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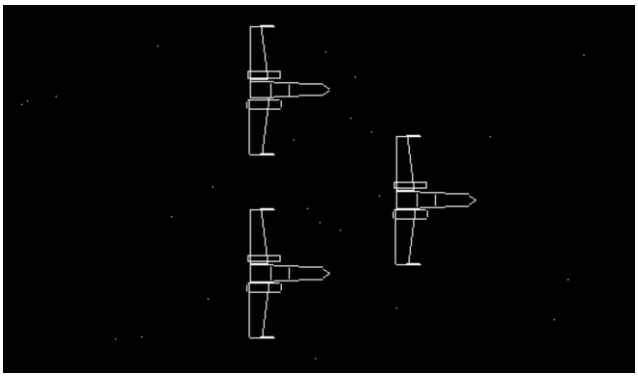
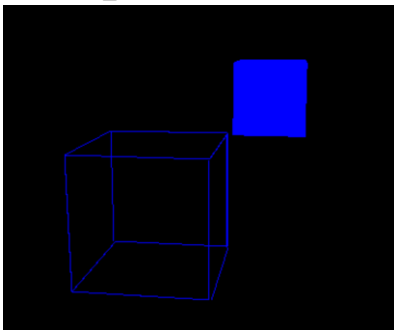
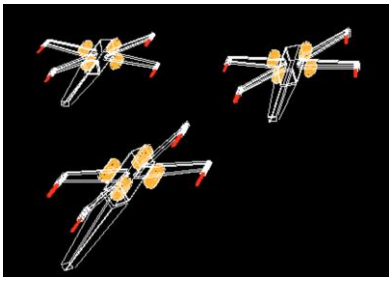
6/23/24
CS5310
Summer 24
****The PDF version does not support animated gifs, so you'll only see a single image. The word document (same file name) has the animated gif for reference****

Introduction
Project 6 introduces us to hierarchical modeling and being able to build "prototypes" that we can duplicate, and transform together or independently. Doing so gives the user an opportunity to build the object once and then make multiple transformations with minimal inputs.
Projects

Test6a

For Test6a, we were debugging the module setup. It involved creating a background and then building xwings with 2D shapes. The primary challenge was understanding how the code was building up each piece, and how to manage the memory afterwards. I ran into some segmentation errors as I was building up the piece.
Module_cube

In the module_cube piece, I decided to include both a shaded and non-shaded cube for the image. It was more for my to practice how to add multiple pieces to a single scene before I moved on to the creative piece. My main struggle continued to be determining and calculating the view reference points and what an appropriate scale should be. The solid block looks like just a square, but it is a cube that is simply level with the VRP.

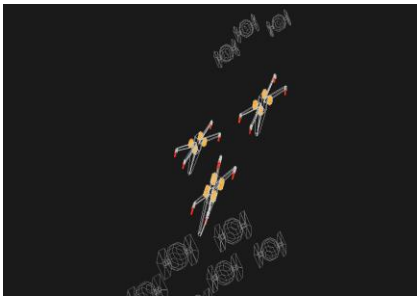
Test 6c



Test6c was a challenge in memory allocation – I spent a long time chasing down a segmentation fault before I realized that the image was writing successfully and that it was struggling during the cleanup portion of the program. Nonetheless, I continued to learn more about the C program as a whole while also refactoring previously written code.

Creative: Space Dogfight (gif in the word document)
Stills:

Gif:



My most rewarding and fun image to create yet. I had some real inspiration from test6b and I wanted to incorporate the energy I get as a military pilot and what this scene could turn into. I also had some great foundation built in with project 5 – I was able to incorporate the unit sphere from project 5 and the cube functions to create a TIE fighter. Then, since the requirement was for 3 formations of 3 fighters each it was a perfect opportunity to recreate an action scene. My main challenges was keeping track of the axes as I built up the modular system for building a TIE fighter. The unit circle was still referenced to have the "cockpit" as the y axis, so the entire axis got tilted for the design. I learned a real hard lesson about choosing the right origin when creating the wings – because my origin was the bottom left corner, when I created the module to mirror the wing on the other side, I had an unfortunate side effect that the wings "twisted" rather than rotated because of an off-center origin. If I have a chance to refactor, I'll fix this.

Extensions
I think some points for a complicated animation scene would be wonderful.

Reflection

I'm getting much better at visualizing and planning out my modules, and completing the creative image after the mid-term actually helped because of the thought process the midterm showed me. I spent a lot of time tinkering with the rotation amounts for each formation to try to create a realistic scene of how the fighters would maneuver.

Acknowledgements

The xwings in the creative image were based entirely off of the test6b code with very little modification, I simply modified them to be added to the main program as a function.