CSC 4356
Programming Assignment 3

Due 11/9/2017, 11:59pm

Objective: This programing assignment is designed to familiarize you with the empirical illumination model and the OpenGL Shading Language (GLSL).

Requirements:
In this assignment, you are required to implement shading programs (vertex shader & fragment shader) under Shader Maker (a simple, cross-platform GLSL editor). (Total 15pt + one bonus point)
1. Download the Shader Maker from http://cgvr.cs.uni-bremen.de/teaching/shader_maker/. After unzipping the package, you can directly run the Shader Maker with the executable file "ShaderMaker.exe". (1pt)
2. Write a vertex shader and a fragment shader to implement the Gouraud shading method (compute the empirical illumination model on vertices and then interpolate colors). (4pt)
3. Write a vertex shader and a fragment shader to implement the Phong shading method (interpolate normals for a fragment and compute the empirical illumination model on each point). (4pt)
4. Modify your Phong shader to compute the specular component with the Blinn variation (N·H) and compare the result with your previous Phong shader (compute specular by V·R). Please use "Sphere" as test model in your comparison result. In your report, show the comparison result and analyze the difference with respect to the shininess value. (4pt)
5. Design your own shader for some special rendering effect (such as toon shading, realistic metallic appearance, surface normal color map, etc.). Please note that your shader does not need to follow the empirical illumination model. If your shading effect is creative and aesthetically pleasing, you will get one bonus point. (2pt + 1pt bonus)

What to Submit?
1. Your shader programs: *.vert and *.frag (you should submit separate shader program files for Gouraud shader, Phong shader, Phong shader (with the Blinn variation) and your own shader)
2. A report explaining your implementation with key results.