

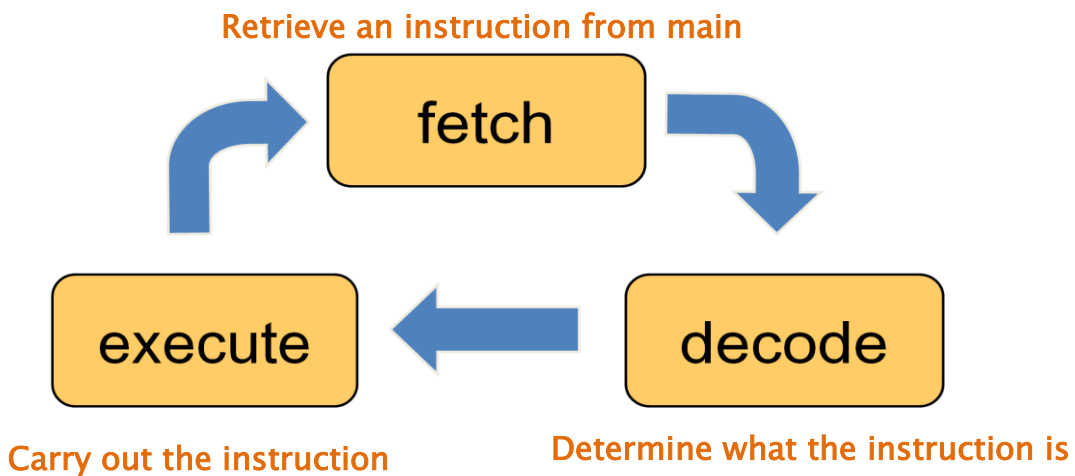
Computer architecture

Part 2

Microprocessor system

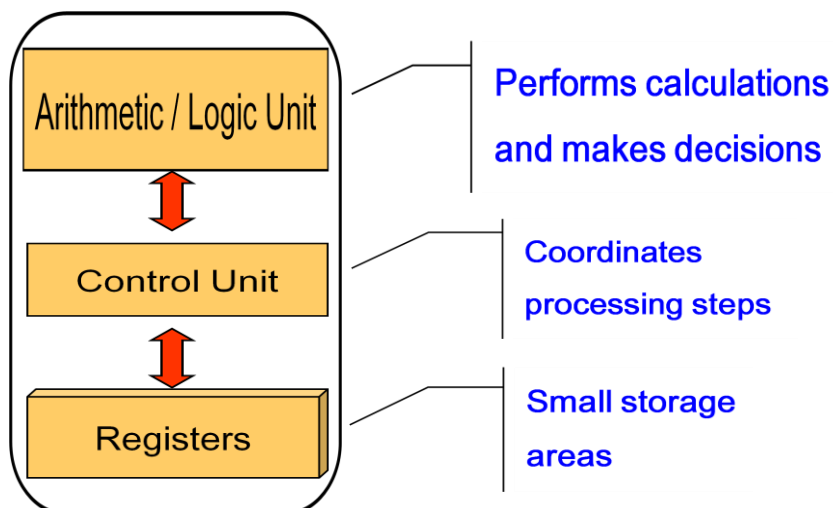
The Central Processing Unit (CPU)

- ▶ A CPU is on a chip called a *microprocessor*
- ▶ It continuously follows the *fetch-decode-execute* cycle:



The Central Processing Unit

- ▶ The CPU contains:



working speed

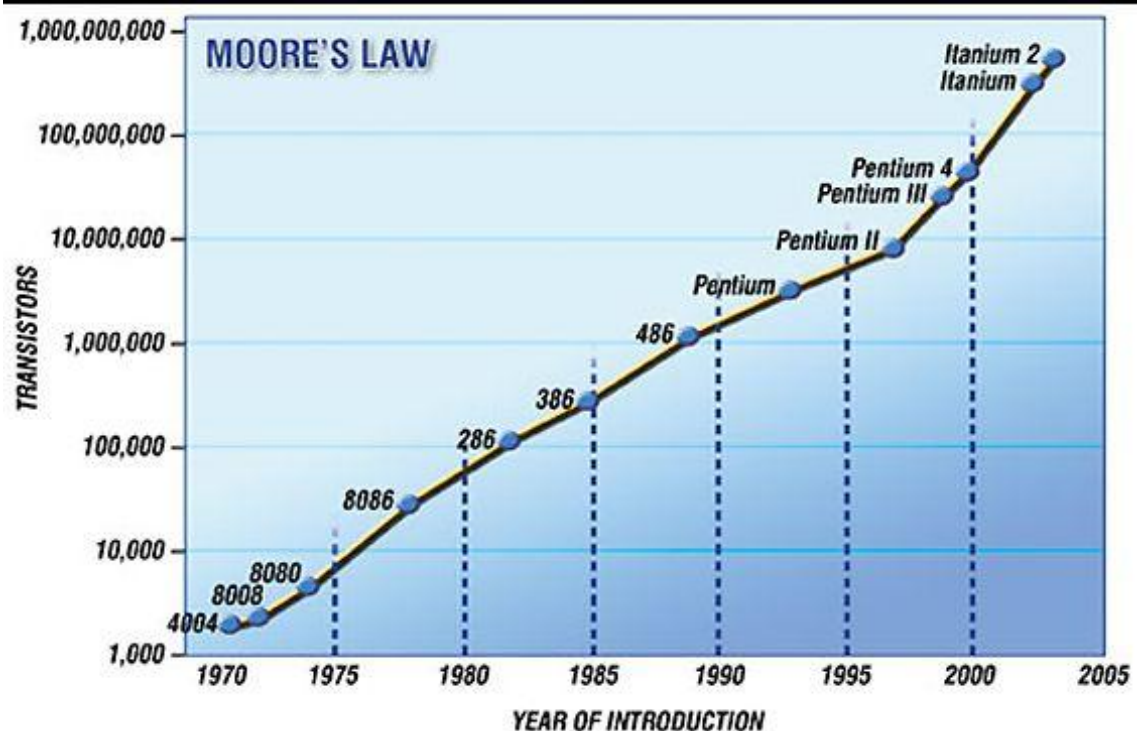
- ▶ The speed of a CPU is controlled by the *system clock*
- ▶ The system clock generates an electronic pulse at regular intervals
- ▶ The pulses coordinate the activities of the CPU
- ▶ The speed is usually measured in *gigahertz* (GHz)

Main characteristics

- ▶ clock frequency.
- ▶ data size.
- ▶ number of transistors.
- ▶ power or energy consumed.
- ▶ operations per second.
- ▶ memory that can process.

Microprocessors evolution

Gordon Moore said in 1992, that the number of computers would double every two years



MAIN MEMORY

PARTIES OF THE MAIN MEMORY.

- ▶ *RAM* - Random Access Memory (direct access). Loads data and programs
- ▶ *ROM*-BIOS - Read-Only Memory (storage start program)
 - The terms RAM and main memory are basically interchangeable
- ▶ *RAM-CMOS* stores information about computer configuration.
- ▶ *Cache memory*, is faster, store data and instructions for immediate use

Memory characteristics

- ▶ Main memory is *volatile* - stored information is lost if the electric power is removed.
- ▶ Main memory and disks are *direct access* devices - information can be reached directly
- ▶ The terms *direct access* and *random access* often are used interchangeably
- ▶ Both RAM and ROM are random (direct) access devices!
- ▶ RAM probably should be called Read-Write Memory