

Overview of Computer Architecture

Processors and Execution

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Definition (Computer Science)

The systematic study (science) of algorithms

Definition (Algorithms)

an **ordered** set of **unambiguous**, **executable** steps that defines a **terminating** process

Computing



Computer Architecture



Sinclair Spectrum



Commodore 64



Acorn 

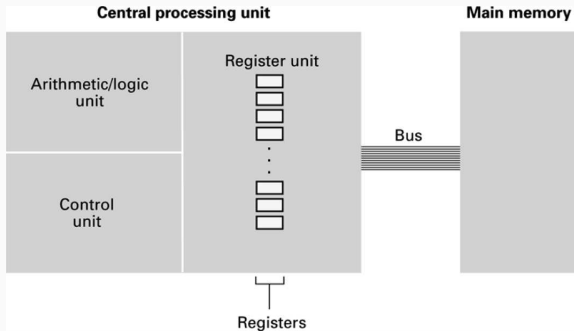


arm

Execution

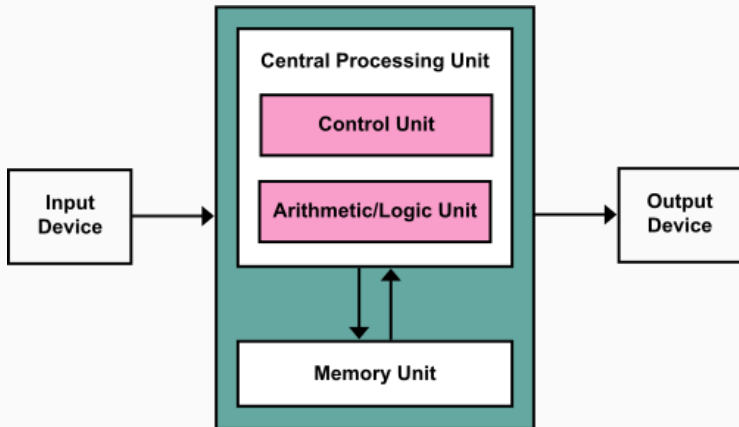


Computer Architecture



RAM as an array of bytes

Content:	FF	00	57	92	B3	8A	10	46	DC
Address:	000 000 000	000 000 001	000 000 002	000 000 003	000 000 004	000 000 005	...	134 217 725	134 217 726	134 217 727



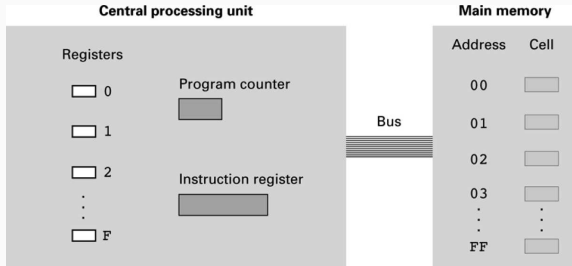
Program Counter

- Address to memory to fetch instruction to execute
- Start position

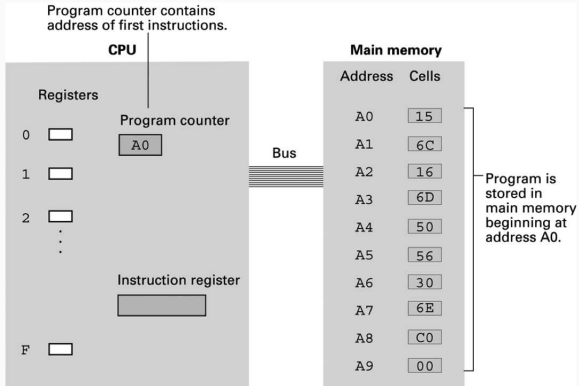
Instruction Register

- Stores instruction

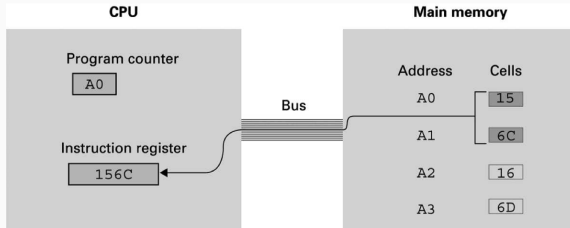
Execution



Execution

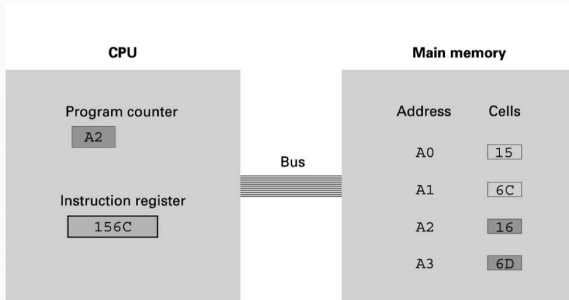


Execution



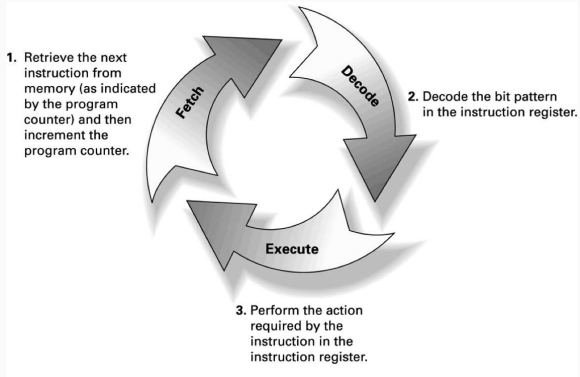
- a. At the beginning of the fetch step the instruction starting at address A0 is retrieved from memory and placed in the instruction register.

Execution



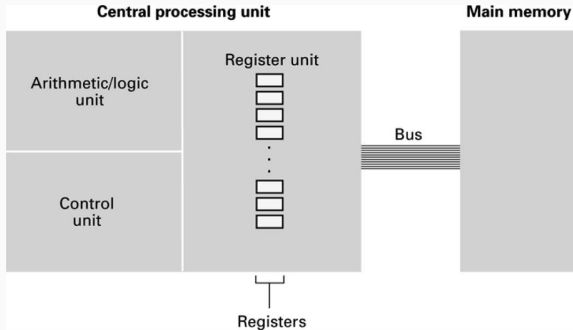
b. Then the program counter is incremented so that it points to the next instruction.

Execution



Processors

Computer Architecture



State Machine

