武汉纺织大学

Web应用开发课程设计

**基于MyBatis的超市收银系统**

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# 1 需求分析

## 1.0需求描述

现在的网络用到浏览器的地方越来越多，人们更倾向于在网络上寻找信息，那么如何在网络上将自己的信息简单有效的显示出来是一种很重要的能力。与此同时，数据库的使用也是越来越流行，规则的存储数据，高效的读取是他的优点，如何将浏览器的快捷显示和数据库的方便读取连接起来就是我们本次的需求。

## 

## 1.1显示折线图

我们引入highcharts.js，将数据存放在option中，用Aajx方法访问数据库得到数据内容显示在div模块中。

## 1.2显示柱状图

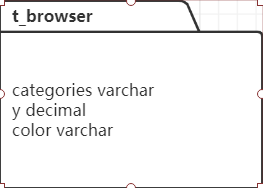
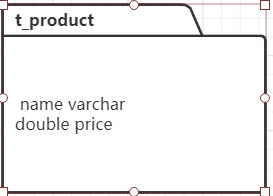
引入highcharts.js，数据存放在option中，用Aajx方法访问数据库得到数据内容显示在div模块中。

## 1.3显示饼状图

引入highcharts.js，数据存放在option中，用Aajx方法访问数据库得到数据内容显示在div模块中。

# **2 系统设计**

## 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

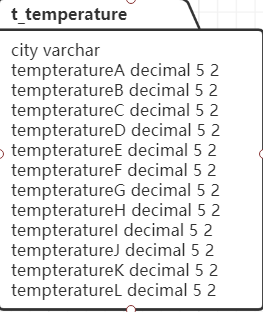


图3-1 数据库ER图

## 2.3 UML类图（Class Diagram）

对于用户功能模块，共设计如下6个类。

* 数据库连接类DatabaseConnection：连接数据库并获取连接对象，关闭连接对象。
* 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,获取各种显示图表所需的对象
* DAO实现类Mapping/userMapping.xml：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。
* 业务逻辑接口UserService：主要定义服务的接口，
* 业务逻辑实现类：UserServiceImpl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：

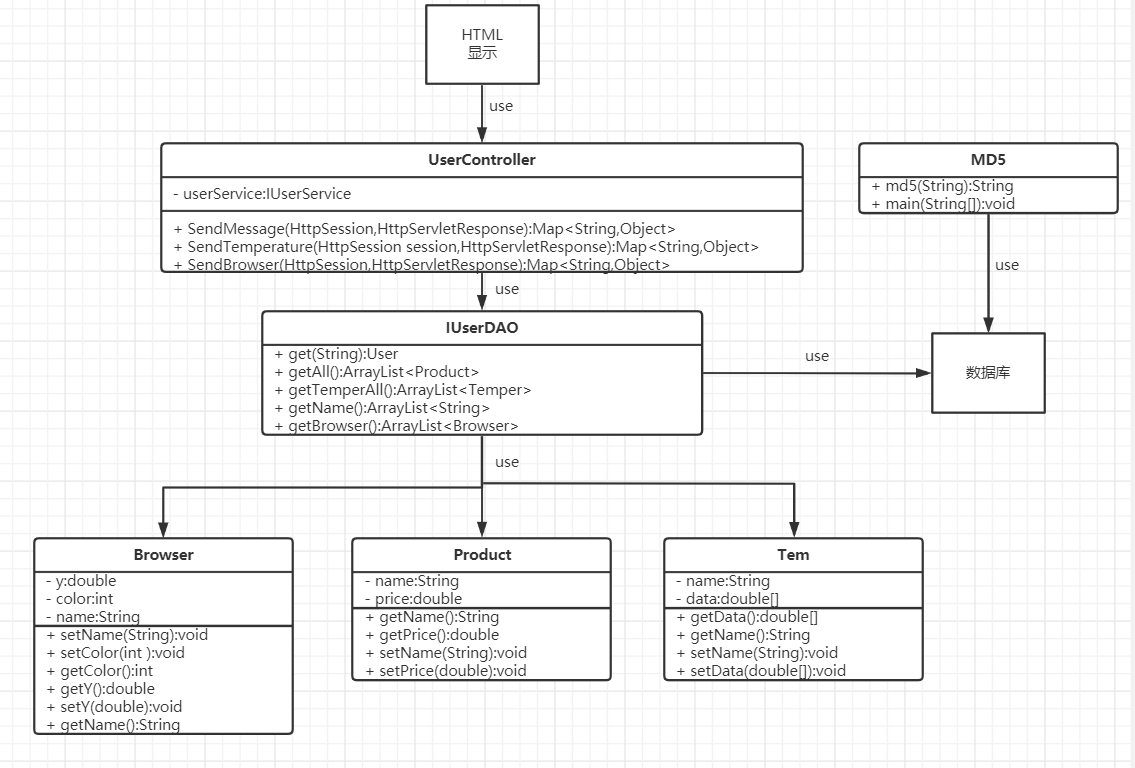
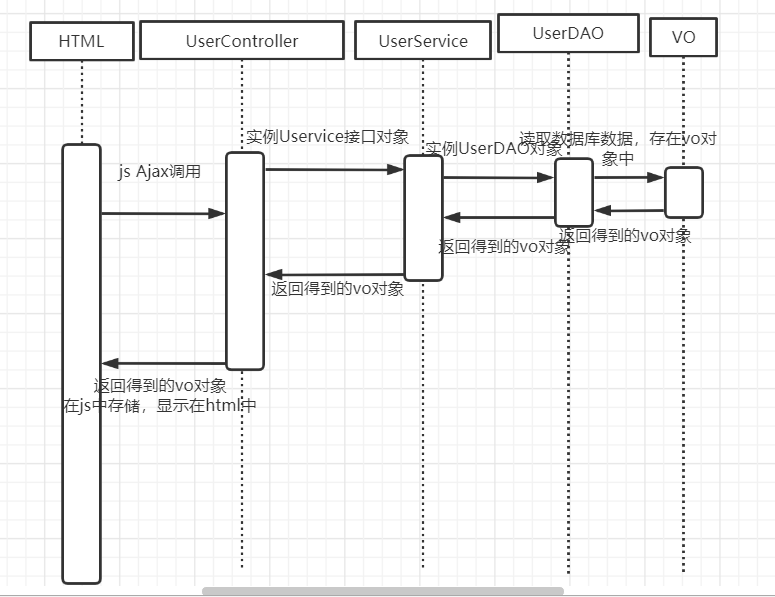


图2-5 用户功能类图

## 2.4 UML时序图（Sequence Diagram）

### 2.4.1 系统登录



## 2.5 UML活动图（Activity Diagram）

### 2.5.1 显示三种图

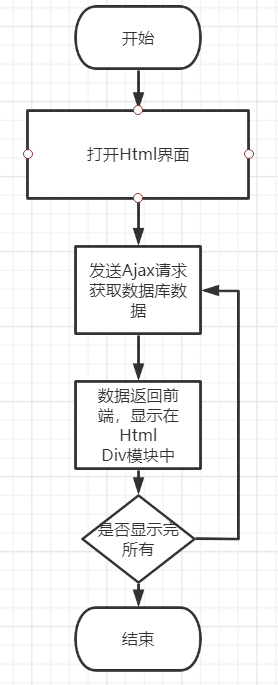
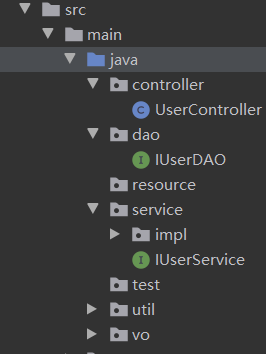


图2-5 显示功能图

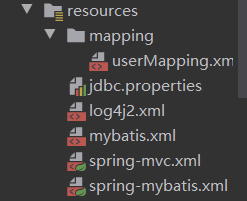
# **3 系统实现**

## 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 jdbc.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。

driver=com.mysql.jdbc.Driver  
url=jdbc:mysql://localhost:3306/excise?useUnicode=true&characterEncoding=UTF-8&useSSL=false  
username=root  
password=Syf123456l  
#定义初始连接数  
initialSize=0  
#定义最大连接数  
maxActive=20  
#定义最小空闲  
minIdle=1  
#定义最长等待时间  
maxWait=60000  
#验证连接是否可用，使用的SQL语句  
validationQuery =SELECT 1

### 3.2.2 log4j.properties文件

描述该文件作用，并对里面的配置进行解释

<?xml version="1.0" encoding="UTF-8"?>  
<!--日志级别以及优先级排序: OFF > FATAL > ERROR > WARN > INFO > DEBUG > TRACE > ALL -->  
<Configuration status="info">  
 <!--appenders:定义输出内容,输出格式,输出方式,日志保存策略等,常用其下三种标签[console,File,RollingFile] -->  
 <!--Appender可以理解为日志的输出目的地 -->  
 <Appenders>  
 <!--console :控制台输出的配置 -->  
 <Console name="Console" target="SYSTEM\_OUT">  
 <PatternLayout pattern="%d{YYYY-MM-dd HH:mm:ss} [%t] %-5p %c{1}:%L - %msg%n" />  
 </Console>  
  
 <RollingFile name="RollingFile" filename="log/ZycTest.log"  
 filepattern="${logPath}/%d{YYYYMMddHHmmss}-fargo.log">  
 <PatternLayout pattern="%d{YYYY-MM-dd HH:mm:ss} [%t] %-5p %c{1}:%L - %msg%n" />  
 <Policies>  
 <SizeBasedTriggeringPolicy size="100 MB" />  
 </Policies>  
 <DefaultRolloverStrategy max="20" />  
 </RollingFile>  
 </Appenders>  
 <!--然后定义logger，只有定义了logger并引入的appender，appender才会生效 -->  
 <Loggers>  
 <Root level="debug">  
 <AppenderRef ref="Console" />  
 <AppenderRef ref="RollingFile" />  
 </Root>  
 </Loggers>  
</Configuration>

### 3.2.3 mybatis.xml文件

描述该文件作用，并对里面的配置进行解释

<?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>  
 <settings>  
 <setting name="logImpl" value="LOG4J2" />  
 </settings>  
</configuration>

### 3.2.4 spring-mvc.xml文件

<?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" xmlns:aop="http://www.springframework.org/schema/aop"  
  
 xsi:schemaLocation="http://www.springframework.org/schema/beans  
 http://www.springframework.org/schema/beans/spring-beans-3.1.xsd  
 http://www.springframework.org/schema/context  
 http://www.springframework.org/schema/context/spring-context-3.1.xsd  
 http://www.springframework.org/schema/mvc  
 http://www.springframework.org/schema/mvc/spring-mvc-4.0.xsd  
 http://www.springframework.org/schema/tx  
 http://www.springframework.org/schema/tx/spring-tx-3.0.xsd  
 http://www.springframework.org/schema/websocket  
  
 http://www.springframework.org/schema/aop  
 http://www.springframework.org/schema/aop/spring-aop-4.3.xsd">  
  
  
  
 <mvc:annotation-driven />  
 <!-- 扫描类包，将标注Spring注解的类自动转化Bean，同时完成Bean的注入 -->  
 <context:component-scan base-package="controller" />  
 <context:component-scan base-package="service" />  
  
 <!--配置视图解析器 -->  
 <!-- ViewResolver 视图解析器； 用于将返回的ModelAndView对象进行分离 InternalResourceViewResolver：用于支持Servlet、JSP视图解析；  
 viewClass：JstlView表示JSP模板页面需要使用JSTL标签库，classpath中必须包含jstl的相关jar包； prefix和suffix：查找视图页面的前缀和后缀（前缀[逻辑视图名]后缀），  
 比如传进来的逻辑视图名为WEB-INF/jsp/hello，则该该jsp视图页面应该存放在“WEB-INF/jsp/hello.jsp”； -->  
  
 <bean  
 class="org.springframework.web.servlet.view.InternalResourceViewResolver">  
 <property name="prefix" value="/"></property> <!-- 视图放在/WEB-INF/pages/下 -->  
 <property name="suffix" value=".jsp"></property>  
 </bean>  
  
 <!-- websocket处理类 -->  
  
  
  
  
  
</beans>

### 3.2.5 spring-mybatis.xml文件

<?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  
 http://www.springframework.org/schema/mvc/spring-mvc.xsd">  
  
 <!-- 扫描类包，将标注Spring注解的类自动转化Bean，同时完成Bean的注入 -->  
 <context:component-scan base-package="service" />  
 <!-- 引入jdbc配置文件 -->  
 <bean id="propertyConfigurer"  
 class="org.springframework.beans.factory.config.PropertyPlaceholderConfigurer">  
 <property name="location" value="classpath:jdbc.properties" />  
 </bean>  
 <!-- 数据库连接池 -->  
 <bean id="dataSource" class="com.alibaba.druid.pool.DruidDataSource"  
 destroy-method="close">  
 <property name="driverClassName" value="${driver}" />  
 <property name="url" value="${url}" />  
 <property name="username" value="${username}" />  
 <property name="password" value="${password}" />  
 <!-- 初始化连接大小 -->  
 <property name="initialSize" value="${initialSize}"></property>  
 <!-- 连接池最大数量 -->  
 <property name="maxActive" value="${maxActive}"></property>  
 <!-- 连接池最小空闲 -->  
 <property name="minIdle" value="${minIdle}"></property>  
 <!-- 获取连接最大等待时间 -->  
 <property name="maxWait" value="${maxWait}"></property>  
 <!-- 验证连接是否可用，使用的SQL语句 -->  
 <property name="validationQuery" value="SELECT 1"></property>  
 </bean>  
 <!-- spring和MyBatis整合，不需要mybatis的配置映射文件 -->  
 <bean id="sqlSessionFactory" class="org.mybatis.spring.SqlSessionFactoryBean">  
 <property name="dataSource" ref="dataSource" />  
 <property name="configLocation" value="classpath:mybatis.xml"></property>  
 <!-- 自动扫描mapping.xml文件 -->  
 <property name="mapperLocations" value="classpath:mapping/\*.xml"></property>  
 </bean>  
 <!-- DAO接口所在包名，Spring会自动查找其下的类 -->  
 <bean class="org.mybatis.spring.mapper.MapperScannerConfigurer">  
 <property name="basePackage" value="dao" />  
 <property name="sqlSessionFactoryBeanName" value="sqlSessionFactory"></property>  
 </bean>  
 <!-- (事务管理)transaction manager-->  
 <bean id="transactionManager"  
 class="org.springframework.jdbc.datasource.DataSourceTransactionManager">  
 <property name="dataSource" ref="dataSource" />  
 </bean>  
</beans>

## 3.3 VO类

### 3.3.1 Browser.java

package vo;  
  
public class Browser {  
 private double y;  
 private int color;  
 private String name;  
  
 public String getName() {  
 return name;  
 }  
  
 public void setName(String name) {  
 this.name = name;  
 }  
  
 public double getY() {  
 return y;  
 }  
  
 public void setY(double y) {  
 this.y = y;  
 }  
  
 public int getColor() {  
 return color;  
 }  
  
 public void setColor(int color) {  
 this.color = color;  
 }  
}

### 3.3.1 Product.java

package vo;  
  
public class Product {  
 private String name;  
 private double price;  
  
 public String getName() {  
 return name;  
 }  
  
 public void setName(String name) {  
 this.name = name;  
 }  
  
 public double getPrice() {  
 return price;  
 }  
  
 public void setPrice(double price) {  
 this.price = price;  
 }  
  
 @Override  
 public String toString() {  
 return "Product{" +  
 "name='" + name + '\'' +  
 ", price=" + price +  
 '}';  
 }  
}

### 3.3.1 Tem.java

package vo;  
  
public class Tem {  
 String name;  
 double[] data;  
  
 public Tem(String name, double[] data) {  
 this.name = name;  
 this.data = data;  
 }  
  
 public String getName() {  
 return name;  
 }  
  
 public void setName(String name) {  
 this.name = name;  
 }  
  
 public double[] getData() {  
 return data;  
 }  
  
 public void setData(double[] data) {  
 this.data = data;  
 }  
}

### 3.3.1 Temper.java

package vo;  
  
import java.util.ArrayList;  
  
public class Temper {  
 private String city;  
 private double temperatureA;  
 private double temperatureB;  
 private double temperatureC;  
 private double temperatureD;  
 private double temperatureE;  
 private double temperatureF;  
 private double temperatureG;  
 private double temperatureH;  
 private double temperatureI;  
 private double temperatureJ;  
 private double temperatureK;  
 private double temperatureL;  
  
  
  
  
 public String getCity() {  
 return city;  
 }  
 public void setCity(String name) {  
 this.city = name;  
 }  
  
 public double getTemperatureA() {  
 return temperatureA;  
 }  
  
 public void setTemperatureA(double temperatureA) {  
 this.temperatureA = temperatureA;  
 }  
  
 public double getTemperatureB() {  
 return temperatureB;  
 }  
  
 public void setTemperatureB(double temperatureB) {  
 this.temperatureB = temperatureB;  
 }  
  
 public double getTemperatureC() {  
 return temperatureC;  
 }  
  
 public void setTemperatureC(double temperatureC) {  
 this.temperatureC = temperatureC;  
 }  
  
 public double getTemperatureD() {  
 return temperatureD;  
 }  
  
 public void setTemperatureD(double temperatureD) {  
 this.temperatureD = temperatureD;  
 }  
  
 public double getTemperatureE() {  
 return temperatureE;  
 }  
  
 public void setTemperatureE(double temperatureE) {  
 this.temperatureE = temperatureE;  
 }  
  
 public double getTemperatureF() {  
 return temperatureF;  
 }  
  
 public void setTemperatureF(double temperatureF) {  
 this.temperatureF = temperatureF;  
 }  
  
 public double getTemperatureG() {  
 return temperatureG;  
 }  
  
 public void setTemperatureG(double temperatureG) {  
 this.temperatureG = temperatureG;  
 }  
  
 public double getTemperatureH() {  
 return temperatureH;  
 }  
  
 public void setTemperatureH(double temperatureH) {  
 this.temperatureH = temperatureH;  
 }  
  
 public double getTemperatureI() {  
 return temperatureI;  
 }  
  
 public void setTemperatureI(double temperatureI) {  
 this.temperatureI = temperatureI;  
 }  
  
 public double getTemperatureJ() {  
 return temperatureJ;  
 }  
  
 public void setTemperatureJ(double temperatureJ) {  
 this.temperatureJ = temperatureJ;  
 }  
  
 public double getTemperatureK() {  
 return temperatureK;  
 }  
  
 public void setTemperatureK(double temperatureK) {  
 this.temperatureK = temperatureK;  
 }  
  
 public double getTemperatureL() {  
 return temperatureL;  
 }  
  
 public void setTemperatureL(double temperatureL) {  
 this.temperatureL = temperatureL;  
 }  
  
 @Override  
 public String toString() {  
 ArrayList<Double> list= new ArrayList<Double>();  
 list.add(temperatureA);  
 list.add(temperatureB);  
 list.add(temperatureC);  
 list.add(temperatureD);  
 list.add(temperatureE);  
 list.add(temperatureF);  
 list.add(temperatureG);  
 list.add(temperatureH);  
 list.add(temperatureI);  
 list.add(temperatureJ);  
 list.add(temperatureK);  
 list.add(temperatureL);  
 System.*out*.println(list.toString());  
 return "{" +  
 " name : '" + city + '\'' +  
 ", data : " +list.toString()+  
 "}";  
 }  
  
}

## 3.4 DAO接口类IUserDAO.java

定义接口方法，实现数据库的原子操作。

public interface IUserService {  
 //检查登录，返回检查结果，存放在map中  
 public Map<String,Object> select();  
 public ArrayList<Tem> selectTemperature();  
 public ArrayList<Browser> selectBrowser();  
 public ArrayList<String> selectName();  
}

## 3.5 接口映射文件UserMapper.xml

描对DAO接口方法的实现，写各种SQL语句，执行结果返回到上级。

<?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="dao.IUserDAO">  
  
 <select id="getAll" resultType="vo.Product">  
 select \* from t\_product  
 </select>  
 <select id="getTemperAll" resultType="vo.Temper">  
 select \* from t\_temperature  
 </select>  
 <select id="getBrowser" resultType="vo.Browser">  
 select \* from t\_browse  
 </select>  
 <select id="getName" resultType="String">  
 select categories from t\_browse  
 </select>  
</mapper>

## 3.6 工具包Util

### 3.6.1 MD5.java

该类主要实现对数据库中的用户密码进行MD5加密，描述该文件作用，并对里面的关键代码进行解释

package util;  
  
import java.math.BigInteger;  
import java.security.MessageDigest;  
import java.security.NoSuchAlgorithmException;  
  
public class MD5 {  
 // 使用jdk自带的java.security.MessageDigest实现  
 public static String md5(String s) {  
 String md5code = "";  
 byte[] secretBytes = null;  
 try {  
 secretBytes = MessageDigest.*getInstance*("md5").digest(s.getBytes());  
 } catch (NoSuchAlgorithmException e) {  
 throw new RuntimeException("没有这个md5算法！");  
 }  
 md5code = new BigInteger(1, secretBytes).toString(16);  
 for (int i = 0; i < 32 - md5code.length(); i++) {  
 md5code = "0" + md5code;  
 }  
  
 return md5code;  
 }  
 public static void main(String[] args) {  
 System.*out*.println(*md5*("admin"));  
 }  
}

## 3.7 服务层UserServiceImpl.java

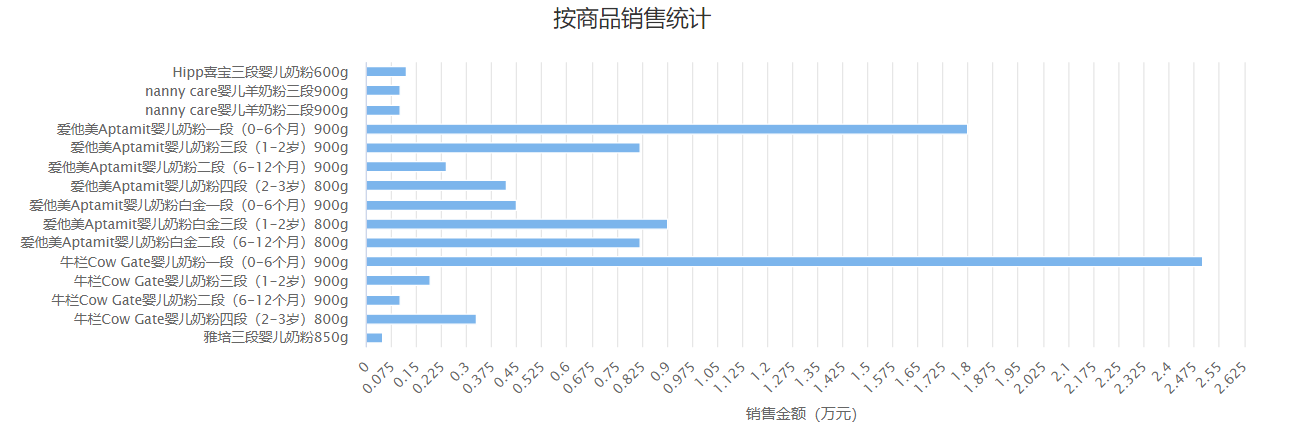
public interface IUserService {  
 //检查登录，返回检查结果，存放在map中  
 public Map<String,Object> select();  
 public ArrayList<Tem> selectTemperature();  
 public ArrayList<Browser> selectBrowser();  
 public ArrayList<String> selectName();  
}

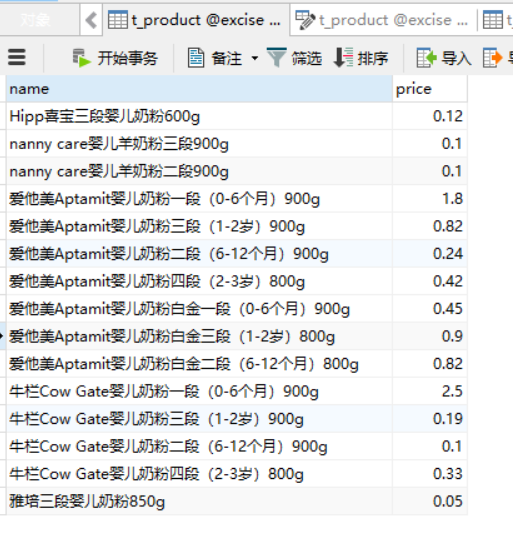
## 3.8 服务层UserServiceImpl.java

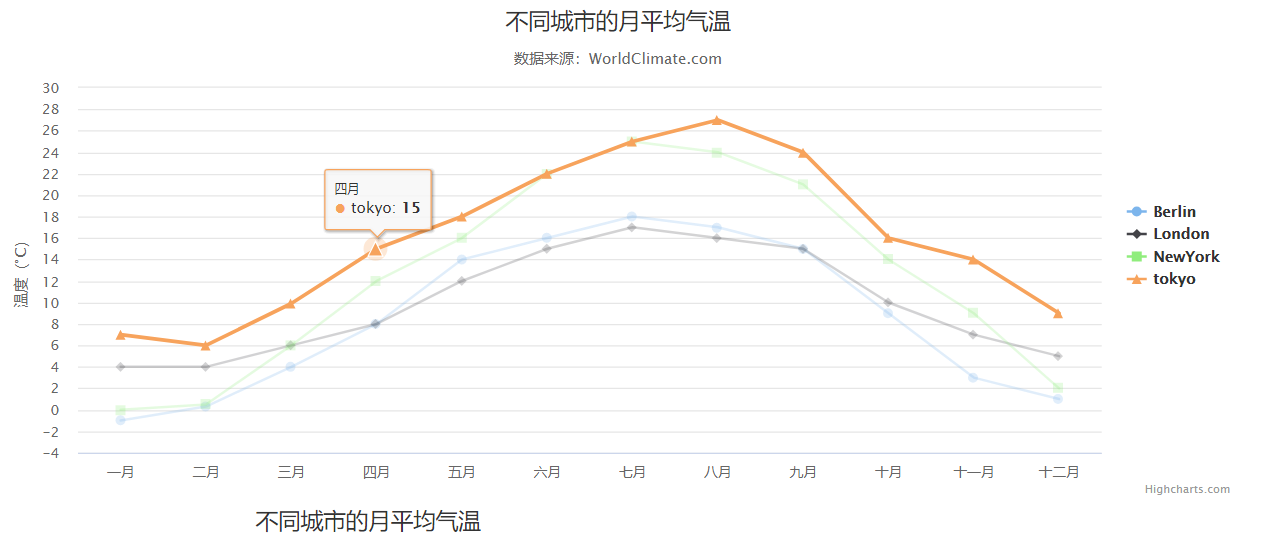
描对UserDAO调用，用原子操作实现业务逻辑的整合

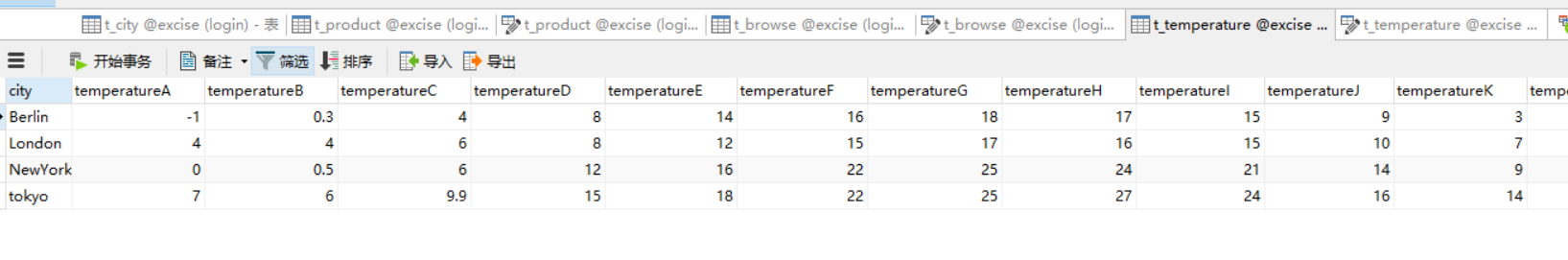
package service.impl;  
  
import org.springframework.beans.factory.annotation.Autowired;  
import org.springframework.stereotype.Service;  
  
import dao.IUserDAO;  
import service.IUserService;  
import util.MD5;  
import vo.\*;  
  
import java.util.ArrayList;  
import java.util.HashMap;  
import java.util.Map;  
  
@Service  
public class UserServiceImpl implements IUserService {  
  
 @Autowired  
 private IUserDAO userDao;  
  
  
 @Override  
 public Map<String, Object> select() {  
 ArrayList<Product> list = userDao.getAll();  
 Map<String,Object> map = new HashMap<String, Object>();  
 ArrayList<String> ca=new ArrayList<String>();  
 ArrayList<Double> y=new ArrayList<Double>();  
 for (Product p:list  
 ) {  
 ca.add(p.getName());  
 y.add(p.getPrice());  
 }  
 map.put("name",ca);  
 map.put("price",y);  
 return map;  
 }  
  
 @Override  
 public ArrayList<Tem> selectTemperature() {  
 ArrayList<Temper> list =userDao.getTemperAll();  
 ArrayList<Tem> list1 = new ArrayList<Tem>();  
 for (Temper tem:  
 list) {  
 double[]data = {tem.getTemperatureA(),tem.getTemperatureB(),tem.getTemperatureC(),tem.getTemperatureD(),tem.getTemperatureE(),tem.getTemperatureF(),tem.getTemperatureG(),tem.getTemperatureH(),tem.getTemperatureI(),tem.getTemperatureJ(),tem.getTemperatureK(),tem.getTemperatureL()};  
 list1.add(new Tem(tem.getCity(),data));  
 }  
  
 return list1;  
 }  
  
 @Override  
 public ArrayList<Browser> selectBrowser() {  
  
 return userDao.getBrowser();  
 }  
  
 @Override  
 public ArrayList<String> selectName() {  
  
 return userDao.getName();  
 }  
}

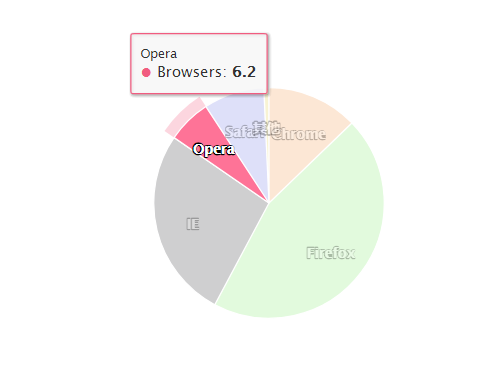
# **4 系统测试**

****











最后的页面效果通过下面这个文件可以看到。



# **5 系统总结**

在这次的实验中，一开始做的比较顺畅，用的网上的数据，同时学习了老师的框架，感觉没什么问题，但是一旦脱离老师的内容，就有点感觉寸步难行，很多东西老师上课讲不了，涉及的方面很广，比如js中的字符串和对象的转换问题，我一开始没有弄明白，到后来也是避过了这个问题直接返回对象，再后来去询问老师，才知道了关于他的内容，很多的东西网上并没有教程，很多东西也都是歪的答非所问，要想好好的学习还是得认真学习网上官方的文档，这次学习我很快就写出了第四题，同时我还试着写其他题目，目前还没写完，但也写了很大一部分，稍后会自行添加到GitHub网站上。这次我自评85分，如果能看见我的第五题，还请老师再增加一点。