Fpt University

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CAPSTONE PROJECT REPORT

Report 3 – Software Requirement Specification

– DaNang, November 2022 –

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I. Record of Changes

Date	A*,M, D	In charge	Change Description
25/09/2022	A*	LongTT	Create new
25/11/2022	M	DangHH	Fix Report
01/12/2022	M	ThanhNPN	Fix Report

*A - Added M - Modified D - Deleted

II. Software Requirement Specification

1. Product Overview

The purpose of this document describes in detail the functions of the "website for buying and selling two-handed items". It illustrates the functions in detail and builds a complete system. It clearly explains the system's constraints, providing an overview of the interface and interactions with the system or other external applications. This document uses the description presented for the customer to better understand the website

- The web-based project management and deployment management system "2hand market" helps the management and implementation of registrations to be done quickly, conveniently and with the least cost. The system was born to sell used products to people in need.
- The service system helps to sell the main objects: Most items from electrical appliances to phones or vehicles.
- The site allows users to register to participate in buying and sell by logging into the system. After registering, customers will be moderated to post their used products for sale or buy products sold on the website.

2. User Requirements

2.1 Actors

#	Actor	Description
1	Guest	As a user accessing the website (not logged in). They can view product an search product,...
2	User	As the user accessing the website (logged in). They can bid, post products they want to sell, ...
3	Manager	As the manager of posts related to the auction,.....
4	Admin	As a system administrator who has the right to manage all and has the right to ban accounts that show signs of violating the rules of the auction site

Table 1: Actors

2.2 Use Cases

The system has 4 actors, including Guest, User and Admin.

2.2.1 Diagram(s)

Figure 1: Second-Hand Market Subsystem
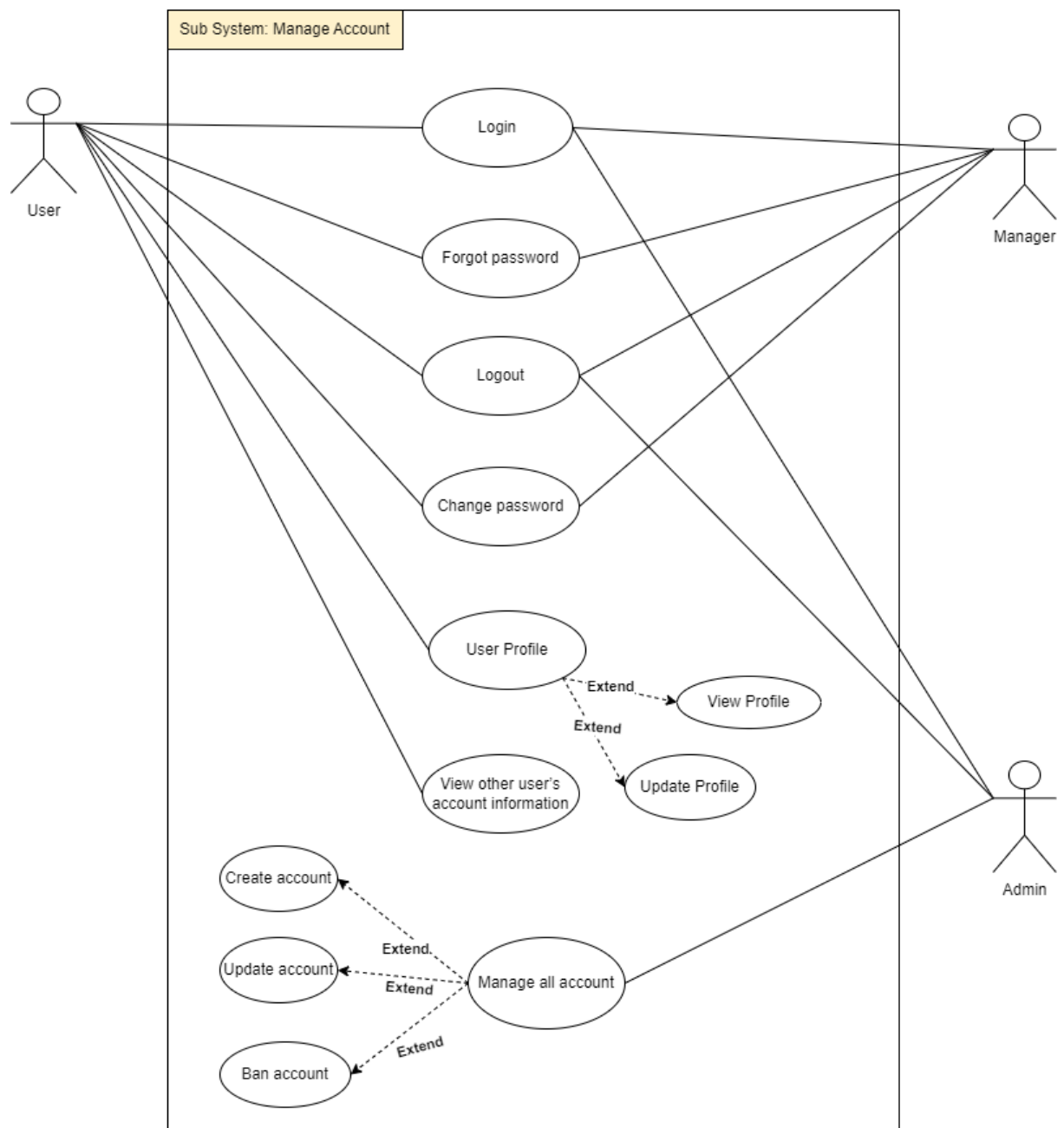
Figure 2: Use case for Manage Account

Figure 3: Use case for Manage product posts
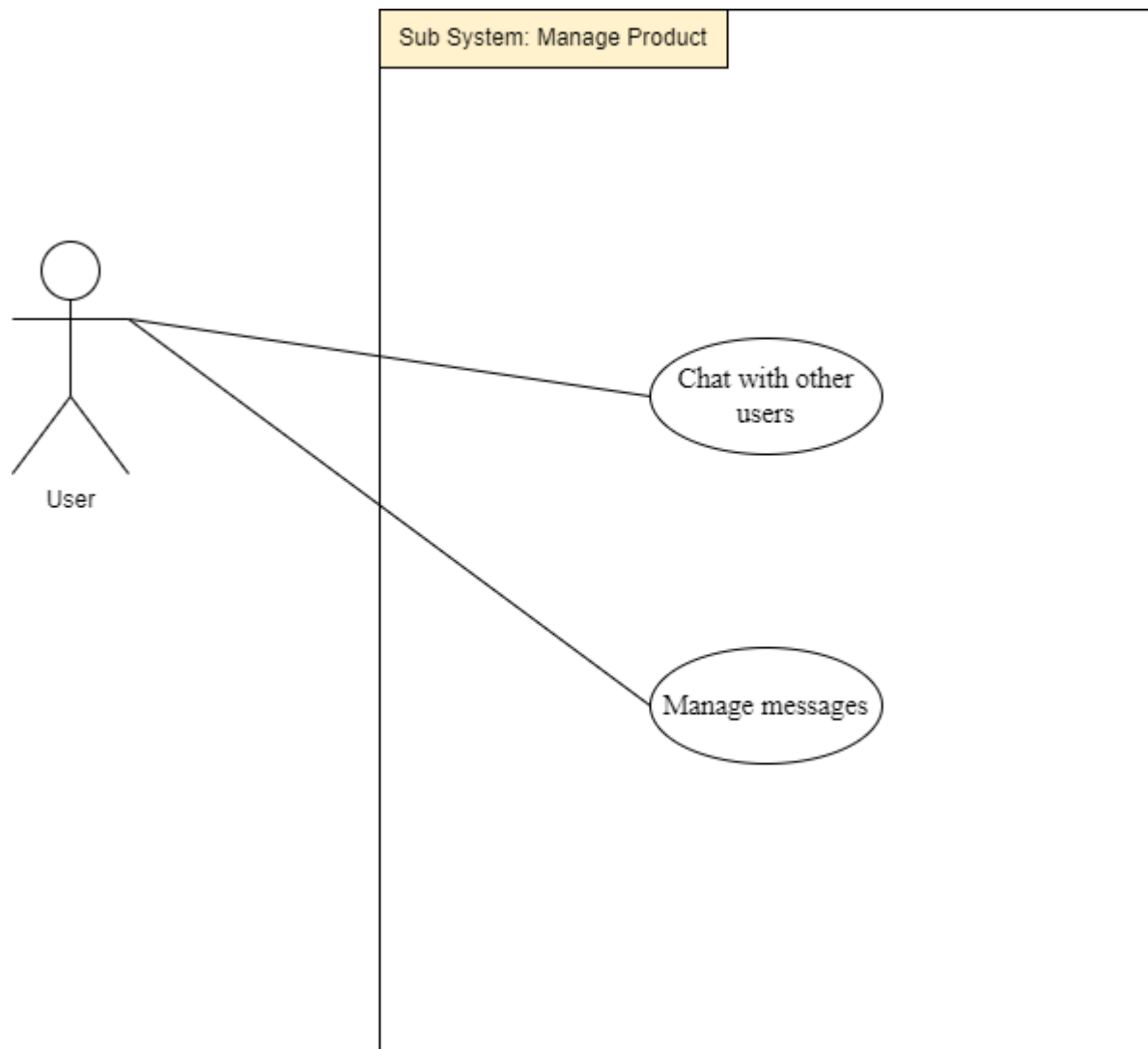
Figure 4: Use case for Manage Messages
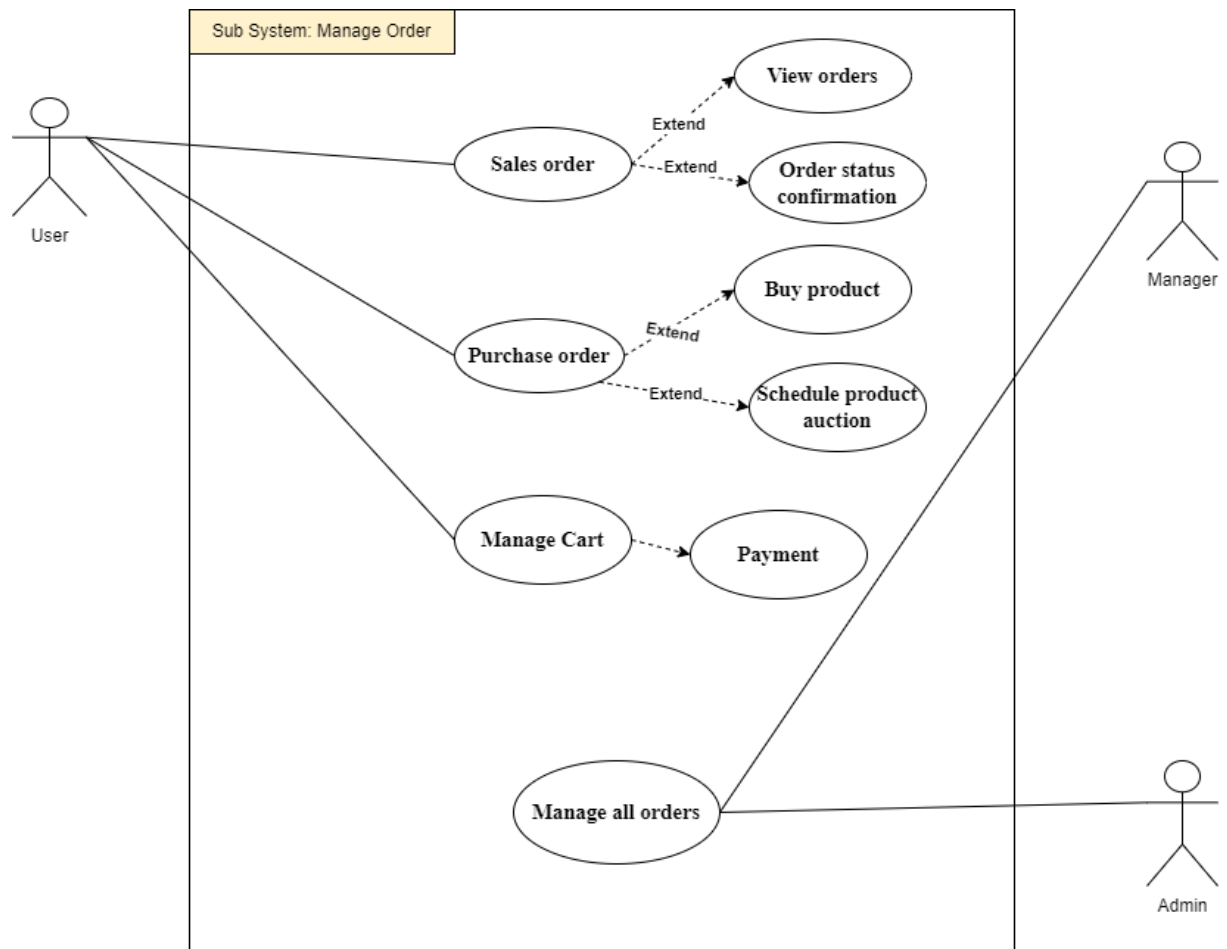
Figure 5: Use case for Manage Order
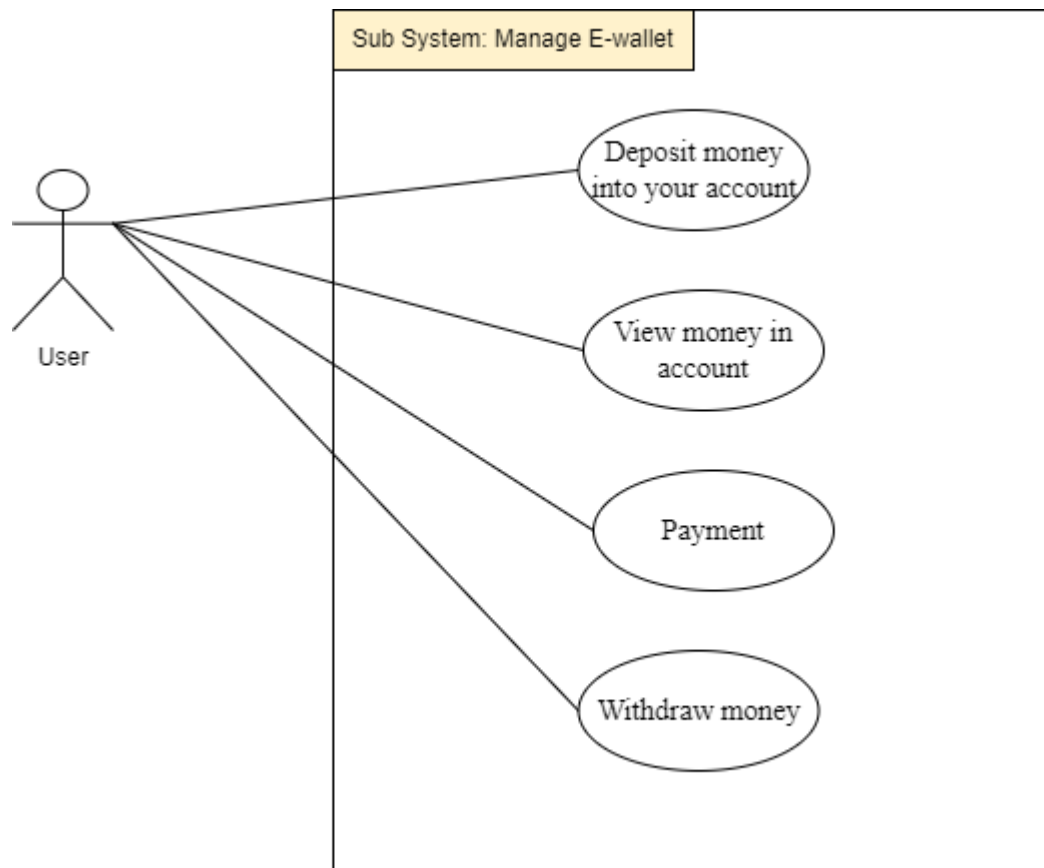
Figure 6: Use case for Manage E-wallet

Figure 7: Use case for System Management

2.2.2 Use Cases List

ID	Use Case	Actors	User Case Description
UC - 01	Register	Guest	Create new account
UC - 02	Login	User/ Admin/manager	Login on system
UC - 03	Search product by name	Guest/User	Search to find product
UC - 04	View product	Guest/User	View all product

UC - 05	Filter product by category	Guest/User	View product by filter
UC - 06	Filter product by location	User/Guest	View product by filter
UC - 07	Forgot password	User	User reset password
UC - 08	Logout	User/Admin/Manager	Log out system
UC - 09	Manage Product to sell	User	Manage product
UC - 10	Post product to sell	User	Post product
UC - 11	Manage auctioned product	User	Users with the seller role manage auction
UC - 12	Schedule product auction	User	Users with the buyer role Join and watch the auction
UC - 13	Create auction	User	Users with the seller role create auction posts
UC - 14	View other user's account information	User	Users view other users' personal information
UC - 15	View money in account	User	Users view their money on the system
UC - 16	Deposit money into your account	User	Users deposit money into their accounts
UC - 17	Manage order	User	View and delete product
UC - 18	Buy product	User	Users view posts describing the product and add it to the cart then checkout
UC - 19	Payment	User	The user makes payment via Paypal after receiving an order confirmation from the seller
UC - 20	Mange favorite product list	User	View and delete favorite product
UC - 21	Add favorite product	User	Can add favorite posts and be saved in the favorite products list
UC - 22	Manage messages	User	View, delete and message to other user
UC - 23	Manage account	User	View, update account

UC - 24	Manage category	Admin/Manager	Create, update, delete, view category
UC - 25	Manage all posting	Admin/Manager	View,delete post
UC - 26	Statistics and Report	Admin/Manager	Statistical analysis of data using tables and graphs
UC - 27	Mange all account User and Admin	Admin	Ban,view,update,create account

Table 2: Use cases list

2.2.3 Descriptions

2.2.3.1 Register

UC ID and Name:	UC 01 - Register
Created By:	
Primary Actor:	Guest
Trigger:	Guests must be on the "home page" screen.
Description:	Guests want to register a new account to Order
Preconditions:	Guest does not have an account
Post-conditions:	POST-1: Register Successfully POST-2: The Guest is taken to the "Home page" screen.
Normal Flow:	1. Click the "Register" button at home screen 2. Redirect to the "Register" screen 3. Fill in register form 4. Click "Register" button 5. an OTP is sent to Gmail 6. Enter the OTP to verify the account
Alternative Flows:	N/A
Exceptions:	EX-01: Username is existed in the database EX-02: Email is existed in the database EX-03: Enter incorrect patterns of fields
Priority:	High
Frequency of Use:	High
Business Rules:	
Other Information:	N/A

Assumptions:	N/A

Table 3: UC 01 Register

2.2.3.2 Login

UC ID and Name:	UC 02 - Login
Created By:	
Primary Actor:	User, Admin,Manager
Trigger:	Click the "login" button on the login page.
Description:	Actor logs in to the system with an existing account.
Preconditions:	PRE-01: Must have a User account.
Post-conditions:	POST-1: Login Successfully POST-2: The user is taken to the home page.
Normal Flow:	1. Click the "Login" at home screen 2. Redirect to the "Login" screen 3. Fill in username, email and password 4. Click "Login" button 5. When login succeeds, the user is taken to the user home page. 6. When login fails, the system requests them to login again.
Alternative Flows:	N/A
Exceptions:	1.User logged in with the wrong username: The system displays "Account does not exist". 2. User logged in with wrong password: The system displays "Password is not correct"
Priority:	High
Frequency of Use:	High
Business Rules:	
Other Information:	N/A
Assumptions:	N/A

Table 4: UC 02 Login

2.2.3.3 Serch product by name:

UC ID and Name:	UC 03 – Search product by name
Created By:	

Primary Actor:	User, guest
Trigger:	User, guest must press the search bar.
Description:	User, guest want to search for a product
Preconditions:	PRE-01: Must press the search bar.
Post-conditions:	POST-01: Show the products you want to search for
Normal Flow:	1. Go to the home screen 2. Must click on the search bar 3. Press the product name 4. Show searched products
Alternative Flows:	N/A
Exceptions:	N/A
Priority:	High
Frequency of Use:	High
Business Rules:	N/A
Other Information:	N/A
Assumptions:	N/A

Table 5: UC 03 Search product by name

2.2.3.4 View Product:

UC ID and Name:	UC 04 – View product
Created By:	
Primary Actor:	User, guest
Trigger:	User, guest must press the product.
Description:	User, guest want to view for a product
Preconditions:	PRE-01: Must press picture image.
Post-conditions:	POST-01: Show the information and pricec products you want to search for.
Normal Flow:	1. Go to the home screen 2. Must click on the product 3. Show products

Alternative Flows:	N/A
Exceptions:	N/A
Priority:	High
Frequency of Use:	High
Business Rules:	N/A
Other Information:	N/A
Assumptions:	N/A

<div align="center">**Table 6: UC 04 View product**</div>

2.2.3.5 Filter product by category

UC ID and Name:	UC 05 - Filter product by category
Created By:	
Primary Actor:	Guest,User
Trigger:	The guest/user must prees category they want to find.
Description:	The guest/user who visits the website can see the list of products
Preconditions:	PRE – 01: When the guest/user they will use the search by category and see products.
Post-conditions:	POST-01: The list of products by category names will appear.
Normal Flow:	1. User, Guest standing at home screen 2. When the user,guest click on the category,the list of products with related names will appear in the table below.
Alternative Flows:	N/A
Exceptions:	N/A
Priority:	High
Frequency of Use:	High
Business Rules:	N/A
Other Information:	N/A
Assumptions:	N/A

2.2.3.6 Filter product by location

UC ID and Name:	UC 06 - Filter product by location
Created By:	
Primary Actor:	User, Guest
Trigger:	The user/guest choose search by location.
Description:	The guest/user who visits the website can see the list of products
Preconditions:	PRE – 01: When the guest/user they will use the search by category and see products.
Post-conditions:	POST-01: The list of products by category names will appear.
Normal Flow:	1. User, Guest standing at home screen 2. When the user, guest click on the category ,the list of products with related names will appear in the table below.
Alternative Flows:	N/A
Exceptions:	N/A
Priority:	High
Frequency of Use:	High
Business Rules:	N/A
Other Information:	N/A
Assumptions:	N/A

Table 8: UC 06 Filter product by location

2.2.3.7 Manager product to sell

UC ID and Name:	UC 07 – Manage Product to sell
Created By:	
Primary Actor:	User
Trigger:	User will post the products to sell
Description:	After the user post products the products will up to the manager to censorship and the products will up to sell

Preconditions:	PRE-1: Users must log in to the system. PRE-2: The product must be suitable and not on the prohibited list.
Post-conditions:	POST-01: User will waiting the product will be evaluated and approved.
Normal Flow:	1. Click to download product image and select item of product type 2. Update product price 3. Wait for the administrator to approve 4. Products will be updated to selected categories.
Alternative Flows:	N/A
Exceptions:	N/A
Priority:	High
Frequency of Use:	High
Business Rules:	N/A
Other Information:	N/A
Assumptions:	N/A

<p align="center">**Table 9: UC 07 Manage product to sell**</p>

2.2.3.8 Post products to sell

UC ID and Name:	UC 08 – Post product to sell
Created By:	
Primary Actor:	User
Trigger:	User will post the products to sell.
Description:	After the user post products the products will up to the manager to censorship and the products will up to sell
Preconditions:	PRE-1: Users must log in to the system. PRE-2: PRE-3: The product must be suitable and not on the prohibited list.
Post-conditions:	POST-01: User will waiting the product will be evaluated and approved.
Normal Flow:	1. Click to download product image and select item of product type 2. Update product price 3. Wait for the administrator to approve 4. Products will be updated to selected categories.
Alternative Flows:	N/A
Exceptions:	N/A

Priority:	High
Frequency of Use:	High
Business Rules:	N/A
Other Information:	N/A
Assumptions:	N/A

<div align="center">

Table 10: UC 08 Post product to sell

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2.2.3.9 Manage acoutioned products

UC ID and Name:	UC 09 – Manage auction product
Created By:	
Primary Actor:	User
Trigger:	User must post auction item
Description:	User wants to see all his/her auctioned product.
Preconditions:	PRE-01: Must have a user account. PRE-02: Must login to the system as User
Post-conditions:	POST-01: View all auctioned product have post.
Normal Flow:	1. Click the "My auctioned product" on the sidebar. 2. Redirect to the "My auctioned product" screen.
Alternative Flows:	N/A
Exceptions:	N/A
Priority:	High
Frequency of Use:	High
Business Rules:	N/A
Other Information:	N/A
Assumptions:	N/A

<div align="center">

Table 11: UC 09 Manage auction product

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2.2.3.10 Schedule production auction

UC ID and Name:	UC – 10: Schedule product auction
Created By:	
Primary Actor:	User
Trigger:	User must be on the 'auction' screen
Description:	User wants to schedule product auction
Preconditions:	PRE-01: Must have a user account. PRE-02: Must login to the system as User. PRE-03: Add notifications for upcoming auctions
Post-conditions:	POST-01: View notifications for upcoming.
Normal Flow:	1. Tap the notification 2. Select notification of scheduled auction
Alternative Flows:	N/A
Exceptions:	N/A
Priority:	High
Frequency of Use:	High
Business Rules:	N/A
Other Information:	N/A
Assumptions:	N/A

Table 12: UC 10 Schedule product auction

2.2.3.11 Create aution

UC ID and Name:	UC – 11 : Create aution
Created By:	
Primary Actor:	User
Trigger:	User must be on the "Aution" screen.

Description:	User want to create an auction.
Preconditions:	PRE-01: User must download the auction product. PRE-02: Select the desired starting price
Post-conditions:	POST-01: Wait for the manager to confirm the auction.
Normal Flow:	1. The product must be prepared in the posted condition…
Alternative Flows:	N/A
Exceptions:	N/A
Priority:	High
Frequency of Use:	High
Business Rules:	N/A
Other Information:	N/A
Assumptions:	N/A

<p align="center">**Table 13: UC 11 Create auction**</p>

2.2.3.12 View other user's account information

UC ID and Name:	UC-12 View other user's account information
Created By:	
Primary Actor:	User
Trigger:	User must go to another User's Profile page
Description:	User wants to see other User's information
Preconditions:	Use phải vào trang Profile của User khác
Post-conditions:	User must go to another User's Profile page
Normal Flow:	1. User enters someone else's User page 2. User proceeds to view other people's information 3. View success
Alternative Flows:	N/A
Exceptions:	1.Actor login with wrong username: The system displays "Account does not exist". 2. Actor login with wrong password: The system displays "Invalid Password"
Priority:	High
Frequency of Use:	High

Business Rules:	
Other Information:	N/A
Assumptions:	N/A

<center>**Table 14: UC 12 View other user's account information**</center>

2.2.3.13 View money in account

UC ID and Name:	UC-13 View money in account
Created By:	
Primary Actor:	User
Trigger:	User must go to the personal information page to see the money in his account
Description:	User wants to see the money in his account
Preconditions:	User adds money to the account
Post-conditions:	User successfully added money to the account
Normal Flow:	1.User clicks on Profile 2. User proceeds to see the amount of money in the account
Alternative Flows:	N/A
Exceptions:	N/A
Priority:	High
Frequency of Use:	High
Business Rules:	
Other Information:	N/A
Assumptions:	N/A

<center>**Table 15: UC 13 View money in account**</center>

2.2.3.14 Deposit money into your account

UC ID and Name:	UC- 14 Deposit money into your account
Created By:	
Primary Actor:	User
Trigger:	User must go to the page to pay money to their account
Description:	User wants to add money to his account
Preconditions:	User must add money to the account
Post-conditions:	User successfully added money to the account
Normal Flow:	1. User clicks on adding money to the account 2. Enter personal information, card information, amount you want to add

	3. More success 4. Press the save button
Alternative Flows:	N/A
Exceptions:	N/A
Priority:	High
Frequency of Use:	High
Business Rules:	N/A
Other Information:	N/A
Assumptions:	N/A

<div align="center">**Table 16: UC 14 Deposit money into your account**</div>

2.2.3.15 Manage order

UC ID and Name:	UC- 15 Manage order
Created By:	
Primary Actor:	User
Trigger:	User must go to product order page
Description:	User wants to manage ordered products.
Preconditions:	User must order the product
Post-conditions:	POST-01: Order successful
Normal Flow:	1. User clicks on the ordered product page 2. User can view, delete, update ordered products 3. User view, delete, update ordered products successful
Alternative Flows:	N/A
Exceptions:	N/A
Priority:	High
Frequency of Use:	High
Business Rules:	N/A

Other Information:	N/A
Assumptions:	N/A

<div align="center">**Table 17: UC 15 Manage order**</div>

2.2.3.16 Buy product

UC ID and Name:	UC- 16 Buy product
Created By:	
Primary Actor:	User
Trigger:	User must go to the product purchase and sale page
Description:	User wants to buy product
Preconditions:	PRE: User must go to product purchase page
Post-conditions:	User successfully purchased product page
Normal Flow:	1. User enters the product purchase and sale page 2. User proceeds to buy the product 3. After successful product purchase 4. Press the pay button
Alternative Flows:	N/A
Exceptions:	N/A
Priority:	High
Frequency of Use:	High
Business Rules:	N/A
Other Information:	N/A
Assumptions:	N/A

<div align="center">**Table 18: UC 16 Buy product**</div>

2.2.3.17 Payment

UC ID and Name:	UC- 17 Payment
Created By:	
Primary Actor:	User
Trigger:	User accesses the payment page
Description:	User wants to pay
Preconditions:	PRE – 01: User must pay
Post-conditions:	POST-01: User made payment successfully
Normal Flow:	1. User on the product purchase and sale page and buy the product successfully 2. Process product payment

	3. Successful payment
Alternative Flows:	N/A
Exceptions:	N/A
Priority:	High
Frequency of Use:	High
Business Rules:	N/A
Other Information:	N/A
Assumptions:	N/A

<p align="center">**Table 19: UC 17 Payment**</p>

2.2.3.18 Mange favourite product list

UC ID and Name:	UC- 18 Mange favourite product list
Created By:	
Primary Actor:	User
Trigger:	User must go to the favorite product list page
Description:	User wants to manage the list of favorite products
Preconditions:	PRE – 01: User wants to manage the list of favorite products
Post-conditions:	POST-01: User managed successfully
Normal Flow:	1. User must go to the favorite product list page 2. User proceed to view, delete product 3. Press the save button
Alternative Flows:	N/A
Exceptions:	N/A
Priority:	High
Frequency of Use:	High
Business Rules:	N/A
Other Information:	N/A
Assumptions:	N/A

<p align="center">**Table 20: UC 18 Mange favourite product list**</p>

2.2.3.19 Add favourite product

UC ID and Name:	UC- 19 Add favourite product
Created By:	
Primary Actor:	User

Trigger:	User must go to favorite product page
Description:	User wants to add favorite products
Preconditions:	PRE – 01: User adds a favorite product
Post-conditions:	POST-01: User successfully added favorite product
Normal Flow:	1. User enters favorite product page. 2. User successfully added favorite product 3. Press the save button
Alternative Flows:	N/A
Exceptions:	N/A
Priority:	High
Frequency of Use:	High
Business Rules:	N/A
Other Information:	N/A
Assumptions:	N/A

<p align="center">Table 21: UC 19 Add favourite product</p>

2.2.3.20 Manage messages

UC ID and Name:	UC- 20 Manage messages
Created By:	
Primary Actor:	User
Trigger:	Users must go to the chat box to manage their messages
Description:	User wants to manage his messages
Preconditions:	PRE-1: User must successfully enter the chat box
Post-conditions:	POST-01:User managed successfully.
Normal Flow:	1. User clicks on the chat box. 2. User managed chat box successfully 3. Press the save button
Alternative Flows:	N/A
Exceptions:	N/A
Priority:	High
Frequency of Use:	High
Business Rules:	N/A
Other Information:	N/A
Assumptions:	N/A

2.2.3.21 Manage account

UC ID and Name:	UC- 21 Manage account
Created By:	
Primary Actor:	User
Trigger:	User must go to his Profile page
Description:	User wants to view, update, edit user information
Preconditions:	PRE-01: User can access Profile page
Post-conditions:	POST-01: User successfully updated information
Normal Flow:	1. User clicks on his Profile page 2. User proceed to view, update, edit his information 3. After viewing, updating, editing my information successfully 4. Press the save button.
Alternative Flows:	N/A
Exceptions:	N/A
Priority:	High
Frequency of Use:	High
Business Rules:	N/A
Other Information:	N/A
Assumptions:	N/A

Table 23: UC 21 Manage account

2.2.3.22 Manage category

UC ID and Name:	UC- 22 Manage category
Created By:	
Primary Actor:	Admin/ Manager
Trigger:	Admin/Manager must go to product catalog management page
Description:	Admin/Manager wants to manage product catalog
Preconditions:	PRE-01: Admin/Manager successfully entered the product catalog management page
Post-conditions	POST-01: Admin/Manager can view the product catalog.
Normal Flow:	1. Admin/ Manager go to product catalog management. 2. Approving the products posted by users 3. Admin/Manager approved successfully.
Alternative Flows:	N/A
Exceptions:	N/A
Priority:	High
Frequency of Use:	High
Business Rules:	N/A

Other Information:	N/A
Assumptions:	N/A

<p align="center">**Table 24: UC 22 Manage category**</p>

2.2.3.23 Manage all posting

UC ID and Name:	UC-23 Manage all posting
Created By:	
Primary Actor:	Admin/ Manager
Trigger:	Admin/Manager wants to manage user's post list
Description:	Admin /Manager approved the post successfully
Preconditions:	PRE-1: Admin/Manager must go to user's post management page
Post-conditions:	POST-01: Admin/Manager successfully entered user's post management page
Normal Flow:	1. On the Admin homepage, Admin clicks on the list of user posts 2. Admin/Manager approves each user's post 3. Click the save button.
Alternative Flows:	N/A
Exceptions:	N/A
Priority:	High
Frequency of Use:	High
Business Rules:	N/A
Other Information:	N/A
Assumptions:	N/A

<p align="center">**Table 25: UC 23 Manage all posting**</p>

2.2.3.24 Statistics and Report

UC ID and Name:	UC- 24 Statistics and Report
Created By:	
Primary Actor:	Admin/Manager
Trigger:	Admin/Manager must be on the "Order confirmation" screen.
Description:	User wants to create an order.
Preconditions:	PRE-01: Must have a user account. PRE-02: Must login to the system as User
Post-conditions:	POST-01: View all Orders of current user
Normal Flow:	1. Choose delivery address and payment method. 2. Enter voucher code (if available) 3. Click on "Paypal payer" button or chose QR code payment

Alternative Flows:	N/A
Exceptions:	N/A
Priority:	High
Frequency of Use:	High
Business Rules:	N/A
Other Information:	N/A
Assumptions:	N/A

Table 26: UC 24 Statistics and Report

2.2.3.25 Manger all account

UC ID and Name:	UC- 25 Manger all account
Created By:	
Primary Actor:	Admin
Trigger:	Admin go to "Admin homepage" to manage account
Description:	Admin wants to add, delete, edit, update account
Preconditions:	PRE-01: Admin must go to the account management page.
Post-conditions:	POST-01: Admin successfully added, deleted, edited and updated account
Normal Flow:	1. Admin must go to the account management page. 2. Admin adds, deletes, edits and updates accounts 3. Admin click on save button.
Alternative Flows:	N/A
Exceptions:	N/A
Priority:	High
Frequency of Use:	High
Business Rules:	N/A
Other Information:	N/A
Assumptions:	N/A

Table 27: UC 25 Manger all account

3. Functional Requirements

3.1 System Functional Overview

3.1.1 Screens Flow
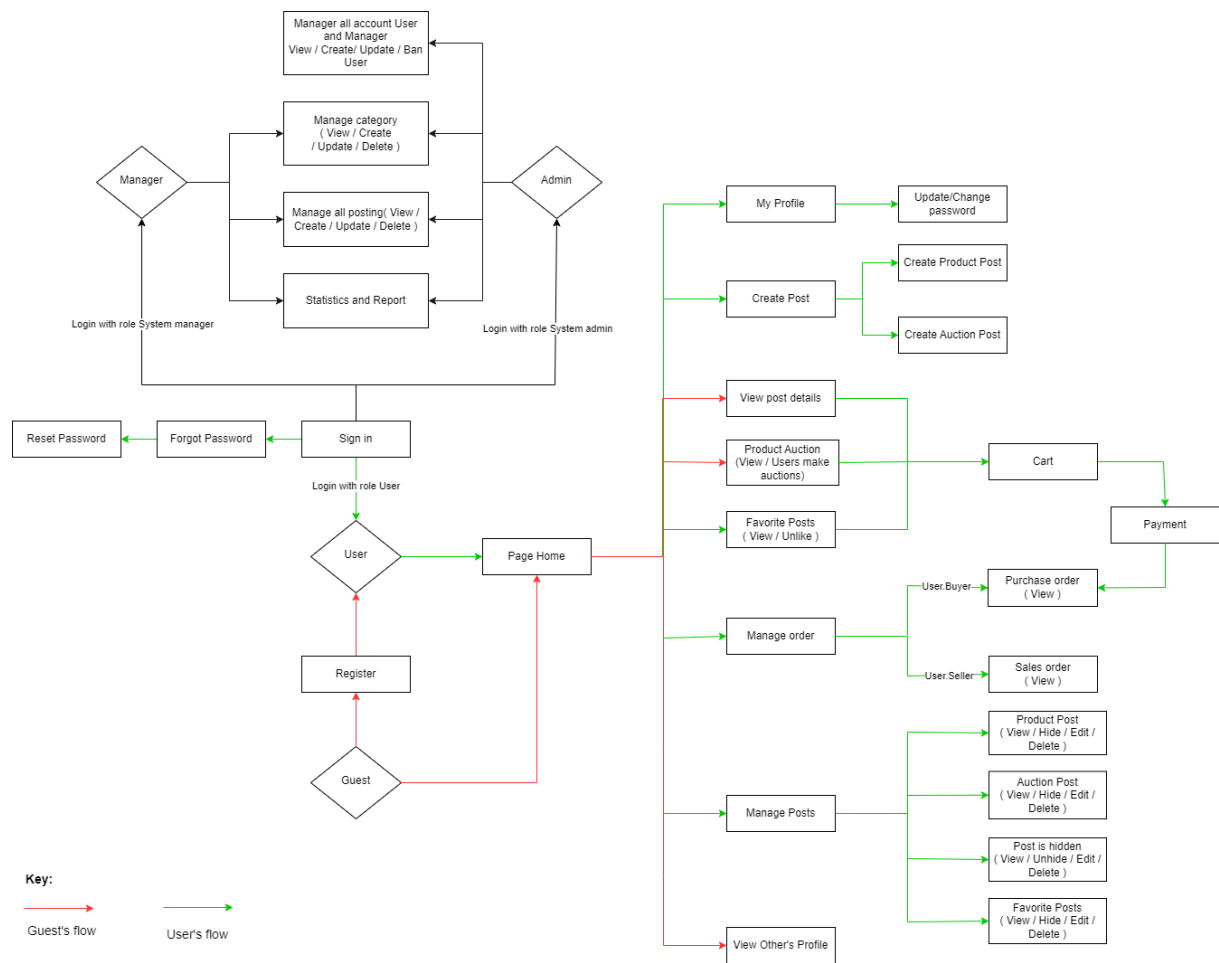
Figure 8: Screens Flow

3.1.2 Screen Descriptions

Web-app's screen descriptions:

No	Feature	Screen	Description
1	Common	Login	Login to system
2	Common	Register	Create an account to access the system
3	Common	Forgot Password	Reset your new password when you forgot your old password
4	Common	My profile	View/update personal information and change password
5	Common	Create Post	Create posts to sell products
6	Common	View post details	See a post selling product description
7	Common	Product Auction	View / bid in the auction to own the product
8	Common	Favorite Posts	Add/remove favorite posts
9	Common	Manage order	Manage purchase/sale orders on the system
10	Common CRUD	Manage Posts	Manage created posts (product sale posts, auction posts, hidden posts, favorite posts)
11	Common	View Other's Profile	View other users' personal information
12	Common	Cart	Shopping cart stores posts to make product purchases
13	Common	Payment	Make payment via paypal
14	Common CRUD	Manage all account User/Manager	Manage all accounts on the system
15	Common CRUD	Manage category	Manage post categories for products
16	Common CRUD	Manage all posting	Manage all posts on the system
17	Common	Dashboard	Analyze and make reports on the system on the number of users, number of posts,...

Table 28: Screen Descriptions

3.1.3 Screen Authorization

Screen	Screen Activity	Guest	User	Manage	Admin
Login	Query Own Data	x	x	x	x
Profile	Query Own Data		x	x	x
Change password	Query Own Data		x	x	x
Dashboard	Query Own Data		x	x	x
Manage manager	Query Own Data + CRUD Data				x

Manage User	Query Own Data + CRUD Data			x	x
Manage Post	Query Own Data + CRUD Data			x	x
Manage post	Query Own Data + CRUD Data			x	x
Manage auction	Query Own Data + CRUD Data			x	x
Manage category	Query Own Data + CRUD Data			x	x
Upload posts to sell	Query Own Data + Update Data	x	x		
View all post product	Query Own Data	x	x	x	x

<p style="text-align:center"><strong style="color:red">Table 29: Screen Authoriztion</p>

3.1.4 Non-Screen Functions

No	Feature	System Function	Description
1	Login	/login	Login to system
2	Logout	/logout	Logout of system
3	Change password	/changepassword	Change password of an account
4	Input OTP	/sentOTP	Input OTP for register
5	Add new account	/register	Register account
6	Post Product	/post	Post product
7	Get detail	/post/:_postId	Get detail the product already created
8	Manage Post	/managePosting	Manage posts of product
9	Delete subject	/edit/post/:postId	Update the product already created
10	Get category	/category/:categoryParentId	Get category
11	Update specialization	/cart	Get list of category
12	Get profile	/profile/user/:userId	Get Profile of user

13	Update profile	/editProfile	Update profile of user
14	Get all item	/cart	Get all item that have type of category
15	Create oder	/order/buy	Add item to payment
16	Get all classes	/class (GET)	Get all classes in system
17	Update payment	/payment/success	Update item to buy

<div align="center">Table 30: Non-Screen Functions</div>

3.1.5 Entity Relationship Diagram
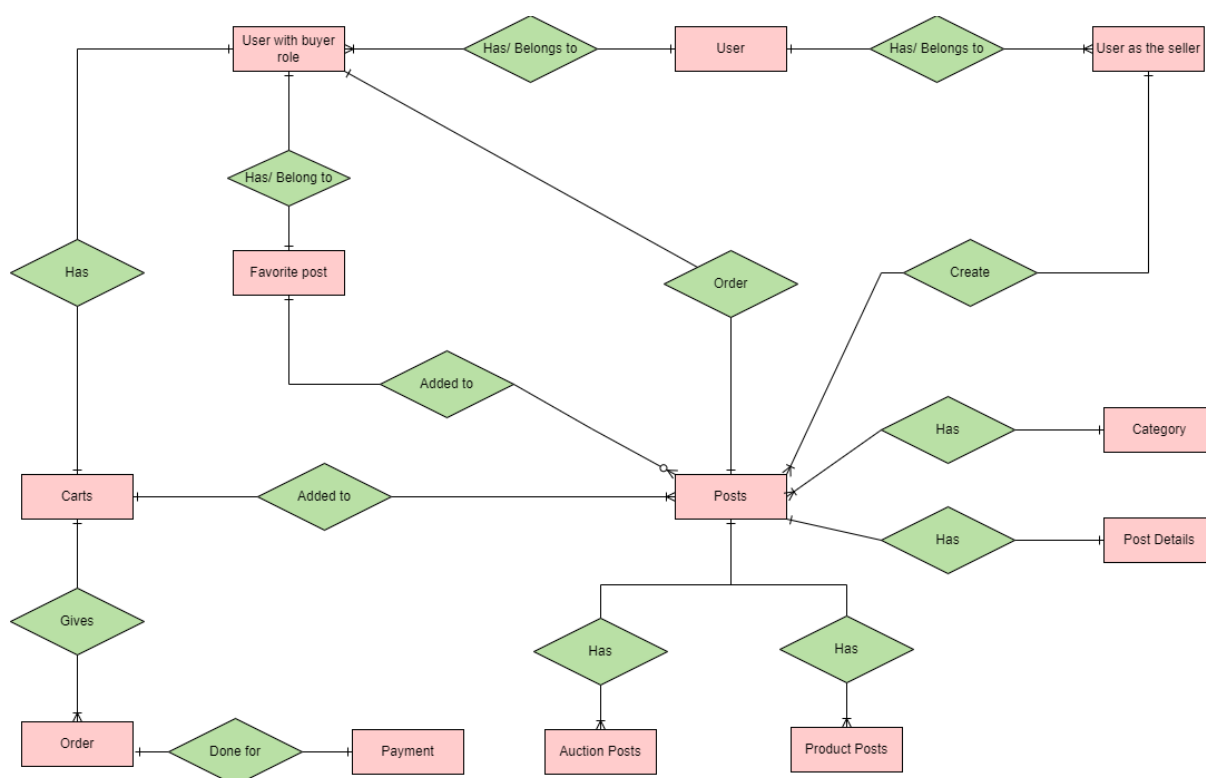
<div align="center">Figure 9: Entity Relationship Diagram</div>

<u>**Entities Description**</u>

No	Entity	Description
1	User with buyer role	Users with the buyer role view posts and place orders to acquire products
2	User as the seller	User as the seller creates posts to sell products
3	Posts	Posts describing products. 2 types of posts are auction posts and regular posts
4	Product Post	Regular post available price and detailed product description
5	Auction Post	The auction post will have a detailed description of the product, and the starting price for the auction. Other users will participate in the auction for a chance to own the product.

No	Entity	Description
1	User with buyer role	Users with the buyer role view posts and place orders to acquire products
6	Category	Posts will be categorized by product category: Fashion, home appliances, electronics...
7	Post Details	Store all information about product details: Product name, price, origin,...
8	Favorite post	Users can add posts to their favorites list for purchase later
9	Carts	Store products for a purchase payment
10	Order	Store all information about orders
11	Payment	Make payments and save payment information

Table 31: Entities Description

3.2 Account services

3.2.1 Login

- Trigger: the guest want to login to system
- Description: Provide a page for guests to log in to the Second hand market system
- Function detail:
    + Validation: User must fill all field to log in to the Second hand market system
    + Functionality: Log in to the system
- Screen layout:
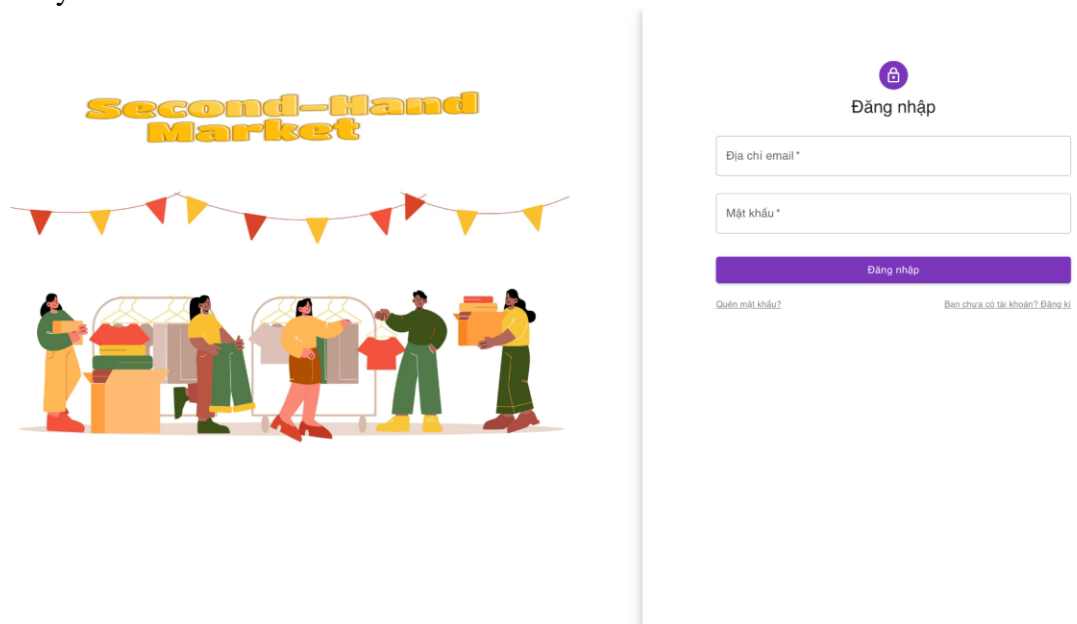
Figure 10: Login

3.2.2 Register

- Trigger: The Guest want to register an account to use the Second hand market system
- Description: Provide a page for guests register an account to use the Second hand market system
- Function detail:

+   Validation: User must fill all field to register an account.
+   Functionality: Register an account
-   Screen layout:

Figure 11: Register

3.2.3 Forgot password

-   Trigger: User forgot password and want to reset the new password.
-   Description:Provide a page for user who want to get the link resetting password from user email or username
-   Function detail:
    +   Validation: User must fill email or username to get link for reset the password, username or email must be registered in system.
    +   Functionality: Reset the password
-   Screen layout:

3.3 Profile

3.3.1 Change password

-   Trigger: User, manager want to change password.
-   Description:Provide a page for user, manager to change password
-   Function detail:
    +   Validation: User, Manager must fill all filed to change the password, new password and confirm password must be the same, the old password must be the same as the current password.
    +   Functionality: Change the password

- Screen layout:

3.3.2 View Profile

- Trigger: User want to view themself profile
- Description:Provide a page for User can view all information of themselves such as fullname, email, age, gender, profession, phone number, address.
- Function detail: Show all information for current
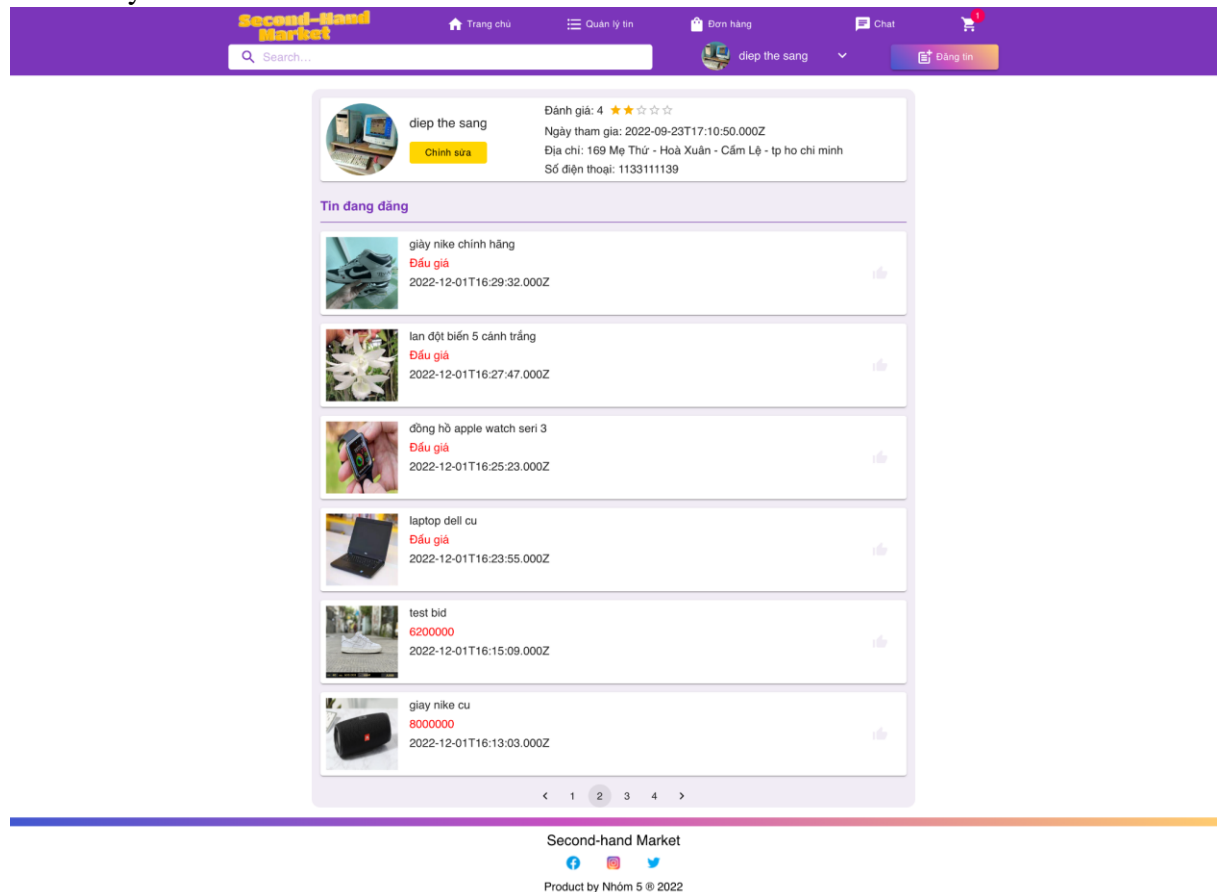
- Screen layout:

3.3.3 Edit Profile

- Trigger: User want to edit themself profile
- Description:Provide a page for User can themself profile
- Function detail: Edit information of user

- Screen layout:

Figure 14: Edit Profile

3.3.4 Manage favorite product list

- Trigger: User want to manage favorite product list in themself cart
- Description:Provide a page for User can manage favorite product list in themself cart
- Function detail: Manage favorite product list in themself cart
- Screen layout:

Figure 15: Manage favourite product list

3.3.5 View other user's account profile

- Trigger: User want to view other user's profile
- Description:Provide a page for User can view all information of other user's profile such as fullname, email, age, gender, profession, phone number, address.
- Function detail: Show all information for current

- Screen layout:
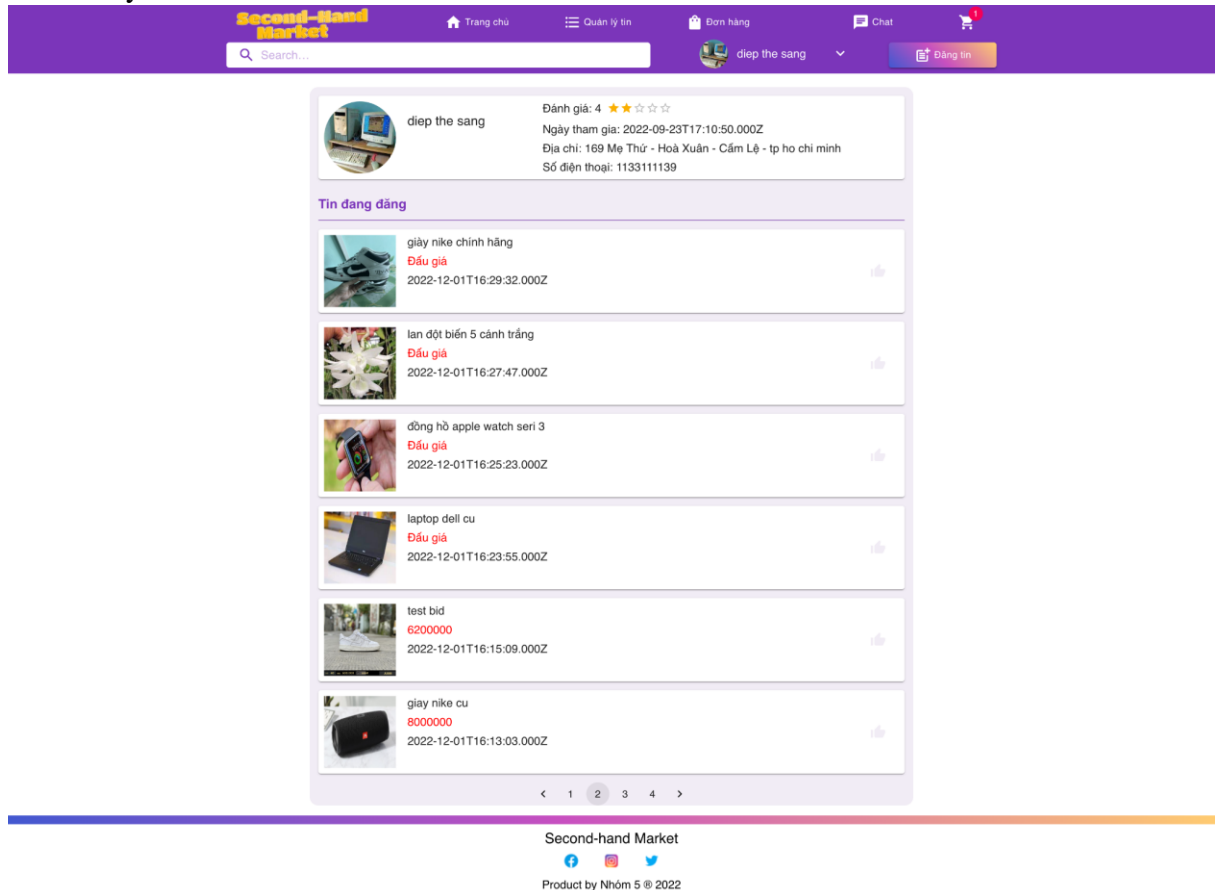
Figure 16: View other user's account profile

3.4 Buyer services

3.4.1 View all product to buy

- Trigger: User, Guest want to view list product current in Secondhand market system.
- Description:Provide a page for User, Guest can view list product
- Function detail: Show all list product.

- Screen layout:
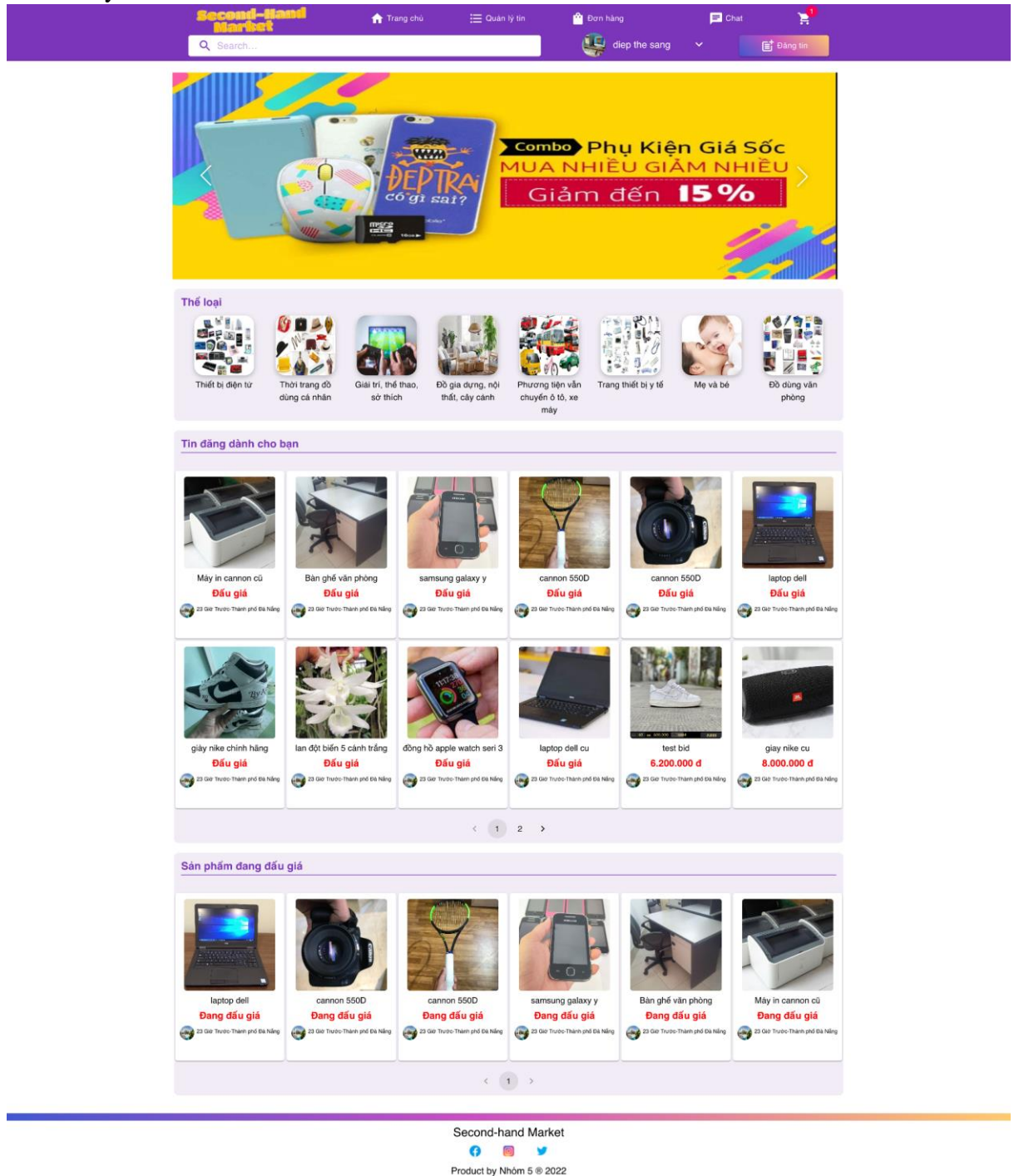
Figure 17: View all product to buy

3.4.2 Search product

- Trigger: User, Guest want to search list product current in Secondhand market system.
- Description: Provide a page for User, Guest can search list product
- Function detail: Show all list product that same the name User, Guest search.

- Screen layout:
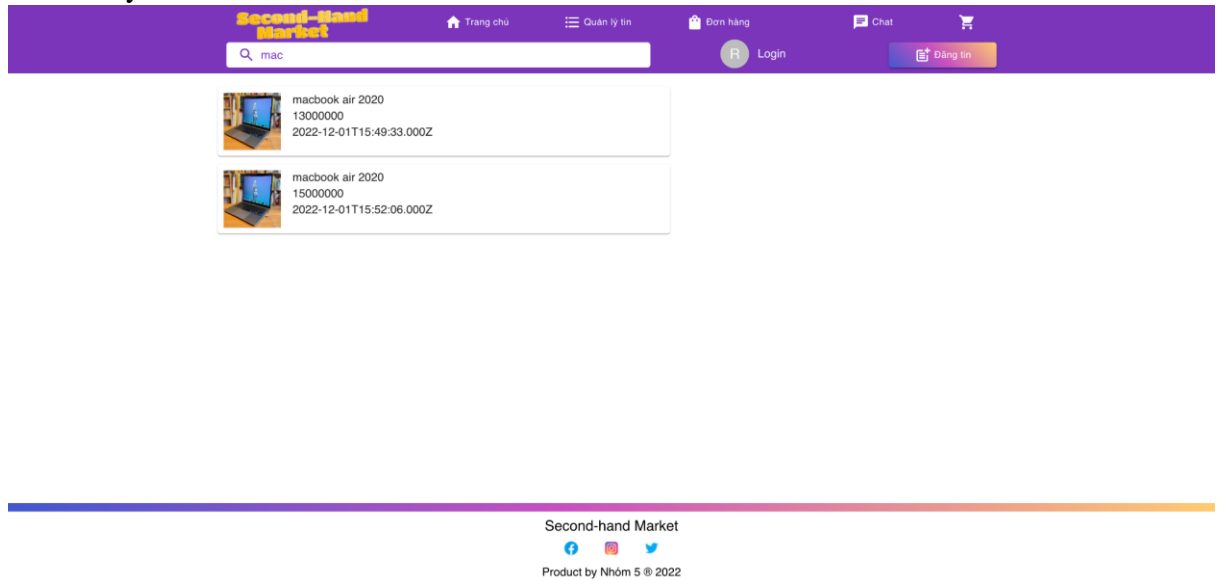
Figure 18: Search product

3.4.3 Filter product by category

- Trigger: User, Guest want to filter list product current in Secondhand market system.
- Description:Provide a page for User, Guest can filter list product
- Function detail: Show all list product that same the name User, Guest filter.
- Screen layout:
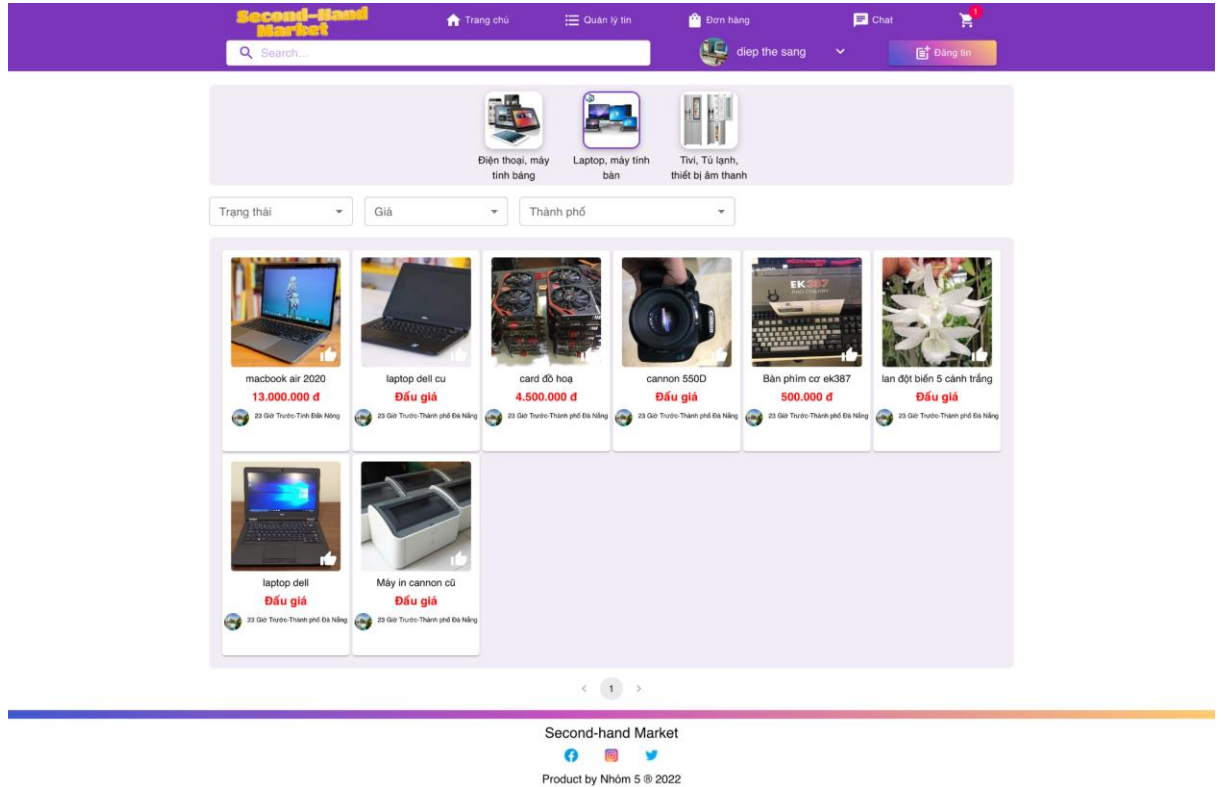
Figure 19: Filter product by category

3.4.3 Filter product by location

- Trigger: User, Guest want to filter list product current in Secondhand market system.
- Description:Provide a page for User, Guest can filter list product
- Function detail: Show all list product that same the name User, Guest filter.
- Screen layout:
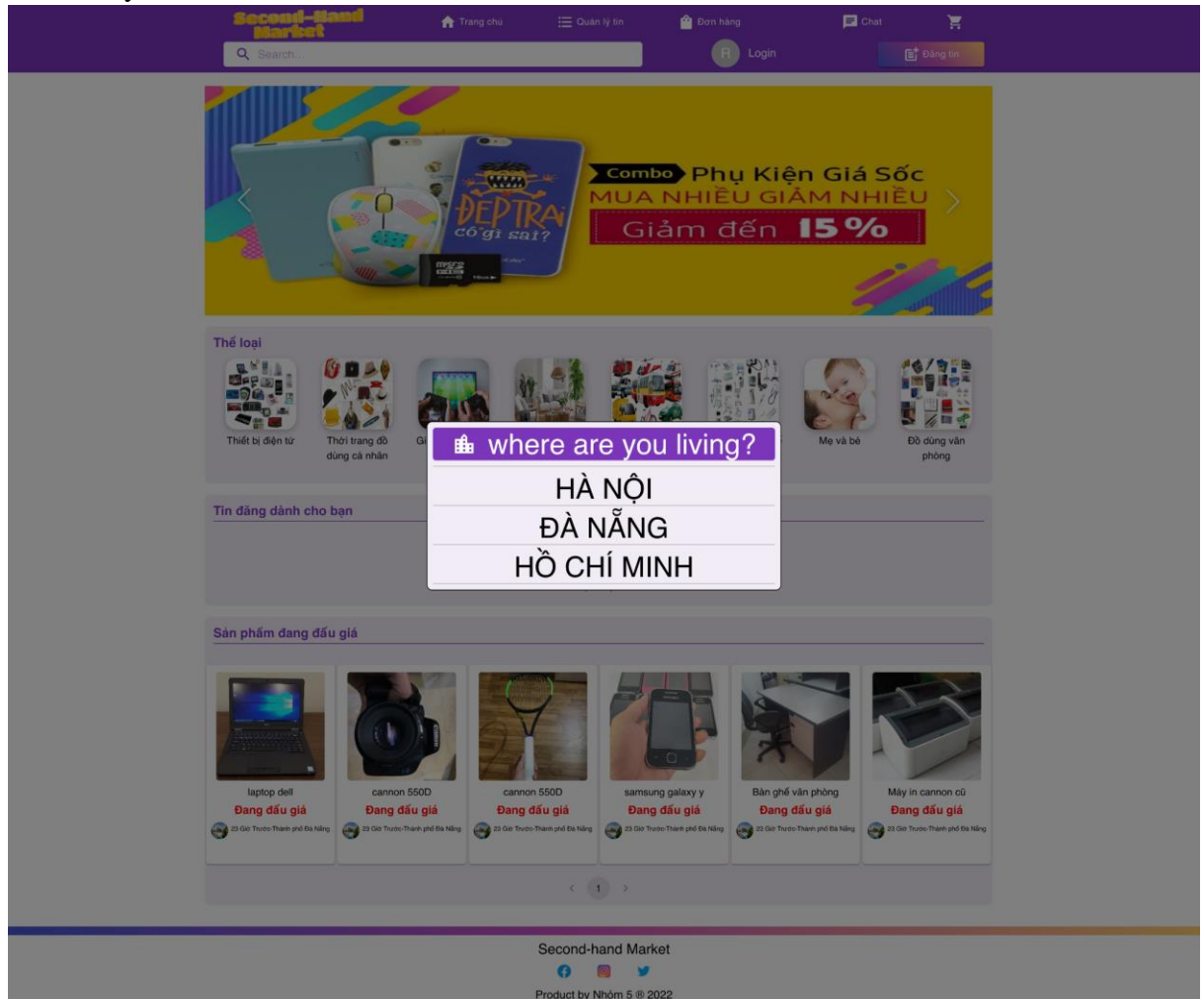
Figure 20: Filter product by location

3.4.4 View product detail

- Trigger: User, Guest want to view detail product in Secondhand market system.
- Description:Provide a page for User, Guest can view product detail
- Function detail: Show all list product that same the name User, Guest search.
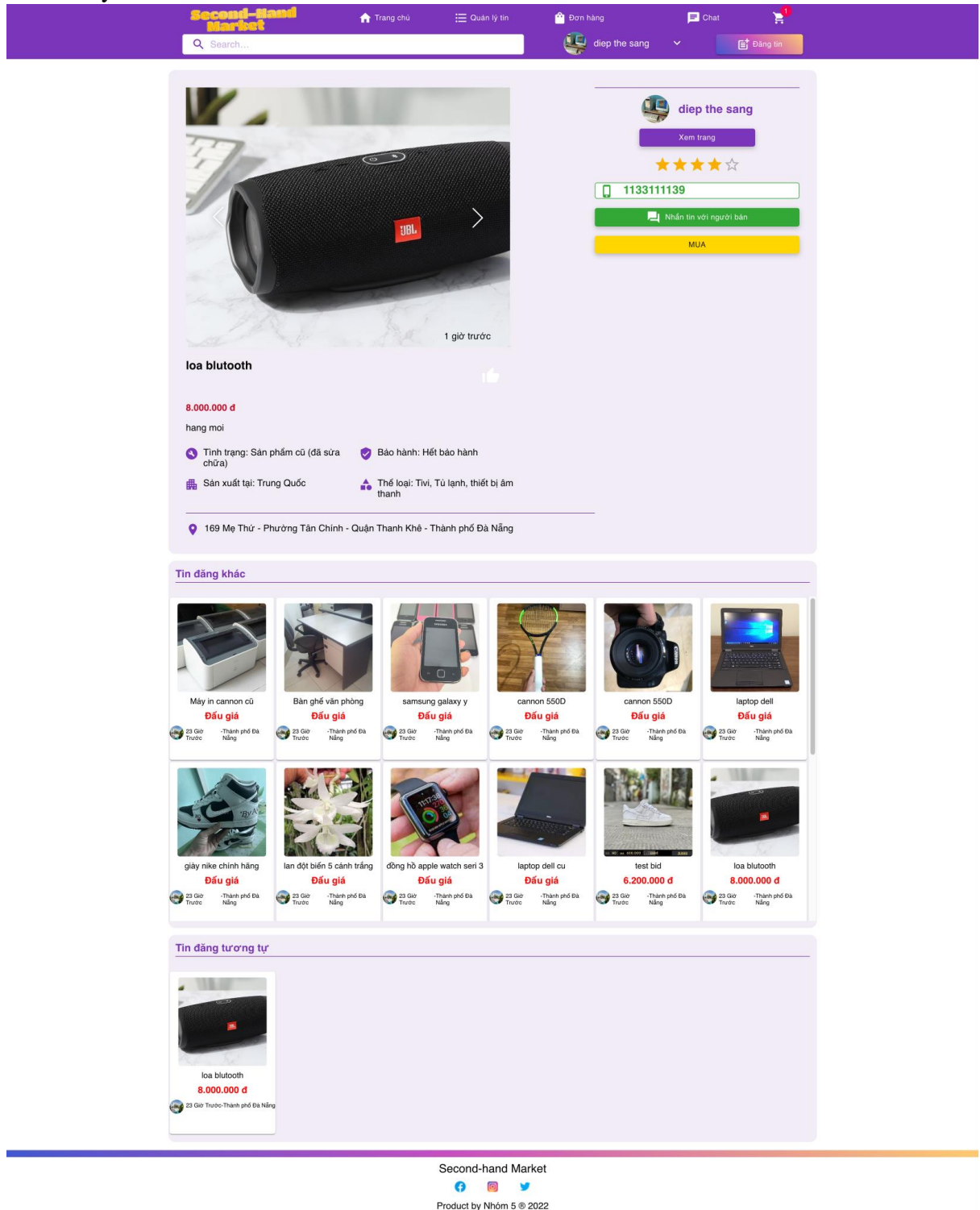
- Screen layout:

Figure 21: View product detail

3.4.5 Buy product

- Trigger: User want to buy product in Secondhand market system.
- Description:Provide a page for User can buy product in Secondhand market system.
- Function detail: Buy product for user

- Screen layout:
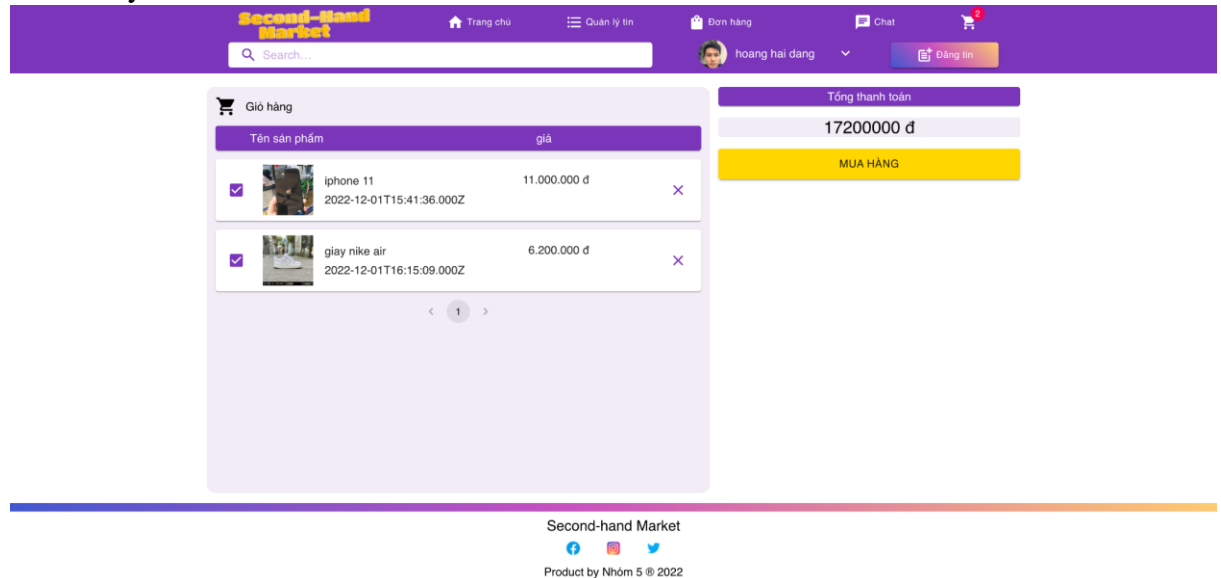
Figure 22: Buy product

3.4.5 Auction product

- Trigger: User want to auction product in Secondhand market system.
- Description:Provide a page for User can auction product in Secondhand market system.
- Function detail: auction product for user

- Screen layout:
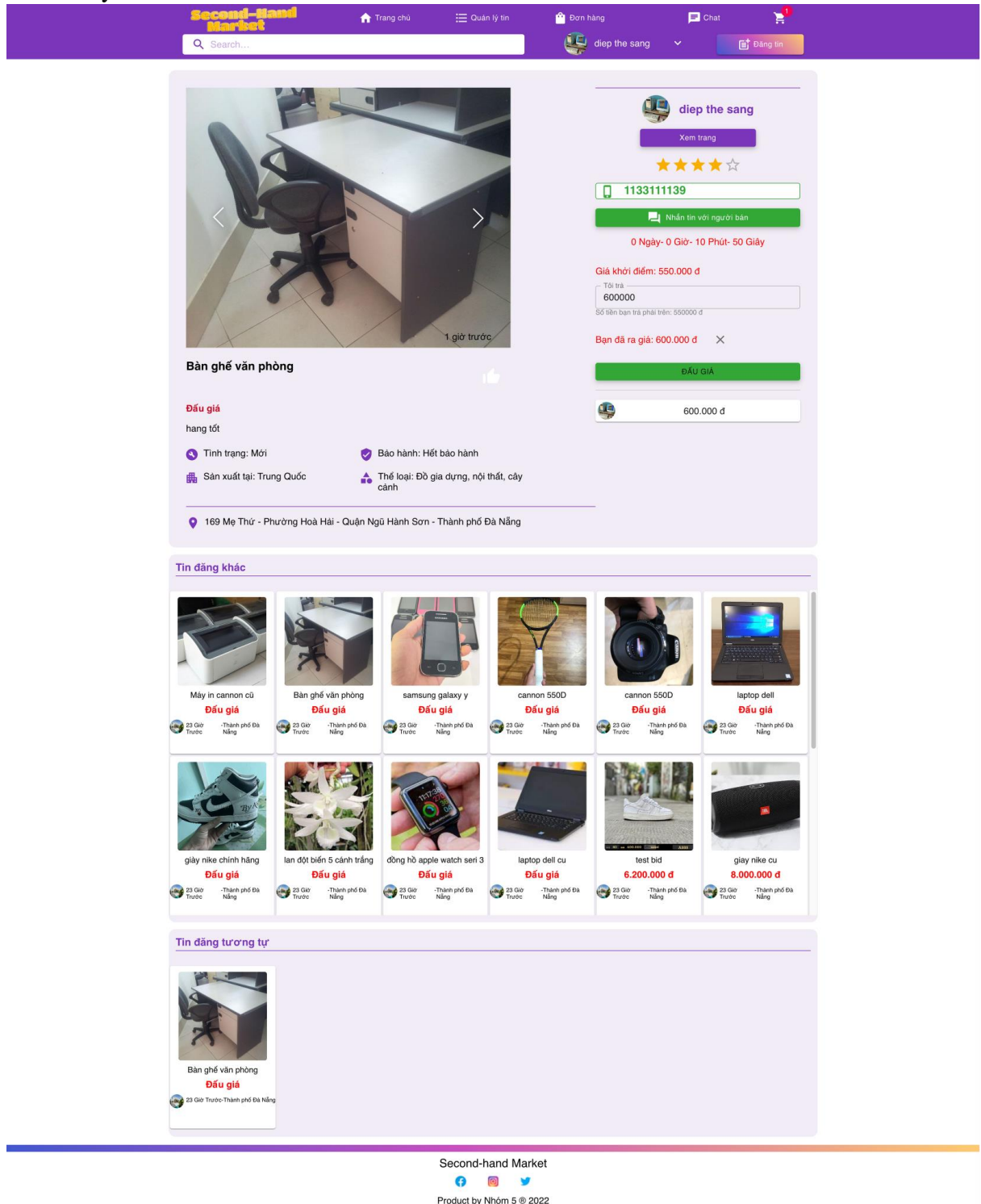
Figure 23: Auction product

3.4.6 Manage order

- Trigger: User want to manage order in Secondhand market system.
- Description:Provide a page for User can manage order in Secondhand market system.
- Function detail: manage order for user

- Screen layout:
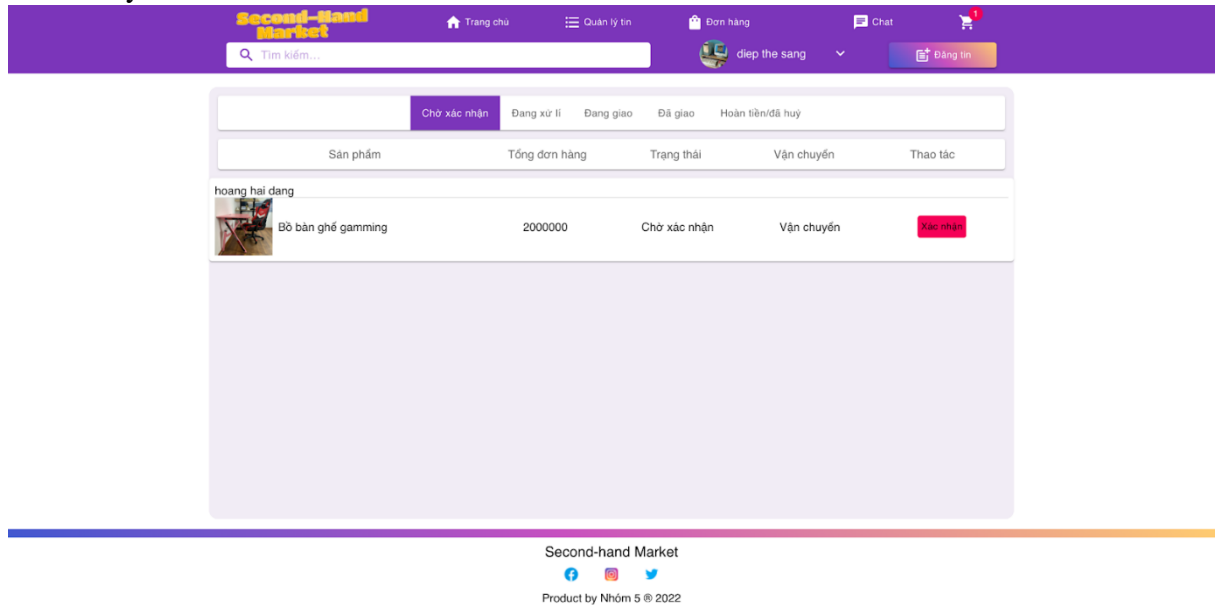
Figure 24: Manage order

3.5 Seller services

3.5.1 Create post to sell

- Trigger: User want to create product to sell in Secondhand market system.
- Description:Provide a page for User can create product to sell
- Function detail: Create product to sell

- Screen layout:

Figure 25: Create post to sell

3.5.2 Create post to auction

- Trigger: User want to create product to auction in Secondhand market system.
- Description:Provide a page for User can create product to auction
- Function detail: Create product to auction

- Screen layout:

Figure 26: Create post to auction

3.5.3 Manage product to sell

- Trigger: User want to manage product to sell in Secondhand market system.
- Description:Provide a page for User can manage product to sell
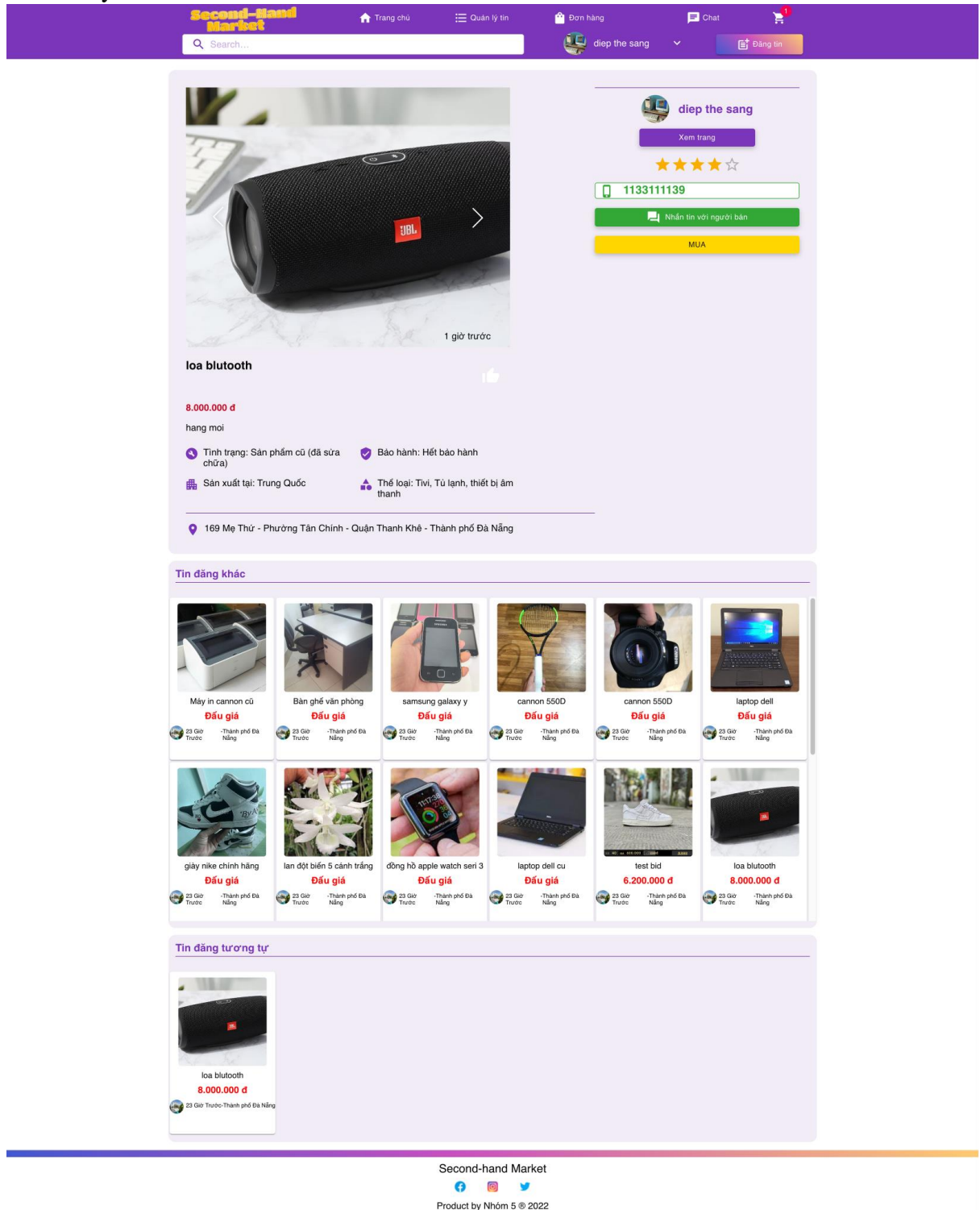- Function detail: Manage product to sell

- Screen layout:

Figure 27: Manage product to sell

3.5.4 Manage post auction

- Trigger: User want to create product to auction in Secondhand market system.
- Description:Provide a page for User can create product to auction
- Function detail: Create product to auction

- Screen layout:

Figure 28: Manage post auction

3.5.4 Schedule auction

- Trigger: User want to create product to auction in Secondhand market system.
- Description:Provide a page for User can create product to auction
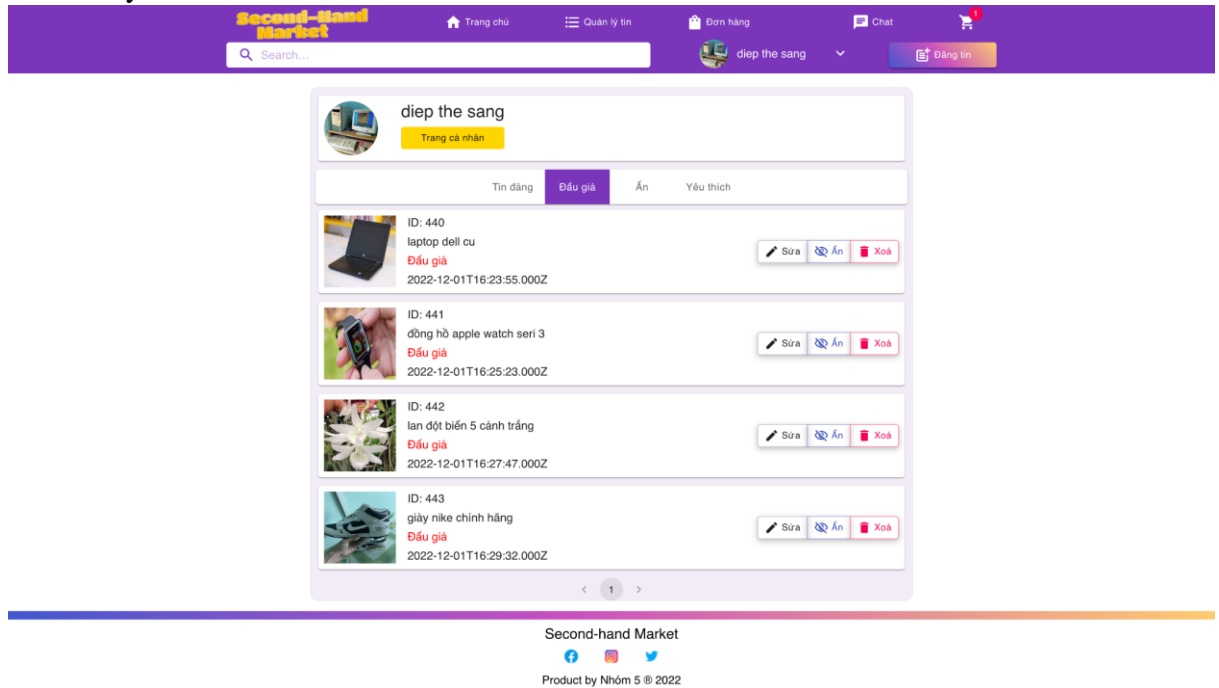- Function detail: Create product to auction

- Screen layout:
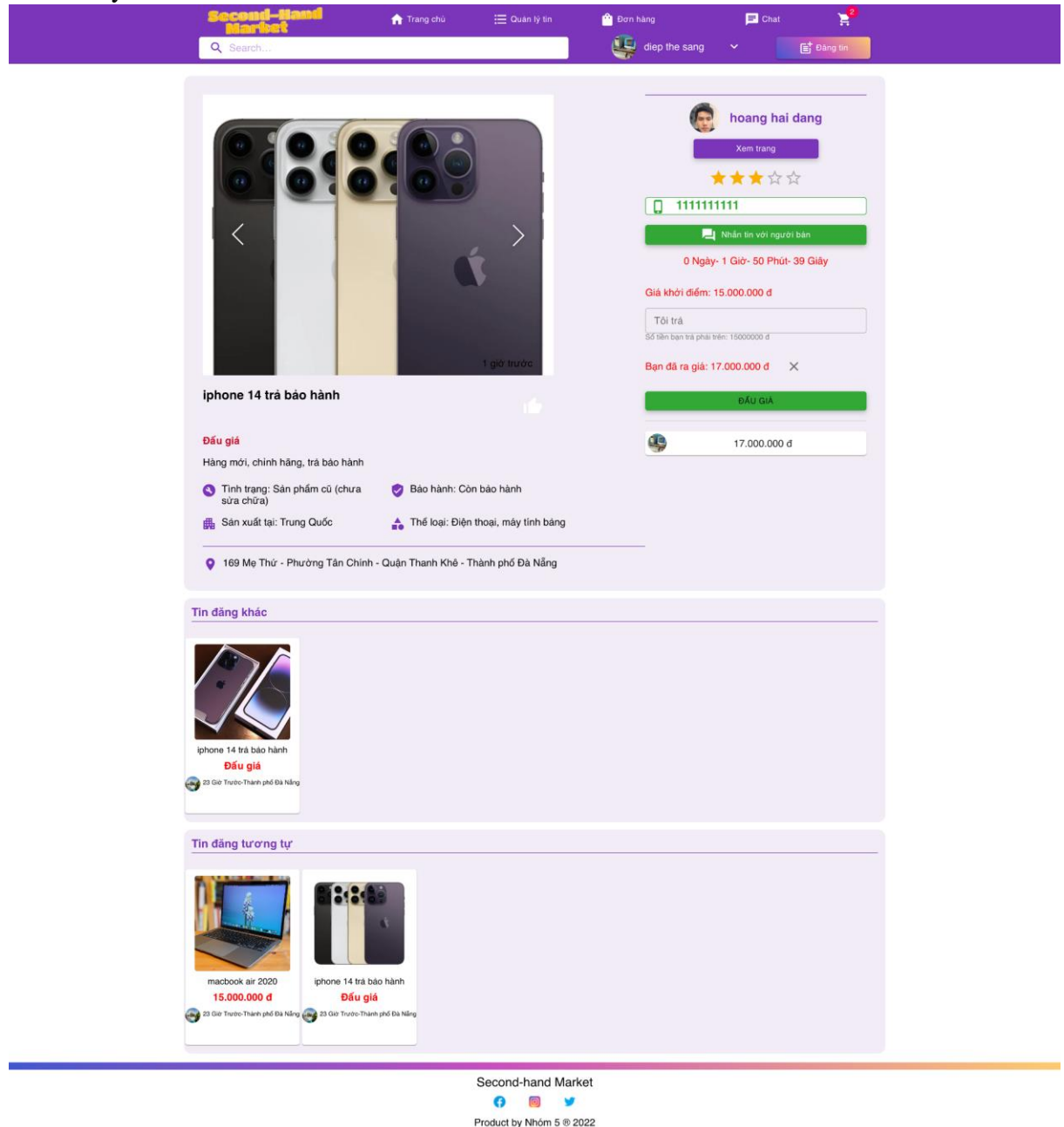

<p align="center">**Figure 29: Schedule auction**</p>

4. Non-Functional Requirements
4.1 External Interfaces:

- Our product has no external interfaces.

4.2 Quality Attributes

4.2.1 Usability
- The user interface should be friendly, simple, logical, and easy to use.

- All the texts and messages should be precise, consistent, and easy to understand.
- Buttons and checkboxes should be made easy for the user to tap.

4.2.2 Security

- The system must use JSON Web Token (JWT) authentication, in which the authentication server returns an access token after the user logs in with an email and password. Then the client will include the access token in the subsequent requests to access protected resources.
- The system must use HTTPS to encrypt the information transferred between clients and servers.
- Password must be hashed before inserted into the database.

4.2.3 Performance

- Front end using React JS, which was designed to provide high performance in mind. The core of the framework offers a virtual DOM program and server-side rendering, which makes complex apps run extremely fast.
- Back-end system uses NodeJS to develop fast web server.

4.2.4 Maintainability & Scalability

- Using RESTful API for the backend architect to help improve scalability.
- We use some stuffs on GitHub Apps is Codacy, CodeCov to check coding quality. In a single merge request, they can run automatically to check our codes. Though we only merge code when all checks passed (we can restrict who can push to matching branches without passing all CI)

5. Requirement Appendix

5.1 Business Rules
Domain business rules:

No	Description
BR-1	Only admin can manage manager
BR-2	Guests can only buy products when they have registered an account
BR-3	Guests can only view items that are listed for sale
BR-4	User can view and buy or bid on any item
BR-5	All users can post for sale or auction
BR-6	User can view information of other users
BR-7	User can rate the product quality after purchasing from another account
BR-8	When admin or Manager accounts have been disabled an account, this account will automatically log out from the system and cannot log in again.
BR-9	Manager has the right to show and hide posts that violate the policy
BR-10	Manager can ban accounts that violate the policy

Table 32: Domanin bussiness rules

Specific business rule:

No	Description
BI-1	The field must be filled by 10 numbers.
BI-2	The field must be filled, followed by format "X@X.Y", where X is characters and Y is alphabets. X and Y are at least 1 character.

<p align="center">Table 33: Specific bussiness rule</p>

5.2 Common Requirements

5.3 Application Messages List

#	Message code	Message Type	Context	Content
1	MSG01	Under the text box	Input-required fields are empty	*Please fill out this field.*
2	MSG02	Toast message	Updating asset(s) information successfully	*Update asset(s) successfully.*
3	MSG03	Toast message	Adding new asset successfully	*Add asset successfully.*
4	MSG04	Toast message	Deleting asset information successfully	*Delete asset(s) successfully.*
5	MSG05	Toast message	Updating asset(s) information failed	*Update asset(s) failed.*
6	MSG06	Toast message	Adding new asset *failed*	*Add asset failed.*
7	MSG07	Toast message	Deleting asset information *failed*	*Delete asset(s) failed.*
8	MSG08	Under input field	Username or password is not correct when clicking sign-in	*Incorrect user name or password. Please check again.*
9	MSG09	Under input field	Input an invalid information	*Invalid asset*
10	MSG10	Toast message	Take attendance successfully	*Take attendance successfully for [username]*
11	MSG11	Toast message	The face recognized is not the same with the face registered	*Wrong face detected*
12	MSG11	Toast message	Upload photo successfully	*Image is successfully trained for [userid]*

<p align="center">Table 34: Application Messages List</p>