

Information Technology

Information Technology is a broad term which covers all aspects of the use of computer technology. It includes not only hardware and software, but also communication technology applied to linking computer systems, software engineering, and the administration and use of computer systems.

*A **computer** is an electronic machine that performs input, processing, storing, and output according to programmed instructions to carry out specific tasks. it can perform computations and make logical decision faster than human beings*



Information could be:

- Results of scientific calculations .
- Results of statistical analysis.
- Conclusions of logic deduction .
- Result of information retrieval or data summary .

Formerly, computers were used primarily to do arithmetic computations,

The modern computer operates in a similar fashion. Input to a computer can be sent through the keyboard or mouse. The computer then processes the input, stores the result, and displays the result via the monitor, speaker, printer, or other output devices.

For example, when you request for a web page by typing in its URL (Uniform Resource Locator), "<http://www.xyz.com>", the computer processes your input by fetching the requested page over the Internet. It then displays the fetched page on your monitor as output

A computer system consists of :

- hardware system
- software system

❖ **Hardware**

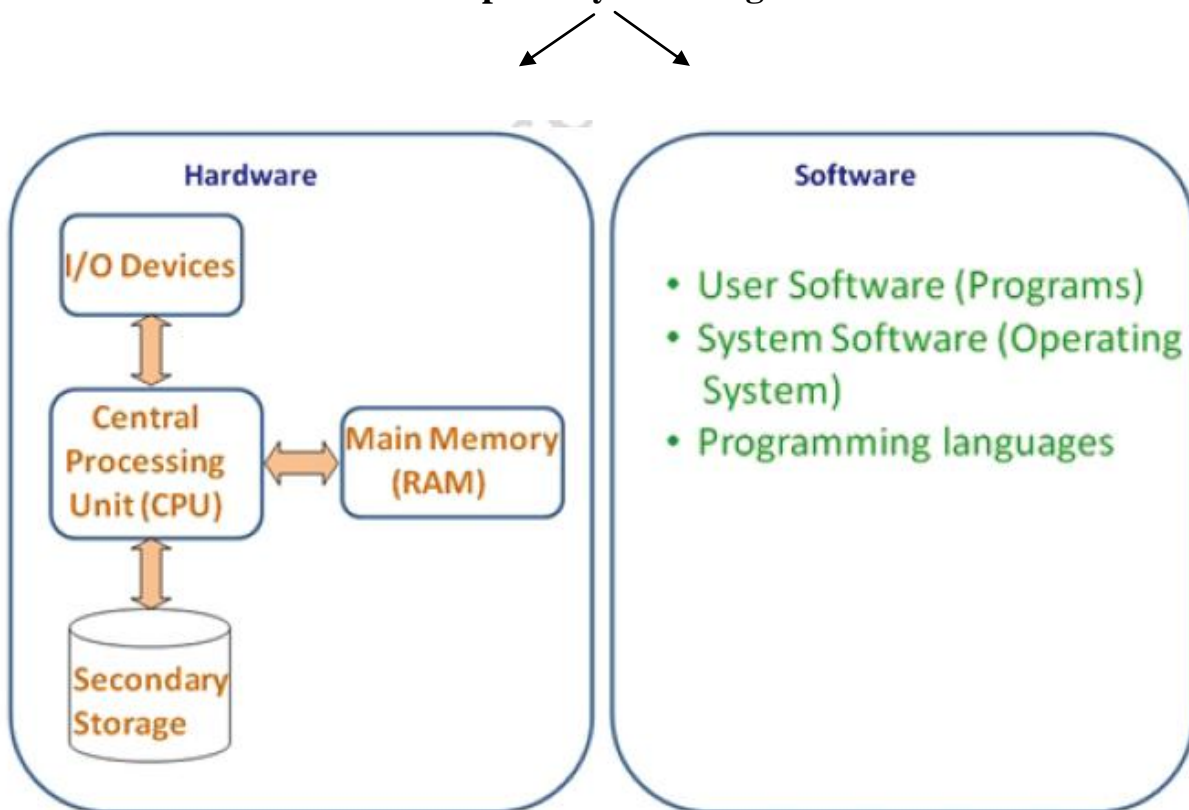
Hardware refers to the physical components of a computer. These are the parts that you can see, feel and hear. Examples are the CPU, the keyboard, the monitor, memory, cables, mouse, printer and power supply.

❖ **Software**

Software refers to the programs that control the computer and make its function.

A **program** is a sequence of instructions that instructs the computer what to do .

computer system diagram



Types of Computer

Mainframes

These are the largest and most powerful of computers. The biggest of these are sometimes called *Supercomputers*. Mainframes are usually only found in large corporate institutions, research organizations, government ministries and tertiary academic institutions.

They provide centralized processing and storage of data. They are usually used for large database systems such as the accounts of a municipality, patient information at a large hospital or student records at a university.

Networking, in which computers are connected together and are able to communicate, allows data to be *downloaded* from the mainframe to the personal computer or be *uploaded* from the personal computer to the mainframe.

Capacity and speed: Mainframes have the largest capacity in terms of data storage and processing speed. The capacity of a modern mainframe can be hundreds or even thousands of times that of a modern personal computer.

Cost: Mainframes are also the most expensive machines in terms of both initial cost and maintenance. A mainframe can cost millions of Rands.

Typical users: Because the mainframe provides services to all sectors of a large corporation or institution, users can include systems analysts, programmers, database administrators, data capturers, accountants, accounts administrators



Network computer

Network computers are also sometimes known as **thin clients** or **dumb terminals**. They provide access to a mainframe via a network and have little, if any, computing capacity of their own. Network computers provide remote access to a mainframe. They allow the user to input data or commands and receive output. The actual processing would be done on the mainframe.

Capacity and speed: Network computers do not have any processing capacity of their own. Their speed will depend on :

- ❖ the speed and capacity of the mainframe;
- ❖ the speed of the network to which they are attached;
- ❖ the number of users accessing the mainframe.



Cost: Network computers are relatively simple devices, hence they are fairly cheap.

Typical users: These would generally be the end-users of the system such as managers, accountants, receptionists, accounts clerks and data capturers.

Personal computers

Personal computers or *PCs* for short are the type of computer that most users are familiar with. Because they are usually found on users desks, they are also sometimes called *desktop computers*.

Operating systems such as *Linux* and *Windows* were designed specifically for personal computers.

Capacity and speed: Because of the rapid advances in technology, the PC of today is more powerful than many mainframes of a few years ago.

What complicates the issue of speed in talking about PCs is the use of graphics.

Cost: The cost of a personal computer is greater than that of a network computer or PDA but less than that of a laptop and a very small fraction of the price of a mainframe.

Typical users: Everyone is a potential user of a personal computer. The list could include scientists, researchers, mathematicians, statisticians, technologists, engineers, students, teachers, accountants, actuaries, managers, doctors, librarians, receptionists, book-keepers, writers, and journalists. These are just a very few.

Laptop

Laptops are similar to personal computers except that they comprise an integrated unit. Instead of a separate monitor, the lid contains a screen. The keyboard is built into the base. Usually they make use of a touchpad instead of a mouse. The term notebook computer is often used instead of laptop computer.

The main feature of a laptop is its portability. This is possible, not only because of the reduced size and weight, but also through the use of a built-in battery which is able to power the computer for a few hours without being connected to a mains power supply.

Capacity and speed: These are the same as for personal computers.

Cost: Because of the more expensive components and the smaller market for laptops, these are usually quite a bit more expensive than personal computers.

Typical users: Although the users could be any of those mentioned under personal computers, cost tends to limit the users to those who need portability or who can afford the cost. You would find them most commonly used by people such as managers and journalists.

PDA / Personal Digital Assistant

The **PDA** is the smallest of all computers. *Their main task* is to maintain a diary and keep contact lists. On many you are able to make use of a word processor or spreadsheet, but, because of physical constraints,

the amount that can be done is far more limited than on a PC. PDAs vary considerably in the features they contain. Top of the range cell phones now contain a PDA. Usually, all the components of a PDA are solid state – they do not contain any moving parts.

Most PDAs are able to connect to a personal computer so that data can be exchanged.

