How to Install Vulkan APIs for UE4

New Paths, New Possibilities

Just as parallelism and multithreaded programming paved the way for the performance strides of multicore CPUs, Vulkan APIs are poised to forge a future of multithreaded, cross-platform GPU programming, and high-performance rendering, regardless of the target device.

The heir apparent to OpenGL, Vulkan gives developers greater control over threading and memory management, and more direct access to the GPU than predecessor APIs, which means more versatility for addressing an array of target platforms. The only costs are a relatively up-to-date processor, and bit more development work up front.

What You'll Need

The minimum requirement for developing with Vulkan APIs on Intel Graphics GPUs is a processor from the 6th Generation Intel® Processor Family (introduced in August, 2015) running 64-bit Windows 7, 8.1 or 10. Intel also offers a 64-bit Windows 10-only driver for 6th-, 7th- or 8th-generation processors. Vulkan drivers are now included with Intel® HD Graphics drivers, which helps simplify the setup process a bit.

These instructions require:

- An account with Epic Games
- A Windows PC with Unity Engine 4 and Microsoft Visual Studio pre-installed. To install UE4, visit the Unreal Engine download page. For Visual Studio, navigate to the Visual Studio download page.
- An account on github

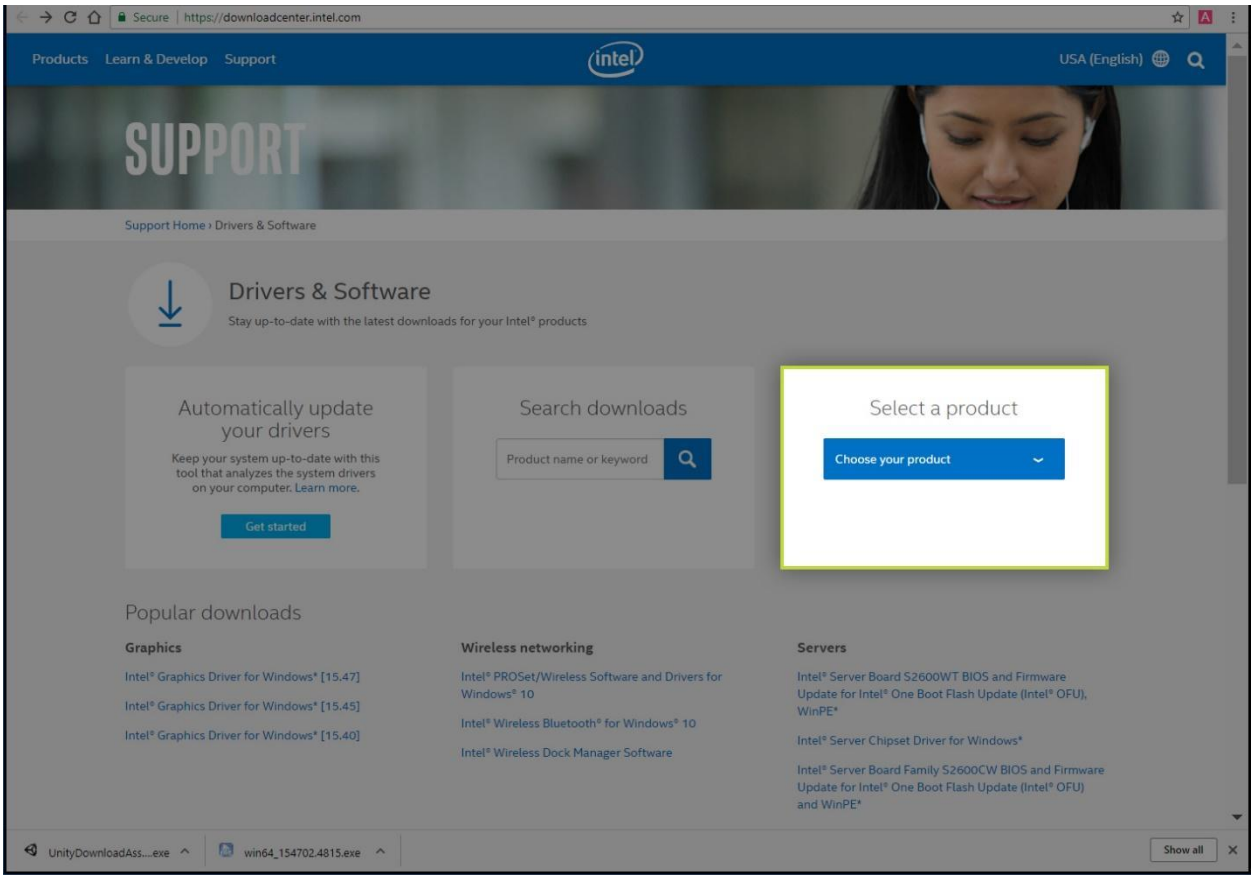
Using UE4 with Vulkan APIs requires that the engine be rebuilt, and this must be done *after* the Vulkan SDK has been downloaded, and installed. Rebuilding the Unreal Engine requires the engine source-code, which is freely available on github to

registered users who have linked their git account with Epic Games. All required steps are covered here.

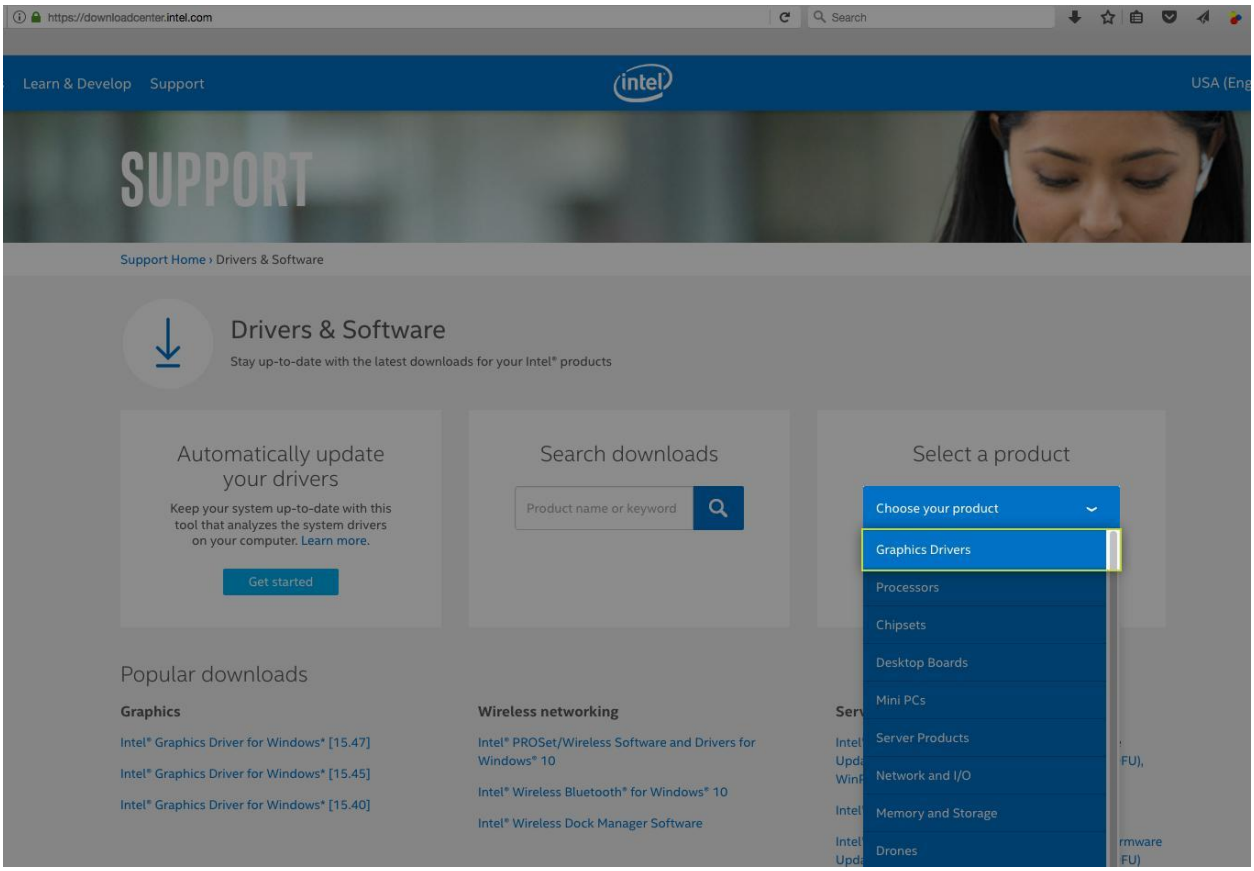
These instructions are for setting up a development host with Intel® HD Graphics.

Part One: Download Intel® Graphics Driver

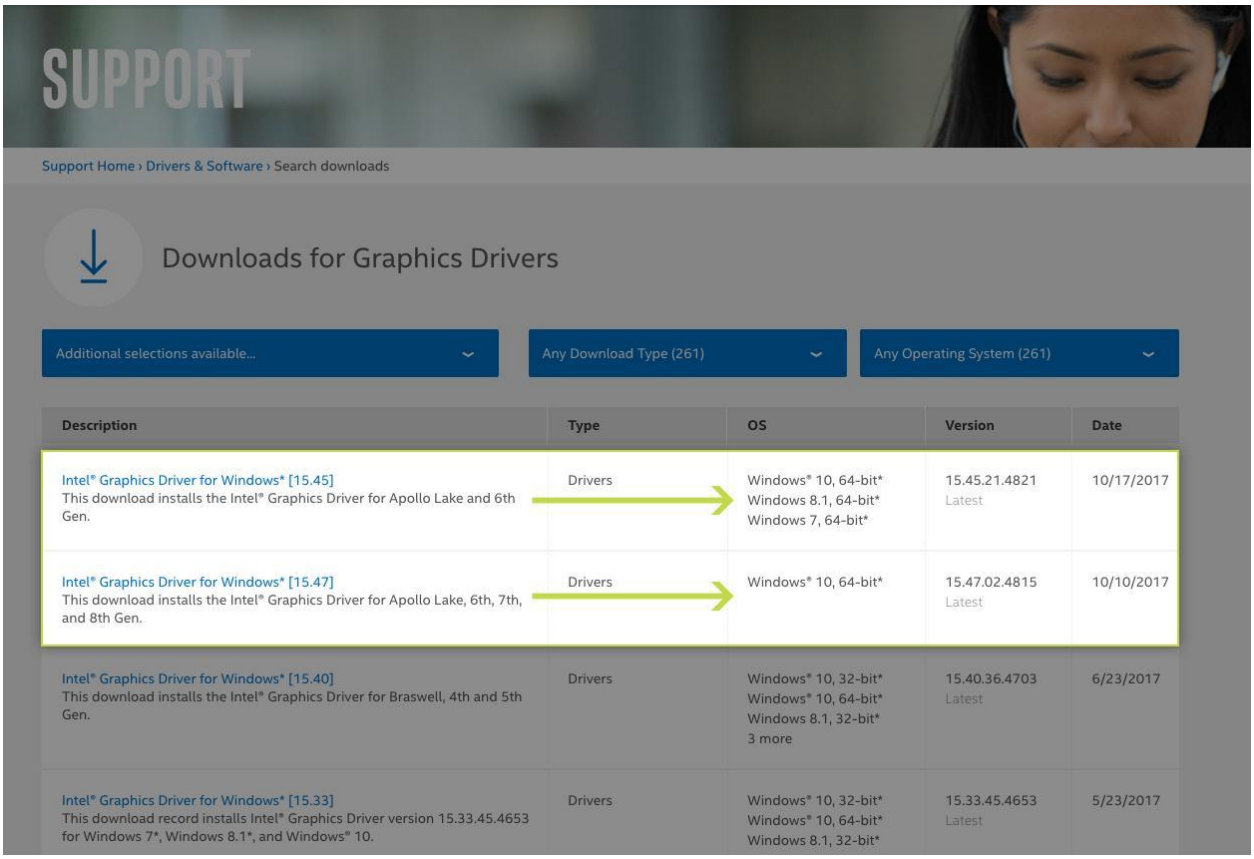
1. Visit the Intel Download Center.



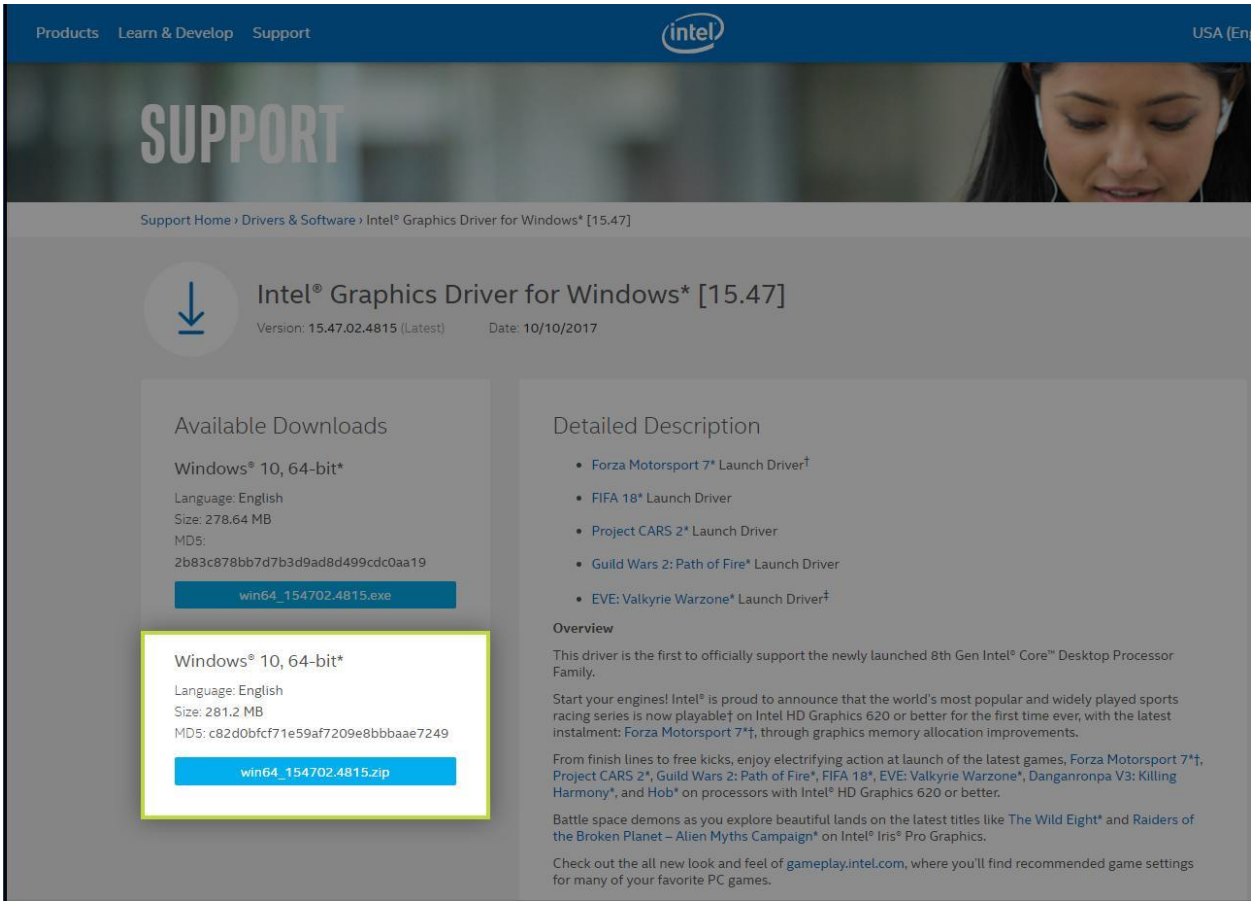
2. Select “Graphics Drivers” from the “Select a Product” drop-down menu.



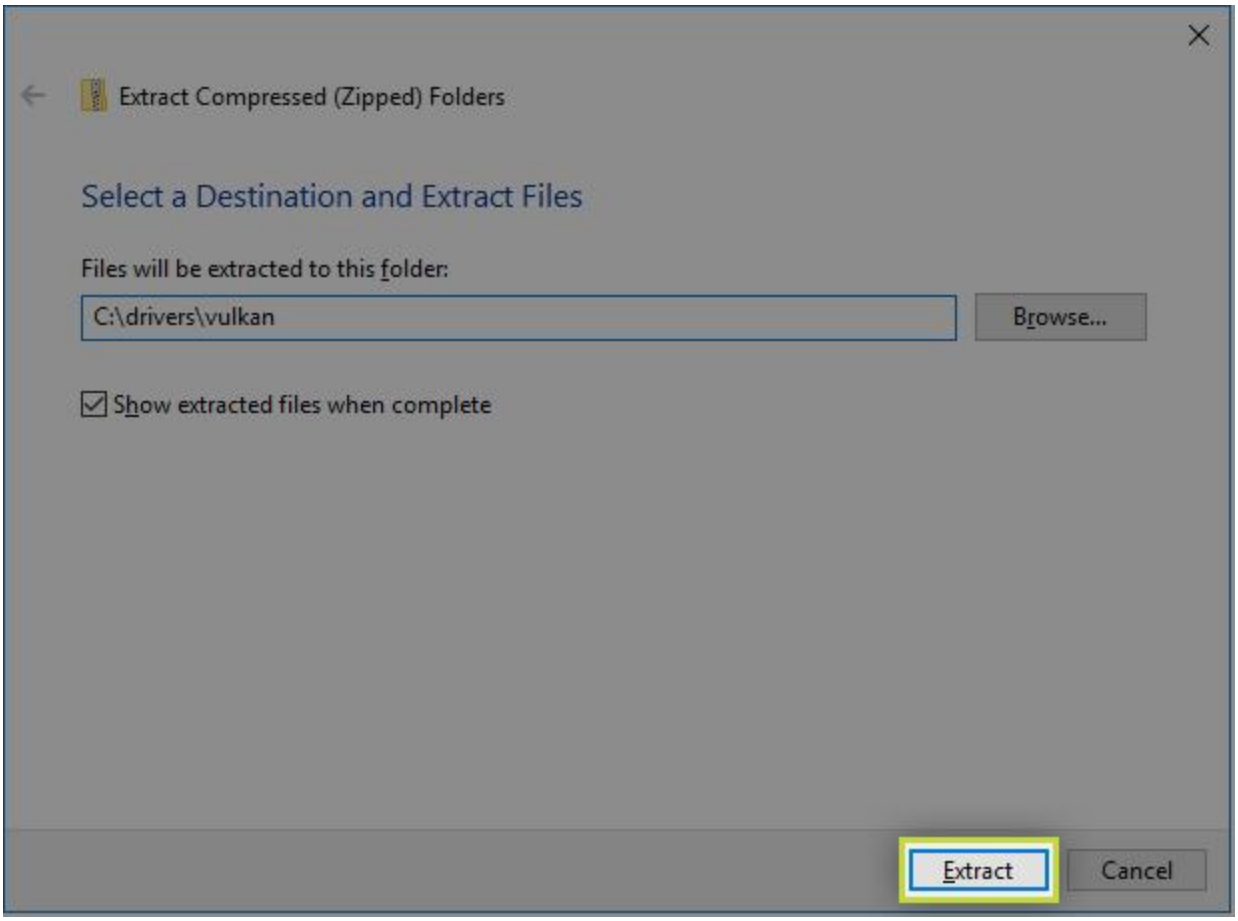
3. Select the required driver based on the development host.



4. Download the .ZIP version of the driver.

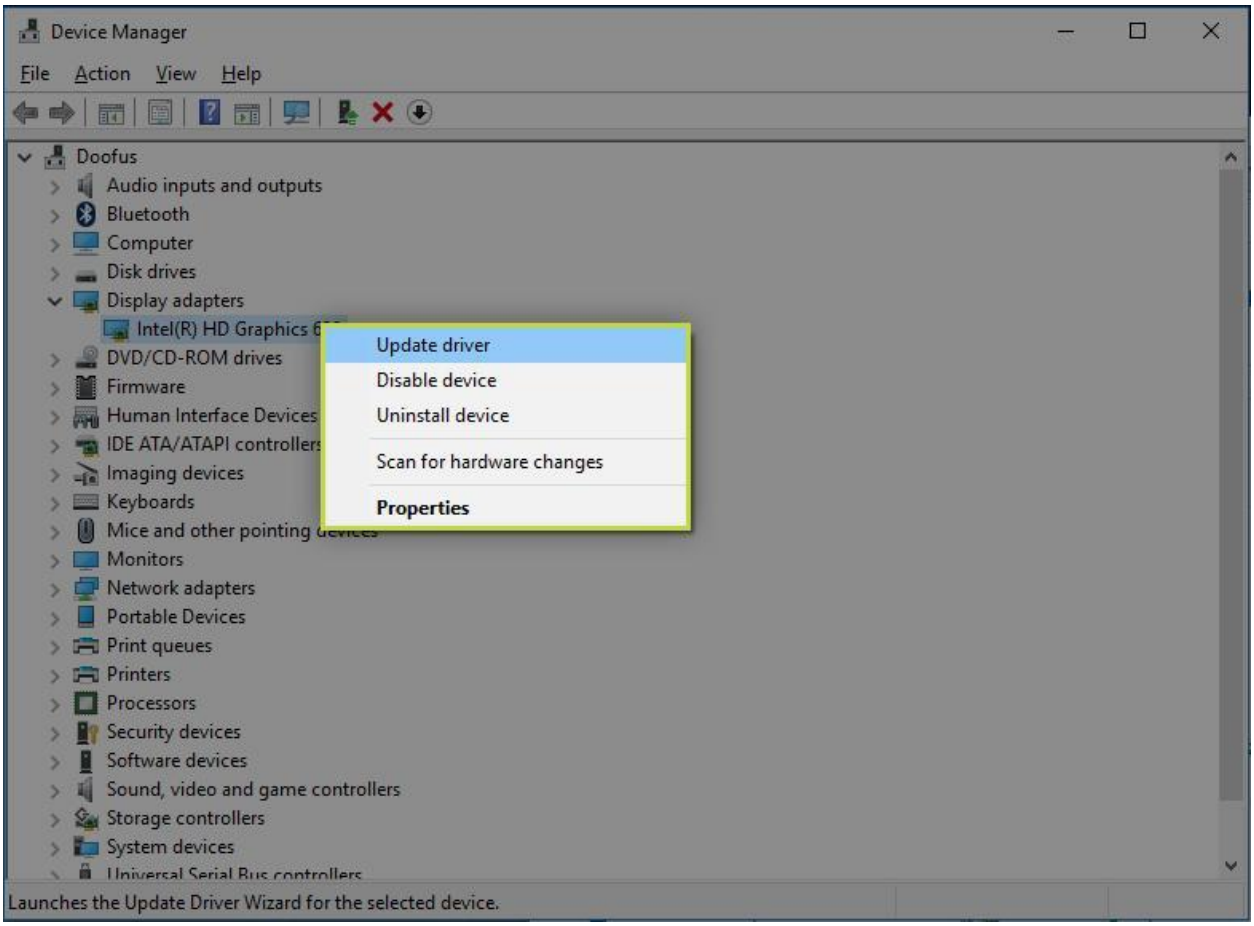


5. Extract all files from the .ZIP and create a memorable destination folder.

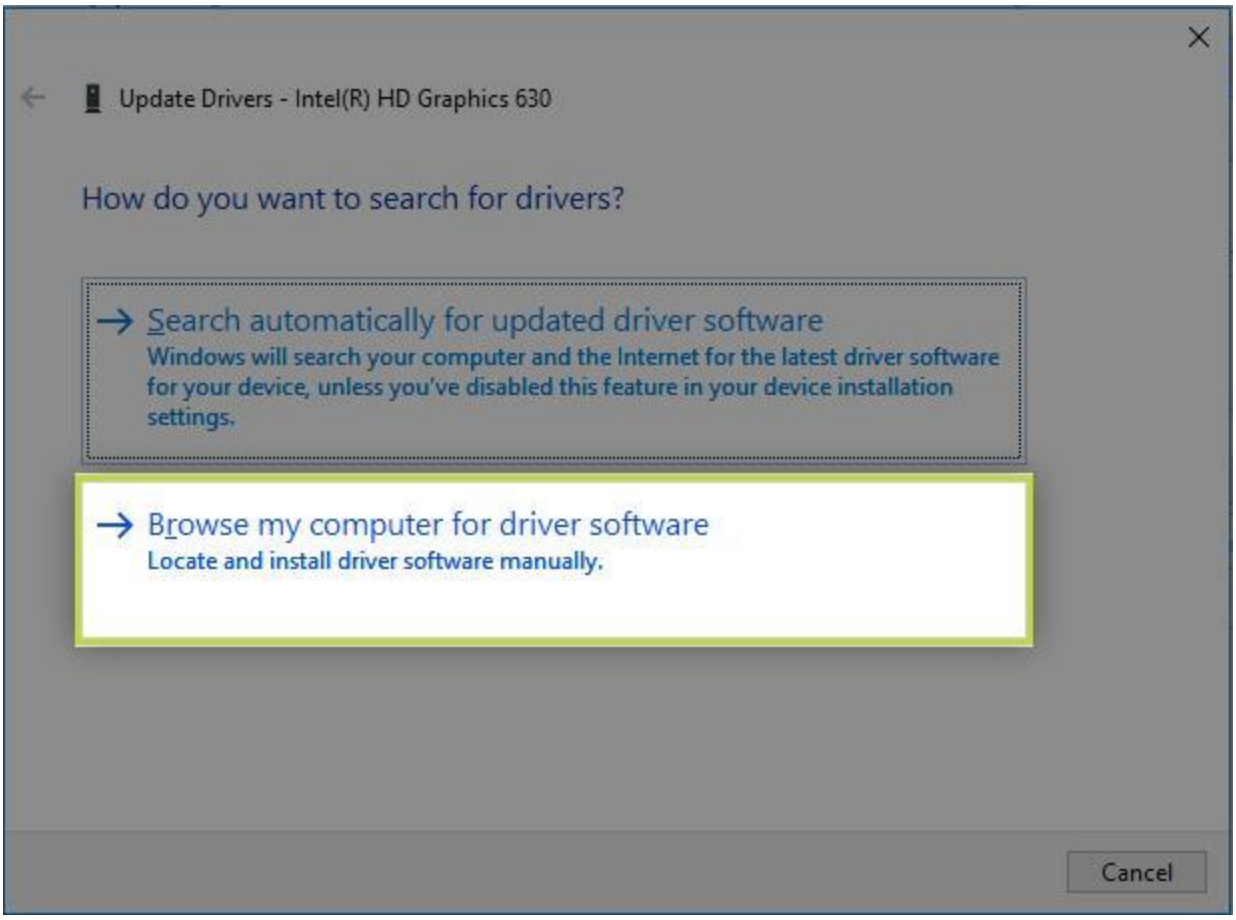

Extract Compressed (Zipped) Folders
Select a Destination and Extract Files
Files will be extracted to this folder:
C:\drivers\vulkan
Browse...
Show extracted files when complete
Extract
Cancel

Part Two: Update Graphics in Windows

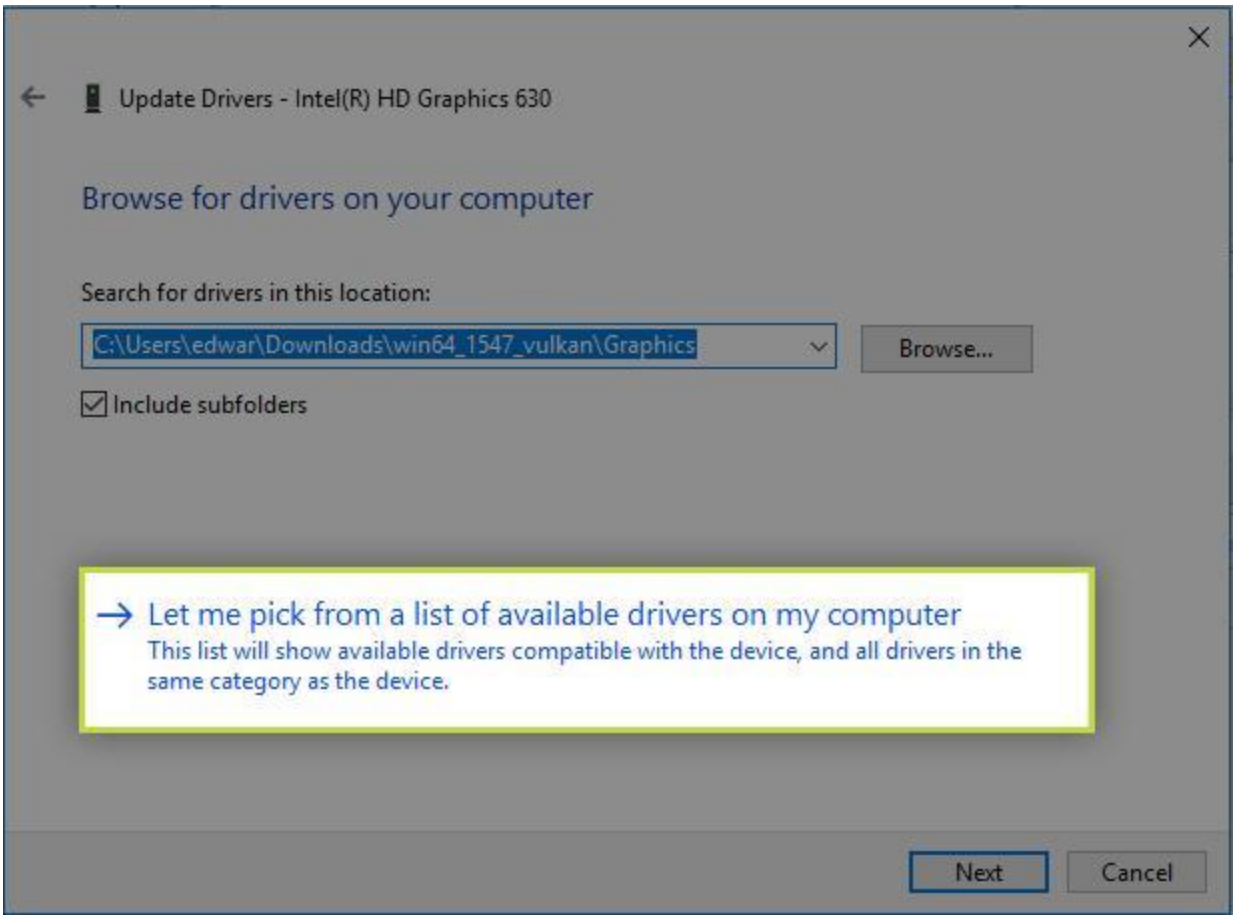
6. In Device Manager, expand “Display adapters,” right-click on the Intel® HD Graphics adapter, and select “Update driver.”



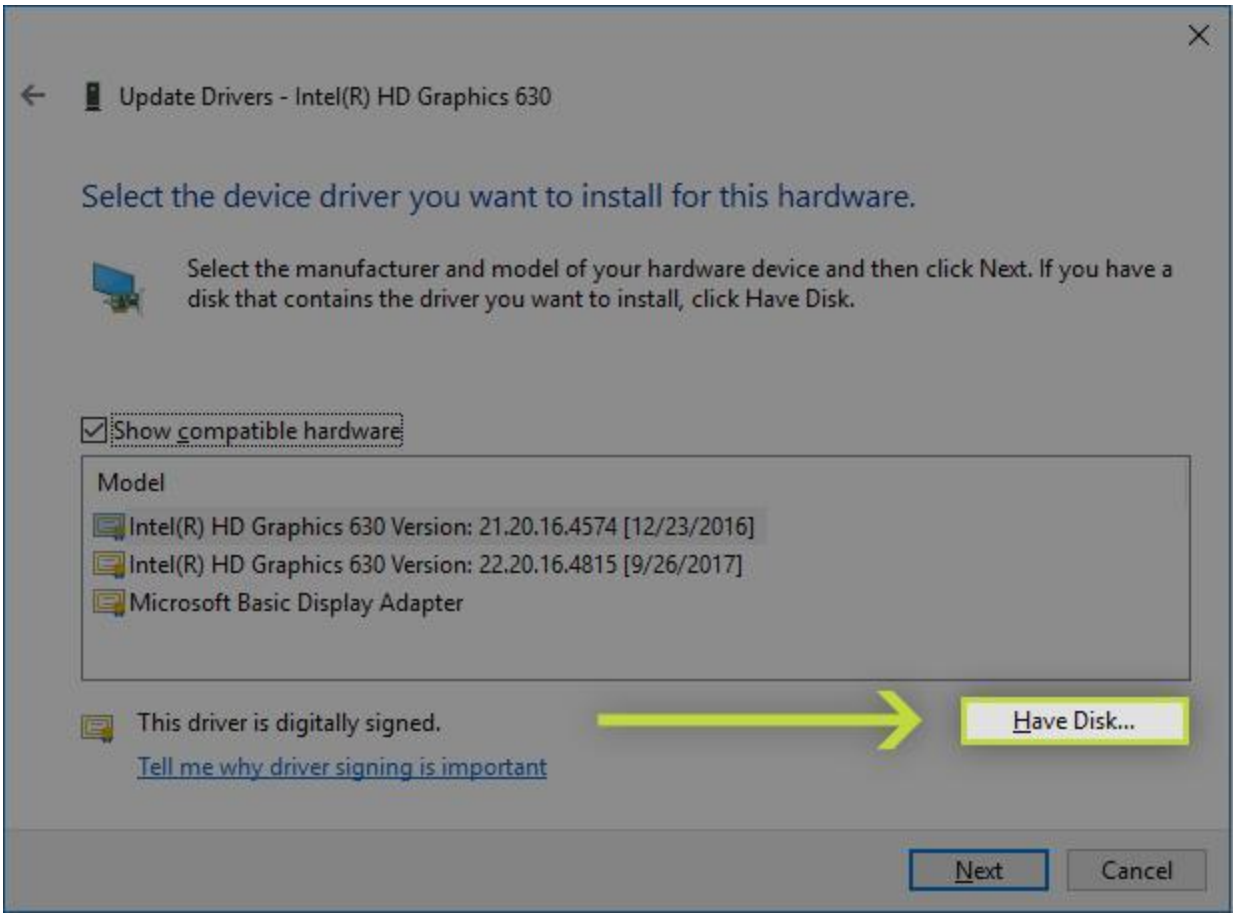
7. Select “Browse my computer…” in the “Update Drivers” screen.



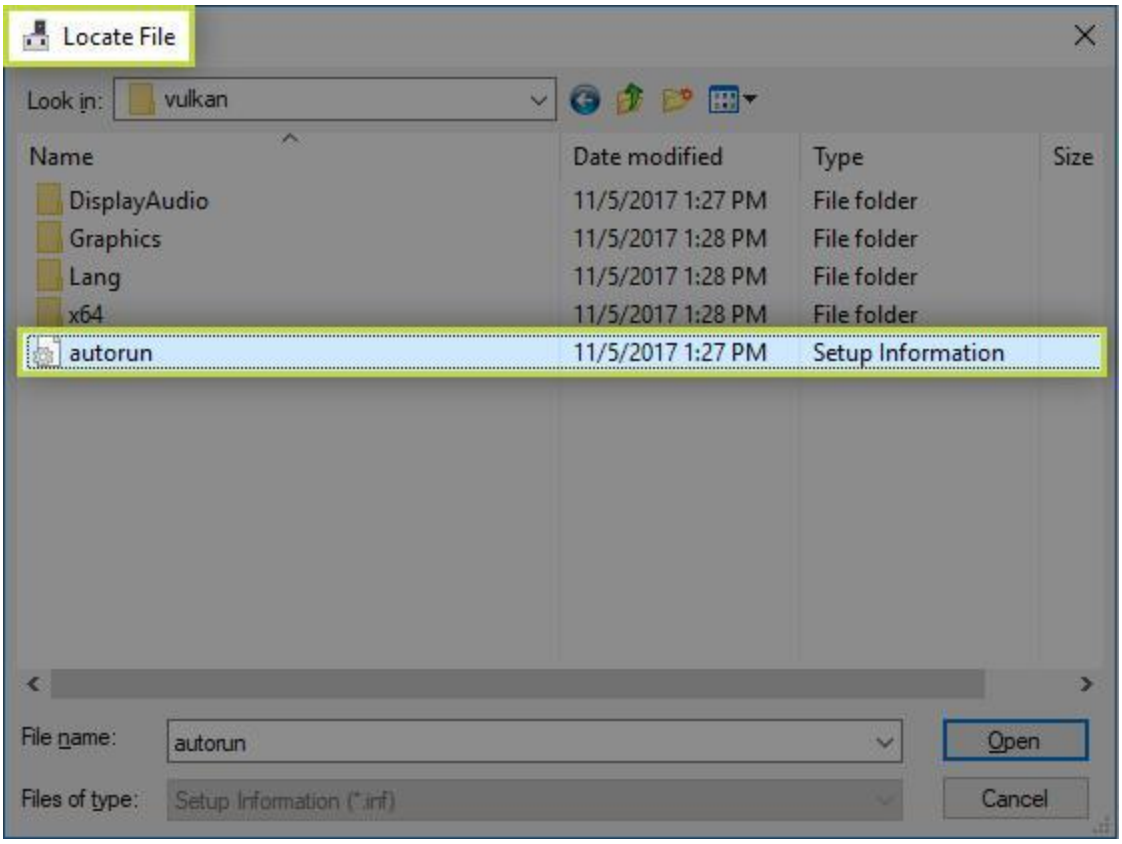
8. Select “Let me pick…”



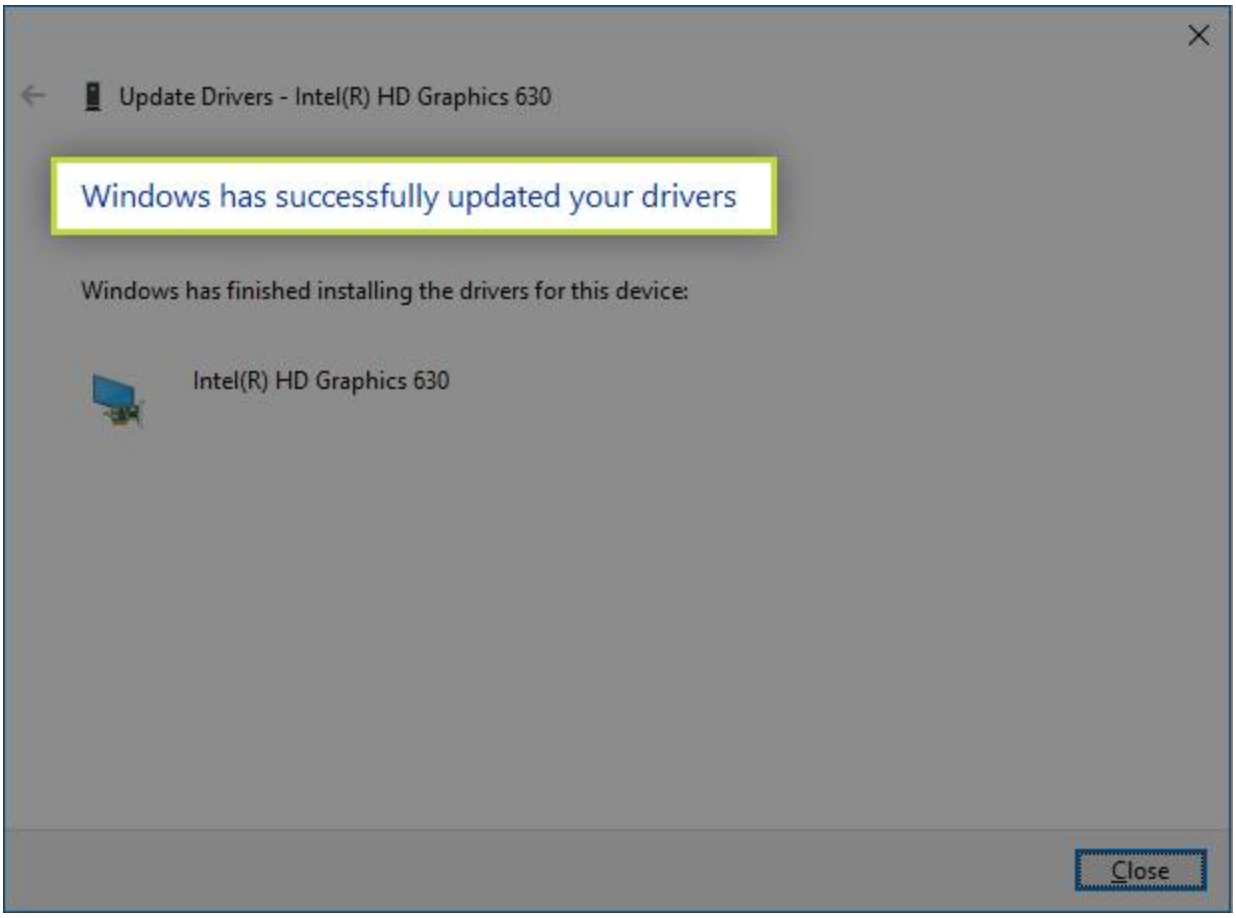
9. Select “Have Disk…”



10. Navigate to the folder containing the files unzipped in Step 5.

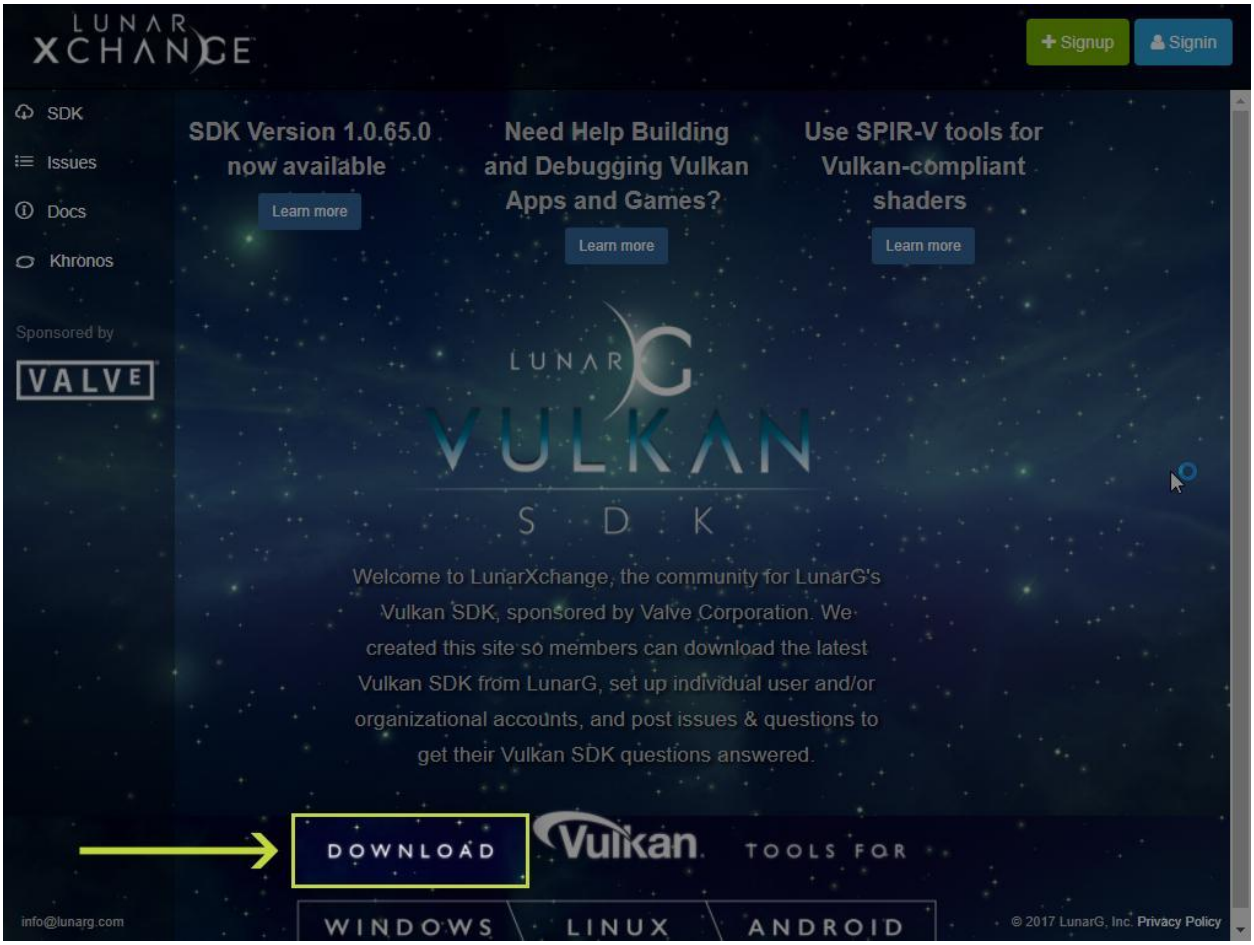


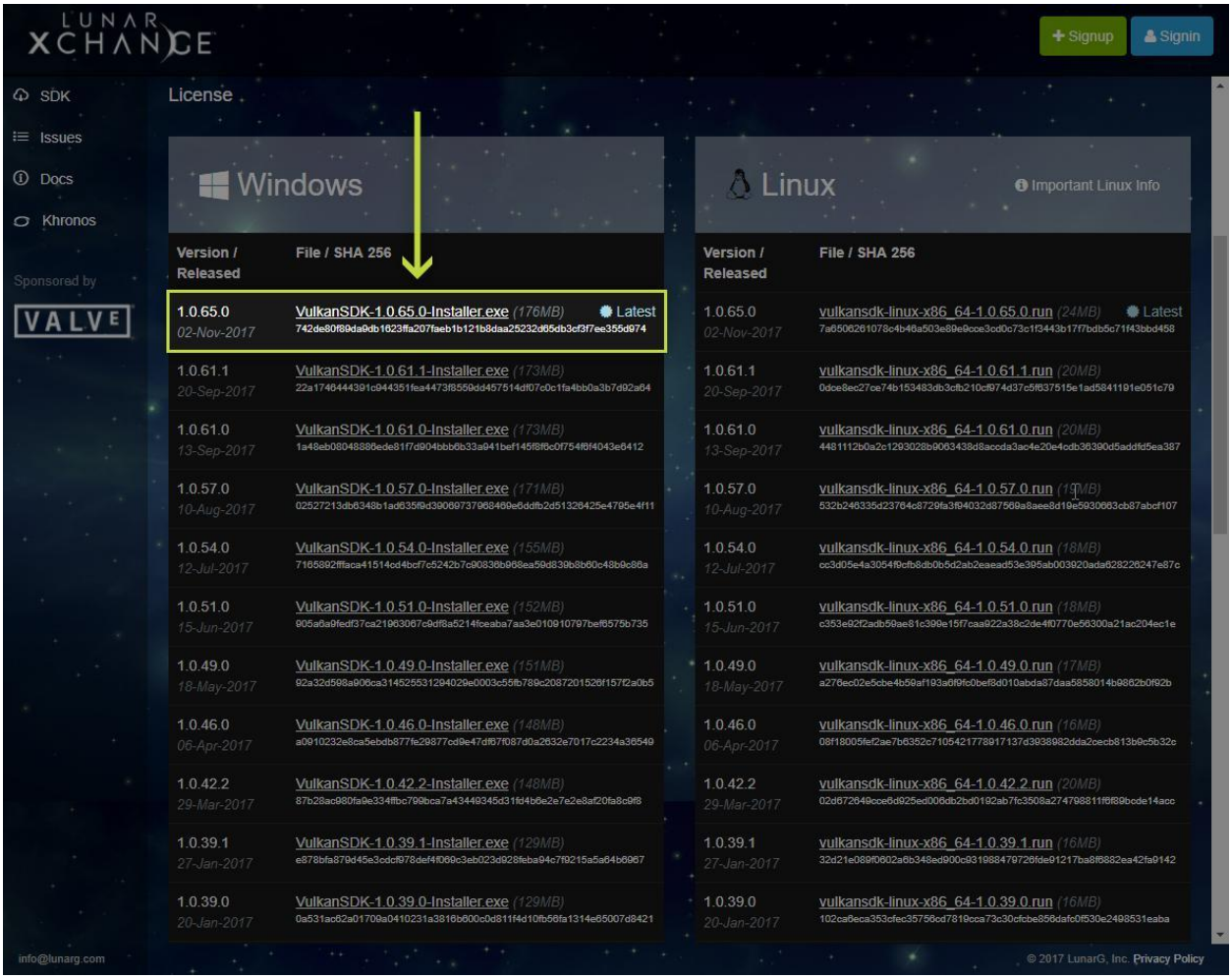
11. If successful, a message like the one below will appear:


Update Drivers - Intel(R) HD Graphics 630
Windows has successfully updated your drivers
Windows has finished installing the drivers for this device:
Intel(R) HD Graphics 630
Close

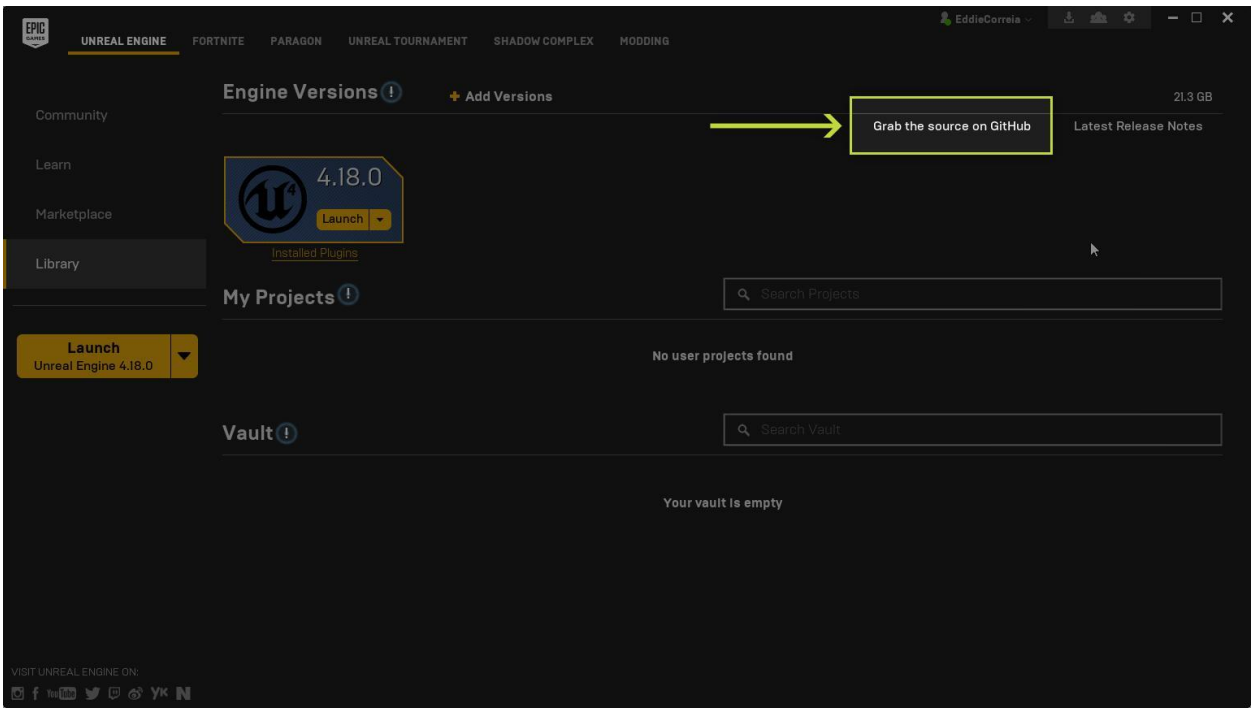
Part Three: Configure UE4 for Vulkan

12. Download and install the Vulkan SDK.

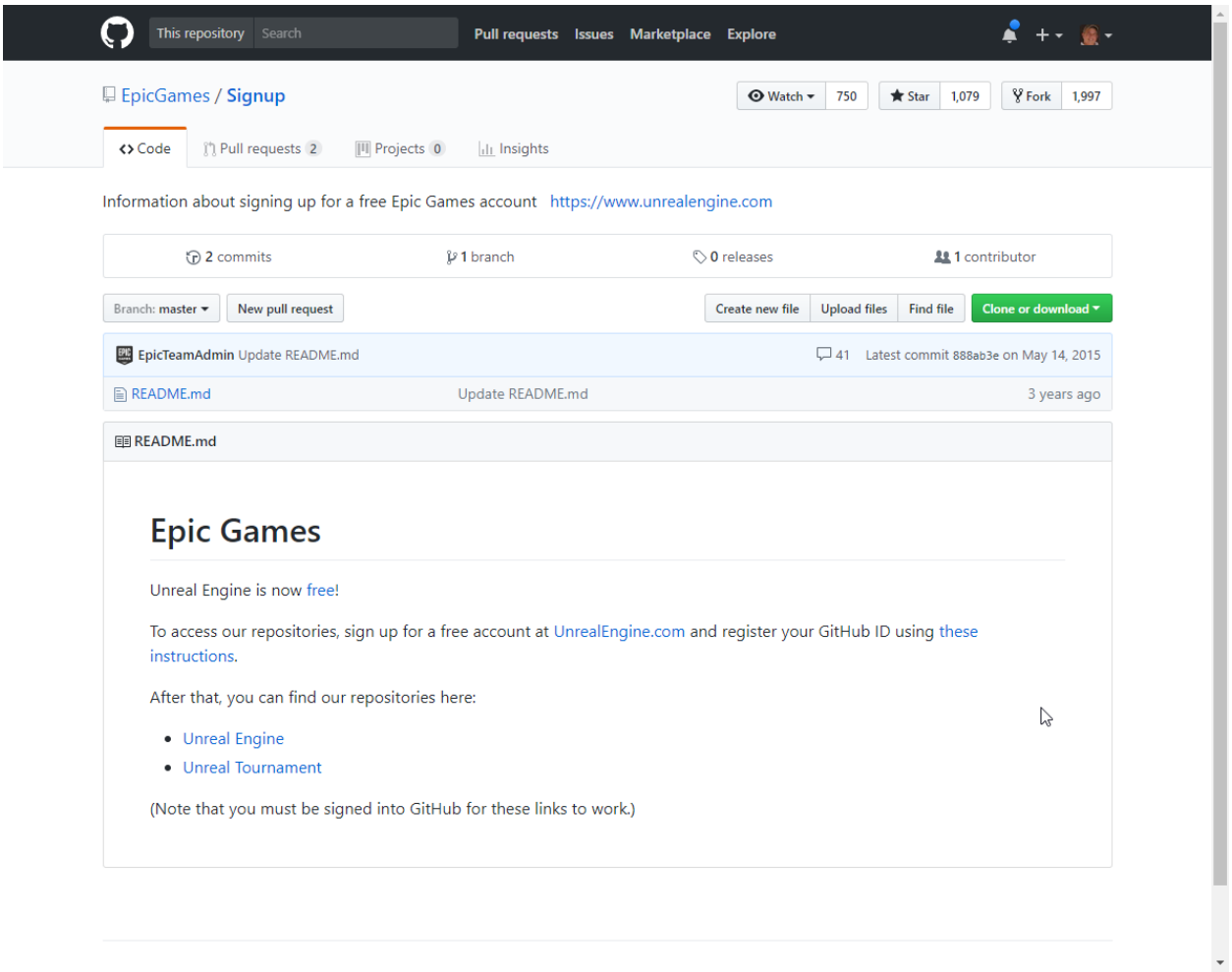




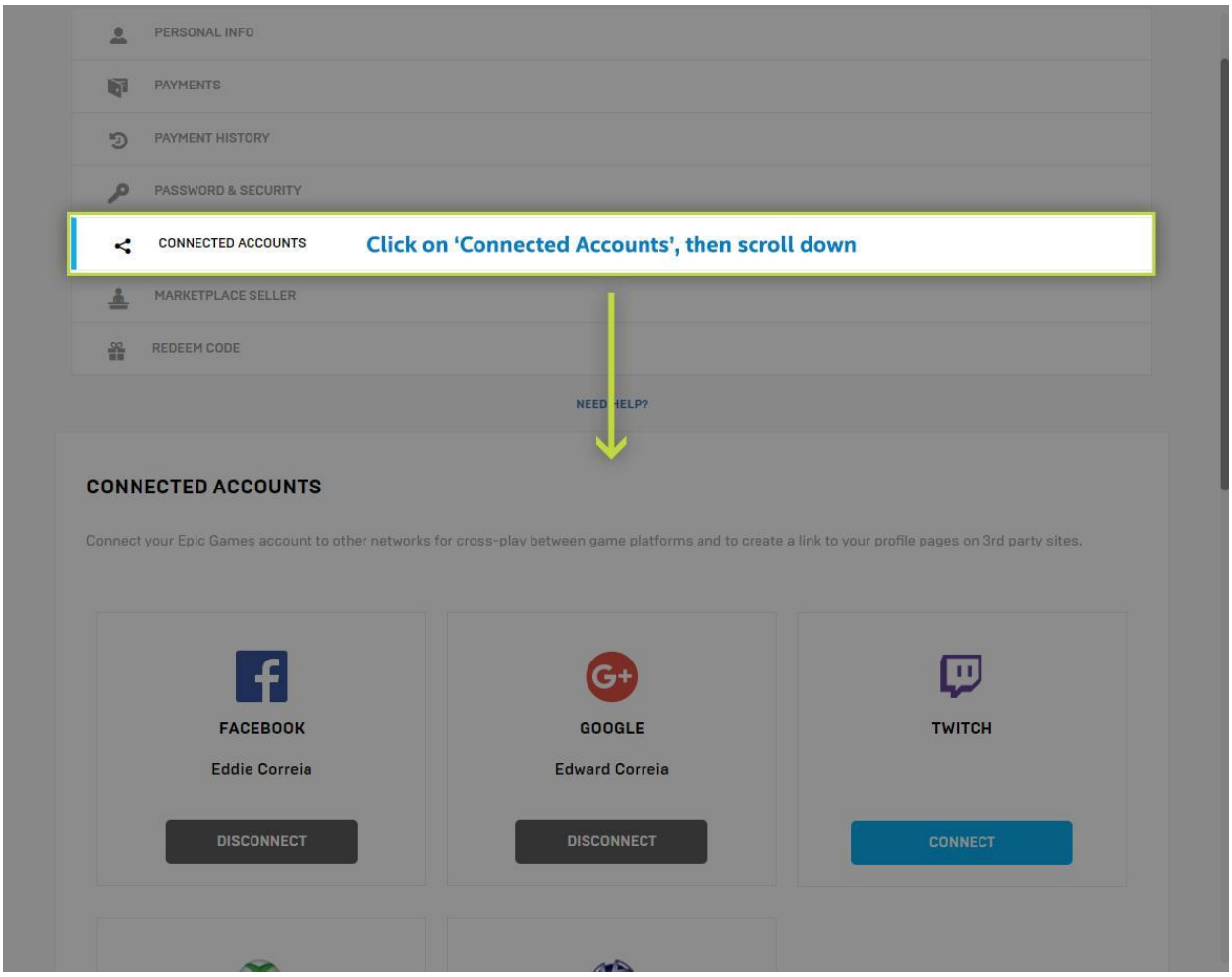
13. If you're not already logged into github, log in now. Then open the Unreal Engine Launcher and click "Get the source code on github" (UE4 source is free to registered users who have linked their github account with Epic Games, which we'll cover next).

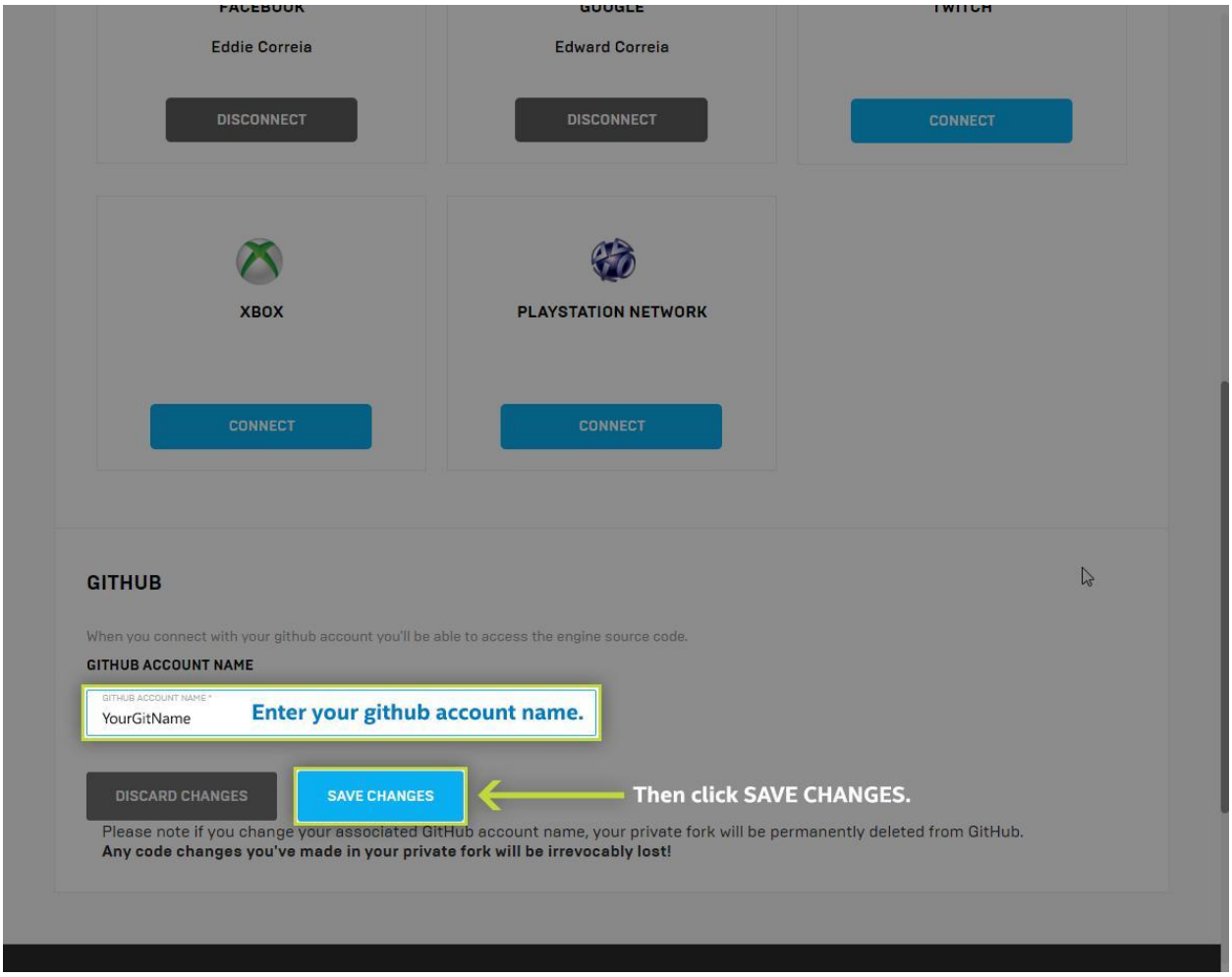


Clicking the “Grab the source” link brings you to the github page, as pictured below:

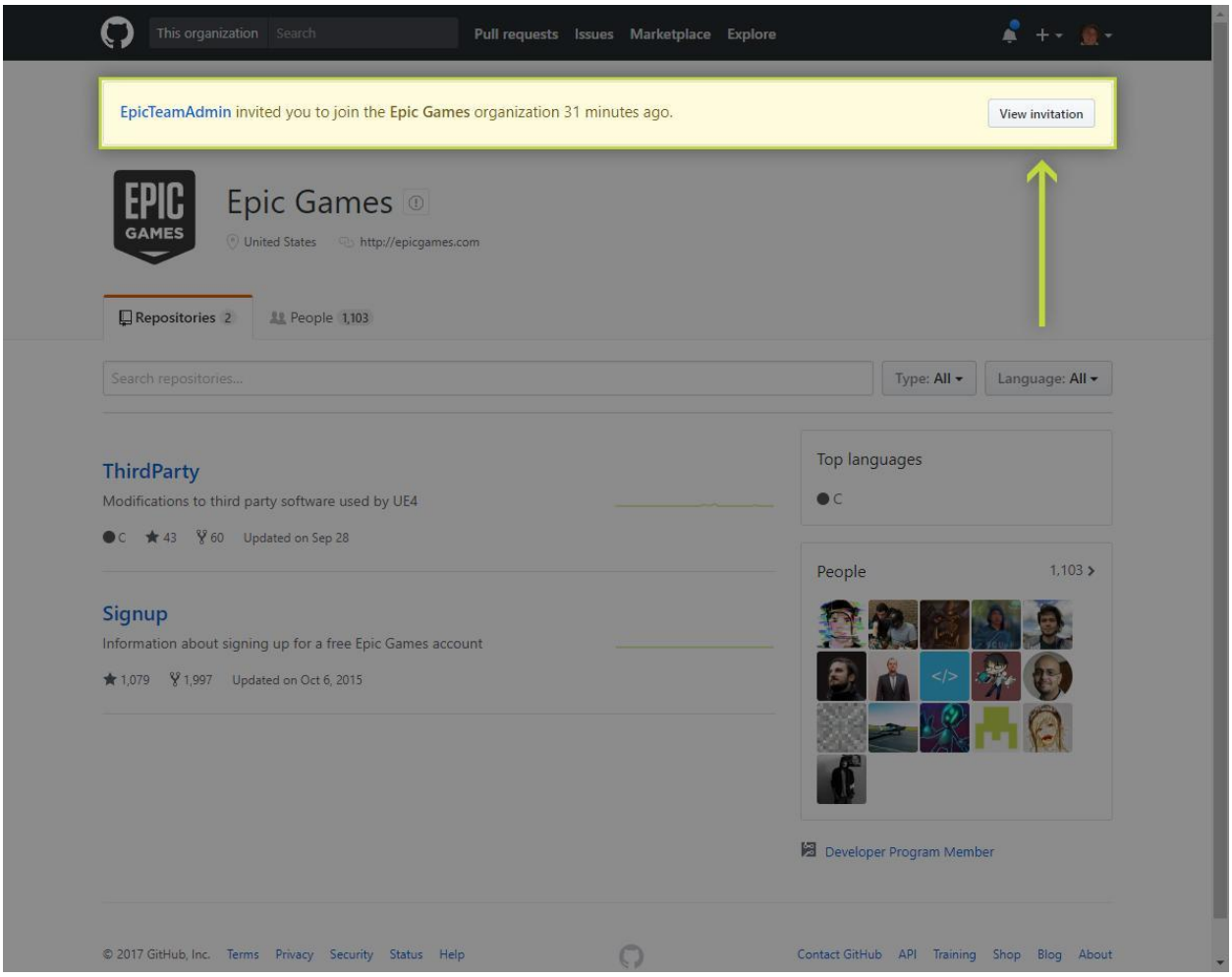


13a. Open your Epic Games Dashboard and link your Epic and github accounts:

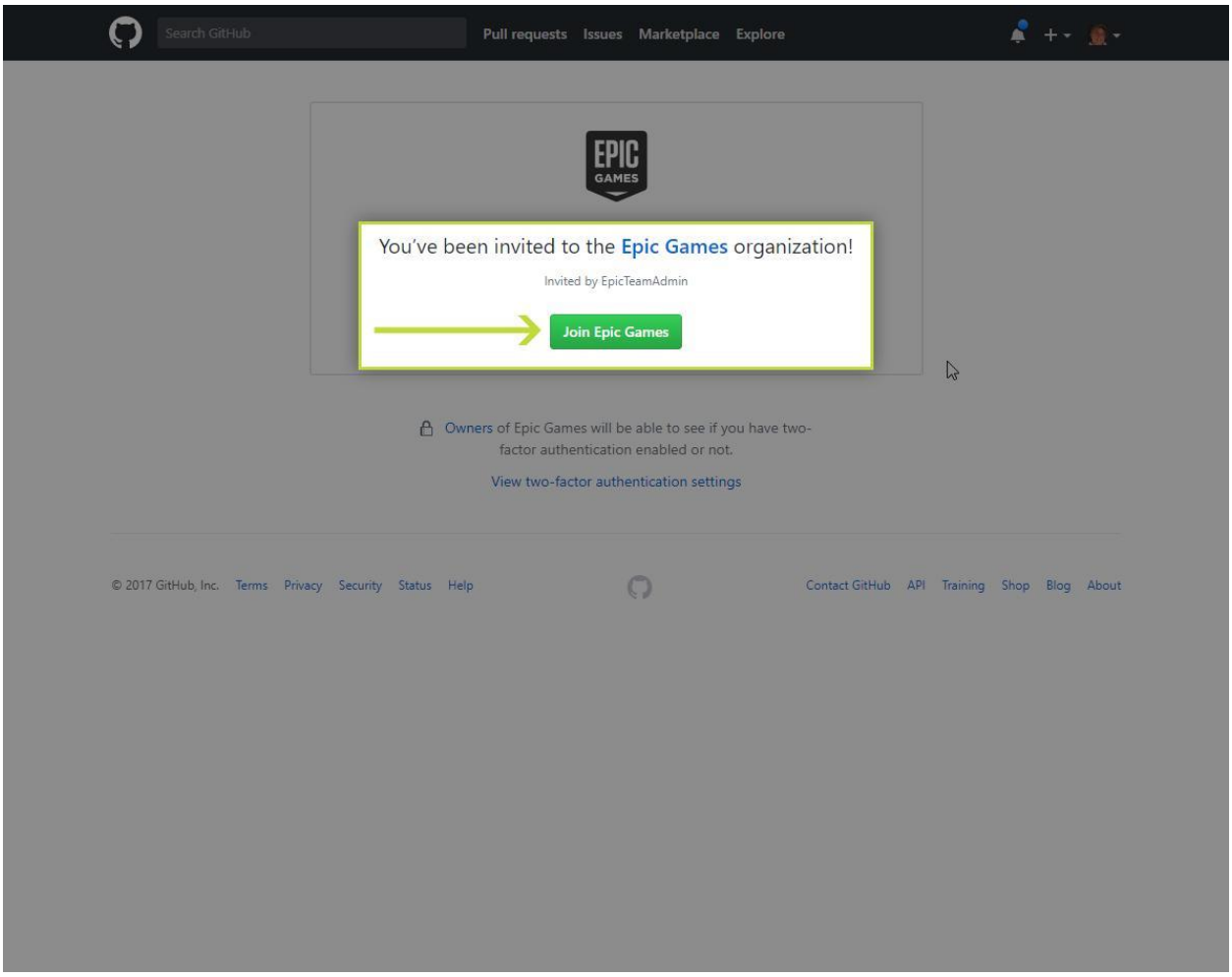

PERSONAL INFO
PAYMENTS
PAYMENT HISTORY
PASSWORD & SECURITY
CONNECTED ACCOUNTS
Click on 'Connected Accounts', then scroll down
MARKETPLACE SELLER
REDEEM CODE
NEED HELP?
CONNECTED ACCOUNTS
Connect your Epic Games account to other networks for cross-play between game platforms and to create a link to your profile pages on 3rd party sites.
FACEBOOK
Eddie Correia
DISCONNECT
GOOGLE
Edward Correia
DISCONNECT
TWITCH
CONNECT



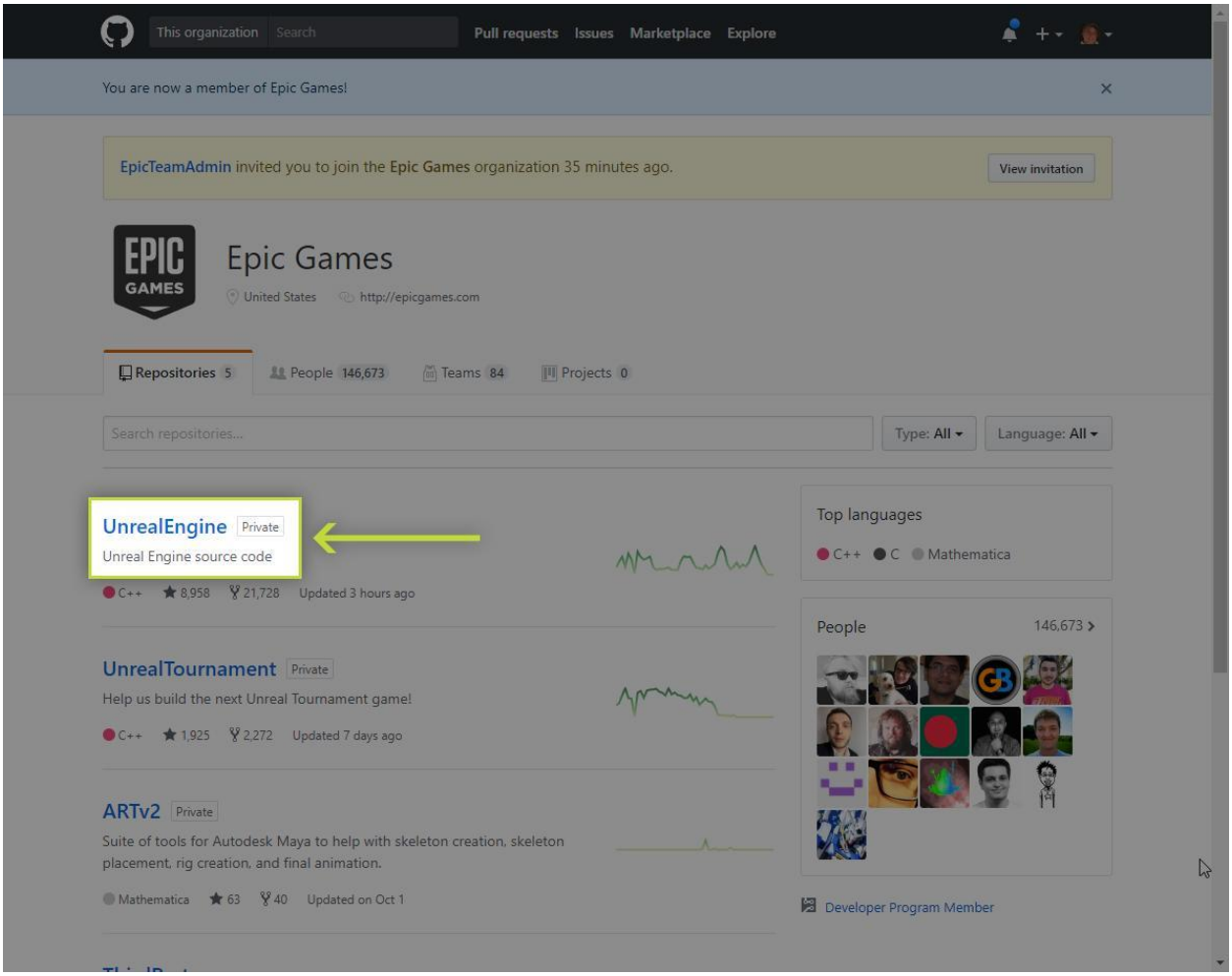
14. Shortly after linking the accounts, a confirmation will arrive in your email inbox. Return to the Epic Games github page, and look for an invitation to join:



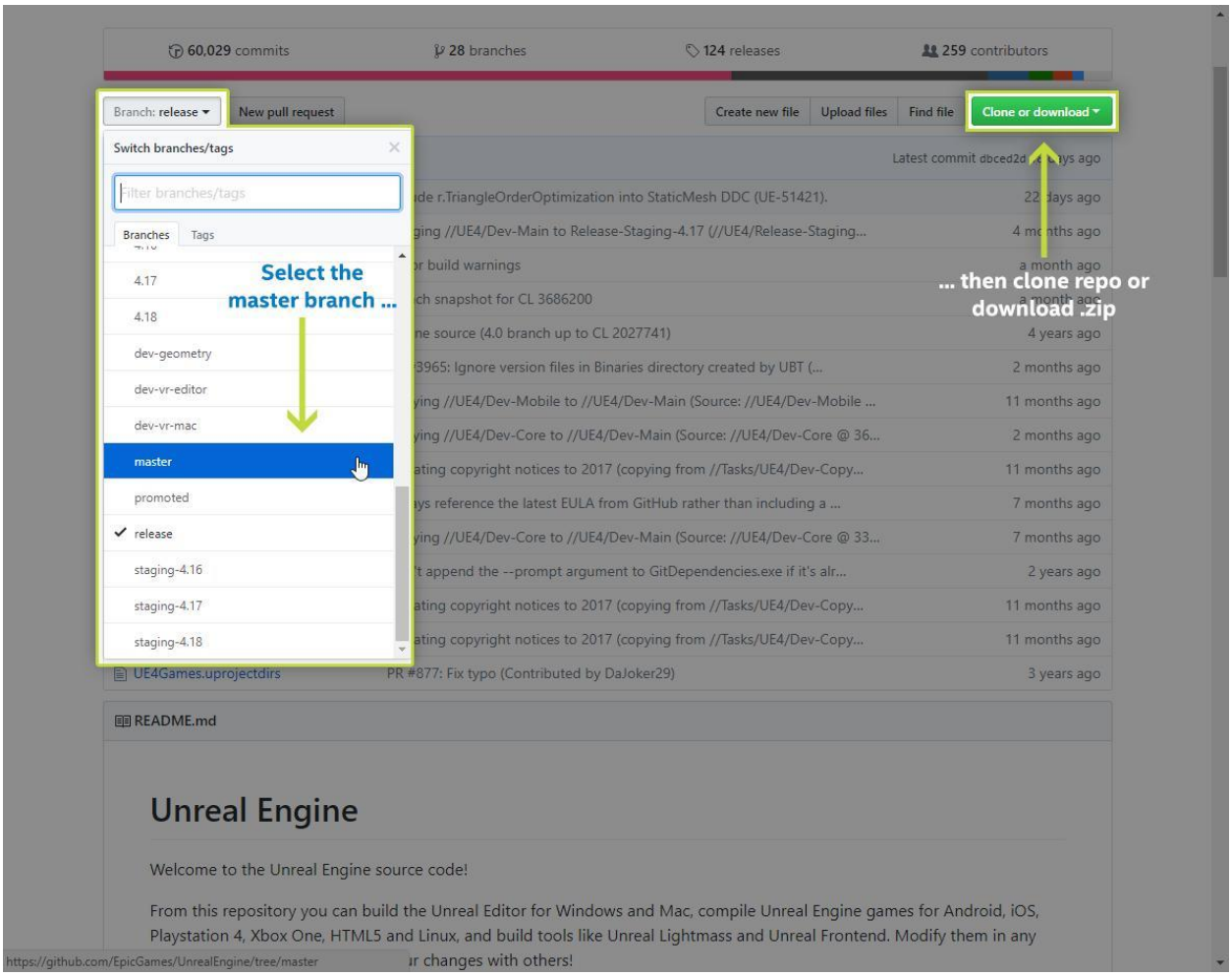
Clicking “View invitation” brings you to the page pictured below. Click “Join Epic Games.”



15. This returns you to the Epic Games github page, where UE4 repositories will now be available. Click "UnrealEngine" to continue.



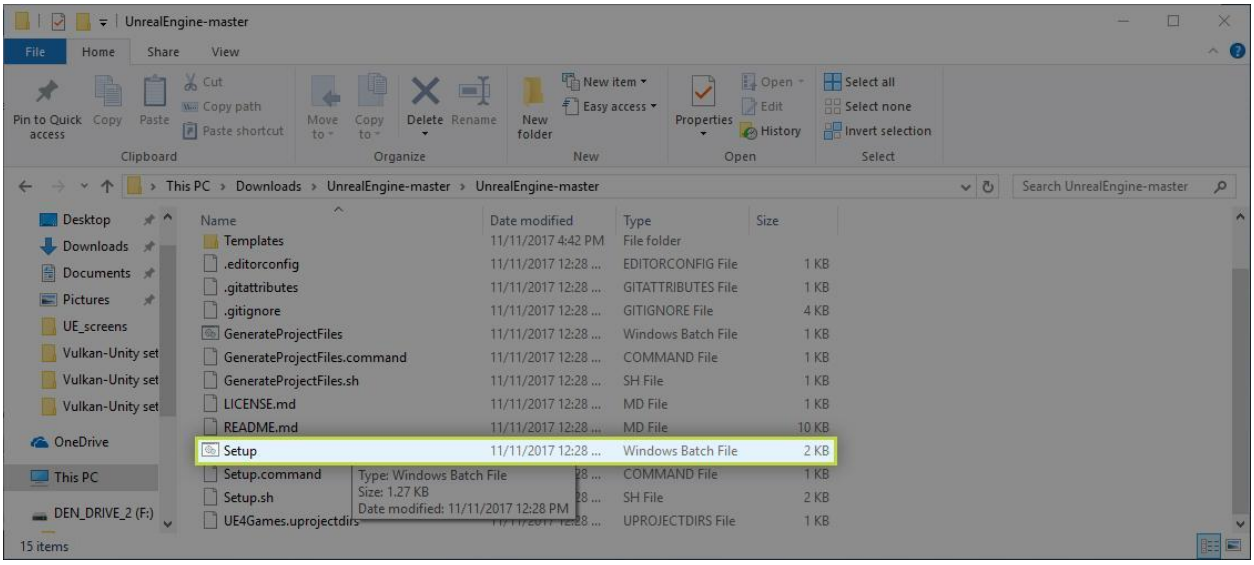
16. Select the “master” branch from the “Branch:” button. Then hit the “Clone or download” button.



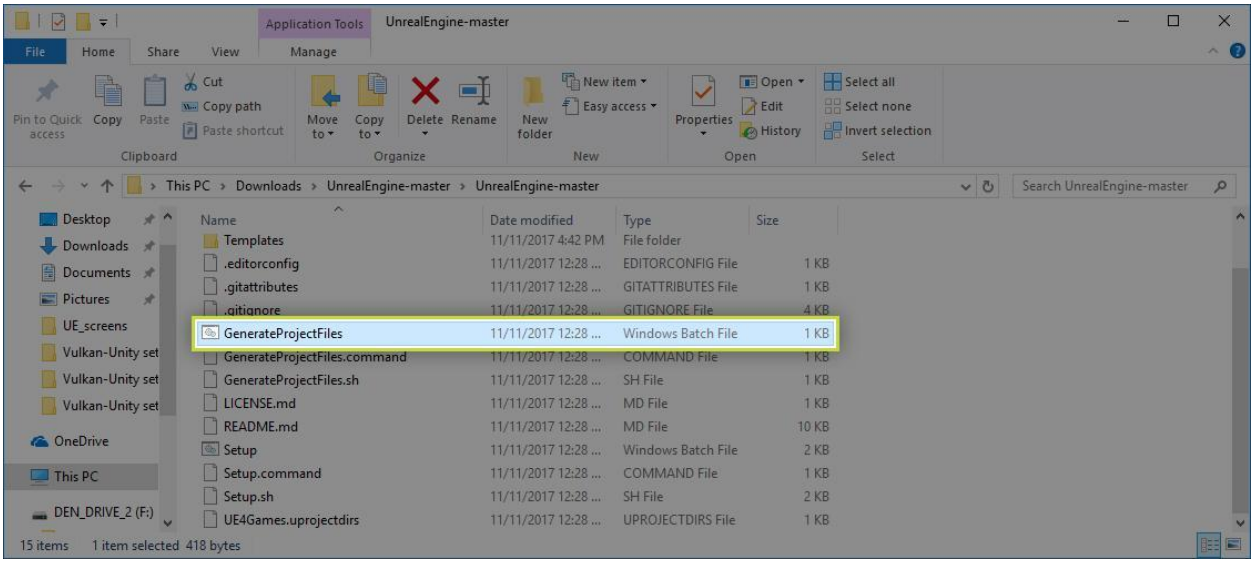
Important:
If you don't intend to return engine changes to the community, download the .Zip file. If you do, then fork the master branch, clone it to your hard drive, and proceed from there.

Extract the .Zip (or clone the repo) to a suitable location on your hard drive.

17. When the file download has finished, open the new directory and run "Setup.bat," and wait for it to finish (this takes a while).



18. In the same directory, run “GenerateProjectFiles.bat” to create the “UE4.sln” project:



Note: On some systems, it might be necessary to activate certain Visual Studio features to enable the “GenerateProjectFiles” script to do its job.

If it fails the first time, open Visual Studio and do the following:

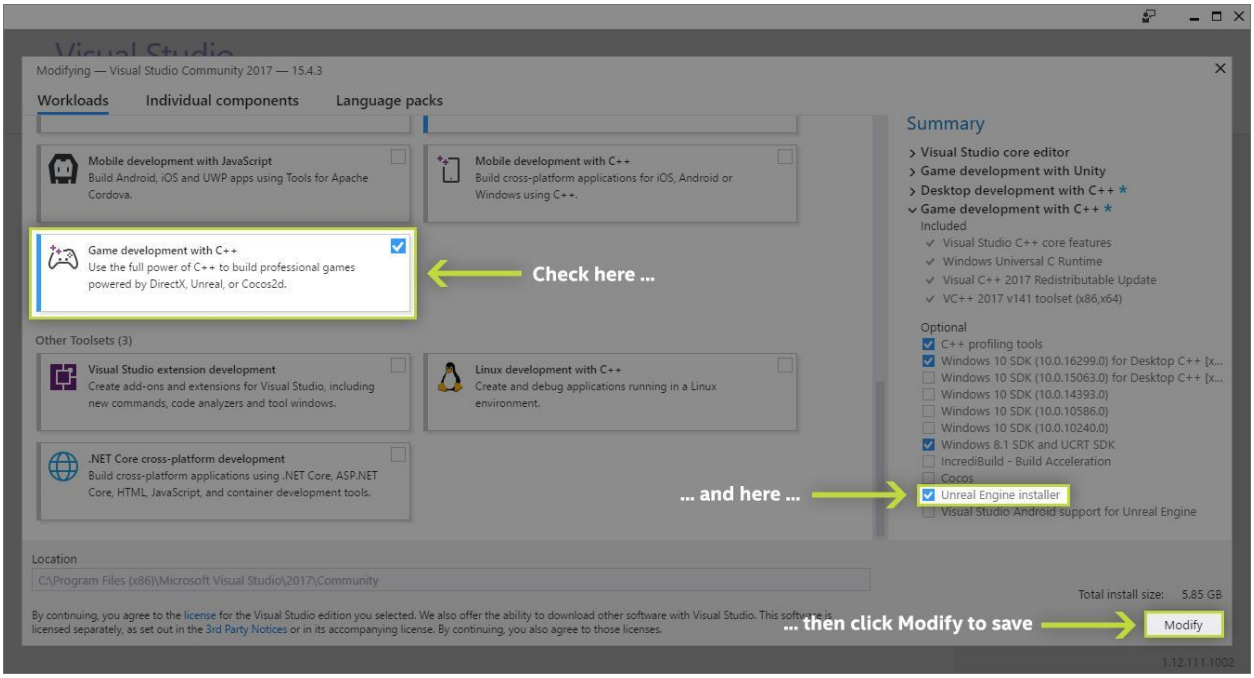
a. Select Tools> “Tools and Features… ”

b. In the list of features, check “Game development with C++”

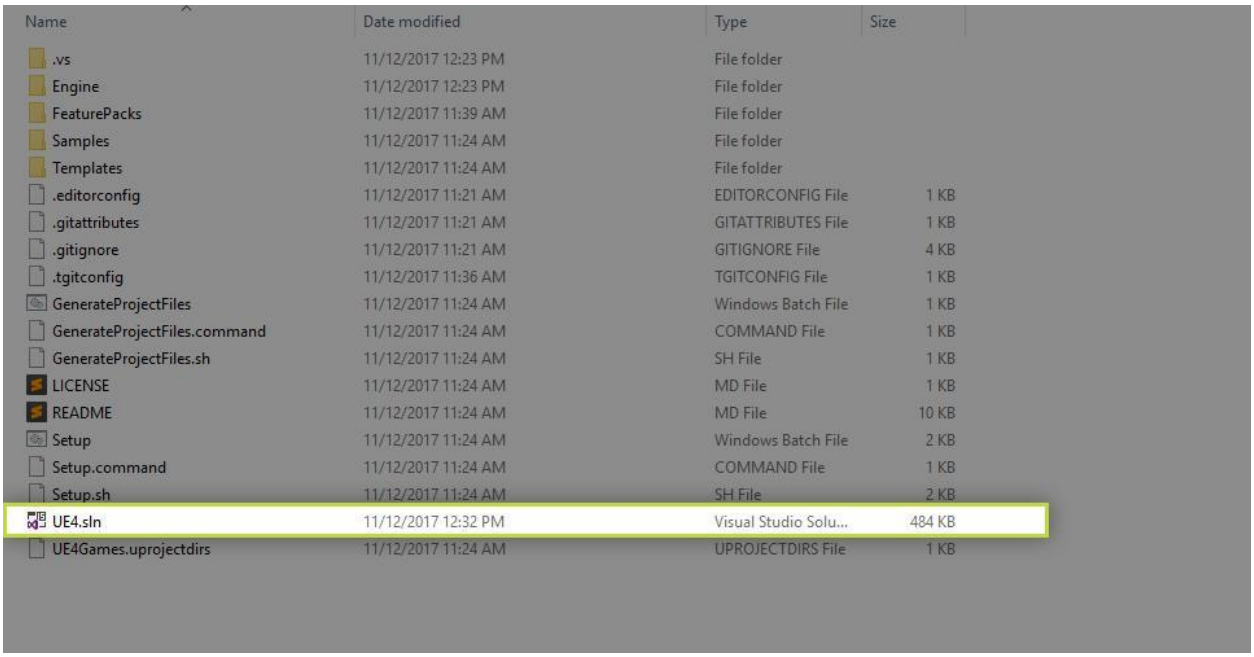
c. In the right-hand panel, check “Unreal Engine Installer”

d. Click “Modify” to save changes

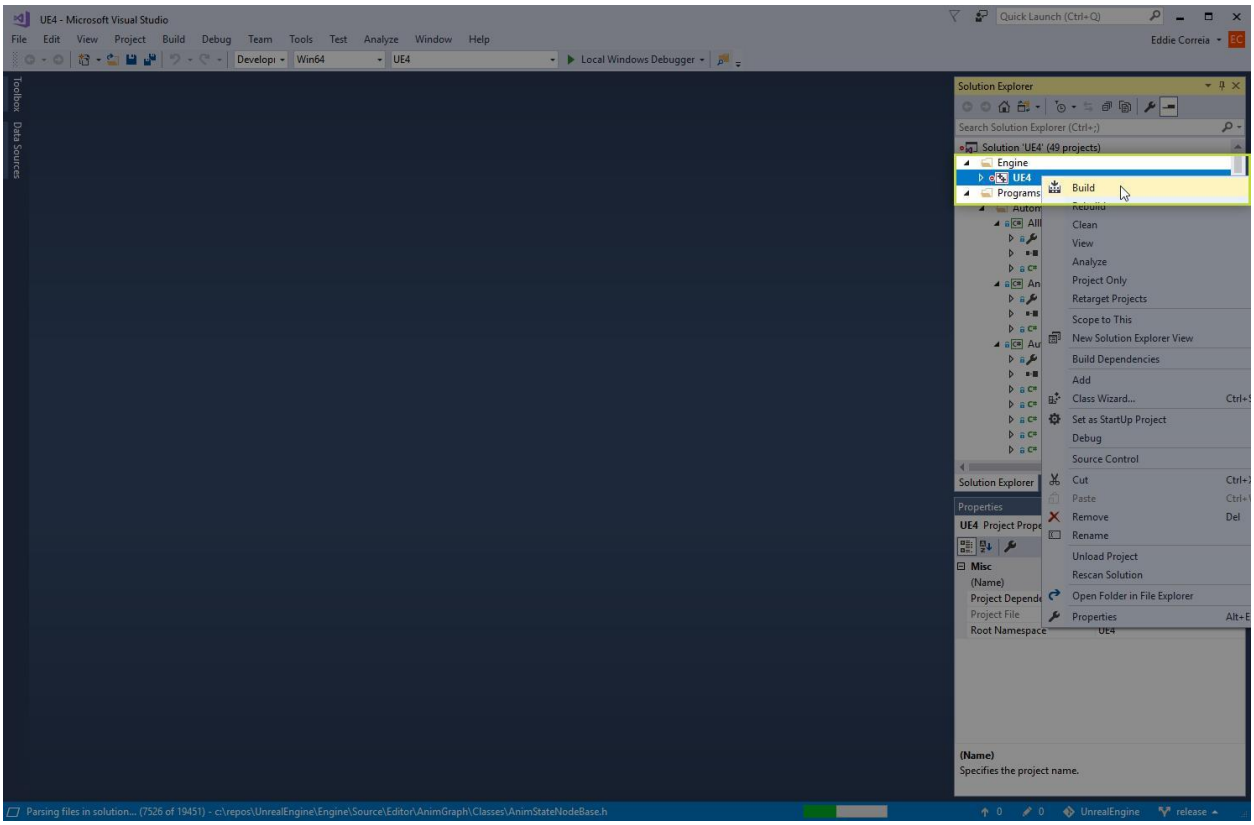
e. Run “GenerateProjectFiles” again



19. Double-click the “UE4.sln” file to open the project in Visual Studio:

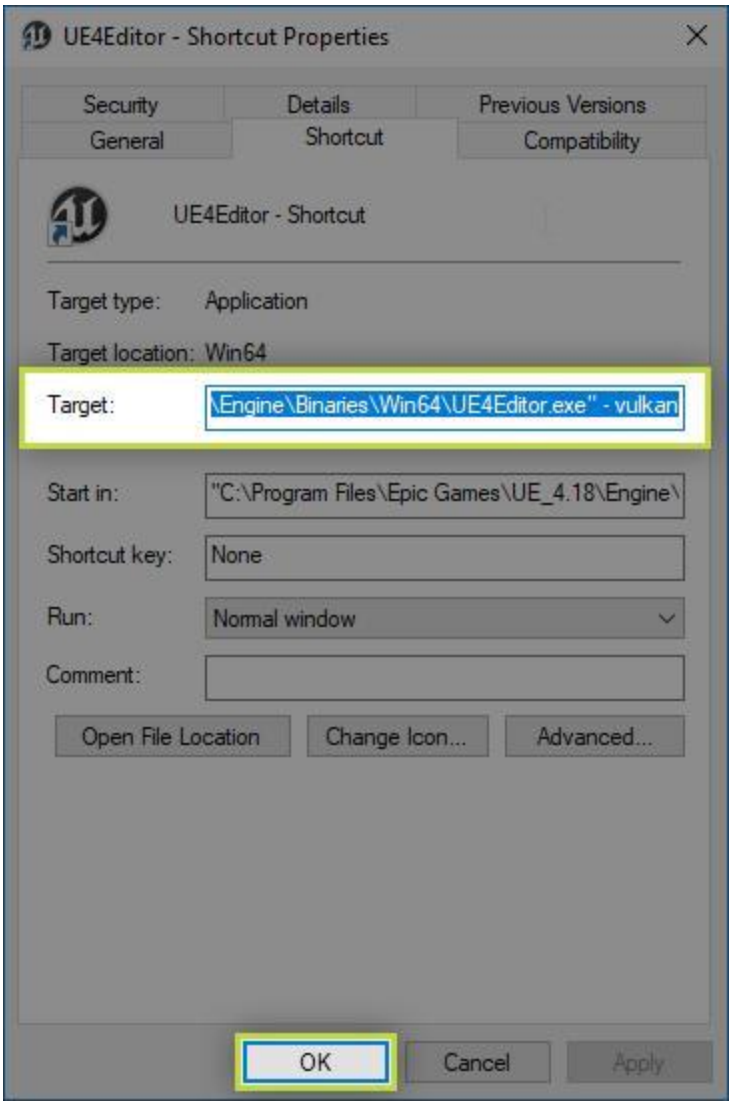


20. In VS Solution Explorer, right-click the UE4 project, and select Build.



21. Once the build completes successfully, set up a shortcut for the UE4 Editor that puts it in “Vulkan mode” using these steps:

a. Go to "C:\<installation_dir>\Engine\Binaries\Win64\
b. Create a shortcut for the file "UE4Editor.exe"
c. Set the shortcut Target to:
"C:\<installation_dir>\Engine\Binaries\Win64\UE4Editor.exe" -vulkan



Your UE4 projects will now build using Vulkan APIs whenever you start from that shortcut.