TYPES OF COMPUTER

Introduction

A computer is one of the greatest inventions of man and it has seen many changes in functions , memory space , size and portability. The computer is an extraordinary machine because of its ability to store and process a massive amount of information. It is used to perform many technical tasks. The different types of computer are in use today due to continuing advances in computing technology. Computers are boardly divided into 3 groups on the basis of computing technology. They are:

Analog computer

Analog computers are used to process analog data. Analog data is of continuous nature and which is not discrete or separate. Such type of data includes temperature, pressure, speed weight, voltage, depth etc. These quantities are continuous and having an infinite variety of values.

It measures continuous changes in some physical quantity e.g. The Speedometer of a car measures speed, the change of temperature. These computers are ideal in situations where data can be accepted directly from measuring instrument without having to convert it into numbers or codes.

Analog computers are the first computers being developed and provided the basis for the development of the modern digital computers. Analog computers are widely used for certain specialized engineering and scientific applications, for calculation and measurement of analog quantities. They are frequently used to control process such as those found in oil refinery where flow and temperature measurements are important. They are used for example in paper making and in chemical industry. Analog computers do not require any storage capability because they measure and compare quantities in a single operation. Output from an analog computer is generally in the form of readings on a series of dial (Speedometer of a car) or a graph on strip chart.

Digital computer

Digital computer is designed to process data in numerical form ;its circuits perform directly the mathematical operation of additions, subtraction , multiplication and division. It is an an electronic computer in which the input is discrete rather than continuous. It consist combinations of numbers, letters, and other characters written in an appropriate programming language and it represented internally in binary notation. These can be further classified according to the difference in size ,cost , application areas and computing power. They are as follow:

a) Super computers
b) Mainframe computers
c) Minicomputers
d) Microcomputers

Super computers

The most powerful computers in terms of performance and data processing are the Supercomputers. It is a computer that is fastest around the world , having very large memory and high processing speed. They can process up to billion operation per second. These are specialized and task specific computers used by large organizations. These computer have multiple CPU that can process multiple instruction at a time, known as parallel processing. These computers are used for research and exploration purposes, like NASA uses supercomputers for launching space shuttles, controlling them and for space exploration purpose.

Example:

Cray titan

NUDT Tianhe-2

Mainframe computers

A mainframe computer is a high performance computer used for large scale computing purpose that require greater security and availability. These computer can support a number of terminals running concurrently serving many hundreds users without degrading its performance. Hence it is also called "central host computer". Mainframe computers can be accommodated in large air-conditioned rooms because of its size. Mainframes can also process & store large amount of data. Banks educational institutions & insurance companies use mainframe computers to store data about their customers, students & insurance policy holders.

Popular Mainframe computers

- Fujitsu's ICL VME
- Hitachi's Z800

Minicomputers

A minicomputer is a type of computer that possesses most of feature and capabilities of large computer but smaller in physical size. A minicomputer fills the space between the mainframe and microcomputer, and is smaller than the former but larger than the latter. Minicomputers are mainly used as small or mid-range servers operating business and scientific applications. However, the use of the term minicomputer has diminished and has merged with servers. A minicomputer may also be called a mid-range computer. The examples of minicomputers are the AS/400 , the PRIME series ,the AP-3 , Olivetti's audit 7 and Interdata 8/32.

Microcomputers

A computer based on a single chip microprocessor is known as micro computer. The personal computer is one form. The power and price of a

microcomputer is determined partly by the speed and power of the processor and partly by the characteristics of other components of the system, i.e. the memory, the disk units, the display, the keyboard, the flexibility of the hardware, and the operating system and other software. It is usually design to be operated by one person at a time. These are general purpose computer which can do a variety of jobs.these are commonly used in offices and homes as well as workstation. The two sub categories of microcomputer are:

1)Desktop computer

A desktop computer is a personal computer that fits on or under a desk. They usually consist of a monitor, keyboard, mouse and either
a horizontal or vertical(tower) form factor. Unlike a laptop, which is portable, a desktop computer is meant to stay at one location. Desktop models are board and low whereas tower model computer are narrow and tall. Desktop models designed to be very small and are sometimes reffered to as slimline models.

2)Portable computers

A portable computer is a personal computer that is designed to be easily transported and relocated. The first portable computer is considered to be the IBM 5100. Portable computer by their nature are generally microcomputers. They are also known as lunchbox or luggable computer. They are available in two forms , they are:

a)Laptop

A laptop computer, sometimes called a notebook computer by manufacturers, is a battery- or AC-powered personal computer generally smaller than a briefcase that can easily be transported and conveniently used in temporary spaces such as on airplanes, in libraries, temporary offices, and at meetings. The advantage of laptop computer is one can used it anytime and anywhere.

b)Palmtop

A palmtop computer is a personal computer or other electronic device that has many of the same features as a computer and fits in the palm of your hand. A good example of an early palmtop computer is the PalmPilot . Because of their size early palmtop computers did not have a keyboard or a mouse and often relied off a pen that used Graffiti or something similar. It can be attached to mobile phones enabling it to receive and send email.

Hybrid computer

A hybrid is a combination of digital and analog computers. It combines the best features of both types of computers, i-e. It has the speed of analog computer and the memory and accuracy of digital computer. Hybrid computers are used mainly in specialized applications where both kinds of data need to be processed. Therefore, they help the user, to process both continuous and discrete data. For example a petrol pump contains a processor that converts fuel flow measurements into quantity and price values. In hospital Intensive Care Unit (ICU), an analog device is used which measures patient's blood pressure and temperature etc, which are then converted and displayed in the form of digits. Hybrid computers for example are used for scientific calculations, in defense and radar systems.