

Topic 2: Data Transmission

Keyword sheet - Cambridge IGCSE Computer Science 0984. Tick each term once you can define it from memory.

Keyword	Definition	Know it?
Packet	A small unit of data split from a larger message for transmission over a network.	
Packet header	Start of a packet; contains the destination address, source address and the packet number.	
Payload	The actual data being carried by a packet.	
Packet trailer	End of a packet; signals the end and may include error-checking data.	
Packet switching	Method of transmission in which a message is split into packets that may take different routes and are reassembled in order at the destination.	
Router	Device that directs packets towards their destination, choosing routes using the header information.	
Serial transmission	Data sent one bit at a time over a single wire; reliable over long distances.	
Parallel transmission	Several bits sent simultaneously over multiple wires; fast over short distances but suffers from skew over longer ones.	
Simplex	Data travels in one direction only.	
Half-duplex	Data travels in both directions, but only one direction at a time.	
Full-duplex	Data travels in both directions simultaneously.	
USB (Universal Serial Bus)	Standard for connecting devices; uses serial transmission, is universally compatible, supports plug-and-play and provides power.	
Parity check	Error detection using an extra parity bit so the number of 1s in each byte is always odd (odd parity) or even (even parity). Cannot detect all errors, e.g. two bits changed.	
Parity block check	Parity applied to both rows and columns of a block of data so the exact position of a single-bit error can be found.	
Checksum	Value calculated from a block of data before transmission and recalculated after; a mismatch indicates an error.	
Echo check	Receiver sends the data back to the sender, who compares it with the original. A mismatch could arise from an error in either direction.	
Check digit	Digit calculated from the other digits of a code (e.g. ISBN, barcode) and appended, used to detect data entry errors.	
Automatic repeat query (ARQ)	Error control using acknowledgements and timeouts: if the receiver detects an error or no acknowledgement arrives, the data is retransmitted.	
Encryption	Converting plaintext into ciphertext using an algorithm and key so that intercepted data cannot be understood.	
Plaintext / ciphertext	Data before encryption / data after encryption.	
Symmetric encryption	Uses the same secret key to encrypt and decrypt; fast but the key must be shared securely.	

Keyword	Definition	Know it?
Asymmetric encryption	Uses a public key to encrypt and a mathematically linked private key to decrypt; removes the need to share a secret key.	