Status	Finished
Started	Wednesday, 9 October 2024, 7:36 PM
Completed	Thursday, 10 October 2024, 9:44 PM
Duration	1 day 2 hours

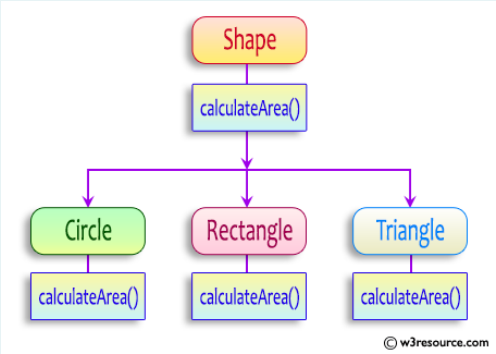
Question **1**

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 calculateArea();
}

class circle extends Shape{
    double r;
   public  circle(double r){
       this.r = r;
   }
   public double calculateArea(){
       return Math.PI*r*r;
   }
}
class Rectangle extends Shape{
  double l,b;
  public Rectangle(double l,double b){
      this.l = l;
```

```
      this.b = b;
  }
    public double calculateArea(){

      return l*b;
    }
}
class Triangle extends Shape{
   double b;
   double h;
   public Triangle(double b,double h){
      this.b = b;
      this.h = h;
   }
    public double calculateArea(){

       return 0.5*b*h;
    }
}
class prog{
    public static void main(String[] args){
        Scanner sc = new Scanner(System.in);
        double r = sc.nextDouble();
        circle c = new circle(r);
   double lenght = sc.nextDouble();
   double breadth = sc.nextDouble();
        Rectangle R = new Rectangle(lenght,breadth);
       double b = sc.nextDouble();
       double h =sc.nextDouble();
        Triangle t = new Triangle(b,h);

        double area1 = c.calculateArea();
        double area2 = R.calculateArea();
        double area3 = 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

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 Main{
    public static void main(String[]args){
        Scanner sc = new Scanner(System.in);
        int n = sc.nextInt();
        sc.nextLine();
        String str[] = new String[n];
        for(int i = 0; i < n; i++){
            str[i] = sc.next();
            str[i] = str[i].toLowerCase();
        }
        String res = "";
        for(String St:str){

            char fc = St.charAt(0);
            char lc = St.charAt(St.length()-1);
            if((fc == 'a'||fc == 'e'||fc == 'i'||fc == 'o'||fc == 'u')&&(lc == 'a'||lc == 'e'||lc == 'i'||lc == 'o'||lc == '
        res += St;


        }


    }
    if(res.isEmpty()){
        System.out.print("no matches found");
```

```
    }
    else{
    System.out.print(res);}
}}
```

	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 {

    // Final variable
        final int maxSpeed = 120;

    // Final method
    public  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! ✓

◄ Lab-08-MCQ

Jump to...

FindStringCode ►