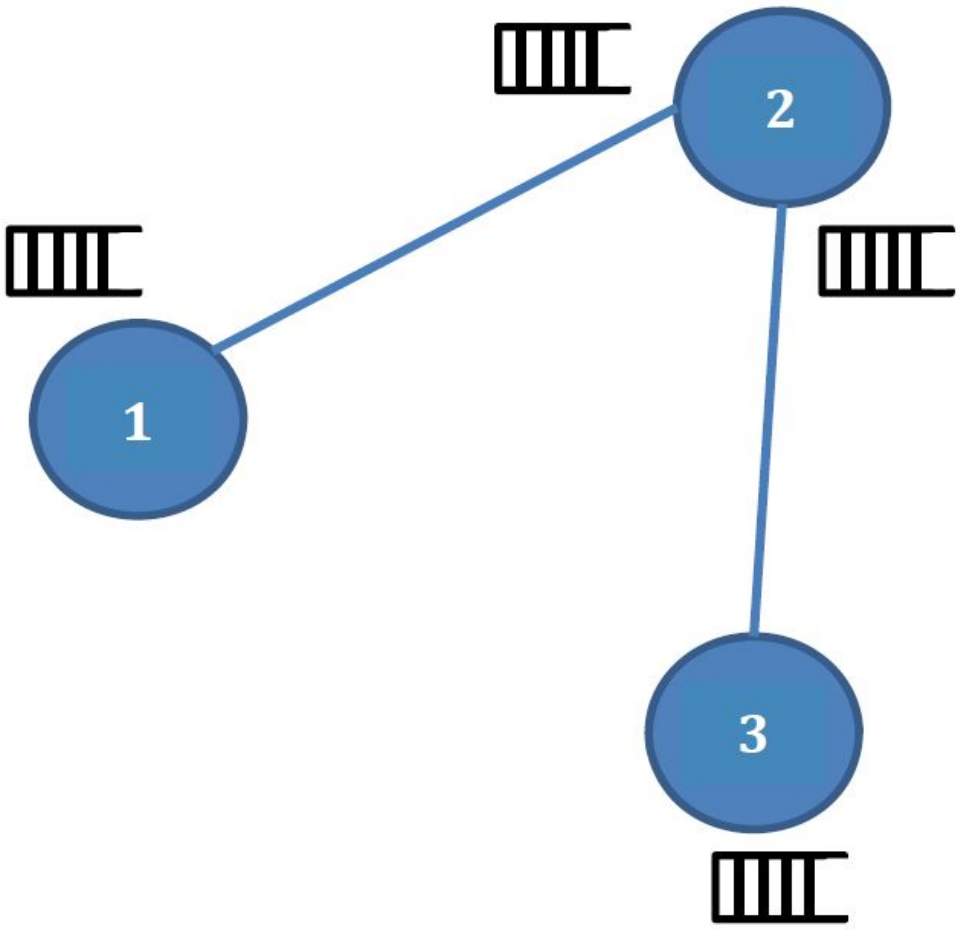
Ayush Agarwal
[17114017]

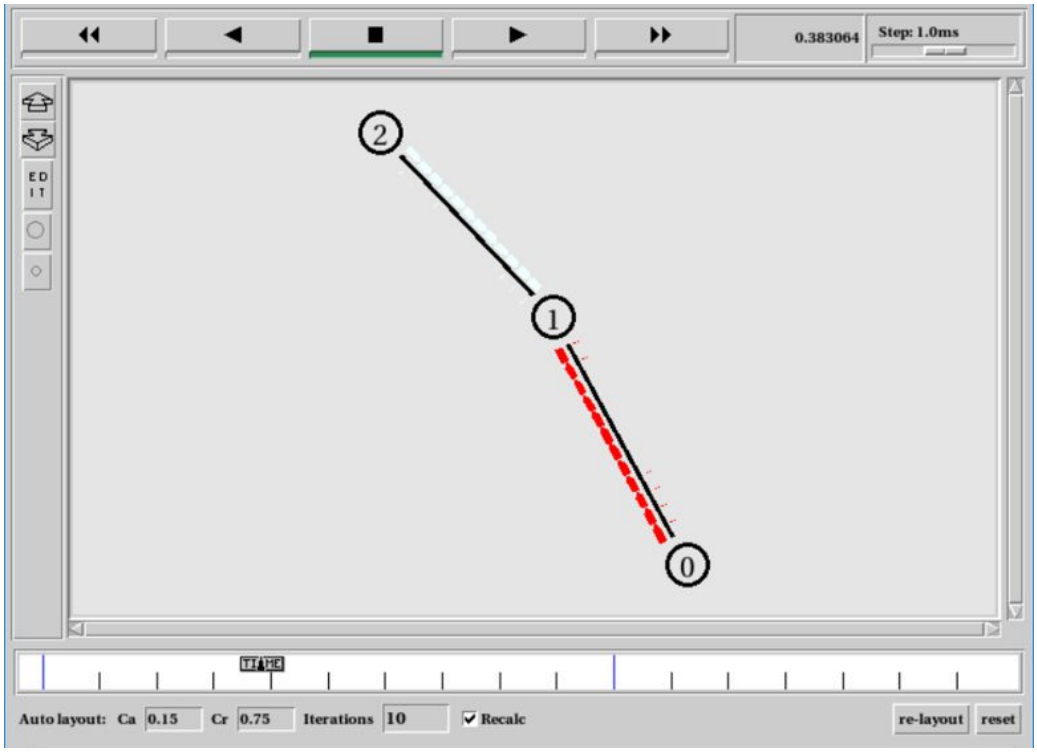
Assignment 4

5th September 2019

1. Write a Network Simulator (NS2) code to simulate a three-node network with duplex links among them as shown in the figure. Show the topology using NAM. Study the variation in the number of packets dropped with the variation of the queue size in the nodes and with the variation of the bandwidth of the links.



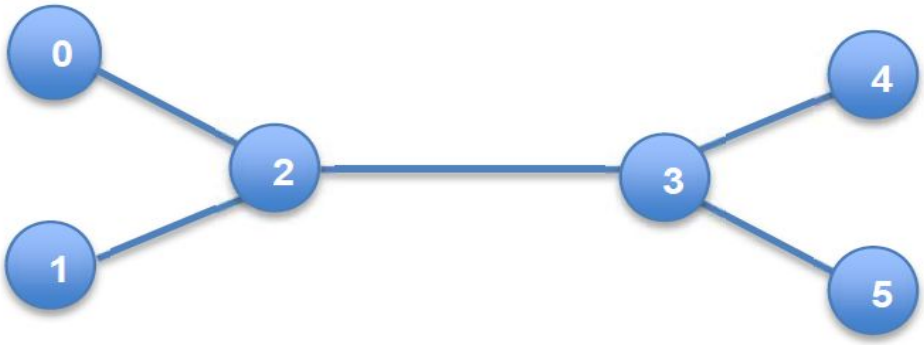
We analyze the relationship between bandwidth/queue-size and packet drops by using a python script to execute the .tcl file using 25 different combinations of bandwidth and queue sizes and storing the results in a readable .csv format. As the queue limit is decreased, more packets are dropped from the nodes.



2. Write a Network Simulator (NS2) code to simulate the transmission of ping messages over a network topology consisting of 6 nodes and find the number of packets dropped due to congestion. Study the variation in the number of packets dropped with the variation of the queue size in the nodes and with the variation of the bandwidth of the links.

   Nodes are connected as follows:
   0-2, 1-2, 2-3, 3-4 and 3-5

   Packet transmissions:
   0-4 and 5-1



When the bridge (2-3) receives too many packets, it exceeds its queue-limit and extra packets are dropped from either 2 or 3 (DropTail mechanism). On the contrary, when the bandwidth and the queue-limit are kept high enough, the transmission between 0,4 and 1,5 takes place without any disturbance.