CS 251, Fall 2007
Voicu Popescu
Assignment 6
Due Friday November 9, 11:59PM

Assignment 6—Hardware rendering

In a nutshell, implement the renderer you have developed so far using OpenGL, to take advantage of graphics hardware.

1. Interface
   a. Add a second frame buffer where the seen is rendered in hardware.
   b. The frames should be in synch; that is they should render the scene with the same view; if the user navigates through one window, the second window should be updated as well.
   c. The user should be able to enable and disable the two windows individually.

2. Scene
   a. Reuse one of your earlier scenes, make sure it has textures.

3. View
   a. Add a hither (near) and a yon (far) plane to the software camera, and enforce the z range for the software window (as well).
   b. Set the hardware view based on the “software” pinhole camera, as described in class.

4. Rendering
   a. Triangle meshes are rendered with arrays as shown in class.
   b. Support a filled mode and a wireframe mode each two options: per vertex color and texture mapping. OK to pre-light vertices in software.
   c. Extra credit 2% for ambient, diffuse, and specular lighting in hardware.
   d. Extra credit 3% for environment mapped reflections in hardware.
   e. Extra credit 5% for doing b and c with GPU vertex and fragment programs.

5. Turn in: use WebCT to upload zip archive with:
   a. Source code, including project/workspace/makefiles
   b. Code should compile, use relative paths
   c. Include all non-standard libraries (archive size should be <50MB)
   d. A short REPORT.{pdf|doc} file that describes your user interface, and the extra credit completed, and that includes 3 of your best images.