

CS 3353 Laboratory Problem Set 4

Course Project

Due Thursday, December 13, 2:30 p.m., 2007

These problems are to be done on an individual basis following the Trinity University Academic Integrity Policy. or Trinity University Honor Code.

Academic Integrity and Honor Code

All students are covered by a policy that prohibits dishonesty in academic work. The Academic Integrity Policy (AIP) covers all students who entered Trinity before the Fall of 2004. The Academic Honor Code covers all those who entered the Fall of 2004 or later. The Integrity Policy and the Code share many features: each asserts that the academic community is based on honesty and trust; each contains the same violations; each provides for a procedure to determine if a violation has occurred and what the punishment will be; each provides for an appeal process. The main difference is that the faculty implements the AIP while the Honor Code is implemented by the Academic Honor Council. Under the Academic Integrity Policy, the faculty member determines whether a violation has occurred as well as the punishment for the violation (if any) within certain guidelines. Under the Honor Code, a faculty member will (or a student may) report an alleged violation to the Academic Honor Council. It is the task of the Council to investigate, adjudicate, and assign a punishment within certain guidelines if a violation has been verified. Students who are under the Honor Code are required to pledge all written work that is submitted for a grade: On my honor, I have neither given nor received any unauthorized assistance on this work and heir signature. The pledge may be abbreviated pledged with a signature.

Laboratory problems should be submitted electronically (e-mail to cs3353@ariel.cs.trinity.edu) on or before the due date and should contain a problem write-up, source code to any programs and data sets used in solving the problem. The submitted files should be ASCII text files having Unix end-of-line characters (please convert all Windows and Mac text files to Unix format—I have found that Emacs seems to do a reasonable job of such conversions). If several files need to be submitted, put them in a directory having name *your-last-name-problem-set-number* and create a tar archive of this file system and attach it to your e-mail problem submission.

Course Project

Choose one of the following two problems. A brief project presentation must be given during the regularly scheduled final examination for the course (Thursday, December 13, 2:30 p.m., 2007).

Navigating a Simple Virtual World

In this laboratory problem we wish to use the Open GL graphics API (Application Programming Interface) to navigate through a simple world.

The Virtual World

The virtual world should consist of several objects of varying size. It is up to you to design the objects in the world. It is acceptable to use the GLUT toolkit to build world objects. The objects should be lighted

so that they have insides as well as outsides. The insides of objects should be easily distinguished visually.

Navigation

You should design a simple user interface for world navigation. You are not required to detect collisions with objects. You may pass right through objects during navigation, but you should be able to see inside any object.

Designing an Animation

In this laboratory problem you are to design an animation. The animation should have a duration of at least 10 seconds. You should assume an animation frame rate of about 20 frames per second, hence, your animation should consist of about 200 frames. Since this will require 39M bytes of disk space, some special arrangements may need to be made to provide space to temporarily store your animation. Your instructor will provide information about where to store your animation sequences. After your instructor has had an opportunity to view and grade your animation, it will be necessary to erase your animation to free up space.

You should use PovRay to model and render your animation. Each scene of the animation should consist of several objects, at least one of which is moving or changing colors. In your animation you should attempt to model motion start-up and stopping in a realistic fashion.

It is suggested that you plan your animation using the technique of making a story-board. A story board is a sequence of sketches which describe what is going on in each scene of your animation. Your animation needs to consist of at least one scene, but may have more than one scene.

Another possibility would be to use Blender rather than PovRay to design the animation.

Problem Set 4 Solution [[HTML](#)] [[PS](#)] [[PDF](#)]