

PRACTICAL NO. 2.

a) Study of basic network Command and Network Configuration Commands. ipconfig, ping, netstat, ARP, trace route, etc.

→ **ipconfig** (Internet Protocol Configuration) is a command line utility available on all versions of Microsoft Windows starting with Windows NT. ipconfig is designed to be run from the Windows Command Prompt. This utility allows you to get the IP address information of a Windows computer. If config stands for "interface Configuration". It is used to view and change the configuration of the network interfaces on Unix-like operating systems.

```
Command Prompt
```

```
Microsoft Windows [Version 10.0.19043.867]  
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```

```
C:\Users\PC23>ipconfig
```

```
Windows IP Configuration
```

```
Ethernet adapter VirtualBox Host-Only Network:
```

```
Connection-specific DNS Suffix . . . :  
Link-local IPv6 Address . . . . . : fe80::dcc9:ed33:7315:3e96%12  
IPv4 Address. . . . . : 192.168.56.1  
Subnet Mask . . . . . : 255.255.255.0  
Default Gateway . . . . . :
```

```
Ethernet adapter Ethernet:
```

```
Connection-specific DNS Suffix . . . :  
Link-local IPv6 Address . . . . . : fe80::6142:61ae:7033:a378%8  
IPv4 Address. . . . . : 192.168.1.193  
Subnet Mask . . . . . : 255.255.255.0  
Default Gateway . . . . . : 192.168.1.1
```

```
C:\Users\PC23>
```

2] Ping

The ping Command is a command line utility used to test the ability of the source Computer to reach a specified destination Computer. It is usually used as a simple way. It verifies that a Computer can communicate over the network with another Computer or network device.

3] Netstat (Network statistics) Command is used to display very detailed information about how your Computer is communicating with other Computers or network devices.

```
C:\Windows\system32\cmd.exe
Microsoft Windows [Version 10.0.19043.867]
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```

```
C:\Users\PC23>netstat
```

Active Connections

Proto	Local Address	Foreign Address	State
TCP	192.168.1.193:27062	20.198.119.84:https	ESTABLISHED
TCP	192.168.1.193:27092	20.198.119.143:https	ESTABLISHED
TCP	192.168.1.193:27105	20.198.119.143:https	ESTABLISHED
TCP	192.168.1.193:27345	a23-54-82-235:https	CLOSE_WAIT
TCP	192.168.1.193:27346	a23-54-82-235:https	CLOSE_WAIT

```
C:\Users\PC23>
```

4] netstat ARP Command allows you to view and modify the ARP cache. If two hosts on the same subnet cannot ping each other successfully, try running the arp -a command on each computer to see whether the computers have the correct media access control (MAC) addresses listed for each other.

```
Command Prompt
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```

```
C:\Users\PC23>arp -a
```

```
Interface: 192.168.1.193 --- 0x8
Internet Address      Physical Address      Type
192.168.1.1          0c-80-63-d9-82-ae    dynamic
192.168.1.5          2c-f0-5d-e8-ca-c9    dynamic
192.168.1.13         54-be-f7-65-e1-d6    dynamic
192.168.1.14         4c-72-b9-26-02-f2    dynamic
192.168.1.26         1c-66-6d-94-1d-a0    dynamic
192.168.1.33         d8-cb-8a-b2-0d-01    dynamic
192.168.1.44         1c-66-6d-94-48-1c    dynamic
192.168.1.65         4c-cc-6a-1f-2f-83    dynamic
192.168.1.82         1c-66-6d-94-48-2e    dynamic
192.168.1.89         d8-5e-d3-e0-63-f5    dynamic
192.168.1.113        f4-6d-04-f0-40-24    dynamic
192.168.1.162        1c-66-6d-94-78-dc    dynamic
192.168.1.169        4c-cc-6a-6f-3d-50    dynamic
192.168.1.182        4c-cc-6a-1f-2f-01    dynamic
192.168.1.183        1c-66-6d-94-48-ee    dynamic
192.168.1.239        d8-5e-d3-74-d4-a1    dynamic
192.168.1.255        ff-ff-ff-ff-ff-ff    static
224.0.0.2            01-00-5e-00-00-02    static
224.0.0.22          01-00-5e-00-00-16    static
224.0.0.251         01-00-5e-00-00-fb    static
239.255.255.250     01-00-5e-7f-ff-fa    static
255.255.255.255     ff-ff-ff-ff-ff-ff    static
```

```
Interface: 192.168.56.1 --- 0xc
Internet Address      Physical Address      Type
192.168.56.255       ff-ff-ff-ff-ff-ff    static
224.0.0.2            01-00-5e-00-00-02    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:\Users\PC23>
```

5] tracert (Trace Route), a command-line utility that you can use to trace the path that an Internet protocol (IP) packet takes to its destination.

It will list all the routers it passes through until it reaches its destination or fails to and is discarded.

Command Prompt

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C:\Users\PC23>tracert 192.168.1.212

Tracing route to 192.168.1.212 over a maximum of 30 hops

1 PC23 [192.168.1.193] reports: Destination host unreachable.

Trace complete.

C:\Users\PC23>tracert www.softonic.com

Tracing route to www.softonic.com [35.227.233.104]
over a maximum of 30 hops:

1	<1 ms	<1 ms	<1 ms	192.168.1.1
2	1 ms	<1 ms	<1 ms	14.192.24.84
3	2 ms	2 ms	2 ms	103.174.158.21
4	1 ms	2 ms	1 ms	14.192.24.253
5	3 ms	3 ms	4 ms	142.250.169.12
6	3 ms	2 ms	6 ms	72.14.238.215
7	3 ms	2 ms	2 ms	209.85.142.85
8	1 ms	1 ms	1 ms	104.233.227.35.bc.googleusercontent.com [35.227.233.104]

Trace complete.

C:\Users\PC23>