Design and Development of web-based Restaurant Management System in Bangladesh

BY

MD. Rashed Hossain
ID: 183-15-11965
AND
MD. Faysal Ahammed
ID: 183-15-12030
AND
Mir. Rowshon Tabassum
Id: 183-15-11973

This Report Presented in Partial Fulfillment of the Requirements for the Degree of Bachelor of Science in Computer Science and Engineering

Supervised By
Professor Dr. Md. Fokhray Hossain
Department of CSE
Daffodil International University

Co-Supervised By
Warda Ruheen Bristi
Assistant Professor
Department of CSE
Daffodil International University

DAFFODIL INTERNATIONAL UNIVERSITY
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APPROVAL

This Project titled **"Design and Development of web-based Restaurant Management System in Bangladesh"**, submitted by **Md Rashed hossain, ID No:183-15-11965 and, Md. Faysal Ahammed, ID: 183-15-12030 and Mir. Rowshon Tabassum ID No:183-15-11973** to the Department of Computer Science and Engineering, Daffodil International University has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on 13 SEPTEMBER 2022.

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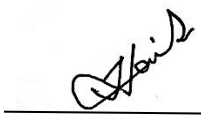

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Faculty of Science & Information Technology
Daffodil International University

Sazzadur Ahmed (SZ) — **Internal Examiner**
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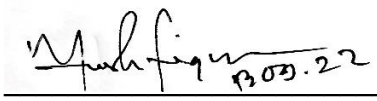
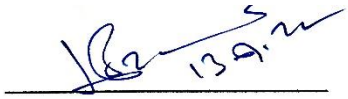
Department of Computer Science and Engineering
Faculty of Science & Information Technology



Mushfiqur Rahman (MUR) — **Internal Examiner**
Senior Lecturer
Department of CSE
Faculty of Science & Information Technology
Daffodil International University

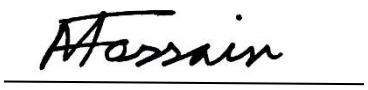


Dr. Md Sazzadur Rahman — **External Examiner**
Associate Professor
Institute of Information Technology
Jahangirnagar University

DECLARATION

We hereby declare that, this research base project for the Completion BSc in CSE has been done by us under the supervision of **Professor Dr. Md. Fokhray Hossain, Department of CSE** Daffodil International University. We also declare that neither this project nor any part of this project has been submitted elsewhere for award of any degree or diploma.

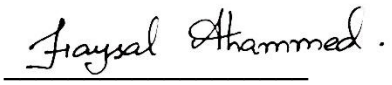
Supervised by:



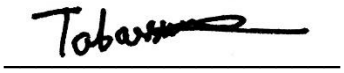
Professor Dr. Md. Fokhray Hossain
Professor
Department of CSE
Daffodil International University

Submitted by:

MD Rashed hossain
ID: 183-15-11965
Department of CSE
Daffodil International University



MD. Faysal Ahammed
ID: 183-15-12030
Department of CSE
Daffodil International University



Mir. Rowshon Tabassum

Id: 183-15-11973

Department of CSE
Daffodil International University

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ABSTRACT

This project is intended to make a Restaurant Management System that will improve experiences for the Restaurant authorities. This system needs an internet connection to run. This system allows the user to Register and login to create an account from any place with an internet connection. After that they will be able to do various kinds of tasks that are designed for them. This system also provides all the users a unique user Id. Using tools such as Laravel, Java Script, HTML and CSS this system was built. Users can use this system to do things in a more efficient and productive way. The system can be entered using email and password. Two key modules in this system are: (i) user (i. e. customer or staff); and (ii) Admin. The system maintains authentications in order to access the system. The primary aim is to focus on every user who uses our service and gets benefitted and makes restaurant system easier.

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CHAPTER 1

Introduction

1.1 Background

A restaurant management system is a collective term for software that helps to improve operations in the food industry. Especially, restaurant businesses, hotels, pastries, shops, online (virtual) kitchens, food carts, or delivery

This type of system may be an all-inclusive system that combines more complex back-end features such as people management, inventory control, and kitchen system monitoring with level components of the system as payment processing. Some restaurant management systems, however, focus on selected places. Important advantages with using restaurant management systems relate to automation and compressing operations to increase customer satisfaction. Modern consumers want fast, hassle-free service, and the restaurant management system is a crucial part.

The reality that all these solutions connect so many various processes in one area can make them valuable restaurant technologies. Payment processing, financial management, sale monitoring, performance analysis, internal communications, and other activities all are possible with a whole restaurant management system. Similarly, our system attempted to develop a solution for a restaurant with a parking area where customers may visit us and make orders and pay bills using these systems without getting outside from their vehicles.

1.2 Motivation

We have built this project to:

1.Implement a web-based online and driveway restaurant.

2.Get a real-time inventory view to guarantee that only dishes with proper ingredient supply are available for purchase. Make sure that the customer has flexible eating options. so that customers can comfortably come and go as they wish to select up their orders. The basic order management systems are no more available

by foot for waiters. choosing the most affordable price for the customers. Direct communication between waiters and restaurant employees allows the kitchen to notify the waiter that service is needed.

3.Get staff attendance systems

4.Get all orders logged for future query generation.

5.Get easy tracking and viewing of all active orders.

6.Get order alerts

7.Get automated stock control

8.Change Currency

9.Change Language

1.3 Problem Statement

There are many restaurants in Bangladesh using a file-based system, allowing customers to contact ahead to book a seat. Each restaurants likes to collect customer data, like name, age, phone number, and information of transactions with the business. All of these are kept in files. These documents are stored in lockers and shelf where they languishing for years without ever being used. In the event of a fire, they might be easily destroyed. The traditional file-based system requires a significant amount of effort and time. It would take a lot of time to search for a damaged file. The traditional restaurant payment system involves large lines. In the modern world, there really are better ways to do this. Communications problems occur for restaurant managers sometimes in the kitchen. All restaurant managers are illiterate, therefore if a foreigner is present, they can't even speak effectively. Because of this, the restaurant will take that customer's perspective into consideration. Consequently, a linguistic system is required in every restaurant. It would be impossible for a restaurant owner to physically monitor all of his restaurants at once if he owned more than one. He has so many issues to deal with, which increases the probability of thieving. With our technology, restaurant owners can operate a driveway

restaurant in addition to their conventional and online restaurant. If any customer came with car and he don't find car parking that time that type of customer go away .so restaurants lost some customer by that.

If owner is not at restaurant, it's not possible for him to viewing sales report, recipe costing etc. That time it's a high chance to pilferage money from accounts.

1.4 Aim of the Project

Restaurant service and monitoring of Bangladesh are not as good as like modern country. People who are busy and are do not have time to seat and eat in restaurant, that type of people can benefitted by this kind of website too. Our main objective is designing a Web-based whole restaurant Management System which includes all the major functional areas of nowadays in modern restaurant.

The Aim of this task is to construct an electronic restaurant the executive's framework utilizing the abilities as a whole and methods from the field guaranteeing that no normal improvement botches are repeated. Project the executives is basic to all computer programming ventures and keeping to an undertaking plan will be of comparative significance.

Specific objectives of this project whole Restaurant Management System are:

1. Design a better system for Restaurant, manager, staff and customer.

2. Improved customer care.

3.Better customer management (order, kitchen service, Empty seat observation, Language).

4. Simplify communication between the restaurant and kitchen staff. All orders taken by the staff

will result in a request on the monitors in the kitchen with all orders being separated by table

and cooking time.

5. Better communication and co-ordination among the different departments.

6.Provide a top management a single website.

7.Online payment system for less hassle.

8. Easy to use User Interface (UI).

9. Deliver reliable and quick service on a real time basis

10. Provide the standard coverage of records that transacts.

11. Eliminate the chances of any kind of pilferage.

12.Enable the growth of the restaurant

13.Reduce scope of errors.

14. Reduce the documentation work.

15. To save time and money.

16.Reduce restaurant Operating costs and easily manageable.

17.Miscommunication caused by handwriting.

18. Problematic stock organization.

1.5 Research Methodology

A restaurant management system helps you track the real-time data of your restaurant. The system assists restaurant management to repose an ample record of all transactions carried out by the restaurant and the database of the restaurant. This essay pretends to examine web-based restaurant management system development. A mixture of quantitative and qualitative strategies will be utilized to get rich photos of the marvels; quantitative instruments for the choice quality-and post-season surveys and meet to develop this

software. Contentious investigation will assume a part in this examination since it creates new thoughts.

Contentious investigation will assume a part in this examination since it creates of new thoughts. Every strategy has its focal points and obstacles, utilizing peculiar sorts of investigation techniques will give me a wealthier comprehension than picking up from one technique alone, and additionally help out every strategy with different sorts of methodologies, also known as data triangular. Data triangular is the point at which the examination crosses confirm the same data. When two or more sources of information are gathered that encourages approval of information through cross verification is called data triangulation.

In order to get a variety of viewpoints on this research field, various consulting firms and web-based developing information systems for other organizations was chosen as a case study, utilizing social interaction with participants in light of the study's background. We used the conventional methodology for software development. Each iteration petals around the development cycle that is analogous to the waterfall model which consists of:

- Preparation /Design
- Requirement analysis
- Design
- Development & Testing

In every cycle, the Association clients are given a demo/exhibition to honor helpful criticism and feedback. This methodology diminishes dangers and delivers the project to acclimate to request redresses quickly with least cost. Last but not least, the system will shortly be improved and enhanced during the Defense stage.

1.6 Research Outcome

The proposed system features can be split into two categories: essential features and wish-list. The essential features:

1. The system will require an extremely basic UI with contact screen capacity.

2. A variety of composed menus is a need. High-level choices are integrated into the straightforward front finish to lessen the expected impediments. Permit choices for each feast including additional items that can be added at an additional expense.

3. Client accreditations to follow the exchange history and normal table turning season of each and every part of the group.

4. SQL Server/Prophet social data set to hold every one of the fixings and courses with a progressive system so fixings can be designated into food types. Making food types will work toward the front regarding showing additional items and choices of a dinner.

5. Manager choices for voiding and applying limits

6. The board highlights for review deals reports, recipe costing, and so on.

7. Booking instrument for apportioning tables with table turn assessment.

The wish-list:

1.Bluetooth PDAs for the restaurant staff so the orders will be immediately sent to the kitchen staff decreasing process time.

2. built-in user education for the system.

3.Table management map, that makes it simple to connect employees to tables and monitor the activities of current customers.

1.7 Conclusion

- The restaurant management system is a necessary part of the lifecycle of this modern era. Implementation of a web-based hospital management system project helps to save all kinds of data, and records, provide adjustment and communication with the users, implement restaurant policies, improve daily service, manage financial and human resources, and market restaurant services. This favorable judgment covers the wants of the admin, manager, waiter, delivery man and restaurant authorities and simplifies. The developed system accomplishes all the objectives stated for the need for the change of the system.

- The output produced seems to satisfy all the users but it will definitely take time to look forward to the real consequences the new system could produce. This project was made user friendly by the use of visual basics enabling the user to interact easily with the database

CHAPTER 2

Importance of Restaurant Management System

2.1 Introduction

Over the years, technology has tremendously revolutionized the restaurant industry. Our modern world system anticipates use of computers, smartphones and iPad and for implementation, all of them are associated with an optimized network. In our society, many owners and managers get caught up in the human spectacle of management, but if the support software being exploited isn't user-friendly, then it's a disservice.

This software they use is indispensable to their business' success. The importance of mobilized restaurant management software systems is often ignored in the restaurant business. At times, this software is seen as a kind of mobile cashier, and nothing more. However, this restaurant management software system does much more than that. They streamline operations, reduce wait times, and greatly affect your customers' satisfaction, which directly affects your restaurant's success.
Besides this software systems manage inventory, simplify menu changes, aid in scheduling, and support many other important tasks. They assist to improve server proficiency, as well as contribute to empty counter space, with smaller and more productive stations. This means quicker table turnover while lowering the risk of errors, as well as enhanced communication through the front and back of the house (FOH and BOH). This software is help to Fast, reliable, and safe payment processing.

2.2 Necessity of Restaurant Management System

In this neoteric world, everything is going online. Businesses, land registrations, Restaurant and many more. Our modern world system makes use of laptop, smartphones like android phones, IOS phones and iPad, each of them is compacted differently to enter the grandiose wisdom, information and data on the internet. Every application or app can't justify all the devices. That's why web-based websites play a very important role in that.

With a web-based Restaurant management system, the site can be easily accessed online. Anyone can manage orders easily across all platforms within this software. It records orders received online as well as offline. Even the restaurant admin can access and know what is happening around the restaurant just by going online. Every update is reflected on this system and customers get notifications constantly too. The entire process becomes easy and they can check the order status at any given point. Customer can take all Restaurant services such as making reservations, processing orders, and delivering meals, generally requiring waiters to input customer information and then transmit the orders to the kitchen for meal preparation. When the customer pays the bill, the amount due is calculated by the cashier. This is way more secure than a file-based system.

2.3 Compliance and Quality

Every restaurant is required to submit a monthly business report that captures a moment in time at this restaurant and serves it up to them for analysis. Since it is tough to arrange them manually, choosing the finest RMS enables you to send the reports quickly and on schedule.

The Restaurant Management System carefully and effectively manages each report to assure accurate findings. An extensive look at restaurant reporting, from the data admin can monitor to the Quarterly, monthly, daily, even hourly. For coordinated and quick care, lower costs, shorter wait times, improved customer safety, and customer care, everyone favors RMS for their restaurant.

2.4 Processing Time and Outcomes

This software handles a real-time process management system for restaurants using an advanced point-of-sale (POS) and online system by which staff can share order information in real time. There are no chances for departure in any of the efficient RMS systems because they all adhere to the standard operating procedures. In this system, kitchen staff can check all customer orders by the dish that was ordered and the elapsed time of each order. when a restaurant lets customers wait a long time before they get the service, customers will be dissatisfied. Inconsequence short waiting times outcome is important for high customer satisfaction.

This Restaurant management system improves accessibility for employees' work and accelerates the completion of processes for improved outcomes.

2.5 Opportunities and Obstacles

The web-based restaurant management system can generate any opportunities and also with authentic-life problems there will be many obstacles with it.

Enchasing some of your restaurant products, such as salad dressings or baked goods, for people to buy and take home represents an opportunity. Offering delivery services and take-out or setting up a drive-through to meet the needs of people on the go represents another potential opportunity. The whole system can do many things store and save like all-in-one solution, Hardware compatibility, User-friendliness, Intuitive Menu Configuration, Reporting Capabilities, Quick Loyalty and Reward Implementation, Cloud-

based or Online Management. It can also take order from customer, and see how many people have made order.

However, with a real-life implemented application or system there will be obstacles too. Restaurant owners faced some of the challenges and how to manage these the best way possible to find out Stock & Inventory Wastage, Demand Forecasting, Stock Theft Managing Stock in Multiple Branches, Supplier Management, Calculating and Analyzing the Profitability of a Dish, Employee Management, Payroll Management. Like storing the information and data needs a database with enough space. Here are five common restaurant problems and the solutions that can help to address them. such as Inventory Shrinkage and Waste, Admin Need to Reduce Face-to-Face Contact Between Customers and Staff, Heavy Labor Costs, High Employee Turnover and Poor customer experience. Now, this is not a big obstacle. The main concern is with the internet connection. If the restaurant has a weak internet connection the system will not work properly. So, to use the web-based restaurant management system, the restaurant will need to have a very strong internet connection.

2.6 Conclusion

In conclusion, a restaurant management system is indispensable for you to run your restaurant proficiency and smoothly. Restaurant management system must be logical and efficient because it is a crucial socioeconomic activity. You may not be at the restaurant at all times but you must have access to this data at all times and a strongest restaurant management system helps you do just that. This is achieved through an easy-to-use graphical interface menu option. The users can add any number of items to the card from any of the available food categories by simply clicking the Add to Cart button for each item. Once item is added to the cart, user is presented with detailed order to review or continue shopping.

CHAPTER 3
Requirement Specification

3.1 Introduction

A design detail is an exhaustive report that frames each part of a cycle or item.
It is the mix of Front-End and Back-End user interface in general. As the name suggests, a plan determination is a report that frames the particulars for a specific project's design. The paper, which the client made after careful examination, has unbelievably unambiguous particulars for the plan that should be completely finished.

Design particulars are a critical part of the development documentation on the grounds that trenchless structure is done underground. To make a completed item that fulfills the client's requirements, a worker for hire should keep the plan rules and acknowledge prescribed procedures.
If there are any plan related issues during the development cycle, the record additionally safeguards the project worker from any responsibility.

3.2 Front-end Design

The Front End is the graphical UI of a PC or gadget that makes it simpler to utilize. The course of frontend configuration involves composing the presentational JavaScript, HTML, and CSS, react code that make up a UI. A front-end originator, then, is a generalist with a strong order of UX ideas, a sharp feeling of style, and information on HTML, CSS, and some JavaScript.

There are five areas that are needed to give adequate consideration.

These are:

1. Fluid, grid-based layout.
2. Consistency in design approach.
3. The use of reusable components.

4. Data transparency.
5. Considering states.

Front-End Architecture:

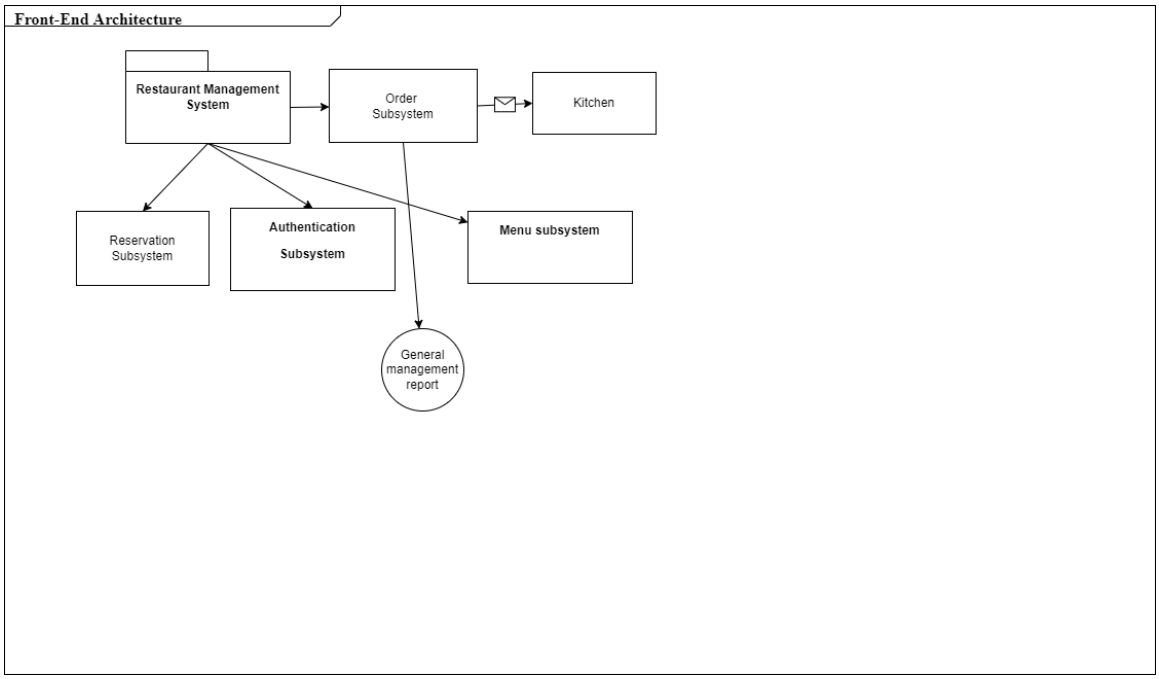


Figure 3.2.1: Front-End Architecture

Current Front-End applications are supposed to deal with a developing measure of the work escalated undertakings. Bugs are emerging all the more frequently because of this expanded intricacy. Since clients collaborate with the front-end, we require an engineering that is reliable, adaptable, and both. I as of now favor a measured, space driven engineering. Despite the fact that my vision might change, for the time being this is my picked game-plan.

The application steering guarantees that clients that connect with our application are coordinated to the fitting module. Every module is incorporated altogether. Be that as it may, there will be some coupling since clients need to use a solitary application, not various little ones. These attributes or business rationale are coupled together. A few qualities can be divided among modules. This thinking can be added to the application layer. This shows that there is a connection choice for every module with the application layer. A

configuration that necessitates using the client-side API to connect to our back-end, or API gateway, is an excellent example.

3.3 Back-End Design

While Frontend Web Development is worried about the planning of the UI of the site utilizing web advances like HTML, CSS, JavaScript, and so on - Backend Web Development (or you can say Server-Side Development) is answerable for the suitable working of the site.

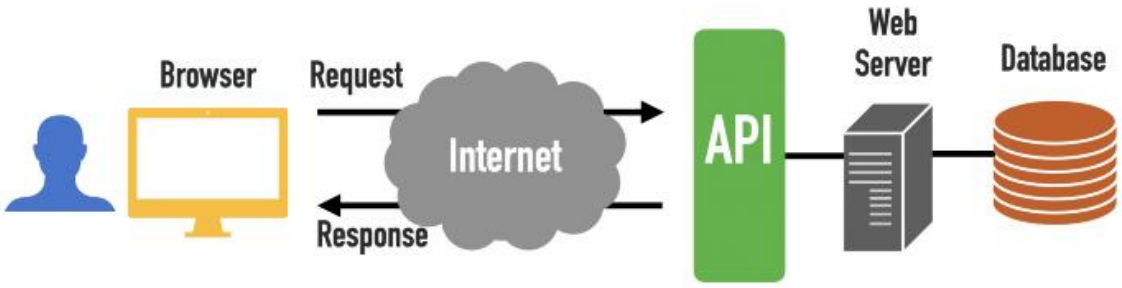


Figure 3.3.1: Back-End Development

Frameworks are libraries of server-side programming languages that construct the back-end structure of a site. In this project we have used **Laravel PHP Framework and My SQL** to implement the database.

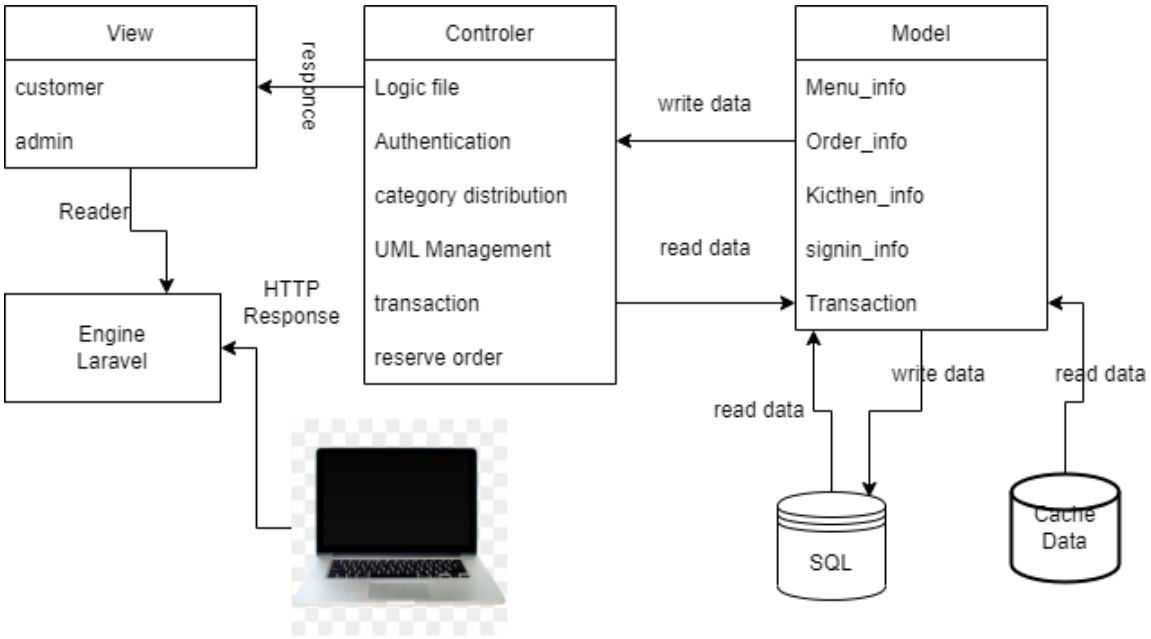


Figure 3.3.2: Back-End Design

Laravel is an open-source PHP framework, which is strong and straightforward. It follows a model-view-regulator configuration design Laravel reuses previously existing parts of various structures which helps in building a web application. The web application consequently planned is more organized and commonsense. The "stack" involves the data set, server-side structure, server and working framework.

3.4 Interaction Design and User Experience (UX)

In some cases, the expressions "collaboration plan" and "client experience configuration" are utilized equivalently. That checks out given the critical cross-over between communication plan and client experience plan. Since UX configuration is tied in with impacting the client experience of an item, communication between the client and the item assumes a critical part in that insight. In any case, client experience and connection configuration are not exactly the same thing.

The manner in which we approach client collaborations is where UX and connection configuration separate most. The target of communication creators is to upgrade the intuitive experience for clients where they cooperate with an item. The client's way while

communicating with an item is what UX creators center around, not just the hour of commitment.

The Four dimensions of interaction design serve as a helpful model to understand that it involves.

The website's Words are simple to follow and can convey just the perfect amount of information to the user.

To support words in providing data to the user, visual representations like photos, images, and style are being used.

Our website is completely responsive to whatever hardware the user is using, and Physical Things or Area refers to the physical hardware and objects that customers interact with. Users can measure their progress via the use of sound and animation as well as how long they spend interacting with the first three axes.

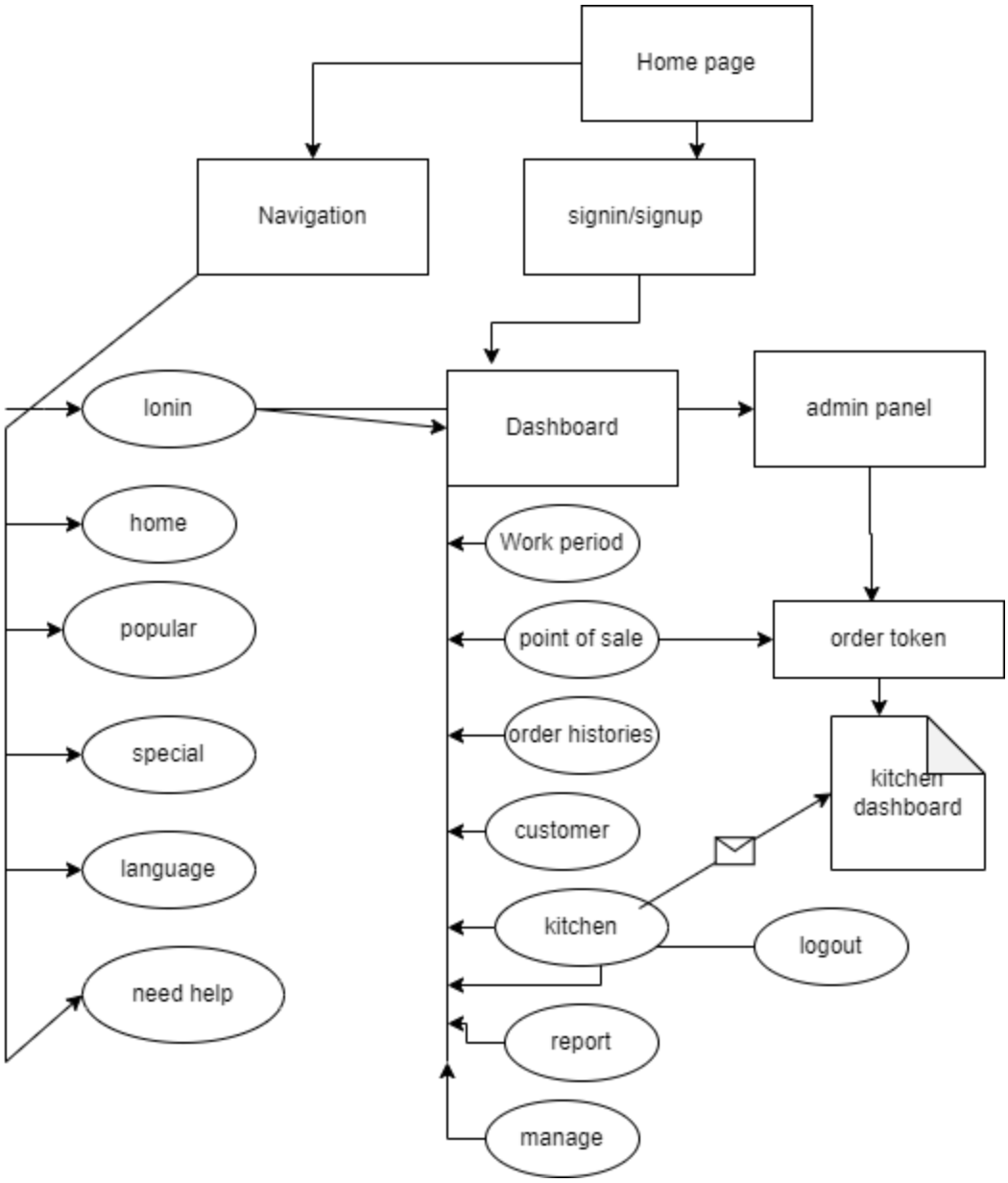


Figure 3.4.1: UX Site Mapping

3.5 Implementation Requirements

The actual process of converting requirements into website architectural designs, detailed designs, code, and test cases is known as requirements implementation. If needs are as precise and quantitative as feasible, the implementation of these work products is less difficult. The work results from website testing and architectural designing are the most in

line with specifications. However, it is not simple to translate a set of functional and non-functional requirements into an architecture and reliable test cases. There isn't much information on how various architectural choices affect needs. Furthermore, even with adequate project resources, it is challenging to create test cases that accurately reflect requirements.

To implement the project, we have used some tools like VS code as editor, Xampp for the database environment.

3.5.1 VS Code

Microsoft created Visual Studio Code, sometimes known as VS Code, a source-code editor for Windows, Linux, and macOS. Debugging support, syntax highlighting, intelligent code completion, snippets, code refactoring, and embedded Git are among the features. The theme, keyboard shortcuts, options, and extensions that offer more functionality can all be changed by users.

Visual Studio Code was rated as the most popular development environment tool in the Stack Overflow 2021 Developer Survey, with 70% of 82,000 respondents saying they use it.

Feature:

- Develop. Navigate, write, and fix your code fast.
- Debug. Debug, profile, and diagnose with ease.
- Test. Write high-quality code with comprehensive testing tools.
- Collaborate.
- Use version control, be agile, collaborate efficiently.
- Extend.

3.5.2 XAMPP

An open-source web servers package called XAMPP deals with several stages. It is actually an acronym, with X denoting the "cross" stage, A denoting the Apache HTTP server, M denoting MySQL, P denoting PHP, and P denoting Perl. XAMPP was created with the

intention of assisting designers, programmers, software engineers, and planners in checking and auditing their work on their PCs even when they are not connected to the internet. In this way, XAMPP can essentially be used to maintain web sites even when not connected to the internet. Additionally, it may be used to create and design databases that are written in SQLite and MySQL. Additionally, because XAMPP is designed to be a cross-platform server bundle, it may be used with a variety of operating systems and platforms, including Microsoft Windows,

Usage,

The designers of XAMPP intended to be used only as a development tool, allowing web designers and software engineers to test their work independently on PCs without access to the Internet. Numerous crucial security features are automatically disabled in order to keep this as simple as is reasonably possible given the conditions. XAMPP has the capability to serve web pages. The most important components of the package are securely secured using an exceptional device.

3.6 Conclusion

A designer, developer, or other individual with an appropriate level of experience in software design, analysis, or programming can maintain and advance the Software, including all derivatives, by following the technical guidelines for the Software known as System Design Specifications.

It is essential to establish precise design requirements early in the phase to prevent errors later in the system life cycle. But we still have to acknowledge that specifications do evolve over time. It might be challenging to create sound standards for a variety of reasons. The requirements for embedded systems are far more complex than those for other systems since they also need to communicate with external systems in addition to other software components. A technical and communicative workforce is required to establish the proper requirements.

CHAPTER 4

System Analysis and Design

4.1 Introduction

Defining user expectations for newly developed or changed software is the process of requirement analysis, commonly referred to as requirement engineering. It is also loosely referred to as requirements collecting or requirements capture in software engineering. The tasks involved in determining the requirements or conditions that must be met for a new or modified product or project, taking into account the potentially conflicting requirements of the various stakeholders, as well as analyzing, documenting, validating, and managing software or system requirements, are all included in requirements analysis.

4.2 Business Process Modeling

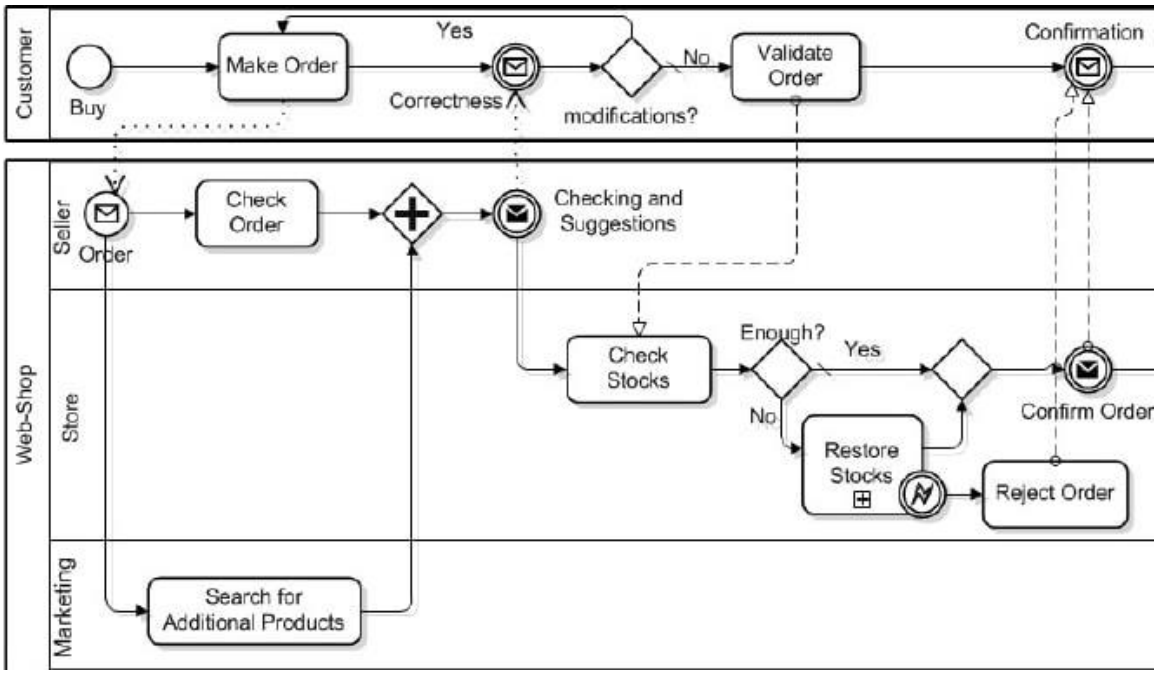


Figure 4.2.1: Business Process life cycle

4.3 Requirement Collection and Analysis

In this step to build this web-based application, first we analyze restaurant owner business objectives. In other words, we listed the business requirement which is our web-based application capacity which should be met by the system. In the process of requirement

collection and analysis we have taken a few stapeses, which are Eliciting requirements, Analyzing Requirements, Requirement Modeling and Review and Retrospective. In each step we have collected and analyzed all business requirements and turned them into technological solutions into our system.

Eliciting Requirements:

- Move existing restaurant to online
- · Maintain a customer and employee database
- · Maintain Transaction Database
- · Track the stocks of raw material

4.4 Use Case Modeling and Description

A use-case model depicts how different user types engage with the system to address a challenge. This clarifies the goals of the users, how they interact with the system, and the steps the system must take to fulfill these goals.

Various model components make into a use-case model. Three essential elements make up a model: actors, use cases, and interactions between them. The following basic model elements must be present in the use-case model.

Actor

An essential element for any performer. Properties include the actor's name and a brief bio. Consult Concept: Actor for further information.

Case Study

A model element represents each use case. Properties include the use case name and the use case definition. See for further information.

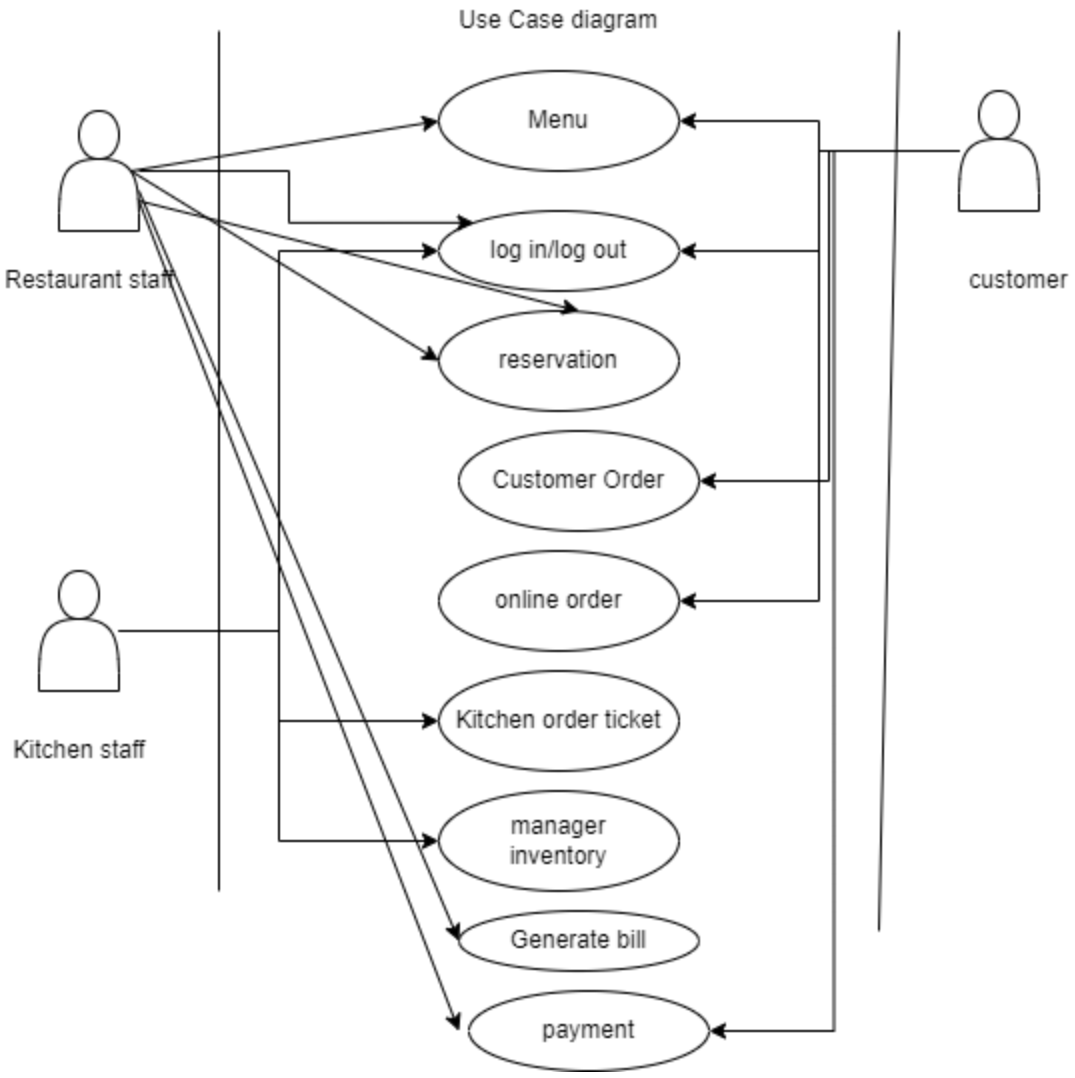


Figure 4.4.1: Use case Diagram of Restaurant Management System

4.5 Logical Data Model

A **logical Data Model** refers to the structure of the data and the relationship among them. The information describing how the data will be implemented is separate from the physical database. The logical data model acts as a design guide for the data that is used. By incorporating more details, the logical data model expands upon the fundamental concepts of conceptual data modeling.

A logical data model is composed of three fundamental parts:

Entities: Each entity is a collection of elements, individuals, or ideas important to a firm.

Relationship: Every relationship is an association between two of the aforementioned objects.

Attributes: Each attribute is a defining feature, trait, or any other detail that helps to further describe an object.

These logical data model elements are each given a name and a written definition. These serve to continuously explain the information requirements as well as the business regulations. However, the aforementioned elements are simply intended to describe business requirements. They don't care how those business requirements are handled, put into practice, or stored.

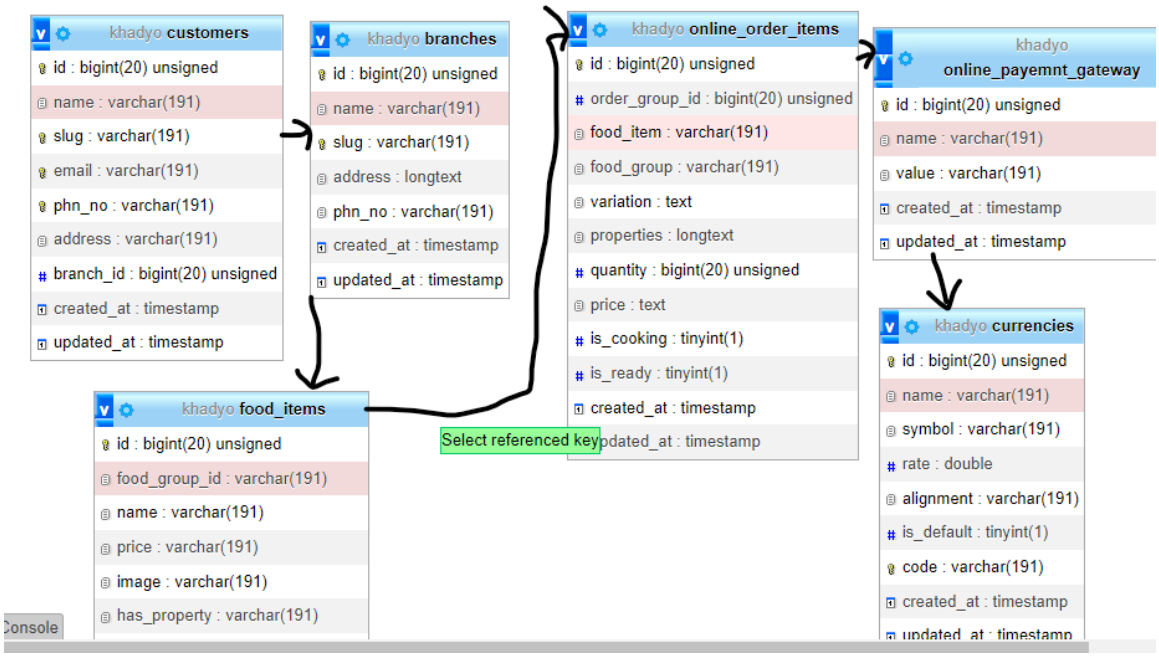


Figure 4.5.1: Logical Data Model of Restaurant Management System

4.5.1 E-R Diagram

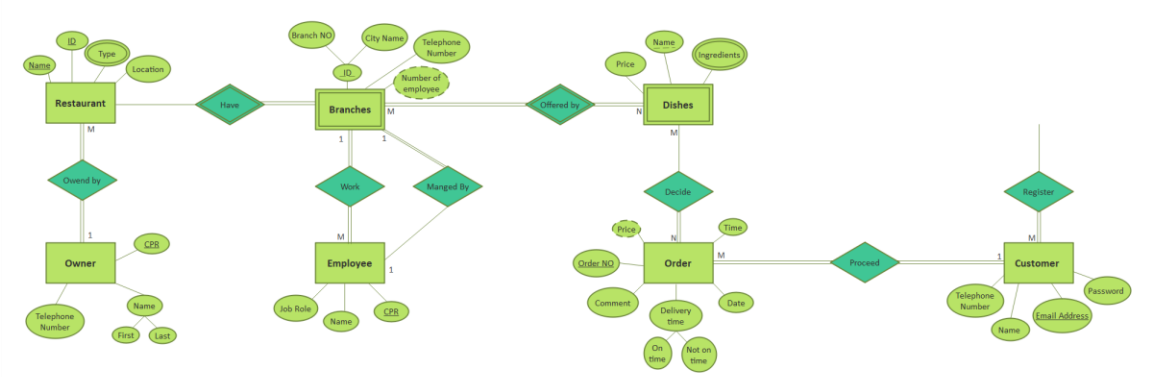


Figure 4.5.2: E-R diagram of Restaurant Management System

4.6 Design Requirement

Design requirements are based on the want and needs of the project. Once the wants and needs have been identified it can be converted to engineering requirements. These engineering requirements become the part of the design requirements.

Basically, design requirements are the functional attributes that can be converted into design features. It explains the goals, purpose and scope of a project. They also provide guidelines for designing projects.

Generally, there are two types of Design requirements: Functional requirements and Non-Functional requirements.

4.6.1 Functional Requirements

The functional needs of the restaurant management system include several software requirements specifications. These processes include registration, report generation, check out, and database.

I. **Registration Process of SRS (Software Requirements Specification)**

● Adding Customer: The restaurant Management allows user to register as customer to the system.

II. **Check Out of SRS:**

● Deleting Customer token: The staff in the administration section of the ward can delete the Customer token from the system when the patient's checkout from the restaurant .

III. **Database of SRS:**

● Mandatory Customer Information: Every Customer has some necessary data like, their first and last name, phone number, food item, address, Customer token, brance, etc.

4.6.2 Non-Functional Requirements

There are a lot of software requirements specifications involved in the non-functional requirements of the Hospital Management System, which comprehend various process, namely Security, Maintainability, Performance and Reliability.

I. **Security:**

customer identification: The phone must be used by the client to identify themselves.

Users who wish to access the system must possess a Login ID and password.

The only person who can synchronize and carry out database adjustments, such as inserts, updates, and deletions, is the administrator.

Front Desk Staff Rights: The front desk staff is able to examine any data in the restaurant management system and add new client files, but they do not have the authority to change any data there.

II. **Performance:**

● Response Time: Once the customer's information has been verified, the system responds with an acknowledgment in less than a second.

4.6.3 System Architecture

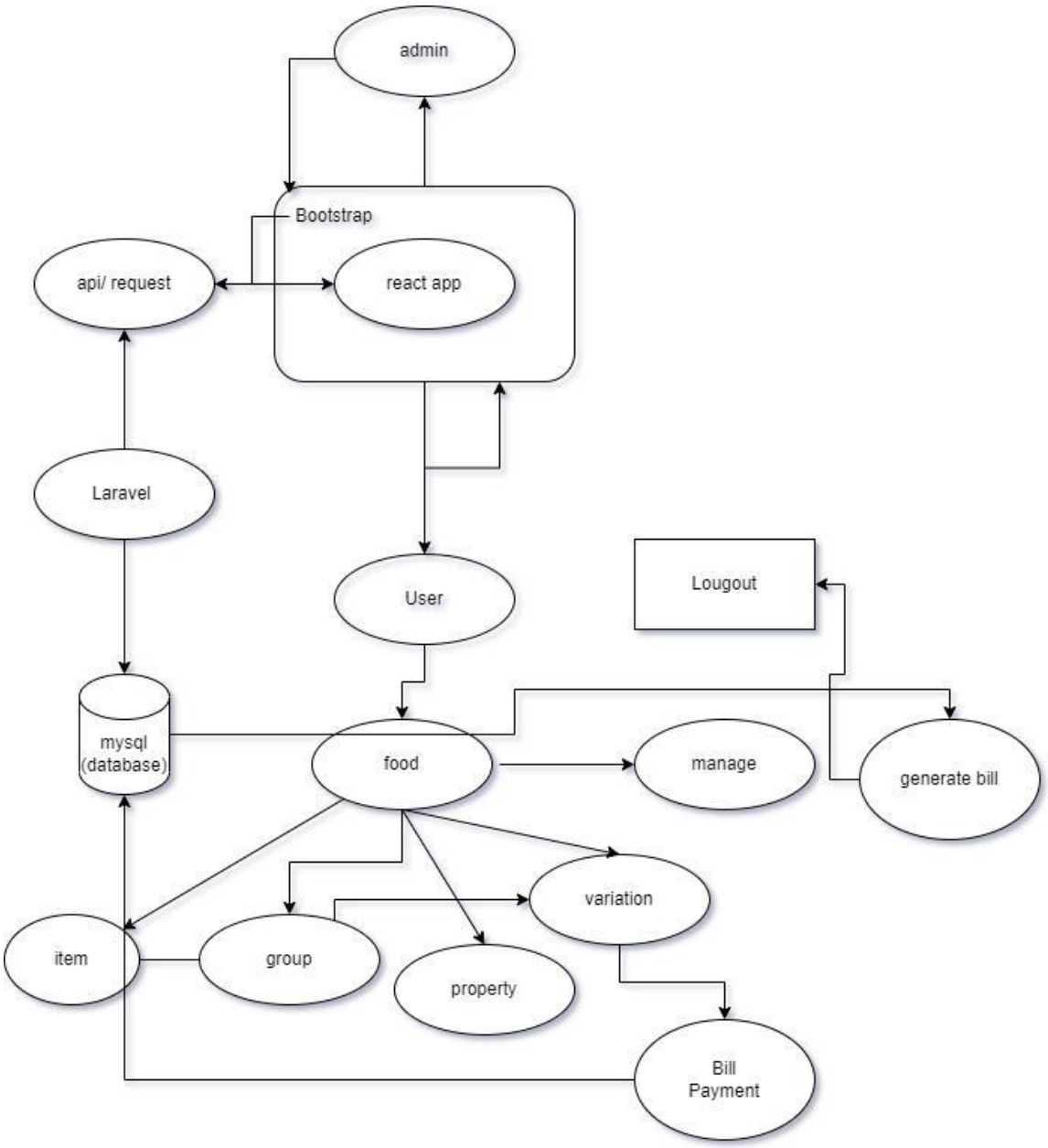


Figure 4.6.1: System Architecture

4.7 System Requirements

OS: Windows 9/ 10/ 11 / Linux or any Ubuntu or Debian OS / MacOS

Ram: 8GB or Higher

SSD: 128 GB or Higher

PHP: Version 8.0 of Higher

Composer and Node package manager must be installed in the system.

4.8 Conclusion

System requirements are one of the foundations to fabricating a successful project. System requirements are a spacious and also narrow detailed assertion that the customer makes in order to achieve their requirement. The customer should have a list of exact requirements they mark. The customer must always walk out a balance between having sufficient needs and budget-friendly requirements. Products may be influenced by requirements that flow from a top organic unit all the way down to the customer and then to the producer.

Without system requirements, both the project and the business will fail. A company will have a higher chance of success if the customer has system specifications that meet their needs. They will not only attain, but also have a better possibility of making time and money savings. System requirements should be the foundation of any project.

CHAPTER 5
System development Implementation and Testing

5.1 Introduction

This procedure analyzes both the possible application of the specification and the conformity of implements to the specification.

5.2 Implementation of Database

The khadyo database is selected for system application with the following design.

Database design is the process of developing a data model for a database. This logical data model must have all required logical and physical design options, as well as storage devices characteristics, in order to develop a design in a data definition language that can subsequently be used to create a database. In a data model with accurate attribution, each entity has a set of characteristics. The term "database design" can be used to describe a broad variety of elements that together make up the overall design of a database system. The easiest way to conceive of it is as the logical organization of the basic data structures that are used to store the data. The relational model has these tables.

Table 4.1: Hardware Requirements of the system

processor	64-bit operating system
Hardware	Minimum System requirements
Processor	1.2 GHz Processor Speed
Memory	128 MB RAM (256 Preferable)
Blender	version 2.79
Display	800X600 Colors (1024x768 High color16- bit recommended)

Software	Minimum System Requirements
Operating System	Windows 7 or later
Runtime Environment	XAMPP Server
Database Management System	MySQL

Table 5.2: Hardware Requirements of the system

5.2.1 Data-Table Name

The name of this Restaurant Management System's database is "khadyo" which has a couple of data tables.

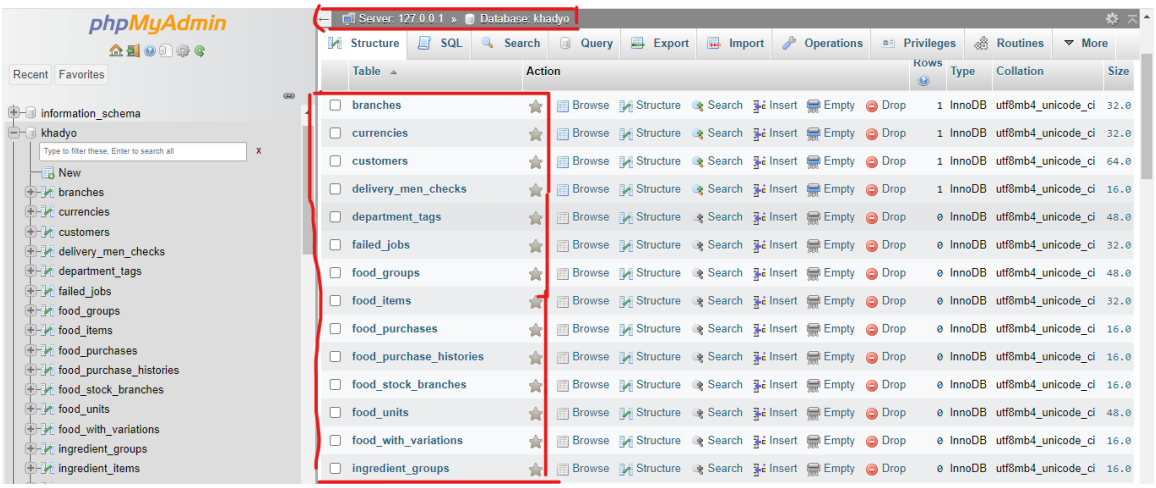


Figure 5.2.1: Database Table Name

5.2.2 Data Type Architecture

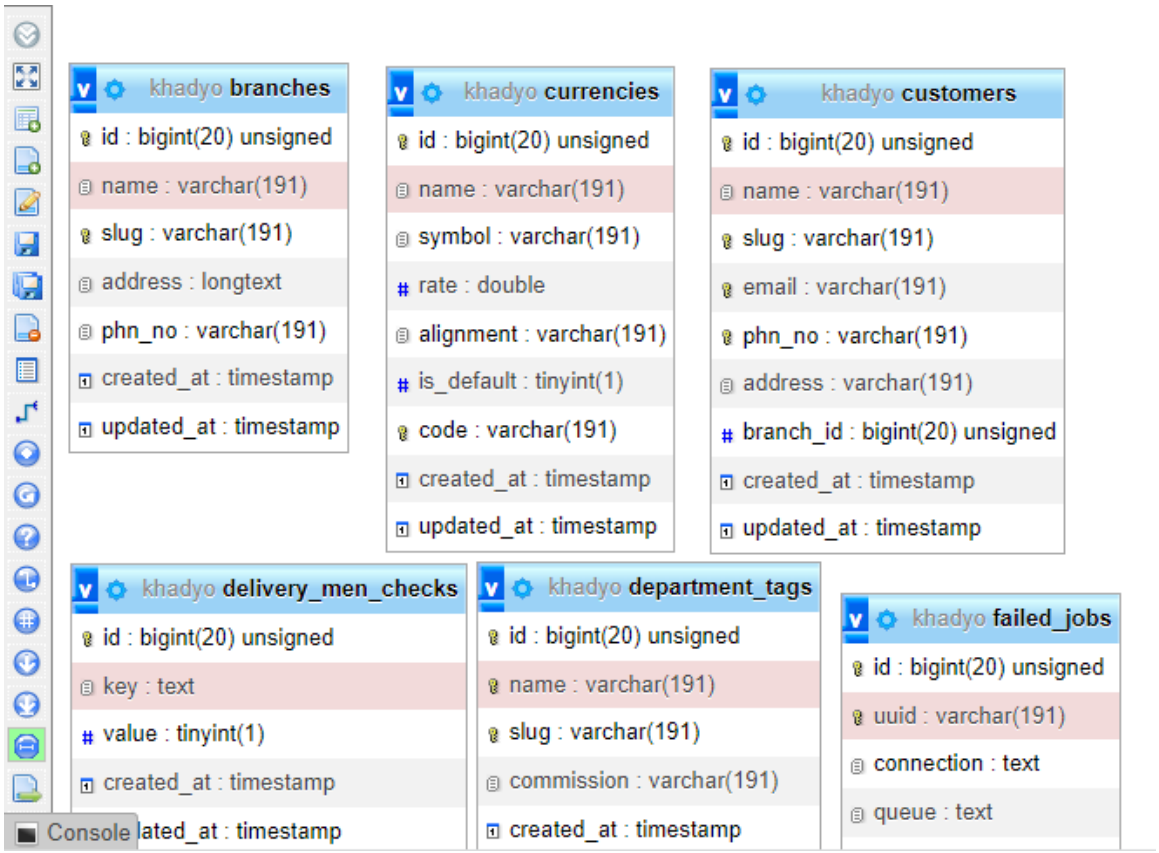
As a Data architecture as well as vision of the eventual interconnections between those data systems, data architecture should impartially establish data standards for all of its data systems. Since data integration necessitates data interactions between two or more data systems, it should be dependent on data architectural standards, for instance.

The following data types parameter declarations:

1. CHARACTER.

2. VARCHAR (length).
3. BOOLEAN.
4. SMALLINT.
5. INTEGER OR DOUBLE
6. DECIMAL
7. NUMERIC
8. REAL
9. FLOAT
10. DOUBLE PRECISION
11. DATE
12. TIME
13. TIMESTAMP

5.2.3 Data Table Architecture



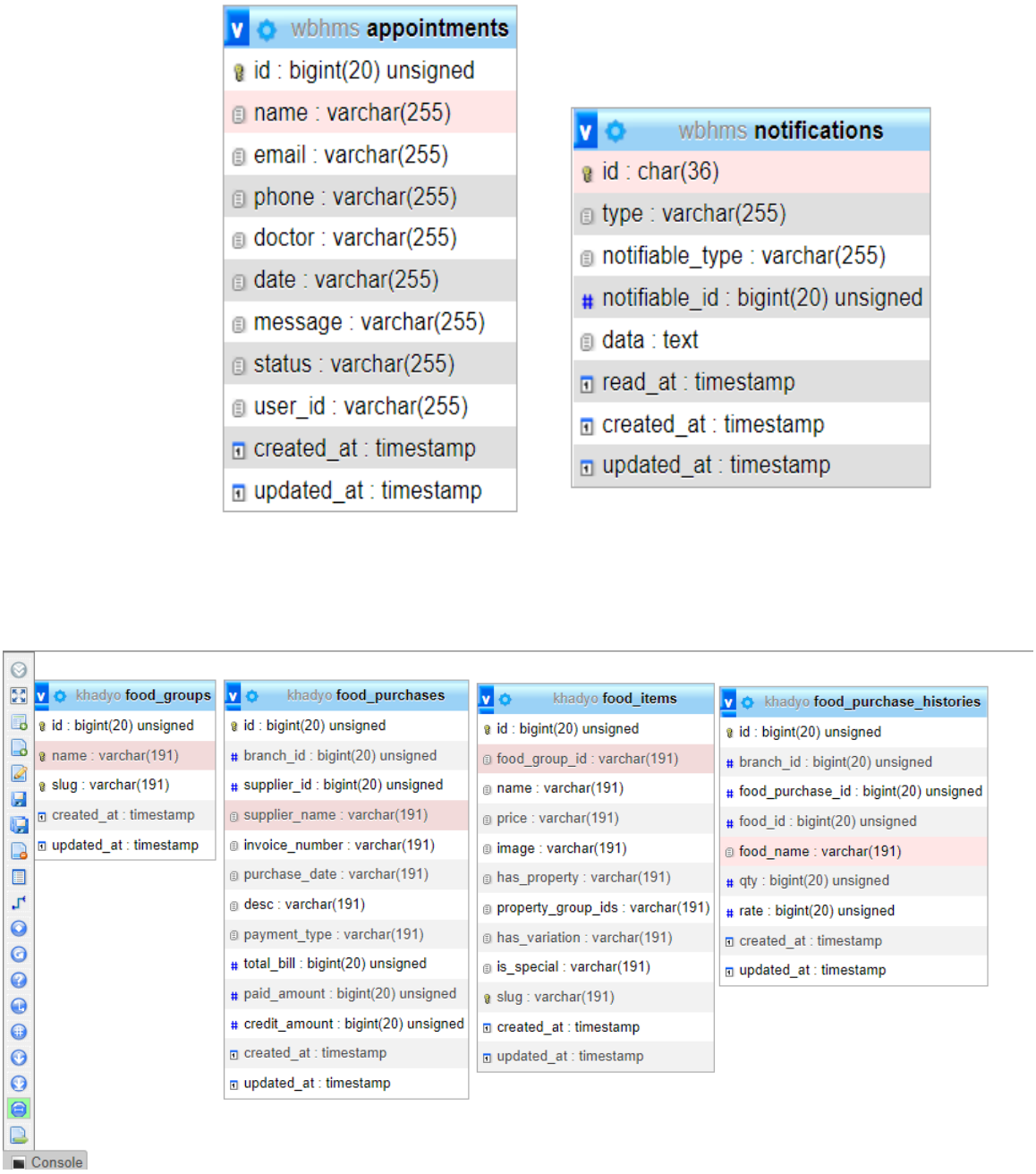


Figure 5.2.2: Database Table Architecture

5.2.4 My SQL Database View

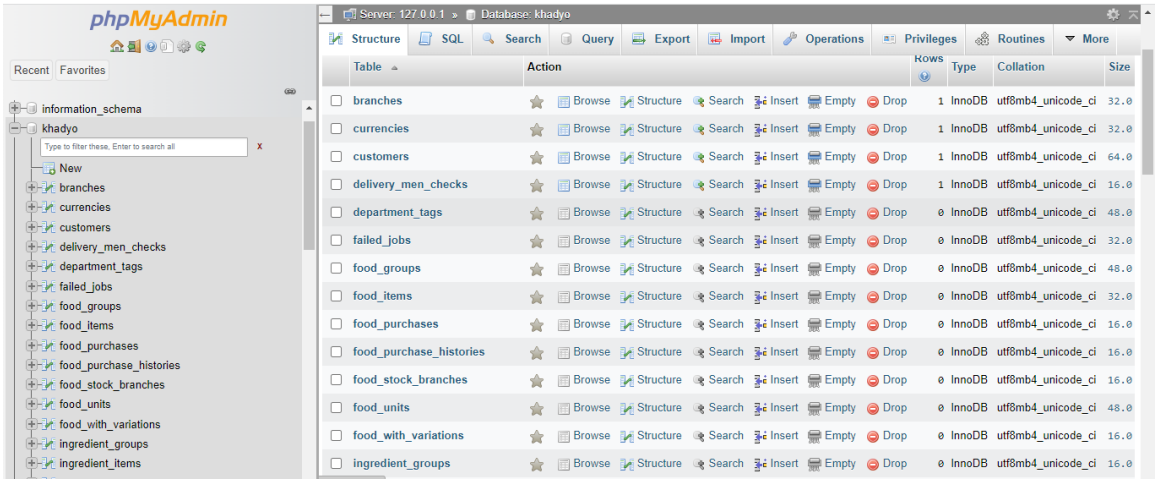


Figure 5.2.3: My SQL Database View

5.2.5 Database Table Structure

Below is the structure of the table (users):

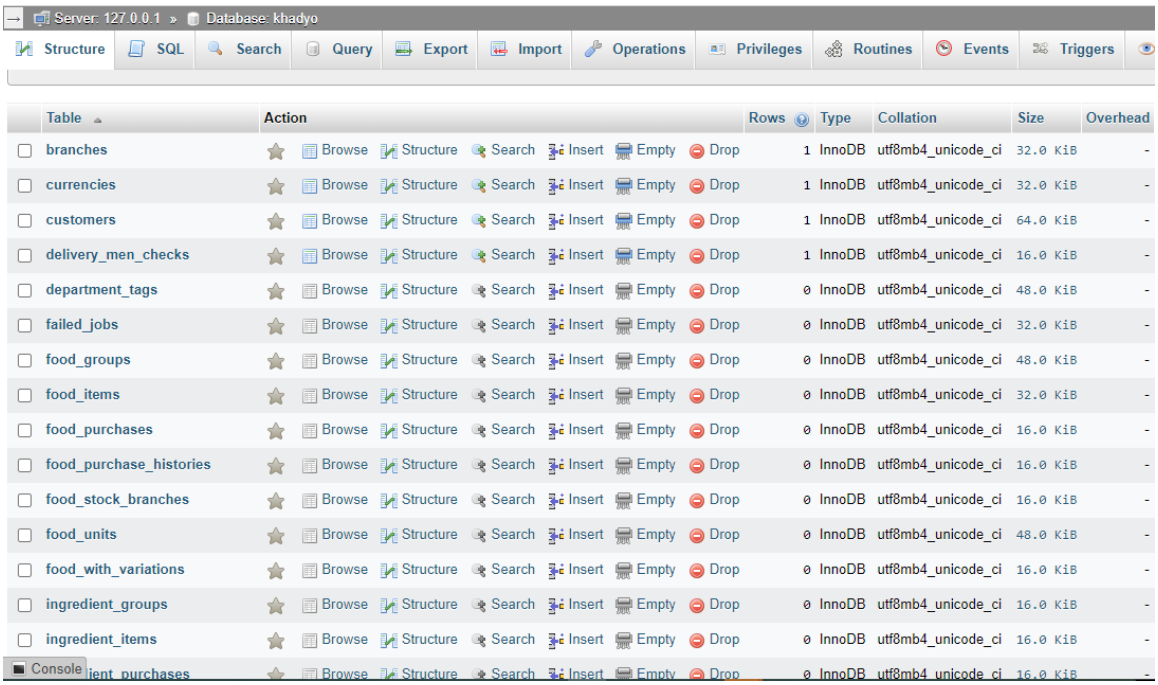


Figure 5.2.4: Database Table (users)

5.2.6 Routes

Api.php

```
A<?php

use App\Http\Controllers\Api\ApiAuthController;
use App\Http\Controllers\Api\OnlineCustomer\OnlineCustomerController;
use App\Http\Controllers\Api\Dashboard\KitchenController;
use App\Http\Controllers\Api\Dashboard\OrderHistoryController;
use App\Http\Controllers\Api\Dashboard\DeliveryUserOrderController;
use App\Http\Controllers\Api\Dashboard\WorkPeriodController;
use App\Http\Controllers\Api\Food\FoodGroupController;
use App\Http\Controllers\Api\Food\FoodItemController;
use App\Http\Controllers\Api\Food\FoodUnitController;
use App\Http\Controllers\Api\Food\PropertyGroupController;
use App\Http\Controllers\Api\Food\PropertyItemController;
use App\Http\Controllers\Api\Food\VariationController;
use App\Http\Controllers\Api\InstallerController;
use App\Http\Controllers\Api\Pos\OrderController;
use App\Http\Controllers\Api\Report\BranchWiseController;
use App\Http\Controllers\Api\Report\DailyController;
use App\Http\Controllers\Api\Report\DashboardController;
use App\Http\Controllers\Api\Report\DepartmentWiseController;
use App\Http\Controllers\Api\Report\DiscountWiseController;
use App\Http\Controllers\Api\Report\GroupWiseController;
use App\Http\Controllers\Api\Report\ItemWiseController;
use App\Http\Controllers\Api\Report\MonthlyController;
use App\Http\Controllers\Api\Report\ServiceChargeWiseController;
use App\Http\Controllers\Api\Report\UserWiseController;
use App\Http\Controllers\Api\RestaurantDetails\BranchController;
use App\Http\Controllers\Api\RestaurantDetails\DeptTagController;
use App\Http\Controllers\Api\RestaurantDetails\PaymentTypeController;
use App\Http\Controllers\Api\RestaurantDetails\TableController;
use App\Http\Controllers\Api\Settings\CurrencyController;
use App\Http\Controllers\Api\Settings\LanguageController;
use App\Http\Controllers\Api\Settings\PermissionController;
use App\Http\Controllers\Api\Settings\SettingsController;
use App\Http\Controllers\Api\Settings\DeliveryMenCheckController;……..
```

Channel.php

```php
<?php

use Illuminate\Support\Facades\Broadcast;

/*
|--------------------------------------------------------------------------
| Broadcast Channels
|--------------------------------------------------------------------------
|
| Here you may register all of the event broadcasting channels that your
| application supports. The given channel authorization callbacks are
| used to check if an authenticated user can listen to the channel.
|
*/

Broadcast::channel('App.Models.User.{id}', function ($user, $id) {
    return (int) $user->id === (int) $id;
});
```

Console.php

```php
<?php

use Illuminate\Foundation\Inspiring;
use Illuminate\Support\Facades\Artisan;

/*
|--------------------------------------------------------------------------
| Console Routes
|--------------------------------------------------------------------------
```

```
|
| This file is where you may define all of your Closure based console
| commands. Each Closure is bound to a command instance allowing a
| simple approach to interacting with each command's IO methods.
|
*/

Artisan::command('inspire', function () {
    $this->comment(Inspiring::quote());
})->purpose('Display an inspiring quote');
```

Web.php

```
<?php
use Illuminate\Support\Facades\Route;
use Illuminate\Support\Facades\View;

//Used for handling the html file of react project
View::addExtension('html', 'php');

Route::get('/{any}', function () {
    //path to dist folder index.html inside the views directory
    return view('build/index');
})->where('any', '.*');
```

5.3 Implementation of Front-End Design

Front-end web development, sometimes referred to as client-side development, is the process of developing HTML, CSS, Bootstrap, and JavaScript for a website or Web application so that a user can see and interact with them directly. The challenge with front-end development is that the approaches and tools used to create a website's front end are always evolving, necessitating continuous observation of market improvements.

This website's design goal is to present the content to approachable and Customer users as soon as they access the page. This is made much more difficult by the fact that customers today utilize a wide range of devices with different screen sizes and resolutions, prompting the site's designer to take these factors into account. The project's primary view is depicted in the screenshot below. It is a screenshot of what users will see on the screen.

Registration: Users need to fill up the registration form to create an account and to login into the system**.**

User needs to give Name, Email, Phone, password, current password Address, If the user already registered or have an account, they click on the already registered? And go to the login page to access their account.

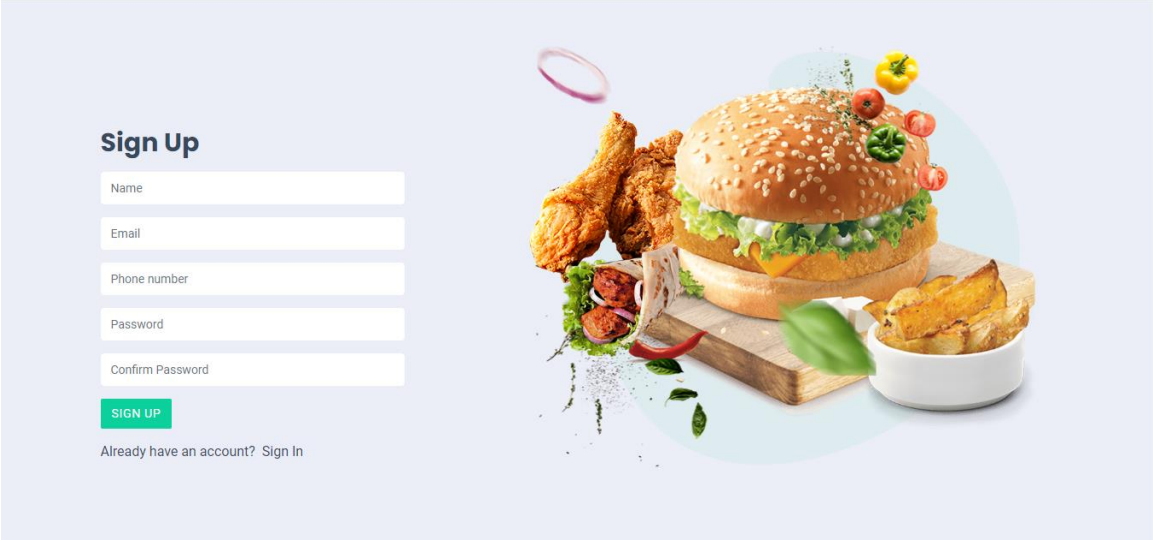


Figure 5.3.1: User Registration Page

Login & After Login:

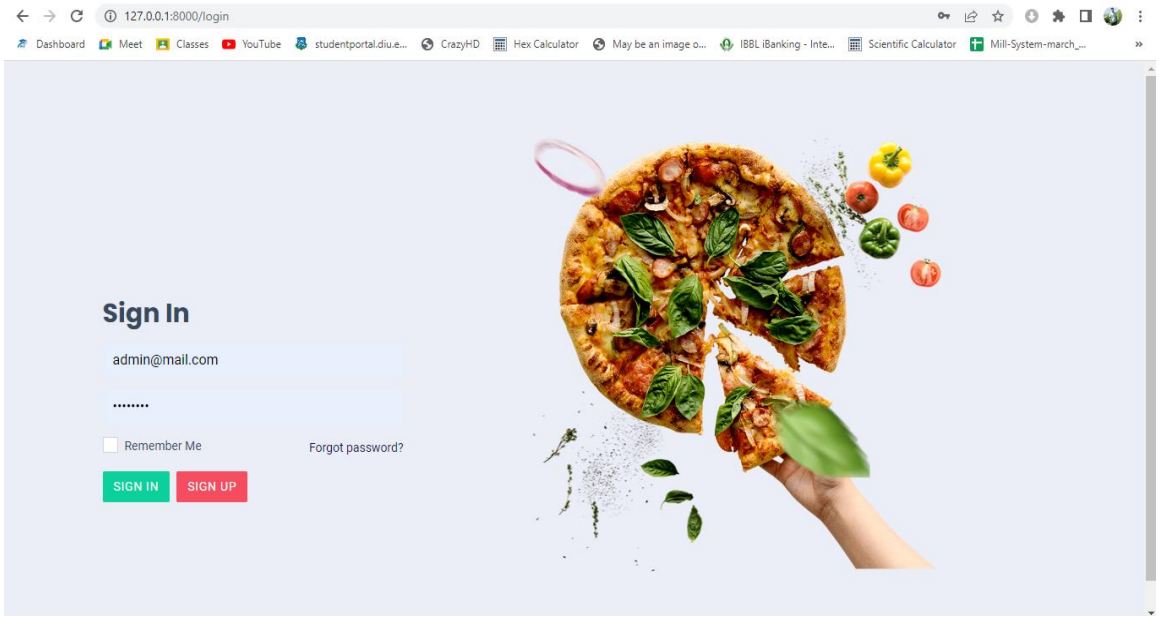


Figure 5.3.2: Sign in Page

Home Page: There are eleven options accessible on the home page

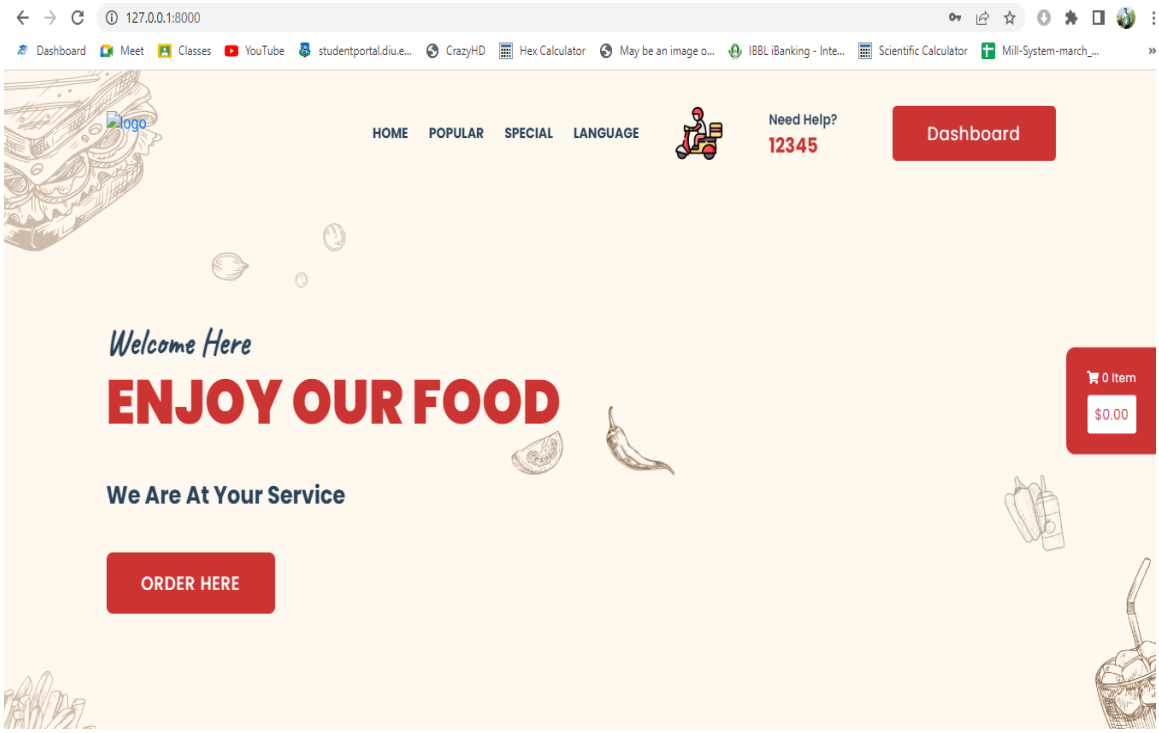


Figure 5.3.3: Restaurant Management Home Page

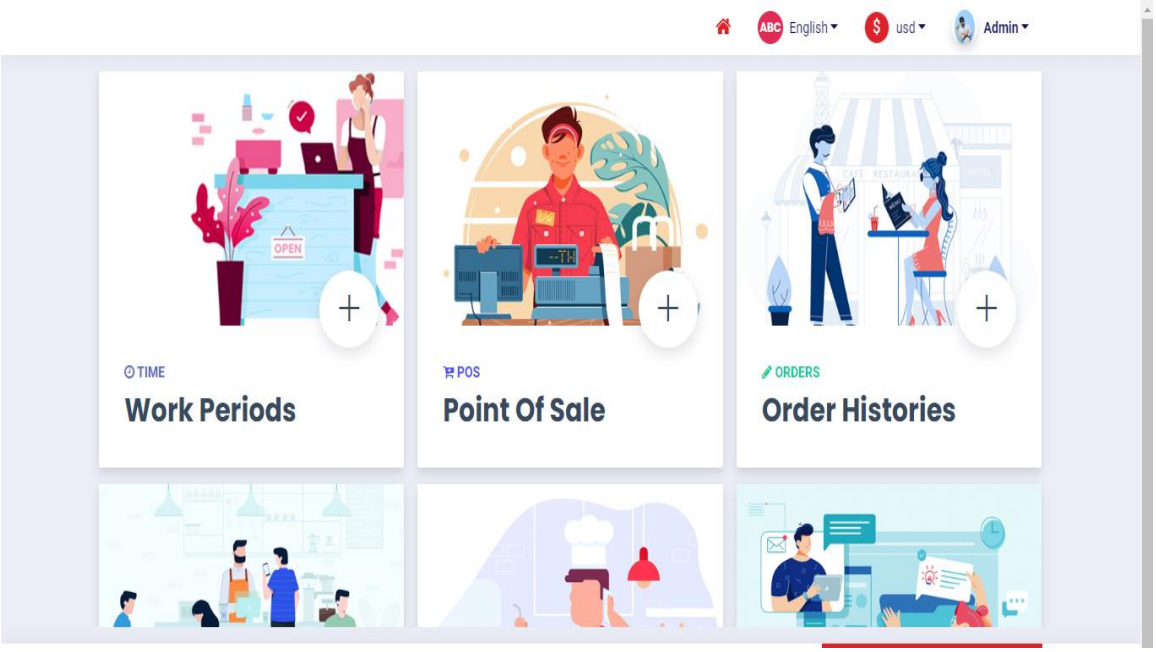


Figure 5.3.4: Restaurant Management Dashboard

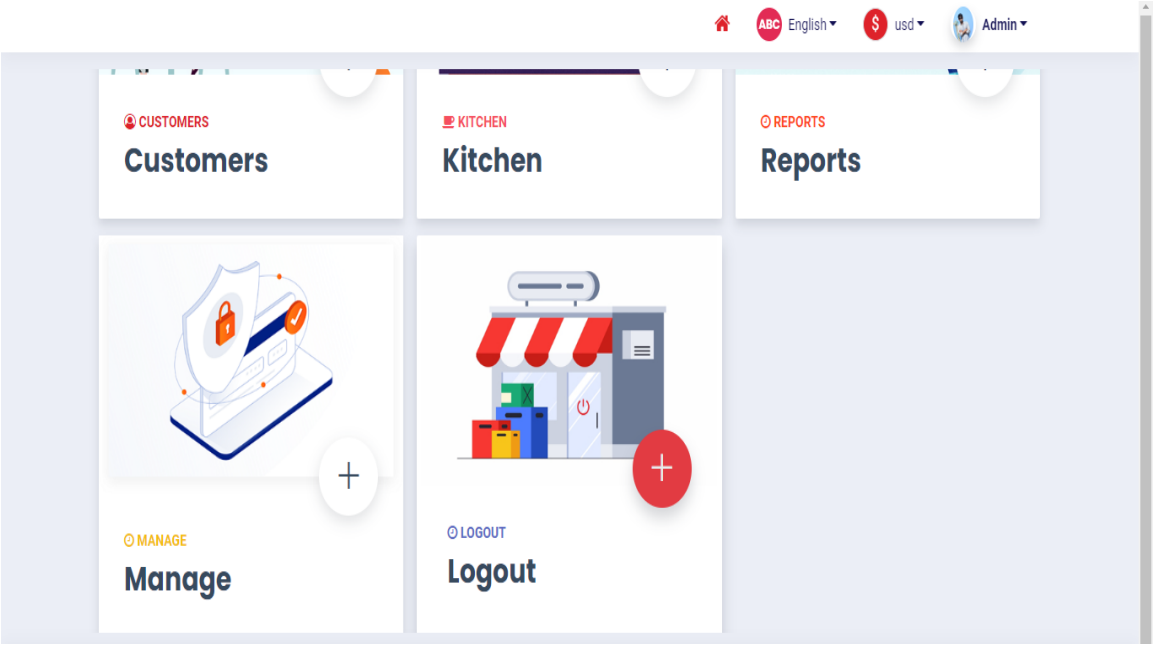


Figure 5.3.5: Restaurant Management Dashboard

Admin panel and Features:

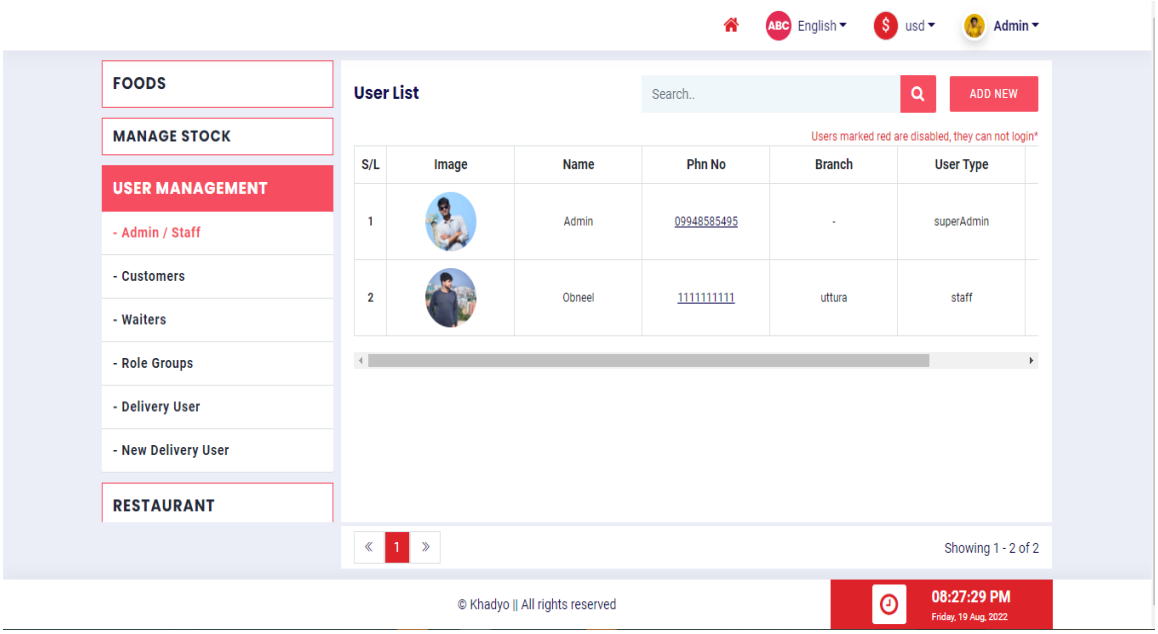


Figure 5.3.6: Admin panel Page

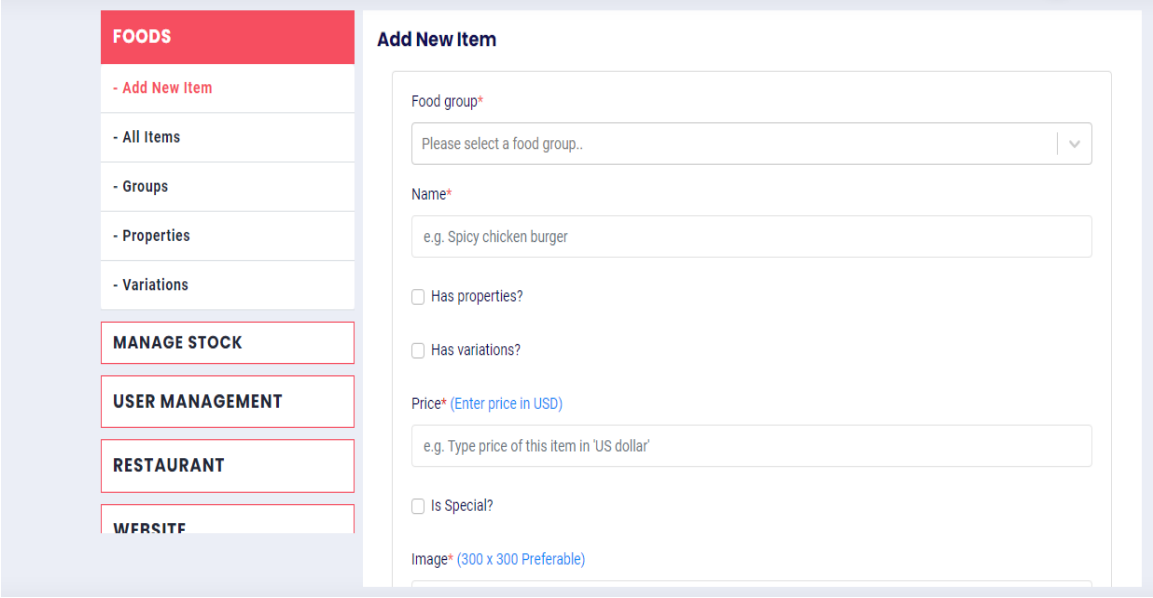


Figure 5.3.7: Features Page

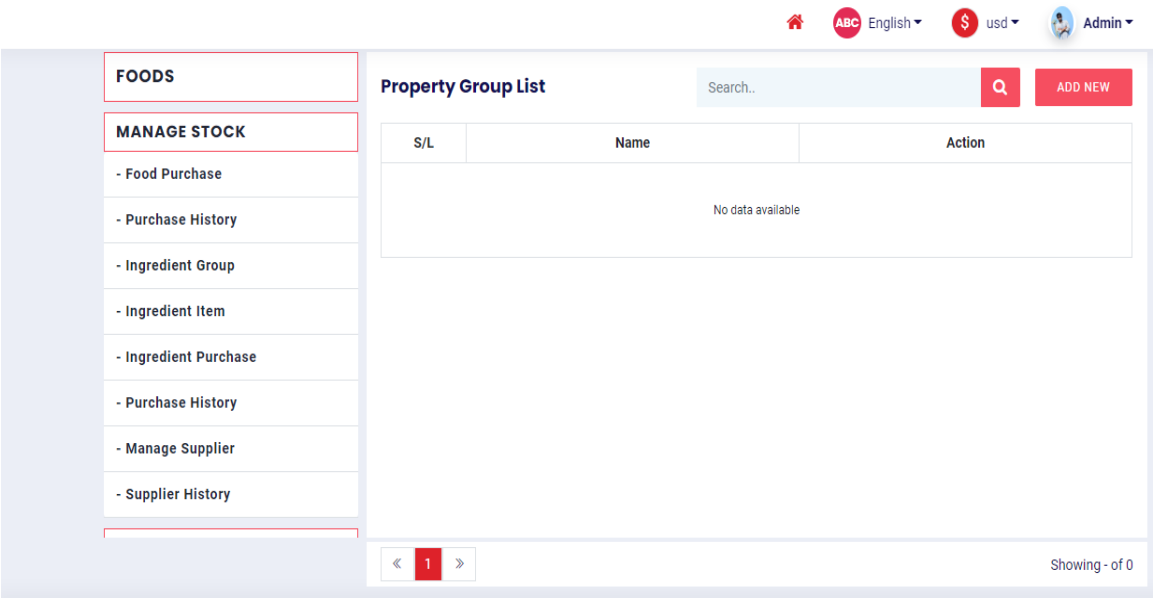


Figure 5.3.8: Property Group List

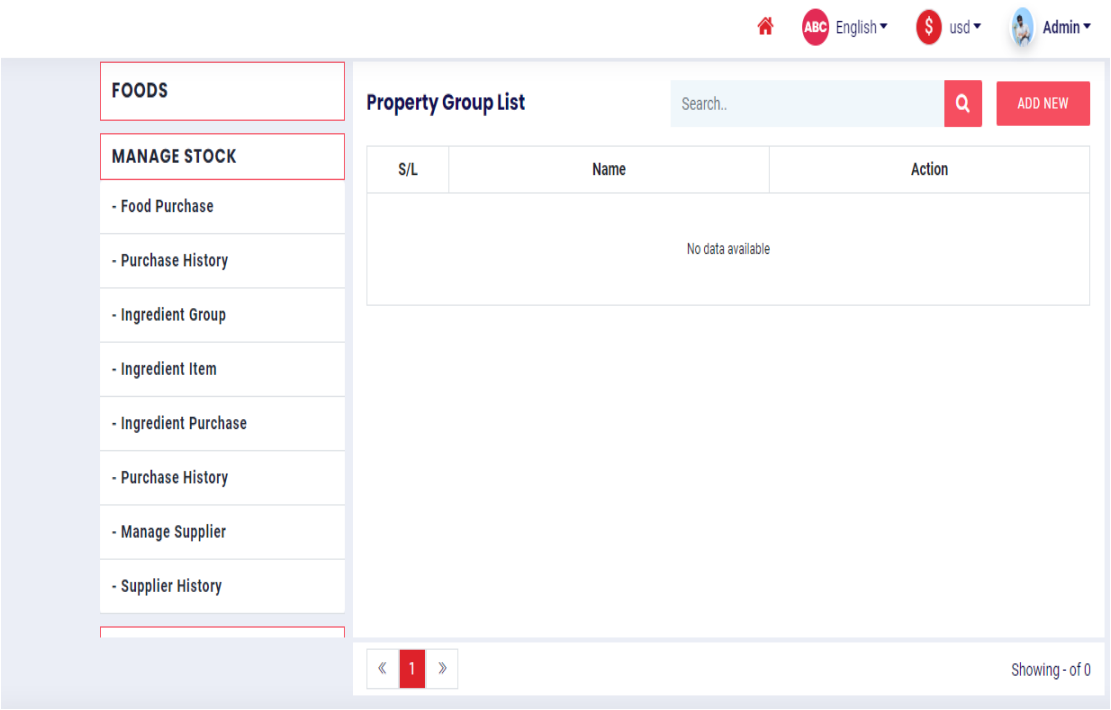


Figure 5.3.9: Property Group List

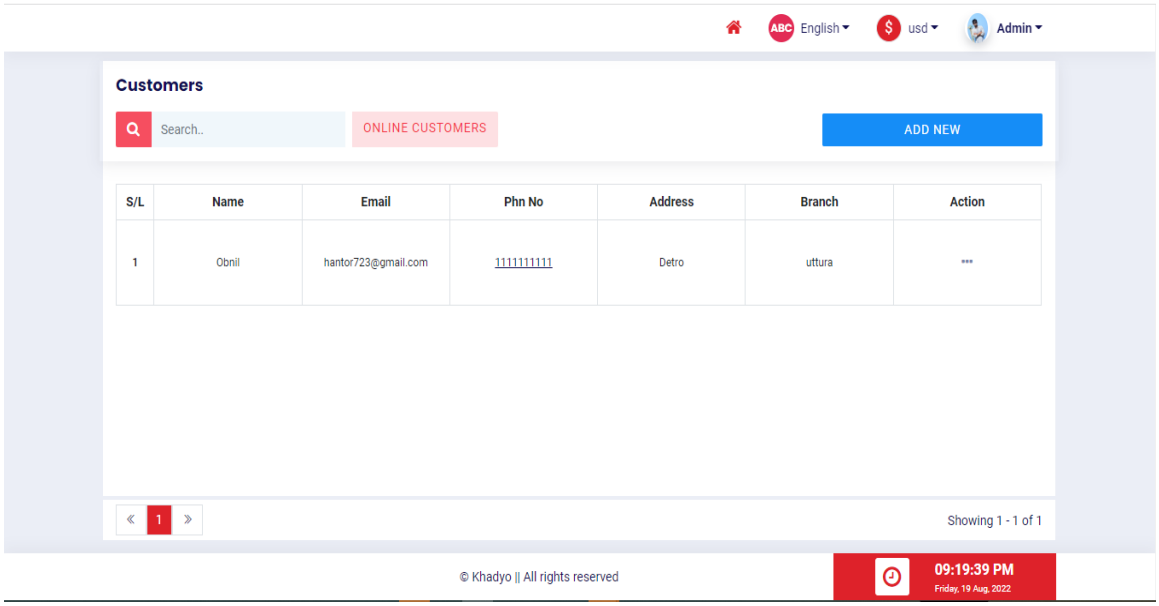


Figure:5.3.10: Online Customer page

Customer

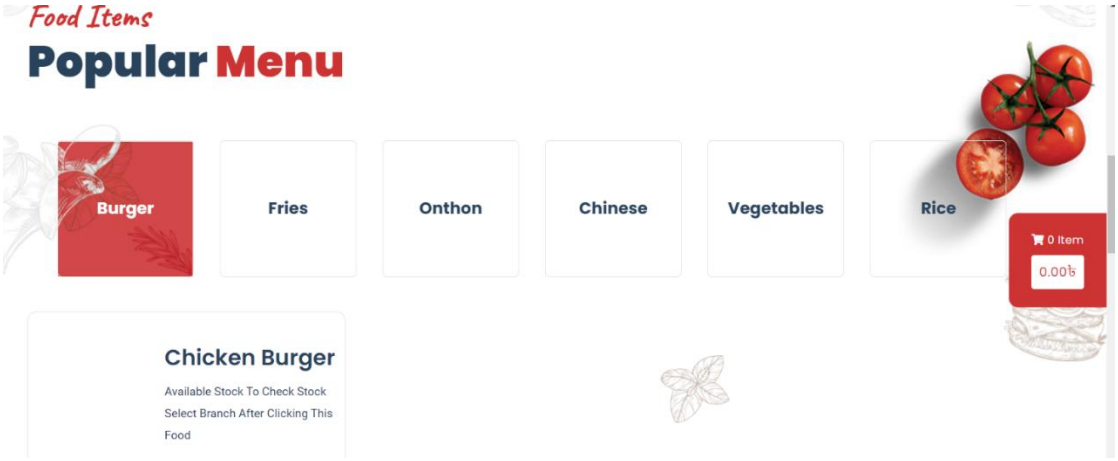


Figure 5.3.11: Customer panel Page

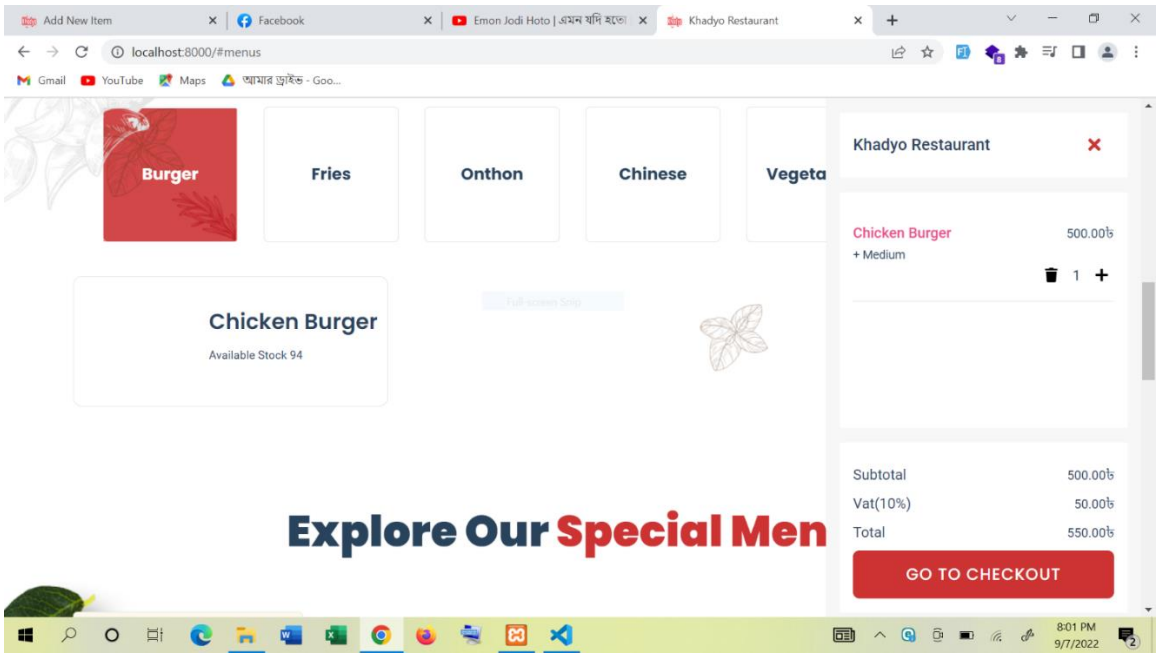


Figure 5.3.12: Customer panel Page

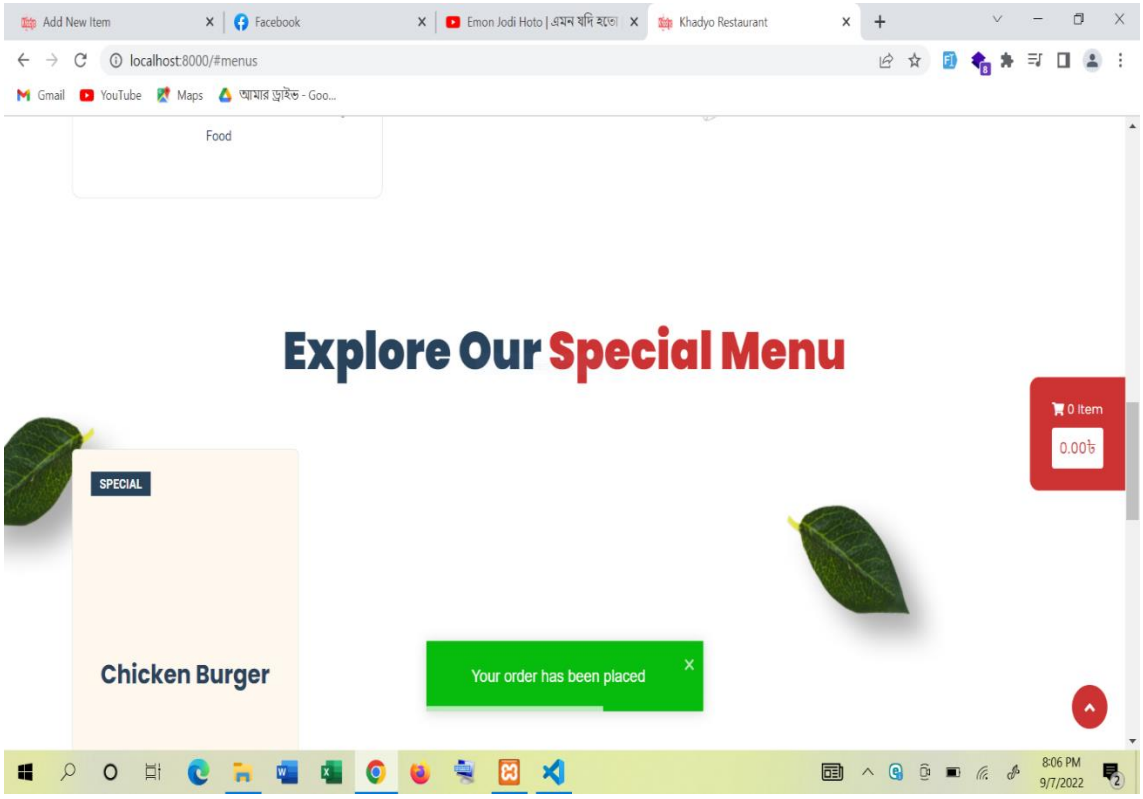


Figure 5.3.13: Customer panel

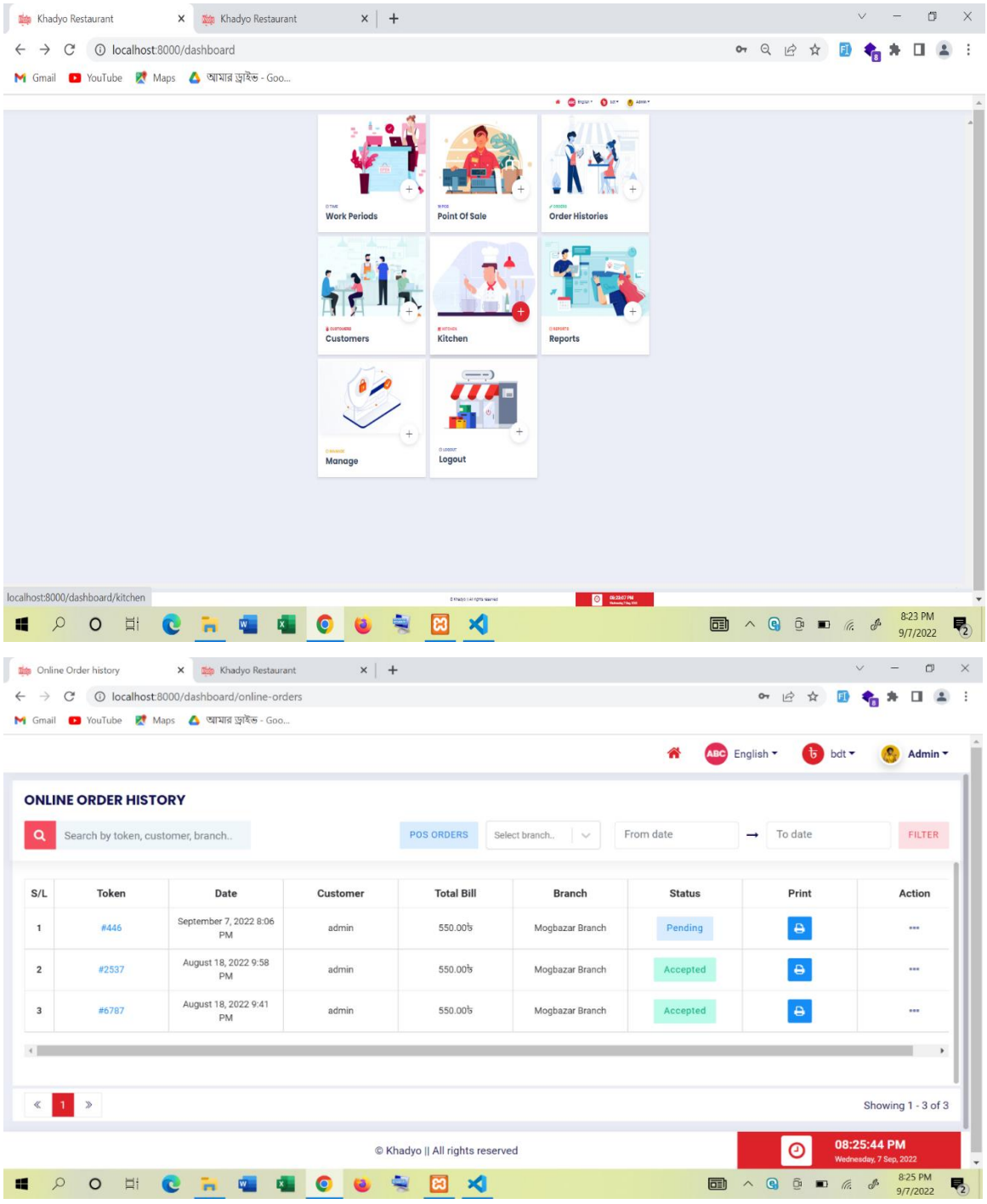


Figure 5.3.14: Admin Panel

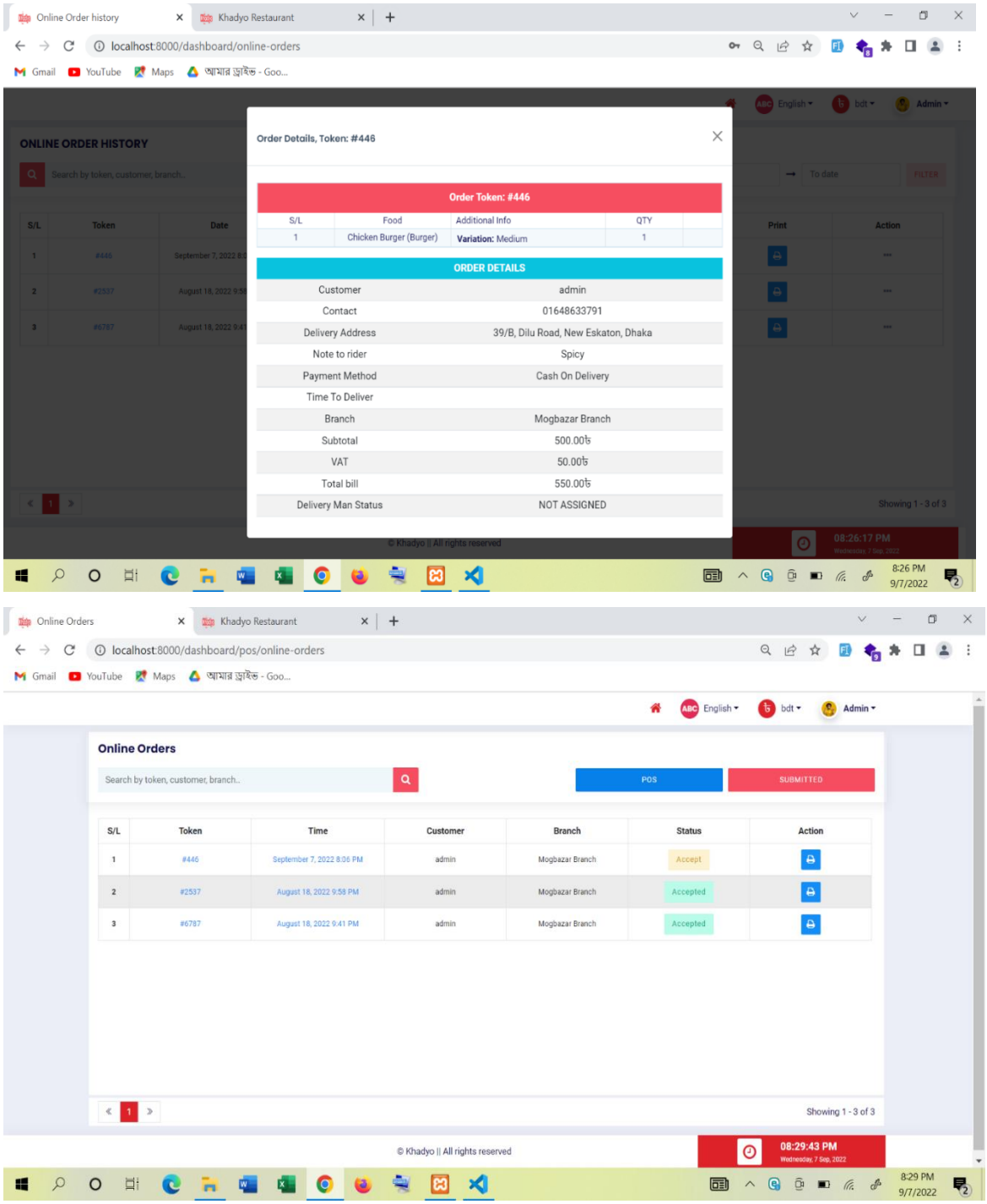


Figure 5.3.15: Online Orders

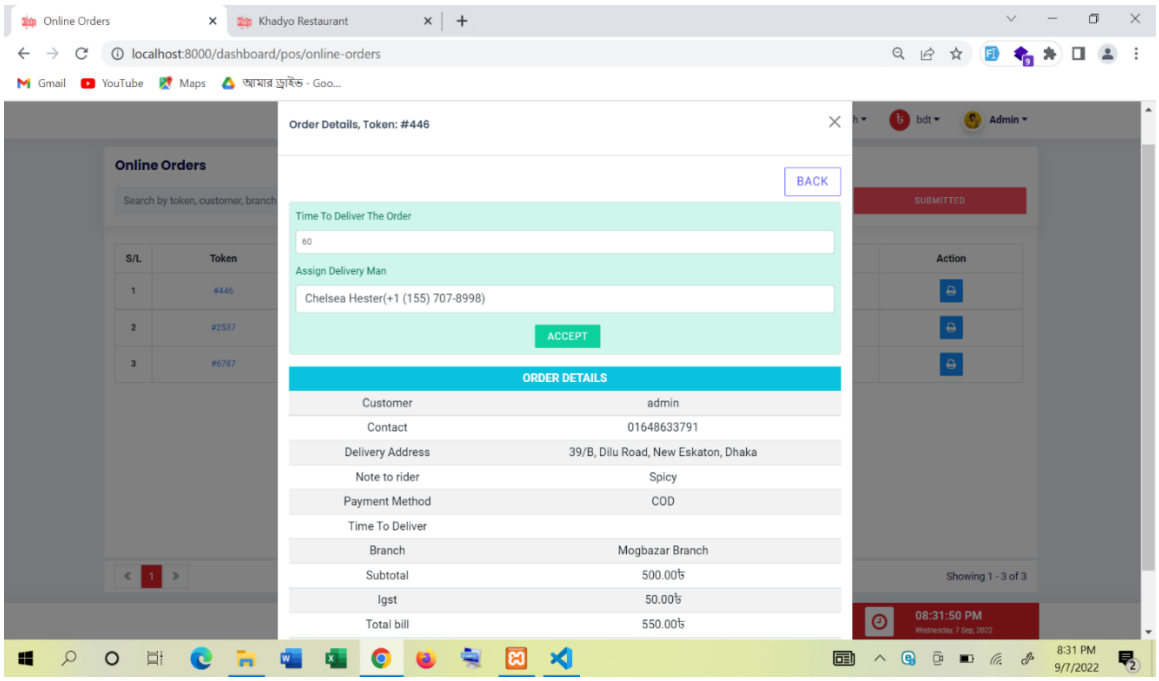


Figure 5.3.16: Order Details Page

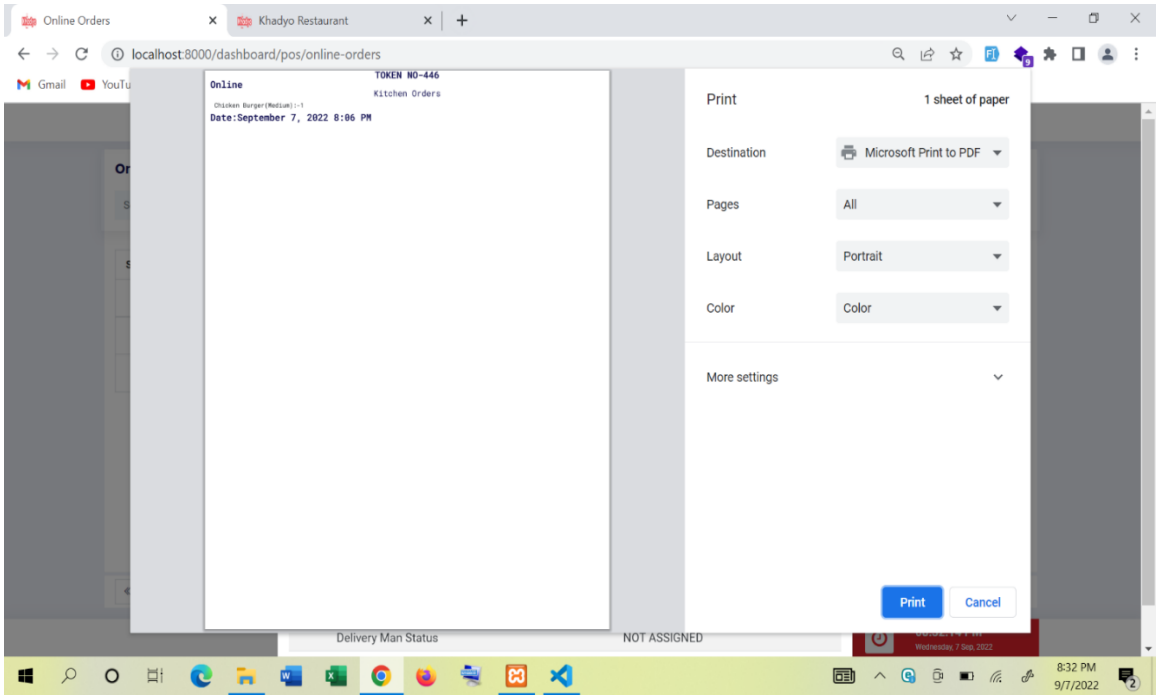


Figure 5.3.17: Order Details Page

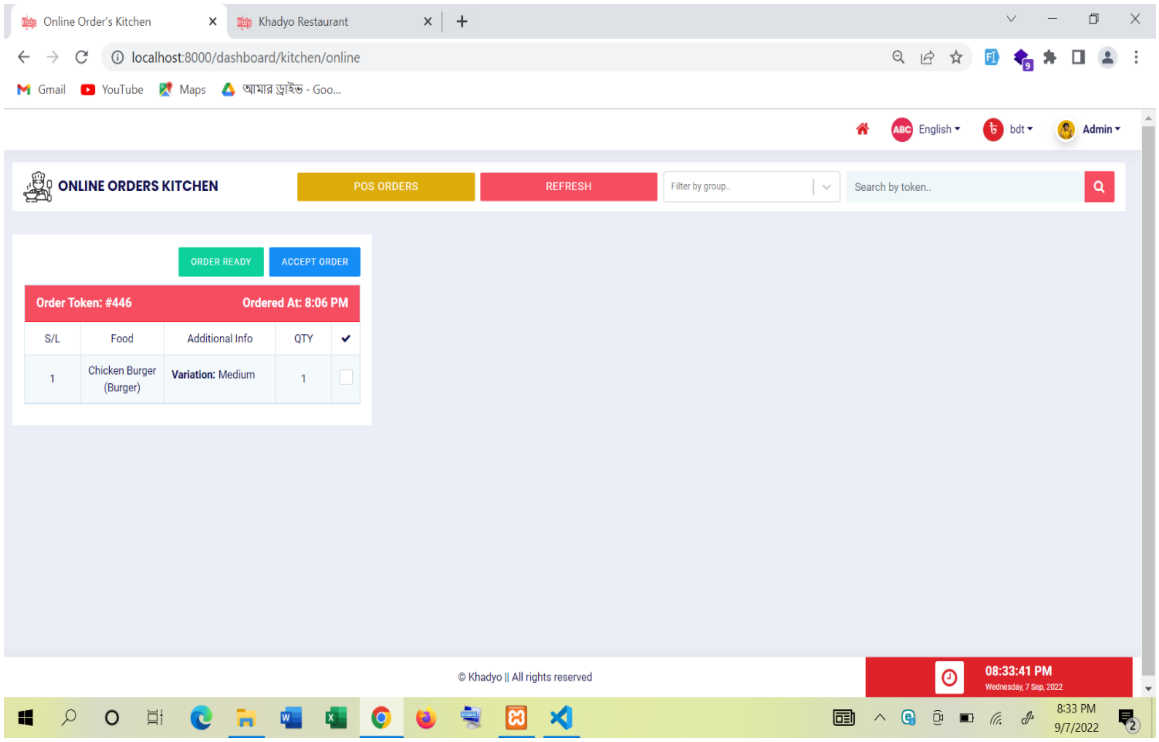
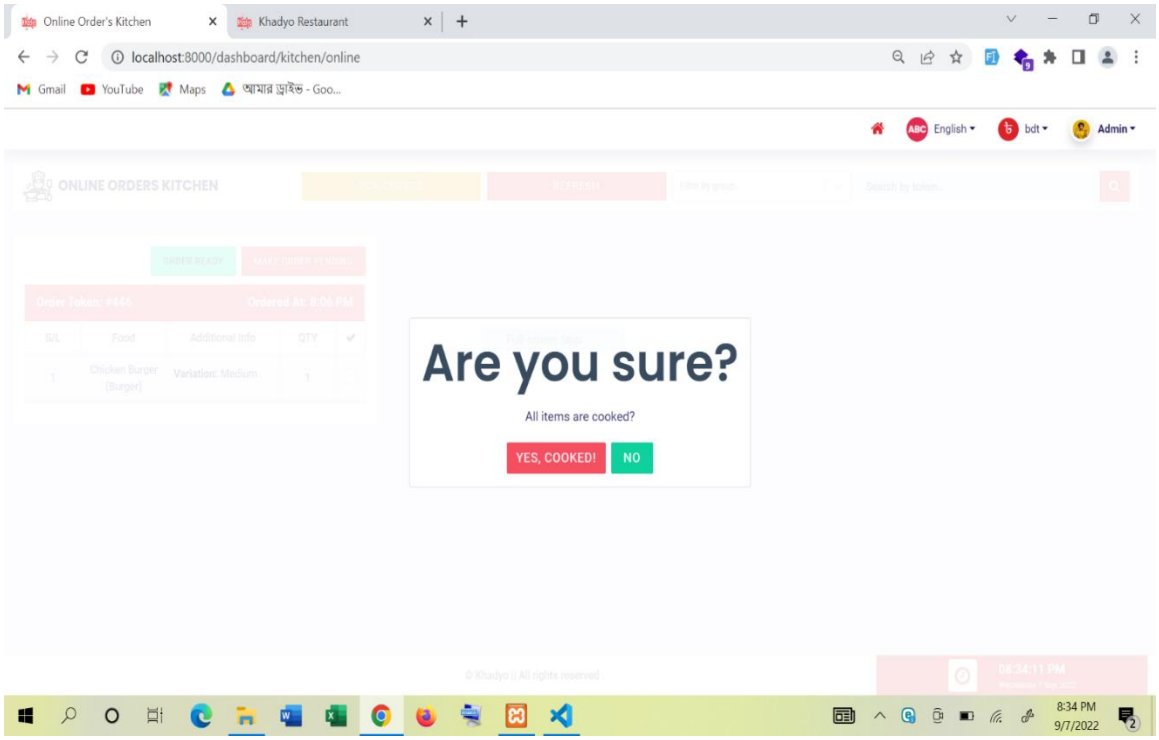


Figure 5.3.18: Online Orders Kitchen Page



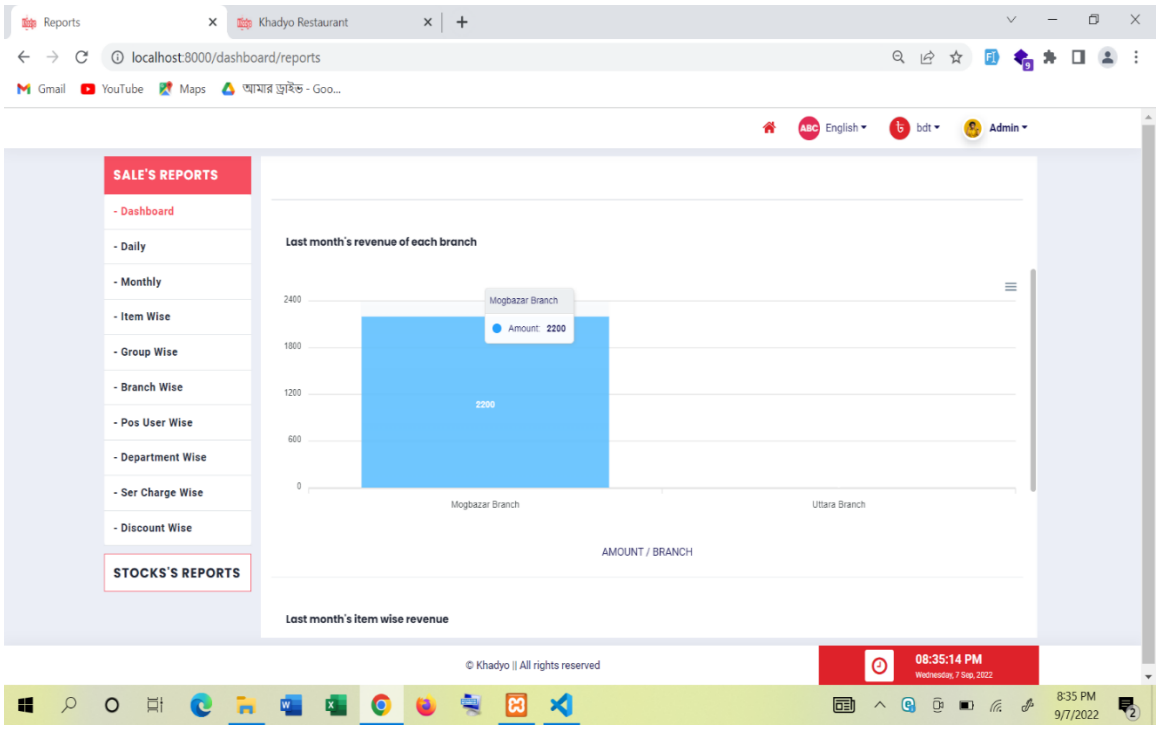


Figure 5.3.19: Sale Reports Page

5.4 Testing Implementation

This project was judged on the following set of criteria:

Satisfying requirement specifications: If a project fulfills all the criteria, including both functional and non-functional needs, it is considered to be successful. It should be able to guarantee the requirements specifications, in other words.

Correctness: It is a crucial prerequisite for software development. The fundamental need for service-oriented software is perfection. Every component of the program should function reliably and properly.

Compatibility and Integrity: These are two key requirements to determine whether the project is effective. Any domain can use the web-based hospital administration system, which was designed for this purpose. It was also created in a way that it may influence virtualization, which is seen as a crucial element. Additionally, whether or not the application was integrated into the entire system affected how the system was evaluated.

Real-time management: The software is used to manage the health industry. Therefore, it is important to keep the real-time scenario. This system's users ought should be able to keep it running.

Reliability and security management: One of the key components of every service-oriented system is security. For this reason, the system's development team took into consideration the evaluation criteria for the security features.

User-friendliness: The user-friendliness of any program is another unique characteristic used to assess the systems. For instance, when utilizing the system, consumers of this solution ought to feel satisfied. In essence, a system should possess quality metrics including effectiveness, portability, reuse, adaptability, coherence, and loose coupling between various software-designed components.

5.4.1 Testing Methodology

Software testing is typically used to identify system flaws. A software test may be performed by looking at the system's code, design, and execution as a whole. To raise the system's level of quality, testing is necessary. Another fundamental of software engineering that is sometimes forgotten throughout project development is reviewing and testing code. The process of creating a system includes testing. The main Standard for Software Testing is contained in the ANSI/IEEE standard 829/1983- Standard for software testing Documentation. CAST may also carry out a small amount of software testing (Computer Aided Software Testing).

5.4.2 Functional Testing

Functional testing involves validating the application to see whether or not all user-specified requirements—regardless of what was stated in the supplemental constraint system—have been taken into account.

There are two categories of functional testing:

- **Positive functional testing:** Valid input is used to test the application's functions, and the outputs are confirmed to be accurate.

- **Negative functional testing:** Application functionality must be tested using a variety of "out-of-bounds" scenarios, including incorrect inputs, unexpected operating circumstances, and other scenarios.

5.4.3 System Responsiveness Testing

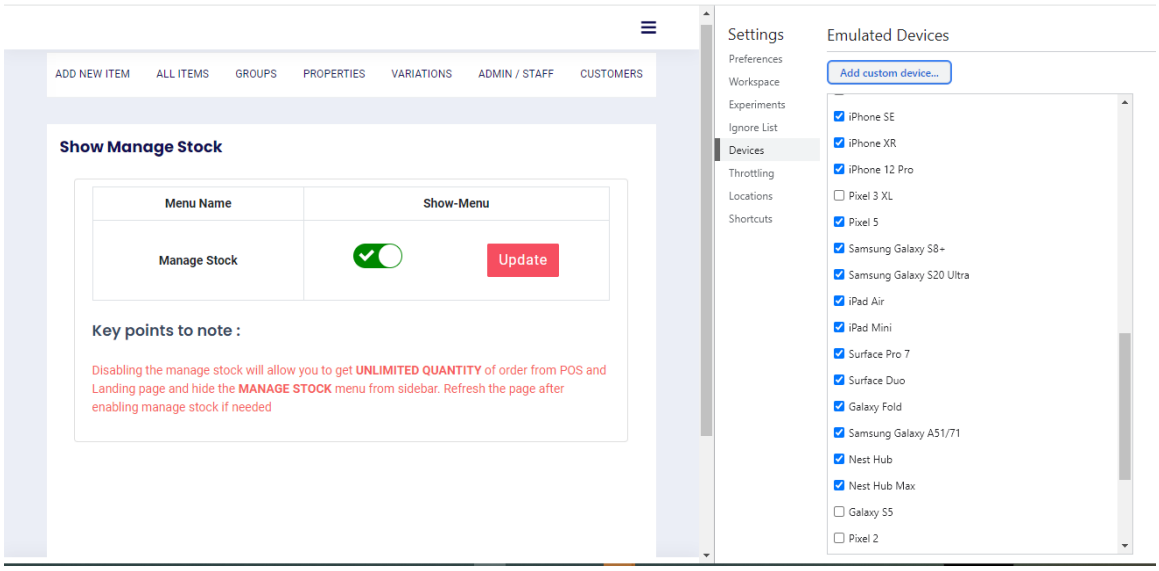


Figure 5.4.3.1: Responsiveness Testing

5.5 Test Results and Reports

a) System Integration Testing

This testing on the application that was put to the test confirms that the entire application functions in accordance with the specifications. Critical Business scenarios were evaluated to ensure that crucial application functionality operates without hiccups and according to plan.

b) Regression Testing

Every time a new build is made available for testing and contains, if any, bug fixes or new improvements, regression testing is carried out. In addition to testing the newly added features and bug fixes, regression testing is also performed on the complete program. This testing makes sure that if a bug is fixed and new additions are made to the current program,

the present functionality still functions as intended. The current test cases are expanded with additional test cases, which are then run.

Every time a new build is made available for testing and contains, if any, bug fixes or new improvements, regression testing is carried out. In addition to testing the newly added features and bug fixes, regression testing is also performed on the complete program.

5.5.1 Results

Table 5.3: Testing Results of the system

Test	User requirement addressed	Expected Results	Actual Results	Pass/Fail	Date	Corrective Action
Logo Displayed	The website uses the company's house style	The logo is displayed and functional as the home button	As expected,	Pass	15/08/2022	None
The navigation bar drop-down works	The website is easy to navigate	When clicked the bar drops down	As expected,	Pass	13/08/2022	None
Navigation bar appears	The website is easy to navigate	Navigation bar appears	As expected,	Pass	11/08/2022	None

5.5.2 Testing Scope

a) In Scope

Functional Testing for the following modules is in the Scope of Testing

1. Registration and login
2. Payment
3. Delivery

b) Out of Scope

For this application, there was no performance testing done.

c) Items not tested

Checking for connectivity with the external system The central repository system was not tested since, for technical reasons, connection could not be established. When the connectivity is there or is possible to be established, this may be confirmed via UAT (User Acceptance Testing).

5.6 Conclusion

Test implementation entails the creation of test data, the establishment and prioritization of test processes, and, if required, the installation of test harnesses and the execution of automated test scripts. Tests are organized and given more priority when test concepts are implemented as test cases, test procedures, and test data.

It is essential to choose the right tests and execute them in the right order. The importance of this concept grows tremendously in risk-based strategies when we prioritize depending on the possibility of risk and difficulty.

CHAPTER 6

IMPACT ON SOCIETY AND ENVIRONMENT

6.1 Introduction

As humans become more civilized, we focus on science and technology to lead a comfortable life. And we were able to live a comfortable life thanks to science and technology. This project will increase another level for human to live a comfortable life. However, this project has a huge impact on our social society, Environment and Sustainability. While we are depending on internet to buy and make payment, as Internet is not a secure platform our personal identity, information or money are at risk. However, this project will have a beneficial effect on environment because we are moving out from traditional restaurant to digital, where we stored every information on our system which is paperless.

6.2 Impact on Society

Human need a more easy and comfortable way to live. We build a web-based system where people can order food online and it delivered at their door step and make online payment and they can even order food from driveway and make the payment. Increase the need for online payment system for convenient monetary transaction. Increase the need to implement cyber security on end devices and workstation, because our money, restaurant money transaction, employee and customers information reside online. People need not to go outside to buy food, this way people could save money. Make our society more dynamic where society can focus more on their important job, not to focus on to go and eat food. In a traditional restaurant where people need to go to the restaurant by vehicle to eat food and make payment, the main downside to this traditional restaurant is that it's very time consuming and people has to deal with cash which is not convenient. On the other hand, in our system, we have provided a driveway restaurant where there is no need to provide a parking place to park car because people can order food from the driveway leave.

Online and driveway restaurant provide an improved customer experience, when ordering process is simple and easy is likelihood that people will make order. Customer don not

prefer to wait at a restaurant for food, they need fast and immediate service. While customer ordering food online our website streaming ordering information to the kitchen, it decreases the amount of time where chef get the real time ordering information. Chef do not waste time to get ordering information instead they can focus on cooking and packaging food and make the delivery. In a traditional restaurant people get less time to choose menu because restaurant is busy most of the time. Restaurant owner get more time to focus on improving the quality of service and business process.

6.3 Impact on Environment

There are so many things used in restaurant which are not good for our environment. here I talking about some important things whose we can found in every restaurant.

Garbage

Garbage from restaurants, which is available in two types waste and liquid waste—is one of the major problems. Food, paper, non - recyclable, leftovers, liquid trash made while washing, flooring, and hands that contain suspended solids, oil, and oil, and biochemical and chemical waste all are classified to just be solid waste.

Water Pollution

Some cleaning products contain chemicals that are harmful to both individuals as well as animals and plants in the environment. Waste like raw food and washing materials is thrown into lakes and rivers, releasing a wide range of pollutants. Many of them are able to survive in the environment and growing up the food chain. Restaurant water wastes are particularly rich in suspended particles, grease, and oil, which are all harmful both to people and the environment and add to the duty of wastewater treatment plants.

Energy Consumption

Restaurants are using a lot of electricity on air conditioners, lighting, and other decorative purpose to attract customers. Carbon dioxide is produced when fossil fuels are burned and this air has been connected to ozone depletion and climate change.

Air Pollution

Internal air is polluted by sources that release harmful, chemicals, or any other pollutants into the air, which reduces the quality of air outside even further. Any restaurant can all have indoor air pollution from a number of sources, including cigarette smoke, building

materials, equipment, cleaning materials, air fresheners, central air conditioning systems, and so on. Those sources can pose serious health problems and transmit infectious diseases.

6.4 Ethical Aspects

While running a business it is important for a Restaurant owner to be ethical.

First of all, and importantly, one of the most serious ethical problems in the modern restaurant business is food sanitation. Restaurants should only serve fresh food is prepared by skilled cooks in restaurants, as is public knowledge. They should also keep up a high standard of hygiene habits.

Second, the employees at the restaurant will maintain high standards of integrity. Owners of restaurant and waiters equally should conduct themselves in accordance with established morality. In in order to provide a superior level of service, they should always preserve a high ethical standard on both a professional and personal level.

Thirdly, all restaurant workers should look for creative ways to improve the standard of services offered to customers. They should try their best to develop the skill of their employees using reducing technologies for supplying customized services and also preparing food that impacts quality of service and client satisfaction.

6.5 Conclusion

So, this project would make a huge impact on our society and environment and will make beneficial impact on society and environment. As we have already mentioned above that, this project will make buying food and payment more convenient even though there is a risk of cyber threats. Since restaurant storing all confidential information online including customer information, employee information, payment details and bank accounts details. But customers get good experience to buy food and make payment online. While moving restaurant online will reduce environmental degradation due to use less paper for accounting and other issues. My people still try to avoid online shop because they could not trust quality of food provided to them and sanity of the environment of the kitchen. So, it is really important for the business owner ensure quality and make sure that the

environment of the kitchen is sanity and raw materials are fresh. In other word restaurant owner should conduct business ethically.

CHAPTER 7

Conclusion

7.1 Conclusion

Conclusion on overall, the project has achieved its motives. The project denominated "Restaurant Management System "has been proposed to be implementing to replace the manual system. The project has provided a client/server application for food ordering system and was successfully created using visual basic software. It provides a more expedient and accurate method for staff in the restaurant since orders are bartered to server in the kitchen immediately and exhibited to the chefs for further process. In view of time saving, less time consuming by waiting and transferring order by staff in restaurant.

The restaurant management system is a necessary part of the lifecycle of this modern era. Implementation of a web-based hospital management system project helps to save all kinds of data, and records, provide adjustment and communication with the users, implement restaurant policies, improve daily service, manage financial and human resources, and market restaurant services. This favorable judgment covers the wants of the admin, manager, waiter, delivery man and restaurant authorities and simplifies. The developed system accomplishes all the objectives stated for the need for the change of the system.

The output produced seems to satisfy all the users but it will definitely take time to look forward to the real consequences the new system could produce. This project was made user friendly by the use of visual basics enabling the user to interact easily with the database.

It's also enabled the platform to serve the needs of emerging information technology trends and needs. The main goal is to create a web-based hospital management system where both customers and restaurant management can get the time response they want. Building a good community and good relationships between customers and restaurants is one of the important goals of our web-based system.

7.2 Further Suggested Work

a) Interface design will be updated,
b) More features and functionalities will be added
c) Reliability of the web-based application should be increased

The system will have other features in the future like more modules like Nurse module, receptionist module, room module, pharmacist module etc. The interface can be changed. More animation, user friendly and simple and interactive features can be added. Managing the doctors, patient, nurses, receptionist, pharmacist can be controlled and monitored by the admin panel. The monthly reports like sales and managing shipments and ordering medicine online can also be added to the project for further development.

It completely depended on the consumers and their needs. The more features and panels needed to satisfy and make it easy for the consumers can be added.

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APPENDIX

Appendix-A

CreateNewUser.php

```php
<?php
declare(strict_types=1);

namespace Lcobucci\JWT;

use Lcobucci\JWT\Signer\CannotSignPayload;
use Lcobucci\JWT\Signer\Ecdsa\ConversionFailed;
use Lcobucci\JWT\Signer\InvalidKeyProvided;
use Lcobucci\JWT\Signer\Key;

interface Signer
{
    /**
     * Returns the algorithm id
     */
    public function algorithmId(): string;

    /**
     * Creates a hash for the given payload
     *
     * @throws CannotSignPayload  When payload signing fails.
     * @throws InvalidKeyProvided When issue key is invalid/incompatible.
     * @throws ConversionFailed   When signature could not be converted.
     */
    public function sign(string $payload, Key $key): string;……

    /** …….
```

OnlineCustomerController.php

```php
<?php

namespace App\Http\Controllers\Api\OnlineCustomer;

use App\Http\Controllers\Controller;
use App\Models\User;
use App\Models\FoodGroup;
use App\Models\Branch;
use App\Models\FoodItem;
use App\Models\OnlineOrderItem;
use App\Models\FoodStockBranch;
use App\Models\OnlineOrderGroup;
use App\Models\FoodWithVariation;
use App\Models\PropertyItem;
use App\Models\PropertyGroup;
use App\Models\Temporary;
use App\Models\Variation;
use App\Models\WorkPeriod;
use App\Models\ShowManageStock;
use Illuminate\Http\Request;
use Illuminate\Support\Facades\Hash;
use Illuminate\Support\Str;
use Auth;

class OnlineCustomerController extends Controller ……
```

OnlineCustomerController.php

```php
<?php

namespace App\Http\Controllers\Api\OnlineCustomer;

use App\Http\Controllers\Controller;
use App\Models\User;
use App\Models\FoodGroup;
use App\Models\Branch;
use App\Models\FoodItem;
use App\Models\OnlineOrderItem;
use App\Models\FoodStockBranch;
use App\Models\OnlineOrderGroup;
use App\Models\FoodWithVariation;
use App\Models\PropertyItem;
use App\Models\PropertyGroup;
use App\Models\Temporary;
use App\Models\Variation;
use App\Models\WorkPeriod;
use App\Models\ShowManageStock;
use Illuminate\Http\Request;
use Illuminate\Support\Facades\Hash;
use Illuminate\Support\Str;
use Auth;

class OnlineCustomerController extends Controller
{
    //homepage
    public function index()
    {
        // return 'okkk';
        $foodGroupsAll = FoodGroup::all();
        $workPeriods = WorkPeriod::where('ended_at', null)->get();…….
```

ResetPassword.php

```php
<?php

namespace Illuminate\Auth\Notifications;

use Illuminate\Notifications\Messages\MailMessage;
use Illuminate\Notifications\Notification;
use Illuminate\Support\Facades\Lang;

class ResetPassword extends Notification
{
    /**
     * The password reset token.
     *
     * @var string
     */
    public $token;

    /**
     * The callback that should be used to create the reset password URL.
     *
     * @var \Closure|null
     */
    public static $createUrlCallback;

    /**
     * The callback that should be used to build the mail message.
     *
     * @var \Closure|null
     */
    public static $toMailCallback;

    /**
     * Create a notification instance.
     *
     * @param  string  $token       …….
```

Appendix - B

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