

A Brief History of Computers

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Pre-Mechanical Computing:

Mechanical computers

From The Abacus c. 4000 BCE to Charles Babbage and his Difference Engine (1812)

Mechanical computers: The Abacus (c. 3000 BC)



Napier's Bones and Logarithms (1617)



Oughtred's (1621) and Schickard's (1623] slide rule





Blaise Pascal's Pascaline (1645)

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Willier Chatains Derennes Simple

Gottfried Wilhelm von Leibnitz's Stepped Reckoner (1674)





Joseph-Marie Jacquard and his punched card controlled looms (1804)





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Charles Babbage (1791-1871) The Father of Computers



Charles Babbage's Difference Engine







<u>Lady Augusta Ada</u> <u>Countess of Lovelace</u>





Electro-mechanical computers

From Herman Hollerith's 1890 Census Counting Machine to Howard Aiken and the Harvard Mark I (1944)

Herman Hollerith and his Census Tabulating Machine (1884)





A closer look at the Census Tabulating Machine



The Harvard Mark I (1944) aka IBM's Automatic Sequence Controlled Calculator (ASCC)

Howard Aiken





Electronic digital computers

From John Vincent Atanasoff's 1939 Atanasoff-Berry Computer (ABC) to the present day



<u>Alan Turing</u> <u>1912-1954</u>

The Turing Machine Aka The Universal Machine 1936

John Vincent Atanasoff (1903-1995)



Physics Prof At Iowa State University, Ames, IA

<u>Clifford Berry (1918-1963)</u>



PhD student of Dr. Atanasoff's

1939 The Atanasoff-Berry Computer (ABC)



The ABC was the first electronic digital computer, invented by John Vincent Atanasoff

1943 Bletchley Park's Colossus





1946 The ENIAC

--Electronic Numerical Integrator and Computer John Presper Eckert (1919-1995)and John Mauchly (1907 - 1980)of the University of Pennsylvania Moore School of Engineering

:CALINE and bna rotargetini lapiremuN pinortpell retuqmoD



30 tons, 18,000 vacuum Tubes (little powerful than the modern Calculator)

ENIAC's Wiring!



Programming the ENIAC



\$40 millions for a calculator!!!

1951 Univac

Typical 1968 prices—EX-cluding maintenance & support!

Model	Description	Purchase Price	Installation Fee
3011-95	1108 CPU	\$566,460	\$2,200
7005-72	131 K word Core Memory	\$823,500	\$2,250
5009-00	FASTRAND tm Controller	\$41,680	\$600
6010-00	FASTRAND II Storage Unit	\$134,400	\$1,080
5012-00	FH-432/FH-1782 Drum Controller	\$67,360	\$600
6016-00	FH-432 Drum (capacity 262,144 words)	\$34,640	\$480
6015-00	FH-1782 Drum (capacity 2,097,152 words)	\$95,680	\$540
4009-99	Console (TTY-35)	\$29,365	\$200



First Generation: Vonn Neuman Machine



1948 and beyond...

1903-1957

"Baby" at the Museum of Science and Industry in Manchester (MSIM), England



Vonn Neuman Architecture



- Stored Program Computer
- ⇒ Programmable
- Instruction Set
 - Architecture
- Memory bandwidth

UNIVAC-I: First Mass Produced Computer : Generation 2



- Universal Automatic Computer
- Originally made by Remington Rand
- Sold 46 machines at \$1 million each
- 1900 operations per second in a smaller and more efficient package than ENIAC.

The IBM Main Frame computers

- 1952, IBM announced the 701 Electronic Data Processing Machine
- First of its successful 700/7000 Mainframe computers
- Fortran was developed during 1955 and 56
 Microprogramming was invented during this time

Punched Cards

A punch card or punched card is a piece of stiff paper that contains digital information represented by the presence or absence of holes in predefined positions

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Generation 3: Post-1960

- Jack St. Clair Kilby's and Robert Noyce's independent invention of the integrated circuit
- Invention of the microprocessor, by Ted Hoff and Federico Faggin at Intel.
- Steve Wozniak, co-founder of Apple Computer, is credited with developing the first mass-market home computers.



Future???

Nano-technology Quantum Computing... Your mind (if applied)...