#set ns Simulator
set ns [new Simulator]
#define color for data flow
$ns color 1 Blue
$ns color 2 Red
#open trace file
set tracefile1 [open lab3.tr w] set winfile [open winfile w]
$ns trace-all $tracefile1
#open namtrace file
set namfile [open lab3.nam w]
$ns namtrace-all $namfile
#define finish procedure proc finish { } {
global ns tracefile1 namfile
$ns flush-trace close $tracefile1 close $namfile
exec nam lab3.nam & exit 0 }
#create 6 nodes
set n0 [$ns node] set n1 [$ns node]
set n2 [$ns node] set n3 [$ns node] set n4 [$ns node] set n5 [$ns node]
$n1 shape box
#create link between nodes
$ns duplex-link $n0 $n2 2Mb 10ms DropTail
$ns duplex-link $n1 $n2 2Mb 10ms DropTail
$ns simplex-link $n2 $n3 0.3Mb 100ms DropTail
$ns simplex-link $n3 $n2 0.3Mb 100ms DropTail
set lan [$ns newLan "$n3 $n4 $n5" 0.5Mb 40ms LL Queue/DropTail MAC/802_3]
#give node position
$ns duplex-link-op $n0 $n2 orient right-down
$ns duplex-link-op $n1 $n2 orient right-up
$ns simplex-link-op $n3 $n2 orient left
$ns simplex-link-op $n2 $n3 orient right
#set queue size of link(n2-n3)
$ns queue-limit $n2 $n3 20
#setup tcp connection set tcp [new Agent/TCP]
$ns attach-agent $n0 $tcp
set sink [new Agent/TCPSink]
$ns attach-agent $n4 $sink
$ns connect $tcp $sink
$tcp set fid_ 1
$tcp set packetSize_ 552

#set ftp over tcp connection set ftp [new Application/FTP]
$ftp attach-agent $tcp
#setup a TCP1 connection set tcp1 [new Agent/TCP]
$ns attach-agent $n1 $tcp1
set sink1 [new Agent/TCPSink]
$ns attach-agent $n5 $sink1
$ns connect $tcp1 $sink1
$tcp1 set fid_ 2
$tcp1 set packetSize_ 552
set telnet0 [new Application/Telnet]
$telnet0 attach-agent $tcp1
#title congestion window1
set outfile1 [open congestion1.xg w]
puts $outfile1 "TitleText: Congestion Window-- Source _tcp" puts $outfile1 "xUnitText: Simulation Time(Secs)"
puts $outfile1 "yUnitText: Congestion WindowSize"
#title congestion window2
set outfile2 [open congestion2.xg w]
puts $outfile2 "TitleText: Congestion Window-- Source _tcp1" puts $outfile2 "xUnitText: Simulation Time(Secs)"
puts $outfile2 "yUnitText: Congestion WindowSize"
proc plotWindow {tcpSource outfile} { global ns
set time 0.1
set now [$ns now]
set cwnd [$tcpSource set cwnd_] puts $outfile "$now $cwnd"
$ns at [expr $now+$time] "plotWindow $tcpSource $outfile"
}
$ns at 0.1 "plotWindow $tcp $winfile"
$ns at 0.0 "plotWindow $tcp $outfile1"
$ns at 0.1 "plotWindow $tcp1 $outfile2"
$ns at 0.3 "$ftp start"
$ns at 0.5 "$telnet0 start"
$ns at 49.0 "$ftp stop"
$ns at 49.1 "$telnet0 stop"
$ns at 50.0 "finish"
$ns run