

Lab 5

Q1

TCP Header

Source Port		Dest Port	
Sequence Number			
Acknowledgement Num			
DO	RSV	Flags	Window
Checksum		Urgent Pointer	
Options			

Source Port : A 16 bit field that specifies the port number of the sender

Destination Port : A 16 bit field that specifies the port number of the receiver

Sequence Number : A sequence number is a 32 bit field that indicates how much data is sent during a TCP session.

Acknowledgement number : 32 bit field that's used by the receiver to request the next TCP package.

DO : indicates length of header, 4 bit data offset field

RSV : 3 bits for the reserved field. Unused and always set to 0.

Flags : 9 bits, used to establish connections, send data and terminate connections

Window: 16 bits, indicates how many bytes the receiver is willing to receive

Checksum: 16 bits used to checksum to check if TCP header is ok or not.

Urgent Pointer: 16 bits used when the URG bit has been sent. This is used to indicate where the urgent data ends.

Options: Optional field, can be 0-320 bits long

Q2

UDP Header

Source Port	Dest Port	} UDP Header
Length	Checksum	
Data		

Source Port - The port of the device sending the data

Destination Port - The port of the device receiving the data

Length - Specifies the number of bytes comprising the UDP header and UDP payload data

Checksum - allows the receiving data to check the integrity of the packet header and payload.

Q3

0x bcd14

10111011010100

0100001000101011

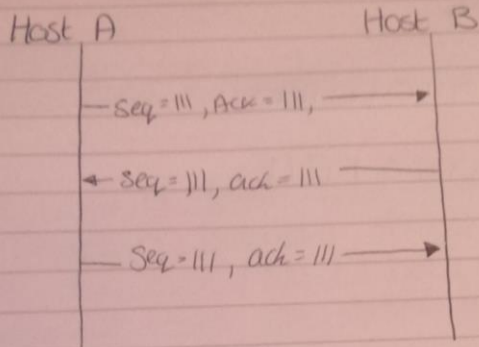
Q4

Streaming applications use both:

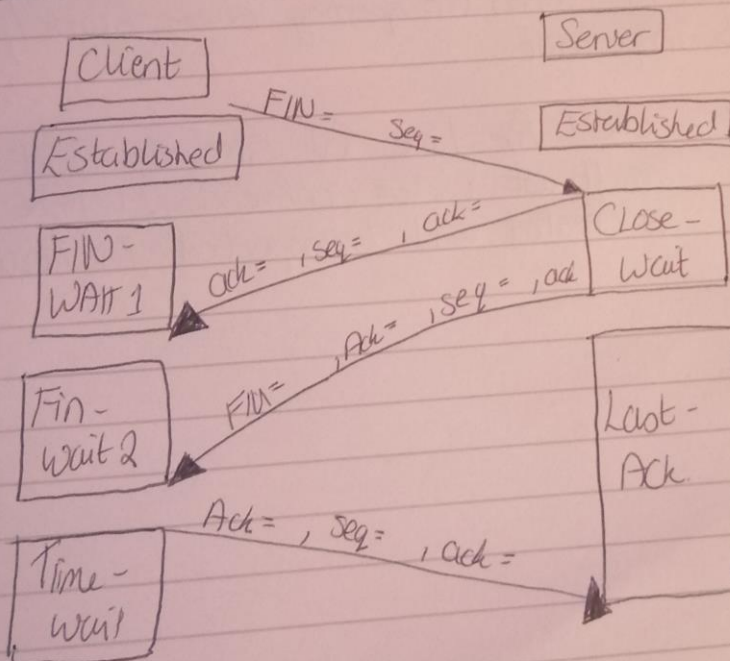
- TCP is used for non-real time communication and for when transporting every frame/packet is important.
- UDP - used for live TV streams and multicast video conferencing, where data is created and transported in real time.

~~Q5~~

Q5



Q6



Bonus

Question 1

How does TCP work?

Ans

TCP uses a three-way handshake to establish a connection between client and server. It uses SYN, ACK and FIN (1 bit) for connecting two endpoints. After the establishment of the connection, data is transferred sequentially. If there is any loss of packet, it retransmits data.

Question 2

Explain User Datagram Protocol (UDP).

Ans

- UDP is a connection-less protocol. If one data packet is lost during transmission, it will not send that packet again.
- This protocol is suitable where minor data loss is not a major issue.