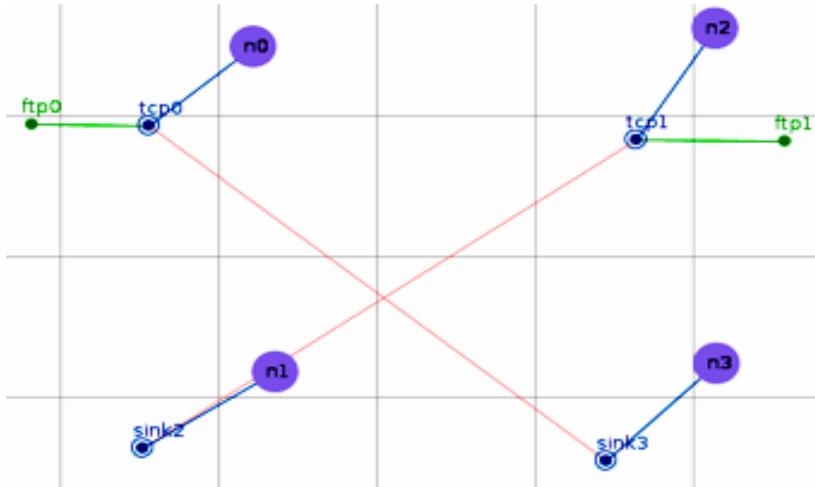


### **Program 3:**

**Aim.: Implement an Ethernet LAN using n nodes and set multiple traffic nodes and plot congestion window for different source / destination.**

#### **Topology:**



#### **p3.tcl**

```
#=====
#   Simulation parameters setup
#=====
set val(stop) 10.0; # time of simulation end

#=====
#   Initialization
#=====
#Create a ns simulator
set ns [new Simulator]

#Open the NS trace file
set tracefile [open p3.tr w]
$ns trace-all $tracefile

#Open the NAM trace file
set namfile [open p3.nam w]
$ns namtrace-all $namfile

#=====
#   Nodes Definition
#=====
#Create 4 nodes
set n0 [$ns node]
set n1 [$ns node]
set n2 [$ns node]
set n3 [$ns node]
```

```

#=====
#      Links Definition
#=====

#Createlinks between nodes
$ns make-lan "$n0 $n1 $n2 $n3" 10mb 40ms LL Queue/DropTail Mac/802_3

#Give node position (for NAM)

#=====
#      Agents Definition
#=====

#Setup a TCP connection
set tcp0 [new Agent/TCP]
$ns attach-agent $n0 $tcp0
set sink3 [new Agent/TCPSink]
$ns attach-agent $n3 $sink3
$ns connect $tcp0 $sink3
$tcp0 set packetSize_ 1500

#Setup a TCP connection
set tcp1 [new Agent/TCP]
$ns attach-agent $n2 $tcp1
set sink2 [new Agent/TCPSink]
$ns attach-agent $n1 $sink2
$ns connect $tcp1 $sink2
$tcp1 set packetSize_ 1500

#=====
#      Applications Definition
#=====

#Setup a FTP Application over TCP connection
set ftp0 [new Application/FTP]
$ftp0 attach-agent $tcp0
$ns at 1.0 "$ftp0 start"
$ns at 3.0 "$ftp0 start"
$ns at 3.5 "$ftp0 stop"
$ns at 6.5 "$ftp0 stop"
#Setup a FTP Application over TCP connection
set ftp1 [new Application/FTP]
$ftp1 attach-agent $tcp1
$ns at 1.5 "$ftp1 start"
$ns at 3.5 "$ftp1 start"
$ns at 3.7 "$ftp1 stop"
$ns at 7.0 "$ftp1 stop"

# To trace the congestion window
set file1 [open file1.tr w]
$tcp0 attach $file1
$tcp0 trace cwnd_
set file2 [open file2.tr w]

```

```

$tcp1 attach $file2
$tcp1 trace cwnd_
=====
#      Termination
=====
#Define a 'finish' procedure
proc finish {} {
    global ns tracefile namfile
    $ns flush-trace
    close $tracefile
    close $namfile
    exec nam p3.nam &
    exit 0
}
$ns at $val(stop) "$ns nam-end-wireless $val(stop)"
$ns at $val(stop) "finish"
$ns at $val(stop) "puts \"done\" ; $ns halt"
$ns run

```

### p3.awk

```

BEGIN{
}
{
if($6=="cwnd_"){
printf("%f\t%f\n", $1, $7);
}
} END{
}

```

### **Results:**