2.人员信息

源码:

https://github.com/gyw666/javaDesign2

version 1

题目要求:

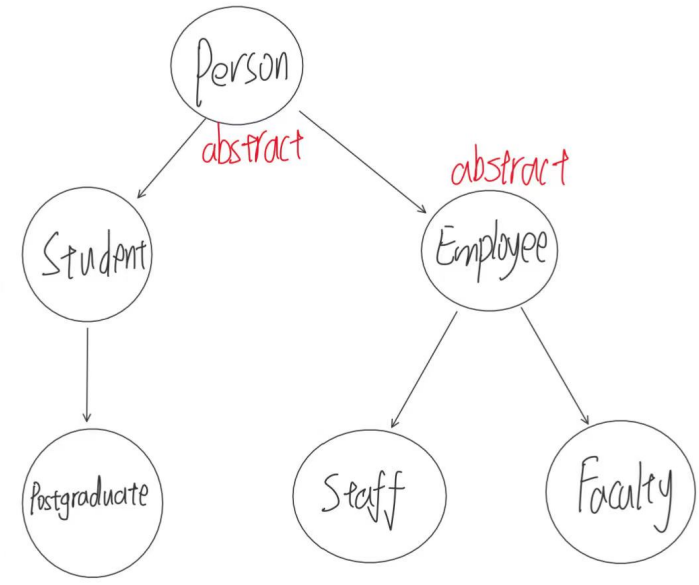
设计 Person 类，有姓名、地址、电话号码和电子邮件等属性。其子类为 Student 和 Employee，其中 Employee 类又有教员类 Faculty 和职员类 staff。学生类有班级状态（大一、大二、大三或大四），这些状态为常量。Employee 类有办公室、工资和受聘日期。定义一个名为 MyDate 的类，包含 year、month 和 day 数据域。Faculty 类有办公时间和级别。Staff 类有职务称号。重写每个类中的 toString 方法，显示相应的类名和人名。

编写测试类 Test1，要求随机产生不同的对象，并将这些对象存储到数组中，并用方法 printMessages(Person[] persons)将对象的信息输出。

源码

https://github.com/gyw666/javaDesign2

思路:



代码

```
package personType;

import java.io.*;

public abstract class Person {
    private String name;
```

```
    private String address;
    private String phoneNumber;
    private String emailAddress;

    public Person() {
    }

    public Person(String name, String address, String phoneNumber, String
emailAddress) {
        this.name = name;
        this.address = address;
        this.phoneNumber = phoneNumber;
        this.emailAddress = emailAddress;
    }

    /**
     * 获取
     * @return name
     */
    public String getName() {
        return name;
    }

    /**
     * 设置
     * @param name
     */
    public void setName(String name) {
        this.name = name;
    }

    /**
     * 获取
     * @return address
     */
    public String getAddress() {
        return address;
    }

    /**
     * 设置
     * @param address
     */
    public void setAddress(String address) {
        this.address = address;
    }

    /**
     * 获取
     * @return phoneNumber
     */
    public String getPhoneNumber() {
        return phoneNumber;
    }

    /**
```

```
     * 设置
     * @param phoneNumber
     */
    public void setPhoneNumber(String phoneNumber) {
        this.phoneNumber = phoneNumber;
    }

    /**
     * 获取
     * @return emailAddress
     */
    public String getEmailAddress() {
        return emailAddress;
    }

    /**
     * 设置
     * @param emailAddress
     */
    public void setEmailAddress(String emailAddress) {
        this.emailAddress = emailAddress;
    }

    public String toString() {
        return "personType.Person{name = " + name + ", address = " + address + ",
phoneNumber = " + phoneNumber + ", emailAddress = " + emailAddress + "}";
    }

    public boolean fileWrite(String fileName) {
        //先读取原来文件中的地址,再加上现在对象的信息,最后再重新输出
        String content=fileRead(fileName)+this.toString();
        File writeName = new File(fileName);
        try {
            BufferedWriter out = new BufferedWriter(new FileWriter(writeName));
            out.write(content);
            out.flush();
            out.close();
        } catch (IOException e) {
            throw new RuntimeException(e);
        }
        return true;
    }

    public  String fileRead(String pathName) {
        File fileName = new File(pathName);
        String line = "";
        try {
            InputStreamReader reader = new InputStreamReader(new
FileInputStream(fileName));
            BufferedReader br = new BufferedReader(reader);

            String tempLine="";
            while (tempLine != null) {
                tempLine = br.readLine();
                if (tempLine != null) {
                    line += tempLine;
```

```
                    line += "\n";
                }

            }

        } catch (FileNotFoundException e) {
            throw new RuntimeException(e);
        } catch (IOException e) {
            throw new RuntimeException(e);
        }
        return line;
    }
}
```

```
package personType;

public class Student extends Person {
    private final static String grade1="freshman";
    private final static String grade2="sophomore";
    private final static String grade3="junior";
    private final static String grade4="senior";
    public Student(){}
    public Student(String name,String address,String phoneNumber,String
emailAddress){
        super(name,address,phoneNumber,emailAddress);
    }

    public String toString() {
        return "class:personType.Student,name:" + this.getName();
    }
}
```

```
package personType;

public abstract class Employee extends Person {
    private String office;
    private String salary;
    private MyData data;

    public Employee() {
    }

    public Employee(String name, String address, String phoneNumber, String
emailAddress,String office, String salary, MyData data) {
        super(name, address, phoneNumber, emailAddress);
        this.office = office;
        this.salary = salary;
        this.data = data;
    }
```

```
    /**
     * 获取
     * @return office
     */
    public String getOffice() {
        return office;
    }

    /**
     * 设置
     * @param office
     */
    public void setOffice(String office) {
        this.office = office;
    }

    /**
     * 获取
     * @return salary
     */
    public String getSalary() {
        return salary;
    }

    /**
     * 设置
     * @param salary
     */
    public void setSalary(String salary) {
        this.salary = salary;
    }

    /**
     * 获取
     * @return data
     */
    public MyData getData() {
        return data;
    }

    /**
     * 设置
     * @param data
     */
    public void setData(MyData data) {
        this.data = data;
    }

    public String toString() {
        return "personType.Employee{office = " + office + ", salary = " + salary
+ ", data = " + data + "}";
    }
}
```

```
package personType;
```

```
public class Faculty extends Employee {
    private String workTime;
    private String rank;

    public Faculty() {
    }

    public Faculty(String name, String address, String phoneNumber, String
emailAddress, String office, String salary, MyData data, String workTime, String
rank) {
        super(name, address, phoneNumber, emailAddress, office, salary, data);
        this.workTime = workTime;
        this.rank = rank;
    }

    /**
     * 获取
     * @return workTime
     */
    public String getWorkTime() {
        return workTime;
    }

    /**
     * 设置
     * @param workTime
     */
    public void setWorkTime(String workTime) {
        this.workTime = workTime;
    }

    /**
     * 获取
     * @return rank
     */
    public String getRank() {
        return rank;
    }

    /**
     * 设置
     * @param rank
     */
    public void setRank(String rank) {
        this.rank = rank;
    }

    public String toString() {
        return "class:personType.Faculty,name:"+this.getName();
    }
}
```

```java
package personType;

public class Staff extends Employee {
    private String title;

    public Staff() {
    }

    public Staff(String name, String address, String phoneNumber, String
emailAddress, String office, String salary, MyData data, String title) {
        super(name,address,phoneNumber,emailAddress,office,salary,data);
        this.title = title;
    }

    /**
     * 获取
     * @return title
     */
    public String getTitle() {
        return title;
    }

    /**
     * 设置
     * @param title
     */
    public void setTitle(String title) {
        this.title = title;
    }

    public String toString() {
        return "class:personType.Staff,name:"+this.getName();
    }
}
```

```java
package personType;

public class Postgraduate extends Student {
    private String searchField;
    private String tutor;

    public Postgraduate() {
    }

    public Postgraduate(String name,String address,String phoneNumber,String
emailAddress,String searchField, String tutor) {
        super(name,address,phoneNumber,emailAddress);
        this.searchField = searchField;
        this.tutor = tutor;
    }

    /**
     * 获取
```

```
     * @return searchField
     */
    public String getSearchField() {
        return searchField;
    }

    /**
     * 设置
     * @param searchField
     */
    public void setSearchField(String searchField) {
        this.searchField = searchField;
    }

    /**
     * 获取
     * @return tutor
     */
    public String getTutor() {
        return tutor;
    }

    /**
     * 设置
     * @param tutor
     */
    public void setTutor(String tutor) {
        this.tutor = tutor;
    }

    public String toString() {
        return "class:personType.Postgraduate,name:"+this.getName();
    }
}
```

```
package personType;

public class MyData {
    private String year;
    private String month;
    private String day;

    public MyData() {
    }

    public MyData(String year, String month, String day) {
        this.year = year;
        this.month = month;
        this.day = day;
    }

    /**
     * 获取
```

```
     * @return year
     */
    public String getYear() {
        return year;
    }

    /**
     * 设置
     * @param year
     */
    public void setYear(String year) {
        this.year = year;
    }

    /**
     * 获取
     * @return month
     */
    public String getMonth() {
        return month;
    }

    /**
     * 设置
     * @param month
     */
    public void setMonth(String month) {
        this.month = month;
    }

    /**
     * 获取
     * @return day
     */
    public String getDay() {
        return day;
    }

    /**
     * 设置
     * @param day
     */
    public void setDay(String day) {
        this.day = day;
    }

    public String toString() {
        return "personType.MyData{year = " + year + ", month = " + month + ", day
= " + day + "}";
    }
}
```

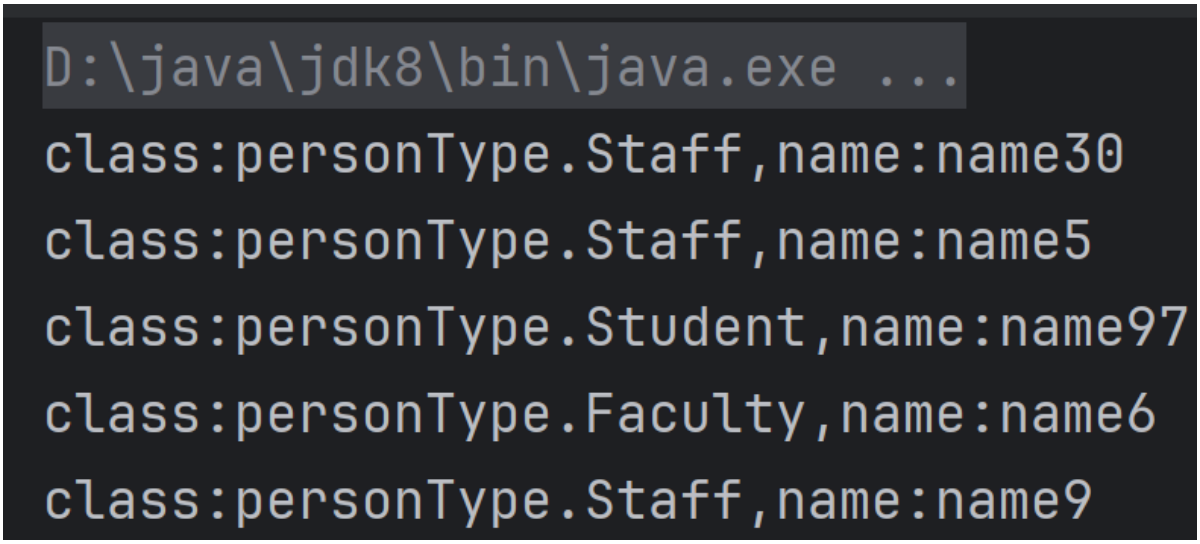
测试类

```
package Test;

import personType.*;

import java.util.Random;


public class Test1 {
    public static final String FILENAME="person.txt";
    public static void main(String[] args) {
        //personType.Student personType.Faculty staff
        //MyDate(year,month,day)
        Random rand = new Random();
        int capacity = rand.nextInt(500);
        Person[] persons = new Person[capacity];
        for (int i = 0; i < capacity; i++) {
            //1 personType.Student
            //2 personType.Faculty
            //3 personType.Staff
            int type = 1+rand.nextInt(3);
            switch (type) {
                case 1: {
                    //personType.Student
                    persons[i]=new
Student(getName(),getAddress(),getPhoneNumber(),getEmailAddress());
                    break;
                }
                case 2: {
                    //personType.Faculty
                    persons[i]=new
Faculty(getName(),getAddress(),getPhoneNumber(),getEmailAddress(),getOffice(),get
Salary(),getMyData(),getWorkTime(),getRank());
                    break;
                }
                case 3: {
                    //personType.Staff
                    persons[i]=new
Staff(getName(),getAddress(),getPhoneNumber(),getEmailAddress(),getOffice(),getSa
lary(),getMyData(),getTitle());
                    break;
                }
            }
        }
        //打印
        printMessages(persons);
    }

    public static void printMessages(Person[] persons) {
        for(Person person: persons){
            System.out.println(person);
        }
    }
```

```
    //生成随机日期
    public static MyData getMyData() {
        Random rand = new Random();
        //生成随机年份
        String year = 2000+rand.nextInt(25) + "";
        int m = rand.nextInt(13);
        String month = m + "";
        String day = "";
        if (m == 1 || m == 3 || m == 5 || m == 7 || m == 8 || m == 10 || m == 12)
{
            //一个月有31天
            day = rand.nextInt(32) + "";
        } else {
            //一个月有30天
            day = rand.nextInt(31) + "";
        }
        return new MyData(year, month, day);
    }

    //生成随机名字
    public static String getName() {
        return "name" + new Random().nextInt(100);
    }

    //生成随机地址
    public static String getAddress() {
        return "address" + new Random().nextInt(100);
    }

    //生成随机电话
    public static String getPhoneNumber() {
        return "phoneNumber" + new Random().nextInt(100);
    }

    //生成随机邮箱
    public static String getEmailAddress() {
        return "emailAddress" + new Random().nextInt(100);
    }

    //升成随机办公室
    public static String getOffice() {
        return "office" + new Random().nextInt(100);
    }

    //生成随机薪资
    public static String getSalary() {
        return "salary" + new Random().nextInt(100);
    }

    //生成随机办公时间
    public static String getWorkTime() {
        return "time" + new Random().nextInt(100);
    }

    //生成随机等级
```

```
    public static String getRank() {
        return "rank" + new Random().nextInt(100);
    }

    //生成随机职称
    public static String getTitle() {
        return "title" + new Random().nextInt(100);
    }


}
```

输出效果



version 2

题目要求:

在上面实现类的基础上，为每个类增加一个将当前对象序列化到指定文件的方法writeToFile(File f)。为 Student 类创建一个新的子类 Postgraduate，有研究方向和导师姓名两个新增数据域。编写测试类 Test2，要求随机产生不同的对象，并将这些对象序列化到指

定的文件中，并用方法 printMessages(Person[] persons)将对象的信息输出。

测试类

```
package Test;

import personType.*;

import java.util.Random;


public class Test2 {
    public static final String FILENAME="person.txt";
    public static void main(String[] args) {
```

```
        //personType.Student personType.Faculty staff
        //MyDate(year,month,day)
        Random rand = new Random();
        int capacity = rand.nextInt(500);
        Person[] persons = new Person[capacity];
        for (int i = 0; i < capacity; i++) {
            //1 personType.Student
            //2 personType.Faculty
            //3 personType.Staff
            //4 personType.Postgraduate
            int type = 1+rand.nextInt(4);
            switch (type) {
                case 1: {
                    //personType.Student
                    persons[i]=new
Student(getName(),getAddress(),getPhoneNumber(),getEmailAddress());
                    break;
                }
                case 2: {
                    //personType.Faculty
                    persons[i]=new
Faculty(getName(),getAddress(),getPhoneNumber(),getEmailAddress(),getOffice(),get
Salary(),getMyData(),getWorkTime(),getRank());
                    break;
                }
                case 3: {
                    //personType.Staff
                    persons[i]=new
Staff(getName(),getAddress(),getPhoneNumber(),getEmailAddress(),getOffice(),getSa
lary(),getMyData(),getTitle());
                    break;
                }
                case 4: {
                    //personType.Postgraduate
                    persons[i]=new
Postgraduate(getName(),getAddress(),getPhoneNumber(),getEmailAddress(),getResearc
hField(),getTutor());
                }
            }
        }
        //打印
        printMessages(persons);
        //将对象信息输出至person.txt
        for(Person person: persons){
            person.fileWrite(FILENAME);
        }
        System.out.println(capacity);
    }

    public static void printMessages(Person[] persons) {
        for(Person person: persons){
            System.out.println(person);
        }
    }
```

```
    //生成随机日期
    public static MyData getMyData() {
        Random rand = new Random();
        //生成随机年份
        String year = 2000+rand.nextInt(25) + "";
        int m = rand.nextInt(13);
        String month = m + "";
        String day = "";
        if (m == 1 || m == 3 || m == 5 || m == 7 || m == 8 || m == 10 || m == 12)
{
            //一个月有31天
            day = rand.nextInt(32) + "";
        } else {
            //一个月有30天
            day = rand.nextInt(31) + "";
        }
        return new MyData(year, month, day);
    }

    //生成随机名字
    public static String getName() {
        return "name" + new Random().nextInt(100);
    }

    //生成随机地址
    public static String getAddress() {
        return "address" + new Random().nextInt(100);
    }

    //生成随机电话
    public static String getPhoneNumber() {
        return "phoneNumber" + new Random().nextInt(100);
    }

    //生成随机邮箱
    public static String getEmailAddress() {
        return "emailAddress" + new Random().nextInt(100);
    }

    //升成随机办公室
    public static String getOffice() {
        return "office" + new Random().nextInt(100);
    }

    //生成随机薪资
    public static String getSalary() {
        return "salary" + new Random().nextInt(100);
    }

    //生成随机办公时间
    public static String getWorkTime() {
        return "time" + new Random().nextInt(100);
    }

    //生成随机等级
    public static String getRank() {
```

```
        return "rank" + new Random().nextInt(100);
    }

    //生成随机职称
    public static String getTitle() {
        return "title" + new Random().nextInt(100);
    }

    //生成随机研究方向
    public static String getResearchField() {
        return "research" + new Random().nextInt(100);
    }

    //生成随机导师姓名
    public static String getTutor() {
        return "tutor" + new Random().nextInt(100);
    }

}
```

输出文件

person.txt

```
class:personType.Faculty,name:name0
class:personType.Staff,name:name46
class:personType.Student,name:name31
class:personType.Staff,name:name41
class:personType.Student,name:name59
class:personType.Faculty,name:name51
class:personType.Staff,name:name50
class:personType.Student,name:name70
class:personType.Postgraduate,name:name10
class:personType.Student,name:name26
class:personType.Student,name:name32
class:personType.Faculty,name:name62
class:personType.Postgraduate,name:name4
class:personType.Postgraduate,name:name19
class:personType.Postgraduate,name:name79
class:personType.Postgraduate,name:name14
class:personType.Staff,name:name1
class:personType.Student,name:name74
class:personType.Faculty,name:name60
class:personType.Staff,name:name9
class:personType.Postgraduate,name:name75
class:personType.Staff,name:name38
class:personType.Postgraduate,name:name90
class:personType.Postgraduate,name:name42
class:personType.Postgraduate,name:name38
class:personType.Postgraduate,name:name11
class:personType.Staff,name:name84
class:personType.Faculty,name:name60
class:personType.Faculty,name:name60
class:personType.Staff,name:name97
class:personType.Student,name:name77
```

```
class:personType.Student,name:name23
class:personType.Faculty,name:name93
class:personType.Faculty,name:name57
class:personType.Faculty,name:name26
class:personType.Faculty,name:name36
class:personType.Staff,name:name70
class:personType.Faculty,name:name45
class:personType.Student,name:name34
```

version 3

题目要求:

在版本 2 的基础上设计实现一个具有 GUI 界面的人员信息管理系统，要求实现基本的人员增、删、改、查的功能，人员信息列表应采用 TableView 组件。

测试类

```
package Test;

import javafx.geometry.Side;
import javafx.scene.control.*;
import javafx.scene.control.Button;
import javafx.scene.control.TextField;
import javafx.scene.image.Image;
import javafx.scene.layout.*;
import personType.*;
import javafx.application.Application;
import javafx.collections.FXCollections;
import javafx.collections.ObservableList;
import javafx.scene.Scene;
import javafx.scene.control.cell.PropertyValueFactory;
import javafx.stage.Stage;
import java.util.ArrayList;
import java.util.Random;


public class Test3 extends Application {
    //每个按钮和textField的宽度
    public static final int deleteButtonHeight = 24;

    //需要用到的button
    //为了方便管理可以用HBox/VBox(写这个的时候不知道这个知识点)
    Button delete1 = new Button("删除");
    Button delete2 = new Button("删除");
    Button delete3 = new Button("删除");
    Button delete4 = new Button("删除");
    Button delete5 = new Button("删除");
    Button delete6 = new Button("删除");
    Button delete7 = new Button("删除");
    Button delete8 = new Button("删除");
    Button delete9 = new Button("删除");
    Button delete10 = new Button("删除");
```

```
    Button delete11 = new Button("删除");
    Button delete12 = new Button("删除");
    Button delete13 = new Button("删除");
    Button delete14 = new Button("删除");
    Button delete15 = new Button("删除");

    Button search1 = new Button("Student");
    Button search2 = new Button("Faculty");
    Button search3 = new Button("Staff");
    Button search4 = new Button("Postgraduate");

    Button modify1 = new Button("修改");
    Button modify2 = new Button("修改");
    Button modify3 = new Button("修改");
    Button modify4 = new Button("修改");
    Button modify5 = new Button("修改");
    Button modify6 = new Button("修改");
    Button modify7 = new Button("修改");
    Button modify8 = new Button("修改");
    Button modify9 = new Button("修改");
    Button modify10 = new Button("修改");
    Button modify11 = new Button("修改");
    Button modify12 = new Button("修改");
    Button modify13 = new Button("修改");
    Button modify14 = new Button("修改");
    Button modify15 = new Button("修改");

    Button confirmButton = new Button("确定修改");

    //修改人物信息时需要用到的文本输入框
    TextField nameField = new TextField();
    TextField addressField = new TextField();
    TextField phoneNumberField = new TextField();
    TextField emailAddressField = new TextField();
    TextField tutorField = new TextField();
    TextField searchField = new TextField();
    TextField titleField = new TextField();
    TextField workTimeField = new TextField();
    TextField rankField = new TextField();
    TextField salaryField = new TextField();
    TextField officeField = new TextField();

    //设置为全局变量,存储要修改的行数
    int modifyChoice;


    public static void main(String[] args) {
        //personType.Student personType.Faculty staff
        //MyDate(year,month,day)
        launch(args);

    }

    //获取随机人物列表
    public static ArrayList<Person> gerPersonList() {
        Random rand = new Random();
```

```
        int capacity = 30 + rand.nextInt(500);


        ArrayList<Person> persons = new ArrayList<>();
        for (int i = 0; i < capacity; i++) {
            //1 personType.Student
            //2 personType.Faculty
            //3 personType.Staff
            //4 personType.Postgraduate
            int type = 1 + rand.nextInt(4);
            switch (type) {
                case 1: {
                    //personType.Student
                    persons.add(new Student("Student" + getName(), getAddress(),
getPhoneNumber(), getEmailAddress()));
                    break;
                }
                case 2: {
                    //personType.Faculty
                    persons.add(new Faculty("Faculty" + getName(), getAddress(),
getPhoneNumber(), getEmailAddress(), getOffice(), getSalary(), getMyData(),
getWorkTime(), getRank()));
                    break;
                }
                case 3: {
                    //personType.Staff
                    persons.add(new Staff("Staff" + getName(), getAddress(),
getPhoneNumber(), getEmailAddress(), getOffice(), getSalary(), getMyData(),
getTitle()));
                    break;
                }
                case 4: {
                    //personType.Postgraduate
                    persons.add(new Postgraduate("Postgraduate" + getName(),
getAddress(), getPhoneNumber(), getEmailAddress(), getResearchField(),
getTutor()));
                }
            }
        }
        return persons;
    }

    //生成随机日期
    public static MyData getMyData() {
        Random rand = new Random();
        //生成随机年份
        String year = 2000 + rand.nextInt(25) + "";
        int m = rand.nextInt(13);
        String month = m + "";
        String day = "";
        if (m == 1 || m == 3 || m == 5 || m == 7 || m == 8 || m == 10 || m == 12)
{
            //一个月有31天
            day = rand.nextInt(32) + "";
        } else {
            //一个月有30天
```

```
            day = rand.nextInt(31) + "";
        }
        return new MyData(year, month, day);
    }

    //生成随机名字
    public static String getName() {
        return "" + new Random().nextInt(100);
    }

    //生成随机地址
    public static String getAddress() {
        return "address" + new Random().nextInt(100);
    }

    //生成随机电话
    public static String getPhoneNumber() {
        return "" + new Random().nextInt(100000);
    }

    //生成随机邮箱
    public static String getEmailAddress() {
        return "emailAddress" + new Random().nextInt(100);
    }

    //升成随机办公室
    public static String getOffice() {
        return "office" + new Random().nextInt(100);
    }

    //生成随机薪资
    public static String getSalary() {
        return "salary" + new Random().nextInt(100);
    }

    //生成随机办公时间
    public static String getWorkTime() {
        return "time" + new Random().nextInt(100);
    }

    //生成随机等级
    public static String getRank() {
        return "rank" + new Random().nextInt(100);
    }

    //生成随机职称
    public static String getTitle() {
        return "title" + new Random().nextInt(100);
    }

    //生成随机研究方向
    public static String getResearchField() {
        return "research" + new Random().nextInt(100);
    }

    //生成随机导师姓名
```

```
    public static String getTutor() {
        return "tutor" + new Random().nextInt(100);
    }

    @Override
    public void start(Stage primaryStage) throws Exception {
        //获取列表.里面内容为随机产生的人物
        ArrayList<Person> persons = gerPersonList();
        //tableView可以使用的list
        ObservableList<Person> list = FXCollections.observableArrayList();
        //随机产生的人物列表内容加入list
        list.addAll(persons);


        //初始化界面
        //把list传给tableView
        TableView<Person> tableView = new TableView<>(list);
        //生成表头,并加入tableView
        //personType.Person成员
        TableColumn<Person, String> tc_name = new TableColumn<>("姓名");
        tableView.getColumns().add(tc_name);
        TableColumn<Person, String> tc_address = new TableColumn<>("地址");
        tableView.getColumns().add(tc_address);
        TableColumn<Person, String> tc_phoneNumber = new TableColumn<>("电话");
        tableView.getColumns().add(tc_phoneNumber);
        TableColumn<Person, String> tc_emailAddress = new TableColumn<>("邮箱");
        tableView.getColumns().add(tc_emailAddress);
        //personType.Postgraduate成员
        TableColumn<Person, String> tc_tutor = new TableColumn<>("导师");
        tableView.getColumns().add(tc_tutor);
        TableColumn<Person, String> tc_searchField = new TableColumn<>("研究方
向");
        tableView.getColumns().add(tc_searchField);
        //personType.Staff成员
        TableColumn<Person, String> tc_title = new TableColumn<>("职称");
        tableView.getColumns().add(tc_title);
        //personType.Faculty成员
        TableColumn<Person, String> tc_workTime = new TableColumn<>("工作时间");
        tableView.getColumns().add(tc_workTime);
        TableColumn<Person, String> tc_rank = new TableColumn<>("等级");
        tableView.getColumns().add(tc_rank);
        //p]ersonType.employee成员
        TableColumn<Person, String> tc_salary = new TableColumn<>("薪资");
        tableView.getColumns().add(tc_salary);
        TableColumn<Person, String> tc_office = new TableColumn<>("办公室");
        tableView.getColumns().add(tc_office);
        TableColumn<Person, String> tc_data = new TableColumn<>("入职日期");
        tableView.getColumns().add(tc_data);

        //把对应的内容加入相应的列
        //personType.person
        tc_name.setCellValueFactory(new PropertyValueFactory<Person, String>
("name"));
        tc_address.setCellValueFactory(new PropertyValueFactory<Person, String>
("address"));
```

```
        tc_phoneNumber.setCellValueFactory(new PropertyValueFactory<Person,
String>("phoneNumber"));
        tc_emailAddress.setCellValueFactory(new PropertyValueFactory<Person,
String>("emailAddress"));
        //personType.Postgraduate
        tc_tutor.setCellValueFactory(new PropertyValueFactory<Person, String>
("tutor"));
        tc_searchField.setCellValueFactory(new PropertyValueFactory<Person,
String>("searchField"));
        //personType.Staff
        tc_title.setCellValueFactory(new PropertyValueFactory<Person, String>
("title"));
        //personType.Faculty
        tc_workTime.setCellValueFactory(new PropertyValueFactory<Person, String>
("workTime"));
        tc_rank.setCellValueFactory(new PropertyValueFactory<Person, String>
("rank"));
        //personType.employee
        tc_salary.setCellValueFactory(new PropertyValueFactory<Person, String>
("salary"));
        tc_office.setCellValueFactory(new PropertyValueFactory<Person, String>
("office"));
        tc_data.setCellValueFactory(new PropertyValueFactory<Person, String>
("data"));

        //AnchorPane对象
        AnchorPane ap = new AnchorPane();
        //把设置好的tableView加入ap
        ap.getChildren().addAll(tableView);

        //增
        addFunction(list, tableView, ap);
        //删
        deleteFunction(list, tableView, ap);
        //查
        searchFunction(list, tableView, ap);
        //改
        modifyFunction(list, ap, tableView);
        //退出系统
        exitFunction(ap);


        //设置cqut背景

        //创建背景图片
        Image image = new
Image("file:D:\\java\\javaDesign\\src\\Test\\cqut.png");
        //创建背景,放在右下角
        BackgroundImage backgroundImage = new BackgroundImage(image,
                BackgroundRepeat.NO_REPEAT,
                BackgroundRepeat.NO_REPEAT,
                new BackgroundPosition(
                        Side.RIGHT, 0, true, Side.BOTTOM, 0, true),
                BackgroundSize.DEFAULT);

        // 设置背景
```

```
        ap.setBackground(new Background(backgroundImage));

        //构造ap的Scene
        Scene scene = new Scene(ap);

        //设置primaryStage
        primaryStage.setScene(scene);
        primaryStage.setHeight(640);  //高
        primaryStage.setWidth(1200);  //宽
        primaryStage.setAlwaysOnTop(true);//始终显示

        primaryStage.show();

    }

    //查询功能
    private void searchFunction(ObservableList<Person> list, TableView<Person>
tableView, AnchorPane ap) {
        //查询按钮
        Button bu_search = new Button("查找人物");
        //设置位置
        bu_search.setLayoutX(600);
        bu_search.setLayoutY(450);
        //设置点击事件
        bu_search.setOnAction(event -> {
            //隐藏不相关的组件
            setModifyButtonVisual(false);
            setDeleteButtonVisual(false);
            setTextFieldNotVisible();
            //设置四种查询类型按钮的位置,再查询按钮的正下方
            search1.setLayoutX(600);
            search2.setLayoutX(600);
            search3.setLayoutX(600);
            search4.setLayoutX(600);
            search1.setLayoutY(450 + 1 * deleteButtonHeight);
            search2.setLayoutY(450 + 2 * deleteButtonHeight);
            search3.setLayoutY(450 + 3 * deleteButtonHeight);
            search4.setLayoutY(450 + 4 * deleteButtonHeight);
            //显示查询按钮
            setSearchButtonVisual(true);
            //设置点击事件
            search1.setOnAction(event1 -> {
                for (int j = 0; j < 100; j++) {   //不知道为什么一次并不能完全筛选,在这
里我设置筛选100词
                    //查询逻辑就是把不是该类型的删除
                    for (int i = 0; i < list.size(); i++) {
                        if (!(list.get(i) instanceof Student)) {
                            list.remove(i);
                        }
                    }
                }
                tableView.refresh();
                System.out.println("查询成功");
            });

            search2.setOnAction(event1 -> {
```

```
                for (int j = 0; j < 100; j++) {
                    for (int i = 0; i < list.size(); i++) {
                        if (!(list.get(i) instanceof Faculty)) {
                            list.remove(i);
                        }
                    }
                }
                tableView.refresh();
            });

            search3.setOnAction(event1 -> {
                for (int j = 0; j < 100; j++) {
                    for (int i = 0; i < list.size(); i++) {
                        if (!(list.get(i) instanceof Staff)) {
                            list.remove(i);
                        }
                    }
                }
                tableView.refresh();
            });

            search4.setOnAction(event1 -> {
                for (int j = 0; j < 100; j++) {
                    for (int i = 0; i < list.size(); i++) {
                        if (!(list.get(i) instanceof Postgraduate)) {
                            list.remove(i);
                        }
                    }
                }
                tableView.refresh();
            });

            //添加查询按钮
            ap.getChildren().add(search1);
            ap.getChildren().add(search2);
            ap.getChildren().add(search3);
            ap.getChildren().add(search4);
            tableView.refresh();

        });
        ap.getChildren().add(bu_search);
    }

    //修改功能
    private void modifyFunction(ObservableList<Person> list, AnchorPane ap,
TableView<Person> tableView) {
        //修改按钮
        Button bu_modify = new Button("修改信息");
        //确定按钮,修改完后点击
        //设置位置
        confirmButton.setLayoutX(1040);
        confirmButton.setLayoutY(22 + 17 * deleteButtonHeight);
        //设置点击事件
        confirmButton.setOnAction(event -> {
            Person temp = list.get(modifyChoice);
            //姓名
```

```
            nameField.setVisible(true);
            temp.setName(nameField.getText());
            //地址
            addressField.setVisible(true);
            temp.setAddress(addressField.getText());
            //电话
            phoneNumberField.setVisible(true);
            temp.setPhoneNumber(phoneNumberField.getText());
            //邮箱
            emailAddressField.setVisible(true);
            temp.setEmailAddress(emailAddressField.getText());
            if (temp instanceof Postgraduate) {
                //导师
                tutorField.setVisible(true);
                ((Postgraduate) temp).setTutor(tutorField.getText());
                //研究方向
                searchField.setVisible(true);
                ((Postgraduate) temp).setSearchField(searchField.getText());
            }
            if (temp instanceof Employee) {
                //办公室
                officeField.setVisible(true);
                ((Employee) temp).setOffice(officeField.getText());
                //工资
                salaryField.setVisible(true);
                ((Employee) temp).setSalary(salaryField.getText());
            }
            if (temp instanceof Staff) {
                //职称
                titleField.setVisible(true);
                ((Staff) temp).setTitle(titleField.getText());
            }
            if (temp instanceof Faculty) {
                //上班时间
                workTimeField.setVisible(true);
                ((Faculty) temp).setWorkTime(workTimeField.getText());
                //等级
                rankField.setVisible(true);
                ((Faculty) temp).setRank(rankField.getText());
            }
            System.out.println("修改成功");
            list.set(modifyChoice, temp);
        });

        //设置按钮不可见,只有当行修改按钮点击后才可见
        confirmButton.setVisible(false);
        ap.getChildren().add(confirmButton);

        //设置总修改按钮位置
        bu_modify.setLayoutX(700);
        bu_modify.setLayoutY(450);

        //每行设置修改按钮
        modify1.setLayoutX(975);
        modify2.setLayoutX(975);
        modify3.setLayoutX(975);
```

```
        modify4.setLayoutX(975);
        modify5.setLayoutX(975);
        modify6.setLayoutX(975);
        modify7.setLayoutX(975);
        modify8.setLayoutX(975);
        modify9.setLayoutX(975);
        modify10.setLayoutX(975);
        modify11.setLayoutX(975);
        modify12.setLayoutX(975);
        modify13.setLayoutX(975);
        modify14.setLayoutX(975);
        modify15.setLayoutX(975);

        modify1.setLayoutY(22 + 0 * deleteButtonHeight);
        modify2.setLayoutY(22 + 1 * deleteButtonHeight);
        modify3.setLayoutY(22 + 2 * deleteButtonHeight);
        modify4.setLayoutY(22 + 3 * deleteButtonHeight);
        modify5.setLayoutY(22 + 4 * deleteButtonHeight);
        modify6.setLayoutY(22 + 5 * deleteButtonHeight);
        modify7.setLayoutY(22 + 6 * deleteButtonHeight);
        modify8.setLayoutY(22 + 7 * deleteButtonHeight);
        modify9.setLayoutY(22 + 8 * deleteButtonHeight);
        modify10.setLayoutY(22 + 9 * deleteButtonHeight);
        modify11.setLayoutY(22 + 10 * deleteButtonHeight);
        modify12.setLayoutY(22 + 11 * deleteButtonHeight);
        modify13.setLayoutY(22 + 12 * deleteButtonHeight);
        modify14.setLayoutY(22 + 13 * deleteButtonHeight);
        modify15.setLayoutY(22 + 14 * deleteButtonHeight);


        //设置事件
        setPerModifyButtonEvent(list, modify1, 0);
        setPerModifyButtonEvent(list, modify2, 1);
        setPerModifyButtonEvent(list, modify3, 2);
        setPerModifyButtonEvent(list, modify4, 3);
        setPerModifyButtonEvent(list, modify5, 4);
        setPerModifyButtonEvent(list, modify6, 5);
        setPerModifyButtonEvent(list, modify7, 6);
        setPerModifyButtonEvent(list, modify8, 7);
        setPerModifyButtonEvent(list, modify9, 8);
        setPerModifyButtonEvent(list, modify10, 9);
        setPerModifyButtonEvent(list, modify11, 10);
        setPerModifyButtonEvent(list, modify12, 11);
        setPerModifyButtonEvent(list, modify13, 12);
        setPerModifyButtonEvent(list, modify14, 13);
        setPerModifyButtonEvent(list, modify15, 14);

        //添加行修改按钮
        ap.getChildren().add(modify1);
        ap.getChildren().add(modify2);
        ap.getChildren().add(modify3);
        ap.getChildren().add(modify4);
        ap.getChildren().add(modify5);
        ap.getChildren().add(modify6);
        ap.getChildren().add(modify7);
        ap.getChildren().add(modify8);
```

```
        ap.getChildren().add(modify9);
        ap.getChildren().add(modify10);
        ap.getChildren().add(modify11);
        ap.getChildren().add(modify12);
        ap.getChildren().add(modify13);
        ap.getChildren().add(modify14);
        ap.getChildren().add(modify15);


        setModifyButtonVisual(false);

        nameField.setLayoutX(1025);
        addressField.setLayoutX(1025);
        phoneNumberField.setLayoutX(1025);
        emailAddressField.setLayoutX(1025);
        tutorField.setLayoutX(1025);
        searchField.setLayoutX(1025);
        titleField.setLayoutX(1025);
        workTimeField.setLayoutX(1025);
        rankField.setLayoutX(1025);
        salaryField.setLayoutX(1025);
        officeField.setLayoutX(1025);

        //设置修改内容文本输入框位置
        nameField.setLayoutY(22 + 0 * deleteButtonHeight);
        addressField.setLayoutY(22 + 1 * deleteButtonHeight);
        phoneNumberField.setLayoutY(22 + 2 * deleteButtonHeight);
        emailAddressField.setLayoutY(22 + 3 * deleteButtonHeight);
        tutorField.setLayoutY(22 + 4 * deleteButtonHeight);
        searchField.setLayoutY(22 + 5 * deleteButtonHeight);
        titleField.setLayoutY(22 + 6 * deleteButtonHeight);
        workTimeField.setLayoutY(22 + 7 * deleteButtonHeight);
        rankField.setLayoutY(22 + 8 * deleteButtonHeight);
        salaryField.setLayoutY(22 + 9 * deleteButtonHeight);
        officeField.setLayoutY(22 + 10 * deleteButtonHeight);

        //设置输入框提示背景
        nameField.setPromptText("请输入姓名");
        addressField.setPromptText("请输入地址");
        phoneNumberField.setPromptText("请输入电话");
        emailAddressField.setPromptText("请输入邮箱");
        tutorField.setPromptText("请输入导师姓名");
        searchField.setPromptText("请输入研究方向");
        titleField.setPromptText("请输入职称");
        workTimeField.setPromptText("请输入工作时间");
        rankField.setPromptText("请输入等级");
        salaryField.setPromptText("请输入薪资");
        officeField.setPromptText("请输入办公室");

        //设置文本输入框不可见
        setTextFieldNotVisible();

        //添加文本输入框
        ap.getChildren().add(nameField);
        ap.getChildren().add(addressField);
        ap.getChildren().add(phoneNumberField);
```

```
        ap.getChildren().add(emailAddressField);
        ap.getChildren().add(tutorField);
        ap.getChildren().add(searchField);
        ap.getChildren().add(titleField);
        ap.getChildren().add(workTimeField);
        ap.getChildren().add(rankField);
        ap.getChildren().add(salaryField);
        ap.getChildren().add(officeField);

        //总修改按钮事件
        bu_modify.setOnAction(event -> {
            setModifyButtonVisual(true);
            setDeleteButtonVisual(false);
            setSearchButtonVisual(false);
            tableView.refresh();
        });
        ap.getChildren().add(bu_modify);
    }

    private static void exitFunction(AnchorPane ap) {
        //退出按钮
        Button bu_exit = new Button("退出");
        //设置按钮位置
        bu_exit.setLayoutX(800);
        bu_exit.setLayoutY(450);
        //设置按钮事件
        bu_exit.setOnAction(event -> {
            //结束jvm
            System.exit(0);
        });
        ap.getChildren().add(bu_exit);
    }

    //删除功能
    private void deleteFunction(ObservableList<Person> list, TableView<Person>
tableView, AnchorPane ap) {
        //删除按钮
        Button bu_delete = new Button("删除人物");
        bu_delete.setLayoutX(500);
        bu_delete.setLayoutY(450);
        //设置行删除按钮
        setDelete_bu(list, tableView, ap, 975, 22 + 0 * deleteButtonHeight, 0,
delete1);
        setDelete_bu(list, tableView, ap, 975, 22 + 1 * deleteButtonHeight, 1,
delete2);
        setDelete_bu(list, tableView, ap, 975, 22 + 2 * deleteButtonHeight, 2,
delete3);
        setDelete_bu(list, tableView, ap, 975, 22 + 3 * deleteButtonHeight, 3,
delete4);
        setDelete_bu(list, tableView, ap, 975, 22 + 4 * deleteButtonHeight, 4,
delete5);
        setDelete_bu(list, tableView, ap, 975, 22 + 5 * deleteButtonHeight, 5,
delete6);
        setDelete_bu(list, tableView, ap, 975, 22 + 6 * deleteButtonHeight, 6,
delete7);
```

```
        setDelete_bu(list, tableView, ap, 975, 22 + 7 * deleteButtonHeight, 7,
delete8);
        setDelete_bu(list, tableView, ap, 975, 22 + 8 * deleteButtonHeight, 8,
delete9);
        setDelete_bu(list, tableView, ap, 975, 22 + 9 * deleteButtonHeight, 9,
delete10);
        setDelete_bu(list, tableView, ap, 975, 22 + 10 * deleteButtonHeight, 10,
delete11);
        setDelete_bu(list, tableView, ap, 975, 22 + 11 * deleteButtonHeight, 11,
delete12);
        setDelete_bu(list, tableView, ap, 975, 22 + 12 * deleteButtonHeight, 12,
delete13);
        setDelete_bu(list, tableView, ap, 975, 22 + 13 * deleteButtonHeight, 13,
delete14);
        setDelete_bu(list, tableView, ap, 975, 22 + 14 * deleteButtonHeight, 14,
delete15);
        //设置不可见,当点击总删除按钮时可见
        setDeleteButtonVisual(false);
        //总删除按钮点击事件
        bu_delete.setOnAction(event -> {
            //设置无关组件不可见
            setSearchButtonVisual(false);
            setModifyButtonVisual(false);
            //设置相关组件可见
            setDeleteButtonVisual(true);
            setTextFieldNotVisible();

        });
        ap.getChildren().add(bu_delete);
    }

    //增加功能
    private void addFunction(ObservableList<Person> list, TableView<Person>
tableView, AnchorPane ap) {
        //添加按钮
        Button bu_add = new Button("添加人物");
        //设置按钮位置
        bu_add.setLayoutX(400);
        bu_add.setLayoutY(450);
        //设置按钮事件
        bu_add.setOnAction(event -> {
            //设置其他无关组件不可见
            setSearchButtonVisual(false);
            setDeleteButtonVisual(false);
            setModifyButtonVisual(false);
            setTextFieldNotVisible();
            //获取随机人物对象并添加至list
            list.add(gerPersonList().get(0));
            System.out.println("添加成功");
            tableView.refresh();
        });

        ap.getChildren().add(bu_add);
    }

    private void setTextFieldNotVisible() {
```

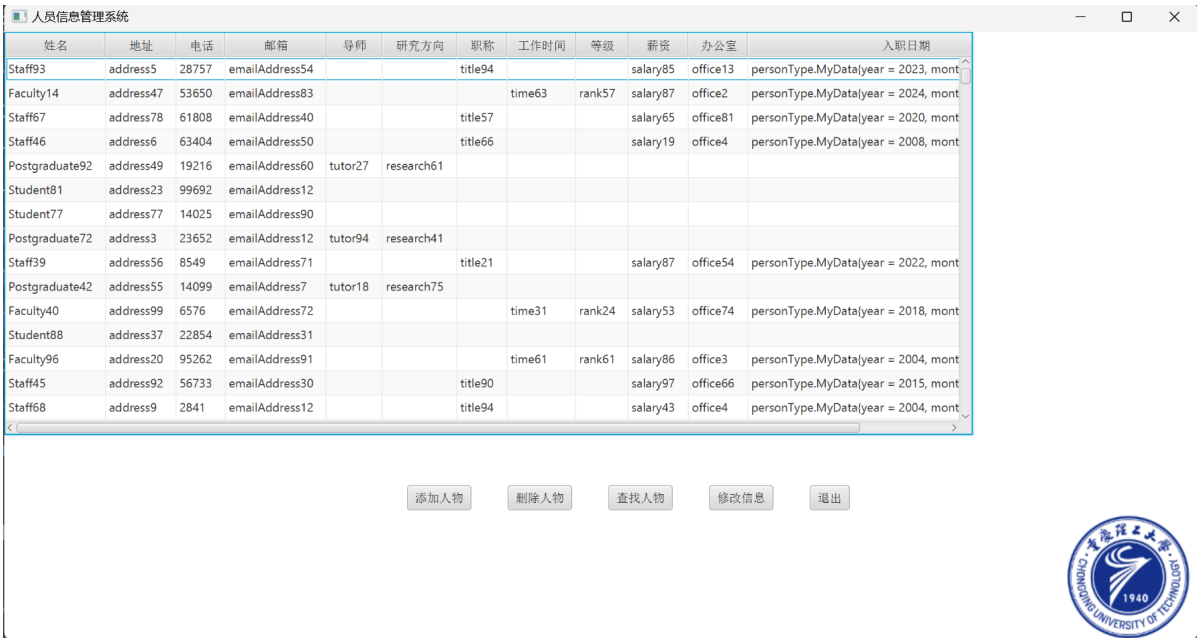
```
        nameField.setVisible(false);
        addressField.setVisible(false);
        phoneNumberField.setVisible(false);
        emailAddressField.setVisible(false);
        tutorField.setVisible(false);
        searchField.setVisible(false);
        titleField.setVisible(false);
        workTimeField.setVisible(false);
        rankField.setVisible(false);
        salaryField.setVisible(false);
        officeField.setVisible(false);
        confirmButton.setVisible(false);
    }

    //行修改按钮功能
    private void setPerModifyButtonEvent(ObservableList<Person> list, Button
modify, int line) {
        modify.setOnAction(event -> {
            modifyChoice = line;
            confirmButton.setVisible(true);
            modifyEvent(list, line);
        });
    }

    private void setSearchButtonVisual(boolean value) {
        search1.setVisible(value);
        search2.setVisible(value);
        search3.setVisible(value);
        search4.setVisible(value);

    }

    private void setDeleteButtonVisual(boolean value) {
        delete1.setVisible(value);
        delete2.setVisible(value);
        delete3.setVisible(value);
        delete4.setVisible(value);
        delete5.setVisible(value);
        delete6.setVisible(value);
        delete7.setVisible(value);
        delete8.setVisible(value);
        delete9.setVisible(value);
        delete10.setVisible(value);
        delete11.setVisible(value);
        delete12.setVisible(value);
        delete13.setVisible(value);
        delete14.setVisible(value);
        delete15.setVisible(value);
    }

    private void setDelete_bu(ObservableList<Person> list, TableView<Person>
tableView, AnchorPane ap, double x, double y, int index, Button delete) {
        //设置行删除按钮的位置
        delete.setLayoutX(x);
        delete.setLayoutY(y);
        //设置行删除按钮的事件
```

```
        delete.setOnAction(event1 -> {
            list.remove(index);
            tableView.refresh();
            System.out.println("成功删除");
        });
        ap.getChildren().add(delete);
    }

    private void setModifyButtonVisual(boolean value) {
        modify1.setVisible(value);
        modify2.setVisible(value);
        modify3.setVisible(value);
        modify4.setVisible(value);
        modify5.setVisible(value);
        modify6.setVisible(value);
        modify7.setVisible(value);
        modify8.setVisible(value);
        modify9.setVisible(value);
        modify10.setVisible(value);
        modify11.setVisible(value);
        modify12.setVisible(value);
        modify13.setVisible(value);
        modify14.setVisible(value);
        modify15.setVisible(value);
    }


    //修改具体实现逻辑
    private void modifyEvent(ObservableList<Person> list, int line) {
        Person temp = list.get(line);
        //姓名
        nameField.setVisible(true);
        nameField.setText(temp.getName());
        temp.setName(nameField.getText());
        //地址
        addressField.setVisible(true);
        addressField.setText(temp.getAddress());
        temp.setAddress(addressField.getText());
        //电话
        phoneNumberField.setVisible(true);
        phoneNumberField.setText(temp.getPhoneNumber());
        temp.setPhoneNumber(phoneNumberField.getText());
        //邮箱
        emailAddressField.setVisible(true);
        emailAddressField.setText(temp.getEmailAddress());
        temp.setEmailAddress(emailAddressField.getText());
        if (temp instanceof Postgraduate) {
            //导师
            tutorField.setVisible(true);
            tutorField.setText(((Postgraduate) temp).getTutor());
            ((Postgraduate) temp).setTutor(tutorField.getText());
            //研究方向
            searchField.setVisible(true);
            searchField.setText(((Postgraduate) temp).getName());
            ((Postgraduate) temp).setSearchField(searchField.getText());
        }
```

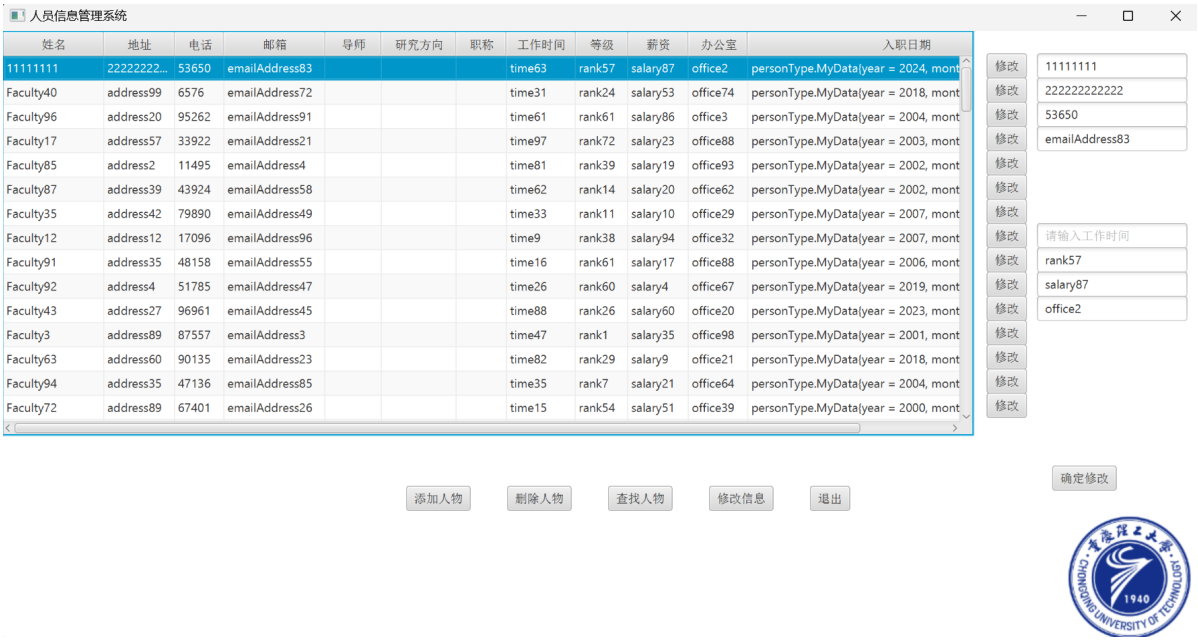
```
        if (temp instanceof Employee) {
            //办公室
            officeField.setVisible(true);
            officeField.setText(((Employee) temp).getOffice());
            ((Employee) temp).setOffice(officeField.getText());
            //工资
            salaryField.setVisible(true);
            salaryField.setText(((Employee) temp).getSalary());
            ((Employee) temp).setSalary(salaryField.getText());
        }
        if (temp instanceof Staff) {
            //职称
            titleField.setVisible(true);
            titleField.setText(((Staff) temp).getTitle());
            ((Staff) temp).setTitle(titleField.getText());
        }
        if (temp instanceof Faculty) {
            //上班时间
            workTimeField.setVisible(true);
            workTimeField.setText(((Faculty) temp).getWorkTime());
            ((Faculty) temp).setWorkTime(workTimeField.getText());
            //等级
            rankField.setVisible(true);
            rankField.setText(((Faculty) temp).getRank());
            ((Faculty) temp).setRank(rankField.getText());
        }
        System.out.println("修改成功");
        list.set(line, temp);
    }


}
```

输出效果

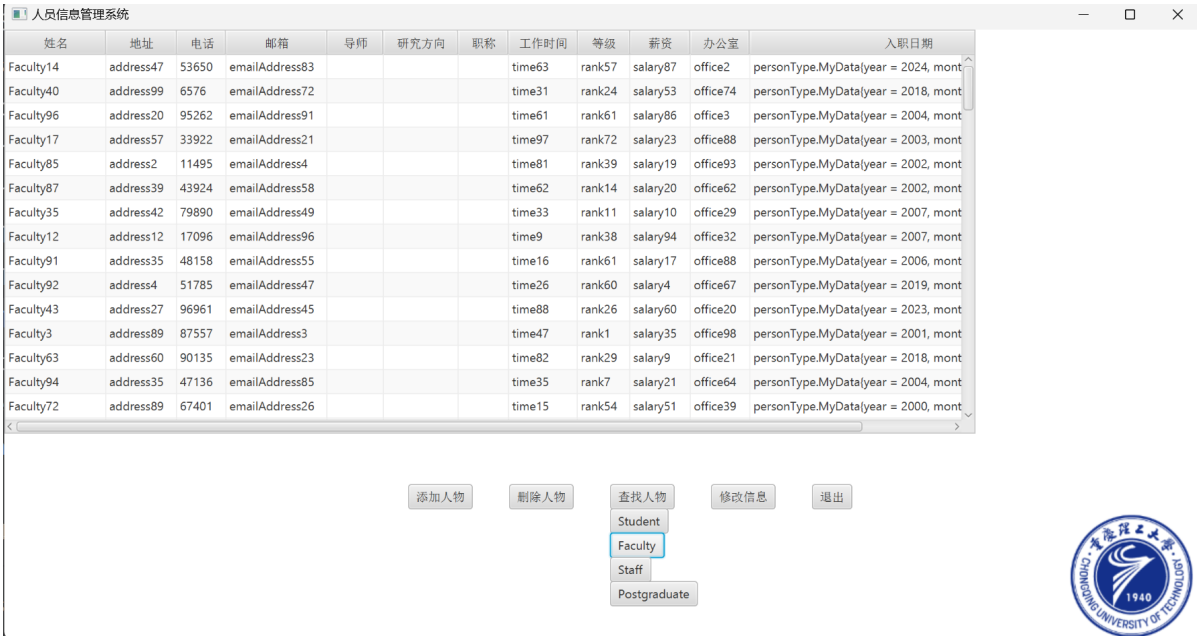
初始界面



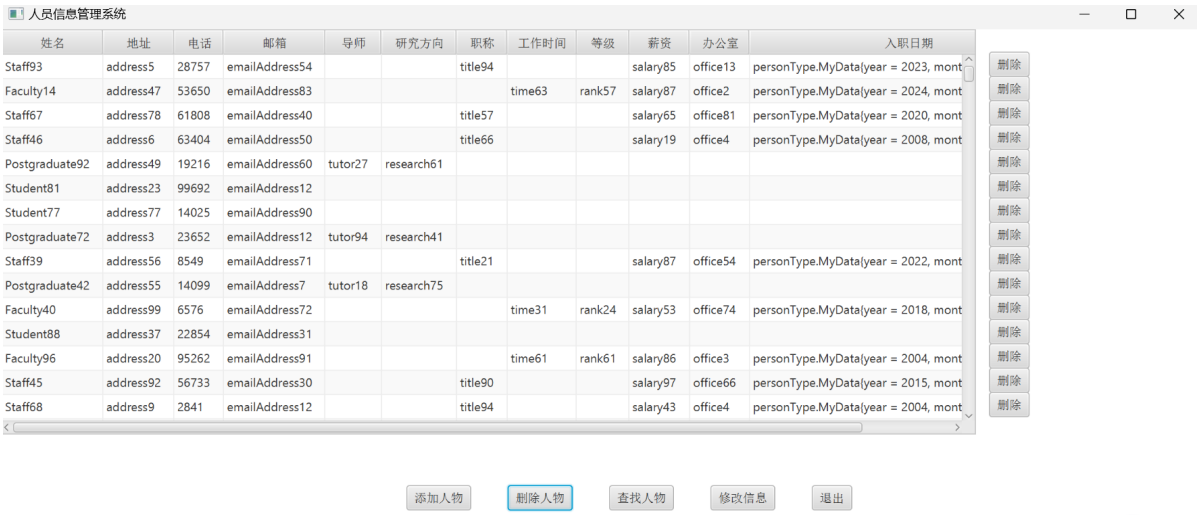
修改信息界面



查询界面



删除界面



6.模拟风扇

源码:

https://github.com/gyw666/javaDesign6

version 1

题目要求:

模拟实现电风扇，可以调 3 档速度（慢速、中速、快速）；开关按钮；定时吹风；描述风扇的扇叶大小、颜色等。

设计 Fan 类，属性包括：3 个常量 SLOW（1）、MEDIUM（2）、FAST（3）代表风扇的速度；1 个 int 属性 speed 指定速度，默认值为 SLOW；1 个 boolean 属性 on 指定开关机，默认值 false；1 个 double 属性 radius 指定风扇扇叶大小；1 个 String 属性 color 指定扇叶颜色，默认值为 blue。方法包括这些属性的访问器、构造函数、重写 Object 类的 toString()和 equals()方法等。

代码

```
package fanType;

public class Fan1 implements Comparable<Fan1>{
    public static final int SLOW = 1;
    public static final int MEDIUM = 2;
```

```
    public static final int FAST = 3;

    private int speed;
    private boolean on;
    private String color;
    private double radius;


    public Fan1() {
        speed = SLOW;
        on = false;
        color = "blue";
    }


    public Fan1(int speed, boolean on, String color, double radius) {
        this.speed = speed;
        this.on = on;
        this.color = color;
        this.radius = radius;
    }

    /**
     * 获取
     * @return speed
     */
    public int getSpeed() {
        return speed;
    }

    /**
     * 设置
     * @param speed
     */
    public void setSpeed(int speed) {
        this.speed = speed;
    }

    /**
     * 获取
     * @return on
     */
    public boolean isOn() {
        return on;
    }

    /**
     * 设置
     * @param on
     */
    public void setOn(boolean on) {
        this.on = on;
    }

    /**
     * 获取
```

```
     * @return color
     */
    public String getColor() {
        return color;
    }

    /**
     * 设置
     * @param color
     */
    public void setColor(String color) {
        this.color = color;
    }

    /**
     * 获取
     * @return radius
     */
    public double getRadius() {
        return radius;
    }

    /**
     * 设置
     * @param radius
     */
    public void setRadius(double radius) {
        this.radius = radius;
    }

    public String toString() {
        return "fan1{ speed = " + speed + ", on = " + on + ", color = " + color +
", radius = " + radius + "}";
    }

    @Override
    public int compareTo(Fan1 o) {
        return Double.compare(this.radius, o.radius);
    }
}
```

测试类

```
package Test;
import fanType.Fan1;

public class test1 {
    public static void main(String[] args) {
        Fan1 fan1 = new Fan1();
        fan1.setSpeed(Fan1.FAST);
        fan1.setRadius(10);
        fan1.setColor("yellow");
        fan1.setOn(true);
        System.out.println(fan1.toString());
    }
}
```

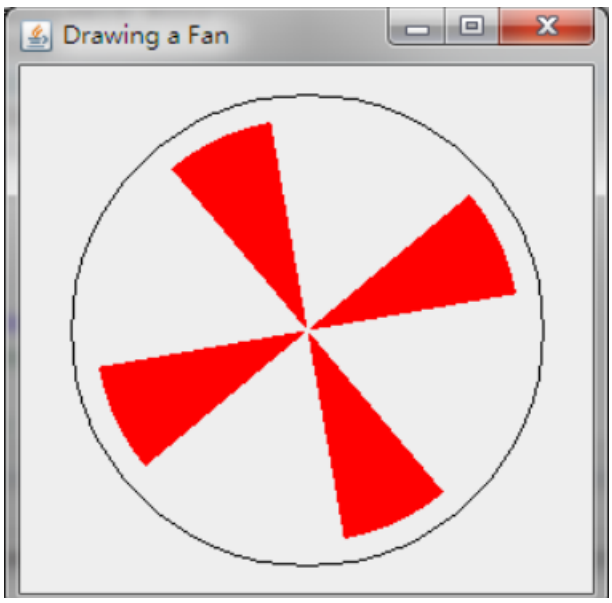
输出效果

```
D:\java\jdk8\bin\java.exe ...
fan1{ speed = 3, on = true, color = yellow, radius = 10.0}
```

version 2

题目要求:

修改版本 1 中 Fan 类，让其继承 Pane 类，并且把 color 属性设置为 Color 类型，默认属性为 red。随机产生 radius，取值范围为 1-5；随机产生颜色，取值范围为 red、blue、yellow、green、orange；根据 color、radius 属性值绘制风扇。运行如下图：



代码

```
package fanType;

import javafx.scene.layout.Pane;
import javafx.scene.shape.*;
```

```java
import javafx.scene.paint.Color;

import java.util.Random;


public class Fan2 extends Pane{
    private Color color;
    private int radius;
    public Fan2() {
        color = Color.RED;
        drawFan();
    }

    public void setRadius(int radius) {
        this.radius = radius;
        drawFan();
    }

    public int getRadius() {
        return radius;

    }

    public void setColor(Color color) {
        this.color = color;
        drawFan();
    }

    public Color getColor() {
        return color;
    }

    public Fan2(Color color, int radius) {
        this.color = color;
        this.radius = radius;
        drawFan();
    }

    private void drawFan() {
        double centerX = 400;
        double centerY = 300;
        for (int i = 0; i < 4; i++) {
            Arc arc = new Arc(centerX,centerY,radius,radius,i*90+30,30);
            arc.setType(ArcType.ROUND);
            arc.setFill(color);
            arc.setStroke(Color.BLACK);
            arc.setStrokeWidth(1);
            this.getChildren().add(arc);
        }
        // 创建Path对象
        Path path = new Path();

        // 起点：在圆弧的顶部（3点钟位置）
        MoveTo moveTo = new MoveTo();
        moveTo.setX(centerX + radius); // 起点X坐标
        moveTo.setY(centerY);          // 起点Y坐标
```

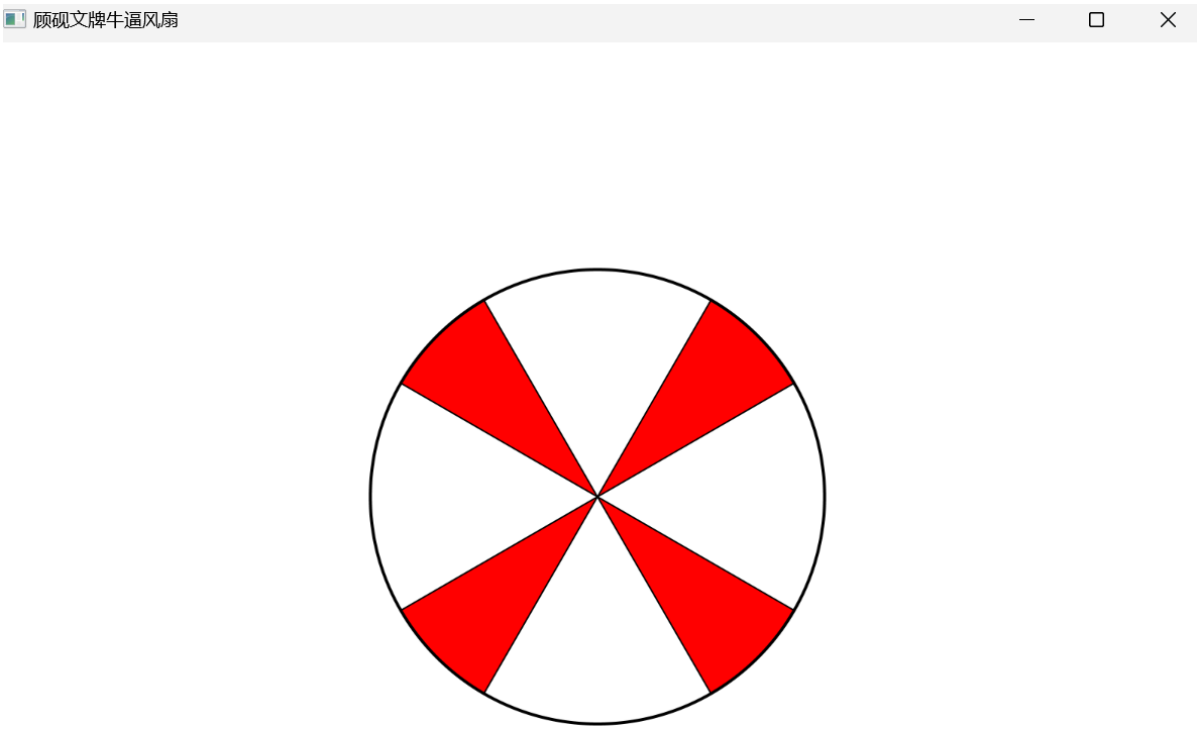
```
        // 创建上半圆弧
        ArcTo arcTo1 = new ArcTo();
        arcTo1.setX(centerX - radius); // 上半圆弧终点X坐标
        arcTo1.setY(centerY);          // 上半圆弧终点Y坐标
        arcTo1.setRadiusX(radius);     // X轴方向的半径
        arcTo1.setRadiusY(radius);     // Y轴方向的半径
        arcTo1.setSweepFlag(false);    // 指定弧的方向为逆时针

        // 创建下半圆弧
        ArcTo arcTo2 = new ArcTo();
        arcTo2.setX(centerX + radius); // 下半圆弧终点X坐标
        arcTo2.setY(centerY);          // 下半圆弧终点Y坐标
        arcTo2.setRadiusX(radius);     // X轴方向的半径
        arcTo2.setRadiusY(radius);     // Y轴方向的半径
        arcTo2.setSweepFlag(false);    // 指定弧的方向为逆时针

        // 将起点和圆弧添加到路径
        path.getElements().add(moveTo);
        path.getElements().add(arcTo1);
        path.getElements().add(arcTo2);

        // 设置路径的样式
        path.setStroke(Color.BLACK);
        path.setStrokeWidth(2);
        path.setFill(null);

        // 将路径添加到Pane
        this.getChildren().add(path);

    }


    public static Color getRandomColor() {
        int choice=new Random().nextInt(5);
        switch (choice) {
            case 0:{
                return Color.RED;
            }
            case 1:{
                return Color.BLUE;
            }
            case 2:{
                return Color.YELLOW;
            }
            case 3:{
                return Color.GREEN;
            }
            case 4:{
                return Color.ORANGE;
            }
        }
        return null;
    }

    public static int getRandomRadius(){
```

```
        return 100*(1+new Random().nextInt(5));
    }
}
```

测试类

```
package Test;

import fanType.Fan2;
import javafx.application.Application;
import javafx.scene.Scene;
import javafx.scene.paint.Color;
import javafx.stage.Stage;


public class test2 extends Application {

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


    @Override
    public void start(Stage primaryStage) throws Exception {
        Color color = Fan2.getRandomColor();
        int radius = Fan2.getRandomRadius();
        Fan2 fan = new Fan2(color,radius);

        Scene scene =new Scene(fan,800,600);
        primaryStage.setScene(scene);
        primaryStage.setAlwaysOnTop(true);
        primaryStage.setTitle("顾砚文牌牛逼风扇");
        primaryStage.show();

    }
}
```

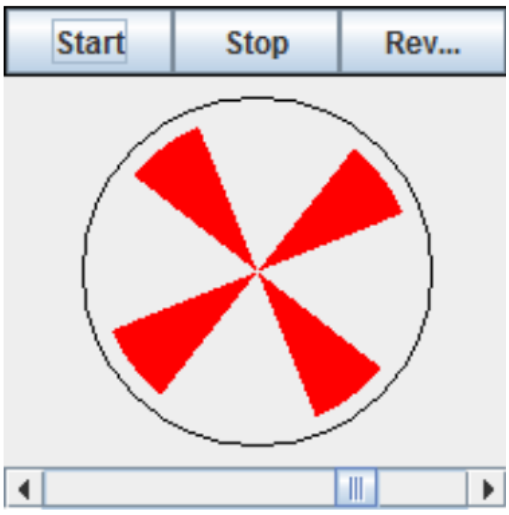
输出效果



version 3

题目要求:

让版本 2 中的风扇转起来。创建一个 FanControl 类包含以下内容：Start、Stop、Reverse 按钮，用于开启、关闭、反转控制；一个滚动条控制速度。运行示例如下：



代码

```
package fanType;

import javafx.animation.KeyFrame;
import javafx.animation.Timeline;
import javafx.geometry.Pos;
import javafx.scene.Group;
import javafx.scene.Scene;
import javafx.scene.control.Button;
import javafx.scene.control.Slider;
import javafx.scene.layout.BorderPane;
import javafx.scene.layout.HBox;
import javafx.scene.layout.Pane;
import javafx.scene.layout.VBox;
import javafx.scene.shape.*;
import javafx.scene.paint.Color;
import javafx.stage.Stage;
import javafx.util.Duration;

import java.util.Random;


public class Fan3 extends Pane{
    private Color color;
    private int radius;
    Group group=new Group();
    Scene scene;
    public Fan3() {
        color = Color.RED;
    }

    public void setRadius(int radius) {
        this.radius = radius;
    }

    public int getRadius() {
        return radius;

    }

    public void setColor(Color color) {
        this.color = color;
    }

    public Color getColor() {
        return color;
    }

    public Fan3(Color color, int radius) {
        this.color = color;
        this.radius = radius;
    }

    public void drawFan(Stage primaryStage) {
```

```
        double centerX = 400;
        double centerY = 300;
        for (int i = 0; i < 4; i++) {
            Arc arc = new Arc(centerX,centerY,radius,radius,i*90+30,30);
            arc.setType(ArcType.ROUND);
            arc.setFill(color);
            arc.setStroke(Color.BLACK);
            arc.setStrokeWidth(1);
            group.getChildren().add(arc);
        }
        // 创建Path对象
        Path path = new Path();

        // 起点：在圆弧的顶部（3点钟位置）
        MoveTo moveTo = new MoveTo();
        moveTo.setX(centerX + radius); // 起点X坐标
        moveTo.setY(centerY);          // 起点Y坐标

        // 创建上半圆弧
        ArcTo arcTo1 = new ArcTo();
        arcTo1.setX(centerX - radius); // 上半圆弧终点X坐标
        arcTo1.setY(centerY);          // 上半圆弧终点Y坐标
        arcTo1.setRadiusX(radius);     // X轴方向的半径
        arcTo1.setRadiusY(radius);     // Y轴方向的半径
        arcTo1.setSweepFlag(false);    // 指定弧的方向为逆时针

        // 创建下半圆弧
        ArcTo arcTo2 = new ArcTo();
        arcTo2.setX(centerX + radius); // 下半圆弧终点X坐标
        arcTo2.setY(centerY);          // 下半圆弧终点Y坐标
        arcTo2.setRadiusX(radius);     // X轴方向的半径
        arcTo2.setRadiusY(radius);     // Y轴方向的半径
        arcTo2.setSweepFlag(false);    // 指定弧的方向为逆时针

        // 将起点和圆弧添加到路径
        path.getElements().add(moveTo);
        path.getElements().add(arcTo1);
        path.getElements().add(arcTo2);

        // 设置路径的样式
        path.setStroke(Color.BLACK);
        path.setStrokeWidth(2);
        path.setFill(null);

        // 将路径添加到Pane
        group.getChildren().add(path);



        Button blueButton = new Button("蓝色");
        Button yellowButton = new Button("黄色");
        Button greenButton = new Button("绿色");
        Button orangeButton = new Button("橙色");
        Button redButton = new Button("红色");
```

```
        VBox hc=new VBox(10, blueButton, yellowButton, greenButton, orangeButton,
redButton);
        hc.setAlignment(Pos.BOTTOM_RIGHT);



        Button radius_50=new Button("50");
        Button radius_100=new Button("100");
        Button radius_150=new Button("150");
        Button radius_200=new Button("200");
        Button radius_250=new Button("250");

        VBox r=new VBox(10, radius_50, radius_100, radius_150, radius_200,
radius_250);
        r.setAlignment(Pos.BOTTOM_LEFT);

        radius_100.setOnAction(event -> {
            new Fan3(this.color,100).drawFan(primaryStage);
        });

        radius_150.setOnAction(event -> {
            new Fan3(this.color,150).drawFan(primaryStage);
        });

        radius_200.setOnAction(event -> {
            new Fan3(this.color,200).drawFan(primaryStage);
        });

        radius_50.setOnAction(event -> {
            new Fan3(this.color,50).drawFan(primaryStage);
        });

        radius_250.setOnAction(event -> {
            new Fan3(this.color,250).drawFan(primaryStage);
        });




        Button pause = new Button("暂停"); //暂停按钮
        Button resume = new Button("继续");   //继续按钮
        Button reverse = new Button("反转"); //反转按钮


        HBox hBox = new HBox(10, pause, resume, reverse);
        hBox.setAlignment(Pos.BOTTOM_CENTER);




        redButton.setOnAction(event ->{
            new Fan3(Color.RED,radius).drawFan(primaryStage);
        });
```

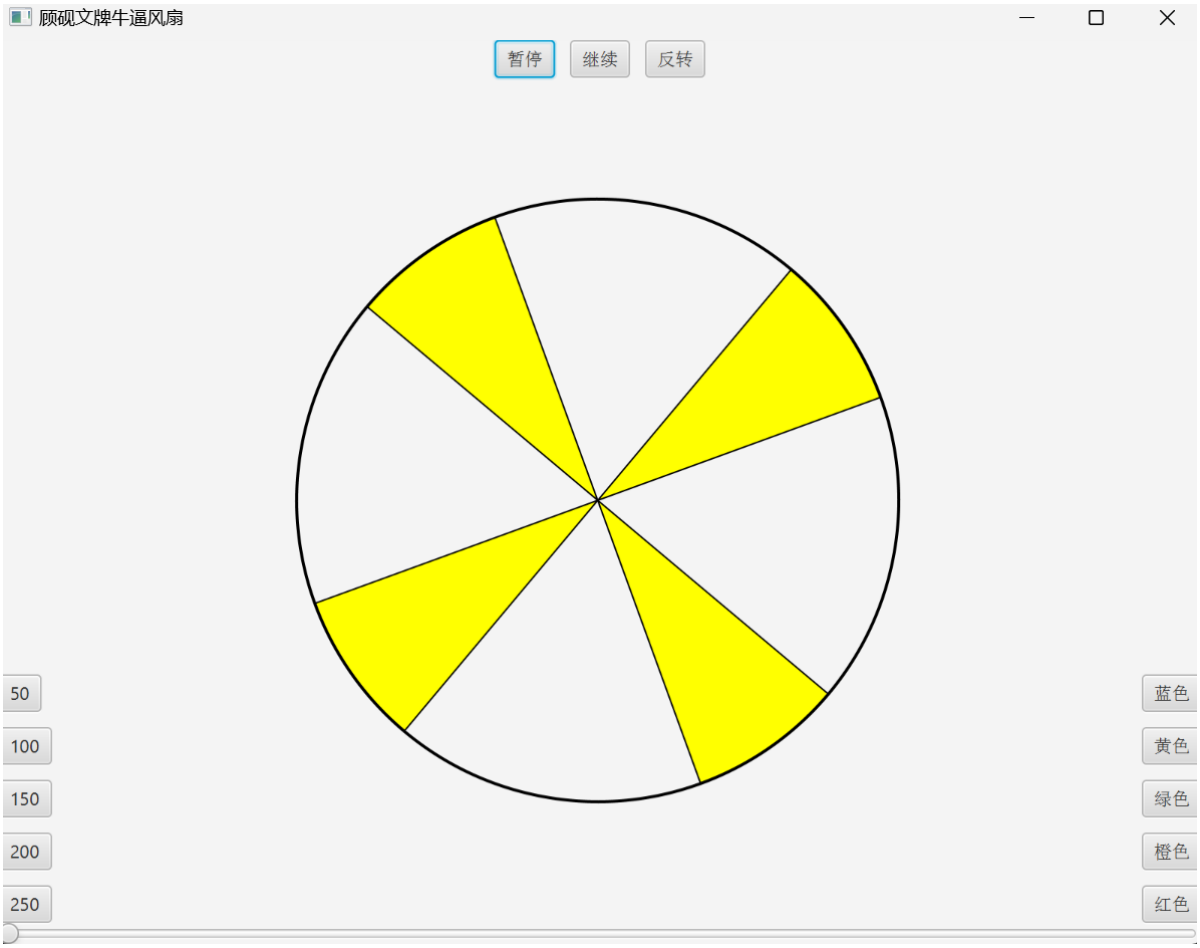
```
        blueButton.setOnAction(event ->{
            new Fan3(Color.BLUE,radius).drawFan(primaryStage);
        });

        yellowButton.setOnAction(event ->{
            new Fan3(Color.YELLOW,radius).drawFan(primaryStage);
        });

        greenButton.setOnAction(event ->{
            new Fan3(Color.GREEN,radius).drawFan(primaryStage);
        });

        orangeButton.setOnAction(event ->{
            new Fan3(Color.ORANGE,radius).drawFan(primaryStage);
        });

        //关键帧
        KeyFrame keyFrame1 = new KeyFrame(Duration.millis(10), event ->
group.setRotate(group.getRotate()+1));
        KeyFrame keyFrame2 = new KeyFrame(Duration.millis(10), event ->
group.setRotate(group.getRotate()-1));
        Timeline animation = new Timeline(keyFrame1);    //时间线动画
        animation.setCycleCount(Timeline.INDEFINITE);    //无限循环次数
        animation.play();   //启动动画

        pause.setOnAction(event -> animation.pause());
        resume.setOnAction(event -> animation.play());
        reverse.setOnAction(event -> {
            animation.stop();

 animation.getKeyFrames().add(animation.getKeyFrames().remove(0).equals(keyFrame1
) ? keyFrame2 : keyFrame1);
            animation.play();
        });
        Slider slider = new Slider();   //滑动条
        slider.setMax(10);  //滑动条设置最大值
        slider.valueProperty().addListener(observable ->
animation.setRate(slider.getValue())); //滑动条添加监听器

        BorderPane borderPane = new BorderPane(new BorderPane(group));
        borderPane.setTop(hBox);
        borderPane.setRight(hc);
        borderPane.setLeft(r);
        borderPane.setBottom(slider);

        scene=new Scene(borderPane, 800, 600);
        primaryStage.setScene(scene);
        primaryStage.setTitle("顾砚文牌牛逼风扇");
        primaryStage.show();
    }


    public static Color getRandomColor() {
        int choice=new Random().nextInt(5);
        switch (choice) {
            case 0:{
```

```
                return Color.RED;
            }
            case 1:{
                return Color.BLUE;
            }
            case 2:{
                return Color.YELLOW;
            }
            case 3:{
                return Color.GREEN;
            }
            case 4:{
                return Color.ORANGE;
            }
        }
        return null;
    }

    public static int getRandomRadius(){
        return 50*(1+new Random().nextInt(4));
    }
}
```

测试类

```
package Test;

import fanType.Fan3;
import javafx.application.Application;
import javafx.scene.Scene;
import javafx.scene.paint.Color;
import javafx.stage.Stage;


public class test3 extends Application {

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


    @Override
    public void start(Stage primaryStage) throws Exception {
        Color color = Fan3.getRandomColor();
        int radius = Fan3.getRandomRadius();
        Fan3 fan = new Fan3(color,radius);
        fan.setRadius(200);
        fan.drawFan(primaryStage);

    }
}
```

输出效果



课程设计总结

在这次的程序设计中，我完成了人员管理系统和模拟风扇的设计开发，收获颇丰。这两个项目使我在实际应用中深入理解了JavaFX的核心组件和动画效果，并提升了编程能力和项目管理技能。

人员管理:

首先，人员管理系统项目让我深入了解了JavaFX中的TableView、Button和TextField等基本组件的使用。TableView作为展示和管理表格数据的重要组件，在这个项目中发挥了核心作用。我学习并实践了如何通过ObservableList来动态更新表格数据，从而实现数据的增删改查功能。通过这些操作，我对数据绑定（data binding）有了更深的认识，并学会了如何有效地管理和更新界面上的数据。

在设计用户界面时，Button和TextField的结合使用让我掌握了响应用户输入的基本方法。例如，通过监听Button的点击事件，我能够触发相应的动作，如添加新人员、删除选定人员等。而TextField则用于接收用户的输入数据，通过设置合适的事件处理器，可以实现数据的验证和处理。这一过程不仅提高了我的事件处理能力，还让我理解了如何设计用户友好的交互界面。

模拟风扇:

在模拟风扇项目中，我额外使用了Slider和KeyFrame等组件。Slider用于调节风扇速度，这使我对JavaFX的控件交互有了更深的理解。KeyFrame的使用则让我掌握了JavaFX的动画系统，通过设置关键帧和时间轴，我实现了风扇叶片的旋转效果。在这个过程中，我学会了如何创建平滑的动画效果，并理解了动画的性能优化问题。

心得:

这两个项目还让我意识到了代码结构和模块化设计的重要性。在开发过程中，我逐渐养成了将代码分离成多个类和方法的习惯，使代码更加清晰易懂，也便于维护和扩展。此外，我还学会了使用Git进行版本控制。这对团队协作和项目管理非常有帮助。通过Git，我能够记录每次代码的修改历史，方便回溯和查看不同版本之间的变化。这一技能在实际开发中非常重要，尤其是在多人协作的项目中，可以有效避免代码冲突和版本混乱问题。

总的来说，通过这两个项目的开发，我不仅提高了JavaFX编程水平，还在实际应用中锻炼了逻辑思维和问题解决能力。理论知识在项目中的实践应用，使我更加理解了软件开发的全流程。从需求分析、设计实现到测试调优，每一个环节都充满了挑战与收获。这段经历为我未来的学习和工作打下了坚实的基础，也让我对软件开发充满了信心和热情。