Design and Implementation of Online Video Education System

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Abstract

Online video education platform can cross the limitation of time and space, improve the interaction between teachers and students, and become an auxiliary platform for teaching. The system is based on H5 online education platform, MySQL database processing background related data information, idea as a development tool. In order to realize the linkage between the front desk and the background, the background can add recording and broadcasting courses independently, so as to realize the online viewing, back looking and backstage management courses. The system enables different people in different places to enjoy the same education at different times, realizes the sharing of educational resources, and can better assist teaching.

Keywords

Online Video Education; Spring Boot; HTML5; Red5, MySQL.

1. Introduction

With the vigorous development of the Internet, the Internet is more and more in our daily life, and online education is also a new Internet product. The rapid development of modern information technology in the 1990s has greatly affected the process of modern education in many countries or regions in the world. With the development of the times, various countries and regions have also reformed their educational models, programs and policies. As the development of the Internet has become more and more mature and has begun to combine all walks of life for creative reform, in recent years, the modernization, digitization and networking of education have become the direction and priority of education reform in various countries and regions, such as the Eureka plan of the European Union From the southern hemisphere to the northern hemisphere, from developed countries to developing countries, different plans based on local conditions are used to promote the concept of online education. These trends of teaching reform in the world with a strong color of the information age reflect, to a certain extent, the new characteristics of educational informatization in the 21st century information socialization world characterized by knowledge economy. Various countries or regions in the world have shown their own new measures. Educational informatization has become the fashionable vocabulary of contemporary teaching reform for a time, greatly promoting it The information process of teaching reform in various countries or regions has been carried out [1-2].

This paper which is based on HTML 5.0, AJAX, spring boot and other technologies to complete online education video learning system realizes the transformation from traditional education mode to modern education mode.

2. System Design

2.1. System Development Technology

The online video learning platform based on H5 is realized by separating the front and rear ends. The back-end uses spring boot to complete data operation. Red5 serves as a streaming media server to provide course video streaming data. The front-end displays data through H5

technology and plays online video through JW player media player. Spring boot is a big integration of the whole spring technology stack, through which we can develop microservices quickly [3-4]. The main function of red5 is similar to the FMS of Macromedia company. It is an open source streaming media server based on Java, which provides streaming media service based on flash.

2.2. System Architecture

The system mainly includes three parts: user management module, course browsing module and online playing module. User management module realizes user registration and login. Online learners register a new account by inputting mobile number, user name and other information. After login, learners can manage their own personal information. Learners can browse courses, collect courses and learn courses. Online playback module provides video playback data through streaming media server.
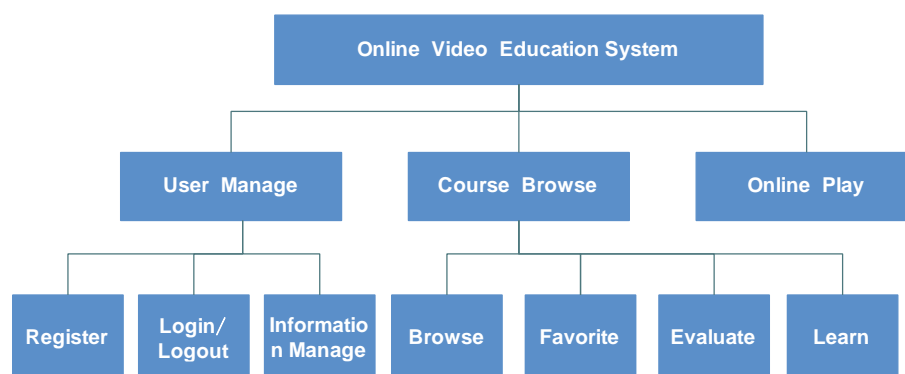

Figure 1.   System architecture

3. System Implementation

The development of the system platform adopts the microservice architecture of separating the front end and the back end based on spring boot. The foreground adopts H5 framework, and the backstage development adopts the framework of spring boot + Spring + mybatis to realize the microservice, and integrates Ajax and HTML 5 to realize page display. The overall development process is shown in Figure 2.
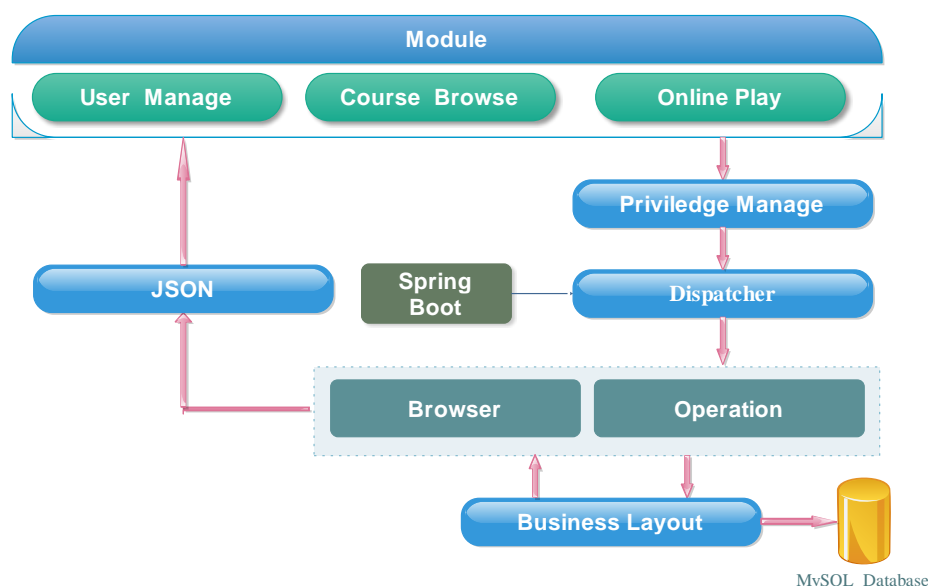

Figure 2. Business execution flow chart

3.1. User Management Module

The module is mainly used for the registration entrance of new users. After the new users fill in all the information, after verification, the user's data will be stored in the MySQL database, which is convenient for the subsequent login and other operations. The registration flow is shown in Figure 3. After successful registration, the user enters the account and password in the login interface. The system will first query whether the user exists in the database, and then verify the user's rights and give the corresponding permissions.
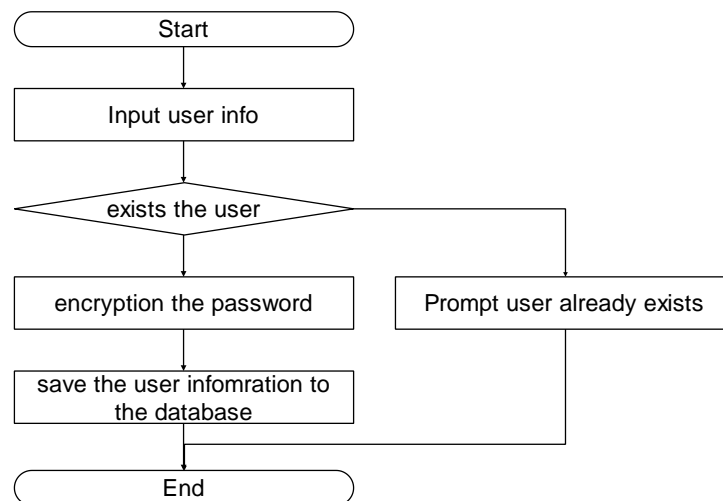

Figure 3. User registration flow chart

3.2. Course Browsing Module

Online learners can browse courses, collect courses, learn online and evaluate online through the front page. Teachers complete the management of curriculum resources, online Q & A, course release and other functions. Taking the course video resources browsing as an example, the front end is composed of videoResouceList.html Page composition, to achieve online course browsing function, through Ajax request background micro service. The server realizes control through vidoeresouceaction, and each method of this class corresponds to a kind of user's request. As a control class, the videoresouceaction class needs to call the videoresourceservice class to complete the user's business request, and the videoresourceservice class needs to call the videoresourcedao class to implement the database operation. Videoresourcedao simplifies MySQL database operations with MyBatis [6-7].

3.3. Online Playmodule

Online play is realized by streaming media server red5. The installation and configuration process is as follows:

Step 1: install JDK and configure Java environment variables.

Step 2: install red5 and configure red5 environment variables.

Step 3: red5 parameter configuration, mainly including the host and port configuration of HTTP, RMTP and other nodes.

Step 4: start the red5 server.

4. Conclusion

With the concept of Internet +more and more popular, the Internet and people's production and life are more and more closely related. Among them, webcast is a new army. During the rest time, more and more people choose to enrich themselves and improve their all-round ability

through online education. However, with the continuous expansion of user groups and the sharp increase in the number of users, the problems associated with emerging industries have become increasingly prominent - the cumulative shortage of technology. How to use the existing technology to maximize the optimization platform and give users the best use experience is a severe test faced by the major online education platforms. .

The platform is based on the microservice architecture system of spring boot, and constructs the microservice architecture with front and back-end separation. Through this architecture, the project is easy to expand, low coupling, maintainability, high user experience has been improved. The back-end microservice implementation is based on Spring boot + Red5 + Mybatis + MySQL and other technologies to simplify the service configuration. The front-end development is based on HTML5 framework, which improves the development efficiency and makes the front-end easier to expand.

Acknowledgements

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