6. Implementation of Link state routing algorithm

```
set val(stop) 10.0 # time of simulation end
#Create a ns simulator
set ns [new Simulator]
#Open the NS trace file
set tracefile [open prg6.tr w]
$ns trace-all $tracefile
#Open the NAM trace file
set namfile [open prg6.nam w]
$ns namtrace-all $namfile
#Create 5 nodes
set n0 [$ns node]
set n1 [$ns node]
set n2 [$ns node]
set n3 [$ns node]
set n4 [$ns node]
#Createlinks between nodes
$ns duplex-link $n0 $n1 100.0Mb 10ms DropTail
$ns queue-limit $n0 $n1 50
$ns duplex-link $n0 $n2 100.0Mb 10ms DropTail
$ns queue-limit $n0 $n2 50
$ns duplex-link $n2 $n3 100.0Mb 10ms DropTail
$ns queue-limit $n2 $n3 50
$ns duplex-link $n1 $n3 100.0Mb 10ms DropTail
$ns queue-limit $n1 $n3 50
$ns duplex-link $n3 $n4 100.0Mb 10ms DropTail
$ns queue-limit $n3 $n4 50
$ns duplex-link $n0 $n3 100.0Mb 10ms DropTail
$ns queue-limit $n0 $n3 50
$ns duplex-link $n1 $n2 100.0Mb 10ms DropTail
$ns queue-limit $n1 $n2 50
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#Give node position (for NAM)
```

```
$ns duplex-link-op $n0 $n1 orient right
$ns duplex-link-op $n0 $n2 orient right-down
$ns duplex-link-op $n2 $n3 orient right
$ns duplex-link-op $n1 $n3 orient left-down
$ns duplex-link-op $n3 $n4 orient left-down
$ns duplex-link-op $n0 $n3 orient right-down
$ns duplex-link-op $n1 $n2 orient left-down
#Set the link costs. All link costs are symmetric
$ns cost $n0 $n1 2
$ns cost $n0 $n2 1
$ns cost $n0 $n3 3
$ns cost $n1 $n0 2
$ns cost $n1 $n2 2
$ns cost $n1 $n3 3
$ns cost $n2 $n1 2
$ns cost $n2 $n0 1
$ns cost $n2 $n3 1
$ns cost $n3 $n2 1
$ns cost $n3 $n1 3
$ns cost $n3 $n0 3
$ns cost $n3 $n4 2
$ns cost $n4 $n3 2
#Setup a UDP connection
set udp0 [new Agent/UDP]
$ns attach-agent $n0 $udp0
set null1 [new Agent/Null]
$ns attach-agent $n4 $null1
$ns connect $udp0 $null1
$udp0 set packetSize 1500
set cbr0 [new Application/Traffic/CBR]
$cbr0 attach-agent $udp0
$cbr0 set packetSize 1000
$cbr0 set rate 1.0Mb
$cbr0 set random_ null
```

```
$ns at 1.0 "$cbr0 start"
$ns at 5.0 "$cbr0 stop"
$ns rtproto LS
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#Define a 'finish' procedure
proc finish {} {
 global ns tracefile namfile
 $ns flush-trace
 close $tracefile
 close $namfile
 exec nam prg6.nam &
 exit 0
}
$ns at 12 "$val(stop)"
$ns at 11 "finish"
$ns at 10 "$ns halt"
$ns run
AWK file
BEGIN{
 tcppack=0
 tcppack1=0
 }
{
if($1=="r"&&$4=="4"&&$5=="cbr"&&$6=="1000")
 {
tcppack++;
 }
}
END{
printf("\n total number of data packets at Node 4 due to
Link state algorithm: %d\n",
tcppack++);
 }
```