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Computer Simulation
Assignment 4

1. Question 1

   (a) fast: fast algorithm to create random numbers.

   (b) sufficiently long cycle: cycle should be sufficiently long to avoid the repetition of the same random numbers and cause bias in the results.

   (c) the generated RNs should closely approximate the ideal statistical properties of uniformity and independence.

   (d) replicable (repeatable): reprodcible in different executions to compare the results of different executions.

   (e) portable: able to get executed on different computers.

2. Question 2

   (a)

   $$a = 4591, m = 256 = 2^8, c = 247$$
   $$gcd(c, m) = gcd(247, 256) = 1$$
   $$4591 = 1 + 4 * 1147.5 \text{ not } 1 + 4 * k$$
   $$=> \text{can not reach the maximum}$$

   (b)

   $$a = 6507, m = 1024 = 2^{10}, c = 0$$
   $$6507 = 3 + 8 * 813 = 3 + 8 * k$$
   $$\text{if X0 is odd}$$
   $$\text{maximum} = m/4 = 256$$

3. Practical

   file in zip

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