**Program 1: Simulate a three nodes point – to – point network with duplex links**

**between them. Set the queue size and vary the bandwidth and find the number of**

**packets dropped.**

**Outcome** :

Σ Creation of nodes & generation of traffic in a network

Σ Analyze the network traffic by varying queue size and bandwidth.

Σ Find the number of packets dropped with increased network traffic.

#Create Simulator

set ns [new Simulator]

#Open Trace file and NAM file

set ntrace [open prog1.tr w]

$ns trace-all $ntrace

set namfile [open prog1.nam w]

$ns namtrace-all $namfile

#Finish Procedure

proc Finish {} {

global ns ntrace namfile

#Dump all the trace data and close the files

$ns flush-trace

close $ntrace

close $namfile

#Execute the nam animation file

exec nam prog1.nam &

#Show the number of packets dropped

exec echo "The number of packet drops is " &

exec grep -c "^d" prog1.tr &

exit 0

}

#Create 3 nodes

set n0 [$ns node]

set n1 [$ns node]

set n2 [$ns node]

#Label the nodes

$n0 label "TCP Source"

$n2 label "Sink"

#Set the color

$ns color 1 blue

#Create Links between nodes

#You need to modify the bandwidth to observe the variation in packet drop

$ns duplex-link $n0 $n1 1Mb 10ms DropTail

$ns duplex-link $n1 $n2 1Mb 10ms DropTail

#Make the Link Orientation

$ns duplex-link-op $n0 $n1 orient right

$ns duplex-link-op $n1 $n2 orient right

#Set Queue Size

#You can modify the queue length as well to observe the variation in packet drop

$ns queue-limit $n0 $n1 10

$ns queue-limit $n1 $n2 10

#Set up a Transport layer connection.

set tcp0 [new Agent/TCP]

$ns attach-agent $n0 $tcp0

set sink0 [new Agent/TCPSink]

$ns attach-agent $n2 $sink0

$ns connect $tcp0 $sink0

#Set up an Application layer Traffic

set cbr0 [new Application/Traffic/CBR]

$cbr0 set type\_ CBR

$cbr0 set packetSize\_ 100

$cbr0 set rate\_ 1Mb

$cbr0 set random\_ false

$cbr0 attach-agent $tcp0

$tcp0 set class\_ 1

#Schedule Events

$ns at 0.0 "$cbr0 start"

$ns at 5.0 "Finish"

#Run the Simulation

$ns run

**Output:**

The number of Packets Dropped is 8