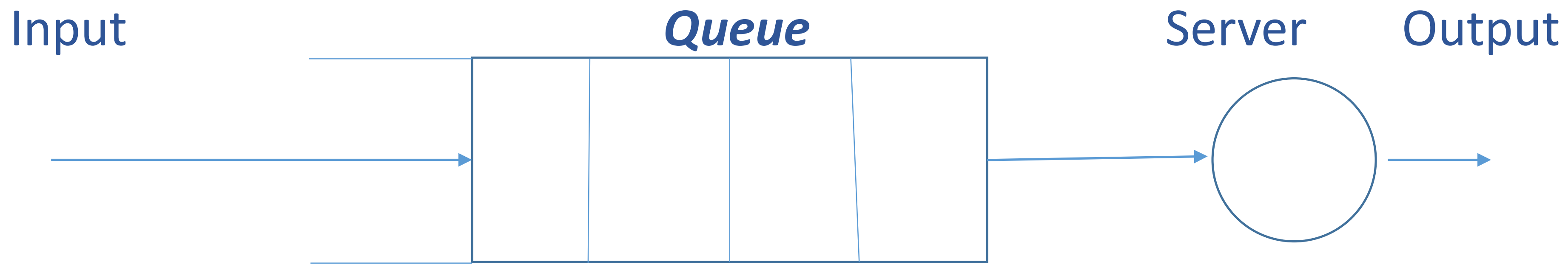
Markovian: exponential probability of arrival $e^{-\lambda t}$

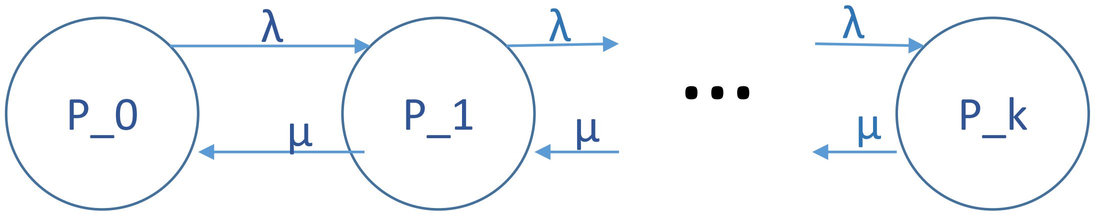
Markovian: probability of completing service $e^{-\mu t}$

k-Servers

m/m/k *Queueing System*



- λ Rate to move from P_i to P_(i+1), (P_i means that there are *i* processes in the system.)
- μ rate to move from P_(i+1) to P_i, $\lambda/\mu=\rho$ *System Utilization*
- $P\_k=(P\_0)*(\lambda/\mu)^k$, Average No of people $N=\Sigma\,(k*(P\_k))=\lambda/(\mu-\lambda)$
- Given: Stationary, Little's law, the *delay* is $N/\lambda=1/(\mu-\lambda)$, even with k independent queues
- Therefore, the m/m/k has $k*\lambda$ arrival and $k*\mu$ service
- ***delay*** of the m/m/k is $1/(k*\mu-k*\lambda)=1/k(\mu-\lambda)$



Markov Chain