CIS121

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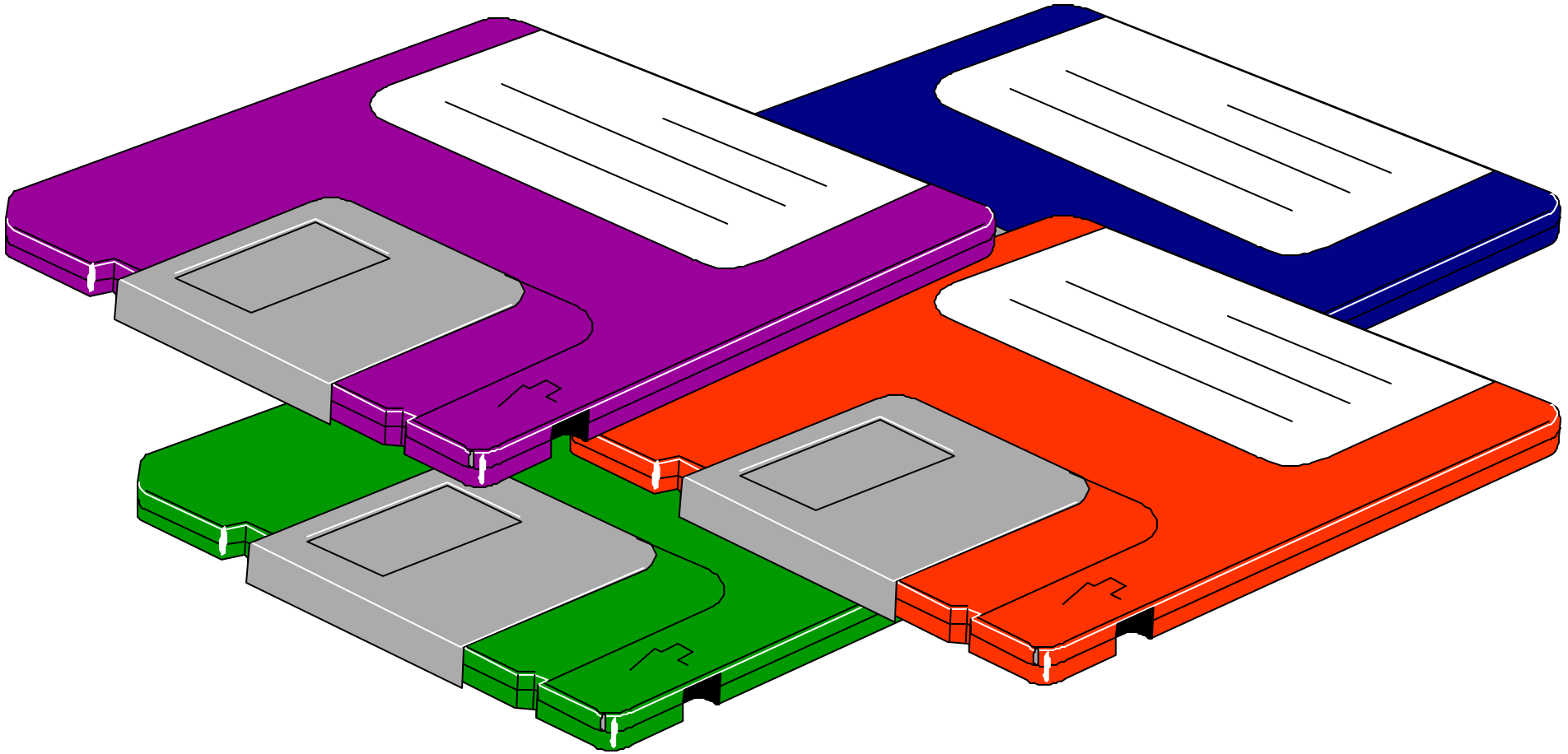
You Will Need Floppy Disks for your labs!



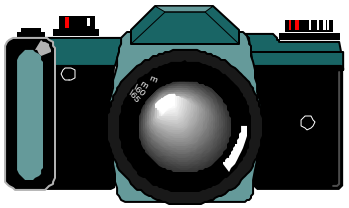
Study Skills

- Remember that quizzes and tests are open note! Take notes!

- Organize! Get a 3-ring binder to keep your labs, notes and quizzes.

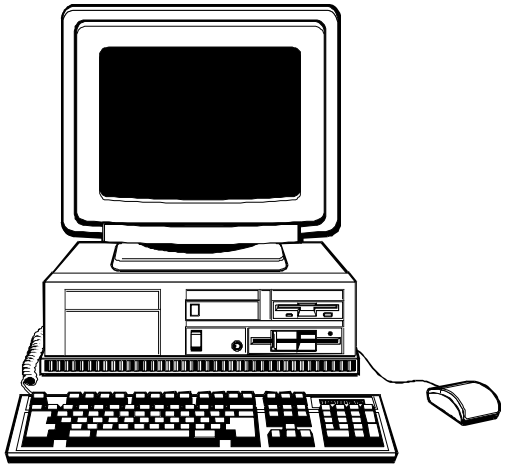
Who Uses Computers?

- Banks
- Researchers
- Utility Companies
- Stores
- ECC
- Cars
- Coffee Makers
- You



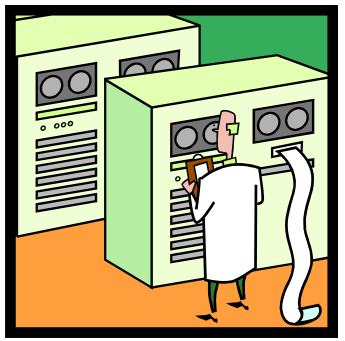
Computers in our lives

- Do research the Internet
- Chat with friends
- Shop
- Balance your checkbook
- Write your term paper
- Keep track of your grades
- Learn French
- Play games



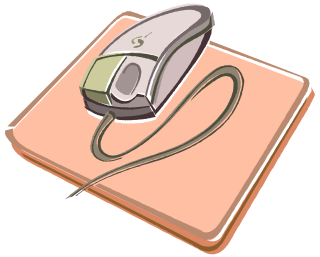
Types of Computers

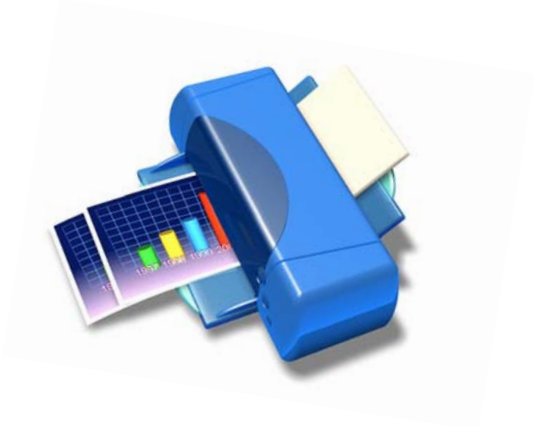
- Supercomputer (high speed mainframe)
- Mainframe (large, high-volume)
- Personal Computers (PCs): Desktop, Laptop, Palmtop
- Workstations: Super PCs
- Network – computers and devices connected together

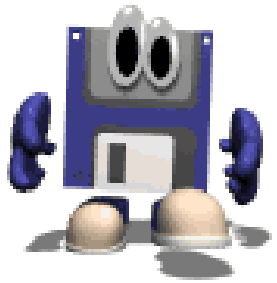


Basic Computer Components

- Input Devices
- Output Devices
- System Unit
  - Processor
  - Memory
- Storage Devices

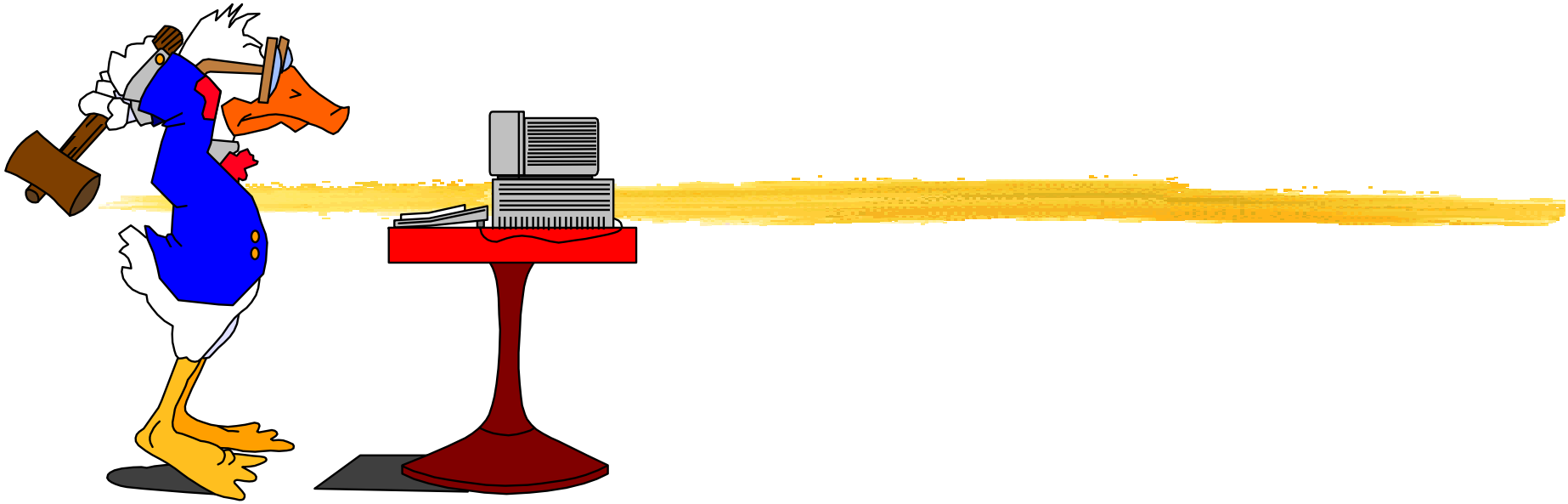






Software

- Operating Systems
- Utility Programs
- Application Programs



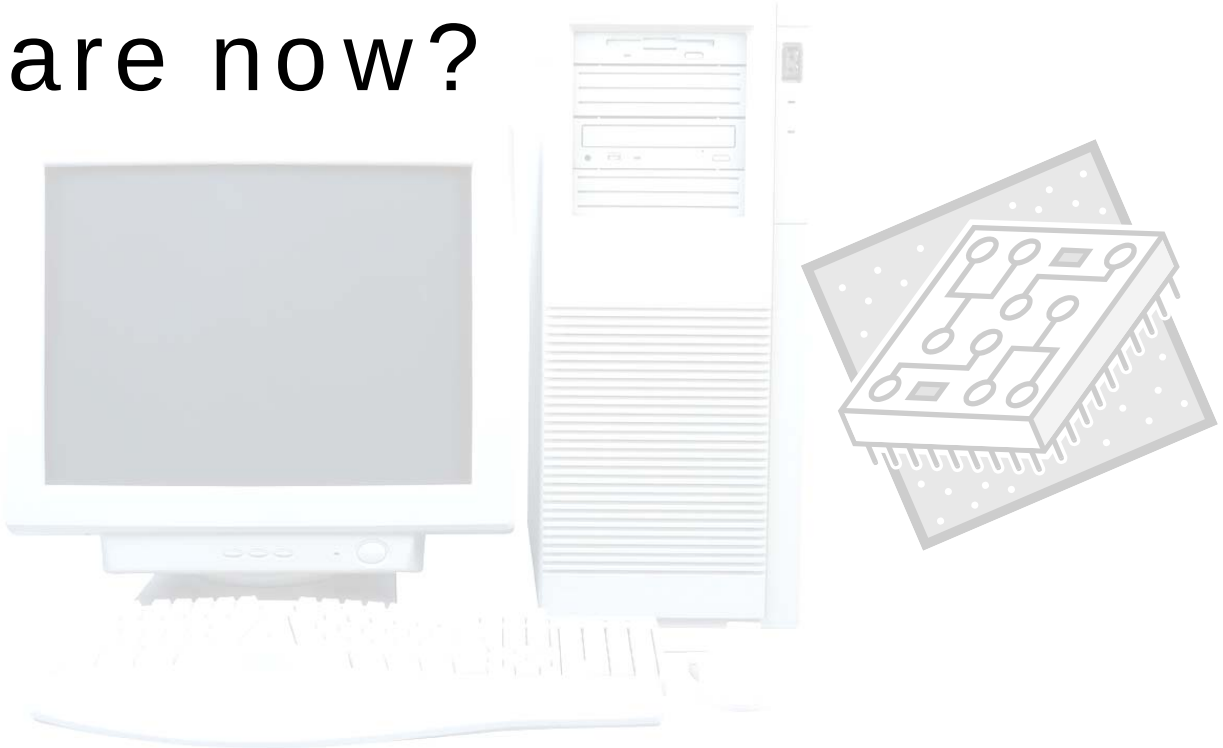
“TO ERR IS HUMAN, BUT TO REALLY FOUL THINGS UP REQUIRES A COMPUTER.” — ANONYMOUS

Benefits of Computers

- Speed
- Reliability
- Accuracy (given correct data)
- Storage of huge amounts of data
- Sharing information

A brief history of computers

Or... How did we get to where we are now?



Mechanical Computers

Abacus

Napier's bones

Pascal's mechanical calculator

Leibniz wheel

Jacquard loom

Difference Engine

Analytical Engine

Augusta Ada first programmer

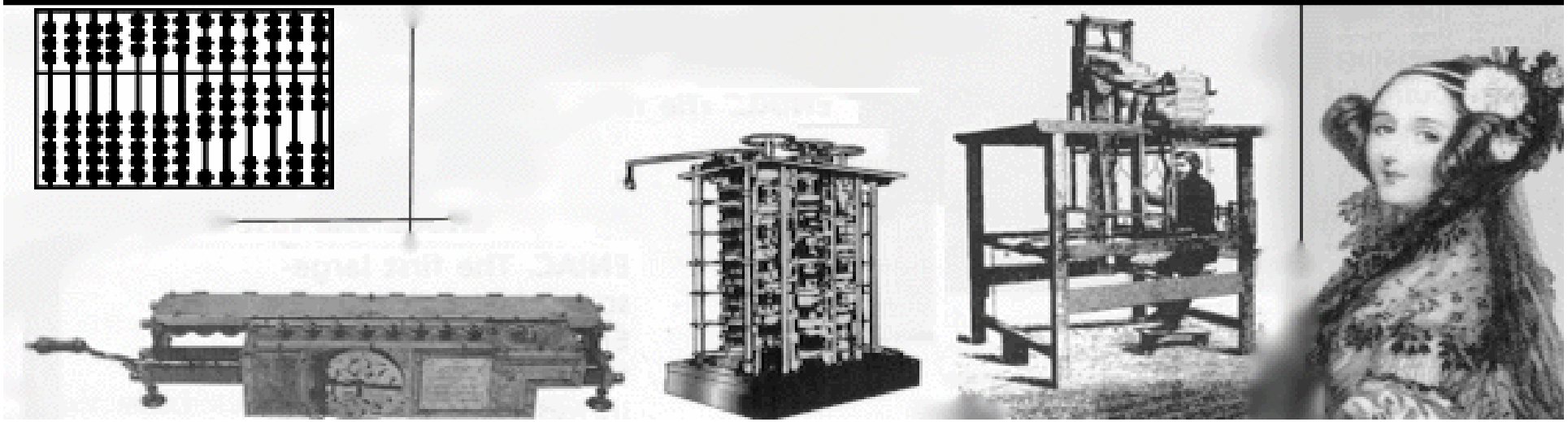
2000+ years ago to about 1600

16th and 17th centuries

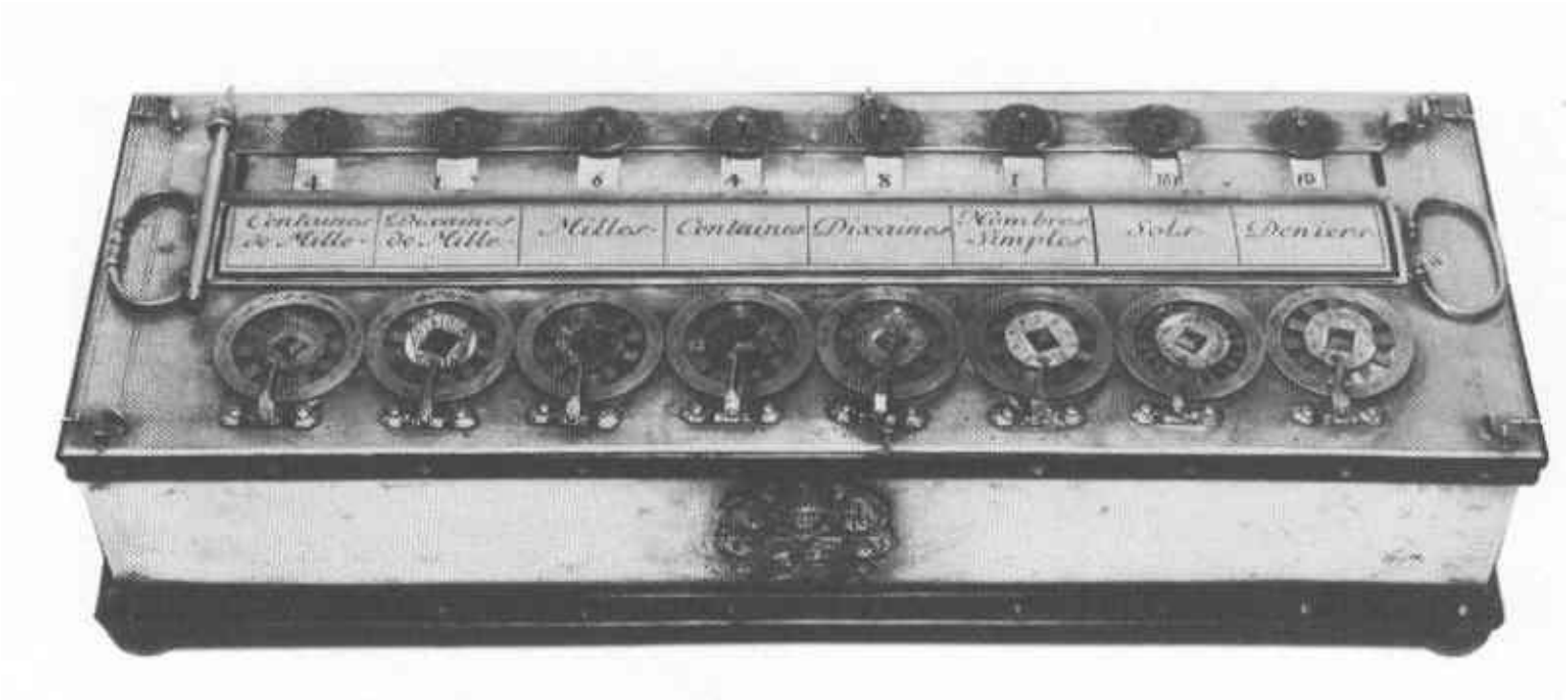
1810

1830

1850



Calculating Machine (1642)



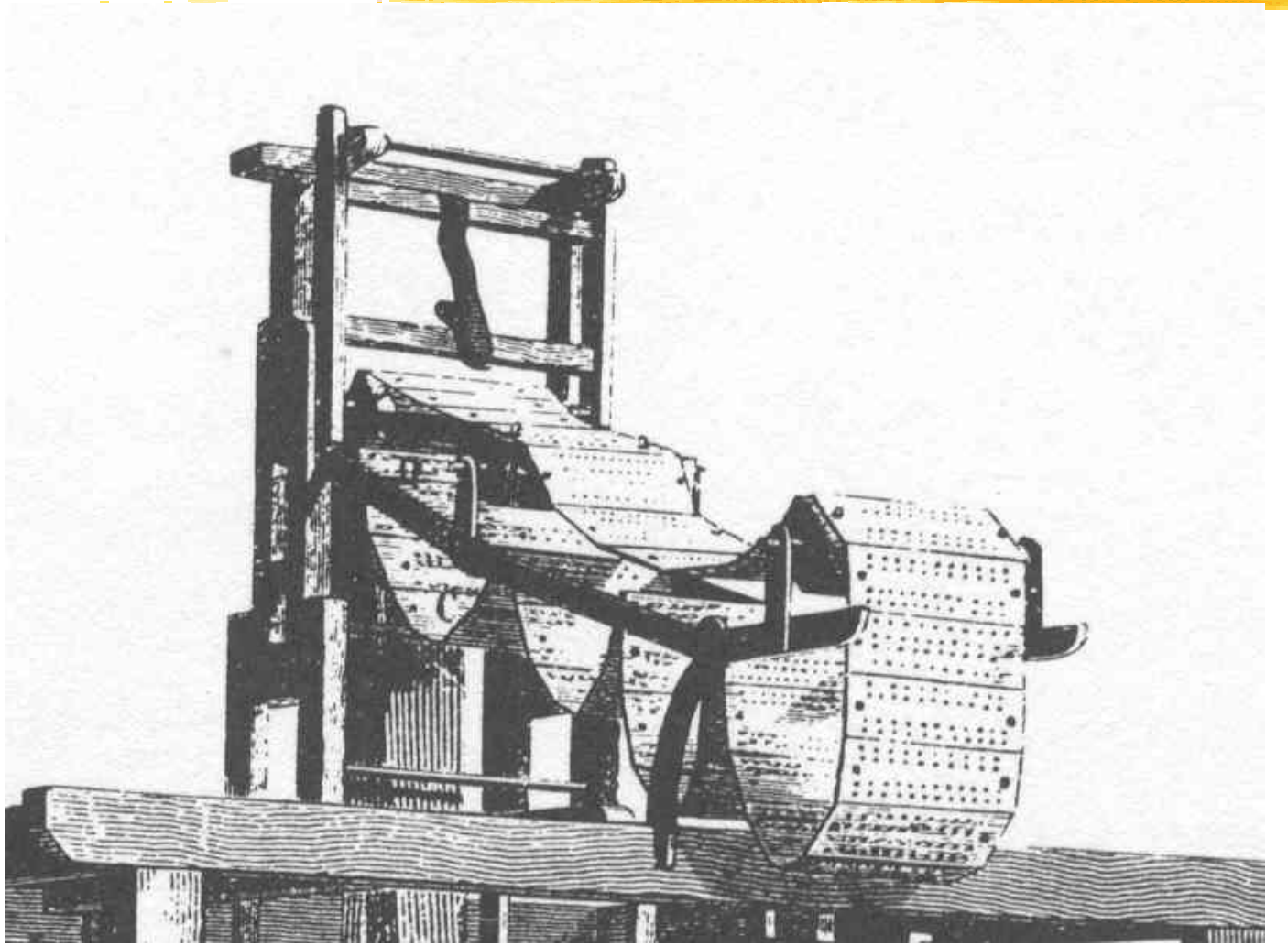
Blaise Pascal

Joseph Jacquard (1752-1834)

The Jacquard Loom

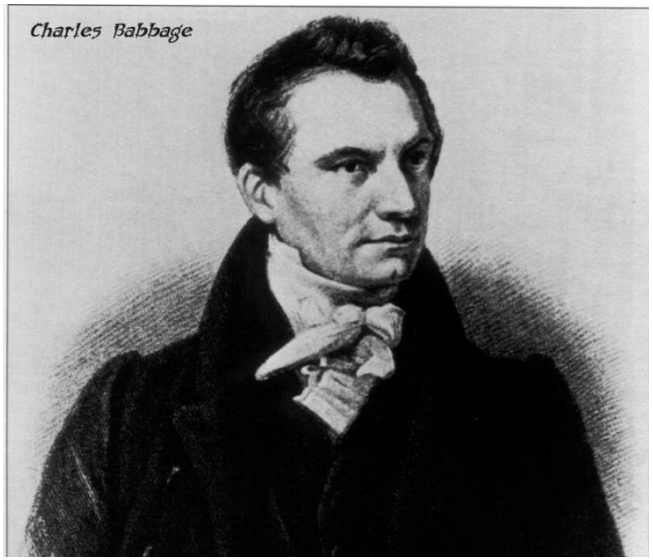
The weaving industry gave birth to the idea of programmable machines. The Jacquard loom creates exact, repeating designs through the use of punched cards.

Programmed using cards



Charles Babbage

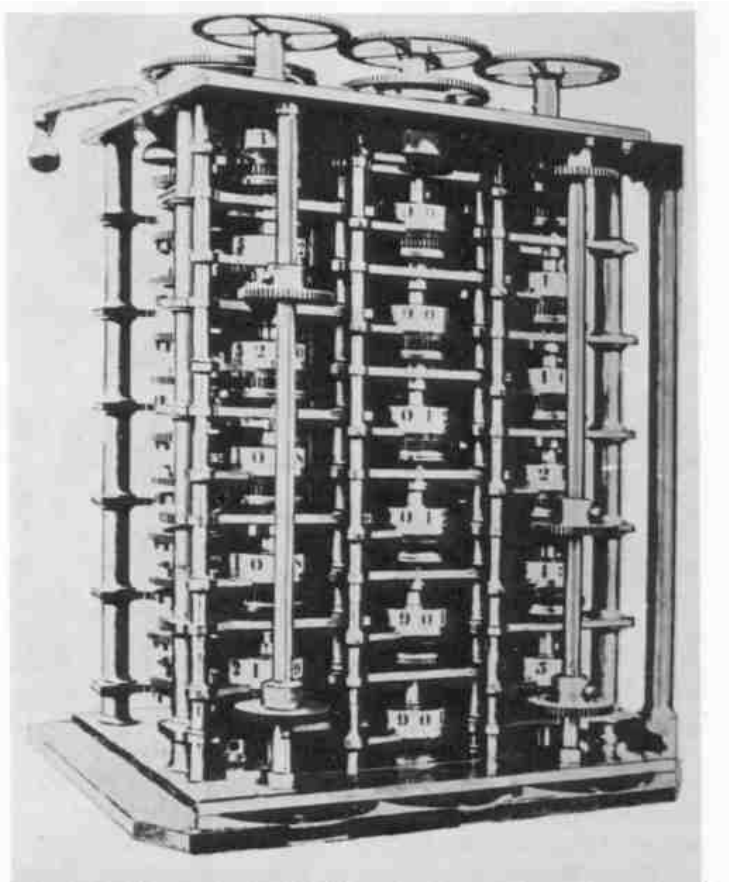
Created the first real computer, making use of the idea of punched cards.



The Analytical Machine

The Analytical Machine contained the main parts found in modern computers:

- Input device
- Processor
- Memory
- Output



Lady Lovelace, the first programmer

An enthusiastic supporter of

Charles Babbage's Analytical machine,

Augusta Ada, Countess of Lovelace made several innovations that are important to programming today.

- Subroutine
- Loops
- Conditional Jumps

Early Electric Computers

Hollerith creates Automatic Card Reader for U.S. census

1890

IBM founded

1924

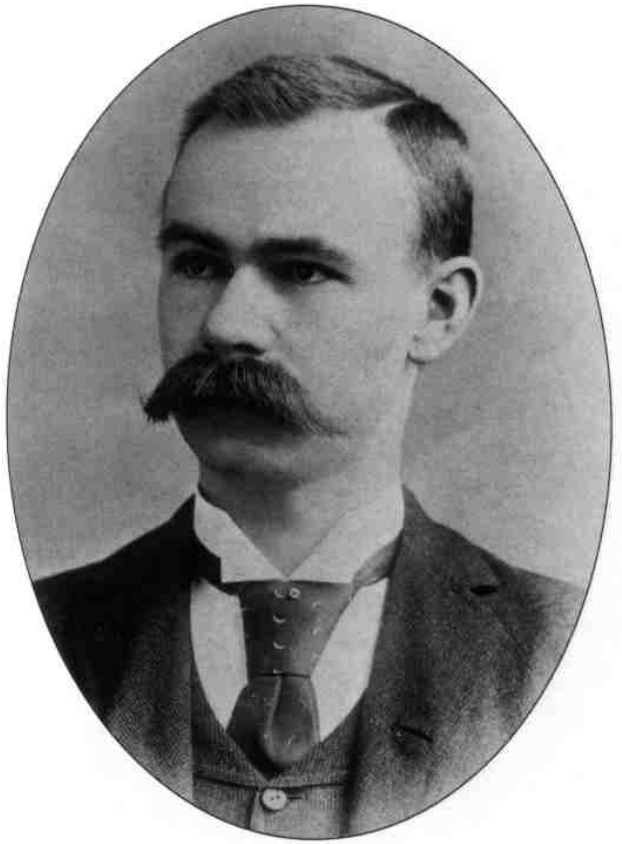
First electronic binary computers Z1 and Z2

1930

Herman Hollerith

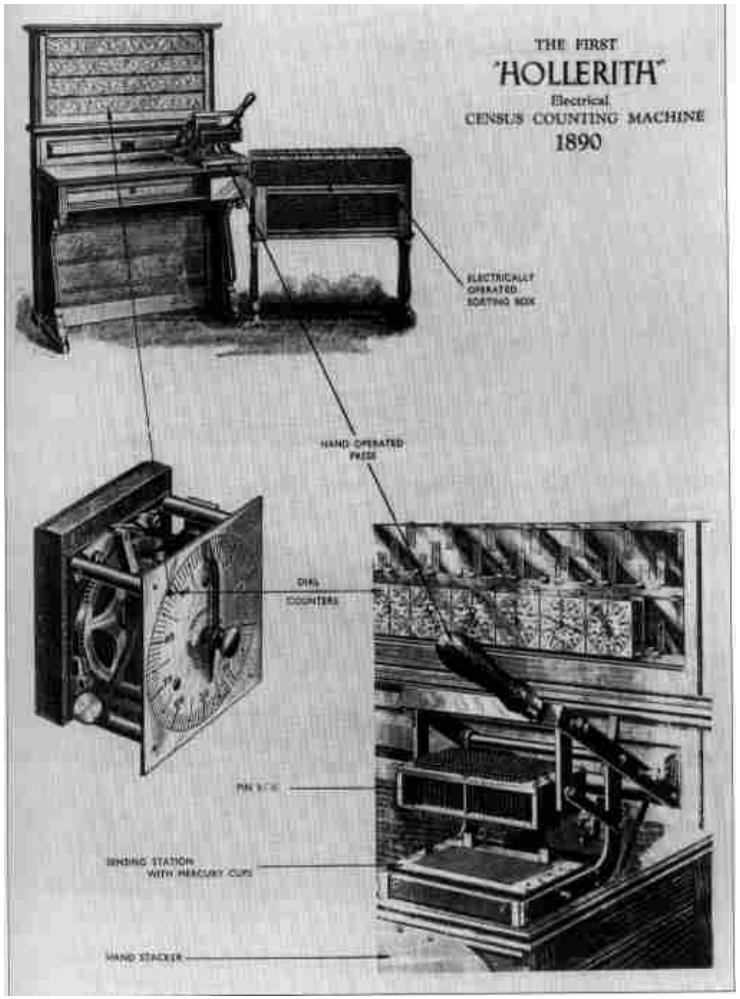
Herman Hollerith won a competition to find an easier way to calculate census data back in the 1880's.

The company he founded later became International Business Machines or IBM for short.



Herman Hollerith

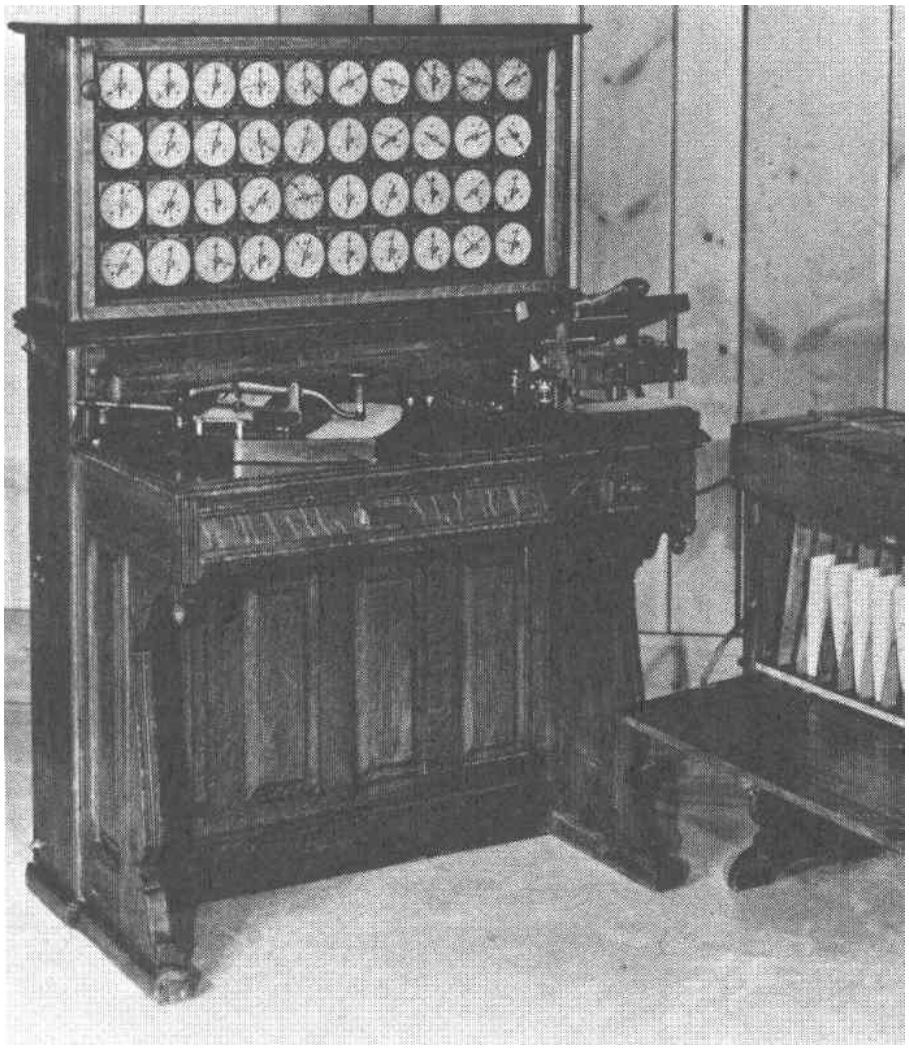
Hollerith's Census Counting Machine



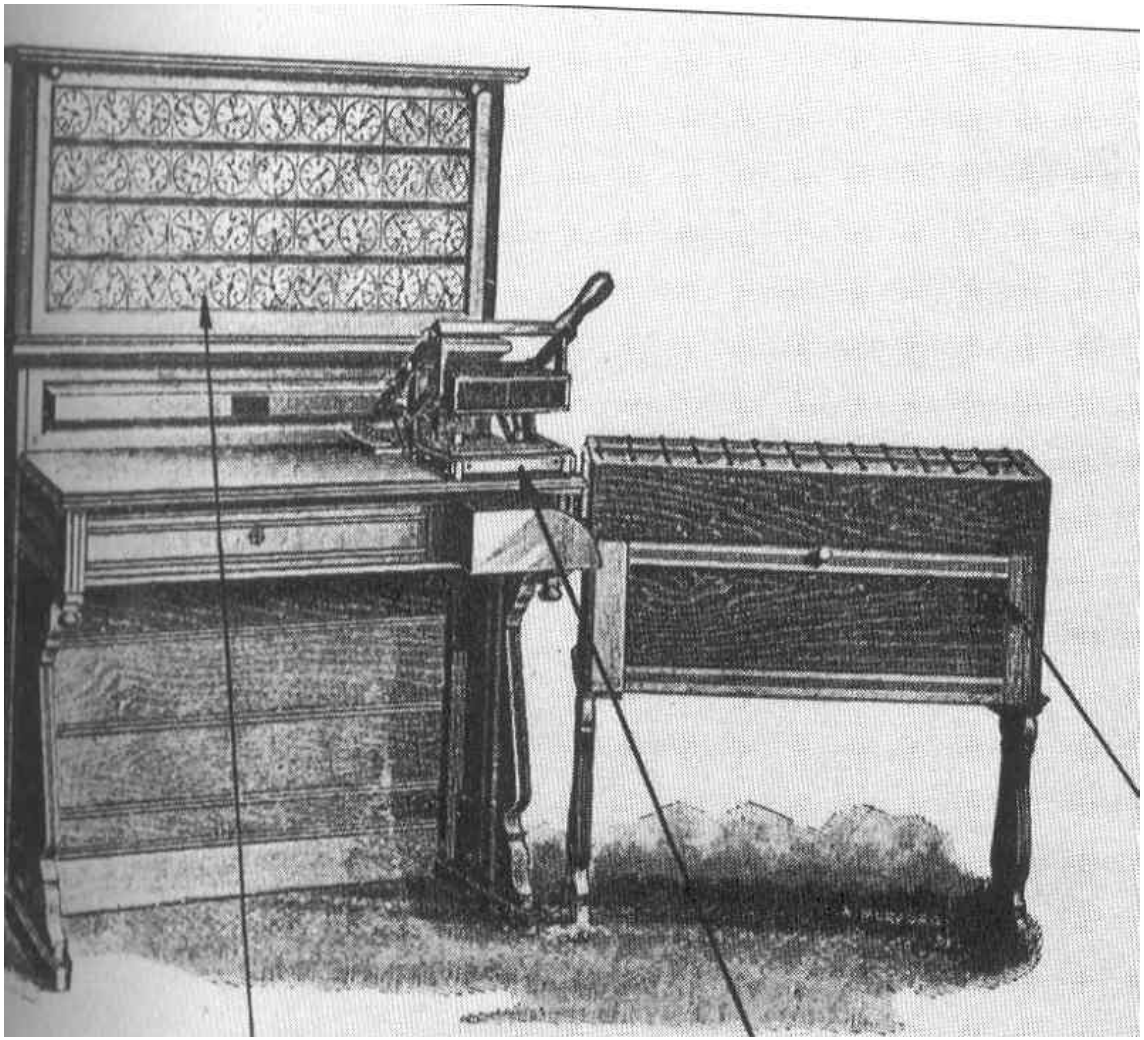
Hollerith's Census Counting machine used an Automatic Card Reader to input information.

If a pin passed through an opening in a card, it completed the electrical circuit.

Hollerith's Census Counting Machine



Used to tabulate the 1890 Census



Wartime Computers

1940 — **Enigma**

1941 — **Colossus first digital computer**

1943 — **U.S. team builds Mark I computer, 8 feet tall and 50 feet long**

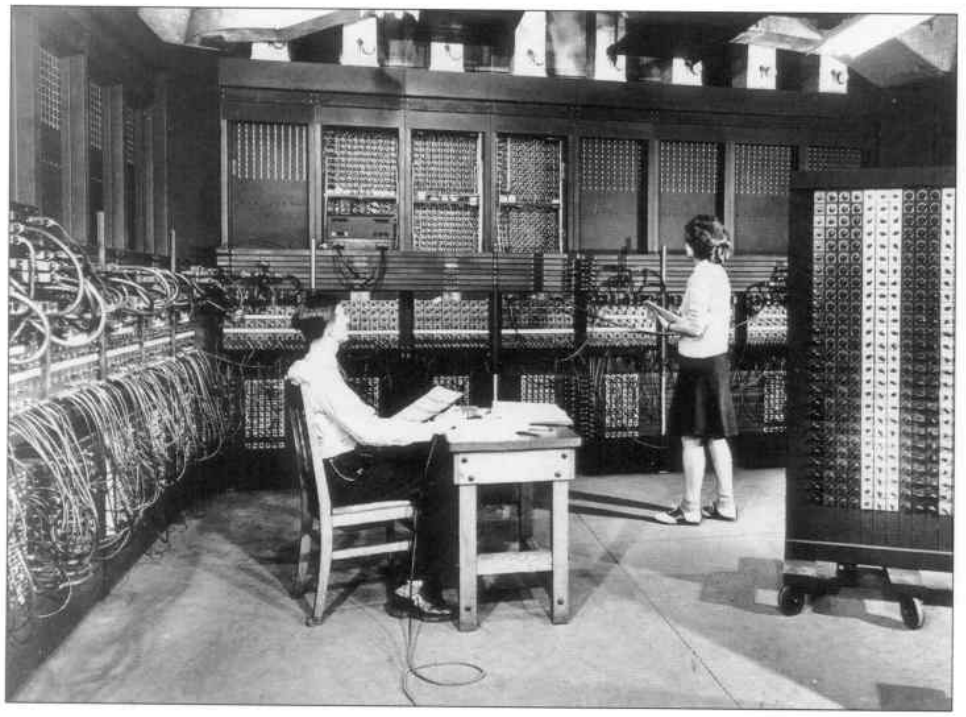
1946 — **Mauchly and Eckert complete the ENIAC, a vacuum tube digital computer**

1947 — **Transistor developed**

The Eniac

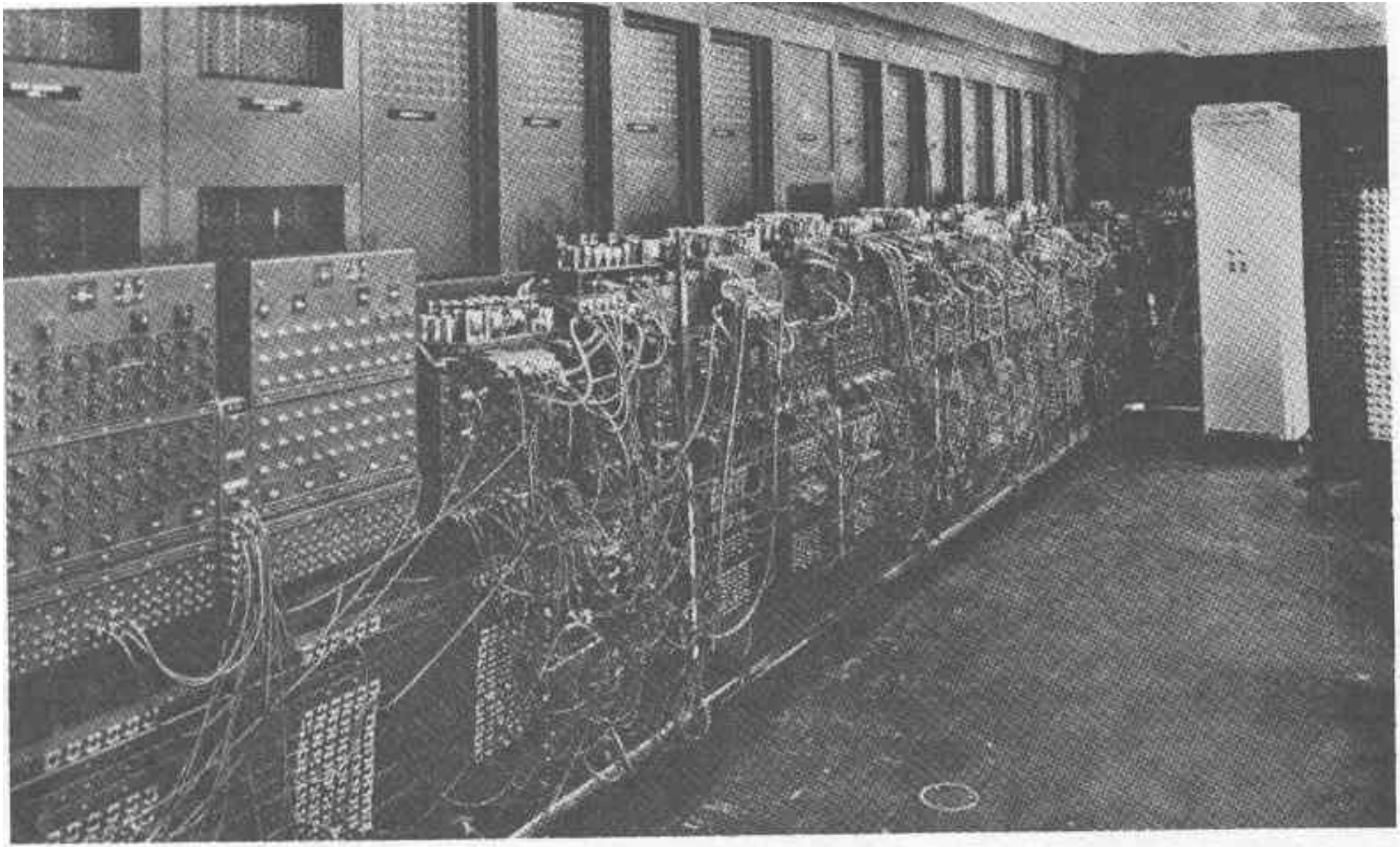
To change a program
on the ENIAC,
programmers had to
rewire the machine by hand.

It weighed over 60,000 lbs.,
and was over eighty feet long.



▲ *ENIAC, the first all-electronic digital computer, completed in December 1945*

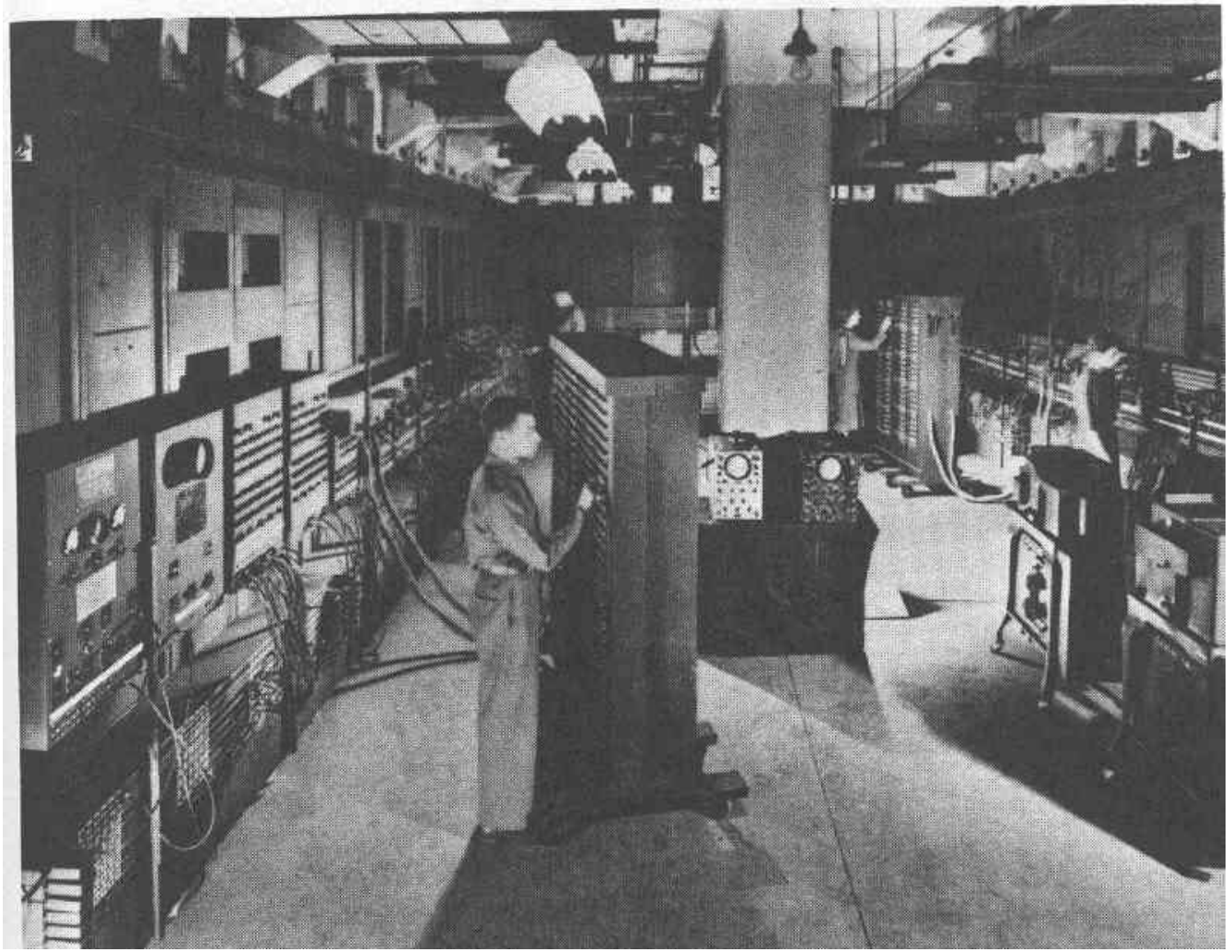
COURTESY OF IBM ARCHIVES



The first electronic digital computer was the ENIAC, which was built by the Moore School of Engineering at the University of Pennsylvania for the U. S. Army. It used 19,000 vacuum tubes and hundreds of

ENIAC

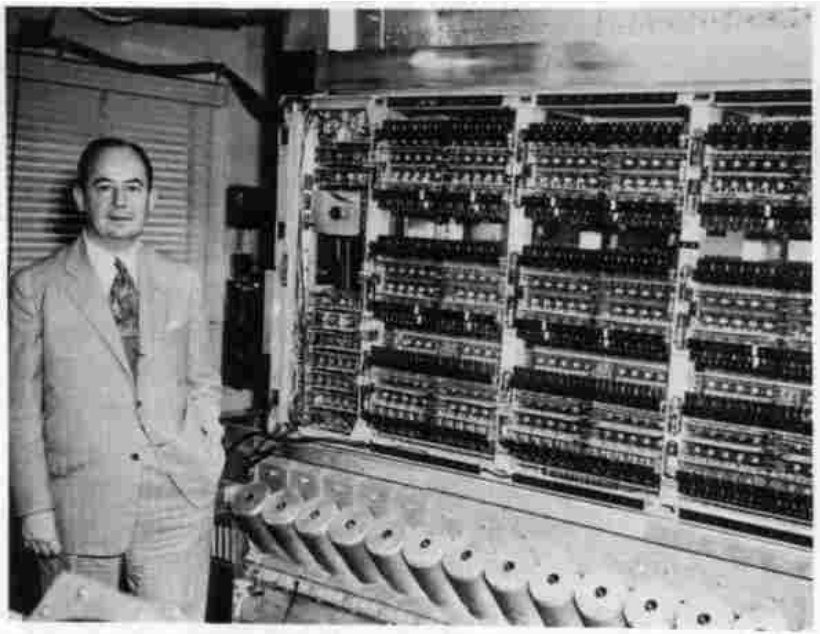
ENIAC, 1945 *(University of Pennsylvania)*



John Von Neuman

Von Neuman solved
the problem of limited
programmability by giving
the computer instructions
as well as data for input.

He reasoned that the computer
could be fed instructions as
binary numbers and stored
in memory.



Dr. John von Neumann stands next to his MANIAC (*M*athematical *A*nalyzer, *N*umerical *I*ntegrator *a*nd *C*omputer) at Princeton, New Jersey.

*Von Neumann proposed the concept of a stored program in a report written for the ENIAC project in 1945. Many people in the computer field feel that Mauchly and Eckert should share the honors for this invention.

The Transistor Age

The invention of the transistor allowed computers to be built that were smaller, more reliable and used less electricity than computers with vacuum tubes and relays.

By the mid-1970's hobbyists could build their own small computers based on microprocessors.

In 1976 Steve Jobs and Steve Wozniak built the Apple II computer which could be programmed in BASIC with a built-in keyboard and could display text and color.

Electronic and Digital Computers

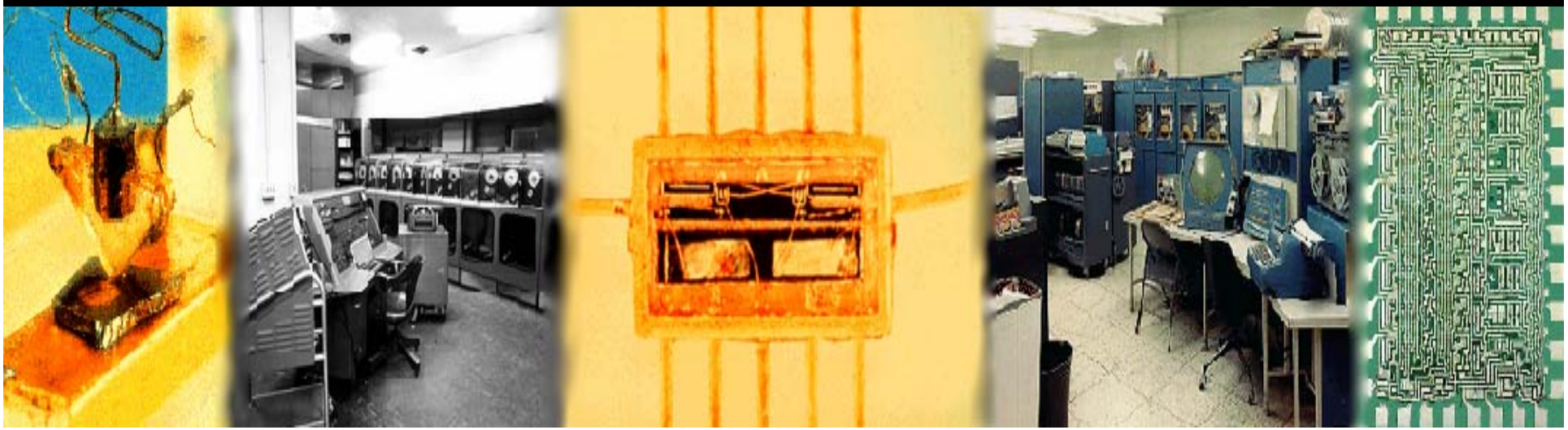
1950 — Remington Rand builds UNIVAC 1; first stored memory

1953 — IBM 650 created; IBM also ships the first electronic computer, the mainframe 701

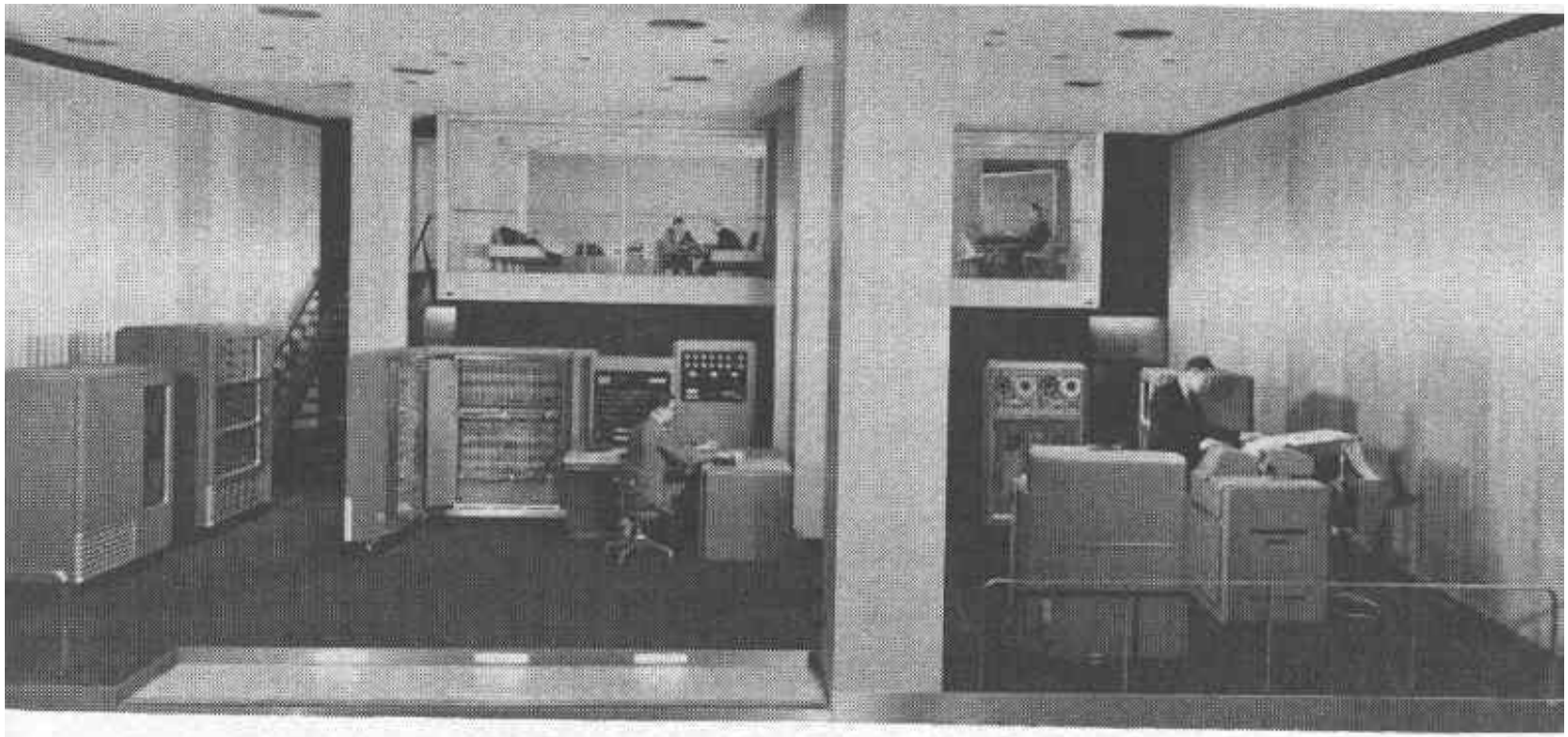
1957 — Minicomputers marketed by Digital Equipment Corporation; Fortran programming language created

1958 — Integrated circuit created

1960 — AT&T creates first commercial modem

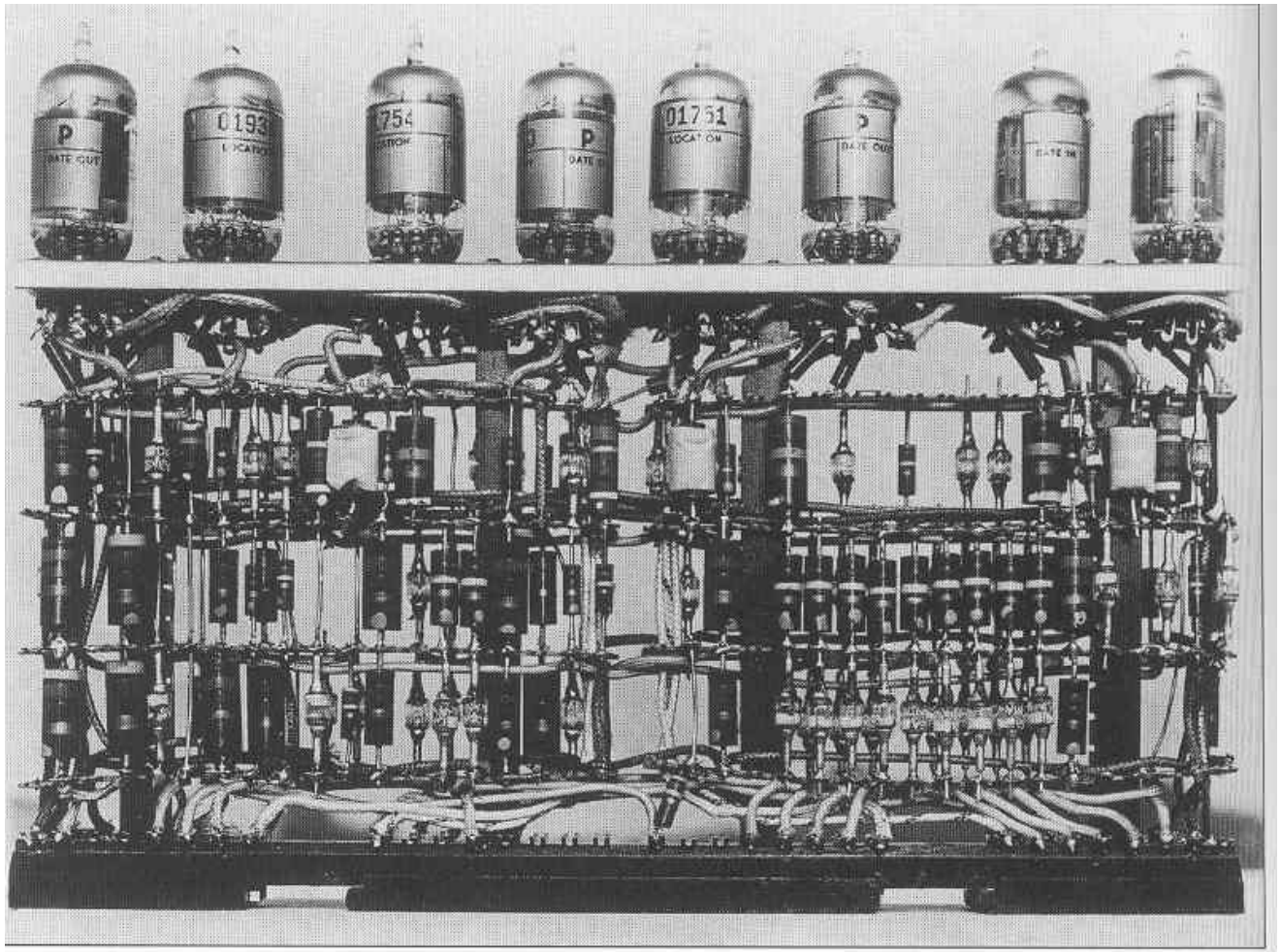


IBM 701



IBM 701, 1952 *(IBM Archives)*

IBM 701 circuit board



Vacuum tubes for the IBM 701, ca. 1950

Miniaturization, Automation and the Space Age

1960 — PDP-1, first digital mini-computer with video display; first industrial robot put to use by GM

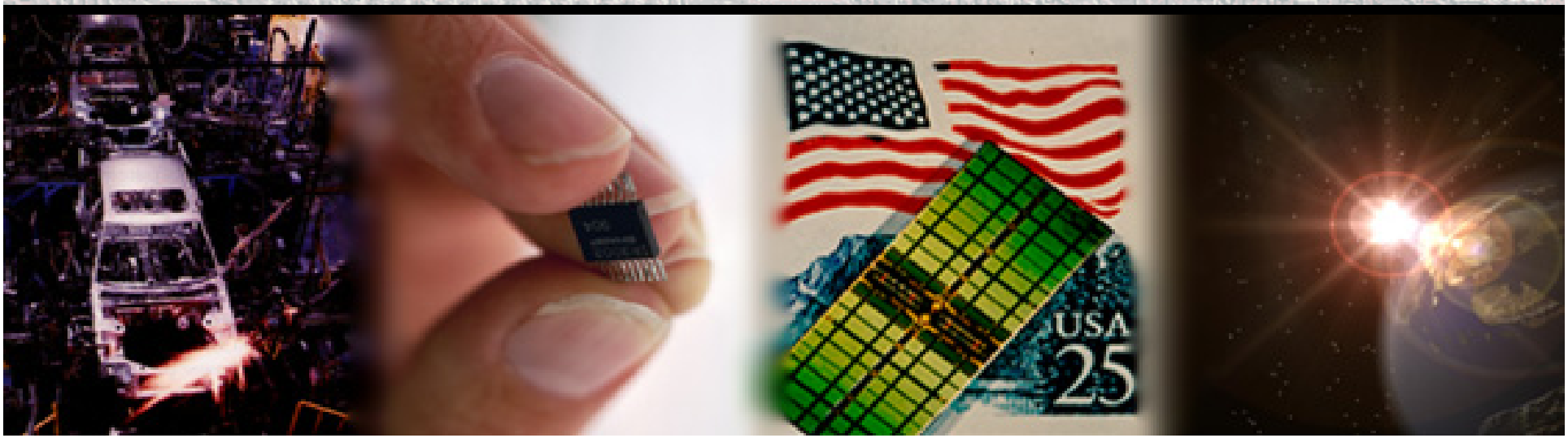
1964 — IBM creates the System/360 series of computers; first supercomputer is developed

1965 — PDP-8 becomes the first successful mini-computer

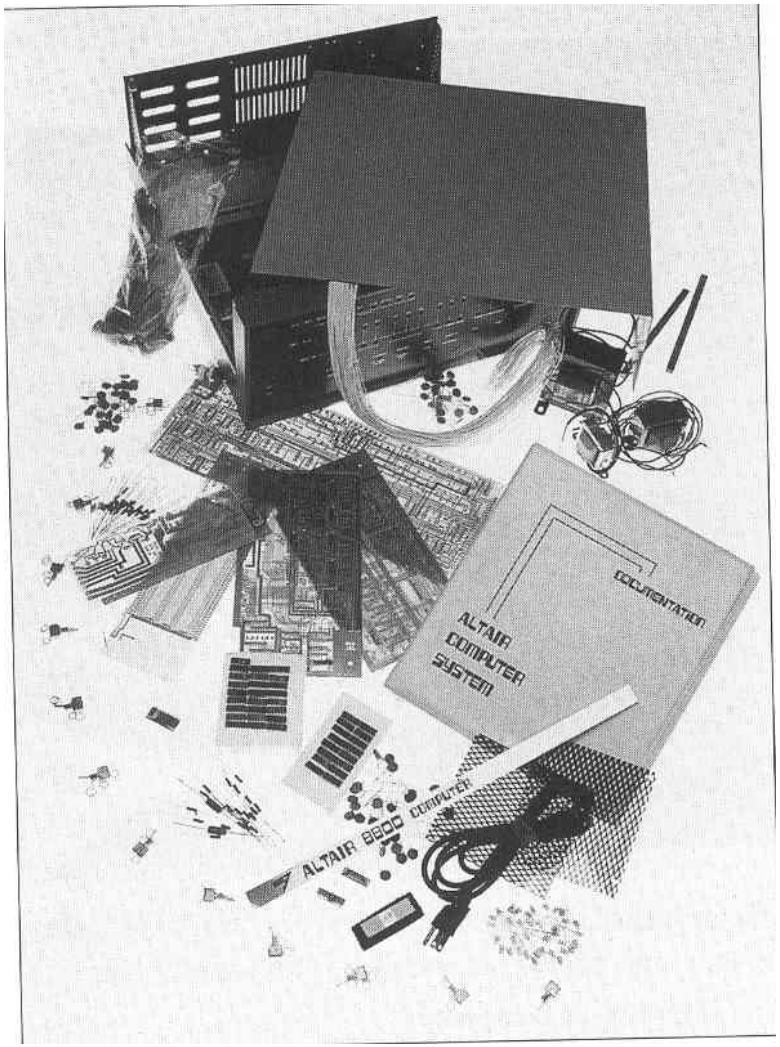
1970 — SRI builds the first moving robot with artificial intelligence

1969 — Apollo 11 lands on the moon, guided by the Apollo guidance computer

1971 — Intel micro-processor; first micro-computer



MITS Altar


ALTAIR
COMPUTER
SYSTEM
DOCUMENTATION
ALTAIR 8800 COMPUTER

The Altair

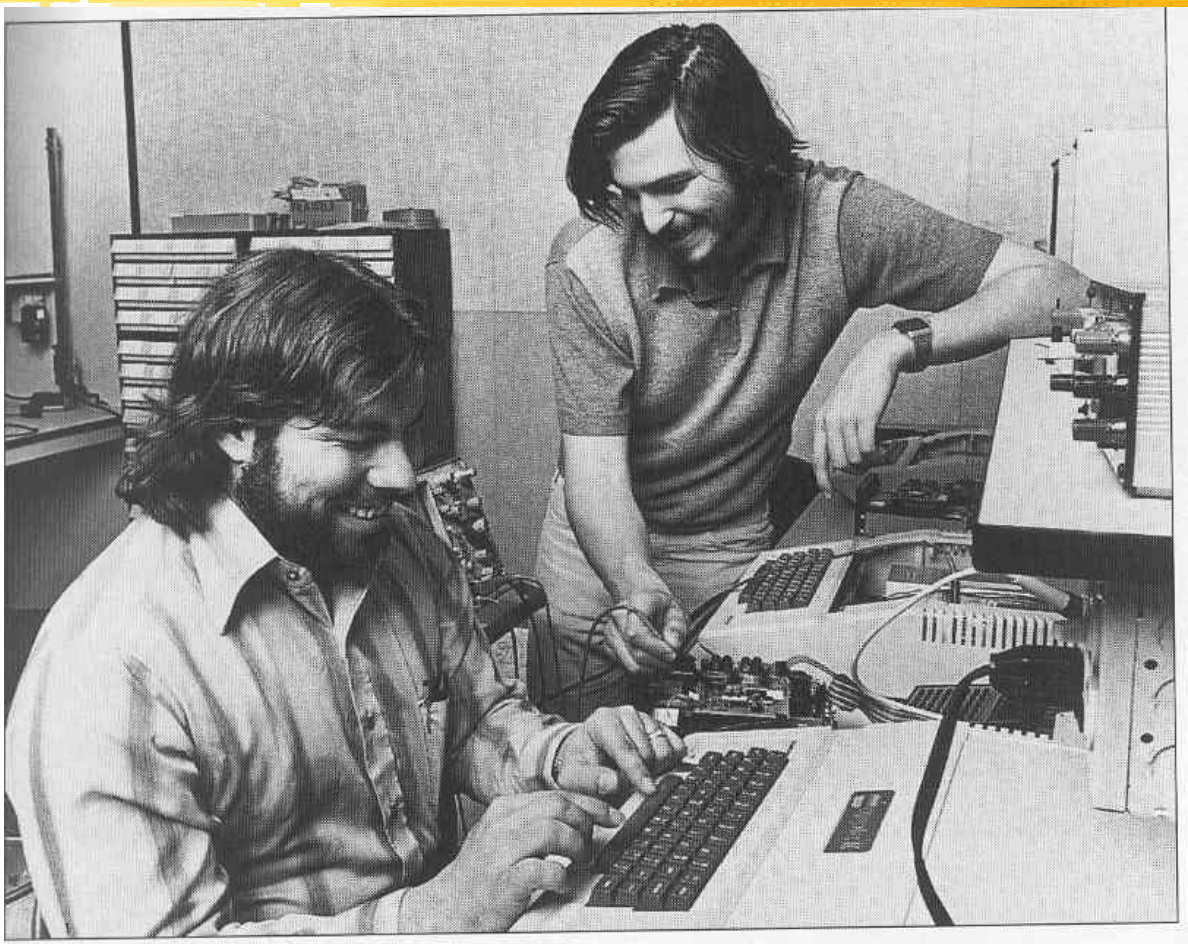
The MITS Altair 8800, assembled

COURTESY OF INTEL CORP.

Personal and Multimedia Computers

1976	1980	1981	1984	1986	1988	1990	1994
Apple computer created	DOS becomes the industry standard	IBM first micro-computer	Macintosh computer created	IBM introduces first laptop computer	IBM and Microsoft release the OS/2 operating system	Microsoft releases Windows 3.0	Multimedia computers and personal data assistants developed

Steve Wozniak and Steve Jobs



▲ *Steve Wozniak and Steve Jobs in Jobs's garage, ca. 1975*

COURTESY OF APPLE COMPUTER, INC.

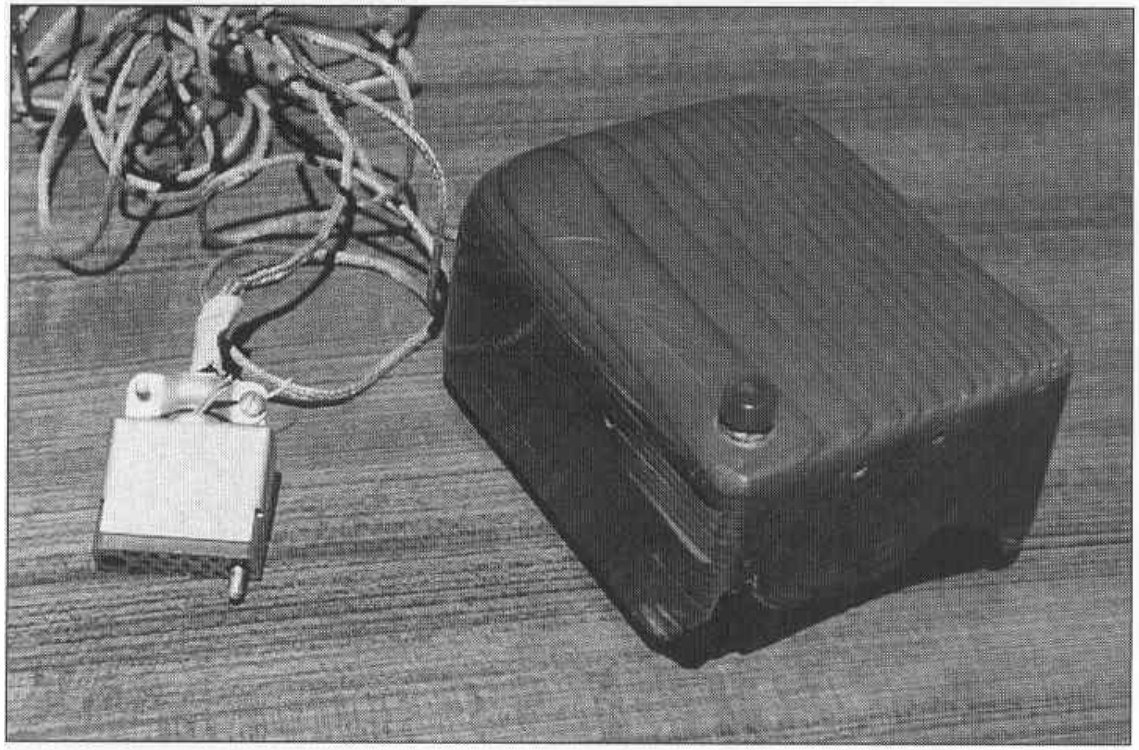
Apple II

Original Apple II, 1977

Courtesy of Apple Computer, Inc.

The graphical user interface is born

The First Mouse

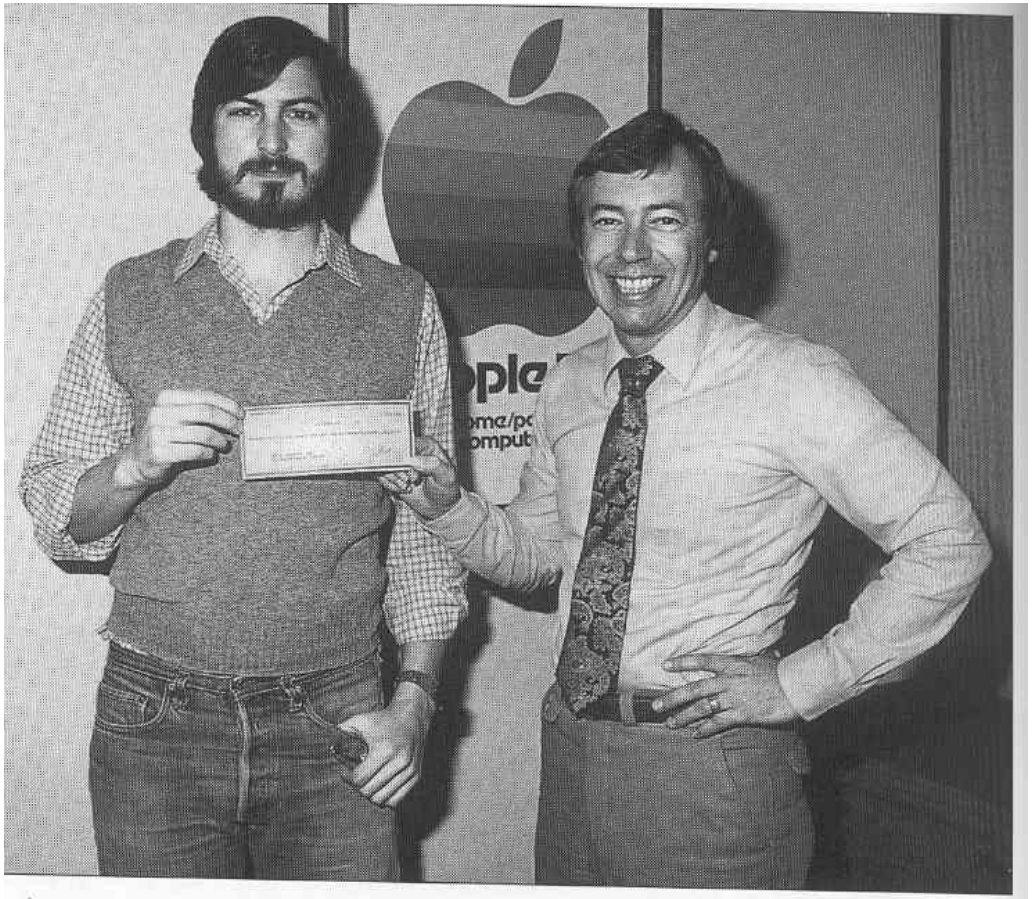


▲ *The first mouse, carved out of wood, which Doug Engelbart invented at SRI in 1964 as part of an experiment to point and click on display workstations*

COURTESY OF DOUG ENGELBART

The Apple Lisa

Apple Computer does OK



Mike Markkula presenting Steve Jobs with a check for $92 million from
is stock offering after Apple Computer went public in December 1980

COURTESY OF APPLE COMPUTER, INC.

The Apple Macintosh

Apple Computer's original Macintosh, 1984

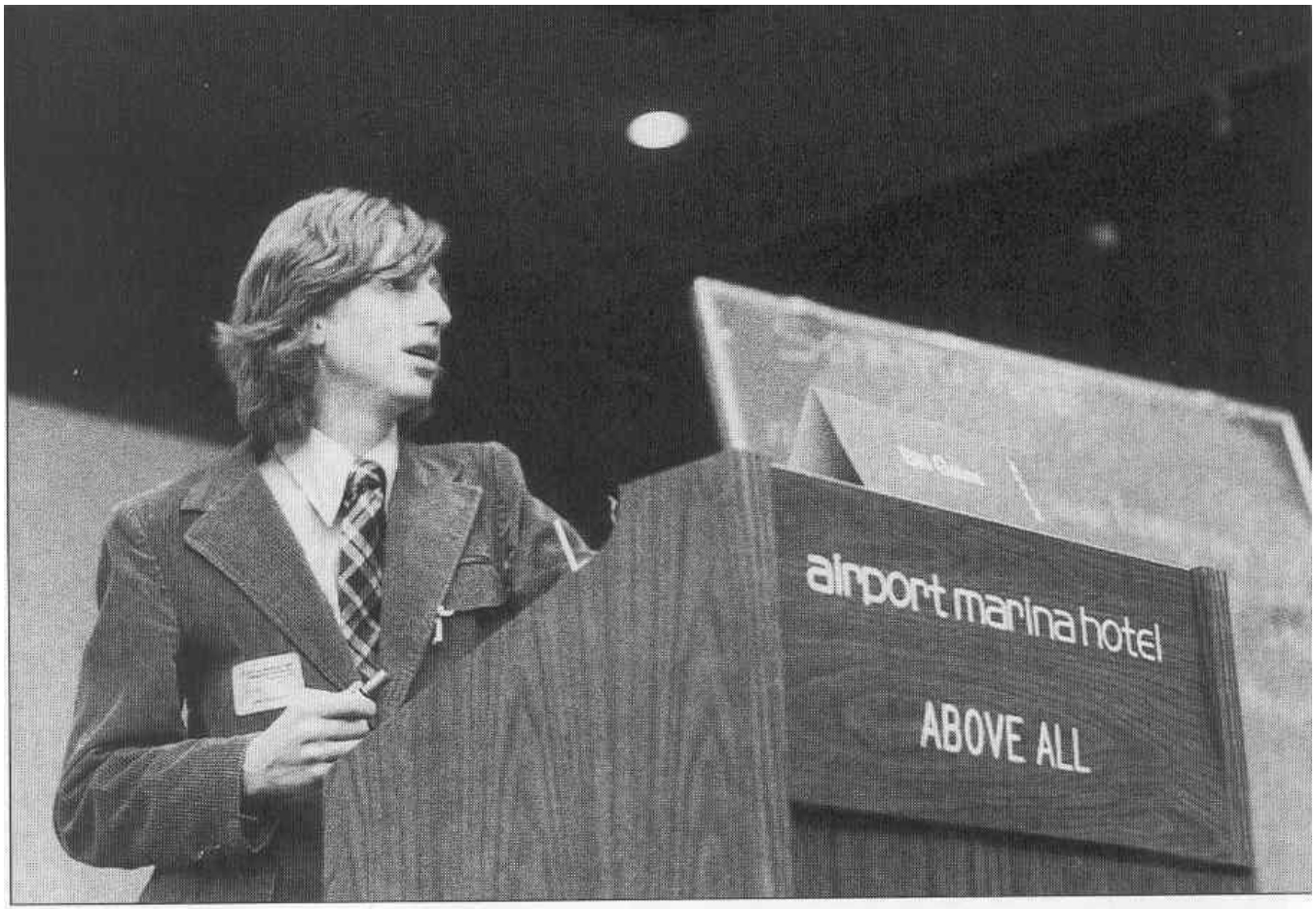
COURTESY OF APPLE COMPUTER, INC.

IBM

▲ *The IBM PC in 1981, which gave the computer industry the stamp of approval it needed, changing it forever*

COURTESY OF IBM ARCHIVES

Bill Gates



Bill Gates at the World Altair Computer Convention, 1976

COURTESY OF DAVID H. AHL

The IBM PC gets *Software*

Paul Allen and Bill Gates surrounded by personal computers on October 19, 1981, shortly after signing a contract with IBM to write software for the IBM PC

COURTESY OF SARAH HINMAN, MICROSOFT MUSEUM

Take a Break!

Are You Ready?

First C++ Program

```
#include <iostream>
using namespace std;
int main()
{
  cout << “Hello World.\n”;
  cout << “Lynne Mayer\n”;
  return 0;
}
```