狂神说SpringMVC05：整合SSM框架

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整合SSM框架

在上一节中，我们了解了SpringMVC参数接收处理和结果跳转处理！
狂神说SpringMVC04：数据处理及跳转
现在我们来看看，如何集成SSM框架！完整项目的整合！

整合SSM

> 环境要求

环境：

- IDEA
- MySQL 5.7.19
- Tomcat 9
- Maven 3.6

要求：

- 需要熟练掌握MySQL数据库，Spring，JavaWeb及MyBatis知识，简单的前端知识；

> 数据库环境

创建一个存放书籍数据的数据库表

```
CREATE DATABASE `ssmbuild`;

USE `ssmbuild`;

DROP TABLE IF EXISTS `books`;

CREATE TABLE `books` (
`bookID` INT(10) NOT NULL AUTO_INCREMENT COMMENT '书id',
```

```
`bookName` VARCHAR(100) NOT NULL COMMENT '书名',
`bookCounts` INT(11) NOT NULL COMMENT '数量',
`detail` VARCHAR(200) NOT NULL COMMENT '描述',
KEY `bookID` (`bookID`)
) ENGINE=INNODB DEFAULT CHARSET=utf8

INSERT  INTO `books`(`bookID`,`bookName`,`bookCounts`,`detail`)VALUES
(1,'Java',1,'从入门到放弃'),
(2,'MySQL',10,'从删库到跑路'),
(3,'Linux',5,'从进门到进牢');
```

> 基本环境搭建

1、新建一Maven项目！ssmbuild ， 添加web的支持

2、导入相关的pom依赖！

```
<dependencies>
   <!--Junit-->
   <dependency>
       <groupId>junit</groupId>
       <artifactId>junit</artifactId>
       <version>4.12</version>
   </dependency>
   <!--数据库驱动-->
   <dependency>
       <groupId>mysql</groupId>
       <artifactId>mysql-connector-java</artifactId>
       <version>5.1.47</version>
   </dependency>
   <!-- 数据库连接池 -->
   <dependency>
       <groupId>com.mchange</groupId>
       <artifactId>c3p0</artifactId>
       <version>0.9.5.2</version>
   </dependency>

   <!--Servlet - JSP -->
   <dependency>
       <groupId>javax.servlet</groupId>
       <artifactId>servlet-api</artifactId>
       <version>2.5</version>
   </dependency>
   <dependency>
       <groupId>javax.servlet.jsp</groupId>
       <artifactId>jsp-api</artifactId>
       <version>2.2</version>
   </dependency>
   <dependency>
```

```
        <groupId>javax.servlet</groupId>
        <artifactId>jstl</artifactId>
        <version>1.2</version>
    </dependency>

    <!--Mybatis-->
    <dependency>
        <groupId>org.mybatis</groupId>
        <artifactId>mybatis</artifactId>
        <version>3.5.2</version>
    </dependency>
    <dependency>
        <groupId>org.mybatis</groupId>
        <artifactId>mybatis-spring</artifactId>
        <version>2.0.2</version>
    </dependency>

    <!--Spring-->
    <dependency>
        <groupId>org.springframework</groupId>
        <artifactId>spring-webmvc</artifactId>
        <version>5.1.9.RELEASE</version>
    </dependency>
    <dependency>
        <groupId>org.springframework</groupId>
        <artifactId>spring-jdbc</artifactId>
        <version>5.1.9.RELEASE</version>
    </dependency>
</dependencies>
```

3、Maven资源过滤设置

```
<build>
    <resources>
        <resource>
            <directory>src/main/java</directory>
            <includes>
                <include>**/*.properties</include>
                <include>**/*.xml</include>
            </includes>
            <filtering>false</filtering>
        </resource>
        <resource>
            <directory>src/main/resources</directory>
            <includes>
                <include>**/*.properties</include>
                <include>**/*.xml</include>
            </includes>
            <filtering>false</filtering>
        </resource>
    </resources>
</build>
```

4、建立基本结构和配置框架！

- com.kuang.pojo
- com.kuang.dao
- com.kuang.service
- com.kuang.controller
- mybatis-config.xml

```
<?xml version="1.0" encoding="UTF-8" ?>
<!DOCTYPE configuration
       PUBLIC "-//mybatis.org//DTD Config 3.0//EN"
       "http://mybatis.org/dtd/mybatis-3-config.dtd">
<configuration>

</configuration>
```

- applicationContext.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<beans xmlns="http://www.springframework.org/schema/beans"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:schemaLocation="http://www.springframework.org/schema/beans
       http://www.springframework.org/schema/beans/spring-beans.xsd">

</beans>
```

> Mybatis层编写

1、数据库配置文件 **database.properties**

```
jdbc.driver=com.mysql.jdbc.Driver
jdbc.url=jdbc:mysql://localhost:3306/ssmbuild?
useSSL=true&useUnicode=true&characterEncoding=utf8
jdbc.username=root
jdbc.password=123456
```

2、IDEA关联数据库

3、编写MyBatis的核心配置文件

```
<?xml version="1.0" encoding="UTF-8" ?>
<!DOCTYPE configuration
       PUBLIC "-//mybatis.org//DTD Config 3.0//EN"
       "http://mybatis.org/dtd/mybatis-3-config.dtd">
<configuration>

   <typeAliases>
       <package name="com.kuang.pojo"/>
```

```
    </typeAliases>
    <mappers>
        <mapper resource="com/kuang/dao/BookMapper.xml"/>
    </mappers>

</configuration>
```

4、编写数据库对应的实体类 com.kuang.pojo.Books

使用lombok插件！

```
package com.kuang.pojo;

import lombok.AllArgsConstructor;
import lombok.Data;
import lombok.NoArgsConstructor;

@Data
@AllArgsConstructor
@NoArgsConstructor
public class Books {

    private int bookID;
    private String bookName;
    private int bookCounts;
    private String detail;

}
```

5、编写Dao层的 Mapper接口！

```
package com.kuang.dao;

import com.kuang.pojo.Books;
import java.util.List;

public interface BookMapper {

    //增加一个Book
    int addBook(Books book);

    //根据id删除一个Book
    int deleteBookById(int id);

    //更新Book
    int updateBook(Books books);

    //根据id查询,返回一个Book
    Books queryBookById(int id);

    //查询全部Book,返回list集合
    List<Books> queryAllBook();
```

```
}
```

6、编写接口对应的 Mapper.xml 文件。需要导入MyBatis的包；

```
<?xml version="1.0" encoding="UTF-8" ?>
<!DOCTYPE mapper
       PUBLIC "-//mybatis.org//DTD Mapper 3.0//EN"
       "http://mybatis.org/dtd/mybatis-3-mapper.dtd">

<mapper namespace="com.kuang.dao.BookMapper">

   <!--增加一个Book-->
   <insert id="addBook" parameterType="Books">
      insert into ssmbuild.books(bookName,bookCounts,detail)
      values (#{bookName}, #{bookCounts}, #{detail})
   </insert>

   <!--根据id删除一个Book-->
   <delete id="deleteBookById" parameterType="int">
      delete from ssmbuild.books where bookID=#{bookID}
   </delete>

   <!--更新Book-->
   <update id="updateBook" parameterType="Books">
      update ssmbuild.books
      set bookName = #{bookName},bookCounts = #{bookCounts},detail = #{detail}
      where bookID = #{bookID}
   </update>

   <!--根据id查询,返回一个Book-->
   <select id="queryBookById" resultType="Books">
      select * from ssmbuild.books
      where bookID = #{bookID}
   </select>

   <!--查询全部Book-->
   <select id="queryAllBook" resultType="Books">
      SELECT * from ssmbuild.books
   </select>

</mapper>
```

7、编写Service层的接口和实现类

接口：

```
package com.kuang.service;

import com.kuang.pojo.Books;

import java.util.List;
```

```
//BookService:底下需要去实现,调用dao层
public interface BookService {
    //增加一个Book
    int addBook(Books book);
    //根据id删除一个Book
    int deleteBookById(int id);
    //更新Book
    int updateBook(Books books);
    //根据id查询,返回一个Book
    Books queryBookById(int id);
    //查询全部Book,返回list集合
    List<Books> queryAllBook();
}
```

实现类：

```
package com.kuang.service;

import com.kuang.dao.BookMapper;
import com.kuang.pojo.Books;
import java.util.List;

public class BookServiceImpl implements BookService {

    //调用dao层的操作，设置一个set接口，方便Spring管理
    private BookMapper bookMapper;

    public void setBookMapper(BookMapper bookMapper) {
        this.bookMapper = bookMapper;
    }

    public int addBook(Books book) {
        return bookMapper.addBook(book);
    }

    public int deleteBookById(int id) {
        return bookMapper.deleteBookById(id);
    }

    public int updateBook(Books books) {
        return bookMapper.updateBook(books);
    }

    public Books queryBookById(int id) {
        return bookMapper.queryBookById(id);
    }

    public List<Books> queryAllBook() {
        return bookMapper.queryAllBook();
    }
}
```

OK，到此，底层需求操作编写完毕！

> Spring层

1、配置**Spring整合MyBatis**，我们这里数据源使用c3p0连接池；

2、我们去编写Spring整合Mybatis的相关的配置文件；spring-dao.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<beans xmlns="http://www.springframework.org/schema/beans"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xmlns:context="http://www.springframework.org/schema/context"
      xsi:schemaLocation="http://www.springframework.org/schema/beans
       http://www.springframework.org/schema/beans/spring-beans.xsd
       http://www.springframework.org/schema/context
       https://www.springframework.org/schema/context/spring-context.xsd">

   <!-- 配置整合mybatis -->
   <!-- 1.关联数据库文件 -->
   <context:property-placeholder location="classpath:database.properties"/>

   <!-- 2.数据库连接池 -->
   <!--数据库连接池
       dbcp 半自动化操作 不能自动连接
       c3p0 自动化操作（自动的加载配置文件 并且设置到对象里面）
   -->
   <bean id="dataSource" class="com.mchange.v2.c3p0.ComboPooledDataSource">
       <!-- 配置连接池属性 -->
       <property name="driverClass" value="${jdbc.driver}"/>
       <property name="jdbcUrl" value="${jdbc.url}"/>
       <property name="user" value="${jdbc.username}"/>
       <property name="password" value="${jdbc.password}"/>

       <!-- c3p0连接池的私有属性 -->
       <property name="maxPoolSize" value="30"/>
       <property name="minPoolSize" value="10"/>
       <!-- 关闭连接后不自动commit -->
       <property name="autoCommitOnClose" value="false"/>
       <!-- 获取连接超时时间 -->
       <property name="checkoutTimeout" value="10000"/>
       <!-- 当获取连接失败重试次数 -->
       <property name="acquireRetryAttempts" value="2"/>
   </bean>

   <!-- 3.配置SqlSessionFactory对象 -->
   <bean id="sqlSessionFactory" class="org.mybatis.spring.SqlSessionFactoryBean">
       <!-- 注入数据库连接池 -->
       <property name="dataSource" ref="dataSource"/>
       <!-- 配置MyBaties全局配置文件:mybatis-config.xml -->
```

```
        <property name="configLocation" value="classpath:mybatis-config.xml"/>
    </bean>

    <!-- 4.配置扫描Dao接口包，动态实现Dao接口注入到spring容器中 -->
    <!--解释 : https://www.cnblogs.com/jpfss/p/7799806.html-->
    <bean class="org.mybatis.spring.mapper.MapperScannerConfigurer">
        <!-- 注入sqlSessionFactory -->
        <property name="sqlSessionFactoryBeanName" value="sqlSessionFactory"/>
        <!-- 给出需要扫描Dao接口包 -->
        <property name="basePackage" value="com.kuang.dao"/>
    </bean>

</beans>
```

3、**Spring整合service层**

```
<?xml version="1.0" encoding="UTF-8"?>
<beans xmlns="http://www.springframework.org/schema/beans"
       xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
       xmlns:context="http://www.springframework.org/schema/context"
       xsi:schemaLocation="http://www.springframework.org/schema/beans
    http://www.springframework.org/schema/beans/spring-beans.xsd
    http://www.springframework.org/schema/context
    http://www.springframework.org/schema/context/spring-context.xsd">

    <!-- 扫描service相关的bean -->
    <context:component-scan base-package="com.kuang.service" />

    <!--BookServiceImpl注入到IOC容器中-->
    <bean id="BookServiceImpl" class="com.kuang.service.BookServiceImpl">
        <property name="bookMapper" ref="bookMapper"/>
    </bean>

    <!-- 配置事务管理器 -->
    <bean id="transactionManager"
class="org.springframework.jdbc.datasource.DataSourceTransactionManager">
        <!-- 注入数据库连接池 -->
        <property name="dataSource" ref="dataSource" />
    </bean>

</beans>
```

Spring层搞定！再次理解一下，Spring就是一个大杂烩，一个容器！对吧！

> SpringMVC层

1、**web.xml**

```
<?xml version="1.0" encoding="UTF-8"?>
<web-app xmlns="http://xmlns.jcp.org/xml/ns/javaee"
```

```
        xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
        xsi:schemaLocation="http://xmlns.jcp.org/xml/ns/javaee
http://xmlns.jcp.org/xml/ns/javaee/web-app_4_0.xsd"
        version="4.0">

   <!--DispatcherServlet-->
   <servlet>
       <servlet-name>DispatcherServlet</servlet-name>
       <servlet-class>org.springframework.web.servlet.DispatcherServlet</servlet-class>
       <init-param>
           <param-name>contextConfigLocation</param-name>
           <!--一定要注意:我们这里加载的是总的配置文件，之前被这里坑了！-->
           <param-value>classpath:applicationContext.xml</param-value>
       </init-param>
       <load-on-startup>1</load-on-startup>
   </servlet>
   <servlet-mapping>
       <servlet-name>DispatcherServlet</servlet-name>
       <url-pattern>/</url-pattern>
   </servlet-mapping>

   <!--encodingFilter-->
   <filter>
       <filter-name>encodingFilter</filter-name>
       <filter-class>
          org.springframework.web.filter.CharacterEncodingFilter
       </filter-class>
       <init-param>
           <param-name>encoding</param-name>
           <param-value>utf-8</param-value>
       </init-param>
   </filter>
   <filter-mapping>
       <filter-name>encodingFilter</filter-name>
       <url-pattern>/*</url-pattern>
   </filter-mapping>

   <!--Session过期时间-->
   <session-config>
       <session-timeout>15</session-timeout>
   </session-config>

</web-app>
```

2、**spring-mvc.xml**

```
<?xml version="1.0" encoding="UTF-8"?>
<beans xmlns="http://www.springframework.org/schema/beans"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xmlns:context="http://www.springframework.org/schema/context"
      xmlns:mvc="http://www.springframework.org/schema/mvc"
      xsi:schemaLocation="http://www.springframework.org/schema/beans
```

```
   http://www.springframework.org/schema/beans/spring-beans.xsd
   http://www.springframework.org/schema/context
   http://www.springframework.org/schema/context/spring-context.xsd
   http://www.springframework.org/schema/mvc
   https://www.springframework.org/schema/mvc/spring-mvc.xsd">

   <!-- 配置SpringMVC -->
   <!-- 1.开启SpringMVC注解驱动 -->
   <mvc:annotation-driven />
   <!-- 2.静态资源默认servlet配置-->
   <mvc:default-servlet-handler/>

   <!-- 3.配置jsp 显示ViewResolver视图解析器 -->
   <bean class="org.springframework.web.servlet.view.InternalResourceViewResolver">
       <property name="viewClass" value="org.springframework.web.servlet.view.JstlView" />
       <property name="prefix" value="/WEB-INF/jsp/" />
       <property name="suffix" value=".jsp" />
   </bean>

   <!-- 4.扫描web相关的bean -->
   <context:component-scan base-package="com.kuang.controller" />

</beans>
```

3、**Spring配置整合文件，applicationContext.xml**

```
<?xml version="1.0" encoding="UTF-8"?>
<beans xmlns="http://www.springframework.org/schema/beans"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:schemaLocation="http://www.springframework.org/schema/beans
       http://www.springframework.org/schema/beans/spring-beans.xsd">

   <import resource="spring-dao.xml"/>
   <import resource="spring-service.xml"/>
   <import resource="spring-mvc.xml"/>

</beans>
```

配置文件，暂时结束！Controller 和 视图层编写

1、BookController 类编写， 方法一：查询全部书籍

```
@Controller
@RequestMapping("/book")
public class BookController {

   @Autowired
   @Qualifier("BookServiceImpl")
   private BookService bookService;

   @RequestMapping("/allBook")
   public String list(Model model) {
```

```
        List<Books> list = bookService.queryAllBook();
        model.addAttribute("list", list);
        return "allBook";
    }
}
```

2、编写首页 **index.jsp**

```
<%@ page language="java" contentType="text/html; charset=UTF-8" pageEncoding="UTF-8" %>
<!DOCTYPE HTML>
<html>
<head>
    <title>首页</title>
    <style type="text/css">
        a {
            text-decoration: none;
            color: black;
            font-size: 18px;
        }
        h3 {
            width: 180px;
            height: 38px;
            margin: 100px auto;
            text-align: center;
            line-height: 38px;
            background: deepskyblue;
            border-radius: 4px;
        }
    </style>
</head>
<body>

<h3>
    <a href="${pageContext.request.contextPath}/book/allBook">点击进入列表页</a>
</h3>
</body>
</html>
```

3、书籍列表页面 **allbook.jsp**

```
<%@ taglib prefix="c" uri="http://java.sun.com/jsp/jstl/core" %>
<%@ page contentType="text/html;charset=UTF-8" language="java" %>
<html>
<head>
    <title>书籍列表</title>
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <!-- 引入 Bootstrap -->
    <link href="https://cdn.bootcss.com/bootstrap/3.3.7/css/bootstrap.min.css"
rel="stylesheet">
</head>
<body>
```

```
<div class="container">

   <div class="row clearfix">
       <div class="col-md-12 column">
           <div class="page-header">
               <h1>
                   <small>书籍列表 —— 显示所有书籍</small>
               </h1>
           </div>
       </div>
   </div>

   <div class="row">
       <div class="col-md-4 column">
           <a class="btn btn-primary"
href="${pageContext.request.contextPath}/book/toAddBook">新增</a>
       </div>
   </div>

   <div class="row clearfix">
       <div class="col-md-12 column">
           <table class="table table-hover table-striped">
               <thead>
               <tr>
                   <th>书籍编号</th>
                   <th>书籍名字</th>
                   <th>书籍数量</th>
                   <th>书籍详情</th>
                   <th>操作</th>
               </tr>
               </thead>

               <tbody>
               <c:forEach var="book" items="${requestScope.get('list')}">
                   <tr>
                       <td>${book.getBookID()}</td>
                       <td>${book.getBookName()}</td>
                       <td>${book.getBookCounts()}</td>
                       <td>${book.getDetail()}</td>
                       <td>
                           <a href="${pageContext.request.contextPath}/book/toUpdateBook?
id=${book.getBookID()}">更改</a> |
                           <a
href="${pageContext.request.contextPath}/book/del/${book.getBookID()}">删除</a>
                       </td>
                   </tr>
               </c:forEach>
               </tbody>
           </table>
       </div>
   </div>
```

```
</div>
```

4、BookController 类编写， 方法二：添加书籍

```
@RequestMapping("/toAddBook")
public String toAddPaper() {
    return "addBook";
}

@RequestMapping("/addBook")
public String addPaper(Books books) {
    System.out.println(books);
    bookService.addBook(books);
    return "redirect:/book/allBook";
}
```

5、添加书籍页面：**addBook.jsp**

```
<%@ taglib prefix="c" uri="http://java.sun.com/jsp/jstl/core" %>
<%@ page contentType="text/html;charset=UTF-8" language="java" %>

<html>
<head>
    <title>新增书籍</title>
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <!-- 引入 Bootstrap -->
    <link href="https://cdn.bootcss.com/bootstrap/3.3.7/css/bootstrap.min.css"
rel="stylesheet">
</head>
<body>
<div class="container">

    <div class="row clearfix">
        <div class="col-md-12 column">
            <div class="page-header">
                <h1>
                    <small>新增书籍</small>
                </h1>
            </div>
        </div>
    </div>
    <form action="${pageContext.request.contextPath}/book/addBook" method="post">
        书籍名称：<input type="text" name="bookName"><br><br><br>
        书籍数量：<input type="text" name="bookCounts"><br><br><br>
        书籍详情：<input type="text" name="detail"><br><br><br>
         <input type="submit" value="添加">
    </form>

</div>
```

6、BookController 类编写， 方法三：修改书籍

```
@RequestMapping("/toUpdateBook")
public String toUpdateBook(Model model, int id) {
    Books books = bookService.queryBookById(id);
    System.out.println(books);
    model.addAttribute("book",books );
    return "updateBook";
}

@RequestMapping("/updateBook")
public String updateBook(Model model, Books book) {
    System.out.println(book);
    bookService.updateBook(book);
    Books books = bookService.queryBookById(book.getBookID());
    model.addAttribute("books", books);
    return "redirect:/book/allBook";
}
```

7、修改书籍页面 **updateBook.jsp**

```
<%@ taglib prefix="c" uri="http://java.sun.com/jsp/jstl/core" %>
<%@ page contentType="text/html;charset=UTF-8" language="java" %>
<html>
<head>
    <title>修改信息</title>
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <!-- 引入 Bootstrap -->
    <link href="https://cdn.bootcss.com/bootstrap/3.3.7/css/bootstrap.min.css"
rel="stylesheet">
</head>
<body>
<div class="container">

    <div class="row clearfix">
        <div class="col-md-12 column">
            <div class="page-header">
                <h1>
                    <small>修改信息</small>
                </h1>
            </div>
        </div>
    </div>

    <form action="${pageContext.request.contextPath}/book/updateBook" method="post">
        <input type="hidden" name="bookID" value="${book.getBookID()}"/>
        书籍名称：<input type="text" name="bookName" value="${book.getBookName()}"/>
        书籍数量：<input type="text" name="bookCounts" value="${book.getBookCounts()}"/>
        书籍详情：<input type="text" name="detail" value="${book.getDetail() }"/>
        <input type="submit" value="提交"/>
    </form>

</div>
```

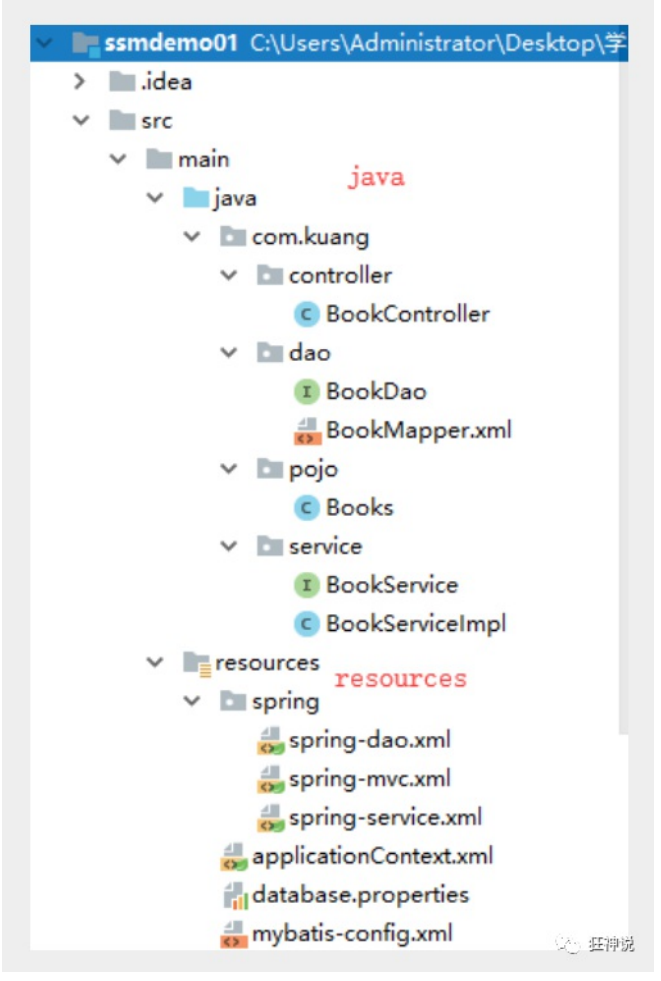
8、BookController 类编写， 方法四：删除书籍

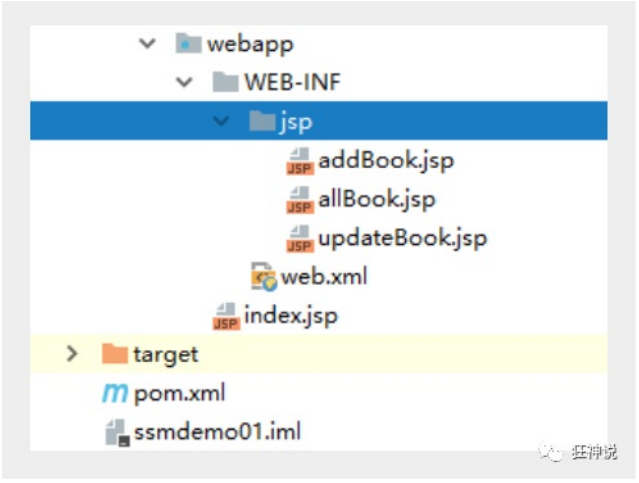
```
@RequestMapping("/del/{bookId}")
public String deleteBook(@PathVariable("bookId") int id) {
   bookService.deleteBookById(id);
   return "redirect:/book/allBook";
}
```

配置Tomcat，进行运行！

到目前为止，这个SSM项目整合已经完全的OK了，可以直接运行进行测试！这个练习十分的重要，大家需要保证，不看任何东西，自己也可以完整的实现出来！

项目结构图





> 小结及展望

这个是同学们的第一个SSM整合案例，一定要烂熟于心！

SSM框架的重要程度是不言而喻的，学到这里，大家已经可以进行基本网站的单独开发。但是这只是增删改查的基本操作。可以说学到这里，大家才算是真正的步入了后台开发的门。也就是能找一个后台相关工作的底线。

或许很多人，工作就做这些事情，但是对于个人的提高来说，还远远不够！

我们后面还要学习一些 SpringMVC 的知识！

- Ajax 和 Json
- 文件上传和下载
- 拦截器

前路漫漫，认真坚持最重要！

end

视频同步更新，这次一定！

“赠人玫瑰，手有余香”

狂神说 的赞赏码

狂神说