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Research on Server In System Based on Mobile Client

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Abstract

Mobile application is commonly used on modern mobile devices and is generally required interaction with the server. This paper studies the design and implementation of a server system based on mobile client, and proposes a data exchange method between server and mobile terminal. Focus on basic information management and data transmission methods on server, how to achieve real-time response to client requests.

Keywords: Server; Mobile; Application;

1. Introduction

The widespread use of mobile devices has made mobile applications running on them more and more widely available. Most mobile application needs to communicate with the server on the PC to complete data exchange such as login, registration, and query. Takes the vocational student class test score management system as an example, This article discuss how to design and implement a server-side application based on a mobile client , and how to complete server-side management and interaction with mobile clients.

Higher vocational students' class score management system is a software system designed to stimulate students' interest in learning and improve teaching efficiency. It come from actual teaching needs. Higher vocational education advocates practicing while teaching. Within a 90 minutes lesson, if teachers simply explain,

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most students are tempted to escape. If there are parts they do not understand before, they may give up the follow-up content. However, if teachers talk a little and let students exercise, students will be easier to understand what they have learned. They also be easier to follow up with the next content, and are therefore willing to continue to concentrate on the following studies. Recording exercise score and give additional scores according to the rankings. It will inspire students to complete class exercises faster and better, and improve interest in learning. It will also improve teaching efficiency. The system aims to record and inquire the results of class exercises on mobile devices. It helps teachers quickly record students' class performance and records each student's ranking. Students can view their scores and rankings at any time through their own mobile phones.

This study uses this system as an example to study the design and implementation of a server in a software system based on a mobile client. The mobile client uses the iOS or Android system as an example. The server runs on the Windows platform using Java, Tomcat, Html, and SQL Server technology.

2. Server Design

The main functions of the server are shown in Figure 1 below. It includes the following three modules: the first one is administrator login, this module includes teacher management, class management, student management, course management, administrator management and announcement information; the second module is teacher login ; the third module is monitor and process request information sent by the client.
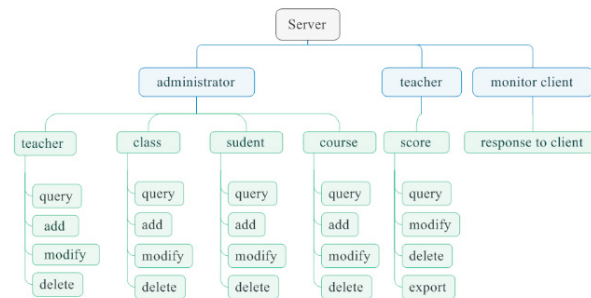

Figure.1. Server Architecture

2.1. Database design

The server database design includes six tables: administrator, teacher, class, student, course, ranking and score. The ranking table stores the student's ranking of all exercises in the course. If a course has 60 class hours, and there are two exercises at one class hour, the ranking table records 120 times ranking for each student. The score table calculates the total score of each student according to the ranking table. If a course include 15 lessons, each student has about 15 lesson scores. Other tables record some basic information such as id, name, icon, etc. Here will not go into details.

2.2. Administrator login

After entering the system login page, select the administrator login, enter the correct user name and password, and you can enter the administrator's homepage. As shown in Figure 2 below.

Figure.2. Administrator Login

Administrators can manage teachers, students, classes, courses, administrators, and announcements after they log in. it mainly include the addition, modification, query, and deletion of related information. In Figure 2, click the 'Details' button, you can view and modify the teacher details, click the 'Add Teacher' button, you can add teacher information, click the 'Delete' button, you can delete the teacher information. The management of other information is similar to this, it will not repeat here.

2.3. Teacher login

After the teacher logs in, he can query the overall score information of the students, including the results of each class exercise. As shown in Table 1 below:

Table 1.class exercise score.

id	stuId	stuName	common function		simple select		Complex select		Sum	Total
			score	ranking	score	ranking	score	ranking		
1	202203101	yibo	5	1	5	3	5	10	64	85
2	202203102	xuefeng	5	18	5	16	5	12	32	43
3	202203103	yakun	5	6	5	7	5	3	62	83
…										

Table 1 shows the scores of three students in three classes' exercises in one lesson, including scores and rankings. The system will summarize the students' rankings, and add or subtract points for each student to calculate the student's scores in the lesson, finally calculated into the total score of the course. In the above table, add 20 points according to the first place, 19 points for the second place, and so on; the first student's score is 5+5+5+(21-1)+(21-3) +(21-10)=64, other students' score calculate in the same way. Because the highest score is 25 points, converted to a percentage system, the first student's average score for this lesson is 64/75*100=85 points. The page design can refer to the administrator login interface, the left list is the lesson practice list, the first level directory is the title of each lesson, the second level directory is the exercise title for each lesson section, and the right side shows the student's current exercise scores and rankings. .

2.4. Monitor client

The server listens to the client's request in real time and responds to the request. Use the 'getParameter' method of the 'request' object to get the login data sent by the client, and then access the database for verification. If the verification is successful, send the responding result information to the client according to the identity of the requester. If the requester is a student, send all the ranking information of the student to the client; if the requester is a teacher, send all students' scores of the class to the client. The server uses JSON technology to send all the score or ranking information to the client.

Here is the core code:

```
JSONObject jStu=new JSONObject();
jStu.put("name",stu_name);
    ......
```

'jStu' represents a student score or ranking object, which stores the individual student score or ranking details through the put method, then adds it to a JsonArray object, and uses the JsonArray object to store all student score or ranking information. Finally, it is sent to the client through the 'write' method of the 'PrintWriter' class. The students can get all their ranking information ,teachers can get all students' score information.

3. Conclusions

This study takes the high vocational students' class exercise score management system as a research case, discusses the design and implementation of the server-side application based on mobile client, including the overall function of the server and page design and implementation, and the data interaction with the mobile client. The system can greatly improve students' interest in learning, promote the efficiency of higher vocational teaching, and ensure better teaching results. This study can also be widely applied to other web server design. In the follow-up study, modularization and templating of the project can be the research objectives to promote the research results more widely.

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