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B.Tech, Cse, 3rd Year
Lab Assignment 3
Csn-361

Problem Statement 1

Write a socket program in c to determine class, Host and Network of an IPv4 address.

Ans:

1->For determining the class: the idea is to check first octet of IP address.
2->For determining the Network and Host ID: we know that Subnet Mask for Class A is 8, for Class B is 16 and for Class C is 24 whereas Class D and E is not divided into Network and Host ID.

Here, I have taken two examples one from class C and other from class A.

```
sgupta@Shivalix:~$ cd Desktop/csn361/csn-361\ Assgn3/
sgupta@Shivalix:~/Desktop/csn361/csn-361 Assgn3$ gcc q1.c
sgupta@Shivalix:~/Desktop/csn361/csn-361 Assgn3$ ./a.out

Input IP address is: 192.226.12.11
Given IP address belongs to Class C
Network ID is 192.226.12
Host ID is 11

Input IP address is: 1.4.5.5
Given IP address belongs to Class A
Network ID is 1
Host ID is 4.5.5
```

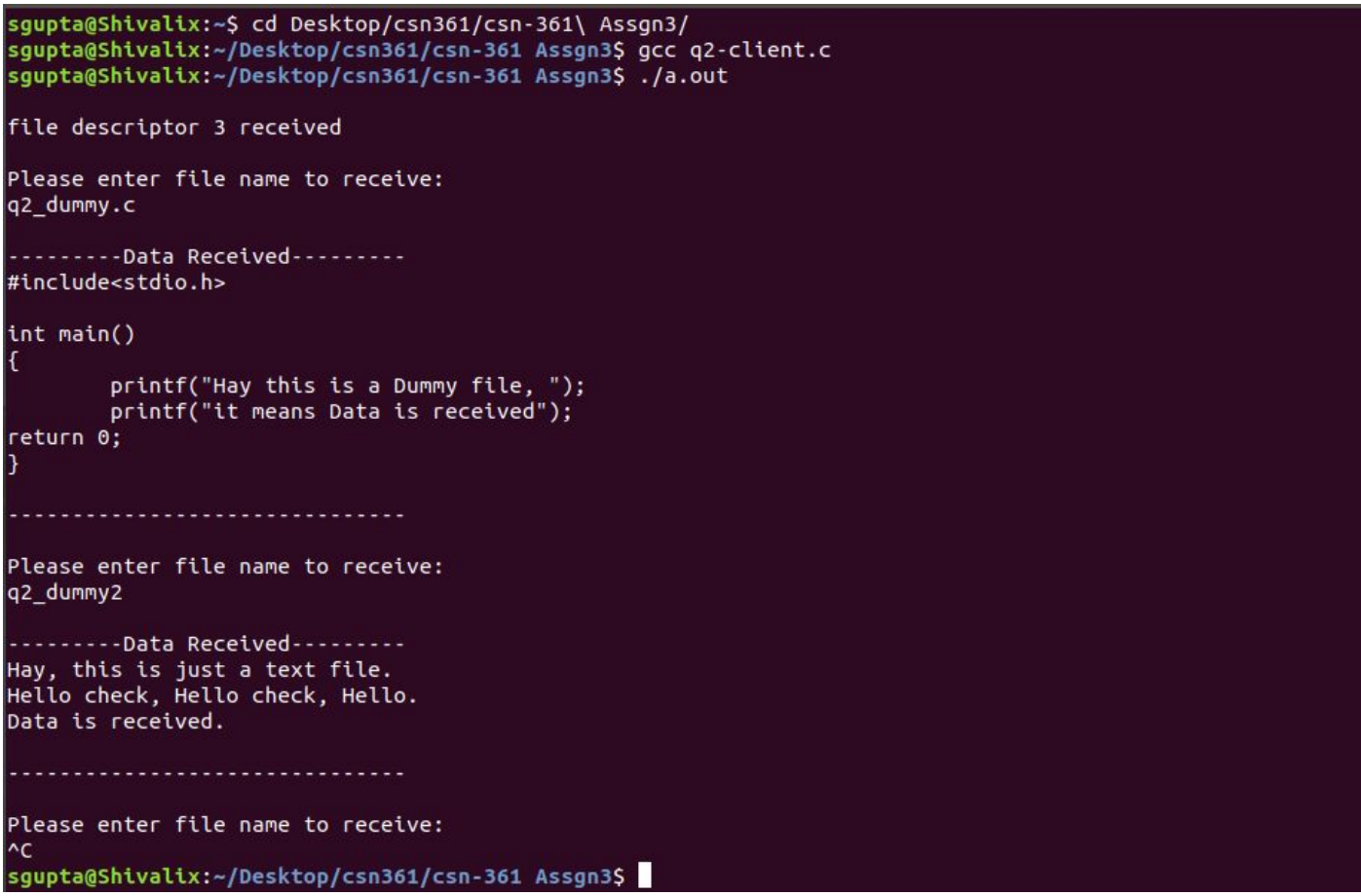
Problem Statement 2

Write a C program to demonstrate file transfer using UDP.

Ans: Algorithm used:
1. The server starts and waits for filename.
2. The client sends a filename.
3. The server receives filename.If file is present, server starts reading file and continues to send a buffer filled with file contents encrypted until file-end is reached.
4. End is marked by EOF.
5. File is received as buffers until EOF is
received. Then it is decrypted.
6. If Not present, a file not found is sent.

Screenshot 1:-> Server Side.

Screenshot 2:-> Client Side.



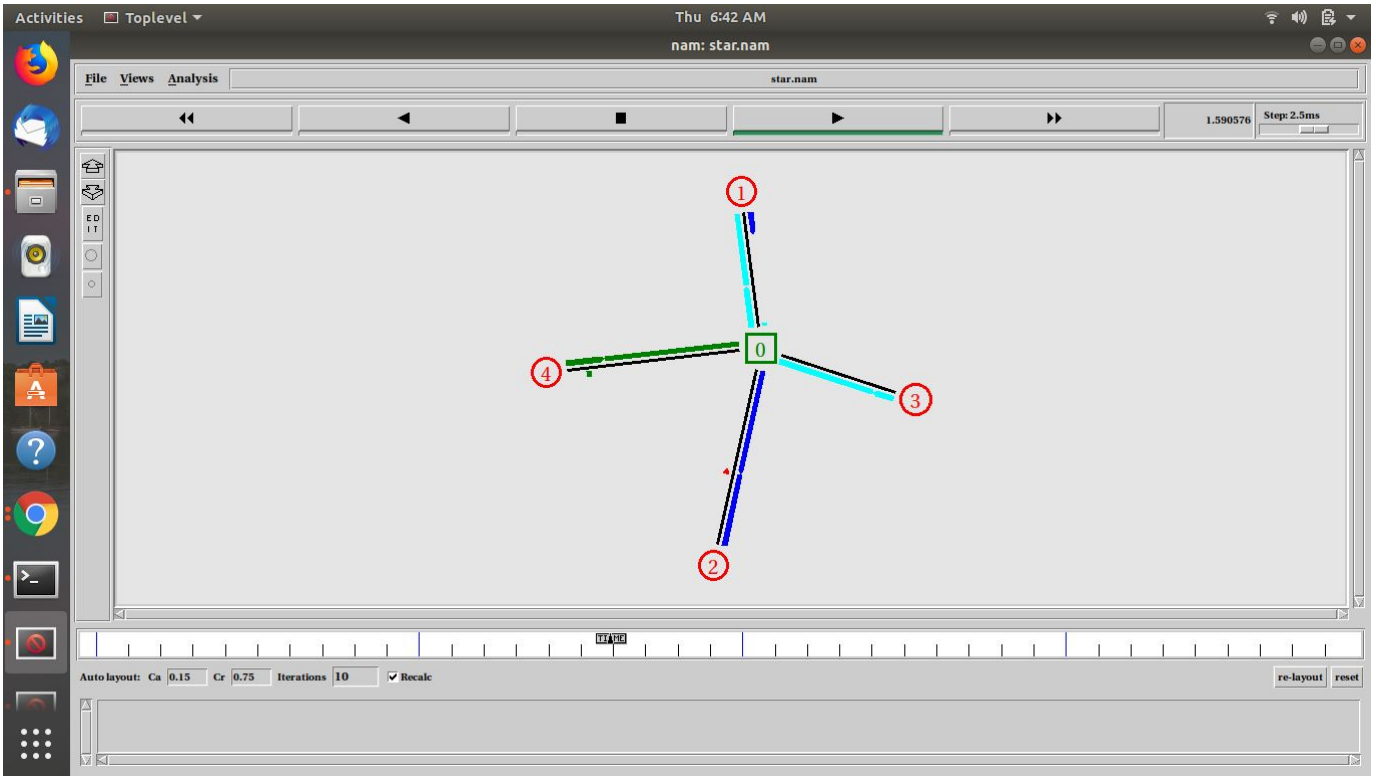
Problem Statement 3

Write a TCL code for network simulator NS2 to demonstrate 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 demonstrate the packet transfer between them using Network Animator(NAM). Use File Protocol for the same.Each link should have different color of packets to differentiate between the packages transferred between each pair of nodes. The program should take the number of nodes(N) as input followed by k pairs of nodes.

Ans:

Here, i have given input N = 5, K = 4.

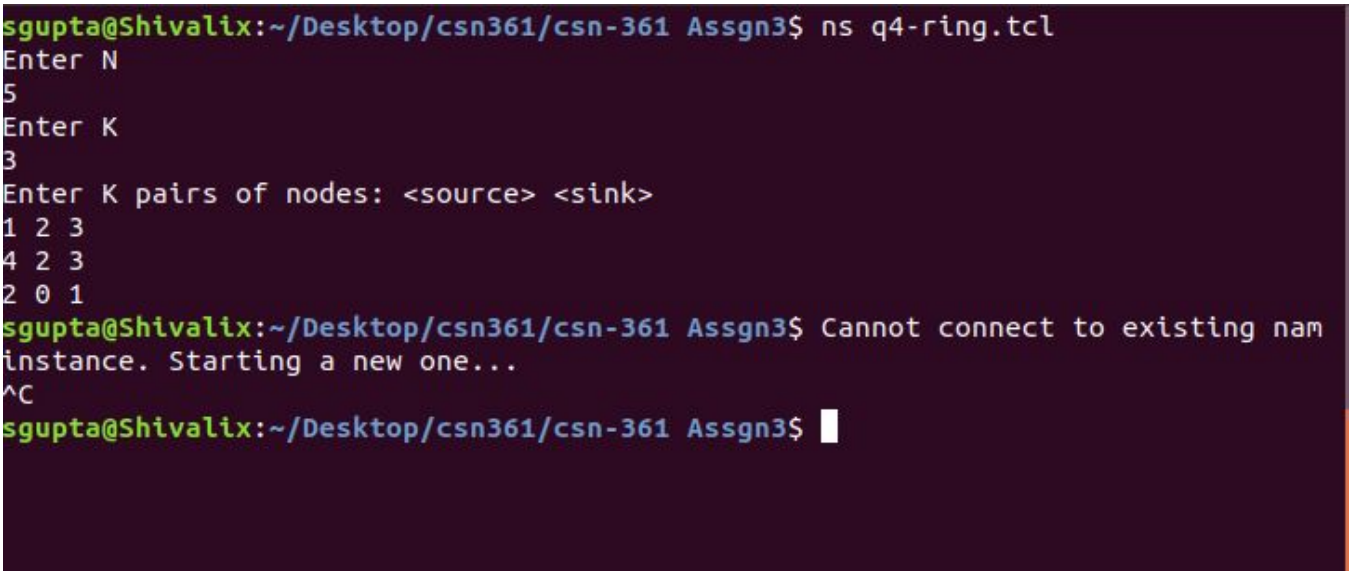
```
sgupta@Shivalix:~/Desktop/csn361/csn-361 Assgn3$ ns q3-star.tcl
Enter N
5
Enter K
4
Enter K pairs of nodes: <source> <sink>
1 2 3 4
0 2 3 1
3 1 4 2
4 0 3 2
sgupta@Shivalix:~/Desktop/csn361/csn-361 Assgn3$ Cannot connect to existing nam
instance. Starting a new one...
^C
sgupta@Shivalix:~/Desktop/csn361/csn-361 Assgn3$
```

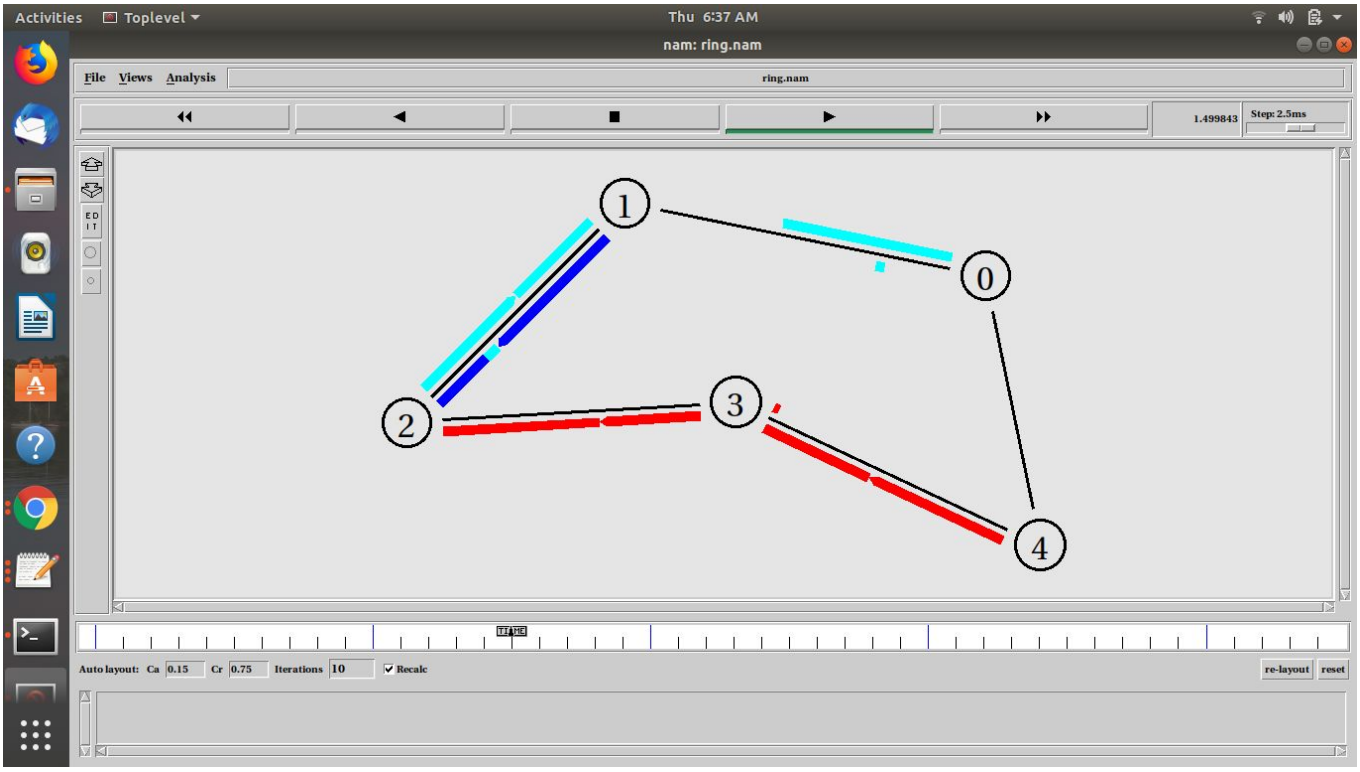


Problem Statement 4

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 the packet transfer between them using Network Animator(NAM). Use File Protocol for the same.Each link should have different color of packets to differentiate between the packages transferred between each pair of nodes. The program should take the number of nodes(N) as input followed by k pairs of nodes.

Ans:
Here, i have given input N = 4, K = 3.





Problem Statement 5

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 a common link. You have to set up a TCP connection between k pairs of nodes and demonstrate the packet transfer between them using Network Animator(NAM). Use File Protocol for the same.Each link should have different color of packets to differentiate between the packages transferred between each pair of nodes. The program should take the number of nodes(N) as input followed by k pairs of nodes.

Ans:
Here, i have given input N = 3, K = 2.

```
sgupta@Shivalix:~$ cd Desktop/csn361/csn-361\ Assgn3/
sgupta@Shivalix:~/Desktop/csn361/csn-361 Assgn3$ ns q5-bus.tcl
Enter N
5
warning: no class variable LanRouter::debug_

        see tcl-object.tcl in tclcl for info about this warning.

Enter K
2
Enter K pairs of nodes: <source> <sink>
1 2
3 4
sgupta@Shivalix:~/Desktop/csn361/csn-361 Assgn3$ Cannot connect to existing nam
instance. Starting a new one...
^C
sgupta@Shivalix:~/Desktop/csn361/csn-361 Assgn3$
```