Selected files

6 printable files

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Week_4/4.1/MultipleShape/Drawing.cs

```
using System;
using System.Collections.Generic;
using SplashKitSDK;
using System.Linq;
using System.Threading.Tasks;

namespace MultipleShape
{
    public class Drawing
    {
        private readonly List<Shape> _shapes;
        private Color _background;

        // Constructor
        public Drawing(Color background)
        {
            _shapes = new List<Shape>();
            _background = background;
        }

        public Drawing() : this(Color.White)
        {
        }

        // Properties
        public Color Background
        {
            get { return _background; }
            set { _background = value; }
        }

        public int ShapeCount
        {
            get { return _shapes.Count; }
        }

        public List<Shape> SelectedShapes
        {
            get
```

```
            {
                List<Shape> result = new List<Shape>();
                foreach (Shape s in _shapes)
                {
                    if (s.Selected)
                    {
                        result.Add(s);
                    }
                }
                return result;
            }
        }

        // Methods
        public void AddShape(Shape s)
        {
            _shapes.Add(s);
        }

        public void RemoveShape(Shape s)
        {
            _ = _shapes.Remove(s);
        }

        public void Draw()
        {
            SplashKit.ClearScreen(_background);
            foreach (Shape s in _shapes)
            {
                s.Draw();
            }
        }

        public void SelectShapesAt(Point2D pt)
        {
            foreach (Shape s in _shapes)
            {
                s.Selected = s.IsAt(pt);
            }
        }

        public void RemoveSelectedShapes()
        {
            foreach (Shape s in SelectedShapes)
            {
                RemoveShape(s);
            }
        }
    }
}
```

Week_4/4.1/MultipleShape/MyCircle.cs

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Threading.Tasks;

using SplashKitSDK;

namespace MultipleShape
{
    public class MyCircle : Shape
    {
        private float _radius;

        public MyCircle() : this(Color.Blue, 0.0f, 0.0f, 129)
        {
        }

        public MyCircle(Color color, float x, float y, float radius) : base(color)
        {
            X = x;
            Y = y;
            Radius = radius;
        }

        public float Radius
        {
            get => _radius;
            set => _radius = value;
        }

        public override void Draw()
        {
            SplashKit.FillCircle(Color, X, Y, _radius);

            if (Selected)
            {
                DrawOutline();
            }
        }

        public override bool IsAt(Point2D pt)
        {
            Circle c = SplashKit.CircleAt(X, Y, _radius);
            return SplashKit.PointInCircle(pt, c);
        }

        public override void DrawOutline()
        {
            SplashKit.DrawCircle(Color.Black, X, Y, _radius + 2);
```

```
        }
    }
}
```

Week_4/4.1/MultipleShape/MyLine.cs

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Threading.Tasks;
using SplashKitSDK;

namespace MultipleShape
{
    public class MyLine : Shape
    {
        private float _endX, _endY;

        public MyLine() : this(Color.Red, 0.0f, 0.0f, 88, 88)
        {
        }

        public MyLine(Color color, float x, float y, float endX, float endY) :
base(color)
        {
            X = x;
            Y = y;
            EndX = endX;
            EndY = endY;
        }

        public float EndX
        {
            get => _endX;
            set => _endX = value;
        }

        public float EndY
        {
            get => _endY;
            set => _endY = value;
        }

        public override void Draw()
        {
            SplashKit.DrawLine(Color, X, Y, EndX, EndY);

            if (Selected)
            {
                DrawOutline();
            }
```

```
        }

        public override bool IsAt(Point2D pt)
        {
            return SplashKit.PointOnLine(pt, SplashKit.LineFrom(X, Y, EndX, EndY));
        }

        public override void DrawOutline()
        {
            SplashKit.DrawCircle(Color.Black, X, Y, 5);
            SplashKit.DrawCircle(Color.Black, EndX, EndY, 5);
        }
    }
}
```

Week_4/4.1/MultipleShape/MyRectangle.cs

```
using System;
using System.Collections.Generic;
using SplashKitSDK;
using System.Linq;
using System.Threading.Tasks;

namespace MultipleShape
{
    public class MyRectangle : Shape
    {
        private float _width, _height;

        public MyRectangle() : this(Color.Green, 0.0f, 0.0f, 194, 194)
        {
        }

        public MyRectangle(Color color, float x, float y, float width, float height)
: base(color)
        {
            X = x;
            Y = y;
            Width = width;
            Height = height;
        }

        public float Width
        {
            get => _width;
            set => _width = value;
        }

        public float Height
        {
            get => _height;
            set => _height = value;
```

```
        }

        // Methods
        public override void Draw()
        {
            SplashKit.FillRectangle(Color, X, Y, Width, Height);

            if (Selected)
            {
                DrawOutline();
            }
        }

        public override bool IsAt(Point2D pt)
        {
            return (pt.X >= X) && (pt.X <= (X + _width))
                && (pt.Y >= Y) && (pt.Y <= (Y + _height));
        }

        public override void DrawOutline()
        {
            SplashKit.DrawRectangle(Color.Black, X - 9, Y - 9, Width + 18, Height + 18);
        }
    }
}
```

Week_4/4.1/MultipleShape/Program.cs

```
using System;
using MultipleShape;
using SplashKitSDK;

namespace MultipleShape
{
    public class Program
    {
        private enum ShapeKind
        {
            Rectangle,
            Circle,
            Line
        }

        public static void Main()
        {
            Window window = new Window("Shape Drawer", 800, 600);
            Drawing myDrawing = new Drawing();

            ShapeKind kindToAdd = ShapeKind.Circle;

            // My ID: 104844794 => Last digit: 4
```

```
            // So I'm only able to draw a maximum of X lines within the timeframe
            int maxLines = 4;

            do
            {
                SplashKit.ProcessEvents();
                SplashKit.ClearScreen();

                if (SplashKit.KeyTyped(KeyCode.RKey))
                {
                    kindToAdd = ShapeKind.Rectangle;
                }

                // If the user presses the C key or has run out of lines to draw, they will draw circles
                if (SplashKit.KeyTyped(KeyCode.CKey) || maxLines <= 0)
                {
                    kindToAdd = ShapeKind.Circle;
                }

                // If the user presses the L key and has lines left to draw, they will draw lines
                if (SplashKit.KeyTyped(KeyCode.LKey) && maxLines > 0)
                {
                    kindToAdd = ShapeKind.Line;
                }

                if (SplashKit.MouseClicked(MouseButton.LeftButton))
                {
                    Shape myShape;

                    switch (kindToAdd)
                    {
                        case ShapeKind.Circle:
                            myShape = new MyCircle();
                            break;
                        case ShapeKind.Line:
                            myShape = new MyLine();
                            maxLines--;
                            break;
                        default:
                            myShape = new MyRectangle();
                            break;
                    }

                    myShape.X = SplashKit.MouseX();
                    myShape.Y = SplashKit.MouseY();
                    myDrawing.AddShape(myShape);
                }

                if (SplashKit.KeyTyped(KeyCode.SpaceKey))
```

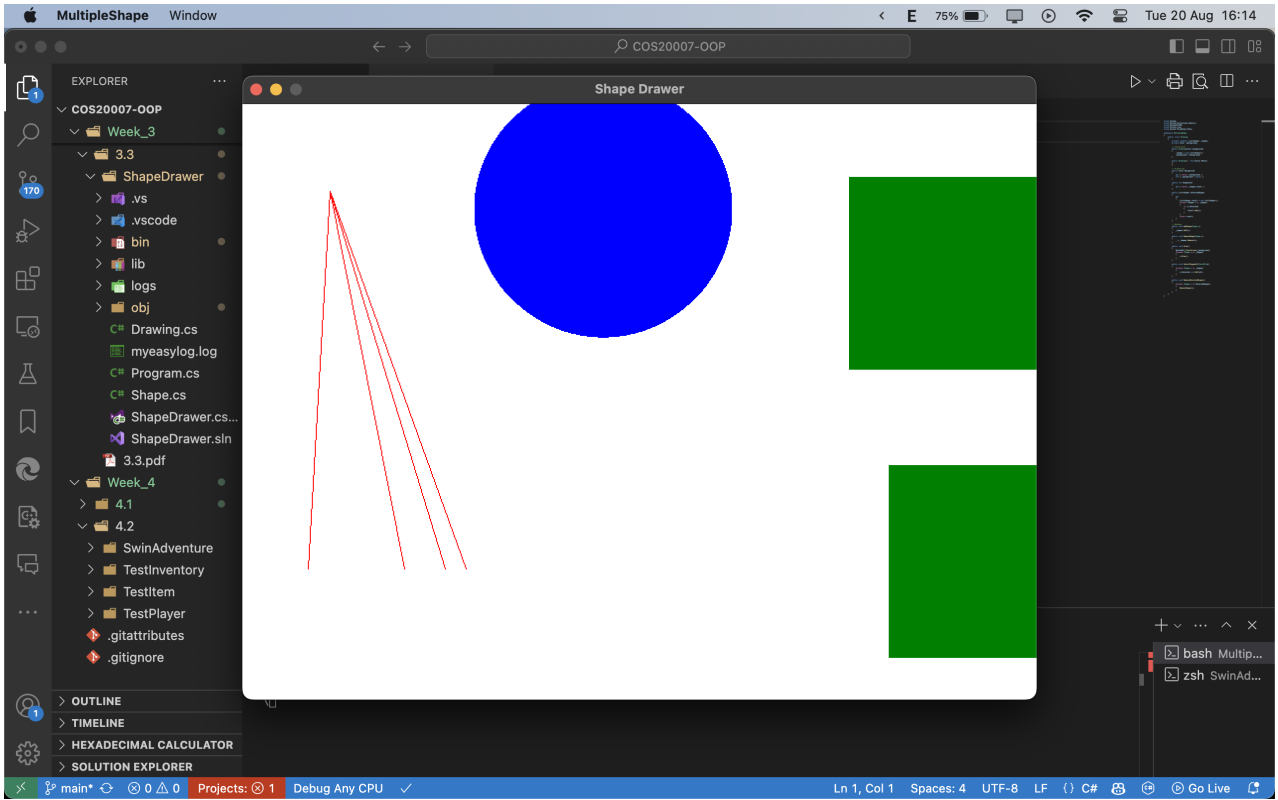
```
                {
                    myDrawing.Background = SplashKit.RandomRGBColor(255);
                }

                if (SplashKit.MouseClicked(MouseButton.RightButton))
                {
                    Point2D pt = new Point2D();
                    pt.X = SplashKit.MouseX();
                    pt.Y = SplashKit.MouseY();

                    myDrawing.SelectShapesAt(pt);
                }

                if (SplashKit.KeyTyped(KeyCode.DeleteKey) ||
SplashKit.KeyTyped(KeyCode.BackspaceKey))
                {
                    myDrawing.RemoveSelectedShapes();
                }

                myDrawing.Draw();
                SplashKit.RefreshScreen();
            } while (!window.CloseRequested);
        }
    }
}

```

Week_4/4.1/MultipleShape/Shape.cs

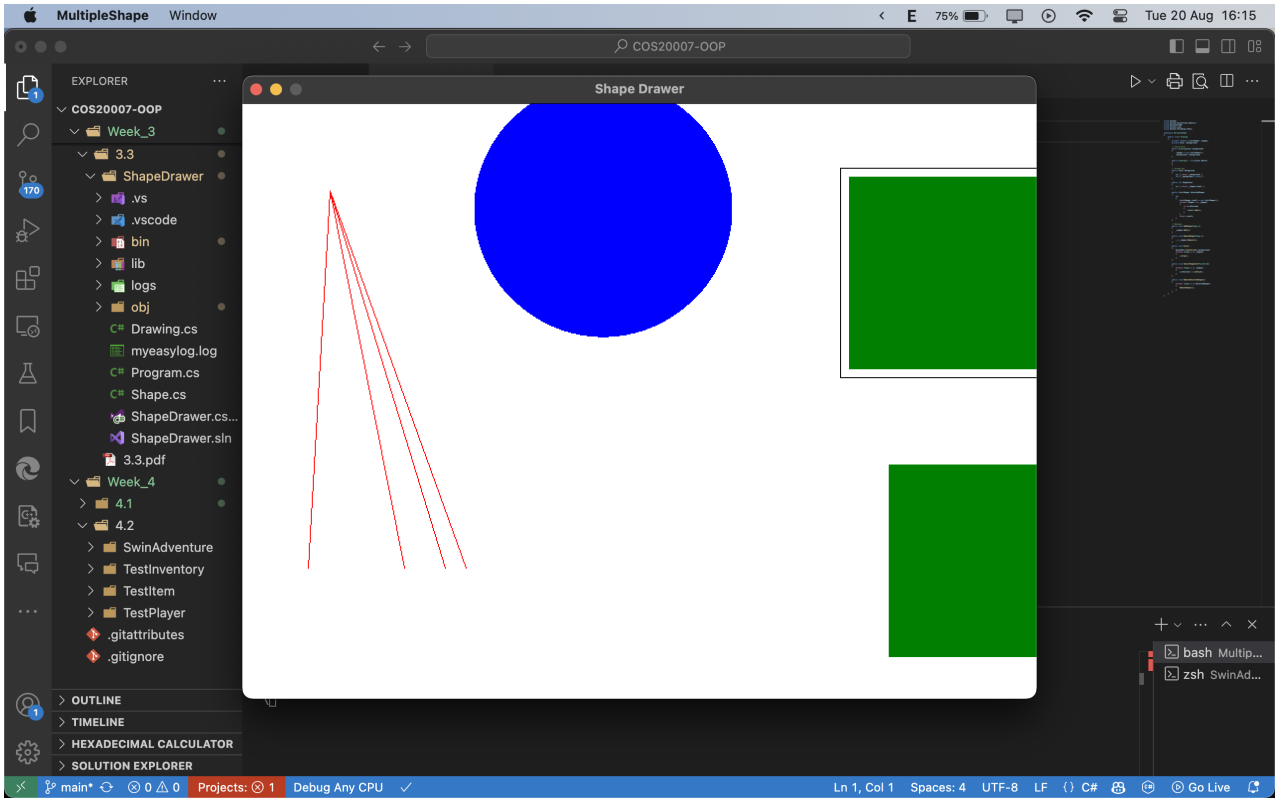
```
using SplashKitSDK;

namespace MultipleShape
{
    public abstract class Shape
    {
        // Fields
        private Color _color;
        private float _x, _y;
        private bool _selected;

        // Constructor
        public Shape() : this(Color.Yellow)
        {
        }

        public Shape(Color color)
        {
            _color = color;
            _x = 0.0f;
            _y = 0.0f;
            _selected = false;
        }
```

```
24
25          // Properties
26          public float X
27          {
28              get { return _x; }
29              set { _x = value; }
30          }
31
32          public float Y
33          {
34              get { return _y; }
35              set { _y = value; }
36          }
37
38          public Color Color
39          {
40              get { return _color; }
41              set { _color = value; }
42          }
43
44          public bool Selected
45          {
46              get { return _selected; }
47              set { _selected = value; }
48          }
49
50          // Methods
51          public abstract void Draw();
52          public abstract void DrawOutline();
53          public abstract bool IsAt(Point2D pt);
54      }
55  }
```

Screenshot of adding shapes:



Screenshot of selecting shape:



Screenshot of deleting shape: