

Computing Y10 – The CPU

Key terms

CPU	The central processing unit is computer hardware. It executes programs and manages all other hardware in the computer system.
Clock Speed	The number of instructions a processor can carry out each second.
Cores	A processing unit found inside the CPU. Multiple programs can work in parallel to each other.
Cache	Quick access memory inside the CPU. Generally comes in small quantities, as it is expensive to produce. Comes in levels, as the level becomes higher, access speed slows down.
Bus	Internal connection within the CPU used to transport specific types of data. The three types of bus used include address, data and control.
Control Unit (CU)	The control unit coordinates the activities taking place in the CPU. It may be used to execute instructions, decode instructions and controls the clock speed of the processor.
Arithmetic Logic Unit (ALU)	Does all of the calculations (addition, subtraction, comparison of numbers, etc.) and logic operations (AND, OR, NOT, etc)
Registers	Temporarily holds tiny bits of data needed by the CPU, and are much faster than any other form of memory. Registers are referred to by an address number.
Von Neumann Architecture	In the 1940s John Von Neumann developed the concept of storing a program which can be run on a computer. This architecture is still used when designing and creating computers today.
Fetch-Decode-Execute Cycle	The cycle used to fetch instructions from main memory, load relevant data, decode the instruction and fully execute the instruction repeats to complete a program.
Embedded System	A device, which does not need an operating system and performs a specific task. Such as a dishwasher interface.

Special-purpose Registers

Memory Address Register (MAR)	Holds the address of the instruction or data to be fetched or stored.
Memory Data Register (MDR)	Holds actual data or an instruction that is fetched from or waiting to be written to memory.
Accumulator	Special purpose fast access memory location within the CPU where the ALU stores results.
Program Counter (PC)	Holds the memory address of the next instruction to be processed.
Current Instruction Register(CIR)	Holds the current instruction to be executed which has been fetched from memory and is temporarily held in the MDR before being copied to the CIR.

