ASSIGNMENT 5

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Section: A1
Subject: Computer Networks Lab Report
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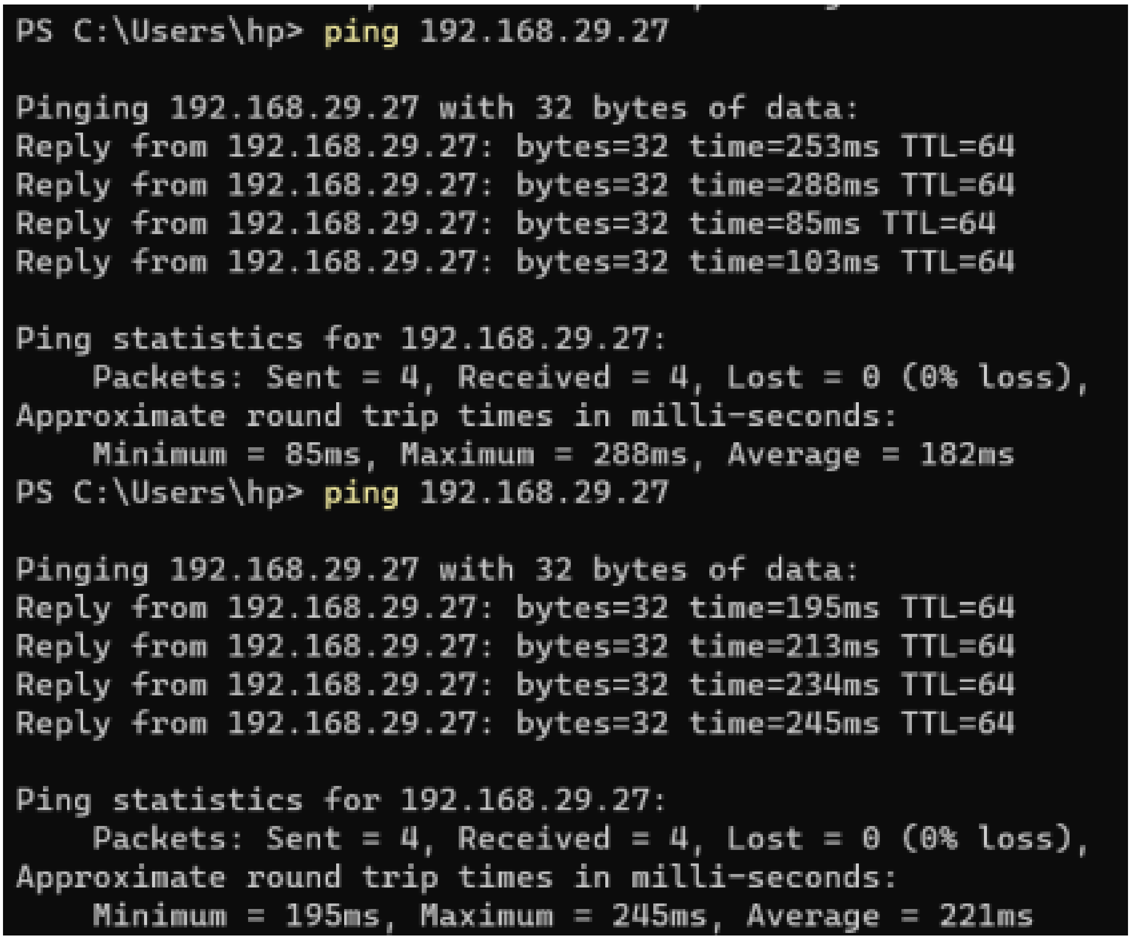
PROBLEM STATEMENT: Packet tracer and traffic analysis with Wireshark

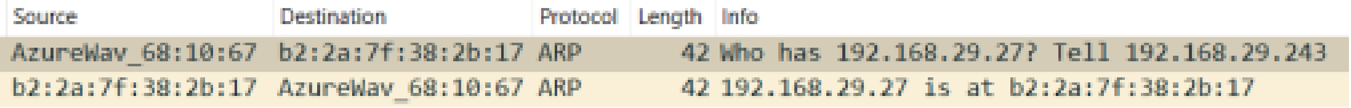
QUESTIONS:

1) Generate some ICMP traffic by using the Ping command line tool to check the connectivity of a neighbouring machine (or router). Note the results in Wireshark. The initial ARP request broadcast from your PC determines the physical MAC address of the network IP Address, and the ARP reply from the neighbouring system. After the ARP request, the pings (ICMP echo request and replies) can be seen.

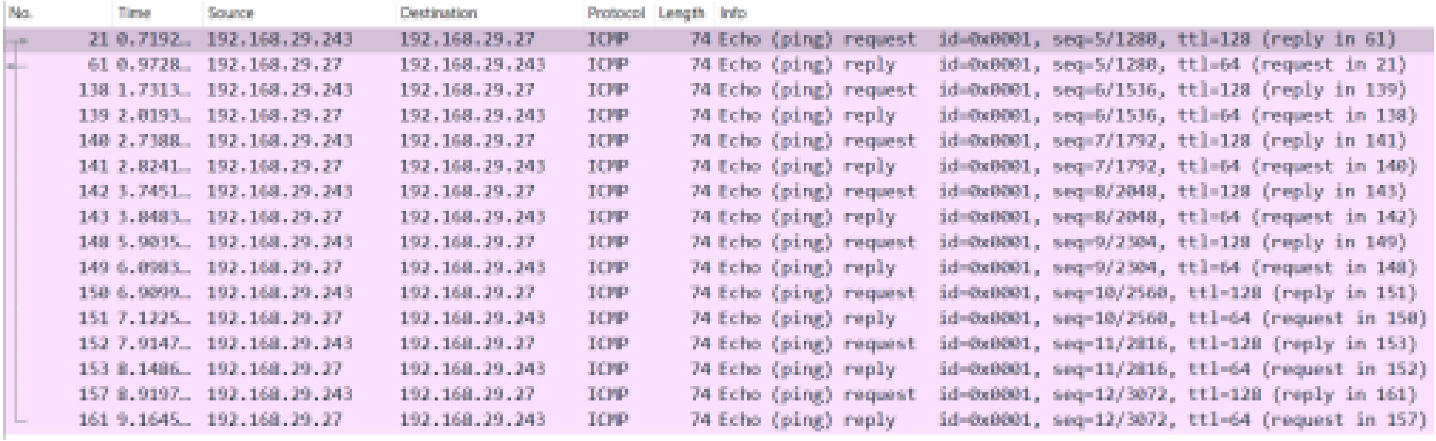
Answer:



```
PS C:\Users\hp> ping 192.168.29.27

Pinging 192.168.29.27 with 32 bytes of data:
Reply from 192.168.29.27: bytes=32 time=253ms TTL=64
Reply from 192.168.29.27: bytes=32 time=288ms TTL=64
Reply from 192.168.29.27: bytes=32 time=85ms TTL=64
Reply from 192.168.29.27: bytes=32 time=103ms TTL=64

Ping statistics for 192.168.29.27:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 85ms, Maximum = 288ms, Average = 182ms
PS C:\Users\hp> ping 192.168.29.27

Pinging 192.168.29.27 with 32 bytes of data:
Reply from 192.168.29.27: bytes=32 time=195ms TTL=64
Reply from 192.168.29.27: bytes=32 time=213ms TTL=64
Reply from 192.168.29.27: bytes=32 time=234ms TTL=64
Reply from 192.168.29.27: bytes=32 time=245ms TTL=64

Ping statistics for 192.168.29.27:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 195ms, Maximum = 245ms, Average = 221ms
```



Source	Destination	Protocol	Length	Info
AzureWav_68:10:67	b2:2a:7f:38:2b:17	ARP	42	Who has 192.168.29.27? Tell 192.168.29.243
b2:2a:7f:38:2b:17	AzureWav_68:10:67	ARP	42	192.168.29.27 is at b2:2a:7f:38:2b:17



No.	Time	Source	Destination	Protocol	Length	Info
21	0.7192…	192.168.29.243	192.168.29.27	ICMP	74	Echo (ping) request id=0x0001, seq=5/1280, ttl=128 (reply in 61)
61	0.9728…	192.168.29.27	192.168.29.243	ICMP	74	Echo (ping) reply id=0x0001, seq=5/1280, ttl=64 (request in 21)
138	1.7313…	192.168.29.243	192.168.29.27	ICMP	74	Echo (ping) request id=0x0001, seq=6/1536, ttl=128 (reply in 139)
139	2.0193…	192.168.29.27	192.168.29.243	ICMP	74	Echo (ping) reply id=0x0001, seq=6/1536, ttl=64 (request in 138)
140	2.7388…	192.168.29.243	192.168.29.27	ICMP	74	Echo (ping) request id=0x0001, seq=7/1792, ttl=128 (reply in 141)
141	2.8241…	192.168.29.27	192.168.29.243	ICMP	74	Echo (ping) reply id=0x0001, seq=7/1792, ttl=64 (request in 140)
142	3.7451…	192.168.29.243	192.168.29.27	ICMP	74	Echo (ping) request id=0x0001, seq=8/2048, ttl=128 (reply in 143)
143	3.8483…	192.168.29.27	192.168.29.243	ICMP	74	Echo (ping) reply id=0x0001, seq=8/2048, ttl=64 (request in 142)
148	5.9035…	192.168.29.243	192.168.29.27	ICMP	74	Echo (ping) request id=0x0001, seq=9/2304, ttl=128 (reply in 149)
149	6.0983…	192.168.29.27	192.168.29.243	ICMP	74	Echo (ping) reply id=0x0001, seq=9/2304, ttl=64 (request in 148)
150	6.9099…	192.168.29.243	192.168.29.27	ICMP	74	Echo (ping) request id=0x0001, seq=10/2560, ttl=128 (reply in 151)
151	7.1225…	192.168.29.27	192.168.29.243	ICMP	74	Echo (ping) reply id=0x0001, seq=10/2560, ttl=64 (request in 150)
152	7.9147…	192.168.29.243	192.168.29.27	ICMP	74	Echo (ping) request id=0x0001, seq=11/2816, ttl=128 (reply in 153)
153	8.1486…	192.168.29.27	192.168.29.243	ICMP	74	Echo (ping) reply id=0x0001, seq=11/2816, ttl=64 (request in 152)
157	8.9197…	192.168.29.243	192.168.29.27	ICMP	74	Echo (ping) request id=0x0001, seq=12/3072, ttl=128 (reply in 161)
161	9.1645…	192.168.29.27	192.168.29.243	ICMP	74	Echo (ping) reply id=0x0001, seq=12/3072, ttl=64 (request in 157)

2) Generate some web traffic and

a. find the list of the different protocols that appear in the protocol column in the unfiltered packet-listing window of Wireshark.

Ans: The different protocols I can see are - HTTP, TCP, TLS, TLSv1.3 etc.

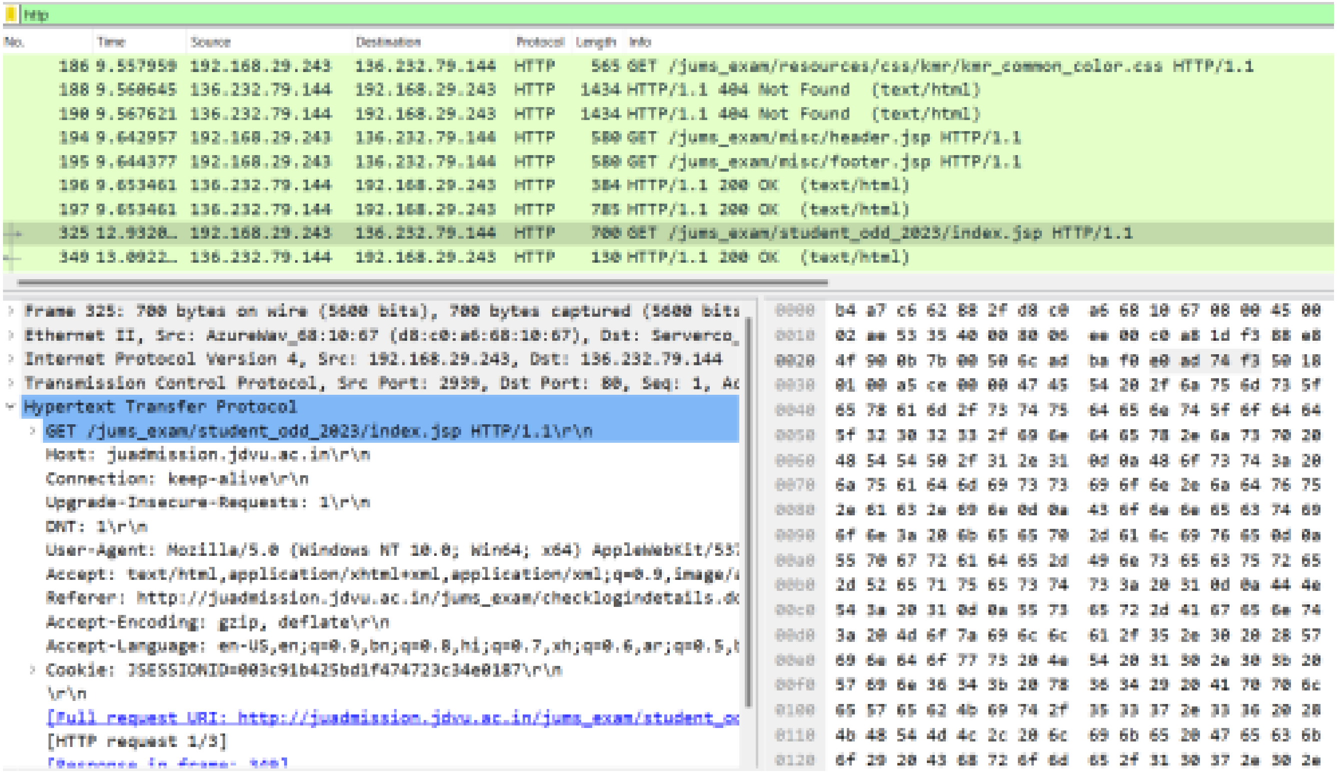
b. How long did it take from when the HTTP GET message was sent until the HTTP OK reply was received?

Ans: GET message was sent in time 12.932066 and OK response was received in time 13.092242. So the time taken is - (13.092242-12.932066) = 0.160176 seconds.

c. What is the Internet address of the website? What is the Internet address of your computer?

Ans: From the previous screenshot, we can see that the internet(IP) address of the website is - 136.232.79.144 and the IP address of my computer is - 192.168.29.243.

d. Search back through your capture, and find an HTTP packet containing a GET command. Click on the packet in the Packet List Panel. Then expand the HTTP layer in the Packet Details Panel, from the packet.



```
http
No.   Time        Source           Destination      Protocol Length Info
  186 9.557959    192.168.29.243   136.232.79.144   HTTP      565 GET /jums_exam/resources/css/kmr/kmr_common_color.css HTTP/1.1
  188 9.560645    136.232.79.144   192.168.29.243   HTTP     1434 HTTP/1.1 404 Not Found  (text/html)
  190 9.567621    136.232.79.144   192.168.29.243   HTTP     1434 HTTP/1.1 404 Not Found  (text/html)
  194 9.642957    192.168.29.243   136.232.79.144   HTTP      580 GET /jums_exam/misc/header.jsp HTTP/1.1
  195 9.644377    192.168.29.243   136.232.79.144   HTTP      580 GET /jums_exam/misc/footer.jsp HTTP/1.1
  196 9.653461    136.232.79.144   192.168.29.243   HTTP      384 HTTP/1.1 200 OK  (text/html)
  197 9.653461    136.232.79.144   192.168.29.243   HTTP      785 HTTP/1.1 200 OK  (text/html)
  325 12.9320…    192.168.29.243   136.232.79.144   HTTP      700 GET /jums_exam/student_odd_2023/index.jsp HTTP/1.1
  349 13.0922…    136.232.79.144   192.168.29.243   HTTP      150 HTTP/1.1 200 OK  (text/html)
```

```
> Frame 325: 700 bytes on wire (5600 bits), 700 bytes captured (5600 bits
> Ethernet II, Src: AzureWav_68:10:67 (d8:c0:a6:68:10:67), Dst: Serverco_
> Internet Protocol Version 4, Src: 192.168.29.243, Dst: 136.232.79.144
> Transmission Control Protocol, Src Port: 2939, Dst Port: 80, Seq: 1, Ac
v Hypertext Transfer Protocol
  > GET /jums_exam/student_odd_2023/index.jsp HTTP/1.1\r\n
    Host: juadmission.jdvu.ac.in\r\n
    Connection: keep-alive\r\n
    Upgrade-Insecure-Requests: 1\r\n
    DNT: 1\r\n
    User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/53
    Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/a
    Referer: http://juadmission.jdvu.ac.in/jums_exam/checklogindetails.dc
    Accept-Encoding: gzip, deflate\r\n
    Accept-Language: en-US,en;q=0.9,bn;q=0.8,hi;q=0.7,xh;q=0.6,ar;q=0.5,t
  > Cookie: JSESSIONID=003c91b425bd1f474723c34e0187\r\n
    \r\n
    [Full request URI: http://juadmission.jdvu.ac.in/jums_exam/student_oc
    [HTTP request 1/3]
    [Response in frame: 349]
```

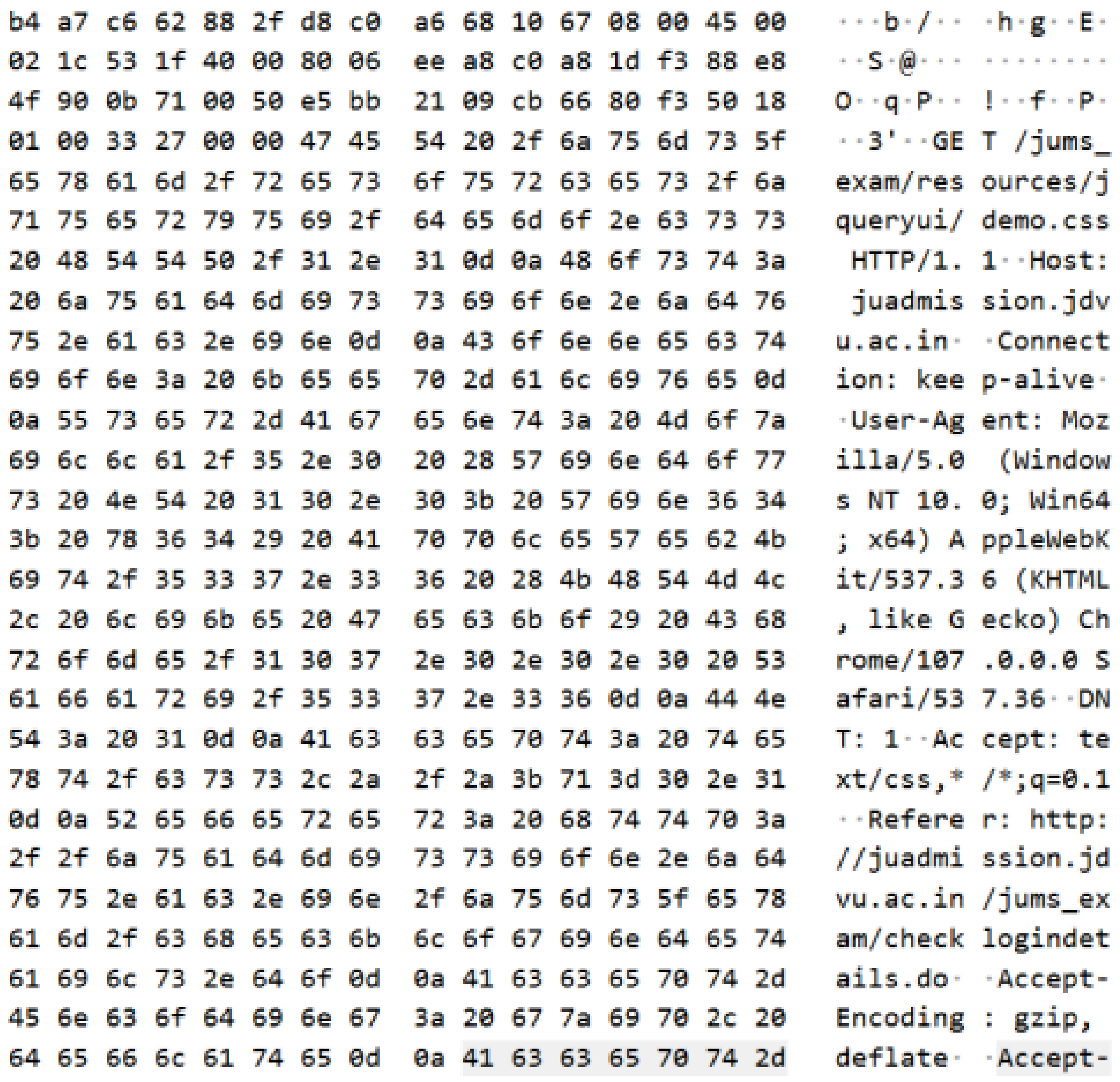
```
0000  b4 a7 c6 62 88 2f d8 c0  a6 68 10 67 08 00 45 00
0010  02 ae 53 35 40 00 80 06  ee 00 c0 a8 1d f3 88 e8
0020  4f 90 0b 7b 00 50 6c ad  ba f0 e0 ad 74 f3 50 18
0030  01 00 a5 ce 00 00 47 45  54 20 2f 6a 75 6d 73 5f
0040  65 78 61 6d 2f 73 74 75  64 65 6e 74 5f 6f 64 64
0050  5f 32 30 32 33 2f 69 6e  64 65 78 2e 6a 73 70 20
0060  48 54 54 50 2f 31 2e 31  0d 0a 48 6f 73 74 3a 20
0070  6a 75 61 64 6d 69 73 73  69 6f 6e 2e 6a 64 76 75
0080  2e 61 63 2e 69 6e 0d 0a  43 6f 6e 6e 65 63 74 69
0090  6f 6e 3a 20 6b 65 65 70  2d 61 6c 69 76 65 0d 0a
00a0  55 70 67 72 61 64 65 2d  49 6e 73 65 63 75 72 65
00b0  2d 52 65 71 75 65 73 74  73 3a 20 31 0d 0a 44 4e
00c0  54 3a 20 31 0d 0a 55 73  65 72 2d 41 67 65 6e 74
00d0  3a 20 4d 6f 7a 69 6c 6c  61 2f 35 2e 30 20 28 57
00e0  69 6e 64 6f 77 73 20 4e  54 20 31 30 2e 30 3b 20
00f0  57 69 6e 36 34 3b 20 78  36 34 29 20 41 70 70 6c
0100  65 57 65 62 4b 69 74 2f  35 33 37 2e 33 36 20 28
0110  4b 48 54 4d 4c 2c 20 6c  69 6b 65 20 47 65 63 6b
0120  6f 29 20 43 68 72 6f 6d  65 2f 31 30 37 2e 30 2e
```

e. Find out the value of the Host from the Packet Details Panel, within the GET command.

Ans: The value of host from the previous screenshot is – juadmission.jdvu.ac.in

Q3) Highlight the Hex and ASCII representations of the packet in the Packet Bytes Panel

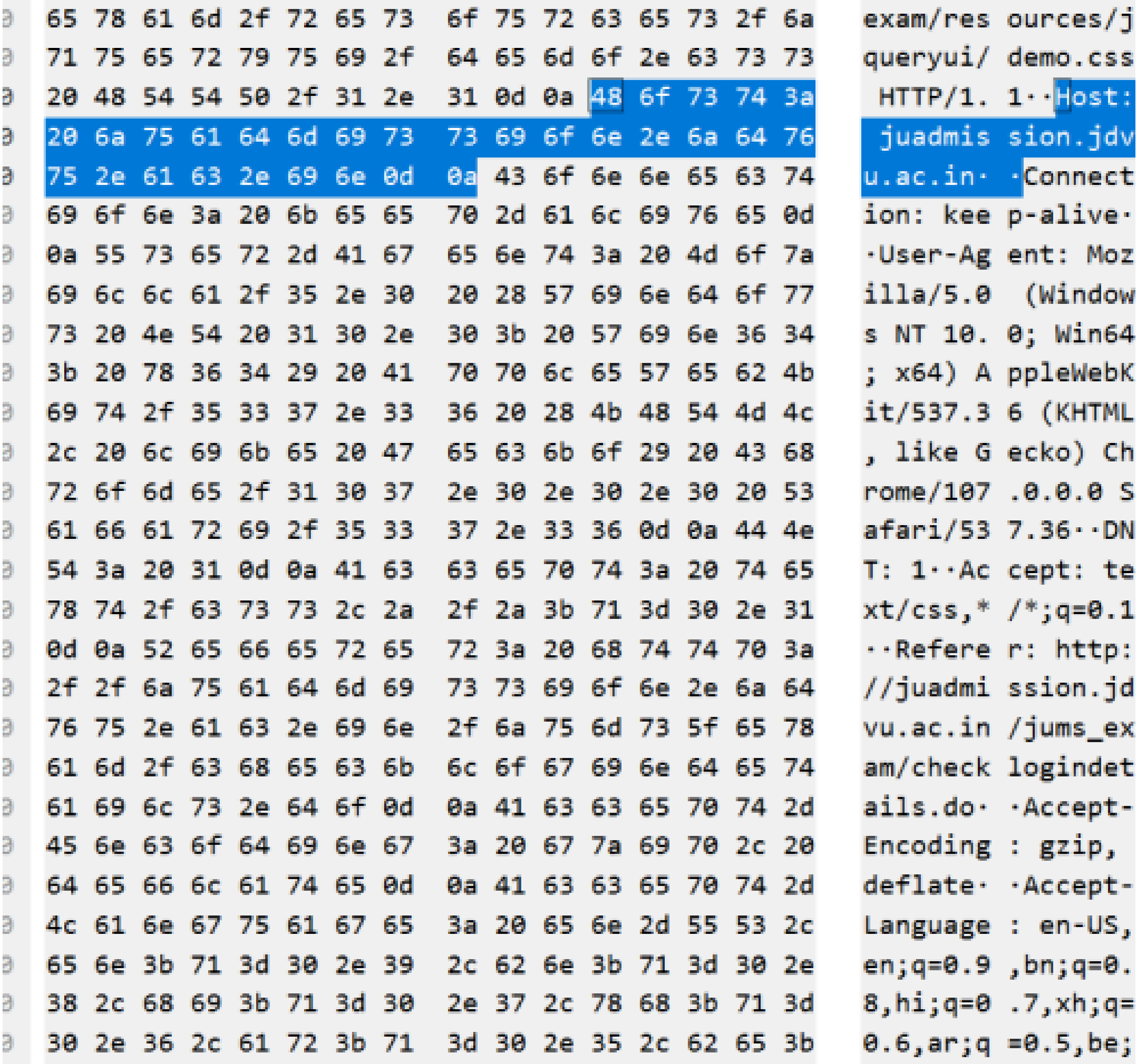
Ans:



```
b4 a7 c6 62 88 2f d8 c0  a6 68 10 67 08 00 45 00   ···b·/·· ·h·g··E·
02 1c 53 1f 40 00 80 06  ee a8 c0 a8 1d f3 88 e8   ··S·@··· ········
4f 90 0b 71 00 50 e5 bb  21 09 cb 66 80 f3 50 18   O··q·P·· !··f··P·
01 00 33 27 00 00 47 45  54 20 2f 6a 75 6d 73 5f   ··3'··GE T /jums_
65 78 61 6d 2f 72 65 73  6f 75 72 63 65 73 2f 6a   exam/res ources/j
71 75 65 72 79 75 69 2f  64 65 6d 6f 2e 63 73 73   queryui/ demo.css
20 48 54 54 50 2f 31 2e  31 0d 0a 48 6f 73 74 3a    HTTP/1. 1··Host:
20 6a 75 61 64 6d 69 73  73 69 6f 6e 2e 6a 64 76    juadmis sion.jdv
75 2e 61 63 2e 69 6e 0d  0a 43 6f 6e 6e 65 63 74   u.ac.in· ·Connect
69 6f 6e 3a 20 6b 65 65  70 2d 61 6c 69 76 65 0d   ion: kee p-alive·
0a 55 73 65 72 2d 41 67  65 6e 74 3a 20 4d 6f 7a   ·User-Ag ent: Moz
69 6c 6c 61 2f 35 2e 30  20 28 57 69 6e 64 6f 77   illa/5.0  (Window
73 20 4e 54 20 31 30 2e  30 3b 20 57 69 6e 36 34   s NT 10. 0; Win64
3b 20 78 36 34 29 20 41  70 70 6c 65 57 65 62 4b   ; x64) A ppleWebK
69 74 2f 35 33 37 2e 33  36 20 28 4b 48 54 4d 4c   it/537.3 6 (KHTML
2c 20 6c 69 6b 65 20 47  65 63 6b 6f 29 20 43 68   , like G ecko) Ch
72 6f 6d 65 2f 31 30 37  2e 30 2e 30 2e 30 20 53   rome/107 .0.0.0 S
61 66 61 72 69 2f 35 33  37 2e 33 36 0d 0a 44 4e   afari/53 7.36··DN
54 3a 20 31 0d 0a 41 63  63 65 70 74 3a 20 74 65   T: 1··Ac cept: te
78 74 2f 63 73 73 2c 2a  2f 2a 3b 71 3d 30 2e 31   xt/css,* /*;q=0.1
0d 0a 52 65 66 65 72 65  72 3a 20 68 74 74 70 3a   ··Refere r: http:
2f 2f 6a 75 61 64 6d 69  73 73 69 6f 6e 2e 6a 64   //juadmi ssion.jd
76 75 2e 61 63 2e 69 6e  2f 6a 75 6d 73 5f 65 78   vu.ac.in /jums_ex
61 6d 2f 63 68 65 63 6b  6c 6f 67 69 6e 64 65 74   am/check logindet
61 69 6c 73 2e 64 6f 0d  0a 41 63 63 65 70 74 2d   ails.do· ·Accept-
45 6e 63 6f 64 69 6e 67  3a 20 67 7a 69 70 2c 20   Encoding : gzip,
64 65 66 6c 61 74 65 0d  0a 41 63 63 65 70 74 2d   deflate· ·Accept-
```

Q4) Find out the first 4 bytes of the Hex value of the Host parameter from the Packet Bytes Pane

Ans:

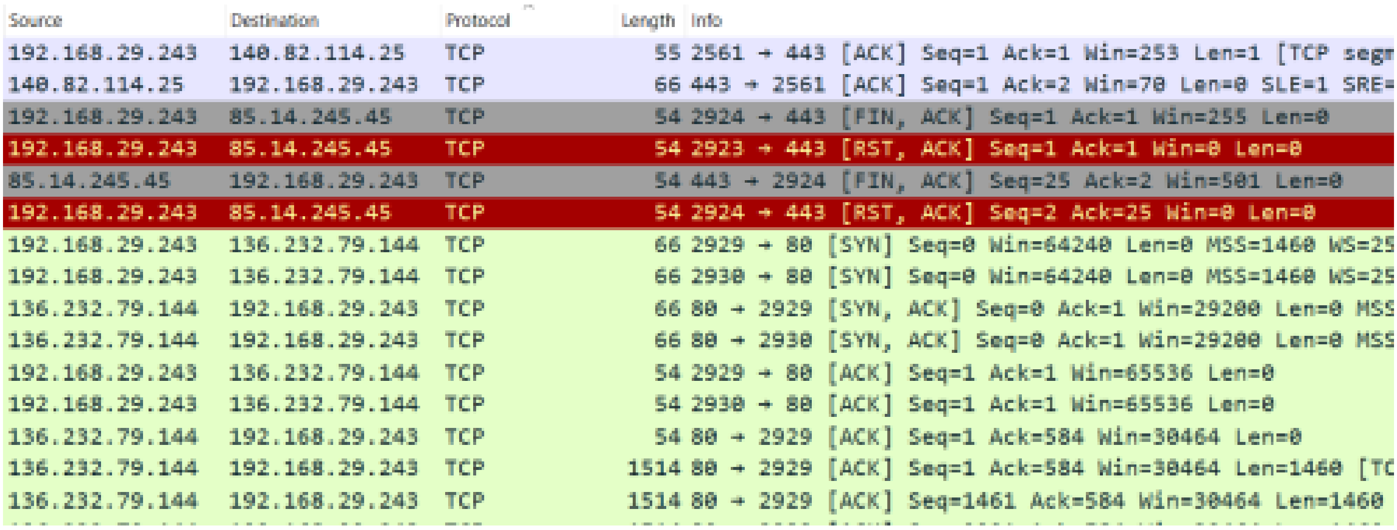


```
65 78 61 6d 2f 72 65 73  6f 75 72 63 65 73 2f 6a   exam/res ources/j
71 75 65 72 79 75 69 2f  64 65 6d 6f 2e 63 73 73   queryui/ demo.css
20 48 54 54 50 2f 31 2e  31 0d 0a 48 6f 73 74 3a    HTTP/1. 1··Host:
20 6a 75 61 64 6d 69 73  73 69 6f 6e 2e 6a 64 76    juadmis sion.jdv
75 2e 61 63 2e 69 6e 0d  0a 43 6f 6e 6e 65 63 74   u.ac.in· ·Connect
69 6f 6e 3a 20 6b 65 65  70 2d 61 6c 69 76 65 0d   ion: kee p-alive·
0a 55 73 65 72 2d 41 67  65 6e 74 3a 20 4d 6f 7a   ·User-Ag ent: Moz
69 6c 6c 61 2f 35 2e 30  20 28 57 69 6e 64 6f 77   illa/5.0  (Window
73 20 4e 54 20 31 30 2e  30 3b 20 57 69 6e 36 34   s NT 10. 0; Win64
3b 20 78 36 34 29 20 41  70 70 6c 65 57 65 62 4b   ; x64) A ppleWebK
69 74 2f 35 33 37 2e 33  36 20 28 4b 48 54 4d 4c   it/537.3 6 (KHTML
2c 20 6c 69 6b 65 20 47  65 63 6b 6f 29 20 43 68   , like G ecko) Ch
72 6f 6d 65 2f 31 30 37  2e 30 2e 30 2e 30 20 53   rome/107 .0.0.0 S
61 66 61 72 69 2f 35 33  37 2e 33 36 0d 0a 44 4e   afari/53 7.36··DN
54 3a 20 31 0d 0a 41 63  63 65 70 74 3a 20 74 65   T: 1··Ac cept: te
78 74 2f 63 73 73 2c 2a  2f 2a 3b 71 3d 30 2e 31   xt/css,* /*;q=0.1
0d 0a 52 65 66 65 72 65  72 3a 20 68 74 74 70 3a   ··Refere r: http:
2f 2f 6a 75 61 64 6d 69  73 73 69 6f 6e 2e 6a 64   //juadmi ssion.jd
76 75 2e 61 63 2e 69 6e  2f 6a 75 6d 73 5f 65 78   vu.ac.in /jums_ex
61 6d 2f 63 68 65 63 6b  6c 6f 67 69 6e 64 65 74   am/check logindet
61 69 6c 73 2e 64 6f 0d  0a 41 63 63 65 70 74 2d   ails.do· ·Accept-
45 6e 63 6f 64 69 6e 67  3a 20 67 7a 69 70 2c 20   Encoding : gzip,
64 65 66 6c 61 74 65 0d  0a 41 63 63 65 70 74 2d   deflate· ·Accept-
4c 61 6e 67 75 61 67 65  3a 20 65 6e 2d 55 53 2c   Language : en-US,
65 6e 3b 71 3d 30 2e 39  2c 62 6e 3b 71 3d 30 2e   en;q=0.9 ,bn;q=0.
38 2c 68 69 3b 71 3d 30  2e 37 2c 78 68 3b 71 3d   8,hi;q=0 .7,xh;q=
30 2e 36 2c 61 72 3b 71  3d 30 2e 35 2c 62 65 3b   0.6,ar;q =0.5,be;
```

As we can see first four bytes of the Hex value of the Host parameter is: 48 6f 73 74

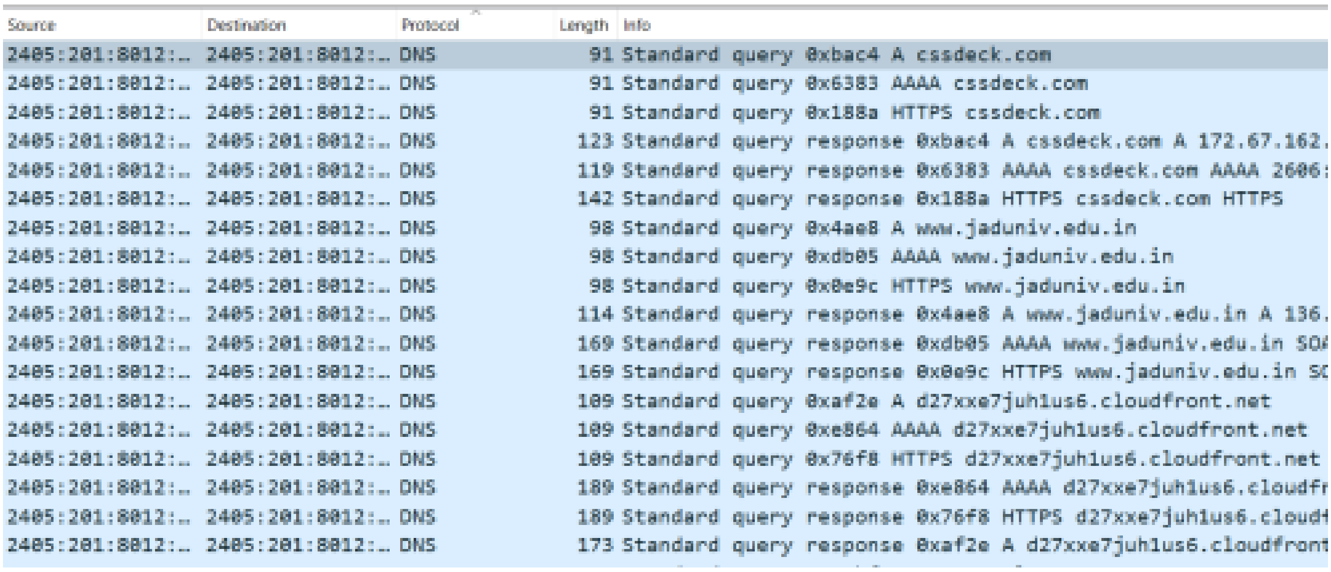
Q5. Filter packets with http, TCP, DNS and other protocols.
a. Find out what are those packets contain by following one of the conversations (also called network flows), select one of the packets and press the right mouse button..click on follow

TCP:



Source	Destination	Protocol	Length	Info
192.168.29.243	140.82.114.25	TCP	55	2561 → 443 [ACK] Seq=1 Ack=1 Win=253 Len=1 [TCP segm
140.82.114.25	192.168.29.243	TCP	66	443 → 2561 [ACK] Seq=1 Ack=2 Win=70 Len=0 SLE=1 SRE=
192.168.29.243	85.14.245.45	TCP	54	2924 → 443 [FIN, ACK] Seq=1 Ack=1 Win=255 Len=0
192.168.29.243	85.14.245.45	TCP	54	2923 → 443 [RST, ACK] Seq=1 Ack=1 Win=0 Len=0
85.14.245.45	192.168.29.243	TCP	54	443 → 2924 [FIN, ACK] Seq=25 Ack=2 Win=501 Len=0
192.168.29.243	85.14.245.45	TCP	54	2924 → 443 [RST, ACK] Seq=2 Ack=25 Win=0 Len=0
192.168.29.243	136.232.79.144	TCP	66	2929 → 80 [SYN] Seq=0 Win=64240 Len=0 MSS=1460 WS=25
192.168.29.243	136.232.79.144	TCP	66	2930 → 80 [SYN] Seq=0 Win=64240 Len=0 MSS=1460 WS=25
136.232.79.144	192.168.29.243	TCP	66	80 → 2929 [SYN, ACK] Seq=0 Ack=1 Win=29200 Len=0 MSS
136.232.79.144	192.168.29.243	TCP	66	80 → 2930 [SYN, ACK] Seq=0 Ack=1 Win=29200 Len=0 MSS
192.168.29.243	136.232.79.144	TCP	54	2929 → 80 [ACK] Seq=1 Ack=1 Win=65536 Len=0
192.168.29.243	136.232.79.144	TCP	54	2930 → 80 [ACK] Seq=1 Ack=1 Win=65536 Len=0
136.232.79.144	192.168.29.243	TCP	54	80 → 2929 [ACK] Seq=1 Ack=584 Win=30464 Len=0
136.232.79.144	192.168.29.243	TCP	1514	80 → 2929 [ACK] Seq=1 Ack=584 Win=30464 Len=1460 [TC
136.232.79.144	192.168.29.243	TCP	1514	80 → 2929 [ACK] Seq=1461 Ack=584 Win=30464 Len=1460

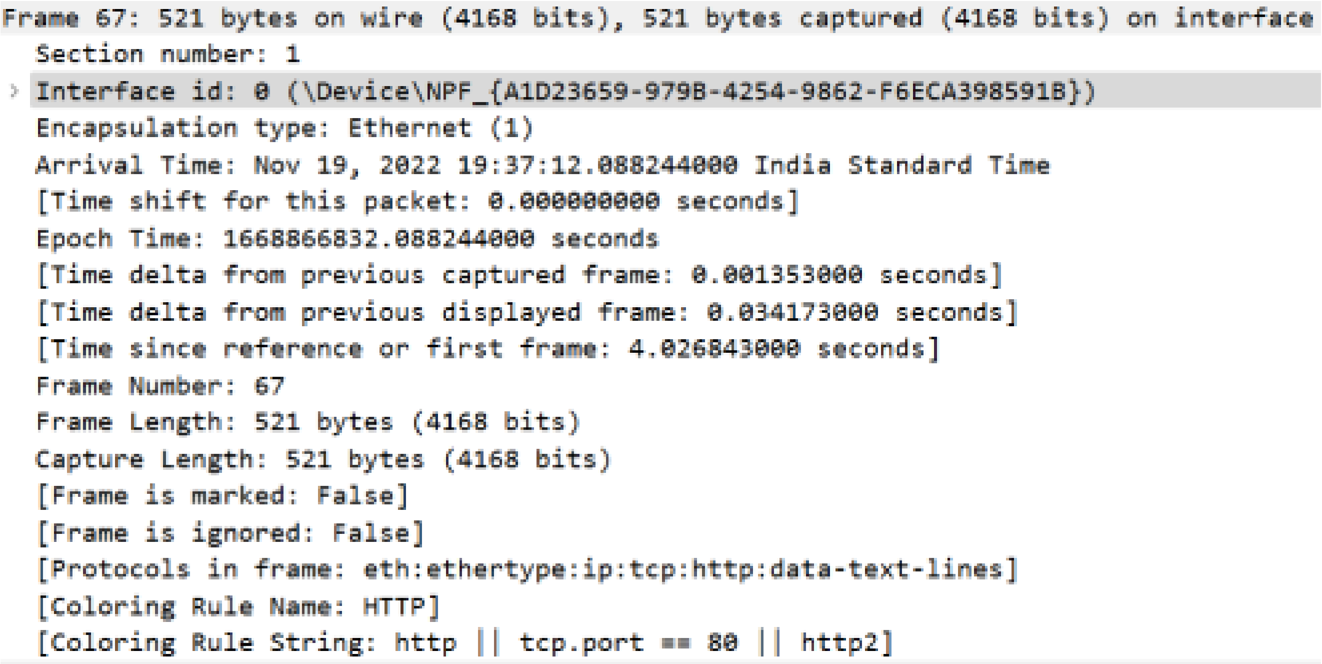
DNS:



Source	Destination	Protocol	Length	Info
2405:201:8012:…	2405:201:8012:…	DNS	91	Standard query 0xbac4 A cssdeck.com
2405:201:8012:…	2405:201:8012:…	DNS	91	Standard query 0x6383 AAAA cssdeck.com
2405:201:8012:…	2405:201:8012:…	DNS	91	Standard query 0x188a HTTPS cssdeck.com
2405:201:8012:…	2405:201:8012:…	DNS	123	Standard query response 0xbac4 A cssdeck.com A 172.67.162.
2405:201:8012:…	2405:201:8012:…	DNS	119	Standard query response 0x6383 AAAA cssdeck.com AAAA 2606:
2405:201:8012:…	2405:201:8012:…	DNS	142	Standard query response 0x188a HTTPS cssdeck.com HTTPS
2405:201:8012:…	2405:201:8012:…	DNS	98	Standard query 0x4ae8 A www.jaduniv.edu.in
2405:201:8012:…	2405:201:8012:…	DNS	98	Standard query 0xdb05 AAAA www.jaduniv.edu.in
2405:201:8012:…	2405:201:8012:…	DNS	98	Standard query 0x0e9c HTTPS www.jaduniv.edu.in
2405:201:8012:…	2405:201:8012:…	DNS	114	Standard query response 0x4ae8 A www.jaduniv.edu.in A 136.
2405:201:8012:…	2405:201:8012:…	DNS	169	Standard query response 0xdb05 AAAA www.jaduniv.edu.in SOA
2405:201:8012:…	2405:201:8012:…	DNS	169	Standard query response 0x0e9c HTTPS www.jaduniv.edu.in SC
2405:201:8012:…	2405:201:8012:…	DNS	109	Standard query 0xaf2e A d27xxe7juh1us6.cloudfront.net
2405:201:8012:…	2405:201:8012:…	DNS	109	Standard query 0xe864 AAAA d27xxe7juh1us6.cloudfront.net
2405:201:8012:…	2405:201:8012:…	DNS	109	Standard query 0x76f8 HTTPS d27xxe7juh1us6.cloudfront.net
2405:201:8012:…	2405:201:8012:…	DNS	189	Standard query response 0xe864 AAAA d27xxe7juh1us6.cloudfr
2405:201:8012:…	2405:201:8012:…	DNS	189	Standard query response 0x76f8 HTTPS d27xxe7juh1us6.cloudf
2405:201:8012:…	2405:201:8012:…	DNS	173	Standard query response 0xaf2e A d27xxe7juh1us6.cloudfront

Q6. Search through your capture, and find an HTTP packet coming back from the server (TCP Source Port == 80). Expand the Ethernet layer in the Packet Details Panel.

On expanding the packet in the Packet Details Panel, the following results are obtained:



```
Frame 67: 521 bytes on wire (4168 bits), 521 bytes captured (4168 bits) on interface
    Section number: 1
  > Interface id: 0 (\Device\NPF_{A1D23659-979B-4254-9862-F6ECA398591B})
    Encapsulation type: Ethernet (1)
    Arrival Time: Nov 19, 2022 19:37:12.088244000 India Standard Time
    [Time shift for this packet: 0.000000000 seconds]
    Epoch Time: 1668866832.088244000 seconds
    [Time delta from previous captured frame: 0.001353000 seconds]
    [Time delta from previous displayed frame: 0.034173000 seconds]
    [Time since reference or first frame: 4.026843000 seconds]
    Frame Number: 67
    Frame Length: 521 bytes (4168 bits)
    Capture Length: 521 bytes (4168 bits)
    [Frame is marked: False]
    [Frame is ignored: False]
    [Protocols in frame: eth:ethertype:ip:tcp:http:data-text-lines]
    [Coloring Rule Name: HTTP]
    [Coloring Rule String: http || tcp.port == 80 || http2]
```

Q7) What are the manufacturers of your PC's Network Interface Card (NIC), and the servers NIC?

Ans:

Manufacturer's NIC: Apple, Inc. (74:a6:cd:99:55:f8)

Server's NIC: Serverco_62:88:2f (b4:a7:c6:62:88:2f)

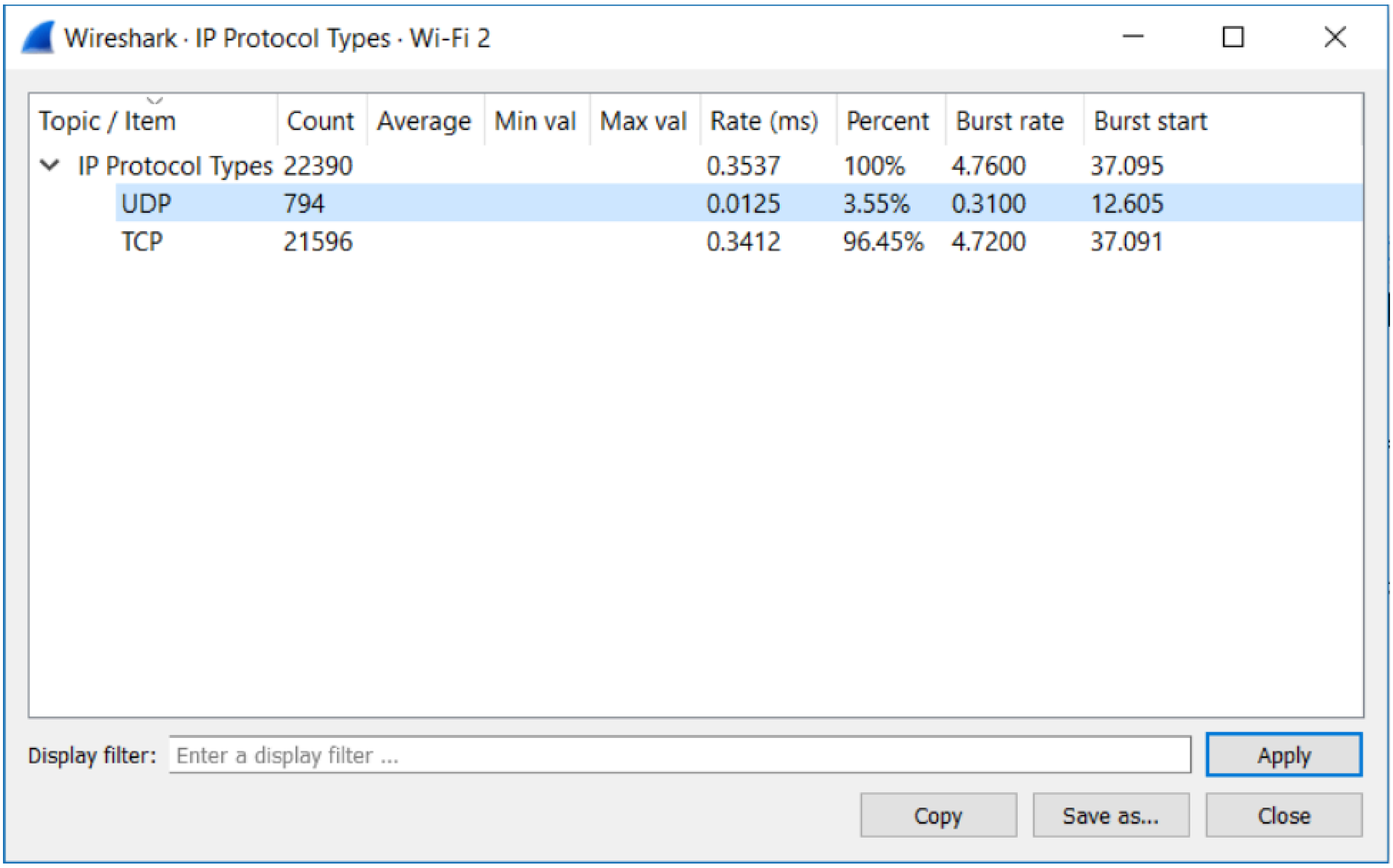
Q8) What are the Hex values (shown in the raw bytes panel) of the two NICS Manufacturers OUIs?

Ans:

For Laptop's Manufacturer :74:a6:cd:99:55:f8

For server's Manufacturer :- b4:a7:c6:62:88:2f

Q9)Find the following statistics:
a. What percentage of packets in your capture are TCP , and give an example of the higher level protocol which uses TCP?
b. What percentage of packets in your capture are UDP , and give an example of the higher level protocol which uses UDP?



Wireshark · IP Protocol Types · Wi-Fi 2

Topic / Item	Count	Average	Min val	Max val	Rate (ms)	Percent	Burst rate	Burst start
IP Protocol Types	22390				0.3537	100%	4.7600	37.095
UDP	794				0.0125	3.55%	0.3100	12.605
TCP	21596				0.3412	96.45%	4.7200	37.091

Display filter: Enter a display filter ...

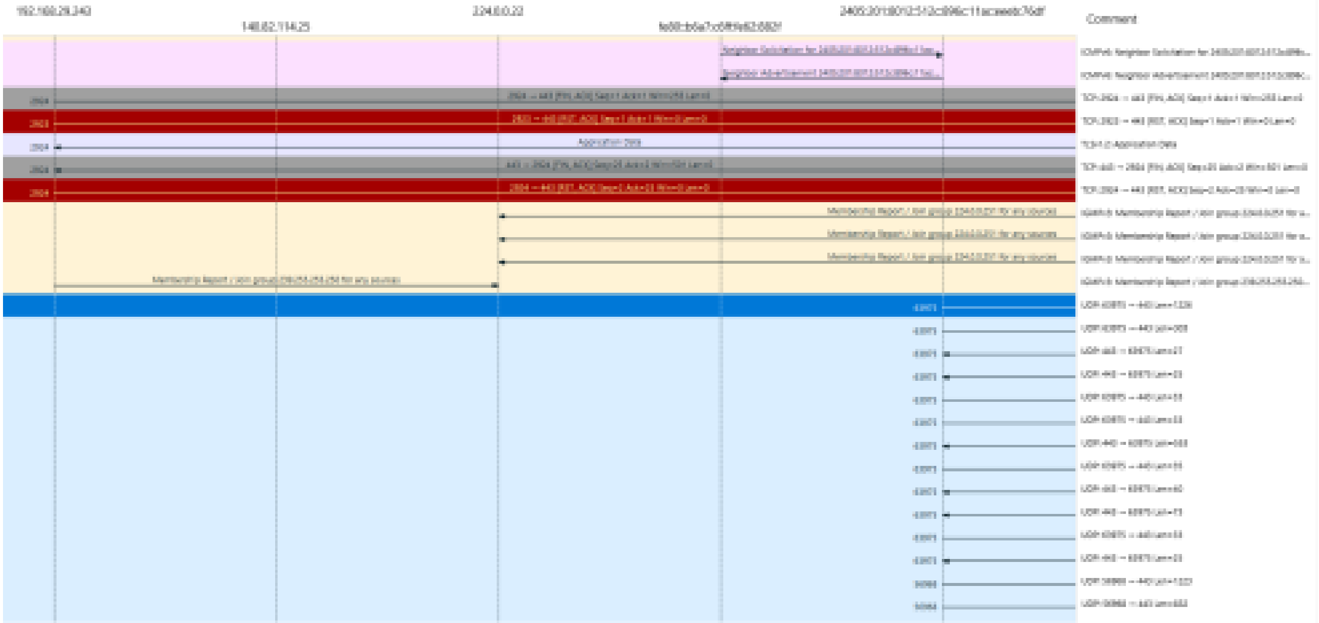
HTTP/S (Hypertext Transfer Protocol / Secure) is the protocol that powers the World Wide Web and uses TCP. When we load a website, our browser uses HTTP (running on top of TCP) to request the text, images, and other files from the server. TCP is used because it is reliable; it guarantees that all the website data arrives in the correct order, without any missing pieces, so the page can be assembled and displayed correctly.

Protocol Example: DNS (Domain Name System) is a common protocol that uses UDP when size of datagram is <512 bytes. When we type a website name (like google.com) into our browser, our computer sends a quick DNS query using UDP to a DNS server to find the corresponding IP address. UDP is used because it is fast. The request is very small, and speed is more important than perfect reliability. If the UDP packet is lost, the computer simply asks again.

Q10) Find the traffic flow Select the Statistics->Flow Graph menu option. Choose General Flow and Network Source options, and click the OK button.

Ans:

Graph Obtained from General Flow and network source option of flow graphs:


192.168.29.240
148.82.114.25
224.0.0.22
fe80::b6a7:c6ff:fe62:882f
2405:201:8012:512c:896c:11ac:eedc:76df
Comment

Conclusion

Through this experiment, I gained a clear understanding of how different network protocols interact and how packet analysis tools like *Wireshark* and *Packet Tracer* reveal the underlying communication between devices. Observing ICMP, TCP, HTTP, and DNS packets in real-time provided valuable insight into how data travels across networks and how protocol layers cooperate to ensure reliable connectivity and performance.