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Design and implementation of efficient Learning platform based on SpringBoot Framework

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Abstract: With the development of Internet technology, the demand for people's information exchange is getting higher and higher, and the traditional way of communication can no longer meet the needs of students. In order to improve the efficiency of information exchange, this paper uses a progressive framework, such as SpringBoot and Vue framework, these frameworks are easy to develop and maintain. According to these technologies, this paper designs a learning exchange community system for college students to learn and communicate. First of all, we analyze the research background and research status of learning community. Then, we analyzed the requirements of the system, including system function, performance and security requirements, and carried out the overall design of the system. The whole system is divided into several modules for development, and the specific module content is designed in detail, and the corresponding system functions are realized by using development tools. Finally, we use the black box to test the function, performance and security of the system.

1. Introduction

With the growth and spread of network technology, the Internet has become one of the important ways to join social activities. More and more people rely on the Internet to participate in the exchange of network information. Virtual community is an important platform for network users to share information and knowledge, and provides people with a new method of communication and a way of working based on community network. In the initial chaotic information exchange in the network world, its emergence will also have a significant impact on individual behavior, bringing new social phenomena and the socialization of network behavior [1].

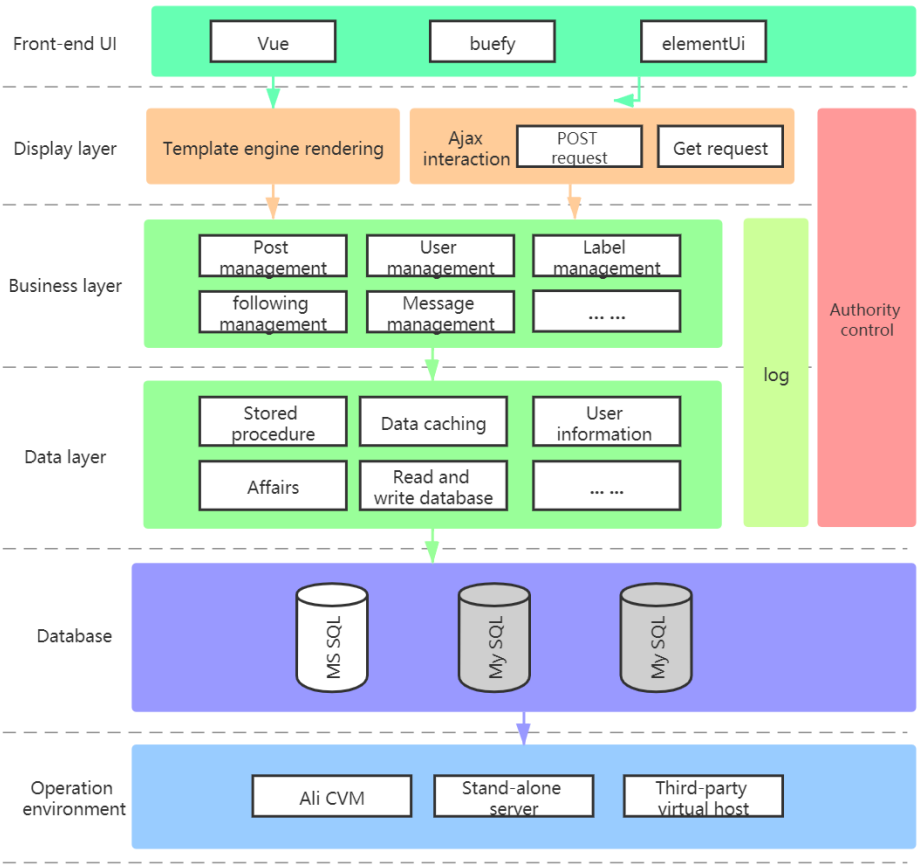

Figure 1: The system architecture diagram

The purpose of this study is to collect the information needed by middle school students and the relevant information of brothers and sisters. According to the needs of college life, the information is divided into life category, learning development category, competition category and so on. At the same time, establish a community where students communicate with each other. Make modern college students reduce the time of collecting and screening information on the Internet, find the way forward as soon as possible, communicate more conveniently with students at the same school, and enter an efficient learning state.

2. Overall architecture of software system

2.1 System architecture

Through continuous market research, combined with the design ideas of the current popular communication website, we determine that the target users of the system are school students and school administrators [2]. Taking students as the main body, in order to facilitate students' access to information and improve the communication between students and schools, the system architecture diagram of this paper is shown in figure 1.

2.2 System module design

The whole module of the system includes the following functions: registration page, login page, post page, search post page, system recommendation page, personal page, post management page,

management user interface, user personal settings page. The overall design diagram of the system is shown in figure 2.

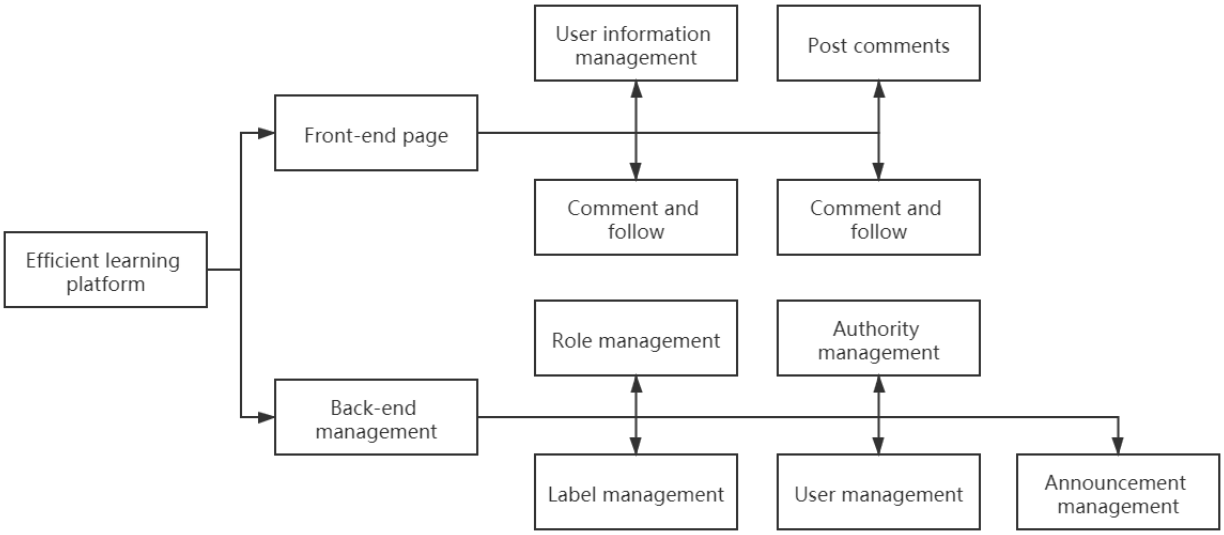

Figure 2: Overall module design diagram of the system

3. Real scene testing of the system

System testing is an indispensable link in the process of software development. it refers to the process of running a program under different specific conditions to detect errors in the program, measure the quality of the software and evaluate whether it meets the design requirements or not. The purpose of system testing is to find areas that do not meet the requirements of the system during the operation of the system. [3]

3.1 Test environment

The test environment of the system is as follows:

Server for virtual machine 4G memory, 20g hard disk, load Centos7 operating system, Mysql8.0 database, Tomcat8.0 server. The client is Asustek notebook, 2.40GHz processor, 16GB memory, 500G hard disk, loaded with Windows10 operating system, Chrome browser, Firefox browser and 360security browser.

3.2 Test scheme

White-box testing is closely linked to the system code and is performed by JUnit, Findbugs, and other tools in the development process. Therefore, this paper mainly introduces the black box testing related to the function of the system.

3.3 Test cases

According to the functional implementation in the system requirements specification, the following test cases and expected results are designed and implemented in this paper. The normal feedback function of the system is normal. In practical applications, it is mainly a variety of abnormal scenarios that test the performance of the system. In order to prevent users from operating improperly and causing exceptions in the system, this paper designs and implements the following exception test

cases and the corresponding expected results (As shown in Table 1).

Table 1: Exception feedback function test case table

Test content	Operation steps	Expected goal	Is it consistent with the reality?	Does it meet the requirements?
User abnormal registration	1. Enter passwords shorter than 6 digits and longer than 20 digits. 2. The password is not the same as the confirmation password. 3. Enter illegal mailbox format. 4. Do not fill in the required options.	There are corresponding prompts.	Yes.	Yes.
User abnormal login	1. Enter the wrong account number or password. 2. Do not fill in the account number or password.	There is an appropriate prompt or warning.	Yes.	Yes.
Abnormal post	1. Do not write content separately. 2. More than 3 tags are created and a single label is more than 15 in length.	Prompted or unable to operate.	Yes.	Yes.
Abnormal follow	Someone follows himself	Warning cannot be followed	Yes	Yes

4. Conclusion

The purpose of the system developed in this paper is to meet the needs of college students who are eager to know relevant knowledge, share learning experience and interesting things in life, and make students learn more easily and happily. And this system makes it convenient for more students to know what they want and know the skills related to competition, life and learning. On the basis of referring to the excellent social software and campus websites at home and abroad, and according to the needs of the actual situation, this paper is developed and implemented. Through browsing and commenting on the article, the system completes the article function of the user and realizes the multi-function interaction. Classified posts meet the needs of students to find relevant posts quickly, and greatly improve the user experience.

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