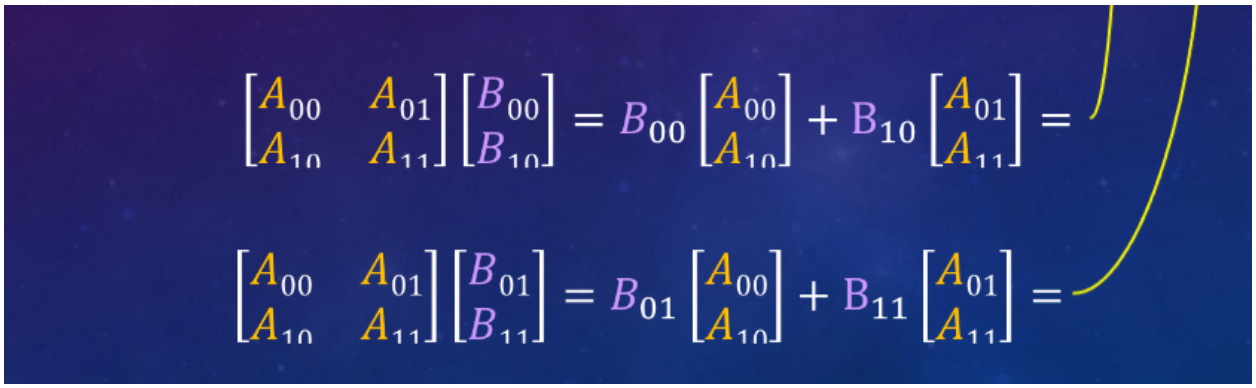
Concepts:

One concept I thought was extremely interesting and surprising was matrix multiplication. At first I did think “oh you just multiply each spot by the other spot in the matrices. But obviously that thought was shut down immediately. But I understood why it was shut down so fast. It makes complete sense to get the new matrix by multiplying the left matrix’s basis vectors by the basis vectors of the right matrix. With x and y multiplying with its respective basis vectors. SInce this is one of the more important concepts in 3D graphics, I thought it was good to understand. Or at least have an idea of what is going on when multiplying two matrices



Next concepts I enjoyed learning about were Perspective Projection and Orthographic Projection. I thought they were both interesting on how you could use them in different situations to give you what you may need. It’s almost important that I understood perspective projection acts as if I was looking from my eye. Along with you know something is perspective when objects are bigger when closer to the “origin” (could mean the eye or camera eye). And things are small when farther away from the origin. But orthography makes all objects look the same size, no matter the distance. One way I remembered both concepts are orthographic maintains evenly spaced lines and lines are kept parallel to one another. While perspective does not keep them evenly spaced and parallel. You can visualize the two concepts just from that description of the two, least I can.

Experience:

One big issue I had was understanding the multiplication matrix concept. I now understand it, but while coding it was a bit weird to grasp and write code on it.

This here is my vector multiplication function.

```
result.x = (v.x * this.elements[0]) + (v.y * this.elements[1]) + (v.z * this.elements[2]) + (v.w * this.elements[3]);
result.y = (v.x * this.elements[4]) + (v.y * this.elements[5]) + (v.z * this.elements[6]) + (v.w * this.elements[7]);
result.z = (v.x * this.elements[8]) + (v.y * this.elements[9]) + (v.z * this.elements[10]) + (v.w * this.elements[11]);
result.w = (v.x * this.elements[12]) + (v.y * this.elements[13]) + (v.z * this.elements[14]) + (v.w * this.elements[15]);
```

I took a look at this and thought “this is basically what we are doing for a matrix times a vector. Which a matrix times a matrix, can also be seen as a matrix times a vector, somewhat. However, to properly multiple a matrix by a matrix you must perform this action of multiplying a basis by another basis. I feel like I can’t entirely put the thought from my head onto paper, but I do understand the concept of matrix times a matrix.

My partner and I worked efficiently on helping each other on the code. We both read the material over and over together, clarifying what we didn’t understand. And making sure what we did understand, we truly understood.