

The CPU

Key Words

bus	A channel of communication used to transport data and instructions in the CPU.
cache memory	Very fast memory, on, or very close to the CPU, stores frequently used instructions
clock	A component of the CPU that sends out regular pulses. Its job is to synchronise the computer's hardware components.
core	A processing unit within a CPU. CPUs can have multiple cores.
CPU / processor	Central Processing Unit, the main component in a computer for processing data and instructions
data	Units of information. In computing there can be different data types, including integers, characters and Boolean. Data is often acted on by instructions.
instruction	A single action that can be performed by a CPU.
Random Access Memory (RAM)	Memory that stores the currently running instructions and data for the CPU.
registers	Locations of computer memory within the processor that provide extremely fast access.
simultaneous	Carrying out multiple actions at the same time.

Fetch-Decode-Execute Cycle

FETCH

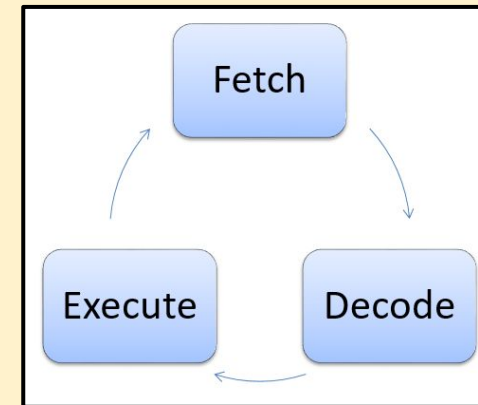
- Retrieves the next instruction and associated data to be fetched from main memory

DECODE

- Interprets the instruction, decodes it.

EXECUTE

- Performs the instruction, it executes it.



CPU Components

Arithmetic Logic Unit (ALU)

- Part of a CPU that carries out the arithmetic and logic operations of a computer instruction.

Control Unit (CU)

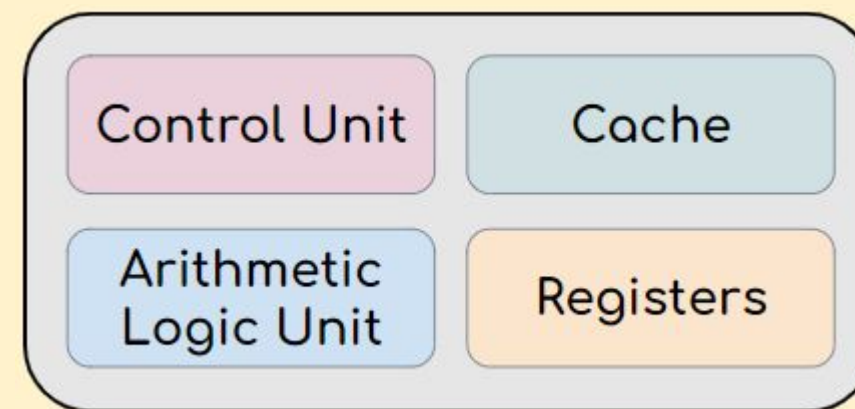
- Part of a CPU that controls the flow of data within the system and to decode instructions.

Cache

- Small temporary volatile memory, stores frequently used instructions. quicker for CPU to access than main memory.

Registers

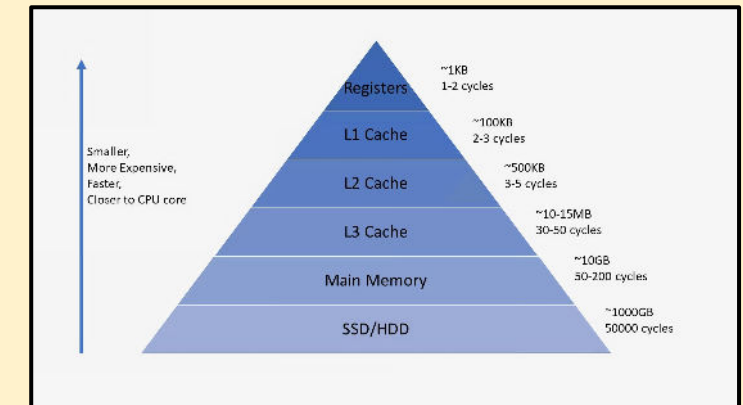
- Locations of computer memory within the processor that provide extremely fast access.



CPU Performance

Cache

- Very fast memory, on, or very close to the CPU, stores frequently used instructions
- The holding area for data from the RAM - stores frequently used instructions.
- More cache then the better the performance. WHY? The more cache the CPU has the less time is spent accessing memory (RAM) this means it can retrieve instructions quicker and programs can run faster.



Cores

- Number of independent processors within the CPU.
- Multiple Instructions able to be processed simultaneously in the same cycle.
- The more cores the quicker the performance - WHY? Quad Core = 4 cores. Can perform 4 instructions at same time in same cycle so more cycles/instructions are being processed per second

Clock Speed

- Clock Speed (measured in Hertz)
- Represents the number of instructions the CPU can process in a given time.
- The higher the clock speed the faster the CPU will run, WHY? - Because it will be doing more Fetch-Decode and Execute cycles per second which means more instructions are being processed.
- A CPU with 3 GHz can run 3 billion cycles per second

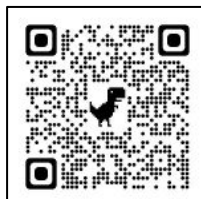
Quizizz



Extended Reading



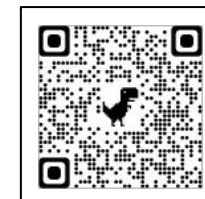
Exam Questions



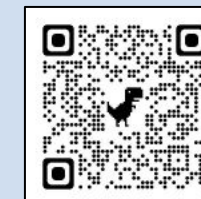
Video



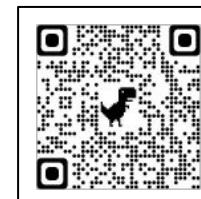
Revision Techniques



Quizlet



Specification



BOHUNT
EDUCATION TRUST