

图书管理系统

Application Design Specification

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1、系统结构和思路

系统环境：

数据库管理系统：MySQL 5.22

MVC 框架：Spring MVC 3

持久层框架：Hibernate 4

数据库表结构：

表 person

Field	Type	Null	Key	Default	Extra
id	bigint(20)	NO	PRI	NULL	auto_increment
age	int(11)	YES		NULL	
login	varchar(255)	NO	UNI	NULL	
name	varchar(255)	NO		NULL	
password	varchar(255)	NO		NULL	
person_role	int(11)	YES		NULL	
pid	bigint(20)	NO		NULL	
sex	int(11)	YES		NULL	

用于存储系统管理的用户信息。

表 book

Field	Type	Null	Key	Default	Extra
id	bigint(20)	NO	PRI	NULL	auto_increment
amount	bigint(20)	YES		NULL	
author	varchar(255)	NO		NULL	
isbn	varchar(13)	NO	UNI	NULL	
price	double	YES		NULL	
publisher	varchar(255)	NO		NULL	
title	varchar(255)	NO		NULL	
url	varchar(255)	YES		NULL	
orz	double	YES		NULL	

用于存储书目。

表 book_order

Field	Type	Null	Key	Default	Extra
id	bigint(20)	NO	PRI	NULL	auto_increment
book	bigint(20)	YES	MUL	NULL	
amount	bigint(20)	YES		NULL	
figure	double	YES		NULL	
status	int(11)	YES		NULL	

用于存储图书订单。和 book 为多对一关系。

表 book_transaction

Field	Type	Null	Key	Default	Extra
id	bigint(20)	NO	PRI	NULL	auto_increment
transaction_type	int(11)	YES		NULL	
transaction_date	datetime	YES		NULL	
figure	double	YES		NULL	
amount	bigint(20)	YES		NULL	
book	bigint(20)	YES	MUL	NULL	

用于存储交易条目。和 book 为多对一关系。

系统特色亮点：

模糊匹配：

支持对作者、图书名、出版社的模糊匹配，支持的占位符号有*,%,?等。

AJAX 搜索框：

首页有图书快捷检索框，可以根据输入动态提示书库中可能有的书目。

条目分页：

测试数据中有上百本图书，系统支持对图书检索时的分页。

真实数据来源：

数据库中的图书信息来源为豆瓣网，由豆瓣读书开放的 API 获取。使得测试用例更贴近真实，并且配有图书封面图片。

2、文件和函数说明

doc/BookInfo.csv 用于导入数据库的图书信息文件。

src/main/cpp (图书信息抓取)

1. fetch.cpp: 根据书目的 isbn 编号, 通过 api 索引 (<http://api.douban.com/book/subject/isbn/>), 在豆瓣上对书的信息进行获取。
2. read.cpp: 对书信息字符串提取主要信息, 主要运用了字符串匹配, 文件的读写。每次匹配都对应书目的 isbn 编号, title, price, publisher 前后的标志性字符串, 比如 <db:attribute name="isbn13"> 后接着的是书的 isbn 编号的信息, 通过读该信息再将信息输出到指定文件中。由此得到所有书的 isbn, 图片, 名称, 价格, 出版社, 作者。

src/main/java (网站后台 java 代码)

***/com/ryliu/book (包名)**

****/domain (模型)**

1. Book.java: 书目定义
2. BookOrder.java: 书目订单定义
3. BookTransaction.java: 交易条目定义
4. OrderStatus: 订单状态定义 (未付款、已付款、已退订、已上架)
5. Person: 用户定义
6. PersonRole: 用户角色定义 (超级管理员、管理员、普通用户)
7. Sex: 用户性别定义 (男性、女性)
8. TransactionType: 交易类型定义 (买入、卖出)

****service (服务)**

1. AuthenticationProvider.java: 用户登录检查服务, 将用户提供的用户名和密码 (加密为 MD5 格式) 和数据库中的用户比对, 判断是否允许登录到本系统, 并根据用户身份赋予相应的权限。

****web (控制器)**

1. ApplicationConversionServiceFactoryBean.java: 提供数据类型之间的转换服务。
2. BookController.java: 图书的创建、更新、删除、购买操作。
3. BookOrderController.java: 订单的创建、支付、退货、上架等操作。
4. BookTransactionController.java: 交易条目的查询等操作。
5. PersonController.java: 用户的创建、更新、删除等操作。

src/main/resources (配置文件)

1. log4j.properties: 日志配置文件

***/META-INF (java 持久化层配置文件)**

1. persistence.xml: 持久化配置
2. spring/database.properties: 数据库链接信息配置

3. spring/applicationContext.xml : 应用程序上下文配置
4. spring/applicationContext-security.xml : 用户权限上下文配置

src/main/webapp (前端页面)

***/images (图片)**

***/styles (css 样式表文件)**

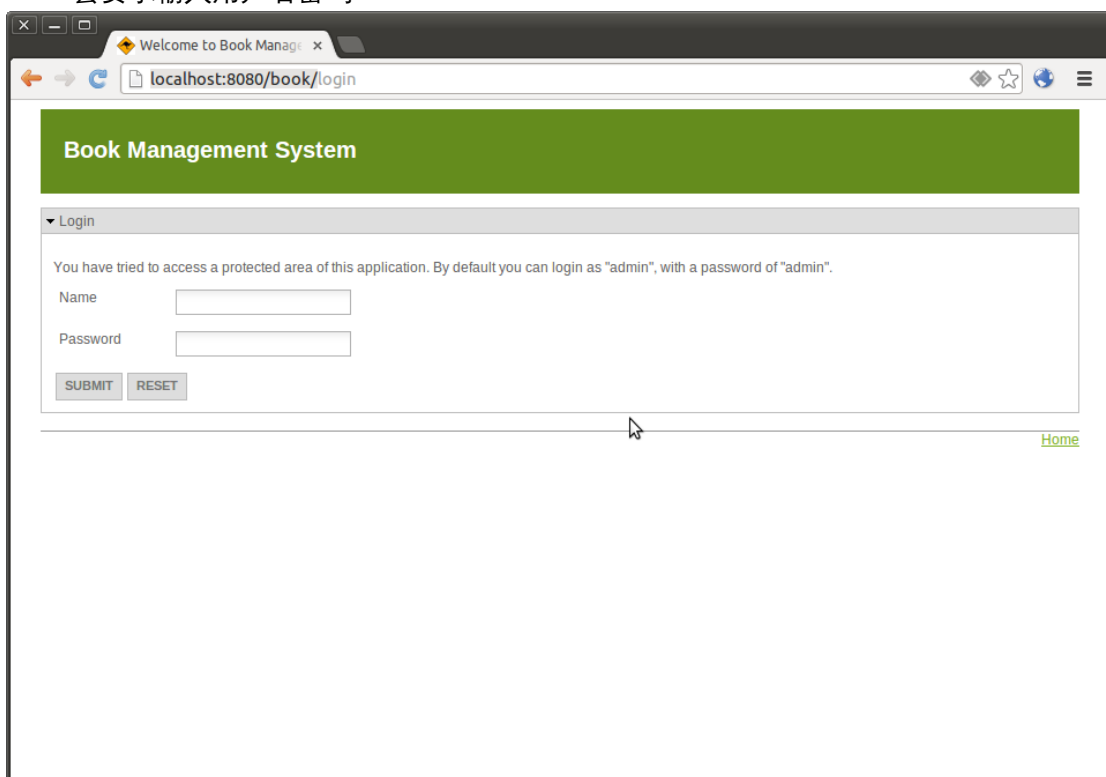
***/WEB-INF (J2EE 目录结构，包含视图、标签等)**

3、使用说明以及测试实例

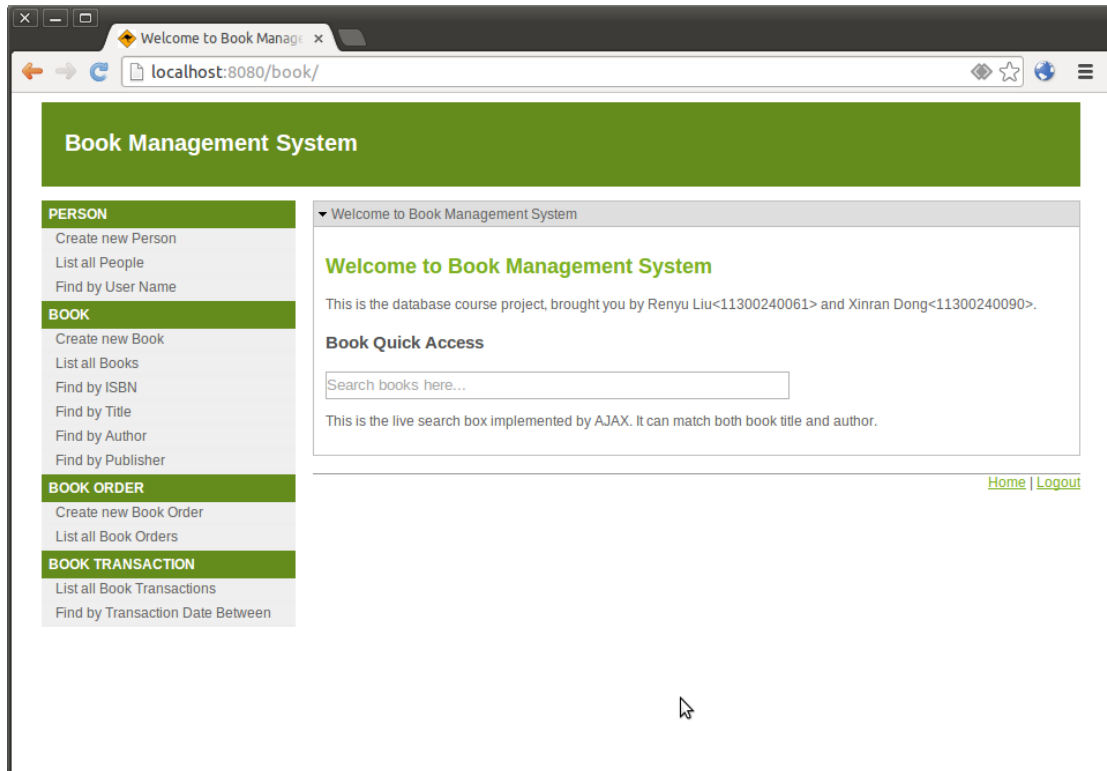
在配置好数据库配置文件之后，使用 `mvn -Dmaven.tomcat.uriEncoding=UTF-8 tomcat:run` 命令开启 8080 端口的 web 服务进行访问。

在浏览器中输入 <http://localhost:8080/book/> 访问。

会要求输入用户名密码：

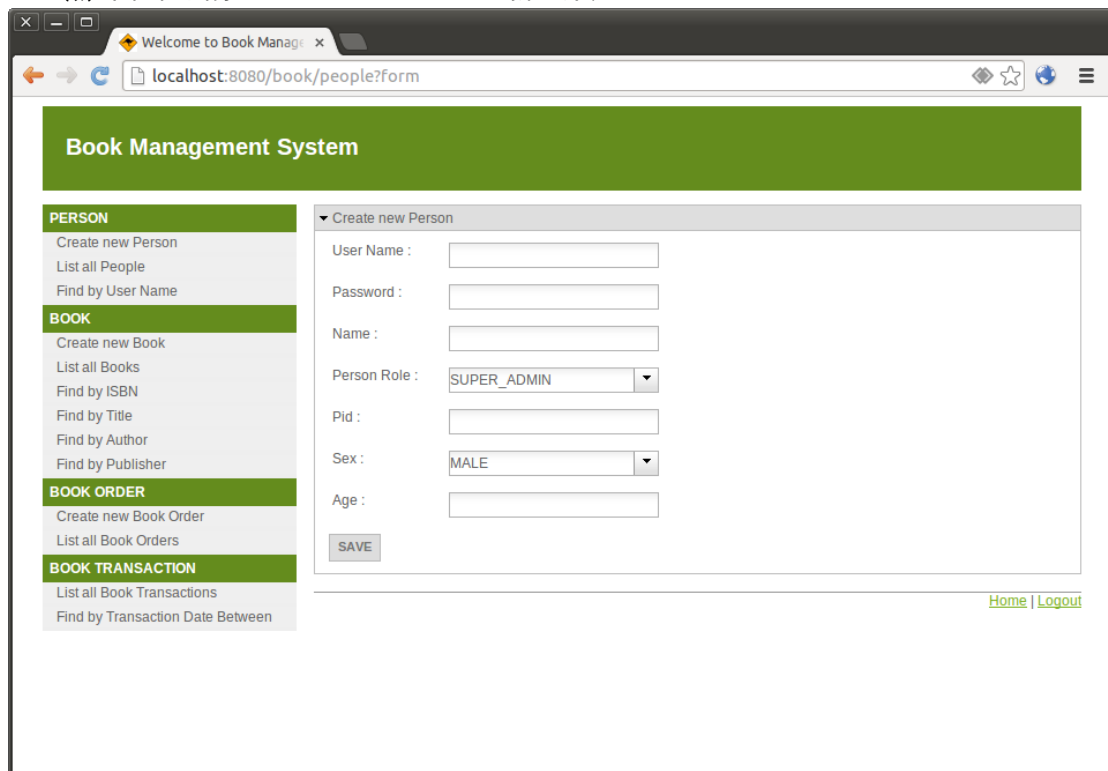


可以使用超级管理员登录(admin/admin) 也可以使用普通管理员登录 (user/user)。
登录后有如下界面：



用户功能测试：

点击菜单中的 Create new Person 新建用户：



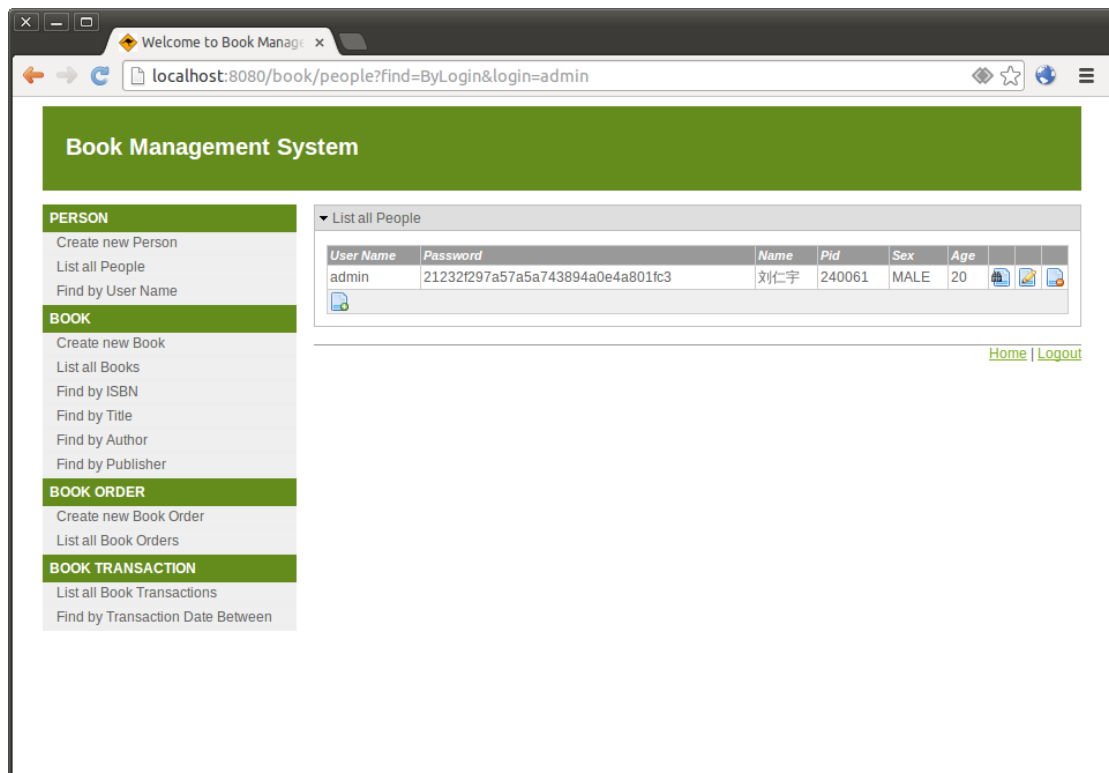
点击菜单中的 List all People 查看全部用户：

The screenshot shows a web browser window with the address bar displaying `localhost:8080/book/people?page=1&size=10`. The page title is "Book Management System". On the left, there is a sidebar menu with categories: PERSON, BOOK, BOOK ORDER, and BOOK TRANSACTION. The "PERSON" category is selected, and the "List all People" option is active. The main content area displays a table of users with columns: User Name, Password, Name, Pid, Sex, Age, and three action icons. The table contains two rows: "admin" and "user". Below the table, it says "List results per page: 5 10 15 20 25 | Page 1 of 1". At the bottom right, there are links for "Home" and "Logout".

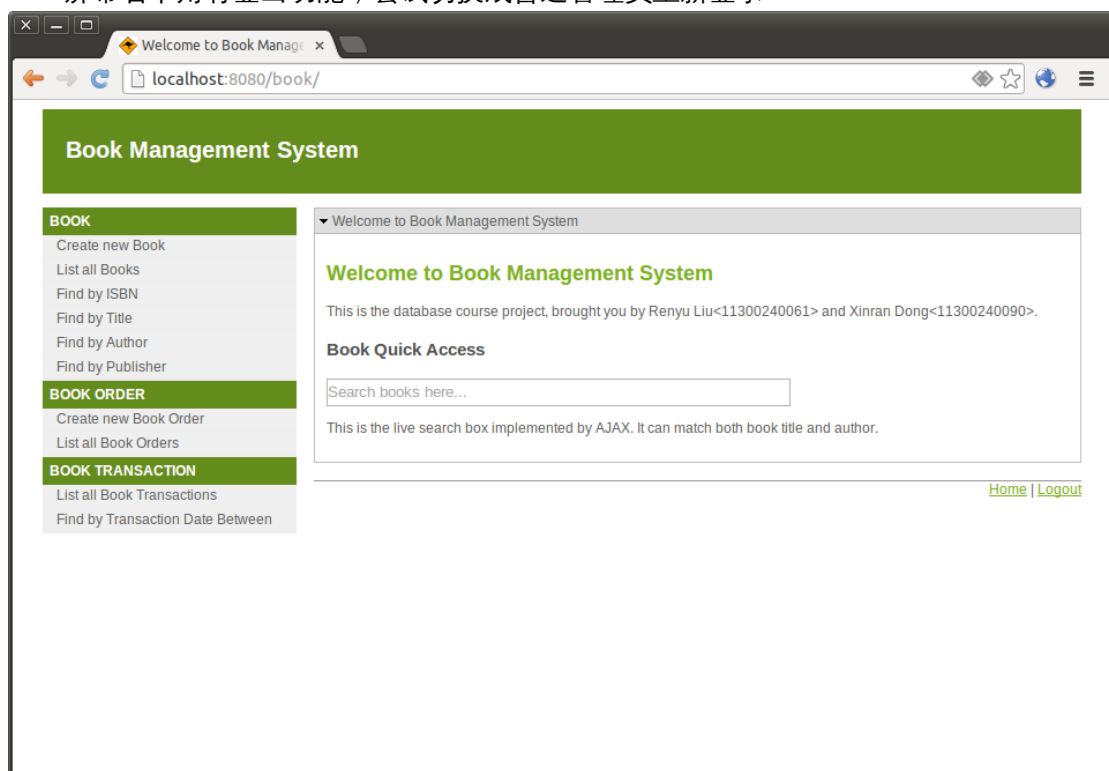
User Name	Password	Name	Pid	Sex	Age			
admin	21232f297a57a5a743894a0e4a801fc3	刘仁宇	240061	MALE	20			
user	ee11cbb19052e40b07aac0ca060c23ee	董欣然	240090	FEMALE	20			

也可以根据用户名检索用户：

The screenshot shows the same web browser window, but the address bar now displays `localhost:8080/book/people?find=ByLogin&form`. The sidebar menu is the same, but the "Find People" option under the "PERSON" category is active. The main content area displays a form with a "User Name" input field containing the text "admin". To the right of the input field is a message "Enter User Name (required)". Below the input field is a "FIND" button. At the bottom right, there are links for "Home" and "Logout".

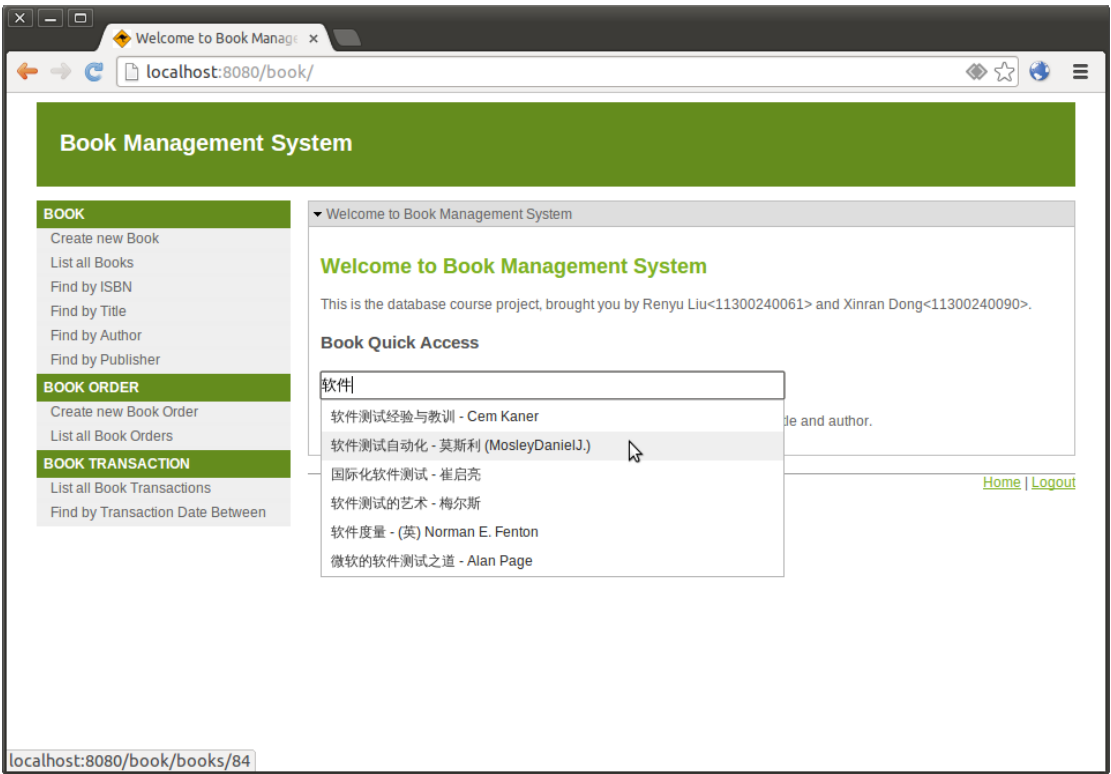


屏幕右下角有登出功能，尝试切换成普通管理员重新登录：

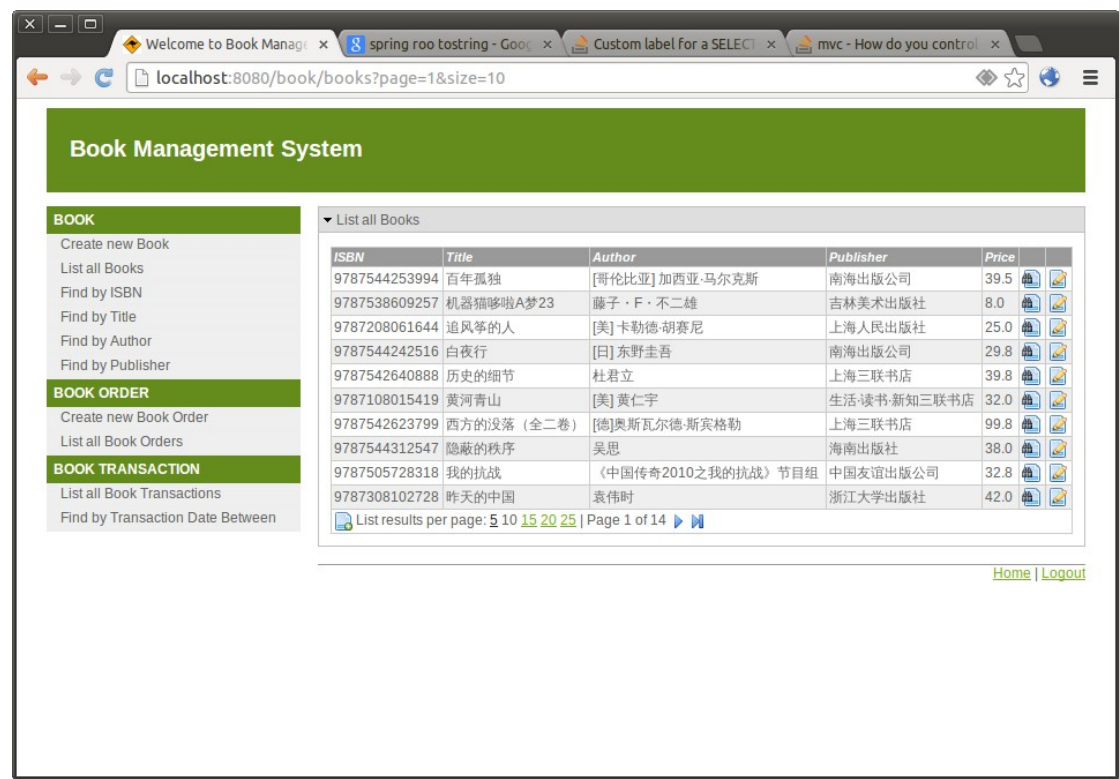


发现菜单中不再有用户管理的选项。

图书功能测试：
AJAX 快捷搜索：



列出全部图书：



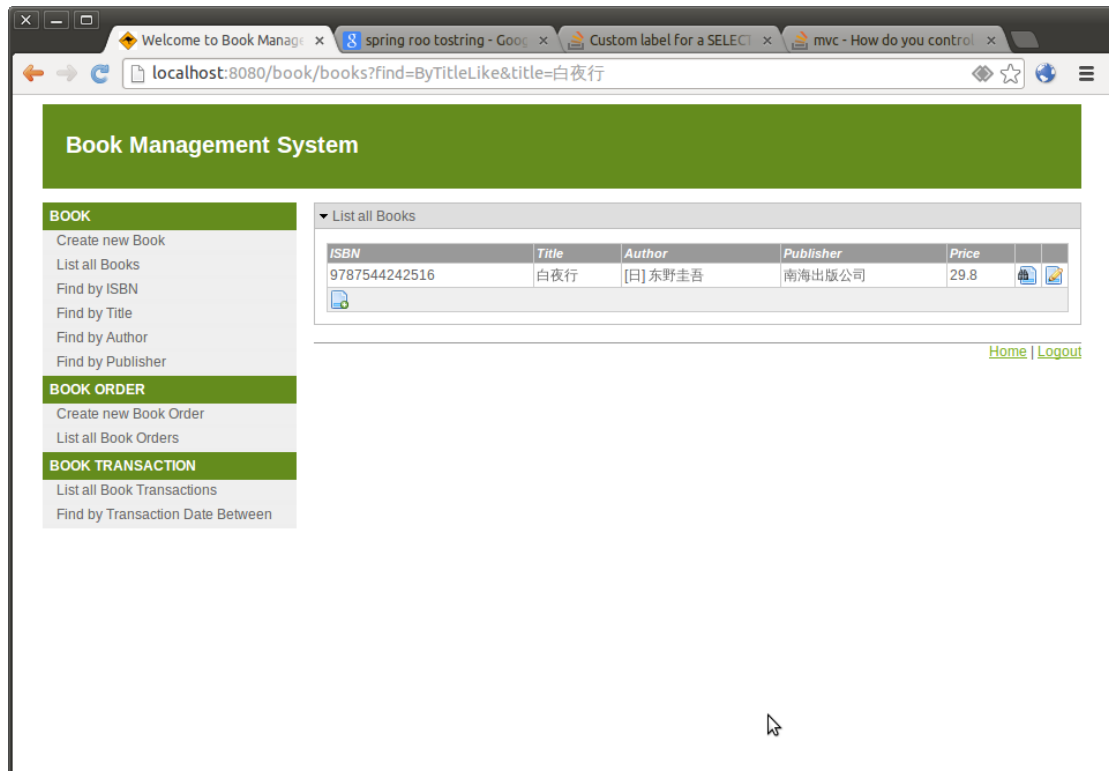
分页功能：

The screenshot shows the 'Book Management System' interface. On the left is a sidebar with navigation links under three categories: BOOK, BOOK ORDER, and BOOK TRANSACTION. The main content area is titled 'List all Books' and displays a table of books. The table has columns for ISBN, Title, Author, Publisher, and Price. Below the table, there is a pagination bar showing 'List results per page: 5 10 15 20 25' and 'Page 1 of 10'. At the bottom right, there are links for 'Home' and 'Logout'.

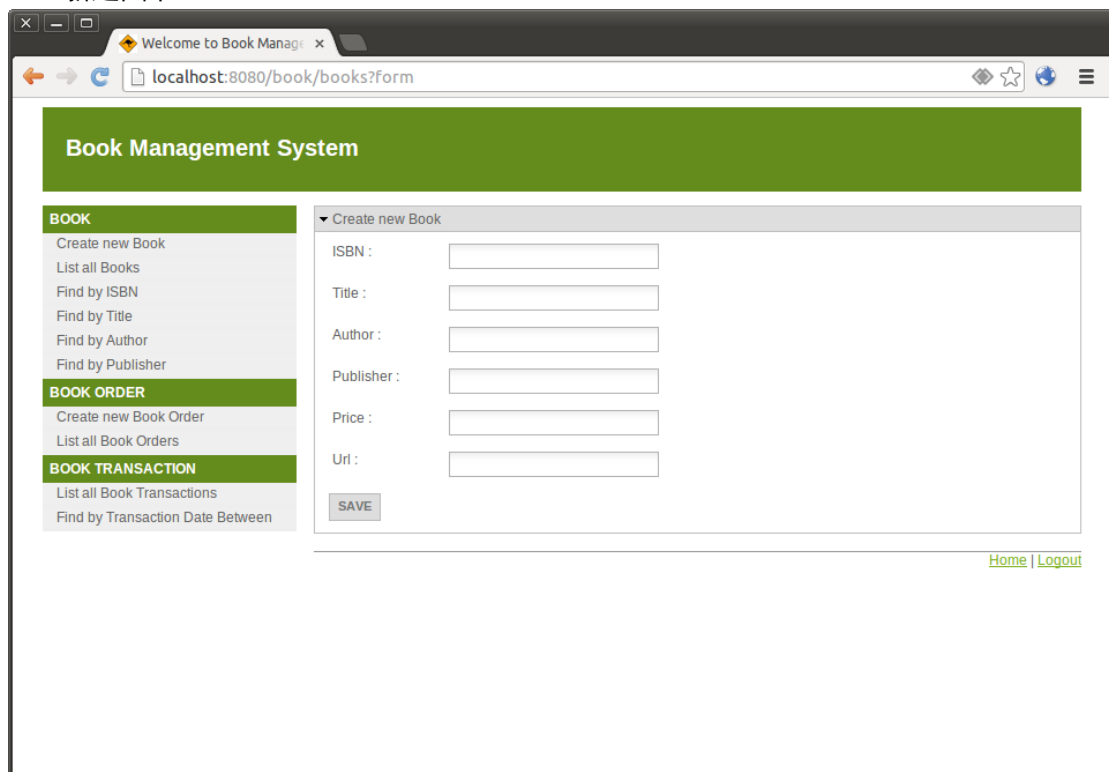
ISBN	Title	Author	Publisher	Price
9787544253994	百年孤独	[哥伦比亚] 加西亚-马尔克斯	南海出版公司	39.5
9787538609257	机器猫哆啦A梦23	藤子·F·不二雄	吉林美术出版社	8.0
9787208061644	追风筝的人	[美] 卡勒德·胡赛尼	上海人民出版社	25.0
9787544242516	白夜行	[日] 东野圭吾	南海出版公司	29.8
9787542640888	历史的细节	杜君立	上海三联书店	39.8
9787108015419	黄河青山	[美] 黄仁宇	生活·读书·新知三联书店	32.0
9787542623799	西方的没落 (全二卷)	[德] 奥斯瓦尔德·斯宾格勒	上海三联书店	99.8
9787544312547	隐藏的秩序	吴思	海南出版社	38.0
9787505728318	我的抗战	《中国传奇2010之我的抗战》节目组	中国友谊出版公司	32.8
9787308102728	昨天的中国	袁伟时	浙江大学出版社	42.0
9787108025371	扫起落叶好过冬	林达	生活·读书·新知三联书店	38.5
9787301168332	从“东欧”到“新欧洲”	金雁	北京大学出版社	48.0
9787500407669	剑桥中国晚清史(上下)	(美) 费正清 (编)	中国社会科学出版社	143.0
9787563391073	古地图密码	刘钢	广西师范大学出版社	29.0
9787508635583	论中国	[美] 基辛格	中信出版社	68.0

其他检索方式 (ISBN、书名、作者、出版社)：

The screenshot shows the 'Book Management System' interface with the search functionality. The sidebar is the same as in the previous screenshot. The main content area is titled 'Find Books' and features a search form. The form has a label 'Title:' followed by a text input field containing the text '白夜行'. To the right of the input field is a button labeled 'FIND'. A tooltip message 'Enter Title (required)' is displayed next to the input field. At the bottom right, there are links for 'Home' and 'Logout'.



新建图书：



查看图书详情：

The screenshot shows a web browser at localhost:8080/book/books/4. The page has a green header "Book Management System". On the left is a sidebar with three sections: "BOOK" (Create new Book, List all Books, Find by ISBN, Find by Title, Find by Author, Find by Publisher), "BOOK ORDER" (Create new Book Order, List all Book Orders), and "BOOK TRANSACTION" (List all Book Transactions, Find by Transaction Date Between). The main content area is titled "Show Book" and displays the following details: ISBN: 9787544242516, Title: 白夜行, Author: [日] 东野圭吾, Publisher: 南海出版公司, Price: 29.8, and Amount: 1. To the right of the details is a book cover image and a green "Buy It Now" button. At the bottom right, there are links for "Home" and "Logout".

Show Book	
ISBN :	9787544242516
Title :	白夜行
Author :	[日] 东野圭吾
Publisher :	南海出版公司
Price :	29.8
Amount :	1

图书购买：

This screenshot is identical to the previous one, but the "Amount" field now shows 0 and the text "Already Sold Out" is displayed in red below the book cover image. The "Buy It Now" button is still present.

Show Book	
ISBN :	9787544242516
Title :	白夜行
Author :	[日] 东野圭吾
Publisher :	南海出版公司
Price :	29.8
Amount :	0

Already Sold Out

图书订单管理：

新建订单：

The screenshot shows a web browser window with the URL `localhost:8080/book/bookorders?form`. The page title is "Book Management System". On the left, there is a sidebar menu with three sections: "BOOK" (containing "Create new Book", "List all Books", "Find by ISBN", "Find by Title", "Find by Author", "Find by Publisher"), "BOOK ORDER" (containing "Create new Book Order", "List all Book Orders"), and "BOOK TRANSACTION" (containing "List all Book Transactions", "Find by Transaction Date Between"). The main content area is titled "Create new Book Order" and contains a form with the following fields: "Book" (a dropdown menu showing "9787544242516 白夜行 [日] 东野圭吾"), "Figure" (a text input field with "20"), and "Amount" (a text input field with "1"). There is a "SAVE" button at the bottom of the form. In the bottom right corner, there are links for "Home" and "Logout".

The screenshot shows a web browser window with the URL `localhost:8080/book/bookorders/9`. The page title is "Book Management System". The sidebar menu is identical to the previous screenshot. The main content area is titled "Show Book Order" and displays the details of a book order: "Book" (9787544242516 白夜行 [日] 东野圭吾), "Figure" (20.0), "Amount" (1), and "Status" (UNPAID). Below the details, there are two buttons: "Pay This Order" and "Cancel This Order". In the bottom right corner, there are links for "Home" and "Logout".

订单支付：

The screenshot shows a web browser window with the URL `localhost:8080/book/bookorders/9`. The page title is "Book Management System". On the left, there is a sidebar menu with three sections: "BOOK" (Create new Book, List all Books, Find by ISBN, Find by Title, Find by Author, Find by Publisher), "BOOK ORDER" (Create new Book Order, List all Book Orders), and "BOOK TRANSACTION" (List all Book Transactions, Find by Transaction Date Between). The main content area displays the "Show Book Order" form for order ID 9. The form shows the following details: Book : 9787544242516 白夜行 [日] 东野圭吾, Figure : 20.0, Amount : 1, Status : PAID. There is a "Move Books on Shelves" button at the bottom of the form. At the bottom right of the page, there are links for "Home" and "Logout".

Show Book Order	
Book :	9787544242516 白夜行 [日] 东野圭吾
Figure :	20.0
Amount :	1
Status :	PAID

[Home](#) | [Logout](#)

书目上架，上架后会要求更新数目信息，主要是数目价格：

The screenshot shows a web browser window with the URL `localhost:8080/book/books/4?form`. The page title is "Book Management System". The sidebar menu is identical to the previous screenshot. The main content area displays the "Update Book" form. The form contains the following fields: ISBN : 9787544242516, Title : 白夜行, Author : [日] 东野圭吾, Publisher : 南海出版公司, Price : 29.8, and Url : http://img3.douban.com/spic/s461. There is a "SAVE" button at the bottom of the form. At the bottom right of the page, there are links for "Home" and "Logout".

Update Book	
ISBN :	9787544242516
Title :	白夜行
Author :	[日] 东野圭吾
Publisher :	南海出版公司
Price :	29.8
Url :	http://img3.douban.com/spic/s461

[Home](#) | [Logout](#)

书目上架成功确认：

The screenshot shows a web browser with the URL `localhost:8080/book/books/4`. The page title is "Book Management System". On the left, there is a sidebar with three main sections: "BOOK", "BOOK ORDER", and "BOOK TRANSACTION". The "BOOK" section is active, showing options like "Create new Book", "List all Books", "Find by ISBN", "Find by Title", "Find by Author", and "Find by Publisher". The main content area displays the details for a book with ISBN 9787544242516. The details include: Title: 白夜行, Author: [日] 东野圭吾, Publisher: 南海出版公司, Price: 29.8, and Amount: 1. There is a "Buy It Now" button and a small book cover image. At the bottom right, there are links for "Home" and "Logout".

Book Management System

BOOK

- Create new Book
- List all Books
- Find by ISBN
- Find by Title
- Find by Author
- Find by Publisher

BOOK ORDER

- Create new Book Order
- List all Book Orders

BOOK TRANSACTION

- List all Book Transactions
- Find by Transaction Date Between

Show Book

ISBN : 9787544242516

Title : 白夜行

Author : [日] 东野圭吾

Publisher : 南海出版公司

Price : 29.8

Amount : 1

Buy It Now

Home | Logout

查看全部订单：

The screenshot shows a web browser with the URL `localhost:8080/book/bookorders?page=1&size=10`. The page title is "Book Management System". On the left, there is a sidebar with three main sections: "BOOK", "BOOK ORDER", and "BOOK TRANSACTION". The "BOOK ORDER" section is active, showing options like "Create new Book Order" and "List all Book Orders". The main content area displays a table of all book orders. The table has columns: Status, Book, Figure, Amount, and a small icon. The data rows show various orders with their respective statuses, book titles, figures, and amounts. At the bottom, there is a pagination link: "List results per page: 5 10 15 20 25 | Page 1 of 1". At the bottom right, there are links for "Home" and "Logout".

Book Management System

BOOK

- Create new Book
- List all Books
- Find by ISBN
- Find by Title
- Find by Author
- Find by Publisher

BOOK ORDER

- Create new Book Order
- List all Book Orders

BOOK TRANSACTION

- List all Book Transactions
- Find by Transaction Date Between

List all Book Orders

Status	Book	Figure	Amount	
PAID	9787208061644 追风筝的人 [美] 卡勒德·胡赛尼	800.0	20	
CANCELED	9787538609257 机器猫哆啦A梦23 藤子·F·不二雄	100.0	20	
SHELVED	9787544242516 白夜行 [日] 东野圭吾	300.0	10	
UNPAID	9787508635583 论中国 [美] 基辛格	50.5	3	
SHELVED	9787544242516 白夜行 [日] 东野圭吾	10.0	1	
SHELVED	9787544242516 白夜行 [日] 东野圭吾	50.0	1	
SHELVED	9787538609257 机器猫哆啦A梦23 藤子·F·不二雄	100.0	20	
UNPAID	9787544242516 白夜行 [日] 东野圭吾	20.0	1	
SHELVED	9787544242516 白夜行 [日] 东野圭吾	20.0	1	

List results per page: 5 10 15 20 25 | Page 1 of 1

Home | Logout

帐目功能：
查看所有交易记录：

Book Management System

BOOK

Create new Book

List all Books

Find by ISBN

Find by Title

Find by Author

Find by Publisher

BOOK ORDER

Create new Book Order

List all Book Orders

BOOK TRANSACTION

List all Book Transactions

Find by Transaction Date Between

List all Book Transactions

Type	Transaction Date	Figure	Amount	Book
SELL	May 10, 2013 8:39:00 PM	39.5	1	9787544253994 百年孤独 [哥伦比亚] 加西亚·马尔克斯
SELL	May 10, 2013 9:05:02 PM	39.5	1	9787544253994 百年孤独 [哥伦比亚] 加西亚·马尔克斯
SELL	May 10, 2013 10:58:42 PM	39.5	1	9787544253994 百年孤独 [哥伦比亚] 加西亚·马尔克斯
BUY	May 10, 2013 11:27:28 PM	800.0	20	9787208061644 追风筝的人 [美] 卡勒德·胡赛尼
BUY	May 10, 2013 11:30:31 PM	300.0	10	9787544242516 白夜行 [日] 东野圭吾
BUY	May 10, 2013 11:34:09 PM	10.0	1	9787544242516 白夜行 [日] 东野圭吾
BUY	May 10, 2013 11:40:36 PM	50.0	1	9787544242516 白夜行 [日] 东野圭吾
SELL	May 10, 2013 11:41:30 PM	29.8	1	9787544242516 白夜行 [日] 东野圭吾
BUY	May 11, 2013 3:41:51 PM	100.0	20	9787538609257 机器猫哆啦A梦23 藤子·F·不二雄
SELL	May 11, 2013 3:43:07 PM	8.0	1	9787538609257 机器猫哆啦A梦23 藤子·F·不二雄

List results per page: 5 10 15 20 25 | Page 1 of 2

[Home](#) | [Logout](#)

查看交易详情：

Book Management System

BOOK

Create new Book

List all Books

Find by ISBN

Find by Title

Find by Author

Find by Publisher

BOOK ORDER

Create new Book Order

List all Book Orders

BOOK TRANSACTION

List all Book Transactions

Find by Transaction Date Between

Show Book Transaction

Type : SELL

Figure : 39.5

Transaction Date : May 10, 2013 8:39:00 PM

Amount : 1

Book : 9787544253994 百年孤独 [哥伦比亚] 加西亚·马尔克斯

[Home](#) | [Logout](#)

查看一段时间内的所有交易：

Welcome to Book Management System

localhost:8080/book/booktransactions?find=ByTransactionDateBetween&form

Book Management System

BOOK

- Create new Book
- List all Books
- Find by ISBN
- Find by Title
- Find by Author
- Find by Publisher

BOOK ORDER

- Create new Book Order
- List all Book Orders

BOOK TRANSACTION

- List all Book Transactions
- Find by Transaction Date Between

Find Book Transactions

Min Transaction Date :
Max Transaction Date :

May

S	M	T	W	T	F	S
28	29	30	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	1
2	3	4	5	6	7	8

2012 2013 2014

Enter Min Transaction Date (required)

FIND

[Home](#) | [Logout](#)

Welcome to Book Management System

localhost:8080/book/booktransactions?find=ByTransactionDateBetween&minTransactionDate=May+11%

Book Management System

BOOK

- Create new Book
- List all Books
- Find by ISBN
- Find by Title
- Find by Author
- Find by Publisher

BOOK ORDER

- Create new Book Order
- List all Book Orders

BOOK TRANSACTION

- List all Book Transactions
- Find by Transaction Date Between

List all Book Transactions

Type	Transaction Date	Figure	Amount	Book
BUY	May 11, 2013 3:41:51 PM	100.0	20	9787538609257 机器猫哆啦A梦23 藤子·F·不二雄
SELL	May 11, 2013 3:43:07 PM	8.0	1	9787538609257 机器猫哆啦A梦23 藤子·F·不二雄
BUY	May 12, 2013 1:43:06 AM	20.0	1	9787544242516 白夜行 [日] 东野圭吾
SELL	May 12, 2013 1:45:34 AM	29.8	1	9787544242516 白夜行 [日] 东野圭吾

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4、分工协作

刘仁宇 (11300240061) :

项目的技术架构、网站的前后端实现以及文档维护。

董欣然 (11300240090) :

关系数据模型设计、测试数据抓取、网站测试。

协作平台：主要搭建在 github.com 上

仓库地址：https://github.com/LazyChild/BookSales_roo.git