TERM 3 CN

set val(stop) 50
set ns [new Simulator]
#open the ns trace file
set tracefile [open p3.tr w]
$ns trace-all $tracefile
#open the ns nam file
set namfile [open p3.nam w]
$ns namtrace-all $namfile
set n0 [$ns node]
set n1 [$ns node]
#assign labels to nodes
$n0 label "SERVER"
$n1 label "CLIENT"
#assign shapes to nodes
$n0 shape square
$n1 shape square
#assign color to nodes
$n0 color red
$n1 color blue
#attaching agent
set tcp0 [new Agent/TCP]
$ns attach-agent $n0 $tcp0
set sink1 [new Agent/TCPSink]
$ns attach-agent $n1 $sink1
$ns connect $tcp0 $sink1
$tcp0 set packetSize_ 1500
#attaching application
set ftp0 [new Application/FTP]
$ ftp0 attach-agent $tcp0
$ns at 0.01 "$ftp0 start"
$ns at 20.2 "$ftp0 stop"
#commands to stablish links between nodes
$ns duplex-link $n0 $n1 100.0Mb 40ms DropTail
$ns queue-limit $n0 $n1 5
#assigning orientation
$ns duplex-link-op $n0 $n1 orient right
$ns color 1 red
$tcp0 set fid_ 1
$ftp0 set Type_ FTP
#Define a finish procedure
proc finish {} {
      global ns tracefile namfile
      $ns flush-trace
      close $tracefile

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        close $namfile
        exec nam p1.nam &
        exec awk -f first.awk   p3.tr &
        exec awk -f graph.awk p3.tr > p3.dat &
        exec xgraph p3.dat -geometry 800x400 -t "Bytes_Recieved_at_client" -x
        "Time_in_sec" -y "Bytes_in_bps" &
        exit 0
}
$ns at $val(stop) "finish";
#Run the simulation
$ns run;

First.awk
BEGIN {
            count = 0
            time = 0
            total_bytes_sent = 0
            total_bytes_recieved = 0

}
{

            if($1=="r" && $4==1 && $5=="tcp")
            total_bytes_recieved += $6
            if($1=="+" && $3==0 && $5=="tcp")
            total_bytes_sent += $6

}
END {

            system("Clear")\
            printf("\nTransmission time required to transfer the file is %1f ",$2);
            printf("\nActual data sent from the server  is %1f  Mbps",
            total_bytes_sent/1000000);
            printf("\nData received by the client  is %1f  Mbps",
            total_bytes_recieved /1000000);

}
graph.awk
BEGIN {
            count = 0
            time = 0

}
{

            if($1=="r" && $4==1 && $5=="tcp")
            {
                 count += $6
                 time += $2
                 printf("\n %1f  \t %1f",time(count)/1000000)
            }

}
```