WWW Technologies and Applications 2025
Assignment 3 — Form and CGI/PHP/ MySQL

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1. Task Description

In this assignment, you will explore the following objectives:

- Manipulating data through MySQL access and gaining familiarity with SQL statements.

- Utilizing PHP for form processing, database connectivity to MySQL, and enhancing an electronic commerce website's functionalities.

- Managing sessions and implementing security mechanisms to prevent SQL injection vulnerabilities in PHP.

- Enhancing the interactivity of your electronic commerce system website, particularly in the context of MySQL and an electronic commerce system.

2. Electronic commerce system

In this assignment, you are required to create an electronic commerce platform and make it interactive with users. You need to implement the main functions for the following tasks: connecting to MySQL, a register page, log-in/out pages, a user page, a main page, a product page, and the functions of creating, editing, and deleting products. The details of the required features are described as follows.

2.1 Connecting to MySQL

2.1.1 Your MySQL account has been created on 140.123.102.94:3306. The account name and the password are set to your student ID initially. You should change your password first to prevent malicious users from breaking into your environment. You can change your password at Home→General settings→Change password.

2.1.2 You can access phpMyAdmin aton http://wwweb2025.csie.io:8080/ to design your database schema and create tables. Please connect to the MySQL server at 140.123.102.94:3306.

2.1.3 A database has been created for each student, and the database name is set to your student ID. You are granted the privilege to create/drop/modify tables in your database.

2.1.4 You need to create at least three tables: users, products, and orders; we suggest you define the schema as described below.

- users:

  user_id (varchar or int), user_name(varchar), account(varchar), hash_password(varchar),

  user_picture (varchar), fullname (varchar), address (varchar), phone (varchar)

- products:

  product_id (varchar or int), product_name (varchar), category (varchar), seller_id (varchar),

  description (text), prodict_image(varchar), in_stock(int), sold(int), price(int),

  create_at (timestamp), update_at (timestamp)

- orders:

  order_id (varchar or int), seller_id (varchar or int), buyer_id(varchar or int),

  order_price(int), pay_method(varchar),buyer_fullname(varchar),buyer_phone(varchar),

  buyer_address(varchar), order_products(varchar), status(varchar),

  checkout_at(timestamp), completed_at(timestamp)

2.2 Log-in page, Register page, and Log-out function

2.2.1 Log-in page

Users log into their accounts through the login page (Figure 1). When designing the login page, you need to take precautions against SQL injection attacks. Additionally, the password input field must be hidden by default. Users should be able to temporarily reveal their entered password using a button next to the input field.

When the following situations occur, a warning must be displayed to notify the user of an operational error:

- When the user enters an incorrect account or password, they must be informed. (each 1 point) (Figure 2)

- When the user fails to enter either the account or password, they must be notified. (each 1 point) (Figure 3)
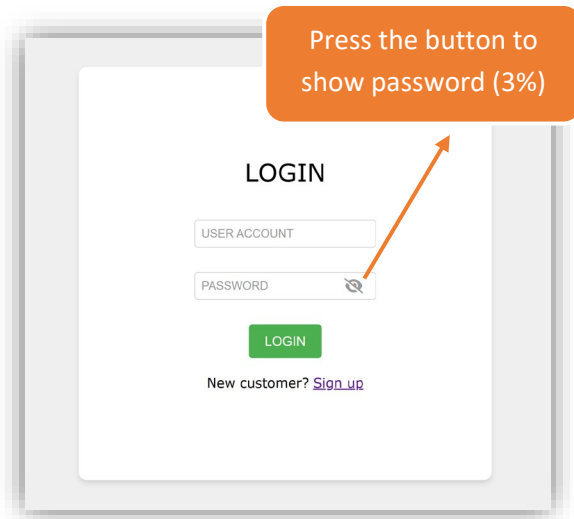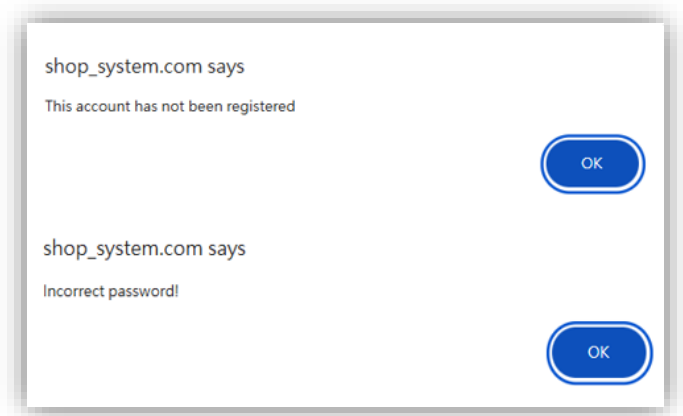

Figure 1: Log-in page
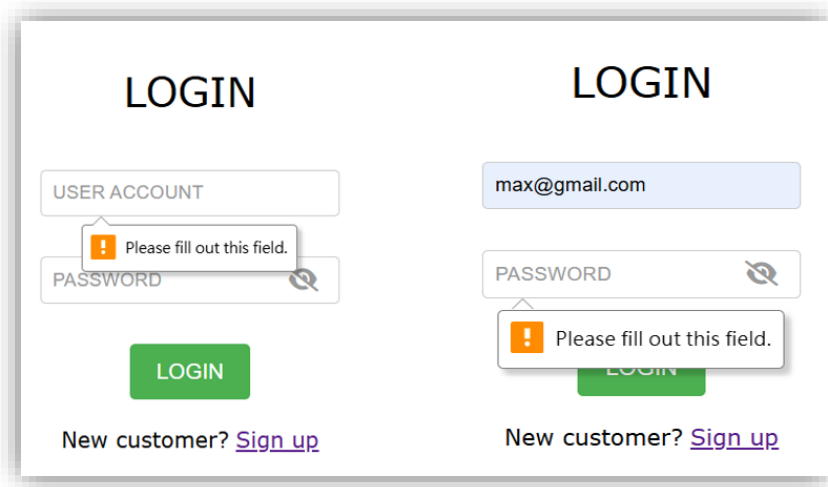

Figure 2: Incorrect account or password

Figure 3 : No account or password entered

2.2.2 Register page

When users click the register link, they will be directed to the registration page. On this page, a user can create a unique account. The **username** is used as the account name, while the **email**

serves as the login account. All data fields on the register form (Figure 4) are required, and when the user uploads a photo, a thumbnail must be displayed immediately (Figure 8). After the user creates an account, the data should be stored in the **"users"** table. You have to check your input format on this page; it should show an error alert in the following cases:

(1) The username or email already exists (Figure 5).

(2) The retyped password does not match the password (Figure 6).

(3) There are any empty fields (all fields are requried) (Figure 7).

(4) In the photo upload area, the user has provided an unsupported file type (photos are only supported in JPG, JPEG, PNG, and GIF formats) (Figure 9).

Hint: Similar to the login page, the password-related field (including confirm password) should include a button to temporarily display the password.
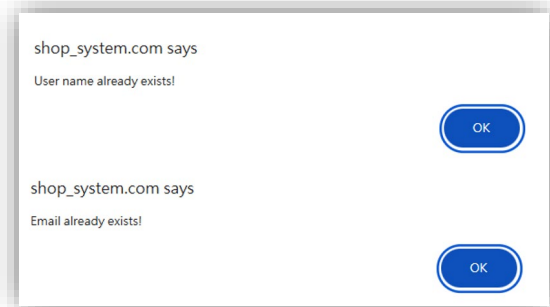

Figure 4: Register form
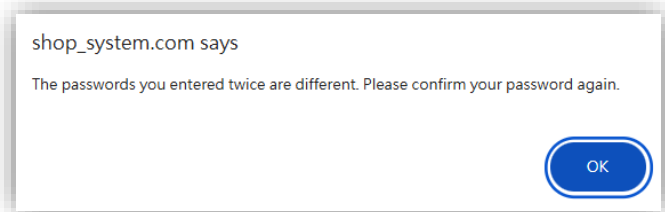
Figure 5: Duplicate emails or usernames

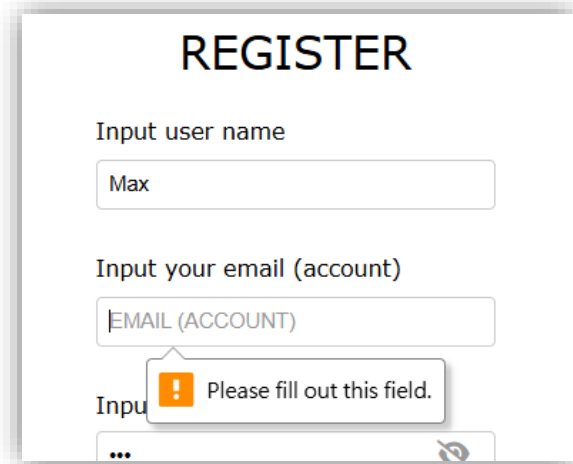Figure 6: Unmatched password error

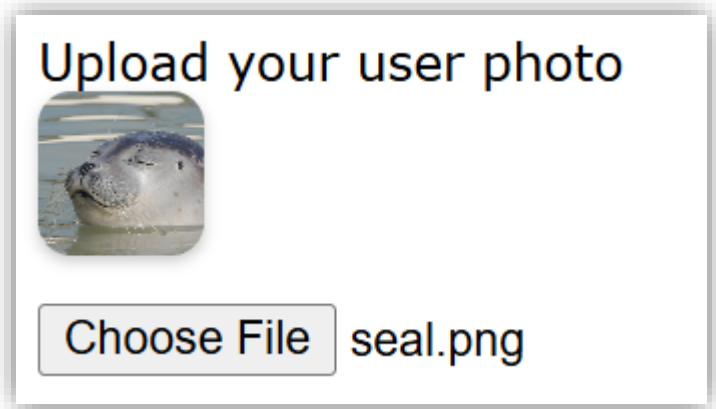Figure 7: Empty field error

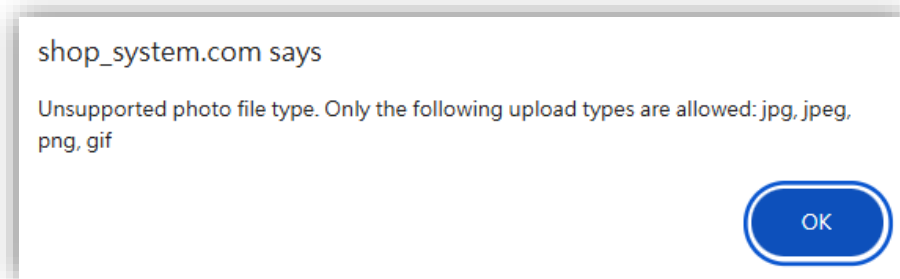Figure 8: User photo thumbnail

Figure 9: Unsupported file type warning

2.2.3 Log-out function

In your electronic commerce system website, you need to implement a log-out function. After the user signs into the website, he or she can click the log-out link (Figure 10) to triger the log-out function and re-direct to the main page (Section 2.7).
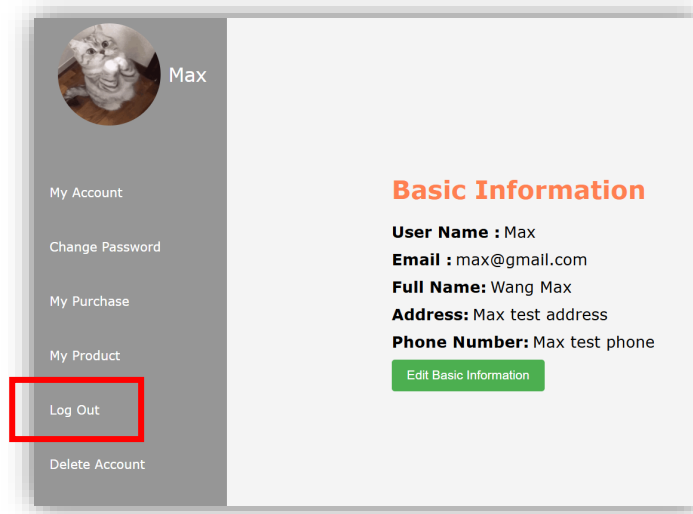

Figure 10: Logout function

2.3 User page

2.3.1 The content of the User page

When the user successfully logs into the system and enters the user page through the main page (Section 2.7), their basic information (username, email, fullname, address, phone) is displayed first (Figure 11). In this section, the user can edit their basic information using the edit button (Figure 12).

Hint: The basic information editing rules are the same as for the register page, but users cannot change their passwords in the basic information editing form.

Hint: After the user modifies the basic information, the basic information area must immediately display the modified results.

In addition to the basic information section, the user page allows switching to the change password, user order, user product, and delete account sections through the side menu. When

clicking on "My Account" in the side menu, it re-displays the basic information. Detailed descriptions of the above functions are provided as follows:

- Change Password (Figure 13)

  The system must validate the following two conditions before allowing the user to change their password. First, the current password is entered correctly. Second, the new password and the confirmation password must match. If the validation fails, the system must provide a corresponding warning message. When the user enters an incorrect old password or when the new password and confirmation password do not match, a relevant warning should be displayed (each 1 point) (Figure 15).

  Hint: Similar to the login page, the password-related field (including new password and confirm new password) should include a button to temporarily display the password.

- My Product

  In this section, users can view all the products they have listed, add new products, and modify or delete existing listings.(Figure 14) The rules for the user product section can be referenced in Section 2.4.

- My Purchase

  In this section, users can view all ongoing orders and completed historical orders. For more detailed regulations, please refer to Section 2.5.

- Delete Account

  In this section, users can delete their own active accounts. For more detailed regulations, please refer to Section 2.6.
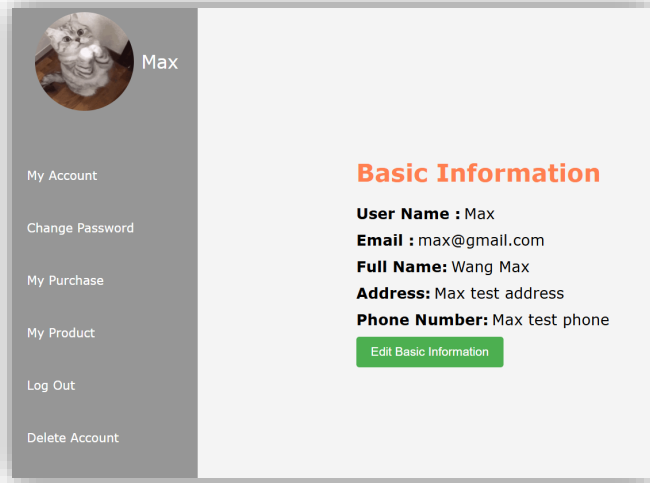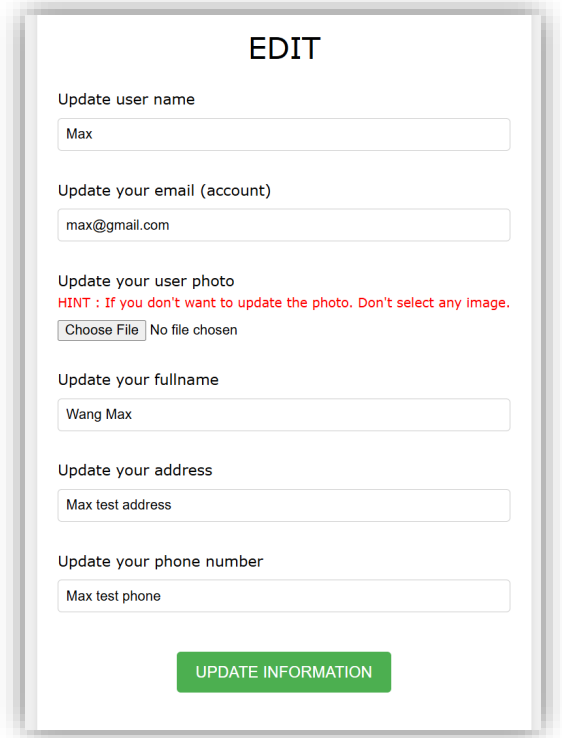
Figure 11: Basic information section
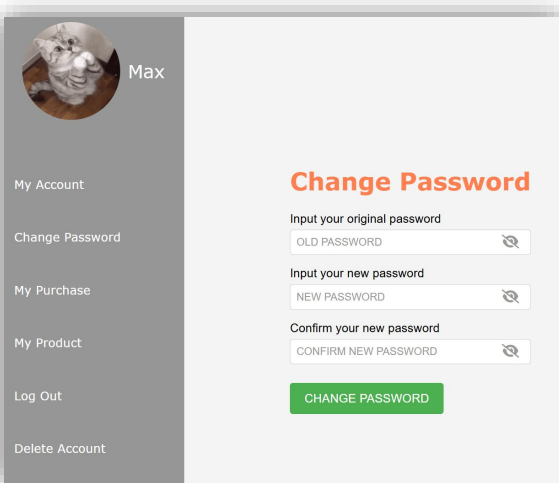

Figure 12: Edit basic information

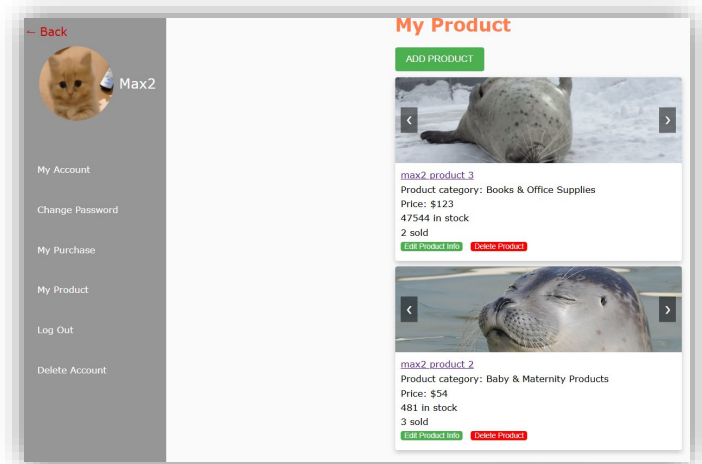Figure 13: Change password section

Figure 14: My product section

Figure 15: Change password error message

2.4 My Product

In this section, an **"Add Product"** button should be displayed, along with all the products that the user has listed. Each product will be presented in a container called **product card** (Section 2.4.1).

2.4.1 Product Card

A **product card** (Figure 16) is a container used to display product information. The container is divided into two sections: the **photo display area** and the **product information display area**. In the photo display area, users can switch between different images of the product using a toggle button. In the product information area, the following details must be displayed: the product's name, category, price, stock quantity, and sales volume.

Additionally, the product card in the My Product section must include buttons for editing (Figure 17) and deleting the product.
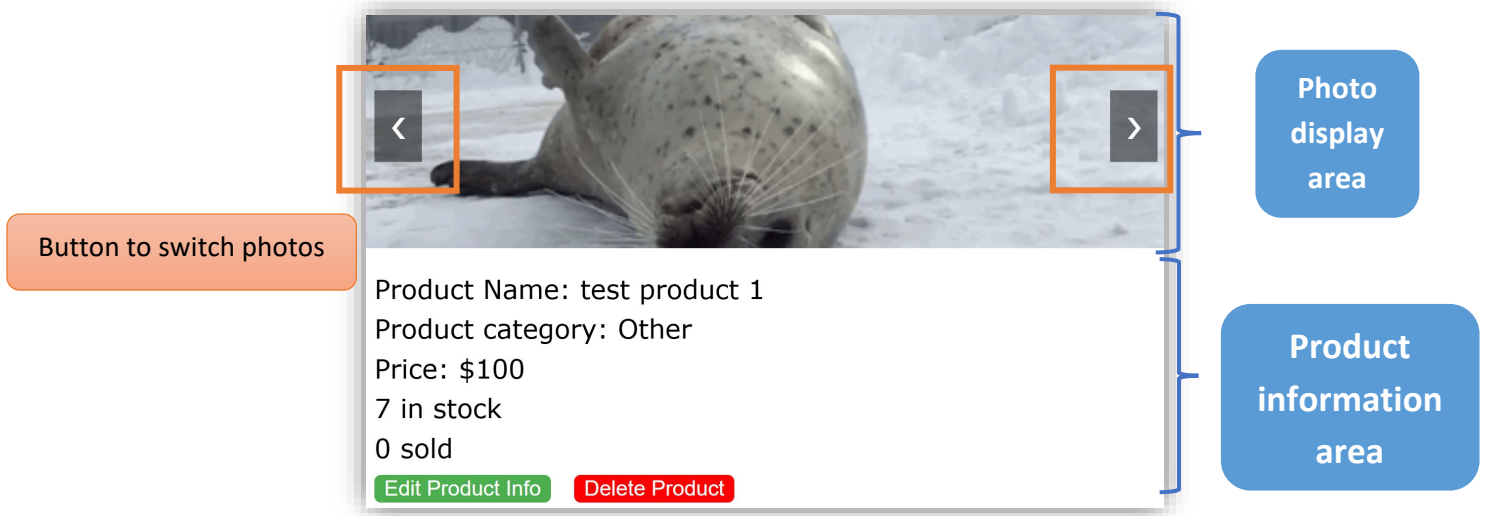
Photo display area

Button to switch photos

Product information area

Figure 16: Product card

Figure 17: Edit product information form

2.4.2 Add Product

Users can list their products by clicking the "Add Product" button. The Add New Product form must include the following fields: product name, photos, price, stock quantity, product description, and product category (Figure 19). Please ensure that all input fields are required and show error message when necessary (Figure 20). The price and stock quantity must be greater than 0 (Figure 22). The product photo upload area follows the same format specifications as for the register page. Additionally, when the user provides multiple photos, thumbnail previews of the photos should be displayed (Figure 21).

In the product category selection area, please make sure to provide the following 11 categories for the user to choose (Figure 19):

Product Category (11 categories)

Electronics & Accessories, Home Appliances & Living Essentials, Clothing & Accessories, Beauty & Personal Care, Food & Beverages, Home & Furniture, Sports & Outdoor Equipment, Automotive & Motorcycle Accessories, Baby & Maternity Products, Books & Office Supplies, Other

Figure 18: Add new product form

Figure 19: 11 product categories

Figure 20: Input fields missing reminder

Figure 21: Photo thumbnail preview

Figure 22: Stock or quantity input error

2.5 My Purchase

In the My purchase interface, all completed checkout orders are categorized into three types (Figure 23) and are displayed separately.
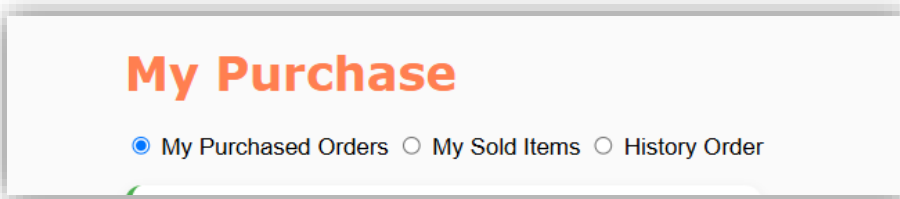
Figure 23: Three types of order

2.5.1 My Purchased Order

In the **My Purchased Order** category, all incomplete orders made by the account should be displayed. The details must include the seller's name, payment method, checkout time (time zone UTC+8), and all items in the order, showing each item's name, the first image, and the purchase quantity.

Additionally, the button below each order should have two different states (Figure 24):

1. When the seller has not clicked **"Shipped Order,"** the button should be **disabled** and the system should **show the buyer that the seller has not shipped the order yet**.

2. **When the seller has clicked "Shipped Order,"** the button "Complete Order"should be **enabled**, and the system should **indicate the user (buyer) that they can complete the order**.

Once the buyer clicks **"Complete Order,"** the order process is considered finished, and the order will be moved to the **History Order** category as a completed order.
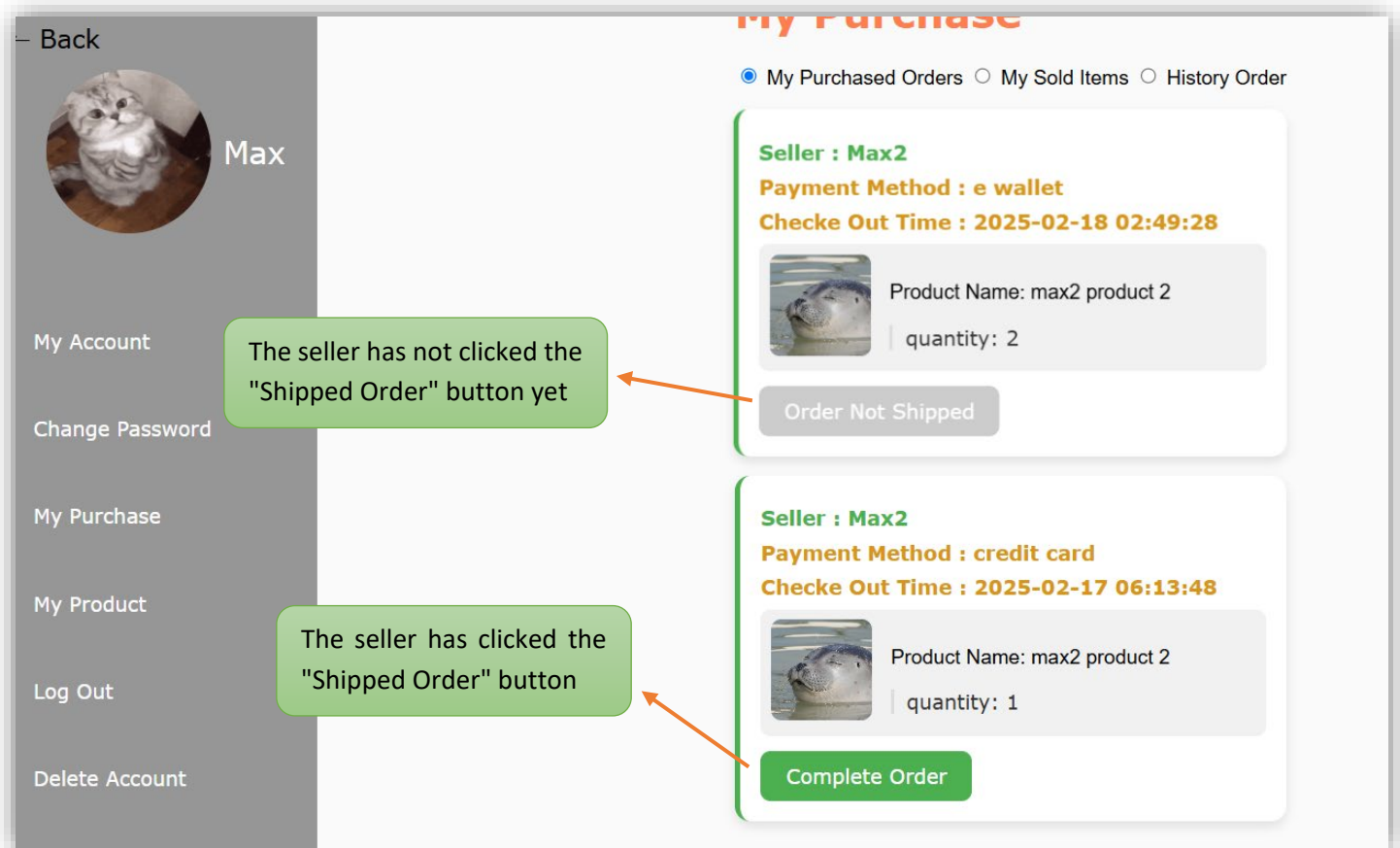
Figure 24: My purchased orders

2.5.2 My Sold Items

In the **My Sold Items** category, all orders from other users who have purchased from the account

holder should be displayed. The details must include the buyer's name, payment method, and all items in the order, showing each item's name, the first image, and the purchase quantity.

Additionally, the button below each order should have **two states** (Figure 25):

1. **When the seller receives the order**, the button "Shipped Order"should be **clickable**, **indicating that the seller can ship the order**.

2. **After the seller clicks the "Shipped Order "button**, it should **become disabled** and the system should **show the seller that the order has been shipped**.
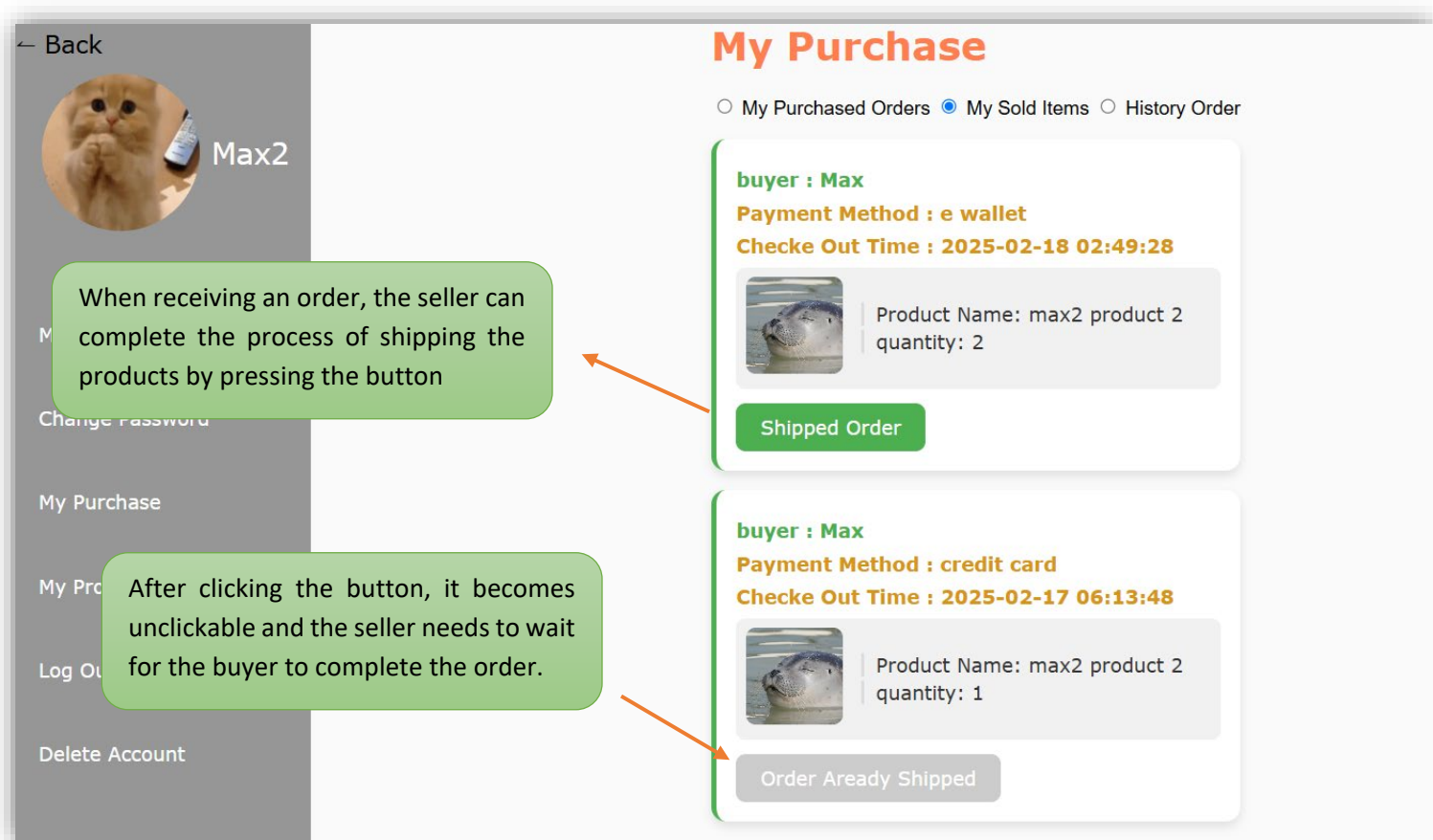
Figure 25: My sold items

2.5.3   History Order

In the History Order category (Figure 26), all completed orders should be displayed, regardless of whether the user is the buyer or the seller. All completed orders must include the buyer's and

seller's names, payment method, checkout and order completion times (time zone UTC+8), and details of all items in the order, including each item's name, the first image, and the purchase quantity.

Order process:

1. The seller ships the product (before the product is shipped, the buyer cannot operate the order buttons).

2. The seller waits for the buyer to complete the order (before the buyer completes the order, the seller's buttons are non-operational).

3. After the buyer completes the order, it becomes a historical order (both the buyer and seller can view the order information in the history order section).
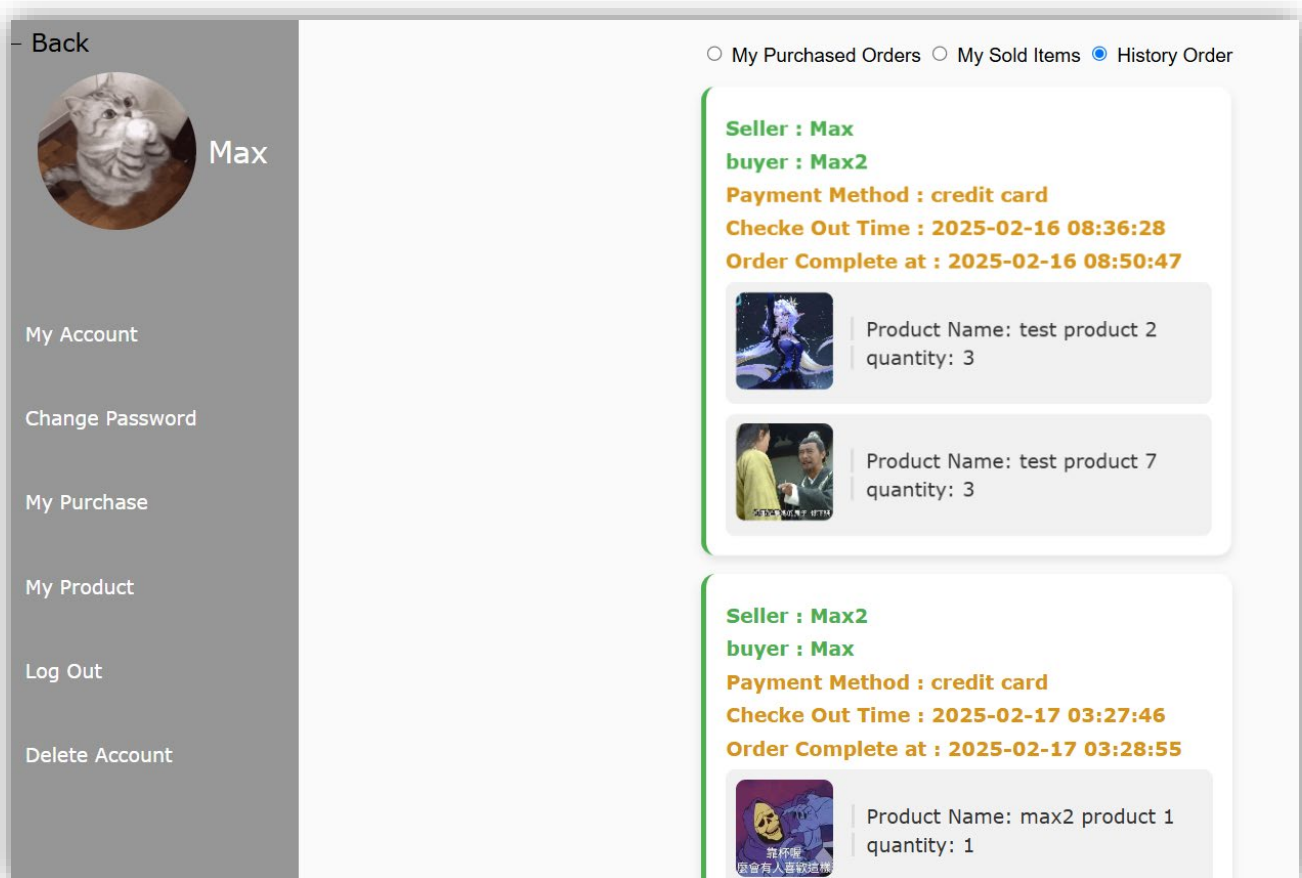
Figure 26: History order

2.6 Delete Account

In the Delete Account section (Figure 27), there will be an input field and a Delete Account button. Users must enter the specified format, which is **username + @ + delete**, in order to delete their account. The input field should use a **placeholder** to inform users of the correct format for deleting an account. For example, if the user name is **Max**, the user must enter **Max@delete** in the input field to delete the account. One can only delete his or her own account.

You must first ask the user if they are sure they want to delete their account (Figure 28). Afterwards, verify that the input format in the field is correct. If the user has any incomplete orders, the account deletion request should be denied (Figure29).

When the user deletes their account, the website should return to the main page and display the status as "**no user logged in**." The username and email of a deleted account can be used by other newly registered accounts.
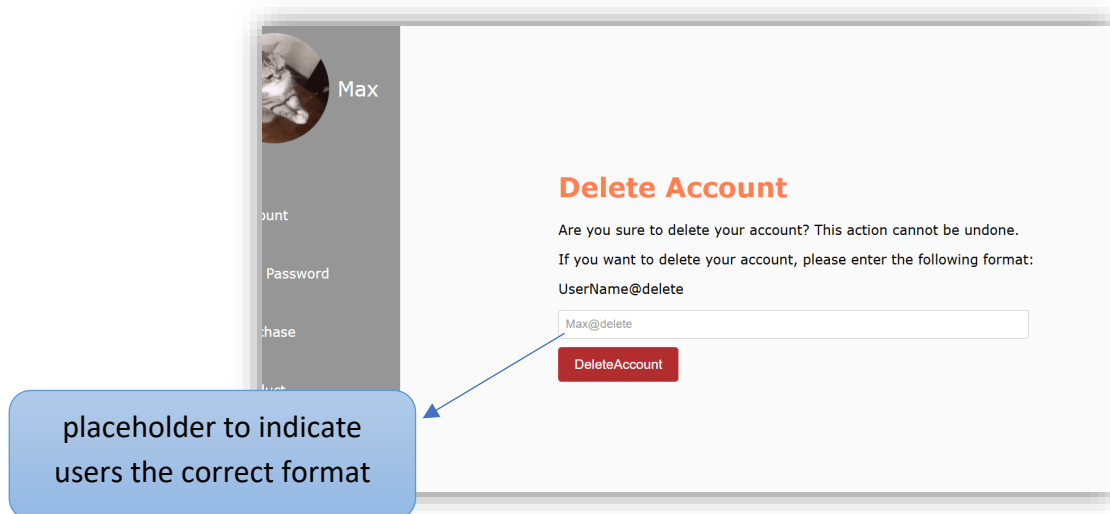
Figure 27: Delete account section
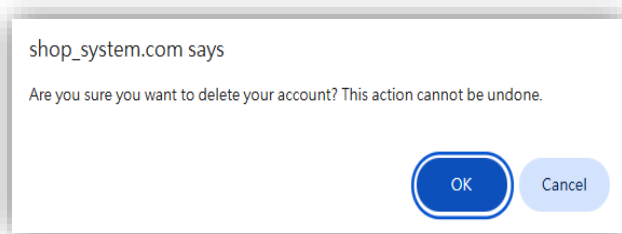
Figure 28: Deletion account inquiry
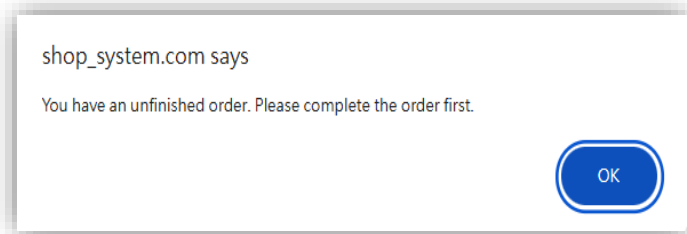
Figure 29: Order uncompleted reminder

2.7 Main Page

The Main page (Figure 30) is the primary interface of the e-commerce system, serving as both the product search and display interface. It consists of three main components: Main Banner (Section 2.7.1), Category Selection Buttons (Section 2.7.2), and Product Display Area (Section 2.8).
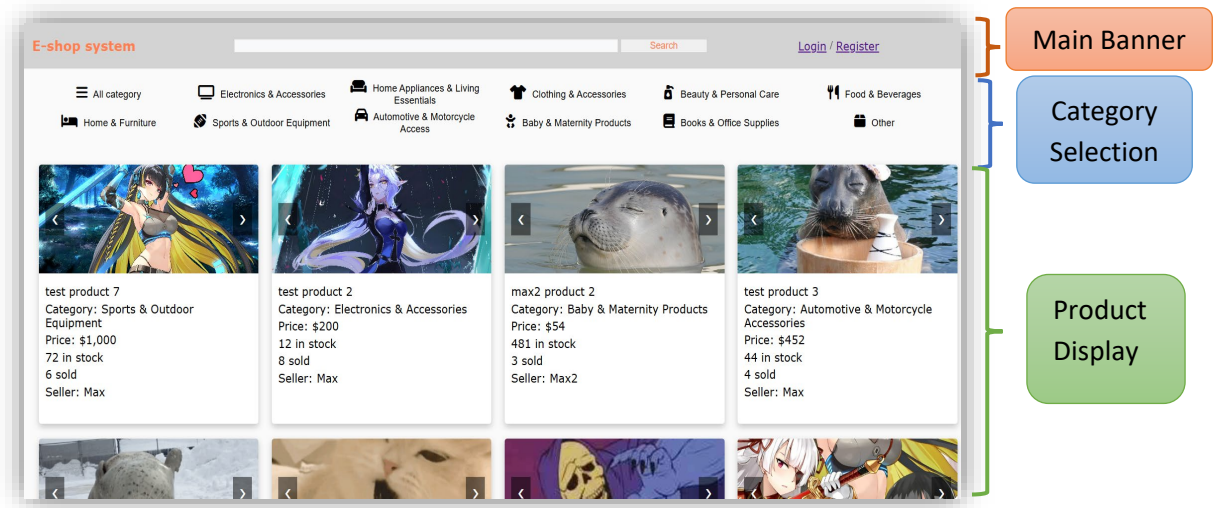
Figure 30: Main page

2.7.1 Main Banner

The Main Banner is primarily composed of the following elements: Main Page Link, Product Search Area (Section 2.7.2), User Function Area.

The **User Function Area** displays different content depending on the user's login status:

- When the user is not logged in, it shows links to the Login and Register pages (Figure 31).

- After the user logs in, it displays the Shopping Cart Button, a User Page Link, and the Logged-in User's Profile Picture (Figure 32).
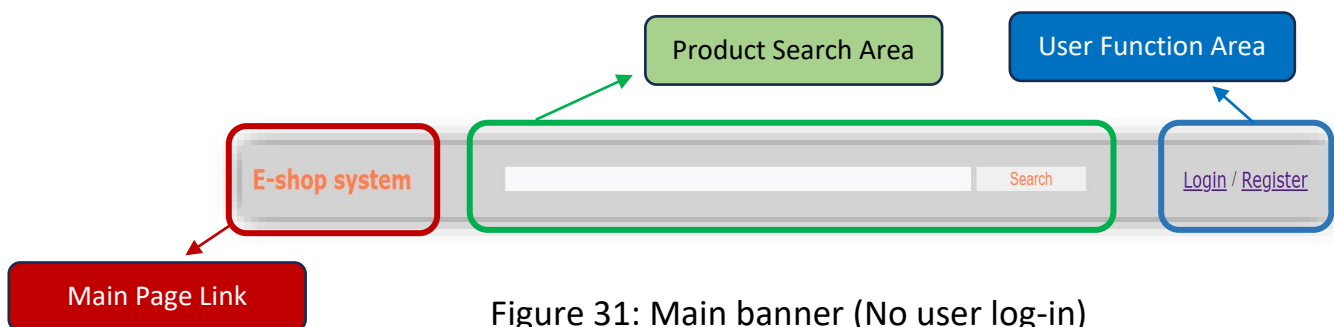
Figure 31: Main banner (No user log-in)

Figure 32: Main banner (user log-in)

2.7.2 Product Search

The product search function will be influenced by the selection of the Product Search Area and Category selection buttons. The Product Search Area consists of a search bar and a search button, while the Category selection buttons form a 6 x 2 grid made up of 11 product categories (Figure 33) and one "All Categories" option. For detailed product search rules, please refer to the rules below in sequence:

1. The search bar in the Product Search Area retrieves relevant products from the database using string matching, For example: If the user searches for the keyword "max," the system will retrieve all products from the database whose names contain the word "max" (Figure 34); if the user does not search for products through the search bar, all products will be displayed, when the search button is clicked.

2. Users can find relevant products by selecting categories through the Category Selection Buttons, with all categories displayed by default.

3. If no user is logged in, all products that meet rules 1 and 2 will be displayed; if a user is logged in, the products listed by that user will be excluded from the results.

4. The products of a deleted account will not be found by the product search function.

Products should be displayed in accordance with the specifications outlined in Section 2.8.
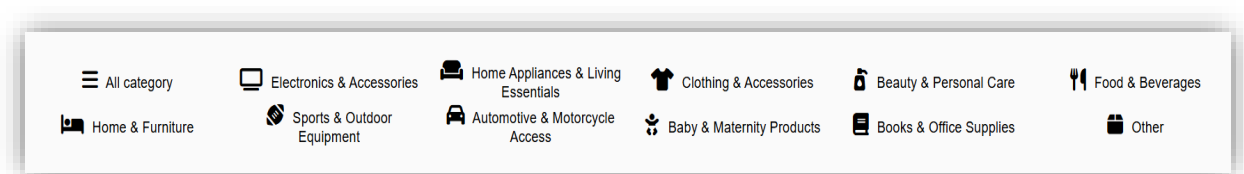
Figure 33:   Category selection button grid
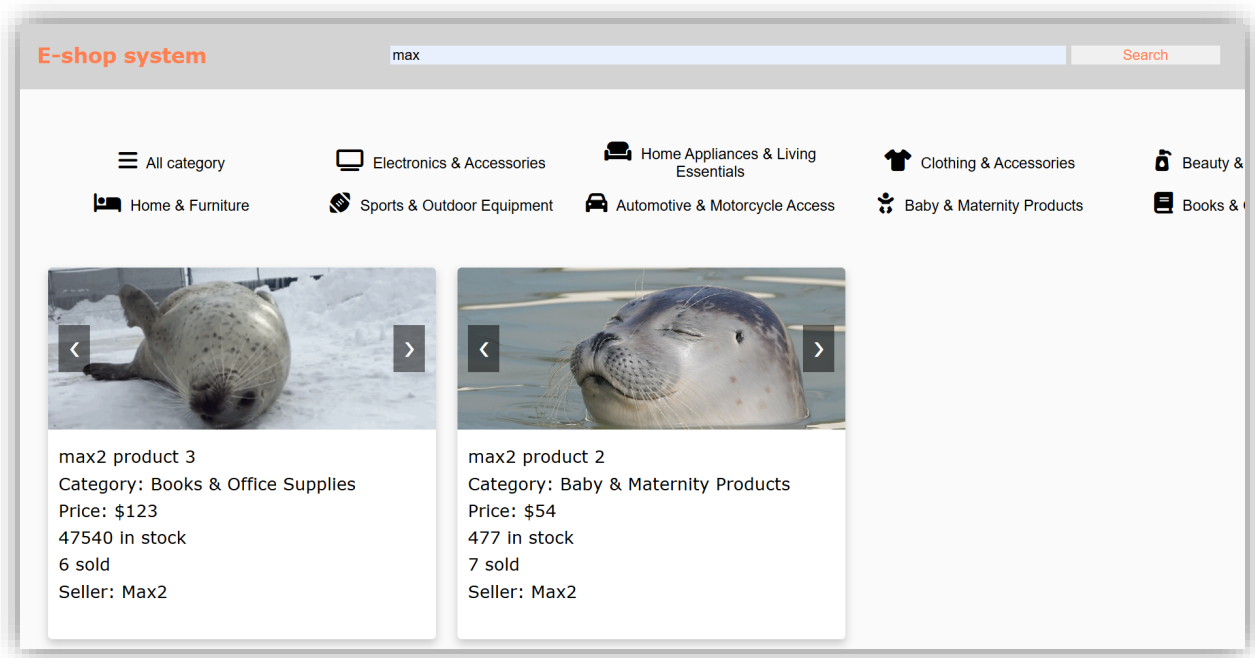
Figure 34: Keyword search example

2.8 Product Display Area

The product display area consists of a 4 x 2 grid. Each cell in the grid contains a product card, which displays the products retrieved by the product search function. The product card in this area should be set to be clickable and be linked to the detailed page of the product (Section 2.9).

Since the product display area can only show 8 products at a time, pagination buttons need to be implemented to switch between different products under the same search criteria (Figure 35).
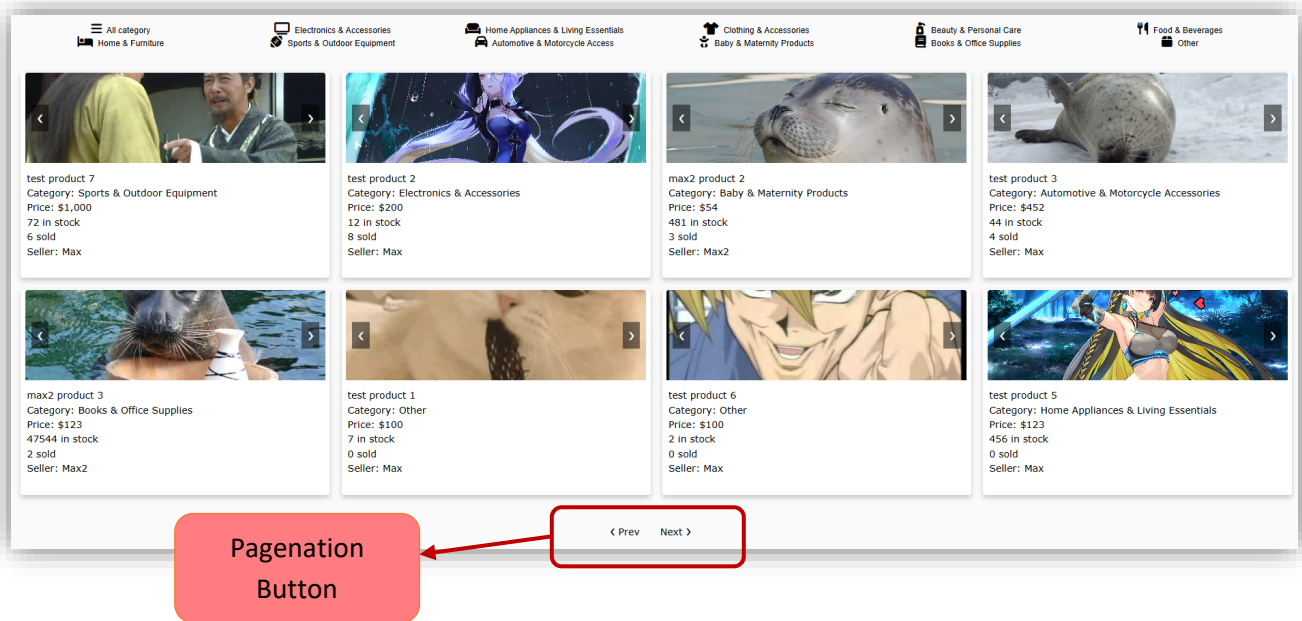
Figure 35: Product display area

2.9 Product page

The user can enter the details in the product page by clicking on the product card in the product display area. In the product detail page (Figure 36), you need to display the product's photo along with a photo-switching feature. Additionally, the product name, seller name, price, and product description should be shown. The page must also include an input field for the purchase quantity and a button to add the product to the shopping cart.

In the purchase quantity input area and Add to Cart button, the following features need to be implemented:

1. An input field that restricts user input to numbers only.

2. Two buttons, one to increase the current input value by 1 and another to decrease it by 1.

3. When the entered value exceeds the available stock, the input should automatically change to the maximum stock quantity. Additionally, the minimum value that can be entered should be set to 1.

   For example (Figure 37), when the user enters a purchase quantity of 100, the input will

be changed to the maximum stock quantity of 7, and a maximum purchase quantity warning will be displayed.

4. If the user is not logged in, he or she should be redirected to the login page. If the user is logged in, the item will be added to their shopping cart.

Hint: For Features 1 and 2, you are not allowed to use the <input> element with type="number" directly.

After the user completes the purchase quantity input, pressing the "Add to Cart" button will add the specified quantity of the product to the shopping cart.

Hint: Do not immediately update the product's sales quantity and stock quantity in the database after adding the product to the shopping cart. All updates to the database must be executed upon the buyer's completion of the checkout procedure.
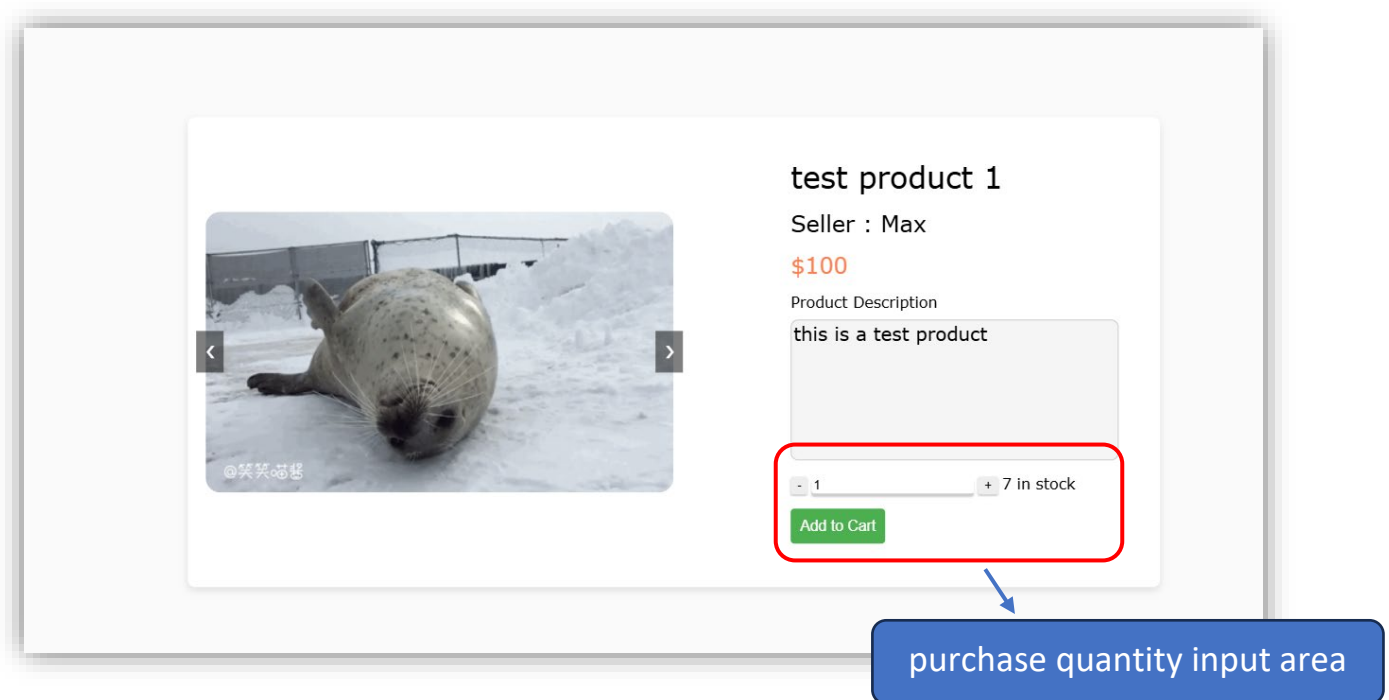
Figure 36: Product detail page
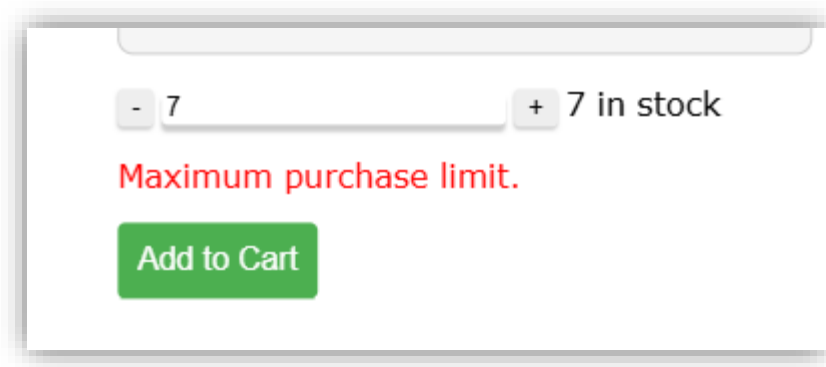
Figure 37: Maximum purchase limit

4. Checkout system

4.1 Shopping cart page

After the user adds a product to the shopping cart, the cart system will categorize the order by seller. This ensures that items from different sellers are grouped separately in the cart (Figure 38).

Each order in the shopping cart should be presented in its own container, displaying the seller's name as well as the details of each product in the order. For each product, the following should be shown: product name, purchase quantity, and one photo of the product. Additionally, two buttons should be implemented for each order: one for checking out the order and the other for deleting the order from the shopping cart.

Figure 38: Shopping cart page

4.2 Checkout page

When the user clicks the Checkout button for a specific order in the shopping cart interface, they will be redirected to the checkout page. On the checkout page, the layout is divided into three sections: order product details, order total amount, and order information form (Figure 39).

In the order total amount section, the price calculation must be performed when the user enters the checkout page to ensure that the obtained price reflects the most up-to-date total price

of the products.

In the order information form section, the user must select one of the following payment methods: "credit card," "cash on delivery," "e-wallet," or "bank transfer." Additionally, the user needs to provide their full name, delivery address, and phone number. The checkout page should pre-fill these fields with the buyer's basic information stored in their profile, but the buyer should have the option to modify this information if needed. Before the user clicks the "Place Order" button, the system must be sure that all form fields are properly filled out.

Figure 39: Checkout page

Hint: In the Payment Method selection, there is no need to integrate any payment gateway API. You only need to provide the options and record the user's chosen payment method in the database.

5. How and what to submit

5.1 How to submit your assignment

The procedures for submitting your assignment can be found on our document website. (http://wwwdmplus2025.csie.io:81/)

5.2 What should be submitted

1. You should hand in your assignment to Gitlab and deploy your website on your server.
2. You should record a demo video to show each function in your assignment and upload it to YouTube.

6. Grading policy

Graders will test your homework only on Google Chrome in 1920*1080. **Homework submitted late will be accepted for up to 7 days after the due date and will receive an automatic 30% penalty. Homework submitted more than 7 days after the due date will not be accepted. Only one final submission (either one on-time or one late submission) will be accepted. Your assignment will not be graded without a demo video. You should explain all functions of your assignment in the demo video. The link to your demo video should be submitted to eCourse.** The TA(s) will mark and give points according to the following grading policy:

Different from homework 1 and homework 2, your website does not need to look exactly the same as the examples. The TA(s) will focus on the required functions only.

The total score for the grading section below is 115 points, but you can earn a maximum of 100 points in this assignment.

MySQL Database (Section 2.1) (10%)

Tables are created correctly	5%
Password is encrypted.	5%

Log-in page, Register page, and Log-out function (Section 2.2)

Log-in page (Section 2.2.1) (13%)

Sign-in function works correctly.	3%
SQL injection	5%
The password field can temporarily show the password through a button.	1%
Account or password input error warning	2%
Account or password input missing reminder	2%

Register page (Section 2.2.2) (14%)

Create user accounts in the database successfully.	5%
Show errors when the input is wrong. 1.The username or email already exists. 2.The retyped password does not match the password. 3. Any empty field 4. Unsupported photo file type upload error message (each 1 point)	4%
The photo upload thumbnail feature works correctly.	3%
The password field can temporarily show the password through a button. (each 1 point)	2%

Log out function (Section 2.2.3) (3%)

Log out function	Log-out function works correctly.	3%

User Page (Section 2.3)
Basic information (Section 2.3.1) (6%)

The user's basic information is displayed correctly.	3%
The basic information editing feature works correctly.	3%

Hint: If the user modifies their information but the basic information is not updated, you will not receive the display score.

Change Password (Section 2.3.1) (8%)

Change Password function is correct	3%
The password field can temporarily show the password through a button.	3%
Show errors when the input is wrong. 1. Old password error 2. New password and confirmation password do not match (each 1 point)	2%

Hint: If the user changes their password but is unable to log in with the new password, you will not receive the "functionality correct" score.

User Product (Section 2.4) (8%)

The product photo switching functionality works correctly.	2%
The product information editing feature works correctly.	3%
The "Add Product" feature works correctly.	3%

Hint: If the user adds or edits product information and the product card displays incorrect information, you will not receive the "functionality correct" score.

User Orders (Section 2.5) (10%)

The order categorization display functionality works correctly.	3%

The order information is displayed correctly.	2%
The order process is correct. (Figures 6-2 ~ 6-4)	5%

Hint: Please ensure the entire order process is fully correct, or you will not receive any points.

Delete Account (Section 2.6) (7%)

Deletion Account Inquiry	1%
Placeholder to inform users of the correct format	1%
Order uncompleted reminder	2%
Delete Account function works correctly	3%

Hint: If the user can still log in after deleting their account, you will not receive the "functionality correct" score.

Main page
Main Banner (Section 2.7.1) (5%)

The three components of the main banner are displayed correctly.	3%
The user function area can correctly distinguish whether a user is logged in or not.	2%

Product Search (Section 2.7.2) (6%)

Product search function works correctly	5%
The category selection buttons 6*2 grid is displayed correctly.	1%

Hint: You must complete all search requirements, or you will not receive any "functionality correct" scores.

Product Display Area (Section 2.8) (5%)

The product display area 4*2 grid is displayed correctly.	1%
The products found by the product search function are displayed correctly.	1%
Pagenation Button works correctly.	3%

Product detail page (Section 2.9) (7%)

Product information is displayed correctly	1%
Purchase quantity input area works correctly.	3%
The "Add to Cart" feature works correctly.	3%

Hint: You must complete all input area requirements, or you will not receive any "functionality correct" scores.

Shopping cart page (Section 4.1) (5%)

The products in the shopping cart can be correctly categorized by seller	2%
The order information is correct.	1%
The checkout button and the delete order button function correctly.	2%

Checkout page (Section 4.2) (8%)

The product information in the order is correct.	1%
The order amount is calculated correctly.	2%
The buyer's full name, address, and phone number are correctly pre-filled.	3%
After checkout, the ongoing order should be displayed in both the buyer's and seller's user order sections.	2%