

1. Display your systems IP Address, Subnet mask using ipconfig, and find out the network address and the maximum number of systems possible on your network and range of IP addresses available to these systems.

```
HP@LAPTOP-JEL6DNS6 MINGW64 ~
$ ipconfig

Windows IP Configuration

Ethernet adapter Ethernet:

    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 Local Area Connection* 3:

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

Wireless LAN adapter Wi-Fi:

    Connection-specific DNS Suffix  . :
    IPv6 Address. . . . . : 2409:4064:2392:ec09:b966:b2fa:c4f7:8b07
    Temporary IPv6 Address. . . . . : 2409:4064:2392:ec09:c6c:2a84:1c53:12f2
    Link-local IPv6 Address . . . . . : fe80::b966:b2fa:c4f7:8b07%8
    IPv4 Address. . . . . : 192.168.43.165
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : fe80::bc91:b5ff:fe96:f0cd%8
                                192.168.43.172

Ethernet adapter Bluetooth Network Connection:

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

- System IP Address: 192.168.43.165
- Subnet mask: 255.255.255.0
- Network ID: 192.168.43.0
- Broadcast ID: 192.168.43.255
- Maximum number of system possible on the network: 254
- Range of IP addresses: 192.168.43.0 to 192.168.43.255
- Class type: C

2. With help of ping, check if you are connected to other systems of your network and find the route to connect to that system using tracert. List all the processes which are using ports for TCP protocol.

```
HP@LAPTOP-JEL6DNS6 MINGW64 ~  
$ ping google.com  
  
Pinging google.com [2404:6800:4009:82f::200e] with 32 bytes of data:  
Reply from 2404:6800:4009:82f::200e: time=112ms  
Reply from 2404:6800:4009:82f::200e: time=108ms  
Reply from 2404:6800:4009:82f::200e: time=116ms  
Reply from 2404:6800:4009:82f::200e: time=113ms  
  
Ping statistics for 2404:6800:4009:82f::200e:  
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),  
Approximate round trip times in milli-seconds:  
    Minimum = 108ms, Maximum = 116ms, Average = 112ms
```

```
HP@LAPTOP-JEL6DNS6 MINGW64 ~  
$ tracert google.com  
  
Tracing route to google.com [2404:6800:4009:82f::200e]  
over a maximum of 30 hops:  
  
  1    22 ms    19 ms     4 ms  2409:4064:38f:8784::a0  
  2      *      *      *    Request timed out.  
  3    60 ms    60 ms    60 ms  2405:200:313:1501::2  
  4    81 ms    60 ms    56 ms  2405:200:801:1000::1e7d  
  5   101 ms    60 ms    80 ms  2405:200:801:1000::1e3b  
  6      *      79 ms     *    2405:200:801:500::1d  
  7    79 ms    79 ms    79 ms  2001:4860:1:1::1a35  
  8    92 ms    71 ms    87 ms  2001:4860:1:1::1a34  
  9    96 ms    79 ms    79 ms  2404:6800:811f::1  
 10      *      *      *    Request timed out.  
 11   163 ms    99 ms    87 ms  2001:4860:0:9e::3  
 12      *      *      *    Request timed out.  
 13   135 ms   119 ms   118 ms  2001:4860::9:4001:7734  
 14   128 ms   107 ms    91 ms  2001:4860:0:115b::1  
 15   116 ms    83 ms    92 ms  2001:4860:0:1::3ff  
 16      *      *      *    Request timed out.  
 17   123 ms    87 ms    95 ms  bom12s19-in-x0e.1e100.net [2404:6800:4009:82f::200e]
```

Trace complete.

HP@LAPTOP-JEL6DNS6 MINGW64 ~

\$ netstat -r

#### Interface List

```
3...c8 d9 d2 ee ee 5f .....Realtek PCIe GbE Family Controller
11...d2 c5 d3 3c b9 b7 .....Microsoft Wi-Fi Direct Virtual Adapter
4...d0 c5 d3 3c b9 b7 .....Microsoft Wi-Fi Direct Virtual Adapter #2
8...d0 c5 d3 3c b9 b7 .....Realtek RTL8723DE 802.11b/g/n PCIe Adapter
1.....Software Loopback Interface 1
```

#### IPv4 Route Table

##### Active Routes:

| Network         | Destination     | Netmask         | Gateway        | Interface     | Metric |
|-----------------|-----------------|-----------------|----------------|---------------|--------|
|                 | 0.0.0.0         | 0.0.0.0         | 192.168.43.239 | 192.168.43.20 | 55     |
|                 | 127.0.0.0       | 255.0.0.0       | On-link        | 127.0.0.1     | 331    |
|                 | 127.0.0.1       | 255.255.255.255 | On-link        | 127.0.0.1     | 331    |
| 127.255.255.255 | 255.255.255.255 | 255.255.255.255 | On-link        | 127.0.0.1     | 331    |
| 192.168.43.0    | 255.255.255.0   | On-link         | 192.168.43.20  | 311           |        |
| 192.168.43.20   | 255.255.255.255 | On-link         | 192.168.43.20  | 311           |        |
| 192.168.43.255  | 255.255.255.255 | On-link         | 192.168.43.20  | 311           |        |
| 192.168.137.0   | 255.255.255.0   | On-link         | 192.168.137.1  | 281           |        |
| 192.168.137.1   | 255.255.255.255 | On-link         | 192.168.137.1  | 281           |        |
| 192.168.137.255 | 255.255.255.255 | On-link         | 192.168.137.1  | 281           |        |
| 224.0.0.0       | 240.0.0.0       | On-link         | 127.0.0.1      | 331           |        |
| 224.0.0.0       | 240.0.0.0       | On-link         | 192.168.43.20  | 311           |        |
| 224.0.0.0       | 240.0.0.0       | On-link         | 192.168.137.1  | 281           |        |
| 255.255.255.255 | 255.255.255.255 | On-link         | 127.0.0.1      | 331           |        |
| 255.255.255.255 | 255.255.255.255 | On-link         | 192.168.43.20  | 311           |        |
| 255.255.255.255 | 255.255.255.255 | On-link         | 192.168.137.1  | 281           |        |

##### Persistent Routes:

None

#### IPv6 Route Table

##### Active Routes:

| If | Metric | Network                                    | Destination | Gateway                   |
|----|--------|--|-------------|---------------------------|
| 8  | 71     | ::/0                                       |             | fe80::6041:faff:feec:7670 |
| 1  | 331    | ::1/128                                    |             | On-link                   |
| 8  | 71     | 2409:4064:38f:8784::/64                    |             | On-link                   |
| 8  | 311    | 2409:4064:38f:8784:b966:b2fa:c4f7:8b07/128 |             | On-link                   |
| 8  | 311    | 2409:4064:38f:8784:e494:50a3:157a:b54a/128 |             | On-link                   |
| 8  | 311    | fe80::/64                                  |             | On-link                   |
| 4  | 281    | fe80::/64                                  |             | On-link                   |
| 4  | 281    | fe80::a11b:ef56:19e2:6d68/128              |             | On-link                   |
| 8  | 311    | fe80::b966:b2fa:c4f7:8b07/128              |             | On-link                   |
| 1  | 331    | ff00::/8                                   |             | On-link                   |
| 8  | 311    | ff00::/8                                   |             | On-link                   |
| 4  | 281    | ff00::/8                                   |             | On-link                   |

##### Persistent Routes:

None

```
HP@LAPTOP-JEL6DNS6 MINGW64 ~
```

```
$ netstat -a
```

## Active Connections

| Proto | Local Address                                  | Foreign Address                                | State       |
|-------|--|--|-------------|
| TCP   | 0.0.0.0:135                                    | LAPTOP-JEL6DNS6:0                              | LISTENING   |
| TCP   | 0.0.0.0:445                                    | LAPTOP-JEL6DNS6:0                              | LISTENING   |
| TCP   | 0.0.0.0:5040                                   | LAPTOP-JEL6DNS6:0                              | LISTENING   |
| TCP   | 0.0.0.0:7250                                   | LAPTOP-JEL6DNS6:0                              | LISTENING   |
| TCP   | 0.0.0.0:7680                                   | LAPTOP-JEL6DNS6:0                              | LISTENING   |
| TCP   | 0.0.0.0:49664                                  | LAPTOP-JEL6DNS6:0                              | LISTENING   |
| TCP   | 0.0.0.0:49665                                  | LAPTOP-JEL6DNS6:0                              | LISTENING   |
| TCP   | 0.0.0.0:49666                                  | LAPTOP-JEL6DNS6:0                              | LISTENING   |
| TCP   | 0.0.0.0:49667                                  | LAPTOP-JEL6DNS6:0                              | LISTENING   |
| TCP   | 0.0.0.0:49668                                  | LAPTOP-JEL6DNS6:0                              | LISTENING   |
| TCP   | 0.0.0.0:49669                                  | LAPTOP-JEL6DNS6:0                              | LISTENING   |
| TCP   | 127.0.0.1:58685                                | login:58686                                    | ESTABLISHED |
| TCP   | 127.0.0.1:58686                                | login:58685                                    | ESTABLISHED |
| TCP   | 127.0.0.1:58694                                | login:58695                                    | ESTABLISHED |
| TCP   | 127.0.0.1:58695                                | login:58694                                    | ESTABLISHED |
| TCP   | 127.0.0.1:58697                                | login:58698                                    | ESTABLISHED |
| TCP   | 127.0.0.1:58698                                | login:58697                                    | ESTABLISHED |
| TCP   | 127.0.0.1:58702                                | login:58703                                    | ESTABLISHED |
| TCP   | 127.0.0.1:58703                                | login:58702                                    | ESTABLISHED |
| TCP   | 127.0.0.1:59505                                | login:59506                                    | ESTABLISHED |
| TCP   | 127.0.0.1:59506                                | login:59505                                    | ESTABLISHED |
| TCP   | 127.0.0.1:59845                                | login:59846                                    | ESTABLISHED |
| TCP   | 127.0.0.1:59846                                | login:59845                                    | ESTABLISHED |
| TCP   | 127.0.0.1:59871                                | login:59872                                    | ESTABLISHED |
| TCP   | 127.0.0.1:59872                                | login:59871                                    | ESTABLISHED |
| TCP   | 192.168.43.20:139                              | LAPTOP-JEL6DNS6:0                              | LISTENING   |
| TCP   | 192.168.43.20:139                              | LAPTOP-JEL6DNS6:0                              | LISTENING   |
| TCP   | 192.168.43.20:58717                            | ec2-52-38-188-32:https                         | ESTABLISHED |
| TCP   | 192.168.43.20:59288                            | ns3036908:3333                                 | ESTABLISHED |
| TCP   | 192.168.43.20:60003                            | 20.198.162.78:https                            | ESTABLISHED |
| TCP   | 192.168.43.20:60004                            | 52.114.14.208:https                            | ESTABLISHED |
| TCP   | 192.168.43.20:60063                            | 239:https                                      | TIME_WAIT   |
| TCP   | 192.168.43.20:60064                            | 52.114.16.138:https                            | ESTABLISHED |
| TCP   | 192.168.137.1:139                              | LAPTOP-JEL6DNS6:0                              | LISTENING   |
| TCP   | :::135   | LAPTOP-JEL6DNS6:0                              | LISTENING   |
| TCP   | :::445   | LAPTOP-JEL6DNS6:0                              | LISTENING   |
| TCP   | :::7250  | LAPTOP-JEL6DNS6:0                              | LISTENING   |
| TCP   | :::7680  | LAPTOP-JEL6DNS6:0                              | LISTENING   |
| TCP   | :::49664                                       | LAPTOP-JEL6DNS6:0                              | LISTENING   |
| TCP   | :::49665                                       | LAPTOP-JEL6DNS6:0                              | LISTENING   |
| TCP   | :::49666                                       | LAPTOP-JEL6DNS6:0                              | LISTENING   |
| TCP   | :::49667                                       | LAPTOP-JEL6DNS6:0                              | LISTENING   |
| TCP   | :::49668                                       | LAPTOP-JEL6DNS6:0                              | LISTENING   |
| TCP   | :::49669                                       | LAPTOP-JEL6DNS6:0                              | LISTENING   |
| TCP   | [2409:4064:38f:8784:e494:50a3:157a:b54a]:59439 | [2405:200:1630:8bf::57]:https                  | CLOSE_WAIT  |
| TCP   | [2409:4064:38f:8784:e494:50a3:157a:b54a]:60034 | whatsapp-cdn6-shv-01-del1:https                | ESTABLISHED |
| TCP   | [2409:4064:38f:8784:e494:50a3:157a:b54a]:60054 | [2603:1040:f02:6::15]:https                    | ESTABLISHED |
| TCP   | [2409:4064:38f:8784:e494:50a3:157a:b54a]:60073 | [2603:1046:c01:1000::2]:https                  | ESTABLISHED |
| TCP   | [2409:4064:38f:8784:e494:50a3:157a:b54a]:60074 | [2606:2800:147:120f:30c:1ba0:fc6:265a]:https   | CLOSE_WAIT  |
| TCP   | [2409:4064:38f:8784:e494:50a3:157a:b54a]:60075 | [2606:2800:147:120f:30c:1ba0:fc6:265a]:https   | CLOSE_WAIT  |
| TCP   | [2409:4064:38f:8784:e494:50a3:157a:b54a]:60077 | del11s09-in-x0e:https                          | TIME_WAIT   |
| TCP   | [2409:4064:38f:8784:e494:50a3:157a:b54a]:60080 | [2405:200:1630:a0a::312c:c358]:https           | ESTABLISHED |
| TCP   | [2409:4064:38f:8784:e494:50a3:157a:b54a]:60081 | [2405:200:1630:a0a::312c:c358]:https           | ESTABLISHED |
| TCP   | [2409:4064:38f:8784:e494:50a3:157a:b54a]:60082 | [2405:200:1630:a0a::312c:c358]:https           | ESTABLISHED |
| TCP   | [2409:4064:38f:8784:e494:50a3:157a:b54a]:60083 | [2405:200:1630:a0a::312c:c358]:https           | ESTABLISHED |
| TCP   | [2409:4064:38f:8784:e494:50a3:157a:b54a]:60084 | [2405:200:1630:a0a::312c:c358]:https           | ESTABLISHED |
| TCP   | [2409:4064:38f:8784:e494:50a3:157a:b54a]:60085 | [2405:200:1630:a0a::312c:c358]:https           | ESTABLISHED |
| TCP   | [2409:4064:38f:8784:e494:50a3:157a:b54a]:60092 | bom05s15-in-x16:https                          | ESTABLISHED |
| TCP   | [2409:4064:38f:8784:e494:50a3:157a:b54a]:60093 | del103s14-in-x03:http                          | ESTABLISHED |
| TCP   | [2409:4064:38f:8784:e494:50a3:157a:b54a]:60094 | bom12s05-in-x0e:https                          | ESTABLISHED |
| TCP   | [2409:4064:38f:8784:e494:50a3:157a:b54a]:60096 | [2405:200:1630:ff95:face:b00c:3333:7020]:https | ESTABLISHED |
| TCP   | [2409:4064:38f:8784:e494:50a3:157a:b54a]:60097 | [2405:200:1630:ff87:face:b00c:3333:7020]:https | ESTABLISHED |

```

UDP      0.0.0.0:5050          *: *
UDP      0.0.0.0:5353          *: *
UDP      0.0.0.0:5355          *: *
UDP      0.0.0.0:56346        *: *
UDP      0.0.0.0:59762        *: *
UDP      127.0.0.1:1900        *: *
UDP      127.0.0.1:49664       *: *
UDP      127.0.0.1:60617       *: *
UDP      192.168.43.20:137     *: *
UDP      192.168.43.20:138     *: *
UDP      192.168.43.20:1900    *: *
UDP      192.168.43.20:60616   *: *
UDP      192.168.137.1:67      *: *
UDP      192.168.137.1:68      *: *
UDP      192.168.137.1:137     *: *
UDP      192.168.137.1:138     *: *
UDP      192.168.137.1:1900    *: *
UDP      192.168.137.1:60615   *: *
UDP      [::]:5353             *: *
UDP      [::]:5355             *: *
UDP      [::]:50094            *: *
UDP      [::]:56346            *: *
UDP      [::]:59762            *: *
UDP      [::1]:1900            *: *
UDP      [::1]:60614           *: *
UDP      [fe80::a11b:ef56:19e2:6d68%4]:1900 *: *
UDP      [fe80::a11b:ef56:19e2:6d68%4]:60612 *: *
UDP      [fe80::b966:b2fa:c4f7:8b07%8]:1900 *: *
UDP      [fe80::b966:b2fa:c4f7:8b07%8]:60613 *: *

```

HP@LAPTOP-JEL6DNS6 MINGW64 ~

\$ ping 25.56.227.210

Pinging 25.56.227.210 with 32 bytes of data:

Reply from 25.56.227.210: bytes=32 time=2ms TTL=64

Reply from 25.56.227.210: bytes=32 time=2ms TTL=64

Reply from 25.56.227.210: bytes=32 time=2ms TTL=64

Reply from 25.56.227.210: bytes=32 time=3ms TTL=64

Ping statistics for 25.56.227.210:

Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),

Approximate round trip times in milli-seconds:

Minimum = 2ms, Maximum = 3ms, Average = 2ms

HP@LAPTOP-JEL6DNS6 MINGW64 ~

\$ tracert 25.56.227.210

Tracing route to 25.56.227.210 over a maximum of 30 hops

```

1          5 ms          5 ms          4 ms    25.56.227.210

```

Trace complete.



```
HP@LAPTOP-JEL6DNS6 MINGW64 ~
```

```
$ ping 192.168.43.19
```

```
Pinging 192.168.43.19 with 32 bytes of data:
```

```
Reply from 192.168.43.19: bytes=32 time=28ms TTL=64
```

```
Reply from 192.168.43.19: bytes=32 time=4ms TTL=64
```

```
Reply from 192.168.43.19: bytes=32 time=63ms TTL=64
```

```
Reply from 192.168.43.19: bytes=32 time=9ms TTL=64
```

```
Ping statistics for 192.168.43.19:
```

```
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
```

```
Approximate round trip times in milli-seconds:
```

```
    Minimum = 4ms, Maximum = 63ms, Average = 26ms
```

```
HP@LAPTOP-JEL6DNS6 MINGW64 ~
```

```
$ tracert 192.168.43.19
```

```
Tracing route to 192.168.43.19 over a maximum of 30 hops
```

```
  0      1      4 ms      5 ms      6 ms      192.168.43.19
```

```
Trace complete.
```