

Project C, Random Shapes With Lighting and Shading

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1. User Guide

In this project, I have three parts of objects in the scene. Each part has objects joined with each other. The user is able to change the camera angle and position. Meanwhile, since two lightings (world light and headlight) are implemented, the user can play around with it. Also, there are four modes of lighting and shading methods can be switched back and forth with user control.

User Control:

- You can also clear the mouse drag by clicking the clear button underneath it.
- WSAD keys are able to tilt the camera forward, backward, left, and right.
- Up, Down arrow keys can zoom in and out the scene.
- Use key H to control the headlight.
- Use key I to control the world light.
- Use key M to control the lighting and shading methods.
- There are four parameters on screen (appeared as 16 sliders):RGB of ambient, diffuse, and specular; and XYZ of the object position.

2. Basic Introduction

- Different modes: Phong lighting with phong shading (Figure1). Blinn-phong lighting with phong shading (Figure2). Phong lighting with Gouraud Shading (Figure3). Blinn-phong lighting with Gouraud Shading (Figure4).

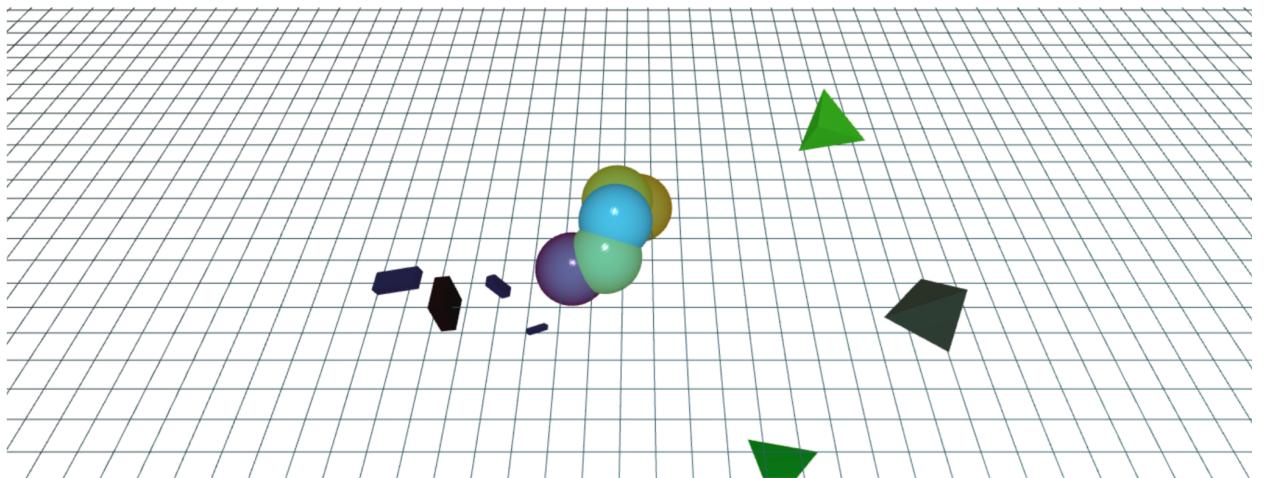


Figure1

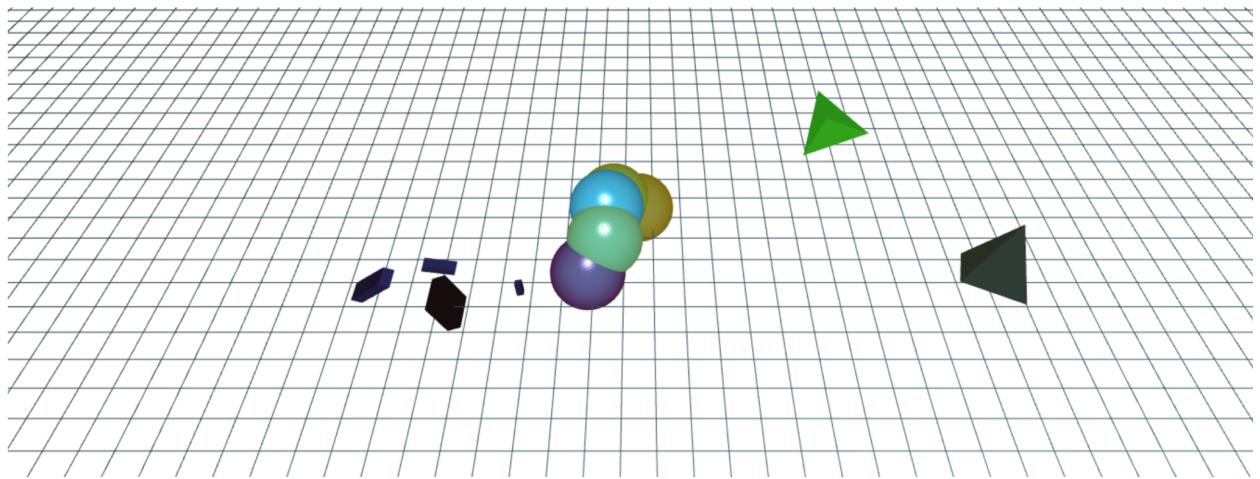


Figure2

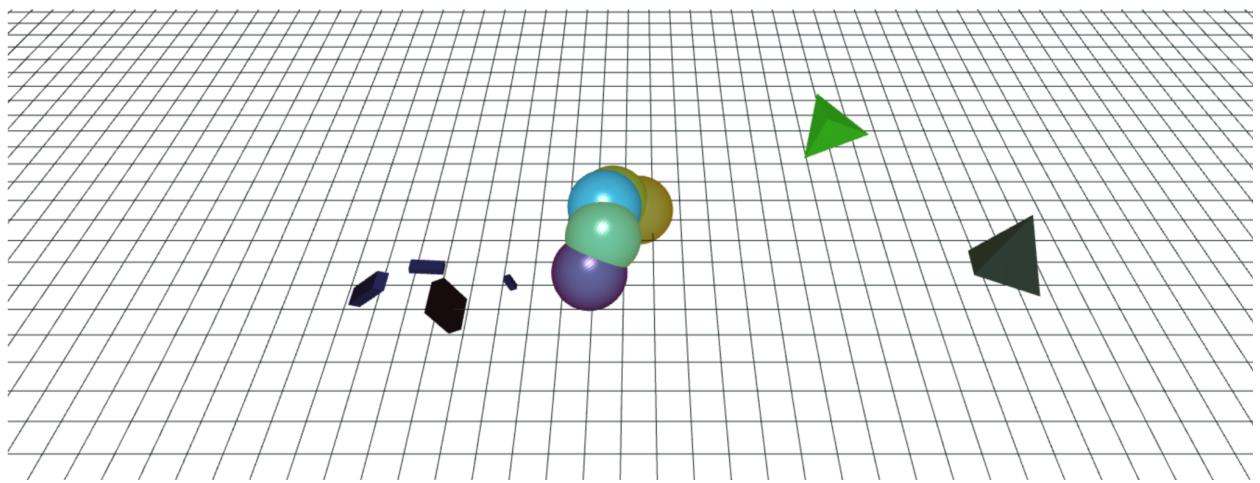


Figure3

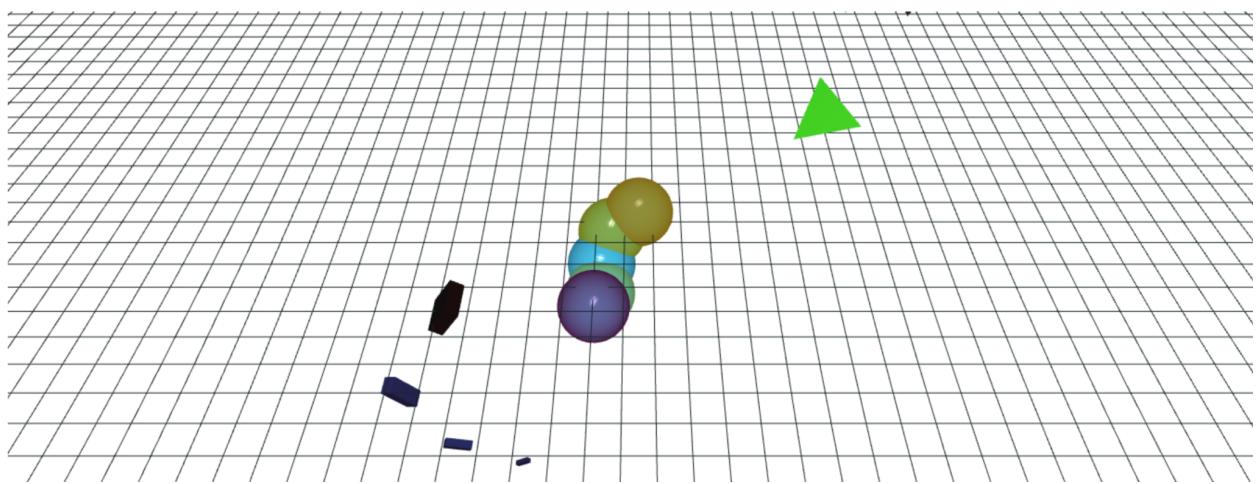


Figure4

- World light on and off on Blinn-Phong lighting with Gouraud Shading (Figure4 and 5).

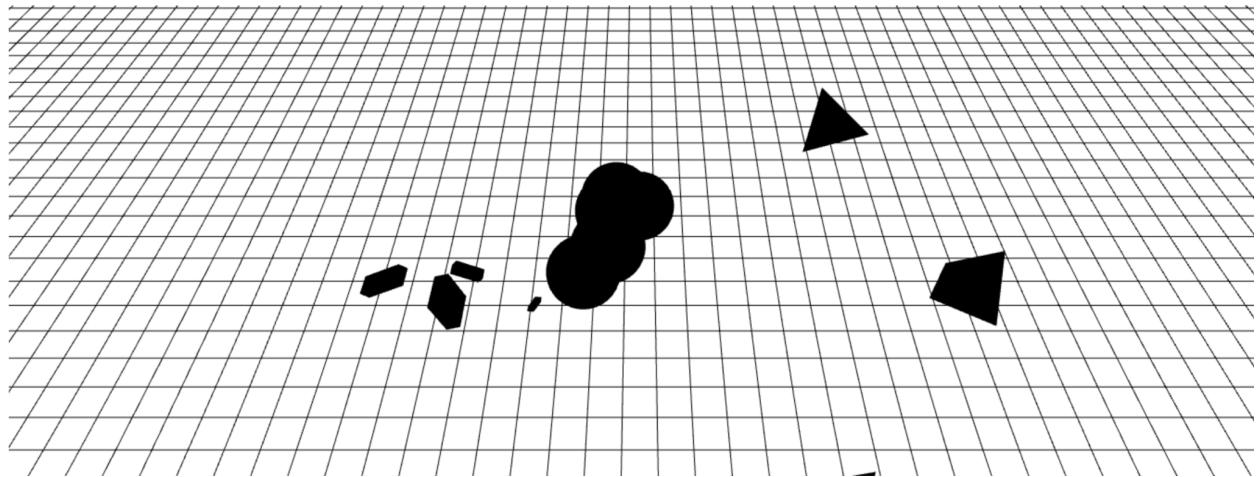


Figure 5

- Head light on and off on Blinn-Phong lighting with Gouraud Shading (Figure4 and 6)

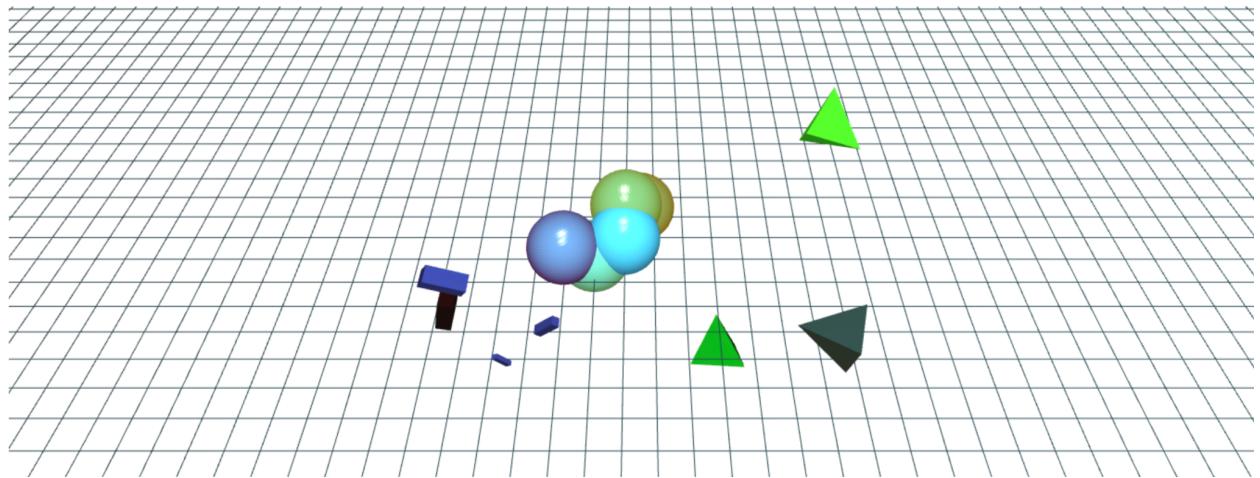


Figure6

- To change the ambient, diffuse, and specular you can get completely different color and texture on objects(compare Figure4 with 7).

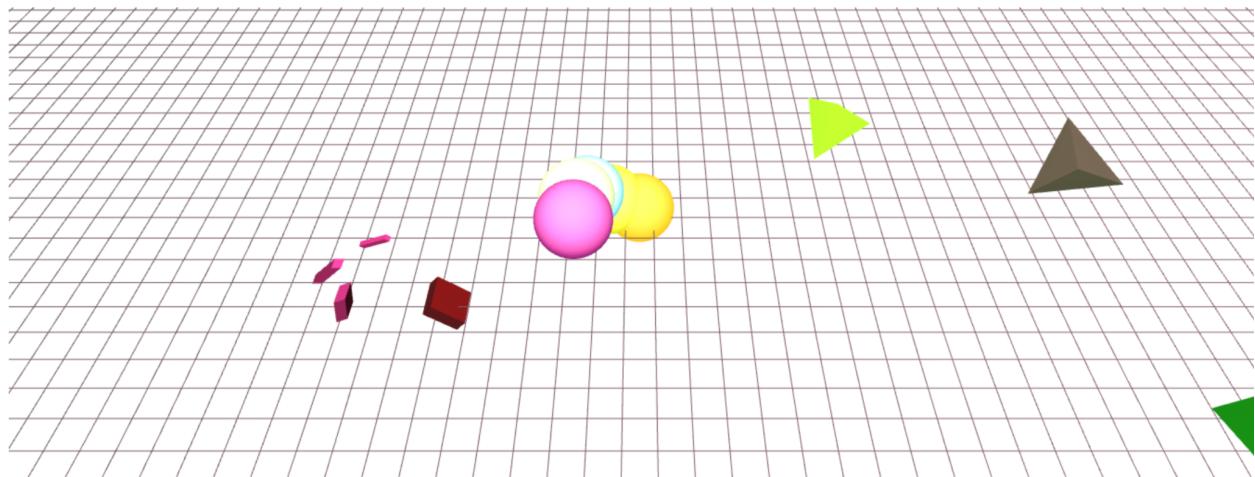


Figure7

Credit:

I achieved the slider css file from site as below:

https://www.w3schools.com/howto/howto_css_skill_bar.asp

The sphere, cube, and tetrahedron shapes are from :

https://github.com/anneb1397/EECS-351/blob/c7d1524123e105c3fcda9c4d214775b90817c3f5/Project%20C/BarrettAnne_ProjC.js