

CS460 Fall 2021

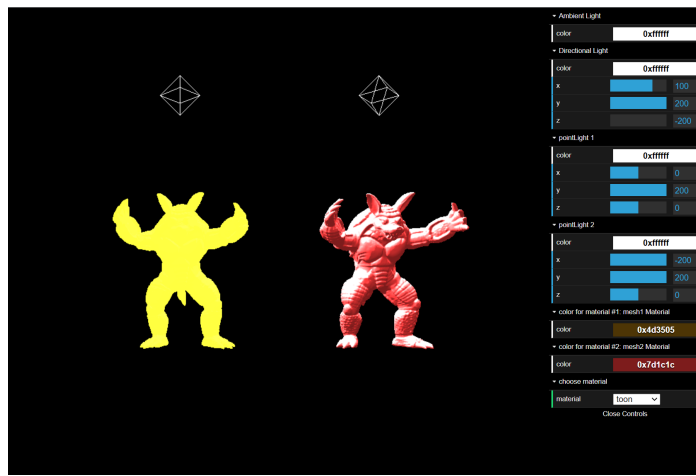
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Due Date: 12/02/2021

## 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.



**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();
```

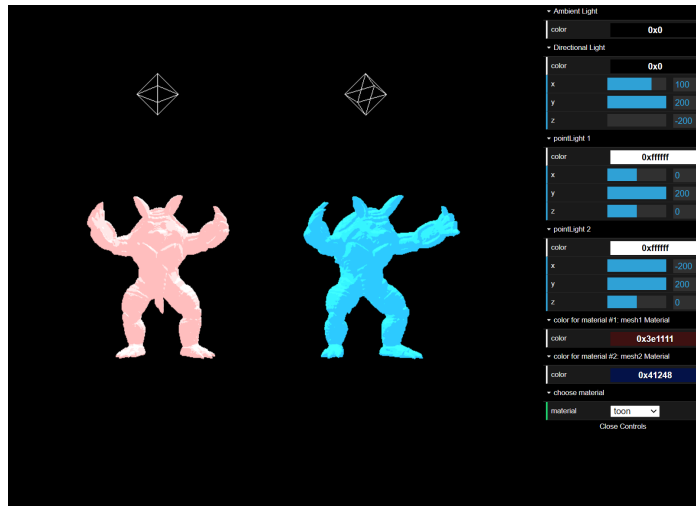
Please setup dat.GUI to control position and color of the two point lights with similar code.

**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?

MY\_OBSERVATIONS

I played around with the lights and it seems that when the directional light and ambient light are off or when ambient light is a dark color, the toon material works better. Also, the toon material works better when color is not dark, and is not light. I think it is happening because of the change in ambient light or because of the change in color of the material.



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

Link to my assignment: <https://aniuta78.github.io/cs460student/09>

**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:

```
// Choose from accepted values
gui.add(controller, 'material', [ 'toon', 'standard', 'phong' ] ).onChange( function(value) {

  if (value == 'phong') {
    // TODO
  }
})
```

```
});
```

**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.