武汉纺织大学

Web应用开发课程设计

**注册页面**

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**成 绩：**

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# 1 需求分析

## 设计一个注册页面，手机验证码发送，将注册的用户信息放入数据库中。

## 1.1用户注册

当程序运行时，显示注册所需要填写的个人信息。

个人信息有用户名、密码、Email、姓名、手机号、性别、出生日期。

**1.2邮箱激活**

注册成功后，跳转邮箱激活页面。

## 1.3主菜单

运行tomcat，进入系统主界面，如下：



## 1.3各项功能

### 1表单校验

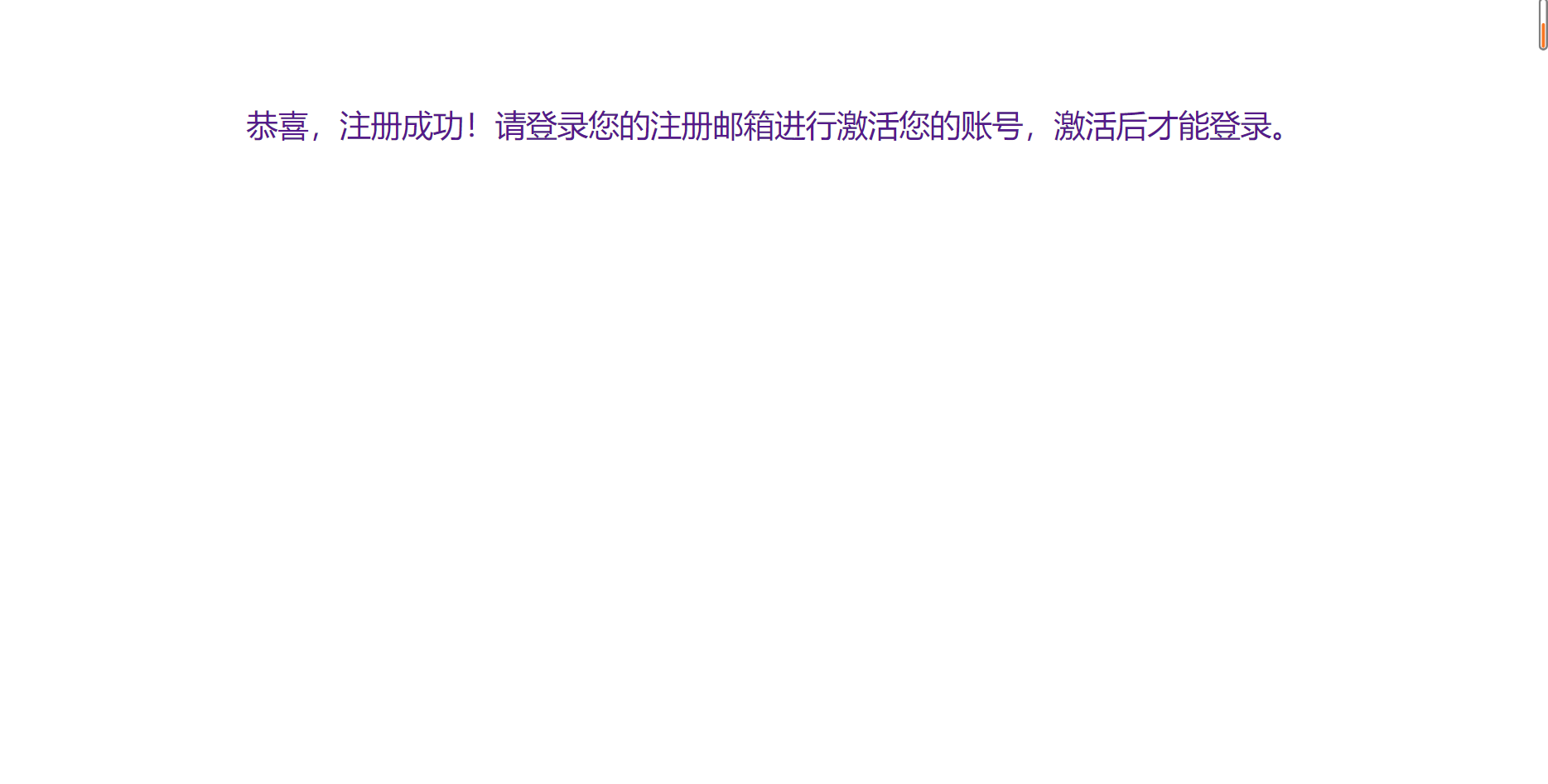
1）.用户名：单词字符，长度8到20位  
2）.密码：单词字符，长度8到20位  
3）.email：邮件格式  
4）.姓名：非空  
5）.手机号：手机号格式  
6）.出生日期：非空  
7）.验证码：非空

1. **注册成功**

**2.1输入信息注册：**



**2.2注册成功跳转页面**



# **2 系统设计**

**2.1数据库表**

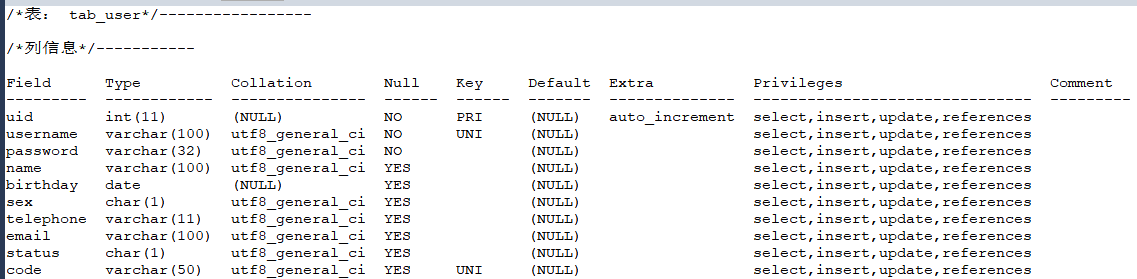


图2.1.1数据库表

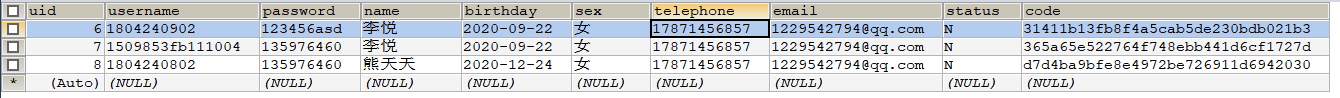


图2.1.2数据库表

## 2.2 ER图

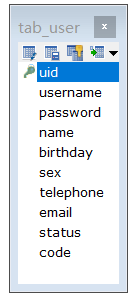
%3CmxGraphModel%3E%3Croot%3E%3CmxCell%20id%3D%220%22%2F%3E%3CmxCell%20id%3D%221%22%20parent%3D%220%22%2F%3E%3Cmysql.table%20entity.table.tableName%3D%22uses%22%20label%3D%22uses%22%20id%3D%222%22%3E%3CmxCell%20style%3D%22swimlane%3BfontStyle%3D0%3BchildLayout%3DstackLayout%3Bhorizontal%3D1%3Bhtml%3D1%3BstartSize%3D26%3BfillColor%3D%23b0e3e6%3BhorizontalStack%3D0%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.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%E5%AF%86%E7%A0%81%22%20entity.column.enum%3D%22%22%20entity.column.set%3D%22%22%20entity.column.enumSetValue%3D%22%22%20id%3D%225%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%2278%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%22role%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%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.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%E8%A7%92%E8%89%B2%22%20entity.column.enum%3D%22%22%20entity.column.set%3D%22%22%20entity.column.enumSetValue%3D%22%22%20id%3D%226%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%22104%22%20width%3D%22310%22%20height%3D%2226%22%20as%3D%22geometry%22%2F%3E%3C%2FmxCell%3E%3C%2Fmysql.column%3E%3Cmysql.table%20entity.table.tableName%3D%22product%22%20label%3D%22product%22%20id%3D%227%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%22210%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%22product%22%20entity.column.name%3D%22barcode%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%2210%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%228%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%227%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%22product%22%20entity.column.name%3D%22productName%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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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）

对于用户功能模块，共设计如下5个类。

* VO实体类User：与数据库结构进行映射的类。主要由属性，setter, getter方法组成，VO类中的属性与表中的字段相对应，每一个VO类的对象都表示表中的每一条记录
* DAO接口IUserDAO：主要定义操作的接口，定义一系列数据库的原子性操作，例如增删改查（通常称为CRUD）等。
* DAO实现类UserDAOImpl：DAO接口的真实实现类，主要完成具体数据库操作，但不负责数据库的打开和关闭。
* DAO工厂类DAOFactory：通过工厂类取得一个DAO的实例化对象
* 业务逻辑实现类UserService：对于数据层的原子操作进行整合。还要负责数据库的打开与关闭（不管是否出异常，数据库都要关闭）
* \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*：

各类的结构及类之间的关系如图2-5所示：

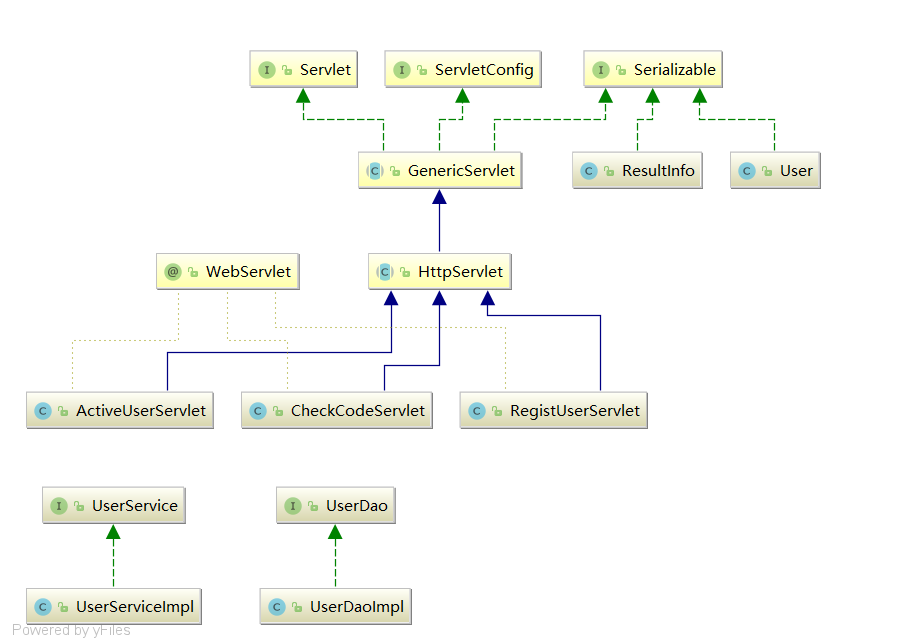


图2-3 用户功能类图

## 2.4 UML时序图（Sequence Diagram）

### 2.4.1 系统注册

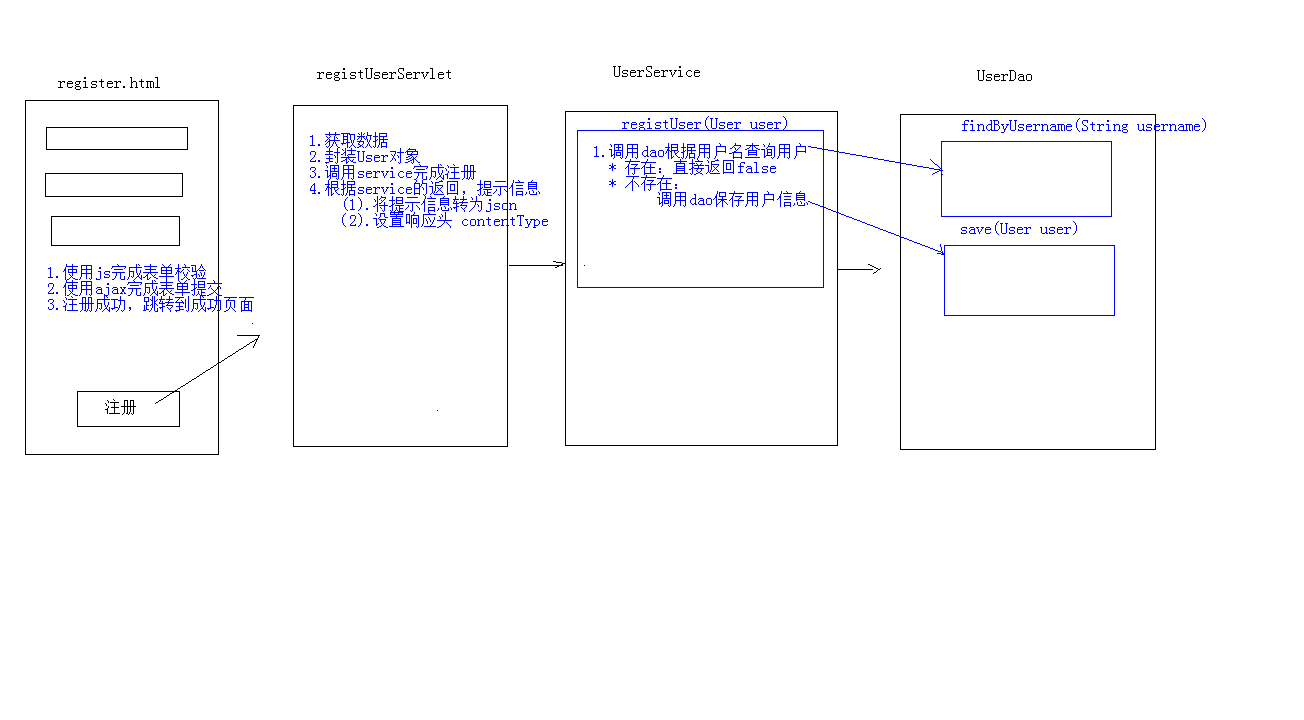


图2.4.1

# **3 系统实现**

## 3.1 项目结构

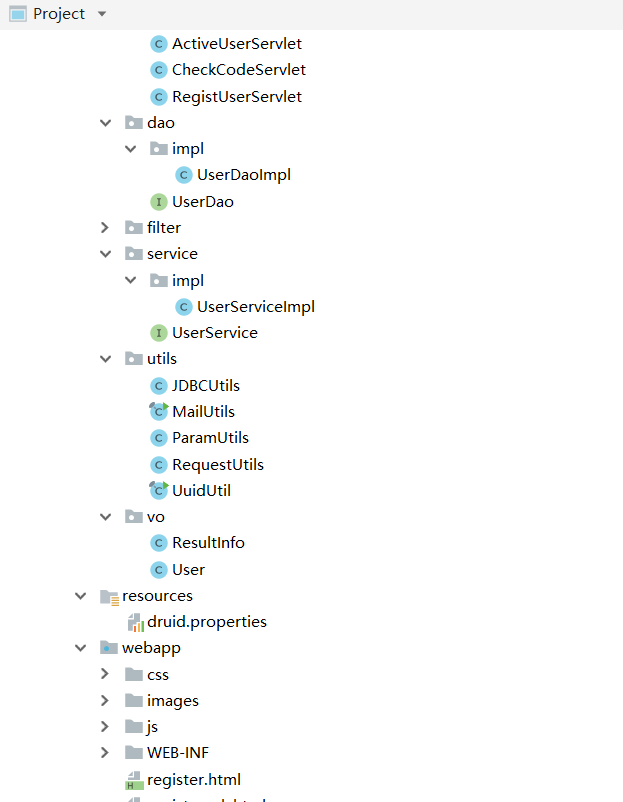


图3.1项目结构

## 3.2 配置文件

在项目下新建Source Folder，名为resources

### 3.2.1 druid.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。

1. driverClassName=com.mysql.jdbc.Driver
2. url=jdbc:mysql:*///web\_kechengsheji*
3. username=root
4. password=root
5. initialSize=5
6. maxActive=10
7. maxWait=3000

### 3.2.2 web.xml文件

web.xml文件是用来初始化配置信息

1. <!DOCTYPE web-app PUBLIC
2. "-//Sun Microsystems, Inc.//DTD Web Application 2.3//EN"
3. "http://java.sun.com/dtd/web-app\_2\_3.dtd" >
4. <web-app>
5. <display-name>Archetype Created Web Application</display-name>
6. </web-app>

## 3.3 VO类User.java

**3.3.1User的实体类**

1. package vo;
2. import java.io.Serializable;
3. */\*\**
4. \* 用户实体类
5. \*/
6. public class User implements Serializable {
7. private int uid;*//用户id*
8. private String username;*//用户名，账号*
9. private String password;*//密码*
10. private String name;*//真实姓名*
11. private String birthday;*//出生日期*
12. private String sex;*//男或女*
13. private String telephone;*//手机号*
14. private String email;*//邮箱*
15. private String status;*//激活状态，Y代表激活，N代表未激活*
16. private String code;*//激活码（要求唯一）*
17. */\*\**
18. \* 无参构造方法
19. \*/
20. public User() {
21. }
22. */\*\**
23. \* 有参构方法
24. \* @param uid
25. \* @param username
26. \* @param password
27. \* @param name
28. \* @param birthday
29. \* @param sex
30. \* @param telephone
31. \* @param email
32. \* @param status
33. \* @param code
34. \*/
35. public User(int uid, String username, String password, String name, String birthday, String sex, String telephone, String email, String status, String code) {
36. this.uid = uid;
37. this.username = username;
38. this.password = password;
39. this.name = name;
40. this.birthday = birthday;
41. this.sex = sex;
42. this.telephone = telephone;
43. this.email = email;
44. this.status = status;
45. this.code = code;
46. }
47. public int getUid() {
48. return uid;
49. }
50. public void setUid(int uid) {
51. this.uid = uid;
52. }
53. public String getUsername() {
54. return username;
55. }
56. public void setUsername(String username) {
57. this.username = username;
58. }
59. public String getPassword() {
60. return password;
61. }
62. public void setPassword(String password) {
63. this.password = password;
64. }
65. public String getName() {
66. return name;
67. }
68. public void setName(String name) {
69. this.name = name;
70. }
71. public String getBirthday() {
72. return birthday;
73. }
74. public void setBirthday(String birthday) {
75. this.birthday = birthday;
76. }
77. public String getSex() {
78. return sex;
79. }
80. public void setSex(String sex) {
81. this.sex = sex;
82. }
83. public String getTelephone() {
84. return telephone;
85. }
86. public void setTelephone(String telephone) {
87. this.telephone = telephone;
88. }
89. public String getEmail() {
90. return email;
91. }
92. public void setEmail(String email) {
93. this.email = email;
94. }
95. public String getStatus() {
96. return status;
97. }
98. public void setStatus(String status) {
99. this.status = status;
100. }
101. public String getCode() {
102. return code;
103. }
104. public void setCode(String code) {
105. this.code = code;
106. }
107. }

**3.3.2ResultInfo的实体类**

用于封装后端返回前端数据对象

1. package vo;
2. import java.io.Serializable;
3. import java.util.Objects;
4. */\*\**
5. \* 用于封装后端返回前端数据对象
6. \*/
7. public class ResultInfo implements Serializable {
8. private boolean flag;*//后端返回结果正常为true，发生异常返回false*
9. private Object data;*//后端返回结果数据对象*
10. private String errorMsg;*//发生异常的错误消息*
11. *//无参构造方法*
12. public ResultInfo() {
13. }
14. public ResultInfo(boolean flag) {
15. this.flag = flag;
16. }
17. */\*\**
18. \* 有参构造方法
19. \* @param flag
20. \* @param errorMsg
21. \*/
22. public ResultInfo(boolean flag, String errorMsg) {
23. this.flag = flag;
24. this.errorMsg = errorMsg;
25. }
26. */\*\**
27. \* 有参构造方法
28. \* @param flag
29. \* @param data
30. \* @param errorMsg
31. \*/
32. public ResultInfo(boolean flag, Object data, String errorMsg) {
33. this.flag = flag;
34. this.data = data;
35. this.errorMsg = errorMsg;
36. }
37. public boolean isFlag() {
38. return flag;
39. }
40. public void setFlag(boolean flag) {
41. this.flag = flag;
42. }
43. public Object getData() {
44. return data;
45. }
46. public void setData(Object data) {
47. this.data = data;
48. }
49. public String getErrorMsg() {
50. return errorMsg;
51. }
52. public void setErrorMsg(String errorMsg) {
53. this.errorMsg = errorMsg;
54. }
55. }

## 3.4接口类UserDAO.java

实现对数据库t\_user表中的增删查改

1. package dao;
2. import vo.User;
3. public interface UserDao {
4. */\*\**
5. \* 根据用户名查询用户信息
6. \* @param username
7. \* @return
8. \*/
9. public User findByUsername(String username);
10. */\*\**
11. \* 用户保存
12. \* @param user
13. \*/
14. public void save(User user);
15. User findByCode(String code);
16. void updateStatus(User user);
17. User findByUsernameAndPassword(String username, String password);
18. }

## 3.6 工具包Util

### 3.6.1 JDBCUtils .java

实现数据库的连接和释放

1. package utils;
2. import com.alibaba.druid.pool.DruidDataSourceFactory;
3. import javax.sql.DataSource;
4. import java.io.IOException;
5. import java.io.InputStream;
6. import java.sql.Connection;
7. import java.sql.ResultSet;
8. import java.sql.SQLException;
9. import java.sql.Statement;
10. import java.util.Properties;
11. */\**
12. 1. 声明静态数据源成员变量
13. 2. 创建连接池对象
14. 3. 定义公有的得到数据源的方法
15. 4. 定义得到连接对象的方法
16. 5. 定义关闭资源的方法
17. \*/
18. public class JDBCUtils {
19. *// 1. 声明静态数据源成员变量*
20. private static DataSource ds;
21. *// 2. 创建连接池对象*
22. static {
23. *// 加载配置文件中的数据*
24. InputStream is = JDBCUtils.class.getClassLoader().getResourceAsStream("druid.properties");
25. Properties pp = new Properties();
26. try {
27. pp.load(is);
28. *// 创建连接池，使用配置文件中的参数*
29. ds = DruidDataSourceFactory.createDataSource(pp);
30. } catch (IOException e) {
31. e.printStackTrace();
32. } catch (Exception e) {
33. e.printStackTrace();
34. }
35. }
36. *// 3. 定义公有的得到数据源的方法*
37. public static DataSource getDataSource() {
38. return ds;
39. }
40. *// 4. 定义得到连接对象的方法*
41. public static Connection getConnection() throws SQLException {
42. return ds.getConnection();
43. }
44. *// 5.定义关闭资源的方法*
45. public static void close(Connection conn, Statement stmt, ResultSet rs) {
46. if (rs != null) {
47. try {
48. rs.close();
49. } catch (SQLException e) {}
50. }
51. if (stmt != null) {
52. try {
53. stmt.close();
54. } catch (SQLException e) {}
55. }
56. if (conn != null) {
57. try {
58. conn.close();
59. } catch (SQLException e) {}
60. }
61. }
62. *// 6.重载关闭方法*
63. public static void close(Connection conn, Statement stmt) {
64. close(conn, stmt, null);
65. }
66. }

### 3.6.2 MailUtils.java

发送邮件的工具类

1. package utils;
2. import javax.mail.\*;
3. import javax.mail.internet.InternetAddress;
4. import javax.mail.internet.MimeMessage;
5. import java.util.Properties;
6. */\*\**
7. \* 发邮件工具类
8. \*/
9. */\**
10. 这个工具类测试有问题  好像是javamail更新用不了
11. \*/
12. public final class MailUtils {
13. private static final String USER = "12295427494@qq.com"; *// 发件人称号，同邮箱地址*
14. private static final String PASSWORD = "uamvpeeapvpmifii"; *// 如果是qq邮箱可以使户端授权码，或者登录密码*
15. */\*\**
16. \*
17. \* @param to 收件人邮箱
18. \* @param text 邮件正文
19. \* @param title 标题
20. \*/
21. */\* 发送验证信息的邮件 \*/*
22. public static boolean sendMail(String to, String text, String title){
23. try {
24. final Properties props = new Properties();
25. props.put("mail.smtp.auth", "true");
26. props.put("mail.smtp.host", "smtp.qq.com");
27. *// 发件人的账号*
28. props.put("mail.user", USER);
29. *//发件人的密码*
30. props.put("mail.password", PASSWORD);
31. *// 构建授权信息，用于进行SMTP进行身份验证*
32. Authenticator authenticator = new Authenticator() {
33. @Override
34. protected PasswordAuthentication getPasswordAuthentication() {
35. *// 用户名、密码*
36. String userName = props.getProperty("mail.user");
37. String password = props.getProperty("mail.password");
38. return new PasswordAuthentication(userName, password);
39. }
40. };
41. *// 使用环境属性和授权信息，创建邮件会话*
42. Session mailSession = Session.getInstance(props, authenticator);
43. *// 创建邮件消息*
44. MimeMessage message = new MimeMessage(mailSession);
45. *// 设置发件人*
46. String username = props.getProperty("mail.user");
47. InternetAddress form = new InternetAddress(username);
48. message.setFrom(form);
49. *// 设置收件人*
50. InternetAddress toAddress = new InternetAddress(to);
51. message.setRecipient(Message.RecipientType.TO, toAddress);
52. *// 设置邮件标题*
53. message.setSubject(title);
54. *// 设置邮件的内容体*
55. message.setContent(text, "text/html;charset=UTF-8");
56. *// 发送邮件*
57. Transport.send(message);
58. return true;
59. }catch (Exception e){
60. e.printStackTrace();
61. }
62. return false;
63. }
64. public static void main(String[] args) throws Exception { *// 做测试用*
65. MailUtils.sendMail("2073889802@qq.com","你好，这是一封测试邮件，无需回复。","测试邮件");
66. System.out.println("successful");
67. }
68. }

### 3.6.3 MailUtils.java

 产生UUID随机字符串工具类（用于验证邮箱的激活）

1. package utils;
2. import java.util.UUID;
3. */\*\**
4. \* 产生UUID随机字符串工具类
5. \*/
6. public final class UuidUtil {
7. private UuidUtil(){}
8. public static String getUuid(){
9. return UUID.randomUUID().toString().replace("-","");
10. }
11. */\*\**
12. \* 测试
13. \*/
14. public static void main(String[] args) {
15. System.out.println(UuidUtil.getUuid());
16. System.out.println(UuidUtil.getUuid());
17. System.out.println(UuidUtil.getUuid());
18. System.out.println(UuidUtil.getUuid());
19. }
20. }

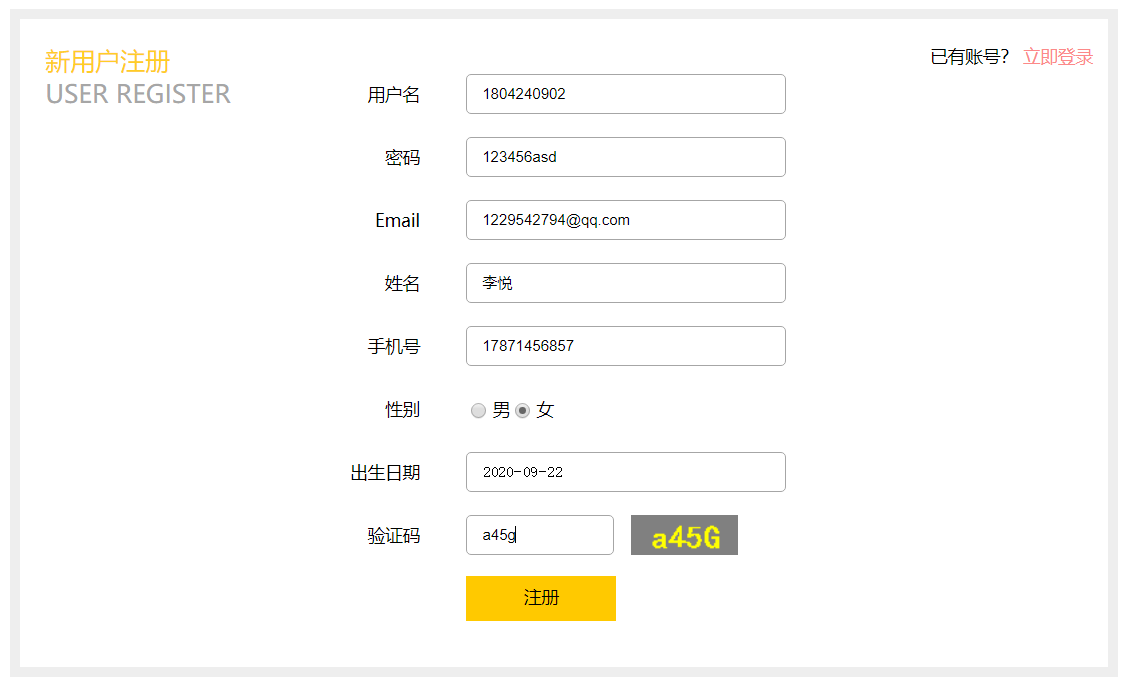
## 3.7 服务层（实现类）UserServiceImpl.java

1. package service.impl;
2. import dao.UserDao;
3. import dao.impl.UserDaoImpl;
4. import service.UserService;
5. import utils.MailUtils;
6. import utils.UuidUtil;
7. import vo.User;
8. public class UserServiceImpl implements UserService {
9. private UserDao userDao = new UserDaoImpl();
10. */\*\**
11. \* 注册用户
12. \* @param user
13. \* @return
14. \*/
15. public boolean register(User user) {
16. *//1.根据用户名查询用户对象*
17. User u = userDao.findByUsername(user.getUsername());
18. *//判断u是否为null*
19. if(u != null){
20. *//用户名存在，注册失败*
21. return false;
22. }
23. *//2.保存用户信息*
24. *//2.1设置激活码，唯一字符串*
25. user.setCode(UuidUtil.getUuid());
26. *//2.2设置激活状态*
27. user.setStatus("N");
28. userDao.save(user);
29. *//3.激活邮件发送，邮件正文？*
30. String content="注册邮箱注册邮箱 作者：李悦"+user.getCode();
31. MailUtils.sendMail(user.getEmail(),content,"激活邮件");
32. return true;
33. }
34. */\*\**
35. \* 激活用户
36. \* @param code
37. \* @return
38. \*/
39. public boolean active(String code) {
40. *//1.根据激活码查询用户对象*
41. User user = userDao.findByCode(code);
42. if(user != null){
43. *//2.调用dao的修改激活状态的方法*
44. userDao.updateStatus(user);
45. return true;
46. }else{
47. return false;
48. }
49. }
50. }

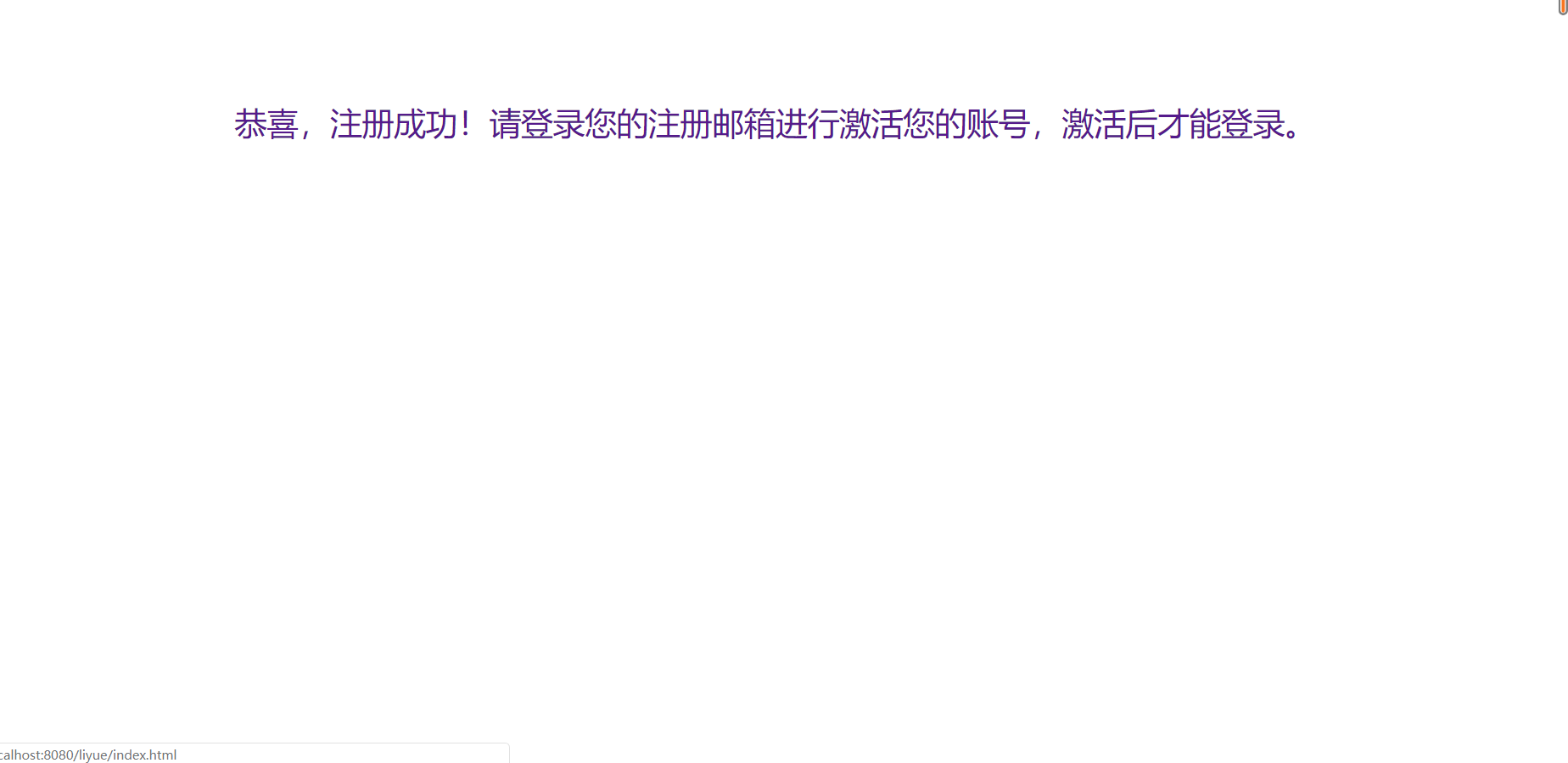
# **4 系统测试**

4.1注册成功

4.1.1填写信息(这里以我个人信息为例)



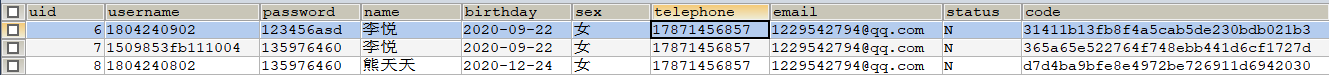
4.1.2注册成功跳转页面



4.1.3刷新数据库中表的信息

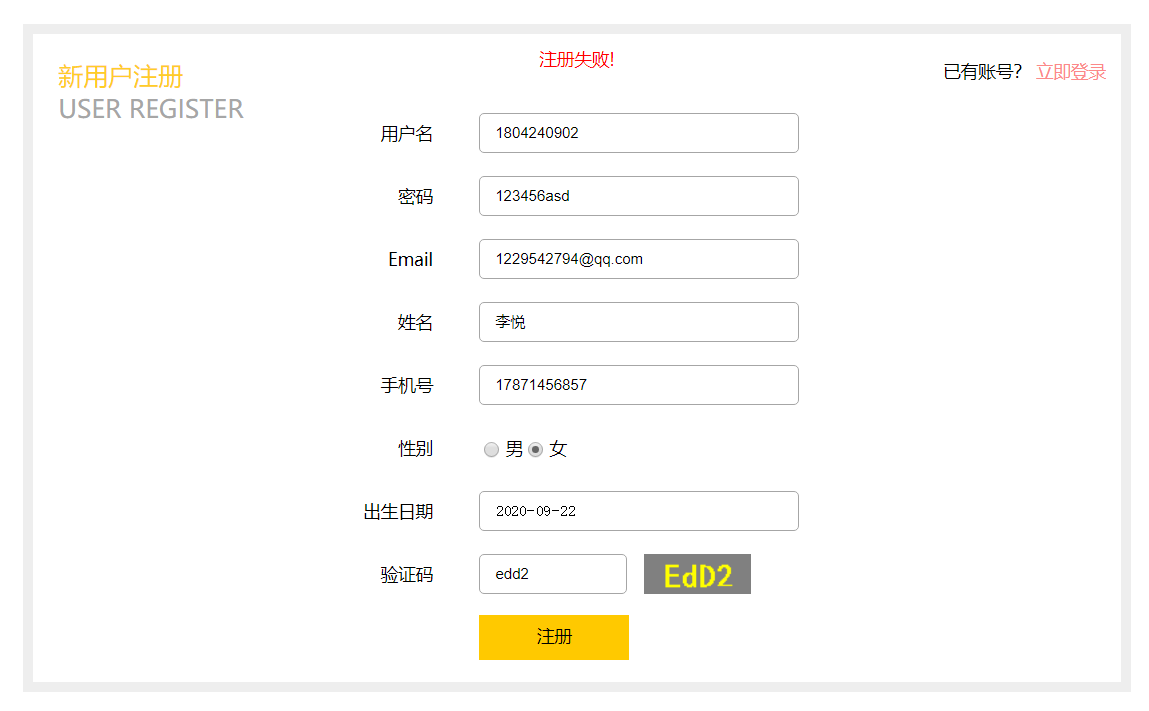


4.2多次注册后刷新数据库中表的信息



4.2注册失败

4.2.1主键重复（用户名）



4.2.2邮件格式错误（Email方框变红）



4.2.3密码或用户名不合规范



4.2.4验证码错误

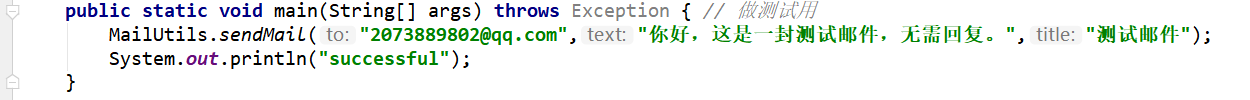


# **5 系统总结**

1. 自己在完成这个功能的时候，比较偏向于后端，前端的样式和布局有参考之前写过的项目。
2. 最初设计是使用手机验证码进行注册，去网上查找api的时候，查到了一个免费有保证的api,但我的申请被驳回了。将手机验证改成了邮箱验证，因为javaMail中封装好了，邮箱验证，在网上查找资料，找到相应的工具类，注册这一步要轻松很多。
3. 但是我在进行邮件发送测试的时候系统出现了以下报错

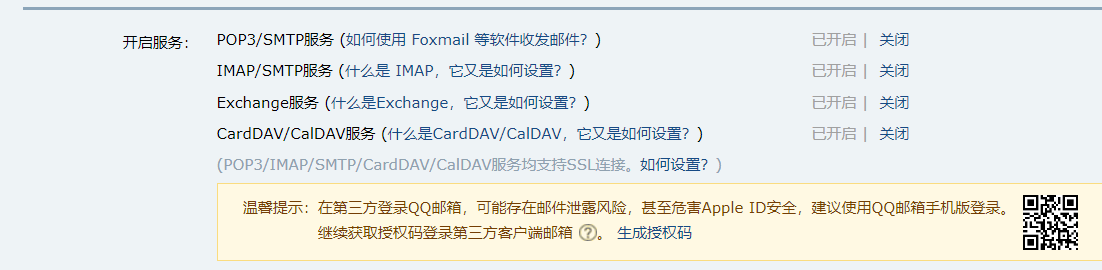


查看我相应测试类的代码



程序是没有问题的，能够输出successful

后来上网查找博客



是设置部分的授权码没有开启，我将三个授权码都开启后重新运行测试类，发现报错并没有解决



原因是：javamail第三方发送版本太低了，现在网易和QQ邮箱，第三方授权安全性很高，无法正常发送。

个人感悟：我的前端部分基础不牢固，写ajax请求的时候，需要套着之前的项目模板进行写。但是经过很长一段时间的练习，我后端部分的基础还是很牢固的，这是我值得欣慰的。

我给自己的评价是优，因为通过这门课，我有真的学到一些东西，从最初的不理解的三层架构，到后面可以把后端基础写的很熟练。但很遗憾的是，我还是没有很熟练的掌握SSM框架，但是框架是建立基础上的，我的打算是寒假一直到开学尽量把三大框架掌握牢固，好为后面的实习和毕业设计做准备。

我最初写的题是第二题，但是我第二题的功能没有完全实现，但是我想多做一点，做好一点，于是把注册这个题也写了，注册这个题很简单，第二题对ajax请求的要求部分比较高，但是查查文档也能写出来。

武汉纺织大学

Web应用开发课程设计

**注册页面**

**学 院： 数学与计算机学院**

**班 级： 计科11804班**

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**学 号： 1804240902**

**指导老师： 聂刚**

**成 绩：**

**完成日期： 2020年12月15日**

# 1 需求分析

## 设计一个注册页面，手机验证码发送，将注册的用户信息放入数据库中。

## 1.1用户注册

当程序运行时，显示注册所需要填写的个人信息。

个人信息有用户名、密码、Email、姓名、手机号、性别、出生日期。

**1.2邮箱激活**

注册成功后，跳转邮箱激活页面。

## 1.3主菜单

运行tomcat，进入系统主界面，如下：



## 1.3各项功能

### 1表单校验

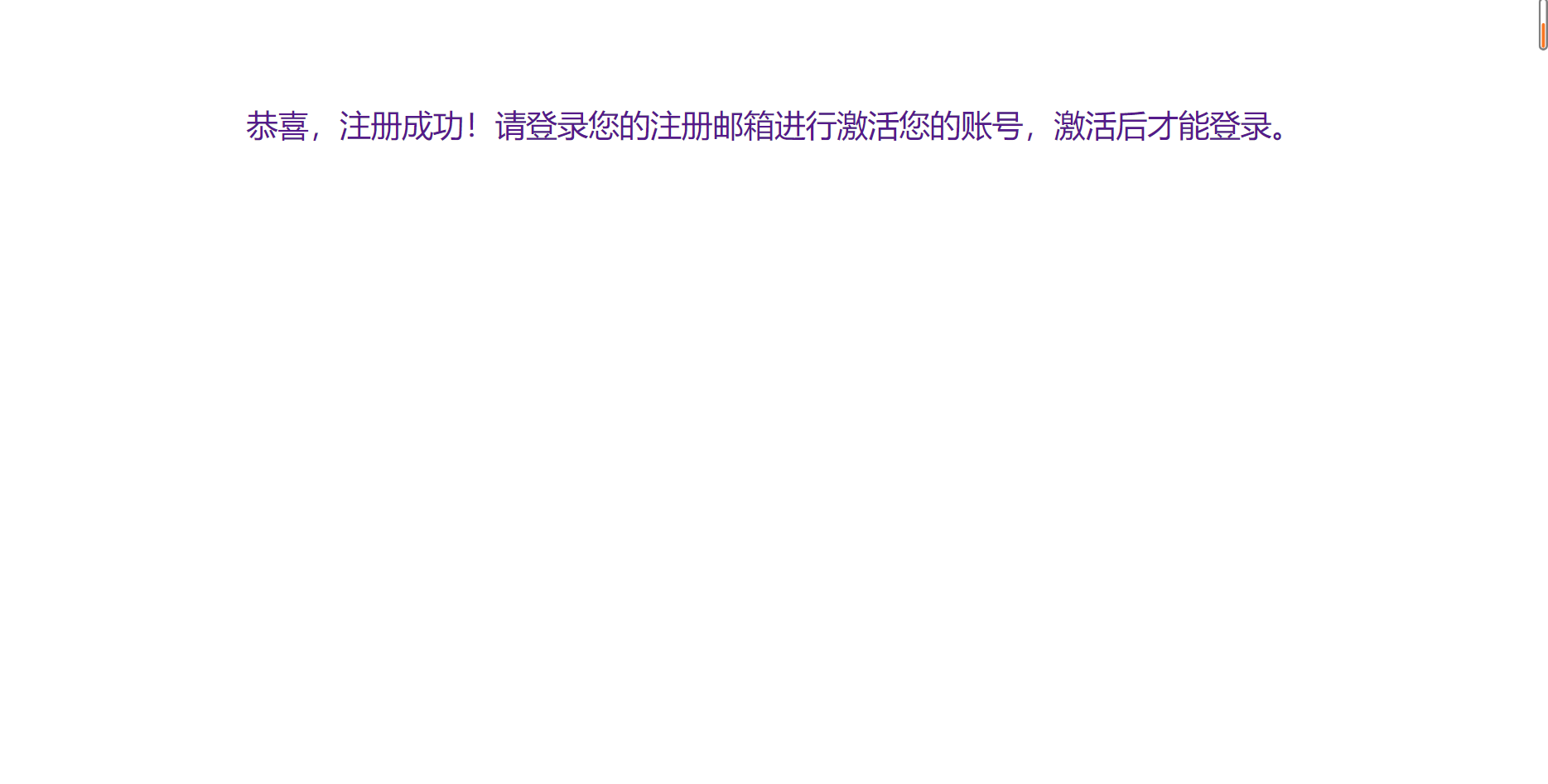
1）.用户名：单词字符，长度8到20位  
2）.密码：单词字符，长度8到20位  
3）.email：邮件格式  
4）.姓名：非空  
5）.手机号：手机号格式  
6）.出生日期：非空  
7）.验证码：非空

1. **注册成功**

**2.1输入信息注册：**



**2.2注册成功跳转页面**



# **2 系统设计**

**2.1数据库表**

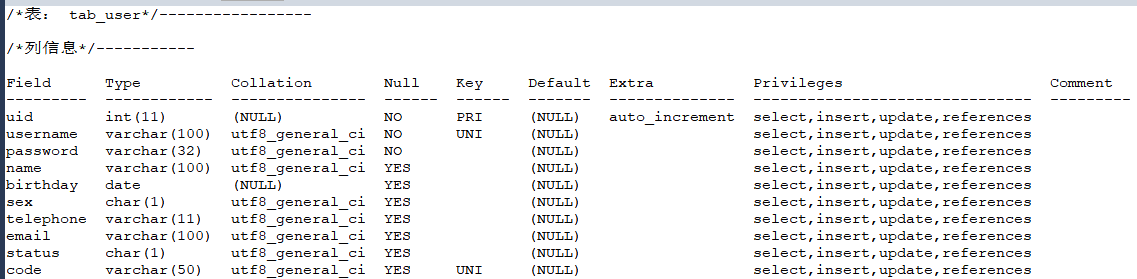


图2.1.1数据库表

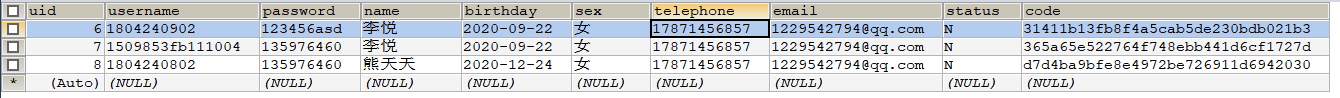


图2.1.2数据库表

## 2.2 ER图

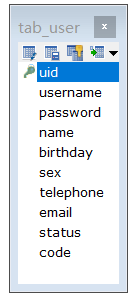
%3CmxGraphModel%3E%3Croot%3E%3CmxCell%20id%3D%220%22%2F%3E%3CmxCell%20id%3D%221%22%20parent%3D%220%22%2F%3E%3Cmysql.table%20entity.table.tableName%3D%22uses%22%20label%3D%22uses%22%20id%3D%222%22%3E%3CmxCell%20style%3D%22swimlane%3BfontStyle%3D0%3BchildLayout%3DstackLayout%3Bhorizontal%3D1%3Bhtml%3D1%3BstartSize%3D26%3BfillColor%3D%23b0e3e6%3BhorizontalStack%3D0%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）

对于用户功能模块，共设计如下5个类。

* VO实体类User：与数据库结构进行映射的类。主要由属性，setter, getter方法组成，VO类中的属性与表中的字段相对应，每一个VO类的对象都表示表中的每一条记录
* DAO接口IUserDAO：主要定义操作的接口，定义一系列数据库的原子性操作，例如增删改查（通常称为CRUD）等。
* DAO实现类UserDAOImpl：DAO接口的真实实现类，主要完成具体数据库操作，但不负责数据库的打开和关闭。
* DAO工厂类DAOFactory：通过工厂类取得一个DAO的实例化对象
* 业务逻辑实现类UserService：对于数据层的原子操作进行整合。还要负责数据库的打开与关闭（不管是否出异常，数据库都要关闭）
* \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*：

各类的结构及类之间的关系如图2-5所示：

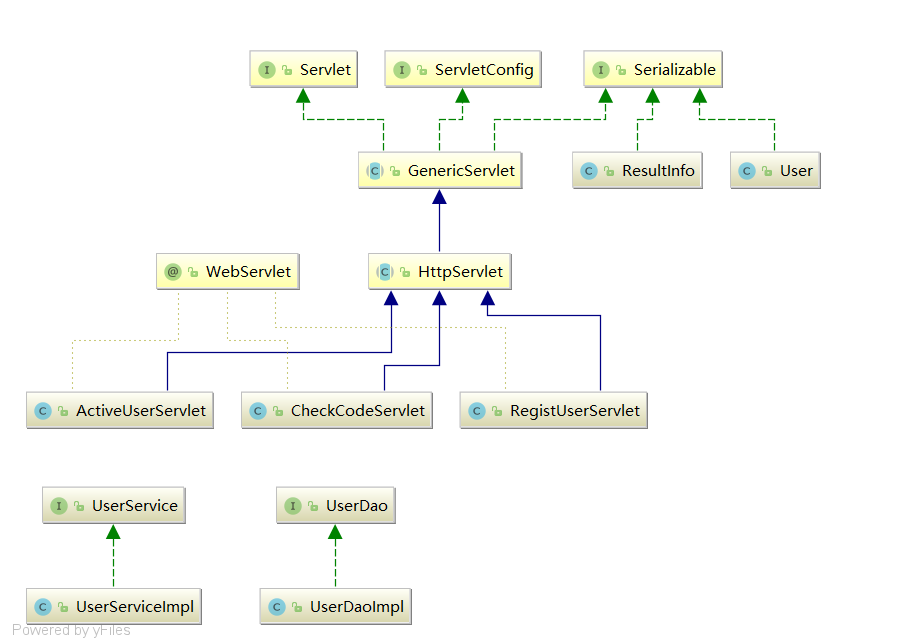


图2-3 用户功能类图

## 2.4 UML时序图（Sequence Diagram）

### 2.4.1 系统注册

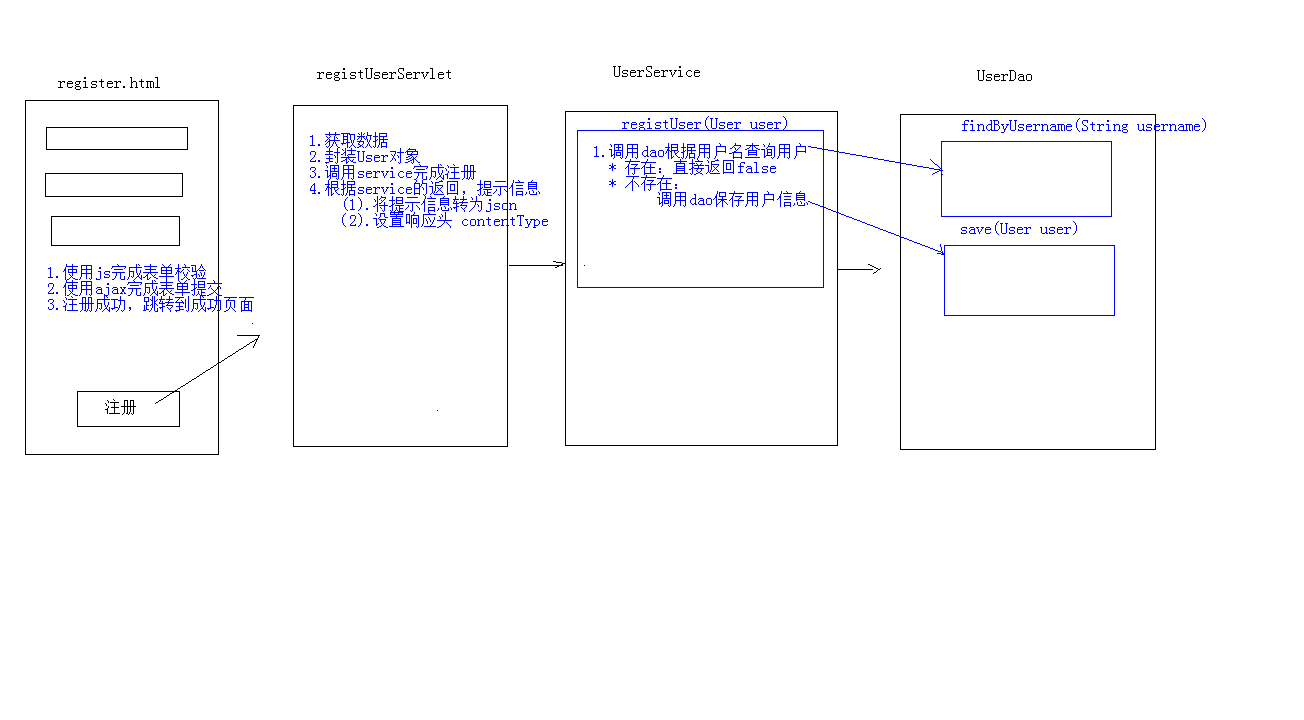


图2.4.1

# **3 系统实现**

## 3.1 项目结构

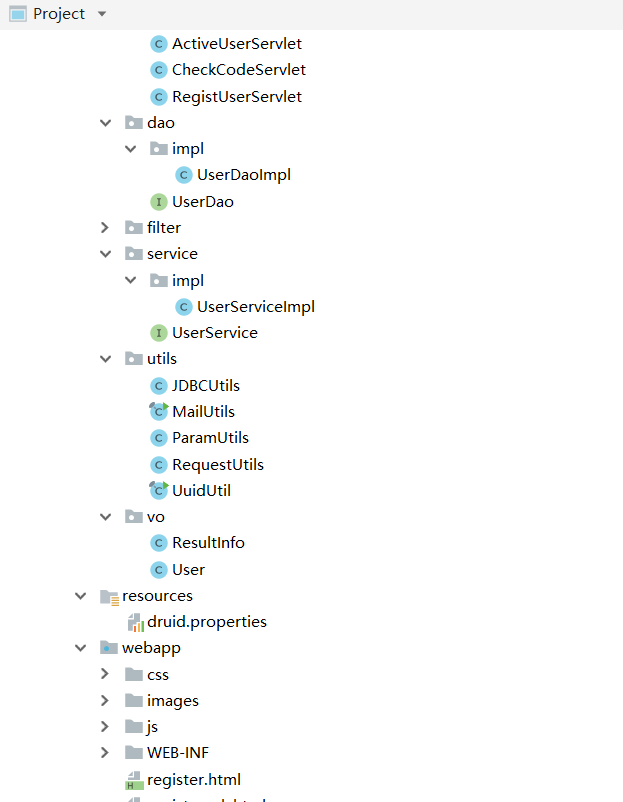


图3.1项目结构

## 3.2 配置文件

在项目下新建Source Folder，名为resources

### 3.2.1 druid.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。

1. driverClassName=com.mysql.jdbc.Driver
2. url=jdbc:mysql:*///web\_kechengsheji*
3. username=root
4. password=root
5. initialSize=5
6. maxActive=10
7. maxWait=3000

### 3.2.2 web.xml文件

web.xml文件是用来初始化配置信息

1. <!DOCTYPE web-app PUBLIC
2. "-//Sun Microsystems, Inc.//DTD Web Application 2.3//EN"
3. "http://java.sun.com/dtd/web-app\_2\_3.dtd" >
4. <web-app>
5. <display-name>Archetype Created Web Application</display-name>
6. </web-app>

## 3.3 VO类User.java

**3.3.1User的实体类**

1. package vo;
2. import java.io.Serializable;
3. */\*\**
4. \* 用户实体类
5. \*/
6. public class User implements Serializable {
7. private int uid;*//用户id*
8. private String username;*//用户名，账号*
9. private String password;*//密码*
10. private String name;*//真实姓名*
11. private String birthday;*//出生日期*
12. private String sex;*//男或女*
13. private String telephone;*//手机号*
14. private String email;*//邮箱*
15. private String status;*//激活状态，Y代表激活，N代表未激活*
16. private String code;*//激活码（要求唯一）*
17. */\*\**
18. \* 无参构造方法
19. \*/
20. public User() {
21. }
22. */\*\**
23. \* 有参构方法
24. \* @param uid
25. \* @param username
26. \* @param password
27. \* @param name
28. \* @param birthday
29. \* @param sex
30. \* @param telephone
31. \* @param email
32. \* @param status
33. \* @param code
34. \*/
35. public User(int uid, String username, String password, String name, String birthday, String sex, String telephone, String email, String status, String code) {
36. this.uid = uid;
37. this.username = username;
38. this.password = password;
39. this.name = name;
40. this.birthday = birthday;
41. this.sex = sex;
42. this.telephone = telephone;
43. this.email = email;
44. this.status = status;
45. this.code = code;
46. }
47. public int getUid() {
48. return uid;
49. }
50. public void setUid(int uid) {
51. this.uid = uid;
52. }
53. public String getUsername() {
54. return username;
55. }
56. public void setUsername(String username) {
57. this.username = username;
58. }
59. public String getPassword() {
60. return password;
61. }
62. public void setPassword(String password) {
63. this.password = password;
64. }
65. public String getName() {
66. return name;
67. }
68. public void setName(String name) {
69. this.name = name;
70. }
71. public String getBirthday() {
72. return birthday;
73. }
74. public void setBirthday(String birthday) {
75. this.birthday = birthday;
76. }
77. public String getSex() {
78. return sex;
79. }
80. public void setSex(String sex) {
81. this.sex = sex;
82. }
83. public String getTelephone() {
84. return telephone;
85. }
86. public void setTelephone(String telephone) {
87. this.telephone = telephone;
88. }
89. public String getEmail() {
90. return email;
91. }
92. public void setEmail(String email) {
93. this.email = email;
94. }
95. public String getStatus() {
96. return status;
97. }
98. public void setStatus(String status) {
99. this.status = status;
100. }
101. public String getCode() {
102. return code;
103. }
104. public void setCode(String code) {
105. this.code = code;
106. }
107. }

**3.3.2ResultInfo的实体类**

用于封装后端返回前端数据对象

1. package vo;
2. import java.io.Serializable;
3. import java.util.Objects;
4. */\*\**
5. \* 用于封装后端返回前端数据对象
6. \*/
7. public class ResultInfo implements Serializable {
8. private boolean flag;*//后端返回结果正常为true，发生异常返回false*
9. private Object data;*//后端返回结果数据对象*
10. private String errorMsg;*//发生异常的错误消息*
11. *//无参构造方法*
12. public ResultInfo() {
13. }
14. public ResultInfo(boolean flag) {
15. this.flag = flag;
16. }
17. */\*\**
18. \* 有参构造方法
19. \* @param flag
20. \* @param errorMsg
21. \*/
22. public ResultInfo(boolean flag, String errorMsg) {
23. this.flag = flag;
24. this.errorMsg = errorMsg;
25. }
26. */\*\**
27. \* 有参构造方法
28. \* @param flag
29. \* @param data
30. \* @param errorMsg
31. \*/
32. public ResultInfo(boolean flag, Object data, String errorMsg) {
33. this.flag = flag;
34. this.data = data;
35. this.errorMsg = errorMsg;
36. }
37. public boolean isFlag() {
38. return flag;
39. }
40. public void setFlag(boolean flag) {
41. this.flag = flag;
42. }
43. public Object getData() {
44. return data;
45. }
46. public void setData(Object data) {
47. this.data = data;
48. }
49. public String getErrorMsg() {
50. return errorMsg;
51. }
52. public void setErrorMsg(String errorMsg) {
53. this.errorMsg = errorMsg;
54. }
55. }

## 3.4接口类UserDAO.java

实现对数据库t\_user表中的增删查改

1. package dao;
2. import vo.User;
3. public interface UserDao {
4. */\*\**
5. \* 根据用户名查询用户信息
6. \* @param username
7. \* @return
8. \*/
9. public User findByUsername(String username);
10. */\*\**
11. \* 用户保存
12. \* @param user
13. \*/
14. public void save(User user);
15. User findByCode(String code);
16. void updateStatus(User user);
17. User findByUsernameAndPassword(String username, String password);
18. }

## 3.6 工具包Util

### 3.6.1 JDBCUtils .java

实现数据库的连接和释放

1. package utils;
2. import com.alibaba.druid.pool.DruidDataSourceFactory;
3. import javax.sql.DataSource;
4. import java.io.IOException;
5. import java.io.InputStream;
6. import java.sql.Connection;
7. import java.sql.ResultSet;
8. import java.sql.SQLException;
9. import java.sql.Statement;
10. import java.util.Properties;
11. */\**
12. 1. 声明静态数据源成员变量
13. 2. 创建连接池对象
14. 3. 定义公有的得到数据源的方法
15. 4. 定义得到连接对象的方法
16. 5. 定义关闭资源的方法
17. \*/
18. public class JDBCUtils {
19. *// 1. 声明静态数据源成员变量*
20. private static DataSource ds;
21. *// 2. 创建连接池对象*
22. static {
23. *// 加载配置文件中的数据*
24. InputStream is = JDBCUtils.class.getClassLoader().getResourceAsStream("druid.properties");
25. Properties pp = new Properties();
26. try {
27. pp.load(is);
28. *// 创建连接池，使用配置文件中的参数*
29. ds = DruidDataSourceFactory.createDataSource(pp);
30. } catch (IOException e) {
31. e.printStackTrace();
32. } catch (Exception e) {
33. e.printStackTrace();
34. }
35. }
36. *// 3. 定义公有的得到数据源的方法*
37. public static DataSource getDataSource() {
38. return ds;
39. }
40. *// 4. 定义得到连接对象的方法*
41. public static Connection getConnection() throws SQLException {
42. return ds.getConnection();
43. }
44. *// 5.定义关闭资源的方法*
45. public static void close(Connection conn, Statement stmt, ResultSet rs) {
46. if (rs != null) {
47. try {
48. rs.close();
49. } catch (SQLException e) {}
50. }
51. if (stmt != null) {
52. try {
53. stmt.close();
54. } catch (SQLException e) {}
55. }
56. if (conn != null) {
57. try {
58. conn.close();
59. } catch (SQLException e) {}
60. }
61. }
62. *// 6.重载关闭方法*
63. public static void close(Connection conn, Statement stmt) {
64. close(conn, stmt, null);
65. }
66. }

### 3.6.2 MailUtils.java

发送邮件的工具类

1. package utils;
2. import javax.mail.\*;
3. import javax.mail.internet.InternetAddress;
4. import javax.mail.internet.MimeMessage;
5. import java.util.Properties;
6. */\*\**
7. \* 发邮件工具类
8. \*/
9. */\**
10. 这个工具类测试有问题  好像是javamail更新用不了
11. \*/
12. public final class MailUtils {
13. private static final String USER = "12295427494@qq.com"; *// 发件人称号，同邮箱地址*
14. private static final String PASSWORD = "uamvpeeapvpmifii"; *// 如果是qq邮箱可以使户端授权码，或者登录密码*
15. */\*\**
16. \*
17. \* @param to 收件人邮箱
18. \* @param text 邮件正文
19. \* @param title 标题
20. \*/
21. */\* 发送验证信息的邮件 \*/*
22. public static boolean sendMail(String to, String text, String title){
23. try {
24. final Properties props = new Properties();
25. props.put("mail.smtp.auth", "true");
26. props.put("mail.smtp.host", "smtp.qq.com");
27. *// 发件人的账号*
28. props.put("mail.user", USER);
29. *//发件人的密码*
30. props.put("mail.password", PASSWORD);
31. *// 构建授权信息，用于进行SMTP进行身份验证*
32. Authenticator authenticator = new Authenticator() {
33. @Override
34. protected PasswordAuthentication getPasswordAuthentication() {
35. *// 用户名、密码*
36. String userName = props.getProperty("mail.user");
37. String password = props.getProperty("mail.password");
38. return new PasswordAuthentication(userName, password);
39. }
40. };
41. *// 使用环境属性和授权信息，创建邮件会话*
42. Session mailSession = Session.getInstance(props, authenticator);
43. *// 创建邮件消息*
44. MimeMessage message = new MimeMessage(mailSession);
45. *// 设置发件人*
46. String username = props.getProperty("mail.user");
47. InternetAddress form = new InternetAddress(username);
48. message.setFrom(form);
49. *// 设置收件人*
50. InternetAddress toAddress = new InternetAddress(to);
51. message.setRecipient(Message.RecipientType.TO, toAddress);
52. *// 设置邮件标题*
53. message.setSubject(title);
54. *// 设置邮件的内容体*
55. message.setContent(text, "text/html;charset=UTF-8");
56. *// 发送邮件*
57. Transport.send(message);
58. return true;
59. }catch (Exception e){
60. e.printStackTrace();
61. }
62. return false;
63. }
64. public static void main(String[] args) throws Exception { *// 做测试用*
65. MailUtils.sendMail("2073889802@qq.com","你好，这是一封测试邮件，无需回复。","测试邮件");
66. System.out.println("successful");
67. }
68. }

### 3.6.3 MailUtils.java

 产生UUID随机字符串工具类（用于验证邮箱的激活）

1. package utils;
2. import java.util.UUID;
3. */\*\**
4. \* 产生UUID随机字符串工具类
5. \*/
6. public final class UuidUtil {
7. private UuidUtil(){}
8. public static String getUuid(){
9. return UUID.randomUUID().toString().replace("-","");
10. }
11. */\*\**
12. \* 测试
13. \*/
14. public static void main(String[] args) {
15. System.out.println(UuidUtil.getUuid());
16. System.out.println(UuidUtil.getUuid());
17. System.out.println(UuidUtil.getUuid());
18. System.out.println(UuidUtil.getUuid());
19. }
20. }

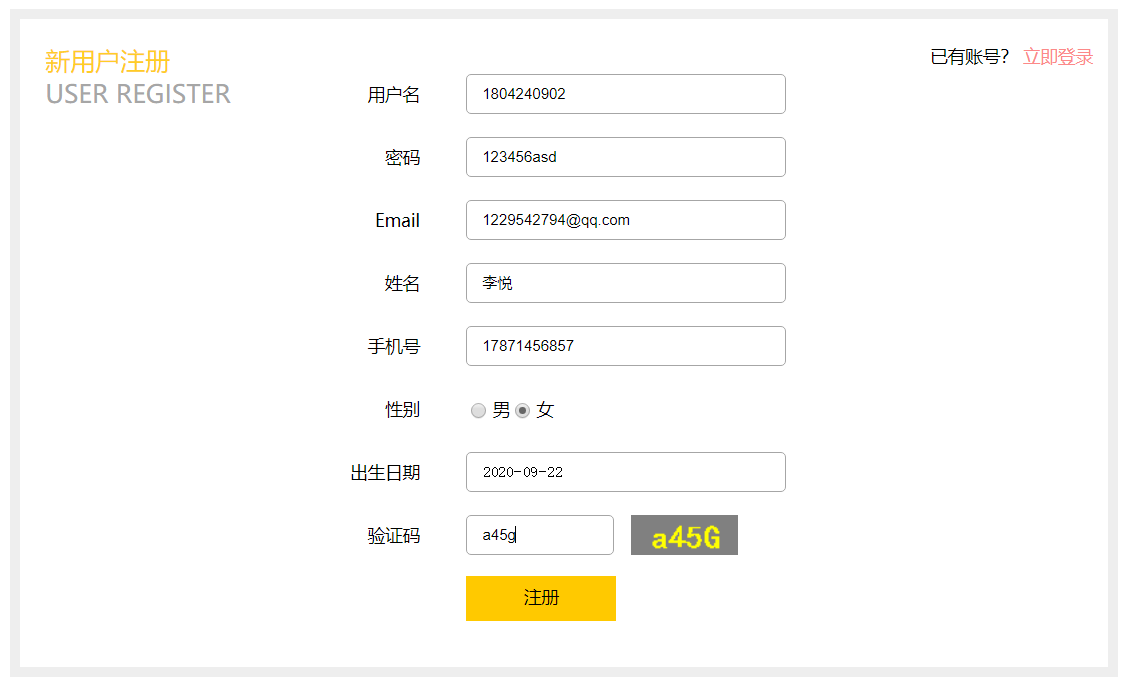
## 3.7 服务层（实现类）UserServiceImpl.java

1. package service.impl;
2. import dao.UserDao;
3. import dao.impl.UserDaoImpl;
4. import service.UserService;
5. import utils.MailUtils;
6. import utils.UuidUtil;
7. import vo.User;
8. public class UserServiceImpl implements UserService {
9. private UserDao userDao = new UserDaoImpl();
10. */\*\**
11. \* 注册用户
12. \* @param user
13. \* @return
14. \*/
15. public boolean register(User user) {
16. *//1.根据用户名查询用户对象*
17. User u = userDao.findByUsername(user.getUsername());
18. *//判断u是否为null*
19. if(u != null){
20. *//用户名存在，注册失败*
21. return false;
22. }
23. *//2.保存用户信息*
24. *//2.1设置激活码，唯一字符串*
25. user.setCode(UuidUtil.getUuid());
26. *//2.2设置激活状态*
27. user.setStatus("N");
28. userDao.save(user);
29. *//3.激活邮件发送，邮件正文？*
30. String content="注册邮箱注册邮箱 作者：李悦"+user.getCode();
31. MailUtils.sendMail(user.getEmail(),content,"激活邮件");
32. return true;
33. }
34. */\*\**
35. \* 激活用户
36. \* @param code
37. \* @return
38. \*/
39. public boolean active(String code) {
40. *//1.根据激活码查询用户对象*
41. User user = userDao.findByCode(code);
42. if(user != null){
43. *//2.调用dao的修改激活状态的方法*
44. userDao.updateStatus(user);
45. return true;
46. }else{
47. return false;
48. }
49. }
50. }

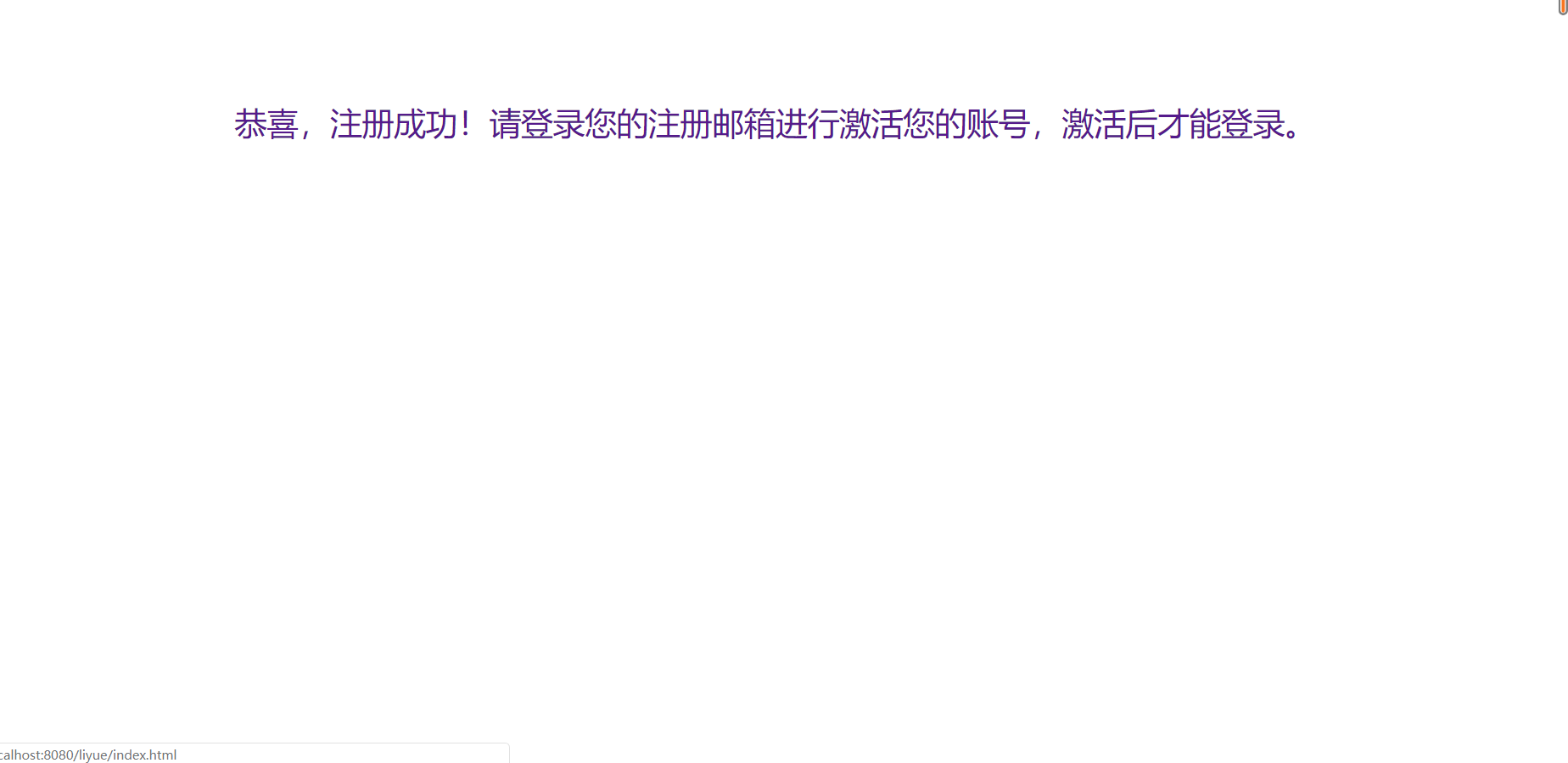
# **4 系统测试**

4.1注册成功

4.1.1填写信息(这里以我个人信息为例)



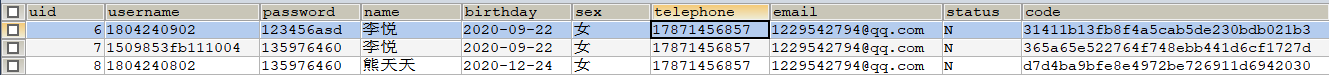
4.1.2注册成功跳转页面



4.1.3刷新数据库中表的信息

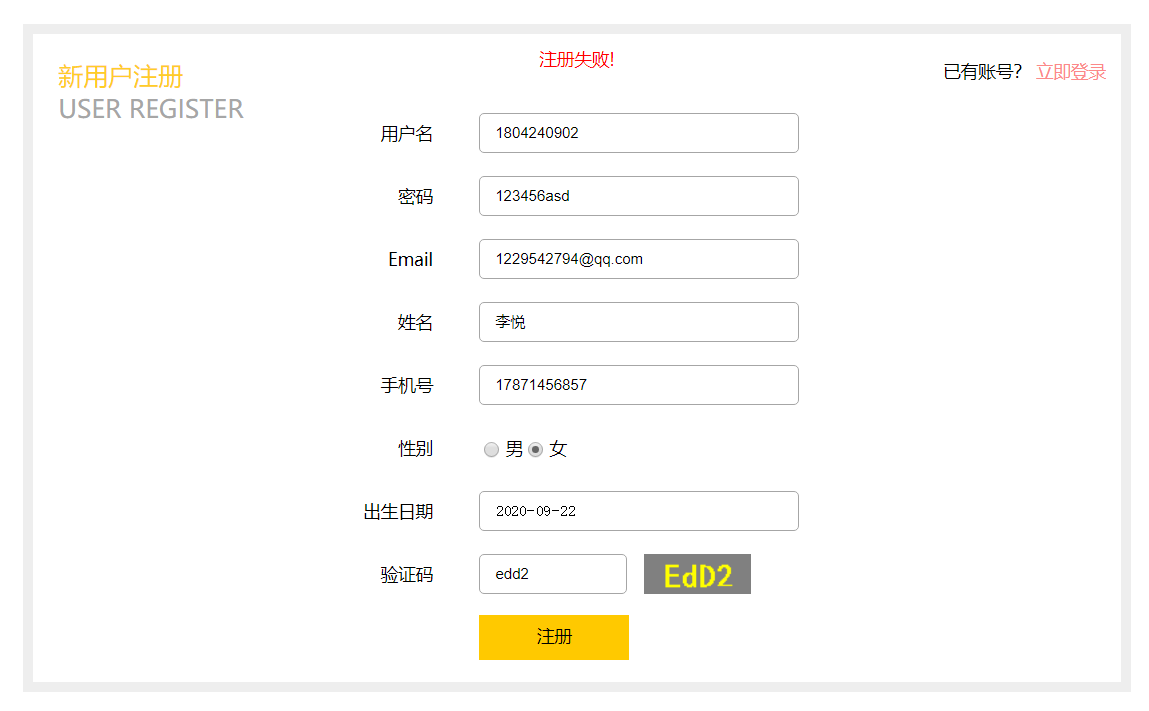


4.2多次注册后刷新数据库中表的信息



4.2注册失败

4.2.1主键重复（用户名）



4.2.2邮件格式错误（Email方框变红）



4.2.3密码或用户名不合规范



4.2.4验证码错误

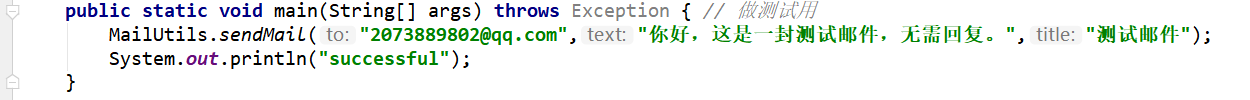


# **5 系统总结**

1. 自己在完成这个功能的时候，比较偏向于后端，前端的样式和布局有参考之前写过的项目。
2. 最初设计是使用手机验证码进行注册，去网上查找api的时候，查到了一个免费有保证的api,但我的申请被驳回了。将手机验证改成了邮箱验证，因为javaMail中封装好了，邮箱验证，在网上查找资料，找到相应的工具类，注册这一步要轻松很多。
3. 但是我在进行邮件发送测试的时候系统出现了以下报错

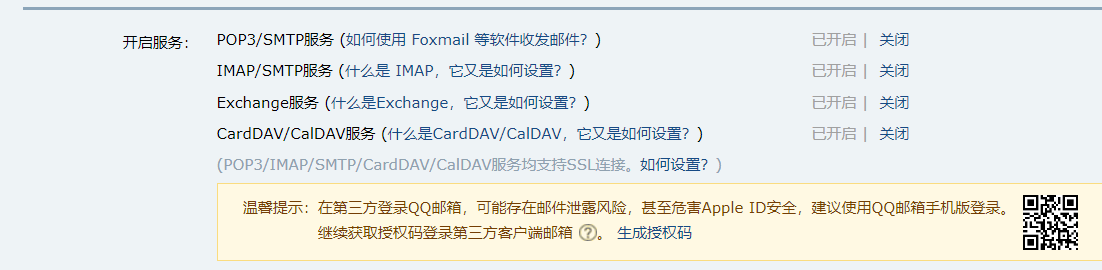


查看我相应测试类的代码



程序是没有问题的，能够输出successful

后来上网查找博客



是设置部分的授权码没有开启，我将三个授权码都开启后重新运行测试类，发现报错并没有解决



原因是：javamail第三方发送版本太低了，现在网易和QQ邮箱，第三方授权安全性很高，无法正常发送。

个人感悟：我的前端部分基础不牢固，写ajax请求的时候，需要套着之前的项目模板进行写。但是经过很长一段时间的练习，我后端部分的基础还是很牢固的，这是我值得欣慰的。

我给自己的评价是优，因为通过这门课，我有真的学到一些东西，从最初的不理解的三层架构，到后面可以把后端基础写的很熟练。但很遗憾的是，我还是没有很熟练的掌握SSM框架，但是框架是建立基础上的，我的打算是寒假一直到开学尽量把三大框架掌握牢固，好为后面的实习和毕业设计做准备。

我最初写的题是第二题，但是我第二题的功能没有完全实现，但是我想多做一点，做好一点，于是把注册这个题也写了，注册这个题很简单，第二题对ajax请求的要求部分比较高，但是查查文档也能写出来。

武汉纺织大学

Web应用开发课程设计

**级联选择**

**学 院： 数学与计算机学院**

**班 级： 计科11804班**

**姓 名： 李悦**

**学 号： 1804240902**

**指导老师： 聂刚**

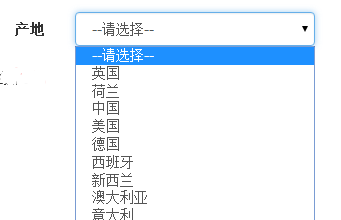
**成 绩：**

**完成日期： 2020年12月15日**

# 1 需求分析

设计一个商品信息增加页面，点击保存把商品信息存入数据库中。

## 1.1分选项卡录入



**1.2选择一级目录后ajax读取二级目录信息**



**1.3主选择一级目录后ajax读取二级目录信息**



**1.4点击保存后给出校验**



**1.5输入条形码后ajax唯一性校验**

## 

运行tomcat，进入系统主界面，如下：



# **2 系统设计**

**2.1数据库表**



图2.1.1数据库表yiji

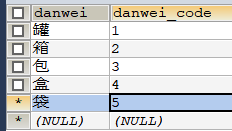


图2.1.2数据库表danwei

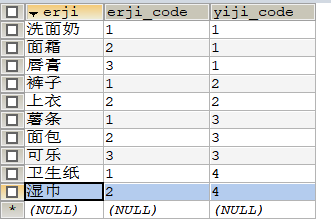


图2.1.2数据库表erji

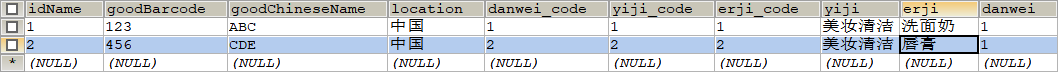
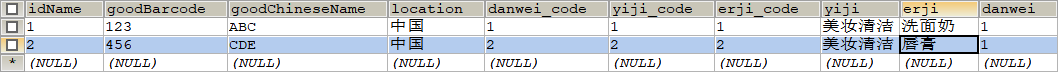


图2.1.2数据库表good

# **3 系统实现**

## 项目结构

## 1）项目结构(IDEA)

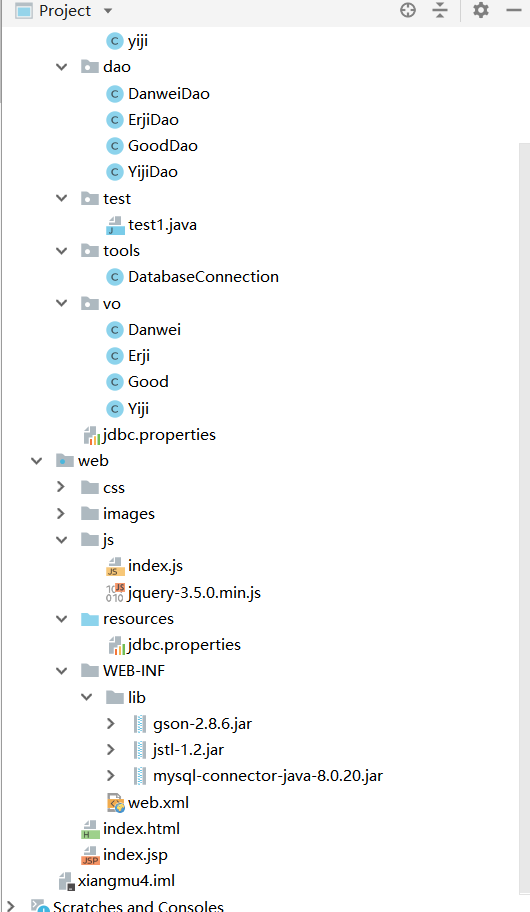


图3.1项目结构

1. **项目结构（Vue）**

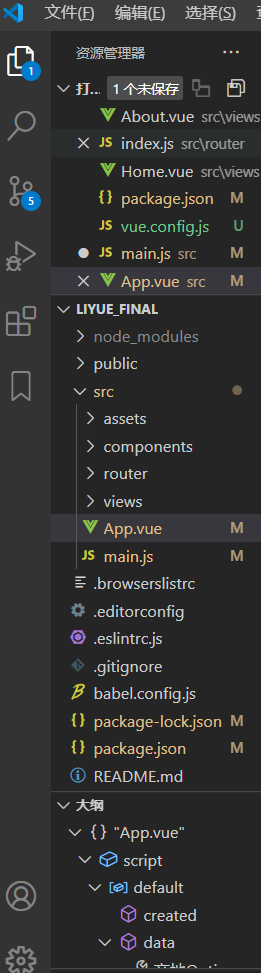
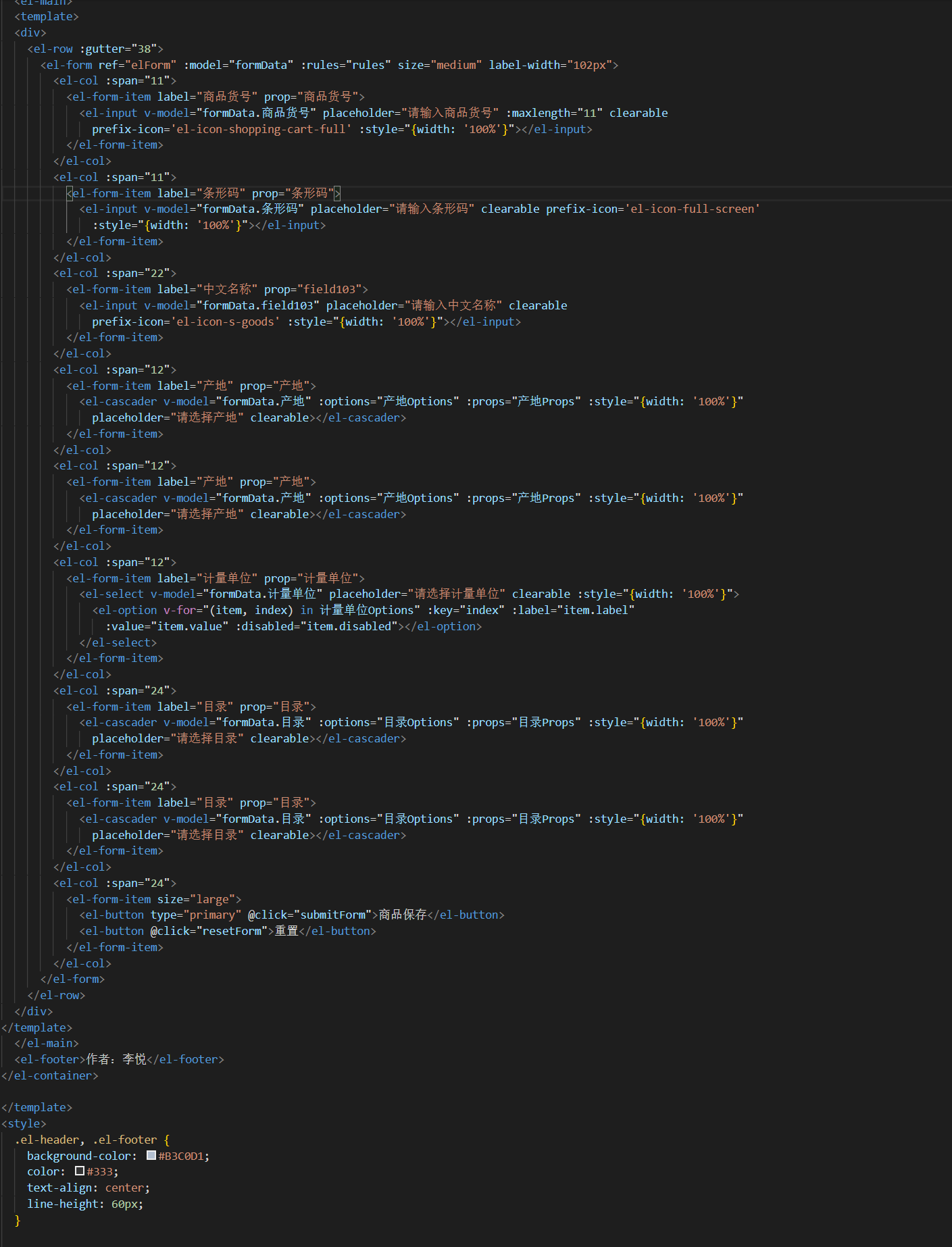


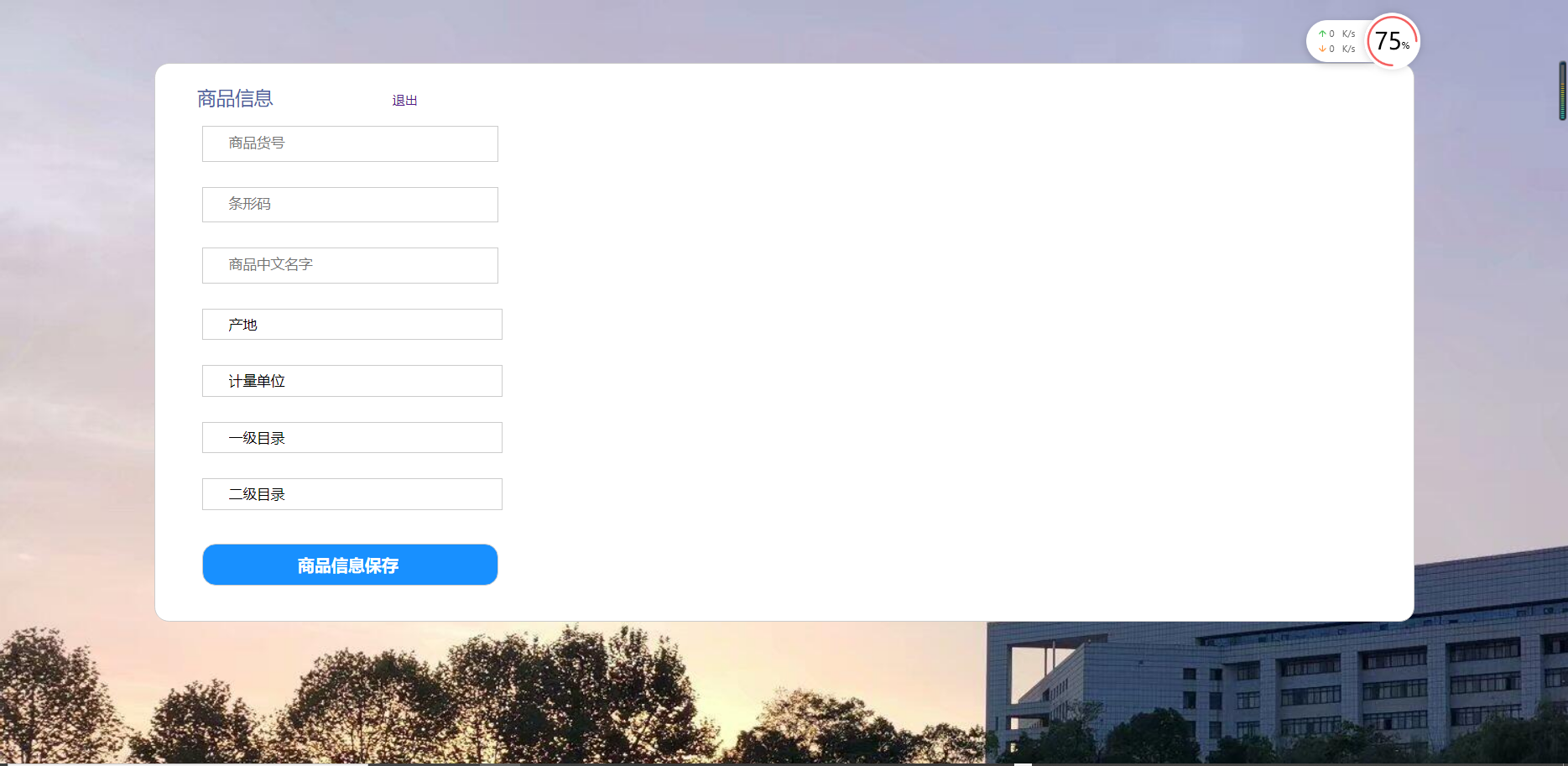
图3.2项目结构

**3.2部分代码**

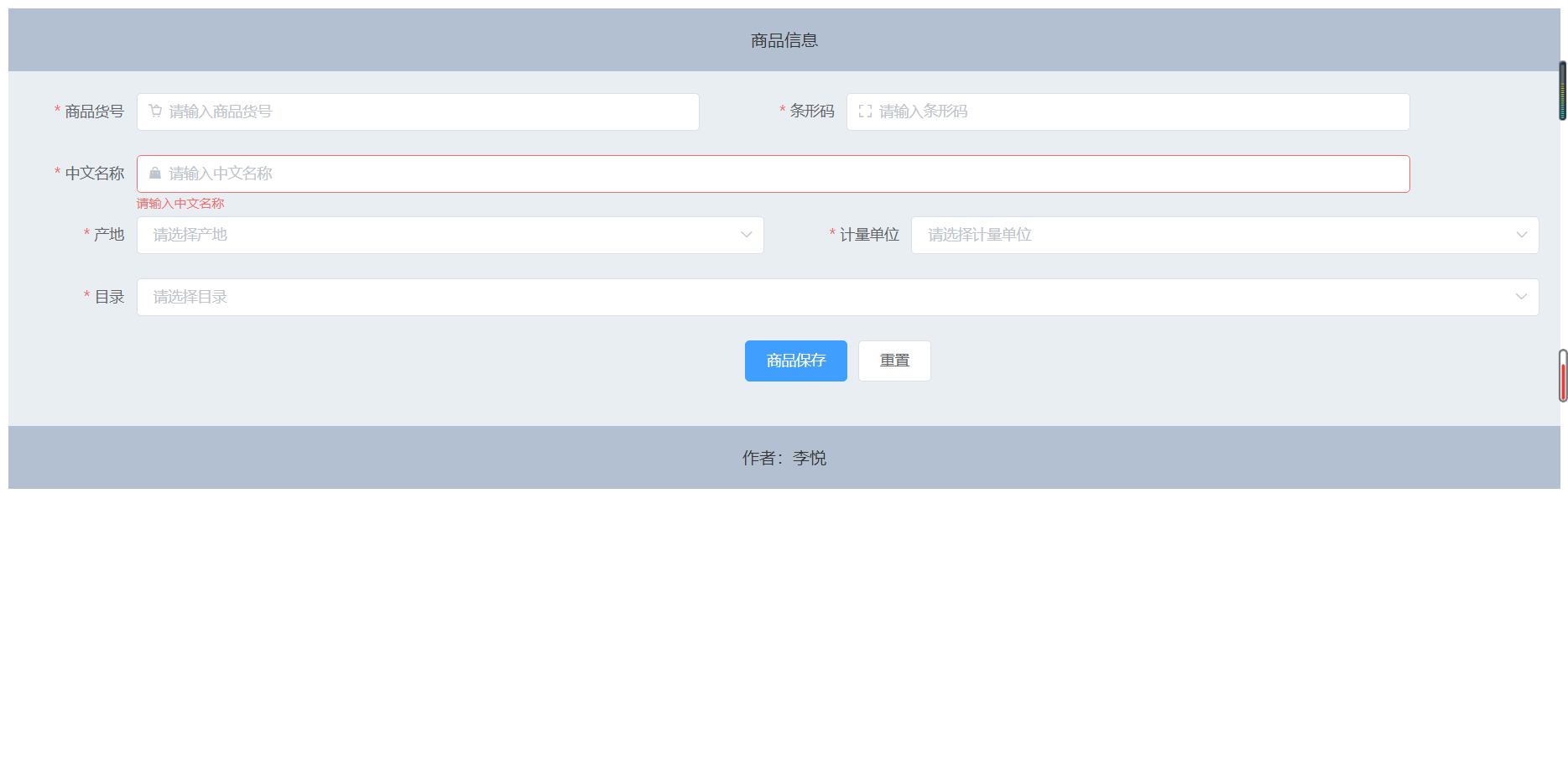


# **4 系统测试**

**4.1.1商品保存(IDEA)**



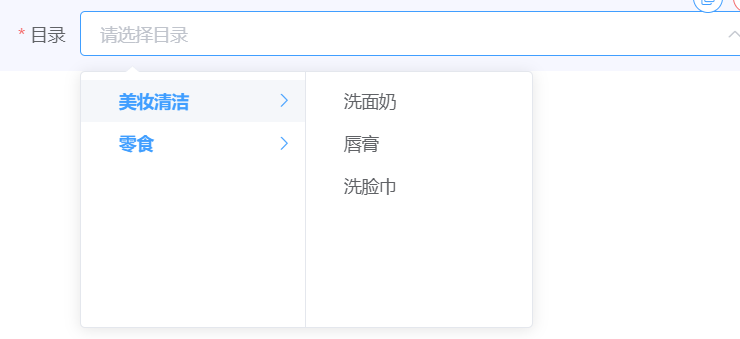
**4.2.1商品保存**

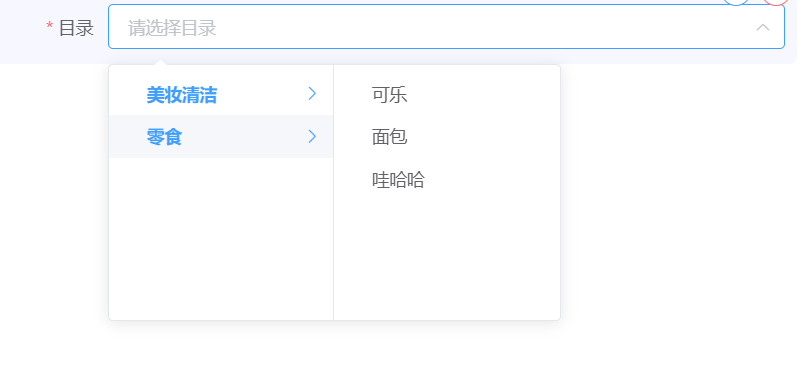


**4.2.2实现校验**



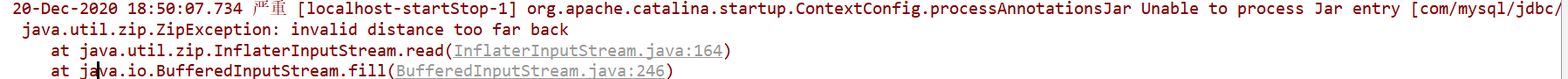
**4.2.3实现级联选择**





# **5 系统总结**

1. 先开始拿到这个题目的时候，卡在的前端上，布局设计样式的话需要设计很久。但是透过现象看本质，这个题相当于之前作业三的题。前端部分我设计的比较简陋，建立在作业三的前端部分进行修改，基本布局算是完成了。可是ajax发送请求上进行级联选择的时候报错了。



这里说我tomcat中的mysql包在压缩的时候有问题

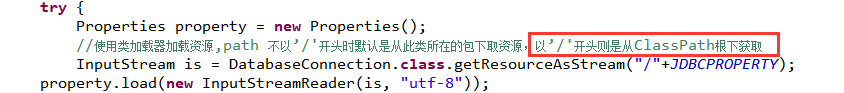
但是我并没有应用mysql中的数据包，我将自己lib中的包从5.31换成了8.x的版本，以避免冲突。



这里能成功打印数据库连接池的信息，说明我的连接是没有问题的，代码是没有问题的，是Tomcat的哪个地方有问题。

之后去询问了老师，老师说

jdbc.properties这个文件应该存放在src目录中

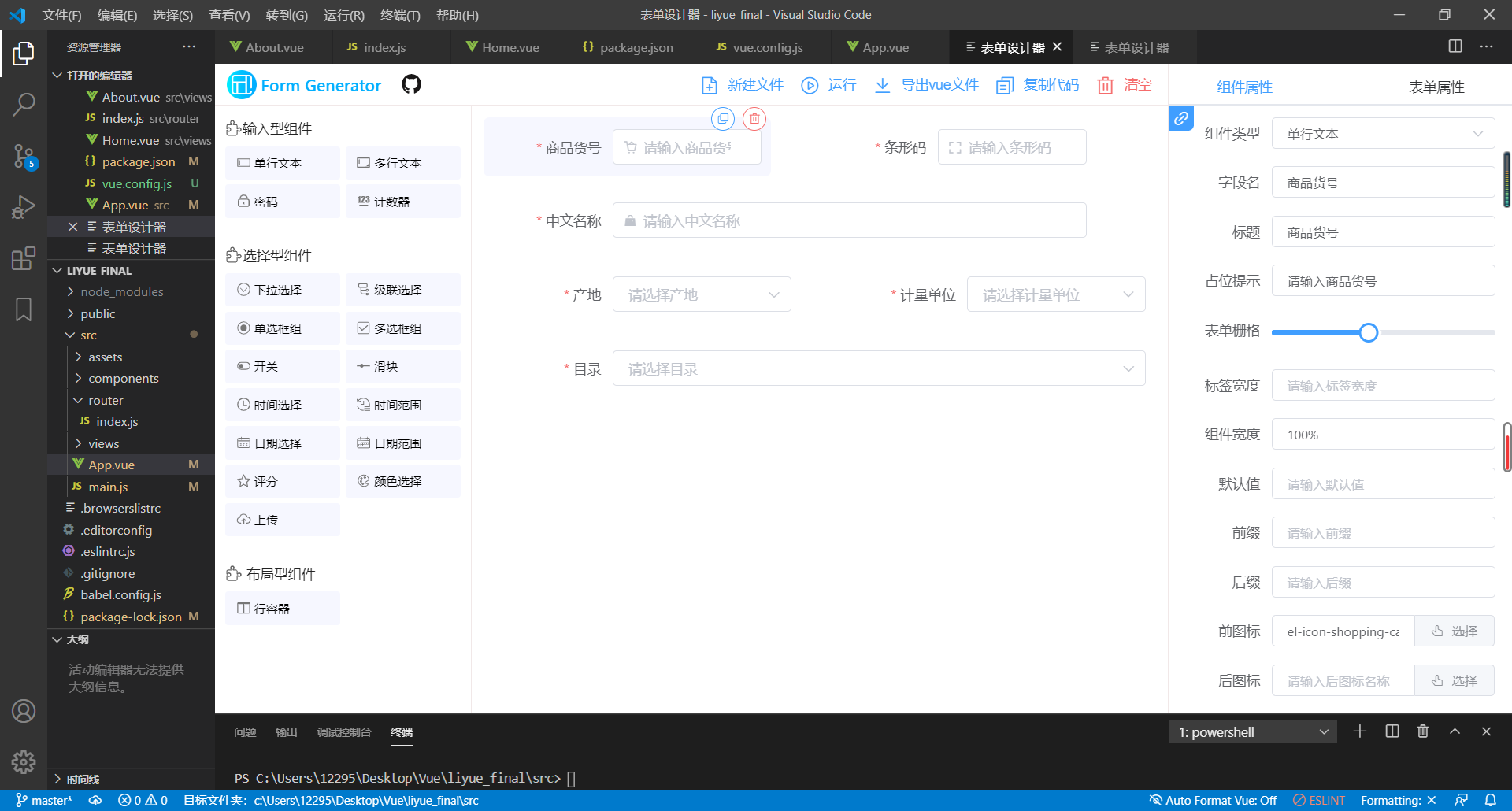


我的确是放在src目录下，并且尝试类加载器和文件加载，都可以成功读取文件，但还是tomcat报错。

2.tomcat报错卡很久之后，我想尝试用别的技术解决这个问题，不想轻易放弃这个题。在查阅相关论坛和询问学长学姐之后，vue框架比较适合级联的校验。

但是我vue框架只在一个了解的阶段，万事开头难，那就先开始学。大概是花了5天左右，将vue的基本语法了解了，能开始写基本表单了。

值得一提的是，中间查阅资料发现了vs一个插件叫form generator-ui,是基于element-ui上的一个表单生成器。这个插件给我提供了很大的帮助。



我只需要思考布局和数据就可以完成表单的制作。我还学习了脚手架的打包功能，以便于vue项目的创建。

但是到vue与后端交互的时候，我卡住了，这个地方没有解决，以至于我第二题虽然采用了两种技术，但是都无法做的很全面。

对于自己的评价，我给自己的评价是优，老师布置的项目和课程设计都有认真的去完成，哪怕最后的效果不好，但没有放弃一直都在尝试。之后毕业论文和工作想选择开发方面，希望自己有所进步，学无止境。