

CS23333-Object Oriented Programming Using Java-2023

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Status	Finished
Started	Saturday, 5 October 2024, 8:42 PM
Completed	Saturday, 5 October 2024, 8:43 PM
Duration	1 min 31 secs

Question 1

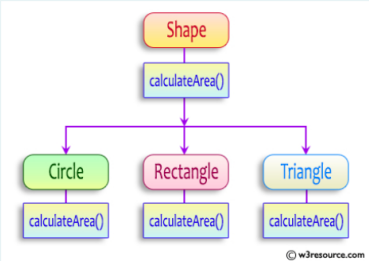
Correct

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

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 %)

```
1 import java.util.*;
2 abstract class s{
3     public abstract double calculateArea();
4 }
5 class c extends s{
6     double r;
7     c(double r){
8         this.r=r;
9     }
10    public double calculateArea(){
11        double a=Math.PI*r*r;
12        System.out.printf("Area of a circle: %.2f\n",a);
13        return a;
14    }
15 }
16 class r extends s{
17     double l;
18     double b;
19     r(double l,double b){
20         this.l=l;
21         this.b=b;
22     }
23    public double calculateArea(){
24        double a=l*b;
25        System.out.printf("Area of a Rectangle: %.2f\n",a);
26        return a;
27    }
28 }
29 class t extends s{
30     double b;
```

```

31     double h;
32     t(double b,double h){
33         this.b=b;
34         this.h=h;
35     }
36     public double calculateArea(){
37         double a=b*h*0.5;
38         System.out.printf("Area of a Triangle: %.2f\n",a);
39         return a;
40     }
41 }
42 public class hello{
43     public static void main(String[] args){
44         Scanner sc=new Scanner(System.in);
45         double r1=sc.nextDouble();
46         c c1=new c(r1);
47         double l1=sc.nextDouble();
48         double b1=sc.nextDouble();
49         r r2=new r(l1,b1);
50         double b2=sc.nextDouble();
51         double h2=sc.nextDouble();
52         t t1=new t(b2,h2);

```

	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

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

```

1 class FinalExample {
2
3     // Final variable
4     int maxSpeed = 120;
5
6     // Final method
7     public final void displayMaxSpeed() {
8         System.out.println("The maximum speed is: " + maxSpeed + " km/h");
9     }
10 }
11
12 class SubClass extends FinalExample {
13
14
15     // You can create new methods here
16     public void showDetails() {
17         System.out.println("This is a subclass of FinalExample.");
18     }
19 }
20
21 class prog {
22     public static void main(String[] args) {
23         FinalExample obj = new FinalExample();

```

```

23         finalExample obj = new finalExample();
24         obj.displayMaxSpeed();
25
26         SubClass subObj = new SubClass();
27         subObj.showDetails();
28     }
29 }

```

	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

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 %)

```

1 import java.util.*;
2 public class hello{
3     public static void main(String[] args){
4         Scanner sc=new Scanner(System.in);
5         int n=sc.nextInt();
6         int k=0;
7         String arr[]=new String[n];
8         for(int i=0;i<n;i++){
9             {
10                 arr[i]=sc.next();
11                 arr[i]=arr[i].toLowerCase();
12                 char ch=arr[i].charAt(0);
13                 if(ch=='a' || ch=='e' || ch=='i' || ch=='o' || ch=='u'){
14                     k=1;
15                     System.out.print(arr[i]);
16                 }
17             }
18         }
19         if(k==0){
20             System.out.println("no matches found");
21         }
22     }
23 }

```

	Input	Expected	Got	
✓	3 oreo sirish apple	oreoapple	oreoapple	✓
✓	2 Mango banana	no matches found	no matches found	✓

✓	3	ateace	ateace	✓
	Ate Ace Girl			

Passed all tests! ✓

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