Computer Graphics Programming 3

Name: Ban Hao

Student Id: 2591928

Operating System: Windows 10

Working hours: 10 hours

1. How these parameters influence the lighting effect.

In sample.vs and sample.fs files, we use Blinn-Phong model to render our object. So, the value of parameters are related to formula of Blinn-Phong model.

a. const vec4 ambientProduct; Ambient product is related to the ambient reflection. When the ambient product changes, ambient reflection will be stronger and the whole surface of object will changed.

b. const vec4 diffuseProduct; Diffuse product is related to the diffuse reflection. When the diffuse product changes, diffuse reflection will be changed and the surface illuminated by light of object will change.

c. const vec4 specularProduct; Specular product is related to the specular reflection. When the ambient product changes, ambient reflection will be changed and only reflected light which has same angle with incident light on the both sides of the surface normal vector will change.

d. const float shininess; Shininess is the coefficient in specular reflection. When the shininess value becomes lager, it will simulate a glossier surface, and give a smaller highlight.

2. The transformations should be bug free to get full points.

In this part, because all of the objects are in the relationship of parents and children without siblings. So, we only need to do the push in the stack.

3. Add light shading effects to at least one object on the scene.

In 3.a, I add a vec4 named **ObjectColor** in **sample.vs and sample.fs**. Finally, we will pass the value of object to fragment shader and then calculate the sum of ex_color and object color.

In 3.b, I modify the vertex shader and fragment shader in **p1.vs** and **p1.fs**. After change the Gouraud shading to Blinn Phong shading, in vertex shader, only normal data and position data are transferred into fragment shader. The calculation of color will be finished in fragment shader.

4. Drag the mouse to move the solar system

I add the mouse click event, and save the position when the button of mouse are up. And then, I do the translation to the solar system.