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Design and implementation of university fixed assets management system

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Abstract

This paper uses the J2EE framework, and proposed the development methods of the fixed assets management system in the Spring platform and the Struts. At the same time, the paper elaborates on the fixed assets management system under the framework of Spring and Struts technology, and lists some core code and part function description. Through the operation of the system many times, proved that the technology can improve the safety and stability of the system, both the Spring and the Struts framework also made redundant code of the system to reduce, avoid the waste of resources, which make the system have better scalability and maintainability.

Keywords: University fixed assets management; J2EE; the Struts2; Spring Framework.

1. Instructions

With the continuous development of computer technology, information management has penetrated into all fields. How to use computer system to conveniently store information and manage fixed assets in university is the primary problem to realize the informationization in many colleges at the present stage. At present, Information management system uses comprehensive computer technology, information technology, management theory and control theory and modern management thoughts, methods and means of organic combine, which can assist the university management personnel of scientific management and decision-making, reduce waste in fixed assets in Colleges and universities, improve the reuse rate of fixed assets in Colleges and universities. The paper analyzes in detail the flow of the fixed assets management system in Colleges and universities, and points out some problems existing in the

management of fixed assets of University, and makes a deep research on the development of necessity of fixed assets management system in Colleges and universities.

In recent years, J2EE (Java 2 Platform Enterprise Edition) technology platform has been rapidly developed, and has become the development norms and application standards in the enterprises and institutions. J2EE technology platform collect service, protocol and application programming interface, using technology platform can construct a distributed multi-tier application, provide high stability, high robustness for system service. In Web application, the J2EE platform is divided into five levels, respectively, client layer, presentation layer, business layer, persistence layer and database layer. This architecture provides a new method for the development of a modular, component-based for developers.

For the characteristics of J2EE technology, the system used Spring and Struts of J2EE technology framework to develop college fixed assets management system, analyzed the disadvantages of the fixed assets management system, according to the actual demand of colleges and universities, realize the data transfer between pages and logic business by MVC model. Design of various business logic classes, database connection using Spring JDBC can improve the safety and stability of the system. At the same time, the use of Spring and Struts framework that make the system fewer redundancy code, improving the system scalability and maintainability.

2. The design of the fixed assets management system

According to the relationship between the system requirements analysis and each module of the system, the system can be divided into several modules asset lending, restitution of assets, asset management, depreciation management, department management, role management etc. The Fig.1 is the main framework of the system diagram.

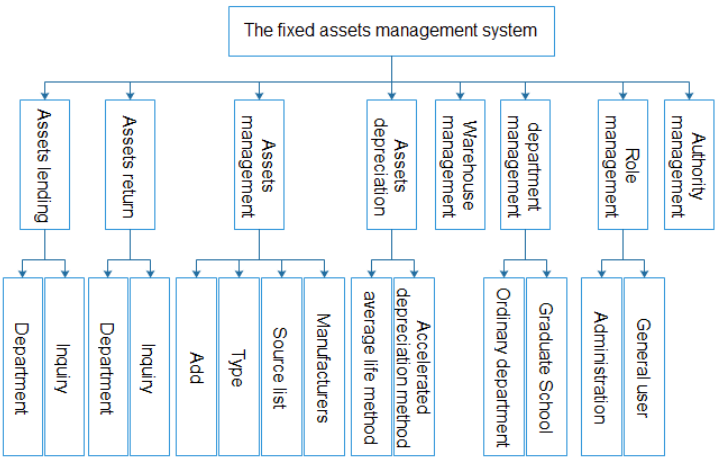

Fig.1. The main frame diagram of system

The main functions include:

(1) The fixed assets management: lending assets, assets restitution, assets depreciation, assets management;

(2) The basic information management: warehouse management, school management, fixed assets management, information source management;

(3) Fixed assets inquiry: assets increase query, query personal borrowing, assets change overall query;

(4) Depreciation management: average service life method, accelerated depreciation method;

(5) The staff management: role management, authority management;

3. The fixed assets management process in university

Specific assets departments in Colleges and universities are used and manage object department. It is responsible for instructions and object management; asset management department is the asset management sector, they mainly manage fixed assets, the various types of card, the real import and include; the accounting department is the fund management department and make various financial assets certificate; the leadership of the responsible departments be responsible to examine and approval, supervise and inspect fixed assets business in itself Department, the process is as shown in Fig.2

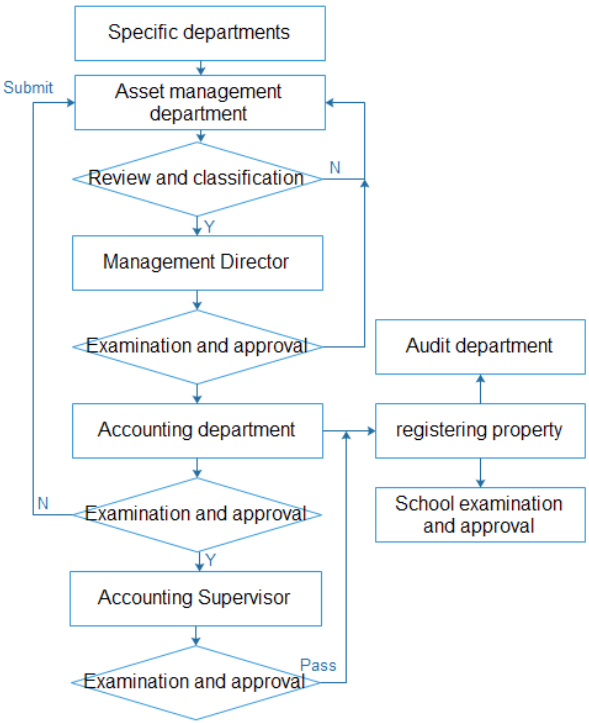

Fig.2. The management process of fixed assets in college

4. Design of class and the analysis of system structure

Based on the three layer structure, combining the actual situation of university assets management, overall structure frame is as shown in Fig.3.

Through the page access layer (View), business logic layer, Spring JDBC framework design and application as well as the breakdown of the data layer enable the whole management system more clear, the program more convenient in the operation and maintenance.

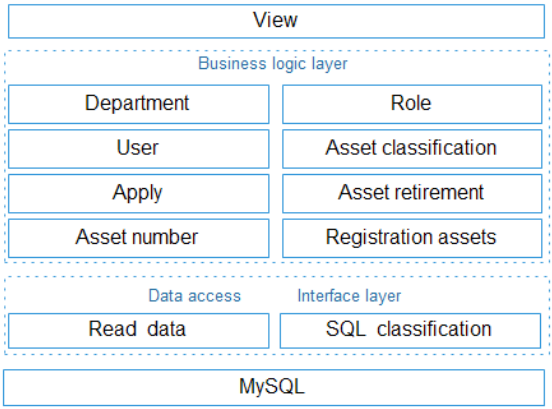

Fig.3. The system structure diagram

4.1 MVC mode in page display layer

Display layer is that the user can see and interact with the interface [1]. The display layer shows the related data through the JSP page, and can accept user related input data, but the display business processing, display layer cannot be the actual to user interface synchronization update. The display layer has two main functions, one is friendly, the second is the user and system interaction in this part mainly uses Struts to achieve MVC (Model View Controller) model [2-5. The application of MVC mode is input into the asset information, processing data, output the asset information; it is as shown in Fig.4.

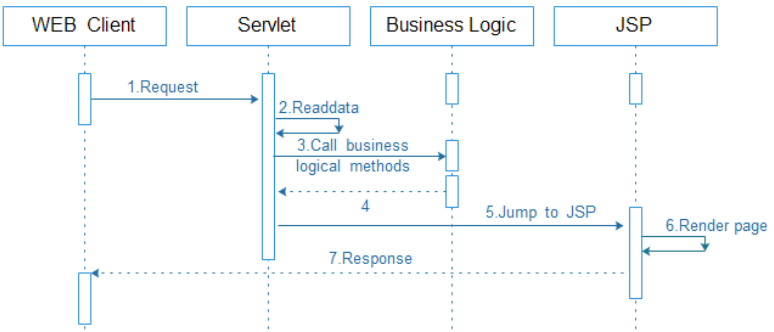

Fig.4. MVC design mode

4.2 Business logic layer

Spring is an open source framework [5] created by Rod Johnson Spring, its framework is composed of 7 modules, which are shown in Fig.4.

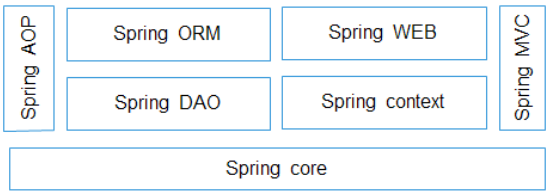

Fig.5. Spring Architecture diagram

5. System implementation

5.1 The assets management

The fixed assets management system will realize the asset management function, basic statistics and query functions. The host operating system interface is composed of asset management, personnel management and basic maintenance page.

5.2 Assets add

Assets add is the basis of the system to add data, only the asset data be recorded into the system, in order to realize function of assets such as adding, classification, query management etc..

5.3 The realization of assets depreciation class

Now we take DepreciationDispatchAction.java as example, the first to verify whether the user login, and then obtain the depreciation Depreciation method choice object, used for acquiring assets from the form, price, age, depreciation amount etc.. In this case, is mainly to depreciation average life method, finally completed by depreciation of assets depreciation average life formula [5].

```
    public ActionForward check( ActionMapping mapping, ActionForm form,
HttpServletRequest request, HttpServletResponse response)
    throws Exception {
    BaseDispatchAction.isLogon( request, response) ;
    String id = request.getParameter( " id" ) ;
    if ( id ! = null id.trim( ) .length( ) > 0) {
    DepreciationDAO dao = new DepreciationDAO( ) ;
    Depreciation depreciation = dao.findById (Integer.valueOf ( id) ) ;
    DepreciationForm depreciationForm = new DepreciationForm( ) ;
    if ( " average" .equals( depreciation.getArithmetic( ) ) ) {
```

```
Asset asset = depreciation.getAsset( ) ;
double price = asset.getPrice( ) ;
int life = asset.getLife( ) ;
Double everyYearSum = price / life;
Double everyMonthSum = everyYearSum / 12;
}
  else if ( " speedup" .equals( depreciation. getArithmetic( ) ) )
{ saveMessage(request," depreciationForm. Speedup. null" ) ; }
}
return mapping.findForward( " check" ) ;
}
```

6. Conclusions

This system mainly around the Spring and Struts two framework to develop, it can solved many problems of difficult tests, data query and visited slow in J2EE program development. To realize the system business logic layer and data persistence layer using MVC mode, DAO mode, Spring JDBC read separately, improve code reuse rate in the program development process; at the same time, using two framework technologies makes the system integration code in the development process, and improve high efficiency in the program development modules. The system has greatly improved efficiency in the increase, delete, change and check.

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本科生毕业设计（论文）外文翻译

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2020 年 01 月

高校固定资产管理系统的设计与实现

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摘要

本文采用 J2EE 框架，提出了基于 Spring 平台和 Struts 的固定资产管理系统的开发方法。同时，对基于 Spring 和 Struts 技术框架下的固定资产管理系统进行了详细的阐述，列出了部分核心代码和部分功能描述。通过多次系统的操作,证明了该技术可以提高系统的安全性和稳定性,Spring 和 Struts 框架也减少了系统的冗余代码,避免资源的浪费,使系统具有更好的可扩展性和可维护性。

关键词: 高校固定资产管理; J2EE; the Struts2; Spring 框架.

1. 说明

随着计算机技术的不断发展，信息管理已经渗透到生活中的各个领域。如何利用计算机系统方便的存储信息和管理固定资产，是当前许多高校实现信息化的首要问题。目前，信息管理系统采用综合计算机技术、信息技术、管理理论和控制理论、现代管理思想、方法和手段的有机结合，它可以帮助诸多大学进行人员的科学管理和决策，同时减少高校固定资产的浪费，提高固定资产在学院和大学的重用率。本文详细分析了高校固定资产管理系统的具体工作流程，指出了高校在固定资产管理中存在的一些问题，并对高校固定资产管理系统发展的必要性进行了深入研究。

近年来，J2EE(Java 2 平台企业版)技术平台得到了迅速的发展，已成为诸多企事业单位的开发规范和应用标准。J2EE 技术是平台收集服务、协议和应用程序编程接口的集合体，利用关键技术平台可以构建一个分布式的多层应用程序，为系统服务提供高稳定性、高健壮性的工作环境。在 Web 应用程序中，J2EE 平台被分为五个层次，分别是客户端层、表示层、业务层、持久层和数据库层。该体系结构为开发人员提供了一种模块化、基于组件的开发新方法。对于 J2EE 技术的特点，该系统使用 Spring 和 Struts 的 J2EE 技术框架来更高效率的开发高校固定资产管理系统，分析了固定资产管理系统的缺点，根据高校的实际的需求，实现页面和业务逻辑之间的数据传输。通过 MVC 模式，设计各种业务逻辑类，使用 Spring JDBC 进行数据库连接，该方法可以提高系统的安全性和稳定性。同时，使用了 Spring 和 Struts 框架，使得系统冗余代码更少，提高了系统的可扩展性和可维护性。

2. 固定资产管理系统的设计

根据系统需求分析与系统各个模块之间的关系，固定资产管理系统可以分为资产借贷、资产返还、资产管理、折旧管理、部门管理、角色管理等几个主要模块。图 1 是系统框图的主要框架。

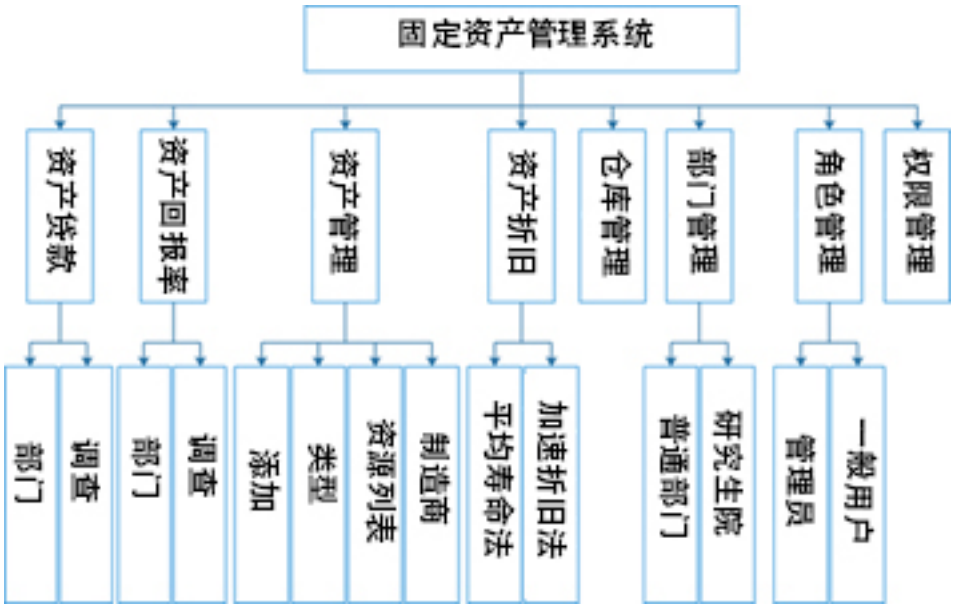

图 1.系统的主要框图

主要功能包括:

(1) 固定资产管理：贷款资产、资产返还、资产折旧、资产管理；

(2) 基本信息管理：仓库管理、学校管理、固定资产管理、信息源管理；

(3) 固定资产查询：资产增加查询，个人借款查询，资产变化整体查询；

(4) 折旧管理：平均使用年限法、加速折旧法；

(5) 人员管理：角色管理、权限管理；

3. 高校固定资产管理流程

高校的特定资产部门是高校使用和管理的对象部门。负责指令以及对象管理；资产管理部主要是负责资产管理的部门，他们主要管理固定资产、各类卡、实物的导入以及数据的导入；会计部门主要是负责资金管理的部门，制作各类金融资产凭证；各责任部门领导主要是负责本部门固定资产业务的审批、监督和检查，流程如图 2 所示

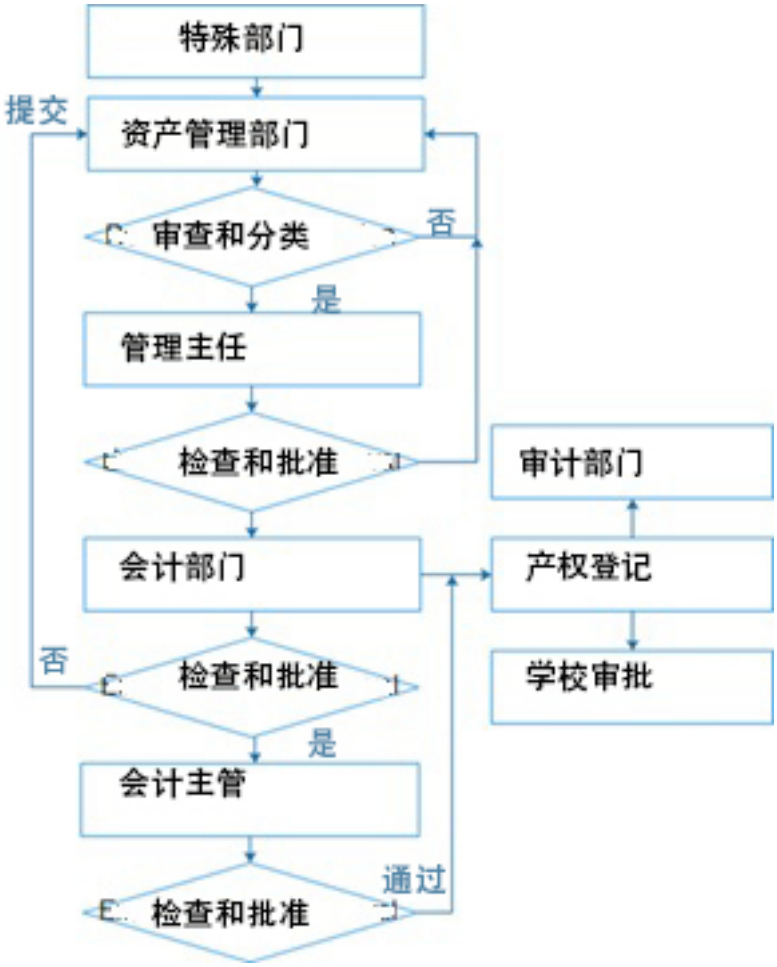

图 2.高校固定资产的管理过程

4. 分类设计与系统结构分析

基于这三层结构，结合高校资产管理的实际情况，整体结构框架如图 3 所示。

通过页面访问层(视图)、业务逻辑层、Spring JDBC 框架设计和应用以及数据层的分解，使整个管理系统更加清晰，程序的操作和维护更加方便。

图 3.系统结构图

4.1 页面显示层的 MVC 模式

显示层是用户可以看到并与界面交互的层[1]。显示层通过 JSP 页面显示相关数据，并可以接受用户相关的输入数据，但显示业务处理后，显示层不能实际对用户界面进行同步更新。显示层主要有两大功能，一是界面友好，二是用户与系统的交互，这部分主要使用 Struts 实现 MVC (Model View Controller)模型[2-5]。应用 MVC 模式输入资产信息，处理数据，输出资产信息;如图 4 所示。

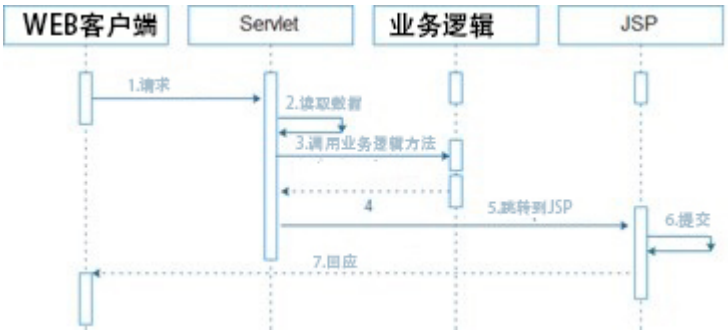

图 4.MVC 设计模式

4.2 业务逻辑层

Spring 是 Rod Johnson Spring 创建的开源框架[5],其框架由 7 个模块组成，如图 4 所示。

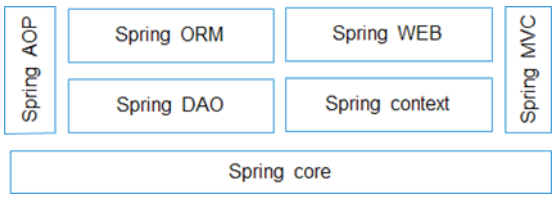

图 5.Spring 框架图

5. 系统实现

5.1 资产管理

固定资产管理系统实现了资产管理功能、基本统计功能和查询功能。主机操作系统界面由资产管理、人员管理和基本维护页面组成。

5.2 资产添加

资产添加是系统添加资产数据的基础，只有已经存在的资产数据被记录到系统中，才能实现资产的添加、分类、查询管理等功能。

5.3 资产折旧类的实现

现在我们以折旧调度。java 为例，首先验证用户是否登录，然后获得折旧方法选择对象，用于获取资产的形式、价格、年限、折旧金额等。在这种情况下，主要是采用折旧平均寿命法，最后完成由资产折旧平均寿命公式[5]。

```
public ActionForward check(ActionMapping mapping, ActionForm form, HttpServletRequ
est request, HttpServletResponse response) throws Exception {
     BaseDispatchAction.isLogon(request, response);
     String id = request.getParameter("id");
     if (id != null && id.trim().length() > 0) {
          DepreciationDAO dao = new DepreciationDAO();
          Depreciation depreciation = dao.findById(Integer.valueOf(id));
          DepreciationForm depreciationForm = new DepreciationForm();
          if ("average".equals(depreciation.getArithmetic())) {
               Asset asset = depreciation.getAsset();
               double price = asset.getPrice();
               int life = asset.getLife();
               Double everyYearSum = price / life;
               Double everyMonthSum = everyYearSum / 12;
          }
          else if ("speedup".equals(depreciation.getArithmetic())) {
               saveMessage(request, "depreciationForm.Speedup.null");
          }
     }
     return mapping.findForward("check");
}
```

6. 总结

本系统主要围绕 Spring 和 Struts 两个框架来开发，它可以解决 J2EE 程序开发中许多测试困难、数据查询慢和访问慢的问题。采用 MVC 模式、DAO 模式、Spring JDBC 分别读取实现了系统的业务逻辑层和数据持久化层，提高了程序开发过程中的代码复用率；同时，采用两种框架技术使系统集成代码在开发过程中，提高了程序开发模块的效率。该系统在增加、删除、更改和检查等方面大大提高了效率。

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指 导 教 师 评 语

毕业设计（论文）题目：

高校固定资产管理系统的设计与实现

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