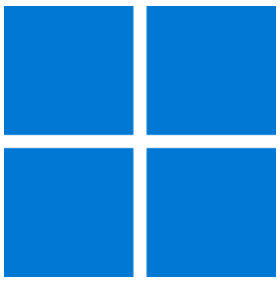
tutorial

Windows App SDK



Docking Layout

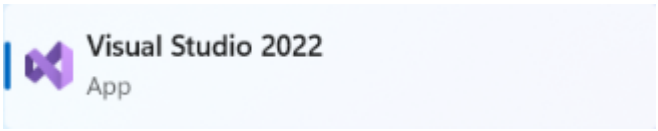
Docking Layout

Docking Layout shows how to create a **Docking Panel** using **Windows App SDK**

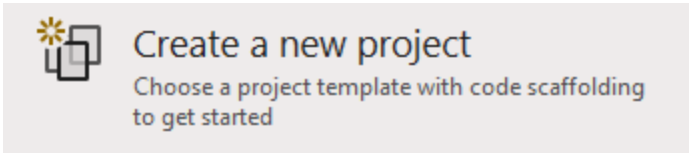
Step 1

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

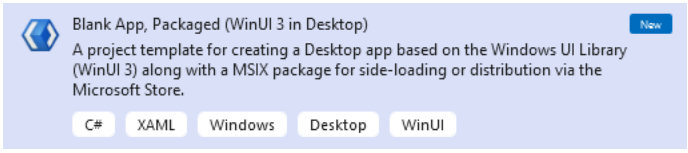
In **Windows 11** choose **Start** and then find or search for **Visual Studio 2022** and then select it.



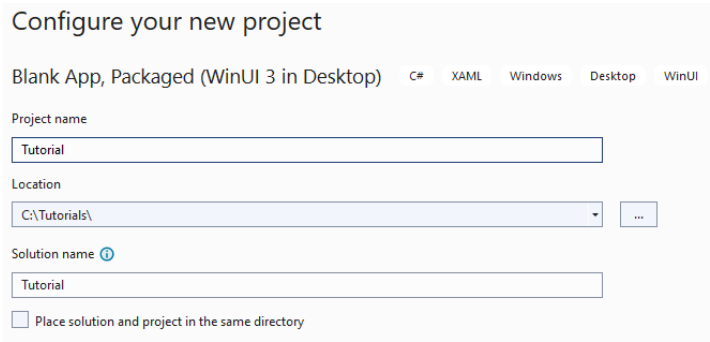
Once **Visual Studio 2022** has started select **Create a new project**.



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

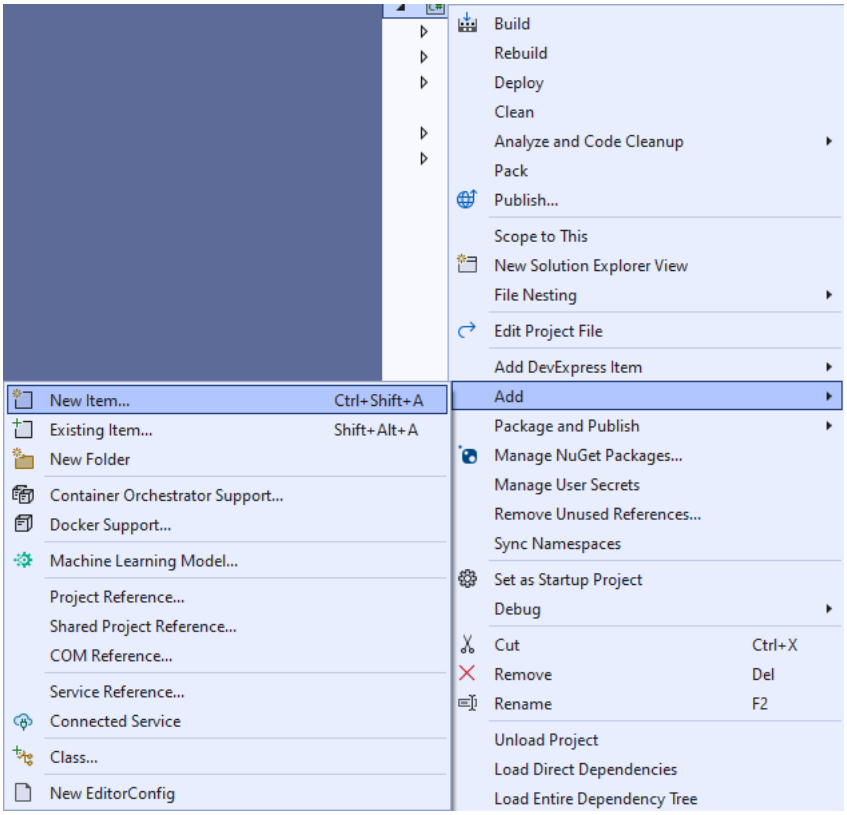


After that in **Configure your new project** type in the **Project name** as *DockingLayout*, then select a Location and then select **Create** to start a new **Solution**.



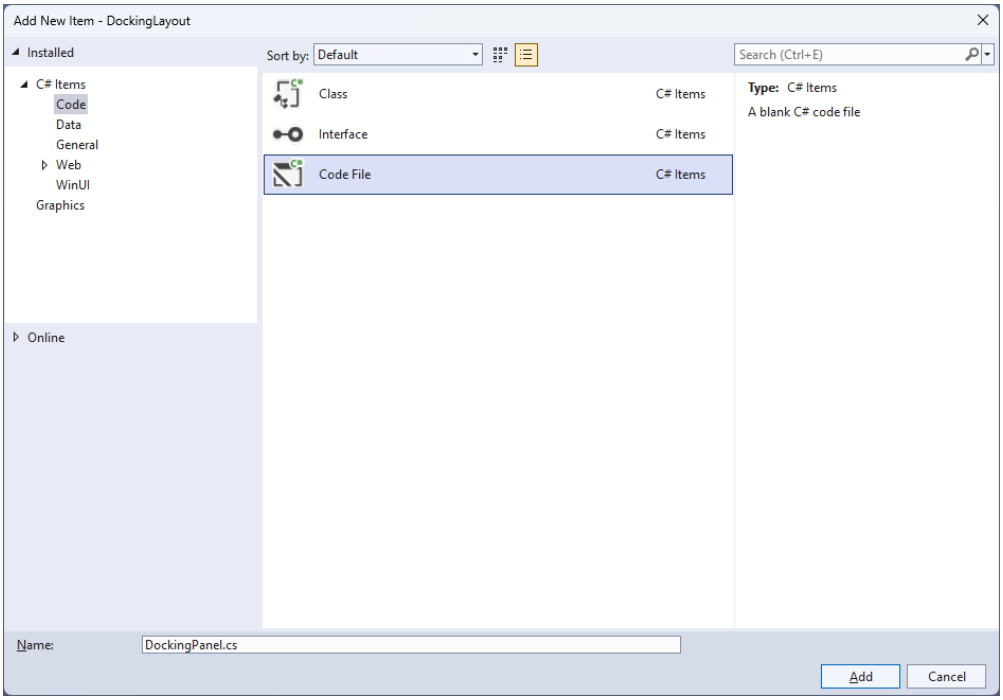
Step 2

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...**



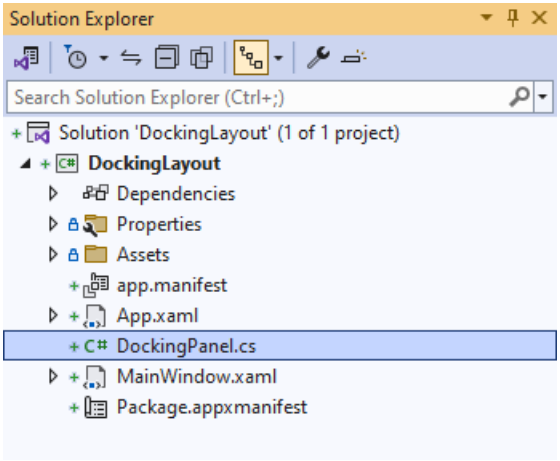
Step 3

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 *DockingPanel.cs* and then **Click** on **Add**.



Step 4

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



Step 5

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

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

namespace DockingLayout;

public class DockingPanel : Panel
{
    public enum Dock
    {
        Left,
        Top,
        Right,
        Bottom
    }

    // Dependency Properties, Properties, Get Dock & Set Dock Methods

    // Measure Override Method

    // Arrange Override Method

}
```

There are **`using`** statements for the **User Control**, a **`namespace`** for **`DockingLayout`** along with a **`class`** of **`DockingPanel`** that will represent the **User Control** and **Inherits** the **`class`** of **`Panel`** which has an **`enum`** of **`Dock`** for the different **Docking** options supported by the **User Control.**

Step 6

Then in the **namespace** of **DockingLayout** in the **class** of **DockingPanel** after the **Comment** of **// Dependency Properties, Properties, Get Dock & Set Dock Methods** type the following **Dependency Properties**, **Properties** and **Methods**:

```
public static readonly DependencyProperty LastChildFillProperty =
DependencyProperty.Register(nameof(LastChildFill), typeof(bool),
typeof(DockingPanel), new PropertyMetadata(false));

public static readonly DependencyProperty DockProperty =
DependencyProperty.RegisterAttached(nameof(Dock), typeof(Dock),
typeof(DockingPanel), new PropertyMetadata(Dock.Left));

public bool LastChildFill
{
    get { return (bool)GetValue(LastChildFillProperty); }
    set { SetValue(LastChildFillProperty, value); }
}

public static Dock GetDock(UIElement element)
{
    ArgumentNullException.ThrowIfNull(element);
    return (Dock)element.GetValue(DockProperty);
}

public static void SetDock(UIElement element, Dock dock)
{
    ArgumentNullException.ThrowIfNull(element);
    element.SetValue(DockProperty, dock);
}
```

Dependency Properties or **Properties** for the **User Control** can be customised for the **Docking Panel** along with some convention-based **Methods** of **GetDock** and **SetDock** used with the **Property** of **Dock**.

Step 7

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

```
protected override Size MeasureOverride(Size availableSize)
{
    double width = 0.0;
    double height = 0.0;
    double maxWidth = 0.0;
    double maxHeight = 0.0;
    foreach (var element in Children)
    {
        var remainingSize = new Size(
            Math.Max(0.0, availableSize.Width - width),
            Math.Max(0.0, availableSize.Height - height));
        element.Measure(remainingSize);
        var desiredSize = element.DesiredSize;
        switch (GetDock(element))
        {
            case Dock.Left:
            case Dock.Right:
                maxHeight = Math.Max(maxHeight, height + desiredSize.Height);
                width += desiredSize.Width;
                break;
            case Dock.Top:
            case Dock.Bottom:
                maxWidth = Math.Max(maxWidth, width + desiredSize.Width);
                height += desiredSize.Height;
                break;
        }
    }
    maxWidth = Math.Max(maxWidth, width);
    maxHeight = Math.Max(maxHeight, height);
    return new Size(maxWidth, maxHeight);
}
```

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

Step 8

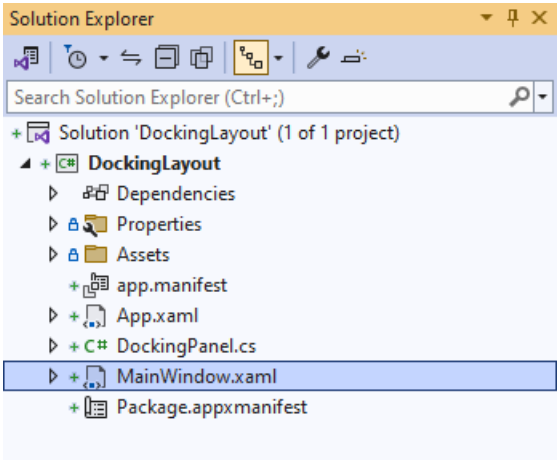
While still in the **namespace** of **DockingLayout** in the **class** of **DockingPanel** after the **Comment** of **// Arrange Override Method** type the following **Method**:

```
protected override Size ArrangeOverride(Size finalSize)
{
    double left = 0.0;
    double top = 0.0;
    double right = 0.0;
    double bottom = 0.0;
    var children = Children;
    var count = children.Count - (LastChildFill ? 1 : 0);
    var index = 0;
    foreach (var element in children)
    {
        var rect = new Rect(left, top,
            Math.Max(0.0, finalSize.Width - left - right),
            Math.Max(0.0, finalSize.Height - top - bottom));
        if (index < count)
        {
            var desiredSize = element.DesiredSize;
            switch (GetDock(element))
            {
                case Dock.Left:
                    left += desiredSize.Width;
                    rect.Width = desiredSize.Width;
                    break;
                case Dock.Top:
                    top += desiredSize.Height;
                    rect.Height = desiredSize.Height;
                    break;
                case Dock.Right:
                    right += desiredSize.Width;
                    rect.X = Math.Max(0.0, finalSize.Width - right);
                    rect.Width = desiredSize.Width;
                    break;
                case Dock.Bottom:
                    bottom += desiredSize.Height;
                    rect.Y = Math.Max(0.0, finalSize.Height - bottom);
                    rect.Height = desiredSize.Height;
                    break;
            }
        }
        element.Arrange(rect);
        index++;
    }
    return finalSize;
}
```

The **Method** of **ArrangeOverride** will position the **Children** of the **Panel** using the **Property** of **Dock** getting the correct **Size** of 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

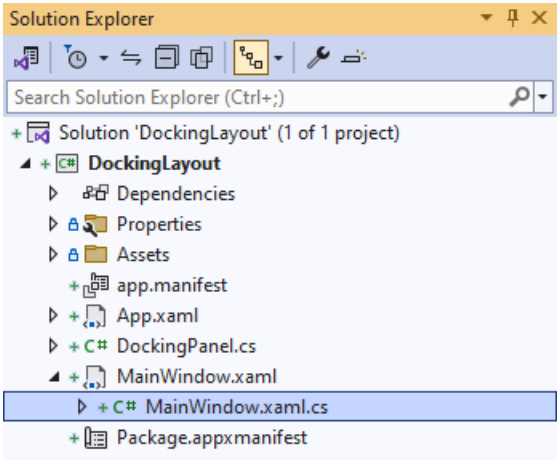
While still in the **XAML** for **MainWindow.xaml** above **`</Window>`**, type in the following **XAML**:

```
<local:DockingPanel LastChildFill="True"
    HorizontalAlignment="Center" VerticalAlignment="Center">
    <Rectangle Width="100" Height="100" Fill="Red"
    Margin="10" local:DockingPanel.Dock="Top"/>
    <Rectangle Width="100" Height="100" Fill="Orange"
    Margin="10" local:DockingPanel.Dock="Top"/>
    <Rectangle Width="100" Height="100" Fill="Yellow"
    Margin="10" local:DockingPanel.Dock="Bottom"/>
    <Rectangle Width="100" Height="100" Fill="Green"
    Margin="10" local:DockingPanel.Dock="Bottom"/>
    <Rectangle Width="100" Height="100" Fill="Cyan"
    Margin="10" local:DockingPanel.Dock="Left"/>
    <Rectangle Width="100" Height="100" Fill="Blue"
    Margin="10" local:DockingPanel.Dock="Left"/>
    <Rectangle Width="100" Height="100" Fill="Magenta"
    Margin="10" local:DockingPanel.Dock="Right"/>
    <Rectangle Width="100" Height="100" Fill="Purple"
    Margin="10" local:DockingPanel.Dock="Right"/>
</local:DockingPanel>
```

This **XAML** contains the **User Control** of **`DockingPanel`** with **`LastChildFill`** set to **`True`** 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**.



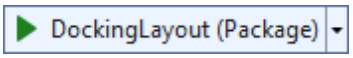
Step 13

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";
}
```

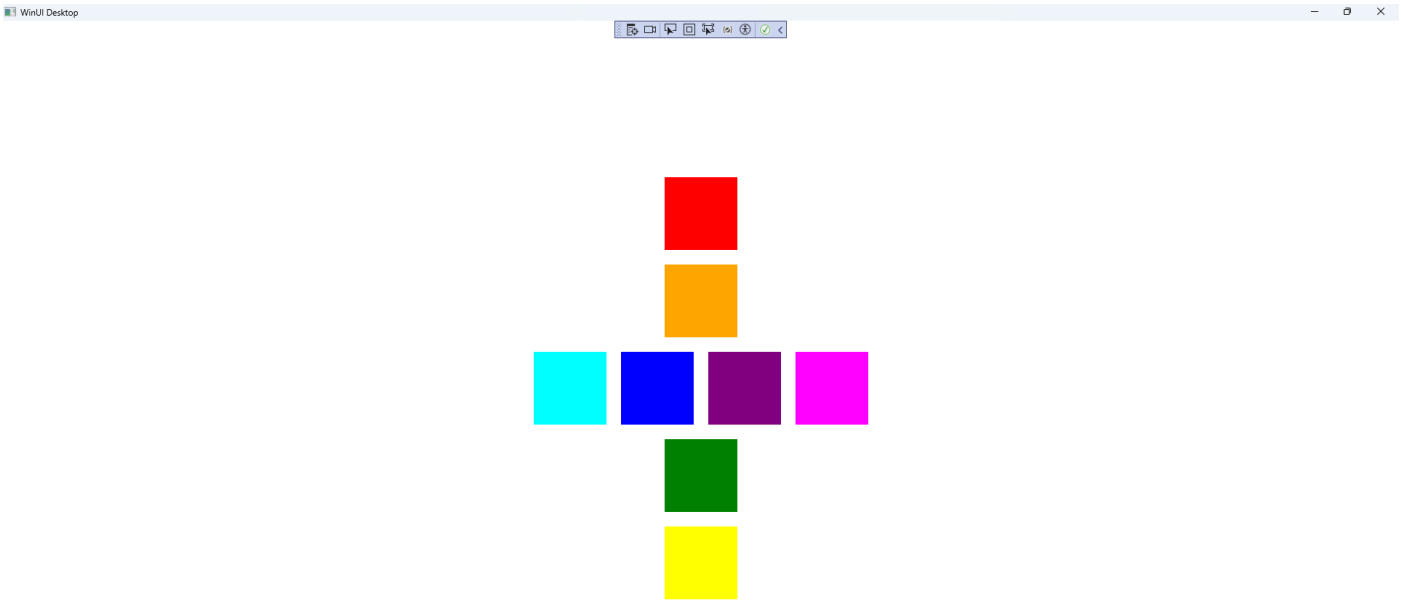
Step 14

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



Step 15

Once running you will see the **Docking 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!