Online (B)

Balking Customers in a Finite Queueing System

Time: 30 minutes

Suppose our queue has a finite capacity of Q customers. A customer arriving at the system, just goes away (this is referred to as *Balking*) if he discovers the queue is full. You need to make necessary changes to your code to simulate the system which will stop after a defined amount of time, and calculate the percentage of customers who balked within this period.

Input

The input file would contain 4 space-separated numbers *A, S, E, Q* denoting the mean inter-arrival time, the mean service time, the simulation end time and the maximum capacity of the queue, respectively.

Output

Only "*results.txt*" is sufficient. In this file, you have to show the percentage of balking customers additionally. The percentage is calculated as follows:

$$\%\ Balking\ customers\ = \frac{Total\ Number\ of\ Balking\ Customers\ [\ \Sigma(Balked)\ ]}{Total\ Number\ of\ Customers\ [\ \Sigma(Entered\ the\ Service) + \Sigma(Balked)\ ]}$$

See the attached I/Os for further clarification.