HISTORY OF COMPUTER

EGCO342 INFORMATION TECHNOLOGY IN DAILY LIFE

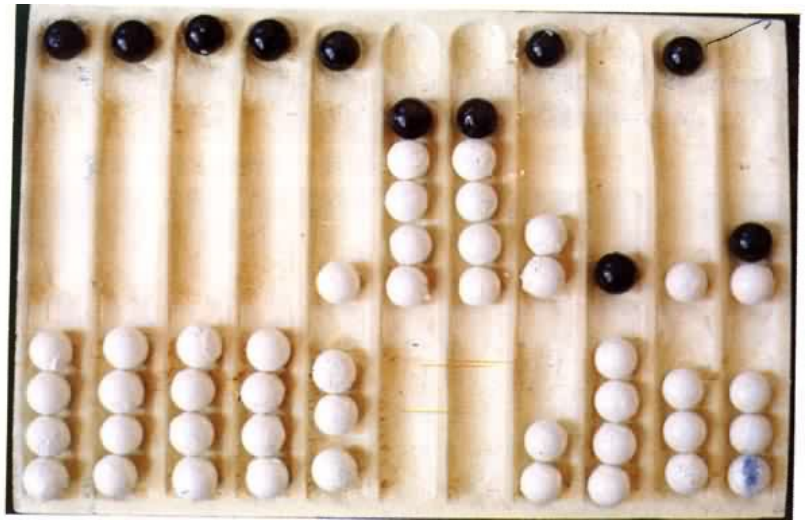
KANAT POOLSAWASD
DEPARTMENT OF COMPUTER ENGINEERING
MAHIDOL UNIVERSITY

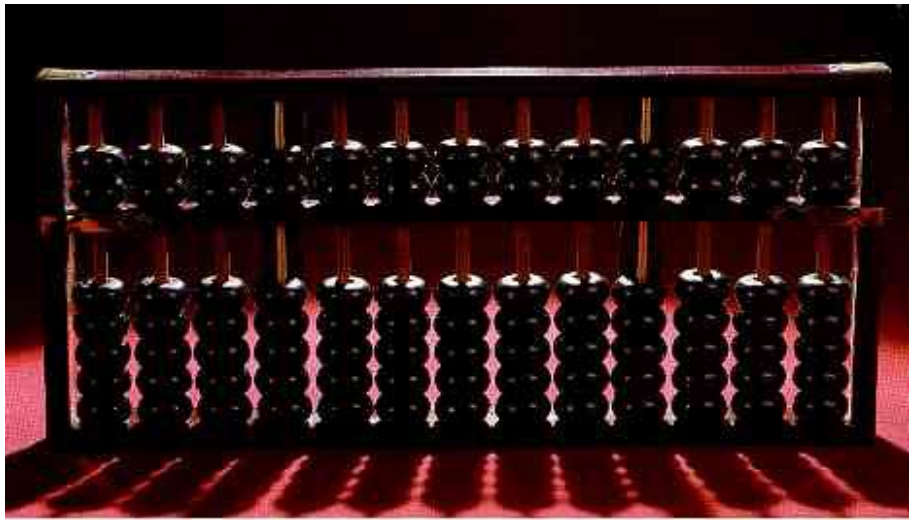
History of Computer

- Early Counting Tools
  - John Napier & Napier's Bones
- Gear-Driven Machines
  - Charles Babbage & His Engines
- Electro-Mechanical Machines
- The First Generation: 1945-1956 (The Vacuum Tube Years)
- The Second Generation: 1956-1963 (The Era of the Transistor)
- The Third Generation: 1965-1970 (The Era of the Integrated Circuits)
- The Fourth Generation: 1971-Today (The Microprocessor)

Early Counting Tools

- The first computer were people!
- The abacus was an early aid for mathematical computations.

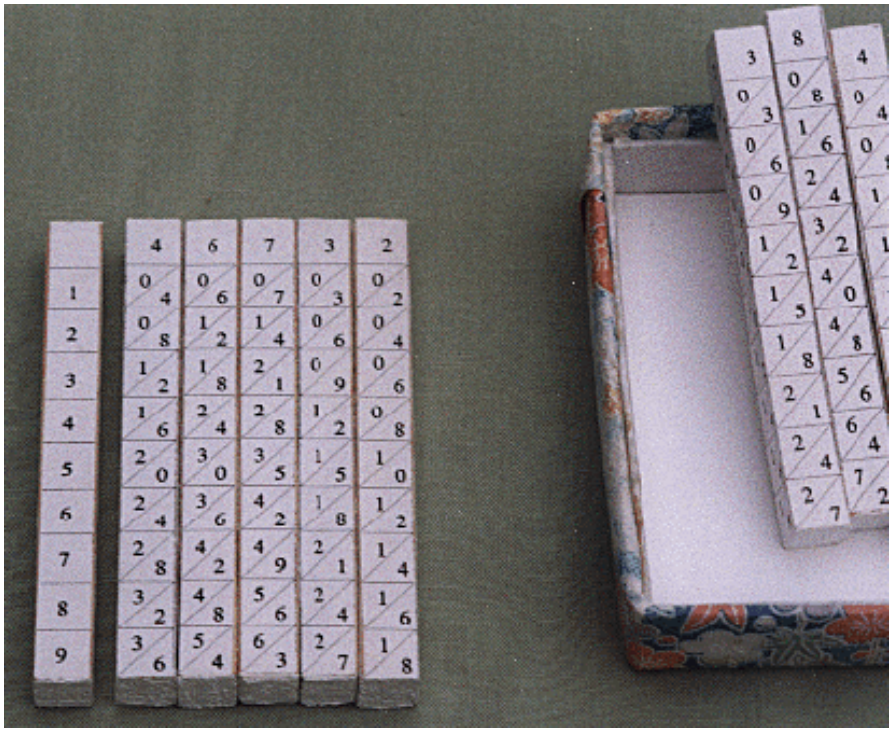


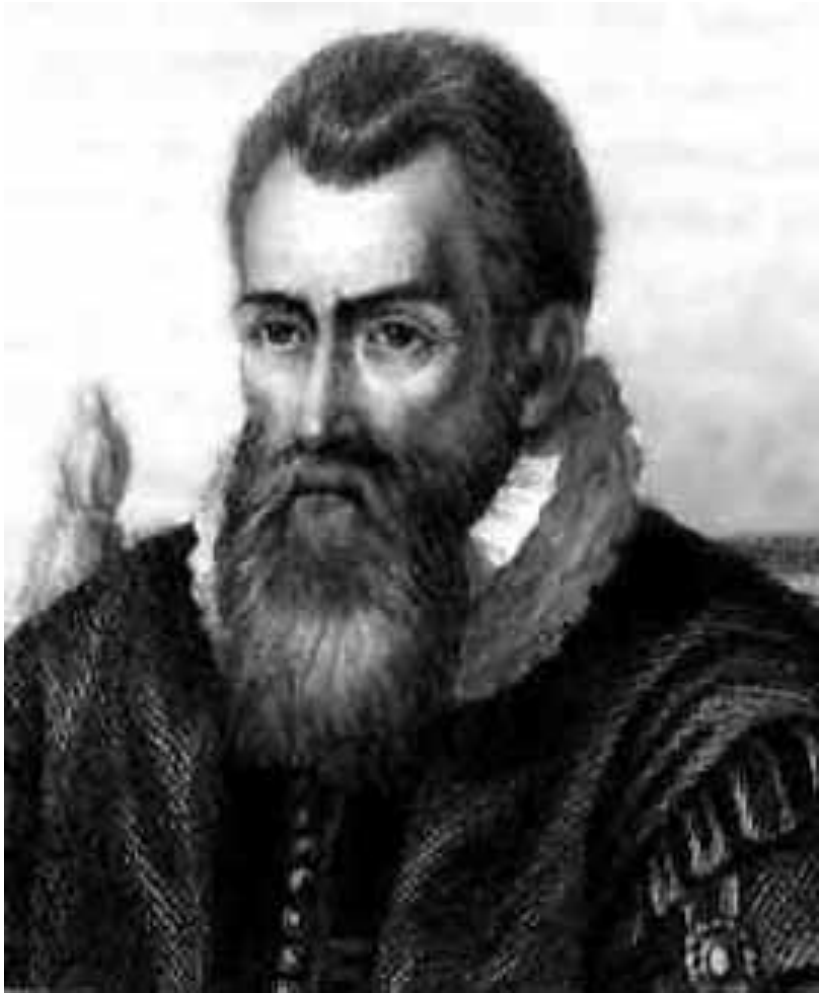


** http://www.computersciencelab.com/ComputerHistory/History.htm*

John Napier & Napier's Bones (1)

- In 1617, John Napier invented Napier’s Bones

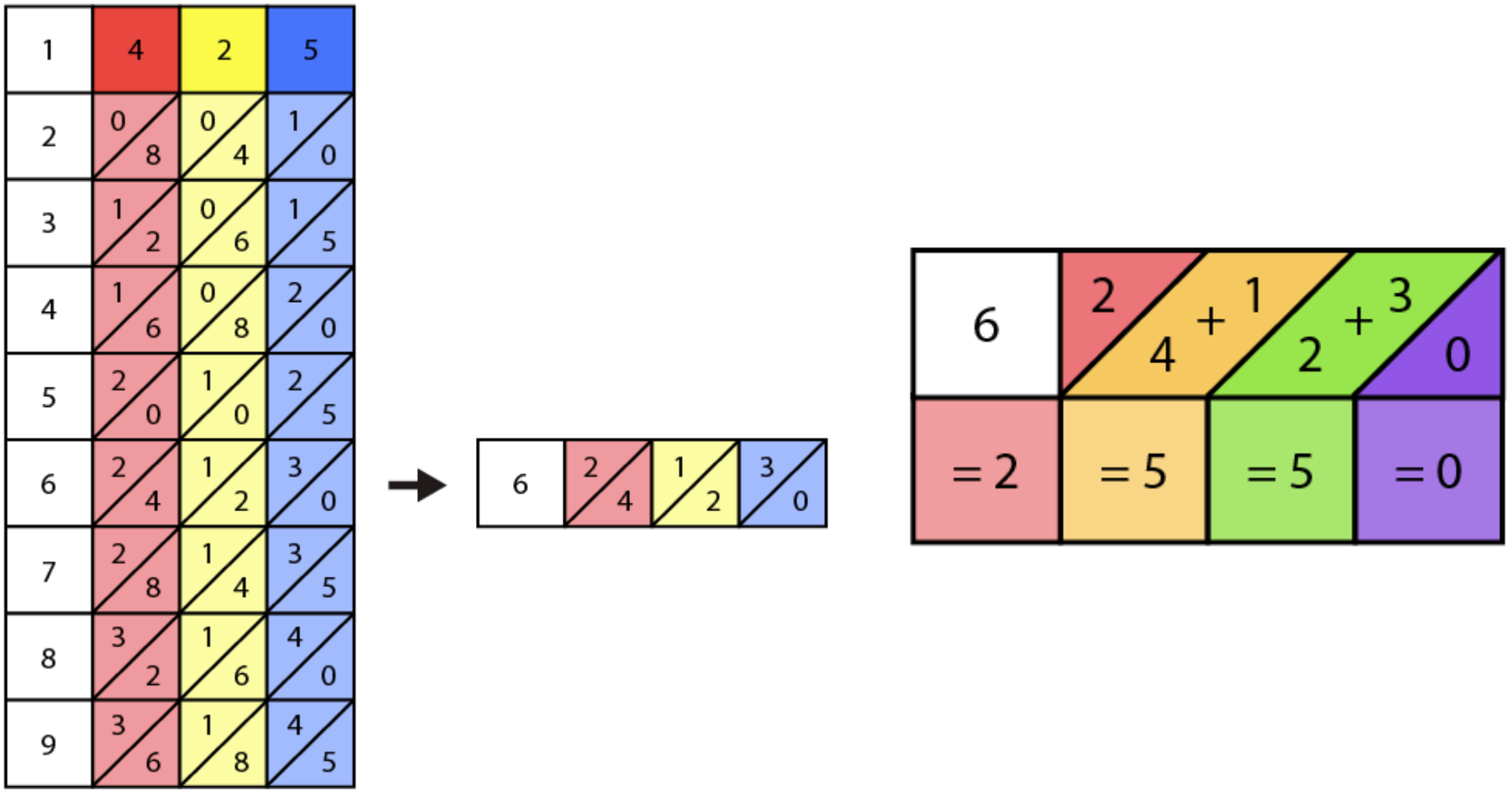




** http://www.computersciencelab.com/ComputerHistory/History.htm*

John Napier & Napier's Bones (2)

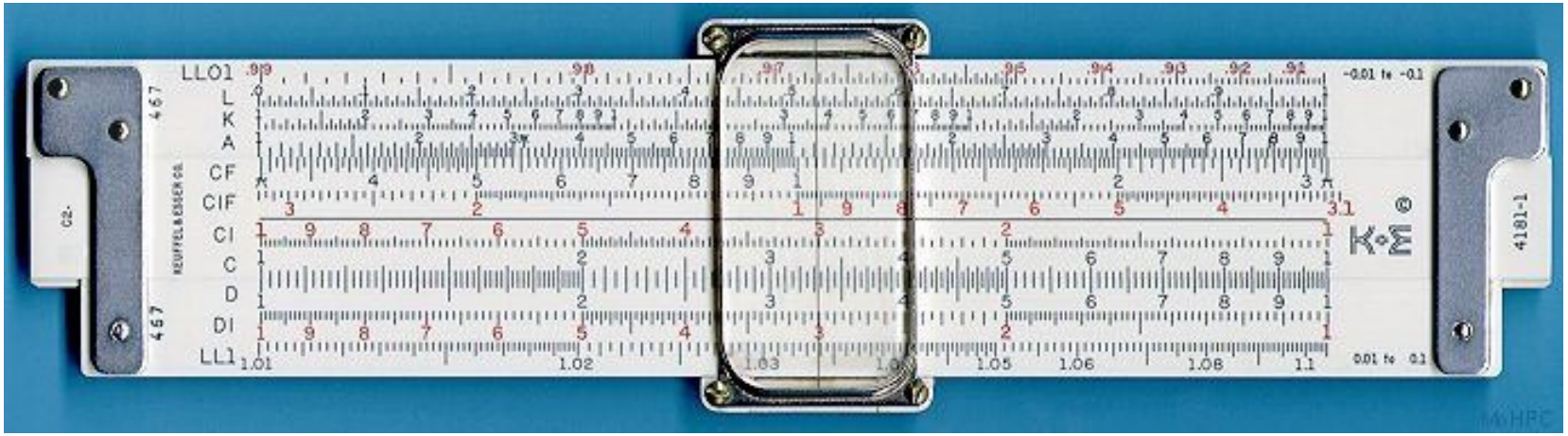
- Example: Multiply 425 by 6 equal ?



** https://en.wikipedia.org/wiki/Napier's_bones*

John Napier & Napier's Bones (3)

- In 1632, William Oughtred invented **Slide Rule**, first build in England and still use in the 1960's by the NASA engineers of Mercury, Gemini, and Apollo programs



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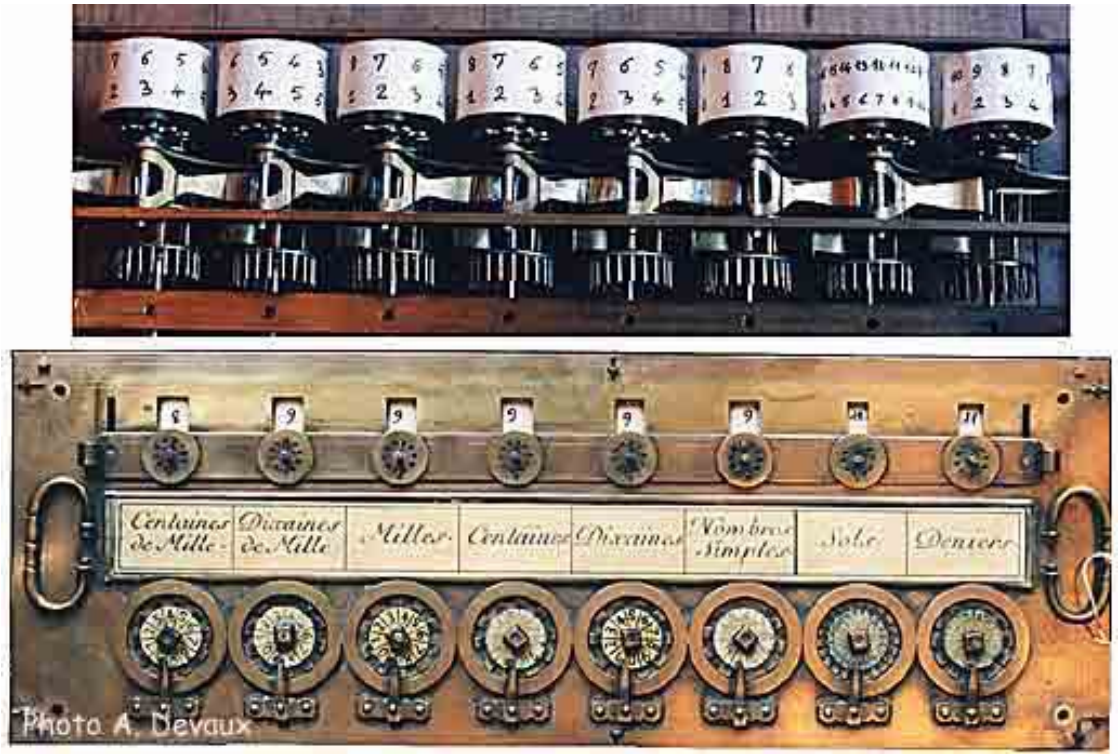
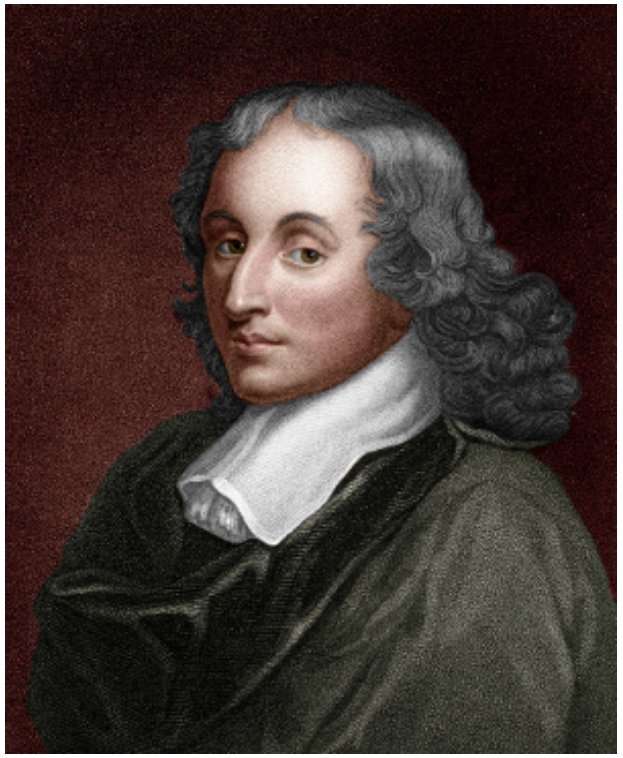
Gear-Driven Machines (1)

- In 1642, Blaise Pascal, at age 19 invented the Pascaline as an aid for his father who was a tax collector.

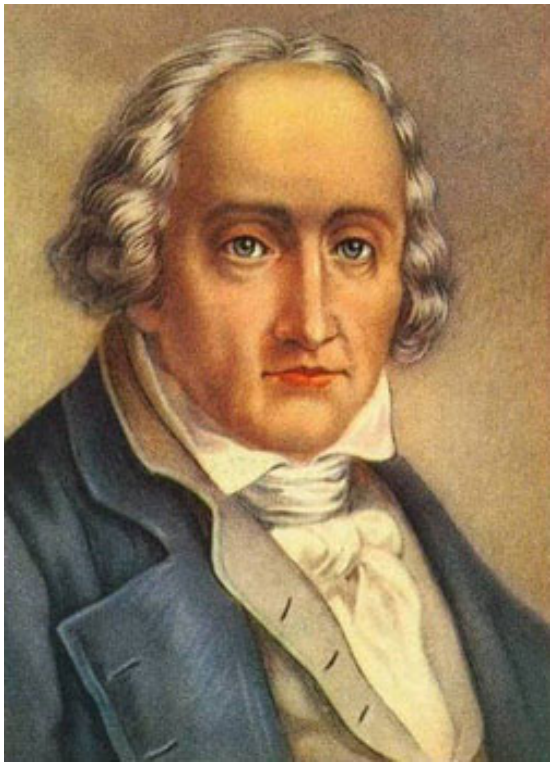




** http://imgkid.com/blaise-pascaline.shtml*

Gear-Driven Machines (2)

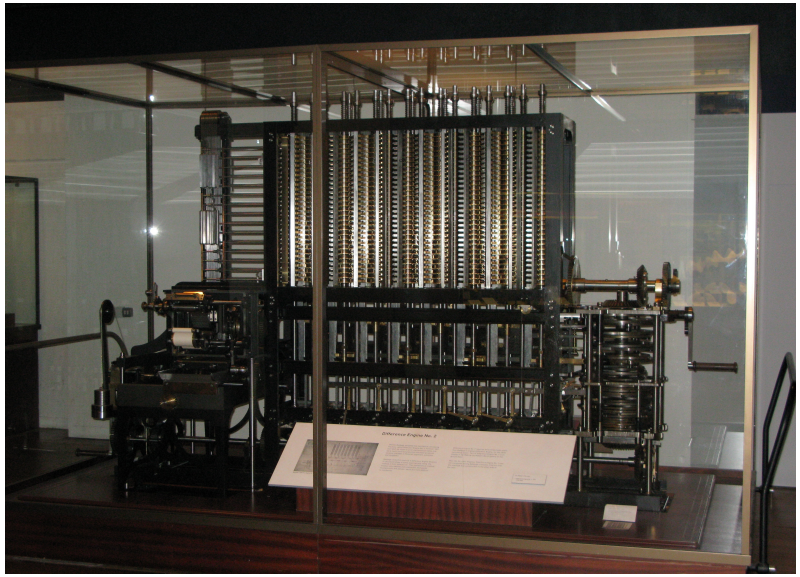
- In 1801 the Frenchman Joseph-Marie Jacquard invented the Jacquard's Loom and Punched Card



** http://en.wikipedia.org/wiki/Jacquard_weaving*

Charles Babbage & His Engines

- In 1822 the English mathematician Charles Babbage invented the **Difference Engine**.
- Augusta Ada Byron, Countess of lovelace, when she was only 19, she was fascinated by Babbage's ideas and thru letters and meetings with Babbage she learned enough about the design of the **Analytic Engine** to begin fashioning "**programs**" for the still unbuilt machine.



** http://en.wikipedia.org/wiki/Jacquard_weaving*

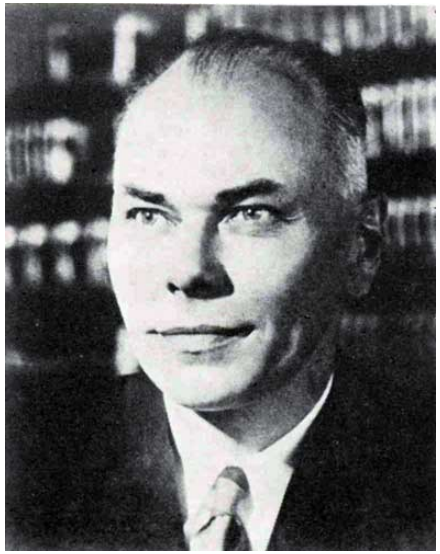
Electro-Mechanical Machines (1)

- In 1890, 50 years after Charles Babbage's death, Hollerith invented a machine called the **“Tabulating Machine”**

** http://www.vintage-computer.com/vcf6_de.shtml*

Electro-Mechanical Machines (2)

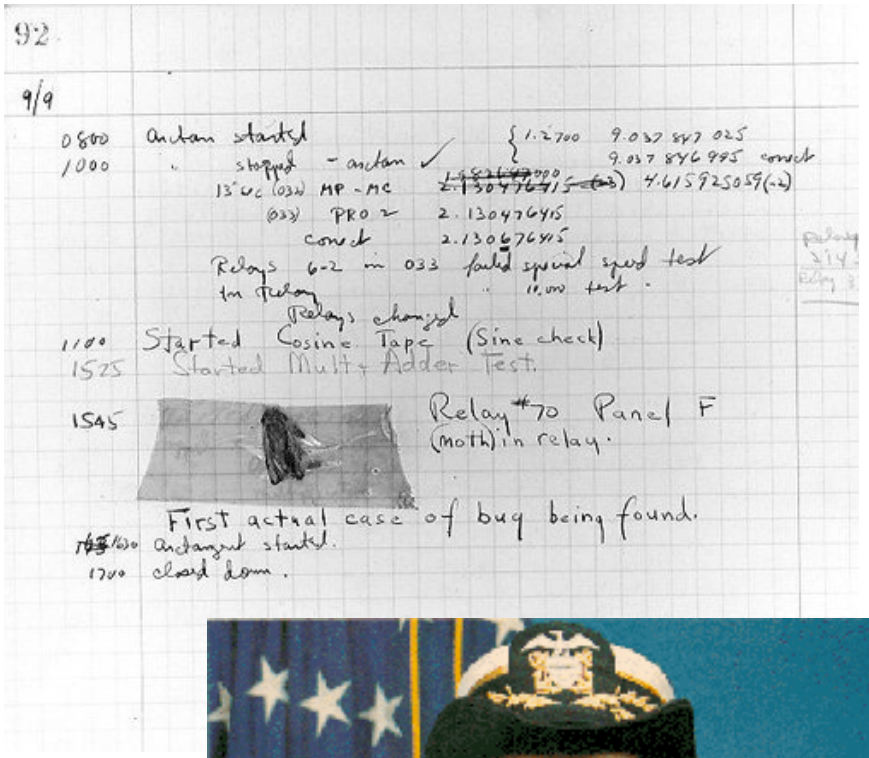
- In 1937, Howard Aiken outlined a plan for a machine that could perform math problems involving very large numbers. Because it handled distinct amounts or numbers, it was a digital (rather than analog) device.
- In 1944, IBM paid engineers to build Aiken's machine. Called the Mark I



** http://histinf.blogs.upv.es/2010/10/28/biografia-de-howard-h-aiken/*

Electro-Mechanical Machines (3)

- Grace Hopper found the first computer "bug": a dead moth that had gotten into the Mark I and whose wings were blocking the reading of the holes in the paper tape.
- The word "bug" had been used to describe a defect since at least 1889 but Hopper is credited with coining the word "debugging" to describe the work to eliminate program faults.

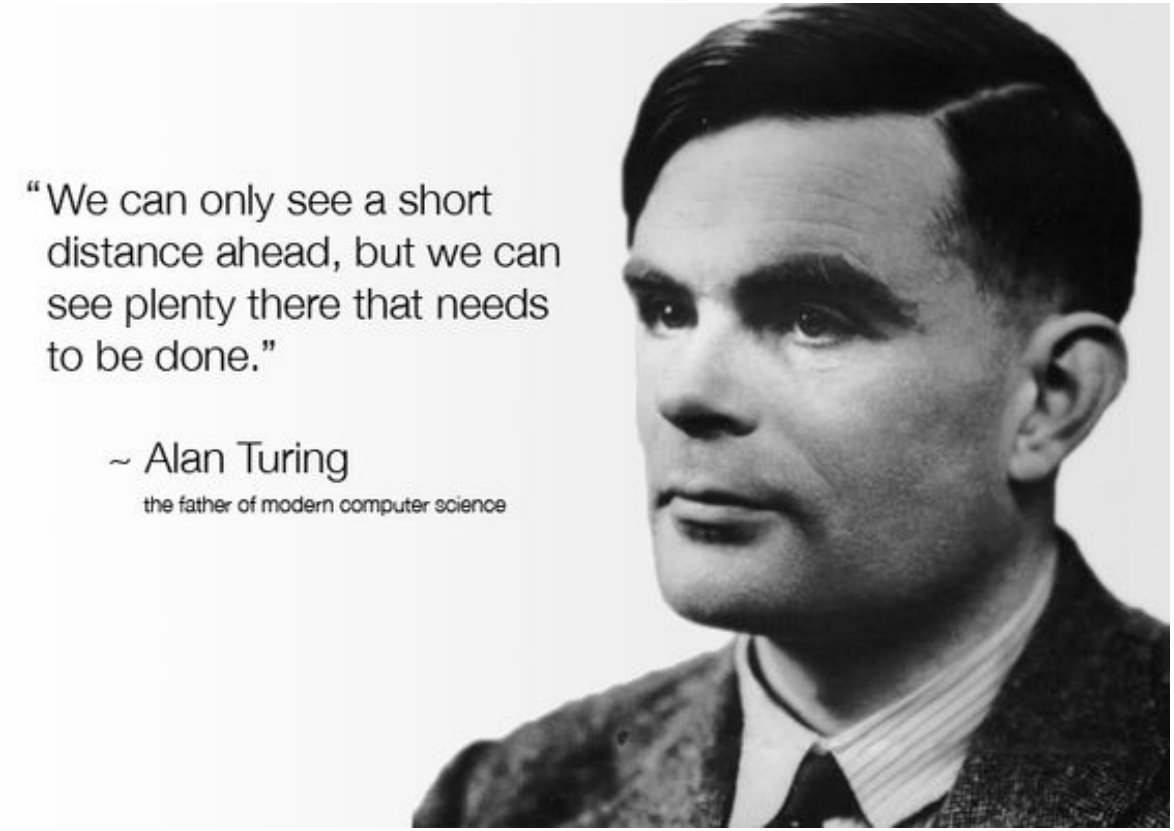


** http://www.computersciencelab.com/ComputerHistory/HistoryPt3.htm*

Electronic Digital Computers (1)

- Alan Turing (1912-1954)
- The Universal Machine

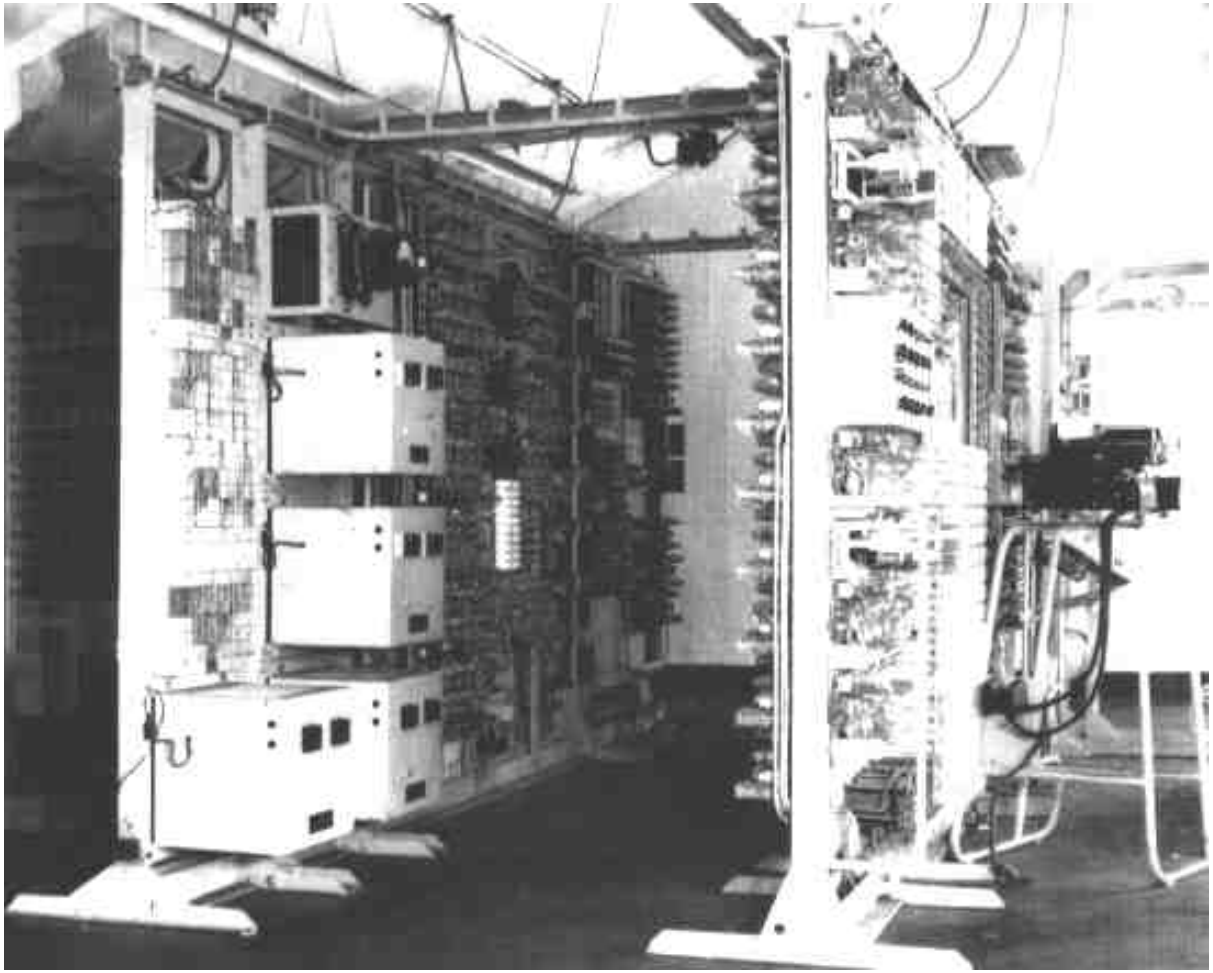
Enigma



** Picture from Wikipedia*

Electronic Digital Computers (2)

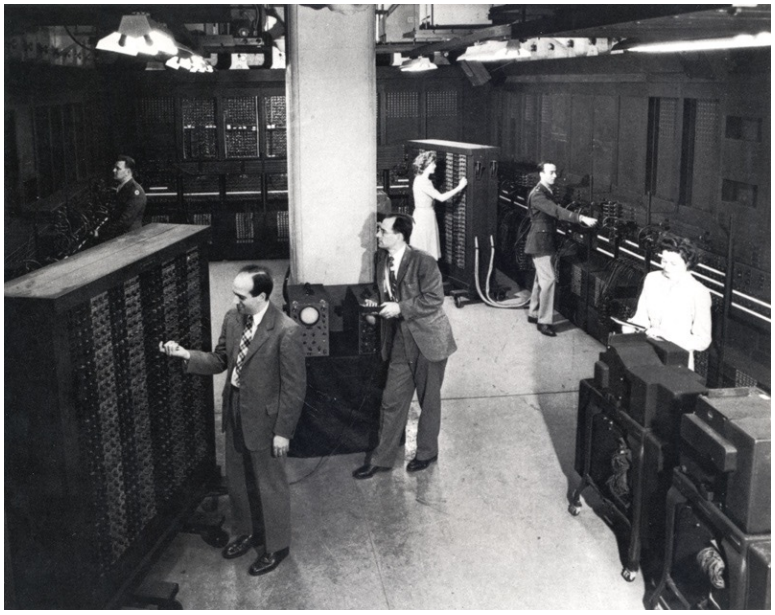
- Bletchley Park's Colossus (1943)



The First Generation: 1945-1956

(The Vacuum Tube Years)

- In 1946 two Americans, Presper Eckert, and John Mauchly built the ENIAC (Electronic Numerical Integrator and Computer) electronic computer which used vacuum tubes instead of the mechanical switches of the Mark I.
- In 1951, Eckert and Mauchly designed another computer called the UNIVAC (UNIVersal Automatic Computer)



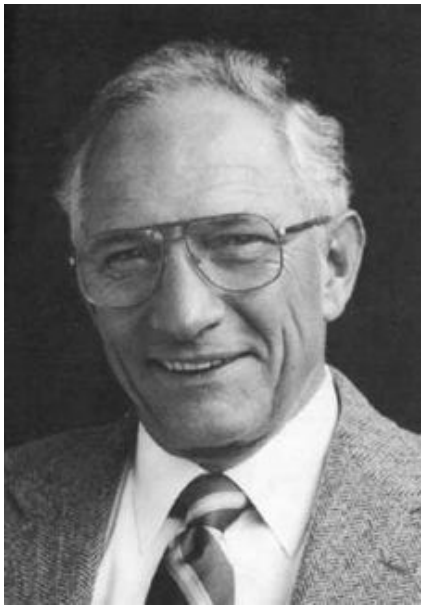
** Picture from Wikipedia*

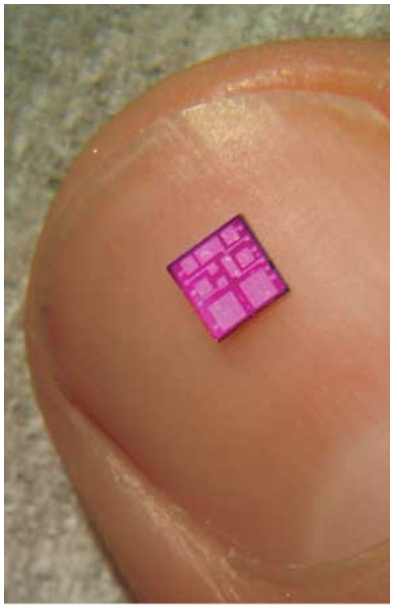
The Second Generation: 1956-1963 (The Era of the Transistor)

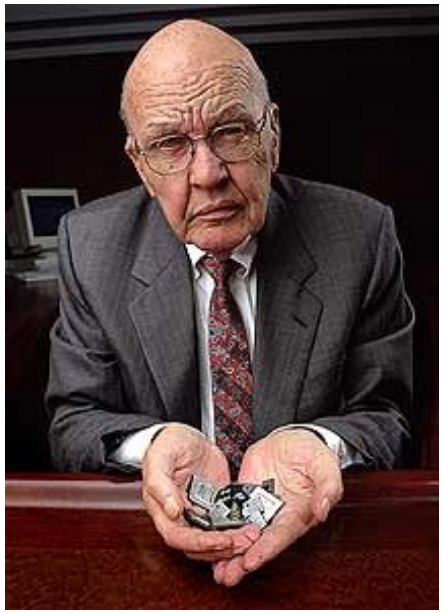
- In 1947 three scientists, John Bardeen, William Shockley, and Walter Brattain working at AT&T's Bell Labs invented what would replace the vacuum tube forever. This invention was the transistor which functions like a vacuum tube in that it can be used to relay and switch electronic signals.
- One transistor replaced the equivalent of 40 vacuum tubes. these transistors were made of solid material, some of which is silicon, an abundant element found in beach sand and glass. Therefore, they were very cheap to produce. Transistors were found to conduct electricity faster and better than vacuum tubes.

The Third Generation: 1965-1970
(The Era of the Integrated Circuits)

- Robert Noyce of Fairchild Corporation and Jack Kilby of Texas Instruments independently discovered the amazing attributes of integrated circuits. Placing such large numbers of transistors on a single chip vastly increased the power of a single computer and lowered its cost considerably.





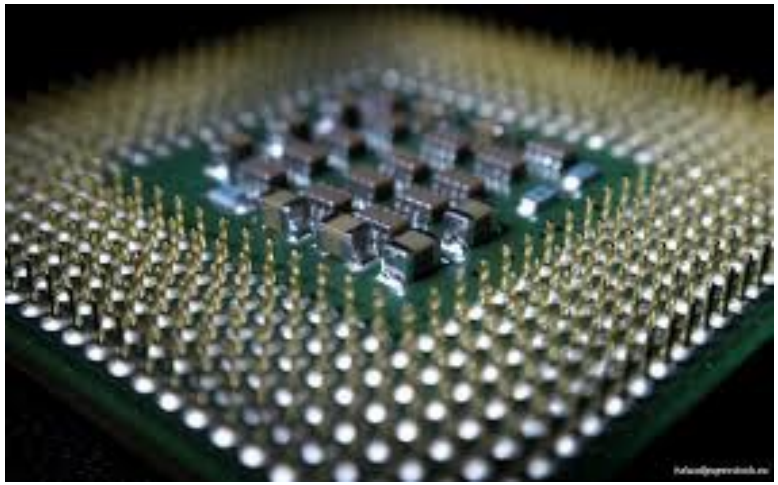


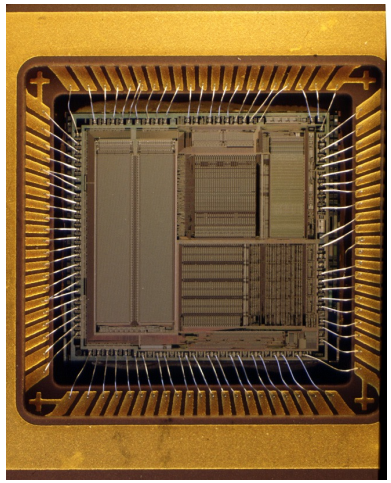
** http://www.ptc.dcs.edu/Moody/comphistory/comphistory_print.html*

The Fourth Generation: 1971-Today

(The Microprocessor)

- Ted Hoff, employed by Intel (Robert Noyce's new company) invented a chip the size of a pencil eraser that could do all the computing and logic work of a computer. The microprocessor was made to be used in calculators, not computers. It led, however, to the invention of personal computers, or microcomputers.





http://www.ptc.dcs.edu/Moody/comphistory/comphistory_print.html

Altair 8800

- 1975 – debut of first personal computer (PC)
- Switches for input and Lights for output
- Bill Gates and Paul Allen were among the first owners
- Wrote compiling program for the Altair

Apple I and Apple II

- Built by Steve Jobs and Steve Wozniak
- Used Motorola processor
- Apple II was first fully contained microcomputer

Apple I - 1976

Apple II - 1977

Evans,Technology In Action Complete International Edition, 9th Edition

IBM PCs

- Until 1980, IBM made mainframe computers
- In 1981, entered small-computer market
- IBM PC
  - 64 KB of memory, expandable to 256 KB
  - Started at $1,565

http://www.extremetech.com/computing/92640-ibm-personal-computer-its-30-year-legacy-slideshow

Other Important Advancements

- During 1970s and 1980s personal computer hardware was developing
- Advances were also made in:
  - Programming Languages
  - Operating Systems
  - Application Software
- Led to more useful and powerful machines

The Importance of BASIC

- Beginners All-Purpose Symbolic Instruction Code (BASIC)
- Introduced in 1964
- Revolutionized software industry
- Easily learned by beginning programmers
- Became key language for PC
- Led to creation of Microsoft

Advent of Operating Systems

- Floppy disk drive introduced in 1978
- Programs could be saved and operating systems were developed
  - Disk Operating System (DOS): Operating system that controlled the first Apples
  - Control Program for Microcomputers (CP/M): First operating system for Intel 8080 chip for PCs

Operating Systems

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  - Disk Operating System (DOS): Operating system that controlled the first Apples
  - Control Program for Microcomputers (CP/M): First operating system for Intel 8080 chip for PCs
- Microsoft developed MS-DOS in 1980
  - Operating system for IBM PCs
  - Based on an operating system called Quick and Dirty Operating System (QDOS)
  - Created by Bill Gates and Paul Allen
  - All PCs using the Intel chip used MS-DOS as their operating system

Software Application Explosion

- Including disk drives in personal computers set off an explosion of software applications

Electronic Spreadsheets

- VisiCalc
- Lotus 1-2-3
- Microsoft Excel

Word Processing

- WordStar
- WordPerfect
- Microsoft Word

Graphical User Interface

- GUI allowed users to interact with computer more easily
- Xerox
  - Designed PC called Alto in 1972
  - Introduced the What You See Is What You Get principle (WYSIWYG)
- Apple
  - In 1983, introduced the Lisa
  - First successful PC brought to market using GUI

The Internet Boom

- 1993 – Mosaic was introduced
- 1994 – Netscape was developed
- 1995 – Internet Explorer introduced by Microsoft
- 1998 – Netscape moves to open source

Embedded System

- An embedded system is a computer system with a dedicated function within a larger mechanical or electrical system, often with real-time computing constraints. It is embedded as part of a complete device often including hardware and mechanical parts. Embedded systems control many devices in common use today.

The Internet of Things

Life after Death by Powerpoint 2012

- Life after death by PowerPoint 2012 by Don McMillan