Example 7:

Consider the Post-office of a small town. Due to an epidemic, the person incharge of stamping the letters is away. Hence a customer who has to send the letter has to first stamp the letter, using the stamp kept at the counter and then drop the letter into the box. It has been observed that the customers arrive in bulks. The size of the arriving group has been observed to follow Poisson distribution with parameter 0.2. The arrival of the group follows geometric distribution with parameter 0.37. Further, the probability with which each customer places the stamp correctly on the letter is 0.73. It is further seen that if an arriving customer finds a rush at the office, then without waiting for long, he leaves and returns after a random time. The time after which he retries is assumed to follow exponential distribution with parameter 3. Obtain the measures of effectiveness, assuming that the situation is modeled as a $Geo^{[X]} / Geo / \infty$ with retrial queue.

Solution:

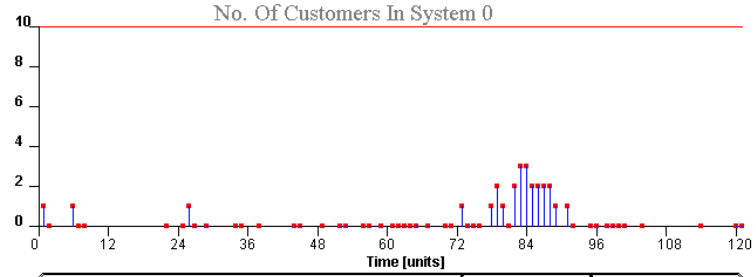
In order to obtain the measures of effectiveness, we follow the steps as shown below:

- Open the page where the experimentation is to be performed
- Feed the data as shown:

- Next, click on the **'Start'** button to obtain the desired measures of effectiveness

Discrete time bulk arrival and bulk departure model

Customers Entered = 9 Customers Served = 9
Customers Blocked = 0 No. Of Customers In Orbit = 0



Performance Measures	Run Time (till t=121.0)	Steady State (Theoretical)
Mean No. of Customers in the System	0.264	N/A
Mean No. of Customers in Queue	0.0	N/A
Mean Waiting Time In Queue	0.0	N/A
Mean Sojurn Time In System	3.555	N/A
Utilisation	0.0	N/A
Throughput	0.074	N/A
Blocking Probability	0.0	N/A

Pause Reset

Arrival Probability (p) : 0.37 Bulk Arrival

Arrival Distribution : Poisson

Parameter 1 : 0.2

Parameter 2 :

Departure Probability (q) : 0.73 Bulk Departure

Departure Size :

Batch Type : Full Partial

Number of Servers : inf

Capacity of the System : inf

Queueing Discipline : FIFO LIFO Random

Orbit Orbit Capacity : inf

Retrial Rate (alpha) : 3