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Design and Application of University Students Management System based on web Platform

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Abstract

Based on the actual specific work condition of university students, the Oracle 11g knowledge, software structure development history and B/S software working principle are firstly introduced in the paper. Next, the overall demand, interface demand and system operation environment demand of university student management information system are described, with the system initially divided into 11 sub-systems, and then the functions and demands of the sub-systems are analyzed in detail, including five non-functional demands, i.e. reliability, usability, expansibility, universality and safety. The analysis of university student management information system in the paper is useful for realizing electronized and paper-free management for university students and effectively improving the efficiency of university student management work.

Keywords: university students management, system development, Web technology, information platform.

1. INTRODUCTION

In recent years, the development of information technology has brought a series of reforms in the society, and the communication and Internet technology have cultivated good environment and condition for the informatization in society and universities. The informatization process has affected all aspects of the society, changing the lifestyle, communication and learning modes of people. The university informatization is now a hot research subject (Seeman and O'Hara, 2005). The university informatization has been developed for many years, covering the managements of student affairs, personnel, finance and scores. The development mode of informatization system is changed from the original client/server mode to browser/server mode where the data is stored in the server and can be operated through the browser. The informatization system can help to improve education management efficiency, emphasize data processing, circulating and integrating, involving in all parts of students work (Cope et al., 2005).

Many foreign universities have strong and large-scale team specialized in informatization establishment while the domestic informatization duration is relatively short. The domestic informatization duration dates back to 1990s, having developed rapidly at coastal regions over the recent years, and at present the informatization has permeated all fields of university management. With the help of informatization, the teaching means become more diversified and vivid, besides, the teacher and students can communicate better with each other. Meanwhile, the informatizaion provides more teaching means, i.e. the network teaching including web teaching and intercommunication teaching (Beyer, 2008; Kaiser et al, 2003). A lot of new teaching ideas are introduced through Internet teaching to share internet resources in a better way.

With the further spread of digital campus in China, the universities frequency purchased hardware, software and network environment, more over, they also purchased and developed teaching, scientific researching and OA systems, and those software, hardware and application system initially formed the informatization system. However, the domestic university informatization level is relatively low compared with the foreign countries due to the insufficient technology, funding and other resources.

According to domestic and foreign informatization status, the safety level and timely updating of existing informatization system is insufficient because each department tends to establish their independent system, but share the information in a poor way. Considering the information managers have their special awareness and favorites, they are not satisfied with the existing informatization system (Orehovacki et al., 2009; Ajanovski, 2013; Cobarsiet al., 2013) At present, the developers should learn to concentrate information of work management system based on campus network and then make step-by-step distribution, developing the traditional paper management to paper-free and intelligent management, and providing favorable base environment for establishing comprehensive digital campus.

2. DEMAND ANALYSIS ON UNIVERSITY STUDENT MANAGEMENT SYSTEM

2.1 Overall demand of university student management system

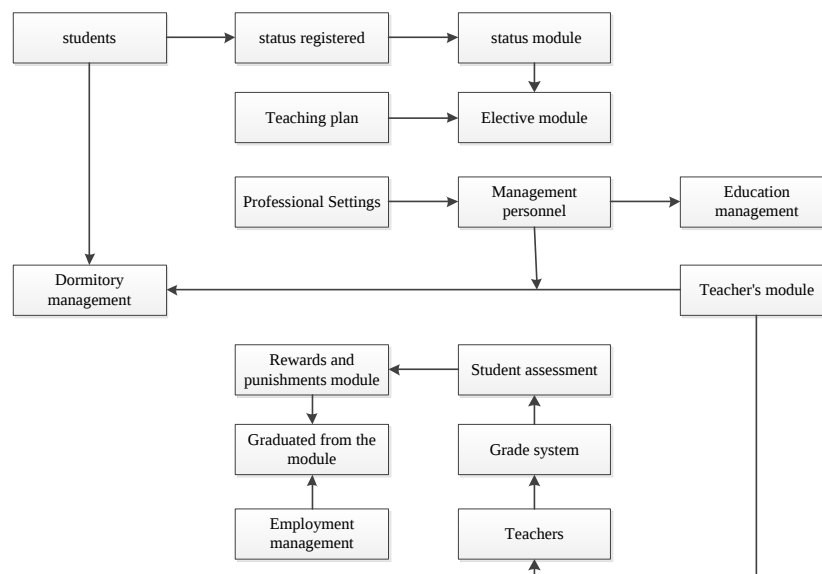


Figure 1. Student work management main business process

A university totally has 17 schools, i.e. school of humanities, school of economics, school of commerce & tourism management, school of PR management, school of law, school of foreign languages, school of art and design, school of physical science & technology, school of mathematics and statistics, school of resource environment and earth science, school of urban construction and management, school of information, school of software, school of life science, school of chemical science and engineering, school of physical education, and school of occupation and continuing education, having more than ten thousand students of complex origins, and wide scope of management contents. The in-depth investigation and research of work demand in Yunnan University indicate that the daily students work consists of party & league work, student awarding and superior evaluation work, class attendance work, daily education work and employment guide work (Dyson et al., 2008). The real-time information is stored in the database system, and the operations including addition, deletion, modification, inquiry and statement

statistics are conducted through the information system when necessary. The main work process of the student management information system is summarized as Figure 1.

2.2 Functional demand of university student management system

The university student management system consists of the following modules:

(1) Student basic information management: the module includes the comprehensive management functions of basic information of students in each school, i.e. new student information recording, modification, deletion, as well as information inquiry, importing and exporting.

(2) Student awarding and superior evaluation work management: the module mainly aims to manage the student scholarship and honorary title evaluation in universities.

(3) Student ideological and political education management: the student ideological and political education management sub-system is specially set up to support the development of university work. The system aims to support the party & league work and cover the basic functions for party member and league member management in universities (Recker and Alter, 2012).

(4) Student funding center work management: the goal of the students funding center work management sub-system is to manage the various students funding projects in university, including national grants, and all kinds of subsidies set up by universities and schools. Functions of the module include student financial assistance application, automatic sifting, application review and statistical analysis.

3. DESIGN OF UNIVERSITY STUDENT MANAGEMENT SYSTEM

3.1 Structure design of university student management system

A university student management organization mainly adopts a two-level management model with the office of student affairs as the lead and all departments as the support (Olsen and Bryant, 2012). Relevant functional departments of student information management designed under the lead of the office of student affairs are mainly the office of student affairs, office of academic affairs, enrollment and employment office, teaching colleges and departments, student education center, student management center, students' general Party branch center, student financial assistance center, the Youth League Committee, etc.

3.2 Module function design of university student management system

According to the introduction of demand analysis above, the system function modules are shown in Figure 2. Because of the limited space, only some typical modules will be introduced in detail below.

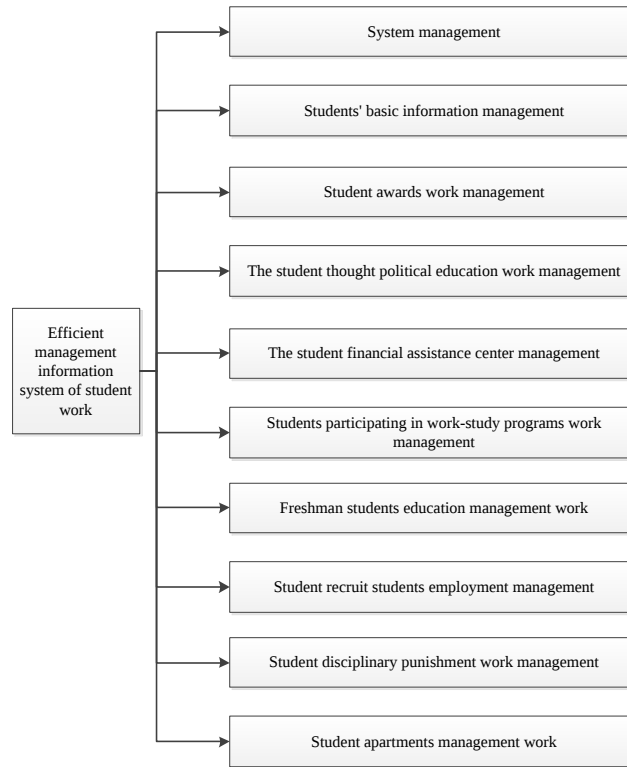


Figure 2. System function module

(1) System management function design

Maintenance subsystems of the system mainly complete five basic functions: I. user access; II. password modification; III. logout; IV. data backup & maintenance; V. log viewing; VI. exiting. The flow chart of the module is shown in Figure 3.

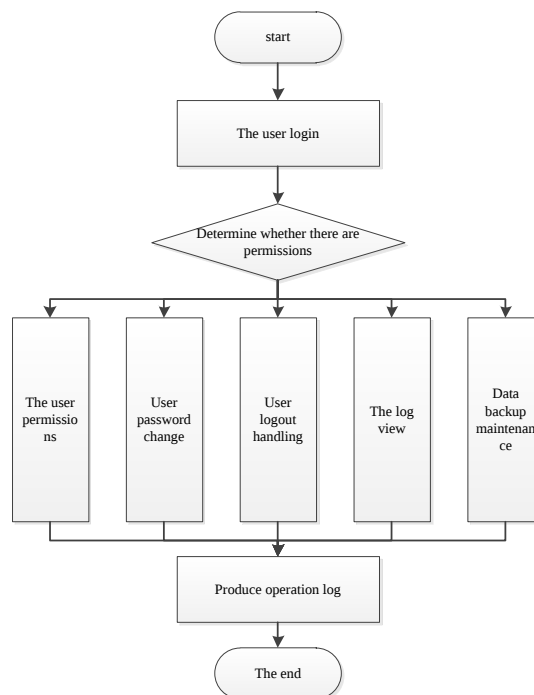


Figure 3. Flow chart of system maintenance functions

According to the system function demands, user roles of the system include system administrators, students, instructors, staff of financial assistance center, Party branch secretary, professional personnel in charge, professional management personnel, science staff, staff of education section, staff of the enrollment and employment office, college leaders, leader of the office of student affairs, heads of college functional departments, management personnel of the Youth League Committee, staff of the office of academic affairs (Kacem et al., 2011; Noraziah et al., 2011; Zhou, 2012). The function of system management can only be used by the system administrator. User logout is to cancel user information in the system, which is mainly used in the student graduation period when information of a large number of graduate students needs to be logged out. In the actual logout process, a single user or a batch of users can be logged out.

(2) Function design of student basic information management module

The subsystem mainly has the following three functions: I. adding, modification, deletion, query, updating, importing and exporting of student information; II. maintenance of student files, including two aspects - recording and maintenance of files; III. student status change management, used when the student census needs changing. The flow chart of the module is shown in Figure 4.

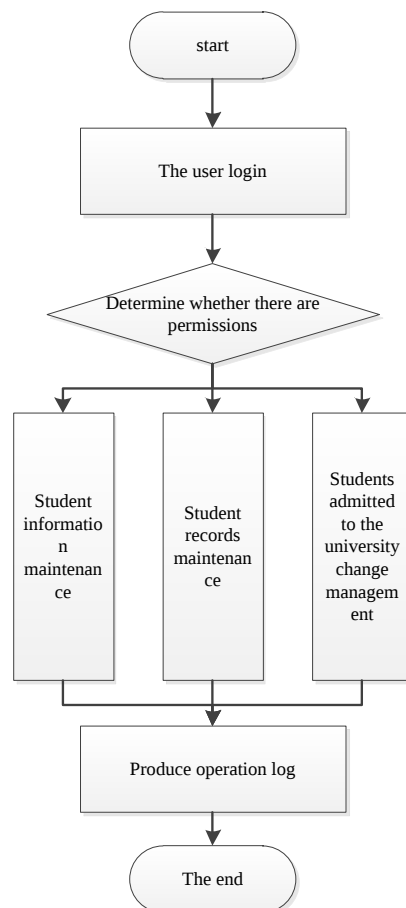


Figure 4. Students basic information management module

There are five user roles in the module, respectively staff of the office of student affairs, teaching affair administration staff, teachers, instructors and students of colleges and departments (Wallace, 2006; Dimitrov, 2009; Kazi et al., 2012). The staff of the office of student affairs is responsible for reviewing all kinds of information; educational administrators are responsible for maintenance of student status information, file

information and student information; instructors can browse class information and students can browse their personal information. Student information maintenance refers to the adding, modification, deletion, query, updating, importing and exporting of student information. Taking the student information adding as an example, the sequence is shown in Figure 5.

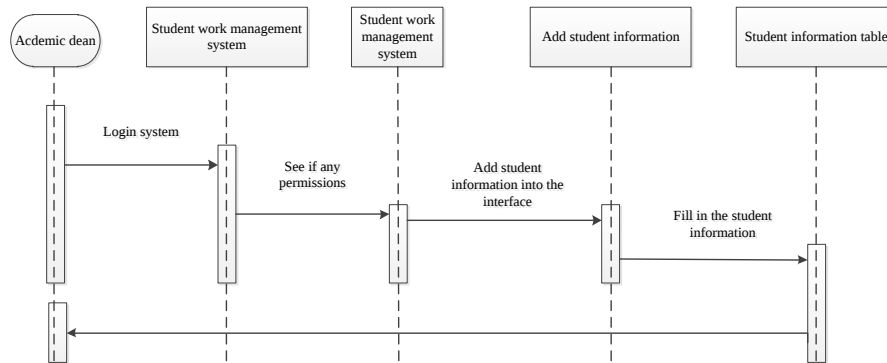


Figure 5. Add student information sequence diagram

(3) Unction design of student awarding and superior evaluation work management module

The module shall have the following five functions: I. personal scholarship application; II. personal honor application; III. advance class application; IV. automatic examination; V. formula and query of evaluation results. See Figure 6 for the function structure.

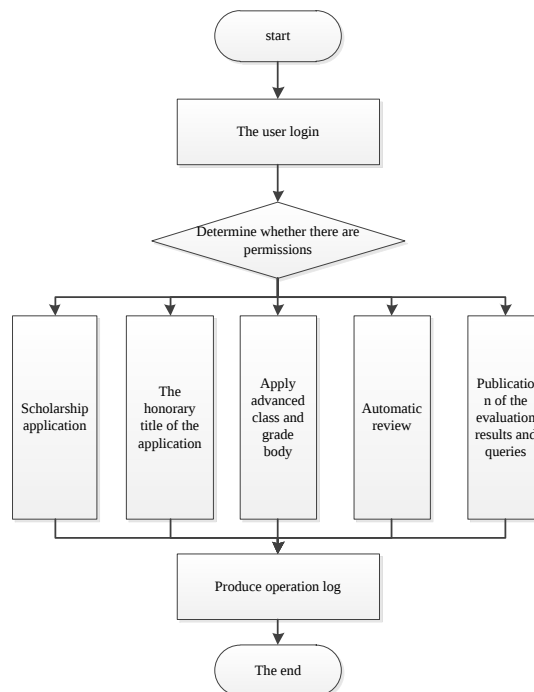


Figure 6. Student awards work management function structure

There are four user roles in the system, respectively the office of student affairs, student work management staff and teachers of colleges and departments and instructors and students of grades. The four roles are involved in the main operation process of the system. The office of student affairs can review all kinds of application and educational

administers of colleges and departments can submit advanced class application, honor application and scholarship application; instructors can view the application results of classes and students can view their personal application results.

In the function of scholarship application, in addition to national scholarships and national motivational scholarships provided by a country, students can also apply for special scholarships, first-grade scholarships, second-grade scholarships and third-grade scholarships provided by universities, as well as other scholarships provided by colleges and departments and scholarships provided by people of all circles. Taking the scholarship application as an example, the sequence is shown in Figure 7.

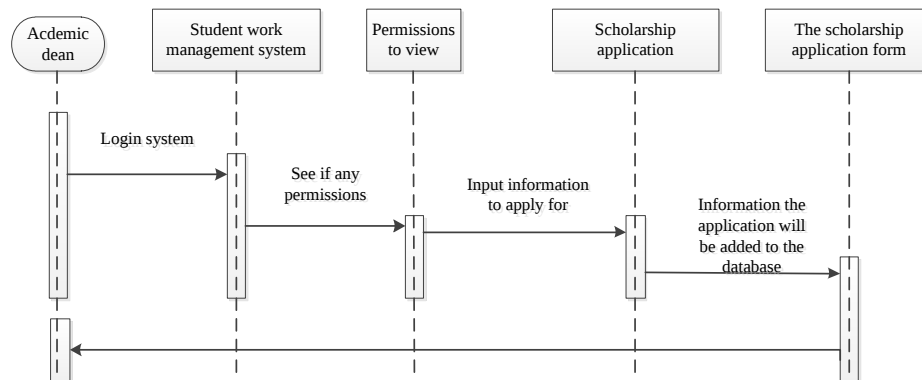


Figure 7. Scholarship application sequence diagram

(4) Function design of student ideological and political education management subsystem

The subsystem mainly has the following functions: I. party and League member training information management; II. management of activists of party application; III. management of probationary Party members; IV. management of full Party members; V. management of application for Party membership; VI. information management of League members. See Figure 8 for the function structure.

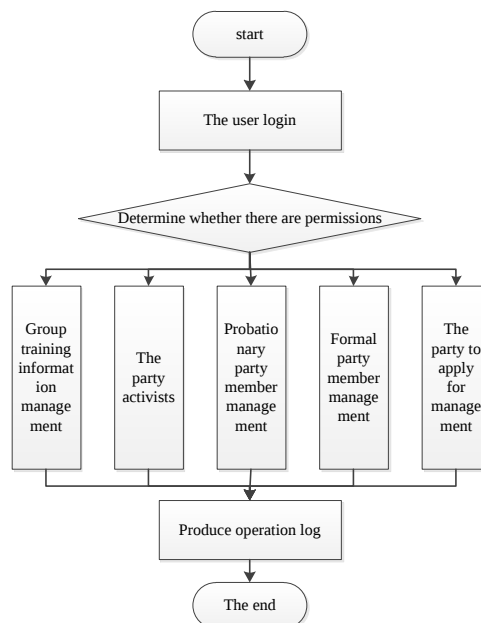


Figure 8. Students ideological and political education work management function structure

There are mainly three user roles in the module, respectively university CPC Party Committee, Youth League Committee, Party branch, Youth League general branch of colleges and departments, students (Binkley and Ralph, 2013). The Party branch and Youth League general branch of colleges and departments offer input and maintenance of basic information of activists of Party application, probationary Party members and Party members of colleges and departments, maintenance of application for Party membership and information including translation of the Party or the League, and submit relevant information to the university CPC Party Committee and Youth League Committee for review.

4. SYSTEM TESTING

(1) Logging testing

Logging testing is mainly to test whether users can successfully log in the system when the user name input is correct and whether the system can prompt the message of input error when the user name input is wrong.

(2) Testing of teacher information management module

Teacher information management is mainly used for query, inserting and modification of teacher information, and initialization of user passwords.

(3) Testing of course information management module

Course information management is mainly used for query and modification of basic information of courses and course setting - compulsory or selective.

5. CONCLUSIONS

In the paper, with the university student management system as the research object and a certain university as the analysis object, the function demands of the student management system were analyzed in detail and 11 subsystems were given. And then, function design, database design and structure design were carried out for the 11 subsystems according to the demand analysis. On the basis of detailed function demands above, the design of university student management was given. At the end, the system was tested, proving the system effectiveness.

6. REFERENCES

- Ajanovski V.V. (2013).Integration of a Course Enrolment and Class Timetable Scheduling in a Student Information System, *International Journal of Database Management Systems*, 5(1), 85-95.
- Beyer S. (2008).Gender Differences and Intra-Gender Differences amongst Management Information Systems Students, *Journal of Information Systems Education*, 19, 301-310.
- Binkley S., Ralph C.L. (2013).Using Reverse Engineering to Construct the Platform Independent Model of a Web Application for Student Information Systems, *Computer Science & Information Systems*, 10(4), 1557-1583.
- Cobarsí J., Bernardo M., Coenders G. (2013). Campus information systems for students: classification in Spain, *Campus-Wide Information Systems*, 25(1), 50-64.
- Cope C., Staehr L. (2005).Improving students' learning approaches through intervention in an information systems learning environment, *Studies in Higher Education*, 30(2), 181-197.

- Dimitrov D.M. (2009).Intermediate Trends in Math and Science Partnership-Related Changes in Student Achievement with Management Information System Data, *Journal of Educational Research & Policy Studies*, 9, 97-138.
- Dyson L.E., Zmijewska A., Lawrence E. (2008).M-Fieldwork for Information Systems Students, *Hawaii International Conference on System Sciences*. IEEE, 46-46.
- Kacem A., SaïDani A., Belaid A. (2011). A System for an Automatic Reading of Student Information Sheets, 1265-1269.
- Kaiser J., Galiová M., Novotný K. (2003). A post-implementation evaluation of a student information system in the UK higher education sector, *Electronic Journal of Information Systems Evaluation*, 97(2), 136-145.
- Kazi L., Kazi Z., Radulovic B. (2012).Data warehouse based evaluation of students' achievements in information systems education, *Mipro, 2012 Proceedings of the, International Convention*. 1377 – 1382.
- Noraziah A., Fauzi A.A.C., Deris M.M. (2011).Managing Educational Resource - Student Information Systems Using BVAGQ Fragmented Database Replication Model, *Procedia - Social and Behavioral Sciences*, 28(1), 127-132.
- Olsen D.H., Bryant P.D. (2012).Business Intelligence And Information Systems: Enhancing Student Knowledge In Database Courses, *Review of Business Information Systems*, 16(1).
- Orehovacki T., Buhas G., Konecki M. (2009). Web 2.0 in Education and Potential Factors of Web 2.0 Use by Students of Information Systems, *International Conference on Information Technology Interfaces*. 443-448.
- Seeman E.D., O'Hara M. (2005). Customer relationship management in higher education: Using information systems to improve the student-school relationship, *Campus-Wide Information Systems*, 23(1), 24-34.
- Recker J., Alter S. (2012).Using the Work System Method with Freshman Information System Students, *Journal of Information Technology Education Innovations in Practice*, 11, 1-24.
- Wallace P. (2006).Using Collaboration to Provide Students with an Internship Experience in an Information Systems Course, *Journal of Information Systems Education*, 18(2), 145-148.
- Zhou H. (2012).Design of Student Information Management Database Application System for Office and Departmental Target Responsibility System, *Physics Procedia*, 25, 1660-1665.