History of Computer

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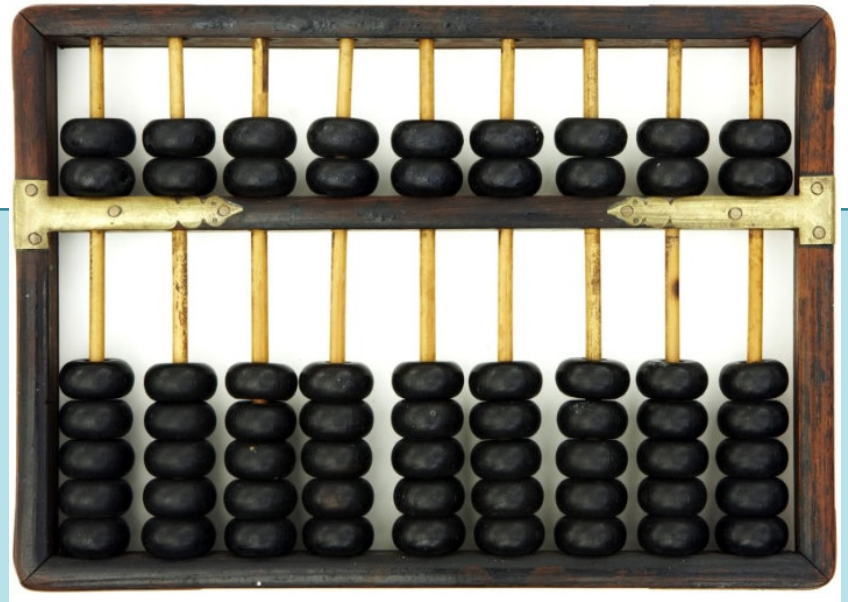
Calculation and Calculators

Harizmili Musa (Musal El Harizmi)

He use 0 and x and wrote the book of algebra
He is an Turkish mathematician, born 780 in Hiva (Harezm); died 850 in Baghdad.



First calculator : Abacus

Mechanical Calculators

First mechanical calculator is made by Blaise Pascal. French mathematician, in 1642. This calculator can adding and subtraction

Pascal's calculator has been improved by German mathematician Gottfriend Leibniz added multiplication and division features to this machine in 1673.

Programmable textile machine, Developed by French textile producer Joseph Marie Jacquard, in 1805

Ideas of Computer

British mathematician and mechanical engineer Charles Babbage (1791-1871) design but realized to machines:

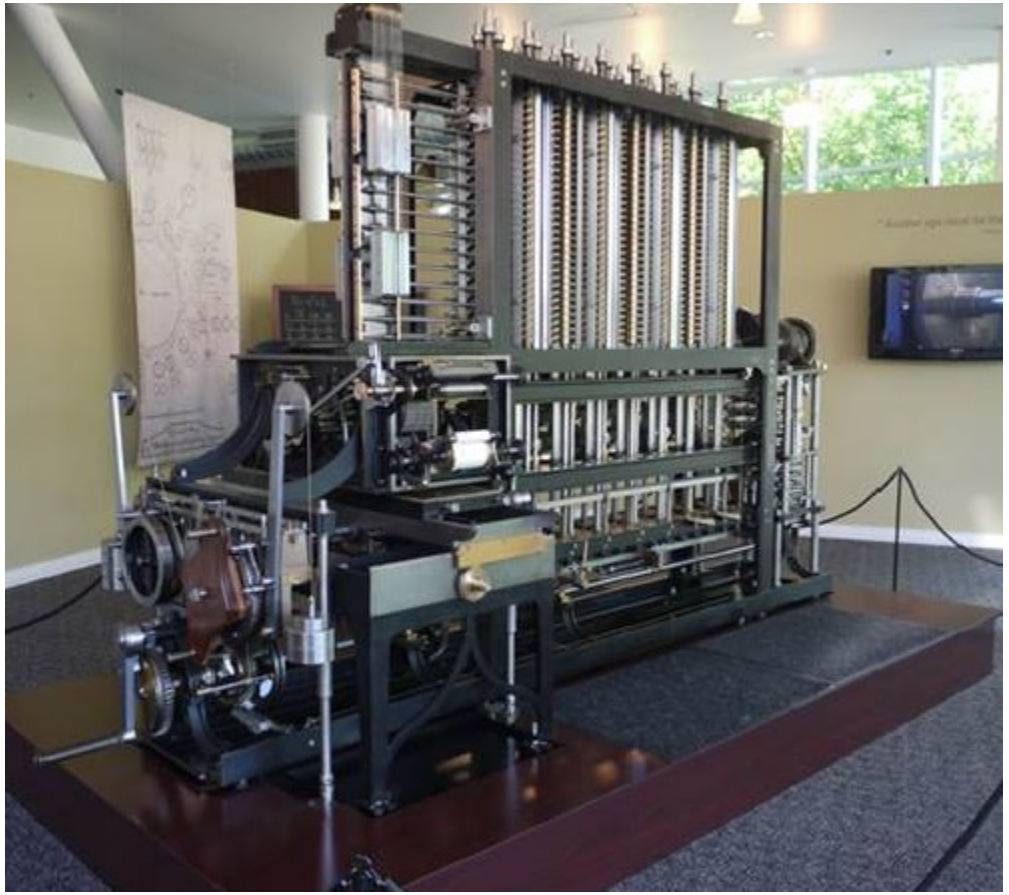
- Difference engine (start to built),in 1822
- analytic engine (just idea), in 1835

His imaginary machine will have capability of

- Calculation
- Storage for data
- Storage for program

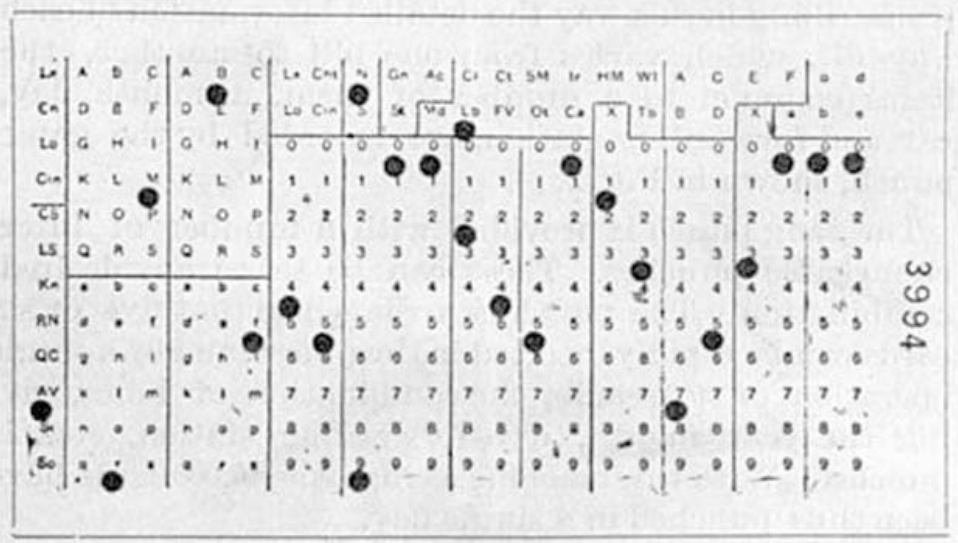
He is known as father of computer.

His idea was realized in 1937 by Howard Aiken with the support of IBM.

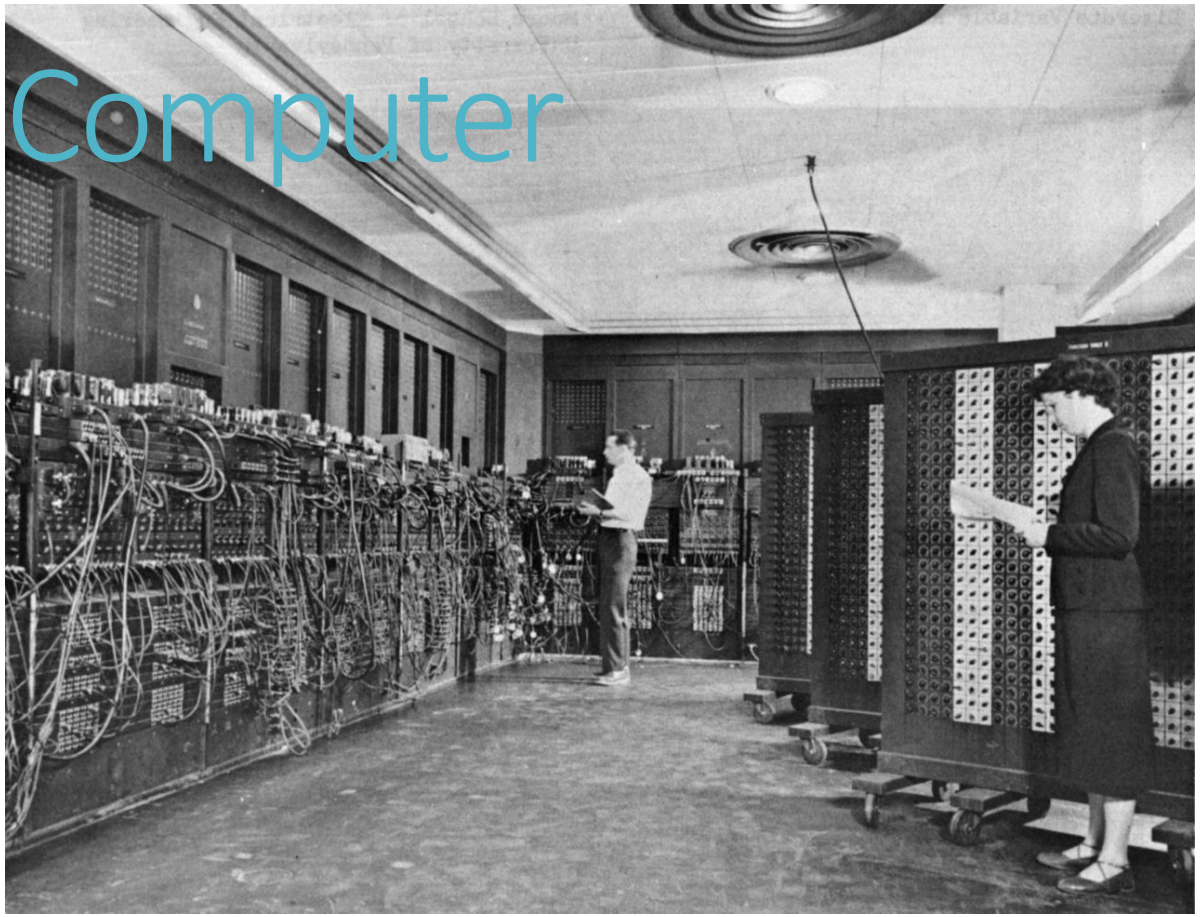


Punch Card

- Herman Hollerith was working at US Census Bureau as statistician, in 1880. He experienced the problems of analyzing the large amounts of data generated by the 1880 US census.
- Dr. J. S Billing suggested to make a machine for calculation and analyzing of census data.
- Hollerith examines the Jackard loom and got the idea of punched card system.
- He designs a punch card which is used about 80 years for data entry.
- He also design a punch machine and tabulating machine.
- His system was used for US census in 1990.
- Hollerith form his company named Tabulating Machine Company. This company will join with other company and the new company will be International Business Machine Corporation (IBM), in 1924



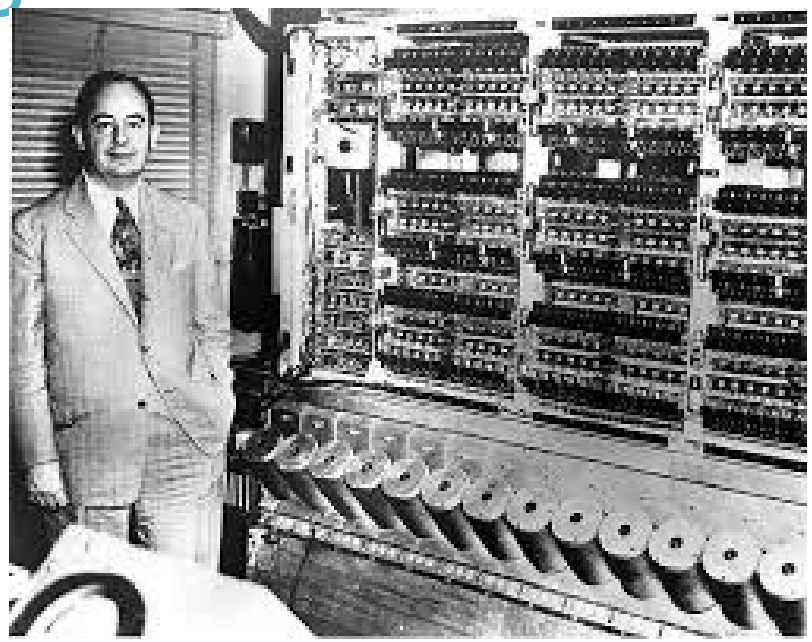
ENIAC first Electronic Computer



- ENIAC (Electronic Numerical Integrator and Computer) project carried out by John Mauchly, John Presper Eckert Jr. İn 1943
- The challenge was to speed up the tedious mathematical calculations needed to produce artillery firing tables for the Army.
- ENIAC used decimal number.
- ENIAC increases the manual calculation speed 2400 time.
- ENIAC was not completed until after the war-II, but it performed until 1955
- The total cost was about 487.000 USD, which equates to 6.816.000 USD in 2016.

- ENIAC contained 17,468 tubes, 7200 diodes, 1500 relays, 70.000 resistors and 10.000 capacitors,
- Size was roughly 2.4m × 0.9m × 30m and occupied 72m^2 , consumed 150 KW of electricity. It was more than 30 tons
- Used an IBM card reader as input device and an IBM card punch for output.
- ENIAC had no system to store memory therefore punch cards was used for external memory storage.
- In 1953, a 100-Word core memory built by the Burroughs Corporation was added to ENIAC.

General Purpose Computers



- **EDVAC** (Electronic Discrete Variable Automatic Computer) : Designers Eckert and Mauchly were joined by John von Neumann and the new design was based on von Neumann's report on ENIAC, in 1952.
- It has a memory which has 1000 memory cell; each cell has 44 bit. Data and program used the same memory.
- EDVAC used binary number
- EDVAC had almost 6,000 vacuum tubes and 12,000 diodes, it consumed 56 KW of power.
- It covered about 50 m2 of floor and weighed 9 ton.
- By 1960 EDVAC was running over 20 hours a day with error-free run time averaging 8 hours.

- **SSEC** (Selective Sequence Electronic Calculator) was an electromechanical computer built by IBM, in 1948. It was the last large electromechanical computer ever built.
- The SSEC was an unusual hybrid of tubes and relays. Approximately 12,500 vacuum tubes, about 21,400 relays were used.

Electronic Age

- 1948 - Inventing of transistor
- 1952 - First large-scale electronic computer to be manufactured in quantity. IBM 701
- 1957 High level language FORTRAN (Formula Translator)
- 1960-70 Main computer (IBM and Bunch : BUNCH" (Burroughs , UNIVAC, NCR, CDC, Honeywell, GE and RCA)
- 1950 – 1990 Mini Computer PDP and VAX by DEC
- 1975 – Microprocessor (Intel, Motorola, Texas,…)
- 1981 - Personnel Computer (IBM PC and Apple)
- 1979 - Embedded System

Trends in Computers

- Standalone computer
- Service bureau
- Green terminal ages
- Cluster computers
- Local area network
- Client server
- Internet, web base computer
- Wireless networks
- Cloud computing