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Online Food Ordering and Restaurant Management System

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An Undergraduate Internship/Project on

Online Food Ordering and Restaurant Management System

By

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Summer 2022

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September 14, 2022

Dissertation submitted in partial fulfillment for the degree of Bachelor of Science in Computer Science

Department of Computer Science & Engineering

Independent University, Bangladesh

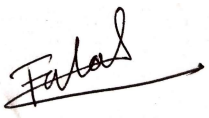
Attestation

I, Md Fahad Hossain, hereby declare that no work in this report has been plagiarized or copied from any other source. Any resources used are listed in the report's reference section. No help was asked for during the completion of the report from a third-party organization except the one that I have worked for in the last 3 months as an intern.

For any information, my internship supervisor, Sheakh Mohammad Rashadul Haider, at my company, Bashundhara Group IT is also known as BG IT, can be contacted on

+8801844-000177.

Sincerely



Signature

14/09/2022
Date

Md Fahad Hossain

Name

Acknowledgment

I would like to express my gratitude to my honorable supervisor Sabrina Alam, Internship Supervisor & Senior Lecturer, Independent University, Bangladesh, who has given me suggestions regarding the research that I conducted and writing this report. He has helped me go through the whole process of making this report.

I am also thankful to BG IT for providing me the opportunity to work in the real world and helping me with important materials and supporting materials, which were vital for my internship. I am also thankful to my friends and family for supporting me not only during this crucial period but also throughout my B.Sc. Degree. I take this opportunity to express my profound gratitude and deep regards to the head of Solution and Proposal Content as well as my External Supervisor, A K M Zahidul Islam, and the head of our application team Sheakh Mohammad Rashadul Haider for his exemplary guidance, monitoring, and constant encouragement throughout the course of this internship. I am obliged to all my Team members, for the valuable information provided by them in their respective fields. I am thankful for their cooperation and help during the period of my internship. Their continual constructive criticism and invaluable suggestions benefited me a lot as my intern. Last but not the least, I would like to thank my parents and other family members for their eternal support given to me.

My sincere gratitude goes to Independent University, Bangladesh for having an internship program for students which really shapes and prepares us to enter the corporate world.

Letter of Transmittal

14th September 2022

Sabrina Alam

Internship Supervisor & Senior Lecturer

Department of Computer Science and Engineering

School of Engineering, Technology and Sciences

Independent University, Bangladesh

Subject: Internship report on 'Online Food Ordering and Restaurant Management System' for BG IT Limited.

Dear Sir,

It is my pleasure to submit to you my internship report on 'Online Food Ordering and Restaurant Management System' for BG IT Limited. The purpose of this report was to fulfill the requirements of the bachelor's degree in Computer Science and Engineering and also to gain an insight into how the organizations are dealing with the ongoing COVID-19 pandemic. I tried to give my best effort to make this report successful. It has been an instructive and knowledgeable experience for me to work with the development team at BG IT Limited. I would be really happy if the report that I have created is able to serve its purpose. I have tried my best to complete the report appropriately as much as possible.

Thank you.

Yours sincerely,

Md Fahad Hossain

ID: 1730416

Evaluation Committee

.....

Signature

.....Sabrina Alam.....

Name

.....SABRINA ALAM.....

Supervisor

.....Mohammed Motiur Rahman.....

Signature

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Internal Examiner

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Abstract

This is an internship report on the project that has been provided by BG IT Limited, as required by the Bachelor of Science (BSc) program in Independent University, Bangladesh.
The objectives of the study are to analyze the different aspects of my internship at BG IT Limited, to distinguish and resolve problems that are associated with the given project of "Online Food Ordering and Restaurant Management System".

We are all aware of the current global situation. Because of Covid 19, virus people are unable to go to restaurants. Since the beginning of the pandemic, the majority of local businesses have been in trouble. The owner of the "Hot Grills" restaurant was unable to operate due to the lockdown. Then he made the decision to take his restaurant business online, and he came to IT Limited to design his restaurant website. The primary goal of this application is to deliver food to the customer's doorstep. This is a web-based application where the users can access the website using the internet. Users can select their preferred foods and place online orders using this web application. This is an extremely useful application in this pandemic situation because it can help a wide range of people while simultaneously saving a significant amount of time and money. This report describes all of the processes involved in designing an up-to-date website, including planning, requirement analysis, development, physical and logical designs, and so on. A well-organized website is a must-have for any company.

Keywords: Customer, Food, Order, Delivery, Payment

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Chapter 1: Introduction

1.1 Overview/Background of the Work

The project is about designing a website for a restaurant named **'Hot Grills'**. The main purpose of this website is to manage the food item and maintain the online order. This includes managing admin panels, managing food categories, managing food items, maintaining online orders, generating report etc. Before this, the restaurant was run physically. With the analog system, they were facing so many problems. Nowadays the world is more digitalized day by day.

Almost every person loves to taste different types of food but at that time people are so busy so they can't go to restaurants physically. Nowadays women also work in different job sectors, so they don't have enough time to cook food for their family. So, a maximum of the people interested to order online food that's why online food delivery system is more popular day by day. People can order their favorite food anytime anywhere using this website. Every system has a good side and also bad sides. There are many facilities and some lacking too. After facing so many problems, they have decided to make a website. BG IT decided to make this process online base. As a web developer intern with a Computer Science background, my objectives and tasks are to construct a platform for Hot Grills Restaurant to develop a web application for the restaurant management system and online food ordering.

1.2 Objectives

The primary objective of any website-based business is to make sure a steady revenue is generated. The website needs to be regularly updated with data, keep the site bug-free, control the traffic to the site and give a great user experience to the users. Ultimately the users are the ones who will grow the site as well as the company. The main focus of this project is simplicity

which is the automation process. This restaurant is managing their information about food items, customer address or contact number, order manually. This project aims to manage all types of information by an automated system.

The objectives of this projects are:

1. Develop a web-based application that can reduce manual work.
2. To reduce the cost of printing paper, pen, etc.
3. Develop a system that can satisfy the user.
4. Compute the customer's bill automatically.
5. Develop a user-friendly application.
6. Develop a system that can manage a huge amount of food orders.
7. Improve the communication between the customer and the server.
8. Manage the customer information.
9. To provide online menu information for customers.

1.3 Scopes

This section consists of three components which are target user, target area, and project deliverables.

1.3.1 Target User

The groups of users that had been identified to use the system are customers and administrators.

- **Customer:** Anyone can order food using this web-based application. Customers can view the restaurant food menu and they can order food online very easily.
- **Administrator:** The person in charge of overseeing the entire system is the administrator. This type of user will also do maintenance and control the application of

this system. The administrator takes responsibility to adding the new menu into the database, new categories, generating invoice bill etc.

1.3.2 Target Area

This system will be placed at the restaurant.

1.3.3 Project Deliverables

- **Customer Online Ordering:** Customer online ordering provides a form that needs to be fulfilling in terms of ordering food online.

- **Menu Module:** The menu module is food that the restaurant prepared for customers. In this module, customers can view the menu and make decisions for orders.

Chapter 2: Literature Review

2.1 Background

The literature review of the report is based on the ideas, theories, and methodologies used to make the application. In this literature review, different aspects of the application such as the market analysis both for local and global markets, similarities, and new functionalities included in this application will be thoroughly discussed.

A major part of this portion of the research is to demonstrate how the application compares to global brands around the world, as well as what additional features have been included.

2.2 Relationship with Undergraduate Studies

Throughout the undergraduate studies, from ‘Hello World’ to solving complex mathematical equations, were the basics of understanding how real-world applications work in general.

Having the capability to do so and link the project to some of the courses offered during the four-year undergraduate program at IUB was truly exceptional.

CSE-307 System Analysis and Design: This course helped in the design of the project's overall structure before starting to deal with codes. All the required analyses that were necessary to be considered such as requirement analysis, flow diagrams, UMLs, Rich picture, Functional and Nonfunctional requirements, methodology, WBS, etc. were taught in this course. This course has helped in the design of the whole project from start to finish.

CSE-213 Object-Oriented Programming: This course helped in working with objects, classes, inheritance, function chaining, etc. This course introduced me to Java which helped me throughout the project.

CSE-211 Algorithms: Algorithms were the building blocks of understanding how a project data can be handled.

CSE-303 Database Management: The back end is responsible for a large portion of the project. This course has provided me with a broad understanding of SQL. From connecting to phpMyAdmin to writing queries, this course provided me with database knowledge that I used throughout the project.

CSE309-Web Application and Internet: This course proved useful while working on the frontend design. From this course, I have learned basic HTML, CSS, Bootstrap, PHP, JavaScript. This course was a huge help throughout the project as I have also learned the use of colors and features.

2.3 Related Works

2.3.1 Global Market

By 2025, it is anticipated that the market for restaurant management software would be worth USD 6.94 billion, based on a recent analysis from Grand View Research, Inc., CAGR of 14.6% is expected throughout the projection period. **[2]**. The market is likely to witness substantial growth over the forecast period. Technology disruption in the restaurant industry and the soaring the requirement for restaurant-specific software, including those for processing payments and bills, managing inventory, and managing tables, and menu management are among the key trends stimulating market growth. The next portion of the report will discuss some of the global restaurants.

- **McDonald's -** Richard and Maurice McDonald opened a restaurant in San Bernardino, California, In 1940 they formed the McDonald's Corporation, an American fast food chain.. Since the late 1990s, McDonald's has made an effort to replace workers with automated kiosks that could handle tasks like collecting orders and processing payments. In order to replace human servers in its US drive-throughs with voice-based technology, McDonald's acquired AI-based start-up Apprentice in September 2019. **[3]**.

- **Domino's Pizza -** In 1960, an American global pizza restaurant franchise called Domino's was established. Shenzhen provided the first mainland China store location. Over 90% of orders in China are made online. Orders can be placed in-store, online, through a mobile app, and through a messaging app. Domino's Pizza started offering customers a promise in 1973 that their pizzas would be delivered within 30 minutes of making an order, or the pizzas would be free. In 1987, this promise was adjusted to $3 off. **[4]**.

2.3.2 Local Market

Restaurant management program and online food delivery are both bringing about significant change and providing convenience for the Bangladeshi food scene. Online food delivery is a blessing for people who prefer to eat fast food in the comfort of their own homes without having to worry about etiquettes or about the jumbo burger coming apart and staining their satin shirts. The desired food can now be delivered to a person's door with just a few scrolls and clicks.

- **Pizza Lab -** It is a Bangladeshi pizza restaurant which is located in Bashundhara residential area. When they started their restaurant, they didn't take online orders. But nowadays they are interested in taking online orders because everybody prefers online orders, and every customer likes to know about the food items from their home.

Chapter 3: Project Management & Financing

To start a project, each organization must establish a timeline within which every element of the project must be calculated, prepared, and executed in keeping with this timeframe. A guideline with diagrams is shown in the next figures mainly through the Work Breakdown Structure, Gantt chart, and Database design.

3.1 Work Breakdown Structure (WBS)

Work breakdown structure (WBS) is a method that breaks a project down into a hierarchy of deliverables, tasks, and subtasks. Work can be made more manageable and approachable by breaking it up into smaller tasks, which is a typical productivity practice. This method is applied in projects through the use of the Work Breakdown Structure (WBS), one of the most significant project management tools.**[5]**. A good WBS is simply one that makes the project more manageable.

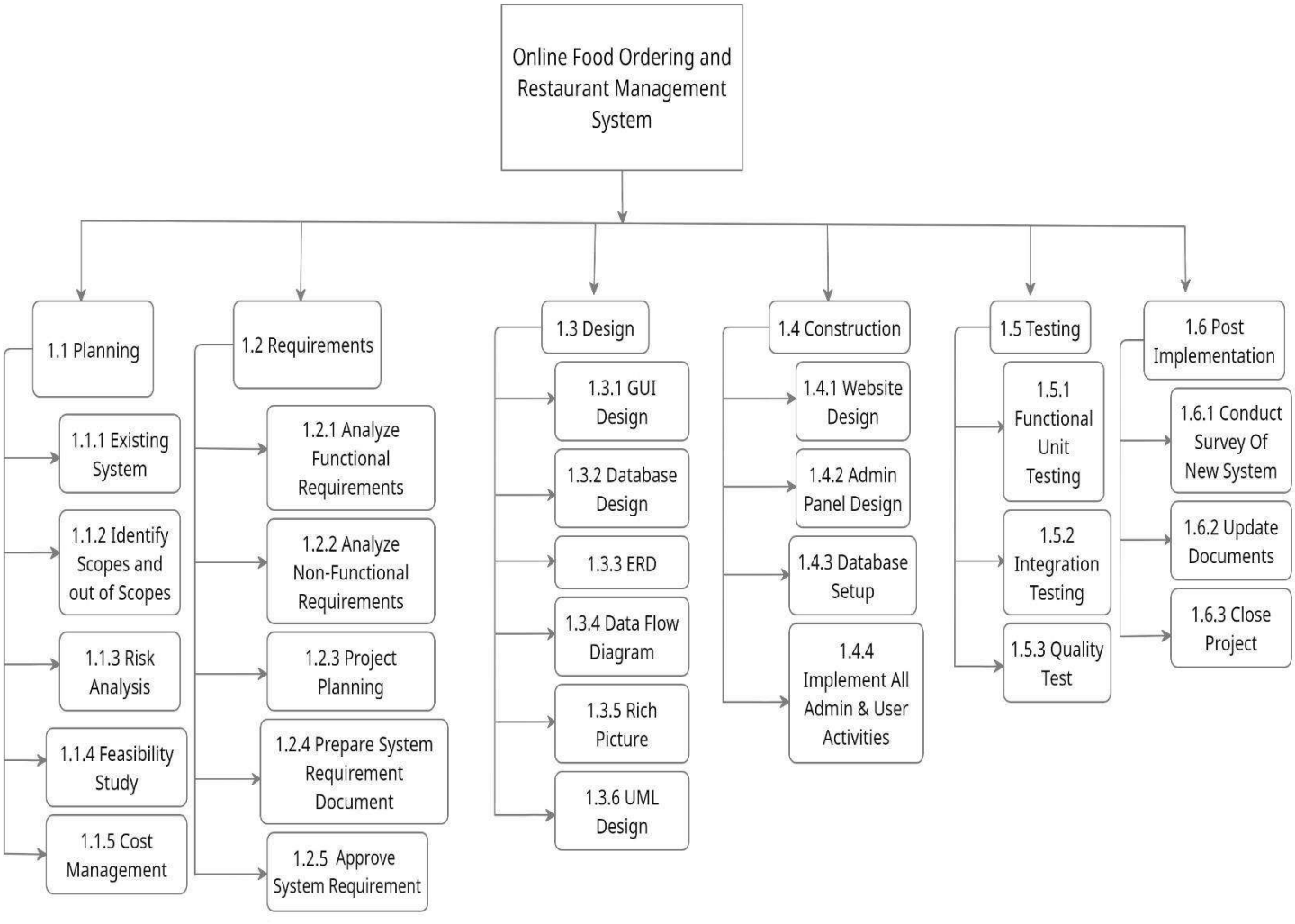


Figure 3. 1: Work Breakdown Structure

3.2 Process/Activity wise Time Distribution

The estimated time required to end a project successfully defines process-wise time distribution. This helps the developers create a mind map as to how efficiently they need to work in order to meet the deadlines. Time distribution is greatly needed to complete any kind of project. The time allocation for the 3 months project is shown below on a chart using the critical path method.

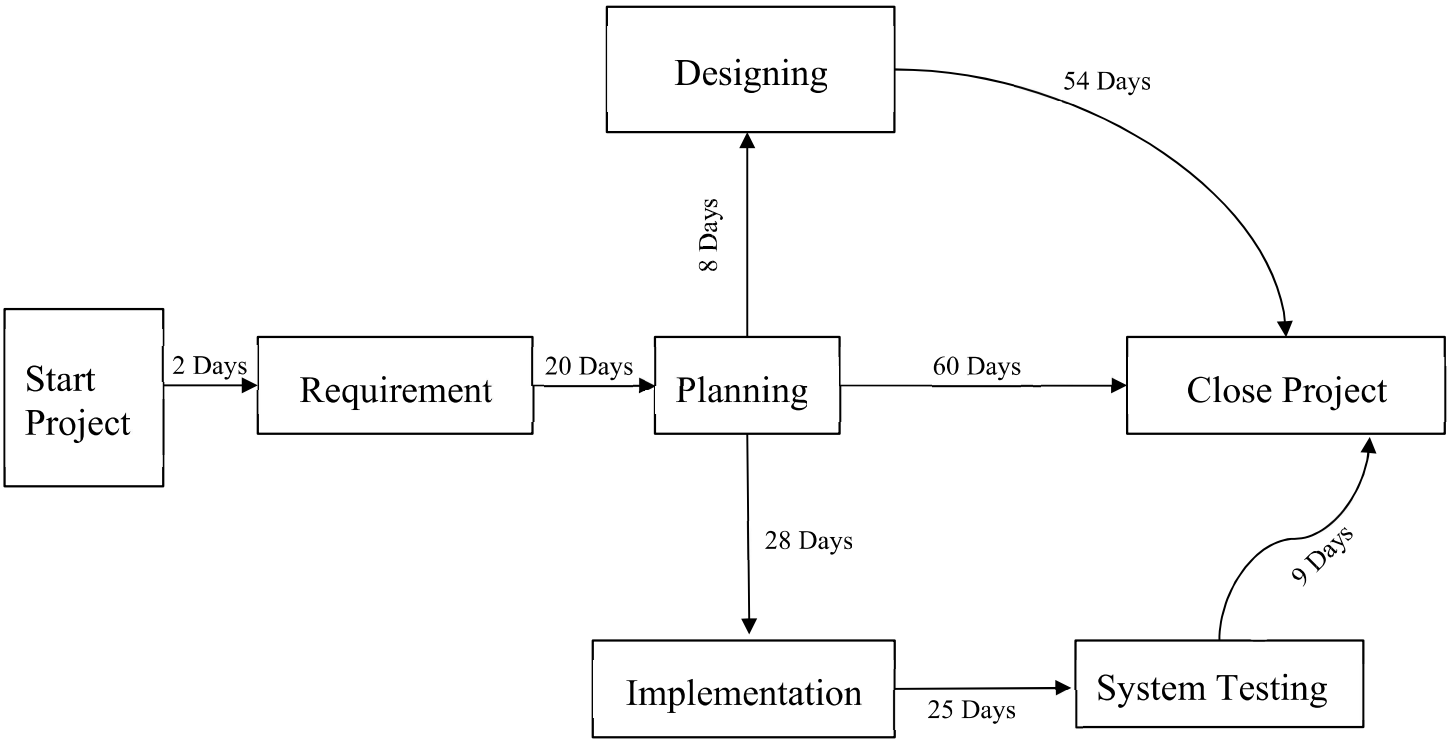
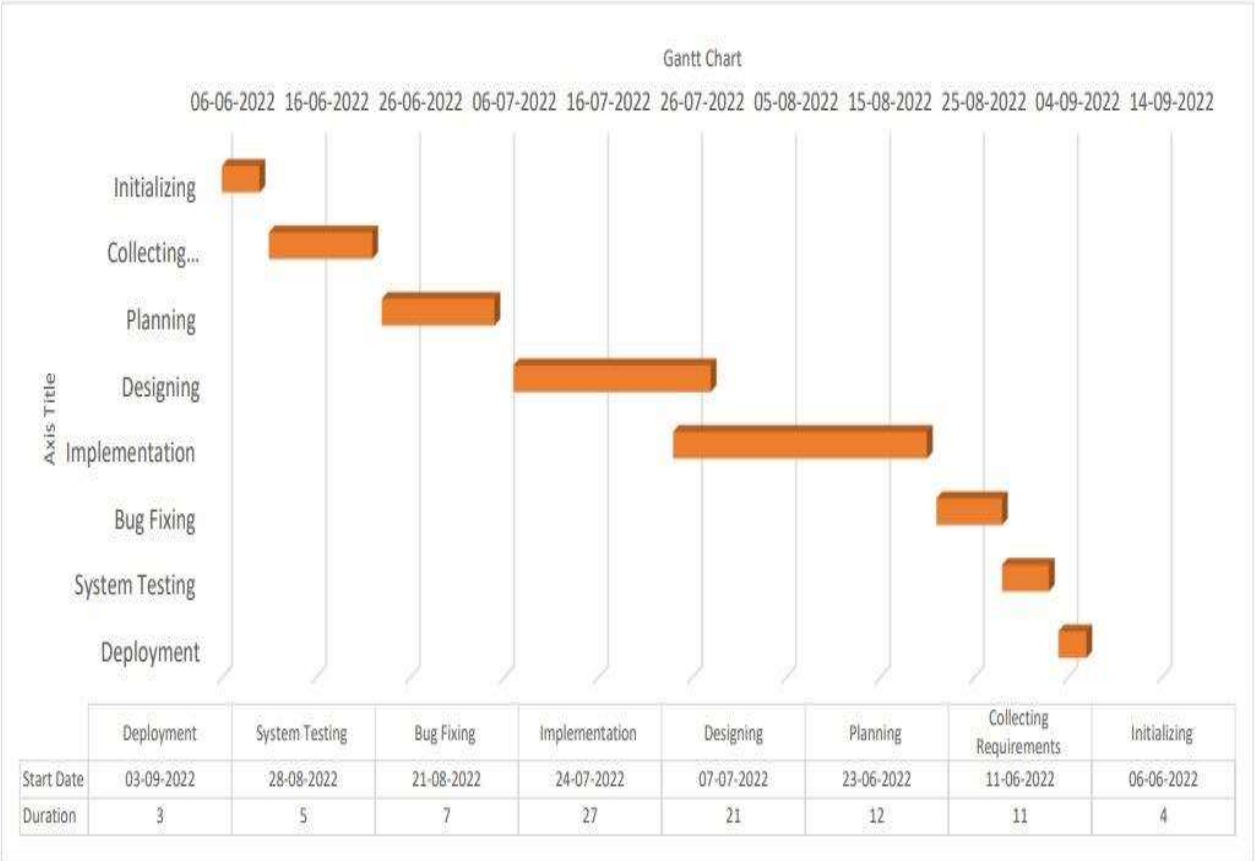


Figure 3. 2: Critical Path

3.3 Gantt Chart

For this project, a Gantt chart was used in the planning phase of the application. The project management tool known as a Gantt chart is being used to project scheduling and planning in general, but they are especially beneficial for simplifying complicated tasks. Project management tasks and schedules are transformed into a chart with horizontal lines that displays start and end dates, dependencies, scheduling, and deadlines, as well as the percentage of the job that has been completed at each stage. When a big team is present, and numerous stakeholders, this is helpful to keep the project on track whenever the scope changes. Since it is presented as a bar chart, it is simple to quickly assess its status. **[6]**.



	Deployment	System Testing	Bug Fixing	Implementation	Designing	Planning	Collecting Requirements	Initializing
Start Date	03-09-2022	28-08-2022	21-08-2022	24-07-2022	07-07-2022	23-06-2022	11-06-2022	06-06-2022
Duration	3	5	7	27	21	12	11	4

Figure 3. 3: Gantt chart

3.4 Process/Activity Wise Resource Allocation:

A project is usually divided into several units and assigned to programmers, designers, and testers. My project manager assisted me in planning, designing, and implementing the project. In addition, we constructed our project using computers, tablets, browsers, and some supporting documents. Following are the details of every step of the project.

1. **Initializing:** This is the first phase of the project, during which the CEO of the company introduced the project's concept.
2. **Requirements Analysis:** During the first few weeks, the CEO and the developers went through all of the conditions for the project's completion. Computer specs, software/tech to be used to develop the application, functionality, and the number of developers needed, for example.

3. **Planning:** The developers and the CEO spent hours discussing how this project should be designed from top to bottom, the steps to be followed, and setting deadlines for them at this stage of the development process.
4. **Designing:** During this process, a few graphic designers were needed to construct the application's web pages, and the management team began working on the project's high level and low-level diagrams.
5. **Implementation:** The web page templates were finished at this stage, and the developers began writing the code for the frontend and backend of the program, while the management team monitored when any of the deadlines were met.

6. **Bug Fixing:** A bug fix is an adjustment made to a program or product to address a programming error. Specific bug fixes that are effectively implemented by developers may be needed for a variety of programming problems that result in errors with system implementation.
7. **System Testing:** As soon as a new element was introduced to the site, testing began. As a result, the developers were doing testing at the same time.
8. **Deployment:** The team found it's behind schedule after the work was truly done. To deploy the program on a live server, a Virtual Private Server and a domain were purchased.

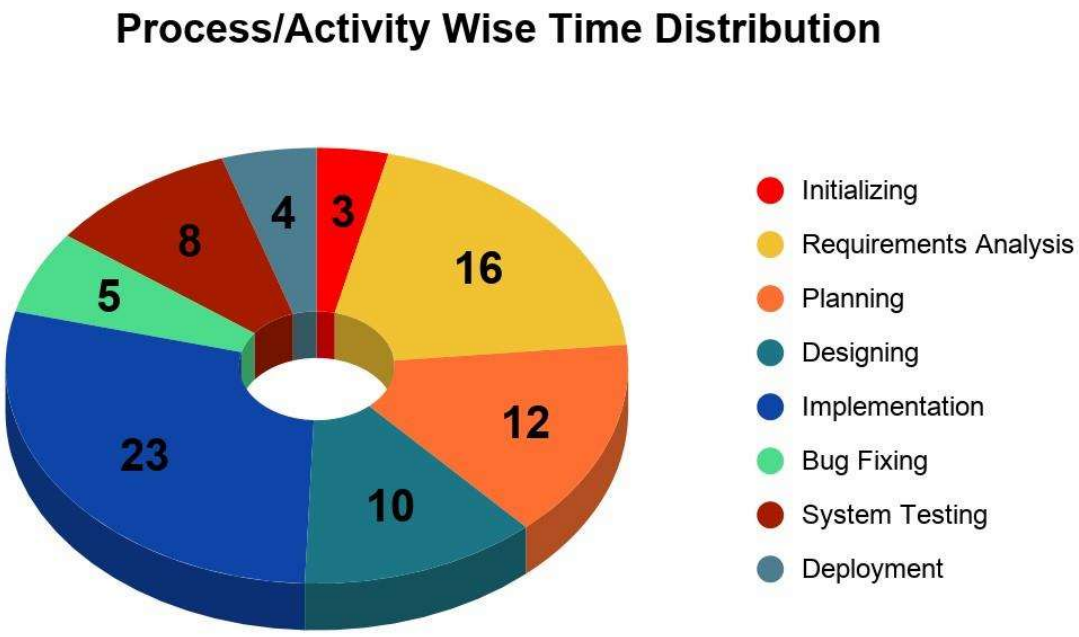


Figure 3. 4: Time Distribution

3.5 Estimated Costing

There are some costs associated with developing a project. Sometimes it is less and sometimes it is huge. Since we are just developers, we make a list of all we'll need to finish this project.

We also provide them a time estimate. Any project's budget is a big concern. This costing portion includes everything specific to the project and required for the project.

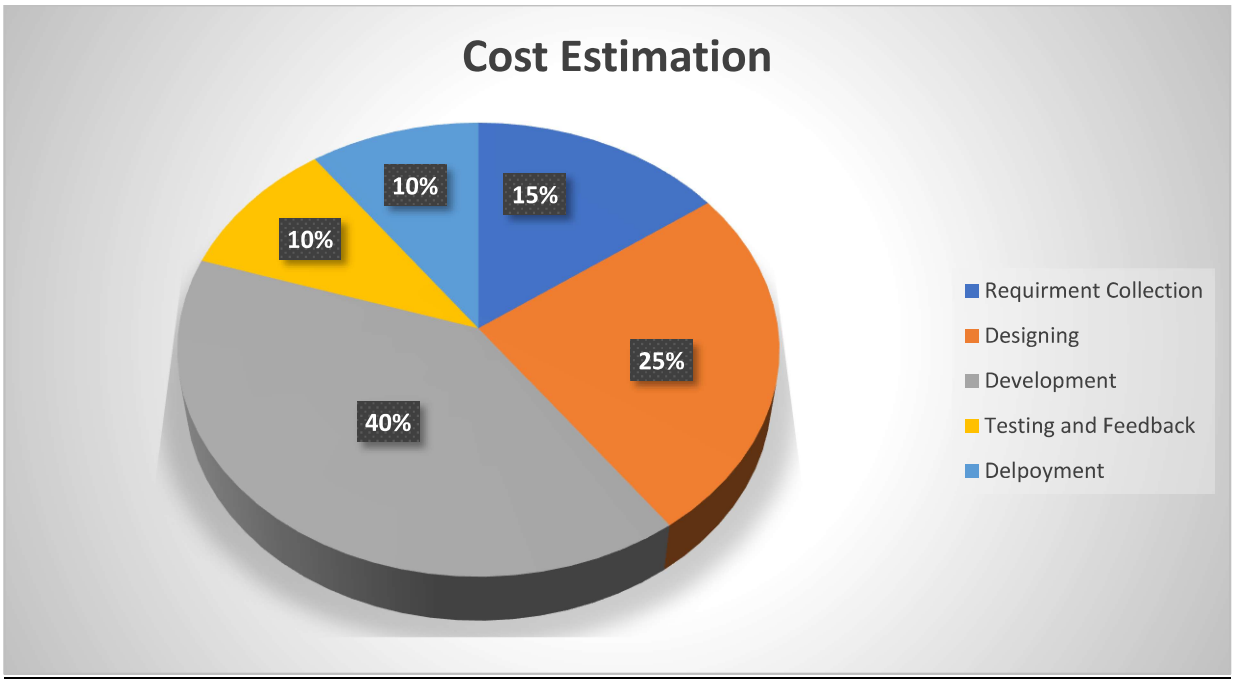


Figure 3. 5: Cost Estimation pie Chart

Chapter 4: Methodology

Well-managed projects are those that are completed on schedule and within budget. To manage a project effectively, the management or software engineers must select the software development technique that will be most effective for the project at hand. Every methodology has unique strengths and limitations and was developed for unique purposes.**[7]**. For this project, the BG IT development team has used, like most modern applications, the agile software development life cycle. Since the inception of information technology, various methods for developing software have been used. These are listed below:

1. Waterfall
2. Prototyping

3. Iterative and Incremental Development
4. Spiral Development
5. Rapid Application Development
6. Extreme Programming

4.1 Agile Development

Agile approaches in software development involve cross-functional, self-organizing teams, as well as customers or program users, to collaboratively identify requirements and develop solutions.**[8]**. To reduce risk when implementing new functionality (such as bugs, cost overruns, and changing requirements), the development team implemented agile development techniques. In all agile methodologies, teams create software in iterations that also include modest increments of the new feature. The agile development methodology comes in a variety of distinct forms, including scrum, crystal, extreme programming (XP), and feature-driven development (FDD). Agile development methodologies are comparable to quick application development and might be ineffective in large organizations.**[7]**.

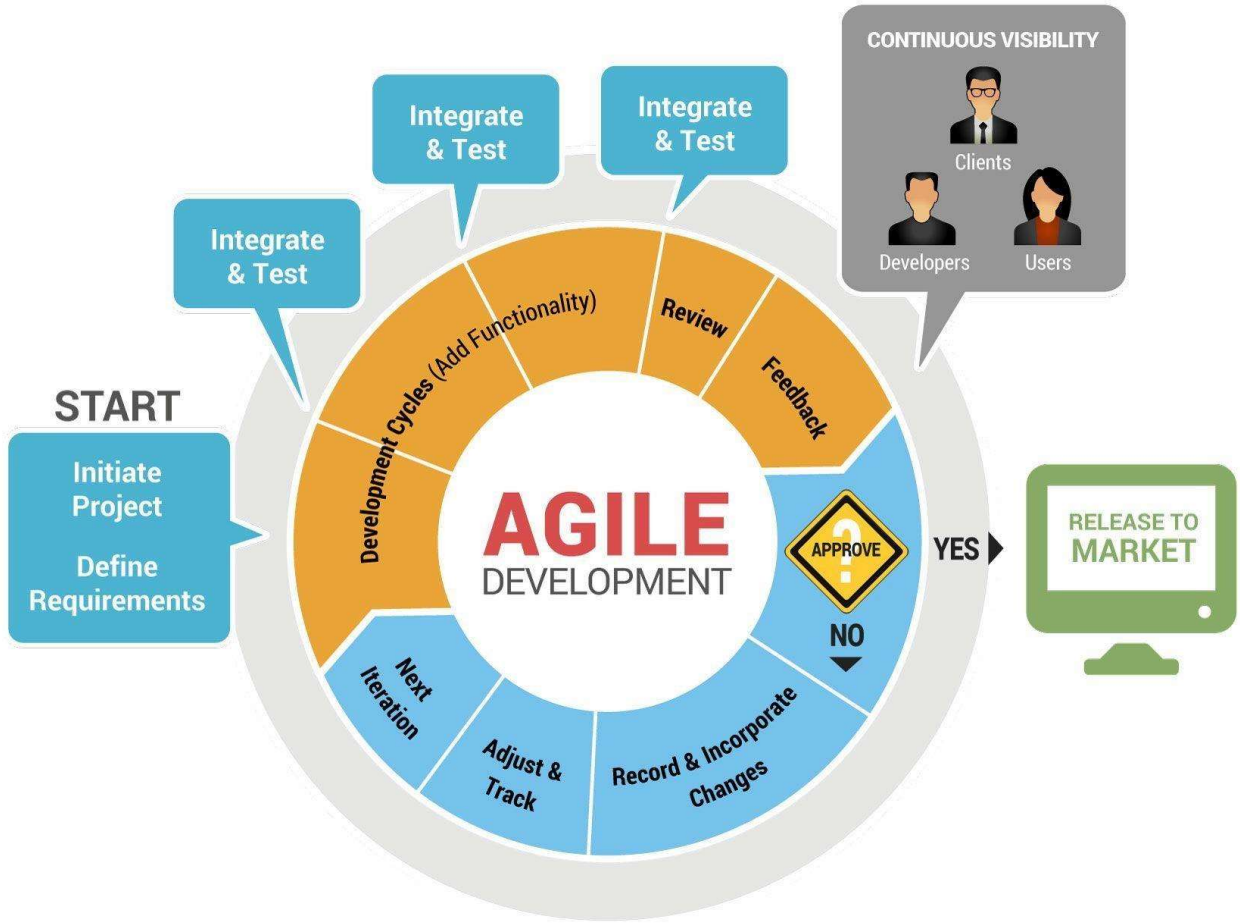


Figure 4. 1: Agile Methodology

4.2 Why Agile?

Agile software development's main advantage is that it enables iterative software deployment. Iterative releases increase efficiency by enabling teams to detect and solve issues and set expectations early on. Additionally, with continuous incremental changes, they enable consumers to enjoy the benefits of software earlier. A software project using agile methodologies aims to be able to release new software at the end of each iteration, even if the iteration did not add enough features to justify the release of the product. The team reviews the project priorities after this iteration. Agile methodologies prioritize working product as the main indicator of progress. Compared to alternative approaches Agile creates very minimal written

documentation; "real-time" communication is preferred. Agile software development methodology's guiding principles: face-to-face meetings, continuous communication, early and frequent delivery of the working software, accessibility. This model becomes the ideal option for team leaders and managers if there are sudden or frequent changes, either on the part of the client or internally.**[9]**.

4.3 Agile Implementation

The whole strategy was decided when the criteria were determined during the planning phase, and the development team ensured that all work was divided on a regular basis. At the end of the day, a consultation with the development team and the management committee would be held to ensure that all of the functionalities that had been implemented during the day were correct and up to the requirements as well as the criteria and that any proposed modifications could be implemented accordingly.

Chapter 5: Body of the Project

5.1 Work Description

This is a web-based application for a restaurant. As a member of the development for the project, I had contributed to both the front end and the backend of the application. In this web based application, the front end was built with HTML, CSS, Bootstrap and for the backend, we used PHP and MySQL. Every day, a target of activities to be accomplished during the day was assigned to me, and those deadlines had to be met and explained properly at the end of the workday.

5.2 Requirement Analysis

5.2.1 Rich Picture

A rich picture is a drawing of a situation that illustrates the main elements and relationships that need to be considered in trying to intervene in order to create some improvement. It consists of pictures, text, symbols, and icons, which are all used to illustrate the situation graphically. It is called a rich picture because it illustrates the richness and complexity of a situation. It is a way to explore, acknowledge and define a situation and express it through diagrams to create a preliminary mental model. A rich picture helps to open discussion and come to a broad, shared understanding of a situation [13]. The whole system is described in the rich picture below.

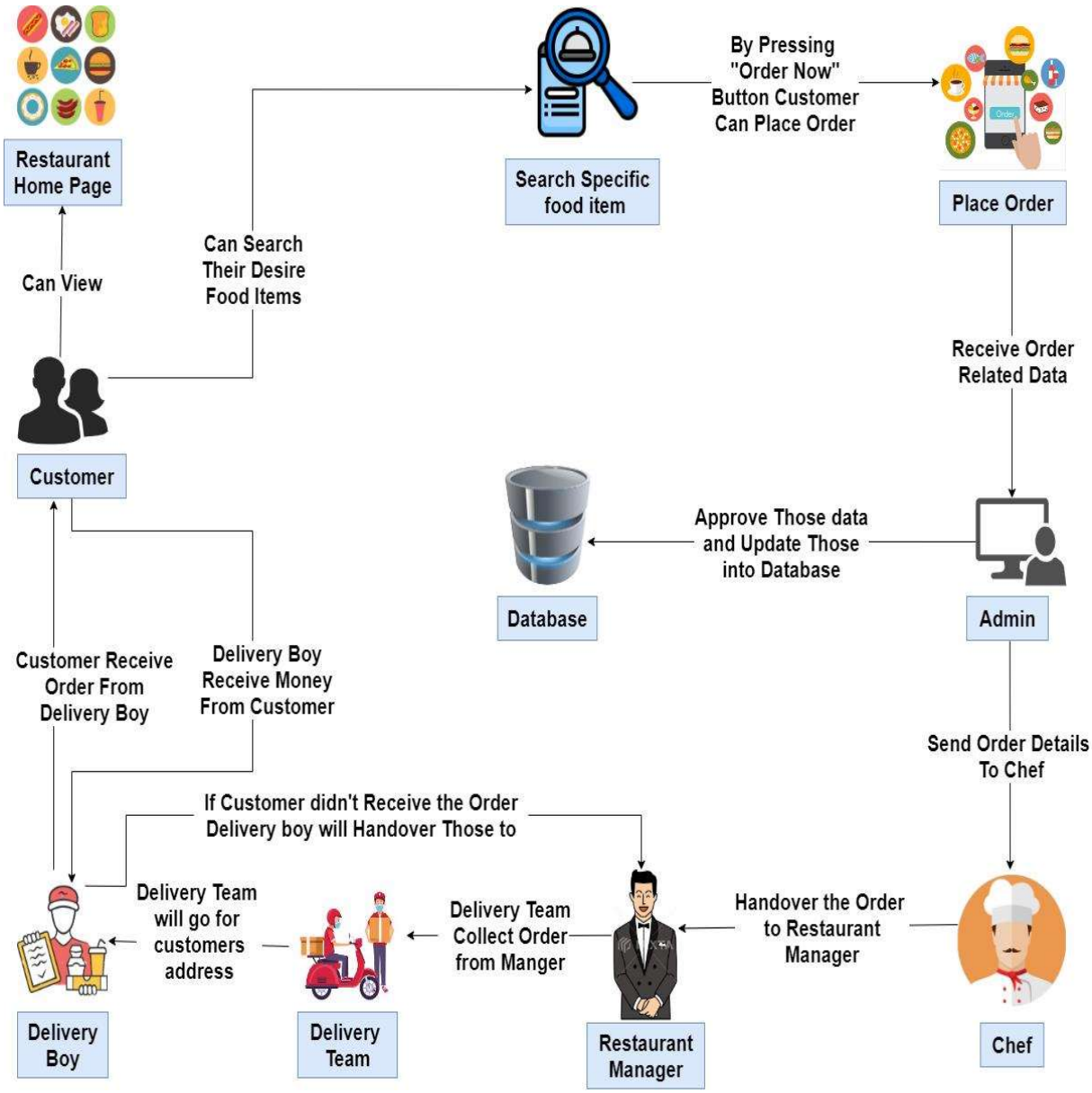


Figure 5.1: Rich Picture

5.2.2 Functional and Non-Functional Requirements

Functional requirements are those which are related to the technical functionality of the system. A functional requirement (FR) describes the service that the software needs to provide. It includes details on a software application or a software system. A function is nothing more than the software system's inputs, behavior, and outputs. It could be a calculation, data manipulation, business procedure, user interaction, or any other unique capability that identifies the purpose that a system is most likely to achieve. Functional Specification is another name for Functional Requirements.

Non-Functional requirements are an extension of the functional requirements. Non-functional requirements are those that the application that has been developed so far implicitly achieves but which are not explicitly required by the user. It might be considered the application's "efficiency" in terms of its performance.

For example, when we order food online, the food has to be the one that is selected, but beyond that many companies offer delivery within 30 minutes, else free delivery. This free delivery can be thought of as a nonfunctional requirement that extends beyond providing the basic functionality that is food delivery.

Functional Requirements:

Two main logical components of this system are:

- Web-ordering system allows the customer to place their order and supply necessary details.

- Through the help of the menu, management allows us to control what can be ordered by the customers.

Web Ordering System:

- Visit the website.
- Customers search for desired food items.
- Navigate the restaurant's menu.
- Select an item from the menu.
- Customize options for a selected item.
- Add an item to their current order.
- Review their current order.
- Remove an item/ remove all items from the current order.
- Include payment and delivery information.
- Place an order.
- Receive a confirmation with an order number.

Non-Functional Requirements:

Performance: This determines how well the Web application performs as a result, as well as how well the device performs under higher workloads. For the high-speed load, we used tiny jpg for image optimization. For better results, we will conduct additional testing.

Security: How is the data in the web application protected from cyber-attacks? Since our data contains sensitive knowledge about our customers, it is extremely valuable. We have checked everything about this.

Usability: Usability is how easy the system is for the user. Our application is already user-friendly. So, there is no problem running the application for any user.

Compatibility: The Web application's operation is very simple and clear; what we try to do is make it as user-friendly as possible. However, there are a few conditions that must be met in order for the application to run. The prerequisites are common.

Hardware requirements:

- ❑ Pentium 5,1.4GHZ or above
- ❑ 512MB RAM or more
- ❑ LAN/WIFI Network
- ❑ Any smartphone/Laptop/Desktop
- ❑ Keyboard & Mouse

5.3 System Analysis

An organized collection of interdependent parts that are connected in accordance with a strategy in order to accomplish a particular goal is known to as a system. The word "system" comes from the Greek word "systema," which defines a synchronized relationship between any group of constituents working toward a single goal or purpose. System analysis is done in order to investigate a system and all of its components in order to determine the goals of the system. It is a procedure for gathering and analyzing data, determining the issues, and breaking down a system into its constituent parts. System analysis is done to investigate a system or its components in order to determine its goals. System analysis is used to study a system or its elements in order to identify its objectives. **[10]**.

5.3.1 Six Element Analysis

Process	Human	Non-Computing Hardware	Computing Hardware	Software	Database	Network & Communication
Login	Users enter username & password	N/A	Keyboard, Mouse, Computer & Smartphones	All Browser	MySQL	Internet
Visit Website	All Users	N/A	Keyboard, Mouse, Computer & Smartphones	All Browser	MySQL	Internet
Order Food	Users fill up respective Order forms	N/A	Keyboard, Mouse, Computer & Smartphones	All Browser	Stores food order data in the database	Internet
Admin Panel	Users who have access	N/A	Keyboard, Mouse, Computer & Smartphones	All Browser	MySQL	Internet
Payment	The user goes through to the checkout process and gateway	Card Information	Keyboard, Mouse, Computer & Smartphones	All Browser & Payment gateway	Stores data if payment successful	Internet

Table 5. 1: Six Element Analysis

5.3.2 Feasibility Analysis

The analysis of a proposed project to determine whether it is feasible and should go ahead is called feasibility analysis. Confirmation of design, plan, and strategy makes sense or not is the main priority of this analysis. This can be used to validate assumptions, constraints, decisions, and approaches. There are different types of feasibility studies that are conducted such as:

- **Technical Feasibility:** In technical feasibility, evaluation of the software, hardware, and the other technical requirements of the proposed system are performed. This evaluates the details of how we with the intention of providing an item or service to customers. Labor, think materials, transportation, what will be the location of our company, and what technology will be required to make everything work. Both short- and long-term planning can benefit from the use of technical feasibility. It can be used as a flowchart to show how your services and products grow and move through your organization to physically reach your goal. **[11]**.
- **Economic Feasibility:** Before allocating financial resources, this assessment often includes a cost/benefit analysis of the project to help businesses examine the feasibility, costs, and benefits related to a project. Additionally, it serves as an impartial project evaluation, strengthens project credibility, and aids decision-makers in determining the favorable financial benefits that the proposed project will bring to the business. **[12]**. This system is completely lacking, but if it can reach its customers, it will undoubtedly be beneficial. On the one hand, it will cut down on wasteful spending on pens and paper. The advantages, however, will depend on the uses.
- **Operational Feasibility:** How successfully a proposed system resolves issues and fulfills system requirements during the scope management and problem analysis phase is a measure of operational feasibility. Projecting whether a system will be used after

development and implementation depends on the human resources available for the project.

Our web application has been developed in such a way that it can be conducted very easily. Users will accept it without any doubt. It is a well-planned system. Users do not need to have a lot of technical knowledge to run this system. Every instruction is very clear to the users. We hope this system will be able to fulfill the requirements of the users.

5.3.3 Problem Solution Analysis

Problem analysis is the process of understanding and defining the problem to be solved. Problem-solving identifies solutions that conform to the needs and constraints of the problem.

Problem 1: No defined process for testing

Definition: Although the development team's excellent skills, there was no testing or SQA team, so testing had to be performed by the development team. As a result of the lack of training, no proper testing process was defined.

Solution: At the project's development phase, a skilled SQA expert was recruited. His expertise led to the development of a testing process which is defined in the next chapter.

Problem 2: Load shedding.

Definition: If anyone uses desktop and Wi-Fi-routers then load shedding may create problems while using this system.

Solution: As this system can be run from laptop and mobile that do not require continuous electricity connection so users can use them very easily.

Problem 3: Less number of requirements.

Definition: The questionnaire did not have too many participants for the project at the beginning, where the conditions for the project were set.

Solution: A larger number of people needed to respond to the survey that was performed.

5.3.4 Effect and Constraints Analysis

A constraint is a limit on how much freedom a business can have when offering a solution. Constraints are essentially global constraints, such as insufficient development funding or a determination from central management that limits the development team's ability to implement a system. Constraints can be economic, political, technical, or environmental. According to the standard triple constraint triangle, which also includes scope, time, and cost, quality is one of the primary constraints of every project. Below is a description of these restrictions and their results:



Figure 5.2: Triple Constraint Triangle

Constraint 1: Cost

Effect: This constraint has a significant impact on how many project workers are recruited and how long the project will be built before it must be completed by the deadline.

Constraint 2: Time

Effect: Both the cost and the time limit are interconnected. The duration of a project is determined entirely by the company's budget for the project. The project was assigned a four month deadline and the 15th of June was chosen as the deadline.

Constraint 3: Scope

Effect: The scope of a project determines whether or not the project's specifications have been fulfilled. During the development process, developers must keep a close eye on the project's requirements; if a timetable is approaching too quickly, the project's scope should be stretched and delivered at a later date.

5.4 System Designs

The process of defining a system's fundamental elements, including its architecture, modules, and components, as well as its many interfaces and the data it processes, is known as system design. By designing a comprehensive and efficient system, it is intended to satisfy the unique goals and requirements of a company or organization.

5.4.1 UML Diagrams

A UML diagram is a graphical representation of a system's primary players, roles, actions, artifacts, or classes created using the UML (Unified Modeling Language) in order to better understand, modify, maintain, or record information about the system. **[14]**.

In this section, the activity diagram for the admin and user groups is shown, Activity diagram is essentially an advanced version of the flow chart that modeling the flow from one activity to another activity.

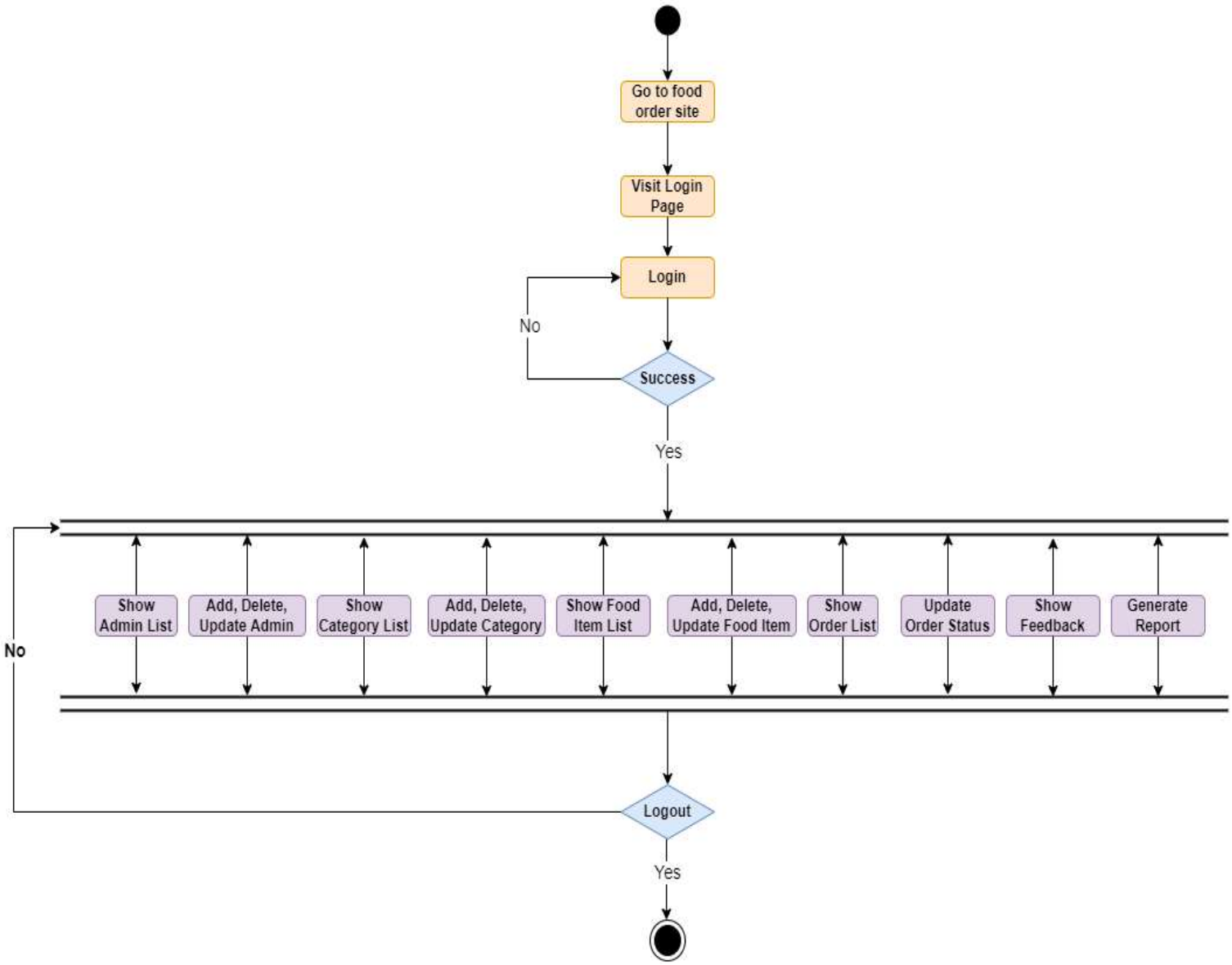


Figure 5.3: Activity Diagram for Admin

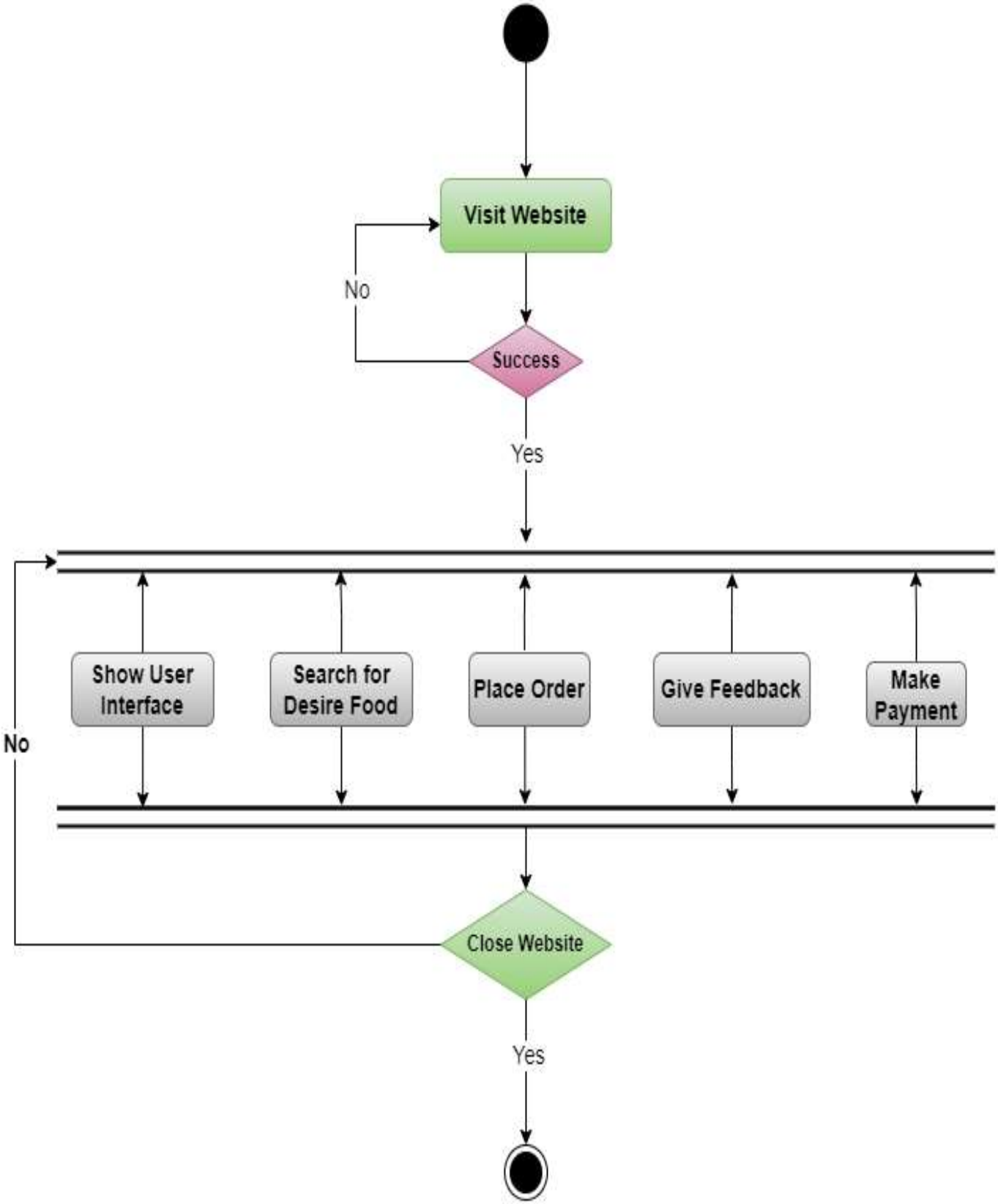


Figure 5.4: Activity Diagram for User

A Use Case Diagram for this system is shown below:

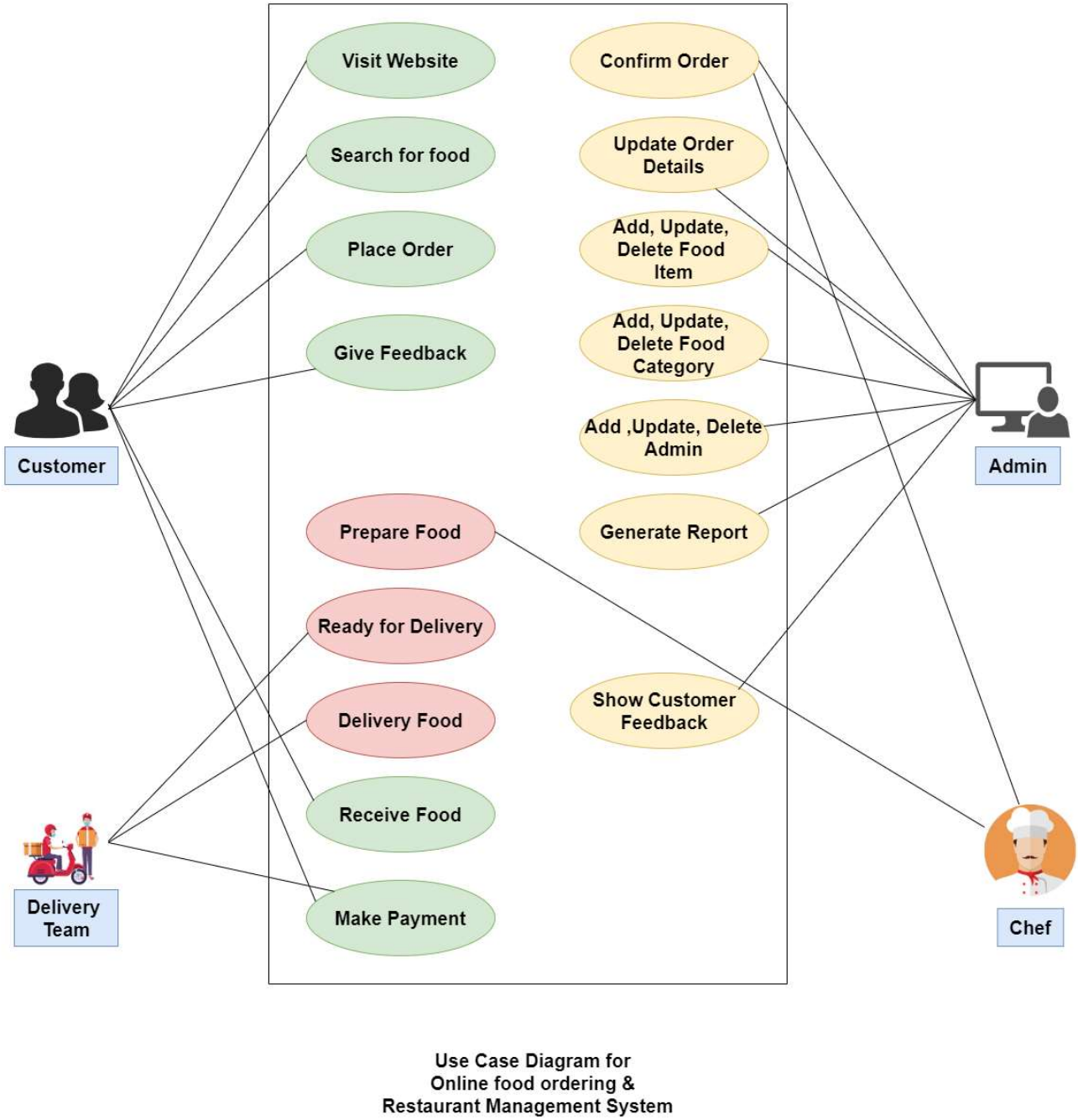


Figure 5.5: Use Case Diagram for this System

5.4.2 Architecture

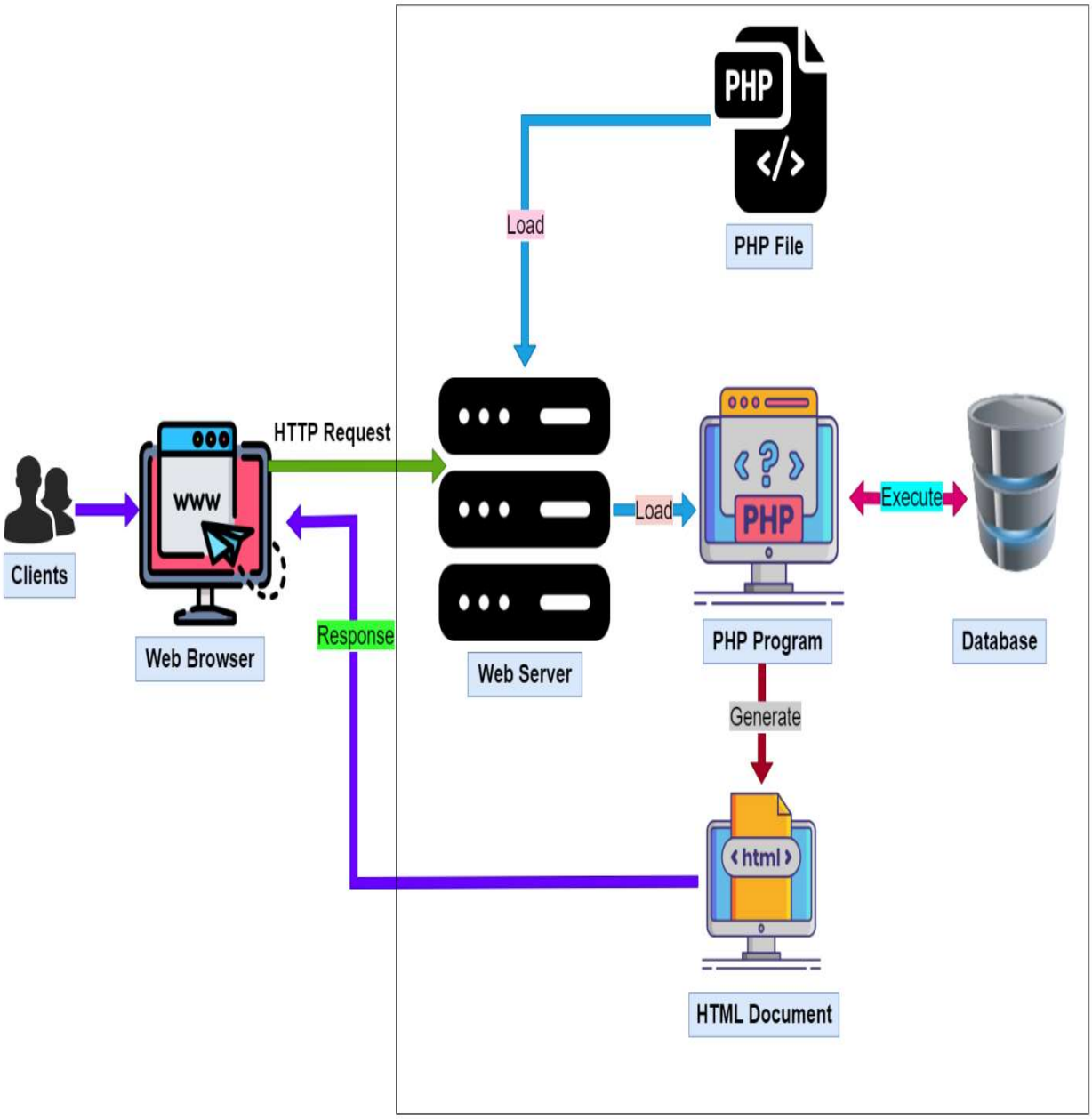


Figure 5.6: Architecture of PHP Application

5.5 Implementation

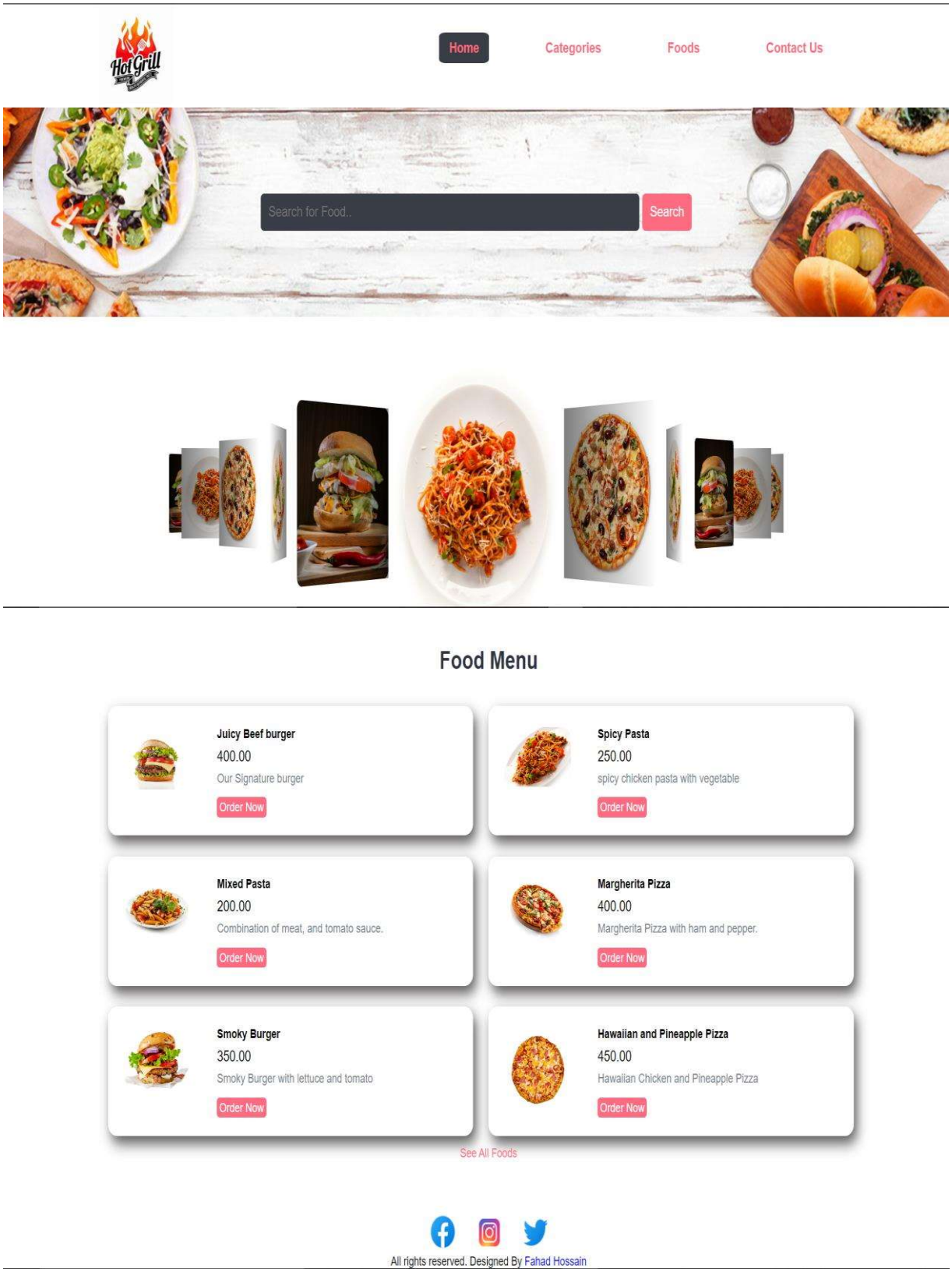


Figure 5.7: Restaurant Homepage

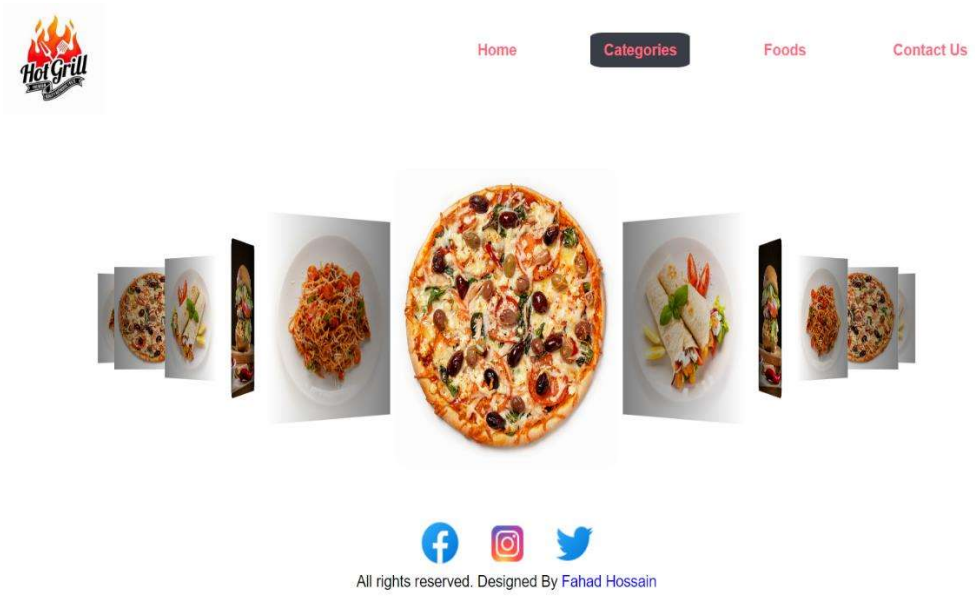


Figure 5.8: Category Page

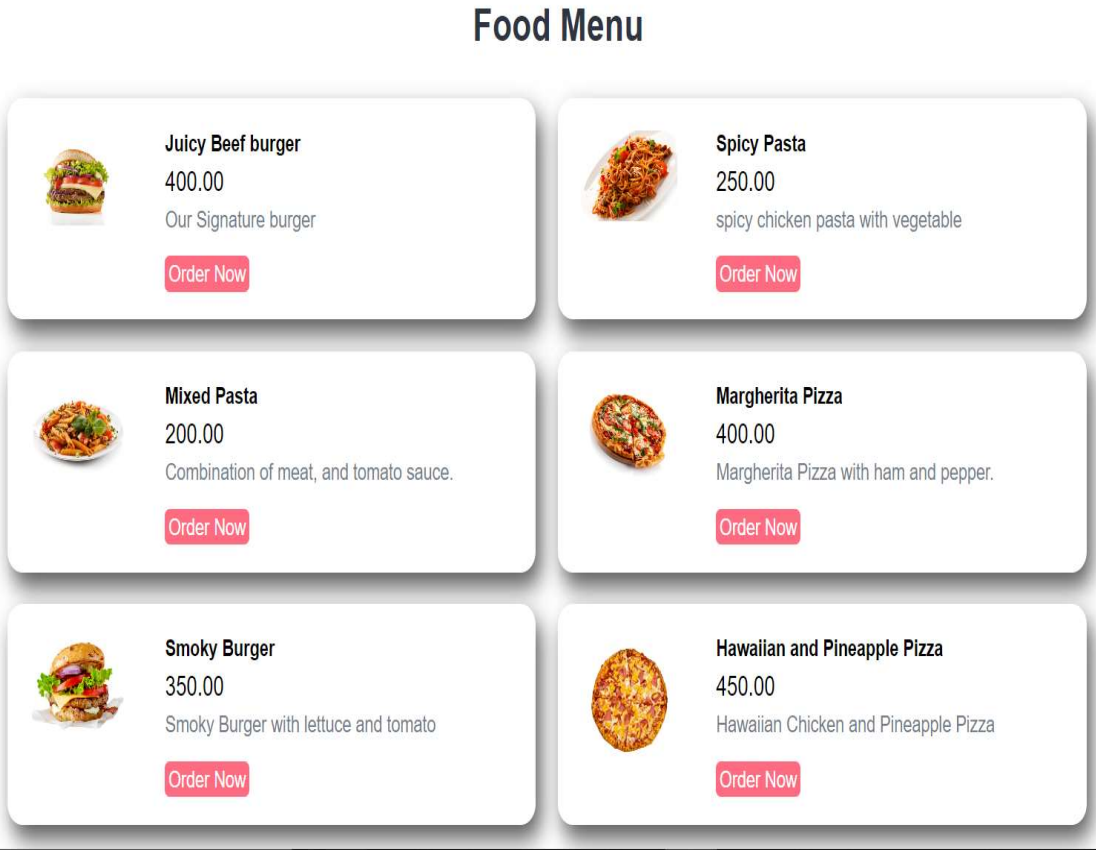


Figure 5.9: Food Menu Page

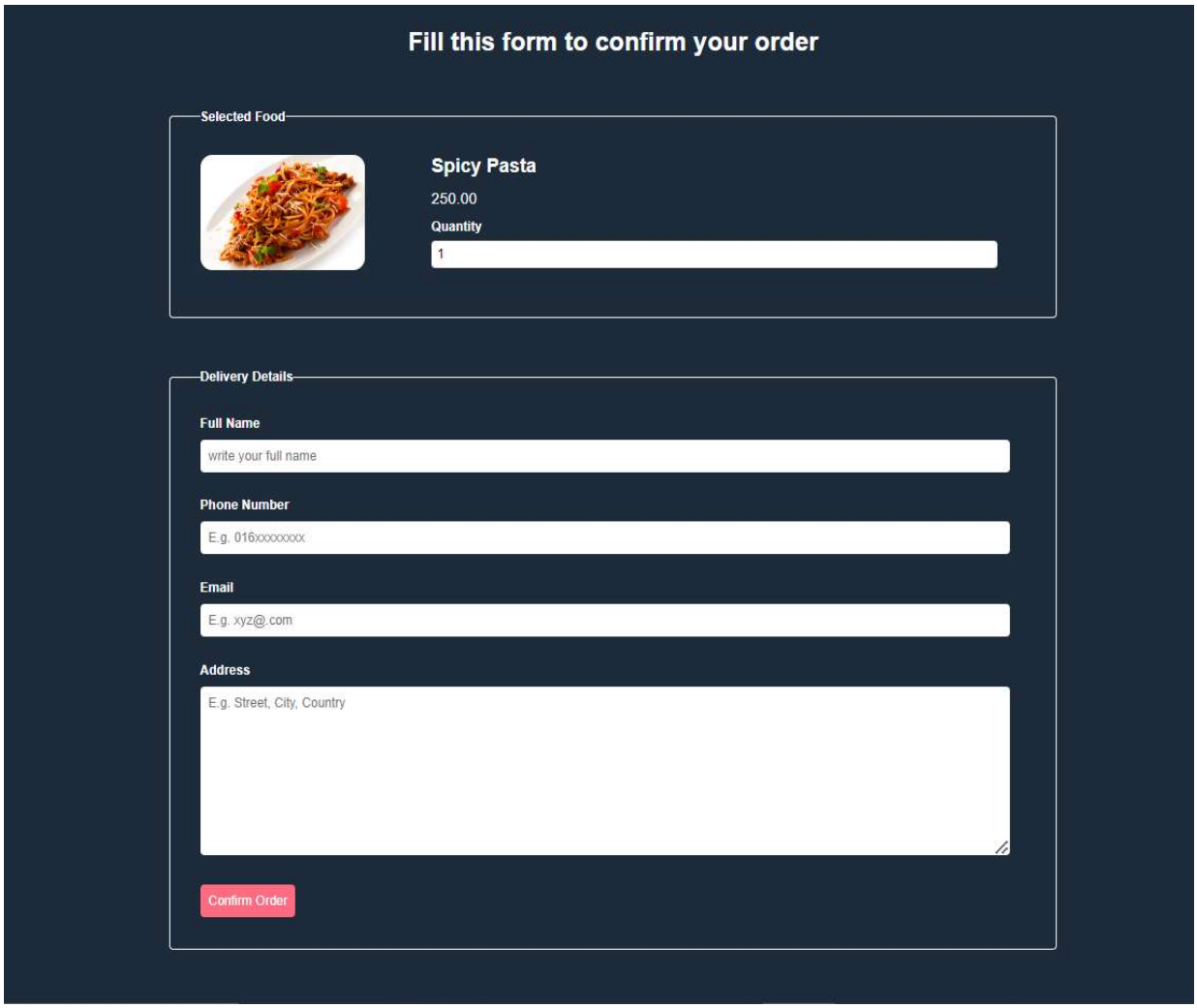


Figure5.10: Food Order Page

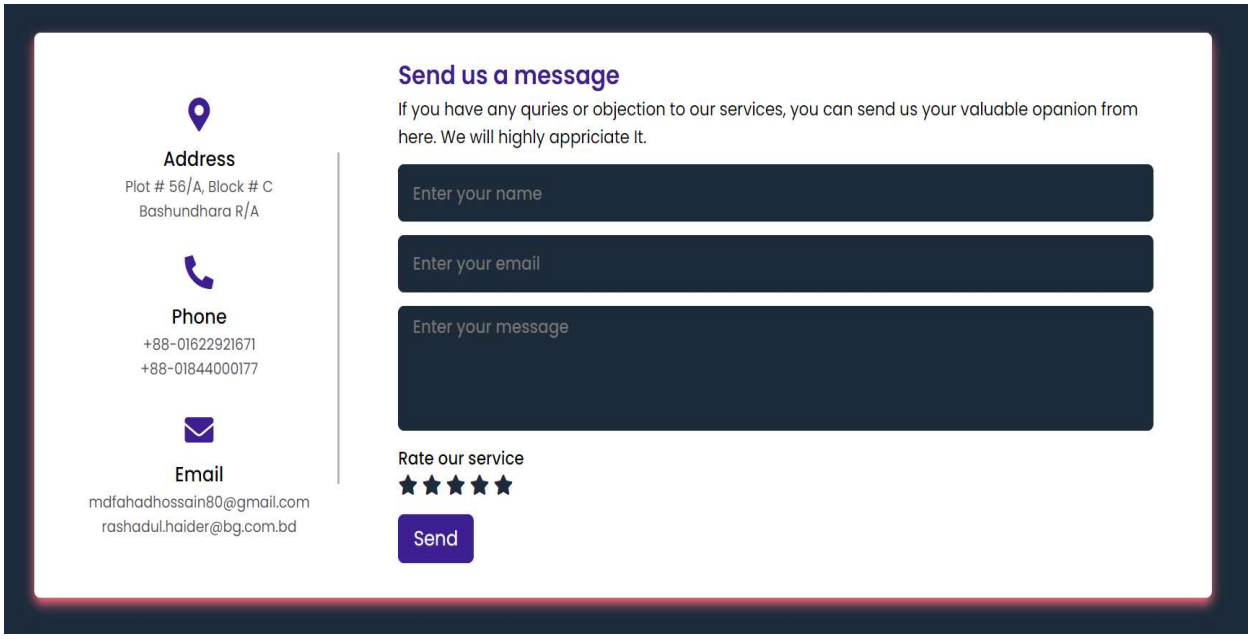


Figure 5.11: Contact us Page

Admin Functionality:

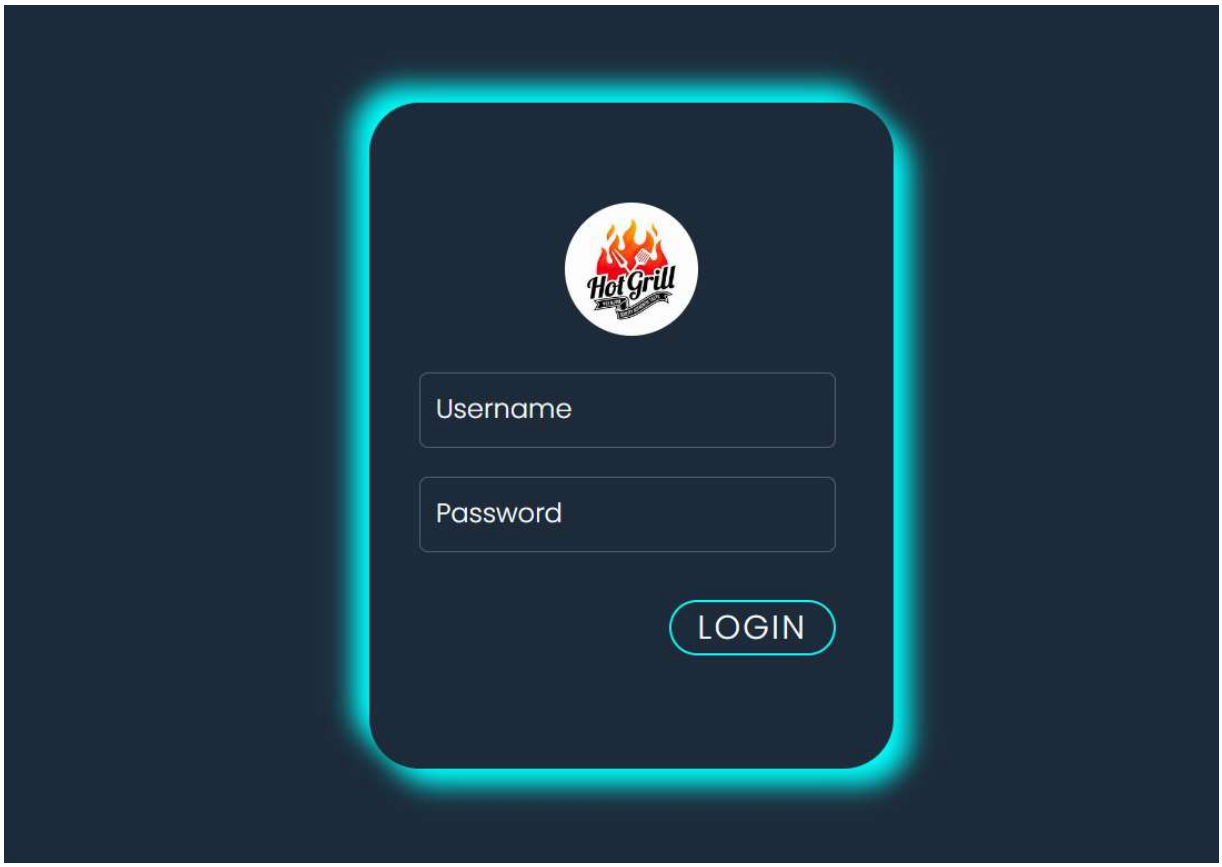


Figure 5.12: Admin Login Page

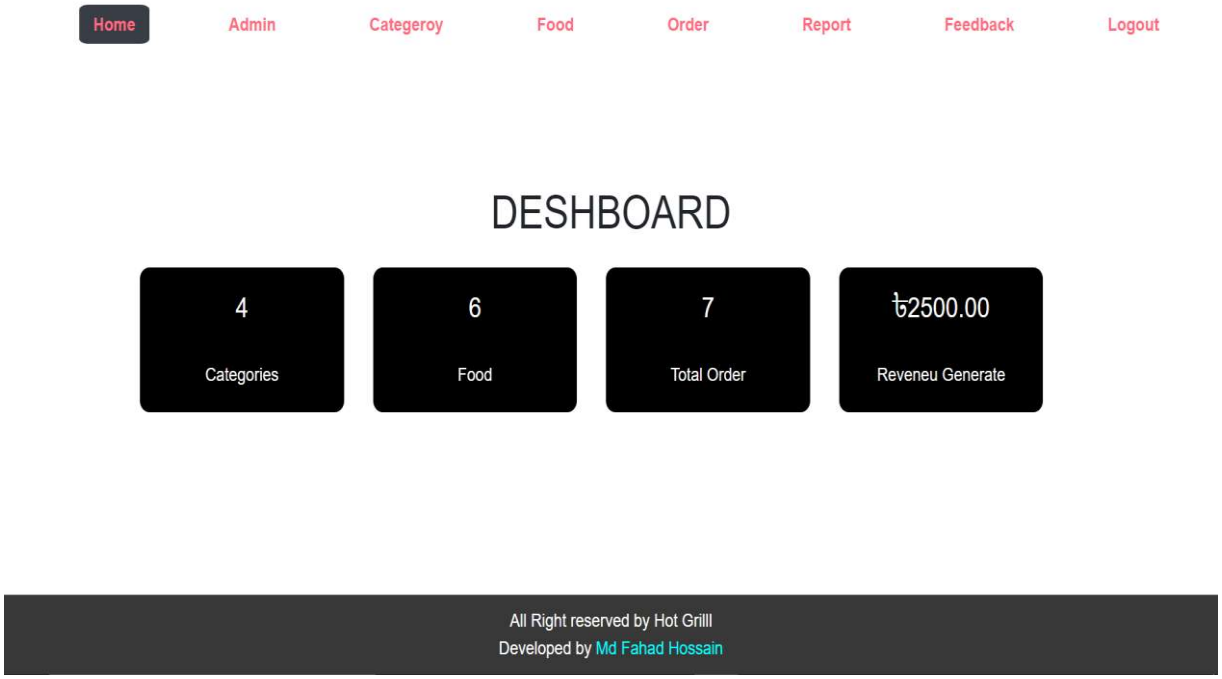


Figure 5.13: Admin Dashboard Page

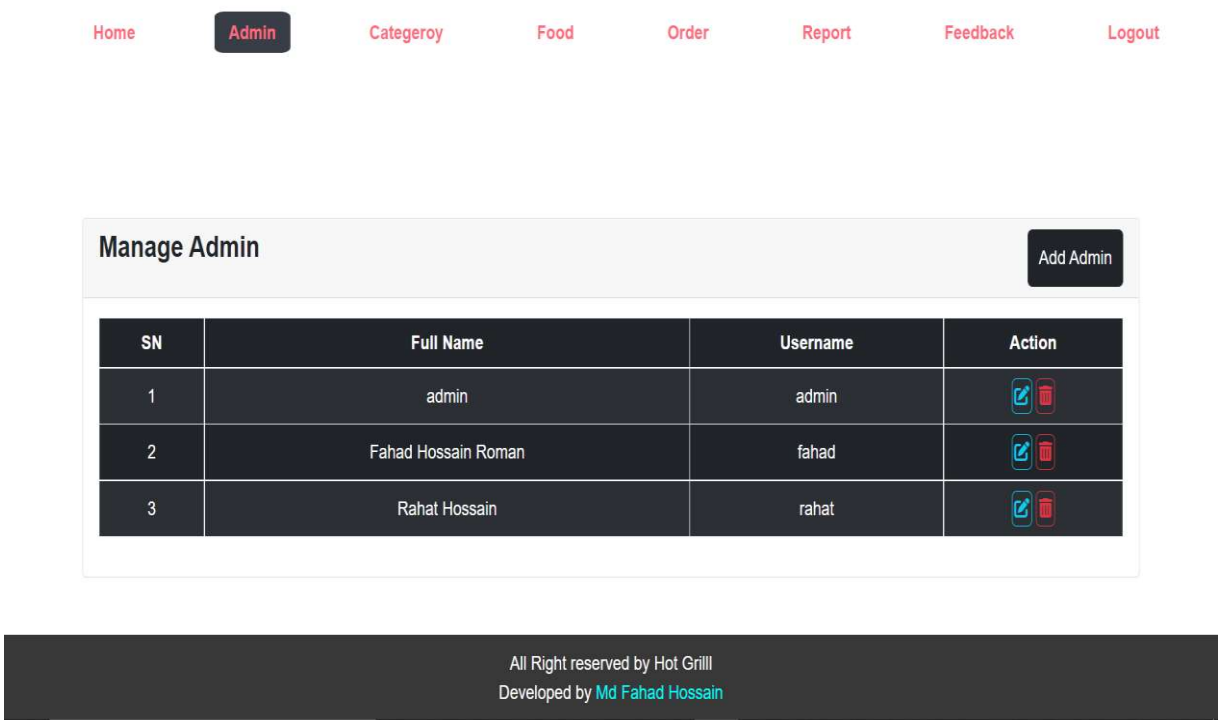


Figure 5.14: Manage Admin Page

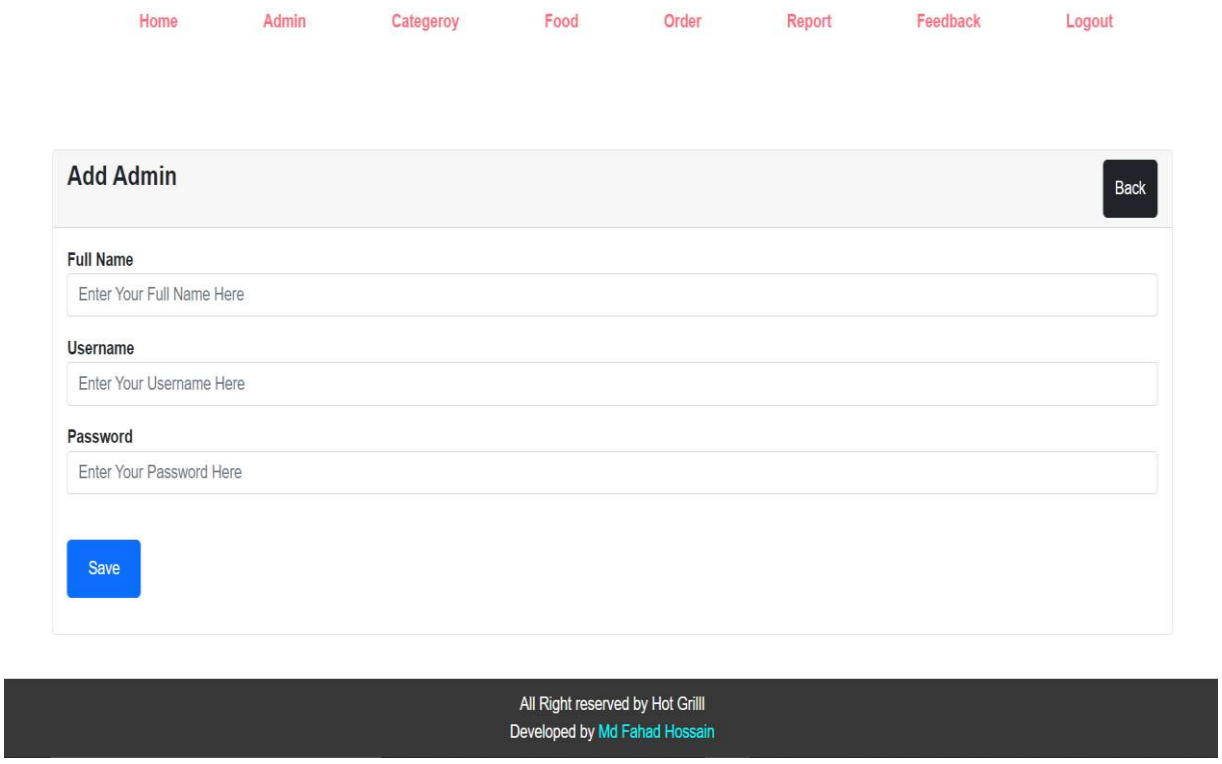


Figure 5.15: Add Admin Page

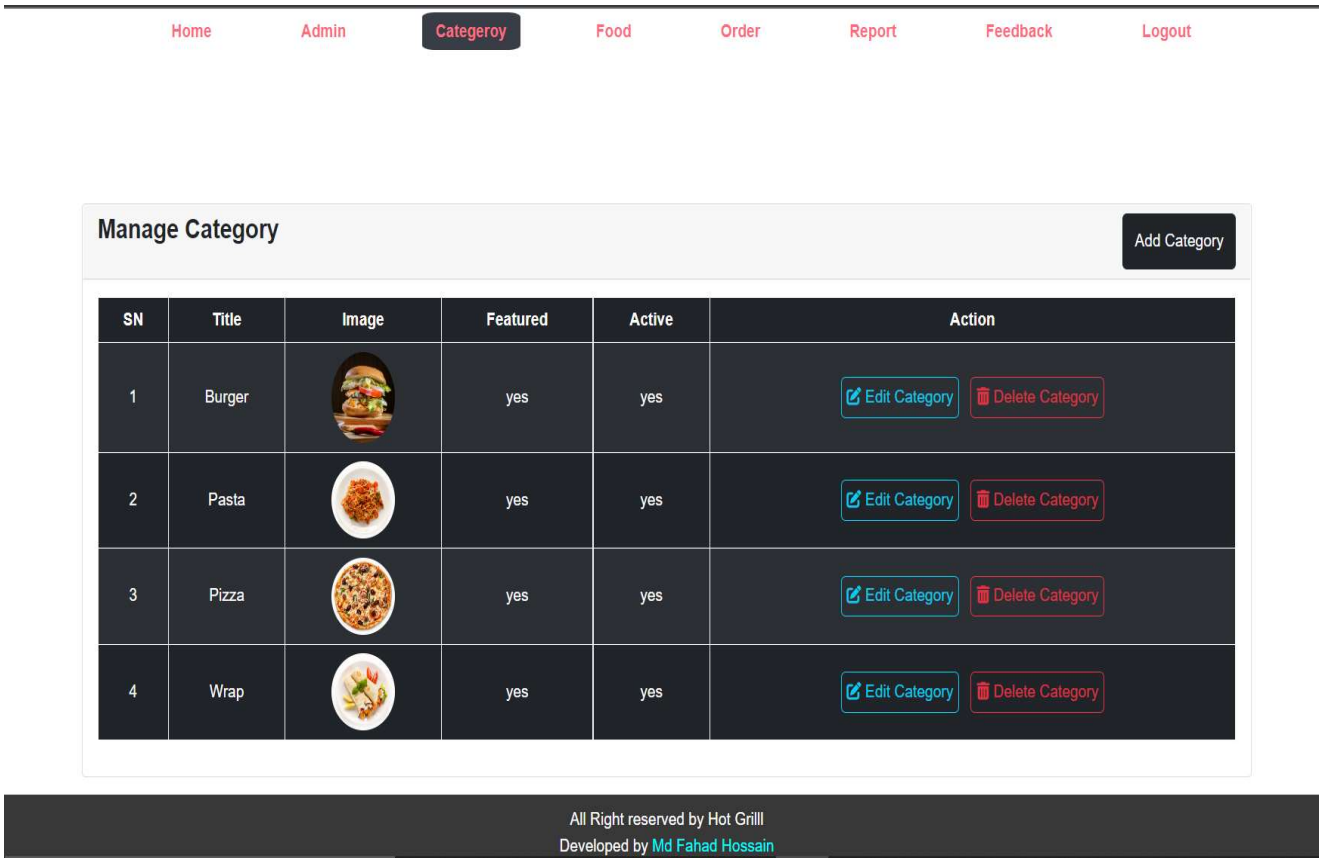


Figure 5.16: Manage Category Page

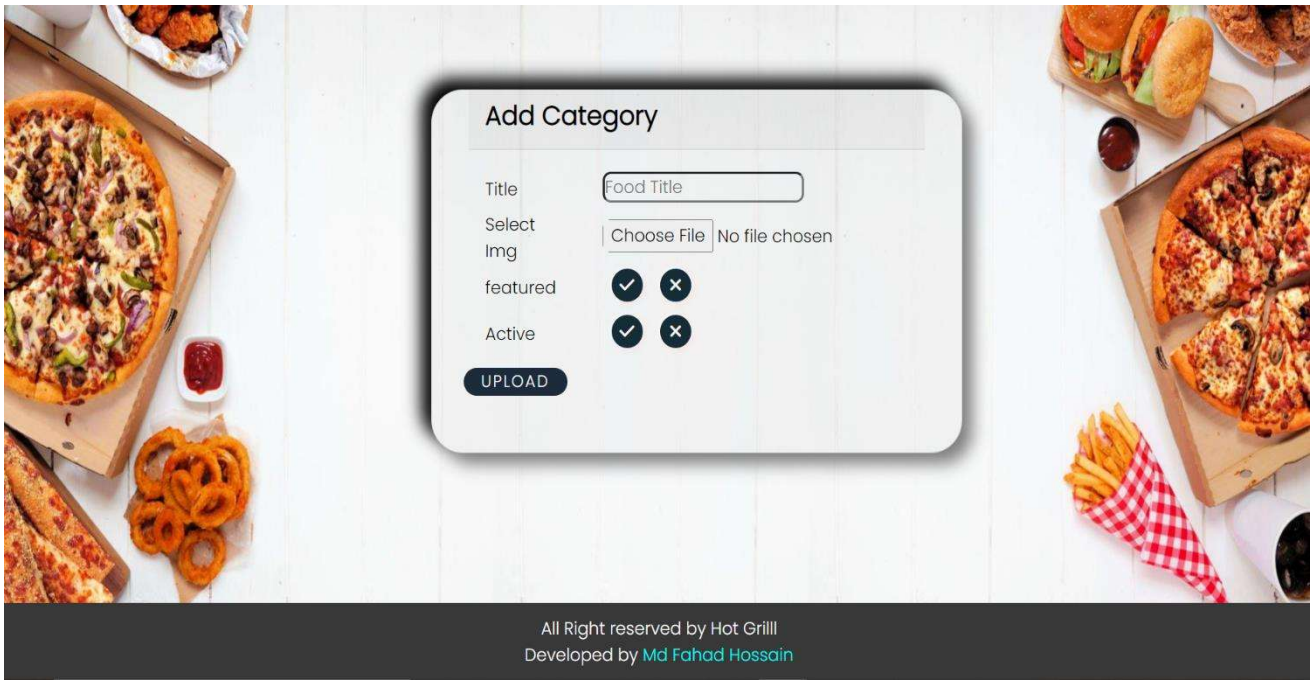


Figure 5.17: Add Category Page

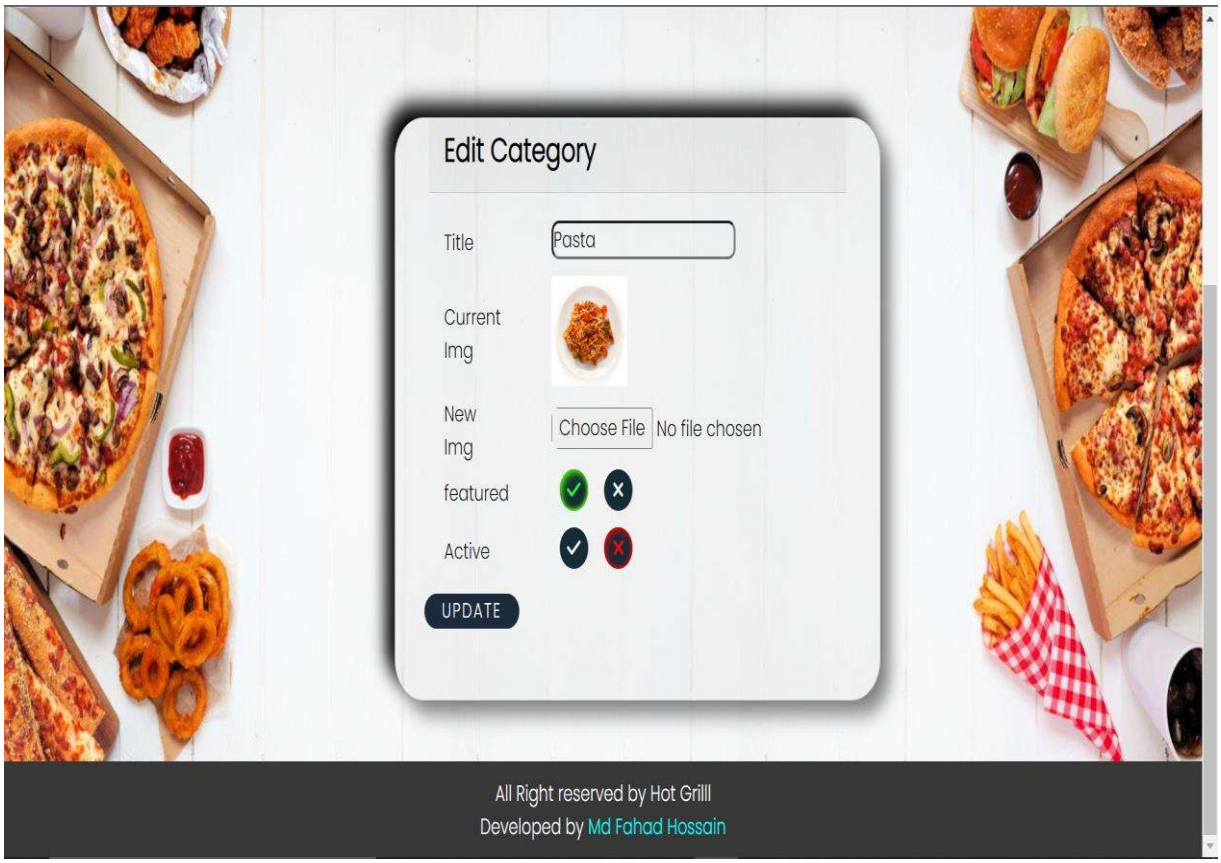


Figure 5.18: Edit Category info Page

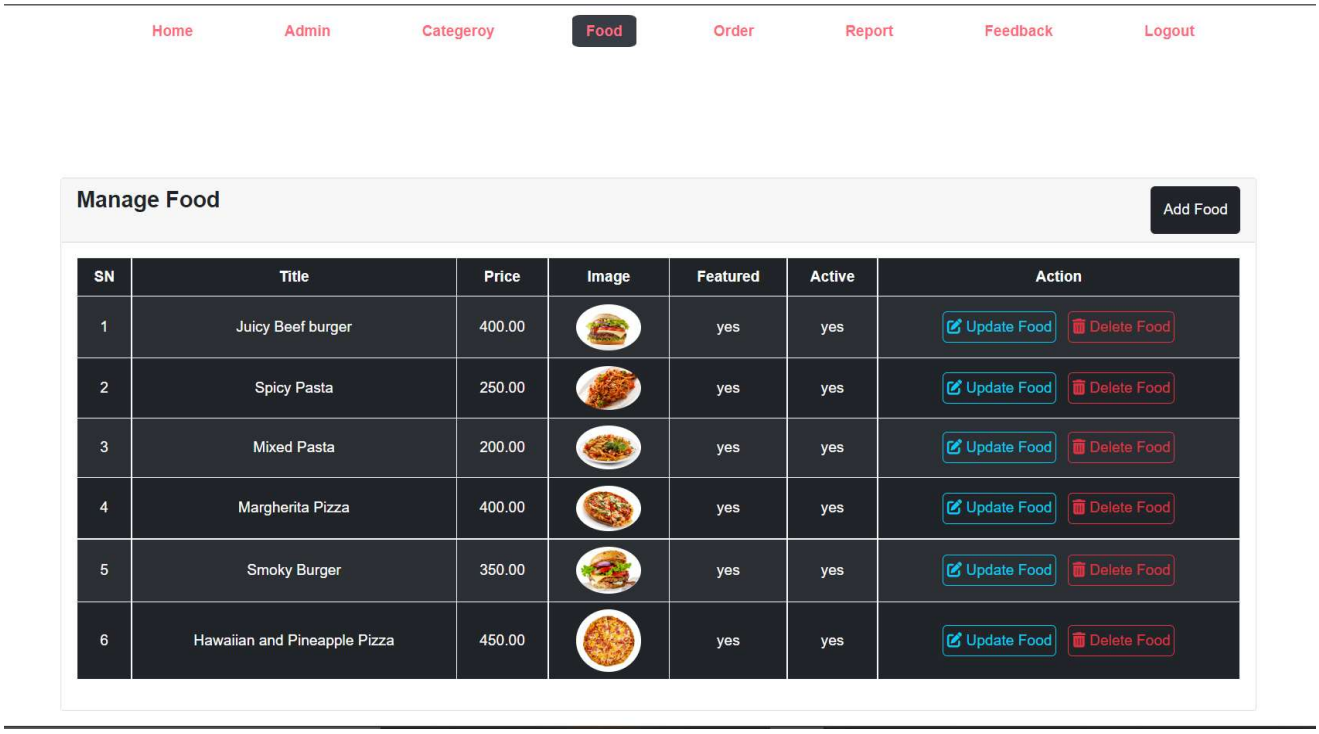


Figure 5.19: Manage Food Item Page

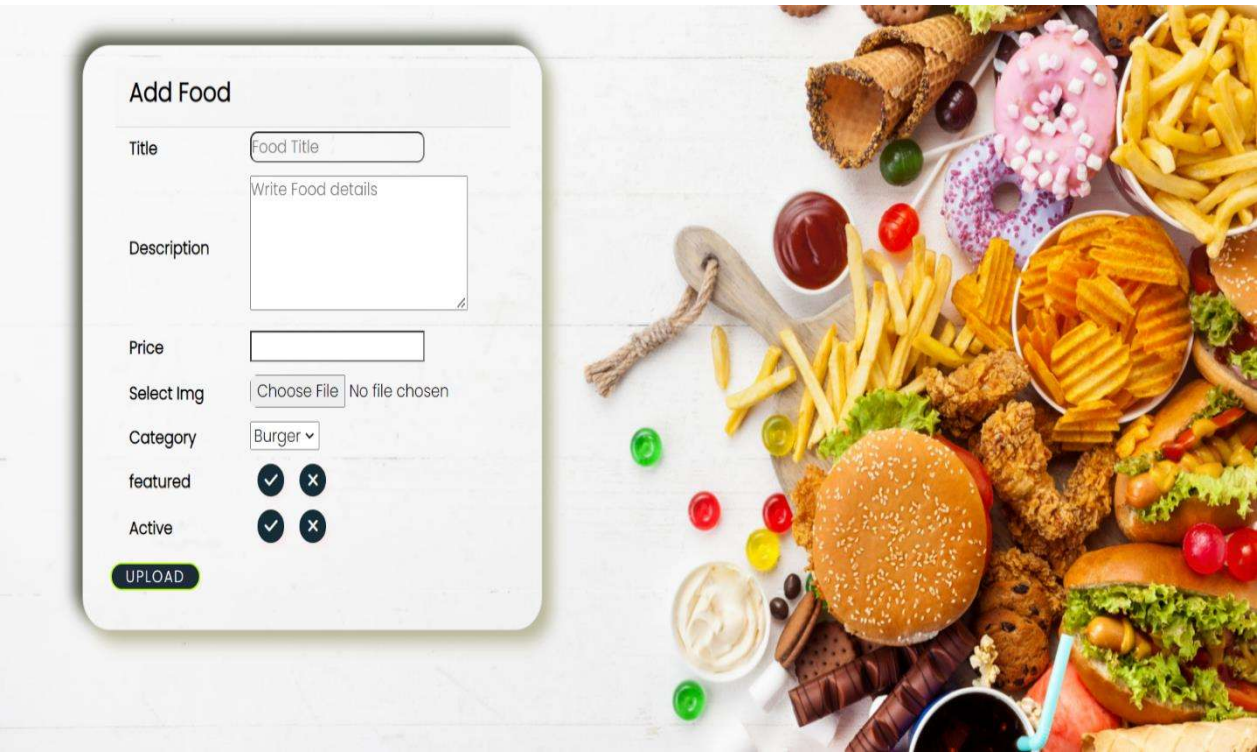


Figure 5.20: Add Food Item Page

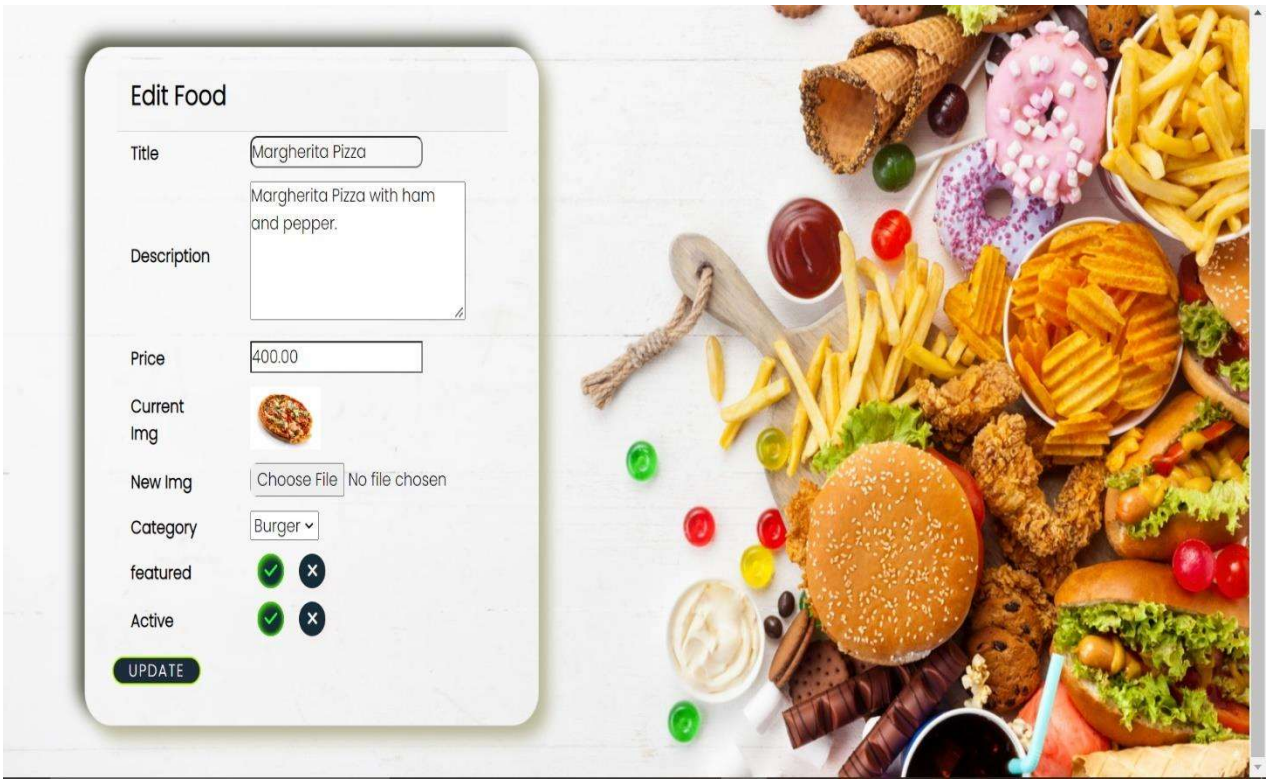


Figure 5.21: Edit Food Item Info Page

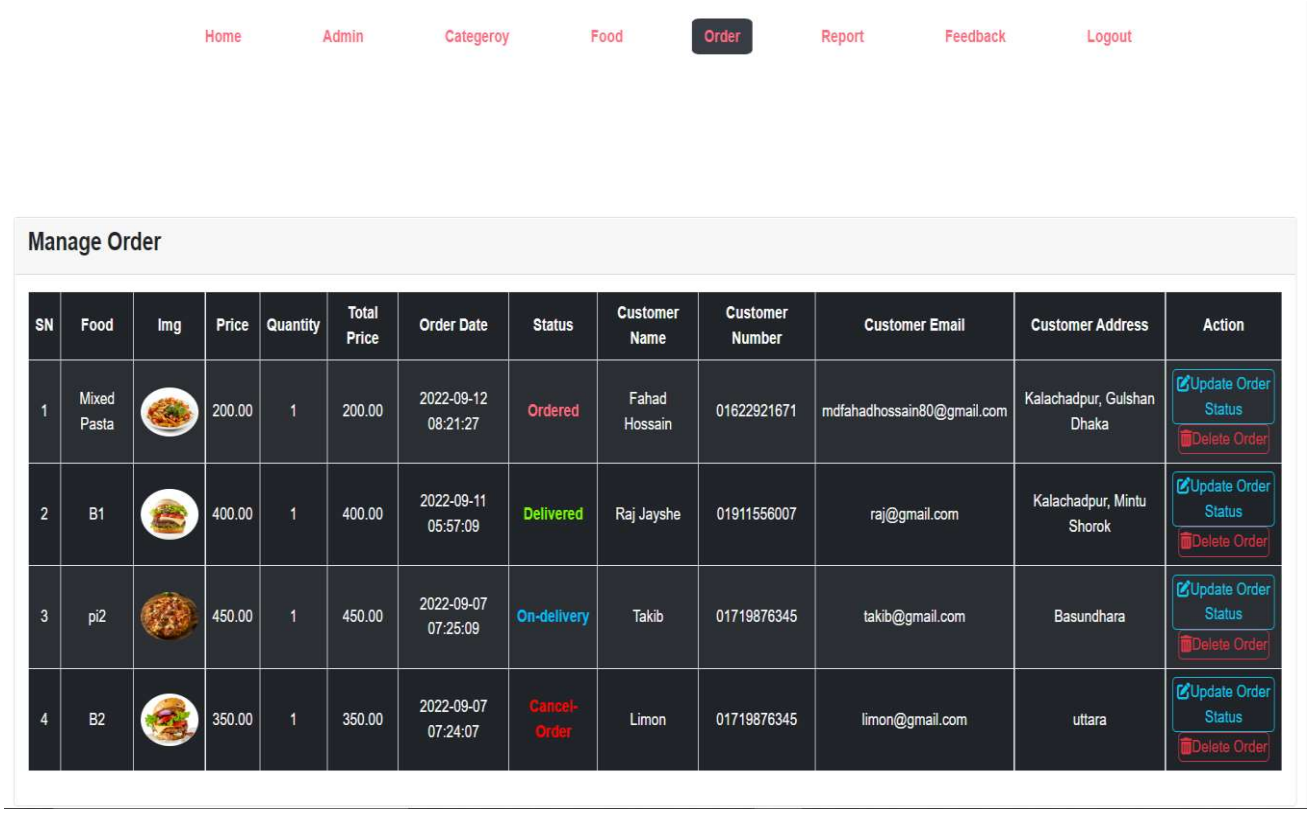


Figure 5.22: Manage Order Details Page

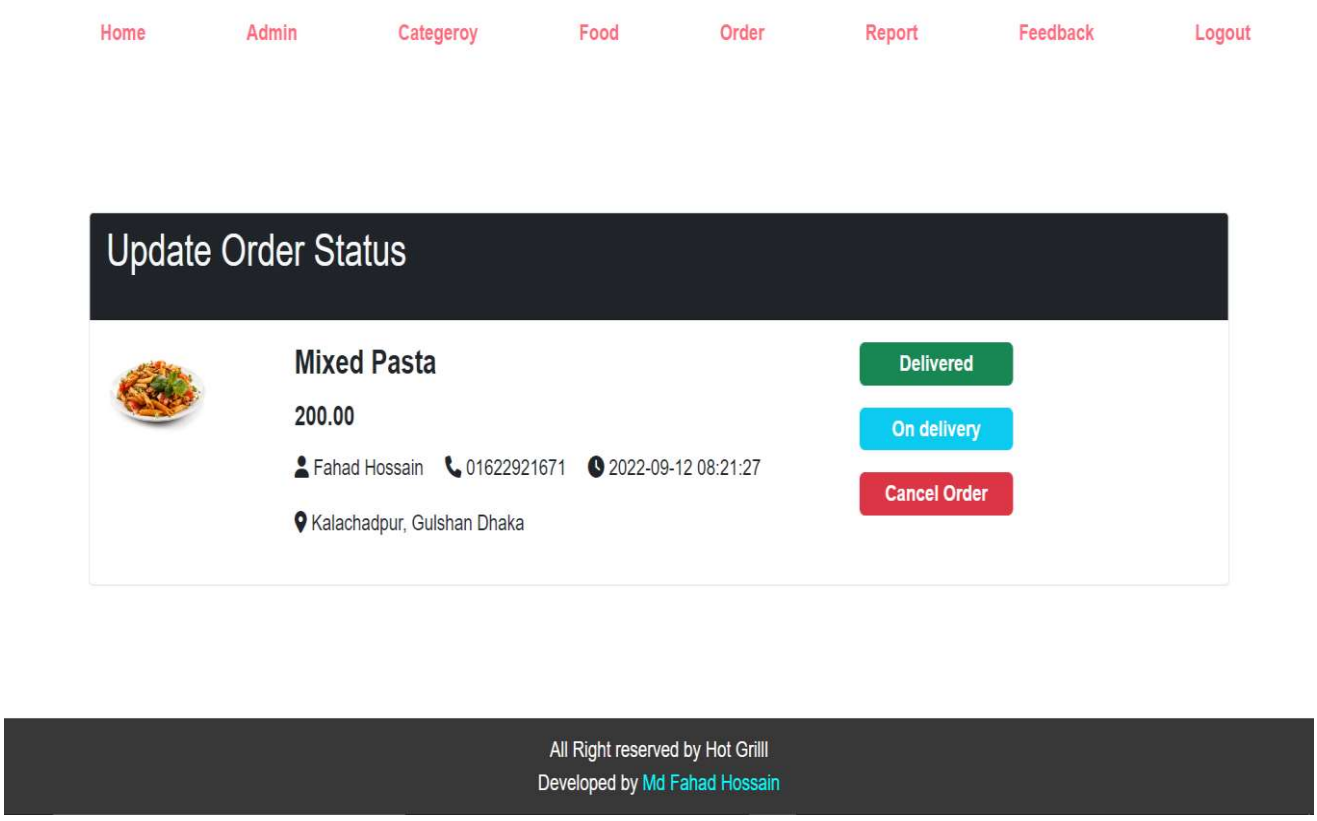


Figure 5.23: Update Order Status Page

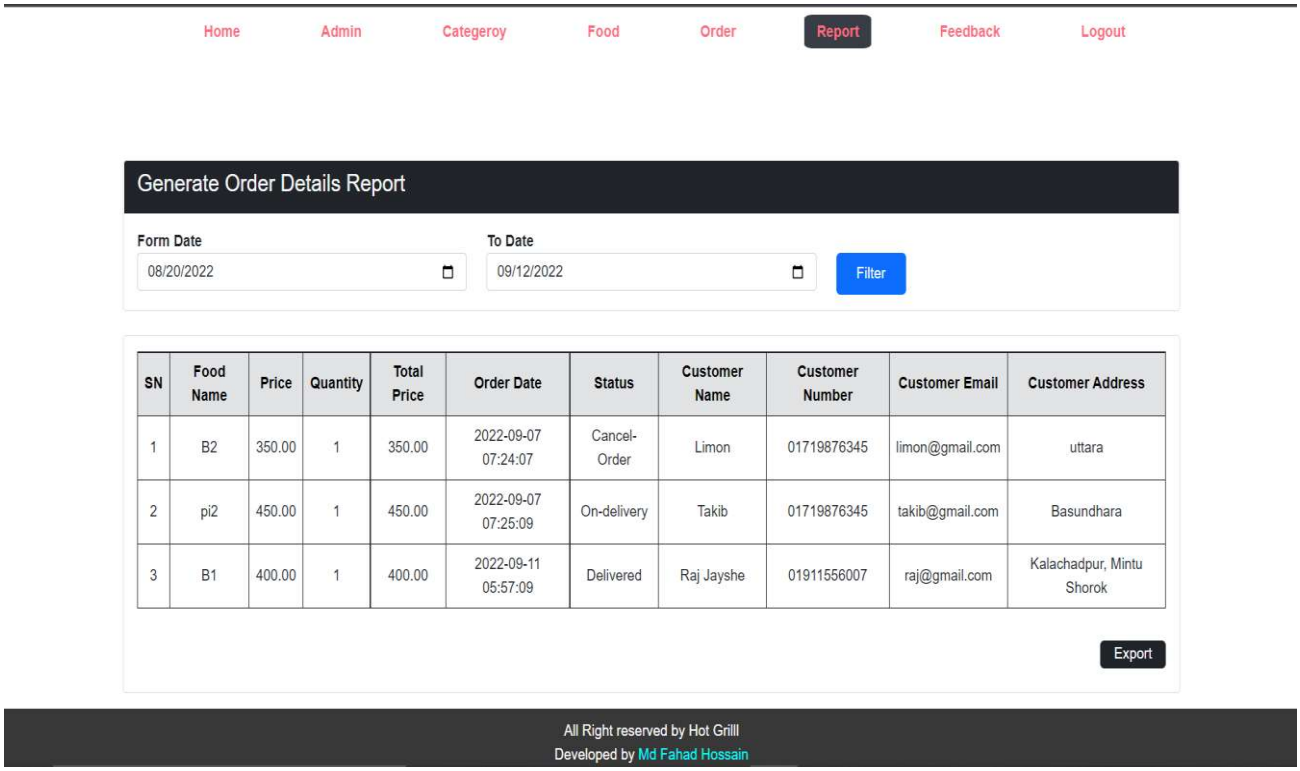


Figure 5.24: Generate Report

SN	Food Name	Price	Quantity	Total Price	Order Date	Status	Customer Name	Customer Number	Customer Email	Customer Address
1	p1	250.00	3	750.00	2022-08-25 10:46:09	Delivered	x	01622921671	x@gmail.com	nodda
2	B2	350.00	1	350.00	2022-09-01 09:57:33	Ordered	Zahid Hasan Shuvo	01622921671	zahid@gmail.com	newmarket
3	pi2	450.00	2	900.00	2022-09-03 11:44:00	Delivered	Alamin	01622921671	dummy@gmail.com	Basundhara C
4	p1	250.00	2	500.00	2022-09-05 11:05:21	Ordered	Limon	01719876345	limon@gmail.com	Nikunja_2
5	B2	350.00	1	350.00	2022-09-07 07:24:07	Ordered	Limon	01719876345	limon@gmail.com	uttara
6	pi2	450.00	1	450.00	2022-09-07 07:25:09	Delivered	Takib	01719876345	takib@gmail.com	Basundhara

Figure 5.25: Report Data Pdf file

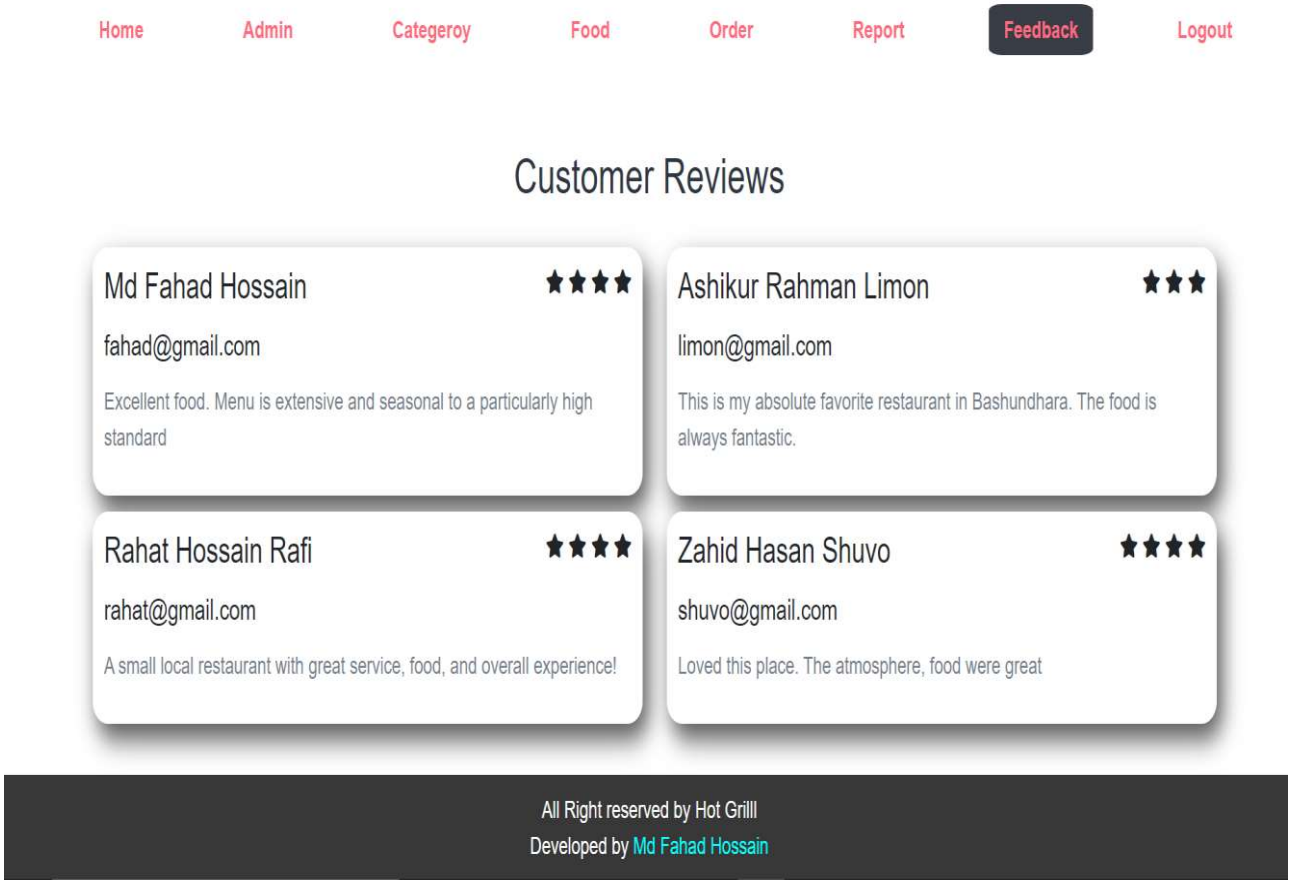


Figure 5.26: Customer Feedback Page

5.6 Testing

5.6.1 Introduction

Software testing is a process, to evaluate the functionality of a software application with an intent to find whether the developed software met the specified requirements or not and to identify the defects to ensure that the product is defect-free in order to produce a quality product **[16]**.

The testing phase for this application started right in between the implementation phase. The BG team worked to make sure every time a functionality was implemented it was tested thoroughly, following a testing pattern called test-driven development or TDD. Since an agile development lifecycle was being followed any new addition was repeatedly tested.

5.6.2 Testing Analysis

Below functionalities of the application needs to be tested:

- Login (Admin)
- Add Admin
- Update Admin
- Delete Admin
- Add Category (Admin)
- Update Category (Admin)
- Delete Category (Admin)
- Add Food (Admin)
- Update Food (Admin)
- Delete Food (Admin)
- Update Order (Admin)
- Generate Report (Admin)
- Search Food (User)
- Order Now (User)
- Give Feedback (User)
- Confirm Order (Admin)
- Logout (Admin)

SN	Test Case	Purpose	Precondition	Test Steps	Expected Results	Actual Results	Status	Remark
1	Login	Check if admin login is working or not	Need to have a stable internet connection. Must enter credentials	Enter credentials in the fields provided. Enter the login button.	Success message shown “Login Successful” and redirect to the admin dashboard.	Message shown “Login Successful” and redirect to the admin dashboard.	Pass	None
2	Add Admin	Check if one admin can add another admin or not	Must be logged in as an admin. Must be on the ‘Manage Admin’ page.	Click the ‘Add Admin’ button. Enter the admin details in the form. C. Lastly confirm the ‘Add Admin’ button.	Success message shown “Admin Added Successfully” and redirect to the ‘Manage Admin’ page.	Message shown “Admin Added Successfully” and redirect to the ‘Manage Admin’ page.	Pass	None
3	Update Admin	Check if the admin information is updating or not	Must be logged in as an admin. Must be on the ‘Manage Admin’ page.	Click the ‘Update Admin’ button. Enter the updated admin details in the form. C. Lastly confirm the	Success message shown “Admin Updated Successfully” and redirected to the ‘Manage Admin’ page.	Message shown “Admin Updated Successfully” and redirected to the ‘Manage Admin’ page.	Pass	None

				‘Update Admin’ button.				
4	Delete Admin	Check if ‘Delete Admin’ button is working or not	Must be logged in as an admin. Must be on the ‘Manage Admin’ page.	Clicked the ‘Delete Admin’ button.	Success message shown “Admin Deleted Successfully” and redirected to the ‘Manage Admin’ page.	Message shown “Admin Deleted Successfully” and redirected to the ‘Manage Admin’ page.	Pass	None
5	Add Category	Check if the system can add category or not	Must be logged in as an admin. Must be on the ‘Manage Category’ page.	Click the ‘Add Category’ button. Enter the category details in the form. C. Lastly confirm the ‘Add Category’ button.	Success message shown “Category Added Successfully” and redirected to the ‘Manage Category’ page.	Message shown “Category Added Successfully” and redirected to the ‘Manage Category’ page.	Pass	None
6	Update Category	Check if the category information is updating or not.	Must be logged in as an admin. Must be on the ‘Manage Category’ page.	Click the ‘Update Category’ button. Enter the updated category	Success message shown “Category Updated Successfully” and redirected to the ‘Manage	Message shown “Category Updated Successfully” and redirected to the ‘Manage	Pass	None

				details in the form. c)Lastly confirm the 'Update Category' button.	Category' page.	Category' page.		
7	Delete Category	Check if 'Delete Admin' button is working or not	Must be logged in as an admin. Must be on the 'Manage Category' page.	Clicked the 'Delete Category' button.	Success message shown "Category Deleted Successfully" and redirected to the 'Manage Category' page.	Message shown "Category Deleted Successfully" and redirected to the 'Manage Category' page.	Pass	None
8	Add Food	Check if the system can add food or not	Must be logged in as an admin. Must be on the 'Manage Food' page.	Click the 'Add Food' button. Enter the food details in the form. C. Lastly confirm the 'Add Food' button.	Success message shown "Food Added Successfully" and redirected to the 'Manage Food' page.	Message shown "Food Added Successfully" and redirected to the 'Manage Food' page.	Pass	None
9	Update Food	Check if the food information is updating or not.	Must be logged in as an admin. Must be on the 'Manage Food' page.	a. Click the 'Update Food' button. b. Enter the updated food details in the form.	Success message shown "Food Updated Successfully" and redirected to the 'Manage Food' page.	Message shown "Food Updated Successfully" and redirected to the 'Manage Food' page.	Pass	None

				C. Lastly confirm the 'Update Food' button.				
10	Delete Food	Check if 'Delete Food' button is working or not	a)Must be logged in as an admin. b. Must be on the 'Manage Food' page.	Clicked the 'Delete Food' button.	Success message shown "Food. Deleted Successfully" and redirected to the 'Manage Food' page.	Message shown "Food Deleted Successfully" and redirected to the 'Manage Food' page.	Pass	None
11	Update Order	Check if the food order information is updating or not.	Must be logged in as an admin. Must be on the 'Manage Order' page.	a. Click the 'Update Order' button. b. Enter the updated food order details in the form. C. Lastly confirm the 'Update Order' button.	Success message shown "Order Updated Successfully" and redirected to the 'Manage Order' page.	Message shown "Order Updated Successfully" and redirected to the 'Manage Order' page.	Pass	None
12	Search Food	Check if the search result is correct or not	Users need to have a stable internet connection.	Simply users search their desired food item on the search bar.	Shown all the food items which are searched by the users	Shown the desired food items.	Pass	None

			Users must enter the restaurant website domain.					
13	Order Now	Check if the 'Order Now' button is working or not.	Users need to have a stable internet connection. Users must enter the restaurant website domain.	The user clicked the 'Order Now' button.	When the user clicked the 'Order Now' button it should go to the order confirmation page.	It goes to the order confirmation page.	Pass	None
14	Confirm Order	Check if the 'Confirm Order' button is working or not.	a) Users need to have a stable internet connection. Users must enter the restaurant website domain.	Users should click the 'Order Now' button and fill the form of the order confirmation and click the 'Confirm Order' button.	Order details should be saved to the database and shown the success message "Food Ordered Successfully" to the users.	Message shown "Food Ordered Successfully" and saved in the database.	Pass	None
15	Report Generate	Check the filter button is working or not	a) must have customer order data.	a) select from date and to date and click filter button to show customer order list according to the date .	If order exist then show the order list according to given date	Result will be shown according to date.	Pass	None

16	Logout	Check if the admin can successfully log out.	Must be logged in as an Admin. Must click on log out in navbar.	Click on logout button in the navbar.	Success - Admin logs out. Failure - No activity on logout clicks	Admin logs out.	Pass	None

Figure: Testing Table

Chapter 6: Results & Analysis

6.1 Overview

When we are working on any project, we always do our best for a good result. In this pandemic, our web application is going to play a big role. Our 'Online food ordering and restaurant management system' will save the cost of pens, paper, and many other things. This system will definitely save the user's valuable time. This system is very user-friendly for the user.

6.2 Testing Results

Not all of the application's features have been added yet; they will be added when the specifications are met. As a result, further test cases for this application are likely in the near future. Any issues that occur during the test are fixed as soon as possible by the developers.

From the test table, we can show that all the test cases were passed. Following the testing process, the team will ensure that user manuals, test case notes, and fault documentation are prepared in order to clarify difficult processes in plain English to non-technical staff and future developers who might join the development team.

6.3 Conclusion

We all know that in the restaurant industry, the management of time is extremely important. As we live in a very modern world, the use of software and technology is essential to helping us streamline and shorten the time it takes us to carry out tasks. One of the countless benefits that come with implementing an online restaurant management software in your business is the ability to access your critical business data from anywhere with access to the internet. This gives you the freedom to spend time away from your restaurant while still making informed, critical

decisions about the well-being of your business. This web application would be very useful for the people, particularly in this pandemic situation, so they will not have to go to a restaurant to eat.

Chapter 7: Project as Engineering Problem Analysis

7.1 Sustainability of the Project/Work

Software sustainability is one part of software engineering. In most cases, sustainability should be considered at the very beginning of the software development process. Since it is difficult to adjust how developers act, this process is not necessarily practicable.

Thinking about the future, the company has made huge plans to make sure enough revenue is generated. The software's initial goal was to provide online food delivery to people who couldn't go to the restaurant because of the pandemic. Initially, the company intends to deliver food only to a limited area of Dhaka. Their long-term goal is to deliver food throughout Dhaka. As a result, this business plan should increase the number of people who have used the application. This application will produce more sales as there are more customers. New technologies are being implemented as per the future plan of the software as well. The software is designed in such a way that any additional functionalities added by the developers can be quickly implemented into the application. Since this system is entirely online, we expect that if it is well maintained, it will be able to operate for a longer period of time.

7.2 Social and Environmental Effects and Analysis

There is no doubt that online food delivery can save time. For those who need to eat late due to work or lifestyle decisions, online food delivery offers a broad variety of meal options. Online food delivery has provided employment opportunities for many food workers. Online food and

delivery people provided a critical lifeline during the COVID-19 pandemic. Online food not only provided meals but also employment for the people who prepared or delivered the food. In order to avoid face-to-face interactions between delivery personnel and customers during this time, the majority of major online food platforms redesigned their food delivery apps.

In terms of the environment, online food delivery has a very good effect. Less going out to eat meals means less traveling as a result carbon released from vehicles is reduced. Nowadays food delivery operators use cargo bikes because they are quiet, emission-free, and less disturbing for citizens. Overall online food ordering has a positive environmental impact all over the world.

7.3 Addressing Ethics and Ethical Issues

Ethics is the study of what is right and wrong, as well as moral responsibility and obligation. Ethics, in reality, shapes the characters. Projects that are useful to consumers include all of the elements that are ethically sound. Our system is completely secure. Any of the user's data is saved in a way where no one else will use it. We have tried to provide the maximum amount of security possible from the hacking of our application. Overall, we can say that our system will work for all the users maintaining all ethical issues properly.

Chapter 8: Lesson learned

8.1 Problems Faced During this Period

There are a lot of problems in web development because it contains more types of markup language, methods, objects, modifiers, and many ways to create a project.

When I started working with PHP, I had more challenges to solve. It doesn't always fit my expectations and isn't always positioned in the correct position. To come up with a beautiful site design needs a lot of creativity, uniqueness, and brainstorming sessions. The majority of web designs that target markets and clients enjoy and respect are the outcomes of continuous improvement and regressive critical thinking. The capacity of the website to sync with multiple apps, as well as its responsiveness, are just a few of the criteria that the web designer considers. As a result, web design is a difficult job. I worked from home due to the COVID 19 scenario. Because I live in a rural place, access to the internet was a huge difficulty. I had to constantly contact my boss, and I had to brief the clients frequently. Remotely doing these tasks brought several problems that may have been avoided. Network drop was a typical issue with Zoom meetings. I believe that if I worked on a person, I would be able to do more.

8.2 Solution of those Problems

Web development is an interesting and interactive field, but I found it difficult to learn at first. With the internship training, I was able to study and understand a variety of objectives. I had several difficulties with the practical work at first. However, after some time, I am able to solve PHP code and other difficulties on my own during my training session. I learned the hard way that clean code avoids unexpected mistakes. By getting a broadband connection, I was able to solve my internet issues. I concentrated on my job and prioritized it over other things.

Chapter 9: Future Work & Conclusion

9.1 Future Works

As previously said, this current application is only for the web. In the future, the company wants to develop a smartphone interface for both iOS and Android. They also want to add a graph analysis system for monthly or daily sales. They have a huge plan to update the application such as add a payment gateway, the daily or monthly sale generated, monthly revenue generated, etc.

9.2 Conclusion

This report is based on the project of “Online Food Ordering and Restaurant Management System”. With the help of the internet, the customers can get access to the restaurant website and order their desired food online. This will save a lot of time for the customers.

It has been a great opportunity for me to work in BG IT Limited as a web application developer. Working on this project has taught me a few lessons over the internship time. It has shown me how complex and dynamic the modern business world is. This program gave me a good picture of what it's like to work as a web developer, what challenges I'll face, and how to deal with them. Hopefully, it will be the start of my journey into the corporate world as a developer.

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An Undergraduate Internship/Project on Online Food Ordering Service & Restaurant Management System By

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Summer, 2022

Consent Form

The student modified the internship final report as per the recommendations made by his/her academic supervisor and/or panel members during the final viva, and the department can use this version for archiving.

Sabrina Alam

(Signature of the Supervisor)

Sabrina Alam

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