WORKSHEET1.2

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Subject Name: Computer Network lab **Subject Code: 21CSH-256**

Aim :- Study the basic network command and Network configuration commands like ping, variations of ipconfig, tracert, nslookup, netstat, arp, rarp, hostname, pathping etc.

Objective: - Students will be able to troubleshoot networks

Theory:- Go to command prompt and type the commands

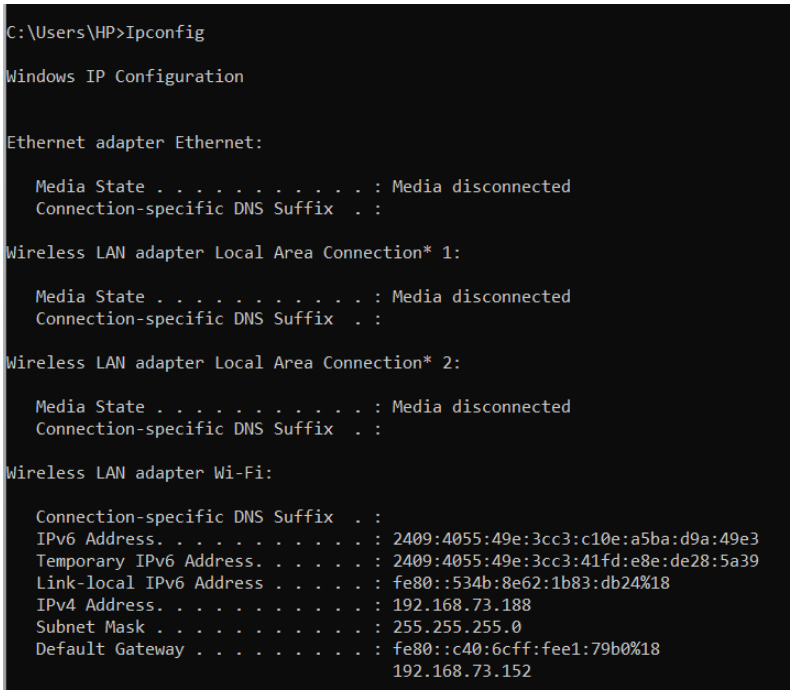
1. Ping:- PING stands for Packet InterNet Groper in computer networking field. It is a computer network administration software utility used to test the network connectivity between two systems. These systems may be any type of normal personal computer, Server, Switch, Router or Gateway. It was created to verify that the specific computer on the network exists or not.

Output:-

```
C:\Users\HP>ping google.com

Pinging google.com [2404:6800:4002:81d::200e] with 32 bytes of data:
Reply from 2404:6800:4002:81d::200e: time=33ms
Reply from 2404:6800:4002:81d::200e: time=66ms
Reply from 2404:6800:4002:81d::200e: time=69ms
Reply from 2404:6800:4002:81d::200e: time=74ms

Ping statistics for 2404:6800:4002:81d::200e:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 33ms, Maximum = 74ms, Average = 60ms

C:\Users\HP>
```

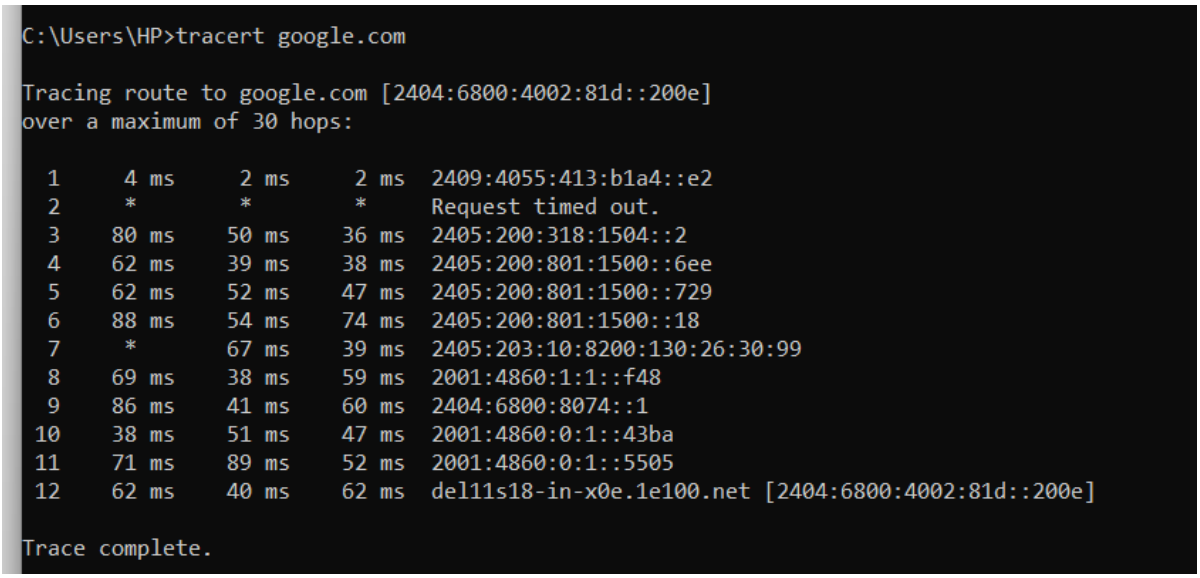
2. Ipconfig:(Internet Protocol Configuration) A command line utility that is used to display and manage the IP address assigned to the machine. In Windows, typing ipconfig without any parameters displays the computer's currently assigned IP, subnet mask and default gateway addresses.

Output:-



3. Tracert:- The TRACERT diagnostic utility determines the route to a destination by sending Internet Control Message Protocol (ICMP) echo packets to the destination. In these packets, TRACERT uses varying IP Time-To-Live (TTL) values.

Output:-



4. Nslookup:- NsLookup is a tool included in many operating systems that can look up IP addresses and perform other searches on DNS domains and servers. This resource is housed in a utility called nslookup.exe. NsLookup is a basic way to get fundamental DNS information quickly and easily.

Output:-

```
C:\Users\HP>nslookup facebook.com
Server:  UnKnown
Address:  192.168.73.152

Non-authoritative answer:
Name:    facebook.com
Addresses:  2a03:2880:f144:181:face:b00c:0:25de
          157.240.239.35


C:\Users\HP>nslookup google.com
Server:  UnKnown
Address:  192.168.73.152

Non-authoritative answer:
Name:    google.com
Addresses:  2404:6800:4002:81d::200e
          142.250.193.46
```

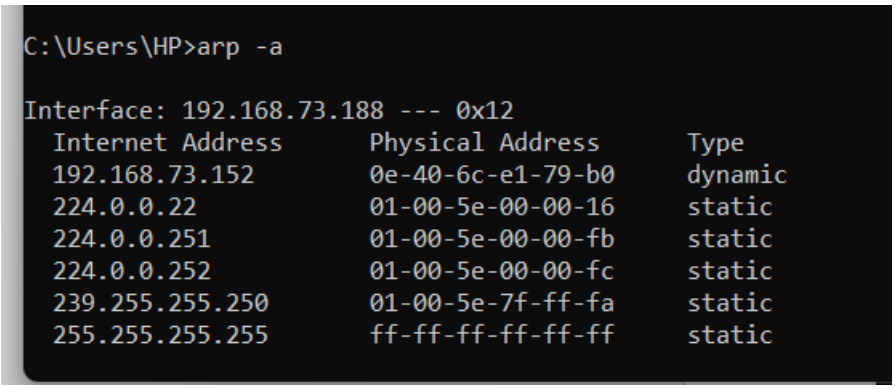
5. Netstat: (Network statistics) A command line utility that reports the status of TCP/IP and Ethernet connections. Netstat comes with all major operating systems, but the Linux/Unix versions provide the most command options. GUI-based versions for Windows, such as NetStat Live and X-Netstat, are also available.

Output:-

```
C:\Users\HP>Netstat

Active Connections

  Proto  Local Address          Foreign Address        State
  TCP    192.168.73.188:20080   SAGU:50135             ESTABLISHED
  TCP    192.168.73.188:20080   SAGU:50504             ESTABLISHED
  TCP    192.168.73.188:20080   SAGU:55517             ESTABLISHED
  TCP    192.168.73.188:20080   SAGU:55518             ESTABLISHED
  TCP    192.168.73.188:20080   SAGU:55520             ESTABLISHED
  TCP    192.168.73.188:20080   SAGU:55563             ESTABLISHED
  TCP    192.168.73.188:20080   SAGU:55602             ESTABLISHED
  TCP    192.168.73.188:20080   SAGU:55604             ESTABLISHED
  TCP    192.168.73.188:20080   SAGU:55619             ESTABLISHED
  TCP    192.168.73.188:20080   SAGU:55620             ESTABLISHED
  TCP    192.168.73.188:20080   SAGU:55741             ESTABLISHED
  TCP    192.168.73.188:20080   SAGU:55745             ESTABLISHED
  TCP    192.168.73.188:20080   SAGU:55747             ESTABLISHED
  TCP    192.168.73.188:20080   SAGU:55766             ESTABLISHED
  TCP    192.168.73.188:20080   SAGU:55770             ESTABLISHED
  TCP    192.168.73.188:20080   SAGU:55774             ESTABLISHED
  TCP    192.168.73.188:20080   SAGU:55835             ESTABLISHED
  TCP    192.168.73.188:20080   SAGU:55837             ESTABLISHED
  TCP    192.168.73.188:20080   SAGU:55845             ESTABLISHED
  TCP    192.168.73.188:20080   SAGU:55862             ESTABLISHED
```

6. Arp:- Address Resolution Protocol (ARP) is a communication protocol used to find the MAC (Media Access Control) address of a device from its IP address. This protocol is used when a device wants to communicate with another device on a Local Area Network or Ethernet.

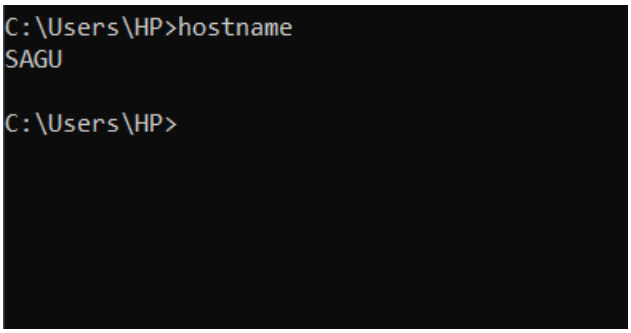
Output:-



7. Rarp:- Reverse Address Resolution Protocol (RARP) is a network-specific standard protocol. It is described in RFC 903. Some network hosts, such as a diskless workstation, do not know their own IP address when they are booted. To determine their own IP address, they use a mechanism similar to ARP, but now the hardware address of the host is the known parameter, and the IP address is the queried parameter.

8. Hostname:- In the Internet, a hostname is a domain name assigned to a host computer. This is usually a combination of the host's local name with its parent domain's name. For example, en.wikipedia.org consists of a local hostname (en) and the domain name wikipedia.org.

Output:-



9. Pathping:-Provides information about network latency and network loss at intermediate hops between a source and destination. This command sends multiple echo Request messages to each router between a source and destination, over a period of time, and then computes results based on the packets returned from each router.

Output:-

```
C:\Users\HP>pathping google.com

Tracing route to google.com [2404:6800:4002:81c::200e]
over a maximum of 30 hops:
  0  SAGU [2409:4055:413:b1a4:39a4:2566:49db:ea7b]
  1  2409:4055:413:b1a4::e2
  2     *        *        *
Computing statistics for 25 seconds...
            Source to Here   This Node/Link
Hop  RTT    Lost/Sent = Pct  Lost/Sent = Pct  Address
  0                                           SAGU [2409:4055:413:b1a4:39a4:2566:49db:ea7b]
                                    0/ 100 =  0%   |
  1   29ms     0/ 100 =  0%     0/ 100 =  0%  2409:4055:413:b1a4::e2

Trace complete.
```