```
set ns [new Simulator]
set nf [open lab2.nam w]
$ns namtrace-all $nf
set tf [open lab2.tr w]
$ns trace-all $tf

proc finish {} {
global ns nf tf
$ns flush-trace
close $nf
close $tf
exec nam lab2.nam &
exit 0
}
# Instance method or procedure (thus, the name instproc) for class
Agent/Ping
Agent/Ping instproc recv {from rtt} {
$self instvar node_
puts "node [$node_ id] received ping from $from with round trip time :
$rtt ms"
}
# Create 7 nodes
set n0 [$ns node]
set n1 [$ns node]
set n2 [$ns node]
set n3 [$ns node]
set n4 [$ns node]
set n5 [$ns node]
set n6 [$ns node]
# Send at high bandwidth, receive at low bandwidth for congestion (n1
sends, n2 receives and so on)
# n0 is router here, n1 <--> n2, n3 <--> n4, n5 <--> n6
$ns duplex-link $n0 $n1 10mb 300ms DropTail
$ns duplex-link $n0 $n2 1kb 300ms DropTail
$ns duplex-link $n0 $n3 10mb 300ms DropTail
$ns duplex-link $n0 $n4 1kb 300ms DropTail
$ns duplex-link $n0 $n5 10mb 300ms DropTail
```

```
$ns duplex-link $n0 $n6 1kb 300ms DropTail

# Keep low queue size for congestion but not too low that no ping is
received

$ns queue-limit $n0 $n2 2

$ns queue-limit $n0 $n4 2

$ns queue-limit $n0 $n6 2

# Create 6 ping agents

set ping1 [new Agent/Ping]

set ping2 [new Agent/Ping]

set ping3 [new Agent/Ping]

set ping4 [new Agent/Ping]

set ping5 [new Agent/Ping]

set ping6 [new Agent/Ping]

# Set each node except router (n0) as ping agent to send pings

$ns attach-agent $n1 $ping1

$ns attach-agent $n2 $ping2

$ns attach-agent $n3 $ping3

$ns attach-agent $n4 $ping4

$ns attach-agent $n5 $ping5

$ns attach-agent $n6 $ping6

# Since, n1 <--> n2, n3 <--> n4, n5 <--> n6, therefore

$ns connect $ping1 $ping2

$ns connect $ping3 $ping4

$ns connect $ping5 $ping6

# Since n1, n3, n5 sends ping, ie, ping1, ping2, ping3 agents

$ns at 0.1 "$ping1 send"

$ns at 0.2 "$ping1 send"

$ns at 0.3 "$ping1 send"

$ns at 0.4 "$ping1 send"

$ns at 0.5 "$ping1 send"


$ns at 0.1 "$ping3 send"

$ns at 0.2 "$ping3 send"

$ns at 0.3 "$ping3 send"

$ns at 0.4 "$ping3 send"

$ns at 0.5 "$ping3 send"
```

```
$ns at 0.1 "$ping5 send"
$ns at 0.2 "$ping5 send"
$ns at 0.3 "$ping5 send"
$ns at 0.4 "$ping5 send"
$ns at 0.5 "$ping5 send"

$ns at 5 "finish"
$ns run
```

AWK FILE

```
BEGIN {
count = 0;
}
{
if($1 == "d"){
count++;
}
}
END {
printf("The no. of packets dropped is %d\n",count);
}
```