第 6 次平时作业

```java
package work6;

/* 抽象类 Student */
public abstract class Student {
    String name;
    String course;
    double grade;

    public Student(){

    }

    /* 单 grade 参数构造函数 */
    public Student(double grade) {
        this.name = "normal student";
        this.course = "common course";
        this.grade = grade;
    }

    /* 全参构造函数 */
    public Student(String name, String course, double grade) {
        this.name = name;
        this.course = course;
        this.grade = grade;
    }

    /* 定义抽象方法，得到成绩等级 */
    public abstract String getGradeRank();

    /* 抽象方法，打印等级 */
    public abstract void printGradeRank();
}
```

```java
package work6;

/* 子类 Undergraduate 实现父类抽象类，实现多态 */
public class Undergraduate extends Student{

    public Undergraduate() {
```

```java
    }

    public Undergraduate(double grade) {
        super(grade);
    }

    public Undergraduate(String name, String course, double grade) {
        super(name, course, grade);
    }

    /* 实现抽象方法，评价稍松*/
    @Override
    public String getGradeRank() {
        if(this.grade - 60.0 < 0.0){
            return "fail";
        }
        else if(this.grade - 80.0 < 0.0 && this.grade -60.0 >= 0.0){
            return "pass";
        }
        else if(this.grade - 90.0 < 0.0 && this.grade - 80.0 >= 0.0){
            return "good";
        }
        else {
            return "excellent";
        }
    }

    /* 抽象方法实现，打印信息和等级*/
    @Override
    public void printGradeRank() {
        System.out.print(this.name+" "+this.course+" "+this.grade);
        System.out.println(" here is a undergraduate, and this
people's rank is: "+this.getGradeRank());
    }
}
```

```java
package work6;

/* 子类 Postgraduate 实现抽象父类*/
public class Postgraduate extends Student{

    public Postgraduate() {
    }
```

```java
    public Postgraduate(double grade) {
        super(grade);
    }

    public Postgraduate(String name, String course, double grade) {
        super(name, course, grade);
    }

    /* 同理，稍严格*/
    @Override
    public String getGradeRank() {
        if(this.grade - 60.0 < 0.0){
            return "fail";
        }
        else if(this.grade - 70.0 < 0.0 && this.grade -60.0 >= 0.0){
            return "pass";
        }
        else if(this.grade - 80.0 < 0.0 && this.grade - 70.0 >= 0.0){
            return "notBad";
        }
        else if(this.grade - 95.0 < 0.0 && this.grade - 80.0 >= 0.0){
            return "good";
        }
        else {
            return "excellent";
        }
    }

    /* 同理*/
    @Override
    public void printGradeRank() {
        System.out.print(this.name+" "+this.course+" "+this.grade);
        System.out.println(" here is a postgraduate, besides this
people's rank is: "+this.getGradeRank());
    }
}
```

```java
package work6;

/* 测试类，新建数组，校验多态实现*/
public class PolymorphicTest {
```

```java
    public static void main(String[] args) {
        Student [] students = new Student[10];
        for(int i = 0 ; i < 10 ; i ++){
            if(i % 2 != 0){
                students[i] = new
Postgraduate("post"+i/2+1,"postCourse",i*10.0 + 9.0);
            }
            else {
                students[i] = new
Undergraduate("under"+i/2,"underCourse",i*10.0 + 9.0);
            }
        }
        for(Student student : students){
            student.printGradeRank();
        }
    }
}
```