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EXP NO:1A 1A.BASIC NETWORKING COMMANDS IN WINDOWS OPERATING SYSTEM.

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AIM:

To study and execute the basic commands in computer networking in windows

COMMANDS:

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.

Command to enter in Prompt - ipconfig

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.

Command to enter in Prompt – nslookup

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.

Command to enter in Prompt - hostname

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 the destination host.

Command to enter in Prompt - ping www.destination_host_name.com

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.

Command to enter in Prompt- tracert IP-address OR tracert www.destination_host_name.com

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.

Command to enter in Prompt - netstat

7. ARP(Address Resolution Protocol)

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.

Command to enter in Prompt - arp

8. SYSTEMINFO

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

Command to enter in Prompt – systeminfo

9. ROUTE

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

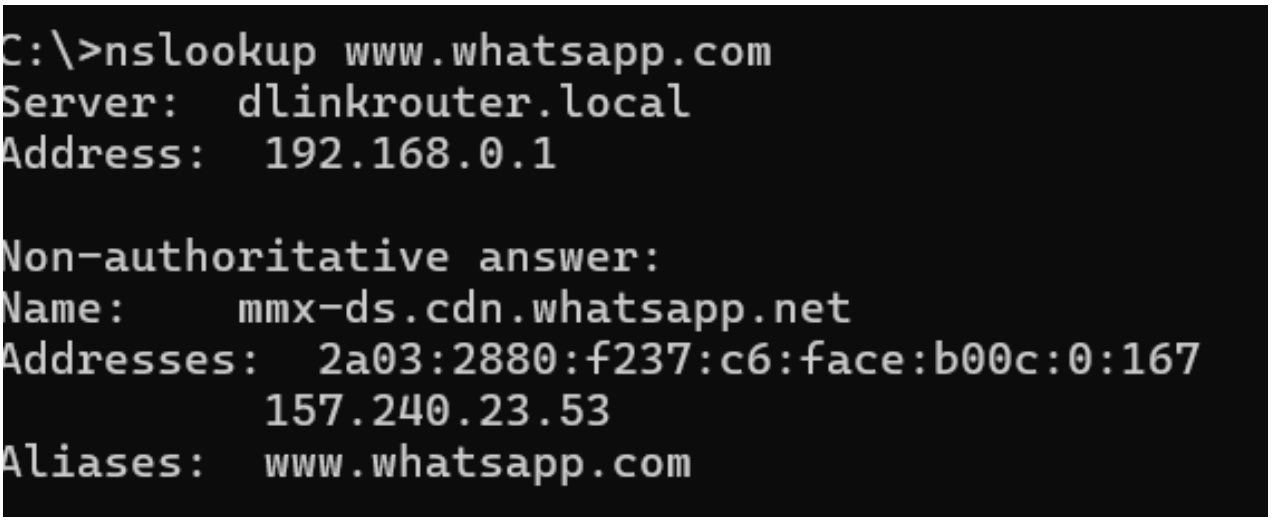
Command to enter in Prompt – route print

10. NETSTAT

It is used to get the over view of the currently connected networks from our system.

Command to enter in Prompt - netstat

OUTPut:



```
C:\>ipconfig/all

Windows IP Configuration

   Host Name . . . . . . . . . . . . : LAPTOP-KV7M51GT
   Primary Dns Suffix  . . . . . . . :
   Node Type . . . . . . . . . . . . : Hybrid
   IP Routing Enabled. . . . . . . . : No
   WINS Proxy Enabled. . . . . . . . : No

Wireless LAN adapter Local Area Connection* 1:

   Media State . . . . . . . . . . . : Media disconnected
   Connection-specific DNS Suffix  . :
   Description . . . . . . . . . . . : Microsoft Wi-Fi Direct Virtual Adapter
   Physical Address. . . . . . . . . : 42-1A-58-7B-FB-AB
   DHCP Enabled. . . . . . . . . . . : Yes
   Autoconfiguration Enabled . . . . : Yes

Wireless LAN adapter Local Area Connection* 2:

   Media State . . . . . . . . . . . : Media disconnected
   Connection-specific DNS Suffix  . :
   Description . . . . . . . . . . . : Microsoft Wi-Fi Direct Virtual Adapter #2
   Physical Address. . . . . . . . . : 46-1A-58-7B-FB-AB
   DHCP Enabled. . . . . . . . . . . : Yes
   Autoconfiguration Enabled . . . . : Yes

Wireless LAN adapter Wi-Fi:

   Connection-specific DNS Suffix  . :
   Description . . . . . . . . . . . : Realtek RTL8852BE-VS WiFi 6 802.11ax PCIe Adapter
   Physical Address. . . . . . . . . : 40-1A-58-7B-FB-AB
   DHCP Enabled. . . . . . . . . . . : Yes
   Autoconfiguration Enabled . . . . : Yes
   Link-local IPv6 Address . . . . . : fe80::6f9d:a40a:ca05:44cd%7(Preferred)
   IPv4 Address. . . . . . . . . . . : 192.168.0.157(Preferred)
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Lease Obtained. . . . . . . . . . : 05 August 2024 19:28:41
   Lease Expires . . . . . . . . . . : 07 August 2024 18:32:39
   Default Gateway . . . . . . . . . : 192.168.0.1
   DHCP Server . . . . . . . . . . . : 192.168.0.1
   DHCPv6 IAID . . . . . . . . . . . : 71309912
```

```
C:\>ping 157.240.23.53

Pinging 157.240.23.53 with 32 bytes of data:
Reply from 157.240.23.53: bytes=32 time=4ms TTL=58
Reply from 157.240.23.53: bytes=32 time=7ms TTL=58
Reply from 157.240.23.53: bytes=32 time=5ms TTL=58
Reply from 157.240.23.53: bytes=32 time=5ms TTL=58

Ping statistics for 157.240.23.53:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 4ms, Maximum = 7ms, Average = 5ms
```

```
C:\>tracert 157.240.23.53

Tracing route to whatsapp-cdn-shv-01-maa2.fbcdn.net [157.240.23.53]
over a maximum of 30 hops:

  1     1 ms     1 ms     1 ms  dlinkrouter.local [192.168.0.1]
  2     3 ms     2 ms     2 ms  RTK_GW.domain.name [192.168.101.1]
  3     5 ms     4 ms     6 ms  10.218.0.1
  4     *        *        *     Request timed out.
  5     *        *        *     Request timed out.
  6    12 ms     6 ms     5 ms  ae5.pr02.maa2.tfbnw.net [157.240.68.172]
  7     5 ms     3 ms     *     po102.psw04.maa2.tfbnw.net [129.134.34.157]
  8     6 ms     3 ms     4 ms  157.240.38.233
  9    10 ms     4 ms     4 ms  whatsapp-cdn-shv-01-maa2.fbcdn.net [157.240.23.53]

Trace complete.
```

```
C:\>netstat

Active Connections

  Proto  Local Address          Foreign Address        State
  TCP    127.0.0.1:49687        LAPTOP-KV7M51GT:49688  ESTABLISHED
  TCP    127.0.0.1:49688        LAPTOP-KV7M51GT:49687  ESTABLISHED
  TCP    127.0.0.1:49689        LAPTOP-KV7M51GT:49690  ESTABLISHED
  TCP    127.0.0.1:49690        LAPTOP-KV7M51GT:49689  ESTABLISHED
  TCP    127.0.0.1:49691        LAPTOP-KV7M51GT:49692  ESTABLISHED
  TCP    127.0.0.1:49692        LAPTOP-KV7M51GT:49691  ESTABLISHED
  TCP    192.168.0.157:49162    40.99.34.242:https     ESTABLISHED
```

```
C:\>hostname
LAPTOP-KV7M51GT
```

```
C:\>arp -a

Interface: 192.168.0.157 --- 0x7
  Internet Address      Physical Address      Type
  192.168.0.1           a4-2a-95-36-c3-5e     dynamic
  192.168.0.255         ff-ff-ff-ff-ff-ff     static
  224.0.0.2             01-00-5e-00-00-02     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
  224.0.1.60            01-00-5e-00-01-3c     static
  239.255.255.250       01-00-5e-7f-ff-fa     static
  255.255.255.255       ff-ff-ff-ff-ff-ff     static
```