Introduction to Computer

Definition of Computer

A device that computes, especially a programmable electronic machine that performs high-speed mathematical or logical operations or that assembles, stores, correlates, or otherwise processes information.

Types of Computers

Supercomputers…are used to process very large amounts of information including processing information to predict hurricanes, satellite images and navigation, and process military war scenarios.

Mainframes…are used by government and businesses to process very large amounts of information.

Mini-Computers…are similar to mainframes…they are used by business and government to process large amounts of information.

Personal Computers (PC)…

Types of Computers

Personal Computers (Continued)

Personal Computers…also known as PC's…are smaller and less powerful than the others. They are used in homes, schools, and small businesses.

Types of Computers

There are 3 main types of PCs

Desktop

Portable (Notebook/Laptop)

When portable (notebook/laptop) computers were first created they were HUGE. They weighed around 100 lbs., and were carried in a large luggage suitcase. The creators of the portable (notebook/laptop) computer dreamed that one day it would be the size a notebook or pocket dictionary. With today's technology, we have been able to accomplish this goal and more...

Hand-Held

Computers Have Two Main Parts

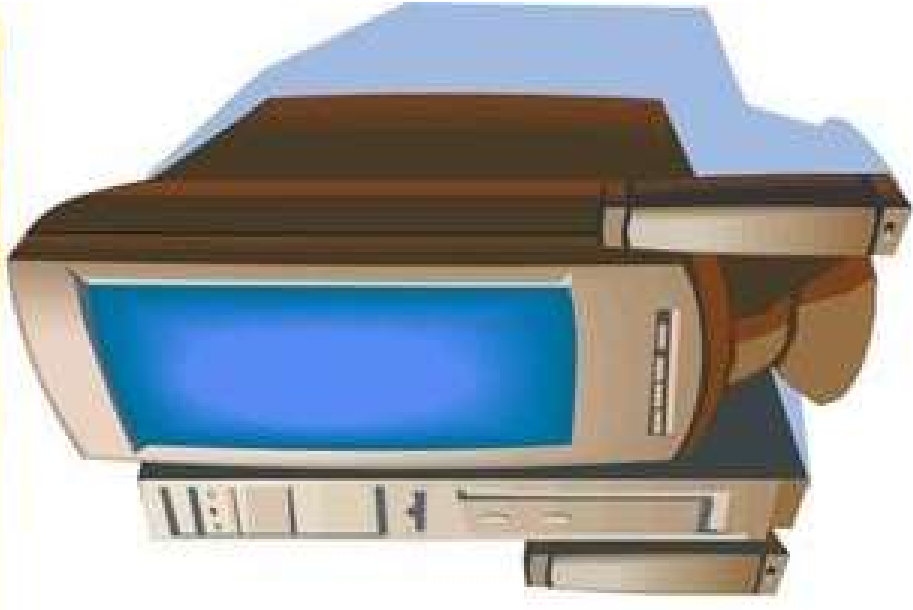There are two basic parts that make up a computer…

2-Software

1-Hardware

What is Computer Hardware?

Computer Hardware is the physical part of the computer system, the machinery and equipment.

Parts of the computer "you can see"

Hardware

Hardware is basically anything that you can touch with your fingers.

Computer Case
CPU (central processing unit...Pentium chip)
Monitor
Keyboard & Mouse
Disk Drive, Zip Drive, CD-ROM, DVD,
Hard Drive
Memory (RAM)
Speakers
Printer

Hardware (Continued)

There are three
types/categories of
hardware
1. Input Devices
2. Output Devices
3. Storage Devices

Input Devices

Input basically means getting data into the computer to be processed.

Keyboard, Mouse,
Trackball, Touch Pad
Light Pen, Laser Scanner,
Pointing Stick
Touch Screen,
Bar Code Reader, Scanner
Microphone, Joystick

Output Devices

Output basically means getting data out of the computer.

Monitor
Printer
Speakers
Headphones
Modem
Fax

Storage Devices

Storage devices are both input and output devices in one. A storage device is a place to keep data that has been processed so that it can be retrieved at a later time to be used again.

Hard Disk
Floppy Disk
CD's, DVD's
Magnetic Tape
Flash Memory, Jump Drive

Computer Input Devices

Computer Devices that input information in the computer

Examples

Key Board

Mouse

Scanner

Digital Camera

Computer Output Devices

Computer Devices that output information from the computer.

Examples
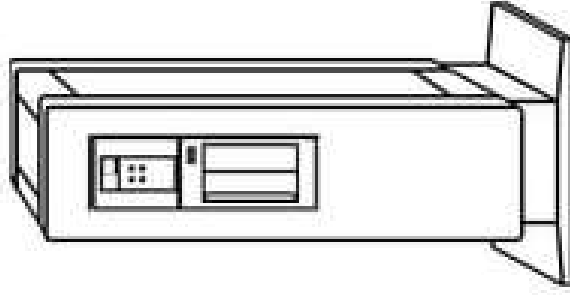
Monitor
Printer

The Monitor

The monitor looks like a TV and lets you see your work and your files.

The CPU

CPU stands for "Central Processing Unit". They contain the brains of the computer. They can be **desktop** models that the monitor sits on top of, or **tower** models that stand up tall.

Examples of Computer Hardware

Keyboard:
This device is used to type information into the computer and contains the numbers 0-9.

# Examples of Computer Hardware

<u>Mouse:</u>

a small device, which you move across the top of the desk to move the pointer or cursor on the screen.

Floppy Disk Drive

The CPU has places to insert disks. One kind of disk drive is a floppy disk drive. A floppy disk drive reads information from a very thin, floppy disk inside a hard plastic case. Floppy disks can hold up to 1.44 megabytes of information.
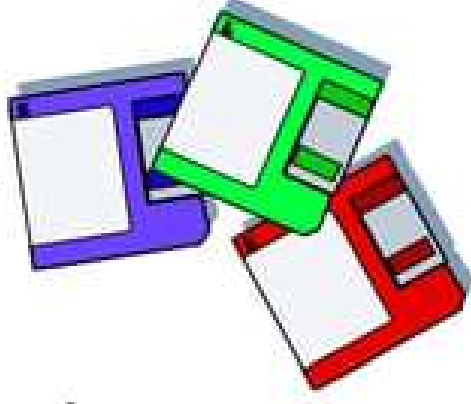
CD-ROM Disk Drive

CD-ROM stands for Compact Disk-Read Only Memory. They are flat, shiny disks that store information. Most new computers have CD-RW drives. CD-RW stands for Compact Disk-ReWrite. This type of disk allows you to write information to it, as well as read from it. Most can hold up to 700 megabytes of information.

DVD Drive/Burner

The newest computers come with the option of a DVD drive. A DVD (Digital Video Disc) looks just like a CD, but holds much more information! They can store 4.7 gigabytes of data!

Flash Drive

A Flash Drive is a relatively new storage device. It's like a mini, portable hard drive! You plug it into the USB (Universal Serial Bus) port on the front of newer computers and you can save to it!

What is Computer Software?

Computer Software are programs that tell the computer what to do.

Examples

Microsoft Word-word processing program

Microsoft PowerPoint-presentation program

Microsoft Excel-work book program used to track, calculate, and analyze numeric data

How Do Computers Work?

Input--This is when information is entered into a computer. Some common input devices include the keyboard, mouse and scanner.

Output--This is the information that comes out of a computer after it has been processed. The information comes out on output devices such as a printer or computer monitor.

Processing--This is when the information is handled by the computer's brain, known as the CPU (Central Processing Unit).
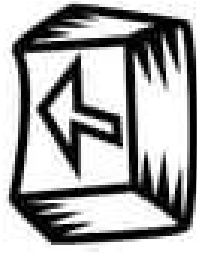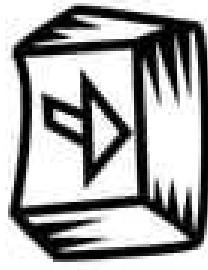
Input Devices
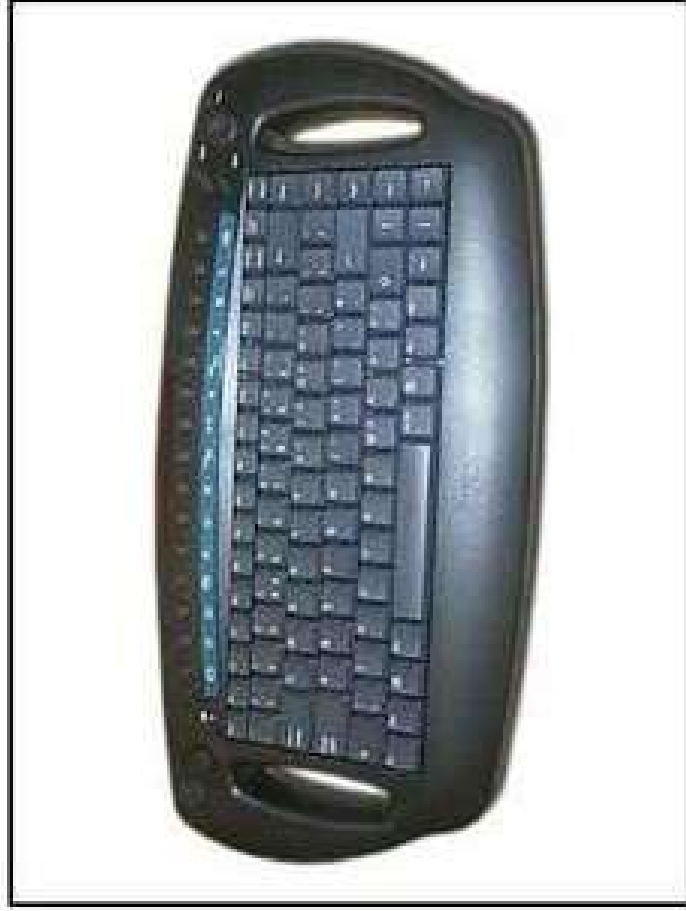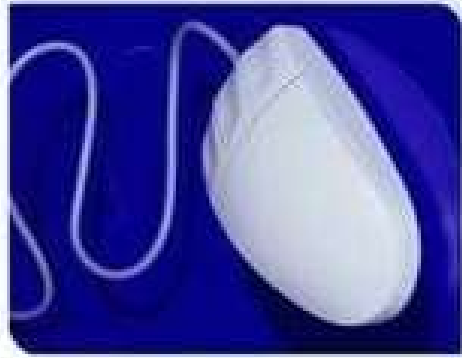
The Keyboard

The keyboard is probably the most used input device. It operates a lot like a typewriter, but has many additional keys that let it do special things a typewriter can't.

Special Keyboard Keys

The flashing light on the computer screen is called the cursor. This cursor can be moved up and down or left and right by pressing the 4 keys that have arrows on them. These arrow keys are called cursor keys.

Shift Key

When this key is pressed at the same time you press a letter key, a capital letter appears on your screen. When it is held down when you press a key with a symbol and number, the top symbol appears on the computer screen. There are two shift keys on your keyboard.

The Backspace Key

When this key is pressed, the cursor moves back one space to the left on your computer screen. This key is very helpful when you press the wrong letter or number. You can erase your mistakes!
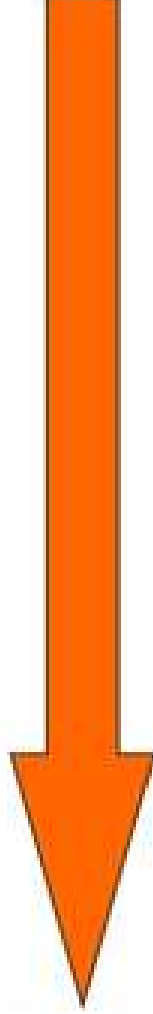
The Caps Lock Key

When you press this key, a small light on the keyboard comes on. Whenever this light is on, any letter key you press will result in a capital of that letter appearing on the screen. Pressing the CAPS LOCK key a second time turns it off.

The Space Bar

This is the long bar located at the bottom of the keyboard. Every time you press this bar, the cursor moves one space to the right on the computer screen.
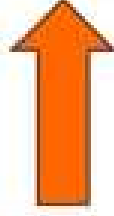
The Enter Key
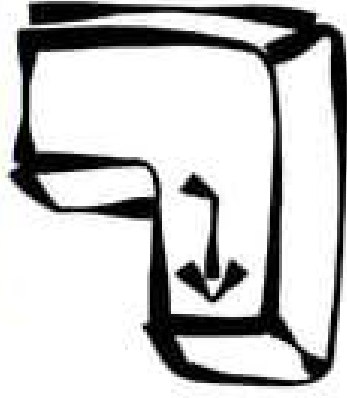
When you write a letter or a story pressing the Enter Key makes the cursor jump down to the next line. This is a very helpful key to use when you want to start a new paragraph or you're typing your spelling list.

The Function Keys

Most computer keyboards have between 10 and 12 function keys. These keys are usually located at the top of the keyboard and give the computer user fast ways to give the computer user special instructions. For example, pressing F1 when using a Windows program will allow the user access to the Help screen.

The Numeric Keypad Keys

On the right side of the keyboard there is a set of keys grouped together in a square. These keys have two functions. When the number lock key is pressed, these keys offer a quick and easy way of entering numbers into the computer. When the number lock key isn't pressed, these keys control the movement of the cursor.

The Mouse

Nope, it's not a rodent! It's another input device. It's called a mouse because of it's shape and the way the cable attaching it to the computer looks a bit like a tail. There are two kinds of mice. Some use a roller ball that allows the mouse to roll around a flat surface. When you do that and look up at the screen, you'll see a small moving arrow. This arrow is called the pointer.

A laser mouse doesn't have a roller ball. It uses a laser light that makes the pointer move. Laser mice don't have to have their insides cleaned!

Scanner
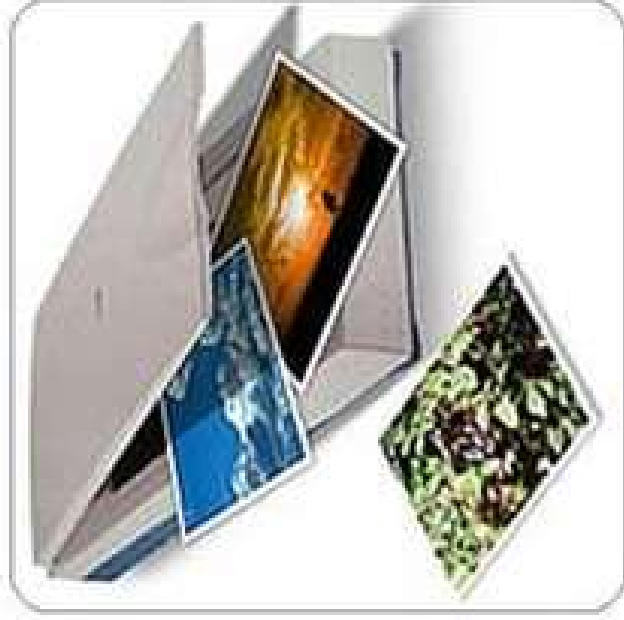
A scanner is a very useful input device. You can place a page of writing or pictures in the scanner and it will send the information to your computer. There they can be changed, saved into a computer file, or printed.

Output Devices

Printers
Soundboard
Audio Speakers

Printers

One output device is a printer. Once a computer user has created something on the computer, such as a story, he can send it to the printer. The printer prints exactly what's on the screen.
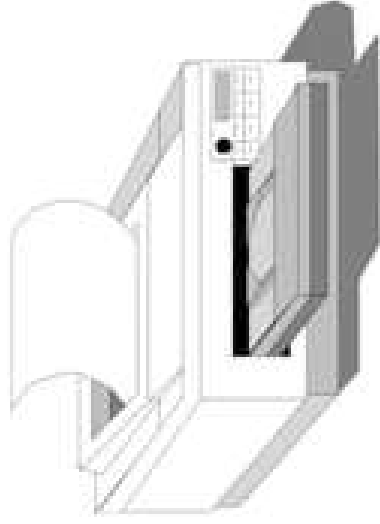
Two Common Types of Printers

An inkjet printer usually prints in color. It prints by squirting out small dots of ink onto the paper.

A laser printer uses a laser beam to create an image that is transferred to paper. It uses toner and a drum. The ink is powder.

Speakers

Speakers can be connected to your computer so you you can hear very very realistic sound effects and wonderful music. Some computer monitors come with built in speakers.
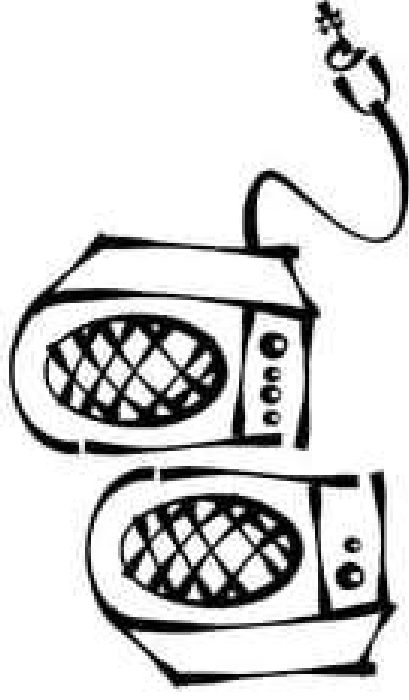
Computer Processing

Once information has been sent to a computer by one of the input devices it's processed. The computer uses it's brain to process the information. The computer's brain is called the CPU, or Central Processing Unit.
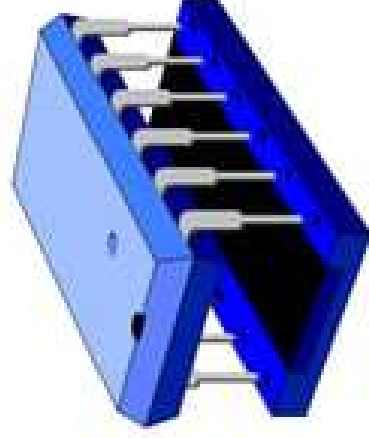
The CPU is also called the microprocessor. The word "micro" means small. Since the CPU is located on a small computer chip about 1 inch square, that makes sense!
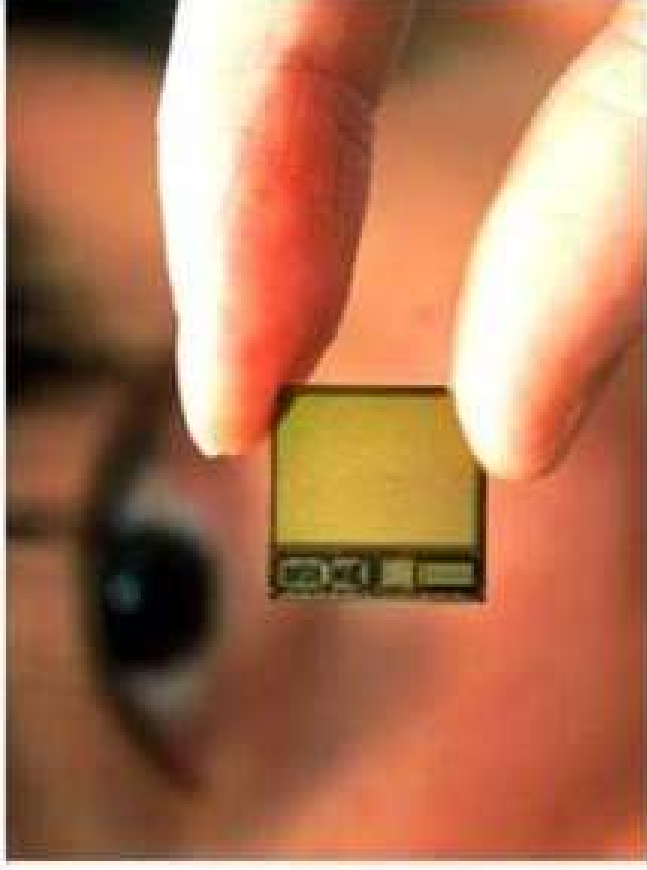
Random Access Memory

When a computer processes information, it uses software programs. Each program requires a certain amount of electronic memory, or RAM (Random Access Memory) to run correctly.

RAM is **temporary memory.** The computer holds information in this memory and gets it when it needs it.

If a computer has more RAM, it can solve problems and process information faster! If you're updating your computer, more RAM is a great thing to add!

Read-Only Memory

A second kind of computer memory is ROM, which stands for Read-Only Memory. This memory is **permanent**. The information there was put there when the computer was made. The computer needs the information in it's ROM memory in order to function.

What are all those parts inside my computer and what do they do???

Computer Hardware

Hard Drive

Motherboard

Sound Card and Video Card

Memory Card

Power Supply

NIC Card

BIOS

Hard Disk Drive

The Hard Disk Drive is a magnetic storage device. All the computer programs and files you create and save are located there. This is **permanent storage** (at least until you uninstall software or delete a file). The hard drive is normally signified by the drive letter "C". Today's hard drives can store a HUGE amount of information. A new computer might have a hard drive that will hold 250 GB's!

Inside the Hard Disk Drive case you'll find circular disks that are made of steel. On the disks, there are many tracks, or cylinders. An electronic reading device called the **head** passes back and forth over the cylinders, reading information from the disk or writing to it.

Hard Disk Drives use Magnetic Recording Techniques. The magnetic medium can be easily erased and rewritten and will "remember" the magnetic flux patterns stored on it for many years!

Hard Disk Drives can spin at 7200 or more rpm's (Revolutions Per Minute). That means in one minute, the hard drive spins around more than 7200 times!

The Motherboard
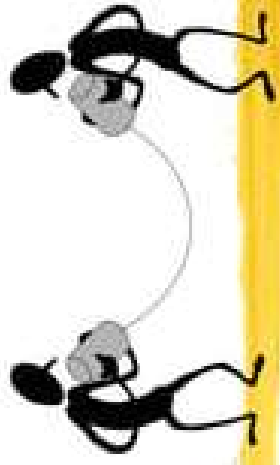
Your computer couldn't work without the **motherboard**. It ties everything together! It allows every part of your computer to receive power and communicate with each other. Everything that runs the computer or enhances it's performance is either part of the **motherboard** or plugs into one of it's expansion slots or ports.

Sound and Video Cards

Sound and Video Cards are Output Devices. They contain special circuits that allow your computer to play sounds and display graphics on your monitor.

Memory Card

Remember RAM (Random Access Memory) and ROM (Read-Only Memory)?

RAM cards will remember what you tell them and can even change to remember new information. But, when the computer is turned off, it forgets everything you did! That's why you always save your work!

ROM is good at remembering, but cannot change it's mind. It holds the information that was built into it!

Power Supply

If there is any one component that is absolutely vital to the operation of a computer, it is the power supply! Without it, a computer is just a box full of plastic and metal. The power supply converts the alternating current (AC) line from your home or school to the direct current (DC) needed by the computer.
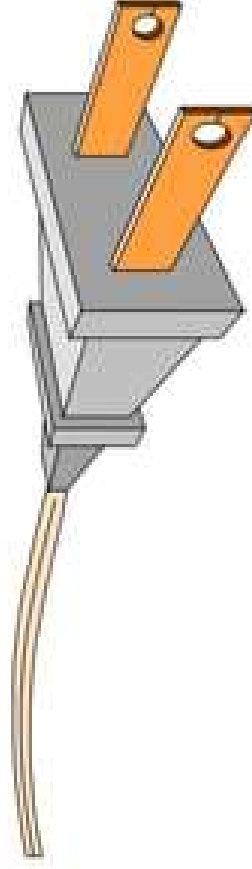
You can see the power supply from the back of your computer because of the power cord and the cooling fan.

Computers put out a LOT of heat and need the fan to keep them from overheating.

Network Interface Card

A NIC card (Network Interface Card) allows your computer to talk to other computers! A cable called Cat5 is plugged into the NIC card and your computer can then be attached to a network and be on the internet!

BIOS CHIP

A BIOS chip (Basic Input Output System) is a very important computer component. In simple terms, the BIOS chip wakes up the computer when you turn it on and reminds it what parts it has and what they do!

Bytes, Kilobytes, Megabytes and *Gigabytes*

Byte 8 Bits=1 byte

KB   Kilobyte=1,000 bytes

MB   Megabyte=1,000,000
      (1 million) bytes

GB   Gigabyte=1,000,000,000
      (1 billion) bytes

That's right! The only information your computer can understand is ON (1) and OFF (0)!

The millions of combinations of those two commands given in series are what makes your computer work.

The memory chips in your computer are divided into thousands of tiny compartments called **bits**. Each and every bit has an electronic switch, or gate. ON means the gate is open and letting electricity through.

Remember, the computer reads ON or open bits or switches as the number 1. Closed switches are OFF because electricity can't get through.

The computer reads OFF switches as 0.

It is by grouping these bits together to form 1/0 commands that data is formed. Remember bytes? Eight bits are grouped together to form one byte.

In that group of 8, there are 256 possible combinations of 1/0. Wow!

The grouping of 1/0 within a byte is called **Binary Code.**

Binary Code is the language of computers.

Here is an example of Binary Code: when you type in the letter A on your keyboard, electrical signals are sent from the keyboard to the CPU. The CPU turns the signals into Binary Code. Then the computer reads the code and sends it on to the monitor to display the letter A. All of that happens in an instant!

So what about Megabytes
and Gigabytes?????

Megabytes and Gigabytes

One megabyte equals one million bytes. So, a computer with 512 megabytes of RAM (Random Access Memory) means the computer can handle 512,000,000 (512 million) bytes of RAM.

Hard disk space is also measured in bytes. So, a 200 GB Hard Disk Drive has 200,000,000,000 (200 billion) bytes for storing memory!

Just the beginning…..

We just touched on the very basics with this presentation! There is so much more to understanding computers. There are books that are thousands of pages long that explain how they work in great detail. But now maybe you understand them more than you did before and you'll want to keep learning.

Keep computing!

General Understanding of how your computer works!

Output Devices

When you send inputs into the PC, it processes them and produces useful output for you. The primary output devices are the video display, printer and speakers.

Software

Some people want to use the power of their computer to create works of art, others want to create music, or play games, surf the web, or play the stock market. Whatever you want to do with your computer, software is the key to doing it.

What happens when your PC is powered on?

With a simple push of a button, your computer comes to life.

Basic Computer Quiz

1. What is Computer Hardware?
2. What is Computer Software?
3. Can you operate a Computer with out the Computer Software?
4. How can Computer Software help your business?
5. What are Computer Input devices?
6. What are Computer Output devices?
7. Where is the Mother Board located?
8. Name a couple of Computer Software.
9. Define Internet
10. How would the Internet help your business?

Answers to Basic Computer Quiz

1. Computer Hardware is the physical part of the computer system, the machinery and equipment. For example: Monitor, Key Board, Printer and more.

2. Computer Software are programs that tell the computer what to do. For Example: Microsoft Word, Microsoft PowerPoint and more.

3. No. You need Computer Software to operate a computer, with out the computer software the computer will be nothing more than just computer hardware.

Answers to Basic Computer Quiz

4.   There are computer software that can help your business, for example, Accounting software can help you do taxes and pay roll faster than by hand. The computer soft ware will calculate numbers for you.

5.   Input Computer Devices are computer devices that input information into the computer for example, the mouse, keyboard and scanner.

6.   Output Computer Devices are computer devices that output information from the computer like the printer and the monitor.

7.   Mother Board is the main circuit board inside the CPU case. It holds the microprocessor, memory and other crucial circuits and components that control the operation of the Personal Computer.

8. Computer Software comes in many programs. Here are a few that you might be familiar with, Microsoft Word, for word processing documents, Microsoft PowerPoint for creating professional graphic slide presentations and Microsoft Access for creating database.

9. Internet: A world wide network that connects millions of computers to share and exchange data, business, news, opinions, and research results. The Internet is not the same as the World Wide Web (WWW). The World Wide Web is a service that is provided on the Internet.

10. The internet can advertise your business and network all over the world. This will help your marketing and boost sales and networking for your business.

Basic Computer Terms and Definitions

CPU: This computer component has several names: Central Processor Unit, microprocessor or processor. This unit is the brain of the computer processes and executes instructions in a software program. The CPU's primary functions include retrieving instructions from the computer's memory, including random access memory, comprehending and executing instructions, and directing the input and output activity of the computer.

Desktop: The first screen that you see when any Windows operating system screen is up and running. One of the main purposes of the Desktop is to make it easier to access different application programs, files and documents.

Basic Computer Terms and Definitions

File: Unit for storing information that may include a word-processing document, a spreadsheet, a picture, a graphic, musical piece, or even part of an application program. Examples of "files" include text files which could be a letter or report and graphic files which could be a picture. Each file has a name because the data or information created in a software program is saved with a file name.

Folder: Method for organizing files that is related by topic, by purpose, by type, by program, or even by a project that you are working on. NOTE: When an application program is loaded onto your computer, it will group similar applications in a folder. As you add or create files, you can organize them however you want.

Hyperlink: Allows you to move from one web page document to another. It can be text which is usually underlined or a graphic. When you move your mouse over a hyperlink, the mouse cursor usually becomes a hand which indicates a hyperlink is present. Once you click on the link, you move to another web page document or to another place on the same web page.

Icon: A small picture that represents processing options such as programs, documents, and shortcuts. When you click on the icon, the file or program will open. The most easily recognized icon is the Recycle Bin which is the graphic below.

Input: Commonly known as data and refers to numbers, letters, words, images, video, music and even sounds. Other computer input includes commands and user response. A command directs the computer to execute tasks or perform certain activities. One example of a command is a command buttons OK, Cancel and Help seen on the Shut Down Windows dialog box.

Internet: A world wide network that connects millions of computers to share and exchange data, news, opinions, and research results. The Internet is not the same as the World Wide Web (WWW). The World Wide Web is a service that is provided on the Internet.

Keyboard: The keyboard is an input device that allows you to enter letters, numbers and symbols into your computer. The keyboard keys include the alphanumeric keys (letters and numbers), numeric keypad, special function keys, mouse cursor moving keys, and status lights.

Files and Folders: *Think of a computer folder as being similar to a filing cabinet folder, whereas a computer file is similar to the pieces of paper that are placed in the folders.*

Graphic User Interface (GUI): Combines text and graphics to make software easier to use. Graphical User Interface features include icons, windows, menus, and buttons.

Hard Copy: Usually refers to a printout on paper.

Hard Drive: The purpose of the hard drive is to store information. This device that allows the computer to permanently retain and store data like the operating system, programs and information data. The hard drive holds more data than a diskette and accesses information faster than on diskettes. *Storage refers to the capability of storing things, and as for the computer, it is information*

Hardware: Refers to any component of the computer system that you can like the monitor, keyboard, mouse, printer, computer unit, scanner, speakers and even the components inside of the computer unit if you opened the box up.

Menu: List of options that may be commands or other options from which you can choose from. The following illustration is the File Menu Bar command menu list.

Mouse: Besides a keyboard, a mouse is the most common input device for a computer. The mouse is a small, palm-sized input device that you move across a flat surface, such as a desktop, to control the movement of the pointer on the screen. Technically, there are many operations that are much easier to perform with a mouse than a keyboard because you can just point and click to select an item on a screen or choose an item from a list of options.

Mouse Commands: Before examining the various commands, you must understand how to execute each mouse command. The mouse commands include move, point, click, deselect, double-click, drag, and right-click.

My Computer: An icon that opens into a folder of icons for all of the resources on the computer like the hard drive and printer.

Operating System: Software that acts as an interface between you, the application software (like word processing or accessing the Internet), and the computer components. This includes interpreting and carrying out basic instructions that operate a computer like recognizing information from the keyboard and mouse, sending information to the monitor, printer, or speakers and scanners, storing information to the hard drive and removable drives. Common operating systems include Windows XP, Windows 2000, Windows ME, and MAC OS.

RAM: This is an acronym for Random Access Memory. This memory is a work area or a temporary **storage** space where the computer places program information so that it can execute the program instructions and information. When the program or file is closed, the data or programs are removed from RAM. The amount of RAM you have on your computer is crucial in determining how many programs can be opened (running) and how much data is available for each program. RAM is available in MB or megabytes. *An example is 256MB of RAM.*

Select: A single left mouse click to select a file or folder icon.

Software: Instructions that provide the computer with step-by-step actions that need to be executed to complete a specific task. A computer will not function with software.