SHARIF
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Computer Simulation

Assignment 4

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Date Last Edited: January 15, 2023

Problem 1

a

1. Results must be produced quickly.
2. Different computer architectures must be capable of running the algorithm.
3. Results must be repeatable.
4. Imitate the uniformity and independence of an ideal random number generator.
5. Long life cycles.

b

1. Since $c \neq 0$ it's a case of mixed congruential method and since $m = 2^b$, c is prime to m and $a = 1 + 4k$ the cycle length of the algorithm is $m = 2^b = 256$.

2. This is a case of multiplicative congruential methods and with an odd seed(X_0), since $m = 2^{10}$ and $a = 8 \times 814 + 5$, the cycle will be $\frac{m}{4} = 256$.

Problem 2
Code.