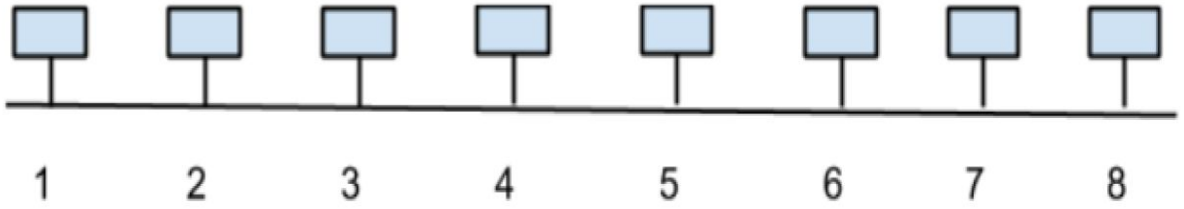
Exp - 7

Consider the following network topology,



The nodes use CSMA protocol for channel access at the link layer. The CSMA link bandwidth is 1024 Kbps and the one-way link delay is 2 msec. Every node uses IPv4 at the Internet layer. The application layer uses UDP echo application where the echo messages are generated at different data generation rate. There are four different UDP flows in this network as given below,

Flow 1 : Node 1 -> Node 5

Flow 2: Node 2 -> Node 6

Flow 3: Node 7 -> Node 3

Flow 4: Node 8 -> Node 4

Measure the performance of the CSMA network in NS3 with respect to following performance metrics:

a) Throughput: Average amount of data bits successfully transmitted per unit time.

b) Forwarding Delay: Average end-to-end delay (including the queuing delay and the transmission delay) experienced by the CSMA frames.

c) Jitter: Jitter is the variation in individual frame delay.

Using the [16 Kbps, 32 Kbps, 64 Kbps, 128 Kbps, 256 Kbps, 512 Kbps, 1024 Kbps] application layer traffic generation rate measure the link layer performance or the network performance, **not per node performance**. Therefore, consider all the CSMA frames from all the communication pairs while calculating the performance metrics. Your laboratory report should include NS3 code (handwritten only), the graph (generated using “GnuPlot” only) and a discussion on the interpretation of the graph with respect to the experiment.