HANOI UNIVERSITY OF SCIENCE AND TECHNOLOGY

SCHOOL OF INFORMATION TECHNOLOGY AND COMMUNICATION

SOFTWARE ENGINEERING REPORT
Project name: Eva De Eva

Supervisor: Dr. Bui Thi Mai Anh
Teaching Assistant: Nguyen Thi Minh Chau

Team 506 - Moon Knight:

No.	Student Name	Student ID	Task
1	Nguyễn Văn Việt	20194883	build database, CRUD product, CRUD user, order management
2	Nguyễn Thành Đạt	20194739	Write query, function statement, place order function
3	Trần Quang Thái	20194836	Homepage interface, general and detailed product interface, place order function
4	Trần Ngọc Dung	20194742	Feasibility study, SRS, Final report
5	Vũ Thị Phượng	20194820	Feasibility study, SDD, Final report, Slide
6	Đào Quang Dương	20194747	Design notification, display notification in user's account
7	Trần Chí Thành	20194845	Offline ordering function
8	Nguyễn Đình Thi	20194852	Sign in, sign up function, user's information interface, order information of user
9	Đỗ Văn Tuấn	20194874	Design voucher event, apply voucher event function, display voucher in user's account

CONTENTS

CHAPTER 1: FEASIBILITY REPORT

1. EXECUTIVE SUMMARY:

The online shopping market is growing strongly due to the development needs of society, especially after the covid 19 epidemic. Ms. Bui Thi Mai Anh proposed to create a website to promote products and attract users, as well as participate in the online market. Ms. Mai Anh developed the original client proposal and is very knowledgeable about the shop's needs. So, we decided to make Ms. Mai Anh a website for her to sell on, helping to solve the current problem. Ms. Mai Anh will be our primary client. People who buy goods on the website will be users because they use our products through the client, Ms. Mai Anh. The basic goal of the development team is to create a website with all the necessary functions of an online store. This website will have basic functions as allowing users to choose size and color, disable products if they are not available, etc…. In addition, when buying clothes here, users will receive vouchers from store manager and they can use them at the store or on the website. Successful implementation of the system will have Eva De Eva improve sale performance, attract new users and increase revenue.

2. PRELIMINARY REQUIREMENTS ANALYSIS

Part I – Application Overview

Objectives

The basic functionality of the system will be a website with all necessary functions as Ms. Mai Anh's requirement.

Business Objectives

The creation of this website will help the store expand its operating method, improve sales and promote its stores more widely on social media platforms. Not only that, the website also makes it easy for users to make purchases without having to go directly to the store.

Current Business Process and Rules

Previously, if a store didn't have its own website, users would only be able to purchase goods and services at the store, during opening hours. On weekends or public holidays, the number of users coming to the store will be larger, leading

to overcrowding and inadequate service. Users who come to the store are often people in the vicinity because of the problem of distance and time, especially for women, choosing clothes takes a lot of time. Moreover, stores often use traditional marketing methods such as handing out leaflets, placing advertising signs, etc. These forms are also limited in terms of their ability to reach users and the amount of information conveyed.

That is why online shopping is gradually taking the throne. Building a sales website is an economical and effective way for stores to introduce products and sell goods. When there is a website, users from anywhere can access the website to find out information about goods and place orders, at any time of the day, as long as users give their address and personal information, the goods will be delivered safely and securely. Moreover, the website will help you implement effective marketing programs to users. With the website, the shop can do online marketing activities such as: SEO, google ads, Facebook ads. Online marketing will help market your products to users quickly. Especially, online marketing costs are often low, and effective. This is the best way to increase sales.

User Roles and Responsibilities

Administrator Role: The ability to enter, record, upload, and delete data; create promotional events, promotional codes or vouchers and can change order status on the system.

Staff Role: create promotional events, promotional codes or vouchers and can change order status on the system.

User Role (who buy products online or from store): The ability to buy in-store or order online (need to enter full address information for accurate delivery), can register an account and become a loyal user to receive vouchers, can see order status on system.

Interactions with Other Systems

The website is built to expand the sales form from the current direct selling system. In addition, this website also links with Google to log in to the system when users want to have an account to receive special promotions.

Production Rollout Considerations

The design and development of the system's interface and functions will be carried out in phases for three months before being tested and used. Users will be guided in detail before use.

Part II – Functional Requirements

Statement of Functionality

The website system will be flexible, sustainable and user-friendly. Users can see all the clothes that the shop has, can quickly search by keywords or search by product filters (titles, categories, cost, etc..). In addition, users can also click on the link to Facebook or Instagram to view the product's feedback. Users can add to cart to store the products they like.Users can buy in-store, or can order online. The system allows to manage the purchase history of each user and manage orders on the system.

Users can see order status on their system. The store will change the order status and the user will receive a notification every time the order changes.

Users can register for an account and become a loyal user to receive vouchers (birthday) or enjoy exclusive promotions for loyal users (some discount items are only for loyal users).

Users also receive discount codes, vouchers from the store and see them in their account space. These codes can be used to make online orders, can also be used at the store at checkout to enjoy the discount. Some promo codes are only applicable for online purchases, some are only applicable in stores.

Users when making a purchase will accumulate points on their loyalty card to rank up. When you level up, you will enjoy more incentives from the store.

Users can also receive notifications from the store in their personal accounts about promotional events, coupon codes, or reminding them to use their own offer codes before the offer code expires.

Moreover, the system allows store owners to easily create promotional events, promotional codes or vouchers to give to users or general events that apply to all users in the system.

Security and User Capabilities

The system will support two types of users. To access the system, users do not need to log in, but if users want to buy goods, the system will ask to log in with Gmail. At the admin login level, users will be granted additional rights such as adding, deleting, editing and updating product types and can optionally add promotions easily. At the user access level (for purchasers), only purchase-related functionality will be provided.

Reporting

The reports generated will help in statistical analysis of the reference data that is collected and stored in the central data repository. Daily, weekly, monthly, quarterly, and yearly reports will be created using the functionalities of the system and sorted data.

Non-functional requirements

The software system will be installed and run on existing Windows systems and the system will be tested out on the store servers. The system needs to be functional whenever reference staff needs to access it.

The criteria for success of the system would be measured by the flexibility and sustainability of the system. The functionality and ability of the system to meet all requirements (i.e. simultaneous access from different workstations, effectiveness of the design of the central data repository, automatic backups, retroactive editing of data, various levels of user access, etc.) would be critical for success as well.

Usability

Usability issues such as speed of operation for the user interface, collection and storage of important quantitative data, speed and efficiency of the work flow processes through automation, and concurrency of collected data will be important considerations

Scope

The scope of our website will be within the capacity of Vietnam in terms of language interface as well as the scope of delivery, if well developed, we will expand to foreign countries.

Users need to enter personal information such as name, age, address, phone number, and citizen's identity so that the system can accurately confirm the buyer, avoiding the situation that users don't receive goods.

3. PROCESS TO BE FOLLOWED

For this project, the team has decided to follow an iterative refinement approach that involves beginning with designing the user's website interface and gradually adding functionality until all of the client's requirements are met. The team chose this particular method due to the client's concern over having a user interface that is easy to use and less cumbersome than the current paper method. The interface is required to be intuitive and simplistic in order to easily collect the reference statistics from the librarians and other assistants. Another version is also required to act as an administrative interface to manipulate the data and perform any necessary administrative functions including report preparation and the modification of data categories. By using an iterative method, the team can quickly complete the product for the client to evaluate. If necessary and time permitting, redesign of the interface will occur based on client feedback. While the interface is being revised at 4 each step of the iterative process detailed below, the team will be adding the necessary software modules that will handle the central data repository, report generation, and other functionalities. Below is the proposed 9 outline of the iteration stages and milestones including what the team expects to have completed at each stage.

Process Outline

User testing throughout: At each milestone, the team will present the most current version of the software to the clients for their testing and evaluation. Although the software will not initially be fully complete during the early presentations, it will give the clients an approximation of the functionality of the final product.

1st iteration (April 19, 2022 – May 26, 2022)

Feasibility study

The group considers technology issues decides what programming languages and frameworks to use for the project, considers whether the database system is feasible in storing, automating systems that client equirements, or not, thereby concluding the feasibility of the project. At the same time, conduct pre-analysis

of requirements, choose a model to follow to implement the project, and then build a tentative plan of work as well as milestones for system development. Evaluate that plan is feasible? Are you okay? Anticipate possible risks and have plans to deal with possible risks.

- Time: 1-2 weeks

- Work results: Report 1: Feasibility Study and Plan

(Submitted on April 28, 2021)

Requirements

The team conducts analysis, understands clearly and explicitly the requirements set forth by the client. When everything is clear, translate the defined requirements into corresponding functional specifications (requirements => functions) and the project team creates designs for the product to meet some those requirements, including hardware design, software design, programming language, data saving.

- Estimated time: 4 weeks

- Work results:

+Build basic database

+The team will design the initial user interface for the client's evaluation:

• Product management page interface design

• Complete CRUD products

+Order management page interface design with basic functions.

• Fill information, view the products in cart, purchase

+Complete the function of viewing and searching for products.

The team will finalize the initial user interface and some basic functions for client to see and rate, if the client is not satisfied or has comments, it will be corrected in time so as not to affect the progress of the project. The team will also work with the client to exchange and receive if the client has a change in request or feedback.

2nd iteration (May 27, 2022- June 5, 2022)

Design Document

A formal document will be prepared that details both the design of the system and the code behind it. In describing the design of the system, the hardware and software needed from the client will be specified. Details about the program design will cover internal functionality so that the client can maintain and modify the end product in the future.

- Estimated time: 1 week

-Work results: Report 2 and Presentation slides.

Implementation

Based on feedback from the client concerning the first iteration deliverables, the team will modify the design of the user and administrator interfaces as needed. During iteration, the team will complete some functions:

+Sign in, sign up

+Purchase (payment, sales, apply voucher, accumulate points …)

Once completed, we will release the product to the client and receive feedback from the client.

- Estimated time: 3 weeks

3rd iteration (June 6, 2022)

-Completely design voucher, event, feedback.

Final Testing Period

The team plans to reserve two weeks before the final presentation so that the client can test the product in its intended environment with real users and data. All functional requirements will have been met before this point; any changes hereafter will only cover small details, such as aspects of the user interface.

Final Documentation and Presentation

Documentation for the final version of the product will be presented to the client so that the end product can be maintained and extended. This will include information on all required features, which will be fully implemented. The documentation will also cover any desired and optional features that have also been implemented. The team will also provide a demonstration of the system and training so that the client can understand how the user interface is intended to be used.

Final System

The final system will include all features that the team and the client have agreed are required, such as allowing data input and storage, sorting data. Based on development progress heretofore, the final system may also include any functionality that the client has also determined as desired and/or optional. - Estimated time: 4 weeks

-Work results:

• The finished product of the system

• Documentation for clients (documentation)

4. SUGGESTED DELIVERABLES

a)Periodic Status Reports:

Throughout the software development process, periodic reports will be written and presented to the client to maintain process visibility and enhance the team's responsiveness to the client's needs. The team understands that the client will wish to comment and respond to the development progress. In turn, the team will strive to continually adjust and target processes and progress to the client's needs. Periodic status reports will detail the feasibility of the project, its exact requirements, its design, and ultimately, its final form and implementation. These will be written documents that are presented to the client and any other individuals the client identifies.

b) Periodic Presentations:

Restate the customer's requirements in the group's understanding. Introduction to the system, functions and user interface will be implemented in the future.

Presenting features that have worked, failed to work and guide users to try them out. Customer feedback will help the team improve the system, add or remove features, and edit the interface and perfect the product to match the customer's wishes.

c) Good Faith Requirements Agreement:

After the project requirements have been discussed and reviewed with the client, a requirements agreement will be presented to the client to clarify exactly what the project intends to accomplish. The agreement will explicitly spell out which features and objectives the team intends to deliver.

d) Documentation for Use and Mechanics:

 The client will be provided documentation both explaining how to use our system and describing its underlying mechanics. The client has expressed interest in gaining familiarity with the system, and the documentation will be useful for reference needs.

e) Demonstration and Client Training:

 In addition to documentation, the client has requested training for their staff to use the system. The team will satisfy this need by providing demonstrations of the system (in various stages of completion) throughout the semester (in coordination with our periodic presentations) and by allocating time after the final system is finished to train the clients in the use of our system. The demonstration will consist of performing routine tasks that have been identified by the client, and the training will either consist of group instruction led by team members or one-on-one training with the client.

5. TECHNICAL FEASIBILITY

The feasibility of the technical requirements can be judged by identifying and outlining at least one technical method that will satisfy the client's needs. Since any technical solution must embody the client's requirements, it is useful to identify them:

Requirements:

a)Data sorting by different fields (time, date, etc..):

- Product type: Skirt, top, shirt, JumpSuit, pants, etc…

-Size: S, M, L, XL

-Promotions: the clothes will be discounted

-Sales: best seller items ….

b) Centralized data repository:

Since many locations will be operating at once and more locations may be added, a centralized data repository is needed to coordinate all of the information. Since different locations may be active at different times, stations should be completely independent of the functioning of the total system.

c) Multiple levels of access to the system:

- System users include loyal users (when purchasing, will accumulate loyalty points to rank up)

- Regular users

- Admin team

d) Administrative interface:

- The system uses a Web interface for administrators to easily create promotional events or vouchers to give away to users or general events applicable to all users in the system.

- The system also allows to manage the purchase history of each user and manage orders on the system.

e) User interface:

- Users can see order status on their web interface system.

- When logging in using a registered account, users can receive notifications about their order status every time there is a change and an account created on the system will save loyalty points, vouchers, and personal information.
f)Security:

- All data in the system, especially user data, which is the purchase history of each user, should be kept confidential to avoid illegal access, but still ensure convenient access for both users' accounts. users and administrators.

- The user's account and password will be guaranteed for confidentiality, integrity and availability in the storage system.

g) User support:

- Users will receive notifications when order changes, promotional events, about promotional codes or remind users to use promotional codes before expiration by login accounts registered on the web system of the user.

 - Users when making a purchase will accumulate points in their loyalty card and will be regularly updated to their paid account on the system to be promoted and receive more incentives from the store.

Concluding and providing solutions

About Back-end: use MySQL database with Prisma to manipulate and store user's data, combine with Graphql to load data from server to client, use Apollo Server to deploy GraphQL server.

Front-end: using React and ApolloClient to build the UI components that communicate with GraphQL data.

All are written in Javascript on the development environment is Visual Studio Code

We get the links of feedback from the user's personal Instagram and Facebook manually and display them on the website for other users can access and see it.

6. VISIBILITY

The team will take efforts to maximize the visibility of the system and the development process. This will ensure that the project is being developed in line with client specifications. Any deviations from those specifications can also be caught early and corrected through client feedback. Various visibility methods the team intends to use are described below.

Communication

MS Team, email and face-to-face meetings will be the primary form of open communication to keep clients updated on project progress. The group will meet as a plenary once a week to ensure all members understand and understand their roles and responsibilities. Any deviations from those specifications can also be detected early and corrected through customer feedback.

Intermediate Deliverables and Presentations

Live demonstrations: The client will be given demonstrations of the progress through presentations at the client site and at the monthly presentations corresponding to each major phase in the project.

Presentations: Slideshows of design layouts of screens, reports and demos of working functions, and the system will be shown to the client to keep them updated with the team's progress.

Reports: The clients will also be presented with copies of the documentation, which record details at each phase in the software development process. These progress reports will also enable them to be well aware of the details of the project from their perspectives.

7. RISK ANALYSIS

As with any project, this undertaking is not entirely risk-free. Three major risk categories have been identified: time, resource, and functionality.

Time Risks

As course requirements specify that the project must be completed within one academic semester, any extensions are not possible. This introduces the risk that the system may not be completed with the full functionality the client wants within the given timeframe of a semester. In this case, there is also a second risk of delayed implementation of the system if the client chooses to wait until the system is fully functional.

Resource Risks

Technological risk: When team members are not fully proficient in the design technology of the system. Most have to study quickly to embark on software projects. Therefore, it is inevitable that error problems arise.

Poor quality code: The lack of mastery of programming skills can lead to code that is difficult to read and understand by other programmers. Code is hard to change, or has bugs that are hard to detect and fix. Especially when the project has been released and used, new errors arise. If detected, it is not sure that there is enough time to process the Library, the framework used may have to pay a fee or stop supporting suddenly, it is possible that the team cannot find a replacement.

Insufficient human resources: For an unexpected reason a team member can't get the job done (i.e. sick...) the team can't find a replacement. Especially when that friend takes on an important function that other members cannot immediately replace.

Other inherent cases such as equipment for programming suddenly broken... while not saving data.

Functionality Risks

Functionality risks have to do with how the system works. Issues that fall under this category include developing a user interface that is not user-friendly or not well-liked by the client, or producing functions that have limited sustainability. The biggest risk comes from developing a system that does not do what the client wants it to do.

Out of the three risk categories, functionality risks are the easiest to reduce since functionality constraints are more flexible than time or resource constraints. However, minimizing functionality risk is usually accomplished by omitting specific parts and/or functions of the system, as decreasing functionality naturally decreases its associated risks. The team would like to avoid doing this as much as possible. The clients must be aware that it is possible that this must be done in order to deliver the system by the due date at the end of the semester.

Risk Management/Minimization

Having outlined the basic risks associated with this project above, the team is prepared to take precautionary actions to minimize these risks. The principle plan is to develop and practice good management strategies. The team intends to divide the project into a series of iterative phases that have concrete milestones as discussed in previous sections. These milestones will provide project visibility and allow the client to see the team's progress at each stage.

Frequent communication and feedback from the client are also essential for client satisfaction with the user interface and functionality. The team will also constantly review their progress and modify goals if necessary to deliver a satisfactory system on time to the client.

8. BUSINESS CONSIDERATIONS

Trade Secrets and Sensitive Information

In order to access and use our website, you may be asked to provide personal information such as your name, phone number, email..., no trade secrets or sensitive information will be handled during the implementation of our system. We will absolutely keep the information that users provide to us, do not arbitrarily 18 distribute information to any third party unless you have your permission or request from the competent authority. We will store the information provided until there is a request to cancel from the user.

Copyrights and Trademark

Since this project is being completed for the Eva De Eva store, the team intends to give store a limited license to use and modify the system.

The team will give a limited license to the Eva De Eva store, and related staff, hereafter referred to as "the client". This limited license will allow the client to use and modify the software system for an unlimited period of time. The team will not be responsible for any modifications after the software system is delivered, but will help with any questions or concerns of the client as time and circumstances permit. The team reserves the right to be able to demo the software system to prospective employers and showcase the software system as a work created by each team member.

Since the team does not plan to trademark any names in relation to the software system, trademark are not foreseen as being an issue.

9. CONCLUSION

From the results of the feasibility study, the team finds that the Reference Statistics for Eva De Eva project is feasible in terms of technicality, skill of team members, and time. Given the time constraint of one semester, the team believes the scope of the project is manageable and that the client's

requirements can be satisfactorily fulfilled upon system completion. The team members also possess the adequate skills to implement the system and are familiar with hardware and software that may be used in this project. The conclusion of the feasibility report is to go ahead with this software development project.

CHAPTER 2: SOFTWARE REQUIREMENTS SPECIFICATION - SRS

1. Introduction

1.1. Objective

This document describes analytics management clients, users, staff, and administrators and their functions that can be used at run time. The objective describes the system's documentation and features, interfaces, and constraints that the system must perform in order to respond to the outside for activation.

Documentation is for stakeholders and software developers.

1.2. Scope

In fact, any software needs to have features to manage users, and user groups and needs to dynamically assign permissions to use functions in the system.

The purpose of the software is to create a user management module, user roles, and functions that the user can use at run time. Guest can register a new account with Gmail account. Upon successful registration, the Guest can log in as a User of the system, with additional functions compared to the Guest.

The administrator is the main manager of the system, and can delegate authority to staff to manage orders, events and vouchers.

When Guest, User, Staff, Administrator use a function of the system, a new interface corresponding to the function will appear.

1.3 Glossary

Terms used in the document:

+ Use case diagram: Describe interactions between functions (use cases) and actors of the system

1.4 References

Reference documents:

+ SRS template that TA provides

2. Overall Description

2.1. Survey

The software has 4 actors namely Guest, User, Staff, and Administrator. Guest is the role of a normal guest who does not log into the system, after Guest logs into the system, a Guest becomes a User. User is the role of a normal user after successfully logging into the system. Staff is the role of creator of offline orders, managing orders, events, and vouchers. The administrator is the role of the main manager of the system that can do all staff functions and user management and product management, moreover.

2.2. Overall requirements

Guests will be able to view and search for product information on the website. Guests can register to create their own account to be able to log in to the system (become a User), perform some additional functions such as placing an order, adding products, viewing order information, ...

Users will use their gmail after successful registration to log in to the system, users can view and update their personal information, view order information, log out of their accounts, search , view information about products, add products to cart and place an order.

Staff can manage online orders, create offline orders, manage vouchers and events.

The administrator inherits the functions of the staff, besides, there is also the function of store management, system usage authorization, product CRUD and user administration.

This usercase diagram is a usercase diagram that summarizes the interactions of actors with the system. Some usecases will be decomposed into smaller usecases, which will be discussed in the following sections.

+ Usecase "Manage users" (Actors is admin)
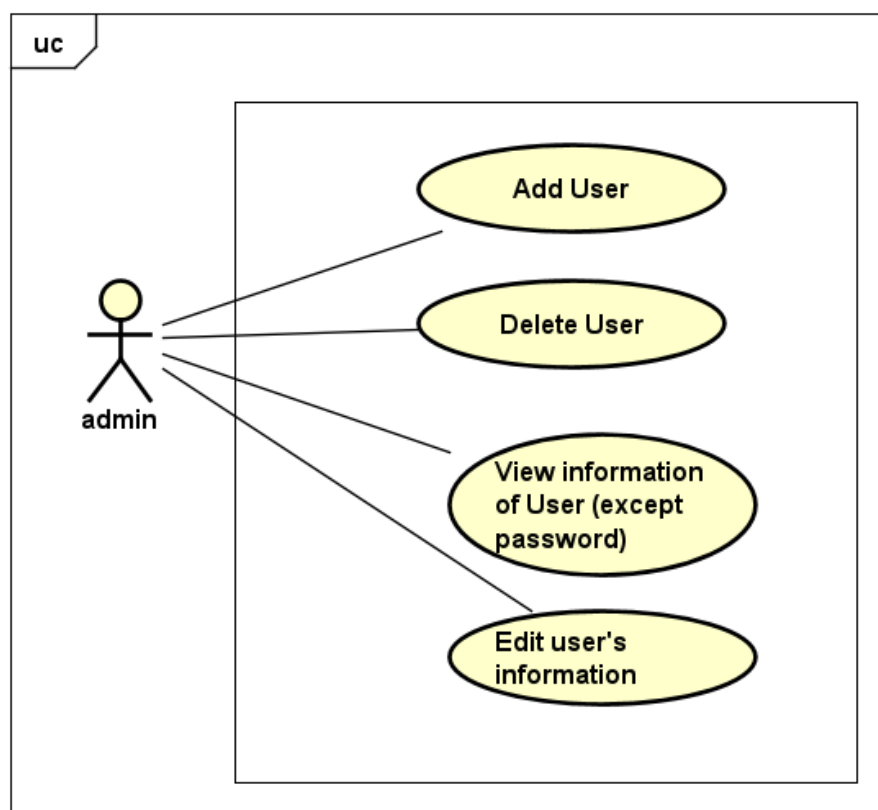
+ Usecase "CRUD products" (Actor is admin)
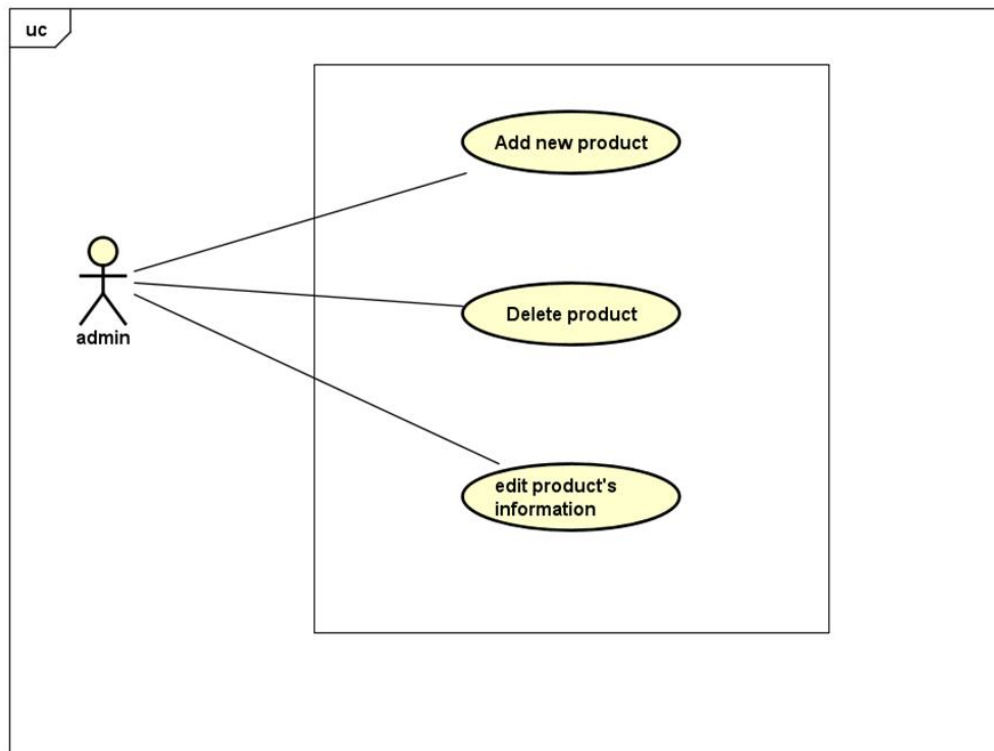
2.3. Business process

In this module, there are some main business processes: User information update process, product ordering process,...

2.3.1. User information update process

Guests can register to create an account, then log in to the system. Once successfully logged in, the Guest will become a User and be taken to the user info page.

Then the User can change his information to be correct with the appropriate information field allowed, if it is wrong, it will ask the User to re-enter it. The new information will then be updated inside the database, a successful update message will be issued and then returned to the User interface. Employees and Administrators can also have similar steps.
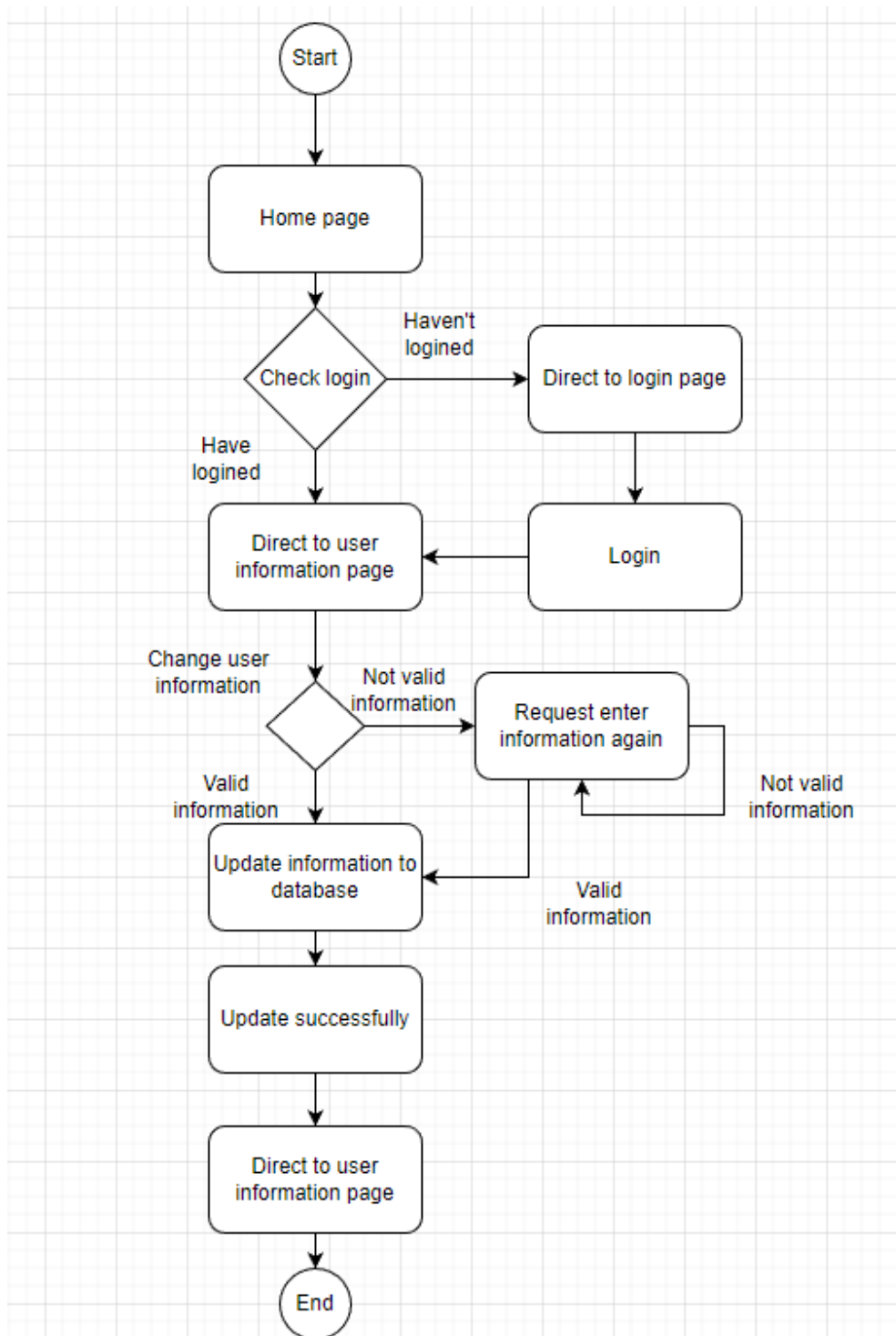
2.3.2. Product ordering process

Users can perform this process. User logs in to the system and enters the type of product you want to search for, and if the search is found, it will return a list of related products if not, the message is not found. If found User can view product information then add the product to the cart, place an order and complete the payment method.
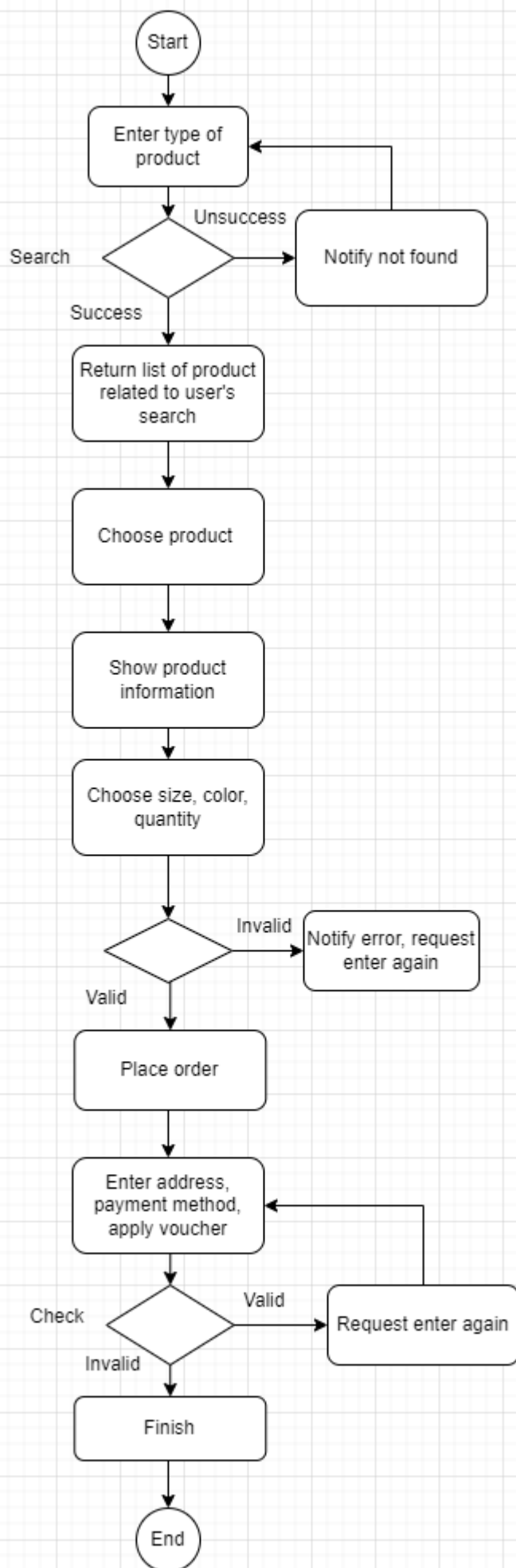
3. Detailed Requirements

Detailed information about use cases in part 2 is below

3.1. Use case 1

<div align="center">

Use Case "Log in"

</div>

1. Use case code

UC001

2. Brief Description

User log in system to buy products online

3. Actors

User, Guest

4. Preconditions

None

5. Basic Flow

      1.   User chooses Log in button

      2.   System show log-in interface

      3.   User log in

      4.   System goes to home page

6. Alternative Flow

      3a.   User choose sign in by system account

      3b.   User choose signin by gmail

7. Postconditions

None

3.2. Use case 2

Use case "Register account"

1. Use case code

UC002

2. Brief Description

User register an account to purchase product

3. Actors

Users, Guest

4. Preconditions

None

5. Basic flow

1. User chooses Register button
2. System show register interface
3. User fills email and password
4. User register
5. System checks if the user has entered the required fields
6. System checks if user's email is valid
7. System saves email account's information and notifies register successfully

6. Basic flow

+ 6a. System notifies error if user has not entered required fields
+ 7a. System notifies error if the email is invalid

7. Postconditions

None

3.3. Use case 3

<div style="border:1px solid black;">

Use case "View Product"

1. Use case code

UC003

2. Brief Description

User view product's information

3. Actors

User, Guest

4. Preconditons

User access to system

5. Basic flow

1. User choose product by clicking the image of product

2. System shows detailed information and Buy now button to add the product to cart.

6. Alternative flow

2a. Notify error: Product is sold out

7. Postconditions

None

</div>

3.4. Use case 4

<div align="center">

Use case "Place order"

</div>

1.   Use case code

UC004

2.   Brief Description

User places an order

3.   Actor

User

4.   Preconditions

User add item to the cart

5.   Basic flow

1. User chooses items they want to buy
2. User fills in information
3. User can apply vouchers
4. System calculates the total amount
5. User makes payment
6. System confirms the order and the system will take you to the order information page
7. User can view the order status and his point is accumulated.

6.   Postconditions

After a successful purchase, user will accumulate points on his loyalty card to rank up and get more coupons to use for future purchases

3.5. Use case 5

Use case "View account's information"

1.   Use case code

UC005

2.   Brief Description

User view their own account's information

3.   Actor

User

4.   Preconditions

User have logged in the system

5.   Basic flow

1.User choose Account button

2. System check if user has logged in

3. System take user's information from database

4. System show user's account interface

6.   Alternative flow

2a. System notifies: User has not logged in

7.   Postconditions

None

3.6. Use case 6

Use case "CRUD product"

1.   Use case code

UC006

2.   Brief description

Admin manage product by adding, deleting, editing product's information

3.   Actor

Admin

4.   Preconditions

Admin signs in successfully

5.   Basic flow

1. Admin sign in the system
2. Admin add/edit/delete product
3. The system confirms the successful operation

6.   Alternative flow

2a. Admin add product to system

2a1. Admin add information about size, color

2a2. Admin ask system to save changes

2b. Admin edit product

2b1. Admin choose information that he want to edit

2b2. Admin edit the information

2b3. Admin ask system to save changes

2c. Admin delete product in the system

2c1. Admin choose products that he want to delete

2c2. Admin ask system to save changes

7. Postconditions

Show product changes in the system

3.7. Use case 7

Use case "Manage Order"

1.   Use case code

UC007

2.   Brief description

Admin manage order of user

3.   Actor

Admin

4.   Preconditions

Admin signs in successfully

5.   Basic flow

1. Admin access order tab
2. System take order information from database
3. System show order information
4. Admin choose status tab of the order that admin want to update
5. System show the list of order with that status
6. Admin change order status
7. System update order status

6.   Alternative flow

7.   Postconditions

None

3.8. Use case 8

Use case "Manage voucher"

1. Use case code

UC008

2. Brief Description

Admin, staff view/add/edit/delete voucher

3. Actors

Admin, Staff

4. Preconditions

Admin, staff signs in successfully

5. Basic flow

+ View voucher

    1. Admin, staff goes into Voucher Manage page
    2. View List of Voucher

+ Edit voucher

    1. Admin, staff chooses one voucher
    2. System take voucher information from database and show edit tab
    3. Admin, staff edit voucher's information
    4. System update information and notifies "Edit successfully"

+ Delete voucher

    1. Admin, staff chooses one voucher
    2. Admin, staff chooses delete
    3. System delete voucher and notifies "Delete successfully"

+ Add voucher

    1. Admin, staff requires to add voucher
    2. Admin, staff inserts voucher's information

3. System update and notifies "Add successfully"

3.9. Use case 9

Use case "Manage event"

1. Use case code

UC009

2. Brief Description

Admin, staff view/add/edit/delete event

3. Actors

Admin, Staff

4. Preconditions

Admin, staff signs in successfully

5. Basic flow

+ View event

   3. Admin, staff goes into Event Manage page
   4. View List of Event

+ Edit event

   5. Admin, staff chooses one event
   6. System takes event information from database and show edit tab
   7. Admin, staff edit event's information
   8. System update information and notifies "Edit successfully"

+ Delete event

   4. Admin, staff chooses one event
   5. Admin, staff chooses delete
   6. System deletes event and notifies "Delete successfully"

+ Add event

   4. Admin, staff requires to add event
   5. Admin, staff inserts event's information

6. System update and notifies "Add successfully"

4. Supplementary specification

4.1. Functionality

In the sequence of events of use cases, all the steps that manipulate the database, if there is an error during the connection or operation, there should be a corresponding error message so that the agent knows that the error is related to the database, not the database. unrelated to user error

4.2. Usability

Functions should be designed to be easy to operate. There should be specific instructions for the user's error so that the user knows where the error is located, what the error is, and how to correct it.

4.3. Reliability

The system should be well secured so that the users and staffs' information is not exposed.

4.4. Performance

The system ensures smooth use

CHAPTER 3: SOFTWARE DESIGN DOCUMENT - SDD

1. Overall architecture of the system

1.1. System Architecture
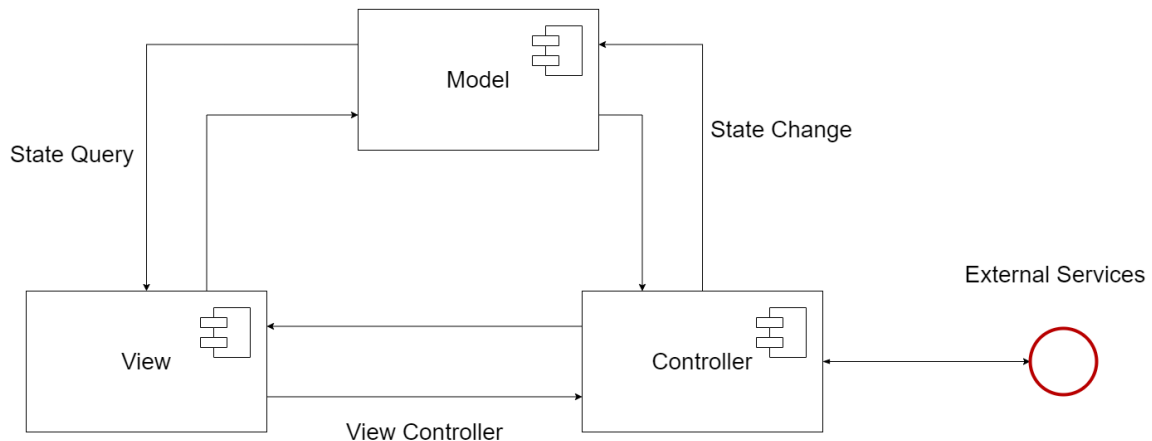
1.2. System Components

- Model: store the website's state and data

  + User

  + Admin, staff

  + Products (Dress, Skirt, Shirt…)

  + Cart

  + Voucher

  + Event

- View:

  + Guest interface

  + User interface: products, cart, order, user information, purchase history

  + Management interface: manage products, accounts, orders, voucher, event

+ Staff interface: online order management, offline ordering, user management

- Controller: Manage and control the flow of user interaction of the system

    + Control user status

    + Control the status of store admin, staff

    + Control the status of products

    + Control order status

    + Control cart status

    + Control the status of events, promotions

2. *Detailed architecture of modules*

In the project there are modules:

- Sign-in
- Search product
- Purchase
- Users management
    + View, add users
    + Edit, update users

- Product management

    + View, add product

    + Delete product

    + Update product

- Voucher, event management

- Order, revenue management

2.1. Sign-in:

- Component diagram
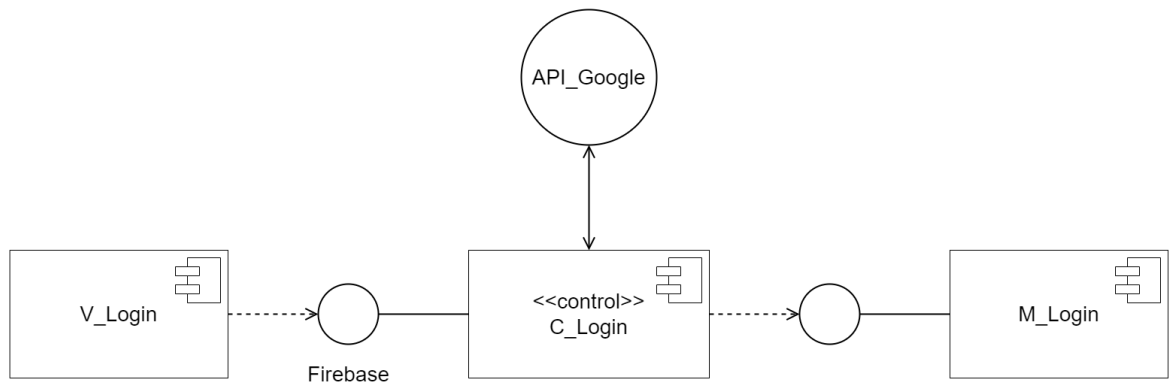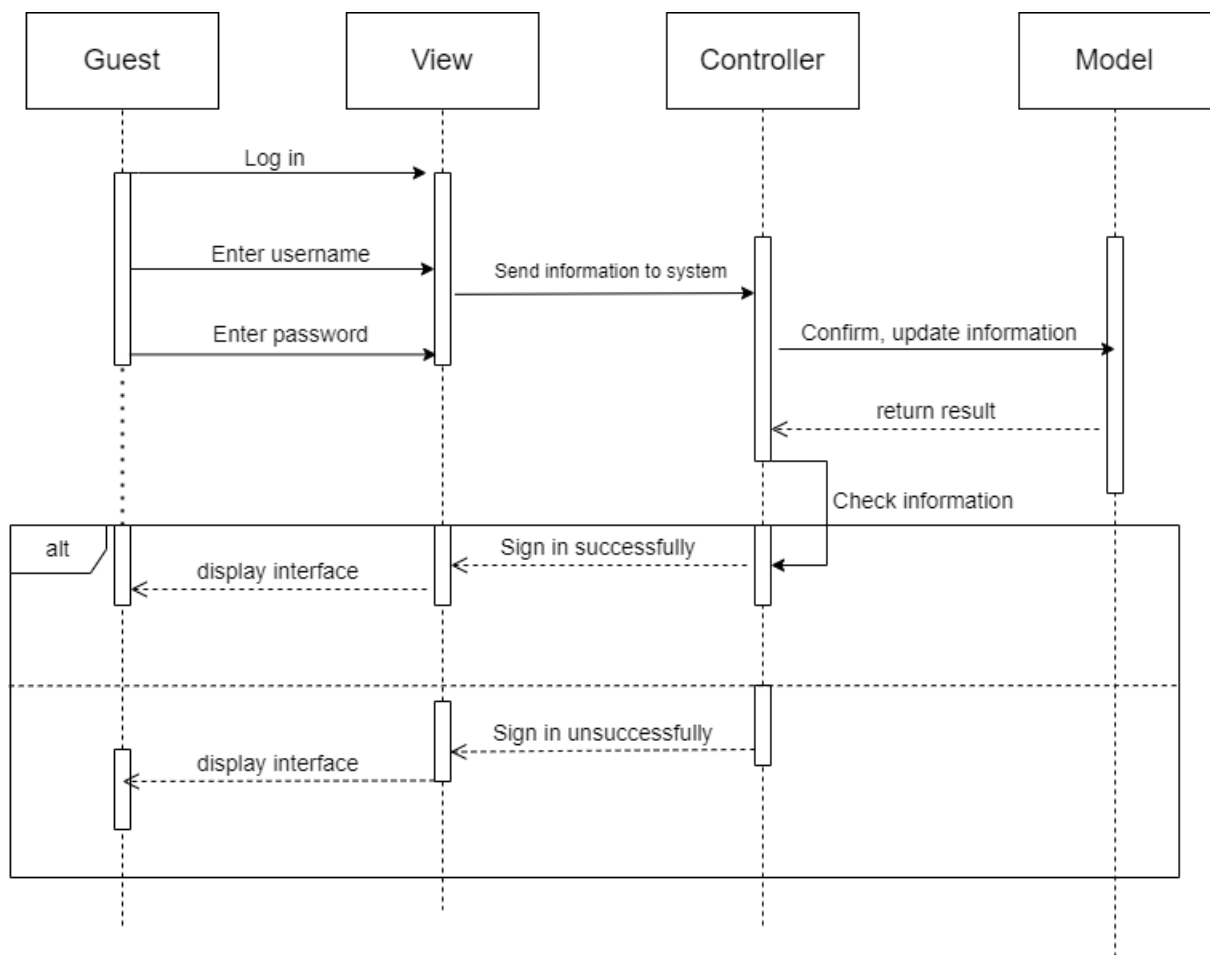
- Sequence diagram

2.2. Search product:

- Sequence diagram:
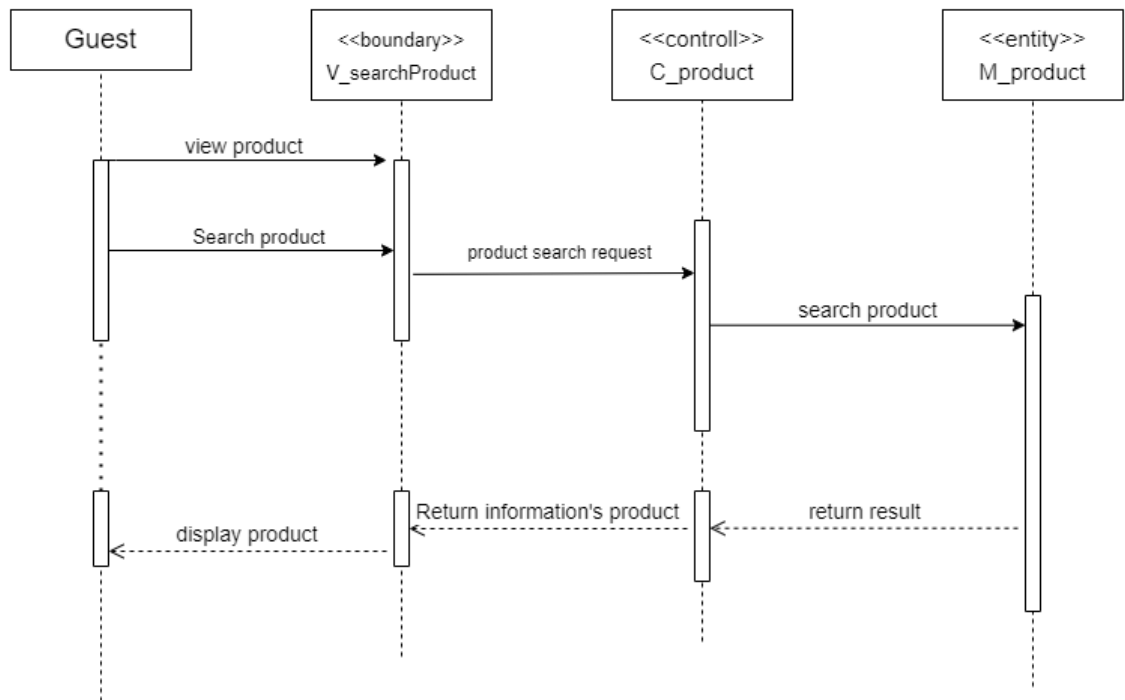
2.3. Purchase
2.3.1: Add to cart:
- Component diagram:
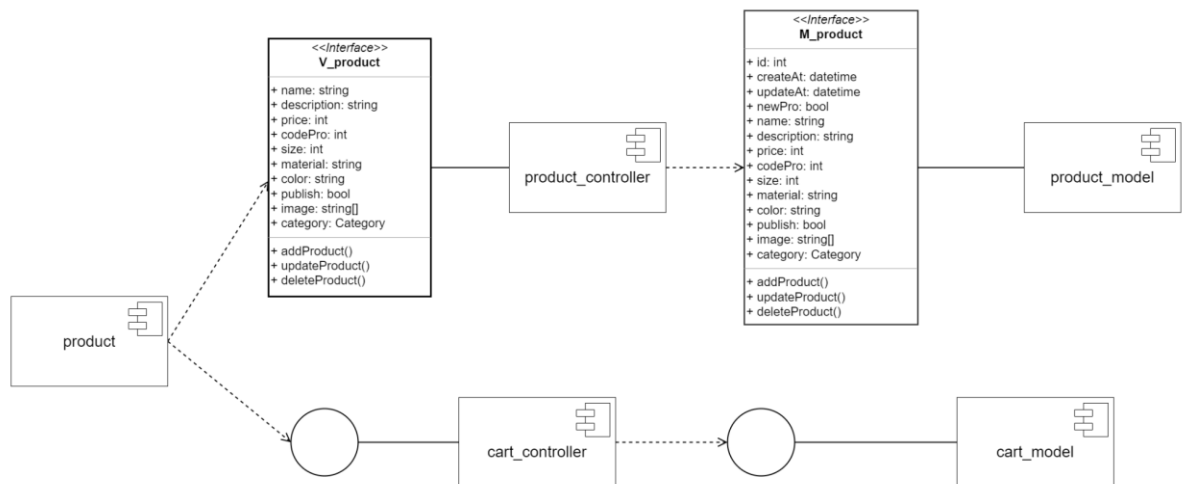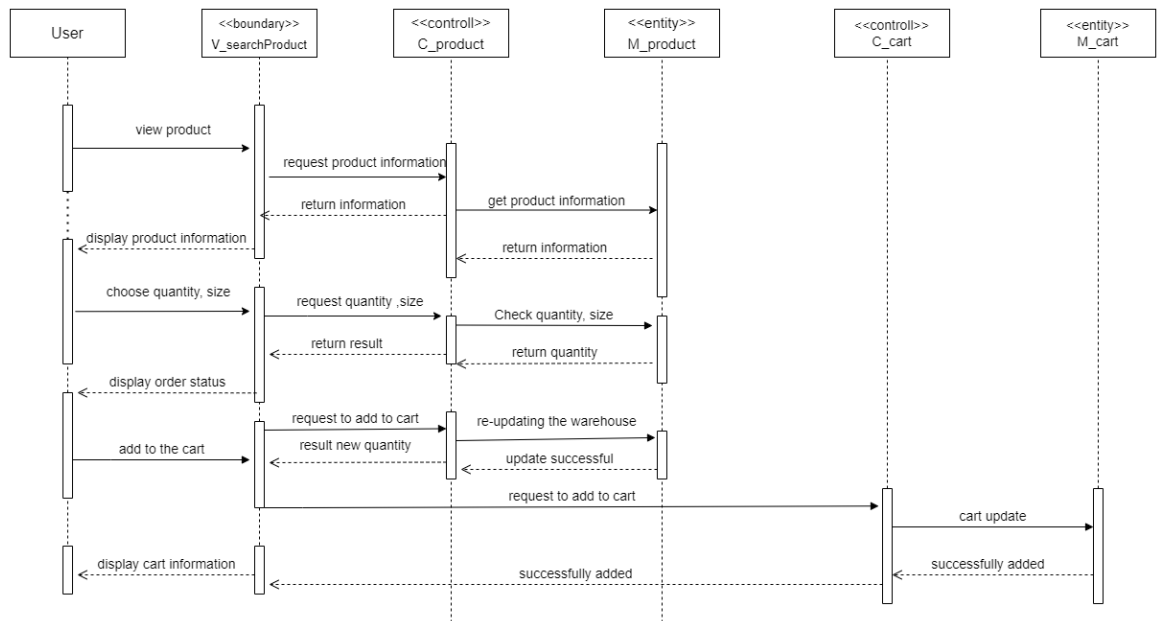
- Sequence diagram:

2.3.2: Remove from cart:
- Sequence diagram:
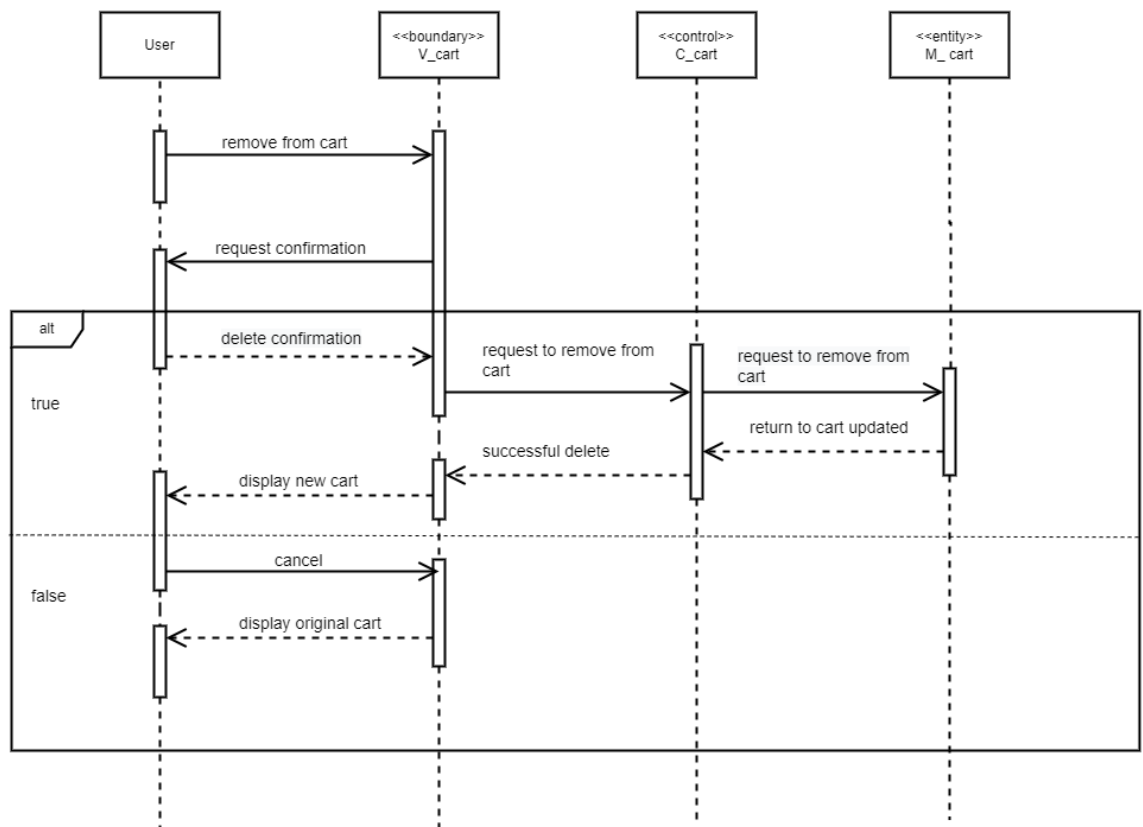
## 2.3.3: Payment orders:
- Sequence diagram:
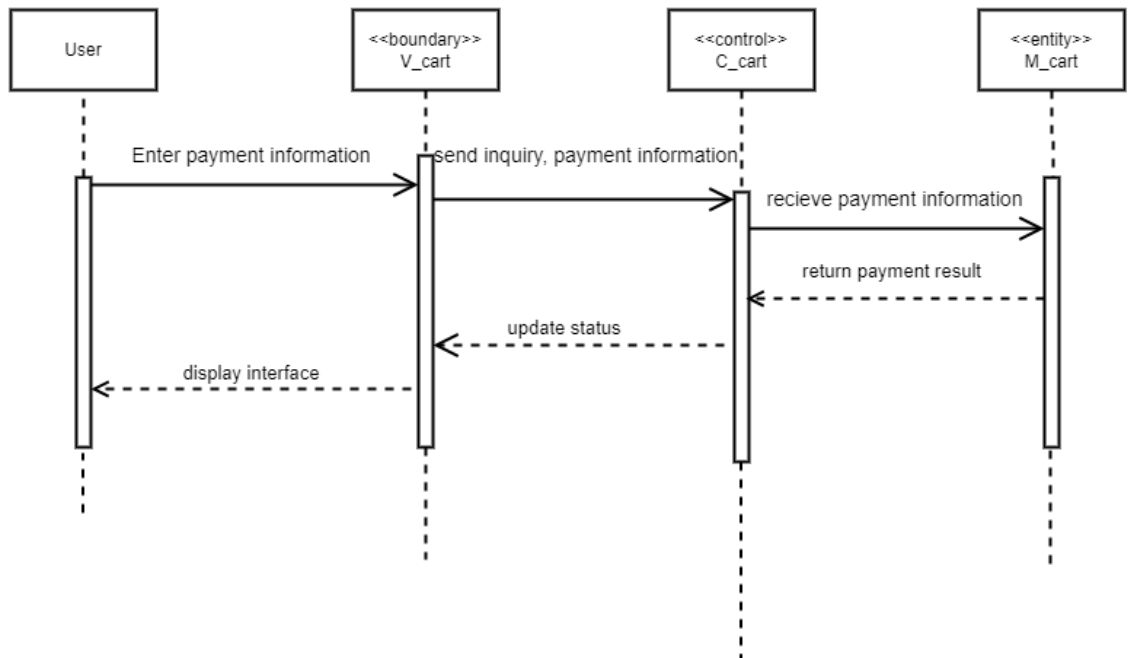
2.3.4: Order management:
- Sequence diagram:
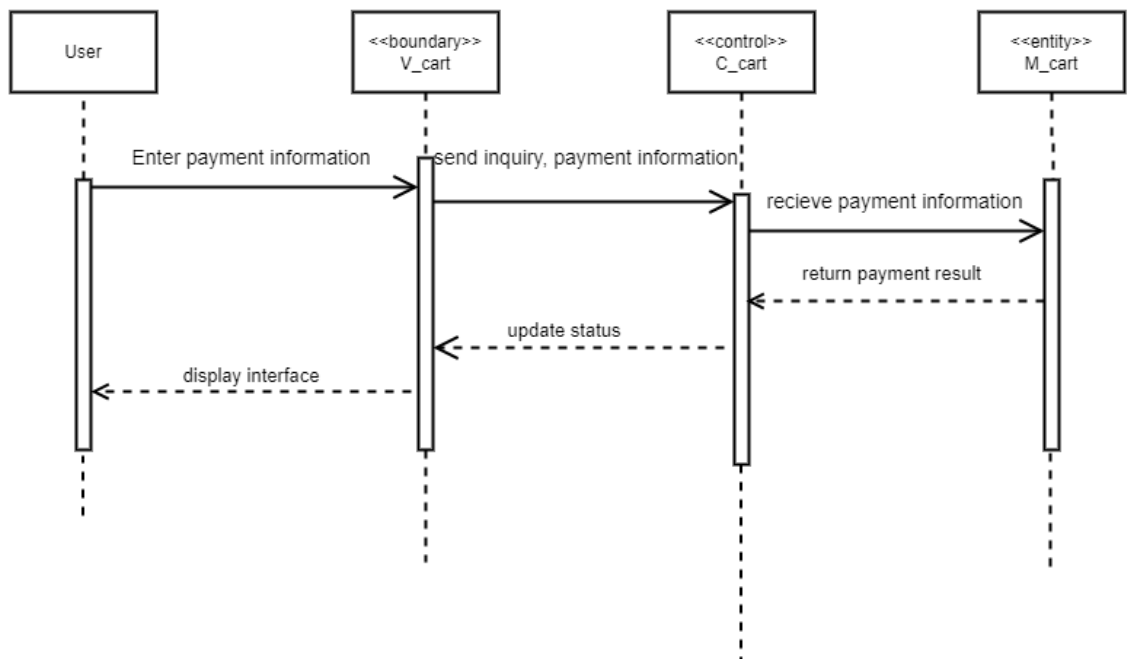
2.4. Product management:
- Component diagram:
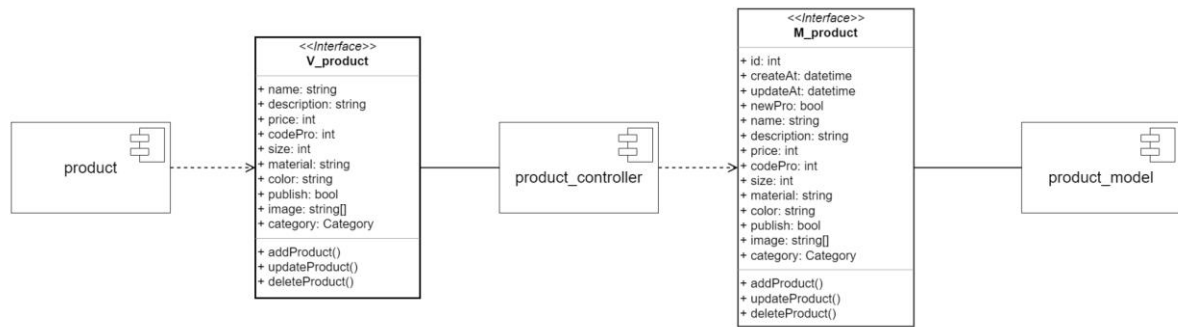
## 2.4.1: View, add product:
- Sequence diagram:
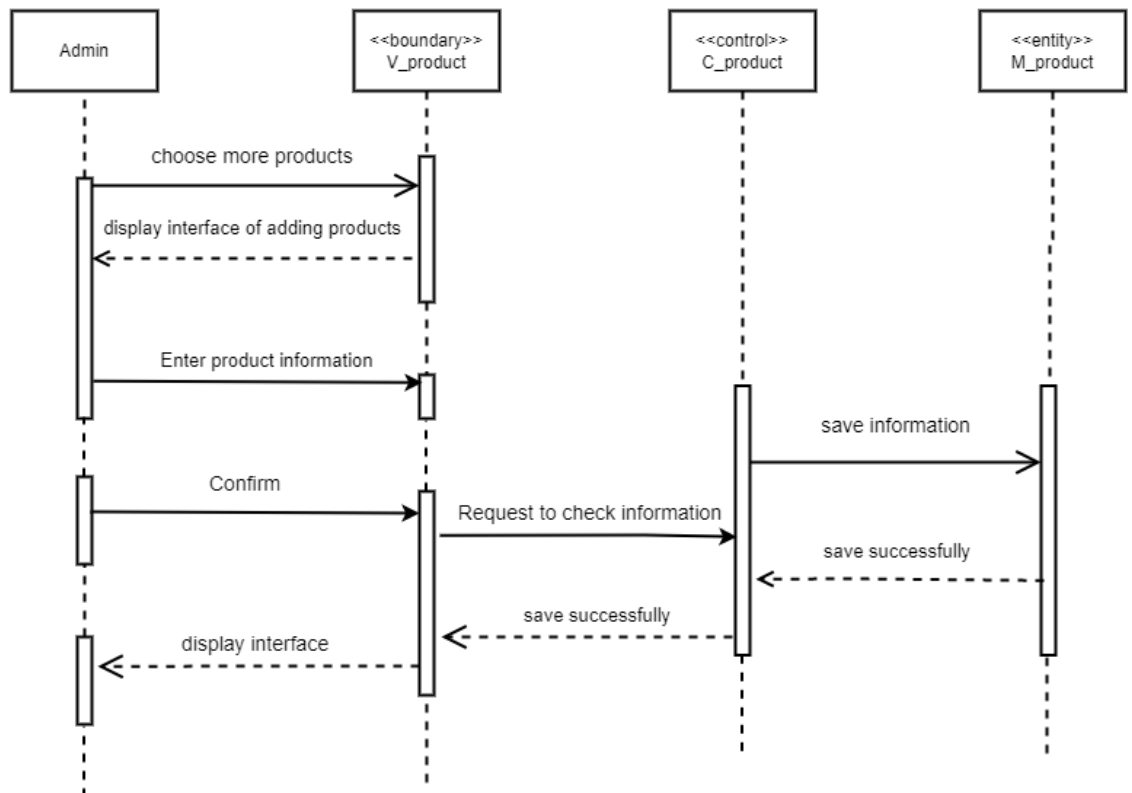
2.4.2: Delete product:
- Sequence diagram:
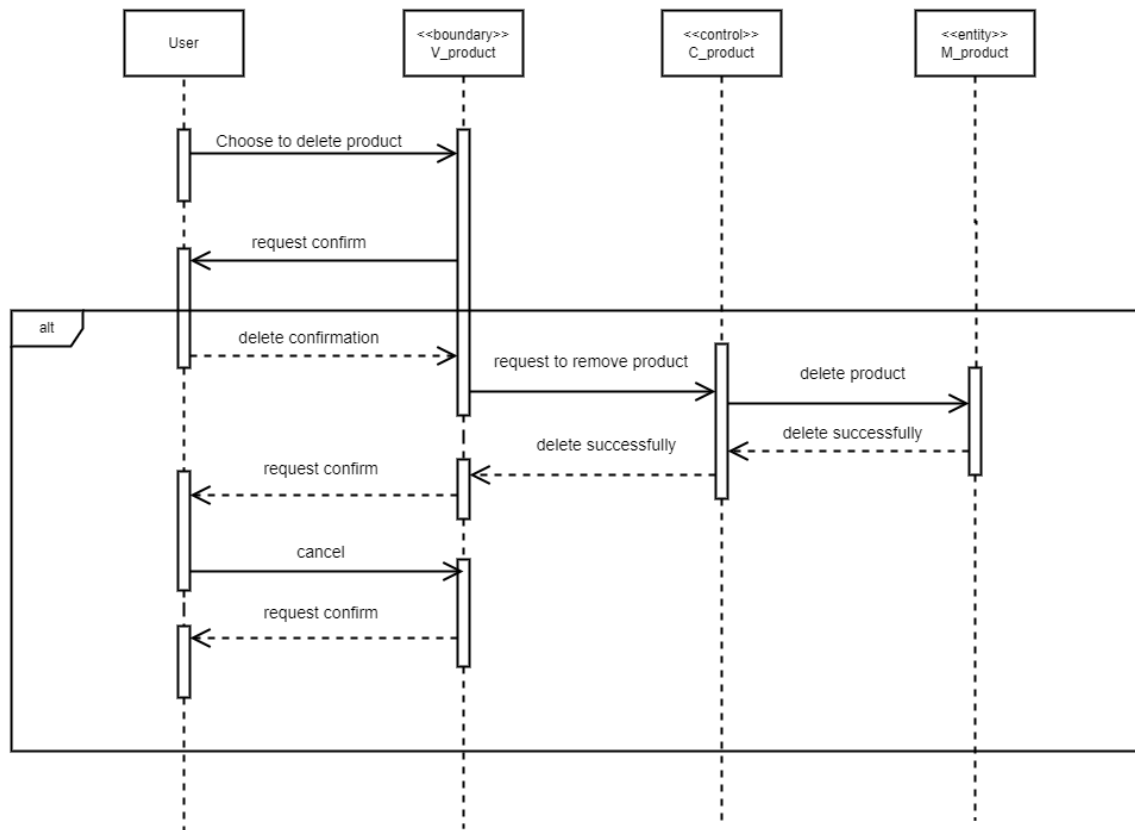
2.4.3: Edit, update product:
- Sequence diagram:
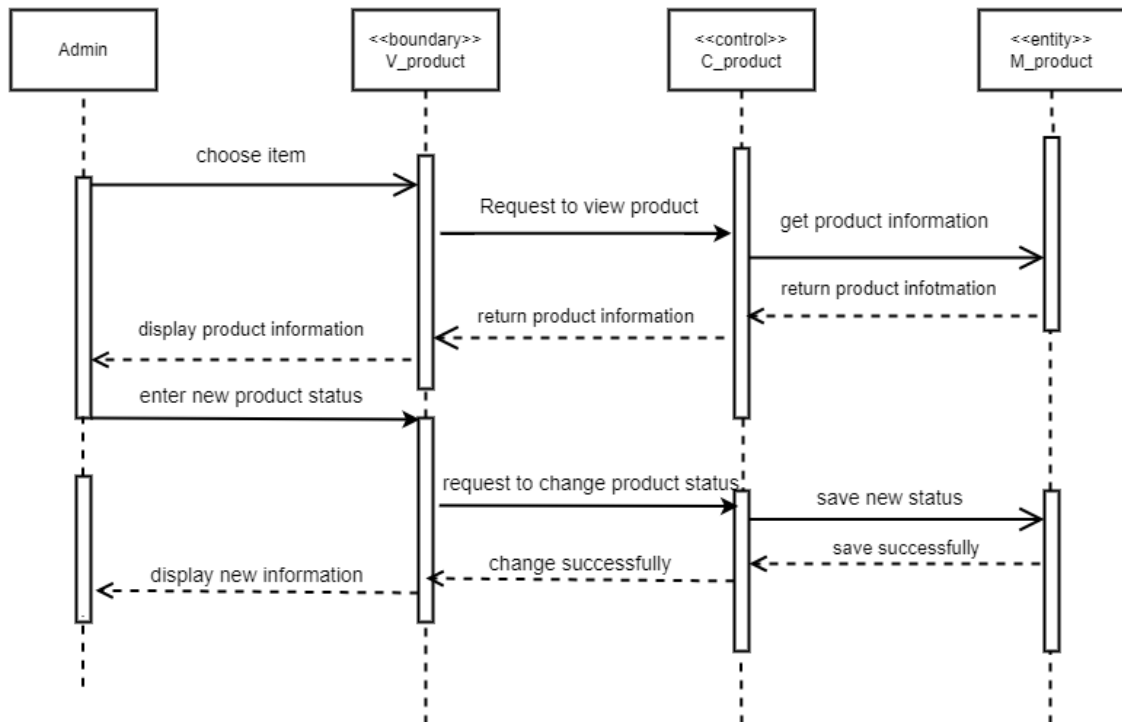
2.5. User management:
- Component diagram:
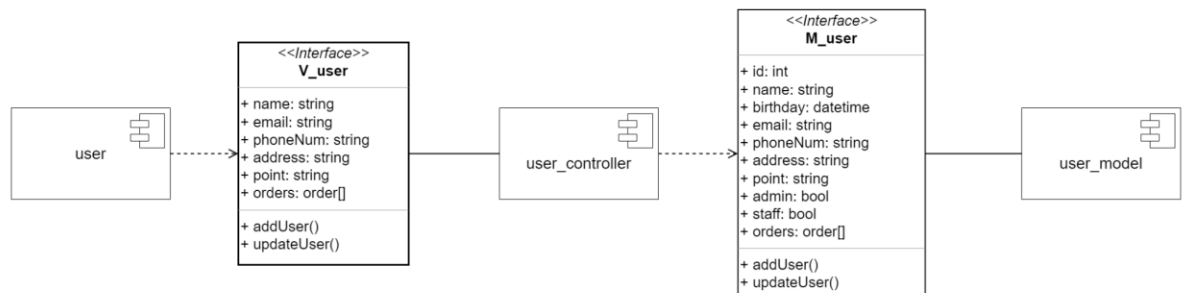
2.5.1: Add users:
- Sequence diagram:
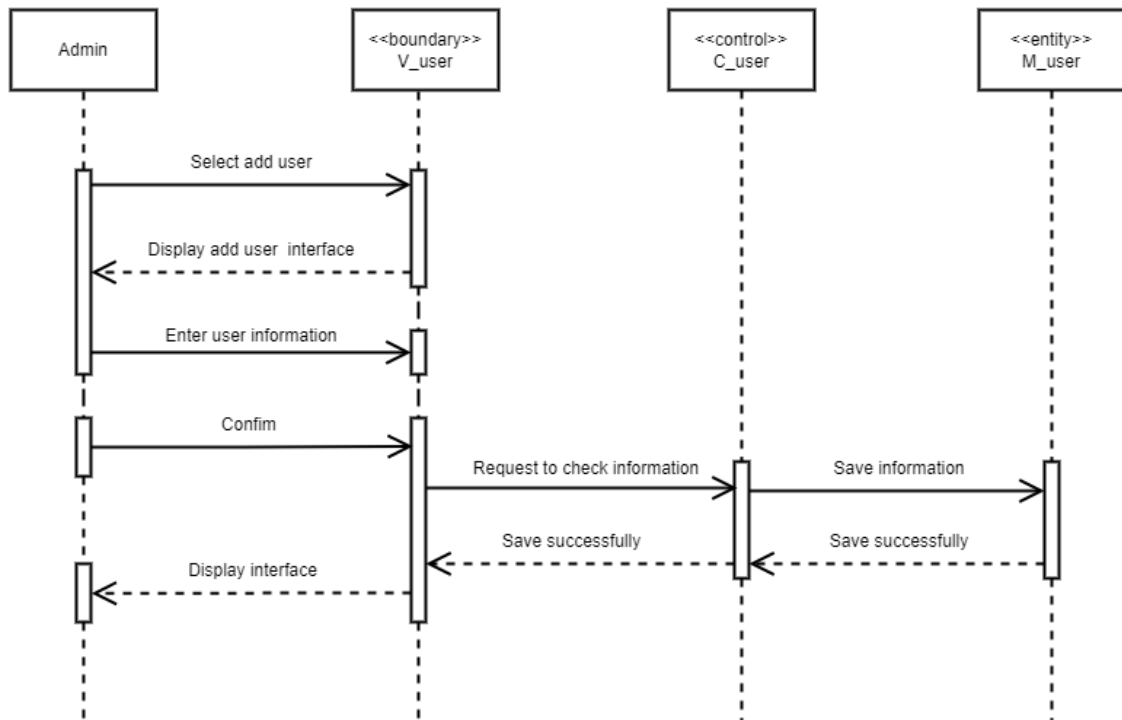
2.5.2: Update users:

- Sequence diagram:
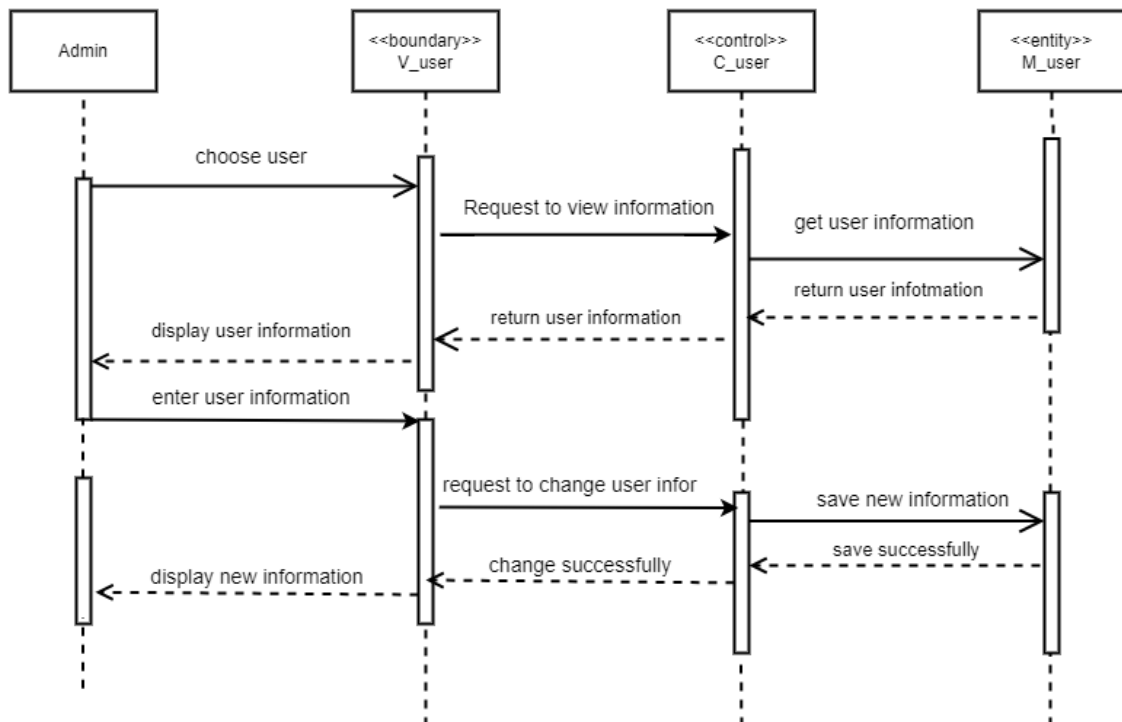
2.6. Voucher, event management:
2.6.1: Add voucher, event
- Sequence diagram:
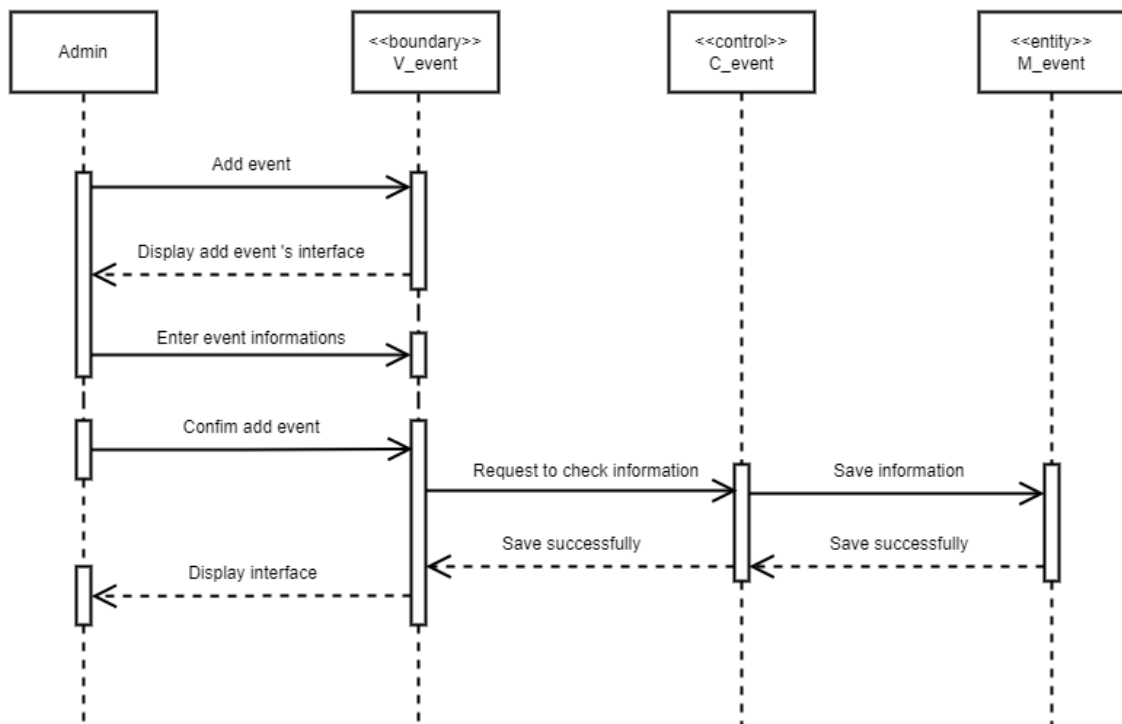
2.6.2: Delete voucher, event
- Sequence diagram:
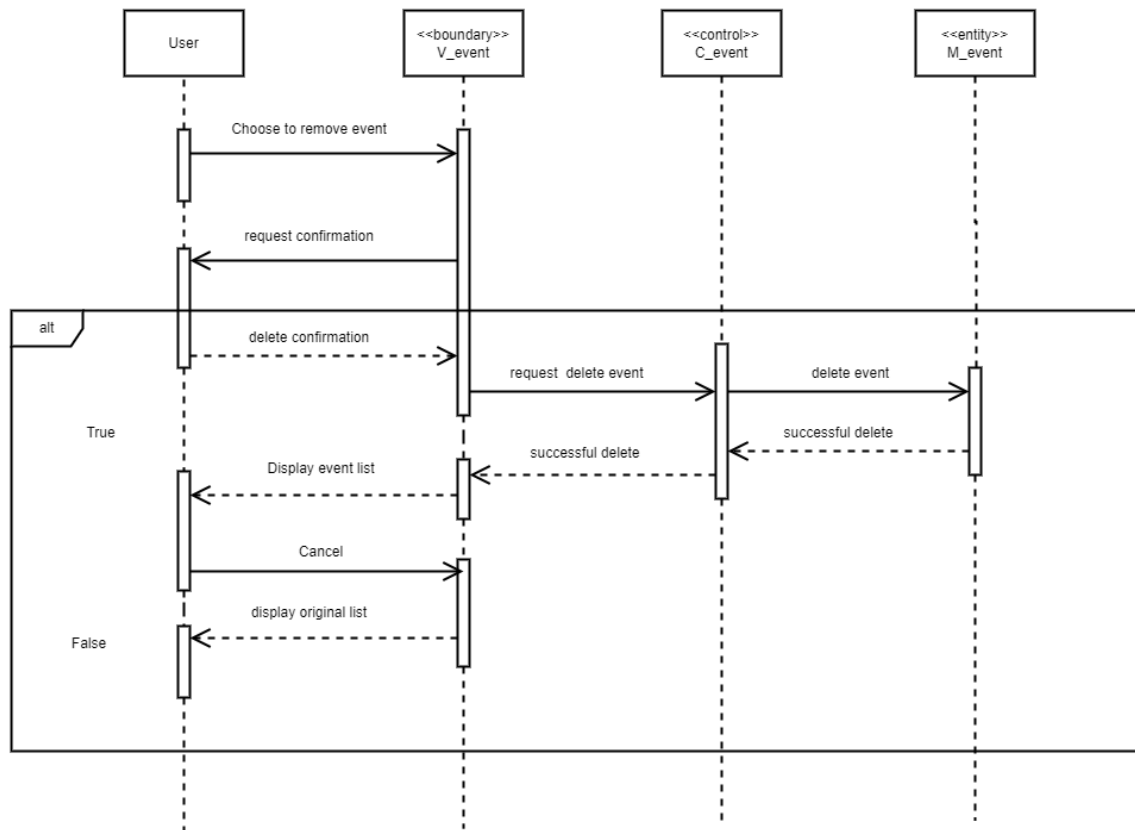
3. *Database Design*

3.1. List of data tables:
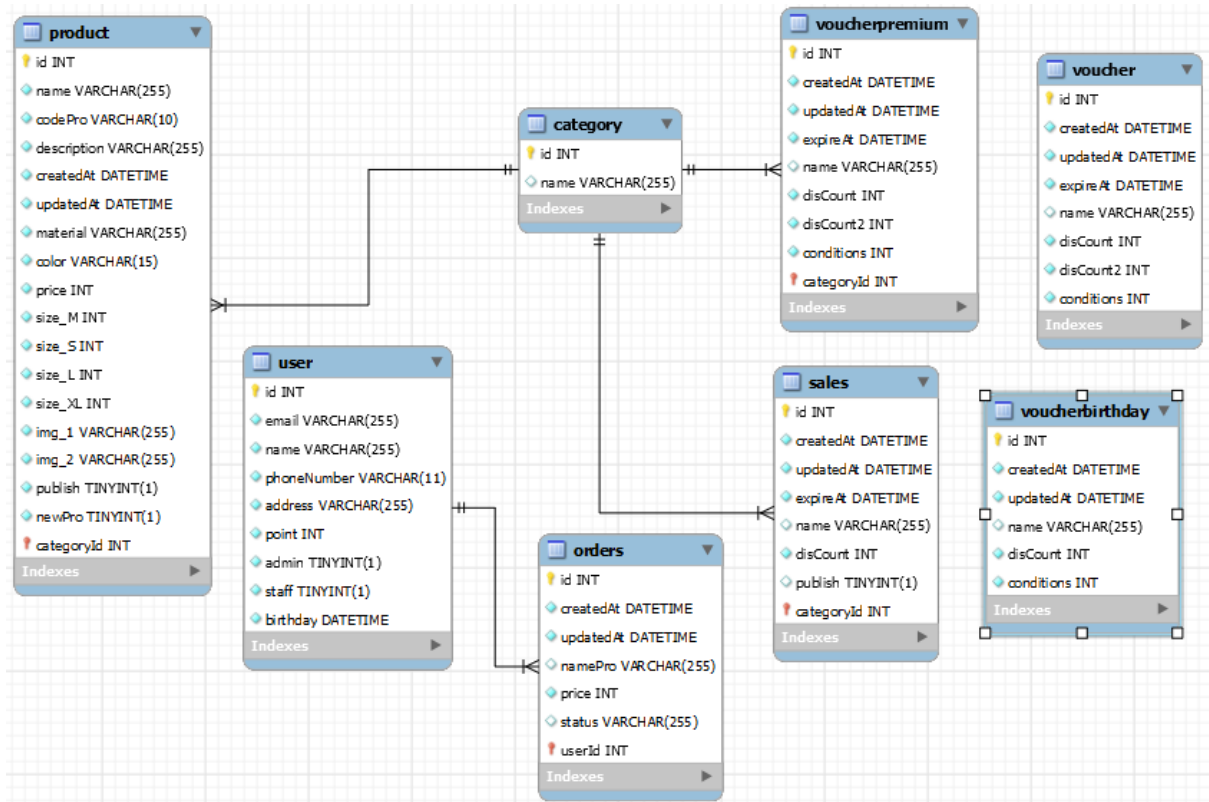
Name of tables	Description
Category	Information about product types
Product	Information about products
User	Information about user accounts and management
Order	Information about user orders
Sales	General discount information for the store every special occasion
Voucher	Information about discounts for products with a price higher than the specified amount
VoucherPremium	Information about discounts for users with higher points
VoucherBirthday	Information about discounts for users on their birthdays

3.2. Detailed design of data tables

3.2.1: Table Category

No.	Field name	Description
1	id	Category ID
2	name	Category name
3	products	List of products of this category

3.2.2: Table Product

No.	Field name	Description
1	id	Product ID
2	name	Product name
3	codePro	Product code
4	categoryId	Id of product type
5	description	Detailed description
6	createdAt	Initialization time
7	updatedAt	Update time
8	material	Material
9	color	Color
10	price	Price
11	size_M	The number of M size products left in the store
12	size_S	The number of S size products left in the store
13	size_L	The number of L size products left in the store
14	size_XL	The number of XL size products left in the store
15	img_1	Link_1 with product images
16	img_2	Link_2 with product images

No.		Description
17	publish	Status displayed on the store interface
18	newPro	New (old) status

3.2.3: Table User

No.	Field name	Description
1	id	Id user
2	email	Account registration email
3	name	Name
4	phoneNumber	Phone number
5	address	Address
6	point	Accumulated points
7	admin	Mark account as admin
8	staff	Mark account as staff
9	birthday	Birthday
10	orders	List of orders of the account

3.2.4: Table Order

No.	Field name	Description
1	id	Id order
2	createdAt	Initialization time
3	updatedAt	Update time
4	namePro	Ordered product name + quantity + product code
5	price	Price
6	status	Order status

7	userId	Id of the account that owns the order
8	user	The account that owns the order

3.2.5: Table Sales

No.	Field name	Description
1	id	Id sale
2	createdAt	Initialization time
3	updatedAt	Update time
4	expireAt	Expire time
5	name	Event name
6	categoryId	Id of product type applied
7	discount	Percent discount
8	publish	Status of applying

3.2.6: Table Voucher

No.	Field name	Description
1	id	Id voucher
2	createdAt	Initialization time
3	updatedAt	Update time
4	expireAt	Expire time
5	name	Voucher name
6	discount	Amount discount per 1 product
7	discount2	Percent discount
8	condition	Minimum order price to receive discount

3.2.7: Table VoucherPremium

No.	Field name	Description
1	id	Id voucher
2	createdAt	Initialization time
3	updatedAt	Update time
4	expireAt	Expire time
5	name	Voucher name
6	discount	Amount discount
7	discount2	Percent discount by product type
8	categoryId	Id of product type
9	condition	Minimum number of points accumulated to receive discount

3.2.8: Table VoucherBirthday

No.	Field name	Description
1	id	Id voucher
2	createdAt	initialization time
3	updatedAt	update time
4	name	Voucher name
5	discount	Percent discount
6	condition	Minimum number of points accumulated to receive discount (Membership class)

CHAPTER 4: TECHSTACK

4.1: Back-end:

The team used MySQL database with Prisma to manipulate and store user's data, combined with Graphql to load data from server to client, and used Apollo Server to deploy GraphQL server.

4.2: Front-end:

The team used the following technologies and libraries:
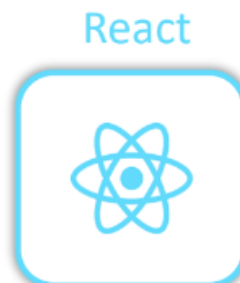
CHAPTER 5: PROGRAM ILLUSTRATION

5.1. Interface
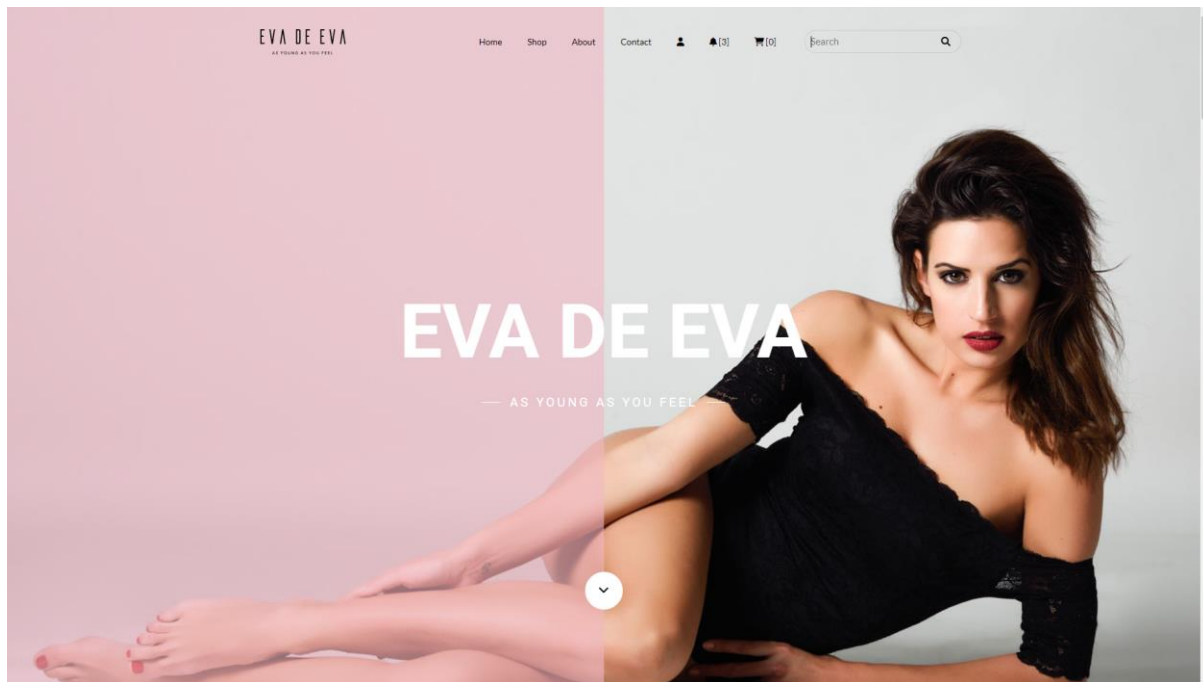
5.2. Sign in, sign up
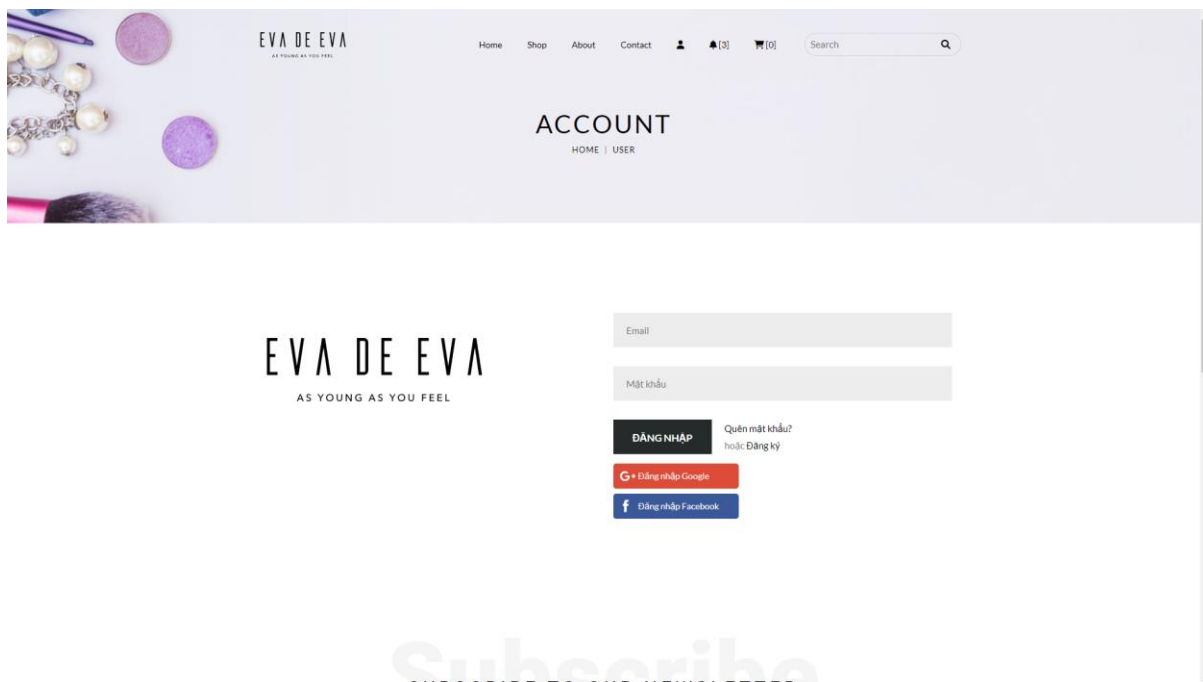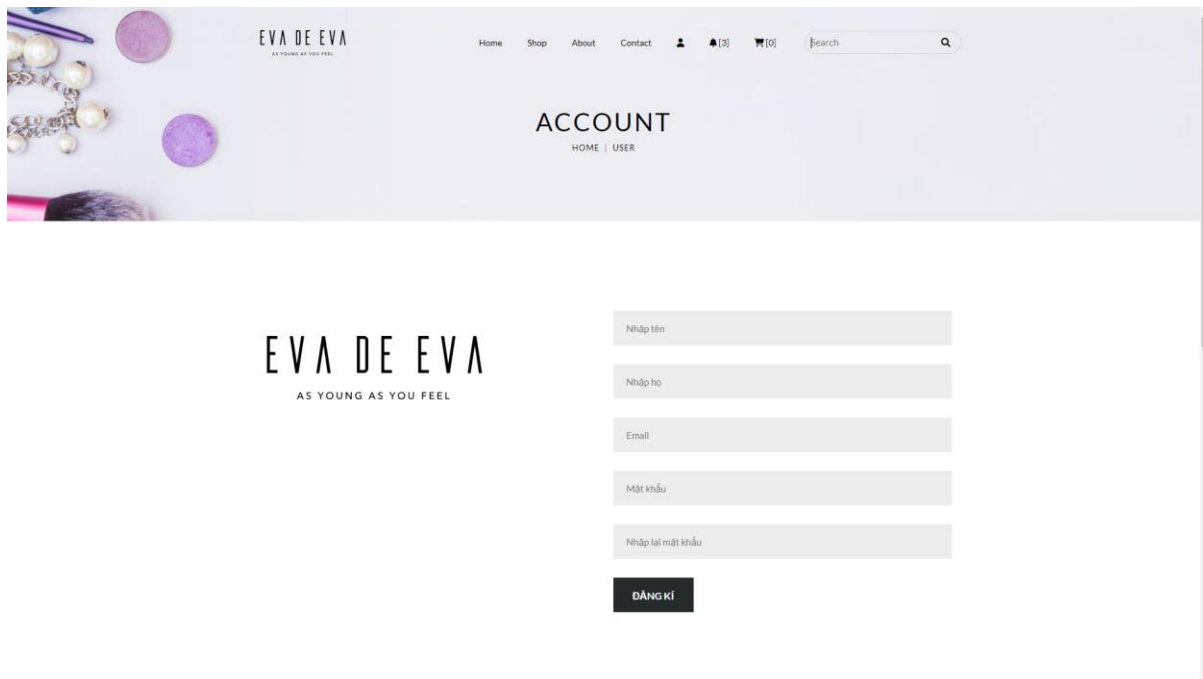
5.3. View info

5.3.1. View your information
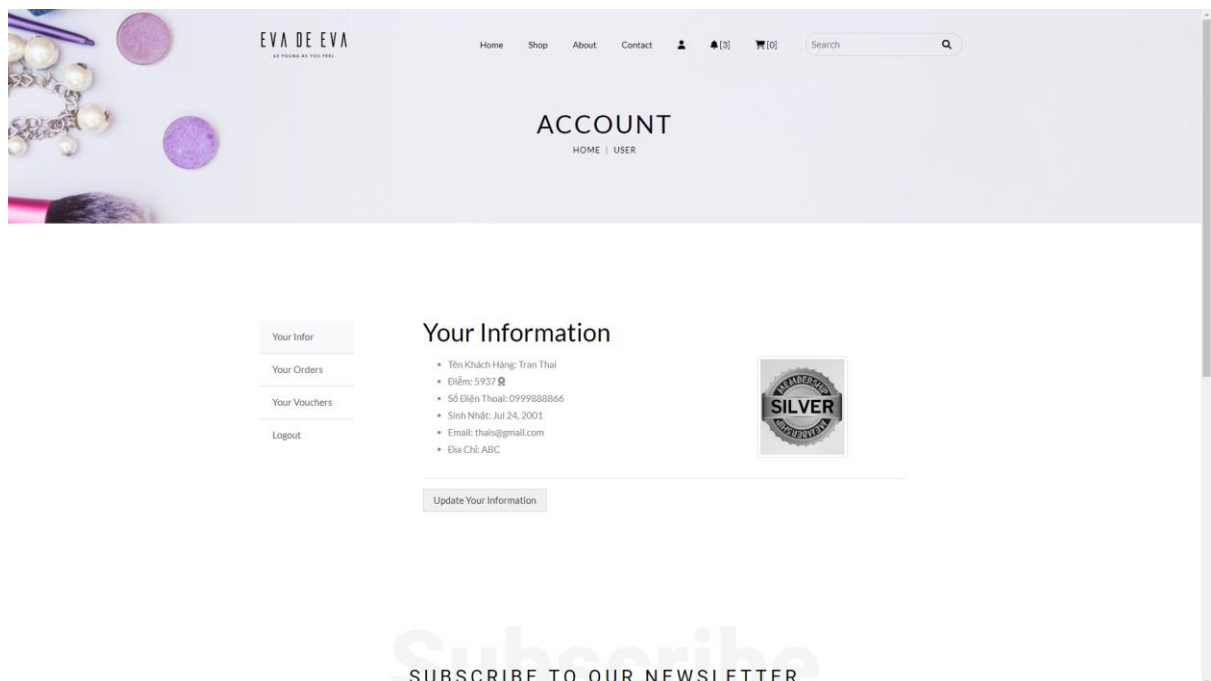
5.3.2. View your order
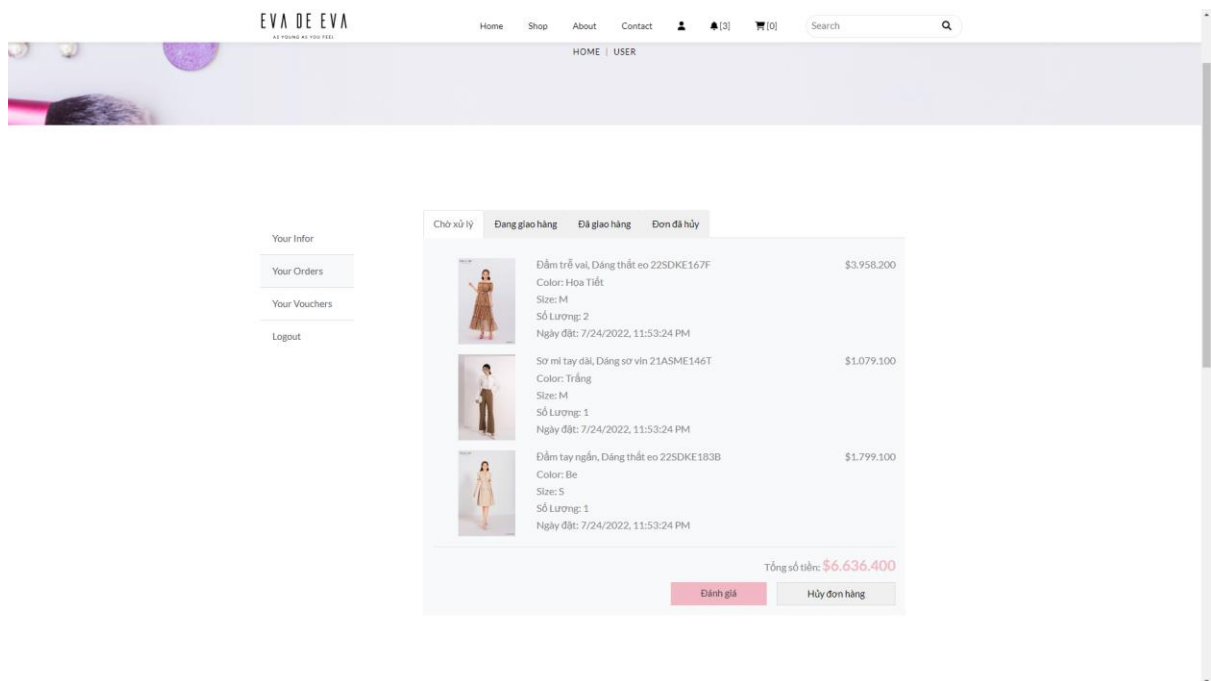
## 5.4. Search product

5.5. View product

5.6. Cart

JUMPSUIT DÀI, 21SJSE024D

$2.199.000

SKU: 21SJSE024D

Bên cạnh điểm nhấn ở phần ruffle bất đối xứng, chiếc jumpsuit chất liệu tuysi thu hút các cô nàng bởi gam màu đen thanh lịch, thiết kế thoải mái, trẻ trung cùng tính ứng dụng cao trong nhiều hoàn cảnh.

Color: Đen

Material: Vải Tuyt sỉ

| S | M | L |

| − | 2 | + |

Add to Cart

5.7. Product management

5.8. User management

5.9. Order management

5.10. Voucher management

| | Voucher | Voucher Premium | Voucher Birthday | Expired Voucher | | | | | | + Thêm Mới |

| STT	ID	Ngày Tạo	Ngày Cập Nhật	Tên	Giảm Giá 1 (VNĐ/1sp)	Giảm Giá 2 (%)	Điều Kiện (VNĐ)	Ngày Hết Hạn	Lựa Chọn
1	1	7/7/2022, 9:59:25 AM	7/7/2022, 2:47:30 PM	test	50.000 VNĐ	10 %	1.000.000 VNĐ	12/12/2022	✏️ 🗑️
2	3	7/8/2022, 11:21:51 AM	7/8/2022, 11:21:51 AM	sale 8/7	50.000 VNĐ	0 %	1.200.000 VNĐ	9/9/2022	✏️ 🗑️
3	5	7/25/2022, 12:05:12 AM	7/25/2022, 12:05:12 AM	123	100.000 VNĐ	0 %	0 VNĐ	11/11/2022	✏️ 🗑️
4	8	7/25/2022, 12:47:30 AM	7/25/2022, 12:47:30 AM	1111	0 VNĐ	0 %	1 VNĐ	11/11/2022	✏️ 🗑️

5.11. Event management

STT	ID	Ngày Tạo	Ngày Cập Nhật	Tên	Loại SP	Giảm Giá (%)	Ngày Hết Hạn	Trạng Thái	Lựa Chọn
							dd/mm/yyyy 📅	Chưa áp dụng	+ Thêm
1	1	7/7/2022, 9:14:27 AM	7/25/2022, 1:06:46 AM	Big Sale	1	10 %	8/8/2022	Đang áp dụng	🗑️
2	2	7/7/2022, 5:54:42 PM	7/25/2022, 1:06:48 AM	Flash Sale 7/7	2	30 %	7/7/2022	Hết Hiệu Lực	Áp Dụng 🗑️
3	7	7/25/2022, 1:06:30 AM	7/25/2022, 1:06:30 AM	Test	0	20 %	9/9/2022	Chưa áp dụng	Áp Dụng 🗑️