```
#Create SimullltOf

set ns [new Simulator]

#Use colors to differentiate the traffics

$ns color 1 Blue

$ns color 2 Red

#Open trace and NAM trace file set ntrace [open prog5.tr w]

$ns trace-all $ntrace

set namfile [open prog5. nam w)

$ns namtrace-all $namfile

#Use some flat file to create congestion graph windows

set winFile0 [open WinFile0 w]

set winFile1 [open WinFile1 w]

#Finish Procedure

proc Finish (}

#Dump all trace data and Close the files

global ns ntrace namfile

$ns flush-trace

close $ntrace

close $namfile

#Execute the NAM animation file exec nam prog5.nam &


#Plot the Congestio n Window graph using xgraph exec xgraph WinFile0 WinFile I &

exit 0



#Plot Window Procedure

proc PlotWindow (tcpsource file}


global ns set time 0.1

set now [$ns now]

set cv•nd [$tcpSource set cwnd   puts $file "$now $cwnd"

$ns at [expr $now+$time] "PlotWindow $tcpSource $fi1e"


#Create 6 nodes

for {set i 0} {$i<6} {incr i}


set n($i) [$ns node]


#Create duplex links between the nodes

$ns duplex-link $n(0) $n(2) 2Mb 10ms DropTail
```

```
$ns duplex-link $n(1) $n(2) 2Mb 10ms DropTail

$ns duplex-link $n(2) $n(3) 0.6Mb l00ms DropTail


#Nodes n(3) , n(4) and n(5) are considered in a LAN

set lan [$ns newLan "$n(3) $n(4) $n(5)" 0.5Mb 40ms LL Queue/DropTail MAC/802_3 Channel]

#Orientation to the nodes

$ns duplex-link-op $n(0) $n(2) orient right-down

$ns duplex-link-op $n(1) $n(2) orient right-up

$ns duplex-link-op $n(2) $n(3) orient right


#Setup queue between n(2) and n(3) and monitor the queue

$ns queue-limit $n(2) $n(3) 20

$ns duplex-link-op $n(2) $n(3) queuePos 0.3


#Set erroi model on link n(2) to n(3) set loss module [new EworModel]

$loss module ranvar [new RandomVariable/Uniform)

$loss module drop-target [new Agent/Null]

$ns lossmodel $loss module $n(2) $n(3)


#Set up the TCP connection between n(0) and n(4)

set tcp0 [new Agent/TCP/Newreno]

$tcp0 set fid                I

$tcp0 set window       8000

$tep0 set packetsize   552

$ns attach-agent $n(0) $tcp0

set sink0 [new Agent/TCPSink/DelAck]

$ns attach-agent $n(4) $sink0

$ns connect $tcp0 $sink0


#Apply FTP Application over TCP set ftp0 [new Application/FTP]

$ftp0 attach-agent $tcp0

$ftp0 set type FTP

#Set up another TCP coiuiection between n(5) and n(1  et tcpl [new Agent/TCP/Newreno]

$tcpl set lid                2

$tcpl set window       8000

$tcpl set packetsize    552

$ns attach-agent $n(5) $tcpl

set sinkl [new Agent/TCPSink/DelAck]

$ns attach-agent $n(1) $sinkl

$ns connect $tcpl $sinkl
```

```
#Apply FTP application over TCP$set ftpl [new
Application/FTP]
$ftpl attach-agent $tcp1
$ftpl set type FTP
#Schedule Events
$ns at 0.1 "$ftp0 start"
$ns ct 0.1 "PlotWindow $tcp0 $winFile0"
$ns at 0.6 "$ftpl start"
$ns at 0.5 "PlotWindow $tcpl $winFilel"
$ns at 25.0 "$ftp0 stop"
$ns at 25.1 "$ftpl stop"
$ns at 25.2 "Finish"

#Run the simulation
$ns run
```