HW3

Goal

1. Draw a sphere and apply Phong shading or Gouraud shading on it.
2. Use keyboard to control the lighting parameters.

*Use GLSL to do this homework, otherwise you'll get zero points.

Spec

Camera:

Position: (0, 0, 5.6)

Center: (0, 0, 0)

Up vector: (0, 1, 0)

Sphere:

Slice: 20

Stack: 10

Radius: 1

Spec

Point light source : (draw a small sphere to represent the light source)

Position : (1.1, 1.0 , 1.3)

The color of the sphere : (0.4, 0.5, 0.0)

The radius of the sphere : 0.05

Keyboard control :

“1” : The parameter “Ks” decreases from 1 to 0 (Ks -= 0.1)

“2” : The parameter “Ks” increases from 0 to 1 (Ks += 0.1)

“3” : The parameter “Kd” decreases from 1 to 0 (Kd -= 0.1)

“4” : The parameter “Kd” increases from 0 to 1 (Kd += 0.1)

Spec

Phong Shading :

Ks = 0 (initial value)

Kd = 0 (initial value)

Ka = 0.5

alpha = 3.6

Ia = (0.2, 0.2, 0.2)

Id = (0.5, 0.5, 0.5)

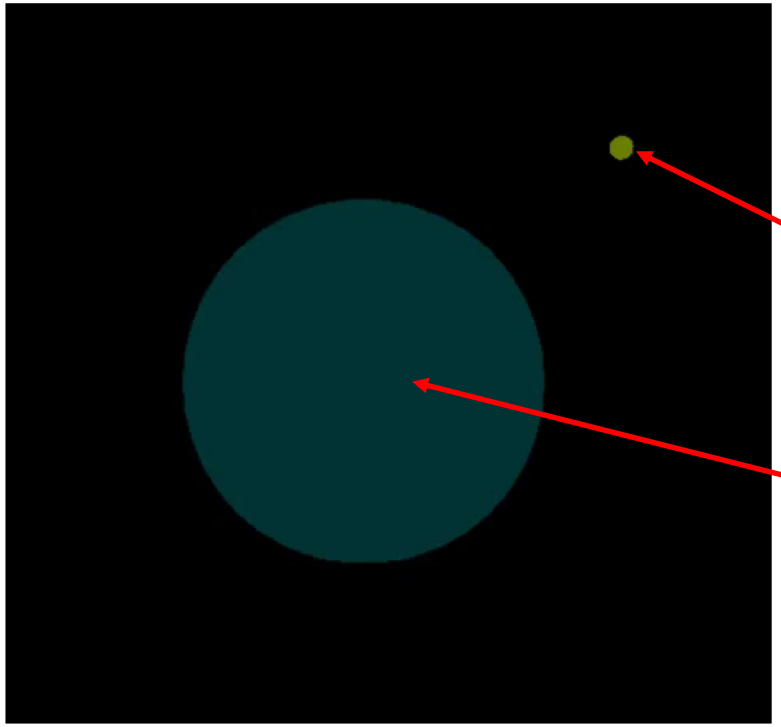
Is = (0.8, 0.8, 0.8)

Score

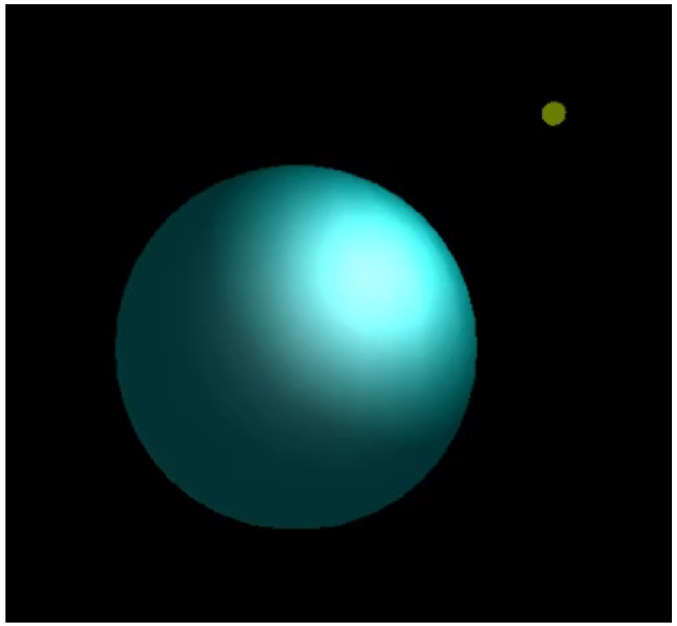
- 1. Successfully draw a sphere and apply Gouraud shading on it. (70%)
- 2. Switch to Phong shading (Use keyboard “B”). (10%)
- 3. Use keyboard to control the Kd and Ks parameters. (10%)
- 4. Demo (10%)
  (We will ask you some questions about this homework)
- 5. Bonus : (10%)
  (1).Change to tone mapping (5%) (Use keyboard “B”)
  (Set the threshold to map the color into 4 Intensity levels.)
  (2).Add border enhancement (5%)
  (Use keyboard “E” to enable and disable the border)

Example video

- Phong shading
- Control Kd and Ks



- Phong shading、Gouraud shading、Tone mapping
- Border enhancement



Others

1. You can do this homework based on your HW2.
2. Zip your Visual Studio project into “ StudentID_HW3.zip” , and upload it to New e3.
3. The deadline is at 11:55 pm on December 23.
4. If you submit your homework late, the score will be discounted.

   submit between (12/24 ~ 12/30) : Your final score * 0.9

   submit between (12/31 ~ 1/6) : Your final score * 0.8

   submit between (1/6~1/10) : Your final score * 0.7