ASSIGNMENT 5

Modeling queues with NS

Introduction : What will we learn here ?

In this assignment, we will learn to simulate classical queueing models like M/M/1, M/D/1 M/M/1/K

Problem Statement C1 (Compulsory; Difficulty level *; 100 points)

Consider a mail server of IIT Delhi with three departments have separate mail servers along with an external mail server. The external mail server receives mails from all the three department mail servers. Label the main server as node 0 and other three servers as node 1, 2 and 3. The messages, each with mean arrival rate 30 messages/sec arrive from three department servers. The capacity of each duplex link is 100kb/sec with 5ms delay. Simulate for 5 minutes to get the following performance measures. (consider M/M/1 queue between the transmitting and the receiving nodes)

1. Throughput at the central server (plot throughput versus simulation time)
2. Plot queue length vs time and also calculate average queue length. (use monitor-queue trace called qm.out)

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Problem Statement O1 (Optional; Difficulty level **; 10 bonus marks)

Compare the throughput at the central server when the queue size for all the links are changed to 500 with that of default queue size provided in NS2. Give an explanation of the results obtained. (M/M/1/K i.e. limited queue size)

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Problem Statement O2 (Optional; Difficulty level ***; 20 bonus marks)

Simulate the above given scenario for M/D/1 queueing model.

NOTE:
● The assignment must be uploaded to https://sakai.iitd.ac.in (in certain exceptional cases,
the TAs may allow it to be mailed to dslab2013.iitd@gmail.com)
● Submission deadline is 5 PM today
● Submit a zip file named assignno_entryno having 2 folders:
1. CODE: Suitable files associated with the assignment
2. DOCUMENTATION: .pdf and .tex file of your report
**Copying is counterproductive
and will be penalized.**

Reading instructions for the next week

Next week, we will be doing assignments on network modelling using Petri Nets in SHARPE tool.
A tutorial will be given by Garima ma'am in this regard..