DCCN LAB

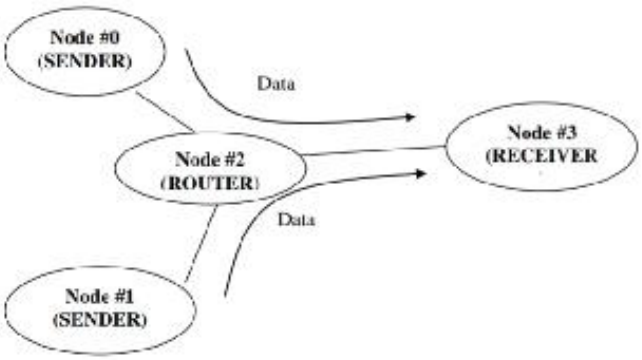
Lab 6

Name: Sourabh Vishnoi
Roll no: 121CS0832

Lab 8

Objective: Goal of this lab is to implement the TCP congestion control algorithm TCP Tahoe/Reno using the network simulator ns-2.

Q1. Write a TCL script to simulate following network simulator scenario where TCP Tahoe is implemented between the source Node#0 and sink Node #3 and TCP Reno is implemented between the source Node#1 and sink Node #3. Also plot the graph for congestion window size and compare both algorithms Tahoe and Reno. Consider the Bandwidth and propagation delay for both link N0N2 and N1N2 as 100 Mbps and delay 10ms, respectively. For N2N3, bandwidth is 10 Mbps and propagation delay is 75ms.

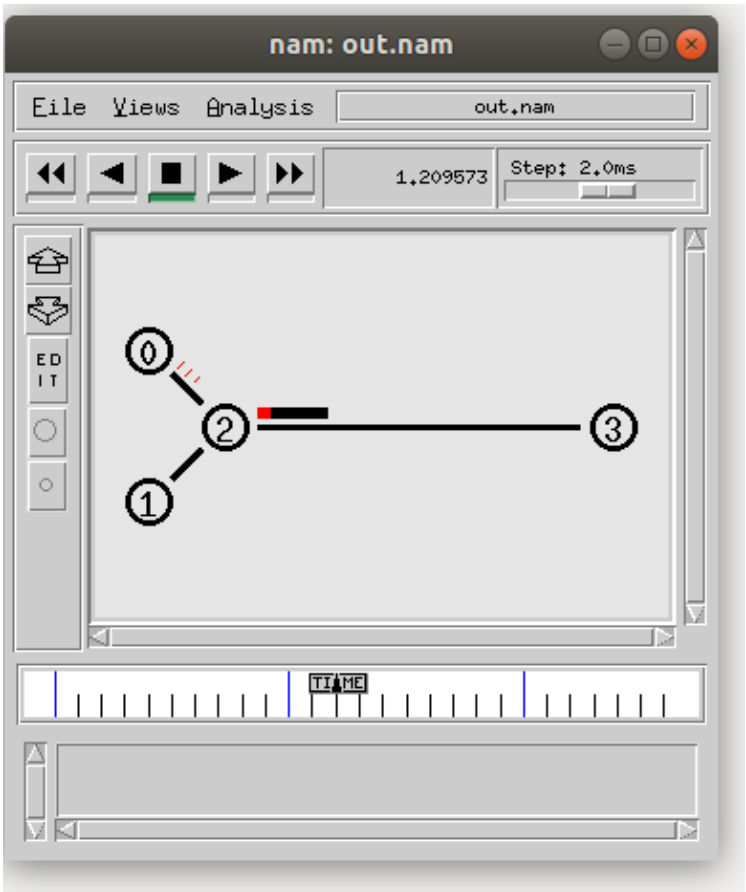


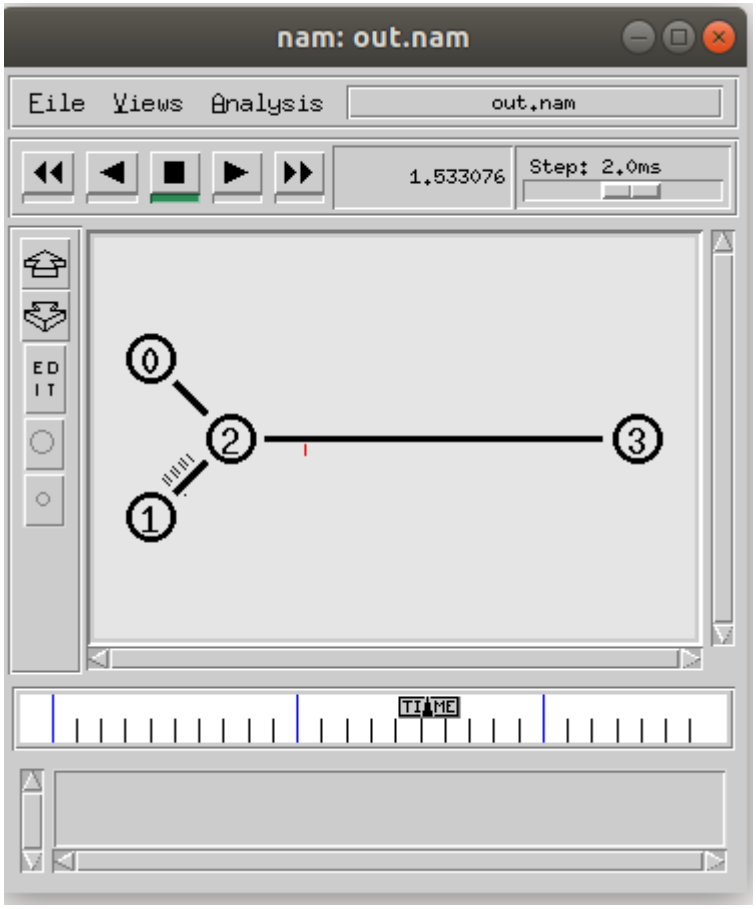
Code :

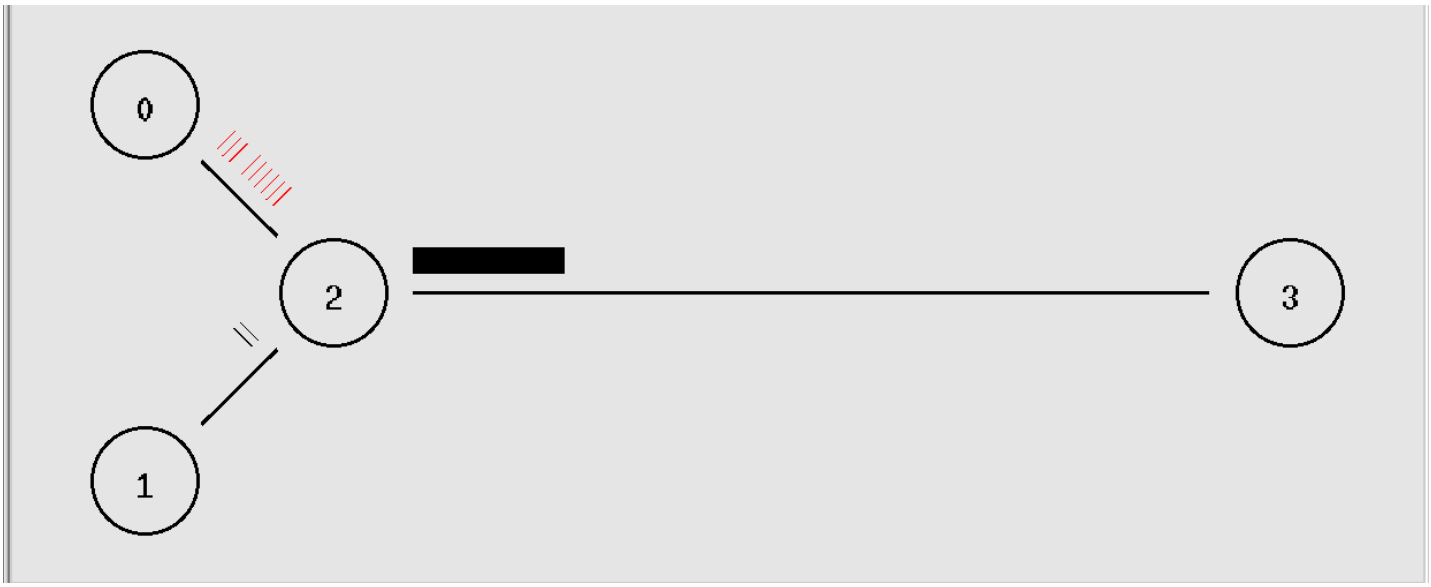
```
#Create a simulator object
set ns [new Simulator]

#Define different colors for data flows (for NAM)
$ns color 1 Blue
$ns color 2 Red

#Open the NAM trace file
set nf [open out.nam w]
$ns namtrace-all $nf
```

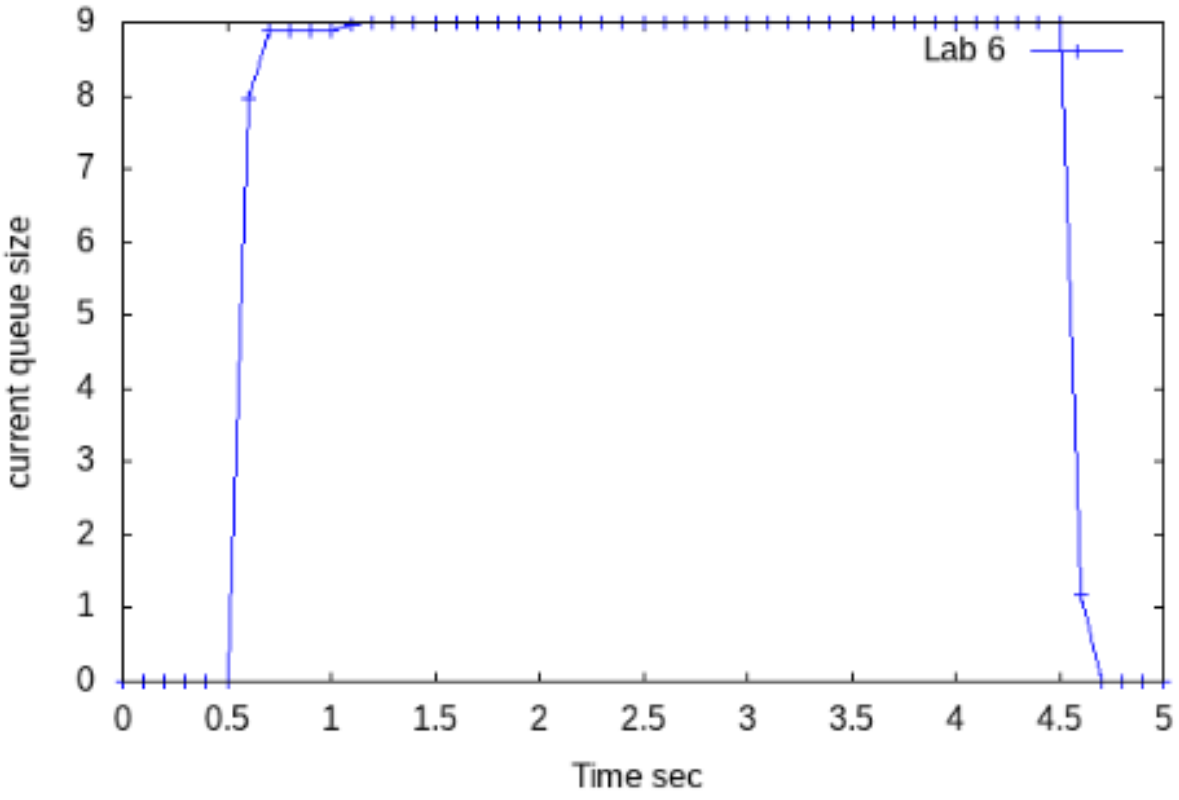
```
#Define a 'finish' procedure
proc finish {} {
        global ns nf
        $ns flush-trace
        #Close the NAM trace file
        close $nf
        #Execute NAM on the trace file
        exec nam out.nam &
        exit 0
}

# Define nodes
set n0 [$ns node]
set n1 [$ns node]
set n2 [$ns node]
set n3 [$ns node]

# Create links between nodes
$ns duplex-link $n0 $n2 100Mb 10ms DropTail
$ns duplex-link $n1 $n2 100Mb 10ms DropTail
$ns duplex-link $n2 $n3 10Mb 75ms DropTail

#Give node position (for NAM)
$ns duplex-link-op $n0 $n2 orient right-down
$ns duplex-link-op $n1 $n2 orient right-up
$ns duplex-link-op $n2 $n3 orient right

# Set up TCP Tahoe on connection from n0 to n3
set tcp0 [new Agent/TCP]
$tcp0 set class_ 2
$ns attach-agent $n0 $tcp0
set sink0 [new Agent/TCPSink]
$ns attach-agent $n3 $sink0
$ns connect $tcp0 $sink0

#Setup a FTP over TCP connection
set ftp0 [new Application/FTP]
$ftp0 attach-agent $tcp0
$ftp0 set type_ FTP

# Set up TCP Reno on connection from n1 to n3
set tcp1 [new Agent/TCP/Reno]
$ns attach-agent $n1 $tcp1
set sink1 [new Agent/TCPSink]
$ns attach-agent $n3 $sink1
```

```
$ns connect $tcp1 $sink1


# Set up TCP Reno on connection from n1 to n3
set ftp1 [new Application/FTP]
$ftp1 attach-agent $tcp1
$ftp1 set type_ FTP

# Schedule events for the FTP agents
$ns at 0.0 "$ftp0 start"
$ns at 0.5 "$ftp1 start"
$ns at 2.0 "$ftp0 stop"
$ns at 2.5 "$ftp1 stop"


# Call finish after 5 seconds of simulation time
$ns at 5.0 "finish"

# Run the simulation
$ns run
```






0
2
3
1


Lab 6
current queue size
Time sec
0
1
2
3
4
5
6
7
8
9
0
0.5
1
1.5
2
2.5
3
3.5
4
4.5
5