Computer Networks Laboratory
CSN-361
Assignment 1 (L4)

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Class: B.Tech CSE 3rd Year

Problem Statements

Question 1: Write a Network Simulator (NS2) code to simulate a three-node network with duplex links among them as shown in the figure. Show the topology using NAM. Study the variation in the number of packets dropped with the variation of the queue size in the nodes and with the variation of the bandwidth of the links.

Question 2: Write a Network Simulator (NS2) code to simulate the transmission of ping messages over a network topology consisting of 6 nodes and find the number of packets dropped due to congestion. Study the variation in the number of packets dropped with the variation of the queue size in the nodes and with the variation of the bandwidth of the links.

Algorithms and Data Structures Used

Question 1:
Connections exist such that they send data to and from nodes 0-1 and 0-2.

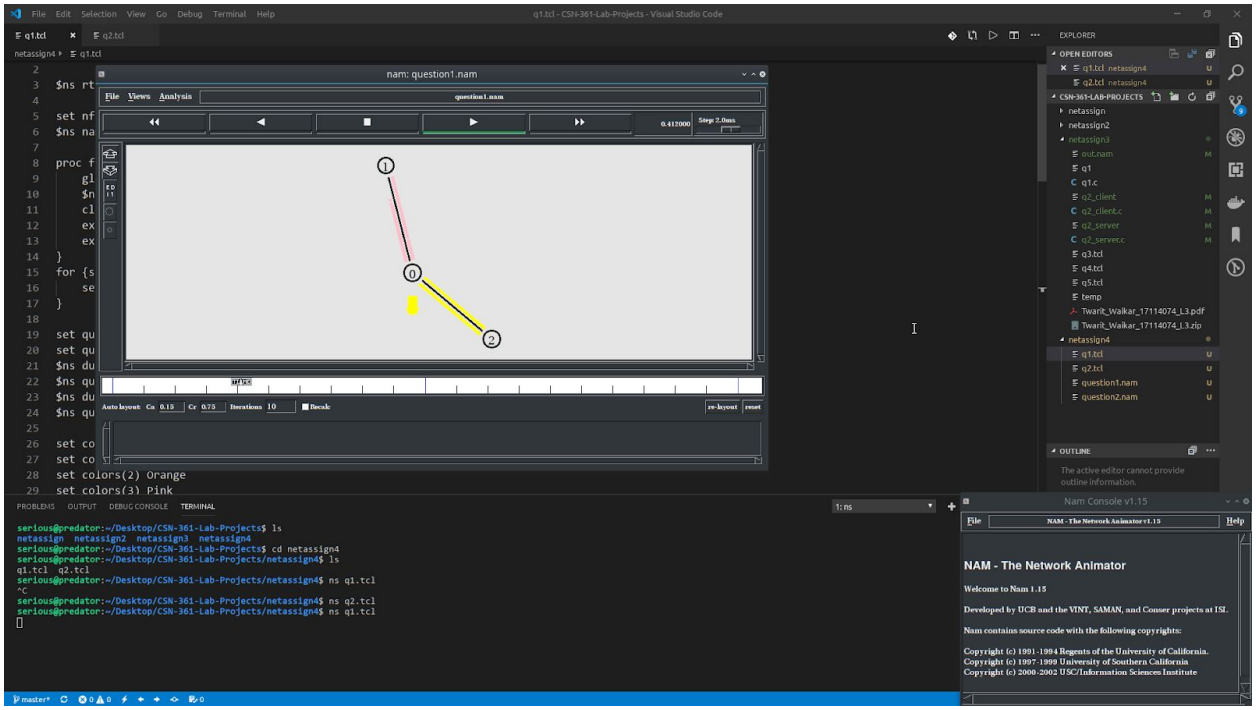
When queue size is reduced, more packets are dropped, and if the bandwidth is increased, packet dropped are lesser.

Question 2:
Connections exist such that they send data to and from nodes 0-4 and 5-1.

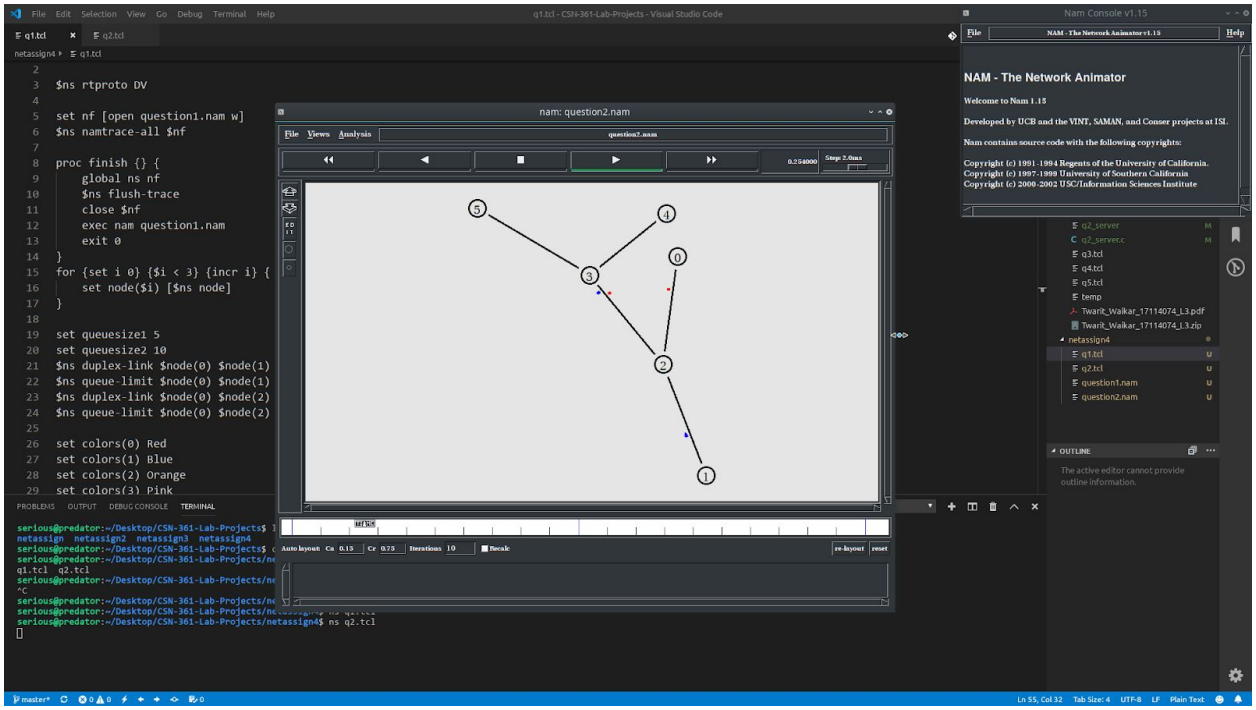
When queue size is reduced, more packets are dropped, while, if bandwidth is increased, packet dropped are less.

Snapshots

Question 1


nam: question1.nam
File Views Analysis
question1.nam
Step 2.0ms
Auto layout Ca 0.15 Cr 0.75 Iterations 10 Recalc
re-layout reset
$ns rt
set nf
$ns na
proc f
gl
$n
cl
ex
ex
}
for {s
se
}
set qu
set qu
$ns du
$ns qu
$ns du
$ns qu
set co
set co
set colors(2) Orange
set colors(3) Pink
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
serious@predator:~/Desktop/CSN-361-Lab-Projects$ ls
netassign netassign2 netassign3 netassign4
serious@predator:~/Desktop/CSN-361-Lab-Projects$ cd netassign4
serious@predator:~/Desktop/CSN-361-Lab-Projects/netassign4$ ls
q1.tcl q2.tcl
serious@predator:~/Desktop/CSN-361-Lab-Projects/netassign4$ ns q1.tcl
^C
serious@predator:~/Desktop/CSN-361-Lab-Projects/netassign4$ ns q2.tcl
serious@predator:~/Desktop/CSN-361-Lab-Projects/netassign4$ ns q1.tcl
Nam Console v1.15
File
NAM - The Network Animator v1.15
Help
NAM - The Network Animator
Welcome to Nam 1.15
Developed by UCB and the VINT, SAMAN, and Conser projects at ISI.
Nam contains source code with the following copyrights:
Copyright (c) 1991-1994 Regents of the University of California.
Copyright (c) 1997-1999 University of Southern California
Copyright (c) 2000-2002 USC/Information Sciences Institute
EXPLORER
OPEN EDITORS
CSN-361-LAB-PROJECTS
netassign
netassign2
netassign3
out.nam
q1
q1.c
q2_client
q2_client.c
q2_server
q2_server.c
q3.tcl
q4.tcl
q5.tcl
temp
Twarit_Walkar_17114074_L3.pdf
Twarit_Walkar_17114074_L3.zip
netassign4
q1.tcl
q2.tcl
question1.nam
question2.nam
OUTLINE
The active editor cannot provide outline information.

Question 2:


$ns rtproto DV
set nf [open question1.nam w]
$ns namtrace-all $nf
proc finish {} {
global ns nf
$ns flush-trace
close $nf
exec nam question1.nam
exit 0
}
for {set i 0} {$i < 3} {incr i} {
set node($i) [$ns node]
}
set queuesize1 5
set queuesize2 10
$ns duplex-link $node(0) $node(1)
$ns queue-limit $node(0) $node(1)
$ns duplex-link $node(0) $node(2)
$ns queue-limit $node(0) $node(2)
set colors(0) Red
set colors(1) Blue
set colors(2) Orange
set colors(3) Pink
nam: question2.nam
File Views Analysis
question2.nam
Step 2.0ms
Auto layout Ca 0.15 Cr 0.75 Iterations 10 Recalc
re-layout reset
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
serious@predator:~/Desktop/CSN-361-Lab-Projects$ ns q2.tcl
Nam Console v1.15
File
NAM - The Network Animator v1.15
Help
NAM - The Network Animator
Welcome to Nam 1.15
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q2_server
q2_server.c
q3.tcl
q4.tcl
q5.tcl
temp
Twarit_Walkar_17114074_L3.pdf
Twarit_Walkar_17114074_L3.zip
netassign4
q1.tcl
q2.tcl
question1.nam
question2.nam
OUTLINE
The active editor cannot provide outline information.