7. What is the purpose of the CPU

> *The purpose of the CPU is to process data*

Immediate Access Store

- Immediate Access Store is where the CPU holds all the data and programs that it is currently using

Arithmetic and logic unit

- ALU is where the CPU performs the arithmetic and logic operations

CPU Speed

> *A computer's speed is heavily influenced by the CPU*

The main factors that affect the CPU speed are:

1. Clock speed
2. Cores
3. Cache

Clock Speed

> *CPUs can only carry out one instruction at a time, the speed at which the CPU can carry out instructions is called the clock speed.*

- Clock Speeds are controlled by a clock
- Every tick of the clock the CPU fetches and executes one instruction
- Clock speeds are measured in cycles per second
- One cycle per second is known as 1 hertz (1hz)

Cores

> *CPUs traditionally made up of a processor with a single core. Now most modern CPUs have two, four, or more cores.*

- A CPU with **two cores** is called a *dual processor*
- A dual processor can fetch and execute two instructions at the same time it takes a single core to fetch and execute just one instruction.

Cache

> *A cache is a tiny block of memory built right onto the processor where the most commonly used instructions and data are stored so that they are close at hand.*

- Bigger the cache, the quickly the most used instructions and data can be brought into the process and used.

Fetch-Execute cycle

> *Basic operation of a computer is called a "fetch-execute" cycle*

1. The CPU fetches instructions one at a time from the main memory into the registers. One register is the program counter (PC). The PC holds the memory address of the next instructions to be fetched from the main memory.
2. The CPU decodes the instruction
3. The CPU executes the instruction
4. Repeat until there are no instructions.

Highly Recommended Watch: (25) The Fetch-Execute Cycle: What's Your Computer Actually Doing? - YouTube