HANOI UNIVERSITY OF SCIENCE AND TECHNOLOGY

School of Information and communications technology

Software Requirement Specification

Version 1.2

<AIMS Project>

Subject: <ITSS>

<Group 17>

<Trần Tiến Dũng - 20225614>

<Trương Quốc Dũng - 20225709>

<Vũ Thành Đạt - 20225607>

<Vũ Ngọc Minh - 20225890>

<Nguyễn Đức Trường - 20225675>

Hanoi, <2, 2025>

Table of contents

1 Introduction

1.1 Objective

The purpose of this SRS is to define the functional and non-functional requirements for the **AIMS (An Internet Media Store)** project. The document is intended for software developers, testers, project managers, and stakeholders involved in the development of the system.

AIMS is a desktop e-commerce software that allows customers to browse and purchase physical media products such as books, CDs, LP records, and DVDs. It also enables product managers to manage inventory, update product details, and track sales operations. Administrators handle user accounts and permissions. The system ensures high availability, reliability, and security while maintaining an optimal shopping experience for users.

1.2 Scope

- **Software Name**: AIMS (An Internet Media Store)
- **Functionality**:
  - Allow customers to browse, search, and purchase products.
  - Enable product managers to add, update, and delete product details.
  - Provide administrators with user management functionalities.
  - Ensure secure transactions through VNPay payment integration.
  - Support inventory management and order processing.
- **Limitations**:
  - Only supports purchasing physical media products.
  - Payment is limited to credit card transactions via VNPay.
  - Rush order delivery is restricted to districts within Hanoi.

1.3 Glossary

No	Term	Explanation	Example	Note
1	VNPay	A third-party payment gateway integrated with AIMS for handling transactions	Online payment via VNPay	Supports credit card payments
2	Rush order delivery	A feature allowing delivery within 2 hours for eligible locations	Available in Hanoi districts	Subject to additional charges
3	Product Manager	A role responsible for managing product inventory	Adding books, CDs, DVDs	Cannot update more than 30 products at once
4	Admintrator	A role responsible for user account management	Resetting passwords	Can block/unblock users

1.4 References

AIMS-ProblemStatement-v2.0.pdf – Project problem statement by Hanoi University of

Science and Technology

VNPay API Documentation – Payment gateway specifications: VNPay Sandbox

2 Overall Description

This section describes the general factors that affect the product and its requirements. It provides a background for understanding the system's purpose, features, and intended users.

2.1 Survey

AIMS is a desktop-based e-commerce system that facilitates the buying and selling of physical media products. The primary users include customers, product managers, and administrators.

- *Actors and Roles:*

    - *Customers:*
        - *Search for products using attributes such as title, category, and price.*
        - *Add products to the shopping cart and proceed with payment.*
        - *View order details and request order cancellations.*
        - *Choose between standard and rush order delivery options.*
    - *Product Managers:*
        - *Add, update, and delete products from the system.*
        - *Manage pricing and ensure compliance with pricing regulations.*
        - *Approve or reject customer orders based on inventory availability.*
    - *Administrators:*
        - *Create, update, and delete user accounts.*
        - *Assign roles and manage user permissions.*
        - *Monitor transactions and system operations.*

*The AIMS system ensures reliability by maintaining performance for up to **1,000 concurrent customers** and operating for **300 continuous hours** without failure. It resumes within **1 hour after an incident** and maintains a **response time of 2 seconds under normal conditions**, extending up to **5 seconds during peak hours***

2.2 Overall requirements

Use case diagram
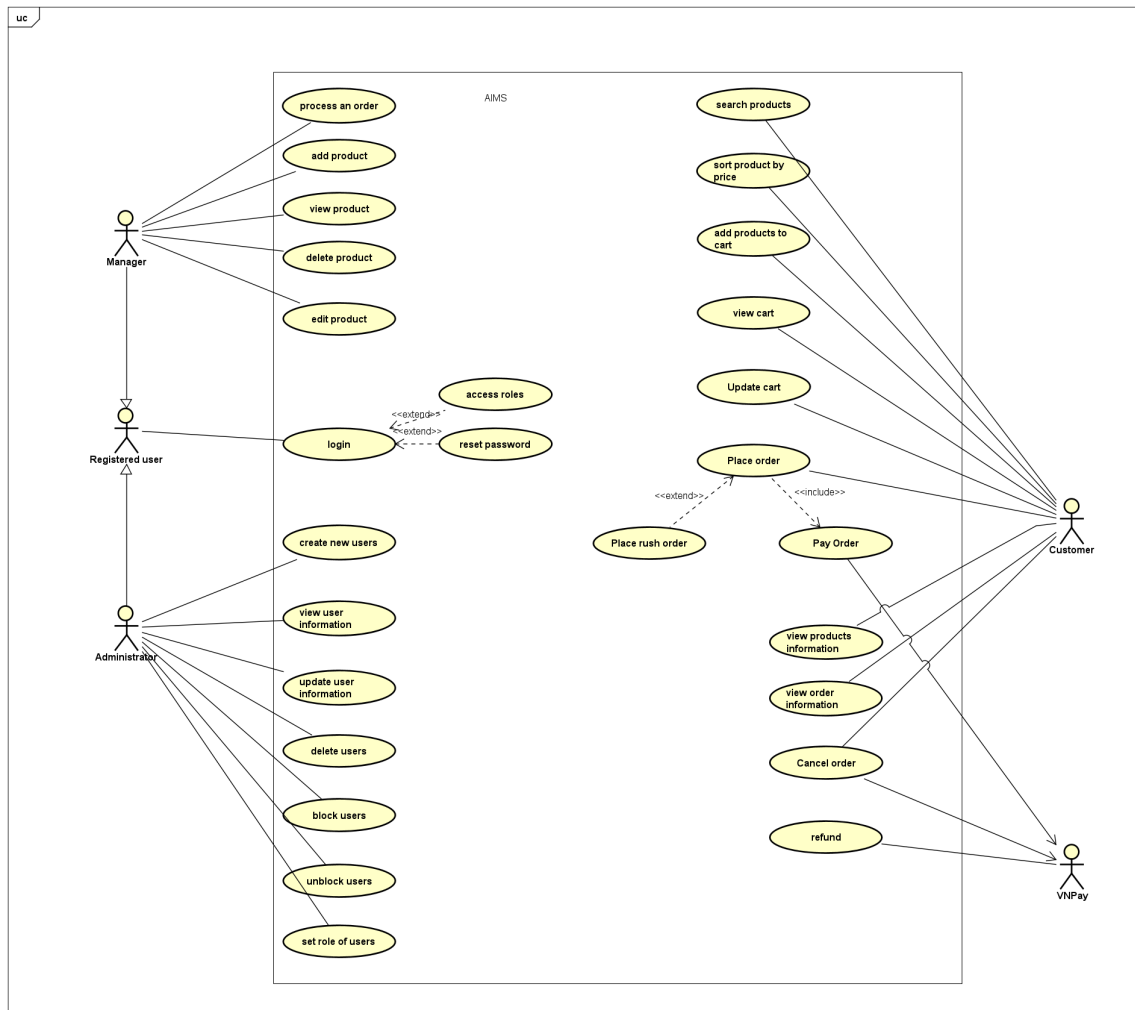
2.3 Business process
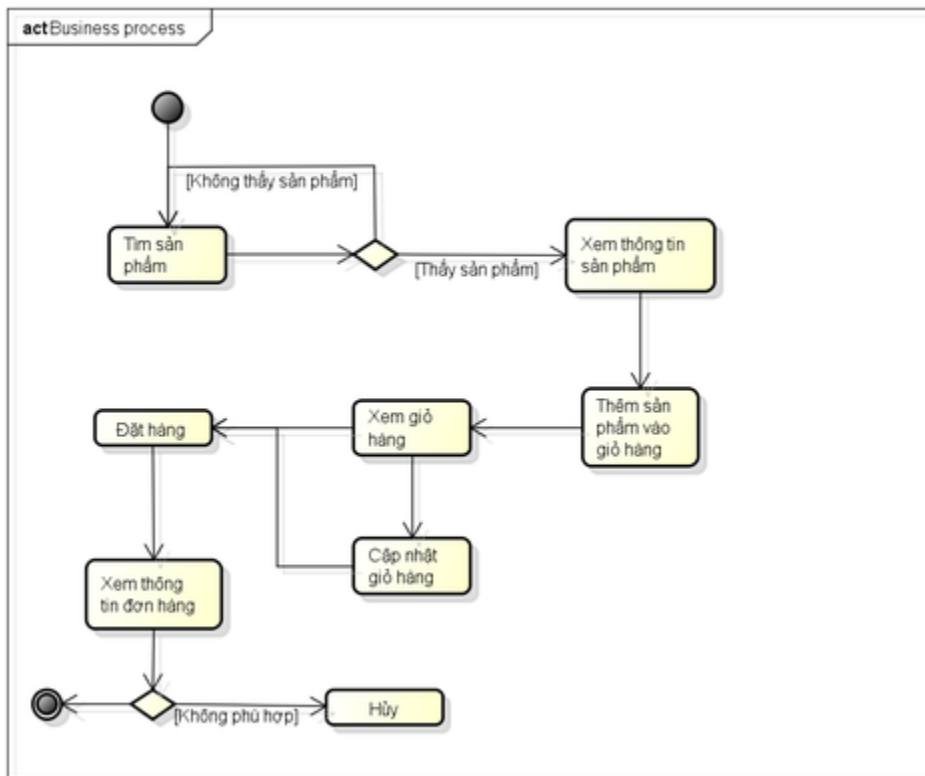
3 Detailed Requirements

Use case 1

Use Case Place rush order

  1. **Use case code**

  UC001

  2. **Brief Description**

  UC "Place rush order " describes the interaction between AIMS software with the customer when the customer desires to place rush order.

  3. **Actors**
   - Customer
    - AIMS

  4. **Preconditions**
   -Cart is not empty.

   -Valid shipping information.

Basic Flow of Events
 Step 1. Customer requests rush order.

Step 2. The AIMS system calculates the total cost of the order, including expedited shipping , and then display (see table 2)

Step 3. Customer confirms payment.

Step 4. The AIMS system calls the Use Case "Pay Order" to process the payment.

Step 5. The system sends a successful payment notification to customer.

  5. **Alternative flows**

Table 1-Alternative flows of events for UC place rush order

No	Location	Condition	Action	Resume location
	At step 3	Customer did not select a valid payment method or entered incorrect information.	The system displays an error message and asks the customer to check their payment information again.	At step 2
	At step 4	The AIMS system calls the Use Case "Pay Order" but receives a failure message from the VNPay payment gateway.	Provide retry option.	At step 2

6. **Input data (không có)**

No	Data fields	Description	Mandatory	Valid condition	Example

7. Output data

Table 2- *Output data of invoice including expedited shipping*

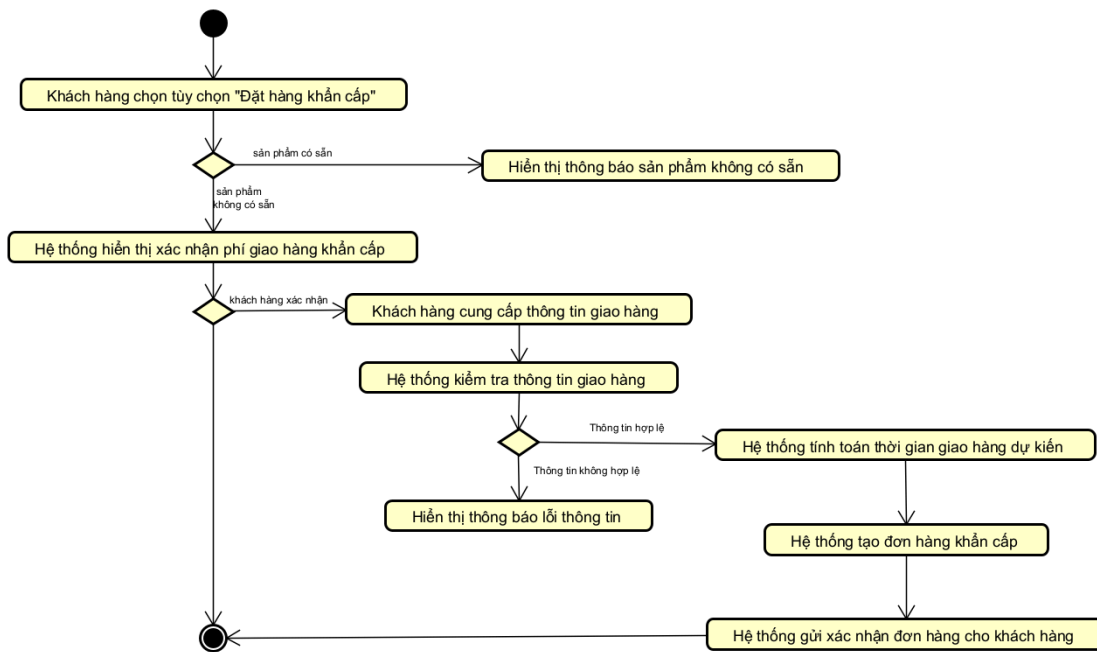| No	Data fields	Description	Display format	Example
1.	Title	Title of a media product		DVD Phim Vượt ngục
2.	Price	Price of the corresponding media product	§ Commafor thousands separator § Positive integer § Right alignment	123,000
3.	Quantity	Quantity of the corresponding media	§ Positive integer § Right alignment	2
4.	Amount	Total money of the corresponding media	§ Commafor thousands separator § Positive integer § Right alignment	246,000
5.	Subtotal Before VAT	Total price of products in the cart before VAT	§ Commafor thousands separator § Positive integer § Right alignment	2,106,000

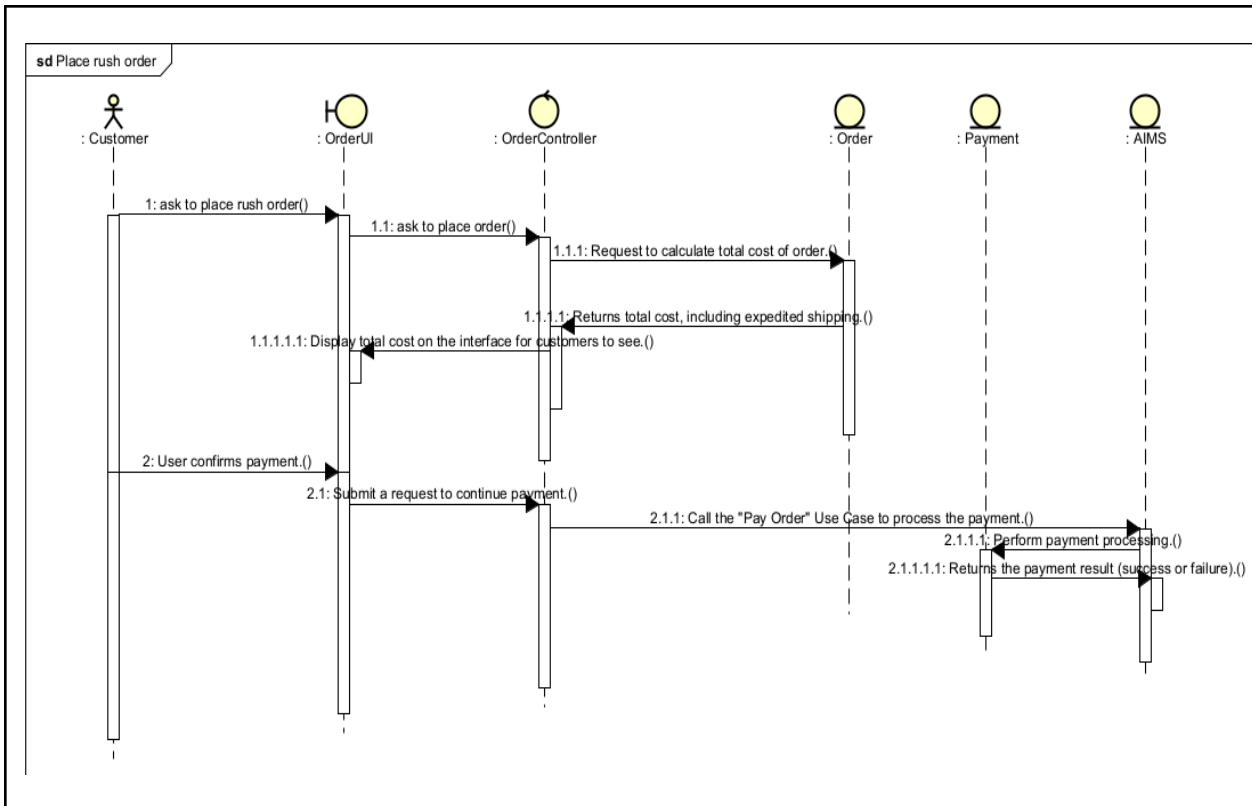|				
6.	Subtotal	Total price of products in the cart with VAT		2,316,600
7.	Shipping fees			30,000
8	Rush Order Status			YES
9.	Total	Sum of subtotal and shipping fees		2,346,600
10.	Currency			VND
11.	Name			Do Minh Hieu
12.	Phone number			0987654321
13.	Province			Hanoi
14.	Address			12,34 Alley of Tran Thai Tong street, Cau Giay district
15.	Shipping instructions			

8. Postconditions

-If the payment is successful, the order is marked as a Rush Order and is processed with priority.

-If the payment fails, the order is not confirmed yet and the customer can try again.

9.Activity diagram

10, Sequence diagram

sd Place rush order

: Customer   : OrderUI   : OrderController   : Order   : Payment   : AIMS

1: ask to place rush order()

1.1: ask to place order()

1.1.1: Request to calculate total cost of order.()

1.1.1.1: Returns total cost, including expedited shipping.()

1.1.1.1.1: Display total cost on the interface for customers to see.()

2: User confirms payment.()

2.1: Submit a request to continue payment.()

2.1.1: Call the "Pay Order" Use Case to process the payment.()

2.1.1.1: Perform payment processing.()

2.1.1.1.1: Returns the payment result (success or failure).()

Use case 2

Use Case Cancel order

1. Use case code

UC002

2. Brief Description

UC "Cancel order" describes the interaction between AIMS software with the customer when the customer desires to cancel order.

3. Actors
 - Customer
  - AIMS

13

4.. Preconditions

 - The customer has placed an order and the order has not yet been moved to "Shipping" or "Delivered" status.

5. Basic Flow of Events

 Step 1. Customer accesses "Order History"

Step 2. Customer selects the order to cancel.

Step 3. Customer selects the "Cancel Order" option.

Step 4. The system displays a notification confirming the order cancellation.

Step 5. Customer confirms the order cancellation.

Step 6. The system updates the order status to "Cancelled".

Step 7. The system displays a notification that the order cancellation was successful.

Step 8. The system sends a notification confirming the order cancellation to the customer's email/phone number (optional).

Step 9. The system refunds the customer (if the order has been paid in advance).

6. Alternative flows

Table 1-Alternative flows of events for UC place rush order

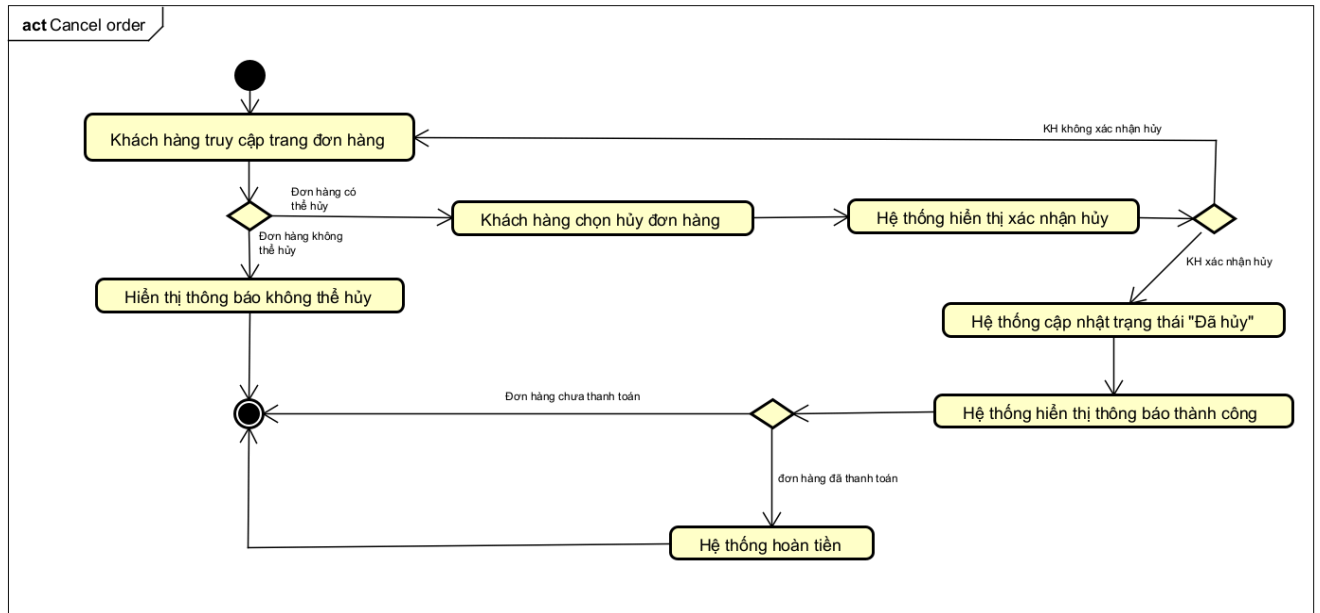| No	Location	Condition	Action	Resume location
1	At step 3	If the order has been changed to "In transit" or "Delivered" status	The system displays an error message that the order cannot be canceled.	At step 1

2	At step 4	If the customer does not confirm the cancellation of the order		At step 1
3	At step 9	During the refund process, the system encountered an error.	The system displays an error message to the customer and informs that support will contact the customer to resolve the issue.	At step 1

7. Postconditions

-The order status is updated to "Cancelled".

-The customer receives a notification confirming the order cancellation.

-The money is refunded to the customer (if applicable).

8.Activity diagram

act Cancel order

Khách hàng truy cập trang đơn hàng

Đơn hàng có thể hủy
Đơn hàng không thể hủy

Khách hàng chọn hủy đơn hàng

Hệ thống hiển thị xác nhận hủy

KH không xác nhận hủy

KH xác nhận hủy

Hiển thị thông báo không thể hủy

Hệ thống cập nhật trạng thái "Đã hủy"

Đơn hàng chưa thanh toán

Hệ thống hiển thị thông báo thành công

đơn hàng đã thanh toán

Hệ thống hoàn tiền

3.3 Use Case 3

Use Case "Place Order"

1. **Use case code**

   UC003

2. **Brief Description**

   This use case describes the interaction between customers and AIMS software when the customer wishes to place order

3. **Actors**

   3.1 Customer

   3.2 AIMS Software

4. **Preconditions**

   - Have items in the cart

   - Customer logged in system successfully

5. **Basic Flow of Events**
1. Customer requests to place order in the cart
2. AIMS software checks the availability of products in the cart
3. AIMS software displays the form of delivery information with order information
4. Customer enters and submits delivery information (see Table 1)
5. AIMS software calculates and updates order information with shipping fees (see Table 2)
6. The customer asks to pay order
7. The AIMS software calls UC "Pay order"
8. The AIMS software creates and saves a new order
9. The AIMS software makes the cart empty
10. The AIMS software sends email about the order notification and information
11. The AIMS software displays the successful order notification, the order and the transaction information (see Table 3)

6. **Alternative flows**

Table N-Alternative flows of events for UC Place order

No	Location	Condition	Action	Resume location
1.	At Step 3	If the products are not available	§ The AIMS software notifies that the products in the cart are not available and stay at the use case "View cart"	Use case ends
2.	At Step 5	If the delivery info is invalid	§ AIMS software notifies that the delivery info is invalid (blank or wrong format)	At Step 3
3.	At Step 5	If the user chooses to place a rush order	§ AIMS software inserts use case "Place rush order"	At Step 6
4.	At Step 8	If the order payment is not successul or goes back from payment		At Step 5

7. **Input data**

Table 1-Input data of delivery information

No	Data fields	Description	Mandatory	Valid condition	Example
1.	Receiver Name		Yes		Truong Quoc Dung
2.	Phone Number		Yes	10 digits	098765431
3.	Province	Choose from a list	Yes		Hanoi
4.	Address		Yes		12, 34 Alley of Tran Thai Tong street, Cau Giay district
5.	Shipping instructions		No		

8. **Output data**

Table 2-Output data of order information and shipping fee

No	Data fields	Description	Display format	Example
1.	Title	Title of a media product		DVD Phim Vuot Nguc

2.	Price	Price of the corresponding media product	§ Comma for thousands separator § Positive integer § Right alignmennt	123, 000
3.	Quantity	Quantity of the corresponding media	§ Positive integer § Right alignment	2
4.	Amount	Total money of the corresponding media	§ Comma for thousands separator § Positive integer § Right alignment	246,000
5.	Subtotal	Total amount of all products in the order		2,316,600
6.	Shipping fee			30,000
7.	Total			2,346,600

**Table 3-Output data of general information of order and transaction info**

| No	Data fields	Description	Display format	Example
1.	Customer name			Truong Quoc Dung
2.	Phone number			0987654321
3.	Province			Hanoi
4.	Address			12, 34 Alley of Tran Thai Tong street, Cau Giay district
5.	Total amount		§ Right alignment § Vietnamese currency (VND) § Vietnamese locale	3.050.000 VND
6.	Transaction ID			30,000
7.	Transaction content			2,346,600
8.	Transaction date		dd/mm/yyyy	03/08/2024

9. **Postconditions**

- The order is created successfully and information of order is displayed

- The email is sent to the customer

- The cart is cleared.

10. **Activity diagram**
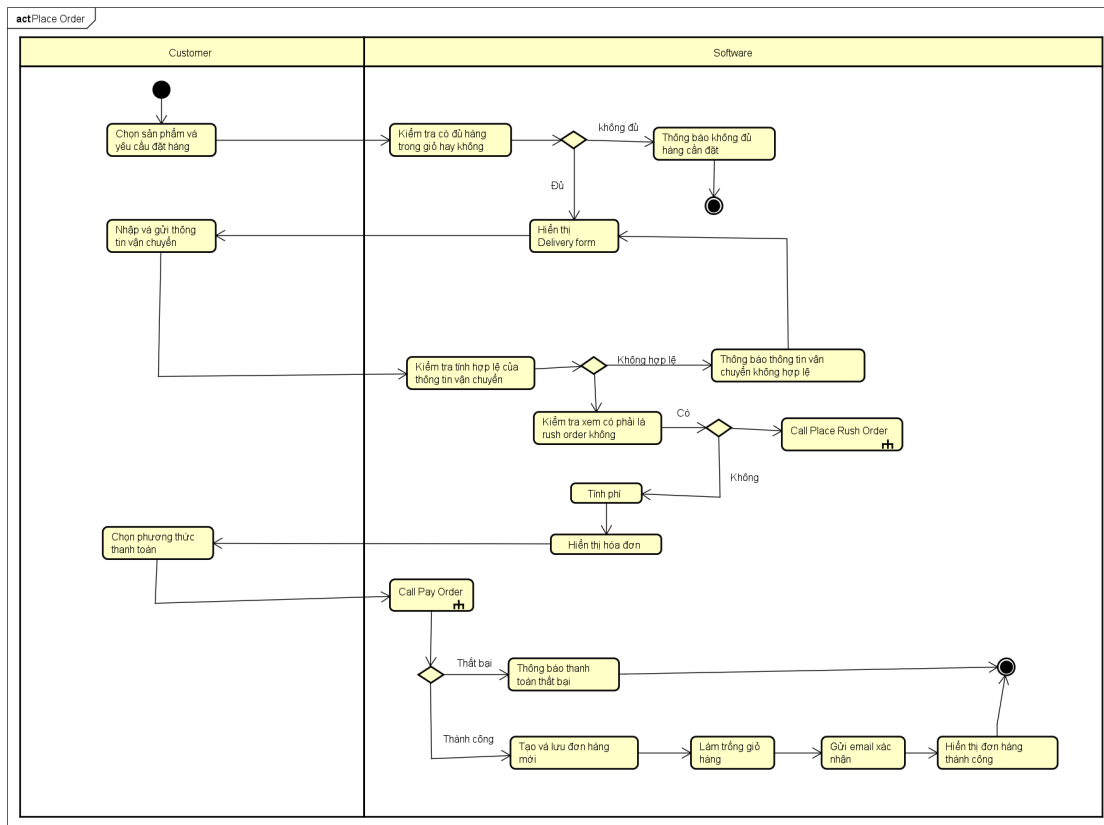
11. Sequence diagram
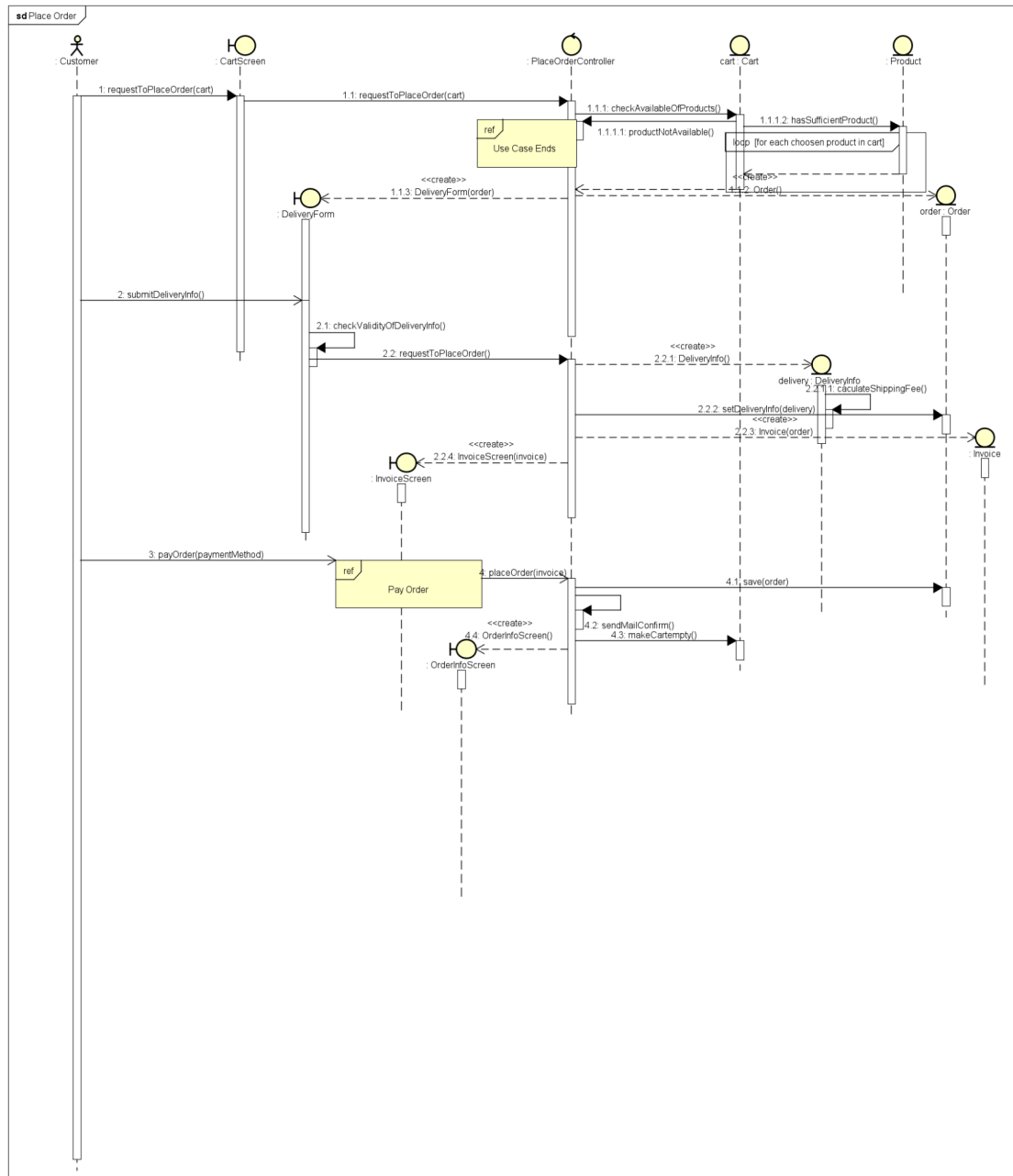
3.4 Use Case Pay Order

Use Case Pay Order

1. Use case code

UC004

2. Brief Description

Usecase is responsible for helping customers pay for orders.

3. Actors

3.1   Customer

3.2   VNPay

4. Preconditions

Invoice created successfully

5. Basic Flow of Events

1. Customer chooses payment method
2. Customer requests payment
3. VNPay connection software
4. Customer enters payment information
5. Customer confirms payment
6. VNPay payment

6. Alternative flows

7. Input data

8. Output data

Table 5 – Invoice output data

No	Data fields	Description	Display format	Example

|				
1.	Title	Product Title		DVDMovie Overcome prison
2.	Price	Price of the corresponding product	§ Comma separates thousands § Positive integer § Right margin	123,000
3.	Quantity	Number of corresponding products	§ Positive integer § Right margin	2
4.	Amount of 1 product	Total amount of the respective purchased products	§ Comma separates thousands § Positive integer § Right margin	246,000
5.	Total VAT Air Amount	Total amount of items in cart excluding VAT		2,106,000
6.	Total amount of goods with VAT	Total amount of items in cart including VAT	§Comma separates thousands § Positive integer § Right margin	2,316,600
7.	Shipping fee	Shipping fee is borne by customer		30,000
8.	Total bill	Total price and shipping fee	§Comma separates thousands § Positive integer § Right margin	2,346,600
9.	Currency		§Comma separates thousands § Positive integer § Right margin	VND

10.	Customer name			Minh Hieu
11.	Phone number			0987654321
12.	Province, city			Hanoi
13.	Address			12, 34 Tran Thai Tong Street, Cau Giay District
14.	Shipping Notes			

9. Postconditions

Customer successfully paid for the order

2.10 Pay Order Activity Diagram
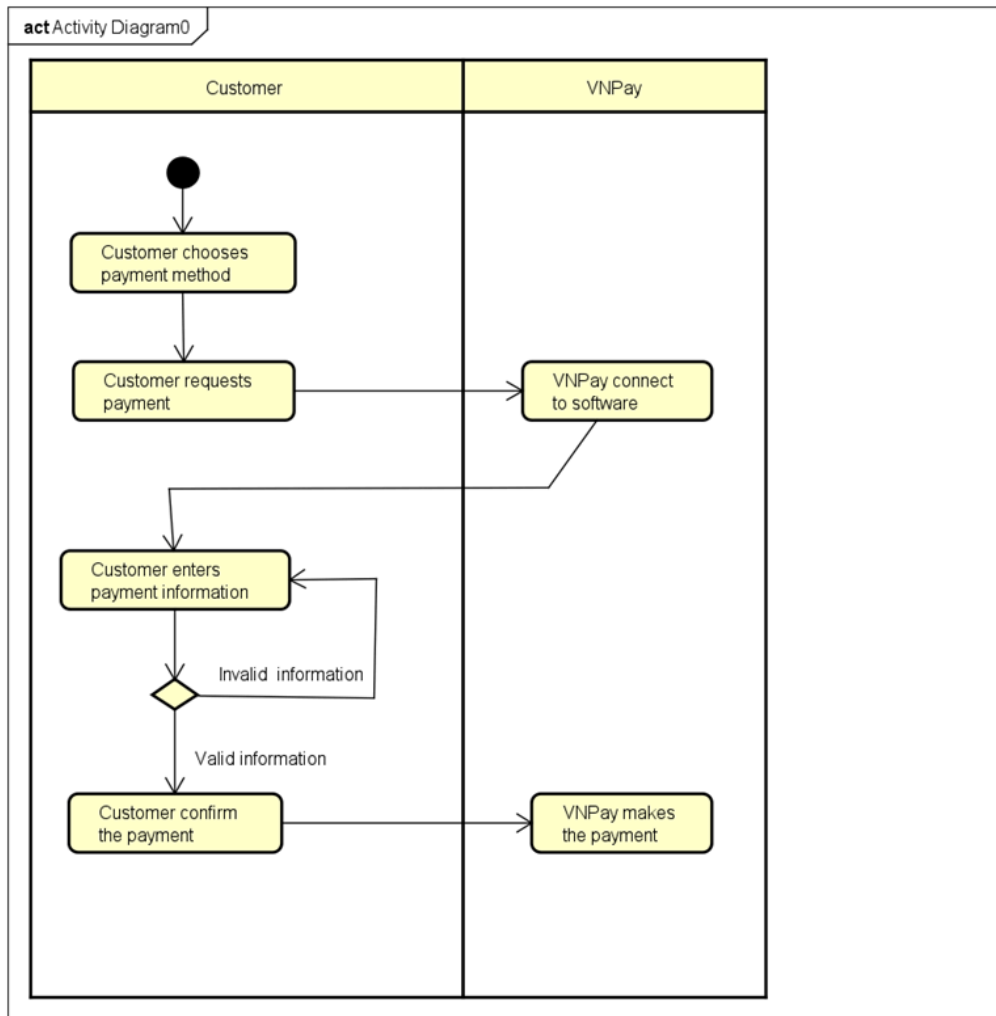
3.5 Use Case View product detail

■ **1. Use Case View Product Detail**

- **UC005**

■ **2. Brief Description**

This use case describes the interaction between Customers and the E-commerce System when they want to view detailed information about a product.

■ **3. Actors**

- **Customer**

■ **4. Preconditions**

- The product must exist in the system.
- The user must be able to access the product detail page.

■ **5. Basic Flow of Events**

Step	Actor/System	Description
1	**Actor**	The customer navigates to the **"Product Listing"** page.
2	**Actor**	The customer selects a specific product to view details.
3	**System**	The system retrieves product details and displays the following information: - Product Name - Product Image - Description - Price - Availability - Customer Reviews
4	**Actor**	The customer can either: - Return to the product list - Add the product to the cart - Proceed to checkout

■ **6. Alternative Flows**

No	Location	Condition	Action	Resume Location

1	Step 2	The selected product does not exist	The system displays an error message: "Product not found."	Use case ends
2	Step 3	The product is out of stock	The system displays a message: "Out of stock" and disables the purchase button	Step 4

■ **7. Input Data**

No	Data Fields	Description	Mandatory	Valid Condition	Example
1	Product ID	Unique identifier for the product	Yes	Must exist in the system	PRD001

■ **8. Output Data**

| No	Data Fields	Description	Display Format	Example
1	Product Name	Name of the product	Bold text	iPhone 15 Pro
2	Product Image	Image of the product	Thumbnail	(Image)
3	Description	Detailed product description	Paragraph text	6.1-inch display, A17 chip
4	Price	Price of the product	VND with comma separators	25,990,000 VND
5	Availability	Stock status	Green for "In stock", Red for "Out of stock"	In stock

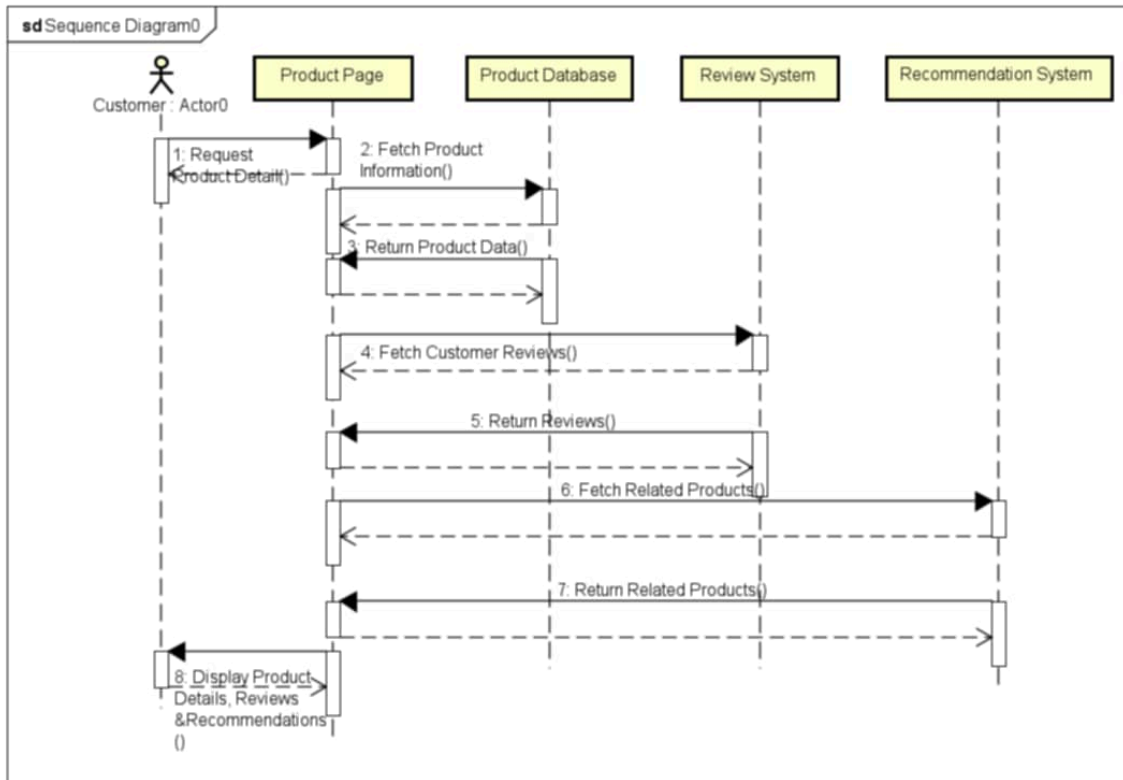| 6 | Customer Reviews | Ratings and comments | Star rating + text reviews | ★★★★☆ |

■ 9. Postconditions

The customer can successfully view product details.

No changes are made to the product data.

10.View Product Detail Activity Diagram
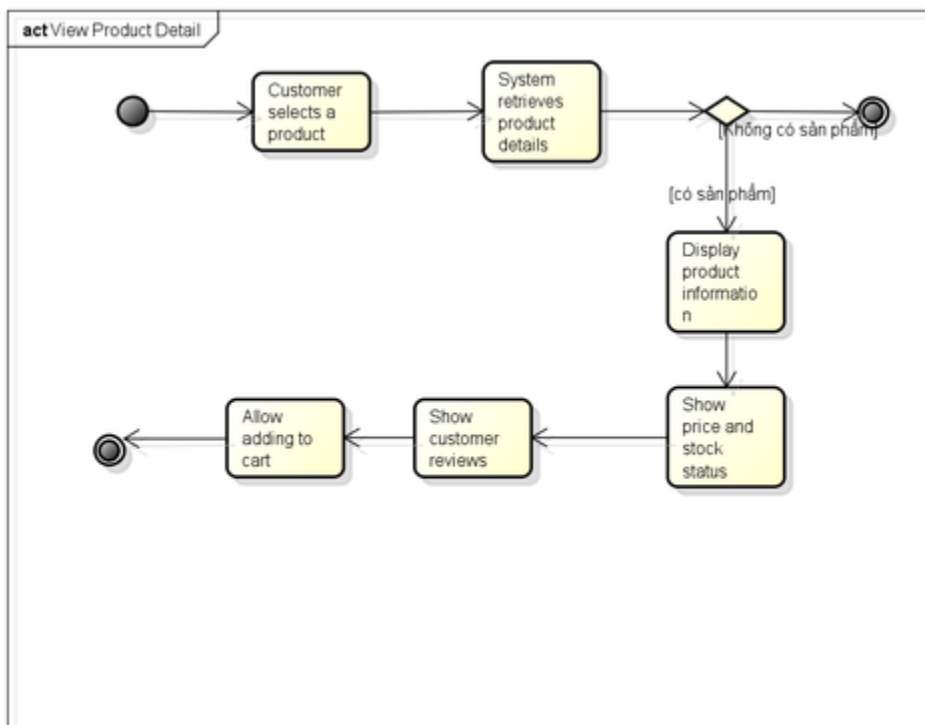
11. view product details sequence diagram

3.6 Use Case Add Product

1. **Use case code**
   UC006
2. **Brief Description**
   UC "Add Product" mô tả quá trình Product Manager thêm một sản phẩm mới vào hệ thống AIMS.
3. **Actors**
   ○ Product Manager
   ○ AIMS
4. **Preconditions**
   ○ Product Manager đã đăng nhập vào hệ thống.
   ○ Sản phẩm thêm vào phải chưa tồn tại trong hệ thống (trùng SKU sẽ bị từ chối).
5. **Basic Flow of Events**

1. Product Manager chọn chức năng "Add Product".

2.   Hệ thống hiển thị biểu mẫu nhập thông tin sản phẩm.

3.   Product Manager nhập đầy đủ thông tin sản phẩm (tên, mô tả, giá, danh mục, SKU, ảnh, số lượng tồn kho).

4.   Product Manager xác nhận thêm sản phẩm.

5.   Hệ thống kiểm tra thông tin hợp lệ và lưu sản phẩm vào cơ sở dữ liệu.

6.   Hệ thống hiển thị thông báo "Product added successfully".

6. **Alternative Flows**

No	Location	Condition	Action	Resume Location
1	Step 3	SKU đã tồn tại trong hệ thống	Hệ thống hiển thị lỗi "SKU already exists"	Step 2
2	Step 3	Một số trường bắt buộc chưa điền hoặc sai định dạng	Hệ thống yêu cầu nhập lại dữ liệu hợp lệ	Step 2

7.

● **Input Data**

No	Data fields	Description	Mandatory	Valid condition	Example
1	Product Name	Tên sản phẩm	Yes	Không để trống	"Harry Potter Book"
2	SKU	Mã định danh sản phẩm	Yes	Duy nhất, không trùng lặp	"HP123456"
3	Description	Mô tả sản phẩm	No	Không giới hạn ký tự	"Fantasy novel"

4	Price	Giá sản phẩm	Yes	Số nguyên dương	"250,000" VND
5	Category	Danh mục sản phẩm	Yes	Tồn tại trong hệ thống	"Books"
6	Stock	Số lượng tồn kho	Yes	Số nguyên dương	"100"
7	Image	Ảnh sản phẩm	No	Định dạng .jpg, .png	"harry_potter.jpg"

8.

- **Output Data**

| No	Data fields	Description	Display format	Example
1	Product ID	ID sản phẩm trong hệ thống	Dạng số tự động tăng	"P1001"
2	Product Name	Tên sản phẩm	Văn bản	"Harry Potter Book"
3	SKU	Mã SKU	Văn bản	"HP123456"
4	Price	Giá sản phẩm	Dạng số, có dấu phẩy	"250,000 VND"
5	Category	Danh mục	Văn bản	"Books"
6	Stock	Số lượng tồn kho	Số nguyên	"100"
7	Status	Trạng thái thêm sản phẩm	"Success" / "Failed"	"Success"

9. **Postconditions**
   ○ Nếu thành công, sản phẩm mới được thêm vào danh sách sản phẩm.
   ○ Nếu thất bại, hệ thống giữ nguyên trạng thái cũ và yêu cầu sửa lỗi.

10. **add producproduct Activity Diagram**
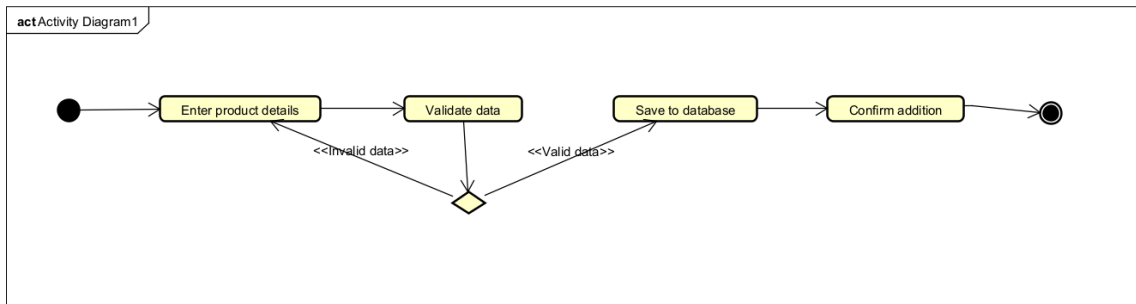
11. add product sequence diagram
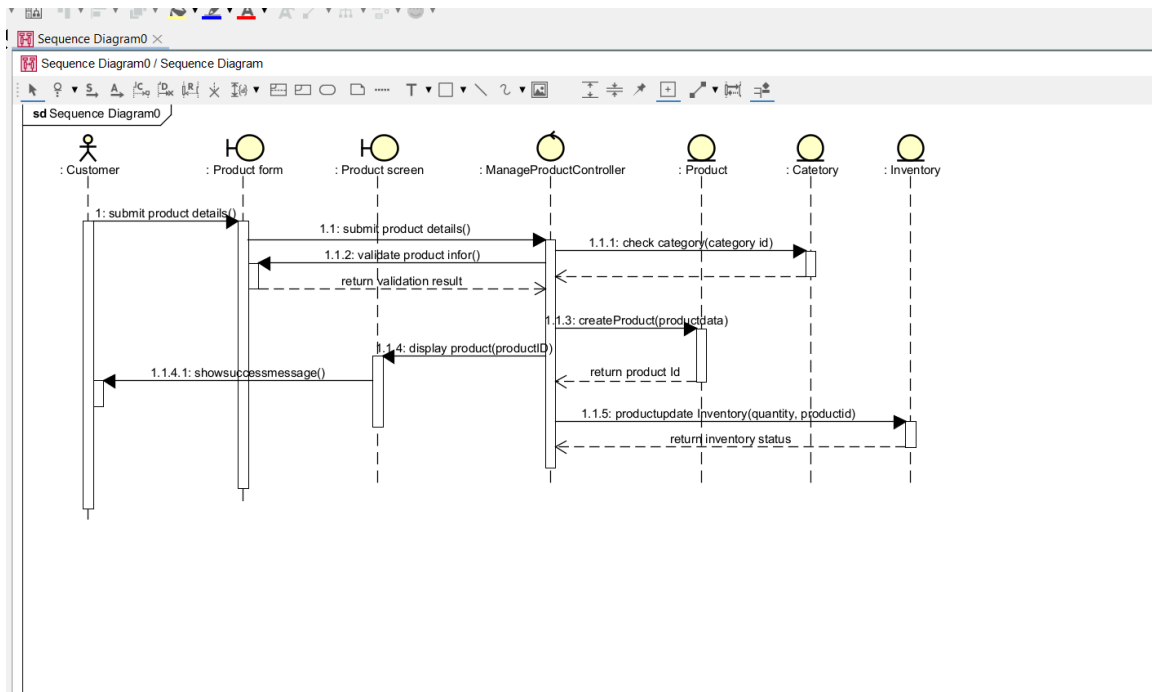
3.7 Use Case Update Product

1. **Use case code**
   UC007
2. **Brief Description**
   UC "Update Product" mô tả quá trình Product Manager cập nhật thông tin sản phẩm hiện có trong hệ thống.
3. **Actors**
   - Product Manager
   - AIMS
4. **Preconditions**
   - Product Manager đã đăng nhập vào hệ thống.
   - Sản phẩm cần cập nhật phải tồn tại trong hệ thống.
5. **Basic Flow of Events**

1. Product Manager chọn chức năng "Update Product".

2. Hệ thống hiển thị danh sách sản phẩm.

3. Product Manager chọn sản phẩm cần cập nhật.

4. Hệ thống hiển thị thông tin chi tiết của sản phẩm.

5. Product Manager chỉnh sửa thông tin cần thay đổi.

6. Product Manager xác nhận cập nhật sản phẩm.

7. Hệ thống kiểm tra tính hợp lệ của dữ liệu và cập nhật vào cơ sở dữ liệu.

8. Hệ thống hiển thị thông báo "Product updated successfully".

6. **Alternative Flows**

No	Location	Condition	Action	Resume Location
1	Step 3	Sản phẩm không tồn tại	Hệ thống hiển thị lỗi "Product not found"	Step 2
2	Step 5	Dữ liệu nhập vào không hợp lệ	Hệ thống hiển thị lỗi "Invalid data format"	Step 4

7.

- **Input Data**

| No	Data fields	Description	Mandatory	Valid condition	Example
1	Product ID	ID sản phẩm cần cập nhật	Yes	Tồn tại trong hệ thống	"P1001"
2	Product Name	Tên sản phẩm (nếu cập nhật)	No	Không để trống	"Harry Potter New Edition"
3	Price	Giá sản phẩm (nếu cập nhật)	No	Số nguyên dương	"280,000" VND
4	Stock	Số lượng tồn kho (nếu cập nhật)	No	Số nguyên dương	"120"

8.

- **Output Data**

| No	Data fields	Description	Display format	Example
1	Product ID	ID sản phẩm	Văn bản	"P1001"
2	Product Name	Tên sản phẩm mới	Văn bản	"Harry Potter New Edition"
3	Price	Giá mới	Số nguyên, có dấu phẩy	"280,000 VND"
4	Stock	Số lượng tồn kho mới	Số nguyên	"120"
5	Status	Trạng thái cập nhật	"Success" / "Failed"	"Success"

9. **Postconditions**

- ○ Nếu thành công, thông tin sản phẩm được cập nhật trong hệ thống.
- ○ Nếu thất bại, hệ thống giữ nguyên trạng thái cũ và yêu cầu chỉnh sửa lại.

10. **Add Product Activity Diagram**
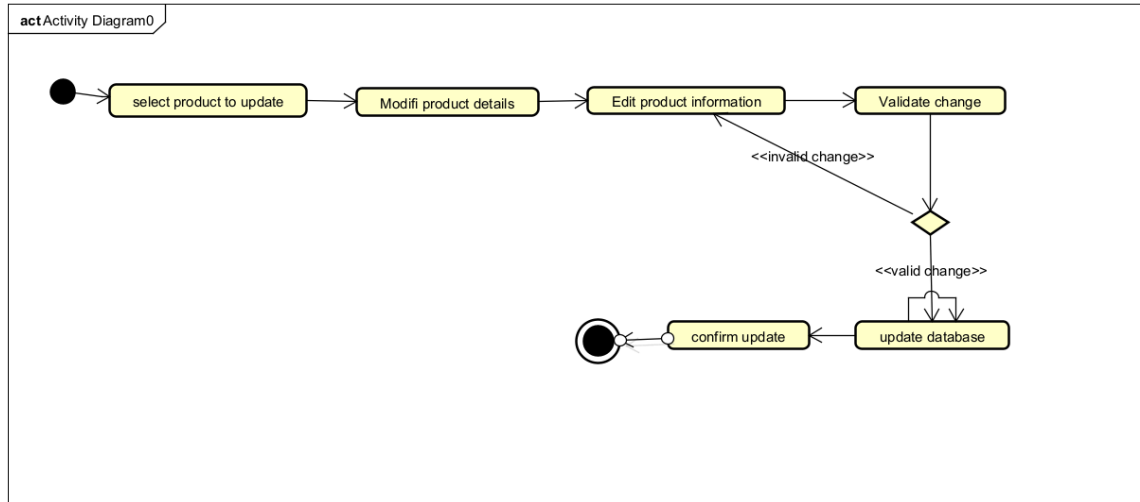
11. update product sequence diagram
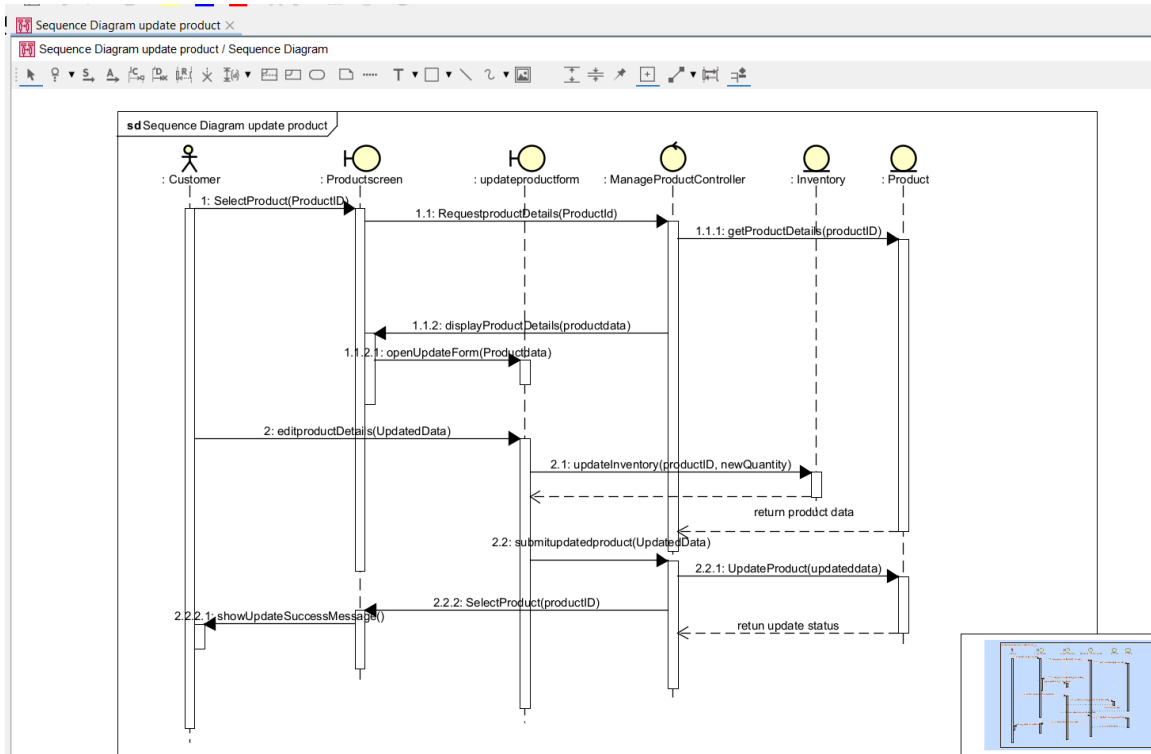
4 Supplementary specification

4.1 Functionality

The software helps the customer to choose, buy product and pay online.

4.2 Usability

Operates 24/7,
Allowing new users to easily familiarize themselves

4.3 Reliability

The software can serve up to 1,000 customers simultaneously without significantly reducing performance.
Can operate continuously for 300 hours without failure.

4.4 Performance

The maximum response time of the software is 2 seconds under normal conditions or 5 seconds during peak hours.

4.5 Supportability

The software can resume normal operation within a maximum of 1 hour after an incident.

4.6 Other requirements