# CS 330 Module One Video Transcript

## Setting up OpenGL

Welcome to the Setting Up the Environment video. In this video, we are going to explain how to unzip the two files that come with your class. We're going to talk about moving them to the proper location, linking the project (which is one of the two files) to the OpenGL folder (which is also one of the files), and then running the sample code that comes within the project.

How to unzip the two files. Download the two zipped files under any folder you want. I placed it under a temp as “SNHU2,” but you can name it anything you want. This folder contains the OpenGL libraries that your code will be using, and this needs to be copied to drive C. This will contain your project, the project that you start with. So my recommendation is to always use this project and just modify the code instead of starting a new project every time. Every time you start a new project, a new solution, you need to redo these steps. Now, they're not a lot of steps, but you just have to redo them. So it's up to you.

So let's start. First, unzip each folder. Here we go, and let's unzip the other one. And let's wait. Now it's done. Now, you need to copy this folder into drive C. So go to drive C by typing “C:/” and then paste it here. As you'll notice, it is here now. Just as a note, I already have one, but that's a 64-bit folder, which we will not use. We'll be using the one you have. Now that we copied OpenGL into drive C, we can remove it from our temp folder — temporary — and we can remove the ZIP file as well. You can also remove this zipped file, since you already unzipped your sample project here. Let's take it out.

Now go inside the folder and run or open the solution. I'm using Visual Studio 2017, but this should open in 2019 as well. As you can see, we prepared for you the necessary libraries you'll use throughout the course. You might need to add a few more if you're testing other things, other — you're experimenting with other libraries, that's up to you.

Your code always resides inside here. It's under “source.cpp.” You do not write anything under “glad.c” or “shader.cpp.” These are not your files. “Source.cpp” is where you will be writing your code. Already, it comes with a sample code taken from LearnOpenGL.com. This code will test everything in your environment, meaning it will test light, colors, shaders, mouse, keyboard input, mouse input, everything. So if you're able to run this code, that means you have properly set up your environment.

Now, we did modify it a little bit from LearnOpenGL in that, for example, the file names. We already placed — changed the directory to look into “shaderfiles/” whatever. And that you will find in your folder if you go to it. Here, “shaderfiles.” So there is a folder called “shaderfiles.” We also placed the images outside.

Now, you could actually create a folder called “images” and modify the code here — modify the code to look inside the “images” folder, which would be like this, much cleaner. It's your choice. You can modify anything you want. My recommendation: Just use the current architecture, because when you submit your code, the faculty who's teaching your code needs to create a folder called “images.” And if you don't tell him, then your things will not load. Unless he pays attention and looks at it, then you'll lose points, then you have to tell him, then he'll recreate it, and it's a long process. So it's your choice. My recommendation: Leave it as is. You won't be using a lot of images in the course, I mean two, three, or four of them, and they're already there.

Now, you will notice that we have a red line under a lot of things because they are not defined. It doesn't know where to look to include these libraries. And that's what we want to do. We want to set it up so that it will look at our “C:/OpenGL” folder. And that's very easy.

As you go to the right side here, first you go to the Solution Explorer. Let's assume you do not see it. Click **View**, **Solution Explorer**, and you get it. Now right-click on the project. Select **Properties**. We need to tell it to — in here, in VC++ directories, we need to tell it where to look for the Include Directories and the Library Directories.

The steps are almost the same, so let's start. Click **Include Directories**, click [the down arrow], **Edit**, and then add a subfolder by clicking this icon and then “…” to specify that sub folder. “C:/OpenGL,” and let's start from the top. You want to tell it look at GLAD. That's it. Don't go inside these two folders, just go into that GLAD folder. Select **Folder**, done. That was your first directory.

Next, add another directory. C:/OpenGL, GLEW. Inside GLEW, we have an Include. You go inside that Include and then you stop. You click **Select Folder**. Now we're going to add the third one, GLFW. And there is a folder called Include, we go inside it, done. And the last one, OpenGL, GLM and you stop. Do not go inside GLM again. Just one GLM, and you select. That's it, you click **OK**.

Now the Include is ready. Now we go to the libraries. You have two folders that hold the LIB files, so let's go add them. Same thing — you click here, here, OpenGL. Now, you do not go to GLAD — GLAD, we don't have libraries in there that we need. You go to GLEW. You notice **lib**, **release**, and I'm going with the thirty — this project is built using the 32-bit libraries, so click **Select** and that's it.

Now, the next one, same thing. OpenGL, GLFW. Now, notice that you have a lot of libs. You select whichever Visual Studio you're using. I'm using 2017, so I'm going in there. I click **Select**, I click **OK**. That's it.

One last thing you need to add is the linker. You need to tell it the names of the lib files that you will be using. So when I click on **Linker**, I click on **Input**, and I'm looking for it…oh, here, it's right there. **Additional Dependencies**, click here. **Edit**. And you need to type these four files — “GLFW3.lib,” “OpenGL32.lib,” “GLEW32.lib,” and “GLU32.lib.” OK? OK, you click **OK**, you click either **OK** or **Apply**, and then you click **OK**. And there you go. Notice that the red lines are gone.

And if you press F5, your code should run. So let's look at it.

Now, the first time you run the code, it will take a while to load the libraries. Only once — it's compiling them. So be patient. If you look at the bottom right where it says **Ready** — though I can't move my mouse here. Let me show you. Here, right here where it says **Ready**, if you look at it, it'll say loading whatever DLL, whatever DLL. Loading symbol table. Once it's done, you'll get this code to run.

And then after that, every time you run, it won't have to load all these things. That's it. It's built some file that it will be using. Visual Studio. We're talking about Visual Studio, of course. And here you go. This is a sample project. You can see that we applied shaders, textures, light, mouse and keyboard motion. That means you're ready to write OpenGL code, your libraries have properly been linked, and that's it.