Summer 2009

CS 470/670: System Simulation

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Textbooks:

Course Requirements:
Simulation Exercises (2 @ 15%) 30%
Simulation Project 30%
Examinations (2 @ 20%) 40%

General Policies:
1. Projects are due at the beginning of class on the assigned due date. Assignments not submitted by the beginning of class on the due date will be accepted up to one week late at a penalty of 25%. The final project must be submitted on the due date -- no late final projects will be accepted.

2. Projects will be graded based on (1) quality of the simulation analysis, (2) correctness of the results, and (3) quality and readability of the code. Code that does not compile or produces serious run time errors will receive a grade of zero.

3. Homework may be assigned periodically. It will not be graded, but similar problems will appear on your examinations so it is to your advantage to attempt each homework problem.

4. Students registering for CS 670 will be asked to perform additional work on each assignment. As always, graduate students are expected to produce superior quality work!

5. Questions, discussion, and debate are strongly encouraged.

Course Outline:

1. Basic Simulation Concepts
   Simulation Methodologies
   L&K 1.1-1.4, 1.7-1.9
   L&K 2.1-2.4, 2.8

2. Introduction of Python and SimPy
   Handouts

3. Building Valid Simulations
   L&K 5

4. Probabilistic Aspects of Simulation
   Review of Probability
   L&K 4
   Random Number Generators
   L&K 7
   Random Variates
   L&K 8.1, 8.2, 8.3.1-8, 8.3.15-16, 8.4, 8.6

5. Statistical Aspects of Simulation
   Selecting Input Distributions
   L&K 6
   Analysis of Output
   L&K 9.1-9.5

6. Comparing Alternative Configurations
   L&K 10

7. Variance Reduction Techniques
   L&K 11

8. Experimental Design
   L&K 12.1-12.3

9. Simulation Languages
   L&K 3