武汉纺织大学

Java应用开发课程设计

**简单在线考试系统**

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# 1 需求分析

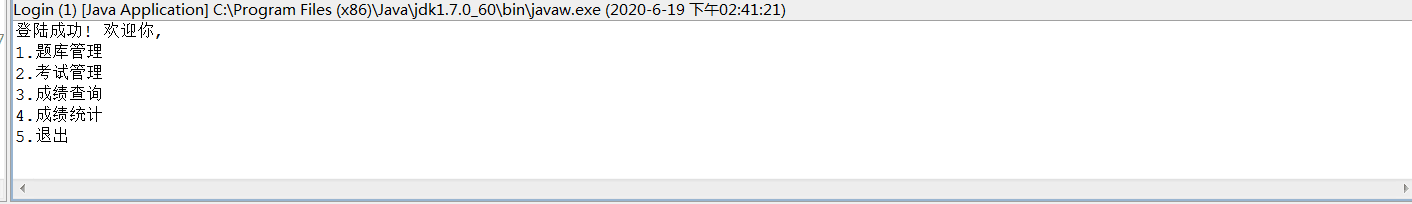
设计一个简单考试系统，实现“登陆”、“答题”等功能，具体要求如下：

## 1.1用户登陆

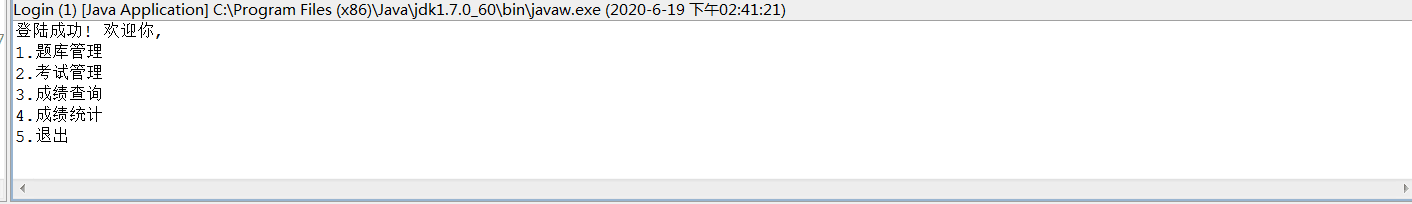
当程序运行时，显示“欢迎进入考试系统，请输入用户名”，提示用户依次输入用户名及其密码，当用户名及密码不正确时，显示提示信息“用户名或密码不正确，请重新输入”.

## 1.2主菜单

当用户名及密码正确时，识别该用户身份，若是老师则界面如下：



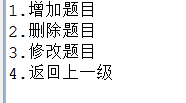
学生身份如下:



## 1.3各项功能

### 1.3.1 题库管理

当选择1时，显示如下子菜单。



当选择1时，系统将提示你依次输入题目,选项,正确答案等数据,之后通过jdbc将新增加的题目写入题库表里.

当选择2时,系统将提示你输入要删除的题目号,然后系统删除数据库中该题号的题目.

当选择3时,系统将提示你输入需要修改的题目的题号,然后修改数据库中该题号的题目信息.

### 1.3.2 试卷管理

当选择2时,系统会提示你输入考试开始的时间,以及一份考卷的题目数量.

### 1.3.3 成绩查询

当选择3时，系统会将数据库中所有学生的成绩打印出来,以供查询.

### 1.3.4 成绩统计

当选择4时，系统将对数据库中的学生成绩进行统计,然后打印出最高分,最低分的学生成绩,以及平均分给老师参考.

### 1.3.5 退出

当选择5时，显示欢迎下次使用,并退出程序.

### 1.3.6 答题

当登陆身份是学生时,系统会提示考试时间,题目数量,并提醒你开始答题,当学生答完题时,系统会自动提交,并给出成绩,然后储存到后台数据库里.

# **2 系统设计**

## 2.1用户用例图

系统分为收银员，管理员两个角色，各角色的用户用例如下图2-1所示：

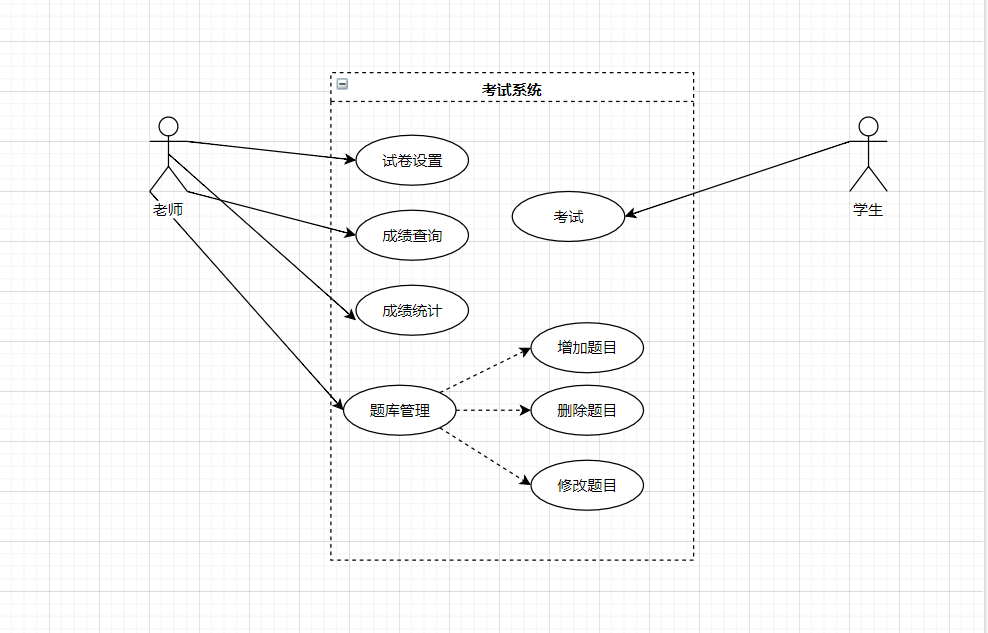


图2-1 用户用例图

## 2.2 ER图

数据库设计3张表，用户表，商品表，销售记录表，对应的ER图如图3-1所示。

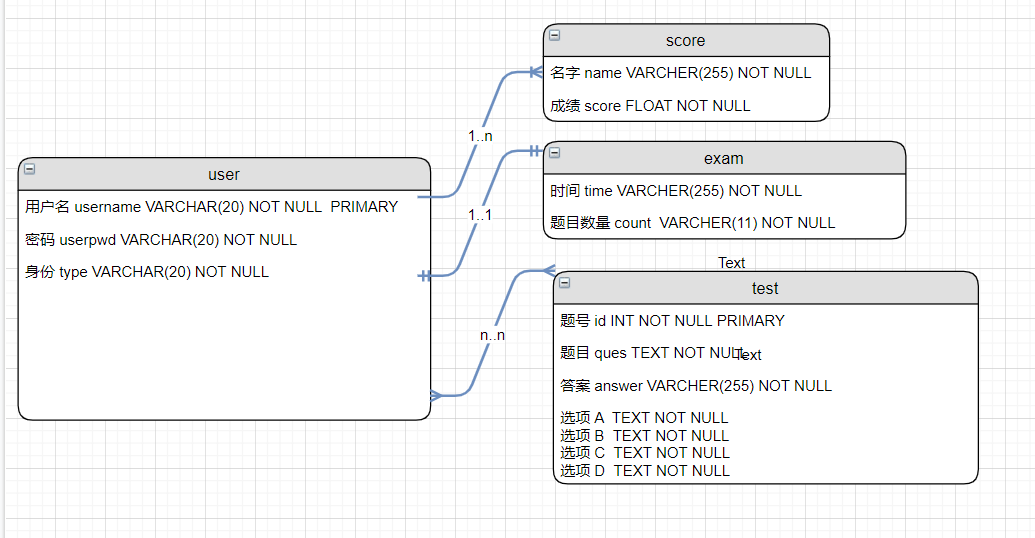
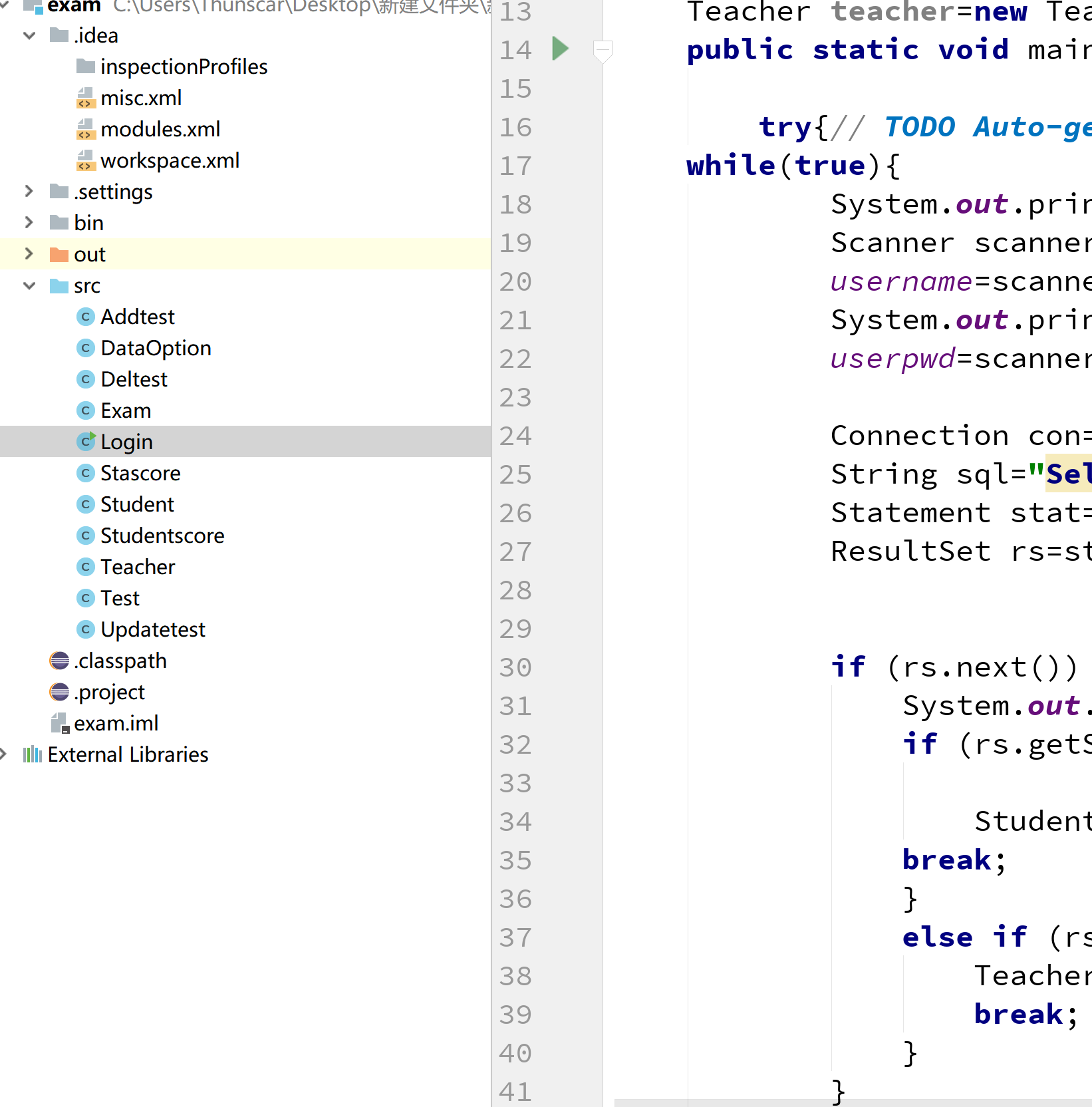
%3CmxGraphModel%3E%3Croot%3E%3CmxCell%20id%3D%220%22%2F%3E%3CmxCell%20id%3D%221%22%20parent%3D%220%22%2F%3E%3Cmysql.table%20entity.table.tableName%3D%22uses%22%20label%3D%22uses%22%20id%3D%222%22%3E%3CmxCell%20style%3D%22swimlane%3BfontStyle%3D0%3BchildLayout%3DstackLayout%3Bhorizontal%3D1%3Bhtml%3D1%3BstartSize%3D26%3BfillColor%3D%23b0e3e6%3BhorizontalStack%3D0%3BresizeParent%3D1%3BresizeParentMax%3D0%3BresizeLast%3D0%3Bcollapsible%3D1%3BmarginBottom%3D0%3BswimlaneFillColor%3D%23ffffff%3Balign%3Dcenter%3BfontSize%3D13%3BstrokeColor%3D%230e8088%3Brounded%3D0%3Bshadow%3D1%3Bcomic%3D0%3Bglass%3D0%3BgradientDirection%3Dsouth%3BgradientColor%3D%23ffffff%3B%22%20vertex%3D%221%22%20connectable%3D%220%22%20parent%3D%221%22%3E%3CmxGeometry%20x%3D%2260%22%20y%3D%2250%22%20width%3D%22310%22%20height%3D%22130%22%20as%3D%22geometry%22%2F%3E%3C%2FmxCell%3E%3C%2Fmysql.table%3E%3Cmysql.column%20entity.column.tableName%3D%22uses%22%20entity.column.name%3D%22userName%22%20entity.column.dataType%3D%22VARCHAR%22%20entity.column.PK%3D%22true%22%20label%3D%22%26lt%3Bimg%20title%3D%26quot%3BPrimary%20Key%26quot%3B%20src%3D%26quot%3Bimg%2Fdb%2Fkey1.png%26quot%3B%20width%3D%26quot%3B16%26quot%3B%20height%3D%26quot%3B16%26quot%3B%20align%3D%26quot%3Btop%26quot%3B%26gt%3B%26amp%3Bnbsp%3B%26lt%3Bfont%20size%3D%26quot%3B1%26quot%3B%20face%3D%26quot%3BTahoma%26quot%3B%26gt%3B%26lt%3Bspan%20style%3D%26quot%3Bfont-size%3A%2013px%26quot%3B%26gt%3B%26lt%3Bb%26gt%3Bid%20int%20primary%20key%26lt%3B%2Fb%26gt%3B%26lt%3B%2Fspan%26gt%3B%26lt%3B%2Ffont%26gt%3B%22%20entity.column.oldName%3D%22id%22%20entity.column.datalen%3D%2220%22%20entity.column.decimals%3D%22%22%20entity.column.autoIncreament%3D%22%22%20entity.column.unsigned%3D%22%22%20entity.column.bin%3D%22%22%20entity.column.ascii%3D%22%22%20entity.column.unicode%3D%22%22%20entity.column.unique%3D%22%22%20entity.column.isNotNull%3D%22NOT%20NULL%22%20entity.column.defaultValue%3D%22%22%20entity.column.comment%3D%22%22%20entity.column.enum%3D%22%22%20entity.column.set%3D%22%22%20entity.column.enumSetValue%3D%22%22%20id%3D%223%22%3E%3CmxCell%20style%3D%22text%3Bhtml%3D1%3BstrokeColor%3Dnone%3BfillColor%3Dnone%3BspacingLeft%3D4%3BspacingRight%3D4%3Boverflow%3Dhidden%3Brotatable%3D0%3BportConstraint%3Deastwest%3BfontSize%3D12%3BverticalAlign%3Dmiddle%3B%22%20vertex%3D%221%22%20parent%3D%222%22%3E%3CmxGeometry%20y%3D%2226%22%20width%3D%22310%22%20height%3D%2226%22%20as%3D%22geometry%22%2F%3E%3C%2FmxCell%3E%3C%2Fmysql.column%3E%3Cmysql.column%20entity.column.tableName%3D%22uses%22%20entity.column.name%3D%22chrName%22%20entity.column.datalen%3D%2220%22%20entity.column.dataType%3D%22VARCHAR%22%20label%3D%22%26lt%3Bimg%20title%3D%26quot%3BPrimary%20Key%26quot%3B%20src%3D%26quot%3Bimages%2Fspacer.gif%26quot%3B%20width%3D%26quot%3B16%26quot%3B%20height%3D%26quot%3B16%26quot%3B%20align%3D%26quot%3Btop%26quot%3B%26gt%3B%26amp%3Bnbsp%3B%26lt%3Bfont%20size%3D%26quot%3B1%26quot%3B%20face%3D%26quot%3BTahoma%26quot%3B%26gt%3B%26lt%3Bspan%20style%3D%26quot%3Bfont-size%3A%2013px%26quot%3B%26gt%3B%26lt%3Bb%26gt%3Bname%20varchar(10)%26lt%3B%2Fb%26gt%3B%26lt%3B%2Fspan%26gt%3B%26lt%3B%2Ffont%26gt%3B%22%20entity.column.oldName%3D%22name%22%20entity.column.decimals%3D%22%22%20entity.column.autoIncreament%3D%22%22%20entity.column.unsigned%3D%22%22%20entity.column.bin%3D%22%22%20entity.column.ascii%3D%22%22%20entity.column.unicode%3D%22%22%20entity.column.PK%3D%22false%22%20entity.column.unique%3D%22%22%20entity.column.isNotNull%3D%22%22%20entity.column.defaultValue%3D%22%22%20entity.column.comment%3D%22%22%20entity.column.enum%3D%22%22%20entity.column.set%3D%22%22%20entity.column.enumSetValue%3D%22%22%20id%3D%224%22%3E%3CmxCell%20style%3D%22text%3Bhtml%3D1%3BstrokeColor%3Dnone%3BfillColor%3Dnone%3BspacingLeft%3D4%3BspacingRight%3D4%3Boverflow%3Dhidden%3Brotatable%3D0%3BportConstraint%3Deastwest%3BfontSize%3D12%3BverticalAlign%3Dmiddle%3B%22%20vertex%3D%221%22%20parent%3D%222%22%3E%3CmxGeometry%20y%3D%2252%22%20width%3D%22310%22%20height%3D%2226%22%20as%3D%22geometry%22%2F%3E%3C%2FmxCell%3E%3C%2Fmysql.column%3E%3Cmysql.column%20entity.column.tableName%3D%22uses%22%20entity.column.name%3D%22password%22%20entity.column.datalen%3D%2250%22%20entity.column.dataType%3D%22VARCHAR%22%20label%3D%22%26lt%3Bimg%20title%3D%26quot%3BPrimary%20Key%26quot%3B%20src%3D%26quot%3Bimages%2Fspacer.gif%26quot%3B%20width%3D%26quot%3B16%26quot%3B%20height%3D%26quot%3B16%26quot%3B%20align%3D%26quot%3Btop%26quot%3B%26gt%3B%26amp%3Bnbsp%3B%26lt%3Bfont%20size%3D%26quot%3B1%26quot%3B%20face%3D%26quot%3BTahoma%26quot%3B%26gt%3B%26lt%3Bspan%20style%3D%26quot%3Bfont-size%3A%2013px%26quot%3B%26gt%3B%26lt%3Bb%26gt%3Bname%20varchar(10)%26lt%3B%2Fb%26gt%3B%26lt%3B%2Fspan%26gt%3B%26lt%3B%2Ffont%26gt%3B%22%20entity.column.oldName%3D%22chrName%22%20entity.column.decimals%3D%22%22%20entity.column.autoIncreament%3D%22%22%20entity.column.unsigned%3D%22%22%20entity.column.bin%3D%22%22%20entity.column.ascii%3D%22%22%20entity.column.unicode%3D%22%22%20entity.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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图3-1 数据库ER图

# **3 系统实现**

## 3.1 项目结构



## 3.2 DataOption.java文件

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DataOption类，增加程序的可扩展型。

public class DataOption {

public static Connection getConnection()

{

Connection con=null;

try {

Class.forName("com.mysql.jdbc.Driver");//1驱动类名称

con=(Connection) DriverManager.getConnection("jdbc:mysql://localhost/examination", "root", "admin");//2url地址

} catch (ClassNotFoundException e) {

e.printStackTrace();

return null;

} catch (SQLException e) {

e.printStackTrace();

return null;

}

return con;

}

}

## 3.3 登陆界面Login.java

登陆界面,输入正确的账号密码,并验证身份进入对应的界面

**public** **class** Login {

**static** String *username*;

**static** String *userpwd*;

Teacher teacher=**new** Teacher();

**public** **static** **void** main(String[] args)**throws** Exception {

**try**{// **TODO** Auto-generated method stub

**while**(**true**){

System.***out***.println("欢迎进入考试系统,请输入用户名:");

Scanner scanner=**new** Scanner(System.***in***);

*username*=scanner.nextLine();

System.***out***.println("请输入密码:");

*userpwd*=scanner.nextLine();

Connection con=DataOption.*getConnection*();

String sql="Select \* from user where username ='"+*username*+"' and userpwd ='"+*userpwd*+"'";

Statement stat=con.createStatement();

ResultSet rs=stat.executeQuery(sql);

**if** (rs.next()) //验证账号密码是否正确{

**if** (rs.getString("type").equals("学生")) {

Student.*student*();//若身份是学生进入学生菜单

**break**;

}

**else** **if** (rs.getString("type").equals("老师")) {

Teacher.*teacher*();//若身份是老师进如教师菜单

**break**;

}

}

**else** {

System.***out***.println("账号或密码错误，请重新输入！");

}

rs.close();

stat.close();

con.close();

}

} **catch** (Exception e) {

// **TODO**: handle exception

}

}

## 3.4学生考试Student.java

生成考卷,并将学生的答案批阅,给出成绩

**public** **class** Student {

**static** **int** *count*;

**static** **int** *i*=1;

**static** **int** *j*=0;

**static** String *ans*;

**static** **double** *score*;

**public** **static** **void** student()**throws** Exception {

**try** {

Connection con=DataOption.*getConnection*();

String sql="Select \* from exam ";

Statement stat=con.createStatement();

ResultSet rs=stat.executeQuery(sql);

**if** (rs.next()) {

*count*=rs.getInt("count");

}

System.***out***.println("登陆成功!"+Login.*username*+",考试将于"+rs.getString("time")+"开始.请答题:");

String sql1="Select \* from test order by rand() limit "+*count*;//随机生成考卷的sql语句

ResultSet rs1=stat.executeQuery(sql1);

**while** (rs1.next()) {

System.***out***.println(*i*+"."+rs1.getString("ques"));

System.***out***.println("A."+rs1.getString("A"));

System.***out***.println("B."+rs1.getString("B"));

System.***out***.println("C."+rs1.getString("C"));

System.***out***.println("D."+rs1.getString("D"));

Scanner scanner=**new** Scanner(System.***in***);

*ans*=scanner.nextLine();

**if** (*ans*.equalsIgnoreCase(rs1.getString("answer"))) {

*j*++;//答对题目数量

}

*i*++;

}

System.***out***.println(*j*);

*score*=100.00/*count*\**j*;//计算成绩

PreparedStatement pStatement=con.prepareStatement("insert into score (name,score) values(?,?)");//把成绩写入数据库

pStatement.setString(1, Login.*username*);

pStatement.setDouble(2, *score*);

pStatement.executeUpdate();

rs.close();

rs1.close();

stat.close();

con.close();//关闭连接

System.***out***.println("考试完成，你的成绩为："+*score*);

}

**catch** (Exception e) {

// **TODO**: handle exception

}

}

}

## 3.5教师主菜单界面Teacher.java

教师菜单,方便操作

**public** **class** Teacher {

**static** **int** *i*;

**public** **static** **void** teacher()**throws** Exception {

// **TODO** Auto-generated method stub

System.***out***.println("登陆成功! 欢迎你,"+Login.*username*+"老师！");

System.***out***.println("1.题库管理");

System.***out***.println("2.考试管理");

System.***out***.println("3.成绩查询");

System.***out***.println("4.成绩统计");

System.***out***.println("5.退出");

Scanner scanner=**new** Scanner(System.***in***);

*i*=scanner.nextInt();

**switch** (*i*) {

**case** 1:

Test.*test*();

**break**;

**case** 2:

Exam.*exam*();

**break**;

**case** 3:

Studentscore.*studentscore*();

**break**;

**case** 4:

Stascore.*stascore*();

**break**;

**case** 5:

System.***out***.println("欢迎下次使用！！");

**break**;

**default**:

**break**;

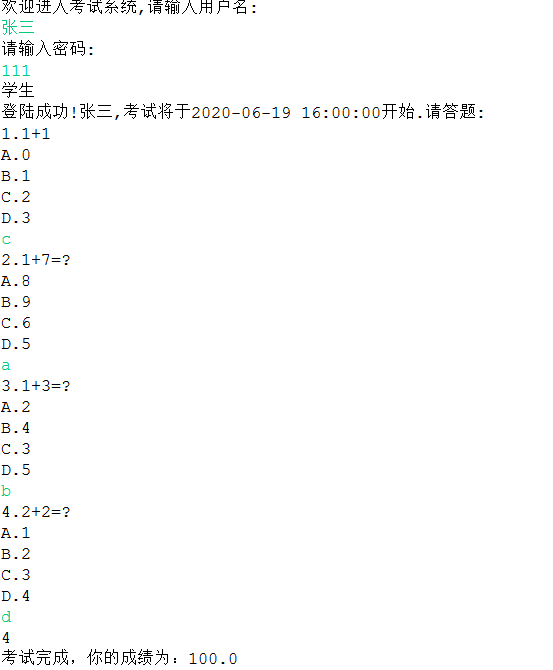
}

}

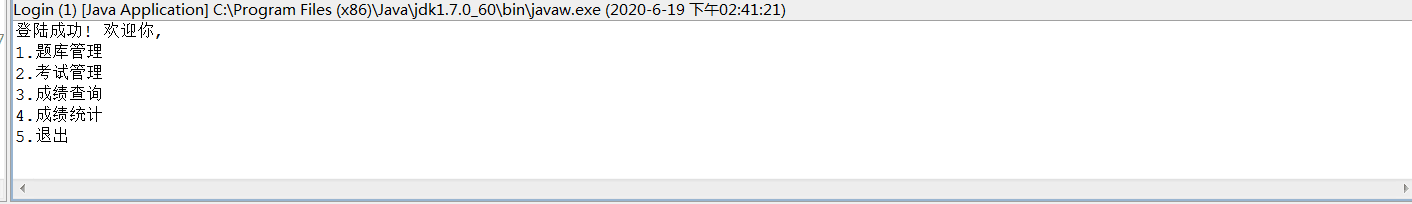
}

# **4 系统测试**

学生:张三 密码:111

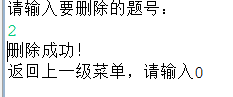


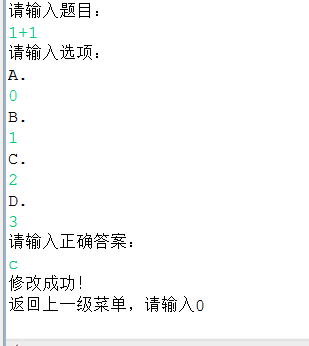
教师

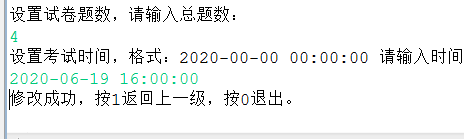


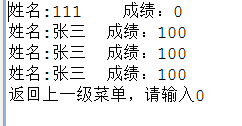
# IMG_256

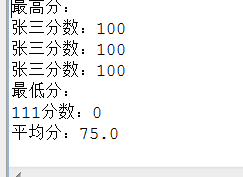
# IMG_256

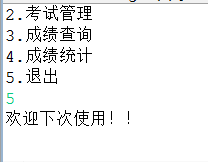












# **5 系统总结**

在随机生成考卷和平均分这两个方面遇到难题,后面通过上网大量的查阅资料,以及和同学讨论解决掉了这两个问题,系统还缺少的密码修改,成绩统计确少了图例的统计来更直观的反应成绩情况以及还存在一些小bug,通过这学期的课程学习,学到很多关于编程的新知识,并会自己弄一下有趣的小编程很有趣的一门课程,希望老师能够扩展更多的知识面,学到更多的东西,成绩的话感觉做的不是很好,给自己评个良好吧.