Practical No. : 04

Objective: - To run and interpret ping command, its variants and other network troubleshooting commands.

1. **Ping IP Address/Domain Name(www.google.com)**

```
Administrator: Command Prompt

Microsoft Windows [Version 10.0.26100.3194]
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C:\Windows\System32>ping www.google.com

Pinging www.google.com [2404:6800:4002:822::2004] with 32 bytes of data:
Reply from 2404:6800:4002:822::2004: time=362ms
Reply from 2404:6800:4002:822::2004: time=258ms
Reply from 2404:6800:4002:822::2004: time=163ms
Reply from 2404:6800:4002:822::2004: time=396ms

Ping statistics for 2404:6800:4002:822::2004:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 163ms, Maximum = 396ms, Average = 294ms
```

2. **Ping -n 10** www.google.com

```
C:\Windows\System32>ping -n 10 www.google.com

Pinging www.google.com [2404:6800:4002:82e::2004] with 32 bytes of data:
Reply from 2404:6800:4002:82e::2004: time=1081ms
Reply from 2404:6800:4002:82e::2004: time=168ms
Reply from 2404:6800:4002:82e::2004: time=352ms
Reply from 2404:6800:4002:82e::2004: time=439ms
Reply from 2404:6800:4002:82e::2004: time=65ms
Reply from 2404:6800:4002:82e::2004: time=441ms
Reply from 2404:6800:4002:82e::2004: time=145ms
Reply from 2404:6800:4002:82e::2004: time=189ms
Reply from 2404:6800:4002:82e::2004: time=207ms
Reply from 2404:6800:4002:82e::2004: time=62ms

Ping statistics for 2404:6800:4002:82e::2004:
    Packets: Sent = 10, Received = 10, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 62ms, Maximum = 1081ms, Average = 314ms
```

3. **Ping** www.google.com **-t**

```
C:\Windows\System32>ping google.com -t

Pinging google.com [2404:6800:4002:82d::200e] with 32 bytes of data:
Reply from 2404:6800:4002:82d::200e: time=179ms
Reply from 2404:6800:4002:82d::200e: time=123ms
Reply from 2404:6800:4002:82d::200e: time=65ms
Reply from 2404:6800:4002:82d::200e: time=190ms
Reply from 2404:6800:4002:82d::200e: time=76ms
Reply from 2404:6800:4002:82d::200e: time=184ms
Reply from 2404:6800:4002:82d::200e: time=142ms
Reply from 2404:6800:4002:82d::200e: time=52ms
Reply from 2404:6800:4002:82d::200e: time=69ms
Reply from 2404:6800:4002:82d::200e: time=110ms
Reply from 2404:6800:4002:82d::200e: time=305ms
Reply from 2404:6800:4002:82d::200e: time=159ms
Reply from 2404:6800:4002:82d::200e: time=92ms
Reply from 2404:6800:4002:82d::200e: time=80ms
```

4. **Ping -f** www.google.com

```
C:\Windows\System32>ping -f google.com

Pinging google.com [142.250.193.238] with 32 bytes of data:
Reply from 142.250.193.238: bytes=32 time=87ms TTL=109
Reply from 142.250.193.238: bytes=32 time=97ms TTL=109
Reply from 142.250.193.238: bytes=32 time=100ms TTL=109
Reply from 142.250.193.238: bytes=32 time=112ms TTL=109

Ping statistics for 142.250.193.238:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 87ms, Maximum = 112ms, Average = 99ms

C:\Windows\System32>
```

5. **Ping -a 12.0.0.1**

```
C:\Windows\System32>ping -a 12.0.0.1

Pinging 12.0.0.1 with 32 bytes of data:
Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 12.0.0.1:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

6. Ping -a localhost

```
C:\Windows\System32>ping -a localhost

Pinging LAPTOP-EVCQ82GL [::1] with 32 bytes of data:
Reply from ::1: time<1ms
Reply from ::1: time<1ms
Reply from ::1: time<1ms
Reply from ::1: time<1ms

Ping statistics for ::1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\Windows\System32>
```

7. **Ping -a** www.google.com

```
C:\Windows\System32>ping -a www.google.com

Pinging www.google.com [2404:6800:4002:819::2004] with 32 bytes of data:
Reply from 2404:6800:4002:819::2004: time=30ms
Reply from 2404:6800:4002:819::2004: time=51ms
Reply from 2404:6800:4002:819::2004: time=127ms
Reply from 2404:6800:4002:819::2004: time=153ms

Ping statistics for 2404:6800:4002:819::2004:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 30ms, Maximum = 153ms, Average = 90ms

C:\Windows\System32>
```

8. Ping -a 2404:6800:4002:819::2004

```
C:\Windows\System32>ping -a 2404:6800:4002:819::2004

Pinging del11s14-in-x04.1e100.net [2404:6800:4002:819::2004] with 32 bytes of data:
Reply from 2404:6800:4002:819::2004: time=85ms
Reply from 2404:6800:4002:819::2004: time=43ms
Reply from 2404:6800:4002:819::2004: time=32ms
Reply from 2404:6800:4002:819::2004: time=32ms

Ping statistics for 2404:6800:4002:819::2004:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 32ms, Maximum = 85ms, Average = 48ms

C:\Windows\System32>
```

9. **Ping -l 100** www.google.com

```
C:\Windows\System32>ping -l 100 www.google.com

Pinging www.google.com [2404:6800:4002:813::2004] with 100 bytes of data:
Reply from 2404:6800:4002:813::2004: time=319ms
Reply from 2404:6800:4002:813::2004: time=181ms
Reply from 2404:6800:4002:813::2004: time=100ms
Reply from 2404:6800:4002:813::2004: time=89ms

Ping statistics for 2404:6800:4002:813::2004:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 89ms, Maximum = 319ms, Average = 172ms

C:\Windows\System32>sni
```

10. Ping google.com -I 5

```
C:\Windows\System32>ping www.google.com -i 5

Pinging www.google.com [2404:6800:4002:82e::2004] with 32 bytes of data:
Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 2404:6800:4002:82e::2004:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\Windows\System32>ping www.google.com -i 50

Pinging www.google.com [2404:6800:4002:82e::2004] with 32 bytes of data:
Reply from 2404:6800:4002:82e::2004: time=126ms
Reply from 2404:6800:4002:82e::2004: time=91ms
Reply from 2404:6800:4002:82e::2004: time=118ms
Reply from 2404:6800:4002:82e::2004: time=124ms

Ping statistics for 2404:6800:4002:82e::2004:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 91ms, Maximum = 126ms, Average = 114ms

C:\Windows\System32>
```

11. **Ping -R** www.google.com

```
C:\Windows\System32>ping -R google.com

Pinging google.com [2404:6800:4002:81e::200e] with 32 bytes of data:
Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 2404:6800:4002:81e::200e:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\Windows\System32>ping -R google.com
```

12. ipconfig/all

```
C:\Windows\System32>ipconfig/all

Windows IP Configuration

    Host Name . . . . . . . . . . . . : LAPTOP-EVCQ82GL
    Primary Dns Suffix  . . . . . . . :
    Node Type . . . . . . . . . . . . : Hybrid
    IP Routing Enabled. . . . . . . . : No
    WINS Proxy Enabled. . . . . . . . : No

Wireless LAN adapter Local Area Connection* 1:

    Media State . . . . . . . . . . . : Media disconnected
    Connection-specific DNS Suffix  . :
    Description . . . . . . . . . . . : Microsoft Wi-Fi Direct Virtual Adapter
    Physical Address. . . . . . . . . : 52-5A-65-F6-74-23
    DHCP Enabled. . . . . . . . . . . : Yes
    Autoconfiguration Enabled . . . . : Yes

Wireless LAN adapter Local Area Connection* 2:

    Media State . . . . . . . . . . . : Media disconnected
    Connection-specific DNS Suffix  . :
    Description . . . . . . . . . . . : Microsoft Wi-Fi Direct Virtual Adapter #2
    Physical Address. . . . . . . . . : 52-5A-65-F6-74-33
    DHCP Enabled. . . . . . . . . . . : Yes
    Autoconfiguration Enabled . . . . : Yes

Wireless LAN adapter Wi-Fi:

    Connection-specific DNS Suffix  . :
    Description . . . . . . . . . . . : MediaTek Wi-Fi 6 MT7921 Wireless LAN Card
    Physical Address. . . . . . . . . : 50-5A-65-F6-74-63
    DHCP Enabled. . . . . . . . . . . : Yes
    Autoconfiguration Enabled . . . . : Yes
    IPv6 Address. . . . . . . . . . . : 2409:40d0:3100:14b7:1570:ab6b:9eac:edc3(Preferred)
    Temporary IPv6 Address. . . . . . : 2409:40d0:3100:14b7:297e:a698:e7e4:6191(Preferred)
    Link-local IPv6 Address . . . . . : fe80::a0dc:78e3:c101:c0d0%14(Preferred)
    IPv4 Address. . . . . . . . . . . : 192.168.68.221(Preferred)
    Subnet Mask . . . . . . . . . . . : 255.255.255.0
    Lease Obtained. . . . . . . . . . : 27 February 2025 15:35:03
    Lease Expires . . . . . . . . . . : 27 February 2025 16:35:04
    Default Gateway . . . . . . . . . : fe80::48d9:f2ff:fedd:e02f%14
                                        192.168.68.220
    DHCP Server . . . . . . . . . . . : 192.168.68.220
    DHCPv6 IAID . . . . . . . . . . . : 223369829
    DHCPv6 Client DUID. . . . . . . . : 00-01-00-01-2E-EF-71-29-50-5A-65-F6-74-63
    DNS Servers . . . . . . . . . . . : 192.168.68.220
                                        2409:40d0:3100:14b7::c7
    NetBIOS over Tcpip. . . . . . . . : Enabled

Ethernet adapter Bluetooth Network Connection:

    Media State . . . . . . . . . . . : Media disconnected
```

```
    DHCP Server . . . . . . . . . . . : 192.168.68.220
    DHCPv6 IAID . . . . . . . . . . . : 223369829
    DHCPv6 Client DUID. . . . . . . . : 00-01-00-01-2E-EF-71-29-50-5A-65-F6-74-63
    DNS Servers . . . . . . . . . . . : 192.168.68.220
                                        2409:40d0:3100:14b7::c7
    NetBIOS over Tcpip. . . . . . . . : Enabled

Ethernet adapter Bluetooth Network Connection:

    Media State . . . . . . . . . . . : Media disconnected
    Connection-specific DNS Suffix  . :
    Description . . . . . . . . . . . : Bluetooth Device (Personal Area Network)
    Physical Address. . . . . . . . . : 50-5A-65-F6-74-62
    DHCP Enabled. . . . . . . . . . . : Yes
    Autoconfiguration Enabled . . . . : Yes

C:\Windows\System32>
```

13. tracert google.com

```
C:\Windows\System32>tracert google.com

Tracing route to google.com [2404:6800:4002:81b::200e]
over a maximum of 30 hops:

  1     43 ms      3 ms      3 ms  2409:40d0:3100:14b7::c7
  2    141 ms     60 ms     57 ms  2405:200:5202:29:3924:110:3:210
  3     27 ms     22 ms     32 ms  2405:200:5202:29:3925::1
  4     86 ms     55 ms     52 ms  2405:200:801:300::f0dc
  5      *         *         *     Request timed out.
  6      *         *         *     Request timed out.
  7      *         *         *     Request timed out.
  8      *         *         *     Request timed out.
  9    212 ms    121 ms     47 ms  2404:6800:8107::1
 10     54 ms     30 ms     37 ms  2001:4860:0:1::54ea
 11    425 ms     70 ms    123 ms  2001:4860:0:1::54f3
 12    249 ms     95 ms     75 ms  del11s16-in-x0e.1e100.net [2404:6800:4002:81b::200e]

Trace complete.

C:\Windows\System32>
```

14. nslookup google.com

```
C:\Windows\System32>nslookup google.com
Server:    UnKnown
Address:   192.168.68.220

Non-authoritative answer:
Name:      google.com
Addresses:  2404:6800:4002:82d::200e
           142.250.194.142


C:\Windows\System32>
```

15. arp -a

```
C:\Windows\System32>arp -a

Interface: 192.168.68.221 --- 0xe
  Internet Address      Physical Address      Type
  192.168.68.220        4a-d9-f2-dd-e0-2f      dynamic
  192.168.68.255        ff-ff-ff-ff-ff-ff      static
  224.0.0.22            01-00-5e-00-00-16      static
  224.0.0.251           01-00-5e-00-00-fb      static
  224.0.0.252           01-00-5e-00-00-fc      static
  239.255.255.250       01-00-5e-7f-ff-fa      static
  255.255.255.255       ff-ff-ff-ff-ff-ff      static

C:\Windows\System32>
```

16. netstat

```
C:\Windows\System32>netstat

Active Connections

  Proto  Local Address          Foreign Address        State
  TCP    192.168.68.221:49418   20.198.119.84:https    ESTABLISHED
  TCP    192.168.68.221:51665   a23-200-216-24:https   ESTABLISHED
  TCP    192.168.68.221:51668   52.98.123.194:https    ESTABLISHED
  TCP    192.168.68.221:51669   204.79.197.222:https   ESTABLISHED
  TCP    192.168.68.221:51671   13.107.6.254:https     ESTABLISHED
  TCP    192.168.68.221:51672   104.208.16.88:https    ESTABLISHED
  TCP    [2409:40d0:3100:14b7:297e:a698:e7e4:6191]:51664  whatsapp-chatd-edge6-shv-01-del2:http  ESTABLISHED
  TCP    [2409:40d0:3100:14b7:297e:a698:e7e4:6191]:51670  [2620:1ec:50::254]:https  ESTABLISHED

C:\Windows\System32>
```