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

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Blank App (Universal Windows) A project for a single-page Universal Windows Platform (UWP) app that has no predefined controls or layout. C# Windows Xbox UWP Desktop										
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ew c	mive			m Projeci						^
Sele	ct th	e target	and minimu	m platfor	m versio	ns that you	• ОМР ар	plication will :	support.	
Target version:		ersion:	Windows 10, version 1903 (10.0; Build 18362)						\sim	
Minimum version:			n: Windows	Windows 10, version 1903 (10.0; Build 18362) ~						
Which version sho			nould I choos	uld I choose?			OK	Cance	I	

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

Proje	ect	Build	Debug	Test	Analyze	Tools
	Ove	erview				
+12	Adc	l Class				
*1	Add	New Ite	m		Ctrl+Shi	ft+A

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**





Universal Windows Platform – Light Effect Step 5

• • × Solution Explorer ○ ○ ☆ ☆ ▼ ○ ▼ ≒ ♥ ♂ ◎ ◎ ◇ ≯ = Search Solution Explorer (Ctrl+;) ρ-Solution 'LightEffect' (1 of 1 project) ▲ 💷 LightEffect (Universal Windows) Connected Services 👂 🏓 Properties ▲ ■•■ References • Analyzers 🔚 Microsoft.NETCore.UniversalWindowsPlatform Microsoft.UI.Xaml.Markup Universal Windows Assets 🕨 🔓 App.xaml C# Library.cs 👂 🔓 MainPage.xaml 🖭 Package.appxmanifest

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

Step 6

View	Project	Build	Debug	Design	Format
<>	<> Code			F7	
	Designer		Shift+F7		

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"></viewbox>				
<grid height="400" width="400"></grid>				
<path <="" fill="#FF5C2D91" name="Logo" stretch="Uniform" th=""></path>				
Data="M27.021,018.897,3.592v28.815L26.938,36L12.653,				
21.7961-9.061,7.021L0,27.021V8.97913.592-1.71419.061,				
7.102 L27.021,0z M3.592,12.653v10.93915.388-5.551L3.592,				
12.653z M17.633,18.04119.306,7.348V10.693L17.633,18.041z"/>				
<commandbar verticalalignment="Bottom"></commandbar>				
<pre><appbarbutton click="Play_Click" icon="Play" label="Play"></appbarbutton></pre>				
<pre><appbarbutton click="Stop_Click" icon="Stop" label="Stop"></appbarbutton></pre>				

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

 View
 Project
 Build
 Debug
 Design
 Format

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 Code
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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





Universal Windows Platform – Light Effect Step 10

🕨 Local Machine 🔻

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

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



