

What Is A Computer?



Introduction

Described in its simplest form, a computer takes information (or inputs), processes it according to a set of instructions (a program), and gives back a result (or output). In this respect, it is very similar to a calculator, but obviously somewhat more complex.

The other key characteristic of a computer is that it is a multi-function platform. The same machine can perform many different tasks by using different programs. So, one program (e.g., a word processing application) allows letters or documents to be created, while another program (e.g., a graphics or drawing application) allows images to be created.

Computers in Education

Computers have many applications in education. They can act as a resource for students or teachers as they facilitate access to relevant information on the Internet and on CD-ROM/DVD/Memory Stick/mp3 players, Mobile Phones etc. They allow students and teachers to prepare presentations, documents, images and so on. Furthermore, there are specific educational programs, usually containing multimedia and animation, which are designed to teach or support learning in specific subject areas. In fact, the ways in which computers are integrated depends entirely on the imagination of both teachers and students.

Computer literacy is becoming a vital skill for all as we move further into this information age. Everyone involved in education has much to gain from the increased productivity that these machines can offer.

Key Components of a Computer

Although computers come in many different shapes and sizes, they are all made up of the same basic components. In fact, all computers are remarkably similar to each other.

Input Devices – telling the computer what to do

Computers have input devices to allow the user to control the machine. Essentially, an input device acts as a conduit for information from the user to the computer. It allows external information to be passed to the computer, which the computer then works with. Common examples of input devices include:

- Keyboard
- Mouse
- Microphone

Output Devices – the computer telling the user what it has done

Computers also have output devices which return the results of computer actions back to the user. Common examples of these are:

- Monitor
- Speakers
- Printer

The Processor

The processor can be considered the 'brain' of the computer — it plays a pivotal role in almost all aspects of the computer's functioning, including its performance and reliability. The processor, either directly or indirectly, controls all the work carried out in the computer. It is commonly known as the 'chip' or, more correctly, the central processing unit (CPU). The processor follows the instructions provided by both the user (via input devices) and the program that is running in order to perform a task.

Memory

In a similar way to the human brain, computers need some short-term memory (or working memory) to do the tasks they have been set. In a computer, this working memory is called random access memory (RAM). RAM is very important to the overall functioning of the computer as a system with a fast processor but only a small amount of RAM will not perform to its full potential. On the other hand, a slower processor with plenty of RAM will perform up to the limit of its ability.

Hard Drive

Computers need to be able to store both the programs that run on the system as well as the work that is created. The most common storage device is a fixed magnetic disk that sits inside the machine and this is called the hard drive. The hard drive is similar to long-term memory in human beings in that it can be a little slow. Consider the following analogy: if you were asked what you did on this day five years ago, you would have to think awhile (accessing the hard drive or storage area), but if you were asked what you were doing at this precise moment in time, you would have no difficulty providing an answer (accessing the working memory or RAM).

Extending the Computer's Abilities

As mentioned earlier, a computer is a multi-function device. This means it is capable of carrying out a diverse set of functions. To actually do so, the computer must be set-up or adapted to take on whatever extra functions are most relevant to the user. The following list outlines some ways in which a computer's abilities can be extended.

Software

An easy way to extend the computer's capabilities is to install more programs. If users want to make posters and cards, for example, a suitable desktop publishing program can be purchased and installed. If users want to create or edit sound files, a sound editing program can be installed. There are programs (also termed applications) written to do everything imaginable.

Hardware

It is possible to increase the functionality of a computer by adding new or improved parts to it. For example, the working memory (RAM) can be increased and this will normally make the machine run faster. Similarly, a larger hard drive can be added which will allow more information to be stored.

Peripherals

Peripherals are devices that connect to a computer and perform specific tasks. They are usually related to the input or output of data, i.e., they are input or output devices. For example, a printer is a peripheral, as is a scanner and a digital camera, to name but a few. Other peripherals such as alternative keyboards, switches and touch-screens provide students with special needs with alternative methods of accessing and operating the computer (see Advice Sheet 28 for more information about special needs).

Relevant Web Sites

How stuff works

<http://computer.howstuffworks.com/pc.htm>

In this article, PCs in the general sense and all the different parts that go into them are explained. You will learn about the various components and how they work together in a basic operating session. You'll also find out what the future may hold for these machines.

Wikipedia

http://en.wikipedia.org/wiki/Personal_computer

This website includes an introduction to computers, history of laptops, categories, related devices, component parts, upgradeability, security, brands and manufacturers.

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www.ncte.ie/ICTAdviceSupport/AdviceSheets