

Batch: B-1

Experiment Number: 1 - Networking Commands

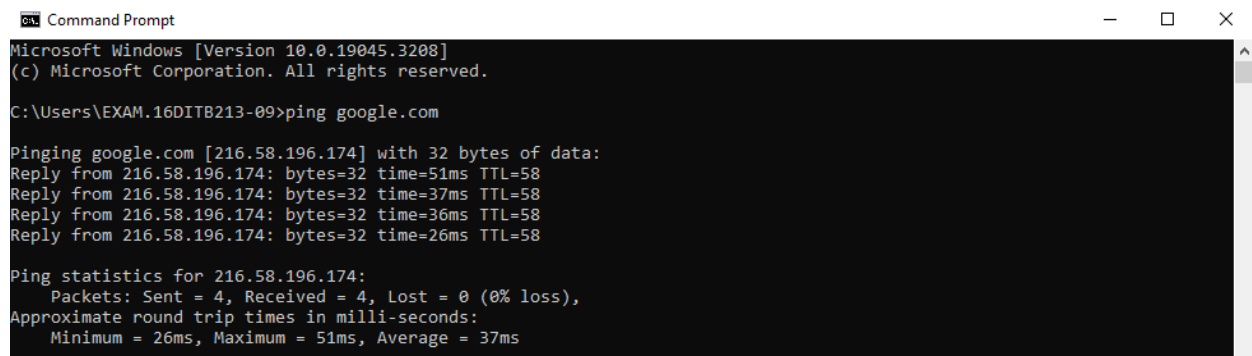
Roll Number: 16010422234

Name: Chandana Ramesh Galgali

Aim of the Experiment: Study of various networking commands.

Program/ Steps:

1. Type each networking command in the command prompt and paste snapshots of the output.
-

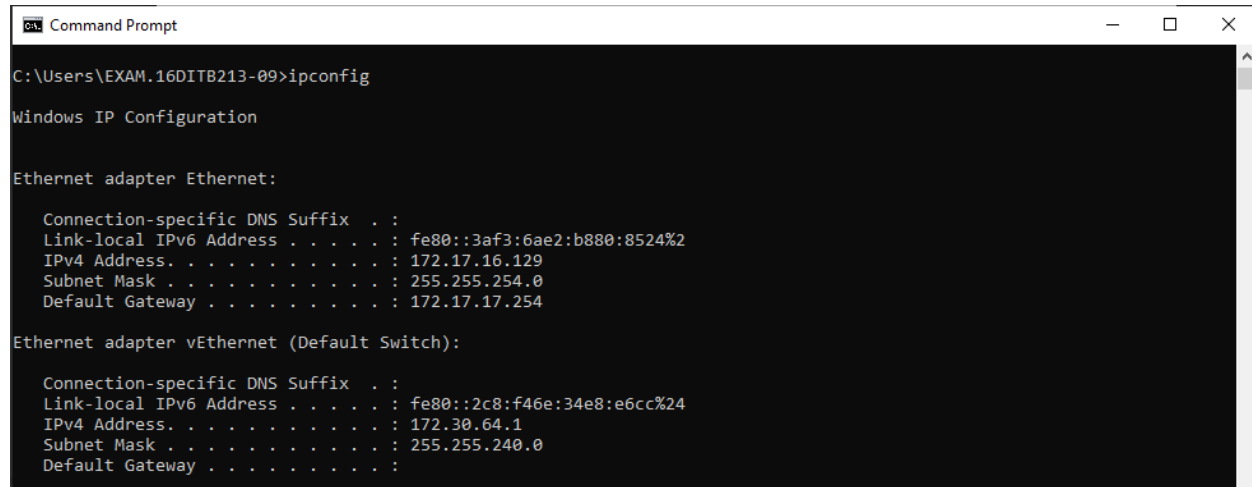
Output/Result:**1. ping**

```
Command Prompt
Microsoft Windows [Version 10.0.19045.3208]
(c) Microsoft Corporation. All rights reserved.

C:\Users\EXAM.16DITB213-09>ping google.com

Pinging google.com [216.58.196.174] with 32 bytes of data:
Reply from 216.58.196.174: bytes=32 time=51ms TTL=58
Reply from 216.58.196.174: bytes=32 time=37ms TTL=58
Reply from 216.58.196.174: bytes=32 time=36ms TTL=58
Reply from 216.58.196.174: bytes=32 time=26ms TTL=58

Ping statistics for 216.58.196.174:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 26ms, Maximum = 51ms, Average = 37ms
```

2. ipconfig**Used without parameters:**

```
Command Prompt

C:\Users\EXAM.16DITB213-09>ipconfig

Windows IP Configuration

Ethernet adapter Ethernet:

    Connection-specific DNS Suffix  . : 
    Link-local IPv6 Address . . . . . : fe80::3af3:6ae2:b880:8524%2
    IPv4 Address. . . . . : 172.17.16.129
    Subnet Mask . . . . . : 255.255.254.0
    Default Gateway . . . . . : 172.17.17.254

Ethernet adapter vEthernet (Default Switch):

    Connection-specific DNS Suffix  . : 
    Link-local IPv6 Address . . . . . : fe80::2c8:f46e:34e8:e6cc%24
    IPv4 Address. . . . . : 172.30.64.1
    Subnet Mask . . . . . : 255.255.240.0
    Default Gateway . . . . . :
```

ipconfig/all:

```

Command Prompt

C:\Users\EXAM.160IT8213-09>ipconfig/all

Windows IP Configuration

Host Name . . . . . : 160IT8213-09
Primary Dns Suffix . . . . . : SVV.local
Node Type . . . . . : Hybrid
IP Routing Enabled. . . . . : No
WINS Proxy Enabled. . . . . : No
DNS Suffix Search List. . . . . : SVV.local

Ethernet adapter Ethernet:

Connection-specific DNS Suffix . : 
Description . . . . . : Realtek PCIe GbE Family Controller
Physical Address. . . . . : 3C-52-82-6D-28-04
DHCP Enabled. . . . . : No
Autoconfiguration Enabled . . . . : Yes
Link-local IPv6 Address . . . . . : fe80::3af3:6ae2:b880:8524%2(Prefered)
IPv4 Address. . . . . : 172.17.16.129(Prefered)
Subnet Mask . . . . . : 255.255.254.0
Default Gateway . . . . . : 172.17.17.254
DHCPv6 IAID . . . . . : 184616578
DHCPv6 Client DUID. . . . . : 00-01-00-01-2A-32-D0-E2-3C-52-82-6D-28-04
DNS Servers . . . . . : 172.31.0.25
                        172.31.0.26
NetBIOS over Tcpip. . . . . : Enabled

Ethernet adapter vEthernet (Default Switch):

Connection-specific DNS Suffix . : 
Description . . . . . : Hyper-V Virtual Ethernet Adapter
Physical Address. . . . . : 00-15-5D-2D-E7-2D
DHCP Enabled. . . . . : No
Autoconfiguration Enabled . . . . : Yes
Link-local IPv6 Address . . . . . : fe80::2c8:f46e:34e8:e6cc%24(Prefered)
IPv4 Address. . . . . : 172.30.64.1(Prefered)
Subnet Mask . . . . . : 255.255.240.0
Default Gateway . . . . . : 
DHCPv6 IAID . . . . . : 402650653
DHCPv6 Client DUID. . . . . : 00-01-00-01-2A-32-D0-E2-3C-52-82-6D-28-04
DNS Servers . . . . . : fec0:0:0:ffff::1%1
                        fec0:0:0:ffff::2%1
                        fec0:0:0:ffff::3%1
NetBIOS over Tcpip. . . . . : Enabled

```

ipconfig/renew:

```

Command Prompt

C:\Users\daxay>ipconfig /renew

Windows IP Configuration

No operation can be performed on Local Area Connection* 1 while it has its media disconnected.
No operation can be performed on Local Area Connection* 2 while it has its media disconnected.

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 . : 
IPv6 Address. . . . . : 2405:201:2a:7857:3da:944c:ebd8:4274
Temporary IPv6 Address. . . . . : 2405:201:2a:7857:a4da:a0bd:269a:fa95
Link-local IPv6 Address . . . . . : fe80::61b:c461:4770:5e60%15
IPv4 Address. . . . . : 192.168.29.148
Subnet Mask . . . . . : 255.255.255.0
Default Gateway . . . . . : fe80::8ea3:99ff:fe9b:a5d5%15
                        192.168.29.1

```

ipconfig/renew:

```

C:\Users\daxay>ipconfig/release

Windows IP Configuration

No operation can be performed on Local Area Connection* 1 while it has its media disconnected.

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  . :
    IPv6 Address. . . . . : 2405:201:2a:7857:3da:944c:ebd8:4274
    Temporary IPv6 Address. . . . . : 2405:201:2a:7857:a4da:a0bd:269a:fa95
    Link-local IPv6 Address . . . . . : fe80::61b:c461:4770:5e60%15
    Default Gateway . . . . . : fe80::8ea3:99ff:fe9b:a5d5%15

```

ipconfig/flushdns:

```

Command Prompt

C:\Users\EXAM.160ITB213-09>ipconfig/flushdns

Windows IP Configuration

Successfully flushed the DNS Resolver Cache.

```

3. tracert

```

C:\Users\EXAM.160ITB213-09>tracert www.google.co.in

Tracing route to www.google.co.in [142.250.199.163]
over a maximum of 30 hops:

  1  1 ms  1 ms  1 ms  172.17.17.254
  2  1 ms  1 ms  1 ms  172.17.52.240
  3  1 ms  <1 ms  1 ms  172.30.250.250
  4  2 ms  2 ms  1 ms  182.73.90.241
  5  11 ms  8 ms  6 ms  116.119.73.96
  6  15 ms  13 ms  12 ms  72.14.212.48
  7  4 ms  6 ms  3 ms  216.239.47.175
  8  5 ms  5 ms  7 ms  108.170.234.157
  9  5 ms  5 ms  3 ms  bom07s37-in-f3.1e100.net [142.250.199.163]

Trace complete.

```

tracert-d

```

Command Prompt

C:\Users\EXAM.160ITB213-09>tracert -d www.google.co.in

Tracing route to www.google.co.in [142.250.199.163]
over a maximum of 30 hops:

  1  1 ms  1 ms  1 ms  172.17.17.254
  2  1 ms  1 ms  1 ms  172.17.52.240
  3  1 ms  <1 ms  <1 ms  172.30.250.250
  4  2 ms  2 ms  3 ms  182.73.90.241
  5  3 ms  2 ms  3 ms  116.119.73.96
  6  5 ms  3 ms  5 ms  72.14.212.48
  7  4 ms  3 ms  3 ms  216.239.47.175
  8  3 ms  4 ms  6 ms  108.170.234.157
  9  8 ms  4 ms  3 ms  142.250.199.163

Trace complete.

```

4. Arp

```

Command Prompt
C:\Users\EXAM.16DITB213-09>Arp -N 192.168.42.171

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 not present, the first applicable interface will be used.

Example:
> arp -s 157.55.85.212 00-aa-00-62-c6-00 .... Adds a static entry.
> arp -a .... Displays the arp table.

```

5. Netstat

```

Command Prompt
C:\Users\EXAM.16DITB213-09>Netstat

Active Connections

Proto Local Address Foreign Address State
TCP 127.0.0.1:111800 kubernetess:49378 ESTABLISHED
TCP 127.0.0.1:49378 kubernetess:11300 ESTABLISHED
TCP 172.17.16.129:7680 172.17.15.10:58668 TIME_WAIT
TCP 172.17.16.129:7680 172.17.15.98:64178 TIME_WAIT
TCP 172.17.16.129:7680 16DITB213-21:63970 TIME_WAIT
TCP 172.17.16.129:7680 172.17.16.161:60790 TIME_WAIT
TCP 172.17.16.129:7680 16DITB212-04:58776 TIME_WAIT
TCP 172.17.16.129:7680 16DITB1108-21:49154 ESTABLISHED
TCP 172.17.16.129:7680 172.17.20.205:60713 TIME_WAIT
TCP 172.17.16.129:7680 172.17.22.61:63118 ESTABLISHED
TCP 172.17.16.129:7680 172.17.22.229:58585 ESTABLISHED
TCP 172.17.16.129:49320 win-sccm:10123 ESTABLISHED
TCP 172.17.16.129:49689 20.197.71.89:https ESTABLISHED
TCP 172.17.16.129:49696 sf-in-f188:5228 ESTABLISHED
TCP 172.17.16.129:49799 bom12s13-in-f14:https ESTABLISHED
TCP 172.17.16.129:49800 bom07s35-in-f14:https ESTABLISHED
TCP 172.17.16.129:49801 bom12s19-in-f14:https ESTABLISHED
TCP 172.17.16.129:49803 bom07s32-in-f14:https ESTABLISHED
TCP 172.17.16.129:49804 bom12s01-in-f3:https ESTABLISHED
TCP 172.17.16.129:49805 bom12s01-in-f3:https ESTABLISHED
TCP 172.17.16.129:49808 bom07s37-in-f14:https ESTABLISHED
TCP 172.17.16.129:49819 bom07s36-in-f10:https ESTABLISHED
TCP 172.17.16.129:49820 bom07s36-in-f10:https ESTABLISHED
TCP 172.17.16.129:49846 198:https ESTABLISHED
TCP 172.17.16.129:49850 bom07s35-in-f14:https ESTABLISHED
TCP 172.17.16.129:49912 bom12s01-in-f3:https ESTABLISHED
TCP 172.17.16.129:49989 125.56.219.18:https CLOSE_WAIT
TCP 172.17.16.129:49993 125.56.219.18:https CLOSE_WAIT
TCP 172.17.16.129:49998 204.79.197.222:https CLOSE_WAIT
TCP 172.17.16.129:49999 125.56.219.18:https CLOSE_WAIT
TCP 172.17.16.129:50060 a23-46-207-30:https CLOSE_WAIT
TCP 172.17.16.129:50073 13.107.228.254:https CLOSE_WAIT
TCP 172.17.16.129:50075 13.107.213.48:https CLOSE_WAIT
TCP 172.17.16.129:50505 bom07s20-in-f3:https ESTABLISHED
TCP 172.17.16.129:50519 52.179.216.235:https TIME_WAIT
TCP 172.17.16.129:50521 bom12s14-in-f5:https ESTABLISHED
TCP 172.17.16.129:50522 172.17.1.11:13111 TIME_WAIT
TCP 172.17.16.129:50527 172.17.1.11:13111 TIME_WAIT
TCP 172.17.16.129:50530 172.17.14.221:ms-do TIME_WAIT
TCP 172.17.16.129:50532 syd15s06-in-f3:https ESTABLISHED
TCP 172.17.16.129:50533 172.17.1.11:13111 TIME_WAIT
TCP 172.17.16.129:50541 52.179.216.235:https ESTABLISHED

```

Netstat -a

```

Command Prompt
C:\Users\EXAM.16DITB213-09>Netstat -a

Active Connections

Proto Local Address           Foreign Address         State
TCP    0.0.0.0:135             16DITB213-09:0         LISTENING
TCP    0.0.0.0:445             16DITB213-09:0         LISTENING
TCP    0.0.0.0:2179            16DITB213-09:0         LISTENING
TCP    0.0.0.0:2781            16DITB213-09:0         LISTENING
TCP    0.0.0.0:5040            16DITB213-09:0         LISTENING
TCP    0.0.0.0:7680            16DITB213-09:0         LISTENING
TCP    0.0.0.0:8003            16DITB213-09:0         LISTENING
TCP    0.0.0.0:11100           16DITB213-09:0         LISTENING
TCP    0.0.0.0:49664           16DITB213-09:0         LISTENING
TCP    0.0.0.0:49665           16DITB213-09:0         LISTENING
TCP    0.0.0.0:49666           16DITB213-09:0         LISTENING
TCP    0.0.0.0:49667           16DITB213-09:0         LISTENING
TCP    0.0.0.0:49674           16DITB213-09:0         LISTENING
TCP    0.0.0.0:49676           16DITB213-09:0         LISTENING
TCP    0.0.0.0:59847           16DITB213-09:0         LISTENING
TCP    127.0.0.1:11200          16DITB213-09:0         LISTENING
TCP    127.0.0.1:11300          16DITB213-09:0         LISTENING
TCP    127.0.0.1:11300          kubernet:49378          ESTABLISHED
TCP    127.0.0.1:30523          16DITB213-09:0         LISTENING
TCP    127.0.0.1:40378          kubernet:111300         ESTABLISHED
TCP    127.0.0.1:49505          16DITB213-09:0         LISTENING
TCP    127.0.0.1:50858          16DITB213-09:0         LISTENING
TCP    127.0.0.1:60212          16DITB213-09:0         LISTENING
TCP    127.0.0.1:64178          16DITB213-09:0         LISTENING
TCP    172.17.16.129:139        16DITB213-09:0         LISTENING
TCP    172.17.16.129:7680      172.17.14.224:61080     TIME_WAIT
TCP    172.17.16.129:7680      16DITB213-21:64849      TIME_WAIT
TCP    172.17.16.129:7680      16DITB212-13:6371       TIME_WAIT
TCP    172.17.16.129:7680      16DITB212-13:63422      TIME_WAIT
TCP    172.17.16.129:7680      16DITB212-13:63560      TIME_WAIT
TCP    172.17.16.129:7680      16DITB212-18:61297      TIME_WAIT
TCP    172.17.16.129:7680      172.17.16.215:60774     TIME_WAIT
TCP    172.17.16.129:7680      172.17.22.61:63118      ESTABLISHED
TCP    172.17.16.129:7680      172.17.22.70:15237      ESTABLISHED
TCP    172.17.16.129:7680      172.17.22.229:50505     ESTABLISHED
TCP    172.17.16.129:7680      172.17.24.103:52980     TIME_WAIT
TCP    172.17.16.129:7680      172.17.24.103:53133     TIME_WAIT
TCP    172.17.16.129:49320      win-sccm:10123          ESTABLISHED
TCP    172.17.16.129:49689      20.197.71.89:https      ESTABLISHED
TCP    172.17.16.129:49696      sf-in-f188:5228         ESTABLISHED
TCP    172.17.16.129:49799      bom12s13-in-f14:https   ESTABLISHED
TCP    172.17.16.129:49800      bom07s35-in-f14:https   ESTABLISHED
TCP    172.17.16.129:49801      bom12s19-in-f14:https   ESTABLISHED
TCP    172.17.16.129:49803      bom07s32-in-f14:https   ESTABLISHED
TCP    172.17.16.129:49804      bom12s01-in-f3:https    ESTABLISHED
TCP    172.17.16.129:49805      bom12s01-in-f3:https    ESTABLISHED
TCP    172.17.16.129:49808      bom07s37-in-f14:https   ESTABLISHED
TCP    172.17.16.129:49810      bom07s36-in-f10:https   ESTABLISHED
TCP    172.17.16.129:49820      bom07s36-in-f10:https   ESTABLISHED
TCP    172.17.16.129:49846      198:https               ESTABLISHED
TCP    172.17.16.129:49850      bom07s35-in-f14:https   ESTABLISHED
TCP    172.17.16.129:49912      bom12s01-in-f3:https    ESTABLISHED
TCP    172.17.16.129:49989      a125-56-219-18:https    CLOSE_WAIT
TCP    172.17.16.129:49993      a125-56-219-18:https    CLOSE_WAIT
TCP    172.17.16.129:49998      204.79.197.222:https     CLOSE_WAIT
TCP    172.17.16.129:49999      a125-56-219-18:https    CLOSE_WAIT
TCP    172.17.16.129:50060      a23-46-207-30:https     CLOSE_WAIT
TCP    172.17.16.129:50073      13.107.228.254:https     CLOSE_WAIT
TCP    172.17.16.129:50075      13.107.213.48:https     CLOSE_WAIT
TCP    172.17.16.129:50505      bom07s20-in-f3:https    ESTABLISHED
TCP    172.17.16.129:50551      bom08s12-in-f10:https   ESTABLISHED
TCP    172.17.16.129:50572      bom07s30-in-f13:https   ESTABLISHED
TCP    172.17.16.129:50574      bom12s13-in-f5:https    ESTABLISHED
TCP    172.17.16.129:50595      52.184.216.246:https     ESTABLISHED
TCP    172.17.16.129:50599      172.17.24.85:ms-do      TIME_WAIT
TCP    172.17.16.129:50601      maa05s23-in-f14:https   ESTABLISHED
TCP    172.17.16.129:50610      e2a:https               ESTABLISHED
TCP    172.17.16.129:50611      172.17.1.11:13111       ESTABLISHED
TCP    172.17.16.129:50612      172.17.15.90:ms-do      SYN_SENT
TCP    172.17.16.129:50614      172.17.26.63:ms-do      SYN_SENT
TCP    172.17.16.129:50615      172.17.20.216:ms-do     SYN_SENT
TCP    172.30.64.1:139         16DITB213-09:0         LISTENING
TCP    [::]:135                16DITB213-09:0         LISTENING
TCP    [::]:445                16DITB213-09:0         LISTENING
TCP    [::]:2179               16DITB213-09:0         LISTENING
TCP    [::]:2781               16DITB213-09:0         LISTENING
TCP    [::]:7680               16DITB213-09:0         LISTENING
TCP    [::]:8003               16DITB213-09:0         LISTENING
TCP    [::]:11100              16DITB213-09:0         LISTENING
TCP    [::]:49664              16DITB213-09:0         LISTENING
TCP    [::]:49665              16DITB213-09:0         LISTENING
TCP    [::]:49666              16DITB213-09:0         LISTENING
TCP    [::]:49667              16DITB213-09:0         LISTENING
TCP    [::]:49674              16DITB213-09:0         LISTENING
TCP    [::]:49676              16DITB213-09:0         LISTENING
TCP    [::]:59847              16DITB213-09:0         LISTENING
TCP    [::1]:30523             16DITB213-09:0         LISTENING
TCP    [::1]:49677             16DITB213-09:0         LISTENING
TCP    [::1]:60212             16DITB213-09:0         LISTENING
UDP    0.0.0.0:53              **
UDP    0.0.0.0:123             **
UDP    0.0.0.0:5500            **
UDP    0.0.0.0:4500            **
UDP    0.0.0.0:5050            **
UDP    0.0.0.0:5353            **
UDP    0.0.0.0:5353            **
UDP    0.0.0.0:5353            **
UDP    0.0.0.0:5353            **

```

```

Command Prompt
UDP 0.0.0.0:5353 *:*
UDP 0.0.0.0:5355 *:*
UDP 0.0.0.0:8004 *:*
UDP 0.0.0.0:15000 *:*
UDP 0.0.0.0:15001 *:*
UDP 0.0.0.0:15001 *:*
UDP 0.0.0.0:15001 *:*
UDP 0.0.0.0:15001 *:*
UDP 0.0.0.0:15001 *:*
UDP 0.0.0.0:15001 *:*
UDP 0.0.0.0:64279 *:*
UDP 0.0.0.0:64280 *:*
UDP 127.0.0.1:1900 *:*
UDP 127.0.0.1:51418 *:*
UDP 127.0.0.1:51609 *:*
UDP 127.0.0.1:55358 *:*
UDP 127.0.0.1:57202 *:*
UDP 127.0.0.1:58141 *:*
UDP 127.0.0.1:62224 *:*
UDP 127.0.0.1:62961 *:*
UDP 127.0.0.1:64620 *:*
UDP 172.17.16.129:137 *:*
UDP 172.17.16.129:138 *:*
UDP 172.17.16.129:1900 *:*
UDP 172.17.16.129:51608 *:*
UDP 172.30.64.1:67 *:*
UDP 172.30.64.1:68 *:*
UDP 172.30.64.1:137 *:*
UDP 172.30.64.1:138 *:*
UDP 172.30.64.1:1900 *:*
UDP 172.30.64.1:51610 *:*
UDP [::]:123 *:*
UDP [::]:500 *:*
UDP [::]:4500 *:*
UDP [::]:5353 *:*
UDP [::]:5353 *:*
UDP [::]:5353 *:*
UDP [::]:5355 *:*
UDP [::]:15000 *:*
UDP [::]:64281 *:*
UDP [::1]:1900 *:*
UDP [::1]:51606 *:*
UDP [fe80::2c8:f46e:34e8:e6cc%24]:1900 *:*
UDP [fe80::2c8:f46e:34e8:e6cc%24]:51607 *:*
UDP [fe80::3af3:6ae2:b880:8524%2]:1900 *:*
UDP [fe80::3af3:6ae2:b880:8524%2]:51605 *:*

```

Netstat -e

```

Select Command Prompt
C:\Users\EXAM.1601T8213-09>Netstat -e
Interface Statistics

           Received           Sent
Bytes      903343326          907388658
Unicast packets      944124          901998
Non-unicast packets    485436          45612
Discards              0              0
Errors                0              0
Unknown protocols      0

```

Netstat -n

```

Select Command Prompt
C:\Users\EXAM.16DITB213-09>Netstat -n

Active Connections

Proto Local Address           Foreign Address         State
TCP    127.0.0.1:11300          127.0.0.1:49378        ESTABLISHED
TCP    127.0.0.1:49378         127.0.0.1:11300        ESTABLISHED
TCP    172.17.16.129:7680      172.17.14.224:61080    TIME_WAIT
TCP    172.17.16.129:7680      172.17.16.172:57485    TIME_WAIT
TCP    172.17.16.129:7680      172.17.16.193:61297    TIME_WAIT
TCP    172.17.16.129:7680      172.17.17.217:55994    TIME_WAIT
TCP    172.17.16.129:7680      172.17.17.217:56049    TIME_WAIT
TCP    172.17.16.129:7680      172.17.17.217:56132    TIME_WAIT
TCP    172.17.16.129:7680      172.17.21.65:56262     TIME_WAIT
TCP    172.17.16.129:7680      172.17.21.65:56307     TIME_WAIT
TCP    172.17.16.129:7680      172.17.22.61:63118     ESTABLISHED
TCP    172.17.16.129:7680      172.17.22.70:15237     ESTABLISHED
TCP    172.17.16.129:7680      172.17.22.229:50505    ESTABLISHED
TCP    172.17.16.129:49320     172.31.0.36:10123      ESTABLISHED
TCP    172.17.16.129:49689     20.197.71.89:443       ESTABLISHED
TCP    172.17.16.129:49696     74.125.24.188:5228     ESTABLISHED
TCP    172.17.16.129:49799     142.250.183.110:443    ESTABLISHED
TCP    172.17.16.129:49800     142.250.66.14:443      ESTABLISHED
TCP    172.17.16.129:49801     142.251.42.14:443      ESTABLISHED
TCP    172.17.16.129:49803     142.250.183.174:443    ESTABLISHED
TCP    172.17.16.129:49804     172.217.167.163:443    ESTABLISHED
TCP    172.17.16.129:49805     172.217.167.163:443    ESTABLISHED
TCP    172.17.16.129:49808     142.250.199.174:443    ESTABLISHED
TCP    172.17.16.129:49819     142.250.199.138:443    ESTABLISHED
TCP    172.17.16.129:49820     142.250.199.138:443    ESTABLISHED
TCP    172.17.16.129:49846     35.201.123.198:443     ESTABLISHED
TCP    172.17.16.129:49850     142.250.66.14:443      ESTABLISHED
TCP    172.17.16.129:49912     172.217.167.163:443    ESTABLISHED
TCP    172.17.16.129:49989     125.56.219.18:443      CLOSE_WAIT
TCP    172.17.16.129:49993     125.56.219.18:443      CLOSE_WAIT
TCP    172.17.16.129:49998     204.79.197.222:443     CLOSE_WAIT
TCP    172.17.16.129:49999     125.56.219.18:443      CLOSE_WAIT
TCP    172.17.16.129:50060     23.46.207.30:443       CLOSE_WAIT
TCP    172.17.16.129:50073     13.107.228.254:443     CLOSE_WAIT
TCP    172.17.16.129:50075     13.107.213.48:443      CLOSE_WAIT
TCP    172.17.16.129:50505     172.217.166.163:443    ESTABLISHED
TCP    172.17.16.129:50551     172.217.160.170:443    TIME_WAIT
TCP    172.17.16.129:50572     142.250.183.13:443     TIME_WAIT
TCP    172.17.16.129:50574     142.250.183.101:443    TIME_WAIT
TCP    172.17.16.129:50595     52.184.216.246:443     TIME_WAIT
TCP    172.17.16.129:50601     142.250.183.238:443    ESTABLISHED
TCP    172.17.16.129:50610     216.239.32.116:443     ESTABLISHED
TCP    172.17.16.129:50611     172.17.1.11:13111      TIME_WAIT
TCP    172.17.16.129:50621     172.17.22.211:7680     TIME_WAIT
TCP    172.17.16.129:50622     172.17.1.11:13111      TIME_WAIT
TCP    172.17.16.129:50626     172.17.15.98:7680      SYN_SENT
TCP    172.17.16.129:50627     172.17.17.154:7680     SYN_SENT

Select Command Prompt
TCP    172.17.16.129:50628     172.17.16.145:7680     SYN_SENT
TCP    172.17.16.129:50629     172.17.17.20:7680      SYN_SENT
TCP    172.17.16.129:50630     184.27.122.43:80       ESTABLISHED

```

Netstat -o

```
Select Command Prompt
C:\Users\EXAM.16DITB213-09>Netstat -o

Active Connections

Proto Local Address Foreign Address State PID
TCP 127.0.0.1:11300 kubernetet:49378 ESTABLISHED 12464
TCP 127.0.0.1:49378 kubernetet:11300 ESTABLISHED 9164
TCP 172.17.16.129:7680 172.17.14.224:61080 TIME_WAIT 0
TCP 172.17.16.129:7680 16DITB212-12:57485 TIME_WAIT 0
TCP 172.17.16.129:7680 16DITB122-18:61297 TIME_WAIT 0
TCP 172.17.16.129:7680 16DITB310-07:55994 TIME_WAIT 0
TCP 172.17.16.129:7680 16DITB310-07:56049 TIME_WAIT 0
TCP 172.17.16.129:7680 16DITB310-07:56132 TIME_WAIT 0
TCP 172.17.16.129:7680 172.17.21.65:56262 TIME_WAIT 0
TCP 172.17.16.129:7680 172.17.21.65:56307 TIME_WAIT 0
TCP 172.17.16.129:7680 172.17.22.61:63118 ESTABLISHED 6024
TCP 172.17.16.129:7680 172.17.22.70:15237 ESTABLISHED 6024
TCP 172.17.16.129:7680 172.17.22.229:58505 ESTABLISHED 6024
TCP 172.17.16.129:49320 win-sccm:10123 ESTABLISHED 8320
TCP 172.17.16.129:49689 20.197.71.80:https ESTABLISHED 3956
TCP 172.17.16.129:49696 sf-in-f188:5228 ESTABLISHED 5768
TCP 172.17.16.129:49799 bom12s13-in-f14:https ESTABLISHED 5768
TCP 172.17.16.129:49800 bom07s35-in-f14:https ESTABLISHED 5768
TCP 172.17.16.129:49801 bom12s19-in-f14:https ESTABLISHED 5768
TCP 172.17.16.129:49803 bom07s32-in-f14:https ESTABLISHED 5768
TCP 172.17.16.129:49804 bom12s01-in-f3:https ESTABLISHED 5768
TCP 172.17.16.129:49805 bom12s01-in-f3:https ESTABLISHED 5768
TCP 172.17.16.129:49808 bom07s37-in-f14:https ESTABLISHED 5768
TCP 172.17.16.129:49819 bom07s36-in-f10:https ESTABLISHED 5768
TCP 172.17.16.129:49820 bom07s36-in-f10:https ESTABLISHED 5768
TCP 172.17.16.129:49846 198:https ESTABLISHED 5768
TCP 172.17.16.129:49850 bom07s35-in-f14:https ESTABLISHED 5768
TCP 172.17.16.129:49912 bom12s01-in-f3:https ESTABLISHED 5768
TCP 172.17.16.129:49980 a125-56-219-18:https CLOSE_WAIT 15004
TCP 172.17.16.129:49993 a125-56-219-18:https CLOSE_WAIT 15004
TCP 172.17.16.129:49998 204.79.197.222:https CLOSE_WAIT 15004
TCP 172.17.16.129:49999 a125-56-219-18:https CLOSE_WAIT 15004
TCP 172.17.16.129:50060 a23-46-207-30:https CLOSE_WAIT 15004
TCP 172.17.16.129:50073 13.107.228.254:https CLOSE_WAIT 15004
TCP 172.17.16.129:50075 13.107.213.48:https CLOSE_WAIT 15004
TCP 172.17.16.129:50505 bom07s20-in-f3:https ESTABLISHED 5768
TCP 172.17.16.129:50551 bom05s12-in-f10:https TIME_WAIT 0
TCP 172.17.16.129:50572 bom07s30-in-f13:https TIME_WAIT 0
TCP 172.17.16.129:50574 bom12s13-in-f5:https TIME_WAIT 0
TCP 172.17.16.129:50595 52.184.216.246:https TIME_WAIT 0
TCP 172.17.16.129:50601 maa05s23-in-f14:https ESTABLISHED 5768
TCP 172.17.16.129:50610 e2a:https ESTABLISHED 5768
TCP 172.17.16.129:50611 172.17.1.11:13111 TIME_WAIT 0
TCP 172.17.16.129:50621 172.17.22.211:ms-do TIME_WAIT 0
TCP 172.17.16.129:50622 172.17.1.11:13111 TIME_WAIT 0
TCP 172.17.16.129:50626 172.17.15.98:ms-do SYN_SENT 6024
TCP 172.17.16.129:50627 172.17.17.154:ms-do SYN_SENT 6024

Select Command Prompt
TCP 172.17.16.129:50628 172.17.16.145:ms-do SYN_SENT 6024
TCP 172.17.16.129:50629 172.17.17.20:ms-do SYN_SENT 6024
```

Netstat -p

```
Select Command Prompt
C:\Users\EXAM.16DITB213-09>Netstat -p

Active Connections

Proto Local Address Foreign Address State
```


Netstat -s

```
Select Command Prompt
C:\Users\LEXAM.1601TB213-09>Netstat -s

IPv4 Statistics

Packets Received           = 770999
Received Header Errors     = 0
Received Address Errors    = 164
Datagrams Forwarded        = 0
Unknown Protocols Received = 1
Received Packets Discarded = 8413
Received Packets Delivered = 772891
Output Requests            = 897303
Routing Discards           = 0
Discarded Output Packets   = 1736
Output Packet No Route     = 34
Reassembly Required        = 0
Reassembly Successful      = 0
Reassembly Failures        = 0
Datagrams Successfully Fragmented = 0
Datagrams Failing Fragmentation = 0
Fragments Created          = 0

IPv6 Statistics

Packets Received           = 77224
Received Header Errors     = 0
Received Address Errors    = 678
Datagrams Forwarded        = 0
Unknown Protocols Received = 0
Received Packets Discarded = 683
Received Packets Delivered = 81027
Output Requests            = 5808
Routing Discards           = 0
Discarded Output Packets   = 4
Output Packet No Route     = 0
Reassembly Required        = 12
Reassembly Successful      = 6
Reassembly Failures        = 0
Datagrams Successfully Fragmented = 0
Datagrams Failing Fragmentation = 0
Fragments Created          = 0

ICMPv4 Statistics

          Received      Sent
Messages          852      1962
Errors              0         0
Destination Unreachable 753      1627
Time Exceeded       68         0
Parameter Problems  0         0
Source Quenches     0         0
Redirects           0         0
```

```
Select Command Prompt

Echo Replies            26         5
Echos                   5        330
Timestamps              0         0
Timestamp Replies       0         0
Address Masks           0         0
Address Mask Replies    0         0
Router Solicitations    0         0
Router Advertisements   0         0

ICMPv6 Statistics

          Received      Sent
Messages          82      101
Errors              0         0
Destination Unreachable 7        21
Packet Too Big     0         0
Time Exceeded       0         0
Parameter Problems  0         0
Echos               0         0
Echo Replies        0         0
MLD Queries         0         0
MLD Reports         4         0
MLD Dones           0         0
Router Solicitations 0         22
Router Advertisements 0         0
Neighbor Solicitations 19        32
Neighbor Advertisements 52        26
Redirects            0         0
Router Renumberings  0         0

TCP Statistics for IPv4

Active Opens           = 9309
Passive Opens          = 2169
Failed Connection Attempts = 1449
Reset Connections      = 800
Current Connections    = 33
Segments Received       = 649423
Segments Sent           = 892797
Segments Retransmitted = 21399

TCP Statistics for IPv6

Active Opens           = 274
Passive Opens          = 34
Failed Connection Attempts = 271
Reset Connections      = 32
Current Connections    = 0
Segments Received       = 19284
Segments Sent           = 18401
Segments Retransmitted = 896
```

```
Select Command Prompt

UDP Statistics for IPv4

Datagrams Received      = 208039
No Ports                = 8103
Receive Errors          = 5056
Datagrams Sent           = 20683

UDP Statistics for IPv6

Datagrams Received      = 124400
No Ports                = 595
Receive Errors          = 87
Datagrams Sent           = 4008
```

Netstat -r

```

Select Command Prompt
C:\Users\EXAM.16DITB213-09>Netstat -r

Interface List
=====
2...3c 52 82 6d 28 04 .....Realtek PCIe GbE Family Controller
1.....Software Loopback Interface 1
24...00 15 5d 2d e7 2d .....Hyper-V Virtual Ethernet Adapter
=====

IPv4 Route Table
=====
Active Routes:
Network Destination        Netmask          Gateway          Interface        Metric
0.0.0.0                    0.0.0.0          172.17.17.254    172.17.16.129    281
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
172.17.16.0                255.255.254.0    On-link          172.17.16.129    281
172.17.16.129              255.255.255.255  On-link          172.17.16.129    281
172.17.17.255              255.255.255.255  On-link          172.17.16.129    281
172.30.64.0                255.255.248.0    On-link          172.30.64.1       5256
172.30.64.1                255.255.255.255  On-link          172.30.64.1       5256
172.30.79.255              255.255.255.255  On-link          172.30.64.1       5256
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          172.30.64.1       5256
224.0.0.0                  240.0.0.0        On-link          172.17.16.129    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          172.30.64.1       5256
255.255.255.255            255.255.255.255  On-link          172.17.16.129    281

Persistent Routes:
Network Address    Netmask  Gateway Address  Metric
0.0.0.0            0.0.0.0    172.17.17.254    Default

IPv6 Route Table
=====
Active Routes:
If Metric Network Destination      Gateway
1 331 ::1/128 On-link
24 5256 fe80::/64 On-link
2 281 fe80::/64 On-link
24 5256 fe80::2c8:f46e:34e8:e6cc/128 On-link
2 281 fe80::3af3:6ae2:b880:8524/128 On-link
On-link
1 331 ff00::/8 On-link
24 5256 ff00::/8 On-link
2 281 ff00::/8 On-link

Persistent Routes:
None

```

Post Lab Question-Answers:

1. ICMP is used in _____

a) Ping

b) Traceroute

c) Ifconfig

d) Both Ping & Traceroute

2. _____ command is used to manipulate TCP/IP routing table.

a) route

b) Ipconfig

c) Ifconfig

d) Traceroute

3. Select the false statement from the following.

a) Nslookup is used to query a DNS server for DNS data

b) Ping is used to check connectivity

c) Pathping combines the functionality of ping with that of route

d) Ifconfig can configure TCP/IP network interface parameters

Outcomes: Understand the data communication system, network topologies and network devices.

Conclusion (based on the Results and outcomes achieved):

The experiment highlights the importance of these networking commands in troubleshooting and managing network connections. They provide valuable insights into DNS resolution, network connectivity, and network path analysis, enabling network administrators and users to diagnose and resolve network-related issues effectively.

References:

Books/ Journals/ Websites:

1. Behrouz A Forouzan, Data Communication and Networking, Tata Mc Graw hill, India, 4th Edition
2. A. S. Tanenbaum, "Computer Networks", 4th edition, Prentice Hall
3. Behrouz A Forouzan, Data Communication and Networking, Tata Mc Graw hill, India, 4th Edition
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