Software Requirements Specification

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Content

1 Introduction

1.1 Purpose of writing

The purpose of this document is to describe the needs and functions of the campus rental trading platform in detail in the form of text, introduce the main intention and development prospects of this product design, so that readers have a clear understanding of this product, and also clarify the specific front and back end interface and functions, guide the development team to carry out system design and development, and serve as the basis for project acceptance.

1.2 Project context

According to user research, almost everyone has spare items, and more than half of users tend to let idle items go. The reason for this situation is that most users do not have the need to use the item for a certain period of time, but there is some permission to discard the item, and a small number of users do not have the channel to rent the product. On university campuses, there is often a demand for goods exchange between students, such as electronic equipment, furniture and so on. However, the current way of trading is usually through social media or offline communication, and the lack of a unified trading platform is not convenient for transactions between students. Therefore, the development of a campus second-hand trading platform can provide a convenient and safe trading environment to meet the trading needs of students, and can solve the problem of nowhere to place idle items in the wechat mini program.

1.3 reference material

[1]Zou Xin. 《The Method of Construction: Modern Software Engineering》(3rd edition). Posts and Telecommunications Press.2016
[2]Roger S. Pressman(US)《Software Engineering: A Practitioner's Approach to Research》(8th Ed.). China Machine Press, 2016
[3]Specification for Computer Software Requirements (GB/T 9385-2008)
[4]Wechat mini-program development - Chinese documentation:
https://developers.weixin.qq.com/miniprogram/dev/framework/
[5]Wechat mini-program design guide:
https://developers.weixin.qq.com/miniprogram/design/

2 Overall description

2.1 Target

Our team wanted to build a fully functional, user-friendly, stable and reliable software to provide campus users with a convenient, safe and fun campus property rental experience. Through the software, users can easily browse, rent or rent idle items, ensure the security and reliability of the transaction process, and increase the interaction and social interaction with features such as product evaluation, collection, sharing, chatting, etc. At the same time, the software is also committed to promoting the recycling of idle items, promoting the environmental concept of saving resources and reducing waste. The ultimate goal is to realize that college students can get extra income or make better use of idle items to provide convenience for users.

2.1.1 Development intention

The campus rental platform aims to provide students with a convenient and safe trading platform, facilitate students to conduct second-hand transactions, and promote the sharing and recycling of campus resources. Sellers can label their own items for easy retrieval, and buyers can browse directly on their mobile phones to find their favorite second-hand resources, and communicate and deal with sellers, saving money and time for college students. At the same time, it can also promote exchanges and mutual assistance among students, cultivate students' innovative and entrepreneurial spirit, and expand students' vision.

2.1.2 Application objectives and scope

（1）Application objectives
　　1. Facilitate communication and cooperation between students: Through the campus rental platform, students can easily rent and rent all kinds of second-hand goods, promoting communication and cooperation between students.
　　2. Provide affordable options: The platform allows students to use second-hand items needed in the short term at a lower price and lower postage, helping them to save expenses and resources.
　　3. Enhance the concept of sustainable development: By promoting the reuse of second-hand goods, the platform can help reduce resource waste and promote the spread of the concept of sustainable development on campus.

（2）Scope
　　1. Crowd oriented
　　For students of Fuzhou University (and neighboring universities) : The campus rental trading platform is mainly for students of the whole school, no matter which college or grade students can use the platform for trading.
　　2. Trading categories
　　Trading of all kinds of second-hand goods: The platform allows students to trade all kinds of second-hand goods, including but not limited to textbooks, electronic equipment, furniture, etc.
　　3. Transaction form
　　Multiple trading methods: In addition to the traditional leasing and leasing, the platform can also provide innovative trading methods such as using lease coins to obtain a certain discount.

2.1.3 Product prospect

The development prospect of campus rental trading platform is very broad. First of all, with the improvement of people's living standards, more and more people begin to pay attention to **environmental protection**, **saving** and **downgrading consumption**. As a result, they will be more inclined to lease goods that will only be used for a short period of time, rather than buying brand new items from the market at a higher price. Secondly, nowadays students mostly use the Internet for shopping. As a result, they are more likely to use online platforms rather than go to traditional physical stores. At the same time, campus rental platforms also have some challenges. It requires consumers to evaluate the quality of goods and sellers to guarantee the quality of goods. The platform will become a common trading platform among students, **promoting interaction and resource sharing** among students. In the future, the platform may expand to other campus-related services, such as part-time job Posting, registration for campus activities, lost and found, and exam notifications.
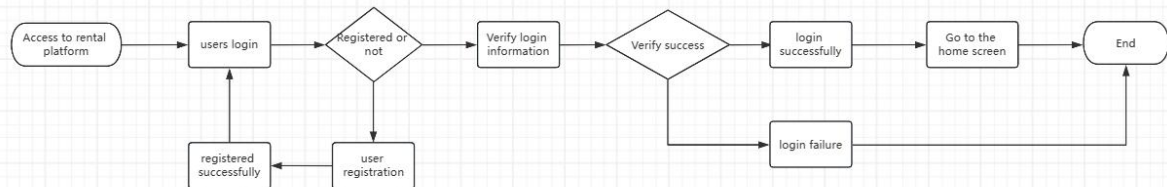
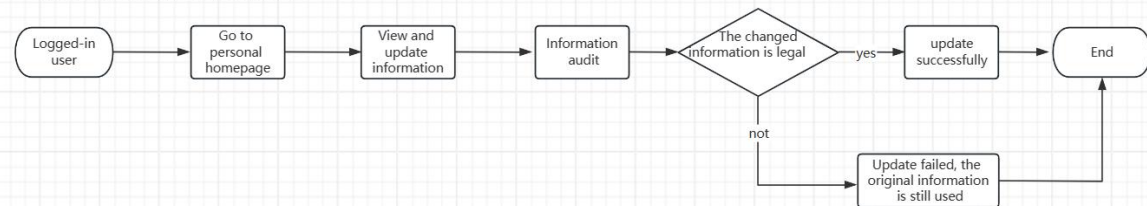# 3 Specific Requirements

3.1 Use case view
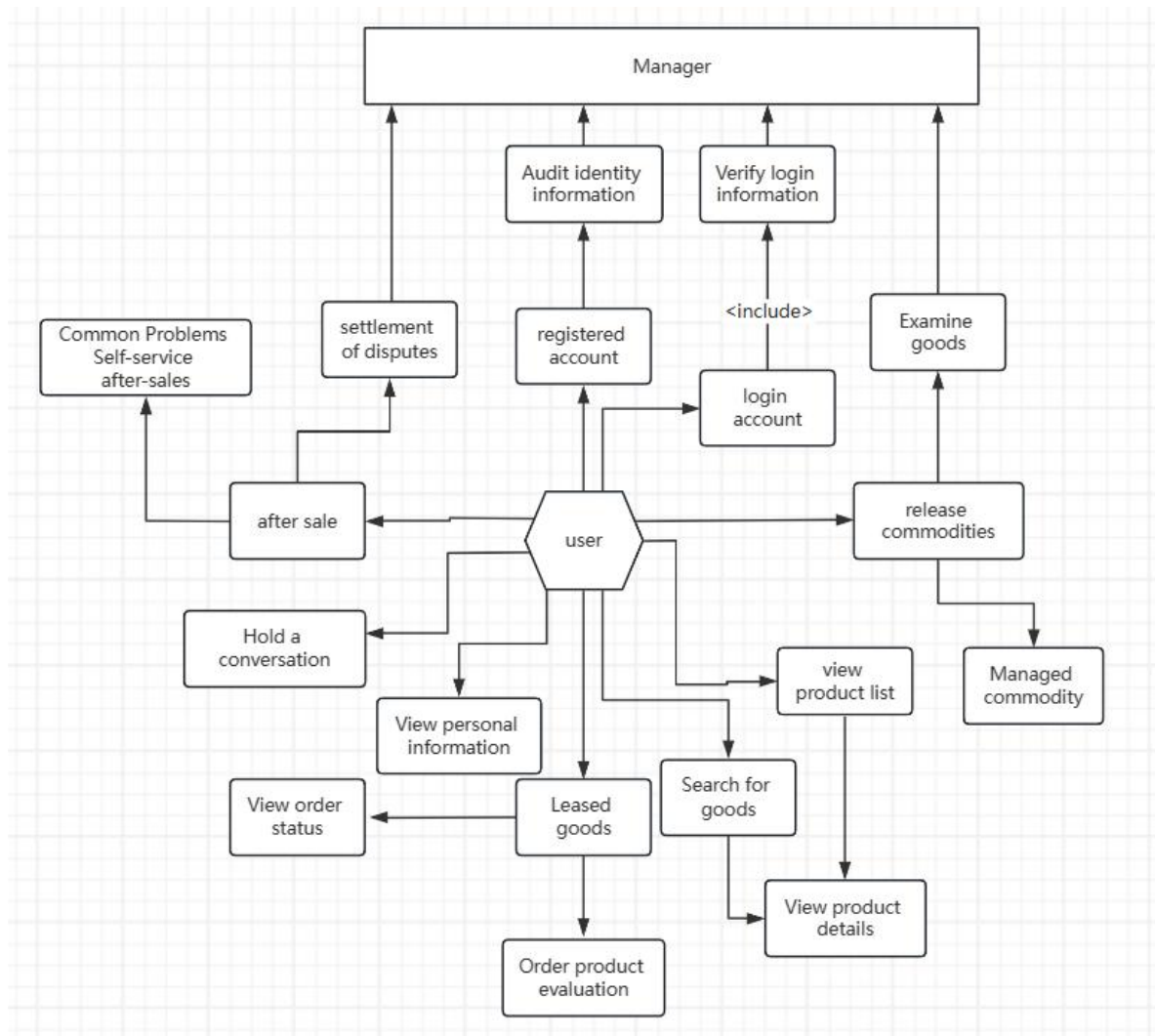
3.2 Activity diagram

It includes user registration and login, updating personal information, searching for goods, publishing goods, renting goods, returning goods and other operations.
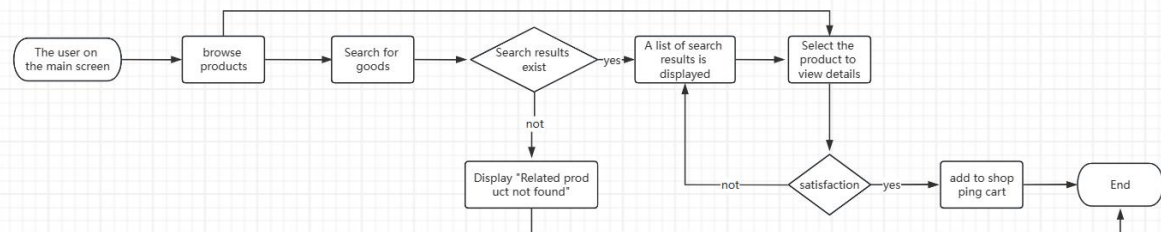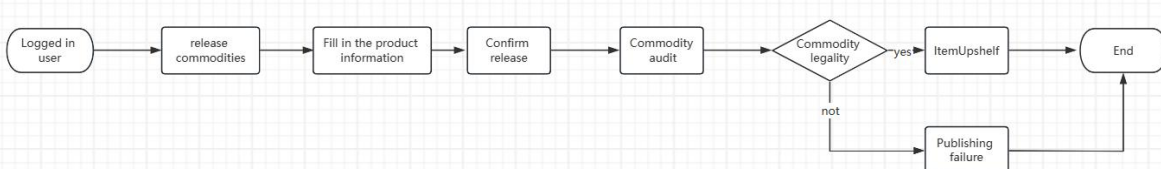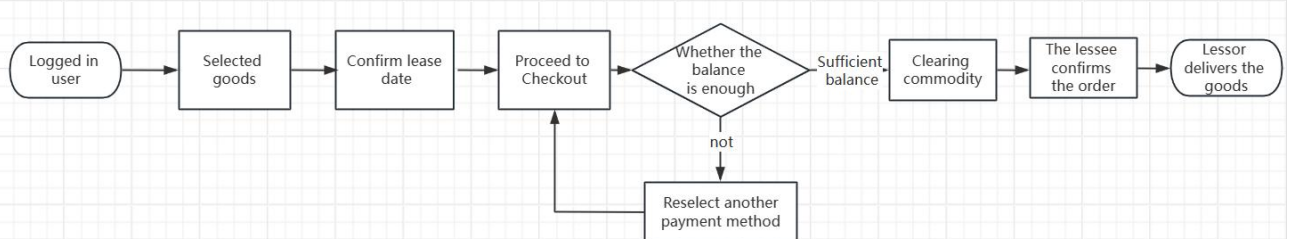
User registration and login

Access to rental platform → users login → Registered or not → Verify login information → Verify success → login successfully → Go to the home screen → End

Registered or not → user registration → registered successfully → users login

Verify success → login failure → End

Update personal information

Logged-in user → Go to personal homepage → View and update information → Information audit → The changed information is legal → yes → update successfully → End

The changed information is legal → not → Update failed, the original information is still used → End

User search for goods

The user on the main screen → browse products → Search for goods → Search results exist → yes → A list of search results is displayed → Select the product to view details

Search results exist → not → Display "Related product not found"

Select the product to view details → satisfaction → not → A list of search results is displayed

satisfaction → yes → add to shopping cart → End

User published goods

Logged in user → release commodities → Fill in the product information → Confirm release → Commodity audit → Commodity legality → yes → ItemUpshelf → End

Commodity legality → not → Publishing failure

User rental items

Logged in user → Selected goods → Confirm lease date → Proceed to Checkout → Whether the balance is enough → Sufficient balance → Clearing commodity → The lessee confirms the order → Lessor delivers the goods

Whether the balance is enough → not → Reselect another payment method → Proceed to Checkout

User returned items

Logged in user → Whether it is returned in time → yes → How to submit returns (face to face/site) → Lessor confirms receipt of goods

Whether it is returned in time → Deferred return → Modification of lease date → Proceed to Checkout → Whether the balance is enough → yes → Clearing commodity

Whether the balance is enough → not → Reselect another payment method → Proceed to Checkout
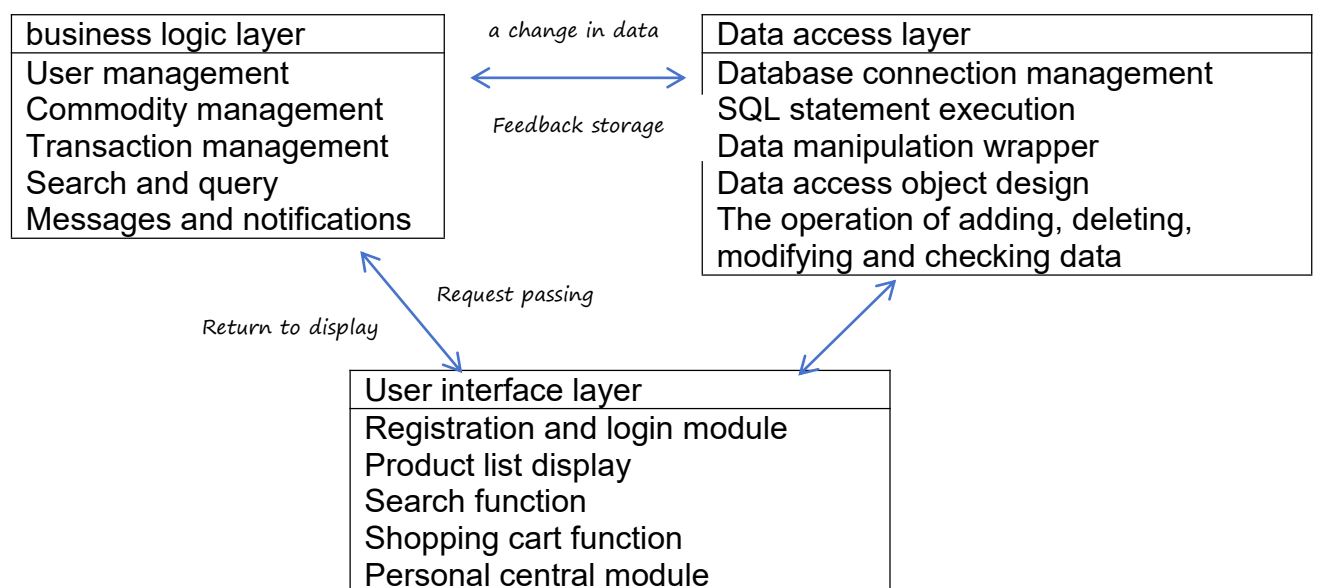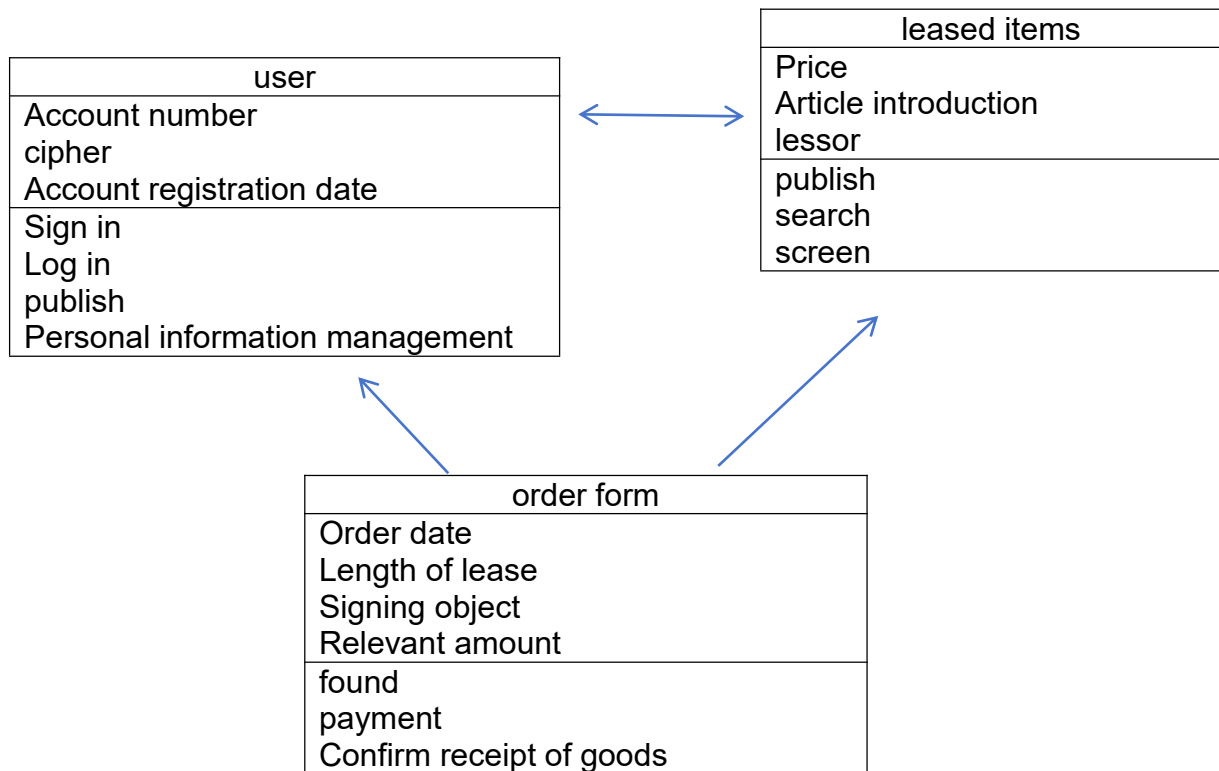
3.3 Class Diagram

Includes the following core classes: Users, goods, orders. User class includes registration, login, personal information management and other methods. The product category includes publishing, searching, filtering and other methods. The order class includes methods for creating, paying, confirming receipt, and so on. There is an association between these classes, such as the user can publish multiple items, the item can belong to a user, and the order is associated with a user and an item.

user
Account number
cipher
Account registration date
Sign in
Log in
publish
Personal information management

leased items
Price
Article introduction
lessor
publish
search
screen

order form
Order date
Length of lease
Signing object
Relevant amount
found
payment
Confirm receipt of goods

business logic layer
User management
Commodity management
Transaction management
Search and query
Messages and notifications

a change in data

Feedback storage

Data access layer
Database connection management
SQL statement execution
Data manipulation wrapper
Data access object design
The operation of adding, deleting, modifying and checking data

Request passing

Return to display

User interface layer
Registration and login module
Product list display
Search function
Shopping cart function
Personal central module

3.4 Properties

3.4.1 Availability

1)The user interface design is simple and clear, easy to operate and navigate;
2)Good fault tolerance, able to handle user input errors or other abnormal situations;
3)Provide search and classification functions to make it easy for users to uickly find what they need;
4)Provide a personal center page, convenient for users to manage their own information, published goods;
5)The message notification function ensures that users can receive messages from the system or other users in a timely manner.

3.4.2 Security

1)User registration, login, password modification and other functions need to be authenticated;implementation method: SMS verification/Xuexin authentication
2)Payment and order information during the transaction needs to be transmitted using a secure encryption protocol to ensure data security;
3)The platform establishes a security mechanism to prevent malicious attacks, fraud and information leakage.

4 Function description and acceptance verification standards

4.1 Detailed function description

4.1.1 user interface

1) Login and registration page: Enter the user name and password to log in, you can register an account if no account information exists.
2) Home page: Display hot products, recommended products, latest releases and other components, easy to browse and search items of interest.
3) Classification page: Classify different categories of goods, such as electronic equipment, daily necessities, books, etc., so that users can quickly find the items they need.
4) Search page: provide keyword search function, users can enter keywords according to their own needs to search for specific goods.
5) Product details page: display product details, including product name, price, description, pictures, etc. Users can view product details and exchange on this page.
6) Publishing page: Users can fill in the relevant information of their goods (such as books that are no longer needed) and upload pictures, and publish the relevant information of their second-hand goods for other users to browse and purchase.
7) Personal Center page: Users can view their personal information, published goods, collected goods, similar goods of the goods concerned, purchase records, etc.
8) Message notification page: used to receive message notifications from the system or users, such as message reply.
9) Shopping cart page: Users will be interested in the goods added to the cart, convenient unified management and settlement.
10) Purchase page: The user checks and purchases the goods in the shopping cart.
11) Payment page: Users choose payment methods, such as Alipay, wechat Pay and other mainstream payment methods.
12) Order page: Users can view their order information, including order status, logistics information, etc.
13) Evaluation page: Users can evaluate and comment on the purchased goods to help other users understand the quality of the goods and the seller's service attitude.
14) Setting page: Users can modify personal information (such as phone, qq account, wechat account), password, account binding, interface display and other Settings.

4.1.2 Service logic

1) User management: including user registration, login, personal information modification and other functions.
2) Product management: including product release, edit, delete, query and other functions.
3) Classification management: including the function of adding, modifying, deleting and querying product categories.
4) Search function: According to the keywords entered by the user, the product search and return the relevant results.
5) Shopping cart management: including adding goods to the cart, removing goods

from the cart, modifying the number of goods in the cart and other functions.

6) Order management: including order creation, order cancellation, order status, after-sales service and other functions.

7) Payment management: Provide payment interface to process users' payment requests. Support a variety of payment methods, ensure the security of transactions, prevent various fraud, including password encryption, risk control, etc., and connect with major payment platforms to process payment requests from users. The payment status of the user is tracked in real time, the transaction status is updated in time, and the user is provided with inquiries.

8) Logistics management: track the logistics information of orders and provide logistics inquiry function.

9) Evaluation management: Users can evaluate and comment on the purchased goods, and the platform can disclose the credit rating information of users to warn of transaction risks. Reviews can be reviewed and managed by administrators. If the user is dissatisfied with the product or the seller, he can lodge a complaint through the evaluation system

10) Message notification management: Handle message notifications from the system and other users, including message replies.

11) Data statistics and analysis: analyze and make statistics on user behavior and transaction data of the platform to provide support for decision making.

12) Security and rights management: Ensure the security of user data and control the rights of users in different roles.

4.1.3 Data access

This module mainly includes the following data addition, deletion, modification, query operations.

1) User information: including the user's basic information (such as user name, password, mobile phone number, email, student number, etc.), the user's identity (such as buyer, seller, administrator, etc.), the user's status (such as whether online, whether banned, etc.).

2) Product information: including the basic information of the product (such as product number, name, description, price, category, pictures, etc.), the status of the product (such as whether it is on the shelf, whether it is sold, whether it is reported, etc.).

3) Order information: including the basic information of the order (such as order number, buyer number, seller number, product number, quantity, total price, order time, etc.), order status (such as whether to pay, whether to deliver, whether to receive goods, whether to evaluate, etc.).

4) Comment information: including the basic information of the comment (such as comment number, order number, reviewer number, reviewer number, comment content, rating, comment time, etc.).

5) Other information: such as announcement information, message information, favorite information, browsing history information, etc.

4.2 Input and output format

4.2.1 Input format

1) Registration page: The user uses the user name, mobile phone number, email address or school name and student number as the login identification, and enters the password for registration. The user name must be unique, the password must contain numbers and letters, the mobile phone number and email address must meet the format specification, and the student number must match the school database. If the input is incorrect, the system prompts you to re-enter or modify the

input.

2) Login interface: When a user logs in, he/she needs to enter a user name and password for verification. If the user name or password is incorrect, the system prompts the user to re-enter or retrieve the password.

3) Search interface: When searching for goods, users can enter keywords or select categories, and filter. Keywords can be empty or contain multiple words, and categories can be selected or not selected from a preset list. The system will return a list of matched items based on the user's input and sort them according to the default or user-specified sorting method.

4) Product information interface: When users click on the link of related items, they can jump to the corresponding page.

5) Shopping Cart page: The number of items in the shopping cart must be an integer greater than 0.

6) Payment page: When placing an order, users need to select the quantity of goods and confirm the order information. The quantity of goods must not exceed the stock or be negative or zero. Order information includes product name, price, quantity, total price, seller information, etc. If the user confirms that it is correct, the order can be submitted and paid.

7) Evaluation interface: When users evaluate, they need to score and comment on the order. Ratings are 1 to 5 stars, and reviews are text content. Ratings and reviews are required. If the user does not rate, the system will periodically remind the user to rate.

4.2.2 Output format

1) Registration interface: After the user successfully registers, the system will display the registration success message and jump to the login page.

2) Login interface: After the user logs in successfully, the system will display the login success message and jump to the home page.

3) Release interface: After the user successfully publishes the product, the system will display a successful release prompt and jump to the product details page.

4) Search interface: After the user searches for goods, the system will display a list of search results, and provide functions such as paging, sorting, and screening. Each search result includes the product name, price, image, seller information, etc., and provides viewing details and adding to the shopping cart.

5) Order details interface: After the user successfully placed an order, the system will display a successful order prompt and jump to the order details page. The order details page includes order number, product information, order status, payment method, receiving address, etc., and provides operations such as cancelling orders, paying orders, confirming receipt of goods, and evaluating orders.

6) Evaluation interface: After the user's evaluation is successful, the system will display the evaluation success prompt and update the order status to evaluated. Users can view their own and other users' reviews of the product, and provide actions such as adding reviews and deleting reviews.

4.3 Interface acceptance criteria

1) Login and registration page:
   You can enter the correct user name and password to log in.
   The registration page needs to provide the necessary account information (Xuexin authentication), and ensure the legitimacy and uniqueness of the account information.
2) Home Page:
   Hot products, recommended products and newly released display content are accurate and attractive.
   Users can learn more about the product by clicking on the product or viewing the more button.
3) Category page:
   Each product category is clearly visible, so that users can quickly select the desired category.
   Click on a category to display an accurate list of related products under that category.
For the same type of goods, priority will be given to the lessor with the highest comprehensive assessment.
4) Search page:
   keyword search function is normal, can accurately match the relevant product information.
5) Product details page:
Product interface display, including description and picture display of the product, rental type, price, lease term, lease requirements.
6) Publishing page:
① Product release, description and picture display of the product, select the rental type, price, rental period and rental requirements of the product at the time of release;
② Provide price change function, after the release of the seller can decide whether to modify the price;
Published product information can be accurately displayed on the platform.
7) Personal Center page:
   Users can view their personal information, posted products, favorites, followed products, purchase history, and more.
   Users can modify personal information, delete or edit published products.
8) Message notification page:
   Users can receive message notifications from the system or other users in a timely manner.
Lessor: When the user has the lease intention, the user's reputation can be displayed; After the price is negotiated and the order is placed, the delivery method is discussed by the user.
Lessee: When the lessor places the goods on the platform, we can receive the corresponding message notification.
9) Shopping cart page:
   Users can add, delete, and edit the items they want to rent from their cart.
   Product information and prices can be accurately displayed.
10) Purchase page:
   The user can select the purchased goods, rental duration, delivery method, delivery address and other necessary information.
   Users can conduct settlement operations, including selecting payment methods, using lease coins, etc.
11) Payment page:
   Users can choose common payment methods to pay.

The payment process is secure and the user's information is protected.

12) Order page:

Users can view their own order information, including order status, logistics information, etc.

The user can confirm, cancel or refund the order.

13) Evaluation page:

Users can rate and comment on purchased products, which can be displayed in the product details page.

Users can view other users' reviews and reviews of products.

14) Setup page:

Users can modify Settings such as personal information, password, and account binding.

Users can customize the display and other personalization of the interface.

4.4 Functional acceptance criteria

1) The user can log in and register normally, and the account information is effectively protected.

2) Users can browse and filter products according to their needs, and can search for relevant product information.

3) Users can publish and edit product information, and can successfully display products on the platform.

4) Users can add, delete and edit items in the shopping cart, and can make settlements and payments.

5) Users can view order information, including order status and logistics information, and can confirm, cancel or refund within a certain time limit.

6) Users can rate and comment on purchased goods, and can view other users' reviews and comments.

7) Users can modify Settings such as personal information, password and account binding.