The realization of background management system based on SSM

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Abstract: In the process of Web application development, the choice of development framework is very important. A good development framework can speed up the development of Web applications, reduce the development cost, reduce the workload of developers, and make Web applications with good extensibility and portability. Based on SpringMVC+Spring+Mybatis (SSM) framework with good performance and faster development efficiency, gradually become the mainstream of Web application development framework combination. SpringMVC is an mvc-based framework that is primarily responsible for presentation layer functions, such as responding to requests.Spring framework mainly ACTS as a container, integrates SpringMVC and Mybatis, realizes decoupling between layers, and makes the business logic clearer. Mybatis framework is mainly responsible for the data persistence layer, completing relevant operations with the database. With the authority management module as an example, the application of SSM framework in developing background management system is illustrated, which provides theoretical guidance for developing background management system.

1. Introduction

At present, there are many Web development technologies at home and abroad, among which the two most widely used technologies are Microsoft's.net platform and J2EE platform proposed by Sun and IBM.J2EE is mainly oriented to the development and deployment of web-based enterprise applications using Java programming language [1].The J2EE platform is open, cross-platform, and portable compared to the.net platform, so many enterprises choose the J2EE platform architecture and solutions. Traditional J2EE EJB (Enterprise javabeans) container as the core, the EJB component provides transaction management, handling user requests, support with packaging and resource management, and other functions, but the EJB and the height of the EJB container coupling relationship, make its poor portability [2], at the same time, the complexity of the EJB code, maintenance difficulties make it to be being washed out gradually, therefore the lightweight framework was born. For example, Struts, Spring, etc. reduce the complexity of development, improve the efficiency of debugging during development, and thus improve the speed of Web site development.

2. System technology

2.1. MVC design pattern

MVC(model-view-controller, that is, model-view-controller [3]) is a design pattern in Web development. In this design pattern, the Model, View, and Controller perform different responsibilities. The Model mainly realizes the logical processing of business, the formulation of business rules, including the access to the database. Therefore, the design of the business model is the most important part of the MVC design pattern. The View is created from model data that the user can see and interact with. A View is usually an input that collects user data and responds to user requests. The Controller reads the data entered by the user in the view, selects the appropriate model to process the user's request based on the data entered by the user, and selects the appropriate view to display the model's processing results. The Controller does not participate in the processing of the data, but hands it over to the Model for execution. It can be seen that the separation of business processing and view presentation realized by MVC design pattern reduces the coupling degree

between each module and reaches the design goal and overall requirements of the system.

2.2. SpringMVC framework

The SpringMVC framework is an implementation of Spring's MVC design model for building Web applications.In the process of Web application development,SpringMVC framework accommodates a large number of view technologies, including JSP, which can be flexibly configured [4].Although SpringMVC has similar functionality to Struts, they are implemented differently.Struts2 is class-based interception, with a class corresponding to a request context.SpringMVC is based on method-level interception, where a method corresponds to the context of a request and the method corresponds to a URL

The main components of the Spring framework are the front-end controller (dis-patcherservlet), Handler mapping, HandlerAdapter, Handler, ViewResolver, and visual diagram [5].In it, DispatcherServlet is inherited from HttpServlet and ACTS like a Servlet, which is mainly used to receive user requests and response services with the following functions:

(1) Realize file upload and localized analysis;

(2) Map the request to the processor (return one execution chain, including one handler and several handler interceptors) through the processor mapper;

(3) Realize multiple types of processors through processor mapper;

(4) Realize the parsing from logical view to specific view through the view parser;

(5) Realize rendering of specific views;

(6) Resolve the exceptions encountered in the execution process through the exception handling parser.

2.3. The Spring framework

Spring is an open source framework created to reduce the complexity of application development in the enterprise.Its main purpose is to realize the separation between the layers of development, to realize what kind of components each layer can choose, and to provide an integration framework for J2EE development.Spring provides a lightweight solution for enterprise application development [6].The Spring framework provides aspect-oriented (AOP) programming, a core inversion of control (IoC) mechanism, and a framework that integrates multiple persistence layers and has its own MVC framework.Spring framework to provide solutions, not focusing on one layer provides a Java EE application development of each layer in the solution. The Spring framework implements the presentation layer, business layer and persistence layer integration, but this does not mean that the original existing framework that can be replaced by the Spring framework, but have a framework in the Spring framework can realize the seamless integration, for the spirit of enterprise application development to provide more active.

To sum up, Spring has the following advantages:

(1) Provided a method for effectively organizing intermediate layer objects.

(2) Provides a non-invasive design that reduces code pollution.

(3) Spring reduces the complexity between business objects through the dependency injection mechanism, and realizes the decoupling between objects and components.

(4) Realize centralized management of daily life, affairs and other functions through AOP.

(5) As an integration component, Spring can integrate other frameworks to provide greater flexibility for the development of enterprise-level applications.

Java objects.Compared with other ORM frameworks (such as Hibernate), Mybatis is suitable for projects (such as Internet projects) with more variable requirements.

Jects)

Implements the possibility of integrating multiple persistence layer frameworks and simplifies

The developer's actions on the database.

(6) As an integration component, Spring can integrate other frameworks to provide greater flexibility for the development of enterprise-level applications.

The relevant terms are as follows:

IoC(Inversion of Control): for object-oriented development, this is a design principle used to reduce associations between code.IoC will design a class not to implement control within the class, but to be controlled by the system, which is called inversion of control [8].

AOP(aspect-oriented Programming): it is a new Programming technique proposed by Gregor Kiczales, which provides a mechanism for developers to describe crosscutting concerns [9].AOP USES dynamic proxies to encapsulate the behavior of multiple system-level services (such as journals, transactions, and so on) into reusable modules for loose coupling of business logic and system-level services.

Non-intrusive: intrusive design shows that the client program needs to inherit the classes in the framework, while non-intrusive design shows that the client implements the interface provided by the framework, thus reducing the dependence of the application on the framework and the burden of framework migration, and improving the reuse of application components.

2.4.Mybatis framework

Mybatis is a persistent layer framework in J2EE application development. It realizes the association between objects and storage routines and SQL statements through configured XML files or annotations, instead of the correlation between objects and database tables, and can realize the dynamic generation of SQL statements.MyBatis framework integrates multiple concepts and methods of operational relational data, which is a powerful data access tool and solution [10].Compared with JDBC, Mybatis simplifies the implementation of relevant code, which realizes the original mapping by using annotation method or simple XML configuration file, and then maps javabeans or defined interfaces to records in the database through the mapping engine.The working principle of Mybatis is shown in figure 4.The XML collocation file maps javabeans, maps, and this data type (Integer, String, and so on) to the type of input parameters required by PreparedStatement to the ResultSet ResultSet.

3. System application

3.1. Integration of SSM box

SSM is SpringMVC, Spring, Mybatis.SSM is a lightweight and widely used composite framework. Many portal websites, government websites and financial projects of small and medium-sized enterprises are developed based on SSM architecture.Since Spring is a business-layer framework, it can well integrate SpringMVC framework of presentation layer and my-batis framework of persistence layer.After integration,Spring will act as the factory for the entire application.Firstly, integrate Spring and Mybatis. The simplest understanding of Spring integration of Mybatis is to "leave the configuration of Mybatis data source, transaction management, creation of SqlSessionFactory and creation of mapper of data mapper interface to Spring for management". Therefore, there is no need to configure the data source and transaction in Mybatis configuration file Mybatis -config. XML in the business layer serviceImplementation does not need to manually obtain SqlSession and the corresponding data Mapper interface, through Spring injection.

3.2. The architecture

J2EE standardizes the framework of server-side application system development, whose core idea is component and layering.Its layering mainly includes three aspects: presentation layer, business logic layer and data layer.In the actual project development process

Due to the requirements and design of the project, it is usually necessary to expand the three-tier architecture into a four-tier architecture, that is, to add a service layer between the business logic layer and the data layer.It is used for the data operation of the persistence layer and represents the persistent memory storage object of the database [1].

3.3. System implementation

In the background management system structure diagram, the website background management has four functions: authority management, knowledge management, information management,

activity management.The so-called management is to achieve the database to add, delete, change and check, because knowledge, activity and information management are based on permission management, so the following mainly describes the realization of authority management function.

3.3.1. Data persistence layer

MyBatis should first create SqlSessionFactory case, its function is equivalent to a database connection pool, and then SqlSession- Factory obtains an SqlSession through the configured XML file.The methods necessary to execute the SQL statement are included in the SqlSession, so the SqlSession to complete the operation of the database, after using the need to release the database connection.

3.3.2. The service layer

Data access adopts DAO (data access to image) mode [2]. DAO is a database access interface and can obtain data from any data source that has been configured [3].The use of the service layer (DAO) can reduce the degree of coupling between the business logic code and the database access code to facilitate the partitioning and assignment of tasks.

3.3.3. Control layer

When you add or delete a user information, you need a Form Form to temporarily store information about the fields in the user information table, so you need a Form class, RoleInfoForm.It's just a simple java-bean, and each field defines a Getter() and Setter() method, and then you can write the JavaBean object directly in the Controller's function argument list, and Spring will auto-marshal the row.

3.3.4. The presentation layer

Through DispatcherServlet, the link address of the page and the submitted form request can be forwarded to the method in the registered Controller class to realize the jump between the whole system pages.Since the view parser is already configured in the springm-vc configuration file and the file that it parses is an FTL file, you need to develop an FTL file instead of a JSP file.

4. The system significance

SSM development framework is a set of rules and written framework code, it helps us achieve a lot of basic functions, save programmers a lot of coding work, programmers can put more energy on the system business logic processing;It can improve the standardization of the program and the reusability of the code.It can improve the extensibility and maintainability of the program.SSM is the integration of three development frameworks. The first letter S refers to Spring development framework, the second letter S refers to Spring MVC development framework, and the third letter M refers to Mybatis database development framework.Spring MVC is actually an extension of the Spring framework, part of the Spring framework, and therefore an integration of the two development frameworks.SSM has now become a mainstream Web application development framework, and networking projects will also use SSM development framework to structure the system.

5. Conclusion

In this paper, combined with the respective functions and characteristics of SpringMVC, Spring and Mybatis framework, the design concept of MVC layered development is well reflected, which is conducive to the maintenance and functional expansion of the application, reduce the coupling between each module, and achieve the design goal and overall requirements of the system.

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