Processor

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Process -err? Architecture? What?

“Text book definition”

A processor is the logic circuitry that responds to and processes the basic instructions that drive a computer. The four primary functions of a processor are fetch, decode, execute and writeback.

CISC & RISC

CISC	RISC
The original microprocessor ISA	Redesigned ISA that emerged in the early 1980s
Instructions can take several clock cycles	Single-cycle instructions
Hardware-centric design — the ISA does as much as possible using hardware circuitry	Software-centric design — High-level compilers take on most of the burden of coding many software steps from the programmer
More efficient use of RAM than RISC	Heavy use of RAM (can cause bottlenecks if RAM is limited)
Complex and variable length instructions	Simple, standardized instructions
May support microcode (micro-programming where instructions are treated like small programs)	Only one layer of instructions
Large number of instructions	Small number of fixed-length instructions
Compound addressing modes	Limited addressing modes

Contents of a “micro”-processor

The arithmetic logic unit (ALU), which carries out arithmetic and logic operations on the operands in instructions.
The floating point unit (FPU), also known as a math coprocessor or numeric coprocessor, a specialized coprocessor that manipulates numbers more quickly than the basic microprocessor circuitry can.
Registers, which hold instructions and other data. Registers supply operands to the ALU and store the results of operations.
L1 and L2 cache memory. Their inclusion in the CPU saves time compared to having to get data from random access memory (RAM).

Today's processors

Most processors today are multi-core, which means that the IC contains two or more processors for enhanced performance, reduced power consumption and more efficient simultaneous processing of multiple tasks (*see:* parallel processing). Multi-core set-ups are similar to having multiple, separate processors installed in the same computer, but because the processors are actually plugged into the same socket, the connection between them is faster.

Specs of i7

- # of Cores 4
- # of Threads 8
- Processor Base Frequency 3.60 GHz
- Max Turbo Frequency 4.20 GHz
- Cache 8 MB SmartCache
- Bus Speed 8 GT/s DMI3
- # of QPI
- TDP 65 W


intel
Core™ i7