All about CPU's

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What Are CPUs?

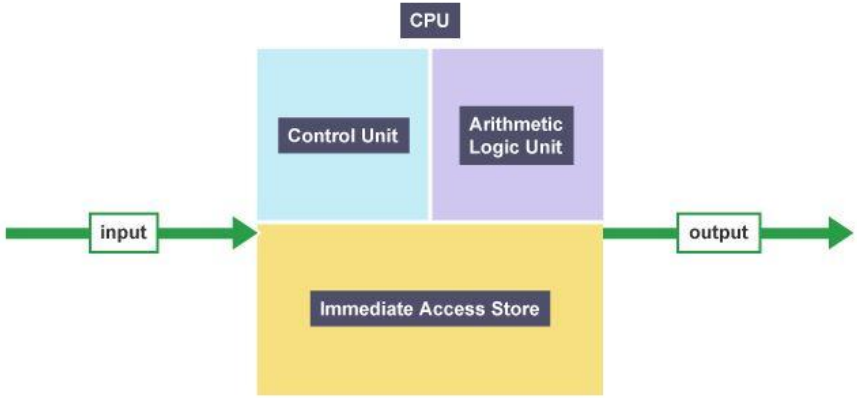
- CPU: Central Processing Unit
- A square chip
- Attached to the motherboard of the computer
- Most important processing unit
- The brain of the computer
- Part of the computer that performs calculations, actions, and runs programs

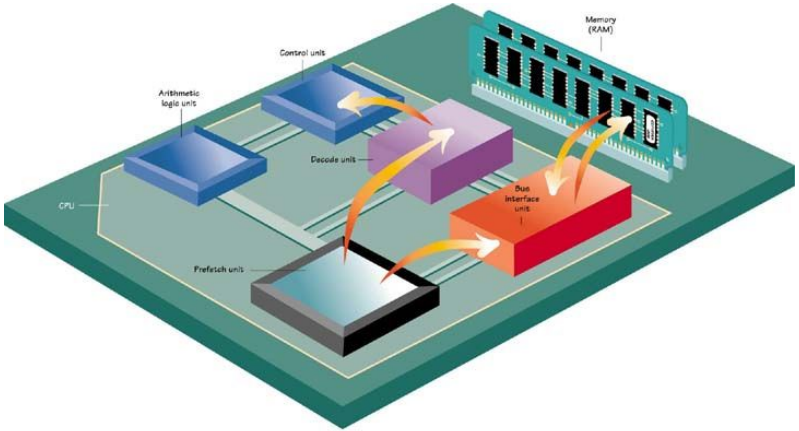
History

- 1968 - Intel was founded
- 1969 - AMD was founded
- 1971 - Intel introduced the first microprocessor ever, the 4004
- 1993 - Intel introduces the Pentium processor
- 2006 - Intel introduces the Core series

CPU components

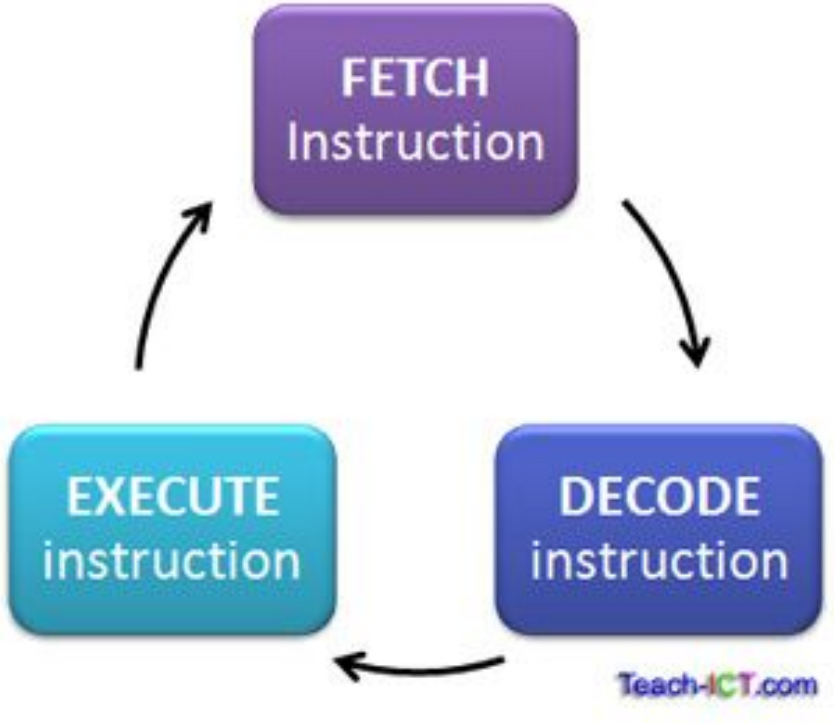
- Control unit
  - Directs the computer system on what to do
- Arithmetic/Logic unit (ALU)
  - Performs calculations
  - Makes logical comparisons
- Memory
  - Although it is not attached to the CPU, it is closely associated with it
  - Acts like temporary storage for info





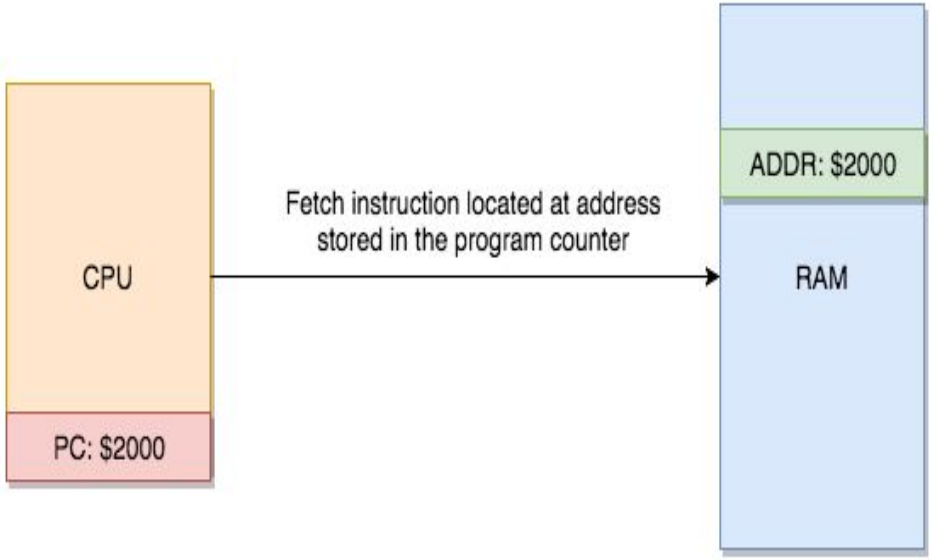
Operation of CPU

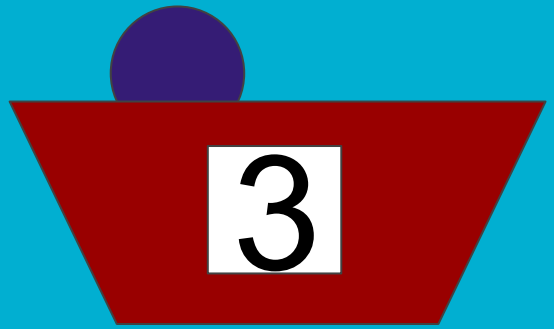
- Operation of CPUs can be broken down into three parts:
  - Fetch
  - Decode
  - Execute



Operation of CPU - Fetch

- CPU fetches the address of an instruction from RAM
- Address of the instruction is determined by the address bus
- Address bus holds a number of instructions
- The encoded instruction moves from RAM to the registers by travelling along the data bus

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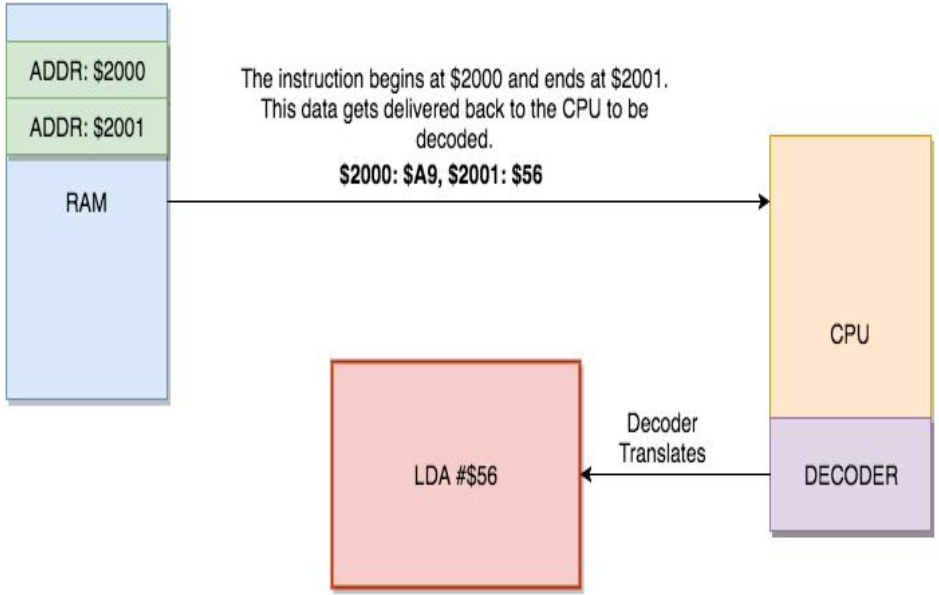
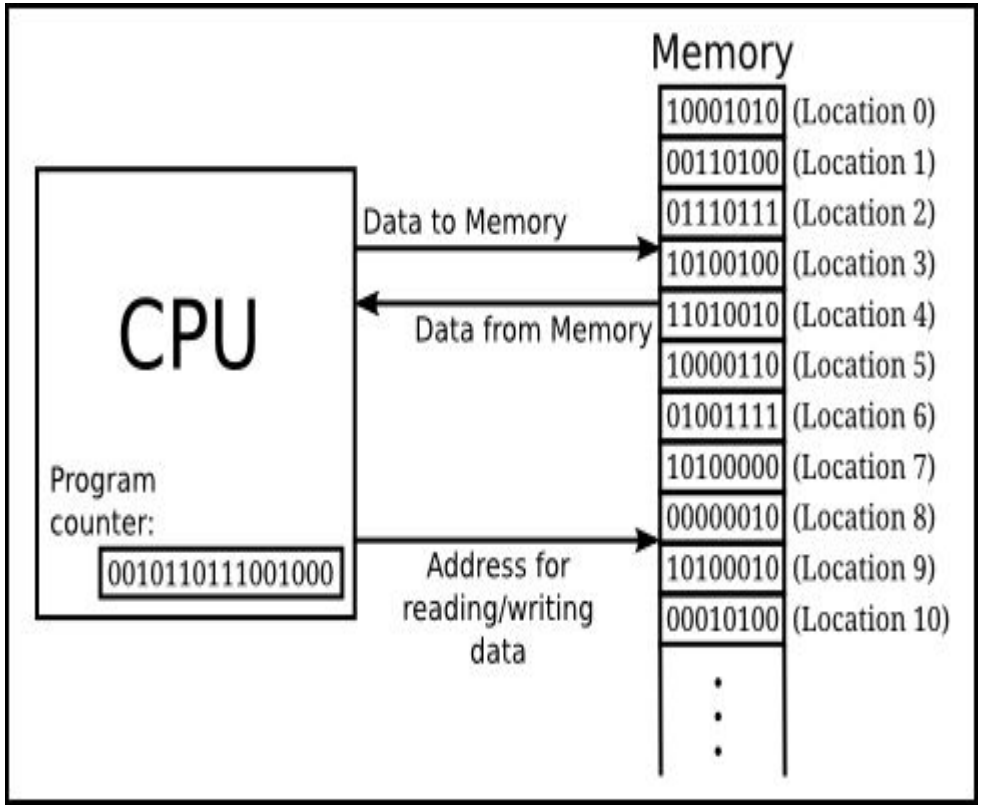
Operation of CPU - Decode

- CPU has circuitry called the instruction decoder
- Instruction is converted into signals
- A group of bits indicate which operation is to be executed
- Remaining groups provide additional information



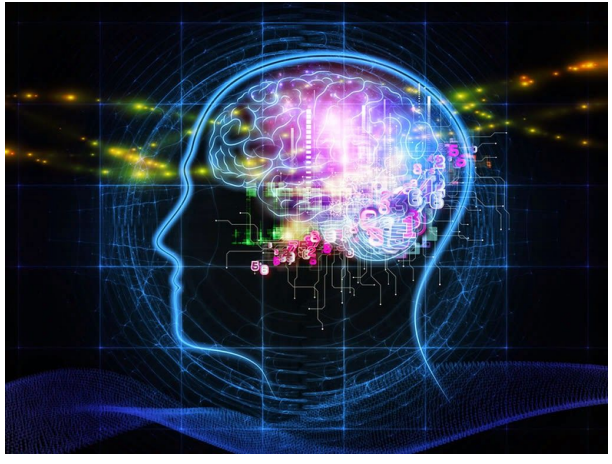
Operation of CPU - Execute

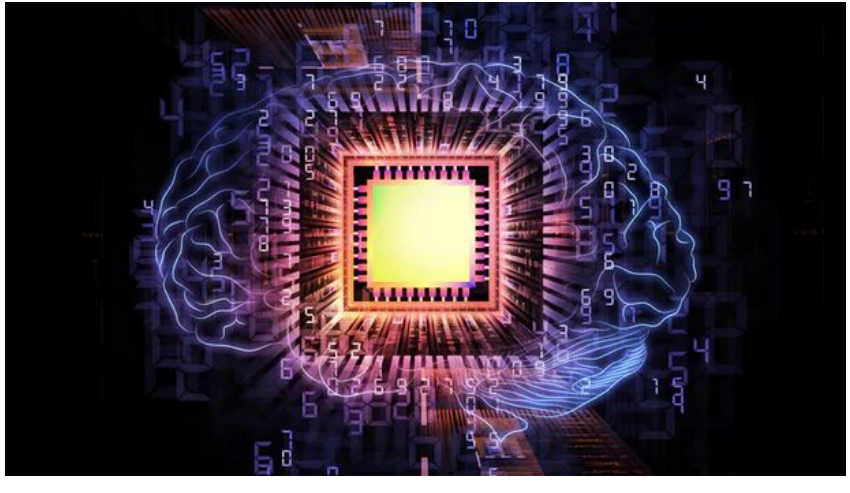
- Usually consists of a single action or multiple actions
- Various parts of CPU are connected to perform the operation
- Results may be written to the CPU’s integrated register or to the RAM



Future Developments

- Processors that act like brains
  - Has digital pathways and circuits, so artificial neurons
  - Pathways change once chip receives data
  - Able to learn on it’s own
- Quantum chip
  - Able to hold more information





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Conclusion

- CPUs have come a long way since their inception and will continue to be developed
- www.TomsHardware.com

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