COMPUTER ARCHITECTURE

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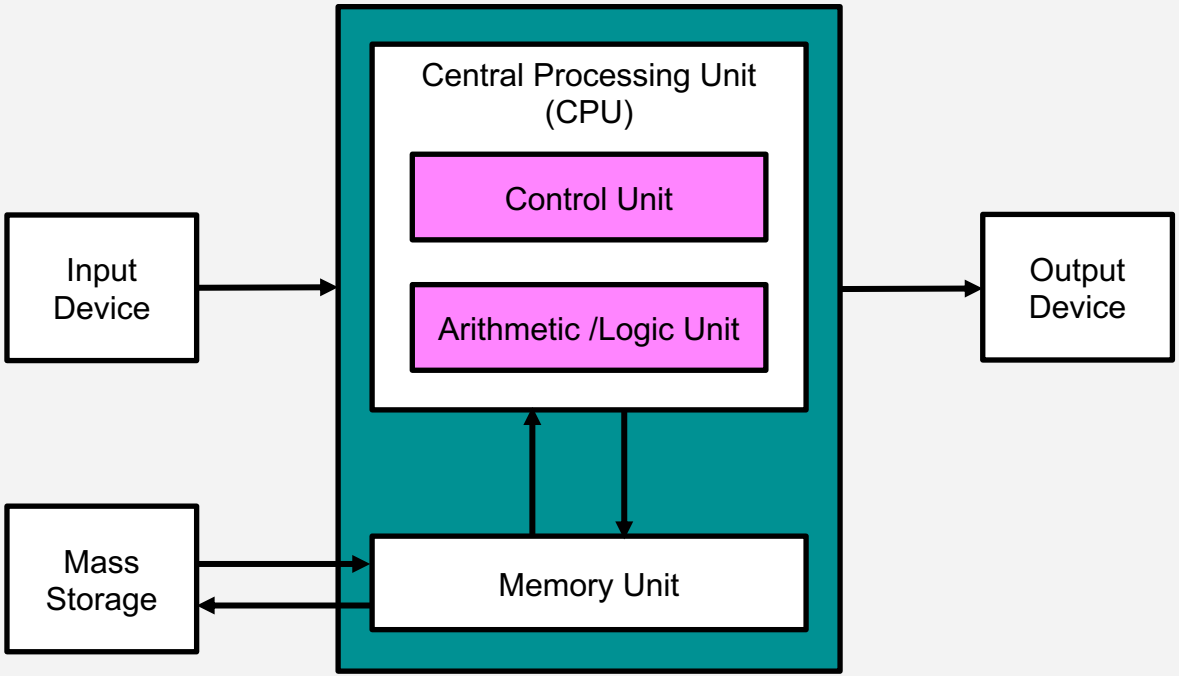
The von Neumann architecture

The first computer architecture was described by John von Neumann in 1945.

It describes a design architecture for an electronic digital computer with these components:

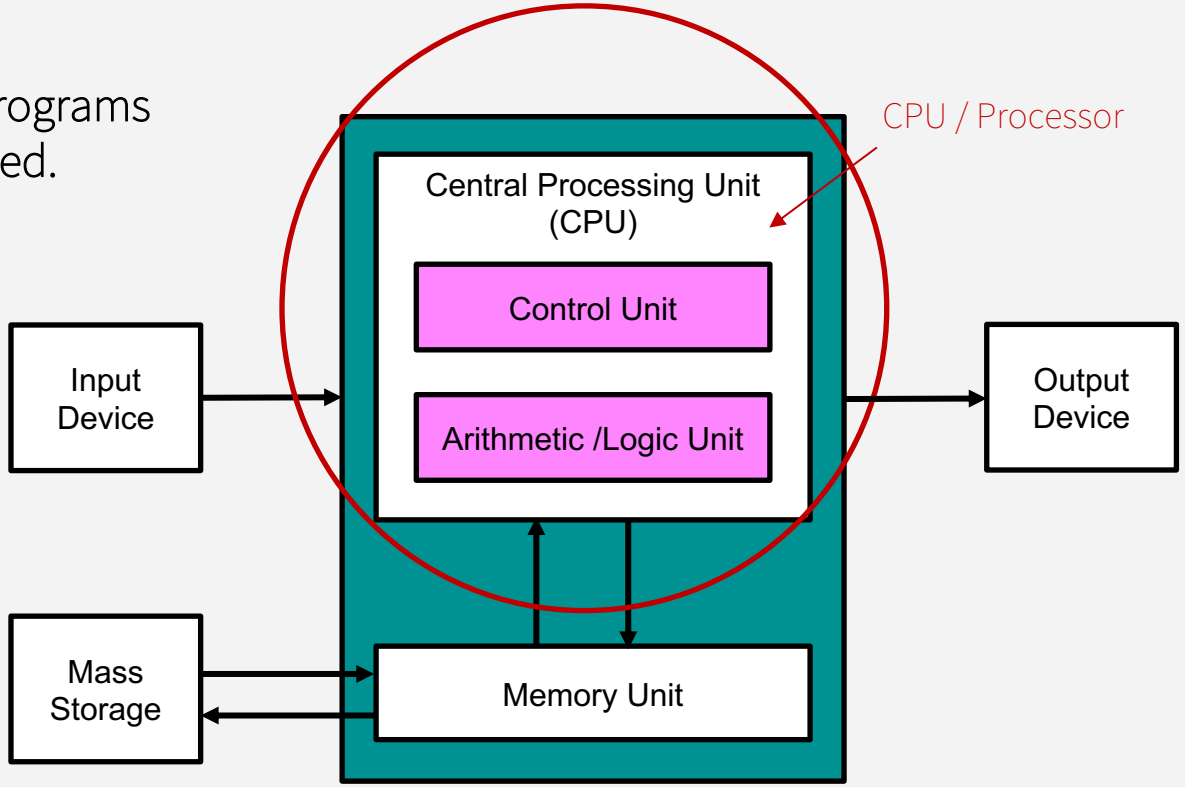
- a **processing unit** that contains an arithmetic logic unit and processor registers;
- a **control unit** that contains an instruction register and program counter;
- **memory** that stores data and instructions;
- **external mass storage**; and
- **input** and **output** mechanisms.

The von Neumann architecture



The von Neumann architecture

This is where programs are executed.



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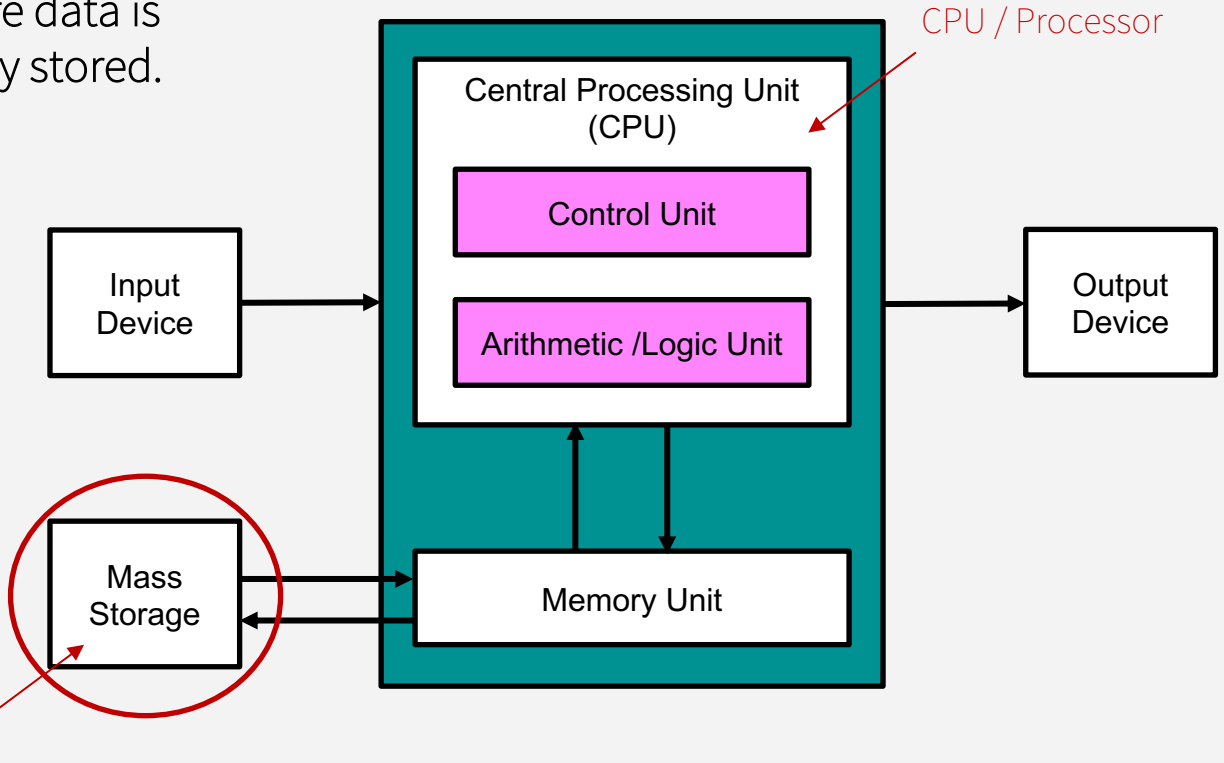
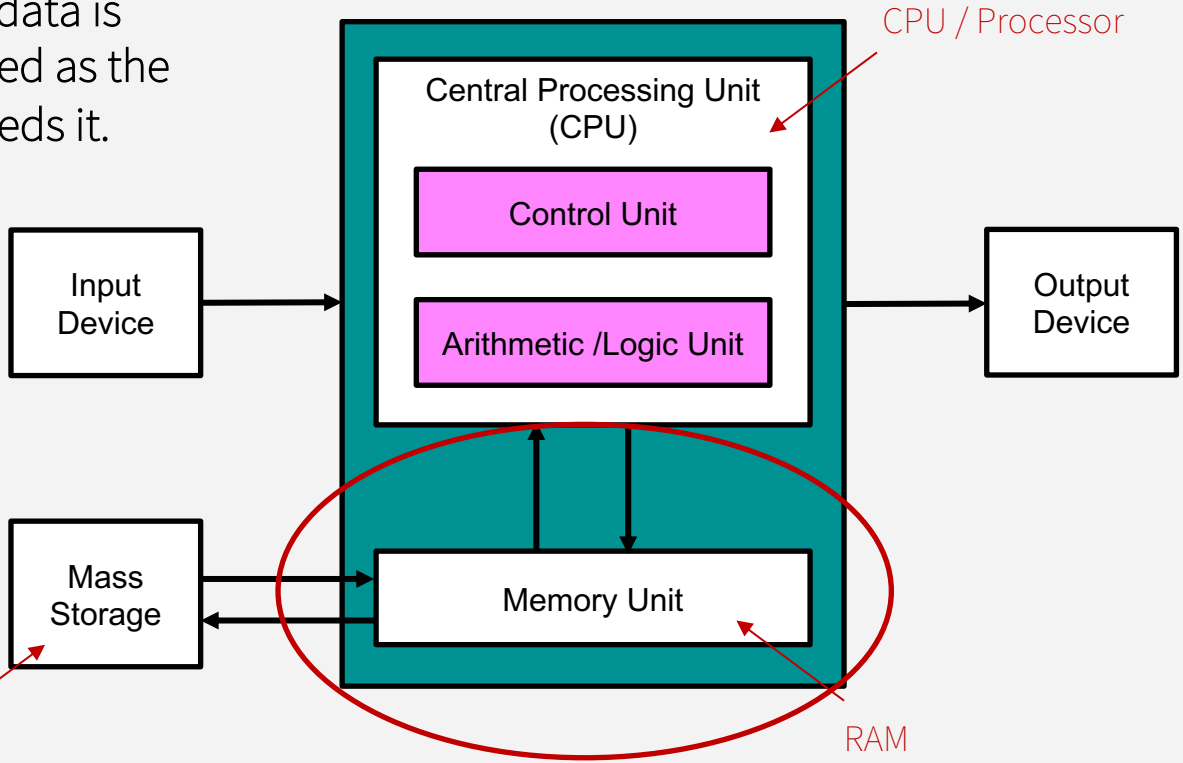
This is where data is permanently stored.



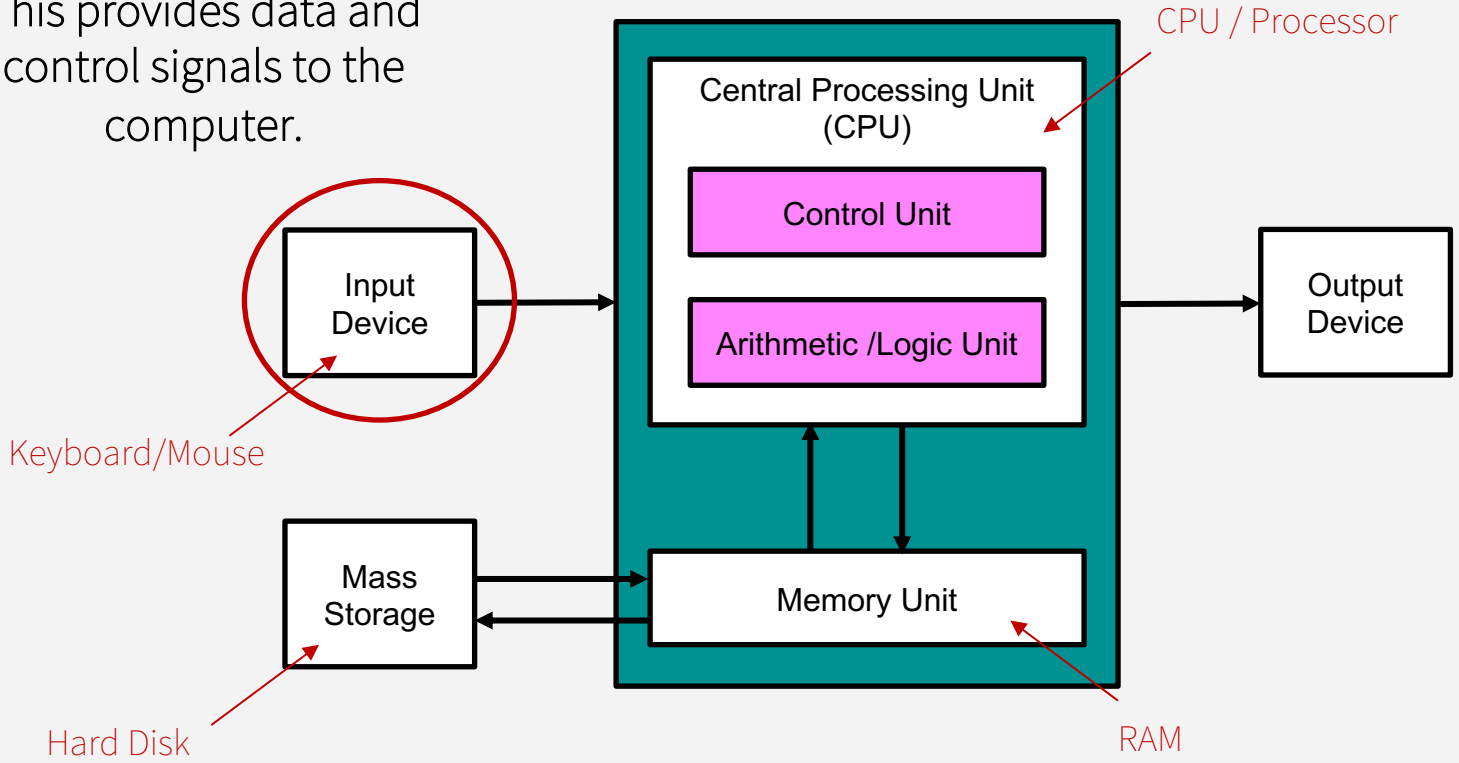
The von Neumann architecture

This is where data is temporarily stored as the processor needs it.



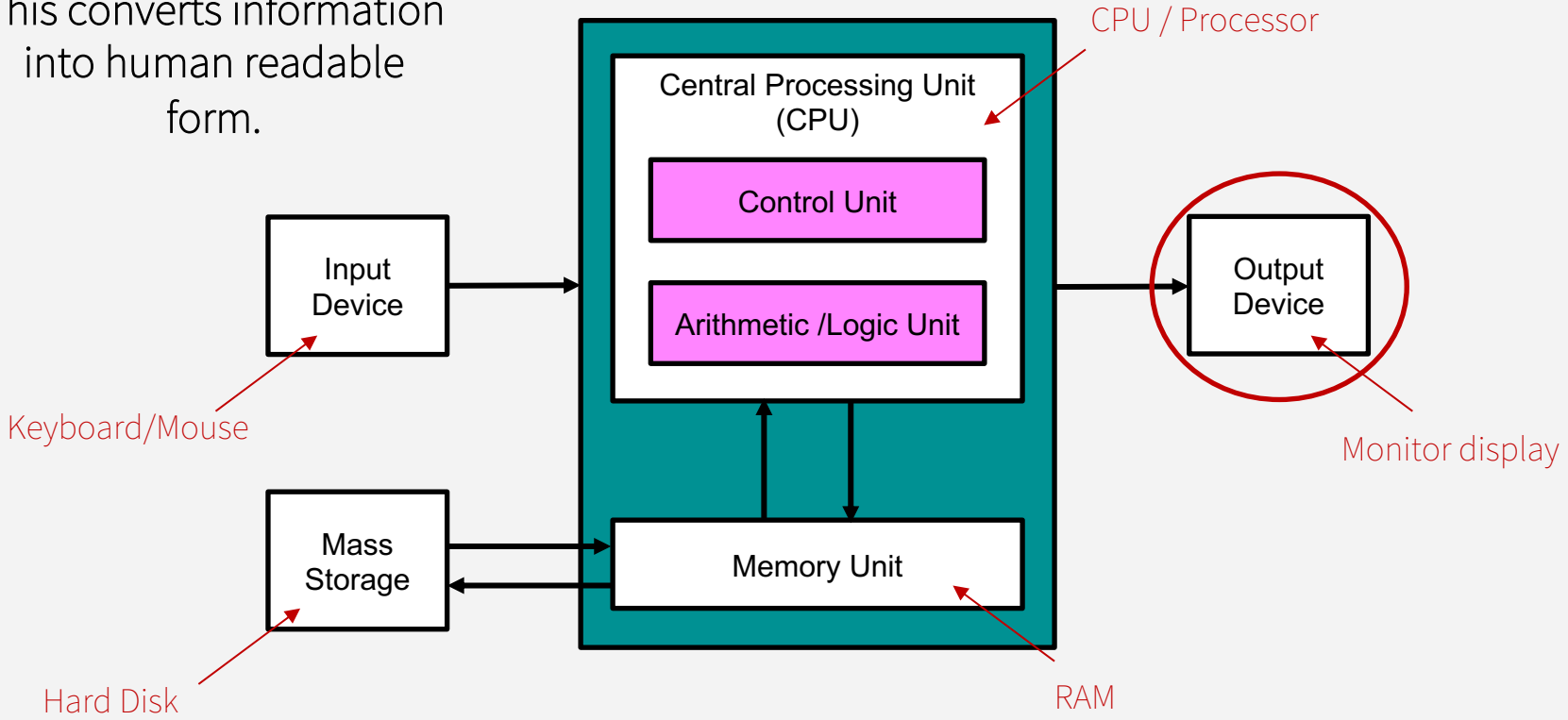
The von Neumann architecture

This provides data and control signals to the computer.



The von Neumann architecture

This converts information into human readable form.



The von Neumann architecture

Communication bus transfers data between components inside a computer.