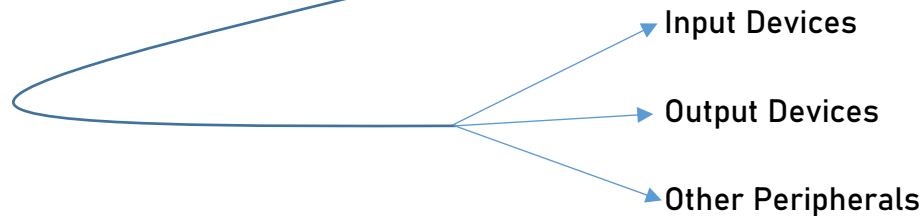


## COMPUTER NOTES FOR REVISIONS

### ➤ Basics:

- » Computer is a device that transforms data into meaningful information.
- » Computer can also be defined in terms of functions it can perform. A computer can
  - i) accept data,
  - ii) store data,
  - iii) process data as desired, and
  - iv) retrieve the stored data as and when required and
  - v) print the result in desired format.
  
- » These are
  - 1) it accepts data or instruction by way of input,
  - 2) it stores data,
  - 3) it can process data as required by the user,
  - 4) it gives results in the form of output, and
  - 5) it controls all operations inside a computer.
    - Input: this is the process of entering data and programs into the computer system.
    - Control Unit (CU): The process of input, output, processing and storage is performed under the supervision of a unit called 'Control Unit'. It decides when to start receiving data, when to stop it, where to store data, etc. It takes care of step-by-step processing of all operations inside the computer.
    - Memory Unit: Computer is used to store data and instructions.
    - Arithmetic Logic Unit (ALU): The major operations performed by the ALU are addition, subtraction, multiplication, division, logic and comparison.
    - Output: This is the process of producing results from the data for getting useful information.
  - The ALU and the CU of a computer system are jointly known as the central processing unit (CPU). You may call CPU as the brain of any computer system.

- **PERIPHERAL DEVICES** Peripheral devices are connected to the computer externally. These devices are used for performing some specific functions. Peripheral devices are as follows:



- » **INPUT DEVICES:**

- Input devices accept data and instructions from the user. Following are the examples of various input devices, which are connected to the computer for this purpose.
  - 1. Keyboard
  - 2. Mouse
  - 3. Light Pen
  - 4. Optical/magnetic Scanner
  - 5. Touch Screen
  - 6. Microphone for voice as input
  - 7. Track Ball

- » **Keyboard:**

- The keyboard in most common use is the QWERTY board.
- Generally standard keyboard has 104 keys.

- » **Mouse**

- A mouse is an electro-mechanical, hand-held device.
- It is used as a pointer.
- It can perform functions like selecting menu commands, moving icons, resizing windows, starting programs, and choosing options.

- The most common mouse uses an internal, magnetically coated ball, to detect the movement of the mouse across a flat surface, usually a desktop.
  - Now a days Optical or laser mouse is used to detect the movement.
  - "Point and Click" actions.
- » Light pen:
- An input device that utilizes a light-sensitive detector to select objects on a display screen.
  - A light pen is similar to a mouse except that with a light pen you can move the pointer and select objects on the display screen by directly pointing to the objects with the pen.
- » Optical Scanner:
- The devices of this category completely eliminate manual input of data.
    - For example, the bar-code reader is actually just a special type of image scanner.
  - An image scanner translates printed images into an electronic format that can be stored in a computer's memory, and with the right kind of software, one can alter a stored image.
  - Another example of scanner is optical character recognition (OCR) device, used by banks to convert the scanned image of a typed or printed page into text that can be edited on the computer.
- » Touch Screen:
- Here the input can be given through the computer screen, that accepts the input through monitor; users touch electronic buttons displayed on the screen or they may use light pen.
- » Microphone:

- Microphone is an input device, which takes voice as input. There are two types of microphones available:
  - 1. Desktop Microphone
  - 2. Hand held Microphone

» Track Ball:

- Trackball, a pointing device, is a mouse lying on its back.
- There are usually one to three buttons next to the ball, which you use just like mouse buttons.

➤ OUTPUT DEVICES:

- » Output devices return processed data that is information, back to the user.

Some of the commonly used output devices are:

- 1. Monitor (Visual Display Unit)
- 2. Printers
- 3. Plotter
- 4. Speakers

» Monitor:

- Computer information is displayed, visually with a video adapter card and monitor.
- Two basic types of monitors are used with microcomputers, which are as follows:
  - 1. CRT
  - 2. LCD
    - CRT or Cathode Ray Tube Monitor: It looks a lot like a television screen, and works the same way. This type

uses a large vacuum tube, called cathode ray tube (CRT).

- Liquid Crystal Displays (LCD): This type of monitors is also known as flat panel monitor. Most monitors have a resolution of at least 800 x 600 pixels. High-end monitors can have resolutions of 1024 x 768 pixels or even 1280 x 1024 pixels.

» Printer:

- After a document is created on the computer; it can be sent to a printer for a hard copy (printout).
- Quality of printer is measured in DPI.
- Some of the most commonly used printers are:
  - 1. Laser Printer
  - 2. Ink Jet Printer
  - 3. Dot Matrix Printer
  - 4. Line Printer
- Laser Printer:
  - A laser printer produces high quality print that one normally finds in publishing.
  - It is extremely fast and quiet.
  - It makes a **laser** beam scan back and forth across a drum inside the **printer**, building up a pattern of static electricity.
  - The static electricity attracts onto the page a kind of powdered ink called toner.
- Ink-Jet Printer:
  - An ink-jet printer creates an image directly on paper by spraying ink through as many as 64 tiny nozzles.

- In general, ink-jet printer offers an excellent middle ground between dot matrix and laser printer.
  - In a thermal **inkjet printer**, tiny resistors create heat, and this heat vaporizes **ink** to create a bubble. As the bubble expands, some of the **ink** is pushed out of a nozzle onto the paper. When the bubble "pops" (collapses), a vacuum is created.
  - This pulls more **ink** into the print head from the cartridge.
- Dot Matrix Printer:
- In dot matrix printer the print head physically "hits" the paper through the ribbon and produces text (or images) by combinations of dots; hence the name dot matrix printer.
  - Its speed is measured in characters per second (CPS).
  - Facing the ribbon and the paper is a small guide plate named ribbon mask holder or protector, sometimes also called *butterfly* for its typical shape. It is pierced with holes to serve as guides for the pins.
  - Dot matrix printers have one of the lowest printing costs per page.
  - They can only print lower-resolution graphics, with limited color performance, limited quality, and lower speeds compared to non-impact printers.
- Line Printer:
- A line printer is generally used with large computer systems to produce text based data processing reports. Line printers are high-speed printers with speeds ranging anywhere from 100 to about 3800 lines per minute. In the past, print quality on line printers was not high. Developments in technology

are improving the print quality on line printers. These are in the cost range of lacs of Rupees.

» **Plotter:**

- A plotter is a special kind of output device that, like a printer.
- An array of different colored pens in a clip rack and a robotic arm is part of plotter.
- The instructions that a plotter receives from a computer consist of a color, and beginning and ending coordinates for a line. With that information, the plotter picks up the appropriate pen through its arm, positions it at the beginning coordinates drops the pen down to the surface of the paper and draws to the ending coordinates. Plotters draw curves by creating a sequence of very short straight lines. Plotters usually come in two designs:
  - 1. Flat Bed: Plotters of small size to be kept on table with restriction of paper size.
  - 2. Drum: These plotters are of big size using rolls of paper of unlimited length.

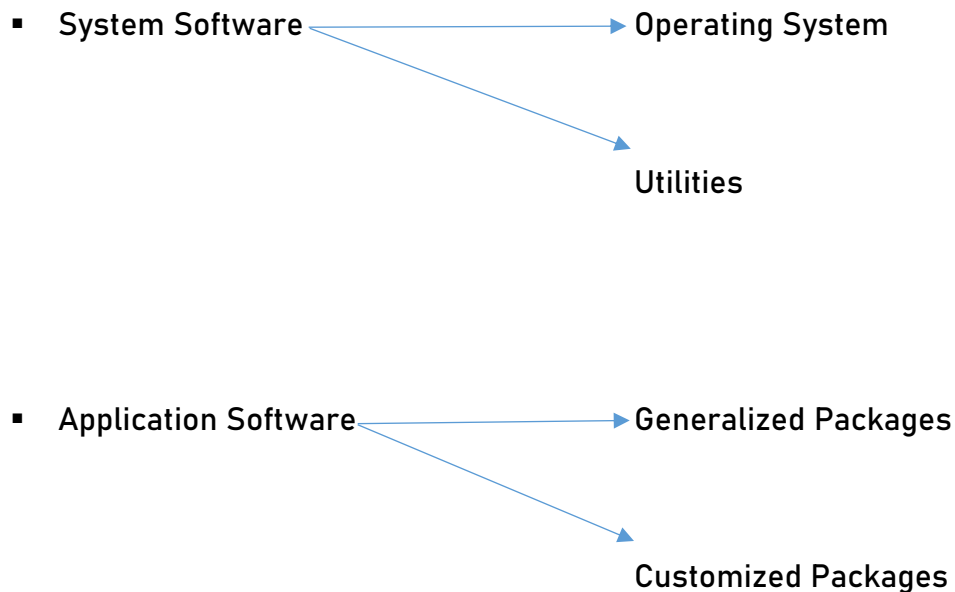
» **Speaker:**

- Speakers are another type of output device, which allow you to listen to voice like music, and conversation with people.

## COMPUTERS NOTES FOR REVISION-2

### ➤ SOFTWARE:

- » Software refers to a set of programs that makes the hardware perform a particular set of tasks in particular order.
- » Classification of Software



### ➤ Operating System:

- » What is an Operating System?
  - A program that acts as an intermediary between a user of a computer and the computer hardware.
  - An operating System is a collection of system programs that together control the operations of a computer system.
  - Some examples of operating systems are
    - UNIX,



- Linux is a family of open source Unix-like operating systems based on the Linux kernel, an operating system kernel first released on September 17, 1991, by Linus Torvalds. Linux is typically packaged in a Linux distribution.
- Plan 9 from Bell Labs is a distributed operating system, originating in the Computing Science Research Center at Bell Labs in the mid-1980s, and building on UNIX concepts first developed there in the late 1960s. The final official release was in early 2015.
- Mach = Mach is a kernel developed at Carnegie Mellon University to support operating system research, primarily distributed and parallel computing. Mach is often mentioned as one of the earliest examples of a microkernel. However, not all versions of Mach are microkernels.
- MS-DOS,
- MS-Windows,
- Windows/NT,
- Chicago, (related to windows 95)
- OS/2, = OS/2 is a series of computer operating systems, initially created by Microsoft and IBM under the leadership of IBM software designer Ed Iacobucci.
- MacOS,
- VMS, Virtual Memory System
- MVS, and Multiple Virtual Storage
- VM = VM is a family of IBM virtual machine operating systems used on IBM mainframes System/370, System/390, zSeries, System z and compatible systems, including the Hercules

emulator for personal computers. The first version, released in 1972, was VM/370, or officially Virtual Machine Facility/370.

## Utilities:

- Although operating system provides all the features users need to use and maintain their systems, inevitably, they still do not meet everyone's expectations. This has led to another type of system software called "Utilities".
  - These are programs that bridge the gap between the functionality of an OS and the needs of users.
  - Utility programs are a broad category of software such as
    - compress (zip)/uncompressed (unzip) files software,
    - anti-virus software,
    - split and join files software, etc.
- » Generalized Packages:
- These are user friendly software's written to cater to user's very general needs such as preparing documents, drawing pictures, database to manage data/information, preparing presentations, play games etc. It is a group of programs that provide general purpose tools to solve specific problems. Some of the generalized packages are listed below:
    - Word Processing Software (for preparing documents): Word Perfect, MS-Word, OpenOffice.org Writer
    - Spreadsheets (Data Analysis): Lotus Smart suites, MS Excel, OpenOffice.org Calc, Apple Numbers
    - Presentations: Presentation Graphics, MS-PowerPoint, OpenOffice.org Impress
    - Database Management System: MS-Access, OpenOffice.org Base, MS-SQL Server, ORACLE

- Graphics Tools: Paint shop pro, Adobe Photoshop

» Customized Packages:

- These are the applications that are customized (or developed) to meet the specific requirements of an organization/institution.
- For Example: Student information details, Payroll packages, inventory control etc. These packages are developed using high-level computer language.

➤ COMPUTER LANGUAGES:

- » Low level language: these are coded in a form which is easy to understand by the processor.
  - Machine language: it is also a type of low level language these can be develop in binary language (0 and 1).
  - Assembly language: it is also a type of low level language and using the human readable instruction of the CPU. It is written as 'MOV A.'
    - This is the language where the machine codes comprising of 0's and 1's are substituted by symbolic codes (called mnemonics) to improve their understanding.
- » High level language programmer can write code in simple easy language, it is user friendly. E.g. C, JAVA
  - C language: it is a middle level programming language and also known as procedural language. C programming is a general-purpose, procedural, imperative computer programming language

developed in 1972 by Dennis M. Ritchie at the Bell Telephone Laboratories to develop the UNIX operating system. C is the most widely used computer language.

- C++ is high level language that uses the OOPS concept. Before the initial standardization in 1998, C++ was developed by Danish computer scientist **Bjarne Stroustrup** at Bell Labs since 1979 as an extension of the C language; he wanted an efficient and flexible language similar to C that also provided high-level features for program organization.
- Fortran: it is known as formula translation. It is used for scientific application. Fortran is a general-purpose, compiled imperative programming language that is especially suited to numeric computation and scientific computing.
  - Designed by
    - John Backus
  - Developer
    - John Backus and IBM
  - First appeared
    - 1957; 63 years ago
- COBOL (Common Business Oriented Language): used for record keeping and data management in business organizations. COBOL is a compiled English-like computer programming language designed for business use. It is imperative, procedural and, since 2002, object-oriented. COBOL is primarily used in business, finance, and administrative systems for companies and governments. Wikipedia
  - Designed by: Howard Bromberg, Norman Discount, Vernon Reeves, Jean E. Sammet, William Selden, Gertrude Tierney

- Developers: CODASYL, ANSI, ISO
- BASIC (Beginner's All Purpose Symbolic Instruction Code): first language designed for non-professional programmers. BASIC is a family of general-purpose, high-level programming languages whose design philosophy emphasizes ease of use. The original version was designed by John G. Kemeny and Thomas E. Kurtz and released at Dartmouth College in 1964.
- PASCAL: it is developed as a teaching tool for programming concepts. Pascal is an imperative and procedural programming language, designed by Niklaus Wirth as a small, efficient language intended to encourage good programming practices using structured programming and data structuring. It is named in honour of the French mathematician, philosopher and physicist Blaise Pascal.
- Simula was the first object-oriented programming language. Java, Python, C++, Visual Basic .NET and Ruby are the most popular Object Oriented Programming languages. The Java programming language is designed especially for use in distributed applications on corporate networks and the Internet. Ruby is used in many Web applications. Curl, Smalltalk, Delphi and Eiffel are also examples of object-oriented programming languages.
- Logo: Logo is an educational programming language, designed in 1967 by Wally Feurzeig, Seymour Papert, and Cynthia Solomon. Logo is not an acronym: the name was coined by Feurzeig while he was at Bolt, Beranek and Newman, and derives from the Greek logos, meaning word or thought