IE630 Midsem Report

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Parameters =
T = 700
N = 50000
A = 3
B = 7
Mu = 0.0000001
S = 4
n=1 (later, n=2)

Question 1

uEB = 24.989 units
uER = 1.008 * 10^7 units

Question 2

Question 3

cEB = 24.989 units
cER = 1.008 * 10^7 units

Question 4

If we have n=2, this has a severe impact on the expected breakdown times:
uEB =13.9058
uER =1.0023e+07
cEB =13.9058
cER =1.0023e+07

Clearly, the expected time to breakdown has decreased a lot. This is because, the chances of breakdown have increased (2 machines are now required to operate, so the system uses its spare machines faster as 1 breakdown affects the system more than it did when n=1 .

Further explanation:
For any reasonable value of n, in our simulation, we observe that uER = cER and uEB = cEB. This is because the mu value given to us is very low. (mean = 1/mu is high). Therefore, the expected value of the repair time of a machine is very high (exponential R.V with parameter mu). So for this case, break downs happen quickly, and machines aren't repaired fast enough. For reasonable values of mu, like 0.5, we see good results with distinction between cEB and uEB etc.