

Design and Implementation of Campus Goods Trading Platform

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ABSTRACT: In view of the problems in campus, such as the rapid renewal of goods leads to many valuable goods being left unused, and many flawless goods of graduates can not be taken away and discarded every year, and freshmen need to buy necessities of life, this paper designs a campus goods trading system. The system adopts SSM framework and realize Web application through B/S architecture based on AJAX technology. This system mainly includes such functions as registration, login, browsing goods, searching goods, purchasing goods, uploading goods, adding shopping cart, etc.

Key words: Campus; Goods trading platform; B/S architecture

I. INTRODUCTION

Nowadays, the Internet is always connected with our daily life, From sending emails and browsing news online to buying clothes and daily necessities, more and more fashionable men and women are looking for a way of life online, The next wave of the Internet may be more and more concerned because it changes people's lives. Because of this, the wave of online shopping has been completely activated, Campus e-commerce is the inevitable trend of the rapid development of modern campus informatization [1]. As a new type of transaction mode, e-commerce has attracted extensive attention for its sustainable development in China[2]. In China, with the growing development of e-commerce and in order to meet the material needs of various users, online trading websites also present a dazzling array of attitudes, such as Xianyu, Jingdong, Taobao, etc. However, these websites are mainly profitable and target a large number of people. Although there are many websites, few of them are truly oriented to the campus. The system designed in this paper needs to use student number registration, which is a completely campus oriented system.

II. SYSTEM DESIGN

2.1 Requirement analysis

2.1.1 Functional Requirements Analysis

This system can enable students to upload idle items, buy the items they want, and solve the problem of resource waste caused by graduates' many flawless items that cannot be taken away and discarded, as well as the problem of alternative resource waste caused by excessive idle items on campus. And provide convenience for those students who want to buy high-quality and inexpensive goods.

2.1.2 Non-Functional Requirements Analysis

The most important non-functional requirements analysis is security analysis. With the increasing number of Internet users in China, the following network security problems are becoming more and more serious. There are various groups of people on the Internet with various purposes. Every day, hackers try to break into website nodes, posing a varying degree of security threat to each website [3]. The campus goods trading system stores a large number of student users and teacher users' personal basic information, including mobile phone contact information, student ID, email, etc. This information has a certain degree of privacy. Once data leakage occurs, users themselves will have potential security threats [4]. So we have taken some measures to ensure the security of the system. For example, if the password is entered incorrectly for too many times, the user will be locked for a period of time, and the background administrator can only reset the user password and cannot modify it.

2.2 System framework

The SSM framework used in the campus goods trading system belongs to the MVC model. The

system is divided into view layer, control layer, service layer and mapping layer.

2.2.1 View layer

The combination of view layer and control layer is very close. These two layers should be jointly developed. This layer is mainly responsible for the display of front-end pages.

2.2.2 Control layer

This layer is equivalent to a controller, which receives the user's request for corresponding process processing, and finally returns a specific path or data table.

2.2.3 Service layer

This layer is equivalent to a controller, which receives the user's request for corresponding process processing, and finally returns a specific path or data table. This layer is used to store the corresponding business logic processing. Although some database related operations are required, it does not directly contact with the database. This layer also has some interfaces and methods to implement them.

2.2.4 Mapping layer

Unlike the service layer, this layer directly deals with the database. Its main task is to persist the data in the database.

2.3 System module design

In order to ensure the long-term efficient, safe and stable operation of the system, the management of user data and commodity data as well as the compilation of program code are very important [5]. If you want to develop a campus goods trading platform with complete functions and simple operation, you must do a good job in module design. After analyzing the functional requirements of the system, the system is generally divided into three modules: tourist module, registered user module and administrator module. For tourists, he has the following rights: register, browse goods, and inquire about goods; For users, they have the rights to browse products, query products, upload products, add desired products to the shopping cart, etc; For managers, their authority includes the authority to add, delete, modify and check items, orders and registered users. Therefore, the campus goods trading system needs to have the foreground function and background function, in which the foreground function is realized, the tourists and registered users use the goods search, view the details of goods, upload goods and other functions. The foreground function module of the system is shown in Figure 1:

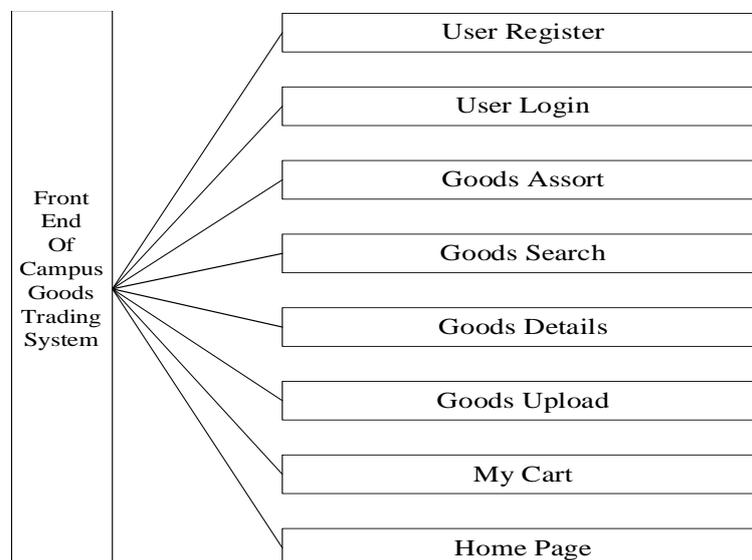


Figure 1 Front-end function module diagram of the system

The background function of the system is responsible for realizing the user management, order management, and goods management

functions used by the background administrator. The background function module of the system is shown in Figure 2:

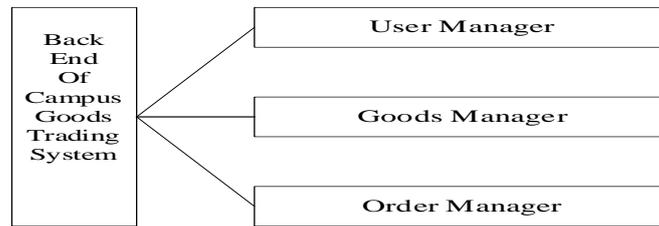


Figure 2 Back-end function module diagram of the system

2.4 Database design

The database design occupies a very important position in the campus goods trading system. The campus goods trading system needs to store a large number of basic information about users and goods, so the database design must be scientific and reasonable, and ensure its accuracy [6]. And a well designed database can make pages and programs more concise, which is more conducive to our system development. Not only that, it can also make the system store data faster and more perfect.

2.4.1 Database conceptual design

The conceptual model is used to model the information world and is independent of the specific DBMS. In order to abstract and organize the concrete things in the real world into a data model supported by a DBMS. From time to time, we turn the objective world into a virtual world through some methods, and finally turn the virtual world into a computer world. In other words, the

first step is to virtualize the real objects in the objective world into another way of information construction. This way of abstract information construction is just a virtual model, which is not dependent on the actual computer system and management system. The last step is to turn it into a data model supported by a DBMS. In fact, there is another level between the transition from the objective world to the virtual world, which is known as the conceptual model.

The so-called conceptual model is to materialize the abstract information world, so it can express some basic concepts in the information world conveniently and accurately. However, most people prefer to use the Entity Relationship Approach proposed by P.P.S.Chen in 1976, which is abbreviated as E-R notation. This is also called entity relation model, or E-R model. The overall E-R model of the campus goods trading platform system is obtained after a certain estimation of the data of this system, As shown in Figure 3:

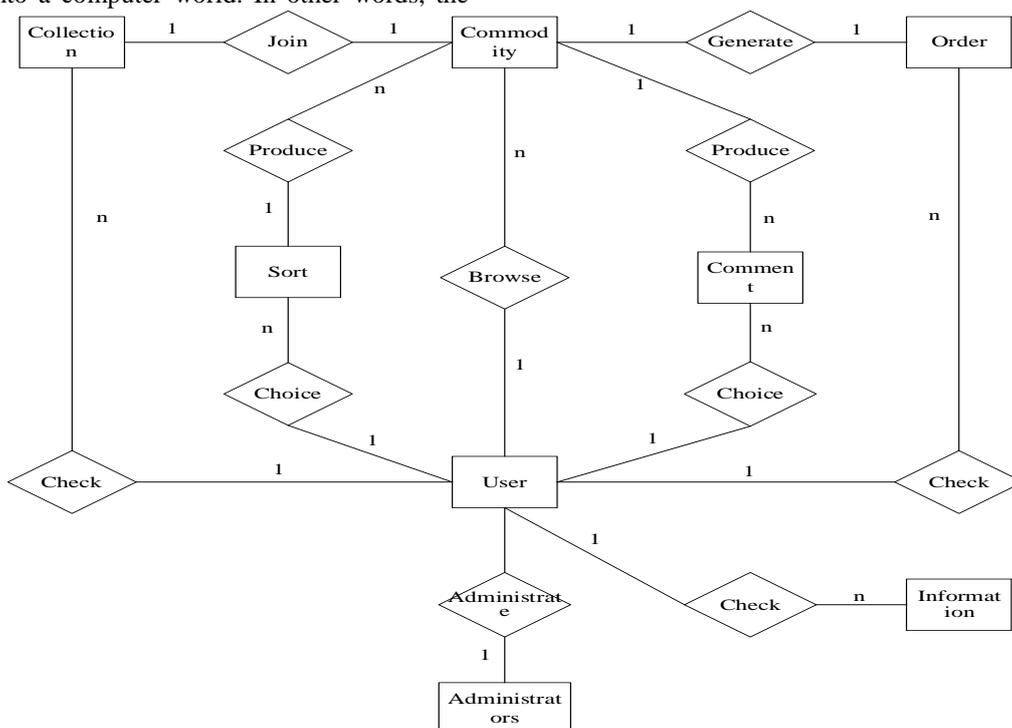


Figure 3 Overall E-R Diagram of the System

The main entities analyzed according to the system are: users, goods, orders, shopping carts, purchase transactions, sales transactions etc. (The specific description and entity diagram of each entity are not shown)

2.4.2 Database logic design

The so-called design database logic is simply to change the previously completed E-R diagram into a logical structure that is consistent with the model that can be selected for our selected DBMS products. Whether the final logical structure is the same as the original conceptual model, not only that, but also to achieve the goal of the user community in terms of function and performance, and finally to evaluate the model.

The database name of the system is subian, and the database includes: User table, Market goods table, Sale goods table, Trade record table, Shopping cart table.

III. SYSTEM IMPLEMENTATION

This system mainly includes the functions of browsing commodities, purchasing commodities, uploading commodities, etc.

3.1 System homepage

After entering the home page of this system, you can see the product classification, registration, login, search bar and other functional modules. The page is shown in Figure 4.

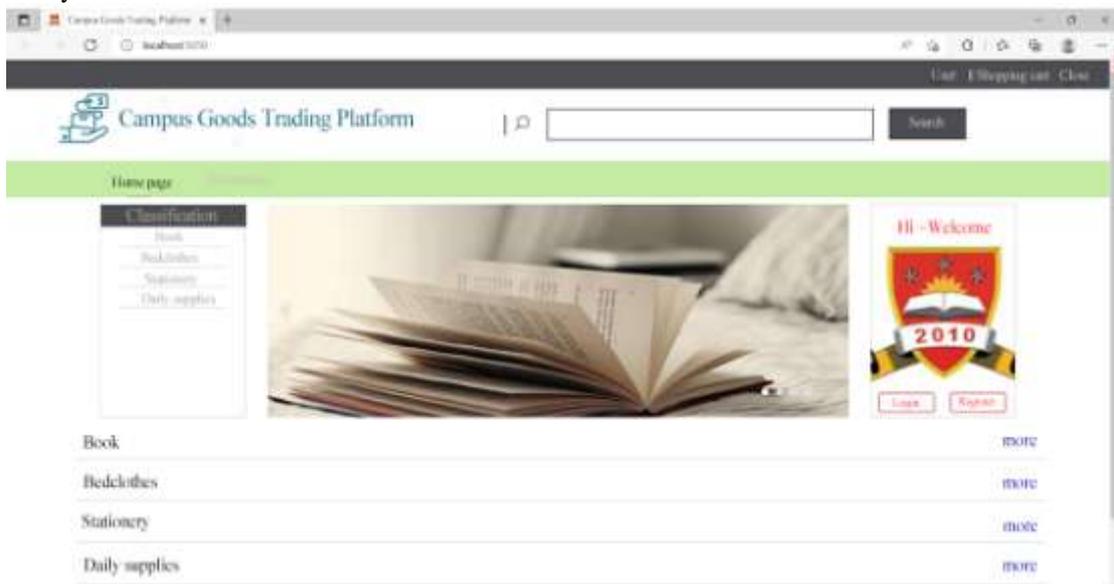


Figure 4 System homepage

3.2 Product browsing

This system divides commodities into four categories: books, bedding, school supplies and daily necessities. Tourists and registered users can click categories to view various products uploaded

by other students or directly search for their desired items in the search bar, but only registered users can purchase products. Tourists can only browse commodities, not buy them. The page is shown in Figure 5.

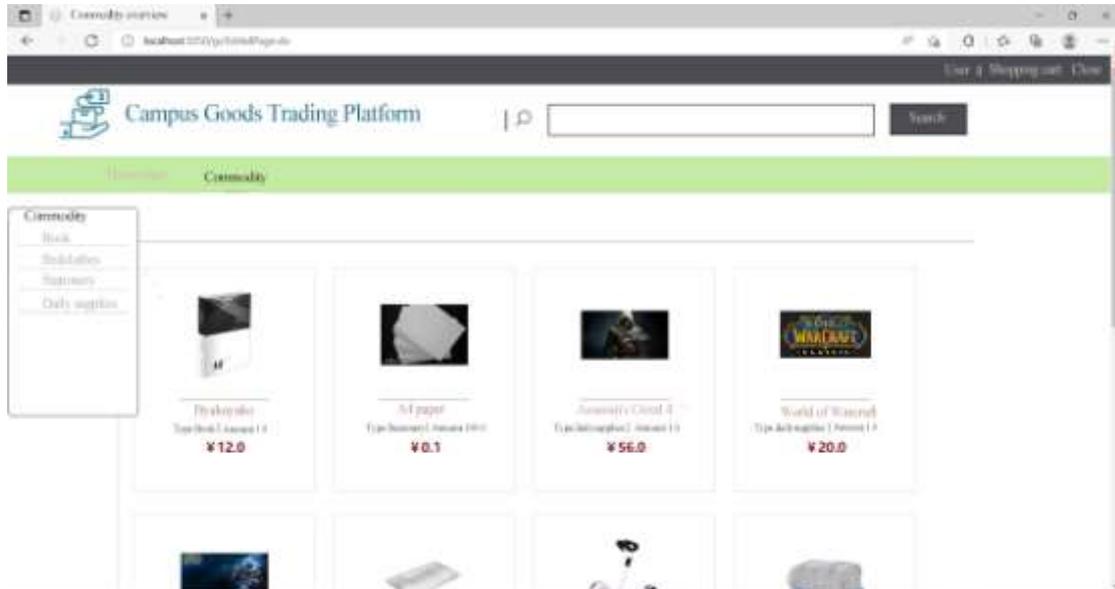


Figure 5 Commodity browsing

3.3 Registration and Login

3.3.1 Registration and Login of users

To register a user, you need to fill in the student ID, password, confirmation password, email, telephone and other information and click

Submit. The page is shown in Figure 6. After registration, select an ordinary user to log in, fill in the student ID and password, and click Login to enter the system. The page is shown in Figure 7.



Figure 6 User Registration



Figure 7 User Login

3.3.2 Registration and Login of administrator

Administrator users can not register when they are added directly to the database. The administrator user selects the administrator to log in and fill in the student number and password, and then clicks Login to directly enter the administrator

background. The administrator can add, delete, modify, and query the user's information, commodity information, and order information (the administrator can also browse, publish, and purchase commodities after clicking Back to the system). The page is shown in Figures 8 and 9.

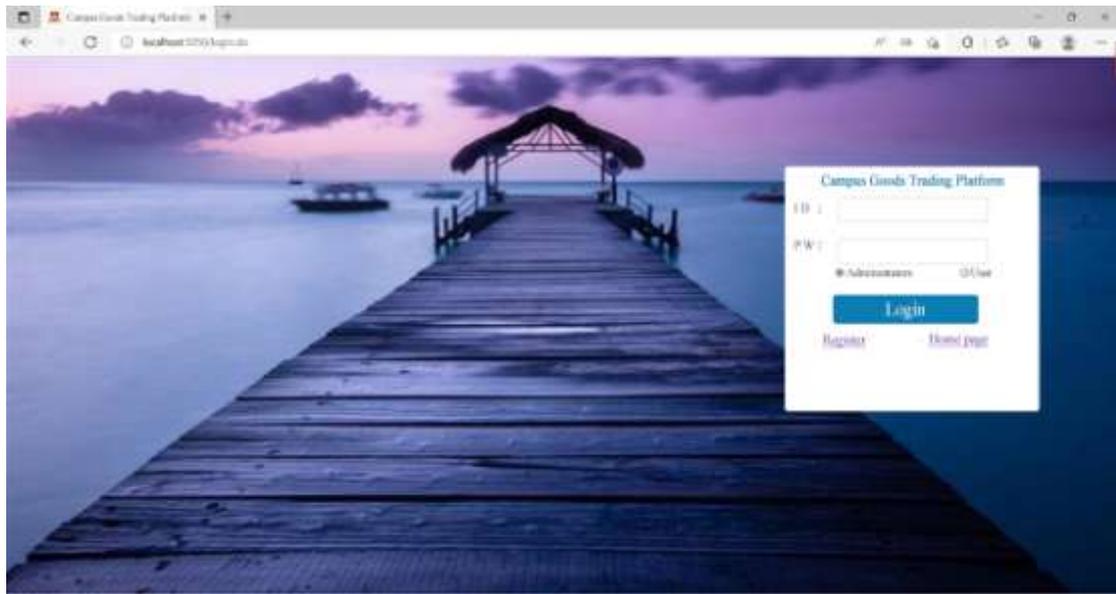


Figure 8 Administrator Login

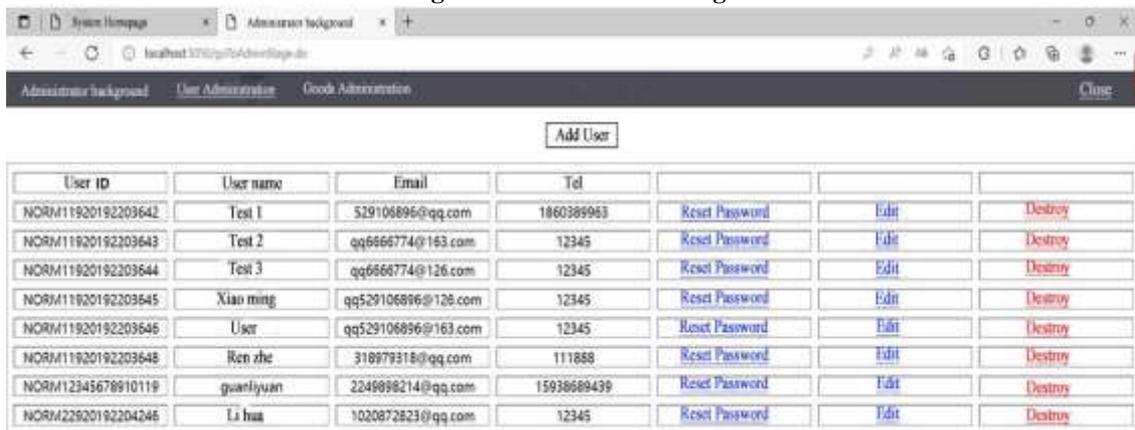


Figure 9 Interface after login

3.4 Upload product

After entering the system, the user enters "My Home Page" and clicks to upload the goods. Click

Submit after adding product name, image, quantity, price and other information. As shown in Figures 10.



Figure 10 Uploading goods

3.5 Buy goods

Users can click the desired product to see the selling price and remaining quantity of the product, as well as the seller's phone and email, or

they can choose to contact online. After selecting the quantity to buy, you can choose to add "My Shopping Cart" or "Order Now". The page is shown in Figure 11.

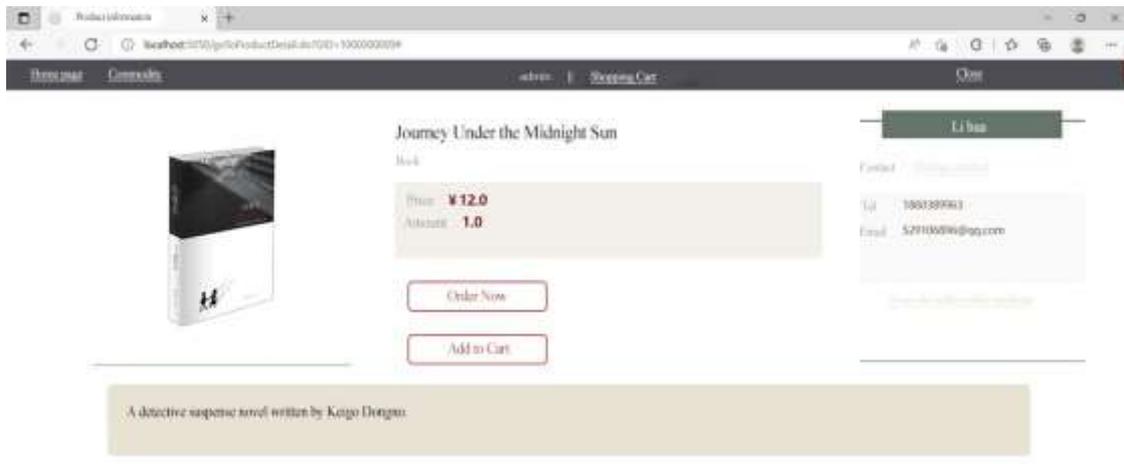
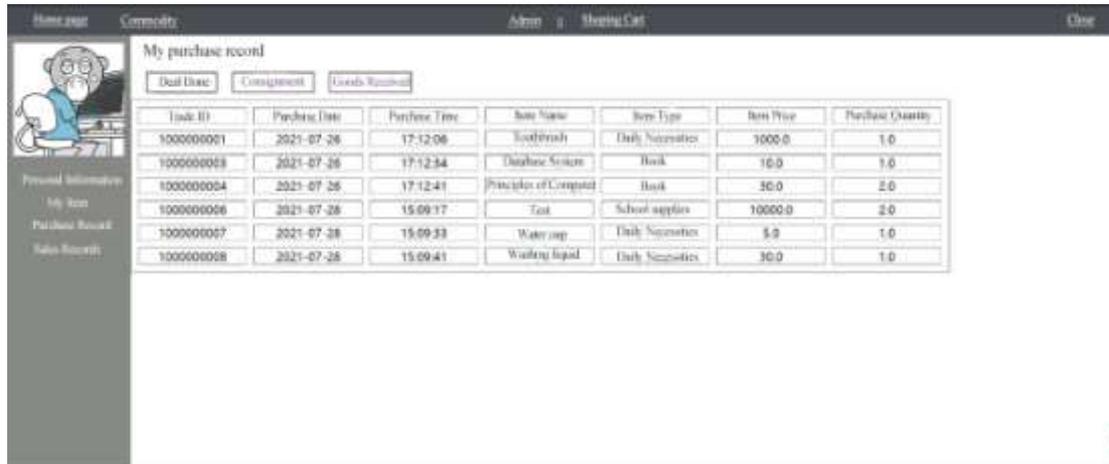


Figure 11 Purchasing goods

3.6 Receipt and delivery

Buyer users can view their successful transaction records, as well as goods to be shipped and

received to be confirmed in My Purchase Records. The seller can confirm the delivery in my sales record. As shown in Figure 12.



Item ID	Purchase Date	Purchase Time	Item Name	Item Type	Item Price	Purchase Quantity
1000000001	2021-07-26	17:12:06	Toothbrush	Daily Necessities	1000.0	1.0
1000000003	2021-07-26	17:12:34	Database System	Book	16.0	1.0
1000000004	2021-07-26	17:12:41	Principles of Computer	Book	30.0	2.0
1000000006	2021-07-26	15:09:17	Text	School supplies	10000.0	2.0
1000000007	2021-07-26	15:09:33	Water cup	Daily Necessities	5.0	1.0
1000000008	2021-07-26	15:09:41	Washing liquid	Daily Necessities	30.0	1.0

Figure 12 Receiving and Shipping

IV. CONCLUSION

The campus goods trading platform designed in this paper is based on B/S architecture, with strong distribution, and can be queried anytime and anywhere; Business expansion is simple and convenient: if the system needs to be expanded, just add web pages to add server functions; Simple and convenient maintenance: just change the web page, you can realize the synchronous update of all users and completely face the campus. This system has strong pertinence and simple operation, which can largely solve the problem of too many idle items for students. It has certain practicality and usability, but the interface and function of this system still need to be further improved.

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