**CS 557 Final Project Proposal**

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In this final project, I am planning to implement a valley with a pool in the middle of it and also added on several other feature.

The main part of this project will be creating the valley and the pool. To implement the valley, I’m planning to use a noise function and add some displacement to a plane just like what we did in the class project. By doing this I will be able to control the height of the “mountains” by a slider. To implement the pool, I am planning to add some reflection and refractions to it. I don’t think I will follow the real physics equations of ray tracing, instead I will use the similar technique as the cube mapping. The waves on the water surface is also one part that I would like to implement, to do so, I assume the bump mapping should be used. I will also add a slider to control the height of the water surface.

In the project, I am planning to take the temperature into account. The temperature will in charge of the morphological changes of water. The temperature will be controlled by a slider. When the temperature is low, the pool should be froze into ice, and when the temperature is high, the water should be gone and turned into steam. To implement this, I assume that the mix function and geometry shadesr will be used.

I am also planning to add the rain effect into the project. Implementing the waves on the pool surface caused by rain drops should be pretty cool to look at. To accomplish it, I think I need to use bump mapping and find an efficient way to create the rain drops.

The features I am planning to do in the final project are all listed and described above. To implement them I need to use almost everything I learned in the class and I also should learn some new techniques at the same time. Hope these will result in a good final project for this class.