

# Design and Implementation of Teaching Case Database Based on Web

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**Abstract**—With the rapid development of Internet technology and computer technology, classroom teaching is gradually moving towards informationization and networking. One of the popular and effective teaching methods is case teaching. However, the scattered cases are not conducive to further study for students after class. In this paper, a Web-based teaching case data system is designed and presented. Firstly, the front-end and back-end software technologies needed to construct the teaching case base system are introduced. Secondly, the system functions and the overall structure are analyzed and designed. Finally, the results show that the system has practical value for improving the teaching effect of the case base.

**Keywords**—teaching case database; web technology; mysql database

## I. INTRODUCTION

With the development of the times and the advancement of network technology, the traditional teaching mode in Colleges and universities is constantly improving. From the teaching of original textbooks to the current multimedia teaching, it has become more and more modern. In recent years, under the background of big data, network teaching has become a new model. One of the most suitable methods for network teaching is case teaching, so it is an inevitable trend to build a teaching case base system to realize network teaching.

Therefore, how to build a teaching case database system has become a key issue. The most widely used technology in the market now is Web database technology. What is Web database technology? Web database refers to the database resources accessed by Web query interface in the Internet. That is to say, the database technology and Web technology are integrated together, so that the database system becomes an important part of the Web, thus realizing the seamless combination of database and network technology. This combination not only brings together all the advantages of Web and database, but also makes full use of a large number of existing database information resources. It can be said that they complement each other. Firstly, the important change of Web technology from HTML of static web page technology to CGI, ASP, PHP, JSP of dynamic web page technology has made Web not only provide information service by static web page, but also provide interactive information query service by dynamic web page, making information database service possible. Furthermore, the database technology not only solves the problem of large amount of data storage in the process of

computer information processing, but also reduces the redundancy of data storage, realizes data sharing, guarantees data security and efficiently retrieves and processes data. This is also the reason why Web database technology is widely used. The most important point is that the fundamental goal of Web database technology is to solve the problem of data sharing. This coincides with our idea of building a teaching case base system.

## II. SYSTEM FUNCTIONS AND IMPLEMENTATION

### A. Introduction of Related Software

The following for the front-end and back-end software used to introduce, in order to better understand the system development process.

#### 1) JQuery Library

JQuery is a fast, concise JavaScript framework that encapsulates common JavaScript functional code and provides a simple JavaScript design pattern that optimizes HTML document manipulation, event handling, animation design, and Ajax interaction. Make the program more succinct.

#### 2) Bootstrap

Bootstrap is an open source toolkit for Web front-end development. It is characterized by its elegant HTML and CSS specifications. And you can tailor code according to your own needs. It can also be compatible with most jQuery plug-ins. In addition, it contains a wealth of Web components, according to these components, you can quickly build a beautiful, fully functional website.

#### 3) JavaScript

JavaScript is a client script language based on object and event driven and has relative security. It is also a scripting language widely used in client Web development, often used to add dynamic functionality to HTML web pages. A complete JavaScript implementation consists of three different parts: the core, the document object model, and the browser object model.

#### 4) MySQL

MySQL is currently a popular open source SQL database management system. MySQL insertion and lookup is very efficient, and supports stored procedure ODBC, with practical, stable and efficient characteristics. It is not only small in size, fast in speed, low in cost, but also easy to use.

**B. Introduction to the Overall Function and Architecture of the System**

In the process of system design, requirement analysis is a very important process, which determines the quality of the whole system, and is also the success or failure of the whole system. System requirement analysis is to understand the performance, function, design requirements of the target system, abstract the information function and behavior model involved in the system, and ultimately form a requirement document. We develop this Web based teaching case library system as well as do needs analysis.

First of all, let's list the functions of the system first.

1. The system needs to support not only text editing in general sense, but also HTML formatting. At the same time, to copyright and PT and other learning materials can be input and output functions to meet the needs of students for teaching modules.

2. Users should be able to communicate with the administrator through the webpage. Student users can ask for information they need or ask for backstage help when they encounter difficulties.

3. Provide query function in front of the web page, publish the case analysis we collected in the web page for users to download.

4. Require managers to have a certain professional knowledge, to be able to timely maintenance of the case base system and solve problems in time, to timely restore the backup of the database in the system.

5. Require the personalized arrangement of the teaching case database to be embodied in the practical application, so that the user can set up the personalized arrangement of the required learning materials under the personal account name.

6. Require system administrators to classify and manage teaching materials and videos, update students' and teachers' information in time.

Furthermore, the use case model of the system shows the "system function" understood by the designer. A module in the system is described below.

As shown below, the teaching case administrator module has many sub modules. In this use case model, you can clearly see the authority of the lesson manager. The purpose of this course is to include information on teaching cases, PPT and so on. Announce the latest announcements, collect students' upload needs and feedback in time.



FIGURE I. TEACHING CASE ADMINISTRATOR USE CASE

**C. System Database Design**

**1) Database Entity Analysis**

In the process of database construction, it is very important to know clearly the entities in the system and form a model. We have analyzed the system in the requirement stage. The system should have four entities, including teaching cases, users, administrators and so on. The following figure is a teaching case entity, which mainly includes the course name, major, lecturer, course hours, course year. In this way, we can better understand the system structure and prepare for further work.

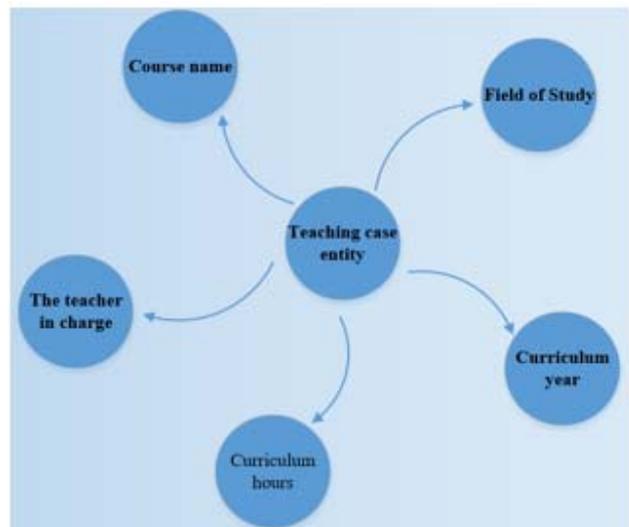


FIGURE II. TEACHING CASE INFORMATION ENTITY

**2) Database Logical Structure Analysis**

Data table is a way to clearly express the logical structure of database. Therefore, in this system, we make a data table according to the database design specifications, as follows: the

following teaching case resource information table, clearly shows the data types of teaching case resources.

1. Teaching Case Resource Information Table

TABLE I. TEACHING CASE RESOURCE INFORMATION TABLE

Field name	Name	Data type	Is it empty
VALUES1	books	11	Not null
VALUES2	courseware	11	Not null
VALUES3	Exercise book	11	Not null
VALUES14	Other resources	11	Not null

2. Administrator User Table

Its main function is to store the username and password of ordinary users and administrators, and it also has a user type attribute to distinguish ordinary users and administrators, and super administrators can manage all user tables.

TABLE II. ADMINISTRATOR USER TABLE

3) Database Implementation

Field name	Name	Data type	Is it empty
Username	Username	11	Not null
Name	Name	11	Not null
Password	Password	11	Not null
Use type	Use type	11	Not null

After the system is built successfully, when the user enters the web address of the case base in the browser window, he will go directly to the home page of the Web-based teaching case base system. After entering the home page, he will see each module. The following figure is a module for input basic information.

Administrators can enter the background through the case database interface for operation, can manage the case database, whether it is to create a new text case, or the case database has been entered in the past has changed significantly.

Core code:

```
public class CF{static{try{
Class.forName("com.mysql.jdbc.Driver");
}catch(Exception ex){
ex.printStackTrace();}}
//2: Get links.
// Building links with databases.
```

// Pay attention to using static methods, otherwise you can't use other packages.

```
public static Connection getCon(){try{return
DriverManager.getConnection( "jdbc:mysql://localhost:3306
/test?useUnicode=true&characterEncoding=UTF-
8","root","root");
}catch(Exception ex){
ex.printStackTrace();
return null;}}
```

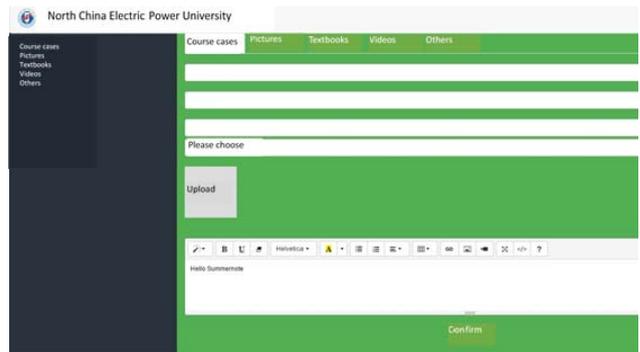


FIGURE III. INPUT BASIC INFORMATION DISPLAY

III. SUMMARY

Through the study of teaching case base based on Web as a starting point, this paper explores the hot topic of database. With the successful construction of the Web-based teaching case base, the school's teaching system has an additional available garden. The use of teaching case database can meet the needs of both students and teachers for the collation of teaching resources at the same time, and on the basis of improving the quality and level of school teaching, it has greatly improved the convenience of students. Students can visit the case library, search for the cases they need, download the corresponding cases and then learn, not only through the Web to improve their learning efficiency, but also on the deep-seated topic of self-learning put forward higher requirements. In this paper, in the face of the development process involved in the knowledge base for a deep-seated summary, according to the case base required levels and modules are discussed. Combining with the actual situation and the problems encountered in the construction of the database, we introduce the system requirements analysis in detail, and summarize all the functions in general. According to the basic process diagram of the case base we need to build, we plot the legend of the case base. On this background, we use the case base. Use case analysis and database design steps to build the main body level. At the end of the paper, the implementation of this case library is demonstrated by charts. The research level of this paper is only a relatively basic level of database knowledge, due to my personal ability has certain limitations, there are still many shortcomings in the system, which need to be further improved

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