MA323 Lab-2

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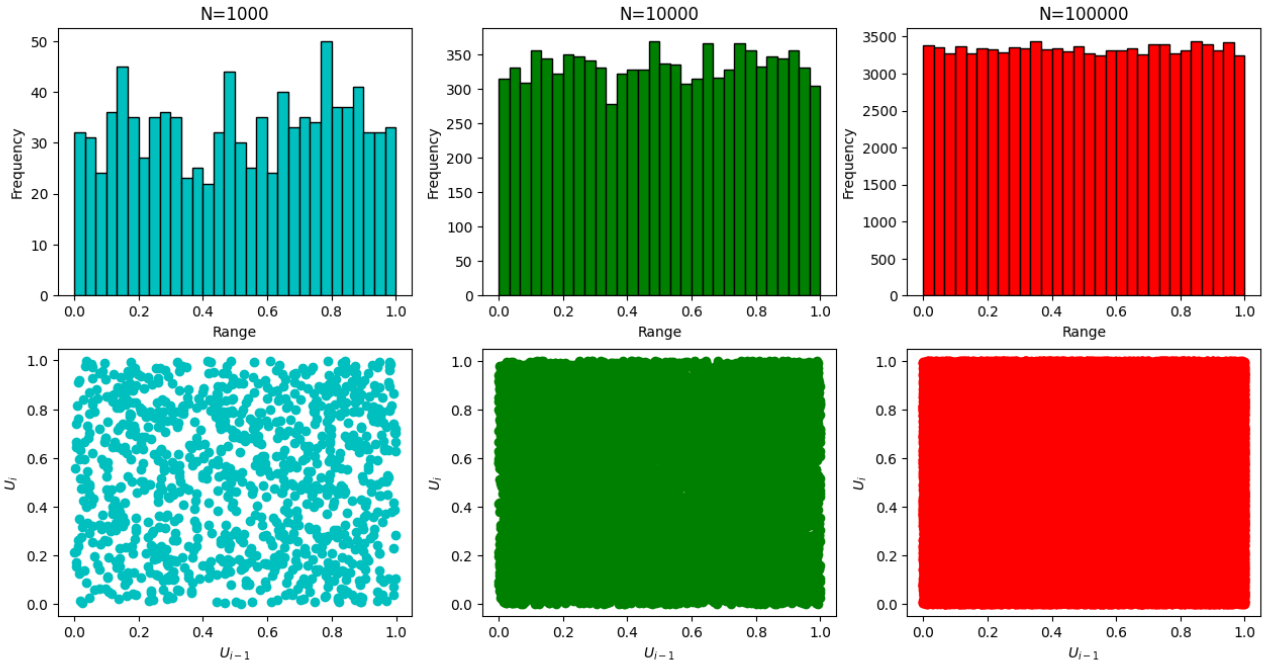
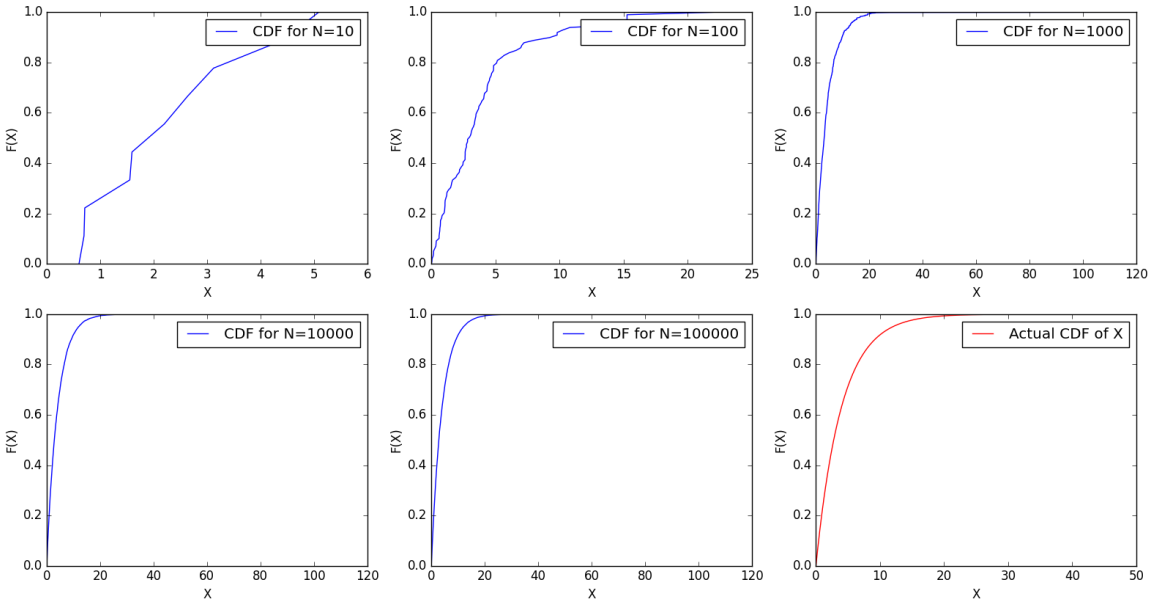
1. The following are the plots of Q1:



2. The following is the plot of CDF for different values of N and actual CDF, F(X)



The mean and variance for different values of N are:

For N = 10:
Mean = 2.2639262838631518
Variance = 2.2111093337525265

For N = 100:
Mean = 3.9137332322109746
Variance = 15.911897161298585

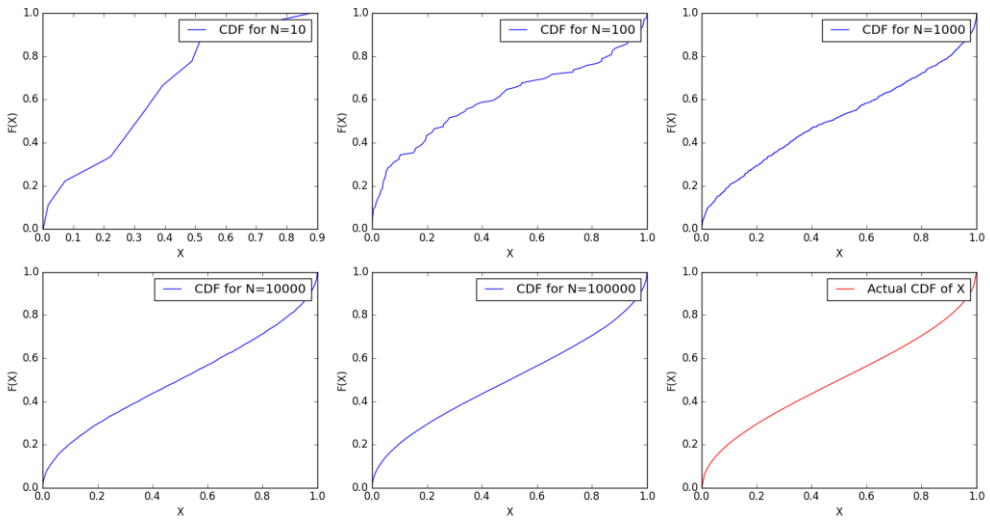
For N = 1000:
Mean = 4.291609469360485
Variance = 27.782950264702507

For N = 10000:
Mean = 4.025399663995703
Variance = 16.839649604395223

For N = 100000:
Mean = 4.018563026914626
Variance = 16.134086489885497

It can be observed that as N increases, mean and variance converge.

3. The following is the plot of CDF for different values of N and actual CDF, F(X)



The mean and variance for different values of N are:
For N = 10:
Mean = 0.3213661135739835
Variance = 0.06493177706881313

For N = 100:
Mean = 0.39496550570311173
Variance = 0.1301456932690897

For N = 1000:
Mean = 0.48885925831452676
Variance = 0.12273697303100911

For N = 10000:
Mean = 0.49707921486319684
Variance = 0.12332434796248468

For N = 100000:
Mean = 0.49978092424413734
Variance = 0.12460307130080557

4. Since the range of X is large, only part of the table is shown here. The whole table is saved as a csv file on running the code.

X	Frequency
1	23
3	11
5	16
7	19
9	25
11	24
13	16
15	17
17	17
19	25
21	20

23	14
25	19
27	18
29	27
31	21