

**Computer Networks**  
**CSE 325**  
**Lab Assignment - 2**

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CSE - 1

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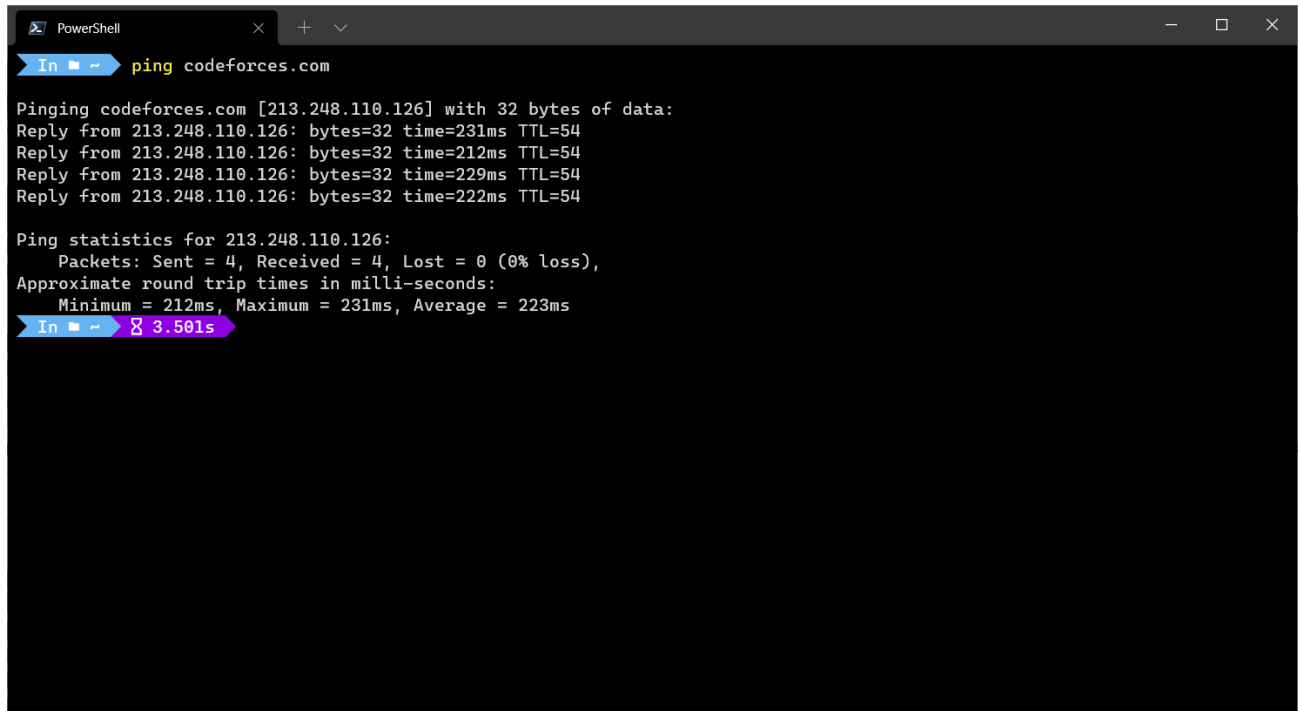
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# Basic commands in Computer Networking

## 1. Ping Command:



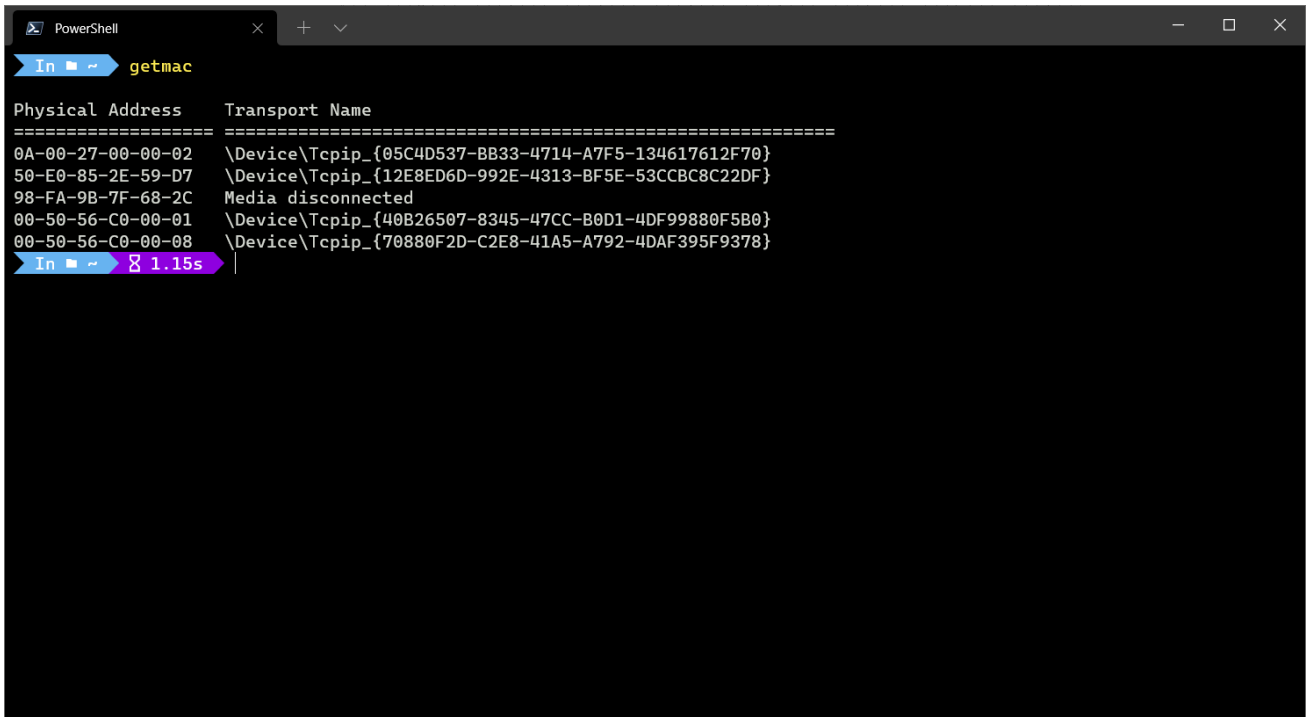
```
PowerShell
In ~ ~ ping codeforces.com

Pinging codeforces.com [213.248.110.126] with 32 bytes of data:
Reply from 213.248.110.126: bytes=32 time=231ms TTL=54
Reply from 213.248.110.126: bytes=32 time=212ms TTL=54
Reply from 213.248.110.126: bytes=32 time=229ms TTL=54
Reply from 213.248.110.126: bytes=32 time=222ms TTL=54

Ping statistics for 213.248.110.126:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 212ms, Maximum = 231ms, Average = 223ms
In ~ ~ 3.501s
```

We can use the **ping** command to test whether or not we can make contact with another network device. It could be a device on our network (for instance, our network router) or to a website domain or internet IP address to test our internet connectivity.

## 2. GETMAC:

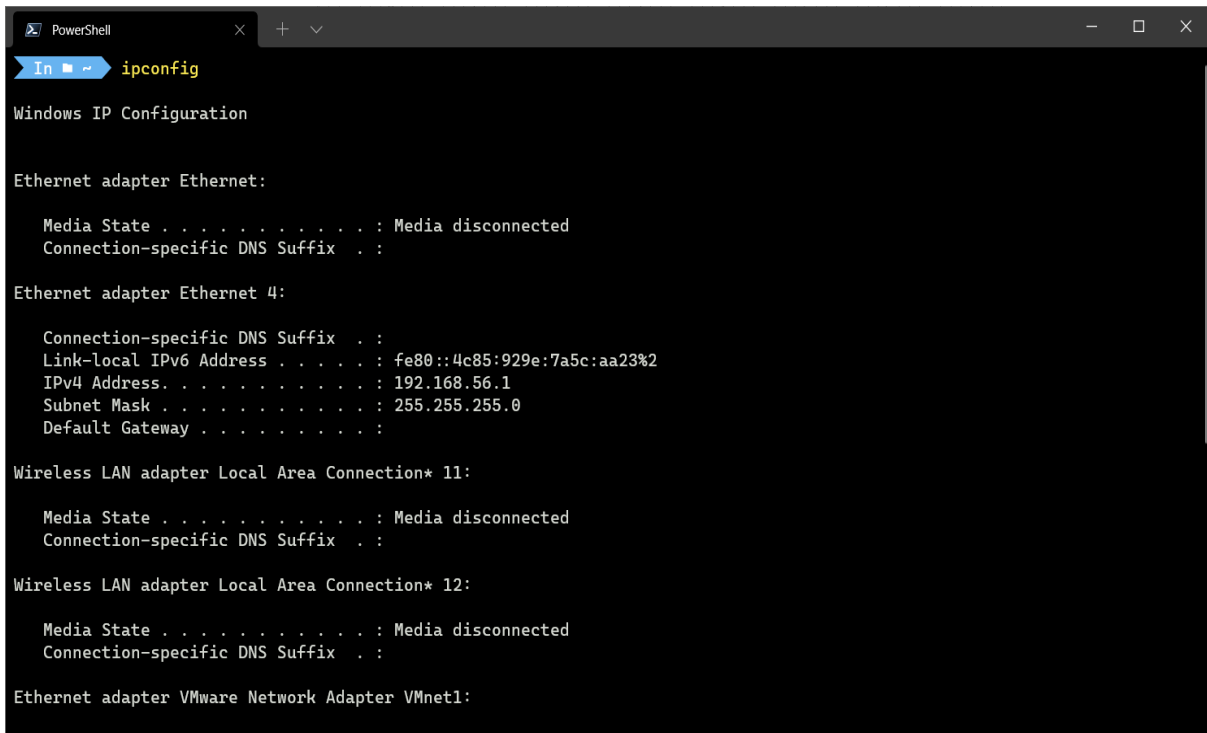


```
PowerShell
In ~ getmac

Physical Address      Transport Name
=====
0A-00-27-00-00-02     \Device\NPF{05C4D537-BB33-4714-A7F5-134617612F70}
50-E0-85-2E-59-D7     \Device\NPF{12E8ED6D-992E-4313-BF5E-53CCBC8C22DF}
98-FA-9B-7F-68-2C     Media disconnected
00-50-56-C0-00-01     \Device\NPF{40B26507-8345-47CC-B0D1-4DF99880F5B0}
00-50-56-C0-00-08     \Device\NPF{70880F2D-C2E8-41A5-A792-4DAF395F9378}
In ~ 1.15s
```

We use the getmac command to find the MAC address of the devices connected.

### 3. IPCONFIG:



```
PowerShell
ipconfig

Windows IP Configuration

Ethernet adapter Ethernet:

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

Ethernet adapter Ethernet 4:

    Connection-specific DNS Suffix  . :
    Link-local IPv6 Address . . . . . : fe80::4c85:929e:7a5c:aa23%2
    IPv4 Address. . . . . : 192.168.56.1
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . :

Wireless LAN adapter Local Area Connection* 11:

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

Wireless LAN adapter Local Area Connection* 12:

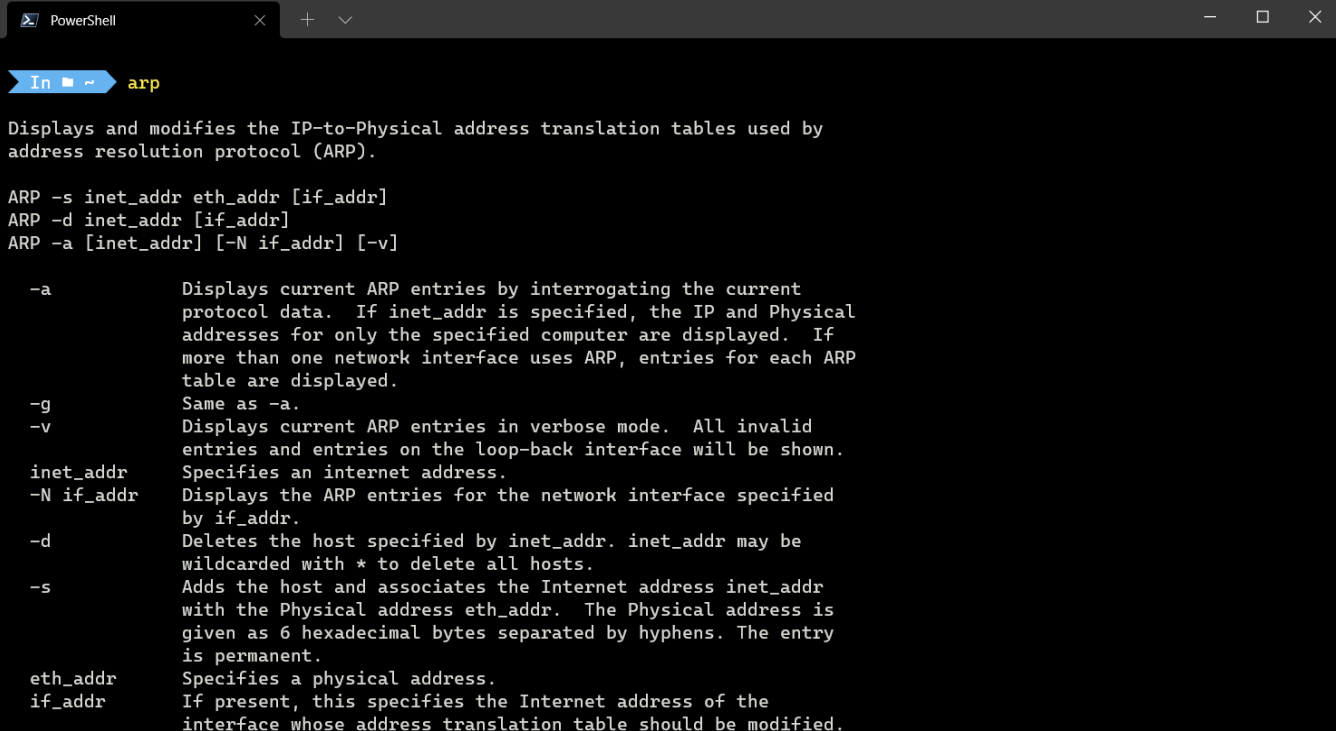
    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . :

Ethernet adapter VMware Network Adapter VMnet1:
```

Typing **ipconfig** at the terminal will list all available commands, but these include:

- To view your current network IP address:  
**ipconfig getifaddr deviceid**
- To view your current network DNS server:  
**ipconfig getoption deviceid domain\_name\_server**

## 4. ARP



```
PowerShell
In ~> arp

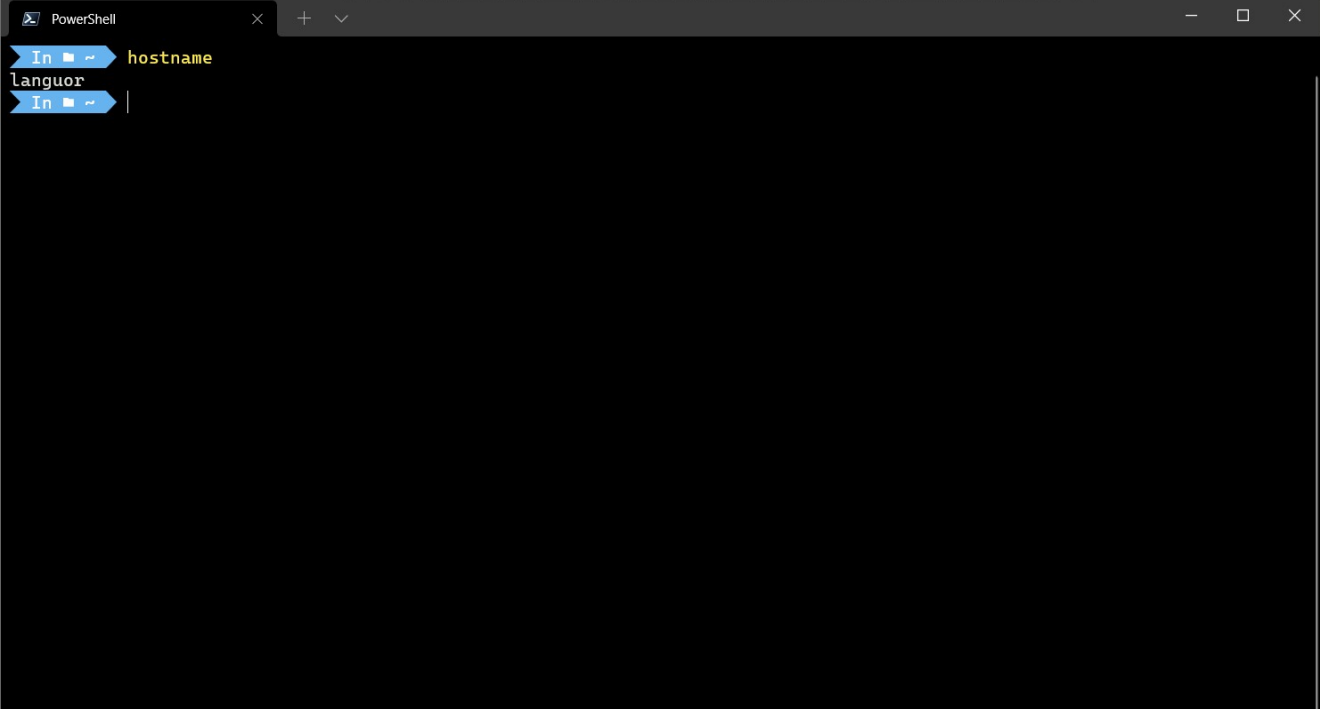
Displays and modifies the IP-to-Physical address translation tables used by
address resolution protocol (ARP).

ARP -s inet_addr eth_addr [if_addr]
ARP -d inet_addr [if_addr]
ARP -a [inet_addr] [-N if_addr] [-v]

-a          Displays current ARP entries by interrogating the current
            protocol data.  If inet_addr is specified, the IP and Physical
            addresses for only the specified computer are displayed.  If
            more than one network interface uses ARP, entries for each ARP
            table are displayed.
-g          Same as -a.
-v          Displays current ARP entries in verbose mode.  All invalid
            entries and entries on the loop-back interface will be shown.
inet_addr   Specifies an internet address.
-N if_addr  Displays the ARP entries for the network interface specified
            by if_addr.
-d          Deletes the host specified by inet_addr.  inet_addr may be
            wildcarded with * to delete all hosts.
-s          Adds the host and associates the Internet address inet_addr
            with the Physical address eth_addr.  The Physical address is
            given as 6 hexadecimal bytes separated by hyphens.  The entry
            is permanent.
eth_addr    Specifies a physical address.
if_addr     If present, this specifies the Internet address of the
            interface whose address translation table should be modified.
```

If you want to view a list of all active devices on a local network, you could use the **arp** tool. This will list the IP and MAC addresses for any devices that your Mac has detected on your network, based on the ARP (Address Resolution Protocol) broadcasts those devices have made.

## 5. HOSTNAME:



```
PowerShell
In ~> hostname
languor
In ~> |
```

To find the Host name that has been assigned to the computer.

## 6. NSLOOKUP:

```
PowerShell
In ~ nslookup
Default Server: UnKnown
Address: 192.168.43.16

> youtube.com
Server: UnKnown
Address: 192.168.43.16

Non-authoritative answer:
Name: youtube.com
Addresses: 2404:6800:4007:818::200e
          142.250.77.174

> github.com
Server: UnKnown
Address: 192.168.43.16

Non-authoritative answer:
Name: github.com
Address: 13.234.210.38

>
In ~ 26.279s |
```

The **nslookup**, which stands for name server lookup command, is a network utility command used to obtain information about internet servers. It provides name server information for the DNS (Domain Name System), i.e. the default DNS server's name and IP Address.

## 7. NBSTAT:

```
PowerShell
In ~ nbtstat

Displays protocol statistics and current TCP/IP connections using NBT
(NetBIOS over TCP/IP).

NBTSTAT [ [-a RemoteName] [-A IP address] [-c] [-n]
          [-r] [-R] [-RR] [-s] [-S] [interval] ]

-a (adapter status) Lists the remote machine's name table given its name
-A (Adapter status) Lists the remote machine's name table given its
                    IP address.
-c (cache)          Lists NBT's cache of remote [machine] names and their IP addresses
-n (names)          Lists local NetBIOS names.
-r (resolved)       Lists names resolved by broadcast and via WINS
-R (Reload)         Purges and reloads the remote cache name table
-S (Sessions)       Lists sessions table with the destination IP addresses
-s (sessions)       Lists sessions table converting destination IP
                    addresses to computer NETBIOS names.
-RR (ReleaseRefresh) Sends Name Release packets to WINS and then, starts Refresh

RemoteName Remote host machine name.
IP address Dotted decimal representation of the IP address.
interval Redisplays selected statistics, pausing interval seconds
          between each display. Press Ctrl+C to stop redisplaying
          statistics.

In ~ |
```

nbtstat command is used to help you diagnose and resolve these problems.

## 8. NET:

```
PowerShell
In ~ net
The syntax of this command is:

NET
[ ACCOUNTS | COMPUTER | CONFIG | CONTINUE | FILE | GROUP | HELP |
  HELPMMSG | LOCALGROUP | PAUSE | SESSION | SHARE | START |
  STATISTICS | STOP | TIME | USE | USER | VIEW ]

In ~ net accounts
Force user logoff how long after time expires?: Never
Minimum password age (days): 0
Maximum password age (days): 42
Minimum password length: 0
Length of password history maintained: None
Lockout threshold: Never
Lockout duration (minutes): 30
Lockout observation window (minutes): 30
Computer role: WORKSTATION
The command completed successfully.

In ~ net user
User accounts for \\LANGUOR

-----
Administrator      DefaultAccount      Guest
kumar              WDAGUtilityAccount
The command completed successfully.

In ~ |
```

Used to manage many different aspects of a network and its settings such as network shares, users and print jobs.

## 9. NETSTAT:

```
PowerShell
In ~ netstat

Active Connections

Proto Local Address          Foreign Address         State
TCP   127.0.0.1:1026          license:65001           ESTABLISHED
TCP   127.0.0.1:1309          license:24476           TIME_WAIT
TCP   127.0.0.1:1313          license:24476           ESTABLISHED
TCP   127.0.0.1:1314          license:24476           ESTABLISHED
TCP   127.0.0.1:10975         license:10976           ESTABLISHED
TCP   127.0.0.1:10976         license:10975           ESTABLISHED
TCP   127.0.0.1:10977         license:10978           ESTABLISHED
TCP   127.0.0.1:10978         license:10977           ESTABLISHED
TCP   127.0.0.1:21734         license:24476           ESTABLISHED
TCP   127.0.0.1:24476         license:1308            TIME_WAIT
TCP   127.0.0.1:24476         license:1313            ESTABLISHED
TCP   127.0.0.1:24476         license:1314            ESTABLISHED
TCP   127.0.0.1:24476         license:21734           ESTABLISHED
TCP   127.0.0.1:65001         license:1026            ESTABLISHED
TCP   192.168.43.113:1024      47:https               ESTABLISHED
TCP   192.168.43.113:1060     52.114.44.77:https      ESTABLISHED
TCP   192.168.43.113:1162     52.109.56.34:https      ESTABLISHED

|
```

It shows the useful network summary for your device.



## 10. NETSH:

```
PowerShell
In ~ netsh int ip show excludedportrange protocol=tcp

Protocol tcp Port Exclusion Ranges

Start Port      End Port
-----
5357           5357
9001           9001
50000          50059      *

* - Administered port exclusions.

In ~ 8 113ms netsh wlan show drivers

Interface name: Wi-Fi

Driver           : Intel(R) Wireless-AC 9560 160MHz
Vendor           : Intel Corporation
Provider         : Intel
Date             : 5/4/2020
Version          : 21.90.3.2
INF file         : oem52.inf
Type             : Native Wi-Fi Driver
Radio types supported : 802.11b 802.11g 802.11n 802.11a 802.11ac
FIPS 140-2 mode supported : Yes
802.11w Management Frame Protection supported : Yes
Hosted network supported : No
Authentication and cipher supported in infrastructure mode:
Open             None
Open             WEP-40bit
```

Used to view and configure almost all of the network adapters in your device in much greater detail compared with some other commands.

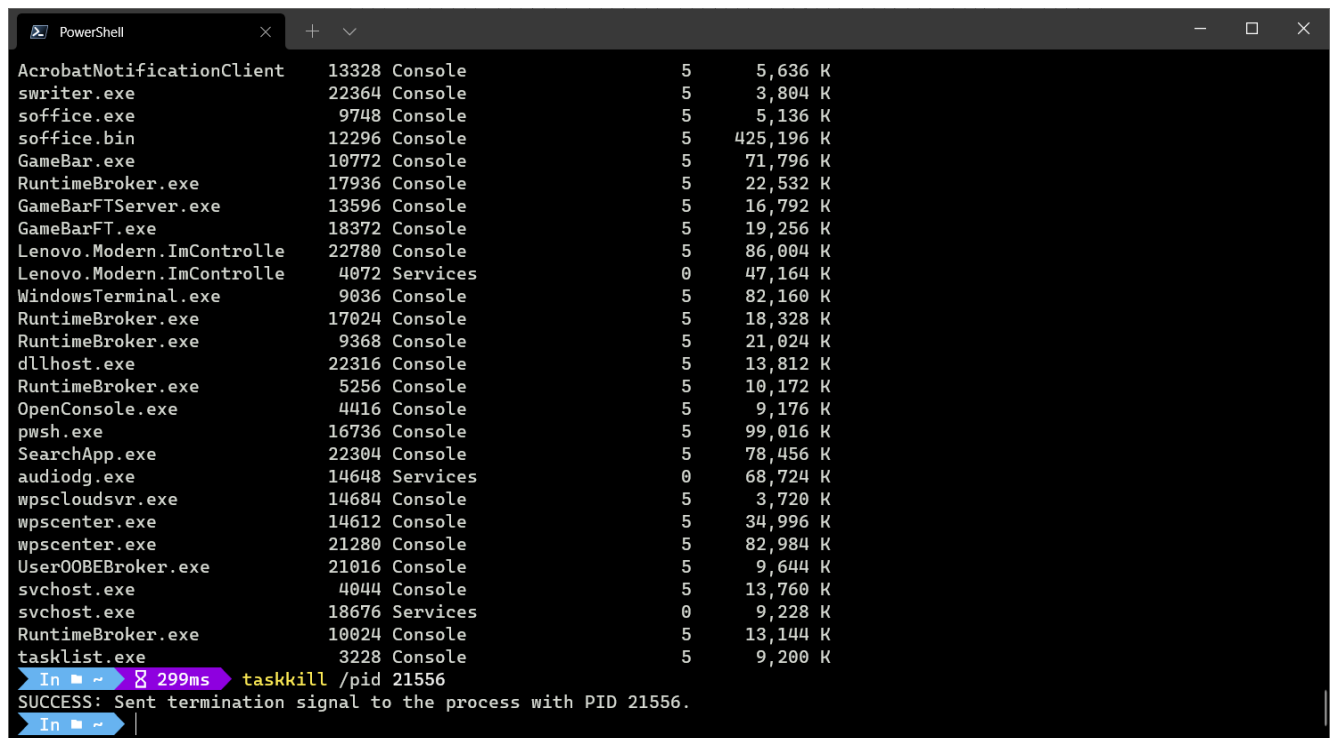
## 11. TASKLIST:

```
PowerShell
In ~ tasklist

Image Name          PID Session Name      Session#    Mem Usage
=====
System Idle Process    0 Services          0           8 K
System                4 Services          0          96 K
Secure System          72 Services          0       23,960 K
Registry              132 Services          0      98,856 K
smss.exe              488 Services          0         880 K
csrss.exe             772 Services          0       4,028 K
wininit.exe           872 Services          0       4,396 K
services.exe          944 Services          0       9,148 K
lsaiso.exe            964 Services          0       3,196 K
lsass.exe             972 Services          0      20,788 K
svchost.exe           592 Services          0      29,392 K
fontdrvhost.exe       92 Services          0       2,248 K
WUDFHost.exe          1048 Services          0      11,560 K
svchost.exe           1108 Services          0      19,572 K
svchost.exe           1156 Services          0       6,724 K
WUDFHost.exe          1216 Services          0       4,672 K
svchost.exe           1560 Services          0       3,604 K
svchost.exe           1616 Services          0       7,692 K
svchost.exe           1624 Services          0       6,772 K
svchost.exe           1676 Services          0      12,196 K
svchost.exe           1724 Services          0       8,380 K
svchost.exe           1732 Services          0       6,180 K
svchost.exe           1788 Services          0       4,312 K
svchost.exe           1840 Services          0       5,992 K
svchost.exe           1888 Services          0      17,576 K
svchost.exe           1960 Services          0       4,932 K
```

It will show all the running processes and their process id(PID).

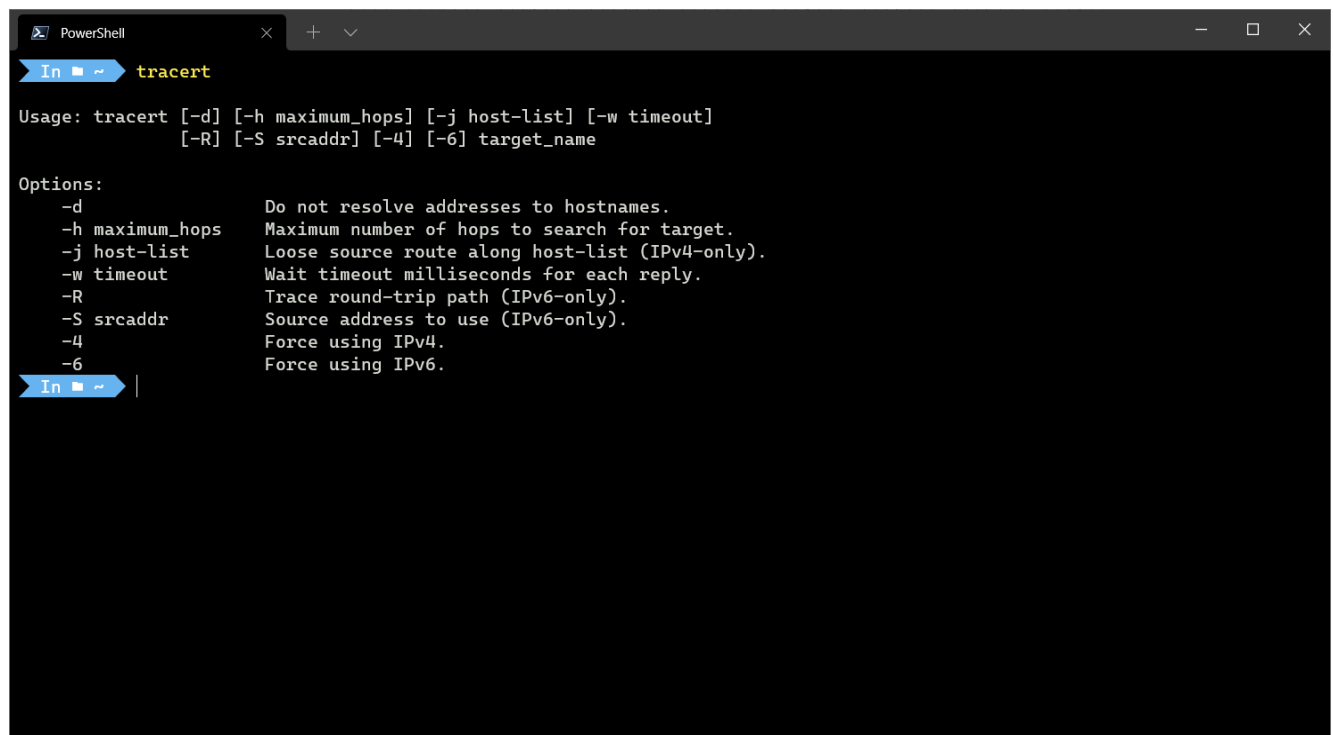
## 12. TASKKILL:



```
PowerShell
AcrobatNotificationClient 13328 Console 5 5,636 K
swriter.exe 22364 Console 5 3,804 K
soffice.exe 9748 Console 5 5,136 K
soffice.bin 12296 Console 5 425,196 K
GameBar.exe 10772 Console 5 71,796 K
RuntimeBroker.exe 17936 Console 5 22,532 K
GameBarFTServer.exe 13596 Console 5 16,792 K
GameBarFT.exe 18372 Console 5 19,256 K
Lenovo.Modern.ImControlle 22780 Console 5 86,004 K
Lenovo.Modern.ImControlle 4072 Services 0 47,164 K
WindowsTerminal.exe 9036 Console 5 82,160 K
RuntimeBroker.exe 17024 Console 5 18,328 K
RuntimeBroker.exe 9368 Console 5 21,024 K
dllhost.exe 22316 Console 5 13,812 K
RuntimeBroker.exe 5256 Console 5 10,172 K
OpenConsole.exe 4416 Console 5 9,176 K
pwsh.exe 16736 Console 5 99,016 K
SearchApp.exe 22304 Console 5 78,456 K
audiodg.exe 14648 Services 0 68,724 K
wpscloudsvr.exe 14684 Console 5 3,720 K
wpscenter.exe 14612 Console 5 34,996 K
wpscenter.exe 21280 Console 5 82,984 K
User00BEBroker.exe 21016 Console 5 9,644 K
svchost.exe 4044 Console 5 13,760 K
svchost.exe 18676 Services 0 9,228 K
RuntimeBroker.exe 10024 Console 5 13,144 K
tasklist.exe 3228 Console 5 9,200 K
In ~ 299ms taskkill /pid 21556
SUCCESS: Sent termination signal to the process with PID 21556.
In ~
```

It is used to kill the task by name of its PID provided by TASKLIST command.

## 13. TRACERT:



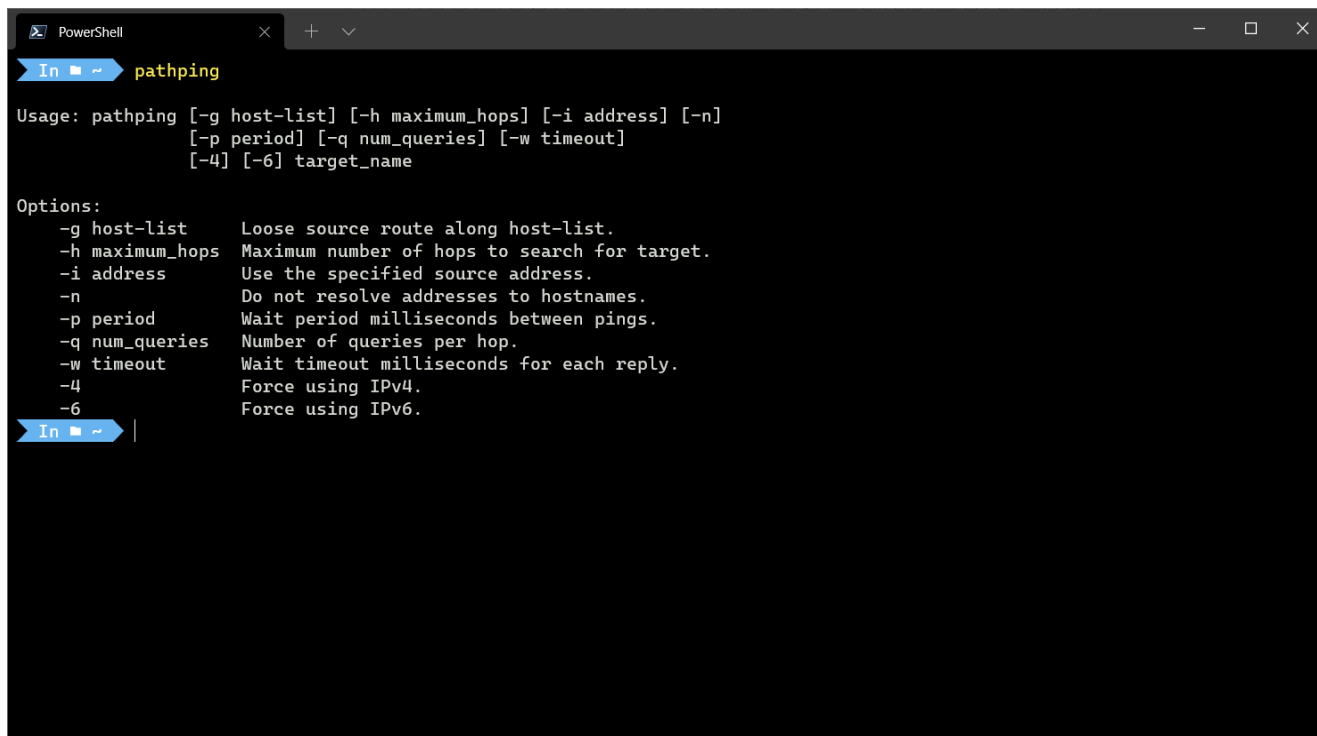
```
PowerShell
In ~ tracert

Usage: tracert [-d] [-h maximum_hops] [-j host-list] [-w timeout]
           [-R] [-S srcaddr] [-4] [-6] target_name

Options:
  -d          Do not resolve addresses to hostnames.
  -h maximum_hops Maximum number of hops to search for target.
  -j host-list Loose source route along host-list (IPv4-only).
  -w timeout  Wait timeout milliseconds for each reply.
  -R          Trace round-trip path (IPv6-only).
  -S srcaddr  Source address to use (IPv6-only).
  -4          Force using IPv4.
  -6          Force using IPv6.
In ~
```

By using the tracert command you can trace the route a packet takes before reaching its destination, and see information on each “hop” along the route.

## 14. PATHPING:



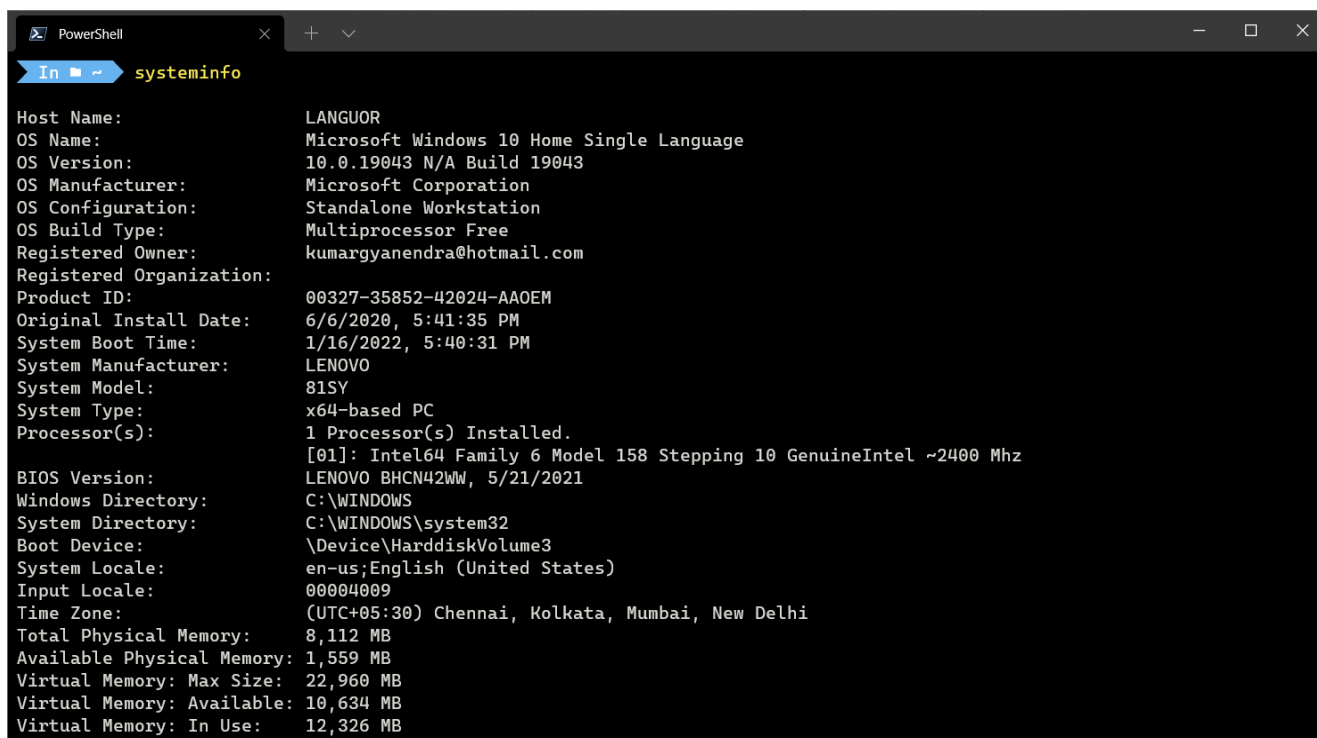
```
PowerShell
In ~ pathping

Usage: pathping [-g host-list] [-h maximum_hops] [-i address] [-n]
               [-p period] [-q num_queries] [-w timeout]
               [-4] [-6] target_name

Options:
  -g host-list      Loose source route along host-list.
  -h maximum_hops   Maximum number of hops to search for target.
  -i address        Use the specified source address.
  -n               Do not resolve addresses to hostnames.
  -p period         Wait period milliseconds between pings.
  -q num_queries    Number of queries per hop.
  -w timeout        Wait timeout milliseconds for each reply.
  -4               Force using IPv4.
  -6               Force using IPv6.
```

It combines that best of both ping and tracert into a single utility.

## 15. SYSTEMINFO:



```
PowerShell
In ~ systeminfo

Host Name:                LANGUOR
OS Name:                  Microsoft Windows 10 Home Single Language
OS Version:               10.0.19043 N/A Build 19043
OS Manufacturer:         Microsoft Corporation
OS Configuration:        Standalone Workstation
OS Build Type:             Multiprocessor Free
Registered Owner:         kumargyanendra@hotmail.com
Registered Organization:
Product ID:                00327-35852-42024-AAOEM
Original Install Date:    6/6/2020, 5:41:35 PM
System Boot Time:         1/16/2022, 5:40:31 PM
System Manufacturer:      LENOVO
System Model:              81SY
System Type:               x64-based PC
Processor(s):              1 Processor(s) Installed.
                           [01]: Intel64 Family 6 Model 158 Stepping 10 GenuineIntel ~2400 Mhz
BIOS Version:              LENOVO BHCN42WW, 5/21/2021
Windows Directory:        C:\WINDOWS
System Directory:          C:\WINDOWS\system32
Boot Device:               \Device\HarddiskVolume3
System Locale:              en-us;English (United States)
Input Locale:              00004009
Time Zone:                 (UTC+05:30) Chennai, Kolkata, Mumbai, New Delhi
Total Physical Memory:     8,112 MB
Available Physical Memory: 1,559 MB
Virtual Memory: Max Size:  22,960 MB
Virtual Memory: Available: 10,634 MB
Virtual Memory: In Use:    12,326 MB
```

It shows the details of the processor used, the version of Windows, or what the boot device is configured as.