PROJECT 5

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**PROBLEM STATEMENT**

* Simulate the arrival of packets at an HOL blocking switch for balanced traffic and hot-spot traffic for k = 2,3 and 8.
* Monitor the buffer occupancy for each input on a slot by slot basis so that you can determine the “steady‐state” queue size distribution and thus the mean queue length.
* monitor packet drops and the number of packet delays while in the HOL slot due to HOL output port blocking for each output port. By splitting the delays in the input queue (until reaching the HOL position) and estimating the delay due to HOL blocking, you can estimate the overall average delay for packets destined to each output port.

# THEORETICAL EXPLORATION

**BASIC QUEUEING MODEL:**



* The above figure is of a server which is receiving packets. The queue acts as a buffer and stores packets in it.

**Measurement of Interest for Queueing Systems:**

* Server Utilization(probability that server is busy) :
* Mean number in System : N
* Mean number in queue : Nq
* Loss Probability
* Mean time spent in the queue by a packet: T
* Mean Time spent in the queue: W

**Little’s Result:**

* N = λT

1. λ = arrival rate in unit time
   * + - Nq = λW
       - NS = = λX