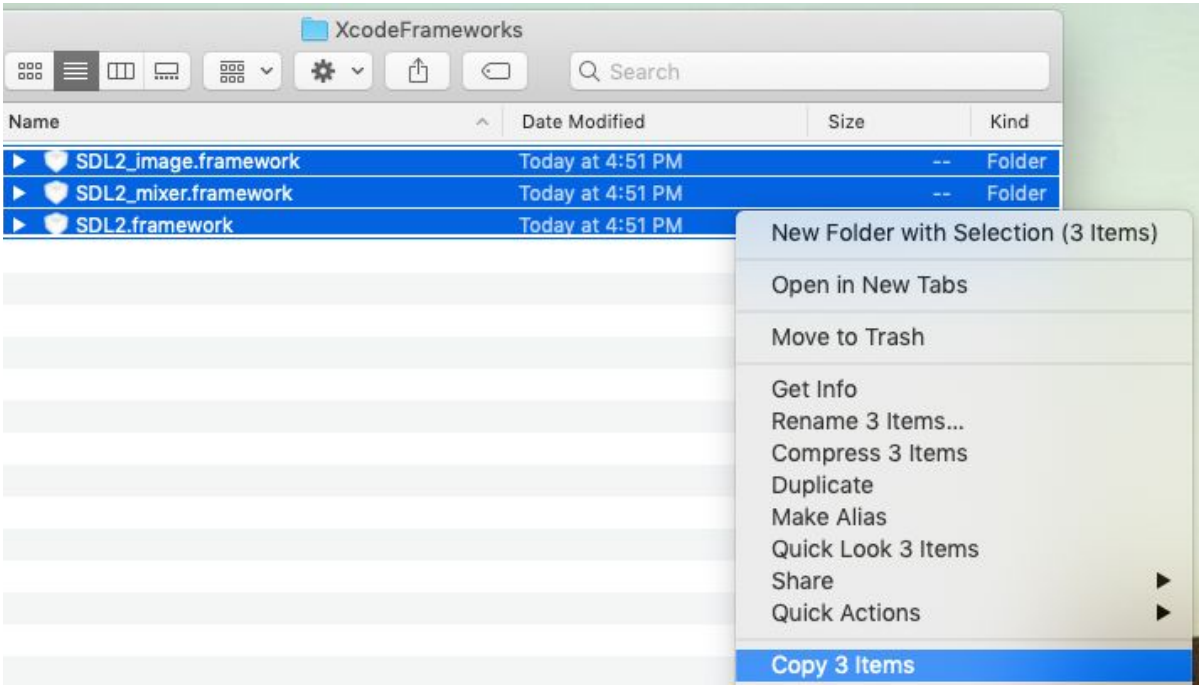
Install Xcode

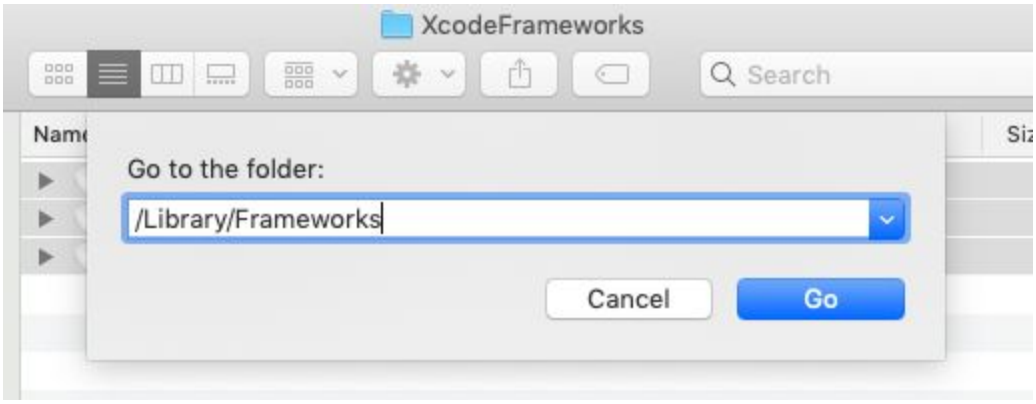
Open “App Store” from the Applications Folder
Install Xcode

Install Libraries

Find the **XcodeFrameworks** folder in the Libraries folder (downloaded from github).
Go inside the folder, select the 3 items, Right-Click (or control-click) then select: Copy 3 Items



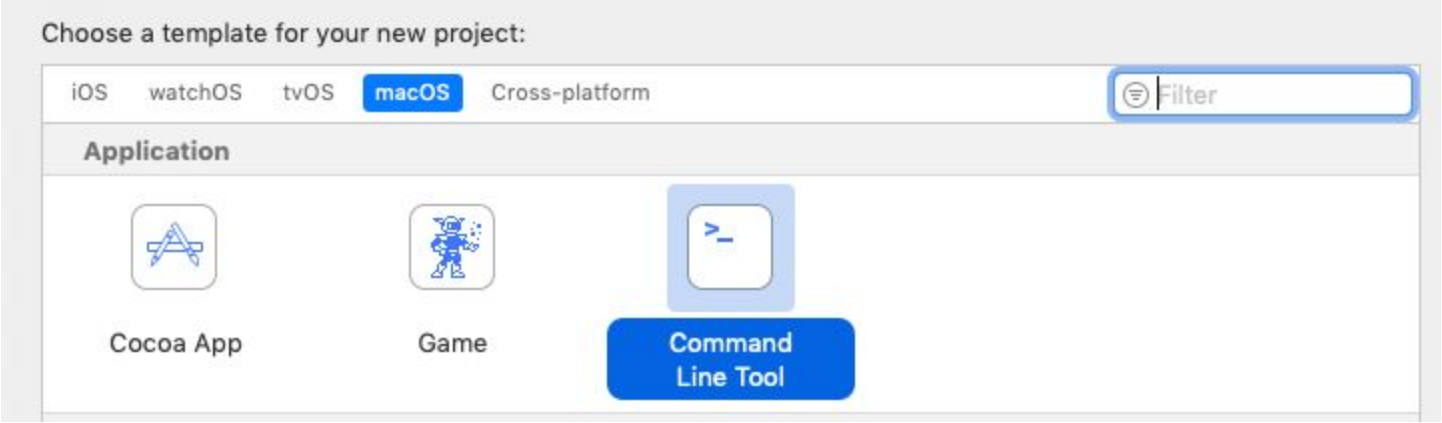
From the Finder menu (on top) select Go -> Go to Folder
Type in /Library/Frameworks:



Right-Click (or control-click) and select: Paste 3 Items

Setup Your Project

Open Xcode and create a new project (you may have to go to File->New->Project)
Select **macOS** and a **Command Line Tool**



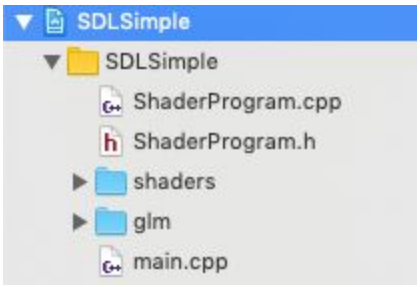
For Product Name, enter: **SDLSimple**
Organization Identifier, enter “com.your_nyu_id”, for instance, mine is: **com.ctg303**
Language: **C++**

Hit Next and select where you want to save it.

Drag the following from the Libraries folder in the GitHub Repository into the SDLSimple folder.
Make sure **Copy Items if Needed is checked**!

- glm (folder)
- ShaderProgram.cpp
- ShaderProgra.h
- shaders (folder)

The end result should look like this:



Configure Build Settings

Click on your project (**SDLSimple**) on the top left, then click on the project under **Targets**.
Select **Build Settings** (it's in the top-middle), then click **All**
Scroll down to "Search Paths"
Double click on Header Search Paths.
Click + and enter: `/Library/Frameworks/SDL2_image.framework/Versions/A/Headers`
Click + and enter: `/Library/Frameworks/SDL2.framework/Versions/A/Headers`

Select **Build Phases** (it's next to Build Settings)
Under **Link Binary With Libraries**…
Click + search for **opengl** and select OpenGL.framework then [Add]
Click + search for **cocoa** and select Cocoa.framework then [Add]
Click + Click "Add Other…"
Hit Command-Shift-G then type in /Library/Frameworks
Select all of the SDL Libraries:

Under **Copy Files** ...
Set Destination to **Executables**
Make sure subpath is **blank**. Remove anything that is there.
Drag the shaders folder from the left side into the add your files here area.

Let's Code!

Type the following. Do not copy and paste! You will learn more typing it out.
The program should open up a window in the top left corner. It will stay open until you close the window.

After the code successfully runs, you can modify the values in **glClearColor**. The first 3 floats are the red, green and blue values. They can range from 0.0 to 1.0 and will set the background color drawn by **glClear**.

```
#define GL_SILENCE_DEPRECATION
#include <SDL.h>
#include <SDL_opengl.h>

SDL_Window* displayWindow;
bool gameIsRunning = true;

void Initialize() {
    SDL_Init(SDL_INIT_VIDEO);
    displayWindow = SDL_CreateWindow("Hello, World!", SDL_WINDOWPOS_CENTERED,
SDL_WINDOWPOS_CENTERED, 640, 480, SDL_WINDOW_OPENGL);
    SDL_GLContext context = SDL_GL_CreateContext(displayWindow);
    SDL_GL_MakeCurrent(displayWindow, context);
    glClearColor(0.0f, 0.0f, 0.0f, 1.0f);
}

void ProcessInput() {
    SDL_Event event;
    while (SDL_PollEvent(&event)) {
        if (event.type == SDL_QUIT || event.type == SDL_WINDOWEVENT_CLOSE) {
            gameIsRunning = false;
        }
    }
}

void Update() { }

void Render() {
    glClear(GL_COLOR_BUFFER_BIT);
    SDL_GL_SwapWindow(displayWindow);
}

void Shutdown() {
    SDL_Quit();
}

int main(int argc, char* argv[]) {
    Initialize();

    while (gameIsRunning) {
        ProcessInput();
        Update();
        Render();
    }

    Shutdown();
    return 0;
}
```