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**RESEARCH ARTICLE**

# COLLEGE MANAGEMENT SYSTEM USING PHP AND MYSQL

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## Abstract

The traditional university education and teaching management information system has the problems of low information recall, poor information precision, and long query time. Therefore, this paper designs a university education and teaching management information system based on Web. Through the analysis of the requirements of the higher education and teaching management information system, the design principle of the system is determined, and the structure design of the higher education and teaching management information system is realized; the teaching management information system management process is determined. By calculating the complexity of university education and teaching management information, the priority of query information is determined to effectively improve the processing effect of the system. Finally, the relational database model is designed to realize the design of university education and teaching management information system. In order to verify the effectiveness of this method, comparative experiments are designed. Experimental results show that this method can effectively improve the low information recall and the poor information precision and shorten the query time.

**Keywords:** Html, css, jscript, xampp control manager, brackets text editor, phpmyadmin. Apache server, localhost, mysql

## Introduction

With the popularization in all kinds of schools and education management departments at all levels, the information construction of education management has entered a new stage of development. The campus network based on Internet technology has gradually broken the original closed and independent mode of education management and started to transform to an interconnected and open system (Guo and Statistics, 2020). However, the current research on teaching management information systems has

begun to take shape, but the actual application is still in its infancy (Tangthong and Aktimagool (2020). In addition to the insufficient investment in education funds and the weak basic environment of school informatization, the main reasons are as follows: The lack of standards for teaching management information system results in great data redundancy and waste of resources, which makes it difficult to realize resource sharing and system interoperability; or just standardizing data cannot solve the problem of interoperability between different systems. Many original independent teaching management information systems have made outstanding contributions to the scientization of education management. However, due to the mutual closure and independent operation of teaching, finance, personnel, equipment, scientific research, and other single management systems developed in different periods and departments, it not only causes great data redundancy and resource waste but also makes it difficult to realize information sharing through the network (Numsimok *et al.*, 2018)

The information quality of educational administrators is relatively backward; in particular, whether the leading cadres at all levels have the awareness of modern information management is the key factor in the development and application of campus network management information system. If school leaders and education administrators do not have the awareness of modern information management and lack of understanding of the role and characteristics of modern information management, they will not pay attention to and care about the development and use of teaching management information system, which will bring about insurmountable obstacles to the development and application of the system (Kress *et al.*, 2018)

Recently, some schools even have established a relatively perfect teaching management information system, but, due to the defects of some managers in consciousness, ability, and other aspects, as well as the role of conservative factors in the work process, the teaching management information system cannot be fully used and developed.

Information security management refers to the establishment of information security policies and objectives in the overall or specific scope. The organization is required to establish an information security management system by determining the scope of the information security management system, formulating the information security policy, clarifying the management responsibilities, and choosing control objectives and control methods based on risk assessment. To get a truly comprehensive cloud computing service, security is a priority. At the same time, how to better establish the enterprise's own information security management has become the focus of the industry.

However, there are some problems in the above methods, such as poor data recall and long query time. Therefore, this paper proposes a Web-based university education and teaching management information system. It is a comprehensive teaching management software system which takes teaching management as the core and integrates educational administration management, student status management, teacher student management, school production management, book management, and system management. Through the network teaching management information system, education administrators, teachers, and students can query, analyze, and process the information in the process of education anytime and anywhere, so as to accurately and timely reflect the current state of the school's work, use the past data to predict the future, and assist the school's functional departments and principles to manage the school from the overall situation. The network teaching management information system also has a clear meaning of the times, which can meet the requirements of the change of work style in the information age and realize the requirements of informatization, scientization, and modernization of school management to meet the needs of assisting school administrators to make correct decisions.

***Our contribution is threefold***

1. The traditional university education and teaching management information system has the problems of low information recall, poor information precision, and long query time. Therefore, this paper designs a university education and teaching management information system based on Web.
2. Through the analysis of the requirements of the higher education and teaching management information system, the design principle of the system is determined, and the structure design of the higher education and teaching management information system is realized.
3. Experimental results show that this method can effectively improve the low information recall and poor information precision and shorten the query time.

## Information system of Education and Teaching Management Based on Web

### *System Requirement Analysis*

System demand analysis is one of the most important links in the system development. It is the basis of analysis and design to investigate comprehensively from facts. System requirements analysis is an important document in the system analysis stage, it is a milestone, marking the end of the analysis phase, and it is the starting point and basis of the system design stage. It determines whether the next stage of system development can be smoothly carried out, and it is also a contract, which defines the new system that the system developer must deliver to the user (Parsons *et al.*, 2020). In addition, according to the research of Boehm, the demand of software, its application scope, and its complexity are growing continuously without limitation; 85% of the resources consumed need management, design, testing, planning, project management control, change management, and tool development, which need to be considered with equal importance. Only 15 percent of software development work is dedicated to coding. Thus, how important the demand analysis is can be seen. The purpose of system analysis is to determine the user's requirements and solutions, including the developer's understanding of the existing organizational management status. The user needs the function of the information system: data business process, management function, and management data index system. The new system is to be modified and the new management model is added.

On the basis of extensive demand survey, the research group determines the overall function of the system, divides the system into various functional modules according to the overall function of the system, and determines the methods to realize various functions. The system adopts the combination of B/S mode and C/S mode, which is a new software architecture. Not only is it conducive to the sharing of information resources, easy to operate, and upgradable and maintainable, but also it ensures the data security to a certain extent (Lu 2020). The database adopts Microsoft SQL Server 2000, which is easy to use and provides support for massive data; Dreamweaver MX 2004 is used as the design platform, asp.net Web database middleware technology is used to develop Web pages, and ADO (active X data object) technology and OLEDB are used to connect and access the database. Most of the pages of the system add instructions or tips to facilitate users to use the functions provided by the system. Users can operate the system well by simple input or selection.

### *Design Principle of the System*

1. ***System Positioning***. When establishing a network information system, we must first make clear who the service object of the system is and what aspects of management the system should mainly complete (Tan 2020). For different objects and different user groups, the function of the system has different requirements.
2. ***System Scale***. The scale of the system has a great influence on the overall scheme of the system and the performance requirements of the software and hardware in the system. The system scale mainly refers to the number of system users, the amount of data processing, the number of functional modules, and so on. It can

be said that the scale of the system will affect the overall technical solution of the system to some extent. In addition, the scale of the system also has requirements for the software and hardware of the system (Luo and Qiao (2021). If there are few users in the system, the processing speed of the server, the number of ports of the switch, and the transmission rate of the backbone network can be relatively small. On the contrary, the high-speed server, the switch with more ports, and the backbone network with higher transmission rate must be used.

3. ***The Advanced Nature and Rationality of Technology.*** Generally speaking, the development system is expected to have the best technology and the most powerful function. In the actual system design, we should consider the advanced factors of the technology and the rationality of the practical application according to the comprehensive factors, such as system location and system scale, so as to achieve the optimal performance price ratio (Barney *et al*., 2018).

4. ***System Security***. This is one of the most important and core technologies of the network development system. To realize the information management system in the network environment, it is necessary to manage every login user account and provide a security mechanism (Campbell, 2020).

5. ***Good Interaction***. Good interactivity can realize resource sharing and timely information processing, which requires a user interface that is easy to operate and intuitive.

In conclusion, the system function should be determined according to the system positioning and system scale in the system design, and then different specific implementation technologies should be selected according to the specific functional requirements.

**Structure Design of the System**

The system adopts modular structure, and the division and design of each module strictly follow the principle of high cohesion and low coupling (Tezer and Cimsir 2018). Each submodule is called by the main module, and each submodule completes a relatively independent function. Each submodule can be developed, tested, and modified independently and finally forms the whole system, so the system has good scalability. The system is divided into eight modules; the system structure is shown in Figure 1, and the system flow chart is shown in Figure 2.

Figure 1

System structure diagram.

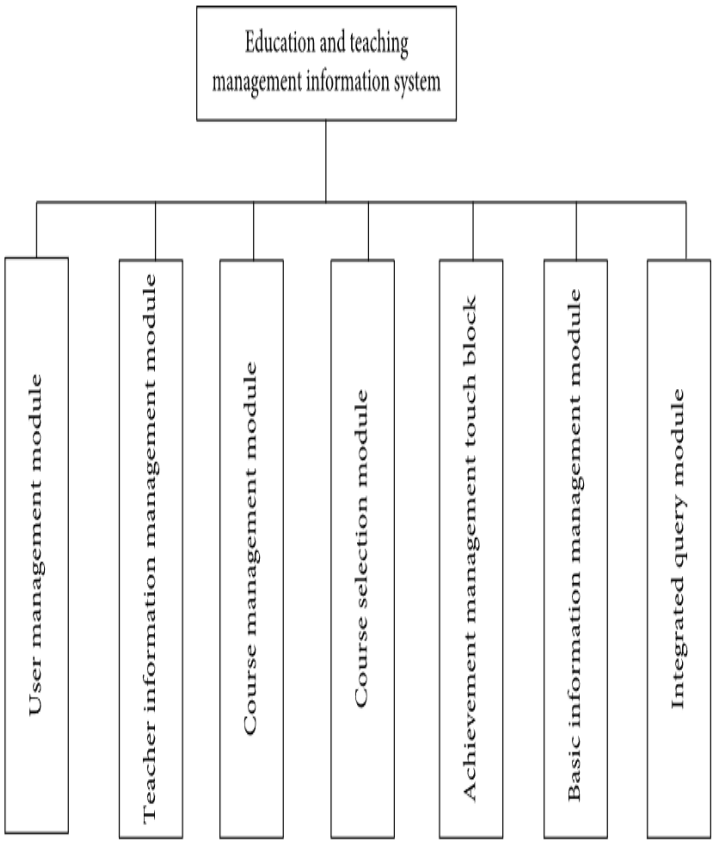
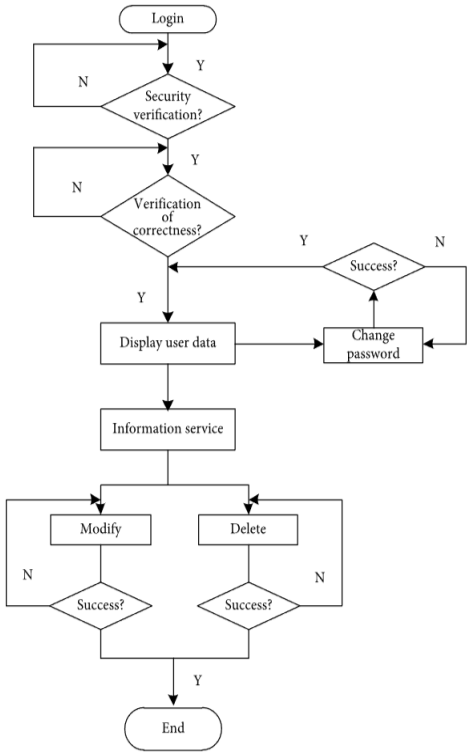


Figure 2

System flow chart.




## Database Design of the Management Information System for College Education and Teaching

### System Database Core Design

The database of university education and teaching management information system is divided into two parts: the general control center database and the sub control center database.

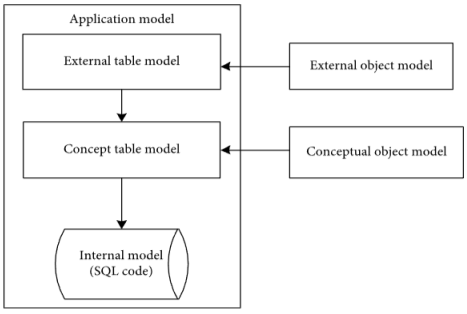
The database of the main control center is the core part of the remote network teaching system. It is particularly important to support the operation of the whole system. In order to efficiently integrate all the information and resource data of the whole system, the capacity, stability, and operation efficiency of the database must be fully considered in the construction of the database of the general control center. In order to make the main control center database able to effectively meet the daily information reading, backup, and other needs, one way is to select the appropriate hardware platform to provide the necessary hardware support for the system, and another is to select an efficient and stable database management system to realize the complete management of data. Database construction is the core part of the network distance education system, which plays a vital role. From the functional point of view, it mainly covers system use case analysis, data management, financial management, identity authentication, security management, and so on. As the data storage point of the whole system, the central host system of the system construction manages and processes the data storage and transmission of the whole system. The system design adopts typical three-tier system architecture. In its architecture design, it covers two functional servers: central database server and teaching management platform. Among them, teaching management platform includes data management server, security server, identity authentication server, and other related equipment servers.

### Relational Database Model

The logic structure of the system is divided into two types: conceptual mode and external mode. According to these two modes, the database design of the system can be carried out, and the object patterns can be transformed into fictitious database tables to get the table pattern (conceptual model). External tables (external models) can be associated with table models through database views or interface programs. Finally, the concept table is converted to an internal pattern, as shown in Figure 3

Figure 3

Transformation of object model and database model.



## Experiment

### Experimental Scheme

Hardware configuration was as follows: server was Pentium 4 processor, memory 512M, hard disk capacity 60 g, and UPS power supply.

Client was as follows: Pentium 3 or more CPU, memory 128M or more, and hard disk space 650 m or more.

Network configuration was as follows: LAN.

### Software Environment

Server operating system was as follows: Windows 2000 (Advanced) Server.

Client operating system was as follows: Windows 98/2000/ME/XP.

DBMS was as follows: SQL Server 2000.

Web server was as follows: Internet Information Server

## Conclusion

This paper designs a Web-based university education and teaching management information system. By analyzing the requirements of university education and teaching management information system, the design principle of the system is determined, the structure design of university education and teaching management information system is realized, and the management process of the system is determined. On the basis of the above, by calculating the complexity of university education and teaching management information, the priority of query information is determined to effectively improve the processing effect of the system. Finally, the relational database model is designed to realize the design of university education and teaching management information system. The results are as follows:

1. When the amount of teaching information data is 100 GB, the precision rate of this method is 94%, which shows that this method has better query accuracy for university education and teaching management information.
2. When the data of teaching information is 200 GB, the recall rate of the information of the teaching management in colleges and universities is 96%, which shows that the method has a good effect on the information retrieval of the teaching management in colleges and universities.
3. When the amount of teaching information data is 300 GB, the query time of this method is only 2.3 s. It shows that the query efficiency of this method is better.

In the future work, we can further optimize the information storage mode, query mode, and resource management, in order to conduct accurate queries in the case of complex data.

### *Data Availability*

The data used to support the findings of this study are available from the corresponding author upon request.

### *Conflicts of Interest*

Theauthors declare that there are no conflicts of interest.

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