CMSI 371-01
COMPUTER GRAPHICS
Spring 2012

Assignment 0426

This assignment seeks to have you round out your initial graphics pipeline implementation. There's way more that you can do, of course, but this is what our allotted time allows.

Outcomes

This assignment will affect your proficiency measures for outcomes *1d, 1e, 2f,* 2g,* 2h, 3e*, and *4a–4f.*

Not for Submission

The lighting model that we have seen, plus a few more details, can be seen in Angel Chapter 5 and the orange book Chapter 9.

* The remaining material for the course can be found in Angel Chapter 6 Sections 6.3–6.7 (clipping) and Section 6.11 (hidden surface removal). To satisfy the outcomes pertaining to these topics (*2f* and *2g*), just attend class on Thursday, April 19 and Tuesday, April 24.

For Submission

For the following tasks, keep building on *homework/pipeline* on your `git` repository. If you haven't done so already, rename your files to better reflect what you have going now.

The New Normal

Add normal vectors to all of your shapes, particularly your sphere implementation. You may use any technique for generating them, including (correctly) using the functions given to you, writing code of your own, and manually specifying them (ouch, but if you insist on doing all that typing, then knock yourself out).

Light It Up

Implement a lighting model for your scene. At a minimum, you should use the model shown in class and designated in the reading. You can go beyond that if you wish (e.g., the UberLight model described in Chapter 12 of the orange book).

API for Your Thoughts

This task informs the proficiency measures for outcomes *1d* and *1e*. In any widely readable file format, answer the following questions:

1. Is the approach used by our graphics pipeline in representing objects (i.e., the `Shapes` module and the `objectsToDraw` array) closer to constructive solid geometry (CSG) or polygon meshes? Support your answer by citing specific similarities and differences between our code and the "pure" versions of these modeling techniques.

2. If forced to implement a "pure" version of either approach, which one would you personally prefer? Cite specific capabilities or scenarios that explain your answer.

Commit and push your work to your `git` repository under *homework/pipeline*.