Practical No 1

<u>**Aim**</u>: Using, linux-terminal or Windows-cmd, execute following networking commands and note the output: ping, traceroute, netstat, arp, ipconfig, Getmac, hostname, NSLookUp, pathping, SystemInfo

<u>**Theory**</u>:

1) ping: ping is a computer network administration software utility used to test the reachability of a host on an Internet Protocol network. It is available for virtually all operating systems that have networking capability, including most embedded network administration software

2) traceroute: The traceroute command (tracert) is a utility designed for displaying the time it takes for a packet of information to travel between a host system and the final destination system. This command returns a list of the hops that the data packets take along their path along their way to the destination

3) netstat: The netstat provides statistics about all active connections so you that we can find out which computers or networks a PC is connected to
    Some of the netstat commands commonly used are
    i)   netstat -in command
            This netstat function shows the state of all configured interfaces.

    ii)   netstat -a command
            The netstat -a command shows the state of all sockets.

    iii)   netstat -s
            The netstat -s command shows statistics for each protocol (while the netstat -p command shows the statistics for the specified protocol).

    iv)   netstat -r
            Another option relevant to performance is the display of the discovered Path Maximum Transmission Unit (PMTU).

4) arp: The ARP (Address Resolution Protocol) commands are used to view, display, or modify the details/information in an ARP table/cache.
    Some of the common arp commands are as follows
    i)   arp -a: This command is used to display the ARP table for a particular IP address. It also shows all the entries of the ARP cache or table.
    ii)   arp -g: Same as the arp -a command.

iii)   arp -d: This command is used to delete an entry from the ARP table for a particular interface. To delete an entry, write arp -d command along with the IP address in a command prompt to be deleted.

iv)   arp -s: This command is used to add the static entry in the ARP table, which resolves the InetAddr (IP address) to the EtherAddr (physical address). To add a static entry in an ARP table, we write arp -s command along with the IP address and MAC address of the device in a command prompt.

5) ipconfig: ipconfig (Internet Protocol CONFIGuration) 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.

6) getmac: Getmac is a Windows command used to display the Media Access Control (MAC) addresses for each network adapter in the computer.

7) hostname: A hostname is a label that is assigned to a device connected to a computer network and it is used to identify the device.

8) NSlookUp: Using this command we can find the corresponding IP address or domain name system record. The user can also enter a command for it to do a reverse DNS lookup and find the host name for an IP address that is specified.

9) Pathping: 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. It can be used to find the routers or links having network problems.

10) SystemInfo: This command is use ot display detailed configuration information about a computer and its operating system, including operating system configuration, security information, product ID, and hardware properties

Link for the video demonstration of the practical:

https://youtu.be/CeMNBxW5LsM