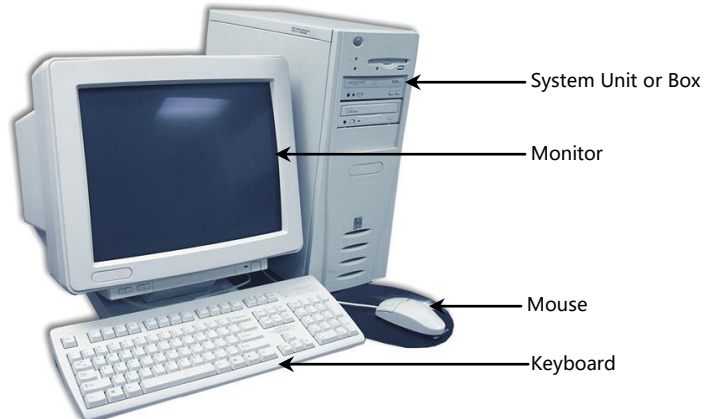# How Computers Are Used

Most of the world uses a personal computer for daily activities such as communicating with others, writing letters or other documentation, calculating reports such as cash flow or budgets, creating presentations for delivery to live audiences, or capturing data for historical or archiving purposes such as insurance data, vehicle and driver statistics, etc.

The following is a list of the different types of computers that exist today:

- Large systems such as supercomputers, mainframe computers, or mini computers

- Personal computers such as microcomputers, notebooks, tablets, personal digital assistants (PDA)

- Other types of computers such as calculators, robotics, microwaves, Global Position System, or cellular phones

An Overview

There are four elements that make up a personal computer system. The user, software, hardware and electricity all work together to form the whole system. Each element is crucial.

The previous picture shows an example of a personal computer system (PC). The system unit or box, monitor, keyboard, and mouse are part of the system hardware.

In order for a computer to be able to store information, either about its configuration or data files, the computer needs to have memory chips installed. Memory is measured in bytes; in very simple terms, one byte is equal to one character.

Officially, computers were developed using a numbering system of 1s and 0s. These two unique numbers are designed to represent the charged or uncharged nature of electricity. This is known as the *binary* system. These two digits essentially make a *bit* and eight bits make one byte. With the advancement of computer technology, the availability for storage capacity has grown:

1 Kilobyte	=	1,024 Bytes	or	1 Thousand Bytes
1 Megabyte	=	1,048,576 Bytes	or	1 Million Bytes
1 Gigabyte	=	1,073,741,824 Bytes	or	1 Billion Bytes
1 Terabyte	=	1,099,511,627,726 Bytes	or	1 Trillion Bytes

All data processed in a computer is made up of bytes, in various combinations as calculated by the computer. Every file used in a software program by the computer has a specific file size, based on the instruction for that feature. As you create or revise files, the size of the data file will increase or decrease accordingly, based on the information stored within the file.

Looking at the Monitor

The *Monitor* is an output device, similar to a television set that allows you to view the information the computer displays. The output from a monitor is considered *soft copy* while a printer's output is considered *hard copy*.
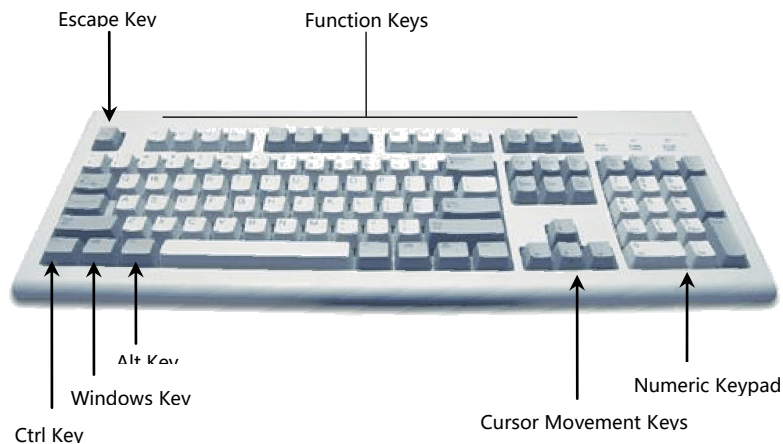

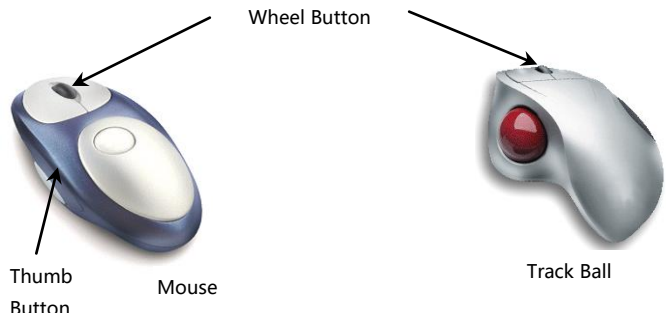CRT Monitor   Flat Panel Monitor

Using the Keyboard

The *Keyboard* is an input device, similar to a typewriter, which allows you to send information to the computer. It is the primary tool for inputting alphanumeric data. You can also use your keyboard to instruct your computer via a series of keystrokes.

Escape Key   Function Keys

Alt Key

Windows Key   Numeric Keypad

Ctrl Key   Cursor Movement Keys

Using the Mouse

The mouse is a device used to move the mouse pointer around on the monitor. Moving the mouse on a flat surface such as a desk causes the mouse ball to rotate and initiates movement reflected by the mouse pointer on the monitor. This also applies if you have a trackball or a thumb mouse (the ball sits on the top or side of the mouse rather than underneath).

Wheel Button

Thumb
Button

Mouse

Track Ball

Working with Disks

A disk drive is the device that enables you to save your work from the computer's RAM memory to disk, store software programs and move information from one disk to another. Imagine the disk as the record album, and the disk drive as the record player (phonograph) and recorder.

Computers use *hard disk drives* (hard drive) as their primary storage for both data and programs. Many software programs must be installed onto a hard disk before you can actually use them. The hard disk drive is similar in design to the floppy disk drive, but stores and retrieves far more information than a floppy, and at much faster speeds. It consists of one or more disk media.

The CD-ROM (Compact Disk Read Only Memory) or CD drive is another form of data storage. This type of drive works similar to a CD player in a stereo system. The information is burned (embedded) onto the vinyl surface and is retrieved with a laser beam, which is different technology than the previously discussed magnetic disk drives.

With the advent of technology comes the requirement for larger storage systems for all sorts of input or output devices. Flash or memory cards are used generally with digital cameras or digital video cameras to increase the number of pictures or video taken on that device. These cards or sticks come in a variety of sizes; the larger the storage capacity, the higher the price.

Flash Card

Memory Card

Flash Reader

These storage devices can be inserted or plugged into the digital device prior to turning it on and then as pictures or video are taken, the user can choose to save these images to the memory cards or device.
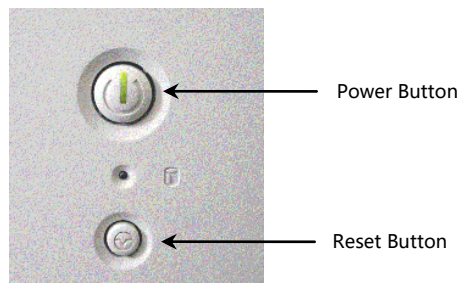
What is a Software Program?

Programs are called software because they only function when loaded into the computer's RAM memory. Because RAM is volatile, software must be permanently stored on a hard disk. Software programs are created using programming languages that contain commands to perform specific tasks. It is these commands that users will activate in order to complete the task. The commands can be available in a menu, toolbar button, shortcut keystroke, shortcut menu, or a combination of these options.

- An operating system or environment is a collection of programs designed to control the computer's interaction and communication with the user. The operating system essentially performs two important functions on the computer: it manages the input devices (keyboard and mouse), output devices (monitor and printer), and storage devices (hard and floppy disk drives), and it also manages the files stored on the computer and recognizes the file types to complete tasks.

- Word processing software programs allow you to create, edit, and save documents, along with changing the position of text in a document, insert new information, or remove words and sections no longer needed. With a typewriter, you would have to re-type the entire document after a few major changes. On a computer, a document can be stored electronically and retrieved at any time for modification. Many of the dedicated word processing programs have the capabilities of handling "DTP" (desktop publishing) tasks, making these very popular for handling documents in an office.

- One of the most popular financial tools is a spreadsheet program that performs mathematical calculations and "what-if" analysis. Besides replacing your pencil and calculator for solving financial and statistical problems, spreadsheets can display line graphs, bar charts, and scatter plot diagrams. Often accounting and spreadsheet programs are designed to work together, in an effort to provide the best financial solution. Any time you need to track numbers or audit information for trends or patterns, a spreadsheet can generally help with these tasks.

- Presentation programs allow you to create slides or handouts for presentations (speaker delivered or self-running), quickly and easily. Special effects are provided in these programs, similar to the manual process of using a number of different pieces of audio or video equipment. Anyone who needs to create a presentation for display from a computer can use this type of program as a resource.

- A database is simply a collection of related information. Some common examples are a phone book, inventory list, or personnel files. With a database program, you need only to enter the items and then generate reports or queries to have the information alphabetized, or categorized by price, volume, type, etc.

- Electronic mail or e-mail programs have been around for many years, and have evolved to be much easier to use. The process of sending e-mail is similar to that of the manual process for addressing, writing, and then mailing a letter on paper. The main difference is that the manual process requires you to use paper, envelope, stamp and have your post office deliver the letter, whereas e-mail requires only that you have an e-mail program, the correct e-mail address, and a connection to a post office, be it via the Internet or a local post office in your office (often referred to as a mail server).

- A Web browser program allows you to connect to the Internet and view web sites for different companies, organizations, or individuals. As with e-mail programs, browsing on the web has become much more popular as more users have connected to the Internet, as well as companies and individuals have set up web sites on the Internet.

Starting the Computer

Many computers have the power switch at the front of the computer, sometimes at the top right, other times in the center of the front panel. The power switch for the monitor is usually at the front, lower right corner. **Do not** try to feel for the switches the first time you want to start the computer — find them visually.

Power Button

Reset Button

Not all computers have a Reset button. Be sure to check your system first to determine which buttons are available to you. Older systems often have an extra button at the front that was used to set the microprocessor speed.

1 Turn on everything connected to the system unit (i.e., the monitor and printer) first. This ensures a steady flow of power to the system unit when it is finally turned on. Otherwise, the power to the system unit would be interrupted each time one of these devices was turned on.

2 Turn on the system unit. Make sure that this is the last power switch that you turn on. In cases where you are using a power bar to turn on all the devices, simply turn off the system unit power switch, turn on the power bar, and then manually turn on the system unit.

After several lines of information are displayed to the screen, the computer starts to look for the operating system by accessing the A Drive. The disk drive light comes on, followed by whirring noises, and then the operating system is loaded off the disk or hard disk and into the computer's RAM memory.

Understanding the Boot Routine

The process of turning on the computer and loading the operating system is called *booting* the computer. The term comes from the idea of lifting yourself off the ground by pulling up your boot straps. When you first turn on the computer, you are performing a *cold boot*. From the off position, the computer's power switch is turned on and the operating system is loaded from the disk into the RAM memory.

A *warm boot* refers to the process of clearing RAM and reloading a new copy of operating system from the disk. The word "warm" is used because the computer's power is left on. A "warm boot" is usually performed when the computer refuses to acknowledge keystrokes from the user, often referred to as "freezing" or "hanging" or "locking up".

Shutting Down the Computer

When you no longer want to use the computer, always shut down the computer appropriately. Never turn the computer off without using the correct procedure as this can damage the system files, in addition to any application programs you may have open at the time. Always make sure any application programs are also closed prior to activating the shut down process. You should essentially be looking at your desktop just as if you had just started the computer.

To shut down the computer correctly:

1 Click the **Start** button.

2 Click the **Shut Down** command at the bottom of the **Start** menu.

3 Ensure that **Shut Down** is selected for the procedure and then click the **OK** button.

4 Wait for Windows to completely shut down and turn off the computer before turning off the monitor or any other devices you may have turned on, such as speakers, printers or a scanner.