The Development and Implementation of Practical Curriculum Appraisement System

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Abstract

Practical curriculum plays an important role in higher vocational education. The appraisement of practical curriculum should be diffrent from the theoretical curriculums for it aims to cultivate students' technical application ability and the occupation accomplishment. Based on the characteristics of cloud computing technology and application major, the practical appraisement system for this major is constructed. The system uses the practical curriculum appraisement index to comprehensively assess students' performance. It improves the objectivity and fairness of appraisement, and stimulates the enthusiasm of learning. The system is deployed on the AliCloud platform and the implementation is based on SSM (Spring, Spring MVC, Mybatis) framework. It improves development efficiency, reduces operation and maintenance costs, and ensures stable and reliable system operation.

Keywords

Practical Curriculum Appraisement System; Cloud computing technology; Module view controller.

1. Introduction

Practice curriculum based on the occupation ability is the most characteristic features of higher vocational education [1]. The student source of higher vocational education is lower than that of the higher education. There is different raining target and the teaching way between them. The appraisement method should not be same as the method of higher education, and should be reformed and innovated.

The appraisement of vocational education abroad refers more to the evaluation model of talents in enterprises and society, and more emphasis on students' ability appraisement and process evaluation. In the 30s of last century, Taylor which is a representative of progressivism educationist, pointed out that it is not scientific only to take the final or graduation examinations as the basis for evaluating the students, and that the mastery of knowledge and the cultivation of ability is a complex process, and the evaluation of process based observation was more scientific and objective [2]. The vocational mode education in developed countries such as "Dual System" in Germany [3], "Sandwich" in Britain [4], and TAFE in Australia [5] is designed to meet the needs of enterprises and industry. A relatively perfect appraisement system is constructed, and a rigorous examination of students' practical skills and professional quality has been carried out.

Cloud computing technology and application in higher vocation institute is a major of higher practical requirements. It is oriented to the IT industry, the new information service industry and the related enterprises and institutions. It is aim to train students with the following abilities.

(1) The ability to install computer software and hardware; (2) The ability to manage and maintain the server; (3) The ability to plan and build the cloud computing platform; (4) The ability to configure the cloud computing and data center; (5) The ability to operate and maintain the cloud computing; (6) The ability to develop and apply the cloud computing; (7) The ability to support pre-sale and after-sale service.

Based on an appraisement index of cloud computing major, an appraisement system is implemented. The SSM (Spring+Spring MVC+Mybatis) as a MVC framework is used in this system development. The SSM framework not only improves the development efficiency, but also reduces the later maintenance cost. The system is deployed to the AliCloud platform. It takes advantage of elasticity, high reliability, and high scalability of cloud compute technology, and reduces effectively development, operation and maintenance costs.

2. Practical curriculum appraisement index

According to the educational objectives of cloud computing technology and application, a practical curriculum appraisement index is built. Many practical curriculums are set up in this major. The proportion is more than 1/3, and more than half with the curriculums which are integrated of theory and practice. The practical curriculums appraisement index which is shown in Fig. 1, is based on process appraisement and appraisement of student achievements is acquired by professional ability. It includes five aspects: practical skills, knowledge mastery, study attitude, study ability and professionalism.

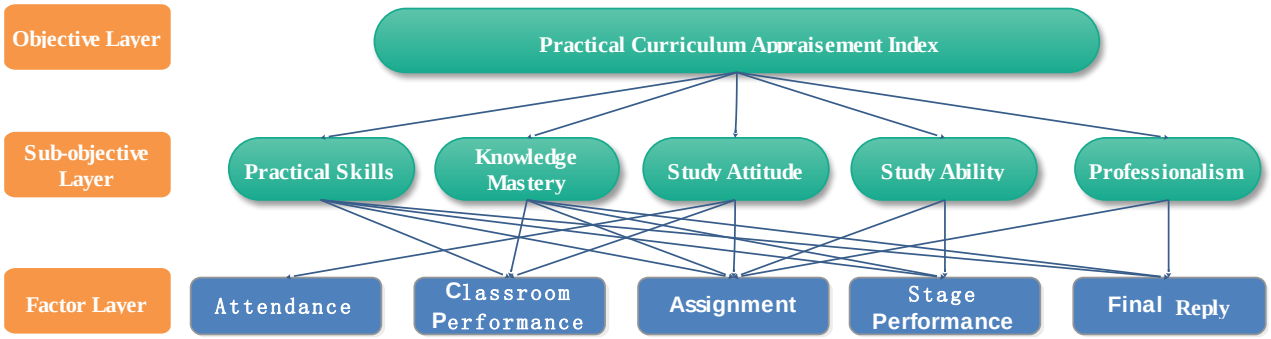

Figure 1. Appraisement index

3. Development and implementation

3.1 Development

The module architecture of this system is shown in Fig.2.

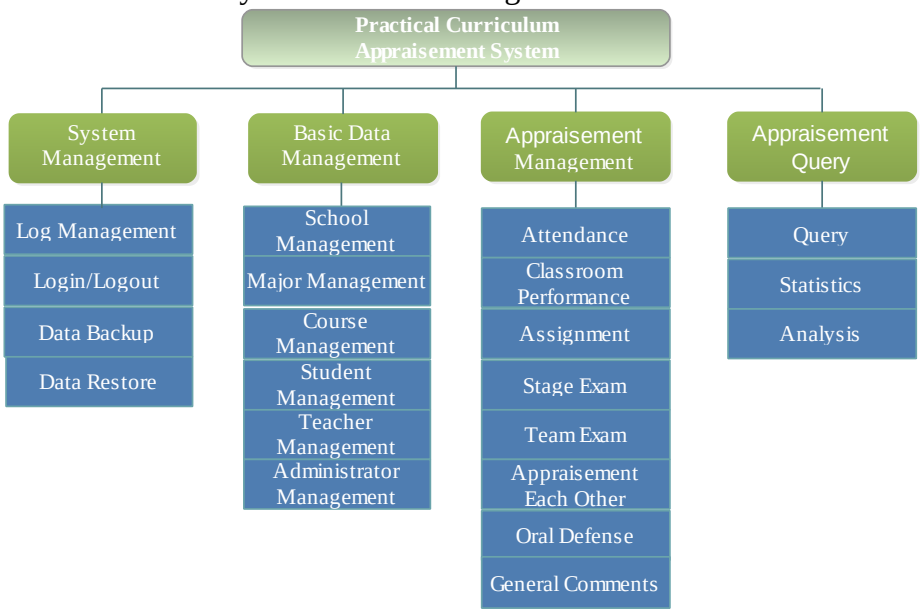

Figure 2. Functional diagram

3.2 Implementation

The practical curriculum appraisement system is implemented by the SSM framework which is a famous MVC framework. The system architecture is shown in Fig. 3.

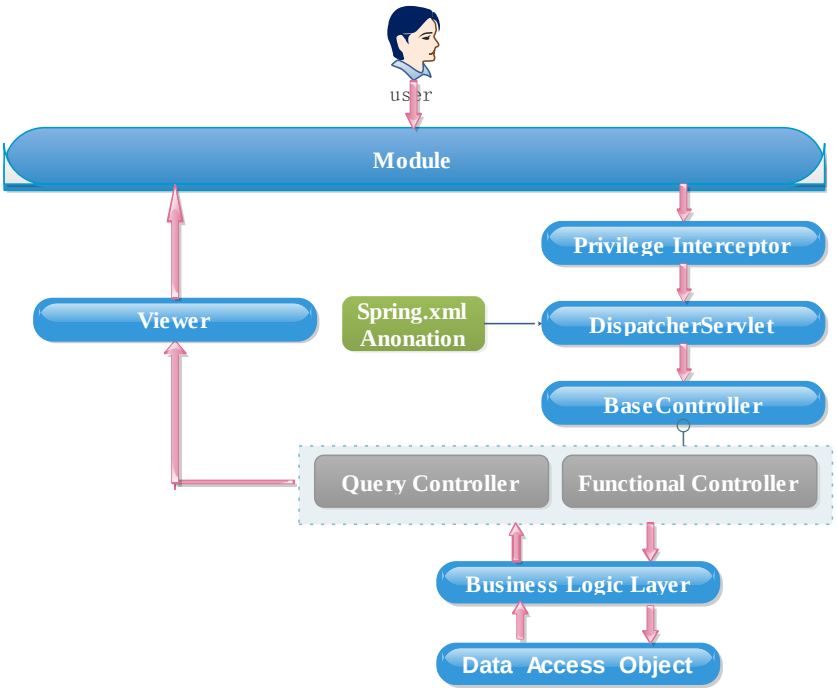

Figure 3. Development framework

MVC model is used for developing this system that divides it into three interconnected parts. The MVC design pattern decouples these major components allowing for efficient code reuse and parallel development [6]. The controller is implemented by Spring MVC and user defined controller classes. Spring MVC is a powerful and flexible MVC framework provider [7]. The module consists of business logic layer and data access object. Business logic layer is the part of the application which encodes the real-world business rules that determine how data can be created, stored, and changed. DAO (Data access object) is an object that provides an abstract interface to some type of database or other persistence mechanism. In the development of this system, it is implemented by Spring and Mybatis. Spring is a lightweight inversion of controller and an aspect- oriented container framework [8]. MyBatis is an excellent persistence layer framework that supports queries, stored procedures and advanced mappings [9]. The view means presentation of the model in a particular format [10]. In the development of this system, it is implemented by JSP (Java Server Page) and Spring template library.

A request firstly arrives to the privilege interceptor. The interceptor checks whether or not the user logins this platform. If the user has the privilege, the flow jumps to the DispatcherServlet. DispatcherServlet is the core of Spring MVC framework, and is a centralized access point for client access. According to the configuration of Spring.xml and annotation, DispatcherServlet calls a controller to deal with the user request. All controllers are inherited from BaseController which provides general properties and methods. Controllers are mainly divided into functional controllers and query controllers.

A hybrid APP is implemented for it is can be adapted to the different mobile platform. This hybrid APP combines native app and web app, and it uses HTML, CSS, and JavaScript as representation. It supports a variety of operating system, such as IOS, Android, and Window Phone. The mobile client development uses HTML 5 and JQuery mobile framework. JQuery Mobile is the front-end development framework for creating mobile web applications [11-12]. By Ajax and Web Socket technology, the hybrid APP can visit the SSM framework, and modify the database. The development framework of this hybrid app is shown in Figure 4.

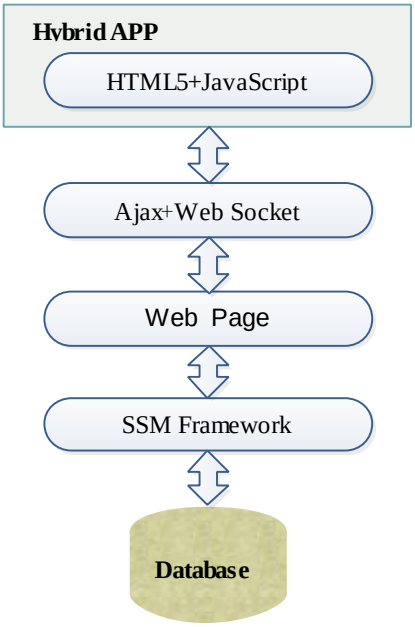

Figure 4. Mobile development framework

4. Conclusion

This practical curriculum appraisement system has been tested in many aspects, such as function, reliability, security, compatibility and performance based on cloud computing environment. The development of this system is based on a famous MVC framework SSM. This system is deployed on an elastic compute server of AliCloud, and the operation system is Center OS. The database is deployed on the RDS server and the database management system is MySQL. This system takes full consideration of security, and different people have different rights. Every can only see the content which is permitted to access to, and the security of data is guaranteed.

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