TECH 3233

Lecture 1

Computer History

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Rev 1/21/25

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1822 – Charles Babbage

- Difference Engine
- All Mechanical "Computer"
- Capable of performing complex calculations not exceeded until the 20th Century.
- Analytical Engine

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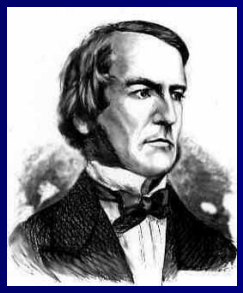
1854 – George Boole



- Boolean Algebra
- AND, OR, NOT, TRUE/FALSE
- All modern day computers work on his principles

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1904 – First Vacuum Tube

- Invented by John Fleming
- Shown is the first diode vacuum tube

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1930 – First Analog Computer

- Made with tube op-amps
- Calculations were done feeding in analog signals and voltages
- Outputs were either on o-scopes, volt meters or chart recorders
- Hard wired – hours to set up one calculation

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1943 – Von Neumann

- Credited with the idea of storing programs in what we call RAM

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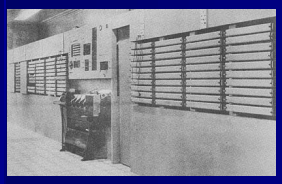
1944 – Electromechanical Computer



- Based on Relays
- Slow and Unreliable

https://www.youtube.com/watch?v=efVS9I5RNYA

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1946 – Electronic Numerical Integrator and Computer (ENIAC)

- First All Electronic Computer
- 30,000 Vacuum Tubes
- 47 Panels
- Made to calculate trajectories for artillery shells.

https://www.youtube.com/watch?v=J6yqOMc9xzg

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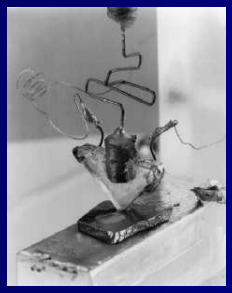
1947 - Transistors



- Bell Labs
- Almost every electronic device built today has transistors inside!

https://www.youtube.com/watch?v=vHUFVhhlYWs

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1956 - Fortran

- Fortran – FORmula TRANslation
- First High Level Computer Programming Language

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1956 - RAMAC

- One of the first hard disk drives
- Made by IBM
- 50 20" disks that spin at 1200 RPM
- Holds aprox 5MBytes
- Size of a refrigerator (when in enclosure)

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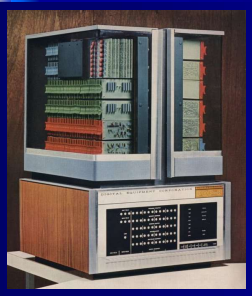
1961 – PDP-8



- First Successful Minicomputer
- Made by Digital Equipment Corporation
- 4K of 18bit words
- $120,000

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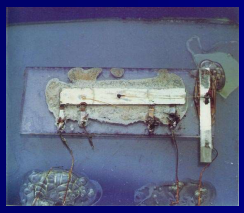
1964 – Integrated Circuit



- First circuit to be made out of one piece of germanium.

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1968 – Block I

- Apollo Spacecraft computer
- 20 op codes
- 30K ROM
- 2K RAM
- 2.048 MHz
- Weight – 20 lbs

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1969 – ARPANET

- Forerunner of the Internet
- First network was established between
  - UCLA
  - Stanford
  - University of California at Santa Barbara
  - University of Utah

https://www.pinterest.com/pin/412853490820048157/

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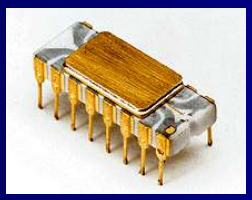
1971 – Intel 4004



- First microprocessor
- 4 bit CPU
- 4K Max external Memory
- 45 Op Codes
- 108 KHz
  - 60,000 instructions per second
- 2300 transistors

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1971 – Intel 8008

- First 8 bit microprocessor
- 16K max external memory
- 48 op codes
- 108 KHz
- 3500 Transistors

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1973 – Intel 8080

- 8 bit microprocessor
- 16 bit address bus (max 64K External memory)
- 6000 Transistors

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1973 – Alto

- Made by Xerox
- First computer to have a "Windows" type interface

- Book: Dealers of Lightning: Xerox Park and the Dawn of the computer age" by Michael Hiltzik

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1975 - Altair

- Produced by MIT
- First Personal Computer
- 8080 Processor
- $400 in kit form

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1977 – Intel 8085

- 5MHz clock speeds
- 6500 transistors
- Improvements over 8080
  - Single Voltage source
  - Serial communications
  - Needed fewer support IC's

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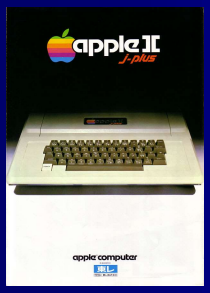
1977 – APPLE II



- First computer with color graphics
- Expandable with card slots

https://www.youtube.com/watch?v=w_nFMK5qtVc

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1978 – Intel 8086

- 10MHz
- 16 bit data bus
- 24 bit address bus
- 10MHz
- 29,000 Transistors

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1979 – Intel 8088

- Similar to 8086 but uses multiplexing to create a 16 bit data bus on 8 actual lines.

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1980 – Motorola 6800

- Intel is not the only one producing microprocessors, Motorola is also producing them.

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1981 – IBM XT

- 8088 CPU
- First widely used PC
- DOS operating system
- Standardized ports, expansion slots…..

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1982 – Intel 80286

- 16MHz processor
- 134,000 Transistors
- 16 bit data bus
- 24 address bus

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1984 – IBM AT

- Based on 80286 Processor

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1985 – Intel 80386

- 32 bit data bus
- 32 bit address bus
- 50 MHz
- 275,000 Transistors

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1989 – Intel 80486

- Improved version of '286
- 100 MHz
- 1.2 Million Transistors

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~1991 – Internet Goes Public

- The Clinton administration decides to allow private citizens on the internet backbone. Up until this point it was used mostly by researchers involved in government projects.

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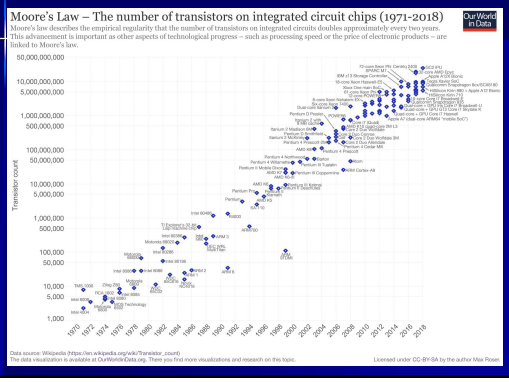
Moore's Law



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