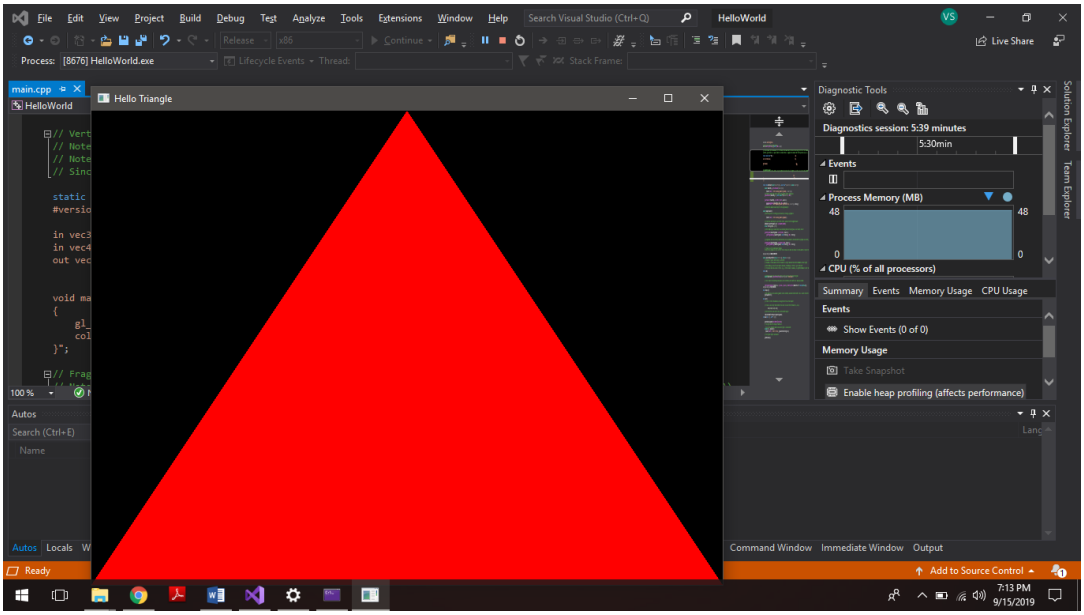
Lab #01 Assignment

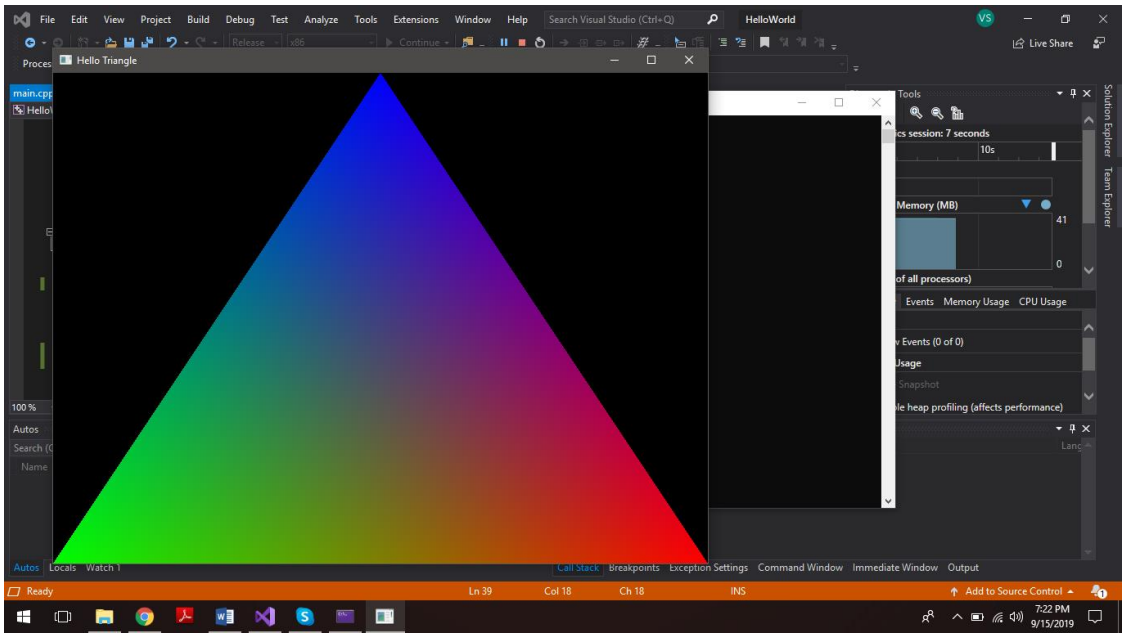
1. Setup:
   After replacing the main.cpp file and making changes in the properties of the project, a red triangle appears on running the project, as expected.



2. Exercises:
   2.1. Multi colored Triangle:
   After linking the input of vertex shader to fragment shader, the desired output is obtained.

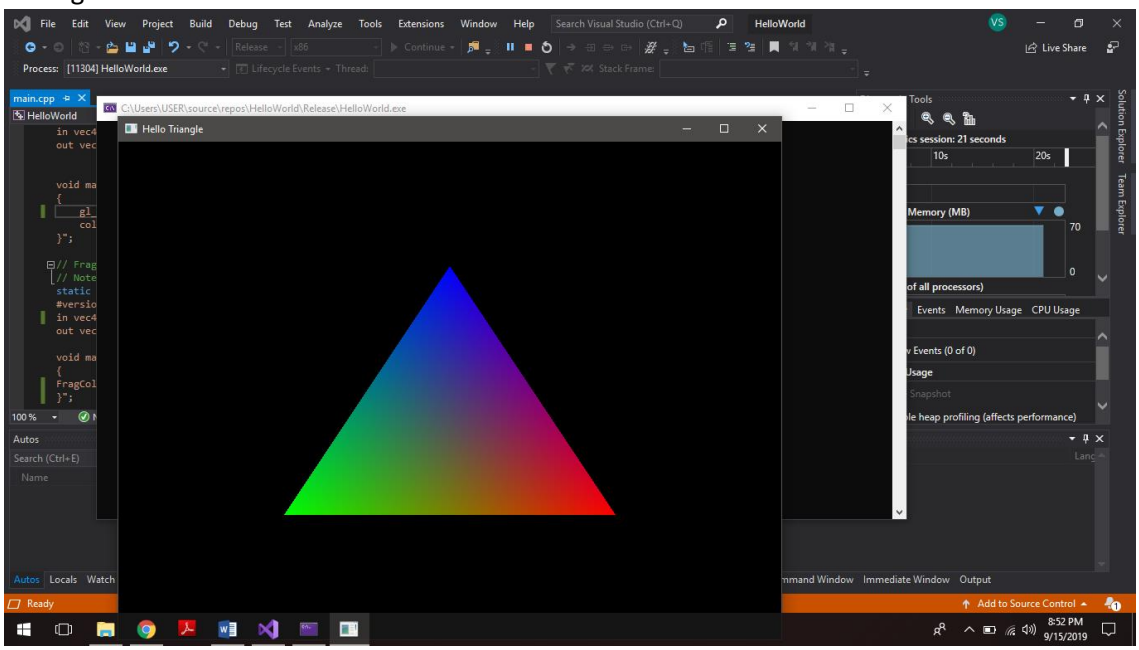
```
static const char* pVS = "                                                    \n\
#version 330                                                                  \n\
                                                                              \n\
in vec3 vPosition;                                                            \n\
in vec4 vColor;                                                               \n\
out vec4 color;                                                               \n\
                                                                              \n\
                                                                               \n\
void main()                                                                    \n\
{                                                                               \n\
    gl_Position = vec4(vPosition.x, vPosition.y, vPosition.z, 1.0);  \n\
    color = vColor;                          \n\
}";

// Fragment Shader
// Note: no input in this shader, it just outputs the colour of all fragments, in this case
static const char* pFS = "                                                  \n\
#version 330                                                                \n\
in vec4 color;                                                               \n\
out vec4 FragColor;                                                          \n\
                                                                              \n\
void main()                                                                   \n\
{                                                                              \n\
FragColor = color;                                  \n\
}";
```



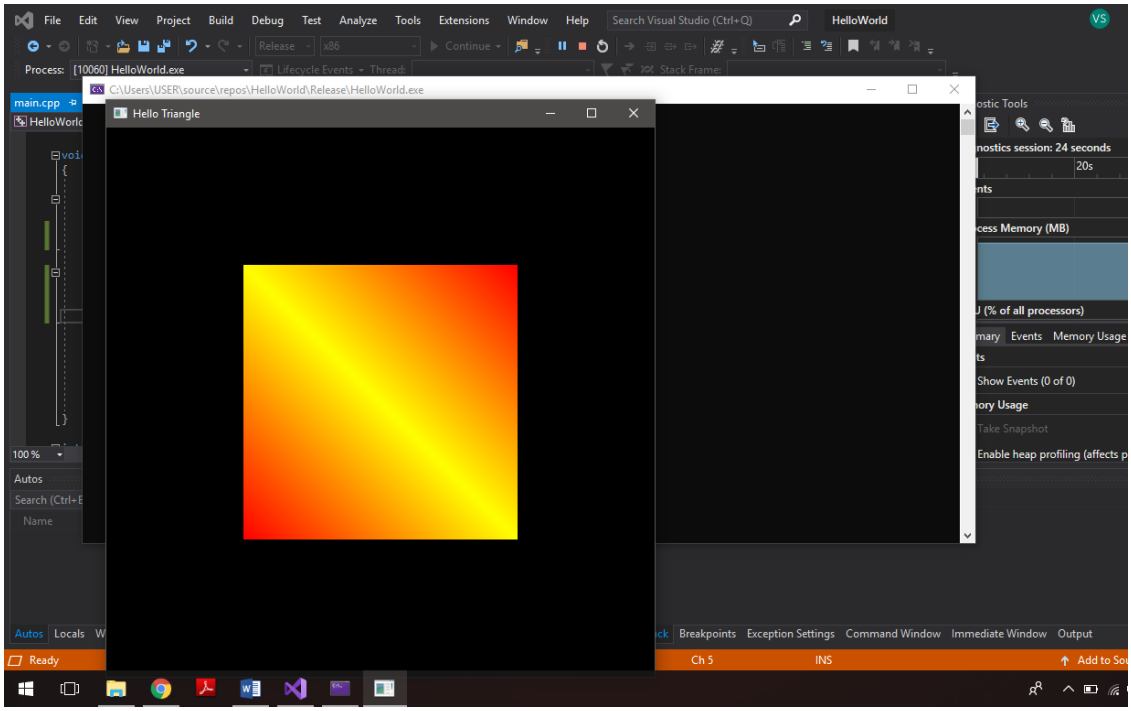
2.2. Reducing the size of triangle by half without changing the vertices:

Could be done in multiple ways. The simplest way is to multiply the position vector by the scaling value, which in this case is 0.5. Other option is to make a translation matrix and multiply the position vector with it. Lastly we can use the function, glscalef(x,y,z) for the scaling.



2.3. Change the Triangle to a Square:

By amending the number of vertices and colors accordingly and reflecting those changes in the display(), linkCurrentBufferToShader() and generateObjectBuffer() functions, we can convert the triangle into square successfully.



Submitted By:
Vishwatmika Srivastava
M.Sc. Computer Science (AR/VR)
19332239