Name: Notes

SA421 – Simulation Modeling   Fall 2017
Assoc. Prof. Nelson Uhan

Assignment 5 – Quiz – 1 November 2017

Instructions. You have 25 minutes to complete this quiz. You
may use your notes and a calculator/computer. No collab-
oration allowed. <u>Show all your work.</u>

Problem	Weight	Score
1	1	
2	1	
3	1	
Total		

Problem 1. Use the linear congruential method with modulus 10, increment 7, multiplier 3, and seed 2 to generate
three samples from a Uniform$[0, 1]$ distribution.

Remember that your samples must be between 0 and 1!

*Follow the LCG formulas for $X_1, X_2, \ldots$ and $R_1, R_2, \ldots$
in Lesson 10 carefully.*

Problem 2. Using the inverse transform method and the samples you generated in Problem 1, generate three samples
from an exponential distribution with mean 1/2. Recall that the cdf of this distribution is

$$F_X(a) = \begin{cases} 0 & \text{if } a < 0, \\ 1 - e^{-2a} & \text{if } a \geq 0. \end{cases}$$

*Most of you had the right idea here, but may have had
incorrect samples from Problem 1.*

Problem 3. Suppose you have two JaamSim files, `A.cfg` and `B.cfg`, that contain simulation models of the box office at the Maryland Renaissance Festival. `A.cfg` simulates how the system currently operates exactly once, and `B.cfg` simulates an alternate version of the system exactly once. In both versions of the system, the service times at the box office follow the same gamma distribution. Both files have a GammaDistribution object to model these service times. How can you make sure that the simulated service times are identical in both simulations?

The service times in both simulations are already
set up in their own separate stream.

What else do you need to set up in JaamSim to make sure
both simulations generate identical service times?