



**VIT<sup>®</sup>**  
**Vellore Institute of Technology**  
(Deemed to be University under section 3 of UGC Act, 1956)

# **BCSE308P-COMPUTER NETWORKS LAB**

**NAME : PATEL SWAPNILKUMAR C.**

**REG.NO : 22BAI1308**

**SEM : FALL 23-24**

**TOPIC : EXPERIMENT-1**

# 1) NETWORKING COMMANDS:

Aim: To test various commands and their outputs

Procedure:

C:\>hostname: This is the simplest of all TCP/IP commands. It simply displays the name of your computer.

C:\>ipconfig: The ipconfig command displays information about the host (the computer you're sitting at) computer TCP/IP configuration.

```

C:\Users\student>ipconfig

Windows IP Configuration

Ethernet adapter Ethernet:

    Connection-specific DNS Suffix  . : 
    Link-local IPv6 Address . . . . . : fe80::a961:712:60c6:9018%21
    IPv4 Address. . . . . : 172.16.15.60
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 172.16.15.2

Ethernet adapter VirtualBox Host-Only Network:

    Connection-specific DNS Suffix  . : 
    Link-local IPv6 Address . . . . . : fe80::e0fa:ceae:fd10:7295%5
    IPv4 Address. . . . . : 192.168.56.1
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 

Ethernet adapter Ethernet 4:

    Connection-specific DNS Suffix  . : 
    Link-local IPv6 Address . . . . . : fe80::e865:4796:f7fb:fed9%4
    IPv4 Address. . . . . : 192.168.203.2
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 

Ethernet adapter Ethernet 6:

    Connection-specific DNS Suffix  . : 
    Link-local IPv6 Address . . . . . : fe80::54bd:2bc8:b6d7:391%13
    IPv4 Address. . . . . : 192.168.245.2
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 

C:\Users\student>hostname
AB1311SCOPE60

C:\Users\student>
```

C:\>ipconfig /all: This command displays detailed configuration information about your TCP/IP connection including Router, Gateway, DNS, DHCP, and type of Ethernet adapter in your system.

Output:

```
Command Prompt
C:\Users\student>ipconfig/all

Windows IP Configuration

Host Name . . . . . : AB1311SCOPE60
Primary Dns Suffix . . . . . :
Node Type . . . . . : Hybrid
IP Routing Enabled. . . . . : No
WINS Proxy Enabled. . . . . : No

Ethernet adapter Ethernet:

Connection-specific DNS Suffix . :
Description . . . . . : Realtek PCIe GBE Family Controller
Physical Address. . . . . : A0-8C-FD-C9-9F-EB
DHCP Enabled. . . . . : No
Autoconfiguration Enabled . . . . : Yes
Link-local IPv6 Address . . . . . : fe80::a961:712:60c6:9018%21(Preferred)
IPv4 Address. . . . . : 172.16.15.60(Preferred)
Subnet Mask . . . . . : 255.255.255.0
Default Gateway . . . . . : 172.16.15.2
DHCPv6 IAID . . . . . : 278957309
DHCPv6 Client DUID. . . . . : 00-01-00-01-29-A7-80-9A-A0-8C-FD-C9-9F-EB
DNS Servers . . . . . : 172.16.1.11
                        8.8.8.8
NetBIOS over Tcpip. . . . . : Enabled

Ethernet adapter VirtualBox Host-Only Network:

Connection-specific DNS Suffix . :
Description . . . . . : VirtualBox Host-Only Ethernet Adapter
Physical Address. . . . . : 0A-00-27-00-00-05
DHCP Enabled. . . . . : No
Autoconfiguration Enabled . . . . : Yes
Link-local IPv6 Address . . . . . : fe80::e0fa:ceae:fd10:7295%5(Preferred)
IPv4 Address. . . . . : 192.168.56.1(Preferred)
Subnet Mask . . . . . : 255.255.255.0
Default Gateway . . . . . :
DHCPv6 IAID . . . . . : 436863015
DHCPv6 Client DUID. . . . . : 00-01-00-01-29-A7-80-9A-A0-8C-FD-C9-9F-EB
DNS Servers . . . . . : fec0:0:0:ffff::1%1
                        fec0:0:0:ffff::2%1
                        fec0:0:0:ffff::3%1
```

```
Command Prompt

NetBIOS over Tcpip. . . . . : Enabled
                        fec0:0:0:ffff::2%1
                        fec0:0:0:ffff::3%1

Ethernet adapter Ethernet 4:

Connection-specific DNS Suffix . :
Description . . . . . : VirtualBox Host-Only Ethernet Adapter #4
Physical Address. . . . . : 0A-00-27-00-00-04
DHCP Enabled. . . . . : No
Autoconfiguration Enabled . . . . : Yes
Link-local IPv6 Address . . . . . : fe80::e865:4796:f7fb:fed9%4(Preferred)
IPv4 Address. . . . . : 192.168.203.2(Preferred)
Subnet Mask . . . . . : 255.255.255.0
Default Gateway . . . . . :
DHCPv6 IAID . . . . . : 638189607
DHCPv6 Client DUID. . . . . : 00-01-00-01-29-A7-80-9A-A0-8C-FD-C9-9F-EB
DNS Servers . . . . . : fec0:0:0:ffff::1%1
                        fec0:0:0:ffff::2%1
                        fec0:0:0:ffff::3%1
NetBIOS over Tcpip. . . . . : Enabled

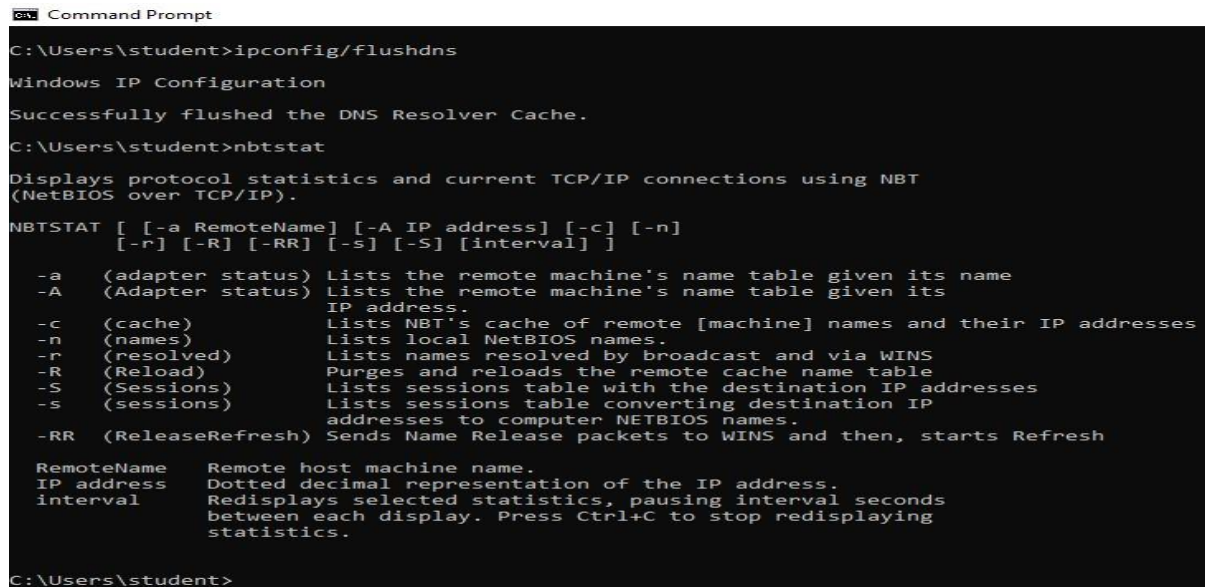
Ethernet adapter Ethernet 6:

Connection-specific DNS Suffix . :
Description . . . . . : VirtualBox Host-Only Ethernet Adapter #6
Physical Address. . . . . : 0A-00-27-00-00-0D
DHCP Enabled. . . . . : No
Autoconfiguration Enabled . . . . : Yes
Link-local IPv6 Address . . . . . : fe80::54bd:2bc8:b6d7:391%13(Preferred)
IPv4 Address. . . . . : 192.168.245.2(Preferred)
Subnet Mask . . . . . : 255.255.255.0
Default Gateway . . . . . :
DHCPv6 IAID . . . . . : 738852903
DHCPv6 Client DUID. . . . . : 00-01-00-01-29-A7-80-9A-A0-8C-FD-C9-9F-EB
DNS Servers . . . . . : fec0:0:0:ffff::1%1
                        fec0:0:0:ffff::2%1
                        fec0:0:0:ffff::3%1
NetBIOS over Tcpip. . . . . : Enabled

C:\Users\student>
```

C:\>ipconfig /flushdns: This command is only needed if you're having trouble with your networks DNS configuration. The best time to use this command is after network configuration frustration sets in, and you really need the computer to reply with flushed.

C:\>nbtstat -a: This command helps solve problems with NetBIOS name resolution. (Nbt stands for NetBIOS over TCP/IP) Output:



```
Command Prompt
C:\Users\student>ipconfig/flushdns
Windows IP Configuration
Successfully flushed the DNS Resolver Cache.
C:\Users\student>nbtstat
Displays protocol statistics and current TCP/IP connections using NBT
(NetBIOS over TCP/IP).
NBTSTAT [ [-a RemoteName] [-A IP address] [-c] [-n]
          [-r] [-R] [-RR] [-s] [-S] [interval] ]
-a      (adapter status) Lists the remote machine's name table given its name
-A      (Adapter status) Lists the remote machine's name table given its
          IP address.
-c      (cache)          Lists NBT's cache of remote [machine] names and their IP addresses
-n      (names)          Lists local NetBIOS names.
-r      (resolved)       Lists names resolved by broadcast and via WINS
-R      (Reload)         Purges and reloads the remote cache name table
-S      (Sessions)       Lists sessions table with the destination IP addresses
-s      (sessions)       Lists sessions table converting destination IP
          addresses to computer NETBIOS names.
-RR      (ReleaseRefresh) Sends Name Release packets to WINS and then, starts Refresh
RemoteName Remote host machine name.
IP address  Dotted decimal representation of the IP address.
interval    Redisplays selected statistics, pausing interval seconds
             between each display. Press Ctrl+C to stop redisplaying
             statistics.
C:\Users\student>
```

C:\>netstat: Netstat displays a variety of statistics about a computers active TCP/IP connections. This tool is most useful when you're having trouble with TCP/IP applications such as HTTP, and FTP.

C:\>nslookup: Nslookup is used for diagnosing DNS problems. If you can access a resource by specifying an IP address but not it's DNS you have a DNS problem.

Output:



CA Command Prompt - nslookup

C:\Users\student>netstat

Active Connections

Proto	Local Address	Foreign Address	State
TCP	172.16.15.60:7680	AB1311SCOPE17:51786	TIME_WAIT
TCP	172.16.15.60:53944	20.198.119.84:https	ESTABLISHED
TCP	172.16.15.60:54261	a23-206-206-224:https	CLOSE_WAIT
TCP	172.16.15.60:54320	40.70.161.7:https	ESTABLISHED
TCP	172.16.15.60:54332	a23-59-175-96:https	CLOSE_WAIT
TCP	172.16.15.60:54333	117.18.232.200:https	CLOSE_WAIT
TCP	172.16.15.60:54339	13.107.246.254:https	CLOSE_WAIT
TCP	172.16.15.60:54354	52.137.103.130:https	TIME_WAIT
TCP	172.16.15.60:54356	20.189.173.11:https	TIME_WAIT
TCP	[fe80::54bd:2bc8:b6d7:391%13]:1521	AB1311SCOPE60:49680	ESTABLISHED
TCP	[fe80::54bd:2bc8:b6d7:391%13]:49680	AB1311SCOPE60:1521	ESTABLISHED

C:\Users\student>nslookup

Default Server: vitccdns

Address: 172.16.1.11

>

C:\>arp -a: ARP is short form of address resolution protocol, It will show the IP address of your computer along with the IP address and MAC address of your router.

Output:

CA Command Prompt

Microsoft Windows [Version 10.0.19045.3208]

(c) Microsoft Corporation. All rights reserved.

C:\Users\student>arp

Displays and modifies the IP-to-Physical address translation tables used by address resolution protocol (ARP).

ARP -s inet\_addr eth\_addr [if\_addr]

ARP -d inet\_addr [if\_addr]

ARP -a [inet\_addr] [-N if\_addr] [-v]

-a Displays current ARP entries by interrogating the current protocol data. If inet\_addr is specified, the IP and Physical addresses for only the specified computer are displayed. If more than one network interface uses ARP, entries for each ARP table are displayed.

-g Same as -a.

-v Displays current ARP entries in verbose mode. All invalid entries and entries on the loop-back interface will be shown.

inet\_addr Specifies an internet address.

-N if\_addr Displays the ARP entries for the network interface specified by if\_addr.

-d Deletes the host specified by inet\_addr. inet\_addr may be wildcarded with \* to delete all hosts.

-s Adds the host and associates the Internet address inet\_addr with the Physical address eth\_addr. The Physical address is given as 6 hexadecimal bytes separated by hyphens. The entry is permanent.

eth\_addr Specifies a physical address.

if\_addr If present, this specifies the Internet address of the interface whose address translation table should be modified. If not present, the first applicable interface will be used.

Example:

> arp -s 157.55.85.212 00-aa-00-62-c6-09 .... Adds a static entry.

> arp -a .... Displays the arp table.

C:\Users\student>hostname

AB1311SCOPE60

C:\Users\student>\_

C:\>pathping: Pathping is unique to Windows, and is basically a combination of the Ping and Tracert commands. Pathping traces the route to the destination address then launches a 25 second test of each router along the way, gathering statistics on the rate of data loss along each hop.

C:\>ping: Ping is the most basic TCP/IP command, and it's the same as placing a phone call to your best friend. You pick up your telephone and dial a number, expecting your best friend to reply with "Hello" on the other end. Computers make phone calls to each other over a network by using a Ping command. The Ping command's main purpose is to place a phone call to another computer on the network, and request an answer. Ping has 2 options it can use to place a phone call to another computer on the network. It can use the computer's name or IP address.

Output:

```

C:\Users\student>pathping

Usage: pathping [-g host-list] [-h maximum_hops] [-i address] [-n]
                [-p period] [-q num_queries] [-w timeout]
                [-4] [-6] target_name

Options:
  -g host-list      Loose source route along host-list.
  -h maximum_hops  Maximum number of hops to search for target.
  -i address        Use the specified source address.
  -n               Do not resolve addresses to hostnames.
  -p period         Wait period milliseconds between pings.
  -q num_queries    Number of queries per hop.
  -w timeout        Wait timeout milliseconds for each reply.
  -4               Force using IPv4.
  -6               Force using IPv6.

C:\Users\student>ping

Usage: ping [-t] [-a] [-n count] [-l size] [-f] [-i TTL] [-v TOS]
            [-r count] [-s count] [[-j host-list] | [-k host-list]]
            [-w timeout] [-R] [-S srcaddr] [-c compartment] [-p]
            [-4] [-6] target_name

Options:
  -t               Ping the specified host until stopped.
                   To see statistics and continue - type Control-Break;
                   To stop - type Control-C.
  -a               Resolve addresses to hostnames.
  -n count         Number of echo requests to send.
  -l size          Send buffer size.
  -f               Set Don't Fragment flag in packet (IPv4-only).
  -i TTL           Time To Live.
  -v TOS           Type Of Service (IPv4-only. This setting has been deprecated
                   and has no effect on the type of service field in the IP
                   Header).
  -r count         Record route for count hops (IPv4-only).
  -s count         Timestamp for count hops (IPv4-only).
  -j host-list     Loose source route along host-list (IPv4-only).
  -k host-list     Strict source route along host-list (IPv4-only).
  -w timeout       Timeout in milliseconds to wait for each reply.
  -R              Use routing header to test reverse route also (IPv6-only).
                   Per RFC 5095 the use of this routing header has been
                   deprecated. Some systems may drop echo requests if

```

C:\>route: The route command displays the computer's routing table. A typical computer, with a single network interface, connected to a LAN, with a router is fairly simple and generally doesn't pose any network problems. But if you're having trouble accessing other computers on your network, you can use the route command to make sure the entries in the routing table are correct.

Output:

# Command Prompt

```

-S srcaddr      this header is used.
-c compartment  Source address to use.
-p              Routing compartment identifier.
-4              Ping a Hyper-V Network Virtualization provider address.
-6              Force using IPv4.
               Force using IPv6.

C:\Users\student>route
Manipulates network routing tables.

ROUTE [-f] [-p] [-4|-6] command [destination]
                                   [MASK netmask] [gateway] [METRIC metric] [IF interface]

-f              Clears the routing tables of all gateway entries. If this is
                used in conjunction with one of the commands, the tables are
                cleared prior to running the command.

-p              When used with the ADD command, makes a route persistent across
                boots of the system. By default, routes are not preserved
                when the system is restarted. Ignored for all other commands,
                which always affect the appropriate persistent routes.

-4              Force using IPv4.

-6              Force using IPv6.

command        One of these:
                PRINT      Prints a route
                ADD        Adds a route
                DELETE      Deletes a route
                CHANGE      Modifies an existing route
destination    Specifies the host.
MASK            Specifies that the next parameter is the 'netmask' value.
netmask        Specifies a subnet mask value for this route entry.
                If not specified, it defaults to 255.255.255.255.
gateway        Specifies gateway.
interface      the interface number for the specified route.
METRIC         specifies the metric, ie. cost for the destination.

All symbolic names used for destination are looked up in the network database
file NETWORKS. The symbolic names for gateway are looked up in the host name
database file HOSTS.

```

# Command Prompt

```

If the command is PRINT or DELETE. Destination or gateway can be a wildcard,
(wildcard is specified as a star '*'), or the gateway argument may be omitted.

If Dest contains a * or ?, it is treated as a shell pattern, and only
matching destination routes are printed. The '*' matches any string,
and '?' matches any one char. Examples: 157.*.1, 157.*, 127.*, *224*.

Pattern match is only allowed in PRINT command.

Diagnostic Notes:
  Invalid MASK generates an error, that is when (DEST & MASK) != DEST.
  Example> route ADD 157.0.0.0 MASK 155.0.0.0 157.55.80.1 IF 1
           The route addition failed: The specified mask parameter is invalid. (Destination & Mask) != Destination.

Examples:

> route PRINT
> route PRINT -4
> route PRINT -6
> route PRINT 157*      .... Only prints those matching 157*

> route ADD 157.0.0.0 MASK 255.0.0.0 157.55.80.1 METRIC 3 IF 2
  destination^   ^mask   ^gateway   metric^   ^
                Interface^
  If IF is not given, it tries to find the best interface for a given
  gateway.
> route ADD 3ffe::/32 3ffe::1

> route CHANGE 157.0.0.0 MASK 255.0.0.0 157.55.80.5 METRIC 2 IF 2

  CHANGE is used to modify gateway and/or metric only.

> route DELETE 157.0.0.0
> route DELETE 3ffe::/32

C:\Users\student>

```

C:\>tracert: The tracert command displays a list of all the routers that a packet has to go through to get from the computer where tracert is run to any other computer on the internet.



Output:

```

C:\Users\student>tracert

Usage: tracert [-d] [-h maximum_hops] [-j host-list] [-w timeout]
              [-R] [-S srcaddr] [-4] [-6] target_name

Options:
  -d          Do not resolve addresses to hostnames.
  -h maximum_hops  Maximum number of hops to search for target.
  -j host-list  Loose source route along host-list (IPv4-only).
  -w timeout    Wait timeout milliseconds for each reply.
  -R          Trace round-trip path (IPv6-only).
  -S srcaddr    Source address to use (IPv6-only).
  -4          Force using IPv4.
  -6          Force using IPv6.

C:\Users\student>_

```

C:\>Ipconfig /renew: Using this command will renew all your IP addresses that you are currently (leasing) borrowing from the DHCP server. This command is a quick problem solver if you are having connection issues, but does not work if you have been configured with a static IP address.

C:\>Ipconfig /release: This command allows you to drop the IP lease from the DHCP server.

C:\>ipconfig /flushdns: This command is only needed if you're having trouble with your networks DNS configuration. The best time to use this command is after network configuration frustration sets in, and you really need the computer to reply with flushed.

Output:

```

C:\Users\student>Ipconfig/renew

Windows IP Configuration

The operation failed as no adapter is in the state permissible for
this operation.

C:\Users\student>Ipconfig/release

Windows IP Configuration

The operation failed as no adapter is in the state permissible for
this operation.

C:\Users\student>netdiag
'netdiag' is not recognized as an internal or external command,
operable program or batch file.

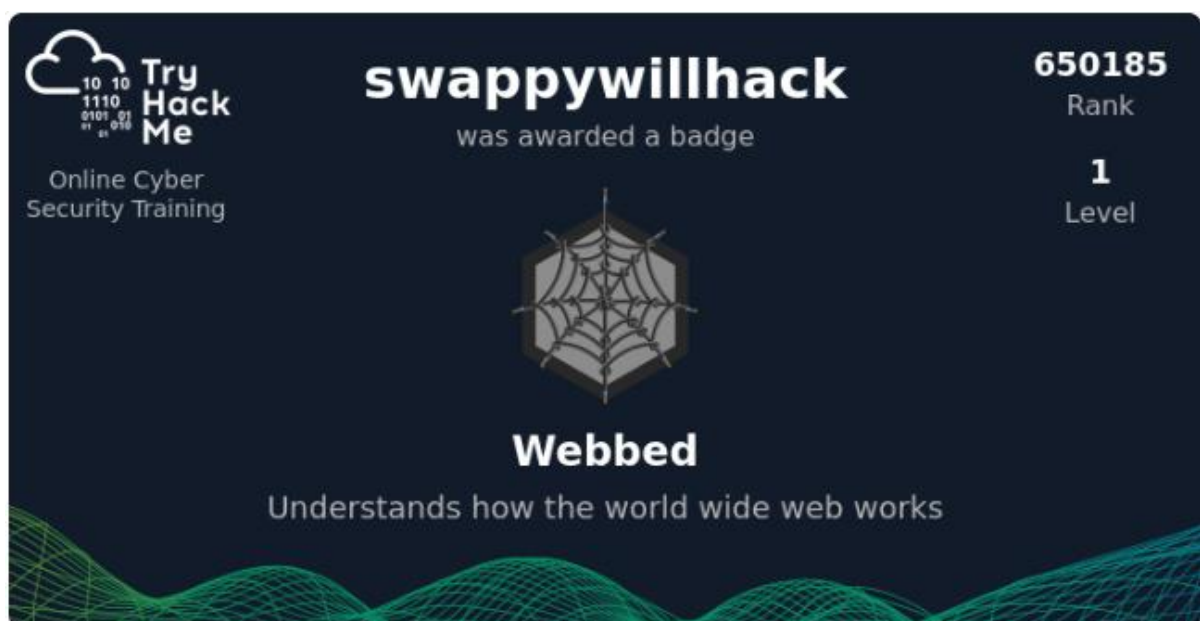
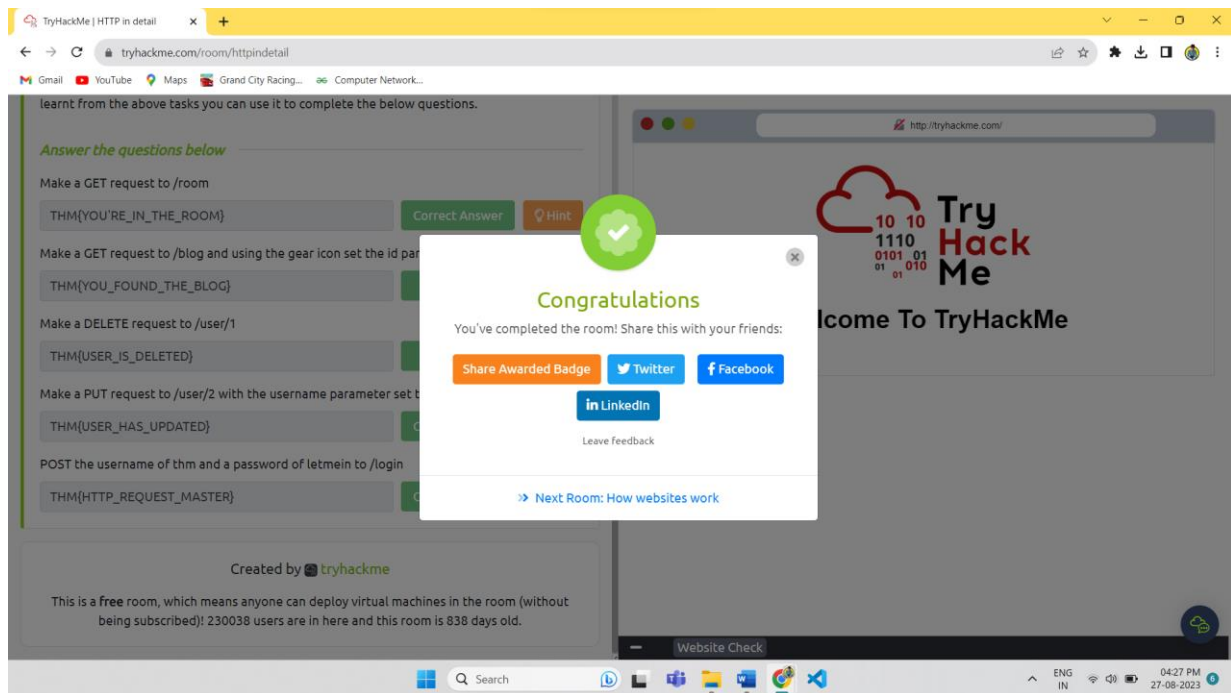
C:\Users\student>

```



## 2) TRY HACK ME – 7 TASKS COMPLETED:

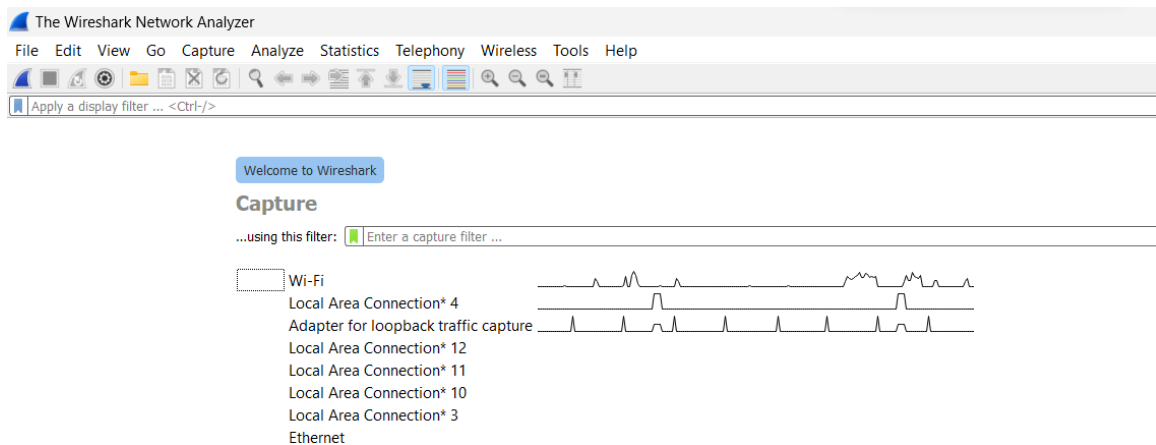
### HTTP in Detail (under web fundamentals)



## 2) WIRESHARK :

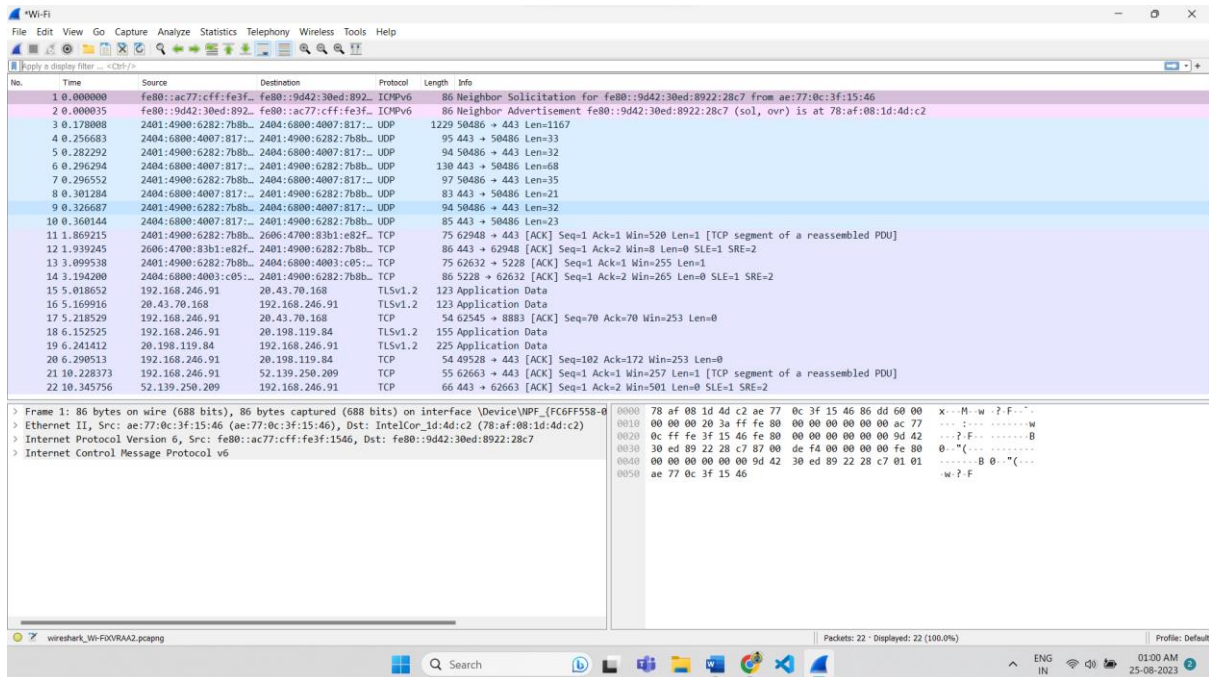


### INTERFACE (Home Screen) :



In the main window, you'll see a list of available network interfaces. These are your network adapters through which Wireshark can capture packets. The above screen shows my adapters and the traffic on it.

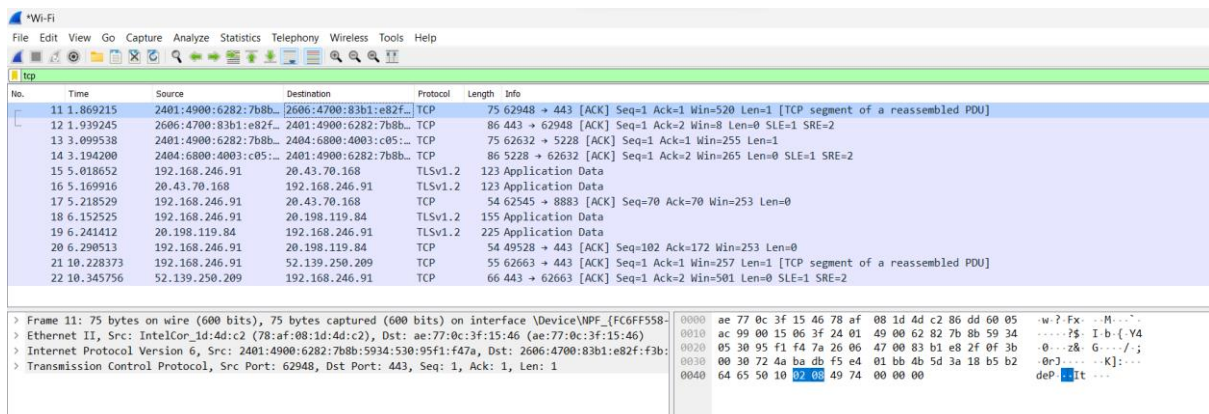
## 1. Here selecting Wifi adapter and Capturing the packets for 5 sec.



Locating TCP packet – packet no. 11

Locating UDP packet – packet no. 3

## 2. Applying filter to see only TCP packets.



### 3. Locating a TCP packet and analyzing its layers.

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

No.	Time	Source	Destination	Protocol	Length	Info
11	1.869215	2401:4900:6282:7b8b...	2606:4700:83b1:e82f...	TCP	75	62948 → 443 [ACK] Seq=1 Ack
12	1.939245	2606:4700:83b1:e82f...	2401:4900:6282:7b8b...	TCP	86	443 → 62948 [ACK] Seq=1 Ack
13	3.099538	2401:4900:6282:7b8b...	2404:6800:4003:c05:...	TCP	75	62632 → 5228 [ACK] Seq=1 Ac
14	3.194200	2404:6800:4003:c05:...	2401:4900:6282:7b8b...	TCP	86	5228 → 62632 [ACK] Seq=1 Ac
15	5.018652	192.168.246.91	20.43.70.168	TLSv1.2	123	Application Data
16	5.169916	20.43.70.168	192.168.246.91	TLSv1.2	123	Application Data
17	5.218529	192.168.246.91	20.43.70.168	TCP	54	62545 → 8883 [ACK] Seq=70 A
18	6.152525	192.168.246.91	20.198.119.84	TLSv1.2	155	Application Data
19	6.241412	20.198.119.84	192.168.246.91	TLSv1.2	225	Application Data
20	6.290513	192.168.246.91	20.198.119.84	TCP	54	49528 → 443 [ACK] Seq=102 A
21	10.228373	192.168.246.91	52.139.250.209	TCP	55	62663 → 443 [ACK] Seq=1 Ack
22	10.345756	52.139.250.209	192.168.246.91	TCP	66	443 → 62663 [ACK] Seq=1 Ack

> Frame 11: 75 bytes on wire (600 bits), 75 bytes captured (600 bits) on interface \Device\NPF\_{FC6FF558-...}

> Ethernet II, Src: IntelCor\_1d:4d:c2 (78:af:08:1d:4d:c2), Dst: ae:77:0c:3f:15:46 (ae:77:0c:3f:15:46)

> Internet Protocol Version 6, Src: 2401:4900:6282:7b8b:5934:530:95f1:f47a, Dst: 2606:4700:83b1:e82f:f3b:

> Transmission Control Protocol, Src Port: 62948, Dst Port: 443, Seq: 1, Ack: 1, Len: 1

Packet number – 11 (selected above)

No. of layers – 4 (layers details in lower window pane)

### 4. Locating a TLS packet and analyzing its layers.

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

Apply a display filter ... <Ctrl-F>

No.	Time	Source	Destination	Protocol	Length	Info
3	0.377663	192.168.246.91	159.223.184.142	TCP	55	63430 → 80 [ACK] Seq=1 Ack=1 Win=256 Len=1
4	0.662906	159.223.184.142	192.168.246.91	TCP	66	80 → 63430 [ACK] Seq=1 Ack=2 Win=126 Len=0 SLE=1 SF
5	2.162532	2401:4900:6282:7b8b...	2404:6800:4007:825:...	TCP	75	63442 → 443 [ACK] Seq=1 Ack=1 Win=255 Len=1 [TCP se
6	2.208216	2404:6800:4007:825:...	2401:4900:6282:7b8b...	TCP	86	443 → 63442 [ACK] Seq=1 Ack=2 Win=265 Len=0 SLE=1 S
7	2.257294	2401:4900:6282:7b8b...	2001:4860:4802:32:...	TCP	75	63456 → 443 [ACK] Seq=1 Ack=1 Win=257 Len=1 [TCP se
8	2.287452	2001:4860:4802:32:...	2401:4900:6282:7b8b...	TCP	86	443 → 63456 [ACK] Seq=1 Ack=2 Win=270 Len=0 SLE=1 S
9	2.602302	2401:4900:6282:7b8b...	2404:6800:4007:820:...	TCP	75	63461 → 443 [ACK] Seq=1 Ack=1 Win=258 Len=1 [TCP se
10	2.626980	2404:6800:4007:820:...	2401:4900:6282:7b8b...	TCP	86	443 → 63461 [ACK] Seq=1 Ack=2 Win=265 Len=0 SLE=1 S
11	2.806363	192.168.246.91	159.223.184.142	TCP	55	63436 → 443 [ACK] Seq=1 Ack=1 Win=257 Len=1 [TCP se
12	2.821942	192.168.246.91	159.223.184.142	TCP	55	63438 → 443 [ACK] Seq=1 Ack=1 Win=258 Len=1 [TCP se
13	2.837994	192.168.246.91	159.223.184.142	TCP	55	63447 → 443 [ACK] Seq=1 Ack=1 Win=255 Len=1 [TCP se
14	2.853564	192.168.246.91	159.223.184.142	TCP	55	63448 → 443 [ACK] Seq=1 Ack=1 Win=258 Len=1 [TCP se
15	2.900539	192.168.246.91	159.223.184.142	TCP	55	63446 → 443 [ACK] Seq=1 Ack=1 Win=258 Len=1 [TCP se
16	2.963658	192.168.246.91	199.232.168.134	TCP	55	63455 → 443 [ACK] Seq=1 Ack=1 Win=254 Len=1 [TCP se
17	3.059313	159.223.184.142	192.168.246.91	TCP	66	443 → 63436 [ACK] Seq=1 Ack=2 Win=126 Len=0 SLE=1 S
18	3.077180	159.223.184.142	192.168.246.91	TCP	66	443 → 63438 [ACK] Seq=1 Ack=2 Win=126 Len=0 SLE=1 S
19	3.106947	159.223.184.142	192.168.246.91	TCP	66	443 → 63447 [ACK] Seq=1 Ack=2 Win=126 Len=0 SLE=1 S
20	3.115989	159.223.184.142	192.168.246.91	TCP	66	443 → 63448 [ACK] Seq=1 Ack=2 Win=126 Len=0 SLE=1 S
21	3.126373	199.232.168.134	192.168.246.91	TCP	66	443 → 63455 [ACK] Seq=1 Ack=2 Win=283 Len=0 SLE=1 S
22	3.155435	192.168.246.91	20.198.119.84	TLSv1.2	155	Application Data
23	3.161919	159.223.184.142	192.168.246.91	TCP	66	443 → 63446 [ACK] Seq=1 Ack=2 Win=126 Len=0 SLE=1 S
24	3.203100	20.198.119.84	192.168.246.91	TLSv1.2	225	Application Data
25	3.249030	192.168.246.91	20.198.119.84	TCP	54	49528 → 443 [ACK] Seq=102 Ack=172 Win=253 Len=0
26	3.409304	192.168.246.91	151.101.0.134	TCP	55	63474 → 443 [ACK] Seq=1 Ack=1 Win=258 Len=1 [TCP se

> Frame 22: 155 bytes on wire (1240 bits), 155 bytes captured (1240 bits) on interface \Device\NPF\_{FC6FF558-0052-4723-9CA8-C62A}

> Ethernet II, Src: IntelCor\_1d:4d:c2 (78:af:08:1d:4d:c2), Dst: ae:77:0c:3f:15:46 (ae:77:0c:3f:15:46)

> Internet Protocol Version 4, Src: 192.168.246.91, Dst: 20.198.119.84

> Transmission Control Protocol, Src Port: 49528, Dst Port: 443, Seq: 1, Ack: 1, Len: 101

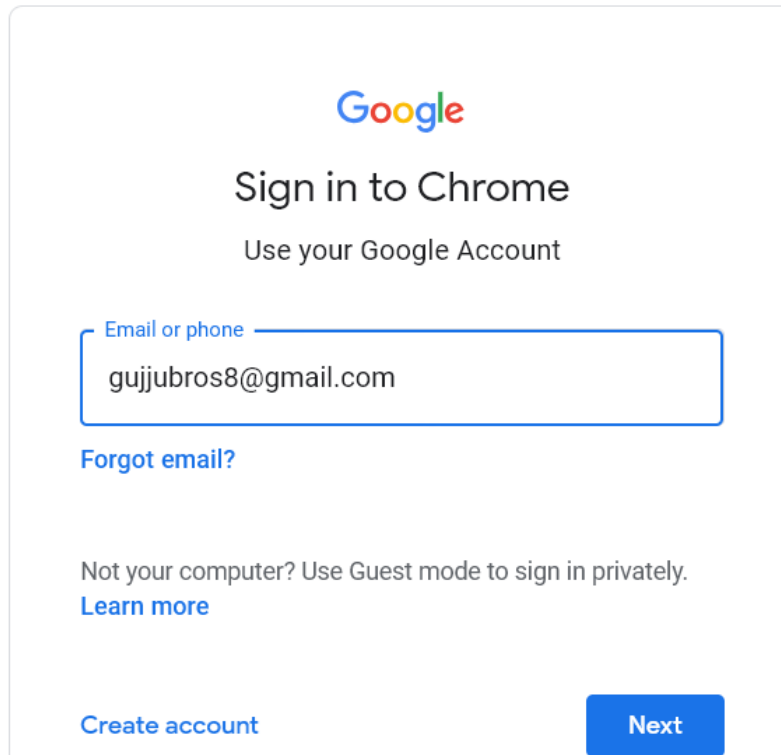
> Transport Layer Security

Packet number – 22 (selected above)

No. of layers – 5 (layers details in lower window pane)



5. Starting to collect the packets.
6. **Logging in to Google.**



7. Stopping the packets capture.

## Locating Request and Response of Gmail Login.

No.	Time	Source	Destination	Protocol	Length	Info
33	8.901722	192.168.246.91	192.168.246.130	DNS	87	Standard query 0x2269 A www.gstatic.com
35	8.901779	192.168.246.91	192.168.246.130	DNS	91	Standard query 0xe765 A accounts.google.com
37	8.901842	192.168.246.91	192.168.246.130	DNS	91	Standard query 0xfca4 AAAA accounts.google.com
48	8.921966	192.168.246.91	192.168.246.130	DNS	91	Standard query 0x3ae6 AAAA clients2.google.com
52	8.922060	192.168.246.91	192.168.246.130	DNS	91	Standard query 0xe6f8 A clients2.google.com
55	8.922120	192.168.246.91	192.168.246.130	DNS	91	Standard query 0x003d HTTPS clients2.google.com
79	9.076135	192.168.246.130	192.168.246.91	DNS	116	Standard query response 0x43d9 AAAA www.gstatic.com AAAA 2404:6800:4007:82c::2003
80	9.076135	192.168.246.130	192.168.246.91	DNS	120	Standard query response 0xfca4 AAAA accounts.google.com AAAA 2404:6800:4007:829::200d
89	9.097827	192.168.246.130	192.168.246.91	DNS	145	Standard query response 0x544d HTTPS www.gstatic.com SOA ns1.google.com
90	9.097827	192.168.246.130	192.168.246.91	DNS	104	Standard query response 0x2269 A www.gstatic.com A 142.250.196.163
104	9.136129	192.168.246.130	192.168.246.91	DNS	144	Standard query response 0x3ae6 AAAA clients2.google.com CNAME clients1.google.com AAAA 2404:6800:4007:808::200e
105	9.136129	192.168.246.130	192.168.246.91	DNS	132	Standard query response 0xe6f8 A clients2.google.com CNAME clients1.google.com A 142.250.195.46
106	9.136129	192.168.246.130	192.168.246.91	DNS	166	Standard query response 0x003d HTTPS clients2.google.com CNAME clients1.google.com SOA ns1.google.com
107	9.136129	192.168.246.130	192.168.246.91	DNS	108	Standard query response 0xe765 A accounts.google.com A 142.250.182.77
357	9.701865	192.168.246.91	192.168.246.130	DNS	102	Standard query 0x5377 AAAA clients2.googleusercontent.com
362	9.701858	192.168.246.91	192.168.246.130	DNS	102	Standard query 0x9181 A clients2.googleusercontent.com
368	9.702811	192.168.246.91	192.168.246.130	DNS	102	Standard query 0x8c93 HTTPS clients2.googleusercontent.com
388	9.711174	192.168.246.91	192.168.246.130	DNS	87	Standard query 0xa0ca AAAA www.gstatic.com
391	9.711274	192.168.246.91	192.168.246.130	DNS	87	Standard query 0x47ca A www.gstatic.com
393	9.711335	192.168.246.91	192.168.246.130	DNS	87	Standard query 0x3afb HTTPS www.gstatic.com
461	9.745954	192.168.246.91	192.168.246.130	DNS	89	Standard query 0x3fea AAAA fonts.gstatic.com
463	9.746958	192.168.246.91	192.168.246.130	DNS	89	Standard query 0x8863 A fonts.gstatic.com
466	9.746260	192.168.246.91	192.168.246.130	DNS	80	Standard query 0x42b0 HTTPS www.gstatic.com

8. Packet 37 asking for **request**, and packet 79 onwards got the **response**.
9. Checking the presence of encrypted content.
10. Packets with description PROTECTED PAYLOAD.

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help						
quid						
No.	Time	Source	Destination	Protocol	Length	Info
1549	10.995570	2404:6800:4007:82c::...	2401:4900:6282:7b8b::...	QUIC	1288	Protected Payload (KP0)
1550	10.995765	2401:4900:6282:7b8b::...	2404:6800:4007:82c::...	QUIC	97	Protected Payload (KP0), DCID=df4a828d37d09842
1551	11.015939	2404:6800:4007:82c::...	2401:4900:6282:7b8b::...	QUIC	1292	Protected Payload (KP0)
1552	11.016757	2404:6800:4007:82c::...	2401:4900:6282:7b8b::...	QUIC	1292	Protected Payload (KP0)
1553	11.017162	2401:4900:6282:7b8b::...	2404:6800:4007:82c::...	QUIC	93	Protected Payload (KP0), DCID=df4a828d37d09842
1554	11.017575	2404:6800:4007:82c::...	2401:4900:6282:7b8b::...	QUIC	1292	Protected Payload (KP0)
1556	11.029413	2404:6800:4007:82c::...	2401:4900:6282:7b8b::...	QUIC	1292	Protected Payload (KP0)
1557	11.029591	2401:4900:6282:7b8b::...	2404:6800:4007:82c::...	QUIC	93	Protected Payload (KP0), DCID=df4a828d37d09842
1558	11.029626	2404:6800:4007:82c::...	2401:4900:6282:7b8b::...	QUIC	1292	Protected Payload (KP0)
1559	11.029837	2401:4900:6282:7b8b::...	2404:6800:4007:82c::...	QUIC	97	Protected Payload (KP0), DCID=df4a828d37d09842
1560	11.029881	2404:6800:4007:82c::...	2401:4900:6282:7b8b::...	QUIC	1292	Protected Payload (KP0)
1561	11.030043	2404:6800:4007:82c::...	2401:4900:6282:7b8b::...	QUIC	455	Protected Payload (KP0)
1562	11.030099	2401:4900:6282:7b8b::...	2404:6800:4007:82c::...	QUIC	93	Protected Payload (KP0), DCID=df4a828d37d09842
1563	11.030470	2404:6800:4007:82c::...	2401:4900:6282:7b8b::...	QUIC	91	Protected Payload (KP0)
1564	11.030470	2404:6800:4007:82c::...	2401:4900:6282:7b8b::...	QUIC	84	Protected Payload (KP0)
1565	11.030577	2404:6800:4007:82c::...	2401:4900:6282:7b8b::...	QUIC	947	Protected Payload (KP0)
1566	11.030632	2404:6800:4007:82c::...	2401:4900:6282:7b8b::...	QUIC	91	Protected Payload (KP0)
1567	11.030715	2401:4900:6282:7b8b::...	2404:6800:4007:82c::...	QUIC	97	Protected Payload (KP0), DCID=df4a828d37d09842
1568	11.030776	2404:6800:4007:82c::...	2401:4900:6282:7b8b::...	QUIC	84	Protected Payload (KP0)
1569	11.031137	2404:6800:4007:82c::...	2401:4900:6282:7b8b::...	QUIC	1067	Protected Payload (KP0)
1570	11.031319	2404:6800:4007:82c::...	2401:4900:6282:7b8b::...	QUIC	91	Protected Payload (KP0)
1571	11.031319	2404:6800:4007:82c::...	2401:4900:6282:7b8b::...	QUIC	84	Protected Payload (KP0)
1572	11.031402	2401:4900:6282:7b8b::...	2404:6800:4007:82c::...	QUIC	97	Protected Payload (KP0), DCID=df4a828d37d09842
> Frame 93: 1292 bytes on wire (10336 bits), 1292 bytes captured (10336 bits) on interface \Device\NPF_{FC6FF558-0052-4723-9CA8-...}						
> Ethernet II, Src: IntelCor_1d:4d:c2 (78:af:08:1d:4d:c2), Dst: ae:77:0c:3f:15:46 (ae:77:0c:3f:15:46)						
> Internet Protocol Version 6, Src: 2401:4900:6282:7b8b:5934:530:95f1:f47a, Dst: 2404:6800:4007:82c::2003						
> User Datagram Protocol, Src Port: 54751, Dst Port: 443						
> QUIC IETF						

## Protected content

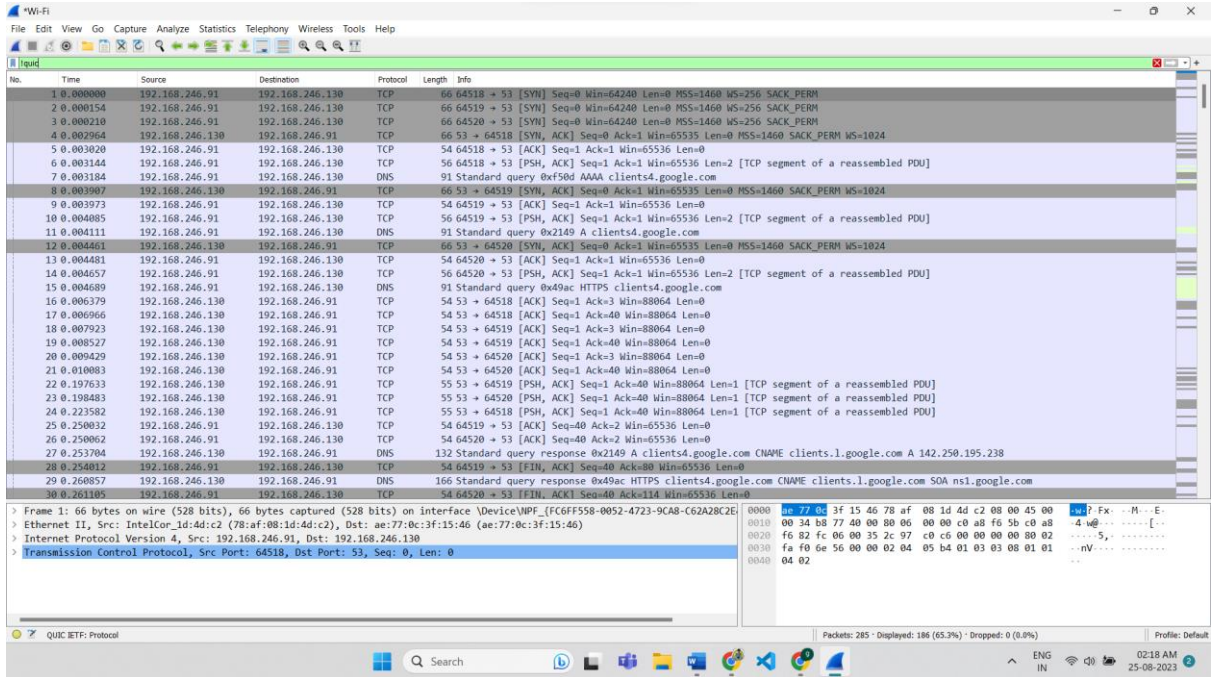
11. Define Interface & Start collecting packets again
12. login with **guest account** in the webpage <http://testphp.vulnweb.com/login.php>

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help						
dns						
No.	Time	Source	Destination	Protocol	Length	Info
79	0.278639	192.168.246.91	192.168.246.130	DNS	95	Standard query 0x2b91 HTTPS safebrowsing.google.com
96	0.726157	192.168.246.91	192.168.246.130	DNS	91	Standard query 0x1614 A testphp.vulnweb.com
98	0.726233	192.168.246.91	192.168.246.130	DNS	91	Standard query 0xe201 AAAA testphp.vulnweb.com
102	0.726670	192.168.246.91	192.168.246.130	DNS	91	Standard query 0x94ab HTTPS testphp.vulnweb.com
113	0.816505	192.168.246.130	192.168.246.91	DNS	151	Standard query response 0x20c9 AAAA testphp.vulnweb.com SOA ns1.eurodns.com
115	0.816681	192.168.246.130	192.168.246.91	DNS	108	Standard query response 0x70a3 A testphp.vulnweb.com A 44.228.249.3
140	0.877579	192.168.246.130	192.168.246.91	DNS	165	Standard query response 0x7436 HTTPS optimizationguide-pa.googleapis.com SOA ns1.google.com

- Packet 102 asking for **request**, and Packet 113 **response** in above image.

13. Checking the presence of **unencrypted content**.

14. Type “!QUIC” under filters and click on apply.



**Unprotected content**

OVER

-----X-----X-----X-----X-----X-----X-----X-----X-----X-----X-----X-----X-----X-----

**!! . THANK YOU . !!**