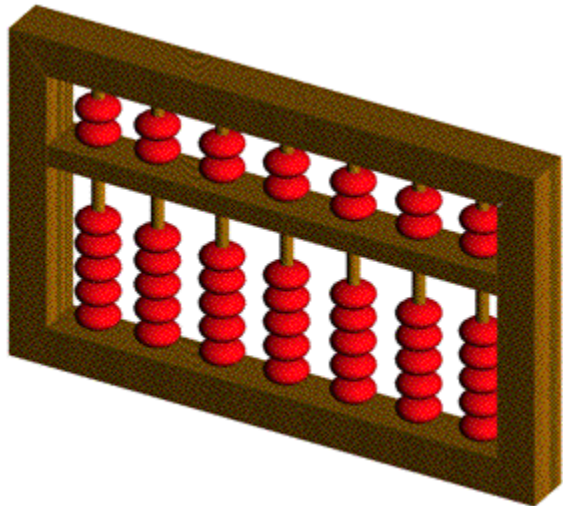




Lecture 2
History of Computer
DR. herlina Jayadianti.ST.MT



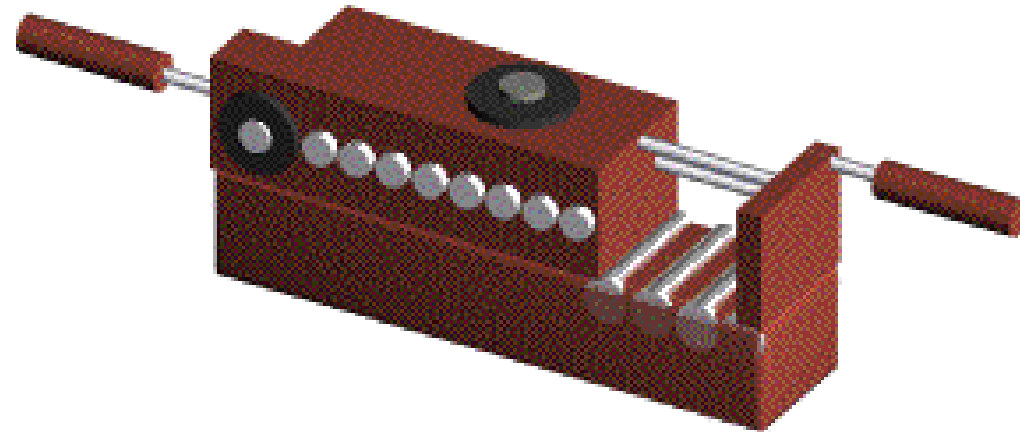
- Early computing machines(Mechanical)
- about 3000 BC - The abacus is invented, probably in Babylonia



1642 - BLAISE PASCAL BUILDS THE FIRST
NUMERICAL CALCULATING MACHINE THAT
CAN ADD AND SUBTRACT.



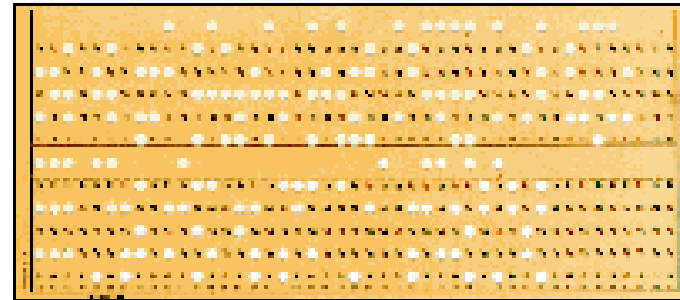
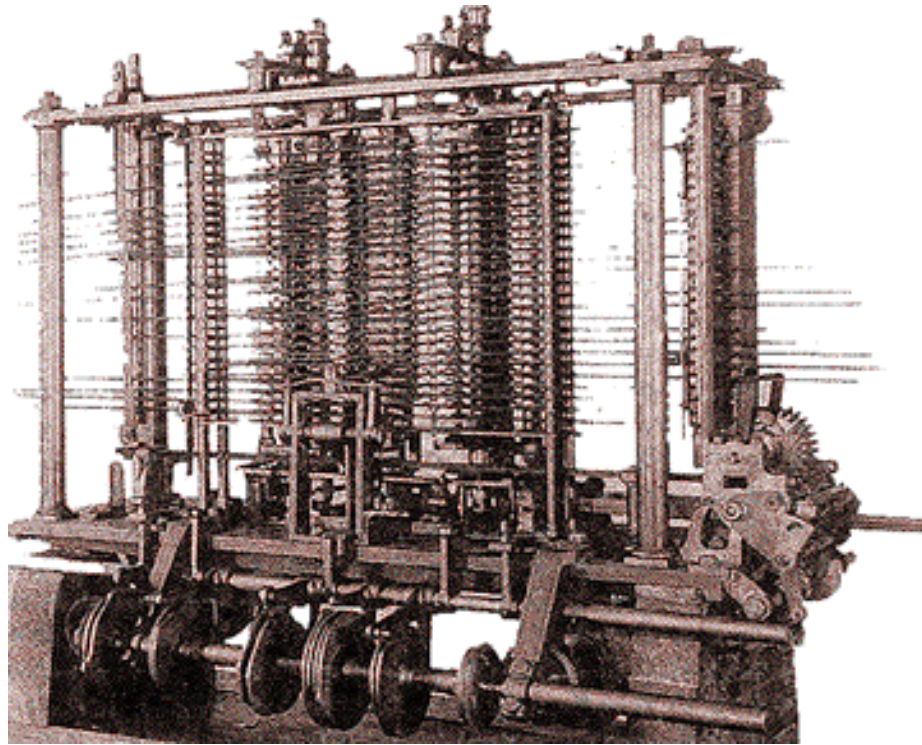
1672 Gottfried Leibnitz builds and creates a machine that can add, subtract, multiply and divide automatically



**1805 - JOSEF-MARIE JACQUARD INVENTS
PERFORATED CARD FOR USE ON HIS LOOM**



1833 - CHARLES BAGGAGE DESINGS THE ANALYTICAL MACHINE THAT FOLLOWS INSTRUCTIONS FROM PUNCHED CARDS



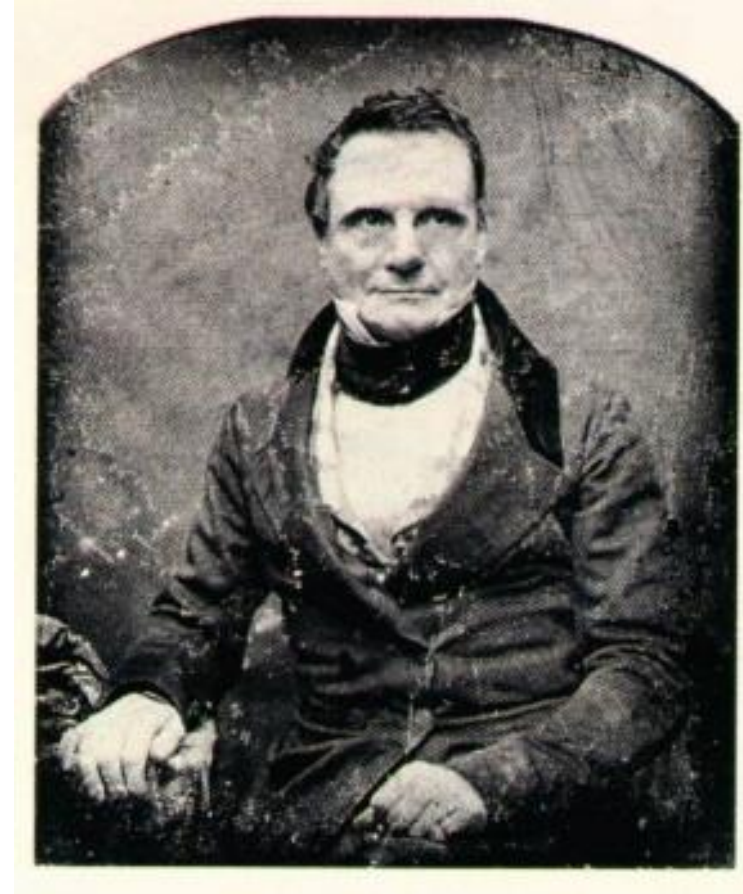
CHARLES BABBAGE

English inventor

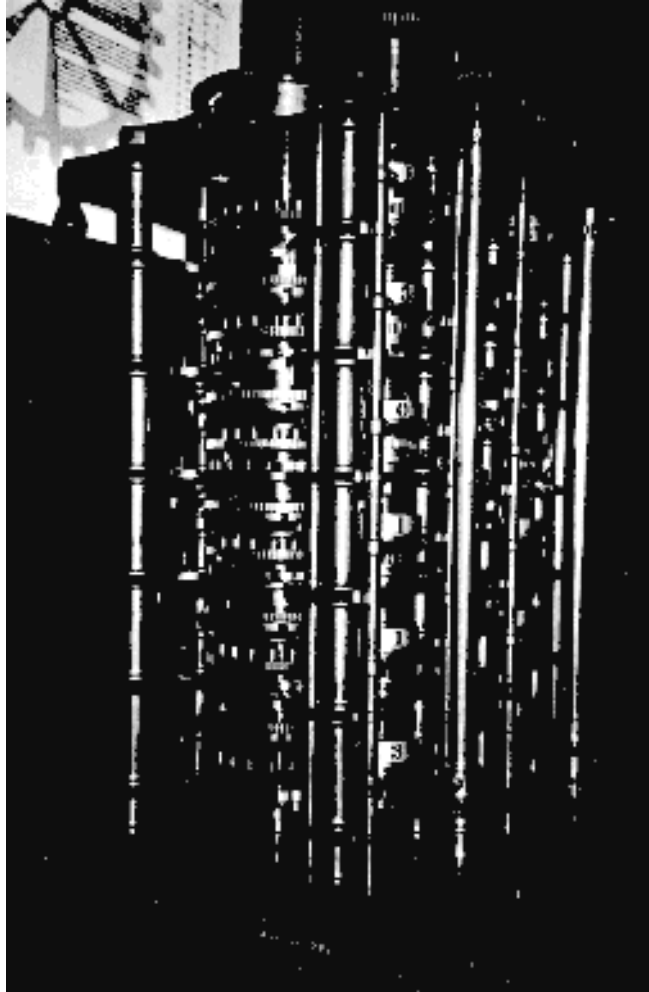
1791-1871

taught math at Cambridge University

invented a viable mechanical
computer equivalent to modern
digital computers



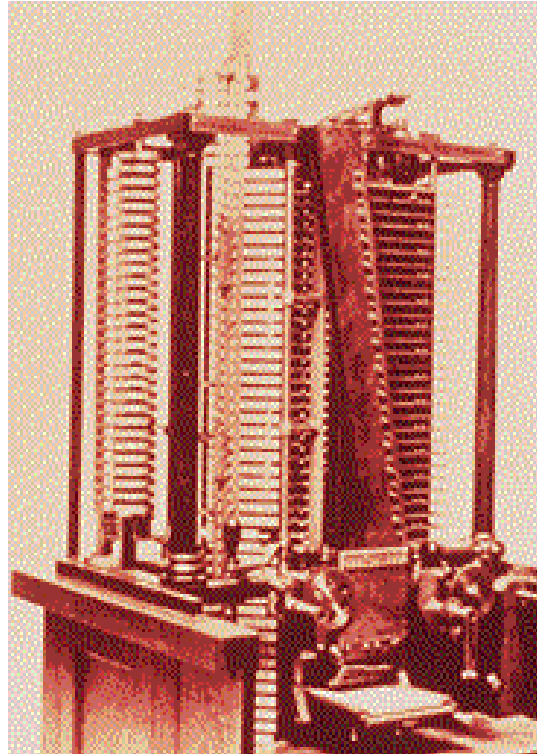
BABBAGE'S FIRST COMPUTER



difference engine

- built in early 1800's
- special purpose calculator
- naval navigation charts

BABBAGE'S SECOND COMPUTER



analytical engine, 1834

Analytical engine

- general-purpose
- used binary system
- punched cards as input
- branch on result of previous instruction
- Ada Lovelace (first programmer)
- machined parts not accurate enough
- never quite completed

INVENTION OF THE LIGHT BULB, 1878

Sir Joseph Wilson Swan

- English physicist and electrician
- first public exhibit of a light bulb in 1878

Thomas Edison

- American inventor, working independently of Swan
- public exhibit of a light bulb in 1879
- had a conducting filament mounted in a glass bulb from which the air was evacuated leaving a vacuum
- passing electricity through the filament caused it to heat up, become incandescent and radiate light
- the vacuum prevented the filament from oxidizing and burning up

EDISON'S LEGACY

Edison continued to experiment with light bulbs

in 1883, he detected electrons flowing through the vacuum of a light bulb

- from the lighted filament
- to a metal plate mounted inside the bulb

this became known as the *Edison Effect*

he did not develop this any further

1890- HERMANN HOLLERITH CONSTRUCTS AN ELECTROMECHANICAL MACHINE USING PERFORATED CARDS



FIRST GENERATION(1941 1956) (ELECTRONIC)

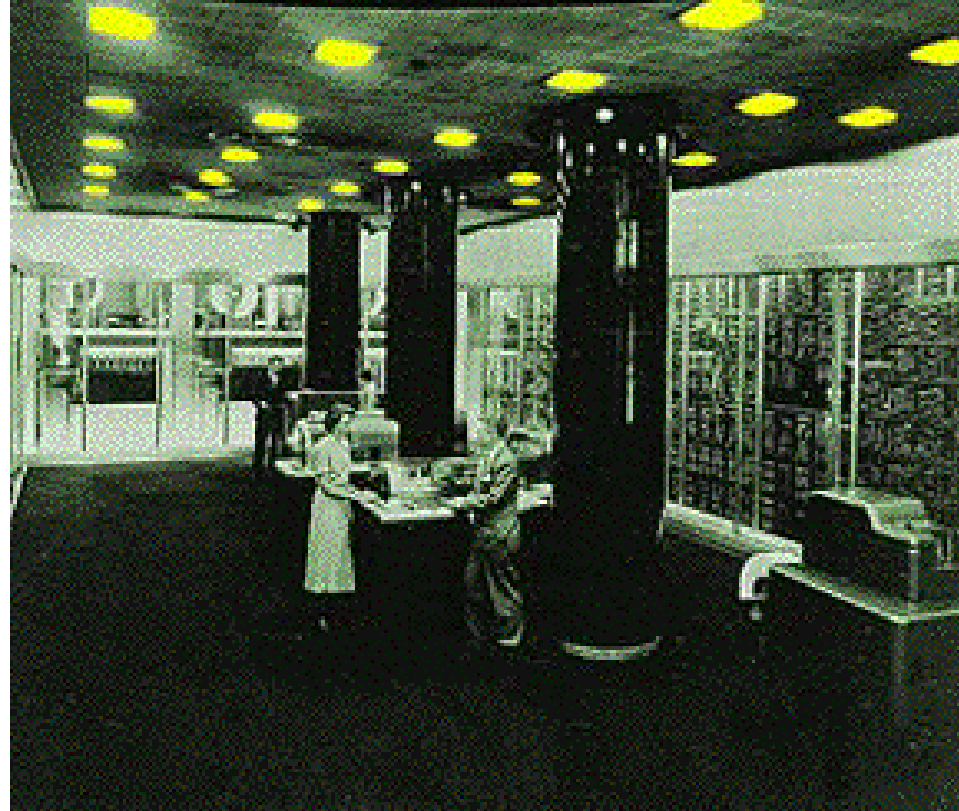
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1941- Konrad Zuse builds the Z3 computer, the first calculating machine with automatic control of its operations

1943 -COLOSSUS, A BRITISH COMPUTER USED FOR CODE-BREAKING



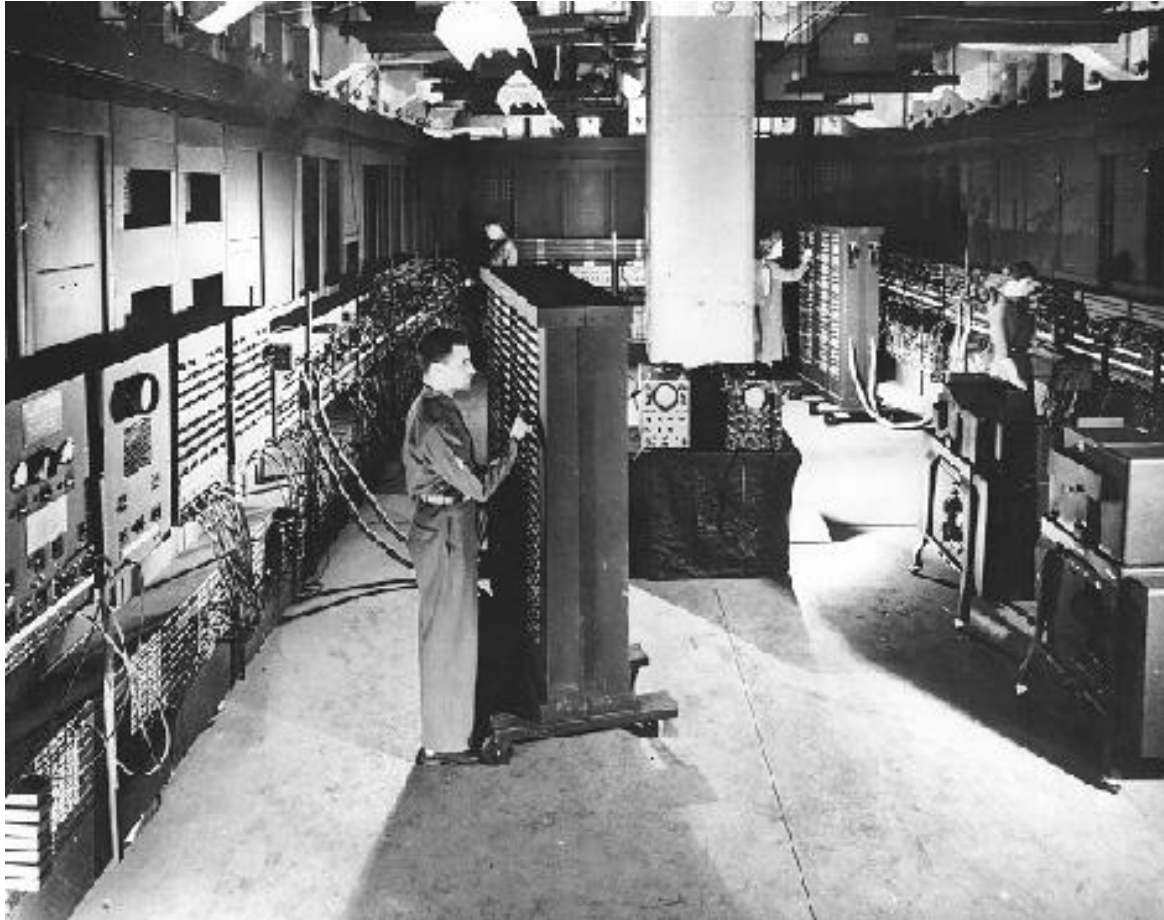
1944- MARK I . IT IS RELAY-BASED COMPUTER FOR THE U.S.NAVY



**1946 - ENIAC FIRST ELECTRONIC COMPUTER
WITH 18000 VACUUM TUBES AND IT
WEIGHED 80 TONS.IT COULD DO 5000
ADDITIONS AND 360 MULTIPLICATIONS PER
SECOND**



ELECTRICAL NUMERICAL INTEGRATOR AND COMPUTER (ENIAC), 1940'S



- an early computer
- developed at UPenn
- Size: 30' x 50' room
- 18,000 vacuum tubes
- 1500 relays
- weighed 30 tons
- designers
 - John Mauchly
 - J. Presper Eckert

1951 UNIVAC USED A MAGNETIC TAPE UNIT AS A BUFFER MEMORY



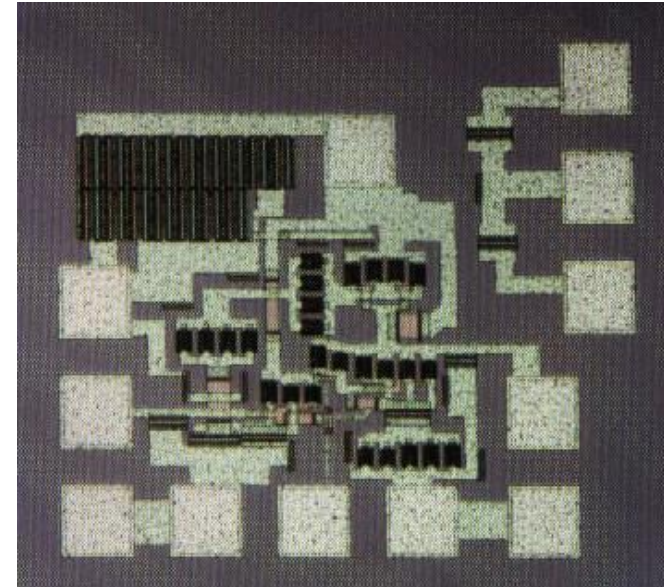
SECOND GENERATION(1956-1963)

By 1947, the invention of the transistor greatly changed the computer's development. The transistor replaced the large, unpractical vacuum tube in computers. Computers came smaller, faster, more reliable and more energy-efficient



THIRD GENERATION(1964-1971)

Integrated circuits semiconductor devices with several transistors built into one physical component. Texas Instrument and Fairchild both announce the integrated circuit 1959



FOURTH GENERATION(1971-PRESENT)

Intel 4004 chip took the integrated circuit one step further by locating all the components of a computer on silicon chip. Whereas previously had manufactured to fit a special purpose, now one microprocessor could be manufactured and programmed to meet any number of demands. Other Intel processors 8008, 8086, 80286, 80386, 80486, pentium, pentium pro, pentium II, pentium III and pentium IV.



INTEL 8088 MICROPROCESSOR (SINGLE CHIP)

used in first IBM personal computer

IBM PC released in 1981

4.77 MHz clock

16 bit integers, with an 8-bit data bus

- transfers took two steps (a byte at a time)
- 1 Mb of physical memory address limitation

8-bit device-controlling chips

29,000 transistors

3-micron technology

speed was 0.33 MIPS

later version had 8 MHz clock

- speed was 0.75 MIPS.

Pentium 4 chip has
42 million transistors

electrical paths now
as small as .13 micron

FIFTH GENERATION(PRESENT -)

There are thousand processors or more that work parallel processing as one processor. The most famous example of fifth generation computer is the HAL 9000. It use visual input, voice recognition and learn its own experiences. Advance superconductor technology allows the flow of electricity with no or little resistance, greatly improving the speed of information flow.

MOORE'S LAW EXAMPLE



DEC
PDP-11,
mid 1970's

DEC
LSI-11,
Early 1980's



These 2 computers were functionally equivalent.



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CCTV Puncak G. Merapi



THE END