Status	Finished
Started	Monday, 7 October 2024, 6:54 PM
Completed	Monday, 7 October 2024, 7:48 PM
Duration	53 mins 47 secs

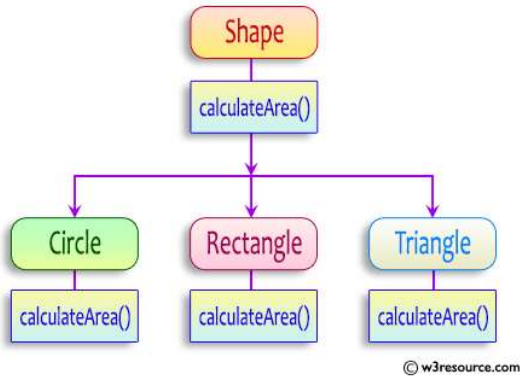
Question **1**

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.Scanner;
abstract class Shape
{
    public abstract double Calcarea();
}
```

```
class Circle extends Shape
{
    private double rad;
    public Circle(double rad){
        this.rad=rad;
    }
    @Override
    public double Calcarea(){
        return Math.PI*rad*rad;
    }
}
class Rectangle extends Shape
{
    private double l,b;
    public Rectangle(double l,double b){
        this.l=l;
        this.b=b;
    }
    @Override
    public double Calcarea(){
        return l*b;
    }
}
class Triangle extends Shape
{
    private double base,height;
    public Triangle(double base,double height){
        this.base=base;
        this.height=height;
    }
    @Override
    public double Calcarea()
    {
        return 0.5*base*height;
    }
}
public class Main
{
    public static void main(String args[]){
        Scanner s=new Scanner(System.in);
        double rad=s.nextDouble();
        double l=s.nextDouble();
        double b=s.nextDouble();
        double base=s.nextDouble();
        double height=s.nextDouble();
        Circle c=new Circle(rad);
        Rectangle r=new Rectangle(l,b);
```

	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

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
{
    final 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();
```

```
25
26          SubClass subObj = new SubClass();
27          subObj.showDetails();
28      }
29  }
30
```

	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! ✓

Question **3**

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.Scanner;
public class Vowel
{
    public static void main(String args[])
    {
        Scanner s=new Scanner(System.in);
        int n=s.nextInt();
        s.nextLine();
        String l=s.nextLine();
        String[] str=l.split(" ");
        if(str.length>n){
```

```
            String[] trim=new String[n];
            System.arraycopy(str,0,trim,0,n);
            str=trim;
        }
        StringBuilder res=new StringBuilder();
        for(String st:str){
            if(st.length()>0 && isVowel(st.charAt(0))&& isVowel(st.charAt(st.length()-1))){
                res.append(st);
            }

        }
        if(res.length()==0)
        {
            System.out.println("no matches found");
        }
        else
        {
            System.out.println(res.toString().toLowerCase());
        }
    }
    private static boolean isVowel(char c)
    {
        char lowerc=Character.toLowerCase(c);
        return lowerc=='a'||lowerc=='e'||lowerc=='i'||lowerc=='o'||lowerc=='u';
    }
}
```

	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! ✓

◄ Lab-08-MCQ

Jump to...

FindStringCode ►