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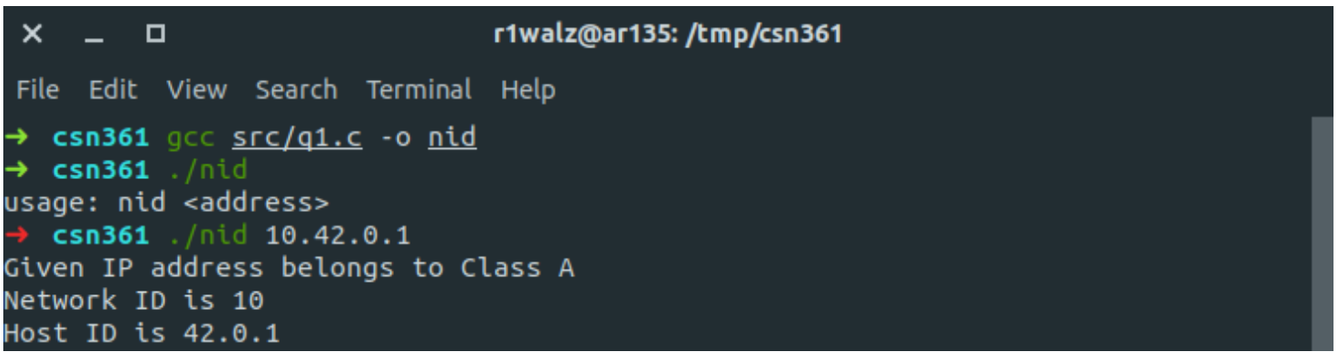
Dept	CSE
Batch	CS 2
Class	B. Tech 3rd yr

Lab Assignment 3

This assignment aims to make the students familiar with the hardware and software aspects of computer networking and extracting information related to computer networking using C programs, TCL programs and NS2.

Problem Statement 1

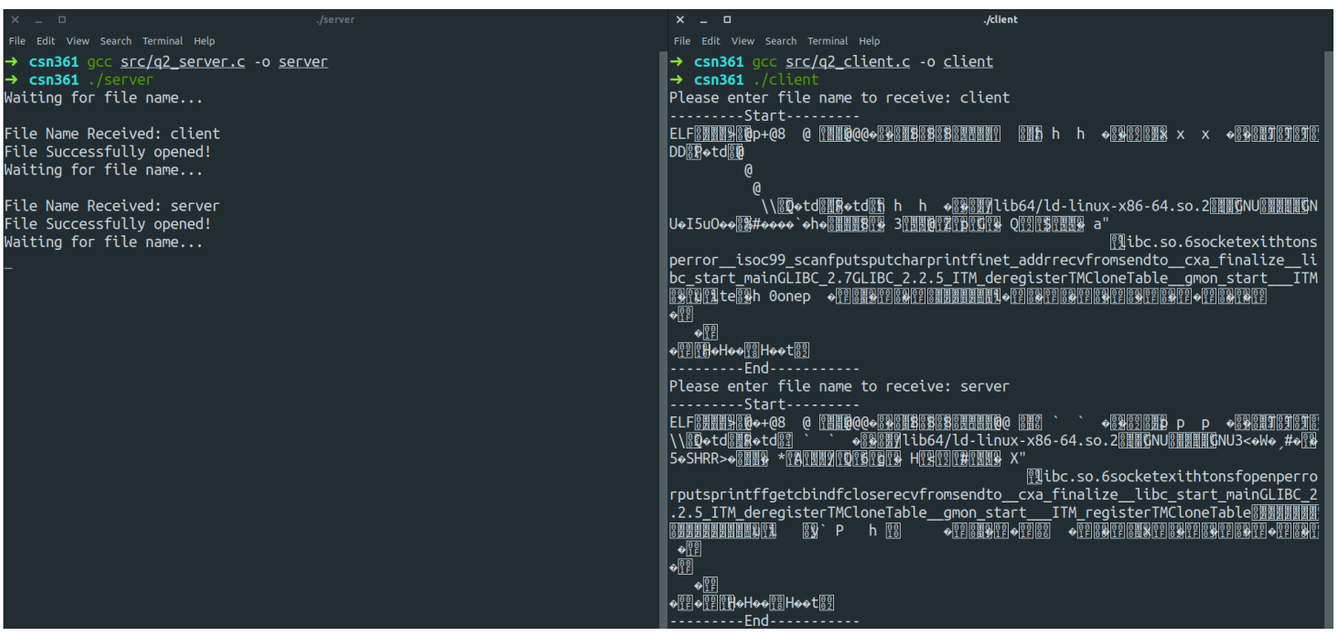
***Q:** Write a socket program in C to determine class, Network and Host ID of an IPv4 address.*



No special data structures or algorithms were used. Simple switch-case was used to get the required information.

Problem Statement 2

***Q:** Write a C program to demostrate File Transfer using UDP.*

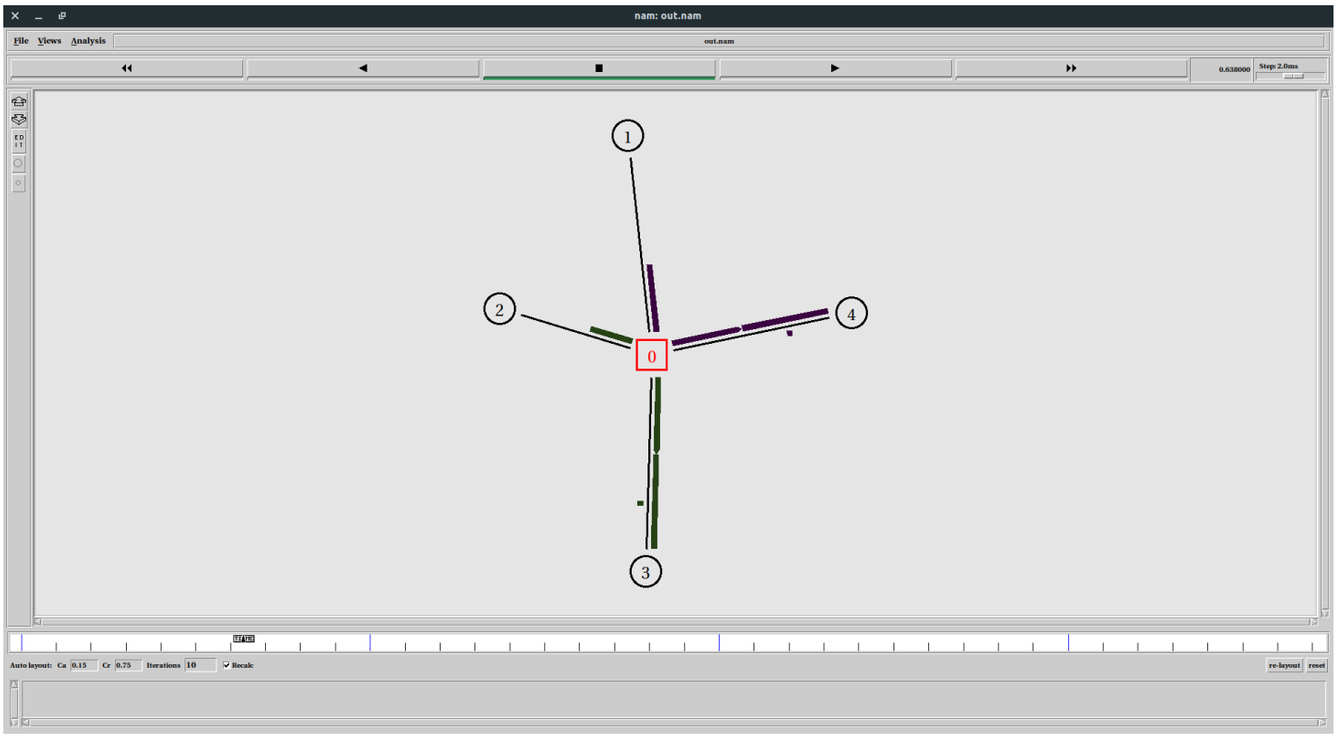


We used infinite loops in both the server and client code to continuously run the sessions. We read the files and maintain a buffer to transfer the file.

Problem Statement 3

***Q:** Write a TCL code for network simulator NS2 to demostrate the **star** topology among a set of computer nodes. Given N nodes, one node will be assigned as the central node and the other nodes will be connected to it to form the star. You have to set up a TCP connection between k pairs of nodes and demostrate the packet transfer between them using Network Animator (NAM). Use File Transfer Protocol (FTP) for the same. Each link should have different color of packets to differentiate the packets transferred between each pair of nodes. The program should take the number of nodes (N) as input followed by k pairs of nodes.*

```
r1walz@ar135: /tmp/csn361
File  Edit  View  Search  Terminal  Help
→  ~ /tmp/csn361
→  csn361 ns src/q3.tcl
Enter number of nodes:
5
Enter number of connections:
2
Please enter connections as comma seperated pairs(for eg "2,3"):
1,4
2,3
```

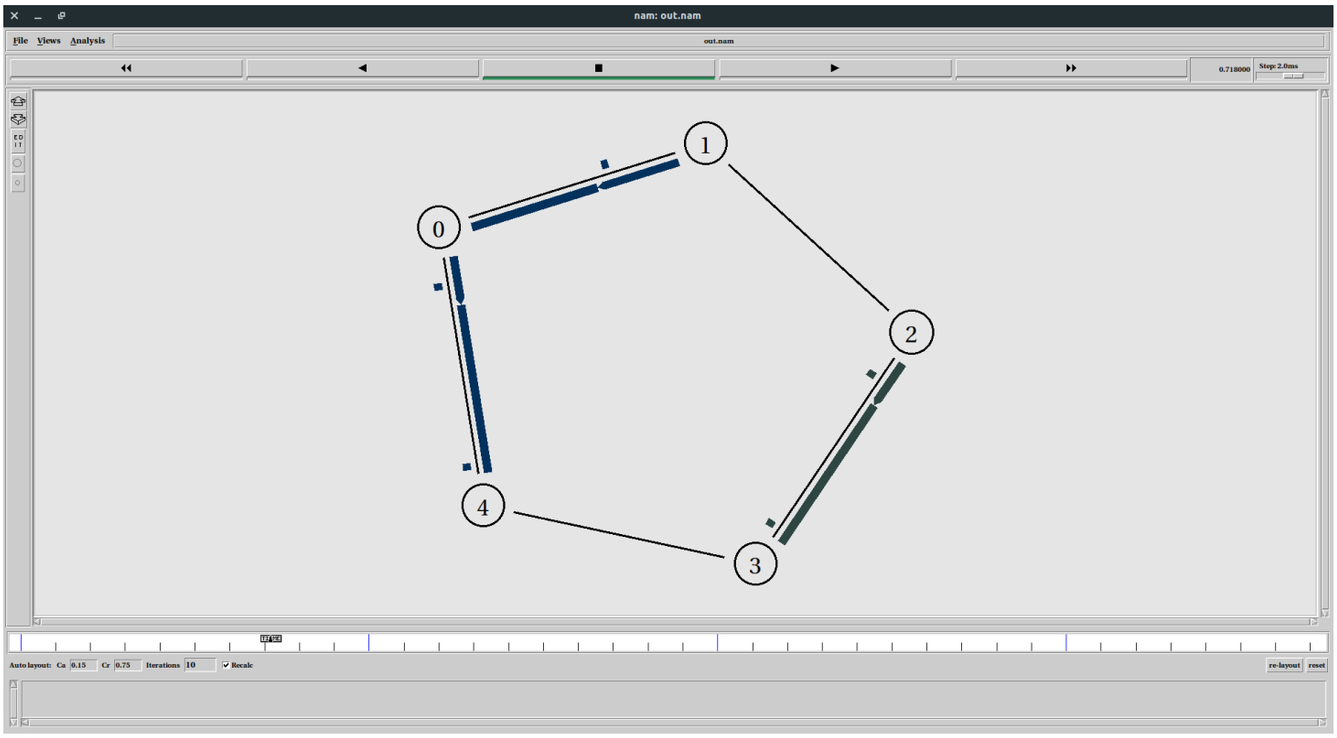


We make a list of N nodes after we get the value of N. We use a list of N colors randomly and uniquely chosen.

Problem Statement 4

Q: *Write a TCL code for network simulator NS2 to demonstrate the ring topology among a set of computer nodes. Given N nodes, each node will be connected to two other nodes in the form of a ring. You have to set up a TCP connection between k pairs of nodes and demonstrate packet transfer between them using Network Animator (NAM). Use File Transfer protocol (FTP) for the same. Each link should have different color of packets to differentiate the packets transferred between each pair of nodes. The program should take the number of nodes (N) as input followed by k pairs of nodes.*

```
r1walz@ar135: /tmp/csn361
File  Edit  View  Search  Terminal  Help
→ csn361 ns src/q4.tcl
Enter number of nodes:
5
Enter number of connections:
2
Please enter connections as comma seperated pairs(for eg "2,3"):
1,4
2,3
```

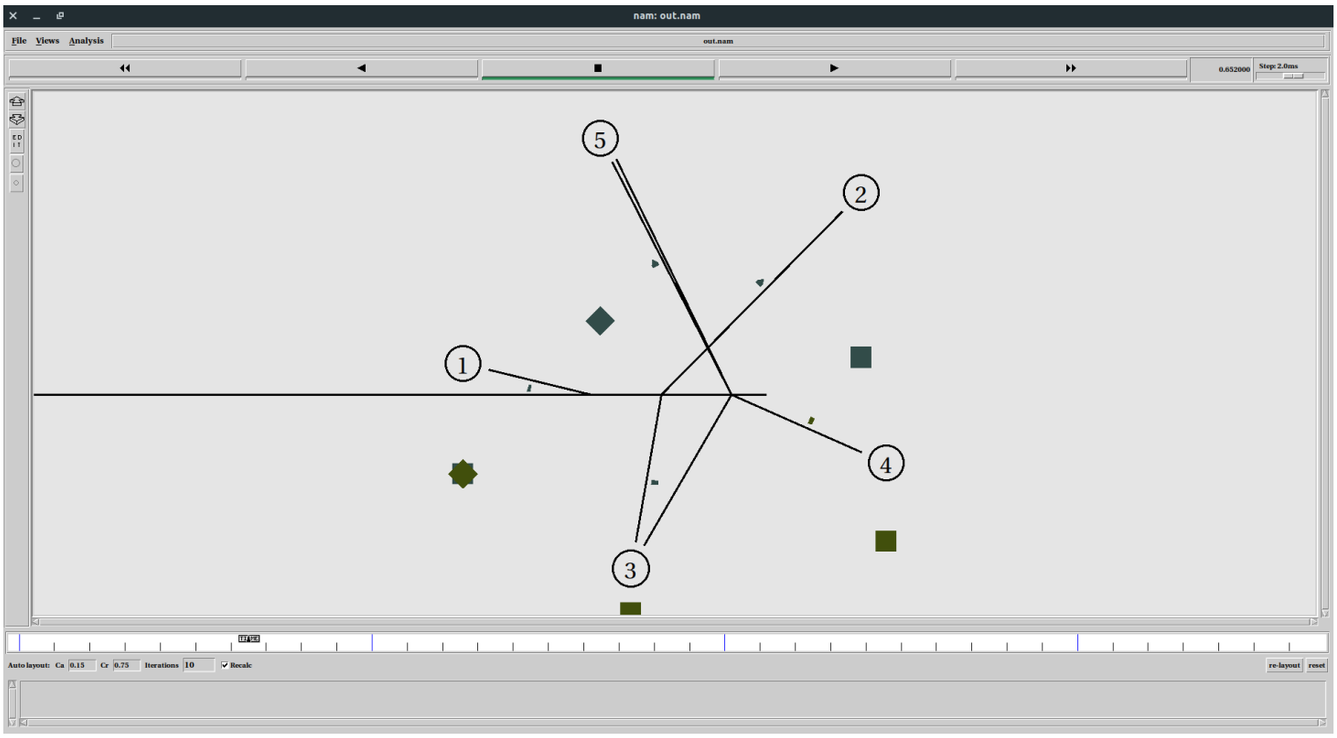


We make a list of N nodes of the we get the value of N. We use a list of N colors randomly and uniquely chosen.

Problem Statement 5

Q: *Write a TCL code for network simulator NS2 to demonstrate the bus topology among a set of computer nodes. Given N nodes, each node will be connected to a common link. You have to set up a TCP connection between k pairs of nodes and demonstrate packet transfer between them using Network Animator (NAM). Use File Transfer protocol (FTP) for the same. Each link should have different color of packets to differentiate the packets transferred between each pair of nodes. The program should take the number of nodes (N) as input followed by k pairs of nodes.*

```
r1walz@ar135: /tmp/csn361
File  Edit  View  Search  Terminal  Help
→ csn361 ns src/q5.tcl 2>/dev/null
Enter number of nodes:
5
Enter number of connections:
2
Please enter connections as comma seperated pairs(for eg "2,3"):
1,4
2,3
```



We make a list of N nodes of the we get the value of N. We use a list of N colors randomly and uniquely chosen.