# What is a Computer? – A Fact Sheet

As you know, a computer is an integral part of everyone's life today. We use computers for just about anything – storage of vast amounts of data, browsing the web, writing documents (such as this one), artistic creativity (videos, movies, games) – the possibilities are endless. This fact sheet will cover the basics of what a computer is, along with historical information showing the evolution of computers. There are also *Fun Facts* sprinkled throughout, noted with a ♪ notation at the start and end of each fact.

The first modern machine computers arrived in the late 1930's filling rooms from floor to ceiling, weighing tons, using vast amounts of power, and only holding a few bytes of data. They also required the code to be manually entered by resetting plugs and switches. We have always thought of computers as machines which provide data with remarkable accuracy. But did you know that the word *computer* has been in use since the early 17th century? It means *one who calculates*.

♪ **Fun Fact**: In the mid-1900's, women were particularly skilled at being *human computers* and were preferred hires because they could be paid less. Checkout the movie *Hidden Figures*, and learn about a group of women who were responsible for the early American space flights due to their *human computer* calculations. Or, look into the history of women decoders during World War II at Bletchley Park, England who broke many of the Axis codes, thereby saving countless of lives. ♪

The 1st computer was invented in 1822 by Charles Babbage, which he named *difference engine*, later improving on it and calling the newer one *analytical engine*. This one utilized punch cards, had a logic unit and integrated memory. Unfortunately, he was way ahead of his time and it was impractical to build and use.

♪ **Fun Fact**: For centuries, the abacus was the calculating tool of preference. It was later replaced by the slide rule. ♪

Abacus

Slide Rule
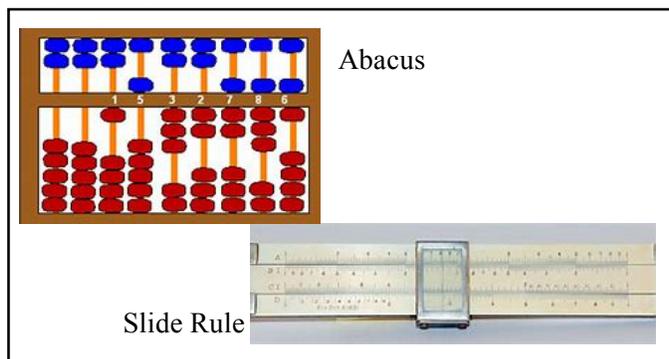
How do computers work? Computers work by taking in information, processing that information, and then producing an outcome. Computers can process millions of instructions in a matter of seconds. However, the output is only as good as the data and instructions supplied by humans. The general workflow for a computer is shown in the figure below.
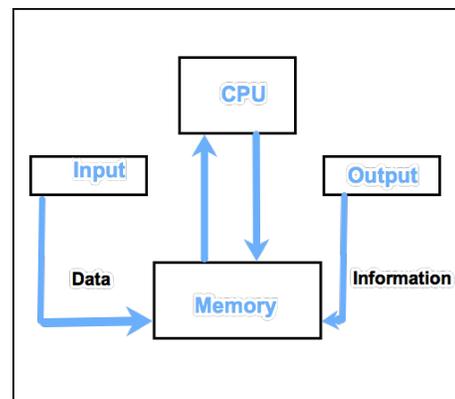
The physical components which are needed to enable the computer to function as we expect it to are as follows:

- Input unit – keyboard and mouse are examples of input units that are used to input data and instructions.
- Output unit – printers and any visual displays are examples of output units which provide the information in the user-specified format.
- Control unit – this controls all the functions of the parts. All interactions of the computer interact with the control unit, sometimes called the motherboard.
- Arithmetic Logic unit – aka the *brain* of the computer where all arithmetic and logical operations take place.
- Memory – all input data are stored in the memory. There are two types of computer memory – primary and secondary. Primary memory is stored within the CPU. Secondary memory is external, such as USB drives.

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Computers come in all sizes and shapes. The most common ones today are:

- Desktop
- Laptop
- Tablet
- Server
- Mainframe
- Supercomputer
- Embedded

♪ **Fun Fact**: The first mouse was made out of wood with metal wheels and a cord (mouse's tail) attached to the computer. ♪

Another important factor for today's reliance on computers for daily tasks is that it is super easy, (most times), to get connected to the network. Most of us simply need to have a good Wi-Fi signal or nearby network modem/router to access the internet. This is a huge improvement over dial-up modems and network connectivity via TCP/IP (*technically means*: Transmission Control Protocol/Internet Protocol; *tongue-in-cheek* definition = This Can't Possibly Install Properly ☺).

In summary, we have reached the point where we take for granted, and expect, computer access for nearly all our daily interactions for both personal usage and work usage. We no longer have to rely on properly formatted punch cards and the manual steps of moving vacuum tubes into the correct slots, then wait patiently for the computer to literally grind out the results on the equivalent of ticker tape.

♪ **Final Fun Fact**: Ctrl/Alt/Delete was a mistake! This action was originally designed as a soft reboot shortcut by IBM developer David Bradley who was annoyed at how long it took to reboot a computer with full memory retests every time there was some sort of glitch. It was originally meant to be Ctrl/Alt/Escape, but that was too easy to do with one hand, so he switched out *Escape* for *Delete*, forcing one to use two hands (or really spread out one hand). This information was published accidentally in an IBM technical manual and became popular when Windows became more widespread. Motto – always read the technical manuals, you never know what hidden gems might be there! ♪

Good-to-Know Computer Acronyms:

Acronym	Definition
CPU	Central Processing Unit
LCD	Liquid Crystal Display
OS	Operation System
PDA	Personal Digital Assistant
RAM	Random Access Memory
ROM	Read Only Memory
TCP/IP	Transmission Control Protocol/Internet Protocol
USB	Universal Storage

A Final Comparison – Look How Far We've Come!
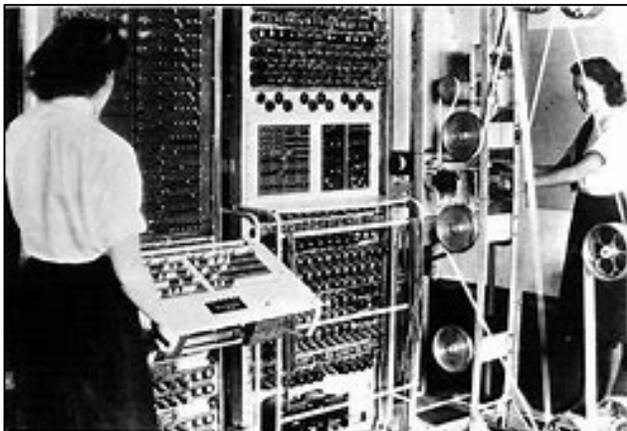
Women Operating Colossus – World War II Computer Code Breaker vs. Today's Workstation