**Lab - DirectX Intro**

CODE RELATED-----------------------------------------------------------------------------------------------------

Setup 1

* Look for “DirectX Sample Browser” on your computer.
* From the Drop Down for Show, select Direct3D 11.
* Find Tutorial 1 DirectX Basics and find **Install** . Install and Open .sln file in VS
* Find Tutorial 1 DirectX Basics and find **Documentation**. Open it.

Questions about the code

1. ***Read the Documentation you just opened***
2. *Open up your Pong lab too, what differences do you immediately see? What new things does the DirectX project code have?*
3. *Look at the Documentation you opened. What is the device objects used to perform in Direct3D 10? What about Direct3D11?*

In Direct3D 10, the device object was used to perform both rendering and resource creation.

In Direct3D 11, the immediate context is used by the application to perform rendering onto a buffer, and the device contains methods to create resources.

1. *What is the swap chain responsible for?*

The swap chain is responsible for taking the buffer to which the device renders, and displaying the content on the actual monitor screen.

1. *What is a render target view? What does a resource view allow you to do?*

A render target view is a type of resource view.

A resource view allows a resource to be bound to the graphics pipeline at a specific stage. Think of resource views as typecast in C. A chunk of raw memory in C can be cast to any data type. We can cast that chunk of memory to an array of integers, an array of floats, a structure, an array of structures, and so on. The raw memory itself is not very useful to us if we don't know its type. Direct3D 11 resource views act in a similar way.

1. *What do we have to change in the message loop now?*

Use PeekMessage() instead of GetMessage().

1. *What does Present() do?*

Present() is responsible for displaying the swap chain's back buffer content onto the screen so that the user can see it.

Setup 2

* Download DirectX project from iLearn
* Open the .sln file for the project in visual studio.
* Look for “DirectX Sample Browser” on your computer.
* From the Drop Down for Show, select DirectX 11.
* Find Tutorial 2 DirectX Rendering a Triangle and find **Documentation**. Open it.
* Build and run the solution

Questions about the code

1. **Read the documentation for Rendering a Triangle.**
2. *What do we have to tell the GPU in order to render a triangle?*

In order for a GPU to render a triangle, we must tell it about the position of the triangle's three vertices.

1. *What is the vertex layout*

A vertex has a position. More often than not, it also has other attributes as well, such as a normal, one or more colors, texture coordinates (used for texture mapping), and so on. Vertex layout defines how these attributes lie in memory: what data type each attribute uses, what size each attribute has, and the order of the attributes in memory.

1. *What does primitive topology refer to?*

Primitive topology refers to how the GPU obtains the three vertices it requires to render a triangle.

1. *In the diagram under primitive topology, why does B and C appear twice in the vertex buffer?*

They are shared by both triangles.

1. *Where are the Global Variables defined for DirectX?*

At the top

1. *What do they have in common?*

They start with g\_

1. Where are the COM objects in the code?

?

1. What letter do they all start with?

?

1. *Look for Where the Direct3D device and swap chain are created. What function does this happen in?*

InitDevice()

1. *Don’t worry too much about the code in InitDevice just yet*
2. *Where is the Render function?*

Line 292

1. *What is our render target? //look for the RenderTargetView COM variable*

g\_pRenderTargetView

1. *Look in the WinMain function. There have been additions made that are related to DirectX way of doing things. What are the two main additions to the WinMain function that relate to DirectX programming?*

InitDevice()

Render()

1. *Is OnPaint being called? Why or Why not?*

No, because Render() is being used from DirectX

1. *What are the three things we have to do when working with DirectX? Look for the comments above the global variables to inform your answer*

// first the global variables (DirectX Objects)  
//  
// second the initdevice(..) function where we load all DX stuff  
//  
// third the Render() function, the equivalent to the OnPaint(), but not from Windows, but from DirectX

VIDEO FOR UNDERSTANDING------------------------------------------------------------------------------------

Intro to DirectX Project Walkthrough

<https://drive.google.com/file/d/0B0U8Py9-2oLSSkc1MTRiQUlGRHM/view>

READ-----------------------------------------------------------------------------------------------------------------------

1. <https://docs.microsoft.com/en-us/windows/desktop/direct3d11/overviews-direct3d-11-devices-intro>
2. <https://docs.microsoft.com/en-us/windows/desktop/direct3d11/overviews-direct3d-11-resources-buffers-intro>
3. <https://docs.microsoft.com/en-us/windows/desktop/direct3d9/what-is-a-swap-chain->
4. Read this about direct X <http://www.directxtutorial.com/Lesson.aspx?lessonid=11-4-2>
5. <https://docs.microsoft.com/en-us/windows/desktop/api/D3D11/nn-d3d11-id3d11device>