Computer Networks Lab sheet 1

```
PS C:\Users\exam> ipconfig

Windows IP Configuration


Ethernet adapter Ethernet:

   Connection-specific DNS Suffix  . : am.amrita.edu
   Link-local IPv6 Address . . . . . : fe80::369b:33a2:51a0:b892%14
   IPv4 Address. . . . . . . . . . . : 192.168.199.114
   Subnet Mask . . . . . . . . . . . : 255.255.252.0
   Default Gateway . . . . . . . . . : fe80::e2f6:2d00:b3:a6de%14
                                       fe80::e2f6:2d00:b3:9d4c%14
                                       192.168.199.251
```

IP Address : 192.168.199.114

Subnet Mask : 255.255.252.0

Default Gateway : fe80::e2f6:2d00:b3:a6de%14

fe80::e2f6:2d00:b3:9d4c%14

192.168.199.251

1. Ping the IP address of the default gateway

```
PS C:\Users\exam> ping 192.168.199.251

Pinging 192.168.199.251 with 32 bytes of data:
Reply from 192.168.199.251: bytes=32 time<1ms TTL=255
Reply from 192.168.199.251: bytes=32 time<1ms TTL=255
Reply from 192.168.199.251: bytes=32 time<1ms TTL=255
Reply from 192.168.199.251: bytes=32 time<1ms TTL=255

Ping statistics for 192.168.199.251:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

2. Ping the IP address of a DHCP or DNS server

```
PS C:\Users\exam> ipconfig /all

Windows IP Configuration

   Host Name . . . . . . . . . . . . : amffc114
   Primary Dns Suffix  . . . . . . . : am.students.amrita.edu
   Node Type . . . . . . . . . . . . : Hybrid
   IP Routing Enabled. . . . . . . . : No
   WINS Proxy Enabled. . . . . . . . : No
   DNS Suffix Search List. . . . . . : am.students.amrita.edu
                                       am.amrita.edu

Ethernet adapter Ethernet:

   Connection-specific DNS Suffix  . : am.amrita.edu
   Description . . . . . . . . . . . : Intel(R) Ethernet Connection (11) I219-LM
   Physical Address. . . . . . . . . : A4-BB-6D-97-68-19
   DHCP Enabled. . . . . . . . . . . : Yes
   Autoconfiguration Enabled . . . . : Yes
   Link-local IPv6 Address . . . . . : fe80::369b:33a2:51a0:b892%14(Preferred)
   IPv4 Address. . . . . . . . . . . : 192.168.199.114(Preferred)
   Subnet Mask . . . . . . . . . . . : 255.255.252.0
   Lease Obtained. . . . . . . . . . : 05 August 2025 13:55:10
   Lease Expires . . . . . . . . . . : 07 August 2025 10:56:52
   Default Gateway . . . . . . . . . : fe80::e2f6:2d00:b3:a6de%14
                                       fe80::e2f6:2d00:b3:9d4c%14
                                       192.168.199.251
   DHCP Server . . . . . . . . . . . : 192.168.0.251
   DHCPv6 IAID . . . . . . . . . . . : 113255845
   DHCPv6 Client DUID. . . . . . . . : 00-01-00-01-2F-03-E1-8B-A4-BB-6D-97-68-19
   DNS Servers . . . . . . . . . . . : 192.168.0.251
                                       192.168.0.250
   Primary WINS Server . . . . . . . : 192.168.0.250
   NetBIOS over Tcpip. . . . . . . . : Enabled
```

DHCP Server : 192.168.0.251

```
PS C:\Users\exam> ping 192.168.0.251

Pinging 192.168.0.251 with 32 bytes of data:
Reply from 192.168.0.251: bytes=32 time<1ms TTL=126
Reply from 192.168.0.251: bytes=32 time=15ms TTL=126
Reply from 192.168.0.251: bytes=32 time<1ms TTL=126
Reply from 192.168.0.251: bytes=32 time<1ms TTL=126

Ping statistics for 192.168.0.251:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 15ms, Average = 3ms
```

3. Find the IP address of any one web server

```
PS C:\Users\exam> nslookup google.com
Server:  UnKnown
Address:  192.168.0.251

Non-authoritative answer:
Name:    google.com
Addresses:  2404:6800:4007:808::200e
          142.250.193.174
```

4. Find the IP address of any one search engine

```
PS C:\Users\exam> nslookup bing.com
Server:  UnKnown
Address:  192.168.0.251

Non-authoritative answer:
Name:    bing.com
Addresses:  2620:1ec:33::10
          2620:1ec:33:1::10
          150.171.27.10
          150.171.28.10
```

5. Trace a local host name or IP address

```
PS C:\Users\exam> tracert amffc114

Tracing route to amffc114.am.students.amrita.edu [fe80::369b:33a2:51a0:b892%14]
over a maximum of 30 hops:

  1    <1 ms    <1 ms    <1 ms  amffc114.am.students.amrita.edu [fe80::369b:33a2:51a0:b892]

Trace complete.
```

```
PS C:\Users\exam> tracert  192.168.199.114

Tracing route to amffc114.am.students.amrita.edu [192.168.199.114]
over a maximum of 30 hops:

  1    <1 ms    <1 ms    <1 ms  amffc114.am.students.amrita.edu [192.168.199.114]

Trace complete.
```

Host Name: amffc114

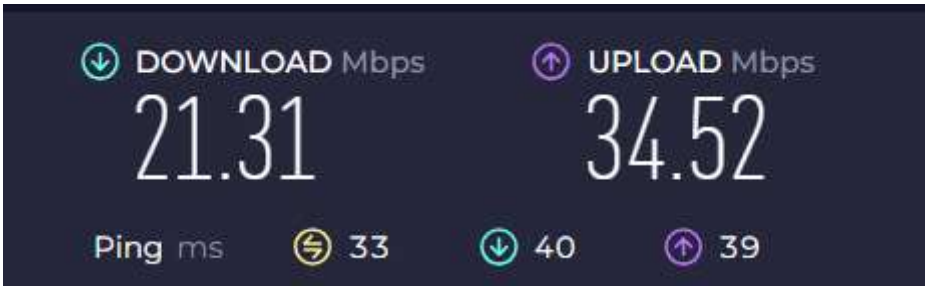
IP Address: 192.168.199.114

6. Trace other IP addresses or domain names

```
PS C:\Users\exam> nslookup amazon.com
Server:  UnKnown
Address:  192.168.0.251

Non-authoritative answer:
Name:    amazon.com
Addresses:  52.94.236.248
          54.239.28.85
          205.251.242.103
```

What is the speed of your Internet Access?



How do you access the Internet in your home? What networking devices do you use? Identify and draw a suitable network topology specifying the end devices and intermediary devices.

- At home, I access the Internet through a broadband connection (Fiber/DSL) provided by an Internet Service Provider (ISP).
- The connection comes into my home via a modem or directly to a Wi-Fi router.
- My devices (laptop, smartphone, smart TV, etc.) connect wirelessly (Wi-Fi)

Networking devices used:

- **Modem - Connects** to ISP line (fiber/cable/DSL).
- **Router/Wi-Fi Router –** Distributes the Internet connection to multiple devices (wired/wireless).
- **Switch** (optional, if multiple wired devices are used).
- End Devices – Laptops, Smartphones, Desktops, Smart TVs, Printers, IoT devices.
- The most suitable home topology is Star Topology, because all devices connect to a central device (router).

→ ISP

|

→ Modem

|

→ Router

|

→ End Devices (Laptops ,Phone ,Smart TV ,Printer)