

College Student Management System Design Using Computer Aided System

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Abstract—In this paper, we propose a design for college student management system utilizing computer aided system, which can play an important role in college management. Firstly, we organize our proposed college student management system via a hierarchical structure, which contains (1) Web display layer, (2) Business logic layer, (3) Data access layer, and (4) Database layer. Secondly, ER diagram of the college student management system is described, and several elements are included in it, such as teacher information, department information, major information, class information, student information, course information, manager, employment information, comprehensive score and course type. Thirdly, functional module design for college student management system is provided, in which three types of users are designed in this system, that is, students, teachers and managers.

Keywords- College Student Management System; Computer Aided System; Business Logic Layer; Data Access Layer

I. INTRODUCTION

With the rapid development of national economic construction, China's higher education system has changed fastly[1]. In recent years, institutions of higher education increasingly expand the enrollment, and it is more difficult to manage students in college. In the 21st century, information technology is an important and irreplaceable work currently in the construction of modern universities[2][3]. Exploiting Digital and informatics in universities has been attracted more and more attentions. In general, with the increasing number of students in college, student management systems design is also important[4].

Considering current situation in college student management process, student management system is of great importance to satisfy the new requirement of the development of student management[5]. Hence, it is very urgent to develop a practical and effective student management system using technological innovation. The destination of our research is to effectively solve the prominent contradiction and problems between the heavy workload and the scarcity of human resources in current student management[6][7].

Most universities in China have independently developed information management system for themselves. However, considering there are many differences in various universities, it is very complex to utilize student information management system[8][9]. Hence, in this paper, we aim to design and develop a student management system for colleges utilizing computer aided system.

II. SYSTEM ARCHITECTURE

As is shown in Fig. 1, our proposed college student management system is organized by a hierarchical structure, including 1) Web display layer, 2) Business logic layer, 3) Data access layer, and 4) Database layer

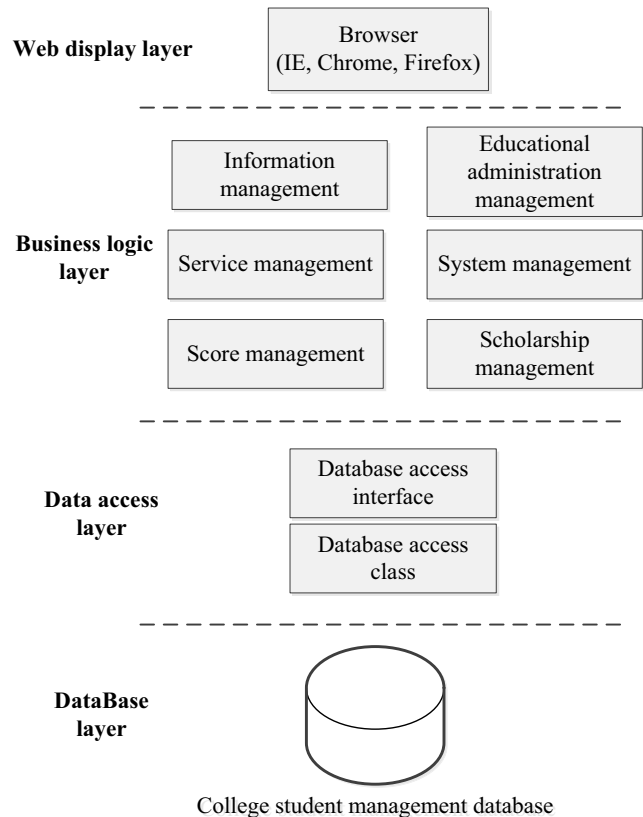


Figure 1. Structure of the college student management system

In computer software development, business logic layer (BLL) refer to the part of the program which is able to encode the real-world business rules. Hence, developer can know how to create and display data[10][11]. In the business logic layer, the software can be correlated with lower-level details of managing a database or displaying the user interface, system infrastructure[12]. On the other hand,

data access layer (DAL) refers to a computer program which supports simplified access to data memorized in persistent storage of some type, e.g. an entity-relational database[13][14].

III. DESCRIPTION OF THE ER DIAGRAM DESIGN

As is well known that entity relationship model (ER model) refers to a data model to represent the data or information aspects of a business domain or its process requirements. Particularly, ER diagram is exploited to show how to design a relational database. Furthermore, main parts of ER models are defined as entities and the relationships between different entities. In this section, we will discuss how to design ER diagram for the college student management system. Firstly, the overall ER diagram of the college student management system is illustrated in Fig. 2.

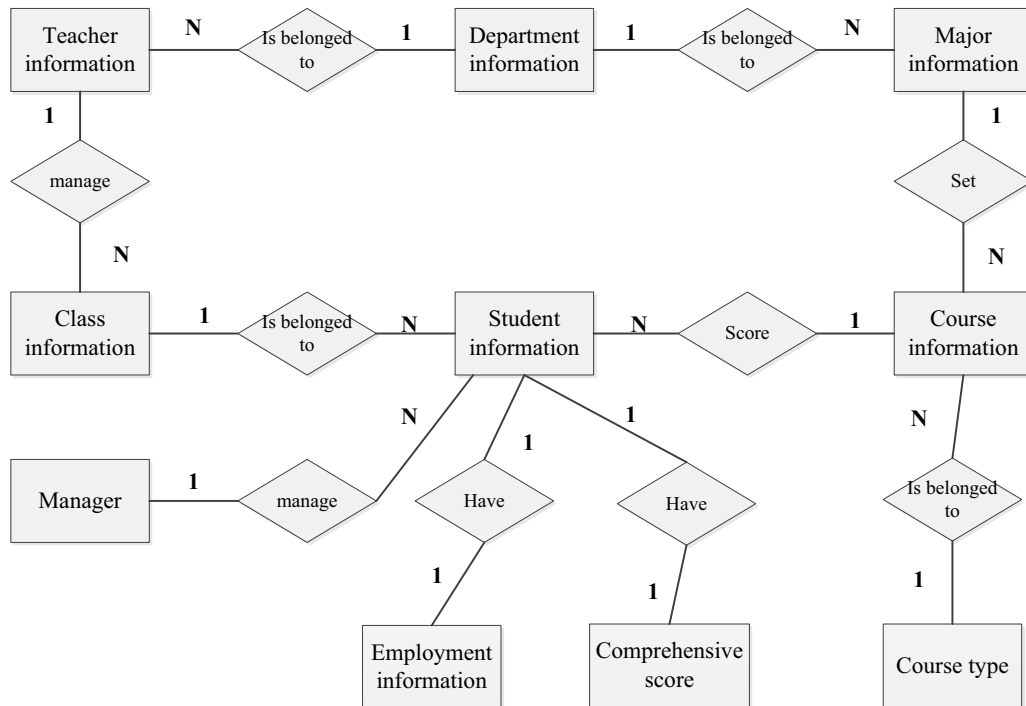


Figure 2. ER diagram of the college student management system

As is shown in Fig. 2, the proposed college student management system contains several basic elements, such as Teacher information, Department information, Major information, Class information, Student information, Course information, Manager, Employment information, Comprehensive score and course type.

IV. DESIGN OF FUNCTION MODULE

In order to make the student management system easy to use, requirement analysis should be done at first. First of all, we should determine the role of various users. In the

proposed, we divide users into three categories, that is, system administrators, teachers and students. User roles design is listed as follows.

(1) Student: student is the lowest authority in this system, and we aim to let this system provide high quality service for students through timely understanding what students need.

(2) Teachers: teachers perform as a bridge between school and students, and teachers directly contact with students.

(3) System administrator: As the highest authority role in the college the student management system, this kind of user is designed to assign and manage students management.

Afterwards, function module design for college student management system is illustrated in Fig. 3.

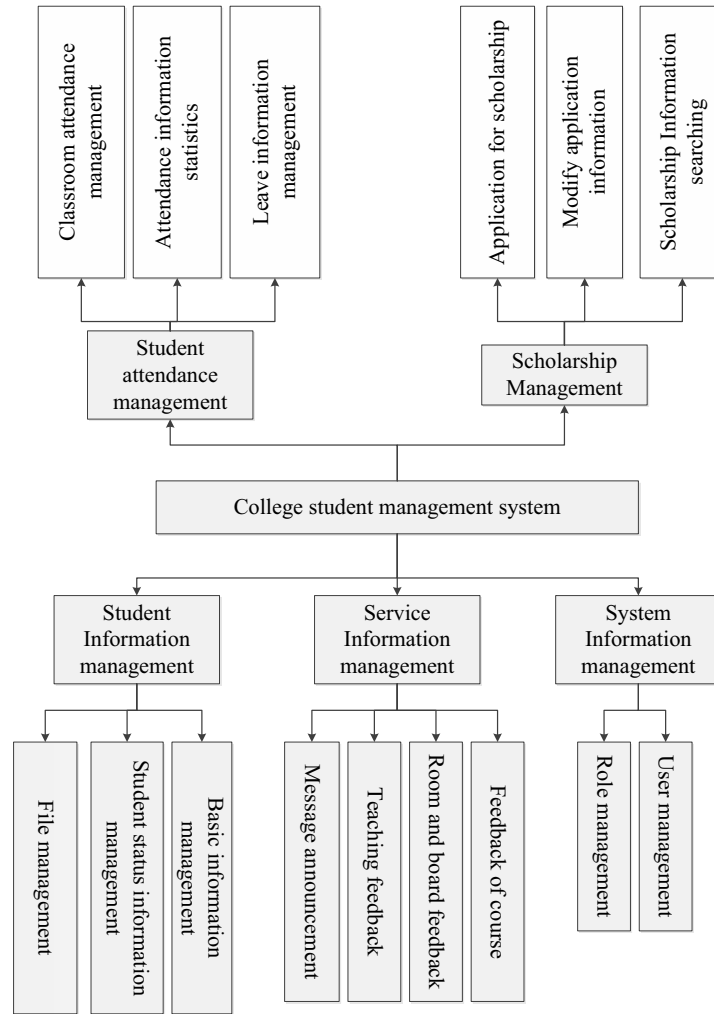


Figure 3. Function module design for college student management system

V. CONCLUSION

This paper proposes a design for college student management system based on computer aided system. The proposed college student management system is organized in a hierarchical way, including: Web display layer, Business logic layer, Data access layer, and Database layer. ER diagram of the college student management system is described as well. In the end, functional module design for college student management system is discussed.

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