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COP2362

TUTORIAL 4-1 Implementing Properties to Access

I worked alone.

A picture containing graphical user interface

Description automatically generated

DrawingShape.cs

using Windows.UI;

using Windows.UI.Xaml.Media;

using Windows.UI.Xaml.Shapes;

using Windows.UI.Xaml.Controls;

using System;

using System.Collections.Generic;

using System.Linq;

using System.Text;

using System.Threading.Tasks;

namespace Drawing

{

abstract class DrawingShape

{

protected int \_size;

protected int \_x = 0, \_y = 0;

protected Shape shape = null;

public DrawingShape(int size)

{

this.\_size = size;

}

public int X

{

get { return this.\_x; }

set { this.\_x = value; }

}

public int Y

{

get { return this.\_y; }

set { this.\_y = value; }

}

public Color Color

{

set

{

if (this.shape != null)

{

SolidColorBrush brush = new SolidColorBrush(value);

this.shape.Fill = brush;

}

}

}

public virtual void Draw(Canvas canvas)

{

if(this.shape == null)

{

throw new InvalidOperationException("Shape is null");

}

this.shape.Height = this.\_size;

this.shape.Width = this.\_size;

Canvas.SetTop(this.shape, this.\_y);

Canvas.SetLeft(this.shape, this.\_x);

canvas.Children.Add(this.shape);

}

}

}

IDraw.cs

using System;

using System.Collections.Generic;

using System.Linq;

using System.Text;

using System.Threading.Tasks;

using Windows.UI.Xaml.Controls;

namespace Drawing

{

interface IDraw

{

int X { get; set; }

int Y { get; set; }

void Draw(Canvas canvas);

}

}

IColor.cs

using System;

using System.Collections.Generic;

using System.Linq;

using System.Text;

using System.Threading.Tasks;

using Windows.UI;

namespace Drawing

{

interface IColor

{

Color Color { set; }

}

}

DrawingPad.xaml.cs

using System;

using System.Collections.Generic;

using System.IO;

using System.Linq;

using System.Runtime.InteropServices.WindowsRuntime;

using Windows.Foundation;

using Windows.Foundation.Collections;

using Windows.UI.Xaml;

using Windows.UI.Xaml.Controls;

using Windows.UI.Xaml.Controls.Primitives;

using Windows.UI.Xaml.Data;

using Windows.UI.Xaml.Input;

using Windows.UI.Xaml.Media;

using Windows.UI.Xaml.Navigation;

using Windows.UI;

namespace Drawing

{

public sealed partial class DrawingPad : Page

{

public DrawingPad()

{

this.InitializeComponent();

}

private void drawingCanvas\_Tapped(object sender, TappedRoutedEventArgs e)

{

Point mouseLocation = e.GetPosition(this.drawingCanvas);

Square mySquare = new Square(100);

if (mySquare is IDraw)

{

IDraw drawSquare = mySquare;

drawSquare.X = (int)mouseLocation.X;

drawSquare.Y = (int)mouseLocation.Y;

drawSquare.Draw(drawingCanvas);

}

if (mySquare is IColor)

{

IColor colorSquare = mySquare;

colorSquare.Color = Colors.BlueViolet;

}

}

private void drawingCanvas\_RightTapped(object sender, RightTappedRoutedEventArgs e)

{

Point mouseLocation = e.GetPosition(this.drawingCanvas);

Circle myCircle = new Circle(100);

if (myCircle is IDraw)

{

IDraw drawCircle = myCircle;

drawCircle.X = (int)mouseLocation.X;

drawCircle.Y = (int)mouseLocation.Y;

drawCircle.Draw(drawingCanvas);

}

if (myCircle is IColor)

{

IColor colorCircle = myCircle;

colorCircle.Color = Colors.HotPink;

}

}

}

}

Text

Description automatically generated with low confidence

Program.cs

using System;

using System.Collections.Generic;

using System.Text;

namespace AutomaticProperties

{

class Program

{

static void doWork()

{

Polygon square = new Polygon();

Polygon triangle = new Polygon { NumSides = 3 };

Polygon pentagon = new Polygon { SideLength = 15.5, NumSides = 5 };

Console.WriteLine($"Square: number of sides is {square.NumSides}, length of each side is {square.SideLength}");

Console.WriteLine($"Triangle: number of sides is {triangle.NumSides}, length of each side is {triangle.SideLength}");

Console.WriteLine($"Pentagon: number of sides is {pentagon.NumSides}, length of each side is {pentagon.SideLength}");

}

static void Main(string[] args)

{

try

{

doWork();

}

catch (Exception ex)

{

Console.WriteLine(ex.Message);

}

}

}

}

Polygon.cs

using System;

using System.Collections.Generic;

using System.Linq;

using System.Text;

using System.Threading.Tasks;

namespace AutomaticProperties

{

class Polygon

{

public int NumSides { get; set; }

public double SideLength { get; set; }

public Polygon()

{

this.NumSides = 4;

this.SideLength = 10.0;

}

}

}