

CMSI 371

COMPUTER GRAPHICS

Spring 2009

Assignment 0402

Surprise, surprise — for this assignment, you are asked to figure out and implement the rest of the *TODO* method stubs in the Java *projection* program.

Not for Submission

We are still on these readings, and they are worth re-reading for additional/deeper understanding (especially in conjunction with doing the homework for submission):

- The remainder of Angel Chapter 4
- Angel Appendix C
- Red book Appendices E and F
- And, though you've already read this, red book Chapter 3 is worth reading again now that you know the theory and mathematics behind the APIs in that chapter

For Submission

Figure out and implement the *gluPerspective* and *gluLookAt* workalike methods in the Java *projection* program (called *perspective* and *lookAt*, respectively). You can test your solutions by using these methods in the *projection* program: *gluPerspective* when setting up the viewing volume, and *gluLookAt* when setting up the “camera” for the scene (see the comments at the relevant places for some additional information; note that, when you have successfully implemented *gluLookAt*, the modified code won't look *exactly* like what was there before, but should still be pretty close).

gluPerspective must end with the corresponding call to *glFrustum* (*frustum* in the *projection* code) — it essentially converts the *y*-axis field of view, and aspect ratio into the corresponding left, top, right, and bottom boundaries of the viewing volume.

Submit hardcopy showing your mathematics or geometry for *gluPerspective* and *gluLookAt* (including any relevant diagrams and proofs), and commit your implementations back to CVS.