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CS147 – Questions for Assign7 – due 11/1/2016

1. Define and describe, in detail, the difference between minification and magnification in texture mapping.

In texture mapping, minification and magnification are two issues which come up relating to the texel size compared to the pixel on the screen being colored. Minification is when a small portion of a texture is mapped to a large screen space. Magnification is when a large portion of a texture is mapped to a small screen space.

1. What is mip mapping? Why would it be used?

In WebGL, mip mapping is one way to resolve issues with minification problems. The resolution of the original texel array is not needed since the size of the texel is large compared to the area of screen space. This allows us to create an array of textures with reduced sizes by using layers of textures until the size of texel is approximately the size of the pixel. It can then accurately be mapped to the pixel to be displayed and appear pleasingly accurate to the viewer. Mip mapping also averages colors and produces a blend to be displayed in nearest mipmaps to improve appearance.

1. What is an environment map? Why would it be used?

Environment maps are used to imitate reflective properties of highly specular surfaces. The teapot which we saw in class was a good example of when an environmental map would be necessary. The “Environment” the tea pot was in ( such as light, buildings, grass, skies and trees) were reflected onto it to create a more realistic image.