

ECE/CS 541 Project #2
Fall 2016
Due December 12, 2016

The objective of this project is to have you use either discrete-event simulation, or SANS modeling using Moebius and its simulation analysis option to develop a model of some system of interest to you, and study its behavior. The emphasis will be on the approach you use to do the study, less than the results the study may reveal.

Examples of systems of interest might include

- Computer architecture (e.g., performance of hierarchical memory systems)
- Protocols used in computer networking (e.g. variants of TCP)
- Methodologies used for distributed key management in computer systems that use public key cryptography
- Analysis of defenses against distributed denial of service attacks.

These are only examples. You are free to propose others.

The objective of this project is to have you go through the methodology of a proper simulation based study, to include

- Identification and implementation of your input models (e.g. bulk Poisson arrivals)
- Generation of samples from unusual probability distributions, as appropriate for your model.
- Clear specification of the events in your model, and the logic behind their scheduling and cancelation of other events
- Output analysis, constructing confidence intervals, using either independent replications or batch means, including analysis of how to deal with initialization bias.
- Design of experiments, which identify for your model the inputs that most significantly impact the outputs of interest.

Your report should include a writeup that explains each of these points, the source code of the simulation (or source Moebius model if that is your chosen route), files that include the output you analyzed in the output analysis. You should include all of this in email to Professor Nicol due by 5 p.m. Monday, December 12.