**Critical Thinking: Module 6**

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CSC405-1: Graphics & Visualization

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**Sphere Recap**

This week we added a layer of complexity to our graphics created with the help of WebGL. In the program, I had to set up some variables such as ambient, diffuse, and specular lighting components for materials as well as light position. Then I had to create several functions to be called to carry out various tasks. I will briefly outline all functions used in the program. The triangle function is something we as a class should be familiar with; take three vertices and push them to our points and normal arrays. Divide triangle recursively divides our current triangles into smaller ones. The tetrahedron works in tandem with the divideTriangle function to take the sides of our current triangle and divide them into smaller triangles. The initialize function is something we have also seen before. In this case it initializes our triangle, our light, our reflections, as well as our vertices and buffers. Lastly, the render function compiles it all together to get us our spherical shape. It clears the buffers, calculates our three matrices and recursively calls the render function to create continuous animation.

The two most important takeaways from doing this assignment are insight to how camera and eye position work as well as lighting and reflections. The eye position represents the location of the camera and is shown as a vector broken into the axes. This combined with the at and up vectors provide the program with the proper camera orientation. In our discussion this week, I talked about two different kinds of reflections, being specular and diffuse. This was developed further with the addition of ambient light. Ambient light is used as a constant for illumination and is applied regardless of orientation. Diffuse light depends on the angle between light source and the surface. Like in the discussion post, diffuse light scatters the light in many directions where the specular light works on shiny surfaces to create a highlighting effect. With the use of camera position, lighting, and material type, a more realistic graphic is rendered.