Batch: B1

Roll Number: 16010420133 **Experiment Number: 1**

Name: Soumen samanta

Title of the Experiment: Implement IP Address Classification concept

Program:

```
import re

print("Enter the IP Address: ", end="")
IP = input()

IP_structure = re.compile("\d{1,3}.\d{1,3}.\d{1,3}.\d{1,3}$")
flag = IP_structure.match(IP)

IP_split = str(IP).split(".")

if(flag):
    for i in IP_split:
        if not (0 <= int(i) < 256):
            flag = False
        if (len(i) >= 2 and i[0] == "0"):
            flag = False

if(flag):
    print("The IP Address is Valid")
    print("The binary form is: ", end="")
    for i in IP_split:
        print(format(int(i), "08b"), end=" ")
    print()
    if(int(IP_split[0]) <= 127):
        print("This IP Adress belongs to class A")
        print("The network address is: ", IP_split[0])
        print("The host address is: ", ".".join(IP_split[1:]))
    elif(int(IP_split[0]) > 127 and int(IP_split[0]) <= 191):
        print("This IP Address belongs to class B")
        print("The network address is: ", ".".join(IP_split[:2]))
        print("The host address is: ", ".".join(IP_split[1:]))
    elif(int(IP_split[0]) > 191 and int(IP_split[0]) <= 223):
        print("This IP Address belongs to class C")
        print("The network address is: ", ".".join(IP_split[:3]))
        print("The host address is: ", IP_split[3])
    elif(int(IP_split[0]) > 223 and int(IP_split[0]) <= 239):
        print("This IP Address belongs to class D")
    else:
```

```
        print("This IP Address belongs to class E")
else:
    print("Invalid IP Address!")

print(“Soumen samanta B1 16010420133”)
```

Output:

```
Enter the IP Address: 123.23.231.123
The IP Address is Valid
The binary form is: 01111011 00010111 11100111 01111011
This IP Adress belongs to class A
soumen samanta B1 16010420133
PS C:\Users\hp\OneDrive\Desktop\vs code\DCN>
```

Post Lab Question- Answers (If Any):

1) Which class of address is used for unicast, multicast and broadcast?

Ans)

Class C is used as the class of address for unicast.

Class D is used as the class of address for multicast.

An IP broadcast address is the highest number in its class for example the broadcast address of a class A 127.156.24 network is 127.169.36.243; The broadcast address for a subnet must account for the part of the address that is reserved for the subnet.

2) IPv4 uses __bit address

Ans) 32

3) Which addressing is used at IP layer?

Ans) b) Logical

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4) What is fragmentation?

Ans) IP fragmentation is an Internet Protocol (IP) process that breaks packets into smaller pieces (fragments), so that the resulting pieces can pass through a link with a smaller maximum transmission unit (MTU) than the original packet size. The fragments are reassembled by the receiving host.

5) What is classless addressing?

Ans) Classless Addressing is an improved IP Addressing system. It makes the allocation of IP Addresses more efficient. It replaces the older classful addressing system based on classes. It is also known as Classless Inter Domain Routing (CIDR)

CO: Understand the data communication systems, network topologies and network devices.

Conclusion:

Python was the programming language used for coding. In this experiment we involved two fields of studies namely, python programming and data communication and networking, it was not only an interesting task to do but also very informative.

The requires output for the program was achieved successfully.