# i. ipconfig, ipconfig /all

```
C:\Users\STUDENT>ipconfig
Windows IP Configuration

Ethernet adapter Ethernet:

Connection-specific DNS Suffix :
Link-local IPv6 Address . : fe80::a51d:d3ed:883f:2dc8%12
IPv8 Address . : 192.168.2.117
Subnet Mask . : 255.255.248.0
Default Gateway . : 192.168.7.254

C:\Users\STUDENT\ipconfig /all
Windows IP Configuration

Host Name . . . : DESKTOP-PC2HMJM
Primary Dns Suffix : :
Node Type . : Hybrid
IP Routing Enabled . : No
WINS Proxy Enabled . : No
Ethernet adapter Ethernet:

Connection-specific DNS Suffix :
Description . : Realtek PCIe GbE Family Controller
Physical Address . : 1C-66-6D-8F-25-DB
DHCP Enabled . : Ves
Autoconfiguration Enabled . : Yes
Link-local IPv6 Address : fe80::a51d:d3ed:883f:2dc8%12(Preferred)
IPv4 Address . : 192.168.2.117(Preferred)
Subnet Mask . : 255.255.248.0
Lease Obtained . : Friday, March 16, 2024 3:10:39 PM
Lease Expires . : Saturday, March 16, 2024 3:10:39 PM
Lease Expires . : Saturday, March 16, 2024 3:10:39 PM
Lease Expires . : Saturday, March 16, 2024 3:10:39 PM
Lease Expires . : Saturday, March 16, 2024 3:10:39 PM
Lease Expires . : Saturday, March 16, 2024 3:10:39 PM
Lease Expires . : Saturday, March 16, 2024 3:10:39 PM
Lease Expires . : Saturday, March 16, 2024 3:10:39 PM
Lease Expires . : Saturday, March 16, 2024 3:10:39 PM
Lease Expires . : Saturday, March 16, 2024 3:10:39 PM
Lease Expires . : Saturday, March 16, 2024 3:10:39 PM
Lease Expires . : Saturday, March 16, 2024 3:10:39 PM
Lease Expires . : Saturday, March 16, 2024 3:10:39 PM
Lease Expires . : Saturday, March 16, 2024 3:10:39 PM
Lease Expires . : Saturday, March 16, 2024 3:10:39 PM
Lease Expires . : Saturday, March 16, 2024 3:10:39 PM
Lease Expires . : Saturday, March 16, 2024 3:10:39 PM
Lease Expires . : Saturday, March 16, 2024 3:10:39 PM
Lease Expires . : Saturday, March 16, 2024 3:10:39 PM
Lease Expires . : Saturday, March 16, 2024 3:10:39 PM
Lease Expires . : Saturday, March 16, 2024 3:10:39 PM
Lease Expires . : Saturday, March 16, 2024 3:10:39 PM
Lease Expires . : Saturday, March 16, 2024 3:10:39 PM
Lease Ex
```

### ii. ipconfig /release, ipconfig /renew

```
C:\Users\STUDENT>ipconfig /release
Windows IP Configuration

Ethernet adapter Ethernet:

Connection-specific DNS Suffix .:
Link-local IPv6 Address . . . : fe80::a51d:d3ed:883f:2dc8%12
Default Gateway . . . . . :

C:\Users\STUDENT>ipconfig /renew

Windows IP Configuration

Ethernet adapter Ethernet:

Connection-specific DNS Suffix .:
Link-local IPv6 Address . . . : fe80::a51d:d3ed:883f:2dc8%12
IPv4 Address . . . . : 192.168.2.117
Subnet Mask . . . . . : 255.255.248.0
Default Gateway . . . . : 192.168.7.254
```

# iii. ipconfig /flushdns

#### Command Prompt

```
C:\Users\STUDENT>ipconfig /flushdns
Windows IP Configuration
Successfully flushed the DNS Resolver Cache.
C:\Users\STUDENT>
```

# iv. arp -a

```
C:\Users\STUDENT>arp -a
Interface: 192.168.2.117 --- 0xc
  Internet Address
                       Physical Address
                                              Type
  192.168.0.104
                        e4-54-e8-bd-b5-5a
                                              dynamic
  192.168.0.120
                        c4-71-54-30-cb-14
                                              dynamic
  192.168.0.124
                        8c-89-a5-d7-16-41
                                              dynamic
  192.168.1.24
                        b0-7b-25-25-ad-57
                                              dynamic
  192.168.2.57
                        3c-e9-f7-d1-e5-0c
                                              dynamic
  192.168.3.80
                        54-77-87-b6-b5-e4
                                              dynamic
  192.168.3.200
                        00-01-6c-d7-53-50
                                              dynamic
  192.168.4.168
                        d8-cb-8a-46-09-06
                                              dynamic
                        10-62-e5-10-b4-c6
                                              dynamic
  192.168.5.214
  192.168.6.225
                        bc-0f-f3-cd-26-e3
                                              dynamic
  192.168.7.39
                        c4-65-16-13-b3-bc
                                              dynamic
  192.168.7.56
                        d0-8e-79-05-f4-9b
                                              dynamic
  192.168.7.65
                        d8-cb-8a-27-a2-bb
                                              dynamic
  192.168.7.254
                        7c-5a-1c-c8-66-82
                                              dynamic
  192.168.7.255
                        ff-ff-ff-ff-ff
                                              static
  224.0.0.2
                        01-00-5e-00-00-02
                                              static
                        01-00-5e-00-00-16
  224.0.0.22
                                              static
  224.0.0.251
                        01-00-5e-00-00-fb
                                              static
                        01-00-5e-00-00-fc
  224.0.0.252
                                              static
  239.255.255.250
                        01-00-5e-7f-ff-fa
                                              static
  255.255.255.255
                        ff-ff-ff-ff-ff
                                              static
```

### v. systeminfo

```
C:\Users\STUDENT>systeminfo
Host Name:
                            DESKTOP-PC2HMJM
OS Name:
                            Microsoft Windows 10 Home
OS Version:
                            10.0.19042 N/A Build 19042
OS Manufacturer:
                            Microsoft Corporation
OS Configuration:
                            Standalone Workstation
OS Build Type:
                            Multiprocessor Free
Registered Owner:
Registered Organization:
Product ID:
Original Install Date:
                            00326-10000-00000-AA564
                            9/23/2022, 12:37:29 PM
System Boot Time:
                            3/14/2024, 11:20:37 AM
System Manufacturer:
                            LENOVO
System Model:
                            10KXA007IH
System Type:
                            x64-based PC
Processor(s):
                            1 Processor(s) Installed.
                            [01]: Intel64 Family 6 Model 94 Stepping 3 GenuineIntel ~2712 Mhz
BIOS Version:
                            LENOVO MOUKT24A, 9/1/2016
                            C:\Windows
Windows Directory:
System Directory:
                            C:\Windows\system32
Boot Device:
                            \Device\HarddiskVolume2
System Locale:
                            en-us; English (United States)
Input Locale:
                            00004009
Time Zone:
                            (UTC+05:30) Chennai, Kolkata, Mumbai, New Delhi
                            8,103 MB
Total Physical Memory:
Available Physical Memory: 4,466 MB
Virtual Memory: Max Size: 9,383 MB
Virtual Memory: Available: 4,902 MB
Virtual Memory: In Use:
                           4,481 MB
Page File Location(s):
                            C:\pagefile.sys
Domain:
                            WORKGROUP
                            \\DESKTOP-PC2HMJM
Logon Server:
                            6 Hotfix(s) Installed.
Hotfix(s):
                            [01]: KB4578968
                            [02]: KB4562830
                             [03]: KB4570334
                            [04]: KB4580325
[05]: KB4586864
                            [06]: KB4594440
                            1 NIC(s) Installed.
Network Card(s):
                            [01]: Realtek PCIe GbE Family Controller
                                  Connection Name: Ethernet
                                  DHCP Enabled:
                                                    Ves
                                  DHCP Server:
                                                    192.168.7.254
                                  IP address(es)
                                  [01]: 192.168.2.117
[02]: fe80::a51d:d3ed:883f:2dc8
                            VM Monitor Mode Extensions: Yes
Hyper-V Requirements:
                            Virtualization Enabled In Firmware: No
                            Second Level Address Translation: Yes
```

# vi. ping (Try -c, -s, -t options)

```
C:\Users\STUDENT>ping google.com
Pinging google.com [142.250.199.174] with 32 bytes of data:
Reply from 142.250.199.174: bytes=32 time=2ms TTL=118
Ping statistics for 142.250.199.174:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 2ms, Maximum = 2ms, Average = 2ms
C:\Users\STUDENT>ping -s 1 google.com
Pinging google.com [142.250.71.110] with 32 bytes of data:
Reply from 142.250.71.110: bytes=32 time=62ms TTL=118
Reply from 142.250.71.110: bytes=32 time=131ms TTL=118
Reply from 142.250.71.110: bytes=32 time=76ms TTL=118
Reply from 142.250.71.110: bytes=32 time=28ms TTL=118
Ping statistics for 142.250.71.110:
   Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
   Minimum = 28ms, Maximum = 131ms, Average = 74ms
C:\Users\STUDENT>ping -s 2 google.com
Pinging google.com [142.250.71.110] with 32 bytes of data:
Reply from 142.250.71.110: bytes=32 time=10ms TTL=118
Reply from 142.250.71.110: bytes=32 time=19ms TTL=118
Reply from 142.250.71.110: bytes=32 time=17ms TTL=118
Reply from 142.250.71.110: bytes=32 time=34ms TTL=118
Ping statistics for 142.250.71.110:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
   Minimum = 10ms, Maximum = 34ms, Average = 20ms
```

```
C:\Users\STUDENT>ping -s 3 google.com
Pinging google.com [142.250.71.110] with 32 bytes of data:
Reply from 142.250.71.110: bytes=32 time=8ms TTL=118
Reply from 142.250.71.110: bytes=32 time=12ms TTL=118
Reply from 142.250.71.110: bytes=32 time=8ms TTL=118
Reply from 142.250.71.110: bytes=32 time=9ms TTL=118
Ping statistics for 142.250.71.110:
   Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
   Minimum = 8ms, Maximum = 12ms, Average = 9ms
C:\Users\STUDENT>ping -s 4 google.com
Pinging google.com [142.250.71.110] with 32 bytes of data:
Reply from 142.250.71.110: bytes=32 time=9ms TTL=118
Reply from 142.250.71.110: bytes=32 time=52ms TTL=118
Reply from 142.250.71.110: bytes=32 time=15ms TTL=118
Reply from 142.250.71.110: bytes=32 time=32ms TTL=118
Ping statistics for 142.250.71.110:
   Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
   Minimum = 9ms, Maximum = 52ms, Average = 27ms
C:\Users\STUDENT>ping -t google.com
Pinging google.com [142.250.71.110] with 32 bytes of data:
Reply from 142.250.71.110: bytes=32 time=2ms TTL=118
Reply from 142.250.71.110: bytes=32 time=5ms TTL=118
Reply from 142.250.71.110: bytes=32 time=2ms TTL=118
Reply from 142.250.71.110: bytes=32 time=2ms TTL=118
Reply from 142.250.71.110: bytes=32 time=2ms TTL=118
Reply from 142.250.71.110: bytes=32 time=3ms TTL=118
Reply from 142.250.71.110: bytes=32 time=2ms TTL=118
Ping statistics for 142.250.71.110:
   Packets: Sent = 10, Received = 10, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
   Minimum = 2ms, Maximum = 5ms, Average = 2ms
Control-C
,C
C:\Users\STUDENT>_
```

### vii. nslookup

```
C:\Users\STUDENT>nslookup
Default Server: sophos.sfit.co.in
Address: 192.168.7.254

> www.google.com
Server: sophos.sfit.co.in
Address: 192.168.7.254

Non-authoritative answer:
Name: www.google.com
Addresses: 2404:6800:4009:832::2004
142.250.192.4
```

#### viii.tracert

```
C:\Users\STUDENT>tracert www.meta.com
Tracing route to star.c10r.facebook.com [163.70.143.15]
over a maximum of 30 hops:
                            <1 ms sophos.sfit.co.in [192.168.7.254]</pre>
       <1 ms
                  <1 ms
                            1 ms static-133.173.107.27-tataidc.co.in [27.107.173.133]
        1 ms
                   1 ms
                   2 ms
                                     10.129.10.226
                           2 ms 115.113.165.21.static-mumbai.vsnl.net.in [115.113.165.21]
30 ms 172.31.167.58
        11 ms
                   3 ms
                  30 ms
        30 ms
                            23 ms 14.141.123.226.static-Chennai.vsnl.net.in [14.141.123.226]
        24 ms
                  23 ms
                                     Request timed out.
                  34 ms 29 ms if-ae-7-2.tcore1.mlv-mumbai.as6453.net [180.87.36.33]
38 ms 29 ms ae31.pr02.bom1.tfbnw.net [157.240.81.208]
45 ms 39 ms po106.psw02.bom2.tfbnw.net [129.134.33.201]
 8
        31 ms
        33 ms
10
        38 ms
                  33 ms 31 ms 173.252.67.91
        32 ms
        28 ms
                  29 ms
                            28 ms edge-star-shv-01-bom2.facebook.com [163.70.143.15]
Trace complete.
```

#### ix. netstat

```
C:\Users\STUDENT>netstat
Active Connections
  Proto Local Address
                                Foreign Address
                                                        State
  TCP
         127.0.0.1:49679
                                DESKTOP-PC2HMJM:49680
                                                        ESTABLISHED
  TCP
         127.0.0.1:49680
                                DESKTOP-PC2HMJM:49679
                                                        ESTABLISHED
  TCP
         127.0.0.1:49681
                                DESKTOP-PC2HMJM:49682
                                                        ESTABLISHED
  TCP
         127.0.0.1:49682
                                DESKTOP-PC2HMJM:49681
                                                        ESTABLISHED
                                                        TIME_WAIT
  TCP
         192.168.2.117:7680
                                192.168.2.141:56815
                                                        TIME_WAIT
  TCP
         192.168.2.117:7680
                                192.168.5.214:56388
  TCP
         192.168.2.117:58040
                                20.198.118.190:https
                                                        ESTABLISHED
  TCP
         192.168.2.117:58055
                                sl-in-f188:5228
                                                        ESTABLISHED
                                20.198.119.84:https
  TCP
         192.168.2.117:58100
                                                        ESTABLISHED
  TCP
         192.168.2.117:58101
                                sg-in-f102:https
                                                        ESTABLISHED
                                                        TIME_WAIT
  TCP
         192.168.2.117:58103
                                123:http
                                20.219.9.219:https
                                                        TIME WAIT
  TCP
         192.168.2.117:58105
  TCP
         192.168.2.117:58106
                                a23-54-83-209:https
                                                        ESTABLISHED
  TCP
         192.168.2.117:58107
                                a23-54-83-209:https
                                                        CLOSE WAIT
                                20.141.12.34:https
  TCP
         192.168.2.117:58110
                                                        ESTABLISHED
  TCP
                                204.79.197.254:https
         192.168.2.117:58112
                                                        ESTABLISHED
                                52.140.48.131:https
  TCP
         192.168.2.117:58113
                                                        ESTABLISHED
  TCP
         192.168.2.117:58114
                                204.79.197.222:https
                                                        ESTABLISHED
  TCP
         192.168.2.117:58115
                                123:http
                                                        ESTABLISHED
```

#### x. route