

HANOI UNIVERSITY OF SCIENCE AND TECHNOLOGY

School of Information and communications technology

Software Requirement Specification

AIMS – An Internet Media Store ITSS Software Development

Nguyen Trong Huy

Huy.NT210451@sis.hust.edu.vn

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1 Introduction

This SRS document serves as a comprehensive guide outlining the requirements, features, and constraints of the software project. It is intended to provide a clear understanding of the scope and objectives of the project for all stakeholders involved, including clients, users, and development team members.

1.1 Objective

The primary purpose of this document is to establish a common understanding of the software requirements among all stakeholders. It defines the functionalities, features, and performance expectations of the software system to be developed. By documenting these requirements in detail, this document serves as a reference point throughout the software development lifecycle, guiding the design, implementation, testing, and deployment phases.

1.2 Scope

This AIMS – ‘An Internet Media Store’ software is developed to be a desktop platform e-commerce software, which helps users to order media products on the Internet, and the store managers, at the same time, are easier to manage their store as well as the orders.

This program is capable of catering to 1,000 clients concurrently with minimal impact on performance and can run uninterrupted for 300 hours without any issues. Moreover, it can return to regular functioning within a maximum of 1 hour following an incident. The software's response time ranges from 2 seconds under typical circumstances to 5 seconds during periods of peak activity.

In AIMS, customers can not only search for products, but also sort products as their desire, they can place order or rush order for necessary cases. AIMS is supported for VNPay transactions; thus, customers can easily pay for their order. Moreover, customers can review their order and modify any information during the processing order stage. While shopkeepers can manage their store by managing products directly in the system. They, meanwhile, can process the orders of the customers. For administrators, they are capable of managing users and privilege problems of users.

Besides, for a desktop website, the need for graphical user interface is also under consideration, which can meet the requirements of end users and enhance the experience of users. Throughout the development stage, every document is also recorded for the future maintenance and upgrading. We keep our focus on every stage to supervise the timeline of the client provided and the quality the software may deliver. If any change is made, our team will adapt quickly to revise our work.

1.3 Glossary

| <i>No</i> | <i>Term</i> | <i>Explanation</i> | <i>Example</i> | <i>Note</i> |
|-----------|---|--|------------------|---|
| 1 | session | a session is a temporary period of interaction or engagement between a user and a system, during which the user accesses and interacts with software or a website, and the system maintains relevant settings and informations. | software session | |
| 2 | VAT (Value-added tax) | It is a type of consumption tax that is levied on the value added to goods and services at each stage of production or distribution. VAT is typically implemented as a percentage of the final selling price of a product or service, and it is collected by businesses on behalf of the government. | | |
| 3 | API (Application Programming Protocol) | API is a set of rules, protocols, and tools that allows different software apps to communicate with each other. | VNPay API | AIMS connects API of VNPay for transaction. |
| 4 | Payment gateway | A technology service that facilitates the secure transmission of payment information between a merchant's website or application and the financial institutions involved in processing payment transactions. | | |
| 5 | GUI (Graphical user interface) | Refers to the visual elements and interactive components of a software application that allow users to interact with the system using graphical icons, buttons, menus, and windows. | | |

| <i>No</i> | <i>Term</i> | <i>Explanation</i> | <i>Example</i> | <i>Note</i> |
|-----------|----------------|---|----------------|---|
| 6 | Credit card | A credit card is a payment card issued by a financial institution, such as a bank or credit union, that allows cardholders to borrow funds up to a predetermined limit to make purchases or pay for goods and services. | | AIMS currently supports for credit card payment through VNPay |
| 7 | Authentication | Authentication is the process of verifying the identity of a user, device, or system attempting to access a resource or service. | | |
| 8 | Response time | Response time refers to the amount of time it takes for a system to respond to a user's request or input. | | |

1.4 References

2 Overall Description

This section describes the survey of overall description of AIMS software, which includes the stakeholders, the main functionalities of the software. At the same time, this also delivers the main business processes of the software by illustrating activity diagrams.

2.1 Survey

The system under consideration is an internet media store designed to facilitate the desire to purchase digital media products online by the customers. This software serves as a comprehensive platform for not only customers but also the shop managers or product managers.

In the systems includes three main actors:

- Customer: They can view, search for or sort in order by many factors the products that are available in the store. To place an order, they must add, update the products in the cart, and provide delivery information to the system. If the information is available, the customer needs to pay for the order through the VNPay platform. If the order is created successfully, the customer will get an email from AIMS about the order invoice. Moreover, customers can place orders with rush orders in some cases.

- Product manager: They can manage their products in their shop through the user interface of manager supplied by AIMS software. They can add, remove, update information about the products. Moreover, under some circumstances, they can apply sales for many products.

- Administrator: They can gain access to manage user in the system. They can also block or unblock the user (customer, product manager) and the system will send the mail to that account. In addition, admin can also change the role of the user like a user can be a customer and a product manager at the same time.

Besides, VNPay is also a stakeholder in the system when they supply the API to make the transaction in the AIMS software.

2.2 Overall requirements

A Use Case diagram illustrates the interactions between actors and use cases. It represents the functional requirements of the system, showing the interaction between external and internal agents with the system.

The figure below shows the general use case diagram of AIMS software, which includes the actors and use cases that are involved in the systems.

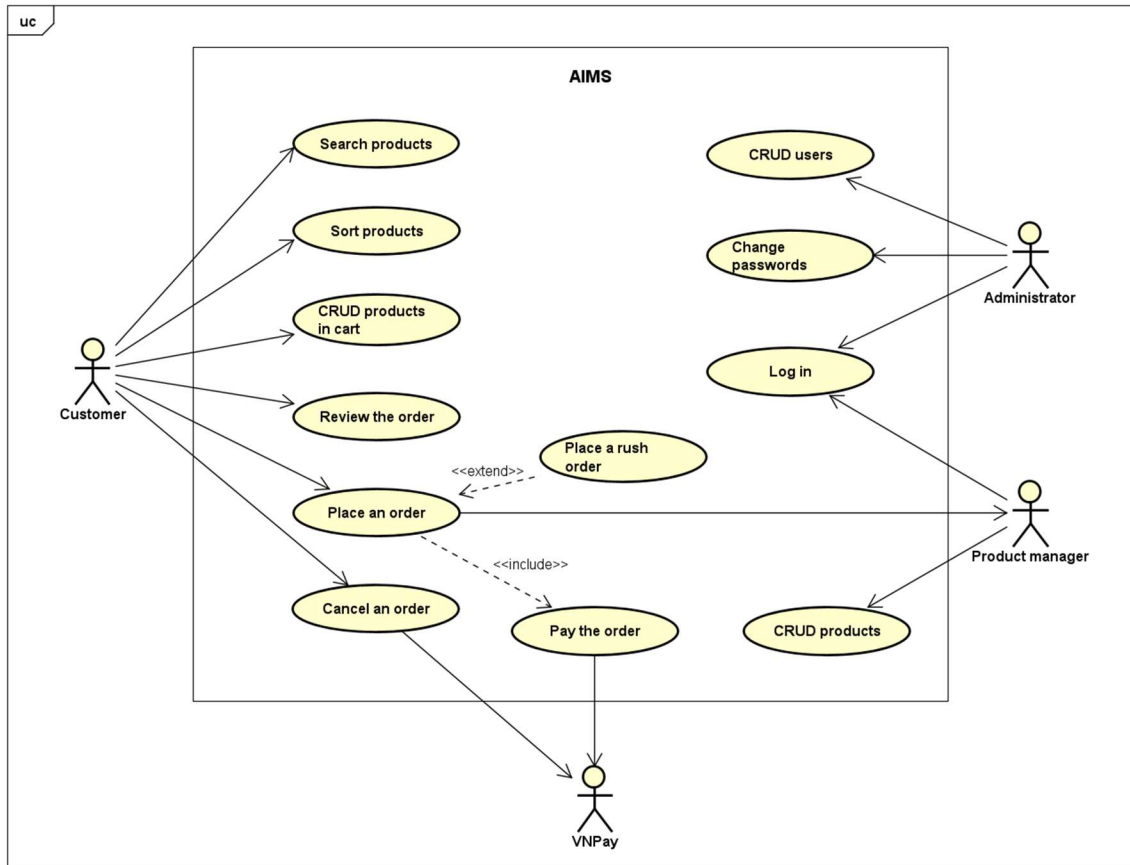


Figure 1: General use case diagram.

2.3 Business process

In AIMS software, there are three main business operations: business operation – “Place an order” by the customer, business operation – “Mange products” by product managers and business operation “Manage users” by administrator. The details of each business processe are described by an activity diagram in each section of each one.

Activity diagrams are used for business processes because they provide a clear visual representation of workflows, decision points, and resource allocation. They help stakeholders understand, analyze, and optimize complex processes by illustrating the sequence of activities, concurrency, error handling, and integration with other models. They serve as effective documentation tools and facilitate communication and collaboration among stakeholders.

2.3.1 Business operation – “Place an order”

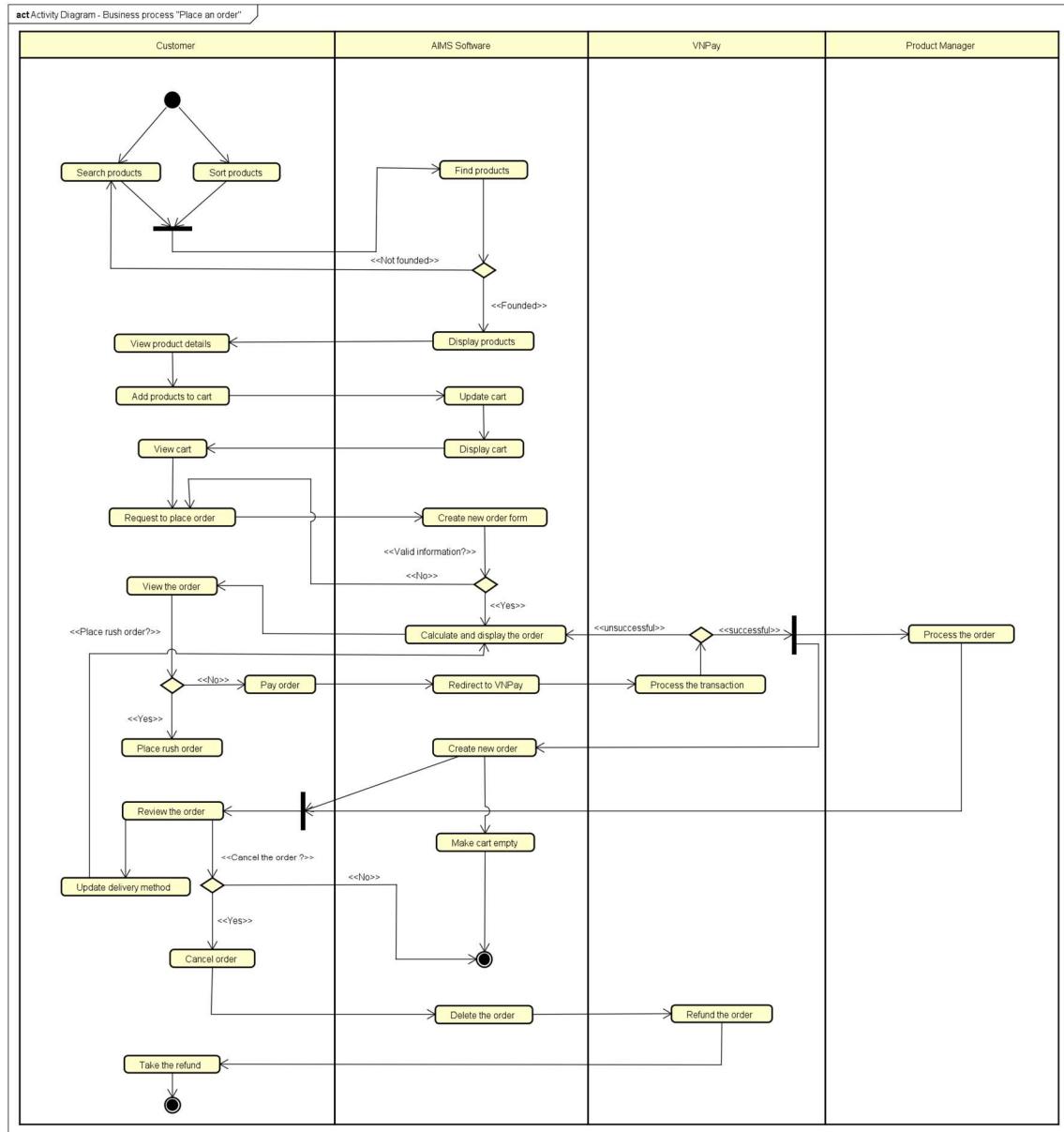


Figure 2: Business process - "Place an order" by customer.

2.3.2. Business operation – “Manage products.”

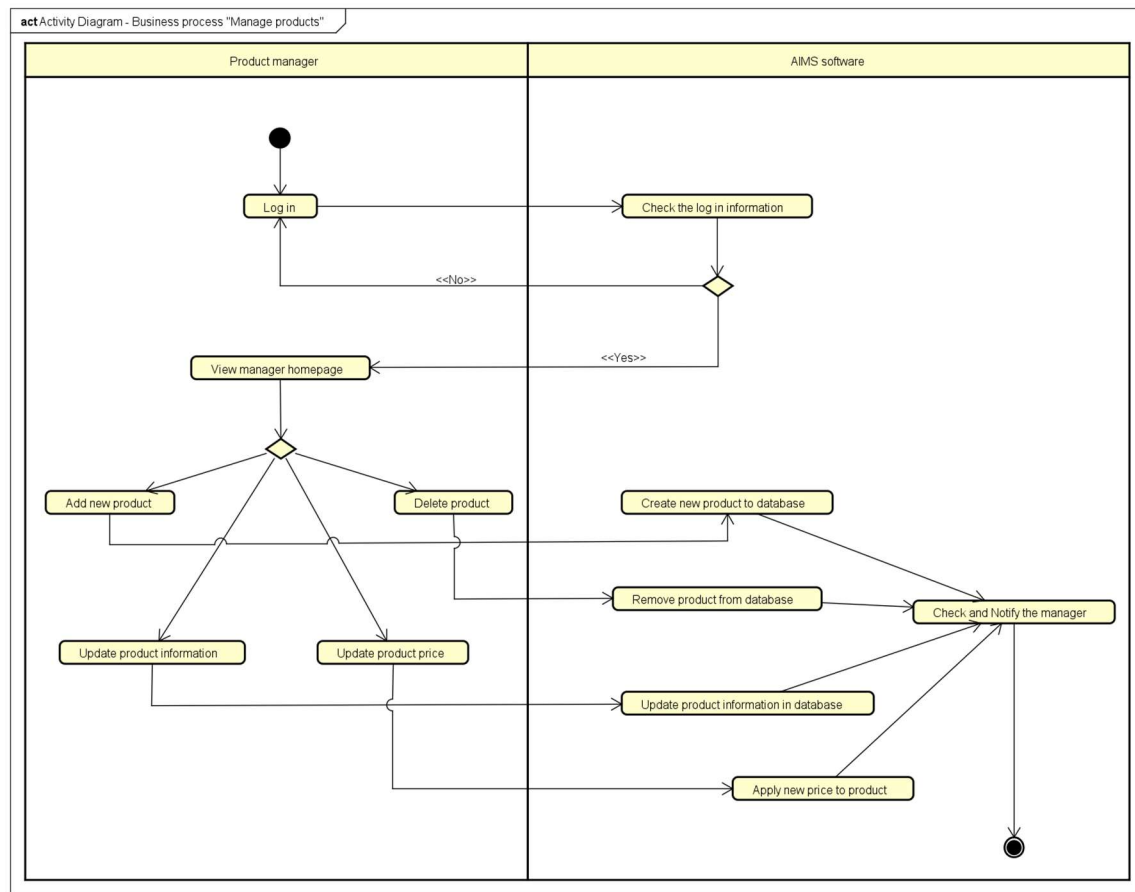


Figure 3: Business process - "Manage products" by product manager.

2.3.3 Business operation – “Manage users.”

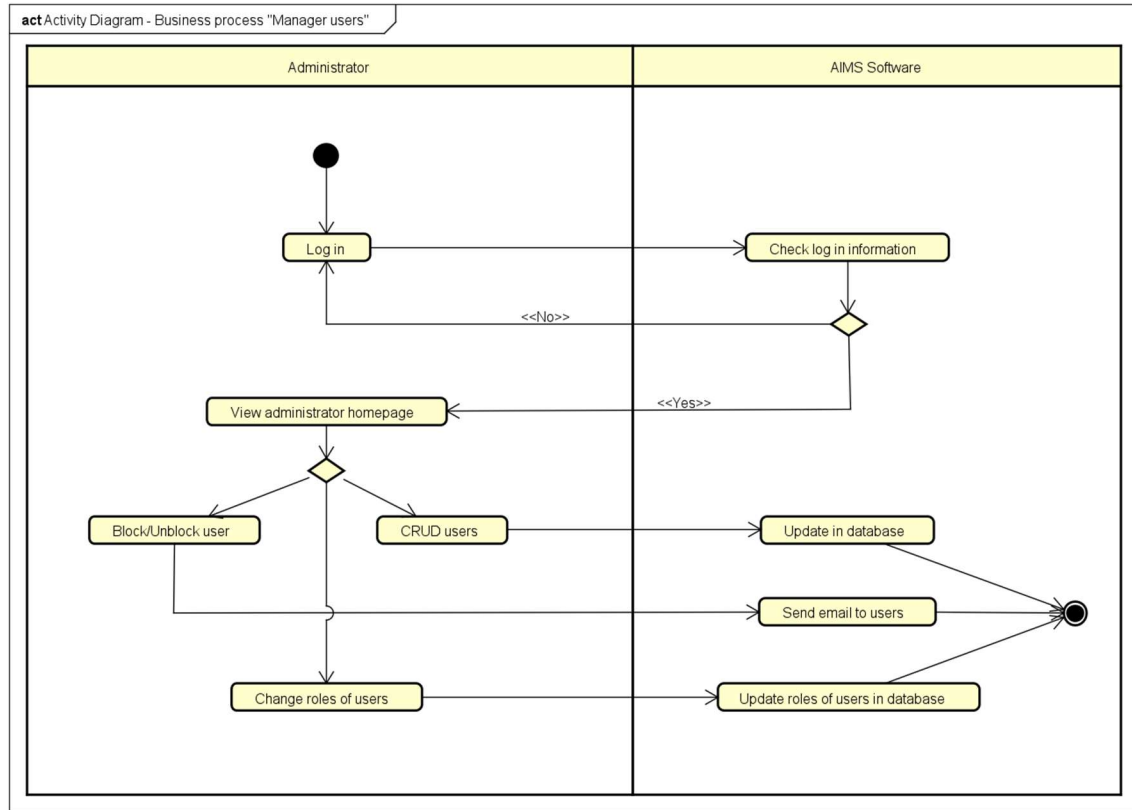


Figure 4: Business process - "Manage users" by admin.

3 Detailed Requirements

Detailed requirements typically include specific descriptions of the functionalities, features, user interactions, system behavior, performance criteria, constraints, and dependencies of the software system. These requirements serve as the foundation for software development and encompass both functional and non-functional aspects of the system.

3.1 Use case “Place order”

Use Case “PLACE ORDER”

1. Use case code

UC001

2. Brief Description

This use case describes the interaction between the software and the customer when the customer wants to place an order.

3. Actors

- Customer
- Product manager

4. Preconditions

Customer must be in their working session and the cart is not empty.

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 displays order and 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 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).
12. The product manager can view the order placed by customer and then process them (accept or reject).

6. Alternative flows

Table A-Alternative flows of events for UC “Place Order”

| No | Location | Condition | Action | Resume location |
|----|-----------|--|---|-----------------|
| 1. | At Step 3 | If the products are not available | <ul style="list-style-type: none"> The AIMS software notifies that the 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 | <ul style="list-style-type: none"> 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 | <ul style="list-style-type: none"> AIMS software inserts use case “Place rush order” | At Step 6 |
| 4. | At Step 8 | If the order payment is not sucessul or goes back from payment | <ul style="list-style-type: none"> | 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 | | Do Minh Hieu |
| 2. | Phone number | | Yes | 10 digits | 0987654321 |
| 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 ‘Vuot Nguc’ |
| 2. | Price | Price of the corresponding media product | <ul style="list-style-type: none"> Comma for thousands seperator Positive integer Right alignment | 123,000 |

| | | | | |
|----|--------------|---|--|-----------|
| 3. | Quantity | Quantity of the corresponding media | <ul style="list-style-type: none"> ▪ Positive integer ▪ Right alignment | 2 |
| 4. | Amount | Total money of the corresponding media | <ul style="list-style-type: none"> ▪ Comma for thousands separator ▪ Positive integer ▪ Right alignment | 246,000 |
| 5. | Subtotal | Total amount of all products in the order | | 2,316,000 |
| 6. | Shipping fee | | | 30,000 |

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

| No | Data fields | Description | Display format | Example |
|----|---------------------|-------------|---|--|
| 1. | Customer name | | | Do Minh Hieu |
| 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 (VNĐ) Vietnamese locale | 1.200.000 VNĐ |
| 6. | Transaction ID | | | |
| 7. | Transaction content | | | |
| 8. | Transaction date | | dd/mm/yyyy | 05/10/2023 |

9. Postconditions

A new order is created, and its information is sent via email to the customer or nothing happens if payment is not successful.

Activity diagram for use case “Place order”:

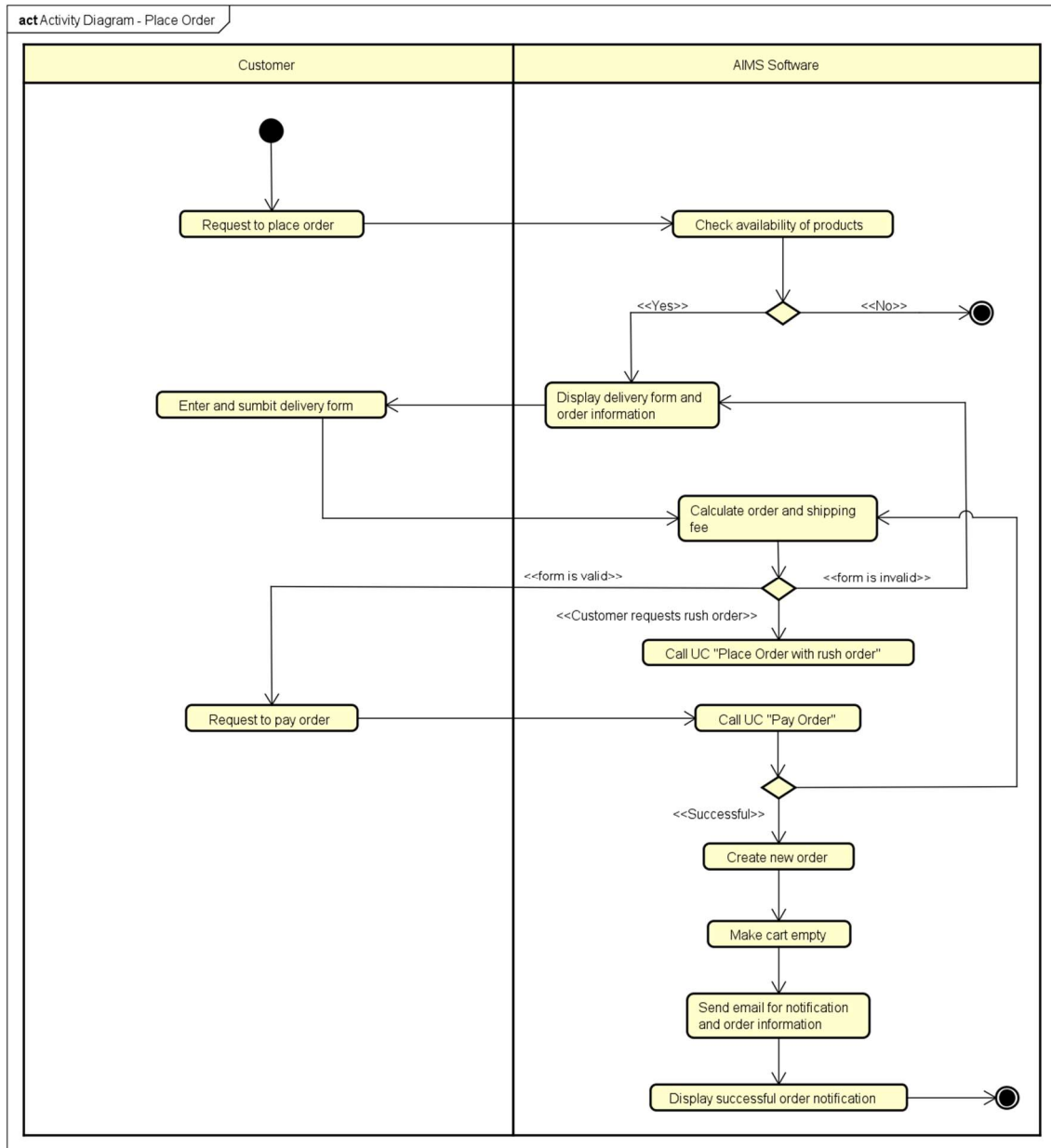


Figure 5: Activity diagram for UC "Place order".

3.2 Use case "Pay order"

Use Case "PAY ORDER"

1. Use case code

UC002

2. Brief Description

This use case describes the interaction between the software, VNPay and the customer when the customer wants to pay for an order.

3. Actors

3.1 Customer

3.2 VNPay

4. Preconditions

AIMS calculates the total of the order requested by customers.

5. Basic Flow of Events

1. AIMS software displays the invoice (see Table 1)
2. Customer asks to pay the invoice
3. AIMS software redirects to VNPay with payment information
4. VNPay notifies the transaction result
5. AIMS software saves the payment transaction

6. Alternative flows

Table A-Alternative flows of events for UC “Pay Order”

| No | Location | Condition | Action | Resume location |
|----|-----------|---|--------|-----------------|
| 5. | At Step 5 | If the customer cancels the payment transaction | ▪ | At Step 1 |

7. Input data

8. Output data

Table 1-Output data of invoice

| No | Data fields | Description | Display format | Example |
|-----|---------------------|--|--|-----------------|
| 7. | Title | Title of a media product | | DVD ‘Vuot Nguc’ |
| 8. | Price | Price of the corresponding media product | <ul style="list-style-type: none"> ▪ Comma for thousands separator ▪ Positive integer ▪ Right alignment | 123,000 |
| 9. | Quantity | Quantity of the corresponding media | <ul style="list-style-type: none"> ▪ Positive integer ▪ Right alignment | 2 |
| 10. | Amount | Total money of the corresponding media | <ul style="list-style-type: none"> ▪ Comma for thousands separator ▪ Positive integer ▪ Right alignment | 246,000 |
| 11. | Subtotal before VAT | Total price of products in the cart before VAT | <ul style="list-style-type: none"> ▪ Comma for thousands separator | 2,106,000 |

| | | | | |
|-----|---------------|--|---|-----------|
| 12. | Subtotal | Total price of products in the cart with VAT | <ul style="list-style-type: none"> Positive integer Right alignment | 2,316,000 |
| 13. | Shipping fees | | | 30,000 |
| 14. | Total | Sum of subtotal and shipping fees | | 2,346.600 |

9. Postconditions

Payment information is sent via email to the customer or nothing happens if payment is not successful.

Activity diagram for use case “Pay order”:

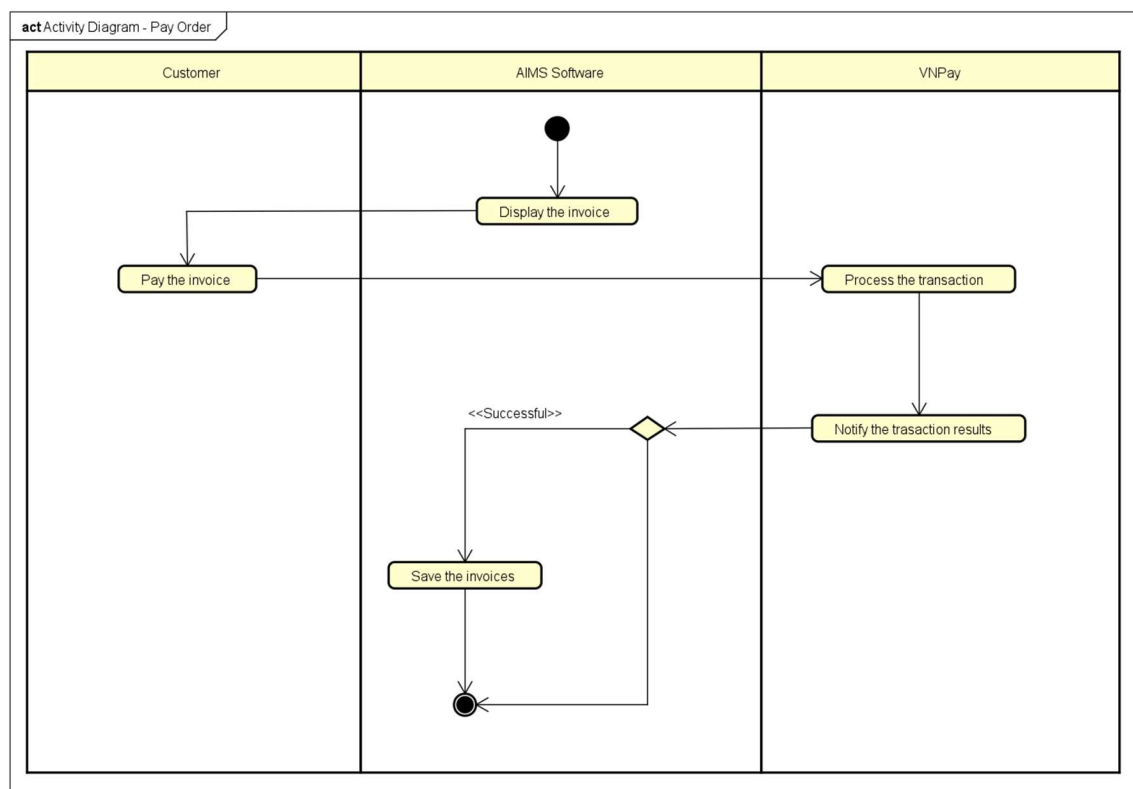


Figure 6: Activity diagram for UC "Pay order".

3.3 Use case “Place order with rush order”

Use Case “PLACE ORDER WITH RUSH ORDER”

1. Use case code

UC003

2. Brief Description

This use case describes the interaction between the software and the customer when the customer wants to place an order with rush order.

3. Actors

3.1 Customer

4. Preconditions

Customer must be in their working session; the cart is not empty, and the customer's information is valid.

5. Basic Flow of Events

1. Customer requests to place rush order
2. AIMS software checks whether the delivery address supports this service and the eligibility of the products.
3. AIMS software displays the form of additional information (See table 1) and reequests customer to complete.
4. Customer completes the form of additional information and submit the form.
5. AIMS processes, calculates, and displays the order and shipping fees. (See table 2)
6. Customer asks to pay order.

6. Alternative flows

Table A-Alternative flows of events for UC “Place Order”

| No | Location | Condition | Action | Resume location |
|----|-------------|--|---|-----------------|
| 6. | At Step 2 | If the no products are not available or address is not eligible for rush order | <ul style="list-style-type: none"> ▪ The AIMS software notifies that the the products in the cart are not available or address is not supported and stay at the use case “View cart” ▪ Some of the products may be delivered as usual | Use case ends |
| 7. | At any Step | If the customer chooses other order methods | <ul style="list-style-type: none"> ▪ AIMS returns to use case “Place Order” | Use case ends |

7. Input data

Table 1-Input data of delivery information

| No | Data fields | Description | Mandatory | Valid condition | Example |
|----|---------------|-------------|-----------|-----------------|--------------|
| 6. | Receiver name | | Yes | | Do Minh Hieu |

| | | | | | |
|-----|-----------------------|--------------------|-----|-----------|--|
| 7. | Phone number | | Yes | 10 digits | 0987654321 |
| 8. | Province | Choose from a list | Yes | | Hanoi |
| 9. | Address | | Yes | | 12, 34 Alley of Tran Thai Tong Street, Cau Giay district |
| 10. | Shipping instructions | | No | | |
| 11. | Delivery time | Rush delivery time | No | | |

8. Output data

Table 2-Output data of order information and shipping fee

| No | Data fields | Description | Display format | Example |
|-----|--------------|---|--|-----------------|
| 15. | Title | Title of a media product | | DVD ‘Vuot Nguc’ |
| 16. | Price | Price of the corresponding media product | <ul style="list-style-type: none"> Comma for thousands separator Positive integer Right alignment | 123,000 |
| 17. | Quantity | Quantity of the corresponding media | <ul style="list-style-type: none"> Positive integer Right alignment | 2 |
| 18. | Amount | Total money of the corresponding media | <ul style="list-style-type: none"> Comma for thousands separator Positive integer Right alignment | 246,000 |
| 19. | Subtotal | Total amount of all products in the order | | 2,316,000 |
| 20. | Shipping fee | | | 30,000 |

9. Postconditions

A new order is created, and its information is sent via email to the customer or nothing happens if payment is not successful.

Activity diagram for use case “Place order with rush order”

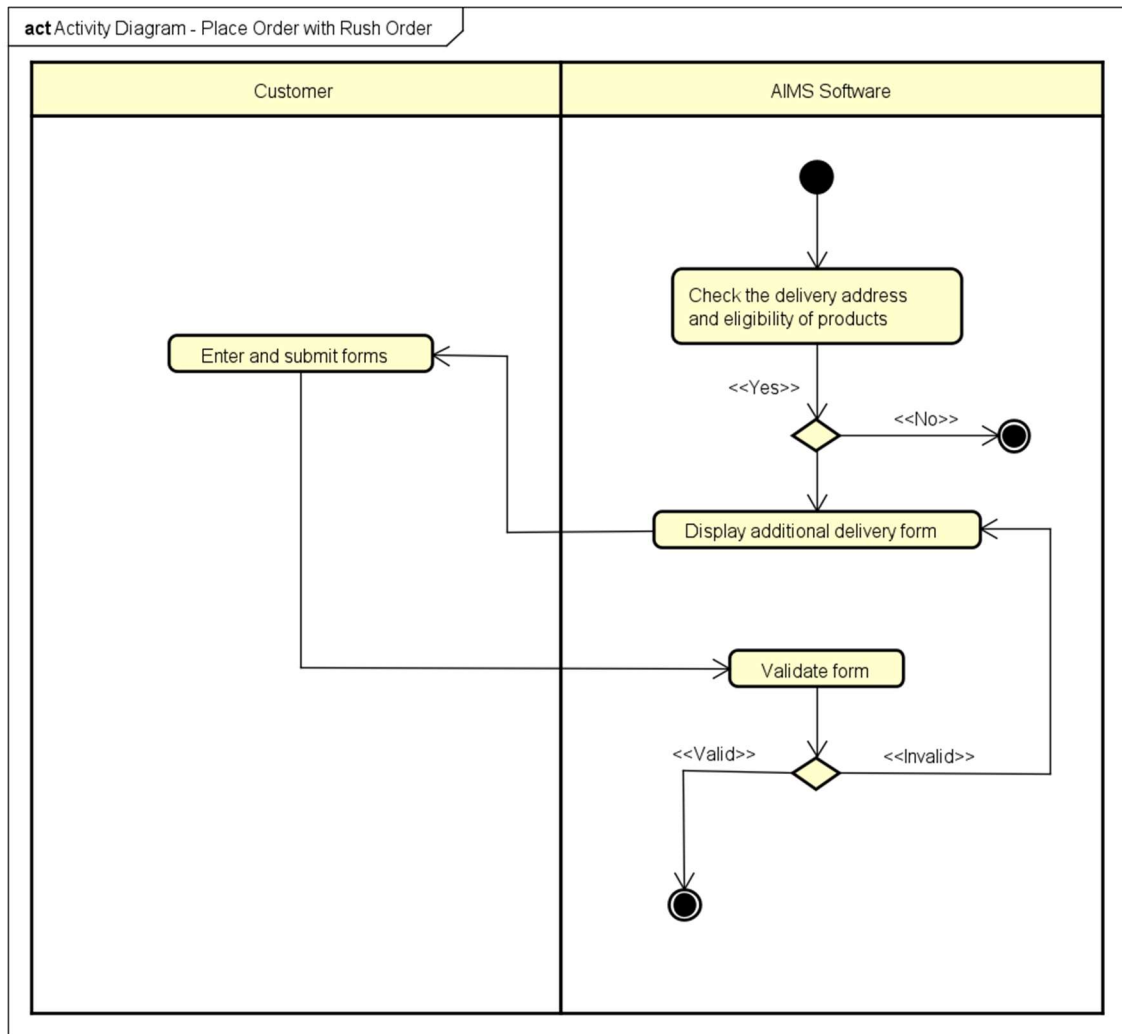


Figure 7: Activity diagram for use case "Place order with rush order".

4 Supplementary specification

Supplementary specifications are additional details that complement the main Software Requirements Specification (SRS). They often include information about external interfaces, performance requirements, quality attributes, design constraints, and other supplementary details that are necessary for a comprehensive understanding of the software system.

4.1 Functionality

- Use cases related to transactional operations, if errors occur during the connection or operation process, need to provide corresponding error notifications so that actors know that the error is related to the system and not the user's fault.

- Use cases related to steps involving registration, account recovery, and password change need to request accurate, secure, reliable confirmation, with at least 2 methods to confirm the user's account. Avoid situations where there is insufficient information to confirm the account.

- Use cases used by Product manager and Customer, guest users need to log in with corresponding roles.

4.2 Usability

- The functions need to be designed for ease of operation.
- Convenient layout, easy to operate.
- The language used should be understandable, avoiding the use of too much technical jargon.

4.3 Reliability

- Availability: The system is expected to be available most of the time, with scheduled maintenance windows limited to no more than 1 hour per month.

- Error Handling: Robust error handling mechanisms detect and log errors, with alerts sent to administrators for immediate resolution. The system gracefully handles errors to prevent service disruptions and provide a seamless user experience.

- Testing and Verification: Rigorous testing procedures, including unit tests, integration tests, and stress tests, verify the system's reliability under various conditions. Automated monitoring tools continuously monitor system performance and alert administrators to potential issues.

- Documentation and Reporting: Comprehensive documentation outlines system architecture, failover procedures, and incident response protocols. Incident reports document reliability incidents and resolutions, facilitating continuous improvement and accountability.

4.4 Performance

- Concurrent Capacity: The program can handle up to 1,000 clients simultaneously with minimal performance impact.

- Continuous Operation: It can run continuously for 300 hours without encountering any issues.

- Recovery Time: In the event of an incident, the program can return to regular functioning within a maximum of 1 hour.

- Response Time: The software's response time varies from 2 seconds under typical circumstances to 5 seconds during periods of peak activity.

4.5 Supportability

This software is supported for Windows platform desktop, and computer. At the same time, whenever clients need to upgrade or maintain any module, then the development team will support them.

4.6 Other requirements

Beautiful graphical user interface, easy to use, fast processing speed, accurate. Reasonable product categorization, easy to search.