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# Final Report

<http://weblab.cs.uml.edu/~kkarke/427546s2018/finalproject/>

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This final report showcases my final project and my thought process and research towards completing the project

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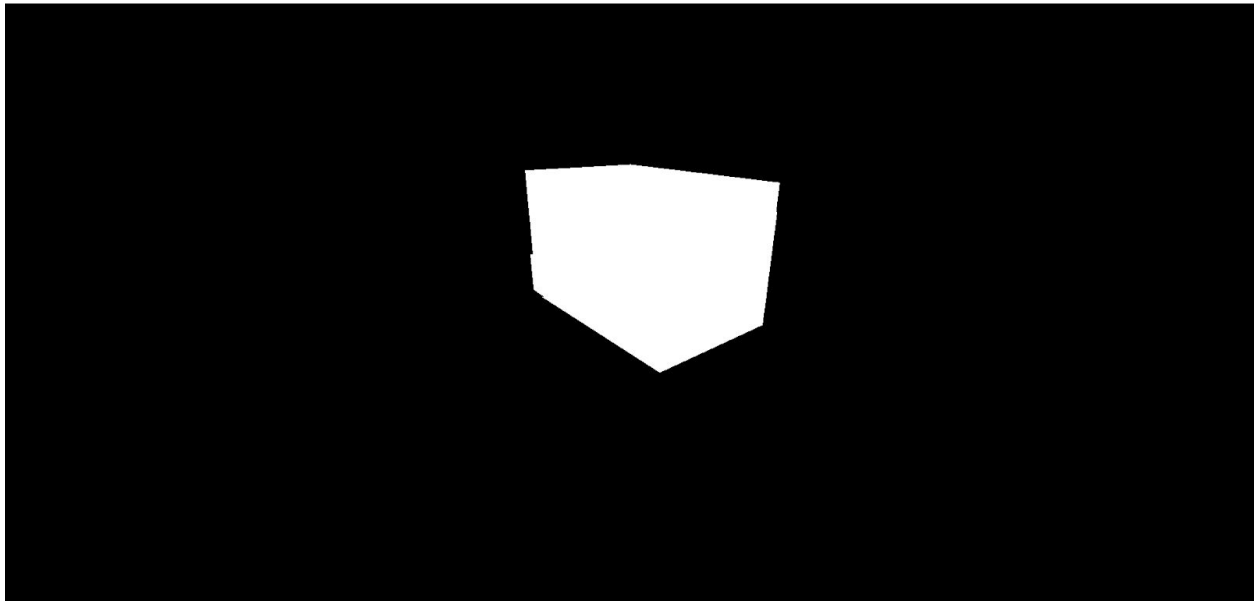
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## Week 1

### Research

I used this week mostly to do research on what framework I would use to do my project while there were many options I ended up using three.js. I found the main framework on

<https://threejs.org/docs/index.html#manual/introduction/Creating-a-scene> and I was able to create a simple cube that was rotating in a space.



I was also able to click and drag the object to change the view multiple sides of it while it was rotating.

It used a perspective camera. This is the code that made the object rotate:

```
requestAnimationFrame(animate);  
  
demoBox.mesh.rotation.x += 0.01;  
  
demoBox.mesh.rotation.y += 0.02;  
  
renderer.render(scene, camera);
```

As this function was running recursively, it called and rendered itself while the webpage was open.

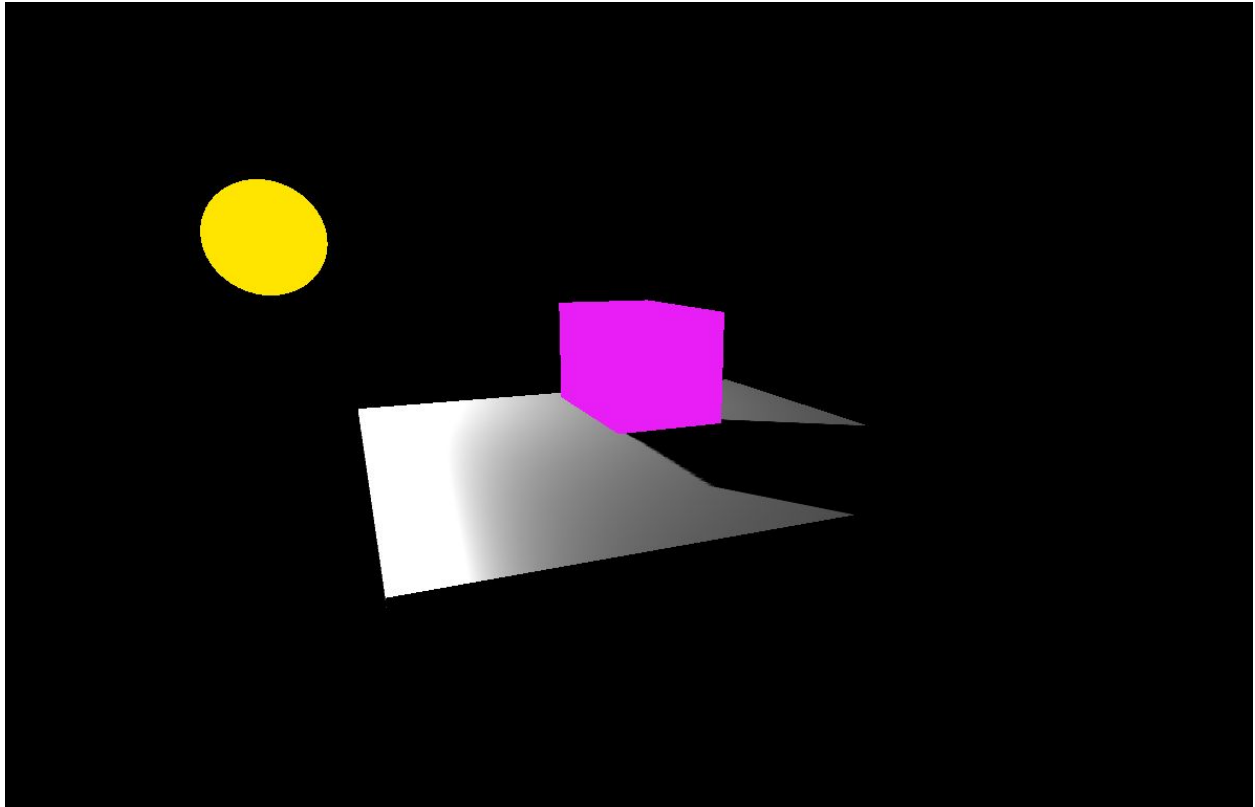
Goal Achieved: **Modeling to create and store a 3D object**

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## Week 2

### Light

I used three.js to create a light source similar to the sun. I was also able to make a floor and cast a shadow of the 3D object. It was complex and took me a while to figure out. I planned to use this lighting to provide a slider in my GUI to increase and decrease it's intensity.



Code I used for the light:

```
light = new THREE.PointLight(0xffffff, 3, 100, 2);  
light.position.set(10, 5, 10);  
light.castShadow = true;  
scene.add(light);  
light.add(sun.mesh);
```

Goal Achieved: **View my created object from multiple views and Transform camera/viewer/light sources(s).**

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## Week 3

### Colors & Mapping

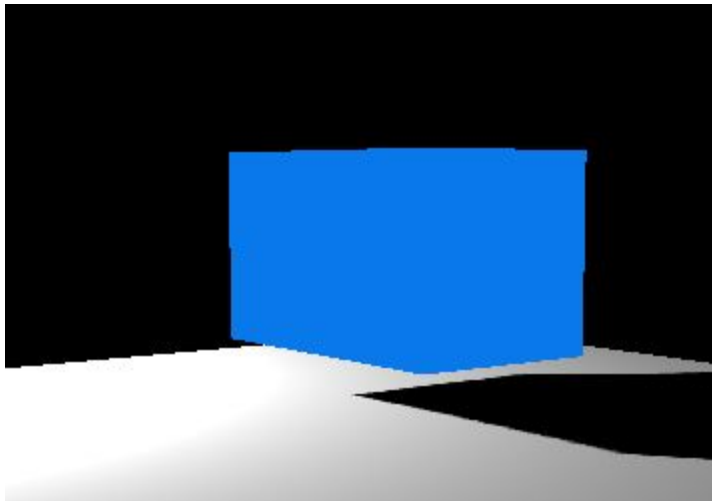
For this week I was able to modify the textures and mapping of my 3D object.

Three.js is very convenient and gives users a way to change the colors and textures of object by using simple commands.

Example:

I was able to turn the cube blue:

```
demoBox.color = new THREE.Color( 0x00FFFF );
```



The material can be changed by using:

```
new THREE.MeshLambertMaterial
```

```
new THREE.MeshPhongMaterial
```

```
new THREE.MeshNormalMaterial
```

There were only a limited number of materials that could be mapped in three.js. If I have the time I will look into custom mapping of texture from user files.

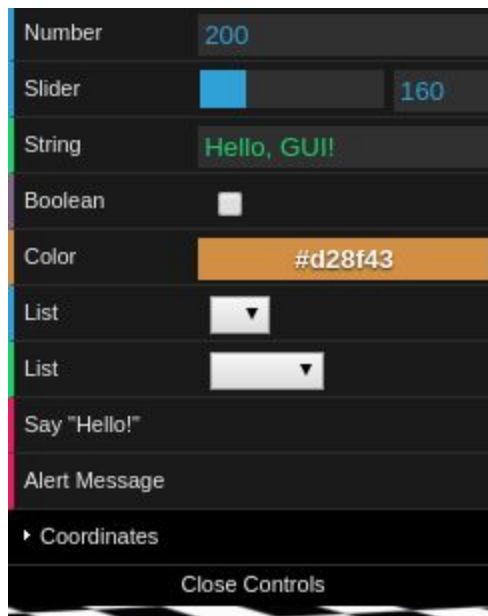
Goals Achieved: **Create texture/bump/environmental mappings for the object.**

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## Week 4

### Interface

For this week I created an interface to control all the previous aspects of the project that I worked on.



I used DAT.GUI files to create this interface which is located at:

<http://learningthreejs.com/blog/2011/08/14/dat-gui-simple-ui-for-demos/>

