

# Network Protocols

This lesson will look at **network protocols** - part of unit 5, networks

There are resources on Blue Square Thing

There is an assignment that should be live as well

# Networks - what we know...

- Networks link devices together
- Allow data and resource sharing
- 3 types - LAN, WAN, PAN (+WLAN)
- 2 topologies - bus and star
- 2 cable types - copper & fibre optic
- Switches, routers etc... as links

**DO NOT GOOGLE ANY  
ANSWERS**

**DO NOT COPY AND  
PASTE ANYTHING**

# Network Protocols

When we communicate we use a range of **protocols**

# Network Protocols

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# Network Protocols

Protocols will include things such as:

- the format of data packets
- the addressing system to be used
- the transmission speed
- any error-checking procedures to be used



# How networks work to transfer data

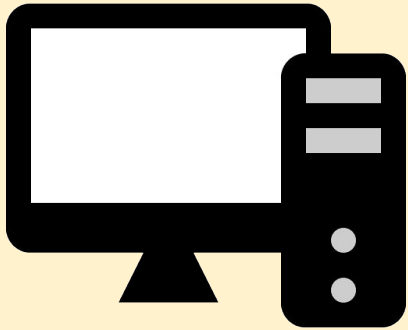
# Packet Switching

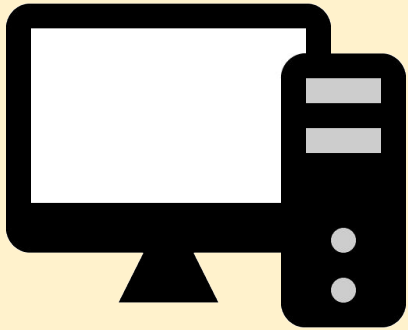
**Packet switching** uses two protocols, called TCP and IP, to break data into **packets** and route it to its destination.

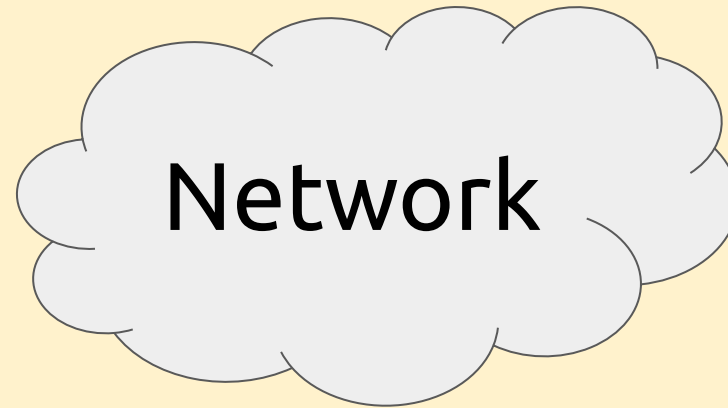
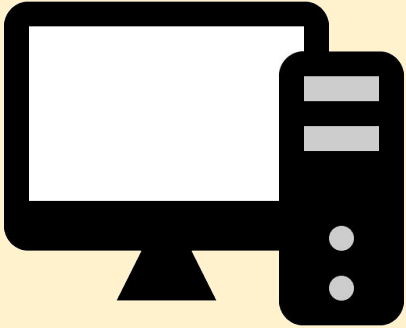
I want to send a 3MB file to someone...

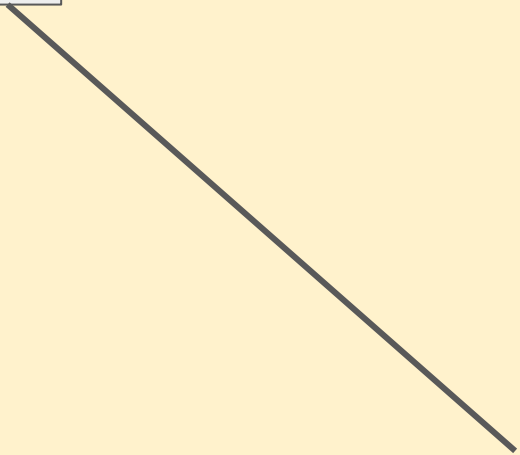
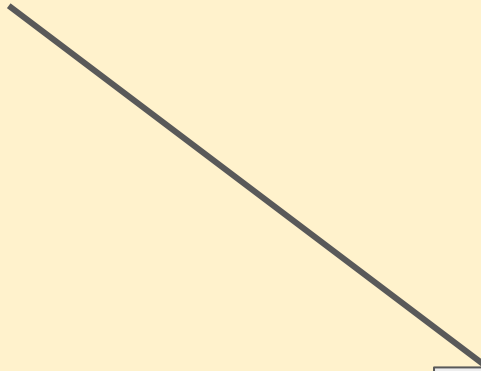
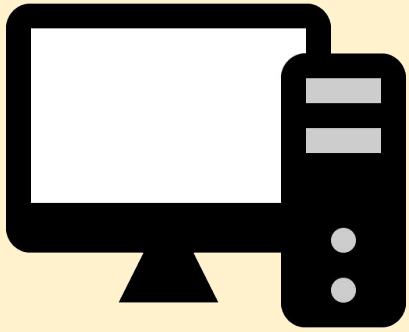
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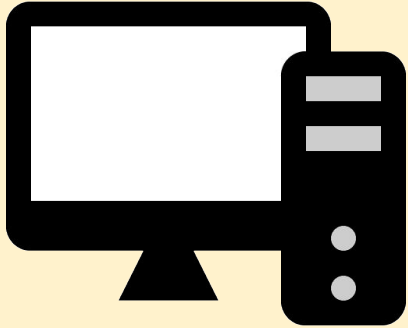
The file will be broken into packets of about 512 Bytes











The  
Internets

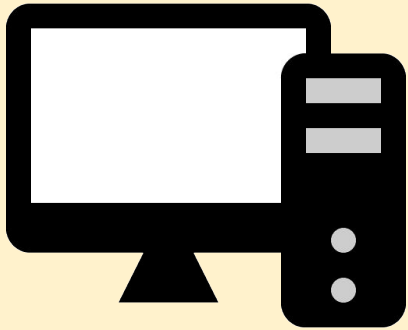




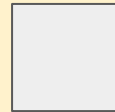
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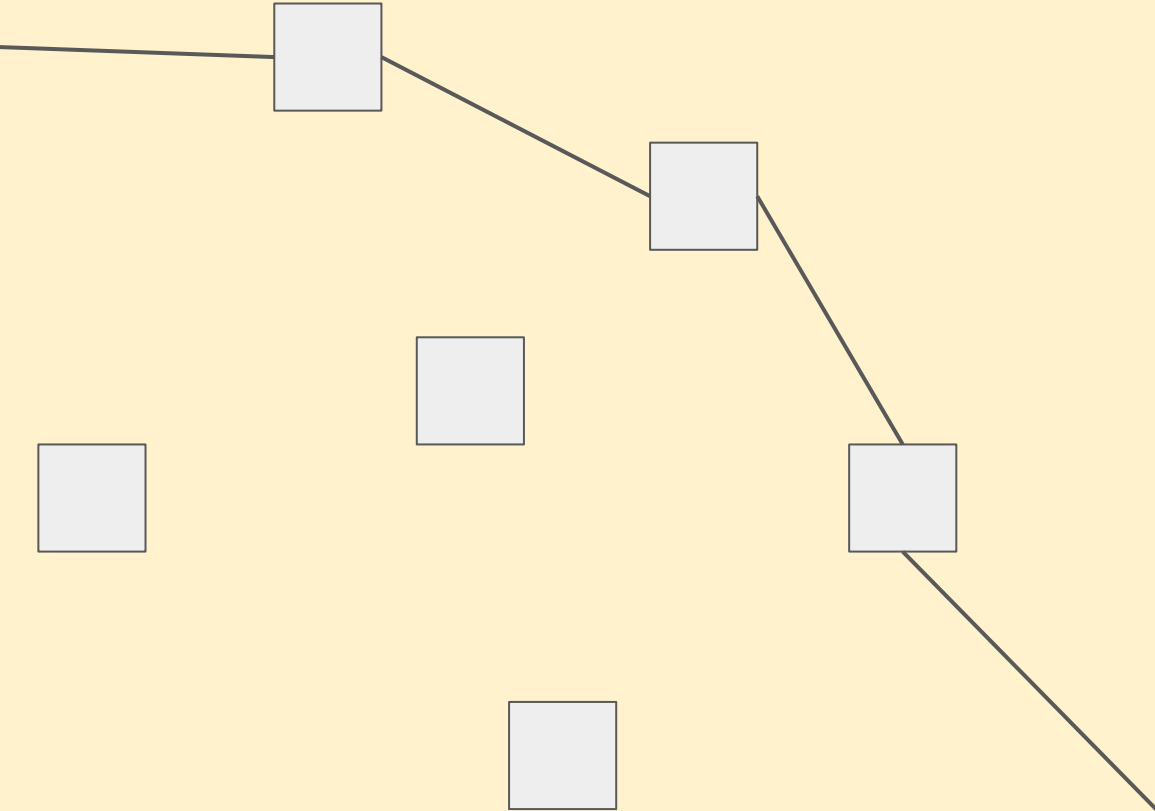
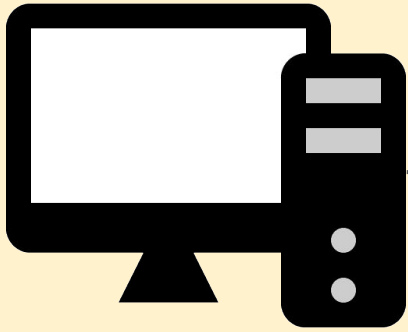
Each packet is then sent to the destination along whatever the best route for it is - avoiding congested routes where possible.

This could easily mean that different packets go via different routes.



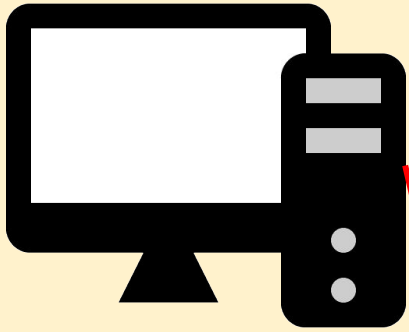
Servers



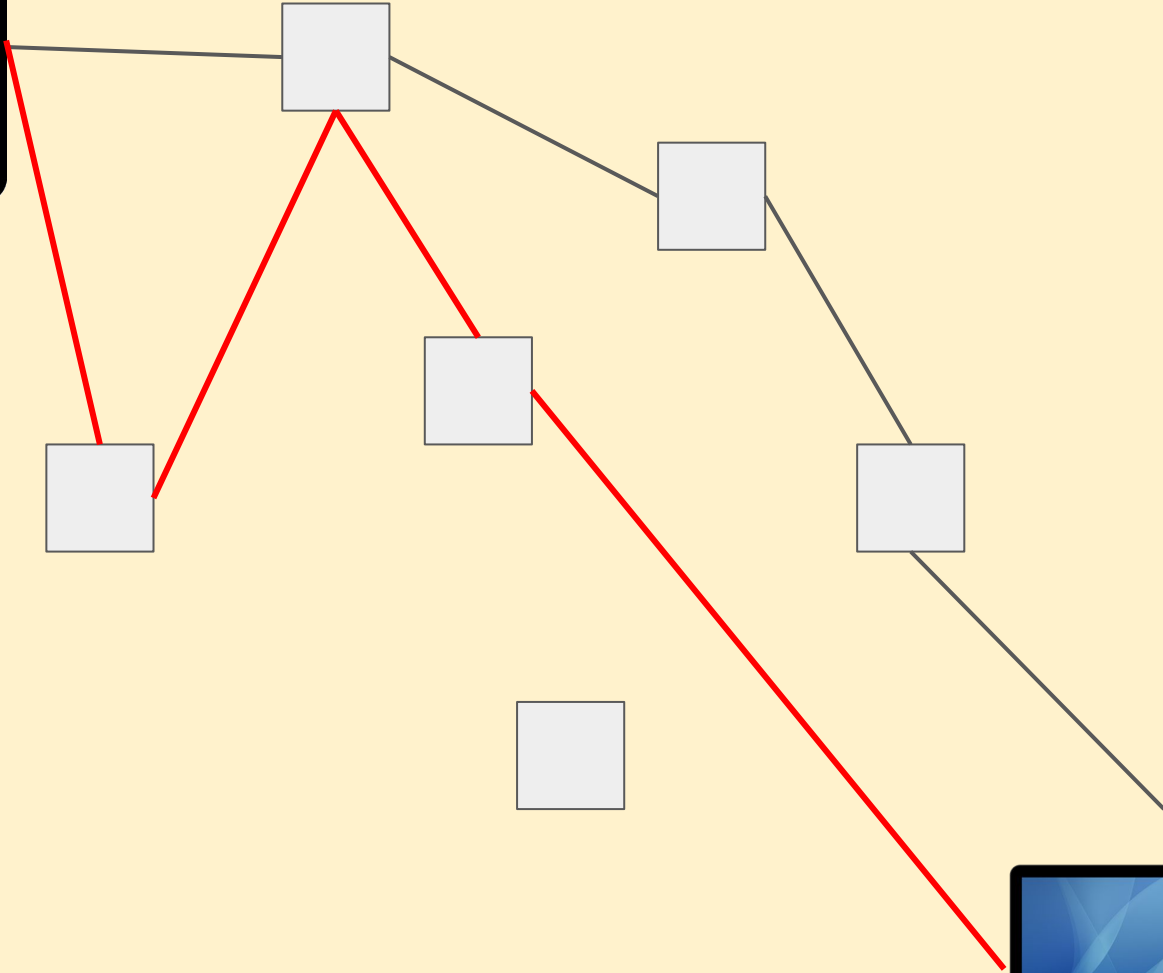


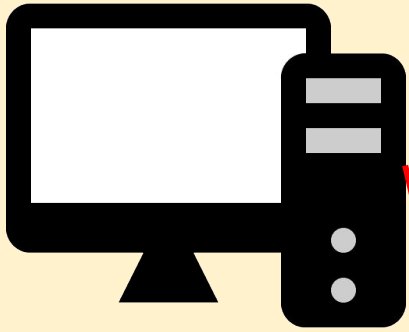
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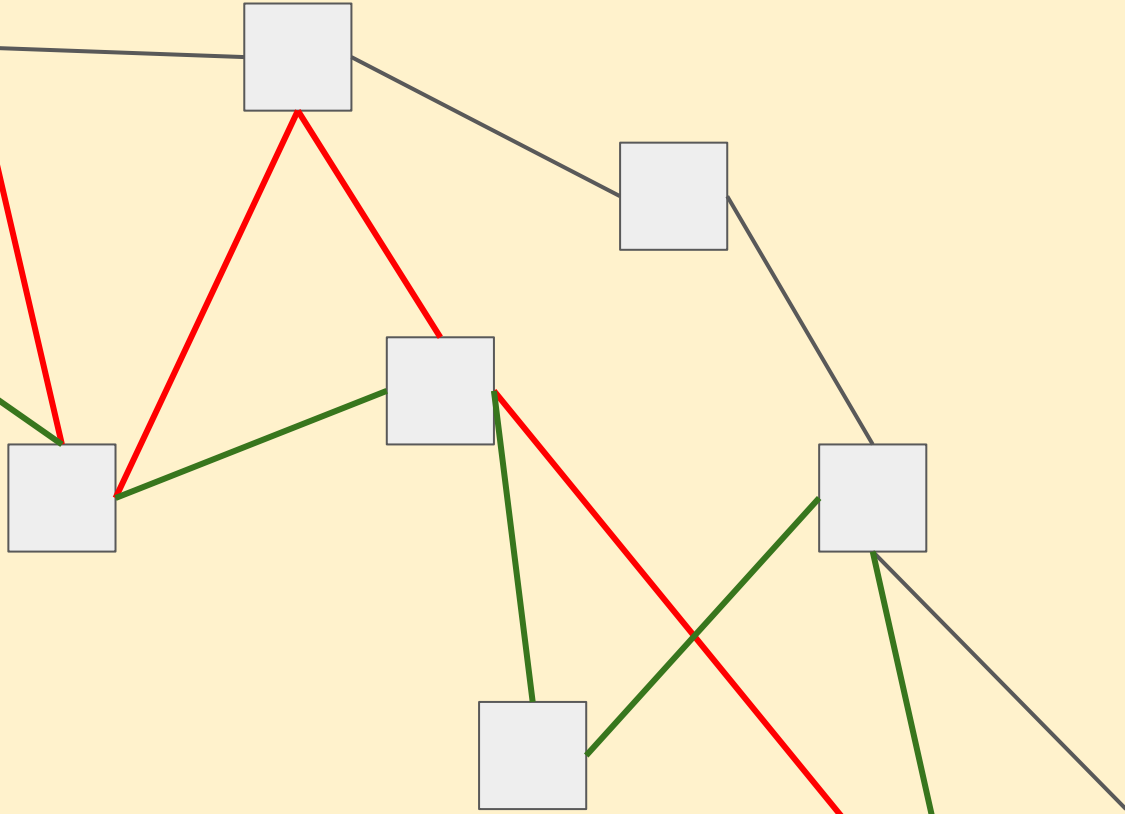


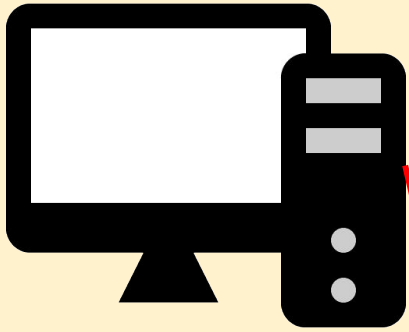
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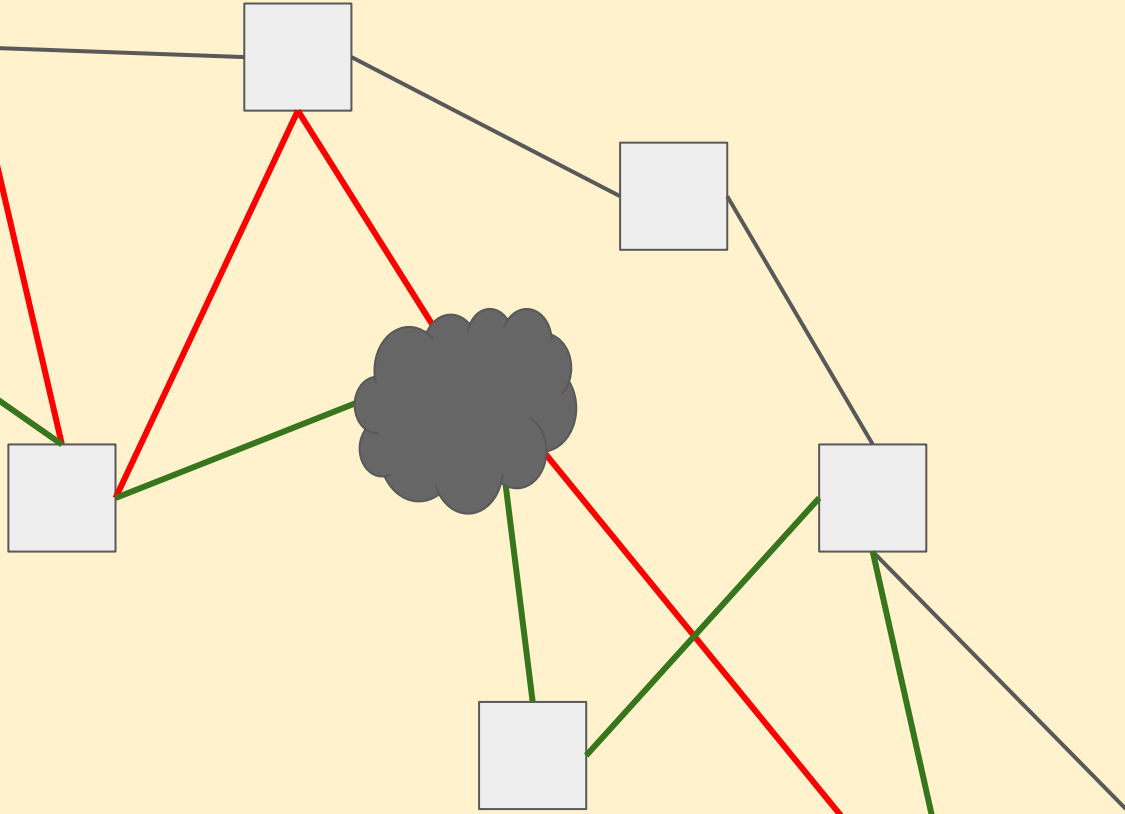


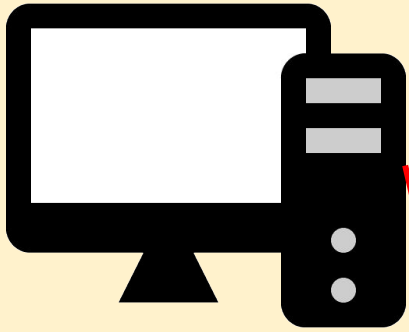
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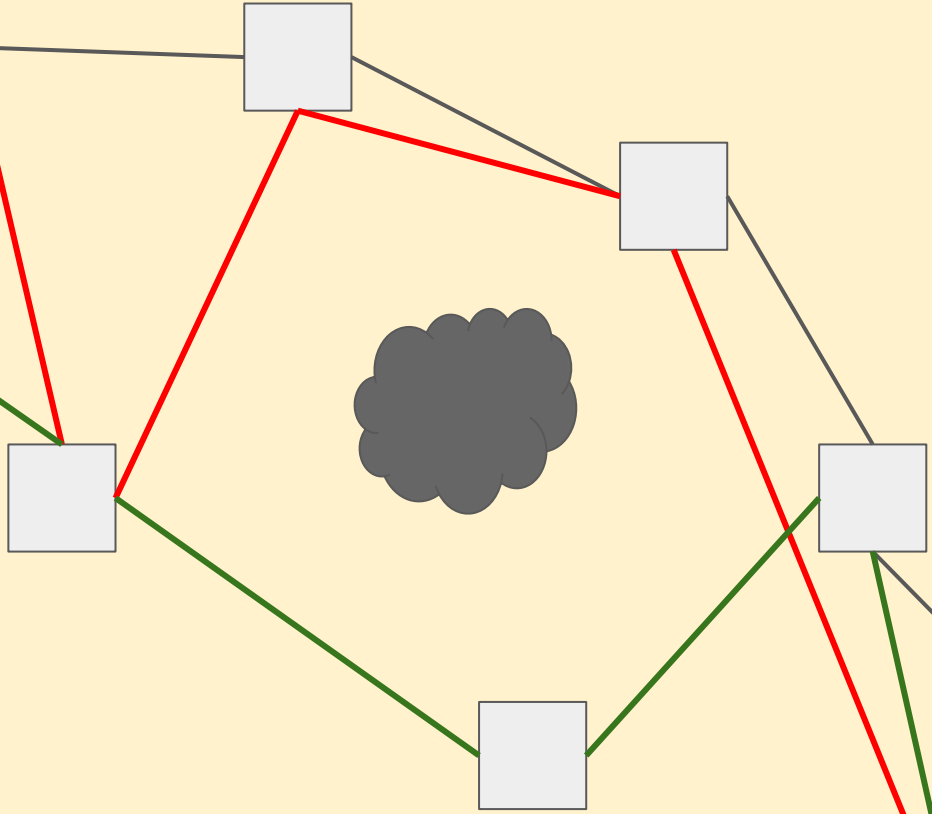


Servers





Servers



# Packet Switching

When the packet arrives at the destination the data starts to be put back together again using the information in the packet protocols (TCP and IP) to put them back together in the right order.

Checks are done for missing packets or missing data.

If errors are found, the receiving system asks for data to be sent again until it arrives



**The protocols you  
need to know**

# Network Protocols

Protocols to learn:

- HTTP
- HTTPS
- FTP
- SMTP
- IMAP
- TCP
- UDP
- IP
- Ethernet
- Wi-Fi

# Network Protocols

<b>Application layer</b>	where applications operate – e.g. web browser, e-mail software
<b>Transport layer</b>	sets up the communication by setting packet size, language etc
<b>Internet layer</b> (network layer)	addresses and packages data ready for transmission
<b>Link layer</b>	network hardware and device drivers – manages the actual connection to the network

**The work to do**

# Network Protocols

- a) Define the term network protocol (2 marks)
- b) There are 8 protocols and 2 protocol families you need to know
- c) Explain why data is normally broken down into packets or frames before it is transferred.
- d) Why do you think UDP is used rather than TCP to deal with VOIP in online games?
- e) Suggest why IPv6 saw the number of bits used to identify an IP address increase so much