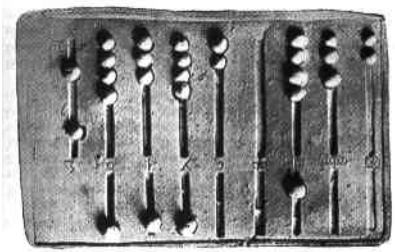
Typology of programming languages

Before Transitors Era

Abacus

- **3000 BC** Dust abacus is invented, probably in Babylonia
- **500 BC** Bead and wire abacus originates in Egypt.

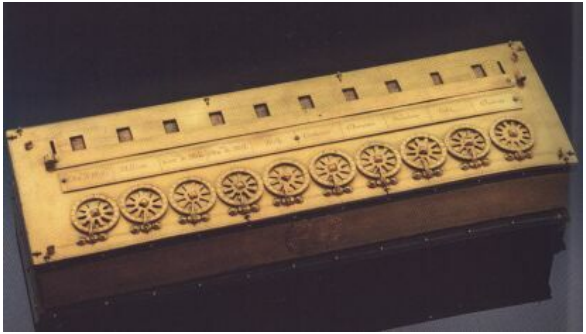
Roman Abacus



The Antikythera mechanism 150/80 BC

La Pascaline

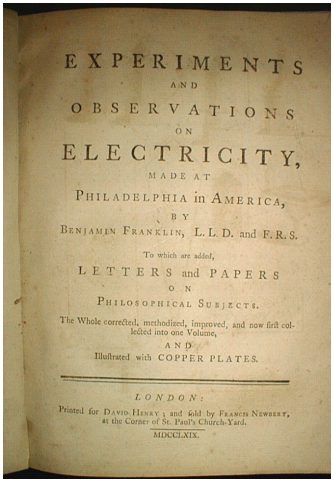
- **1642** First numerical calculating machine in Paris.



Mechanical calculating machine & tapes

- **1673** Mechanical calculating machine by Gottfried Leibniz.
- **1725** Basille Bouchon, son of an organist at Lyon, invents a loom controled by a punched paper tape.
- **1780** American Benjamin Franklin discovers electricity

Franklin asking for troubles



EXPERIMENTS
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ON
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PHILADELPHIA in AMERICA,
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Printed for DAVID HENRY; and sold by FRANCIS NEWBERY, at the Corner of St. Paul's Church-Yard.
MDCCLXIX.

Jacquard

- **1801** Jacquard invents fully automated looms, driven by punch cards.

Babbage's machine

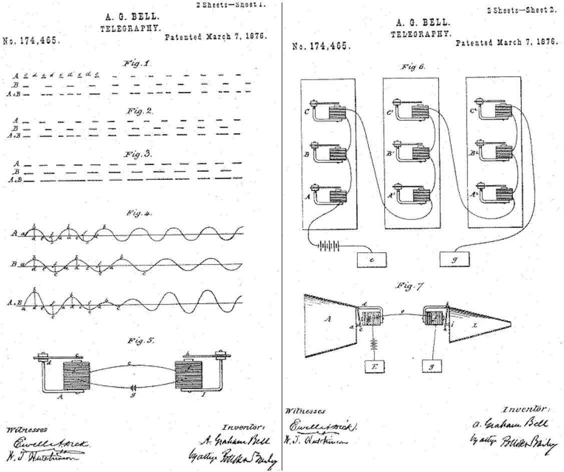
- **1833** Babbage designs a machine
  driven by punched-cards
  The first general purpose computer.

Babbage's machine

- **1833** Babbage designs a machine
  driven by punched-cards
  The first general purpose computer.

Telephone

- **1876** Telephone is patented by Alexander Graham Bell, a few hours before Elisha Gray.



CTRC

- **1911** Computer-Tabulating-Recording Company is formed

IBM

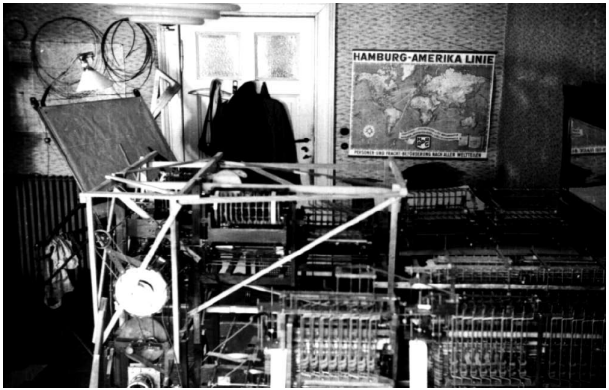
- **1924** Computing-Tabulating-Recording Company changes its name to International Business Machines (IBM).

Around 1930

- **1927** First public demonstration of television.
- **1936** First calculator, the Z1
  Built in Germany by Konrad Zuse

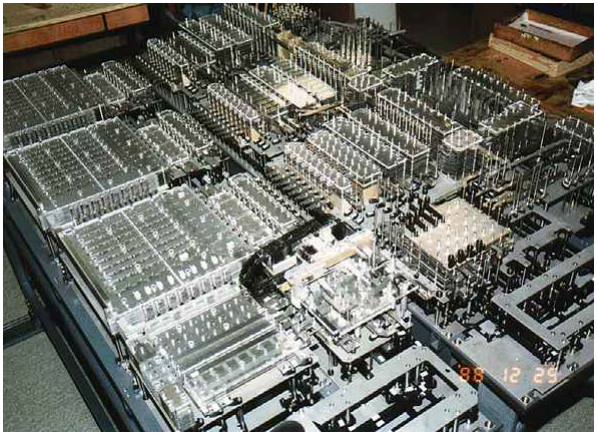
Z1

- Z1 in the apartment of Konrad Zuse's parents in 1936



Z1 reconstructed

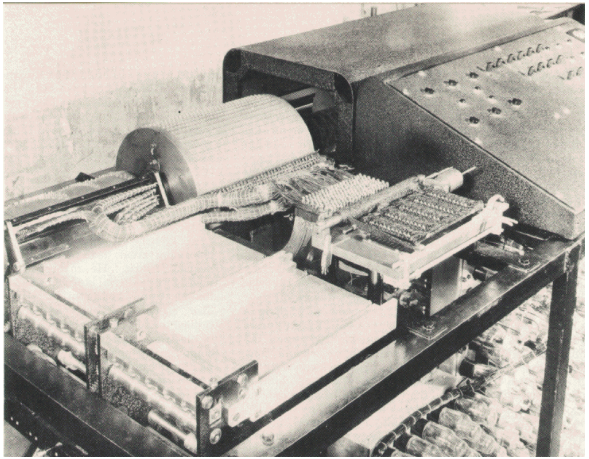
- The Z1 reconstructed by K. Zuse



1939

- **1939** First Radio Shack catalog is published.
- **1939** Design of the ABC (Atanasoff-Berry Compute
  Ruled the first automatic digital computer in 1973.
  Not programmable, not Turing complete.

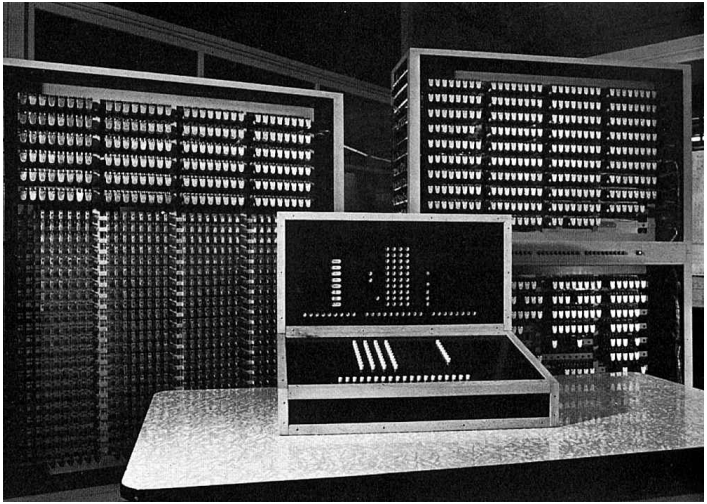
The Atanasoff-Berry Computer



Around 1940

- **1940** Complex Number Calculator, which may be the first digital computer (Bell Labs).
- **1940** First color TV broadcast.
- **1941** Zuse's Z3
  The first reliable, freely programmable, working computer based on a binary floating-point number and switching system.
  First Turing-complete machine.

The Z3 rebuilt in 1961 by Zuse



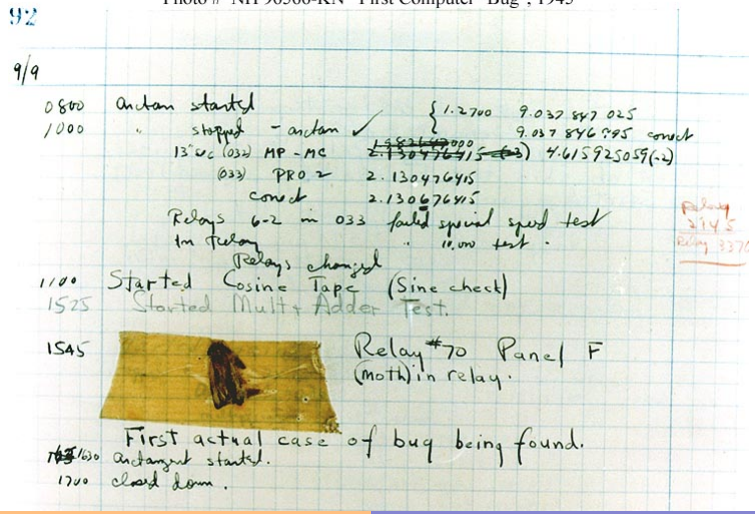
The IBM ASCC

- **1944** Harvard Mark I (IBM Automatic Sequence Controlled Calculator (ASCC)) is completed at Harvard and IBM.
  A relay-based computer.

The First Bug, logged

- **1945, Sep 9th** Grace Hopper finds the first computer bug on a Harvard Mark II

Photo # NH 96566-KN First Computer "Bug", 1945



Eniac and Univac

- **1946-02-14** First electronic calculator: ENIAC (Electronic Numerical Integrator and Computer) University of Pennsylvania.
- **1946** Design of the Universal Automatic Computer (Univac).

1948

- **1948** IBM builds a computer with 12,000 tubes.
- **1948** Transistor is invented.

First transistor

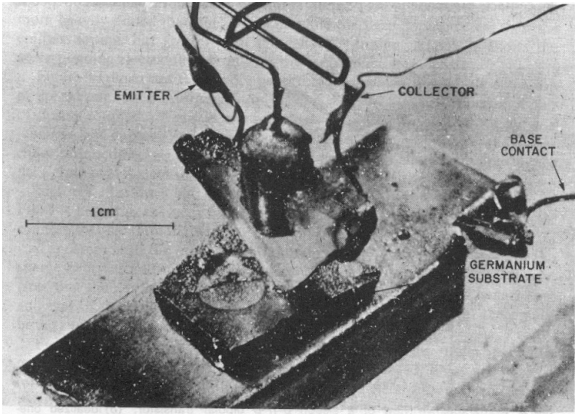
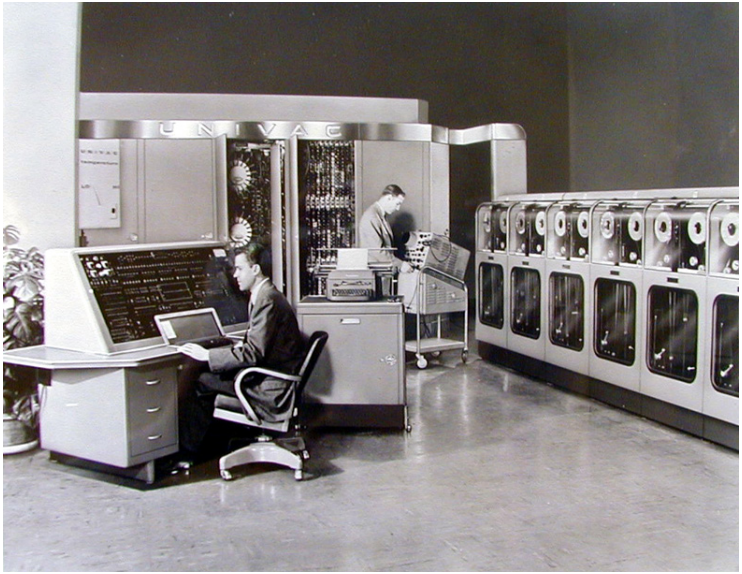


Fig. 1 The first transistor.[1]

EDVAC, Binac, UNIVAC

- **1949** EDVAC (Electronic Discrete Variable Automatic Computer) supports the first tests of magnetic disks
- **1949-03** Binac (Binary Automatic Computer
  First computer to operate in real time.
- **1951-06-14**UNIVAC I, first commercially available computer. Features a magnetic tape unit as a buffer memory.

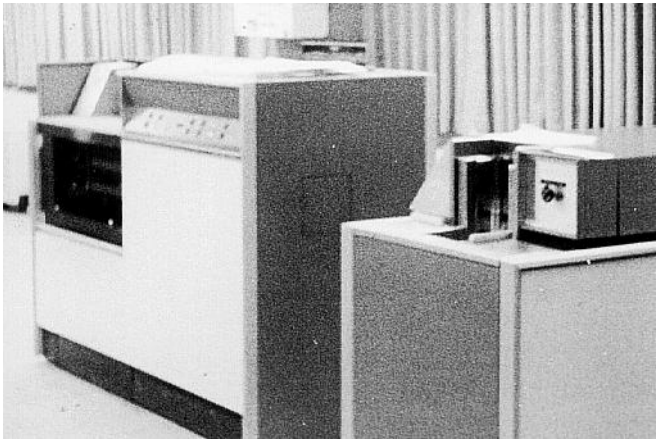
UNIVAC I



EDVAC, Binac, UNIVAC

- **1952** RCA develops Bizmac with iron-core memory and a magnetic drum supporting the first database.
- **1953** First high-speed printer is developed
(by Remington-Rand for Univac).

Printer for the UNIVAC 1107 in the 60's



Music [a-simple-text-file.mp3]

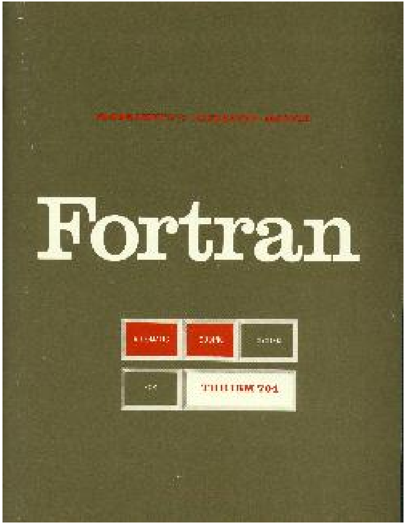
EDVAC, Binac, UNIVAC

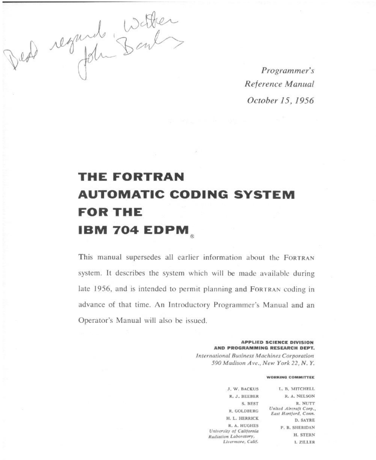
- **1953** First magnetic tape device
- **1953-04-07** BM introduces the 701.
  Its first electronic stored-program computer.
  It is a vacuum tube, or first generation, computer.

IBM 701

Fortran

- **1954** FORTRAN is created.





Programmer's
Reference Manual
October 15, 1956

THE FORTRAN
AUTOMATIC CODING SYSTEM
FOR THE
IBM 704 EDPM®

This manual supersedes all earlier information about the FORTRAN system. It describes the system which will be made available during late 1956, and is intended to permit planning and FORTRAN coding in advance of that time. An Introductory Programmer's Manual and an Operator's Manual will also be issued.

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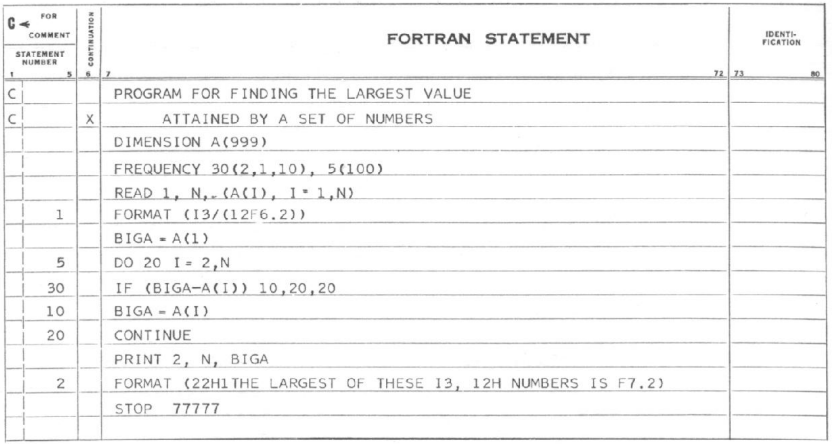
A FORTRAN sample



C ← FOR COMMENT / STATEMENT NUMBER (1–5)	CONTINUATION (6)	FORTRAN STATEMENT (7–72)	IDENTIFICATION (73–80)
C		PROGRAM FOR FINDING THE LARGEST VALUE	
C	X	ATTAINED BY A SET OF NUMBERS	
		DIMENSION A(999)	
		FREQUENCY 30(2,1,10), 5(100)	
		READ 1, N, (A(I), I = 1,N)	
1		FORMAT (I3/(12F6.2))	
		BIGA = A(1)	
5		DO 20 I = 2,N	
30		IF (BIGA-A(I)) 10,20,20	
10		BIGA = A(I)	
20		CONTINUE	
		PRINT 2, N, BIGA	
2		FORMAT (22H1THE LARGEST OF THESE I3, 12H NUMBERS IS F7.2)	
		STOP 77777	