Definitions Of Computer

The term 'computer' is derived from the word 'compute', which means to calculate.
A computer is a machine that accepts data in digital form and process it for some result based on a program, which describes how data is to be manipulated or processed.

Some Other Simple Definitions Are

- An electronic device for the storage and processing of information.
- A programmable machine that inputs, processes and outputs data.
- A multi-function electronic device that can execute instructions to perform a task.
- An electronic device for the input, Storage, processing and output of data according to your requirements.

Four Basic Functions Of Computer

The four basic functions of computers are also known as the information processing cycle. Computer accepts data from an input device, processes it, stores it in a disk and finally displays it on an output device such as a monitor.

The functions are

1. **Input**
2. **Process**
3. **Output**
4. **Storage**

Input
The computer gathers data or allows a user to add data

Process
Data is converted into information

Output
After processing the data, computer shows the result in different format, which is called output.

Storage
Data or information is stored for future use

Types of Computers

1. Mainframes Computers
2. Server
3. Microcomputers
4. Supercomputers

Mainframes Computers

Mainframes computers are computers used mainly by large organizations for critical applications. Mainframe computers are large computers often found in businesses and colleges, where thousands of people are able to simultaneously use the computer to access data. These computers have much greater memory and storage capacities than other types of computers.

Purposes Of Mainframe Computer

- Bulk data processing such as census (survey of population)
- For industry and consumer statistics
- For financial transaction processing

Server

Server is an important component of computer networks. These specialized computers manage networks. These are used by multiple users, but a smaller number than a mainframe (Generally used to serve up to 300 users).

It is smaller than a mainframe computer, designed originally for use in small organizations.

Mainframes and Servers are the backbone of information system in corporations, universities, and other organizations.

Microcomputers

Microcomputers are designed to be used by individuals. Some of the most common types of microcomputer include

- Desktop computers (PCs)
- Notebook computers
- Tablet computers
- Mobile devices

Supercomputers

Supercomputers are large, powerful computers that perform specialized tasks. Supercomputer is designed to run fewer programs at one time, but to do so as quickly as possible.

The Basic Parts Of The Computer

- Computer Case
- Power supply
- Motherboard
- CPU (Processor)
- Hard Drive
- CD or DVD Burner
- Video Graphics Card
- Memory
- Sound Card
- Monitor
- Keyboard & Mouse
- Printer

Optional Items Of The Computer

- Scanner
- Fax
- USB Hub
- Router
- Speaker system

Hardware And Software

Hardware

Hardware is physical parts of the computer e.g. keyboard, monitor, mouse etc.

Software

Software is the program that is on the computer that allows you to work with the computer, e.g. M.S Office, Corel Draw etc.

Input Devices & Output Devices Of A Computer

Input Devices

An Input device is any piece of computer hardware equipment used to feeds or store data into a computer is known as input device, e.g.

- Key Board
- Mouse
- CD Rom
- Floppy Disk
- Microphone
- Scanner
- Digital Camera
- Light Pen
- Flash Drive
- Joystick
- Bluetooth
- Infrared Device

Keyboard
Keyboard is a primary input device for the PC. Standard keyboard has 104 keys.

Mouse
Mouse is also primary input device for the PC. It is used as a pointer. It can perform functions like selecting menu commands, moving icons, resizing windows, starting programs, and choosing options.

CD Rom
Compact disk read only memory, meaning that you can only read from the CD but you can't write to the CD It is an optical device. CD Rom is an input as well as an out put device.

CD RW, DVD
CD RW and DVD are also an input and output devices.
CD RW: Compact disk Rewritable. (Capacity up to 700MB)
DVD: Digital Video Disk (capacity up to 17GB)

Floppy Disk:
A floppy disk is a disk storage medium composed of a disk of thin and flexible magnetic storage medium. Floppy disks can store up to 1.44 MB of data and are usually 3 1/2 inches in size

Microphone
Microphone is an input device, which takes voice as input. We use it for voice commands or for voice chat on the internet.

Scanner
Scanner translates printed images into an electronic format that can be stored in a computer's memory.

Digital Camera, Web cam
Digital camera or Web cam is used for video chatting, to take pictures and for videoconferences.

Light pen
Light pen is used for special purposes like to highlight object on monitor screen.

Flash Drive
Flash drive is used to transfer data from one computer to another computer. It is an input as well as an output device.

Joystick
Joystick is used to play Video Games on PCs

Blue-tooth & Infrared Device
Blue-tooth & infrared devices are used to perform many tasks like, Printing Downloading & uploading information/ documents from a Mobile phone and computer vice versa.

Output Devices

An output device is any piece of computer hardware equipment used to communicate the results of data processed by computer. By using these hardware, we can get output in different formats.

- Monitor
- Printer
- Speaker
- CD RW, DVD
- Floppy
- Flash Drive
- Bluetooth & Infrared

Monitor

A monitor is the screen on which words, numbers, and graphics can be seen, it is the most common output device

Printer

A printer produces output on paper or transparencies. The output is referred to as hard copy. It can print words, numbers, or pictures.
Some of the most commonly used printers are:
1. Laser Printer
2. Ink Jet Printer
3. Dot Matrix Printer

Speakers

Computer speakers are output device. Speakers allow you to listen to voice like music, and conversation with people.

Note:
CD RW, DVD, Floppy, Flash Drive, Bluetooth & Infrared devices are both input and output devices.

Applications of Computer

In the last few decades, computer technology has revolutionized the businesses and other aspects of human life all over the world. Practically, every company, large or small, is now directly or indirectly dependent on computers. Computer systems help hospital records, accounts, electronic banking and so on. Computers not only save time, but also save paper work. Some of the areas where computers are being used are as follows:

Science
Scientists have been using computers to develop theories and to analyze and test the data. The high speed and accuracy of the computer allow different scientific analyses to be carried out.

Education
Computers are very helpful in education sector. Currently, the classrooms, libraries and museums are efficiently utilizing computers to make the education much more interesting.

Medicine and Health Care
There has been an increasing use of computers in the field of medicine. Now, doctors are using computers right from diagnosing the illness to monitoring a patient's status during complex surgery. By using automated imaging techniques, doctors are able to look inside a person's body and can study each organ in detail (e.g. CT scans or MRI scans), which was not possible few years ago. There are several examples of special-purpose computers that can operate within the human body such as cochlear implant, a special kind of hearing aid that makes it possible for deaf people to hear.

Engineering/Architecture/Manufacturing
The architects and engineers are extensively using computers in designing and drawings. Computers can create objects that can be viewed from all the three dimensions. The manufacturing factories are using computerized robotic arms to perform hazardous jobs. Computers help in coordinating the entire manufacturing process.

Entertainment
Computers are also used for entertainment purpose. They are used to control the images and sounds. The special effects would not have been possible without the computers. In addition, computerized animation and colorful graphics have modernized the film industry.

Communication
E-mail or electronic mail is one of the communication media in which computer is used. Through e-mail, messages and reports are passed from one person to one or more persons with the aid of computer and telephone line. The advantage of this service is that while transferring the messages it saves time, avoids wastage of paper and so on. Moreover, the person who is receiving the messages can read the messages whenever he is free and can save it, reply it, forward it or delete it from the computer.

Business Application
This is one of the important uses of the computer. There are various concerns where computers are used such as in business forecasting, to prepare pay bills and personal records, in banking operations and data storage. Businesses are also using the networking of computers, where a

number of computers are connected together to share the data and the information. Use of e-mail and the Internet has changed the ways of doing business.

Publishing
Computers have created a field known as *desktop publishing* (*DTP*). In DTP, with the help of computer and a laser printer one can perform the publishing job all by oneself.

Banking
Computers are extensively used in the field of banking and finance. People can use the ATM (automated teller machine) services 24 hours a day to deposit and withdraw cash. When different branches of the bank are connected through computer networks.

Disk

Information may be saved (stored) on a disk for future reference or printing. The amount of information that can be stored depends on the type of disk.
Storage is achieved on either a hard disk, compact disk (CD) or on floppy disk.

Hard Disk (HDD)

Hard disk is inside the computer and you do not see it. The primary characteristics of a hard disk are its capacity and performance. The hard disk contains the operating system and the information on all the programs you use. Hard disk store much more information that do CD or floppy disk. Hard disk makes possible faster information access. Now a day the hard disks are available in 100GB to 2- Terabyte (1 Terabyte or 1-TB = 1000GB)

Compact Disk (CD)

The compact disc, or CD for is 4.75-inch optical disk that can store computer files and data, audio, video, images, and other digital files. CD can hold up to 7 00MB data.
There are many different types of CDs. CD-R or Compact Disk Record able, you can only burn data a single time on it, and you cannot physically delete data.
CD-RW, Rewritable discs (CD Rewritable), You add and also erase the whole data on disc many times.

Floppy Disk

A floppy disk is a disk storage medium composed of a disk of thin and flexible magnetic storage medium. Floppy disks can store up to 1.44 MB of data and are usually 3 1/2 inches in size.

Disk Operating Systems (DOS) and Windows

Operating system

An operating system (OS) is the software that allows a computer user to interact with a computer.

Disk Operating Systems (DOS)

Disk operating system, an operating system originally developed for IBM personal computers in 1981. DOS is the medium through which the user and external devices attached to the system communicate. The main functions of DOS are to manage disk files, allocate system resources according to the requirement.

The Decline Of DOS

With the invention of Windows and other desktop-based operating systems, DOS has faded in overall use and importance. Many functions needed to use modern operating systems can be done simply through the graphical interface provided.

Microsoft Windows

Windows is the most popular operating system used on home and business computers. Windows makes a computer system user-friendly by providing a graphical display and organizing information so that it can be easily accessed.

There have been many versions of Microsoft Windows, including

- **Windows 3.0**
- **Windows 95**
- **Windows 98**
- **Windows 2000**
- **Windows ME**
- **Windows NT**
- **Windows XP**
- **Windows Vista**
- **Windows 7**
- **Windows 8**

Top Features of Windows 7

Microsoft Windows 7 is an operating system and graphical user interface developed by Microsoft. Some of its important features are listed below:

- **Faster Operating System**
- **Improved Reliability**
- **Innovative, Easy to use features**
- **Compatibility**
- **Lower hardware requirements**
- **Search and organization**
- **Taskbar**
- **Safe and easy personal computing**
- **World of Digital Media**
- **Best for Business**

Faster Operating System
Windows 7 includes tools that increase the speed of the computer. It also includes a set of programs designed to optimize the efficiency of computer, especially when used together.

Improved Reliability
Windows improves computer reliability by introducing new wizards, utilities and resources that helps you to operate system effortlessly.

Innovative, Easy To Use Features
Windows makes your computer easier to use with some new and enhanced features.

Compatibility
Windows 7 is compatible with almost all latest software and hardwires.

Lower Hardware Requirements
Windows 7 runs well on lower end hardware.

Search And Organization
One of the best things about Windows 7 is the improved search tool to find what you need quickly and easily.

Taskbar
Taskbar icons are now larger and items are grouped together and are not labeled with clumsy text.

Safe And Easy Personal Computing
Windows 7 makes personal computing easy and enjoyable.

User-Friendly Screens
Windows 7 has user-friendly screens, simplified menus among other features.

World Of Digital Media
Work at length using digital media while at home, at work and on the Internet. Enjoy photography, music, videos, computer games and more.

Best For Business
Windows 7 is enhanced for high-speed performance for your business.

Computer Language

The computer performs its functions based on the instructions given by the user. The set of such instructions written for a particular task is known as a computer program.

The language in which a computer program is written is known as programming language. The programming languages are classified as

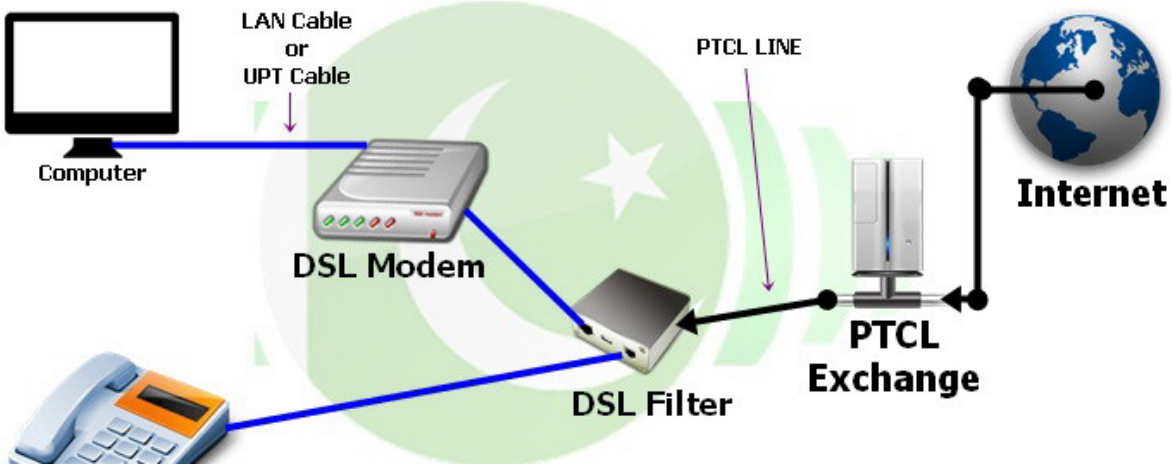
- **Low-level language**
- **High-level language**

Low-level language is further classified as
- Machine language
- Assembly language

Modems and Networking

Modem

A modem is a device that enables a computer to transmit data, for example, telephone or cable lines. Computer information is stored digitally, whereas information transmitted over telephone lines is transmitted in the form of analog waves. A modem converts between these two forms.



Modem Applications

Modems were originally used for connecting users to the Internet or for sending faxes, but a majority of the modems are used by businesses in a variety of different applications.
Some of these applications include.

- Point of Sale (PoS)
- Remote Management, Maintenance
- Broadband Internet
- Data transfers
- Machine to Machine (M2M)

Point of Sale (PoS)
PoS is one of the most heavily used applications by the everyday consumer. Anytime you pay via credit card or debit card there is a modem (dial-up or broadband) behind it transferring that data.

Examples of Point of Sale

- Credit Card Payment
- ATM cash machines
- Ticketing machines in trains stations, bus stations, and airports

Remote Management, Maintenance
Modems can be installed in remote locations at off-site locations, or inside sensitive locations. Certain applications can be controlled remotely via the modem without having to make a visit to the actual location. This can save time and money in travel costs.

Examples of Remote Management, Maintenance

- Stoplight timing control to regulate traffic flows

Broadband Internet
Many small, medium, and large companies depend on constant communication connections to run their businesses. Many companies rely on broadband connections for their employee connections.

Examples of Broadband

- PTCL Broadband
- Wateen Broadband
- Witribe Broadband

Data Transfers
Many large companies have headquarter where all data is centrally located. Normally this means that the other locations need to send the data in to HQ on a daily basis. Modems are ideal because they efficiently transfer the data with secure connections.

Examples of Data transfers
- Daily Sales information sent to a headquarter from different branches

Machine To Machine (M2M)
Machine-to-Machine solutions typically have a communications link connecting 2 machines (computers, electronic devices) that transfer data or communicate without any human interaction.

Examples of Machine to Machine
- Medical devices transferring test results to a computer at a doctor's office

Computer Network

A computer network is a set of two or more computers connected together in order to share information and other resources. The computers in a network are connected with one another through cables, satellite or telephone lines.

Advantages Of Networking

- Computers can communicate with each other easily
- Computers can share data and files.
- Computing power and/or storage facilities can be shared.
- Hardware such as printers can be shared.
- There is control over which programs, data and hardware a user has access to.

Disadvantages Of Networking

- A virus can spread more easily.
- As data is shared there is a greater need for security.
- If the server fails, all the workstations are affected.
- The cost of installing the equipments is greater.

Different Types Of Networks

Different types of networks based on their size (in terms of the number of computers) are listed below

1. **LAN (local area network)**
2. **MAN (metropolitan area network)**
3. **WAN (wide area network)**

LAN

LAN stands for Local Area Network. It's a group of computers which belong to the same organization, and which are linked within a small geographic area using a network, and often the same technology. Data transfer speeds over a local area network can from 10 Mbps to1 GBps (Gigabit Ethernet).

MANs

MANs (Metropolitan Area Networks) connect multiple LANs to one another (over an area of up to a few dozen kilometers) at high speeds.
A MAN is made from switches or routers connected to one another with high-speed links (usually fiber optic cables).

WANs

A WAN (Wide Area Network or extended network) connects multiple LANs to one another over great geographic distances. The most well known WAN is the Internet.