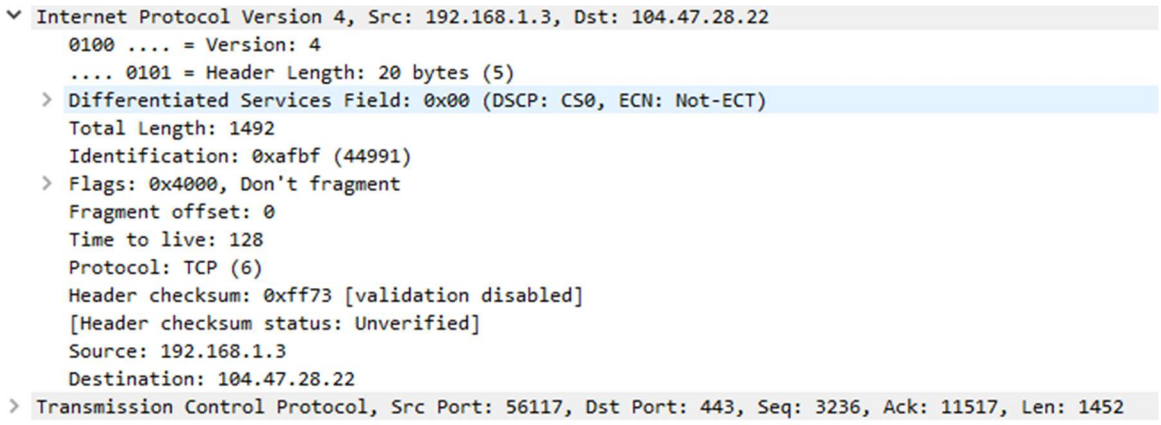
Question 1

TCP Header

Source Port		destination Port	
Sequence number			
Data Offset	Reserved	Flags	Window
Checksum		Urgent Pointer	
Data			



TCP Packet Captured with header above

Source Ip Address: 192.168.1.3 the address of the host that sent the packet.

Destination Ip Address: 104.47.28.22 the address of the receiver.

Version 4 is the ip protocol version.

Header length is the length of the header 20 out of 60 max bytes. Total length is the total length of the packet including the header of 20 bytes. Identification describes the packet, flag controls the fragmentation and it doesn't fragment here. The fragment offset describes if the packet is too big to take apart and put together here it's not.

Time to live describes the length of time it has to send and discards if longer than the TTL. TTL is 128

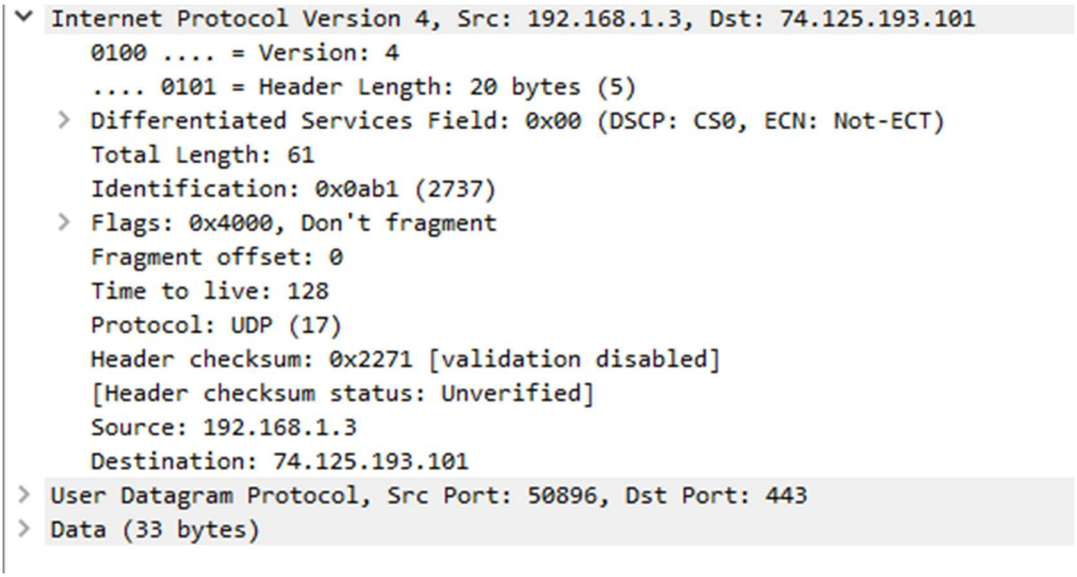
Protocol is the type the packet is and this is a TCP.

Header checksum checks the headers checksum and its unverified.

Question 2

UDP Pseudo Header

32-bit source IP Address		
32-bit destination IP Address		
zero	8-bit protocol (17)	16-bit UDP length
16-bit source port number		16-bit destination port number
16-bit UDP length		16-bit UDP checksum
Data		



UDP Packet Captured with header above

Source Ip Address: 192.168.1.3 the address of the host that sent the packet.

Destination Ip Address: 74.125.193.101 the address of the receiver.

Version 4 is the ip protocol version.

Header length is the length of the header 20 out of 60 max bytes. Total length is the total length of the packet including the header of 20 bytes.

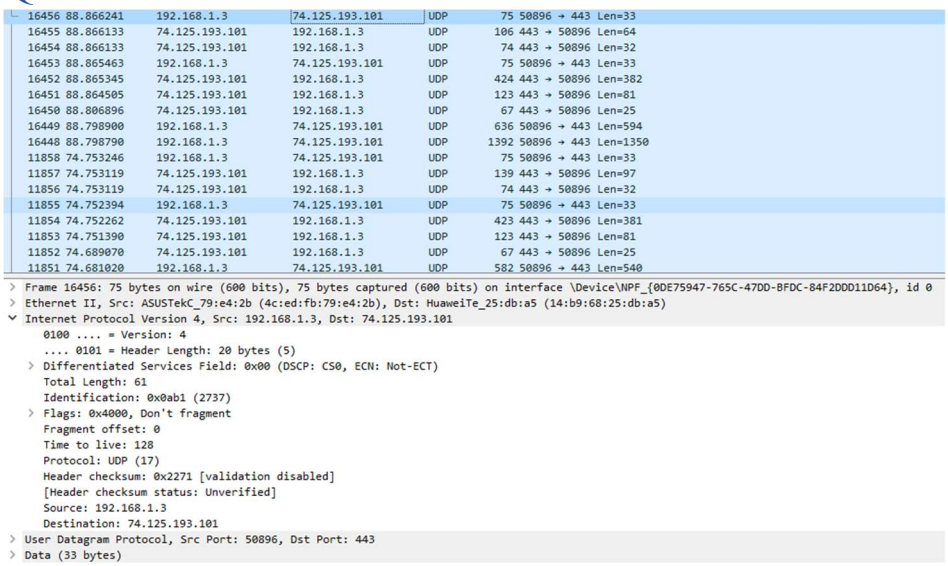
Identification describes the packet, flag controls the fragmentation and it doesn’t fragment here. The fragment offset describes if the packet is too big to take apart and put together here it’s not.

Time to live describes the length of time it has to send and discards if longer than the TTL. In this case 128

Protocol is the type the packet is and this is a UDP.

Header checksum checks the headers checksum and its unverified.

Question 3



```
16456 88.866241   192.168.1.3       74.125.193.101    UDP     75 50896 → 443 Len=33
16455 88.866133   74.125.193.101    192.168.1.3       UDP    106 443 → 50896 Len=64
16454 88.866133   74.125.193.101    192.168.1.3       UDP     74 443 → 50896 Len=32
16453 88.865463   192.168.1.3       74.125.193.101    UDP     75 50896 → 443 Len=33
16452 88.865345   74.125.193.101    192.168.1.3       UDP    424 443 → 50896 Len=382
16451 88.864505   74.125.193.101    192.168.1.3       UDP    123 443 → 50896 Len=81
16450 88.806896   74.125.193.101    192.168.1.3       UDP     67 443 → 50896 Len=25
16449 88.798900   192.168.1.3       74.125.193.101    UDP    636 50896 → 443 Len=594
16448 88.798790   192.168.1.3       74.125.193.101    UDP   1392 50896 → 443 Len=1350
11858 74.753246   192.168.1.3       74.125.193.101    UDP     75 50896 → 443 Len=33
11857 74.753119   74.125.193.101    192.168.1.3       UDP    139 443 → 50896 Len=97
11856 74.753119   74.125.193.101    192.168.1.3       UDP     74 443 → 50896 Len=32
11855 74.752394   192.168.1.3       74.125.193.101    UDP     75 50896 → 443 Len=33
11854 74.752262   74.125.193.101    192.168.1.3       UDP    423 443 → 50896 Len=381
11853 74.751390   74.125.193.101    192.168.1.3       UDP    123 443 → 50896 Len=81
11852 74.689070   74.125.193.101    192.168.1.3       UDP     67 443 → 50896 Len=25
11851 74.681020   192.168.1.3       74.125.193.101    UDP    582 50896 → 443 Len=540

> Frame 16456: 75 bytes on wire (600 bits), 75 bytes captured (600 bits) on interface \Device\NPF_{0DE75947-765C-47DD-BFDC-84F2DDD11D64}, id 0
> Ethernet II, Src: ASUSTekC_79:e4:2b (4c:ed:fb:79:e4:2b), Dst: HuaweiTe_25:db:a5 (14:b9:68:25:db:a5)
v Internet Protocol Version 4, Src: 192.168.1.3, Dst: 74.125.193.101
    0100 .... = Version: 4
    .... 0101 = Header Length: 20 bytes (5)
  > Differentiated Services Field: 0x00 (DSCP: CS0, ECN: Not-ECT)
    Total Length: 61
    Identification: 0x0ab1 (2737)
  > Flags: 0x4000, Don't fragment
    Fragment offset: 0
    Time to live: 128
    Protocol: UDP (17)
    Header checksum: 0x2271 [validation disabled]
    [Header checksum status: Unverified]
    Source: 192.168.1.3
    Destination: 74.125.193.101
> User Datagram Protocol, Src Port: 50896, Dst Port: 443
> Data (33 bytes)
```

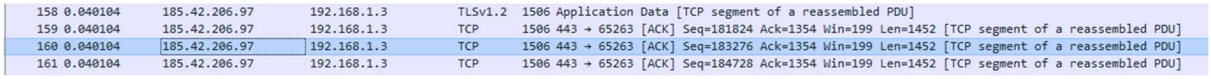
```
c0a8
0103
= C1AB
4a7d
= 10C28
c165
= 1CD8D
0011
= 1CD9E
c6d0
= 2946E
01bb
= 29629
0029
= 29652
1ada
= 2B12C
4735
= 2F861
c4dd
= 3BD3E
1110
= 3CE4E
930a
= 46158
c9c8
= 52B20
ab31
= 5D651
1380
= 5E9D1
f25e
= 6DC2F
789f
= 754CE
```

```
7c45
+ 7D113
3787
= 8089A
4bce
= 85486
6d5b
= 8C1E1
5c16
= 91DF7
168e
= 93485
0069
= 934EE
f08a
= A2578
0063
= A25DB

1010001001011101 1011
0101110110100010 0100
5da24
```

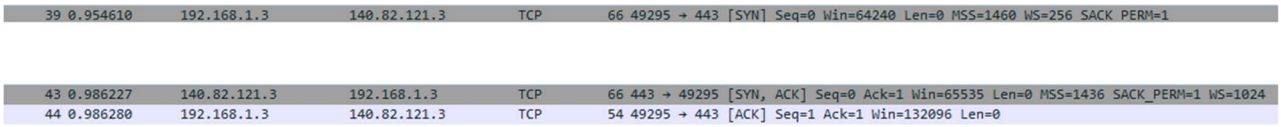
Addition of values and 16-bit ones complement Sum.

Question 4



The packet above uses the TCP. I'm not sure if this is a streaming packet but it came up a lot while I ran a stream on its own.

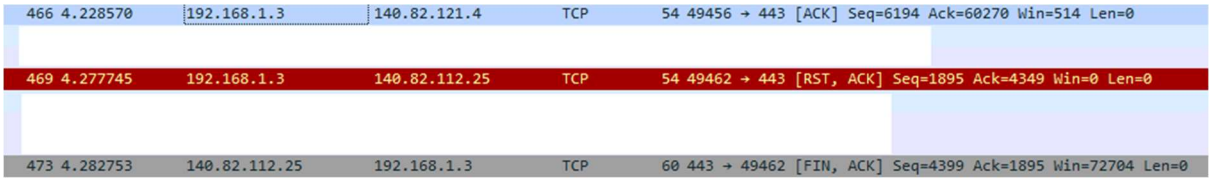
Question 5



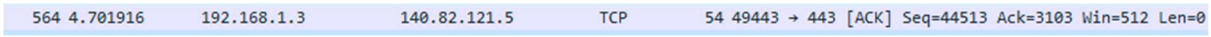
Segment with SYN sent to start a connection with server and the sequence number of it. Tells the server the client is about to communicate with it. Next will be the response from the server and this will be a SYN , ACK. These are the segment that was received and the sequence number.
The last part is the ACK and this establishes that a connection between the client and the server has occurred.

Question 6

Client sends FIN , ACK to state that the client wants to end the connection with the server



The server sends back a ACK and then sends a FIN , ACK to the client to start the close of the connection.



The final ACK is sent from the client to the server to make sure the connection has been closed

Bonus Question

What are the gateways in case of Tcp/ip?

(WisdomJobs.com, 2020) states its function is to provide connectivity between network segments and runs on a computer and is a type of software. It provides a translation and allows systems to communicate on a network.

What is a link in the case of Tcp/ip?

(WisdomJobs.com, 2020) states that this is how two devices are communicating together and include protocols and the cables used and its describes the connectivity between the two devices.

Reference

WisdomJobs.com 2020, *TCP/IP INTERVIEW QUESTIONS & ANSWERS,* WisdomJobs.com, viewed 3 November 2020,
< https://www.wisdomjobs.com/e-university/tcp-ip-interview-questions.html >