Project C : Lighting and Shading a Sphere

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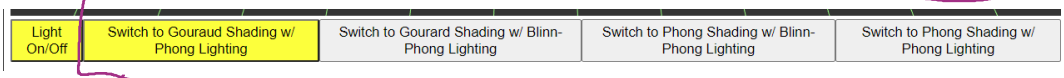
Goal

The goal of this project was to create a sphere that could be lit using different lighting and shading methods. We wanted to make it as interactive as possible, allowing the user to view the sphere from any position, change the lighting and shading methods, change the material of the sphere, change the color of the lighting (ambient,specular and diffuse), and change the position of the light source.

Instructions

Use the On/Off switch to toggle the light source
Use the remaining four buttons to change the lighting/shading method used to illuminate the sphere
Use WASD controls to look around the space
Use Arrow Keys to move around the space
Press M to change the material of the sphere
Use the leftmost sliders to change the X,Y,Z coordinates of the light source
Use the remaining sliders to change the RGB values of the lighting on the sphere



Results

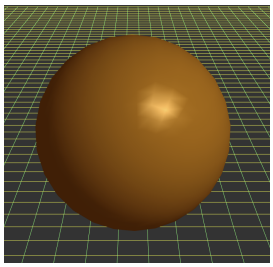


fig 1

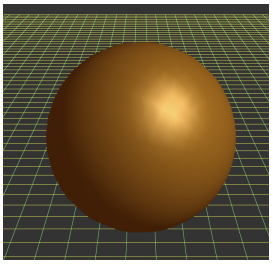


fig 2

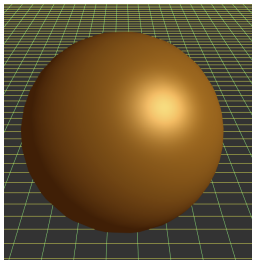


fig 3

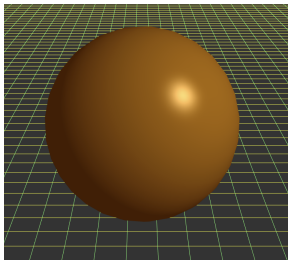


fig 4

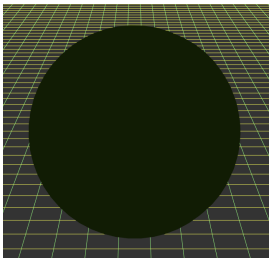
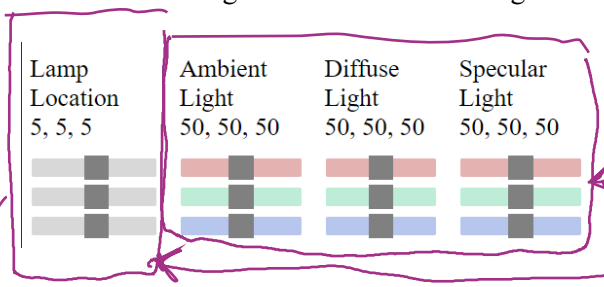


fig 5

fig 1 - Gouraud Shading with Phong Lighting
fig 2 - Gouraud Shading with Blinn-Phong Lighting
fig 3 - Phong Shading with Blinn-Phong Lighting
fig 4 - Phong Shading with Phong Lighting
fig 5 - Light Source Off



Changing the light source location (figs 6&7)

Changing the Ambient, Diffuse, Specular Lighting (figs 8&9)

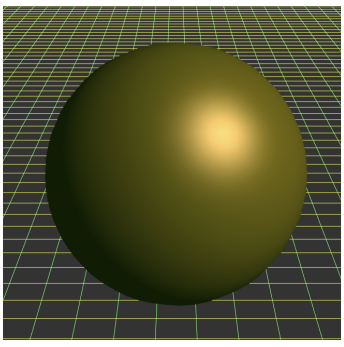


fig 6

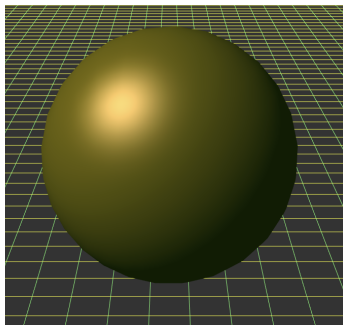


fig 7

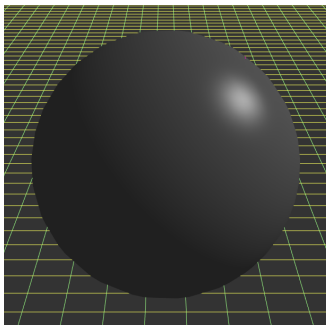


fig 8

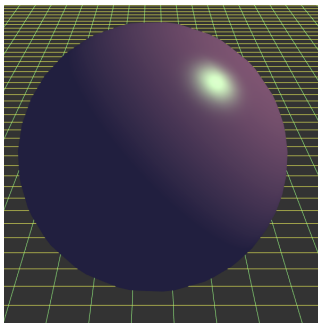


fig 9

Because we opted not to build any jointed objects, thus we do not have any scene graphs to show for this assignment.