Journal of Advanced Computing and Intelligent Systems (JACIS)
https://journal.chainknowpub.com/index.php/JACIS/index
ISSN Online: –
ISSN Print: –

Design of Discrete Mathematic s Network Teaching Platform Based on wechat public platform

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Absrtact: by investigating the knowledge architecture of discrete mathematics, combined with the actual situation of the course, the network teaching platform of discrete mathematics based on wechat public platform is developed and designed. The platform has passed the test of function test and realized the function of teaching assistance, which has a certain reference value for the current exploration of intelligent education.

Keywords: wechat public platform; Interactive teaching platform; SSH framework; MySQL

1. Introduction

At present, most schools use the existing network teaching resources to basically meet the teaching of professional knowledge, and can also solve the problem of lack of interaction between teachers and students. However, there is still no way to realize that teachers teach online while students give feedback on problems, and the interaction is still not strong enough. The teaching mode of smart classroom teaching platform can enhance students´ interest in learning and enhance their enthusiasm to participate in course teaching through timely interactive technology. Wechat as a popular app, its built–in wechat public platform has important teaching assistant function, as well as a complete mobile learning platform, which can meet the needs of interactive teaching. Teachers can use wechat public platform to send knowledge points related to course content, and students can use extracurricular time to learn relevant knowledge; Teachers can use wechat videos to guide students, answer questions, and test online. Teachers can also use their spare time to answer students´ life, feelings, life and other more private growth questions.

2. key theories

2.1 wechat public platform

Wechat public platform is a derivative service of wechat app, which involves the most important tools in Tencent´s wechat ecosystem, such as enterprise number and small program. WeChat official account developer mode provides multiple ports for programmers. Any application system can interact with WeChat clients through third party interfaces to achieve the extension of the system.

2.2 ssh framework

SSH is an integrated framework of struts + Spring + hibernate, which is an open source framework for web applications. SSH framework system includes four layers: presentation layer, business logic layer, data persistence layer and domain module layer, which can help developers build reusable and easy to maintain web applications very quickly. Struts is the basis of the framework, which is responsible for the separation of MVC and the control of business jump; Hibernate is the supporting part of the framework and supports persistence layer; Spring is the management part of the framework, which manages struts and hibernate.

2.3 mysql database technology

MySQL is a relational database management system, which stores data in different tables. The SQL language used by MySQL is the most commonly used standardized language for accessing databases. MySQL has the characteristics of small size, high speed, low cost and open.

3. system design

According to the actual teaching content and examination link of discrete mathematics, the system adopts automatic test paper generation through the decision table. The teacher can make statistical analysis on the students´ test scores, failed courses and error prone points. The system also provides a teacher-student communication module to realize the function of one-to-one question answering and group notification; Through mobile location attendance and two-dimensional code attendance two ways to achieve the role of supervision.

3.1. system architecture design

The system applies SSH framework. The system adopts MVC design pattern and is based on B / S architecture. It is mainly divided into presentation layer, business logic layer, data access layer and database. The system presentation layer uses the specific functional modules designed by the previous needs analysis. The user roles of the functional modules are teachers, students, reviewers and universities. The business logic layer uses Struts2 to process the data of related business classes and display the data in the form of JSP pages. Hibernate´s task is to operate and use the database, while spring is responsible for managing the above two frameworks. The data access layer uses c3p0 data source to realize connection pool, and the database design uses MySQL database. Alibaba cloud server is selected as the server to interact with users on wechat public platform through callback system application server.

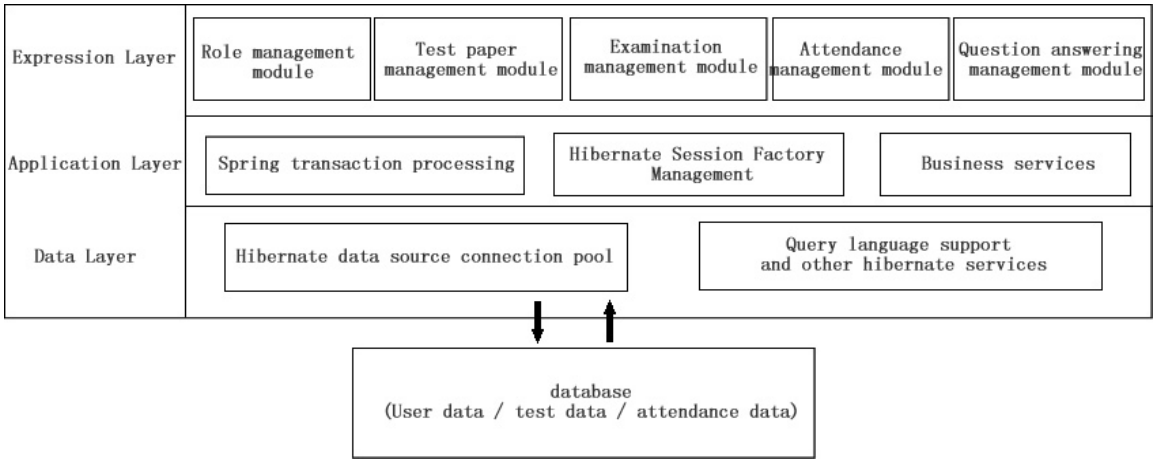

Figure 1 system architecture

3.2 system database design

The reasonable standardization of the database, its level will affect the success of the whole system to some extent. Therefore, for the development of a complete background system, the design of the database needs to be in accordance with the object and relationship described in the early E-R diagram, so as to convert to the specific definition of the data structure, and finally realize the accurate data of the database. The specific content of the interactive classroom teaching platform is designed as follows:

Table 1 User administrator information table

dataname	datatype	length	constraint
id	int	10	
shenhe_id	int	10	primary key
username	char	40	
password	char	20	

Table 2 Teacher information table

dataname	datatype	length	constraint
id	int	10	
teacher_id	int	10	primary key
username	char	40	
password	char	20	
phonenumber	char	20	
name	char	20	

Table 3 Student information table

dataname	datatype	length	constraint
id	int	10	
student_id	int	10	primary key
username	char	40	
password	char	20	
phonenumber	char	20	
name	char	20	

Table 4 Chat information record table

dataname	datatype	length	constraint
record_id	int	10	primary key
chat_id	int	10	foreign key
time	char	datatime	

Table 5 Chat information table

dataname	datatype	length	constraint
chat_id	int	10	primary key
teacher_id	int	10	foreign key
student_id	int	10	foreign key
content	varchar	255	
sender	char	60	
record	int	60	
time	datetime		

Table 6 Knowledge information table

dataname	datatype	length	constraint
topic_id	int	10	primary key
topicname	varchar	60	
topiccontent	varchar	255	

Table 7 Topic management information table

dataname	datatype	length	constraint
knowledge_id	int	10	primary key
topic	varchar	255	
A	char	40	
B	char	40	
C	char	40	
D	char	40	
answer	varchar	255	
difficult	char	40	
type	char	40	
score	float	20	

3.3 function module design

3.3.1 WeChat official account menu page

Application configuration discrete mathematics intelligence classroom teaching platform specific functions, login www.mp.weixin.com The official account number is registered with the official account number of WeChat account, and the subsequent certification is completed. After verification, WeChat will provide developers with AppID accounts and AppSecret of public platform. According to the above two identities, the official account can be obtained by interface invocation. The ports on the platform depend on access token. The user should click on the menu key at the bottom of the dialogue window of the official account to enter the interface of the interactive classroom platform. The related menu is designed according to the coordination of the supplier and the demander, and then the related design work is completed in the background.

3.3.2 teacher side

(1) Q & A

The function of Q & A includes the display of students´ chat record table, which includes chat time, chat content and message reply box. In addition, it also includes message group sending function, which includes two functions, one is to send group messages, the other is to view and manage the history of group sending.

(2) Management of question bank and test paper

To manage the question bank, you can input the important knowledge test points and questions of each unit into the database as the question bank. Test paper management function, according to the number of questions selected by the teacher automatically generate test paper, the algorithm used here is random selection method, at the same time, in order to avoid its shortcomings, in the development of automatic test paper, reasonable combination of knowledge and difficulty.

(3) Attendance check in

By obtaining the real-time location of the teacher end, the data is sent to the background server, and the student end will display the specific attendance information. Click the attendance button of the course to complete the attendance. After the operation, the teacher goes to the attendance page to check the attendance of the students.

(4) Error prone statistics

After the students pass the examination, the corresponding student scores will be fed back to the teacher channel. This function includes

two functions, one is the score view function. The page can see the name of the test paper, the test students and the test scores.

(5) Upload and download courseware

Teachers and students use the upload function to upload all kinds of courseware and homework. In the process of uploading, the user will be informed to upload the required content. The user can choose to confirm according to the needs. After completing the operation, you can see the courseware just uploaded. On this page, the user can download and delete it. When the file upload page submits a request, the request is sent to the upload function key. This is a Struts2 action, which processes the upload request. In addition to the name attribute of two form fields, the action also contains headimagecontenttype and headimagefilenam.

3.3.3 student terminal

(1) Take the exam

After the teacher has set up the content of the test paper, the corresponding test paper will be displayed in the student channel interface, and the limited time test will be conducted. After the time, the test paper will be handed in automatically, and the student´s test results will be sent to the teacher interface.

(2) Self examination

In the spare time, students can choose the number of questions according to their own learning level, so as to form a test paper for online testing. After answering the questions, the answer content will be displayed.

(3) Q & A

In the spare time, students have doubts in learning. They can send the questions that need help through the communication and question answering interface. After the teacher receives the information, he will give feedback in time.

(4) Attendance check in

When the course starts, the teacher sets the attendance course name and attendance class location through the mobile wechat terminal, and then starts attendance. Students can click on the corresponding course attendance, and finish the positioning attendance within 3 minutes. If it is overtime, it will be late; At the same time, repeated attendance is invalid, and finally the attendance distance will be fed back to the teacher´s mobile terminal.

4.Conclusion

In this study, 112 test cases are designed, 108 of which pass the test cases, 2 of which block, and 2 of which fail. The pass rate of test cases is 96.4%. In addition, many on-site tests have been carried out in the actual classroom, and 35 students and teachers have participated in the positioning attendance, QR code attendance and paper test in the classroom. The whole class has completed the above functions, The test basically passed. Therefore, the platform initially realizes the overall design requirements and related tasks discussed by the supplier and the demander.

Acknowledgement

This paper is part of the research results of Research on the teaching reform of Xinyu University,㊥OBE oriented Ideological and political teaching reform and practice of basic computer courses㊥(NO:XJJG-21-8)

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