Research and Design of Experimental Simulation Environment for Information Resource Management Based on Web

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Abstract. The development of modern information technology has enabled the virtual simulation experiment system to play an important role in the remote experiment process of colleges and universities. Information resource management is based on its own characteristics, and it is more suitable to use the web-based simulation experiment environment to carry out practical teaching. This paper uses the architecture of the virtual experimental system to discuss and design the experimental simulation environment of information resource management based on Web.

Introduction

Information resources management disciplines in recent years the research focuses on the entities such as the research from the library and "virtual", "digital" information resources research, at the same time, more focus on from the angle of technology to explore the management of information resources, and combining the" electronic commerce ", "e-government", such as hot issues, around service, user, policies and regulations, intellectual property rights, information sharing, etc. The key research direction. In recent years, the college information resource management course has also intensified the practice teaching and focused on the ability of cultivating students' practical application and creative thinking in the simulated practice environment.

In experimental teaching in colleges and universities, as a result of the experiment equipment and the industrial production environment deployment cost is higher, the virtual experiment environment for relevant practice teaching provides an easy to implement and no limit of space and platform. Virtual simulation environment is a platform for virtual object model, using the Web and. NET technology, the information resource management course covers the various business application scenarios and modeling, such as: digital resources retrieval, FTP server, book classification and coding, etc., so that the students in the limited space and time quickly grasp the basic concept and application process of all kinds of practical object.

Overall Design

The experiment simulation environment is a series of software and hardware combining with the web to simulate the real experiment scene. Its application effect depends on the application scene and the mock object.

The hardware components of the virtual simulation system include a series of distributed control system components, which are mainly used to develop web-based experimental projects and experimental projects. This series of components can be used in other industries and can be used for industrial production line monitoring. Control station, operation station and engineer station. The control station is used as the next machine to collect data and control the connection equipment. The operation station is the upper computer to monitor the whole production process. The engineer station is used to manage the whole system. It also includes a configuration tool that works with the entire hardware system. The software system consists of database, interface, and algorithm and so on. The database component mainly collects the important data in the collection business to meet the state feedback of the entire simulation process. Interface components can be used to form
human-computer interfaces. The algorithm component implements specific business logic control. The relevant components use FBD, LD, SFC, ST and IL languages that meet international standards.

Simulation Environment Design Based on B/S Architecture

The B/S architecture has unified the client, and the core of the experimental environment is placed on the server side, which effectively expands the time and space of the experimental environment, and is more conducive to the students to carry out the practice study anytime and anywhere. It has the characteristics of low cost, simple maintenance, low platform dependence and strong adaptability.

The virtual simulation experiment environment of information resource management mainly uses two ways to realize the interaction of hardware and software.

(1) Page release. The hardware part mainly uses the component to realize the establishment and use of the experimental project. With the function of Web page publishing, the original C/S structure can be transformed into B/S structure with very high degree of freedom.

(2) Remote access. Remote access has been set up on the server, multiple virtual machine within each virtual machine build business system: such as retrieval, electronic library, FTP server, and connected to the entrance of all kinds of virtual experiment software, each user can apply to the server via a browser independent business, achieve access to experimental project and hardware. Advantages are easy to use and easy to develop for developers; the disadvantage is that the server is more demanding.

Design of the Project Release Platform

As students remote, parallel, web-based access to the entry of the simulation environment, experiment, content management platform provides a course related information, announcements, and other information, at the same time also can realize the paperless operation and test program correcting function, realize the interactive discussion and information sharing. In addition, providing near-real simulation environment is the most important and core goal of information resource management experiment simulation environment. The specific platform is built as follows:

User management platform. Mode of the platform adopts the user login, because sometimes it takes the experiment report upload or message boards, and other functions, so the user can in favor of the management of the platform management system, and of course teacher user privileges than the students' rights. The module mainly reads data from the database, and identifies whether it is a teacher by a certain value of the data. It is the privilege of starting certain teachers. Otherwise, these rights will be cancelled. The duration of user login is set by the session value, which is usually set to 2 h. After the user logs in 2 h, it will automatically log out and require the user to login again. The specific length will be determined according to specific needs. All user data can only be read by an administrator from the server database, users can only access information about yourself, if you want to get this information, you can query in the management platform, then the server will respond to the request data from the database of the server to the browser page.

Information management platform. The homepage content of the login, real-time hot news, teacher profile, and course profile and message board are actually the category of information management platform. The teacher can add to the news, introduce the course and revise the experimental report and monitor the message board. Students can only access and upload documents, and cannot modify the specific content of the platform. The data of course introduction, hot news and teacher profile is directly written in the front part. This part of data is directly displayed in the browser, and the user won't need to submit the request. However, the data of the test report and the message board are stored in the database. The database and user database is a relational database, message board and user ID in the user table or student ID (work number) binding, unlike the users table, is all users can see the content of the message board.

Theoretical learning platform. The experimental content and curriculum knowledge of theoretical
learning platform belong to the content of theoretical study part. The data, like the course introduction, are written directly on the front end. Users can click into the platform, and then tested, due to subjective topic openness is bigger, and computer is more difficult to score, so the test subject consists of two kinds of topic, choice and judgment. The correct answer to the user's answer is to make a direct judgment on the front-end page, without the need for back-end participation.

Virtual experiment platform. Teachers can release and maintain experimental projects and control the progress of students' experiments through schedule constraints. The content of this platform is mainly composed of the component to publish the experimental project to the web page, in this module call.

Virtual simulation software system requires the individual components of mutual cooperation to form a complete virtual simulation environment of information resource management, the design of the software system mainly use the ASP.NET, JavaScript, CSS and HTML web page programming language.

Conclusions

This paper introduces the virtual simulation environment design of information resource management principle, adopts B/S structure, and using the Web technology, effectively help users better for remote experiment, experiment teaching management, and is conducive to school is a kind of extension and expansion of field laboratories in colleges and universities.

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