Computer Networks Lab 4

OBJECTIVE:

IPv4 addresses are 32-bit integers that will be expressed in decimal notation. A network mask determines what subnet an IP address belongs to. An IP address has a network address and a host address. The first two numbers represent the network address and the second two represent the network's host.

PROBLEM STATEMENT:

The problem here is to implement a code to display the class of IP address, and network mask and generate the subnet IP address based on the subnet bits entered from the keyboard.

ALGORITHM:

- Take IP address as input and split with "."

- determining the class of the given IP address

- network and host address

- getting the network class

- printing the host and network ID

CODE:

```
def findClass(ip):
    if (ip[0] >= 0 and ip[0] <= 127):
        return "A"

    elif (ip[0] >= 128 and ip[0] <= 191):
        return "B"

    elif (ip[0] >= 192 and ip[0] <= 223):
       return "C"

    elif (ip[0] >= 224 and ip[0] <= 239):
       return "D"

    else:
       return "E"



def separate(ip, className):


# for class A network
 if (className == "A"):
    print("Network Address is : ", ip[0])
    print("Host Address is : ", ".".join(ip[1:4]))
    print("Subnet Mask: 255.0.0.0")

# for class B network
 elif (className == "B"):
    print("Network Address is : ", ".".join(ip[0:2]))
    print("Host Address is : ", ".".join(ip[2:4]))
    print("Subnet Mask: 255.255.0.0")

# for class C network
 elif (className == "C"):
    print("Network Address is : ", ".".join(ip[0:3]))
    print("Host Address is : ", ip[3])
    print("Subnet Mask: 255.255.225.0")
```

```
    else:
        print("In this Class, IP address is not divided into Network and Host ID")
        print("Subnet Mask: Not applicable")


if __name__ == "__main__":


    ip = input('Enter IP address : ')
    ip = ip.split(".")
    ip = [int(i) for i in ip]


# getting the network class
networkClass = findClass(ip)
print("Given IP address belongs to class : ", networkClass)

# printing network and host id
ip = [str(i) for i in ip]
separate(ip, networkClass)
```

Code:

```
In [4]: runfile('C:/Users/MOHITH/untitled0.py', wdir='C:/Users/MOHITH')

Enter IP address : 192.168.1.9
Given IP address belongs to class :  C
Network Address is :  192.168.1
Host Address is :  9
Subnet Mask: 255.255.225.0
```

EXPLANATION:

The IP address is 192.168.1.9. Here the first octet will range from 192 so it ranges from 192 to 223 so it belongs to class “C”. The subnet mask for class C is 255.255.225.0. The IP address is divided into the network address which is 192.168.1 and the host address is 9.

PROBLEMS FACED:

I found it difficult to find out network mask and subnet IP address initially and implementing it in code challenged me.

CONCLUSION:

This code is used to display the class of IP address and also network and host address by taking input from the user, the code is written using python language.