

DATA TRANSMISSION

Internet is about sharing data. Therefore, it is important that the data hasn't been change during transmission.

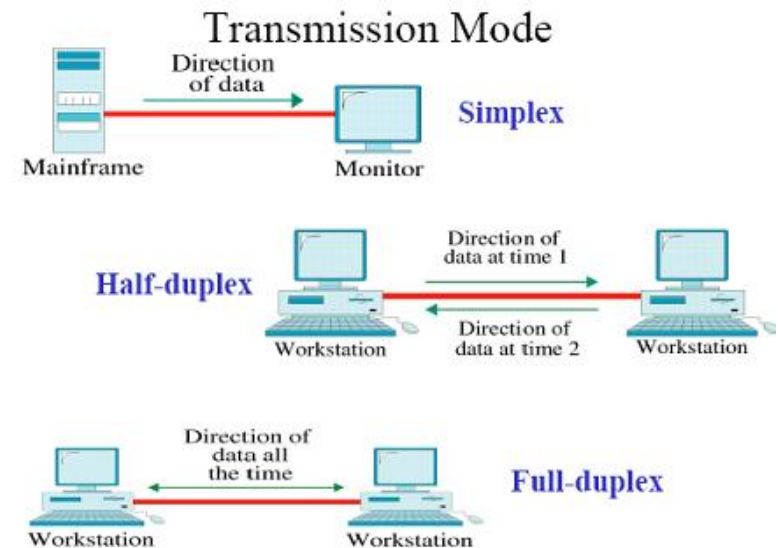
2 Factors about data transmission

- Direction of transmission
- Method of transmission



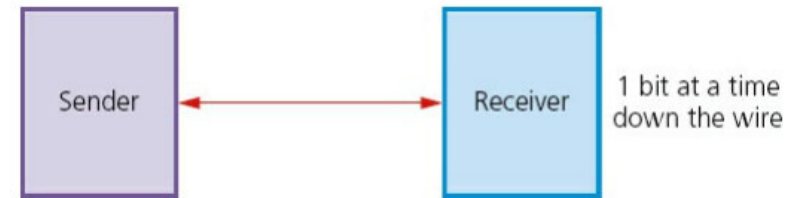
DIRECTION OF TRANSMISSION

- Simplex data transmission :
 - one direction only e.g. computers to printers
- Half-duplex data transmission :
 - both directions but not the same time e.g. walkie talkie
- Full-duplex data transmission :
 - both direction and at the same time e.g. phone call and internet data transmission.



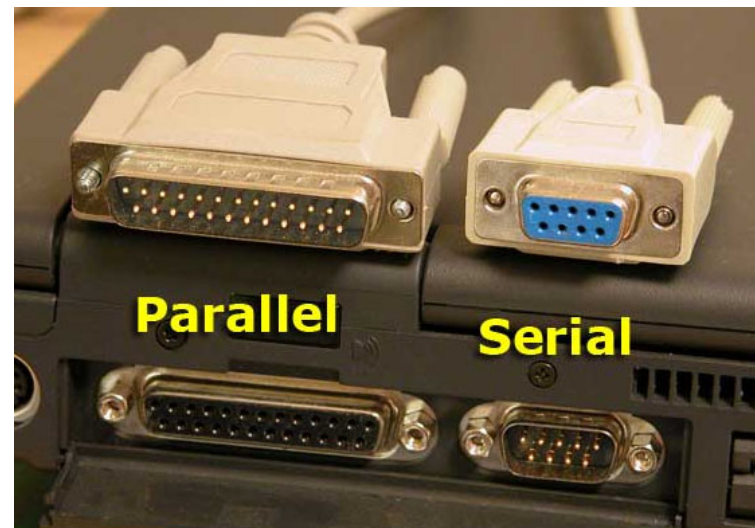
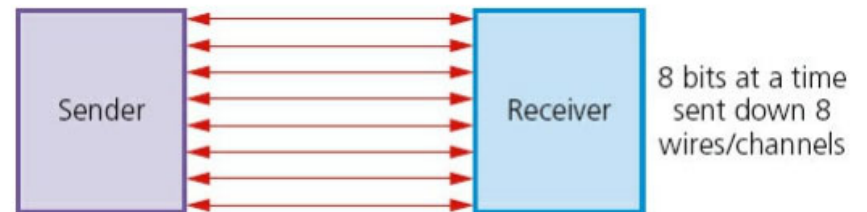
METHOD OF DATA TRANSMISSION

- Serial data transmission
 - data is sent one bit at a time over a single wire
 - works well over long distance because only one cable is used, thus, no data arrives destinations out of synchronisation
 - examples, computer to modem, PS/2



METHOD OF DATA TRANSMISSION

- Parallel data transmission
 - several bits of data are sent down over several wires at the same time
 - one wire is used to transmit each bit
 - works well over short distance (less than 20 meters) because sending bits might out of synchronisation if one bit doesn't arrive at the same time
 - examples, ribbon cable, internal computer component



METHOD OF DATA TRANSMISSION

Serial	Parallel
less risk of external interference than with parallel (due to fewer wires)	faster rate of data transmission than serial
more reliable transmission over longer distances	works well over shorter distances (for example, used in internal pathways on computer circuit boards)
transmitted bits won't have the risk of being skewed (that is, out of synchronisation)	since several channels/wires used to transmit data, the bits can arrive out of synchronisation (skewed)
used if the amount of data being sent is relatively small since transmission rate is slower than parallel (for example, USB uses this method of data transmission)	preferred method when speed is important
used to send data over long distances (for example, telephone lines)	if data is time-sensitive, parallel is the most appropriate transmission method
less expensive than parallel due to fewer hardware requirements	parallel ports require more hardware, making them more expensive to implement than serial ports
	easier to program input/output operations when parallel used

DIRECTION AND METHOD OF TRANSMISSION

Statement	true (✓)	false (✓)
Data is transmitted in one direction only, one bit at a time.		
Data is transmitted in both directions, multiple bits at a time.		
Data is transmitted in one direction only, multiple bits at a time.		
Data is transmitted in both directions, but only one direction at a time. Data is transmitted one bit at a time.		
Data is transmitted in both directions, but only one direction at a time. Data is transmitted multiple bits at a time.		

DIRECTION AND METHOD OF TRANSMISSION

- ❖ A file server is used as a central data store for a network of computers. James sends data from his computer to a file server that is approximately 200 metres away. It is important that the data is transmitted accurately. James needs to be able to read data from and write data to the file server at the same time.
- ❖ What method and direction of data transmission are needed in this example

USB (UNIVERSAL SERIAL BUS)

- Most common port on computers because:
 - it has become factory standard
 - its device is automatically detected, and appropriate driver is installed
 - it only fits in one way. Impossible to connect incorrectly
 - fast data transfer
 - newer USB standard are backward compatible with older standards

