

# Assignment 2

## Programming Starter Code Notes

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- The starter code has backface removal (culling) turned on by default. You'll probably find it easier to debug by turning it off (and you don't need to turn it back on when you submit the assignment). The call that enables it is in `ui.cpp`; `glEnable(GL_CULL_FACE)`; you can simply comment out this line or replace it with a `glDisable(GL_CULL_FACE)`.
- When you shade a surface it is important that the surface normal of each patch (or triangle) be pointing in the right direction. All surface normals should be outward facing normals, and of course the light source and the camera should also be outside of the object. Plotting the surface normals is a good way to help debug your geometry.

For the sphere and torus, this makes perfect sense, but for some surfaces of revolution there is a question. What if you make a bowl that is open at the top (or a glass for example)? Then you might decide that all the triangles on the side of the bowl should face outside (*i.e.*, away from the axis about which you are revolving the curve). In that case the object will appear fine when viewed from outside, but the inside of the bowl may look weird (*e.g.* grey) since these sides of the triangles do not see the light source so to speak.

So....

- Be aware of this while debugging
- If you want to avoid this ... producing something nice inside the bowl, then for the sides of a concave object light this you might way 2 triangles everywhere that you would otherwise have just 1. One would point outside and one would point inside so that the inside can also be shaded.