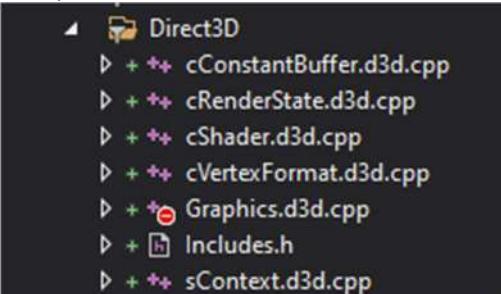
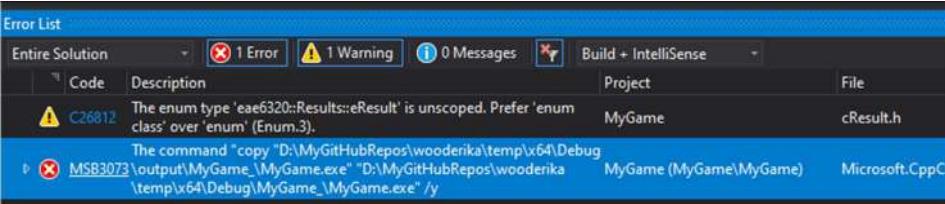
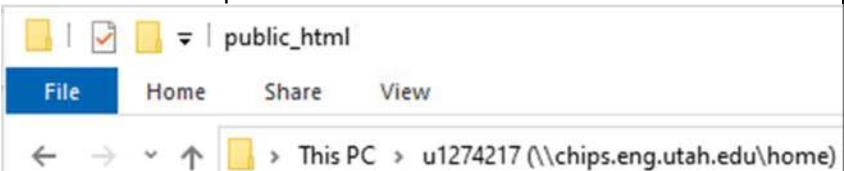
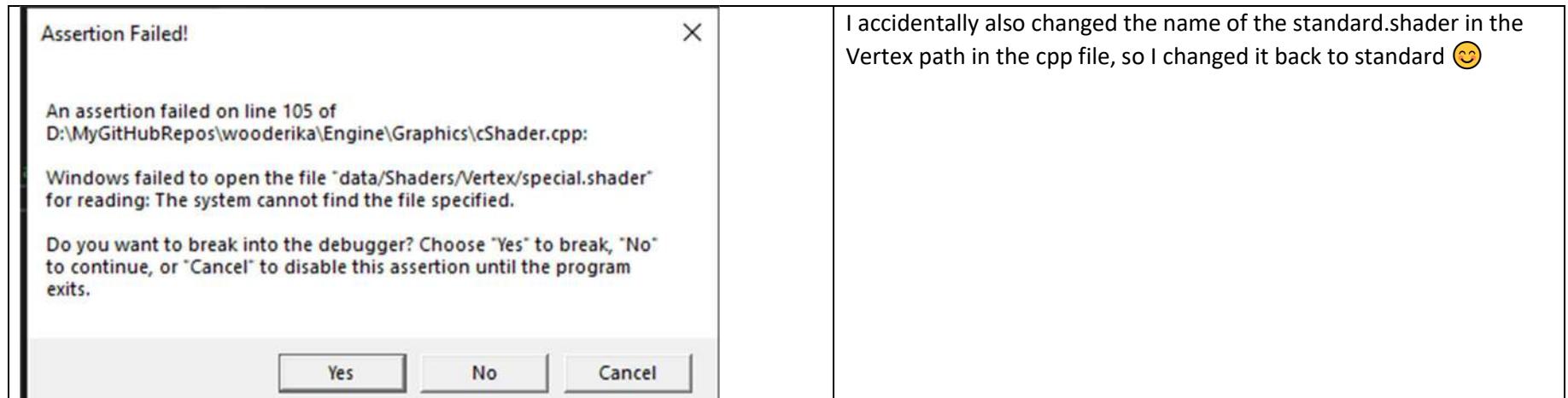


Assignment 01 Write Up – Erika Wood

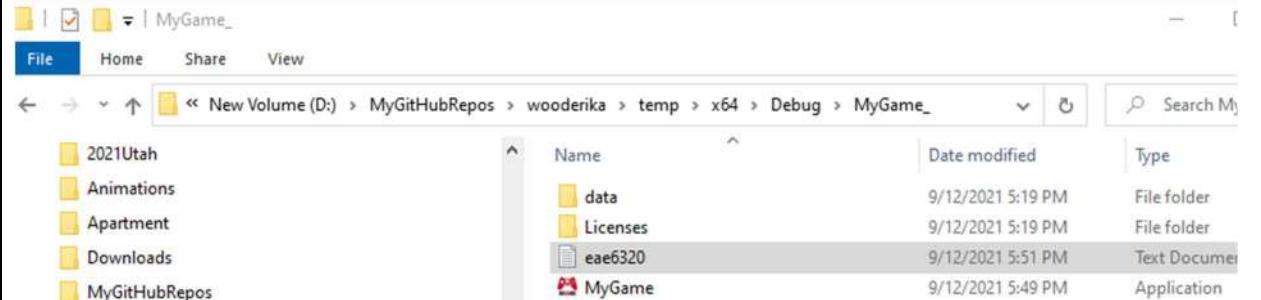
Link to the assignment: <https://utah.instructure.com/courses/716072/pages/assignment-01>

- Summary of issues I encountered and solutions I found

Issue	Solution
Compile error 	I excluded all files in the Direct3D filter instead of just the Graphics.cpp.
Linking errors	Joshua suggested to delete the entire solution and recreated it.
1 Link error remained	I forgot to add the OpenGLExtension reference after setting up the solution again
	Delete temp folder
How to get a CADE website set up	I found the place where to put the index.html: In the Windows Explorer: 



- Things I noticed

	A log file in the x64 but none in the x86. But once I got the game running both configurations contained log files 😊
--	--

- What I researched/what I was confused about

I was not sure where to apply the sin function to receive an oscillating value over time. I first thought the variable needs to be set somewhere.	I learned that D3D and OpenGL use different language and looked at coding examples. That gave me a clue about where to put the timing variable to have the changing color effect.
Changing the icon – I wasn't sure at first which icon this will apply to – in the Windows explorer, the task list or the game window	I simply tried it out and observed the change 😊
RGB color palette	https://www.tug.org/pracjourn/2007-4/walden/color.pdf
Refreshed HTML	
How to create a GIF from a video	https://www.adobe.com/express/feature/video/video-to-gif

	(does not support MKV file)
Not sure what 'tag' means that must be pushed to gitLab	

- Support I received – cudos tooooo

- Tony
- Nancy
- Joshua
- Zhu
- Slack

Thank you for your amazing support!!!

- What I learned

Ooooh sooo much! It was a great learning experience in so many ways! I loved the shader part but this was actually the first time that I really had a chance to learn a lot about VS.

- I first started to go through the following example programs:

- Solution Setup
- Static Library
- Platform-Specific Code

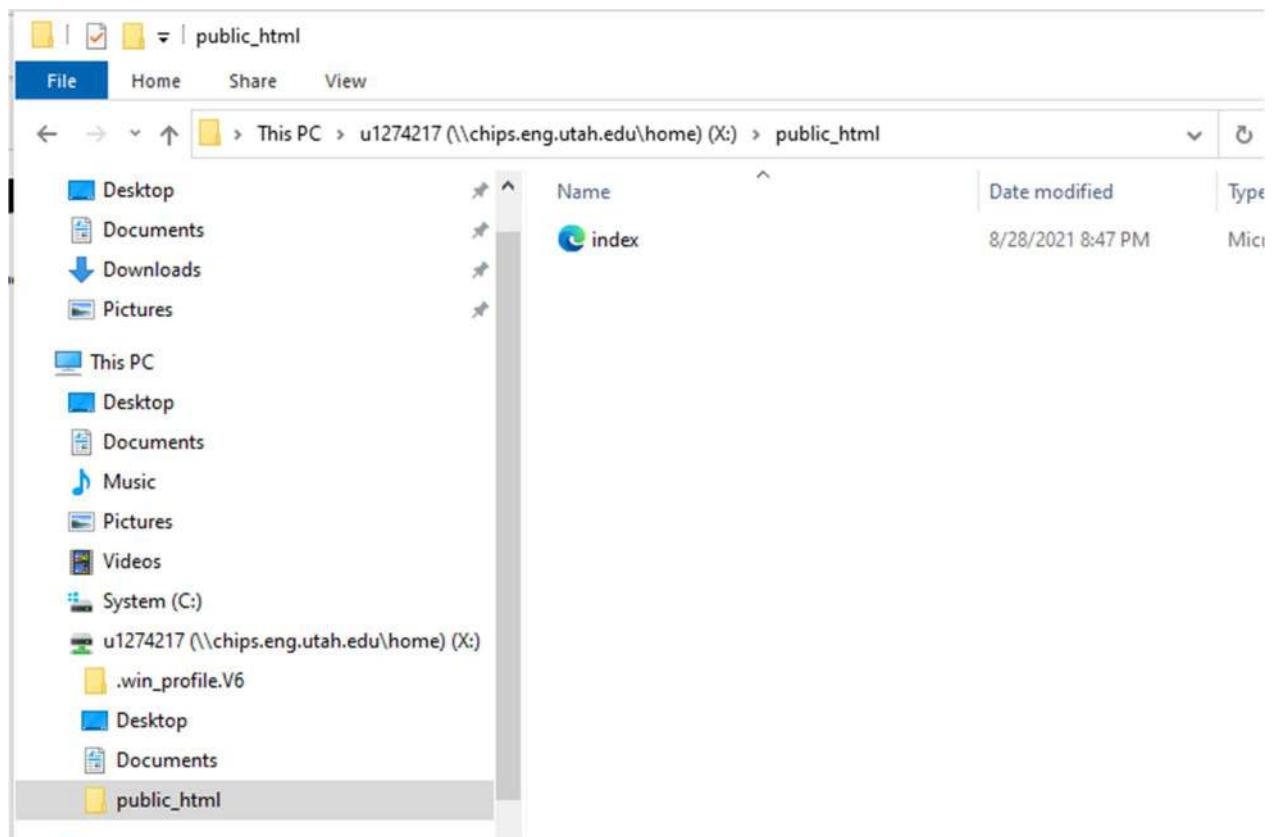
I followed the instructions and documented my progress with screenshots in a separate xls document.

- Then I set up a CADE website. It took me some time to find the correct link to set up the website.

I assumed that once you created a CADE username the website <http://www.eng.utah.edu/~u1274217/> would be accessible, however, I received a 'Forbidden' message. I then navigated the FAQ page.

The next 'tumble stone' was that the hosting does not look anything like any other hosting service I had used before.

Initially, it was not clear to my that the home directory mentioned on the FAQ answer refers to the directory found on the Explorer of the Remote Desktop. Eventually, I simply tried to create a public_html folder and index.html



And sure enough it worked. Yay 😊

The screenshot shows a web browser window with the URL <https://my.eng.utah.edu/~u1274217/>. The page title is "My First Heading". The main content is "My first paragraph." Below the heading, there is a bulleted list: "• Next I read through the Write-up Guidelines and collected general and assignment specific instructions as follows:"

General:

- explain (in your own words) what the point of the assignment was and **how you did it**
Someone should be able to read your write-up without knowing anything else about the class.
This is your chance to convince me that you understand what we talked about in class and that you "get" what you were supposed to learn by doing the assignment,
 - The write-up should contain detail about how you *personally* completed the assignment:
 - If there were parts that could be done in different ways, explain why you chose one option and whether that was a good idea now that you have completed it
 - If there were parts that gave you trouble, explain what was difficult or confusing about them and how you ended up getting it working or figuring things out
 - If you had any realizations while working on the assignment please share them
 - If you did any extra work that was cool but not required explain it
 - If there was anything you would do differently in a real game or that you would personally be interesting in adding in the future let us know
 - Show a screenshot of your game running
 - Make a screenshot that shows the triangle with a different color from the default white (screenshot should only be of the game window, **your screenshot should not contain any other windows, desktop, taskbar, etc.**)
 - (You may also show an animated GIF or video if you prefer)
 - You must describe the controls on **every** assignment, even if they haven't changed from the previous assignment. Early assignments won't have any controls. In this case your write-up doesn't need to say anything. You should describe the controls of your game in the same place where the link to download it is

- o link to this assignment must be easy to find. It is probably better at the start of your write-up
- o The file to download must be compressed as a **ZIP**

Assignment 01 specific:

- Show a screenshot of the generated log file with your game's initialization and clean up messages
- Tell us which projects needed to add a reference to the new Graphics project
 - Did you find any projects whose code mentioned the Graphics namespace, but didn't need a reference added? If so, give an example, and explain why the code in question doesn't require a reference.
- Tell us about any thoughts you have about the engine code base that has been provided to you
 - How is it organized? Is there anything that you like or don't like about the organization?
 - What do you think of the code style? Is there anything that you like or don't like about it?
 - Is there anything that you were initially confused about? Tell us why you were confused and what you figured out to not be confused.
- Discuss briefly your expectations of the class based on the first lecture and what you know so far, and tell us what you hope to learn from it
 - Take some time and think about what you personally might be able to get out of the class that aligns with your interests

Time: 4.5 hrs

Before starting with the Assignment 01 instructions I set up the git environment:

- I first checked my GitLab project name to know how to name the actual solution file:



- I then created a development branch for Assignment 01 on GitLAB

The screenshot shows the GitLab web interface. At the top, there is a dark blue header with the GitLab logo, navigation links for 'Projects', 'Groups', and 'More', and a search bar icon. Below the header, the project name 'WoodErika' is displayed, along with a 'W' icon. The main content area shows the 'Repository' section of the project. On the left, a sidebar menu lists 'Project overview', 'Repository' (which is selected and highlighted in blue), 'Files', 'Commits', 'Branches' (selected and highlighted in blue), and 'Tags'. The main content area has a breadcrumb navigation path: 'EAE6320-FALL2021 > WoodErika > Repository > Branches'. Below this, there are tabs for 'Overview', 'Active', 'Stale', and 'All', with 'Overview' being the active tab. The main content is titled 'Active branches' and lists two branches: 'master' and 'DevAssignment01'. The 'master' branch is marked as 'default' and 'protected'. Both branches have a commit history entry: '291e8326 · Added Read Me · 1 day ago'. The commit message for both is 'Added Read Me'.

- Next, I cloned the project to Github Desktop

Time: Including the write-up until this point:

Now I am starting with the Assignment 01 instructions:

- I downloaded the solution provided by Tony.
- Used the Windows Explorer to change the solution name to WoodErika according to the GitLAB project name and committed the changes to the development branch for Assignment01

GitLab Projects Groups More Search or jump to... Project overview Create merge request

WoodErika EAE6320-FALL2021 > WoodErika > Repository You pushed to DevAssignment01 1 minute ago

Repository Files Commits Branches Tags Contributors Graph Compare Locked Files Issues Merge Requests Requirements CI / CD Security & Compliance

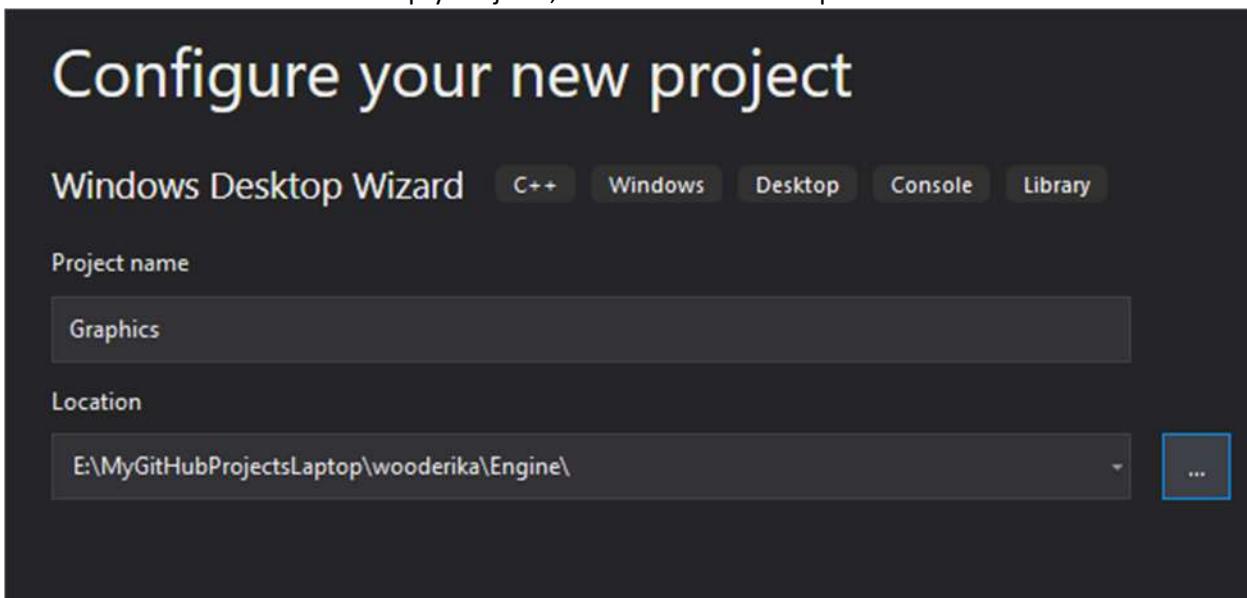
DevAssignment01 wooderika / + History Find file Web IDE Clone

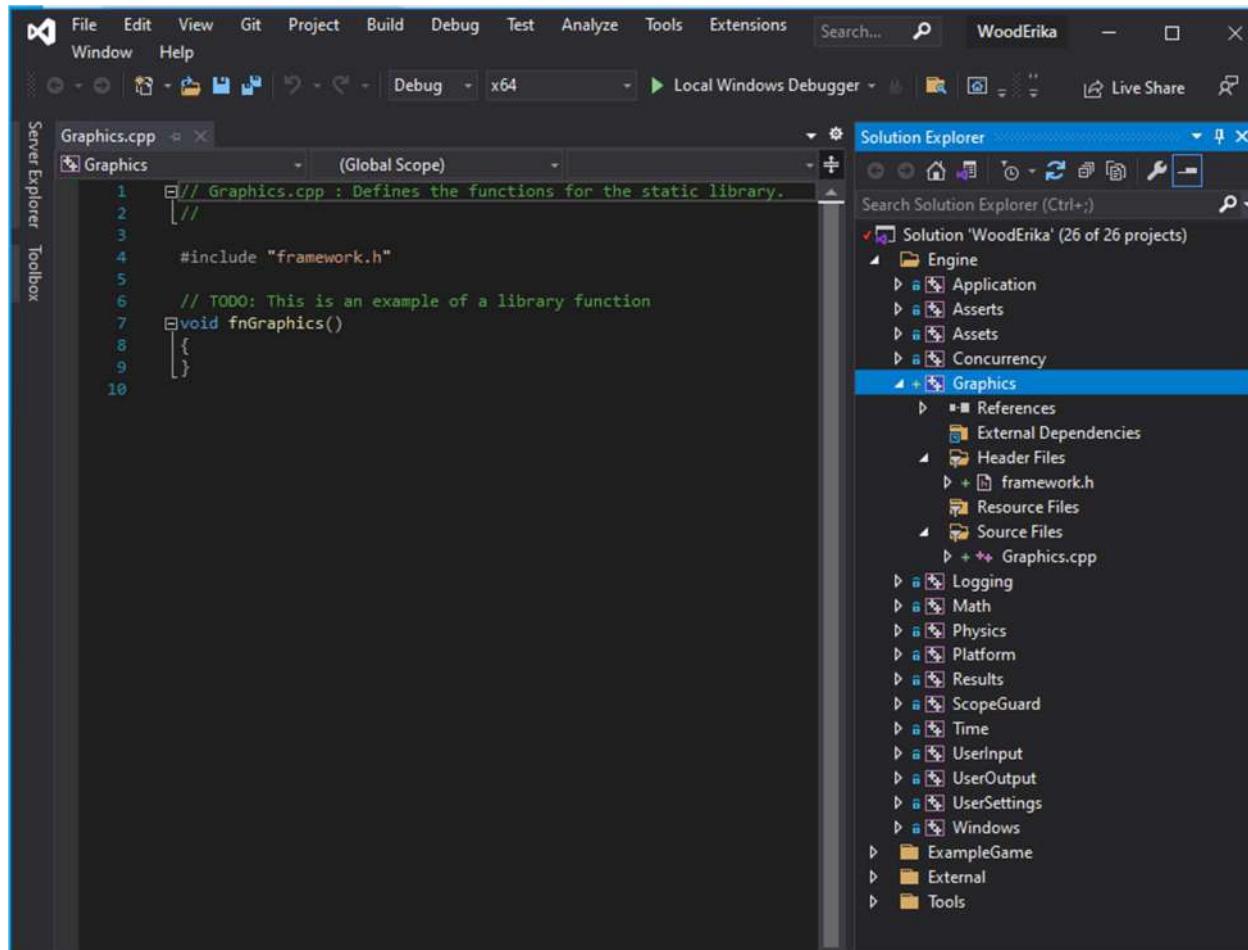
STEP 1 - Uploading Assignment01_solution ... sunny-erika authored 1 minute ago df5c3821

Name	Last commit	Last update
Engine	STEP 1 - Uploading Assignment01_solution Uploading Assignment01_soluti...	1 minute ago
ExampleGame_	STEP 1 - Uploading Assignment01_solution Uploading Assignment01_soluti...	1 minute ago
External	STEP 1 - Uploading Assignment01_solution Uploading Assignment01_soluti...	1 minute ago
Tools	STEP 1 - Uploading Assignment01_solution Uploading Assignment01_soluti...	1 minute ago
.gitignore	STEP 1 - Uploading Assignment01_solution Uploading Assignment01_soluti...	1 minute ago
README.md	Added Read Me	1 day ago
WoodErika.sln	STEP 1 - Uploading Assignment01_solution Uploading Assignment01_soluti...	1 minute ago

README.md

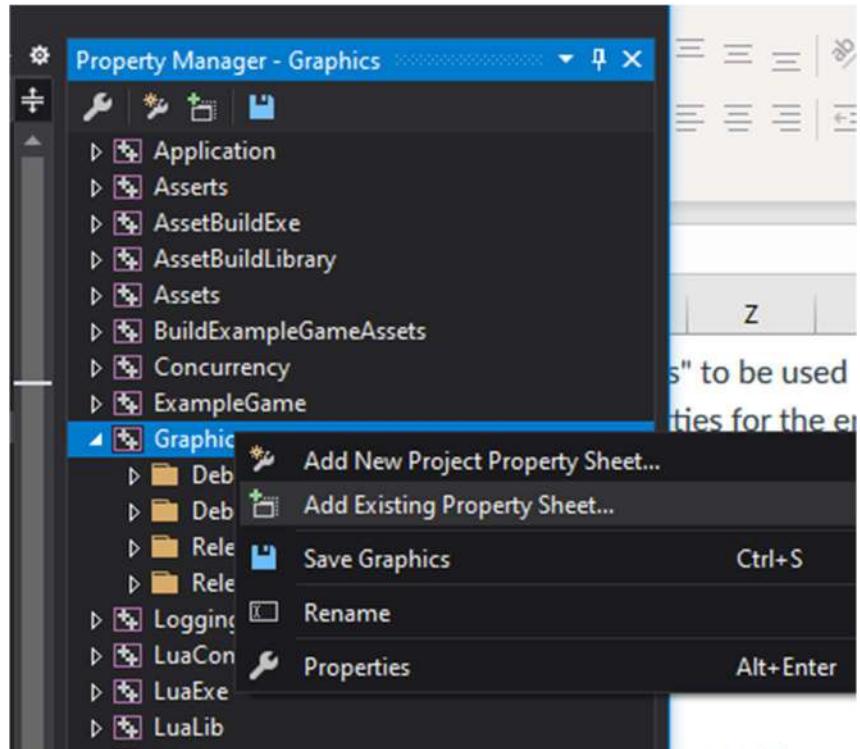
- Created a new Graphics project for the solution located in the Engine folder
At first I would have selected “Empty Project”, then I noticed the steps and followed the instructions using the Windows Desktop Wizard.



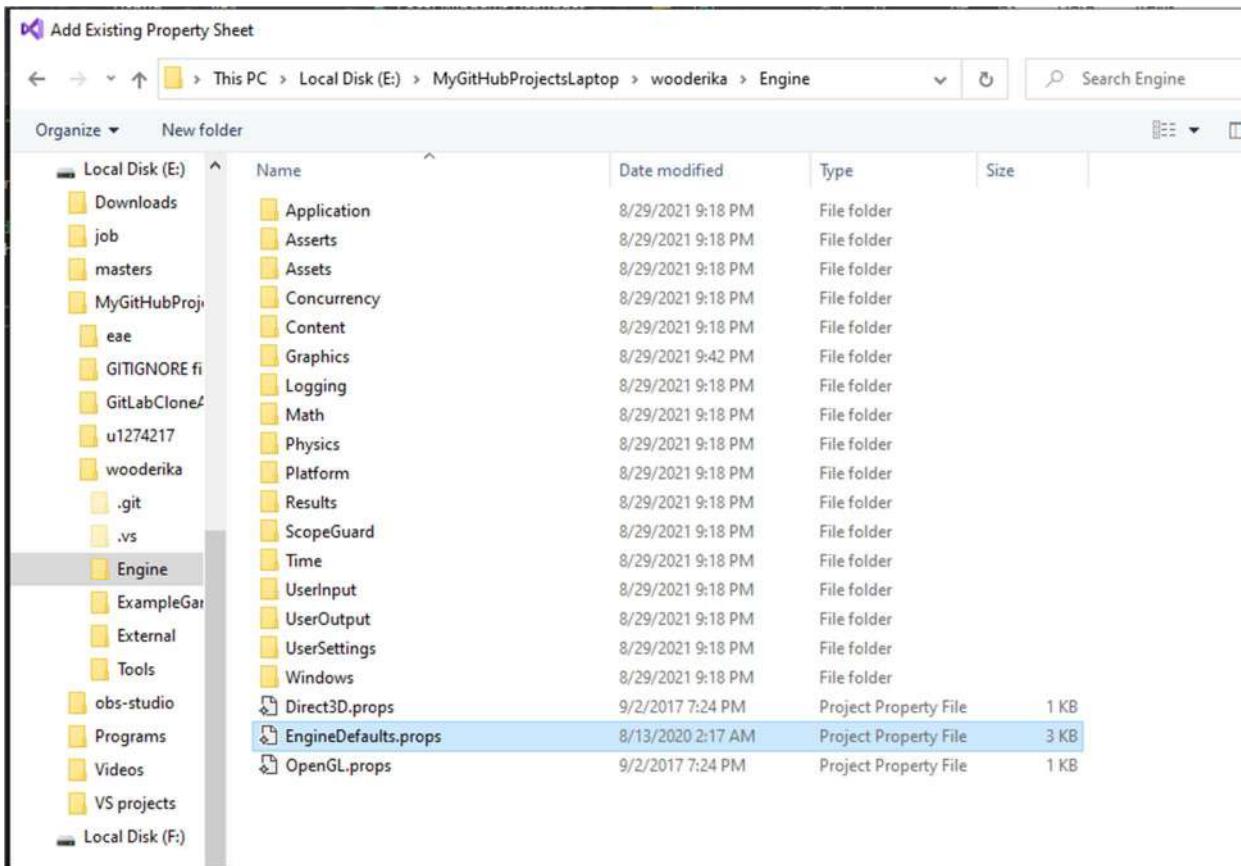


- Adding property sheets by reviewing the Solution Setup Example making sure that I have the correct order.
 - First I am adding the EngineDefault.props
- At first I wasn't sure where to put the EngineDefault.props, then I read the instructions again and it indicated "The very first thing you should do with your new project is to add the property sheets". Since the new project I just created is the Graphics project, I added it there by switching to

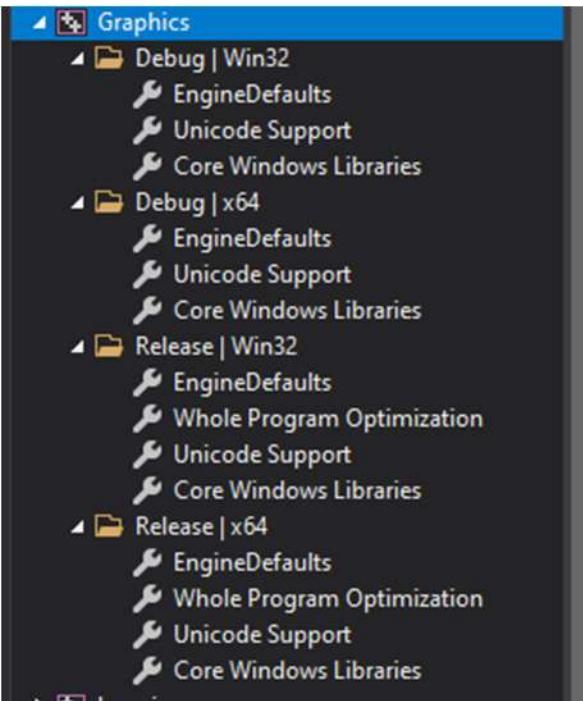
the Property Manager Window, right click on the project folder and selecting Add Existing Property Sheet.



I then selected the EngineDefaults.props as follows:

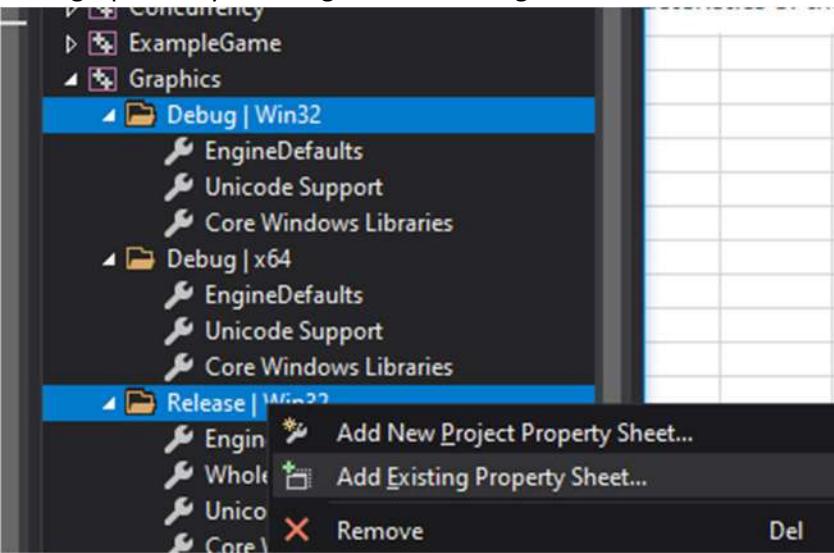


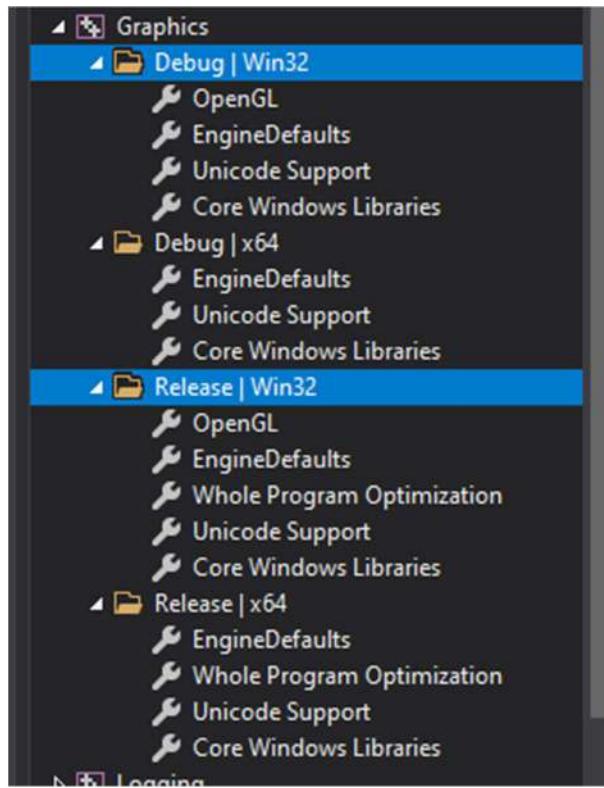
This added the property sheet to every subfolder:



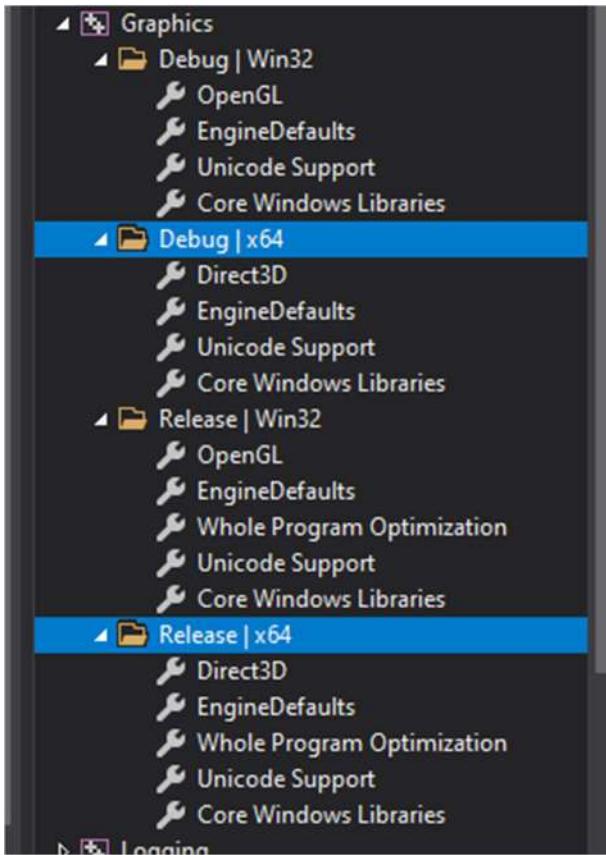
- OpenGL to the Win32 configuration and then

Adding OpenGL by selecting both the Debug x64 and Release x 64 folders and adding Existing Property Sheet.





- Direct3D for the x64 configuration



- I checked again the Solution Setup Example and checked the following:
"Note that the platform-specific property sheets should be *above* the engine defaults properties, but *below* any game-specific properties"
There are now game-specific properties yet, so this should be fine.
- The next instruction says to remove **all of the files and folders** that Visual Studio adds for you, and then delete them from disk.
I am not really sure which files to delete.

The image displays two overlapping Windows File Explorer windows. The top window shows the contents of the folder `wooderika` located at `Local Disk (E:) > MyGitHubProjectsLaptop > wooderika`. The bottom window shows the contents of the `Graphics` folder within the `Engine` folder of the same path.

Top Window (Main Project Structure):

Name	Date modified	Type	Size
.git	8/29/2021 9:21 PM	File folder	
.vs	8/29/2021 9:33 PM	File folder	
Engine	8/29/2021 9:41 PM	File folder	
ExampleGame_	8/29/2021 9:18 PM	File folder	
External	8/29/2021 9:18 PM	File folder	
Tools	8/29/2021 9:18 PM	File folder	
.gitignore	8/2/2018 6:03 PM	GITIGNORE File	1 KB
README.md	8/29/2021 9:07 PM	MD File	0 KB
WoodErika.sln	8/16/2020 2:56 PM	Visual Studio Solu...	23 KB

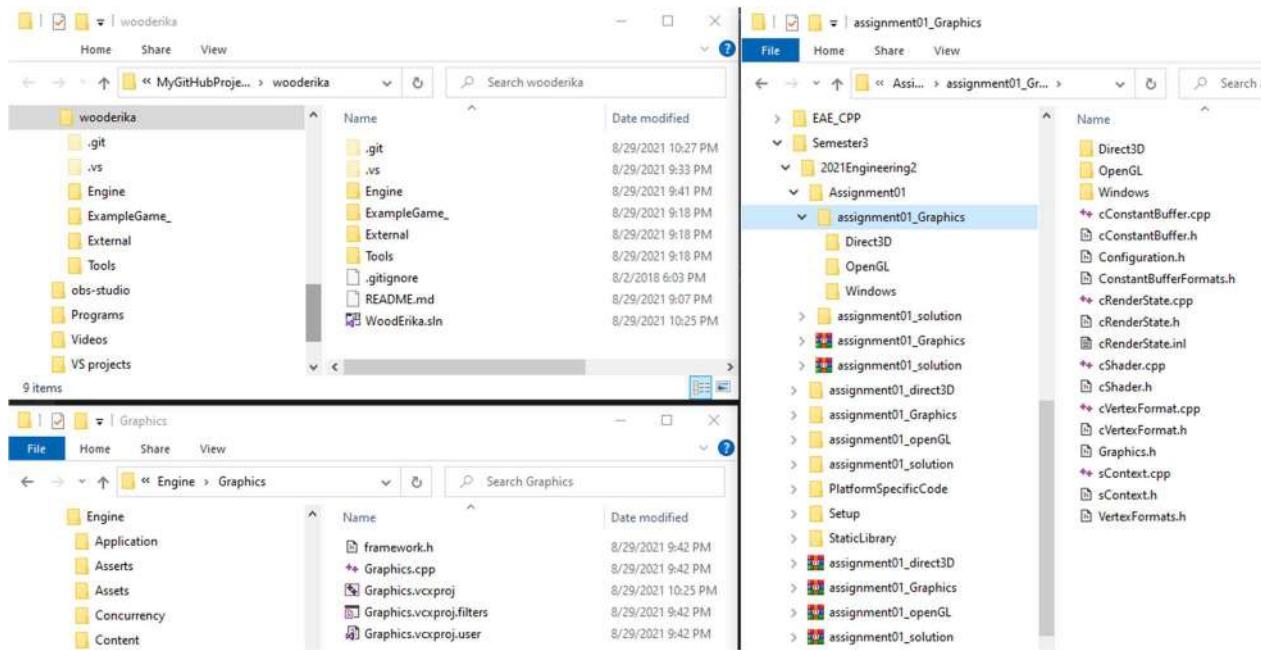
Bottom Window (Graphics Sub-Module):

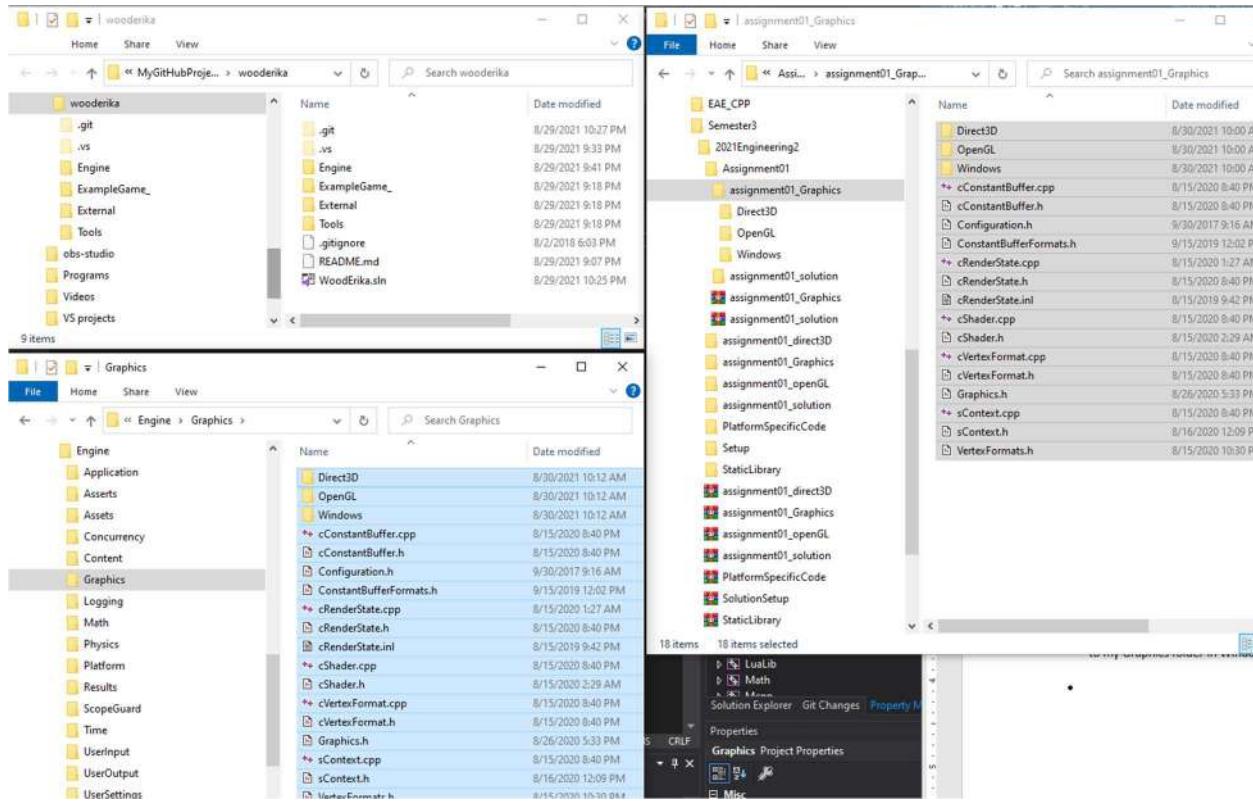
Name	Date modified	Type	Size
framework.h	8/29/2021 9:42 PM	C/C++ Header	1 Ki
Graphics.cpp	8/29/2021 9:42 PM	C++ Source	1 Ki
Graphics.vcxproj	8/29/2021 9:42 PM	VC++ Project	8 Ki
Graphics.vcxproj.filters	8/29/2021 9:42 PM	VC++ Project Filte...	2 Ki
Graphics.vcxproj.user	8/29/2021 9:42 PM	Per-User Project O...	1 Ki

Maybe the files auto-generated by the Wizard?

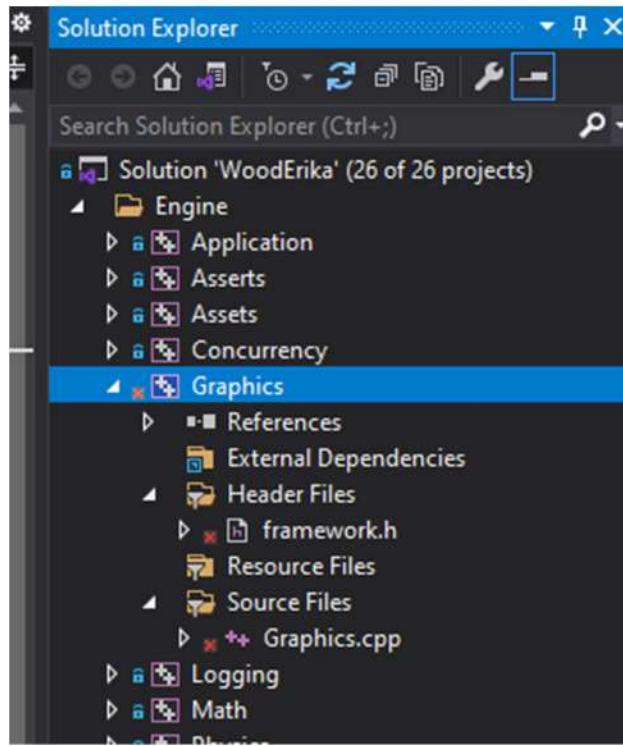
I will first get to the next step and see what files need to be copied into the Graphics library folder in Windows Explorer.

Oh, now it makes sense 😊 Deleting the files in my Graphics folder and copying the content of the assignment01_Graphics to my Graphics folder in Windows Explorer.



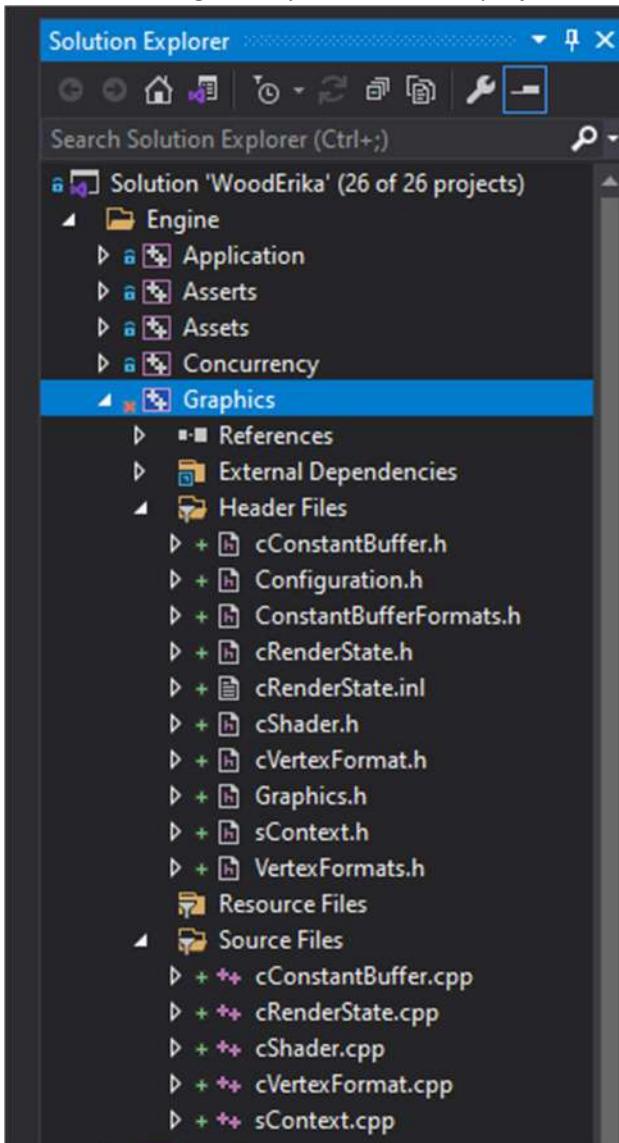


Removing the files in Windows Explorer caused red x on the files in the Solution Explorer.

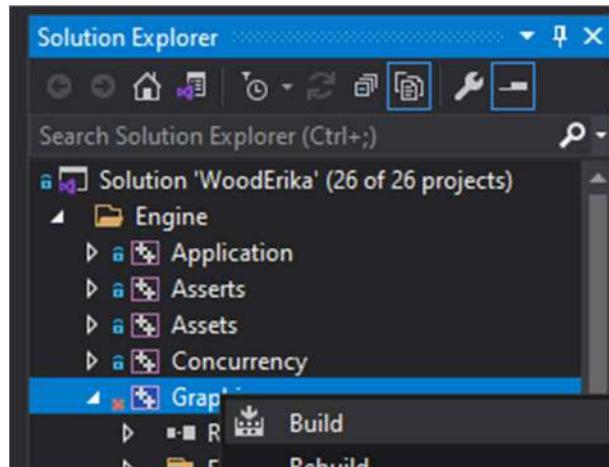


So I will remove them in the Solution Explorer as well.

- Now I am adding the copied files to the project in Solution Explorer



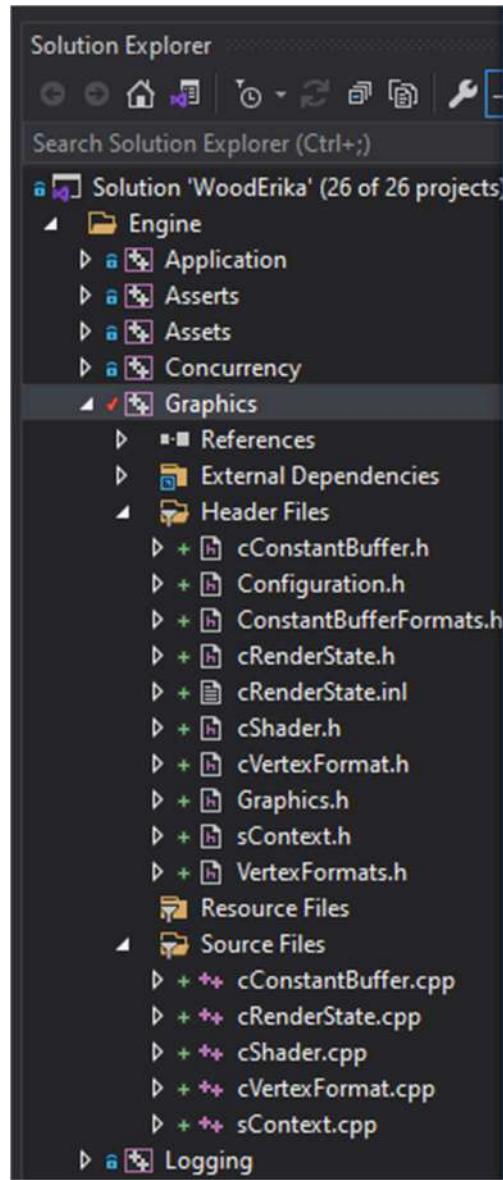
Hmm, there is still a red cross on the Graphics folder. I will try to build it.



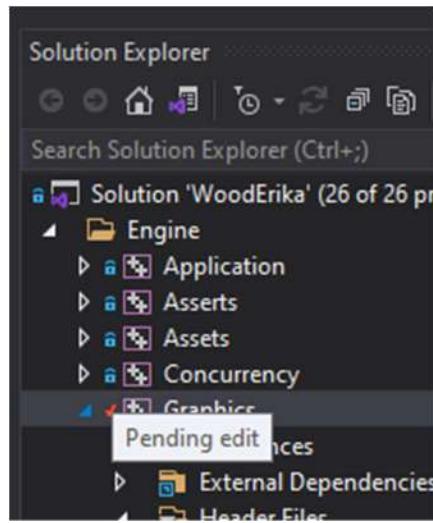
This caused the following Error List:

Code	Description	Project	File	Line
C2382	'eae6320::cScopeGuard<tFunction>::~cScopeGuard': redefinition; different exception specifications	Graphics	cScopeGuard.inl	28
C2382	'eae6320::cScopeGuardMutable<tFunction>::~cScopeGuardMutable': redefinition; different exception specifications	Graphics	cScopeGuard.inl	56
C2382	'eae6320::cScopeGuard<tFunction>::~cScopeGuard': redefinition; different exception specifications	Graphics	cScopeGuard.inl	28
C2382	'eae6320::cScopeGuardMutable<tFunction>::~cScopeGuardMutable': redefinition; different exception specifications	Graphics	cScopeGuard.inl	56

But the red cross was replaced with a red check mark.



The red check mark means pending edit:



It is Source Control related, once the changes have been committed it should disappear.

- So, now I will go back to the Platform-Specific Code Example and look at the set up again. I assume the errors occurred because the platform-specific files were built for both configurations, as indicated by 'redefinition' in the error message.

A screenshot of the code editor showing the file "cScopeGuard.inl". The title bar says "cScopeGuard.inl" and "ScopeGuard". The status bar shows "eae6320::cScopeGuard<tFunction>" and "~cScopeGuard()". The code is as follows:

```
26
27     template <typename tFunction>
28     eae6320::cScopeGuard<tFunction>::cScopeGuard() noexcept
29     {
30         m_function();
31     }
```

The screenshot shows the Visual Studio IDE interface. The top part is the code editor with the file 'cScopeGuard.inl' open. The code is as follows:

```
54
55     template <typename tFunction>
56     eae6320::cScopeGuardMutable<tFunction>::~cScopeGuardMutable() noexcept
57     {
58         if ( m_isEnabled )
59         {
60             m_function();
61         }
62     }
63
64 #endif // EAE6320_CSCOPEGUARD_INL
65
```

The bottom part is the 'Error List' window, which displays four errors:

Code	Description	Project	File	Line
C2382	'eae6320::cScopeGuard<tFunction>::~cScopeGuard': redefinition; different exception specifications	Graphics	cScopeGuard.inl	28
C2382	'eae6320::cScopeGuardMutable<tFunction>::~cScopeGuardMutable': redefinition; different exception specifications	Graphics	cScopeGuard.inl	56
C2382	'eae6320::cScopeGuard<tFunction>::~cScopeGuard': redefinition; different exception specifications	Graphics	cScopeGuard.inl	28
C2382	'eae6320::cScopeGuardMutable<tFunction>::~cScopeGuardMutable': redefinition; different exception specifications	Graphics	cScopeGuard.inl	56

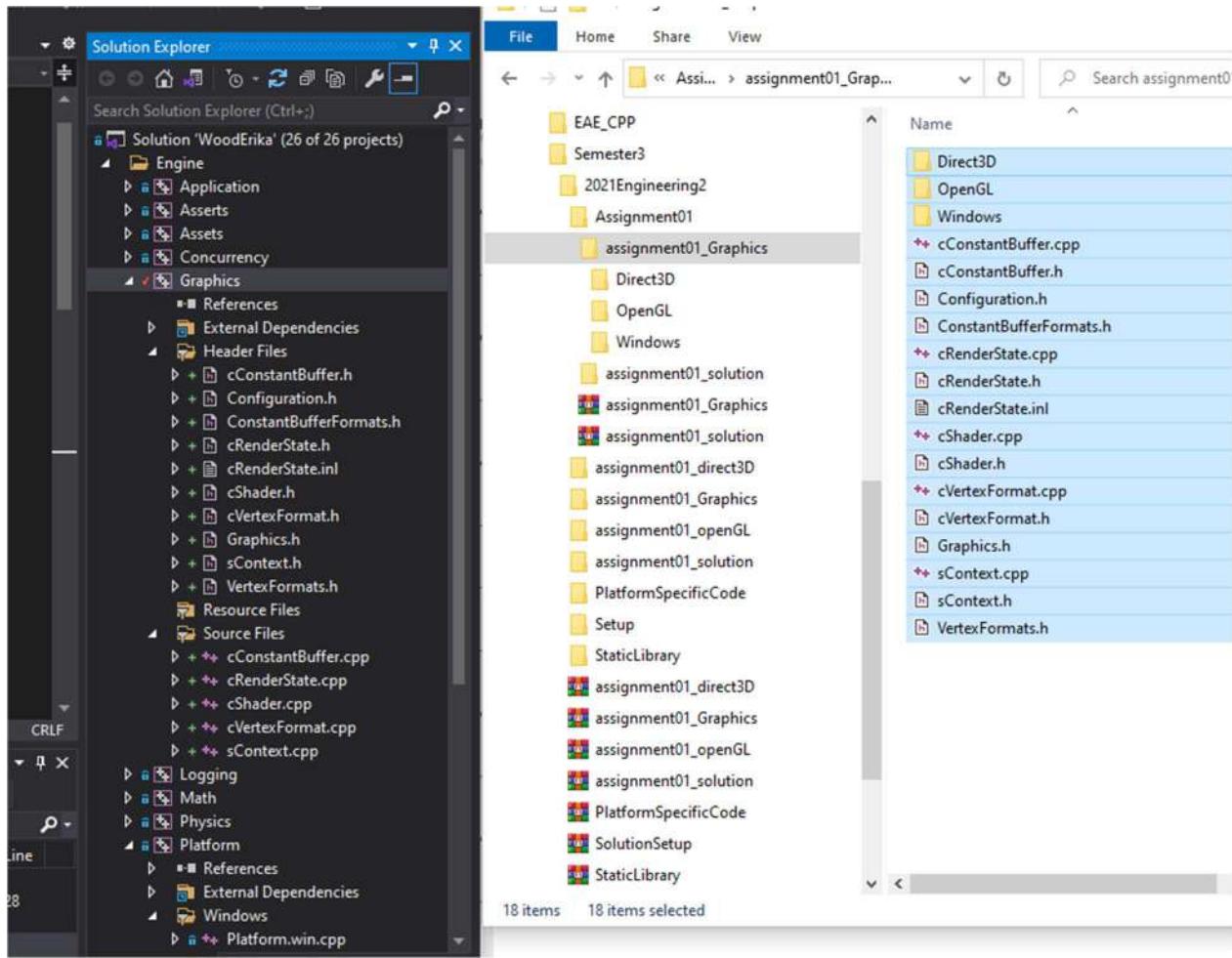
The instructions for Platform-specific code indicate as follows:

When you define a single function twice in two different files you need to help Visual Studio know which version to use:

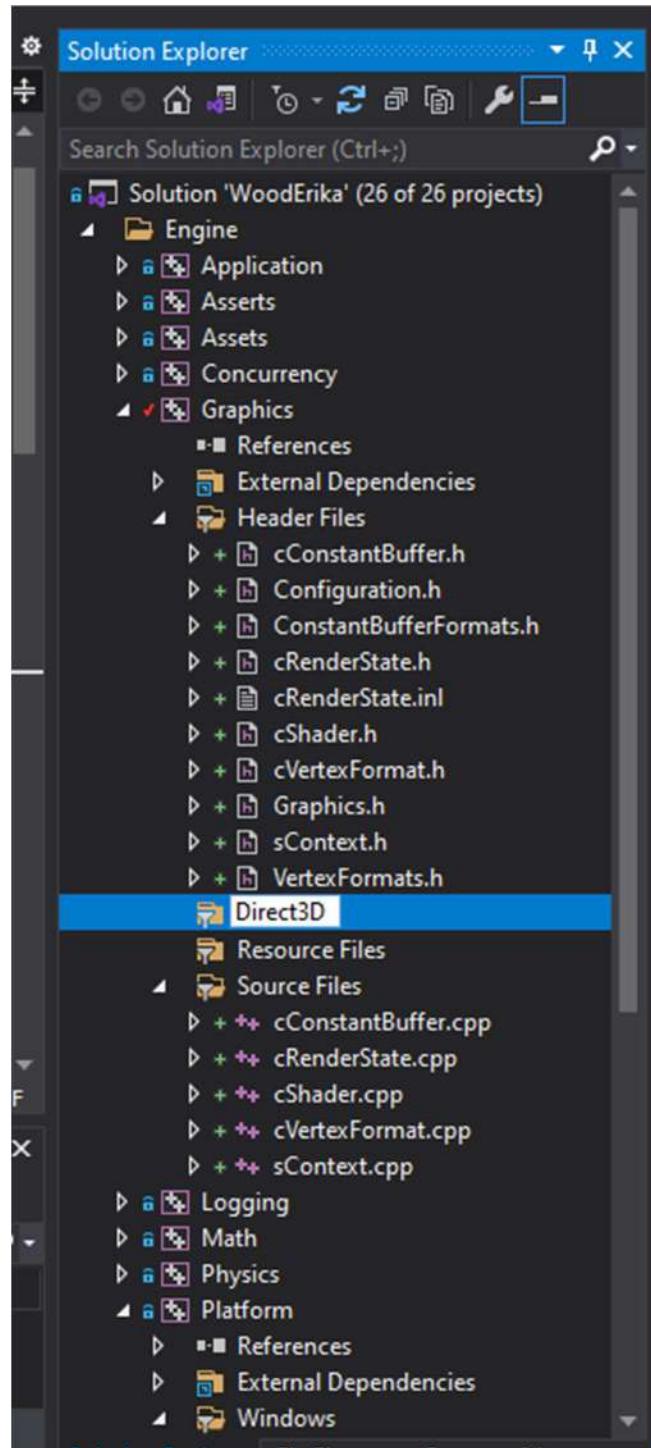
I will follow the instructions as follows:

- Right click one of the platform-specific files in Solution Explorer and choose "Properties"

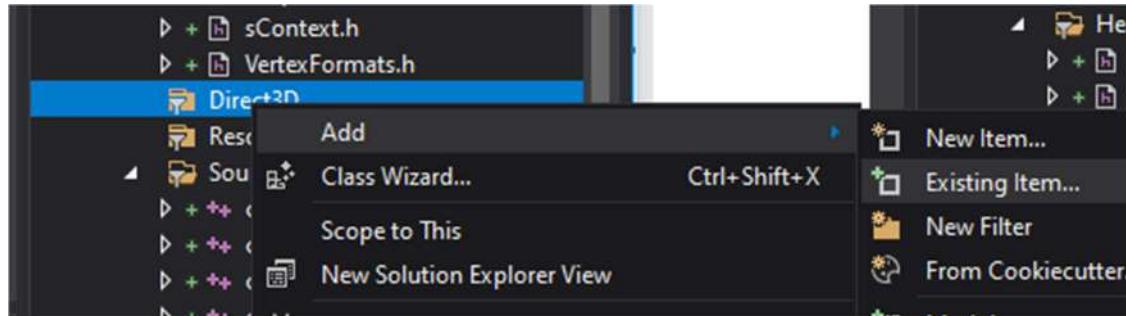
I noticed that only the copied files have been added to the Solution Explorer, but not the folders containing the platform-specific code.



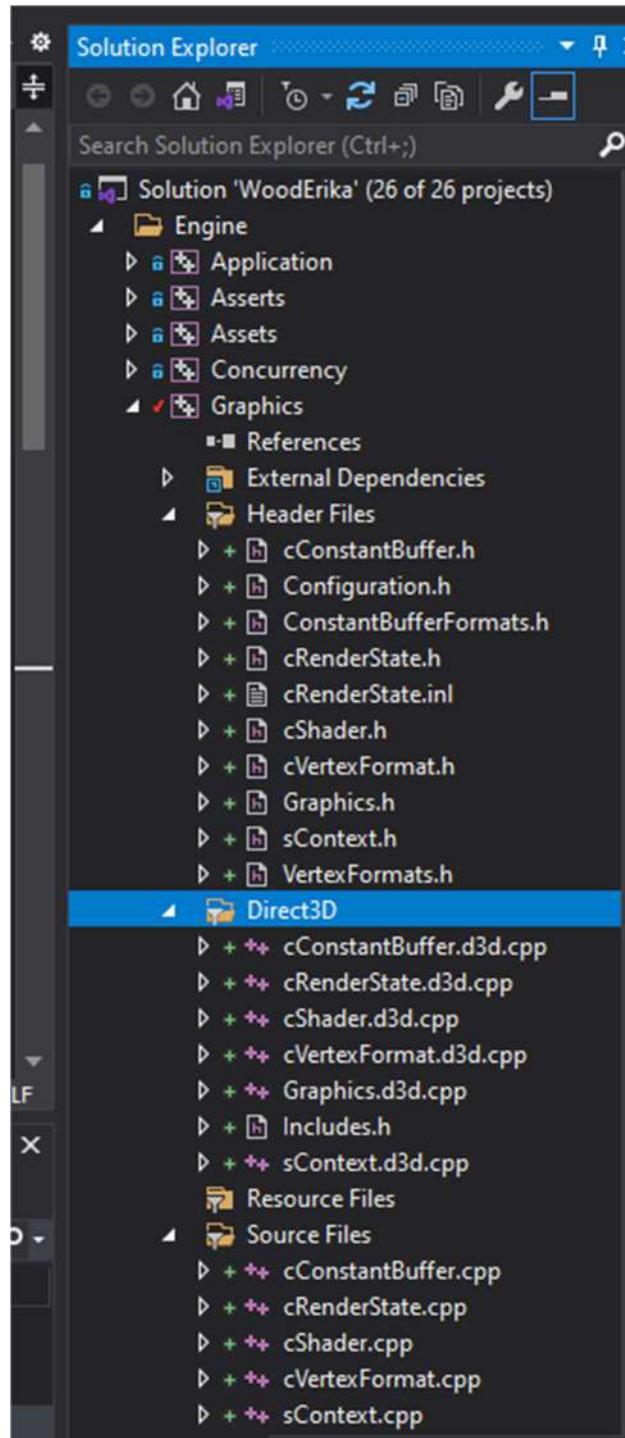
So, now I am adding a new Filter for Direct3D:



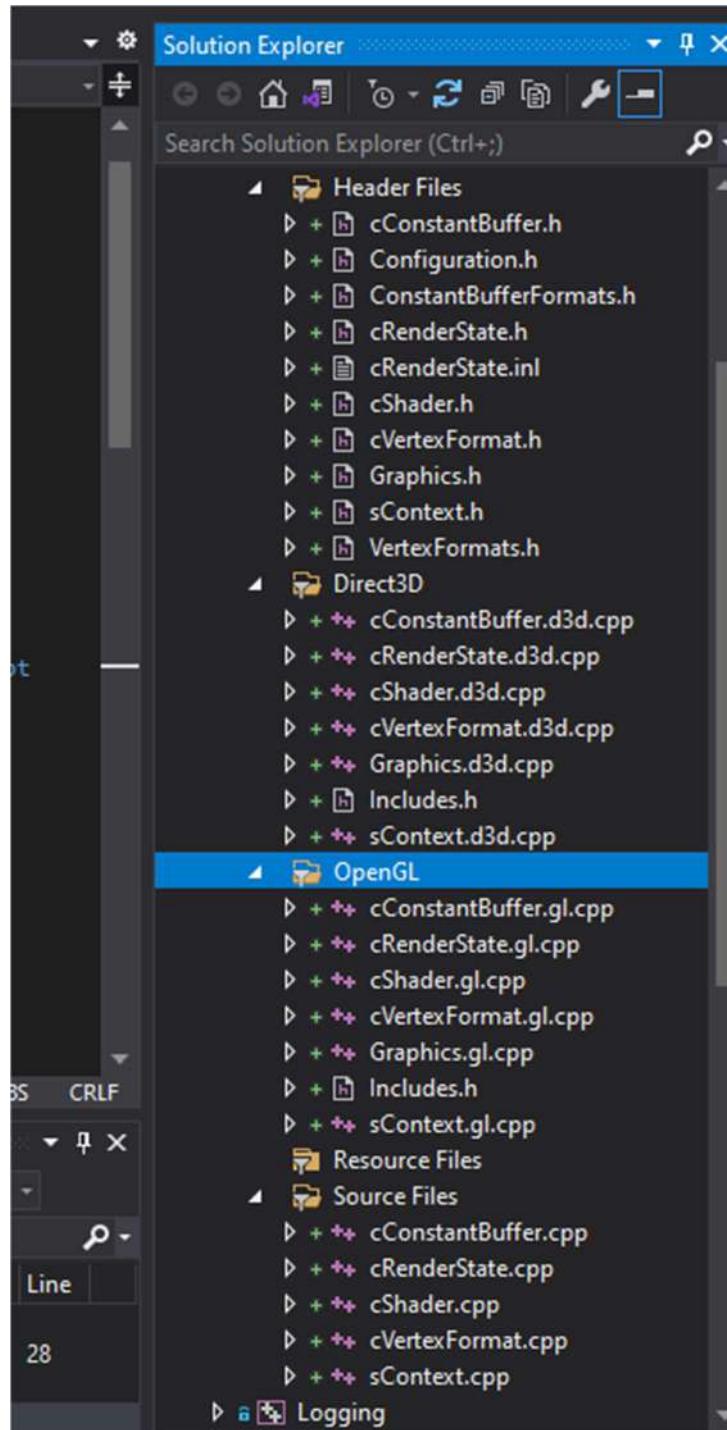
And add existing items to it:



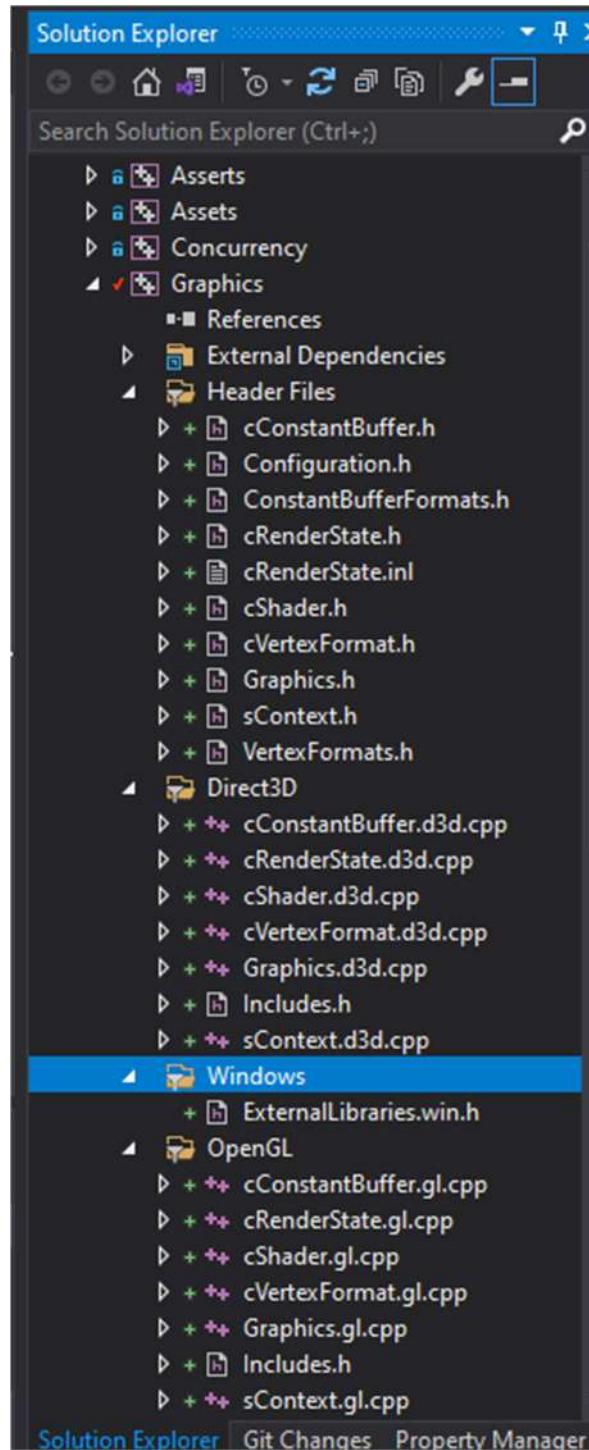
And add the copied files to it:



Same for OpenGL:



And for the Windows folder:



Building Graphics project again:

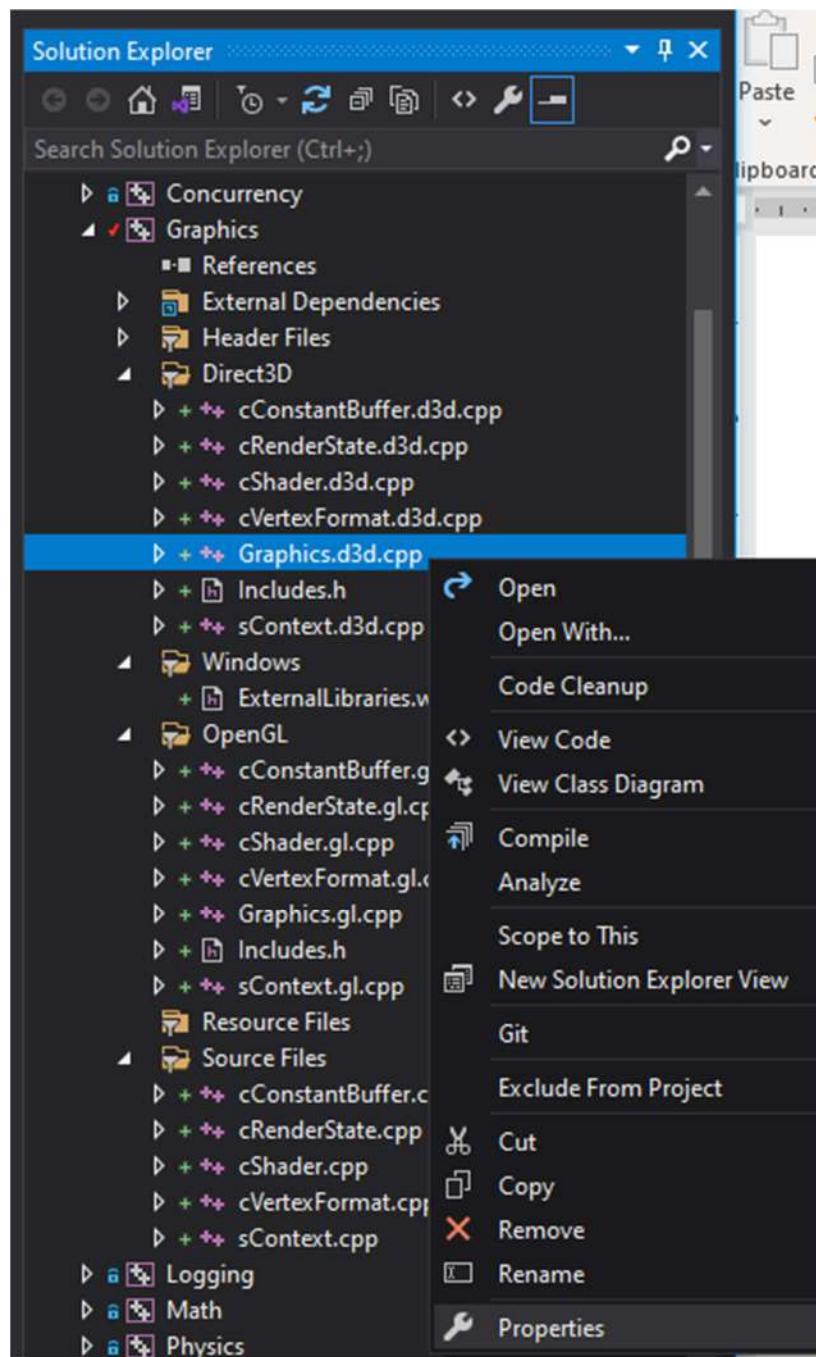
This caused 203 errors: below I am screenshotting a few

Error List						
Entire Solution	203 Errors	0 Warnings	0 of 29 Messages	Build + IntelliSense	Search Error List	
Code	Description	Project	File	Line	Suppression State	
✖ C2382	'eae6320::cScopeGuard<Function>::~cScopeGuard ': redefinition; different exception specifications	Graphics	cScopeGuard.inl	28		
✖ C2382	'eae6320::cScopeGuardMutable<Function>::~cScopeGuardMutable ': redefinition; different exception specifications	Graphics	cScopeGuard.inl	56		
✖ C2382	'eae6320::cScopeGuard<Function>::~cScopeGuard ': redefinition; different exception specifications	Graphics	cScopeGuard.inl	28		
✖ C2382	'eae6320::cScopeGuardMutable<Function>::~cScopeGuardMutable ': redefinition; different exception specifications	Graphics	cScopeGuard.inl	56		
✖ C2382	'eae6320::cScopeGuard<Function>::~cScopeGuard ': redefinition; different exception specifications	Graphics	cScopeGuard.inl	28		
✖ C2382	'eae6320::cScopeGuardMutable<Function>::~cScopeGuardMutable ': redefinition; different exception specifications	Graphics	cScopeGuard.inl	56		
✖ C2382	'eae6320::cScopeGuard<Function>::~cScopeGuard ': redefinition; different exception specifications	Graphics	cScopeGuard.inl	28		

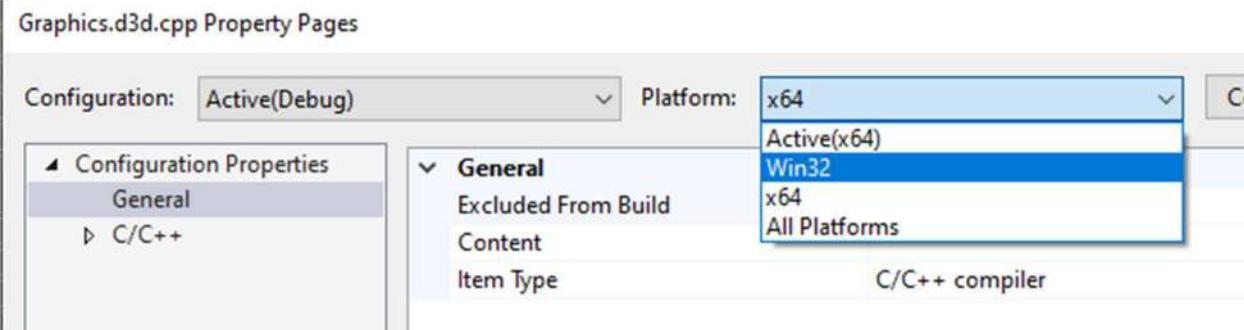
Error List					
Code	Description	Project	File	Line	Search
C2001	'syntax error: identifier' 'GLintptr'	Graphics	cConstantBufferEngine.cpp	23	
C3861	'glGetError': identifier not found	Graphics	cConstantBufferEngine.cpp	23	
C2065	'GL_NO_ERROR': undeclared identifier	Graphics	cConstantBufferEngine.cpp	28	
C2065	'm_bufferId': undeclared identifier	Graphics	cConstantBufferEngine.cpp	32	
C2065	'm_bufferId': undeclared identifier	Graphics	cConstantBufferEngine.cpp	32	
C3861	'glBindBuffer': identifier not found	Graphics	cConstantBufferEngine.cpp	32	
C3861	'glGetError': identifier not found	Graphics	cConstantBufferEngine.cpp	33	
C2065	'GL_NO_ERROR': undeclared identifier	Graphics	cConstantBufferEngine.cpp	33	
C2065	'GLintptr': undeclared identifier	Graphics	cConstantBufferEngine.cpp	37	
C2146	'syntax error: missing ';' before identifier 'updateAtTheBeginning'	Graphics	cConstantBufferEngine.cpp	37	
C2065	'updateAtTheBeginning': undeclared identifier	Graphics	cConstantBufferEngine.cpp	37	
C2065	'GL_UNIFORM_BUFFER': undeclared identifier	Graphics	cConstantBufferEngine.cpp	38	
C2065	'updateAtTheBeginning': undeclared identifier	Graphics	cConstantBufferEngine.al.cpp	38	

Now I will follow the platform-specific instructions:

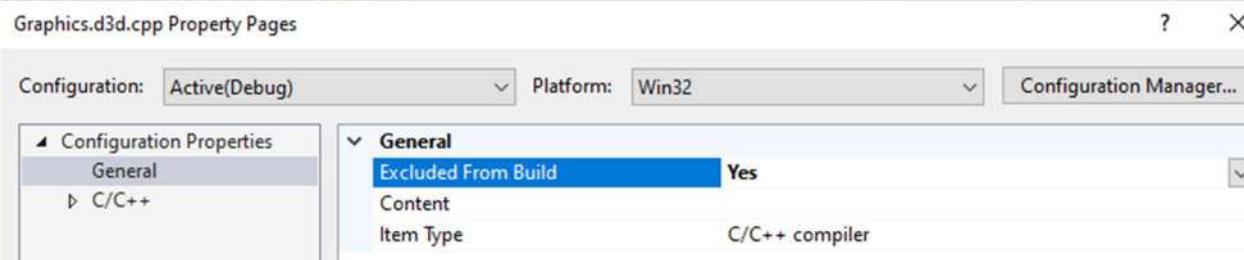
- Right click one of the platform-specific files in Solution Explorer and choose "Properties"



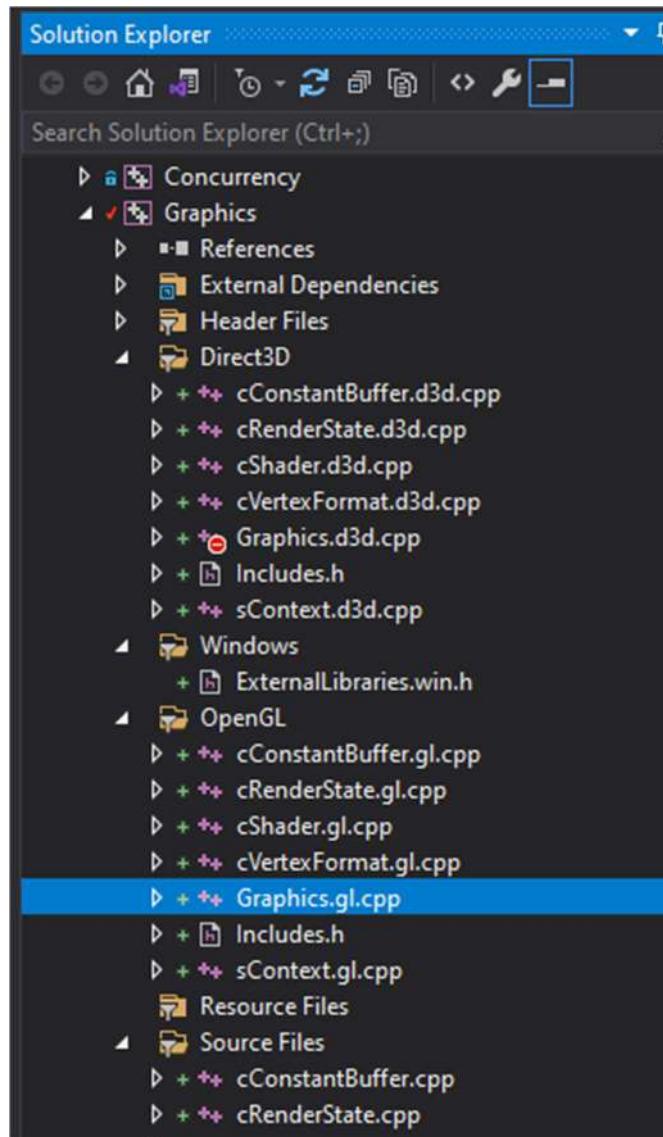
- Selecting the platform that should NOT use the file selected:



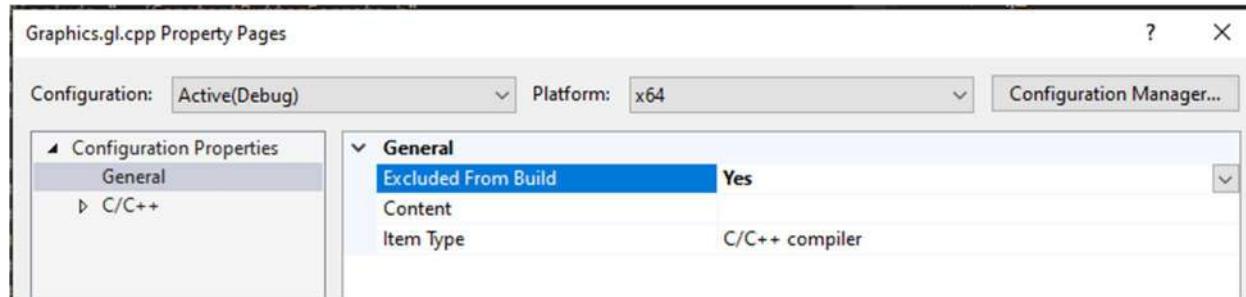
- And changing Excluded From Build to Yes



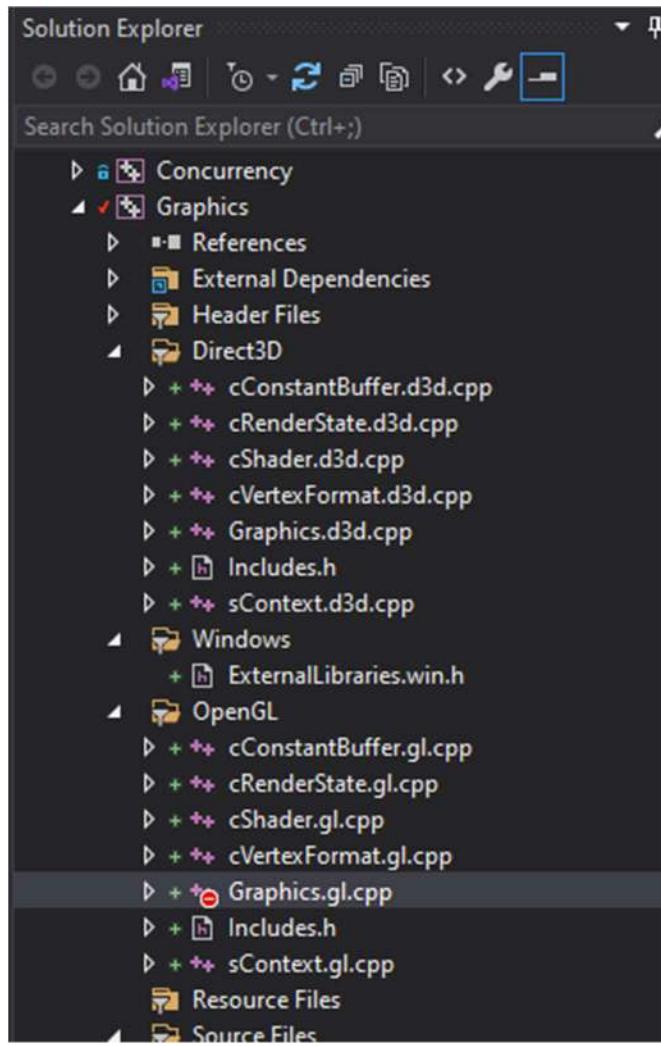
This caused the Direct3D file



- Doing the same for OpenGL:



This caused the OpenGL file to show the little red icon showing it is excluded when selecting the Debug x64.

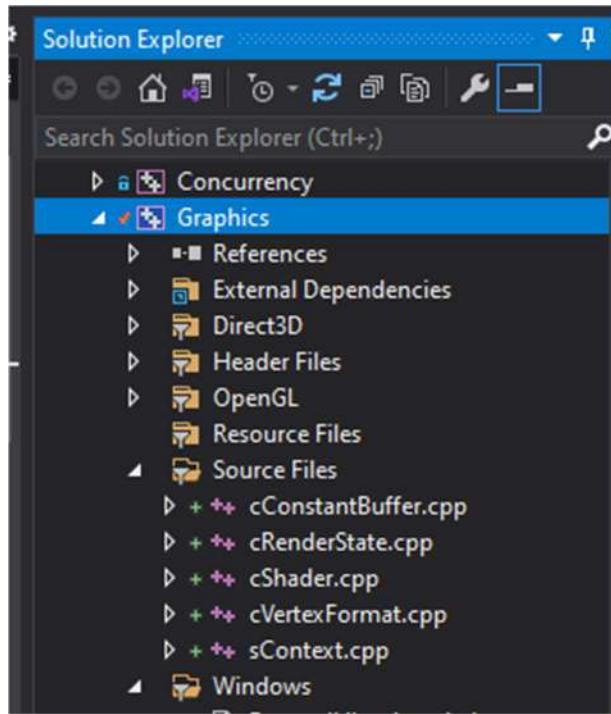


After building again there are 189 errors, and the redefinition errors are still there.

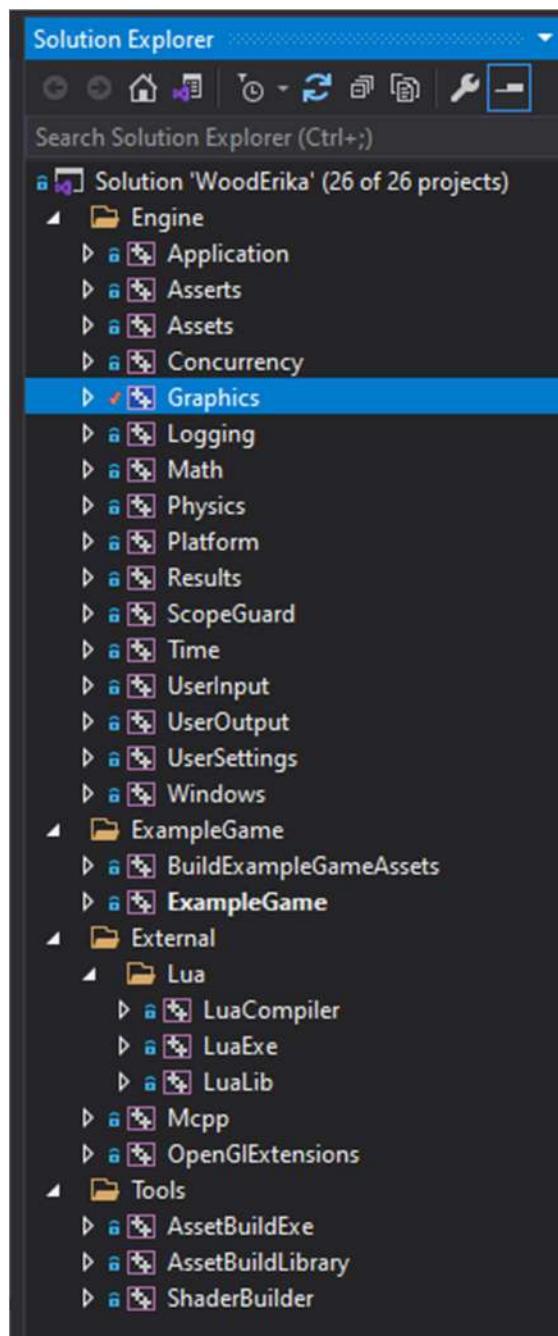
Error List						
Entire Solution		189 Errors	0 Warnings	0 of 20 Messages	Build + IntelliSense	▼
Search Error List						
	Code	Description	Project	File	Line	Sup
✖	C2382	'eae6320::cScopeGuard<tFunction >::~cScopeGuard': redefinition; different exception specifications	Graphics	cScopeGuard.inl	28	
✖	C2382	'eae6320::cScopeGuard Mutable<t Function>::~cScopeGuard Mutable e': redefinition; different exception specifications	Graphics	cScopeGuard.inl	56	
✖	C2382	'eae6320::cScopeGuard<tFunction >::~cScopeGuard': redefinition; different exception specifications	Graphics	cScopeGuard.inl	28	
✖	C2382	'eae6320::cScopeGuard Mutable<t Function>::~cScopeGuard Mutable e': redefinition; different exception specifications	Graphics	cScopeGuard.inl	56	
		'eae6320::cScopeGuard<tFunction >::~cScopeGuard': redefinition; different exception specifications				

- Next I will set up the project dependencies:
 - Projects the Graphics project is using
Looking through each source file in the Graphics project and figure out which other projects it calls functions from.
These projects will be added as references.

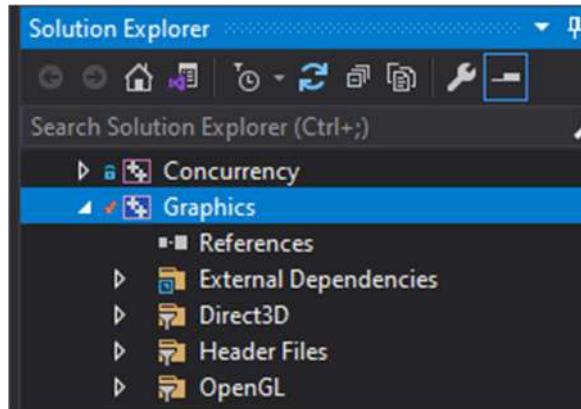
These are the source files of the Graphics project:

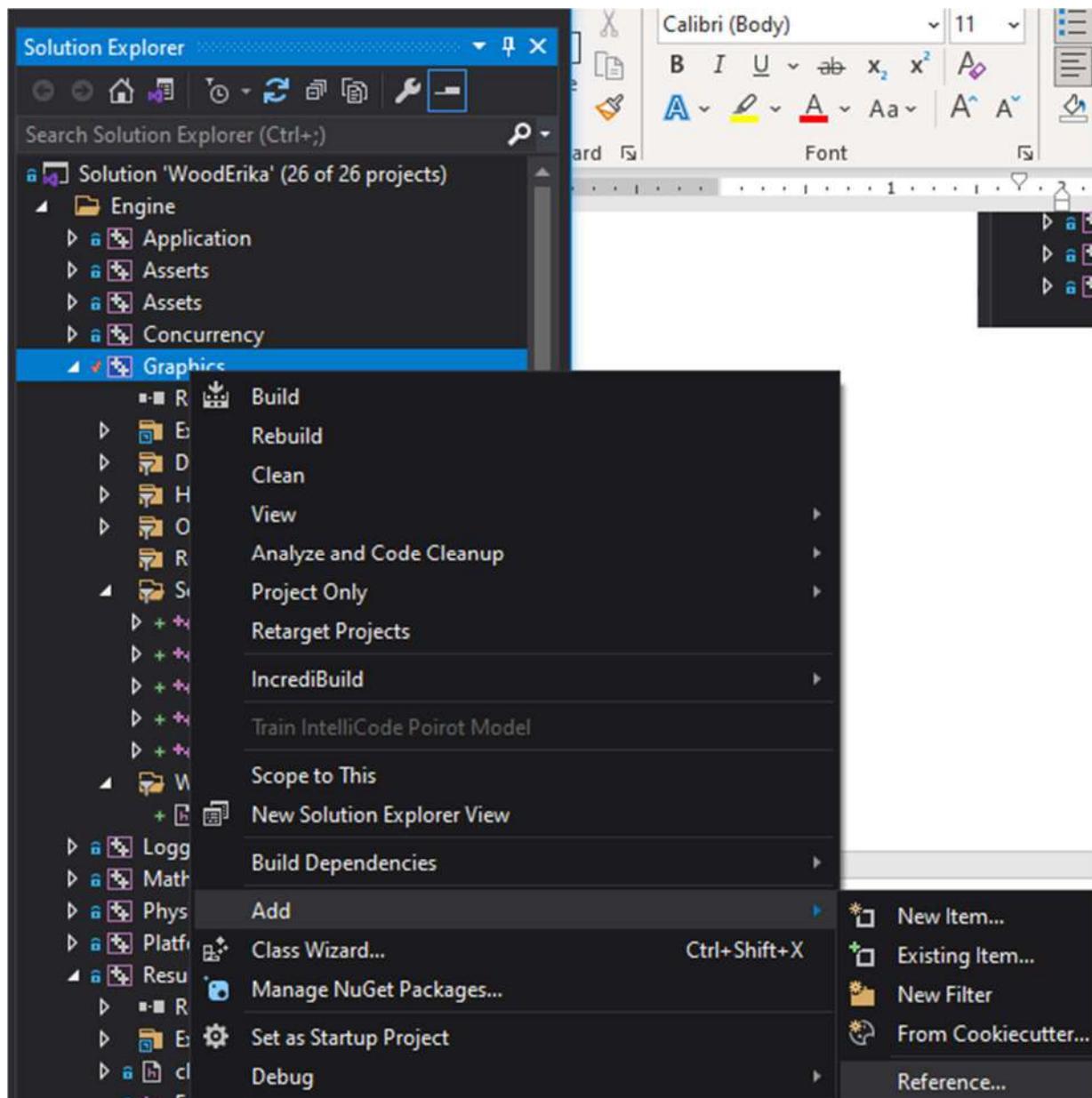


These are all 26 projects



These are the references before adding the new ones:

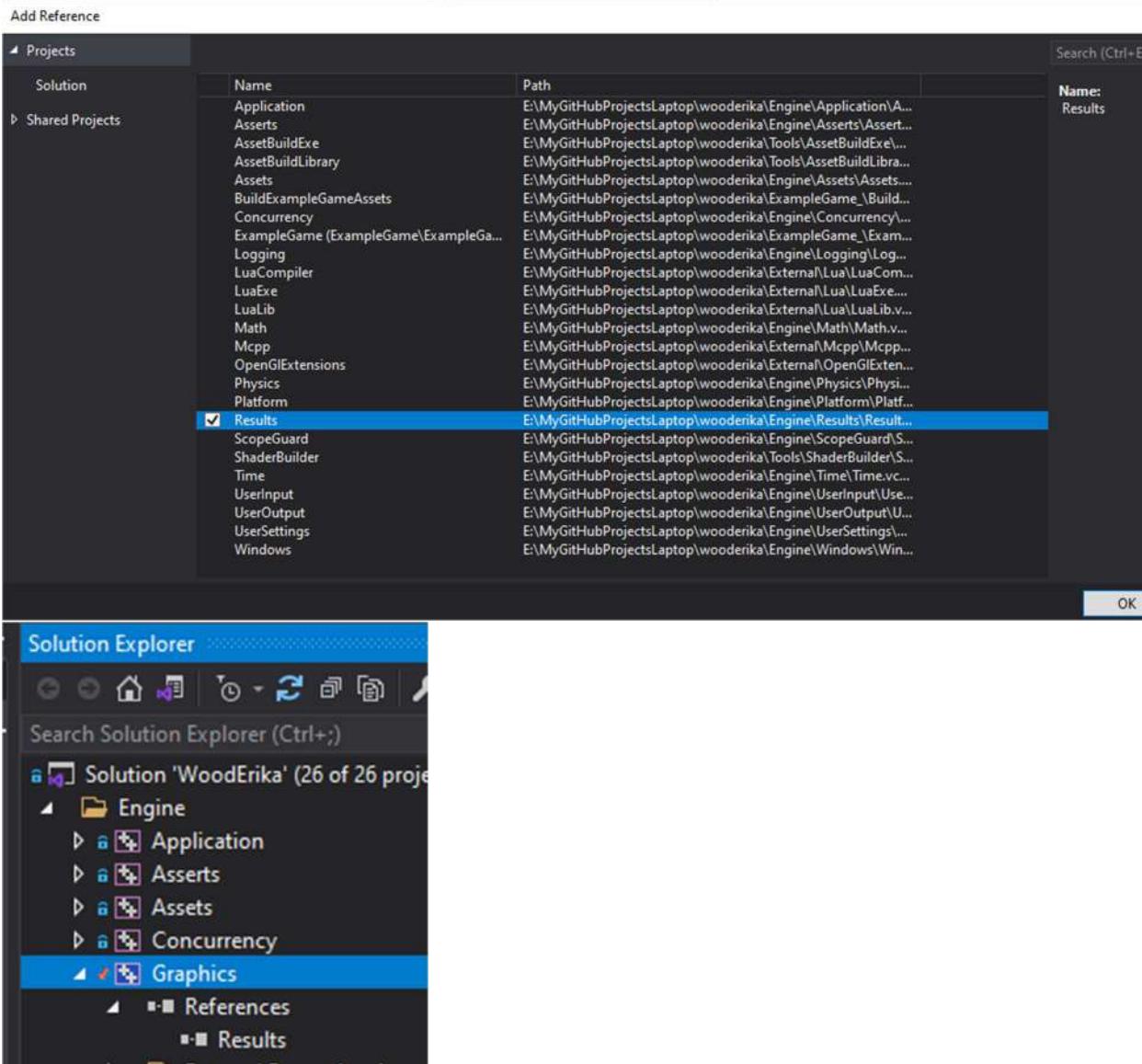




- Starting with `cConstantBuffer.cpp`

Needs the following:

- Results



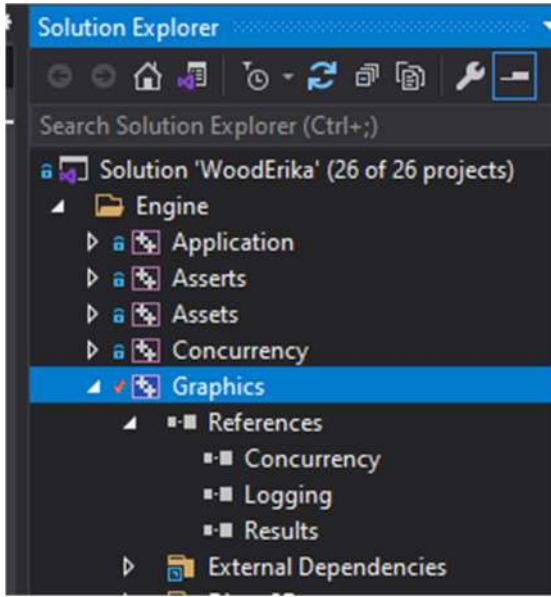
- cRenderState.cpp:
none

- cShader.cpp
Concurrency, Results, Logging
- cVertexFormat.cpp
Results, Logging

Add Reference

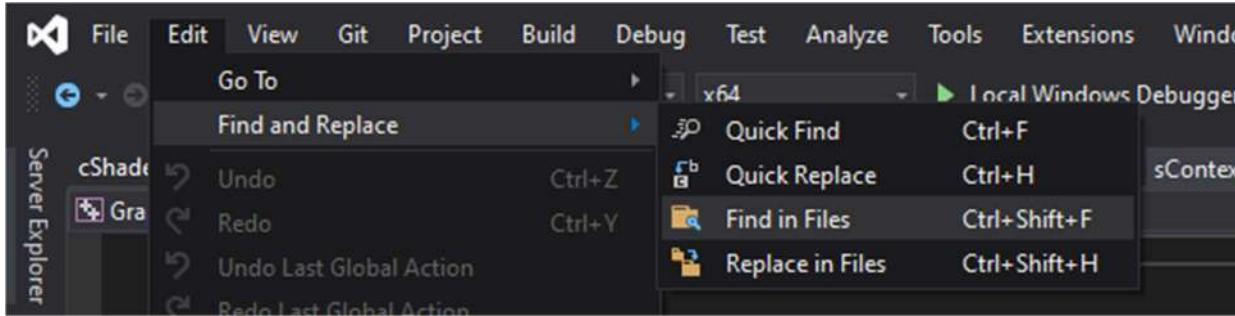
Projects		
Solution	Name	Path
▶ Shared Projects	Application	E:\MyGitHubProjectsLa
	Assets	E:\MyGitHubProjectsLa
	AssetBuildExe	E:\MyGitHubProjectsLa
	AssetBuildLibrary	E:\MyGitHubProjectsLa
	Assets	E:\MyGitHubProjectsLa
	BuildExampleGameAssets	E:\MyGitHubProjectsLa
✓ Concurrency		E:\MyGitHubProjectsLa
	ExampleGame (ExampleGame\ExampleGa...	E:\MyGitHubProjectsLa
✓ Logging		E:\MyGitHubProjectsLa
	LuaCompiler	E:\MyGitHubProjectsLa
	LuaExe	E:\MyGitHubProjectsLa
	LuaLib	E:\MyGitHubProjectsLa
	Math	E:\MyGitHubProjectsLa
	Mcpp	E:\MyGitHubProjectsLa
	OpenGLExtensions	E:\MyGitHubProjectsLa
	Physics	E:\MyGitHubProjectsLa
	Platform	E:\MyGitHubProjectsLa
✓ Results		E:\MyGitHubProjectsLa
	ScopeGuard	E:\MyGitHubProjectsLa
	ShaderBuilder	E:\MyGitHubProjectsLa
	Time	E:\MyGitHubProjectsLa
	UserInput	E:\MyGitHubProjectsLa
	UserOutput	E:\MyGitHubProjectsLa
	UserSettings	E:\MyGitHubProjectsLa
	Windows	E:\MyGitHubProjectsLa

Now references has the following children:



- Adding the Graphics project as a reference to other projects:

Search the entire solution (i.e. use Visual Studio's "Find in Files" functionality) for "**Graphics::**"



results from the Graphics project itself can be ignored
only required if a project calls a *function and*
even then only if that function is defined in a CPP file

(starting from the bottom):

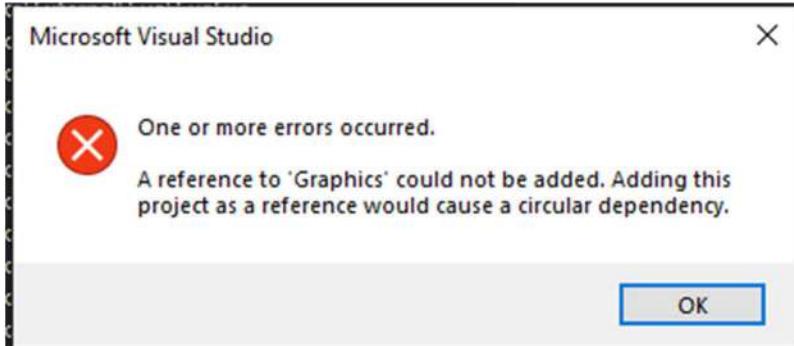
- sContext has a function Call to Graphics, but is a source file of the Graphics project itself

- ShaderBuilder doesn't have function calls
- So adding to Application and Windows:
Windows:

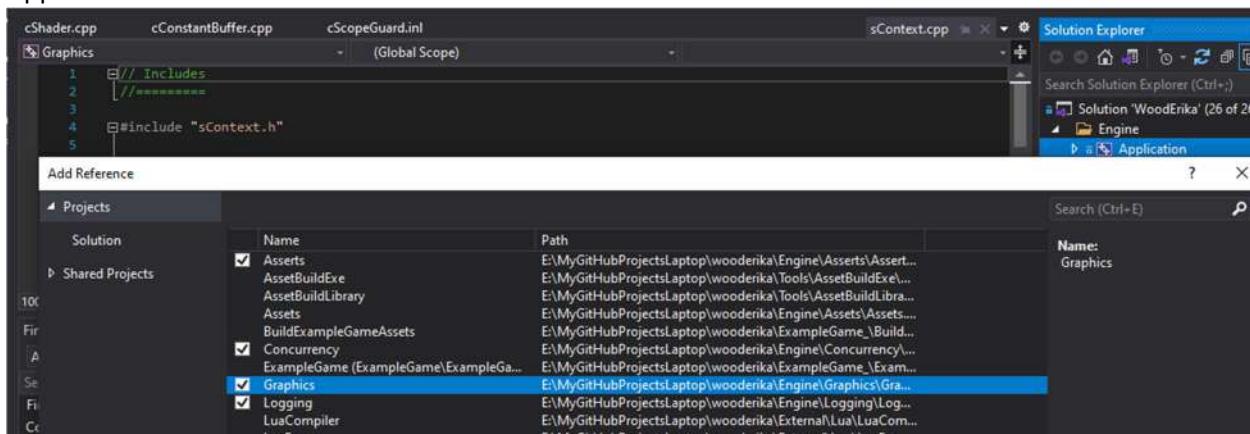


```
#include "sContext.h"
```

But could not add Graphics to Windows:

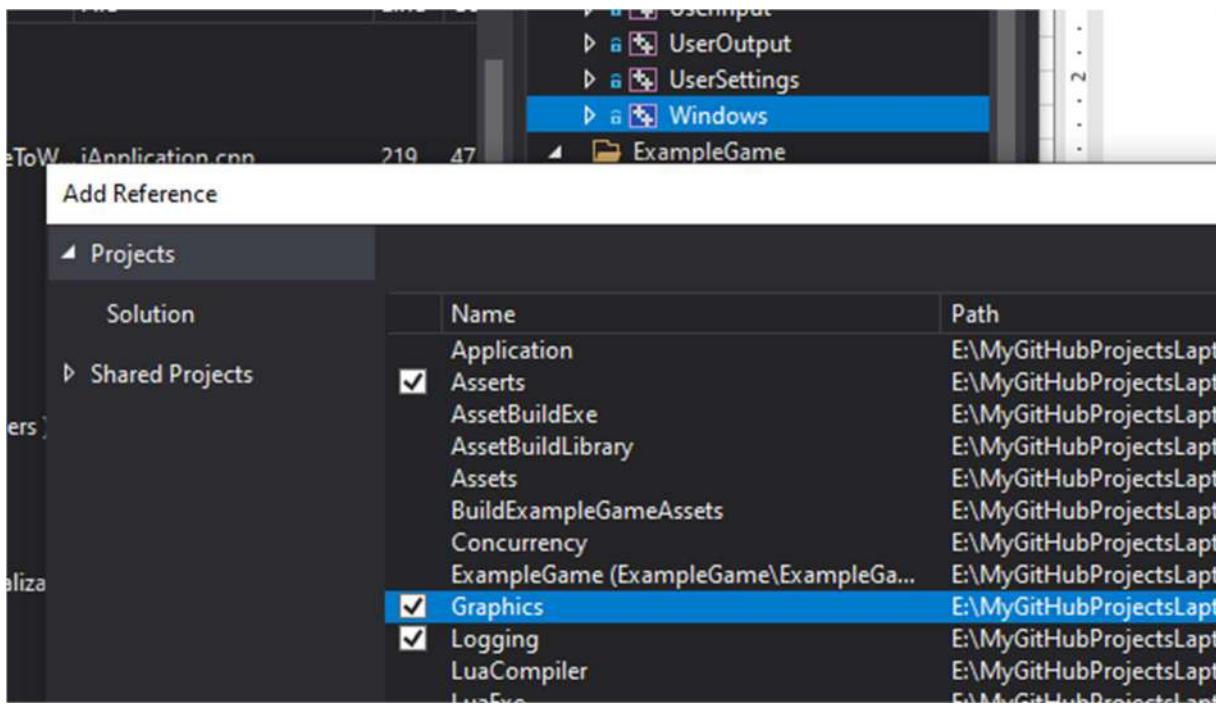


Application worked



```
// Includes
// -----
#include "sContext.h"
```

Name	Path
Asserts	E:\MyGitHubProjects\laptop\wooderika\Engine\Assets\Assert...
AssetBuildExe	E:\MyGitHubProjects\laptop\wooderika\Tools\AssetBuildExe\...
AssetBuildLibrary	E:\MyGitHubProjects\laptop\wooderika\Tools\AssetBuildLibra...
Assets	E:\MyGitHubProjects\laptop\wooderika\Engine\Assets\Assets...
BuildExampleGameAssets	E:\MyGitHubProjects\laptop\wooderika\ExampleGame\Build...
Concurrency	E:\MyGitHubProjects\laptop\wooderika\Engine\Concurrency...
ExampleGame (ExampleGame\ExampleGa...	E:\MyGitHubProjects\laptop\wooderika\ExampleGame\Exam...
Graphics	E:\MyGitHubProjects\laptop\wooderika\Engine\Graphics\Gra...
Logging	E:\MyGitHubProjects\laptop\wooderika\Engine\Logging\Log...
LuaCompiler	E:\MyGitHubProjects\laptop\wooderika\External\Lua\LuaCom...
LuaEnv	E:\MyGitHubProjects\laptop\wooderika\External\Lua\LuaEn...



Now there are 191 errors, when building the Graphics project:

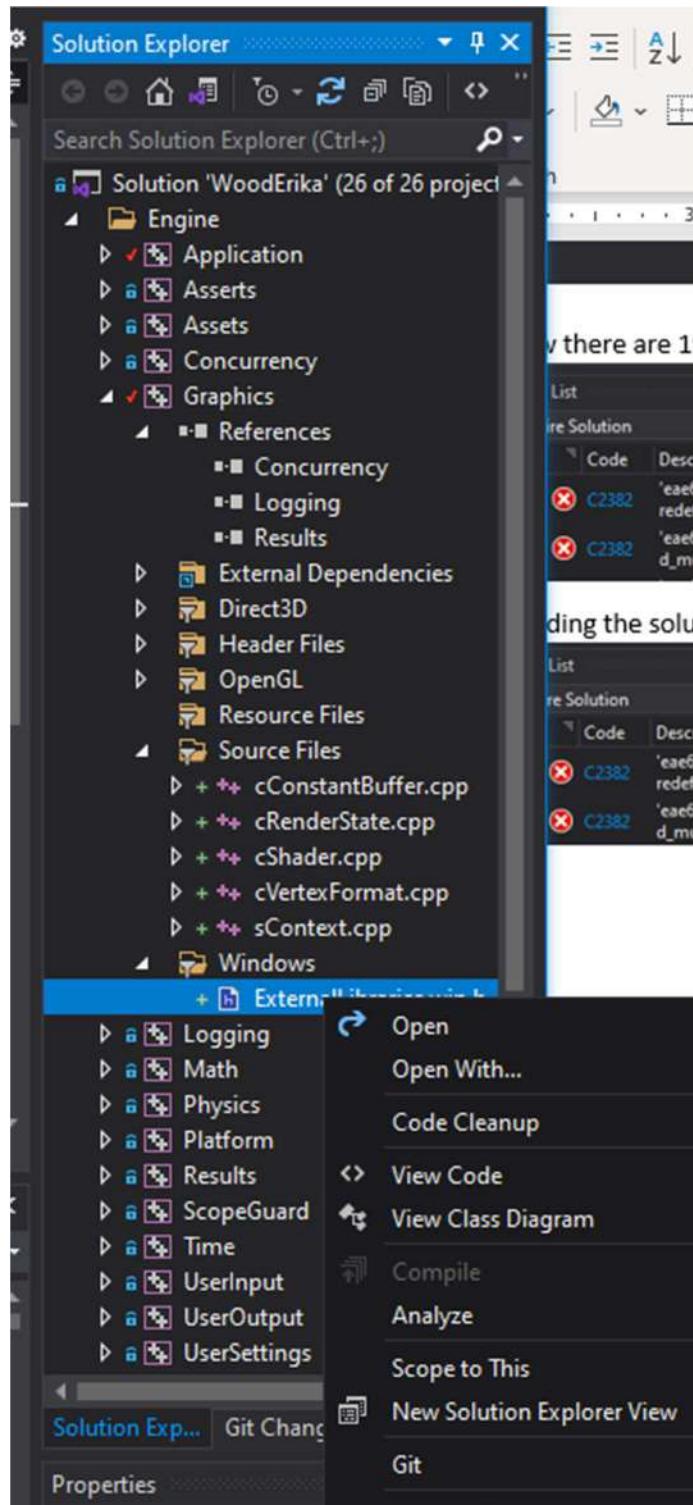
Error List						
Entire Solution		191 Errors	0 of 1 Warning	0 of 22 Messages	Build + IntelliSense	Search Error List
Code	Description	Project	File	Line	Suppression State	
✖ C2382	'eae6320::cScopeGuard<tFunction>::~cScopeGuard': redefinition; different exception specifications	Windows	cScopeGuard.inl	28		
✖ C2382	'eae6320::cScopeGuard Mutable<tFunction>::~cScopeGuard Mutable': redefinition; different exception specifications	Windows	cScopeGuard.inl	56		

Building the solution shows 206 errors:

Error List						
Entire Solution		206 Errors	0 of 1 Warning	0 of 34 Messages	Build + IntelliSense	Search Error List
Code	Description	Project	File	Line	Suppression State	
✖ C2382	'eae6320::cScopeGuard<tFunction>::~cScopeGuard': redefinition; different exception specifications	Windows	cScopeGuard.inl	28		
✖ C2382	'eae6320::cScopeGuard Mutable<tFunction>::~cScopeGuard Mutable': redefinition; different exception specifications	Windows	cScopeGuard.inl	56		

I guess I did something wrong at the step “deleting files”.

First I am going to check the ExternalLibraries.win.h instructions:



There are 19 errors in the solution.

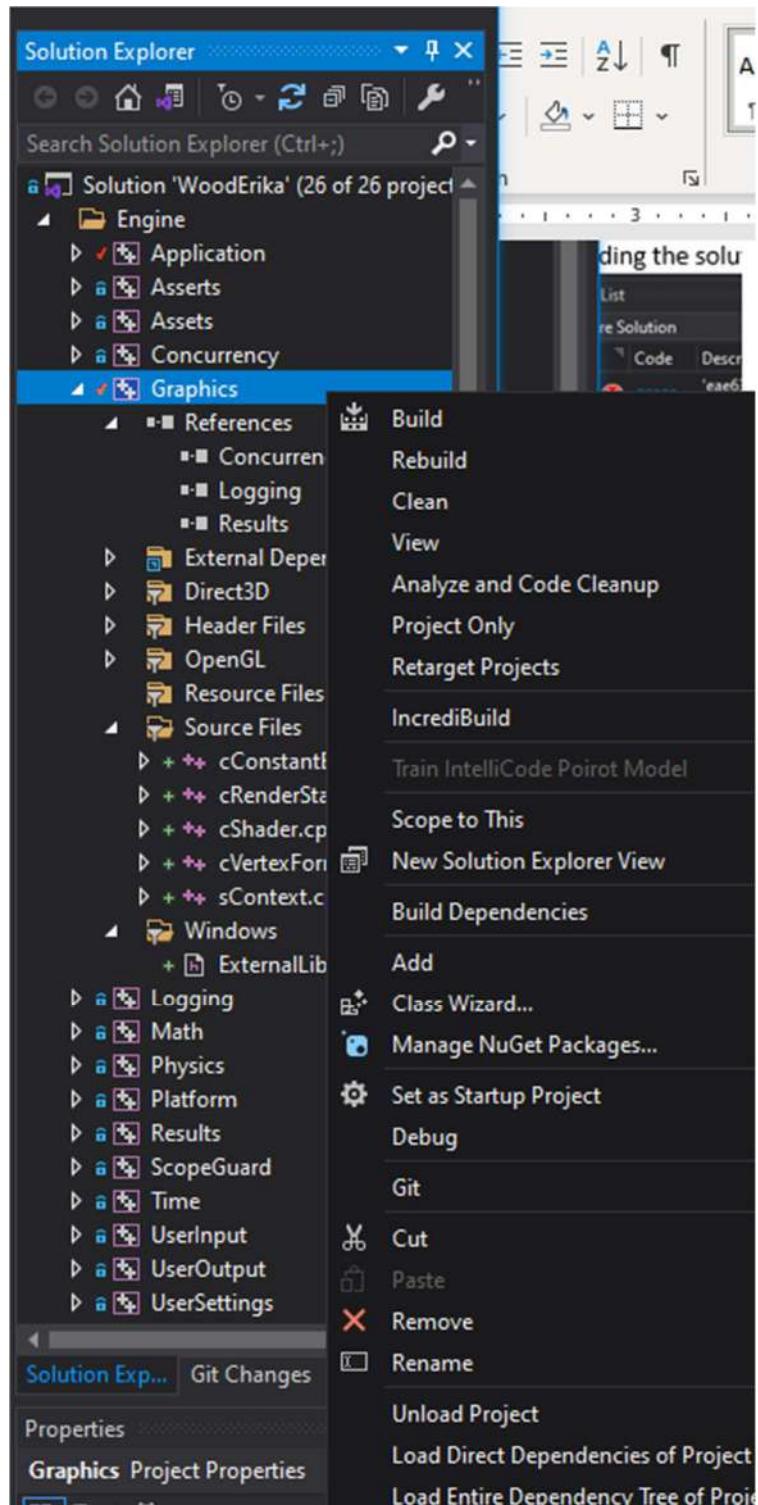
Code	Description
C2382	'eae6' redefined
C2382	'eae6' d_mu

ding the solution.

Code	Description
C2382	'eae6' redefined
C2382	'eae6' d_mu

oh that was wrong.

I need to right-click the project:



Graphics Property Pages

? X

Configuration: Active(Debug) Platform: x64 Configuration Manager...

Calling Convention	__cdecl (/Gd)
Compile As	Default
Disable Specific Warnings	
Forced Include File	
Forced #using File	
Show Includes	No
Use Full Paths	Yes (/FC)
Omit Default Library Name	No
Internal Compiler Error Reporting	Prompt Immediately (/errorReport:prompt)
Treat Specific Warnings As Errors	

Calling Convention
Select the default calling convention for your application (can be overridden by function). (/Gd, /Gr, /Gz, /Gv)

OK Cancel Apply

Adding the platform-specific file:

Forced Include File

`$(ProjectDir)Windows/ExternalLibraries.win.h`

<

Evaluated value:

`E:\MyGitHubProjectsLaptop\wooderika\Engine\Graphics\Windows/ExternalLibraries.win.h
%(ForcedIncludeFiles)`

<

Inherited values:

Inherit from parent or project defaults

Inherit from parent is checked and the "Evaluated value" section shows "%(ForcedIncludeFiles)".

The 206 errors are still there.

Error List

Entire Solution 206 Errors 0 Warnings 0 of 34 Messages Build + IntelliSense

Search Error List

	Code	Description	Project	File	Line	Suppression State
✖	C2065	'GL_UNIFORM_BUFFER': undeclared identifier	Graphics	cConstantBuffer.gl.cpp	38	
✖	C2065	'updateAtTheBeginning' : undeclared identifier	Graphics	cConstantBuffer.gl.cpp	38	
✖	C2061	syntax error: identifier 'GLsizeiptr'	Graphics	cConstantBuffer.gl.cpp	38	
✖	C3861	'glGetError': identifier not found	Graphics	cConstantBuffer.gl.cpp	39	
✖	C2065	'GL_NO_ERROR': undeclared identifier	Graphics	cConstantBuffer.gl.cpp	39	
✖	C2065	'm_bufferId': undeclared identifier missing type specifier -	Graphics	cConstantBuffer.gl.cpp	50	

I will restart again, assuming I did something wrong when deleting and copying the Graphics files.

Discarding all changes:

File Edit View Repository Branch Help

Current repository wonderika

Current branch DevAssignment01

Fetch origin Last fetched 19 hours ago

Changes 35 History Engine\Graphics\cConstantBuffer.cpp

35 changed files

Engine\Application\Application.vcxproj

Engine\Graphics\cConstantBuffer.cpp

Engine\Graphics\cConstantBuffer.h

Engine\Graphics\Configuration.h

Engine\Graphics\ConstantBufferFormats.h

Engine\Graphics\cRenderState.cpp

Engine\Graphics\cRenderState.h

Engine\Graphics\cRenderState.inl

Engine\Graphics\cShader.cpp

Engine\Graphics\cShader.h

Engine\Graphics\cVertexFormat.cpp

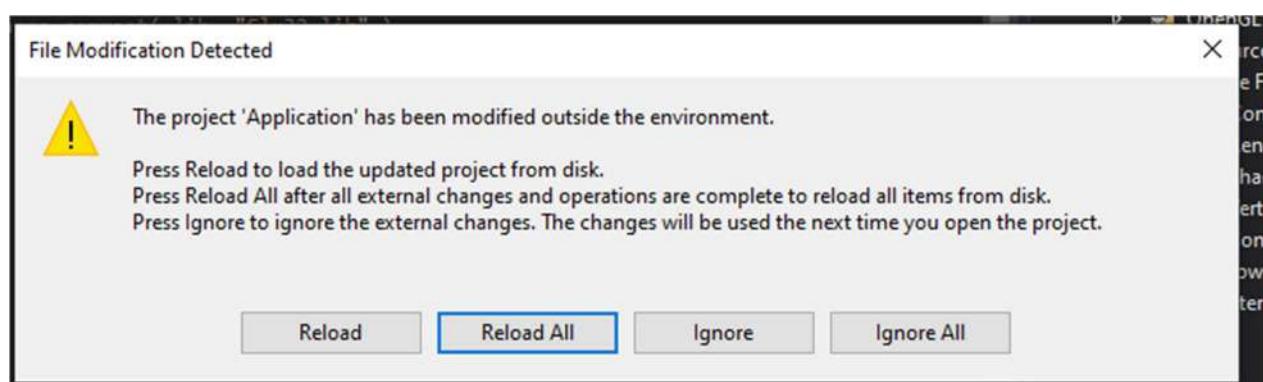
Engine\Graphics\cVertexFormat.h

Summary (required)

Description

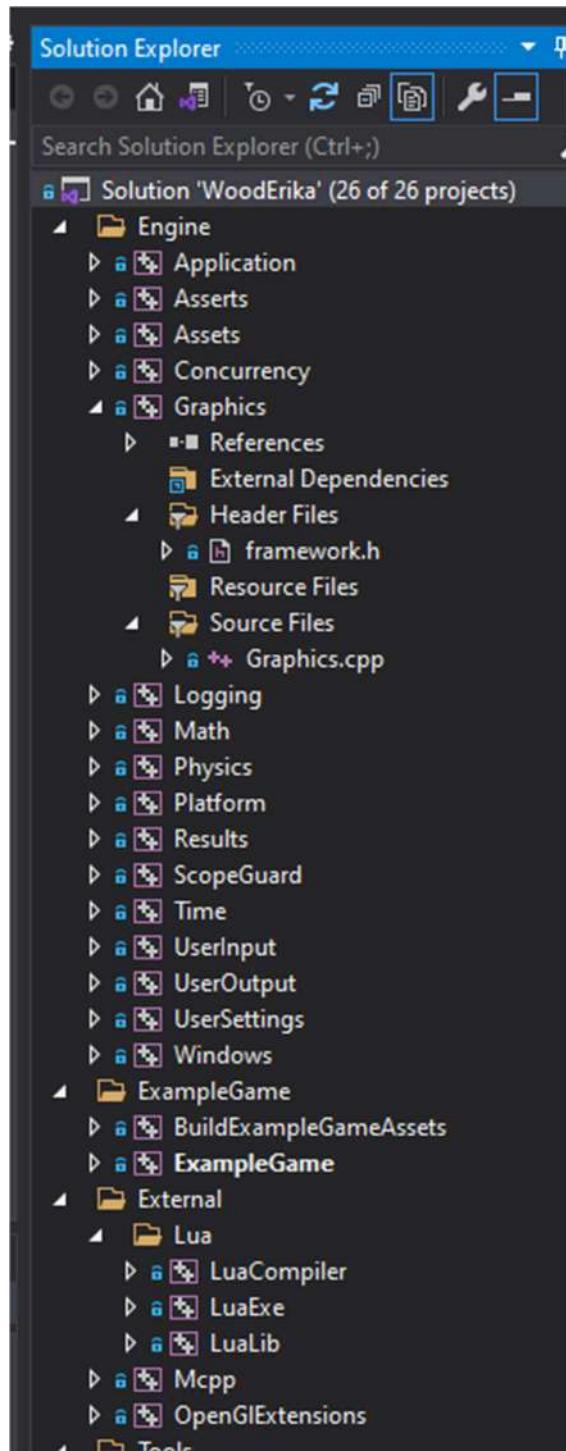
Discard all changes... Stash all changes

```
@@ -0,0 +1,69 @@
1 // Includes
2 //=====
3 +
4 #include "cConstantBuffer.h"
5 +
6 #include "ConstantBufferFormats.h"
7 +
8 #include <Engine/Asserts/Asserts.h>
9 #include <Engine/Logging/Logging.h>
10 +
11 // Interface
12 //=====
13 +
14 // Initialize / Clean Up
15 -----
16 +
17 +eae6320::cResult eae6320::Graphics::cConstantBuffer::Initialize( const i_initialData )
18 +{
19 +    auto result = Results::Success;
20 +
21 +    if ( m_type < ConstantBufferTypes::Count )
```



Starting again:

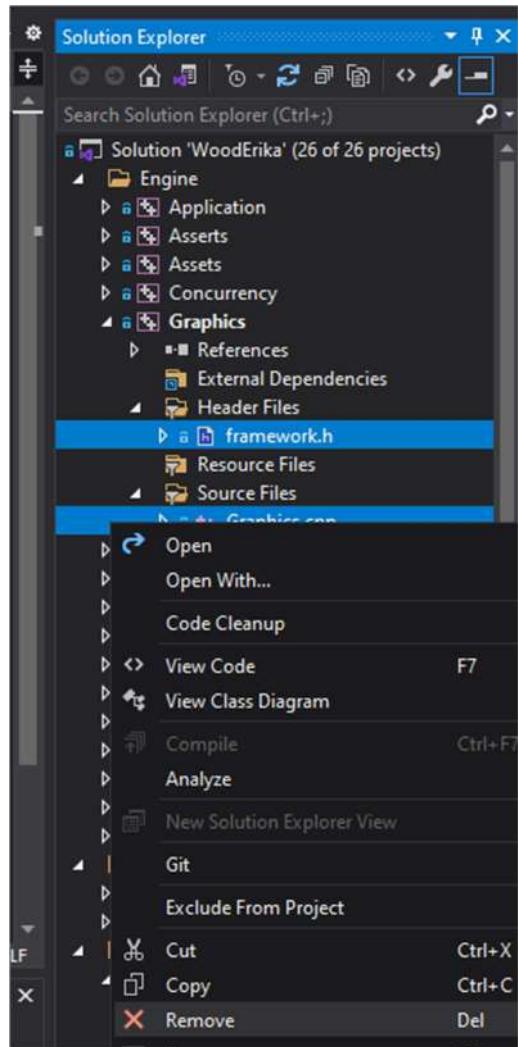
This time I will build the solution before continuing, as I am curious what will happen.



Redefinition errors and cannot find includes.h

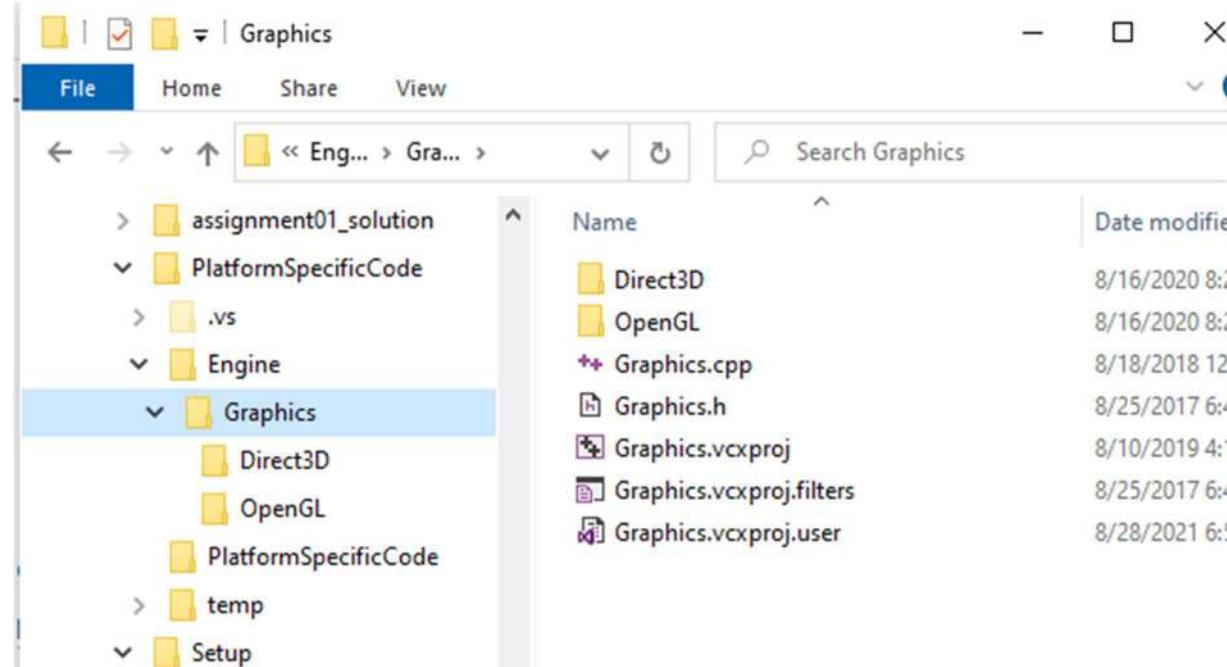
Error List						
Entire Solution		15 Errors	0 Warnings	0 of 6 Messages	Build + IntelliSense	Search
Code	Description	Project	File	Line	Suppression S	Count
C2382	'eae6320::cScopeGuard<tFunction>::~cScopeGuard': redefinition; different exception specifications	Windows	cScopeGuard.inl	28		1
C2382	'eae6320::cScopeGuardMutable<tFunction>::~cScopeGuardMutable': redefinition; different exception specifications	Windows	cScopeGuard.inl	56		1
C1083	Cannot open include file: 'Engine/Graphics/OpenGL/Includes.h': No such file or directory	OpenGLExtensions	OpenGLExtensions.h	12		1
C2382	'eae6320::cScopeGuard<tFunction>::~cScopeGuard': redefinition; UserSettings different exception specifications	UserSettings	cScopeGuard.inl	28		1

Removing framework.h and Graphics.cpp from the solution

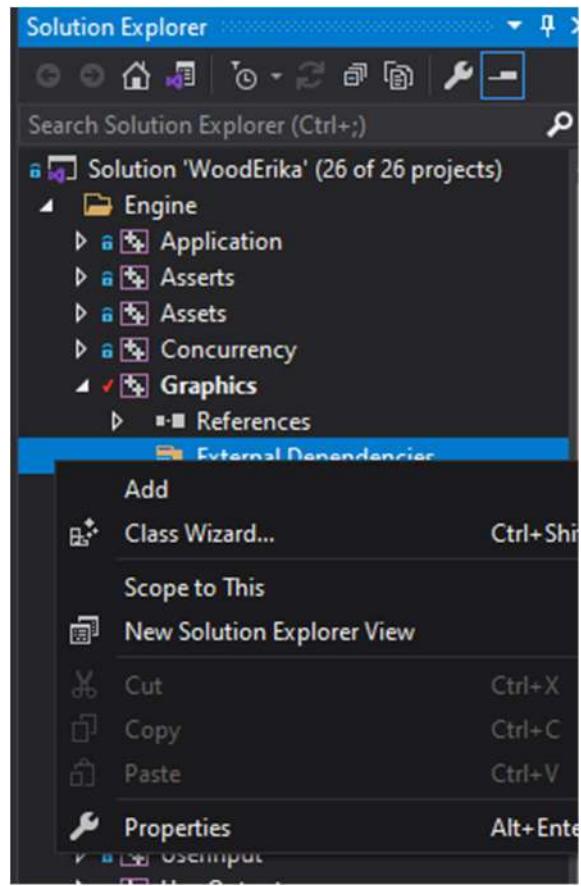


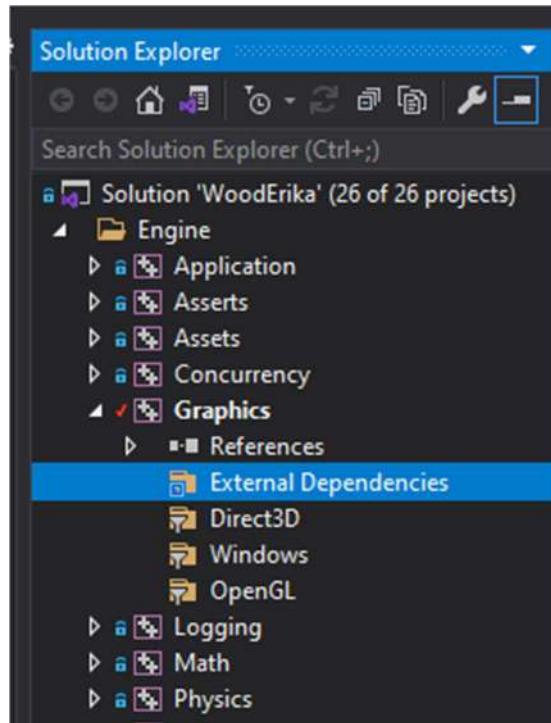
And deleting these files from the disk (Windows Explorer)

Also removing the following filters from the Solution Explorer based on the PlatformSpecificCode example:

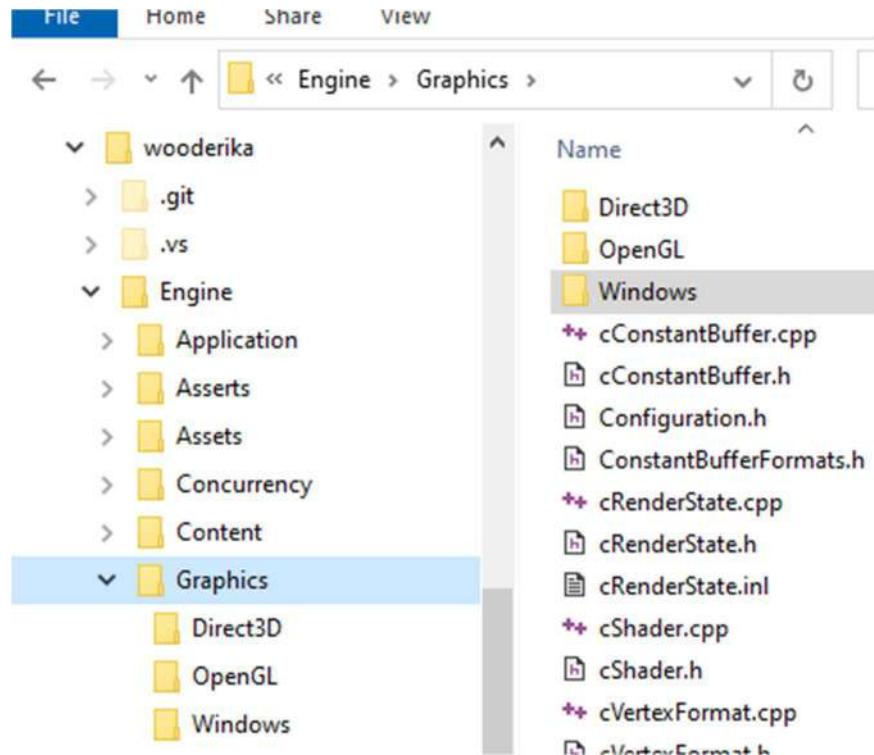


The filter External Dependencies cannot be removed:

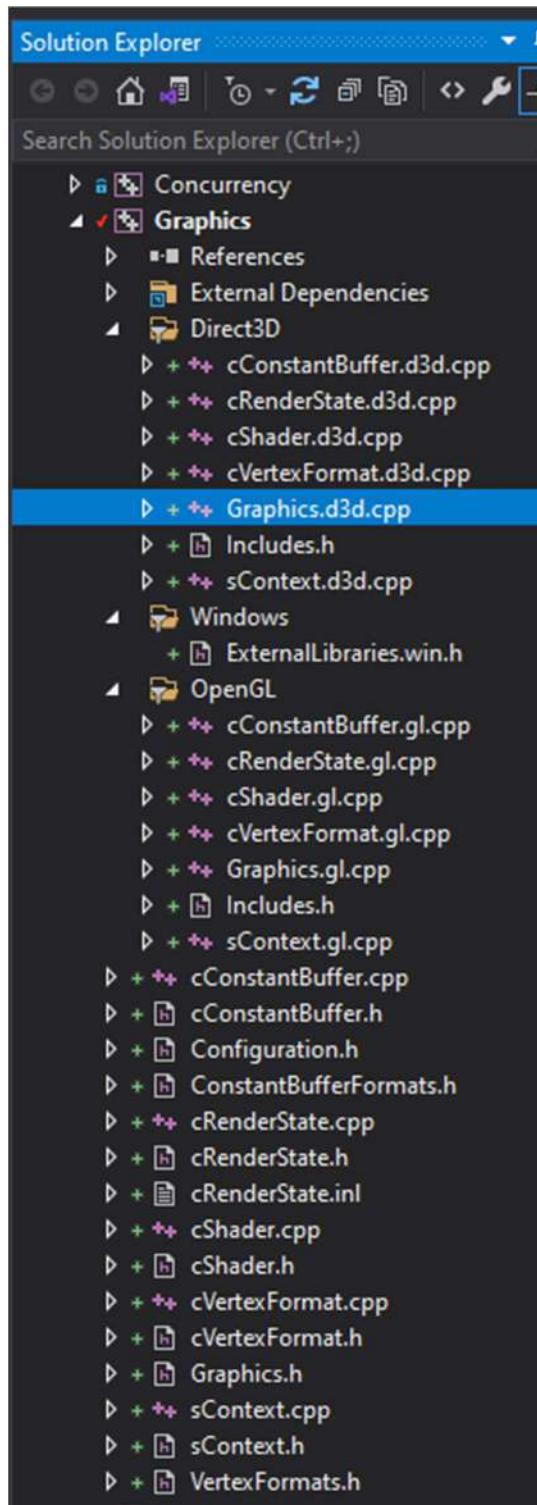




Copied files to Graphics and its subfolders in Windows Explorer



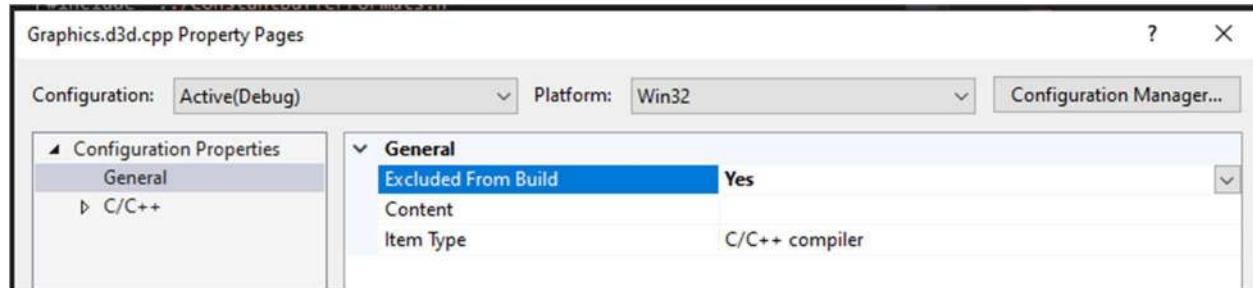
Now adding them to the Solution Explorer

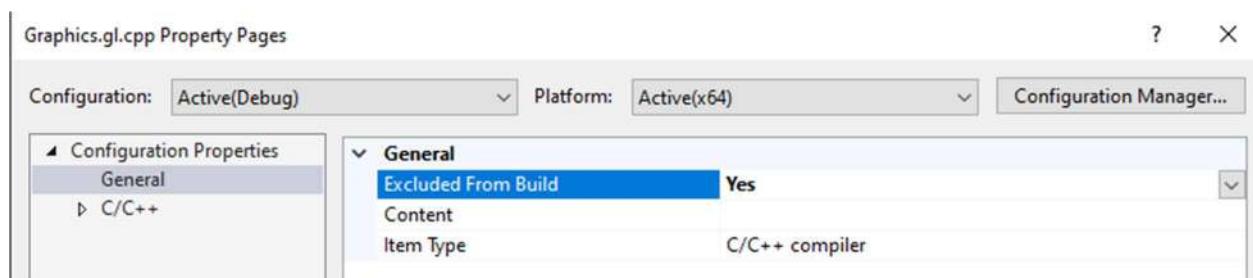
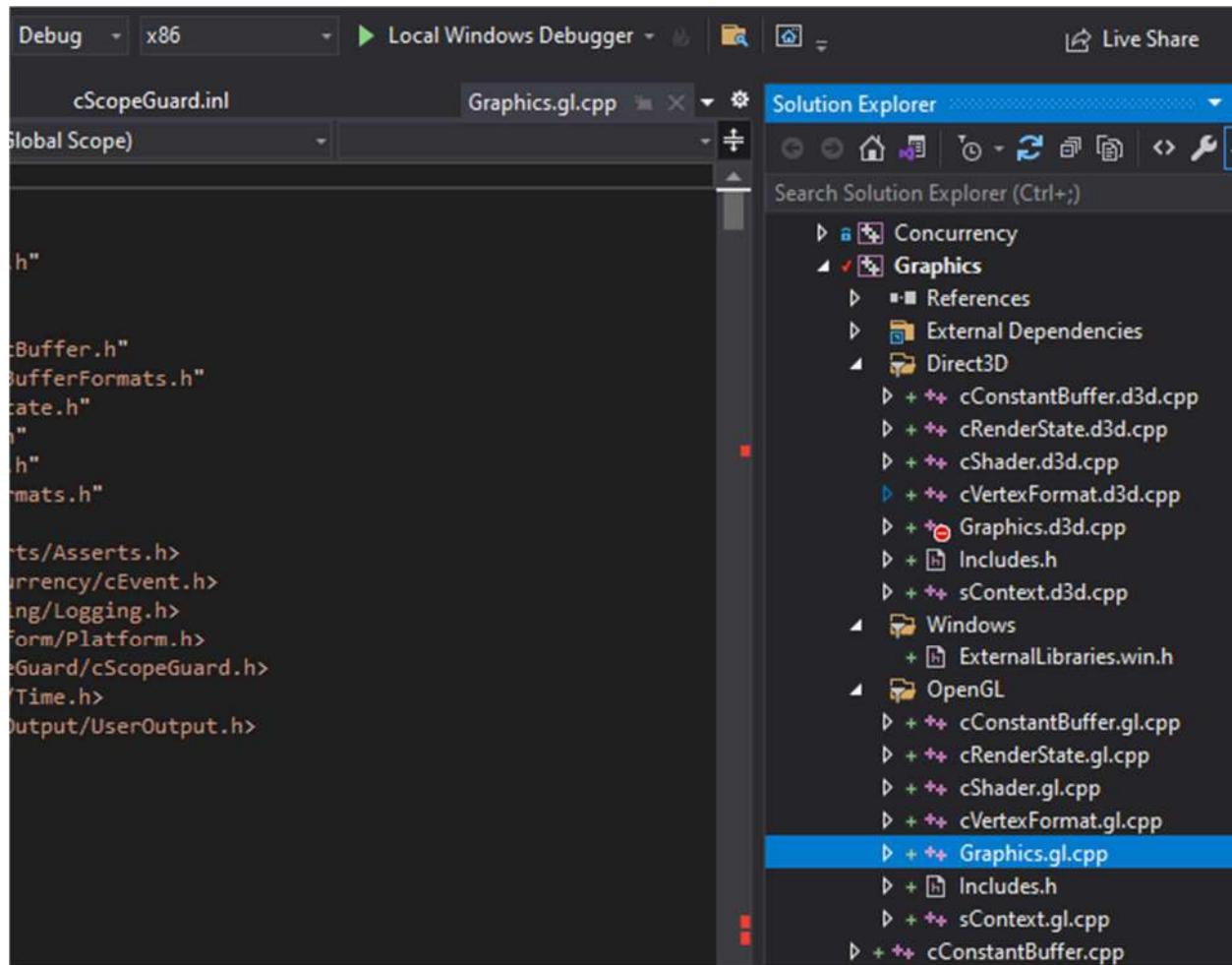


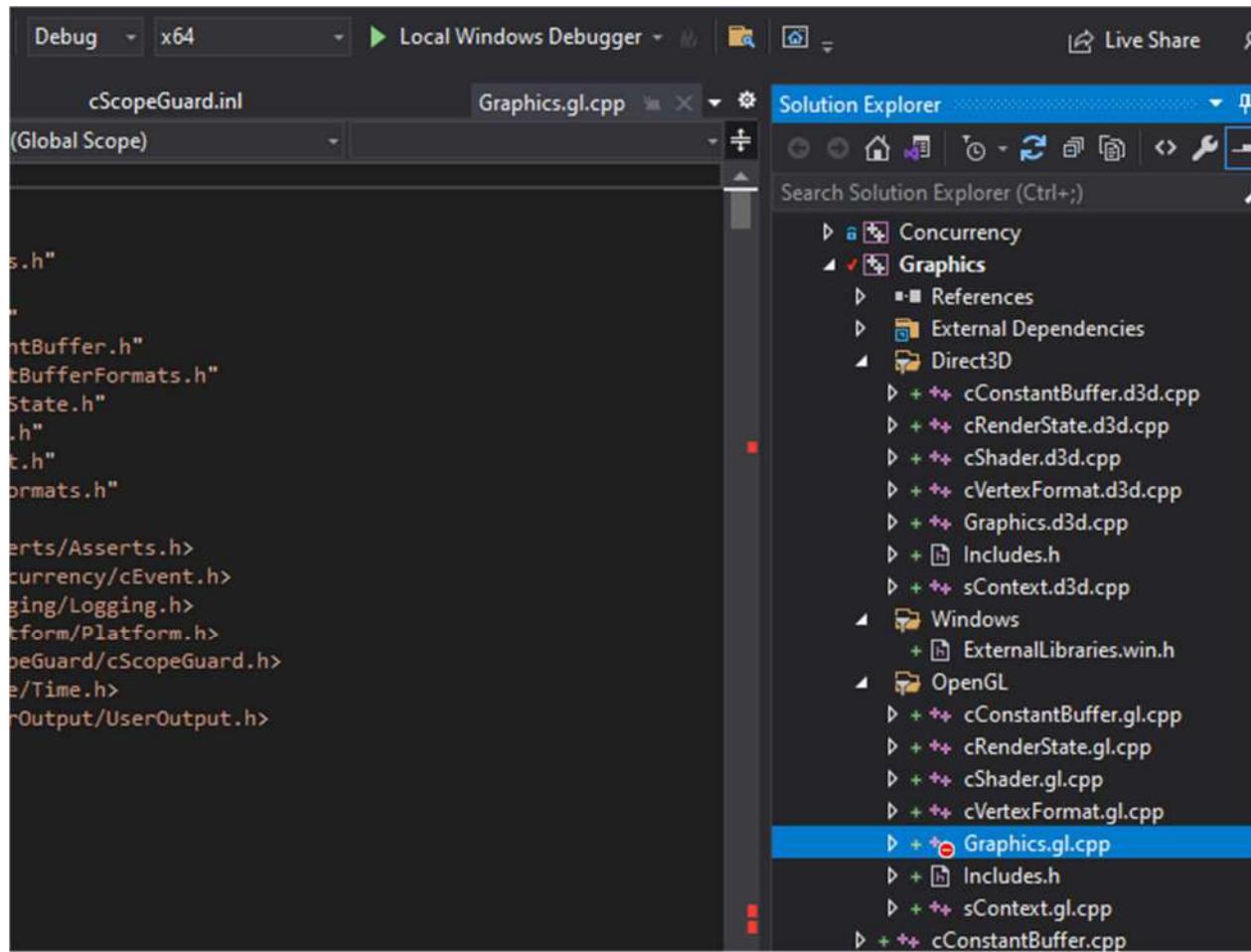
Building the project shows 203 errors

Error List						
Entire Solution		203 Errors	0 Warnings	0 of 29 Messages	X	''
	Code	Description	Project	File	Line	Suppress
✖	C2382	'eae6320::cScopeGuard<tFunction>::~cScopeGuard': redefinition; different exception specifications	Graphics	cScopeGuard.inl	28	
✖	C2382	'eae6320::cScopeGuardMutable<tFunction>::~cScopeGuardMutable': redefinition; different exception specifications	Graphics	cScopeGuard.inl	56	
✖	C2382	'eae6320::cScopeGuard<tFunction>::~cScopeGuard': redefinition; different exception specifications	Graphics	cScopeGuard.inl	28	
✖	C2382	'eae6320::cScopeGuardMutable<tFunction>::~cScopeGuardMutable': redefinition; different exception specifications	Graphics	cScopeGuard.inl	56	

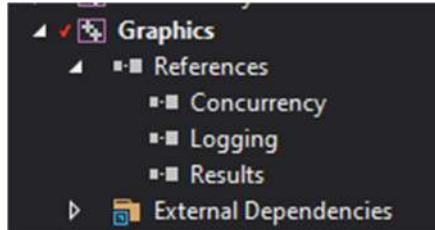
Setting up things the way that the [Platform-Specific Code Example](#) explains:



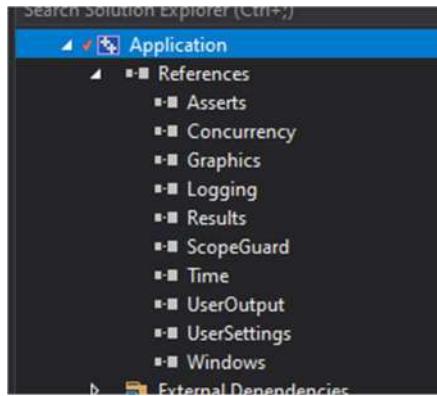




Adding references to the Graphics project:



Adding Graphics as a reference to other projects:



Now following the instructions for ExternalLibraries.win.h:

Adding \$(ProjectDir)Windows/ExternalLibraries.win.h to the field Forced Include File

Forced Include File

```
$(ProjectDir)Windows/ExternalLibraries.win.h
```

<

Evaluated value:

```
E:\MyGitHubProjects\ Laptop\wooderika\Engine\Graphics\Windows\ExternalLibraries.win.h  
%(ForcedIncludeFiles)
```

<

Inherited values:

Inherit from parent or project defaults

This did not fix the issue, still 206 errors:

Error List

Entire Solution		206 Errors	0 of 1 Warning	0 of 34 Messages	
Search Error List					
	Code	Description	Project	File	Line
	C2382	'eae6320::cScopeGuard<tFunction>::~cScopeGuard': redefinition; different exception specifications	Windows	cScopeGuard.inl	28
	C2382	'eae6320::cScopeGuard<tFunction>::~cScopeGuard': redefinition; different exception specifications	Windows	cScopeGuard.inl	56

Deleting the temp folder and building the solution again

Error List

Entire Solution		218 Errors	0 of 1 Warning	0 of 34 Messages		Build + IntelliSense	
	C...	Description	Project	File	Line	Sup	
	C2039	'deviceContext': is not a member of 'eae6320::Graphics::sContext'	Graphics	sContext.gl.cpp	108		
	C2039	'deviceContext': is not a member of 'eae6320::Graphics::sContext'	Graphics	sContext.gl.cpp	109		
	C2039	'deviceContext': is not a member of 'eae6320::Graphics::sContext'	Graphics	sContext.gl.cpp	142		
	C2039	'deviceContext': is not a member of 'eae6320::Graphics::sContext'	Graphics	sContext.gl.cpp	180		
	C2039	'openGLRenderingContext': is not a member of 'eae6320::Graphics::sContext'	Graphics	sContext.gl.cpp	209		
	C2039	'deviceContext': is not a member of 'eae6320::Graphics::sContext'	Graphics	sContext.gl.cpp	209		
	C2039	'openGLRenderingContext': is not a member of 'eae6320::Graphics::sContext'	Graphics	sContext.gl.cpp	210		

In the meantime I will fix the cScopeGuard.h

To get rid of the redefinition errors:

```
30
31     public:
32
33     // Initialize / Clean Up
34     cScopeGuard( tFunction&& i_function ) noexcept;
35     ~cScopeGuard() noexcept;
36
```

Added noexcept to the Destructors.

```
68     public:
69
70     void Disable() noexcept;
71
72     // Initialize / Clean Up
73     cScopeGuardMutable( tFunction&& i_function ) noexcept;
74     ~cScopeGuardMutable() noexcept;
75
76     // Data
```

Ok, it seems to be an issue with a 'compiler switch' – the x86 configuration also compiles OpenGL(x64) code. When I delete the Direct3D it works fine:

The screenshot shows the Microsoft Visual Studio interface. The Solution Explorer on the right lists the 'WoodErika' solution with its projects and files. The Code Editor on the left displays the 'cScopeGuard.h' header file, which contains code for a scope guard class. The Output window at the bottom shows the build log for the 'Graphics' project.

Solution Explorer:

- WoodErika (26 of 26 projects)
- Engine
 - Application
 - Assets
 - Concurrency
 - Graphics
 - References
 - External Dependencies
 - OpenGL
 - cConstantBuffer.cpp
 - cRenderState.cpp
 - cShader.cpp
 - cVertexFormat.cpp
 - Graphics.cpp
 - Includes.h
 - sContext.cpp
 - Windows
 - ExternalLibraries.win.h
 - cConstantBuffer.cpp
 - cConstantBuffer.h
 - Configuration.h
 - ConstantBufferFormats.h
 - cRenderState.cpp
 - cRenderState.h
 - cRenderState.inl
 - cShader.cpp
 - cShader.h
 - cVertexFormat.cpp
 - cVertexFormat.h
 - Graphics.h
 - sContext.cpp
 - sContext.h
 - VertexFormats.h
 - Logging
 - Math
 - Physics
 - Platform
 - Results
 - ScopeGuard
 - References
 - External Dependencies
 - cScopeGuard.h
 - cScopeGuard.inl
 - Empty.cpp

Code Editor (cScopeGuard.h):

```
#ifndef EAE6320_CSCOPEGUARD_H
#define EAE6320_CSCOPEGUARD_H

namespace eae6320
{
    // Standard
    //=====

    // Once the scope guard is created
    // its assigned function will always be called
    // (i.e. it can't be disabled)

    template <typename tFunction>
    class cScopeGuard
    {
        // Interface
        //-----

        public:
            // Initialize / Clean Up
            cScopeGuard( tFunction&& i_function ) noexcept;
            ~cScopeGuard() noexcept;

        // Data
        //-----

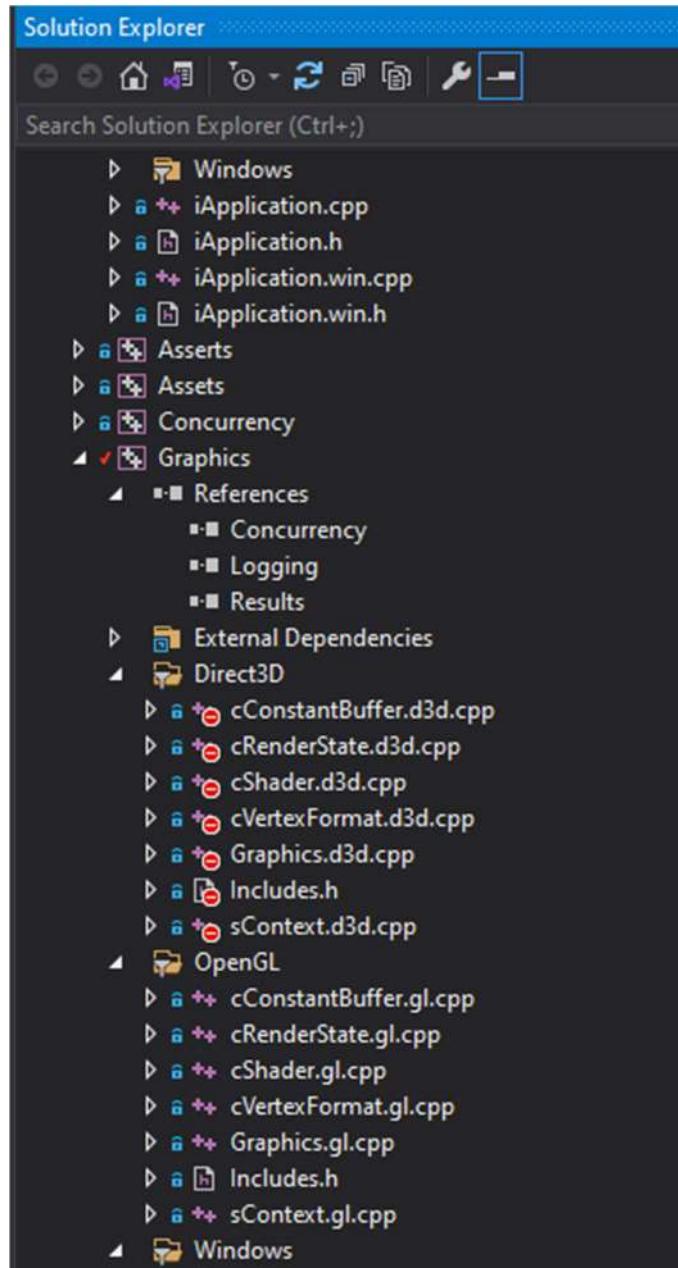
        private:
    };
}
```

Output:

```
Show output from: Build
7>Mutex.win.cpp
7>Mutex_recursive.win.cpp
7>cThread.win.cpp
7>Generating Code...
7>Concurrency.vcxproj -> E:\MyGitHubProjects\laptop\wooderika\temp\x86\Debug\output\Concurrency.lib
8>----- Rebuild All started: Project: Graphics, Configuration: Debug Win32 -----
8>cConstantBuffer.cpp
8>cRenderState.cpp
8>cShader.cpp
8>cShader.h
8>cVertexFormat.cpp
8>cVertexFormat.h
8>Graphics.cpp
8>sContext.cpp
8>sContext.h
8>Generating Code...
8>Graphics.vcxproj -> E:\MyGitHubProjects\laptop\wooderika\temp\x86\Debug\output\Graphics.lib
----- Rebuild All: 8 succeeded, 0 failed, 0 skipped -----
```

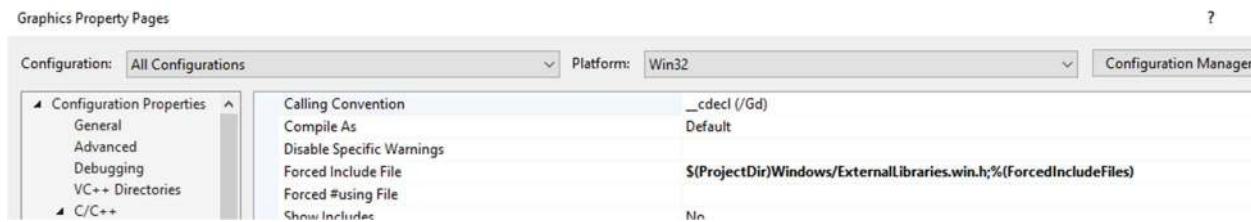
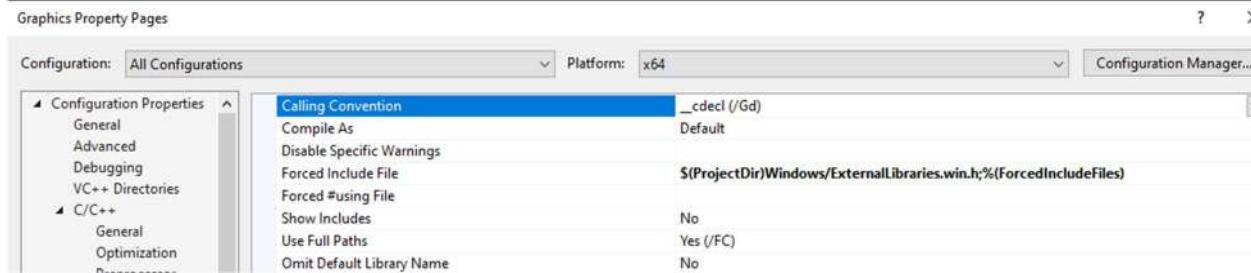
So now I will try to find where it is determined which files to compile for a specific configuration.

Our TA Nancy was so kind and got on a Zoom call with me for over an hour. Thank you sooo much!!!! It was a great learning experience!! So what I learned was that we need to exclude all platform-specific code not just the graphics.cpp file.



So that got rid of the vast majority of errors.

Editing the Forced Include File for the Graphics project only:



Now there are linking errors left:

On the x86 configuration:

Screenshot of Microsoft Visual Studio showing an error list and solution explorer for a C++ project.

Error List:

- Entire Solution - 32 Errors
- LNK1120 31 unresolved externals
- LNK2001 unresolved external symbol "void __stdcall glBindBuffer(unsigned int,unsigned int)" (? glBindBuffer@3@P6GX@Z)
- LNK2001 unresolved external symbol "void __stdcall glBindVertexArray(unsigned int)" (? glBindVertexArray@3@P6GX@Z)
- LNK2001 unresolved external symbol "void __stdcall glGetAttribPointer(unsigned int,int,unsigned int,unsigned char,int,void const *)" (? glGetAttribPointer@3@P6GXH@IE@PBX@ZA)
- LNK2001 unresolved external symbol "unsigned int __stdcall glCreateProgram(void)" (? glCreateProgram@3@P6GX@Z)
- LNK2001 unresolved external symbol "public __thiscall eaef320::Graphics::ConstantBuffer<ConstantBuffer<void>>" (? 1cConstantBuffer@Graphics@eaef320@@QAE@Z)
- LNK2001 unresolved external symbol "public __thiscall eaef320::Graphics::ConstantBuffer<ConstantBuffer<enum 0cConstantBuffer@Graphics@eaef320@@W4ConstantBufferTypes@12@@Z>>" (? 0cConstantBuffer@Graphics@eaef320@@W4ConstantBufferTypes@12@@Z)
- LNK2001 unresolved external symbol "public class eaef320::ConstantBuffer __thiscall eaef320::Graphics::ConstantBuffer::Initialize(void const * const)" (? Initialize@ConstantBuffer@Graphics@eaef320@@QAE@AIVcResult@3@Q8X@Z)
- LNK2001 unresolved external symbol "void __stdcall glDeleteBuffers(int,unsigned int const *)" (? glDeleteBuffers@3@P6GXH@Z)
- LNK2001 unresolved external symbol "void __stdcall glGetProgramiv(unsigned int,unsigned int,int)" (? glGetProgramiv@3@P6GXH@Z)
- LNK2001 unresolved external symbol "void __stdcall glEnableVertexAttribArray(unsigned int)" (? glEnableVertexAttribArray@3@P6GX@Z)
- LNK2001 unresolved external symbol "void __stdcall glGetProgramInfoLog(unsigned int,int,int *,char *)" (? glGetProgramInfoLog@3@P6GXH@AD@Z)
- LNK2001 unresolved external symbol "void __stdcall glBufferData(unsigned int,long,void const *,unsigned int)" (? glBufferData@3@P6GXH@BX@Z)
- LNK2001 unresolved external symbol "void __stdcall glGenBuffers(int,unsigned int)" (? glGenBuffers@3@P6GXH@Z)
- LNK2001 unresolved external symbol "void __stdcall glGenVertexArrays(int,unsigned int)" (? glGenVertexArrays@3@P6GXH@Z)
- LNK2001 unresolved external symbol "void __stdcall glLinkProgram(unsigned int)" (? glLinkProgram@3@P6GX@Z)
- LNK2001 unresolved external symbol "void __stdcall glAttachShader(unsigned int,unsigned int)" (? glAttachShader@3@P6GX@Z)
- LNK2001 unresolved external symbol "void __stdcall nIsePronamni(unsigned int)" (? nIsePronamni@3@P6GX@Z)

Solution Explorer:

- Windows
 - Application.cpp
 - Application.h
 - Application.wn.cpp
 - Application.wn.h
- Assets
- Concurrency
- Graphics
 - References
 - Concurrency
 - Logging
 - Results
 - External Dependencies
 - Direct3D
 - cConstantBuffer.d3d.cpp
 - cFenderState.d3d.cpp
 - cShader.d3d.cpp
 - cVertexFormat.d3d.cpp
 - Graphics.d3d.cpp
 - Includes.h
 - sContext.d3d.cpp
 - OpenGL
 - cConstantBuffer.cpp
 - cFenderState.cpp
 - cShader.cpp
 - cVertexFormat.cpp
 - Graphics.cpp
 - Includes.h
 - sContext.cpp
 - Windows
 - ExternalLibraries.win.h
 - cConstantBuffer.h
 - Configuration.h
 - ConstantBufferFormats.h
 - cRenderState.cpp
 - cRenderState.h
 - cRenderState.inl
 - cShader.cpp
 - cShader.h
 - cVertexFormat.cpp
 - cVertexFormat.h
 - Graphics.h
 - sContext.cpp
 - sContext.h
 - VertexFormats.h

And less on the x64 configuration:

The screenshot shows the Microsoft Visual Studio IDE interface. The top menu bar includes File, Edit, View, Git, Project, Build, Debug, Test, Analyze, Tools, Extensions, Window, Help, and a Search bar. The title bar displays "Release x64 Local Windows Debugger". The code editor window shows a file named "ExternalLibraries.win.h" with the following content:

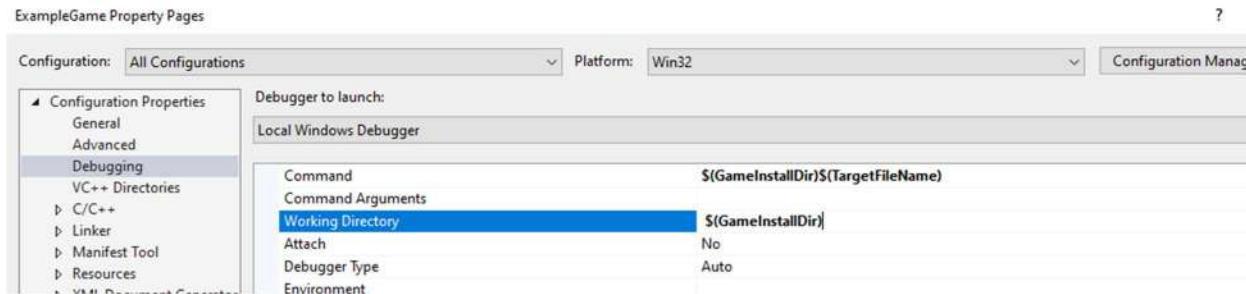
```
1 // This file lists external prebuilt libraries that this library depends on
2
3 #pragma once
4
5 // Includes
6 // -----
7
```

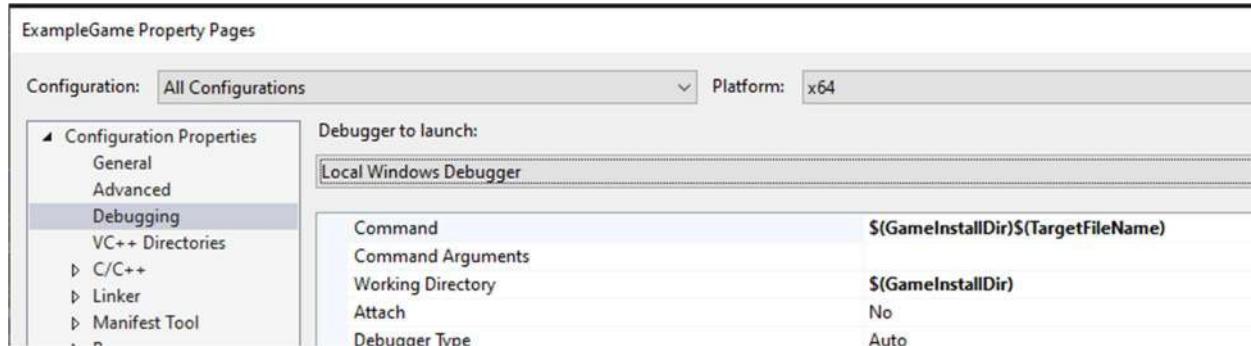
The status bar at the bottom indicates "Ln: 1 Ch: 1 TABS". Below the code editor is the "Error List" window, which shows the following build errors:

C...	Description	Project	File	Line	Suppression State
LNK1120	3 unresolved externals	ExampleGame (ExampleG...	ExampleGame.exe	1	
LNK2001	unresolved external symbol "public: __cdecl eae6320::Graphics::ConstantBuffer::~ConstantBuffer(void)" ??_EcConstantBuffer@Graphics@@QAE@XZ	ExampleGame (ExampleG...	Graphics.lib(Graphics.d3d....	1	
LNK2001	unresolved external symbol "public: __cdecl eae6320::Graphics::ConstantBuffer::ConstantBuffer(enum eae6320::Graphics::ConstantBufferTypes)" ??_EcConstantBuffer@Graphics@@QAE@W4ConstantBufferTypes@12@Z	ExampleGame (ExampleG...	Graphics.lib(Graphics.d3d....	1	
LNK2001	unresolved external symbol "public: class eae6320::CResult __cdecl eae6320::ConstantBuffer::Initialize(void const * const)" ??_EcConstantBuffer@Graphics@@QAE@ZAVcResult@3@QEBX@Z	ExampleGame (ExampleG...	Graphics.lib(Graphics.d3d....	1	

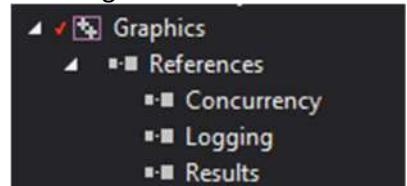
Following the changes for Debugging:

- Changing Command and working directory





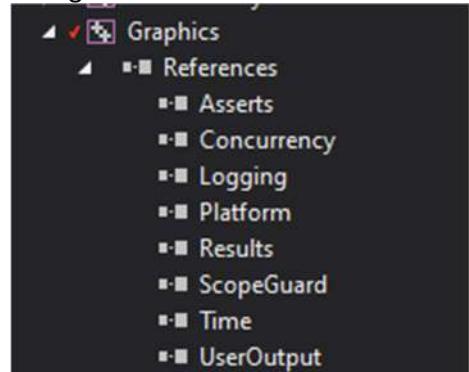
checking the references added to graphics



checking the .cpp and .h files

of the graphic.d3d

changed it to



according to the includes

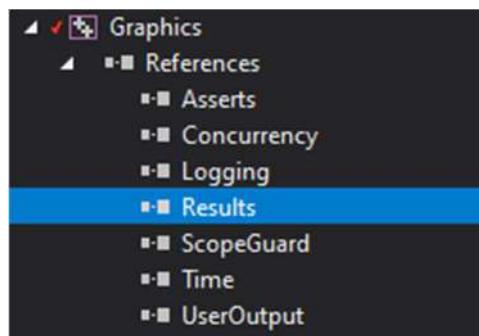
```
#include <Engine/Asserts/Asserts.h>
#include <Engine/Concurrency/cEvent.h>
#include <Engine/Logging/Logging.h>
#include <Engine/Platform/Platform.h>
#include <Engine/ScopeGuard/cScopeGuard.h>
#include <Engine/Time/Time.h>
#include <Engine/UserOutput/UserOutput.h>
#include <utility>
```

and double-checked function calls, for example

```
eae6320::Logging::OutputError( "OpenGL failed to get an unused vertex array ID: %u" )  
eae6320::cResult InitializeGeometry()  
eae6320::cScopeGuard scopeGuard_program( [&result] {
```

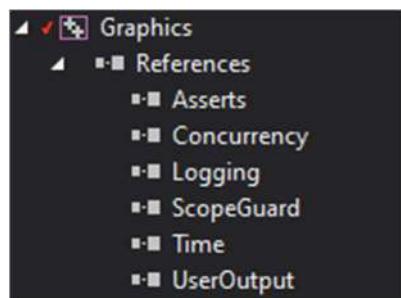
```
Concurrency::WaitForEvent( s_whenDataForANewFrameCanBeSubmittedFromApplicationThread, i_timeToWait_inMilliseconds
void eae6320::Graphics::SubmitElapsedTime( const float i_elapsedSecondCount_systemTime, const float i_elapsedSecondCount_simulation
UserOutput::Print( "The renderer failed to signal to th
```

Removed Platform, since there is no function call



Also removed Results, since there is no function call, only
this for example:

```
result = eae6320::Results::Failure;
```



now the link errors changed from LINK 2001 to 2019

for x64 and for x86

Entire Solution		4 Errors	0 Warnings	0 Messages	Build + IntelliSense
C...	Description	Project			
LNK1120	3 unresolved externals unresolved external symbol "public: class eae6320::cResult __cdecl eae6320::Graphics::cConstantBuffer::Initialize(void const * const)" (?)	ExampleGame (ExampleGame\ExampleGame)			
LNK2019	Initialize@cConstantBuffer@Graphics@eae6320@@QEAA?AVcResult@3@QEBX@Z referenced in function "class eae6320::cResult __cdecl eae6320::Graphics::Initialize(struct eae6320::Graphics::sInitializationParameters const &)" (?Initialize@Graphics@eae6320@@YA?AVcResult@2@AEBUsInitializationParameters@12@@Z) unresolved external symbol "public: __cdecl eae6320::Graphics::cConstantBuffer::cConstantBuffer(enum eae6320::Graphics::ConstantBufferTypes)" (?)	ExampleGame (ExampleGame\ExampleGame)			
LNK2019	0cConstantBuffer@Graphics@eae6320@@QEAA@W4ConstantBufferTypes@12@@Z referenced in function "void __cdecl `anonymous namespace`::`dynamic initializer for 's_constantBuffer_frame`"(void)" (?) _Es_constantBuffer_frame@?A0x4522fdd2@@YAXXZ unresolved external symbol "public: __cdecl eae6320::Graphics::cConstantBuffer::~cConstantBuffer(void)" (?)	ExampleGame (ExampleGame\ExampleGame)			
LNK2019	1cConstantBuffer@Graphics@eae6320@@QEAA@Z referenced in function "void __cdecl `anonymous namespace`::`dynamic atexit destructor for 's_constantBuffer_frame`"(void)" (?)_Fs_constantBuffer_frame@?A0x4522fdd2@@YAXXZ	ExampleGame (ExampleGame\ExampleGame)			

Error List Output

I asked Yi De Zhu for help and he was so kind to get on a call on Discord where I screenshared my codebase. He was so kind to look at my solution on Discord last night, even though he was busy working on his own project he insisted helping me for almost an hour. It was not just a quick glance either. He was very dedicated and I am very appreciative of his commitment. We went through all reference of all projects, checked the excludes, external forced includes, property sheets, checked his previous error logs, but we couldn't find the issue.

Today (September 2) I asked Joshua Butner and he went over the code with me for over 30 mins and suggested to delete the Graphics project entirely. He had issues with Visual Studio before that were entirely unrelated to the project.

The errors suggest that it cannot find a symbol that it should find within the project.

So, now I will delete the entire project and set it up again.

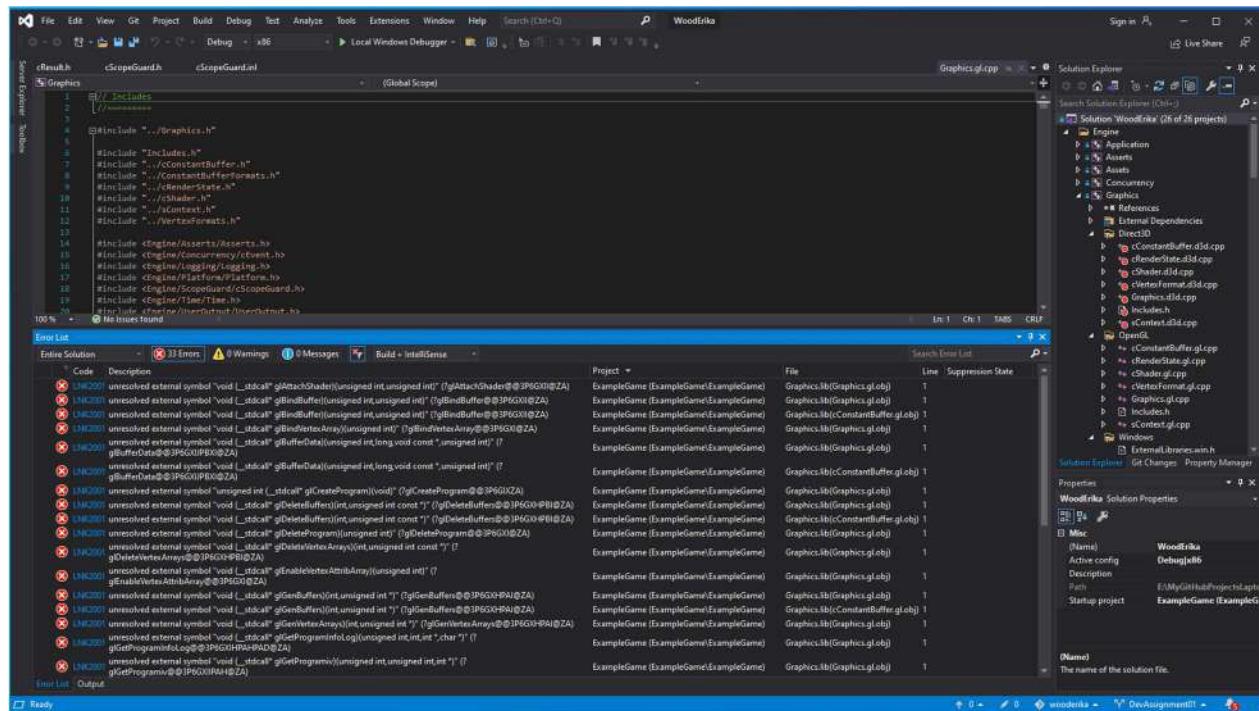
WOOOOHOOOOOO it works!!!!!!

The screenshot shows the Microsoft Visual Studio interface with the 'WoodErka' solution open. The Solution Explorer on the right lists 26 projects under the 'Engine' category, including sub-folders like 'Application', 'Assets', 'Math', 'Concurrency', and 'Graphics'. The 'Graphics' folder contains files such as 'cRenderTarget.h', 'cConstantBuffer.h', 'cShader.h', 'cVertexFormat.h', 'cGraphics.h', 'cContext.h', 'cVertexFormatLayout.h', 'cContextFormat.h', 'cContent.h', and 'cContentD3D.h'. The 'Properties' window shows settings for the 'WoodErka' solution, including the active configuration as 'Debug|x64'. The 'Output' window at the bottom displays the build log:

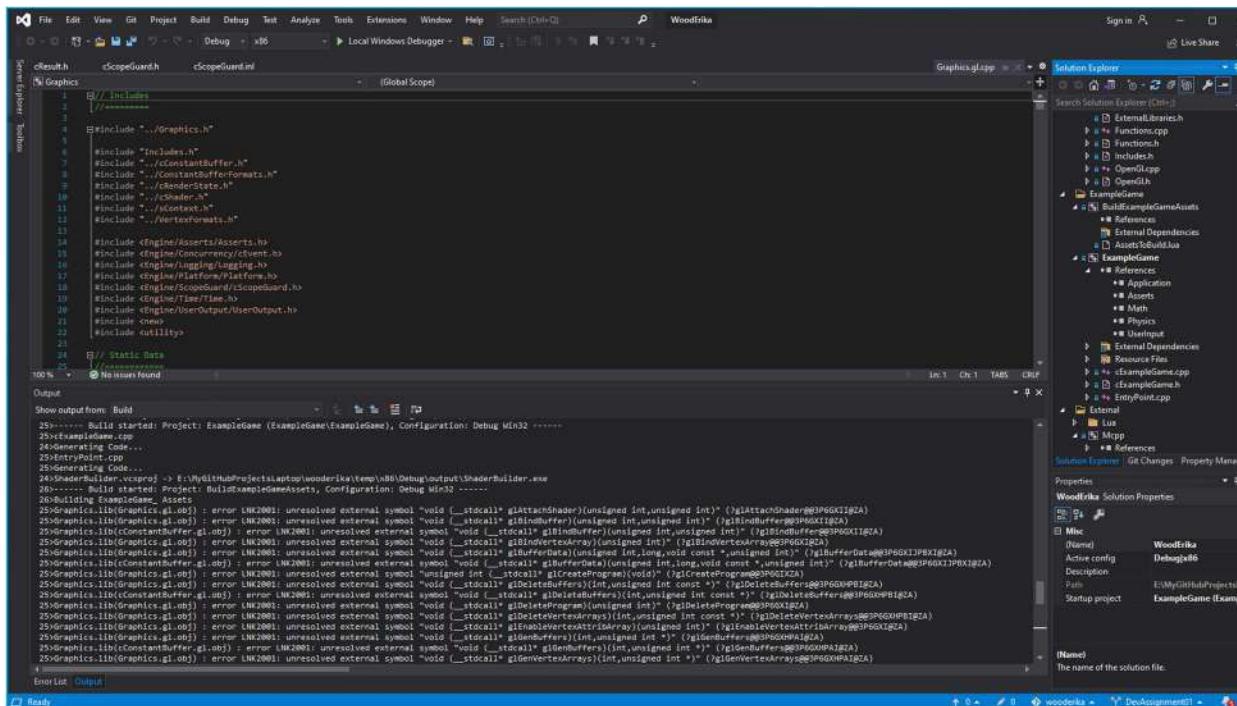
```
Show output from: Build
1>removing vccproj...
2>1>Graphics.vcxproj -> E:\MyGitHubProjects\laptop\wooderika\temp\x64\Debug\output\Graphics.lib
3>----- Build started: Project: Application, Configuration: Debug x64 -----
4>4>1>Application.cpp
5>5>Application_wdn.cpp
6>6>Generating Code...
7>7>appdata\local\temp\vsprj -> E:\MyGitHubProjects\laptop\wooderika\temp\x64\Debug\output\Application.lib
8>----- Build started: Project: ExampleGame (ExampleGame|ExampleGame), Configuration: Debug x64 -----
9>9>ShaderBuilder.cpp
10>10>ShaderBuilder_d3d.cpp
11>11>EntryPoint.cpp
12>12>EntryPoint.cpp
13>13>Generating Code...
14>14>appdata\local\temp\vsprj -> E:\MyGitHubProjects\laptop\wooderika\temp\x64\Debug\output\ExampleGame_.\ExampleGame.exe
15>Copying ExampleGame_ Executable
16>16> 1 file(s) copied.
17>17>ShaderBuilder_d3d.exe -> E:\MyGitHubProjects\laptop\wooderika\temp\x64\Debug\output\ShaderBuilder.exe
18>----- Build started: Project: BuildExampleGameSets, Configuration: Debug x64 -----
19>Building ExampleGame_ Assets
20>Built E:\MyGitHubProjects\laptop\wooderika\temp\x64\Debug\output\ExampleGame_.\Content\shaders\vertex\standard.shader
21>Built E:\MyGitHubProjects\laptop\wooderika\temp\x64\Debug\output\ExampleGame_.\Content\shaders\fragment\standard.shader
22>Built E:\MyGitHubProjects\laptop\wooderika\temp\x64\Debug\output\ExampleGame_.\Content\shaders\vertex\vertexInputLayout_mesh.shader
23>Installed lua.txt
24>Installed mpp.txt
***** Build: 26 succeeded, 0 failed, 0 up-to-date, 0 skipped *****
```

Oh but it only built for x64.

When building for x86 there are 33 LINK errors:

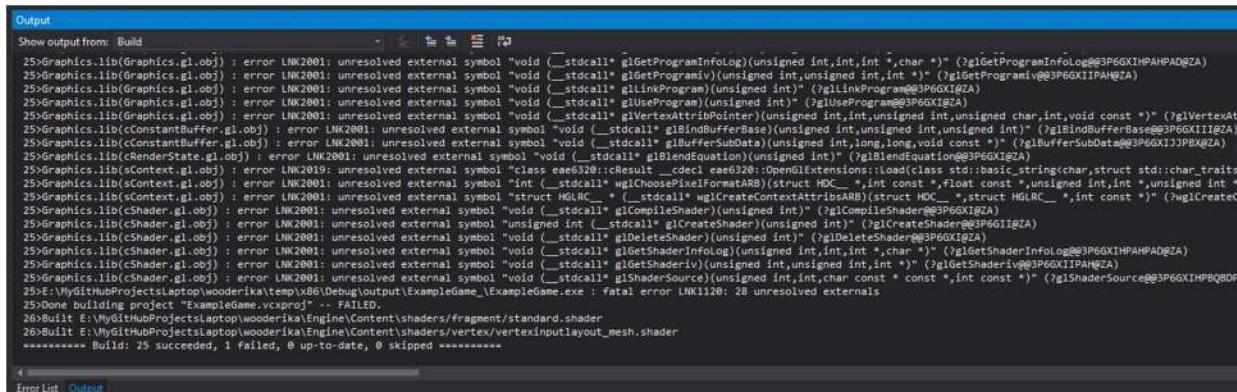


It happens on number 25>Graphics.lib



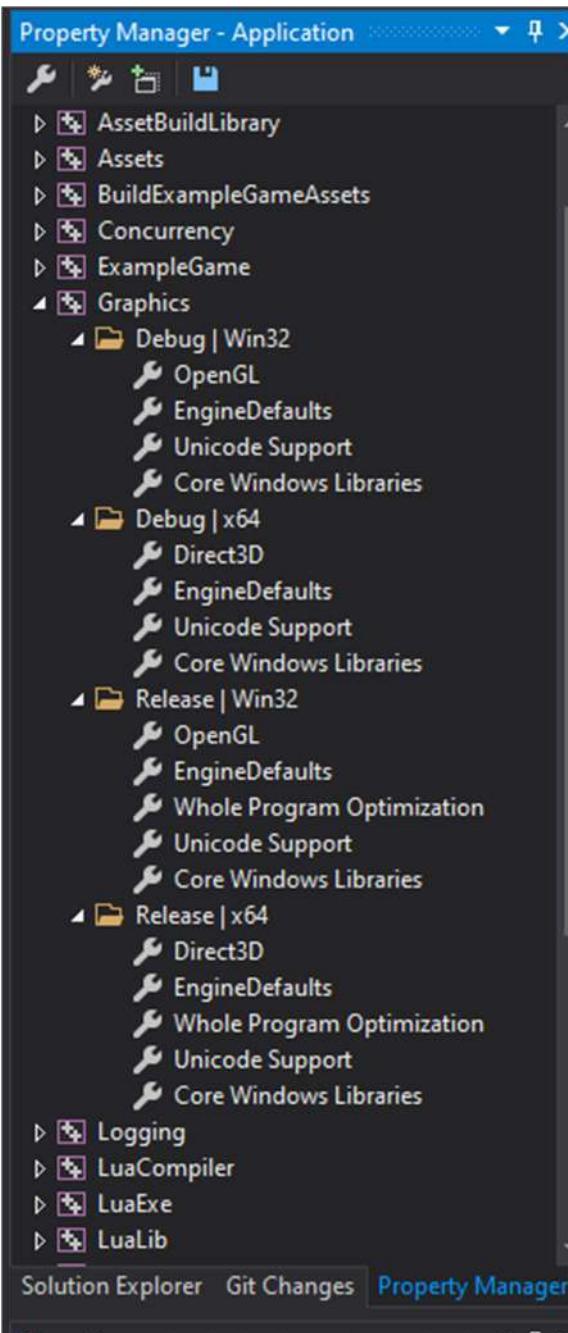
ExampleGame did not build correctly.

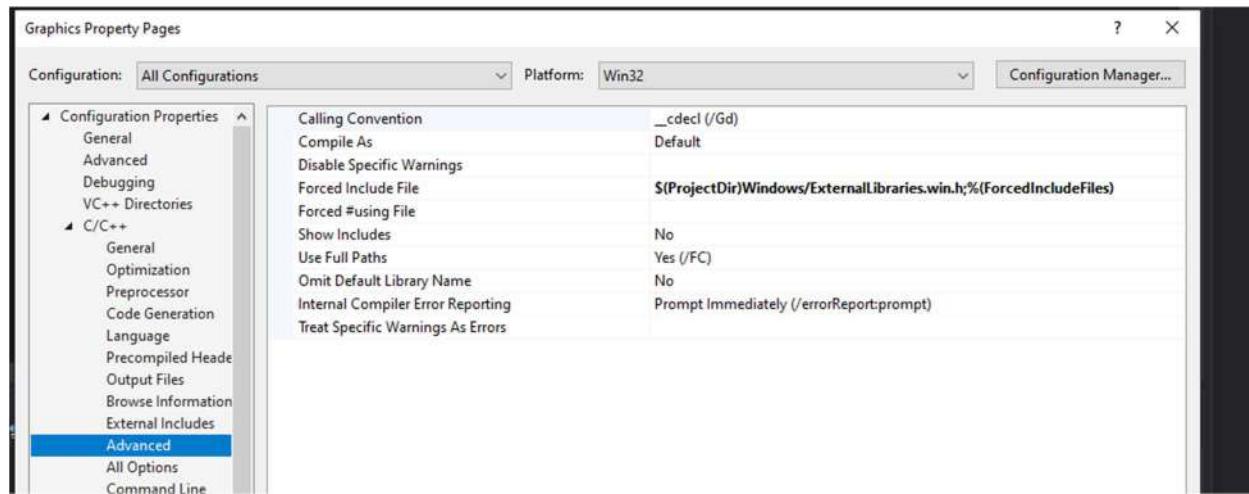
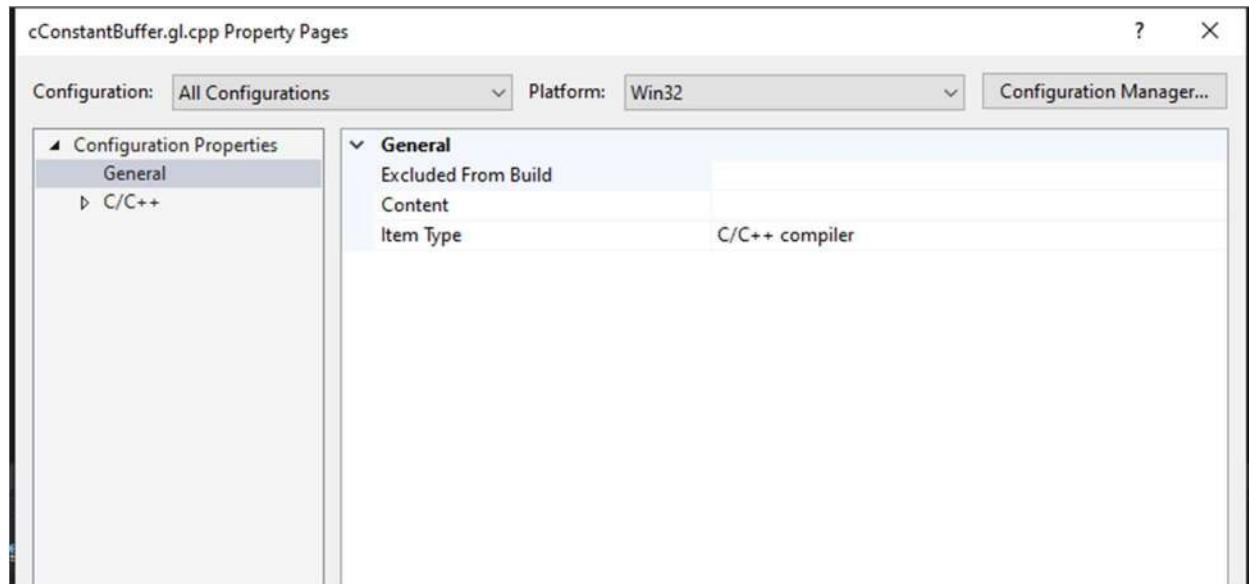
Ironically, exactly the project that build correctly before.

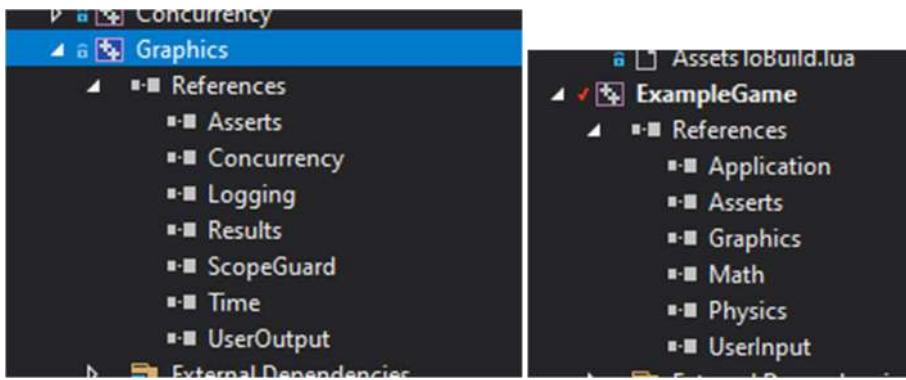


The following are affected:

cShader, sContext, cRenderState, cConstantBuffer, Graphics – so almost everything form the Graphics Project for x86 – OpenGL.

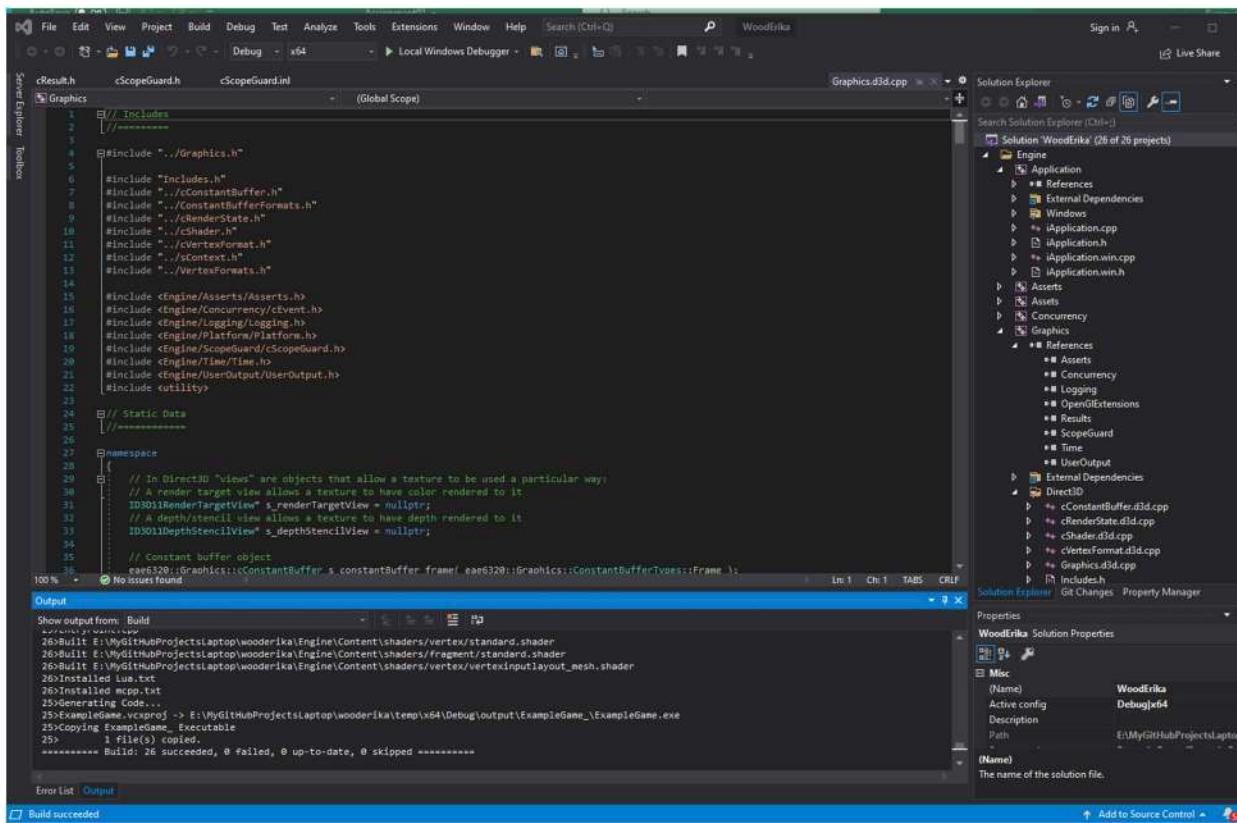






Hahahaha what a “surprise”

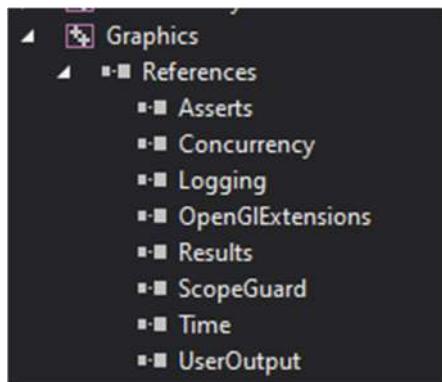
Adding the OpenGLExtension as a reference to the Graphics project finally solved it:



The screenshot shows the Microsoft Visual Studio IDE interface. The code editor displays a file named `cResult.h` with C++ code related to OpenGL vertex format handling. The Solution Explorer shows a solution named "WoodErika" containing multiple projects and files under categories like Engine, Application, Assets, and Graphics. The Properties Manager shows settings for the "WoodErika" solution. The Output window displays the build log, indicating a successful build with 26 succeeded, 0 failed, 0 up-to-date, and 0 skipped files.

```
1 // In OpenGL, the vertex format data is encapsulated in a vertex array,
2 // and so this class isn't necessary.
3 // (and shouldn't be used)
4
5 // Includes
6 // -----
7 #include "../cVertexFormat.h"
8
9 // Interface
10 // -----
11 class cResult
12 {
13 public:
14     void eae6320::Graphics::cVertexFormat::Bind()
15     {
16     }
17
18     // Implementation
19     // -----
20     void Initialize();
21
22     // Initialize / Clean Up
23     // -----
24     void eae6320::Graphics::cVertexFormat::Initialize( const eVertexFormat::eType i_type, const char* const i_vertexShaderPath )
25     {
26         return Results::Success;
27     }
28
29     void eae6320::Graphics::cVertexFormat::CleanUp()
30     {
31         return Results::Success;
32     }
33
34     // Results
35     // -----
36     eae6320::cResult eae6320::Graphics::cVertexFormat::GetResult() const
37     {
38         return Results::Success;
39     }
40 };
41
42 // Results
43 // -----
44 eae6320::cResult eae6320::Graphics::cVertexFormat::GetResult() const
45 {
46     return Results::Success;
47 }
```

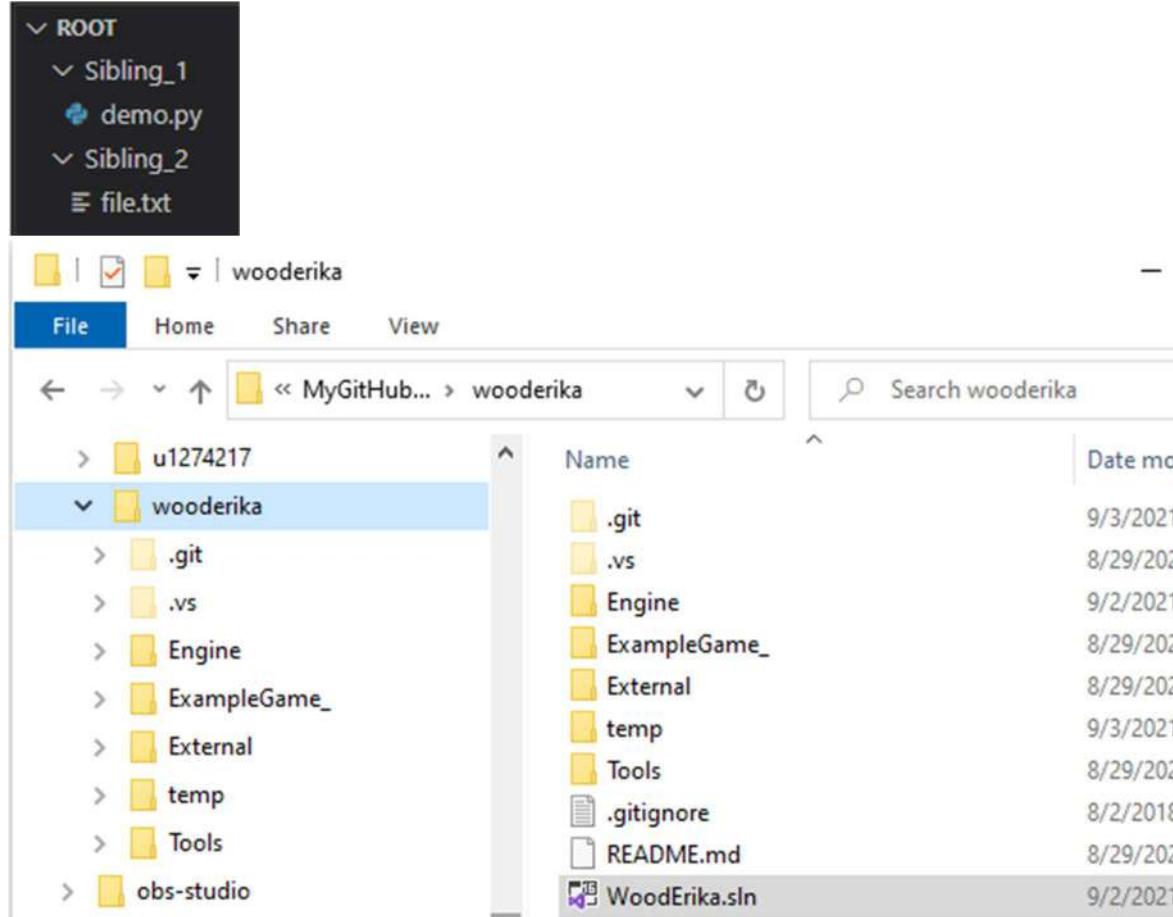
Show output from: Build
24>ShaderBuilder.vcxproj -> E:\MyGitHubProjects\laptop\wooderika\temp\x86\Debug\output\ShaderBuilder.exe
25>----- Build started: Project: BuildExampleGameAssets, Configuration: Debug Win32 -----
26>Building exampleGame_Assets
26>Built E:\MyGitHubProjects\laptop\wooderika\Engine\Content\shaders\vertex\standard.shader
26>Built E:\MyGitHubProjects\laptop\wooderika\Engine\Content\shaders\fragment\standard.shader
25>E:\MyGitHubProjects\laptop\wooderika\temp\x86\Debug\output\ExampleGame_\ExampleGame.exe
25>Building ExampleGame_\ExampleGame.exe
26>Built E:\MyGitHubProjects\laptop\wooderika\Engine\Content\shaders\vertex\vertexInputLayout_eesh.shader
25> 1 File(s) copied.
***** Build: 26 succeeded, 0 failed, 0 up-to-date, 0 skipped *****

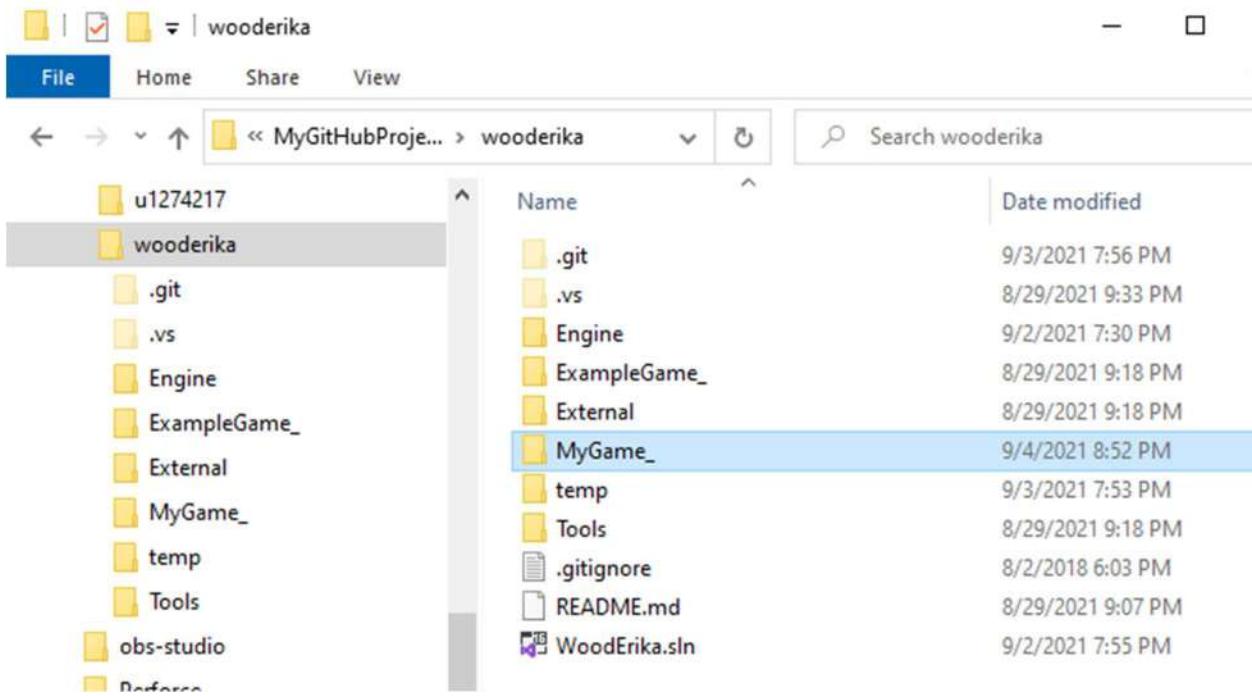


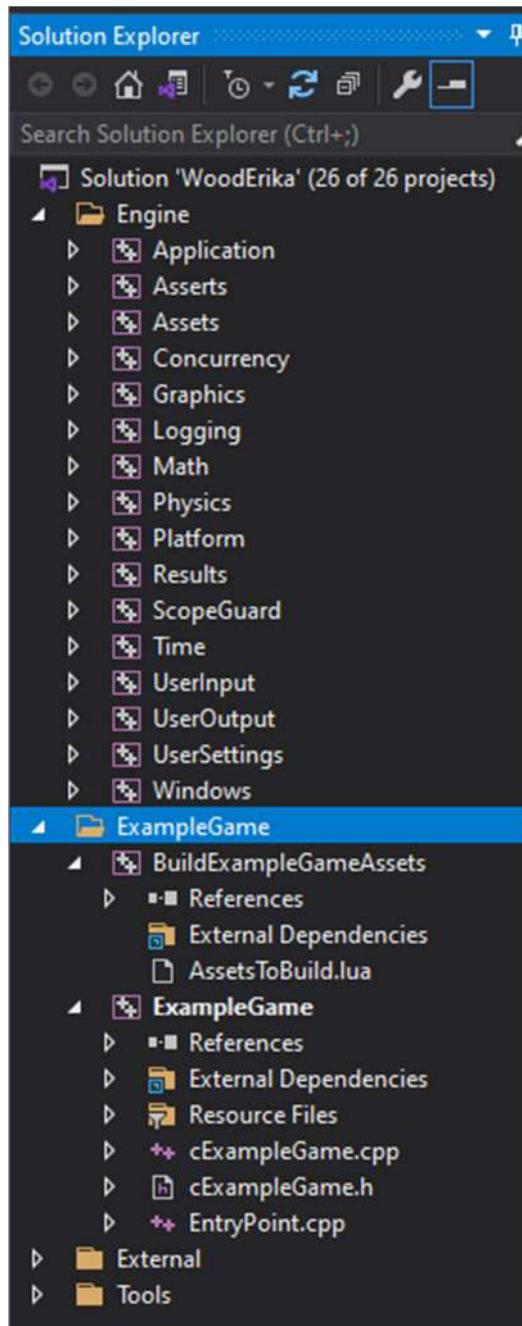
Finally I can start with my Personal Game Project 😊

We need to create a new Game Project based on the ExampleGame project. However, the files cannot be copied exactly as there are unique identifiers used by VS, therefore, we need a new project with its own unique identifiers – then we can copy the example game files.

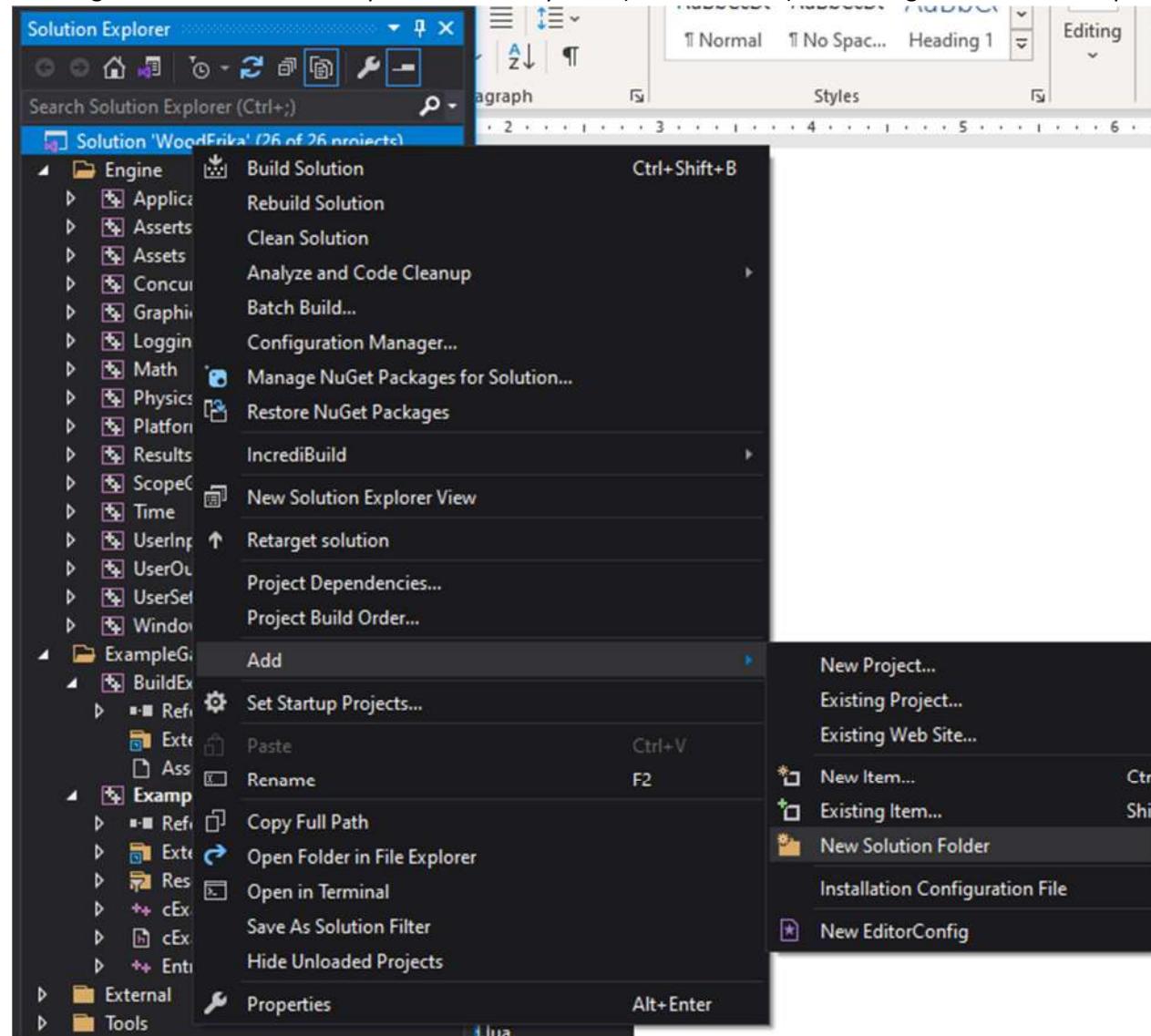
The instructions mention “sibling” folder. I suppose it means in the same hierarchy level with wooderika being the parent folder.

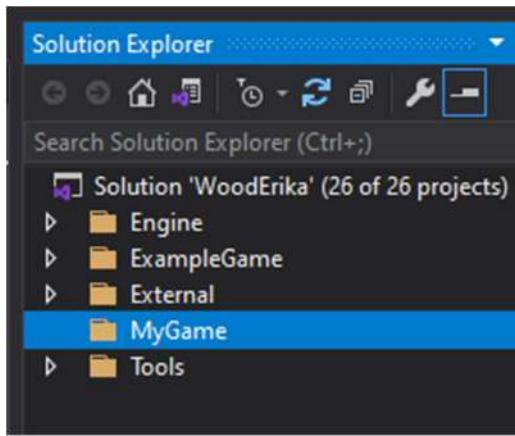






Creating a filter in VS Solution explorer named MyGame(no underscore) as a sibling filter to the ExampleGame filter.





Now creating a project for the game code:

Configure your new project

Windows Desktop Wizard

Project name

MyGame

Location

E:\MyGitHubProjectsLaptop\wooderik

Windows Desktop Project

Application type

Console Application (.exe)

Console Application (.exe)

Desktop Application (.exe)

Dynamic Link Library (.dll)

Static Library (.lib)

Export symbols

MFC headers

OK

Cancel

Windows Desktop Project

Application type

Desktop Application (.exe)

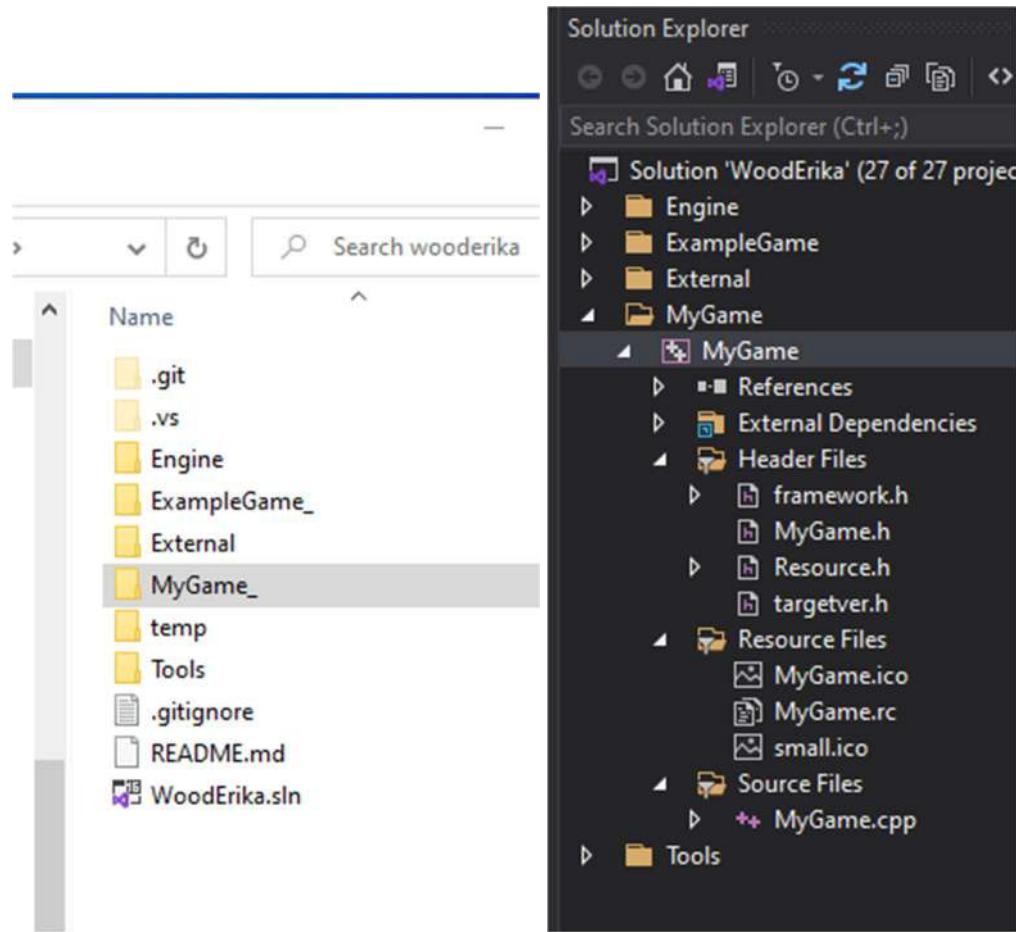
Additional options:

- Empty project
- Precompiled header
- Export symbols
- MFC headers

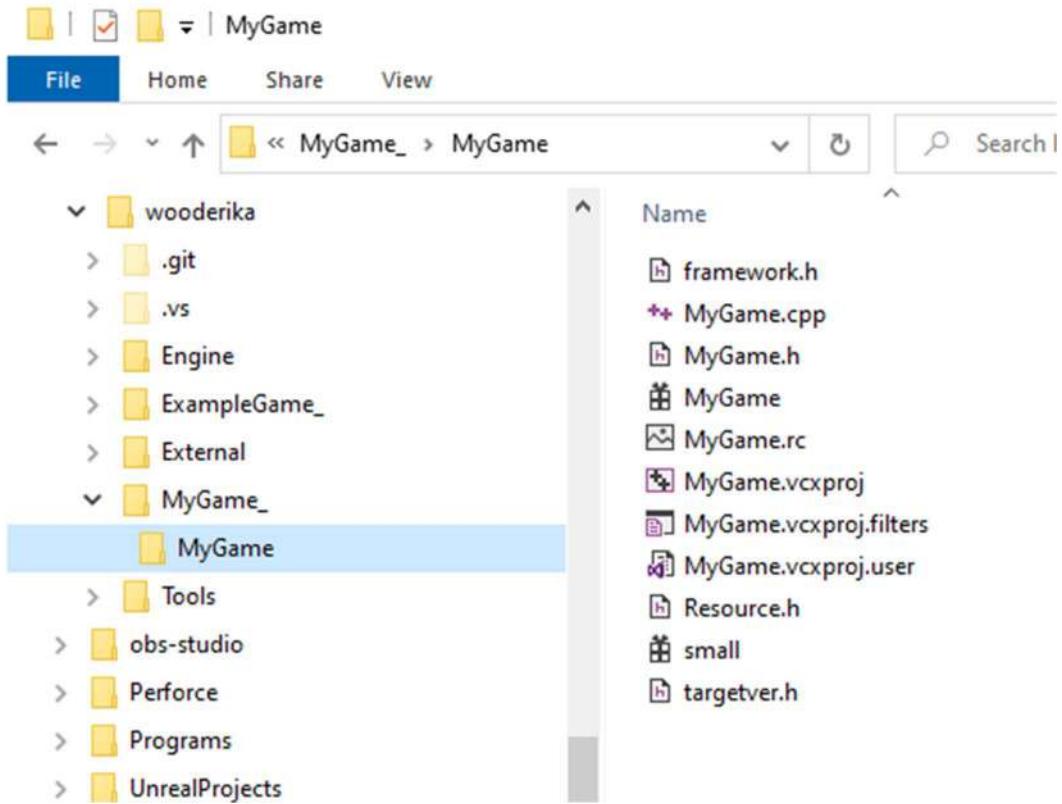
OK

Canc

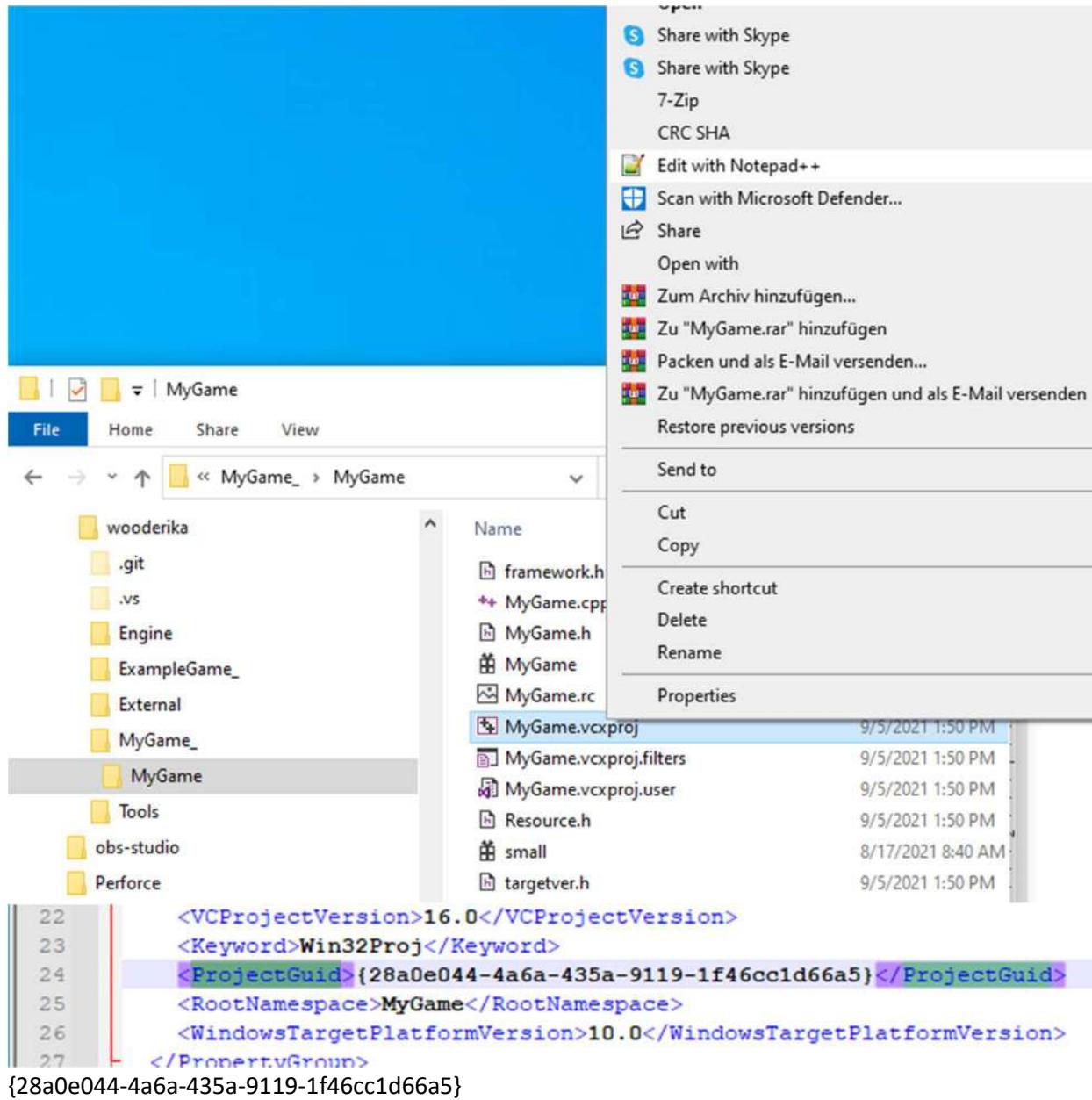
Windows Explorer is with underscores, Visual studio without



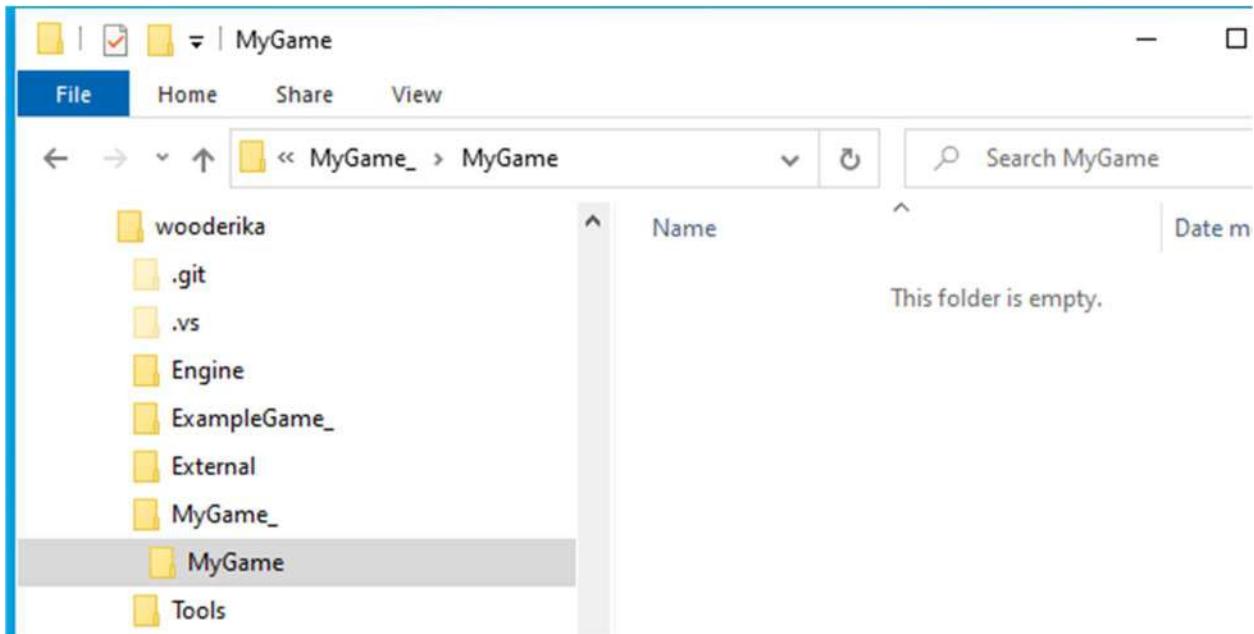
Closing Visual Studio.



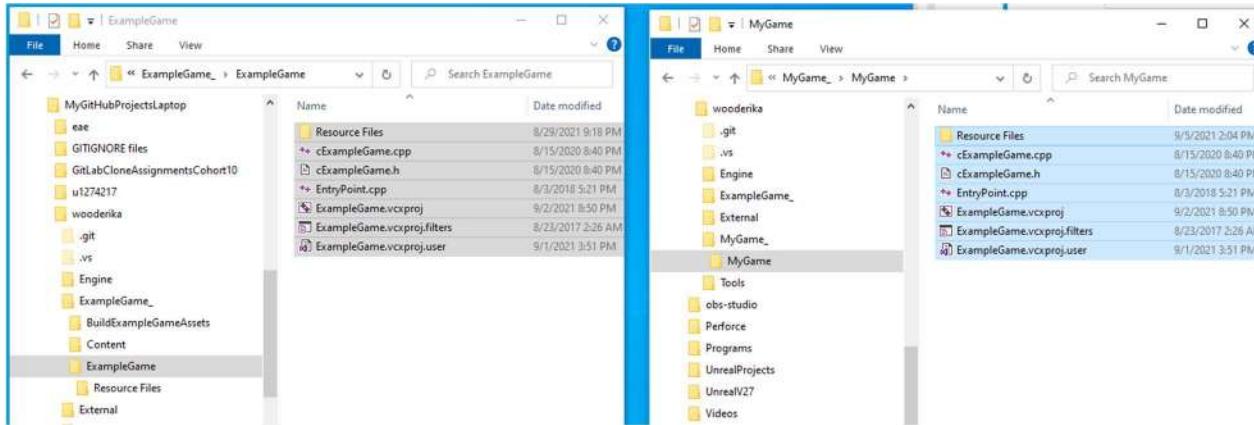
Those are the files generated by VS.



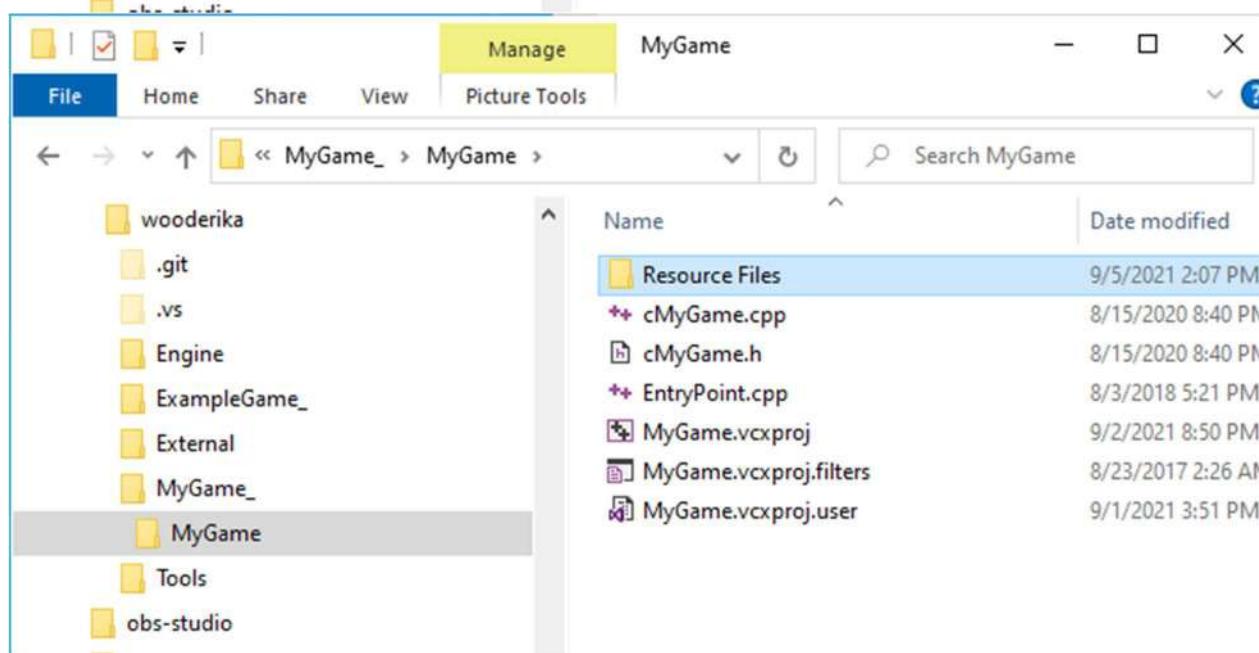
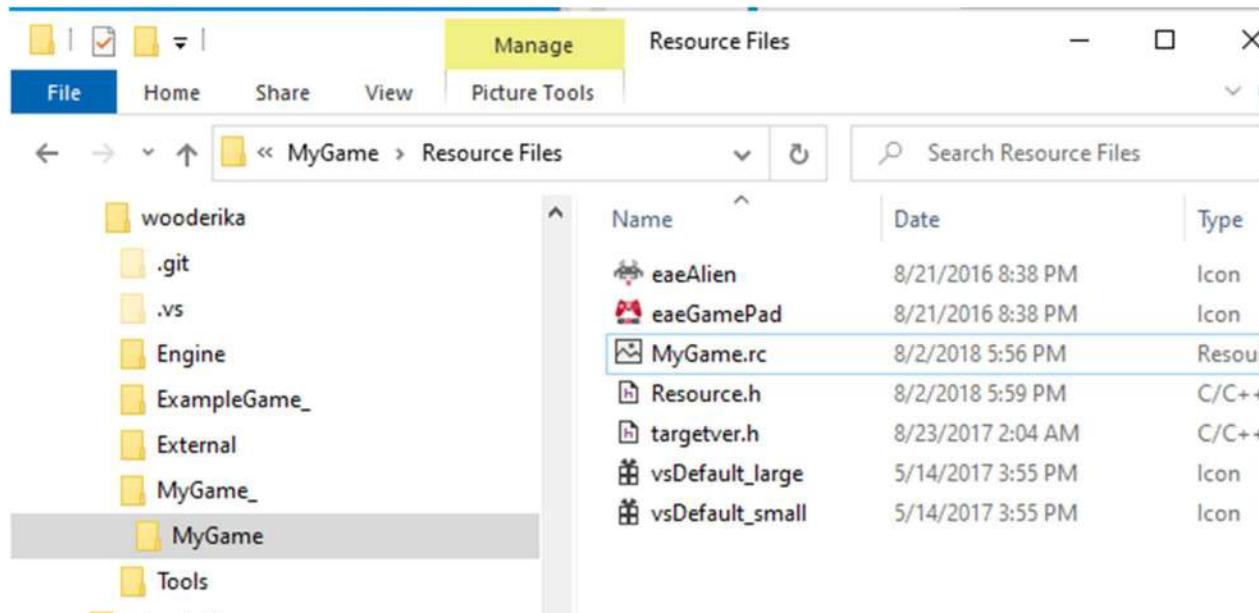
Now emptying the folder

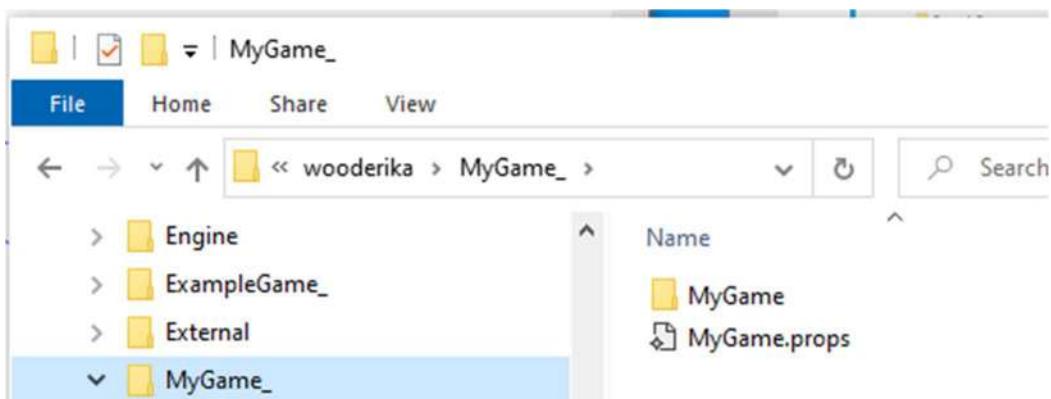
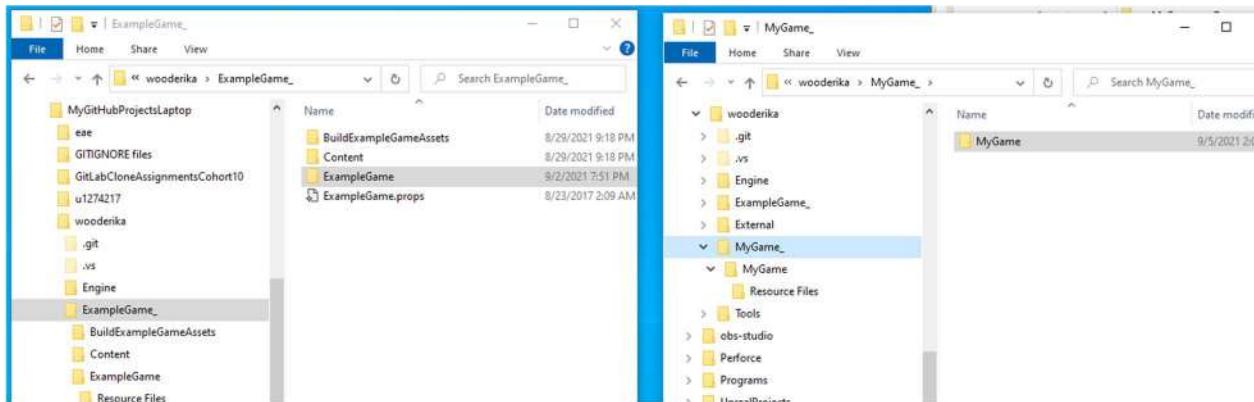


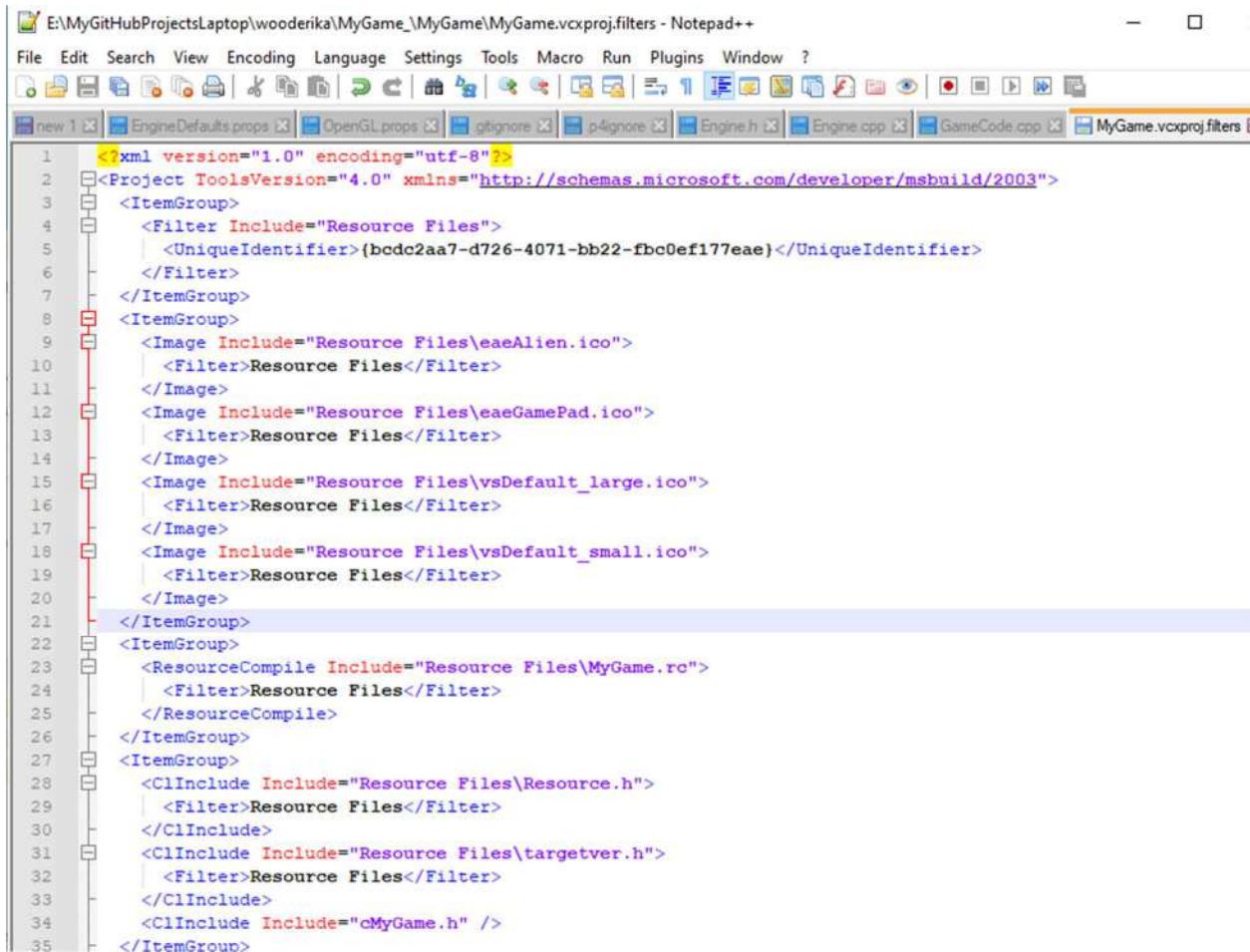
Copying all of the files in ExampleGame_/ExampleGame/ to MyGame_/MyGame/



Renaming







```
1 <?xml version="1.0" encoding="utf-8"?>
2 <Project ToolsVersion="4.0" xmlns="http://schemas.microsoft.com/developer/msbuild/2003">
3   <ItemGroup>
4     <Filter Include="Resource Files">
5       <UniqueIdentifier>(bcdc2aa7-d726-4071-bb22-fbc0ef177eae)</UniqueIdentifier>
6     </Filter>
7   </ItemGroup>
8   <ItemGroup>
9     <Image Include="Resource Files\ea Alien.ico">
10      <Filter>Resource Files</Filter>
11    </Image>
12    <Image Include="Resource Files\ea GamePad.ico">
13      <Filter>Resource Files</Filter>
14    </Image>
15    <Image Include="Resource Files\vsDefault_large.ico">
16      <Filter>Resource Files</Filter>
17    </Image>
18    <Image Include="Resource Files\vsDefault_small.ico">
19      <Filter>Resource Files</Filter>
20    </Image>
21  </ItemGroup>
22  <ItemGroup>
23    <ResourceCompile Include="Resource Files\MyGame.rc">
24      <Filter>Resource Files</Filter>
25    </ResourceCompile>
26  </ItemGroup>
27  <ItemGroup>
28    <ClInclude Include="Resource Files\Resource.h">
29      <Filter>Resource Files</Filter>
30    </ClInclude>
31    <ClInclude Include="Resource Files\targetver.h">
32      <Filter>Resource Files</Filter>
33    </ClInclude>
34    <ClInclude Include="cMyGame.h" />
35  </ItemGroup>
```

Now making the UniqueIdentifier unique by using this tool:
<https://www.guidgenerator.com/online-guid-generator.aspx>

Online GUID / UUID Generator

How many GUIDs do you want (1-2000):

Format: Uppercase {} Braces Hypens

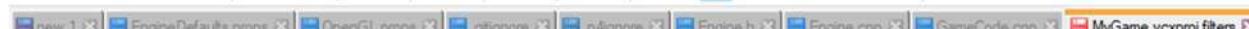
Encoding: Base64 RFC 7515 URL encode

Generate some GUIDs!

Results: [Copy to Clipboard](#)

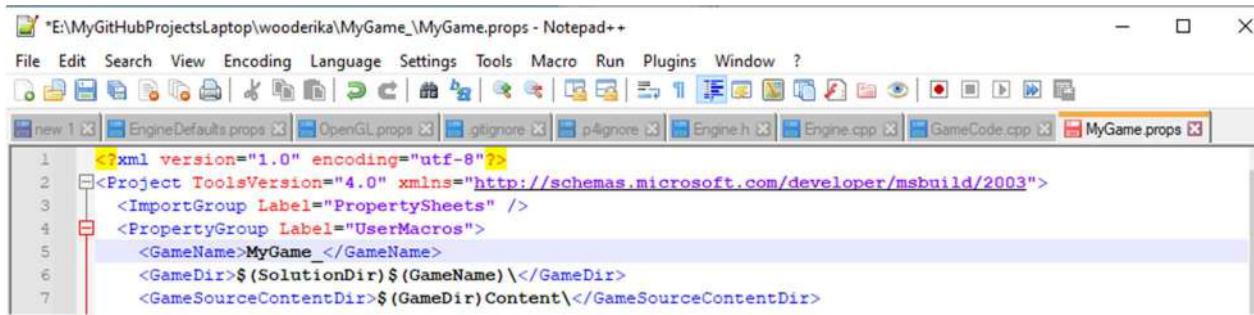
```
{da41fd63-3277-4d87-a722-58f6903c4c8d}
```

New:



```
<?xml version="1.0" encoding="utf-8"?>
<Project ToolsVersion="4.0" xmlns="http://schemas.microsoft.com/developer/msbuild/2003">
  <ItemGroup>
    <Filter Include="Resource Files">
      <UniqueIdentifier>{da41fd63-3277-4d87-a722-58f6903c4c8d}</UniqueIdentifier>
    </Filter>
  </ItemGroup>
</Project>
```

Changing the MyGame.props



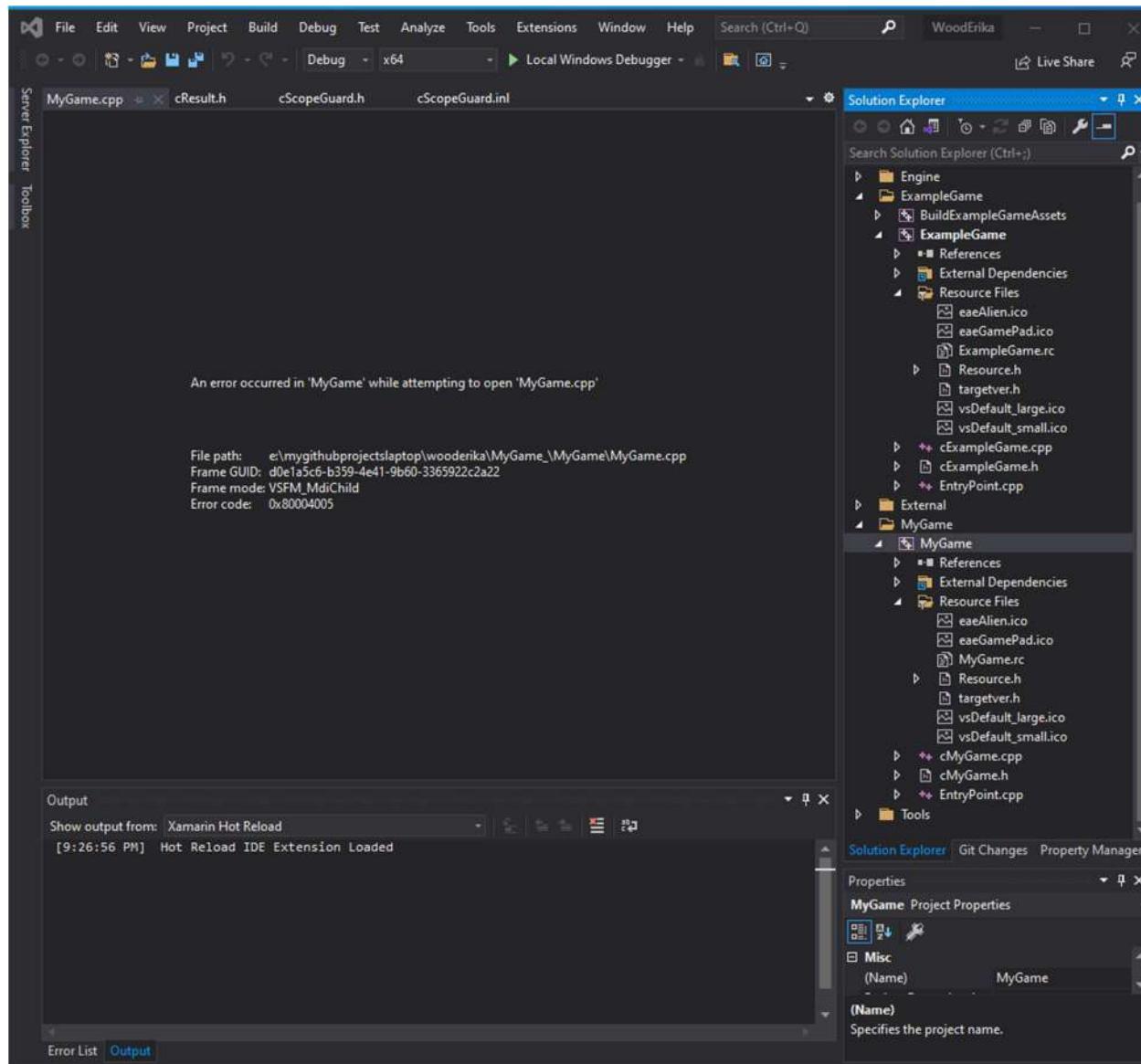
The screenshot shows a Notepad++ window with the title bar "E:\MyGitHubProjectsLaptop\wooderika\MyGame_\MyGame.props - Notepad++". The menu bar includes File, Edit, Search, View, Encoding, Language, Settings, Tools, Macro, Run, Plugins, Window, and ?.

The toolbar contains various icons for file operations like Open, Save, Find, Replace, and Print.

The tab bar shows multiple files: new 1, EngineDefaults.props, OpenGL.props, .gitignore, p4ignore, Engine.h, Engine.cpp, GameCode.cpp, and MyGame.props. The MyGame.props file is currently selected.

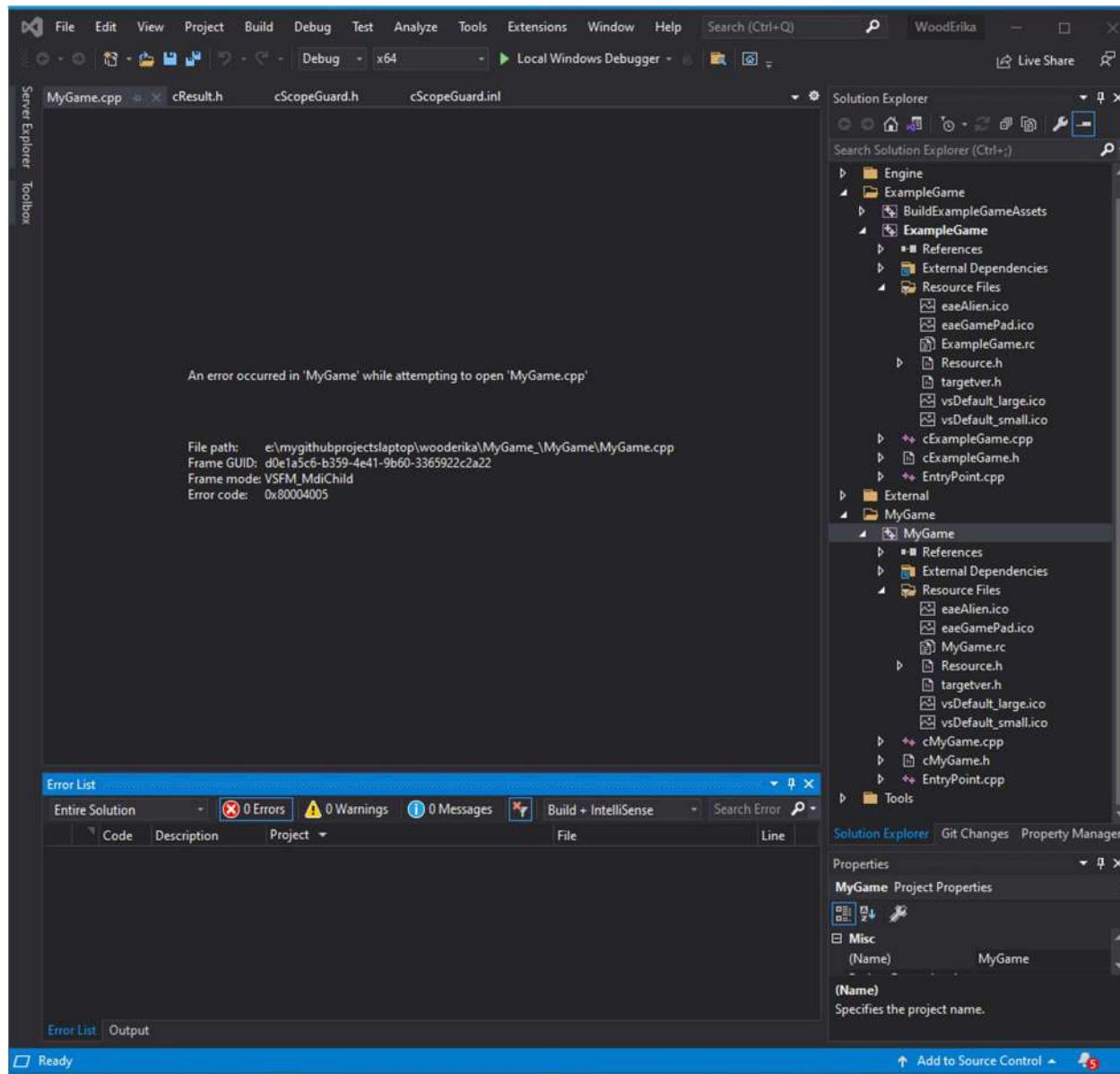
The code editor displays the XML content of the MyGame.props file:

```
1 <?xml version="1.0" encoding="utf-8"?>
2 <Project ToolsVersion="4.0" xmlns="http://schemas.microsoft.com/developer/msbuild/2003">
3   <ImportGroup Label="PropertySheets" />
4   <PropertyGroup Label="UserMacros">
5     <GameName>MyGame_</GameName>
6     <GameDir>$(SolutionDir)$(GameName)\</GameDir>
7     <GameSourceContentDir>$(GameDir)Content\</GameSourceContentDir>
```



There is no MyGame.cpp, we only have a cMyGame.cpp.

But the error list shows 0 errors



The screenshot shows the GitHub Desktop application interface. At the top, the menu bar includes File, Edit, View, Repository, Branch, and Help. The repository dropdown shows "Current repository woderika". The branch dropdown shows "Current branch DevAssignment01". The status bar indicates "Fetch origin Last fetched 7 hours ago".

The main area displays a list of changes under the "Changes" tab, showing 14 changed files. The list includes various files such as MyGame.props, cMyGame.cpp, cMyGame.h, EntryPoint.cpp, MyGame.vcxproj, MyGame.filters, Resource Files\aeAlien.ico, Resource Files\aeGamePad.ico, Resource Files\MyGame.rc, Resource Files\Resource.h, and Resource Files\targetver.h.

A tooltip message "STEP 7 - Creating MyGame Project - intermediary local commit" is visible. Below it, a note says "not pushing it yet - Github Desktop doesn't seem to have a staging feature". A blue button at the bottom right says "Commit to DevAssignment01".

The code editor on the right shows the content of MyGame.props. The code is a diff with 14 additions (marked with '+') and 0 deletions (marked with '-'). The code defines properties for the project, including GameName, GameDir, GameSourceContentDir, GameIntermediateDir, GameOutputDir, GameInstallDir, GameLicenseDir, OutDir, IntDir, ItemDefinitionGroup, ClCompile, AdditionalIncludeDirectories, ItemGroup, and BuildMacro.

```
@@ -0,0 +1,52 @@
+*<?xml version="1.0" encoding="utf-8"?>
+<Project ToolsVersion="4.0" xmlns="http://schemas.microsoft.com/developer/m
sbuild/2003">
+  <ImportGroup Label="PropertySheets" />
+  <PropertyGroup Label="UserMacros" />
+  <GameName>MyGame_</GameName>
+  <GameDir>$(SolutionDir)$(&GameName)\</GameDir>
+  <GameSourceContentDir>$(GameDir)Content\</GameSourceContentDir>
+  <GameIntermediateDir>$(IntermediateDir)..$(&GameName)$(&ProjectName)\</
GameIntermediateDir>
+  <GameOutputDir>$(OutputDir)$(&GameName)\</GameOutputDir>
+  <GameInstallDir>$(TempDir)$(&GameName)\</GameInstallDir>
+  <GameLicenseDir>$(GameInstallDir)Licenses\</GameLicenseDir>
+  </PropertyGroup>
+  <PropertyGroup>
+    <OutDir>$(GameOutputDir)</OutDir>
+    <IntDir>$(GameIntermediateDir)</IntDir>
+  </PropertyGroup>
+  <ItemDefinitionGroup>
+    <ClCompile>
+      <AdditionalIncludeDirectories>$(GameDir);%AdditionalIncludeDirectori
es</AdditionalIncludeDirectories>
+    </ClCompile>
+  </ItemDefinitionGroup>
+  <ItemGroup>
+    <BuildMacro Include="GameName">
+      <Value>$(&GameName)</Value>
```

So opening without errors worked.

It won't build yet as indicated in the instructions:

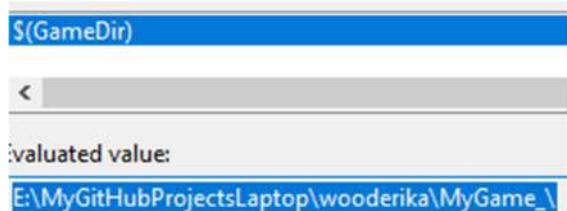
sure to keep the format of the GUID the same, (enclosed in curly braces.)

- Open the new MyGame.props in a text editor and change the GameName from "ExampleGame_" to "MyGame_" (with an underscore at the end)
 - If everything was correctly changed you should now be able to open your solution in Visual Studio with no errors and the MyGame project should look the same as the ExampleGame project. (Even though you should be able to open it without errors you won't be able to build it without errors yet!) If it doesn't work you can either look for errors that Visual Studio reports and fix them (this may or may not be possible depending on what the error is), or you could remove the project, delete the files, and start again. Don't be afraid to ask for help on the class discussion board if you run into problems!
 - Once this part is working I would suggest staging your current changes in git. I personally wouldn't commit them yet (because your code won't build yet without errors), but staging changes is like making a quicksave in a game: If you make any mistakes on future steps you will be able to get back to this point.
- Update the file contents in the new MyGame project

Next step: updating the file contents in the new MyGame project

But first I am skipping ahead, curious about the Example Game exe 😊

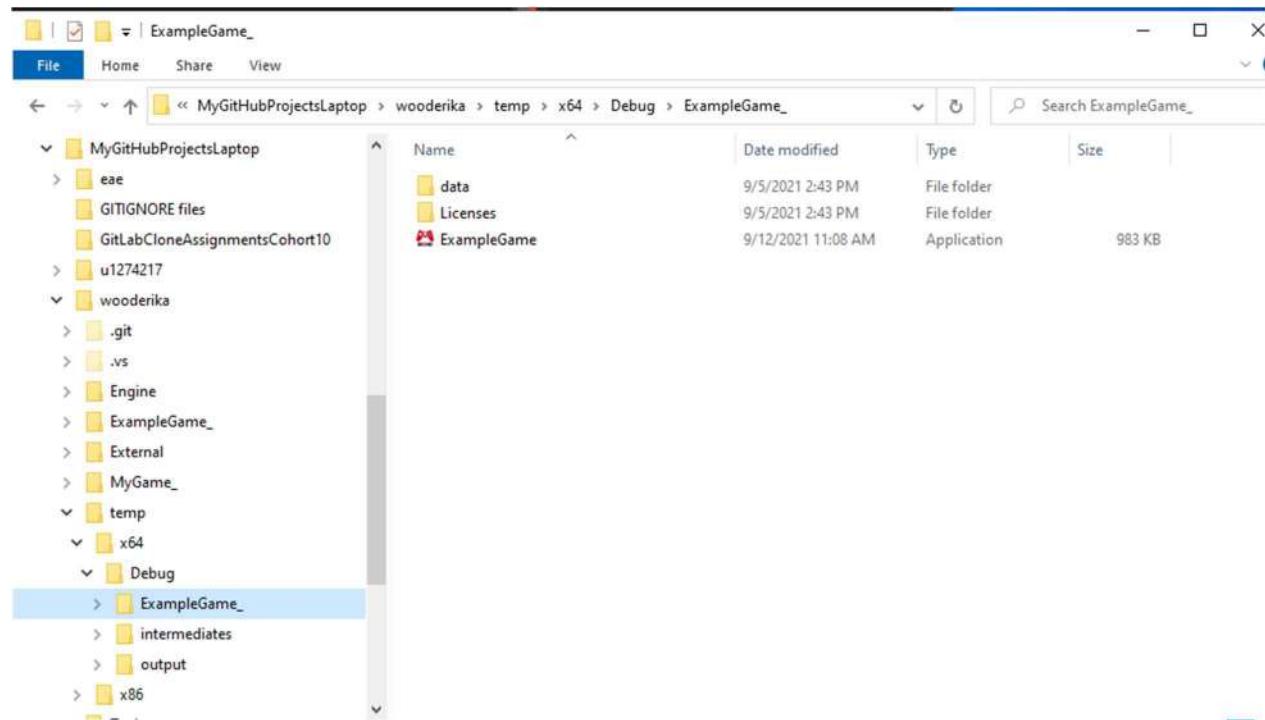
First determining MyGame exe location:

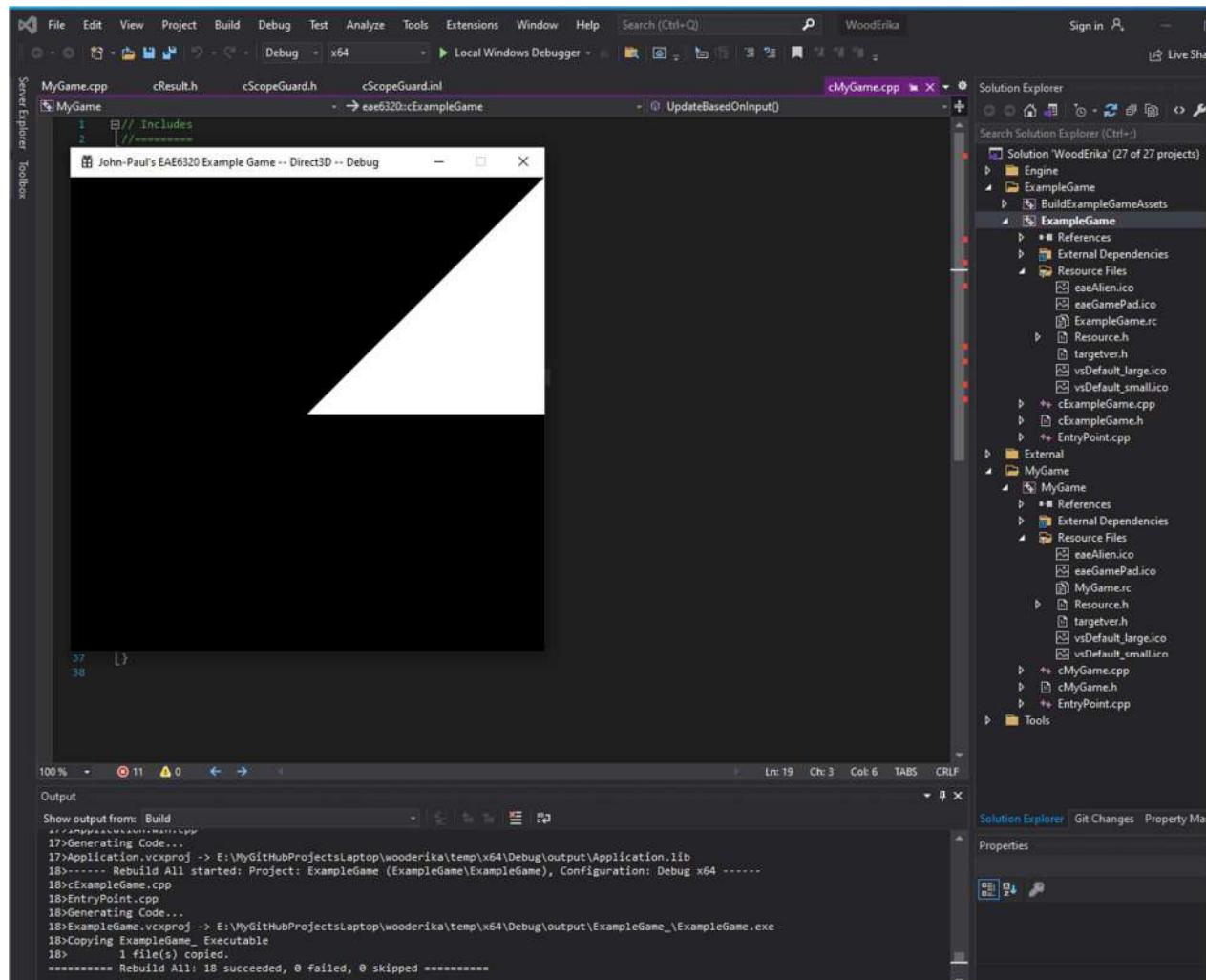


\$(GameDir) on my laptop

\$(GameInstallDir) E:\MyGitHubProjectsLaptop\wooderika\temp\x86\Debug\MyGame_\

Example Game exe: to get it I need to build the Example Game project first

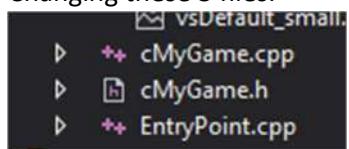




Off to the next step:

- Update the file contents in the new MyGame project
 - There are three files that you will need to change: EntryPoint.cpp, cMyGame.h, and cMyGame.cpp (You shouldn't have to change any of the Resource Files)
 - You will have to change some #include directives
 - You should change the "include guards" in cMyGame.h
 - You should change the class name from cExampleGame to cMyGame
 - Once you have done this you should be able to build the solution without errors. You should then be able to find your new MyGame \$(GameInstallDir) folder in Windows Explorer, and it should contain MyGame.exe. You can even run it, but you will get errors because there are no shaders yet. Consider staging your new changes once this is working!

Changing these 3 files:



- EntryPoint.cpp

Changed include

```

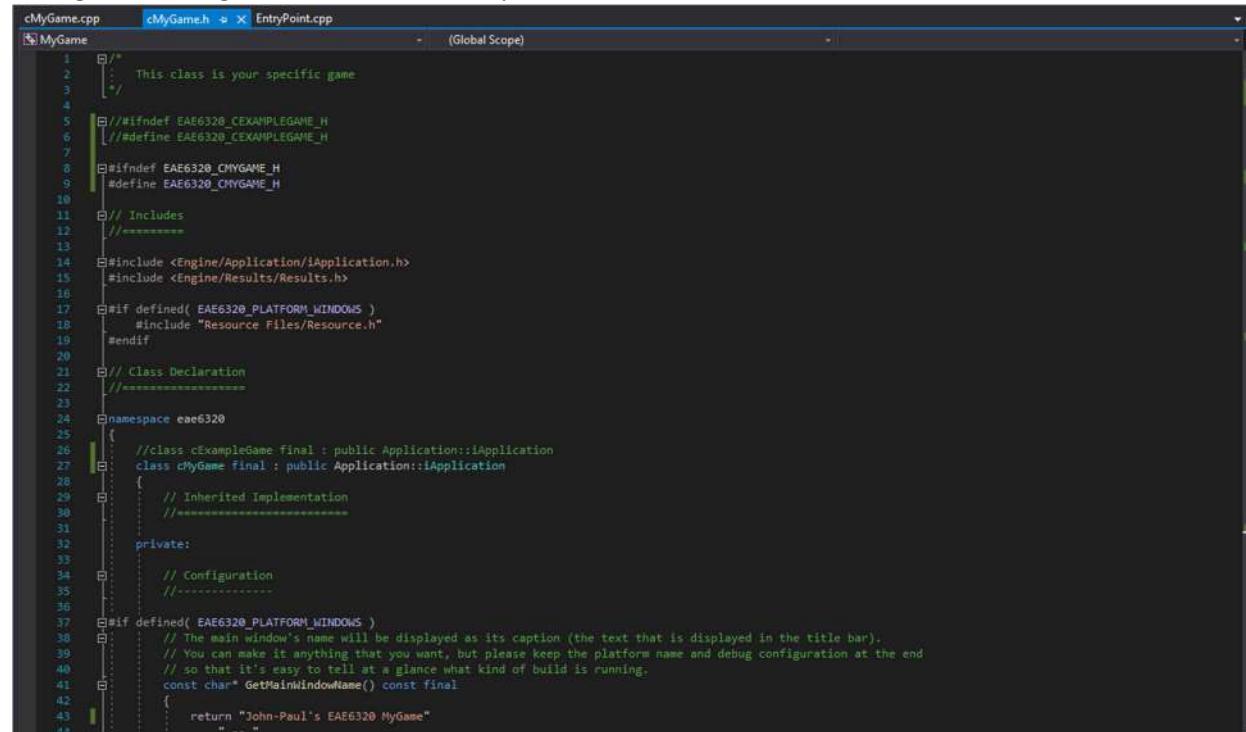
EntryPoint.cpp  MyGame.cpp  cResult.h  cScopeGuard.h  cScopeGuard.inl
MyGame
1  /*
2   *  WinMain() is the entry point of a Windows program
3   *  (instead of the familiar main() in a console program)
4   */
5
6  // Includes
7  //=====
8
9  #include "cMyGame.h"
10
11 // Entry Point
12 //=====
13
14 int WINAPI WinMain( HINSTANCE i_thisInstanceOfTheApplication, HINSTANCE, char* i_commandLineArguments, int i_initialWindowDisplayState )
15 {
16     return eae6320::Application::Run<eae6320::cExampleGame>( i_thisInstanceOfTheApplication, i_commandLineArguments, i_initialWindowDisplayState );
17 }
18

```

The screenshot shows a code editor with a dark background. The tab bar at the top lists 'EntryPoint.cpp', 'MyGame.cpp', 'cResult.h', 'cScopeGuard.h', and 'cScopeGuard.inl'. The code itself starts with a multi-line comment explaining that WinMain is the entry point. It then includes 'cMyGame.h'. A section titled 'Entry Point' follows, containing the definition of the WinMain function. The function takes four parameters: i_thisInstanceOfTheApplication, HINSTANCE, i_commandLineArguments, and i_initialWindowDisplayState. It returns a value of type int and calls 'eae6320::Application::Run' with a template argument of 'eae6320::cExampleGame'.

- cMyGame.h

Changed include guards, class name and print outs



The screenshot shows a code editor window with three tabs at the top: "cMyGame.cpp", "cMyGame.h", and "EntryPoint.cpp". The "cMyGame.h" tab is active, displaying the following C++ header file:

```
1 // This class is your specific game
2 */
3 */
4
5 #ifndef EAE6320_CEXAMPLEGAME_H
6 #define EAE6320_CEXAMPLEGAME_H
7
8 #ifndef EAE6320_CMYGAME_H
9 #define EAE6320_CMYGAME_H
10
11 // Includes
12 //=====
13
14 #include <Engine/Application/iApplication.h>
15 #include <Engine/Results/Results.h>
16
17 #if defined( EAE6320_PLATFORM_WINDOWS )
18     #include "Resource Files/Resource.h"
19 #endif
20
21 // Class Declaration
22 //=====
23
24 namespace eae6320
25 {
26     //class cExampleGame final : public Application::iApplication
27     class cMyGame final : public Application::iApplication
28     {
29         // Inherited Implementation
30         //=====
31
32     private:
33
34         // Configuration
35         //=====
36
37 #if defined( EAE6320_PLATFORM_WINDOWS )
38         // The main window's name will be displayed as its caption (the text that is displayed in the title bar).
39         // You can make it anything that you want, but please keep the platform name and debug configuration at the end
40         // so that it's easy to tell at a glance what kind of build is running.
41         const char* GetMainWinName() const final
42         {
43             return "John-Paul's EAE6320 MyGame"
44         }
45     }
46 }
```

- cMyGame.cpp

Changed include and class names

```
1 // Includes
2 //=====
3
4 #include "cMyGame.h"
5
6 #include <Engine/Asserts/Asserts.h>
7 #include <Engine/UserInput/UserInput.h>
8
9 // Inherited Implementation
10 //=====
11
12 // Run
13 //-----
14
15 void eae6320::cExampleGame::UpdateBasedOnInput()
16 {
17     // Is the user pressing the ESC key?
18     if (UserInput::IsKeyPressed(UserInput::KeyCodes::Escape))
19     {
20         // Exit the application
21         const auto result = Exit(EXIT_SUCCESS);
22         EAE6320_ASSERT(result);
23     }
24 }
25
26 // Initialize / Clean Up
27 //=====
28
29 eae6320::cResult eae6320::cMyGame::Initialize()
30 {
31     return Results::Success;
32 }
33
34 eae6320::cResult eae6320::cMyGame::CleanUp()
35 {
36     return Results::Success;
37 }
38
39
```

Building solution:

going back to EntryPoint.cpp and changing class name

```
1 /*
2 * WinMain() is the entry point of a Windows program
3 * (instead of the familiar main() in a console program)
4 */
5
6 // Includes
7 //=====
8
9 #include "cMyGame.h"
10
11 // Entry Point
12 //=====
13
14 int WINAPI WinMain( HINSTANCE i_thisInstanceOfTheApplication, HINSTANCE, char* i_commandLineArguments, int i_initialWindowDisplayState )
15 {
16     return eae6320::Application::Run<eae6320::cMyGame>( i_thisInstanceOfTheApplication, i_commandLineArguments, i_initialWindowDisplayState );
17 }
```

Yaaaay 😊

The screenshot shows a Microsoft Visual Studio interface. The top menu bar includes File, Edit, View, Project, Build, Debug, Test, Analyze, Tools, Extensions, Window, Help, and Search (Ctrl+Q). The toolbar has icons for Undo, Redo, Cut, Copy, Paste, Find, Replace, and others. The status bar at the bottom shows 'WoodErika' and '100 %'.

Solution Explorer: Shows the project structure for 'WoodErika' (27 of 27 items). It includes 'Engine', 'ExampleGame', 'BuildExampleGameAsse', 'ExampleGame', 'References', 'External Dependencies', 'Resource Files' (with files like 'eaeAll.h', 'eaeGamePad.h', 'ExampleGame.rc', 'Resource.h', 'targetver.h', 'vsDefault_large.h', 'vsDefault_small.h'), 'External', and 'MyGame' (with files like 'eaeAll.h', 'eaeGamePad.h', 'MyGame.rc', 'Resource.h', 'targetver.h', 'vsDefault_large.h', 'vsDefault_small.h').

Code Editor: The main window displays the file 'cMyGame.cpp'. The code is as follows:

```
// MyGame.cpp
#include "MyGame.h"
#include <Engine/Asserts/Asserts.h>
#include <Engine/UserInput/UserInput.h>

// Inherited Implementation
// -----
// Run
// -----
//Void eae6320::cExampleGame::UpdateBasedOnInput()
//Void eae6320::cMyGame::UpdateBasedOnInput()
{
    // Is the user pressing the ESC key?
    if (UserInput::IsKeyPressed(UserInput::KeyCodes::Escape))
    {
        // Exit the application
        const auto result = Exit(EXIT_SUCCESS);
        EAE6320_ASSERT(result);
    }
}

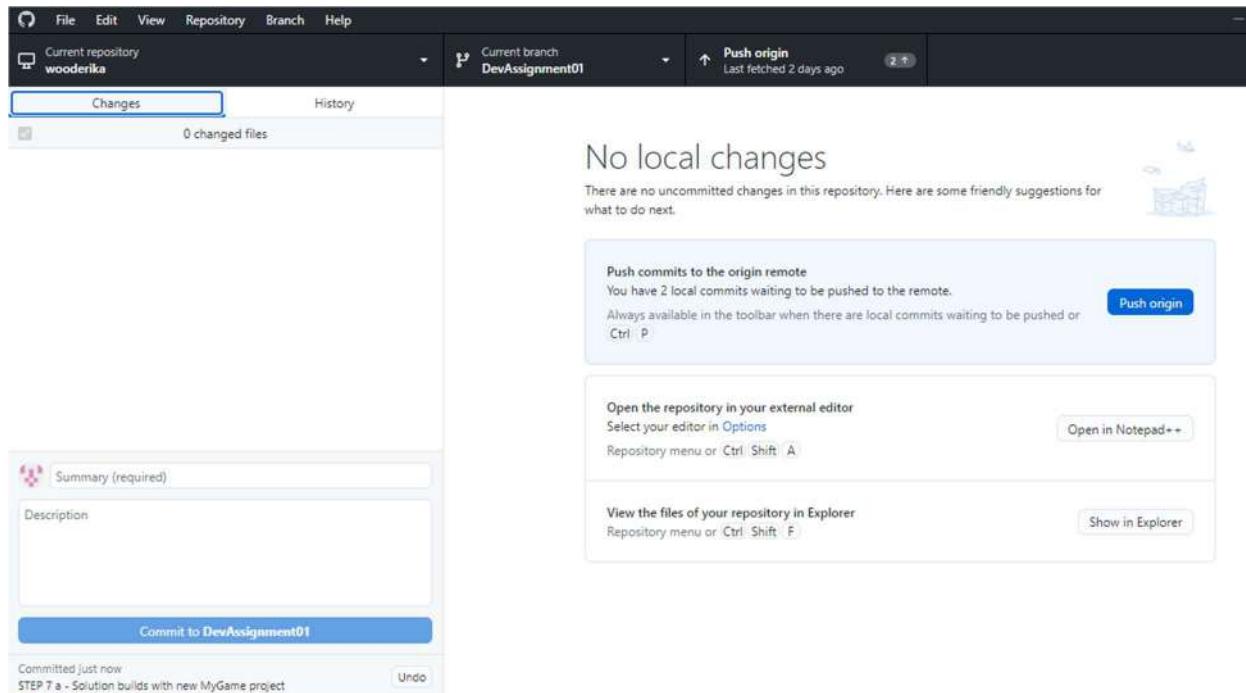
// Initialize / Clean Up
// -----
//eae6320::cResult eae6320::cMyGame::Initialize()
{
    return Results::Success;
}

//eae6320::cResult eae6320::cMyGame::CleanUp()
{
    return Results::Success;
}
```

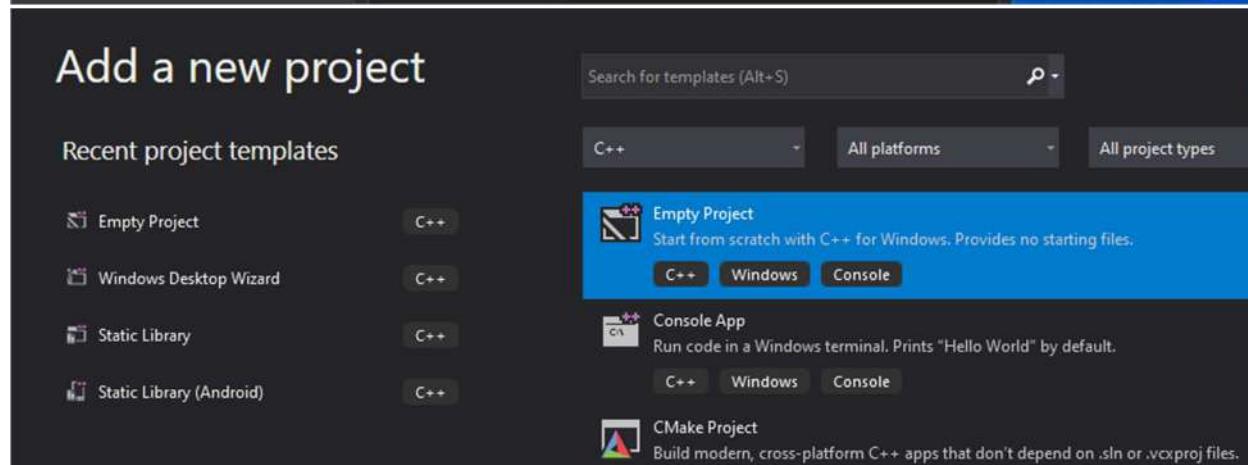
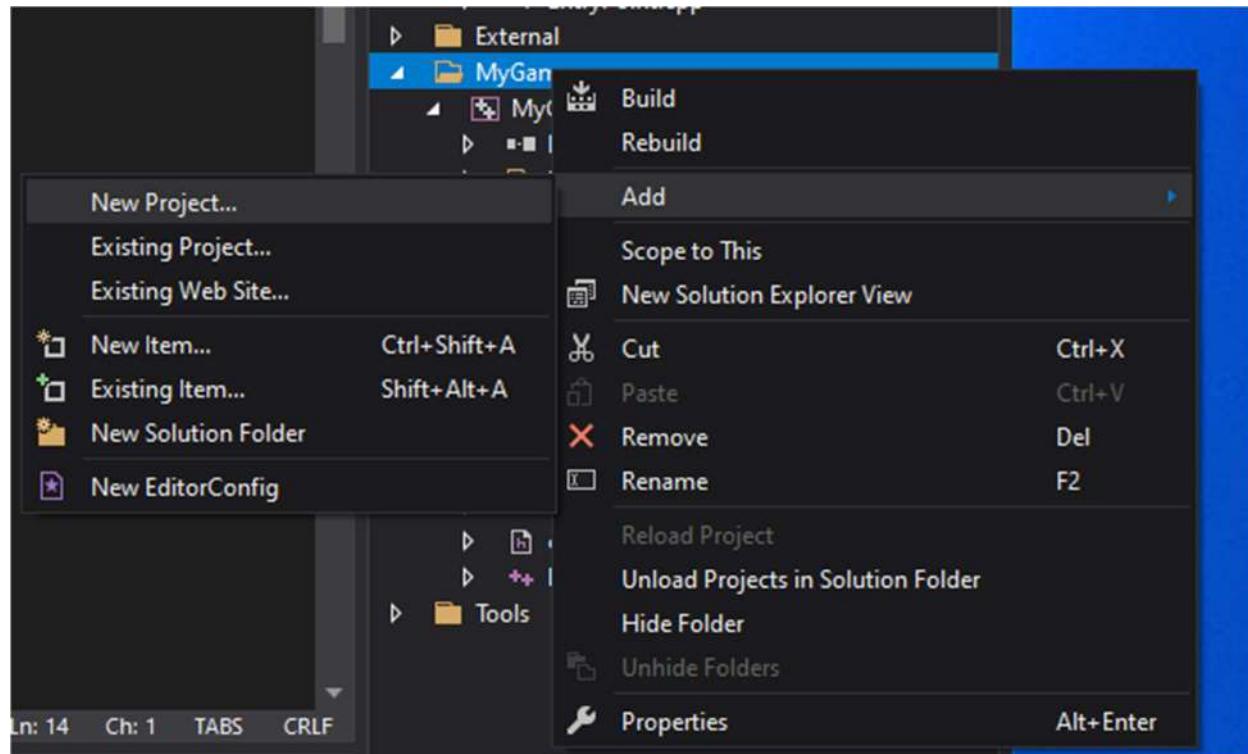
Output: The output window shows the build process:

```
Show output from: Build
24>Building solution...
25>EntryPoint.cpp
26>Generating Code...
25>Generating Code...
26>MyGame.vcxproj -> E:\MyGitHubProjects\laptop\wooderika\temp\x64\Debug\output\MyGame_\MyGame.exe
25>ExampleGame.vcxproj -> E:\MyGitHubProjects\laptop\wooderika\temp\x64\Debug\output\ExampleGame_\ExampleGame.exe
26>Copying MyGame_ Executable
25>Copying ExampleGame_ Executable
26>    1 file(s) copied.
25>    1 file(s) copied.
***** Rebuild All: 27 succeeded, 0 failed, 0 skipped *****
```

"staged commits locally"



Now creating an empty project to build assets:



Configure your new project

Empty Project

C++

Windows

Console

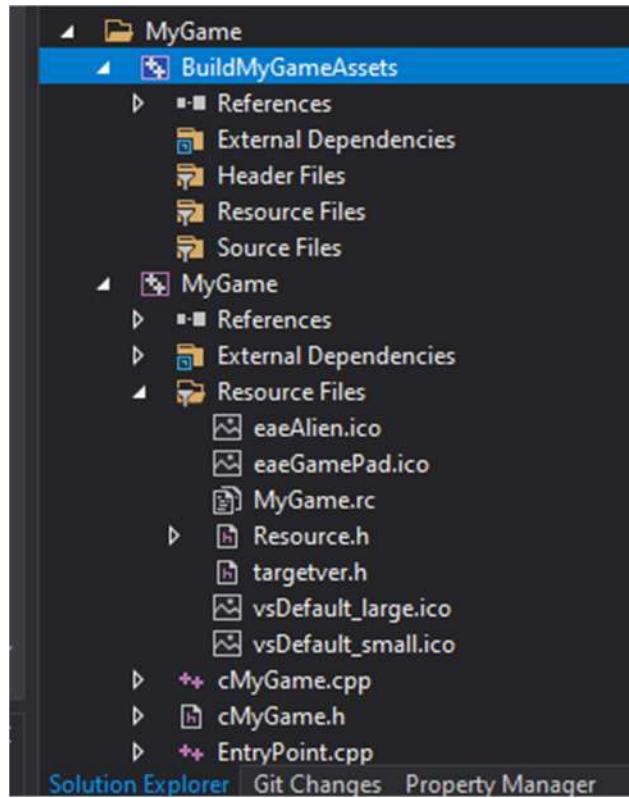
Project name

BuildMyGameAssets

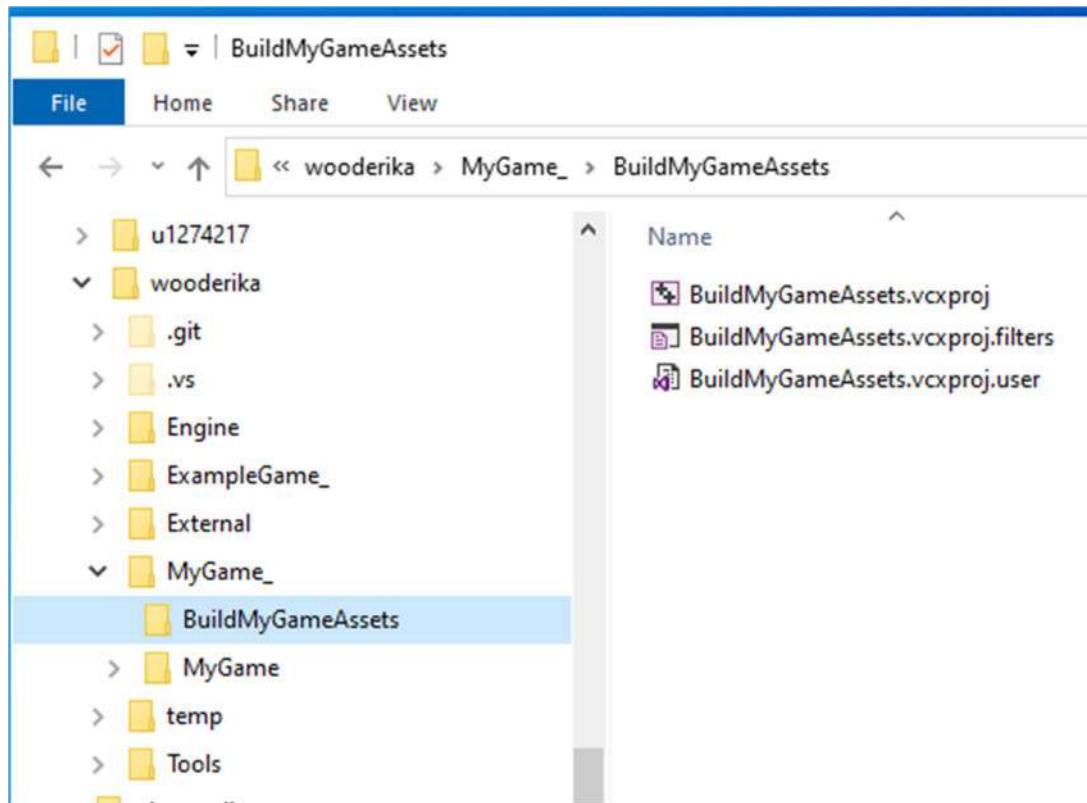
Location

E:\MyGitHubProjectsLaptop\wooderika\MyGame_\

...



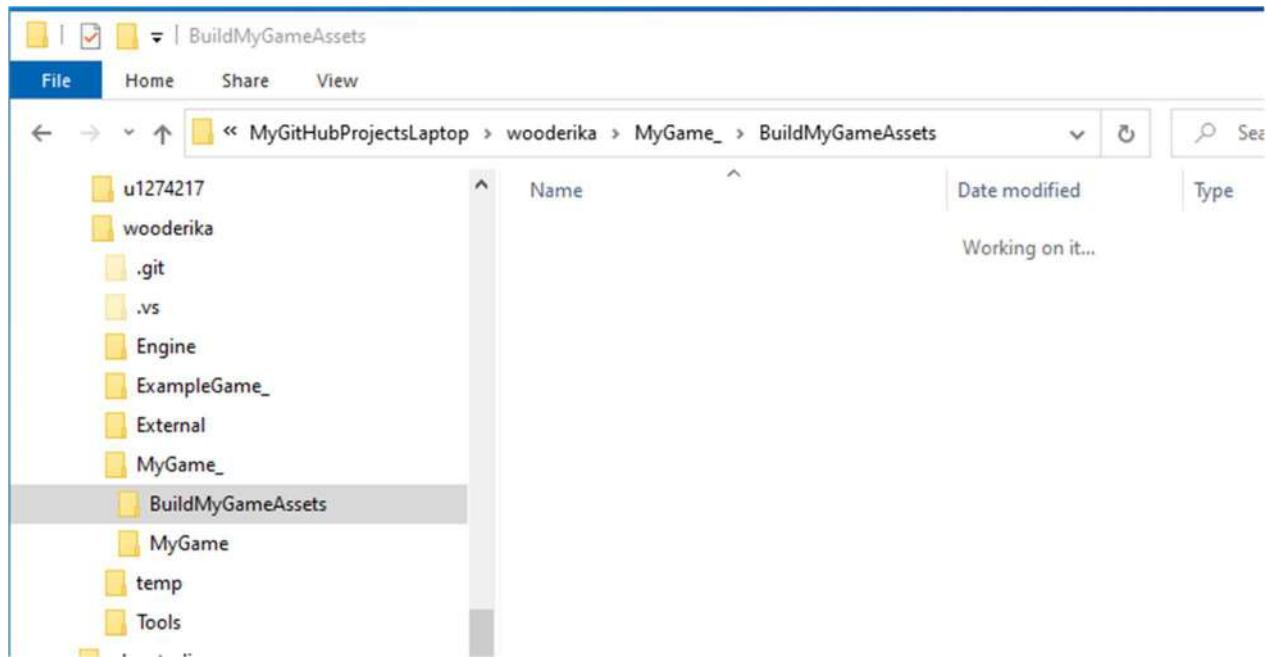
Closing VS.



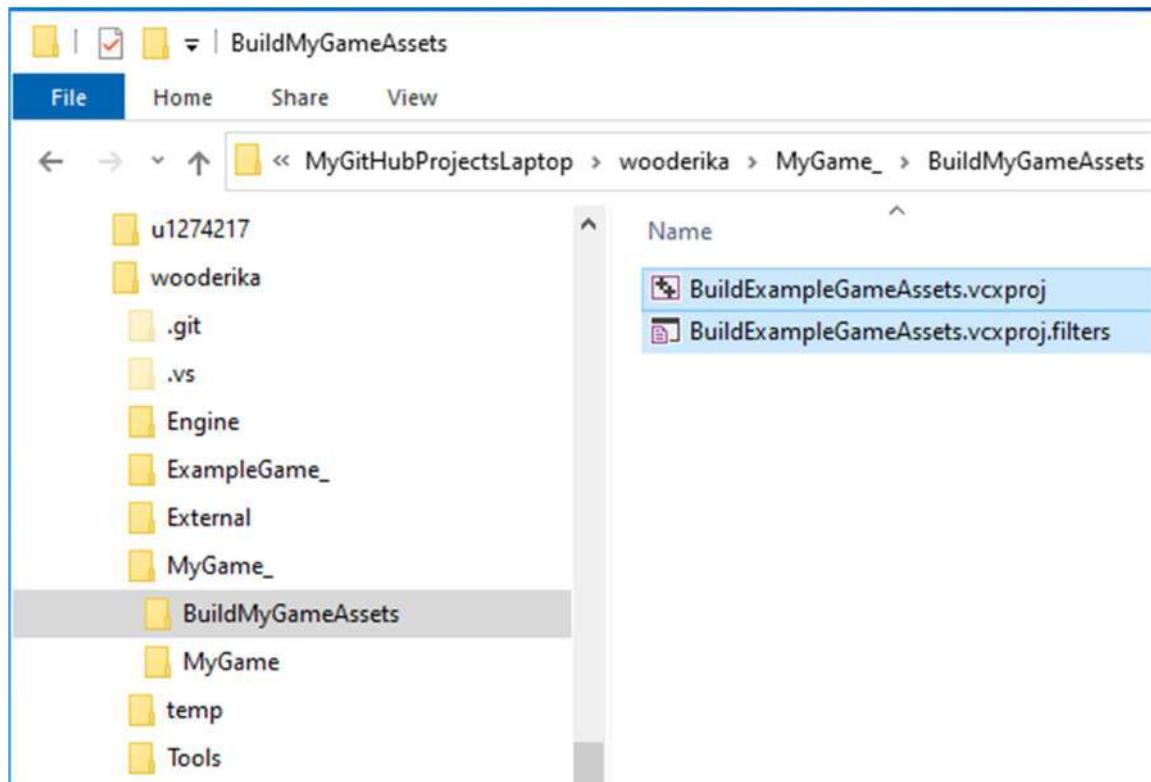
The screenshot shows a Notepad++ window displaying an XML configuration file. The title bar reads: E:\MyGitHubProjectsLaptop\wooderika\MyGame_\BuildMyGameAssets\BuildMyGameAssets.vcxproj - Notepad++. The file content is as follows:

```
</ProjectConfiguration>
</ItemGroup>
<PropertyGroup Label="Globals">
    <VCProjectVersion>16.0</VCProjectVersion>
    <Keyword>Win32Proj</Keyword>
    <ProjectGuid>{9cb26815-6b56-45ef-9ad3-176bf5c5ec78}</ProjectGuid>
    <RootNamespace>BuildMyGameAssets</RootNamespace>
    <WindowsTargetPlatformVersion>10.0</WindowsTargetPlatformVersion>
{9cb26815-6b56-45ef-9ad3-176bf5c5ec78}
```

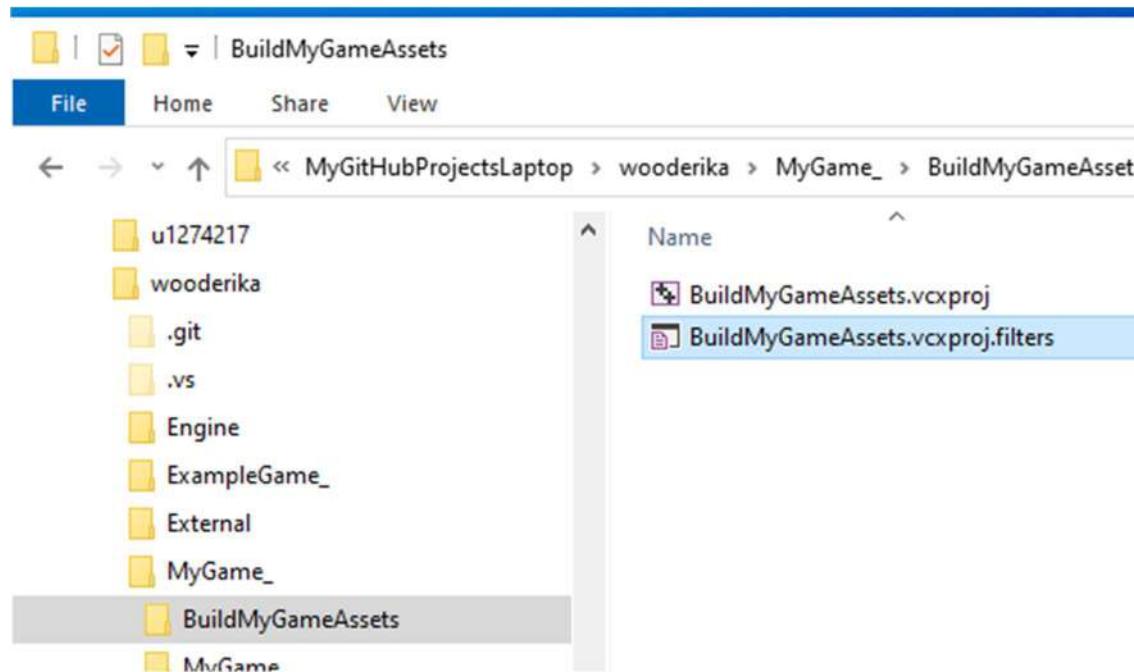
Deleting generated files



Copying files from ExampleGame_/_BuildExampleGameAssets/ to MyGame_/_BuildMyGameAssets/



Renaming files



Updating .vxproj file:

```
16 <ProjectConfiguration Include="Release|x64">
17   <Configuration>Release</Configuration>
18   <Platform>x64</Platform>
19 </ProjectConfiguration>
20 </ItemGroup>
21 <PropertyGroup Label="Globals">
22   <VCProjectVersion>15.0</VCProjectVersion>
23   <ProjectGuid>{9cb26815-6b56-45ef-9ad3-176bf5c5ec78}</ProjectGuid>
24   <RootNamespace>BuildExampleGameAssets</RootNamespace>
25   <WindowsTargetPlatformVersion>10.0</WindowsTargetPlatformVersion>
26 </PropertyGroup>
27 <Import Project="$(VCTa
28 <PropertyGroup Condition=
29   <ConfigurationType>Ap
30   <UseDebugLibraries>tr
```

new 1 * BuildMyGameAssets.vcxproj

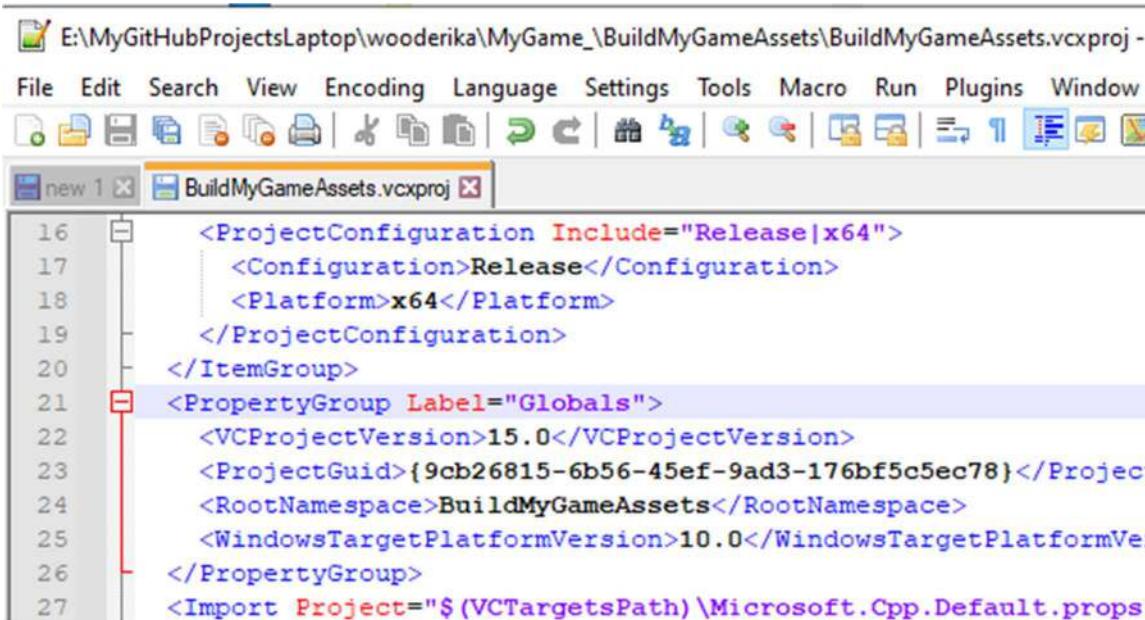
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?

Replace

Find Replace Find in Files Find in Projects Mark

Find what: ExampleGame Find Next

5 occurrences were changed



```
E:\MyGitHubProjectsLaptop\wooderika\MyGame_\BuildMyGameAssets\BuildMyGameAssets.vcxproj -  
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window  
new 1 BuildMyGameAssets.vcxproj  
16 <ProjectConfiguration Include="Release|x64">  
17   <Configuration>Release</Configuration>  
18   <Platform>x64</Platform>  
19 </ProjectConfiguration>  
20 </ItemGroup>  
21 <PropertyGroup Label="Globals">  
22   <VCProjectVersion>15.0</VCProjectVersion>  
23   <ProjectGuid>{9cb26815-6b56-45ef-9ad3-176bf5c5ec78}</Project  
24   <RootNamespace>BuildMyGameAssets</RootNamespace>  
25   <WindowsTargetPlatformVersion>10.0</WindowsTargetPlatformVe  
26 </PropertyGroup>  
27 <Import Project="$(VCTargetsPath)\\Microsoft.Cpp.Default.props'"
```

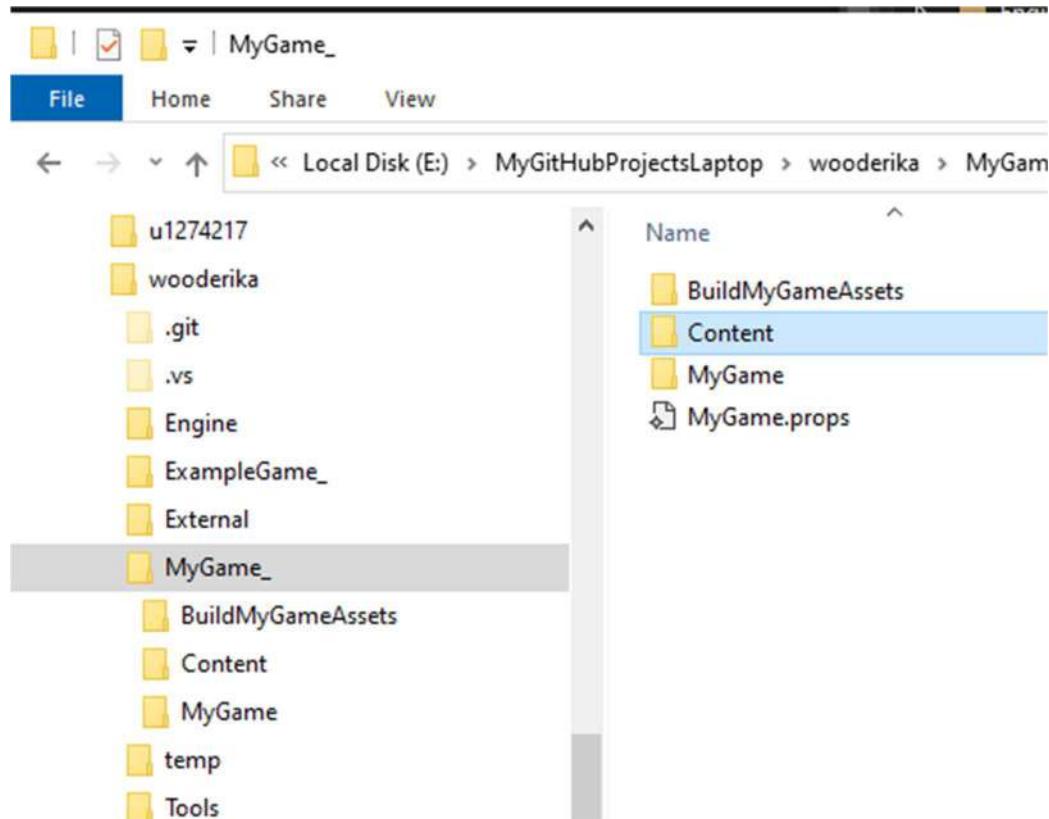
- If you have done everything correctly you should now be able to open the solution in Visual Studio and the BuildExampleGameAssets project should look correct (you won't be able to build it without errors yet, though). Consider staging in git!

The screenshot shows a Microsoft Visual Studio interface with the following components:

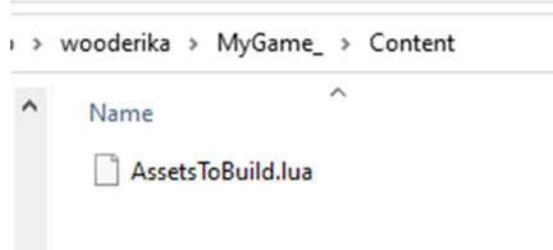
- Solution Explorer:** Displays the solution "WoodErika" containing 28 projects. The "ExampleGame" project is expanded, showing its structure including "Resource Files" (eae6320.h, eaeGamePad.h, ExampleGame.rc, targetver.h, v4Default_large.ico, v4Default_small.ico), "External Dependencies" (AssetsToBuild.lua), and "MyGame" (Resource Files, External Dependencies, and source files like MyGame.cpp, MyGame.h, and EntryPoint.cpp).
- Code Editor:** Shows the file "cMyGame.cpp" with the following code:

```
1 // Includes
2 // -----
3 #include "cMyGame.h"
4 #include <Engine/Asserts/Asserts.h>
5 #include <Engine/UserInput/UserInput.h>
6
7 // Inherited Implementation
8 // -----
9
10 // Run
11 // -----
12 void eae6320::cExampleGame::UpdateBasedOnInput()
13 {
14     // Is the user pressing the ESC key?
15     if (UserInput::IsKeyPressed(UserInput::KeyCodes::Escape))
16     {
17         // Exit the application
18         const auto result = Exit(EXIT_SUCCESS);
19         EAE6320_ASSERT(result);
20     }
21 }
22
23 // Initialize / Clean Up
24 // -----
25
26 eae6320::Result eae6320::cMyGame::Initialize()
27 {
28     return Results::Success;
29 }
30
31 eae6320::Result eae6320::cMyGame::Cleanup()
32 {
33     return Results::Success;
34 }
```

- Error List:** Shows 0 errors, 0 warnings, and 0 messages.
- Properties:** A small pane showing file properties.

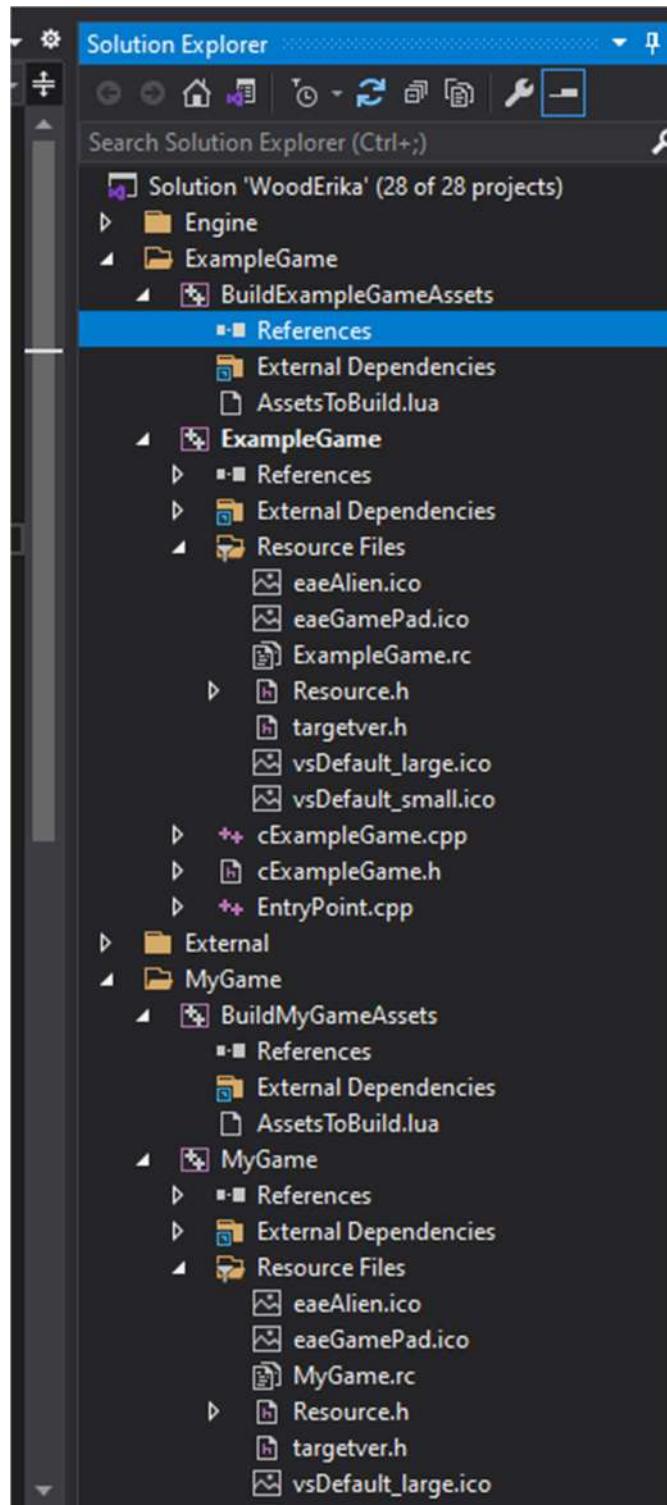


The content folder contains a lua file

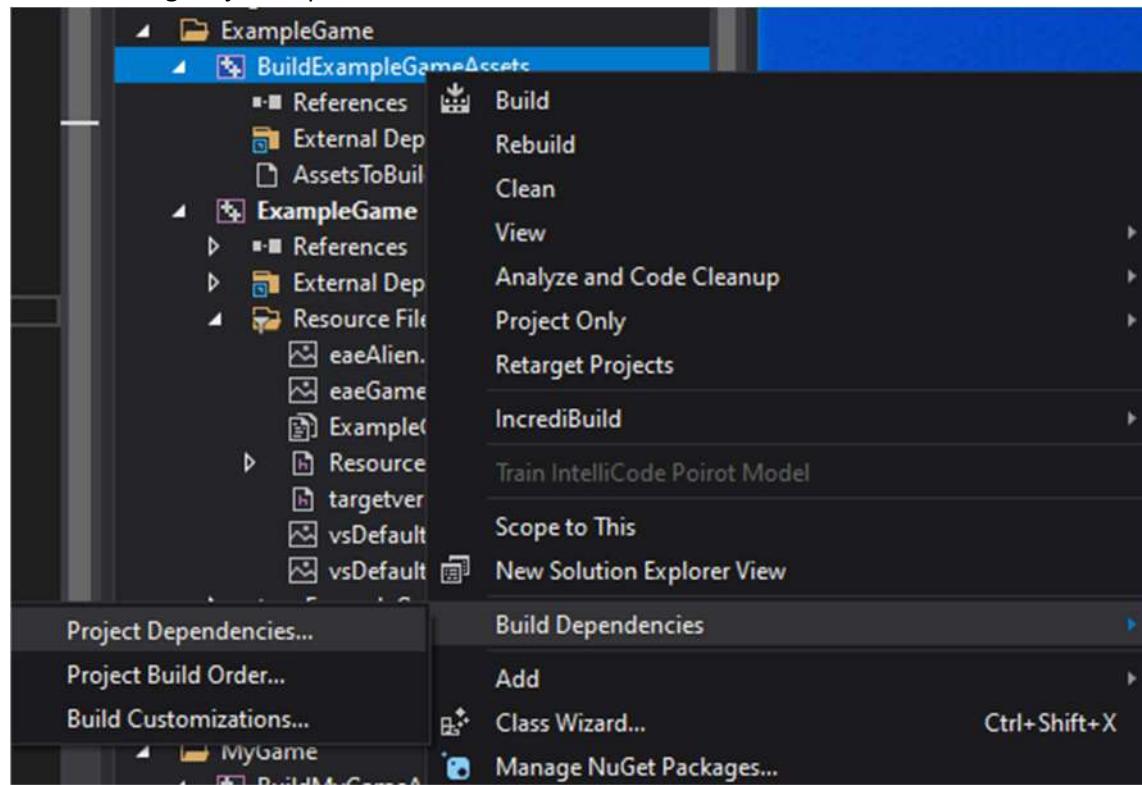


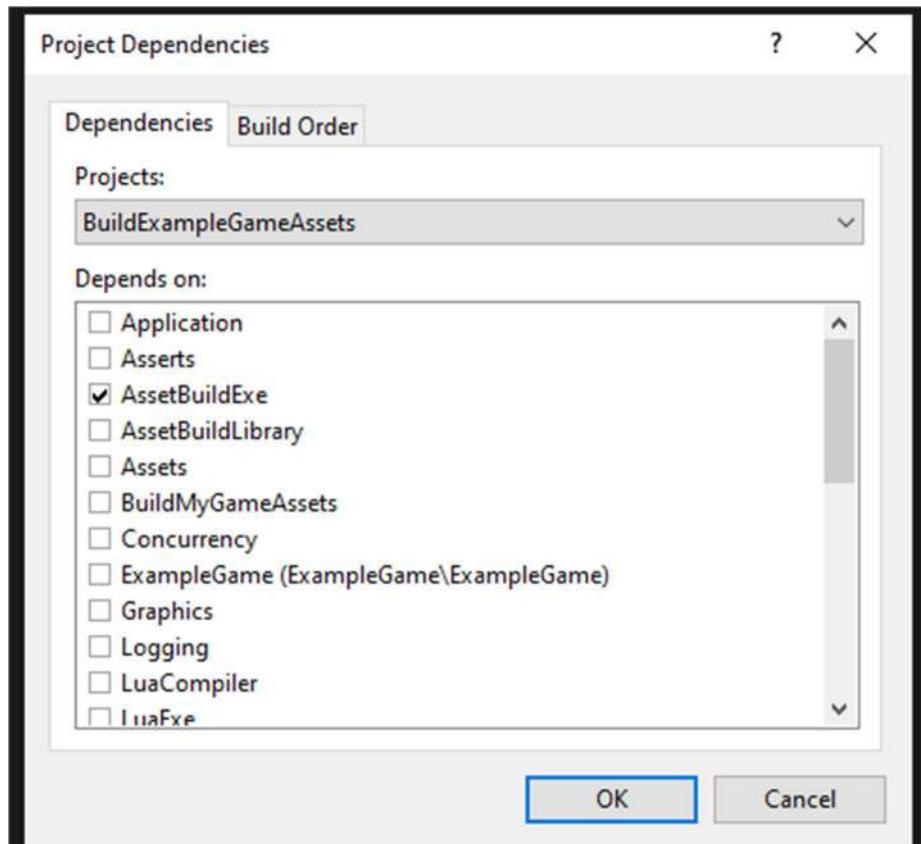
Now checking project dependencies for the BuildExampleGameAssets project and making the new BuildMyGameAssets project depend on the same projects.

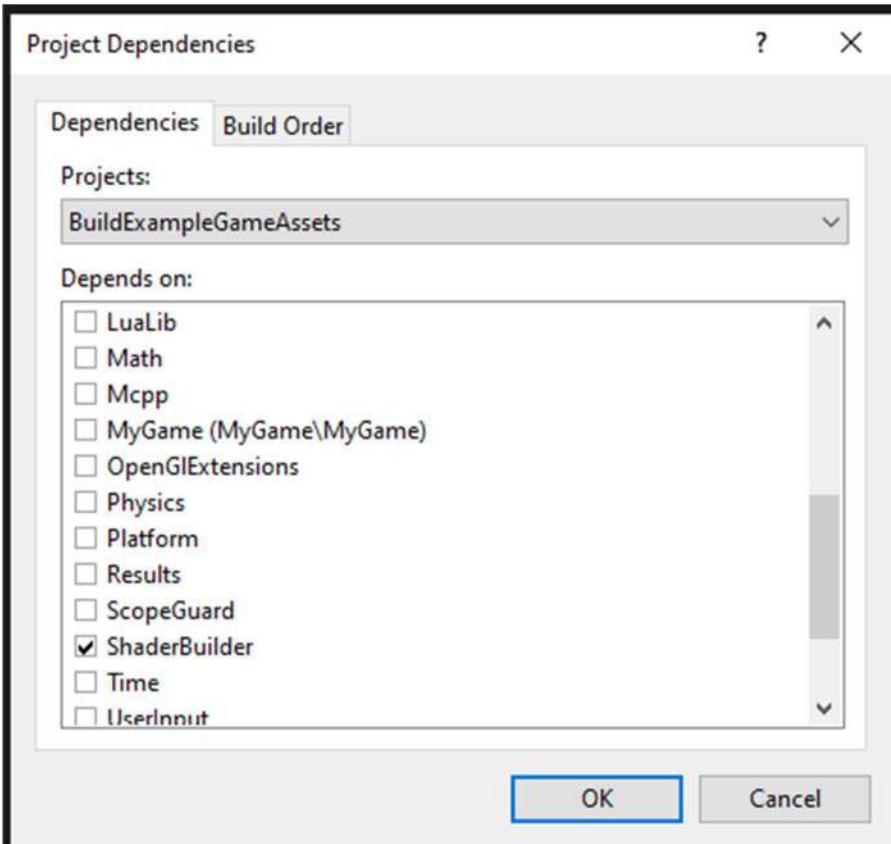
A first look at the solution tree doesn't show any references:

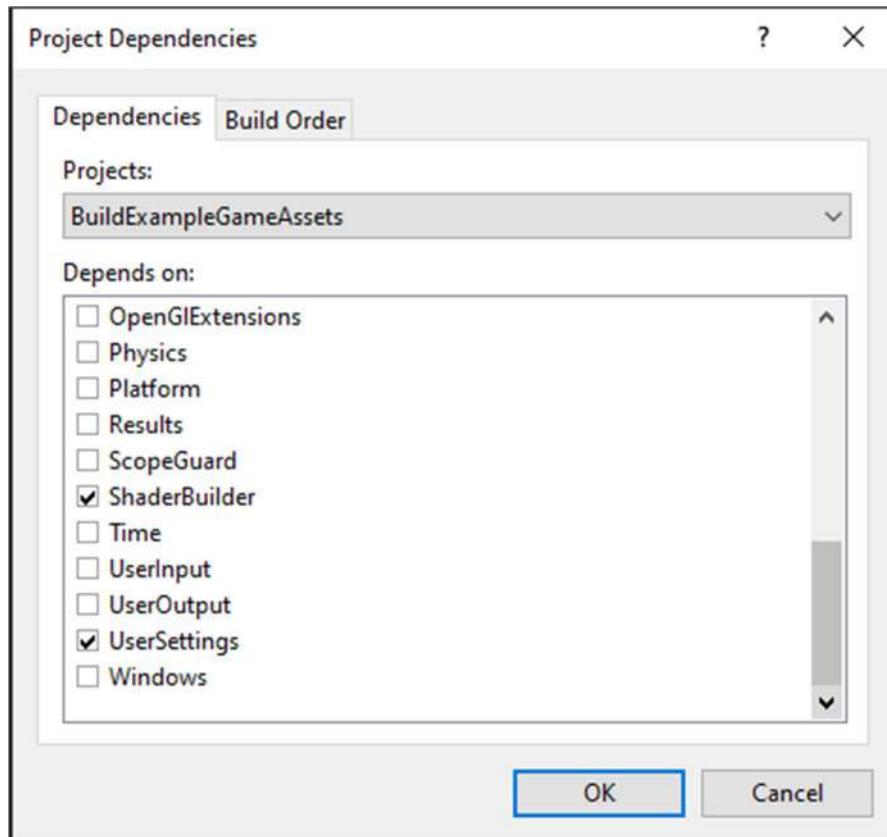


Now selecting Project dependencies:

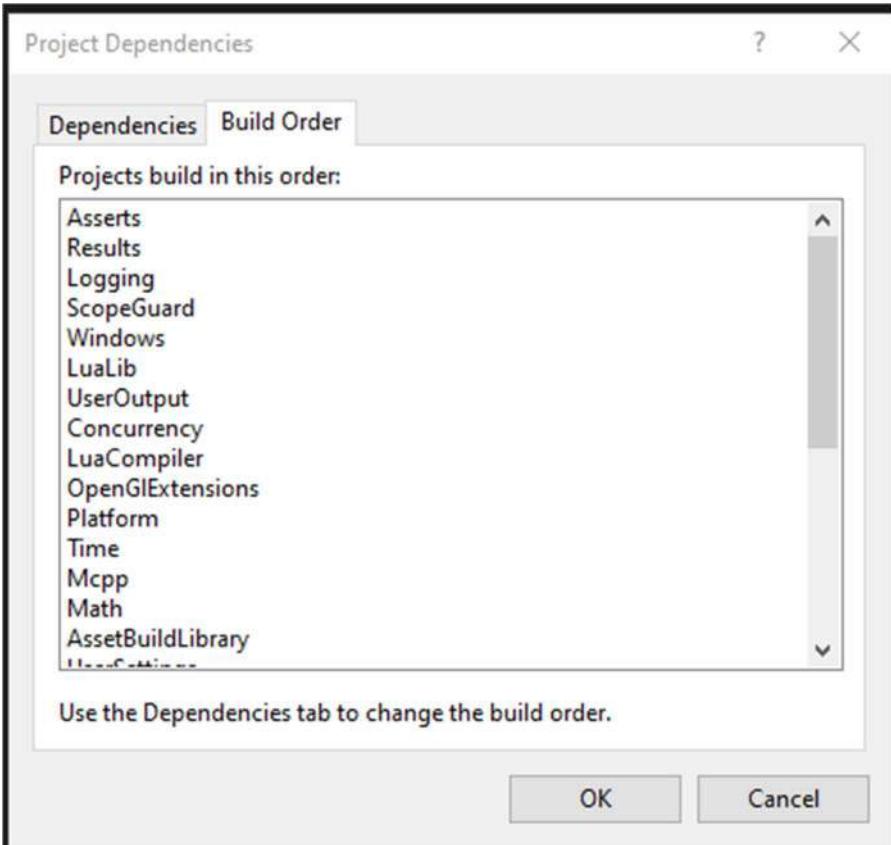


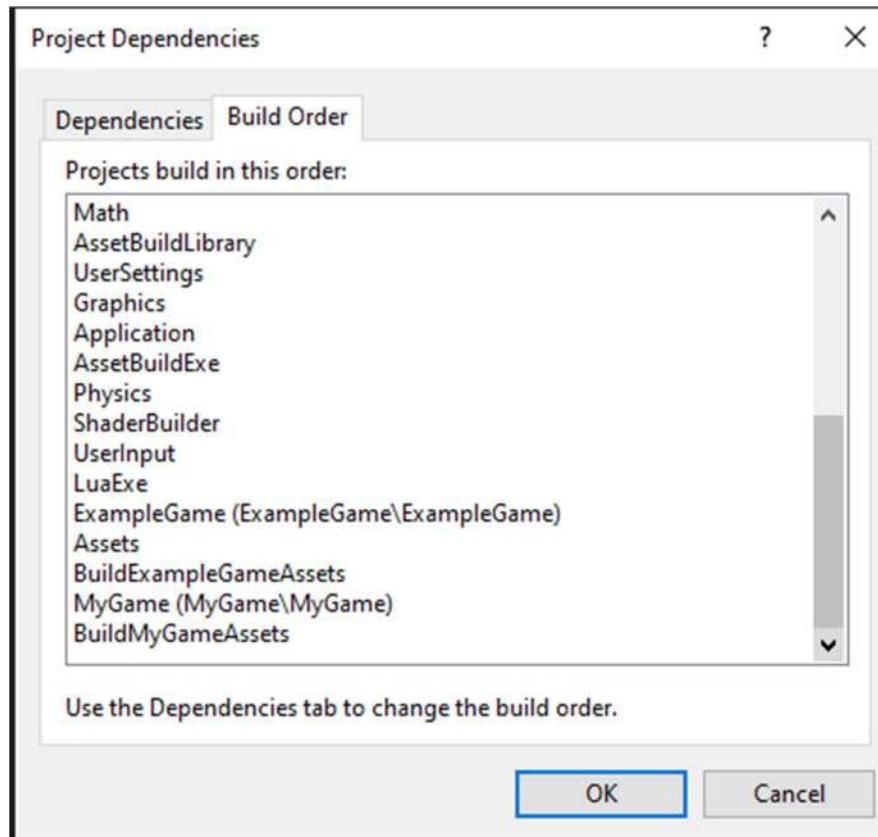




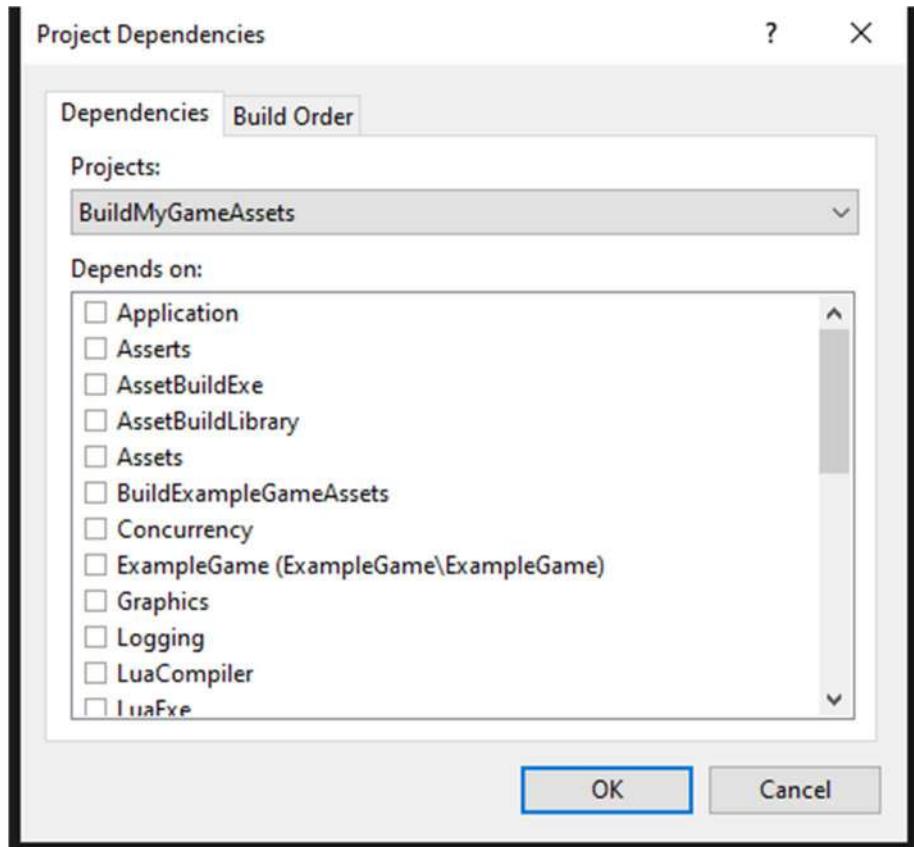


Also checking build order since it's already open 😊

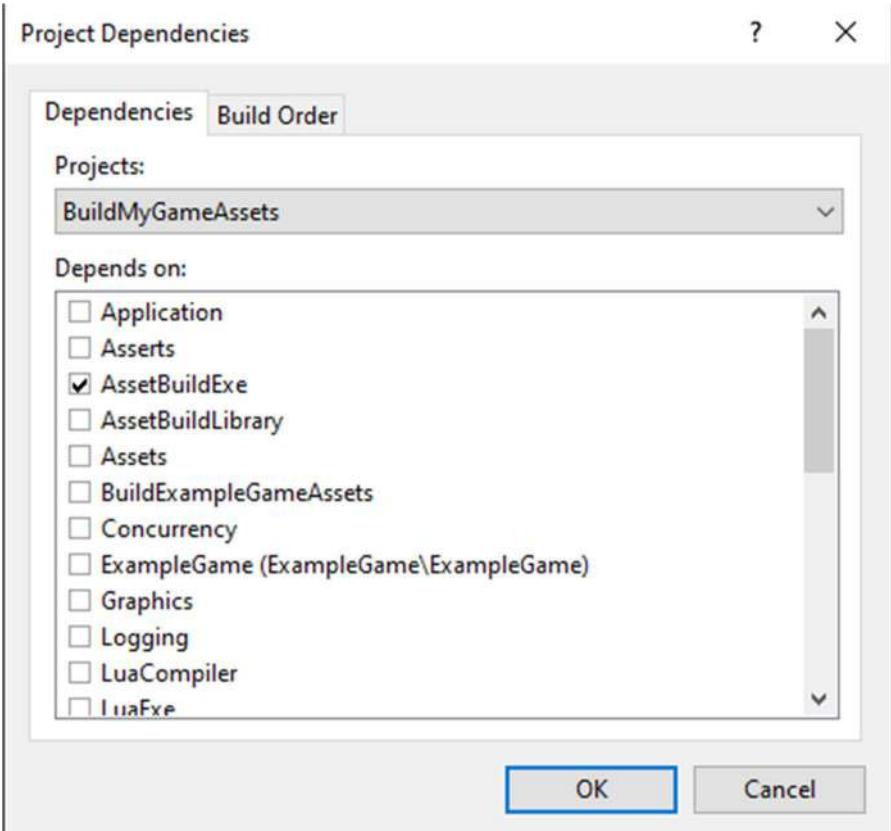


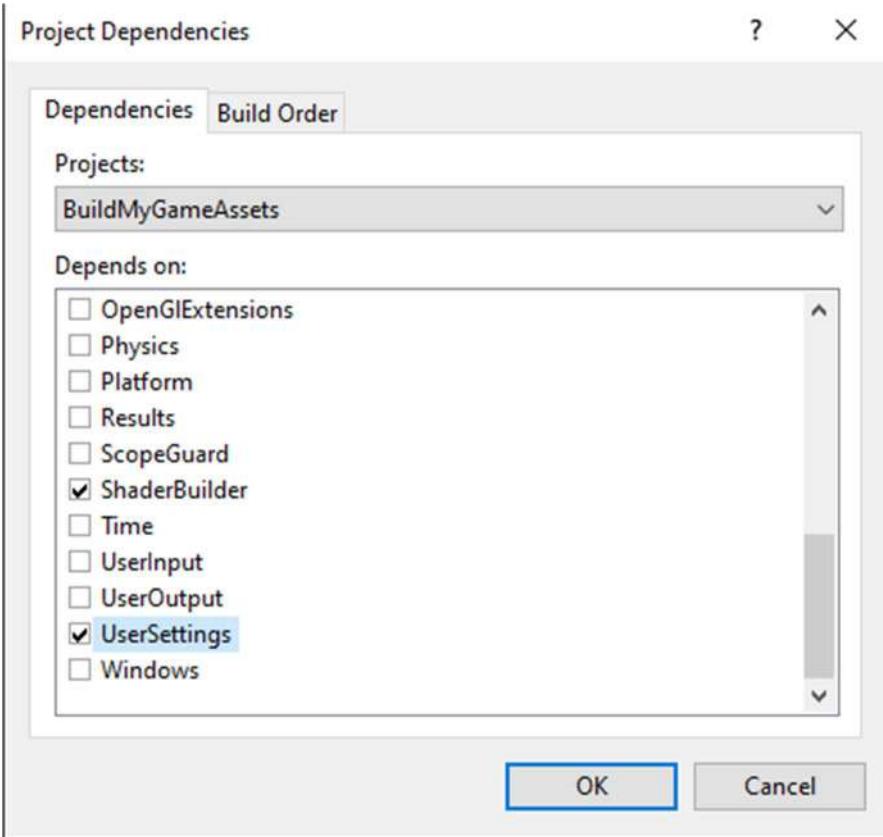


Now checking BuildMyGameAssets Project dependencies:

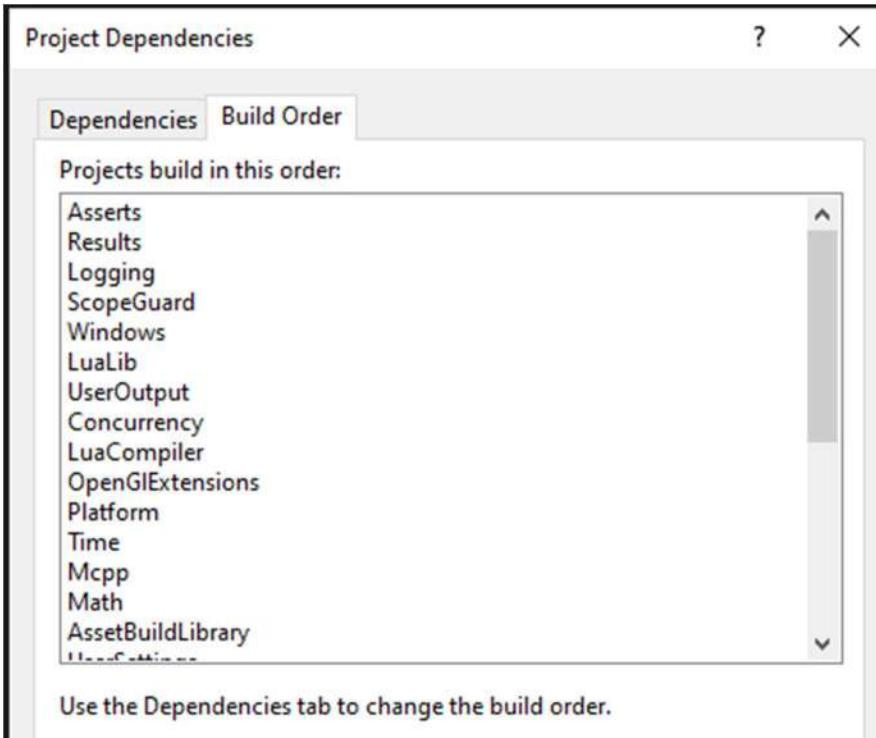


Nothing is checked.





Checking build order



Project Dependencies

?

X

Dependencies Build Order

Projects build in this order:

- Math
- AssetBuildLibrary
- UserSettings
- Graphics
- Application
- AssetBuildExe
- Physics
- ShaderBuilder
- UserInput
- LuaExe
- ExampleGame (ExampleGame\ExampleGame)
- Assets
- BuildExampleGameAssets
- MyGame (MyGame\MyGame)
- BuildMyGameAssets

Now building the solution:

x64: build successful

The screenshot shows the Microsoft Visual Studio interface with the following components:

- Solution Explorer:** Displays the solution structure for "WoodErika" with 28 projects. Projects include "Engine", "ExampleGame", "BuildExampleGameAssets", "MyGame", and "BuildMyGameAssets".
- Code Editor:** Shows the file "cMyGame.cpp" with C++ code. The code includes includes for "MyGame.h", "Engine/Asserts/Asserts.h", and "Engine/UserInput/UserInput.h". It contains comments for "Inherited Implementation", "Run", and "Initialize / Clean Up". It also includes logic for handling user input (ESC key) and exiting the application.
- Output Window:** Shows build logs for the "Build" configuration. The log indicates successful builds for various projects, including "MyGame" and "ExampleGame".
- Properties Window:** Shows the properties for the "WoodErika" solution, specifically for the "MyGame" project under the "Misc" section.

```
1 // Includes
2 // =====
3
4 #include "MyGame.h"
5
6 #include <Engine/Asserts/Asserts.h>
7 #include <Engine/UserInput/UserInput.h>
8
9 // Inherited Implementation
10 // -----
11
12 // Run
13 // -----
14
15 //void eae6320::cExampleGame::updateBasedOnInput()
16 void eae6320::cMyGame::updateBasedOnInput()
17 {
18     // Is the user pressing the ESC key?
19     if (UserInput::IsKeyPressed(UserInput::KeyCodes::Escape))
20     {
21         // Exit the application
22         const auto result = Exit(EXIT_SUCCESS);
23         EAE6320_ASSERT(result);
24     }
25 }
26
27 // Initialize / Clean Up
28 // -----
29
30 Eae6320::Result eae6320::cMyGame::Initialize()
31 {
32     return Results::Success;
33 }
34
35 Eae6320::Result eae6320::cMyGame::CleanUp()
36 {
37     return Results::Success;
38 }
39
```

Output

```
Show output from: Build
28:Built E:\MyGitHubProjects\laptop\wooderika\Engine\Content\shaders\vertex\vertexInputLayout_mesh.shader
28:Built E:\MyGitHubProjects\laptop\wooderika\temp\x64\Debug\output\MyGame_MyGame.exe
28:Installed lua.txt
28:Installed mpp.txt
26:MyGame.vcxproj -> E:\MyGitHubProjects\laptop\wooderika\temp\x64\Debug\output\ExampleGame_(ExampleGame.exe
25:Copying ExampleGame_ Executable
26:Copying MyGame_ Executable
25:    1 file(s) copied.
26:    1 file(s) copied.
***** Build: 28 succeeded, 0 failed, 0 up-to-date, 0 skipped *****
```

Properties

WoodErika Solution Properties

MyGame

Misc

(Name) WoodErika

Active config Debug|x64

x86

The screenshot shows the Microsoft Visual Studio IDE interface. The top menu bar includes File, Edit, View, Project, Build, Debug, Test, Analyze, Tools, Extensions, Window, Help, and Search (Ctrl+Q). The title bar says "WoodErika".

The Solution Explorer window on the right lists the solution "WoodErika" with 28 projects. Projects include "Engine", "ExampleGame", "BuildSampleGameAssets", "MyGame", and "BuildMyGameAssets". Each project has its own folder structure for files like "Resource.h", "targetver.h", and various ".ico" files.

The Properties window at the bottom shows the "WoodErika" solution properties with sections for "General", "Build Events", "References", "External Dependencies", and "Misc".

The main code editor window displays "cMyGame.cpp" with C++ code. The code includes comments for inheritance and implementation, handling user input (specifically the Escape key), and game initialization and cleanup. It uses the EAE6320 framework.

The Output window at the bottom shows the build log:

```
Show output from: Build
1>-----[Build]-----> E:\MyGitHubProjects\laptop\wooderika\Engine\Content\shaders\vertex\vertexInputLayout_mesh.shader
3>Built E:\MyGitHubProjects\laptop\wooderika\Engine\Content\shaders\vertex\vertexInputLayout_mesh.shader
3>Installed lua.txt
3>Installed mcpp.txt
2>cMyGame.cpp
2>EntryPoint.cpp
2>Generating Code...
2>Game.exe -> E:\MyGitHubProjects\laptop\wooderika\temp\x86\Debug\output\MyGame_\MyGame.exe
2>Copying MyGame_ Executable
2>      1 file(s) copied.
***** Build: 3 succeeded, 0 failed, 25 up-to-date, 0 skipped *****
```

Staging changes locally

File Edit View Repository Branch Help

Current repository
wooderika

Current branch
DevAssignment01

Push origin
Last fetched 2 days ago 4 ↑

Changes History

0 changed files

No local changes

There are no uncommitted changes in this repository. Here are some what to do next:

Push commits to the origin remote
You have 4 local commits waiting to be pushed to the remote.
Always available in the toolbar when there are local commits wait
Ctrl + P

Open the repository in your external editor
Select your editor in Options
Repository menu or Ctrl + Shift + A

View the files of your repository in Explorer
Repository menu or Ctrl + Shift + F

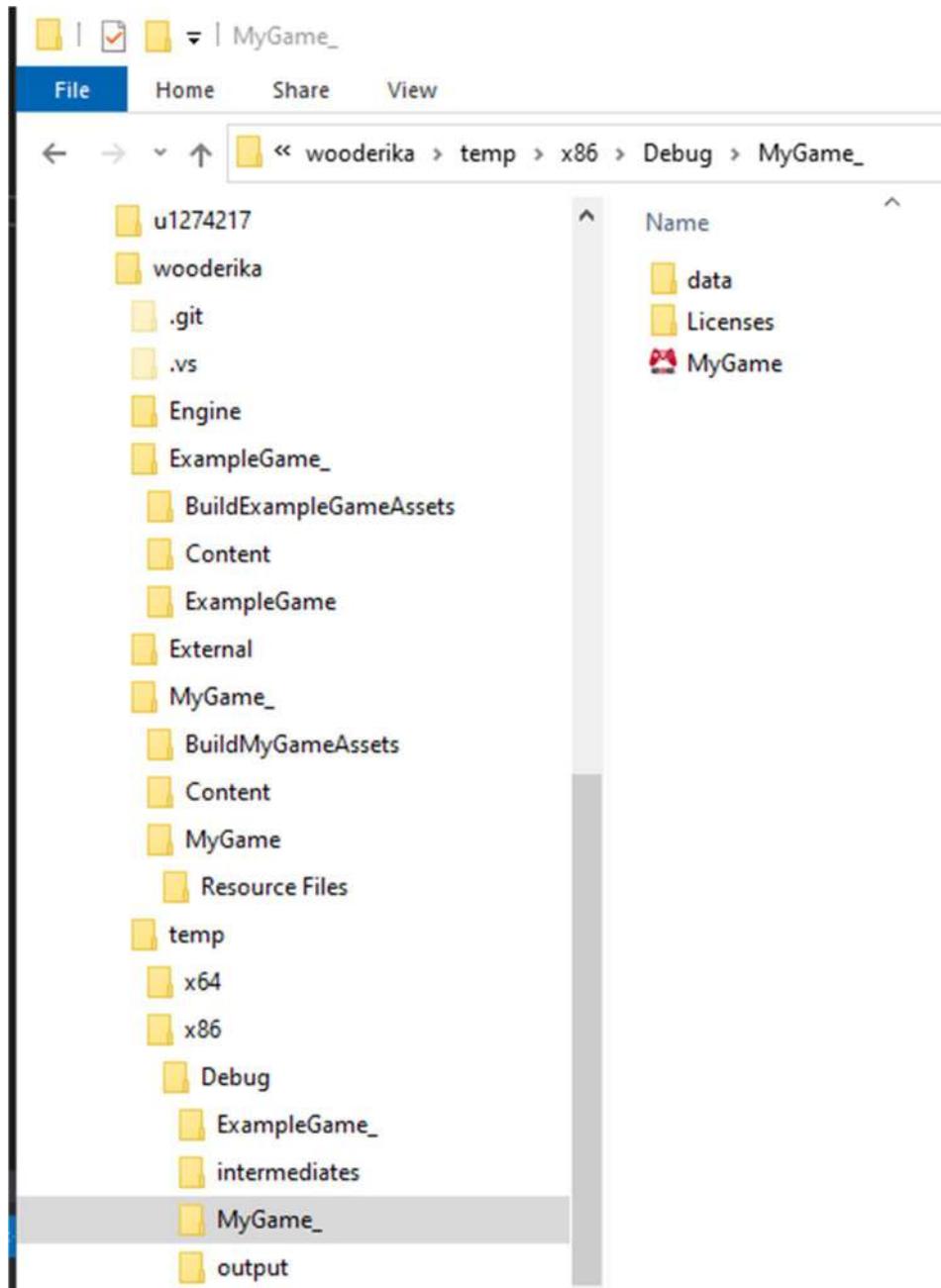
Summary (required)

Description

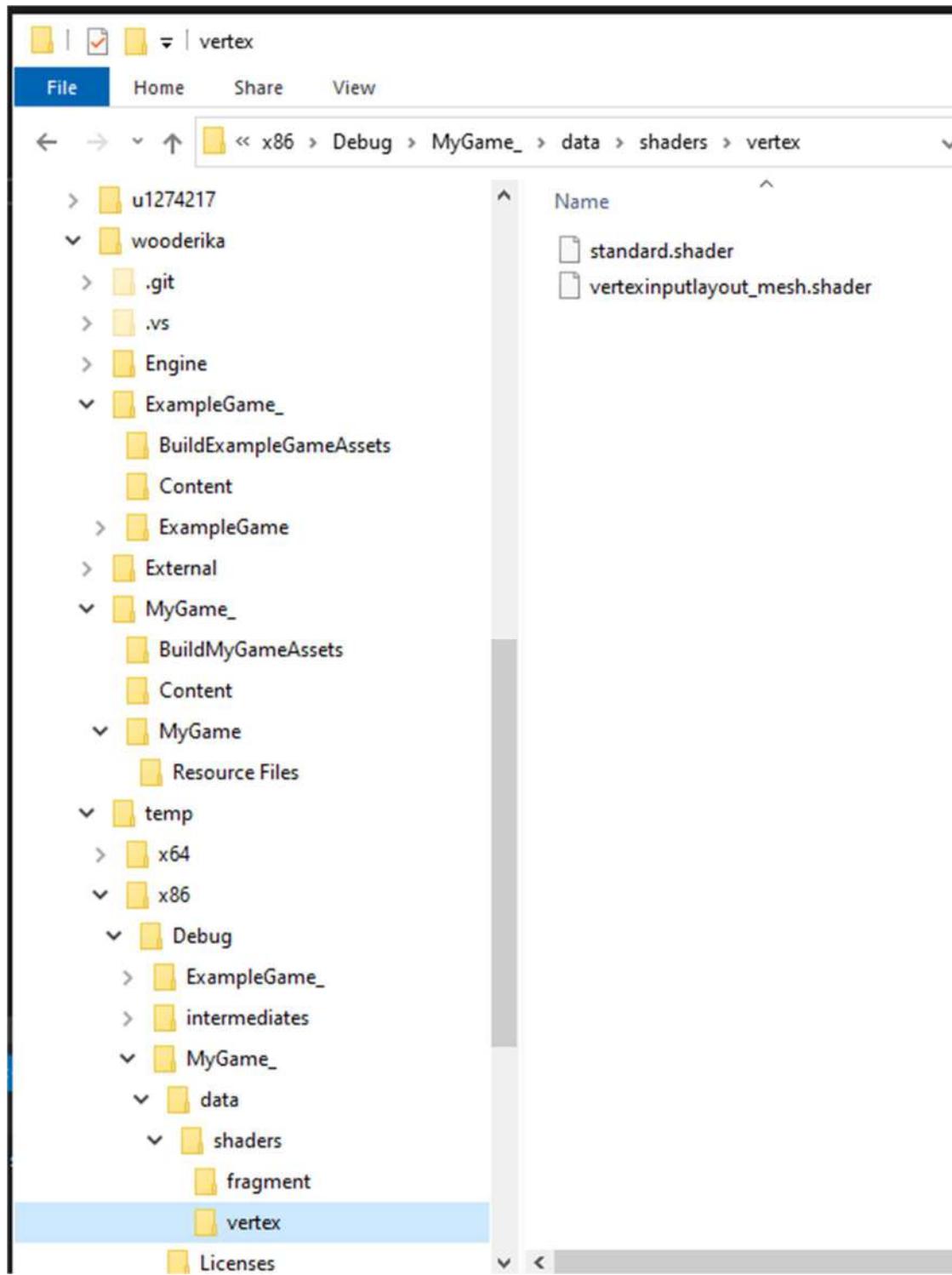
Commit to DevAssignment01

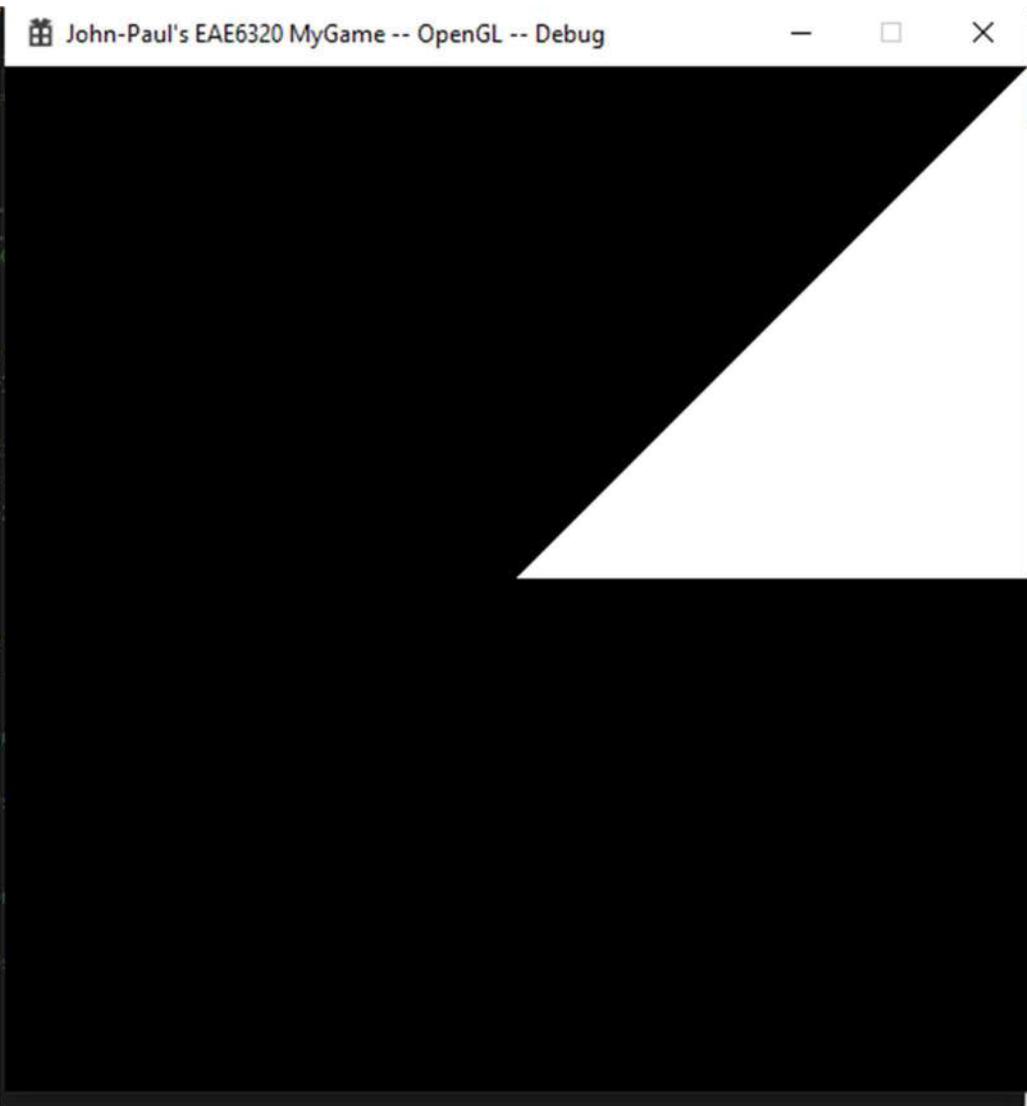
Committed 3 minutes ago
STEP 7 c - added content folder and project dependencies Undo

Checking MyGame \$(GameInstallDir)
E:\MyGitHubProjectsLaptop\wooderika\temp\x86\Debug\MyGame_\

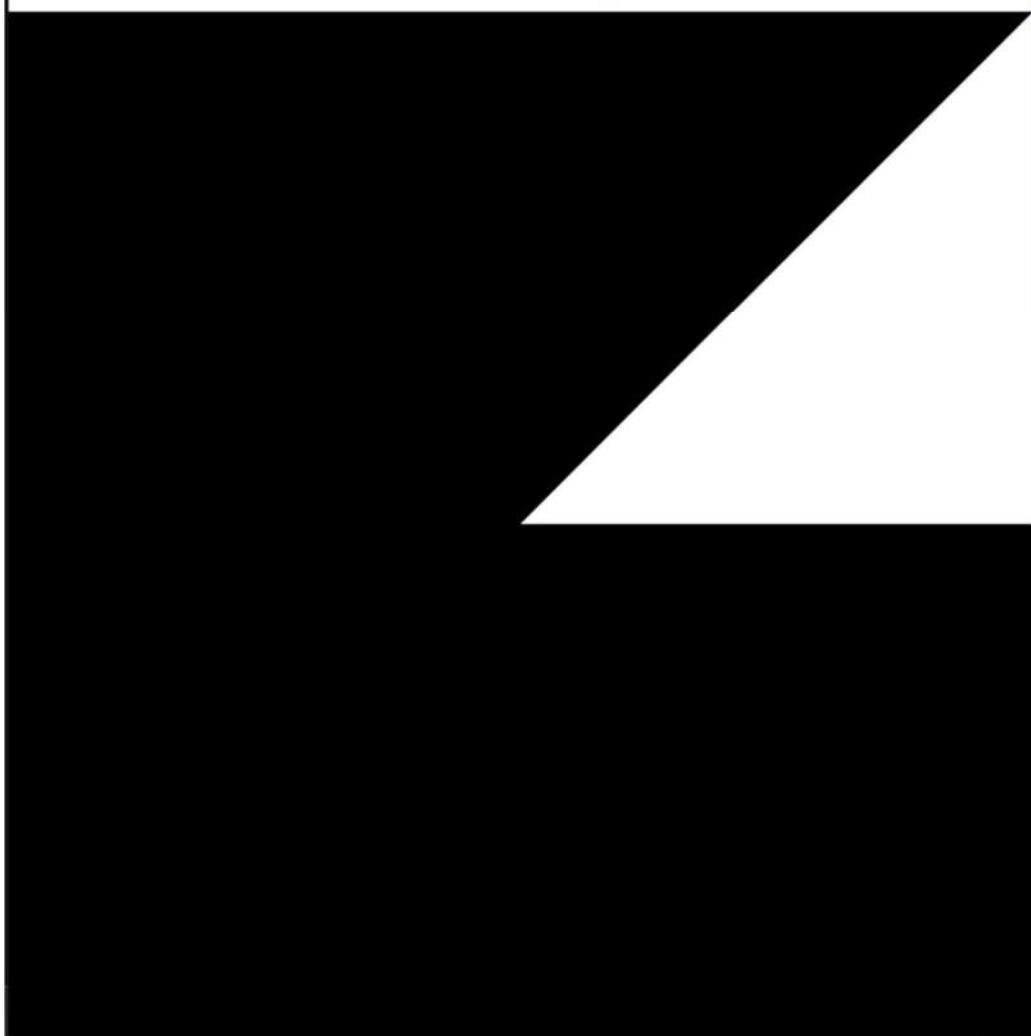


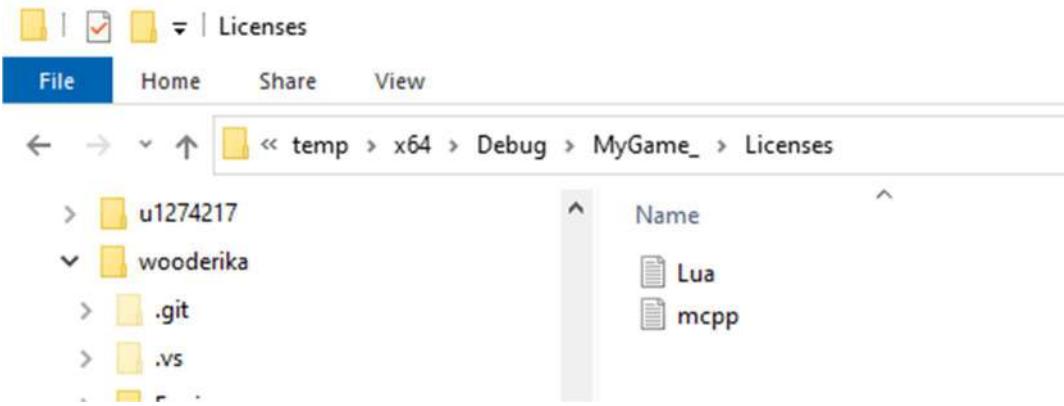


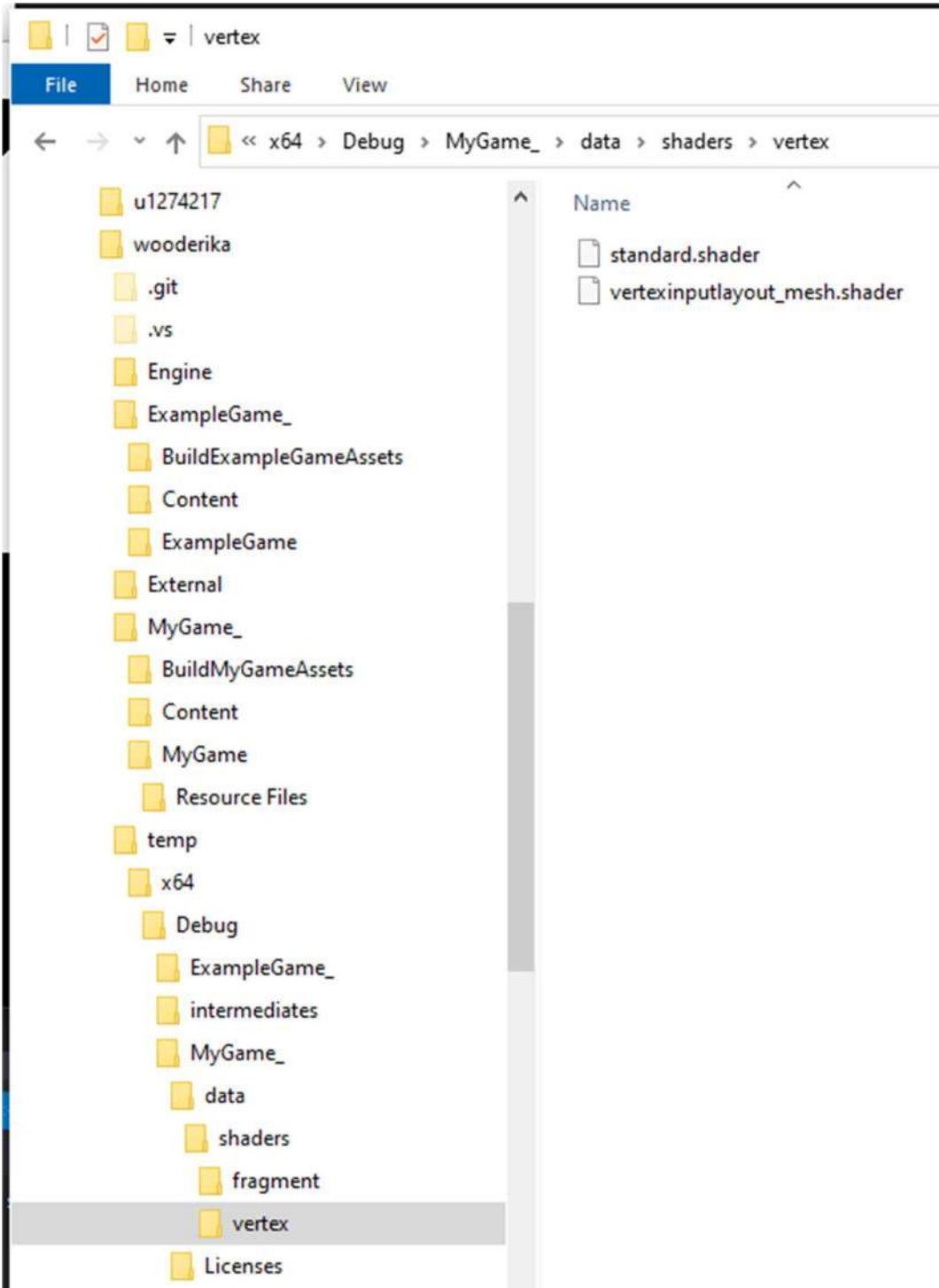




John-Paul's EAE6320 MyGame -- Direct3D -- Debug

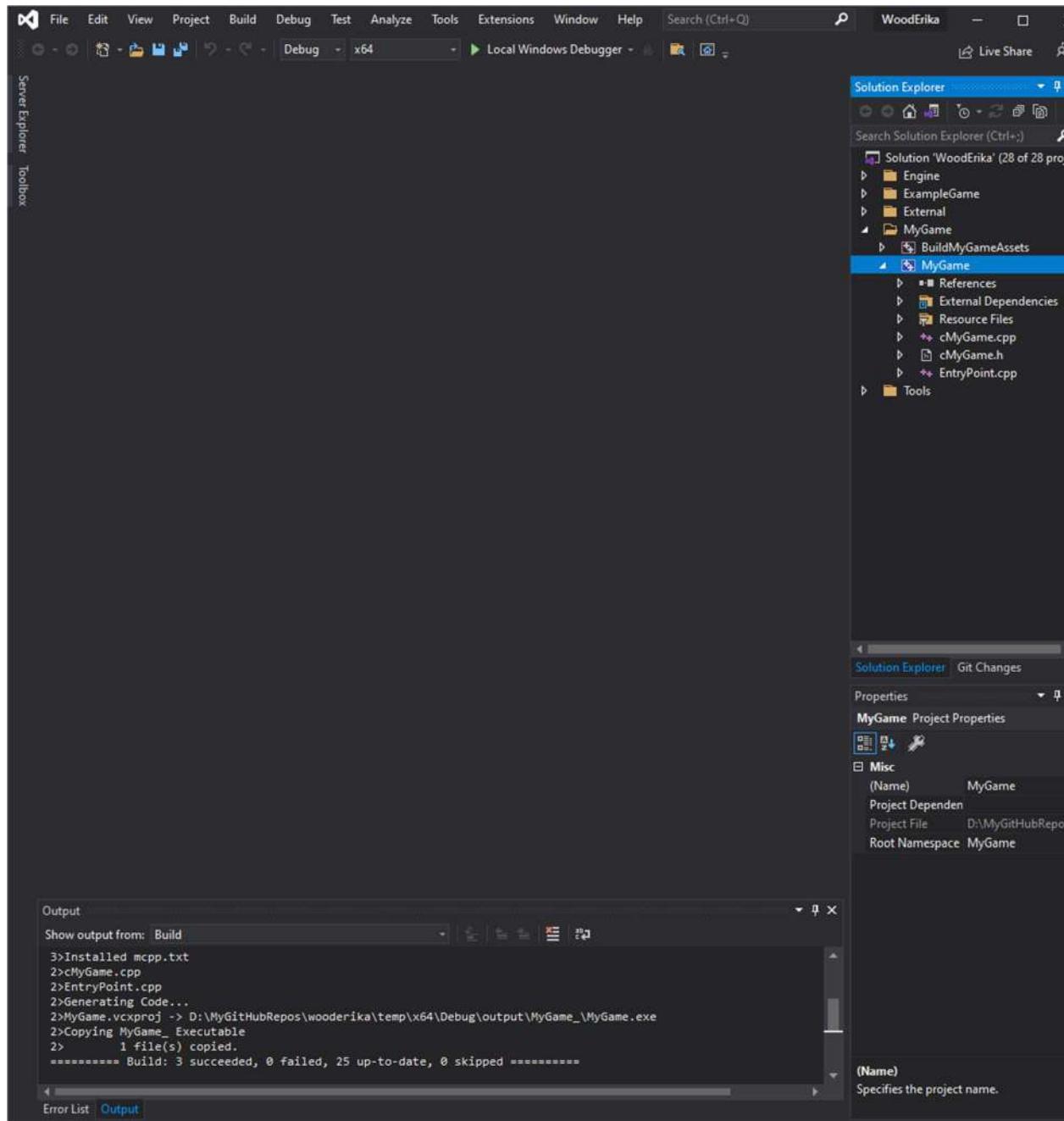






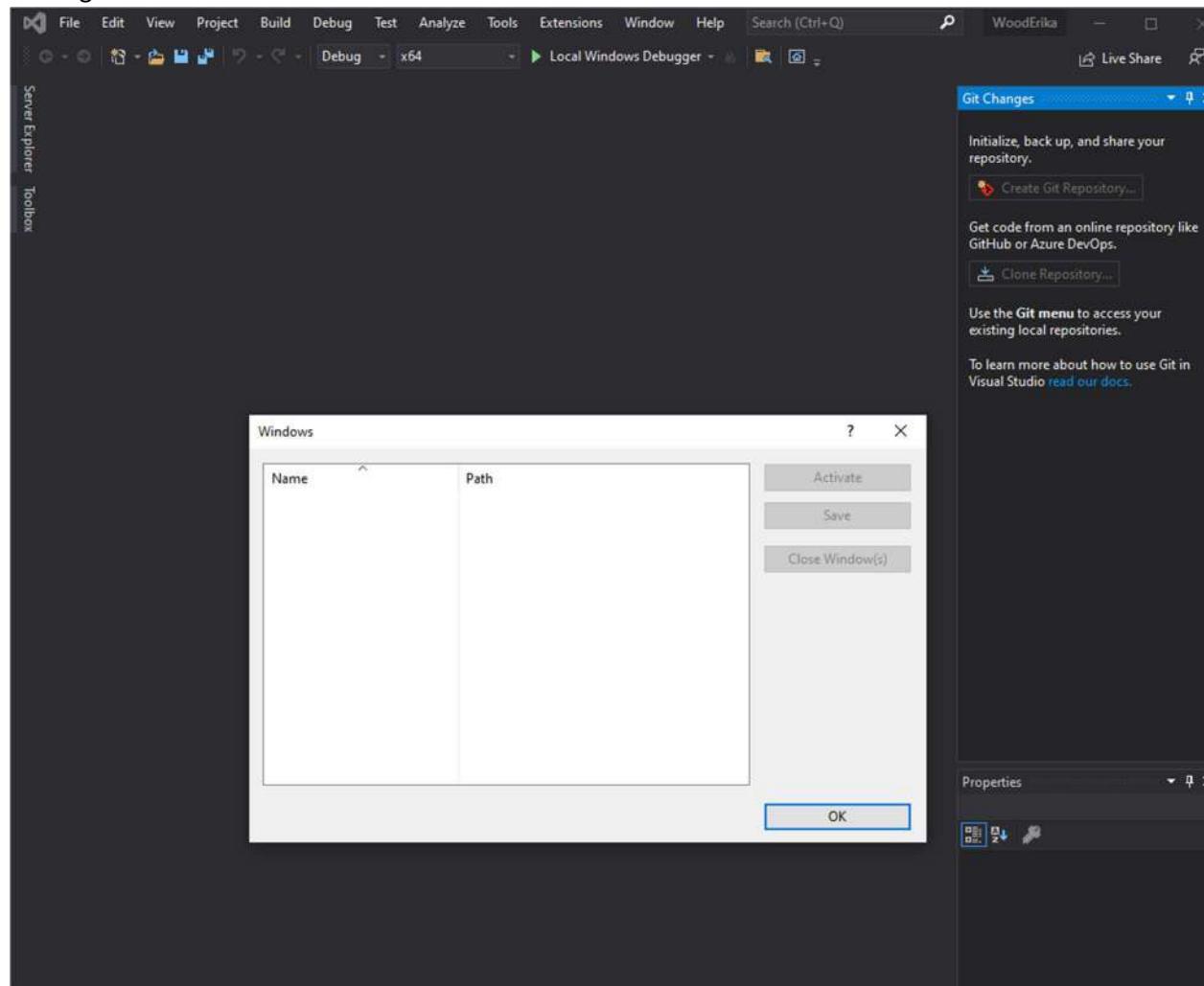
Continue working on my PC:

```
$GameInstallDir: D:\MyGitHubRepos\wooderika\temp\x86\Debug\MyGame_\
$(GameOutputDir) D:\MyGitHubRepos\wooderika\temp\x86\Debug\output\MyGame_\
```



Now updating the solution to make MyGame the default startup project:

Closing solution.

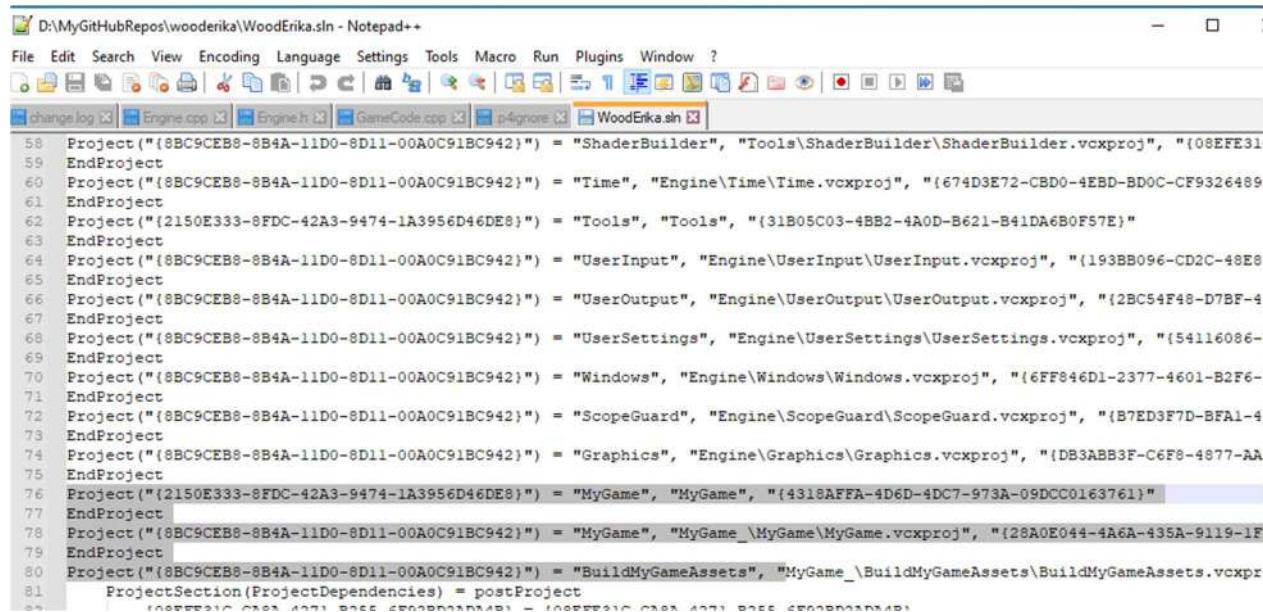


Actually I decided to close VS completely.

Opening the solution file in text editor.

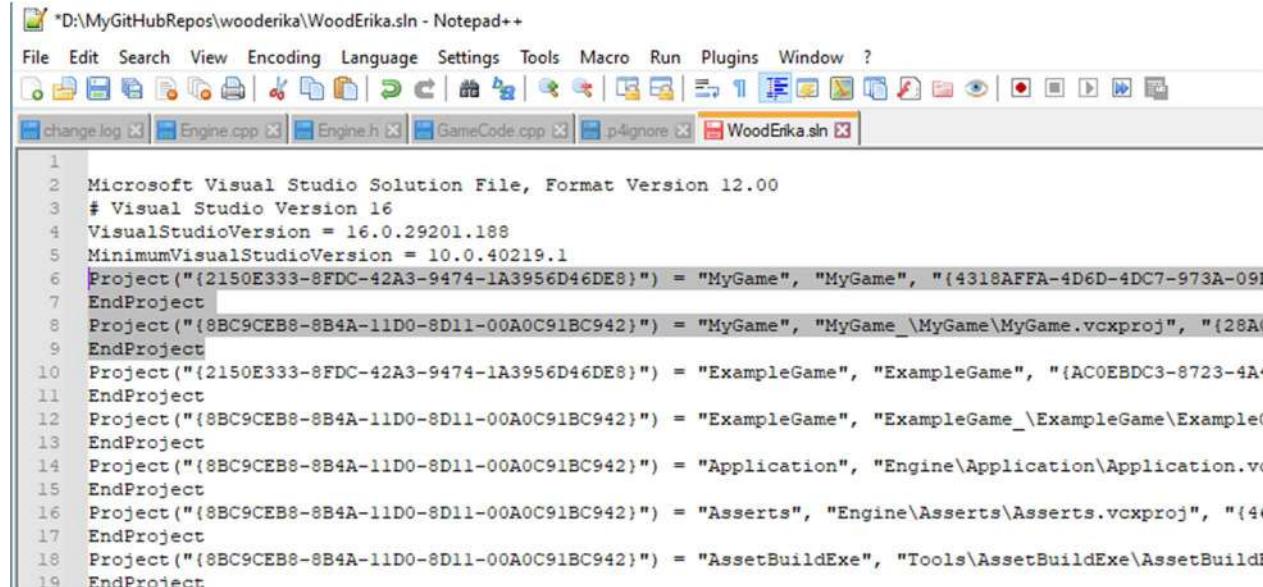
All of the projects are listed towards the top of the file.

MyGame projects is at the bottom of the list of projects.



```
58 Project("{8BC9CEB8-8B4A-11D0-8D11-00A0C91BC942}") = "ShaderBuilder", "Tools\ShaderBuilder\ShaderBuilder.vcxproj", "{08EFE310-  
59 EndProject  
60 Project("{8BC9CEB8-8B4A-11D0-8D11-00A0C91BC942}") = "Time", "Engine\Time\Time.vcxproj", "(674D3E72-CBD0-4EBD-BD0C-CF9326489C-  
61 EndProject  
62 Project("{2150E333-8FDC-42A3-9474-1A3956D46DE8}") = "Tools", "Tools", "{31B05C03-4BB2-4A0D-B621-B41DA6B0F57E};"  
63 EndProject  
64 Project("{8BC9CEB8-8B4A-11D0-8D11-00A0C91BC942}") = "UserInput", "Engine\UserInput\UserInput.vcxproj", "(193BB096-CD2C-48E8-  
65 EndProject  
66 Project("{8BC9CEB8-8B4A-11D0-8D11-00A0C91BC942}") = "UserOutput", "Engine\UserOutput\UserOutput.vcxproj", "(2BC54F48-D7BF-4;  
67 EndProject  
68 Project("{8BC9CEB8-8B4A-11D0-8D11-00A0C91BC942}") = "UserSettings", "Engine\UserSettings\UserSettings.vcxproj", "(54116086-  
69 EndProject  
70 Project("{8BC9CEB8-8B4A-11D0-8D11-00A0C91BC942}") = "Windows", "Engine\Windows\Windows.vcxproj", "(6FF846D1-2377-4601-B2F6-  
71 EndProject  
72 Project("{8BC9CEB8-8B4A-11D0-8D11-00A0C91BC942}") = "ScopeGuard", "Engine\ScopeGuard\ScopeGuard.vcxproj", "(B7ED3F7D-BFA1-4;  
73 EndProject  
74 Project("{2150E333-8FDC-42A3-9474-1A3956D46DE8}") = "MyGame", "MyGame", "{4318AFFA-4D6D-4DC7-973A-09DCC0163761}";  
75 EndProject  
76 Project("{8BC9CEB8-8B4A-11D0-8D11-00A0C91BC942}") = "MyGame", "MyGame_\MyGame\MyGame.vcxproj", "{28A0E044-4A6A-435A-9119-1F;  
77 EndProject  
78 Project("{8BC9CEB8-8B4A-11D0-8D11-00A0C91BC942}") = "BuildMyGameAssets", "MyGame_\BuildMyGameAssets\BuildMyGameAssets.vcxproj",  
79 EndProject  
80 ProjectSection(ProjectDependencies) = postProject  
81     PostBuildEvent = postBuild -> postBuild  
82 EndProjectSection
```

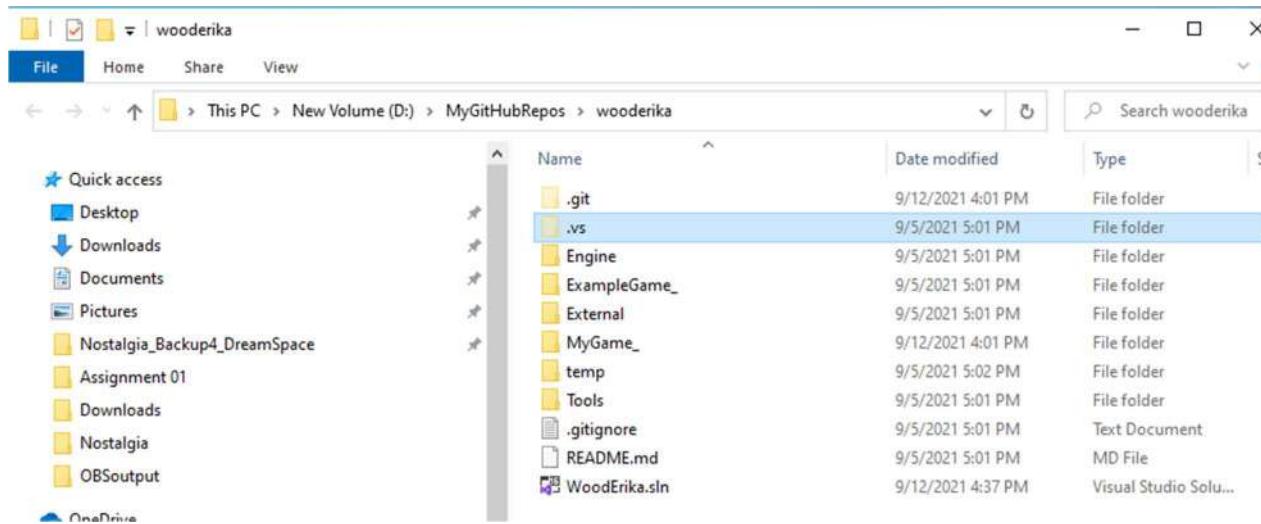
Moving to the top



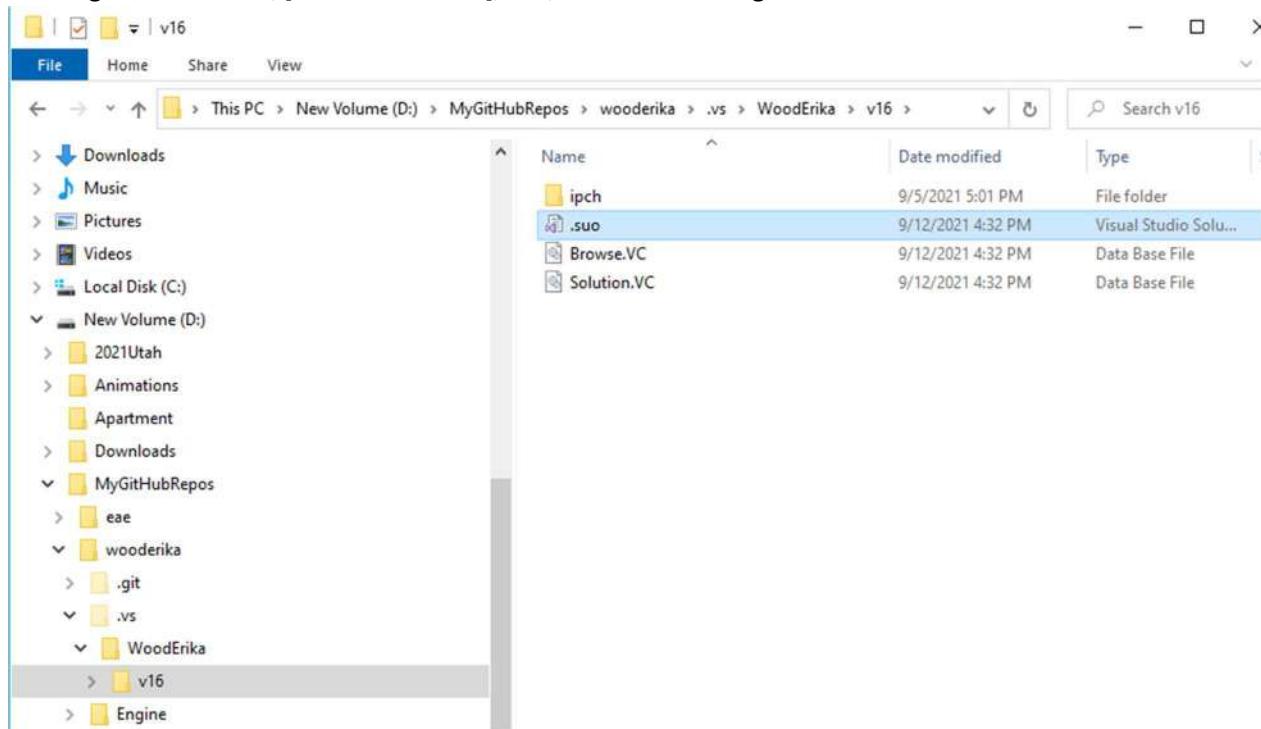
```
1  
2 Microsoft Visual Studio Solution File, Format Version 12.00  
3 # Visual Studio Version 16  
4 VisualStudioVersion = 16.0.29201.188  
5 MinimumVisualStudioVersion = 10.0.40219.1  
6 Project("{2150E333-8FDC-42A3-9474-1A3956D46DE8}") = "MyGame", "MyGame", "{4318AFFA-4D6D-4DC7-973A-09I  
7 EndProject  
8 Project("{8BC9CEB8-8B4A-11D0-8D11-00A0C91BC942}") = "MyGame", "MyGame_\MyGame\MyGame.vcxproj", "{28A0  
9 EndProject  
10 Project("{2150E333-8FDC-42A3-9474-1A3956D46DE8}") = "ExampleGame", "ExampleGame", "{AC0EBDC3-8723-4A4  
11 EndProject  
12 Project("{8BC9CEB8-8B4A-11D0-8D11-00A0C91BC942}") = "ExampleGame", "ExampleGame_\ExampleGame\ExampleG  
13 EndProject  
14 Project("{8BC9CEB8-8B4A-11D0-8D11-00A0C91BC942}") = "Application", "Engine\Application\Application.v  
15 EndProject  
16 Project("{8BC9CEB8-8B4A-11D0-8D11-00A0C91BC942}") = "Assets", "Engine\Assets\Assets.vcxproj", "{46  
17 EndProject  
18 Project("{8BC9CEB8-8B4A-11D0-8D11-00A0C91BC942}") = "AssetBuildExe", "Tools\AssetBuildExe\AssetBuildE  
19 EndProject
```

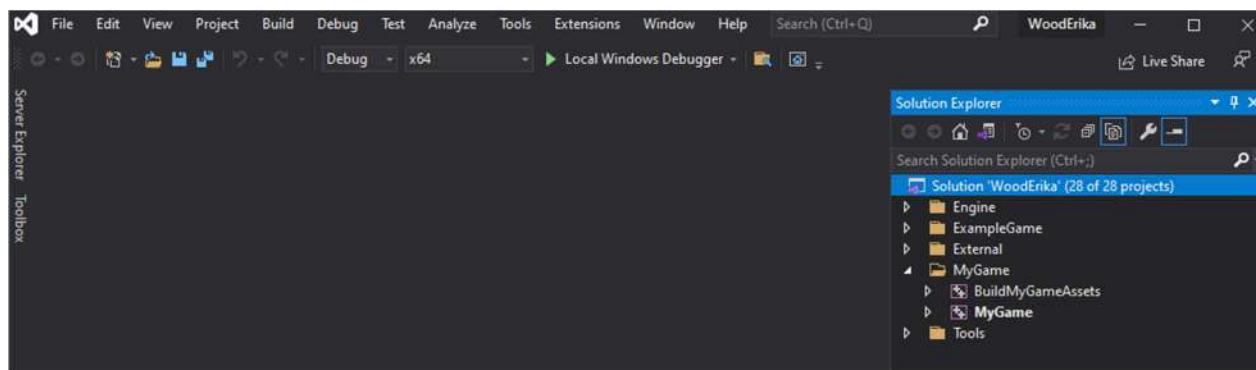
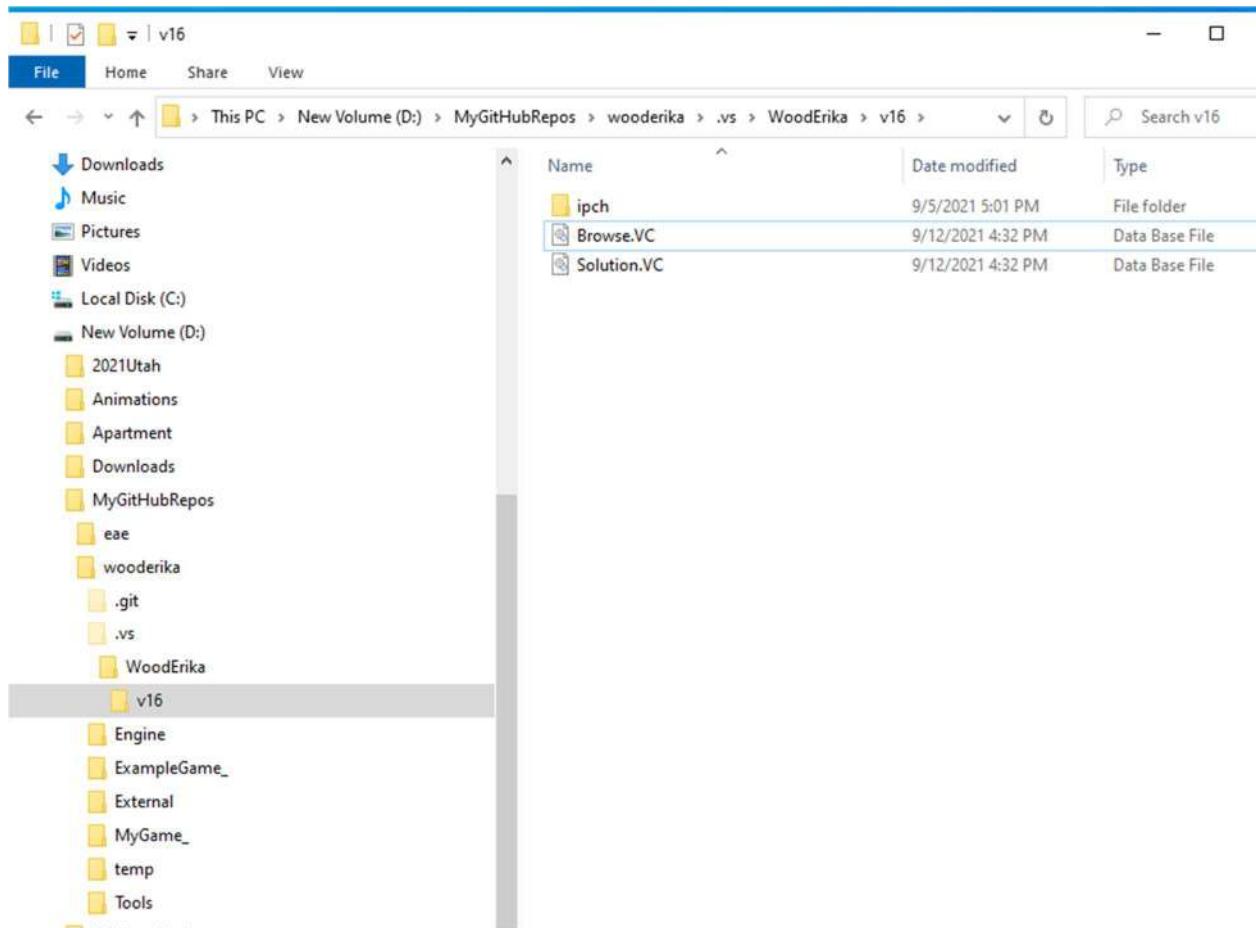
Deleting the solution user settings:

.vs is a hidden folder



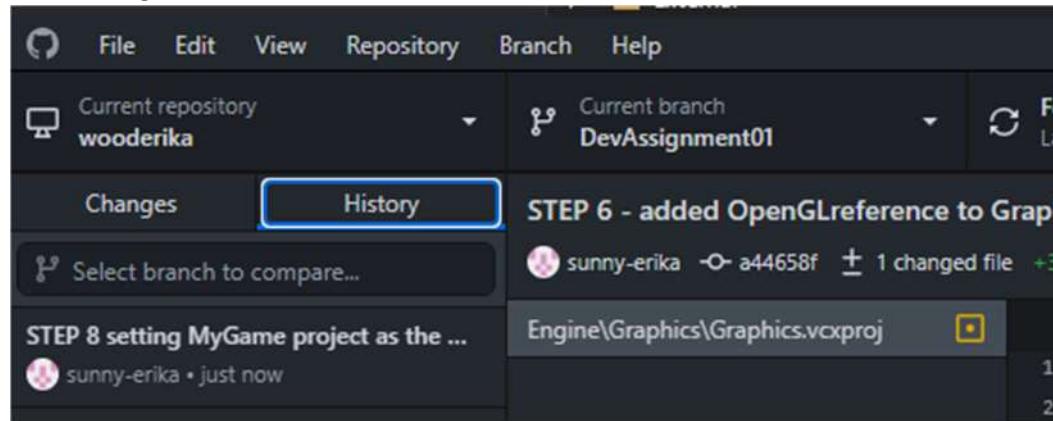
Looking for the file .vs/[YOURSOLUTION]/v16/.suo and deleting it





MyGame project is now bold yay 😊

Committing to Git.

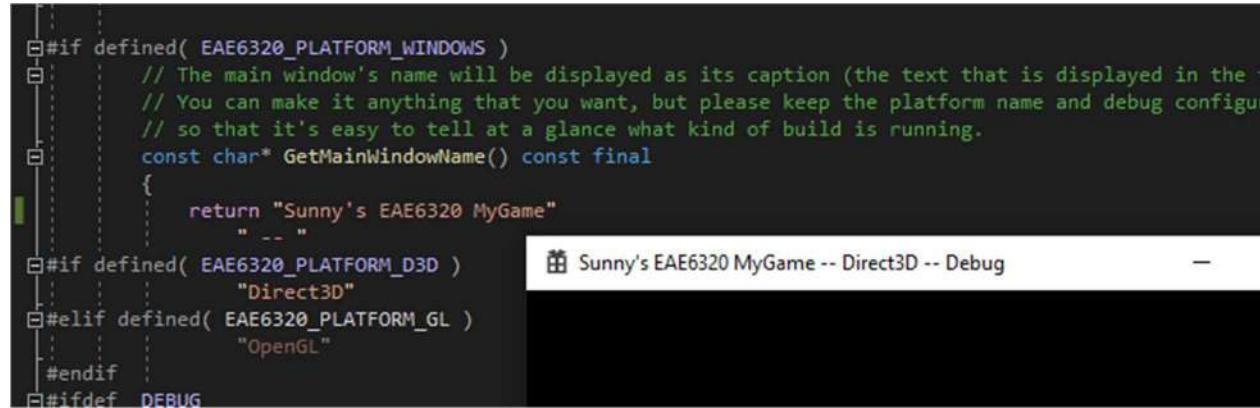


Configuring cMyGame.h

The screenshot shows the Microsoft Visual Studio IDE interface. The title bar includes the standard menu options: File, Edit, View, Project, Build, Debug, Test, Analyze, Tools, Extensions, Window, Help, and a Search field. Below the menu bar, there are several icons for navigating between files and windows. The main window displays the code for `cMyGame.h`. The code is a header file for a game application, specifically for the EAE6320 framework. It defines a class `cMyGame` that inherits from `iApplication`. The code handles different platform configurations: Windows, Direct3D, and OpenGL. It also includes logic for the `_DEBUG` macro and provides a default window class name. The code editor uses color-coded syntax highlighting for C++ keywords, comments, and identifiers.

```
19 //endif
20
21 // Class Declaration
22 //=====
23
24 namespace eae6320
25 {
26     //class cExampleGame final : public Application::iApplication
27     class cMyGame final : public Application::iApplication
28     {
29         // Inherited Implementation
30         //=====
31
32         private:
33
34         // Configuration
35         //-
36
37 #if defined( EAE6320_PLATFORM_WINDOWS )
38     // The main window's name will be displayed as its caption (the text that is displayed in the
39     // You can make it anything that you want, but please keep the platform name and debug config
39     // so that it's easy to tell at a glance what kind of build is running.
40     const char* GetMainWindowName() const final
41     {
42         return "Sunny's EAE6320 MyGame"
43         " -- "
44     }
45 #if defined( EAE6320_PLATFORM_D3D )
46     "Direct3D"
47 #elif defined( EAE6320_PLATFORM_GL )
48     "OpenGL"
49 #endif
50 #ifdef _DEBUG
51     " -- Debug"
52 #endif
53     ;
54 }
55 // Window classes are almost always identified by name;
56 // there is a unique "ATOM" associated with them,
57 // but in practice Windows expects to use the class name as an identifier.
58 // If you don't change the name below
59 // your program could conceivably have problems if it were run at the same time on the same
60 // as one of your classmate's.
61 // You don't need to worry about this for our class,
62 // but if you ever ship a real project using this code as a base you should set this to some
63 // (a generated GUID would be fine since this string is never seen)
64 const char* GetMainWindowClassName() const final { return "Sunny's EAE6320 MyGame Main Windo
65 // The following three icons are provided:
66     // * TDF_EAEGAMERPAD
```

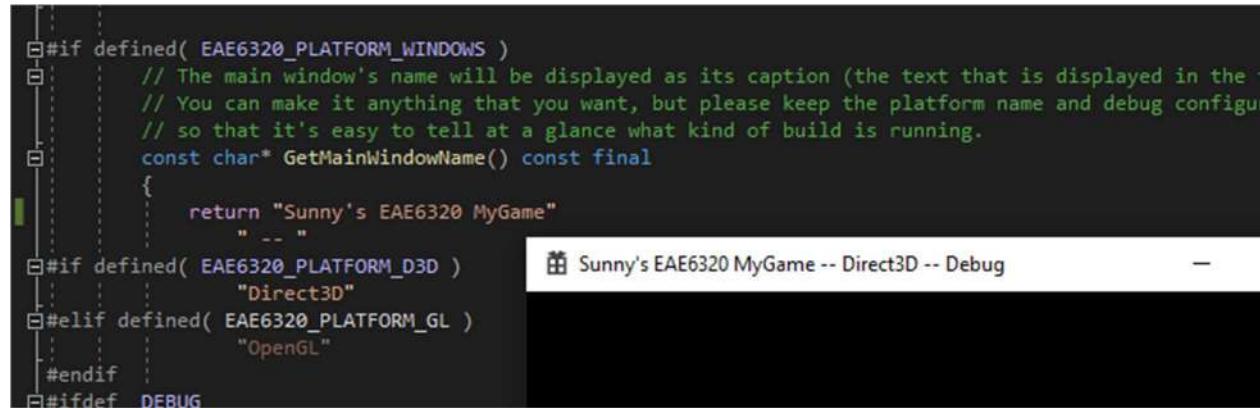
Changing game's window name:



The screenshot shows a code editor on the left and a running application window on the right. The code editor displays C++ code for determining the main window's name based on the platform. The application window title bar shows the text "Sunny's EAE6320 MyGame -- Direct3D -- Debug".

```
#if defined( EAE6320_PLATFORM_WINDOWS )
    // The main window's name will be displayed as its caption (the text that is displayed in the title bar).
    // You can make it anything that you want, but please keep the platform name and debug configuration
    // so that it's easy to tell at a glance what kind of build is running.
    const char* GetMainWindowName() const final
    {
        return "Sunny's EAE6320 MyGame"
        " -- "
#endif defined( EAE6320_PLATFORM_D3D )
        "Direct3D"
#ifndef defined( EAE6320_PLATFORM_GL )
        "OpenGL"
#endif
#endif
#ifndef DEBUG
```

Changed class name as well, but not with the GUID

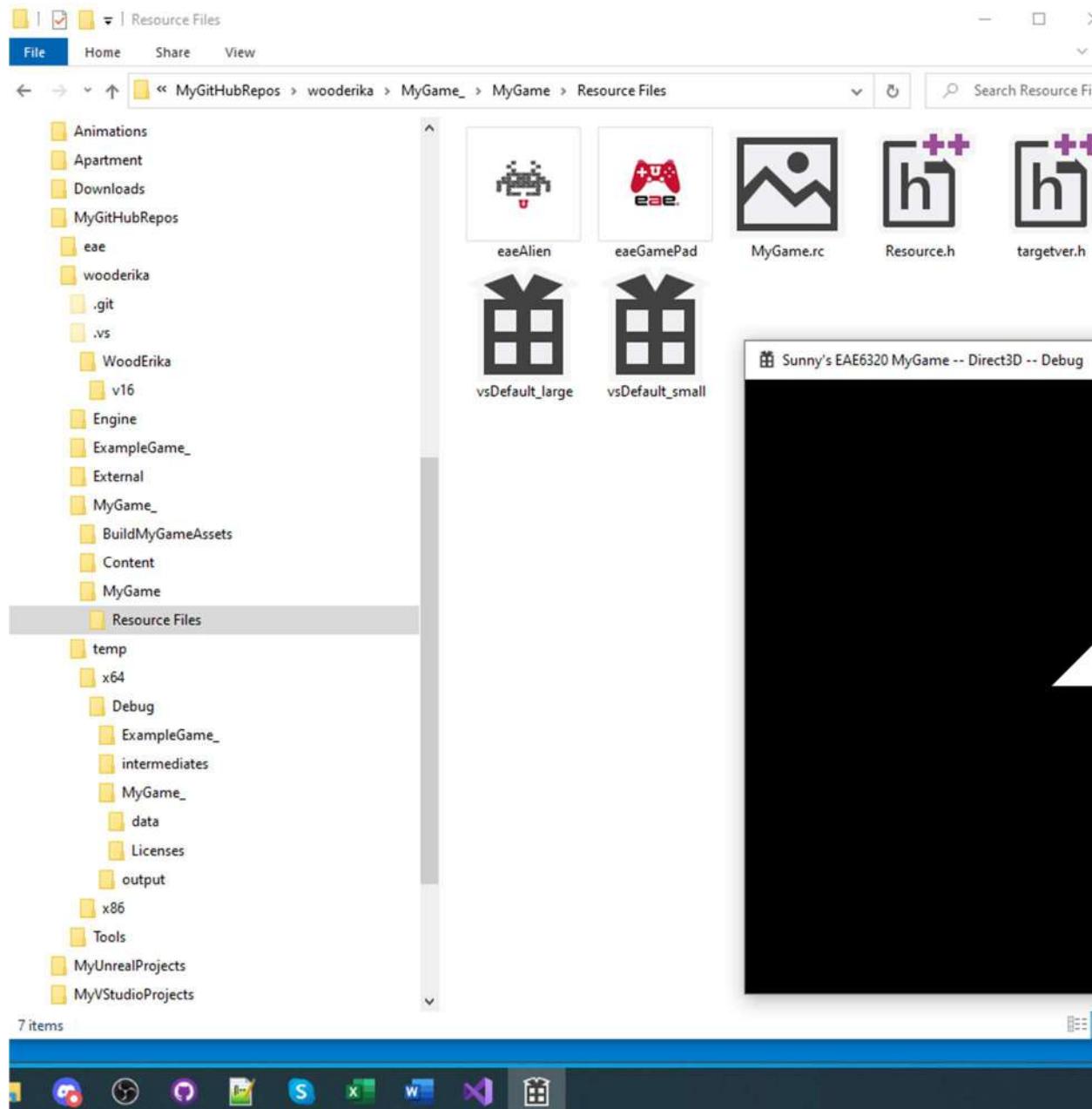


The screenshot shows a code editor on the left and a running application window on the right. The code editor displays C++ code for determining the main window's name based on the platform. The application window title bar shows the text "Sunny's EAE6320 MyGame -- Direct3D -- Debug".

```
#if defined( EAE6320_PLATFORM_WINDOWS )
    // The main window's name will be displayed as its caption (the text that is displayed in the title bar).
    // You can make it anything that you want, but please keep the platform name and debug configuration
    // so that it's easy to tell at a glance what kind of build is running.
    const char* GetMainWindowName() const final
    {
        return "Sunny's EAE6320 MyGame"
        " -- "
#endif defined( EAE6320_PLATFORM_D3D )
        "Direct3D"
#ifndef defined( EAE6320_PLATFORM_GL )
        "OpenGL"
#endif
#endif
#ifndef DEBUG
```

Changing the icon

Current resource folder



I decided to use the alien to see which icons change. There are icons on the game window title, the Windows task bar and on the exe file of the game.

An error msg appeared

The screenshot shows the Microsoft Visual Studio IDE interface. The main window displays the code for `cMyGame.h`. The code includes various #ifdef and #ifndef directives for different platforms and build configurations. It defines several constants, such as `IDI_EAEALIEN` and `IDI_VSDEFAULT_SMALL`, and provides implementations for functions like `GetMainWindowName()` and `GetSmallIconId()`.

In the bottom-left corner, the Error List window is open, showing one error message:

Code	Description
MSB3073	The command "copy D:\MyGitHubRepos\woodenika\temp\x64\Debug\output MyGame_MyGame.exe" D:\MyGitHubRepos\woodenika\temp\x64\Debug\MyGame_MyGame.exe /y

This error indicates that the command to copy the output file failed because it already exists.

I will revert the changes and start again.

The screenshot shows the GitHub Desktop application interface. The top navigation bar includes File, Edit, View, Repository, Branch, and Help. The main area displays a list of commits in the 'Changes' tab, with the most recent commit being 'STEP 8 setting MyGame project as the default startup project' by 'sunny-erika'. A context menu is open over this commit, showing options like 'Revert changes in commit', 'Create branch from commit', 'Create Tag...', 'Cherry-pick commit...', 'Copy SHA', and 'View on GitHub'. The right side of the screen shows the content of the 'MyGame.csproj' file in a code editor. The code is a Visual Studio Solution File (Format Version 12.00) containing multiple project definitions for 'MyGame', 'ExampleGame', 'Graphics', and 'BuildMyGameAssets'. The commit history on the left lists various steps from 'STEP 1 - Uploading Assignment01_solution' to 'STEP 8 setting MyGame project as the default startup project'.

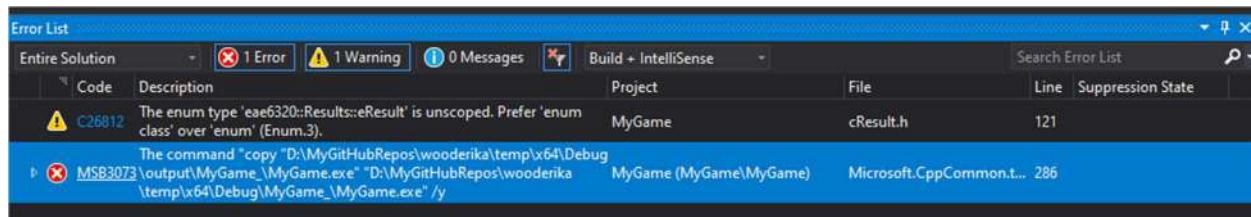
```
@@ -3,6 +3,10 @@ Microsoft Visual Studio Solution File, Format Version 12.00
 3  # Visual Studio Version 16
 4  VisualStudioVersion = 16.0.29201.188
 5  MinimumVisualStudioVersion = 10.0.40219.1
 6  +Project("{2150E333-BFDC-42A3-9474-1A3956D460E8}") = "MyGame", "MyGame", "{431BAFFA-4060-40C7-973A-090CC0163761}"
 7  +EndProject
 8  +Project("{88C9CEB8-8B4A-11D0-8D11-00A0C91BC942}") = "MyGame", "MyGame_VMyGame
 9  +EndProject
 10 Project("{2150E333-BFDC-42A3-9474-1A3956D460E8}") = "ExampleGame", "ExampleGa
 11 me", "{AC0E80C3-8723-44A3-9112-0B863C2C3694}"
 12 EndProject
 13 Project("{88C9CEB8-8B4A-11D0-8D11-00A0C91BC942}") = "ExampleGame", "ExampleGa
 14 me_\ExampleGame\ExampleGame.vcxproj", "{C4A8A8ED-1817-46FC-97E1-E77CA857D9E}"
 15 @@ -73,10 +77,6 @@ Project("{88C9CEB8-8B4A-11D0-8D11-00A0C91BC942}") = "ScopeG
 16   +", "Engine\ScopeG
 17  EndProject
 18 Project("{88C9CEB8-8B4A-11D0-8D11-00A0C91BC942}") = "Graphics", "Engine\Graph
 19  ics\Graphics.vcxproj", "{D03AB83F-C6F8-4577-AA12-0EC42A1943E6}"
 20 EndProject
 21 -Project("{2150E333-BFDC-42A3-9474-1A3956D460E8}") = "MyGame", "MyGame", "{431
 22 BAFFA-4060-40C7-973A-090CC0163761}"
 23 -EndProject
 24 -Project("{88C9CEB8-8B4A-11D0-8D11-00A0C91BC942}") = "MyGame", "MyGame_VMyGame
 25 +VMyGame.vcxproj", "{28A0E044-4A6A-435A-9119-1F46CC1D66A5}"
 26 -EndProject
 27 Project("{88C9CEB8-8B4A-11D0-8D11-00A0C91BC942}") = "BuildMyGameAssets", "MyG
 28 ame_BuildMyGameAssets\BuildMyGameAssets.vcxproj", "{9CB26815-6856-45EF-9AD3-1
 29 76BF5C5EC78}"
 30 -ProjectSection(ProjectDependencies) = postProject
 31     {08EFE31C-CABA-4271-B255-6F92B02AD4B} = {08EFE31C-CABA-4271-B255-6F92
```

Same error, but only for the x64.

The screenshot shows a Microsoft Visual Studio interface with the following components:

- Code Editor:** Displays the file `cMyGame.h` with C++ code. The code includes defines for platform-specific headers, class declarations, and configuration logic for different platforms (Windows, D3D, GL).
- Solution Explorer:** Shows the project structure for "WoodErika". The `MyGame` project contains files `cMyGame.cpp`, `cMyGame.h`, and `EntryPoint.cpp`.
- Properties:** Shows the properties for the solution "WoodErika".
 - Misc:**
 - (Name) WoodErika
 - Active config Debug|x86
 - Description
 - Path D:\MyGitHub\WoodErika
 - Startup project MyGame (MyGame)
- Output:** Shows the build log:

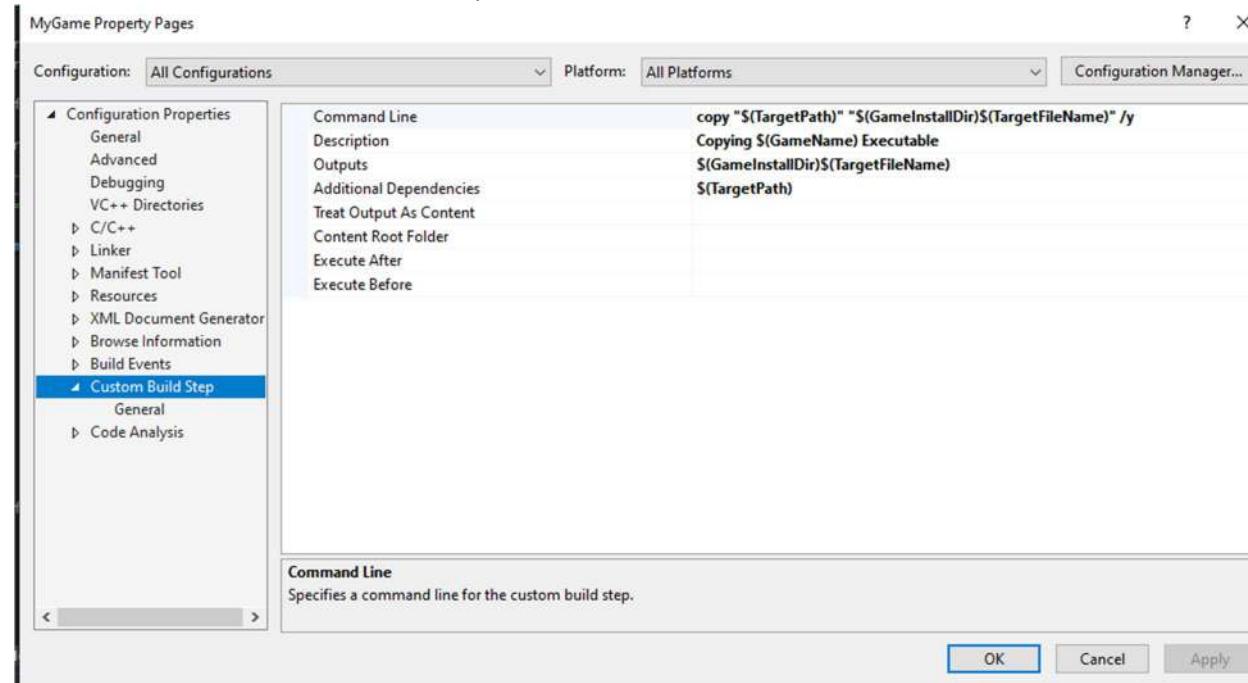
```
3>Building MyGame_ Assets
2>EntryPoint.cpp
2>cMyGame.cpp
2>Generating Code...
2>MyGame.vcxproj -> D:\MyGitHubRepos\wooderika\temp\x86\Debug\output\MyGame_\MyGame.exe
2>Copying MyGame_ Executable
2>      1 file(s) copied.
===== Build: 3 succeeded, 0 failed, 25 up-to-date, 0 skipped ======
```

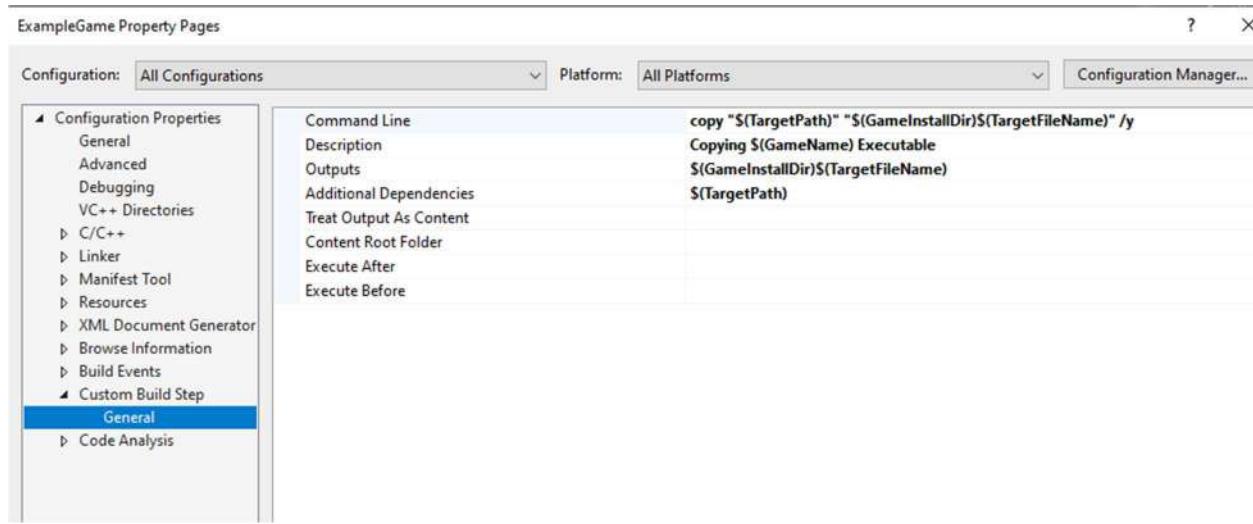


There is a y in the command.

Hmmm, trying to remember where to set that.

Found a reference in the Solution Setup instructions





The y seems correct

Deleting the temp folder helped

The screenshot shows the Microsoft Visual Studio IDE interface with the following components:

- Code Editor:** Displays the file `cMyGame.h` with C++ code. The code includes defines for EAE6320_CEXAMPLEGAME_H and EAE6320_CMYGAME_H, includes for Application/iApplication.h and Results/Results.h, and a class definition for `cMyGame` derived from `iApplication`. It also includes configuration logic for the Windows platform.
- Solution Explorer:** Shows the solution structure for 'WoodErika' with projects like Engine, ExampleGame, External, and MyGame, along with their respective files and assets.
- Properties:** Shows the properties for the solution, including the name 'WoodErika', active configuration 'Debug|x64', and startup project 'MyGame (MyGame)'.
- Output:** Displays the build logs, showing the build process for multiple projects (e.g., Engine, ExampleGame) and the final build statistics: 28 succeeded, 0 failed, 0 up-to-date, 0 skipped.

```
/*
 * This class is your specific game
 */
#ifndef EAE6320_CEXAMPLEGAME_H
#define EAE6320_CEXAMPLEGAME_H
#endif // EAE6320_CMYGAME_H

// Includes
// -----
#include <Engine/Application/iApplication.h>
#include <Engine/Results/Results.h>

#if defined( EAE6320_PLATFORM_WINDOWS )
#include "Resource Files/Resource.h"
#endif

// Class Declaration
// -----
namespace eae6320
{
    //class cExampleGame final : public Application::iApplication
    class cMyGame final : public Application::iApplication
    {
        // Inherited Implementation
        // -----
        private:
            // Configuration
            // -----
            #if defined( EAE6320_PLATFORM_WINDOWS )
                // The main window's name will be displayed as its caption (the text that is displayed in the title bar).
                // You can make it anything that you want, but please keep the platform name and debug configuration at the end
                // so that it's easy to tell at a glance what kind of build is running.
                const char* GetMainWindowName() const final
                {
                    return "John-Paul's EAE6320 MyGame";
                }
            #endif
    };
}
```

Show output from: Build
28>Built D:\MyGitHubRepos\wooderika\Engine\Content\shaders\fragment\standard.shader
28>Built D:\MyGitHubRepos\wooderika\Engine\Content\shaders\vertex\vertexinputlayout_mesh.shader
28>Installed Lua.txt
28>Installed mcpp.txt
26>Generating Code...
25>Generating Code...
26>MyGame.vcxproj -> D:\MyGitHubRepos\wooderika\temp\x64\Debug\output\MyGame_\MyGame.exe
25>ExampleGame.vcxproj -> D:\MyGitHubRepos\wooderika\temp\x64\Debug\output\ExampleGame_\ExampleGame.exe
25>Copying ExampleGame_ Executable
25> 1 file(s) copied.
26>Copying MyGame_ Executable
26> 1 file(s) copied
***** Build: 28 succeeded, 0 failed, 0 up-to-date, 0 skipped *****

(Name)
The name of the solution file.

The screenshot shows the Microsoft Visual Studio IDE interface. The code editor displays the file `cMyGame.h` with the following content:

```
1  /* This class is your specific game */
2  */
3  */
4
5  #ifndef EAE6320_CEXAMPLEGAME_H
6  #define EAE6320_CEXAMPLEGAME_H
7
8  #ifndef EAE6320_CMYGAME_H
9  #define EAE6320_CMYGAME_H
10
11 // Includes
12 //-----
13
14 #include <Engine/Application/iApplication.h>
15 #include <Engine/Results/Results.h>
16
17 #if defined( EAE6320_PLATFORM_WINDOWS )
18     #include "Resource Files/Resource.h"
19 #endif
20
21 // Class Declaration
22 //-----
23
24 namespace eae6320
25 {
26     //class cExampleGame final : public Application::iApplication
27     class cMyGame final : public Application::iApplication
28     {
29         // Inherited Implementation
30         //-----
31
32         private:
33
34         // Configuration
35         //-----
36
37 #if defined( EAE6320_PLATFORM_WINDOWS )
38         // The main window's name will be displayed as its caption (the text that is displayed in the title bar).
39         // You can make it anything that you want, but please keep the platform name and debug configuration at the end
40         // so that it's easy to tell at a glance what kind of build is running.
41         const char* GetMainWindowName() const final
42         {
43             return "John-Paul's EAE6320 MyGame";
44         }
45     };
46 }
```

The Solution Explorer window shows the project structure:

- Solution 'WoodErika' (28 of 28 p)
- Engine
- Application
- Assets
- Concurrency
- Graphics
- Logging
- Math
- Physics
- Platform
- Results
- ScopeGuard
- Time
- UserInput
- UserOutput
- UserSettings
- Windows
- ExampleGame
- BuildExampleGameAsset
- ExampleGame
- External
- MyGame
- BuildMyGameAssets
- MyGame
- Build References
- External Dependencies

The Properties window shows the following settings for the project:

- Misc
 - (Name) WoodErika
 - Active config Debug|x86
 - Description
 - Path D:\MyGitHubRepos\WoodErika
 - Startup project MyGame (MyGame)

The Output window displays the build logs:

```
Show output from: Build
25>Copying ExampleGame_ Executable
26>Copying MyGame_ Executable
25>    1 file(s) copied.
26>    1 file(s) copied.
27>Built D:\MyGitHubRepos\WoodErika\Engine\Content\shaders/fragment/standard.fragment
28>Built D:\MyGitHubRepos\WoodErika\Engine\Content\shaders/fragment/standard.shader
28>Built D:\MyGitHubRepos\WoodErika\Engine\Content\shaders/vertex/vertexinputlayout_mesh.fragment
27>Built D:\MyGitHubRepos\WoodErika\Engine\Content\shaders/vertex/vertexinputlayout_mesh.shader
28>Installed Lua.txt
28>Installed mcpp.txt
27>Installed Lua.txt
27>Installed mcpp.txt
----- Build: 28 succeeded, 0 failed, 0 up-to-date, 0 skipped -----
```

Redoing the setting the startup project:
Oh maybe I can do an undo on the local commit

File Edit View Repository Branch Help

Current repository
wooderika

Current branch
DevAssignment01

Push origin
Last fetched 33 minutes ago

Changes History

0 changed files

No local changes

There are no uncommitted changes in this repository. Here are some friendly suggestions for what to do next.

Push commits to the origin remote
You have 1 local commit waiting to be pushed to the remote.
Always available in the toolbar when there are local commits waiting to be pushed or **Ctrl P**

Push origin

Open the repository in your external editor
Select your editor in [Options](#)
Repository menu or **Ctrl Shift A**

Open in Notepad++

View the files of your repository in Explorer
Repository menu or **Ctrl Shift F**

Show in Explorer

Summary (required)

Description

Commit to DevAssignment01

Committed 31 minutes ago
Revert "STEP 8 setting MyGame project as the default startup project"

Undo

Revert "STEP 8 setting MyGame project as the default startu...

sunny-erika • just now

This reverts commit 7144c58dde09a860a159e6a3862d5371d941e030.

Undoing the revert

Nope that didn't work

D:\MyGitHubRepos\wooderika\WoodErika.sln - Notepad++

File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?



change.log Engine.cpp Engine.h GameCode.cpp .p4ignore WoodErika.sln

```
1 Microsoft Visual Studio Solution File, Format Version 12.00
2 # Visual Studio Version 16
3 VisualStudioVersion = 16.0.29201.188
4 MinimumVisualStudioVersion = 10.0.40219.1
5 Project("{2150E333-8FDC-42A3-9474-1A3956D46DE8}") = "ExampleGame", "ExampleGame", "{AC0EBDC3-8723-4A43-9112-DB863C2C3694}"
6 EndProject
7 Project("{8BC9CEB8-8B4A-11D0-8D11-00A0C91BC942}") = "ExampleGame", "ExampleGame_\ExampleGame\ExampleGame.vcxproj", "{C4A8A8...
8 EndProject
9 Project("{8BC9CEB8-8B4A-11D0-8D11-00A0C91BC942}") = "Application", "Engine\Application\Application.vcxproj", "{E9A1C1DB-D62...
10 EndProject
11 Project("{8BC9CEB8-8B4A-11D0-8D11-00A0C91BC942}") = "Asserts", "Engine\Asserts\Asserts.vcxproj", "{464A6551-FCA9-4027-BD9E-...
12 EndProject
13 EndProject
```

I will say discard changes on this:

File Edit View Repository Branch Help

Current repository woorderika Current branch DevAssignment01 Fetch origin Last fetched 37 minutes ago

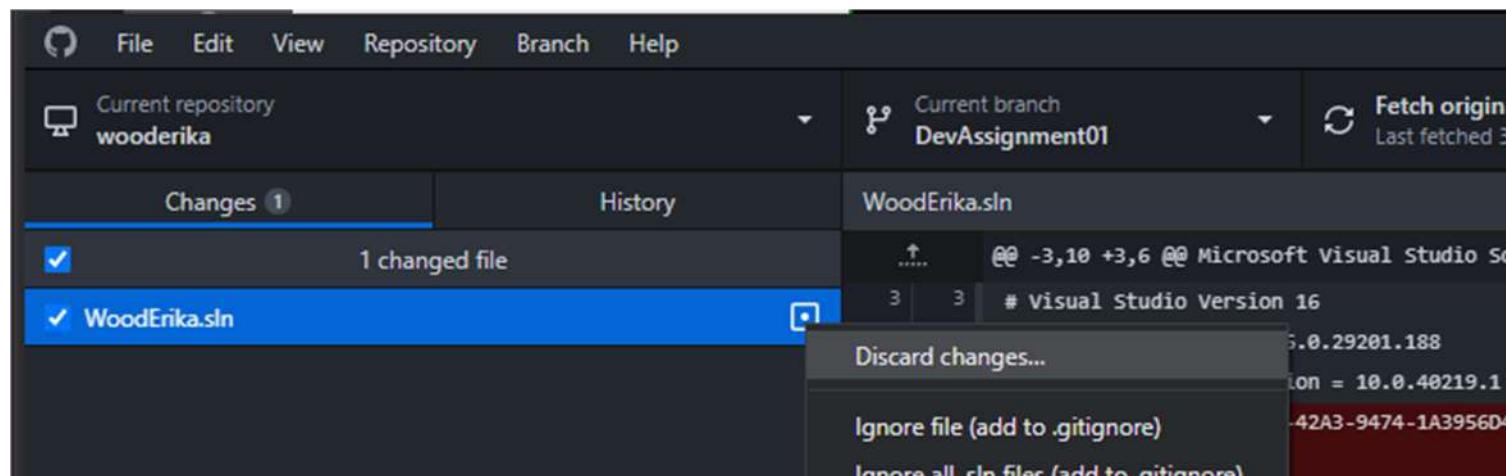
Changes 1 History WoodErika.sln New

1 changed file WoodErika.sln

```
... @@ -3,10 +3,6 @@ Microsoft Visual Studio Solution File, Format Version 12.00
 3 | 3 # Visual Studio Version 16
 4 | 4 VisualStudioVersion = 16.0.29201.188
 5 | 5 MinimumVisualStudioVersion = 10.0.40219.1
 6 | -Project("{2150E333-8FDC-42A3-9474-1A3956D46DE8}") = "MyGame", "MyGame", "{4318AFFA-4D60-4DC7-973A-09DCC0163761}"
 7 | -EndProject
 8 | -Project("{8BC9CE88-8B4A-11D0-8D11-00A0C91BC942}") = "MyGame", "MyGame\MyGame\MyGame.vcxproj", "{28A0E044-4A6A-435A-9119-1F46D66A5}"
 9 | -EndProject
10 | 6 Project("{2150E333-8FDC-42A3-9474-1A3956D46DE8}") = "ExampleGame", "ExampleGame", "{AC0EBDC3-8723-4A43-9112-DB863C2C3694}"
11 | 7 EndProject
12 | 8 Project("{8BC9CE88-8B4A-11D0-8D11-00A0C91BC942}") = "ExampleGame", "ExampleGame\ExampleGame\ExampleGame.vcxproj", "{C4A8A8ED17-46FC-97E1-E77CA8057D9E}"
... @@ -77,6 +73,10 @@ Project("{8BC9CE88-8B4A-11D0-8D11-00A0C91BC942}") = "ScopeGuard", "Engine\ScopeG
77 | 73 EndProject
78 | 74 Project("{8BC9CE88-8B4A-11D0-8D11-00A0C91BC942}") = "Graphics", "Engine\Graphics\Graphics.vcxproj", "{DB3ABB3F-C6F8-4877-AA12C42A1943E6}"
79 | 75 EndProject
76 | +Project("{2150E333-8FDC-42A3-9474-1A3956D46DE8}") = "MyGame", "MyGame", "{4318AFFA-4D60-4DC7-973A-09DCC0163761}"
77 | +EndProject
78 | +Project("{8BC9CE88-8B4A-11D0-8D11-00A0C91BC942}") = "MyGame", "MyGame\MyGame\MyGame.vcxproj", "{28A0E044-4A6A-435A-9119-1F46D66A5}"
79 | +EndProject
80 | 80 Project("{8BC9CE88-8B4A-11D0-8D11-00A0C91BC942}") = "BuildMyGameAssets", "MyGame\BuildMyGameAssets\BuildMyGameAssets.vcxproj", "{9CB26815-6B56-45EF-9AD3-176BF5C5EC78}"
81 | 81 ProjectSection(ProjectDependencies) = postProject
82 | 82 {08EFE31C-CA8A-4271-B255-6F92BD2ADA48} = {08EFE31C-CA8A-4271-B255-6F92BD2ADA48}
... @@
```

Revert "STEP 8 setting MyGame project as the default startup proj
This reverts commit 7144c58dde09a860a159e6a3862d5371d941e030.
Undoing the revert

Commit to DevAssignment01

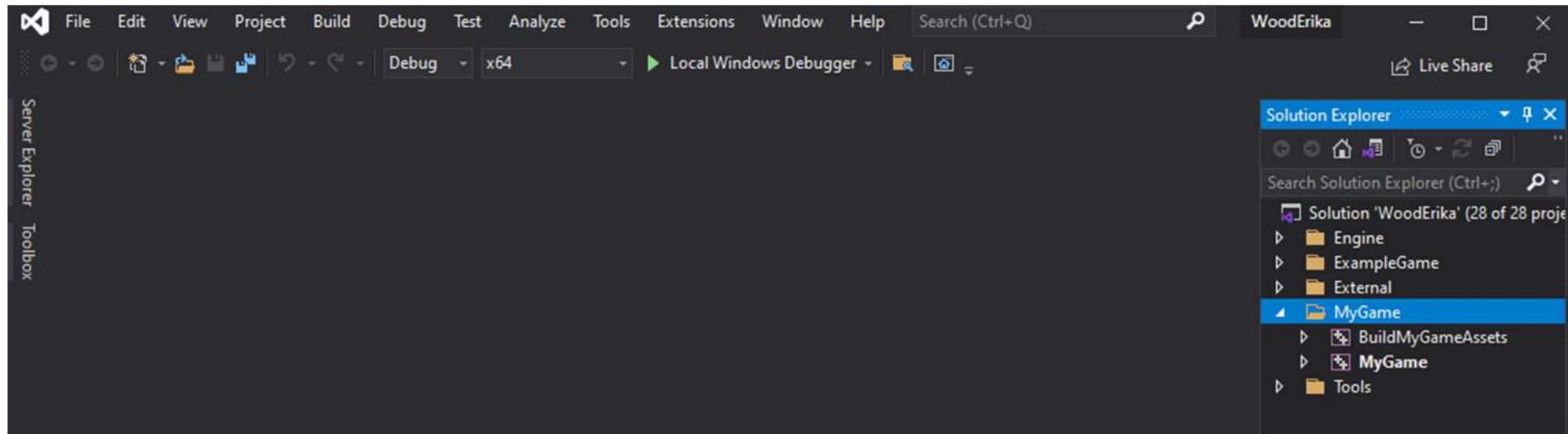


That worked 😊

The screenshot shows the Notepad++ editor window with the file 'WoodErika.sln' open. The title bar reads 'D:\MyGitHubRepos\wooderika\WoodErika.sln - Notepad++'. The menu bar includes 'File', 'Edit', 'Search', 'View', 'Encoding', 'Language', 'Settings', 'Tools', 'Macro', 'Run', 'Plugins', 'Window', and '?'. The toolbar below has various icons for file operations. The tabs at the bottom include 'change.log', 'Engine.cpp', 'Engine.h', 'GameCode.cpp', '.p4ignore', and 'WoodErika.sln'. The code content of 'WoodErika.sln' is as follows:

```
1 Microsoft Visual Studio Solution File, Format Version 12.00
2 # Visual Studio Version 16
3 VisualStudioVersion = 16.0.29201.188
4 MinimumVisualStudioVersion = 10.0.40219.1
5 Project("{2150E333-8FDC-42A3-9474-1A3956D46DE8}") = "MyGame", "MyGame", "{4318AFFA-4D6D-4DC7-973A-09DCC0163761}"
6 EndProject
7 Project("{8BC9CEB8-8B4A-11D0-8D11-00A0C91BC942}") = "MyGame", "MyGame_\MyGame\MyGame.vcxproj", "{28A0E044-4A6A-435A-9119-1B"
8 EndProject
9 Project("{2150E333-8FDC-42A3-9474-1A3956D46DE8}") = "ExampleGame", "ExampleGame", "{AC0EBDC3-8723-4A43-9112-DB863C2C3694}"
10 EndProject
11 Project("{8BC9CEB8-8B4A-11D0-8D11-00A0C91BC942}") = "ExampleGame", "ExampleGame_\ExampleGame\ExampleGame.vcxproj", "{C4A8A8
12 EndProject
13 Project("{8BC9CEB8-8B4A-11D0-8D11-00A0C91BC942}") = "Application", "Engine\Application\Application.vcxproj", "{E9A1C1DB-D62
14 EndProject
15 }
```

Closing VS and deleting suo



The screenshot shows the Microsoft Visual Studio IDE interface with the following components:

- Code Editor:** Displays the file `cMyGame.cpp` with C++ code. The code includes includes for `cMyGame.h`, `Asserts.h`, and `UserInput.h`. It contains logic for handling user input, specifically checking for the ESC key press to exit the application.
- Solution Explorer:** Shows the solution structure for 'WoodErika' with 28 projects. The `MyGame` project is expanded, showing its contents: `BuildMyGameAssets`, `MyGame` (which contains `References`, `External Dependencies`, `Resource Files`, `cMyGame.cpp`, `cMyGame.h`, and `EntryPoint.cpp`), and `Tools`.
- Properties:** Shows the properties for the `WoodErika` solution, including the active configuration as `Debug|x64`.
- Output:** Shows the build log output from the 'Build' window, indicating a successful build with 2 succeeded, 0 failed, 26 up-to-date, and 0 skipped.

```
1 // Includes
2 //=====
3
4 #include "cMyGame.h"
5
6 #include <Engine/Asserts/Asserts.h>
7 #include <Engine/UserInput/UserInput.h>
8
9 // Inherited Implementation
10 //-----
11
12 // Run
13 //-----
14
15 //void eae6320::cExampleGame::UpdateBasedOnInput()
16 void eae6320::cMyGame::UpdateBasedOnInput()
17 {
18     // Is the user pressing the ESC key?
19     if ( UserInput::IsKeyPressed( UserInput::KeyCodes::Escape ) )
20     {
21         // Exit the application
22         const auto result = Exit( EXIT_SUCCESS );
23         EAE6320_ASSERT( result );
24     }
25 }
26
27 // Initialize / Clean Up
28 //-----
29
30 eae6320::cResult eae6320::cMyGame::Initialize()
31 {
32     return Results::Success;
33 }
34
35 eae6320::cResult eae6320::cMyGame::CleanUp()
36 {
37     return Results::Success;
38 }
39
```

Output window content:

```
Show output from: Build
Build started...
1>----- Build started: Project: BuildExampleGameAssets, Configuration: Debug x64 -----
2>----- Build started: Project: BuildMyGameAssets, Configuration: Debug x64 -----
1>Building ExampleGame_Assets
2>Building MyGame_Assets
===== Build: 2 succeeded, 0 failed, 26 up-to-date, 0 skipped ======
```

The screenshot shows a Microsoft Visual Studio interface with the following components:

- Code Editor:** The main window displays the file `cMyGame.cpp` with the following code:

```
1 // Includes
2 //=====
3
4 #include "cMyGame.h"
5
6 #include <Engine/Asserts/Asserts.h>
7 #include <Engine/UserInput/UserInput.h>
8
9 // Inherited Implementation
10 //=====
11
12 // Run
13 //-----
14
15 //void eae6320::cExampleGame::UpdateBasedOnInput()
16 void eae6320::cMyGame::UpdateBasedOnInput()
17 {
18     // Is the user pressing the ESC key?
19     if (UserInput::IsKeyPressed(UserInput::KeyCodes::Escape))
20     {
21         // Exit the application
22         const auto result = Exit(EXIT_SUCCESS);
23         EAE6320_ASSERT(result);
24     }
25 }
26
27 // Initialize / Clean Up
28 //-----
29
30 eae6320::cResult eae6320::cMyGame::Initialize()
31 {
32     return Results::Success;
33 }
34
35 eae6320::cResult eae6320::cMyGame::CleanUp()
36 {
37     return Results::Success;
38 }
```

- Solution Explorer:** Shows the solution structure for "WoodErika" with 28 projects, including `Engine`, `ExampleGame`, `External`, and `MyGame`.
- Properties:** The properties for the `WoodErika` solution are displayed, showing the active configuration as `Debug|x86`.
- Output:** The output window shows build logs:

```
1>----- Build started: Project: BuildExampleGameAssets, Configuration: Debug Win32 -----
2>----- Build started: Project: BuildMyGameAssets, Configuration: Debug Win32 -----
1>Building ExampleGame_Assets
2>Building MyGame_Assets
===== Build: 2 succeeded, 0 failed, 26 up-to-date, 0 skipped ======
```

Both configurations are building.

So now going back to the cMyGame.h configuration:

Solution is building

The screenshot shows the Microsoft Visual Studio IDE interface. The main window displays the code for `cMyGame.h`. The code includes definitions for window classes, icons, and various methods like `UpdateBasedOnInput` and `Initialize`. The Solution Explorer on the right shows the project structure for 'WoodErika' with multiple solution files and external dependencies. The Properties window shows the current configuration is 'WoodErika' for 'Debug|x86'. The Output window at the bottom shows the build log, indicating a successful build with 3 succeeded projects.

```
File Edit View Project Build Debug Test Analyze Tools Extensions Window Help Search (Ctrl+Q) WoodErika Sign in Live Share
```

```
cMyGame.h
```

```
#include "MyGame.h"
#include <Windows.h>
#include <string>

class cMyGame : public cGame
{
public:
    cMyGame();
    ~cMyGame();

    void Run();

private:
    void UpdateBasedOnInput() final;
    void Initialize() final;
    void CleanUp() final;

    // Window classes are almost always identified by name;
    // there is a unique "ATOM" associated with them,
    // but in practice Windows expects to use the class name as an identifier.
    // If you don't change the name below
    // your program could conceivably have problems if it were run at the same time on the same computer
    // as one of your classmate's.
    // You don't need to worry about this for our class,
    // but if you ever ship a real project using this code as a base you should set this to something unique
    // (a generated GUID would be fine since this string is never seen)
    const char* GetMainWindowClassName() const final { return "Sunny's EAE6320 MyGame Main Window Class"; }

    // The following three icons are provided:
    // * IDI_EAEGAMEPAD
    // * IDI_EAALIEN
    // * IDI_VSDEFAULT_LARGE / IDI_VSDEFAULT_SMALL
    // If you want to try creating your own a convenient website that will help is: http://icoconvert.com/
    //const WORD* GetLargeIconId() const final { static constexpr WORD iconId_large = IDI_VSDEFAULT_LARGE; return &iconId_large; }
    //const WORD* GetSmallIconId() const final { static constexpr WORD iconId_small = IDI_VSDEFAULT_SMALL; return &iconId_small; }
    const WORD* GetLargeIconId() const final { static constexpr WORD iconId_large = IDI_EAALIEN; return &iconId_large; }
    const WORD* GetSmallIconId() const final { static constexpr WORD iconId_small = IDI_EAALIEN; return &iconId_small; }

    // Run
    //-----

    void UpdateBasedOnInput() final;
    void Initialize() final;
    void CleanUp() final;
};

100% No issues found
```

```
Output
```

```
Show output from: Build
Build started...
1>----- Build started: Project: BuildExampleGameAssets, Configuration: Debug Win32 -----
2>----- Build started: Project: MyGame (MyGame\MyGame), Configuration: Debug Win32 -----
3>----- Build started: Project: BuildMyGameAssets, Configuration: Debug Win32 -----
1>Building ExampleGame_Assets
3>Building MyGame_Assets
2>EntryPoint.cpp
2>cMyGame.cpp
2>Generating Code...
2>MyGame.vcxproj -> D:\MyGitHubRepos\wooderika\temp\x86\Debug\output\MyGame_\MyGame.exe
2>Copying MyGame_ Executable
2>      1 file(s) copied.
===== Build: 3 succeeded, 0 failed, 25 up-to-date, 0 skipped ======
```

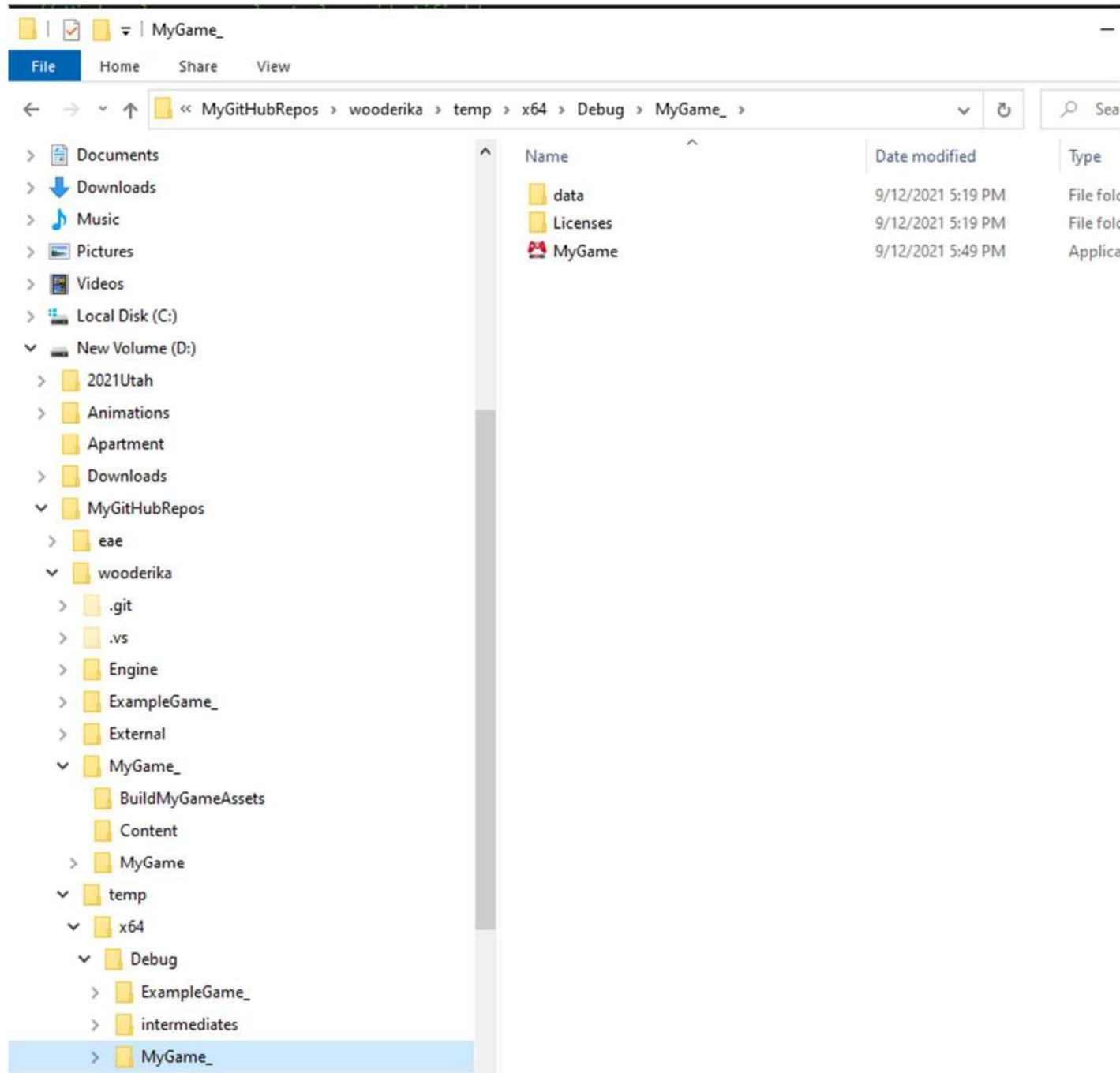
The screenshot shows a Microsoft Visual Studio interface with the following details:

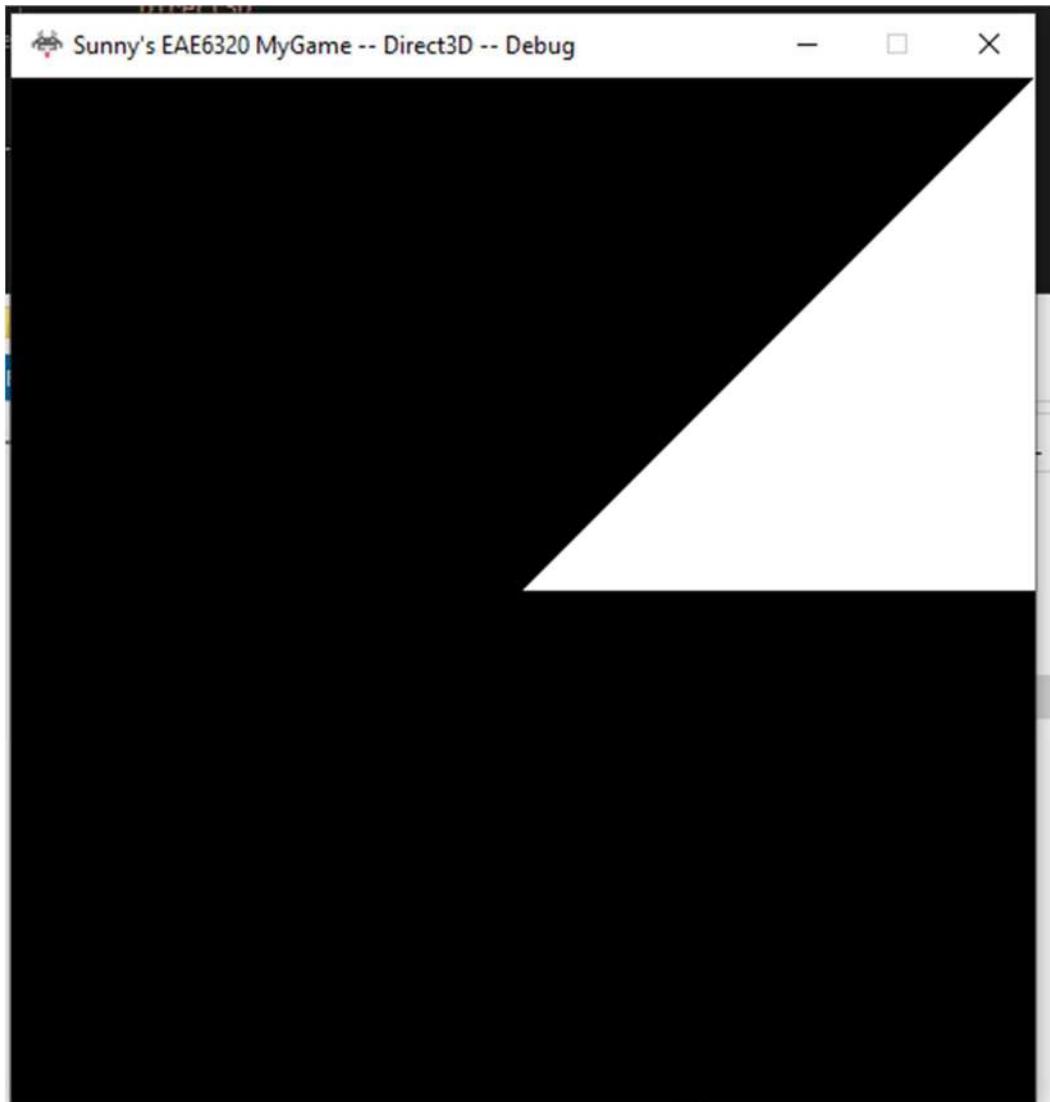
- File Menu:** File, Edit, View, Project, Build, Debug, Test, Analyze, Tools, Extensions, Window, Help.
- Search Bar:** Search (Ctrl+Q) and a search icon.
- Toolbar:** Standard toolbar icons.
- Solution Explorer:** Shows the solution structure:
 - Solution 'WoodErika' (26 files)
 - Engine
 - ExampleGame
 - External
 - MyGame
 - BuildMyGameAssets
 - MyGame
 - References
 - External Dependencies
 - Resource Files
 - cMyGame.cpp
 - cMyGame.h
 - EntryPoint.cpp
 - Tools
- Properties Window:** Shows project properties for WoodErika.
- Output Window:** Shows build logs for the MyGame project.
- Code Editor:** Displays the cMyGame.h header file with code related to window classes and icons.

```
46     "Direct3D"
47 #defined( EAE6320_PLATFORM_GL ) "OpenGL"
48
49 #if _DEBUG
50     " -- Debug"
51 #endif
52
53 ;
54
55 // Window classes are almost always identified by name;
56 // there is a unique "ATOM" associated with them,
57 // but in practice Windows expects to use the class name as an identifier.
58 // If you don't change the name below
59 // your program could conceivably have problems if it were run at the same time on the same computer
60 // as one of your classmate's.
61 // You don't need to worry about this for our class,
62 // but if you ever ship a real project using this code as a base you should set this to something unique
63 // (a generated GUID would be fine since this string is never seen)
64 const char* GetMainWindowClassName() const final { return "Sunny's EAE6320 MyGame Main Window Class"; }
65
66 // * IDI_EAEGAMEPAD
67 // * IDI_EEALIEN
68 // * IDI_VSDEFAULT_LARGE / IDI_VSDEFAULT_SMALL
69 // If you want to try creating your own a convenient website that will help is: http://icoconvert.com/
70 //const WORD* GetLargeIconId() const final { static constexpr WORD iconId_large = IDI_VSDEFAULT_LARGE; return &iconId_large; }
71 //const WORD* GetSmallIconId() const final { static constexpr WORD iconId_small = IDI_VSDEFAULT_SMALL; return &iconId_small; }
72 const WORD* GetLargeIconId() const final { static constexpr WORD iconId_large = IDI_EEALIEN; return &iconId_large; }
73 const WORD* GetSmallIconId() const final { static constexpr WORD iconId_small = IDI_EEALIEN; return &iconId_small; }
74
75
76 // Run
77 //-----
78
79 void UpdateBasedOnInput() final;
80
81 // Initialize / Clean Up
82 //-----
83
84 cResult Initialize() final;
85 cResult CleanUp() final;
86
87
88
100% No issues found
Output
Show output from: Build
Build started...
1>----- Build started: Project: BuildExampleGameAssets, Configuration: Debug x64 -----
2>----- Build started: Project: MyGame (MyGame\MyGame), Configuration: Debug x64 -----
3>----- Build started: Project: BuildMyGameAssets, Configuration: Debug x64 -----
1>Building ExampleGame_Asets
3>Building MyGame_Asets
3>EntryPoint.cpp
2>MyGame.cpp
2>Generating Code...
2>MyGame.vcxproj -> D:\MyGitHubRepos\wooderika\temp\x64\Debug\output\MyGame_\MyGame.exe
2>Copying MyGame_Executable
2>          1 file(s) copied.
===== Build: 3 succeeded, 0 failed, 25 up-to-date, 0 skipped ======
```

Checking icon and title

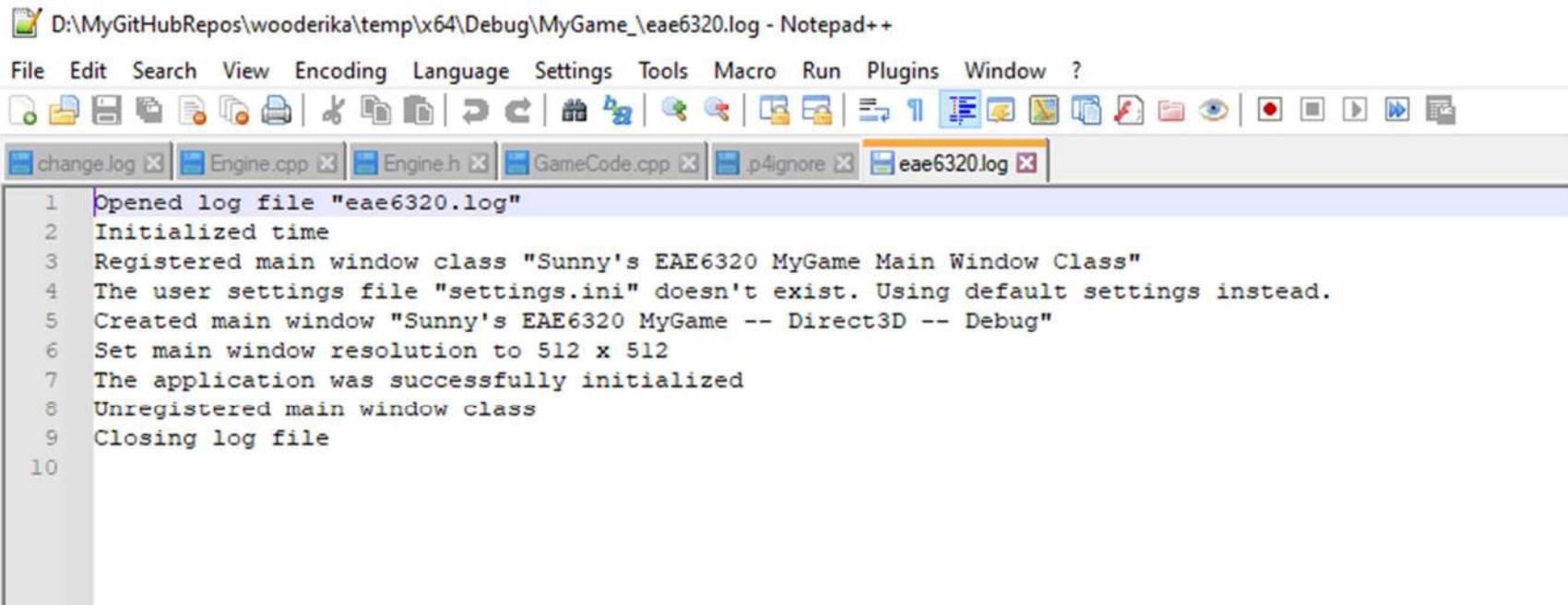
Ok, so the icon in the Windows Explorer remained the same:





The icon on the window of the game and the title changed 😊

I noticed a log file in the x64 debug :



D:\MyGitHubRepos\wooderika\temp\x64\Debug\MyGame_\eae6320.log - Notepad++

File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?

change.log Engine.cpp Engine.h GameCode.cpp .p4ignore eae6320.log

```
1 Opened log file "eae6320.log"
2 Initialized time
3 Registered main window class "Sunny's EAE6320 MyGame Main Window Class"
4 The user settings file "settings.ini" doesn't exist. Using default settings instead.
5 Created main window "Sunny's EAE6320 MyGame -- Direct3D -- Debug"
6 Set main window resolution to 512 x 512
7 The application was successfully initialized
8 Unregistered main window class
9 Closing log file
10
```

Went back up in the write up but I only screenshotted the x86 debug folder before, which doesn't contain a log file now either.

Next point

Logging Messages.

Ah how coincidental 😊

100% 4 NO ISSUES FOUND Err. 70 Ch. 5 TADS

Find "log"

All Files Group by: Path then File Repeat Find Keep Results List View Search Find Results

Find all "log", Include miscellaneous files, Entire solution, "!\"bin*;!\"obj*;!\"*"

Code File Line Co

- ▲ D:\MyGitHubRepos\wooderika (335)
 - ▲ Engine (254)
 - ▲ Application (28)
 - ▲ iApplication.cpp (14)


```
#include <Engine/Logging/Logging.h>
Logging::OutputMessage( "The application was successfully initialized" );
Logging::OutputError( "Application initialization failed!" );
UserOutput::Print( "Initialization failed! (Check the log file for details.) This program will now exit." );
Logging::OutputError( "Failed to wait for graphics data for a new frame to be submittable" );
// Initialize logging first so that it's always available
if ( !( result = Logging::Initialize() ) )
EAE6320_ASSERTF( false, "Application can't be initialized without Logging" );
Logging::OutputError( "The application loop thread couldn't be started" );
Logging::OutputError( "The application loop thread didn't exit after waiting %u milliseconds", timeToWait_inMilliseconds );
// Clean up logging last so that messages can still be logged during clean up
const auto result_logging = Logging::CleanUp();
if ( !result_logging )
result = result_logging;
```
 - ▲ Windows (14)
 - ▲ iApplication.win.cpp (14)


```
#include <Engine/Logging/Logging.h>
Logging::OutputError( "Windows failed to set the main window's user data: %s", errorMessage.c_str() );
eae6320::Logging::OutputMessage( "Created main window \"%s\"", i_windowName );
```

Examples:

MyGame.cpp

iApplication.cpp

cMyGame.h

Application

```
45     if ( exitCode == EXIT_SUCCESS )
46     {
47         exitCode = EXIT_FAILURE;
48     }
49 }
50 );
51
52 // Initialize the application
53 // (this also starts the application loop on a separate thread)
54 {
55     const auto result = Initialize_all( i_entryPointParameters );
56     if ( result )
57     {
58         Logging::OutputMessage( "The application was successfully initialized" );
59     }
60     else
61     {
62         exitCode = EXIT_FAILURE;
63         EAE6320_ASSERT( false );
64         Logging::OutputError( "Application initialization failed!" );
65         UserOutput::Print( "Initialization failed! (Check the log file for details.) This program will now exit." );
66         return exitCode;
67     }
68 }
69 // Enter an infinite loop rendering frames until the application is ready to exit
```

→ eae6320::Application::iApplication

ParseEntryPointParametersAndRun(const

```
        }

    // Clean up logging last so that messages can still be logged during clean up
    {
        const auto result_logging = Logging::CleanUp();
        if ( !result_logging )
        {
            if ( result )
            {
                result = result_logging;
            }
        }
    }
}
```

MyGame.cpp

```
cMyGame.cpp ➔ X iApplication.cpp      cMyGame.h
⌘ MyGame                                (Global Scope)

10     // Inherited Implementation
11     [=====]
12
13     // Run
14     [----]
15
16     //void eae6320::cExampleGame::UpdateBasedOnInput()
17     void eae6320::cMyGame::UpdateBasedOnInput()
18     {
19         // Is the user pressing the ESC key?
20         if ( UserInput::IsKeyPressed( UserInput::KeyCodes::Escape ) )
21         {
22             // Exit the application
23             const auto result = Exit( EXIT_SUCCESS );
24             EAE6320_ASSERT( result );
25         }
26     }
27
28     // Initialize / Clean Up
29     [----]
30
31     eae6320::cResult eae6320::cMyGame::Initialize()
32     {
33         return Results::Success;
34     }
35
36     eae6320::cResult eae6320::cMyGame::CleanUp()
37     {
38         return Results::Success;
39     }
40
```

Three functions:

UpdateBasedOnInput

Initialize

Cleanup

Examples for each:

Initialize:

```
{  
    const auto result = Initialize_all( i_entryPointParameters );  
    if ( result )  
    {  
        Logging::OutputMessage( "The application was successfully initialized" );  
    }  
    else  
    {  
        exitCode = EXIT_FAILURE;  
        EAE6320_ASSERT( false );  
        Logging::OutputError( "Application initialization failed!" );  
        UserOutput::Print( "Initialization failed! (Check the log file for details.) This program will  
        return exitCode;  
    }  
}
```

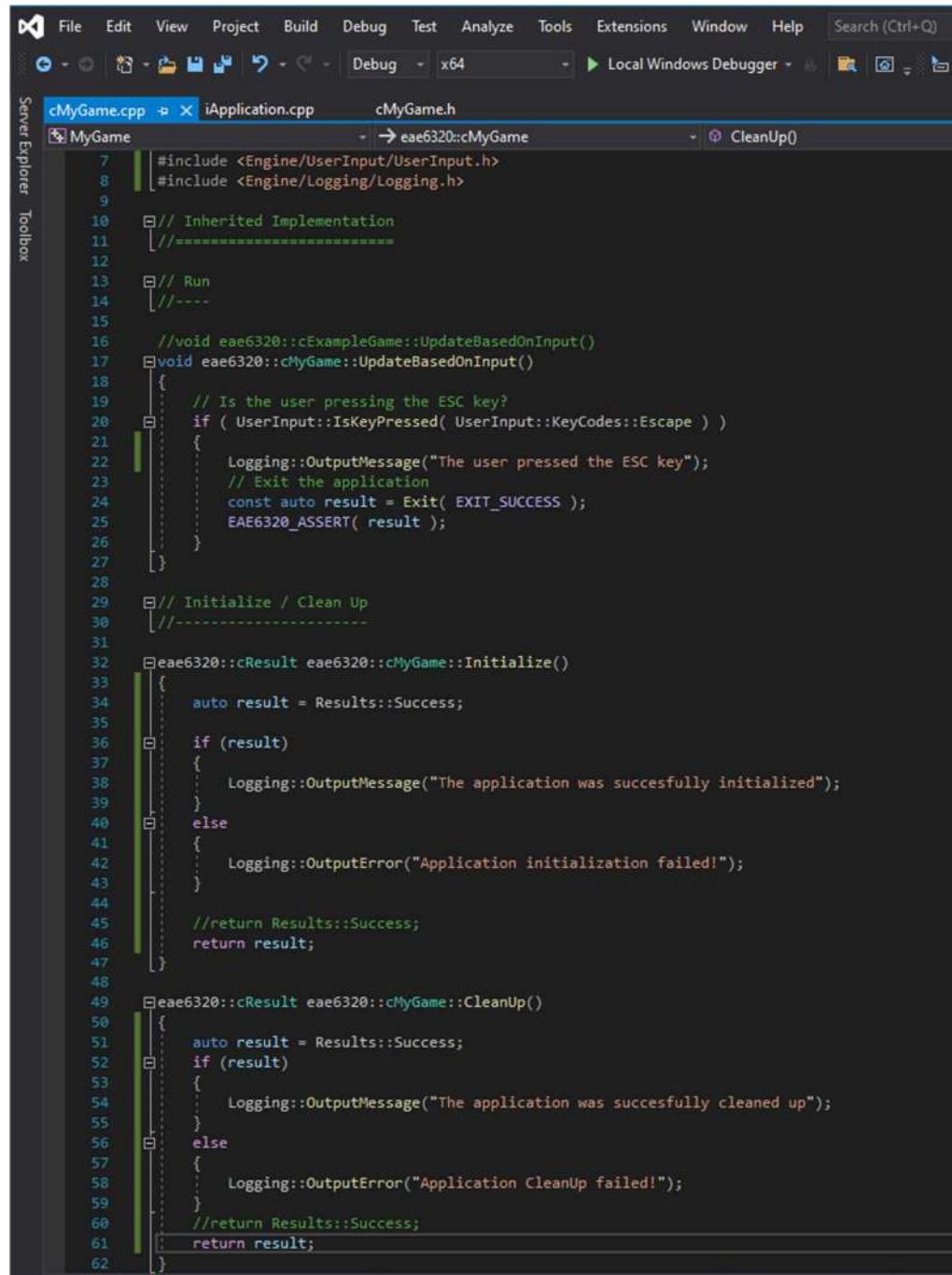
```
eae6320::cResult eae6320::Application::iApplication::Initialize_engine()  
{  
    auto result = Results::Success;  
  
    // User Output  
    {  
        UserOutput::sInitializationParameters initializationParameters;  
        if ( result = PopulateUserOutputInitializationParameters( initializationParameters ) )  
        {  
            if ( !( result = UserOutput::Initialize( initializationParameters ) ) )  
            {  
                EAE6320_ASSERTF( false, "Application can't be initialized without UserOutput" );  
                return result;  
            }  
        }  
        else  
        {  
            EAE6320_ASSERT( false );  
            return result;  
        }  
    }  
}
```

Cleanup:

```
cMyGame.cpp iApplication.cpp ✘ x cMyGame.h
Application → eae6320::Application::iApplication → CleanUp_all()

450     return result;
451 }
452
453     eae6320::cResult eae6320::Application::iApplication::CleanUp_engine()
454     {
455         auto result = Results::Success;
456
457         // Graphics
458         {
459             const auto result_graphics = Graphics::CleanUp();
460             if ( !result_graphics )
461             {
462                 EAE6320_ASSERTF( false, "Graphics wasn't successfully cleaned up" );
463                 if ( result )
464                 {
465                     result = result_graphics;
466                 }
467             }
468         }
469         // User Output
470         {
471             const auto result_userOutput = UserOutput::CleanUp();
472             if ( !result_userOutput )
473             {
474                 if ( result )
475                 {
476                     result = result_userOutput;
477                 }
478             }
479         }
480
481     return result;
482 }
483
```

Added the following:



The screenshot shows a Windows debugger interface with assembly code and registers. The assembly code is displayed in the bottom pane, showing instructions like ADD, SUB, and CMP. The registers pane shows various CPU registers with their current values. The stack pane shows the current stack state.

```
#include <Engine/UserInput/UserInput.h>
#include <Engine/Logging/Logging.h>

// Inherited Implementation
//-----

// Run
//---

//void eae6320::cExampleGame::UpdateBasedOnInput()
void eae6320::cMyGame::UpdateBasedOnInput()
{
    // Is the user pressing the ESC key?
    if (UserInput::IsKeyPressed(UserInput::KeyCodes::Escape))
    {
        Logging::OutputMessage("The user pressed the ESC key");
        // Exit the application
        const auto result = Exit(EXIT_SUCCESS);
        EAE6320_ASSERT(result);
    }
}

// Initialize / Clean Up
//-----

eae6320::cResult eae6320::cMyGame::Initialize()
{
    auto result = Results::Success;

    if (result)
    {
        Logging::OutputMessage("The application was successfully initialized");
    }
    else
    {
        Logging::OutputError("Application initialization failed!");
    }

    //return Results::Success;
    return result;
}

eae6320::cResult eae6320::cMyGame::CleanUp()
{
    auto result = Results::Success;
    if (result)
    {
        Logging::OutputMessage("The application was successfully cleaned up");
    }
    else
    {
        Logging::OutputError("Application CleanUp failed!");
    }

    //return Results::Success;
    return result;
}
```

Oh, I can't run the project yet because of the shaders. – copying below where I remember having read about the shaders error:

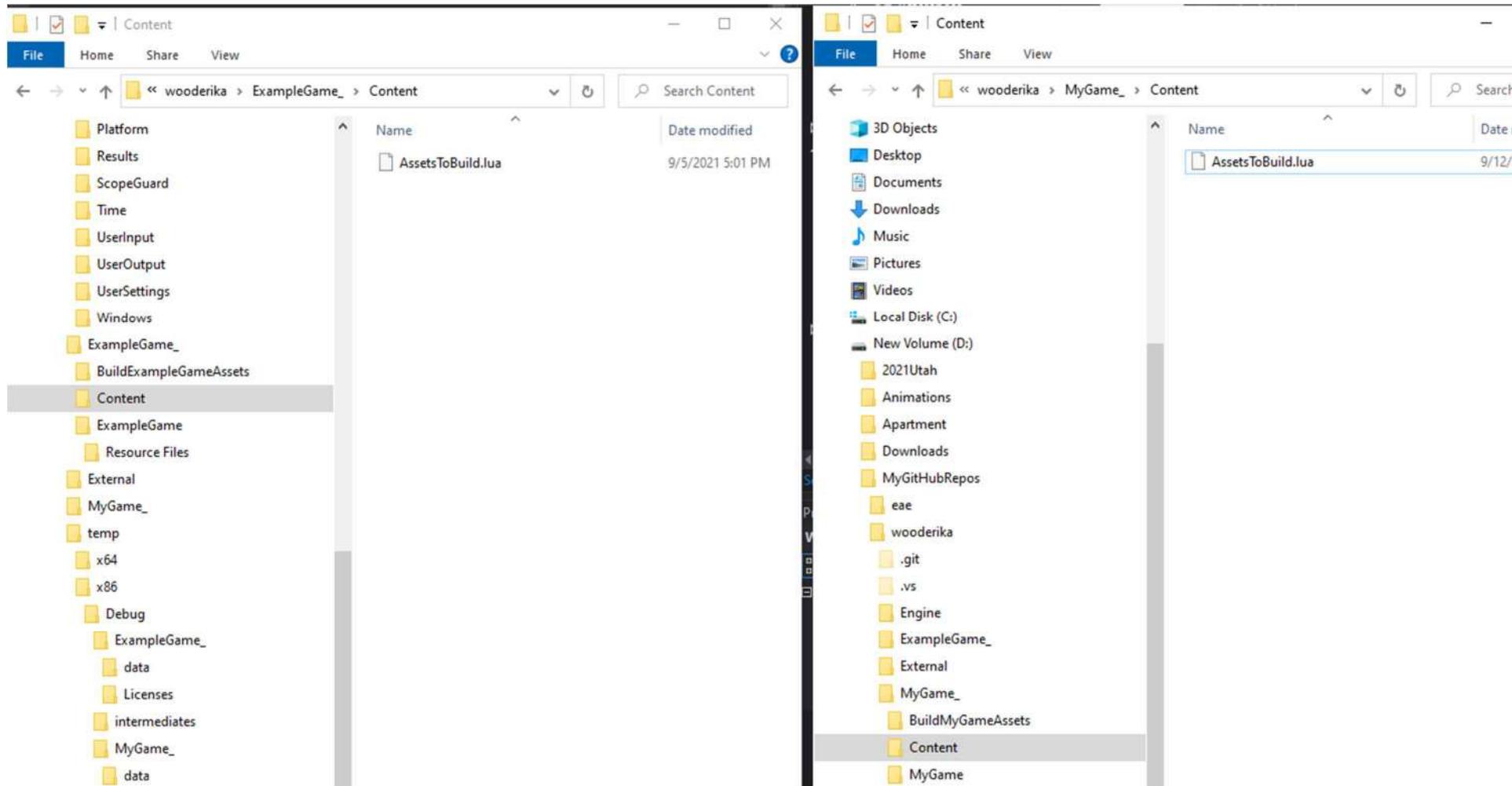
- Update the file contents in the new MyGame project
 - There are three files that you will need to change: EntryPoint.cpp, cMyGame.h, and cMyGame.cpp (You shouldn't have to change any of the Resource Files)
 - You will have to change some #include directives
 - You should change the "include guards" in cMyGame.h
 - You should change the class name from cExampleGame to cMyGame
 - Once you have done this you should be able to build the solution without errors. You should then be able to find your new MyGame \$(GameInstallDir) folder in Windows Explorer, and it should contain MyGame.exe. You can even run it, but you will get errors because there are no shaders yet. Consider staging your new changes once this is working!

Noooow finally I can get to the animation part yaaay 😊

Creating a new custom fragment shader.

Copying Engine/Content/Shaders/Fragment/standard.shader to MyGame_/Content/Shaders/Fragment/

There is not Shaders folder in MyGame_/Content



Content

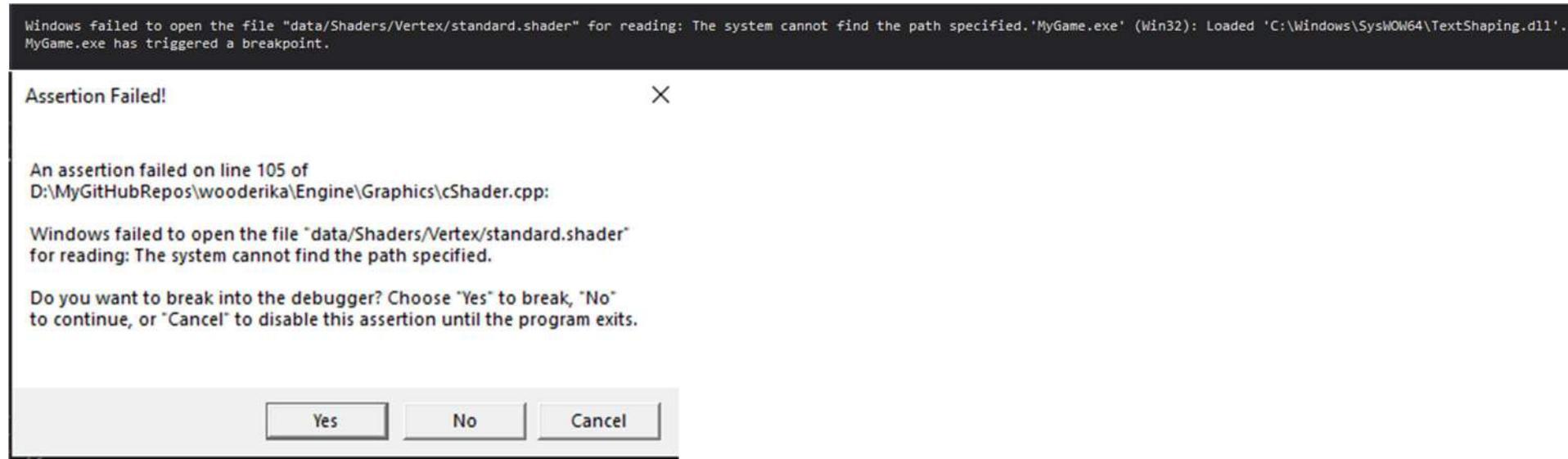
File Home Share View

← → ⌂ ⌈ ⌉ <> wooderika > ExampleGame_

- ExampleGame_
- BuildExampleGameAssets
- Content
- ExampleGame
 - Resource Files
- External
- MyGame_
- temp
 - x64
 - x86
 - Debug
 - ExampleGame_
 - data
 - Licenses
 - intermediates
 - MyGame_
 - data
 - shaders
 - fragment
 - vertex
 - Licenses
 - output

Name	Date
standard.shader	9/12/2023
vertexinputlayout_mesh.shader	9/12/2023

I tried running the game and get the following error for both configurations:

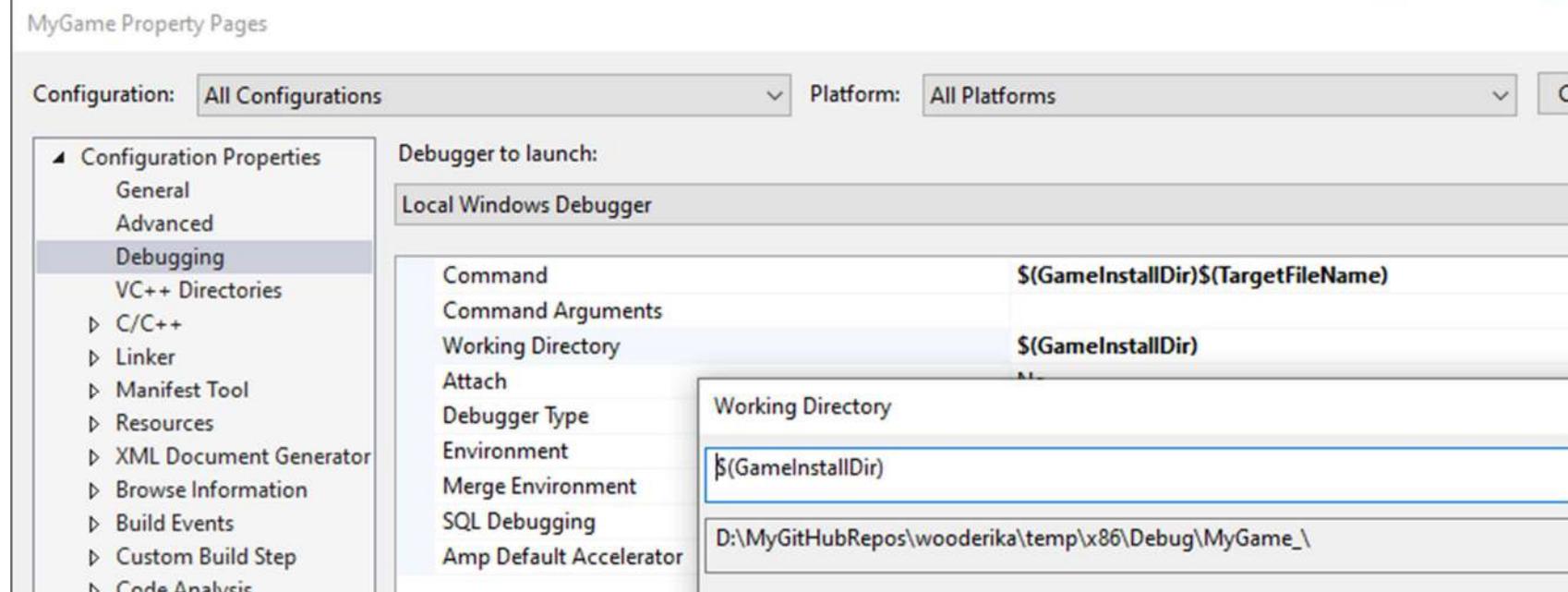
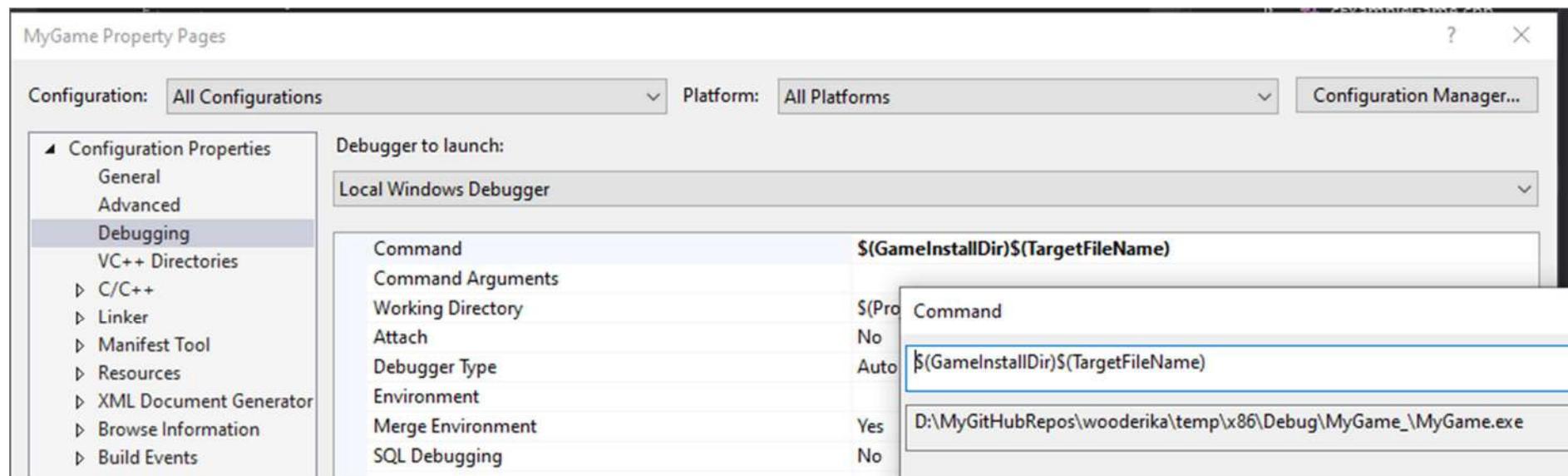


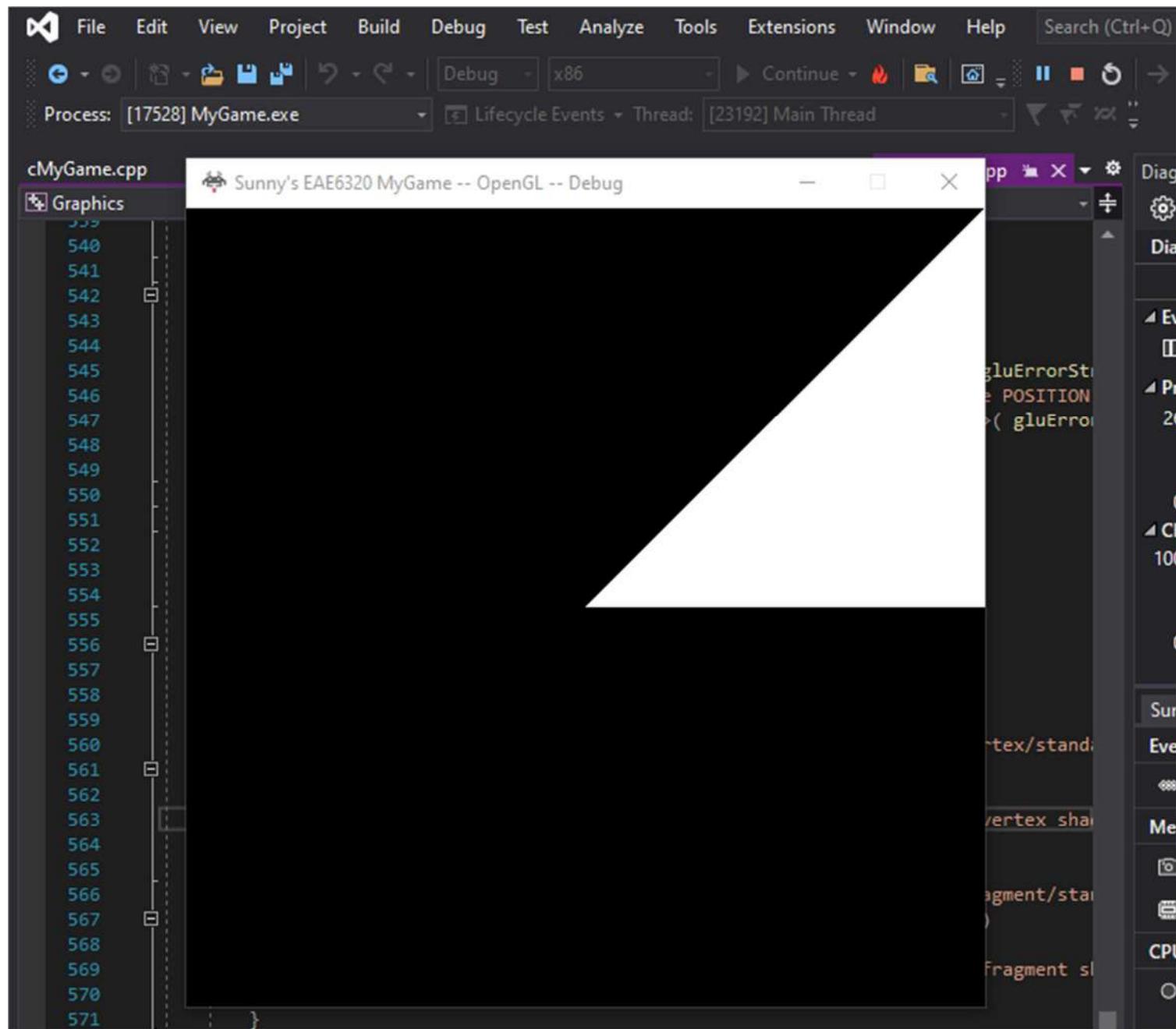
Checking the working directory setting

In our class we will want to use \$(GameInstallDir) for the game

The steps to set the working directory correctly for the game project are as follows:

- Right-click the project's name and choose "Properties"
- In the tree view to the left select Configuration Properties->Debugging
- Change Command to \$(GameInstallDir)\$(TargetFileName)
 - (If you don't do this things will still work, but the debugger will be using the version in \$(GameOutputDir) instead of the version that users will be using in \$(GameInstallDir). The two versions should be identical, though, and this step can be considered optional.)
- Change Working Directory to \$(GameInstallDir)
 - This step is important and often forgotten by students! If you neglect to set the working directory then your game won't be able to find any assets when you are debugging.





A screenshot of Microsoft Visual Studio showing the code editor and a running application window.

The code editor displays `cMyGame.cpp` and `cMyGame.h`. The `cMyGame.cpp` file contains the following code:

```
10 // Inherited Implementation
11 //=====
12
13 // Run
14 //-----
15 //void eae6320::cMyGame::Run()
16 void eae6320::cMyGame::Run()
17 {
18     // ...
19     if (true)
20     {
21         // ...
22     }
23
24
25
26     }
27 }
28
29 // Init
30 //-----
31
32 eae6320::cMyGame::cMyGame()
33 {
34     Log("Creating cMyGame object");
35     auto& log = Log();
36
37     if (true)
38     {
39         log.info("cMyGame has been created");
40     }
41     else
42     {
43         log.error("cMyGame failed to be created");
44     }
45
46     // ...
47     return;
48 }
```

The application window titled "Sunny's EAE6320 MyGame -- Direct3D -- Debug" shows a black screen with a white diagonal line from the top-left to the bottom-right.

Now also logging works:

D:\MyGitHubRepos\wooderika\temp\x64\Debug\MyGame_\eae6320.log - Notepad++

The screenshot shows the Notepad++ interface with the title bar "D:\MyGitHubRepos\wooderika\temp\x64\Debug\MyGame_\eae6320.log - Notepad++". The menu bar includes File, Edit, Search, View, Encoding, Language, Settings, Tools, Macro, Run, Plugins, Window, and Help. The toolbar has various icons for file operations. The main window displays a log file with the following content:

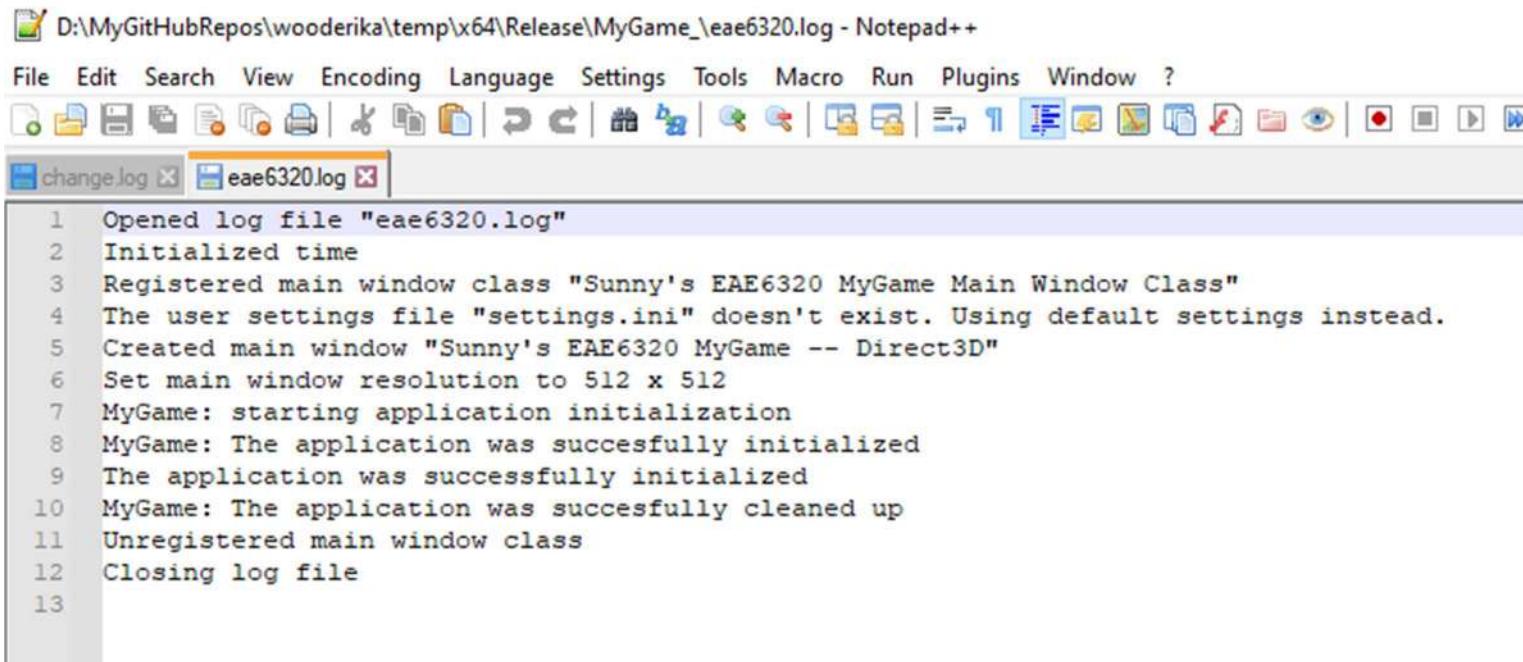
```
1 Opened log file "eae6320.log"
2 Initialized time
3 Registered main window class "Sunny's EAE6320 MyGame Main Window Class"
4 The user settings file "settings.ini" doesn't exist. Using default settings instead.
5 Created main window "Sunny's EAE6320 MyGame -- Direct3D -- Debug"
6 Set main window resolution to 512 x 512
7 MyGame: starting application initialization
8 MyGame: The application was successfully initialized
9 The application was successfully initialized
10
```

D:\MyGitHubRepos\wooderika\temp\x86\Debug\MyGame_\eae6320.log - Notepad++

The screenshot shows the Notepad++ interface with the title bar "D:\MyGitHubRepos\wooderika\temp\x86\Debug\MyGame_\eae6320.log - Notepad++". The menu bar includes File, Edit, Search, View, Encoding, Language, Settings, Tools, Macro, Run, Plugins, Window, and Help. The toolbar has various icons for file operations. The main window displays a log file with the following content:

```
1 Opened log file "eae6320.log"
2 Initialized time
3 Registered main window class "Sunny's EAE6320 MyGame Main Window Class"
4 The user settings file "settings.ini" doesn't exist. Using default settings instead.
5 Created main window "Sunny's EAE6320 MyGame -- OpenGL -- Debug"
6 Set main window resolution to 512 x 512
7 MyGame: starting application initialization
8 MyGame: The application was successfully initialized
9 The application was successfully initialized
10
```

Now including cleanup:



D:\MyGitHubRepos\wooderika\temp\x64\Release\MyGame_\eae6320.log - Notepad++

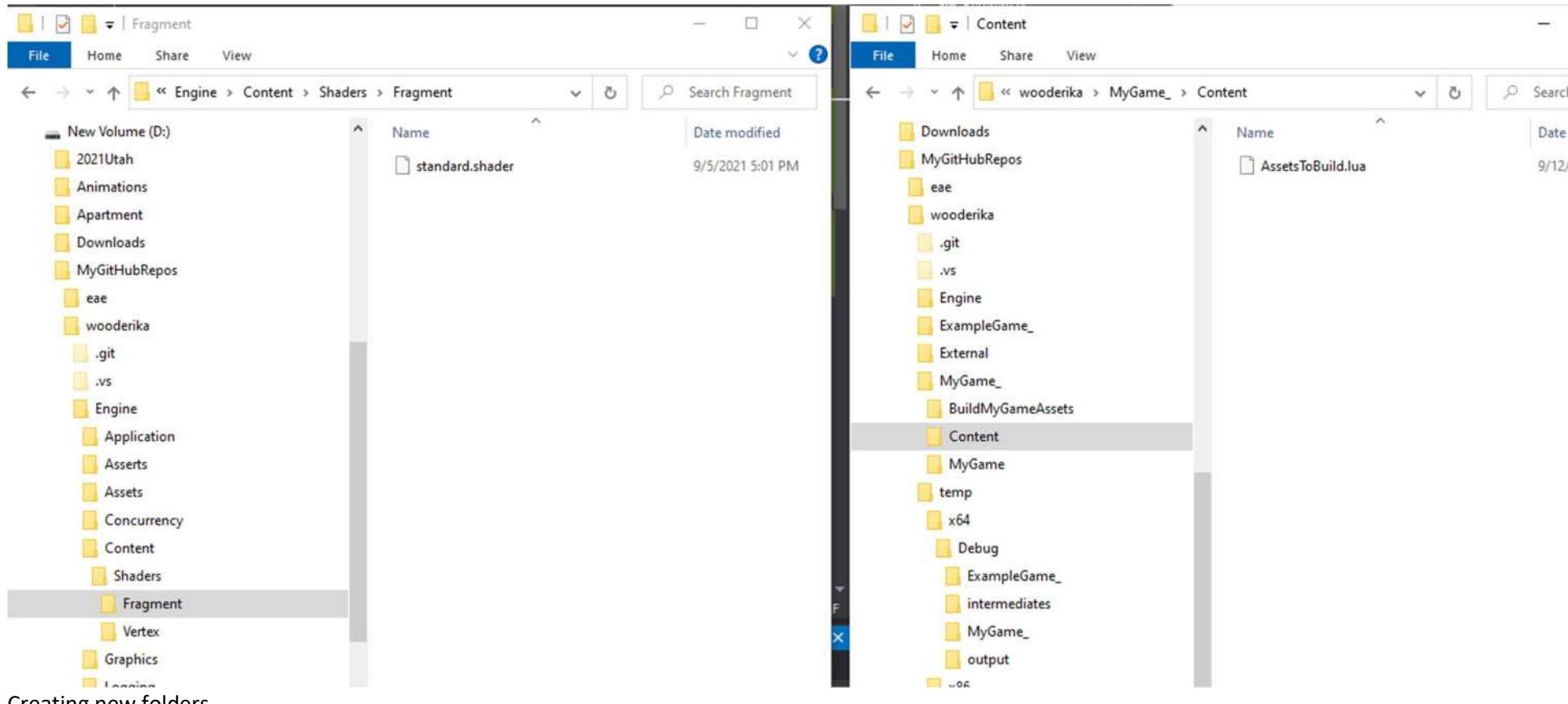
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?

change.log eae6320.log

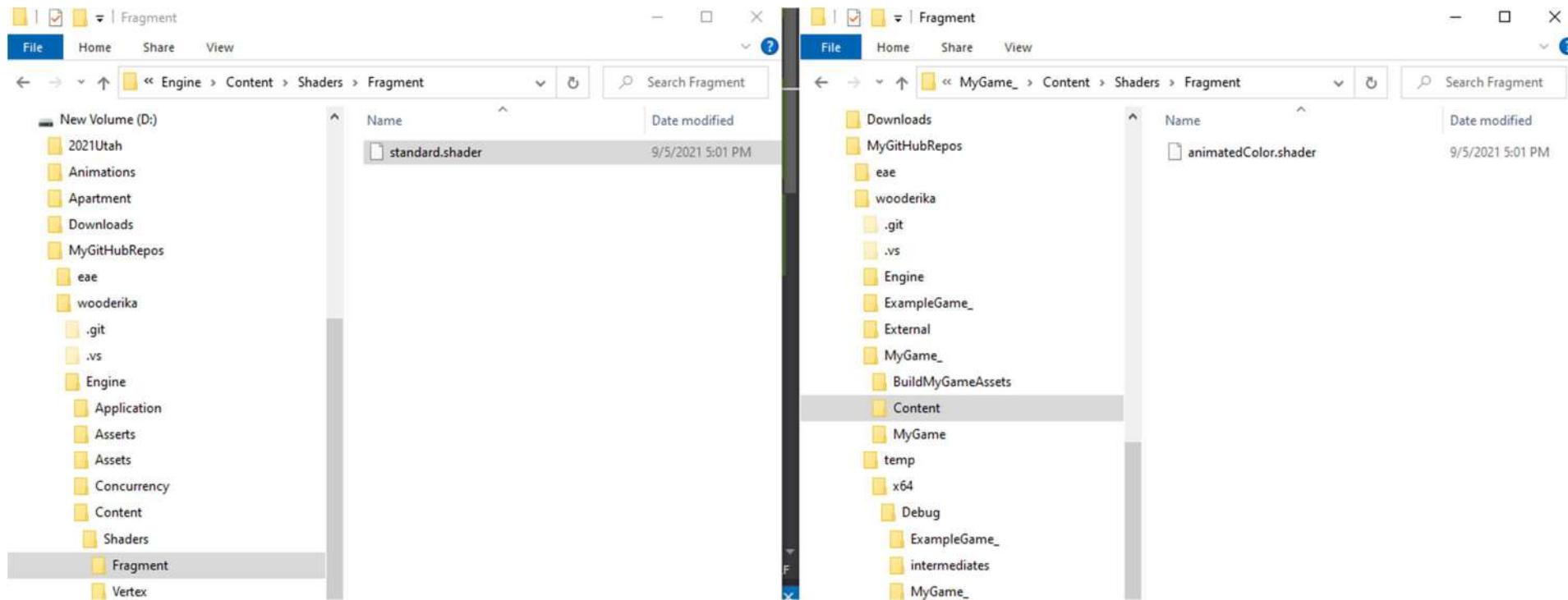
```
1 Opened log file "eae6320.log"
2 Initialized time
3 Registered main window class "Sunny's EAE6320 MyGame Main Window Class"
4 The user settings file "settings.ini" doesn't exist. Using default settings instead.
5 Created main window "Sunny's EAE6320 MyGame -- Direct3D"
6 Set main window resolution to 512 x 512
7 MyGame: starting application initialization
8 MyGame: The application was successfully initialized
9 The application was successfully initialized
10 MyGame: The application was successfully cleaned up
11 Unregistered main window class
12 Closing log file
13
```

Now copying the shader:

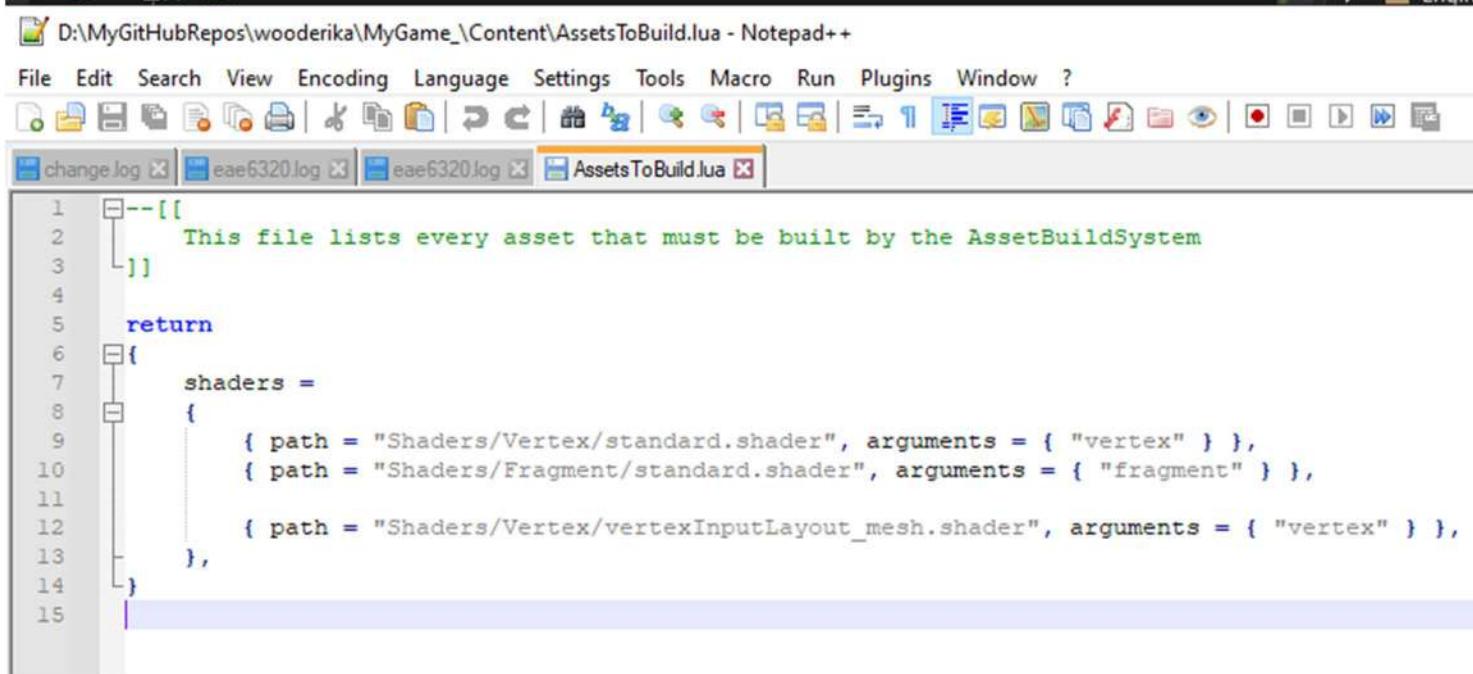
Copy Engine/Content/Shaders/Fragment/standard.shader to MyGame_\Content/Shaders/Fragment/



Creating new folders



Opening the AssetsToBuild.lua



D:\MyGitHubRepos\wooderika\MyGame_\Content\AssetsToBuild.lua - Notepad++

File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?

change.log x eae6320.log x eae6320.log x AssetsToBuild.lua x

```
1 --[[  
2     This file lists every asset that must be built by the AssetBuildSystem  
3 ]]  
4  
5     return  
6 {  
7     shaders =  
8     {  
9         { path = "Shaders/Vertex/standard.shader", arguments = { "vertex" } },  
10        { path = "Shaders/Fragment/standard.shader", arguments = { "fragment" } },  
11        { path = "Shaders/Vertex/vertexInputLayout_mesh.shader", arguments = { "vertex" } },  
12    },  
13}  
14}  
15
```

Adding an entry for new shader:

D:\MyGitHubRepos\wooderika\MyGame_\Content\AssetsToBuild.lua - Notepad++

File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?

change.log eae6320.log eae6320.log AssetsToBuild.lua

```
1 --[[  
2     This file lists every asset that must be built by the AssetBuildSystem  
3 ]]  
4  
5     return  
6 {  
7     shaders =  
8     {  
9         { path = "Shaders/Vertex/standard.shader", arguments = { "vertex" } },  
10        { path = "Shaders/Fragment/standard.shader", arguments = { "fragment" } },  
11        { path = "Shaders/Fragment/animatedColor.shader", arguments = { "fragment" } },  
12        { path = "Shaders/Vertex/vertexInputLayout_mesh.shader", arguments = { "vertex" } },  
13    },  
14}
```

Building solution:

The screenshot shows the Microsoft Visual Studio IDE interface with the following components:

- Code Editor:** Displays the file `cMyGame.cpp` with C++ code. The code handles application initialization and input handling, specifically checking for the ESC key.
- Solution Explorer:** Shows the project structure for "WoodErika" with 28 projects. The "MyGame" project is selected, containing files like `cMyGame.cpp`, `cMyGame.h`, and `EntryPoint.cpp`.
- Properties:** Shows the properties for the "WoodErika" solution, including the active configuration as "Debug|x64".
- Output:** Shows the build logs, indicating a successful build with 2 succeeded, 0 failed, 26 up-to-date, and 0 skipped.

```
10 // Inherited Implementation
11 [=====]
12
13 // Run
14 [----]
15
16 //void eae6320::cExampleGame::UpdateBasedOnInput()
17 void eae6320::cMyGame::UpdateBasedOnInput()
18 {
19     // Is the user pressing the ESC key?
20     if ( UserInput::IsKeyPressed( UserInput::KeyCodes::Escape ) )
21     {
22         Logging::OutputMessage("MyGame: The user pressed the ESC key");
23         // Exit the application
24         const auto result = Exit( EXIT_SUCCESS );
25         EAE6320_ASSERT( result );
26     }
27 }
28
29 // Initialize / Clean Up
30 [-----]
31
32 cResult eae6320::cMyGame::Initialize()
33 {
34     Logging::OutputMessage("MyGame: starting application initialization");
35     auto result = Results::Success;
36
37     if (result)
38     {
39         Logging::OutputMessage("MyGame: The application was successfully initialized");
40     }
41     else
42     {
43         Logging::OutputError("MyGame: Application initialization failed!");
44     }
45
46     //return Results::Success;
47     return result;
48 }
```

100% No issues found

Output

```
Show output from: Build
Build started...
1>----- Build started: Project: BuildExampleGameAssets, Configuration: Debug x64 -----
2>----- Build started: Project: BuildMyGameAssets, Configuration: Debug x64 -----
1>Building ExampleGame_Assets
2>Building MyGame_Assets
2>Built D:\MyGitHubRepos\wooderika\MyGame\_Content\shaders\fragment\animatedcolor.shader
===== Build: 2 succeeded, 0 failed, 26 up-to-date, 0 skipped ======
```

WoodErika Solution Properties

Misc	WoodErika
(Name)	WoodErika
Active config	Debug x64
Description	
Path	D:\MyGitHubRepos\
Startup project	MyGame (MyGame)

The screenshot shows a Microsoft Visual Studio interface with the following components:

- Code Editor:** Displays the file `cMyGame.cpp`. The code implements a game loop and handles user input for exiting. It also includes an `Initialize()` method that logs application start and success/failure messages.
- Solution Explorer:** Shows the solution structure for 'WoodErika' with 28 projects. Projects include `Engine`, `ExampleGame`, and `MyGame`.
- Properties:** Shows the properties for the `WoodErika` solution, including the active configuration as `Debug|x86`.
- Output:** Shows the build log output from the `Build` window, indicating a successful build with 2 succeeded, 0 failed, 26 up-to-date, and 0 skipped files.

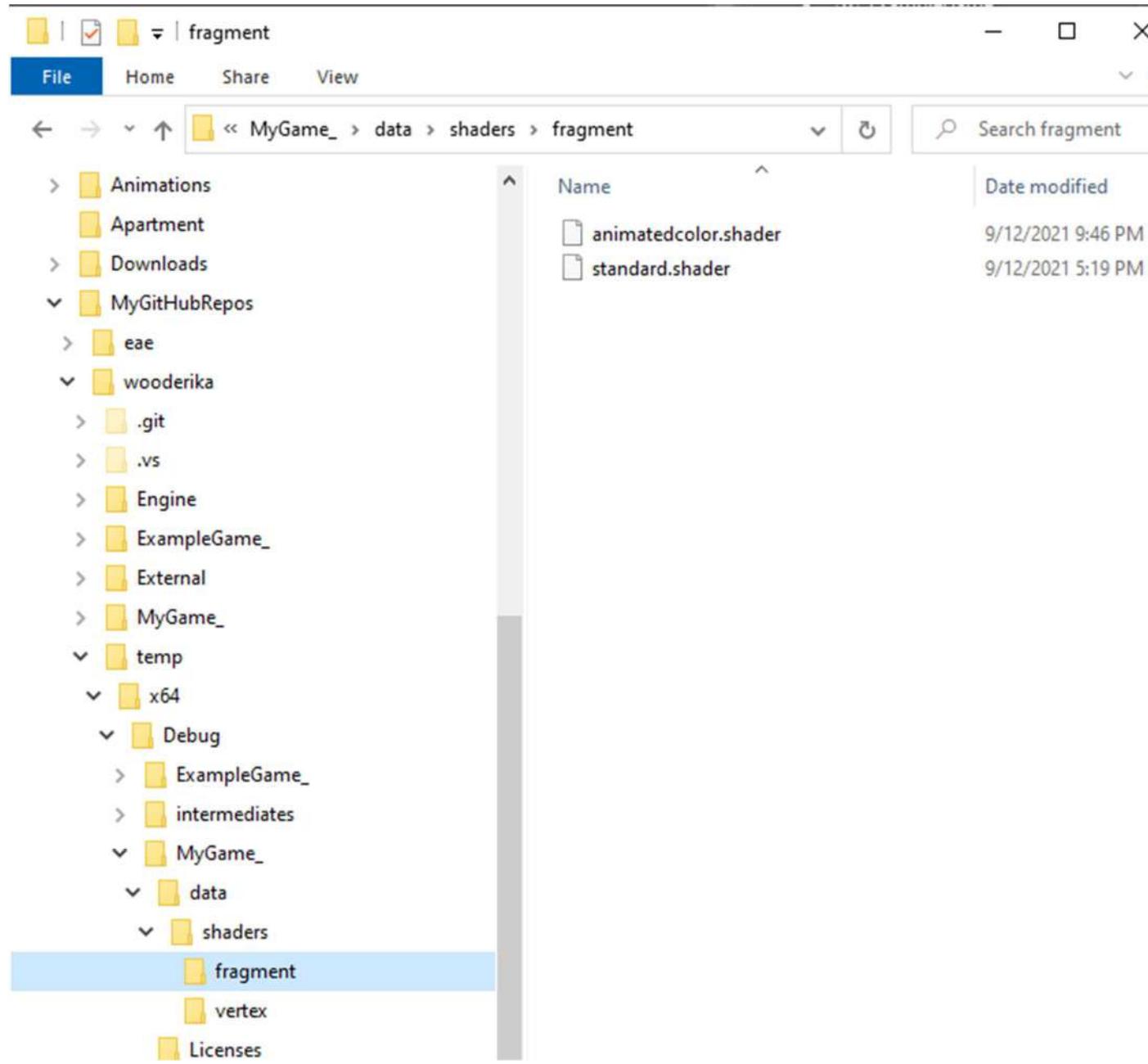
```
10 // Inherited Implementation
11 //-----
12
13 // Run
14 //-----
15
16 //void eae6320::cExampleGame::UpdateBasedOnInput()
17 void eae6320::cMyGame::UpdateBasedOnInput()
18 {
19     // Is the user pressing the ESC key?
20     if (UserInput::IsKeyPressed(UserInput::KeyCodes::Escape))
21     {
22         Logging::OutputMessage("MyGame: The user pressed the ESC key");
23         // Exit the application
24         const auto result = Exit(EXIT_SUCCESS);
25         EAE6320_ASSERT(result);
26     }
27 }
28
29 // Initialize / Clean Up
30 //-----
31
32 eae6320::cResult eae6320::cMyGame::Initialize()
33 {
34     Logging::OutputMessage("MyGame: starting application initialization");
35     auto result = Results::Success;
36
37     if (result)
38     {
39         Logging::OutputMessage("MyGame: The application was successfully initialized");
40     }
41     else
42     {
43         Logging::OutputError("MyGame: Application initialization failed!");
44     }
45
46     //return Results::Success;
47     return result;
48 }
```

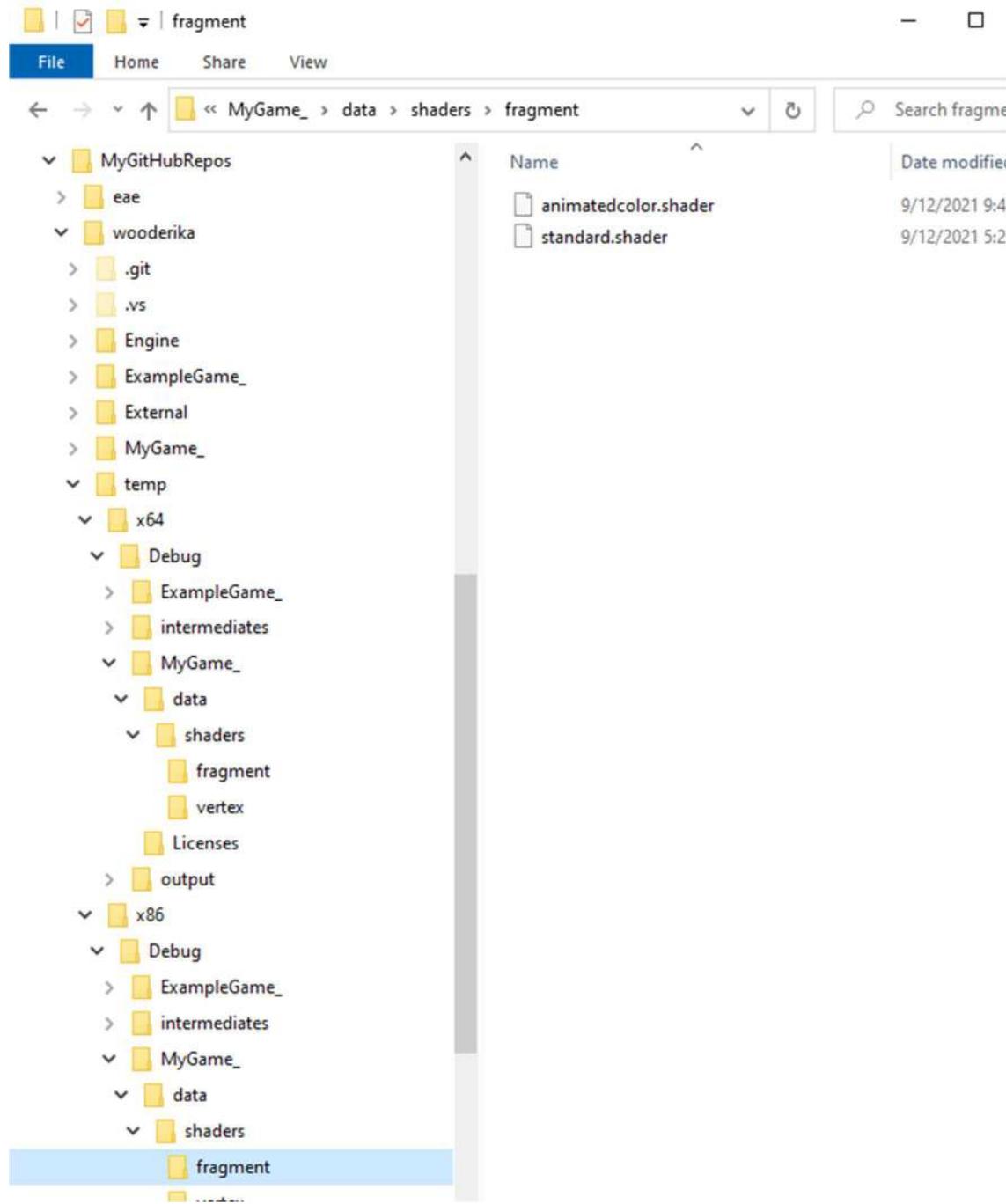
Output window log:

```
Show output from: Build
Build started...
1>----- Build started: Project: BuildExampleGameAssets, Configuration: Debug Win32 -----
2>----- Build started: Project: BuildMyGameAssets, Configuration: Debug Win32 -----
1>Building ExampleGame_Assets
2>Building MyGame_Assets
2>Built D:\MyGitHubRepos\wooderika\MyGame\Content\shaders\fragment\animatedcolor.shader
===== Build: 2 succeeded, 0 failed, 26 up-to-date, 0 skipped ======
```

Looking in \$(GameInstallDir), and verifying that the new shader is there.

D:\MyGitHubRepos\wooderika\temp\x86\Debug\MyGame_\





Changing the graphics project to load the new fragment shader instead of the standard one:

```
Graphics.cpp*  X cMyGame.cpp      cMyGame.h
Graphics
541     }
542     else
543     {
544         result = eae6320::Results::Failure;
545         EAE6320_ASSERTF( false, reinterpret_cast<const char*>( gluErrorString( errorCode ) ) );
546         eae6320::Logging::OutputError( "OpenGL failed to set the POSITION vertex attribute at location" );
547             vertexElementLocation, reinterpret_cast<const char*>( gluErrorString( errorCode ) ) );
548         return result;
549     }
550 }
551 }
552
553     return result;
554 }
555
556 eae6320::cResult InitializeShadingData()
557 {
558     auto result = eae6320::Results::Success;
559
560 //if ( !( result = eae6320::Graphics::cShader::Load( "data/Shaders/Vertex/standard.shader",
561 if ( !(result = eae6320::Graphics::cShader::Load("data/Shaders/Vertex/animatedcolor.shader",
562     s_vertexShader, eae6320::Graphics::eShaderType::Vertex ) ) )
563 {
564     EAE6320_ASSERTF( false, "Can't initialize shading data without vertex shader" );
565     return result;
566 }
567 //if ( !( result = eae6320::Graphics::cShader::Load( "data/Shaders/Fragment/standard.shader",
568 if ( !(result = eae6320::Graphics::cShader::Load("data/Shaders/Fragment/animatedcolor.shader",
569     s_fragmentShader, eae6320::Graphics::eShaderType::Fragment ) ) )
570 {
571     EAE6320_ASSERTF( false, "Can't initialize shading data without fragment shader" );
572     return result;
573 }
```

The screenshot shows the Microsoft Visual Studio IDE interface with the following details:

- Menu Bar:** File, Edit, View, Project, Build, Debug, Test, Analyze, Tools, Extensions, Window, Help.
- Search Bar:** Search (Ctrl+Q) with a magnifying glass icon.
- User Profile:** WoodErika.
- Toolbar:** Standard icons for file operations like Open, Save, Print, etc.
- Project Explorer:** Shows files: Graphics.d3d.cpp, Graphics.gl.cpp, cMyGame.cpp, and cMyGame.h.
- Toolbox:** Standard development tools.
- Code Editor:** The main window displays the code for `Graphics.d3d.cpp`. The code is part of the `cGraphics` class and includes methods for initializing vertex and fragment shaders.

```
460     return initialData;
461 
462     }()
463 
464     const auto result_create = direct3dDevice->CreateBuffer( &bufferDescription, &initialData, &s_vertexBuffer );
465     if ( FAILED( result_create ) )
466     {
467         result = eae6320::Results::Failure;
468         EAE6320_ASSERTF( false, "3D object vertex buffer creation failed (HRESULT %#010x)", result_create );
469         eae6320::Logging::OutputError( "Direct3D failed to create a 3D object vertex buffer (HRESULT %#010x)", result );
470     }
471 }
472 
473     return result;
474 }
475 
476 eae6320::cResult InitializeShadingData()
477 {
478     auto result = eae6320::Results::Success;
479 
480     //if ( !( result = eae6320::Graphics::cShader::Load( "data/Shaders/Vertex/standard.shader",
481     if ( !(result = eae6320::Graphics::cShader::Load("data/Shaders/Vertex/animatedcolor.shader",
482         s_vertexShader, eae6320::Graphics::eShaderType::Vertex ) ) )
483     {
484         EAE6320_ASSERTF( false, "Can't initialize shading data without vertex shader" );
485         return result;
486     }
487     //if ( !( result = eae6320::Graphics::cShader::Load( "data/Shaders/Fragment/standard.shader",
488     if ( !(result = eae6320::Graphics::cShader::Load("data/Shaders/Fragment/animatedcolor.shader",
489         s_fragmentShader, eae6320::Graphics::eShaderType::Fragment ) ) )
490     {
491         EAE6320_ASSERTF( false, "Can't initialize shading data without fragment shader" );
492         return result;
493     }
```

The screenshot shows a Microsoft Visual Studio interface with the following components:

- Code Editor:** Displays the file `Graphics.d3d.cpp` with code related to Direct3D buffer creation and shader loading.
- Solution Explorer:** Shows the solution structure for "WoodErika" with projects like Engine, Application, Assets, Concurrency, and Graphics.
- Properties:** Shows project settings for "WoodErika" with details like Name: WoodErika, Active config: Debug|x64, and Path: D:\MyGitHubRepos\wooderika\Engine.
- Output Window:** Shows build logs for "MyGame" with various copy operations and shader builds.

```
460     return initialData;
461 }
462
463     const auto result_create = direct3dDevice->CreateBuffer( &bufferDescription, &initialData, &s_vertexBuffer );
464     if ( FAILED( result_create ) )
465     {
466         result = eae6320::Results::Failure;
467         EAE6320_ASSERTF( false, "3D object vertex buffer creation failed (HRESULT %#010x)", result_create );
468         eae6320::Logging::OutputError( "Direct3D failed to create a 3D object vertex buffer (HRESULT %#010x)", result );
469         return result;
470     }
471 }
472
473     return result;
474 }
475
476 eae6320::cResult InitializeShadingData()
477 {
478     auto result = eae6320::Results::Success;
479
480     //if ( !( result = eae6320::Graphics::cShader::Load( "data/Shaders/Vertex/standard.shader",
481     if ( !(result = eae6320::Graphics::cShader::Load("data/Shaders/Vertex/animatedcolor.shader",
482         s_vertexShader, eae6320::Graphics::eShaderType::Vertex ) ) )
483     {
484         EAE6320_ASSERTF( false, "Can't initialize shading data without vertex shader" );
485         return result;
486     }
487     //if ( !( result = eae6320::Graphics::cShader::Load( "data/Shaders/Fragment/standard.shader",
488     if ( !(result = eae6320::Graphics::cShader::Load("data/Shaders/Fragment/animatedcolor.shader",
489         s_fragmentShader, eae6320::Graphics::eShaderType::Fragment ) ) )
490     {
491         EAE6320_ASSERTF( false, "Can't initialize shading data without fragment shader" );
492         return result;
493     }
494     {
495         constexpr auto renderStateBits = []
496         {
497             uint8_t renderStateBits = 0;
498
499             eae6320::Graphics::RenderStates::DisableAlphaTransparency( renderStateBits );
500             eae6320::Graphics::RenderStates::DisableDepthTesting( renderStateBits );
501         };
502     }
503
504     return result;
505 }
```

Output window logs:

```
3>Copying MyGame_ Executable
3>    1 file(s) copied.
4>Copying ExampleGame_ Executable
4>    1 file(s) copied.
5>----- Build started: Project: BuildExampleGameAssets, Configuration: Debug x64 -----
6>----- Build started: Project: BuildMyGameAssets, Configuration: Debug x64 -----
5>Building ExampleGame_ Assets
6>Building MyGame_ Assets
6>Built D:\MyGitHubRepos\wooderika\Engine\Content\shaders/vertex/standard.shader
6>Built D:\MyGitHubRepos\wooderika\Engine\Content\shaders/fragment/standard.shader
6>Built D:\MyGitHubRepos\wooderika\MyGame_\Content\shaders/fragment/animatedcolor.shader
6>Built D:\MyGitHubRepos\wooderika\Engine\Content\shaders/vertex/vertexinputlayout_mesh.shader
5>Built D:\MyGitHubRepos\wooderika\Engine\Content\shaders/vertex/standard.shader
5>Built D:\MyGitHubRepos\wooderika\Engine\Content\shaders/fragment/standard.shader
5>Built D:\MyGitHubRepos\wooderika\Engine\Content\shaders/vertex/vertexinputlayout_mesh.shader
===== Build: 6 succeeded, 0 failed, 22 up-to-date, 0 skipped =====
```

The screenshot shows a Microsoft Visual Studio interface with the following components:

- Code Editor:** Displays the file `Graphics.d3d.cpp` with code related to shader loading and rendering state setup.
- Solution Explorer:** Shows the project structure for "WoodErika" with 28 projects. The "Graphics" project is expanded, showing files like `cConstantBuffer.d3d.cpp`, `cShader.d3d.cpp`, etc.
- Properties:** Shows project properties for "WoodErika" under the "Misc" tab.
- Output:** Shows build logs for "MyGame" project, indicating successful builds for various files.

```
5>Building ExampleGame_ Assets
6>Building MyGame_ Assets
4>ExampleGame.vcxproj -> D:\MyGitHubRepos\wooderika\temp\x86\Debug\output\ExampleGame_\ExampleGame.exe
4>Copying ExampleGame_ Executable
4>    1 file(s) copied.
3>MyGame.vcxproj -> D:\MyGitHubRepos\wooderika\temp\x86\Debug\output\MyGame_\MyGame.exe
3>Copying MyGame_ Executable
3>    1 file(s) copied.
5>Built D:\MyGitHubRepos\wooderika\Engine\Content\shaders/vertex/standard.shader
6>Built D:\MyGitHubRepos\wooderika\Engine\Content\shaders/vertex/standard.shader
6>Built D:\MyGitHubRepos\wooderika\Engine\Content\shaders/fragment/standard.shader
5>Built D:\MyGitHubRepos\wooderika\Engine\Content\shaders/fragment/standard.shader
5>Built D:\MyGitHubRepos\wooderika\Engine\Content\shaders/vertex/vertexinputlayout_mesh.shader
6>Built D:\MyGitHubRepos\wooderika\MyGame_\Content\shaders/fragment/animatedcolor.shader
6>Built D:\MyGitHubRepos\wooderika\Engine\Content\shaders/vertex/vertexinputlayout_mesh.shader
===== Build: 6 succeeded, 0 failed, 22 up-to-date, 0 skipped ======
```

Updating the custom shader to output a color different from white:

- The output variable is called `o_color`.
- It is a float4 in Direct3D and a vec4 in OpenGL
- which is a special shader type that is an array of four floats.
- When used as a color this is an "RGBA" value
- the fourth float is how much transparency ("A" for "alpha")
- In our class we will only worry about the first three floats ("RGB").
- Each of the floats should be a value between 0 and 1
- red would be represented as (1,0,0)
- White is a combination of all colors (1,1,1)
- black is the absence of all colors (0,0,0)
- special syntax to change individual floats
- You can use "r", "g", and "b" to index each color "channel"
- Adding `o_color.r = 0.0` to the shader will change `o_color` from (1,1,1) to (0,1,1)

White color for D3D:

D:\MyGitHubRepos\wooderika\MyGame_\Content\Shaders\Fragment\animatedColor.shader - Notepad++

File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?

change.log eae6320.log eae6320.log animatedColor.shader

```
1  /*
2   * This is the standard fragment shader
3   *
4   * A fragment shader is responsible for telling the GPU what color a specific fragment should be
5   */
6
7 #include <Shaders/shaders.inc>
8
9 #if defined( EAE6320_PLATFORM_D3D )
10
11 // Constant Buffers
12 //=====
13
14 cbuffer g_constantBuffer_frame : register( b0 )
15 {
16     float4x4 g_transform_worldToCamera;
17     float4x4 g_transform_cameraToProjected;
18
19     float g_elapsedSecondCount_systemTime;
20     float g_elapsedSecondCount_simulationTime;
21     // For float4 alignment
22     float2 g_padding;
23 };
24
25 // Entry Point
26 //=====
27
28 void main(
29
30     // Input
31     //=====
32
33     in const float4 i_fragmentPosition : SV_POSITION,
34
35     // Output
36     //=====
37
38     // Whatever color value is output from the fragment shader
39     // will determine the color of the corresponding pixel on the screen
40     out float4 o_color : SV_TARGET
41
42 )
43 {
44     // Output solid white
45     o_color = float4(
46         // RGB (color)
47         1.0, 1.0, 1.0,
48         // Alpha (opacity)
49         1.0 );
50 }
```

White color for GL

D:\MyGitHubRepos\wooderika\MyGame_Content\Shaders\Fragment\animatedColor.shader - Notepad++

File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?

change.log eae6320.log eae6320.log animatedColor.shader

```
49     |    1.0 );
50 }
51
52 #elif defined( EAE6320_PLATFORM_GL )
53
54 // Constant Buffers
55 //=====
56
57 layout( std140, binding = 0 ) uniform g_constantBuffer_frame
58 {
59     mat4 g_transform_worldToCamera;
60     mat4 g_transform_cameraToProjected;
61
62     float g_elapsedSecondCount_systemTime;
63     float g_elapsedSecondCount_simulationTime;
64     // For vec4 alignment
65     vec2 g_padding;
66 };
67
68 // Output
69 //=====
70
71 // Whatever color value is output from the fragment shader
72 // will determine the color of the corresponding pixel on the screen
73 out vec4 o_color;
74
75 // Entry Point
76 //=====
77
78 void main()
79 {
80     // Output solid white
81     o_color = vec4(
82         // RGB (color)
83         1.0, 1.0, 1.0,
84         // Alpha (opacity)
85         1.0 );
86 }
87
88 #endif
```

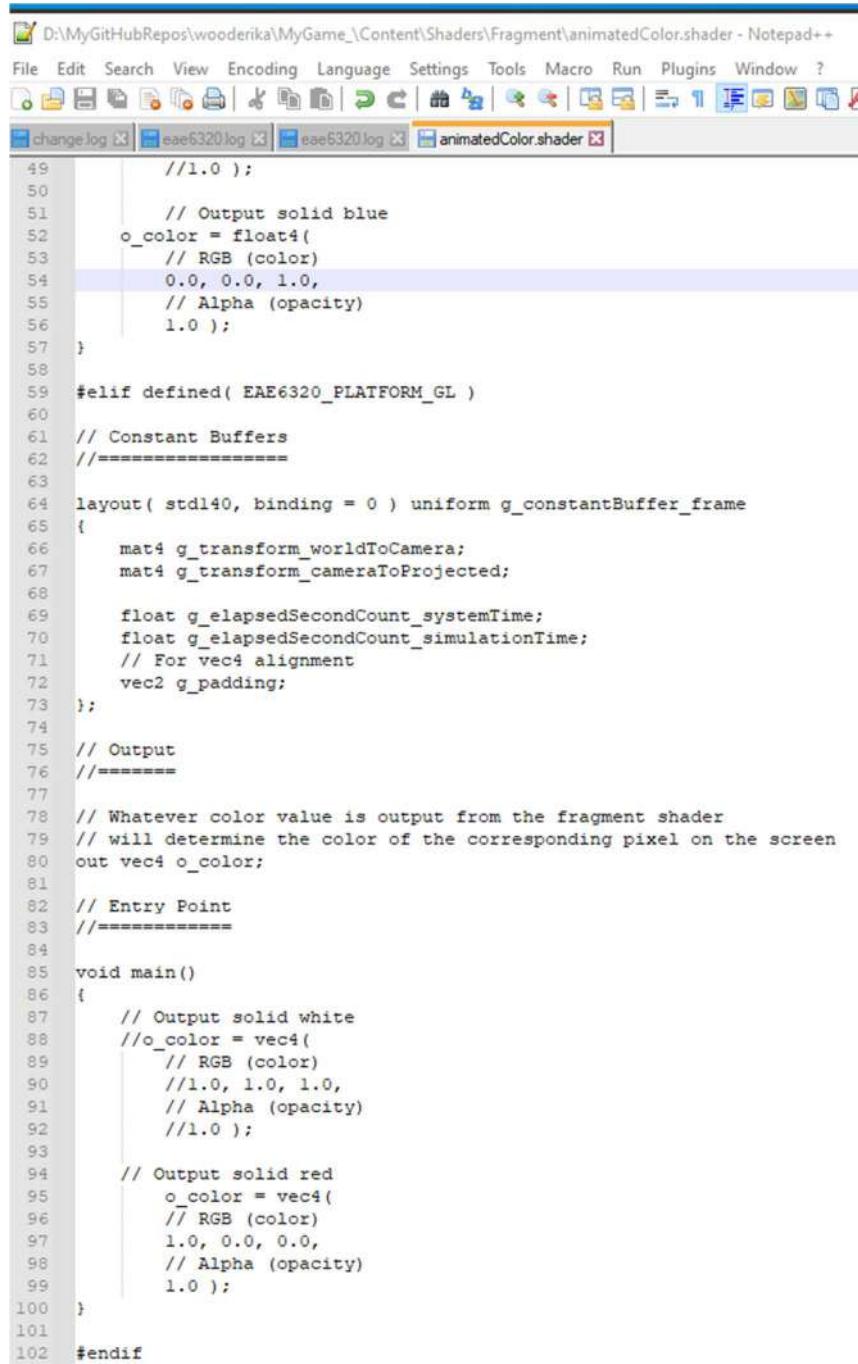
Changing the D3D color to blue and the GL to red:

D:\MyGitHubRepos\wooderika\MyGame_\Content\Shaders\Fragment\animatedColor.shader - Notepad++

File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?

change.log | eae6320.log | eae6320.log | animatedColor.shader |

```
1 /*  
2     This is the standard fragment shader  
3  
4     A fragment shader is responsible for telling the GPU what color a specific fragment should be  
5 */  
6  
7 #include <Shaders/shaders.inc>  
8  
9 #if defined( EAE6320_PLATFORM_D3D )  
10  
11 // Constant Buffers  
12 //=====  
13  
14 cbuffer g_constantBuffer_frame : register( b0 )  
15 {  
16     float4x4 g_transform_worldToCamera;  
17     float4x4 g_transform_cameraToProjected;  
18  
19     float g_elapsedSecondCount_systemTime;  
20     float g_elapsedSecondCount_simulationTime;  
21     // For float4 alignment  
22     float2 g_padding;  
23 };  
24  
25 // Entry Point  
26 //=====  
27  
28 void main(  
29  
30     // Input  
31     //=====  
32  
33     in const float4 i_fragmentPosition : SV_POSITION,  
34  
35     // Output  
36     //=====  
37  
38     // Whatever color value is output from the fragment shader  
39     // will determine the color of the corresponding pixel on the screen  
40     out float4 o_color : SV_TARGET  
41  
42 }  
43 {  
44     // Output solid white  
45     //o_color = float4(  
46         // RGB (color)  
47         //1.0, 1.0, 1.0,  
48         // Alpha (opacity)  
49         //1.0 );  
50  
51     // Output solid blue  
52     o_color = float4(  
53         // RGB (color)  
54         0.0, 0.0, 1.0,  
55         // Alpha (opacity)  
56         1.0 );  
57 }
```



D:\MyGitHubRepos\wooderika\MyGame_\Content\Shaders\Fragment\animatedColor.shader - Notepad++

File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?

change.log eae6320.log eae6320.log animatedColor.shader

```
49     //1.0 );
50
51     // Output solid blue
52     o_color = float4(
53         // RGB (color)
54         0.0, 0.0, 1.0,
55         // Alpha (opacity)
56         1.0 );
57 }
58
59 #elif defined( EAE6320_PLATFORM_GL )
60
61 // Constant Buffers
62 //=====
63
64 layout( std140, binding = 0 ) uniform g_constantBuffer_frame
{
65     mat4 g_transform_worldToCamera;
66     mat4 g_transform_cameraToProjected;
67
68     float g_elapsedSecondCount_systemTime;
69     float g_elapsedSecondCount_simulationTime;
70     // For vec4 alignment
71     vec2 g_padding;
72 };
73
74 // Output
75 //=====
76
77
78 // Whatever color value is output from the fragment shader
79 // will determine the color of the corresponding pixel on the screen
80 out vec4 o_color;
81
82 // Entry Point
83 //=====
84
85 void main()
86 {
87     // Output solid white
88     //o_color = vec4(
89         // RGB (color)
90         //1.0, 1.0, 1.0,
91         // Alpha (opacity)
92         //1.0 );
93
94     // Output solid red
95     o_color = vec4(
96         // RGB (color)
97         1.0, 0.0, 0.0,
98         // Alpha (opacity)
99         1.0 );
100 }
101
102 #endif
```

Assertion Failed!

X

An assertion failed on line 105 of
D:\MyGitHubRepos\wooderika\Engine\Graphics\cShader.cpp:

Windows failed to open the file
"data/Shaders/Vertex/animatedcolor.shader" for reading: The system
cannot find the file specified.

Do you want to break into the debugger? Choose "Yes" to break, "No"
to continue, or "Cancel" to disable this assertion until the program
exits.

Hmmm, I just verified before that the shader is there.

Oh I have a typo, I typed animatedcolor

Correcting:

```
474     }
475
476     eae6320::cResult InitializeShadingData()
477     {
478         auto result = eae6320::Results::Success;
479
480         //if ( !( result = eae6320::Graphics::cShader::Load( "data/Shaders/Vertex/standard.shader",
481         if ( !(result = eae6320::Graphics::cShader::Load("data/Shaders/Vertex/animatedColor.shader",
482             s_vertexShader, eae6320::Graphics::eShaderType::Vertex ) ) )
483         {
484             EAE6320_ASSERTF( false, "Can't initialize shading data without vertex shader" );
485             return result;
486         }
487         //if ( !( result = eae6320::Graphics::cShader::Load( "data/Shaders/Fragment/standard.shader",
488         if ( !(result = eae6320::Graphics::cShader::Load("data/Shaders/Fragment/animatedColor.shader",
489             s_fragmentShader, eae6320::Graphics::eShaderType::Fragment ) ) )
490         {
491             EAE6320_ASSERTF( false, "Can't initialize shading data without fragment shader" );
492             return result;
493         }
494     }
```

```
555
556     eae6320::cResult InitializeShadingData()
557     {
558         auto result = eae6320::Results::Success;
559
560         //if ( !( result = eae6320::Graphics::cShader::Load( "data/Shaders/Vertex/standard.shader",
561         if ( !(result = eae6320::Graphics::cShader::Load("data/Shaders/Vertex/animatedColor.shader",
562             s_vertexShader, eae6320::Graphics::eShaderType::Vertex ) ) )
563         {
564             EAE6320_ASSERTF( false, "Can't initialize shading data without vertex shader" );
565             return result;
566         }
567         //if ( !( result = eae6320::Graphics::cShader::Load( "data/Shaders/Fragment/standard.shader",
568         if ( !(result = eae6320::Graphics::cShader::Load("data/Shaders/Fragment/animatedColor.shader",
569             s_fragmentShader, eae6320::Graphics::eShaderType::Fragment ) ) )
570         {
571             EAE6320_ASSERTF( false, "Can't initialize shading data without fragment shader" );
572             return result;
573         }
574     }
```

Assertion Failed!

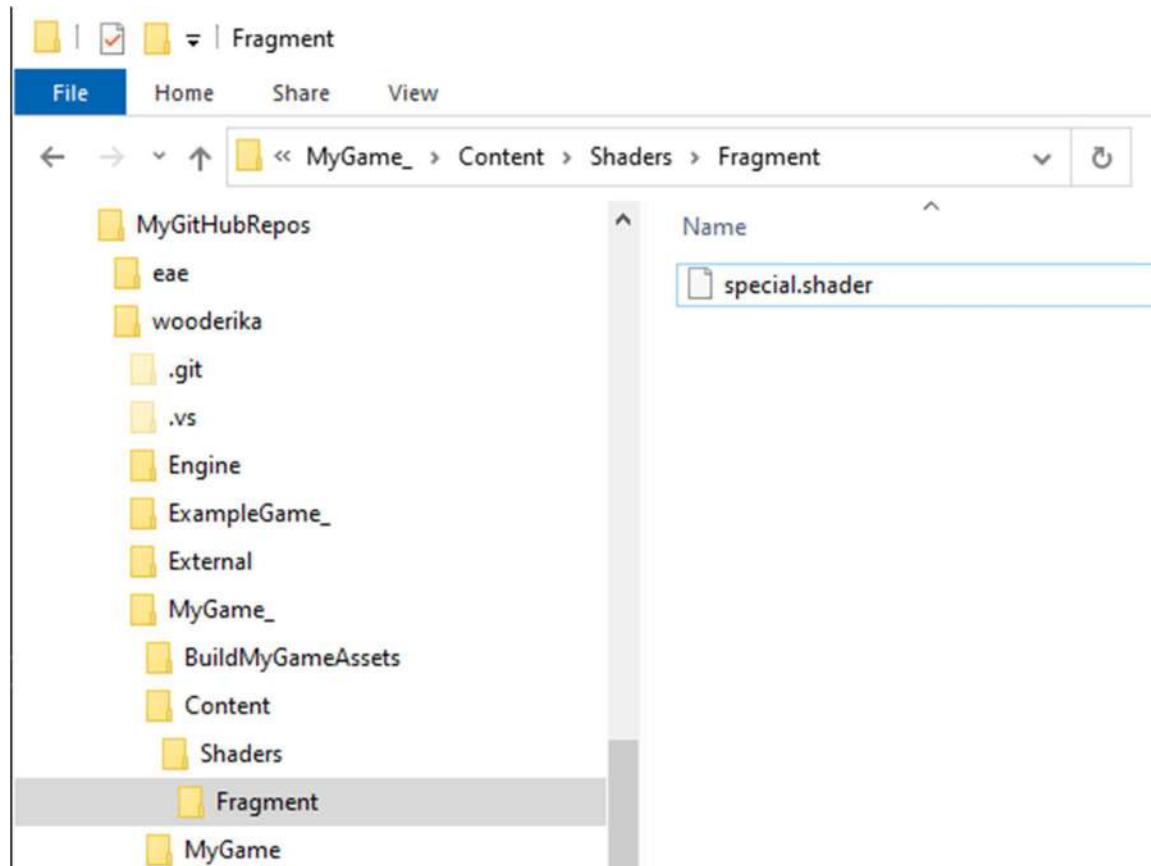
X

An assertion failed on line 105 of
D:\MyGitHubRepos\wooderika\Engine\Graphics\cShader.cpp:

Windows failed to open the file
"data/Shaders/Vertex/animatedColor.shader" for reading: The system
cannot find the file specified.

Do you want to break into the debugger? Choose "Yes" to break, "No"
to continue, or "Cancel" to disable this assertion until the program
exits.

I will call it special shader.



Still can't find it:

Assertion Failed! X

An assertion failed on line 105 of
D:\MyGitHubRepos\wooderika\Engine\Graphics\cShader.cpp:

Windows failed to open the file "data/Shaders/Vertex/special.shader"
for reading: The system cannot find the file specified.

Do you want to break into the debugger? Choose "Yes" to break, "No"
to continue, or "Cancel" to disable this assertion until the program
exits.

A screenshot of the Microsoft Visual Studio IDE interface. The top menu bar includes File, Edit, View, Project, Build, Debug, Test, Analyze, Tools, Extensions, Window, Help, and Search (Ctrl+Q). The toolbar below has icons for file operations like Open, Save, and Build. The status bar at the bottom shows 100% zoom, 0 issues found, Line 34, Column 69, and TABS.

The code editor displays the file `cMyGame.cpp` with the following content:

```
10 // Inherited Implementation
11 //=====
12
13 // Run
14 //-----
15
16 //void eae6320::cExampleGame::UpdateBasedOnInput()
17 void eae6320::cMyGame::UpdateBasedOnInput()
18 {
19     // Is the user pressing the ESC key?
20     if ( UserInput::IsKeyPressed( UserInput::KeyCodes::Escape ) )
21     {
22         Logging::OutputMessage("MyGame: The user pressed the ESC key");
23         // Exit the application
24         const auto result = Exit( EXIT_SUCCESS );
25         EAE6320_ASSERT( result );
26     }
27 }
28
29 // Initialize / Clean Up
30 //-----
31
32 eae6320::cResult eae6320::cMyGame::Initialize()
33 {
34     Logging::OutputMessage("MyGame: starting application initialization");
35     auto result = Results::Success;
36
37     if (result)
38     {
39         Logging::OutputMessage("MyGame: The application was successfully initialized");
40     }
41     else
42     {
43         Logging::OutputError("MyGame: Application initialization failed!");
44     }
45
46     //return Results::Success;
47     return result;
48 }
```

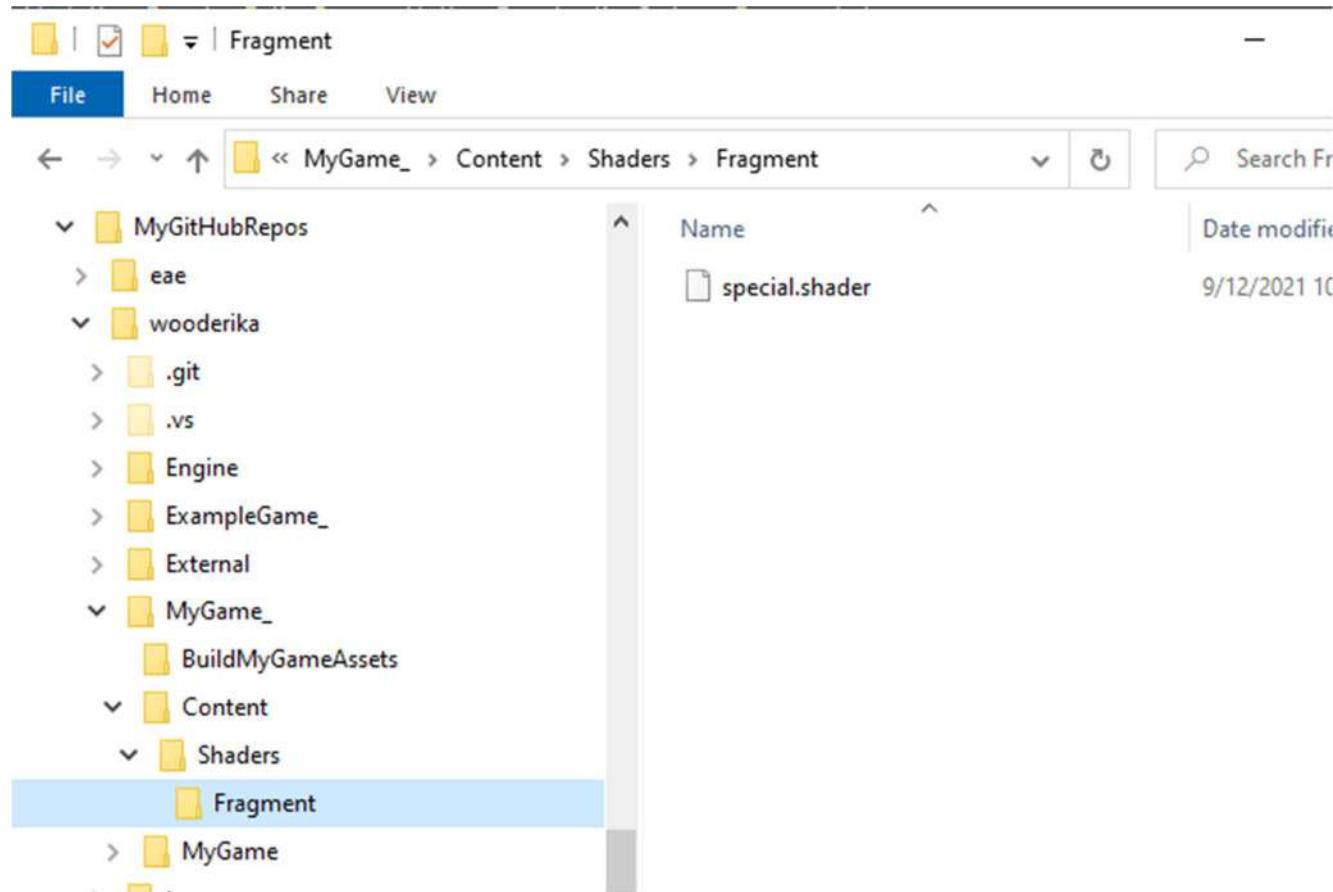
The output window below shows the build log:

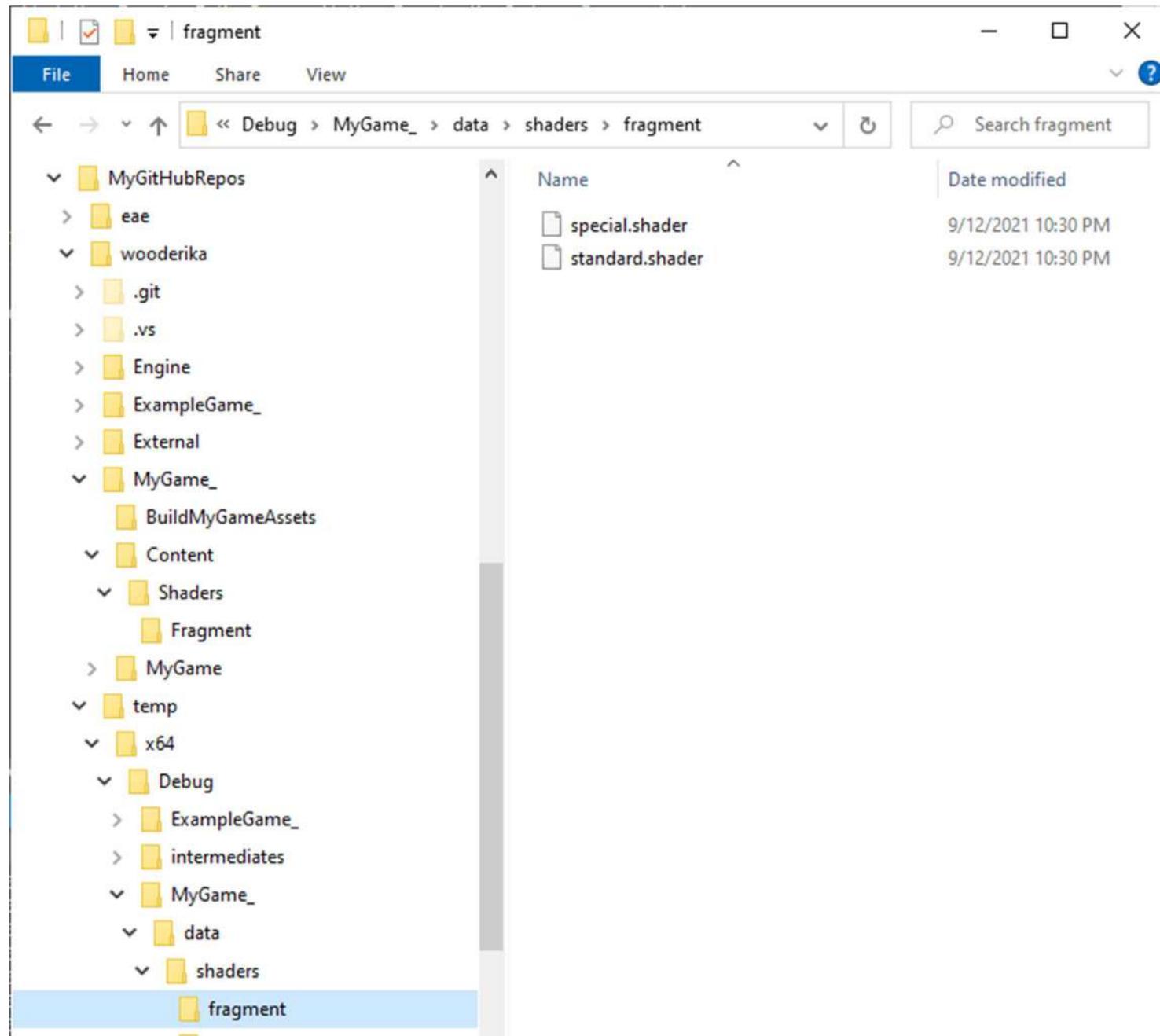
```
25>MyGame.vcxproj -> D:\MyGitHubRepos\wooderika\temp\x86\Debug\output\MyGame_\MyGame.exe
26>ExampleGame.vcxproj -> D:\MyGitHubRepos\wooderika\temp\x86\Debug\output\ExampleGame_\ExampleGame.exe
25>Copying MyGame_ Executable
25>    1 file(s) copied.
26>Copying ExampleGame_ Executable
26>    1 file(s) copied.
28>Built D:\MyGitHubRepos\wooderika\Engine\Content\shaders\fragment\standard.fragment
27>Built D:\MyGitHubRepos\wooderika\Engine\Content\shaders\fragment\standard.shader
27>Built D:\MyGitHubRepos\wooderika\Engine\Content\shaders\vertex\vertexinputlayout_mesh.vertex
27>Installed Lua.txt
27>Installed mcpp.txt
28>Built D:\MyGitHubRepos\wooderika\MyGame_\Content\shaders\fragment\special.fragment
28>Built D:\MyGitHubRepos\wooderika\Engine\Content\shaders\vertex\vertexinputlayout_mesh.shader
28>Installed Lua.txt
28>Installed mcpp.txt
===== Build: 28 succeeded, 0 failed, 0 up-to-date, 0 skipped ======
```

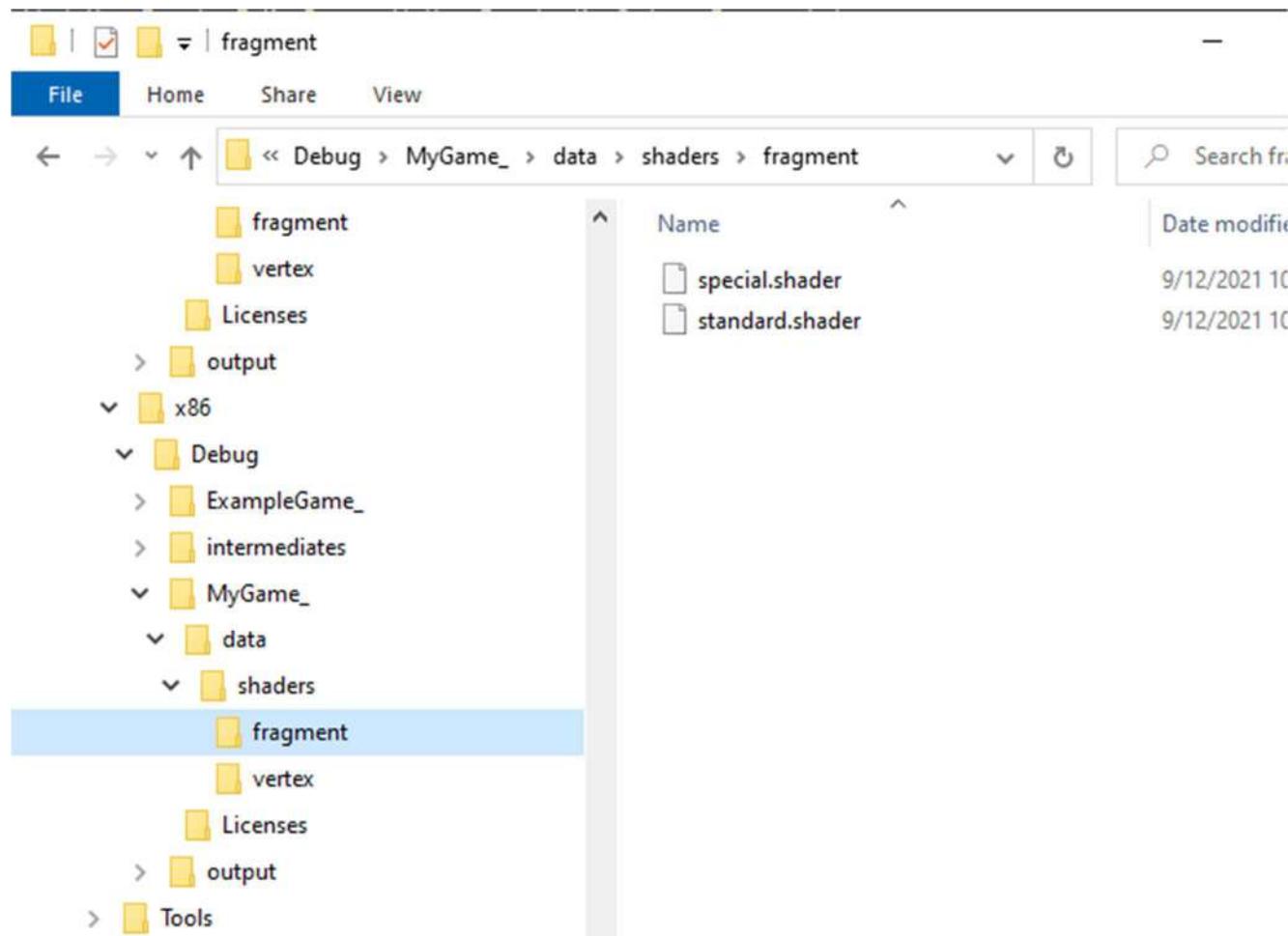
The screenshot shows a Microsoft Visual Studio interface with the following components:

- File**, **Edit**, **View**, **Project**, **Build**, **Debug**, **Test**, **Analyze**, **Tools**, **Extensions**, **Window**, **Help** menu items.
- Search bar: **Search (Ctrl+Q)**.
- User profile: **WoodErika**, **Sign in**.
- Toolbox and Server Explorer tabs.
- Solution Explorer** window showing the project structure:
 - Engine
 - Application
 - Assert
 - Assets
 - Concurrency
 - Graphics
 - Logging
 - Math
 - Physics
 - Platform
 - Results
 - Scope
 - Time
 - UserInput
 - UserOptions
 - UserSettings
 - Windows
 - ExampleGame
 - External
 - MyGame
 - Build
 - MyGame
 - Resources
 - ExampleGame.exe
 - MyGame.exe
 - cMyGame.h
- Properties** window for the **WoodErika Solution**.
- Output** window showing build logs:

```
27>Built D:\MyGitHubRepos\wooderika\Engine\Content\shaders\vertex\standard.shader
28>Built D:\MyGitHubRepos\wooderika\Engine\Content\shaders\vertex\standard.shader
27>Built D:\MyGitHubRepos\wooderika\Engine\Content\shaders\fragment\standard.shader
27>Built D:\MyGitHubRepos\wooderika\Engine\Content\shaders\vertex\vertexinputlayout_mesh.shader
28>Built D:\MyGitHubRepos\wooderika\Engine\Content\shaders\fragment\standard.shader
28>Built D:\MyGitHubRepos\wooderika\MyGame_\Content\shaders\fragment\special.shader
28>Built D:\MyGitHubRepos\wooderika\Engine\Content\shaders\vertex\vertexinputlayout_mesh.shader
25>Generating Code...
26>Generating Code...
25>MyGame.vcxproj -> D:\MyGitHubRepos\wooderika\temp\x64\Debug\output\MyGame_\MyGame.exe
26>ExampleGame.vcxproj -> D:\MyGitHubRepos\wooderika\temp\x64\Debug\output\ExampleGame_\ExampleGame.exe
25>Copying MyGame_ Executable
25>    1 file(s) copied.
26>Copying ExampleGame_ Executable
26>    1 file(s) copied.
===== Rebuild All: 28 succeeded, 0 failed, 0 skipped =====
```







Graphics.d3d.cpp X Graphics.gl.cpp cMyGame.cpp cMyGame.h cShader.cpp

Graphics

```
466     result = eae6320::Results::Failure;
467     EAE6320_ASSERTF( false, "3D object vertex buffer creation failed (HRESULT %#010x)", result_create );
468     eae6320::Logging::OutputError( "Direct3D failed to create a 3D object vertex buffer (HRESULT %#010x)" );
469     return result;
470 }
471 }
472
473     return result;
474 }
475
476 eae6320::cResult InitializeShadingData()
477 {
478     auto result = eae6320::Results::Success;
479
480     //if ( !( result = eae6320::Graphics::cShader::Load( "data/Shaders/Vertex/standard.shader",
481     if ( !(result = eae6320::Graphics::cShader::Load("data/Shaders/Vertex/special.shader",
482         s_vertexShader, eae6320::Graphics::eShaderType::Vertex ) ) )
483     {
484         EAE6320_ASSERTF( false, "Can't initialize shading data without vertex shader" );
485         return result;
486     }
487     //if ( !( result = eae6320::Graphics::cShader::Load( "data/Shaders/Fragment/standard.shader",
488     if ( !(result = eae6320::Graphics::cShader::Load("data/Shaders/Fragment/special.shader",
489         s_fragmentShader, eae6320::Graphics::eShaderType::Fragment ) ) )
490     {
491         EAE6320_ASSERTF( false, "Can't initialize shading data without fragment shader" );
492         return result;
493     }
494 }
```

Oooooohhhhhh I accidentally changed the Vertex one too!

File Edit View Project Build Debug Test Analyze Tools Extensions Window Help Search (Ctrl+Q)

Debug x86 Continue Lifecycle Events Thread: [24816] Main Thread Stack Frames

Process: [21044] MyGame.exe

Graphics.d3d.cpp Graphics.gl.cpp cMyGame.cpp cMyGame.h cShad

MyGame → eae6320::cMyGame Initialize()

```
10 // Inherited Implementation
11 //=====
12
13 // Run
14 //-----
15 //void eae6320::c
16 void eae6320::cMyGame()
17 {
18     // Is the user input
19     if (UserInput::IsKeyPressed(EAE6320_A))
20     {
21         Logging::Output("User pressed A key");
22         // Exit the application
23         const auto result = EAE6320_Application::GetResult();
24         EAE6320_Application::Exit(result);
25     }
26 }
27
28 // Initialize / Create
29 //-----
30
31 eae6320::cResult Initialize()
32 {
33     Logging::Output("Initializ
34     auto result =
35
36     if (result)
37     {
38         Logging::Output("Initialization successful");
39     }
40     else
41     {
42         Logging::Output("Initialization failed");
43     }
44
45     //return Result
46     return result;
47 }
48 }
```

Sunny's EAE6320 MyGame -- OpenGL -- Debug

The screenshot shows a Microsoft Visual Studio interface. At the top is the menu bar with File, Edit, View, Project, Build, Debug, Test, Analyze, Tools, Extensions, Window, Help, and a Search field. Below the menu is a toolbar with various icons. The status bar at the bottom shows "Process: [8316] MyGame.exe" and "Lifecycle Events Thread: [24816] Main Thread". The main area has tabs for Graphics.d3d.cpp, Graphics.gl.cpp, cMyGame.cpp, and cMyGame.h. The cMyGame.cpp tab is active, displaying the following code:

```
10 // Inh
11 //=====
12
13 // Run
14 //-----
15
16 //void
17 void e
18 {
19     //if
20     if
21     {
22
23
24
25
26     }
27 }
28
29 // Ini
30 //-----
31
32 eae632
33 {
34     Lo
35     au
36
37     if
38     {
39
40     }
41     el
42     {
43         Logging::OutputError("MyGame: Application initialization failed!");
44     }
45 }
```

A modal dialog box titled "Sunny's EAE6320 MyGame -- Direct3D -- Debug" is displayed in the center. The dialog shows a black screen with a large blue triangle in the upper right corner, indicating a rendering error or failure.

However, now I will check how it works using `o_color.g`.

<https://www.tug.org/pracjourn/2007-4/walden/color.pdf>

D3D to yellow: 1/1/0

GL to pink 1/0.1/0.6

D:\MyGitHubRepos\wooderika\MyGame_\Content\Shaders\Fragment\special.shader - Notepad++

File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?



change.log special.shader

```
28 void main(
29
30     // Input
31     //=====
32
33     in const float4 i_fragmentPosition : SV_POSITION,
34
35     // Output
36     //=====
37
38     // Whatever color value is output from the fragment shader
39     // will determine the color of the corresponding pixel on the screen
40     out float4 o_color : SV_TARGET
41
42 )
43 {
44     // Output solid white
45     //o_color = float4(
46         // RGB (color)
47         //1.0, 1.0, 1.0,
48         // Alpha (opacity)
49         //1.0 );
50
51     // Output solid blue
52     //o_color = float4(
53         // RGB (color)
54         //0.0, 0.0, 1.0,
55         // Alpha (opacity)
56         // 1.0 );
57
58     o_color.r = 1.0;
59     o_color.g = 1.0;
60     o_color.b = 0.0;
61
62 }
```

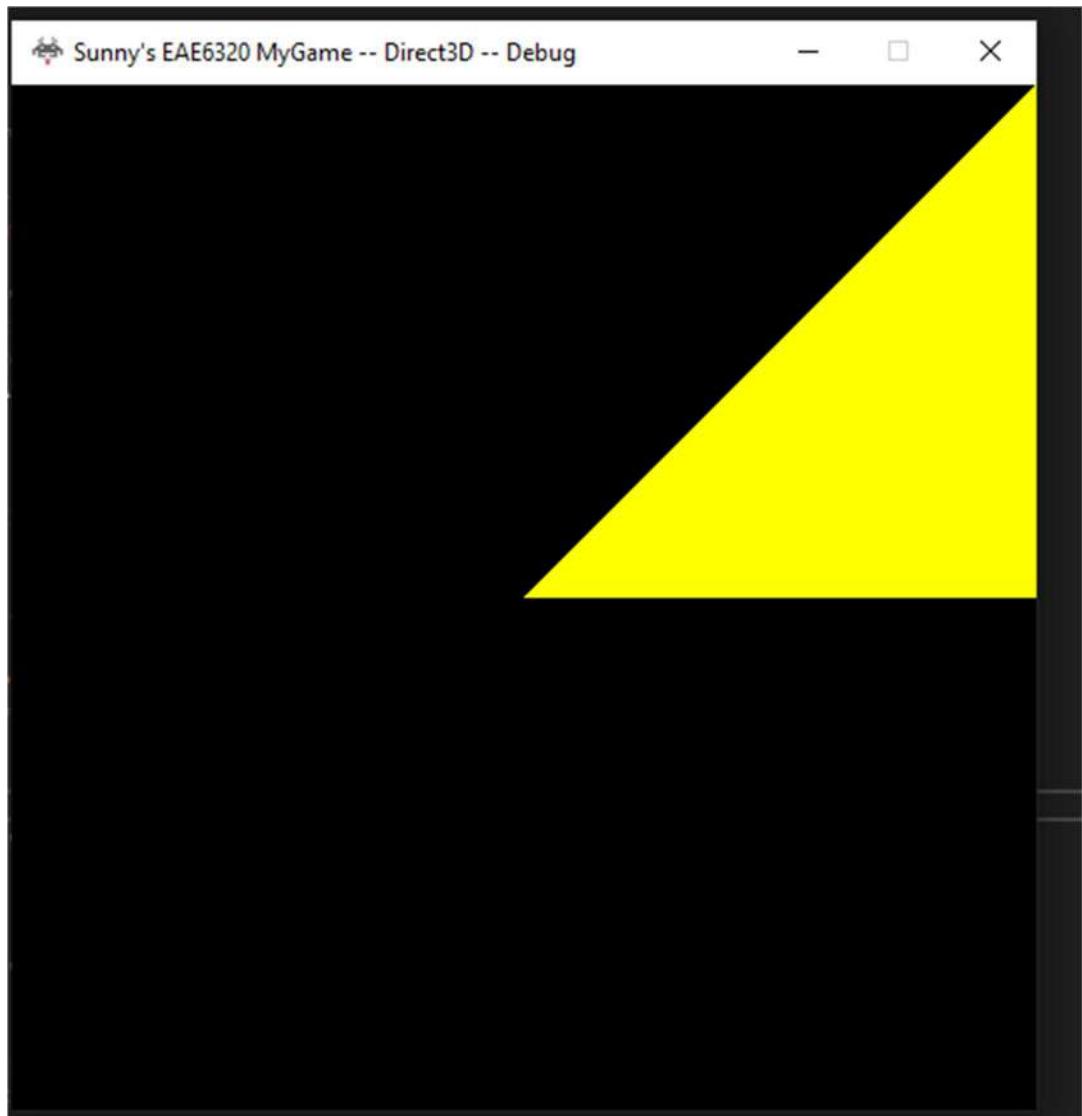
This syntax does not work

100% ▼ No issues found

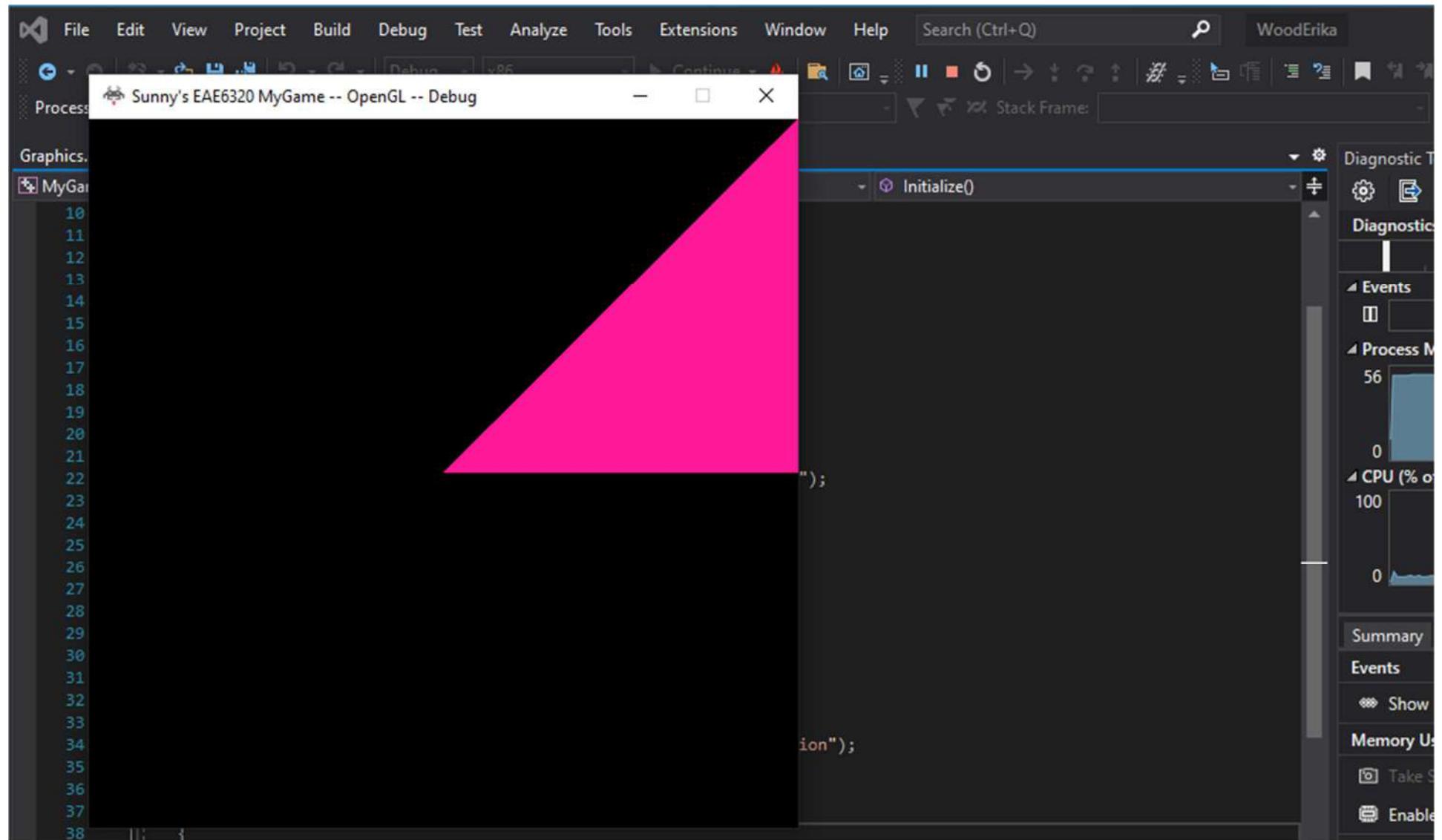
Ln: 38 Ch: 3 Col: 6 TABS CRLF

Error List

Entire Solution		4 Errors	2 Warnings	0 Messages	Build + IntelliSense	Search Error List		
Code	Description	Project	File	Line				
! C26495	Variable 'eae6320::Graphics::ConstantBufferFormats::sFrame::padding' is uninitialized. Always initialize a member variable (type.6).	Graphics	ConstantBufferFormats.h	37				
! C26812	The enum type 'eae6320::Results::eResult' is unscoped. Prefer 'enum class' over 'enum' (Enum.3).	MyGame	cResult.h	121				
X X3129	warning treated as error	BuildMyGameAssets	special.shader	40				
X X3578	Output value 'o_color' is not completely initialized The command "D:\MyGitHubRepos\wooderika\temp\x64\Debug\output\ShaderBuilder.exe" "D:\MyGitHubRepos\wooderika\MyGame_\Content\shaders/fragment/special.shader" "D:\MyGitHubRepos\wooderika\temp\x64\Debug\MyGame_\data/shaders/fragment/special.shader" fragment failed with exit code 1	BuildMyGameAssets	special.shader	40				
X MSB8066	Custom build for '..\Content\AssetsToBuild.lua' exited with code 1.	BuildMyGameAssets	Microsoft.CppCommon.t...	241				



```
// Output solid yellow
o_color = float4(
    // RGB (color)
    1.0, 1.0, 0.0,
    // Alpha (opacity)
    1.0 );
```



```
// Output solid pink
o_color = vec4(
// RGB (color)
1.0, 0.1, 0.6,
// Alpha (opacity)
1.0 );
```

Now trying changing colors over time:

D:\MyGitHubRepos\wooderika\MyGame_Content\Shaders\Fragment\special.shader - Notepad++

File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?



change.log special.shader

```
64     // Alpha (opacity)
65     //1.0 );
66
67     // Output solid yellow
68 o_color = float4(
69     // RGB (color)
70     sin(g_elapsedSecondCount_simulationTime), cos(g_elapsedSecondCount_simulationTime), 0.3,
71     // Alpha (opacity)
72     1.0 );
73 }
74
75 #elif defined( EAE6320_PLATFORM_GL )
76
77 // Constant Buffers
78 //=====
79
80 layout( std140, binding = 0 ) uniform g_constantBuffer_frame
81 {
82     mat4 g_transform_worldToCamera;
83     mat4 g_transform_cameraToProjected;
84
85     float g_elapsedSecondCount_systemTime;
86     float g_elapsedSecondCount_simulationTime;
87     // For vec4 alignment
88     vec2 g_padding;
89 };
90
91 // Output
92 //=====
93
94 // Whatever color value is output from the fragment shader
95 // will determine the color of the corresponding pixel on the screen
96 out vec4 o_color;
97
98 // Entry Point
99 //=====
100
101 void main()
102 {
103     // Output solid white
104     //o_color = vec4(
105     //    // RGB (color)
106     //    //1.0, 1.0, 1.0,
107     //    // Alpha (opacity)
108     //    //1.0 );
109
110     // Output solid red
111     //o_color = vec4(
112     //    // RGB (color)
113     //    //1.0, 0.0, 0.0,
114     //    // Alpha (opacity)
115     //    // 1.0 );
116
117     // Output solid pink
118     o_color = vec4(
119         // RGB (color)
120         sin(g_elapsedSecondCount_simulationTime), cos(g_elapsedSecondCount_simulationTime), 0.3,
121         // Alpha (opacity)
122         1.0 );
123
124 }
```

LINK GIF:

Building the release for submission:

The screenshot shows the Microsoft Visual Studio 2019 interface with the following details:

- Code Editor:** The main window displays the file `cConstantBuffer.cpp` with the following code snippet:

```
37     return result;
38 }
39     EAE6320_ASSERT( m_size > 0 );
40 }
41 // Initialize the platform-specific constant buffer
42 {
43     result = Initialize_platformSpecific( i_initialData );
44     EAE6320_ASSERT( result );
45 }
46 else
47 {
48     result = Results::Failure;
49     EAE6320_ASSERTF( false, "Invalid constant buffer type %u", m_type );
50     Logging::OutputError( "A constant buffer is being initialized with the invalid type %u", m_type );
51     return result;
52 }
53
54 return result;
55 }
56
57 eae6320::Graphics::cConstantBuffer::cConstantBuffer( const ConstantBufferTypes i_type )
58 :
59     m_type( i_type )
60 {
61 }
62
63
64
65 eae6320::Graphics::cConstantBuffer::~cConstantBuffer()
66 {
67     const auto result = CleanUp();
68     EAE6320_ASSERT( result );
69 }
```

- Solution Explorer:** Shows the project structure for "WoodErika" (28 of 28 projects). The `MyGame` project is expanded, showing its contents.

 - `Engine`: Application, Asserts, Assets, Concurrency, Graphics, Logging, Math, Physics, Platform, Results, ScopeGuard, Time, UserInput, UserOutput, UserSettings, Windows.
 - `ExampleGame`
 - `External`
 - `MyGame`: BuildMyGameAssets, MyGame (selected), References, External Dependencies, Resource Files, cMyGame.cpp, cMyGame.h

- Properties:** Shows the properties for the `WoodErika` solution.

Name	WoodErika
Active config	Release x64
Description	
Path	D:\MyGitHubRep
Startup project	MyGame (MyGame)

- Output Window:** Displays build logs for "Build Example Game Assets" and "Build My Game Assets".

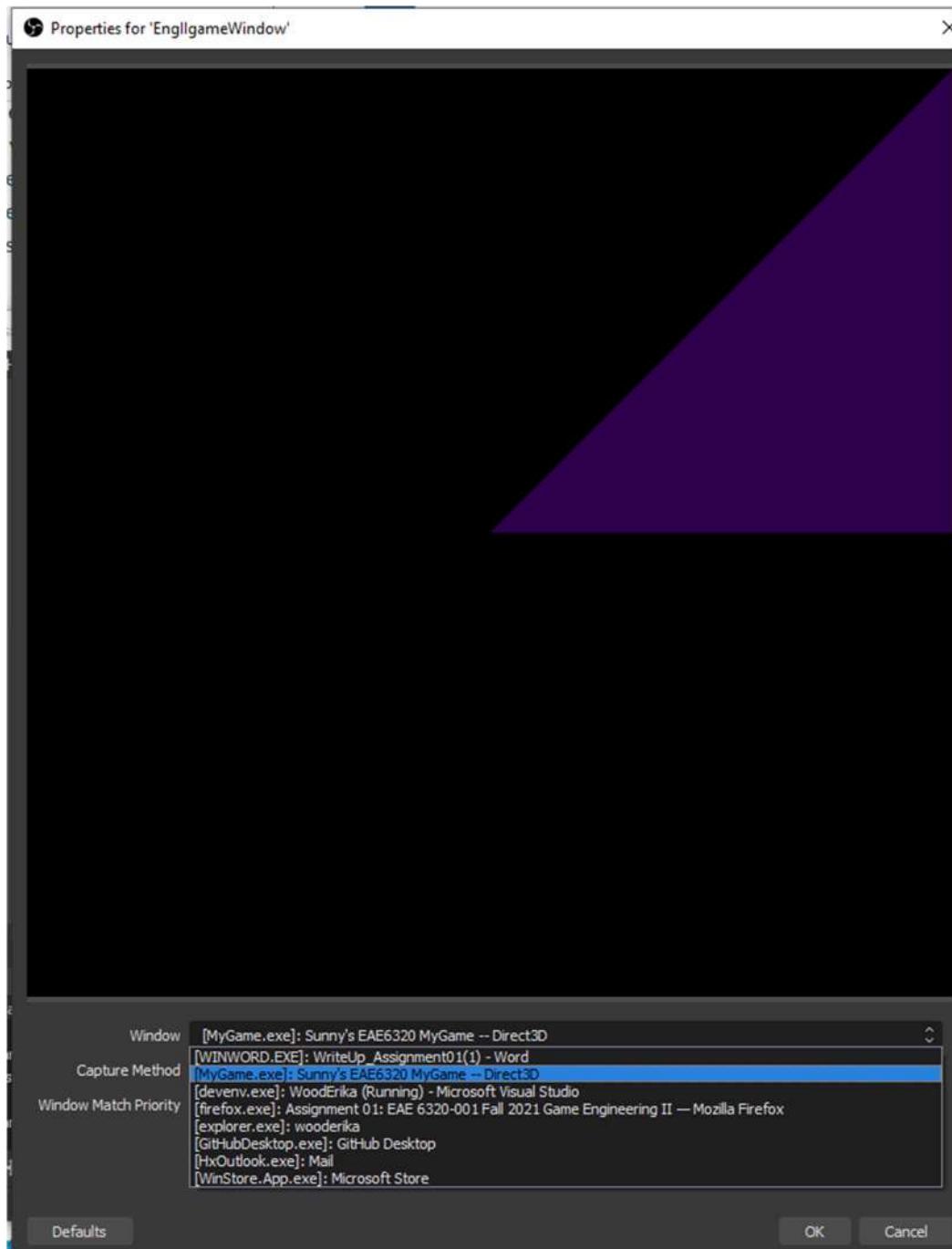
```
27>----- Build started: Project: BuildExampleGameAssets, Configuration: Release x64 -----
28>----- Build started: Project: BuildMyGameAssets, Configuration: Release x64 -----
28>Building MyGame_ Assets
27>Building ExampleGame_ Assets
28>Built D:\MyGitHubRepos\wooderika\Engine\Content\shaders\vertex\standard.shader
27>Built D:\MyGitHubRepos\wooderika\Engine\Content\shaders\vertex\standard.shader
27>Built D:\MyGitHubRepos\wooderika\Engine\Content\shaders\fragment\standard.shader
27>Built D:\MyGitHubRepos\wooderika\Engine\Content\shaders\vertex\vertexinputlayout_mesh.shader
27>Installed Lua.txt
27>Installed mcpp.txt
28>Built D:\MyGitHubRepos\wooderika\Engine\Content\shaders\fragment\standard.shader
28>Built D:\MyGitHubRepos\wooderika\MyGame_\Content\shaders\fragment\special.shader
28>Built D:\MyGitHubRepos\wooderika\Engine\Content\shaders\vertex\vertexinputlayout_mesh.shader
28>Installed Lua.txt
28>Installed mcpp.txt
===== Build: 28 succeeded, 0 failed, 0 up-to-date, 0 skipped ======
```

Sunny's EAE6320 MyGame -- Direct3D

— □ ×



Capturing the window with OBS:

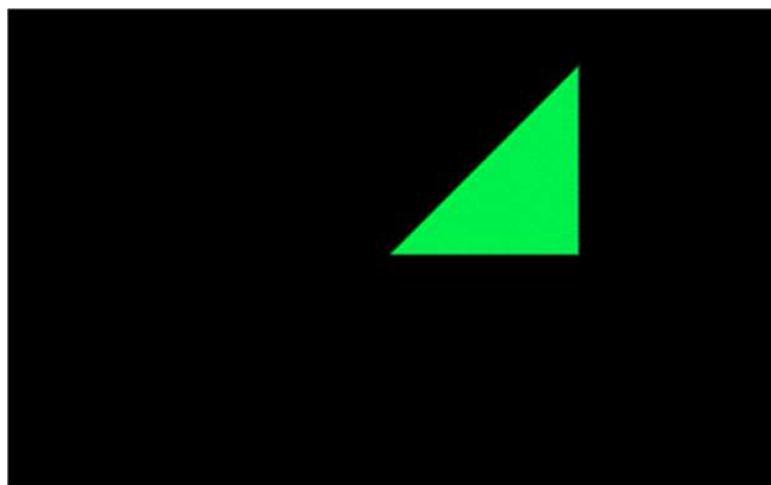


Converting video to gif:

<https://spark.adobe.com/tools/convert-to-gif>

but have to output a different format in OBS

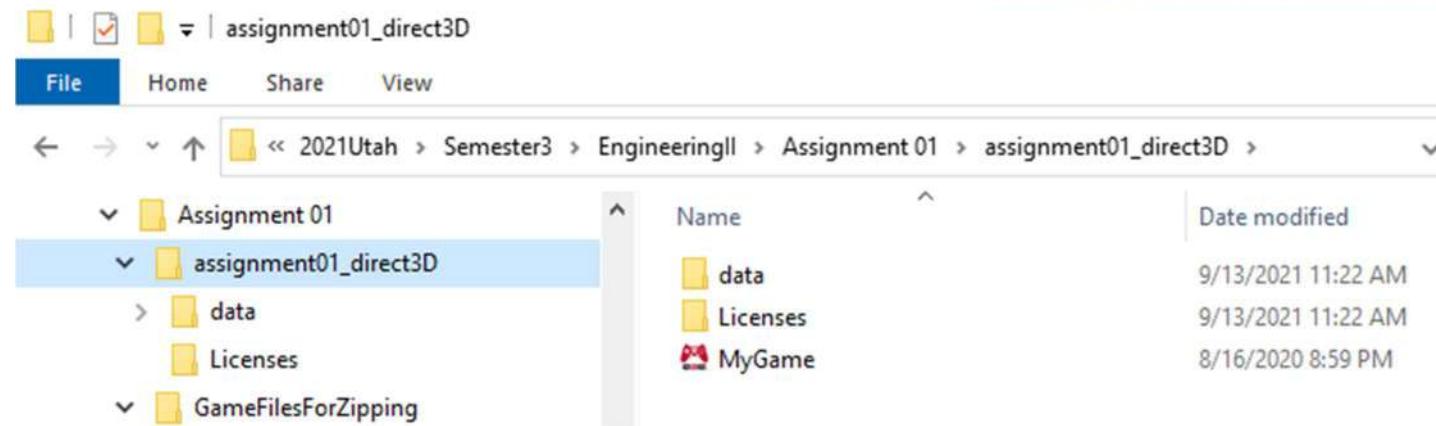
Quick Action

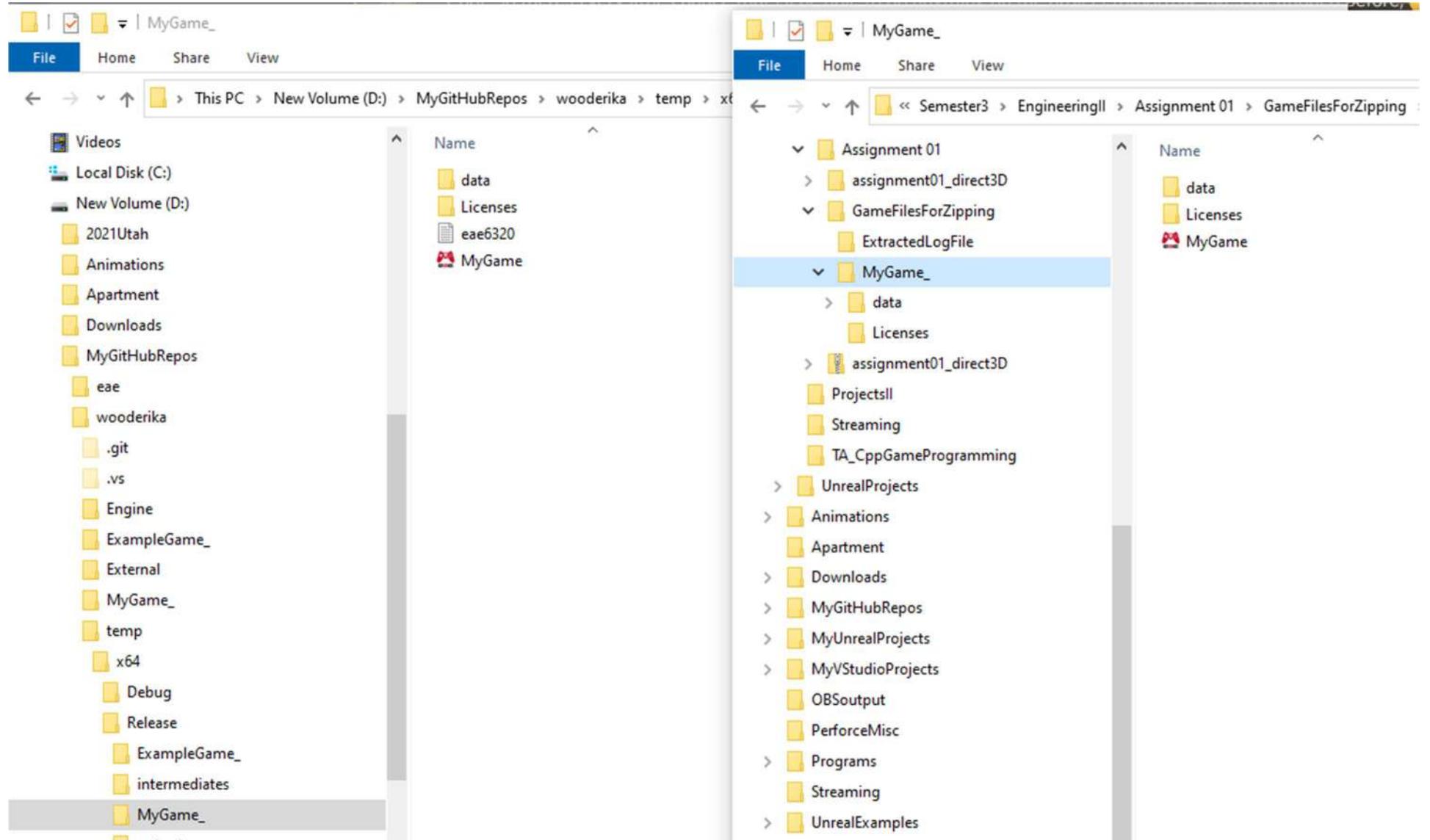


The Quality of the gif is not really good. I will use a different service the next time.

Now getting it ready for submission:

Extracted the log file according to sample submission:





Zipping the MyGame_ folder without the log file:

The screenshot shows a Windows File Explorer window. The title bar says "Extract GameFilesForZipping". The ribbon menu has tabs: File, Home, Share, View, Compressed Folder Tools, and Extract. The address bar shows the path: This PC > New Volume (D:) > 2021Utah > Semester3 > EngineeringII > Assignment 01 > GameFilesForZipping. The left sidebar shows a tree view with "GameFilesForZipping" selected. The main pane lists files and folders:

Name	Date modified	Type	Size
ExtractedLogFile	9/13/2021 12:55 PM	File folder	
MyGame_	9/13/2021 12:55 PM	File folder	
MyGame_.zip	9/13/2021 12:57 PM	Compressed (zipp...)	169 KB

Checking where I can create a tag: in GitLab and in GitHub

The screenshot shows a GitLab interface. The top navigation bar includes links for Projects, Groups, More, and a search bar. The sidebar on the left shows "WoodErika" as the current user, with options for Project overview, Repository (selected), Files, Commits, and Branches. The main content area is titled "Tags" and shows the message: "Tags give the ability to mark specific points in history as being important". It also states: "Repository has no tags yet. Use git tag command to add a new one: git tag -a v1.4 -m 'version 1.4'". A "New tag" button is visible at the bottom right.

The screenshot shows a GitHub desktop application interface. At the top, there's a navigation bar with File, Edit, View, Repository, Branch, and Help. Below the navigation bar, there are sections for Current repository (wooderika) and Current branch (DevAssignment01). A Fetch origin button indicates it was last fetched 13 hours ago.

The main area has two tabs: Changes (selected) and History. Under Changes, there's a dropdown menu to "Select branch to compare...". Below this, a list of recent commits is shown:

- STEP 12 Triangle Color Animation (sunny-erika, 13h)
- STEP 11 running Game works (sunny-erika, 16h)
- STEP 9, 10 (sunny-erika, 17h)
- STEP 8 setting MyGame project as the default startup project (sunny-erika, 20h)
- STEP 7 c - added content folder and project dependencies (sunny-erika, 21h)
- STEP 7 b - added new project BuildMyGameAssets (sunny-erika, 22h)
- STEP 7 a - Solution builds with new MyGame project (sunny-erika, 1d)

The commit for "STEP 12 Triangle Color Animation" is expanded, showing a diff between the current branch and the base branch. The diff highlights changes in three files: Graphics.d3d.cpp, Graphics.gl.cpp, and special.shader. A "New" button is visible next to the diff summary.

A modal dialog titled "Create a tag" is open in the center. It has a "Name" input field, a "Create tag" button, and a "Cancel" button. The "Create tag" button is highlighted with a blue background.

The code diff for the "special.shader" file is partially visible:

```
Engine\Graphics\Di...\\Graphics.d3d.cpp
Engine\Graphics\Ope...\\Graphics.gl.cpp
MyGame_\Content\\AssetsToBuild.lua
MyGame_\Content\\Sh...\\special.shader
```

```
@@ -483,7 +483,8 @@ namespace
483   483       EAE6320_ASSERTF( false, "Can't initialize shading data without
r" );
484   484       return result;
485   485   }
486 - if ( !( result = eae6320::Graphics::cShader::Load( "data/Shaders/
rd.shader",
result = eae6320::Graphics::cShader::Load( "data/Shader
ult = eae6320::Graphics::cShader::Load("data/Shaders/Fra
gmentShader, eae6320::Graphics::eShaderType::Fragment )
20_ASSERTF( false, "Can't initialize shading data without
```

I will try the GitLab option.

GitLab Projects Groups More 🔍 Search or jump to... ? 🌐

W WoodErika

Project overview

Repository

- Files
- Commits
- Branches
- Tags**
- Contributors
- Graph
- Compare
- Locked Files

Issues 0

Merge Requests 0

Requirements 0

CI / CD

Security & Compliance

Operations

Packages

« Collapse sidebar

EAE6320-FALL2021 > WoodErika > New Tag

New Tag

Tag name Assignment01tagWoodErika

Create from DevAssignment01

Existing branch name, tag, or commit SHA

Message Tagging DevAssignment01 branch

Optionally, add a message to the tag. Leaving this blank creates a [lightweight tag](#).

Release notes

Optionally, create a public Release of your project, based on this tag. Release notes are displayed on the [Releases page](#). [More information](#)

Write Preview

Testing tagging

Markdown is supported

Attach a file

Create tag

Cancel

Import bookmarks... Make Images, Videos ... Projects · Dashboard · University Surplus & S... EAE 4900-UUT Fall 2021... Iwatch Home - Iwatch Awesome Tuts - Learn... Getting Started

GitLab Projects Groups More Search or jump to... ?

W WoodErika

EAE6320-FALL2021 > WoodErika > Tags > Assignment01tagWoodErika

Assignment01tagWoodErika u1274217 @01388442 cd669dc5 · STEP 12 Triangle Color Animation · 13 hours ago

Tagging DevAssignment01 branch

Testing tagging

Project overview Repository Files Commits Branches Tags

Merge request:

GitLab Projects Groups More

⚠ You won't be able to pull or push project code via SSH until you add an SSH key to your profile

Add SSH key Don't show again

EAE6320-FALL2021 > WoodErika > Details

WoodErika  Project ID: 885 | Leave project

1 Commit 2 Branches 1 Tag 1.8 MB Files 1.8 MB Storage 1 Release

master wooderika / + History Find file Web IDE Clone

 Added Read Me u0213638 authored 2 weeks ago 291e8326

 README  No license. All rights reserved Auto DevOps enabled

Name	Last commit	Last update
README.md	Added Read Me	2 weeks ago
README.md		

W WoodErika

Project overview Details Activity Releases Repository Issues Merge Requests Requirements CI / CD Security & Compliance Operations Packages Analytics Wiki

The screenshot shows the GitLab interface for the project 'WoodErika'. The left sidebar has a 'W' icon and the project name 'WoodErika'. Under 'Repository', 'Branches' is selected. The main area shows the 'Branches' tab with 'Overview' selected. It lists two branches: 'DevAssignment01' (active, last commit 13 hours ago) and 'master' (active, default, protected, last commit 2 weeks ago). A search bar at the top right allows filtering by branch name, and buttons for 'Delete merged branches' and 'New branch' are also present.

Now looking at the organization of the engine code I have to say that I really like it. Even though I don't have any previous experience with Game Engines, from a Software Engineering perspective I really like that the code is not just simply put into one project with different classes but the functionality is separated into different projects each serving a different purpose. Theoretically the organization could be solved by filters which would only seems like a quick and dirty solution. That was actually the way we solved our solutions during my Bachelor degree. We had amazing professors and it was a great program, however, I wish we had had more hands-on-practice like we had during our C++ class with Joe and this Engineering II class.

I also feel that the coding style is very organized with plenty of comments and explanations. It is easily readable and there is a consistent naming conventions throughout the projects.

I really do appreciate the guidance we received with the step-by-step instructions on how to get the project set up. Thank you!!!