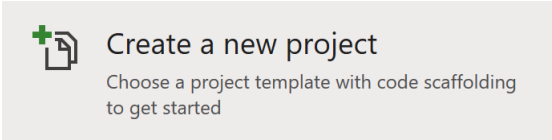
Universal Windows Platform – Light Effect

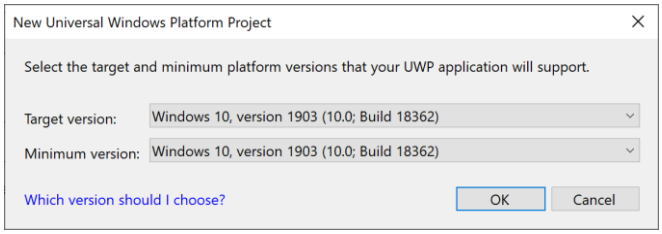
Light Effect shows how to create a **PointLight** on an element – in this case the **Visual Studio** Logo and uses an animation to demonstrate the effect passing over the logo, triggered with **Play** and cleared with **Stop**

Step 1



Follow **Setup and Start** on how to Install and/or Get Started with **Visual Studio 2019** if not already or in **Windows 10** choose **Start**, find and select **Visual Studio 2019** then from the **Get started** screen select **Create a new project**

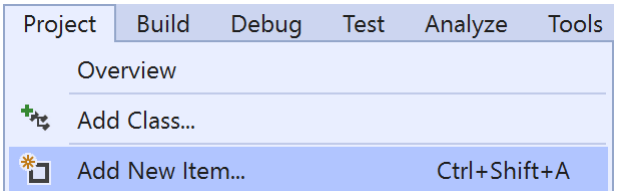
Then choose **Blank App (Universal Windows)** and select **Next** and then in **Configure your new project** enter the **Project name** as **LightEffect** and select **Create**



Finally, in **New Universal Windows Platform Project** pick the **Target version** and **Minimum version** to be at least **Windows 10, version 1903 (10.0; Build 18362)** and then select **OK**

Target Version will control the most recent features of Windows 10 your application can use. To make sure you always have the most recent version, check for any Notifications or Updates in Visual Studio 2019

Step 2



Choose **Project** then **Add New Item...** from the **Menu** in **Visual Studio 2019**

Step 3

Then choose **Code File** from **Add New Item** in **Visual Studio 2019**, enter the **Name** as **Library.cs** and select **Add**

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Step 4

In the **Code** View of **Library.cs** will be displayed and in this the following should be entered:

```
using System;
using System.Numerics;
using Windows.UI;
using Windows.UI.Composition;
using Windows.UI.Xaml.Hosting;
using Windows.UI.Xaml.Shapes;

public class Library
{
    private PointLight _light;

    public void Play(ref Path path)
    {
        Compositor compositor = ElementCompositionPreview
        .GetElementVisual(path).Compositor;
        Visual visual =
        ElementCompositionPreview.GetElementVisual(path);
        _light = compositor.CreatePointLight();
        _light.Offset = new Vector3(-(float)path.ActualWidth * 2,
        (float)path.ActualHeight / 2, (float)path.ActualHeight);
        _light.CoordinateSpace = visual;
        _light.Color = Colors.White;
        _light.Targets.Add(visual);
        ScalarKeyFrameAnimation animation =
        compositor.CreateScalarKeyFrameAnimation();
        animation.IterationBehavior = AnimationIterationBehavior.Forever;
        animation.InsertKeyFrame(1, 2 * (float)path.ActualWidth);
        animation.Duration = TimeSpan.FromSeconds(5.0f);
        _light.StartAnimation("Offset.X", animation);
    }

    public void Stop()
    {
        if (_light != null)
        {
            _light.Targets.RemoveAll();
        }
    }
}
```

There is a `PointLight` member, the `Play` method uses `GetElementVisual` to get the `Path` to apply the effect to then the `PointLight` is set up and a `ScalarKeyFrameAnimation` animation is set up which will "move" the `PointLight` across the `Path`. `Stop` method uses `RemoveAll` to clear the effect and has `null` check to prevent a `NullReferenceException`

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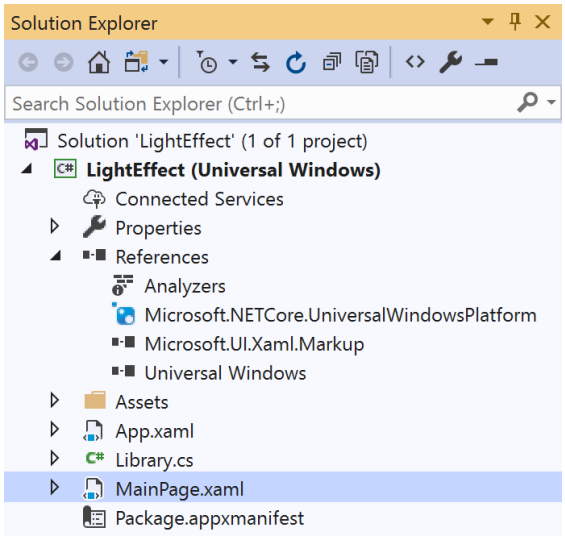
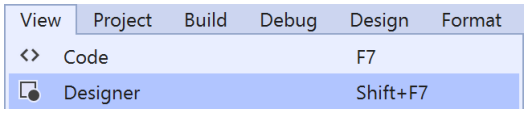
Step 5



In the **Solution Explorer** of **Visual Studio 2019** select **MainPage.xaml**

Step 6



Choose **View** then **Designer** from the **Menu** in **Visual Studio 2019**

Step 7

In the **Design** View and **XAML** View of **Visual Studio 2019** will be displayed, and in this between the **Grid** and **/Grid** elements enter the following **XAML**:

```
<Viewbox Margin="100">
    <Grid Height="400" Width="400">
        <Path Name="Logo" Fill="#FF5C2D91" Stretch="Uniform"
        Data="M27.021,0l8.897,3.592v28.815L26.938,36L12.653,
        21.796l-9.061,7.021L0,27.021V8.979l3.592-1.714l9.061,
        7.102 L27.021,0z M3.592,12.653v10.939l5.388-5.551L3.592,
        12.653z M17.633,18.041l9.306,7.348V10.693L17.633,18.041z"/>
    </Grid>
</Viewbox>
<CommandBar VerticalAlignment="Bottom">
    <AppBarButton Icon="Play" Label="Play" Click="Play_Click"/>
    <AppBarButton Icon="Stop" Label="Stop" Click="Stop_Click"/>
</CommandBar>
```

The first block of XAML is a Viewbox which contains a Grid with a Path within which represents the Logo. The second block of XAML is the CommandBar which contains Play – to apply the Light Effect to the Logo and Stop – to remove the Light Effect from the Logo

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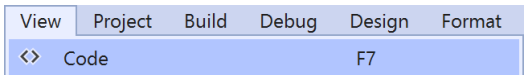
Step 8



Choose **View** then **Code** from the **Menu** in **Visual Studio 2019**

Step 9

Once in the **Code** View, below the end of **`public MainPage() { ... }`** the following Code should be entered:

```
Library library = new Library();

private void Play_Click(object sender, RoutedEventArgs e)
{
    library.Play(ref Logo);
}

private void Stop_Click(object sender, RoutedEventArgs e)
{
    library.Stop();
}
```

Below the MainPage(...) method an instance of the `Library` Class is created. In the `Play_Click(...)` Event handler the `Play` method is called, and in the `Stop_Click(...)` event handler the `Stop` method of the `Library` class is called

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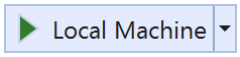
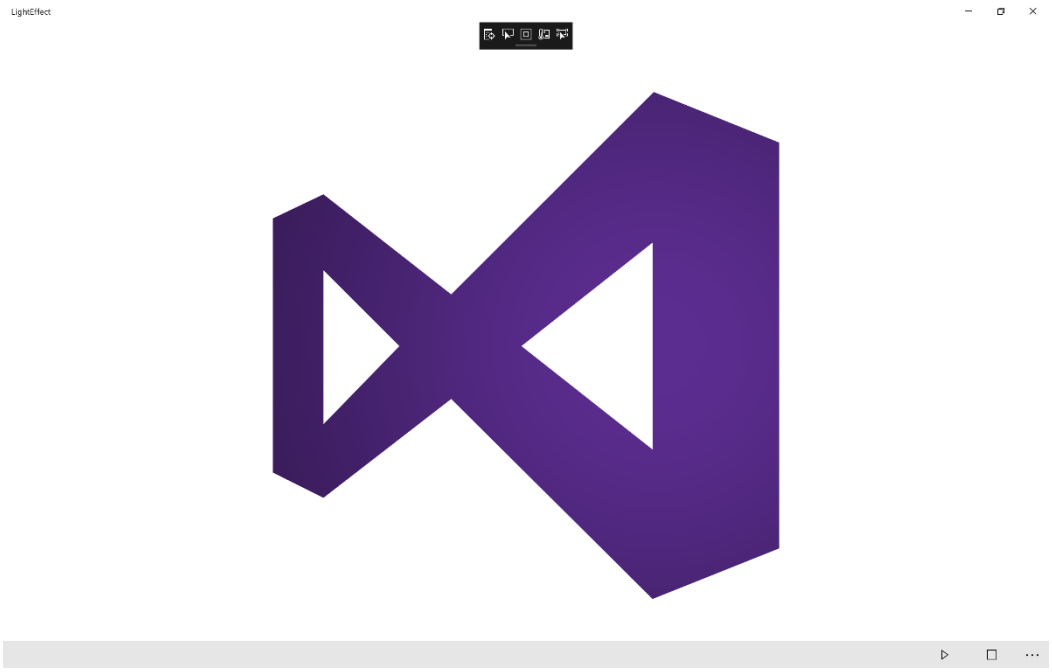
Step 10



That completes the **Universal Windows Platform** Application, in **Visual Studio 2019** select **Local Machine** to run the Application

Step 11

Once the Application is running you can then select **Play** to start the Light Effect and use **Stop** to remove the effect



Step 12

To Exit the Application, select the **Close** button in the top right of the Application