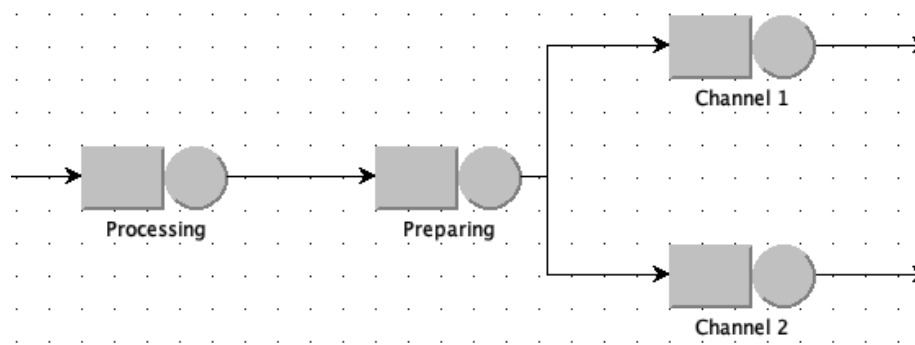


## Performance indices of a warehouse

A warehouse receives order at rate  $\lambda$ . Each order is processed in First-Come-First-Served, and a maximum of  $K = 5$  pending orders is allowed: in case further requests are received, they will be dropped. The average processing time is exponentially distributed, with an average service time of  $S_1 = 2 \text{ min}$ . Orders are then prepared in Last-Come-First-Served, with a buffer of  $K = 10$  requests; should this capacity be reached, the processing node will be blocked in BAS mode. The average processing time is exponentially distributed, with an average service time of  $S_2 = 3.5 \text{ min}$ . The system has two distribution channels, characterized by an exponentially distributed service time with average  $S_3 = 6 \text{ min}$  and  $S_4 = 5.5 \text{ min}$ , selected in a Round-Robin fashion. A possible model for the system is shown below:

con quale drop?  
Coda?



Considering a variable input rate between  $\lambda = 10 \text{ req/h}$  and  $\lambda = 20 \text{ req/h}$ , compute using JMT:

1. The system throughput
2. The drop rate of the Processing station
3. The system response time
4. The average response time of the four stations