CSE 232: Assignment 1

Due date: Aug 25, 2023

Read the following instructions carefully

- For all the observations and explanations, create a single report.
- Please note that command names may be different for Windows OS, so please use the equivalent commands.
- Attach screenshots in the report.
- Naming Convention: <Roll_No>-Assignment1.zip

Q1. [1 + 1]

a) Learn to use the ifconfig command, and figure out the IP address of your network interface. Put a screenshot.

b) Go to the webpage https://www.whatismyip.com and find out what IP is shown for your machine. Are they identical or different? Why?

Q2. nslookup ([2+1] + [1+1])

a) Get an authoritative result for "google.in" using nslookup. Put a screenshot. Explain how you did it.

b) Find out time to live for any website on the local DNS. Put a screenshot. Explain in words (with unit) that after how much time this entry would expire from the local DNS server.

Q3. [13]

a) Run the command, *traceroute google.in.* How many intermediate hosts do you see? What are the IP addresses? Compute the average latency to each intermediate host. Put a screenshot. [1+2+1]
Note that some of the intermediate hosts might not be visible; their IP addresses will come as "", ignore those hosts for this assignment.***

b) Send 50 ping messages to google.in, Determine the average latency. Put a screenshot. [1]

c) Add up the ping latency of all the intermediate hosts obtained in (a) and compare with (b). Are they matching, explain?[1+1]

d) Take the maximum of ping latency amongst the intermediate hosts (in (a)) and compare with (b). Are they matching, explain? [1+1]

e) You may see multiple entries for a single hop while using traceroute command. What do these entries mean? [1]

f) Send 50 ping messages to stanford.edu, Determine the average latency. Put a screenshot. [1]

g) Run the command, *traceroute stanford.edu*. Compare the number of hops between google.in and stanford.edu (between the traceroute result of google.in and stanford.edu). [1]

h) Can you explain the reason for the latency difference between google.in and stanford.edu (see (b) & (f))? [1]

Q4. [2+1] Make your ping command fail for 127.0.0.1 (with 100% packet loss). Explain how you do it. Put a screenshot that it failed.

Q.5 [0.5*4 + 1] Use telnet to perform an HTTP get request on a webpage hosted at **192.168.24.12**

Steps :

1. On your VM or main machine, run **telnet 192.168.24.12 9900.**
2. Once the connection is established, perform a GET request on **/secret (Syntax : GET <access path> HTTP/1.1).**
3. Now set the **Host** by typing **Host: <host part of URL>** then press enter. This tells the server the host part of the URL
4. Now close the connection
5. If the request is successful, you will receive the response on the screen. Note the value of the **X-secret** header and take a screenshot of the entire response.

Q6. [0.5*4 + 2 + 0.5*2] Use telnet to send an email to one of the other students using an SMTP server.

Steps:

1. On your VM or main machine, run telnet **192.168.24.12 smtp**
2. If everything goes well you will see **220 Welcome to CSE232 Mail Server.**
3. Now identify your system by sending **helo cse232.com**
4. If everything goes well, you will see **250 xeon01-rs-iiitd.iiitd.edu.in** on the screen.
5. Now write an email by specifying the sender, recipient, subject and the body and send it to one of your friends from Section A or Section B.
    a. **Note: Both senders are receivers are identified by their roll numbers. So if you are 20018 and the recipient is 20019, then the sender address will be *20018@cse231.com* and the recipient address will be *20019@cse231.com*.**
6. Note down the id of the message, take a screenshot and close the connection by typing **quit <enter>**
7. In order to confirm that your friend has received the mail, ask him to open his mailbox at **192.168.24.12/<encrypted_key>** where this key is unique to every student and is sent to them at their **iiitd email.(DO NOT SHARE YOUR KEY WITH OTHERS).**

Important Note:

1. **For each user, the mailbox size is 10MB and the per-message size limit is 10MB.**
2. **Your IPs are logged automatically by the system once you are logged into the SMTP server.**

3. **Any emails with attachments are automatically discarded by the server and therefore will not be sent to the recipient.**