MA323 - Monte Carlo Simulation

Lab – 9
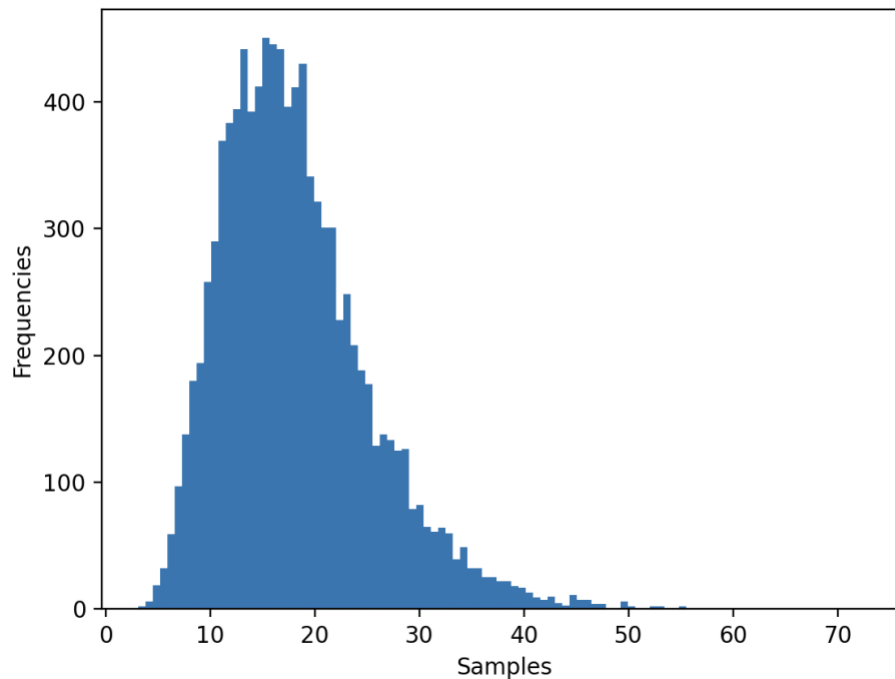
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a) $E_{10} = T_{10} + T_1 + \max \{T_4 + T_2, T_9 + \max \{T_5 + T_2, T_6 + T_3, T_7 + T_3\}, T_8 + T_3\}$

b) Approximate value of mean E_{10} is Mean: 18.11290548276788 with sample size n = 10,000.

c) Histogram shape is light tailed, skewed to the left.

d) Probability of missing the deadlines: $4.0 * 10^{-5}$

Standard deviation: 7.117228902074806

The probability of missing deadlines is low as the distribution density is very less towards higher values.

e) Probability of missing the deadlines: 0.0

Mean: 15.984526499104113

Standard deviation: 4.130258545597922

Effective sample size 2.9785043825836683

f) Considering k = 3.

Probability of missing the deadlines: 3.032e-05

Mean: 16.08035389109727

Standard deviation: 4.076462234224032

Effective sample size: 3.0576366396494983

Considering k = 4.

Probability of missing the deadlines: 3.072e-05

Mean: 16.646119467377456

Standard deviation: 4.763262613331335

Effective sample size: 2.239461847528743

Considering k = 5.

Probability of missing the deadlines: 3.257e-05

Mean: 17.2227486557997

Standard deviation: 5.505887142659512

Effective sample size: 1.67609299113153

g) The standard deviation is more in part 1f than in part 1e while the mean remains more or less same. We also observe the probability of missing the deadline in 1e is 0.0 while in 1f it is approximately 3.0e-05

h) k = 5 has the minimum effective sample size.

99% Confidence interval for k = 5: (3.0175598277381557, 31.427937483861243)