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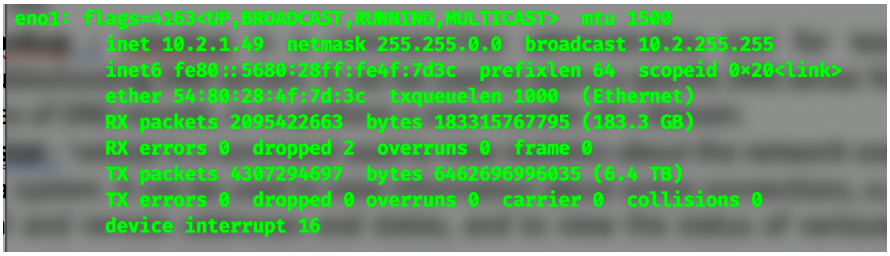
ENROLLMENT NO. – 2020CSB039
GROUP – GX
SUBJECT – COMPUTER NETWORK LAB

1. Read the man pages of **ifconfig, ping, traceroute, arp, dig, nslookup, and netstat** and write their utilities in brief.

- **Ifconfig :** 'ifconfig' is a command used to configure network interfaces on Unix-based systems. It can be used to view and modify the settings of a network interface, such as its IP address, netmask, and status.
- **Ping :**
  ping is a command used to test the connectivity between two network devices. It sends an ICMP echo request packet to a specified host and waits for an IMP echo reply. The time it takes for the reply to be received is known as the "ping time."
- **Traceroute :** traceroute is a command used to trace the path that network packets take from the host to a destination. It shows the sequence of routers that packets go through to reach the destination and the time it takes for packets to reach each hop.
- **ARP**: arp' is a command used to view and modify the Address Resolution Protocol (ARP) cache. ARP is used to map a network address (such as an IP address) to a physical address (such as a MAC address.
- **DIG:** dig (domain information groper) is a command line tool for querying DNS name servers. It can be used to look up various types of DNS records, such as A, AAAA, MX, and NS.
- **nslookup :** nslookup is a command-line administrative tool for testing and troubleshooting DNS servers. It can be used to query a specific DNS server for various types of DNS records, or to perform a zone transfer of a domain.
- **netstat** : 'netstat is a command used to view statistics about the network connections on a system. It can be used to view information about active connections, such as the local and remote addresses and states, and to view the status of various network protocols, such as TCP and UDP.

2. Find the IP and hardware addresses of your machine using ifconfig command.



3. Use “ping <AnyURL>” command and find out

i. the average RTT(round trip time).

ii. the %packet loss.

iii. size of packet that is sent to <AnyURL> server.

iv. size of packet that is received by your machine.

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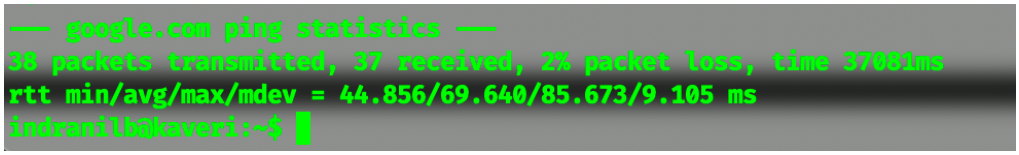

4. Use "dig <AnyURI>" command and find out

i 1. the IP address of <AnyURL>.

ii. the IP addresses of local DNS servers of IIEST.

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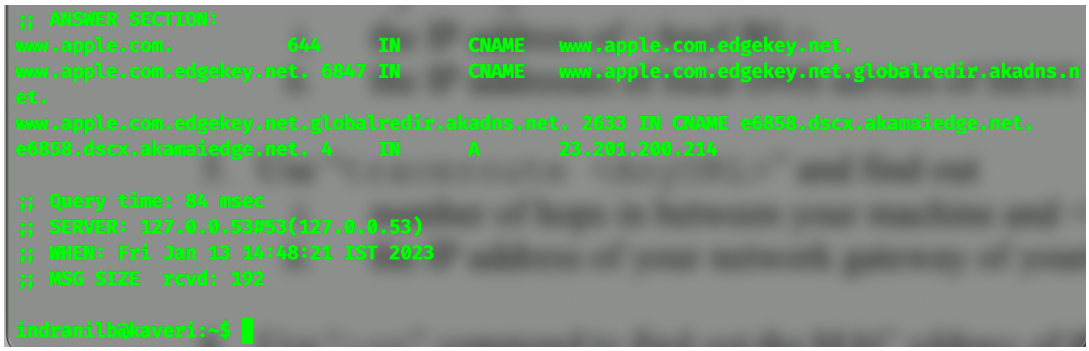

5. Use "traceroute <AnyURL>" and find out

i. number of hops in between your machine and <AnyURL> server.

ii. the IP address of your network gateway of your subnet.

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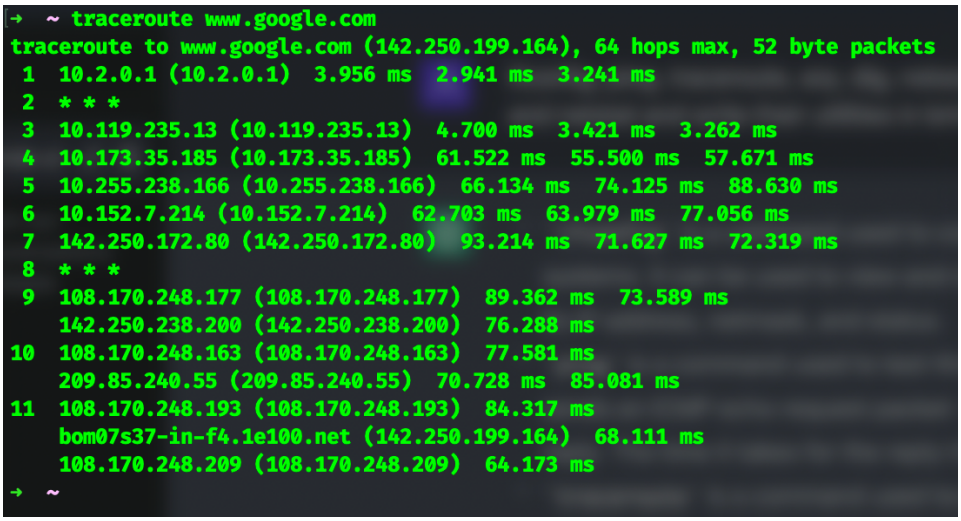

6. Use "arp" command to find out the MAC address of the device that is performing as your network gateway.

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```
*** System restart required ***
Last login: Fri Jan 13 14:31:59 2023 from 10.2.94.153
indranilb@kaveri:~$ arp
Address                  HWtype  HWaddress           Flags Mask            Iface
10.2.6.178               ether   30:8d:99:ac:cc:ac   C                     eno1
hanau.cs.iiests.ac.in    ether   9c:b6:54:8c:9e:8c   C                     eno1
169.254.232.32                   (incomplete)                              eno1
10.2.1.225               ether   a0:8c:fd:84:53:69   C                     eno1
10.2.97.27               ether   ec:b1:d7:37:d1:a9   C                     eno1
10.2.94.153              ether   50:ed:3c:55:11:9d   C                     eno1
10.2.98.159                      (incomplete)                              eno1
10.2.80.124              ether   40:b0:34:38:f9:51   C                     eno1
10.2.89.170              ether   80:e8:2c:cb:34:10   C                     eno1
hamsa.cs.iiests.ac.in    ether   9c:b6:54:96:62:28   C                     eno1
10.2.100.156             ether   a4:b1:c1:14:6b:a8   C                     eno1
10.2.63.0                ether   3c:a6:f6:1b:c1:1d   C                     eno1
169.254.215.249          ether   b8:09:8a:c8:6f:79   C                     eno1
10.2.98.137              ether   ec:b1:d7:37:af:81   C                     eno1
10.2.92.193              ether   5c:ba:ef:43:c2:55   C                     eno1
10.2.0.50                ether   2c:ea:7f:ce:ee:18   C                     eno1
10.2.1.221               ether   a0:8c:fd:83:14:95   C                     eno1
```

7. Use nslookup <AnyURL> command and find out the IP address of <AnyURL>. Use nslookup <IP address> command and perform reverse domain lookup.

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indranilb@kaveri:~$ nslookup www.apple.com
Server:         127.0.0.53
Address:        127.0.0.53#53

Non-authoritative answer:
www.apple.com   canonical name = www.apple.com.edgekey.net.
www.apple.com.edgekey.net       canonical name = www.apple.com.edgekey.net.globa
lredir.akadns.net.
www.apple.com.edgekey.net.globalredir.akadns.net        canonical name = e6858.d
scx.akamaiedge.net.
Name:   e6858.dscx.akamaiedge.net
Address: 23.32.176.246
Name:   e6858.dscx.akamaiedge.net
Address: 2600:140f:1e00:4b7::1aca
Name:   e6858.dscx.akamaiedge.net
Address: 2600:140f:1e00:484::1aca
```

```
indranilb@kaveri:~$ nslookup 10.2.1.49
49.1.2.10.in-addr.arpa  name = kaveri.cs.iiests.ac.in.
49.1.2.10.in-addr.arpa  name = kaveri.
```

8. Use netstat command and find out the active connections of your machine.

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```
indranilb@kaveri:~$ netstat
Active Internet connections (w/o servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
tcp        0      0 kaveri.cs.iiests.ac:ssh 10.2.96.136:41618       ESTABLISHED
tcp        0    164 kaveri.cs.iiests.ac:ssh 10.2.94.153:64897       ESTABLISHED
tcp        0      0 kaveri.cs.iiests.a:swat hamsa.cs.iiests.ac.:nfs ESTABLISHED
tcp        0      0 kaveri.cs.iiests.ac:ssh 10.2.100.156:54346      ESTABLISHED
tcp        0      0 kaveri.cs.iiests.ac:ssh 10.2.97.27:35324        ESTABLISHED
tcp        0      0 kaveri.cs.iiests.ac:ssh 10.2.96.136:33766       ESTABLISHED
tcp        0      0 kaveri.cs.iiests.ac:ssh 10.2.94.78:51801        ESTABLISHED
tcp        0      0 kaveri.cs.iiests.ac:948 hanau.cs.iiests.ac.:nfs ESTABLISHED
tcp        0      0 kaveri.cs.iiests.ac:ssh 10.2.94.153:64567       ESTABLISHED
```