02561 COMPUTER GRAPHICS IMM . DTU

Exercise 02561-06 **Vertex and Fragment Shaders**

Readings

Angel: chapter 9
Primer: chapter 10

Purpose

The purpose of the exercise is to get acquainted with OpenGL’s vertex and fragment shader interface and the shading language GLSL.

Part 1

Draw a simple scene of a glossy teapot lit by a point light using OpenGL’s fixed function pipeline. In the next parts, we will gradually replace the fixed functionality with shaders written in GLSL.

Part 2

Implement Gouraud shading using a vertex shader. You can use the code fragments from the slides to skip the tedious initialization procedures. Use the built-in uniforms gl_FrontMaterial, gl_LightSource, etc. to get the material and light source state from OpenGL. If your OpenGL header files do not support GLSL, you will need to download the GLEW library.

Part 3

Implement Phong shading using a vertex and a fragment shader. Recall that the difference between Gouraud and Phong shading is that in Phong shading lighting is computed for each fragment, whereas in Gouraud shading it is only computed at each vertex and then linearly interpolated across the triangle.

Part 4

Replace the constant diffuse color with a texture lookup. You can load a PPM file of your own choice using the code from the slides. You will also need to setup a sampler in your fragment shader.

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