Assignment 1

COL 334/672

Ans1 →

www.testmyspeed.com
Download Speed -> 33.14Mb/s; (29.17; 39.02; 31.23)
Upload Speed -> 0.37Mb/s (0.36; 0.39; 0.37)
www.speedtest.net
Download Speed -> 36.02Mbps (31.19; 38.84; 38.04)
Upload Speed -> 30.26Mbps (29.82; 30.59; 30.36)

I conducted the test 3 times and took the average of the readings. All other tabs were closed so that the test results are not affected due to them.The download speed results are approximately same but the upload test results are very different. Reason for the difference is most probably due to the fact that they ping different servers which results in different RTT and hence the different speeds.

Ans2 →

(a)Network Utility "Ping" basically refers to the sending and receiving back of packets to a server. The host computer on which ping command is run sends the ICMP Echo request packets to the target server. It measures the round trip time(RTT) for the messages. Internet control message protocol (ICMP) is the protocol being used.We are able to see the Ip address of the web server which we ping.Besides once the icmp sequences are over we also get the Statistics of the number of packets transmitted, received, percentage of packet loss occurred, total time taken and also the minimum, maximum, average , standard deviation of the Round trip times(RTTs). An ICMP packet consists of IP header, ICMP header and optional ICMP payload.The Identifier and sequence number is used by the webserver to match the reply to the message which invoked that reply.The echo reply is mandatory for all the servers and the reply should have the same payload as it received in the request. The type and code of the reply is set to 0.

(b)

Site	IP Address	RTT(in milli-seconds)
www.google.com	216.58.197.68	107
www.rice.edu	128.42.206.11	341
www.iitd.ac.in	103.27.9.20	62

IIT delhi server is closest in terms of RTT whereas the Rice server is farthest. The reason for this is that the ping command is run from my machine in IIT Delhi, so its server is closest whereas Rice University has its server in US so it's RTT time is more. Google on the other hand may be having many servers worldwide and also locally in India so, its RTT time is intermediate.

Ans3→

(a)
1st Interface→lo (Local Loopback)
    inet addr:127.0.0.1
2nd Interface→wlo1(Ethernet)
    inet addr:10.195.46.180

(b)

(A)Interface Name → enp8s0(Ethernet)
Ethernet Address→ 48:0f:cf:6b:77:4d
MTU→ 1500
(B)Interface Name → wlo1(Ethernet)
Ethernet Address→ c4:8e:8f:c4:6b:63
MTU→ 1500

MTU refers to Maximum Transmission Unit. MTU of a communication protocol of a layer is the size of largest protocol data unit that the layer can transmit.

(c)Only wlo1(wireless network1) had IPv6 listed against it.
IPv6 → fe80::c68e:8fff:fec4:6b63/64
IPv6 originally has 8 groups of 4 hexadecimal digits with these groups separated by colons. Above is an abbreviated version of such a sequence.So IPv6 is 128 bits in length.

Ans4->

Tracing route to www.iitd.ac.in [10.7.174.111]

1	1 ms	1 ms	1 ms	10.195.32.14
2	1 ms	2 ms	2 ms	10.254.238.1
3	152 ms	1 ms	6 ms	10.254.236.10
4	5 ms	1 ms	2 ms	www.iitd.ac.in [10.7.174.111]

Tracing route to bahar.cse.iitd.ac.in [10.208.20.4]

1	1 ms	1 ms	1 ms	10.195.32.14
2	5 ms	2 ms	3 ms	10.254.238.5
3	6 ms	1 ms	7 ms	10.254.208.6
4	67 ms	1 ms	1 ms	bahar.cse.iitd.ernet.in [10.208.20.4]

Only one router is common,that is 10.195.32.14 and the other 2 in the path are different.

Yes, Mostly the RTT to routers further along the path is greater than those near my machine.But this is not the case sometimes as in 3rd case of www.iitd.ac.in where the first RTT takes much larger time(152ms). But overall if we will see the consistency then we will see that routers father will have higher RTT.