COS20007: Object Oriented Programming

Pass Task 3.3: Drawing Program - A Drawing Class with your own attributes

Show Wai Yan/105293041

Drawing.cs

```
using SplashKitSDK;

namespace ShapeDrawer
{
    public class Drawing
    {
        // Fields
        private readonly List<Shape> _shapes;
        private Color _background;

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

        }

        // Property
        public List<Shape> SelectedShapes
        {
            // readonly property
            get
            {
                List<Shape> selectedShapes = new List<Shape>();
                foreach (Shape s in _shapes)
                {
                    if (s.Selected) selectedShapes.Add(s);
                }
                return selectedShapes;
            }
        }

        public int ShapeCount
        {
            // readonly property
            get { return this._shapes.Count; }
        }

        public Color Background
        {
            get { return this._background; }
            set { this._background = value; }
        }

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

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

}
```

Shape.cs

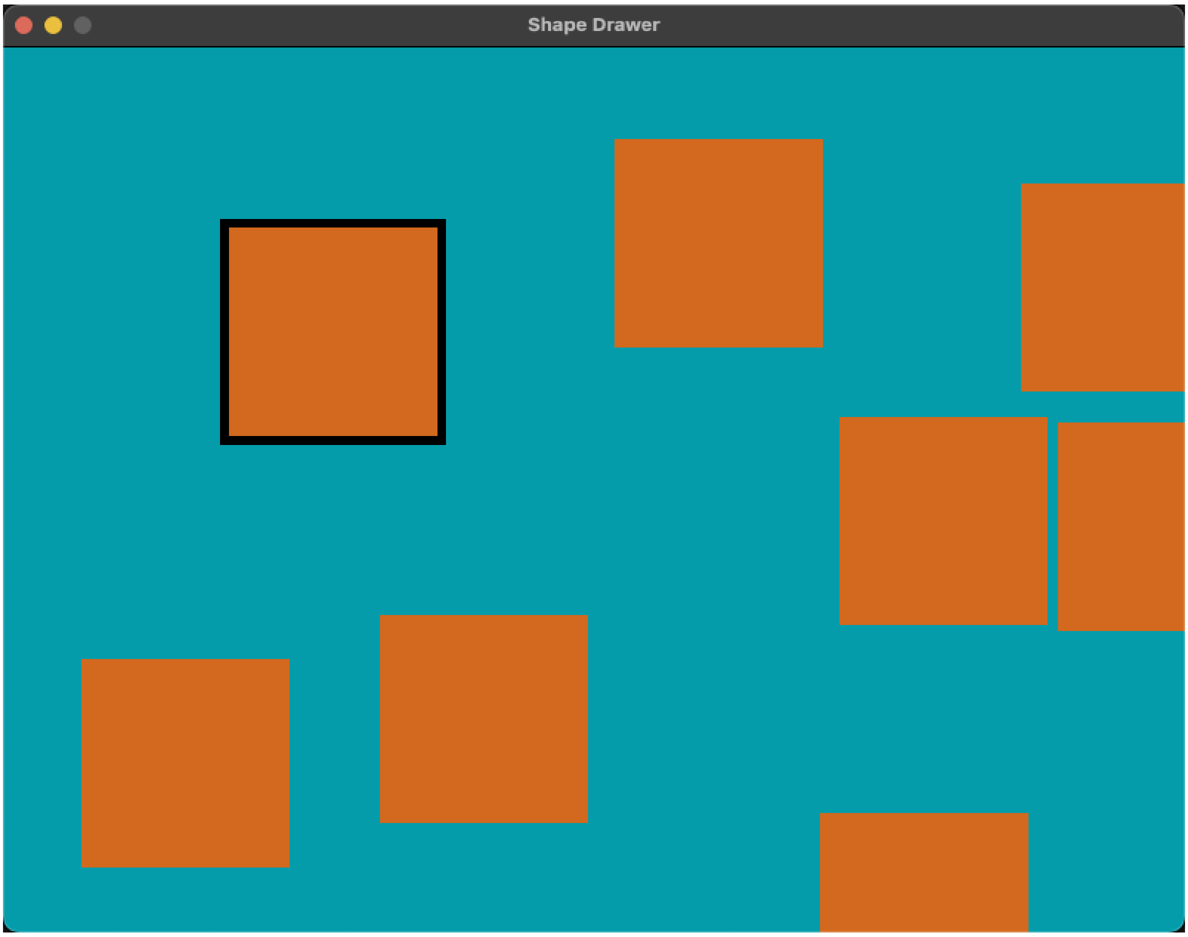
```
using SplashKitSDK;

namespace ShapeDrawer
{
    public class Shape
    {
        // Fields
        private Color _color;
        private float _x;
        private float _y;
        private int _width;
        private int _height;
        private bool _selected = false;

        // Constructors
        public Shape(int param)
        {
            _color = Color.Chocolate;
            _x = 0.0f; _y = 0.0f;
            _width = param; _height = param;
        }

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

        public float X
        {
            get { return _x; }
            set { _x = value; }
        }
        public float Y
        {
            get { return _y; }
            set { _y = value; }
        }

        public int Width
        {
            get { return _width; }
            set { _width = value; }
        }
        public int Height
        {
            get { return _height; }
            set { _height = value; }
        }

        public bool Selected
        {
            get { return this._selected; }
            set { this._selected = value; }
        }


        // Methods
        public void Draw()
        {
            if (this._selected) this.DrawOutline();
            SplashKit.FillRectangle(_color, _x, _y, _width, _height);
        }

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

        public void DrawOutline()
        {
            int outlineThickness = 6; //5+!
            SplashKit.FillRectangle(Color.Black, _x-outlineThickness, _y-outlineThickness,
_width+2*outlineThickness, _height+2*outlineThickness);
```

```
        }
    }
}
```

Program.cs

```
using System;
using SplashKitSDK;

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

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

                if (SplashKit.MouseClicked(MouseButton.LeftButton))
                {
                    Shape myShape = new Shape(141);
                    myShape.X = SplashKit.MouseX();
                    myShape.Y = SplashKit.MouseY();

                    myDrawing.AddShape(myShape);
                }

                if (SplashKit.KeyTyped(KeyCode.SpaceKey))
                {
                    myDrawing.Background = SplashKit.RandomColor();
                }

                if (SplashKit.MouseClicked(MouseButton.RightButton))
                {
                    myDrawing.SelectShapesAt(SplashKit.MousePosition());
                }

                if (SplashKit.KeyTyped(KeyCode.DeleteKey) || SplashKit.KeyTyped(KeyCode.BackspaceKey))
                {
                    foreach (Shape s in myDrawing.SelectedShapes)
                    {
                        myDrawing.RemoveShape(s);
                    }
                }

                myDrawing.Draw();

                SplashKit.RefreshScreen();
            } while (!window.CloseRequested);
        }
    }
}
```

Screenshot of the Splashkit Window showing your drawing


Shape Drawer