# Assignment 0: Environment Setup

CS 6323.001 2020 Fall

Total Points of the Assignment: 3

Follow the instructions carefully. If you encounter any problems in the setup, please don't hesitate to come to my office hours.

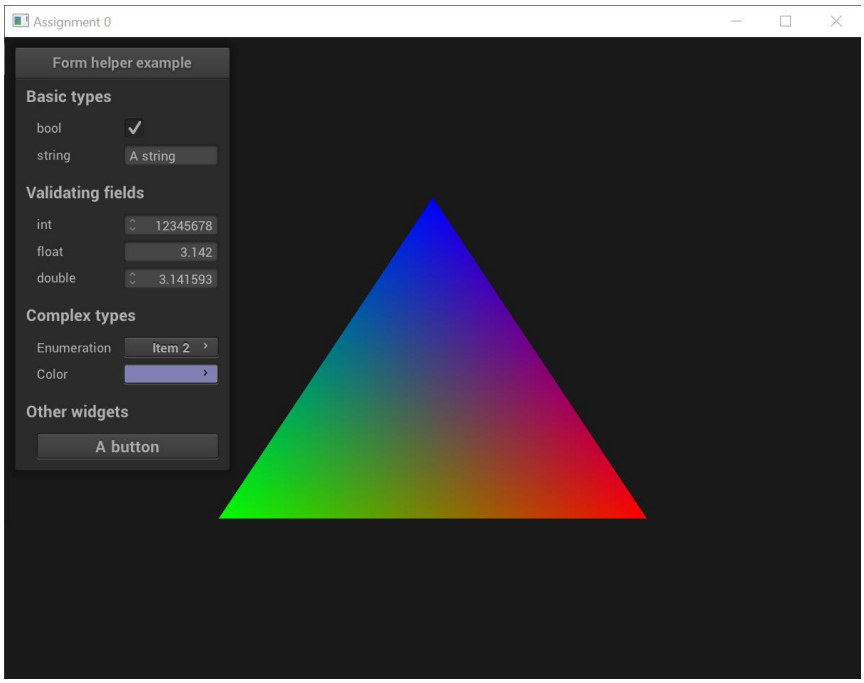
## Requirement Overview

This section lists the basic environments/libraries needed in our following classes. You are required to setup the OpenGL environment and run a "HelloWorld" program in assignment 0. In the next section, we will go through details in Windows, MacOS and Linux.

- C++11
- Graphic cards which support OpenGL 3.3+
- CMake 2.8+ (if you hope to compile the libraries by yourself)
- glew
- glfw/glut/freeglut
- glm
- NanoGUI
- stb_image

In the "HelloWorld" program, a GUI tool is created using NanoGUI, and a colored triangle is shown on the window.

After finishing the assignment, you are required to demo your code in your computer and the output of the "HelloWorld" code should be shown like this:



# Download the Code:

This assignment includes the sample code, which can be used to test GLEW, GLFW and GLM configuration, Nanogear configuration and shader language compilation.

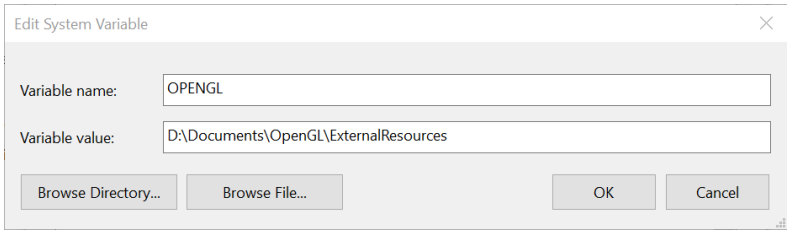
# Configuration Tutorial

The sample code is using GLEW, GLFW, GLM libraries and NanoGUI. You can feel free to choose any GUI libs such as NanoGUI/ANtTweakBar.

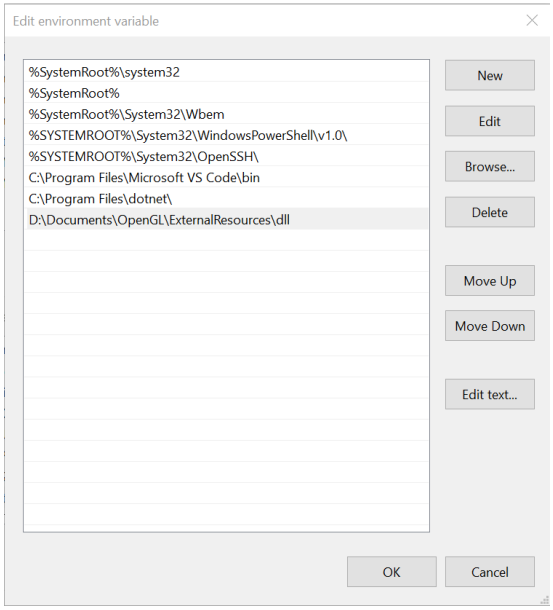
You could find the binary files for windows VS2019 x64 version with this link, it includes GLFW, GLEW, GLM, Freeglut, NanoGUI and SOIL. It also includes a tutorial for configuring NanoGUI on MacOS.

## Windows (Visual Studio):

1. Download compiled binary files:
    - GLEW
    - GLFW
    - GLM
2. Wrap into folder and add the path to environment path:
   For example, the folder path is "*D:\Documents\OpenGL\ExternalResources*", add it into the system variables:




   Add dll files directly into your project folder (not recommended)
   Or put all dll files under a folder and add it into "Path" (recommended)
   For example, all dll files as under folder "D:\Documents\OpenGL\ExternalResources\dll"



3. Open Visual Studio and create an empty project. Add helloworld.ccp file into it.
4. Add external libs path and include path in Property window (or import prop page)
5. Run code

## MAC OS (XCode):

1. Homebrew:
    - $ brew update
    - $ brew install glfw3 glew
    - GLM you can directly add it to include header path
2. XCode:
    - Add /usr/local/include in header path
    - Add /usr/local/glew/2.0.0/lib /usr/local/Cellar/glfw/3.2.1/lib in library path
3. Add link binary libraries
    - libglfw.3.2.dylib libGLEW.2.0.0.dylib OpenGL framework

    (If you are facing the "GLFW Fails to Open Window in OSX error" (this is one error many people face during compilation), add glfwWindowHint(GLFW_OPENGL_FORWARD_COMPAT, GL_TRUE);) (http://stackoverflow.com/questions/22887922/glfw-fails-to-open-window-in-osx)

4: Run code

## Linux (ubuntu):

1. Install using apt-get
    - $ sudo apt-get install libglew-dev libglfw3-dev libglm-dev
2. Compile
    - $ sudo g++ -o helloworld helloworld.cpp -std=c++11 -lGL -lglfw -lGLEW
3. Run code