Queuing happens because at a particular point the arrival rate is greater than the service rate

Average service rate is greater than the average arrival rate.

Average arrival rate is denoted by λ

Average service rate is denoted by μ

“n” , “Pn”

𝛒= λ/μ= traffic intensity or server utilization factor.

P0=1- λ/μ

Ls, Lq, L, Ws,Wq, Pw=1- P0

Arrival rate follows Poisson distribution

Service rate follows Exponential distribution

Classification of Queuing Models

{(a/b/c):(d,e)}

{(M/M/1):(I/FCFS)}

Expected number of customers in the system

Ls = λ/(μ- λ)

Lq= λ2/ μ (μ- λ)

Expected waiting time for a customer in the queue Wq= λ/ μ (μ- λ)

Expected waiting time for a customer in the system Ws=1/(μ- λ)

The variance of queue length= λ μ / (μ- λ)2

Probability that the queue is non-empty= (λ /μ)2

Expected length of non-empty queue=

L= μ / (μ- λ)

Λ=10/8=5/4 sets per hour

2

“μ”= 2 sets per hour

1-5/8=3/8\*8=3 hours

Expected