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Status	Finished
Started	Friday, 4 October 2024, 6:14 PM
Completed	Friday, 4 October 2024, 8:17 PM
Duration	2 hours 2 mins

Question **1**

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 VowelStringConcatenation
{
    public static boolean isVowel(char c)
    {
        return "AEIOUaeiou".indexOf(c)!=-1;
    }
    public static String concatenateVowelStrings(String[] arr)
    {

        StringBuilder result = new StringBuilder();
        for(String str : arr)
        {
            if(!str.isEmpty() && isVowel(str.charAt(0)) && isVowel(str.charAt(str.length() -1)))
            {
                result.append(str);
            }
        }
        }
        if(result.length()==0)
        {
            return "no matches found";
        }
        return result.toString().toLowerCase();
    }


        /*StringBuilder result=new StringBuilder();
        for(String str:arr)
        {

            boolean allVowels=true;
            for(int i=0;i<str.length();i++)
            {
                if(!isVowel(str.charAt(i)))
                {
                    allVowels=false;
                    break;
                }
            }
            if(allVowels)
            {
                result.append(str);

            }

        }
            return result.toString().toLowerCase();


        }
        public static boolean isVowel(char c)
        {
```

	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 **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

```
public class FinalExample
{
    final int MAX_SPEED=120;
    public final void display()
    {
        System.out.println("The maximum speed is: "+ MAX_SPEED+ " km/h");
    }
    public static void main(String[] args)
    {
        SubExample obj=new SubExample();
        obj.display();
        obj.show();
    }
}
class SubExample extends FinalExample
{
    public void show()
    {
        System.out.println("This is a subclass of FinalExample.");
    }
}


```

	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! ✓

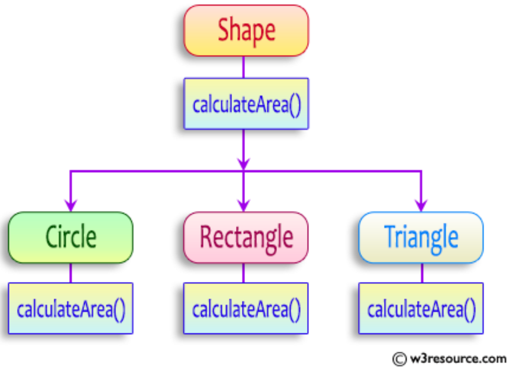
Question **3**

Correct

Marked out of 5.00

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:



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```
 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
{
    private double radius;
    public Circle(double radius)
    {
        this.radius=radius;
    }
    @Override
    public double calculateArea()
    {
        return Math.PI*radius*radius;
    }
}
class Rectangle extends Shape
{
    private double length;
    private double breadth;
    public Rectangle(double length,double breadth)
    {
        this.length=length;
        this.breadth=breadth;
    }
    @Override
    public double calculateArea()
    {
        return length*breadth;
    }
}
class Triangle extends Shape
{
    private double base;
    private double height;
    public Triangle(double base,double height)
    {
        this.base=base;
        this.height=height;
    }
    @Override
    public double calculateArea()
    {
        return 0.5 * base * height;
    }
}
public class Main
{
    public static void main(String[] args)
    {
```

	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! ✓

◄ Lab-08-MCQ

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FindStringCode ►