CSE340 - Computer Networks Lab

Lab Assignment 2

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1 . ifconfig

• This interface configuration utility for system/network administration in Unix/Linux operating systems to configure . It manages and query network interface parameters via command line interface or in a system configuration script.The ifconfig command is also used to check the assigned IP address of a server. It is used for displaying current network configuration information,netmask or broadcast address to an network interface, creating an alias for network interface, setting up hardware address and enabling or disable network interfaces.

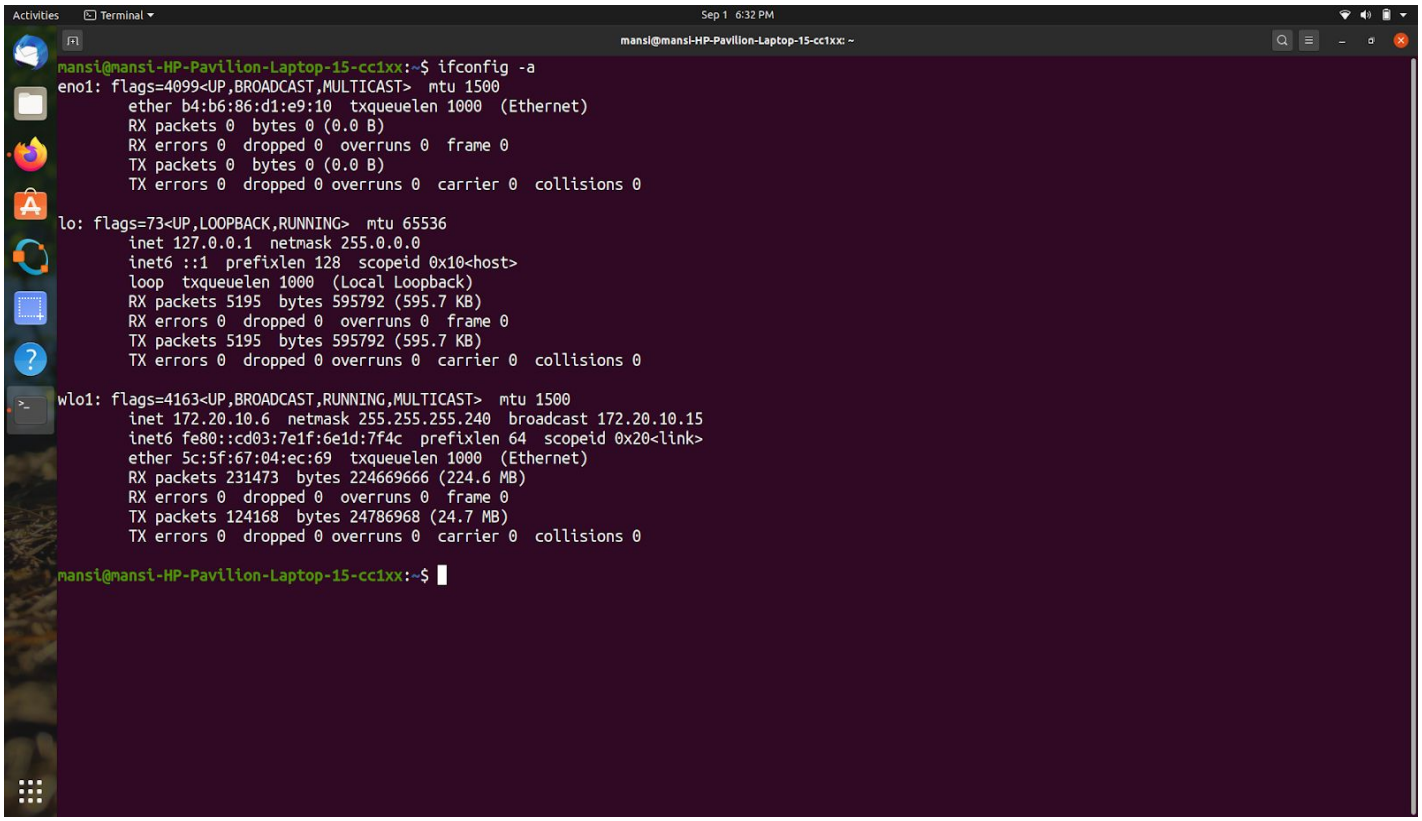
• ipconfig (internet protocol configuration): a console application in Microsoft Windows that displays all current TCP/IP network configuration values and can modify Dynamic Host Configuration Protocol DHCP and Domain Name System DNS settings.

↦Installation for ubuntu : sudo apt-get install net-tools

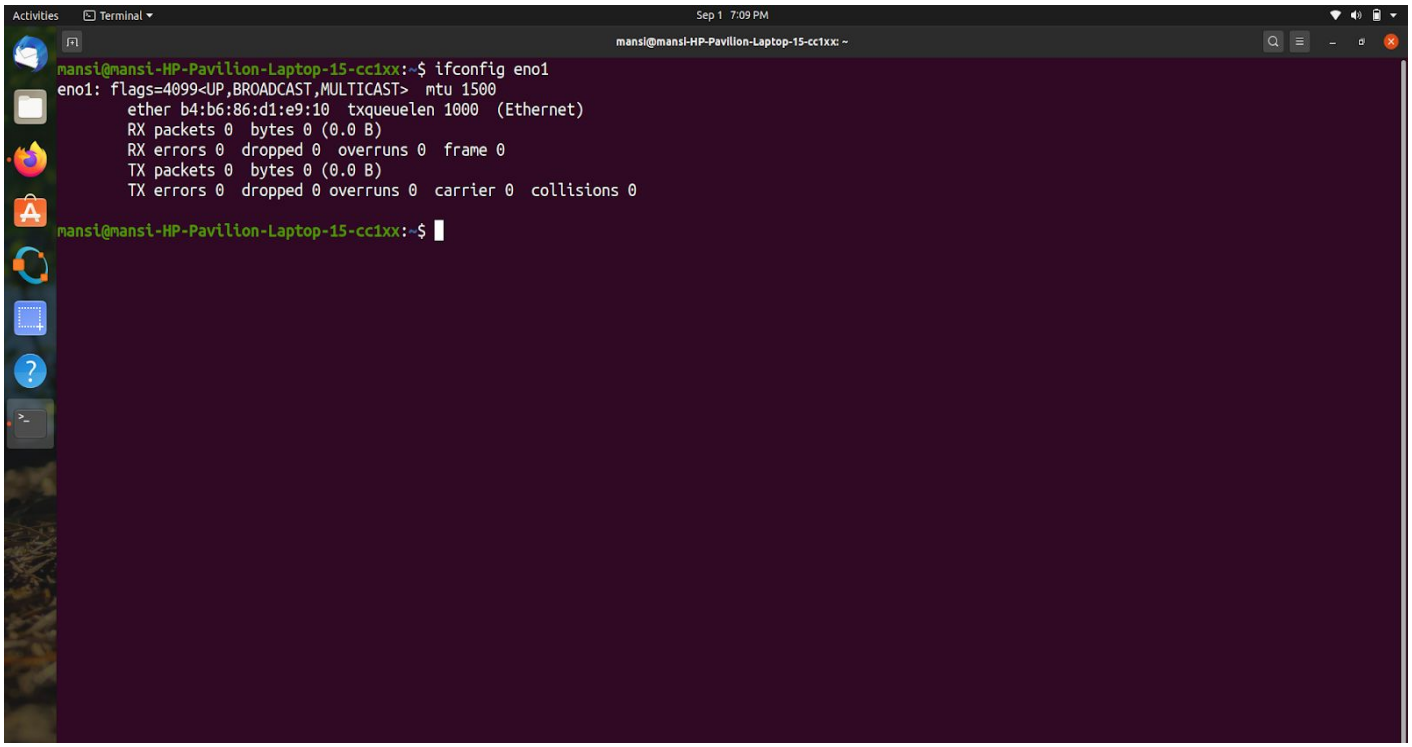
↦ifconfig :View All Network Setting

↦ifconfig -a : to display all the interfaces available, even if they are down

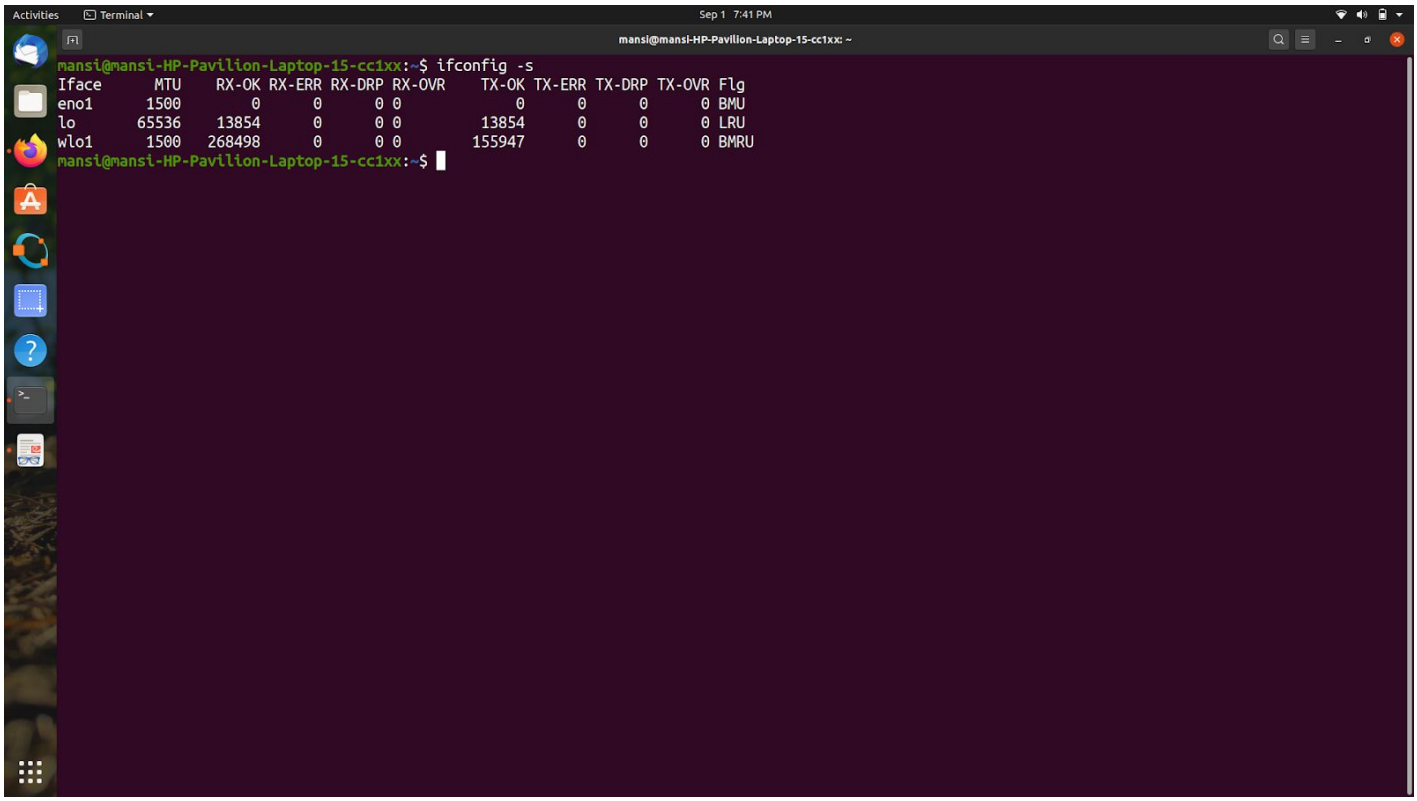
It returns **lo** is the loopback interface. This is a special network interface that the system uses to communicate with itself.**wlan0** is the name of the first wireless interface on the system. Additional wireless interfaces would be named wlan1, wlan2, etc. **en** is for Ethernet **o** is for on-board . eno [number] The number is a firmware/BIOS provided index .



↦ifconfig eno1:It will display details of specific network interfaces.



↦ifconfig -s :Display a short list, instead of details



↦ ifconfig interface up:This option is used to activate the driver for the given interface.

↦ ifconfig interface down : to deactivate the driver for the given interface.

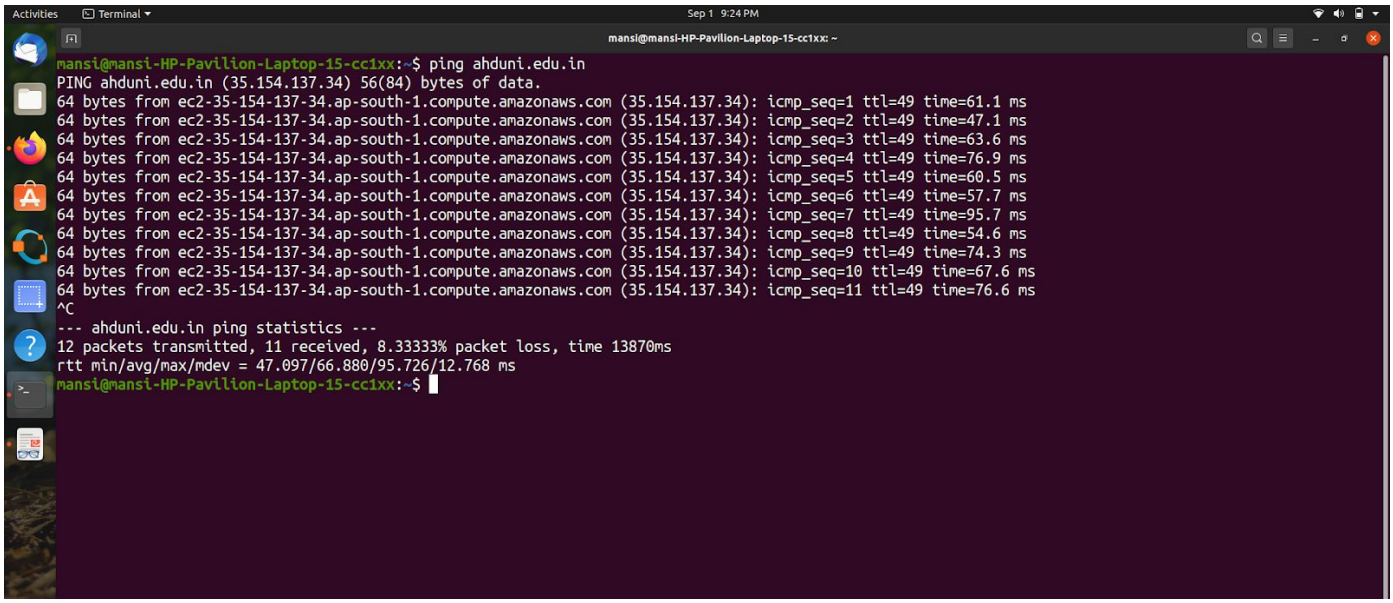
2 . ping

• PING (Packet Internet Groper) command is used to check the network connectivity between host and server/host. This command takes as input the IP address or the URL and sends a data packet to the specified address with the message “PING” and gets a response from the server/host this time is recorded which is called latency. Fast ping low latency means faster connection. Ping uses ICMP(Internet Control Message Protocol) to send an ICMP echo message to the specified host if that host is available then it sends ICMP reply message .That response shows the URL you’re pinging, the IP address associated with that URL, and the size of the packets being sent on the first line. The next four lines show the replies from each individual packet, including the time (in milliseconds) it took for the response and the time-to-live (TTL) of the packet, which is the amount of time that must pass before the packet is discarded. At the bottom, you’ll see a summary that shows how many packets were sent and received, as well as the minimum, maximum, and average response time.

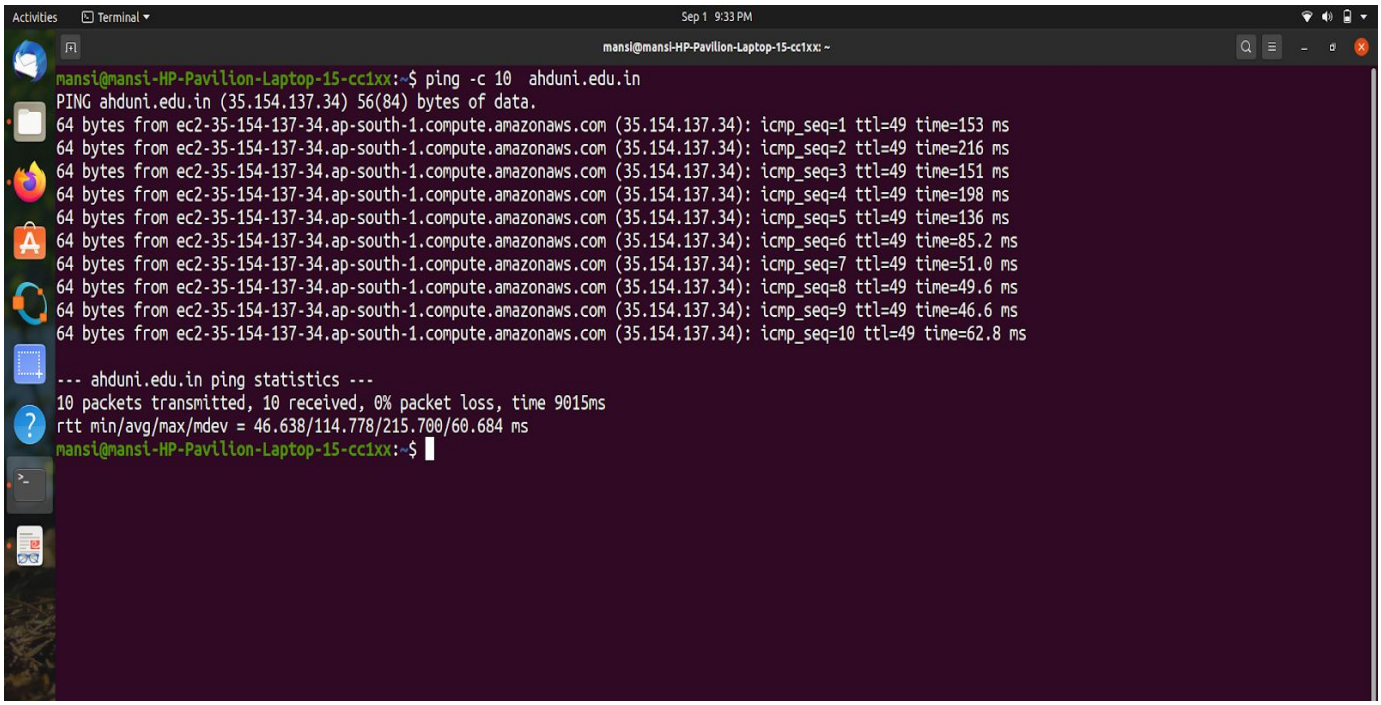
• If you get a successful response, you know that all the networking devices between you and that destination are working, including the network adapter in your computer, your router, and whatever devices exist on the internet between your router and the destination. Ping your router to see if you can reach it. If you can’t successfully ping an internet location, you can then try pinging your router. A successful response lets you know that your local network is

working okay, and that the problem reaching the internet location is somewhere out of your control

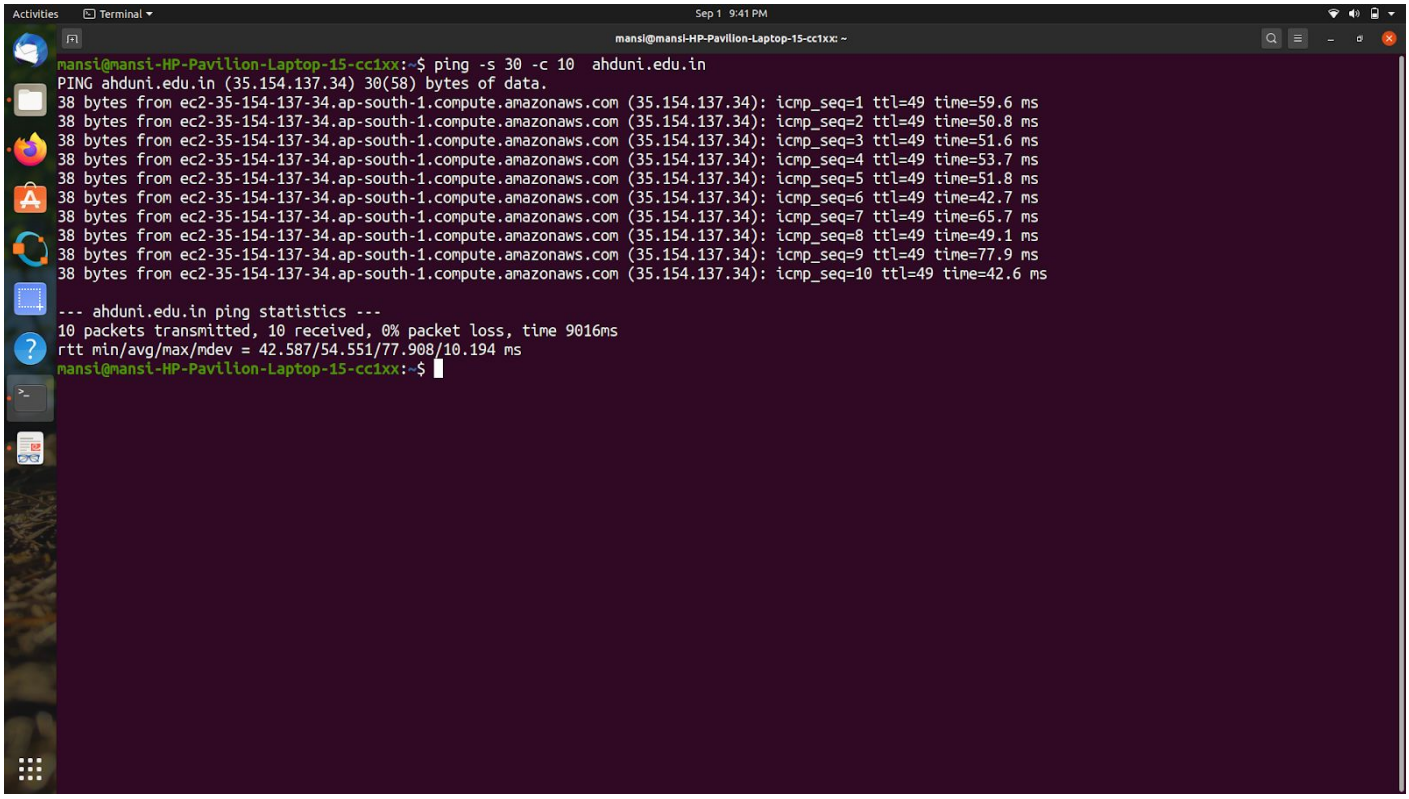
↦ ping ahduni.edu.in



↦ ping -c 10 ahduni.edu.in :controlling number of pings



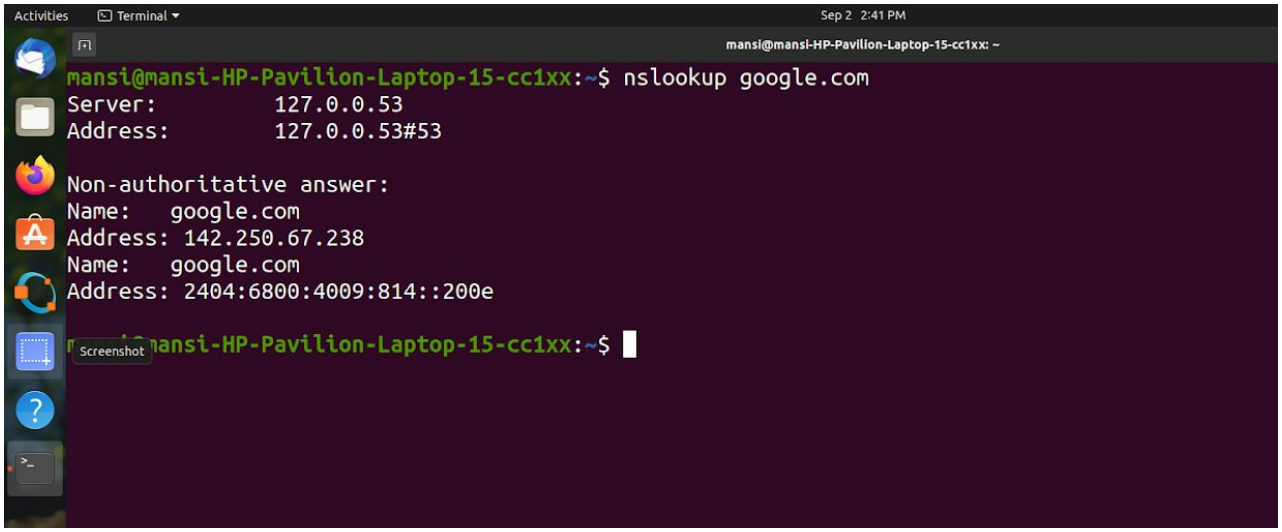
↦ping -s 30 -c 10 ahduni.edu.in :controlling the size of packet send



3 . nslookup

nslookup (stands for “Name Server Lookup”) is a useful command for getting information from a DNS server. It is a network administration tool for querying the Domain Name System (DNS) to obtain domain name or IP address mapping or any other specific DNS record. It is also used to troubleshoot DNS related problems

↦nslookup website

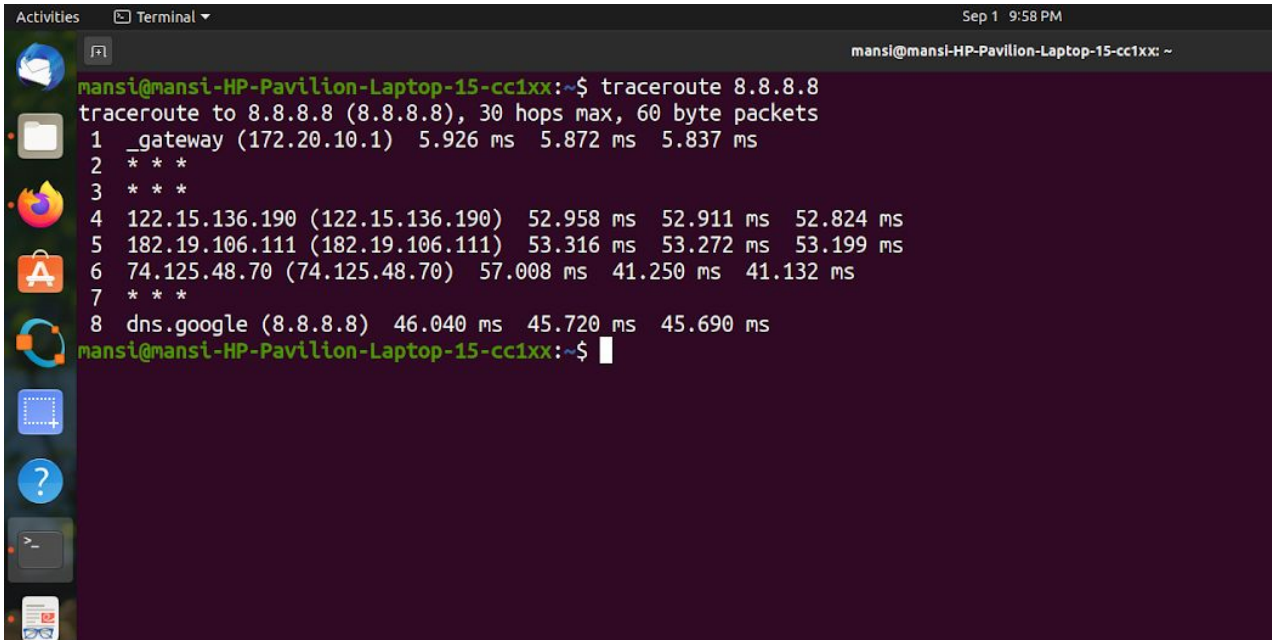


4 . traceroute

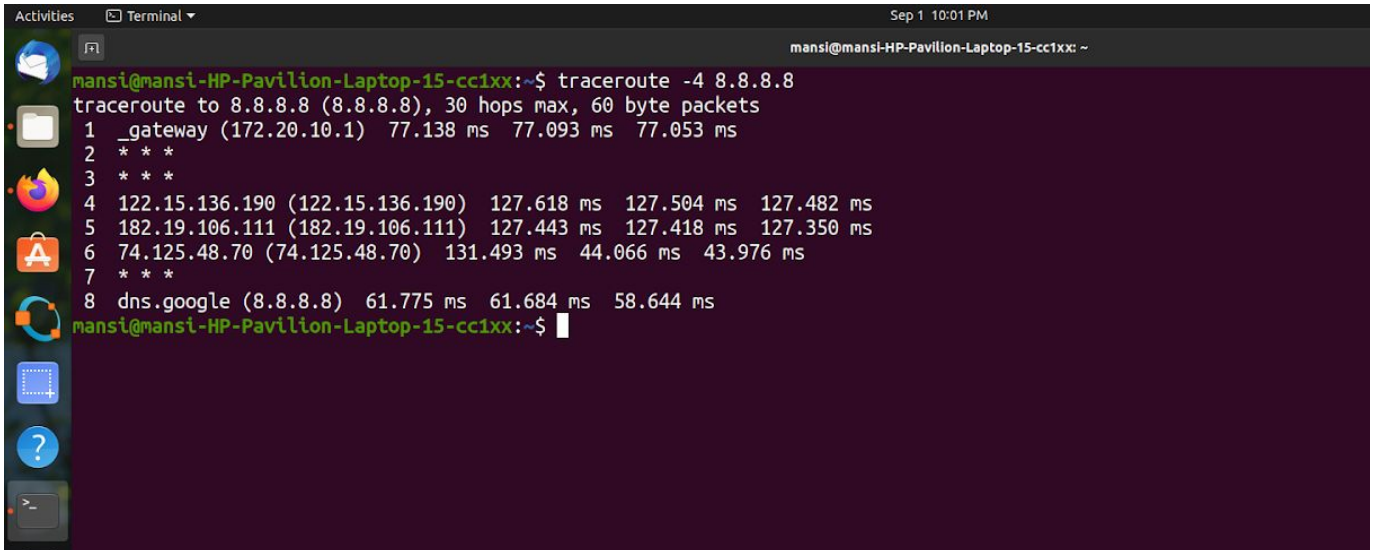
When packets are sent across the internet, they must hop from network to network. The traceroute command traces the route that packets take to reach the host. It will show you how many hops it takes to reach the host and how long it took between each hop. This allows you to diagnose potential networking bottlenecks. (If the system working on a network is delivering a higher volume of data than what is supported by the existing capacity of the network, then a network bottleneck will occur. A common computing bottleneck culprit is network data interruption caused by microprocessor circuitry or TCP/IP).

The first column corresponds to the hop count. The second column represents the address of that op and after that, you see three space-separated times in milliseconds. This command sends three packets to the hop and each of the time refers to the time taken by the packet to reach the hop.

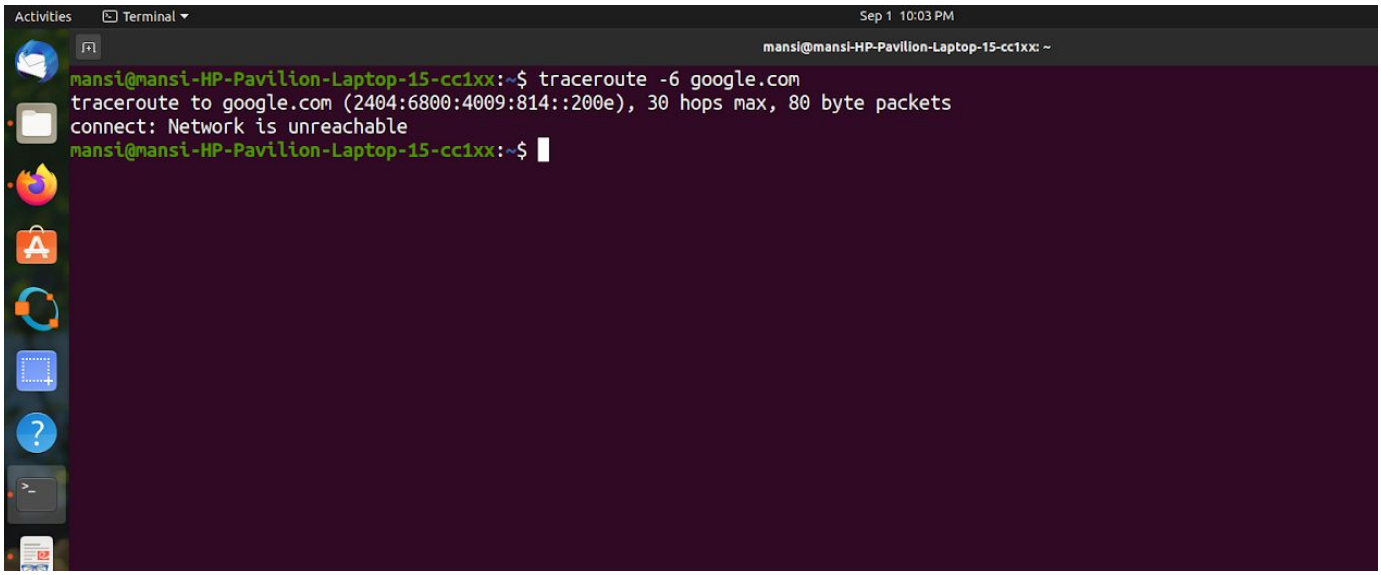
↦traceroute 8.8.8.8



↦traceroute -4 8.8.8.8:To display ipv4



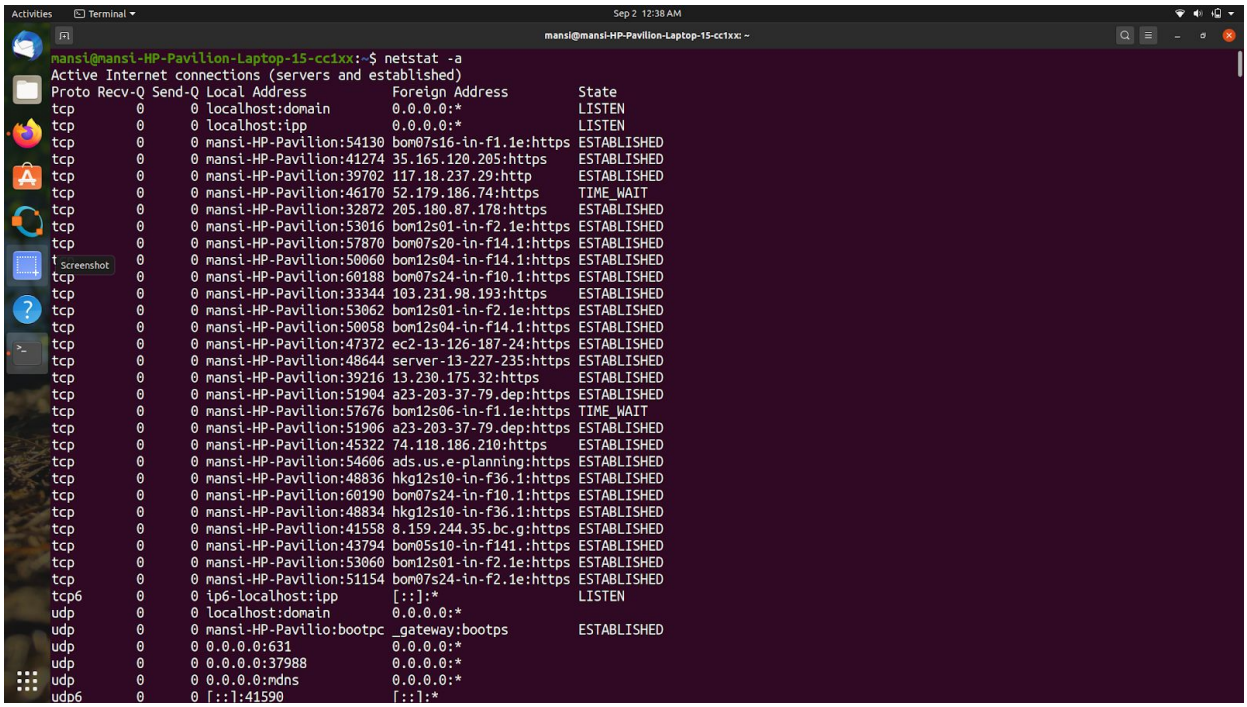
↦traceroute -6 google.comTo display ipv6

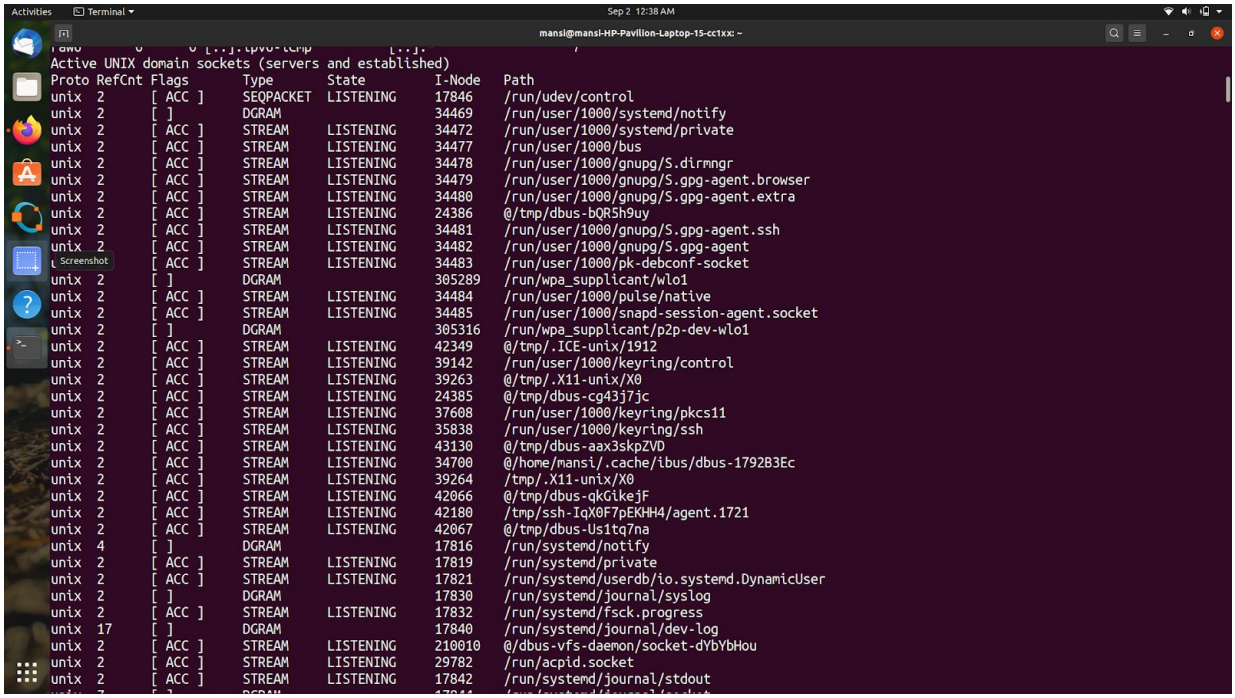


5 . netstat

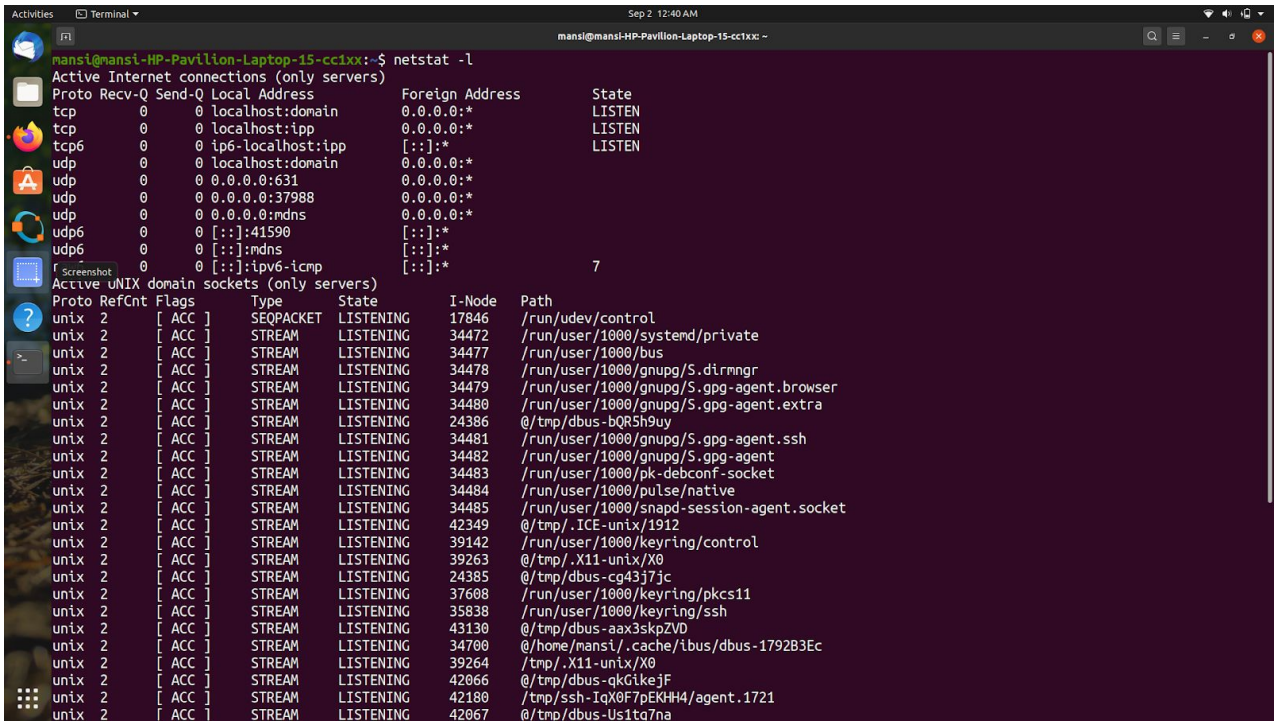
When packets are sent across the internet, they must hop from network to network. The traceroute command traces the route that packets take to reach the host. It will show you how many hops it takes to reach the host and how long it took between each hop. This allows you to diagnose potential networking bottlenecks. (If the system working on a network is delivering a higher volume of data than what is supported by the existing capacity of the network, then a network bottleneck will occur. A common computing bottleneck culprit is network data interruption caused by microprocessor circuitry or TCP/IP).

↦netstat -a :List all ports.

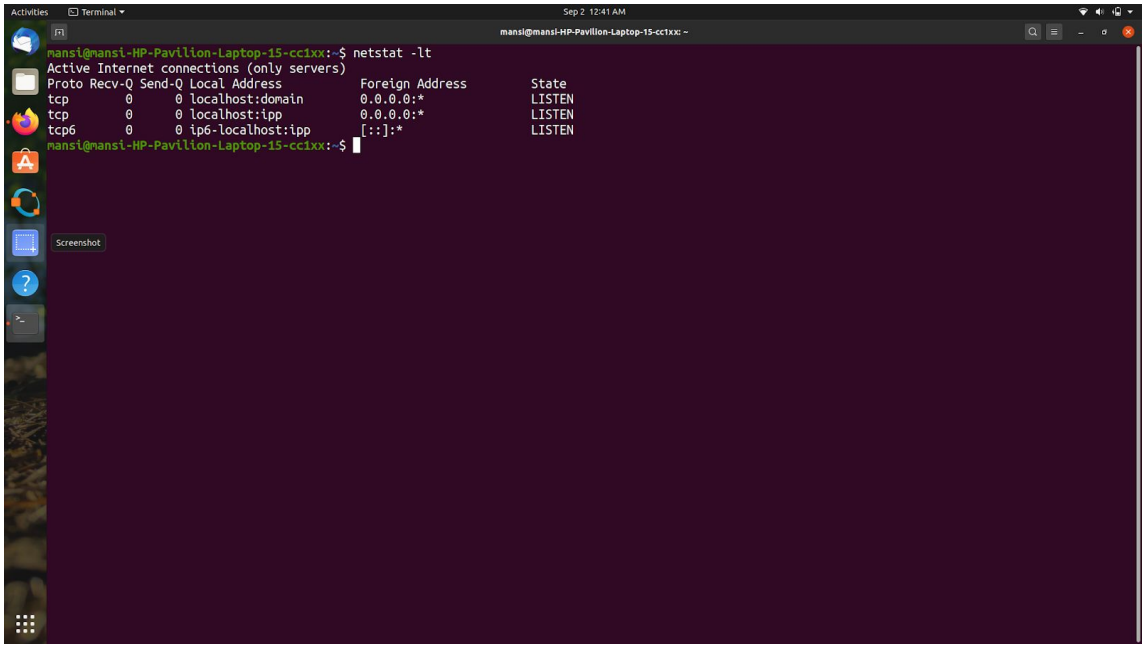




↦netstat -l :List only listening ports.



↦netstat -lt :List only listening TCP ports.



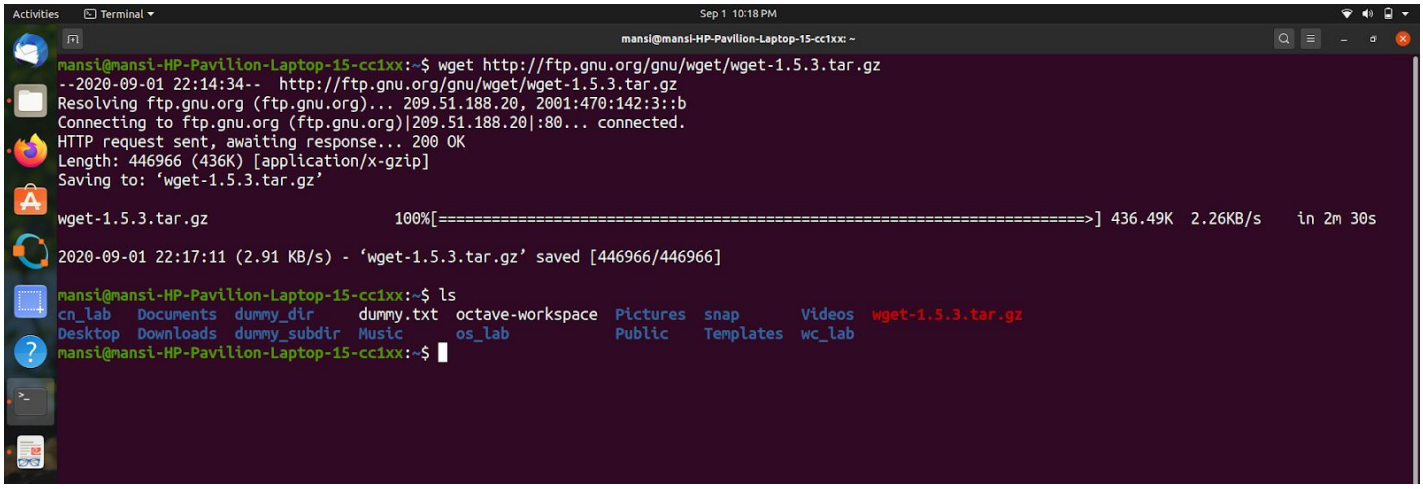
6 . wget

The wget command is a command line utility for downloading files from the Internet. It supports down- loading multiple files, downloading in the background, resuming downloads, limiting the bandwidth used for downloads and viewing headers. It is also a non-interactive network downloader. It means that it can work in the background, while

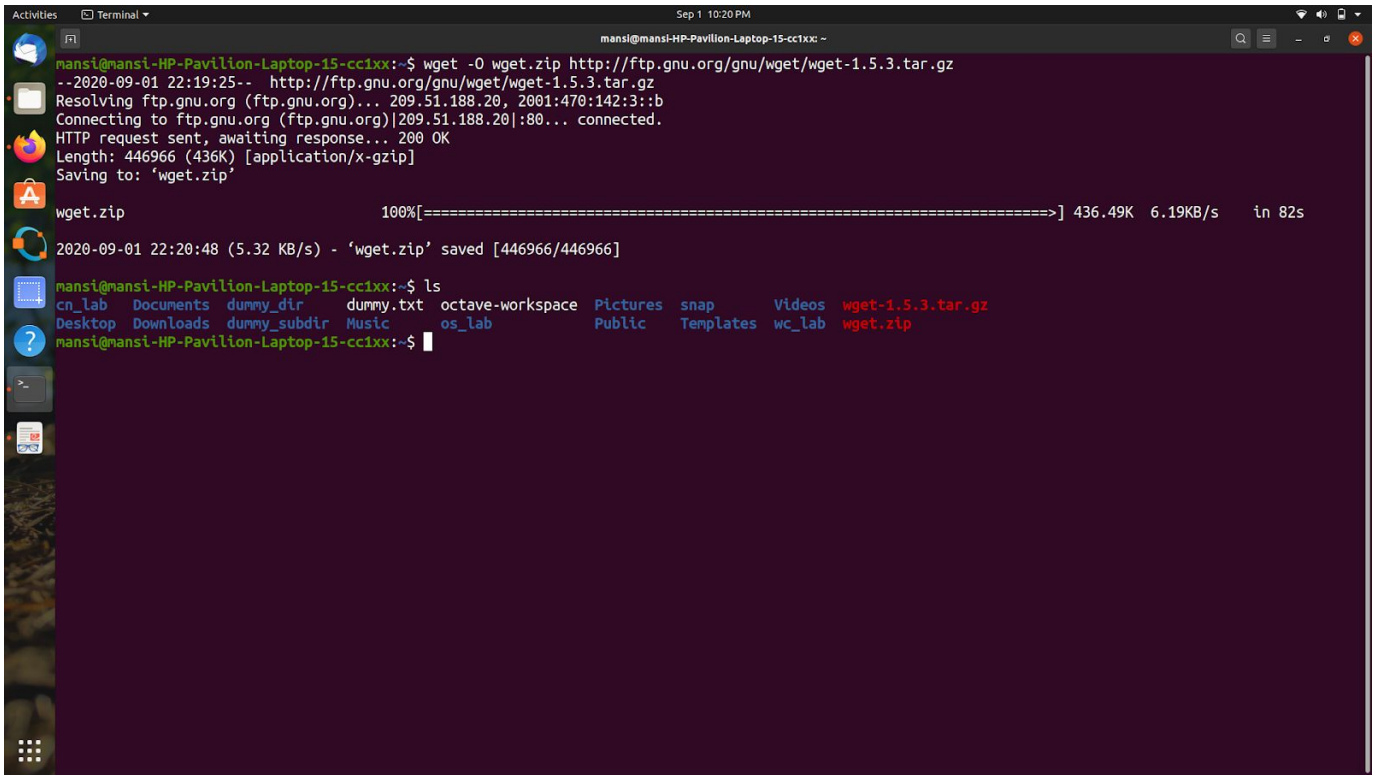
the user is not logged on. The beauty of this is that most of the browsers require constant user's presence and it may be a hindrance when transferring a lot of data and this is where this command will help to start a retrieval and disconnect from the system letting wget finish the work. If a download fails due to network problems, it will keep retrying until the whole file has been retrieved. If the server supports re-getting, it will instruct the server to continue the download from where it left off.

↦Installation for ubuntu : sudo apt install wget

↦wget http://ftp.gnu.org/gnu/wget/wget-1.5.3.tar.gz

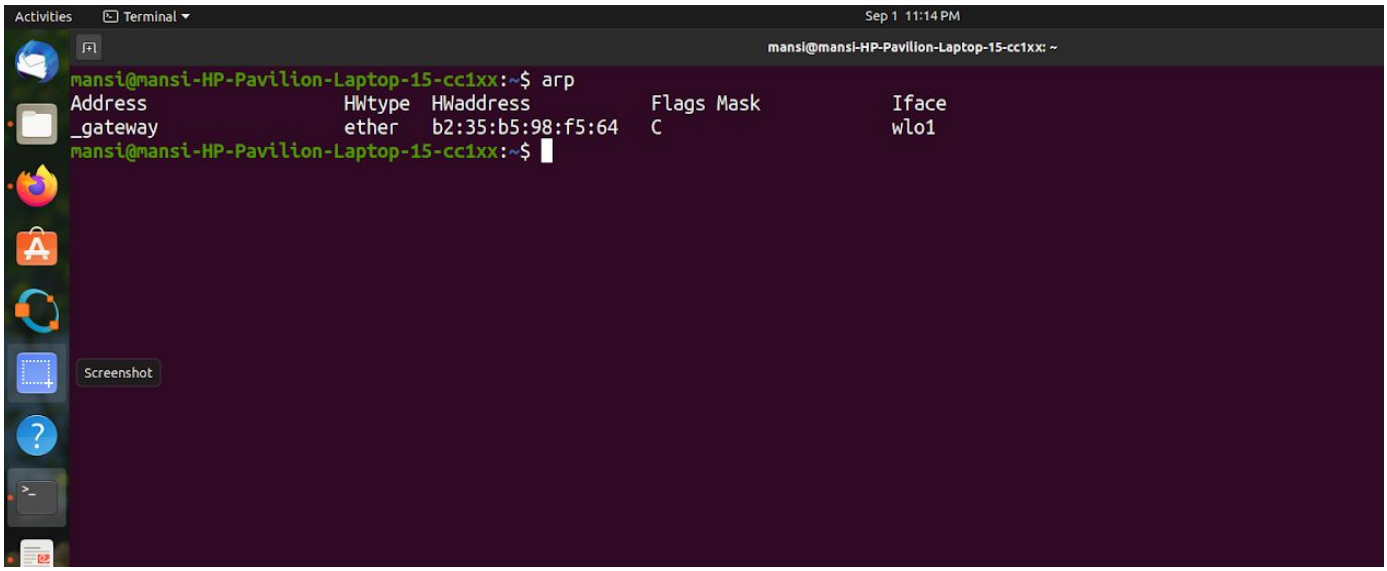


↦wget -O wger.zip http://ftp.gnu.org/gnu/wget/wget-1.5.3.tar.gz

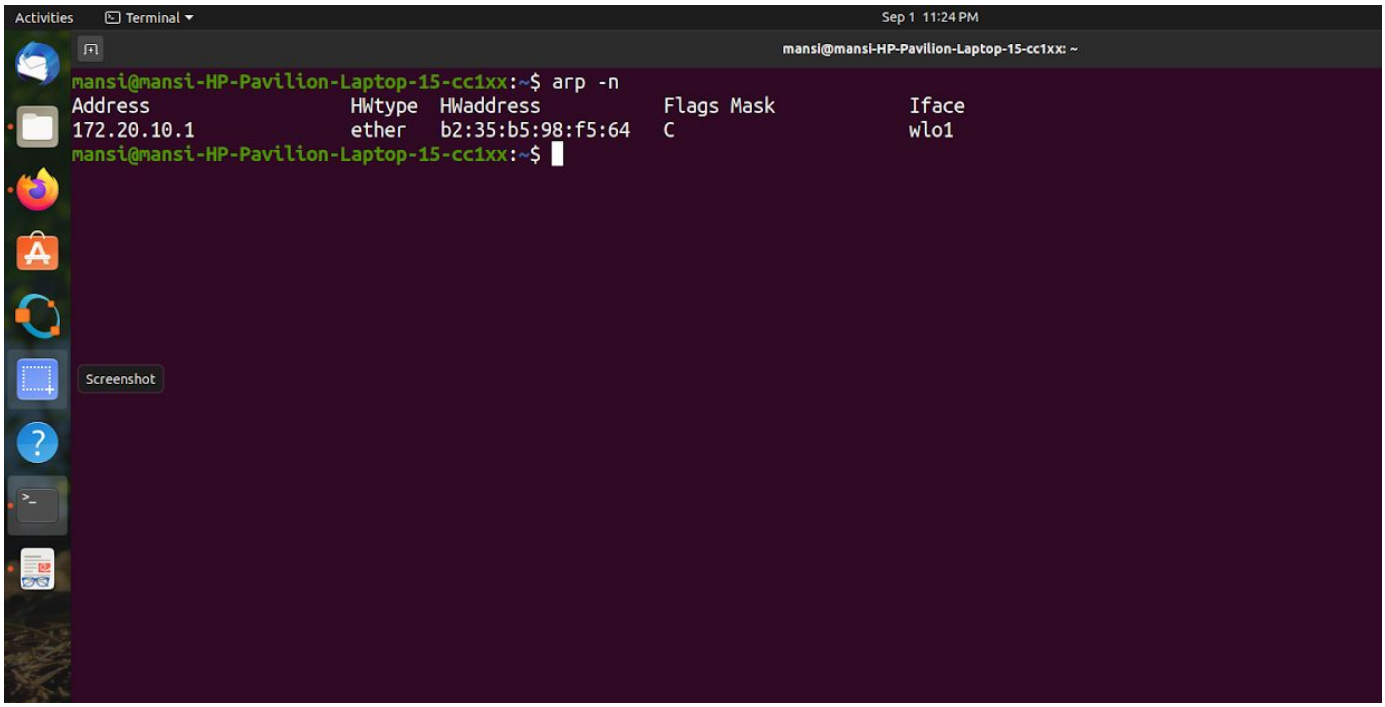


7 . arp

ARP [Address Resolution Protocol] It is used to find the media access control address (MAC address) of a network neighbour for a given IPv4 address. An ARP cache is a simple mapping of IP addresses to MAC addresses. Each time a computer's TCP/IP stack uses ARP to determine the Media Access Control (MAC) address for an IP address, it records the mapping in the ARP cache so that future ARP lookups go faster. arp command is used to manipulate the system ARP cache. More specifically, it manipulates or displays the kernel's IPv4 network neighbour cache and can add entries to the table, delete one, or display the current content.

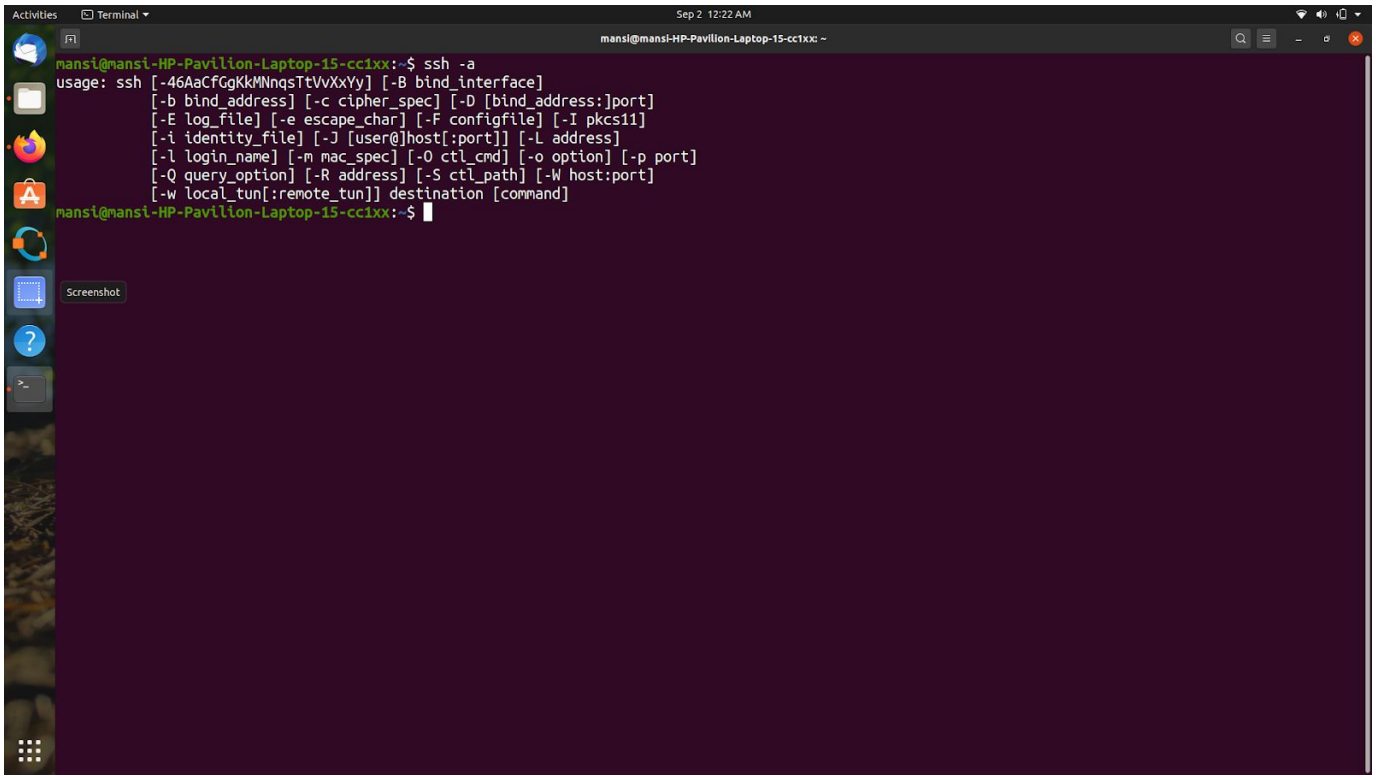


↦arp -n **:** shows numerical addresses instead of symbolic host, port or usernames



8 . ssh

ssh stands for “Secure Shell” . The ssh command provides a secure encrypted connection between two hosts(remote server/system) over an insecure network. This connection can also be used for terminal access, file transfers, and for tunneling other applications .It transfers inputs from the client to the host and relays back the output. ssh runs at TCP/IP port 22.



9 . ftp

ftp is the user interface to the Internet standard File Transfer Protocol. The program allows a user to transfer files to and from a remote network site

10 . iwconfig

iwconfig command in Linux is like ipconfig command, in the sense it works with kernel-resident network interface but it is dedicated to wireless networking interfaces only. It is used to set the parameters of the network interface that are particular to the wireless operation like SSID, frequency etc. *iwconfig* may also be used to display the parameters, and the wireless statistics which are extracted from */proc/net/wireless*.