8-2023

RESTAURANT MANAGEMENT WEBSITE

Akhil Sai Gollapudi

RESTAURANT MANAGEMENT WEBSITE

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A Project

Presented to the

Faculty of

California State University,

San Bernardino

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In Partial Fulfillment

of the Requirements for the Degree

Master of Science

In

Computer Science

_____

by

Akhil Sai Gollapudi

August 2023

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Approved by:

Dr. Qingquan Sun, Committee Chair, Computer Science

Dr. Yan Zhang, Committee Member

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ABSTRACT

In the ever-evolving corporate landscape of today, it is crucial to respond

to customer needs as efficiently and in a timely manner as possible. The project's

primary objective is to create a method for clients to make reservations for

restaurants online. This makes life easier for busy customers in their daily life.

Today, people are looking for comfort thanks to rapidly developing

technology. As we can see, people invent and implement new technologies in all

fields according to customer needs.

We got a unique restaurant idea that helps people save time. People

prefer quick methods to get things done. With this in mind, we created a new

website where they can pre-order products online before going to the restaurant.

The customer must fill in his data.

ACKNOWLEDGEMENTS

I'm writing to thank Dr. Qingquan Sun, the chair of my committee, for his ongoing encouragement and constant pushing of the envelope to make this study effort the best it can be. Dr. Khalil Dajani and Dr. Yan Zhang, members of my committee, are also deserving of my gratitude for joining the group and having faith in me. While working on this project, I appreciate their confidence in me. I also want to thank all the lecturers at the university for helping me advance in my academic career.

I appreciate that the School of Computer Science at California State University, San Bernardino, has created a curriculum that will support me in achieving my future objectives.

I once heard that the one thing that can never be stolen from me is my education, and I took this thought with me throughout my master's program. My fearlessness, tenacity, and commitment to my future are demonstrated through this undertaking and finishing my master's degree.

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CHAPTER ONE

INTRODUCTION

People nowadays are searching for methods to maintain their hectic lifestyles. Of course, they demand comfort at all stages of the purchasing experience and brand involvement. In light of this, even restaurants must meet the ever-changing demands of customers.

The restaurant's pre-order system, which enables guests to purchase food in advance, is a flexible and reliable digital solution. As a result, there is less delay between placing the actual order and receiving the food. Customers can reserve meals using these computerized ordering systems in advance and then pick them up later.

We came up with a unique idea called Pre-Order. Order Ahead is a unique website where you can pre-order your food before going to a restaurant. The customer can open the web portal and select items from the menu. The customer can choose a time that suits him. It is very convenient for people who are busy in their daily life. This saves them time and they will be happy to hear "Your food is ready" when they arrive at the restaurant.

CHAPTER TWO

OVERALL DESCRIPTION

Description

Pre Order is a uniquely designed and developed restaurant website with a variety of delicious dishes that you can pre-order.

➢ Any member can sign up and access the Menu.

➢ Online meal orders can only be placed by logged-in users.

➢ You can contact the system administrator with the questions on the contact page.

➢ The visitor, user, and administrator roles are the ones that are accessible.

➢ The visitor has access to the website and menu.

➢ Users can view and order food items.

➢ The administrator has additional rights including all visitor and user rights.

➢ The system administrator is permitted to see details on customers and their orders.

➢ System administrator can reply to/contact the customer.

Two portals have been developed for users and administrators. The user portal consists of the following pages.

➢ Home page

➢ About Us

- ➢ Menu

- ➢ My Orders

- ➢ Contact Us

- ➢ Login/Register Page

The administrative portal consists of the following pages.

- ➢ Home

- ➢ Orders

- ➢ Users

- ➢ Menu

- ➢ Analysis

Advantages of Preordering

Before it gets to the customer's plate, 10% of the food is squandered. This is partly due to poor inventory management. With a pre-order system, you can avoid such waste. You can better manage your inventory and schedule your food orders if you receive orders in advance. Based on advance orders, you can plan food preparation most efficiently, reducing TAT and enhancing client happiness.

Customers don't like standing in line for food or takeout. Additionally, consumers might have to wait longer than usual for their food to be delivered if you have a high volume of delivery orders during busy times. Pre-ordering

assures that people won't have to wait for their food and helps avoid such inconveniences. By reducing wait times for ordering, food preparation, and checkout, it also boosts table traffic. If orders and payments are completed beforehand, staff can serve clients promptly and effectively. In this manner, you can fulfill more orders and guarantee that customers will eat more.

When a digital pre-order application is employed, order accuracy is enhanced. Restaurants are aware of exactly how many orders to fill and what to prepare. You have enough time to complete all your tasks and place two or three orders. This improves effectiveness and lowers errors in customer service.

For restaurant proprietors, everything works out well. There are no complicated phone orders, and customers can easily click or tap to place their meals utilizing the restaurant's online ordering platform. It is not necessary to entertain a waiting crowd. All of the reservations have already been made; the restaurant only needs to serve the customer. Both the diners and the restaurant can start serving food immediately away. Early adopters, techies, and millennials favor this strategy.

Site Information
- Site name: PreOrder
- Website address: localhost:4200

Use of this Site

- ➤ The home page menu is visible to everyone.

- ➤ To order food from the website the customer must register on the website.

- ➤ A user profile is created for each registered customer.

- ➤ The user profile consists of My orders, Address, shopping cart, etc.

- ➤ Admin has a profile to view customers and customer orders.

- ➤ Users can select the items from the menu and press on add to cart and selected items will be added to cart.

- ➤ Users can go to the pre-selected shopping cart and order food items.

Use of Code

- Run the application.
- Search the database

CHAPTER THREE

PROJECT PLANNING

You need to create a relational database before you can develop a website. Both the data model and the process model are components of conceptual design. As opposed to the process model, which focuses on data processing, the data model focuses on what data should be saved in the database. Designing relational tables within the framework of a relational database requires the use of a data model. Designing queries to access and use these tables is done using the process model.

Database Design

The project database's fundamental table structure, together with details on primary and foreign keys, are provided in this section.

Table 1. Users Table:

S NO	NAME	TYPE	DESCRIPTION
1	id	int	Primary key
2	name	varchar	
3	email	varchar	
4	password	varchar	
5	Activation status	varchar	
6	Activation code	varchar	
7	userStatus	varchar	
8	createdTimestamp	timestamp	

Table 2. Orders Table:

SNO	NAME	TYPE	DESCRIPTION
1	id	int	Primary key
2	preOrderStatus	varchar	
3	CreatedTimeStamp	timestamp	
4	totalPrice	varchar	
5	paymentId	varchar	
6	status	varchar	
7	customerArrivalTime	varchar	
8	userId	int	

Table 3. Ordered Items Table:

SNO	NAME	TYPE	DESCRIPTION
1	id	int	Primary key
2	menuId	int	
3	price	varchar	
4	quantity	int	
5	orderId	int	
6	status	varchar	

Table 4. Menu Table:

SNO	NAME	TYPE	DESCRIPTION
1	id	int	id
2	itemName	varchar	
3	itemPrice	varchar	
4	discount	int	
5	description	text	
6	imagePath	text	
	status	varchar	

Table 5. Expenses Table:

SNO	NAME	TYPE	DESCRIPTION
1	id	int	id
2	yearMonth	varchar	
3	electricity	varchar	
4	salaries	varchar	
5	maintenance	varchar	
6	materials	varchar	
7	otherExpenses		

Table 6. AdminUsers Table:

SNO	NAME	TYPE	DESCRIPTION
1	id	int	id
2	Name	varchar	
3	mobileNumber	varchar	
4	password	text	
5	email	varchar	
6	address	text	
7	role	varchar	

Process Model

A process model explains how information is gathered by processing data and moving it from one table to another. A functional decomposition diagram plus a data flow diagram make up this model.

Data Flow Diagram
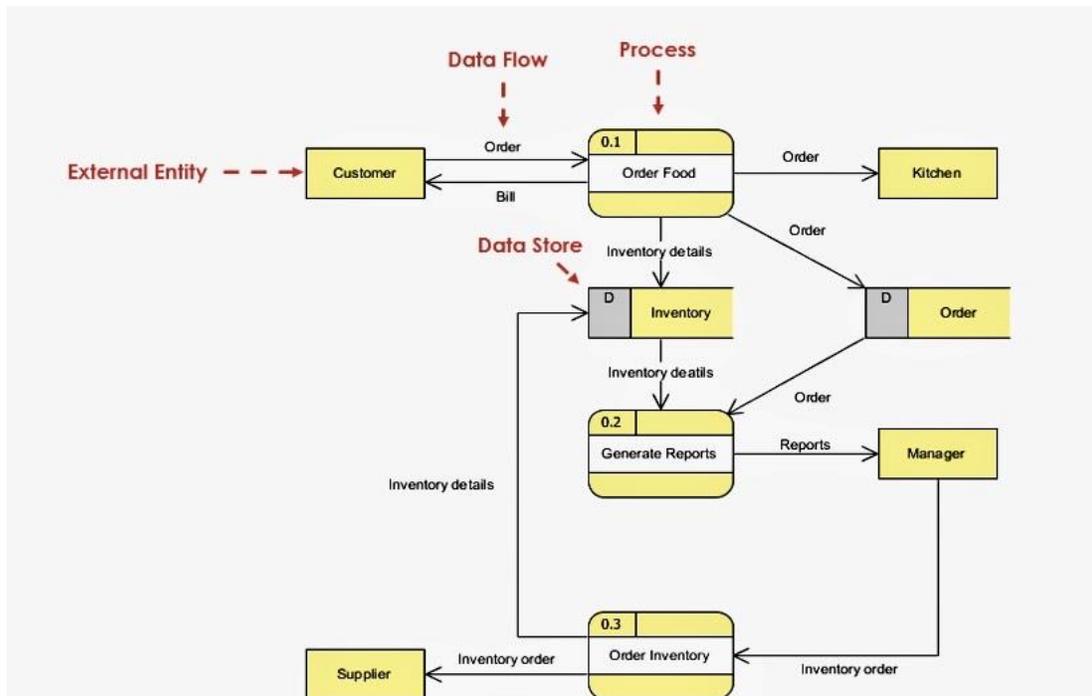
Figure 1: Data Flow Diagram

- ➢ From the above data flow diagram, we can see that customers order food from the menu.
- ➢ And the order goes directly to the chef and the order is prepared based on the arrival time of the customer.
- ➢ A report is generated for all the orders and the reports are visible to the system administrator.
- ➢ The ordered food goes to inventory details and prepares a report.
- ➢ An invoice is prepared for the customer based on the prices of the items.
- ➢ The system administrator has access to the reports and order information.

<u>Use Case Diagram</u>

The PreOrder website portal and menu can be viewed by anyone who
wishes, but each user must log in with their username and password to order
food from the website. Members who have not yet registered can do so by
visiting the registration page. Since a developer can only be a "admin" by default,
only an administrator can switch roles. Once a user registers on the website,
"User" is their default role.
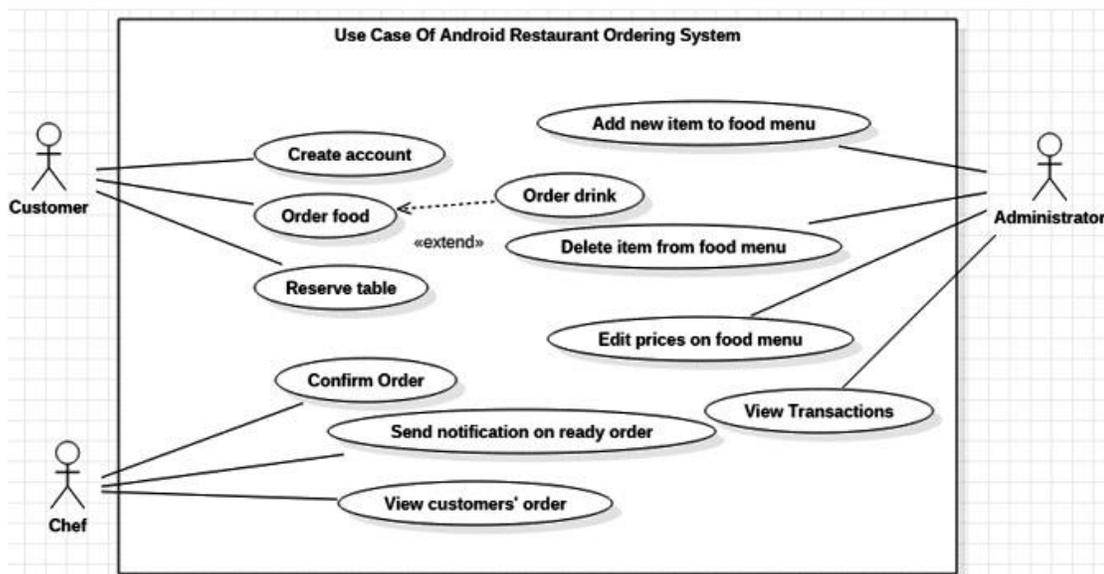
Figure 2: Use Case Diagram

➢ The Customer creates an account with his data on the registration page
displayed on the main page.

➢ If the customer has registered with his data he can order food from the
website.

➢ He/She can reserve a table from the website.

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- ➤ The Chef can confirm the order and send notifications to the customer about the completion of the order.
- ➤ The cook can see the customer's orders.
- ➤ The system administrator has the right to add new items to the menu and also remove items from the menu.
- ➤ The system administrator can change product prices.
- ➤ Admin has a page where you can see transaction history and expenses for this month.

CHAPTER FOUR

USER PORTAL

Website Features

Home Page

➢ The home page consists of tabs like Home, About Us, Menu, Contact Us, and Login/Register.

➢ This page appears the same for Users and Admin.

➢ You can click on the tabs which are shown on the home page to view or order dishes from the menu.
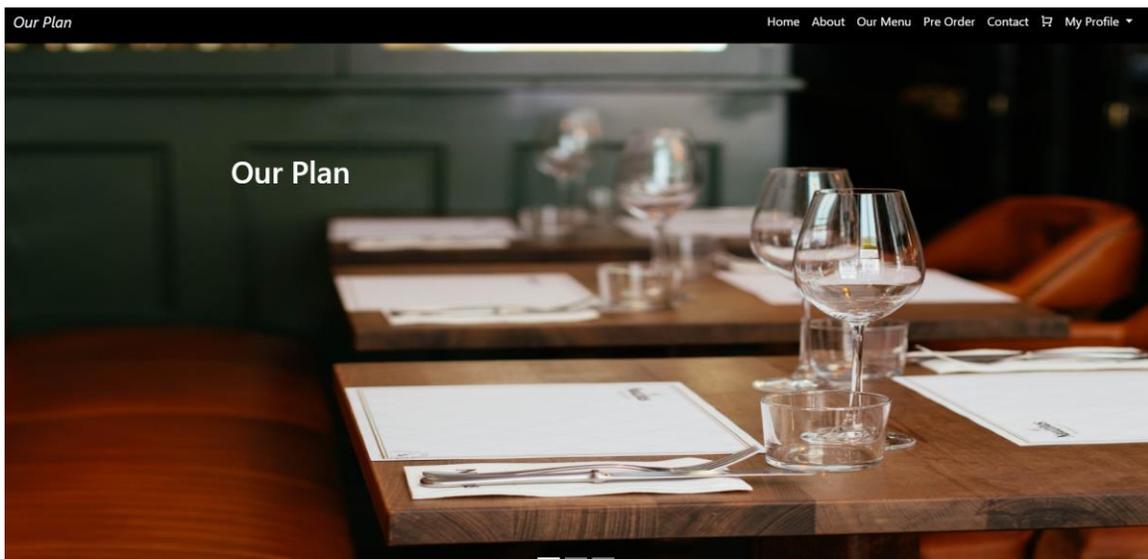
Figure 3. Home Page

About Us

➢ About Us tells you about the website.
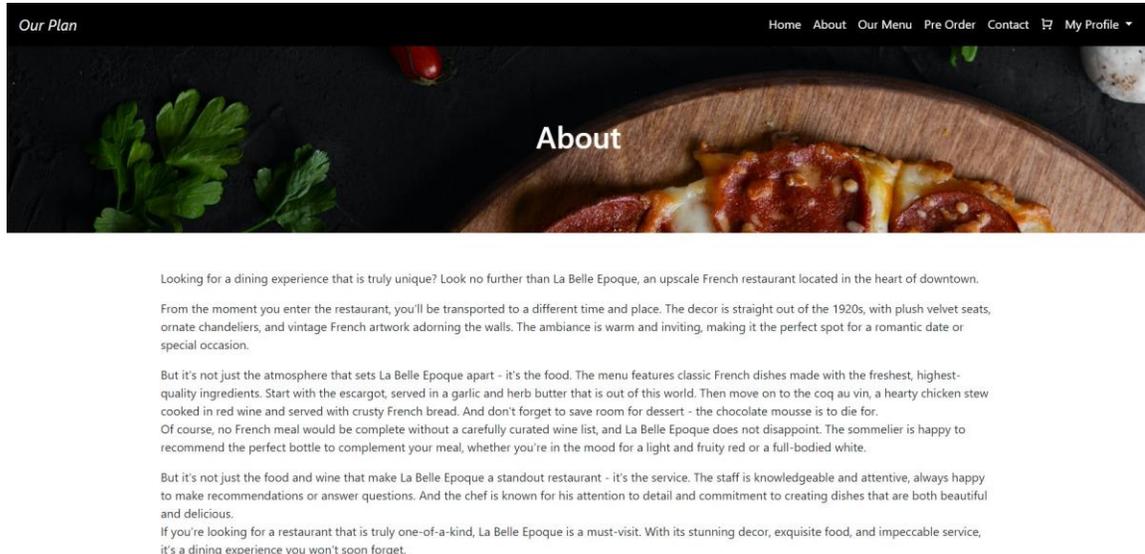
Figure 4. About Us

Our Menu

➢ If you click on the "Menu" tab on the homepage, the menu page will be opened.

➢ Here you can select the item/dish which you like and add it to your cart.

➢ You can also view multiple dishes from each category as per your likes.

➢ The menu page will show you different types of dishes like starters, Main courses, desserts, drinks, etc.
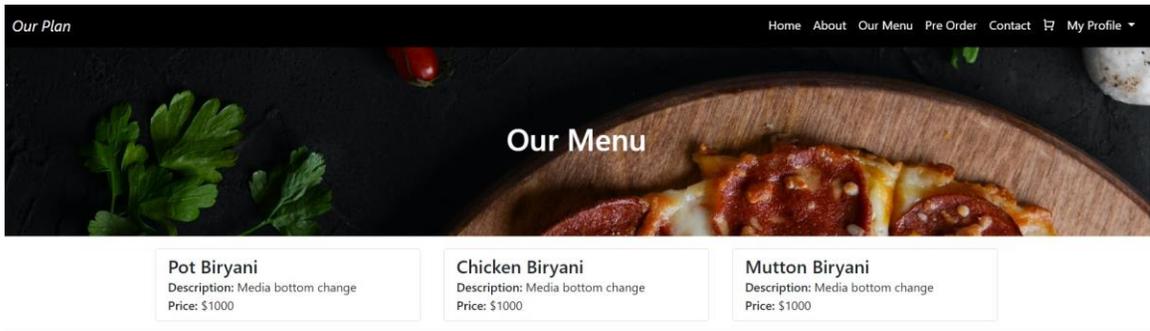
Figure 5. Our Menu

Pre Order

➢ The pre-order page shows you the orders which you have selected.
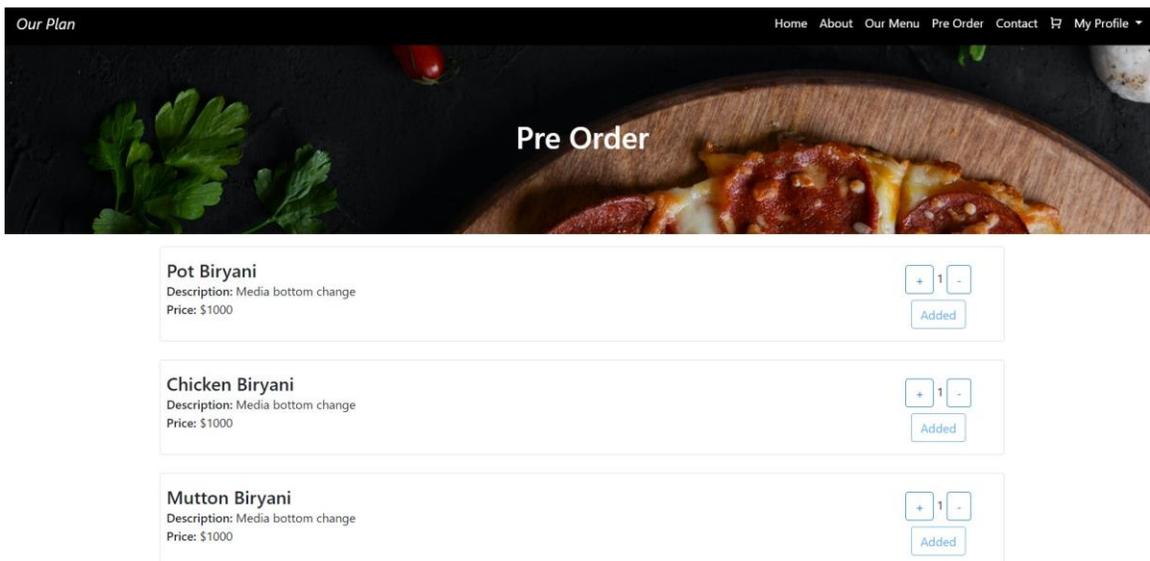
Figure 6. Pre Order

Cart

> ➤ Once you add items/dishes to the cart you need to enter your arrival time.

> ➤ Here you can see your item details like dish names and prices.

> ➤ Click on the "order" option to order the product.
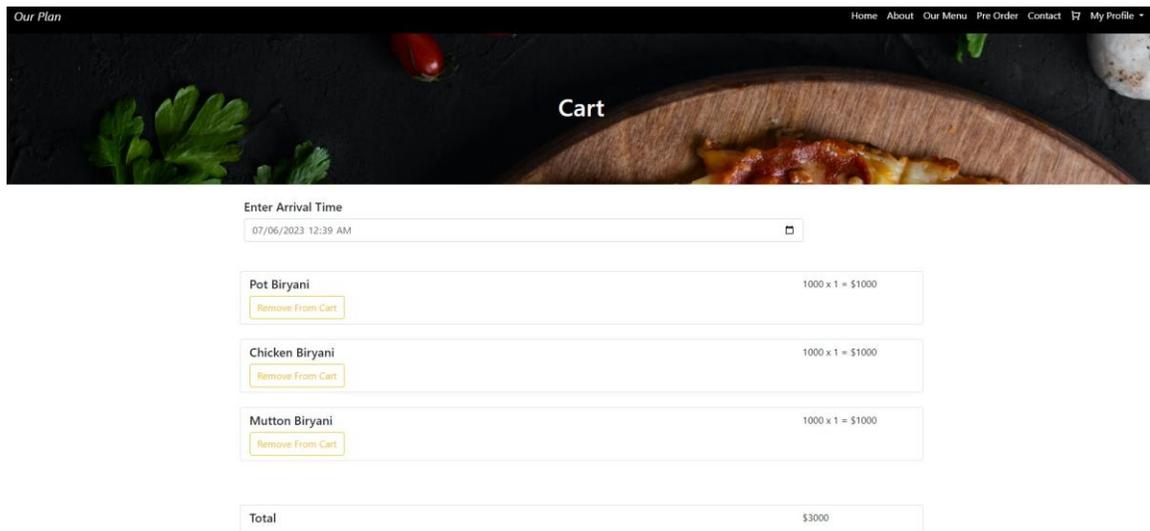
Figure 7. Cart

Payment

> ➤ Once you have added items to the cart, it will ask for your arrival time.

> ➤ After entering your arrival time, it will ask you for payment.

> ➤ We have imported a Stripe payment gateway to our website.

> ➤ Click on Proceed with payment.

> ➤ Above page will be opened.

> ➤ Enter your card details and click on Proceed with payment.
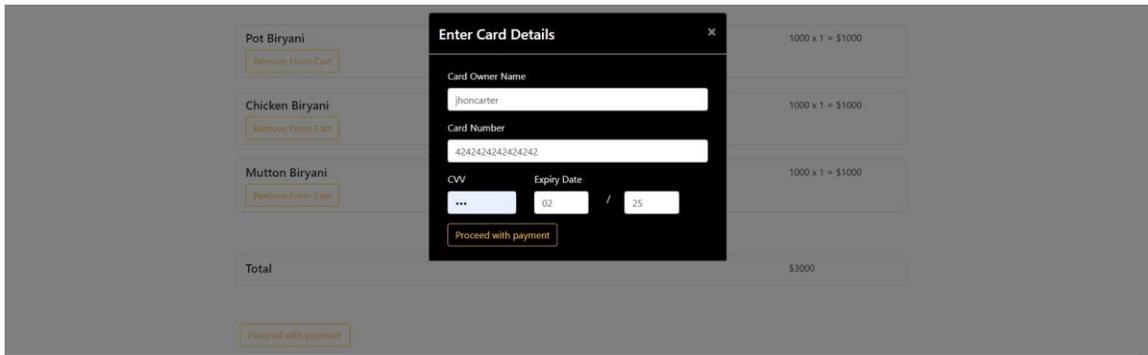
Figure 8. Payment

Contact Us

➤ From here, users and visitors can contact the website's owners or administrators.

➤ To contact the administrator, you can reach out to the email which is given on the page.
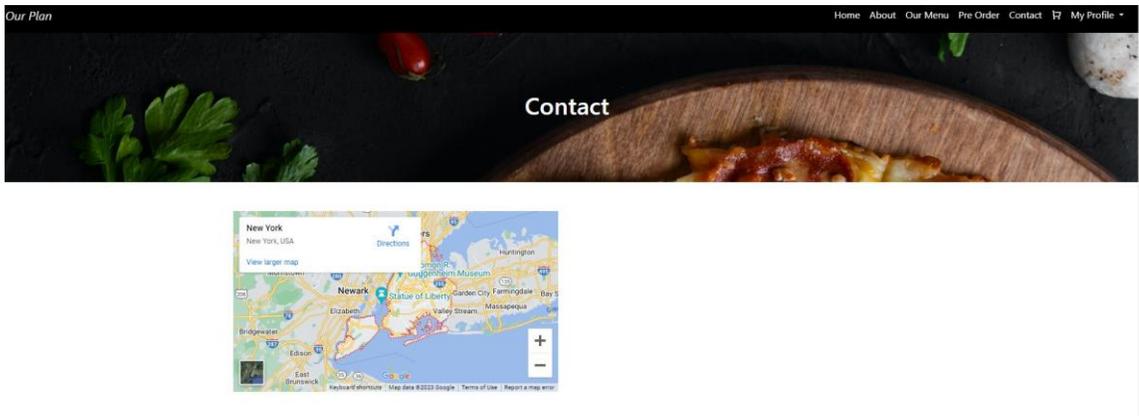
Figure 9. Contact Us

<u>Login/Register Page</u>

> ➢ Once you click on the "Login/Register", the below page will be opened.

> ➢ Click on the register to get registration page.

> ➢ Fill in the details which were asked on the page and click on register.

> ➢ User details will be registered and saved in the profile.
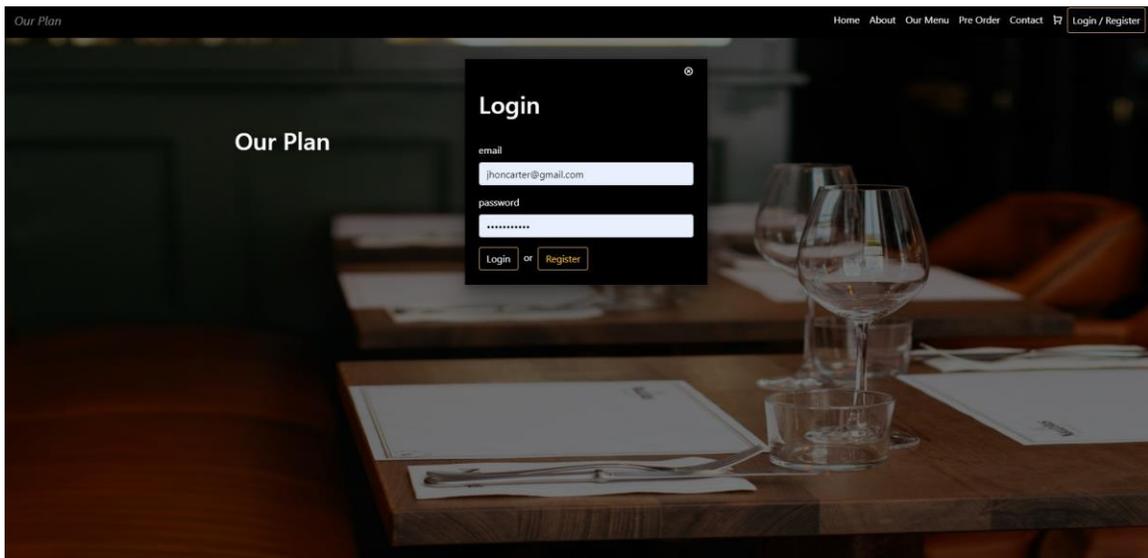
Figure 10. Login
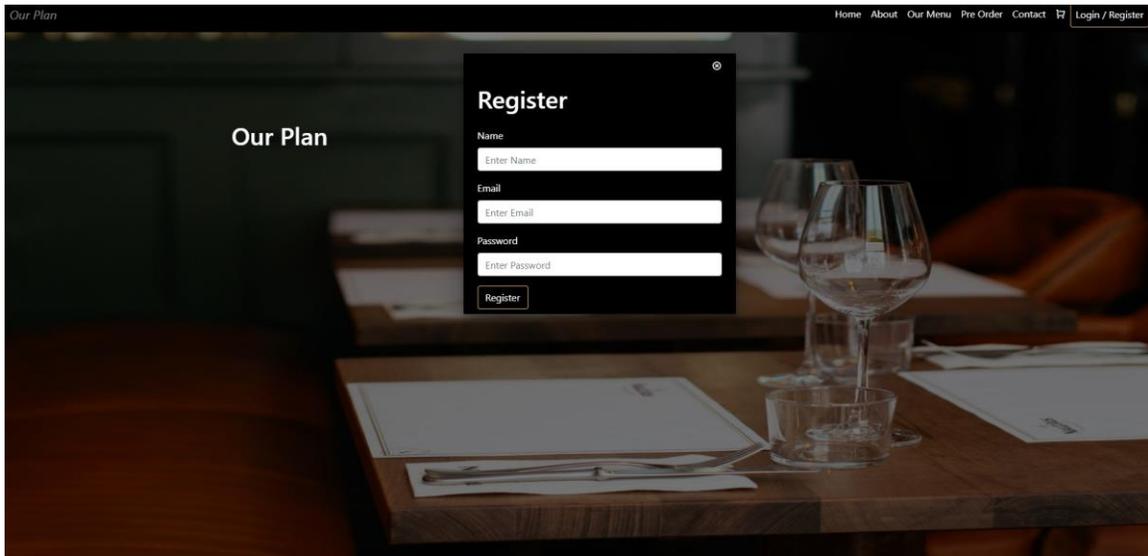
Figure 11. Register

My Orders

➢ The items which you have selected will be added to the cart.

➢ You can view your orders from the My Orders page.

Figure 12. My Orders

CHAPTER FIVE

ADMIN PORTAL

System Administrator Features

Login

➢ The admin portal is only visible to the admin.

➢ Admin will have a profile to view users and orders.

➢ Below is the login page for Admin.
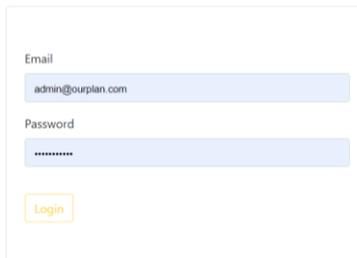
Figure 13. Admin Login

Users

➢ Users list will be visible to Admin.

➢ Only Admin will have access to this page.

Figure 14. Admin Users

Orders

➤ The orders list is visible on the Orders page.

➤ Only Admin will have access to this page.

Figure 15. Admin Orders

Data Analytics

➤ Here in the above graph admin can able to track the number of sales ,expenses, profit through this web portal.
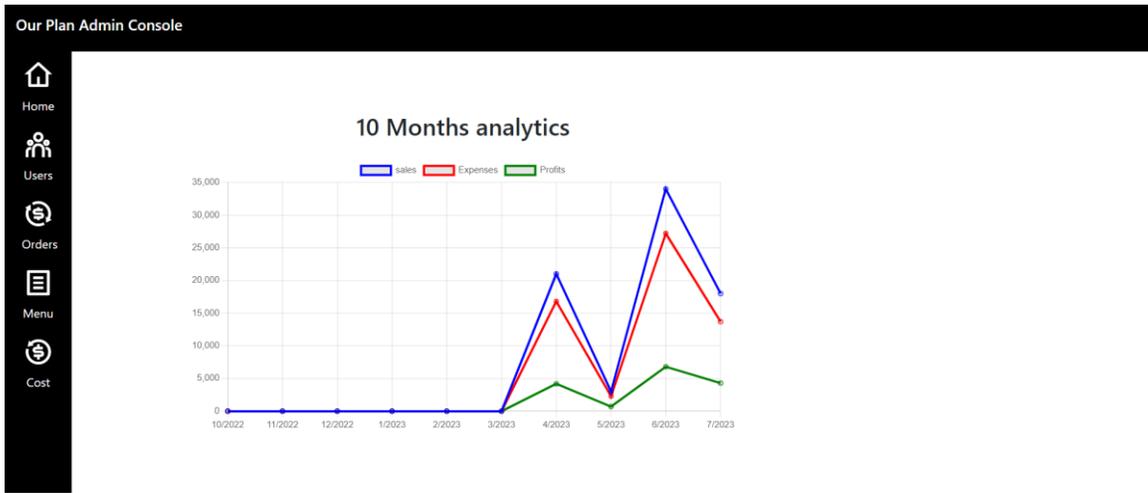
Figure 16. Data Analytics

Expenses

➢ Admin can see the total expenses of the month on this page.

Figure 17. Expenses

CHAPTER SIX

REQUIREMENTS THAT ARE OPERATING OR NON-FUNCTIONAL

Protection Protocols

Security

> ➤ This website is a secure website and all the information stored in this is
> safe.
>
> ➤ All the details given by the user are only visible to Admin.
>
> ➤ On pages they have access to, administrators can only carry out
> administrative functions. The administrative pages won't be accessible to
> users. All passwords are encrypted with decrypt encryption.

Succulence and Maintenance

> ➤ Depending on the request being made, pages should be loaded quickly
> and formatted.
>
> ➤ Administrators will be able to immediately alter the website, product
> descriptions, prices, and order forms. The admin should maintain the
> website well and the network administrator should check the servers and
> network if the customer faces any network issues.

CHAPTER SEVEN

APPLIED TECHNOLOGIES

Technologies Used

<u>Node JS for Backend</u>

The majority of developers use Node.js to build server-side web apps, and because it employs an asynchronous event-driven approach, it is ideal and very helpful for applications that require plenty of data. Node.js shares fundamental similarities with Ruby's Event Machine and takes some of Python's twist. The event concept is expanded upon a little in Node.js. Instead of being a library, it represents the event loop as a runtime structure. In other systems, the event loop is always started by a block call. Typically, the server is launched with a blocking call like EventMachine::run() at the conclusion of the script after the behavior has been defined with a callback at the beginning. There is no equivalent start-the-wind-loop call in Node.js. After the injected script has been run, Node.js merely joins the event loop. When there are no more callbacks that need to be triggered, the event loop is ended. The event loop is concealed from the user in a manner akin to browser JavaScript. Node.js made HTTP a first-class citizen and it was built with low latency and streaming in mind. As a result, Node.js is a good choice as the foundation for a web library or framework. The lack of threads in Node.js does not preclude you from using many cores in your environment. The child_process.fork() API can be used to start new child processes, and they are

made to be user-interactive. The clustering module, which enables you to exchange sockets amongst processes to balance the load on your cores, is based on the same interface as these programs. The issue is resolved by Node.js using server-side JavaScript. The most widely used programming language in the world, JavaScript, is the backend of millions of websites. JavaScript is a language that adds interactions, such animations and effects, to websites, making them less static. In its first form, JavaScript was a client-side scripting language that communicated with the backend. HTML document tags are used in JavaScript to run code. This meant that all of the JavaScript code was run in the browser, which was not the best option in terms of code speed and maintainability.

Scalable. Because Node.js is single-threaded, you can scale your web apps using it. As a result, Node.js is able to manage numerous connections simultaneously.

Speed. Threaded execution in Node.js is non-blocking, making JavaScript execution much faster.

Packages. There are over a million packages available in the Node Package Manager (NPM). These packages streamline your work and are simple to install with just one command. Behind the scenes, packages handle a lot of automation tasks including running common code and establishing the appropriate kind of directory. You can concentrate on creating the project itself by using this kind of automation.

Powerful Backend. Node.js is powered by C and C++. This increases Node.js' speed even further and makes it possible to perform practical tasks like meshing, creating dynamic page content, and gathering form input.

Cross Platform Support. You may create webpages, desktop applications, and even mobile applications using Node.js. Because Node.js isolates system-specific functions and converts them into APIs, cross-platform support is possible. Then, from various platforms, you can use your apps to call these APIs.

Angular JS for Frontend

Using Node.js, you can make websites, desktop applications, and even mobile applications. Cross-platform compatibility is possible because Node.js isolates system-specific functions and turns them into APIs. Then, you may utilize your apps to call these APIs from a variety of platforms.

Declarative UI. To specify an application's user interface, Angular employs HTML. You don't need to define program flow in HTML because it is a declarative language. Simply state your needs, and Angular will take care of the rest.

Typescript. TypeScript enables types (primitives, interfaces, etc.) and helps to obviate mistakes from the start of the code, it provides stronger protection for Angular apps.

Easy Testing. In Angular, testing is incredibly simple. Applications included in modules allow for automated testing. You don't even need to remember the order of loading the modules because it adheres to the one file, one module approach.

Features of Angular. An XML or HTML page is treated by the DOM (Document Object Model) as a tree structure, with each node denoting a distinct section of the content. A basic DOM is used by Angular. Let's imagine that the same HTML page receives ten modifications. Angular changes the full tree of HTML Tags rather to just changing the existing content.

Advantages of Angular. Since its conception, Angular has been available in numerous versions. The effectiveness of the framework was improved in each of these iterations.

Custom Components. Users can build components using Angular that can package functionality and break down logic into reusable bits. The same is true for web components.

Data Binding. With the aid of Angular, users can quickly transport data from JavaScript code to a screen and respond to user events without explicitly writing any code.

Dependency Injection. Users of Angular can create modular services and add them as needed. This enhances the services' capacity to be tested and reused.

Testing. Tests are a valuable tool, and Angular was created with testability in mind from the very beginning. You will have the chance to test each component of your application, which is strongly advised.

Comprehensive. The full-featured framework Angular offers covert

solutions for server connection, application routing, and more.

Browser Compatibility. Both platforms and browsers are compatible with

Angular. Most browsers, including Chrome and Firefox, as well as operating

systems, including Windows, macOS, and Linux, can run Angular applications.

MySQL for Database

A relational database system's relational query language, or SQL, is used

to store, manipulate, and retrieve data from those databases. The preferred

language for Relational Database Systems is SQL. SQL is the common database

language used by all relational database management systems, including

MySQL, MS Access, Oracle, Sybase, Informix, Postgres, and SQL Server.

SQL Process. In any RDBMS, when you execute a SQL command, the

system decides how to best fulfill your query and the SQL engine decides how to

interpret the task. There are several parts to the procedure. Query Dispatcher,

Optimization Engines, Classic Query Engine, SQL Query Engine, etc. are some

examples of these components. Logical files are not supported by the SQL query

engine; only the Classic query engine supports non-SQL queries.

MYSQL. MySQL is a free and open-source SQL database created by

MySQL AB in Sweden. The pronunciation of MySQL is "my ess-que-ell," as

opposed to SQL, which is pronounced "sequel." Microsoft Windows, the main

Linux variants, UNIX, and Mac OS X are just a few of the many operating

systems that MySQL supports. Depending on its application (non-commercial/commercial) and functionality, MySQL comes in both free and paid editions. A powerful, multi-user, multi-threaded, and quick SQL database server is included with MySQL.

Features of MYSQL

> All operations can be carried out with high performance, high availability, scalability, and flexibility.

> Robust Transactional Support.

> Data Warehouse and Web Strengths.

> A strong data protection system.

> Development of an all-encompassing application.

> Open-Source Freedom and Seven Days a Week Support

> Best Total Cost of Ownership..

RDBMS. All contemporary database systems, including MySQL, Microsoft SQL Server, Oracle, and Microsoft Access DDL, are built on the Relational Database Management System (RDBMS), a program used to administer a relational database.

SQL Commands

> CREATE - Creates a new table, view from a table, or other database object using the command.

> ALTER refers to changing a table or other existing database item.

- ➢ DROP - Deletes the entirety of a table, a view of a table, or another database object.

- ➢ Data Manipulation Language (DML)

- ➢ INSERT   - Creates a record

- ➢ UPDATE   - changing records

- ➢ DELETE   - Deletes records

CHAPTER EIGHT

CONCLUSION

In contemporary business, the Internet has grown in importance. This is how people order food, clothing, groceries, and many other things online. One of the biggest sectors in the world today is the food industry. There is a grocery store in every corner of the world. We are all aware that a company's ability to provide excellent customer service is crucial to the success of the business and may therefore guarantee a return on investment. People are looking for easy ways because of their busy life schedules. Because we created and developed this pre-order website to make people's lives easier. The main motive of this website is to create an even more friendly menu for customers. All are uniquely designed with customers in mind. The atmosphere and the restaurant are designed according to the comfort of the customers. The manager receives all reports based on expenses and orders. He also has a page with a graph showing profit and loss. The best restaurants have both hardware and software that are user-friendly and offer management functions and requirements based on business needs. In the past, people waited a long time to order food and waited longer for food to be served. This eventually leads to boredom and not wanting to eat, even though food is ordered at will. In addition, the staff/chef felt pressure from the customers. As technology advances, customers can happily order their food online at their convenience and go to a restaurant to get their food faster. This makes life easier for both customers and administrator.

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