ASSIGNMENT

Submitted By,

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S2RMCA Batch A

Roll No:29

1.Try out these network commands in Window as well as in Linux and perform at least 4 options with each command: ping route traceroute, nslookup,Ip Config, NetStat .

Windows

- **Ping**

```
Microsoft Windows [Version 10.0.17134.1]
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C:\Program Files>ping google.com

Pinging google.com [2404:6800:4007:825::200e] with 32 bytes of data:
Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 2404:6800:4007:825::200e:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

```
C:\Program Files>ping -a google.com

Pinging google.com [2404:6800:4009:826::200e] with 32 bytes of data:
Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 2404:6800:4009:826::200e:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

```
C:\Program Files>ping -j google.com

Pinging google.com [142.250.183.238] with 32 bytes of data:
General failure.
General failure.
General failure.
General failure.

Ping statistics for 142.250.183.238:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\Program Files>
```

```
C:\Program Files>ping -4 google.com

Pinging google.com [142.250.183.238] with 32 bytes of data:
Reply from 142.250.183.238: bytes=32 time=1584ms TTL=112
Reply from 142.250.183.238: bytes=32 time=349ms TTL=112
Reply from 142.250.183.238: bytes=32 time=1249ms TTL=112
Request timed out.

Ping statistics for 142.250.183.238:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 349ms, Maximum = 1584ms, Average = 1060ms

C:\Program Files>
```

Route

```
C:\Program Files>route print
===========================================================================
Interface List
 16...b4 b6 86 0c 1b 5b ......Realtek PCIe GBE Family Controller
 14...0a 00 27 00 00 0e ......VirtualBox Host-Only Ethernet Adapter
 20...82 c5 f2 9a 23 4d ......Microsoft Wi-Fi Direct Virtual Adapter
  8...80 c5 f2 9a 23 4d ......Microsoft Wi-Fi Direct Virtual Adapter #2
  3...00 ff 0d 16 c4 cf ......Kaspersky Security Data Escort Adapter
 18...00 ff ad e4 72 5a ......Kaspersky Security Data Escort Adapter #2
  4...80 c5 f2 9a 23 4d ......Realtek RTL8723DE 802.11b/g/n PCIe Adapter
 21...80 c5 f2 9a 23 4c ......Bluetooth Device (Personal Area Network)
  1...........................Software Loopback Interface 1
===========================================================================

IPv4 Route Table
===========================================================================
Active Routes:
Network Destination        Netmask          Gateway       Interface  Metric
          0.0.0.0          0.0.0.0     192.168.43.1   192.168.43.205     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         On-link        127.0.0.1    331
     192.168.43.0    255.255.255.0         On-link   192.168.43.205    311
   192.168.43.205  255.255.255.255         On-link   192.168.43.205    311
   192.168.43.255  255.255.255.255         On-link   192.168.43.205    311
     192.168.56.0    255.255.255.0         On-link    192.168.56.1    281
     192.168.56.1  255.255.255.255         On-link    192.168.56.1    281
   192.168.56.255  255.255.255.255         On-link    192.168.56.1    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    192.168.56.1    281
        224.0.0.0        240.0.0.0         On-link   192.168.43.205    311
  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    192.168.56.1    281
  255.255.255.255  255.255.255.255         On-link   192.168.43.205    311
===========================================================================
Persistent Routes:
  None
```

```
IPv6 Route Table
===========================================================================
Active Routes:
 If Metric Network Destination      Gateway
  4      71 ::/0                     fe80::82ce:b9ff:febf:4cfb
  1     331 ::1/128                  On-link
  4      71 2409:4073:4e01:734a::/64 On-link
  4     311 2409:4073:4e01:734a:188c:afcd:8641:4d25/128
                                     On-link
  4     311 2409:4073:4e01:734a:71c9:bb48:16af:dbb3/128
                                     On-link
 14     281 fe80::/64                On-link
  4     311 fe80::/64                On-link
  4     311 fe80::188c:afcd:8641:4d25/128
                                     On-link
 14     281 fe80::b8e1:1444:8093:966/128
                                     On-link
  1     331 ff00::/8                 On-link
 14     281 ff00::/8                 On-link
  4     311 ff00::/8                 On-link
===========================================================================
Persistent Routes:
  None

C:\Program Files>ping -j google.com
```

```
C:\Program Files>route print -4
===========================================================================
Interface List
 16...b4 b6 86 0c 1b 5b ......Realtek PCIe GBE Family Controller
 14...0a 00 27 00 00 0e ......VirtualBox Host-Only Ethernet Adapter
 20...82 c5 f2 9a 23 4d ......Microsoft Wi-Fi Direct Virtual Adapter
  8...80 c5 f2 9a 23 4d ......Microsoft Wi-Fi Direct Virtual Adapter #2
  3...00 ff 0d 16 c4 cf ......Kaspersky Security Data Escort Adapter
 18...00 ff ad e4 72 5a ......Kaspersky Security Data Escort Adapter #2
  4...80 c5 f2 9a 23 4d ......Realtek RTL8723DE 802.11b/g/n PCIe Adapter
 21...80 c5 f2 9a 23 4c ......Bluetooth Device (Personal Area Network)
  1...........................Software Loopback Interface 1
===========================================================================

IPv4 Route Table
===========================================================================
Active Routes:
```

```
IPv4 Route Table
===========================================================================
Active Routes:
Network Destination        Netmask          Gateway       Interface  Metric
          0.0.0.0          0.0.0.0      192.168.43.1   192.168.43.205     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         On-link         127.0.0.1    331
     192.168.43.0    255.255.255.0         On-link    192.168.43.205    311
   192.168.43.205  255.255.255.255         On-link    192.168.43.205    311
   192.168.43.255  255.255.255.255         On-link    192.168.43.205    311
     192.168.56.0    255.255.255.0         On-link      192.168.56.1    281
     192.168.56.1  255.255.255.255         On-link      192.168.56.1    281
   192.168.56.255  255.255.255.255         On-link      192.168.56.1    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      192.168.56.1    281
        224.0.0.0        240.0.0.0         On-link    192.168.43.205    311
  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      192.168.56.1    281
  255.255.255.255  255.255.255.255         On-link    192.168.43.205    311
===========================================================================
Persistent Routes:
  None

C:\Program Files>
```

```
C:\Program Files>route print -6
===========================================================================
Interface List
 16...b4 b6 86 0c 1b 5b ......Realtek PCIe GBE Family Controller
 14...0a 00 27 00 00 0e ......VirtualBox Host-Only Ethernet Adapter
 20...82 c5 f2 9a 23 4d ......Microsoft Wi-Fi Direct Virtual Adapter
  8...80 c5 f2 9a 23 4d ......Microsoft Wi-Fi Direct Virtual Adapter #2
  3...00 ff 0d 16 c4 cf ......Kaspersky Security Data Escort Adapter
 18...00 ff ad e4 72 5a ......Kaspersky Security Data Escort Adapter #2
  4...80 c5 f2 9a 23 4d ......Realtek RTL8723DE 802.11b/g/n PCIe Adapter
 21...80 c5 f2 9a 23 4c ......Bluetooth Device (Personal Area Network)
  1...........................Software Loopback Interface 1
===========================================================================

IPv6 Route Table
===========================================================================
Active Routes:
 If Metric Network Destination      Gateway
  4     71 ::/0                     fe80::82ce:b9ff:febf:4cfb
  1    331 ::1/128                  On-link
  4     71 2409:4073:4e01:734a::/64 On-link
  4    311 2409:4073:4e01:734a:188c:afcd:8641:4d25/128
                                    On-link
  4    311 2409:4073:4e01:734a:71c9:bb48:16af:dbb3/128
                                    On-link
 14    281 fe80::/64                On-link
  4    311 fe80::/64                On-link
  4    311 fe80::188c:afcd:8641:4d25/128
                                    On-link
 14    281 fe80::b8e1:1444:8093:966/128
                                    On-link
  1    331 ff00::/8                 On-link
 14    281 ff00::/8                 On-link
  4    311 ff00::/8                 On-link
===========================================================================
Persistent Routes:
  None
```

```
C:\Program Files>route print *157
===========================================================================
Interface List
 16...b4 b6 86 0c 1b 5b ......Realtek PCIe GBE Family Controller
 14...0a 00 27 00 00 0e ......VirtualBox Host-Only Ethernet Adapter
 20...82 c5 f2 9a 23 4d ......Microsoft Wi-Fi Direct Virtual Adapter
  8...80 c5 f2 9a 23 4d ......Microsoft Wi-Fi Direct Virtual Adapter #2
  3...00 ff 0d 16 c4 cf ......Kaspersky Security Data Escort Adapter
 18...00 ff ad e4 72 5a ......Kaspersky Security Data Escort Adapter #2
  4...80 c5 f2 9a 23 4d ......Realtek RTL8723DE 802.11b/g/n PCIe Adapter
 21...80 c5 f2 9a 23 4c ......Bluetooth Device (Personal Area Network)
  1...........................Software Loopback Interface 1
===========================================================================

IPv4 Route Table
===========================================================================
Active Routes:
  None
Persistent Routes:
  None

IPv6 Route Table
===========================================================================
Active Routes:
  None
Persistent Routes:
  None
```

Tracert

```
C:\Program Files>tracert  192.168.1.1

Tracing route to 192.168.1.1 over a maximum of 30 hops

  1    323 ms    100 ms     95 ms   192.168.43.1
  2     *         *          *       Request timed out.
  3    210 ms    259 ms      *       56.8.126.45
  4    325 ms    201 ms    176 ms    172.26.104.197
  5    287 ms    303 ms    303 ms    172.26.104.211
  6    276 ms    302 ms   3374 ms    192.168.14.32
  7    272 ms    405 ms    610 ms    192.168.14.33
  8    245 ms    235 ms    307 ms    172.16.3.14
  9    420 ms    304 ms    301 ms    172.16.81.0
 10    475 ms    302 ms    215 ms    172.16.0.159
 11    279 ms    204 ms    187 ms    172.16.21.20
 12    217 ms    187 ms    190 ms    172.16.2.9
 13     *         *          *       Request timed out.
 14     *         *          *       Request timed out.
 15     *         *          *       Request timed out.
 16     *         *          *       Request timed out.
 17     *         *          *       Request timed out.
 18     *         *          *       Request timed out.
 19     *         *          *       Request timed out.
 20     *         *          *       Request timed out.
 21     *         *          *       Request timed out.
 22     *         *          *       Request timed out.
 23     *         *          *       Request timed out.
 24     *         *          *       Request timed out.
 25     *         *          *       Request timed out.
 26     *
 22     *         *          *       Request timed out.
 23     *         *          *       Request timed out.
 24     *         *          *       Request timed out.
 25     *         *          *       Request timed out.
 26     *         *          *       Request timed out.
 27     *         *          *       Request timed out.
 28     *         *          *       Request timed out.
 29     *         *          *       Request timed out.
 30     *         *          *       Request timed out.

Trace complete.
```

```
C:\Program Files>tracert  www.google.com

Tracing route to www.google.com [2404:6800:4002:818::2004]
over a maximum of 30 hops:

  1    246 ms    200 ms    200 ms  2409:4073:4e01:734a::f4
  2     *         *         *      Request timed out.
  3     *         *         *      Request timed out.
  4     *         *         *      Request timed out.
  5     *         *         *      Request timed out.
  6     *         *         *      Request timed out.
  7     *         *         *      Request timed out.
  8     *         *         *      Request timed out.
  9     *         *         *      Request timed out.
 10     *         *         *      Request timed out.
 11     *         *         *      Request timed out.
 12     *         *         *      Request timed out.
 13     *         *         *      Request timed out.
 14     *         *         *      Request timed out.
 15     *         *         *      Request timed out.
 16     *         *         *      Request timed out.
 17     *         *         *      Request timed out.
 18     *         *         *      Request timed out.
 19     *         *         *      Request timed out.
 20     *         *         *      Request timed out.
 21     *         *         *      Request timed out.
 22     *         *         *      Request timed out.
 23     *         *         *      Request timed out.
 24     *         *         *      Request timed out.
 25     *         *         *      Request timed out.
 26     *         *         *      Request timed out.
 19     *         *         *      Request timed out.
 20     *         *         *      Request timed out.
 21     *         *         *      Request timed out.
 22     *         *         *      Request timed out.
 23     *         *         *      Request timed out.
 24     *         *         *      Request timed out.
 25     *         *         *      Request timed out.
 26     *         *         *      Request timed out.
 27     *         *         *      Request timed out.
 28     *         *         *      Request timed out.
 29     *         *         *      Request timed out.
 30     *         *         *      Request timed out.

Trace complete.
```

```
C:\Program Files>tracert  -d www.yahoo.com

Tracing route to new-fp-shed.wg1.b.yahoo.com [2406:2000:e4:1605::9001]
over a maximum of 30 hops:

  1    156 ms    190 ms    405 ms  2409:4073:4e01:734a::f4
  2     *         *         *      Request timed out.
  3     *         *         *      Request timed out.
  4     *         *         *      Request timed out.
  5     *         *         *      Request timed out.
  6     *         *         *      Request timed out.
  7     *         *         *      Request timed out.
  8     *         *         *      Request timed out.
  9     *         *         *      Request timed out.
 10     *         *         *      Request timed out.
 11     *         *         *      Request timed out.
 12     *         *         *      Request timed out.
 13     *         *         *      Request timed out.
 14     *         *         *      Request timed out.
 15     *         *
```

```
  7     *         *         *      Request timed out.
  8     *         *         *      Request timed out.
  9     *         *         *      Request timed out.
 10     *         *         *      Request timed out.
 11     *         *         *      Request timed out.
 12     *         *         *      Request timed out.
 13     *         *         *      Request timed out.
 14     *         *         *      Request timed out.
 15     *         *         *      Request timed out.
 16     *         *         *      Request timed out.
 17     *         *         *      Request timed out.
 18     *         *         *      Request timed out.
 19     *         *         *      Request timed out.
 20     *         *         *      Request timed out.
 21     *         *         *      Request timed out.
 22     *         *         *      Request timed out.
 23     *         *         *      Request timed out.
 24     *         *         *      Request timed out.
 25     *         *         *      Request timed out.
 26     *         *         *      Request timed out.
 27     *         *         *      Request timed out.
 28     *         *         *      Request timed out.
 29     *         *         *      Request timed out.
 30     *         *         *      Request timed out.

Trace complete.
```

```
C:\Program Files>tracert 22.110.0.1

Tracing route to 22.110.0.1 over a maximum of 30 hops

  1     88 ms     100 ms     101 ms   192.168.43.1
  2      *          *          *       Request timed out.
  3      *         543 ms     612 ms   56.8.126.69
  4    215 ms      197 ms     226 ms   172.26.104.197
  5    173 ms      155 ms     187 ms   172.26.104.211
  6    434 ms      305 ms     203 ms   192.168.14.32
  7    211 ms      201 ms     183 ms   192.168.14.35
  8    275 ms      510 ms     305 ms   172.16.21.21
  9    190 ms      199 ms     237 ms   172.16.81.6
 10    275 ms      304 ms     306 ms   172.16.3.91
 11    302 ms      483 ms     203 ms   172.16.3.15
 12    731 ms      314 ms     399 ms   172.16.2.60
 13    425 ms       *         736 ms   103.198.140.27
 14   1031 ms     1326 ms    1276 ms   103.198.140.27
 15    436 ms     1543 ms     679 ms   hurricane.mrs.franceix.net [37.49.232.13]
 16    661 ms      406 ms     406 ms   port-channel1.core2.mrs1.he.net [184.104.197.42]
 17    564 ms      407 ms     305 ms   ve952.core1.bio1.he.net [184.104.196.78]
 18   1183 ms      668 ms     444 ms   100ge0-30.core1.orf2.he.net [184.105.64.122]
 19    500 ms      613 ms     509 ms   100ge15-1.core2.ash1.he.net [184.105.64.121]
 20      *          *          *       Request timed out.
 21      *          *          *       Request timed out.
 22      *          *          *       Request timed out.
 23      *          *          *       Request timed out.
 24      *          *          *       Request timed out.
 25      *          *          *       Request timed out.
 26      *          *          *       Request timed out.
 27      *          *          *       Request timed out.
 28      *          *          *       Request timed out.
 29      *          *          *       Request timed out.
 30      *          *          *       Request timed out.

Trace complete.
```

Nslookup

```
C:\Program Files>nslookup
Default Server:  UnKnown
Address:   192.168.43.1
```

```
C:\Program Files>nslookup google.com
DNS request timed out.
    timeout was 2 seconds.
Server:  UnKnown
Address:  192.168.43.1

Non-authoritative answer:
DNS request timed out.
    timeout was 2 seconds.
Name:     google.com
Address:  142.250.195.142
```

```
C:\Program Files>nslookup -q=MX  google.com
Server:  UnKnown
Address:  192.168.43.1

Non-authoritative answer:
google.com      MX preference = 10, mail exchanger = aspmx.l.google.com
google.com      MX preference = 30, mail exchanger = alt2.aspmx.l.google.com
google.com      MX preference = 20, mail exchanger = alt1.aspmx.l.google.com
google.com      MX preference = 40, mail exchanger = alt3.aspmx.l.google.com
google.com      MX preference = 50, mail exchanger = alt4.aspmx.l.google.com
```

```
C:\Program Files>nslookup -type=ns google.com
Server:  UnKnown
Address:  192.168.43.1

Non-authoritative answer:
google.com      nameserver = ns2.google.com
google.com      nameserver = ns4.google.com
google.com      nameserver = ns3.google.com
google.com      nameserver = ns1.google.com
```

Ipconfig

```
C:\Program Files>ipconfig

Windows IP Configuration


Ethernet adapter Ethernet:

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

Ethernet adapter VirtualBox Host-Only Network:

   Connection-specific DNS Suffix  . :
   Link-local IPv6 Address . . . . . : fe80::b8e1:1444:8093:966%14
   IPv4 Address. . . . . . . . . . . : 192.168.56.1
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Default Gateway . . . . . . . . . :

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  . :

Ethernet adapter Ethernet 2:
```

```
Ethernet adapter Ethernet 2:

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

Ethernet adapter Ethernet 3:

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

Wireless LAN adapter Wi-Fi:

   Connection-specific DNS Suffix  . :
   IPv6 Address. . . . . . . . . . . : 2409:4073:4e01:734a:188c:afcd:86
   Temporary IPv6 Address. . . . . . : 2409:4073:4e01:734a:71c9:bb48:16
   Link-local IPv6 Address . . . . . : fe80::188c:afcd:8641:4d25%4
   IPv4 Address. . . . . . . . . . . : 192.168.43.205
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Default Gateway . . . . . . . . . : fe80::82ce:b9ff:febf:4cfb%4
                                       192.168.43.1

Ethernet adapter Bluetooth Network Connection:

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

```
C:\Program Files>ipconfig /allcompartments

Windows IP Configuration


==============================================================================
Network Information for Compartment 1 (ACTIVE)
==============================================================================

Ethernet adapter Ethernet:

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

Ethernet adapter VirtualBox Host-Only Network:

   Connection-specific DNS Suffix  . :
   Link-local IPv6 Address . . . . . : fe80::b8e1:1444:8093:966%14
   IPv4 Address. . . . . . . . . . . : 192.168.56.1
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Default Gateway . . . . . . . . . :

Wireless LAN adapter Local Area Connection* 2:

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

Wireless LAN adapter Local Area Connection* 3:
```

```
C:\Program Files>ipconfig /displaydns

Windows IP Configuration

    www.fastjobsearchers.com
    ----------------------------------------
    Record Name . . . . . : www.fastjobsearchers.com
    Record Type . . . . . : 1
    Time To Live  . . . . : 10241
    Data Length . . . . . : 4
    Section . . . . . . . : Answer
    A (Host) Record . . . : 119.18.54.75


    www.aesajce.in
    ----------------------------------------
    Record Name . . . . . : www.aesajce.in
    Record Type . . . . . : 5
    Time To Live  . . . . : 1310
    Data Length . . . . . : 8
    Section . . . . . . . : Answer
    CNAME Record  . . . . : aesajce.in


    Record Name . . . . . : aesajce.in
    Record Type . . . . . : 1
    Time To Live  . . . . : 1310
    Data Length . . . . . : 4
    Section . . . . . . . : Answer
```

```
C:\Program Files>ipconfig /release

Windows IP Configuration

No operation can be performed on Ethernet while it has its media disconnected.
No operation can be performed on Local Area Connection* 2 while it has its media disconnected.
No operation can be performed on Local Area Connection* 3 while it has its media disconnected.
No operation can be performed on Ethernet 2 while it has its media disconnected.
No operation can be performed on Ethernet 3 while it has its media disconnected.
No operation can be performed on Bluetooth Network Connection while it has its media disconnected.

Ethernet adapter Ethernet:

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

Ethernet adapter VirtualBox Host-Only Network:

   Connection-specific DNS Suffix  . :
   Link-local IPv6 Address . . . . . : fe80::b8e1:1444:8093:966%14
   IPv4 Address. . . . . . . . . . . : 192.168.56.1
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Default Gateway . . . . . . . . . :

Wireless LAN adapter Local Area Connection* 2:

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

Netstat

```
C:\Program Files>netstat

Active Connections

  Proto  Local Address          Foreign Address        State
  TCP    [2409:4073:4e01:734a:71c9:bb48:16af:dbb3]:54159   maa05s20-in-x03:https  TIME_WAIT
  TCP    [2409:4073:4e01:734a:71c9:bb48:16af:dbb3]:54289   maa03s44-in-x04:https  ESTABLISHED
  TCP    [2409:4073:4e01:734a:71c9:bb48:16af:dbb3]:57218   sc-in-xbc:5228         ESTABLISHED
  TCP    [2409:4073:4e01:734a:71c9:bb48:16af:dbb3]:57302   maa05s22-in-x03:https  ESTABLISHED
  TCP    [2409:4073:4e01:734a:71c9:bb48:16af:dbb3]:60597   maa05s22-in-x03:https  ESTABLISHED
  TCP    [2409:4073:4e01:734a:71c9:bb48:16af:dbb3]:61313   del12s07-in-x01:https  ESTABLISHED
```

```
C:\Program Files>netstat -n

Active Connections

  Proto  Local Address          Foreign Address        State
  TCP    [2409:4073:4e01:734a:71c9:bb48:16af:dbb3]:50204   [2404:6800:4009:824::200e]:443  TIME_WAIT
  TCP    [2409:4073:4e01:734a:71c9:bb48:16af:dbb3]:53337   [2404:6800:4007:81d::2003]:443  TIME_WAIT
  TCP    [2409:4073:4e01:734a:71c9:bb48:16af:dbb3]:54159   [2404:6800:4007:81b::2003]:443  TIME_WAIT
  TCP    [2409:4073:4e01:734a:71c9:bb48:16af:dbb3]:54289   [2404:6800:4007:829::2004]:443  TIME_WAIT
  TCP    [2409:4073:4e01:734a:71c9:bb48:16af:dbb3]:55506   [2404:6800:4007:81b::2003]:443  TIME_WAIT
  TCP    [2409:4073:4e01:734a:71c9:bb48:16af:dbb3]:57218   [2404:6800:4003:c02::bc]:5228   ESTABLISHED
  TCP    [2409:4073:4e01:734a:71c9:bb48:16af:dbb3]:57584   [2404:6800:4009:812::200e]:443  TIME_WAIT
  TCP    [2409:4073:4e01:734a:71c9:bb48:16af:dbb3]:60077   [2404:6800:4009:824::200e]:443  ESTABLISHED
  TCP    [2409:4073:4e01:734a:71c9:bb48:16af:dbb3]:60597   [2404:6800:4007:81d::2003]:443  TIME_WAIT
  TCP    [2409:4073:4e01:734a:71c9:bb48:16af:dbb3]:61313   [2404:6800:4002:824::2001]:443  TIME_WAIT
```

```
C:\Program Files>netstat -n 5

Active Connections

  Proto  Local Address          Foreign Address        State
  TCP    [2409:4073:4e01:734a:71c9:bb48:16af:dbb3]:50204   [2404:6800:4009:824::200e]:443  TIME_WAIT
  TCP    [2409:4073:4e01:734a:71c9:bb48:16af:dbb3]:53337   [2404:6800:4007:81d::2003]:443  TIME_WAIT
  TCP    [2409:4073:4e01:734a:71c9:bb48:16af:dbb3]:54159   [2404:6800:4007:81b::2003]:443  TIME_WAIT
  TCP    [2409:4073:4e01:734a:71c9:bb48:16af:dbb3]:54289   [2404:6800:4007:829::2004]:443  TIME_WAIT
  TCP    [2409:4073:4e01:734a:71c9:bb48:16af:dbb3]:55506   [2404:6800:4007:81b::2003]:443  TIME_WAIT
  TCP    [2409:4073:4e01:734a:71c9:bb48:16af:dbb3]:57218   [2404:6800:4003:c02::bc]:5228   ESTABLISHED
  TCP    [2409:4073:4e01:734a:71c9:bb48:16af:dbb3]:57584   [2404:6800:4009:812::200e]:443  TIME_WAIT
  TCP    [2409:4073:4e01:734a:71c9:bb48:16af:dbb3]:60077   [2404:6800:4009:824::200e]:443  TIME_WAIT
  TCP    [2409:4073:4e01:734a:71c9:bb48:16af:dbb3]:60597   [2404:6800:4007:81d::2003]:443  TIME_WAIT
  TCP    [2409:4073:4e01:734a:71c9:bb48:16af:dbb3]:61313   [2404:6800:4002:824::2001]:443  TIME_WAIT

Active Connections

  Proto  Local Address          Foreign Address        State
  TCP    [2409:4073:4e01:734a:71c9:bb48:16af:dbb3]:50204   [2404:6800:4009:824::200e]:443  TIME_WAIT
  TCP    [2409:4073:4e01:734a:71c9:bb48:16af:dbb3]:53337   [2404:6800:4007:81d::2003]:443  TIME_WAIT
  TCP    [2409:4073:4e01:734a:71c9:bb48:16af:dbb3]:54159   [2404:6800:4007:81b::2003]:443  TIME_WAIT
  TCP    [2409:4073:4e01:734a:71c9:bb48:16af:dbb3]:54289   [2404:6800:4007:829::2004]:443  TIME_WAIT
  TCP    [2409:4073:4e01:734a:71c9:bb48:16af:dbb3]:55506   [2404:6800:4007:81b::2003]:443  TIME_WAIT
  TCP    [2409:4073:4e01:734a:71c9:bb48:16af:dbb3]:57218   [2404:6800:4003:c02::bc]:5228   ESTABLISHED
  TCP    [2409:4073:4e01:734a:71c9:bb48:16af:dbb3]:57584   [2404:6800:4009:812::200e]:443  TIME_WAIT
  TCP    [2409:4073:4e01:734a:71c9:bb48:16af:dbb3]:60077   [2404:6800:4009:824::200e]:443  TIME_WAIT
  TCP    [2409:4073:4e01:734a:71c9:bb48:16af:dbb3]:60597   [2404:6800:4007:81d::2003]:443  TIME_WAIT
  TCP    [2409:4073:4e01:734a:71c9:bb48:16af:dbb3]:61313   [2404:6800:4002:824::2001]:443  TIME_WAIT
```

```
C:\Program Files>netstat -a

Active Connections

  Proto  Local Address          Foreign Address        State
  TCP    0.0.0.0:135            DESKTOP-IPG3LL3:0       LISTENING
  TCP    0.0.0.0:445            DESKTOP-IPG3LL3:0       LISTENING
  TCP    0.0.0.0:5040           DESKTOP-IPG3LL3:0       LISTENING
  TCP    0.0.0.0:7680           DESKTOP-IPG3LL3:0       LISTENING
  TCP    0.0.0.0:49664          DESKTOP-IPG3LL3:0       LISTENING
  TCP    0.0.0.0:49665          DESKTOP-IPG3LL3:0       LISTENING
  TCP    0.0.0.0:49666          DESKTOP-IPG3LL3:0       LISTENING
  TCP    0.0.0.0:49667          DESKTOP-IPG3LL3:0       LISTENING
  TCP    0.0.0.0:49668          DESKTOP-IPG3LL3:0       LISTENING
  TCP    0.0.0.0:49669          DESKTOP-IPG3LL3:0       LISTENING
  TCP    127.0.0.1:5939         DESKTOP-IPG3LL3:0       LISTENING
  TCP    127.0.0.1:49670        DESKTOP-IPG3LL3:0       LISTENING
  TCP    169.254.77.37:139      DESKTOP-IPG3LL3:0       LISTENING
  TCP    192.168.56.1:139       DESKTOP-IPG3LL3:0       LISTENING
  TCP    [::]:135               DESKTOP-IPG3LL3:0       LISTENING
  TCP    [::]:445               DESKTOP-IPG3LL3:0       LISTENING
  TCP    [::]:7680              DESKTOP-IPG3LL3:0       LISTENING
  TCP    [::]:49664             DESKTOP-IPG3LL3:0       LISTENING
  TCP    [::]:49665             DESKTOP-IPG3LL3:0       LISTENING
  TCP    [::]:49666             DESKTOP-IPG3LL3:0       LISTENING
  TCP    [::]:49667             DESKTOP-IPG3LL3:0       LISTENING
  TCP    [::]:49668             DESKTOP-IPG3LL3:0       LISTENING
  TCP    [::]:49669             DESKTOP-IPG3LL3:0       LISTENING
```

Linux

- ## Ping

```
ashtami@ashtami-VirtualBox:~$ ping google.com
PING google.com (142.250.77.142) 56(84) bytes of data.
64 bytes from maa05s16-in-f14.1e100.net (142.250.77.142): icmp_seq=1 ttl=112 ti
me=361 ms
64 bytes from maa05s16-in-f14.1e100.net (142.250.77.142): icmp_seq=2 ttl=112 ti
me=229 ms
64 bytes from maa05s16-in-f14.1e100.net (142.250.77.142): icmp_seq=3 ttl=112 ti
me=270 ms
64 bytes from maa05s16-in-f14.1e100.net (142.250.77.142): icmp_seq=4 ttl=112 ti
me=235 ms
64 bytes from maa05s16-in-f14.1e100.net (142.250.77.142): icmp_seq=5 ttl=112 ti
me=192 ms
64 bytes from maa05s16-in-f14.1e100.net (142.250.77.142): icmp_seq=6 ttl=112 ti
me=203 ms
64 bytes from maa05s16-in-f14.1e100.net (142.250.77.142): icmp_seq=7 ttl=112 ti
me=198 ms
64 bytes from maa05s16-in-f14.1e100.net (142.250.77.142): icmp_seq=8 ttl=112 ti
me=190 ms
64 bytes from maa05s16-in-f14.1e100.net (142.250.77.142): icmp_seq=9 ttl=112 ti
me=193 ms
64 bytes from maa05s16-in-f14.1e100.net (142.250.77.142): icmp_seq=10 ttl=112 t
ime=194 ms
64 bytes from maa05s16-in-f14.1e100.net (142.250.77.142): icmp_seq=11 ttl=112 t
ime=200 ms
64 bytes from maa05s16-in-f14.1e100.net (142.250.77.142): icmp_seq=12 ttl=112 t
ime=226 ms
64 bytes from maa05s16-in-f14.1e100.net (142.250.77.142): icmp_seq=13 ttl=112 t
ime=267 ms
64 bytes from maa05s16-in-f14.1e100.net (142.250.77.142): icmp_seq=14 ttl=112 t
```

```
ashtami@ashtami-VirtualBox:~$ ping  -a google.com
PING google.com (142.250.77.142) 56(84) bytes of data.
64 bytes from maa05s16-in-f14.1e100.net (142.250.77.142): icmp_seq=1 ttl=112 ti
me=271 ms
64 bytes from maa05s16-in-f14.1e100.net (142.250.77.142): icmp_seq=2 ttl=112 ti
me=294 ms
64 bytes from maa05s16-in-f14.1e100.net (142.250.77.142): icmp_seq=3 ttl=112 ti
me=215 ms
64 bytes from maa05s16-in-f14.1e100.net (142.250.77.142): icmp_seq=4 ttl=112 ti
me=237 ms
64 bytes from maa05s16-in-f14.1e100.net (142.250.77.142): icmp_seq=5 ttl=112 ti
me=181 ms
64 bytes from maa05s16-in-f14.1e100.net (142.250.77.142): icmp_seq=6 ttl=112 ti
me=182 ms
64 bytes from maa05s16-in-f14.1e100.net (142.250.77.142): icmp_seq=7 ttl=112 ti
me=183 ms
64 bytes from maa05s16-in-f14.1e100.net (142.250.77.142): icmp_seq=9 ttl=112 ti
me=177 ms
64 bytes from maa05s16-in-f14.1e100.net (142.250.77.142): icmp_seq=11 ttl=112 t
ime=196 ms
64 bytes from maa05s16-in-f14.1e100.net (142.250.77.142): icmp_seq=12 ttl=112 t
ime=185 ms
64 bytes from maa05s16-in-f14.1e100.net (142.250.77.142): icmp_seq=13 ttl=112 t
ime=183 ms
64 bytes from maa05s16-in-f14.1e100.net (142.250.77.142): icmp_seq=14 ttl=112 t
ime=181 ms
64 bytes from maa05s16-in-f14.1e100.net (142.250.77.142): icmp_seq=15 ttl=112 t
ime=182 ms
64 bytes from maa05s16-in-f14.1e100.net (142.250.77.142): icmp_seq=16 ttl=112 t
```

```
ashtami@ashtami-VirtualBox:~$ ping -v google.com
PING google.com (142.250.195.142) 56(84) bytes of data.
```

```
ashtami@ashtami-VirtualBox:~$ ping -b google.com
PING google.com (142.250.195.142) 56(84) bytes of data.
64 bytes from maa03s40-in-f14.1e100.net (142.250.195.142): icmp_seq=3 ttl=111 t
ime=1641 ms
64 bytes from maa03s40-in-f14.1e100.net (142.250.195.142): icmp_seq=4 ttl=111 t
ime=1744 ms
64 bytes from maa03s40-in-f14.1e100.net (142.250.195.142): icmp_seq=5 ttl=111 t
ime=1360 ms
64 bytes from maa03s40-in-f14.1e100.net (142.250.195.142): icmp_seq=6 ttl=111 t
ime=1399 ms
64 bytes from maa03s40-in-f14.1e100.net (142.250.195.142): icmp_seq=7 ttl=111 t
ime=1118 ms
64 bytes from maa03s40-in-f14.1e100.net (142.250.195.142): icmp_seq=8 ttl=111 t
ime=790 ms
64 bytes from maa03s40-in-f14.1e100.net (142.250.195.142): icmp_seq=9 ttl=111 t
ime=481 ms
64 bytes from maa03s40-in-f14.1e100.net (142.250.195.142): icmp_seq=10 ttl=111
time=1559 ms
64 bytes from maa03s40-in-f14.1e100.net (142.250.195.142): icmp_seq=11 ttl=111
time=1129 ms
64 bytes from maa03s40-in-f14.1e100.net (142.250.195.142): icmp_seq=12 ttl=111
time=920 ms
64 bytes from maa03s40-in-f14.1e100.net (142.250.195.142): icmp_seq=14 ttl=111
time=1784 ms
64 bytes from maa03s40-in-f14.1e100.net (142.250.195.142): icmp_seq=15 ttl=111
time=1411 ms
64 bytes from maa03s40-in-f14.1e100.net (142.250.195.142): icmp_seq=16 ttl=111
time=1329 ms
64 bytes from maa03s40-in-f14.1e100.net (142.250.195.142): icmp_seq=17 ttl=111
```

- **Route**

```
ashtami@ashtami-VirtualBox:~$ route
Kernel IP routing table
Destination     Gateway         Genmask         Flags Metric Ref    Use Iface
default         _gateway        0.0.0.0         UG    100    0        0 enp0s3
10.0.2.0        0.0.0.0         255.255.255.0   U     100    0        0 enp0s3
link-local      0.0.0.0         255.255.0.0     U     1000   0        0 enp0s3
ashtami@ashtami-VirtualBox:~$ route -n
Kernel IP routing table
Destination     Gateway         Genmask         Flags Metric Ref    Use Iface
0.0.0.0         10.0.2.2        0.0.0.0         UG    100    0        0 enp0s3
10.0.2.0        0.0.0.0         255.255.255.0   U     100    0        0 enp0s3
169.254.0.0     0.0.0.0         255.255.0.0     U     1000   0        0 enp0s3
ashtami@ashtami-VirtualBox:~$ route -Cn
Kernel IP routing cache
Source          Destination     Gateway         Flags Metric Ref    Use Iface
ashtami@ashtami-VirtualBox:~$ ip route
default via 10.0.2.2 dev enp0s3 proto dhcp metric 100
10.0.2.0/24 dev enp0s3 proto kernel scope link src 10.0.2.15 metric 100
169.254.0.0/16 dev enp0s3 scope link metric 1000
```

- **Traceroute**

```
ashtami@ashtami-VirtualBox:~$ traceroute
Usage:
  traceroute [ -46dFITnreAUDV ] [ -f first_ttl ] [ -g gate,... ] [ -i device ]
[ -m max_ttl ] [ -N squeries ] [ -p port ] [ -t tos ] [ -l flow_label ] [ -w MA
X,HERE,NEAR ] [ -q nqueries ] [ -s src_addr ] [ -z sendwait ] [ --fwmark=num ]
host [ packetlen ]
Options:
  -4                            Use IPv4
  -6                            Use IPv6
  -d  --debug                   Enable socket level debugging
  -F  --dont-fragment           Do not fragment packets
  -f first_ttl  --first=first_ttl
                                Start from the first_ttl hop (instead from 1)
  -g gate,...  --gateway=gate,...
                                Route packets through the specified gateway
                                (maximum 8 for IPv4 and 127 for IPv6)
  -I  --icmp                    Use ICMP ECHO for tracerouting
  -T  --tcp                     Use TCP SYN for tracerouting (default port is 80)
  -i device  --interface=device
                                Specify a network interface to operate with
  -m max_ttl  --max-hops=max_ttl
                                Set the max number of hops (max TTL to be
                                reached). Default is 30
  -N squeries  --sim-queries=squeries
                                Set the number of probes to be tried
                                simultaneously (default is 16)
  -n                            Do not resolve IP addresses to their domain names
  -p port  --port=port          Set the destination port to use. It is either
                                initial udp port value for "default" method
```

- **Ipconfig**

```
ashtami@ashtami-VirtualBox:~$ ifconfig
enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 10.0.2.15  netmask 255.255.255.0  broadcast 10.0.2.255
        inet6 fe80::4664:8ca7:83d6:e512  prefixlen 64  scopeid 0x20<link>
        ether 08:00:27:02:c3:08  txqueuelen 1000  (Ethernet)
        RX packets 1355  bytes 1221479 (1.2 MB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 1265  bytes 116277 (116.2 KB)
        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 3962  bytes 321045 (321.0 KB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 3962  bytes 321045 (321.0 KB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0
```

- **nslookup**

```
ashtami@ashtami-VirtualBox:~$ nslookup google.com
Server:         127.0.0.53
Address:        127.0.0.53#53
```

- **Netstat**

```
ashtami@ashtami-VirtualBox:~$ netstat
Active Internet connections (w/o servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
udp        0      0 ashtami-VirtualB:bootpc _gateway:bootps          ESTABLISHED
Active UNIX domain sockets (w/o servers)
Proto RefCnt Flags       Type       State         I-Node   Path
unix  2      [ ]         DGRAM                     26494    /run/user/1000/syste
md/notify
unix  2      [ ]         DGRAM                     15155    /run/systemd/journal
/syslog
unix  15     [ ]         DGRAM                     15165    /run/systemd/journal
/dev-log
unix  8      [ ]         DGRAM                     15169    /run/systemd/journal
/socket
unix  3      [ ]         DGRAM                     15141    /run/systemd/notify
unix  3      [ ]         DGRAM                     26496
unix  2      [ ]         DGRAM                     32327
unix  3      [ ]         STREAM     CONNECTED      31641
unix  3      [ ]         STREAM     CONNECTED      29439    @/tmp/.X11-unix/X0
unix  3      [ ]         STREAM     CONNECTED      28033
unix  3      [ ]         STREAM     CONNECTED      22100    /run/systemd/journal
/stdout
unix  3      [ ]         STREAM     CONNECTED      124099
unix  3      [ ]         STREAM     CONNECTED      31414    @/tmp/dbus-YF3pZfSXR
X
unix  3      [ ]         DGRAM                     16272
unix  3      [ ]         STREAM     CONNECTED      33084
unix  2      [ ]         DGRAM                     26387
```

2. Identify and perform 5 more network commands and it's working.

1. Hostname

To communicate with each and other, the computer needs a unique address. A hostname can be alphabetic or alphanumeric and contain specific symbols used specifically to define a specific node or device in the network. For example, a hostname should have a domain name (TLD) of the top-level and a distance between one and 63 characters when used in a domain name system (DNS) or on the Internet.

```
ashtami@ashtami-VirtualBox:~$ hostname
ashtami-VirtualBox
ashtami@ashtami-VirtualBox:~$
```

2. df

df is a standard Unix command used to display the amount of available disk space for file systems on which the invoking user has appropriate read access. df is typically implemented using the statfs or statvfs system calls.

```
ashtami@ashtami-VirtualBox:~$ df
Filesystem      1K-blocks     Used Available Use% Mounted on
udev               515780        0    515780   0% /dev
tmpfs              108992     1344    107648   2% /run
/dev/sda5         9736500  7116844   2105352  78% /
tmpfs              544952        0    544952   0% /dev/shm
tmpfs                5120        4      5116   1% /run/lock
tmpfs              544952        0    544952   0% /sys/fs/cgroup
/dev/loop2          56832    56832         0 100% /snap/core18/2128
/dev/loop1          56832    56832         0 100% /snap/core18/2074
/dev/loop0         224256   224256         0 100% /snap/gnome-3-34-1804/66
/dev/loop3         224256   224256         0 100% /snap/gnome-3-34-1804/72
/dev/loop5          66688    66688         0 100% /snap/gtk-common-themes/1515
/dev/loop4          66432    66432         0 100% /snap/gtk-common-themes/1514
/dev/loop6          52352    52352         0 100% /snap/snap-store/518
/dev/loop7          33152    33152         0 100% /snap/snapd/12704
/dev/loop9          33152    33152         0 100% /snap/snapd/12883
/dev/loop8          52224    52224         0 100% /snap/snap-store/547
/dev/sda1          523248        4    523244   1% /boot/efi
tmpfs              108988       32    108956   1% /run/user/1000
ashtami@ashtami-VirtualBox:~$ 
```

3.env

env is a shell command for Unix and Unix-like operating systems. It is used to either print a list of environment variables or run another utility in an altered environment without having to modify the currently existing environment.

```
ashtami@ashtami-VirtualBox:~$ env
SHELL=/bin/bash
SESSION_MANAGER=local/ashtami-VirtualBox:@/tmp/.ICE-unix/1155,unix/ashtami-Virt
ualBox:/tmp/.ICE-unix/1155
_WSREP_START_POSITION=
QT_ACCESSIBILITY=1
COLORTERM=truecolor
XDG_CONFIG_DIRS=/etc/xdg/xdg-ubuntu:/etc/xdg
XDG_MENU_PREFIX=gnome-
GNOME_DESKTOP_SESSION_ID=this-is-deprecated
GNOME_SHELL_SESSION_MODE=ubuntu
SSH_AUTH_SOCK=/run/user/1000/keyring/ssh
XMODIFIERS=@im=ibus
DESKTOP_SESSION=ubuntu
SSH_AGENT_PID=1106
GTK_MODULES=gail:atk-bridge
PWD=/home/ashtami
LOGNAME=ashtami
XDG_SESSION_DESKTOP=ubuntu
XDG_SESSION_TYPE=x11
GPG_AGENT_INFO=/run/user/1000/gnupg/S.gpg-agent:0:1
XAUTHORITY=/run/user/1000/gdm/Xauthority
GJS_DEBUG_TOPICS=JS ERROR;JS LOG
WINDOWPATH=2
HOME=/home/ashtami
USERNAME=ashtami
IM_CONFIG_PHASE=1
LANG=en_US.UTF-8
LS_COLORS=rs=0:di=01;34:ln=01;36:mh=00:pi=40;33:so=01;35:do=01;35:bd=40;33;01:c
```

4.Od

od is a command on various operating systems for displaying data in various human-readable output formats. The name is an acronym for "octal dump" since it defaults to printing in the octal data format.

```
ashtami@ashtami-VirtualBox:~$ od -b file2.txt
0000000 142 141 163 151 143 040 154 151 156 165 170 040 143 157 155 155
0000020 141 156 144 163 040 160 141 162 164 040 062 012 012 012 012 012
0000040 012 012 012 012 012 012 012 012 012 012 012 012 012 012 012 012
0000060 012 012 012 012 033 133 101 012
0000070
```

5.cal

cal will print a calendar of the current month.

```
ashtami@ashtami-VirtualBox:~$ cal
    September 2021
Su Mo Tu We Th Fr Sa
          1  2  3  4
 5  6  7  8  9 10 11
12 13 14 15 16 17 18
19 20 21 22 23 24 25
26 27 28 29 30
```