

CS460 Fall 2020

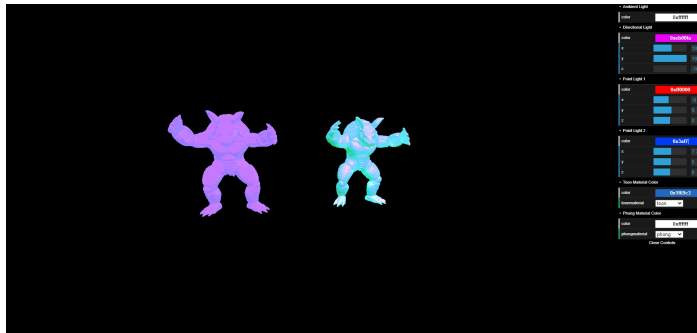
Github Username: Msoohoo1

Due Date: 11/30/2020

## Assignment 9: Geometry, Materials, and Lighting!

We will load our favorite mesh from a file, try out different materials, and play around with light settings.

Updated Picture:



**Starter code for assignment 9.** After pulling from upstream, there is the folder 09 in your fork. If you run a webserver and access the file, you will see a sad single armadillo in the scene.

**Part 1 (14 points):** The armadillo needs a friend! Please load a second mesh from a file using a THREE.js loader. This could be any mesh you find online in any format THREE.js supports - or you could load the armadillo again. Please modify the positions so that the meshes do not overlap.

**Part 2 (15 points):** Please configure the second mesh from above with a different material of your choice (not MeshToonMaterial again!).

**Part 3 (10 points):** Please add two point light sources to the scene.

**Part 4 (15 points):** The starter code includes the following snippet to control the color and position of the directional light.

```
var directionalFolder = gui.addFolder('Directional Light');
directionalFolder.addColor(controller, 'color').onChange( function(value) {
    directionalLight.color.setHex(value);
});
directionalFolder.add(directionalLight.position, 'x', -100, 100);
directionalFolder.add(directionalLight.position, 'y', -100, 100);
directionalFolder.add(directionalLight.position, 'z', -100, 100);
directionalFolder.open();
```

Please setup dat.GUI to control position and color of the two point lights with similar code.

**Part 5 (15 points):** Please setup dat.GUI to control the color of both materials.

**Part 6 (30 points):** Please play around with the lights and try to understand why the toon material seems to work \*sometimes\*. What are your observations?

The toon material seems to not change dramatically but can have certain variations of colors if changing the directional light and the toon material color to a certain degree. This degree will allow us to see changes in the color to a brighter or darker version of the color. The toon material color cannot be the extreme of the colors like 0xff0000 or 0x9500ff as these will not show any changes to the toon color. The toon material color demands a rather lighter color as it shows the shading, which allows the user, us, to see the changes that the point light colors makes. The changes are not dramatic compared to the phong material which we could clearly see the color changes. The toon material does not seem reflective but rather it appears that it absorbs light in while the phong material actually seems to be reflective.

**Part 9 (1 points):** Please update the screenshot above with your own and then post the github pages url here:

<https://msoohool.github.io/cs460student/09/index.html>

Credit to:

Daniel Haehn

Zhenrongliew

**Bonus (33 points):**

**Part 1 (11 points):** Please add dat.GUI elements that allow to switch the material for the two meshes. Here is an example of a combobox in dat.GUI:

Did it

**Part 2 (22 points):** Please make adding lights to the scene dynamic: Add dat.GUI buttons to add new directional lights that then also add a dat.GUI folder to the menu that allows to control (color and position), and remove the light.