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Pass Task 5+6+9+11 – Shape Drawer

Related Learning Outcomes

ULO1 – Explain the OO Principles

The task explains the concept of aggregation in Object-oriented programming, as well as the concepts of inheritance, subtype polymorphism, abstract classes/methods and virtual methods, and how to use them to create families of classes that can share methods from a single base class. .

ULO2 – Use OO Language and Library

This exercise provides a basic example of coding a program in C# using the SwinGame library.

ULO3 – Design, Develop and Test using an IDE

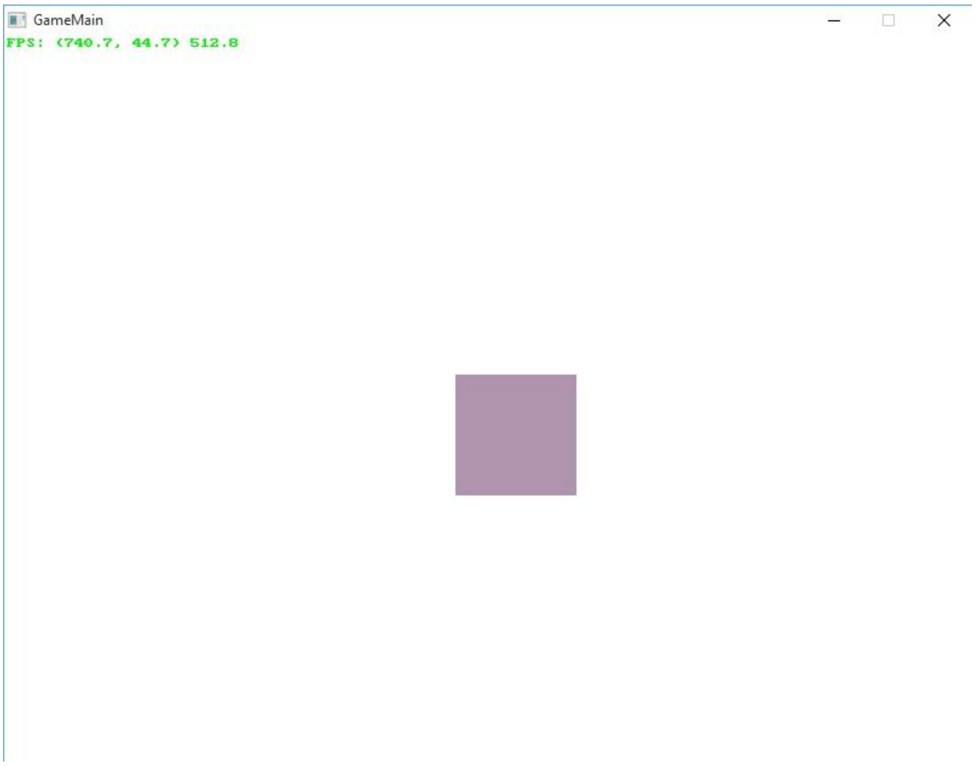
The task demonstrates how to use perform testing on program algorithm with nUnit in Xamarin Studio Task 9 also demonstrates the process of Test Driven Development and how to apply it with Xamarin Studio.

ULO4 – Communicate using UML Diagrams

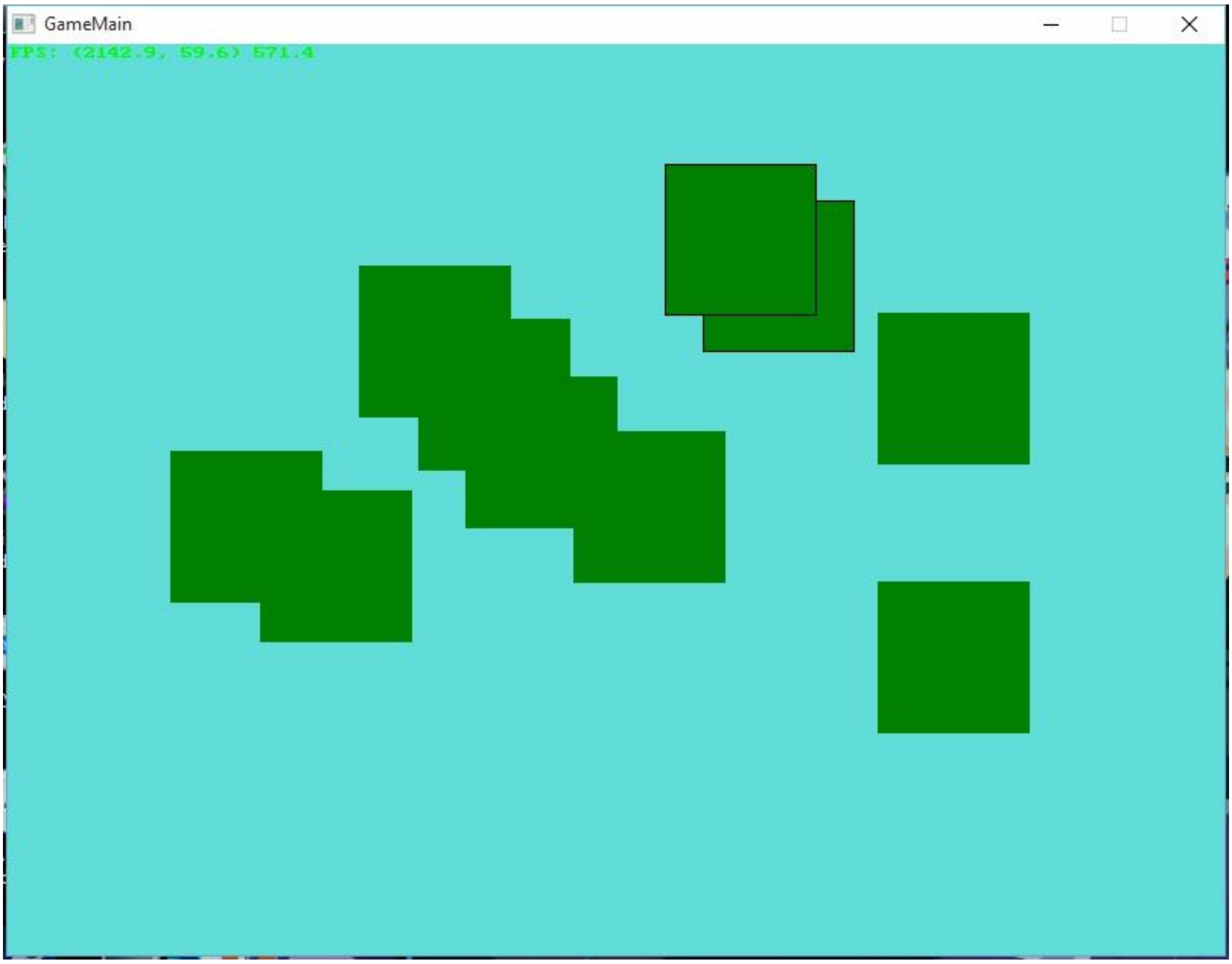
The task shows how to demonstrate aggregation in UML diagrams.

ULO5 – Describe Elements of Good OO Design

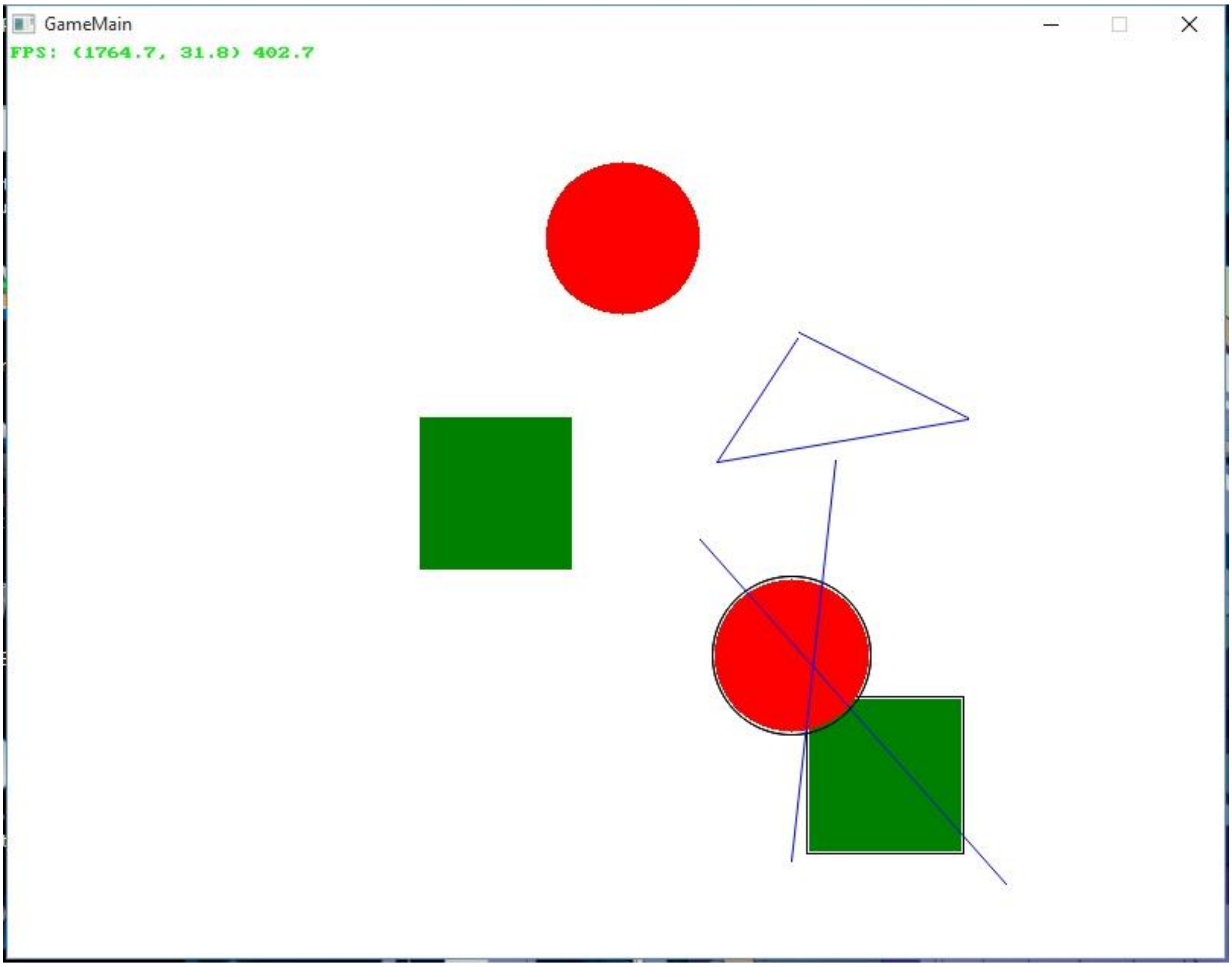
Code running



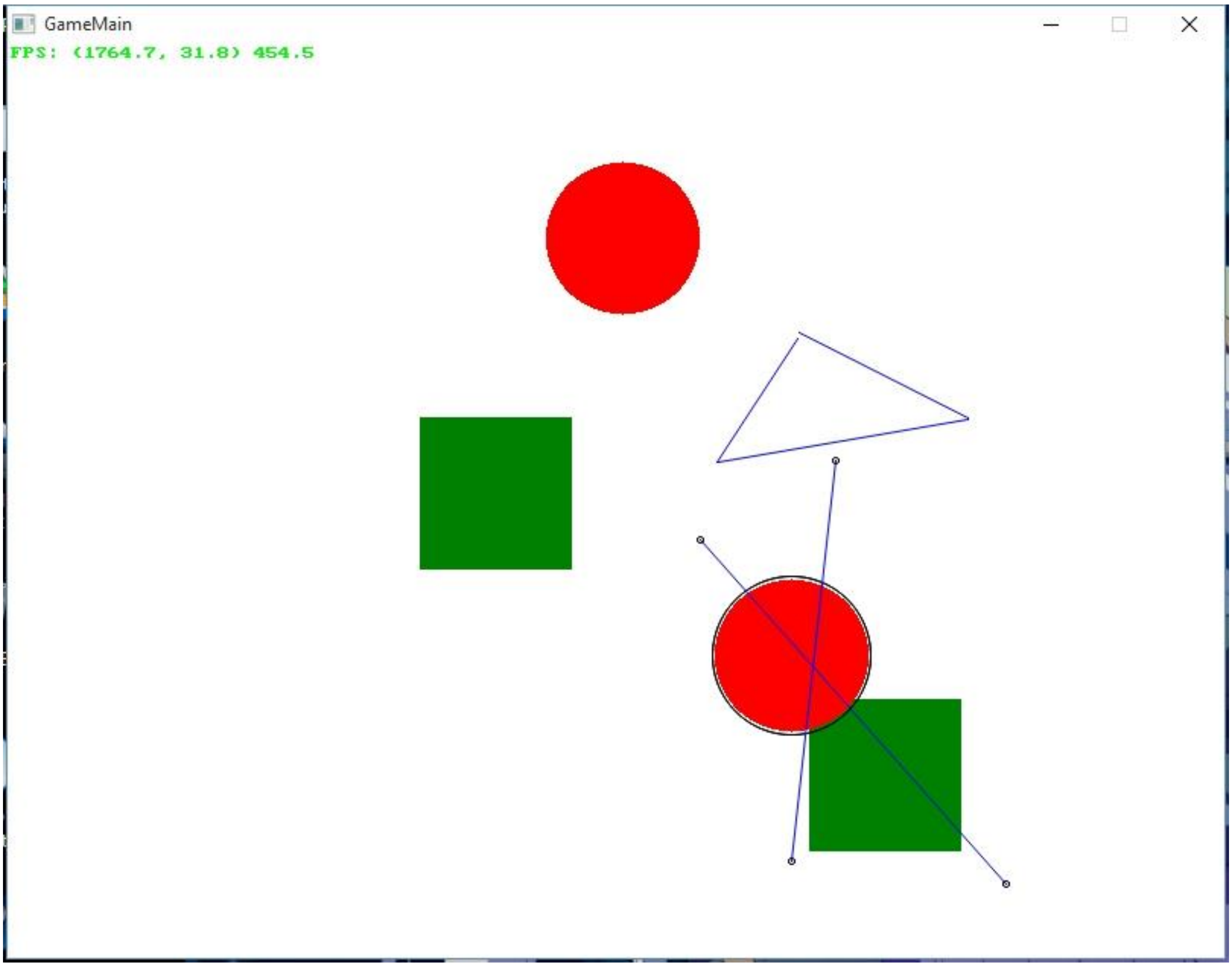
```
FPS: (740.7, 44.7) 512.8
```



```
FPS: (2142.9, 59.6) 571.4
```



```
FPS: (1764.7, 31.8) 402.7
```



```
FPS: (1764.7, 31.8) 454.5
```

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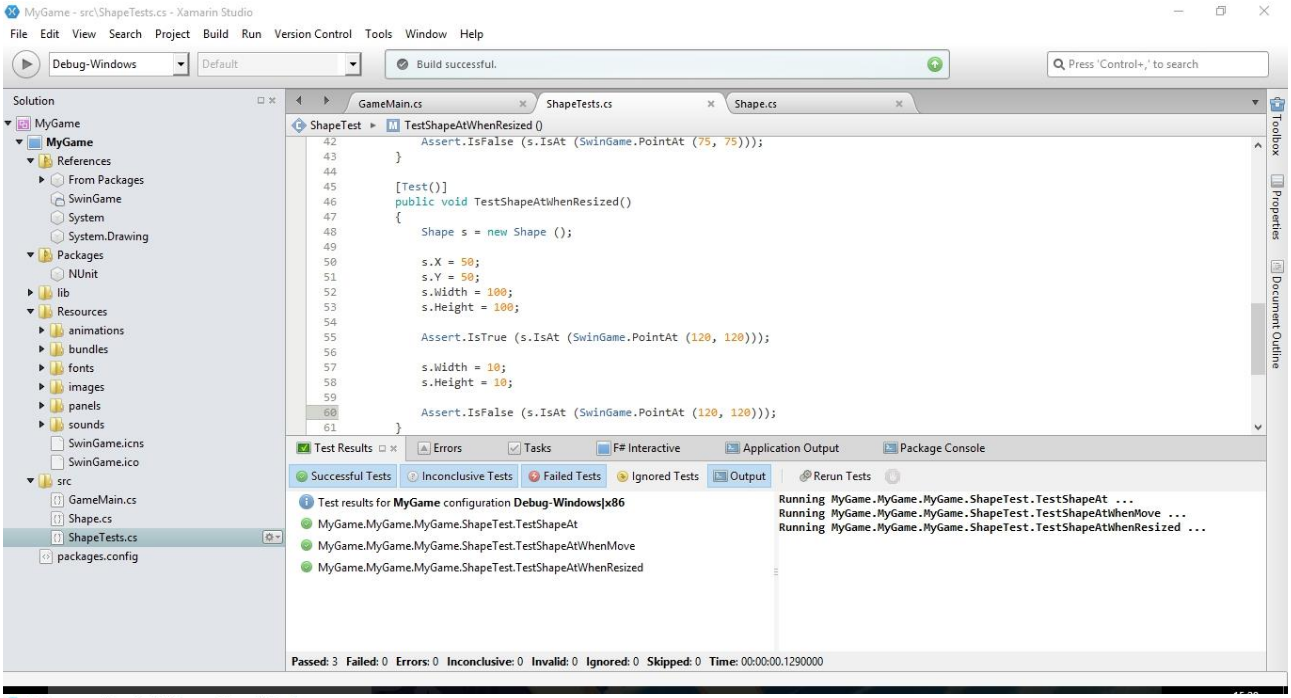
Unit Testing:



Build successful.

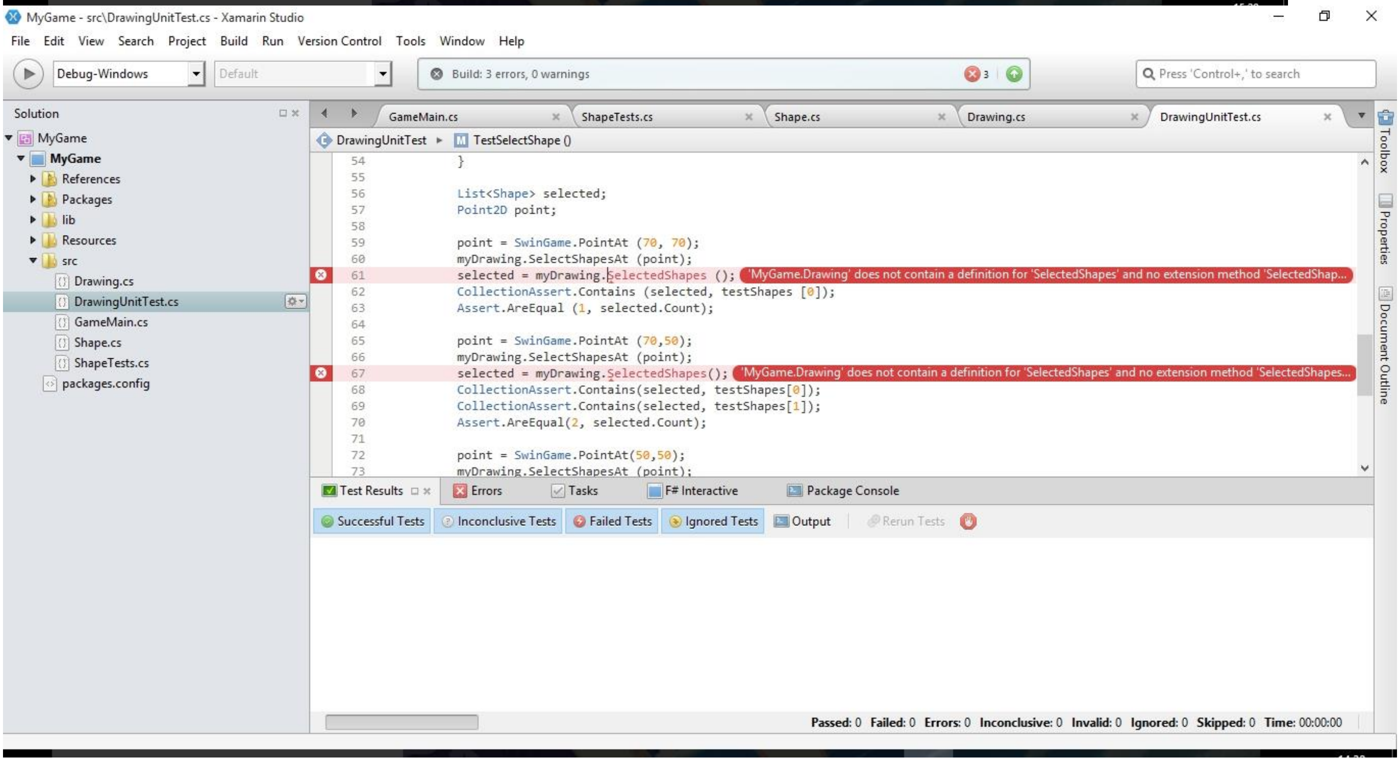
```
            Assert.IsFalse (s.IsAt (SwinGame.PointAt (75, 75)));
        }

        [Test()]
        public void TestShapeAtWhenResized()
        {
            Shape s = new Shape ();

            s.X = 50;
            s.Y = 50;
            s.Width = 100;
            s.Height = 100;

            Assert.IsTrue (s.IsAt (SwinGame.PointAt (120, 120)));

            s.Width = 10;
            s.Height = 10;

            Assert.IsFalse (s.IsAt (SwinGame.PointAt (120, 120)));
        }
```

Test results for **MyGame** configuration **Debug-Windows|x86**

- MyGame.MyGame.MyGame.ShapeTest.TestShapeAt
- MyGame.MyGame.MyGame.ShapeTest.TestShapeAtWhenMove
- MyGame.MyGame.MyGame.ShapeTest.TestShapeAtWhenResized

```
Running MyGame.MyGame.MyGame.ShapeTest.TestShapeAt ...
Running MyGame.MyGame.MyGame.ShapeTest.TestShapeAtWhenMove ...
Running MyGame.MyGame.MyGame.ShapeTest.TestShapeAtWhenResized ...
```

Passed: 3 **Failed:** 0 **Errors:** 0 **Inconclusive:** 0 **Invalid:** 0 **Ignored:** 0 **Skipped:** 0 **Time:** 00:00:00.1290000



Build: 3 errors, 0 warnings

```
        }

        List<Shape> selected;
        Point2D point;

        point = SwinGame.PointAt (70, 70);
        myDrawing.SelectShapesAt (point);
        selected = myDrawing.SelectedShapes ();  'MyGame.Drawing' does not contain a definition for 'SelectedShapes' and no extension method 'SelectedShap...
        CollectionAssert.Contains (selected, testShapes [0]);
        Assert.AreEqual (1, selected.Count);

        point = SwinGame.PointAt (70,50);
        myDrawing.SelectShapesAt (point);
        selected = myDrawing.SelectedShapes();  'MyGame.Drawing' does not contain a definition for 'SelectedShapes' and no extension method 'SelectedShapes...
        CollectionAssert.Contains(selected, testShapes[0]);
        CollectionAssert.Contains(selected, testShapes[1]);
        Assert.AreEqual(2, selected.Count);

        point = SwinGame.PointAt(50,50);
        myDrawing.SelectShapesAt (point);
```

Passed: 0 **Failed:** 0 **Errors:** 0 **Inconclusive:** 0 **Invalid:** 0 **Ignored:** 0 **Skipped:** 0 **Time:** 00:00:00

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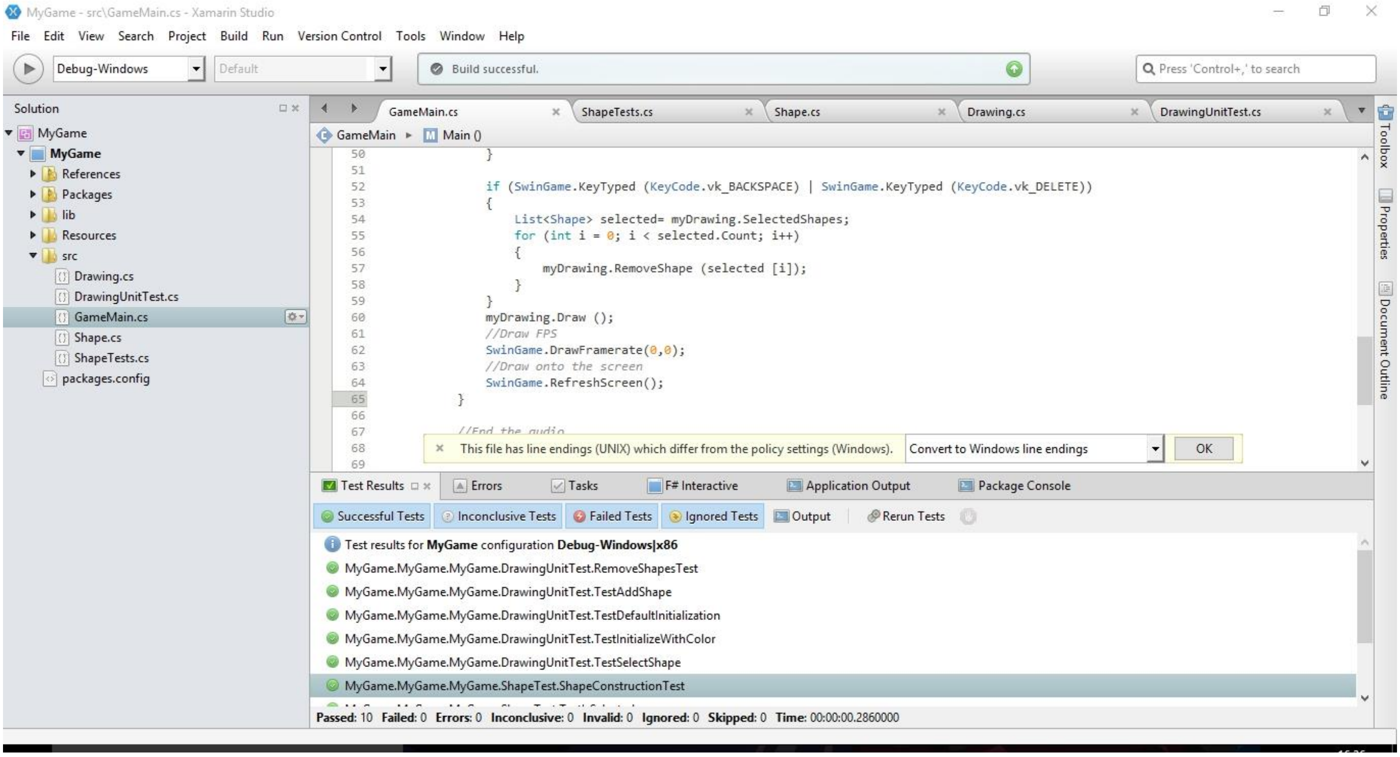


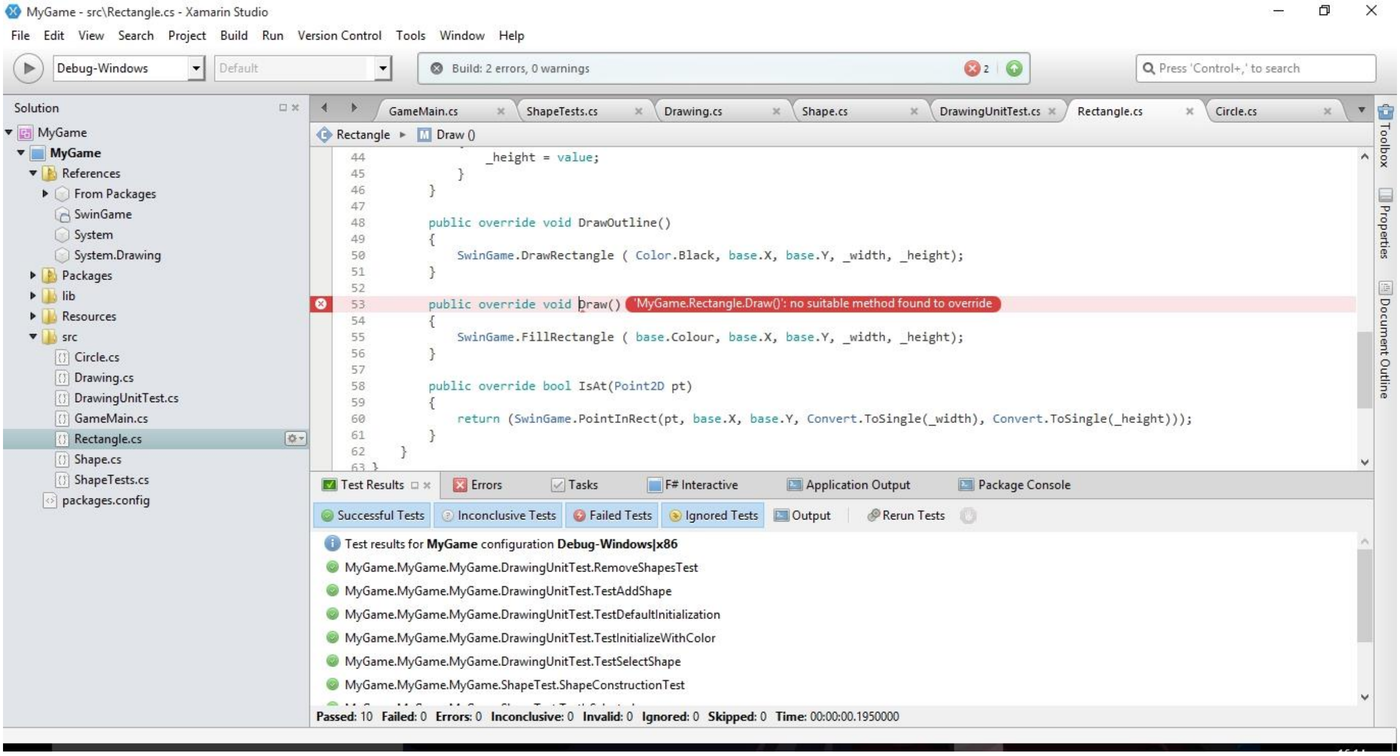
Build successful.

```
    }

    if (SwinGame.KeyTyped (KeyCode.vk_BACKSPACE) | SwinGame.KeyTyped (KeyCode.vk_DELETE))
    {
        List<Shape> selected= myDrawing.SelectedShapes;
        for (int i = 0; i < selected.Count; i++)
        {
            myDrawing.RemoveShape (selected [i]);
        }
    }
    myDrawing.Draw ();
    //Draw FPS
    SwinGame.DrawFramerate(0,0);
    //Draw onto the screen
    SwinGame.RefreshScreen();
}

//End the audio
```

This file has line endings (UNIX) which differ from the policy settings (Windows). Convert to Windows line endings OK

```
Test results for MyGame configuration Debug-Windows|x86
MyGame.MyGame.MyGame.DrawingUnitTest.RemoveShapesTest
MyGame.MyGame.MyGame.DrawingUnitTest.TestAddShape
MyGame.MyGame.MyGame.DrawingUnitTest.TestDefaultInitialization
MyGame.MyGame.MyGame.DrawingUnitTest.TestInitializeWithColor
MyGame.MyGame.MyGame.DrawingUnitTest.TestSelectShape
MyGame.MyGame.MyGame.ShapeTest.ShapeConstructionTest
Passed: 10  Failed: 0  Errors: 0  Inconclusive: 0  Invalid: 0  Ignored: 0  Skipped: 0  Time: 00:00:00.2860000
```

Errors regarding use of abstract/virtual methods and abstract classes.



Build: 2 errors, 0 warnings

```
                _height = value;
            }
        }

        public override void DrawOutline()
        {
            SwinGame.DrawRectangle ( Color.Black, base.X, base.Y, _width, _height);
        }

        public override void Draw()
        {
            SwinGame.FillRectangle ( base.Colour, base.X, base.Y, _width, _height);
        }

        public override bool IsAt(Point2D pt)
        {
            return (SwinGame.PointInRect(pt, base.X, base.Y, Convert.ToSingle(_width), Convert.ToSingle(_height)));
        }
    }
}
```

'MyGame.Rectangle.Draw()': no suitable method found to override

```
Test results for MyGame configuration Debug-Windows|x86
MyGame.MyGame.MyGame.DrawingUnitTest.RemoveShapesTest
MyGame.MyGame.MyGame.DrawingUnitTest.TestAddShape
MyGame.MyGame.MyGame.DrawingUnitTest.TestDefaultInitialization
MyGame.MyGame.MyGame.DrawingUnitTest.TestInitializeWithColor
MyGame.MyGame.MyGame.DrawingUnitTest.TestSelectShape
MyGame.MyGame.MyGame.ShapeTest.ShapeConstructionTest
Passed: 10  Failed: 0  Errors: 0  Inconclusive: 0  Invalid: 0  Ignored: 0  Skipped: 0  Time: 00:00:00.1950000
```

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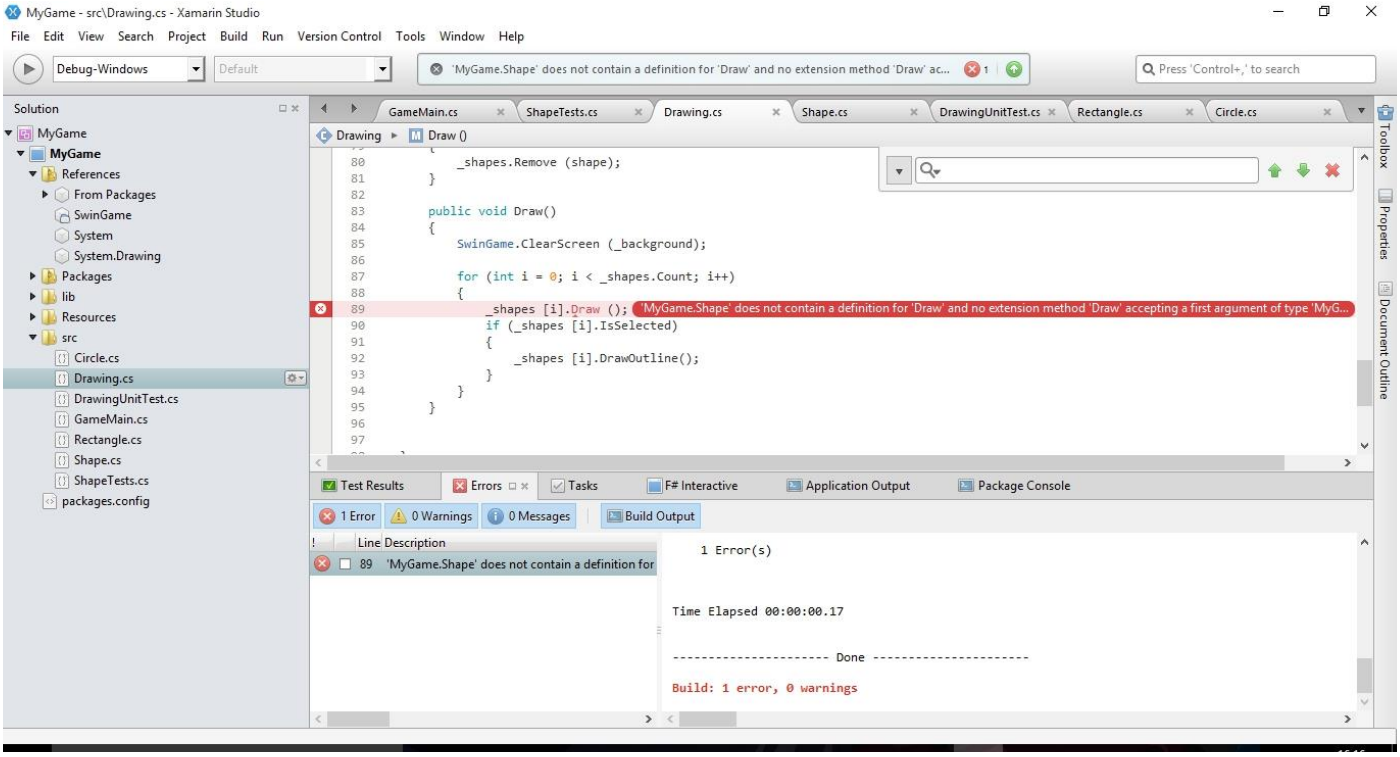

'MyGame.Shape' does not contain a definition for 'Draw' and no extension method 'Draw' ac... 1

```
            _shapes.Remove (shape);
        }

        public void Draw()
        {
            SwinGame.ClearScreen (_background);

            for (int i = 0; i < _shapes.Count; i++)
            {
                _shapes [i].Draw ();
                if (_shapes [i].IsSelected)
                {
                    _shapes [i].DrawOutline();
                }
            }
        }
```

'MyGame.Shape' does not contain a definition for 'Draw' and no extension method 'Draw' accepting a first argument of type 'MyG...

89 'MyGame.Shape' does not contain a definition for

```
    1 Error(s)


Time Elapsed 00:00:00.17


--------------------- Done ---------------------

Build: 1 error, 0 warnings
```