Assignment 3 Report
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Compilation instructions
Install Assimp library (https://github.com/assimp/assimp/blob/master/Build.md)
Ensure that the glm include library (no lib / .a files) is in the same directory as GL and GLFW include directories.
Compile with normal commands. Presumably,
g++ -lglfw -lglew Source.cpp Shader.cpp Model.cpp Mesh.cpp
will work, but I was unable to test it.
To call an object file other than “cow.obj”, please edit the value in line 119 of Source.cpp.

Commands
1/2/3 switch between no shading, gouraud shading, and phong shading
w/s zoom camera in and out
d downscale model
u/i/o/j/k/l rotate object around model axes
9 show z-buffer depth
0 show wireframe

Transformations
Implemented w/s to scale object by moving camera. Implemented d to downscale actual object model. Did not implement actual upscale of object model.

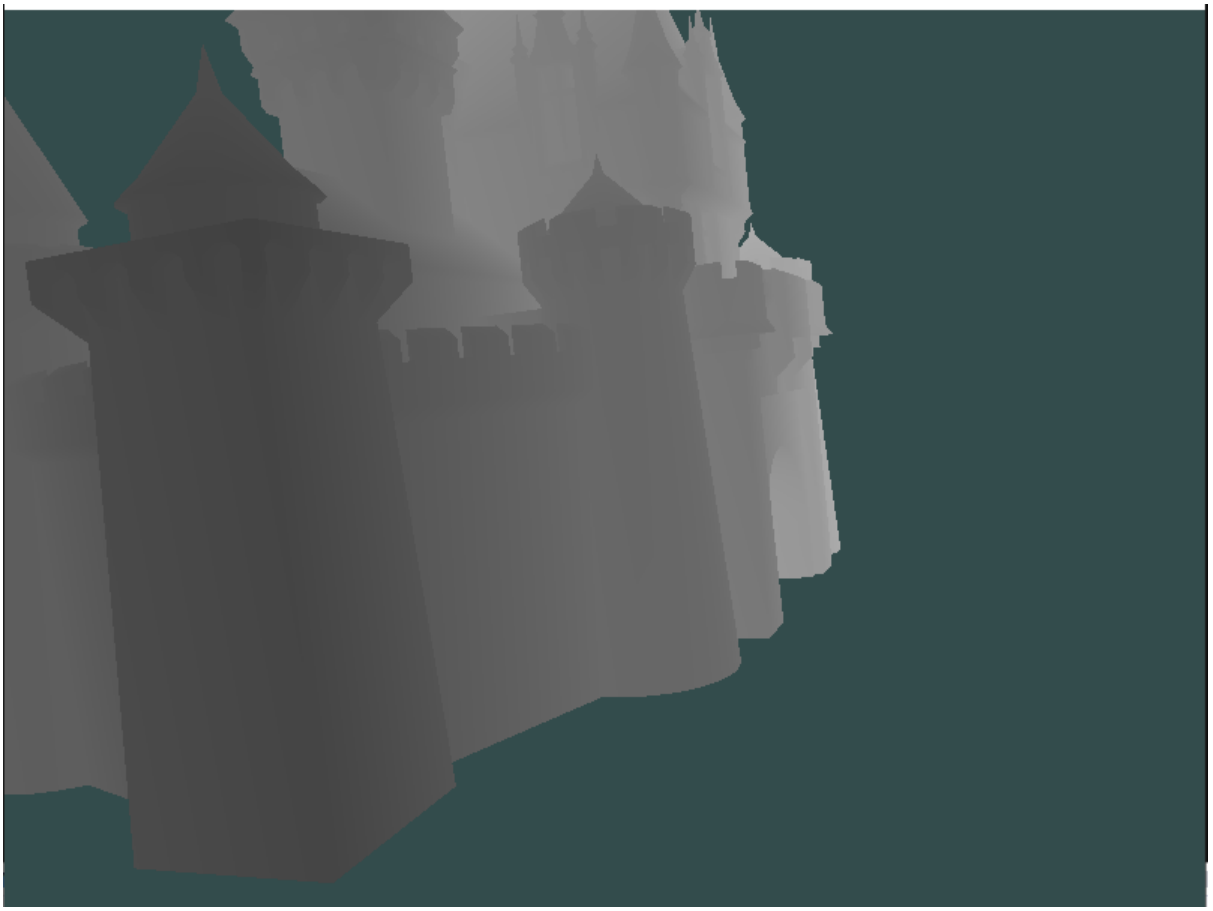
Rotations
By using u/i/o/j/k/l, the model can be rotated around any of its axes.

Implemented:
Downscale but not upscale. (Can zoom.)
Rotation.
Gouraud shading.
Most of Phong shading.
Did not implement mouse-based rotation.

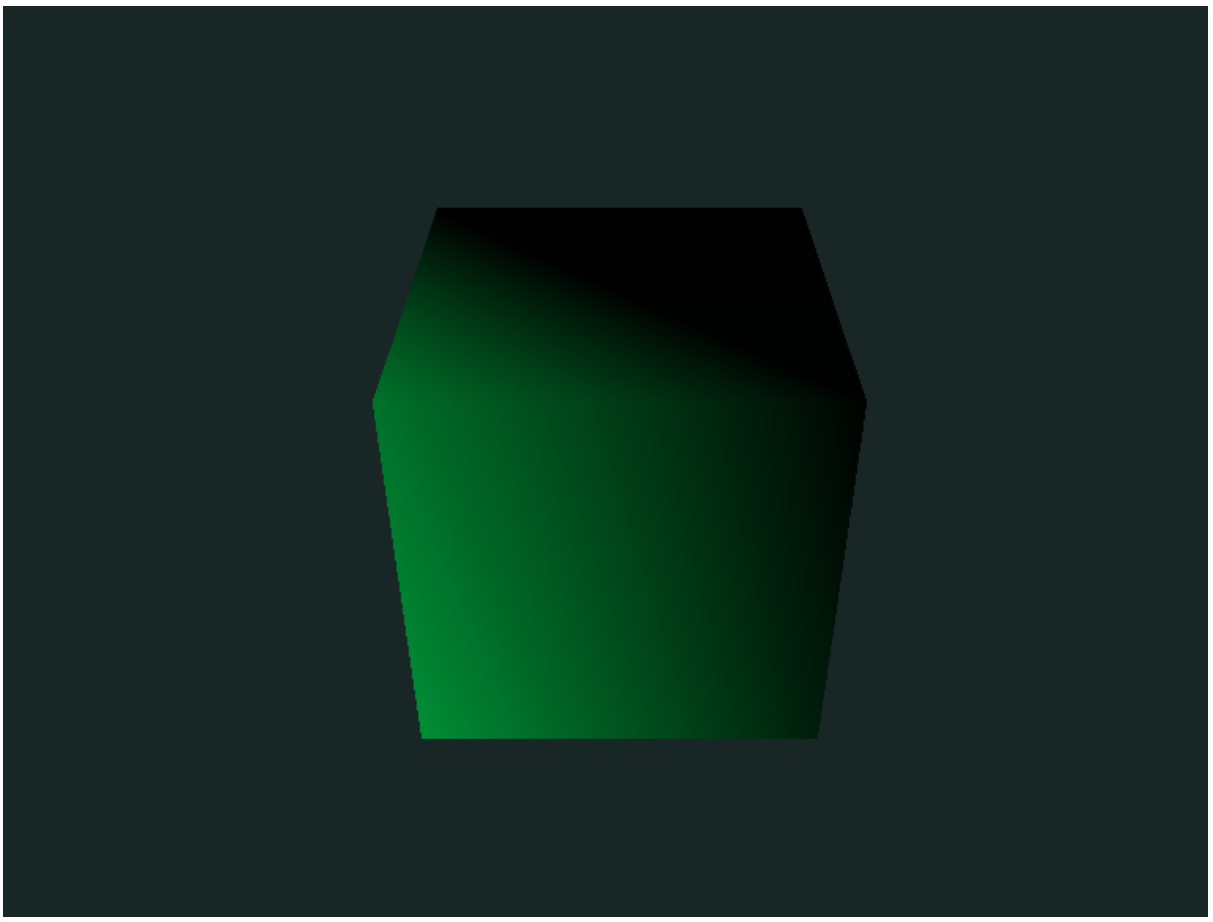
Implementation details

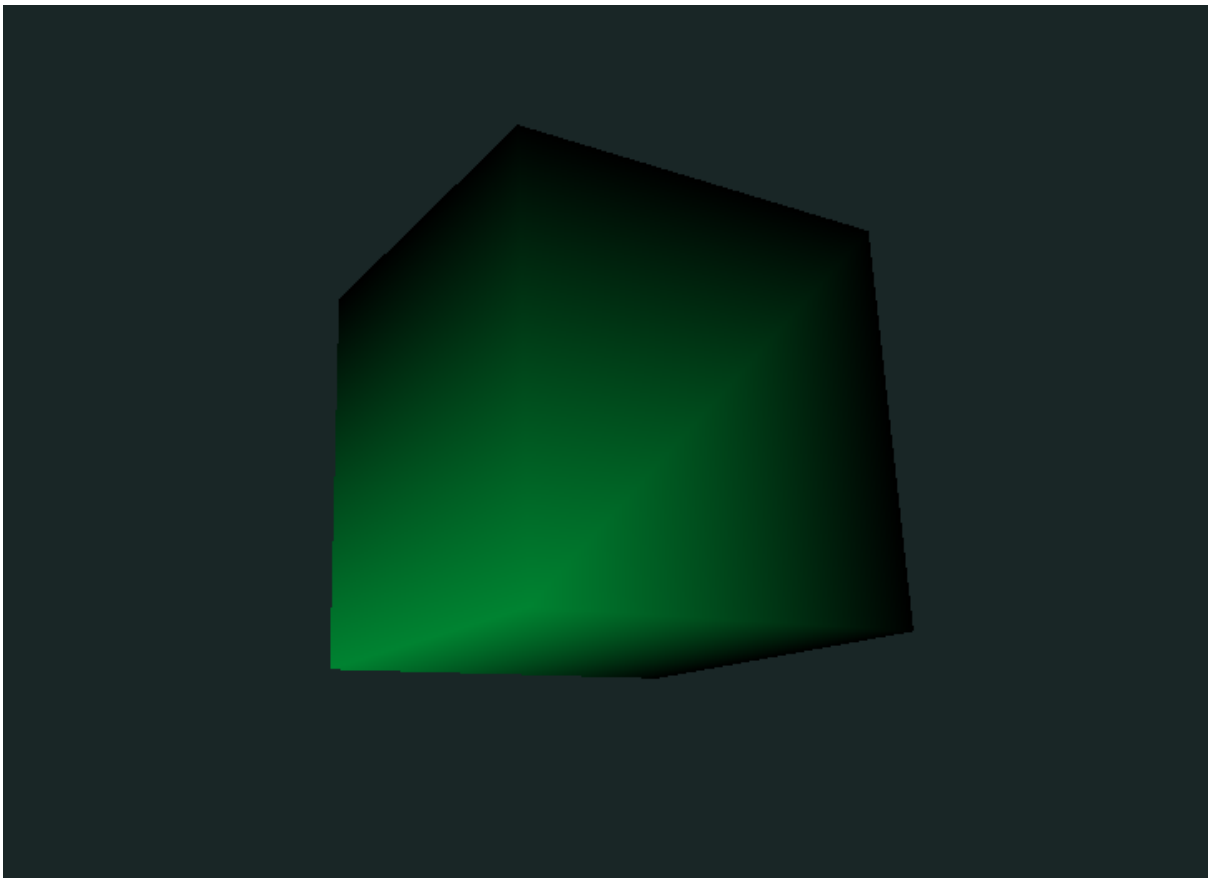
Z buffer output
cube_normal.obj

castle.obj
Note the difference in z-buffer from near to far.



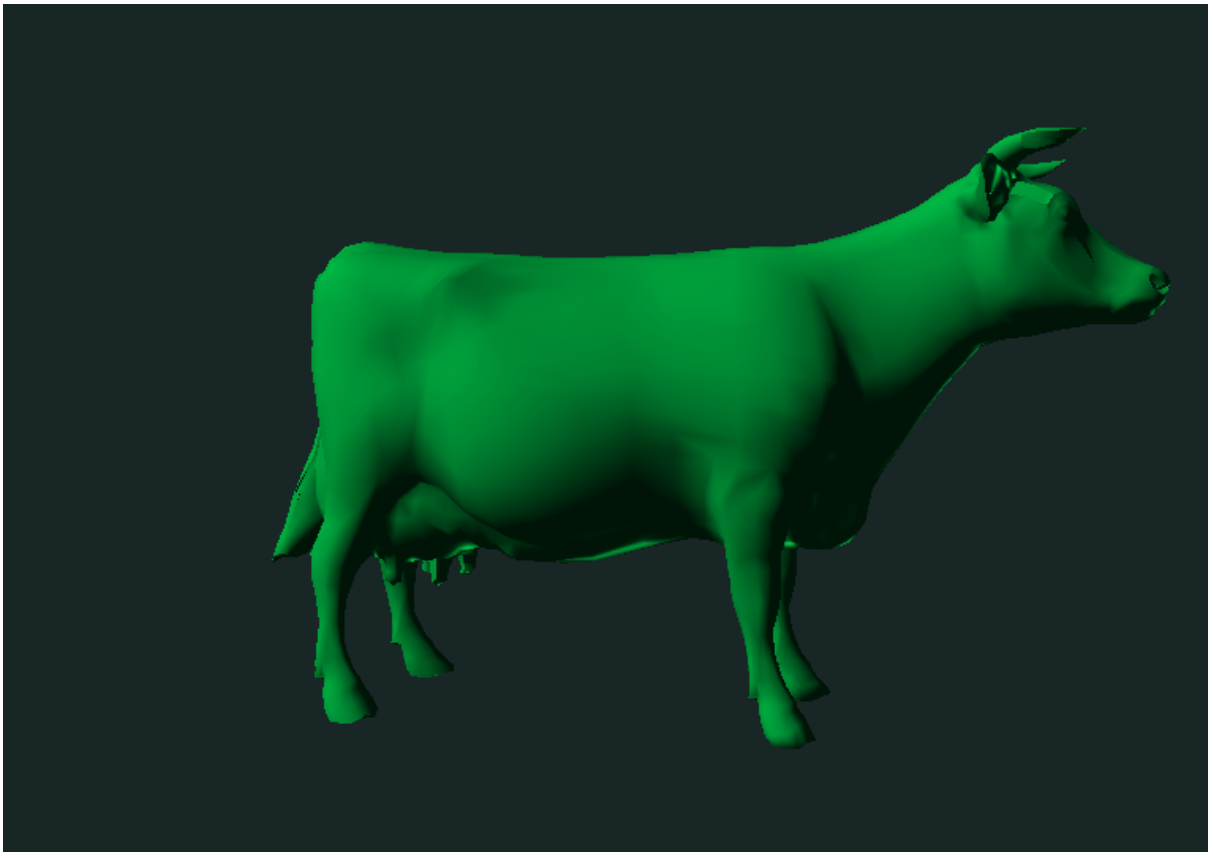
Gouraud Shading (note: i used the lambertian model as the underlying model)
cube_normal.obj





cow.obj

Phong shading
This did not work correctly for some reason.



Spectral highlights appear but in the wrong places.  These spectral highlights should have been on the cow's flank, not on its back and ears.

Did not implement mouse-based camera movement.

References
learnopengl.com for pretty much everything
https://glm.g-truc.net/0.9.4/api/index.html for glm functions
Lecture slides for shading formulas.