# Design and Implementation of Computer Room Management System in University

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**Abstract.** With the development of science and technology, the network has become an indispensable part of college life. At present, most colleges and universities have established their own computer room management system for teachers and students to use the class. How to give full play to the efficiency of campus computer room, room open, maximum room management services, both to improve the level of scientific management of computer room, but also to reduce the room administrator work, causes the engine room management more standardized and orderly. To this end, the establishment of an experimental center of the dynamic website is imperative. This paper systematically analyzed the characteristics of management information system for computer room, first of all from the demand of the function module of the system is established, then use the JSP dynamic web page technology, realizes the laboratory management information system based on B / S mode of web. This system directly serves the experimental management of the computer room, and realizes the static management and dynamic management of the laboratory information.

**Keywords:** Computer room; management information system; dynamic web page technology; system design.

## 1 Introduction

With the development of science and technology, the network has become an indispensable part of our life. At present, most colleges and universities have established their own computer room management system for teachers and students to use the class. How to give full play to the efficiency of campus computer room, room open, maximum room management services, both to improve the level of scientific management of computer room, but also to reduce the room administrator work, causes the engine room management more standardized and orderly. Using a computer can quickly and quickly complete the above work. To this end, the establishment of an experimental center of the dynamic web site is imperative, the goal is to improve the quality of college teaching, strengthen the experimental link, improve the level of experiment, while the establishment of a window of information exchange with the outside world [1].

The management level of College Teaching Laboratory (Lab) has a direct impact on the quality of training talents in Colleges and universities. The comprehensive analysis and

management of the laboratory information is not only the need of laboratory management itself, but also the need of improving the quality of teaching and the level of running a school, and the need of extensive management to the fine management. First, for each stage of experimental teaching in the process of analysis, focusing on analysis of the key process, including teachers of the online booking system problems, student teacher interaction problems, results show the problem. And then the design of the specific solutions, using popular MySQL as the background database. The system fully supports the wide area network, which greatly reduces the manual labor in the process of the experiment reservation management. The computer room management system in the text are the main function modules include: announcement, browse the information, laboratory booking, query results, the experimental, booking the audit, correcting test reports, experimental information release, message, backstage management announcement, backstage student information management, teacher information management background, experimental information management background, message information management background, background experimental report management, backstage management audit appointment etc.. "Based on Internet laboratory information management system is the computer technology, network technology and database technology organic combination, make full use of network technology, database technology and management technology combined the advantages of, using the web to provide flexible, friendly windows interface, so that all levels of management personnel to transfer information through the computer network, communication, reduce personnel exchanges and recorded manually is tedious, to realize the transfer of information on the Internet, improve the work efficiency and management level.

## 2    Software Module Structure Design

Structural design is the structured analysis of data flow graph is mapped into a design method of software architecture, SD emphasis on criteria for the design of modular, top-down stepwise refinement, information hiding and high cohesion and low coupling. In the structured method, the software design is divided into two steps: the outline design and the detailed design. Summary of the design is the overall design of the software system, using a structured design method, the task is: the decomposition of a system into modules and identify each module function, interface (passed between modules of data) and the call, and module and the module's call to build the system structure of the software. Detailed design is the design of the implementation details of the module, using structured programming methods. According to the requirement analysis of the system function and the characteristics of the management of the college computer room, the system function module structure diagram of the system is obtained as shown in Figure 1. A description of database will reflect the real world entities, attributes and their relations form the original data, including each item of data, records, and file identifier, definition, classification, measurement unit and range, to establish the database of each piece of user view. Conceptual structure design is the key of the whole database design, which is based on the integration [2], induction and abstraction of the user's needs, and forms the concept model independent of the specific DBMS. The system architecture consists of three layers.

**Fig. 1.** System function structure diagram

## 2.1 Database Design

For student information management, we can divide the student entities abstracted and students belong to professional and class information can be used as an entity, teachers' information, information manager, experimental information, information notification as an entity, reservation information. Experimental report information as an entity.

(1) A class only belong to a professional, a professional can have more than one class, so the class of professional is more than 1 of the relationship.

(2) A student only belongs to a class, a class by a number of students, so the students of the class is more than 1 of the relationship.

(3) A student only belongs to a professional, a professional by a number of students, so the students of the professional is more than 1 of the relationship.

(4) A student can make an appointment for a number of experiments, an experiment can be more than a student to make an appointment, so the student is more than the relationship between the experiment.

(5) A student can view a number of notification information, a notice of information can be more than one student view, so the student to inform the information is more than the relationship.

(6) A student can submit multiple reports, an experimental report can only be submitted by a student, so the student's report on the experiment is more than 1 pairs of relationships [3].

The E-R diagram conversion into relation model is actually to contact between the body shape, physical attribute and entity type conversion relation mode. This transformation generally follow the following principles: a solid type conversion is a relational schema. The attribute of the entity is the attribute of the relation, and the code of the entity is the code of the relation. The relationship between the entities is different: a 1:1 connection can be converted into an independent relationship model, which can be combined with the corresponding relationship model at any one end. If the transformation is an independent relation mode, the code of the entity which is connected with the connection and the attribute of the connection itself are all converted to the attribute of the relation, and the code of each entity is the candidate code of the relation. If the relationship mode is merged with one end of the entity, it is needed to add another relational schema to the attributes of the relational schema.
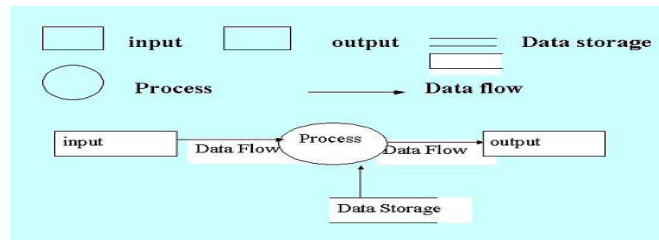
**Fig. 2.** Schematic diagram of system database

## 2.2    System Physical Design

The physical design of database is the process of selecting a suitable application requirement for a given logical data model. The implementation of the physical structure design phase is the internal model of the database system, which directly determines the performance of the whole system. Before determining the storage structure and access method of the database, the transaction supported by the database system should be carefully analyzed to obtain the parameters for optimizing the physical design of the database. The physical design of database is usually divided into two steps:

1) to determine the physical structure of the database, in the relational database, the main means of access method and access structure

2) to evaluate the physical structure, the focus is on the time and space efficiency

To improve the security of software system, we should start from the two aspects of "management" and "design". The security design of the database is considered here. Users can only use the account login to the application software, through the application software to access the database, and no other way to operate the database. Determine the operating rights of each role to the database table, such as query, add, modify, delete, etc.. Each role has just the right to complete the task, not too many. At the time of application to assign roles to the user, each user's rights is equal to the sum of the rights of the user and the role of the user. Analyze and optimize the "time and space" efficiency of the database, as far as possible, improve the processing speed and reduce the space occupied by the data ". Analyze the bottleneck of "time - space" efficiency, find out the optimization object (object), and determine the priority. When there is a confrontation between the optimization object (object), a compromise solution is given. Given the specific measures, such as optimizing the database environment parameters, the form of counter standardized processing, etc [4].

## 3    System Compilation and Testing

This system is the Web mode of the computer room management system, application software Dreamweaver Macromedia to design the JSP interface. The combination of JSP and JavaBean is applied to the development, and the method of combining JSP with Servlet is very much like. JavaBean is a reusable software component, in fact, is a kind of Java class. It becomes possible to deal with some kind of function or the object of a business, or Bean. JSP+JavaBean development model, to achieve the performance of the page and the page of the logic of separation, that all the data through the JavaBean to deal with, JSP most of the only realization of the page performance. In between pages value is need to request object to get,

when after query submitted through the form, you need to submit to the page using request object to get the query conditions to call database connection to through the acquisition of the query. As long as the program written by Java, if you want to achieve with the database to connect to the use of jdbc. Here the JDBC connection database to query the code is written in a single DBConnectionLabMS.java class java. In JavaBean only set and get method, here is the use of the set method, the data stored in JavaBean, in the page to get the data to use the get method. Query to the data using JavaBean data package. Create a JavaBean to conform to the following points: must have a parameter free public constructor, when class has no constructor, the default is no public participation; to want to use the attributes are defined as private variables; the definition of the private variables must have it corresponds to the get and set methods. Traversal of the results in JSP information display. To get the results of a query in a JSP page, write the corresponding java code to invoke a method information query, and then save every record in the JavaBean, through and get out and on the page display, in the JSP page using a custom Java classes need these classes where the import package, import package can use the two Java classes [5].

| sno | char | 10 | 0 | ☐ | 🔑1 |
|-----|------|-----|---|----|----|
| sname | varchar | 10 | 0 | ☑ | |
| ssex | char | 8 | 0 | ☑ | |
| birthday | date | 0 | 0 | ☑ | |
| symbol | varchar | 8 | 0 | ☑ | |
| Id | varchar | 20 | 0 | ☑ | |
| Intime | date | 0 | 0 | ☑ | |
| birthplace | varchar | 10 | 0 | ☑ | |
| homeaddr | varchar | 30 | 0 | ☑ | |
| postcode | varchar | 10 | 0 | ☑ | |
| classno | varchar | 10 | 0 | ☑ | |
| spassword | varchar | 20 | 0 | ☑ | |

**Fig. 3.** System student information table

## 4    Conclusion

In the process of developing the system encountered some difficulties, such as the design of the login screen, how to be in a login screen, login to enter different systems. Administrators, teachers, students how to distinguish the login. After viewing the data, only to find it is not difficult, as long as the processing of sign to add an attribute judgment, according to the attribute to judge the use of any SQL statement to query the database, then according to the user name and password to access the database and returns the login is successful. In to retrieve information from a database using SQL statements, the emergence of different querying methods have different SQL query, which leads to programming simple enough, query process is relatively complex, query time is relatively long. Therefore, the modified query, add the view to the query. This not only makes the code more concise, but also easy to modify, view. In dealing with experimental report, due to the experimental information referenced by the students and the teachers system vary, resulting in programming code is simple, high repeatability, but can well realize the functions required for students and teachers in all.

# References

[1] Song Guanghui. Design and implementation of network monitoring system. computer and modernization. No. 11. (2014)

[2] Zhong Shaodan, Xie Zhenggui. The network of computer laboratory management to explore the. modern computer. No. 10. (2014)

[3] Chen Yunhong, Wu Ruihong, Gan Xing Xun. The management of computer room in Colleges and universities of. (Academic Edition) Chinese waterway. No. 08. (2011)

[4] ma. The management of multimedia teaching room in Colleges and universities. Journal of Gansu teachers college. No. 02. (2013)

[5] Zhang Chao, Dou Wenhua, Yang Guoqiang. Application of network video monitoring system in the network performance measurement. computing technology and automation. No. 01. (2011)