Institute of Computer And Technology

B.Tech – CSE(BDA)

Name:- Dwij Vatsal Desai

Sem:- 2

Sub: - BCS

Enrollment No.:- 23162121027

Prac:- 2

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Aim: Utilization of Computer Network Commands.

Procedure:

Case 1: Consider a scenario when you want to cross check whether your request

is being sent properly or not. Whether anybody is accessing your data or not.

Command: PING

Description :

PING is a tool that checks if another computer is reachable on a network. It sends a message to the other computer and waits for a reply. If it gets a reply, it means the other computer is reachable.PING is often used to test and troubleshoot network connections.

Screen shot :

```
C:\Users\dwijd>ping www.google.com

Pinging www.google.com [2404:6800:4009:822::2004] with 32 bytes of data:
Reply from 2404:6800:4009:822::2004: time=29ms
Reply from 2404:6800:4009:822::2004: time=63ms
Reply from 2404:6800:4009:822::2004: time=46ms
Reply from 2404:6800:4009:822::2004: time=49ms

Ping statistics for 2404:6800:4009:822::2004:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 29ms, Maximum = 63ms, Average = 46ms

C:\Users\dwijd>
```

Case 2: If you don’t know the host name of your computer, then how do you get

aware with that?

Command: HOSTNAME

Description :

A hostname is a label assigned to a device connected to a computer network. It is used to identify the device in a network and is typically a human-readable string, such as "example.com". Hostnames are used in various network protocols to route data to the correct destination.

Screen shot :

Case 3: Consider the situation in which you want to display the computer's

currently assigned IP Address, subnet mask and default gateway addresses.

Command: IPCONFIG

Description :

IPCONFIG is a command-line tool in Windows used to display the current configuration of the TCP/IP network stack on a computer. It can show information such as the computer's IP address, subnet mask, and default gateway. IPCONFIG is often used for troubleshooting network connectivity issues.

Screen shot :

```
C:\Users\dwijd>Ipconfig

Windows IP Configuration


Ethernet adapter Ethernet:

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

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  . :

Ethernet adapter VMware Network Adapter VMnet1:

   Connection-specific DNS Suffix  . :
   Link-local IPv6 Address . . . . . : fe80::215:4ff4:c8fb:92f3%12
   IPv4 Address. . . . . . . . . . . : 192.168.37.1
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Default Gateway . . . . . . . . . :
```

```
Ethernet adapter VMware Network Adapter VMnet1:

   Connection-specific DNS Suffix  . :
   Link-local IPv6 Address . . . . . : fe80::215:4ff4:c8fb:92f3%12
   IPv4 Address. . . . . . . . . . . : 192.168.37.1
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Default Gateway . . . . . . . . . :

Ethernet adapter VMware Network Adapter VMnet8:

   Connection-specific DNS Suffix  . :
   Link-local IPv6 Address . . . . . : fe80::8b8d:5c22:f3c6:adbc%11
   IPv4 Address. . . . . . . . . . . : 192.168.182.1
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Default Gateway . . . . . . . . . :

Wireless LAN adapter Wi-Fi:

   Connection-specific DNS Suffix  . :
   IPv6 Address. . . . . . . . . . . : 2409:40c1:5e:ff:649:c20e:3c91:d607
   Temporary IPv6 Address. . . . . . : 2409:40c1:5e:ff:80f0:1b5f:6d49:f620
   Link-local IPv6 Address . . . . . : fe80::c6b5:8a51:de54:69bc%16
   IPv4 Address. . . . . . . . . . . : 192.168.234.117
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Default Gateway . . . . . . . . . : fe80::7820:81ff:fe23:9ee0%16
                                       192.168.234.34

Ethernet adapter Bluetooth Network Connection:

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

C:\Users\dwijd>
```

Case 4: Consider a scenario when you want to know the time it takes for a packet

of information to travel between a local computer and a destination IP address or

domain.

Command: TRACERT

Description :

TRACERT is a command-line tool used to trace the route that packets take from one networked device to another. It shows the IP addresses of the routers that the packets pass through on their way to the destination. TRACERT is often used to diagnose network connectivity issues and to determine the path that data takes across a network.

Screen shot :

```
C:\Users\dwijd>Tracert www.google.com

Tracing route to www.google.com [2404:6800:4009:820::2004]
over a maximum of 30 hops:

  1    65 ms     5 ms     4 ms  2409:40c1:5e:ff::b4
  2    52 ms    15 ms    18 ms  2405:200:5210:0:3924:0:3:81
  3    62 ms    43 ms    27 ms  2405:200:5210:0:3925::1
  4    57 ms    31 ms    19 ms  2405:200:801:b00::cd2
  5     *        *        *     Request timed out.
  6   304 ms   147 ms    29 ms  2405:200:801:200::9b5
  7   131 ms    84 ms    29 ms  2001:4860:1:1::3c8
  8   255 ms    79 ms    99 ms  2404:6800:80db::1
  9   115 ms    96 ms    23 ms  2001:4860:0:1::43d4
 10   138 ms    82 ms    98 ms  2001:4860:0:115b::a
 11    67 ms    27 ms    32 ms  2001:4860:0:115d::1
 12    49 ms    24 ms    21 ms  2001:4860:0:1::4fe7
 13    50 ms    30 ms    32 ms  bom07s30-in-x04.1e100.net [2404:6800:4009:820::2004]

Trace complete.

C:\Users\dwijd>
```

Case 5: Consider the case in which you want to know the network status and

protocol statistics.

Command: NETSTAT

Description :

NETSTAT is a command-line tool used to display network statistics and information about network connections on a computer. It can show the current connections, listening ports, routing tables, and other network-related information. NETSTAT is often used for diagnosing network issues and monitoring network activity.

Screen shot :

```
C:\Users\dwijd>NETSTAT

Active Connections

  Proto  Local Address          Foreign Address        State
  TCP    127.0.0.1:49676        DESKTOP-3LO9N74:49677  ESTABLISHED
  TCP    127.0.0.1:49677        DESKTOP-3LO9N74:49676  ESTABLISHED
  TCP    127.0.0.1:49682        DESKTOP-3LO9N74:49683  ESTABLISHED
  TCP    127.0.0.1:49683        DESKTOP-3LO9N74:49682  ESTABLISHED
  TCP    127.0.0.1:55511        DESKTOP-3LO9N74:3580   SYN_SENT
  TCP    192.168.234.117:55332  bom12s15-in-f10:https  ESTABLISHED
  TCP    [::1]:49671            DESKTOP-3LO9N74:49672  ESTABLISHED
  TCP    [::1]:49672            DESKTOP-3LO9N74:49671  ESTABLISHED
  TCP    [::1]:49674            DESKTOP-3LO9N74:49675  ESTABLISHED
  TCP    [::1]:49675            DESKTOP-3LO9N74:49674  ESTABLISHED
  TCP    [::1]:49679            DESKTOP-3LO9N74:49680  ESTABLISHED
  TCP    [::1]:49680            DESKTOP-3LO9N74:49679  ESTABLISHED
  TCP    [2409:40c1:5e:ff:80f0:1b5f:6d49:f620]:50012  a104-71-108-237:https  CLOSE_WAIT
  TCP    [2409:40c1:5e:ff:80f0:1b5f:6d49:f620]:50817  g2600-140f-1c00-0000-0000-0000-312c-8cc1:https  CLOSE_WAIT
  TCP    [2409:40c1:5e:ff:80f0:1b5f:6d49:f620]:55139  [64:ff9b::14c6:76be]:https  ESTABLISHED
  TCP    [2409:40c1:5e:ff:80f0:1b5f:6d49:f620]:55259  sg-in-f188:5228        ESTABLISHED
  TCP    [2409:40c1:5e:ff:80f0:1b5f:6d49:f620]:55335  bom12s20-in-x0a:https  ESTABLISHED
  TCP    [2409:40c1:5e:ff:80f0:1b5f:6d49:f620]:55496  [64:ff9b::b91a:b66f]:https  ESTABLISHED
  TCP    [2409:40c1:5e:ff:80f0:1b5f:6d49:f620]:55497  [64:ff9b::b91a:b66f]:https  CLOSE_WAIT

C:\Users\dwijd>
```

Case 6: Consider the case in which you want to display the Media Access Control

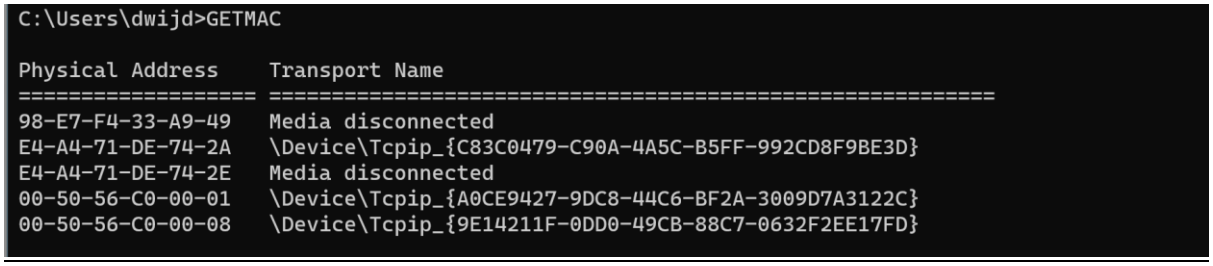
(MAC) addresses for each network adapter in the computer.

Command: GETMAC

Description :

GETMAC is a command-line tool in Windows used to display the media access control (MAC) address and list of network protocols associated with each address for all network cards in a computer. MAC addresses are unique identifiers assigned to network interfaces, such as Ethernet cards or Wi-Fi adapters. GETMAC is often used for network troubleshooting and identification of devices on a network.

Screen shot :



Case 7: Consider that you have already a domain name of website and you want

to find out the IP address and DNS server detail.

Command: NSLOOKUP

Description :

NSLOOKUP is a command-line tool used to query the Domain Name System (DNS) to obtain domain name or IP address mapping, or other DNS records. It can be used to troubleshoot DNS-related issues, such as checking DNS records, testing DNS configuration, and diagnosing DNS resolution problems.

Screen shot :

```
C:\Users\dwijd>NSLOOKUP
Default Server:  UnKnown
Address:  192.168.234.34

> www.google.com
Server:  UnKnown
Address:  192.168.234.34

Non-authoritative answer:
Name:    www.google.com
Addresses:  2404:6800:4009:822::2004
          142.250.183.4

> ^C
C:\Users\dwijd>
```

Case 8: Consider that you have to do the mapping between an Internet Protocol

(IP) address and a Media Access Control (MAC) address.

Command: arp –a

Description :

The "arp -a" command is used to display the current ARP (Address Resolution Protocol) cache on a computer. The ARP cache contains mappings of IP addresses to MAC addresses for devices on the local network. The command shows a list of IP addresses and their corresponding MAC addresses, along with the type of the entry (static or dynamic) and the interface through which the mapping was learned. ARP is used to translate IP addresses to MAC addresses for communication on a local network.

Screen shot :

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

Interface: 192.168.182.1 --- 0xb
  Internet Address      Physical Address      Type
  192.168.182.254       00-50-56-fd-b5-a6     dynamic
  192.168.182.255       ff-ff-ff-ff-ff-ff     static
  224.0.0.22            01-00-5e-00-00-16     static
  224.0.0.251           01-00-5e-00-00-fb     static
  224.0.0.252           01-00-5e-00-00-fc     static
  239.255.255.250       01-00-5e-7f-ff-fa     static
  255.255.255.255       ff-ff-ff-ff-ff-ff     static

Interface: 192.168.37.1 --- 0xc
  Internet Address      Physical Address      Type
  192.168.37.254        00-50-56-e2-4a-a1     dynamic
  192.168.37.255        ff-ff-ff-ff-ff-ff     static
  224.0.0.22            01-00-5e-00-00-16     static
  224.0.0.251           01-00-5e-00-00-fb     static
  224.0.0.252           01-00-5e-00-00-fc     static
  239.255.255.250       01-00-5e-7f-ff-fa     static
  255.255.255.255       ff-ff-ff-ff-ff-ff     static

Interface: 192.168.234.117 --- 0x10
  Internet Address      Physical Address      Type
  192.168.234.34        7a-20-81-23-9e-e0     dynamic
  192.168.234.255       ff-ff-ff-ff-ff-ff     static
  224.0.0.22            01-00-5e-00-00-16     static
  224.0.0.251           01-00-5e-00-00-fb     static
  224.0.0.252           01-00-5e-00-00-fc     static
  239.255.255.250       01-00-5e-7f-ff-fa     static
  255.255.255.255       ff-ff-ff-ff-ff-ff     static

C:\Users\dwijd>
```