to provide reports that facilitate managerial decision-making. What sets this system apart from others is its exclusive focus on health information. Upon account creation, customers have the option to input their calorie intake data. They will receive a notification if their order exceeds the prescribed calorie restriction. Certainly, the calorie count can be modified after that if needed. This will prove beneficial for individuals following a weight loss regimen and those managing diabetes. Additionally, it cautions users regarding items that contain additional sugar. These characteristics render this system highly unique. The security concerns pertaining to this project have been resolved. The project plan meticulously outlines the precise front-end and back-end functionalities of the technology employed and provides comprehensive information on its execution. In anticipation of the future, the project establishes the groundwork for upcoming objectives and extent, emphasizing its dedication to ongoing enhancement and growth. Due to its effective and intuitive automated features and emphasis on safety and health, "CalBalance Bistro" has the potential to become a groundbreaking entity in the market.

7.2 Limitations:

- We worked with SQL but not with NoSQL. Keeping the advantages of NoSQL in mind, it can be said to be a limitation of ours.
- Authentication by call, message, or email is not available as of now. As for online transactions, sensitive information, and security breaches could lead to the compromise of personal and financial data. The risk of fraud, hacking, or unauthorized access to the system is a significant concern. It is a security concern, and thus, it's a limitation of our project.

7.3 Future Work:

First of all, overcoming our current limitations will be our main focus. Then, we'll upgrade our system by various means. Some of them are

- Integration of Artificial intelligence and machine learning.
- Voice and chatbot integration.
- Subscription Services and Loyalty Programs.
- Develop systems that can predict user preferences and suggest orders based on

- Historical data, time of day, and other contextual factors.
- Collaboration with other e-payment systems.

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