Sirma

e: office@sirma.bg
m: +359 2 9768310
a: 135 Tsarigradsko Shosse, blvd.
1784 Sofia, Bulgaria

Shape Area Calculator

Learn and implement polymorphism in C# by creating a program to calculate the area of different shapes.

Instructions:

- Create a base class called Shape with a virtual method GetArea().
- Create derived classes (Circle, Rectangle, Triangle) that override the GetArea() method.
- Use a List<Shape> to store different shape objects.
- Loop through the list and calculate/display the area for each shape.

Extensions:

- Add more shapes like Square, Trapezoid, Pentagon etc.
- Include user input to dynamically create shapes and calculate their areas.
- Use abstract classes instead of virtual methods to enforce method overriding.
- Adding a new feature to calculate the perimeter for each shape.
- Validate user input (e.g., prevent negative dimensions or invalid sides count).
- Save and load the list of shapes from a file using serialization.
- Add an option to remove shapes from the list.

```
class Program
    {
        static void Main(string[] args)
        {
            List<Shape> shapes = new List<Shape>
            {
                new Circle(5),
                new Rectangle(4, 6),
                new Triangle(5, 8)
            };
            foreach (Shape shape in shapes)
            {
                Console.WriteLine($"The area of the {shape.GetType().Name} is {shape.GetArea():F2}");
            }
        }
    }
```

Good luck and have fun!