The Design and Implementation of Teaching Plan Management System based on Cloud Platform

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Abstract

The teaching plan management is an important aspect of teaching progress. With the development of new information technology, the electronization of teaching material management has become a top priority. Based on the current situation of teaching resources management in Jiangsu Maritime Institute, a teaching plan management system is designed and implemented. MVC pattern is used in the development of this system. By this model, the development efficiency is improved. The Docker cluster is used in deployment of this system. By this cloud platform, the concurrent access and reliability of this system is improved.

Keywords

Teaching　Planning Management; Module View Controller ; MySQL; Cloud Platform; Docker.

1.　Introduction

With the continuous expansion of the school and the rapid increase of the number of students, the amount of information about various teaching plans has multiplying growth. At present, the management of teaching plans in most colleges is hovering in the stage of manual management. In this method, teaching plan management is more repetitive, large workload and low efficiency. Based on these problems, a practical teaching plan management system is developed to meet the needs of teachers and teaching managers [1-2].

The teaching plan management system is designed and implemented according to the smart campus project, thousand sails team project and the results by investigating professional teachers and experts inside and outside the school. This system uses MVC (Model View Controller) pattern to develop. It uses SSM (Spring + Spring MVC+ Mybatis) framework, and uses HTML5, AJAX and other technologies to improve user experience. The SSM framework not only improves the development efficiency, but also reduces the maintenance cost [3]. The platform is deployed on docker cluster, and the scalability, stability and maintainability of the teaching planning management system are improved through load balancing, elastic computing and other technologies.

2.　Requirement Analysis

This system consists of three roles, teachers, directors and administrators. Each role has several functional modules. Administrator role can manage teacher, director, notice and so on. Director role can check teaching plan, manage notices. Teacher role can upload teaching plan, management personal information. The use diagram of this system is shown in fig. 1.
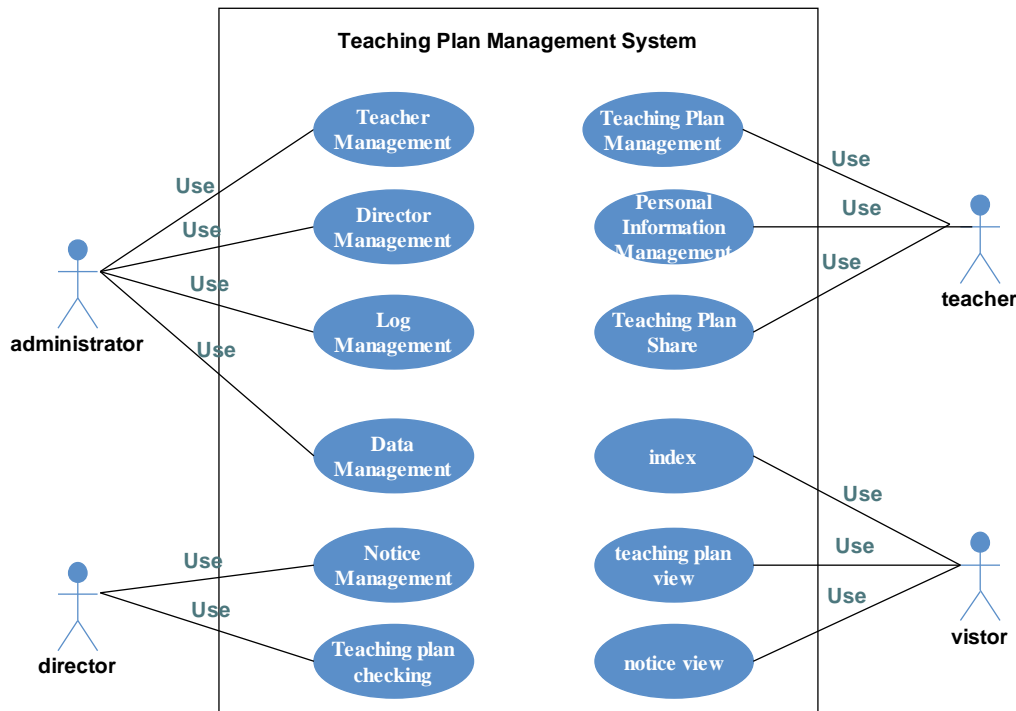
Fig.1 Use case diagram

3. Development and Implementation

3.1 Module Design

This teaching plan management system consists of foreground exhibit and background management. Background management includes three type users. The foreground exhibit includes the index, view notices and teaching plan. The structure of this platform is shown in Fig.2.
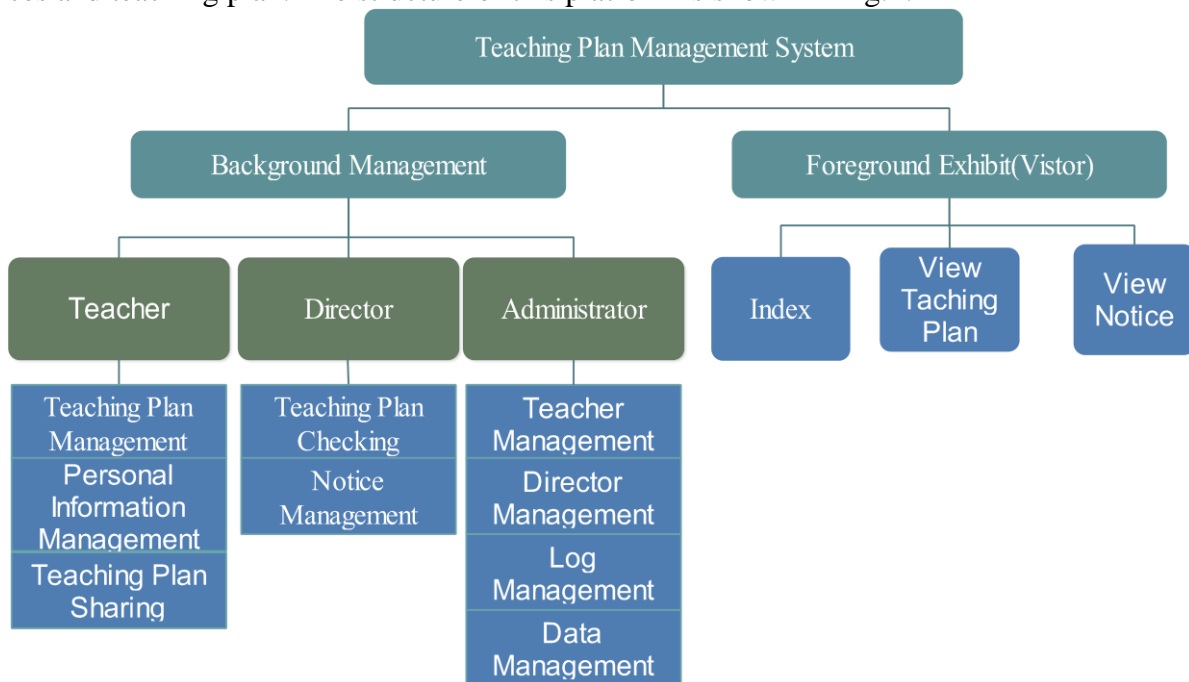

Fig. 2 Functional diagram

3.2 Private Cloud Platform based on Docker Cluster

According to the smart campus construction of Jiangsu Maritime Institute, the teaching plan management system is deployed on a private cloud platform based on Docker cluster. It can help to

reduce system response time and make information management safer [4-5]. The platform deployment architecture is shown in Fig. 3.
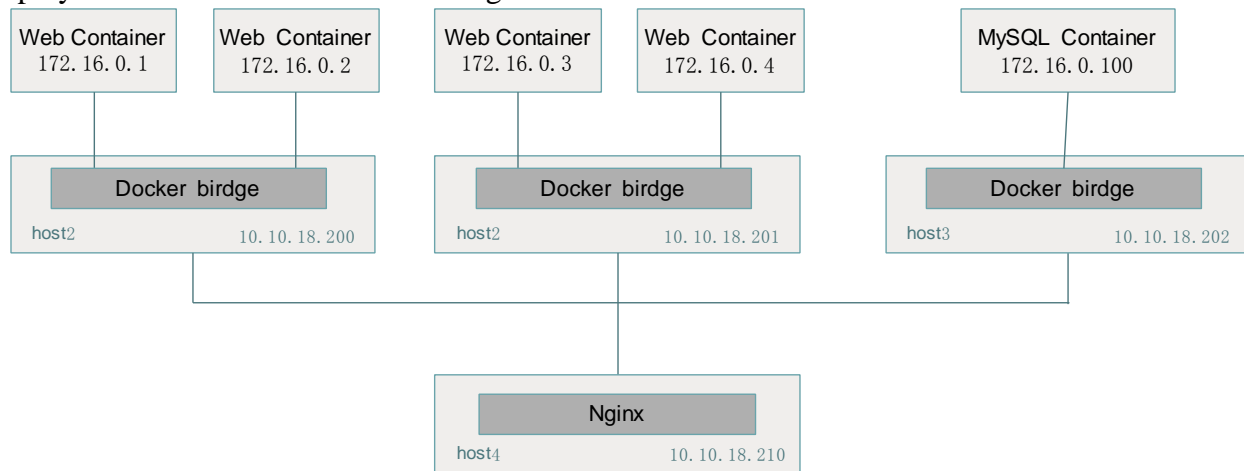

Fig. 3 Platform deployment diagram

3.3 Development Architecture

The teaching plan management system adopts MVC (Model View Controller) mode [6]. The implementation is based on the SSM (Spring + Spring MVC+ Mybatis) framework. In the system development, the control layer is mainly composed of system controller Dispatcher Servlet and various business controllers [7]. Dispatcher Servlet accepts user's request and forwards it to the corresponding business control class to process user's request. The business controller calls the model layer and returns the corresponding view. The model layer is used to implement business logic operations, consisting of business layer and data layer. The business layer performs logical operations on data business. The data layer performs the operations of adding, modifying, deleting and querying the database. The platform implements the automatic mapping of database records and Java objects through Spring+Mybatis [8]. The view layer is composed of JSP (Java Server Page) and Spring MVC template library, providing the function of page display. The system framework is shown in Figure 4.
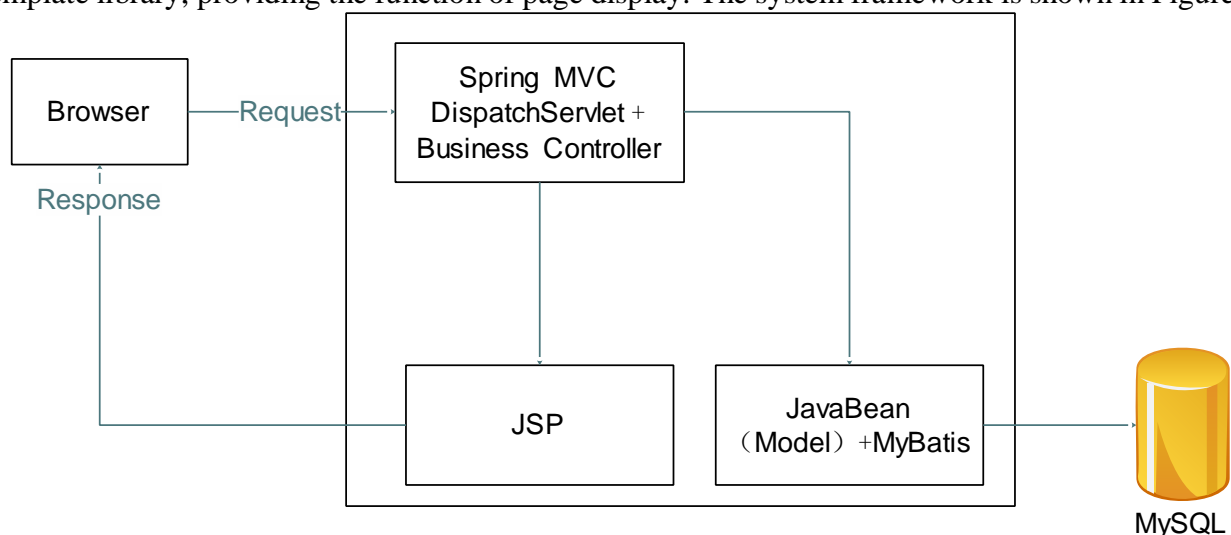

Fig.4 MVC diagram

The user interface of this system is shown in Fig . 5.

Fig. 5 User interface chart

4. Conclusion

With the new development of social economy and network technology, the educational method is changing, The online management system based on WEB is also developing. It enables the teacher to get rid of the traditional way of teaching material submission and avoid duplication of labor. Modern education and teaching theory advocates reforming the structure of teaching plan, while WEB-based office platform has gained a wide market with the characteristics of simplicity, flexibility and ease of use. Through the formulation, implementation and inspection of the teacher plan, it can make rational use of human, material and financial resources, effectively coordinate internal and external relations, and improve all aspects of teaching efficiency.

Acknowledgements

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