
History

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Confession

- ❖ Most of the materials have been collected from Internet.
- ❖ Images are taken from Internet.
- ❖ Various books are used to make these slides.
- ❖ Various slides are also used.
- ❖ References & credit:
 - Atanu Shome, Assistant Professor, CSE, KU.
 - Computer Organization and Design: the Hardware/Software Interface - Textbook by David A Patterson and John L. Hennessy.
 - Computer Organization and Architecture - Book by William Stallings

ENIAC

(Electronic Numerical Integrator And Computer)

Built between 1943 and 1945

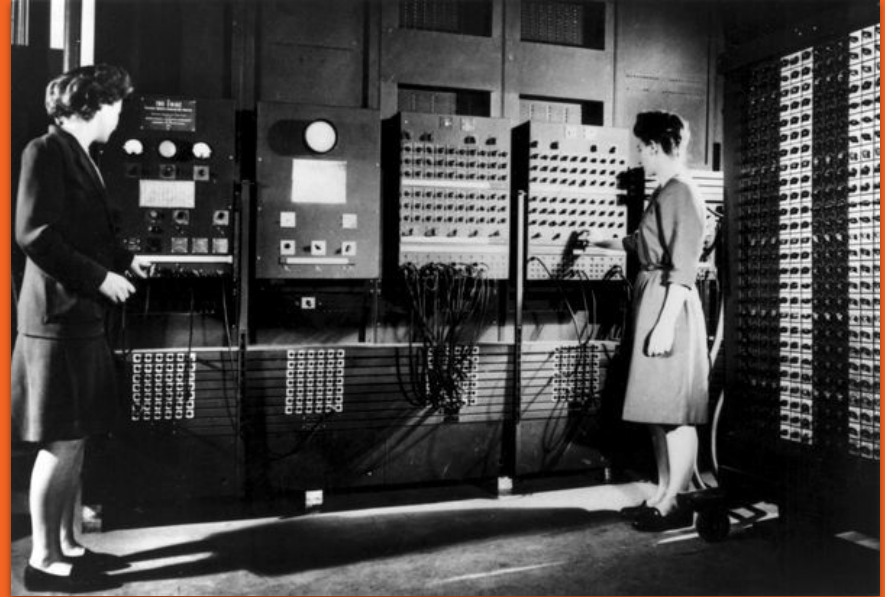
1,000 times faster than anything else in existence at the time,

Capable of performing **5,000 additions per second**

Its memory consisted of 20 accumulators

Each capable of holding a 10-digit decimal number

A ring of 10 vacuum tubes represented each digit



Vacuum Tubes

Electron tube or valve

Sir John Ambrose Fleming, in 1904

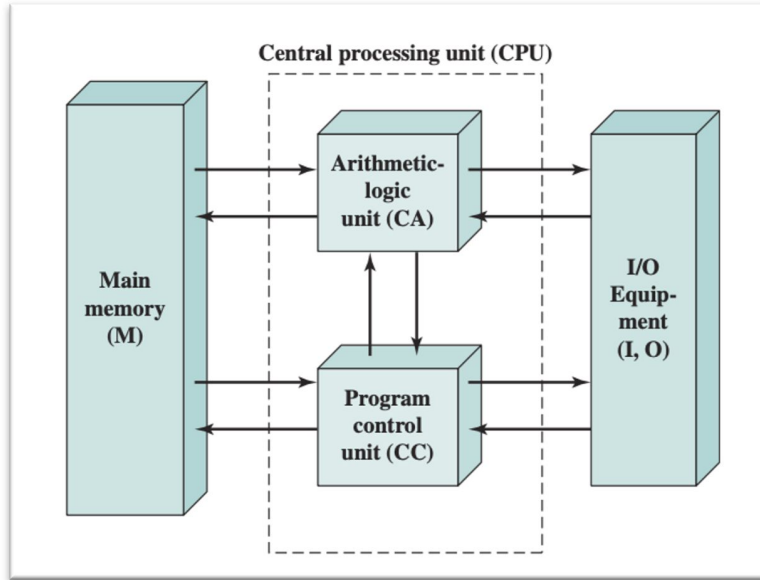
Gas removed, creating a vacuum

Electrodes



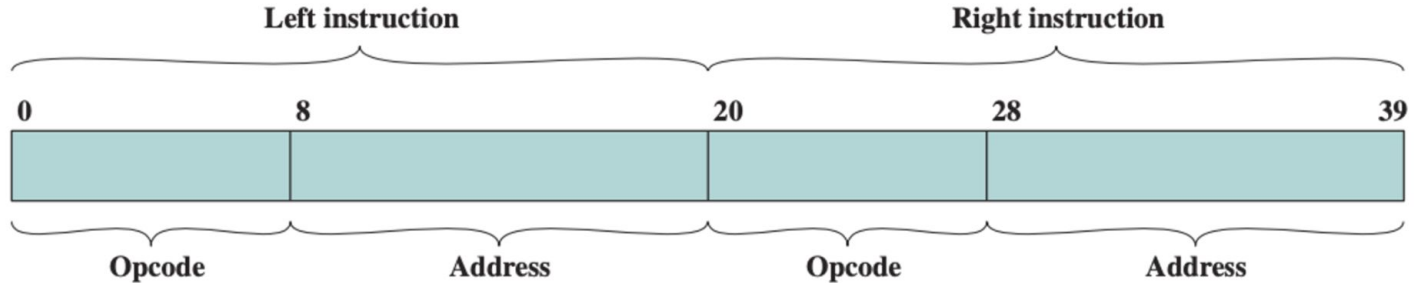
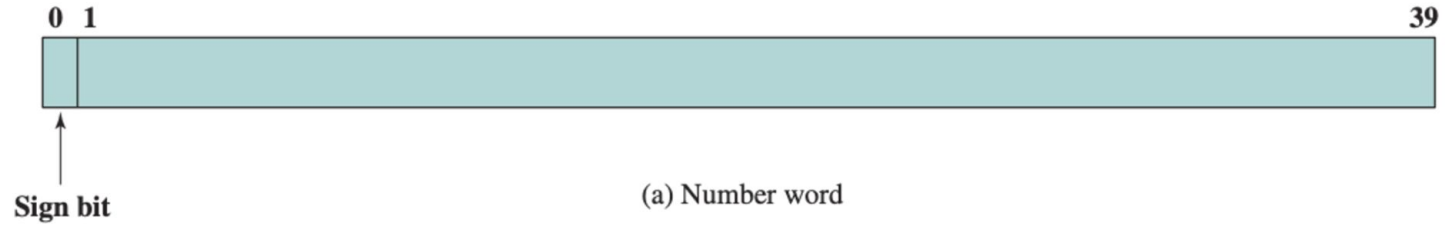
THE VON NEUMANN MACHINE

Stored-program concept
IAS computer

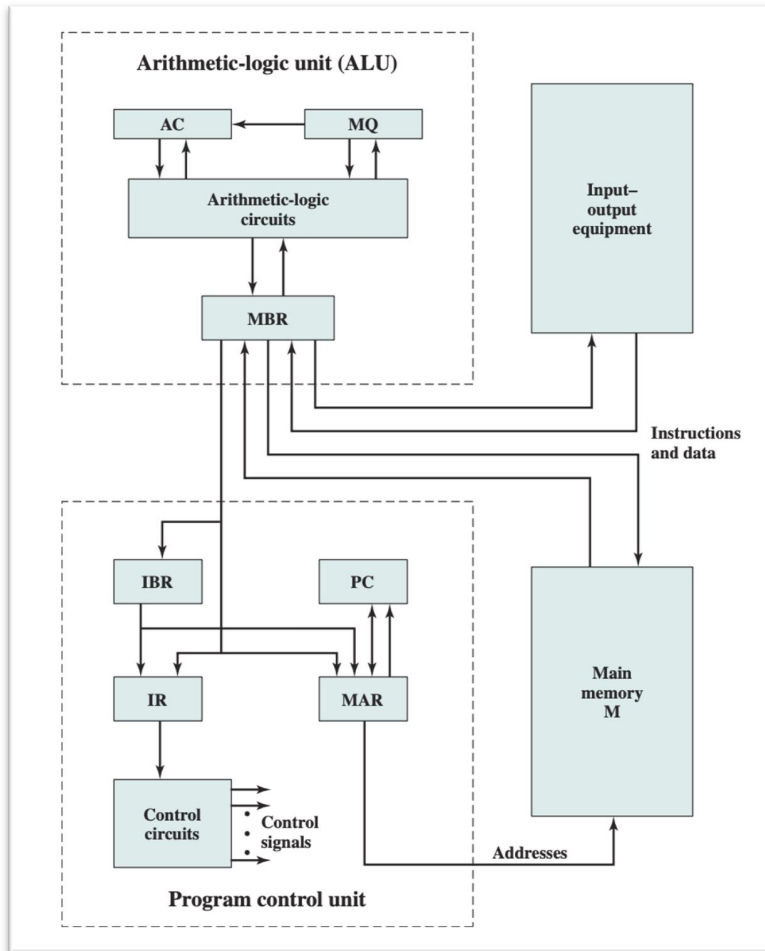


- A main memory, which stores both data and instructions
- An arithmetic and logic unit (ALU) capable of operating on binary data
- A control unit, which interprets the instructions in memory and causes them to be executed
- Input/output (I/O) equipment operated by the control unit

IAS Memory Formats



IAS Structure



Computer Generations

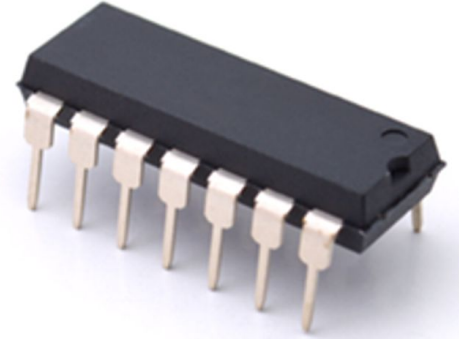
Generation	Approximate Dates	Technology	Typical Speed (operations per second)
1	1946–1957	Vacuum tube	40,000
2	1958–1964	Transistor	200,000
3	1965–1971	Small- and medium-scale integration	1,000,000
4	1972–1977	Large-scale integration	10,000,000
5	1978–1991	Very-large-scale integration	100,000,000
6	1991–	Ultra-large-scale integration	1,000,000,000

Transistors



Vacuum tubes: slow,
expensive, fragile

Transistors: much simpler, much smaller, much
cheaper, more reliable, no warm up, much
faster.



Integrated circuits: miniaturization added to all
the existing benefits, enabled unthought-of
possibilities

Thank You
