

STEPS FOR SETTING UP THE SHADERS PROJECT ON MAC

1. Make sure to use the glslprogramP5.cpp and glslprogramP5.h if you are using a Mac. You can find these files on the resources page.

C++ class to use GLSL shaders -- cut down to just what Project #5 needs -- might work better for Macs than the full version

[glslprogramP5.h](#),
[glslprogramP5.cpp](#)

2. Comment out the "glew.h" header from all the files as it is not required.
3. Do not include the glslprogramP5.cpp in your main program.
4. Once these steps are complete, try to compile the code using the make command.
5. At this point the code should get compiled successfully.
6. Next include the pattern.vert and pattern.frag file in your source code folder and follow the instructions provided in the document related to Project 5.

A Head Start

To help you get started, here are some program skeletons to work from:

- [pattern.cpp](#)
- [pattern.vert](#)
- [pattern.frag](#)

Per-Fragment Lighting

You need to do per-fragment lighting.

Here is what needs to be added to the vertex shader code to enable per-fragment lighting:

```
out vec3 vN;           // normal vector
out vec3 vL;           // vector from point to light
out vec3 vE;           // vector from point to eye

vec3 LightPosition = vec3( 0., 5., 5. );

void
main( )
{
    vec3 vert = gl_Vertex.xyz;
    << change vert to perform vertex distortion >>
    vec4 ECposition = gl_ModelViewMatrix * vec4( vert, 1. );
    vN = normalize( gl_NormalMatrix * gl_Normal ); // normal vector
    vL = LightPosition - ECposition.xyz;           // vector from the point
                                                    // to the light position
    vE = vec3( 0., 0., 0. ) - ECposition.xyz;       // vector from the point
                                                    // to the eye position
    gl_Position = gl_ModelViewProjectionMatrix * vec4( vert, 1. );
}
```

7. In both these files you have to include the #version header and since we are using Mac, we have to follow the syntax acceptable, so instead of **#version 330 compatibility**, just use #version and the version number.
8. Finally, the "in" and "out" syntax is not supported in the compatible version of Mac. So you need to use the keyword "varying" and then with the relevant code in place, try executing the program.