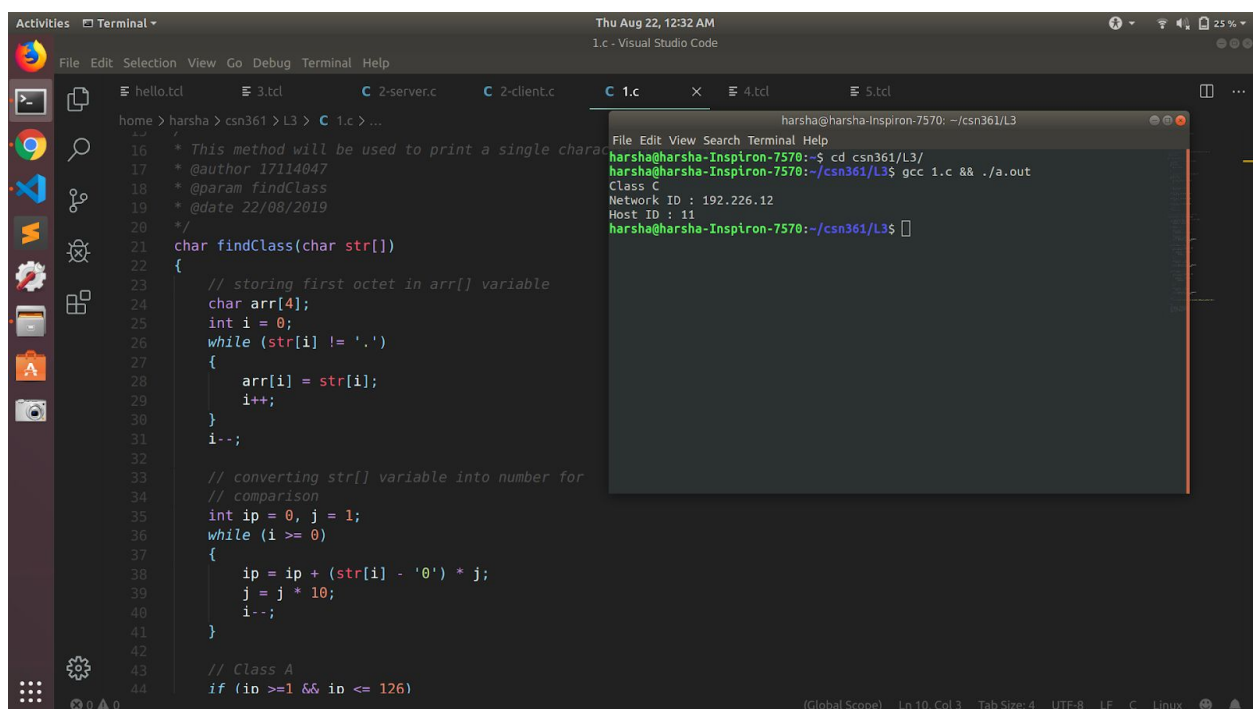


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1. Write a socket program in C to determine class, Network and Host ID of an IPv4 address.

A.



The screenshot shows a Visual Studio Code editor with a C program named `1.c` and its terminal output. The program is designed to determine the class, Network ID, and Host ID of an IPv4 address. The code includes comments and uses a `findClass` function to determine the class based on the first octet. The terminal output shows the execution of the program, which successfully identifies the class as C, the Network ID as 192.226.12, and the Host ID as 11.

```
home > harsha > csn361 > L3 > C 1.c > ...  
16  * This method will be used to print a single character  
17  * @author: 17114047  
18  * @param findClass  
19  * @date 22/08/2019  
20  */  
21  char findClass(char str[])  
22  {  
23      // storing first octet in arr[] variable  
24      char arr[4];  
25      int i = 0;  
26      while (str[i] != '.')  
27      {  
28          arr[i] = str[i];  
29          i++;  
30      }  
31      i--;  
32  
33      // converting str[] variable into number for  
34      // comparison  
35      int ip = 0, j = 1;  
36      while (i >= 0)  
37      {  
38          ip = ip + (str[i] - '0') * j;  
39          j = j * 10;  
40          i--;  
41      }  
42  
43      // Class A  
44      if (ip >= 1 && ip <= 126)
```

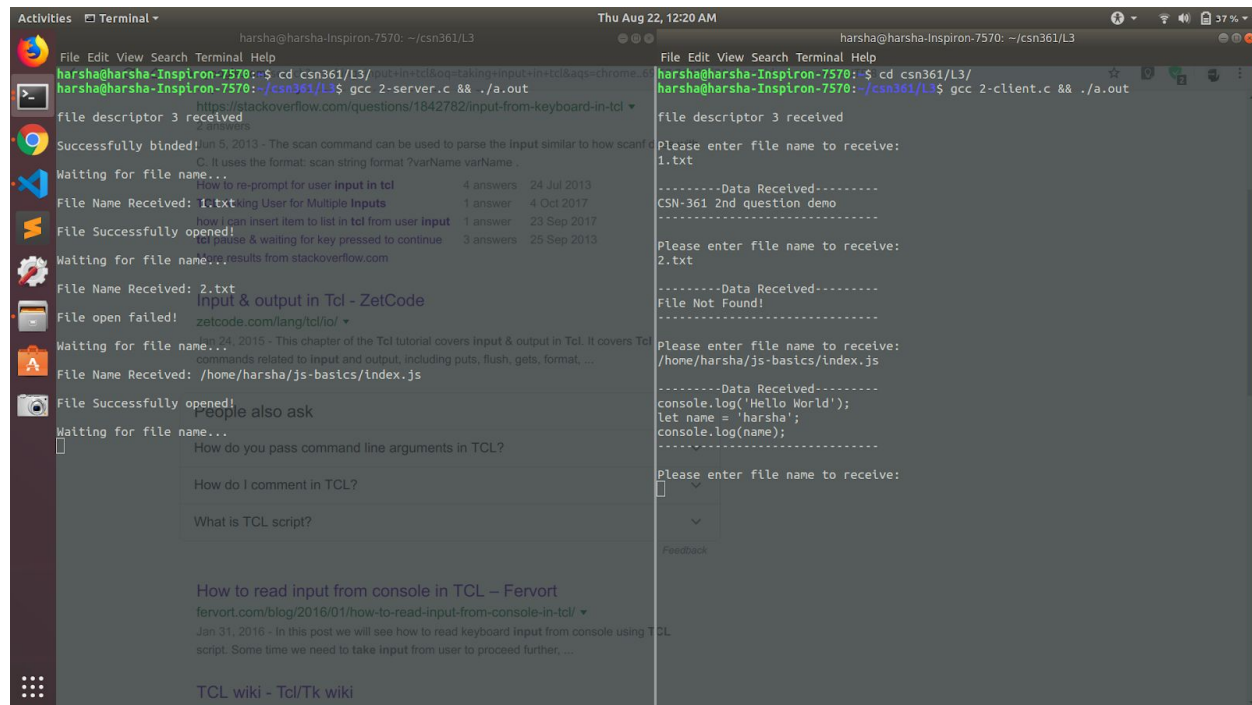
```
harsha@harsha-Inspiron-7570: ~/csn361/L3  
harsha@harsha-Inspiron-7570:~$ cd csn361/L3/  
harsha@harsha-Inspiron-7570:~/csn361/L3$ gcc 1.c && ./a.out  
Class C  
Network ID : 192.226.12  
Host ID : 11  
harsha@harsha-Inspiron-7570:~/csn361/L3$
```

Data Structures and Functions used:

- `char findClass(char str[])` : find the class of the IP address based on the first octet.
- `void separate(char str[], char ipClass)` : find the Network ID and Host ID from the class.

2. Write a C program to demonstrate File Transfer using UDP

A.



```

harsha@harsha-Inspiron-7570: ~/csn361/L3
harsha@harsha-Inspiron-7570:~$ cd csn361/L3/
harsha@harsha-Inspiron-7570:~/csn361/L3$ gcc 2-server.c && ./a.out
file descriptor 3 received
Please enter file name to receive:
1.txt
-----Data Received-----
CSN-361 2nd question demo
-----
Please enter file name to receive:
2.txt
-----Data Received-----
File Not Found!
-----
Please enter file name to receive:
/home/harsha/js-basics/index.js
-----Data Received-----
console.log('Hello World');
let name = 'harsha';
console.log(name);
-----
Please enter file name to receive:

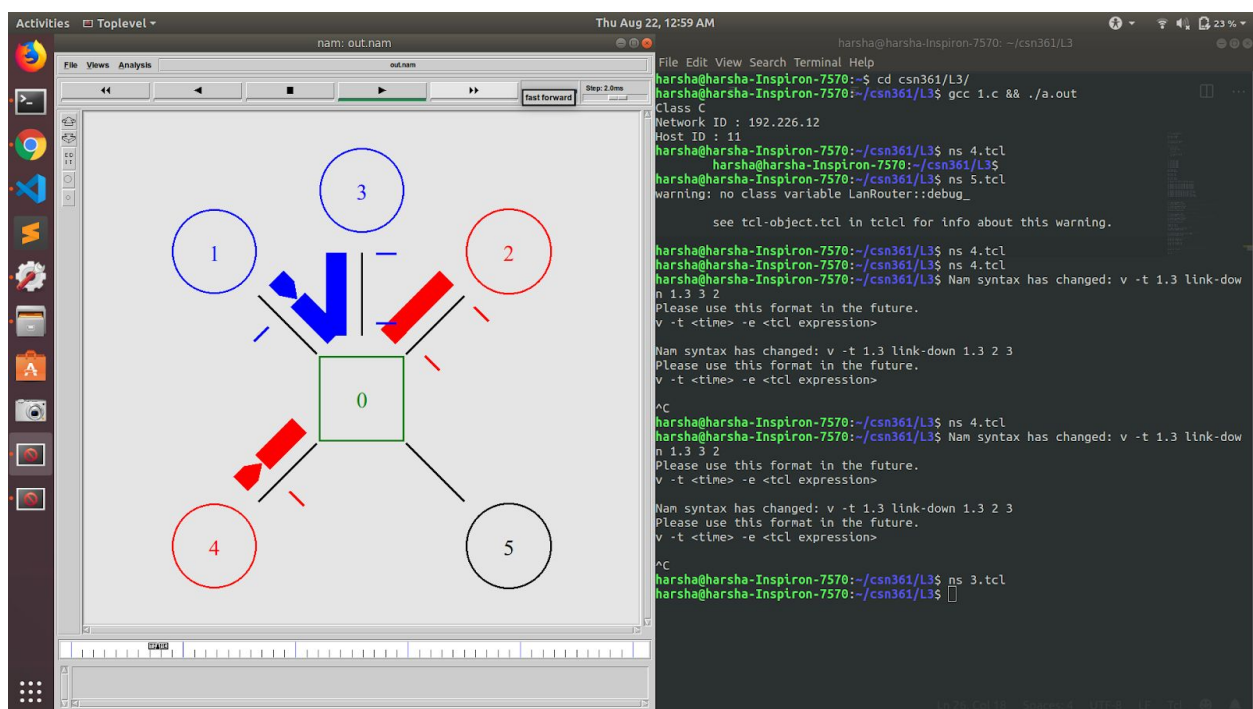
```

Data Structures and Functions used:

- `sockfd = socket(AF_INET, SOCK_DGRAM, IP_PROTOCOL)` : The `socket()` call creates a socket in the specified domain and of the specified type.

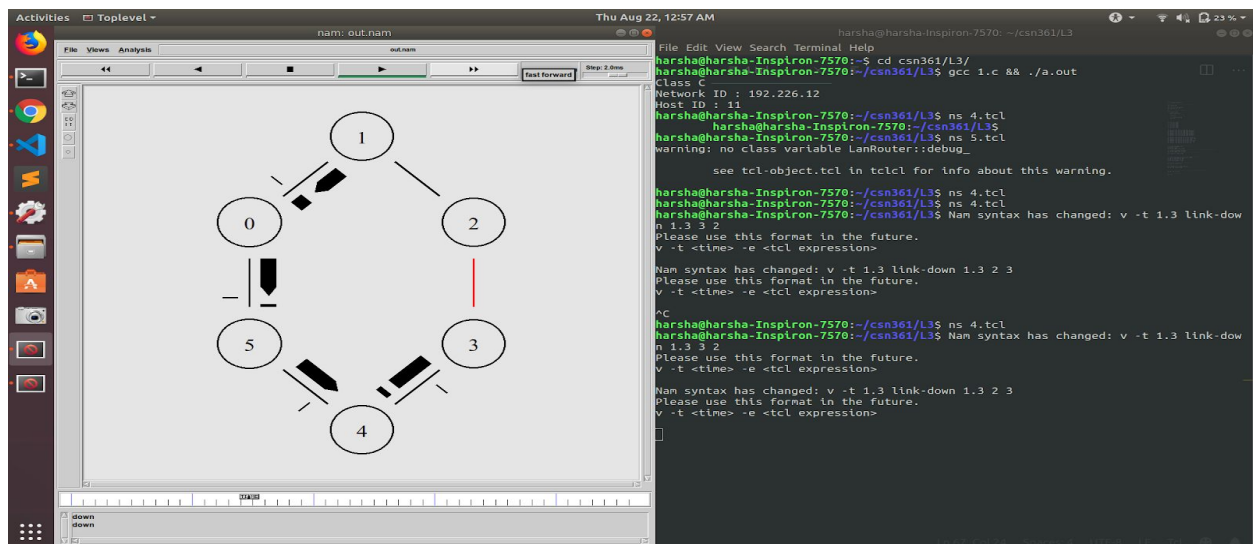
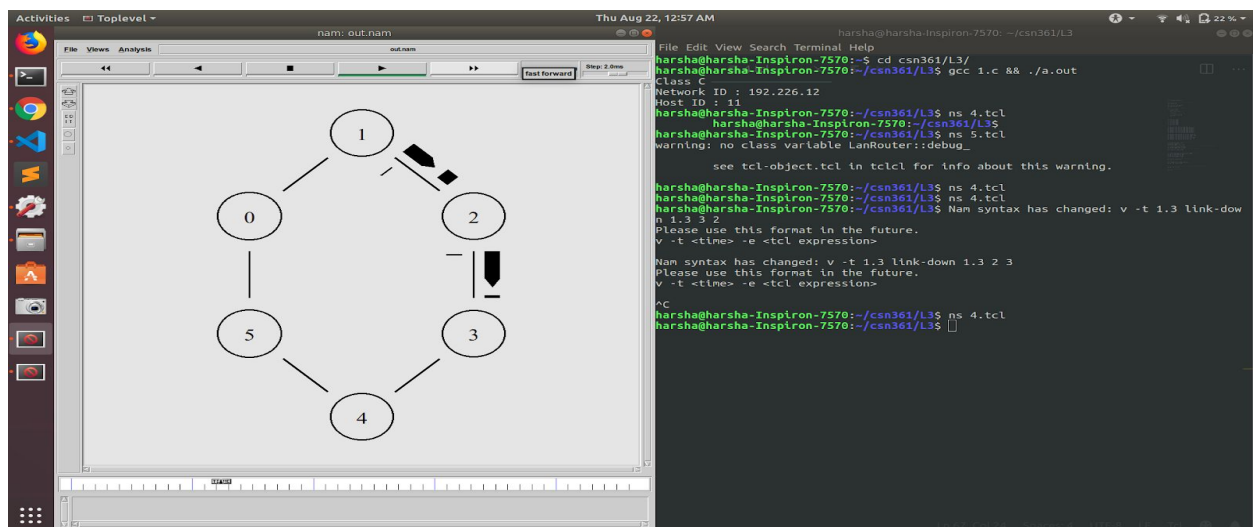
3. Write a TCL code for network simulator NS2 to demonstrate the star topology among a set of computer nodes. Given N nodes, one node will be assigned as the central node and the other nodes will be connected to it to form the star. You have to set up a TCP connection between k pairs of nodes and demonstrate the packet transfer between them using Network Animator (NAM). Use File 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.

A.



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 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

A.



5. 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.

A.

