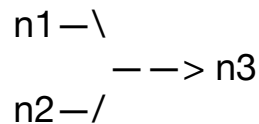


ACN Midsem 1:

1. Given λ and μ , what is the avg. waiting time and avg. queue length, a) M/M/1 queue b) If processing is a deterministic process
2. M/M/1/5 queue, given ρ a) draw state diagram, b) find formula using flow constraints, c) blocking probability
3. Given $\lambda_n = a^n$, λ , μ constant for all n , i) Draw state diagram ii) Write flow balancing equations, iii) Solve for P_0 , P_n
4. For M/M/1 queue, given μ , λ , find the avg. time spent by a packet in system
5. Would you use djikstra or bellman ford for (Justify)
 1. Setting up static routing table for a complex LAN
 2. A protocol to be deployed at the gateway to connect to the internet?
6. Nodes: M/M/1. Avg. time for packet arriving at n_1 to exit at n_3 ? Arrival process at n_3 is poisson. Packet size given. $\lambda(n_1)$, $\mu(n_1)$ given.



$$\begin{aligned}
 \mu(n_1) &= \mu(n_2) = \mu(n_3) \\
 \lambda(n_2) &= \lambda(n_1)/10
 \end{aligned}$$