

HANOI UNIVERSITY OF SCIENCE AND TECHNOLOGY

School of Information and communications technology

## Software Requirement Specification

Version 1.2

### An Internet Media Store

### Subject: ITSS Software Development

Nguyen Dinh Dung - 20210230

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# 1 Introduction

## 1.1 Objective

- The rise of the Internet age, coupled with the advent of the Fourth Industrial Revolution, has ushered in fresh prospects for everyone. The AIMS Project, an e-commerce platform dedicated to media product transactions, emerges within this landscape. Rather than delving into aspects like user authentication and management, this course will center on functionalities concerning order placement and payment within the AIMS Project.
- This documentation specifically addresses functionalities associated with the initiation and settlement of customer orders within the AIMS Project. It serves as a guide for stakeholders and software developers alike.

## 1.2 Glossary

<i>No</i>	<i>Term</i>	<i>Explanation</i>	<i>Example</i>	<i>Note</i>
1	token	A piece of data created by server, and contains the user's information, as well as a special token code that user can pass to the server with every method that supports authentication, instead of passing a username and password directly.	JSON Web Token (JWT)	Compact, URL-safe and usable especially in web browser single sign-on (SSO) context.
2	VNPay	VNPAY is an e-wallet service that applies modern technology to help users pay online. This is considered a breakthrough service in the payment field. This service brings convenience and good experience to users.		
3	Customer	an individual who interacts with the platform to browse, select, and purchase media products. Customers can search for products, add them to a cart, proceed with ordering and payment, and view		

<i>No</i>	<i>Term</i>	<i>Explanation</i>	<i>Example</i>	<i>Note</i>
		order information. They do not require a login to place orders.		
4	Product Manager	a user role within the AIMS software responsible for managing the catalog of media products available for sale. Product managers can add new products, view and edit existing product information, and delete products within certain limitations. They are tasked with ensuring that product details are accurate and up-to-date, including pricing, descriptions, and availability.		
5	Admin	a privileged user of the AIMS software with the authority to manage various aspects of the system. Administrators can create, view, update, and delete user accounts, reset passwords, assign roles, and perform other administrative tasks such as blocking or unblocking users. They have control over system-wide settings and user permissions.		
6	Vat	VAT, or Value-Added Tax, is a consumption tax added to the price of goods and services at each stage of production or distribution. In the context of the AIMS software, VAT is applied to the sale of media products. When a product manager adds a new product for sale, they provide its value and price excluding VAT. The software automatically calculates and adds		

<i>No</i>	<i>Term</i>	<i>Explanation</i>	<i>Example</i>	<i>Note</i>
		the appropriate VAT amount to the product price during transactions. VAT helps generate revenue for governments and is ultimately paid by the end consumer as part of the purchase price.		
7	Rush order	a special delivery option available to customers within the AIMS software. When selecting rush order delivery, customers can receive their items within a predefined timeframe of 2 hours. This expedited delivery service is typically limited to specific areas, such as the inner city of Hanoi, and is subject to eligibility based on product availability and delivery address. Additional fees may apply for rush order delivery.		

### 1.3 References

Some information and specifications about the payment gateway can be found at:

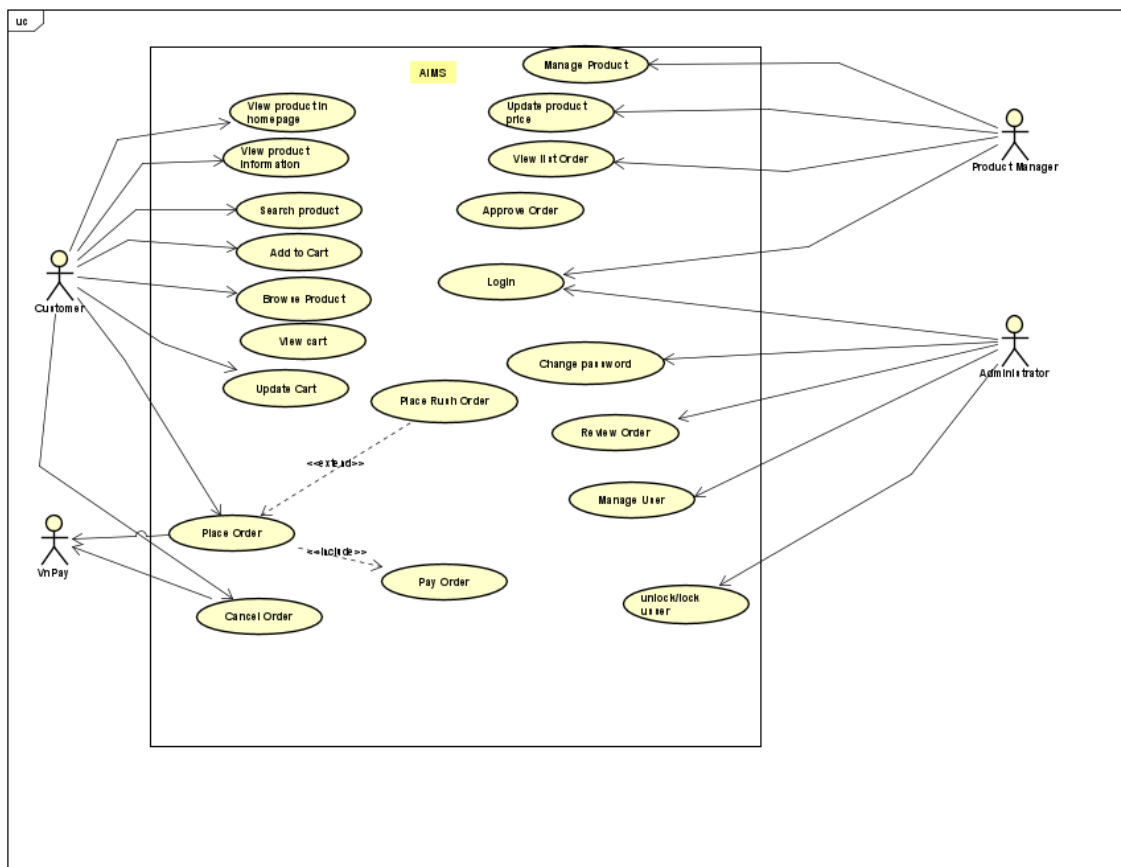
- Demo at <https://sandbox.vnpayment.vn/apis/vnpay-demo/>
- Payment API specification: <https://sandbox.vnpayment.vn/apis/docs/thanh-toanpay/pay.html>
- Query and refund API specification: <https://sandbox.vnpayment.vn/apis/docs/truy-vanhoan-tien/querydr&refund.html>

## 2 Overall Description

### 2.1 Survey

- AIMS Project is a desktop e-commerce software that has 4 main actors: Customer (Including Customer with and without account), VNPay, Admin, and Product Manager. This software allows users to easily familiarize themselves with software system and buying products online easily.

### 2.2 Overall requirements



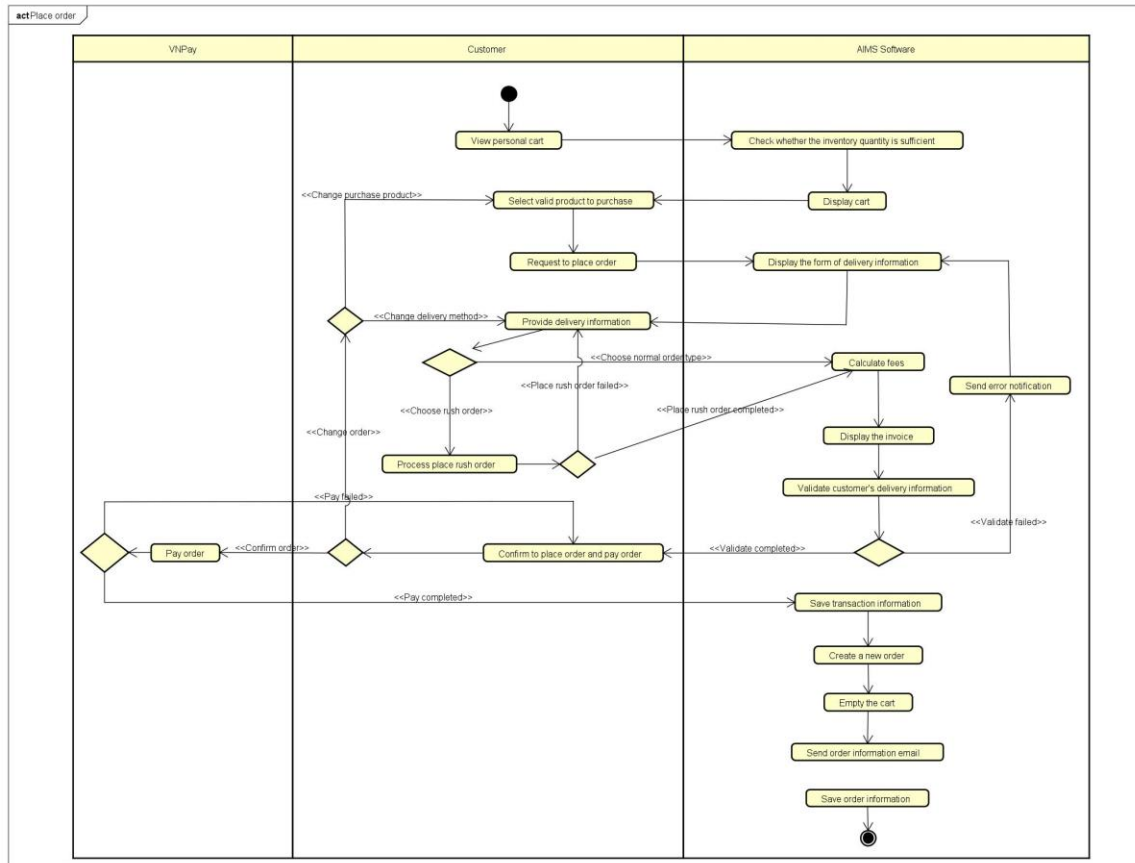
### 2.3 Business process

#### 2.3.1 Place Order process

Place order process include the following main steps:

1. Customer view the cart
2. Customer choose the product to purchase

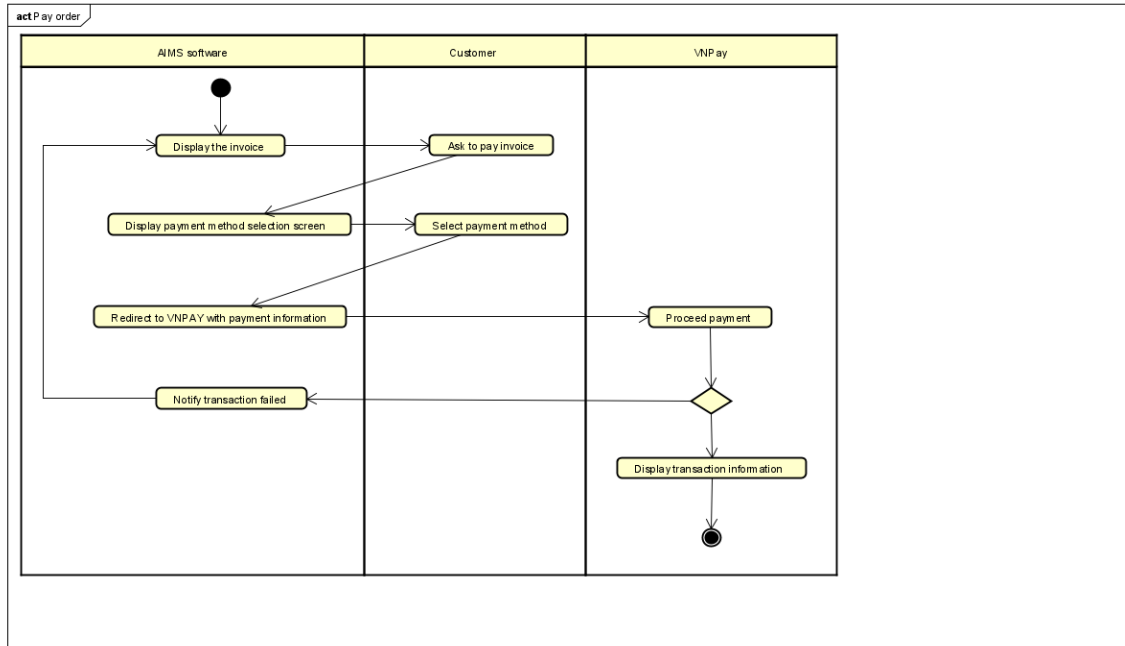
3. Customer requests to place order
4. Customer provides delivery information
5. Customer confirm delivery fee
6. Customer confirms to place order and pay order



### 2.3.2 Pay Order process

Pay Order process include the following main steps:

1. The AIMS software generates and presents the invoice to the customer
2. Upon receiving the invoice, the customer expresses the intention to proceed with payment.
3. The AIMS software then prompts the customer with a selection form for choosing a preferred payment method.
4. Customer choose payment method
5. AIMS software redirects to VNPAY with payment information
6. VNPAY notifies the transaction result.

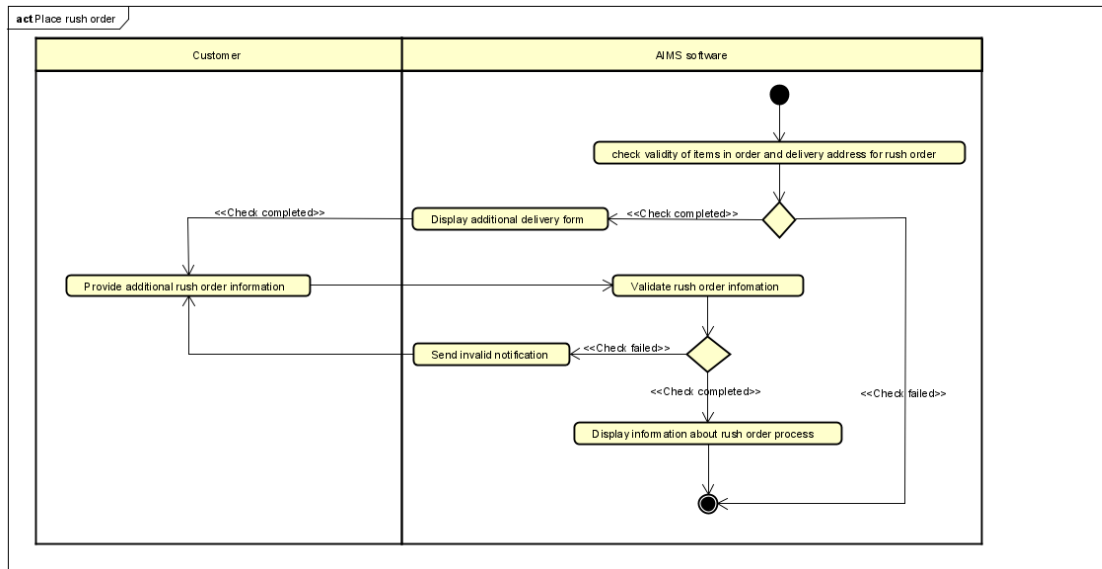


### 2.3.3 Place Rush Order process

Place Rush Order process include the following steps:

1. Software check whether items in order and delivery address can be applied rush order option
2. Software display form for additional information for rush order
3. The customer fills in the required additional information for the rush delivery.
4. AIMS software validate additional information for rush delivery
5. Software displays information for rush order process
6. AIMS initiates the "Place order" use case, proceeding to step 8 in the process flow.





## 3 Detailed Requirements

### 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 customer and AIMS software when customer wishes to place an order via software

**3. Actors:** Customer

**4. Preconditions:** Cart must have at least 1 item

**5. Basic Flow of Events**

1. Customer views the cart.
2. AIMS software checks whether the inventory quantity is sufficient to provide to the customer
3. AIMS software displays the cart
4. Customer choose products to purchase
5. Customer requests to place order
6. AIMS software displays the form of delivery information
7. Customer provides delivery information (See table A)
8. AIMS software validate customer's delivery information
9. AIMS software calculates and display delivery fees
10. Customer confirm delivery fee
11. AIMS software displays the invoice (See table B)
12. AIMS software validate customer's delivery information
13. Customer confirms to place order and pay order
14. AIMS software calls use case “Pay order”
15. AIMS software save successful transaction information
16. AIMS software creates a new order
17. AIMS software empty the cart
18. AIMS software displays order (See table C)
19. AIMS software save successful order information
20. AIMS software sends order information email to customer.

**6. Alternative flows**

**Table N-Alternative flows of events for UC Place order**

No	Location	Condition	Action	Resume location
1.	At Step 7	if customer chooses to place a rush order	insert use case “Place rush order”	Resumes at Step 8
2.	At Step 8	if there are any required fields left blank or invalid information	software ask customer to re-input information	Resumes at step 7
3.	At step 2	If products in cart are not available	AIMS Software notified that all products in cart are not available now and stay at use case “View cart”	Use case ends
4.	At step 12	If payment is not successfully completed	AIMS software notifies that payment wasn’t completed	Resumes at step 11

**7. Input data****Table A-Input data of delivery information**

No	Data fields	Description	Mandatory	Valid condition	Example
1.	Receiver Name	Text input	Yes		Nguyen Duy
2.	Phone number	Text input	Yes	10 digits	0123456789
3.	Province	Choose from the exist list	Yes		Ha Noi
4.	Address	Text input	Yes		Hai Ba Trung – Ha noi – VietNam
5.	Shipping instructions	Text input	No		The items in order are fragile

## 8. Output data

**Table B-Output data of order information and shipping fee**

No	Data fields	Description	Display format	Example
1.	Title	Title of a media product		DVD Harry Potter
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 product media	-Comma for thousands separator -Positive integer -Right alignment	250,000
5.	Subtotal	Total amount of all products in the order	-Comma for thousands separator -Positive integer -Right alignment	1,000,000
6.	Shipping fee	Delivery fee of order	-Comma for thousands separator -Positive integer -Right alignment	30,000

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

No	Data fields	Description	Display format	Example
1.	Customer Name	Name of customer	Text	Le Phu Tai
2.	Phone number	Phone number of customer	Text	0123456789
3.	Province	Province of customer	Text	Ha Noi

4.	Address	Address of customer	Text	Hai Ba Trung – Ha noi – VietNam
5.	Total amount	Total fee includes order fee and delivery fee	Right alignment Vietnamese currency (VNĐ) Vietnamese locale	1.500.000 VND
6.	Transaction ID	ID of successful payment transaction of order	Text	PT5102
7.	Transaction content	Content of successful payment transaction of order	Text	Le Phu Tai order 78910
8.	Transaction date	Time of successful payment transaction of order	Dd/mm/yy	16/3/2024

#### 9. Postconditions

- Customer successfully create a order placement in system if order information in valid and payment is successful
- AIMS Software saves all information about order and transaction history in database
- AIMS send error notification to customer if any order information is invalid or payment is not successful

### 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 customer and AIMS software when customer wish to do payment process for their order.
3. Actors:	

- Customer
- VNPAY
- 4. Preconditions:** The total amount of money that customer has to pay must be calculated completely by AIMS software.
- 5. Basic Flow of Events**
  1. AIMS software displays the invoice (See table B)
  2. Customer asks to pay the invoice
  3. AIMS software display payment method selection form
  4. Customer choose payment method
  5. AIMS software redirects to VNPay with payment information
  6. VNPay notifies the transaction result
- 6. Alternative flows**

**Table N-Alternative flows of events for UC Place order**

No	Location	Condition	Action	Resume location
5.	At Step 5	If the customer cancels the payment transaction	AIMS notifies that transaction process is failed	Resumes at Step 1
6.	At Step 5	If transaction process is failed	AIMS notifies that transaction process is failed	Resumes at Step 1

## **7. Input data**

**Table A-Input data of payment information**

## **8. Output data**

**Table B-Output data of transaction**

No	Data fields	Description	Display format	Example
9.	Title	Title of a media product		DVD Harry Potter
10.	Price	Price of the corresponding media product	-Comma for thousands separator -Positive integer -Right alignment	123,000
11.	Quantity	Quantity of the corresponding media product	-Positive integer -Right alignment	2

12.	Amount	Total money of the corresponding media product	-Comma for thousands separator -Positive integer -Right alignment	250,000
13.	Subtotal Before VAT	Total price of products in the cart before VAT	-Comma for thousands separator -Positive integer -Right alignment	2,316,600
14.	Subtotal	Total price of products in the cart with VAT	-Comma for thousands separator -Positive integer -Right alignment	2,316,600
15.	Shipping fee	Total delivery fee	-Comma for thousands separator -Positive integer -Right alignment	30,000
16.	Total	Sum of subtotal and shipping fees	-Comma for thousands separator -Positive integer -Right alignment	2,333,600
17.	Currency	Currency used to do payment of order		VND
18.	Name	Name of customer	Text	Le Phu Tai
19.	Phone number	Phone number of customer	Text	0123456789
20.	Province	Province of address of customer	Text	Hanoi
21.	Address	Address of customer	Text	Hai Ba Trung – Ha Noi - VietNam
22.	Shipping instruction	Instruction and note for shipping process	Text	The items in order are fragile
<b>9. Postconditions</b>				

- Customer successfully paid the order bill if payment information is valid and back account balance is enough
- AIMS software sends failed notifications to customer if either payment information isn't valid or back account balance isn't enough

### 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 customer and AIMS software when customer wish to place an order which can be received within a prearranged time frame of 2 hours via AIMS software.

**3. Actors:** Customer.

**4. Preconditions:** Customer must have at least 1 available item in order.

**5. Basic Flow of Events**

1. Software check whether items in order and delivery address can be applied rush order option
2. Software display from for additional information for rush order
3. Customer enter additional information for rush delivery
4. AIMS software validate additional information for rush delivery
5. Software displays information for rush order process
6. AIMS calls use case "Place order" at step 8

**6. Alternative flows**

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

No	Location	Condition	Action	Resume location
7.	At Step 1	If all products in order can not be applied rush order option	AIMS software notifies that all items can not be applied rush order option	Use case ends
8.	At Step 1	If delivery address can not be applied rush order option	AIMS software notifies that delivery address can	Use case ends



			not be applied rush order option	
9.	At step 4	If customer provide invalid additional information for rush order	AIMS software notifies invalid additional information for rush order	Resumes at step 2

## 7. Input data

**Table 2-Input data of additional delivery information for rush order**

No	Data fields	Description	Mandatory	Valid condition	Example
7.	Estimated arrive time	Datetime input	Yes	Can not earlier than the time when order is accepted	4:00 pm
8.	Delivery instruction	Text input	No	No	The items in order are fragile

## 8. Output data

**Table 3-Output data of rush order process description**

No	Data fields	Description	Display format	Example
23.	Description	Rush order process description	Right alignment	If only certain products are eligible for rush order delivery, these items will be delivered together to the designated rush order delivery location at the prearranged time.
24.	Applied items	Items applied rush order	Right alignment, comma for item separator	Cd1, LP2, DVD3,DVD12
25.	Unapplied items	Items that can not be applied rush order	Right alignment, comma for item separator	CD123, CD234, DVD222

**9. Postconditions**

- The customers successfully register for rush order service if their order is valid for rush order
- The customers received notification to change delivery method or order information if their order is not valid for rush order

## 4 Supplementary specification

### 4.1 *Functionality*

- Users should be able to authenticate securely using credentials (e.g., username and password).
- Different user roles (administrator, product manager, customer) should have appropriate access rights to system functionalities.
- Each product should have attributes such as title, category, author, artist, genre, etc.
- Validation rules should ensure the accuracy and consistency of product data.
- Orders should be processed securely, capturing delivery and payment information.
- Integration with a payment gateway (e.g., VNPay Sandbox) should allow secure processing of payments.

### 4.2 *Usability*

- **User Interface Design:**
  - Intuitive Navigation: Ensure easy exploration through intuitive menus and buttons.
  - Consistent Layout: Maintain consistency in design elements across all screens.
  - Responsive Design: Ensure adaptability to various devices for seamless user experience.
- **Accessibility and Inclusivity:**
  - WCAG Compliance: Ensure compliance with accessibility guidelines.
  - Keyboard Navigation: Allow users to navigate using keyboard shortcuts.
  - Screen Reader Compatibility: Ensure compatibility with screen reader software.
- **User Assistance and Feedback:**
  - Contextual Help: Provide in-context tooltips and guides.
  - Error Handling: Display clear error messages with guidance for users.
  - Feedback Mechanisms: Implement feedback channels for user input.
- **Training and Onboarding:**
  - Onboarding Process: Design a user-friendly onboarding experience.
  - Training Materials: Provide comprehensive user guides and tutorials.
- **Multilingual Support:** Language Options: Support multiple languages for global users.

### 4.3 Reliability

- **Availability:**
  - The AIMS system is expected to be available 24/7, allowing users to access its functionalities at any time.
  - In the event of maintenance or system upgrades, users will be notified in advance through system notifications or email alerts.
  - The system should have a degraded mode operation in place, allowing essential functionalities to remain accessible even during system failures or maintenance activities.
- **Mean Time Between Failures (MTBF):** The system's MTBF is specified to be at least 300 hours of continuous operation.
- **Mean Time To Repair (MTTR):** The system is required to resume normal operation within a maximum of 1 hour after an incident or failure.
- **Maximum Bugs or Defect Rate:** The maximum allowable bug or defect rate is set at 0.5 bugs per thousand lines of code.

### 4.4 Performance

- **Response Time:**
  - Average Response Time: The average response time for normal user transactions, such as search products, adding items to cart, or placing orders, should not exceed 2 seconds under normal conditions (Use case: Place order, Search product, ..)
  - Maximum Response Time: The maximum response time for any transaction, including peak hours, should not exceed 5 seconds to maintain user satisfaction and engagement.
- **Precision and Accuracy:**
  - Precision: The system's output, including pricing information, inventory status, and order details, should have a precision level of at least two decimal places for currency-related values.
  - Accuracy: The accuracy of the system's output should meet industry standards for e-commerce platforms, ensuring that product information, pricing, and inventory levels are up to date and reliable.
- **Capacity:** Customer Capacity: The system should accommodate up to 1,000 concurrent customers without experiencing significant degradation in performance.

## **4.5 Supportability**

- **Documentation:** Comprehensive documentation should be provided for system installation, configuration, and usage. API specifications and integration guides for VNPay Sandbox should be available for developers.
- **Maintenance Access and Utilities:**
  - Maintenance Access: Administrators and authorized personnel should have secure access to maintenance tools and utilities for system monitoring, troubleshooting, and updates.
  - Backup and Recovery: Regular backups of system data and configurations should be performed to safeguard against data loss and enable quick recovery in case of system failures or disasters.

## **4.6 Other requirements**