CPU Performance

# Clock speed

A CPU’s clock speed is the rate in which it completes a processing cycle. It is usually measured in megahertz (MHz) and gigahertz (GHz). A singular megahertz is 1 million cycles per second, while a gigahertz is 1 billion cycles per second. A lower clock speed usually results in a slower CPU, depending on the architecture.

# Amount of cores

A CPU core is an independent processing unit on a CPU. They can run a singular operation each, but allow a single processor to do more at once (Multi-Threading). A singular core can run multiple instructions at one time if there is more than one core.

# Cache size

All modern CPUs have multiple levels of Caches. Important information for the CPU is stored here, as it faster to access cache then information on the main hard drive. A bigger cache size means that a CPU can store more temporary data, allowing for more information to be accessed quickly and effectively. They are generally sized in powers of 2

# Cache type

An L1 cache is a type of cache where there is generally a small cache size, but data can be accessed very quickly. Upon an initial cache miss (where data is not found in the cache), another type of cache (L2) is checked. This is a much larger cache, with a higher file size, albeit a slower speed. This pattern continues throughout the L3, L4 (if it exists) and finally, the DRAM (main memory). This means that the CPU has a wider range of collectable results, and rarely has to check the DRAM.

# Fetch-Execute cycle

The Fetch-Execute cycle, also known as a CPU instruction cycle is the process all machines need to go through, it is the most basic and most essential operation a computer needs to carry out. The CPU fetches an instruction from a program on the computer, decodes the instructions from OS-level code. Then, the address is read and the interpreted instruction is carried out.