SIE 431 Simulation Modeling and Analysis

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Homework 7

To solve Problem 1, I updated the model from book example 6-03 to fit the specifications in the problem statement. The following data was acquired after one run of the resulting paper trimming process model:

	Primary Trimmer	Secondary Trimmer
Cycle Time (Average)	41.938 min	33.044 min
Resource Utilization (Average)	0.933	0.349
Number in Queue (Average)	2.315	0.252
Time in Queue (Average)	24.197 min	13.846 min

Problem 1 also asked for the number of replications needed to reduce the cycle times for both the primary and secondary trimmers. These values were calculated using the half width formula, $n = n_0 * (h_0^2 / h^2)$, for both trimmers.

Primary Trimmer:

$1(41.94^2/1^2) = 1758.96$ replications

Secondary Trimmer:

$1(33.04^2/1^2) = 1091.64$ replications

However, after running the PAN application in Arena with the controls specified to the replication values above, the response variables, primary and secondary cycle times, were not equal to 1 minute. In fact, the cycle times increased for both the primary and secondary trimmers.

For problem 2, the model I constructed experienced run time errors that did not allow me to obtain the statistical outputs requested in the problem statements. The model includes a pickQ block module that, as stated in the problem statement, prioritizes higher number assignation to empty lots.