

一、MySQL数据库连接工具的介绍和使用

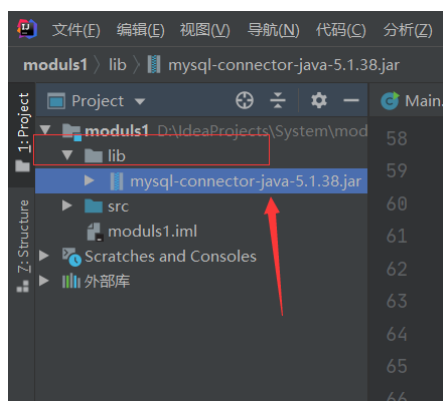
1.1 MySQL数据库连接工具的介绍和配置

Java程序中要想对数据库进行操作(增加, 删除, 修改, 更新简称增删改查), 就需要借助MySQL数据库连接工具。

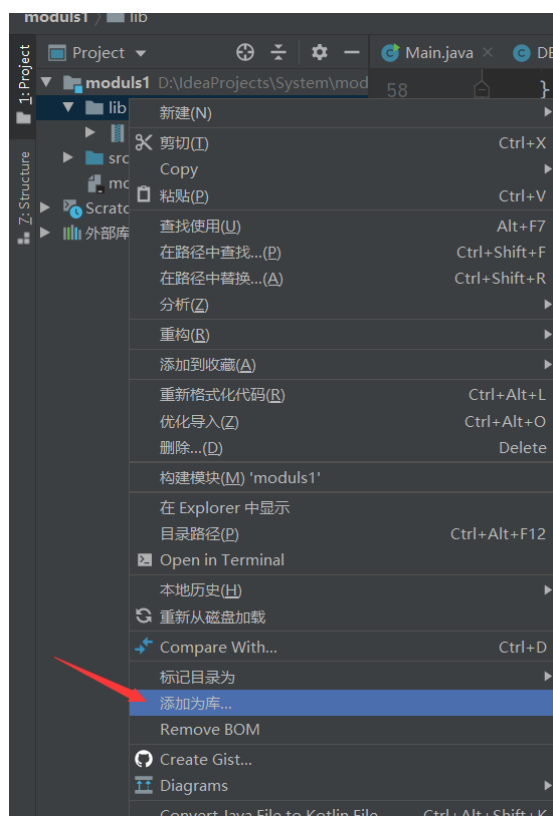
MySQL数据库连接工具是经过众多开发者开发和测试编写的一个Java程序包, 通常称为**MySQL驱动jar包**

 **mysql-connector-java-5.1.38.jar** 2018-04-13 10:43 Executable Jar File 961 KB

在java程序里面导入这个jar包, 就可以使用其编写好的一些类和方法, 方便我们进行开发。



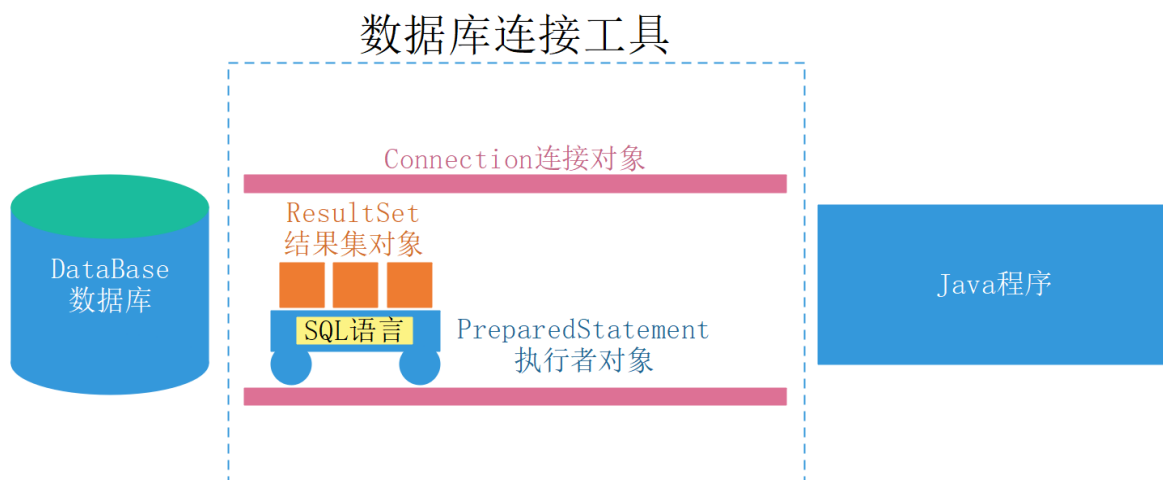
在我们的项目里面, 与src同级目录下, 新建一个lib文件夹, 然后将jar包存放到其目录下



随后将lib文件夹添加到java程序库, 就可以使用了

1.2 MySQL数据库连接工具的使用

- 加载数据库连接工具
- 获取Connection连接对象
- 得到执行者对象
- 执行者对象执行SQL语言 获得结果集对象
- 遍历结果集对象，进行拆箱
- 释放资源



简单查询代码实现：

```
package utils;

import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.PreparedStatement;
import java.sql.ResultSet;

public class UtilsTest {
    public static void main(String[] args) throws Exception {
        // 1.定义数据库的连接信息
        String url = "jdbc:mysql://localhost:3306/test?useSSL=false&serverTimezone=UTC";
        String user = "root";
        String password = "123456";
        // 2.加载数据库连接工具
        Class.forName("com.mysql.jdbc.Driver");
        // 3.获取连接对象
        Connection connection = DriverManager.getConnection(url, user, password);
        // 4.得到执行者对象
        String sql = "select * from student_login";
        PreparedStatement preparedStatement = connection.prepareStatement(sql);
        // 5.执行者对象执行SQL语言 获得结果集对象
        ResultSet resultSet = preparedStatement.executeQuery();
        // 6.遍历结果集对象，进行拆箱
        while (resultSet.next()){
            System.out.println("-----");
            System.out.println(resultSet.getString("username"));
            System.out.println(resultSet.getString("password"));
            System.out.println(resultSet.getString("phonenum"));
            System.out.println(resultSet.getString("confirm"));
        }
        // 7.释放资源
        resultSet.close();
        preparedStatement.close();
    }
}
```

```
        connection.close();
    }
}
```

由于上述过程在后续会多次使用到，因此可以抽成一个模块

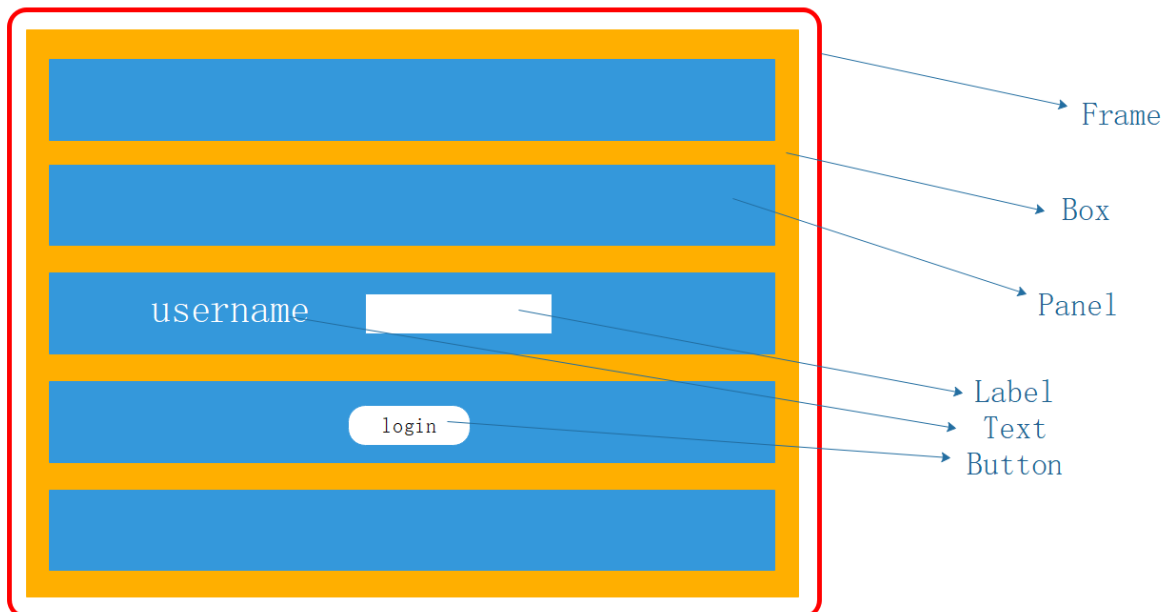
DBUtils.java:

```
import java.sql.*;
public class DBUtil {
    // 定义数据库连接信息
    private static String url = "jdbc:mysql://localhost:3306/test?useSSL=false&serverTimezone=UTC";
    private static String user = "root";
    private static String password = "123456";
    // 加载驱动类，工具包
    static {
        try {
            Class.forName("com.mysql.jdbc.Driver");
        } catch (ClassNotFoundException e) {
            e.printStackTrace();
        }
    }
    // 获取连接对象
    public static Connection getConn() {
        Connection conn = null;
        try {
            conn = DriverManager.getConnection(url, user, password);
        } catch (SQLException throwables) {
            throwables.printStackTrace();
        }
        return conn;
    }
    // 关闭资源，释放内存
    public static void close(ResultSet rs, Statement stm, Connection conn) {
        if (rs != null) {
            try {
                rs.close();
            } catch (SQLException e) {
                e.printStackTrace();
            }
        }
        if (stm != null) {
            try {
                stm.close();
            } catch (SQLException e1) {
                e1.printStackTrace();
            }
        }
        if (conn != null) {
            try {
                conn.close();
            } catch (SQLException e) {
                e.printStackTrace();
            }
        }
    }
}
```

}

二、项目开发

Java Swing开发基本模型

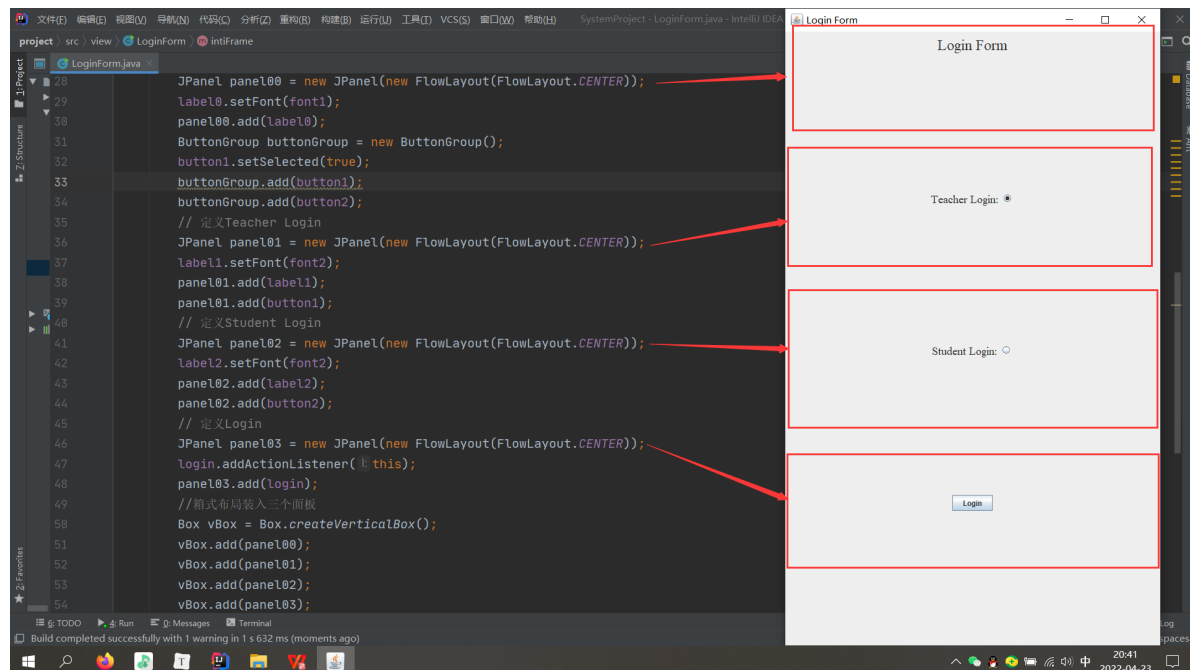


2.1 学生和老师公共视图开发

2.1.1 Login Form

实现选择身份登录，Teacher和Student不同身份登录，后续的视图显示不同的功能模块。

这块比较简单，代码实现：



```
package view;

import javax.swing.*;
import java.awt.*;
import java.awt.event.ActionEvent;
```

```

import java.awt.event.ActionListener;

public class LoginForm extends JFrame implements ActionListener {
    private JLabel label0 = new JLabel("Login Form");    // 页面标题
    private JLabel label1 = new JLabel("Teacher Login:");
    private JLabel label2 = new JLabel("Student Login:");
    private JRadioButton button1 = new JRadioButton();
    private JRadioButton button2 = new JRadioButton();
    private JButton login = new JButton("Login");
    private JFrame frame = new JFrame("Login Form");
    private Font font1 = new Font(Font.SERIF, Font.PLAIN, 24);
    private Font font2 = new Font(Font.SERIF, Font.PLAIN, 18);

    public LoginForm(){
        frame.setSize(500,400);
        frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);    // 页面的关闭方式
        intiFrame();
        frame.setLocationRelativeTo(null);
        frame.setVisible(true);
    }

    public void intiFrame(){
        // 定义最上方的横幅
        JPanel panel00 = new JPanel(new FlowLayout(FlowLayout.CENTER));
        label0.setFont(font1);
        panel00.add(label0);

        ButtonGroup buttonGroup = new ButtonGroup();
        button1.setSelected(true);
        buttonGroup.add(button1);
        buttonGroup.add(button2);

        // 定义Teacher Login
        JPanel panel01 = new JPanel(new FlowLayout(FlowLayout.CENTER));
        label1.setFont(font2);
        panel01.add(label1);
        panel01.add(button1);

        // 定义Student Login
        JPanel panel02 = new JPanel(new FlowLayout(FlowLayout.CENTER));
        label2.setFont(font2);
        panel02.add(label2);
        panel02.add(button2);

        // 定义Login
        JPanel panel03 = new JPanel(new FlowLayout(FlowLayout.CENTER));
        // 给按钮添加一个事件监听方法
        login.addActionListener(this);
        panel03.add(login);

        // 箱式布局装入三个面板
        Box vbox = Box.createVerticalBox();
        vbox.add(panel00);
        vbox.add(panel01);
        vbox.add(panel02);
        vbox.add(panel03);

        // 将布局置入窗口
        frame.setContentPane(vbox);
    }
}

```

```

    }
    public static void main(String[] args) {
        new LoginForm();
    }
    // 当按钮被点击后，此方法将会执行
    @Override
    public void actionPerformed(ActionEvent e) {
        // 当被按下的按钮是login时
        if (e.getSource() == login){
            // 将当前页面隐藏
            frame.setVisible(false);
            int teacherOrStudent = 1;
            if (button2.isSelected()){
                teacherOrStudent = 2;
            }
            // 生成一个System Login页面，并将老师或学生按钮的值传递过去
            new SystemLogin(teacherOrStudent);
        }
    }
}

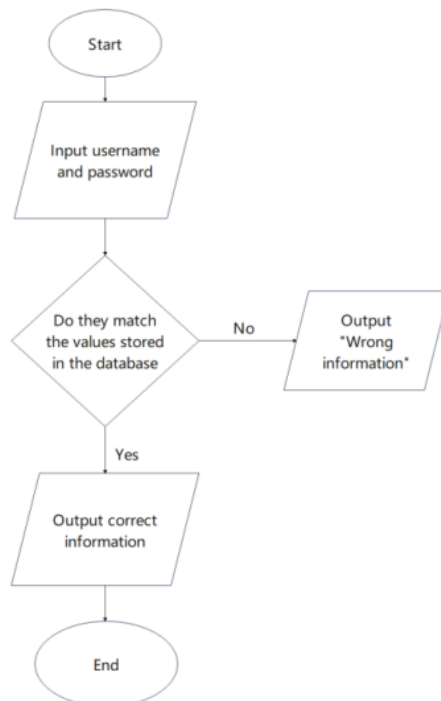
```

2.1.1 System Login

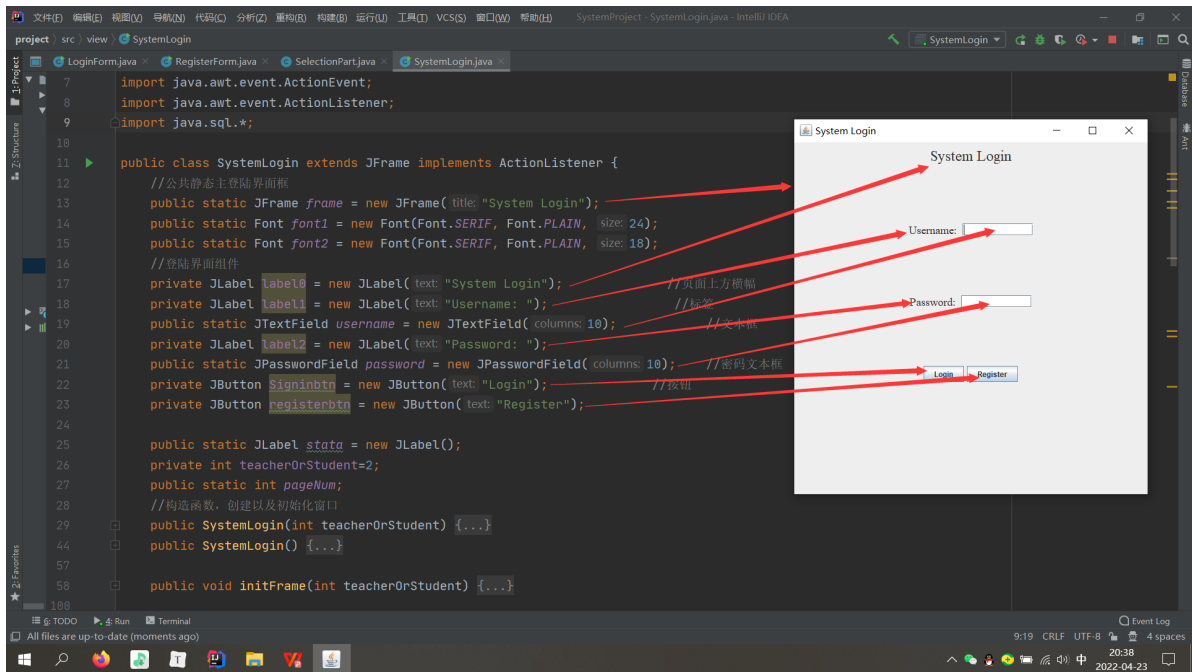
此视图需要根据用户名和密码进行登录，如果用户名或密码错误，则需要有一定的提示功能

1. Login Page

Here is the login flowchart. The users need to enter his/her username and password to check whether its information is the same with the values stored in the database. If they are the same then the users can continue to enter the main program, if not, the users will need to go to the registration page to register as a new user.



代码实现：



```
package view;
```

```
import utils.DBUtils;
```

```
import javax.swing.*;
import java.awt.*;
import java.awt.event.ActionEvent;
import java.awt.event.ActionListener;
import java.sql.*;
```

```
public class SystemLogin extends JFrame implements ActionListener {
```

```
    //公共静态主登陆界面框
```

```
    public static JFrame frame = new JFrame("System Login");
    public static Font font1 = new Font(Font.SERIF, Font.PLAIN, 24);
    public static Font font2 = new Font(Font.SERIF, Font.PLAIN, 18);
```

```
    //登陆界面组件
```

```
    private JLabel label0 = new JLabel("System Login");           //页面上方横幅
    private JLabel label1 = new JLabel("Username: ");              //标签
    public static JTextField username = new JTextField(10);        //文本框
    private JLabel label2 = new JLabel("Password: ");
    public static JPasswordField password = new JPasswordField(10); //密码文本框
```

```
    框
```

```
    private JButton Signinbtn = new JButton("Login");             //按钮
    private JButton registerbtn = new JButton("Register");
```

```
    public static JLabel stata = new JLabel();
```

```
    // 用于标记上个页面选择的时老师还是学生。
```

```
    // 默认是学生
```

```
    private int teacherOrStudent=2;
```

```
    // 用于标记当前页面是否被初始化
```

```
    public static int pageNum;
```

```
    //构造函数，创建以及初始化窗口
```

```
    public SystemLogin(int teacherOrStudent) {
        pageNum += 1;
        this.teacherOrStudent = teacherOrStudent;
        //设置窗口大小
        frame.setSize(500, 400);
        //设置按下右下角X号后关闭
```

```

        frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
        //调用函数初始化窗体的组件
        signinbtn.addActionListener(this);
        initFrame(teacherOrStudent);
        //窗口居中
        frame.setLocationRelativeTo(null);
        //窗口可见
        frame.setVisible(true);
    }
    public SystemLogin() {
        //设置窗口大小
        frame.setSize(500, 400);
        //设置按下右上角X号后关闭
        frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
        //调用函数初始化窗体的组件
        signinbtn.addActionListener(this);
        initFrame(2);
        //窗口居中
        frame.setLocationRelativeTo(null);
        //窗口可见
        frame.setVisible(true);
    }

    public void initFrame(int teacherOrStudent) {
        // 定义最上方的横幅
        JPanel panel00 = new JPanel(new FlowLayout(FlowLayout.CENTER));
        label0.setFont(font1);
        panel00.add(label0);

        //定义面板封装文本框和标签
        JPanel panel01 = new JPanel(new FlowLayout(FlowLayout.CENTER)); //居中面
        label1.setFont(font2);
        panel01.add(label1);
        panel01.add(username);

        JPanel panel02 = new JPanel(new FlowLayout(FlowLayout.CENTER));
        label2.setFont(font2);
        panel02.add(label2);
        panel02.add(password);

        // 用户名或密码错误的时候，才显示
        JPanel panel04 = new JPanel(new FlowLayout(FlowLayout.CENTER));
        stata.setForeground(Color.red);
        stata.setFont(new Font(Font.DIALOG, Font.PLAIN, 16));
        panel04.add(stata);

        //定义面板封装按钮
        JPanel panel03 = new JPanel(new FlowLayout(FlowLayout.CENTER));
        signinbtn.addActionListener(this);
        registerbtn.addActionListener(this);
        panel03.add(signinbtn);
        if (teacherOrStudent != 1){
            panel03.add(registerbtn);
        }
        //箱式布局装入三个面板
        Box vbox = Box.createVerticalBox();
        vbox.add(panel00);

```

板


```

        vbox.add(panel01);
        vbox.add(panel02);
        vbox.add(panel03);
        vbox.add(panel04);
        //将布局置入窗口
        frame.setContentPane(vbox);
    }

    @Override
    public void actionPerformed(ActionEvent e) {
        if (e.getSource() == signinbtn){
            // 当没有查询到结果, 证明用户名或密码错误
            int flag = 0;
            System.out.println("点击了登录");
            Connection conn = null;
            ResultSet resultSet = null;
            PreparedStatement preparedStatement = null;
            try {
                conn = DBUtils.getConn();
                String sql1 = "select username,password from student_login where username=? and password=?";
                String sql2 = "select username,password from teacher where username=? and password=?";
                if (teacherOrStudent == 1){
                    //System.out.println("查询老师的表");
                    preparedStatement = conn.prepareStatement(sql2);
                }else {
                    //System.out.println("查询学生的表");
                    preparedStatement = conn.prepareStatement(sql1);
                }
                // 设置SQL语句中的?代表的参数
                preparedStatement.setString(1,username.getText());
                preparedStatement.setString(2,password.getText());
                resultSet = preparedStatement.executeQuery();
                if (resultSet.next()){
                    // 当查询到了结果, 证明用户名或密码正确
                    flag = 1;
                }
                // 如果出现异常, 则抛出
            }catch (SQLException throwables) {
                throwables.printStackTrace();
            }finally {
                // 使用完毕之后, 关闭所有资源
                DBUtils.close(resultSet,preparedStatement,conn);
            }
            // 当查询到了结果, 证明用户名或密码正确, 则执行登录之后的功能
            if(flag == 1){
                System.out.println("用户名或密码正确");
                System.out.println("登录成功");
            }else{
                System.out.println("用户名或密码错误");
                stata.setText("账户名或密码错误, 请重新输入");
            }
        }
        if(e.getSource() == registerbtn){
            System.out.println("点击了注册");
            frame.setVisible(false);
            if (RegisterForm.pageNum >= 1){

```

```

        RegisterForm.frame2.setVisible(true);
    }else {
        new RegisterForm();
    }
}

public static void main(String[] args) {
    new SystemLogin();
}
}

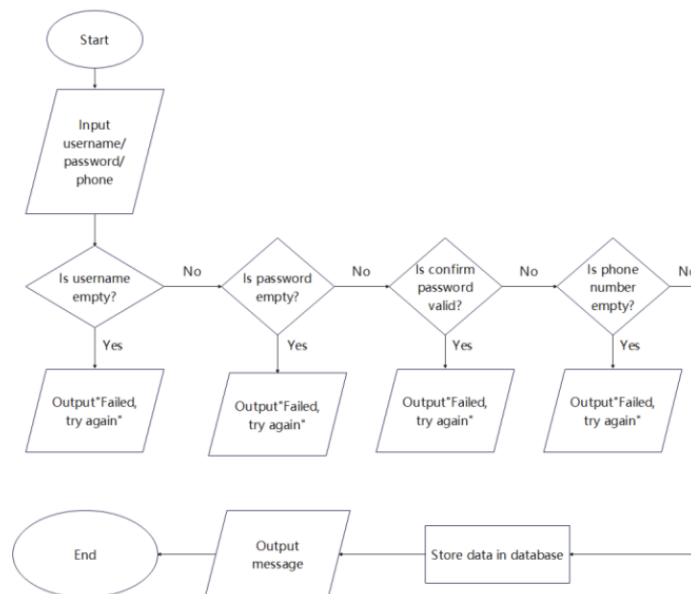
```

2.2 学生端的开发

2.2.1 Register Form

2. Register Page

Here is the registration flowchart. Users need to input his/her username, password and phone number to create their own accounts. They will fail this process if the values entered are invalid and the program will output corresponding message.



注册页面需要根据用户输入的信息进行合法性校验，校验全部通过，则可以存进数据库，供下次登录使用

代码实现：

```

package view;
//注册界面类
import com.sun.xml.internal.messaging.saaj.soap.JpegDataContentHandler;
import entity.Student;
import org.omg.CORBA.TRANSACTION_MODE;
import utils.DBUtils;

import java.awt.*;
import java.awt.event.ActionEvent;
import java.awt.event.ActionListener;
import java.sql.Connection;
import java.sql.PreparedStatement;

```

```

import java.sql.ResultSet;
import java.sql.SQLException;
import java.util.prefs.BackingStoreException;

import javax.swing.*.*;

public class RegisterForm extends JFrame implements ActionListener {

    public static JFrame frame2 = new JFrame("Register Form");
    private JLabel label0 = new JLabel("Register Form");
    private JLabel label1 = new JLabel("Username: ");           //标签
    private JLabel label2 = new JLabel("Password: ");
    private JTextField username = new JTextField(10);          //文本框
    private JPasswordField password = new JPasswordField(10);  //密码文本框

    private JLabel label3 = new JLabel("Confirm Password: ");
    private JPasswordField conpassword = new JPasswordField(10);

    private JLabel label4 = new JLabel("Phone : ");
    private JTextField phone = new JTextField(10);             //文本框

    public static JButton confirm = new JButton("Confirm");
    public static JButton clear = new JButton("Clear");
    public static JButton back = new JButton("Back");
    public static JButton exit = new JButton("Exit");

    public static int pageNum;

    public RegisterForm() {
        pageNum += 1;
        //设置窗口大小
        frame2.setSize(500, 400);
        //设置按下右上角X号后关闭
        frame2.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
        frame2.setLocationRelativeTo(null);
        //调用函数初始化窗体的组件
        initFrame2();
        //窗口可见
        frame2.setVisible(true);
    }

    public void initFrame2() {

        JPanel panel00 = new JPanel();
        label0.setFont(SystemLogin.font1);
        panel00.add(label0);

        JPanel panel11 = new JPanel();
        panel11.add(label1);
        panel11.add(username);

        JPanel panel12 = new JPanel();
        panel12.add(label2);
        panel12.add(password);
    }

```

```

        JPanel panel13 = new JPanel();
        label13.setFont(SystemLogin.font2);
        panel13.add(label13);
        panel13.add(conpassword);

        JPanel panel15 = new JPanel();
        label14.setFont(SystemLogin.font2);
        panel15.add(label14);
        panel15.add(phone);

        JPanel panel14 = new JPanel(new FlowLayout(FlowLayout.CENTER));
        confirm.addActionListener(this);
        clear.addActionListener(this);
        back.addActionListener(this);
        exit.addActionListener(this);

        panel14.add(confirm);
        panel14.add(clear);
        panel14.add(back);
        panel14.add(exit);

        Box vBox = Box.createVerticalBox();
        vBox.add(panel100);
        vBox.add(panel11);
        vBox.add(panel12);
        vBox.add(panel13);
        vBox.add(panel15);
        vBox.add(panel14);
        frame2.setContentPane(vBox);
    }

    @Override
    public void actionPerformed(ActionEvent e) {
        // 当点击 exit按钮时
        if (e.getSource() == exit){
            int message = JOptionPane.showConfirmDialog(null, "确认退出吗?", "提示", JOptionPane.OK_OPTION);
            if (message == 0){
                System.exit(0);
            }
            // 当点击back按钮时
        }else if (e.getSource() == back){
            frame2.setVisible(false);
            SystemLogin.stata.setText("");
            SystemLogin.frame.setVisible(true);
            // 当点击clear按钮时
        }else if(e.getSource() == clear){
            username.setText("");
            password.setText("");
            conpassword.setText("");
            phone.setText("");
        }else {
            // 用一个是实体类对象来方便操作
            Student student = new Student(username.getText(),
            password.getText(), conpassword.getText(), phone.getText());
            // 进行一系列的校验
            // 如果学生的密码长度为0 或者 学生的电话号码为0 或者.....

```

```

        if (student.getPassword().length() == 0 ||
student.getPhoneNum().length() == 0 ||student.getUserName().length() == 0 ||
student.getConfirm().length() == 0){
            JOptionPane.showMessageDialog(null, "请输入完整的用户名/密码/手机号",
"确认",JOptionPane.ERROR_MESSAGE);
            // ! （如果学生密码的内容等于确认密码的内容）
        }else if (!student.getPassword().equals(student.getConfirm())){
            JOptionPane.showMessageDialog(null, "密码和确认密码不一致，请重新输入", "确认",JOptionPane.ERROR_MESSAGE);
        }else {
            Connection conn = null;
            ResultSet resultSet = null;
            PreparedStatement preparedStatement = null;
            try {
                conn = DBUtils.getConn();
                String sql = "INSERT INTO student_login VALUES(?,?,?,?);";
                preparedStatement = conn.prepareStatement(sql);
                preparedStatement.setString(1, student.getUserName());
                preparedStatement.setString(2, student.getPassword());
                preparedStatement.setString(3, student.getConfirm());
                preparedStatement.setString(4, student.getPhoneNum());
                int i = preparedStatement.executeUpdate();
                System.out.println(i);
            } catch (SQLException throwables) {
                throwables.printStackTrace();
            }finally {
                DBUtils.close(resultSet,preparedStatement,conn);
            }
            System.out.println("注册成功");
            frame2.setVisible(false);
            SystemLogin.stata.setText("");
            SystemLogin.frame.setVisible(true);
        }
    }
}

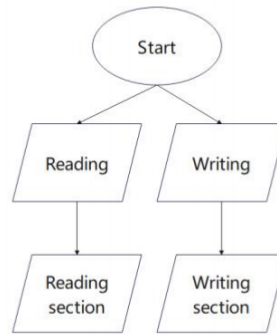
public static void main(String[] args) {
    new RegisterForm();
}
}

```

2.2.2 Selection Part

3. Selection Page

First, the users need to choose what category they want to study. The 2 options are Reading and Writing.



代码实现:

```
package view;

import javax.swing.*;
import java.awt.*;
import java.awt.event.ActionEvent;
import java.awt.event.ActionListener;
public class SelectionPart extends JFrame implements ActionListener{
    public static JFrame frame3 = new JFrame("Selection Part");
    public static JLabel label0 = new JLabel("Selection Part");
    public static JButton readingButton = new JButton("Reading");
    public static JButton writingButton = new JButton("writing");
    public static int pageNum;
    public SelectionPart(){
        pageNum += 1;
        //设置窗口大小
        frame3.setSize(500, 400);
        //设置按下右上角X号后关闭
        frame3.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
        //窗口居中
        frame3.setLocationRelativeTo(null);
        //调用函数初始化窗体的组件
        initFrame3();
        //新窗口与旧窗口错开50像素。
        //窗口可见
        frame3.setVisible(true);
    }
    private void initFrame3() {
        JPanel panel = new JPanel();
        label0.setFont(SystemLogin.font1);
        panel.add(label0);

        JPanel panel1 = new JPanel();
        readingButton.addActionListener(this);
        writingButton.addActionListener(this);

        panel1.add(readingButton);
        panel1.add(writingButton);

        JPanel panel2 = new JPanel();
        RegisterForm.back.addActionListener(this);
        RegisterForm.exit.addActionListener(this);
    }
}
```

```

panel2.add(RegisterForm.back);
panel2.add(RegisterForm.exit);

//箱式布局装入三个面板
Box vbox = Box.createVerticalBox();
vbox.add(panel);
vbox.add(panel1);
vbox.add(panel2);
//将布局置入窗口
frame3.setContentPane(vbox);
}

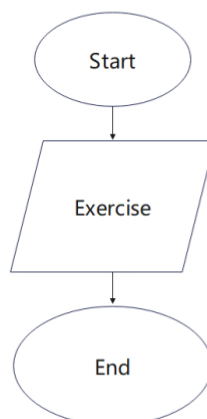
@Override
public void actionPerformed(ActionEvent e) {
    if (e.getSource() == readingButton){

    }else if(e.getSource() == writingButton){
        frame3.setVisible(false);
        if (WritingSection.pageNum >= 1){
            WritingSection.frame5.setVisible(true);
        }else {
            new WritingSection();
        }
    }else if(e.getSource() == RegisterForm.back){
        frame3.setVisible(false);
        SystemLogin.frame.setVisible(true);
    }else {
        int message = JOptionPane.showConfirmDialog(null, "确认退出吗?", "提示", JOptionPane.OK_OPTION);
        if (message == 0){
            System.exit(0);
        }
    }
}
}
}

```

2.2.3 Writing Section

For Writing, the users can only choose one exercise because of the current program only includes one set of exercise.



代码实现:

```

package view;

import javax.swing.*;
import java.awt.event.ActionEvent;
import java.awt.event.ActionListener;
import java.text.SimpleDateFormat;
import java.util.Date;

public class WritingSection extends JFrame implements ActionListener {
    public static JFrame frame5 = new JFrame("Writing Section");
    private JLabel label0 = new JLabel("Writing Section");
    private JButton exercise = new JButton("Exercise");
    private JButton back = new JButton("Back");
    public static int pageNum;

    public WritingSection(){
        pageNum += 1;
        //设置窗口大小
        frame5.setSize(500, 400);
        //设置按下右上角X号后关闭
        frame5.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
        //窗口居中
        frame5.setLocationRelativeTo(null);
        //调用函数初始化窗体的组件
        initframe5();
        //新窗口与旧窗口错开50像素。
        //窗口可见
        frame5.setVisible(true);
    }

    @Override
    public void actionPerformed(ActionEvent e) {
        if (e.getSource() == back){
            frame5.setVisible(false);
            if (SelectionPart.pageNum == 1){
                SelectionPart.frame3.setVisible(true);
            }else {
                new SelectionPart();
            }
        }
        if (e.getSource() == exercise){
            frame5.setVisible(false);
            //new Question();
        }
    }

    private void initframe5() {
        JPanel panel = new JPanel();
        label0.setFont(SystemLogin.font1);
        panel.add(label0);

        JPanel panel1 = new JPanel();
        exercise.addActionListener(this);
        panel1.add(exercise);

        JPanel panel2 = new JPanel();
        back.addActionListener(this);
        panel2.add(back);
    }
}

```



```

        //箱式布局装入三个面板
        Box vbox = Box.createVerticalBox();
        vbox.add(panel);
        vbox.add(panel1);
        vbox.add(panel2);
        //将布局置入窗口
        frame5.setContentPane(vbox);
    }
}

```

2.2.4 Question

此页面查询数据库，获得一个题目，然后显示到页面即可

代码实现：

```

package login;

import entity.QuestionsReading;
import org.omg.CORBA.PUBLIC_MEMBER;
import sun.security.krb5.internal.PAData;
import uuuuuu.DBUtil;

import javax.swing.*;
import java.awt.*;
import java.awt.event.ActionEvent;
import java.awt.event.ActionListener;
import java.sql.Connection;
import java.sql.PreparedStatement;
import java.sql.ResultSet;
import java.sql.SQLException;
import java.util.ArrayList;

public class Questions extends JFrame implements ActionListener {
    public static ArrayList<QuestionsReading> questionsReadingList = new
    ArrayList<QuestionsReading>();
    public static Color color = new Color(221, 232, 243);
    public static JFrame frame = new JFrame("Questions");
    public static JLabel label0 = new JLabel("Questions");
    public static JButton a = new JButton("A.XXX");
    public static JButton b = new JButton("B.XXX");
    public static JButton c = new JButton("C.XXX");
    public static JButton d = new JButton("D.XXX");
    public static JTextArea textArea = new JTextArea("Reading passage",5,5);
    public static JButton next = new JButton("Next");
    public static JButton finish = new JButton("Finish");
    // 当前题目的编号
    public static int questionNum;
    // 做对的次数
    public static int rightNum;
    // 做题开始时间
    public static long startTime;
    // 做题结束时间
    public static long endTime;
    // 记录错误题目的数组集合
    public static ArrayList<Integer> wrongQuestion = new ArrayList<>();
}

```

```

public static int pageNum;
public Questions(){
    pageNum += 1;
    startTime = System.currentTimeMillis();
    //设置窗口大小
    frame.setSize(500, 400);
    //设置按下右上角X号后关闭
    frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
    //窗口居中
    frame.setLocationRelativeTo(null);
    //调用函数初始化窗体的组件
    getQuestionArray();
    initframe();
    //新窗口与旧窗口错开50像素。
    //窗口可见
    frame.setVisible(true);
}

public void getQuestionArray(){
    Connection conn = null;
    ResultSet resultSet = null;
    PreparedStatement preparedStatement = null;
    try {
        conn = DBUtil.getConn();
        String sql = "select * from questions";
        preparedStatement = conn.prepareStatement(sql);
        resultSet = preparedStatement.executeQuery();
        while (resultSet.next()){
            QuestionsReading questionsReading = new
QuestionsReading(resultSet.getString("a"), resultSet.getString("b"),
resultSet.getString("c"), resultSet.getString("d"),
resultSet.getString("readingPassage"), resultSet.getInt("rightAnswer"));
            questionsReadingList.add(questionsReading);
        }
        System.out.println("题目装载完成");
    } catch (SQLException throwables) {
        throwables.printStackTrace();
    }finally {
        DBUtil.close(resultSet,preparedStatement,conn);
    }
}

@Override
public void actionPerformed(ActionEvent e) {
    JButton jButton = (JButton) e.getSource();
    if (jButton == next){
        int rightOne = 0;
        if (a.getBackground() == Color.ORANGE){
            rightOne = 1;
        }else if (b.getBackground() == Color.ORANGE){
            rightOne = 2;
        }else if (c.getBackground() == Color.ORANGE){
            rightOne = 3;
        }else {
            rightOne = 4;
        }
        if (rightOne ==
questionsReadingList.get(questionNum).getRightAnswer()){
            // 题目做对了，则做对的数目+1

```

```

        rightNum += 1;
    }else {
        // 题目做错了，则记录进错误数组中
        wrongQuestion.add(questionNum+1);
    }
    if (questionNum+1 == questionsReadingList.size()){
        JOptionPane.showMessageDialog(null,"题目做完了!", "提示",JOptionPane.PLAIN_MESSAGE);
    }else {
        questionNum += 1;
        a.setBackground(color);
        b.setBackground(color);
        c.setBackground(color);
        d.setBackground(color);
        a.setText("A."+questionsReadingList.get(questionNum).getA());
        b.setText("B."+questionsReadingList.get(questionNum).getB());
        c.setText("C."+questionsReadingList.get(questionNum).getC());
        d.setText("D."+questionsReadingList.get(questionNum).getD());

        textArea.setText(questionsReadingList.get(questionNum).getReadingPassage());
    }
}
if (jButton == finish){
    endTime = System.currentTimeMillis();
    System.out.println(endTime);
    int timeUsed = (int) ((endTime - startTime)/1000);
    float accuracy = (float) (rightNum*1.0 /
questionsReadingList.size());
    String wrongquestion = wrongQuestion.toString();

    Connection conn = null;
    ResultSet resultSet = null;
    PreparedStatement preparedStatement = null;
    try {
        conn = DBUtil.getConn();
        String sql = "insert into
report(timeUsed,accuracy,wrongQuestion) values(?,?,?)";
        preparedStatement = conn.prepareStatement(sql);
        preparedStatement.setInt(1,timeUsed);
        preparedStatement.setFloat(2,accuracy);
        preparedStatement.setString(3,wrongquestion);
        int i = preparedStatement.executeUpdate();
        System.out.println(i);
    } catch (SQLException throwables) {
        throwables.printStackTrace();
    }finally {
        DBUtil.close(resultSet,preparedStatement,conn);
    }
    frame.setVisible(false);
    new Report(timeUsed,accuracy,wrongquestion);
}
a.setBackground(color);
b.setBackground(color);
c.setBackground(color);
d.setBackground(color);
if (jButton == a){
    a.setBackground(Color.ORANGE);
}

```

```

        if (jButton == b){
            b.setBackground(Color.ORANGE);
        }
        if (jButton == c){
            c.setBackground(Color.ORANGE);
        }
        if (jButton == d){
            d.setBackground(Color.ORANGE);
        }
    }

    private void initframe() {
        Box vbox = Box.createVerticalBox();
        JPanel panel = new JPanel(new FlowLayout(FlowLayout.CENTER));
        panel.add(label0);
        JPanel panel12 = new JPanel(new FlowLayout(FlowLayout.CENTER));
        JPanel panel13 = new JPanel(new FlowLayout(FlowLayout.CENTER));
        JPanel panel14 = new JPanel(new FlowLayout(FlowLayout.CENTER));
        JPanel panel15 = new JPanel(new FlowLayout(FlowLayout.CENTER));
        a.setText("A."+questionsReadingList.get(questionNum).getA());
        b.setText("B."+questionsReadingList.get(questionNum).getB());
        c.setText("C."+questionsReadingList.get(questionNum).getC());
        d.setText("D."+questionsReadingList.get(questionNum).getD());
        a.setBackground(color);
        b.setBackground(color);
        c.setBackground(color);
        d.setBackground(color);
        a.addActionListener(this);
        b.addActionListener(this);
        c.addActionListener(this);
        d.addActionListener(this);
        panel12.add(a);
        panel13.add(b);
        panel14.add(c);
        panel15.add(d);
        label0.setFont(SystemLogin.font1);
        vbox.add(panel);
        vbox.add(panel12);
        vbox.add(panel13);
        vbox.add(panel14);
        vbox.add(panel15);

        Box vbox1 = Box.createVerticalBox();
        JPanel panel1 = new JPanel(new FlowLayout(FlowLayout.RIGHT));
        next.addActionListener(this);
        finish.addActionListener(this);
        panel1.add(next);
        panel1.add(finish);
        vbox1.add(panel1);

        textArea.setText(questionsReadingList.get(questionNum).getReadingPassage());
        textArea.setEditable(false);
        vbox1.add(textArea);
        Box vbox2 = Box.createHorizontalBox();
        vbox2.add(vbox);
        vbox2.add(vbox1);
        frame.setContentPane(vbox2);
    }
}

```

```

        public static void main(String[] args) {
            new Questions();
        }
    }
}

```

2.2.5 Answer

学生答完题，显示学生的结果，可以选择保存到数据库中去

代码实现：

```

package login;

import uuuuuu.DBUtil;

import javax.swing.*;
import java.awt.*;
import java.awt.event.ActionEvent;
import java.awt.event.ActionListener;
import java.sql.Connection;
import java.sql.PreparedStatement;
import java.sql.ResultSet;
import java.sql.SQLException;

public class Answer extends JFrame implements ActionListener {
    public static JFrame frame = new JFrame("Answer Section");
    public static JLabel label0 = new JLabel("Answer");
    public static JTextArea answer = new JTextArea(20,40);

    public static void setAnswer() {
        Connection conn = null;
        ResultSet resultSet = null;
        PreparedStatement preparedStatement = null;
        try {
            conn = DBUtil.getConn();
            String sql = "SELECT * FROM answer;";
            preparedStatement = conn.prepareStatement(sql);
            resultSet = preparedStatement.executeQuery();
            if (resultSet.next()){
                answer.setText(resultSet.getString("answer"));
            }
        } catch (SQLException throwables) {
            throwables.printStackTrace();
        } finally {
            DBUtil.close(resultSet,preparedStatement,conn);
        }
    }

    public Answer(){
        //设置窗口大小
        frame.setSize(500, 500);
        //设置按下右上角X号后关闭
        frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
        //窗口居中
        frame.setLocationRelativeTo(null);
    }
}

```

```

        //调用函数初始化窗体的组件
        initframe();
        //新窗口与旧窗口错开50像素。
        //窗口可见
        frame.setVisible(true);
    }

    @Override
    public void actionPerformed(ActionEvent e) {
        if (e.getSource() == RegisterForm.exit){
            System.exit(0);
        }
    }
    private void initframe() {
        JPanel panel = new JPanel();
        label0.setFont(SystemLogin.font2);
        panel.add(label0);

        JPanel panel1 = new JPanel();
        setAnswer();
        panel1.add(answer);

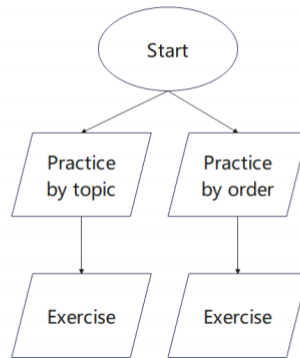
        JPanel panel2 = new JPanel(new FlowLayout(FlowLayout.CENTER));
        RegisterForm.exit.addActionListener(this);
        panel2.add(RegisterForm.exit);
        //箱式布局装入三个面板
        Box vbox = Box.createVerticalBox();
        vbox.add(panel);
        vbox.add(panel1);
        vbox.add(panel2);
        //将布局置入窗口
        frame.setContentPane(vbox);
    }

    public static void main(String[] args) {
        new Answer();
    }
}

```

2.2.6 Reading Selection

After they have entered one of the sections, they will need to click the button for the next selection. For Reading, the users can choose to practice by topic or practice by order.



代码实现:

```
package login;

import javax.swing.*;
import java.awt.event.ActionEvent;
import java.awt.event.ActionListener;

public class ReadingSelection extends JFrame implements ActionListener {
    public static JFrame frame4 = new JFrame("Reading Selection");
    public static JLabel label0 = new JLabel("Reading Selection");
    public static JButton practiceByOrder = new JButton("Practice by order");
    public static JButton practiceByTopic = new JButton("Practice by topic");
    public static JButton back = new JButton("Back");
    public static JButton exit = new JButton("Exit");
    public ReadingSelection(){
        //设置窗口大小
        frame4.setSize(500, 400);
        //设置按下右上角X号后关闭
        frame4.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
        //窗口居中
        frame4.setLocationRelativeTo(null);
        //调用函数初始化窗体的组件
        initframe4();
        //新窗口与旧窗口错开50像素。
        //窗口可见
        frame4.setVisible(true);
    }

    @Override
    public void actionPerformed(ActionEvent e) {
        JButton source = (JButton) e.getSource();
        frame4.setVisible(false);
        if (back.equals(source)) {
            SelectionPart.frame3.setVisible(true);
        } if (exit.equals(source)) {
            System.exit(0);
        } if (practiceByOrder.equals(source)) {
            new ReadingByOrder();
        } if (practiceByTopic.equals(source)) {
            new ReadingByTopic();
        }
    }
}
```

```

private void initframe4() {
    JPanel panel = new JPanel();
    label0.setFont(SystemLogin.font1);
    panel.add(label0);

    JPanel panel1 = new JPanel();
    practiceByOrder.addActionListener(this);
    practiceByTopic.addActionListener(this);

    panel1.add(practiceByOrder);
    panel1.add(practiceByTopic);

    JPanel panel2 = new JPanel();
    back.addActionListener(this);
    exit.addActionListener(this);
    panel2.add(back);
    panel2.add(exit);

    //箱式布局装入三个面板
    Box vbox = Box.createVerticalBox();
    vbox.add(panel);
    vbox.add(panel1);
    vbox.add(panel2);
    //将布局置入窗口
    frame4.setContentPane(vbox);
}

public static void main(String[] args) {
    new ReadingSelection();
}
}

```

2.2.7 Reading by order和Reading by topic

代码实现:

```

package login;

import javax.swing.*;
import java.awt.event.ActionEvent;
import java.awt.event.ActionListener;

public class ReadingByOrder extends JFrame implements ActionListener {
    public static JFrame frame7 = new JFrame("Reading By Order");
    public static JLabel label0 = new JLabel("Reading By Order");
    public static JButton exercise1 = new JButton("Exercise1");
    public static JButton exercise2 = new JButton("Exercise2");
    public ReadingByOrder(){
        //设置窗口大小
        frame7.setSize(500, 400);
        //设置按下右下角X号后关闭
        frame7.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
        //窗口居中
        frame7.setLocationRelativeTo(null);
        //调用函数初始化窗体的组件
        initframe7();
    }
}

```



```

        //新窗口与旧窗口错开50像素。
        //窗口可见
        frame7.setVisible(true);
    }

    @Override
    public void actionPerformed(ActionEvent e) {
        JButton source = (JButton)e.getSource();
        if (source == exercise1){
            frame7.setVisible(false);
            new Questions();
        }
    }

    private void initframe7() {
        JPanel panel = new JPanel();
        label0.setFont(SystemLogin.font1);
        panel.add(label0);

        JPanel panel1 = new JPanel();
        exercise1.addActionListener(this);
        panel1.add(exercise1);

        JPanel panel2 = new JPanel();
        exercise2.addActionListener(this);
        panel2.add(exercise2);

        //箱式布局装入三个面板
        Box vbox = Box.createVerticalBox();
        vbox.add(panel);
        vbox.add(panel1);
        vbox.add(panel2);
        //将布局置入窗口
        frame7.setContentPane(vbox);
    }

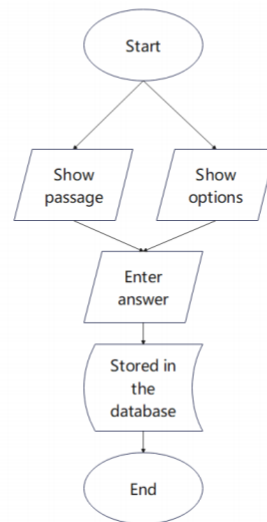
    public static void main(String[] args) {
        new ReadingByOrder();
    }
}

```

2.2.8 Questions

4. Reading Main Page

The following flowchart shows the basic structure of reading main page where the user can actually write his/her answers there and look at the questions.



此页面逻辑比较复杂，需要使用数组来存储不同的题目对象，题目对象里面包括了选项，题目和正确答案等信息，然后当用户点击next时，显示下一套题目

代码实现：

```
package login;

import entity.QuestionsReading;
import org.omg.CORBA.PUBLIC_MEMBER;
import sun.security.krb5.internal.PADData;
import uuuuuu.DBUtil;

import javax.swing.*;
import java.awt.*;
import java.awt.event.ActionEvent;
import java.awt.event.ActionListener;
import java.sql.Connection;
import java.sql.PreparedStatement;
import java.sql.ResultSet;
import java.sql.SQLException;
import java.util.ArrayList;

public class Questions extends JFrame implements ActionListener {
    public static ArrayList<QuestionsReading> questionsReadingList = new
    ArrayList<QuestionsReading>();
    public static Color color = new Color(221, 232, 243);
    public static JFrame frame = new JFrame("Questions");
    public static JLabel label0 = new JLabel("Questions");
    public static JButton a = new JButton("A.XXX");
    public static JButton b = new JButton("B.XXX");
    public static JButton c = new JButton("C.XXX");
    public static JButton d = new JButton("D.XXX");
    public static JTextArea textArea = new JTextArea("Reading passage",5,5);
    public static JButton next = new JButton("Next");
    public static JButton finish = new JButton("Finish");
    // 当前题目的编号
    public static int questionNum;
```

```

// 做对的次数
public static int rightNum;
// 做题开始时间
public static long startTime;
// 做题结束时间
public static long endTime;
// 记录错误题目的数组集合
public static ArrayList<Integer> wrongQuestion = new ArrayList<>();

public static int pageNum;
public Questions(){
    pageNum += 1;
    startTime = System.currentTimeMillis();
    //设置窗口大小
    frame.setSize(500, 400);
    //设置按下右上角X号后关闭
    frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
    //窗口居中
    frame.setLocationRelativeTo(null);
    //调用函数初始化窗体的组件
    getQuestionArray();
    initframe();
    //新窗口与旧窗口错开50像素。
    //窗口可见
    frame.setVisible(true);
}

public void getQuestionArray(){
    Connection conn = null;
    ResultSet resultSet = null;
    PreparedStatement preparedStatement = null;
    try {
        conn = DBUtil.getConn();
        String sql = "select * from questions";
        preparedStatement = conn.prepareStatement(sql);
        resultSet = preparedStatement.executeQuery();
        while (resultSet.next()){
            QuestionsReading questionsReading = new
QuestionsReading(resultSet.getString("a"), resultSet.getString("b"),
resultSet.getString("c"), resultSet.getString("d"),
resultSet.getString("readingPassage"), resultSet.getInt("rightAnswer"));
            questionsReadingList.add(questionsReading);
        }
        System.out.println("题目装载完成");
    } catch (SQLException throwables) {
        throwables.printStackTrace();
    } finally {
        DBUtil.close(resultSet,preparedStatement,conn);
    }
}

@Override
public void actionPerformed(ActionEvent e) {
    JButton jButton = (JButton) e.getSource();
    if (jButton == next){
        int rightOne = 0;
        if (a.getBackground() == Color.ORANGE){
            rightOne = 1;
        }else if (b.getBackground() == Color.ORANGE){
            rightOne = 2;

```

```

        }else if(c.getBackground() == Color.ORANGE){
            rightOne = 3;
        }else {
            rightOne = 4;
        }
        if (rightOne ==
questionsReadingList.get(questionNum).getRightAnswer()){
            // 题目做对了, 则做对的数目+1
            rightNum += 1;
        }else {
            // 题目做错了, 则记录进错误数组中
            wrongQuestion.add(questionNum+1);
        }
        if (questionNum+1 == questionsReadingList.size()){
            JOptionPane.showMessageDialog(null, "题目做完了!", "提示", JOptionPane.PLAIN_MESSAGE);
        }else {
            questionNum += 1;
            a.setBackground(color);
            b.setBackground(color);
            c.setBackground(color);
            d.setBackground(color);
            a.setText("A."+questionsReadingList.get(questionNum).getA());
            b.setText("B."+questionsReadingList.get(questionNum).getB());
            c.setText("C."+questionsReadingList.get(questionNum).getC());
            d.setText("D."+questionsReadingList.get(questionNum).getD());

            textArea.setText(questionsReadingList.get(questionNum).getReadingPassage());
        }
    }
    if (jButton == finish){
        endTime = System.currentTimeMillis();
        System.out.println(endTime);
        int timeUsed = (int) ((endTime - startTime)/1000);
        float accuracy = (float) (rightNum*1.0 /
questionsReadingList.size());
        String wrongquestion = wrongQuestion.toString();

        Connection conn = null;
        ResultSet resultSet = null;
        PreparedStatement preparedStatement = null;
        try {
            conn = DBUtil.getConn();
            String sql = "insert into
report(timeUsed,accuracy,wrongQuestion) values(?,?,?)";
            preparedStatement = conn.prepareStatement(sql);
            preparedStatement.setInt(1,timeUsed);
            preparedStatement.setFloat(2,accuracy);
            preparedStatement.setString(3,wrongquestion);
            int i = preparedStatement.executeUpdate();
            System.out.println(i);
        } catch (SQLException throwables) {
            throwables.printStackTrace();
        }finally {
            DBUtil.close(resultSet,preparedStatement,conn);
        }
        frame.setVisible(false);
        new Report(timeUsed,accuracy,wrongquestion);
    }
}

```

```

    }
    a.setBackground(color);
    b.setBackground(color);
    c.setBackground(color);
    d.setBackground(color);
    if (jButton == a){
        a.setBackground(Color.ORANGE);
    }
    if (jButton == b){
        b.setBackground(Color.ORANGE);
    }
    if (jButton == c){
        c.setBackground(Color.ORANGE);
    }
    if (jButton == d){
        d.setBackground(Color.ORANGE);
    }
}

private void initframe() {
    Box vbox = Box.createVerticalBox();
    JPanel panel = new JPanel(new FlowLayout(FlowLayout.CENTER));
    panel.add(label0);
    JPanel panel12 = new JPanel(new FlowLayout(FlowLayout.CENTER));
    JPanel panel13 = new JPanel(new FlowLayout(FlowLayout.CENTER));
    JPanel panel14 = new JPanel(new FlowLayout(FlowLayout.CENTER));
    JPanel panel15 = new JPanel(new FlowLayout(FlowLayout.CENTER));
    a.setText("A."+questionsReadingList.get(questionNum).getA());
    b.setText("B."+questionsReadingList.get(questionNum).getB());
    c.setText("C."+questionsReadingList.get(questionNum).getC());
    d.setText("D."+questionsReadingList.get(questionNum).getD());
    a.setBackground(color);
    b.setBackground(color);
    c.setBackground(color);
    d.setBackground(color);
    a.addActionListener(this);
    b.addActionListener(this);
    c.addActionListener(this);
    d.addActionListener(this);
    panel12.add(a);
    panel13.add(b);
    panel14.add(c);
    panel15.add(d);
    label0.setFont(SystemLogin.font1);
    vbox.add(panel);
    vbox.add(panel12);
    vbox.add(panel13);
    vbox.add(panel14);
    vbox.add(panel15);

    Box vbox1 = Box.createVerticalBox();
    JPanel panel1 = new JPanel(new FlowLayout(FlowLayout.RIGHT));
    next.addActionListener(this);
    finish.addActionListener(this);
    panel1.add(next);
    panel1.add(finish);
    vbox1.add(panel1);

    textArea.setText(questionsReadingList.get(questionNum).getReadingPassage());
}

```

```

        textArea.setEditable(false);
        vbox1.add(textArea);
        Box vbox2 = Box.createHorizontalBox();
        vbox2.add(vBox);
        vbox2.add(vBox1);
        frame.setContentPane(vBox2);

    }

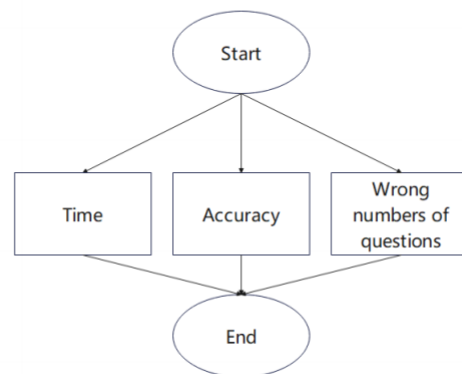
    public static void main(String[] args) {
        new Questions();
    }
}

```

2.2.9 Report

5. Report Page

Below is the flowchart of the results of reading and writing. When the user finishes the questions, the program will automatically print time, accuracy and wrong numbers of the questions.



当学生答完后，计算学生答题的准确率和用时，然后显示到页面上，并将此数据保存到数据库中，供下次老师登录时查看

代码实现：

```

package login;
//注册界面类

import javax.swing.*;
import java.awt.*;
import java.awt.event.ActionEvent;
import java.awt.event.ActionListener;

public class Report extends JFrame implements ActionListener {

    public static JFrame frame = new JFrame("Report");
    public static JLabel labe0 = new JLabel("Report");
    public static JLabel labe1 = new JLabel("Time used");
    public static JTextField textField1 = new JTextField(10);
    public static JLabel labe2 = new JLabel("Accuracy");
    public static JTextField textField2 = new JTextField(10);
    public static JLabel labe3 = new JLabel("Wrong question");
    public static JTextField textField3 = new JTextField(10);

```

```

public static JButton exit = new JButton("Exit");
// Report(timeUsed,accuracy,wrongquestion);
public Report(int timeUsed,float accuracy,String wrongquestion) {
    //设置窗口大小
    frame.setSize(500, 400);
    //设置按下右上角X号后关闭
    frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
    //调用函数初始化窗体的组件
    initFrame(timeUsed,accuracy,wrongquestion);
    //新窗口与旧窗口错开50像素。
    frame.setLocationRelativeTo(null);
    //窗口可见
    frame.setVisible(true);
}

public void initFrame(int timeUsed,float accuracy,String wrongquestion) {
    textField1.setText(timeUsed+"秒");
    textField2.setText(String.valueOf(accuracy));
    textField3.setText(wrongquestion);

    JPanel panel = new JPanel();
    label0.setFont(SystemLogin.font1);
    panel.add(label0);

    JPanel panel1 = new JPanel(new FlowLayout(FlowLayout.CENTER));
    label1.setFont(SystemLogin.font2);
    panel1.add(label1);
    panel1.add(textField1);

    JPanel panel2 = new JPanel(new FlowLayout(FlowLayout.CENTER));
    label2.setFont(SystemLogin.font2);
    panel2.add(label2);
    panel2.add(textField2);

    JPanel panel3 = new JPanel(new FlowLayout(FlowLayout.CENTER));
    label3.setFont(SystemLogin.font2);
    panel3.add(label3);
    panel3.add(textField3);

    JPanel panel4 = new JPanel(new FlowLayout(FlowLayout.CENTER));
    exit.addActionListener(this);
    panel4.add(exit);

    Box vbox = Box.createVerticalBox();
    vbox.add(panel);
    vbox.add(panel1);
    vbox.add(panel2);
    vbox.add(panel3);
    vbox.add(panel4);

    frame.add(vbox);
}

@Override
public void actionPerformed(ActionEvent e) {
    if (e.getSource() == exit){
        System.exit(0);
    }
}

```

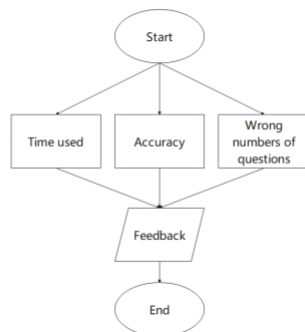
```
}  
}
```

2.3 教师端的开发

2.3.1 Student Status

6. Student Status Page

The following flowchart is the student status page where the teacher can monitor the student's performance of the exercise and give feedback to the student.



当老师登录成功后，可以立即查询到学生答题的一些信息，此时需要查询数据库，让学生答题信息的数据显示到页面上

代码实现：

```
package login;  
  
import entity.StudentReport;  
import uuuuuu.DBUtil;  
  
import javax.swing.*.*;  
import java.awt.*.*;  
import java.awt.event.ActionEvent;  
import java.awt.event.ActionListener;  
import java.sql.Connection;  
import java.sql.PreparedStatement;  
import java.sql.ResultSet;  
import java.sql.SQLException;  
  
public class StudentStatus extends JFrame implements ActionListener {  
  
    public static JFrame frame = new JFrame("Student Status");  
    private JLabel labe0 = new JLabel("Student Status");  
    private JLabel labe1 = new JLabel("Time used ");  
    private JTextField textField1 = new JTextField(10);  
    private JLabel labe2 = new JLabel("Accuracy ");  
    private JTextField textField2 = new JTextField(10);  
    private JLabel labe3 = new JLabel("Wrong question");
```



```

private JTextField textField3 = new JTextField(10);

private JLabel labe4 = new JLabel("Feedback: ");
private JTextArea textArea = new JTextArea(10,20);

private JButton exit = new JButton("Exit");

public static int pageNum;
// Report(timeUsed,accuracy,wrongquestion);
public StudentStatus() {
    pageNum += 1;
    //设置窗口大小
    frame.setSize(500, 400);
    //设置按下右上角X号后关闭
    frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
    //调用函数初始化窗体的组件
    getStudentStatus();
    initFrame();
    //新窗口与旧窗口错开50像素。
    frame.setLocationRelativeTo(null);
    //窗口可见
    frame.setVisible(true);
}
public void getStudentStatus(){
    Connection conn = null;
    ResultSet resultSet = null;
    PreparedStatement preparedStatement = null;
    try {
        conn = DBUtil.getConn();
        String sql = "select * from report";
        preparedStatement = conn.prepareStatement(sql);
        resultSet = preparedStatement.executeQuery();
        if (resultSet.next()){
            StudentReport studentReport = new
StudentReport(resultSet.getInt("timeUsed"), resultSet.getFloat("accuracy"),
resultSet.getString("wrongQuestion"),resultSet.getString("feedback"));
            textField1.setText(String.valueOf(studentReport.getTimeUsed()));
            textField2.setText(String.valueOf(studentReport.getAccuracy()));
            textField3.setText(studentReport.getWrongQuestion());
            textArea.setText(studentReport.getFeedback());
            textField1.setEditable(false);
            textField2.setEditable(false);
            textField3.setEditable(false);
        }
    } catch (SQLException throwables) {
        throwables.printStackTrace();
    } finally {
        DBUtil.close(resultSet,preparedStatement,conn);
    }
}
public void initFrame() {
    //      textField1.setText(timeUsed+"秒");
    //      textField2.setText(String.valueOf(accuracy));
    //      textField3.setText(wrongquestion);

    JPanel panel = new JPanel();
    labe0.setFont(SystemLogin.font1);
    panel.add(labe0);

```

```

JPanel panel1 = new JPanel(new FlowLayout(FlowLayout.CENTER));
label1.setFont(SystemLogin.font2);
panel1.add(label1);
panel1.add(textField1);

JPanel panel2 = new JPanel(new FlowLayout(FlowLayout.CENTER));
label2.setFont(SystemLogin.font2);
panel2.add(label2);
panel2.add(textField2);

JPanel panel3 = new JPanel(new FlowLayout(FlowLayout.CENTER));
label3.setFont(SystemLogin.font2);
panel3.add(label3);
panel3.add(textField3);

JPanel panel4 = new JPanel(new FlowLayout(FlowLayout.CENTER));
exit.addActionListener(this);
panel4.add(exit);

JPanel panel5 = new JPanel(new FlowLayout(FlowLayout.CENTER));
label4.setFont(SystemLogin.font2);
panel5.add(label4);
panel5.add(textArea);

Box vbox = Box.createVerticalBox();
vbox.add(panel);
vbox.add(panel1);
vbox.add(panel2);
vbox.add(panel3);
vbox.add(panel5);
vbox.add(panel4);

frame.add(vbox);
}

@Override
public void actionPerformed(ActionEvent e) {
    if (e.getSource() == exit){
        Connection conn = null;
        ResultSet resultSet = null;
        PreparedStatement preparedStatement = null;
        try {
            conn = DBUtil.getConn();
            String sql = "update report set feedback=? where timeUsed = ?";
            preparedStatement = conn.prepareStatement(sql);
            preparedStatement.setString(1, textArea.getText());

preparedStatement.setInt(2,Integer.parseInt(textField1.getText()));
            int i = preparedStatement.executeUpdate();
            System.out.println(i);
        } catch (SQLException throwables) {
            throwables.printStackTrace();
        }finally {
            DBUtil.close(resultSet,preparedStatement,conn);
        }
        System.exit(0);
    }
}

```

```
}  
  
public static void main(String[] args) {  
    new StudentStatus();  
}  
}
```