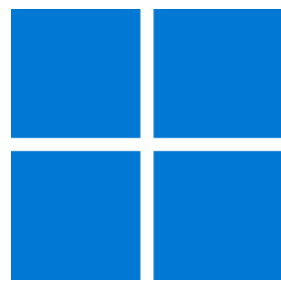




Windows App SDK



Offset Layout

Offset Layout

Offset Layout shows how to create an **Offset Panel** using **Windows App SDK**

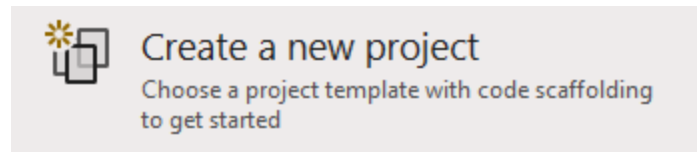
Step 1

Follow **Setup and Start** on how to get **Setup** and **Install** what you need for **Visual Studio 2022** and **Windows App SDK**.

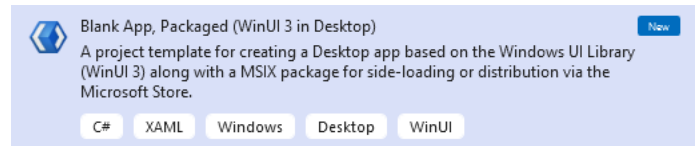
In **Windows 11** choose **Start** and then find or search for **Visual Studio 2022** and then select it.



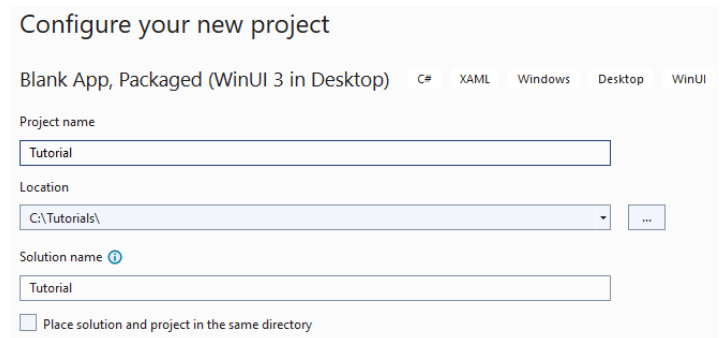
Once **Visual Studio 2022** has started select **Create a new project**.



Then choose the **Blank App, Packages (WinUI in Desktop)** and then select **Next**.

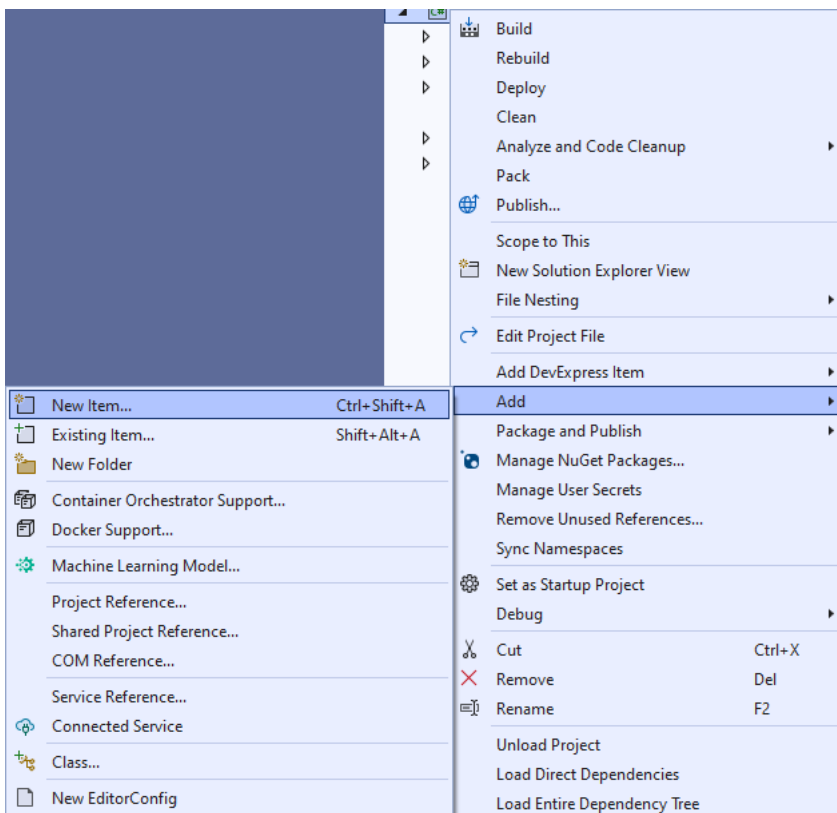


After that in **Configure your new project** type in the **Project name** as *OffsetLayout*, then select a Location and then select **Create** to start a new **Solution**.



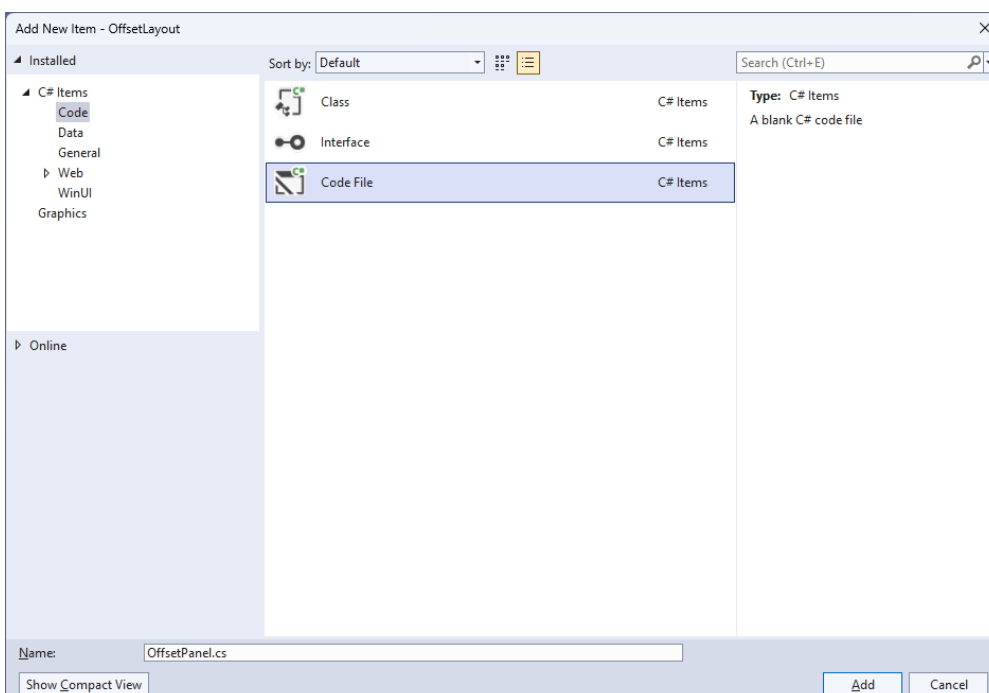
Step 2

Then in **Visual Studio** within **Solution Explorer** for the **Solution**, right click on the **Project** shown below the **Solution** and then select **Add** then **New Item...**



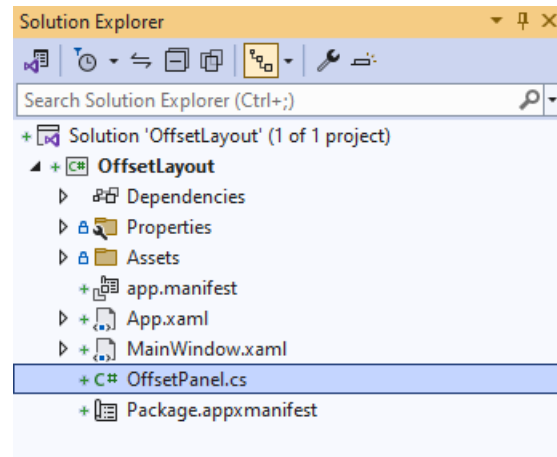
Step 3

Then in **Add New Item** from the **C# Items** list, select **Code** and then select **Code File** from the list next to this, then type in the name of *OffsetPanel.cs* and then **Click** on **Add**.



Step 4

Then from **Solution Explorer** for the **Solution** double-click on **OffsetPanel.cs** to see the **Code** for the **User Control**.



Step 5

You will now be in the **View** for the **Code** of *OffsetPanel.cs*, within this type in the following **Code**:

```
using Microsoft.UI.Xaml;
using Microsoft.UI.Xaml.Controls;
using Windows.Foundation;

namespace OffsetLayout;

public class OffsetPanel : Panel
{
    // Dependency Properties & Properties

    // Measure Override Method

    // Arrange Override Method
}
```

There are **using** statements for the **User Control**, a **namespace** for **OffsetLayout** along with a **class** of **OffsetPanel** that will represent the **User Control** and **Inherits** the **class** of **Panel**.

Step 6

Then in the namespace of `OffsetLayout` in the class of `OffsetPanel` after the **Comment** of `// Dependency Properties & Properties` type the following **Dependency Properties** and **Properties**:

```
public static readonly DependencyProperty MaximumColumnsProperty =
DependencyProperty.Register(nameof(MaximumColumns),
typeof(int), typeof(OffsetPanel), new PropertyMetadata(2));

public static readonly DependencyProperty ColumnOffsetProperty =
DependencyProperty.Register(nameof(ColumnOffset),
typeof(double), typeof(OffsetPanel), new PropertyMetadata(10.0));

public static readonly DependencyProperty RowOffsetProperty =
DependencyProperty.Register(nameof(RowOffset),
typeof(double), typeof(OffsetPanel), new PropertyMetadata(10.0));

public static readonly DependencyProperty SpacingYProperty =
DependencyProperty.Register(nameof(SpacingY),
typeof(double), typeof(OffsetPanel), new PropertyMetadata(10.0));

public static readonly DependencyProperty SpacingXProperty =
DependencyProperty.Register(nameof(SpacingX),
typeof(double), typeof(OffsetPanel), new PropertyMetadata(10.0));

public int MaximumColumns
{
    get { return (int)GetValue(MaximumColumnsProperty); }
    set { SetValue(MaximumColumnsProperty, value); }
}

public double ColumnOffset
{
    get { return (double)GetValue(ColumnOffsetProperty); }
    set { SetValue(ColumnOffsetProperty, value); }
}

public double RowOffset
{
    get { return (double)GetValue(RowOffsetProperty); }
    set { SetValue(RowOffsetProperty, value); }
}

public double SpacingX
{
    get { return (double)GetValue(SpacingXProperty); }
    set { SetValue(SpacingXProperty, value); }
}

public double SpacingY
{
    get { return (double)GetValue(SpacingYProperty); }
    set { SetValue(SpacingYProperty, value); }
}
```

Step 7

While still in the **namespace** of **OffsetLayout** in the **class** of **OffsetPanel** after the **Comment** of **// Measure Override Method** type the following **Method**:

```
protected override Size MeasureOverride(Size availableSize)
{
    double x = 0;
    double y = 0;
    double itemWidth = 0.0;
    double itemHeight = 0.0;
    for (int i = 0; i < Children.Count; i++)
    {
        var element = Children[i];
        element.Measure(availableSize);
        double width = element.DesiredSize.Width + x;
        double height = element.DesiredSize.Height + y;
        if (width > itemWidth) itemWidth = width;
        if (height > itemHeight) itemHeight = height;
        y += SpacingY;
        if ((i + 1) % MaximumColumns == 0)
        {
            x -= SpacingX * (MaximumColumns - 1);
            x += RowOffset;
            y += ColumnOffset;
        }
        else
            x += SpacingX;
    }
    return new Size(itemWidth, itemHeight);
}
```

The **Method** of **MeasureOverride** will **Measure** the **Size** required to layout the **Children** of the **Panel**.

Step 8

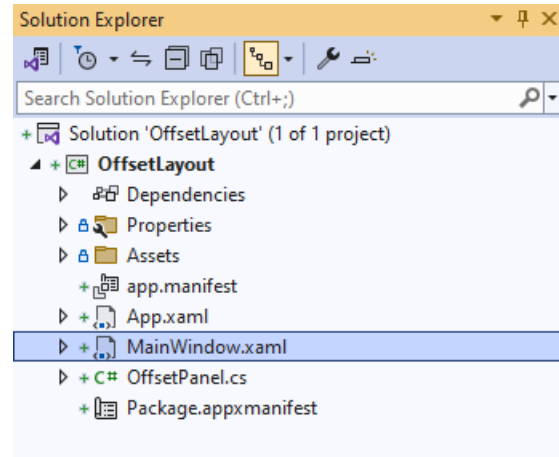
While still in the **namespace** of **OffsetLayout** in the **class** of **OffsetPanel** after the **Comment** of **// Arrange Override Method** type the following **Method**:

```
protected override Size ArrangeOverride(Size finalSize)
{
    double x = 0;
    double y = 0;
    for (int i = 0; i < Children.Count; i++)
    {
        var element = Children[i];
        element.Arrange(new Rect(new Point(x, y),
            element.DesiredSize));
        y += SpacingY;
        if ((i + 1) % MaximumColumns == 0)
        {
            x -= SpacingX * (MaximumColumns - 1);
            x += RowOffset;
            y += ColumnOffset;
        }
        else
            x += SpacingX;
    }
    return finalSize;
}
```

The **Method** of **ArrangeOverride** will position the **Children** of the **Panel** at **Offsets** to each other for their **Rows** and **Columns** along with **Spacing** between them for the **User Control**.

Step 9

Within **Solution Explorer** for the **Solution** double-click on **MainWindow.xaml** to see the **XAML** for the **Main Window**.



Step 10

In the **XAML** for **MainWindow.xaml** there be some **XAML** for a **StackPanel**, this should be **Removed** by removing the following:

```
<StackPanel Orientation="Horizontal"
HorizontalAlignment="Center" VerticalAlignment="Center">
    <Button x:Name="myButton" Click="myButton_Click">Click Me</Button>
</StackPanel>
```

Step 11

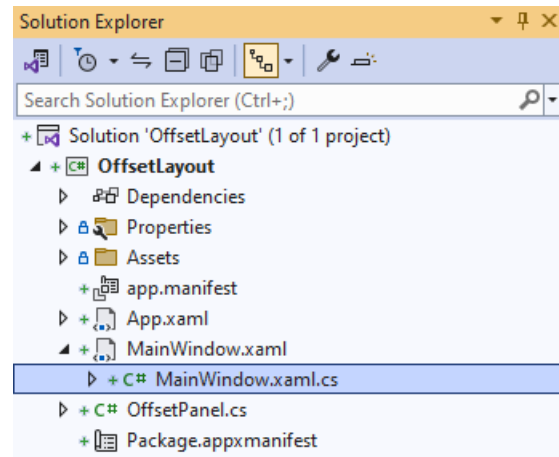
While still in the **XAML** for **MainWindow.xaml** above **</Window>**, type in the following **XAML**:

```
<local:OffsetPanel MaximumColumns="4" SpacingX="50" SpacingY="50"
HorizontalAlignment="Center" VerticalAlignment="Center">
    <Rectangle Width="100" Height="100" Fill="Red"/>
    <Rectangle Width="100" Height="100" Fill="Orange"/>
    <Rectangle Width="100" Height="100" Fill="Yellow"/>
    <Rectangle Width="100" Height="100" Fill="Green"/>
    <Rectangle Width="100" Height="100" Fill="Cyan"/>
    <Rectangle Width="100" Height="100" Fill="Blue"/>
    <Rectangle Width="100" Height="100" Fill="Magenta"/>
    <Rectangle Width="100" Height="100" Fill="Purple"/>
</local:OffsetPanel>
```

This **XAML** contains the **User Control** of **OffsetPanel** with **MaximumColumns** set to **4** and **Spacing** between items set and the **Children** containing **Controls** for a **Rectangle** in various colours.

Step 12

Then, within **Solution Explorer** for the **Solution** select the arrow next to **MainWindow.xaml** then double-click on **MainWindow.xaml.cs** to see the **Code** for the **Main Window**.



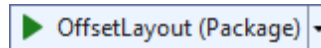
Step 13

In the **Code** for **MainWindow.xaml.cs** there be a **Method** of `myButton_Click(...)` this should be **Removed** by removing the following:

```
private void myButton_Click(object sender, RoutedEventArgs e)
{
    myButton.Content = "Clicked";
}
```

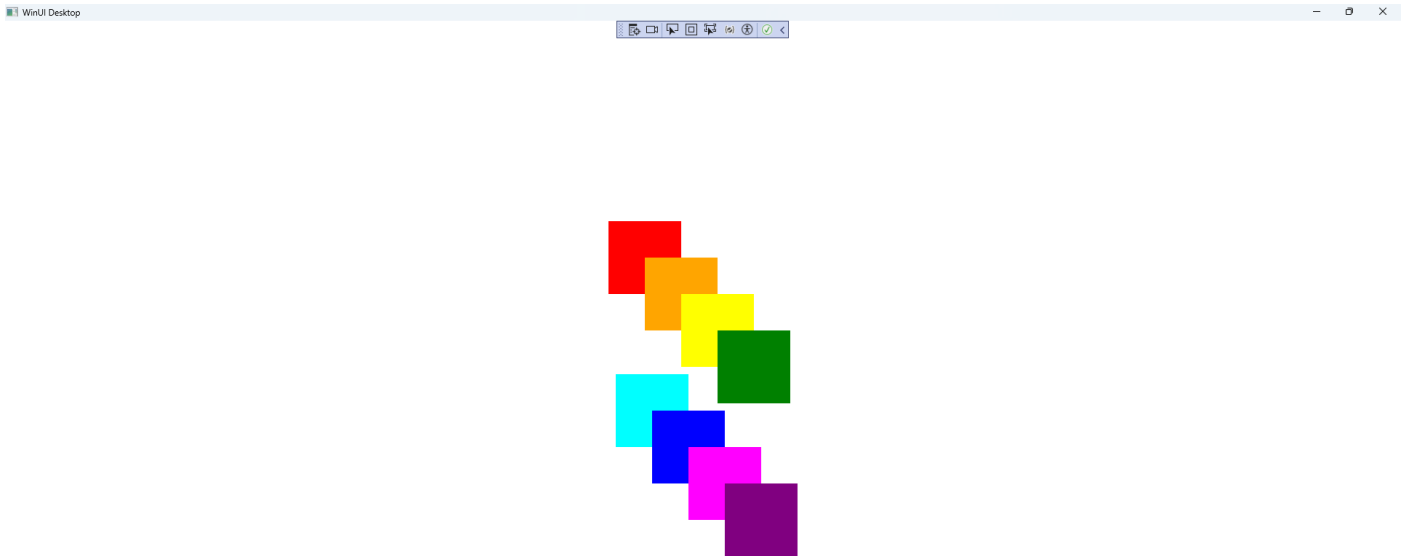
Step 14

That completes the **Windows App SDK** application. In **Visual Studio 2022** from the **Toolbar** select **OffsetLayout (Package)** to **Start** the application.



Step 15

Once running you will see the **Offset Panel** displayed.



Step 16

To **Exit** the **Windows App SDK** application, select the **Close** button from the top right of the application as that concludes this **Tutorial** for **Windows App SDK** from tutorialr.com!

