

## Introduction

In this assignment we will create a Visual Studio project and then add the necessary header files, libraries, and application program to draw a red square.

## The Visual Studio Project

Create a project just as you did in Coms 261 and Coms 262. (Visual Studio 2017 is a bit different from Visual Studio 2015.)

## The Standard Libraries, Header Files, and Source Code

In the Coms 331/Koether folder on the server, copy the folder `OGLPG-9th-Edition` to your folder. Then open the subfolder `lib` and add the following files to your project

`gl3w.c`

`glfw3_d.lib`

`LoadShaders.cpp`

`targa.cpp`

`vbm.cpp`

In the Coms 331/Koether/OpenGL Files/lib folder, you will find the file `OPENGL32.LIB`. Copy it to your folder and then add it to your project.

In Visual Studio, select Project Properties in the Properties menu. Click on VC++ Directories in the left panel and Include Directories in the right panel. Edit the (empty) list of include directories to include the following directories.

`\OGLPG-9th-Edition\lib\glfw\include`

`\OGLPG-9th-Edition\include`

with each one filled out to the full pathname, depending on where you stored the `OGLPG-9th-Edition` folder.

## The Application Program

Copy the folder `Assignments/Assignment 1` from the server to your workspace. In that folder, you will find the files

```
Rectangle.cpp
```

```
Rectangle.frag
```

```
Rectangle.vert
```

Add the file `Rectangle.cpp` to the project. Open the file `Rectangle.cpp` and go to lines 103 and 104. Replace the pathnames of `Rectangle.vert` and `Rectangle.frag` with their correct pathnames, depending on where you stored the folder `Assignment 1`.

## Run the Program

Execute the program in the usual way. You should see two windows open. The window in the background is the usual text window, through which you can read input and write output using `cin` and `cout`. The window in the foreground is the graphics window with the title “Rectangle,” in which the drawing will be rendered. You should see a red square in the graphics window and the text “Welcome to Rectangle” in the text window.

If the program reports that GLSL v. 4.5 is not supported on your computer, then change the line

```
#version 450 core
```

to

```
#version 430 core
```

and if that doesn’t work, then try

```
#version 330 core
```

If that doesn’t work, then find another computer.

## Experiment

You will get a better feel for how the program works if you perform some simple experiments. After each change, run the program.

- In line 156, change `0.5f` to `0.8f` (both occurrences).
- In line 33, change

```
GLfloat green = 0.0f;
```

to

```
GLfloat green = 1.0f;
```

- In line 56, change 800, 800 to 1200, 600.
- In line 92, change

```
glClearColor(0.0f, 0.0f, 0.4f, 0.0f);
```

to

```
glClearColor(0.0f, 1.0f, 0.4f, 0.0f);
```

- In line 137, change

```
glDrawArrays(GL_TRIANGLE_FAN, 0, 4);
```

to

```
glDrawArrays(GL_TRIANGLE_FAN, 0, 3);
```

## Due Date

This assignment will not be collected.