

Topic 3: Hardware

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

Keyword	Definition	Know it?
CPU	Central processing unit: processes instructions and data; contains the ALU, control unit and registers.	
ALU	Arithmetic logic unit: performs arithmetic and logical operations.	
Control unit (CU)	Coordinates the CPU by decoding instructions and sending control signals.	
Register	Small, extremely fast storage location inside the CPU.	
Program counter (PC)	Register holding the address of the next instruction to be fetched.	
MAR	Memory address register: holds the address of the memory location being read from or written to.	
MDR	Memory data register: holds data fetched from, or about to be written to, memory.	
Accumulator (ACC)	Register that holds the results of ALU calculations.	
Address / data / control bus	Buses that carry memory addresses (one way), data (two way) and control signals between components.	
Fetch-decode-execute cycle	The repeating process by which the CPU fetches an instruction from memory, decodes it and executes it.	
Von Neumann architecture	Design in which program instructions and data are stored together in main memory and processed sequentially.	
Core	An independent processing unit within a CPU; more cores allow more tasks to run in parallel.	
Cache	Small, fast memory close to the CPU holding frequently used instructions and data, reducing access time to RAM.	
Clock speed	Number of fetch-decode-execute cycles per second, measured in hertz; higher speed generally means faster processing.	
Embedded system	Computer built into a larger device and dedicated to a specific function, e.g. in a washing machine.	
Input device	Hardware that sends data to a computer, e.g. keyboard, scanner, microphone.	
Output device	Hardware that presents data from a computer, e.g. monitor, printer, speaker, actuator.	
Sensor	Input device that measures a physical property (e.g. temperature, light, pressure, motion) and converts it to data.	
RAM	Random access memory: volatile primary storage holding programs and data currently in use.	
ROM	Read-only memory: non-volatile primary storage holding the start-up (bootstrap) instructions.	
Volatile / non-volatile	Memory that loses its contents when power is removed / keeps its contents without power.	

Keyword	Definition	Know it?
Secondary storage	Non-volatile storage for long-term data retention; types: magnetic, optical, solid-state.	
Magnetic storage	Stores data as magnetised areas on spinning platters, e.g. hard disk drive; high capacity, low cost per GB.	
Optical storage	Stores data as pits and lands read by a laser, e.g. CD, DVD, Blu-ray.	
Solid-state storage (SSD)	Stores data in flash memory using electrical charge; no moving parts so fast, silent and durable.	
Virtual memory	Part of secondary storage used as an extension of RAM when RAM is full; much slower than RAM.	
Cloud storage	Storing data on remote servers accessed via the internet; offers accessibility and scalability but depends on connectivity and raises security concerns.	