

### **Example 1:**

In a mobile handset manufacturing factory, components arrive with a Poisson distribution at the rate of 6 components per 100 seconds. Assume that the time for testing the component takes any random time from 5 to 15 seconds, per component. It is assumed that the number of machines available for testing is 3 and also that the system can accommodate atmost 15 components. Determine the measures of effectiveness.

### **Solution:**

In the given situation, the components arrive as a Poisson process with rate 0.06/sec and are processed in the time duration following uniform distribution over [5,15]. Hence the system is and  $M/G/3/15$  queue. 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:

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$M/G/c/N$ ,  $G/M/c/N$ ,  $G/G/c/N$

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Start Reset

☒ M ☐ G

Arrival Distribution : Uniform

Parameters : 0.06

☐ M ☒ G

Departure Distribution : Uniform

Parameters : 5 15

Number of Servers : 3

Capacity of the System : 15

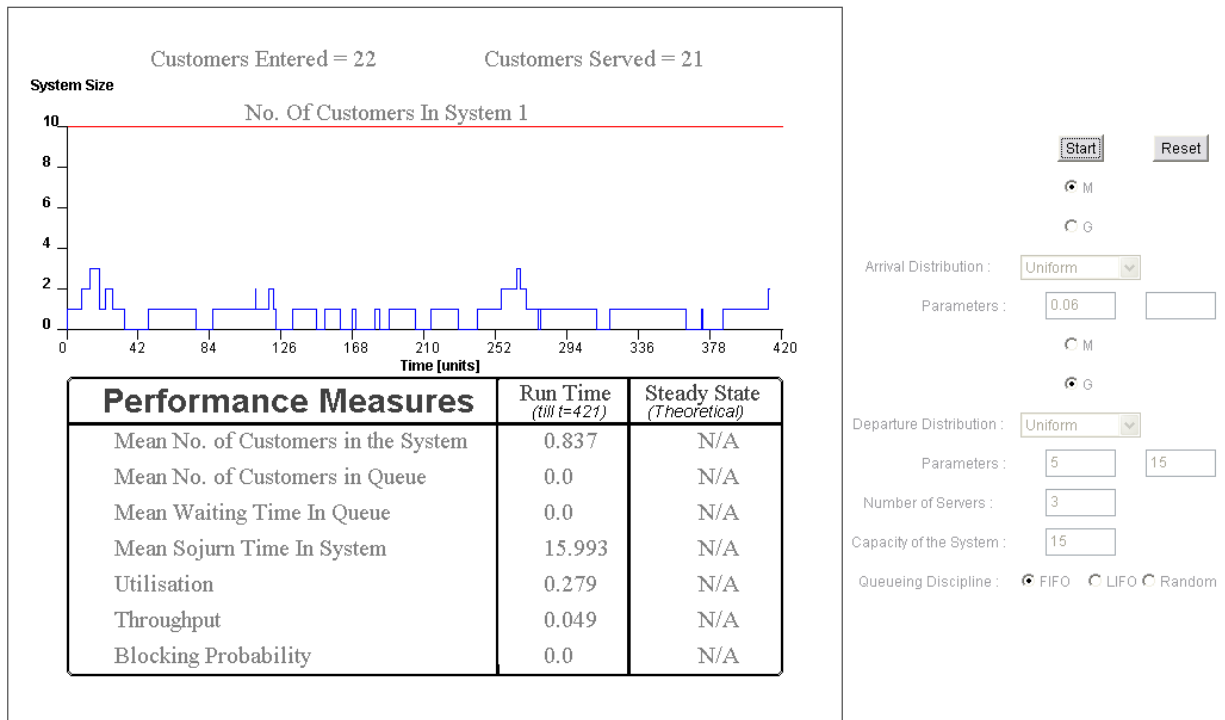
Queueing Discipline : ☒ FIFO ☐ LIFO ☐ Random

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



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- In the simulator we can choose the queueing discipline to be either **FIFO, LIFO or Random**

### Example 2:

In a mobile handset manufacturing factory, a component arrives for testing every 3 seconds. It is assumed that the time for testing the component is exponentially distributed with parameter 4. It is assumed that the number of machines available for testing is 3 and also that the system can accommodate at most 15 components. Determine the measures of effectiveness.

### Solution:

In the given situation, the components arrive at a fixed time interval of 3 seconds and is tested at the rate of 4 components per second. Hence the system is and  $G/M/3/15$  queue. 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:



☐ M  
☒ G

Arrival Distribution :

Parameters :

☒ M  
☐ G

Departure Distribution :

Parameters :

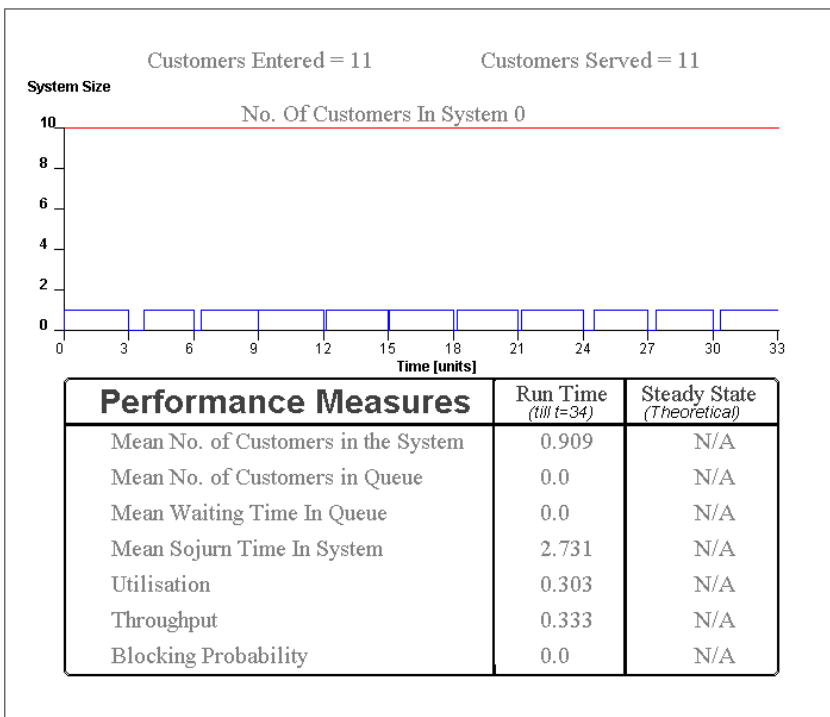
Number of Servers :

Capacity of the System :

Queuing Discipline : ☒ FIFO ☐ LIFO ☐ Random

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



☐ M  
☒ G

Arrival Distribution :

Parameters :

☒ M  
☐ G

Departure Distribution :

Parameters :

Number of Servers :

Capacity of the System :

Queuing Discipline : ☒ FIFO ☐ LIFO ☐ Random

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- In the simulator we can choose the queuing discipline to be either **FIFO, LIFO or Random**

### Example 3:

In a mobile handset manufacturing factory, a component arrives for testing every 10 mins. It is assumed that the time for testing the component takes any random time from 5 to 15 mins, per component. It is assumed that the number of machines available for testing is 3 and also that the system can accommodate atmost 15 components. Determine the measures of effectiveness.

### Solution:

In the given situation, the components arrive at a fixed time interval of 10 minutes. The time for testing is uniformly distributed between 5 to 15 mins. Hence the system is and  $G/G/3/15$  queue. 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:

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$M/G/c/N$ ,  $G/M/c/N$ ,  $G/G/c/N$

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Start Reset

☐ M  
☒ G

Arrival Distribution : Deterministic

Parameters : 10

☐ M  
☒ G

Departure Distribution : Uniform

Parameters : 5 15

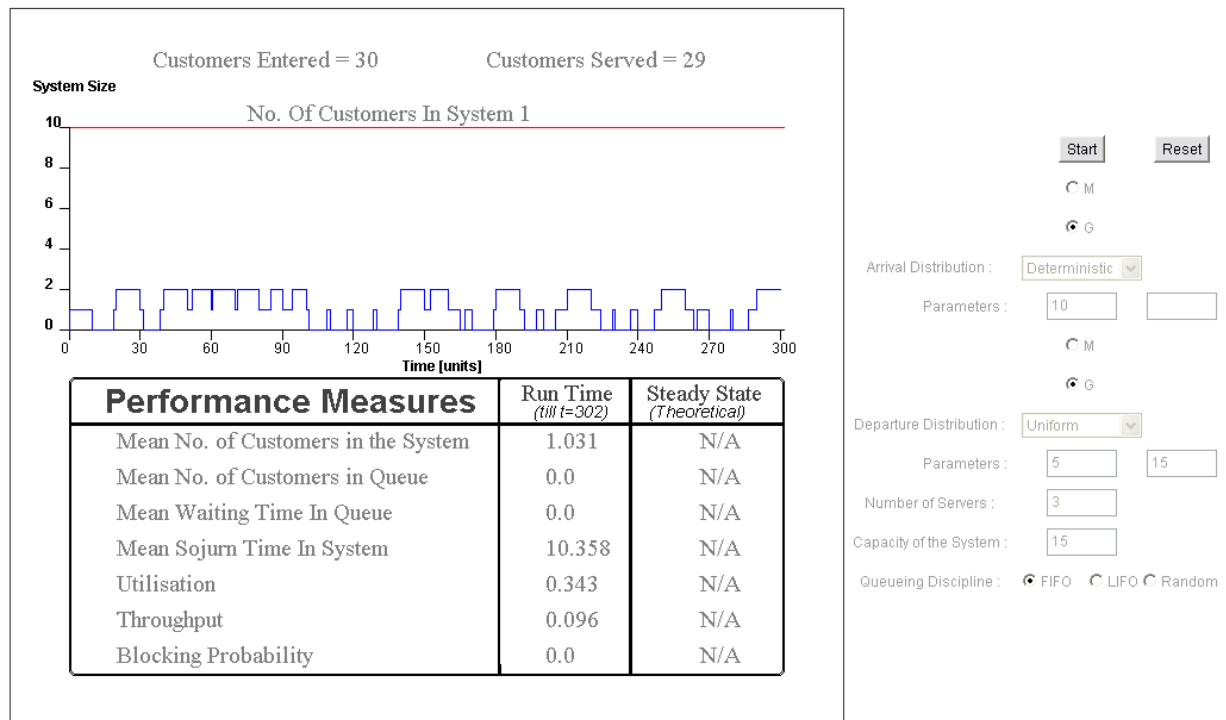
Number of Servers : 3

Capacity of the System : 15

Queueing Discipline : ☒ FIFO ☐ LIFO ☐ Random

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



- In the simulator we can choose the queueing discipline to be either **FIFO**, **LIFO** or **Random**