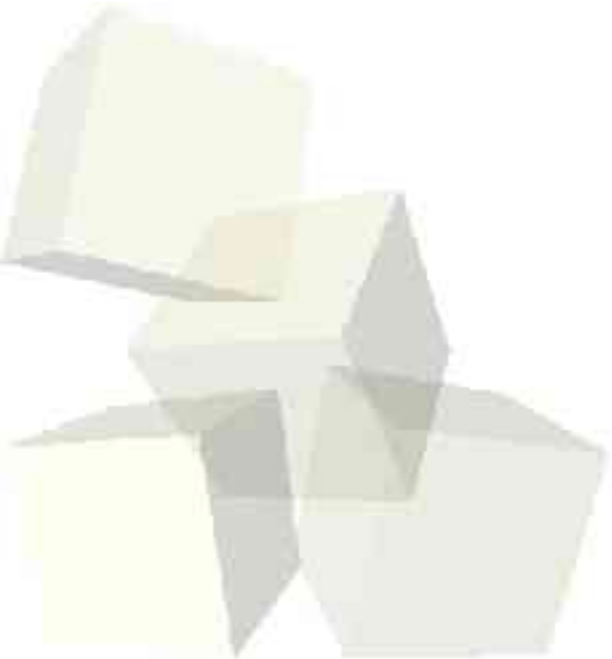
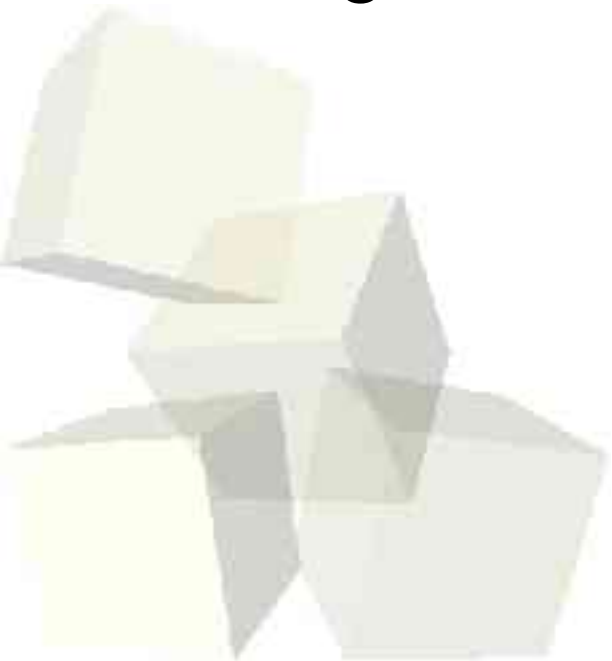
Course Overview & Basics of Simulation

1-13-2004



Opening Discussion

- Why are you taking this course? What do you hope to get out of it?
- What does it mean to simulate something? What things can you think of that people might simulate?



Course Basics

- Course web site
  - http://www.cs.trinity.edu/~mlewis/CSCI3352-S05
- Office: 201K
- Phone: 999-7022
- e-mail: mlewis@trinity.edu
- Office hours: 2:30-5:30 M, 10:00-11:30 MW, 11:10-1:10 TR, or by appointment. Monday afternoon is an open lab.
- Text - “Simulation Model Design and Execution” by Paul Fishwick

Course Description

- I'm going to follow the text for this course fairly closely. It it quite easy to read and covers the topic with significant breadth.
- By the end of the course you should know about all the major styles/techniques of computer simulation and be able to design and execute models with them.
- You will be asked to write code to perform various simulations and that code should be properly formatted with indentation and reasonable comments.

Grades

- Your grade in this course will come from 5 components.
  - Assignments (5) – 30%
  - Tests (2) – 30%
  - Project – 20%
  - Quizzes (6 drop 1) – 10%
  - Class Participation – 10%
- The tests will be given during class on the dates noted on the schedule.

Assignments and Project

- In the first 2/3rds of the semester you will be doing 5 different assignments that are partially on questions pulled from the book and partially from questions I give you.
- Later in the semester you will switch to mostly working on a project. You should think about the project early in the semester as well. The project will involve you designing and executing a significant simulation and drawing conclusions from it.

More Project Stuff

- For the project you will give me the code for the simulation, a 6+ page paper (12 point, 1.5 spaced), and you will each do a presentation during the normal final time.
- You can do the project in teams, but each team member will turn in his/her own 6 page paper and I will need documentation of what parts of the code and the project each person did.

Basics of Simulation

- The basic ideal of simulation is to create/recreate some system in such a way that we can do something useful with it. Simulations don't have to be done on computers, small scale models are effectively simulations of physical systems.
- In this course we are only concerned with computational models of systems. Even in that limited realm there are many variations to what we can simulate and how we do simulations.

Realms of Simulation

- You book lists a number of different areas where simulations can be used. This is certainly not exhaustive.
  - Computational Science
  - Chaos and Complex Systems
  - Virtual Reality
  - Artificial Life
  - Physically Based Modeling/Animation
- Your project could come from any of these areas. Note that they are very different in their objectives.

Quintessential Example

- The most common example of a simulation is one of processing lines, for example the lines of people at a bank teller or what happens to people at Bell on their first day at Trinity.
- How could you model this? What does the model look like? What do you need to know to make the model correct? What might you be able to learn with this model?

Minute Essay

- Have you gotten the text? What are your thoughts on the course description? Do you have any idea what you might want to simulate for the project? If so, what?