Lab Work 8

Name – Ashutosh Sharma
Roll No – 121CS0239

Q1)

DropTail -

```
# This script is created by NSG2 beta1
# <http://wushoupong.googlepages.com/nsg>


#===================================
#     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 out.tr w]
$ns trace-all $tracefile

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


#===================================
#        Nodes Definition
#===================================
#Create 10 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 [$ns node]
set n7 [$ns node]
set n8 [$ns node]
set n9 [$ns node]
```

```
#=================================
#       Links Definition
#=================================
#Createlinks between nodes
$ns duplex-link $n0 $n4 100.0Mb 25ms DropTail
$ns queue-limit $n0 $n4 50
$ns duplex-link $n1 $n4 100.0Mb 25ms DropTail
$ns queue-limit $n1 $n4 50
$ns duplex-link $n2 $n4 100.0Mb 25ms DropTail
$ns queue-limit $n2 $n4 50
$ns duplex-link $n3 $n4 100.0Mb 25ms DropTail
$ns queue-limit $n3 $n4 50
$ns duplex-link $n6 $n5 100.0Mb 25ms DropTail
$ns queue-limit $n6 $n5 50
$ns duplex-link $n7 $n5 100.0Mb 25ms DropTail
$ns queue-limit $n7 $n5 50
$ns duplex-link $n8 $n5 100.0Mb 25ms DropTail
$ns queue-limit $n8 $n5 50
$ns duplex-link $n9 $n5 100.0Mb 25ms DropTail
$ns queue-limit $n9 $n5 50
$ns duplex-link $n4 $n5 100.0Mb 100ms DropTail
$ns queue-limit $n4 $n5 50

#Give node position (for NAM)
$ns duplex-link-op $n0 $n4 orient right-down
$ns duplex-link-op $n1 $n4 orient right-down
$ns duplex-link-op $n2 $n4 orient right-up
$ns duplex-link-op $n3 $n4 orient right-up
$ns duplex-link-op $n6 $n5 orient left-down
$ns duplex-link-op $n7 $n5 orient left-down
$ns duplex-link-op $n8 $n5 orient left-up
$ns duplex-link-op $n9 $n5 orient left-up
$ns duplex-link-op $n4 $n5 orient right

#=================================
#       Agents Definition
#=================================
#Setup a TCP connection
set tcp1 [new Agent/TCP]
$ns attach-agent $n0 $tcp1
set sink5 [new Agent/TCPSink]
$ns attach-agent $n6 $sink5
$ns connect $tcp1 $sink5
$tcp1 set packetSize_ 1500
```

```
#Setup a TCP connection
set tcp2 [new Agent/TCP]
$ns attach-agent $n1 $tcp2
set sink6 [new Agent/TCPSink]
$ns attach-agent $n7 $sink6
$ns connect $tcp2 $sink6
$tcp2 set packetSize_ 1500

#Setup a TCP connection
set tcp3 [new Agent/TCP]
$ns attach-agent $n2 $tcp3
set sink7 [new Agent/TCPSink]
$ns attach-agent $n8 $sink7
$ns connect $tcp3 $sink7
$tcp3 set packetSize_ 1500

#Setup a TCP connection
set tcp4 [new Agent/TCP]
$ns attach-agent $n3 $tcp4
set sink8 [new Agent/TCPSink]
$ns attach-agent $n9 $sink8
$ns connect $tcp4 $sink8
$tcp4 set packetSize_ 1500


#=================================
#       Applications Definition
#=================================
#Setup a FTP Application over TCP connection
set ftp2 [new Application/FTP]
$ftp2 attach-agent $tcp1
$ns at 1.0 "$ftp2 start"
$ns at 2.0 "$ftp2 stop"

#Setup a FTP Application over TCP connection
set ftp3 [new Application/FTP]
$ftp3 attach-agent $tcp2
$ns at 1.0 "$ftp3 start"
$ns at 2.0 "$ftp3 stop"

#Setup a FTP Application over TCP connection
set ftp4 [new Application/FTP]
$ftp4 attach-agent $tcp3
$ns at 1.0 "$ftp4 start"
$ns at 2.0 "$ftp4 stop"

#Setup a FTP Application over TCP connection
```

```
set ftp5 [new Application/FTP]
$ftp5 attach-agent $tcp4
$ns at 1.0 "$ftp5 start"
$ns at 2.0 "$ftp5 stop"


#=================================
#        Termination
#=================================
#Define a 'finish' procedure
proc finish {} {
    global ns tracefile namfile
    $ns flush-trace
    close $tracefile
    close $namfile
    exec nam out.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
```

RED -

```
# This script is created by NSG2 beta1
# <http://wushoupong.googlepages.com/nsg>

#=================================
#     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 red_out.tr w]
$ns trace-all $tracefile

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

```
#=================================
#       Nodes Definition
#=================================
#Create 10 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 [$ns node]
set n7 [$ns node]
set n8 [$ns node]
set n9 [$ns node]

#=================================
#       Links Definition
#=================================
#Createlinks between nodes
$ns duplex-link $n0 $n4 100.0Mb 25ms RED
$ns queue-limit $n0 $n4 50
$ns duplex-link $n1 $n4 100.0Mb 25ms RED
$ns queue-limit $n1 $n4 50
$ns duplex-link $n2 $n4 100.0Mb 25ms RED
$ns queue-limit $n2 $n4 50
$ns duplex-link $n3 $n4 100.0Mb 25ms RED
$ns queue-limit $n3 $n4 50
$ns duplex-link $n6 $n5 100.0Mb 25ms RED
$ns queue-limit $n6 $n5 50
$ns duplex-link $n8 $n5 100.0Mb 25ms RED
$ns queue-limit $n8 $n5 50
$ns duplex-link $n9 $n5 100.0Mb 25ms RED
$ns queue-limit $n9 $n5 50
$ns duplex-link $n4 $n5 100.0Mb 100ms RED
$ns queue-limit $n4 $n5 50
$ns duplex-link $n5 $n7 100.0Mb 100ms RED
$ns queue-limit $n5 $n7 50

#Give node position (for NAM)
$ns duplex-link-op $n0 $n4 orient right-down
$ns duplex-link-op $n1 $n4 orient right-down
$ns duplex-link-op $n2 $n4 orient right-up
$ns duplex-link-op $n3 $n4 orient right-up
$ns duplex-link-op $n6 $n5 orient left-down
$ns duplex-link-op $n8 $n5 orient left-up
$ns duplex-link-op $n9 $n5 orient left-up
```

```
$ns duplex-link-op $n4 $n5 orient right
$ns duplex-link-op $n5 $n7 orient right-up

#===================================
#        Agents Definition
#===================================
#Setup a TCP connection
set tcp1 [new Agent/TCP]
$ns attach-agent $n0 $tcp1
set sink5 [new Agent/TCPSink]
$ns attach-agent $n6 $sink5
$ns connect $tcp1 $sink5
$tcp1 set packetSize_ 1500

#Setup a TCP connection
set tcp2 [new Agent/TCP]
$ns attach-agent $n1 $tcp2
set sink6 [new Agent/TCPSink]
$ns attach-agent $n7 $sink6
$ns connect $tcp2 $sink6
$tcp2 set packetSize_ 1500

#Setup a TCP connection
set tcp3 [new Agent/TCP]
$ns attach-agent $n2 $tcp3
set sink7 [new Agent/TCPSink]
$ns attach-agent $n8 $sink7
$ns connect $tcp3 $sink7
$tcp3 set packetSize_ 1500

#Setup a TCP connection
set tcp4 [new Agent/TCP]
$ns attach-agent $n3 $tcp4
set sink8 [new Agent/TCPSink]
$ns attach-agent $n9 $sink8
$ns connect $tcp4 $sink8
$tcp4 set packetSize_ 1500


#===================================
#        Applications Definition
#===================================
#Setup a FTP Application over TCP connection
set ftp2 [new Application/FTP]
$ftp2 attach-agent $tcp1
$ns at 1.0 "$ftp2 start"
$ns at 2.0 "$ftp2 stop"
```

```
#Setup a FTP Application over TCP connection
set ftp3 [new Application/FTP]
$ftp3 attach-agent $tcp2
$ns at 1.0 "$ftp3 start"
$ns at 2.0 "$ftp3 stop"

#Setup a FTP Application over TCP connection
set ftp4 [new Application/FTP]
$ftp4 attach-agent $tcp3
$ns at 1.0 "$ftp4 start"
$ns at 2.0 "$ftp4 stop"

#Setup a FTP Application over TCP connection
set ftp5 [new Application/FTP]
$ftp5 attach-agent $tcp4
$ns at 1.0 "$ftp5 start"
$ns at 2.0 "$ftp5 stop"


#=================================
#        Termination
#=================================
#Define a 'finish' procedure
proc finish {} {
    global ns tracefile namfile
    $ns flush-trace
    close $tracefile
    close $namfile
    exec nam out.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
```

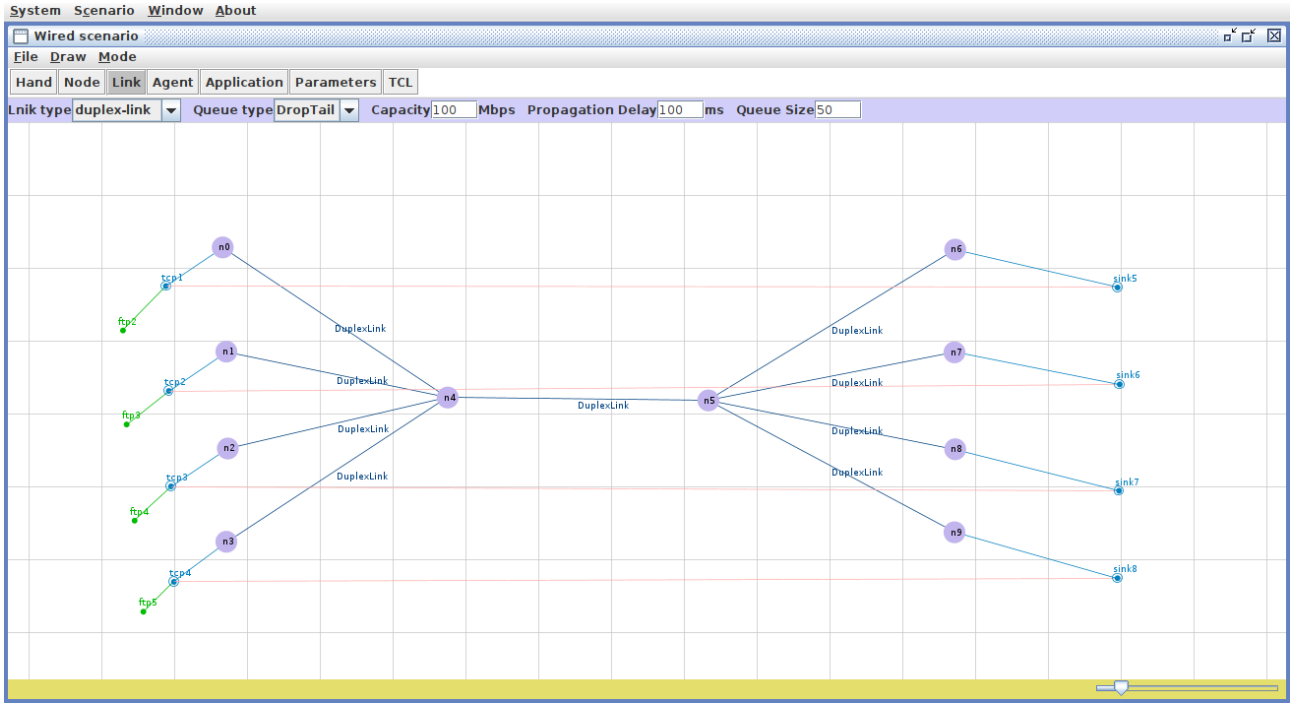
SFQ -

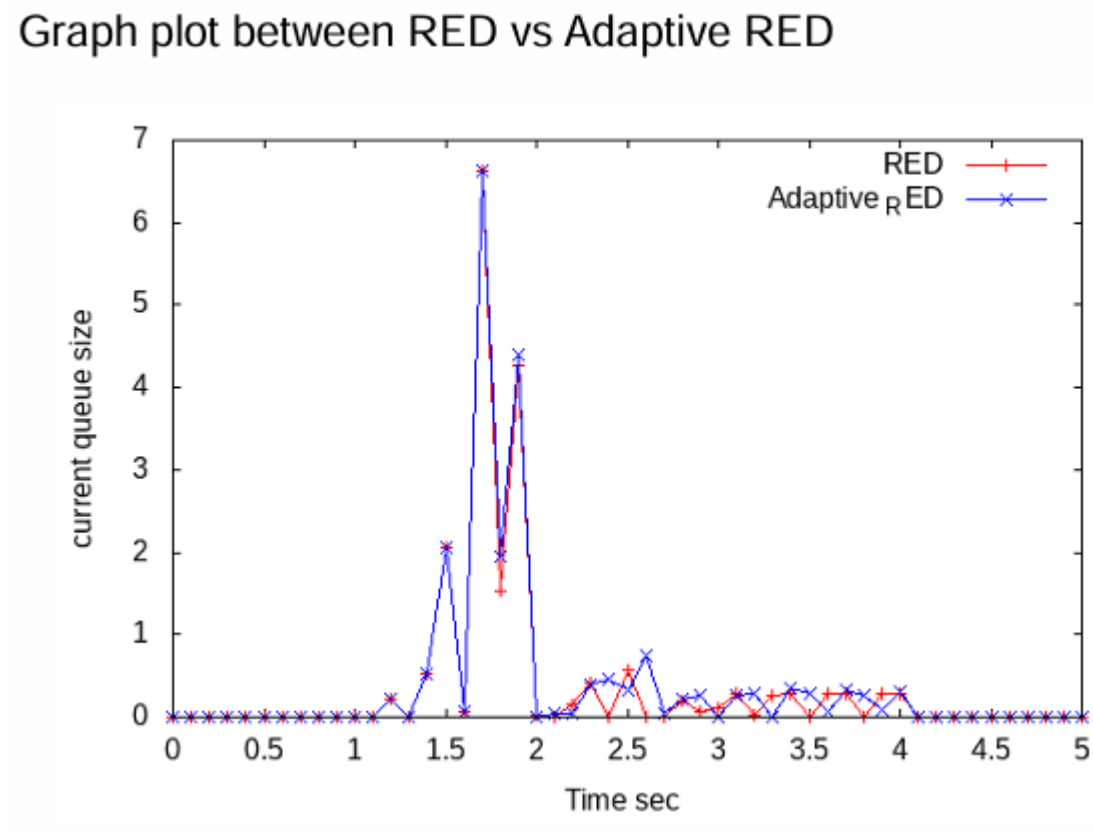
```
# This script is created by NSG2 beta1
# <http://wushoupong.googlepages.com/nsg>


#=================================
#     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 red_out.tr w]
$ns trace-all $tracefile

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

#==================================
#        Nodes Definition
#==================================
#Create 10 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 [$ns node]
set n7 [$ns node]
set n8 [$ns node]
set n9 [$ns node]

#==================================
#        Links Definition
#==================================
#Createlinks between nodes
$ns duplex-link $n0 $n4 100.0Mb 25ms SFQ
$ns queue-limit $n0 $n4 50
$ns duplex-link $n1 $n4 100.0Mb 25ms SFQ
$ns queue-limit $n1 $n4 50
$ns duplex-link $n2 $n4 100.0Mb 25ms SFQ
$ns queue-limit $n2 $n4 50
$ns duplex-link $n3 $n4 100.0Mb 25ms SFQ
$ns queue-limit $n3 $n4 50
$ns duplex-link $n6 $n5 100.0Mb 25ms SFQ
$ns queue-limit $n6 $n5 50
$ns duplex-link $n8 $n5 100.0Mb 25ms SFQ
$ns queue-limit $n8 $n5 50
$ns duplex-link $n9 $n5 100.0Mb 25ms SFQ
$ns queue-limit $n9 $n5 50
$ns duplex-link $n4 $n5 100.0Mb 100ms SFQ
```

```
$ns queue-limit $n4 $n5 50
$ns duplex-link $n5 $n7 100.0Mb 100ms SFQ
$ns queue-limit $n5 $n7 50

#Give node position (for NAM)
$ns duplex-link-op $n0 $n4 orient right-down
$ns duplex-link-op $n1 $n4 orient right-down
$ns duplex-link-op $n2 $n4 orient right-up
$ns duplex-link-op $n3 $n4 orient right-up
$ns duplex-link-op $n6 $n5 orient left-down
$ns duplex-link-op $n8 $n5 orient left-up
$ns duplex-link-op $n9 $n5 orient left-up
$ns duplex-link-op $n4 $n5 orient right
$ns duplex-link-op $n5 $n7 orient right-up

#=================================
#       Agents Definition
#=================================
#Setup a TCP connection
set tcp1 [new Agent/TCP]
$ns attach-agent $n0 $tcp1
set sink5 [new Agent/TCPSink]
$ns attach-agent $n6 $sink5
$ns connect $tcp1 $sink5
$tcp1 set packetSize_ 1500

#Setup a TCP connection
set tcp2 [new Agent/TCP]
$ns attach-agent $n1 $tcp2
set sink6 [new Agent/TCPSink]
$ns attach-agent $n7 $sink6
$ns connect $tcp2 $sink6
$tcp2 set packetSize_ 1500

#Setup a TCP connection
set tcp3 [new Agent/TCP]
$ns attach-agent $n2 $tcp3
set sink7 [new Agent/TCPSink]
$ns attach-agent $n8 $sink7
$ns connect $tcp3 $sink7
$tcp3 set packetSize_ 1500

#Setup a TCP connection
set tcp4 [new Agent/TCP]
$ns attach-agent $n3 $tcp4
set sink8 [new Agent/TCPSink]
$ns attach-agent $n9 $sink8
$ns connect $tcp4 $sink8
```

```
$tcp4 set packetSize_ 1500


#=================================
#        Applications Definition
#=================================
#Setup a FTP Application over TCP connection
set ftp2 [new Application/FTP]
$ftp2 attach-agent $tcp1
$ns at 1.0 "$ftp2 start"
$ns at 2.0 "$ftp2 stop"

#Setup a FTP Application over TCP connection
set ftp3 [new Application/FTP]
$ftp3 attach-agent $tcp2
$ns at 1.0 "$ftp3 start"
$ns at 2.0 "$ftp3 stop"

#Setup a FTP Application over TCP connection
set ftp4 [new Application/FTP]
$ftp4 attach-agent $tcp3
$ns at 1.0 "$ftp4 start"
$ns at 2.0 "$ftp4 stop"

#Setup a FTP Application over TCP connection
set ftp5 [new Application/FTP]
$ftp5 attach-agent $tcp4
$ns at 1.0 "$ftp5 start"
$ns at 2.0 "$ftp5 stop"


#=================================
#        Termination
#=================================
#Define a 'finish' procedure
proc finish {} {
    global ns tracefile namfile
    $ns flush-trace
    close $tracefile
    close $namfile
    exec nam out.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
```


System Scenario Window About
Wired scenario
File Draw Mode
Hand Node Link Agent Application Parameters TCL
Lnik type duplex-link Queue type DropTail Capacity 100 Mbps Propagation Delay 100 ms Queue Size 50
n0
n1
n2
n3
n4
n5
n6
n7
n8
n9
tcp1
tcp2
tcp3
tcp4
ftp2
ftp3
ftp4
ftp5
sink5
sink6
sink7
sink8
DuplexLink


Graph plot between RED vs Adaptive RED
RED
Adaptive RED
current queue size
Time sec
0
1
2
3
4
5
6
7
0
0.5
1
1.5
2
2.5
3
3.5
4
4.5
5