

Fundamental for Diploma in computer application & Post Graduation Diploma in Computer Application

CHAPTER-1 (INTRODUCTION TO COMPUTER)

General Question:

1. Have you ever use a mobilephone?
2. Have you ever play games in mobile?
3. What do you think how is it working?
4. Heve you ever use a computer?
5. How is your feeling regarding computer operation?
6. How many types of machines are there?
 - a. Mechanical (Bike Engine, Cycle etc)
 - b. Electricals (Fan, Electric Bulb, Dynamo etc)
 - c. Electronics (TV, Mobiles, Radio, Computers etc)

Definition of Computer: - Computer comes from the word "Compute" which means to analyze or calculate. Computer is an electronic device which calculate & process large amount of data with very high speed and accuracy. It accepts data as Input from the user, processes it and retrieves output for the user.

Data: - Data is a collection of raw fact like Letters, Numbers, Sound, Videos, and Images etc that becomes information after processing.

Information: - The meaningful result of processed data is called information, by the help of which we can make decisions.

Characteristics of computer

1. **Speed:** - Compute is the fastest device and can perform various task at very fast. The speed of the computer is calculated in 3 to 4 million data processing per second. Speed is calculated in Mili second, Micro Second, Nano Second or Pico Second per data processing.
1 Sec = 1000 Mili-Second
1 Mili Second = 1000 Micro Second
1 Micro Second = 1000 Nano Second
1 Nano Second= 1000 Pico Second
2. **Accuracy:** - The word accuracy means correctness of any particular result. A computer can never misguide a user in any result unless and until user give incorrect data.
3. **Diligence:** - A computer never suffers stress or tiredness hence can work for hours without creating any error.
4. **Storage:-** The most important feature of compute is Storage. A computer can store large amount of data and can retrieve / fetch it when and where required very easily unlike human cannot do it. For example a dictionary, encyclopedia, or all the world news can store in a computer memory and can fetched.
5. **Versatility:** - One of the most exciting features of computer is versatility. A computer can perform multiple works at the same time & at same speed. Example Computer can retrieve information of an employee working since last 15 years in a company & make the salary sheet of the current employees at same timeframe simultaneously.

6. Power of Remembering: - A computer can remember any information stored in its memory speedily at any time but human cannot do it. Example, computer can retrieve the last 5 years investment records but human cannot do so.

7. I.Q. (Intelligence Quotient) : - A computer cannot make decision by itself but a human can do this. In this regard only a human defeat the computer. Example if we instruct a human to destroy data of an office without any reason then human think first but never do it directly but a computer can do so immediately.

Role of Computer in different sectors

In Education: - In this sector computer is used to learn different subject by using recorded videos , online videos or live streaming by using internet. It make the students aware about Computer. It improve the quality of education with the help of computer.

In Hospitals: - For dignosys the problems of a patient, computer is used in hospitals.

In Railway: - It is used to enquiry ticket reservation, Book online tickets, know the train timing etc.

In Business Offices: - It is used to transfer of salary and various payments. Database management works etc.

In Research Centers: - used to Research on astronomy, neuclear energy, defence system, launch of missile, launch of satellite etc.

In manufacturing: - It is used in manufacturing of Cars, Aeroplain, Big machines and so on.

Anatomy of a computer

There are five functional units of a computer

1. **INPUT UNIT**
2. CPU (Arithmetic & Logical Unit + Control Unit)
3. STORAGE UNIT
4. OUTPUT UNIT
5. COMMUNICATION INTERFACE

1. CPU: - It is called **Central Processing Unit**. It is the brain of a computer. The other parts are used to transfer data & to communicate with the computer. The Big box in desktop computer set is the example.
2. Input Unit: - by the help of this unit, user enters data in to the computer to process it. The Keyboard & Mouse are the example.
3. Output Unit: - It brings out the processed result to us through Monitor & Printer.
4. Storage Unit: - It stores the entered data as well as processed result in the computer. Hard disk is the example.
5. Communication Interface: - The Cables attached & the integrated wires on the motherboard are the communication interface.

Arithmetic & Logical Unit (ALU): - It Process & Analyze the data for the user and forward it to the Output Device. It belongs to the Central Processing Unit. All calculations are performed here & all decisions are made here.

Control Unit: - This unit is called the central nervous system of the computer. It coordinates the entire system. By the help of this unit, computer can decide where & when the data to be sent or receive, whether it required further processing or not.

History of computer

ABACUS: - It was invented in China in 3000 BC. It was the earliest & simplest device in that time. It is also known as **SOROBAN**. This device is still in use in worldwide. We can find it in the slate used by primary students.

Napier's Logs & Bones: - The next manual [calculating](#) device called Logarithms was invented in 1560-to-1617 by John Napier.

PASCAL'S ADDING MACHINE.

It was developed by Blaise Pascal 1642. The second machine was developed by Gottfried Leibnitz in 1684 which is a more effective calculator perform multiplication & and Division.

CHARLES BABBAGE

Charles Babbage invented **Differential Engine in 1822** and Analytical **Engine** in **1833**. He was a professor of Cambridge University and called as Father of Modern Digital Computer.

HOLLOERITH'S PUNCHED CARD MACHINE.

In 1885 **Herman Hollerith** invent a machine to calculate **census** data of United State of America which was run in electricity for the first time. In 1896 he established a company called INTERNATIONAL BUSINESS MACHINE CORPORATION (IBMC).

Generations of computer

Generations of Computers

A generation of computers refers to the specific improvements in computer technology with time. In 1946, electronic pathways called circuits were developed to perform the counting. It replaced the gears and other mechanical parts used for counting in previous computing machines.

In each new generation, the circuits became smaller and more advanced than the previous generation circuits. The miniaturization helped increase the speed, memory and power of computers. There are five generations of computers which are described below;

First Generation Computers

The first generation (1946-1959) computers were slow, huge and expensive. In these computers, vacuum tubes were used as the basic components of CPU and memory. These computers were mainly depended on batch operating system and punch cards. Magnetic tape and paper tape were used as output and input devices in this generation;

Some of the popular first generation computers are;

- **ENIAC** (Electronic Numerical Integrator and Computer)
- **EDVAC** (Electronic Discrete Variable Automatic Computer)
- **UNIVACI**(Universal Automatic Computer)
- **IBM-701**
- **IBM-650**

Second Generation Computers

The second generation (1959-1965) was the era of the transistor computers. These computers used transistors which were cheap, compact and consuming less power; it made transistor computers faster than the first generation computers.

In this generation, magnetic cores were used as the primary memory and magnetic disc and tapes were used as the secondary storage. Assembly language and programming languages like COBOL and FORTRAN, and Batch processing and multiprogramming operating systems were used in these computers.

Some of the popular second generation computers are;

- **IBM 1620**
- **IBM 7094**
- **CDC 1604**
- **CDC 3600**
- **UNIVAC 1108**

Third Generation Computers

The third generation computers used integrated circuits (ICs) instead of transistors. A single IC can pack huge number of transistors which increased the power of a computer and reduced the cost. The computers also became more reliable, efficient and smaller in size. These generation computers used remote processing, time-sharing, multi programming as operating system. Also, the high-level programming languages like FORTRAN-II TO IV, COBOL, PASCAL PL/1, ALGOL-68 were used in this generation.

Some of the popular third generation computers are;

- **IBM-360 series**
- **Honeywell-6000 series**
- **PDP(Personal Data Processor)**
- **IBM-370/168**
- **TDC-316**

Fourth Generation Computers

The fourth generation (1971-1980) computers used very large scale integrated (VLSI) circuits; a chip containing millions of transistors and other circuit elements. These chips made this generation computers more compact, powerful, fast and affordable. These generation computers used real time, time sharing and distributed operating system. The programming languages like C, C++, DBASE were also used in this generation.

Some of the popular fourth generation computers are;

- **DEC 10**
- **STAR 1000**
- **PDP 11**
- **CRAY-1(Super Computer)**
- **CRAY-X-MP(Super Computer)**

Fifth Generation Computers

In fifth generation (1980-till date) computers, the VLSI technology was replaced with ULSI (Ultra Large Scale Integration). It made possible the production of microprocessor chips with ten million electronic components. This generation computers used parallel processing hardware and AI (Artificial

Intelligence) software. The programming languages used in this generation were C, C++, Java, .Net, etc.

Some of the popular fifth generation computers are;

- **Desktop**
- **Laptop**
- **NoteBook**
- **UltraBook**
- **ChromeBook**

Types of Computer

We can categorize computer by two ways: data handling capabilities and size.

On the basis of data handling capabilities, the computer is of *three* types:

- Analogue Computer
- Digital Computer
- Hybrid Computer

1) Analogue Computer

Analogue computers are designed to process the analogue data. Analogue data is continuous data that changes continuously and cannot have discrete values such as speed, temperature, pressure and current.

The analogue computers measure the continuous changes in physical quantity and generally render output as a reading on a dial or scale.

Analogue computers directly accept the data from the measuring device without first converting it into numbers and codes.

Speedometer and mercury thermometer are examples of analogue computers.

2) Digital Computer

Digital computer is designed to perform calculations and logical operations at high speed. It accepts the raw data as digits or numbers and processes it with programs stored in its memory to produce output. All modern computers like laptops and desktops that we use at home or office are digital computers.

3) Hybrid Computer

Hybrid computer has features of both analogue and digital computer. It is fast like analogue computer and has memory and accuracy like digital computers. It can process both continuous and discrete data. So it is widely used in specialized applications where both analogue and digital data is processed. For example, a processor is used in petrol pumps that converts the measurements of fuel flow into quantity and price.

On the basis of size, the computer can be of *five* types:

1) Supercomputer

Supercomputers are the biggest and fastest computers. They are designed to process huge amount of data. A supercomputer can process trillions of instructions in a second. It has thousands of interconnected processors.

Supercomputers are particularly used in scientific and engineering applications such as weather forecasting, scientific simulations and nuclear energy research. First supercomputer was developed by Roger Cray in 1976.

2) Mainframe computer

Mainframe computers are designed to support hundreds or thousands of users simultaneously. They can support multiple programs at the same time. It means they can execute different processes simultaneously. These features of mainframe computers make them ideal for big organizations like banking and telecom sectors, which need to manage and process high volume of data.

3) Miniframe computer

It is a midsize multiprocessing computer. It consists of two or more processors and can support 4 to 200 users at one time. Miniframe computers are used in institutes and departments for the tasks such as billing, accounting and inventory management.

4) Workstation

Workstation is a single user computer that is designed for technical or scientific applications. It has faster microprocessor, large amount of RAM and high speed graphic adapters. It generally performs a specific job with great expertise; accordingly, they are of different types such as graphics workstation, music workstation and engineering design workstation.

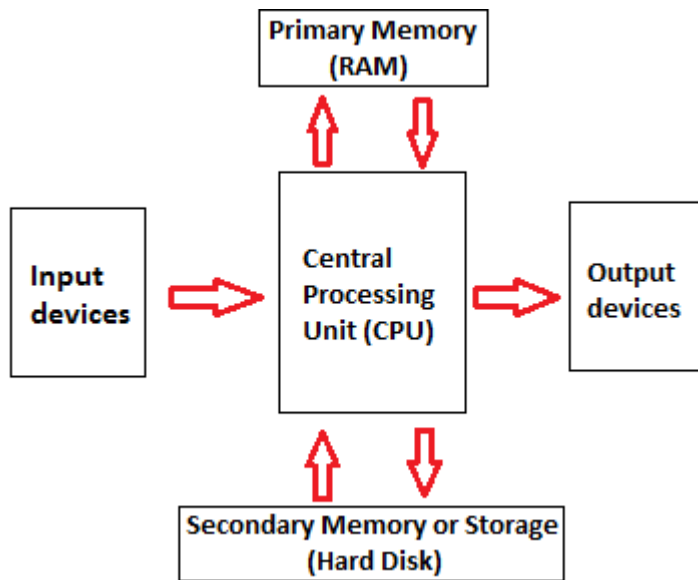
5) Microcomputer

Microcomputer is also known as personal computer. It is a general purpose computer that is designed for individual use. It has a microprocessor as a central processing unit, memory, storage area, input unit and output unit. Laptops and desktop computers are examples of microcomputers.

Computer Components

There are 5 main computer components that are given below:

- Input Devices
- CPU
- Output Devices
- Primary Memory
- Secondary Memory



The operations of computer components are given below:

1) Inputting: It is the process of entering raw data, instructions and information into the computer. It is performed with the help of input devices.

2) Storing: The computer has primary memory and secondary storage to store data and instructions. It stores the data before sending it to CPU for processing and also stores the processed data before displaying it as output.

3) Processing: It is the process of converting the raw data into useful information. This process is performed by the CPU of the computer. It takes the raw data from storage, processes it and then sends back the processed data to storage.

4) Outputting: It is the process of presenting the processed data through output devices like monitor, printer and speakers.

5) Controlling: This operation is performed by the control unit that is part of CPU. The control unit ensures that all basic operations are executed in a right manner and sequence.

INPUT DEVICES

1. Keyboard
2. Mouse
3. Track Ball
4. Scanner
5. Joystick
6. Light Pen
7. Digitizer
8. Microphone
9. Magnetic Ink Character Recognition (MICR)
10. Optical Character Reader (OCR)
11. Digital Camera
12. Gesture recognition devices
13. Touch Pad

14. Touch screen
15. VR
16. Webcam
17. Biometric Devices

- a. Input device accepts the list of instruction & data from outside.
- b. It converts these instructions and data in computer acceptable form.
- c. It supplies the converted instruction & data to the computer system for further processing.

Example of Input Device: - Key board, Floppy Disk & its drive, Joy stick, track ball, light pen, Digitizer, Scanner Mouse, Touch Screen, Graphic Tablet etc.

Key Board: -

It is an input device.

- ❖ It has minimum 103 keys
- ❖ Categorized as Function Keys (F1 to F 12), Numeric Keys (0-9) Alphabetic Key (A-Z), Symbolic Keys, Special Keys (Enter, Shift, Esc, Tab, Caps Lock, Ctrl, Delete, Alt, Home, Ins, Page Up, Page Down, Pause/ Break, Scroll Lock, Num Lock, End, Print Scr, Window Key, Space Bar, Menu Key)
- ❖ There are number of keys on the key board having letters, numbers & symbols which is called as character.



Computer can remember no of things. Whatever character it types, it appears on the screen of monitor. We can append it when required. Written matter is known as **“Textual Data”**.

Touch Screen: -

- ❖ It is an input as well as output device.
- ❖ The screen looks like a television screen.
- ❖ It is also known as Visual Display Unit (V.D.U.)

This input device is most commonly used in Cell Phones & ATM. We can put instruction by touching the screen.



Joystick: -

- ❖ It is a mechanical input device.
- ❖ It converts mechanical action to electronic signals.
- ❖ It is used for feeding signals to the computers.

This kind of input device is normally used to play Games, Control CCTV Cameras & Control other mechanical machines.



Mouse: -



- ❖ It is an input as well as pointing device. (Mechanical Mouse, Optical Mouse & wireless Mouse)
- ❖ It has 3 buttons, Left Button, Right Button & Scroll Button.
- ❖ It is used to move a cursor on the screen.
- ❖ It is used to make a copy of a file or directory and make a figure on the screen.

This devise is used in computers.



Tracker Ball: -

- ❖ It is an input device.
- ❖ It works like joy stick.
- ❖ It is used instead of Mouse & Joystick.

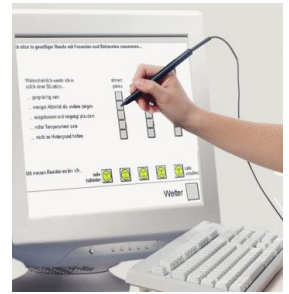
This device is used to control Games & Computer pointer.



Light Pen: -

- ❖ It is an input device.
- ❖ This is an electronic device used to write or draw anything on the screen.

This device is used to put signature electronically & make drawing on the computer screen. It has a pad.



Digitizer: -

Digitizer is a computer input device that has a flat surface and usually comes with a stylus. It enables the user to draw images and graphics using the stylus as we draw on paper with a pencil. The images or graphics drawn on the digitizer appear on the computer monitor or display screen. The software converts the touch inputs into lines and can also convert handwritten text to typewritten words.

It can be used to capture handwritten signatures and data or images from taped papers. Furthermore, it is also used to receive information in the form of drawings and send output to a CAD (Computer-aided design) application and software like AutoCAD. Thus, it allows you to convert hand-drawn images into a format suitable for computer processing.



Microphon: -

The microphone is a computer input device that is used to input the sound. It receives the sound vibrations and converts them into audio signals or sends to a recording medium. The audio signals are converted into digital data and stored in the computer. The microphone also enables the user to telecommunicate with others.



Scanner: -

- ❖ It is an input device.
- ❖ It is used to put pictorial data directly to the computer as digital form.

There are three types of scanner.

1. Optical Marked Reader. (OMR)
2. Optical Character Reader (OCR)
3. Bar-Code Reader (BCR)

Optical Marked Reader. (OMR)

These scanner are capable of recognize a pre-specified type of mark made by pencil or pen.

Example: - Objective type answer sheet used to conduct banking Exams & Matriculate exams now. Which is called OMR sheet. Students have to fill the blank box by the pencil or pen. That sheet is recognized by Optical Marker Reader (OMR).

Optical Character Reader. (OCR)

This scanner is used to detect Alphabetic & Numeric character printed on paper.

Example: - This process is used in the business now a days. Application like AABBY Reader is the substitute of the OCR.

Bar Code Reader. (BCR)

This scanner is used to decode the information coded in Light & dark lines printed vertically. It recognize the code and feed it to the computer directly.

Example: - This scanner is used in Post office for scanning Speed post Bar Code & in different offices for scanning Application form serial no.

Magnetic Ink Character Recognizer (MICR): -

This scanner is normally used to read character written or printed in Magnetic ink.

Example: - This scanner is used normally in Banks for verify the originality of bank cheque. The Magnetic Character is written on the bottom right corner of the Bank Cheque.



OUTPUT DEVICE

- a. It accept the results produced by the computer, which are in coded form and hence can not be easily understand by us.
- b. It converts these coded results to human acceptable form.
- c. It supplies the converted results to the user.

Examples of Output device are...

Monitor, Printer, Plotter etc. (pic cell)

Monitor: -

- ❖ It is both input and output device.
- ❖ It display the results processed by the computer on its screen.
- ❖ It display the letters in various size & types.

Types of Monitor: -

- a. CRT Monitor (Cathode Ray-Tube)
- b. LCD Monitor (Liquid Cristal Display)
- c. LED Monitor (Light Emitting Diode)

**Plotter: -**

- ❖ This is an output device.
- ❖ It cut the papers or flat things according to computer instructed by the user.
- ❖ It has a mechanical arm & blade to complete these actions.

Printer: -

- ❖ This is an output device.
- ❖ It Print the processed data on the paper for the user.

Type of Printer: -

- a. Impact Printer: - Letter Quality Printer, Dot Matrix Printer, Drum Printer, Chain Printer.
- b. Non – Impact Printer: - Laser Printer & Inkjet Printer.



Character Printer: - Letter Quality Printer & Dot Matrix Printer belongs to Character Printer.

Line Printer: - Drum Printer & Chain Printer belongs to Line Printer.

Impact Printers: - These printers use a print wheel to print documents. In the wheel there are characters embossed and a hammer fitted in the printer, strike the wheel to print the character. This is the example of Letter quality printer which is in the category of Impact Printer.

Dot Matrix Printer: -

These printers print each character in a pattern of Dots. This printer is fastest then the letter quality printers. Dot Matrix Printer has some tiny needle in rows and columns of 9x7 matrix, while letter like hammer strike on it, it prints the latter shaped dots on the paper.

Drum Printer: -

- ❖ A wide-format inkjet printer. The paper is taped onto a drum for precise alignment to the nozzles.
- ❖ An old line printer technology that used formed character images around a cylindrical drum as its printing mechanism. When the desired character for the selected position rotated around to the hammer line, the hammer hit the paper from behind and pushed it into the ribbon and onto the character.

Chain Printer: - An early line printer that used type slugs linked together in a chain as its printing mechanism. The chain spins horizontally around a set of hammers. When the desired character is in front of the selected print column, the corresponding hammer hits the paper into the ribbon and onto the character in the chain. Chain and train printers gave way to band printers in the early 1980s.

Non-Impact Printer

Laser Printer: - It is a Non-Impact Printer in Page Category. It Prints the documents Page by Page. This is the high speed printer than the aforesaid printers. It can print 20,000 (Twenty Thousand) line per minute. Its speed is calculated in PPM (Page Per-Minute). It uses Laser Beam and Ink dust to make a print copy of computer instruction.

Ink-Jet Printer: - It is a Non-Impact Printer in Character Category. It prints the documents Character wise. This printer print High Quality printouts than the other printers. It uses Laser technology & Ionic Liquid Ink for Printing. So the Print quality is very high than the other printers. It cannot print multiple copy print in a single printing like Laser Printers.

CHAPTER 5

HARDWARE & SOFTWARE

Over view on Hardware & Software

A computer works in a team with hardware & software. It makes good cooperation & communication with its hardware & software. Hardware & Software are co-related.

What is hardware?

Hardware is a physical component of a computer by the help of which it retrieve results to the user. It is a necessary part of computer to store & process data. All the touchable parts of a computer are hardware. Other things attached in a computer are **peripherals**.

Example of **Hardware**: - Monitor CPU Key Board Mouse, RAM, ROM, Mother Board and Microprocessor, Internal Hard Disk, Internal DVD Writer Internal USB etc.

Example of **Peripheral**: - Power Cables, Video Cable, (VGA Cable) Head Phone, UPS, External Hard Disk, External DVD Writer, External USB etc.

What is Software?

Software is a set of command or instruction used to run the hardware. In other words we can describe it as “the things in computer, which we cannot touch is called software. The software is written in a language called programming language which is in computer coded form. Such a sequence of instruction written in a computer is called “**Program**” by the help of which computer functions smoothly and retrieves results. Without software no hardware is useful.

Types of Software:

Software is divided into two types:-

1. System Software: - The software which work directly with hardware to fetch a result is called system software.

Example of System Software: - Windows, DOS, Linux, MAC.

2. Application Software: - The Software which works with the help of system software and makes a bridge between user & computer to fetch a result is called application software. Or in other word we can say the software which is used to bring user required result from the computer is called application software.

Example: - MS Office, MS Paint, MS Word Pad, FoxPro, Tally, Oracle, C, C++, C#, Visual Basic, Java, .net, or any available utility apps for mobiles & computers.

Antivirus

Chapter 6 Memory

Overview on Memory: - If we want to store information, we need memory. In human body, we store all the information like content of books, lectures of teacher, visuals sounds we hard is stored in our brain first. That storage part of our brain is called brain memory.

Definition of Memory: - The required space to store any information is called memory. Like Human brain computer has also Memory.

There are two type of memory in computer...

1. Primary Memory (Volatile Memory)
2. Secondary Memory (Non-Volatile Memory)

1. **Primary Memory:** - The memory which directly connected with the CPU is called Primary Memory of computer. The instructions put to the computer are stored first in this memory. And the Basic Instruction of computer functionality like booting & shut down process (BIOS: - Basic Input & Output System) is also stored in the primary memory.

2.

There are two type of Primary Memory, **RAM & ROM**

RAM (Random Access Memory): - It is a Volatile Memory or Temporary Memory. User can perform read/write operation because of this memory. When power failure, all the information are removed from this memory.

RAM is divided in to three types

1. **D-RAM (Dynamic Random Access Memory)**
2. **S-RAM (Static Random Access Memory)**
3. **F-RAM (Ferro-Magnetic Random Access Memory)**

D-RAM: - It means Dynamic RAM. It refresh the memory in every 70 nanosecond. By the help of which we can see the updated information on the screen.

S-RAM: - It Store the information of state of bits.

F-RAM: - This type of RAM is Non-Volatile. The information is not deleted with power failure. It is of two type

- a. Cache Memory: - It is a high speed memory with quick access time speed equivalent to the speed of processor.
- b. Register: - This memory move the information from one unit to the other. It is essential for the processing of data and input output system (I/O System). It use the information temporary basis.

Functions of Various Registers

SI No	Name of the Register	Function
1	Memory Address Register (MAR)	Hold the address of the active memory
2	Memory Buffer Register (MBR)	Hold information on its way to and from Memory.
3	Program Control Register (PCR)	Hold the address of the next instruction to be executed
4	Accumulator	Accumulates result & data to be operated upon
5	Instruction	Hold an instruction while it is being executed
6	Input Output	Communication with the Input & Output Device.

Secondary Storage

1. **Magnetic Tape:** - It is an Sequence Access Storage Device. This tape is made from Iron Oxide material which is magnetized for storing information. Data in magnetic tape can be erased and reused. Data is stored in sequence.

Example: - Audio Recorder & Tape Video Recorder Tap.

Magnetic Disk or Hard Disk

A magnetic disk is a thin, circular plate coated both side with a magnetic material. A disk pack consist of a number of disks mounted about half a inch and a read/write head. The angular momentum speed of the disk is about 4200 RPM to 7200 RPM (Round per Minute). It is very fast to access memory than a magnetic tape. It works in Some Track & Records. Track means the magnetic circle & Record means no of track series on the disk.

Sector of a disk

The intersection between tracks and records is called Sector. There are more than 8 sectors in a track.

Floppy Disk: -

Floppy Disk was produced in 1972 by IBM. It was a company of Charles Babbage. Floppy disk is portable low cost memory device to store data externally. The floppy disk comes with to different diameter size, 3.5 inch & 5.25 inch or 8 inch. They come in either single or double density versions and record on one or both surface of a disk.

- a. Single density single sided
- b. Double density double sided
- c. Single density double sided
- d. Double density double sided.

CHAPTER 7 (COMPUTER LANGUAGE)

What is Language?

A Language is a method of communication. By the help of which we complete dally works easily and properly & communicate to one another our ideas and emotions.

What is Computer Language?

A Computer Language is a means of communication used to communicate between people and the computer. With the help of a computer language a programmer tells a computer what he wants it to do.

The computer Language is called **Programming Language**. Like the computer hardware, programming languages also improved periodically. It is improved from machine level language where 0s & 1s are used which is called binary digits to the mathematical & English term called problem-oriented language.

The Programming Language is classified into 3 broad categories.

1. MACHINE LANGUAGE /or/ LOW-LEVEL-LANGUAGE (LLL)
2. ASSEMBLY LANGUAGE /OR/ MEDIUM-LEVEL-LANGUAGE (MLL)

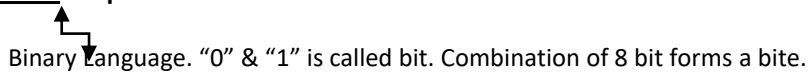
3. HIGH-LEVEL-LANGUAGE. (HLL)

MACHINE LANGUAGE /or/ LOW-LEVEL-LANGUAGE: - Machine Level Language uses machine code. It is a computer own understandable language. Computer can understand this language directly. This language is written in "0s & 1s".

Example: - 5 can be written as : - 00000101

12 can be written as : - 00001100 etc.

Here **00001100** represent 12

 Binary Language. "0" & "1" is called bit. Combination of 8 bit forms a bite.

In this way...

8 bit = 1 bite

1024 bite = 1 kilo Bite (KB)

1024 Kilo Bite = 1 Mega Bite (MB)

1024 Mega Bite = 1 Giga Bite (GB)

1024 Giga Bite = 1 Tera Bite (TB)

ASSEMBLY LANGUAGE /OR/ MEDIUM-LEVEL-LANGUAGE: - It was very problematic to write binary language or Machine Language directly. So an Assembly Language was developed where some mathematical codes are sued instead of "0" & "1" to make the language human understandable. A compiler compiles that code to "0" & "1" after that for the computer.

Example: - ADD is used for Addition

SUB is used for Subtraction.

This language was easier than the machine language to understand.

HIGH-LEVEL-LANGUAGE: - It is English like language. There are many high level languages which differ from machine to machine. It requires a translator to convert the high level language to machine level language. The Compiler, Interpreter & Assembler are called Translator. Hare Compiler Check the errors in the language, Interpreter convert the language to machine codes & Assembler assemble the interpreted language for proper functioning of the program.

Example: a. FORTRAN, b. COBOL, c. BASIC, d. PASCAL, d. PL-I

A. FORTRAN: - One of the oldest & most popular High Level Language is FORTRAN which stands for **FOR**mula **TRAN**slator. Originally developed by IBM for its 704 computers in 1957. **FORTRAN** was design to solve scientific & engineering problems and is currently the most popular among scientist & engineers.

B. COBOL: - COBOL is the acronyms of **C**ommon **B**usiness **O**riented **L**anguage. This language was designed for business data processing and till today it is the most widely used business-oriented programming language. The vocabulary and grammars of COBOL were worked out in 1959-1960 by a committee of the conformance on Data System Language as a joint effort.

C. BASIC: - BASIC Stands for **B**eginners **A**ll-Purpose **S**ymbolic **I**nstruction **C**ode. It was developed by Prof. John Keenly & Thomas KurtzIn 1964 at Darmouth College in the United States. This language has few grammatical rules, understandable for all, need no complex programming techniques, need few hour concentrated study to know this language. Any person having basic computer knowledge can learn and write "BASIC" programming Language. This language is popular in Micro Computer users.

D. PASCAL: - Named after the French mathematician BLAISE PASCAL this language was first introduced in the year 1971 by Professor Niklaus Wirth of the Federal Institute of Technology in Zurich Switzerland. His aim was to develop a computer language in structured programming. Thus, PASCAL was the first language to fully embed in an organized way concept of structured programming. The language is relatively easy to learn and it allows programmers to structure the programming problems.

E. PL-I: - PL-I Stands for Programming Language One. It was designed by IMB in 1960 for general purpose having features similar to COBOL & FORTRAN by the help of which both the Scientific, Engineering & Business purpose is fulfilled. The invention was to create universal language, which would adequate for programming any kind of application. ANSI Committee produces PL/I Standard in 1976. Then PL/I-G is available for the use of small computer.

Language Translator: - There are three types of language translator.

1. Compiler
2. Interpreter
3. Assembler

1. Compiler: - A Compiler is a program written in Machine Level Language whose function is to translate the high level program in to the machine level program. Since a computer hardware is capable of understanding only machine level instructions, so it is necessary to convert the instruction of a program written in high level language to machine instructions before the program can be executed by the computer. Compiler checks the program at a time and displays all the errors. So it takes very less time to execute any program. Translator is an interface between a computer program & a compiler. A compiler is faster than an Interpreter.

2. Interpreter: - An Interpreter is a program written in Machine Level Language whose function is to translate the high level program in-to the machine level program. Unlike compiler, Interpreter checks error line by line and convert it to machine codes. This is the reason for which interpreter is slower than compiler.

3. Assembler: - Assembler is a program written in Assembly Level Language (Medium Level Language) whose function is to translate Assembly Level Language to machine code.

CHAPTER-8 (MISCELLANEOUS TOPIC)

Number System: - There are 4 types of number system.

- a. Decimal Number System
- b. Binary Number System
- c. Octal Number System
- d. Hexadecimal Number System.

DECIMAL NUMBER SYSTEM

In decimal number system, we use 10 number of disits that are 0,1,2,3,4,5,6,7,8, & 9. We uses decimal number in our regular life to calculate.

BINARY NUMBER SYSTEM

In Binary Number system, there are 2 numbers of digit used i.e. 0 & 1. As it is base 2 calculation, it is called binary number system. This system is normally used for computer.

Conversion of binary number to decimal.

$$11001_2 = 1 \times 2^4 + 1 \times 2^3 + 0 \times 2^2 + 0 \times 2^1 + 1 \times 2^0 = 16 + 8 + 0 + 0 + 1 = 25_{10}$$

Conversion of Decimal Number to Binary Number.

2	25	↑ 1
2	12	0
2	6	0
2	3	1
2	1	1
	0	

The Converted number is counted from down to top of the table.

11001₂

OCTAL NUMBER SYSTEM

It consist of 8 digit i.e. 0,1,2,3,4,5,6, & 7. It based on 8. Example of an Octal Number is "03276"₈

$$03276_8 = 0 \times 8^4 + 3 \times 8^3 + 2 \times 8^2 + 7 \times 8^1 + 6 \times 8^0 = 0 + 1536 + 128 + 56 + 6 = 1726_{10}$$

Conversion of Decimal Number to Octal No...

8	1726	6
8	215	7
8	26	2

8	3	3
8	0	0
	0	

The Converted number is counted from down to top of the table.

HEXADECIMAL NUMBER SYSTEM

It has base 16. It contains number & Letters i.e. 0,1,2,3,4,5,6,7,8,9, A,B,C,D,E, & F.
An example of Hexadecimal Number is = $1012FF_{16}$

How do we read these numbers?

10_8 = One Zero

10_{10} = Ten

10_2 = One Zero

$10FF_{16}$ = One Zero F F

NETWORKING

In networking we can connect more than one computer to each other. A main computer is called Server & the connected computer is called NODE / TERMINAL.

Advantage of Networking: -

- ✓ We can access to the information of outside world.
- ✓ Data can be transfer from a computer of one region to another region is very easy.
- ✓ We can get details information of anything.
- ✓ We can share compute equipments with each other. Like Printer, Scanner & Hard Disk etc.
- ✓ We can access files from the NODE (Connected computer).
- ✓ Transfer of Information is very quick. Example a video is captured in America can be viewed in India within 2 to 3 minute where as travelling to America is consume 24 hour.

Example of Network System: - LAN, WAN, MAN.

Local Area Networking (LAN): - This is a type of network which is limited only for a single home around 100 to 200 meter range. In this networking there is a Main computer & several other computer accesses to it.

Wide Area Networking (WAN): - This is a type of networking which is generally used to transfer data from one city to another city. The best example of it is The Telephone Department. They used cupper or fiber optic wires to make a connection. Railway & Banks are also used WAN.

ASCII

The computer code that is widely used is ASCII (American Standard Code for Information Interchange). ASCII-7 was used firstly in which 128 characters chould produced. But after some years ASCII-8 was developped where it allows 256 different characters rather than 128. It is an 8 bit code. This code is popular in data communications, is used almost exclusively to present data internally in micro-computers.

ASCII Table

WINDOWS

Chapter-I

Introduction to Windows

Windows is an Operating system developed by Microsoft Company. The Author of windows is Bill Gates. This is a Graphic User Interface (GUI). User uses graphics to operate the computer here where as in DOS user uses Commands like character. Windows is more popular than DOS because of its looks , graphics system, & color systems. It makes the computer operation very easy.

Windows comes with a package of application software like Notepad, Word pad, Paint, Internet Explorer, Windows Explorer etc.

Overview on Different version of Windows

In 1983 Microsoft started working on Windows & in 1985 completes the work and lunch the first Windows software. This time user can create their own applications namely write paintbrush & desktop accessories.

Here is the list of version below...

In May 1990 :- Windows 3.0 was introduced. It was usable where as windows version 1 & 2 were not.

In May 1992 :- Windows 3.1 was introduced.

In March 1993 :- Windows 3.11 was introduced.

In July 1993 :- Windows NT was introduced. Which was the first Industrial Strength version?

In Aug 1995 :- Windows 95 was introduced.

In Aug 1996 :- Windows 95, Version 2 was introduced, which have interactive features.

In Sep 1998 :- Windows 98 was introduced, which have more interactive features than Windows 95.

In :- Windows XP was introduced.

In :- Windows 2000 was introduced.

In :- Windows ME was introduced.

In :- Windows 7 was introduced. Still in used.

In :- Windows 8 was introduced. Still in used.

In :- Windows 8.1 was introduced. Still in used.

BASIC WINDOWS ELEMENTS`

The Desktop: - It is the working area on a windows screen where we are made to work. As it is used like a desk, so it is called desktop. We can put our day-to-day files on the desktop and work.

Icons & Their Type: - An icon is a graphic object that shows a program or a file on the computer screen. There are different types of icons on desktop. System Icon & Shortcut Icon etc.

System Icons: - The system icons are displayed on the edge of the screen. It is created by the system software (Windows).

<u>System Icons</u>	<u>Functions</u>
My Computer	This icon let us allow to browse files & folders in the computer.
My Documents	This icon represents a folder that is used by many programs as default locations for starting the programs.
Internet Explorer	This icon starts the Internet explorer where we can surf the internet.
My Network	It display the server or work group available in the computer.
Recycle bin	This icon provides temporary location for the deleted items.

Shortcut Icons: - These are the icons with small aero in the lower left corner. A shortcut icon provides easy access to the Files, Folders & objects of the computer. We can access these remotely by the shortcut Icons.