**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 = n0 \* (h02 / h2), for both trimmers.

Primary Trimmer:

1(41.942/12) = 1758.96 replications

Secondary Trimmer:

1(33.042/12) = 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.