

# *Research on design and implementation of campus second-hand platform based on WeChat mini program*

**Jie Yuan, Yunkun Zhang, Yiming Wang**

*Department of Electrical and Information Engineering, Jingjiang College, Jiangsu University, Zhenjiang, 212013, China*

**Keywords:** Second-hand trading, WeChat mini program, Java language

**Abstract:** The traditional campus second-hand trading process is cumbersome and has low efficiency and security, while the campus second-hand trading platform WeChat mini program, which uses WeChat development tools and Java development and design, is not only real-name registration, safe and convenient transaction, but also free of installation, easy to spread and use, which is an efficient recycling of campus second-hand resources. Through the WeChat mini program, this paper integrates various functions to create a simple campus second-hand trading platform that focuses on serving users and ensuring the safety of second-hand trading.

## **1. Introduction**

With the continuous update of network technology, online trading is becoming more and more common in modern life, and under the wave of vigorous development of the sharing economy, second-hand trading<sup>[1]</sup> has gradually come to people's attention. At the same time, with the growing demand for second-hand goods trading, the quality and service of second-hand trading platforms<sup>[2]</sup> are also the top priority. The research of this paper is to help users buy satisfactory second-hand goods, give real second-hand goods evaluation, and help buyers shorten the time of purchasing goods. The use of WeChat mini programs<sup>[3]</sup> allows developers to achieve similar back-end functions without building servers, facilitating developers to focus on the development of front-end core business, not only greatly shortening the application development cycle<sup>[4]</sup>, but also enabling users to browse second-hand items anytime and anywhere.

## **2. Research on different functions of second-hand trading platform**

The functions of the second-hand trading platform<sup>[5]</sup> are mainly studied from the aspects of system architecture, software structure, system page, etc. The specific contents are as follows:

### **2.1 Second-hand trading platform system structure**

The second-hand trading platform<sup>[6]</sup> is divided into three modules, namely administrator module, user module and commodity information management module. The functions of the administrator are mainly to review and retrieve commodity and user information, the functions of the administrator are

mainly to register, log in, modify information and exchange, and the functions of commodity information management are mainly to publish and manage commodities. The modules and functions are shown in Figure 1.

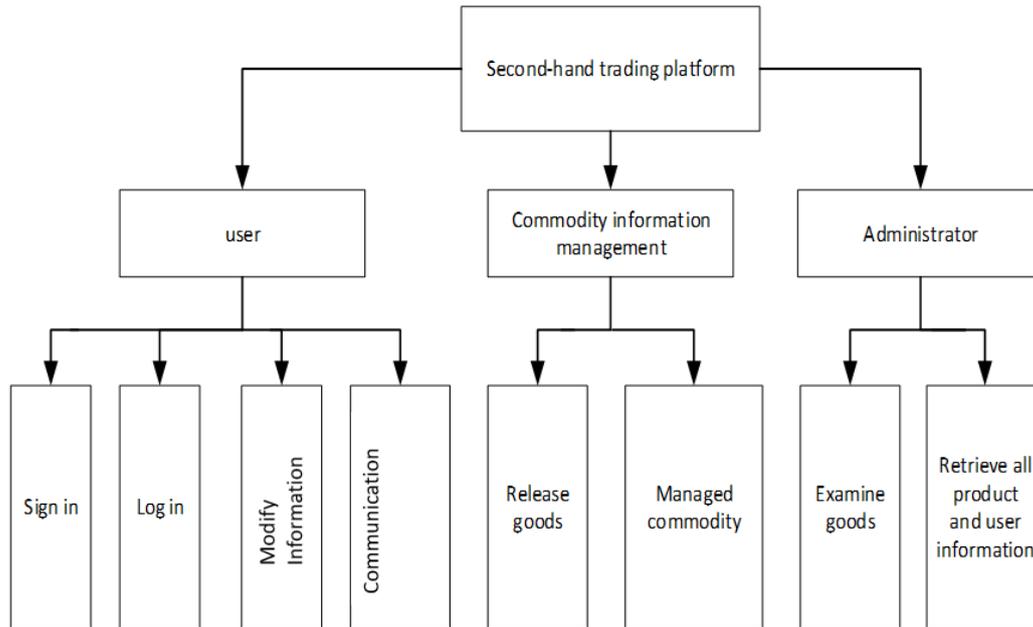


Figure 1: Campus second-hand trading platform system structure

## 2.2 Software structure

Campus trading WeChat mini program through different modules to achieve different functions. The mini program contains three modules, which are user center, commodity management, and trading home page. As shown in Figure 2.

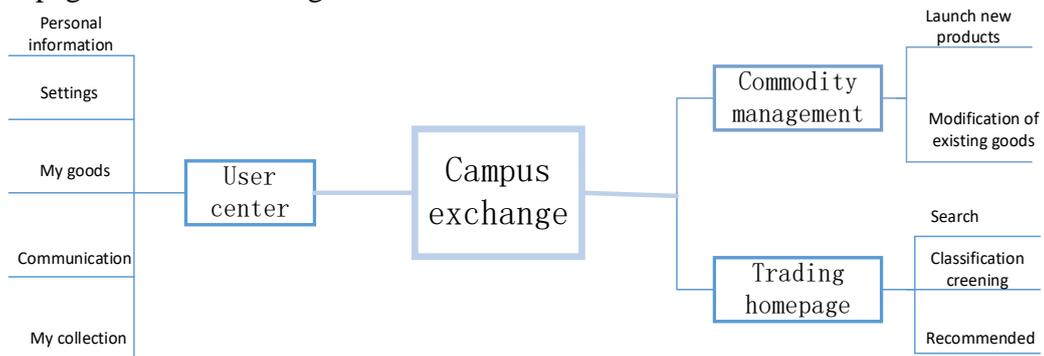


Figure 2: Software structure

## 2.3 Main contents of the system interface

(1) Open the APP and enter the interface. There are two lines in the figure, the first behavior account and the second behavior password. As shown in Figure 3.



Figure 3: Small program login page

(2) Enter the account and password, enter completed, home page. The first page contains three sections: "Search", "Classification and screening" and "recommendation", as shown in Figure 4.

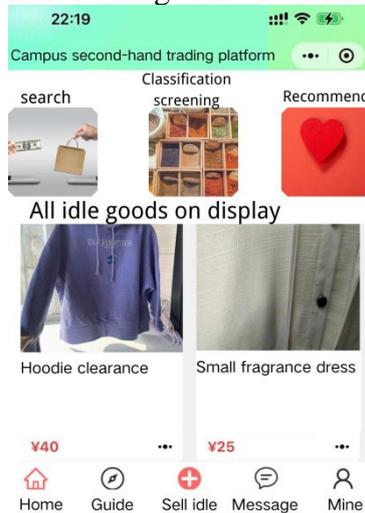


Figure 4: Home page

(3) Continue to swipe right to enter my page, which contains "Personal information", "My products", "My favorites", "Settings," communication "and other functions as shown in Figure 5.



Figure 5: My page

### 3. Innovative features of second-hand trading platform

#### 3.1 Clear personalized positioning

In the traditional campus second-hand trading market, a unique second-hand goods trading platform dedicated to college students is established. The innovative co-campus trading mode <sup>[7]</sup> not only greatly simplifies the transaction process, but also has efficient information integration and release functions, which effectively lowers the threshold of second-hand goods trading, reduces the waste of idle resources, and promotes the development of green campus. This project holds a unique business model and concept, with the ultimate goal of advocating environmental protection consumption, avoiding resource waste and building a saving campus.

#### 3.2 Improve the system supervision mechanism

The real name system of the seller and the buyer in the small program ensures the quality of the goods to a large extent. In addition, the platform obtains service feedback <sup>[8]</sup> through online transaction evaluation and offline questionnaire survey, and analyzes and evaluates the feedback information, which will improve the service quality of the platform, effectively meet the needs of users at all levels, optimize customer experience, and increase loyalty to the platform.

#### 3.3 Integrate the concept of green sharing

Different from traditional second-hand trading software, which requires the use of mobile phone memory to download APP, this paper establishes a second-hand trading platform with easy operation and outstanding personality by utilizing the drainage ability and convenience of WeChat mini program <sup>[9]</sup>, fundamentally expands the communication channels of second-hand goods, and thereby cultivates college students' good behavior habits of second-hand goods trading. Realize the recycling of second-hand resources and build a green and healthy consumption model for college students <sup>[10]</sup>.

### 4. Second-hand trading platform technical route

In the running environment of java jdk 1.8, the structural sequence of WeChat small program development is shown in Figure 6. In the construction of Second-Hand Transactions project, APPLETT and Java will be divided into two categories.

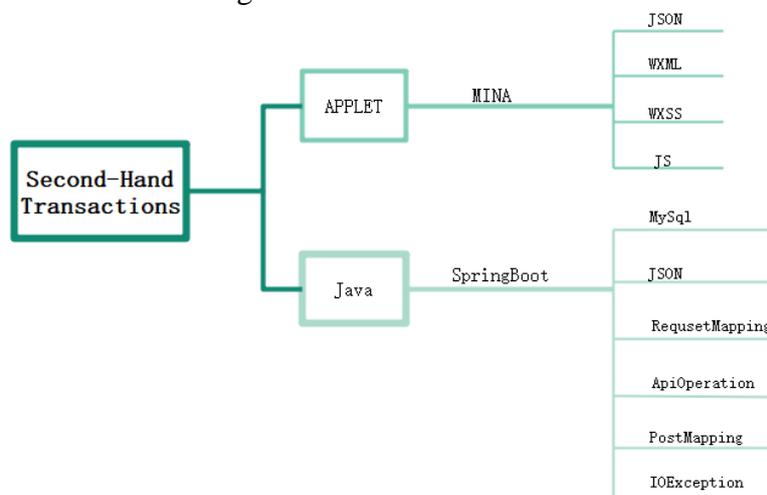


Figure 6: Software development structure

## 4.1 Introduction to Second-Hand Transactions

(1) The development of the APPLET is based on the MINA framework, and the main file of the MINA framework consists of the following four basic files, the first of which is the json configuration file with the suffix of .JSON. JSON is a data format, not a programming language, and in small programs, JSON plays the role of static configuration. The second is the WXML template file with the .wxml suffix. Web programming uses a combination of HTML+CSS+JS, where HTML is used to describe the structure of the current page, CSS is used to describe the look of the page, JS is usually used to deal with the page and user interaction. WXML plays an HTML-like role in small programs. The third is a WXSS style file with a .wxss suffix. WXSS has most of the features of CSS, and small programs have been extended and modified in WXSS. The fourth is the .js suffix JS script logic file. It is not enough for a service only to display the interface, but also to interact with the user, respond to the user's click, obtain the user's location, and so on. In the small program, you can handle the user's operations by writing JS script files.

(2) Create a SpringBoot project in Java and name it Controller. MySQL, JSON, RequestMapping, ApiOperation, PostMapping and IOException are the main packages imported in the program.

## 4.2 Concrete realization

(1) The java.mysql package uses the JavaTM programming language to access and process the API of the data in the database. The API includes a framework by which different drivers can be dynamically installed to access different data sources, the common MySQL operations are insert, delete, update. The storage and processing of specific information about users and goods are embodied in the project.

(2) Import Java.json package to achieve JSON and JS object mutual transfer, the main realization of Java objects quickly converted into JSON format strings, JSON format strings into Java objects. Of course, XML can also be used as a cross-platform data exchange format, but it is very inconvenient to process XML in JS (short for JavaScript), and there are more XML tags than data, which increases the traffic generated by exchange, while JSON does not have any additional tags, and can be processed as an object in JS. So we prefer JSON to exchange data. The concrete embodiment in the project is the conversion of symbols.

(3) Import the RequestMapping package to implement an annotation that handles the requested address mapping, which can be used on classes or methods. On a class, all methods in the class that respond to a request have that address as the parent path. Method only handles requests that contain "application/json" in the Accept header of the request, and implies that the returned content type is application/json. The purpose of the RequestMapping annotation is to establish a mapping relationship between the request and the controller method that processes the request. Specifically in the project is to connect Java with WeChat mini program.

(4) Import the ApiOperation package as added API-related annotations. But not ApiOperation spring's own annotation is swagger. Com wordnik. Swagger. Annotations. ApiOperation. Specifically in the project, we are now improving the docking efficiency of the Java side, the client side and the WeChat mini program side. Import PostMapping, which maps a POST request, is a new feature of Spring MVC and provides support for Restful style, which is reflected in the creation of user registration and communication sections. IOException is imported to throw exception classes.

## 5. Conclusions

The development of the campus second-hand platform based on WeChat mini program is in line with the concept of green sharing, taking college students as the consumer market user group, taking

the Internet as the cornerstone, through the establishment of a data database, providing users with functions including the release of second-hand goods on campus, the purchase of second-hand goods on campus, and the search of second-hand goods on campus. Through the WeChat mini program, integrate various functions to create a simple campus second-hand trading platform that focuses on serving users and ensuring the safety of second-hand trading, which helps guide college students to build correct values and effectively understand and practice new development concepts.

## References

- [1] Wei Hai-Zhi, Yi Han-Ru, Yang Jiao. *Research report on the status quo and prospect of campus second-hand market based on Xianyu trading platform [J]. Shopping Mall Modernization*, 2022, No. 966(09):43-45.
- [2] Liu Ziyi, Wang Xuze, Zhong Zeyao et al. *Research on the current situation of second-hand transaction market in colleges and universities under the background of green development -- A case study of second-hand platform of Civil Aviation University of China [J]. Chinese Business Theory*, 2021, No. 825(02):57-60.
- [3] Zhang Zhu, Song Cunjin, Jiang Le, et al. *Design and development of Campus second-hand trading platform based on WeChat mini program [J]. Computer Programming Skills and Maintenance*, 2022(12):59-61+142.
- [4] Lai J I, Zhenjiang T, Wei Z ,et al.*The design and implementation of the campus secondary trading platform based on network technology[J].Intelligent Computer and Applications*, 2017.
- [5] Chang N , Liang Q , Wan F .*Research and Design of College Courses Resources Sharing Platform Based on WeChat Mini Program[J]. e-Learning, e-Education, and Online Training: 5th EAI International Conference, eLEOT 2019*. 2019. DOI:10.1007/978-3-030-35095-6\_6.
- [6] Chi Yuxin, Guan Mingfu. *Analysis on the construction of campus WeChat second-hand trading platform -- A case study of Information service and dynamic exchange platform of Shenyang University [J]. Intelligence*, 2019(14):227.
- [7] Sun Li, Wang Hao, Dai Lu, et al. *Construction and operation of second-hand trading platform on university campus: A case study of E University's "Huali Xianyu" WeChat mini program [J]. Science and Technology and Innovation*, 2024(04): 12-16.
- [8] Yong M , Min Y , Liang L ,et al.*Research and implementation of smart campus mobile platform based on WeChat enterprise[J].Microcomputer & Its Applications*, 2017.
- [9] Song Ying, Xie Xiaoling, Yu Wenting, et al. *Development and construction of WeChat mini program Cloud Service for Smart Campus [J]. Changjiang Information and Communication*, 2022, 35(04):174-176. (in Chinese)
- [10] Cao Zhenxing, Liu Yajiao, Zou Min et al. *Campus second-hand trading platform under the background of green campus [J]. Digital Communication World*, 2023, No. 217(01):75-77.