Assignment 1

TASK1

1)ping www.google.com
This sends ip packets from our machine to destination and receives them back. Also, if the server wasn't up and working, then we wouldn't have received back any package. It also tells us the RTT and ttl of the packet

2) traceroute www.google.com
This gives us a table containing the list of all the servers the ip packet went through before reaching destination.

3)arp
This gives a one to one mapping of all the ip address and respective mac address of the devices connected to the current network.

4)ifconfig
This command gives us the configuration of the network interfaces present on a device.

5)hostname
Gives the hostname of the current machine.

6)
/etc/hostname
File containing the hostname of the current device.

/etc/hosts
File containing the list of all the hostname and ip of hosts present on the current device.

/etc/resolv.conf
File contains ip of name server that can be used for dns resolution.

/etc/protocols
File contains a list off all the protocols and information such as name, number and aliases related to it.

/etc/services
File containing a list of all the services present on the current network along with port mapped to them.

TASK 2

i)
Machines hostname is Oms-MacBook-Air.local. We can get this by using the **hostname** command in the terminal.

Machine ip is 10.19.8.81 We can obtain this by using **ifconfig | grep "inet "** command in the terminal

ii)
10.196.3.250 is the next hop ip which we can get by using the **traceroute** command in the terminal.
2:4:96:9a:82:e8 is the mac address obtained by using the **arp 10.196.3.250** command in the terminal

iii)
10.250.200.3 is the dns server name. Obtained by using the information obtained from the **/etc/resolv.conf** file.

iv)
The numbers in the file /etc/protocols represent the protocol number of the different protocols available.

v)
ssh - 22
ftp - 21
nfs - 2049
smtp - 25

Obtained by using the **cat /etc/services | grep <protocol_name>** command in the terminal

vi)
I can get the hostname, mac address, ip address and the dns server ip address of my android phone from the settings menu.
Other directories such as /etc/protocols, /etc/services are not obtainable.

TASK 3

i)
ping www.amazon.in
64 bytes from 52.84.11.190: icmp_seq=2 ttl=245 time=27.397 ms

ping www.iitb.ac.in
Request timeout for icmp_seq 0

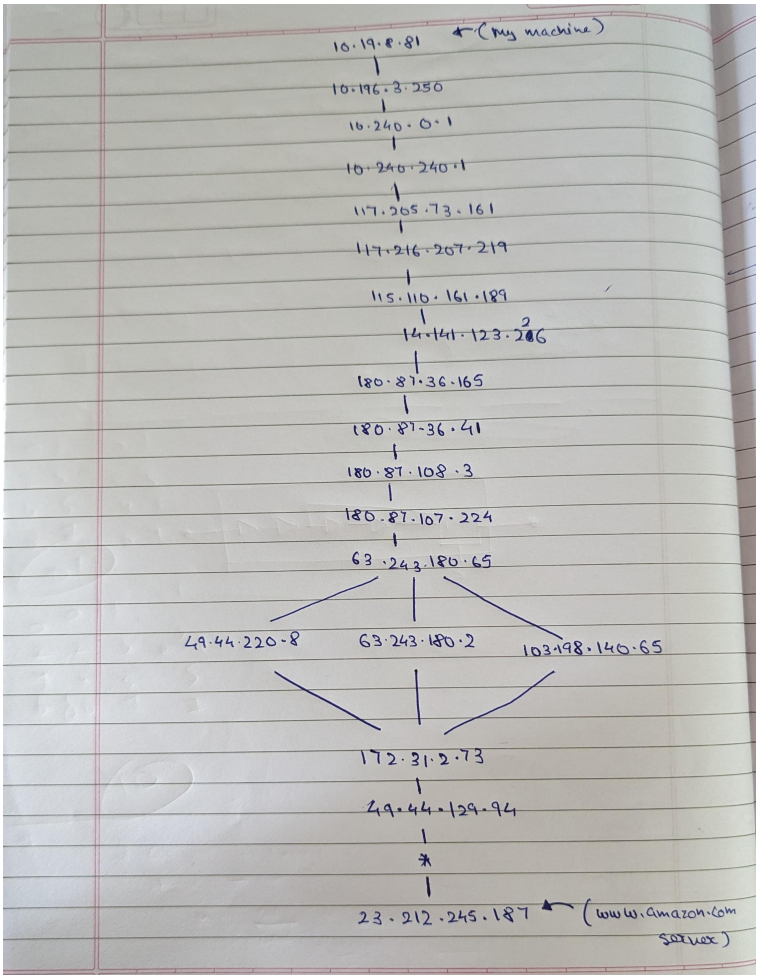
a) In case of www.amazon.in the RTT is 27.397 ms which is the amount of time it takes for the an ip packet to go from my machine to the destination and come back.

In case of www.iitb.ac.in since the server for that particular domain does not respond, there was a timeout since the packet never came back.

b)www.amazon.in ‘s server exists and responds to the (ICMP)packet sent by the ping commands and hence the packet came back where as www.iitb.ac.in ‘s server did not respond to the sent package, hence the packet never came back and hence we don’t have any RTT information on that package.

ii)

a)



The **traceroute** command send 3 different packets to each of the routers that come in between source and destination. Hence, we get three different ttl for each of the packets for a specific router. When we have *, it shows that specific router is not configured to respond to the packet sent by **traceroute** command.

b) Use **traceroute -m 24 www.amazon.in** ; here the max number of hops are set to 24.

c) Whenever we use **traceroute**, three different packets are sent to each servers coming in between the machine and the final(destination) server. Hence, we get 3 different RTT for each of the sent package.

d) TTL stands for time to live, which tells us the max time(i.e the number of hops) the packet will survive before it gets discarded.