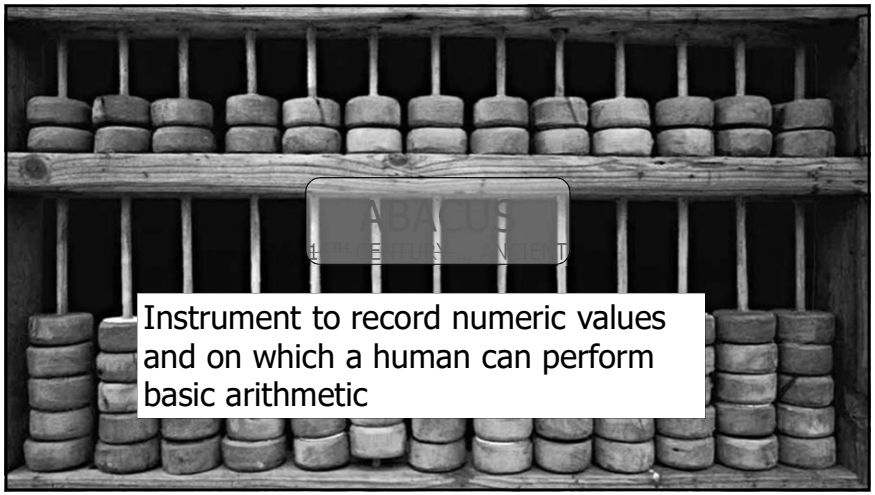
TERMS

COMPUTER SYSTEM - Used to solve problems and interact with its environment

COMPUTER HARDWARE - physical elements of a computing system

COMPUTER SOFTWARE - programs that provide the instructions for a computer to execute



Instrument to record numeric values and on which a human can perform basic arithmetic

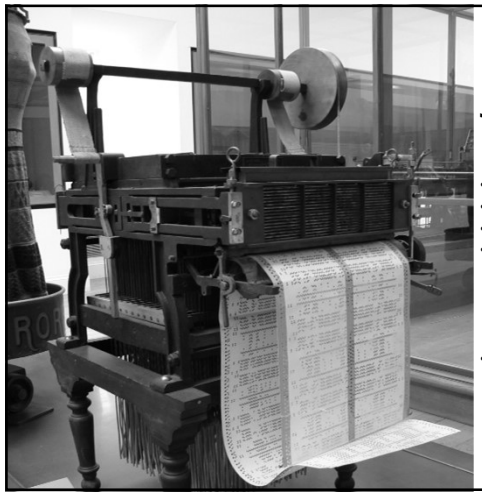
BLAISE PASCAL

- 17TH CENTURY
- MECHANICAL DEVICE TO ADD AND SUBTRACT

LEIBNIZ MACHINE

- 17TH CENTURY

- Gottfried Wilhelm von Liebniz
- Calculating Machine that included multiplication and division

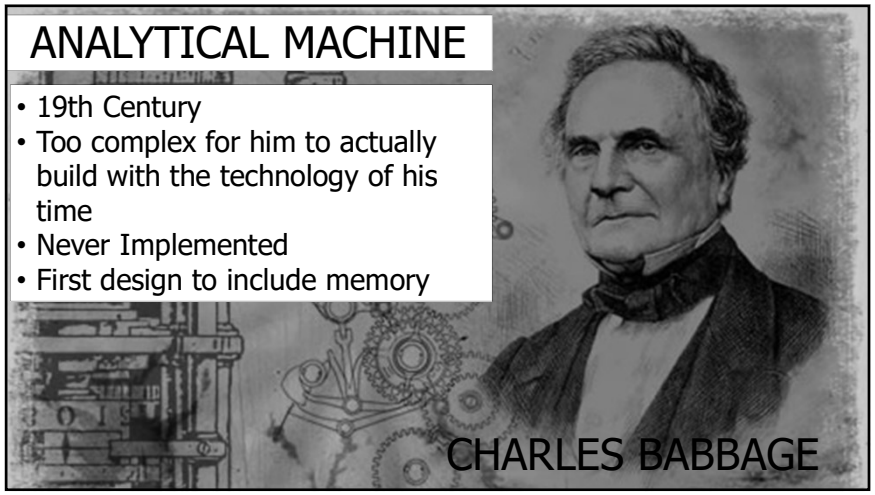


JACQUARD'S LOOM

- 18th Century
- Joseph Jacquard
- Used for weaving cloth
- Series of cards with holes punched in to specify the use of specific colored thread to dictate the design that was woven
- First to use INPUT! Punched card

ANALYTICAL MACHINE

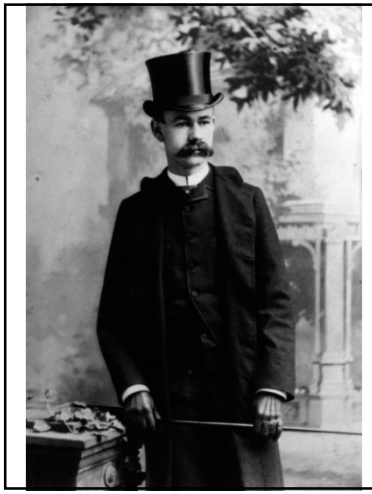
- 19th Century
- Too complex for him to actually build with the technology of his time
- Never Implemented
- First design to include memory



ADA LOVELACE

FIRST COMPUTER PROGRAMMER

- 19th Century
- Daughter of Lord Byron (English Poet)
- Extended Babbage's ideas and even corrected errors
- Developed concept of a loop
- Ada – programming language used by the DoD



Herman Hollerith

- 19th Century
- Developed first electro-mechancial tabulator
- Read info from punched cards
- Revolutionized the census
- Later formed IBM (International Business Machines)

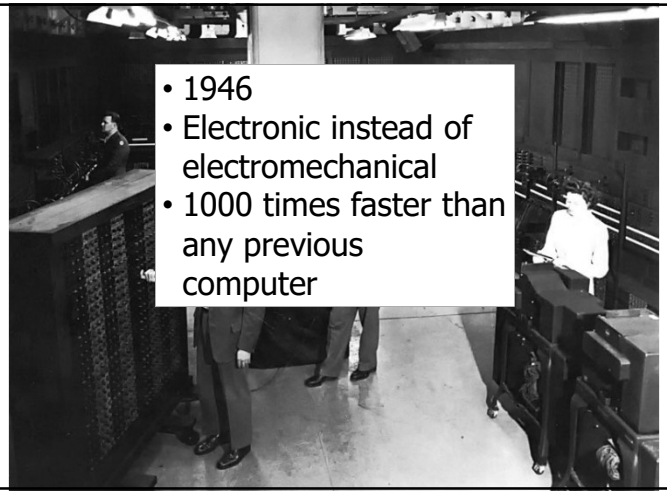
- 1936
- British Mathematician
- Turing Machine
  - Abstract Mathematical Model
- Turing Test

Alan Turing

HARVARD MARK I

- 1944
- IBM Automatic Sequence Controlled Calculator given to Harvard

ENIAC



- 1946
- Electronic instead of electromechanical
- 1000 times faster than any previous computer

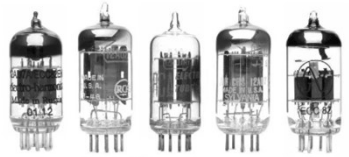
UNIVAC I

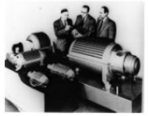
- 1951
- First commercial computer
- First computer used to predict outcome of a presidential election

FIRST GENERATION
(1951 – 1959)

FIRST GENERATION (1951 – 1959)

HARDWARE

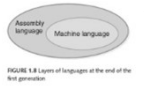




- Vacuum Tubes
- Magnetic Drum
- Card Reader

SOFTWARE

- Binary (0s and 1s)



- Assembly Languages & Translators
- Programers
  - Application
  - System

SECOND GENERATION (1959 – 1965)

SOFTWARE HARDWARE

SECOND GENERATION (1959 – 1965)

HARDWARE

- Transistor

- Immediate – Access Memory
  - Magnetic cores

- Magnetic Disk

SOFTWARE

- High Level Languages
  - FORTRAN, COBOL, Lisp

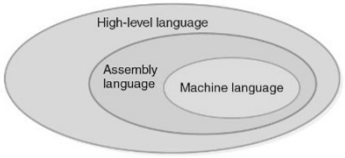


FIGURE 1.9 Layers of language at the end of the second generation

THIRD GENERATION (1965 – 1971)

SOFTWARE HARDWARE

THIRD GENERATION (1965 – 1971)

HARDWARE

- Integrated Circuits

- Terminal

SOFTWARE

- Operating System
- SEPARATION BETWEEN USERS AND HARDWARE
  - Computer programmers write programs to be used by general public (i.e., Nonprogrammers)

MOORE'S LAW

- From the invention of the integrated circuit, the number of circuits that could be placed on a single integrated circuit doubled each year.

HARDWARE FOURTH GENERATION (1971 – 1980?)

- Large Scale Integration
- Moore's Law Modified
  - Chip density doubling every 18 months
- Personal Computer (PC)

```
{
  Author:     John Citizen
  Date:       April 1, 2041
  Student     ID: 1234567
  FileName:   TestSwap
  Description: Swaps two inputed user values around
}

program TestSwap;

{
  Procedure:  Swap
  Input:      v1, v2 : Integers
  Output:     v1, v2 : Integers
  Description:Swaps the values of passed in Integers
}
procedure Swap(var v1, v2 : Integer);
var temp : Integer;
begin
  temp:=v1;           {sets temp to value v1}
  v1:=v2;             {sets the value of v1 to v2}
  v2:=temp;           {sets the value of v2 to temp}
end;

procedure Main();
var
  v1,v2 : Integer;
begin
  Write('Enter a number ' );
  ReadLn(v1);                                  {Read user input and asign value to v1}
  Write('Enter another number ' );
  ReadLn(v2);                                  {Read user input and asign value to v2}
  WriteLn ('v1 is :',v1,' and v2 is :',v2);
  Swap(v1,v2);                                 {Calls Swap Procedure}
  WriteLn ('v1 is now :',v1,' and v2 is now :',v2);
end;

begin
  Main();
end.
```

SOFTWARE FOURTH GENERATION (1971 – 1989)

- Structured Programming
  - PASCAL, C++
- Better Operating Systems
- Applications

1981 ?

FIFTH GENERATION HARDWARE

- 1981 – IBM PC
- 1984 – APPLE MACINTOSH
- WORKSTATIONS
  - Networked
- UNIX

FIFTH GENERATION SOFTWARE

1. Rise of Microsoft
2. Object-Oriented design and programming
3. World wide web

USERS

Programmers	Systems Programmers	Applications Programmers	Everyone
solve specific problems	write more complex tools for other programmers	using complex tools to write programs for non-programmers to use	Uses applications