

Homework Assignment #1

due 7:20 pm, Monday, February 23, 2004

***** Due time will be strictly enforced. Late HW is subject to at least 25% penalty *****
***** There is a 20% penalty for the HW turned in through email *****

1. (10 points) Consider the random variable X_i has an exponential distribution: $X_i \sim \text{EXP}(0.02)$. Suppose we have generated 100 Unif(0,1) random numbers: 0.005, 0.015, 0.025, 0.035, ..., 0.995 (obviously, these are not good random numbers). Write a program to generate X_i using THESE 100 uniform random numbers and calculate the average. You need to turn in the printouts of your code, the 100 numbers $\{X_1, X_2, \dots, X_{100}\}$, and the average.
2. (10 points) Repeat Question 1 using the function rand() in Excel, instead of using the 100 Unif(0,1) random number given above.
3. Find the optimal solution for the following maximization problem. Consider N_1 and N_2 as the control variables.

$$\max_{N_1, N_2} \left(\frac{\mu_1 - \mu_2}{\sqrt{\frac{\sigma_1^2}{N_1}} + \sqrt{\frac{\sigma_2^2}{N_2}}} \right), \text{ subject to } N_1 + N_2 = 10.$$