

ASSIGNMENT:02

PROBLEM STATEMENT: Implementation of network commands like ping, netstat, ifconfig, ipconfig, netconfig, traceroute, telnet, finger, iptables, ipchains.

♦ ipconfig:

The ipconfig command in windows is used to display information about your network configuration and refresh DHCP and DNS Settings. By default, the ipconfig command displays your IP Address, Subnet Mask, and default gateway.

♦ ipconfig/all:

This will return the following information for each network adapter in your device:

Physical Address :This is the MAC address of your network adapter.

DHCP Enabled :Indicates if the network connection is using DHCP

IPv4 Address :The IP Address of your computer

Default Gateway :The router to which your computer is connected

DHCP Server: Router/server that hands out IP Addresses in your network

DNS Servers :Servers used to translate domain names to IP Addresses

Link-Local IPv6 Address: IPv6 address of your computer (often not used)

Lease Obtained :Date-time when your computer received the IP Address

♦ ifconfig :

In Linux, it helps to display all IP related details of the PC.

```
C:\Users\SUPRATIM NAG>ipconfig

Windows IP Configuration

Ethernet adapter Ethernet 2:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . : 

Ethernet adapter Ethernet 3:

    Connection-specific DNS Suffix  . : 
    Link-local IPv6 Address . . . . . : fe80::656f:e5cb:48d6:5b46%15
    IPv4 Address. . . . . : 192.168.56.1
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 

Wireless LAN adapter Local Area Connection* 1:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . : 

Wireless LAN adapter Local Area Connection* 2:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . : 

Wireless LAN adapter Wi-Fi:

    Connection-specific DNS Suffix  . : 
    Link-local IPv6 Address . . . . . : fe80::87bc:4f3a:56d9:833a%9
    IPv4 Address. . . . . : 192.168.0.149
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : fe80::360a:33ff:fe71:2be2%9
                                192.168.0.1

Ethernet adapter Bluetooth Network Connection:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . : 

C:\Users\SUPRATIM NAG>
```

```
C:\Users\SUPRATIM NAG>ipconfig/all

Windows IP Configuration

Host Name . . . . . : LAPTOP-AL1UDHDD
Primary Dns Suffix . . . . . : 
Node Type . . . . . : Hybrid
IP Routing Enabled. . . . . : No
WINS Proxy Enabled. . . . . : No

Ethernet adapter Ethernet 2:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix . : 
    Description . . . . . : ExpressVPN TAP Adapter
    Physical Address. . . . . : 00-FF-EE-DD-D9-73
    DHCP Enabled. . . . . : Yes
    Autoconfiguration Enabled . . . . : Yes

Ethernet adapter Ethernet 3:

    Connection-specific DNS Suffix . : 
    Description . . . . . : VirtualBox Host-Only Ethernet Adapter
    Physical Address. . . . . : 0A-00-27-00-00-0F
    DHCP Enabled. . . . . : No
    Autoconfiguration Enabled . . . . : Yes
    Link-local IPv6 Address . . . . . : fe80::656f:e5cb:48d6:5b46%15(Preferred)
    IPv4 Address. . . . . : 192.168.56.1(Preferred)
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 
    DHCPv6 IAID . . . . . : 705298471
    DHCPv6 Client DUID. . . . . : 00-01-00-01-2B-A5-F1-14-20-4E-F6-4E-6F-29
    NetBIOS over Tcpip. . . . . : Enabled

Wireless LAN adapter Local Area Connection* 1:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix . : 
    Description . . . . . : Microsoft Wi-Fi Direct Virtual Adapter
    Physical Address. . . . . : 22-4E-F6-4E-6F-29
    DHCP Enabled. . . . . : Yes
```

```
(snsupratim@kali)~[~/Desktop]
$ ifconfig
eth0: flags=4163<UP, BROADCAST, RUNNING, MULTICAST> mtu 1500
    inet 192.168.0.199 netmask 255.255.255.0 broadcast 192.168.0.255
    inet6 fe80::a00:27ff:fe6e:e584 prefixlen 64 scopeid 0x20<link>
    inet6 fd01::a00:27ff:fe6e:e584 prefixlen 64 scopeid 0x0<global>
    ether 08:00:27:6e:e5:84 txqueuelen 1000 (Ethernet)
    RX packets 8 bytes 982 (982.0 B)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 27 bytes 4818 (4.7 KiB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP, LOOPBACK, RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
    inet6 ::1 prefixlen 128 scopeid 0x10<host>
    loop txqueuelen 1000 (Local Loopback)
    RX packets 4 bytes 240 (240.0 B)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 4 bytes 240 (240.0 B)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

(snsupratim@kali)~[~/Desktop]
```

Ping

The ping command sends ICMP requests, also known as pings, to a remote device and returns the response. It is the most popular command-line tool for testing connectivity between two network devices.

```
C:\Users\SUPRATIM NAG>ping google.com

Pinging google.com [142.250.193.142] with 32 bytes of data:
Reply from 142.250.193.142: bytes=32 time=81ms TTL=114
Reply from 142.250.193.142: bytes=32 time=73ms TTL=114
Reply from 142.250.193.142: bytes=32 time=130ms TTL=114
Reply from 142.250.193.142: bytes=32 time=104ms TTL=114

Ping statistics for 142.250.193.142:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 73ms, Maximum = 130ms, Average = 97ms

C:\Users\SUPRATIM NAG>
```

```
(snsupratim@kali) ~/Desktop
$ ping google.com
PING google.com (142.250.193.142) 56(84) bytes of data:
64 bytes from maa05525-in-f14.1e100.net (142.250.193.142): icmp_seq=1 ttl=114 time=44.8 ms
64 bytes from maa05525-in-f14.1e100.net (142.250.193.142): icmp_seq=2 ttl=114 time=45.2 ms
64 bytes from maa05525-in-f14.1e100.net (142.250.193.142): icmp_seq=3 ttl=114 time=44.0 ms
64 bytes from maa05525-in-f14.1e100.net (142.250.193.142): icmp_seq=4 ttl=114 time=44.9 ms
64 bytes from maa05525-in-f14.1e100.net (142.250.193.142): icmp_seq=5 ttl=114 time=50.7 ms
64 bytes from maa05525-in-f14.1e100.net (142.250.193.142): icmp_seq=6 ttl=114 time=43.8 ms
64 bytes from maa05525-in-f14.1e100.net (142.250.193.142): icmp_seq=7 ttl=114 time=44.3 ms
64 bytes from maa05525-in-f14.1e100.net (142.250.193.142): icmp_seq=8 ttl=114 time=42.9 ms
64 bytes from maa05525-in-f14.1e100.net (142.250.193.142): icmp_seq=9 ttl=114 time=43.5 ms
64 bytes from maa05525-in-f14.1e100.net (142.250.193.142): icmp_seq=10 ttl=114 time=54.8 ms
64 bytes from maa05525-in-f14.1e100.net (142.250.193.142): icmp_seq=11 ttl=114 time=43.3 ms
64 bytes from maa05525-in-f14.1e100.net (142.250.193.142): icmp_seq=12 ttl=114 time=44.2 ms
64 bytes from maa05525-in-f14.1e100.net (142.250.193.142): icmp_seq=13 ttl=114 time=43.9 ms
64 bytes from maa05525-in-f14.1e100.net (142.250.193.142): icmp_seq=14 ttl=114 time=43.8 ms
64 bytes from maa05525-in-f14.1e100.net (142.250.193.142): icmp_seq=15 ttl=114 time=50.1 ms
64 bytes from maa05525-in-f14.1e100.net (142.250.193.142): icmp_seq=16 ttl=114 time=44.0 ms
64 bytes from maa05525-in-f14.1e100.net (142.250.193.142): icmp_seq=17 ttl=114 time=44.0 ms
64 bytes from maa05525-in-f14.1e100.net (142.250.193.142): icmp_seq=18 ttl=114 time=43.9 ms
64 bytes from maa05525-in-f14.1e100.net (142.250.193.142): icmp_seq=19 ttl=114 time=43.9 ms
64 bytes from maa05525-in-f14.1e100.net (142.250.193.142): icmp_seq=20 ttl=114 time=43.3 ms

--- google.com ping statistics ---
20 packets transmitted, 19 received, 5% packet loss, time 19880ms
rtt min/avg/max/mdev = 42.850/50.464/143.332/22.095 ms
```

Ping -a:

RESOLVES ADDRESSES TO HOSTNAMES.

```
C:\Users\SUPRATIM NAG>ping -a google.com

Pinging google.com [142.250.193.142] with 32 bytes of data:
Reply from 142.250.193.142: bytes=32 time=43ms TTL=114
Reply from 142.250.193.142: bytes=32 time=45ms TTL=114
Reply from 142.250.193.142: bytes=32 time=74ms TTL=114
Reply from 142.250.193.142: bytes=32 time=43ms TTL=114

Ping statistics for 142.250.193.142:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 43ms, Maximum = 74ms, Average = 51ms

C:\Users\SUPRATIM NAG>
```

```
(snsupratim@kali) ~/Desktop
$ ping -a google.com
PING google.com (142.250.193.142) 56(84) bytes of data:
64 bytes from maa05525-in-f14.1e100.net (142.250.193.142): icmp_seq=1 ttl=114 time=44.4 ms
64 bytes from maa05525-in-f14.1e100.net (142.250.193.142): icmp_seq=2 ttl=114 time=43.6 ms
64 bytes from maa05525-in-f14.1e100.net (142.250.193.142): icmp_seq=3 ttl=114 time=44.7 ms
64 bytes from maa05525-in-f14.1e100.net (142.250.193.142): icmp_seq=4 ttl=114 time=56.0 ms
64 bytes from maa05525-in-f14.1e100.net (142.250.193.142): icmp_seq=5 ttl=114 time=43.4 ms
64 bytes from maa05525-in-f14.1e100.net (142.250.193.142): icmp_seq=6 ttl=114 time=44.7 ms
64 bytes from maa05525-in-f14.1e100.net (142.250.193.142): icmp_seq=7 ttl=114 time=62.6 ms
64 bytes from maa05525-in-f14.1e100.net (142.250.193.142): icmp_seq=8 ttl=114 time=49.5 ms
64 bytes from maa05525-in-f14.1e100.net (142.250.193.142): icmp_seq=9 ttl=114 time=43.4 ms
64 bytes from maa05525-in-f14.1e100.net (142.250.193.142): icmp_seq=10 ttl=114 time=43.7 ms
64 bytes from maa05525-in-f14.1e100.net (142.250.193.142): icmp_seq=11 ttl=114 time=44.1 ms
64 bytes from maa05525-in-f14.1e100.net (142.250.193.142): icmp_seq=12 ttl=114 time=47.5 ms
64 bytes from maa05525-in-f14.1e100.net (142.250.193.142): icmp_seq=13 ttl=114 time=44.3 ms
64 bytes from maa05525-in-f14.1e100.net (142.250.193.142): icmp_seq=14 ttl=114 time=43.6 ms
64 bytes from maa05525-in-f14.1e100.net (142.250.193.142): icmp_seq=15 ttl=114 time=45.0 ms
64 bytes from maa05525-in-f14.1e100.net (142.250.193.142): icmp_seq=16 ttl=114 time=45.4 ms
64 bytes from maa05525-in-f14.1e100.net (142.250.193.142): icmp_seq=17 ttl=114 time=44.2 ms

--- google.com ping statistics ---
17 packets transmitted, 17 received, 0% packet loss, time 20576ms
rtt min/avg/max/mdev = 43.401/46.475/62.559/5.043 ms
```

Ping -t:

PING THE SPECIFIED HOST UNTIL STOPPED.

```
C:\Users\SUPRATIM NAG>ping -t google.com

Pinging google.com [142.250.193.142] with 32 bytes of data:
Reply from 142.250.193.142: bytes=32 time=46ms TTL=114
Reply from 142.250.193.142: bytes=32 time=57ms TTL=114
Reply from 142.250.193.142: bytes=32 time=45ms TTL=114
Reply from 142.250.193.142: bytes=32 time=43ms TTL=114
Reply from 142.250.193.142: bytes=32 time=43ms TTL=114
Reply from 142.250.193.142: bytes=32 time=46ms TTL=114
Reply from 142.250.193.142: bytes=32 time=44ms TTL=114
Reply from 142.250.193.142: bytes=32 time=45ms TTL=114
Reply from 142.250.193.142: bytes=32 time=43ms TTL=114
Reply from 142.250.193.142: bytes=32 time=43ms TTL=114
Reply from 142.250.193.142: bytes=32 time=43ms TTL=114
Reply from 142.250.193.142: bytes=32 time=43ms TTL=114
Reply from 142.250.193.142: bytes=32 time=66ms TTL=114
Reply from 142.250.193.142: bytes=32 time=189ms TTL=114
Reply from 142.250.193.142: bytes=32 time=49ms TTL=114

Ping statistics for 142.250.193.142:
    Packets: Sent = 14, Received = 14, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 43ms, Maximum = 189ms, Average = 57ms
Control-C
^C
C:\Users\SUPRATIM NAG>
```

TO STOP CTRL+C

◊tracert

- The tracert command details the path a packet takes from your computer to the destination you specify.

```
C:\Users\SUPRATIM NAG>tracert google.com

Tracing route to google.com [142.250.193.142]
over a maximum of 30 hops:

  1    3 ms    3 ms    2 ms  dlinkrouter [192.168.0.1]
  2    5 ms    4 ms    3 ms  172.24.14.129
  3   38 ms    5 ms    7 ms  172.30.11.57
  4    *      *      *    Request timed out.
  5    *      4 ms    4 ms  172.30.6.166
  6   15 ms   39 ms    4 ms  172.30.3.41
  7    4 ms    4 ms    6 ms  103.52.254.1
  8    5 ms    4 ms    5 ms  110.172.55.229
  9   44 ms   43 ms   43 ms  ns0.wishnet.in [223.223.158.197]
 10    *      44 ms   43 ms  ^C

C:\Users\SUPRATIM NAG>
```

◊tracert -d:

DO NOT RESOLVE HOSTNAMES.

```
C:\Users\SUPRATIM NAG>tracert -d google.com

Tracing route to google.com [142.250.193.142]
over a maximum of 30 hops:

  1    3 ms    2 ms    4 ms  192.168.0.1
  2    4 ms    5 ms    3 ms  172.24.14.129
  3    5 ms    5 ms    5 ms  172.30.11.57
  4    *      *      *    Request timed out.
  5    4 ms   41 ms    *    172.30.6.166
  6    4 ms    4 ms    6 ms  172.30.3.41
  7    6 ms    6 ms    6 ms  103.52.254.1
  8    5 ms    4 ms    5 ms  110.172.55.229
  9   44 ms   43 ms   43 ms  223.223.158.197
 10   47 ms   45 ms   43 ms  142.251.227.215
 11   42 ms   42 ms   41 ms  142.251.55.225
 12   52 ms   44 ms    *    142.250.193.142
 13  152 ms   45 ms   44 ms  142.250.193.142

Trace complete.
```

◊tracert -h {MAX HOPS}

MAX. NO. OF HOPS TO SEARCH FOR TARGET.

```
C:\Users\SUPRATIM NAG>tracert -h 5 google.com

Tracing route to google.com [142.250.193.142]
over a maximum of 5 hops:

  1   21 ms   20 ms    2 ms  dlinkrouter [192.168.0.1]
  2    4 ms    6 ms    8 ms  172.24.14.129
  3    4 ms    4 ms    3 ms  172.30.11.57
  4    *      *      *    Request timed out.
  5    *      *   110 ms  172.30.6.166

Trace complete.

C:\Users\SUPRATIM NAG>
```