

# Shape Calculator

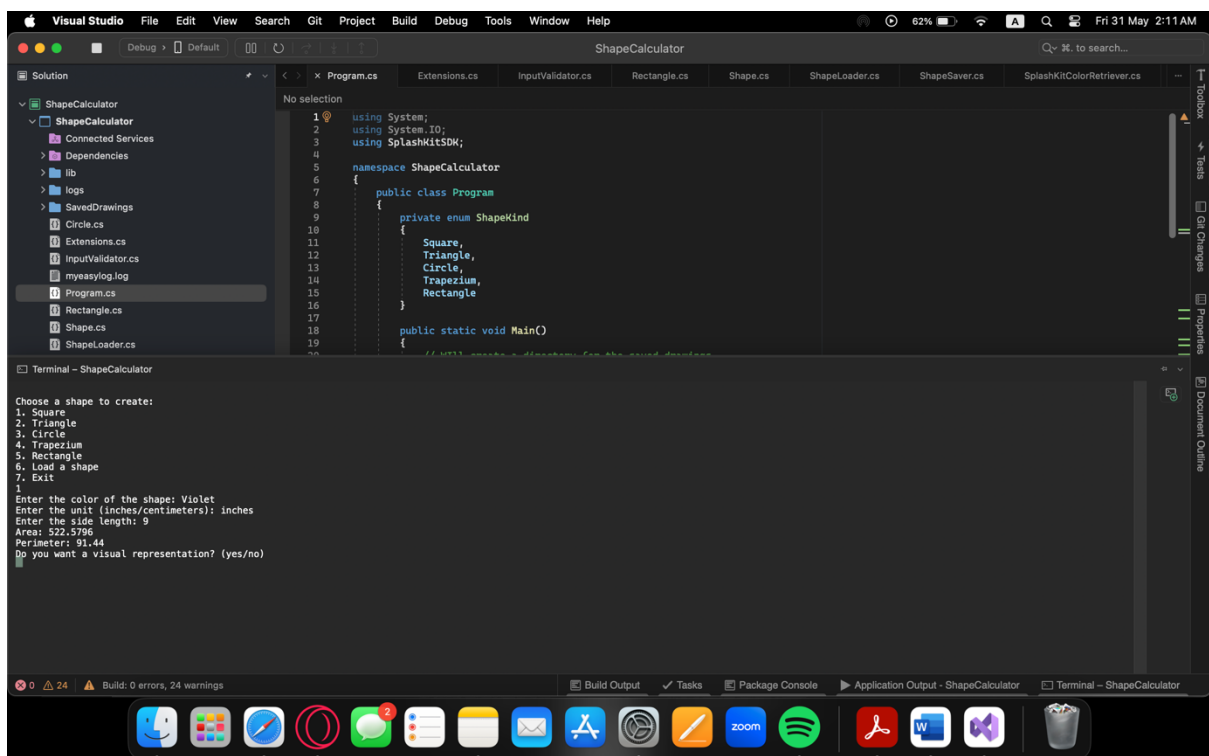
## Overview

The Shape Calculator program allows users to create, visualize, save, and load various geometric shapes. The shapes supported include squares, triangles, circles, trapeziums, and rectangles. The program provides functionality to calculate the area and perimeter of these shapes in either inches or centimetres depending on user preference and offers a visual representation using the SplashKit library.

The program will mainly rely on user input from the console in order to function. Given below are examples of the program working and their outputs.

## Outputs

1. Users are allowed to select between the options of the shapes, from 1-5. In this example, square is selected, hence number 1 is entered. Furthermore, users are also to select the color they want by entering, in this scenario 'Violet' is selected. Moreover, the unit is allowed to be selected by entering, in this scenario 'inches' is selected. Afterwards, depending on the shape, users will be asked to input necessary measurements, in this scenario since it is a square only one length is required, 9 is entered in inches, and the area and perimeter is given in centimeters. Finally, a visually representation is asked by the user if required in which they can choose so by entering 'yes'.



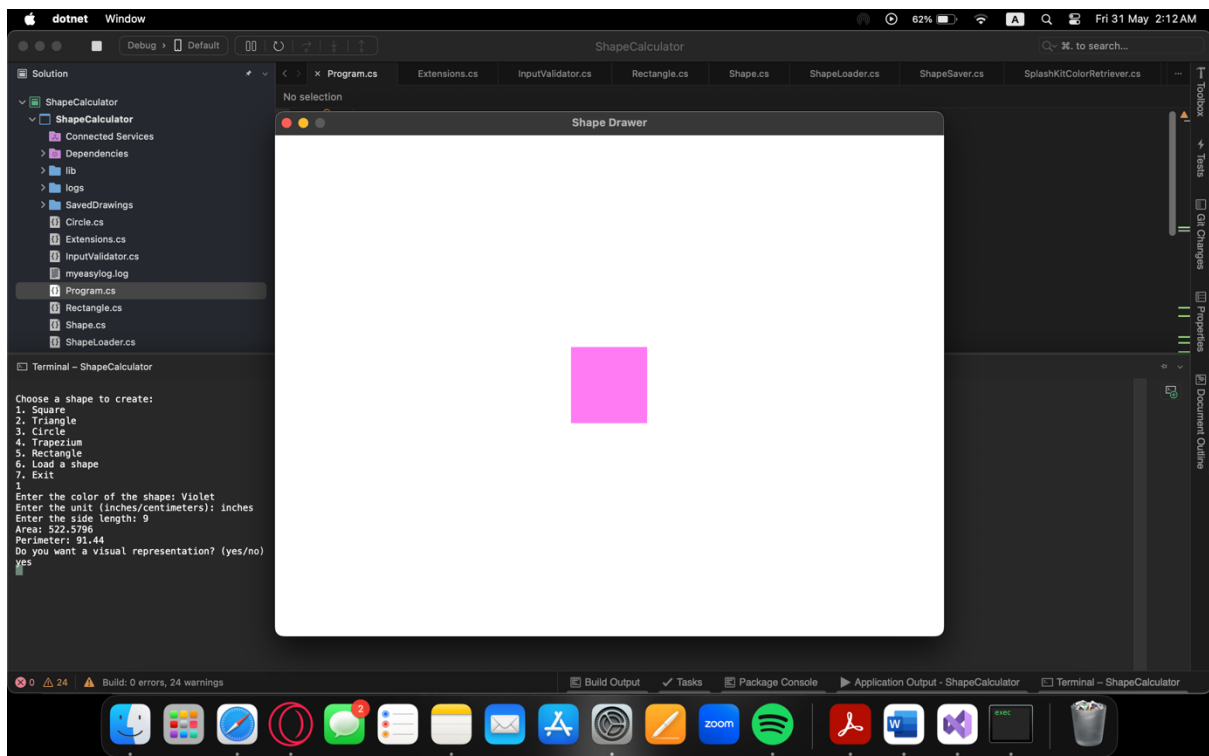
The screenshot displays the Visual Studio IDE with the ShapeCalculator project open. The Solution Explorer on the left shows the project structure, including files like Program.cs, Extensions.cs, InputValidator.cs, Rectangle.cs, Shape.cs, ShapeLoader.cs, ShapeSaver.cs, and SplashKitColorRetriever.cs. The main editor window shows the code for Program.cs, which includes using statements for System, System.IO, and SplashKitSDK, and a namespace ShapeCalculator. Inside the namespace, there is a public class Program with a private enum ShapeKind (Square, Triangle, Circle, Trapezium, Rectangle) and a public static void Main() method. The terminal window at the bottom shows the program's execution, where the user has selected '1' for Square, 'Violet' for color, 'inches' for unit, and '9' for side length. The program has calculated the area as 522.5796 and the perimeter as 91.44, and asked if the user wants a visual representation, to which the user has responded 'yes'.

```
1 using System;
2 using System.IO;
3 using SplashKitSDK;
4
5 namespace ShapeCalculator
6 {
7     public class Program
8     {
9         private enum ShapeKind
10         {
11             Square,
12             Triangle,
13             Circle,
14             Trapezium,
15             Rectangle
16         }
17
18         public static void Main()
19         {
20             // TODO: create a diagram for the given dimensions
21         }
22     }
23 }
```

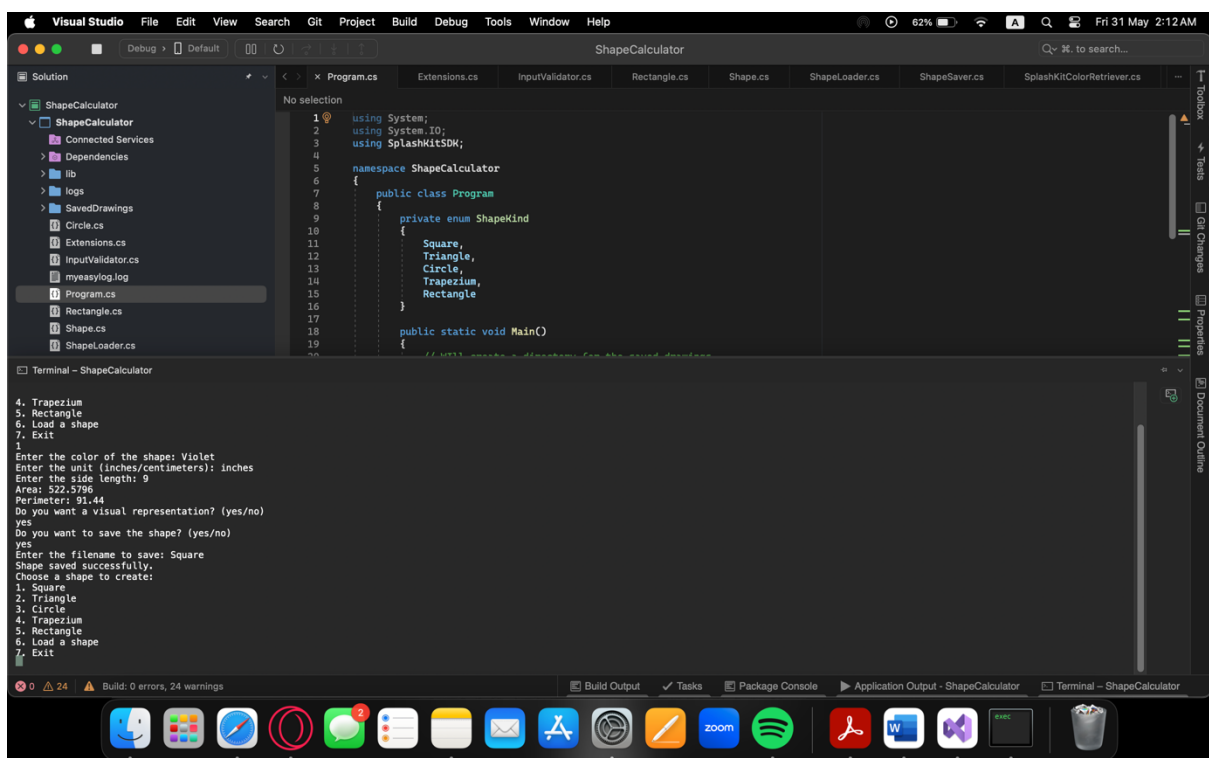
Terminal - ShapeCalculator

```
Choose a shape to create:
1. Square
2. Triangle
3. Circle
4. Trapezium
5. Rectangle
6. Load a shape
7. Exit
1
Enter the color of the shape: Violet
Enter the unit (inches/centimeters): inches
Enter the side length: 9
Area: 522.5796
Perimeter: 91.44
Do you want a visual representation? (yes/no)
yes
```

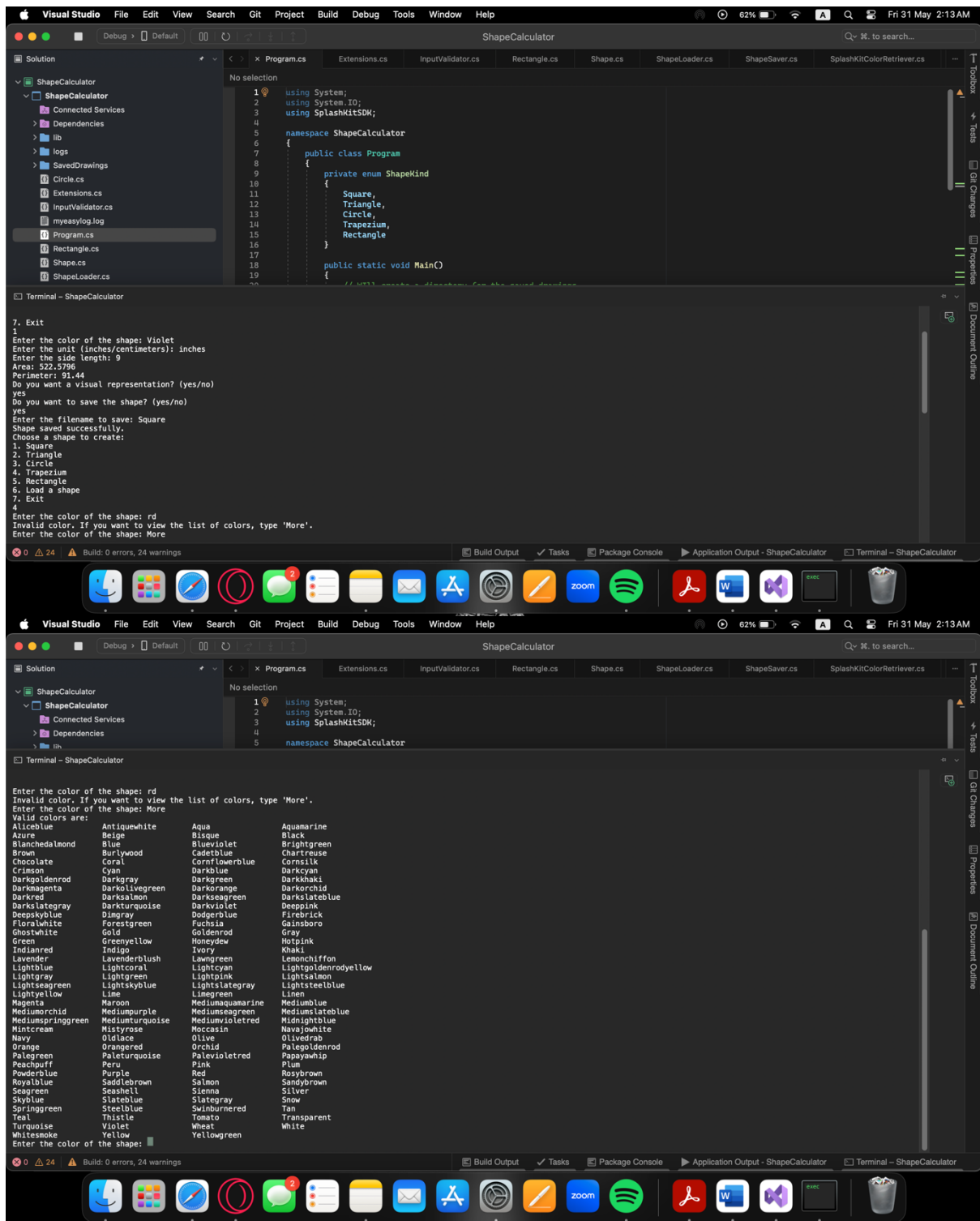
2. The Shape is drawn in a Splashkit Window as shown

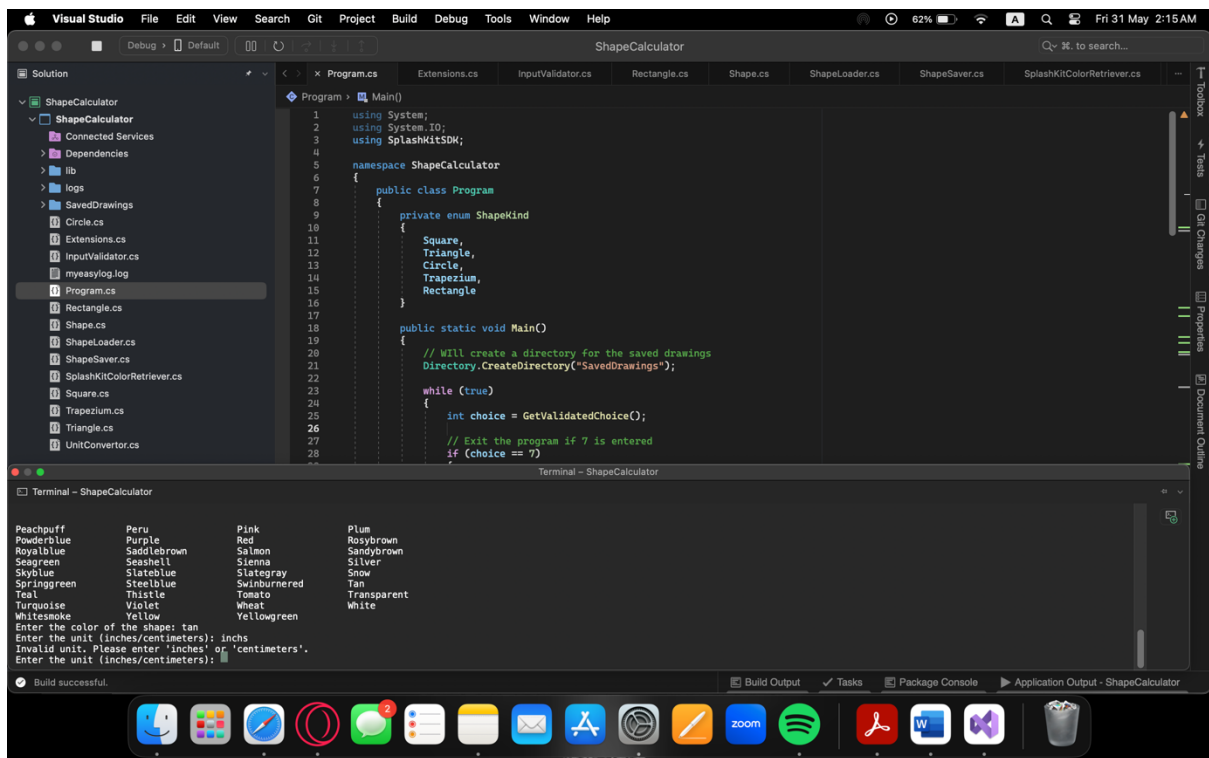


3. After closing, an option to save the shape is given where once again if the user wants to, they can do so by typing 'yes'.



- Furthermore, in the case of the colours, since the user could be looking for a colour that does not exist in the SplashKit Library, an option to view the available colours is there by entering the word 'More' in which a list of colours will appear.





5. Finally, by choosing option 6 in the first step of the program, the user can load previous saved shapes, in this scenario the earlier saved shape is successfully loaded.

