Research and Development of Scientific Research Management Information System in Higher Vocational Colleges Based on Distributed Block Technology

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Abstract:This paper is based on the distributed block platform to develop a management information system suitable for the scientific research management needs of higher vocational colleges. This system will become an information platform for the daily work of the scientific research management department, an information platform for the faculty of the college to conduct scientific research work and scientific research achievement management, and an information platform for academic management, professional leaders, and young and middle-aged backbone teachers. Informatization, networking of school teachers' information resource management, and office automation of some businesses in teaching and personnel management.

Keywords: Management Information System, Higher Vocational Colleges, Distributed Block, Scientific Research

1. INTRODUCTION

The scientific research management of the college is basically in a manual state, and the scientific research management staff use Word, Excel and other office software to process a large number of scientific research management data and forms. In recent years, with the continuous increase in business volume, the management work in this area has become increasingly arduous, and the management efficiency and quality are relatively low. In order to comprehensively improve the level of scientific research management of the college, the academic affairs and scientific research department of the college put forward the requirements and jointly developed the scientific research management information system with the college information center to improve the scientific research management level of the college through informatization [1-6].

With the rapid development of modern information technology and the popularization and application of blockchain technology, the informatization construction of higher vocational college libraries has entered a new stage, and it has become an important symbol of measuring the modern development of higher vocational colleges. In October 2016, the Ministry of Industry and Information Technology of my country issued the first guidance document on blockchain, the "White Paper on China's Blockchain Technology and Application Development". In December 2016, the State Council issued the "Notice on National Informatization Standards for the 13th Five-Year Plan", which clearly pointed out the need to "strengthen the advanced layout of strategic frontier technologies", including "artificial intelligence" and "big data cognitive analysis". Blockchain" and so on. In July 2017, the State Council's "Notice on Issuing a New Generation of Artificial Intelligence Development Plan" proposed to "promote the integration of blockchain technology and artificial intelligence and establish a new social credit system." [7-14]

In August 2017, the State Council's "Guiding Opinions on Further Expanding and Upgrading Information Consumption and Continuously Unleashing the Potential of Domestic Demand" proposed "to carry out pilot applications based on new technologies such as blockchain and artificial intelligence." This system is based on Microsoft's latest software development platform .NET, and based on our institute's scientific research management work, we develop a management information system suitable for the scientific research management needs of higher vocational colleges. The system is developed and operated based on the WEB model to provide an information management platform for scientific research management personnel; to provide college leaders with scientific research information and statistical decision-making information; to provide middle-level cadres with departmental scientific research statistical information; to manage their own scientific research results for all faculty and staff Provide an information platform; provide an information platform for college management academics, professional leaders and young backbone teachers. In today's society, learning and education have become the focus of attention of all mankind. The development of the network provides a good basic platform for the construction of campus informatization. The campus information management system based on the .NET architecture has strong openness and scalability, and can easily provide more and more abundant information services for campus informatization. Realize various managements of colleges and universities by means of informatization management. One of the key contents of college management is the management of teachers. For a long time, some higher vocational colleges have not had a set of teacher information management system (abbreviated as TIMS) that is completely suitable for them. Teacher information management is still in the scattered and random management stage. The college office, personnel department, academic affairs department, etc. To master a set of relevant information of college teachers, the information between various departments is relatively scattered and chaotic, and data is transmitted manually, which cannot achieve good data sharing, and cannot meet the increasing requirements for teacher information resource management in higher vocational colleges [15-21].

In order to establish a "people-oriented" management model in higher vocational colleges, and to facilitate managers, users and teachers themselves to update, use and manage teacher information, the research and development of the TIMS system in higher vocational colleges based on .NET has important practical significance [22-24].

2. THE PROPOSED METHODOLOGY

2.1 The Distributed Block Technology

Blockchain has four characteristics. The first is the decentralization of the blockchain. As an accounting system, the blockchain has equal rights of each node in the entire network, and the rights and obligations between nodes are equal. Data is stored in a distributed manner. Each node can participate in the verification process of the data block with a password. The academic principle is that the consensus algorithm is used for transactions. No third party is required. Any transaction can be directly used for payment transactions. There is no centralized hardware or organization in the entire network. The second is the trustless feature of blockchain.

The trust in the blockchain system is not completed by a third party to determine the supervision and control. All nodes exercise self-restraint through algorithms, because each participant agrees with the consensus mechanism. Any node will reject and suppress malicious deception of the system. The operating rules and data content in the system are open and transparent, and the data exchange between nodes does not require mutual trust. Scientific research results mainly include scientific research projects, papers (published/collected), works, patents, variety identification, identification results, award-winning results, software systems, works and other scientific research results that have been completed. Through this subsystem, teachers can report their own various scientific research achievements annually, which are reviewed by the scientific research management department. The scientific research results that have passed the review can be automatically calculated by the system's scoring management subsystem according to the college's scientific research scoring management methods. If it fails to pass the review, make suggestions for modification or delete. The .NET framework makes it easier to develop, release, and integrate with other network systems for the next generation of application software.

For users, .NET Framework makes their machines more stable and easy to use, and can be easily connected to other systems. For developers, the .NET Framework simplifies the development of Windows software, it provides a single method to establish C/S and B/S architecture styles, and allows developers to use the same tools and technologies to develop for various devices software. Moreover, software built on .NET Framework is easier to develop and maintain than traditional software, and developers can easily upgrade the software to the latest version automatically. This is determined by the system mechanism itself. In the blockchain system, after the transaction information and data are entered into the system, no one can modify it, including internal staff.

2.2 The Scientific Research Management in Higher Vocational Colleges

This system adopts ASP.NET three-tier system structure: presentation layer, business logic layer and data access layer, as shown in Figure 2. ASP.NET is an Internet programming technology launched by Microsoft Corporation. It uses an efficient, object-oriented method to create dynamic Web applications. The rapid development of modern information technology promotes profound changes in the service and management methods of libraries in higher vocational colleges. The application and development of blockchain technology has brought new opportunities and challenges to the construction of smart libraries. Management and service are important indicators for the assessment and evaluation of the library, and also an important content that reflects the overall development level of the library.

Different eras have different standards and requirements. School management information system is the specific application of management information system (MIS) theory and technology in the field of education. Therefore, it follows the general rules of MIS. On the other hand, the object of school management information system processing is all kinds of information in the school management process. What is executed is the various management affairs of the school, which in turn determines the particularity of the system. The division of the functional modules of the school's management information system varies with the school's category, scale, management system, and institutional settings. The general school management information system designs functional modules from the overall situation of a school, mainly including: teaching management information subsystem, student management information subsystem, personnel management information subsystem, scientific research management information subsystem, financial management information subsystem, public The service system management subsystem, logistics management information subsystem, and asset management information subsystem are composed of several information management modules. There are not many management information systems for secondary colleges or departments. Moreover, the current general department management information system There are the following shortcomings: the purpose of higher vocational college libraries is to improve the management level, improve the service quality, and adapt to the development needs of modern vocational colleges.

2.3 The Scientific Research Management Information System of Higher Vocational Colleges

Higher vocational education is an important part of higher education in our country. The country attaches great importance to its development. However, due to its late start, the higher vocational education model and management method suitable for our country are still being studied and explored. At present, his institution setting and management model. The management method is still very different from that of ordinary universities, and the basic functions of each institution are somewhat different from those of universities. At present, there is no higher vocational education that can develop a set of management information system based on the characteristics and management mode of higher vocational education, let alone a set of department management information system for higher vocational colleges.

Improving their management's informatization, scientification, standardization and management is to improve the quality of higher vocational teaching, and to train tens of millions of high-tech applied professionals who serve the production, construction, management, and service lines. Very important role. With the continuous expansion of the scale of higher vocational education, improving the efficiency and quality of running schools, reducing the costs and expenses of running schools, and improving work efficiency, there is an urgent need for a management information system to assist them in scientific and standardized management. The main function of the designed transaction reminder is: when the user logs in to the system, the system will automatically search from the recent transaction data table. If there is a transaction related to the logged-in user, a message box will pop up to remind the user of the transaction that should be handled in the near

future. The Computer and Management Engineering Department of Xi'an Aeronautical Vocational and Technical College has 5 departments, including: Department Office (Department Management), Software Technology Teaching and Research Office, Computer Network Teaching and Research Office, E-commerce Teaching and Research Office, and Computer Information Management Teaching and Research Office, with a total of 41 faculty members. There are more than 1,900 students in school.

Since there are not many teachers in this department, the system can remind specific teachers for each task, and student-related affairs are generally collective, so relevant student affairs will be prompted as long as they log in to the system as a "student". The scientific research management system is open to off-campus users.

3. CONCLUSIONS

This article discusses the .NET framework and related technologies, and describes the design principle, overall structure and function realization process of a TIMS system based on the combination of ASP.NET, ADO.NET and SQL Server 2000. The TIMS system developed in this paper has been installed, deployed, and initially applied in Suzhou Vocational and Technical College, and has achieved good results. The integration of the scientific research management system and the collaborative office platform has laid a good foundation for the college to build a unified application information platform and data center.

4. REFERENCES

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