JAVA OOPS

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CSE B

WEEK 8

CS23333-Object Oriented Programming Using Java-2023

Quiz navigation

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Status	Finished
Started	Sunday, 6 October 2024, 5:56 PM
Completed	Sunday, 13 October 2024, 11:17 PM
Duration	7 days 5 hours

Question **1**

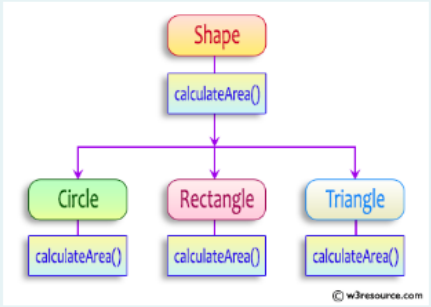
Correct

Marked out of 5.00

Flag question

Create a base class Shape with a method called calculateArea(). Create three subclasses: Circle, Rectangle, and Triangle. Override the calculateArea() method in each subclass to calculate and return the shape's area.

In the given exercise, here is a simple diagram illustrating polymorphism implementation:




```
 abstract class Shape {
    public abstract double calculateArea() ;
    }
}
```

System.out.printf("Area of a Triangle :%.2f%n",((0.5)*base*height)); // use this statement

sample Input :

4 // radius of the circle to calculate area PI*r*r

5 // length of the rectangle

6 // breadth of the rectangle to calculate the area of a rectangle

4 // base of the triangle

3 // height of the triangle

OUTPUT:

Area of a circle :50.27
Area of a Rectangle :30.00
Area of a Triangle :6.00

OUTPUT:

Area of a circle :50.27
Area of a Rectangle :30.00
Area of a Triangle :6.00

For example:

Test	Input	Result
1	4 5 6 4 3	Area of a circle: 50.27 Area of a Rectangle: 30.00 Area of a Triangle: 6.00
2	7 4.5 6.5 2.4 3.6	Area of a circle: 153.94 Area of a Rectangle: 29.25 Area of a Triangle: 4.32

Answer: (penalty regime: 0 %)

```
import java.util.*;
abstract class Shape{
    abstract void calculatearea();
}
class Circle extends Shape{
    float rad;
    Circle(float rad){
        this.rad = rad;
    }
    void calculatearea(){
        System.out.format("Area of a circle: %.2f\n",3.14159*rad*rad);
    }
}
class Rectangle extends Shape{
    float l;
    float br;
    Rectangle(float l,float br){
        this.l = l;
        this.br = br;
    }
    void calculatearea(){
        System.out.format("Area of a Rectangle: %.2f\n",(l*br));
```

```
    }
}
class Triangle extends Shape{
    float ba;
    float h;
    Triangle(float ba ,float h){
        this.ba = ba;
        this.h = h;
    }
    void calculatearea(){
        System.out.format("Area of a Triangle: %.2f",0.5*ba*h);

    }
}
class prog{
    public static void main (String are[]){
        Scanner scan = new Scanner(System.in);
        float rad = scan.nextFloat();
        float l = scan.nextFloat();
        float br = scan.nextFloat();
        float ba = scan.nextFloat();
        float h = scan.nextFloat();
        Circle c = new Circle(rad);
        Rectangle r = new Rectangle(l,br);
        Triangle t = new Triangle(ba,h);
        c.calculatearea();
        r.calculatearea();
        t.calculatearea();

```

	Test	Input	Expected	Got	
✓	1	4 5 6 4 3	Area of a circle: 50.27 Area of a Rectangle: 30.00 Area of a Triangle: 6.00	Area of a circle: 50.27 Area of a Rectangle: 30.00 Area of a Triangle: 6.00	✓
✓	2	7 4.5 6.5 2.4 3.6	Area of a circle: 153.94 Area of a Rectangle: 29.25 Area of a Triangle: 4.32	Area of a circle: 153.94 Area of a Rectangle: 29.25 Area of a Triangle: 4.32	✓

Passed all tests! ✓

Question **2**

Correct

Marked out of 5.00

Flag question

As a logic building learner you are given the task to extract the string which has vowel as the first and last characters from the given array of Strings.

Step1: Scan through the array of Strings, extract the Strings with first and last characters as vowels; these strings should be concatenated.

Step2: Convert the concatenated string to lowercase and return it.

If none of the strings in the array has first and last character as vowel, then return no matches found

input1: an integer representing the number of elements in the array.

input2: String array.

Example 1:

input1: 3

input2: {“oreo”, “sirish”, “apple”}

output: oreoapple

Example 2:

input1: 2

input2: {“Mango”, “banana”}

output: no matches found

Explanation:

None of the strings has first and last character as vowel.

Hence the output is no matches found.

Example 3:

input1: 3

input2: {“Ate”, “Ace”, “Girl”}

output: ateace

For example:

Input	Result
3 oreo sirish apple	oreoapple
2 Mango banana	no matches found
3 Ate Ace Girl	ateace

Answer: (penalty regime: 0 %)

```
import java.util.*;
class prog{
    public static void main(String ae[]){
        Scanner scan = new Scanner(System.in);
        int n = scan.nextInt();
        String arr[] = new String[n];
        scan.nextLine();
        String str = scan.nextLine();
        String temp = "";
        int j=0;
        int l=str.length();
        for(int i = 0;i<l;i++){
            if(str.charAt(i)==' '){
                arr[j] = temp;
                temp ="";
                j++;
            }
            else{
                temp +=str.charAt(i);
            }
        }
        arr[j] = temp;
        String s = "";
        char [] cha ={'a','A','e','E','i','I','o','O','U','u'};
        for(int i=0;i<n;i++){
            int c=0;
            char [] ar = arr[i].toCharArray();
            char ch1 = ar[0];
            char ch2 = ar[ar.length -1];
            for(char k : cha){
                if(k==ch1){
                    c++;
                }
```

```
30          for(char k : cha){
31              if(k==ch1){
32                  c++;
33              }
34              if(k==ch2){
35                  c++;
36              }
37          }
38          if(c==2){
39              s+=arr[i];
40          }
41      }
42      if(s==""){
43          System.out.print("no matches found");
44      }
45      else{
46          System.out.print(s.toLowerCase());
47      }
48
49
50
51
52
```

	Input	Expected	Got	
✓	3 oreo sirish apple	oreoapple	oreoapple	✓
✓	2 Mango banana	no matches found	no matches found	✓
✓	3 Ate Ace Girl	ateace	ateace	✓

Passed all tests! ✓

Question **3**

Correct

Marked out of 5.00

Flag question

1. Final Variable:

- Once a variable is declared `final`, its value cannot be changed after it is initialized.
- It must be initialized when it is declared or in the constructor if it's not initialized at declaration.
- It can be used to define constants

```
final int MAX_SPEED = 120;  // Constant value, cannot be changed
```

2. Final Method:

- A method declared `final` cannot be overridden by subclasses.
- It is used to prevent modification of the method's behavior in derived classes.

```
public final void display() {
    System.out.println("This is a final method.");
}
```

3. Final Class:

- A class declared as `final` cannot be subclassed (i.e., no other class can inherit from it).
- It is used to prevent a class from being extended and modified.
- public final class Vehicle {
  // class code
  }

Given a Java Program that contains the bug in it, your task is to clear the bug to the output.

you should delete any piece of code.

For example:

Test	Result
1	`The maximum speed is: 120 km/h` `This is a subclass of FinalExample.`

Answer: (penalty regime: 0 %)

Reset answer

```java
class FinalExample {

    // Final variable
    final int maxSpeed = 120;

    // Final method
    public  final void displayMaxSpeed() {
        System.out.println("The maximum speed is: " + maxSpeed + " km/h");
    }
}

class SubClass extends FinalExample {

    // public void displayMaxSpeed() {
    //     System.out.println("Cannot override a final method");
    // }

    // You can create new methods here
    public void showDetails() {
        System.out.println("This is a subclass of FinalExample.");
    }
}

class prog {
    public static void main(String[] args) {
        FinalExample obj = new FinalExample();
        obj.displayMaxSpeed();

        SubClass subObj = new SubClass();
        subObj.showDetails();
    }
}
```

	Test	Expected	Got	
✓	1	The maximum speed is: 120 km/h This is a subclass of FinalExample.	The maximum speed is: 120 km/h This is a subclass of FinalExample.	✓

Passed all tests! ✓

Finish review