# A New Hope

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I am not interested in being considered for one of the prized Vulkan t-shirts for my final project.

For my final project, I would like to recreate the scene from Star Wars Episode IV: A New Hope where the rebels lead the attack on the Death Star. I plan on doing this by recreating the large red planet which will just be a large sphere with a texture mapped to it. I will have the Death Star on one side of the planet and some X-Wings, Y-Wings and potentially the Millennium Falcon on the other side. From the view of the planes, you will only be able to see half of the Death Star as it orbits around the planet (to be as accurate to the movie as possible). The Death Star will be another sphere which I will map a texture of the Death Star onto. I will likely be using some .obj files that I've found online for the X-Wings, Y-Wings and Millennium Falcon as I'm not sure I'd be able to recreate those very well.

I've included an image below, which depicts what I will be trying to emulate in this project. As you can see, there is some white lighting coming into the scene from the right side, so I will place a white light from that side pointing towards the planet.   This project will utilize lighting and textures and I think it would be a really cool project, hopefully looking similar to what happened in the movie.

Here is a screenshot of what I actually did with this project:
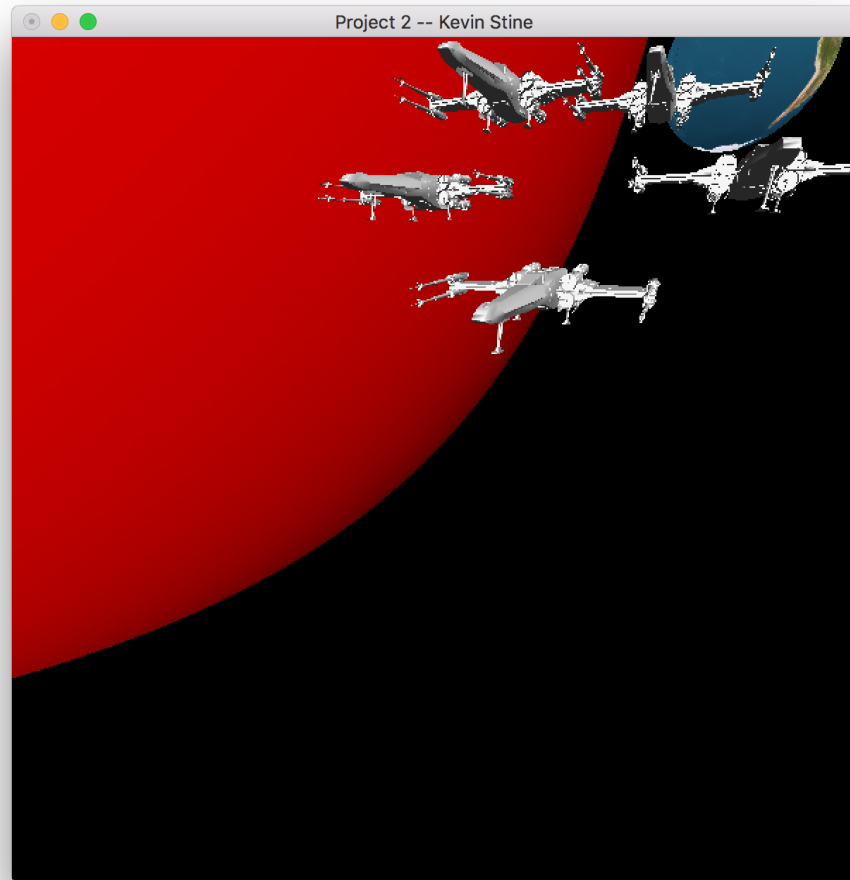
I implemented the scene like in the picture above, however it's missing a few things from the picture from the movie. I was able to find .obj files for the X-Wings, and while they did have their landing gear down, these were the best ones that I was able to find that we're both free, and didn't contain a crazy amount of polygons as the load times for some other objects were insane. I put in a few different X-Wings and spaced them out all relative to the first X-Wing on the bottom which I translated to (5., 5., 0.). Each of the X-Wings are also scaled down by (0.05, 0.05, 0.05) since the initial objects were pretty large when I imported them into the scene. I recreated the large red planet off to the left and the secondary planet behind the X-Wings which is a little more visible when you rotate the scene. I also brought in an ambient, white light coming in from the right of the screen similarly how the light was portrayed in the initial proposal.

In my proposal I mentioned how I wanted to have the scene swapped in the image above, where you are looking behind the X-Wings towards the death star. This what was I initially began implementing, starting with just a Death Star object that I found online and spent a lot of my time just trying to get a texture to map to it. Most of the .obj files of the death star came with .tga files to be used as the raster graphics file. As this class is my first experience

with any sort of computer graphics, I was only comfortable using the functions that we were given for reading in textures like the function to read in the bmp file as a texture. I initially tried getting these .tga files to convert to .bmp files however I generally encountered errors such as the compression ratio was wrong. After not being able to figure out the death star texture mapping, I decided to scrap the idea since I didn't like the idea of having the death star just being a grey blob. From there, I moved onto creating the red planet. When I had done my research initially, I had just assumed that there would be a lot of .bmp files available for tons of different planets, similarly to the image of earth that we were given for project #3. However after hours of research the best I was able to find was some .png files which were textures of planets. I tried converting the .png files to .bmp files but was still getting errors when trying to read the files so I decided to just use a large red planet and the earth texture from project #3 for the planet behind the X-Wings.

I learned a lot from doing this project and I think the main takeaway from me was just how difficult graphics programming can be. The only prior knowledge I had of graphics programming was seeing programs like Unity which essentially took all the programming out of the graphics design and allowed you to just add and drop objects. With my limited research before creating my project proposal, I had seem some objects for X-Wings and the Death Star and thought that it would be relatively simple getting textures mapped to them and getting them positioned just how I wanted them. It turns out that there was a lot more involved in actually getting all the little pieces that I wanted to work together, so I ended up going with a pretty stripped down version of my proposal. I also learned that while what I believed to be a simple project was actually way out of my experience and comfort level for getting everything working how I wanted.