Status	Finished
Started	Sunday, 6 October 2024, 11:36 AM
Completed	Sunday, 6 October 2024, 12:35 PM
Duration	59 mins 3 secs

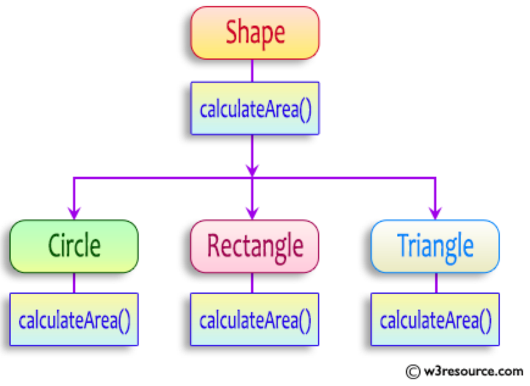
Question **1**

Correct

Marked out of 5.00

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

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

```
class Circle extends Shape{
    double radius;
    public Circle(double r){
        this.radius=r;
    }
    public double calculateArea(){
        return Math.PI*radius*radius;
    }
}
class Rectangle extends Shape{
    double length;
    double breadth;
    public Rectangle(double l,double b){
        this.length=l;
        this.breadth=b;
    }
    public double calculateArea(){
        return length*breadth;
    }
}
class Triangle extends Shape{
    double base;
    double height;
    public Triangle(double b,double h){
        this.base=b;
        this.height=h;
    }
    public double calculateArea(){
        return 0.5*base*height;
    }
}
public class Main{
    public static void main(String[] args){
        Scanner sc = new Scanner(System.in);
        double ra = sc.nextDouble();
        double l = sc.nextDouble();
        double br = sc.nextDouble();
        double ba = sc.nextDouble();
        double h =sc.nextDouble();
        Circle c = new Circle(ra);
        Rectangle re = new Rectangle(l,br);
        Triangle t = new Triangle(ba,h);
        double Carea = c.calculateArea();
        double Rarea = re.calculateArea();
        double Tarea = t.calculateArea();
        System.out.printf("Area of a circle: %.2f\n",Carea);
        System.out.printf("Area of a Rectangle: %.2f\n",Rarea);
        System.out.printf("Area of a Triangle: %.2f\n",Tarea);
```

	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

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.*;
public class hello
{
    public static void main(String[] args)
    {
        Scanner sc=new Scanner(System.in);
        int n=sc.nextInt();
        int k=0;
        String arr[]=new String[n];
        for(int i=0;i<n;i++)
        {
            arr[i]=sc.next();
            arr[i]=arr[i].toLowerCase();
            char ch=arr[i].charAt(0);
            if(ch=='a' || ch=='e' || ch=='i' || ch=='o' || ch=='u')
            {
                int z=arr[i].length();
                char x=arr[i].charAt(z-1);
                if (x=='a' || x=='e' || x=='i' || x=='o'|| x=='u')
                {
                    k=1;
                    System.out.print(arr[i]);
                }

            }
        }
        if(k==0)
        {
            System.out.println("no matches found");
        }

    }
}
```

	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

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

```
class FinalExample
{
    int maxSpeed = 120;
    public final void displayMaxSpeed()
    {
        System.out.println("The maximum speed is: " + maxSpeed + " km/h");
    }
}
class SubClass extends FinalExample
{
    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! ✓

◄ Lab-08-MCQ

Jump to...

FindStringCode ►