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Research and implementation of teaching affairs management information system in colleges based on campus network

Ping Li^{1*}, Cui Jiang²

Editorial Office of Journal of Jiujiang University, Jiujiang JiangXi¹ 332005, (CHINA)

School of Accountancy of Jiujiang University, Jiujiang JiangXi² 332005, (CHINA)

E-mail: 497287500@qq.com

ABSTRACT

This paper studies and designs a set of teaching affairs management system according to the actual condition and specific requirements of teaching affairs management in colleges. The building mode combining both B/S and C/S structures, which boasts the advantages of the two, is adopted for the system. ASP.NET language is used and SQL Server2000 is used as the database platform to carry out the design of teaching plan management module, course management module, teacher management module and teaching quality evaluation module and finally build up a course scheduling model that is in accordance with the conceptual logistic structure and bring it into real operation.

KEYWORDS

Teaching affairs management in colleges; Information system; Campus network.



INTRODUCTION

This paper analyzed the overall demand of the system and divided the functions and analyzed the functional modules of the system based on the demand. Furthermore, it also analyzed the feasibility and safety requirement of the system, and briefly described the related requirement cases to lay a solid foundation for proceeding to the next development step.

SYSTEM FUNCTIONAL REQUIREMENT ANALYSIS

The organizational chart of the comprehensive management department for teaching affairs is shown in Figure 1:

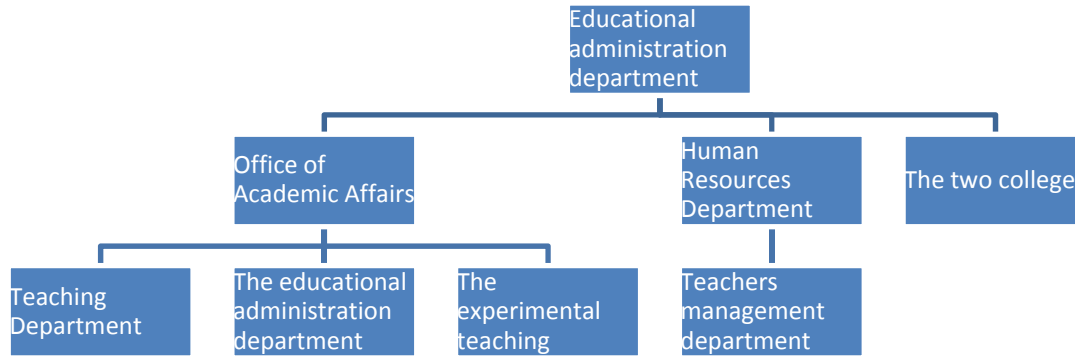


Figure 1 : Educational comprehensive management structure diagram

As one can see from Figure 1, the comprehensive management and organization department is made up of 8 units, each performing its own functions while coordinating with each other to handle teaching affairs management works. There are the following 4 offices that are respectively responsible for matters from specific implementation and teaching affairs management:

Teaching office

Its main responsibility is to prepare teaching and cultivation plan, teaching implementation plan and manage teaching materials, teaching research and examination papers.

Teaching affairs office

Its main responsibility is to carry out students' source management, education status management, daily performance management, examination management and student graduation management.

Experiment management office

Its main responsibility is the organization and coordination of experimental lesson management.

Teacher management office

Its main responsibility is to manage the teachers' titles, salaries and posts.

Admittedly, comprehensive management of teaching affairs is complicated and fussy and involves various aspects and departments. Therefore, it is necessary to prepare a work process. See Figure 2 for the specific work process of comprehensive management of teaching affairs.

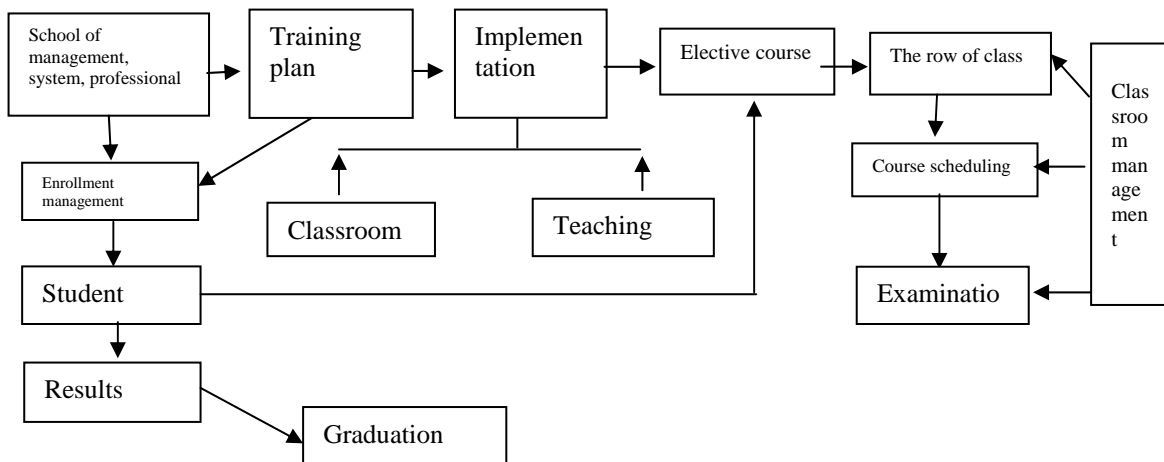


Figure 2 : The educational administration management work flow chart

Specific missions are:

Management of schools, departments and specialties

The main job is to number and classify the schools, departments and specialties, and record and register related classification information.

Management of teaching and cultivation plan

The main job is to manage the teaching and cultivation plan of the college in a standardized manner, establish the data logic relation between class hours, credits, course and number of semesters and record and register the same.

Management of teaching implementation plan

The main job is to manage the teaching implementation plan of the college in a standardized manner, allocate teaching resources reasonably, optimize teaching plan and designate course syllabus and related teaching materials.

Course selection management

The students should select specific optional courses according to the specific teaching implementation plan and their own conditions.

Course scheduling management

Make course scheduling and formulate the venue and time of each course according to the specific teaching implementation plan, course selection of students, as well as the actual teaching resources.

Course arrangement

Dispatch the course resources in a reasonable manner according to specific requirements for the fully arranged curriculum schedule.

Examination management

Arrange the time, venue and supervisors for examination of each course according to the curriculum schedule, teaching resources and other restricting conditions.

Teacher management

Manage the basic information condition of teachers; arrange the workload of the teachers in a reasonable manner and reevaluate the specific teaching conditions.

Teaching material management

Manage every link according to the teacher selection, including the designation, number, purchase, inventory and issuance.

Classroom management

Manage and register the classrooms that could be actually used so as to facilitate course scheduling and examination.

Enrollment management

Fill in the basic information on the newly enrolled students.

Educational status management

Establish a status archive for each newly enrolled student.

Achievement management

Manage and register the homework of each course of the students and provide inquiry function.

Graduation management

Provide an information management platform for students to graduate very soon, including the graduation qualification examination, degree awarding and alumnus information.

ANALYSIS OF SYSTEM AUTHORIZATION MANAGEMENT REQUIREMENT

Through field investigation, it has been identified that the users of the teaching affairs comprehensive management system of the school include: management personnel at the Teaching Affairs Office, teaching affairs management personnel of the school and department, students and teachers. There are super administrators, ordinary administrators and general users. The users of different types should be given different system operating authorization. Authorization management is a

very important part of the system management system and it is directly related to the safe reliability of the system. It relates specifically to the following aspects:

Different personnel

Different types of users should be given different authorization. For instance, management personnel at the Teaching Affairs Office should be given the authorization to operate the entire system while the students should only be authorized to view their personal information, scores and selected courses.

Different levels

Users of different levels should be given different authorization. For instance, the super administrator should have access to all databases while ordinary administrators should only have access to some of the databases.

Different businesses

Different access authorization collections should be given for different management businesses. For instance, for education status management, access to only the status management module is required while for achievement management, access to only the achievement management module is required.

Different times

Different access and operation restrictions should be reinforced at different times. For instance, the access to course selection module should only be allowed during the course selection period of a semester.

In this teaching affairs management system, the role-based policies access control (RBAC) technology is used to control the authorization management. The specific principle is given in Figure 3:

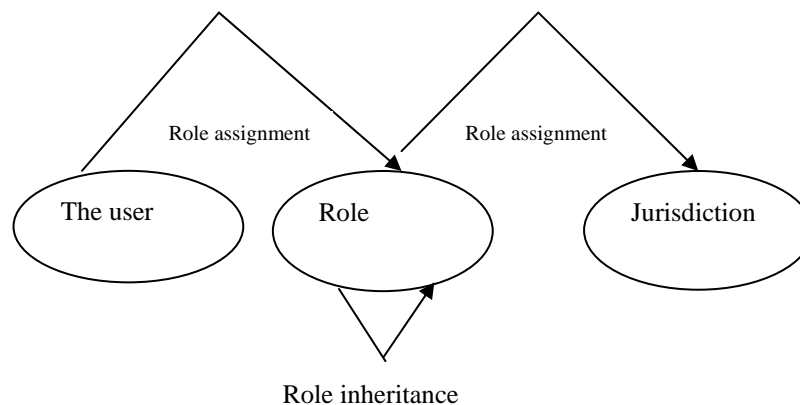


Figure 3 : The basic principle of RBAC

The “role” above refers to the collection of operations that could be executed by one or a group of users in the organizational structure. In RBAC, one role will generally be given several options, which are specifically corresponding to their responsibilities. This will result in to correlation conditions in the system, i.e., user-role correlation and role-authorization correlation. In general, there will not be any major change of role-authorization correlation. Application of RBAC in the system could reduce the authorization management load and ensure safety and reliability of the system.

In this teaching affairs management system, there are 5 different roles. The specific management frame model and corresponding authorization management model are given in Figure 4.

SYSTEM FEASIBILITY ANALYSIS

Development of any system will be limited by time and resources. Therefore, before development of each project, feasibility analysis should be carried out to reduce the development risk and avoid waste of man power, material resources and financial resources. Feasibility study includes mainly the economic feasibility analysis and technical feasibility analysis.

Application feasibility analysis

Teaching affairs management in colleges is one of the very important components in daily management of a college. This system could provide a more open, reliable and safe service for both students and teachers and is therefore completely feasible in terms of application.

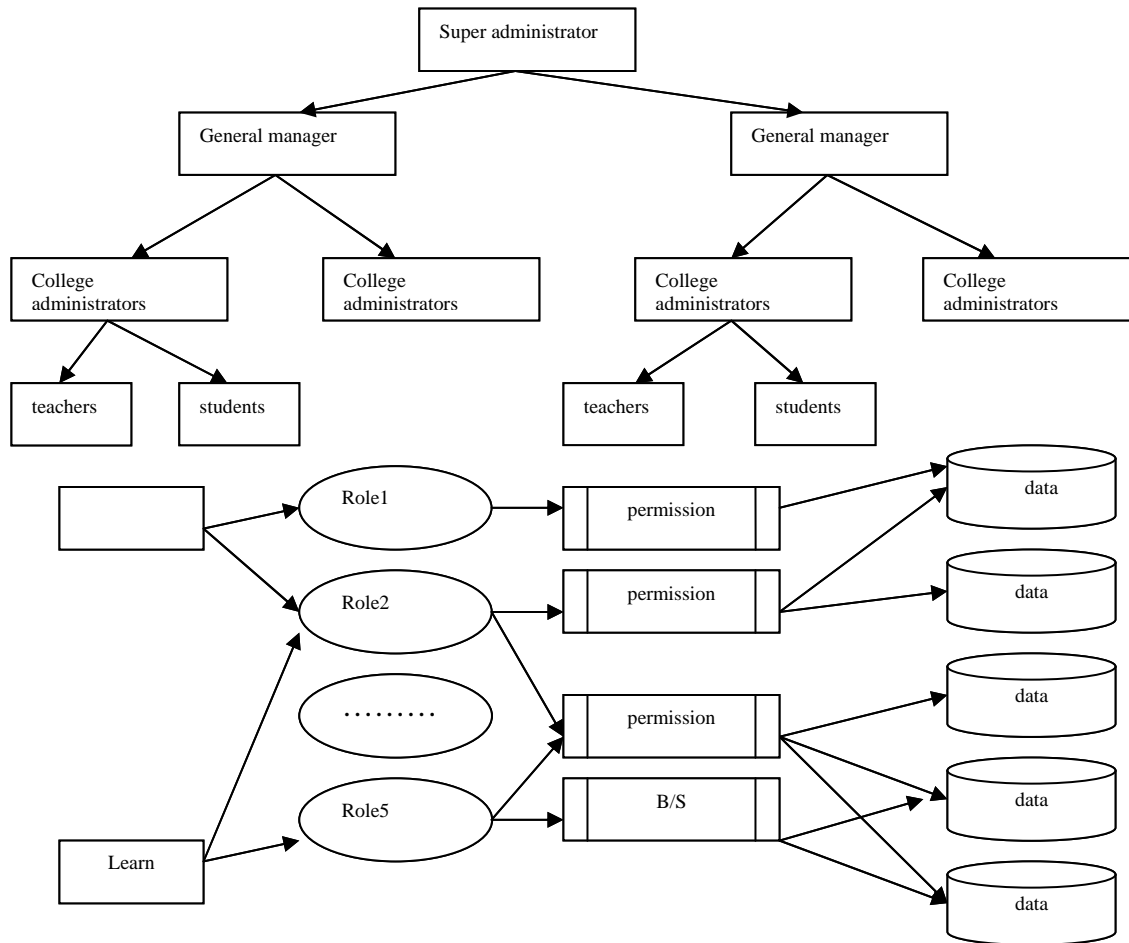


Figure 4 : Framework model of permissions management

Time-based feasibility analysis

Nowadays, with development of the society and the ever-increasing informationization degree, such a teaching affairs management system will have a quite promising market and therefore it is feasible in terms of time.

Technical feasibility analysis

The system is to be designed based on ASP.NET and SQL SERVER is used as the backend database. B/S structure is adopted for the design. Therefore, this system has a complete and favorable software development platform.

CONCLUSION

After the system is brought into practical use by our school, it could drastically reduce the workload of teaching affairs management personnel of the school, improve the work efficiency and reduce the errors of manual management, so as to build a favorable foundation for further development of the schools.

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