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# FINAL PROJECT

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A Coursework Report On  
Course: COMP1682



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# CHAPTER 1: INTRODUCTION

## 1.1. Introduction.

In recent years, the commercial market is developing rapidly. In addition, the covid 19 pandemic contributes to accelerating the development of e-commerce sites, so I decided to do a research project on the topic of allowing users to order food online on the web. Below, I will outline the reasons why I decided to choose this research topic.

To enjoy a delicious dish, customers have to walk around the restaurant, wait in long queues if it's rush hours, order directly from the staff and wait a long time for the food to be delivered and feast. This consumes a lot of customer's times and the restaurant is also can be easily overloaded, this leads to service quality will be reduced. The solution to this problem is to apply technology to restoration services to solve the above problems. Users only need a phone or any smart device that can access to the internet, they can enter to visit and order their favorite food. Customers can also know more details of the dishes that they have ordered. In addition, customers can see the reviews of customers who have already tried by checking the reviews and comments section. This creates more convenience for customers and more choice. After the customer chooses the food they want, go to the shopping cart to check again and confirm, then proceed to checkout. The information that the customer ordered will be transferred to the restaurant management system then employees of the restaurant will process the request quickly, completely and accurately. Payment system customers can pay online or pay after receiving the goods. Applying technology to service helps minimize staffing costs, providing customers with a great experience. Additionally, the restaurant will minimize errors, always operating at full capacity at all times.

In the research process for this project, I will use the knowledge I have acquired over the past four years and a number of references from a variety of sources, research the systems currently on the market and learn from it, improve it. From there apply it to the project I'm been working on, there will definitely be some gaps as I don't have much experience and I promise to try to perfect it as much as possible.

## **1.2. Project objectives.**

### **1.2.1. Knowledge of web programming and the e-commerce market.**

- Prepare basic to advanced knowledge of Web Apps programming.
- Learn more about standard SEO design.
- Learn how to create good interfaces and interact well with users.
- Know the structure of an e-commerce site project
- Research catering systems that sell takeout and how it works, then learn from the experience and apply it to the project.

### **1.2.2. Find resources to help you develop a project using Asp.Net and some supporting libraries.**

- Use the documentation provided by Microsoft to develop an e-commerce project using Asp.Net.
- Use built-in libraries provided by Microsoft for fast, stable, and accurate code.
- Use help tools for writing code such as the automatic creation of Controllers, the creation of databases by code (Code First).

### **1.2.3. Study and learn how to organize a project according to the MVC model in Asp.Net.**

- Study and learn about the MVC pattern and the features of Model, View, and Controller.
- Discover the pros and cons of the MVC pattern.
- Learn about MVC pattern components enforced by Asp.Net Core such as Routing, Model binding, Model validation, Dependency injection, Filters, Areas, Web APIs, Testability, Razor view engine, strongly typed views, Tag Helpers, View Components.

### **1.2.4. Research and design database of project requirements.**

- Draw the database using the drawing board based on the requirements gathered earlier.
- Create a database by the first code in the model.
- Study the commands to create and update the database and how to connect to SQL Server

### **1.2.5. Compare with e-commerce sites in the same niche.**

- Research and search large and reputable e-commerce sites in the same field that offer similar products.
- List the pros and cons between e-commerce sites to learn from and learn from before starting to develop the project.
- Always self-evaluate and compare other projects, thus gaining a lot of experience and promoting better project development.

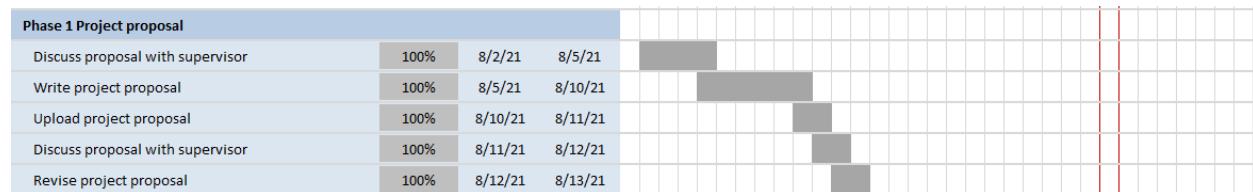
### **1.2.6. Proceed with the construction of the project**

- Collect, analyze and evaluate the requirements and ideas of the desired customer in the system.
- Create design drawings of system functionality and operation.
- Create design tables for UI/UX, build a system based on the proposed design table.
- Based on the design tables and clarification requirements, start building the system.
- Complete the system, commission it and test it before deploying it to the market.
- Overcome limitations after going through the testing and acceptance process.

## **1.3. Project plan.**

I used the Excel tool to create a handy Gantt chart to track project progress. The workload is divided into 6 phases, below I have provided specific tasks of each phase.

### **Phase 1 Project proposal**



*Figure 1-Phase 1*

## Phase 2 Research

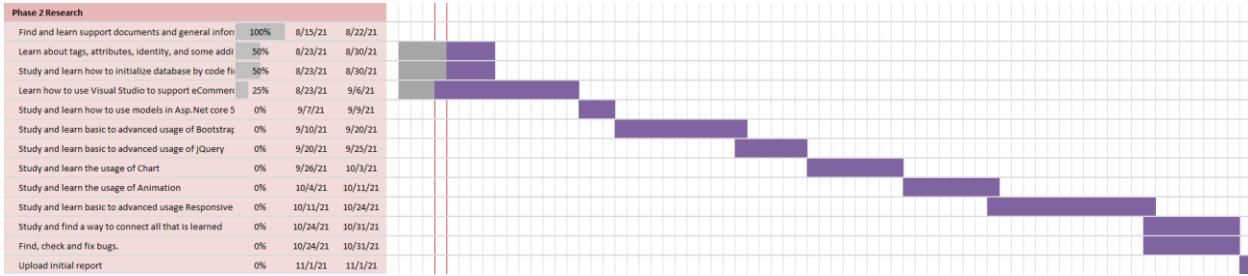


Figure 2-Phase 2

## Phase 3 Product Development



Figure 3-Phase 3

## Phase 4 Interim Report



Figure 4-Phase 4

## Phase 5 Final Report



Figure 5-Phase 5

## Phase 6 Project Demonstration



Figure 6-Phase 6

### 1.4. Project outcomes.

According to the data of the past 3 years, the e-commerce industry is gradually developing. Moreover, due to the great impact of covid 19, the e-commerce market has become explosive in terms of sales. Especially in the sector of online food sales and home delivery services. If in the

past, customers wanted to eat the restaurant's food, but the restaurant was located far enough away, this caused the customer to give up that choice, resulting in a decline in restaurant revenue. That's why I came up with a way to solve the problem that restaurants are facing, which is to create a separate website for the restaurant, instead of customers having to spend time doing the shuttle, to go on the street in congested traffic and in bad weather. discover the restaurant's cuisine. Now users just need to visit the restaurant website, select the item and add it to the cart, place an order and choose a payment method, and after a while, the restaurant staff will give it to you. will deliver. This helps to maximize certain steps to speed up the service process, bring convenience to customers, and initiative for the restaurant.

During the implementation of this project, there was advice and help from my teacher.

The finished product is expected to solve business problems and meet user needs.

Below is a description of the features that will be available at the end of the project

*Table 1-Features that will appear in the project*

Type	Situation	Expectation
Features that will appear on the website	Product search function	On the website will provide the user with an input box, the user only needs to enter the user's product in the input box. By clicking on the search button or icon, the system will rely on the keywords provided by the user and return the corresponding results to the user.

	<p>View detailed information such as price, size and more product photos</p>	<p>Users want to know more detailed information about a product, users only need to select this product, the website will immediately redirect the user to the correct product detail page and related content such as pictures and content will be displayed to the user</p>
	<p>Users can create an account and log in.</p>	<p>Registration: First, the user selects the registration function, the system will give him a form for the user to fill in the necessary information to create an account, then click submit to submit the form to the system.</p> <p>Login: First, the user must have a previously registered account, then select login and enter all account information in the input fields as required by the form, then click login to continue with the purchase.</p>

	Shopping cart function	When the user wants and wants to buy a product, just select this product and put it in the shopping cart, the user can go to the shopping cart to see the selected products, the total amount will also be displayed. For the customers see and confirm and users feel satisfied, just select the payment button, the system will save the information and send an order confirmation email.
	Customer can add items to your basket and at that time, no need to log in	when the user has not logged in to the system, but added products to the cart, when the user logs in, the cart is still intact, the user only has to pay without reselecting the previous products.
	Admin management features	The administrator is the person who manages the whole system. The rights that the admin can manipulate include adding products, deleting products, sales statistics, displaying orders

		on demand. Admin can also lock any account
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## **1.5. Project evaluation.**

The project was developed by me, researched and with the help and advice of my teacher, the subject of my choice is related to the development of an e-commerce site to support the activity of the restaurant. Here are some of the criteria I will set to evaluate my products against these criteria.

### **1.5.1. Performance**

The performance of the website under normal conditions must be guaranteed to load content, images, ... under 0.5 seconds. Building websites with Asp.Net Core technology makes it possible to work on good multi-platforms such as: window, macOS, Linux, ... The speed of transition or page processing must always guarantee minimum latency.

### **1.5.2. Function**

Based on request collection and analysis to determine website functionality and assign permissions to each user segment. In this project will be divided into 3 types of users: Admin, Staff, User.

#### **Admin**

Admin plays the role of user management, can add, view, delete or edit users, furthermore, can provide the right to use functions for users, view sales, and view sales information as of graph. Moreover, the admin can edit home, about, contact pages and manage content like banners, categories, header, footer.

#### **Staff**

Employees play the role of managing what is related to the product. Specifically products, employees can add, view, edit, and delete products. The added content is the title, content, and images of the product and certain detailed information of the product description and may be

reviewed, modified, and deleted by the staff. In addition, it is necessary to have a person to manage customer reviews, so the staff will also take care of the management of the reviews, the staff will be able to see the reviews and can block the false negative reviews. Besides, the creation of promotional codes to retain customers will also be undertaken by the staff, from there the staff will create discount codes to send to the customers and the customers can use this code for the next payment.

### **User (Customer/Guest)**

Features that will appear in a customer's role include login functionality so that customers can log in to the system and make purchases. The search function helps customers quickly find the products they want. Shopping cart function, any item a customer wants to buy, just add it to the shopping cart and the system will save and add this product to the shopping cart, in the shopping cart, the customer can increase or decrease the number of products. . The system will automatically calculate and display the total value of the product that the customer has placed in the cart. In addition, customers can also apply a discount code provided by the staff to enjoy the promotion. After using the product, customers can access the product details and comment on its quality. Finally, the paging function, if displaying all products on the same page makes customers confused and difficult to choose, paging will reduce the number of products on one page to help customers quickly. Easy to decide while ensuring a full menu.

Customers accessing the website will be in the guest role only when they use the login feature and log in with the account, they will be switched to the customer role and unlock certain features such as payment and commenting on products.

#### **1.5.3. The consistency.**

The e-commerce site that I have researched and developed will go through the testing process, and for small-scale testing and will gradually increase in size over time. During this process, we will continue to improve and develop to fix any errors or bugs, ensure product consistency from interface to functionality before releasing it into service.

#### **1.5.4. Security capabilities**

Security is an important part that customers and companies are very concerned about, it is also one of the reasons why I use Asp.Net Core for my projects. Asp.Net Core provides Authentication, Authorization, Data Protection, HTTPS Enforcement, App Secrecy, XSRF/CSRF Prevention, Cross-Origin Resource Sharing (CORS), Cross-Site Attacks Scripting (XSS).

#### **1.5.5. Interface**

When developing the user interface, I decided to use two of the “seven design principles” (Benyon, 2010). To be applied to the design of interfaces, for example Coherence and Constraint. This will be highlighted and explained in detail in the design section. Moreover, the positions and layout of the website will be clearly and logically aligned with no overlapping or overlapping between blocks, the content is fully displayed, the font size is designed SEO standard. Harmonious colors, high-quality images attract customers' first eyes.

#### **1.5.6. Responsive**

Responsiveness is quite a big thing to pay attention to as most people now have more phones than computers and more web traffic from phones. So the current interface design trend is Mobile-first, so Responsive is important, and in the project, I will apply Bootstrap to be compatible with many types of devices available in the current market.

#### **1.5.7. Database**

Based on the requirements and analysis of the system, I understood that the components that will appear in the system will be needed to create the corresponding tables to save and extract data. Moreover, there will also be a link between the tables so that the retrieved data is displayed exactly and as per the user's requirement.

#### **1.5.8. Scalable development**

After the project is completed, it will be put into trial operation for one to two months, then I will continue to develop and optimize the features and user experience. Specifically, the possibility of optimizing in the ordering and purchasing process, the information entered by the customer

is saved and will be automatically filled in when the customer pays for example or develops more mobile applications to expand the market of a part of the restaurant.

## CHAPTER 2: LITERATURE REVIEW

### 2.1. What is an Ecommerce Website? Is restaurant A eCommerce?

In the old days people usually go to traditional restaurant or store to be served. But now with the immense of e-commerce restaurant websites allow a user or a group to order food from the platforms offered by restaurants. The main difference between traditional restaurants and e-commerce restaurants is that the transaction, the transaction process of an e-commerce restaurant is done on the Internet and not in a physical place.

I will explain to you more clearly what an e-commerce restaurant is. Restaurants will create an online store, users can access it to order food, and then the restaurant will take care of delivering it to you.

### 2.2. What are the different types of eCommerce websites?

It is difficult to talk about the scope of e-commerce because it is so vast and impossible to list them all, but I can list e-commerce business models such as: Business-to-consumer (B2C), Business-to-business (B2B), Business-to-administration (B2A), Consumer-to-consumer (C2C), Consumer-to-business (C2B), Consumer-to-administration (C2A). Here I will briefly introduce the business models I have listed

- **Business-to-consumer (B2C)**

It is the type of model considered to be the most familiar and popular among ordinary people, the model B2C website that helps businesses easily and quickly exchange goods or services for consumers, such as ordering a meal in a store that customers love.

- **Business-to-business (B2B)**

The B2B e-commerce model is a business-to-business sales model, the popularity of this model is also among the top models that generate the highest revenue. This model appears mostly in e-commerce channels. The advantage of this model is high performance

and efficiency. Example of a B2B model: Your company is a company specializing in the sale of all kinds of cakes, you can buy batches of these cakes from an online wholesaler.

- **Business-to-administration (B2A)**

The B2A e-commerce model, also known as the B2G model, is an e-commerce model between businesses and government or state agencies. For example, providing legal documents, policies for buying and selling in cyberspace, and transparency of the buying process.

- **Consumer-to-consumer (C2C)**

The C2C e-commerce model is a model between customers and customers, a third party will stand out to create an intermediary to help two parties exchange goods between each other. The third party will receive part of the commission when the goods are successfully exchanged. Example: eBay.

- **Consumer-to-business (C2B)**

The C2B e-commerce model is a type of model where individuals provide services or any type of goods to businesses, businesses will use and consume what that individual provides. For example, the individual here is mentioned as an influencer, this individual receives advertisements for the products offered by the company, so more people know about the company's products.

- **Consumer-to-administration (C2A)**

The C2A e-commerce model, also known as C2G. Allows consumers to provide feedback or information, goods or services related to government, administrative agencies or governmental organizations. For example, you participate in the payment of social or health insurance, pay for electricity and water, ...

## **2.3. Characteristics of the Best eCommerce Websites.**

### **Friendliness and good interaction with users**

Inspired by the saying of the actor with the stage name Cary Grant "the simpler the better". What determines the success of a product such as an e-commerce site is its ease of use. In recent years, the e-commerce market has gradually become a shopping trend, replacing traditional stores. The

secret to a successful e-commerce site is to help customers get what they want quickly, reduce unnecessary steps, and make everything easier to drive demand for increased business revenue. Sellers on e-commerce platforms have very little time to convince customers. It is therefore very important to focus on improving the user experience. E-commerce sites will add filtering features, comparing products against each other to yield the desired result to help users quickly decide which product they are looking for.

List some features to improve user experience

- Based on the information provided by the customer when opening an account, at the time of placing the order, this information will be automatically filled in and the customer will only have to fill in the missing information to complete the order, if applicable.
- The search bar will add the functionality to display trending products that match the keywords that customers search for.
- User navigations should be clear, efficient, and non-overlapping to avoid misunderstandings

### **Cross-platform compatibility and Mobile-First priority**

Currently, the creation of an e-commerce site must be cross-platform, in particular Mobile-first. Because the number of customers owning smartphones is very popular these days, many companies will never let this opportunity pass. A website that can be compatible with all different platforms will bring the best experience. A large company like Walmart after optimizing their website for mobile, mobile sales increased by 98%. The crux of the matter is that it doesn't matter how many features your website has, how big the site is, as long as you care about user experience, especially mobile users, automatically, sales as well as website reputation. the business will automatically increase.

### **Information, photos and videos are always clear**

To attract buyers to e-commerce sites, products must contain information and images specific to the type of product the user is looking for. Disclosures should be clearly designed and use

appropriate fonts to grab users' attention. In addition to information such as images and text, many other types of information are required, such as video or certain animations. Providing this information helps users to understand all product information and feel secure when choosing this product. Therefore, video images, ... should be optimized and achieve high quality resolution synchronously, optimized with page loading speed.

### **Choose buy and order quickly.**

Gone are the days when an e-commerce website didn't have a shopping feature, but only provided a few images and some bulleted information and waited for the user to contact to place an order and confirm the order. The checkout function is an important feature that makes a difference and is professional in online buying and selling. The reason why you should have the order function is that it optimizes the process of buying and selling and payment if ordering by phone makes users hesitant to choose more and the risk that businesses and businesses are losing customers is higher. The shopping cart functionality is simply understood as follows, the user selects a store containing products to buy => then the user selects a product, quantity, color, ... in the cart => decides to Pay and choose the payment method online or just after receiving the goods => complete the transaction. The order will then be shipped to the store. The store's job is to confirm orders and prepare goods for delivery to customers.

### **Product reviews and user feedback**

According to some studies, before users decide to buy a product, they tend to read the reviews of previous buyers and then make a decision, this number can be up to 95%. In other words, a Another feature is to rate products using stars to rate, users tend to choose types of products rated 4 stars or more and this number can reach 57%. The downside of this feature is that negative customer reviews will affect the ability of the store or business to sell. It also leads to some confusion for customers that every product with many stars is by default a good product, which is sometimes faked. E-commerce sites can consider using third-party plugins such as social networks like Facebook, Twitter, ... to increase the number of users and the number of reviews. Using reviews to create content for products in an honest and transparent way is seen as a trend.

### **Payment in different forms**

Nowadays, online payment is still essential on e-commerce sites. Online payment functionality allows users to purchase goods from e-commerce sites. Customers will tend to buy more when paying online or by credit card. To use online payment, customers only need to enter the information of the first payment, then the information will be filled in automatically without having to re-enter it from the beginning, customers can use the mobile banking services provided by the bank or other systems. systems such as Momo, Viettel pay,... In addition, customers can order and pay after receiving the goods are also very popular.

### **Special offers or free shopping vouchers**

The distribution of coupons or product discounts plays a role of gratitude to purchasing customers, encouraging customers to purchase more. The difficulty is how to distinguish between different groups of customers to send the appropriate vouchers. The promotion will be sent by e-commerce sites to filter, list, and add support features by notifying customers via email or social networking sites that users have already registered. In addition, there are certain methods of creating sales events that help to retain customers longer, search more on the website, which not only increases the sales of the store or the company but also constitutes an improvement strategy. High-efficiency SEO improvement.

### **Security**

Today, e-commerce sites are growing rapidly and spreading, accompanied by a dense volume of traffic and payments. Therefore, e-commerce websites are often noticed by cybercriminals. Information security must be coordinated between both sides of the business and the customer. Without the cooperation of either, the information will be easily compromised by cybercriminals. Customers must equip themselves with information security knowledge, e-commerce sites will constantly update the latest security features.

Here is a list of some of the security features an eCommerce website should have:

- SSL Certificate: Creates a secure connection between the client and the website. HTTPS is essential for e-commerce sites, it helps users communicate securely over computer networks, encrypted information.
- Two-layer security: In addition to the user entering the correct password, it is necessary to add a second layer of security, the system sends a message to the user's phone or uses software called Authenticator provided by Microsoft.
- Use a firewall: block malicious offers and allow non-malicious ones.
- Commitment between companies and customers: Both parties will keep the information and data contained in the commitment confidential, and will not share or sell information to third parties.

## **2.4. E-commerce site development technology**

To create a website, we divide it into two tables, the first table is the Front-end table, the second is the Back-end table.

Regarding the Front-end, the technologies used to make the Front-end include HTML, CSS, JavaScript in addition to supporting Framework technologies such as React, Vue, Angular...

About Backend, the technologies used to do Back-end include PHP, C#, Java, NodeJS, ...

**Front-end:** The job of a Front-end is to design interfaces and interactions for the website. Give users a feel of the website, convert design images from Photoshop or Figma,... to web interface, create motions, transition effects. Perform simple operations such as sending and receiving data on the server and coordinating with the back-end to create a highly interactive website with users.

Below are some technologies to start doing Front-end:

- **HTML:** If you are a person who learned via Front-end, you must have heard or learned HTML. HTML stands for Hyper Text Markup Language, you can understand it as web page skeleton, HTML contains content, titles, images, sounds, links and many other things.

- **CSS:** For a website to have many different decorations and colors, it is indispensable for CSS, which stands for Cascading Style Sheets. The role of CSS is to adjust the layout of the website, change the colors accordingly, ... In short, the CSS is described as a layer of skin of a human, with color, arrangement of elements in different parts.
- **JavaScript:** Apart from HTML and CSS, to make a website even more amazing, it is necessary to have motions that make it alive and have good interaction with users. It helps the website to update the website specific modifications which are HTML and CSS, in addition, it also helps the website to calculate the numbers and manipulate the data entered in the website.

### **Introduce libraries or frameworks to help with Front-end development.**

Some supporting technologies make CSS simpler, neater, more convenient and more cross-platform, for example some CSS supporting technologies are: Sass, Post CSS, less, ... Some CSS frameworks create predefined frameworks that users just install and use. to reduce design time for example: Bootstrap, Tailwind CSS, Bulma, Material UI, ...

Using JavaScript on a large project, the code will get more and more fleshed out, which inadvertently makes the project more difficult to edit and develop. As a result, a number of libraries and frameworks have arisen to make JavaScript code more manageable and extensible.

Examples of some libraries and frameworks: React, Vue, Angular, Svelte, ...

*Table 2-Comparison between technologies that are popular Front-end today*

	React	Vue	Angular
Pros	React currently is very popular and widely used in projects whether small or large, has a large community, clear and abundant documentation,	Vue is a new technology that incorporates the good things react and angular have done together.	Angular was developed for AngularJS and uses TypeScript written in the TypeScript style, a clear code structure in each module that makes it easy

	easy for users to learn and self-learn.		to correct the code in case of error or facilitate the development and extension of the project.
Cons	The creation of the project structure depends a lot on the project development team, which exposes a weakness if the project development team does not have clear coding experience, which will make it difficult to maintain and development becomes more difficult.	Vue is split into 2 types, Vue 2 and Vue 3, which annoys front-end developers because some libraries only support Vue 2 but not Vue 3 and vice versa. The typed documentation for Vue is also not clear, and the situation when used for Vue 2 is not available for Vue 3 and vice versa. In short, the view documentation is not really consistent and clear.	Manipulation using modules, customizations, integrations and code will take a lot of time. Also, in terms of self-learning and effectively using Angular, it will be much more difficult than other frameworks.

**Back-end:** The back-end plays a very important role, working on the inner side of the website. In a nutshell and easier to understand, it is dealing with the issues of the back-end of the website that the user will never know or see how it works, but the issues handled by the back-end have an impact important to users. The related back-end task of user data security is for example in the databases: you can see the web pages that have a login function, the information entered by the customer will be saved in the databases, the decentralization, ... In order to get user input data in Backend, it is necessary to coordinate with Front-end, provide rest API for Front-end and Front-end to get information and send it back for the system.

- **PHP (Laravel/Symfony):** Hypertext Preprocessor is the full name of PHP. A specialized programming language for web programming, widely known and used by many web programmers. For programmers who are just starting to study, the backend table should use PHP, it has all the functionality to create dynamic page content, create CRUD functionality, add view, delete modification, send and receive cookies, can create, read, write, delete directly on the server, can encrypt data in many forms such as md5, decentralized or user control, additionally there are a number of libraries that support exporting images, pdf, word, excel... So, we can see that we just need to create a sales website or a blog site and many other types of websites.
- **C# (ASP.NET MVC):** Active Server Pages is the full name of Asp and Network Enabled Technologies is the full name of .NET, and it is quite a popular framework for web development. The C# and VB.net languages are the basis; programmers must learn to be able to use this framework. .NET has many support and documentation libraries provided by Microsoft which are very suitable for web development. Besides, it also provides MVC pattern to help optimize code development, easy to upgrade, extend and repair.
- **Java (Spring/Struts):** Java is a popular language known to many programmers. Java can be used in many areas such as mobile, office, web, games, ... but here I will focus on the introduction of Java web development. To create a Java Web, we first need Java and some other HTML technologies, CSS, JavaScript. Java Web can welcome and develop many different types of websites such as e-commerce, educational websites, banks or government institutions. The benefits of Java are multithreading, safety, flexibility and robustness in addition to the rich and diversified source of documentation and support community. But next to this Java also exists some weaknesses as difficult to access and beginners may encounter many difficulties.

## CHAPTER 3: TECHNOLOGY AND TOOLS

### **3.1. Technology**

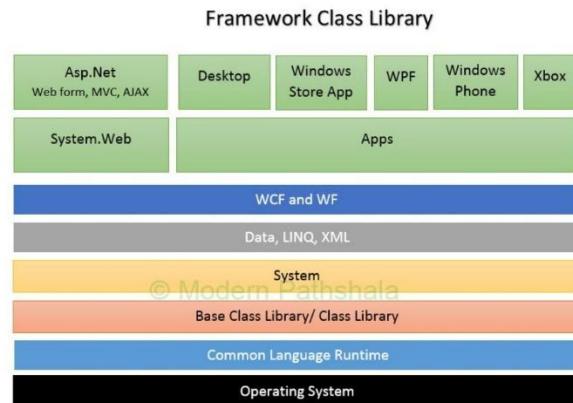
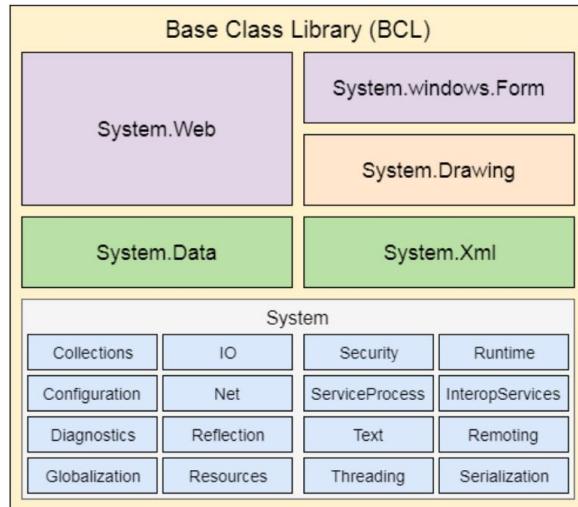
#### **3.1.1. Asp.Net**

The term Asp.Net is known to programmers who develop websites in open source, a cross-platform framework. Asp.Net is very suitable for building systems or applications with data connectivity to the cloud, for example web applications, IoT and mobile backend. Currently, programmers can choose between two directions when using Asp.Net, namely: .NET Framework and .NET Core.

In this project, I want to create a project based on .Net Framework. Below I will describe some of the reasons why I chose to develop my project using Asp.Net Framework.

In .NET Framework, there are core components including Common Language Runtime (CLR) and .NET Framework Class Library (FCL).

Class library, also known as FCL, it is a collection of components such as classes, namespaces, interfaces and data types (strings, numbers, ...) The collection plays a role to create features that have on websites, in addition, there is a special thing that it will combine with the Common Language Runtime (CLR) which in .NET uses many kinds of languages C#, VB... Besides the superior features, it also has the feature to read API, connect to database and write files... Besides CLR and FCL, there is also Base Class Library (BCL) which is a child of FCL and has basic functionality below.



The namespace that appears in the FCL is a cluster of classes and interfaces and uses the .Net Framework language.

A special feature of the .Net Framework appreciated by programmers is the help in creating web-specific web pages. Asp.Net MVC creates web pages running on IIS.

The MVC model is very famous and used by many programmers, so I will guide myself to build the web according to ASP.NET MVC.

### **3.1.2. HTML**

In my project there will be a part to build the user interface, so I choose HTML to build the structure, the structure here is understood as a backbone of the interface page. Helps form the skeleton of the whole website.

### **3.1.3. CSS**

In addition to using HTML to frame the whole website, I also chose to add CSS for the project, this choice helps to align the layout, coordinate colors and create effects of control, which makes the website more special. Grab the user's attention and give them an impressive preview of the website.

### **3.1.4. JavaScript**

JavaScript is known as the engine that allows websites to create actions and events that help interact with user actions. The actions here (can move slides, display notifications, ...) Thus, JavaScript plays an important and indispensable role in the design of the interface. So, I decided to include it in the development of my project.

### **3.1.5. Bootstrap**

To save labor time for the process of creating a standard and responsive interface, Bootstrap is one of the perfect choices. Bootstrap is known as a front-end framework; Bootstrap is often used for responsive types of websites. The particularity of Bootstrap is that it makes it very easy to make responsive for all devices such as computers, iPads, phones, ... Using Bootstrap avoids the neutralization of the CSS code, making the neater code.

The advantage of Bootstrap is that it's easy to learn, easy to use, produces great products, and is compatible with many screen devices.

The above reasons explain why I decided to use Bootstrap while developing the project.

## **3.2. Tools**

### **3.2.1. Visual Studio 2019 IDE:**

Visual Studio is an IDE developed by Microsoft Corporation. Visual Studio ranks among the best IDEs most used by DEVs. Microsoft has combined developer tools and packages to create the Visual Studio product. Visual Studio features include editors, debugging tools, and design tools. Visual Studio IDE can be used to support web and mobile development.

Below are some of the features that Visual Studio offers its users:

- Installation and support on various platforms.

Visual Studio 2019 has good support for operating systems like Windows, macOS, and Linux.

- Support for multiple programming languages:

In visual studio to support Front-end and Back-end developers. The front-end includes HTML, CSS, JavaScript, ... The back-end includes C#, C++, ...

- Provide many support utilities for DEV during project development

When developing a project, programmers often use other libraries or languages, but Visual Studio is available to support and facilitate downloading without affecting performance or performance.

- Hierarchies.

The layout of a project in visual studio is clearly divided and prioritized. Within each project hierarchy, there are folders that you can view and customize. These categories will be organized differently depending on the type of project you are developing.

- Provide secure storage (GitHub)

GitHub is part of Microsoft's ecosystem that helps developers store source code securely. Additionally, GitHub is also a great place to build and develop projects with other team members.

- Intellisense.

Most IDEs have Intellisense functionality and Visual Studio has Intellisense functionality as well. But the difference is that Visual Studio is professional, users who forget to declare the system will suggest and tell which line the error is on and also suggest how to fix or suggest information for users to read. This feature is highly appreciated by many programmers, especially those new to the computer industry.

Due to the above advantages, I decided to use Visual Studio 2019 IDE in the project development process.

### **3.2.2. SQL Server**

Simply put, SQL Server is a place used to store data and retrieve data when needed. SQL is very popular, the documentation is extensive, and the support community is large. Above all, it is free, which makes it easy to access for many computer science students. SQL is also the support for advanced languages such as Oracle, MS Access, MS Visual Basic, .NET, ...

There's a reason I chose to use SQL Server as the database for my project. The first is that it is free, and the second is that it has many resources and a large support community. Finally, it is optimized to work in many extremely large database environments and can serve a large number of concurrent users, up to thousands.

## **CHAPTER 4: SOFTWARE PRODUCT REQUIREMENTS**

### **4.1. Review/overview of other similar products.**

The project I'm looking to research and aim for is to implement a system that allows users to order food from a restaurant. This project is based on existing systems such as KFC, Pizza Hut, jollibee, etc. The systems I mentioned are those that are well known and have been in operation for a long time. The disadvantage of these systems is that they only focus on providing a few dishes, what I want to aim for is to be able to expand my catering area and sell more dishes to attract more users, in addition My system wants to be more geared towards selling online, which will save labor and space. The cost of hiring will be reduced, which will help reduce costs and

increase revenue for the restaurant. As this is a small-scale, time-limited research project, I will do my best to complete the project on time, finding flaws in the systems listed above and improving and improving it. including it in your project. To do that, I have to focus on analysis and try to experience as many of these apps. Then summarize some of the features that will appear on the website.

Synthesis of experiences on e-commerce sites. I will aim to create a website for users with features such as: login, register, forget password, search for products, view product details, comment on products, send quality feedback service for the system. The management page will be managed by the new administrator who can access the task that will manage users, create roles and assign roles to users. Moreover, admin and staff can manage products like create, read, update, delete. Also, there will be features to manage reviews, orders, coupons, customer feedback emails, view revenue stats of each month.

#### **4.2. Use cases**

The system I developed is divided into 3 types of users: Admin, Staff and Customer

Admin: is the person who can use all features, e.g. some typical user management, user empowerment, ...

Staff: is the system manager, some features specific to staff: order management, product management, customer feedback management, ...

Customers: are users and purchases on the system, users can view products, search for products and comment on products, choose products and make payments, ...

#### 4.2.1. Admin:

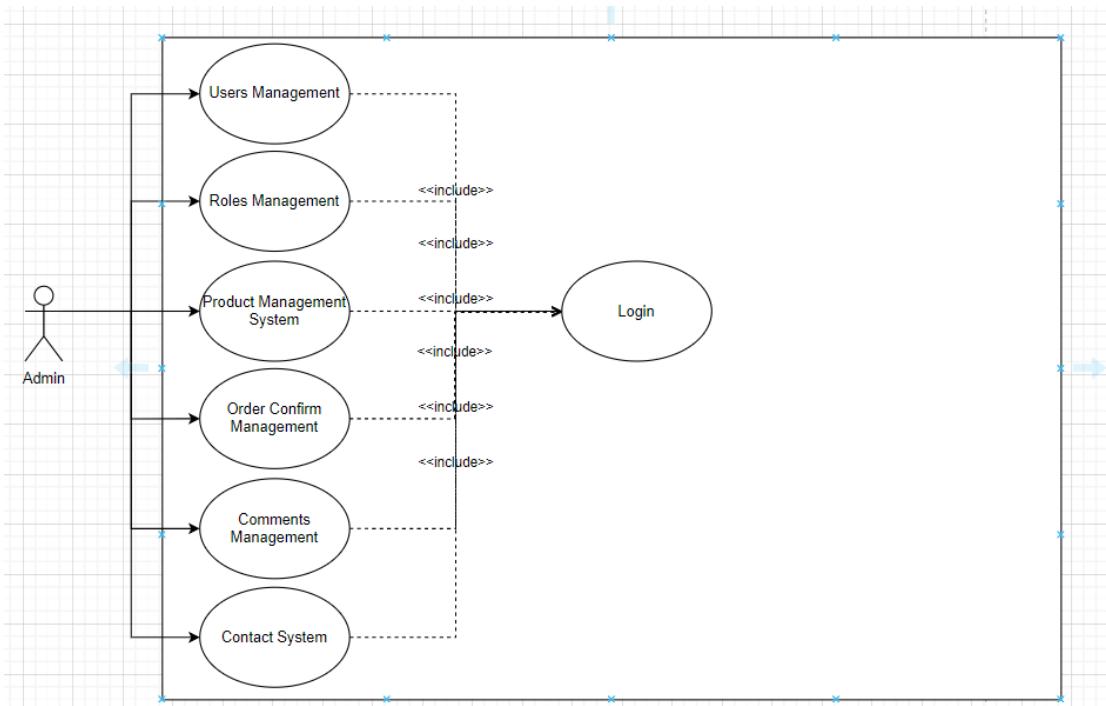


Figure 7-Use Case Admin

#### 4.2.2. Staff:

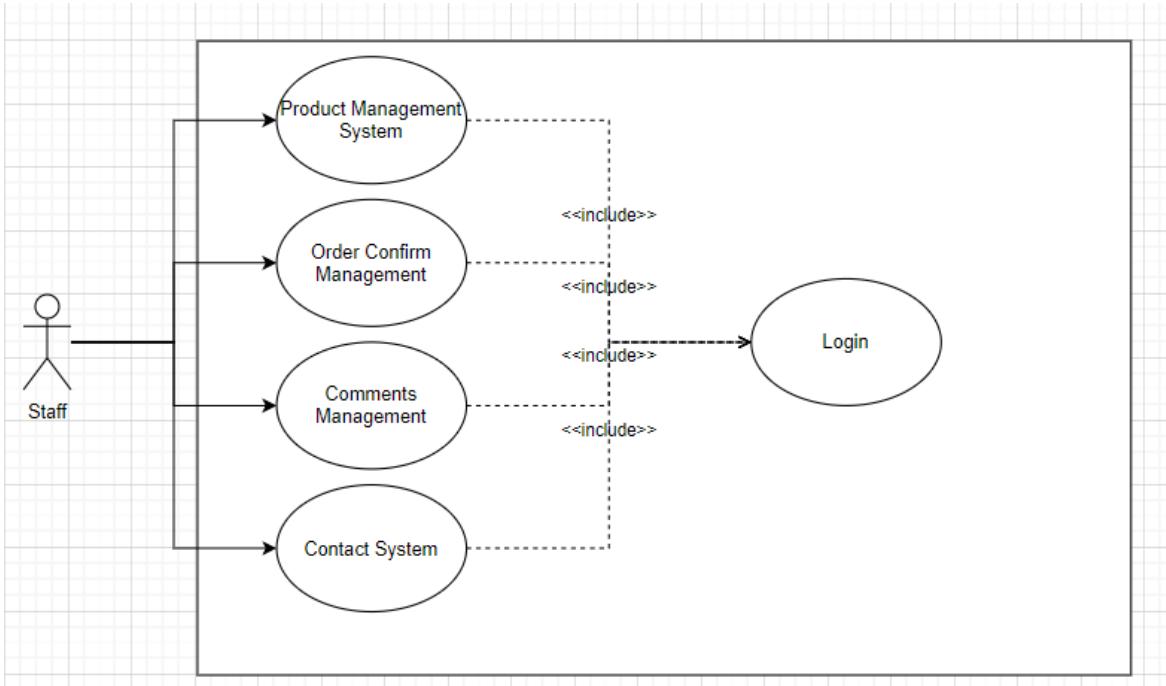


Figure 8-Use Case Staff

#### 4.2.3. Customer

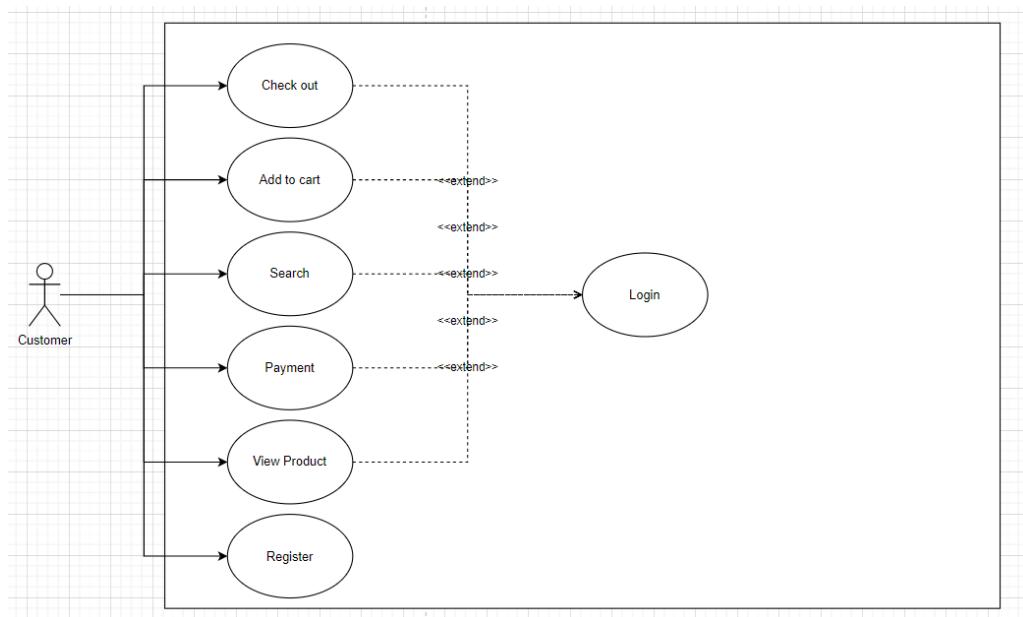


Figure 9-User Case Customer

#### 4.3. ERD Diagram

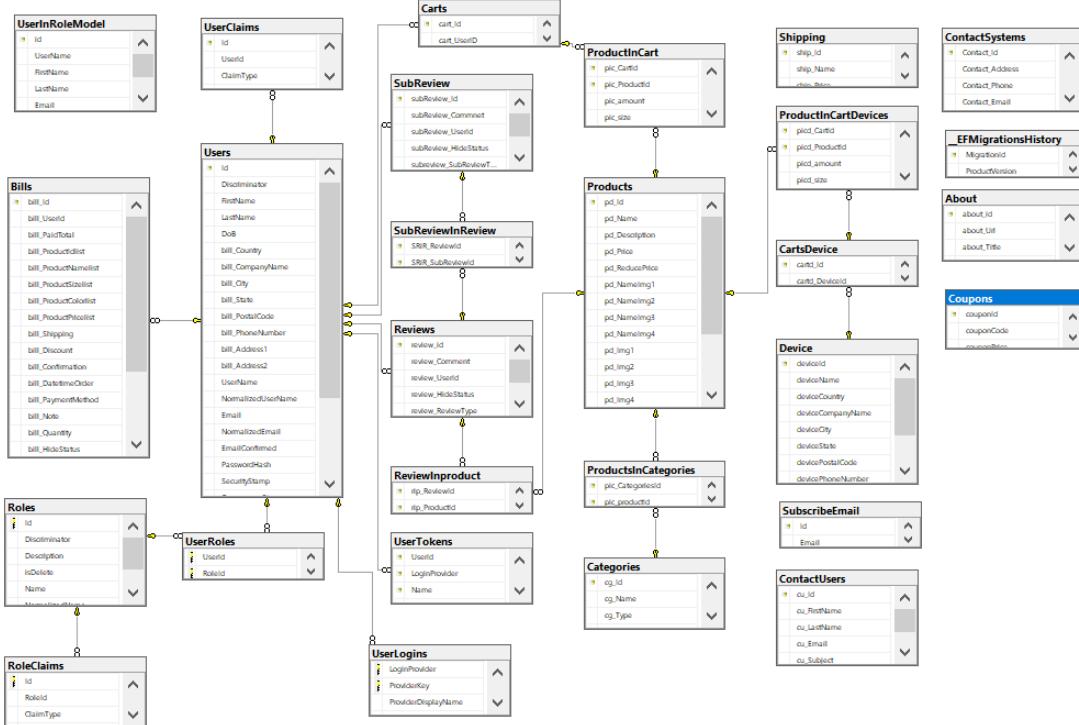


Figure 10-ERD Diagram

## 4.4. Sequence diagram.

### 4.4.1. Customer

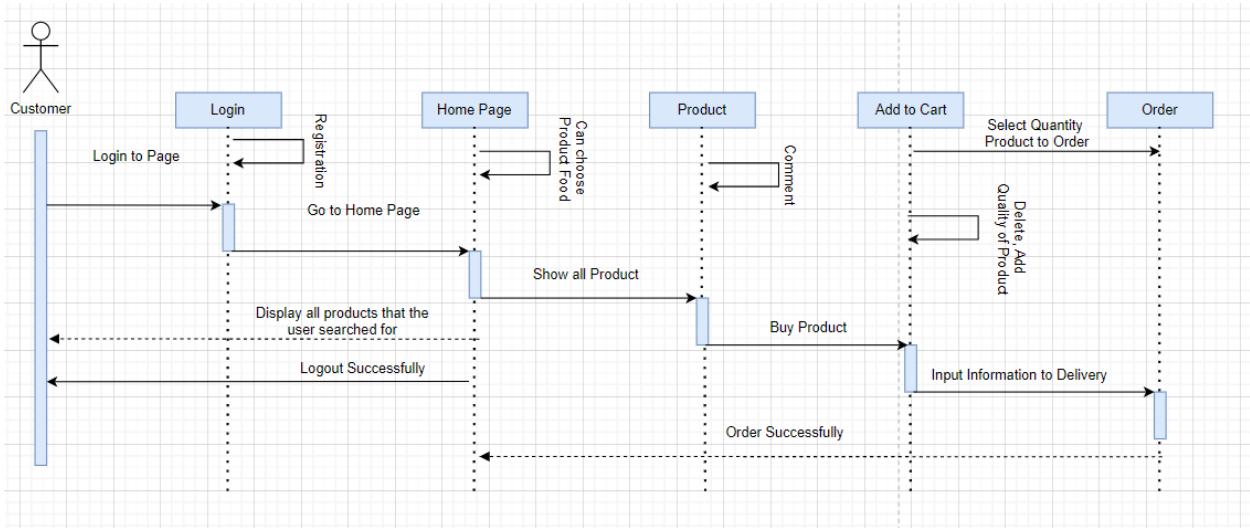


Figure 11-Customer Sequence Diagram

### 4.4.2. Admin

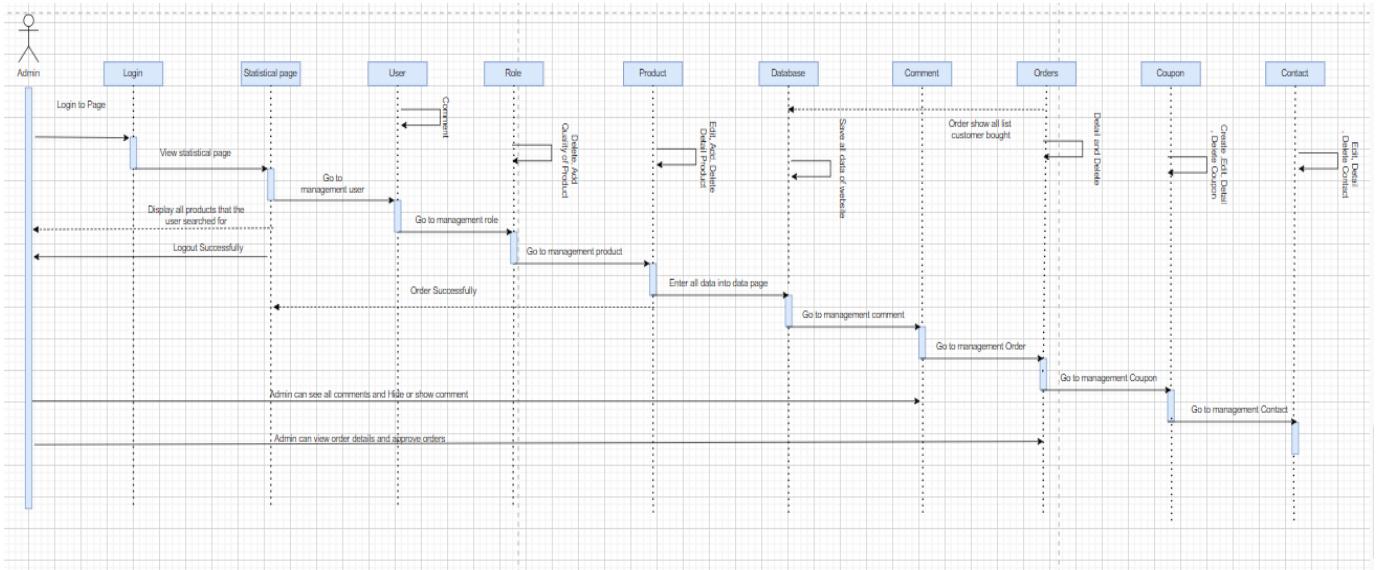


Figure 12-Admin Sequence Diagram

#### 4.5. Activity diagram.

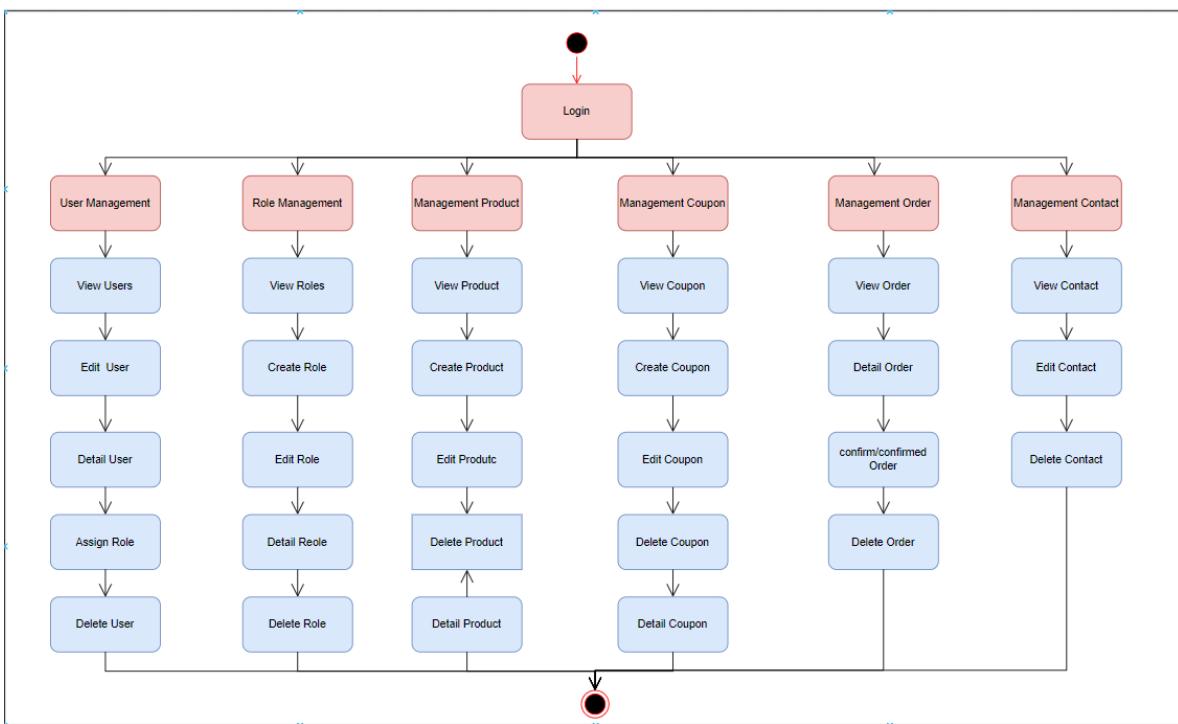


Figure 13-Admin Activity Diagram

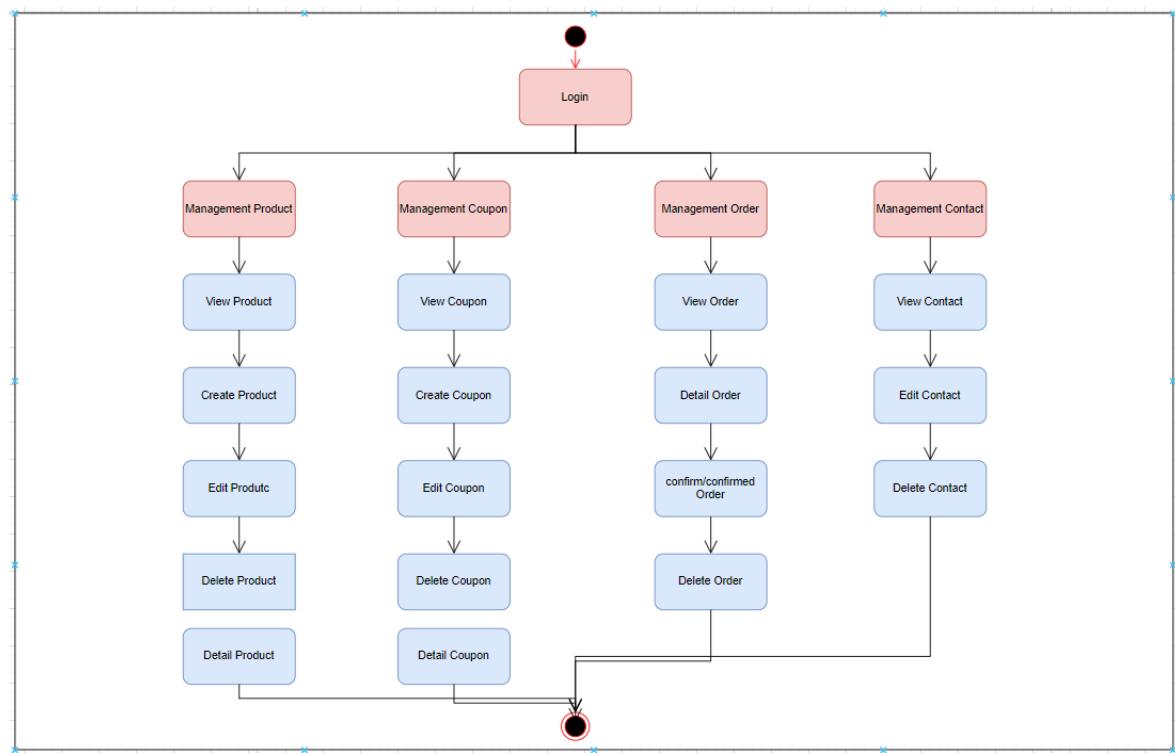
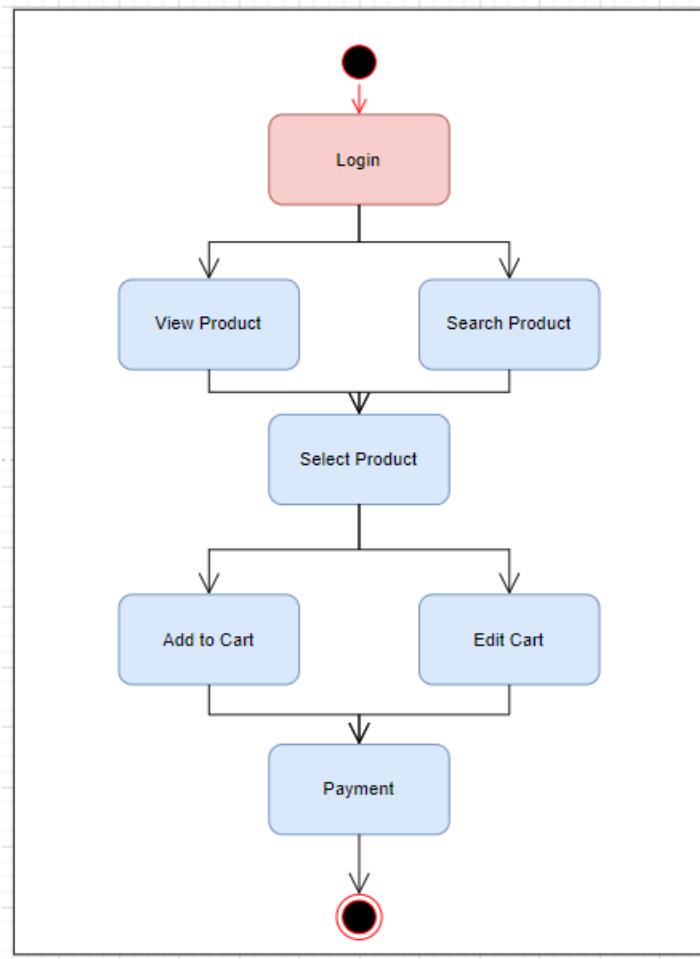


Figure 14-Staff Activity Diagram



*Figure 15-User Activity Diagram*

## CHAPTER 5 REVIEW OF SOFTWARE DEVELOPMENT METHODOLOGIES

Develop software or design a system in an efficient and professional manner. We have to follow Software Development Life Cycle or SDLC methodology for short. Many SDLC models have been created to serve development and design, such as the Waterfall model, the Waterfall model is implemented in five stages and each phase must be completed before proceeding to the next stage. Then we have the spiral model understood as a process that repeats itself until the project is completed. Another model is the incremental model which is deployed by developing many different versions, each upgraded version will update new features. Finally, the Agile model, changing customer requirements making system development difficult, the Agile model was born

to quickly adapt to changing requirements. Although there are many other models, I decided to discuss the four models mentioned above, compare the models, and based on that choose a suitable model and use it for my project.

### 5.1. Waterfall Model.

The Waterfall Model was proposed by Royce in 1970, it is an old model and known to many developers. This model is often used in large projects or government projects. The project implementation process according to the Waterfall Model is observable, it is like a waterfall flowing from top to bottom, through the steps one by one. The requirements analysis, system design, implementation, testing, and maintenance phases do not overlap, helping developers see each step as the system develops. The peculiarity of the waterfall model compared to other models is that it is carried out sequentially and without overlapping, which is better explained that if the current phase is not completed, it means that the next phase will be not carried out.

The waterfall model diagram

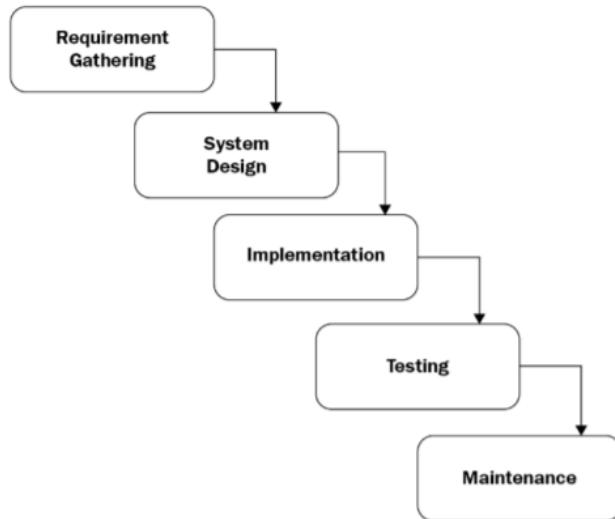


Figure 16-Waterfall model diagram

Below, I will describe the development steps of the waterfall model development process.

**Requirement Gathering and analyzing:** The requirement here is understood as a description of the system to be developed based on the ideas or information provided. Information or ideas are

usually provided by the client side. The developer, based on the collected requirements, provides solutions and prepares documents to serve the development based on the requirements.

**System Design:** Based on the documents collected at the requirement stage, the developer will make a plan and pose problems to be solved for the system or software. To summarize the work of this phase, the developer will provide logic, database drawings, and software architecture.

**Implementation:** In this phase, the developer will the development of the software system, translating the requirements into an actual product.

**Testing:** At this point, the developers will start re-checking the designed features, evaluating them, and comparing them to see if they meet the originally planned requirements. Finally, find and deal with errors and problems encountered during operation.

**Maintenance:** During operation, there are certain cases of errors that need to be fixed or provide updates depending on the situation that the developer needs to adjust accordingly.

**Application:** As mentioned in the introduction to SDLC, each software project must conform to an SDLC method, depending on the level and requirements of the project, it is necessary to choose the appropriate SDLC approach for each project. Here are some solutions of projects that fit the waterfall model.

- For the waterfall model, the requirements should be clear, completed and fixed. There were no changes in design and implementation.
- Have a team with a high level of knowledge and expertise in the area of the product being developed to support product development (e.g., oil and gas software development requires new oil and gas industry expertise) develop software for the oil and gas industry).
- The project has a short duration.

#### **The exceptional advantages of the waterfall model.**

The waterfall model helps developers control time and workload and track the progress of each project.

Specifically, the project process goes from concept to design, through implementation and testing, and then to the final installation and troubleshooting phase. These phases all take place in a strict order and no changes affect the project.

**The advantages of the waterfall model are:**

- Not picky, lies in the level of simplicity, easy to understand and know how to use.
- The hardness level of the waterfall model is very high, so it is easy to manage. Each stage is assigned a specific task, completion of the task assigned to this stage can move to another stage.
- Project phases are all processed and completed within a certain time frame.
- For small projects that want to follow this model, it is still possible, in return, they still have to understand the requirements of the project.
- The steps must be clearly defined before implementation.
- The important milestones of each project must be well captured and understood about these issues.
- Easily divide the work for each project development department.
- The process of implementing the development of the project until the results are fully recorded.

**Disadvantages still exist in the waterfall model.**

Each model has its own disadvantages, the waterfall model is no exception, the limits of the development of the waterfall model is that once all the requirements are closed, proceeding to the development stage is allowed to change a lot because a change will ruin the whole project. Thus, at the conceptual stage, if the project requirements are not understood until the development stage, many problems arise that will directly affect the project.

**Disadvantages that can be seen when using the waterfall model:**

- There won't be any working software until the end of the life cycle.
- The project will exist many high risks when the implementation steps are not thorough.

- The waterfall model is not suitable for complex, object-oriented projects.
- The waterfall model is not compatible for long-distance or ongoing and cross-cutting development projects.
- It doesn't suit for projects with a risk of continuous change, the change will be disrupt the objectives initially set by the waterfall model.
- Difficult to track improvement over time.
- It will not be possible to edit or respond to change requests during development.
- The project may crash or terminate when adapting to one of the development phases.

## **5.2. Spiral Model**

A type of model commonly applied in the industry (IT) is the spiral model, also known as the spiral life cycle model, which is a systems development method (SDM). The spiral model combines features of a waterfall model and a prototyping model. The spiral pattern type is often applied in complex, large-scale, and high-cost projects.

The steps of the spiral model are divided into 4 steps. The phases of a software project are repeated many times due to the iterative nature that the model is called the spiral model.

### **Identification**

At this point, the developers will start by gathering the project requirements into the framework. In the next spirals, the project matures, the definition of system, subsystem and unit requirements will be made.

At this stage, the developer needs the customer's participation in the process of understanding the system requirements and analyzing the system. In the final stages, or final spiral, the product will be deployed by the developer in the defined market.

## **Design**

Enter the conceptual design phase which is based on the basic spiral and involves architectural design, conceptual thinking of the modules, physical design of the product and the final design in spirals afterwards

## **Construct or Build**

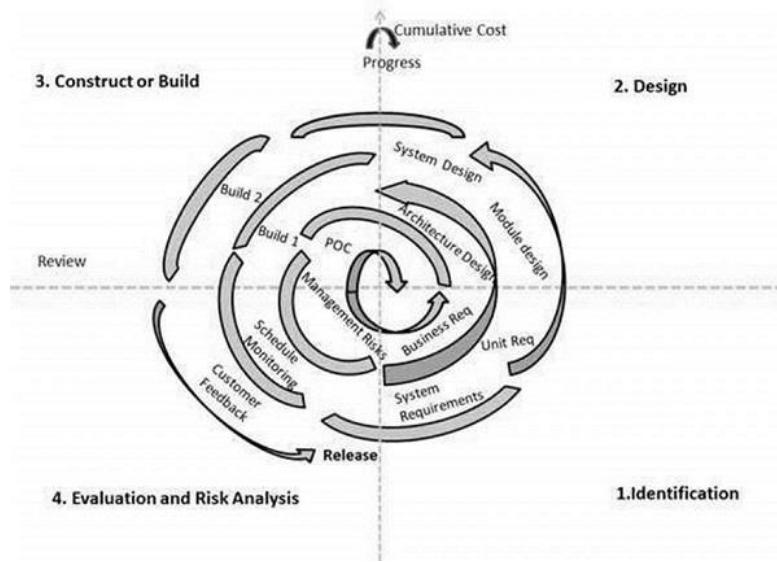
Being in the building phase of the goal spiral refers to the production of the software. When in the infancy stage, new ideas are thought, developers rely on them to develop products, moreover, the POC (Proof of Concept) stage is performed to collect feedback from the customer side.

After collecting feedback from customers, the next twists of the designers came to understand the clear and detailed designs, part of the working model of the software provided by the developer is called is a generated version with a version number. Builds are made available to customers for developer review and feedback.

## **Evaluation and Risk Analysis**

Starting with the risk analysis phase, developers will estimate and monitor feasibility and risks in addition to defining techniques, cost overruns, estimated delays.

Below is an illustration of the spiral life cycle model.



*Figure 17-Spiral Model diagram*

By evaluating customer feedback, the software development process enters the next iteration, and then follows a linear approach to implement customer-recommended feedback. Iteration of the spiral pattern occurs throughout the life of the project.

## Application

In the software industries, the most widely used model is the spiral model, the reason why many developers choose this model is that it is in line with the natural development process of any project. The spiral model develops the project towards maturity, which also includes minimal risk for the client and the developer.

Below I will introduce the ways the spiral pattern is used:

- When a project's budget is limited, it is extremely important to assess the risks the project may face.
- For projects with many medium to high potential risks.
- There are long-term project commitments due to changes in project priorities and economic requirements over time.

- Most customers will change their requirements over time, which often happens because needs change over time.
- Project requirements are complex and detailed assessments are needed for clarity.
- In order for the product to work well and be well received by customers when it is released, it is necessary to implement every step to get customer feedback.
- Substantial update changes are expected a lot in the development cycle.

### **Spiral Model - Pros and Cons**

The spiral model has exceptional advantages such as the possibility of adding existing or known components, but the added components must be guaranteed not to cause conflicts with the previous requirements.

Additionally, the spiral modeling approach easily tackles many software build and release projects. All projects using the spiral model have in common to allow an orderly transition to maintenance operations. Moreover, the spiral model forces the parties involved to participate and work together to build and develop the system.

Change without strict management runs the risk of the project spiraling into an indefinite spiral. Therefore, it is necessary to define levels of change taking into account the level of approval of changes that are essential for the development and implementation of a successful product.

### **The outstanding advantages of the Spiral SDLC model:**

- Change requests will be reviewed and accommodated where possible.
- Prototypes are widely allowed.
- It is very important to capture the requirements, the spiral model helps to capture the requirements more accurately.
- Having many spirals allows users to see the system early without having to wait long.
- Risk management is an extremely important thing, early risk detection will help developers find solutions to risk issues. In the spiral model, the development will be broken down to help the developer detect risks as early as possible.

**The disadvantages of the Spiral SDLC model are:**

- The management level becomes more complex.
- Because there are changes in the development process, knowing when the project will end may not be known anytime soon.
- The spiral model should not be used for small scale, low risk projects as it can be costly and affect the entire project.
- The process that the model brings to the project is extremely complex.
- In the spirals, there are always changing requirements to be met, so the project will continue indefinitely.
- A large number of intermediate steps require a lot of documentation.

### **5.3. RAD Model**

Rapid Application Development Model, abbreviated as RAD, is a type of model that rapidly develops a project or prototype using various tools and techniques. Because of this, I noticed the similarities of the RAD model with the incremental model. The prototypes I mentioned are part of the functionality that will appear in the product, the prototypes should be guaranteed to be reusable.

The RAD model allows functional modules to develop at the same time as prototypes are then brought into the application, integrating for a product, concurrent development shortens time and product release faster.

The key point of this model is that the prototypes made are reusable.

The RAD model is divided into several phases such as collection and analysis, design, development and finally testing. These steps will be repeated over and over to form a development cycle until the product is perfected.

**Business Modelling:** Identification of information in business transactions is extremely important. Therefore, careful analysis should be done in order to get the analytical data we need across different news feeds and business information distribution channels.

**Data Modelling:** The collection serves as a springboard for the fine analytical review to produce a set of data objects, and these objects play a very important role for companies.

**Process Modelling:** To realize a specific business function according to the business model, it is necessary to obtain data objects which are collected during the modeling stages and then converted into information flows to help support the analysis of the business functions.

**Application Generation:** Building a real prototype using automation tools and then converting to process and data models ultimately results in real prototypes.

**Testing and Turnover:** Total project time when applying the RAD model is reduced due to independent testing processes between iterations. Additionally, testing is essential to reduce unexpected incidents.

Below is a simulation image of how the RAD model works.

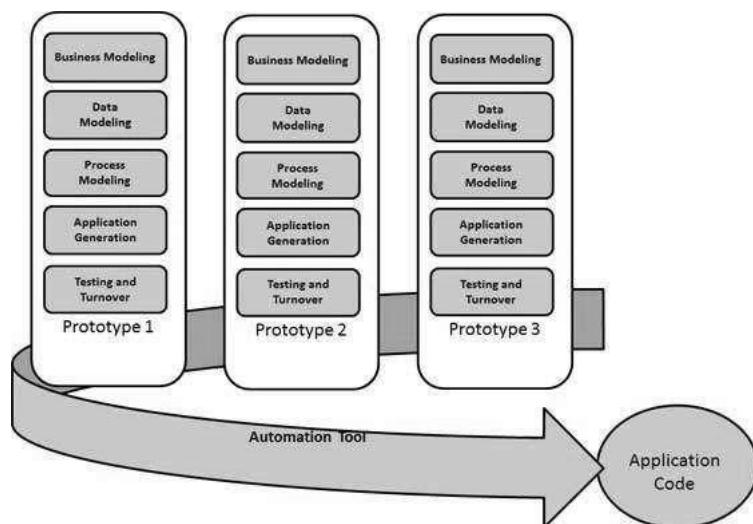


Figure 18-RAD Model Diagram

## Application

Projects with modules that clearly fit the RAD model. Intentionally used for projects that are not modular, it can cause problems.

Below are some suitable cases using the RAD model.

- The RAD model is suitable for use in a scalable modularized system
- The design team must have a model ready if they decide to use the RAD model.
- The use of automated code generation tools is required for projects using the RAD model. Therefore, the budget is one of the important factors for using the RAD model.
- Having a team of experts with relevant in-depth knowledge in the field of development is a necessary condition for using the RAD model.
- The RAD model should be used on projects with a high frequency of requirement changes. After every 2-3 months of manufacturing, the prototypes will be returned to the customer.

### **Advantages and disadvantages of the RAD model.**

Any type of model has advantages and disadvantages, and the RAD model is no exception. The RAD model allows process acceleration, reusable components and parallel development at the same time. The model will be most effective when there is a team of experts in the field of development, the cooperation of the customer to jointly make the prototype within the given time. The model will fail if there is no coordination and commitment from both sides.

#### **List of pros**

- Changing requirements are inevitable on the client-side, the RAD model is reactive to changes on the client-side.
- The progress of the project can be measured by the developers.
- Short development time thanks to the support of RAD model support tools.
- Components are designed to be reusable
- Create convenience for customers, increase communication between developers and customers.

### **List of cons**

- Relies on a team of experienced developers in the field, the technical requirements of the company.
- The system must be explicitly modular in order to effectively use the RAD model.
- Requires the customer to engage closely with the developer throughout all lifecycles.
- The high cost of running the RAD model and automated code generation tool is not suitable for low budget projects.

### **5.4. Agile Model**

The agile model is a model created based on the combination of two iterative and incremental process models. The model is iterative, adapts quickly to the process and allows the project to start quickly. The Agile model implements the division of the project into stages, the workload increases gradually. Builds are iterative and the iteration cycle is one to three weeks. The iterations will combine functional groups and cross work in different areas both such as

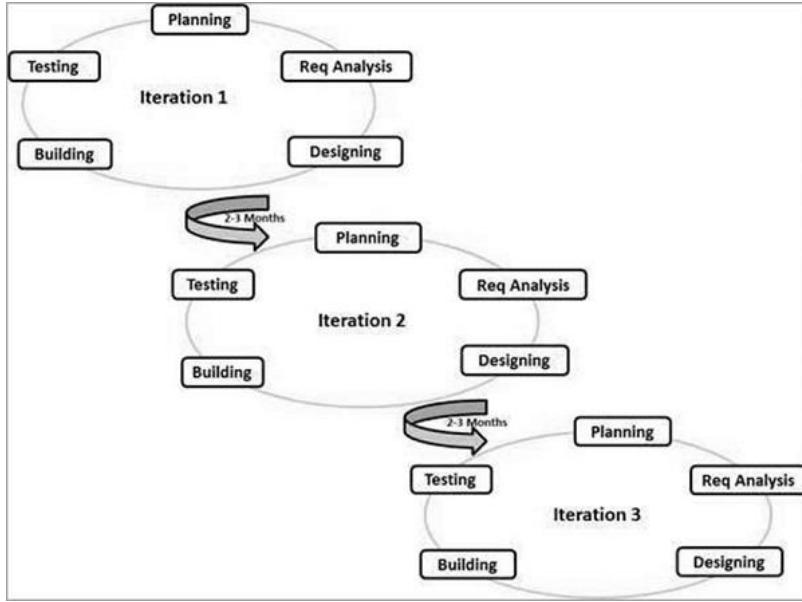
- Create schedules.
- Analyze and collect requirements.
- System design for the project.
- Perform the code.
- Check and fix errors.
- Check again and accept the result

Reports, progress and results at the end of the project iteration will be presented to stakeholders.

### **Identification**

The Agile model is a flexible software development model that adapts to the project. In the Agile model, tasks will be broken down into timelines to deliver products to users as quickly as possible.

Below is a model illustrating the Agile model.



*Figure 19-Agile Model Diagram*

In the Agile model, there are typical and commonly used methods such as Rational Unified Process, Scrum, Feature Driven Development, Dynamic Systems Development Method (DSDM), ... After the Agile manifesto in 2001, everything was understood as the Nimble method.

### **Below are the essence and principles of the Agile manifesto.**

#### **Individuals and interactions**

The focus is on people as well as the support and interaction between members of the development team. Solidarity between capable people will create a good outcome for the project

#### **Working software**

Documentation plays an important role in the development of a project, but launching a demo product as soon as possible is not enough to help customers visualize their needs. It acts as a communication bridge between the client and the developer.

#### **Customer collaboration**

In the initial phase, the requirements will not be collected in their entirety before proceeding, but rather will be collected in stages based on various variables and impacts. Therefore, the interaction between the developer and the client must take place regularly, which is extremely important to keep the project on track and on schedule.

### **Responding to change**

The Agile model evolves towards situational improvisation with quick reflexes to keep pace with ever-changing and evolving project requirements.

### **Advantages and disadvantages of the Agile model:**

Nowadays, the Agile model is known and widely used. However, not all projects can apply the Agile model. Below is a list of some of the pros and cons of the Agile model.

#### **List the advantages of the Agile SDLC model:**

- Agile model, it has mobility and flexibility which helps a lot for developers.
- The Agile model allows developers to work in teams and train each other.
- The agile model is a good choice for changing requirements or fixed requirements.
- Can be easily managed.

#### **List the disadvantages of the Agile SDLC model:**

- In terms of durability, maintainability and scalability, the risk is high.
- Relying heavily on documentation makes it difficult to transfer technology to new members.
- Depending on the customer interaction, if the customer makes unclear and ambiguous requirements. This inadvertently makes development difficult and in the wrong direction.

## **5.5. Your selection of a software development methodologies and your justification**

After commenting and analyzing the models and their advantages and disadvantages, I will decide to use the waterfall model. Here I will explain why I chose the waterfall model and the process of applying the waterfall model to my project.

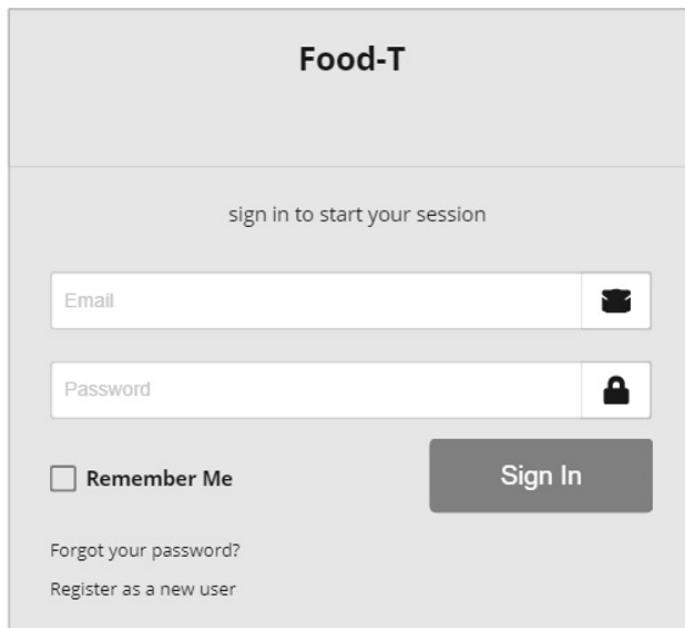
The reason I choose the waterfall model is that the project requirements are well defined and guaranteed no changing. In addition, I have the right to choose technology for project development based on my current expertise and skills for project development. The waterfall model is very suitable for projects with a short development time like the one I'm working on. In addition, this model helps me manage the time of each phase, each phase is I make a specific schedule. I know at these milestones that I need to do and complete the tasks set at those milestones. Following, I will outline the processes by which I applied the waterfall model to my project. In the second phase I will carry out the design of the system based on the data collected and analyzed in the first stage, I will deal with problems such as the design of the database, which language to use to adapt to the extended project development, create interface design drawings, etc. Creating clearer and more detailed designs will help the project move in the right direction, also spend less time. Entering the third stage of implementing the project in code, the point to note in this phase is to strictly follow what had described in the design sheet, not to modify it arbitrarily. Coming to the fourth stage is the testing phase, at this stage will test the functionality of the system. If there is an error, it will proceed to fix the error and fix the remaining system issues. Once the tests are completed, the project will move on to the final stage of commissioning.

I hope the project can be completed in time and create a useful system.

# CHAPTER 6 DESIGN AND IMPLEMENTATION OF YOUR DEMO PRODUCT

## 6.1. Product Analysis and Design.

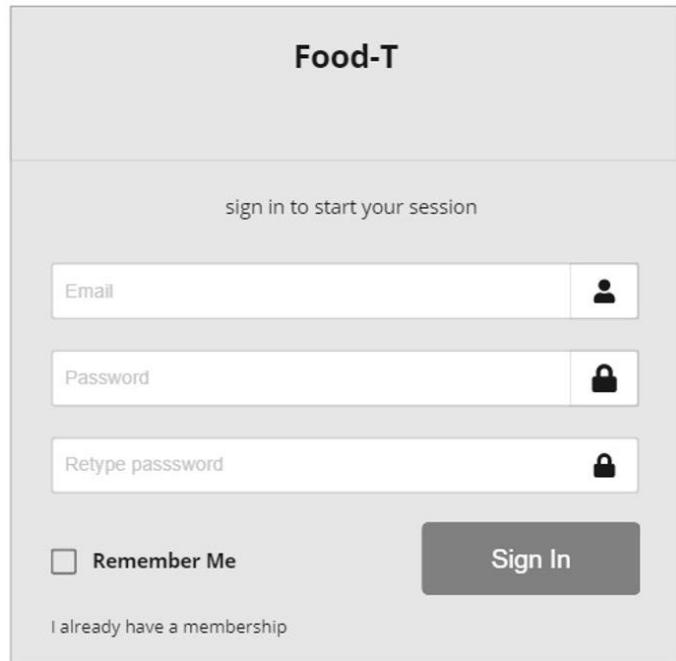
### 6.1.1. UI Design



The image shows a design for a login form titled "Food-T". At the top, there is a call-to-action button labeled "sign in to start your session". Below it are two input fields: "Email" and "Password", each accompanied by a small icon (envelope for Email and lock for Password). To the left of the "Email" field is a checkbox labeled "Remember Me". To the right of the "Sign In" button is a link "Forgot your password?". At the bottom, there is a link "Register as a new user".

*Figure 20-Design Login Form*

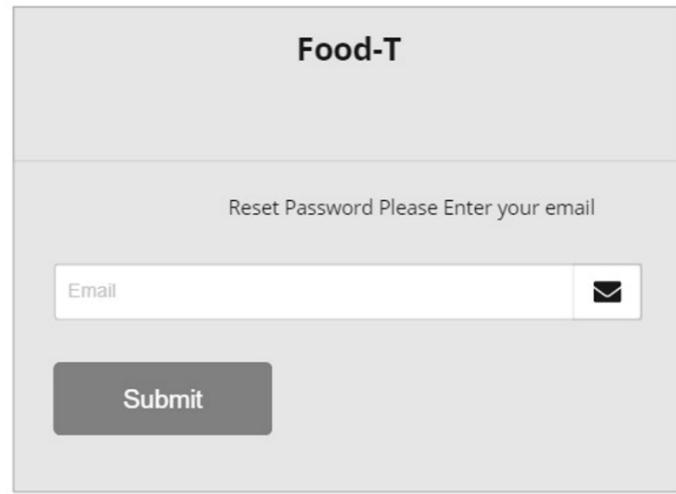
The login interface is balanced, page-centric and simple, using icons for signing instead of labels to help users stand out. Optimize space and communicate effectively. Users only have to enter the corresponding information in the two input fields.



The register form for Food-T. At the top, it says "Food-T". Below that is a message "sign in to start your session". There are three input fields: "Email" with a person icon, "Password" with a lock icon, and "Retype password" with a lock icon. Below the fields are two buttons: "Remember Me" with a checkbox and "Sign In" in a dark button. At the bottom, there is a link "I already have a membership".

*Figure 21-Design Register Form*

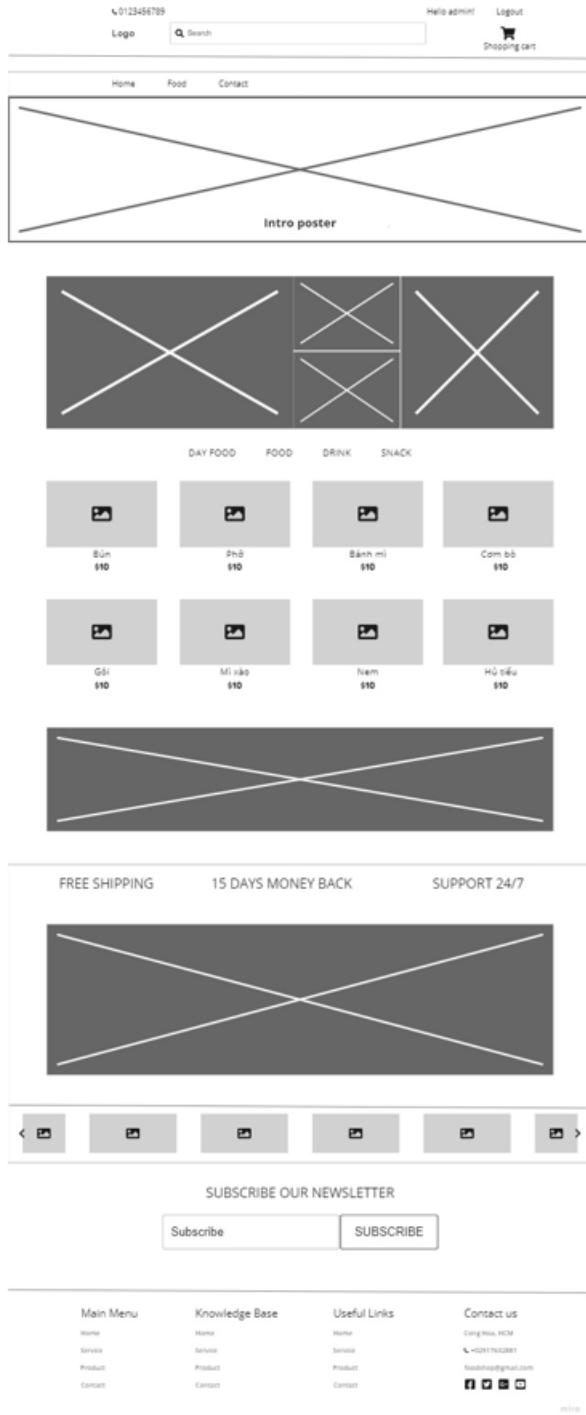
The register interface is designed with 3 input fields, allowing the user to enter information, unlike the login register, there is a place to force the user to confirm the previously entered password, this helps the user to avoid forgetting the password



The forgot password form for Food-T. At the top, it says "Food-T". Below that is a message "Reset Password Please Enter your email". There is one input field "Email" with an envelope icon. At the bottom is a "Submit" button.

*Figure 22-Forgot password*

This is the interface to recover user account password. Users only need to enter the correct email, the system will send a confirmation and change the new password



**Figure 23-Home Page**

When a user accesses the system, this is the first page the user sees, the home page is designed to display the entire contents of the system but is concise, comprehensive, and logically organized. I actively split Header, Body, and Footer into 3 parts for a balanced look system.

Avoid information given in a hurry and nervous for users. Since this is the first page a customer visits, I take great care of it.

0123456789

Hello admin! Logout  
Shopping cart

Home Food Contact

**Intro poster**

**Category**

- Snack
- Food
- Dry food
- Drink
- Banhmi

**Top Rated Products**

Product	Rating	Price
Bún	1x \$10	\$10
Banhmi	1x \$10	\$10
Phở	1x \$10	\$10
Gỏi	1x \$10	\$10
Mì xào	1x \$10	\$10
Bánh mì	1x \$10	\$10
Com bò	1x \$10	\$10
Nem	1x \$10	\$10
Hủ tiếu	1x \$10	\$10

Previous 1 2 Next

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Main Menu

- Home
- Service
- Product
- Contact

Knowledge Base

- Home
- Service
- Product
- Contact

Useful Links

- Home
- Service
- Product
- Contact

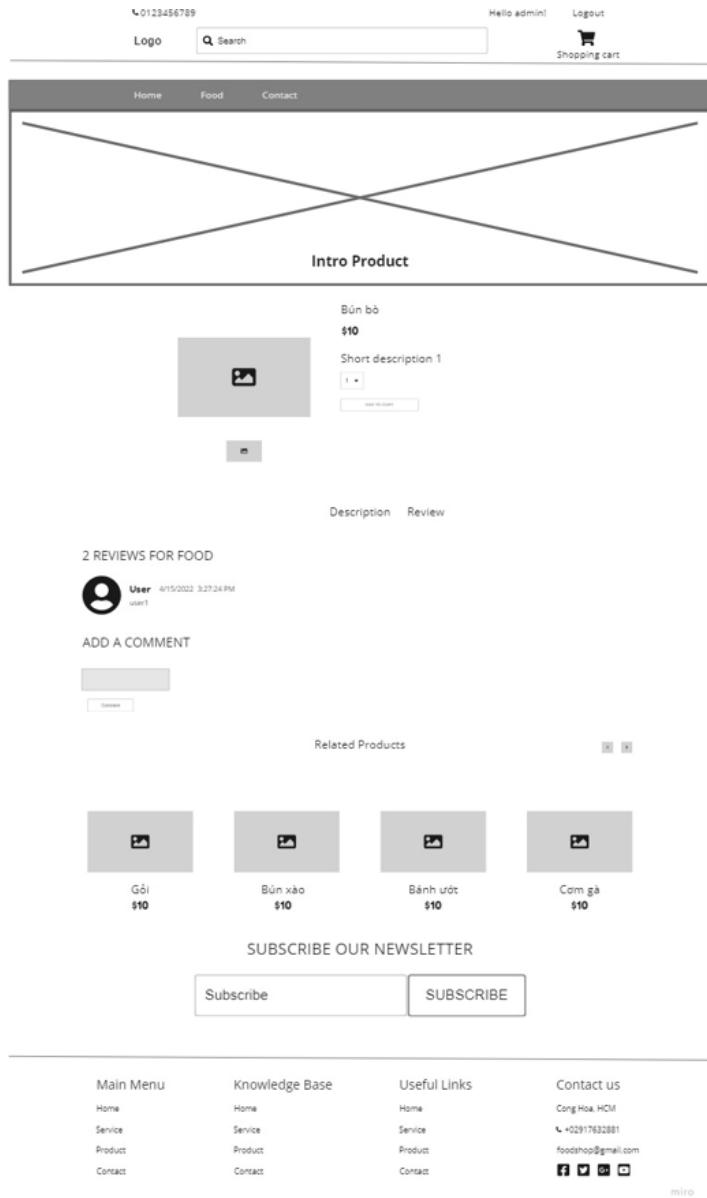
Contact us

- Cong Hoa, HCM
- +02917632881
- foodshop@gmail.com
- [Facebook](#) [Twitter](#) [Instagram](#) [YouTube](#)

miro

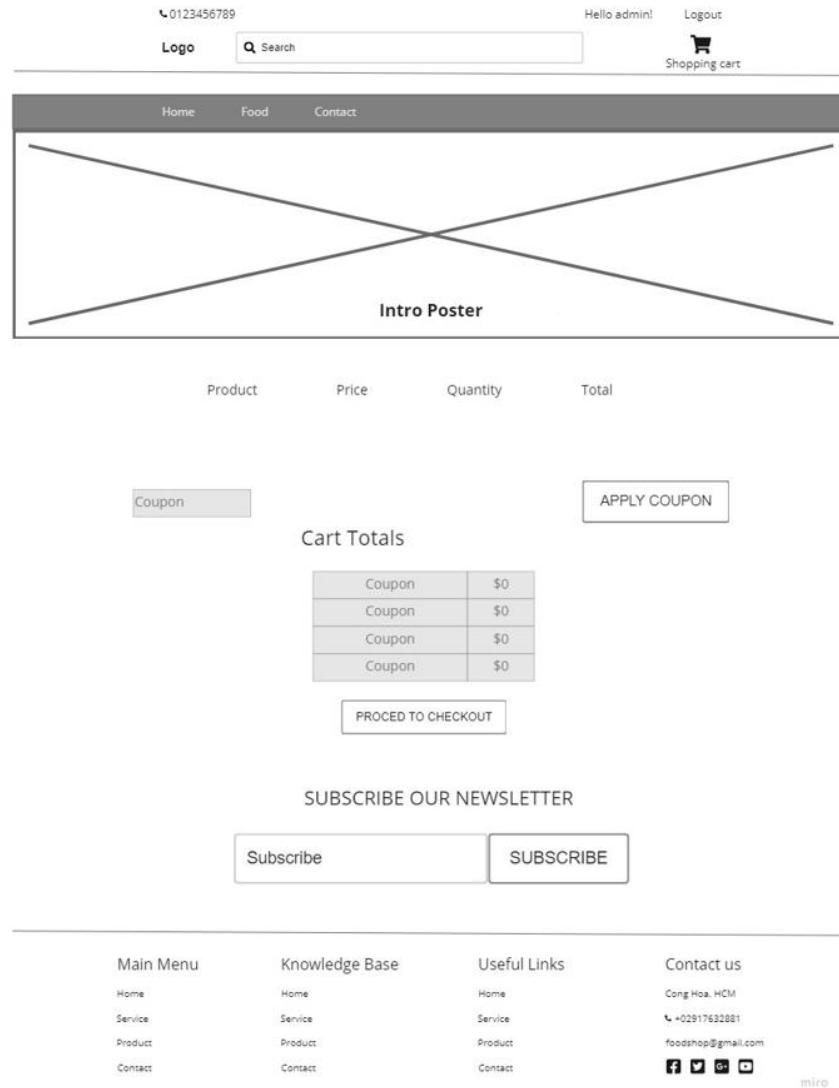
**Figure 24-Product**

To see more diverse products, you just need to go to the product page, this page will show the methods for you to choose freely. Moreover, I also categorize foods by category and as long as you like foods in that category, just click on the category needed to view foods in that category.



**Figure 25-Detail Product**

In the product details section, the system will provide detailed information about this product, some photos and a detailed description of the dish. In addition, it also displays comments left by other users, some related foods will suggest more to users to help them increase their choices to enrich the meal.



**Figure 26-Payment Page**

The product information added to the cart will be displayed in full. The price of each product type, quantity and shipping costs will be displayed and totaled for the customer. In addition, when customers have a discount code and enter it, it will be displayed and deducted directly from the invoice.

0123456789

Hello admin! Logout

Logo Search Shopping cart

Home Food Contact

**Intro Poster**

Coupon	\$0
Coupon	\$0
Coupon	\$0
Coupon	\$0

**Billing Details**

First name*	Last name*
Email Address*	Phone*
Address*	
State	City/Town*
District*	Postcode/ZIP*

**Cart Totals**

**Payment Method**

Cash on Delivery

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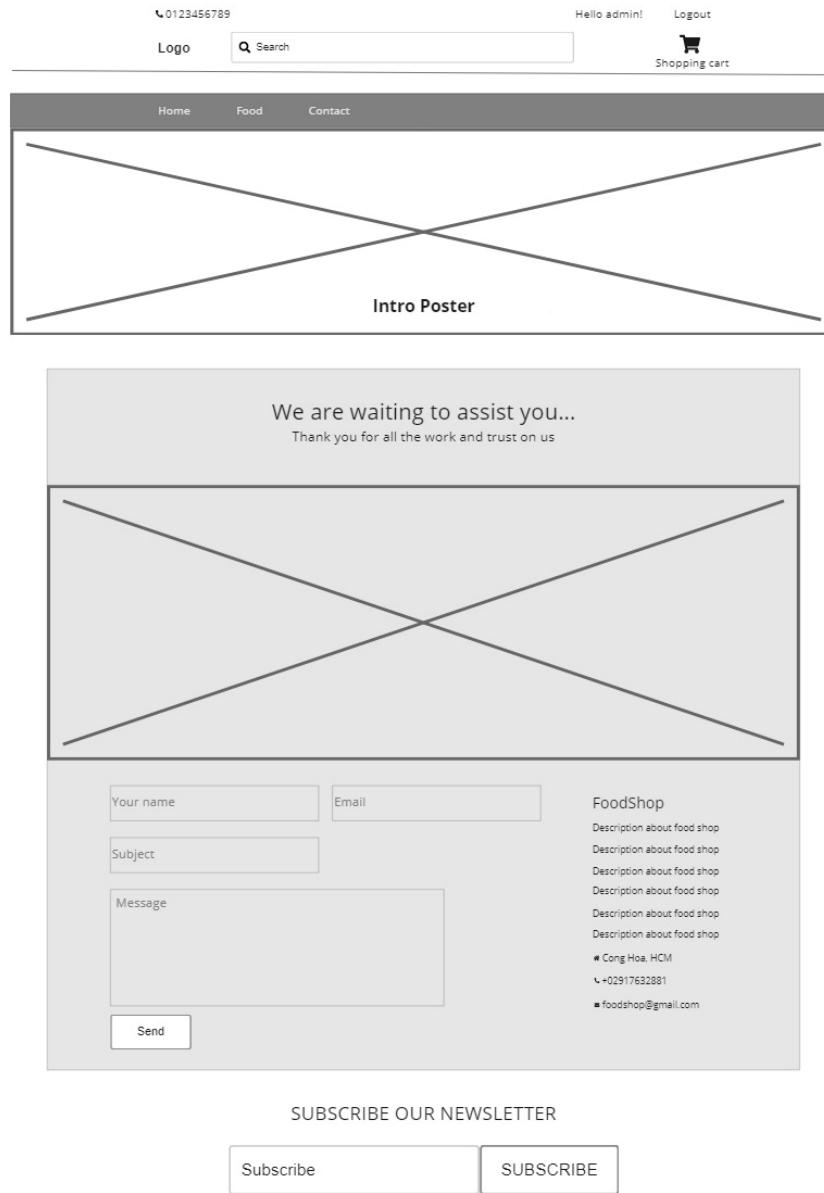
**Subscribe** **SUBSCRIBE**

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Main Menu	Knowledge Base	Useful Links	Contact us
Home	Home	Home	Cong Hoa, HCM
Service	Service	Service	+02917632881
Product	Product	Product	foodshop@gmail.com
Contact	Contact	Contact	<a href="#">Facebook</a> <a href="#">Twitter</a> <a href="#">Google+</a> <a href="#">Instagram</a>

miro

After confirming the entire order and price, the customer must provide some personal information such as full name, address, e-mail, telephone, address, ....In addition, there will be a section displaying back the amount the user has to pay so that the customer can confirm before choosing to click place order.



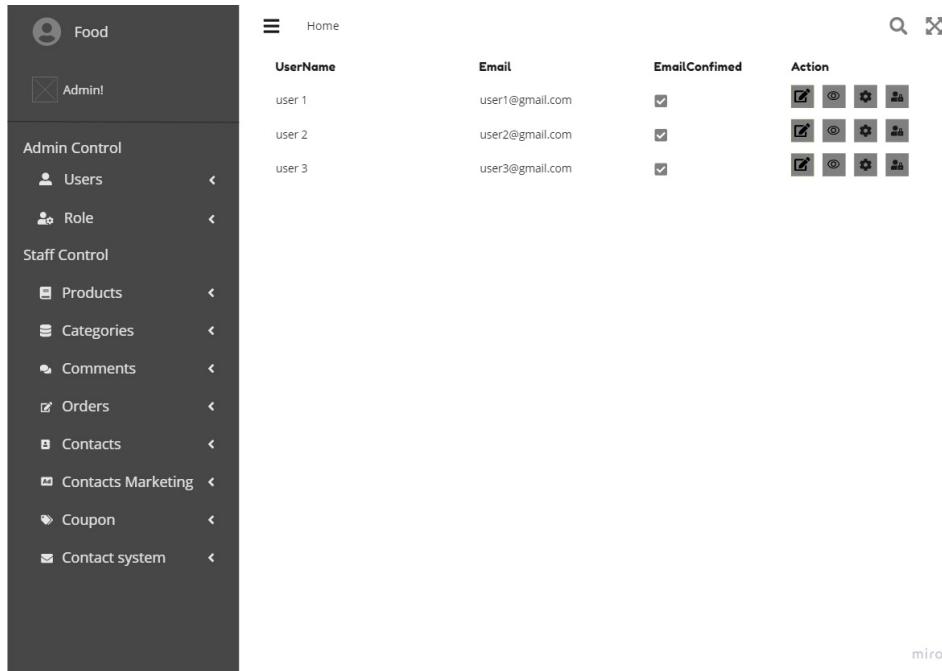
**Figure 27-Contact**

During the ordering and purchasing process, sometimes customers will not be satisfied with the service or if there is a problem they want to complain about, the contact will be where the customer can fill in the content and send it. to the management system. receive and process



**Figure 28-Admin Page**

This is the administrator's home page when logging into the system. The first admin will see the number of sales in that month.



**Figure 29-Management Users**

This section will display a list of users currently in the system. Admin has options to edit, delete, view details and assign permissions to this user.

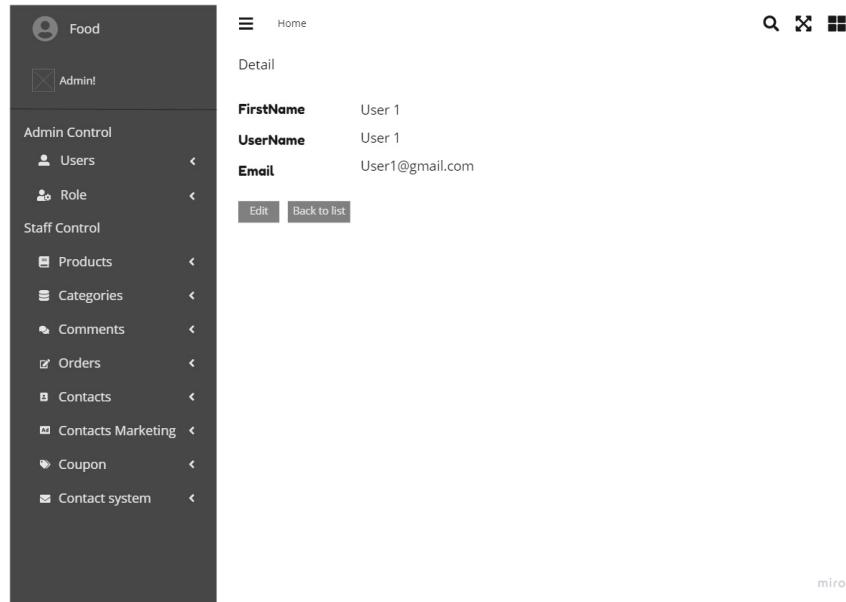


Figure 30-User Detail

This page displays a user's detailed information, the system provides an edit function to go to the edit page and a back to list button to return to the user management list.

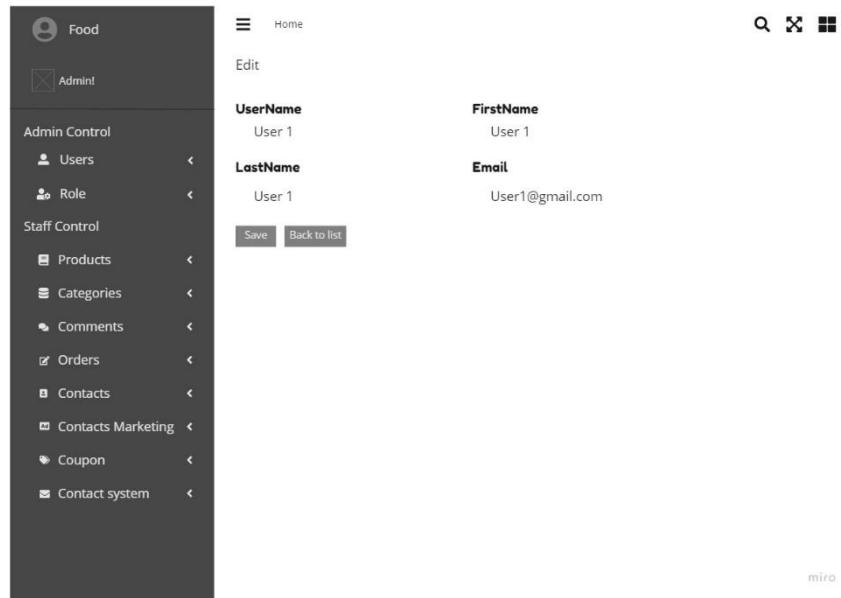
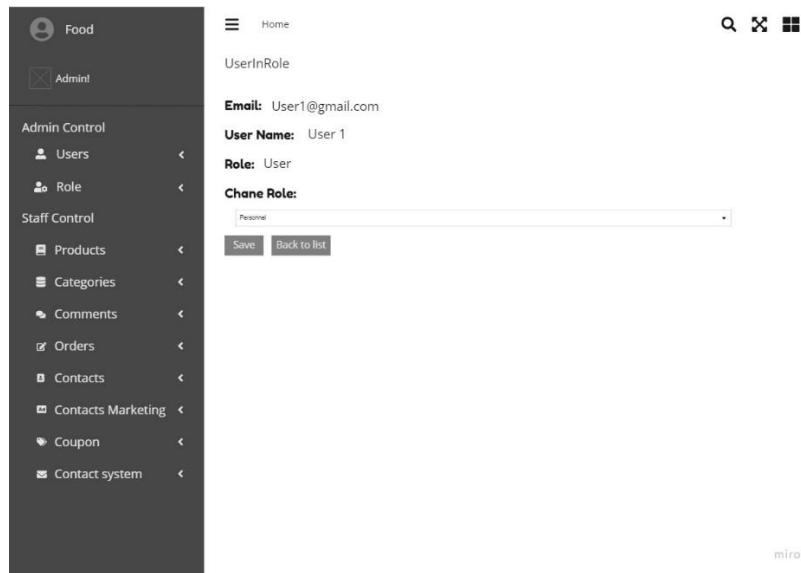


Figure 31-User Edit

This page displays the details of a user, the administrator can modify this information. Admin can click save to save or click back to list to go back to the list page.



**Figure 32-Assign Role.**

This page displays information about the role of the user account. Admin can give permissions to users.

Name	Description	Normalized Name	Action
Personnel	Personnel	PERSONNEL	
Admin	Admin	Admin	

**Figure 33-Management Role**

This page displays a list of existing roles in the system, admin can add, view details, edit and delete this role.

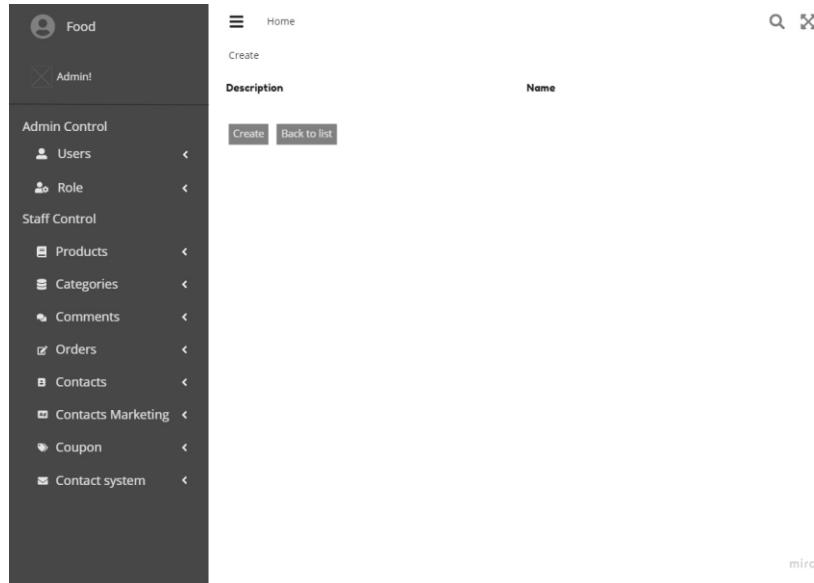


Figure 34-Create Role

This page is designed with two input boxes used to enter content related to role description and role name.

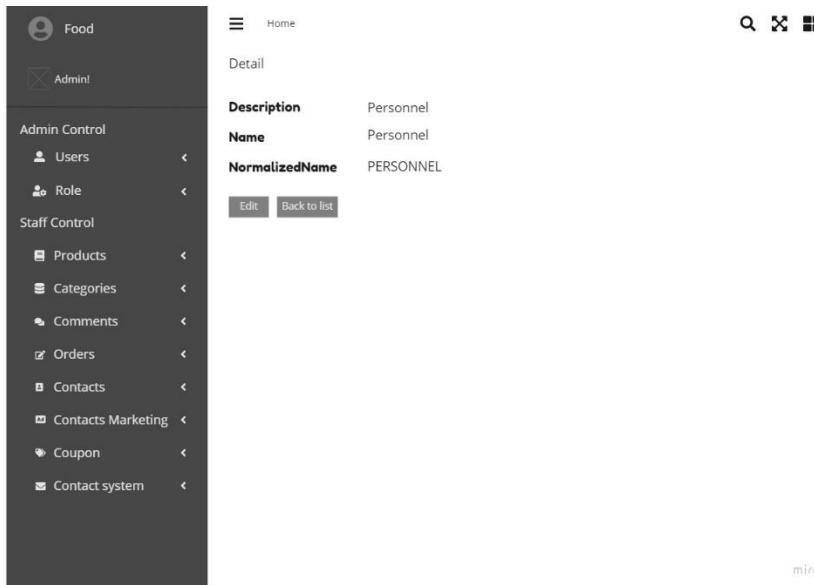
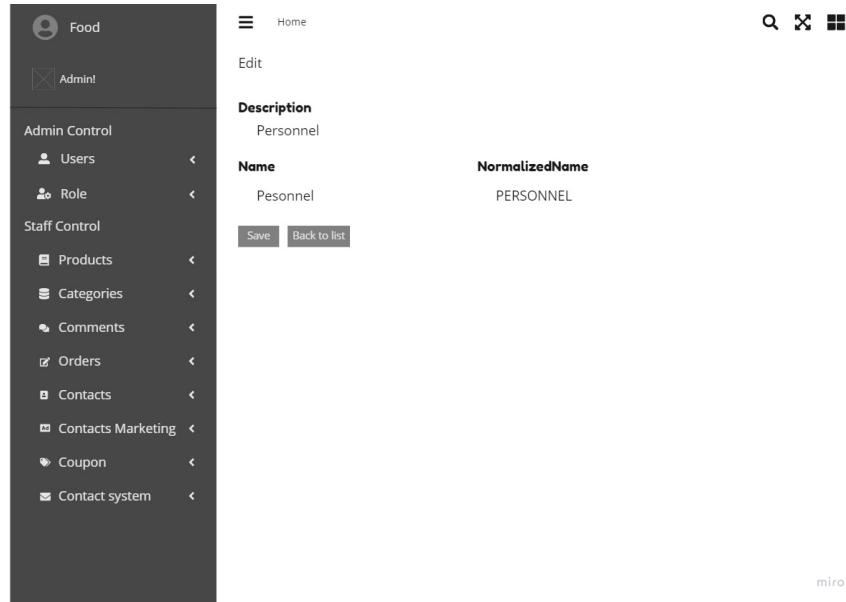


Figure 35-Detail Role

This page displays the details of the roles, in addition to providing 2 additional buttons, 1 button is used to switch to edition, the other button returns to the list page.



**Figure 36-Edit Role**

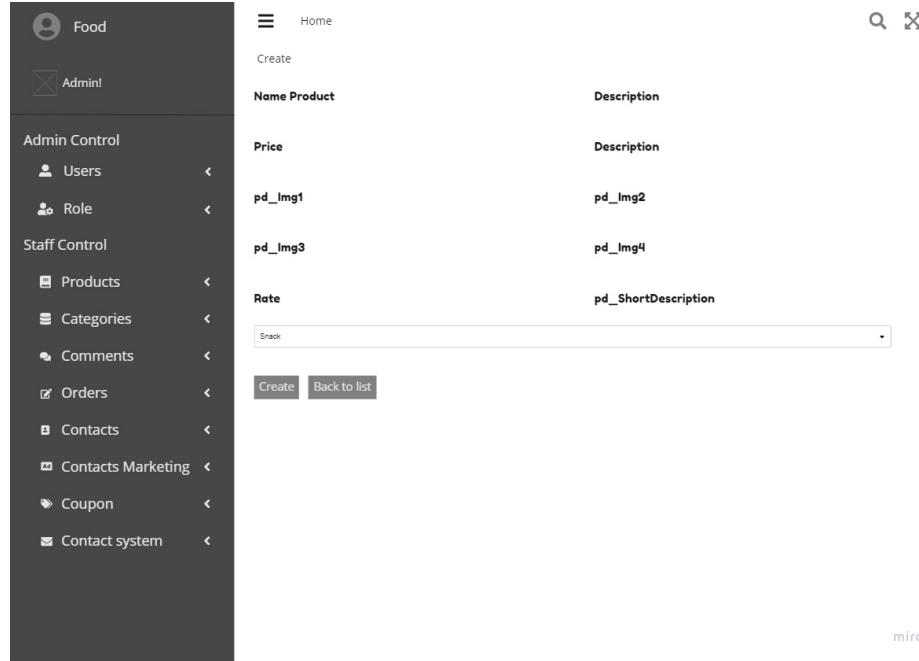
This page displays all role information, admin can edit role content

Name Product	Description	Price	ReducePrice	Rate	Action
Bánh Tráng	banhtrang	10	5	5	
Bún xào	bunxao	10	5	5	
Bún Mọc	bunmoc	10	5	5	
Bánh Uót Lòng Gà	banhuotlongga	10	5	5	
Cơm Gà	comga	10	5	5	

The screenshot shows the 'List of Product' page. The left sidebar is identical to Figure 36. The main area shows a table with columns: Name Product, Description, Price, ReducePrice, Rate, and Action. The table contains five rows of product data. A '+' button is located in the top right corner. The page is from 'miro'.

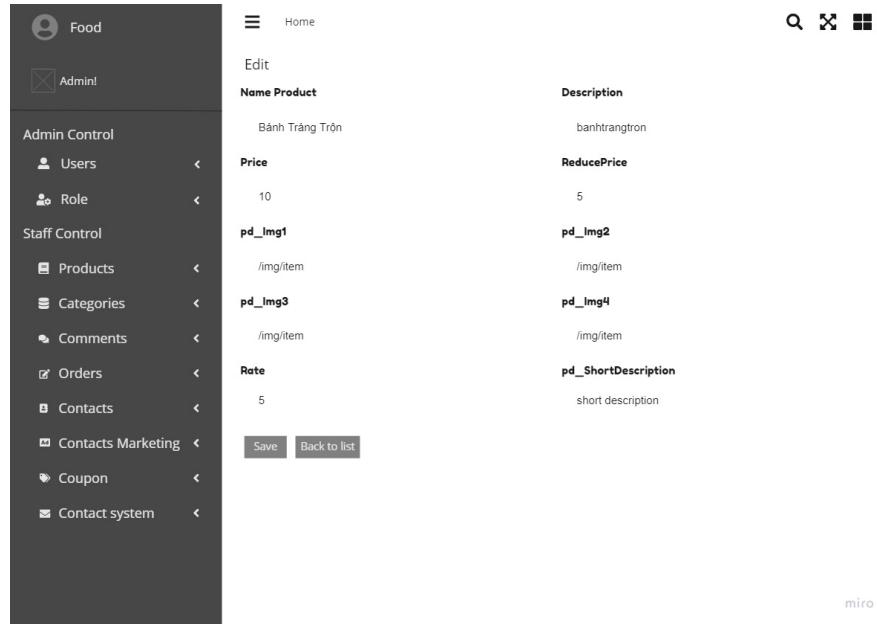
**Figure 37-Product List**

This page will display information about the current products marketed by the website, with full create, details, delete, and edit functionality. There will also be a pagination feature that limits the number of products that will appear on a page. Make product tracking and management easier for admins



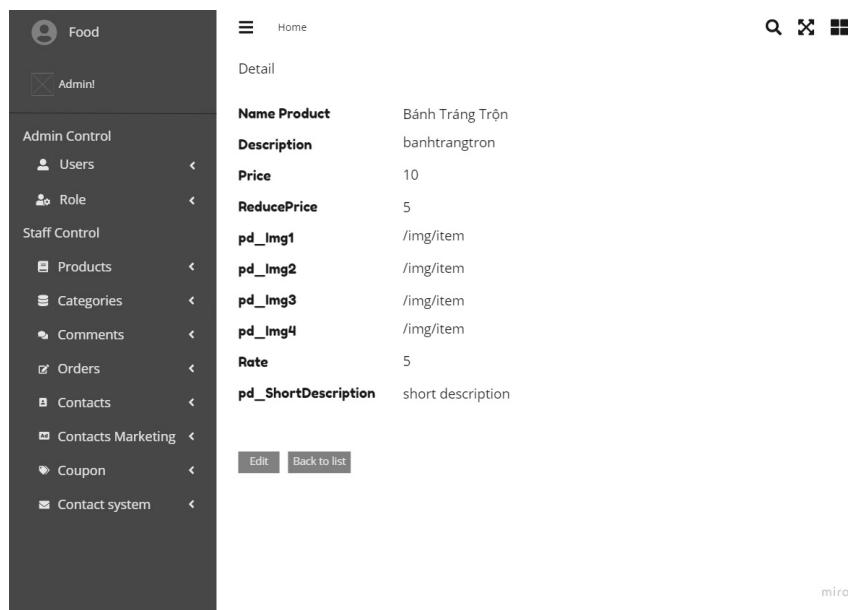
*Figure 38-Create Product*

The page provides input boxes for the admin to enter product related information. Upon entering all the necessary information for the product, the admin can click Create to create a product, or click Back to List to cancel and return to the product listing page.



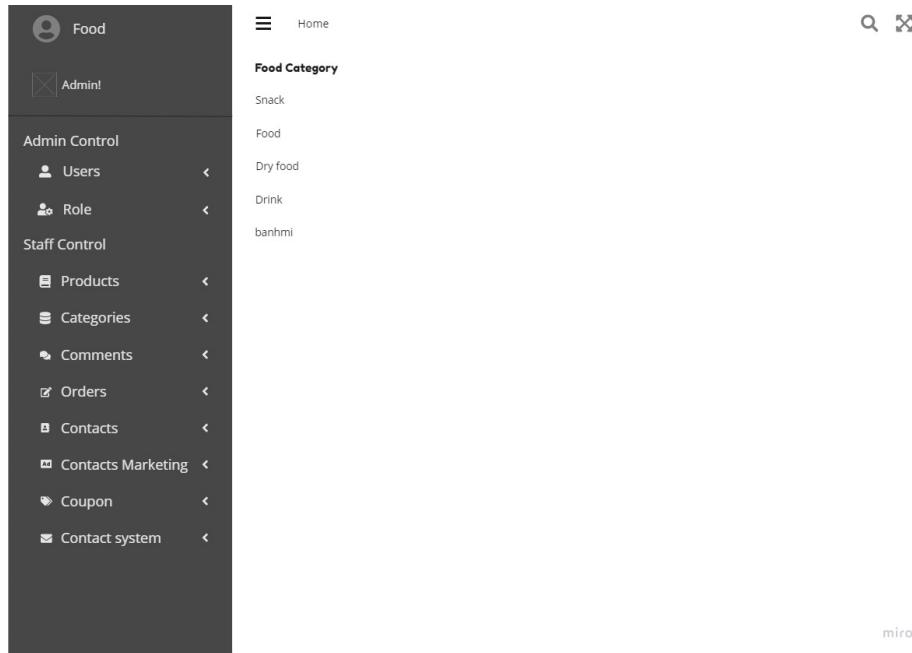
**Figure 39-Edit Product**

Upon entering the edit feature, all the specific information of the selected product will be fully displayed, admin just need to edit the content to edit and click save to save or back to list to cancel changes and return to the product list.



**Figure 40-Detail Product**

In the product detail page, complete product information will be displayed, and additionally, there will be two buttons, one to navigate to edit page and one to navigate to product listing page.



*Figure 41-List Categories*

This page displays the list of categories available in the system.

User Comment	Comment	Status	Update Date	ReviewType
User	Good	Hidden	Update	Review
User	Great	Publish	Update	Review
Admin	Good	Hidden	Update	Review
Admin	Great	Hidden	Update	Review

Previous 1 2 Next

miro

**Figure 42-List Comment**

This page will display the complete list of comments left by customers on the products. The admin can click on the client-side view to read the specific product reviews. Also, admin can hide negative comments.

Order Id	UserName	FirstName	Last Name	Email	Shipping	Discount	Total Price	Confirm
23942343434	Admin	Admin	Admin	admin@gmail.com	5	5	50	False
3234343113	User	User	User	user@gmail.com	10	10	10	False
12341234	User	User	User	user@gmail.com	5	5	5	False

Previous 1 2 Next

miro

**Figure 43-List Order**

This page will display all orders placed by the user. Admin can go to details to redirect to confirmation or press delete to delete the order. Also, for efficient order management, the number of orders appearing on one page will be 5. If you want to continue, just click button next, and if you want to go back, just click button previous.

The screenshot shows the Food admin dashboard. On the left, there's a sidebar with 'Admin Control' and 'Staff Control' sections. Under 'Admin Control', there are links for 'Users', 'Role', 'Products', 'Categories', 'Comments', 'Orders', 'Contacts', 'Contacts Marketing', 'Coupon', and 'Contact system'. Under 'Staff Control', there are links for 'Products', 'Categories', 'Comments', 'Orders', 'Contacts', and 'Contact system'. At the top right, there are search and filter icons. The main content area is titled 'Customer' and shows the following information:

- Bill to:**
- User Name:** User
- First Name:** User
- Last Name:** User
- Phone Number:** +02342343242
- Address:**
- Email:** User@gmail.com

**Payment Method:** Cash on Delivery      **Order Date:** 4/15/2022 3:29:12PM

**Order summary**

Item	Price	Quantity	Total
banhtrangtron	\$10	1	\$10
<b>Discount</b>			\$5
<b>Shipping</b>			\$0
<b>Total</b>			\$5

A 'Confirm' button is located at the bottom left of the order summary table.

*Figure 44-Order detail*

The order detail page will display all the information the customer provided when placing the order. Attached is the quantity of goods the customer has ordered and the amount the customer has to pay. The admin just has to check and confirm. Otherwise, you can return to the previous page to cancel the order.

The screenshot shows a user interface for managing coupons. On the left is a dark sidebar with navigation links for Admin Control (Users, Role), Staff Control (Products, Categories, Comments, Orders, Contacts, Contacts Marketing, Coupon, Contact system), and Home. The main area has a header with a search icon, a refresh icon, and a plus sign for creating new entries. Below the header is a table titled 'List of Coupon' with three columns: 'couponCode', 'couponPrice', and 'Action'. The table contains three rows with data: code50 (50), code10 (10), and code20 (20). At the bottom of the table is a navigation bar with 'Previous', '1', '2', and 'Next' buttons.

couponCode	couponPrice	Action
code50	50	<input type="checkbox"/> <input type="radio"/> <input type="button"/>
code10	10	<input type="checkbox"/> <input type="radio"/> <input type="button"/>
code20	20	<input type="checkbox"/> <input type="radio"/> <input type="button"/>

miro

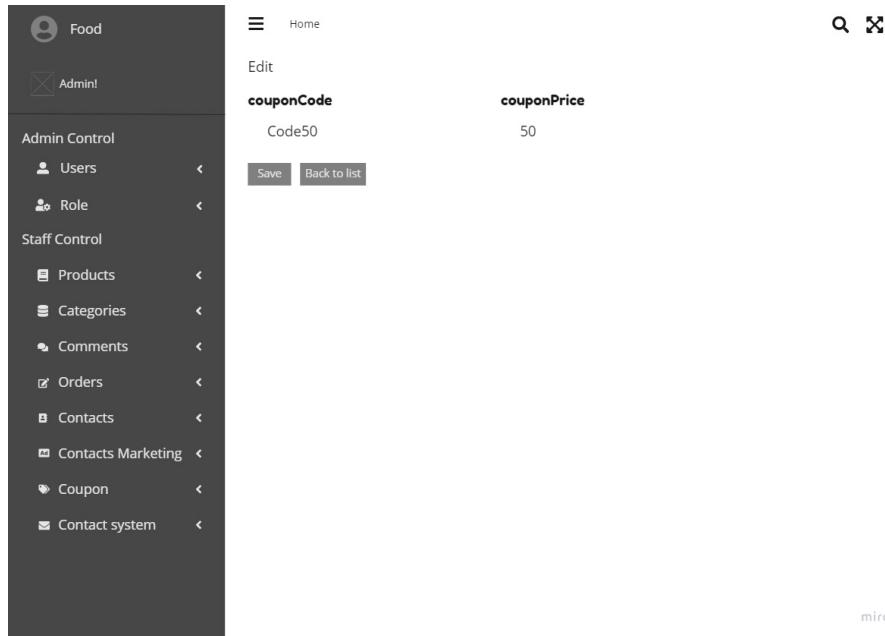
**Figure 45-List Coupon**

This is the page displaying the list of coupons that have been generated. Admin can manage this page with create, detail, update and delete tasks. Also, I limit the number of coupons appearing on a page to 5 for easy management.

The screenshot shows a user interface for creating a new coupon. On the left is a dark sidebar with navigation links for Admin Control (Users, Role), Staff Control (Products, Categories, Comments, Orders, Contacts, Contacts Marketing, Coupon, Contact system), and Home. The main area has a header with a search icon, a refresh icon, and a plus sign for creating new entries. Below the header is a form with three fields: 'couponId', 'couponCode', and 'couponPrice'. At the bottom of the form are two buttons: 'Create' and 'Back to list'.

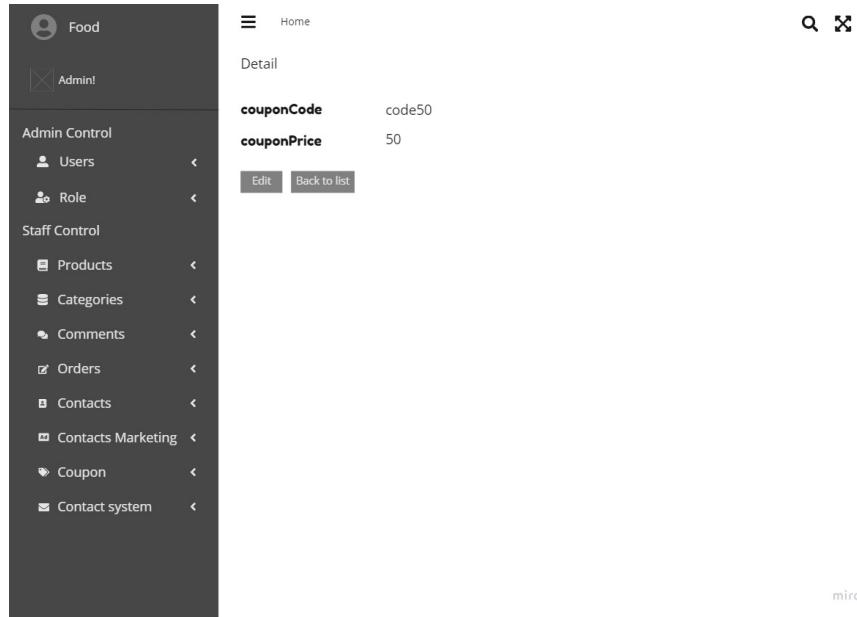
**Figure 46-Create Coupon**

This is the interface while creating a coupon, there will be three input fields for the admin to enter information. There will be two buttons, one is used to create and the other is used to cancel the order and return to the coupon list.



*Figure 47-Edit Coupon*

This is the interface while editing the coupon, there will be two input fields for the admin to enter the editing information. There will be two buttons, one is used to edit and the other button is used to cancel the edit order and return to the coupon list.



**Figure 48-Detail Coupon**

The coupon details will be fully displayed in the details page. Additionally, provide two more buttons, the first one is edit button which admin can click edit to go to edit coupon page and second one is back to coupon list.

Food		Home				
Admin!		List of Contact System				
Admin Control		Contact_Address	Contact_Phone	Contact_Email	Contact_Description	Action
Cong Hoa		012.342.2323		support@foodshop.com	Description contact Description contact Description contact Description contact Description contact Description contact	<input checked="" type="checkbox"/> <input type="button" value="Edit"/> <input type="button" value="Delete"/>
Previous   1   2   Next						

In the bottom right corner of the main area, there is a small 'miro' watermark.

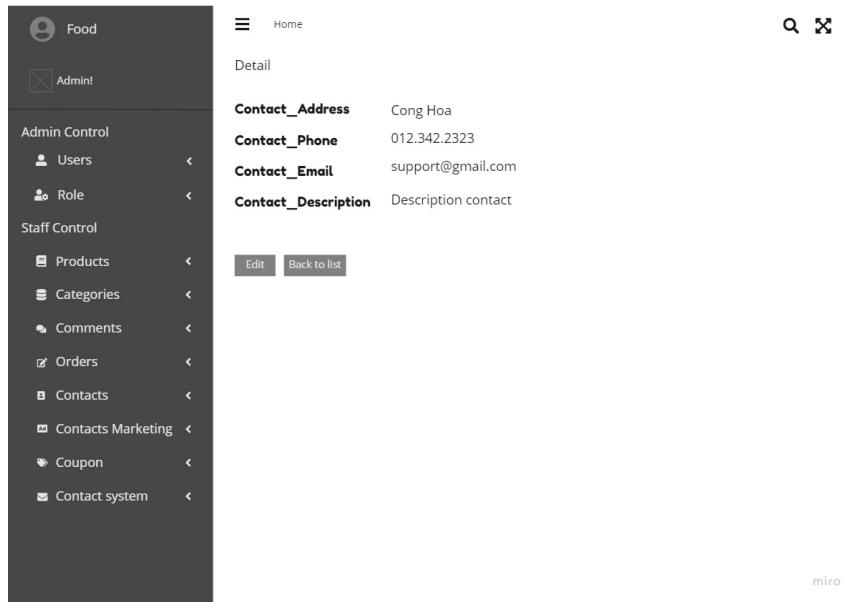
**Figure 49-Management Contact**

This is the interface when editing the content of the external contact page. Admin can manipulate read, update, delete.

The screenshot shows a left sidebar menu titled 'Food' with a user icon and 'Admin!' label. The sidebar includes sections for 'Admin Control' (Users, Role) and 'Staff Control' (Products, Categories, Comments, Orders, Contacts, Contacts Marketing, Coupon, Contact system). The main content area is titled 'Edit' and shows four input fields: 'Contact\_Address' (Cong Hoa), 'Contact\_Phone' (012.342.2323), and 'Contact\_Email' (support@gmail.com). Below these is a section for 'Contact\_Address' with the description 'Description contact'. At the bottom are 'Save' and 'Back to list' buttons. The footer says 'miro'.

*Figure 50-Edit Contact*

This is the page to edit the contact content, there will be 4 input fields. The administrator only has to enter the information to be modified corresponding to the 4 input fields. Then you can click save to save or click back to list to cancel and return to the list page.



**Figure 51-Detail Contact**

Contact details were added earlier, all information will be fully displayed on the details page. Additionally, provide two more buttons, the first one is the edit button which the admin can click on edit to enter the edit contacts page and the second is to go back to the contact list.

### 6.1.2. Analysis Human Computer Interaction

We live in the age of the greatest technological advancement of all time. Computers have become popular and are no longer alien to people, now people can connect even from afar, just through a computer with an internet connection. Of course, the convenience of computers and the Internet is also applied in all industries, especially the exchange and trade of goods. Humans are gradually coming into contact with the use of more and more computers, which makes human-computer communication important and also a matter of great concern when manufacturing any product or application that allows people to use computers for human use.

Talking about human-computer interaction (HCI) is a term referring to the communication between users interacting with software or applications running on computers or devices such as phones, tablets, ... An application or software is considered interactive when it meets criteria such as easy to learn, easy to use, and can be used proficiently by any age group.

Many design rules are born with the aim of helping designers to follow the rules to be able to come up with a product that meets the design requirements. In this project, I also applied some principles, in the design rules of (Benyon, 2010) to design my whole project. The first rule "Consistency" users are easily attracted to icons instead of seeing and reading words, so letting icons replace text will be one of the ways to help users easily distinguish them and recognize knots faster. For example, on management pages, I often use icons to replace letters. The goal is to quickly convey functional information to users. On the login page, instead of having the text displayed to indicate that the place is used to enter email or password information, I changed them to icons for email and password to help boost and recall icons they have touched before. The second rule "Constraint", optimizes space, limits the display of all information on a page, now users will no longer know how to choose and what is the right choice. Therefore, it is necessary to optimize the feature presentation space to fill sufficient gaps, it helps customers to have a comprehensive view and not to be overloaded with information. For example, I applied it to the navigation bar to help reduce the management page interface, ...

## 6.2. Features include with screenshots.

### 6.2.1. The shopping cart.

The screenshot shows the 'CART PAGE' of the FoodShop website. At the top, there's a header with a phone number (00-62-658-658), user info (Hello iuctieupham00@gmail.com! Logout), and a shopping cart icon. Below the header is a navigation bar with Home, Food, and Contact links. A search bar is also present. The main content area features a large image of a sandwich with the text 'CART PAGE' overlaid. Below the image is a breadcrumb trail: Home / Cart. The central part of the page displays a table of items in the cart:

	Product	Price	Quantity	Total
	Bánh Tráng Trộn	\$50	3	\$150

Below the table, there's a 'Coupon' input field and a red 'APPLY COUPON' button. To the right, a yellow box contains the text: 'Click here to access the payment page'. Further down, a section titled 'Cart Totals' shows the following breakdown:

Subtotal	\$150
Discount	10
Shipping	\$5
Total	\$145

At the bottom of the page, there's a 'PROCEED TO CHECKOUT' button. Below the main content, there's a newsletter subscription form with fields for 'Enter your Email' and a 'SUBSCRIBE' button. The footer contains links for Main Menu, Knowledge Base, Useful Links, and Contact Us, along with social media icons and a note about the design: 'Designed by MarkUp.io'.

Figure 52-Cart Page

This is a shopping cart feature, when the user selects the food they want and adds it to the cart, the system records it and saves it in the customer session. When the user enters the shopping cart, the shopping cart retrieves the goods from the machine session and displays them for the customer to see. The dish information will be displayed based on the information the customer has previously selected, for example: name, price and quantity, total amount of this dish. Below

there will be a section allowing customers to enter a discount code, only when the customer enters the correct code and presses apply. The system will discount the money exactly to the amount specified in the code. Finally, Cart Totals, this section will show the total amount of goods purchased by the customer, the discount is to show the discounted amount, the shipping is the shipping cost for the customer, the total is the total cost that the customer must pay. If the customer accepts and is satisfied with the service provided, simply click on Proceed to payment to access the payment page.

### 6.2.2. Checkout Page

The user must fill in the information in the input fields so that the delivery person can fulfill the order

Display of food, service and discount codes.

Click here to complete

**Main Menu**

- [Home](#)
- [Our Services](#)
- [Our Products](#)
- [About Us](#)
- [Contact Us](#)

**Knowledge Base**

- [Delivery](#)
- [Returns](#)
- [Services](#)
- [Discount](#)
- [Special Offer](#)

**Useful Links**

- [Site Map](#)
- [Search](#)
- [Advanced Search](#)
- [Suppliers](#)
- [FAQ](#)

**Contact Us**

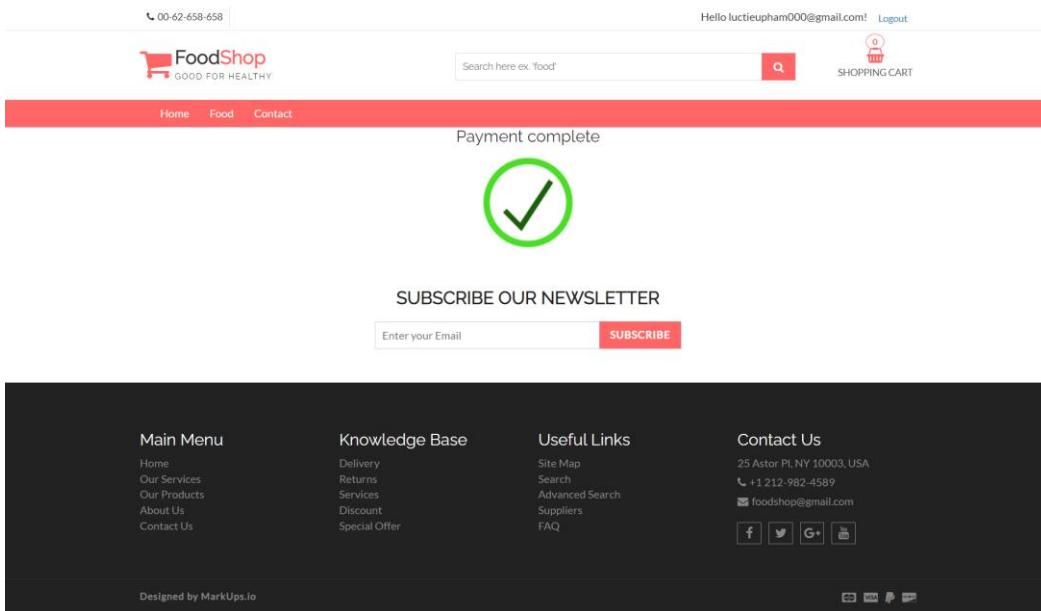
25 Astor Pl, NY 10003, USA  
+1 212-982-4589  
foodshop@gmail.com

Designed by [MarkUp.io](#)

Figure 53-Checkout Page

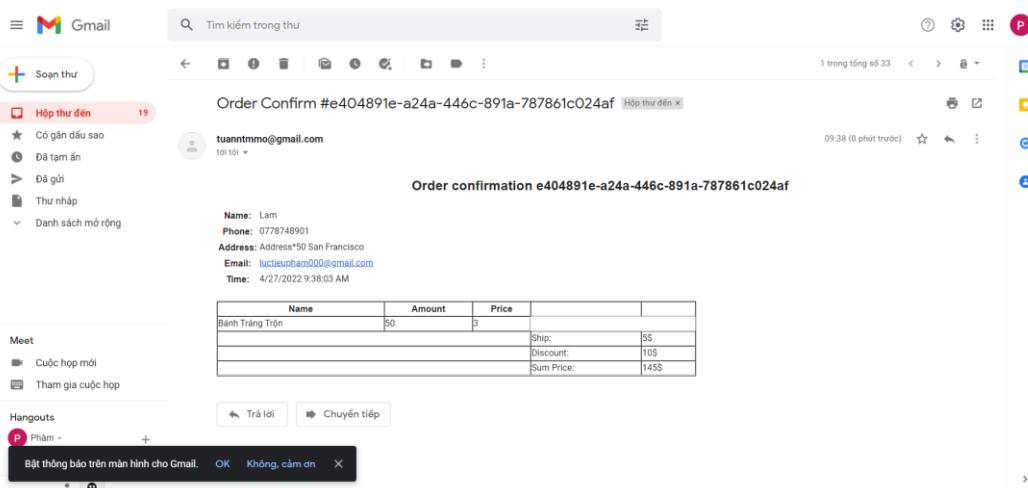
This is a payment page, users need to fill in personal information related to their name, surname, telephone number, address, ... In order for the system to register the shipment. What's more,

the page also provides all the information about the product unit price, shipping cost, promotion, so that customers can reconfirm. When you complete all the steps, the customer just needs to click Place Order to complete the order and when the order is successful, it will redirect the customer to the successful order notification page. In addition, the system will rely on the email provided by the customer to send the invoice and the customer can view it.



**Figure 54-Successful Order Notice**

This is where the customer will be directed when the order is successfully placed



**Figure 55-Email notification**

This is the email the customer will receive after a successful order.

### 6.2.3. Order Management

Order Id	UserName	First Name	Last Name	Email	Shipping	Discount	Total price	Confirm	
61f70492-6c64-4489-802a-368177f20409	Admin	admin	admin	admin@gmail.com	5	10	45	True	<a href="#">Detail</a> <a href="#">Delete</a>
9fe7cad4-6d7f-4e1f-9eb6-7c9ab4751d59	luctieupham000@gmail.com			luctieupham000@gmail.com	5	0	205	True	<a href="#">Detail</a> <a href="#">Delete</a>
D269BF93-A5E2-4C4A-8146-9967DDE60030	Staff	staff	staff	staff@gmail.com	10	0	2000	False	<a href="#">Detail</a> <a href="#">Delete</a>
e38f279f-7e85-4f61-bf99-a3d9712a569b	luctieupham000@gmail.com			luctieupham000@gmail.com	5	10	101	False	<a href="#">Detail</a> <a href="#">Delete</a>
e404891e-a24a-446c-891a-787861c024af	luctieupham000@gmail.com			luctieupham000@gmail.com	5	10	145	False	<a href="#">Detail</a> <a href="#">Delete</a>

Design by Tuan Nguyen [Tuan Nguyen](#). Version 1.0.

Figure 56-List Order

The system recorded the order that the user placed and the proof that the order is already in the order list. In addition, there will be 5 menus displayed on 1 page, click "Next" to continue viewing and click "Previous" to return to the previous page.

### 6.2.4. Order Detail

**Customer**

Bill to:  
User Name: luctieupham000@gmail.com  
First Name:  
Last Name:  
Phone Number:  
Address:  
Email: luctieupham000@gmail.com  
Payment Method: Cash on Delivery

Order Date: 4/24/2022 11:45:37 PM

**Order summary**

Item	Price	Quantity	Totals
Bánh Tráng Trộn	\$50	4	\$200
		Discount	\$0
		Shipping	\$5
		Total	\$205

Design by Tuan Nguyen [Tuan Nguyen](#). Version 1.0.

Figure 57-Detail Order

The order detail page helps administrators manage and approve orders. The page will contain the buyer information and the amount of this order, so that the admin can easily manage the orders.

#### 6.2.5. Home page

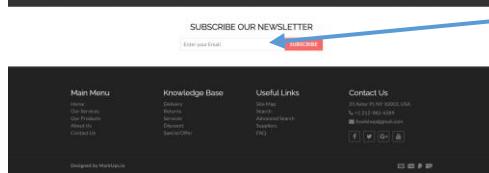
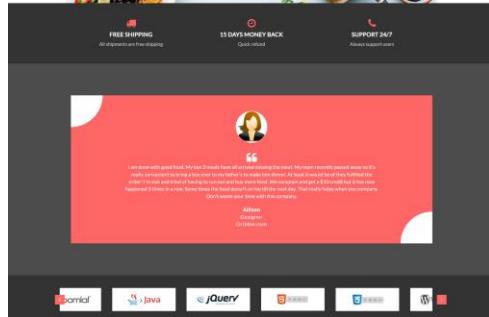
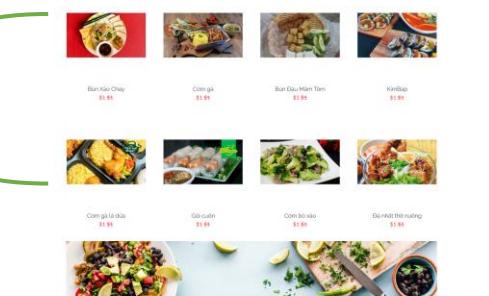
This is the main navigation bar of the page with 3 categories: Home, Food, Contact



This is the search bar, users can enter keywords here to search

This is the cart, when the product is selected by the user, this will be the place to store the product

List of dishes



Enter your email information here and submit. The system will rely on email to announce new products and give coupons to customers

Figure 58-Home Page

## 6.2.6. Food Page

The screenshot shows the FoodShop website's food page. At the top, there is a header with a phone number (00-62-658-658), a search bar, and a shopping cart icon. Below the header is a navigation bar with links for Home, Food, and Contact. A large banner image of food is centered above the main content area.

**Category:**

- Snack
- Food
- Dry food
- Drink
- Banhmi

**Top Rated Products:**

Item	Description	Price
Bánh Tráng Trộn	1 x \$50	\$50 \$50
Bún Xào Chay		\$1 \$1
Dứa CoCo	1 x \$1	
pizza	1 x \$1	
Bánh Uýt Lòng Gà		\$1 \$1
Cơm gà		\$1 \$1
Dứa CoCo		\$1 \$1
pizza		\$1 \$1
Bánh Mì		\$1 \$1
Xôi xéo Bà 3 Béo		\$1 \$1

A blue bracket on the right side groups the last four items in the list under the heading "List of dishes".

**Product paging feature:** An orange arrow points from this text to the page navigation at the bottom of the page, which includes "Previous", "2", and "Next".

**SUBSCRIBE OUR NEWSLETTER:** A form with a placeholder "Enter your Email" and a "SUBSCRIBE" button.

**Footer:**

- Main Menu:** Home, Our Services, Our Products, About Us, Contact Us
- Knowledge Base:** Delivery, Returns, Services, Discount, Special Offer
- Useful Links:** Site Map, Search, Advanced Search, Suppliers, FAQ
- Contact Us:** 25 Astor Pl, NY 10003, USA, +1 212-982-4589, foodshop@gmail.com, social media icons for Facebook, Twitter, Google+, and YouTube

Designed by MarkUps.io

Figure 59-Food Page

## 6.2.7. Contact Page

**Users can ask questions, complain about the quality of service,... by filling in all the required information and sending it to the system.**

We are waiting to assist you..  
Thank you for all the work and trust on us.

**Basic company information can be edited through the management system.**

SUBSCRIBE OUR NEWSLETTER  
Enter your Email  SUBSCRIBE

Main Menu: Home, Our Services, Our Products, About Us, Contact Us

Knowledge Base: Delivery, Returns, Services, Discount, Special Offer

Useful Links: Site Map, Search, Advanced Search, Suppliers, FAQ

Contact Us: 25 Astor Pl NY 10003, USA, +1 212-982-4589, foodshop@gmail.com

Facebook, Twitter, Google+, LinkedIn icons

Figure 60-Contact Page

## 6.3. Product Implementation.

### 6.3.1. Statistics of the number of products per month

```
[Route("admin")]
public IActionResult Index()
{
    //Create Chart
    var queryBill = _context.Bills;
    ChartForBill chartForBill = new ChartForBill();
```

```

chartForBill.PriceForJanuary = 0;
chartForBill.PriceForFebruary = 0;
chartForBill.PriceForMarch = 0;
chartForBill.PriceForApril = 0;
chartForBill.PriceForMay = 0;
chartForBill.PriceForJune = 0;
chartForBill.PriceForJuly = 0;
chartForBill.PriceForAugust = 0;
chartForBill.PriceForSeptember = 0;
chartForBill.PriceForOctober = 0;
chartForBill.PriceForNovember = 0;
chartForBill.PriceForDecember = 0;

// Pass data into feild
foreach (var item in queryBill)
{
    switch (item.bill_DatetimeOrder.Month)
    {
        case 1:
            // code block
            chartForBill.PriceForJanuary += item.bill_PaidTotal;
            break;
        case 2:
            // code block
            chartForBill.PriceForFebruary += item.bill_PaidTotal;
            break;
        case 3:
            // code block
            chartForBill.PriceForMarch += item.bill_PaidTotal;
            break;
        case 4:
            // code block
            chartForBill.PriceForApril += item.bill_PaidTotal;
            break;
        case 5:
            // code block
            chartForBill.PriceForMay += item.bill_PaidTotal;
            break;
        case 6:
            // code block
            chartForBill.PriceForJune += item.bill_PaidTotal;
            break;
        case 7:
            // code block
            chartForBill.PriceForJuly += item.bill_PaidTotal;
            break;
        case 8:
            // code block
            chartForBill.PriceForAugust += item.bill_PaidTotal;
            break;
        case 9:
            // code block
            chartForBill.PriceForSeptember += item.bill_PaidTotal;
            break;
        case 10:
            // code block
    }
}

```

```

                chartForBill.PriceForOctober += item.bill_PaidTotal;
                break;
            case 11:
                // code block
                chartForBill.PriceForNovember += item.bill_PaidTotal;
                break;
            case 12:
                // code block
                chartForBill.PriceForDecember += item.bill_PaidTotal;
                break;
            default:
                // code block
                break;
        }
    }

    //Send Data
    sendData(
        chartForBill.PriceForJanuary,
        chartForBill.PriceForFebruary,
        chartForBill.PriceForMarch,
        chartForBill.PriceForApril,
        chartForBill.PriceForMay,
        chartForBill.PriceForJune,
        chartForBill.PriceForJuly,
        chartForBill.PriceForAugust,
        chartForBill.PriceForSeptember,
        chartForBill.PriceForOctober,
        chartForBill.PriceForNovember,
        chartForBill.PriceForDecember
    );

    return View();
}

public void sendData(
    int January = 0,
    int February = 0,
    int March = 0,
    int April = 0,
    int May = 0,
    int June = 0,
    int July = 0,
    int August = 0,
    int September = 0,
    int October = 0,
    int November = 0 ,
    int December = 0
)
{
    ViewBag.January = January;
    ViewBag.February = February;
    ViewBag.March = March;
    ViewBag.April = April;
    ViewBag.May = May;
    ViewBag.June = June;
    ViewBag.July = July;
}

```

```

        ViewBag.August = August;
        ViewBag.September = September;
        ViewBag.October = October;
        ViewBag.November = November;
        ViewBag.December = December;
    }

```

I first declare it as a variable and assign it the invoice data. I then create a new ChartForBill object setting the chartForBill values for each month to 0. Then I give it a loop and iterate through each case. A year has 12 months so there will be 12 cases, in each loop the value of the orders will be recorded in variables corresponding to the number of months. Then it will record the price of each invoice corresponding to the corresponding number of months. Before sending data, declare the variable for months to 0 so that when sending data by viewbag will get the corresponding value for each month.

### 6.3.2. List Product

```

//Query Product
    var productListTest1 = from a in _context.Products select a;

    //Contidition
    productListTest1 = productListTest1.Where(a => a.isDelete == false);
    int pageSize = 5;
    return
View(PaginatedList<Products>.Create(productListTest1.AsNoTracking(), pageNumber ?? 1,
pageSize));

```

Read the product value from the database and then assign it to the productListTest1 variable to get a list of products. In addition, I want to do pagination for the products so I declare a pageSize variable by assigning it the value 5 in order to limit the number of products that can appear on 1 listing page. Finally, return all processing information to the view. By calling the pagination service and passing the product list to this service, this service returns the correct number of pageSize that I declare corresponding to each of its pages.

### 6.3.3. Create Product

```

//Create product
    var productId = Guid.NewGuid().ToString();
    var product1 = new Products()
    {
        Id = productId,
        Name = productModel.pd_Name,

```

```

        Description = productModel.pd_Description,
        Price = productModel.pd_Price,
        ReducePrice = productModel.pd_ReducePrice,
        Img1 = productModel.Img1,
        Img2 = productModel.Img2,
        Img3 = productModel.Img3,
        Img4 = productModel.Img4,
        Rate = productModel.Rate,
        ShortDescription = productModel.ShortDescription
    };
    _context.Products.Add(product1);

    //Create Product In Categories
    string CategoriesSelect = Request.Form["CategoriesSelect"];
    var CategoriesIdQuery = _context.Categories.FirstOrDefault(a => a.cg_Id
== CategoriesSelect);

    var productInCategories = new ProductsInCategories()
    {
        pic_productId = productId,
        pic_CategoriesId = CategoriesSelect,
    };

    _context.ProductsInCategories.Add(productInCategories);

    await _context.SaveChangesAsync();

    return RedirectToAction(nameof(Index));

```

The first will assign the product variable the Id and the automatically generated Id. Then create a new object, the object here is a new product, based on the information entered in the input box and assigned to the corresponding column, then convert this linq statement to Sql and save. And likewise, the product must belong to a certain category. So based on the data the user selects in the view and assigns it to the respective column and converts it from Linq to Sql and saves it to the database.

#### 6.3.4. Edit Product

```

[HttpPost("/productmanagement/edit/{id:guid?}/")]
[ValidateAntiForgeryToken]
public ActionResult Edit(string id, ProductModel productModel)
{
    try
    {

        var product = _context.Products.FirstOrDefault(x => x.pd_Id == id);

        product.Name = productModel.Name;
        product.Description = productModel.Description;
        product.Price = productModel.pd__Price;
        product.ReducePrice = productModel.ReducePrice;
        product.Img1 = productModel.Img1;
    }
}

```

```

        product.Img2 = productModel.Img2;
        product.Img3 = productModel.Img3;
        product.Img4 = productModel.Img4;
        product.Rate = productModel.Rate;
        product.ShortDescription = productModel.pd_ShortDescription;
        _context.SaveChanges();

        return RedirectToAction(nameof(Index));
    }
    catch
    {
        return View();
    }
}

```

First of all, to use a product, you must first obtain the identifier of this product. Therefore, the edit should always be accompanied by an identifier when navigating to where to edit product information. Then call from the database the old data to show to the administrator. Depending on the administrator wishes to modify the information that will be reassigned. After clicking save, the LINQ statements will be converted to sql statements and perform this action.

### 6.3.5. Delete Product

```

var product = _context.Products.FirstOrDefault(a => a.pd_Id == id);
product.isDelete = true;

_context.SaveChanges();

```

The admin wants to delete a product displayed on the product view page, then just select the delete function and read the data from the database based on the product id. Convert this linq statement to Sql and save. The product will no longer be visible on the product display page.

### 6.3.6. Block User

```

//Query User
var queryUser = _context.AppUser.FirstOrDefault(a => a.Id == appUser.Id);

//Block User
if(queryUser.EmailConfirmed == true)
{
    queryUser.EmailConfirmed = false;
}
else
{
    queryUser.EmailConfirmed = true;
}
_context.SaveChanges();

```

Is to read the existing user value in the list. Then change the required email value, opposite the email\_confirm value to change the login status of this account. Convert this linq statement to Sql and save it.

### 6.3.7. List Coupon

```
[Route("/couponmanagement")]
public ActionResult Index(int? pageNumber)
{
    var query = _context.Coupons;
    int pageSize = 5;
    return View(PaginatedList<Coupons>.Create(query.AsNoTracking(), pageNumber ?? 1, pageSize));
}
```

First, to access the coupon list, you need to have a path or call Route to access the coupon management page. Public ActionResult will return multiple results but the code returns the view. Next, read the database and then assign the Query Coupon variable to get the list. In addition, I want to do pagination for the coupons so I declare a variable pageSize by assigning it the value 5 in order to limit the number of coupons that can appear on 1 listing page. Finally, return all processing information to the view. By calling the Paging Service and passing the list of coupons to this service, this service returns the correct number of pageSizes that I declare correspond to each of its pages.

## 6.4. Evaluation of your product.

In this project, I successfully developed a project, helping users to buy food remotely without having to go to the restaurant to buy and order food, meeting the food needs necessary in life. . Specifically, creating such products helps the restaurant increase retail sales and save labor costs. For users of this product, it helps them to stay home and eat their favorite food, especially during this covid season, avoiding contact in crowded places is essential. The app responded and resolved these issues in a timely manner. Deepening its operation, the system offers an abundant number of dishes, customers are spoiled for choice and add to cart. During checkout, customers can apply discount codes to reduce the amount payable. Customers can read reviews and rate dishes. Also, customers may complain about the quality of service per contact. The management system provides functionality for user management, product management, and customer feedback management. Summarize the construction project on time and complete the proposed

functions. But there are still a few issues to address before deployment on hosting and runtime. The system does not have any features that really attract others for example: group purchase function, function to save user information and autofill for next purchases, further improve the user interface, there are more admin chat functionality, ... I plan to implement and develop these missing features in the future. The achievement brings this product to market and serves many customers, improving and improving the quality of life.

## CHAPTER 7 CONCLUSIONS

### **7.1. What you have learned in this project.**

After spending a lot of time working on a project, I learned a lot from skills to knowledge. Below I will describe in more detail what I learned from the project. The first is the collection and analysis of project requirements, the collection and analysis allows me to filter out the requirements that are important and relevant to the project. Also, improve critical thinking and analytical skills. The second is development planning for the whole project, planning helps me to control the development progress for the whole project. Complete the project on time. The third is to apply the model, in particular the waterfall, to the development of the project. Applying the waterfall model to the project helped me understand the software development process. Fourth, UI/UX design skills for the project, in particular, I learned to draw wireframes, applied knowledge of HCI subject to interface design. Fifth, apply asp.net core technology to create functionality for websites and additionally use techniques such as ORM, create projects according to MVC software architecture. Finally, problem solving skills when encountering errors, while developing project I often encounter many errors, I solved it using Google and some resources from some sites like stack overflow, documentation if asp.net core provided by Microsoft, to solve the problem.

### **7.2. What is the result of this project?**

The project development process completed, the result I found was two products. The first is an e-commerce site that allows customers to access catering system products. The second is a management system that helps the restaurant easily manage customer information and product information displayed on the e-commerce site. The website works on multiple platforms with a

user-friendly interface that is easy to use and provides good user interaction. Finally, there is a report, in which the report specifically describes the needs analysis process, the specific development planning, drawing diagrams, sketching the interface for the website, comparing the technological options to be developed, explaining the features worked, summarize the whole project. Achieving a good result and following the original plan is also due to my own tireless efforts, as well as the guidance and support of the lecturer. I thank my teachers for their enthusiasm and support throughout my development. This project is almost complete, but I myself do not have much experience in project development, so gaps are inevitable, through the construction and development of this project, I also gained a lot of experience, understand for yourself. From the experience acquired, I can participate and develop the next projects.

### **7.3. Further development of this project.**

After a long period of construction and development of the project, I have come up with a product with basic functionality that can be implemented. But currently, if the product is released, it will not compete with the same level websites currently in the market. Personally, I really want my product to succeed and compete with other websites, so I am committed to developing more features to attract more users. For example: maximizing shopping operations after just a few clicks, group shopping function, ... In addition, I will pay more attention to the user interface, further improve the interaction between people and the machine. Also, I intend to improve page loading speed, increase fluency while using the website. To do this, my goal is to create a single-page application, rather than using React to redevelop the system interface. After completing the upgrade process, I will put it into the market for users to experience it, and then I will do surveys to evaluate it again before putting it into practice. It makes it easier for people to accept and use my product.

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# **PROJECT PROPOSAL**

## **1. Overview**

Nowadays, technology is developing rapidly, many businesses and stores in trade and service industries are also gradually transforming to digital to keep up with the trend. They are gradually moving from commerce to e-commerce, from which they easily reach customers through the Internet.

From 2012 to recently, the number of online shopping users is increasing year by year. The benefits of online shopping help users save time, users can access more products, and easily compare products, ... Benefits of digital transformation and application of technology to business enterprises include Reduction of rental costs of premises, employees, the guarantee of high precision, non-stopping of operation, and in addition, automatic management of sales statistics and stocks for better management.

Currently, I plan to research and develop the digital transformation of a restaurant system specializing in food delivery, this project that I will use to develop ASP.NET Core technology. The application of technology helps to optimize the steps from product viewing, product selection, ordering, and payment. In addition, criteria such as customer information security, information access security, etc. must also be insured. To start building and researching, the first thing I need to do is analyse customer needs, recommend features and solutions. Then create a clear development plan for each phase of the project. Finally, test and compare with the original requirements.

## **2. Aim**

The main goal of this project is to create a website where people can order/choose their favorite food without having to spend a lot of time and effort on it. Bring joy and comfort to everyone.

## **3. Objectives**

3.1. Investigate web programming objectives and the online trading market.

- 3.1.1. Aggregate and learn the basics knowledge of web programming, from which to define general rules and follow them in the development process [1.0].
- 3.1.2. Research and learn the top e-commerce websites such as structure and attributes [1.0].
- 3.1.3. Survey and evaluate strategic e-commerce sites in the same field [5.0].
- 3.1.4. Research and learn the interface, functions, and optimization methods of e-commerce websites in the field of restaurant chains [10.0].

### 3.2. Investigation of framework Asp.Net Core.

- 3.2.1. Find and learn support documents and general information about the Asp.Net Core. [2.0].
- 3.2.2. Learn about tags, attributes, identity, and some additional support libraries. [4.0].
- 3.2.3. Study and learn how to initialize database by code first in Asp.Net Core. [3.0].
- 3.2.4. Learn how to use Visual Studio to support eCommerce website development [2.0].
- 3.2.5. Study and learn how to use models in Asp.Net core [2.0]

### 3.3. Research technologies to support UI development and apply technologies to the interface of e-commerce websites.

- 3.3.1. Study and learn basic to advanced usage of Bootstrap. [2.0].
- 3.3.2. Study and learn basic to advanced usage of jQuery [4.0].
- 3.3.3. Study and learn the usage of Chart [2.0].
- 3.3.4. Study and learn the usage of Animation [1.0].
- 3.3.5. Study and learn basic to advanced usage Responsive [3.0].

### 3.4. Realize the project.

- 3.4.1. Collect information and data related to the project, according to this and analyse the needs (survey and interview methods). [4.0]
- 3.4.2. Organize timelines and create a specific roadmap for project development. [5.0]
- 3.4.3. Build a database system based on project needs. [9.0]
- 3.4.4. Interface sketch and interface construction for the whole system. [6.0]

3.4.5. Develop the functionalities required in the project. [12.0]

3.4.6. Operation and testing of the project. [5.0]

3.4.7. Solve problems arising during operation and testing. [4.0]

3.4.8. Transmit and deploy the system to reality. [5.0]

## **4. Legal, Social, Ethical and Professional**

### **Legal:**

- Asp.Net is open-source code that programmers can use for free. Asp.Net is built and developed by Microsoft.
- Asp.Net Core is a version of Asp.Net, supporting the development of applications and software according to the MVC model.
- Throughout my project every document and resource will come from free sources or legal copyright.
- This project is my own effort, manage to research and develop by myself. That why this is my asset and otherize by University of Greenwich.
- This project has been approved and accepted by my faculty and the University of Greenwich.

### **Social:**

- My website has been created and put into service, for example, committed to respecting the host country's regulations and not linked to social ills.
- Do not use the website for the purpose of incitement, personal attack, or fraud.
- The website created will not market articles containing harmful substances, prohibited substances or articles prohibited by the host country.

### **Ethical:**

- This project was created with my own efforts.
- Do not engage in any plagiarism in the project.
- Do not use third-party software to avoid plagiarism detection.

- Do not use pre-coded projects in any course.

### **Professional:**

- Acts of disclosing or intentionally disclosing personal projects to any 3rd party is considered a violation. Commitment to strictly comply with the regulations on information security and the project. Projects may only be provided with the consent of the University of Greenwich, or provided for investigation purposes.
- Always respect and receptive alternative other perspectives, seek and accept honest criticisms about my project. Learn to approve and evolve every day.
- Always lookout for the interests of related parties, any conflict affecting the interests of related parties must be avoided.

## **5. Planning (see appendix A)**

To ensure that the project is completed on time, it is necessary to have a clear plan, detailing the tasks that need to be completed for each deadline. Therefore, in this project, I decided to use the Gantt chart to manage my project.

In this project, I will divide it into 6 phases including:

Project proposal, inception report, product development, interim report, final report, project demonstration.

TASK	START	END
<b>Phase 1 - Project proposal</b>		
Discuss proposal with supervisor.	8/2/2021	8/5/2021

Write project proposal.	8/5/2021	8/10/2021
Upload project proposal.	8/10/2021	8/11/2021
Discuss proposal with supervisor.	8/11/2021	8/12/2021
Revise project proposal	8/12/2021	8/13/2021
<b>Phase 2 - Research</b>		
Find and learn support documents and general information about the Asp.Net Core framework.	8/15/2021	8/22/2021
Learn about tags, attributes, identity, and some additional support libraries.	8/23/2021	8/30/2021
Study and learn how to initialize database by code first in Asp.Net Core.	8/23/2021	8/30/2021

Learn how to use Visual Studio to support eCommerce website development	8/23/2021	9/6/2021
Study and learn how to use models in Asp.Net core	9/7/2021	9/9/2021
Study and learn basic to advanced usage of Bootstrap.	9/10/2021	9/20/2021
Study and learn basic to advanced usage of jQuery	9/20/2021	9/25/2021
Study and learn the usage of Chart	9/26/2021	10/3/2021
Study and learn the usage of Animation	10/4/2021	10/11/2021
Study and learn basic to advanced usage Responsive	10/11/2021	10/24/2021
Study and find a way to connect all that is learned	10/24/2021	10/31/2021
Find, check and fix bugs.	10/24/2021	10/31/2021
Upload initial report	11/1/2021	11/1/2021
<b>Phase 3 – Product development:</b>		

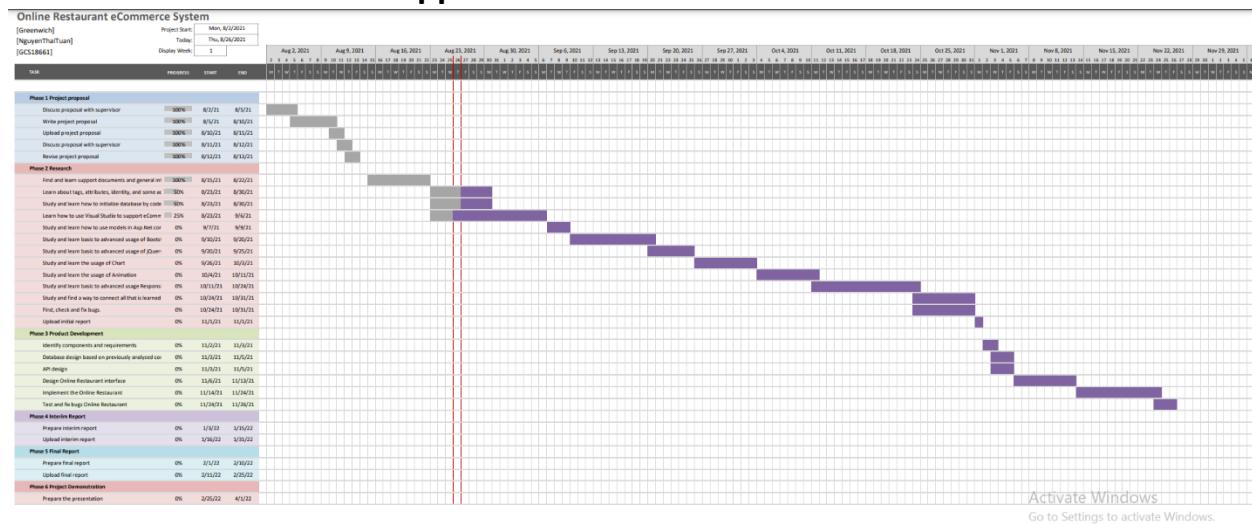
Identify components and requirements	11/2/2021	11/3/2021
Database design based on previously analysed components and requirements	11/3/2021	11/5/2021
Initialize the models for the project	11/3/2021	11/5/2021
Design Online Restaurant interface	11/6/2021	11/13/2021
Implement the Online Restaurant	11/14/2021	11/24/2021
Test and fix bugs Online Restaurant	11/24/2021	11/26/2021
<b>Phase 4 - Interim Report</b>		
Prepare interim report	1/3/2022	1/15/2022
Upload interim report	1/16/2022	1/31/2022
<b>Phase 5 - Final Report</b>		
Prepare final report	2/1/2022	2/10/2022
Upload final report	2/11/2022	2/25/2022

<b>Phase 6 - Project Demonstration</b>		
Prepare the presentation	2/25/2022	4/1/2022

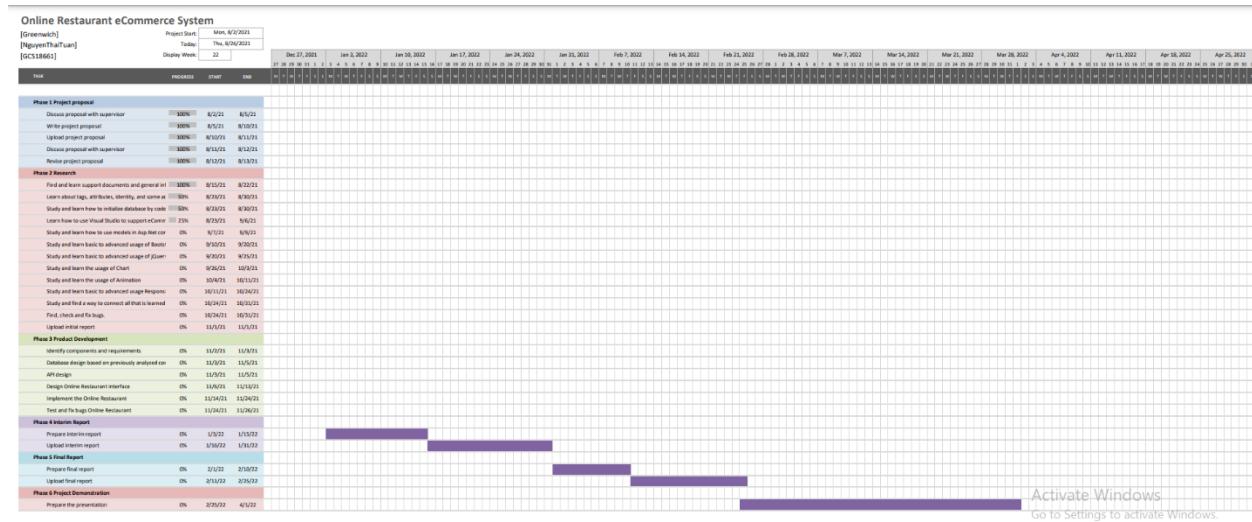
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## Appendix 1 - Schedule of Work



## Appendix 2 - Schedule of Work (Proposal)



## SOURCE CODE

Below is the whole source code of the project developed by myself, in the folder I share contains the code and all the data from the sql is exported.

[https://drive.google.com/drive/folders/138P64yvjF8M8J92\\_FLtyt2CGpkKhqifv?usp=sharing](https://drive.google.com/drive/folders/138P64yvjF8M8J92_FLtyt2CGpkKhqifv?usp=sharing)