Project:
Theme:«The central processing unit»

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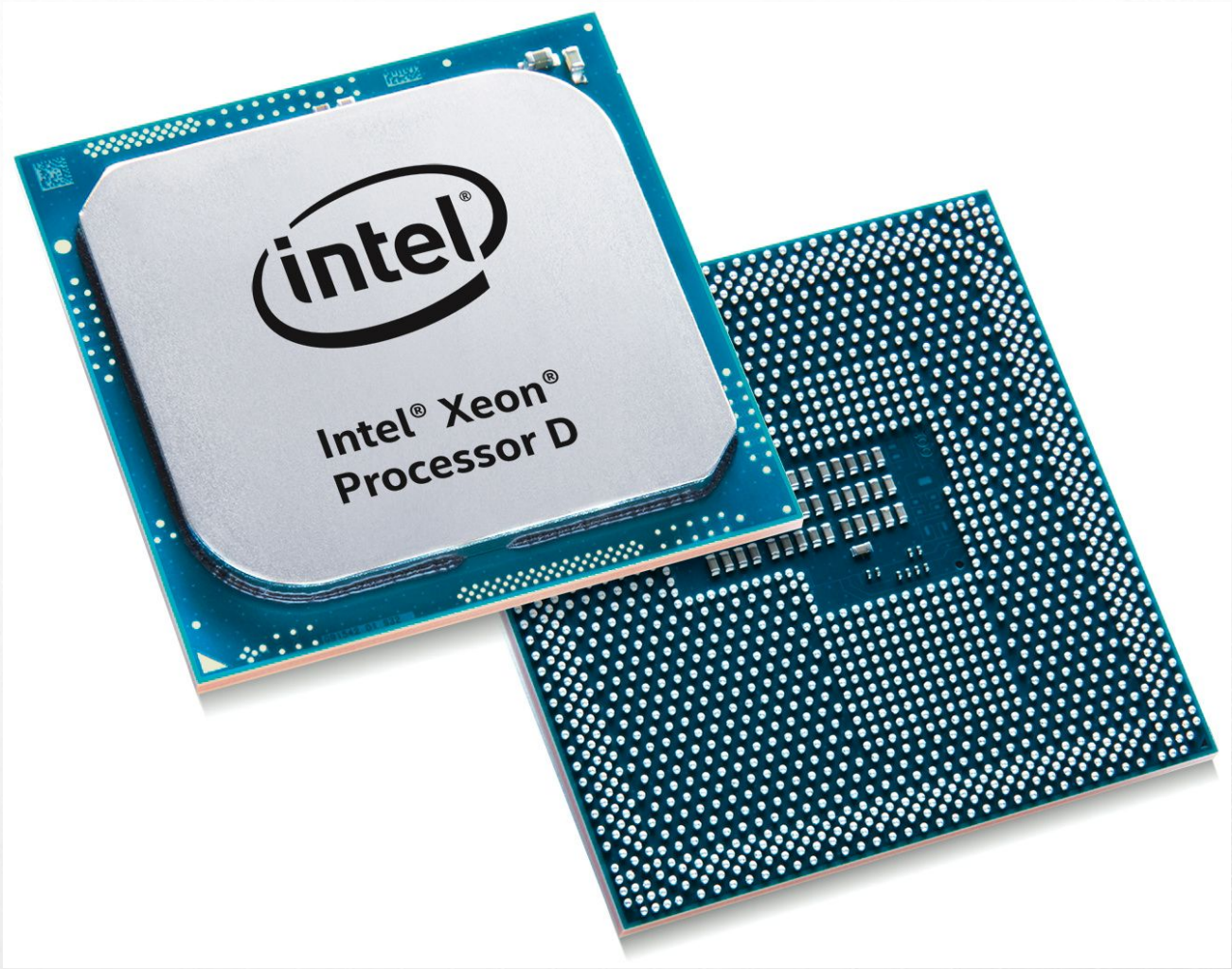
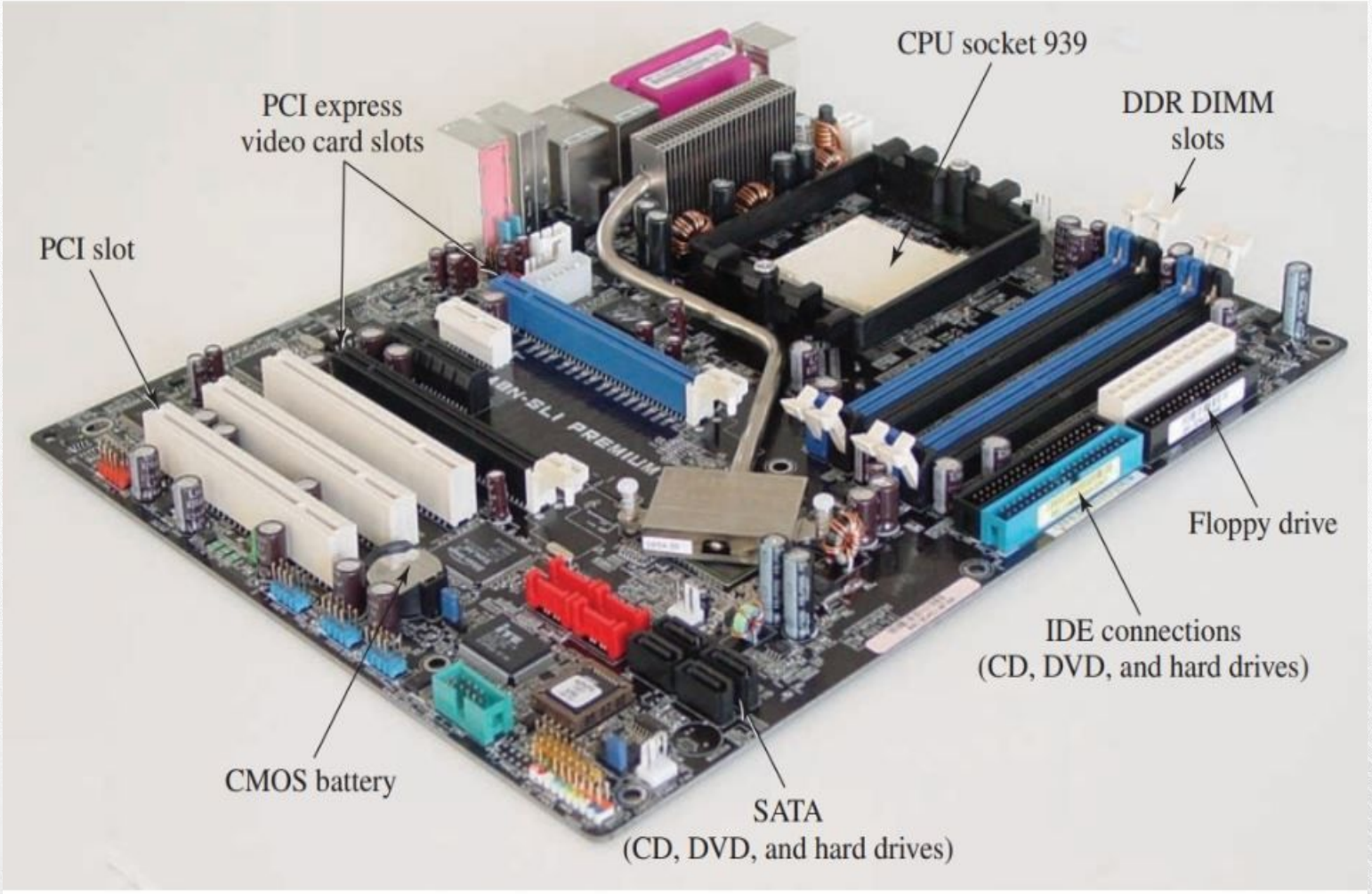
What is the CPU?

The central processing unit (also referred to as a central processor or CPU) is a main hardware component of any digital computer.
The CPU is like the "brain" of the computer - every instruction, no matter how simple, has to go through the CPU.



The CPU attaches directly to a CPU "socket" (or sometimes a "slot") on the motherboard. The CPU is inserted into the socket pin-side-down, and a small lever helps to secure the processor. The CPU socket is specific for a certain type of processor.



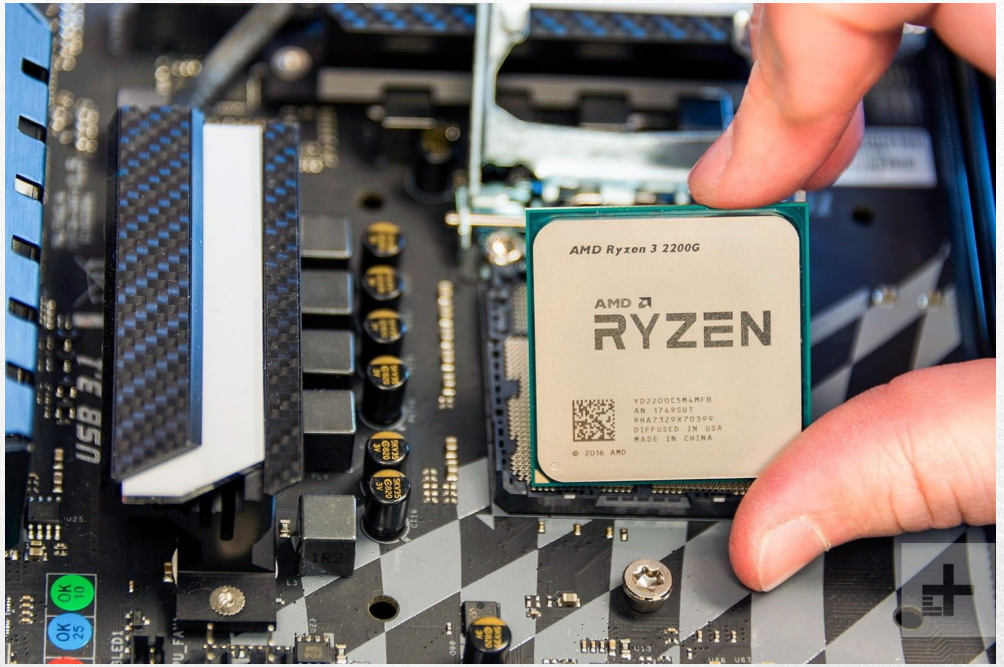
Types of devices that use CPUs

All sorts of devices use a CPU, including desktop, laptop, and tablet computers, smartphones, even your flat-screen television set.

Intel and AMD are the two most popular CPU manufacturers for desktops, laptops, and servers, while Apple, NVIDIA, and Qualcomm are big smartphone and tablet CPU makers.

What does the CPU consist of?

A modern CPU is usually small and square, with many short, rounded, metallic connectors on its underside. Some older CPUs have pins instead of metallic connectors. The CPU consists of a two-inch ceramic square with a silicon chip located inside. The chip is usually about the size of a thumbnail.



After running even a short while, modern CPUs can get very hot. To help dissipate this heat, it's almost always necessary to attach a heatsink and a fan directly on top of the CPU. Typically, these come bundled with a CPU purchase.

CPU Clock Speed

The clock speed of a processor is the number of instructions it can process in any given second, measured in gigahertz (GHz).

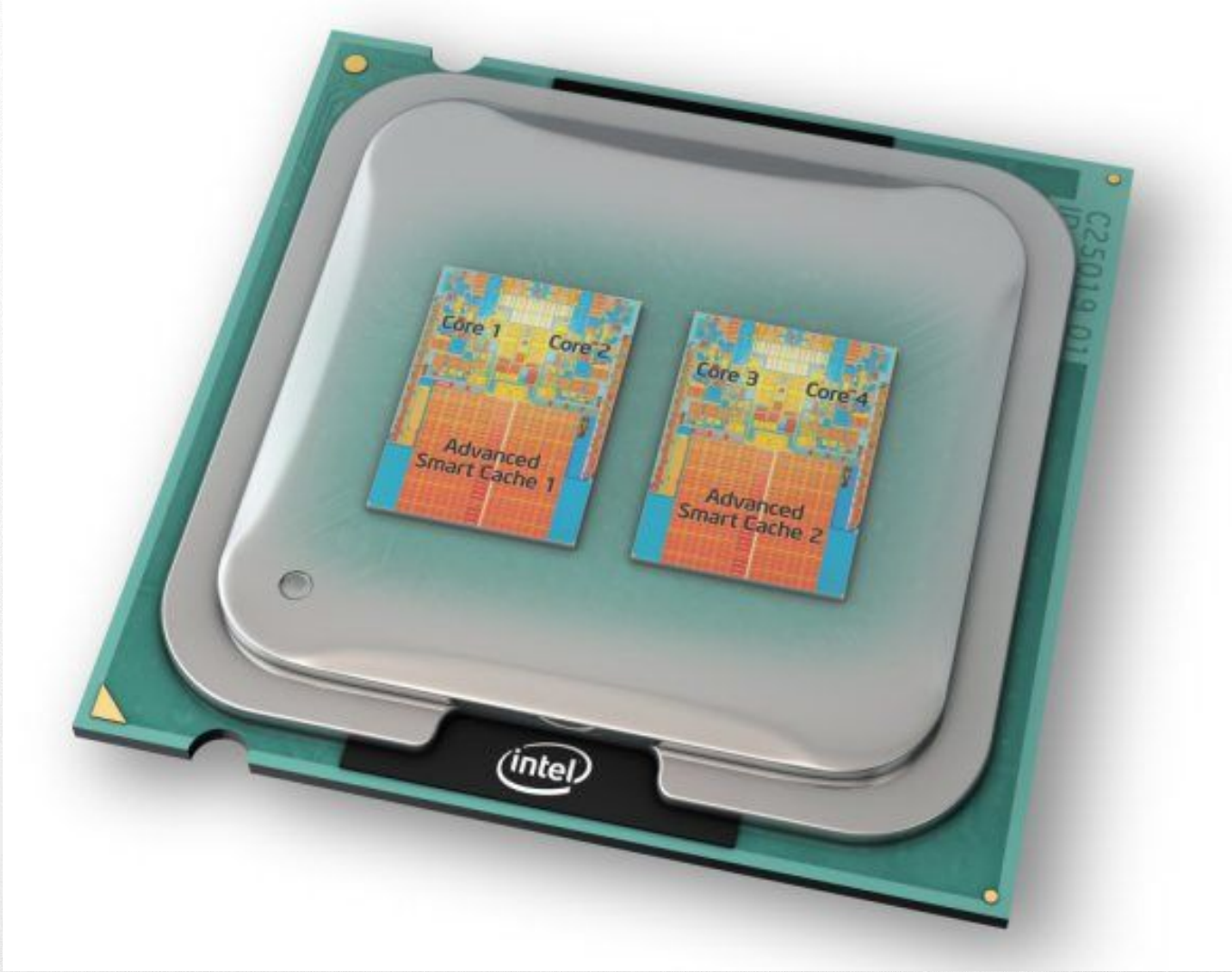
For example, a CPU has a clock speed of 1 Hz if it can process one piece of instruction every second. Extrapolating this to a more real-world example: a CPU with a clock speed of 3.0 GHz can process 3 billion instructions each second.

CPU Clock Speed

A computer usually has a maximum clock speed set by default, but it is possible to change this speed in the computer **BIOS**. Some geeks increase a CPU clock speed, trying to make their computer run faster – this is called overclocking. Although overclocking really provides higher computer performance, it can cause system instability or even damage.

CPU Cores

A CPU can contain one or more processing units. Each unit is called a core. Some devices use a single-core processor while others may have a dual-core (or quad-core, etc.) processor. Running two processor units working side-by-side means that the CPU can simultaneously manage twice the instructions every second, drastically improving performance.

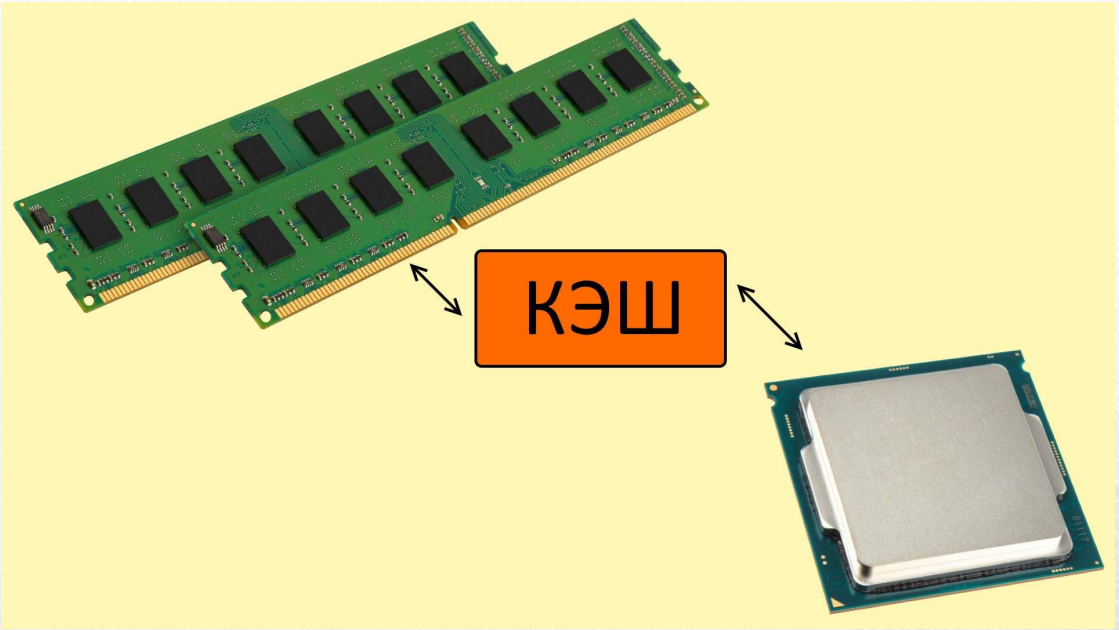


Memory Cache Size

CPU cache is a very small memory module, mounted on the CPU chip. It is used to temporarily hold instructions and data that the CPU is likely to reuse.

It’s actually an ultra-fast type of random-access memory.

The CPU control unit automatically checks cache for instructions before requesting data from RAM. Transfers to and from cache take less time than transfers to and from RAM. The more cache there is, the more data can be stored closer to the CPU.



A typical CPU has two functional sections: the arithmetic logic unit and the control unit.

- The ALU is a circuit, which carries out the arithmetic operations (addition, subtraction, multiplication, division) and the logic operations (AND, OR, NOT, XOR, etc.).
- The CU manages the operation of the processor and the other hardware components.

More Information on CPUs

Neither clock speed, nor simply the number of CPU cores, is the sole factor determining whether one CPU is "better" than another. It often depends most on the type of software that runs on the computer—in other words, the applications that will be using the CPU.

For example, a CPU-demanding video editing program that functions best with several CPU cores is going to work better on a multicore processor with low clock speeds than it would on a single-core CPU with high clock speeds. Not all software, games, and so on can even take advantage of more than just one or two cores, making any more available CPU cores pretty useless.

Thank you for your attention!