武汉纺织大学

Web应用开发课程设计

**采用SSM框架实现基于DAO设计模式的图书馆系统**

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# 图书馆管理系统

# ####概述

# 基于Spring + Spring MVC + MyBatis的图书馆管理系统，使用Maven进行包管理。主要功能包括：图书查询、图书管理、图书编辑、读者管理、图书的借阅与归还以及借还日志记录等。

# ### 环境配置

# #### 开发环境：Windows 10，eclipse, Mysql5.5, Maven3.6.1

# #### 运行配置

# 1. 首先安装Mysql5.5，设置用户名为root，密码为root，默认端口号:3306,并保证其在运行状态，并执行library.sql文件导入数据。

# 2. 然后再配置Maven到环境变量中，在源代码目录下运行

# 使用tomcat插件运行

# 3. 使用浏览器访问http://localhost:8080即可进入系统。

# ### 概念设计

# 用户分为两类：读者、图书馆管理员。图书馆管理员可以修改读者信息，修改书目信息，查看所有借还日志等；读者仅可以修改个人信息、借阅或归还书籍和查看自己的借还日志。

# 1 需求分析

设计一个图书管理系统，实现读者角色：登陆，查询图书，借阅图书，归还图书，查询借阅记录，修改密码等功能

图书馆管理人员角色：登陆，图书增加，图书修改，图书删除，读者增加，读者修改，读者删除，借阅查询，借阅统计等功能。

## 1.1登陆

当程序运行时，显示“欢迎使用图书管理系统，请登陆”，提示用户依次输入用户名及其密码，当用户名及密码不正确时，显示提示信息“账号或密码错误!”账户密码正确时根据账户类别进入读者或管理员主界面。

## 1.2主界面

当用户名及密码正确时，进入系统主界面,网页图形化界面。



## 1.3读者的各项功能

### 1.3.1 图书查询

### 点击进入图书查询子界面

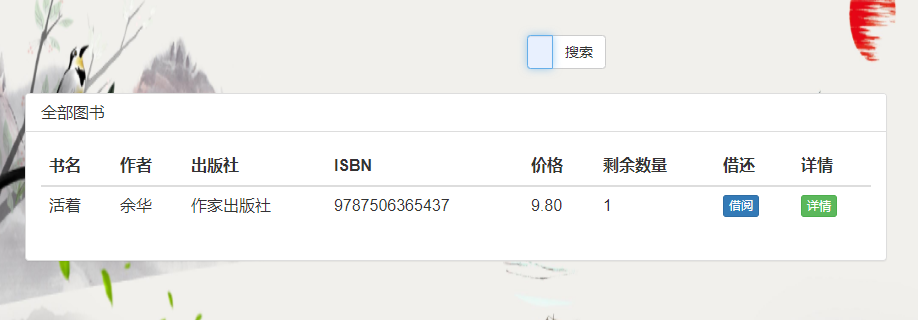
可查看所有图书的书名,作者,出版社,图书编号ISBN,价格,剩余数量,以及借还和查看详情按钮。



### 1.3.1.2 单本查询

图书查询的上部有按关键字查找书



示例

### 

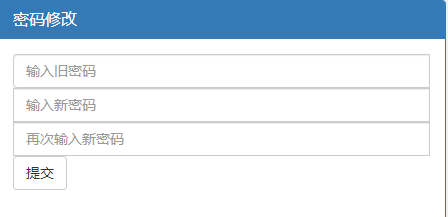
### 1.3.2 查询修改个人信息

在个人信息页面可查看修改读者信息

可查看 读者证号码,姓名,性别,生日,地址,电话。

除读者证号不可修改以外均可修改且未设置字符限制.

### 1.3.3 修改密码

当选择密码修改时，显示

需填写完整后提交,若旧密码输入不正确，则提示“旧密码错误!”，若两次密码输入不一致，提示“两次输入的新密码不同,请检查”，输入成功后，修改数据库中的用户表，并提示“修改密码成功!”。

### 1.3.4 退出登录

右上角退出 回到登陆页面。



## 1.4 管理员账户的各项功能

###### 1.4.1图书管理

可查看全部图书的书名,作者,出版社,ISBN,价格,剩余数量,详情,可编辑和删除书籍。



增加书籍



按提示填入图书名,作者,出版社,ISBN,简介,语言种类,价格,出版日期,分类号,数量进行添加.

1.4.2 读者管理

1.查看全部读者的所有信息:读者号,姓名,性别,生日,地址,电话.可编辑除读者号以外信息。也可以删除读者账户(删除读者证)。

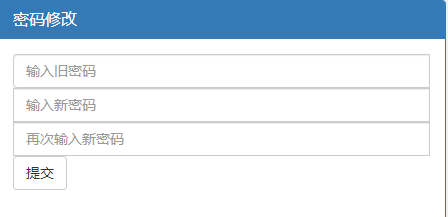


2.增加读者 由管理员输入新读者的密码,姓名,性别,生日,地址,电话 读者号由系统自动顺序生成。

1.4.3借还管理

可查看读者借书还书日志,归还情况。

###### 1.4.4管理员密码修改



需填写完整后提交,若旧密码输入不正确，则提示“旧密码错误!”，若两次密码输入不一致，提示“两次输入的新密码不同,请检查”，输入成功后，修改数据库中的用户表，并提示“修改密码成功!”。管理员账户不可添加和删除。

###### 1.4.5 退出

右上角退出 回到登陆页面。



# **2 系统设计**

**2.0数据库设计**

## 

## 2.1用户用例图

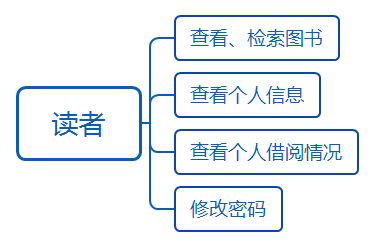
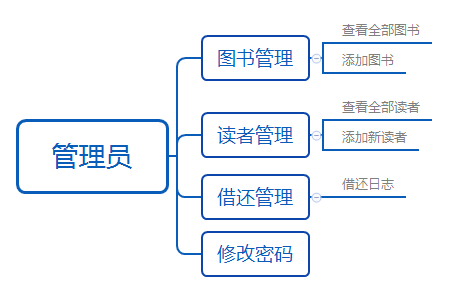
系统分为读者，图书管理员两个角色，各角色的用户用例如下图2-1所示：

图2-1 用户用例图

## 2.2 ER图

数据库设计共有6个表用,对应的ER图如图3-1所示。

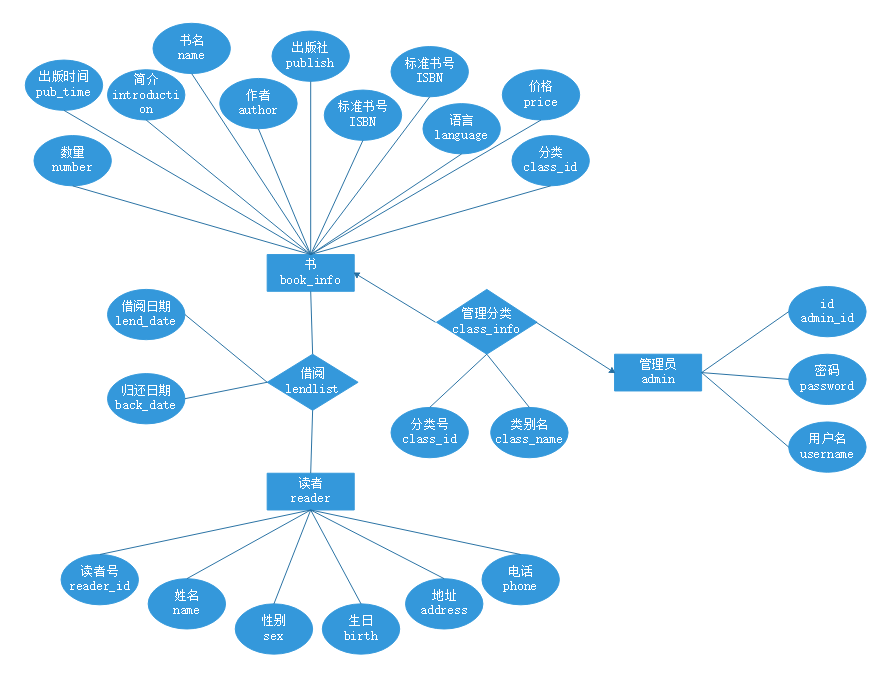
%3CmxGraphModel%3E%3Croot%3E%3CmxCell%20id%3D%220%22%2F%3E%3CmxCell%20id%3D%221%22%20parent%3D%220%22%2F%3E%3Cmysql.table%20entity.table.tableName%3D%22uses%22%20label%3D%22uses%22%20id%3D%222%22%3E%3CmxCell%20style%3D%22swimlane%3BfontStyle%3D0%3BchildLayout%3DstackLayout%3Bhorizontal%3D1%3Bhtml%3D1%3BstartSize%3D26%3BfillColor%3D%23b0e3e6%3BhorizontalStack%3D0%3BresizeParent%3D1%3BresizeParentMax%3D0%3BresizeLast%3D0%3Bcollapsible%3D1%3BmarginBottom%3D0%3BswimlaneFillColor%3D%23ffffff%3Balign%3Dcenter%3BfontSize%3D13%3BstrokeColor%3D%230e8088%3Brounded%3D0%3Bshadow%3D1%3Bcomic%3D0%3Bglass%3D0%3BgradientDirection%3Dsouth%3BgradientColor%3D%23ffffff%3B%22%20vertex%3D%221%22%20connectable%3D%220%22%20parent%3D%221%22%3E%3CmxGeometry%20x%3D%2260%22%20y%3D%2250%22%20width%3D%22310%22%20height%3D%22130%22%20as%3D%22geometry%22%2F%3E%3C%2FmxCell%3E%3C%2Fmysql.table%3E%3Cmysql.column%20entity.column.tableName%3D%22uses%22%20entity.column.name%3D%22userName%22%20entity.column.dataType%3D%22VARCHAR%22%20entity.column.PK%3D%22true%22%20label%3D%22%26lt%3Bimg%20title%3D%26quot%3BPrimary%20Key%26quot%3B%20src%3D%26quot%3Bimg%2Fdb%2Fkey1.png%26quot%3B%20width%3D%26quot%3B16%26quot%3B%20height%3D%26quot%3B16%26quot%3B%20align%3D%26quot%3Btop%26quot%3B%26gt%3B%26amp%3Bnbsp%3B%26lt%3Bfont%20size%3D%26quot%3B1%26quot%3B%20face%3D%26quot%3BTahoma%26quot%3B%26gt%3B%26lt%3Bspan%20style%3D%26quot%3Bfont-size%3A%2013px%26quot%3B%26gt%3B%26lt%3Bb%26gt%3Bid%20int%20primary%20key%26lt%3B%2Fb%26gt%3B%26lt%3B%2Fspan%26gt%3B%26lt%3B%2Ffont%26gt%3B%22%20entity.column.oldName%3D%22id%22%20entity.column.datalen%3D%2220%22%20entity.column.decimals%3D%22%22%20entity.column.autoIncreament%3D%22%22%20entity.column.unsigned%3D%22%22%20entity.column.bin%3D%22%22%20entity.column.ascii%3D%22%22%20entity.column.unicode%3D%22%22%20entity.column.unique%3D%22%22%20entity.column.isNotNull%3D%22NOT%20NULL%22%20entity.column.defaultValue%3D%22%22%20entity.column.comment%3D%22%22%20entity.column.enum%3D%22%22%20entity.column.set%3D%22%22%20entity.column.enumSetValue%3D%22%22%20id%3D%223%22%3E%3CmxCell%20style%3D%22text%3Bhtml%3D1%3BstrokeColor%3Dnone%3BfillColor%3Dnone%3BspacingLeft%3D4%3BspacingRight%3D4%3Boverflow%3Dhidden%3Brotatable%3D0%3BportConstraint%3Deastwest%3BfontSize%3D12%3BverticalAlign%3Dmiddle%3B%22%20vertex%3D%221%22%20parent%3D%222%22%3E%3CmxGeometry%20y%3D%2226%22%20width%3D%22310%22%20height%3D%2226%22%20as%3D%22geometry%22%2F%3E%3C%2FmxCell%3E%3C%2Fmysql.column%3E%3Cmysql.column%20entity.column.tableName%3D%22uses%22%20entity.column.name%3D%22chrName%22%20entity.column.datalen%3D%2220%22%20entity.column.dataType%3D%22VARCHAR%22%20label%3D%22%26lt%3Bimg%20title%3D%26quot%3BPrimary%20Key%26quot%3B%20src%3D%26quot%3Bimages%2Fspacer.gif%26quot%3B%20width%3D%26quot%3B16%26quot%3B%20height%3D%26quot%3B16%26quot%3B%20align%3D%26quot%3Btop%26quot%3B%26gt%3B%26amp%3Bnbsp%3B%26lt%3Bfont%20size%3D%26quot%3B1%26quot%3B%20face%3D%26quot%3BTahoma%26quot%3B%26gt%3B%26lt%3Bspan%20style%3D%26quot%3Bfont-size%3A%2013px%26quot%3B%26gt%3B%26lt%3Bb%26gt%3Bname%20varchar(10)%26lt%3B%2Fb%26gt%3B%26lt%3B%2Fspan%26gt%3B%26lt%3B%2Ffont%26gt%3B%22%20entity.column.oldName%3D%22name%22%20entity.column.decimals%3D%22%22%20entity.column.autoIncreament%3D%22%22%20entity.column.unsigned%3D%22%22%20entity.column.bin%3D%22%22%20entity.column.ascii%3D%22%22%20entity.column.unicode%3D%22%22%20entity.column.PK%3D%22false%22%20entity.column.unique%3D%22%22%20entity.column.isNotNull%3D%22%22%20entity.column.defaultValue%3D%22%22%20entity.column.comment%3D%22%22%20entity.column.enum%3D%22%22%20entity.column.set%3D%22%22%20entity.column.enumSetValue%3D%22%22%20id%3D%224%22%3E%3CmxCell%20style%3D%22text%3Bhtml%3D1%3BstrokeColor%3Dnone%3BfillColor%3Dnone%3BspacingLeft%3D4%3BspacingRight%3D4%3Boverflow%3Dhidden%3Brotatable%3D0%3BportConstraint%3Deastwest%3BfontSize%3D12%3BverticalAlign%3Dmiddle%3B%22%20vertex%3D%221%22%20parent%3D%222%22%3E%3CmxGeometry%20y%3D%2252%22%20width%3D%22310%22%20height%3D%2226%22%20as%3D%22geometry%22%2F%3E%3C%2FmxCell%3E%3C%2Fmysql.column%3E%3Cmysql.column%20entity.column.tableName%3D%22uses%22%20entity.column.name%3D%22password%22%20entity.column.datalen%3D%2250%22%20entity.column.dataType%3D%22VARCHAR%22%20label%3D%22%26lt%3Bimg%20title%3D%26quot%3BPrimary%20Key%26quot%3B%20src%3D%26quot%3Bimages%2Fspacer.gif%26quot%3B%20width%3D%26quot%3B16%26quot%3B%20height%3D%26quot%3B16%26quot%3B%20align%3D%26quot%3Btop%26quot%3B%26gt%3B%26amp%3Bnbsp%3B%26lt%3Bfont%20size%3D%26quot%3B1%26quot%3B%20face%3D%26quot%3BTahoma%26quot%3B%26gt%3B%26lt%3Bspan%20style%3D%26quot%3Bfont-size%3A%2013px%26quot%3B%26gt%3B%26lt%3Bb%26gt%3Bname%20varchar(10)%26lt%3B%2Fb%26gt%3B%26lt%3B%2Fspan%26gt%3B%26lt%3B%2Ffont%26gt%3B%22%20entity.column.oldName%3D%22chrName%22%20entity.column.decimals%3D%22%22%20entity.column.autoIncreament%3D%22%22%20entity.column.unsigned%3D%22%22%20entity.column.bin%3D%22%22%20entity.column.ascii%3D%22%22%20entity.column.unicode%3D%22%22%20entity.col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ty.column.datalen%3D%22%22%20entity.column.dataType%3D%22DATETIME%22%20label%3D%22%26lt%3Bimg%20title%3D%26quot%3BPrimary%20Key%26quot%3B%20src%3D%26quot%3Bimages%2Fspacer.gif%26quot%3B%20width%3D%26quot%3B16%26quot%3B%20height%3D%26quot%3B16%26quot%3B%20align%3D%26quot%3Btop%26quot%3B%26gt%3B%26amp%3Bnbsp%3B%26lt%3Bfont%20size%3D%26quot%3B1%26quot%3B%20face%3D%26quot%3BTahoma%26quot%3B%26gt%3B%26lt%3Bspan%20style%3D%26quot%3Bfont-size%3A%2013px%26quot%3B%26gt%3B%26lt%3Bb%26gt%3Bname%20varchar(10)%26lt%3B%2Fb%26gt%3B%26lt%3B%2Fspan%26gt%3B%26lt%3B%2Ffont%26gt%3B%22%20entity.column.oldName%3D%22count%22%20entity.column.decimals%3D%22%22%20entity.column.autoIncreament%3D%22%22%20entity.column.unsigned%3D%22%22%20entity.column.bin%3D%22%22%20entity.column.ascii%3D%22%22%20entity.column.unicode%3D%22%22%20entity.column.PK%3D%22false%22%20entity.column.unique%3D%22%22%20entity.column.isNotNull%3D%22%22%20entity.column.defaultValue%3D%22%22%20entity.column.comment%3D%22%22%20entity.column.enum%3D%22%22%20entity.column.set%3D%22%22%20entity.column.enumSetValue%3D%22%22%20id%3D%2219%22%3E%3CmxCell%20style%3D%22text%3Bhtml%3D1%3BstrokeColor%3Dnone%3BfillColor%3Dnone%3BspacingLeft%3D4%3BspacingRight%3D4%3Boverflow%3Dhidden%3Brotatable%3D0%3BportConstraint%3Deastwest%3BfontSize%3D12%3BverticalAlign%3Dmiddle%3B%22%20vertex%3D%221%22%20parent%3D%2212%22%3E%3CmxGeometry%20y%3D%22182%22%20width%3D%22280%22%20height%3D%2226%22%20as%3D%22geometry%22%2F%3E%3C%2FmxCell%3E%3C%2Fmysql.column%3E%3CmxCell%20id%3D%2220%22%20value%3D%221..n%22%20style%3D%22edgeStyle%3DentityRelationEdgeStyle%3BfontSize%3D12%3Bhtml%3D1%3BendArrow%3DERoneToMany%3BstrokeWidth%3D2%3BstrokeColor%3D%236c8ebf%3BexitX%3D1%3BexitY%3D0.25%3BentryX%3D0%3BentryY%3D0.5%3B%22%20edge%3D%221%22%20source%3D%224%22%20target%3D%2214%22%20parent%3D%221%22%3E%3CmxGeometry%20relative%3D%221%22%20as%3D%22geometry%22%2F%3E%3C%2FmxCell%3E%3CmxCell%20id%3D%2221%22%20value%3D%221..n%22%20style%3D%22edgeStyle%3DentityRelationEdgeStyle%3BfontSize%3D12%3Bhtml%3D1%3BendArrow%3DERoneToMany%3BstrokeWidth%3D2%3BstrokeColor%3D%236c8ebf%3BexitX%3D1%3BexitY%3D0.5%3BentryX%3D0%3BentryY%3D0.5%3B%22%20edge%3D%221%22%20source%3D%228%22%20target%3D%2216%22%20parent%3D%221%22%3E%3CmxGeometry%20relative%3D%221%22%20as%3D%22geometry%22%2F%3E%3C%2FmxCell%3E%3C%2Froot%3E%3C%2FmxGraphModel%3E

图3-1 数据库ER图

## 2.3 UML类图（Class Diagram）

各类的结构及类之间的关系如图2-5所示：

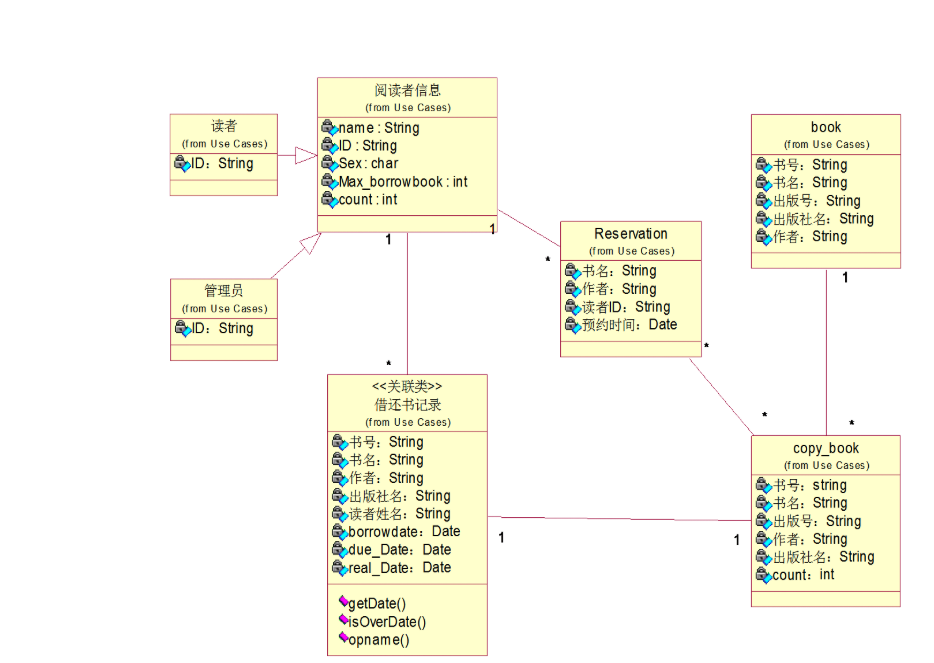
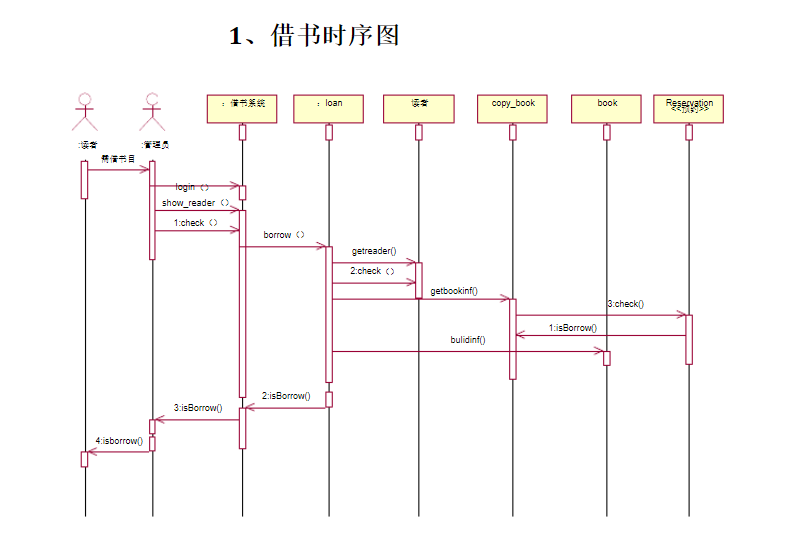


图2-5 用户功能类图

## 2.4 UML时序图（Sequence Diagram）

### 2.4.1 借书时序图



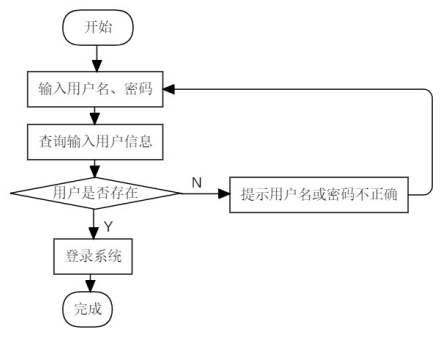
###### 2.4.2还书时序图

### 

## 2.5 UML活动图（Activity Diagram）

### 2.5.1 登陆

读者登陆和管理员登陆操作需要验证用户名，密码，只有当用户名和密码同时存在即用户存在的情况下才能成功登录系统，否则会提示错误信息，具体流程如图2-6所示。



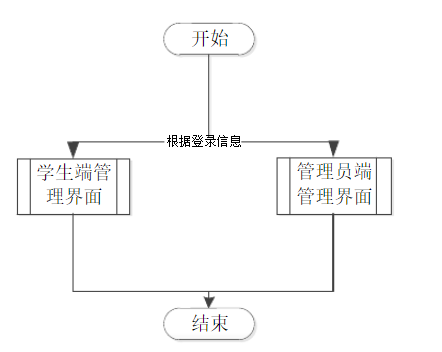
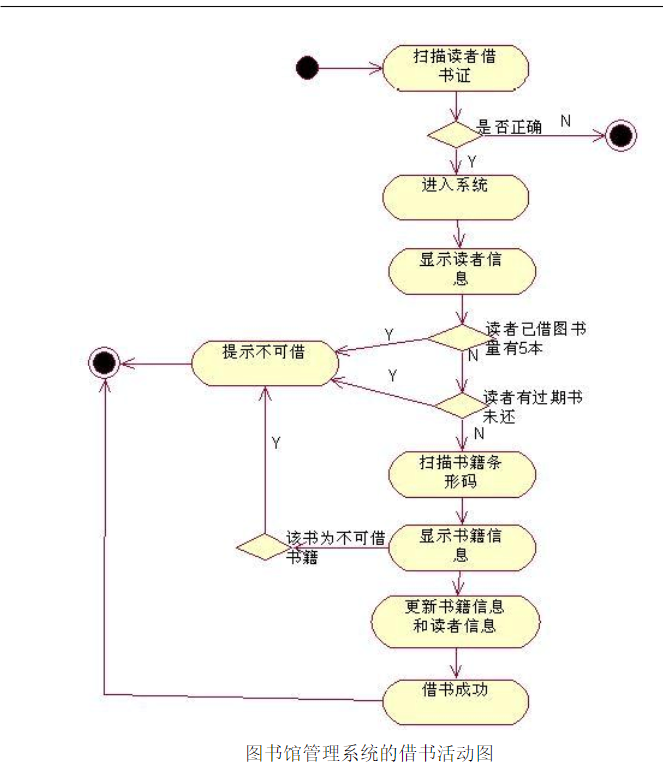
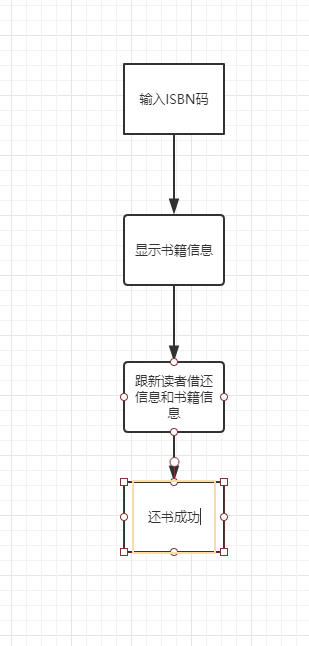


图2-2 登录流程图

### 2.5.2 借阅模块



### 2.5.3 归还模块



# **3 系统实现**

## 3.1 项目结构

## 

## 3.2 配置文件

### 3.2.1 db.properties文件

该配置文件主要是以文件形式保存数据库的驱动类名称，连接数据库的URL地址，访问数据库的用户名及对应的密码，程序运行时会读取该文件相关信息，避免硬编码，当相关信息发生变化时，只需修改配置文件而不用修改源代码，增加程序的可扩展型。

### 3.2.2 log4j.properties文件

 txt文件为解释文件作用和关键代码

### log4j.rootLogger = debug,stdout

### log4j.appender.stdout = org.apache.log4j.ConsoleAppender

### log4j.appender.stdout.Target = System.out

### log4j.appender.stdout.Threshold = debug

### log4j.appender.stdout.layout = org.apache.log4j.PatternLayout

### log4j.appender.stdout.layout.ConversionPattern = [%-5p] %d method:%l%n%m%n

### **3.2.3** book-context.xml文件

描述该文件作用，并对里面的配置进行解释

## 3.3 VO类ReaderInfo.java

描述该文件作用，并对里面的关键代码进行解释



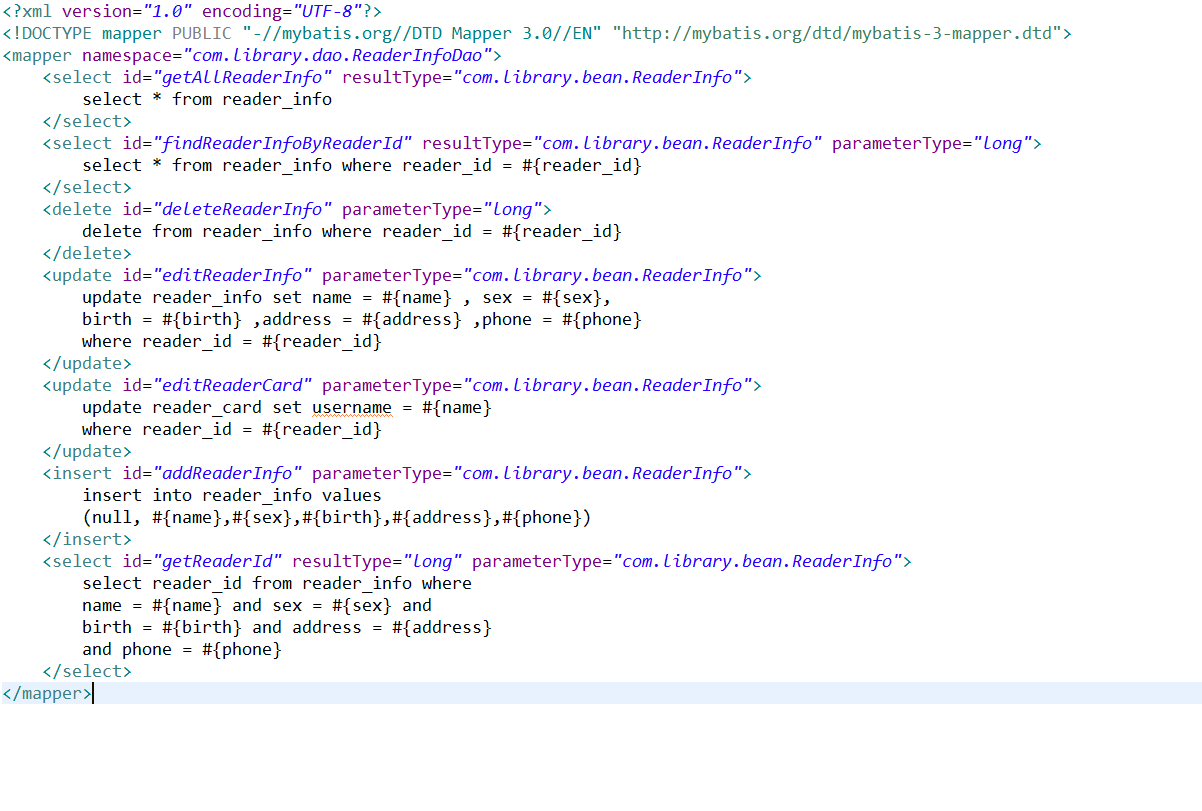
## 3.4 DAO接口类readerInfoDAO.java

描述该文件作用，并对里面的关键代码进行解释

## 

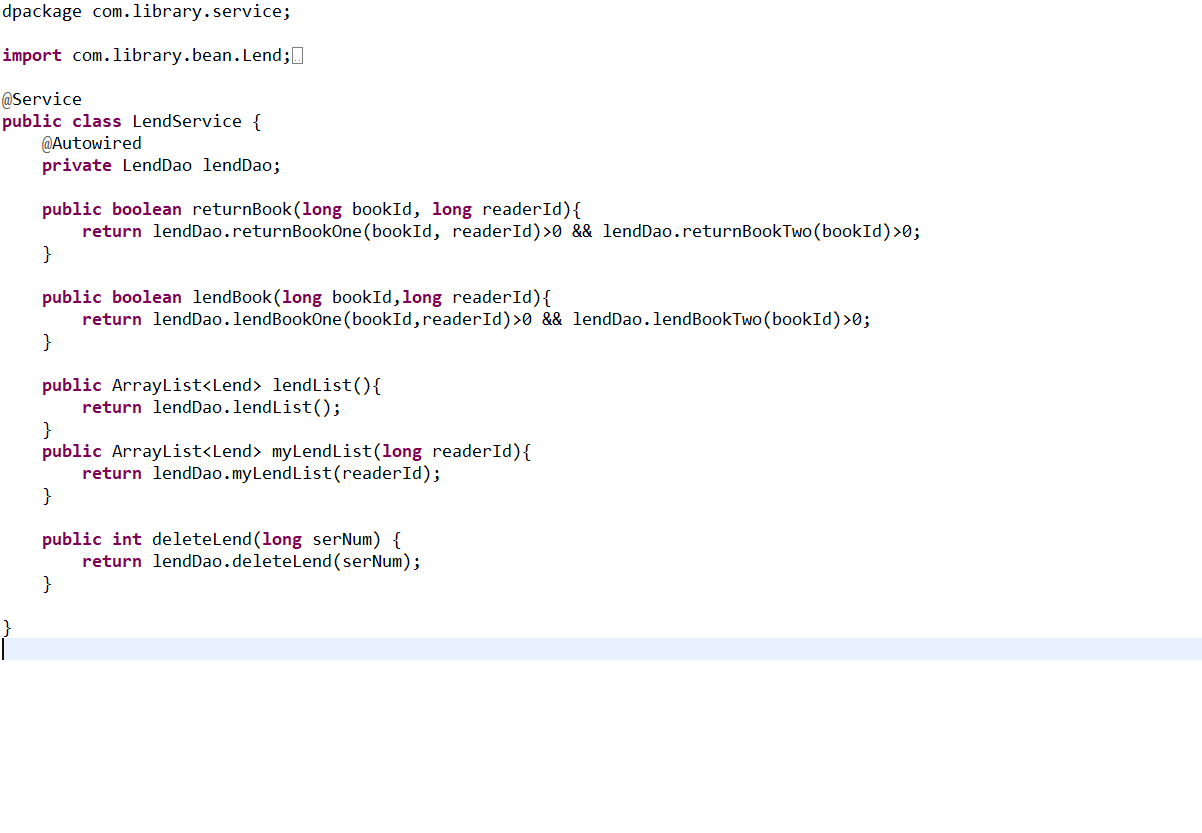
## 3.5 接口映射文件readerInfo.xml

描述该文件作用，并对里面的关键信息进行解释

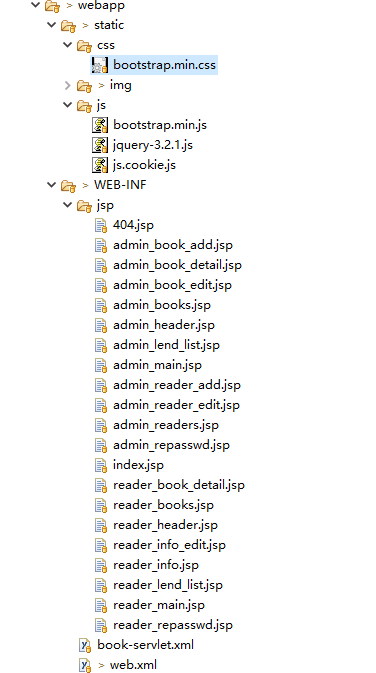


## 3.6 服务层Lendservice.java

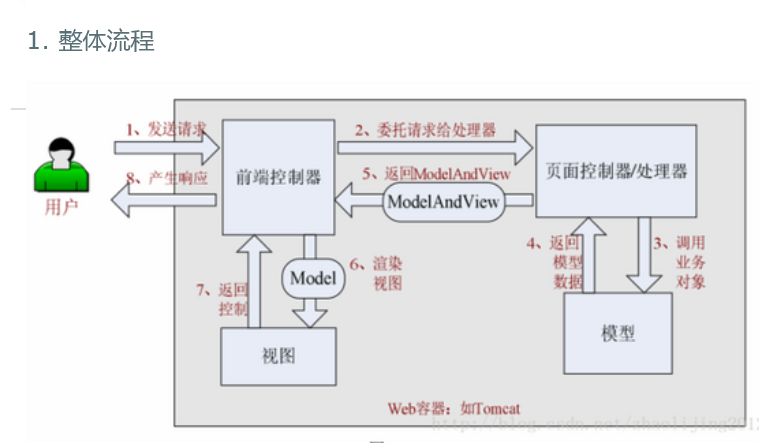
描述该文件作用，并对里面的关键代码进行解释

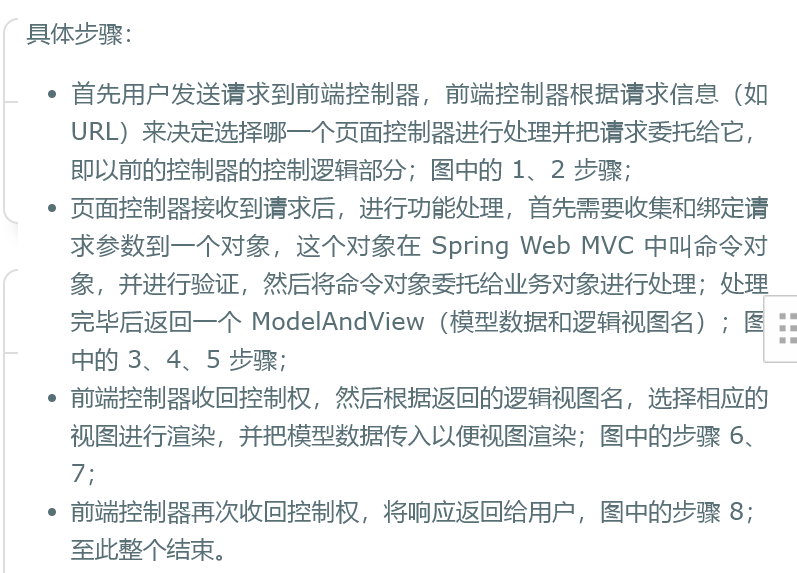


## 3.7 用户界面 前端



前端页面采用jsp+js+css 。js是脚本语言，负责一些逻辑处理，比如验证账户密码的正确性等css是样式表，可以设置一些样式属性js的框架使用的是jquery，css的框架使用的是bootstrap





# **4 系统测试**

程序每个功能模块的运行结果截图由于图片太多放在文件夹”测试”中 分读者和管理员两类账户展示。

# **5 系统总结**

通过本次课程设计，我对Java开发有了一定的认识，对JSP技术和JAVA以及MsSQL数据库也有了进一步的了解，丰富了自己的知识。

在设计过程中,出现了许多错误,难处,为了解决问题查阅了不少相关的资料和前人写的教程和经验,锻炼了自我学习的能力,开阔了视野。