HANOI UNIVERSITY OF SCIENCE AND TECHNOLOGY

School of Information and communications technology

Use Case Specification Documents

AN INTERNET MEDIA STORE

Subject: ITSS SOFTWARE DEVELOPMENT

Group 17

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1 Introduction

The journey towards knowledge, art, and entertainment has always been and will continue to be an integral part of human life. However, life itself is not inherently easy. There will come a time when the fruits of creative labor may struggle to reach people, as artists and intellectuals may find it challenging to sustain themselves with adequate living standards.

Fortunately, in the age of the booming Internet and the Fourth Industrial Revolution, new opportunities have emerged for all of us. One such opportunity is the AIMS Project, an E-commerce system designed for purchasing media products.

The objective of this document is to provide a comprehensive description of the requirements for the development of the AIMS software. The intended audience for this document includes the developers and testers, who will be involved in the development, testing and implementation of the system.

The document aims to serve as a reference guide and communication tool between the project team and stakeholders, ensuring a clear understanding of the system's objectives, functionalities, and constraints. It will provide the basis for system design, development, testing, and validation activities.

1.1 Objective

The system enables customers to browse products, add items to their cart, proceed to checkout, make payments for orders, and manage their purchase history. The project aims to offer a hands-on experience for students to enhance their programming and software engineering skills, focusing particularly on web development, database design, and software architecture. Furthermore, the project aims to deepen students' understanding of the e-commerce industry, encompassing both business processes and technical aspects such as payment processing, inventory management, and order fulfillment.

1.2 Scope

The software product to be produced is the AIMS Software, which is an online platform for e-commerce systems, a comprehensive and dynamic platform designed to cater to diverse needs. The system will support various features and functionalities to provide a seamless user experience. It allows customers to order products and make payments, and for Product managers and product managers to manage users, orders, and inventory. The system will support various features and functionalities to provide a seamless user experience.

Notably, by using the AIMS website, users can expect a user-friendly interface, intuitive navigation, and a robust course catalog that spans different expertise levels.

The AIMS Software will allow customers to browse and search for products, add products to their cart, view the invoice before payment, and make payments using a prepaid credit card. Customers will also be able to cancel their orders and receive refunds.

For Product managers and product managers, the AIMS Software will provide a view for managing orders, including approving or rejecting pending orders, and updating inventory levels. The software will also enable the addition, deletion, and editing of products in the inventory.

The purpose of the AIMS Software application is to provide customers with a convenient and efficient means of ordering products, while enabling product managers to effectively manage orders and inventory. The relevant benefits include streamlined order processing, improved inventory management, and increased customer satisfaction. The objectives and goals are to create a user-friendly and reliable software system that meets the needs of both customers and Product managers. For purchasing purposes, customers will have the option of using a credit card. The transaction will be processed by a third-party payment processing service called VNPay.

In summary, the AIMS website is intended to be a versatile and user-centric platform that not only provides top-notch service but also fosters a sense of community and adaptability akin to successful platforms in the near future.

1.3 Glossary

No	*Term*	*Explanation*	*Example*	*Note*
1	AIMS	AIMS stands for "Automated Inventory Management System". It is a software system designed to help businesses manage their inventory and streamline their operations		
2	E-commerce	E-commerce (electronic commerce) refers to the buying and selling of goods and services over the internet.		
3	Customer	A customer is a person or organization that purchases goods or services from a business.		

No	*Term*	*Explanation*	*Example*	*Note*
4	Credit Card	A credit card is a plastic card issued by a bank or financial services company that allows cardholders to borrow funds to purchase goods and services. The borrowed funds must be repaid with interest.		
5	CRUD	Four basic functions, namely Create, Retrieve, Update, Delete		
6	Use Case Analysis	A technique that aids in modeling the requirements of a software system. A well-crafted Use Case model will describe the system in the most intuitive and easy-to-understand way for all users and clients.		

1.4 *References*

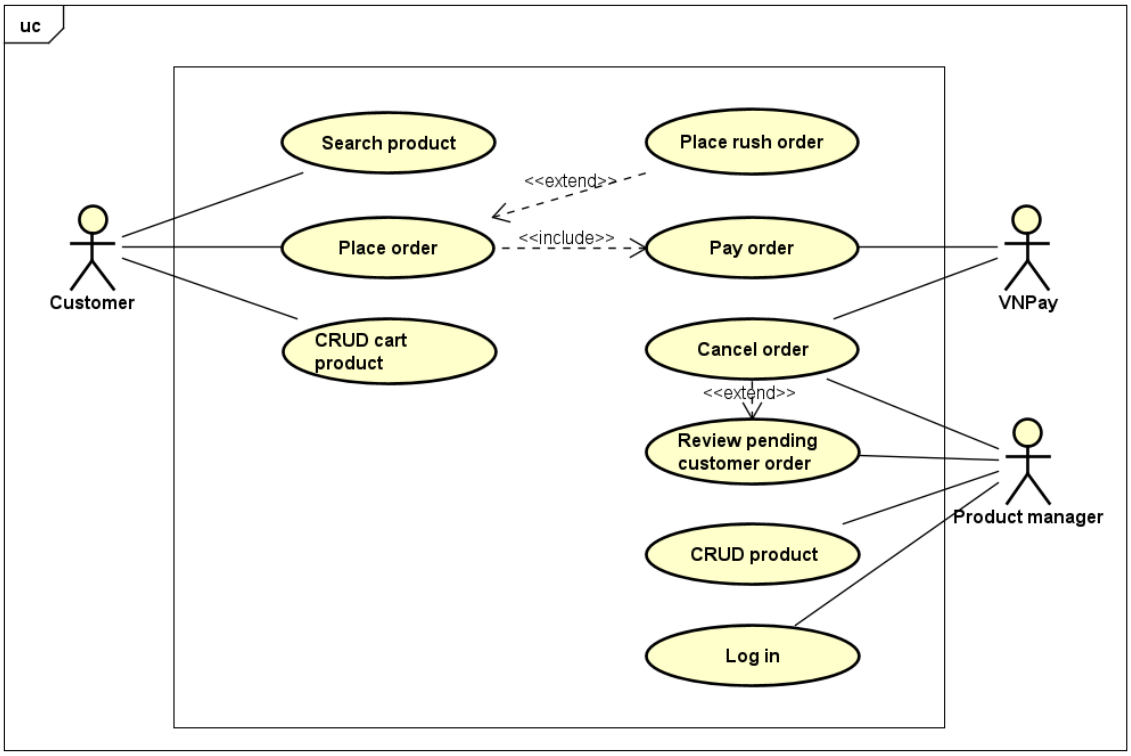
2 Overall Description

2.1 Survey

The AIMS System involves three main actors interacting with the system including the customer, product manager and VNPay.

2.2 Overall requirements

Use case diagram represents the interactions between actors and usecases. It represents the functional requirements of the system, showing the interaction between external and internal actors with the system.



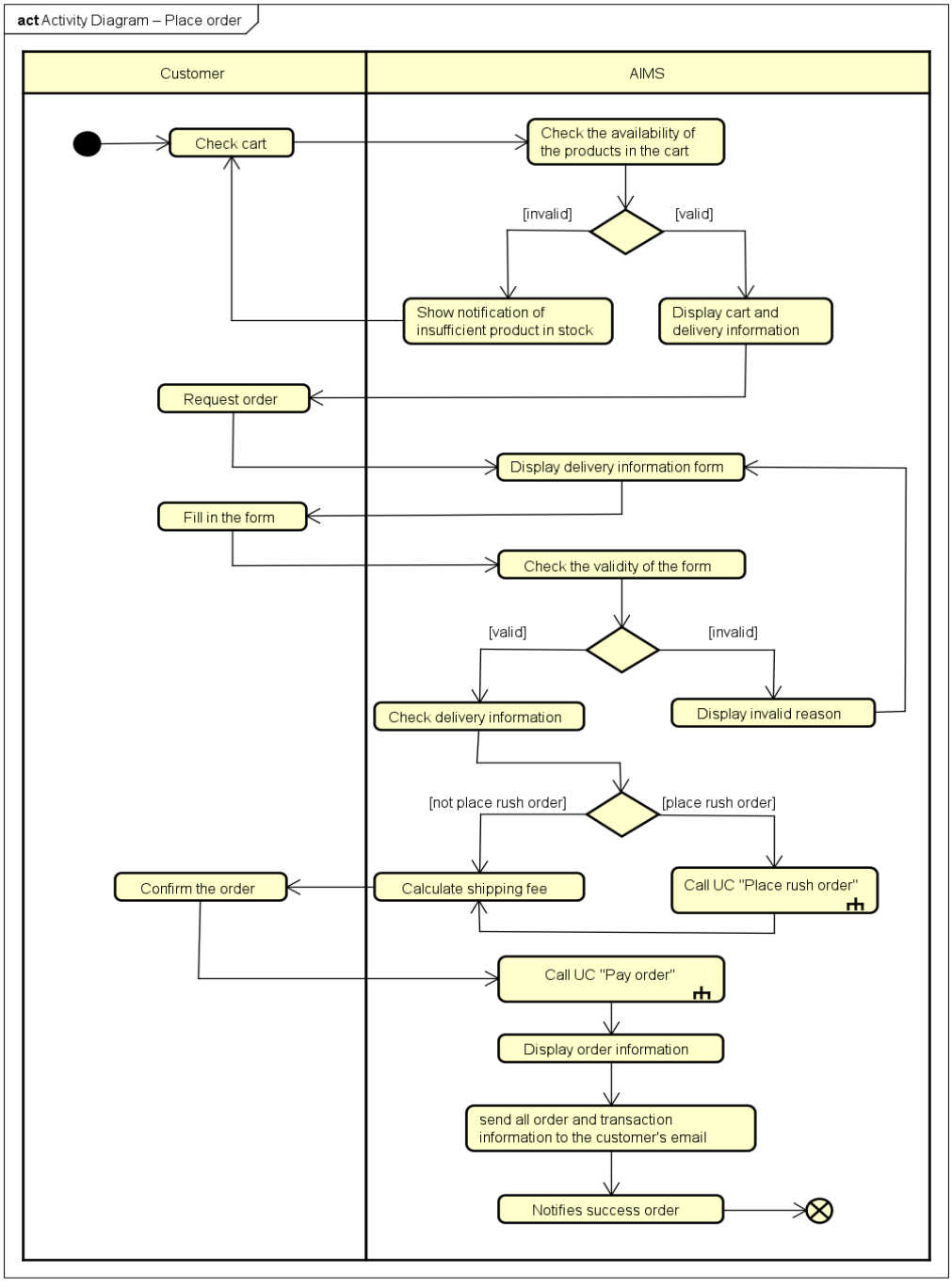
2.3 Business process

Details of the actions in these processes are visualized with activity diagrams in the sub-sections of each process.

2.3.1 Place order process

The process of placing an order involves several steps. First, the customer checks their shopping cart, ensuring that all desired items are included. Next, they select a payment method, in the scope of AIMS software, VNPay is chosen. The system then verifies order

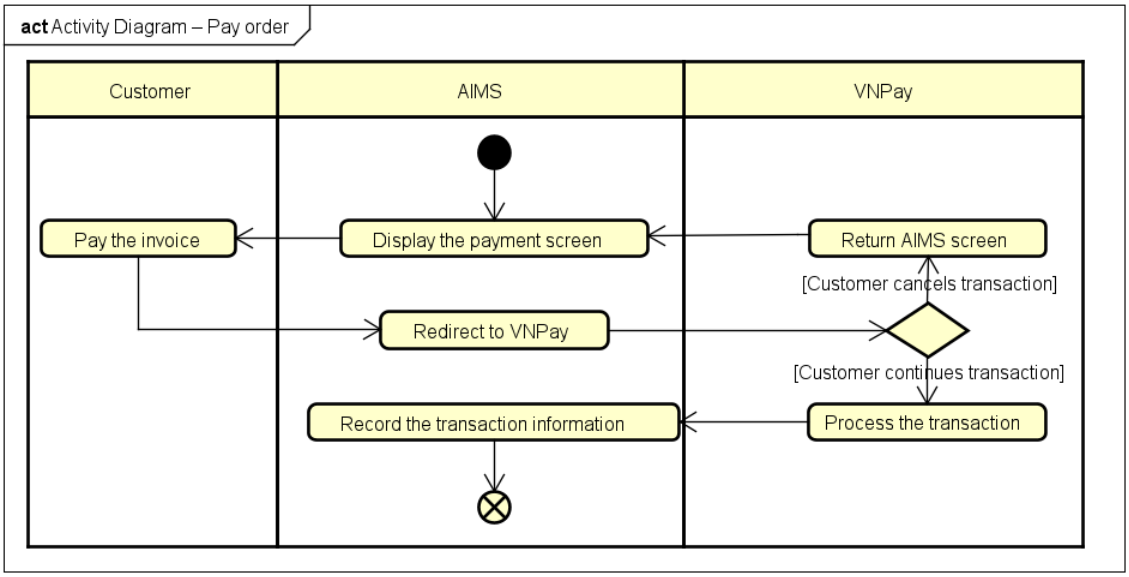
details, including the shipping address and product availability. Finally, the customer confirms the order, and the system processes it. This streamlined process ensures efficient and accurate order placement within the AIMS software.



2.3.2 Pay order process

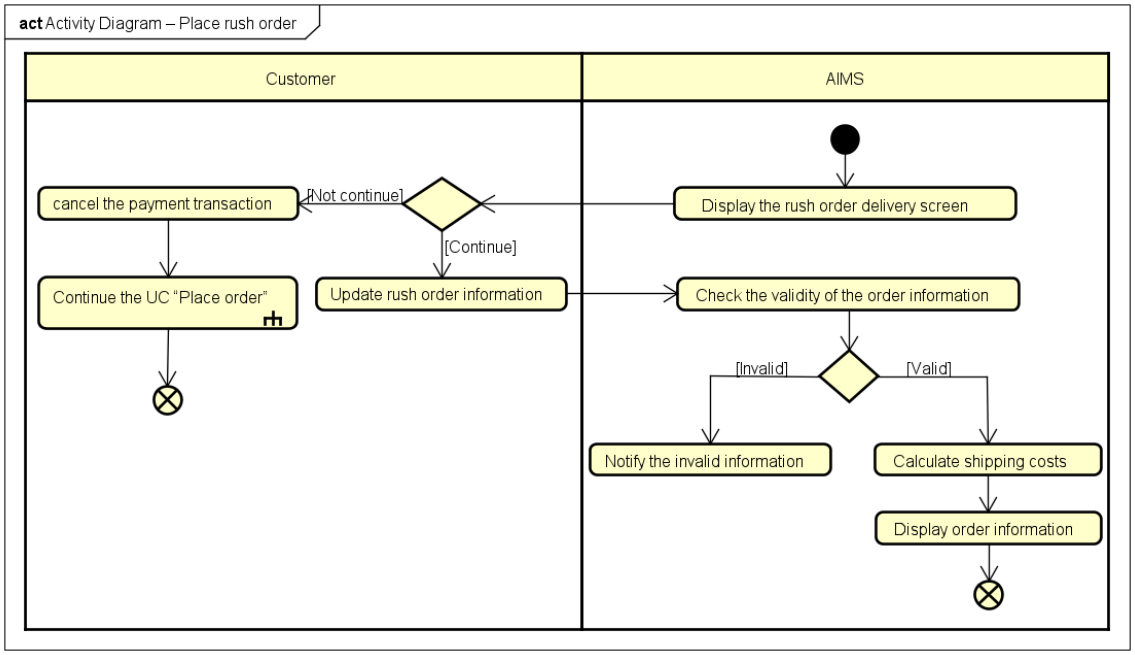
The business process of paying orders involves several crucial steps. First of all, the system generates an invoice for the customer, detailing the order items and their costs. The

customer then makes a payment when AIMS redirects to VNPay purchase interface. Once payment is verified, the system proceeds with order fulfillment. Otherwise, the process returns to the initial steps by displaying the payment screen once again to ask whether customer wishes to process the transaction. Finally, the system logs the payment transaction for record-keeping and auditing purposes.



2.3.3 Place rush order process

The business process of placing rush orders involves several crucial steps. This process can only start if the customer confirms this option from the placing order process. First, the software checks whether the delivery address supports this service and if any products are eligible. If no products are eligible or the delivery address does not support rush order delivery, the software prompts the customer to update the delivery information or delivery method. In cases where both the products and delivery address support rush order delivery, the software requests additional rush order delivery information from the customer. Customers can adjust the delivery method or the items they wish to purchase if necessary. The software recalculates the delivery fees and updates the corresponding invoice. Delivery fees depend on the weight of the products and the delivery location.


act Activity Diagram – Place rush order
Customer
AIMS
cancel the payment transaction
[Not continue]
[Continue]
Continue the UC "Place order"
Update rush order information
Display the rush order delivery screen
Check the validity of the order information
[Invalid]
[Valid]
Notify the invalid information
Calculate shipping costs
Display order information

3 Detailed Requirements

Details of the use cases given in part 2 are described in the sections below.

3.1 Use Case "Place order"

Use Case "Place Order"

1. Use case code: UC001

2. Brief descriptions:
- This use case describes the interaction between customer and AIMS software when customer wants to place their order.

3. Actors:
3.1. Customer

4. Preconditions:
- The customer needs to review the cart and select the products they want to purchase.
- There is at least one item in the cart.

5. Basic flow of events:

1. Customer checks the cart.
2. AIMS software checks the availability of products in the cart.
3. AIMS software displays carts.
4. Customer request to place order.
5. AIMS displays delivery information.
6. Customer enters and confirms delivery information.
7. AIMS software calculates and displays order and shipping fees.
8. Customer confirms order.
9. AIMS software calls use case "Pay Order".
10. AIMS displays order information.
11. AIMS software displays the successful notification.

6. Alternative flows:

No	Location	Condition	Action	Resume location
1	Step 2	If the products are not available	- AIMS software notifies that the products in the	Step 1

			cart are not available and requests the customer to update the cart. - Customer update cart.	
2	Step 6	If the delivery information is invalid	AIMS software notifies that the delivery information is invalid	Step 6
3	Step 6	If customer choose to place a rush order	AIMS software calls use case “Place rush order” if any product supports rush order.	Step 7

7. Input data

No	Data fields	Descriptions	Mandatory	Valid condition	Example
1	Customer name		Yes		Name
2	Phone number		Yes		Number
3	Province	Choose from a list	Yes		Province
4	Address		Yes		Address
5	Shipping instructions		No		

8. Output data

No	Data fields	Descriptions	Display format	Example
1	Title	Title of a media product		Product_ name
2	Price	Price of the corresponding media product	- Comma for thousands separator - Positive integer - Right alignment	123,000
3	Quantity	Quantity of the	- Positive integer	2

		corresponding media product	- Right alignment	
4	Amount	Total money of the corresponding media product	- Comma for thousands separator - Positive integer - Right alignment	123,000
5	Subtotal before VAT	Total price of products in the cart before VAT	- Comma for thousands separator - Positive integer - Right alignment	123,000
6	Subtotal	Total price of products in the cart with VAT		123,000
7	Shipping fees			123,000
8	Total	Sum of subtotal and shipping fees		123,000
9	Currency			VND
10	Name			Name
11	Phone number			Number
12	Province			Province
13	Address			Address
14	Shipping instructions			
15	Transaction ID			
16	Transaction content			
17	Transaction date		dd/mm/yy	

9. Postconditions: None

3.2 Use case "Pay Order"

Use Case "Pay Order"

1. Use case code: UC002

2. Brief descriptions:
- This use case describes the interaction between customer, VNPay and AIMS software when customer wants to pay their order.

3. Actors:
3.1. Customer
3.2. VNPay

4. Preconditions:
- The customer had set up delivery information.
- AIMS has calculated the total price to be paid.

5. Basic flow of events:
1. AIMS software displays the invoice information.
2. Customer requests to pay the order.
3. AIMS displays the payment screen.
4. Customer enters information and confirms the transaction.
5. AIMS requests VNPay to process the transaction.
6. VNPay processes the transaction.
7. AIMS records the transaction information.

6. Alternative flows:

No	Location	Condition	Action	Resume location
1	Step 4	Invalid information	AIMS notifies invalid information.	Step 4
2	Step 5	If customer cancels the payment transactions	VNPay redirect to the software	Use case ends
3	Step 6	Insufficient payment value	Notifies the insufficient payment value	Use case ends

7. Input data

No	Data fields	Descriptions	Mandatory	Valid condition	Example
1	Card owner		Yes		
2	Card number		Yes		
3	Expiry		Yes		
4	PIN code		Yes		

8. Output data

No	Data fields	Descriptions	Display format	Example
1	Title	Title of a media product		Product_name
2	Price	Price of the corresponding media product	- Comma for thousands separator - Positive integer - Right alignment	123,000
3	Quantity	Quantity of the corresponding media product	- Positive integer - Right alignment	2
4	Amount	Total money of the corresponding media product	- Comma for thousands separator - Positive integer - Right alignment	123,000
5	Subtotal before VAT	Total price of products in the cart before VAT	- Comma for thousands separator - Positive integer - Right alignment	123,000
6	Subtotal	Total price of products in the cart with VAT		123,000
7	Shipping fees			123,000
8	Total	Sum of subtotal and shipping fees		123,000
9	Currency			VND

10	Name			Name
11	Phone number			Number
12	Province	Choose from list		Province
13	Address			Address
14	Transaction date		dd/mm/yy	
15	Shipping instructions			

9. Postconditions: None

3.3. Use Case "Place rush order"

Use Case "Place rush order"

1. Use case code

UC003

2. Brief Description

This use case describes the interaction between the customer and AIMS when the customer wants to make a rush order delivery.

3. Actors

3.1 Customer

4. Pre-conditions

Customer chooses rush order option.

5. Basic Flow of Events

1. AIMS displays the rush order delivery screen with a list of products that support rush order delivery (see Table 2)

2. Customer updates rush order information and chooses products

3. AIMS checks the validity of the order information

4. AIMS calculates shipping costs

5. AIMS displays order information

6. Alternative flows

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

No	Location	Condition	Action	Resume location
1.	At Step 1	If the customer cancels the payment transaction	▪ Continues the UC001 – "Place order"	Use case ends
2.	At Step 3	If the location is not in Ha Noi	▪ Notifies the invalid information	2
3.	At Step 3	Missing information	▪ Requests customer to fill the missing information	2

7. Input data

Table 2 - Input data of rush order delivery information

No	Data fields	Description	Mandatory	Valid condition	Example
1.	Receiver's name		Yes		DINH VIET QUANG
2.	Phone number		Yes	10-digit number	0123456789
3.	City	Choose from list	Yes		Ha Noi
4.	Address		Yes		No 1, Dai Co Viet street, Hai Ba Trung district
5.	Time		Yes		12:00, 01/01/2024
6.	Instruction		No		Weekdays delivery

1. **Output data: None**
2. **Post-conditions**

Calculate delivery costs to continue printing invoice for UC001.

3.4 Use case CRUD cart product

Use Case "CRUD Cart Product"

1. Use case code: UC004

2. Brief descriptions:

- This use case allows customers to manage the products in their shopping cart, including adding products, viewing the cart, updating product quantities, and removing products from the cart

3. Actors:

3.1. Customer

4. Preconditions:

- The customer has navigated to the product list or product detail screen.

5. Basic flow of events:

a. Add Product to Cart:

1. The customer selects a product from the product list or product detail screen.
2. The customer specifies the quantity and adds the product to the cart.
3. The software updates the cart with the selected product and quantity.
4. The software displays the updated cart with the total price excluding VAT.

b. View Cart:

1. The customer requests to view the cart.
2.The software displays the cart information, including the list of products, their quantities, prices, and the total price excluding VAT.

c. Update Product Quantity in Cart:

1. The customer selects a product in the cart to update its quantity.
2. The customer specifies the new quantity.
3. The software checks the inventory to ensure the requested quantity is available.
4. If the inventory is sufficient, the software updates the cart with the new quantity.
5. If the inventory is insufficient, the software notifies the customer of the available quantity and prompts for an update.
6. The software displays the updated cart with the new total price excluding VAT.

d. Remove Product from Cart:

1. The customer selects a product in the cart to remove.
2. The customer confirms the removal.

3. The software updates the cart by removing the selected product.
4 The software displays the updated cart with the new total price excluding VAT.

6. Alternative flows:

No	Location	Condition	Action	Resume location
1	Step 4	Customer sorts product according to price	- AIMS sorts products according to their price ascending.	Step 4

No	Location	Condition	Action
1	Insufficient Inventory When Adding or Updating Product	Customer attempts to add or update a product quantity that exceeds available inventory	Display a message indicating the maximum available quantity. Customer can adjust the quantity or cancel the action.
2	View Cart with Insufficient Inventory Notice	Customer views the cart and any product has become out of stock or has insufficient quantity	Notify the customer of the issue and display the current available quantity.

7. Input data

Action	Input Data	Description
Add Product to Cart	Product ID, Quantity	The customer selects a product and specifies the quantity to add to the cart.
View Cart	N/A	The customer requests to view the cart.
Update Product Quantity	Product ID, New Quantity	The customer selects a product in the cart and specifies a new quantity.
Remove Product from Cart	Product ID	The customer selects a product in the cart to remove.

8. Output data

Action	Output Data	Description

Add Product to Cart	Updated Cart (Product List, Quantities, Total Price excluding VAT)	The software displays the updated cart information after adding the product.
View Cart	Cart Information (Product List, Quantities, Prices, Total Price excluding VAT, Inventory Status)	The software displays the current cart information including product details and total price.
Update Product Quantity	Updated Cart (Product List, Quantities, Total Price excluding VAT)	The software displays the updated cart information after changing the product quantity.
Remove Product from Cart	Updated Cart (Product List, Quantities, Total Price excluding VAT)	The software displays the updated cart information after removing the product.
Insufficient Inventory	Error Message (Available Quantity)	The software displays an error message indicating the maximum available quantity for the product.

9. Postconditions:

- The cart is updated with the new list of products and quantities.

- The cart reflects the current inventory status of the products.

3.5 Use case Search product

Use Case "Search Product"

1. Use case code: UC005

2. Brief descriptions:

- This use case describes the interaction between customer and AIMS software when customer wants to search products.

3. Actors:

3.1. Customer

4. Preconditions:

5. Basic flow of events:

Step 1: Customer enters the name of the desired product in the search bar.

Step 2: Customer request to searches the product.

Step 3: AIMS searches the product.

Step 4: AIMS displays the list of products that match the searched product's name.

6. Alternative flows:

No	Location	Condition	Action	Resume location
1	Step 4	Customer sorts product according to price	- AIMS sorts products according to their price ascending.	Step 4

7. Input data

8. Output data

9. Postconditions: None

3.6 Use case Canel order

Use Case "Cancel order"

1. Use case code

UC006

2. Brief Description

This use case describes the interaction between Admin and AIMS when Admin wishes to cancel an order.

3. Actors

3.1. Admin

4. Pre-conditions

There is at least one order in the system.

5. Basic Flow of Events

Step 1: The admin selects the refuse option.

Step 2: The AIMS software updates the order status.

6. Post-conditions

An order is canceled, and its order status is updated accordingly in the database.

3.7 Use case Review pending customer order

Use Case "Review Pending Order"

1. Use case code

UC006

2. Brief Description

This use case describes the interaction between Admin and AIMS when Admin wishes to review pending order.

3. Actors

3.1. Admin

4. Pre-conditions

There is at least one order in the system.

5. Basic Flow of Events

Step 1: The AIMS software displays the order list.

Step 2: The admin updates the status of the pending order.

Step 3: The AIMS software displays the order list with updated status.

6. Alternative flows

Table 1 - Alternative flows of events for UC Place order

No	Location	Condition	Action	Resume location
1.	Step 2	If the admin refuses the order	- The AIMS software updates the order status.	Step 2

7. Post-conditions

The order status is updated and is saved in the database.

3.8 Use case Log in

Use Case "Log in"

1. Use case code: UC007

2. Brief descriptions:

- This use case describes the interaction between the product manager and AIMS when he wants logging into the system

3. Actors:

None

4. Preconditions:

None

5. Basic flow of events:

1. AIMS software displays the invoice information.

2. Customer requests to pay the order.
3. AIMS displays the payment screen.
4. Customer enters information and confirms the transaction.
5. AIMS requests VNPay to process the transaction.
6. VNPay processes the transaction.
7. AIMS records the transaction information.

6. Alternative flows:

No	Location	Condition	Action	Resume location
1	Step 5	Invalid information	The system displays an error message	Use case ends

7. Input data

No	Data fields	Descriptions	Mandatory	Valid condition	Example
1	Email		Yes		a@gmail.com
2	Password		Yes		123456

8. Output data
9. Postconditions: None

3.9 Use case CRUD product

3.9.1. Use case "Create Product"

Use Case "Create Product"

1. Use case code: UC0091

2. Brief descriptions:
- This use case describes the interaction between the product manager and AIMS when the Product manager creates a new product.

3. Actors:
3.1. Product manager

4. Preconditions:
- Product manager has been logged in.

5. Basic flow of events:
Step 1: Product manager request to create a new product.
Step 2: AIMS display form of product information.
Step 3: Product manager fills the product's information and saves product's information.
Step 4: AIMS displays the home screen.

6. Alternative flows:

No	Location	Condition	Action	Resume location
1	Step 3	Product manager cancels the process.	- AIMS displays the home screen with no change.	Use case end.

7. Input data
8. Output data
9. Postconditions:
- New product is created.

3.9.2. Use case "Read Product"

Use Case "Read Product"

1. Use case code: UC0092

2. Brief descriptions:
- This use case describes the interaction between the Product manager and AIMS when the Product manager reads the product's information.

3. Actors:
3.1. Product manager

4. Preconditions:
- Product manager has been logged in.

5. Basic flow of events:
Step 1: Product manager requests to see product management's screen.
Step 2: AIMS displays list of all products.
Step 3: Product manager requests to view a product's information.
Step 4: AIMS display product's information.

6. Alternative flows:
7. Input data
8. Output data

No	Data fields	Descriptions	Display format	Example
1.	id	product's id	Integer	
2.	title	product's title	String	
3.	category	product's category	String	
4.	price	product's price	Integer	
5.	quantity	product's quantity	Integer	
6.	imageURL	URL to product's image	String	
7.	type	product type	String	

9. Postconditions: None

3.9.3. Use case "Update Product"

Use Case "Update Product"

1. Use case code: UC0093

2. Brief descriptions:
- This use case describes the interaction between the Product manager and AIMS when the Product manager updates products.

3. Actors:
3.1. Product manager

4. Preconditions:
- Product manager has been logged in.

5. Basic flow of events:
Step 1: Product manager requests to update a product.
Step 2: AIMS display form of product information.
Step 3: Product manager updates the product's information and saves product's information.
Step 4: AIMS displays the home screen.

6. Alternative flows:

No	Location	Condition	Action	Resume location
1	Step 3	Product manager cancel the process.	- AIMS displays the home screen with no change.	Use case end.

7. Input data
8. Output data
9. Postconditions:
- Product's information is updated.

3.9.4. Use case "Delete Product"

Use Case "Delete Product"

1. Use case code: UC0094

2. Brief descriptions:
- This use case describes the interaction between the Product manager and AIMS when the Product manager deletes products.

3. Actors:
3.1. Product manager

4. Preconditions:
- Product manager has been logged in.

5. Basic flow of events:
Step 1: Product manager request to delete a product.
Step 2: AIMS deletes all the product's information.
Step 3: AIMS notifies successful delete product and displays the home screen.

6. Alternative flows:

No	Location	Condition	Action	Resume location
1	Step 3	Product manager cancel the process.	- AIMS displays the home screen with no change.	Use case end.

7. Input data
8. Output data
9. Postconditions:
- Requested product is deleted.