

"Never trust a computer you can't throw out a window." - *Steve Wozniak*

# Chapter 1: A Brief History of Computers

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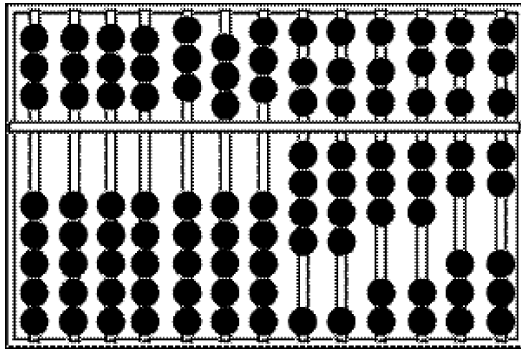
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## IN THE BEGINNING

The first devices that humans used to help them make calculations are still available, literally at our fingertips. If we need to calculate above ten, we can use our toes as well.



*The Abacus was one of the world's first calculators.*

The next big improvement was the abacus, invented by the Chinese about 2000 years ago. The abacus used beads instead of fingers and toes, and could allow a skilled practitioner to do addition and subtraction with surprising speed. The abacus is still in use in some parts of the Orient.

In 1839, a clever fellow named Charles Babbage created a mechanical device that could do really advanced mathematics. He called this amazing machine the Babbage Analytical Engine, and some people consider it to be the first computer.

However, my dictionary defines a computer as "an electronic<sup>1</sup> machine for making calculations, and for storing and analyzing information". That definition pretty well excludes both the abacus and Babbage's machine, not to mention our fingers and toes, since none of these are electronic. By the dictionary's definition, the first true general-purpose computer was a room-sized monstrosity called ENIAC. This machine was built in 1946 at the University of Pennsylvania, entirely out of vacuum tubes<sup>2</sup> since the transistor<sup>3</sup> hadn't been invented yet. ENIAC stood for "Electronic Numerical Integrator and Computer". Integrate means to combine, so in plain English, ENIAC was a machine used to combine numbers and figure things out (compute). It used an enormous amount of electricity but had less computing power than the average battery-powered laptop<sup>4</sup> of today.

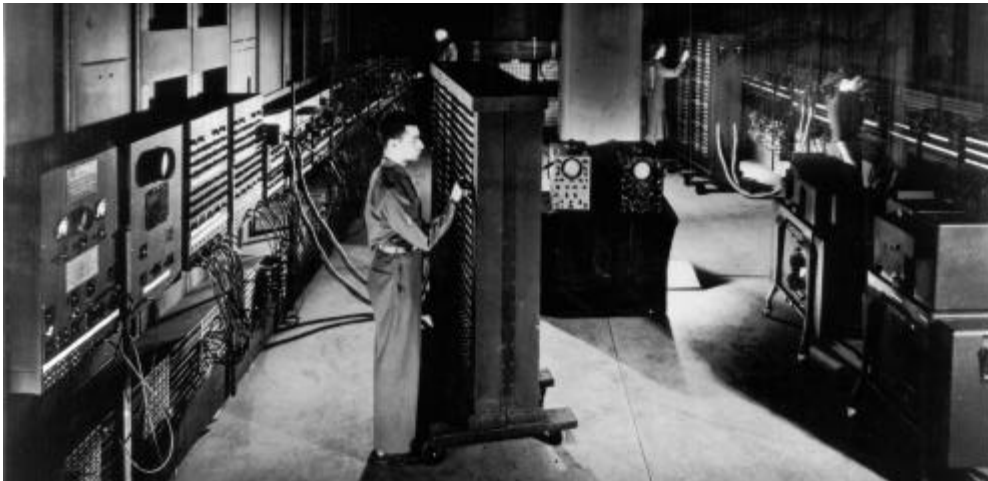


Photo: John W. Mauchly Papers, Rare Book & Manuscript Library, University of Pennsylvania

*The ENIAC was as large as an entire room.*

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<sup>1</sup> Electronic: Having to do with the flow of electrons.

<sup>2</sup> Vacuum tube: A glass tube used to modify electric current.

<sup>3</sup> Transistor: A device using solid material (usually silicon) to modify an electric current. It does the same thing as a vacuum tube, but is much smaller, more durable and more efficient.

<sup>4</sup> Laptop: A portable computer small enough to fit in your lap.

## MODERN TIMES

With the invention of the transistor in 1947 and even more so with the Integrated Circuit<sup>5</sup> in 1958, computers got smaller and much more power-efficient, but they were still quite large and expensive by today's standards. By the early 1970's, the smaller computers were still about the size of a refrigerator, and cost more than the average 3-bedroom house. Only large companies and institutions could afford to own computers.

In the late 1970's in a garage in San Jose, California a bright young guy named Steve Wozniak built a small computer designed for one person to use. The first models had cases made of wood, and they sold just as fast as Steve could build them in his garage. A company was formed to mass-produce them, and Steve and his partner Steve Jobs called their company "Apple Computer". Perhaps you've heard of it.



One of Apple's later computers, the Macintosh.

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<sup>5</sup> Integrated Circuit: A device that combines (integrates) many transistors and other components.

About this same time IBM decided the idea of a personal computer had some promise, and they set out to build their own. They called theirs the IBM Personal Computer, soon abbreviated to "PC", and the first ones hit the stores in 1981. The software<sup>6</sup> to run these IBM machines was provided by a little start-up company in Seattle called Microsoft.



*A more modern PC desktop computer.*

Almost right from the beginning, IBM chose to make public the inner workings of their machine, while Apple decided to keep theirs private. As a result, IBM now has many competitors making systems that are "IBM-compatible", but there are also lots of companies making lots of

nifty programs for this type of system. The IBM-type PC has become the most common type of computer throughout the world, and along the way, Bill Gates of Microsoft became for a while the world's richest man by providing much of the software for those PCs. On the other hand, Apple has the market all to themselves for the Apple and Macintosh-type computers, but it's only a sliver of the whole personal-computer market.

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<sup>6</sup> Software: Programs containing instructions for the computer.

Many otherwise calm and peace-loving people will gladly raise their blood pressure through the roof discussing whether Apple or IBM makes the best personal computer. Both sides have some hard facts to back up their arguments, and we don't wish to get caught in the middle of this debate. We must point out, however, that the A+ test covers only IBM-compatible systems, and no longer includes any questions about products from Apple Computer.

## THE FUTURE

It was tempting to conclude this section with a "see where we are now" rundown of today's personal computers, in terms of computing power, storage capacity etc. As impressive as this list would be compared to a couple of years ago, it would be obsolete even before this book made it off the printing presses.



So, if you want to know just how powerful today's computers are, you will have to go down to your local electronics store and have a look. And in a few months, you can go back and be impressed all over again.

## CHAPTER QUIZ

### MULTIPLE CHOICE

*Circle the best answer for each statement.*

1. The first electronic computer was:
  - a. made in a garage in San Jose.
  - b. invented by Charles Babbage.
  - c. called ENIAC.
  - d. the Abacus.
  
2. In the computer field, PC stands for:
  - a. Politically Correct.
  - b. Perfect Computing.
  - c. Personal Comfort.
  - d. Personal Computer.
  
3. What contributed to computers becoming smaller and more affordable?
  - a. The Transistor
  - b. The Integrated Circuit
  - c. Steve Wozniac
  - d. All of the above.

## TRUE OR FALSE

*Read each statement carefully. If the statement is true, circle T.  
If the statement is false, circle F.*

1. Steve Jobs invented the first computer.            T            F
2. ENIAC could only do math computations.            T            F
3. IBM became successful because they kept  
the inner workings of their PC hardware  
secret.            T            F
4. The first computers made by Steve Wozniac    T            F  
had wood cases.

## ADDITIONAL READING

*Here are some websites with additional reading on the material covered in this chapter:*

<http://www.cbi.umn.edu/> - The Charles Babbage Institute

<http://www.library.upenn.edu/special/gallery/mauchly/jwmintro.html> -  
University of Pennsylvania - Online ENIAC Exhibit

<http://www.applemuseum.seastar.net/> - The Apple Computer Museum

<http://www.computer-museum.org> - Computer Museum of America

**CHAPTER 1**

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