

AIMS: An Internet Media Store



NGUYEN Thi Thu Trang, trangntt@soict.hust.edu.vn

AIMS Project is a desktop e-commerce software that operates 24/7, allowing new users to easily familiarize themselves. This software can serve up to 1,000 customers simultaneously without significantly reducing performance and can operate continuously for 300 hours without failure. Additionally, the software can resume normal operation within a maximum of 1 hour after an incident. The maximum response time of the software is 2 seconds under normal conditions or 5 seconds during peak hours.

In AIMS, product managers can add, view, edit, or delete any product. However, product managers can only add or edit one product at a time, but they can delete up to 10 products at once. Furthermore, product managers cannot delete or update more than 30 products for security reasons, but they can add an unlimited number of products in a day.

When wanting to add a product for sale, the product manager needs to provide the required information as requested by the software. For each media product, the product manager needs to provide the title, category, value, and current price. The value and price of the product that he/she enters do not include a 10% value-added tax (VAT). Depending on the type of product, the product manager needs to provide information such as:

- Books require information about authors, cover type (paperback or hardcover), publisher, and publication date; additional information such as number of pages, language, and genre may be included.
- CDs, including music collections or albums, require information about artists, record label, tracklist, and genre; additional information such as release date may be included.
- LP records have similar information requirements to CDs.
- DVDs require information about disc type (Blu-ray, HD-DVD), director, runtime, studio, language, and subtitles; additional information such as release date and genre may be included.

Currently, the software only allows the buying and selling of physical media products. For these types of products, a barcode, product description (e.g., new, used, primary color, condition for return), quantity, warehouse entry date, product dimensions, and weight are required. Physical products can be books, CDs, LP records, or DVDs.

The price of the product may change depending on market demand. Product managers can update the price of a product up to twice a day. However, the price of the product must always be between 30% and 150% of the product value to avoid price inflation or undercutting.

The software will store a history of product addition, editing, and deletion operations and will notify the product manager if any operation is invalid. For example, when the input does not comply with the rules or the date format is incorrect.

Administrators can create new users, view user information, update user information, delete users, and reset passwords of users. They can block or unblock users as needed. The software will automatically send email notifications to users for administrative actions. Administrators can set or change the roles of users. Each user can have multiple roles, such as administrator or product manager. Administrators and product managers need to log in to access the features corresponding to their roles. They also can change password.

For customers, when starting the software, a list of 20 random products will be displayed on each page. To search for products, customers use product attributes to search. The software will display 20 related products on each search page. Additionally, customers can sort products by price. Customers can view the detail information of each product when choosing the corresponding product in the list of product screen. Customer can add products with corresponding quantities to the current cart in the list of product or product detail screen.

When customers asks to view the cart, the software will display cart information, including the total price of products excluding VAT, a list of products with product information (product name, quantity, and price). At the same time, the software will also notify customers if the inventory quantity of any product is insufficient and will display the quantity of each product that is lacking. When changing their mind, customers can also remove products from the cart or change the quantity of products in the cart. Additionally, there is only one cart per software session, and the cart will be emptied after successfully paying for an order.

To place a successful order, customers need to proceed with ordering and payment. Within the scope of the course, customers do not need to log in to place an order. When placing an order, customers need to provide delivery information (including recipient name, email, phone number, province/city for delivery, and delivery address), as well as payment information.

Before placing an order, customers need to review the cart and select the products they want to purchase. From here, customers can request to place an order. Each time a customer requests to place an order, the software will always check whether the inventory quantity is sufficient to provide to the customer. The software will ask customers to update the cart if the inventory quantity is insufficient and will display the inventory quantity for each unmet product. After updating the cart, customers can request to place the order again.

Next, the software will ask customers to set up delivery information. During the process of entering delivery information, customers will still see the products and information as in the cart. At this time, the software will check the input information and ask customers to update if there are any required fields left blank or invalid information. Each time customers enter or update the delivery address, the software will calculate (or recalculate) and display the delivery fee. Customers then can proceed to pay the order. At this point, the software will display and

temporarily save invoice information, including the list of products in the cart, quantity, product prices, total product price excluding VAT, total product price including VAT, delivery fee, and total amount to be paid. The total amount that customers need to pay includes the total product price including VAT and the delivery fee. Then, the software will allow customers to choose the payment method. In the scope of this course, there is only one option to pay by credit cards. However, in the future, we may extend to other payment methods. The AIMS software connects to VNPay for further payment process by credit cards. Customers need to provide all the necessary information and steps as requested by VNPay to successfully complete the transaction.

Customers have the option to select rush order delivery. Rush order delivery allows customers to receive their items within a prearranged timeframe of 2 hours. Currently, rush order delivery is only available for addresses within the inner city of Hanoi (only districts). If a customer wishes to opt for rush order delivery, 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 doesn't 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 (delivery time for rush order delivery, delivery instructions) and simultaneously provides the following information:

- 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. Products that are not eligible for rush order delivery will be delivered as usual. Delivery fees will be calculated and displayed separately for regular delivery items (if any) and rush order delivery items.
- If all products in the order are eligible for rush order delivery, they will be delivered together to the designated rush order delivery location at the prearranged time. Delivery fees will be calculated and displayed for this group of products.

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.

- Shipping fees are not subject to tax.
- Orders with a total value of the items exceeding 100,000 VND will qualify for free shipping, up to a maximum of 25,000 VND per order. This provision does not apply to rush order delivery items. Consequently, customers always incur separate shipping fees for rush order delivery items. The total order value to qualify for free shipping does not include rush order delivery items.
- Shipping fees are calculated based on the weight of the heaviest item.
- For customers located in the inner city of Hanoi or Ho Chi Minh City, the initial price for the first 3kg is 22,000 VND.
- For customers elsewhere in Vietnam, the initial price for the first 0.5kg is 30,000 VND.
- An additional fee of 2,500 VND is charged for every subsequent 0.5kg.

- In the case of opting for rush order delivery, customers will be charged an additional 10,000 VND per rush order delivery item.

After a successful payment, the software will display general information of the order (customer name, phone number, shipping address, province, total amount) and transaction information (transaction ID, transaction content and transaction datetime). The order will be in a pending processing state, and the software will send invoice and payment transaction information to the customer's email. Note that customers can go back to any step or exit the software during the ordering process. Finally, the software records the payment transaction information and the successfully paid order.

Customers can view order information or cancel orders using the links sent in the email regarding the order and transaction. Customers can view all information about the order, including the invoice, shipping information, and payment transaction information. Customers can choose to cancel the order when viewing the order information before the order is approved. After the customer confirms the cancellation, the full amount will be refunded to the payment method used for this order through VNPay.

Orders in the pending processing state will be reviewed or rejected by the product manager. The product manager can see 30 pending orders on each page. From there, they can select a specific order to view the details and approve or reject the order even if there are enough products in stock. There are various reasons such as undelivered items, out of stock while the customer is paying for the order, or simply cannot find the item in stock. However, the software will reject accepting the order if there are not enough products in stock.

Within the scope of the course, students connect to VNPay Sandbox for any payment or refund transaction. 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-toan-pay/pay.html>
- Query and refund API specification: <https://sandbox.vnpayment.vn/apis/docs/truy-van-hoan-tien/querydr&refund.html>