

Date: 27.07.2024

Exp no : 1A BASIC NETWORKING COMMANDS IN WINDOWS OPERATING SYSTEM

Aim:-

To implement basic networking commands in the Windows operating system.

## 1. IPCONFIG

The IPCONFIG network command provides a comprehensive view of information regarding the IP address configuration of the device we are currently working on.

The IPConfig command also provides us with some variation in the primary command that targets specific system settings or data, which are:

- IPConfig/all - Provides primary output with additional information about network adapters.
- IPConfig/renew - Used to renew the system's IP address.
- IPConfig/release - Removes the system's current IP address.

Syntax: ipconfig

```
Microsoft Windows [Version 10.0.22631.3880]
(c) Microsoft Corporation. All rights reserved.

C:\Users\peeja>ipconfig

Windows IP Configuration

Ethernet adapter Ethernet:

    Connection-specific DNS Suffix  . : 
    Link-local IPv6 Address . . . . . : fe80::7685:248e:1b0e:22f3%3
    IPv4 Address. . . . . : 192.168.56.1
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 

Wireless LAN adapter Local Area Connection* 10:

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

Wireless LAN adapter Local Area Connection* 11:

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

Wireless LAN adapter Wi-Fi 3:

    Connection-specific DNS Suffix  . : 
    IPv6 Address. . . . . : 2481:0000:633c:ca72:9492:645c:d95a:daef
    Temporary IPv6 Address. . . . . : 2481:0000:633c:ca72:35af:c09:80b:6560
    Link-local IPv6 Address . . . . . : fe80::09fc:T49c:56fa:004a%31
    IPv4 Address. . . . . : 192.168.35.88
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : fe80::362a:aaff:fe0f:33d9%31
    192.168.35.89

C:\Users\peeja>ipconfig/all

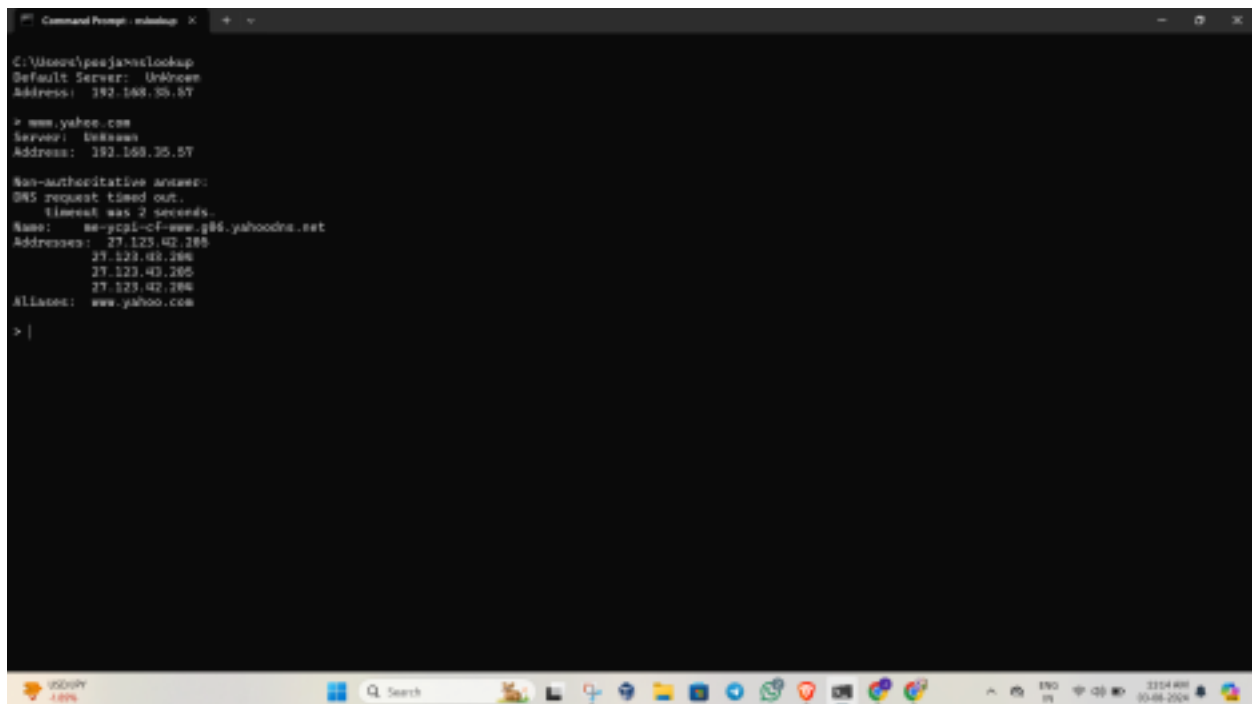
Windows IP Configuration
```

## 2. NSLOOKUP

The NSLOOKUP command is used to troubleshoot network connectivity issues in the system. Using the nslookup command, we can access the information related to our system's DNS server, i.e., domain name and IP address.

Syntax: nslookup

class:CSE(cyber security)



```
C:\Users\ipseejavaslookup>
Default Server: Unknown
Address: 192.168.35.57

> www.yahoo.com
Server: Unknown
Address: 192.168.35.57

Non-authoritative answer:
DNS request timed out.
  timeout was 2 seconds.
Name:    ns-yc2l-cf-eww.g86.yahoodns.net
Addresses: 27.123.42.265
           27.123.43.265
           27.123.43.265
           27.123.42.265
Aliases:  www.yahoo.com

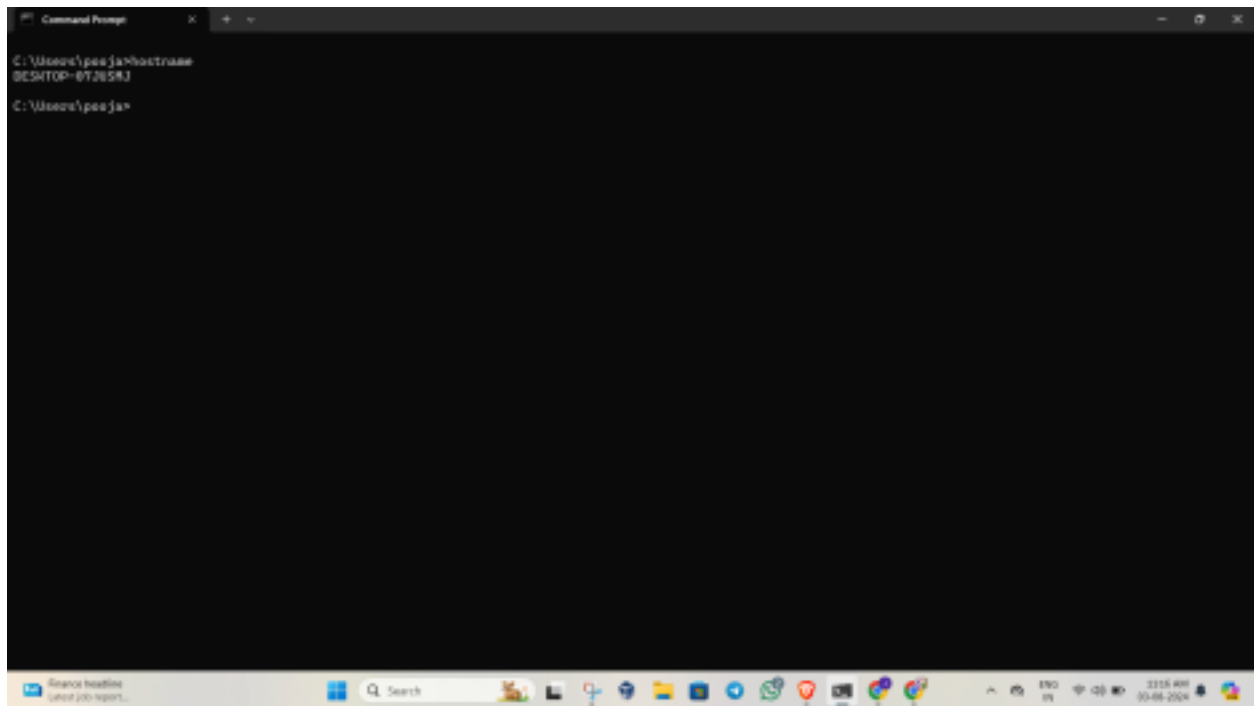
> |
```

### 3. HOSTNAME

The HOSTNAME command displays the hostname of the system. The hostname command is much easier to use than going into the system settings to search for it.

Syntax:hostname

class:CSE(cyber security)



```
Command Prompt
C:\Users\peeja>hostname
DESKTOP-6TJ258J
C:\Users\peeja>
```

#### 4. PING

The Ping command is one of the most widely used commands in the prompt tool, as it allows the user to check the connectivity of our system to another host.

This command sends four experimental packets to the destination host to check whether it receives them successfully, if so, then, we can communicate with the destination host. But in case the packets have not been received, that means, no communication can be established with

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NAME: Venselvam.V

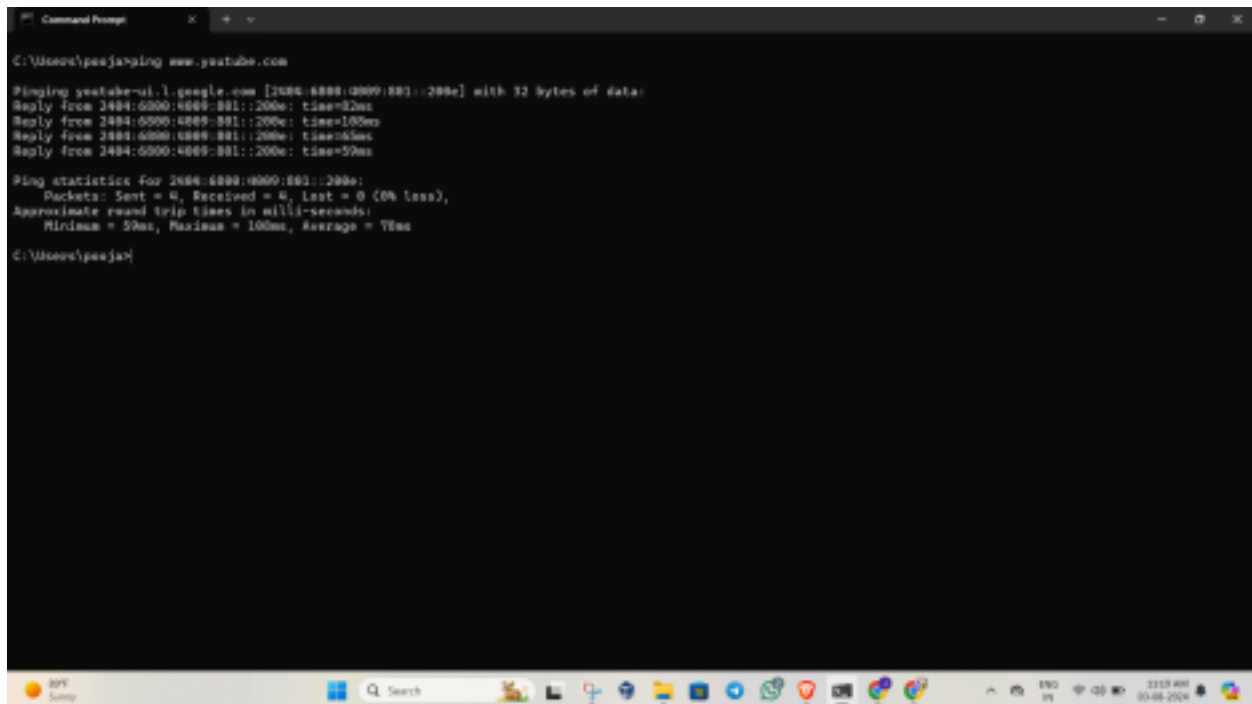
ROLL NO: 231901061

the destination host.

Syntax:

ping [www.destination\\_host\\_name.com](http://www.destination_host_name.com)

Example: ping [www.yahoo.com](http://www.yahoo.com)



```
Command Prompt
C:\Users\pseja>ping www.youtube.com

Pinging youtube-ul.l.google.com [2404:6800:4000:801::200e] with 32 bytes of data:
Reply from 2404:6800:4000:801::200e: time=32ms
Reply from 2404:6800:4000:801::200e: time=105ms
Reply from 2404:6800:4000:801::200e: time=63ms
Reply from 2404:6800:4000:801::200e: time=59ms

Ping statistics for 2404:6800:4000:801::200e:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milliseconds:
        Minimum = 59ms, Maximum = 105ms, Average = 78ms

C:\Users\pseja>
```

## 5. TRACERT

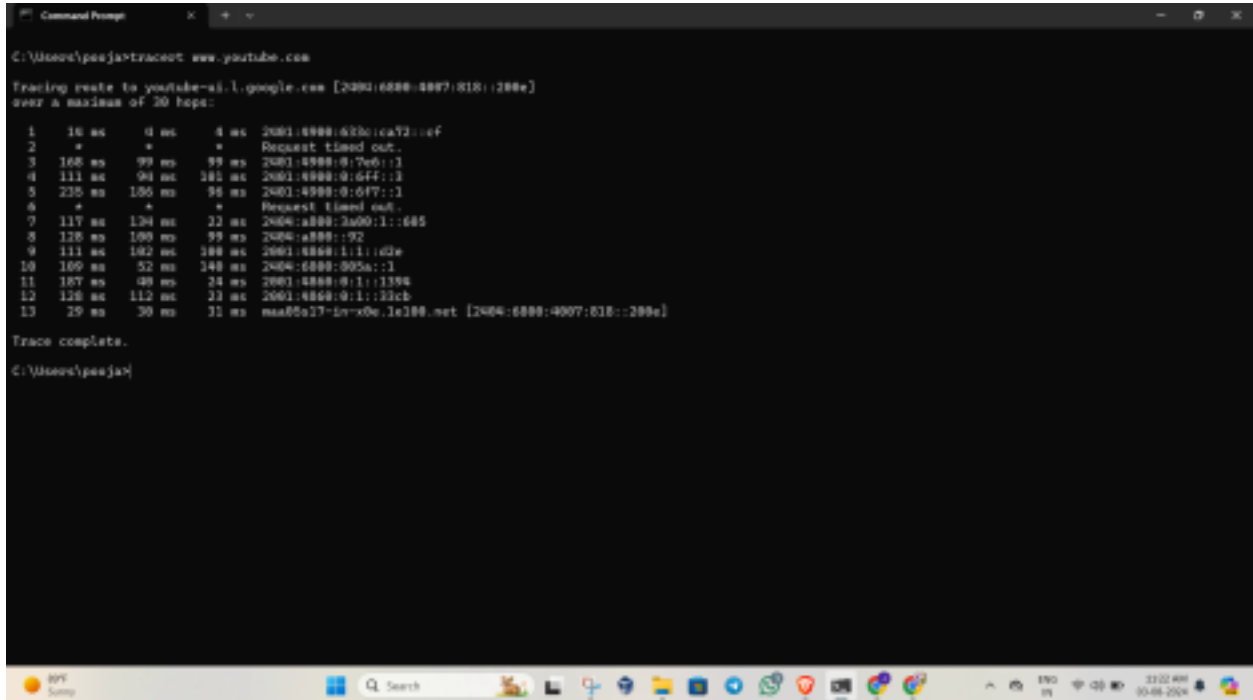
The TRACERT command is used to trace the route during the transmission of the data packet over to the destination host and also provides us with the “hop” count during transmission.

Using the number of hops and the hop IP address, we can troubleshoot network issues and identify the point of the problem during the transmission of the data packet.

Syntax: tracert IP-address OR tracert [www.destination\\_host\\_name.com](http://www.destination_host_name.com)

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Example: `tracert` [www.youtube.com](http://www.youtube.com)



```
Command Prompt
C:\Users\pasja>tracert www.youtube.com

Tracing route to youtube-si.l.google.com [2001:6800:4007:818::200e]
over a maximum of 30 hops:
  0  10 ms  0 ms  4 ms  2001:6800:4007:818::200e
  1  *      *      *      Request timed out.
  2  168 ms  99 ms  99 ms  2001:6800:4007:818::200e
  3  111 ms  94 ms  101 ms  2001:6800:4007:818::200e
  4  235 ms  195 ms  98 ms  2001:6800:4007:818::200e
  5  *      *      *      Request timed out.
  6  117 ms  134 ms  22 ms  2001:6800:4007:818::200e
  7  128 ms  100 ms  99 ms  2001:6800:4007:818::200e
  8  111 ms  102 ms  100 ms  2001:6800:4007:818::200e
  9  109 ms  52 ms  140 ms  2001:6800:4007:818::200e
 10  187 ms  48 ms  24 ms  2001:6800:4007:818::200e
 11  128 ms  112 ms  23 ms  2001:6800:4007:818::200e
 12  29 ms  39 ms  31 ms  2001:6800:4007:818::200e

Trace complete.
C:\Users\pasja>
```

## 6. NETSTAT

The Netstat command as the name suggests displays an overview of all the network connections in the device. The table shows detail about the connection protocol, address, and the current state of the network.

Syntax: `netstat`

[illegible]

The ARP command is used to access the mapping structure of IP addresses to the MAC address. This provides us with a better understanding of the transmission of packets in the network channel.

Syntax: arp  
class:CSE(cyber security)

```

C:\Users\user>arp -a
Displaying and modifying the IP-to-Physical address translation table used by
address resolution protocol (ARP).

arp -s [dest_addr] [ip_addr] [hw_addr]
arp -d [dest_addr] [ip_addr] [-v]

-v          Displays current ARP entries by interleaving the current
           protocol data. If [ip_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.

-i [if_name] Displays current ARP entries in verbose mode. If [if_name]
           specifies an interface name, only the entries for that
           interface are displayed.

-s [if_name] [ip_addr]
           Specifies the ARP entries for the network interface specified
           by [if_name].

-d [if_name] [ip_addr]
           Deletes the host specified by [ip_addr]. [ip_addr] may be
           wildcarded with * to delete all hosts.

-a [if_name]
           Adds the host and associates the logical address [ip_addr]
           with the physical address [hw_addr]. The physical address is
           given as 4 hexadecimal bytes separated by hyphens. The entry
           is permanent.

[hw_addr]
           Specifies a physical address.
           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 192.168.0.101 00-00-00-00-00-00 -v with a static entry.
> arp -a
           Displays the arp table.

C:\Users\user>

```

Using the SYSTEMINFO command, we can access the system's hardware and software details, such as processor data, booting data, Windows version, etc.

class:CSE(cyber security)

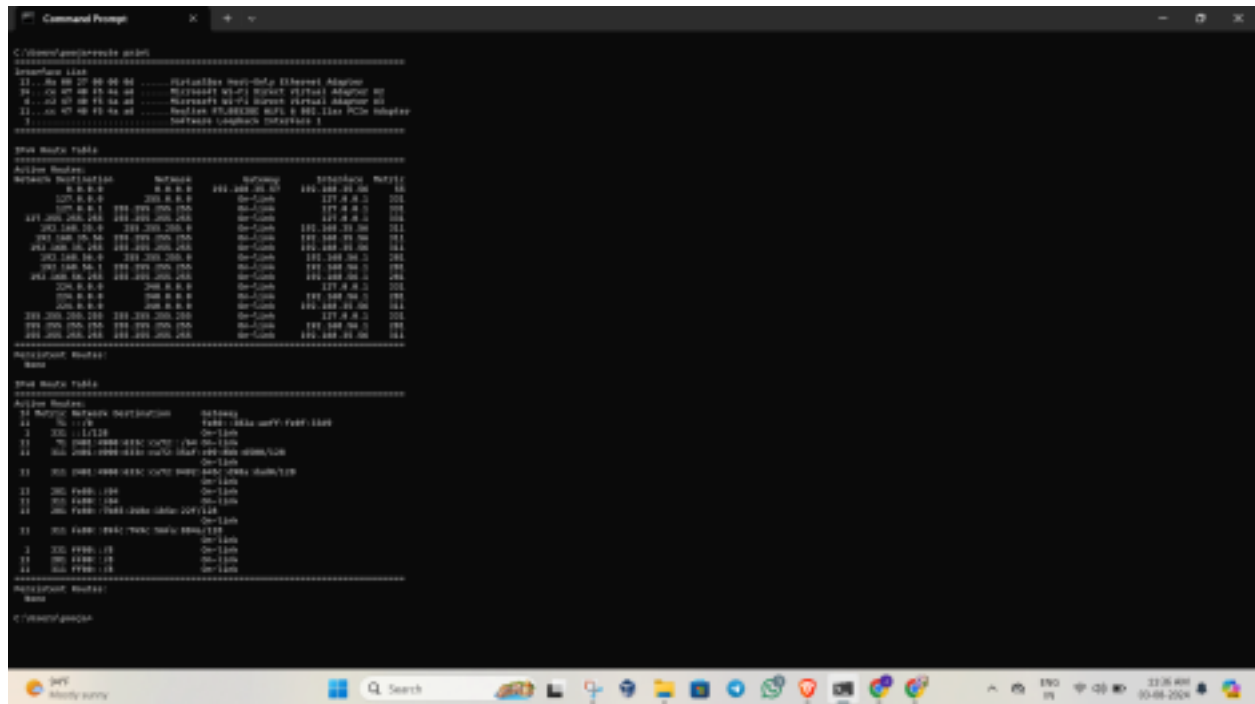


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9. ROUTE
Provides the data of routing data packets in the system over the communication channel.

class:CSE(cyber security)





## CONCLUSION

Understood the need of using network commands and the way to implement them in the Windows command prompt and also learned about the different network commands to troubleshoot and configure the system's network settings.