ROHIT GARG(2018A7PS0193G)

CS F303 Computer Networks
Lab-2

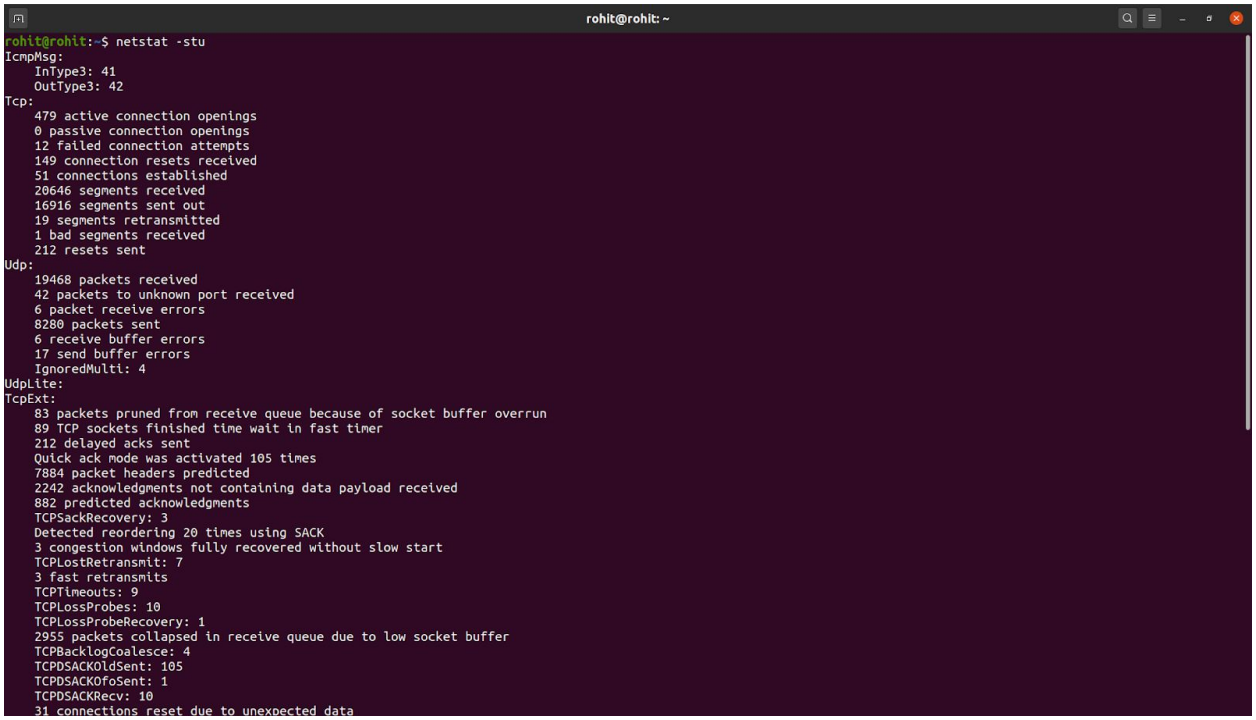
Q. Find network commands to do the following.

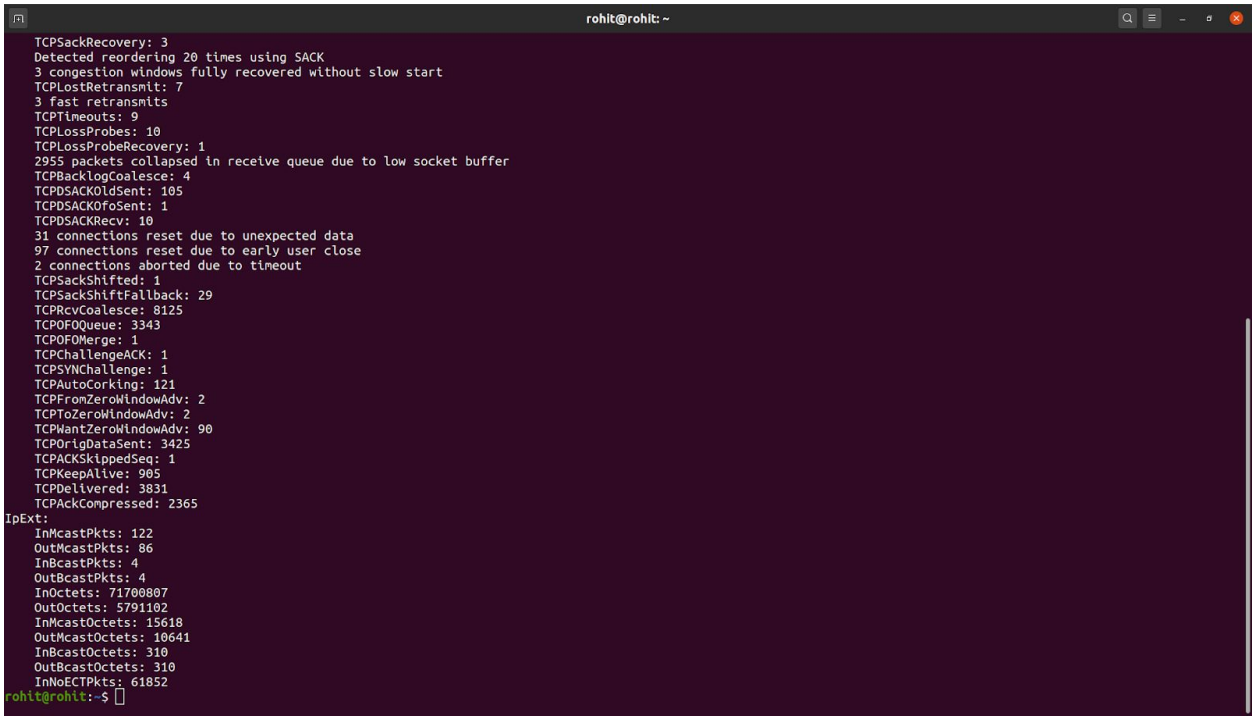
1. See the statistics of TCP and UDP ports on Linux machine

Method-1

'netstat -stu' lists the statistics including connection requests, packets sent, segments information for TCP and UDP ports on the machine.

'-s' attribute lists the statistics of each protocol.
'-t' attribute lists TCP ports.
'-u' attribute lists UDP ports.





2. Enlist the listening ports on your machine

Method-1: netstat -l lists out all ports that are being listened on(STATE = LISTEN)

- -l - Show only listening ports.

NOTE: grep command can also be used additionally to highlight the listening ones but the above command will suffice our need.

Method-2: sudo ss -tunlp works in a similar fashion to above command. It lists out all listening TCP or UDP ports, including the services using the ports and the socket status along with their process IDs or PIDs.

```
rohit@rohit: ~
rohit@rohit:~$ netstat -l
Active Internet connections (only servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
tcp        0      0 localhost:mysql         0.0.0.0:*               LISTEN
tcp        0      0 localhost:domain        0.0.0.0:*               LISTEN
tcp        0      0 localhost:ipp           0.0.0.0:*               LISTEN
tcp6       0      0 ip6-localhost:ipp       [::]:*                  LISTEN
udp        0      0 0.0.0.0:42971           0.0.0.0:*
udp        0      0 localhost:domain        0.0.0.0:*
udp        0      0 0.0.0.0:631             0.0.0.0:*
udp        0      0 224.0.0.251:mdns        0.0.0.0:*
udp        0      0 224.0.0.251:mdns        0.0.0.0:*
udp        0      0 0.0.0.0:mdns            0.0.0.0:*
udp6       0      0 [::]:41657              [::]:*
udp6       0      0 [::]:mdns               [::]:*
raw6       0      0 [::]:ipv6-icmp          [::]:*                  7
raw6       0      0 [::]:ipv6-icmp          [::]:*                  7
Active UNIX domain sockets (only servers)
Proto RefCnt Flags       Type       State         I-Node   Path
unix  2      [ ACC ]     STREAM     LISTENING     42848    @/tmp/dbus-Q7T4JNyc
unix  2      [ ACC ]     SEQPACKET  LISTENING     20901    /run/udev/control
unix  2      [ ACC ]     STREAM     LISTENING     56460    /run/user/1000/systemd/private
unix  2      [ ACC ]     STREAM     LISTENING     56465    /run/user/1000/bus
unix  2      [ ACC ]     STREAM     LISTENING     56466    /run/user/1000/gnupg/S.dirmngr
unix  2      [ ACC ]     STREAM     LISTENING     56467    /run/user/1000/gnupg/S.gpg-agent.browser
unix  2      [ ACC ]     STREAM     LISTENING     56468    /run/user/1000/gnupg/S.gpg-agent.extra
unix  2      [ ACC ]     STREAM     LISTENING     56469    /run/user/1000/gnupg/S.gpg-agent.ssh
unix  2      [ ACC ]     STREAM     LISTENING     56470    /run/user/1000/gnupg/S.gpg-agent
unix  2      [ ACC ]     STREAM     LISTENING     56471    /run/user/1000/pk-debconf-socket
unix  2      [ ACC ]     STREAM     LISTENING     56472    /run/user/1000/pulse/native
unix  2      [ ACC ]     STREAM     LISTENING     56473    /run/user/1000/snapd-session-agent.socket
unix  2      [ ACC ]     STREAM     LISTENING     42112    /run/acpid.socket
unix  2      [ ACC ]     STREAM     LISTENING     58740    @/tmp/.ICE-unix/2523
unix  2      [ ACC ]     STREAM     LISTENING     54419    @/tmp/.X11-unix/X0
unix  2      [ ACC ]     STREAM     LISTENING     53453    /run/user/1000/keyring/control
unix  2      [ ACC ]     STREAM     LISTENING     56534    @/tmp/dbus-jlG5dJTf
unix  2      [ ACC ]     STREAM     LISTENING     54088    /run/user/1000/keyring/pkcs11
unix  2      [ ACC ]     STREAM     LISTENING     58768    /run/user/1000/keyring/ssh
unix  2      [ ACC ]     STREAM     LISTENING     42114    /run/avahi-daemon/socket
unix  2      [ ACC ]     STREAM     LISTENING     42116    /run/cups/cups.sock
unix  2      [ ACC ]     STREAM     LISTENING     42118    /run/dbus/system_bus_socket
unix  2      [ ACC ]     STREAM     LISTENING     42120    /run/snapd.socket
unix  2      [ ACC ]     STREAM     LISTENING     42122    /run/snapd-snap.socket
unix  2      [ ACC ]     STREAM     LISTENING     42124    /run/uuidd/request
unix  2      [ ACC ]     STREAM     LISTENING     54420    /tmp/.X11-unix/X0
unix  2      [ ACC ]     STREAM     LISTENING     20874    /run/systemd/private
```

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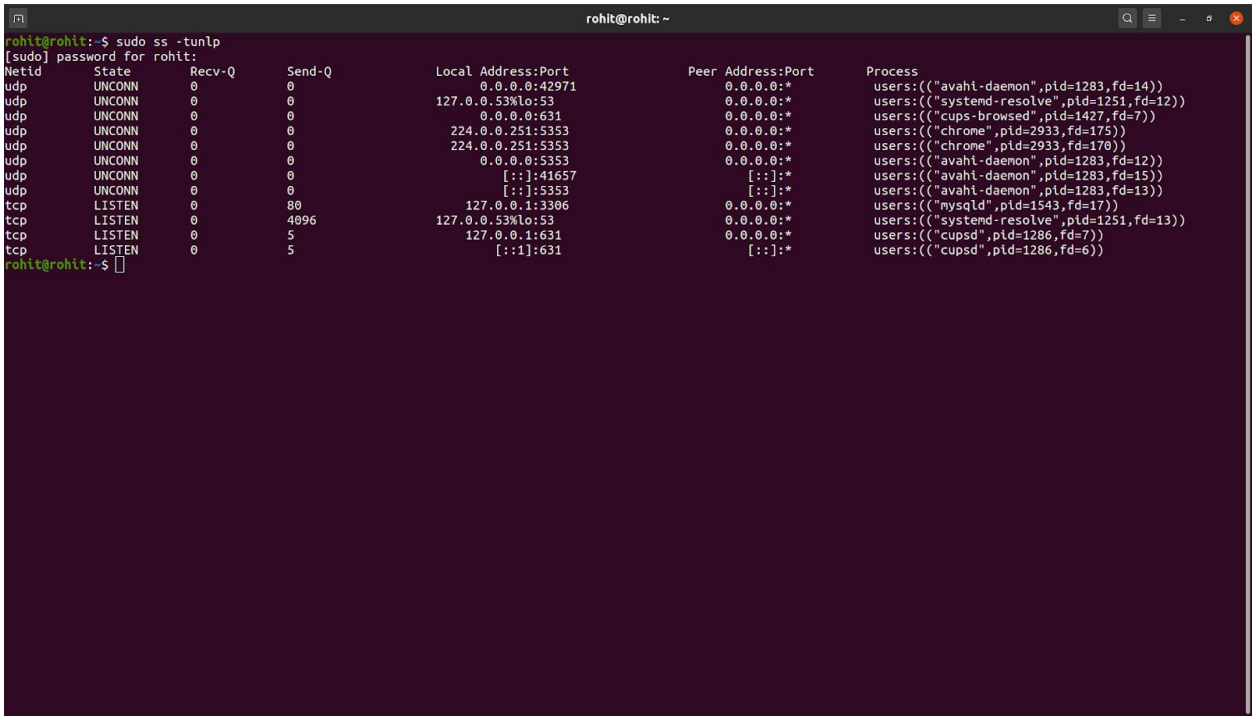
unix  2      [ ACC ]     STREAM     LISTENING     54420    /tmp/.X11-unix/X0
unix  2      [ ACC ]     STREAM     LISTENING     20874    /run/systemd/private
unix  2      [ ACC ]     STREAM     LISTENING     57642    /tmp/ssh-ubU2NLK0dTn6/agent.2354
unix  2      [ ACC ]     STREAM     LISTENING     20876    /run/systemd/userdb/io.systemd.DynamicUser
unix  2      [ ACC ]     STREAM     LISTENING     58741    /tmp/.ICE-unix/2523
unix  2      [ ACC ]     STREAM     LISTENING     40416    /run/irqbalance//irqbalance1311.sock
unix  2      [ ACC ]     STREAM     LISTENING     20887    /run/systemd/fsck.progress
unix  2      [ ACC ]     STREAM     LISTENING     42847    @/tmp/dbus-PNSaCmhm
unix  2      [ ACC ]     STREAM     LISTENING     20897    /run/systemd/journal/stdout
unix  2      [ ACC ]     STREAM     LISTENING     16673    /run/systemd/journal/io.systemd.journal
unix  2      [ ACC ]     STREAM     LISTENING     56533    @/tmp/dbus-RVFOmPEt
unix  2      [ ACC ]     STREAM     LISTENING     54602    @/home/rohit/.cache/ibus/dbus-xF1yCcJp
unix  2      [ ACC ]     STREAM     LISTENING     60968    /tmp/.org.chromium.Chromium.Ba6Nra/SingletonSocket
unix  2      [ ACC ]     STREAM     LISTENING     47651    /var/run/mysqld/mysqld.sock
unix  2      [ ACC ]     STREAM     LISTENING     45726    /var/snap/canonical-livepatch/95/livepatchd-priv.sock
unix  2      [ ACC ]     STREAM     LISTENING     45727    /var/snap/canonical-livepatch/95/livepatchd.sock
unix  2      [ ACC ]     STREAM     LISTENING     53979    @/tmp/dbus-iSnCWC7qHr
rohit@rohit:~$
```

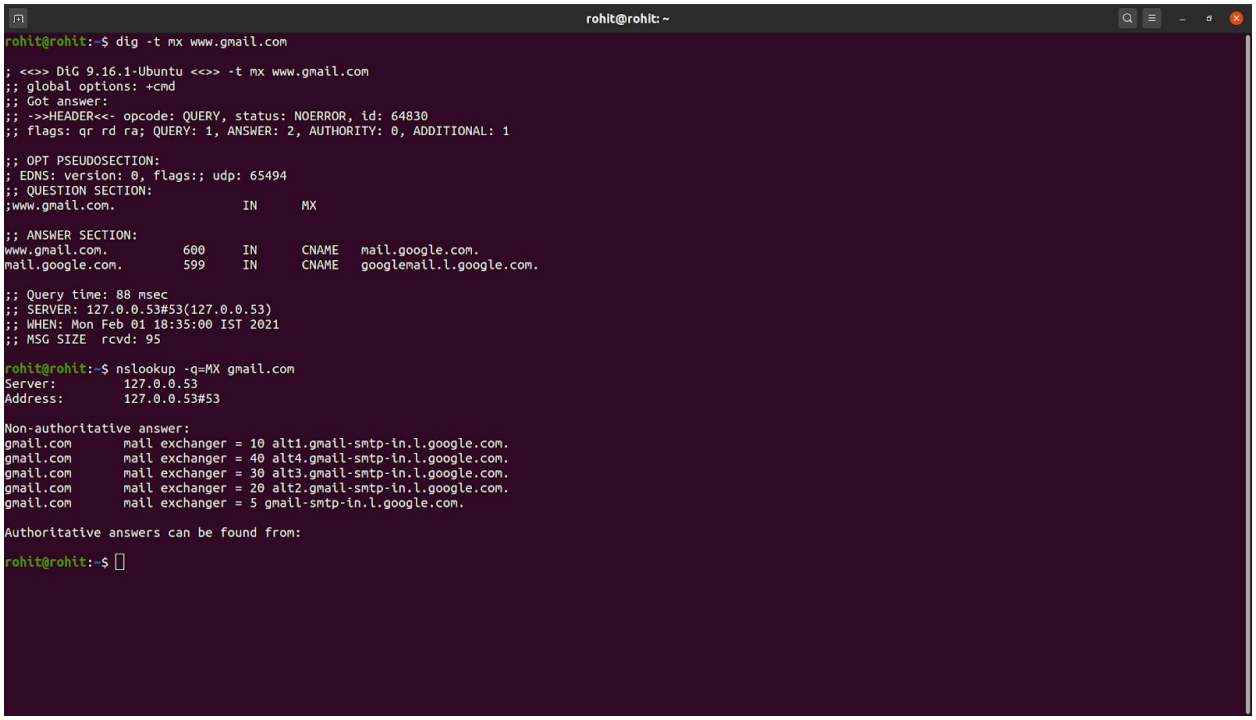


3. See the mail xchange (MX) record for www.gmail.com

Method-1
nslookup -type=MX www.gmail.com

'nslookup' command opens up an interactive session where one needs to 'set type = MX' followed by the domain name www.gmail.com and values Corresponding to mail exchanger are the MX values.

Method-2
'dig -t MX gmail.com' command list out MX records in the Answer Section.



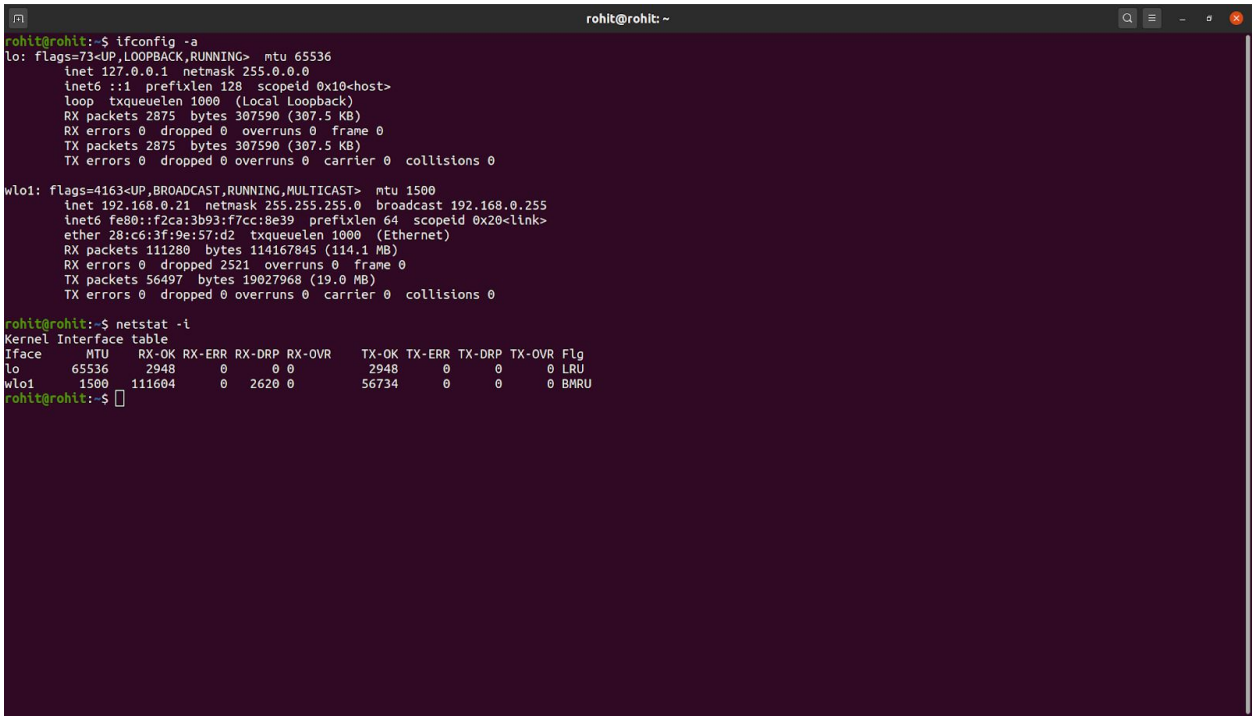
4. Display the all network interfaces on your machine

Method-1

'ifconfig -a' command lets us view all the configurations of network interfaces including those that are currently inactive.

Method-2

'Netstat -i' command shows the state of the all network interfaces that are configured on the local system.

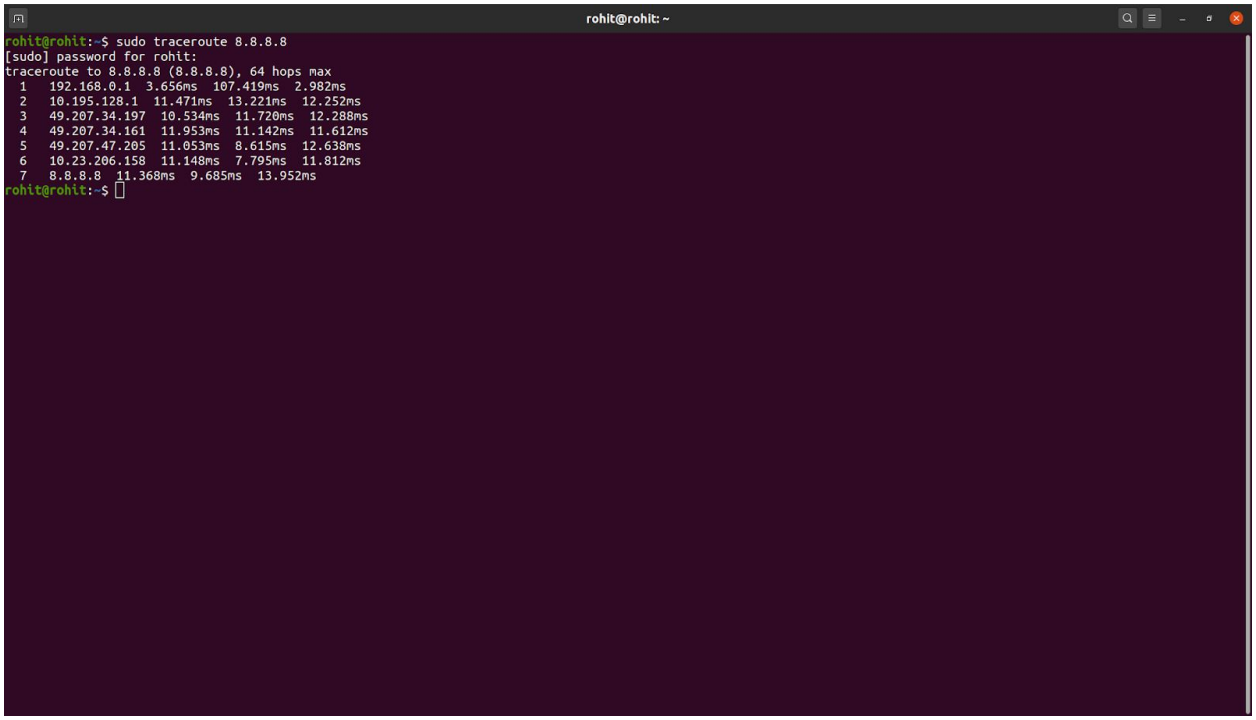


5. A list of intermediate routers to reach 8.8.8.8 from your machine, with latency

Method-1: sudo traceroute 8.8.8.8

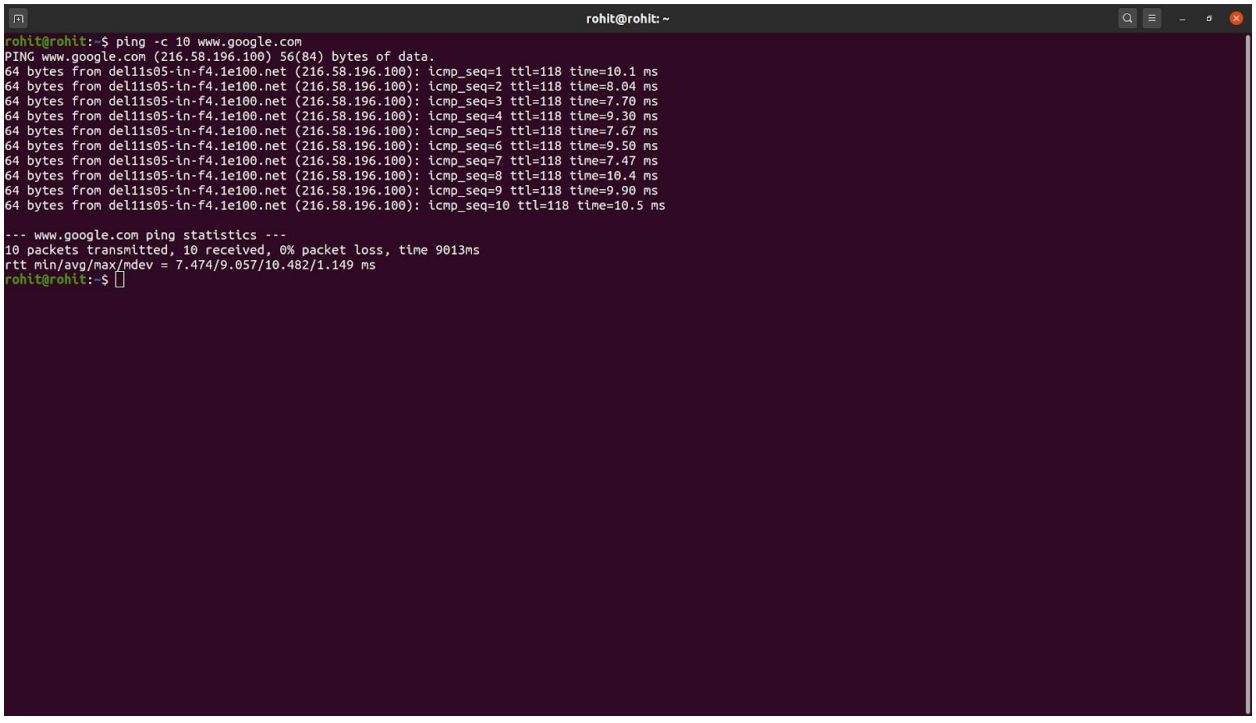
traceroute command sends Internet Control Message Protocol (ICMP) packets to test connections and report on latency between two points of the Internet.The first line of the traceroute output describes what the command is doing. It lists the destination system (8.8.8.8), destination IP address (8.8.8.8), and the maximum number of hops that will be used in the traceroute (64).

The remainder of the output shows information on each hop, which is typically a router, in the path between the sender and the final destination.



6. Send 10 echo requests to 8.8.8.8 server from your machine

ping -c 10 8.8.8.8' command sends 10 echo of ICMP packages to 8.8.8.8, the number after -c specifies the number of echoes that will be sent.



7. Get the IP address of www.bits-pilani.ac.in domain.

Method-1:
'dig www.bits-pilani.ac.in' lists out the IP address in ANSWER Section

Method-2
'nslookup www.bits-pilani.ac.in' lists out the IP address under non-authoritative answer