Batch: A3 **Experiment Number:5**

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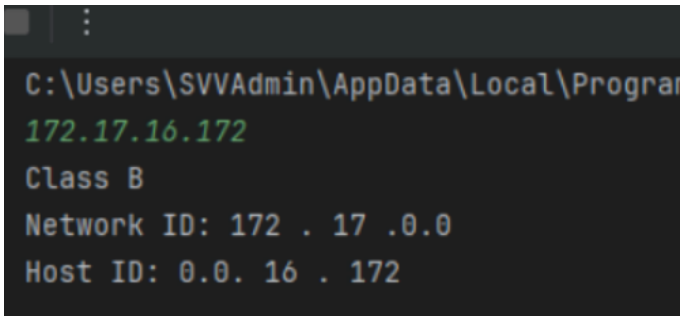
Aim of the Experiment: To write a program to identify the class to which a given IP Address belong to.

Program/ Steps:

```
a, b, c, d = list(map(int, input("Enter IP address (x.x.x.x): ").split(".")))
if a in range(1, 128):
    print("Class A")
    print("Network ID:", a, ".0.0.0")
    print("Host ID: 0.", b, ".", c, ".", d)
elif a in range(128, 192):
    print("Class B")
    print("Network ID:", a, ".", b, ".0.0")
    print("Host ID: 0.0.", c, ".", d)
elif a in range(192, 224):
    print("Class C")
    print("Network ID:", a, ".", b, ".", c, ".0")
    print("Host ID: 8.0.0.", d)
elif a in range(224, 240):
    print("Class D")
    print("This is a multicast address, no network/host ID.")
elif a in range(240, 256):
    print("Class E")
    print("This is a reserved experimental address, no network/host ID.")
else:
```

```
print("Invalid IP address")
```

Output/Result:



Post Lab Question-Answers:

Which OSI layer corresponds to IP Layer?

Ans: The IP layer corresponds to the Network Layer (Layer 3) of the OSI model.

Compare IPv4 and IPv6 header

Ans: IPv4 headers are 20-60 bytes long, while IPv6 headers are fixed at 40 bytes. IPv4 uses 32-bit addresses; IPv6 uses 128-bit addresses. IPv4 includes options for fragmentation; IPv6 handles fragmentation differently, delegating it to the sender.

What is fragmentation?

Ans: Fragmentation is the process of breaking down a packet into smaller pieces to fit within the size limits of the network's Maximum Transmission Unit (MTU).

Explain Subnetting and Supernetting with examples ?

Ans: Subnetting divides a larger network into smaller, manageable sub-networks (e.g., splitting 192.168.1.0/24 into 192.168.1.0/26 and 192.168.1.64/26). Supernetting aggregates multiple smaller networks into a larger one (e.g., combining 192.168.0.0/24 and 192.168.1.0/24 into 192.168.0.0/23).

Outcomes:

CO2: Build the skills of subnetting and routing mechanisms.

Conclusion (based on the Results and outcomes achieved):

Successfully executed a python program to identify the class to which a given IP Address belongs to.

References:

Books/ Journals/ Websites:

- Behrouz A Forouzan, Data Communication and Networking, Tata Mc Graw hill, India, 4th Edition
- A. S. Tanenbaum," Computer Networks", 4th edition, Prentice Hall