11.2-Introduction to Structures

Program

```
using System;

// Define the Triangle structure
struct Triangle
{
    public double Base { get; set; }
    public double Height { get; set; }

    // Constructor to initialize the Triangle
    public Triangle(double @base, double height)
    {
        Base = @base;
        Height = height;
    }

    // Method to calculate the area of the triangle
    public double CalculateArea()
    {
        return 0.5 * Base * Height;
    }
}

class Program
{
```

```
    static void Main()
    {
        // Create a Triangle instance
        Triangle myTriangle = new Triangle(5.0, 10.0);

        // Access the properties and methods of the Triangle
        Console.WriteLine("Triangle Base: " + myTriangle.Base);
        Console.WriteLine("Triangle Height: " + myTriangle.Height);
        Console.WriteLine("Triangle Area: " + myTriangle.CalculateArea());

        Console.ReadLine();
    }
}
```

Exercise

Write a C# program that demonstrate the use of a Triangle structure to represent a triangle and calculate its area.

The program defines a Triangle structure to represent a triangle.

It has two properties: Base and Height, representing the base length and height of the triangle respectively.

A constructor is defined to initialize the Base and Height properties when a new Triangle instance is created.

The Triangle structure contains a method named CalculateArea() to calculate the area of the triangle.

The area is calculated using the formula: Area=1/2×Base×HeightArea.

In the Main method, a Triangle instance named myTriangle is created with a base of 5.0 and a height of 10.0.

The properties and methods of the Triangle instance (Base, Height, and CalculateArea()) are accessed and displayed using Console.WriteLine().

The program displays the base length, height, and area of the triangle to the console.

Hint

Examine the CalculateArea() method within the Triangle structure.

Understand how it calculates the area of the triangle using the formula: Area=1/2×Base×HeightArea

Explanation

this program, a Triangle structure is defined to represent triangles in terms of their base and height. The structure contains two properties, Base and Height, which are used to store the dimensions of the triangle. Additionally, there's a constructor within the Triangle structure that initializes the Base and Height properties when a new Triangle instance is created.

The CalculateArea() method is implemented to compute the area of the triangle using the formula: Area=1/2×Base×HeightArea. This method returns the calculated area.

In the Main method, an instance of the Triangle structure named myTriangle is created with base length 5.0 and height 10.0. The properties (Base and Height) and the CalculateArea() method of the myTriangle instance are accessed and displayed using Console.WriteLine().

When the program is executed, it outputs the base length, height, and area of the triangle to the console. The user is then prompted to press the Enter key before the program exits, allowing them to view the output. This simple program demonstrates the usage of a structure to represent geometric shapes and perform calculations based on their properties.