

# Design of Student Centered Computer Laboratory Open Reservation System

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## Abstract

**In view of the frequent use of computer laboratory caused by the implementation of paperless examination in Colleges and universities, the current computer laboratory appointment procedures are cumbersome and the manual management registration method is prone to errors and appointment conflicts. Based on the actual use of Guangxi University of traditional Chinese medicine, this paper designs a computer laboratory appointment management system suitable for colleges and universities, It is not only convenient for teachers to quickly determine the time and place of paperless examination, but also improve the efficiency of computer laboratory management and resource utilization.**

## Keywords

**Computer Laboratory; Reservation System; Database; System Management.**

## 1. Significance and Status Analysis of Project Research

In recent years, with the development of information technology, under the promotion of national policies, coupled with the advantages of paperless examination itself, the implementation of paperless examination has become one of the important tasks for colleges and universities to promote information construction. The paperless examination is conducted in the computer laboratory, which can only be used by appointment between the teacher and the administrator of the computer laboratory, That is, teachers fill in the application form, and then submit it to the computer laboratory administrator to check whether the laboratory is free after the examination and approval of the secondary college. If not, they need to communicate again to determine the new time or computer laboratory. After confirmation, the administrator must register, otherwise it may cause appointment conflict. The efficiency of this management method is too low, the process is too complex and easy to make mistakes. Therefore, the design of a computer laboratory reservation management system which can adapt to the actual application of our school can not only facilitate teachers to quickly determine the time and place of paperless examination, but also improve the efficiency of computer laboratory management. The computer laboratory not only has the function of teaching and scientific research, but also has the ability of opening to the outside world and serving the outside world. It is an interdisciplinary and interdisciplinary comprehensive experimental base, an important base for cultivating students' innovative spirit and practical ability, and a main place for teachers' teaching and scientific research activities.

At present, the number of computer labs in some colleges is often unable to meet the needs of the current number of experimenters. Most of them need to make an appointment in the management room of the experimental building before doing the experiment, while the number of computer laboratories in some colleges is surplus, which leads to the low efficiency of computer laboratory appointment and the waste of computer laboratory resources in some colleges; In addition, The demand of computer laboratory inside and outside the college may be

different at the same time, which leads to the unreasonable resource allocation of computer laboratory inside and outside the college.

Therefore, how to use the existing computer laboratory reasonably is an urgent problem to be solved.

## **2. The Purpose of the Project Research.**

The purpose of this project is to reasonably use the existing computer laboratory and improve the efficiency of computer laboratory appointment.

## **3. Basic Contents of the Project**

The above technical objectives of the project are realized through the following technical solutions: the open computer laboratory reservation system based on big data, including multiple user terminals, cloud servers, data centers and at least one computer laboratory management system;The user terminal, cloud server, data center and computer laboratory management system are connected through 4G / 3G / 2G network.

The user terminal includes a user information management unit, an appointment application unit and a progress query unit;The user information management unit is used to set and audit the personal information of system users;The reservation application unit is used for setting the reservation computer laboratory information of the system user, and transmitting the reservation computer laboratory information to the cloud server;Progress query unit,It is used to query the appointment progress information of the corresponding appointment.

The cloud server is used to make statistics on all the reserved computer laboratory information, and transmit the reserved computer laboratory information after statistics to the data center.

The data center includes data storage unit and reservation allocation unit;The data storage unit stores all the computer laboratory information reserved in the computer laboratory management system;The reservation allocation unit is used to match the computer laboratory management system according to the computer laboratory information and the reservation computer laboratory information,And the information of reservation computer laboratory is transmitted to the corresponding computer laboratory management system.

The computer laboratory management system includes computer laboratory matching unit, progress management unit, monitoring unit and equipment sorting and confirmation unit;The computer laboratory matching unit is used to match the corresponding reserved computer laboratory according to the reserved computer laboratory information;The monitoring unit is used to monitor the appointment progress information of the computer laboratory,And transfer the reservation progress information to the schedule management unit;The progress management unit is used to count the appointment progress information of the computer laboratory and transmit the reservation progress information to the progress query unit.

By adopting the above technical scheme and using the reservation allocation unit, the number of existing computer laboratories can be reasonably allocated;By using the matching unit of computer laboratory, the corresponding computer laboratory can be quickly matched and the efficiency of computer laboratory reservation can be improved.

The computer laboratory management system also includes the equipment arrangement and confirmation unit connected with the progress management unit and the monitoring unit;The equipment arrangement confirmation unit controls the monitoring unit to monitor the equipment arrangement information of the reserved computer laboratory after receiving the equipment confirmation information from the user of the computer laboratory,The equipment sorting information is compared with the equipment sorting standard information preset by

the equipment sorting confirmation unit, and the comparison results are transmitted to the progress management unit.

It is convenient to improve the efficiency of computer laboratory equipment sorting and testing by using monitoring unit and equipment sorting and confirmation unit.

The computer laboratory management system also includes a route recommendation unit connected with the user information management unit and a travel notification unit connected with the progress query unit;The route recommendation unit is connected with the travel notification unit;Route recommendation unit is used to match route recommendation information according to personal information and transmit route recommendation information to travel notification unit;Travel notification unit,It is used to send travel notice information to progress query unit according to route recommendation information and reservation progress information.

The route recommendation unit and travel notification unit are used to reduce the travel preparation time of system users.

#### **4. Project Implementation Plan and Implementation Plan**

The above technical objectives of the project are realized through the following technical solutions:

It includes the following steps:

- 1).Set and audit the personal information of system users;
- 2).After the personal information is approved, the system user's reservation computer laboratory information is set, and the reservation computer laboratory information is transmitted to the cloud server;
- 3).Make statistics of all reserved computer laboratory information, and transfer the information to data center after statistics;
- 4).According to the information of computer laboratory and reservation computer laboratory, the computer laboratory management system is matched, and the reservation computer laboratory information is transmitted to the corresponding computer laboratory management system;
- 5).According to the information of reservation computer laboratory, the corresponding reservation computer laboratory is matched;
- 6).Monitor the appointment progress information of the computer laboratory, and transfer the information to the progress management unit;
- 7).The reservation progress information of the computer laboratory is counted and transmitted to the progress inquiry unit;
- 8).Query the appointment progress information of the corresponding appointment.

By adopting the above technical scheme, it is convenient to allocate the number of existing computer laboratories reasonably, quickly match the corresponding computer laboratories, and improve the efficiency of computer laboratory reservation.

Detailed design of using state information generating function in Computer Laboratory.

The status information data of computer laboratory comes from two kinds: one is the information data of the planned course of school teaching task, the other is the reservation data in the reservation information table of computer laboratory.The school's teaching task and curriculum plan information can be exported from the teaching management system before the beginning of each semester,It is imported into the reservation system through a fixed format.When the laboratory reservation system generates the weekly computer laboratory use status information table, it needs to scan the data table of the timetable stored in the database,

and compare the current date with the weekly, weekly and class hours of each class in the schedule data table, Then add the corresponding classroom information to the weekly computer laboratory use status information table. The reservation information data refers to the appointment application submitted by the teacher after viewing the status information table of the computer laboratory online. After the administrator's approval, the reservation information of the computer laboratory is added to the laboratory reservation information table, The administrator updates the computer laboratory use status information table. The computer use status information table must clear the information every week or within the time according to the actual demand and generate the course information of the new appointment week.

## 5. Key Problems and Innovations to be Solved

Using the reservation allocation unit, it is convenient to reasonably allocate the number of existing computer laboratories;

Using the computer lab matching unit, it is convenient to quickly match the corresponding computer labs and improve the efficiency of computer lab reservation.

Using the monitoring unit and the equipment arrangement confirmation unit is convenient to improve the efficiency of equipment arrangement and inspection in computer laboratory.

The route recommendation unit and travel notification unit are used to reduce the travel preparation time of system users.

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