

Chapter I

Computer Getting Started

The Big Picture

A computer system has three main components: hardware, software, and people. The equipment associated with a computer system is called hardware. A set of instructions called software tells the hardware what to do. People, however, are the most important component of a computer system--people use the power of the computer for some purpose.

1. What is the computer?

It is a machine whose function is to accept data and process it into Information. It is also capable of storing huge amount of data and performs complex Operation using programs



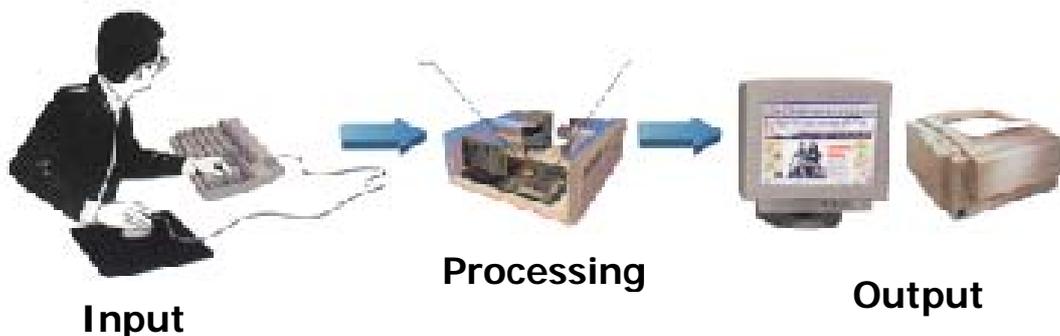
2. Data and Information

Data:

Data are essentially raw, unprocessed unorganized facts .Almost any kind of facts or set of facts can become computer data: a letter to a friend, text and pictures, a budget set of employee records.

Information:

Data that have been processed into a meaningful form.



Hardware and Software

The Basic Components of a Computer:

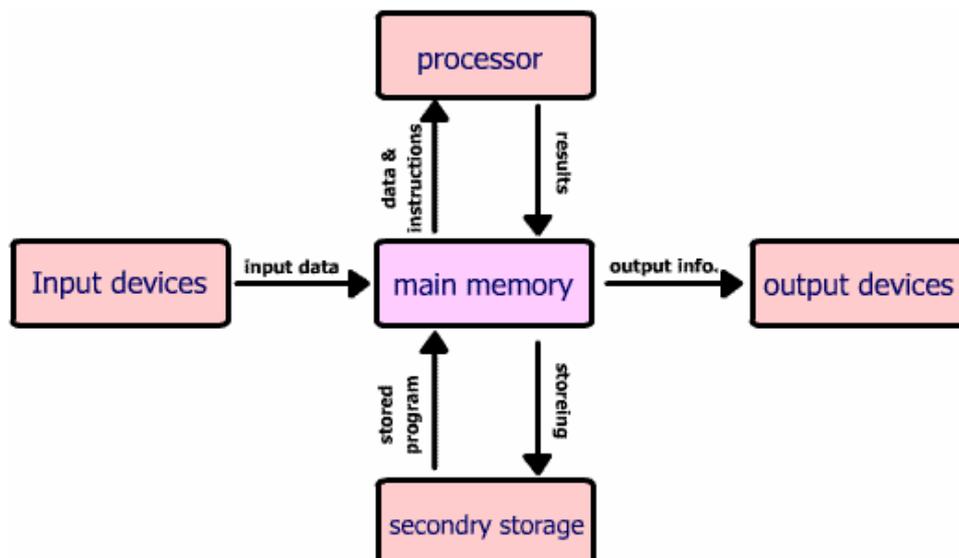
A computer is a machine that can be programmed to accept data (*input*), process it into useful information (*output*), and store it away (in a *secondary storage* device) for safekeeping or later reuse. The *processing* of input to output is directed by the software but performed by the hardware

a. Hardware:

The term hardware refers to the physical components of your computer such as the system unit, mouse, keyboard, monitor...etc.

Hardware consists of five computer system components

1. **Input Devices:** accept data or commands in a form that the computer can use; they send the data or commands to the processing unit.
2. **Main Memory:** *memory* or *primary storage*, which can hold data and programs only temporarily
3. **Processor:** more formally known as the *central processing unit (CPU)*, has electronic circuitry that manipulates input data into the information people want. The central processing unit actually executes computer instructions.
4. **Output Devices:** show people the processed data--information--in understandable and usable form.
5. **Secondary Storage:** usually means *secondary storage*, which consists of secondary storage devices such as disk--hard disk or diskettes or some other kind of disk--that can store data and programs outside the computer itself



1. Input Devices:

Converts data and programs that humans can understand Into a form the computer can process such as keyboard, Mouse, joystick, touch-screen, scanners, digital cameras, light pen, etc.



2. Main Memory:

Holds data and program instructions awaiting processing, Intermediate results and processed output also called "Primary storage".



3. Processor:

Processes or manipulates data often called "Central Processing Unit".



4. Output Devices:

Converts strings of computer bits back into natural language Form to make them understandable to human such as monitor, Printer, Speakers, plotters,.... etc.



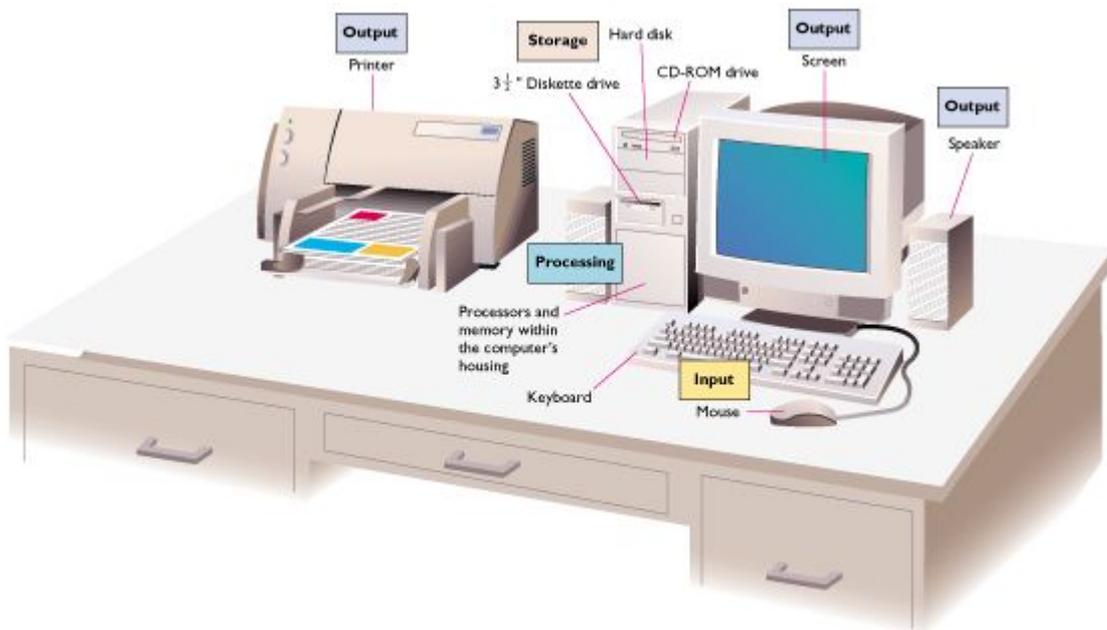
5. Secondary Storage:

it's used to store data and programs permanently. Fast, accurate, inexpensive, high capacity, nonvolatile? Extension of main memory such as hard disk, diskette, CD Rom, DVD, etc.



Personal Computer Hardware:

In this personal computer system, the input device is a keyboard or a mouse. The input device feeds data to the central processing unit, which is inside the computer housing, the vertical box to the left of the screen. The output devices in this example are the screen, the printer, and the speakers. The secondary storage devices are a hard drive, a 3 1/2-inch disk drive, and a CD-ROM drive, all within the computer housing. This popular configuration, with the housing standing on end, is called a minitower.



b. Software:

The term software refers to the sets of instructions or programs which tell the Computer to do something and how to do it.

Software provided into three main parts

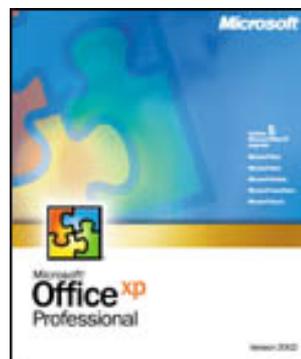
1. Systems Software:

Consists of programs operating in the background that enable Applications software to run on a computer system's hardware Devices. One of the most important pieces of system software Is the operating system, a set of control programs that super-? Vise the computer system's work.



2. Applications Software:

Is designed to assist with such tasks as computing bank-Account interest, preparing bills, creating letters,Managing files and databases, playing games and Scheduling, applications software makes possible the Types of work that most people have in mind when they Acquire computer system.



4. Classification of Computers

1. Super-Computer:

The mightiest computers the most expensive also the fastest: They can process trillions of instructions per second. Supercomputers can be found in mainstream activities as varied as stock analysis, automobile design, special effects for movies, and even sophisticated artwork agencies of the federal government uses supercomputers for tasks that require mammoth data manipulation, such as worldwide weather forecasting and weapons research



2. Mainframe:

Large computers are called **mainframes**. Mainframes are capable of processing data at very high speeds--millions of instructions per second--and have access to billions of characters of data. The price of these large systems can vary from several hundred thousand to many millions of dollars. Use is for processing vast amounts of data quickly, banks, insurance companies, and manufacturers. Airlines with sophisticated reservation systems, government accounting services, aerospace companies doing complex aircraft design, these examples of mainframe applications, a key characteristic of large computers is that they are designed for multiple users



4. Personal Computer (PC):

Most often called personal computers, or just PCs, these desktop computers are occasionally known as microcomputers or, sometimes, home computers. Personal computers now fall into categories; most are low-end functional computers or else fully powered personal computers. A third category of upper-end PCs, called workstations, is used by specialized workers such as engineers, financial traders, and graphic designers. Now, for a few hundred dollars, anyone can own a personal computer.

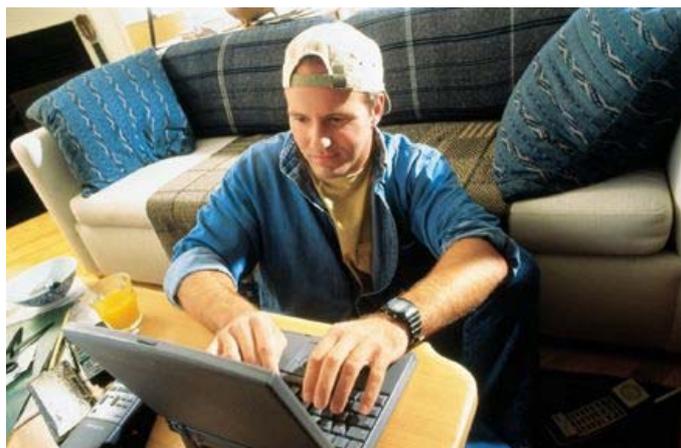


At the low end, a cheap PC has less of everything: a slower and less powerful microprocessor, less memory, a smaller and less crisp screen, less hard drive space, cheap PCs perform primary functions more than adequately. Customers who want a computer mainly for basic applications such as word processing, personal finance, record-keeping, games, and access to the Internet are usually happy with computers at the low end.

There are, of course, people who should buy the more expensive, cutting-edge computers. You will want all the computer you can get if you plan to spend a lot of time on graphic images, heavy-duty calculations, programming, and--above all--action-oriented arcade games.

5. Notebook Computers:

A computer that fits in a briefcase! a computer that weighs less than a newborn baby? A computer you do not have to plug in? A computer to use on your lap on an airplane!. **Notebook computers** are wonderfully portable and functional, and they are popular with travelers who need a computer that can go with them. Somewhat larger, heavier versions of these computers are known as **laptop computers**.



The memory and storage capacity of notebook computers today can compete with those of desktop computers. Notebooks have a hard disk drive and most accept diskettes, so it is easy to move data from one computer to another. Many offer a CD-ROM drive. Furthermore, notebooks can run most software available. Notebooks are not as inexpensive as their size might suggest; most carry a price tag greater than that of a full-size personal computer.

6. Personal Digital Assistants:

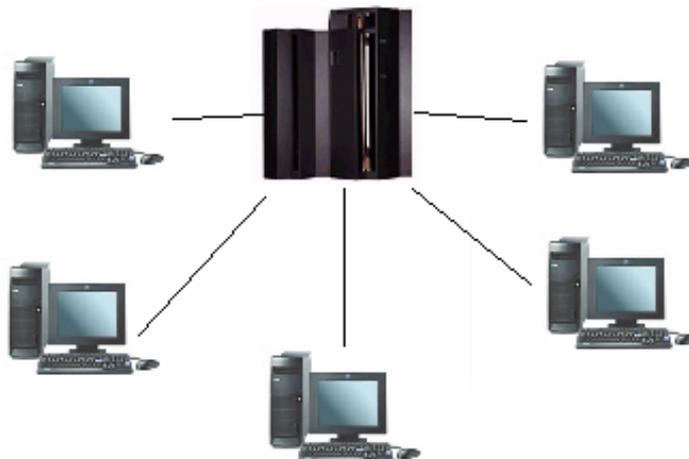
A handheld computer called a **personal digital assistant (PDA)** can be used to keep track of appointments and other business information, such as customer names and orders. also called **pen-based computers** because, through a pen-like stylus, they can accept handwritten input directly on a touch-sensitive screen. Many PDAs offer multiple functions, including wireless e-mail and fax capabilities



7. Intelligent and Dumb Terminals:

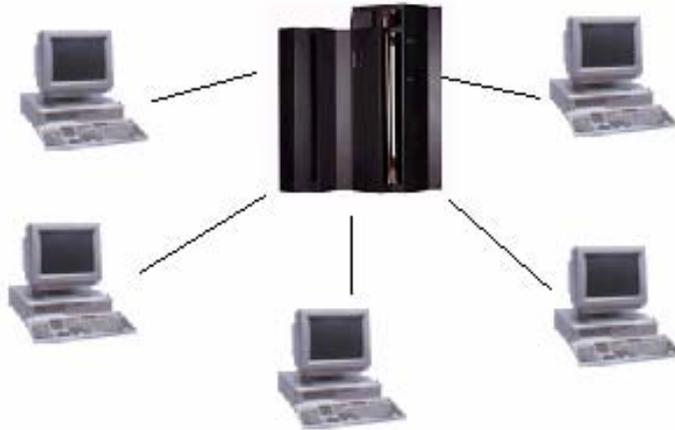
a. Intelligent Terminals:

An intelligent terminal, for example PC, performs a lot of the processing Locally i.e. within PCs CPU (Central Processing Unit) thus you could use a PC Linked to a mainframe to extract the required information from the mainframe And then perform analysis of that data on PC.



b. Dumb Terminals:

A dumb terminal has very limited processing capabilities itself, but allows you to connect a large powerful computer such as mainframe, the dumb terminals only allow you to enter your data and display the information on the screen.



5. How a Computer Works:

A computer is controlled by stored programs; thus, the first step in using the machine is copying the program from diskette into memory. Now, the processor can be executing instructions. Input data from the keyboard are stored in memory. The processor manipulates the data, storing the results back into memory. Finally, the results are output.

