

Computer Fundamental

UNIT : 04 (PART – 02)

- ❖ LANGUAGES
- ❖ OPERATING SYSTEM
- ❖ SOFTWARE PACKAGES

-By Hiral Pandya

WHAT IS COMPUTER LANGUAGE ?

- Language is a mode of communication that is used to share ideas, opinions with each other.
- Similarly, programming language is a computer language that is used by programmers (developers) to communicate with computers.
- It is a set of instructions written in any specific language (C, C++, Java, Python) to perform a specific task.
- A programming language is mainly used to develop desktop applications, websites, mobile applications and etc.

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WHAT IS COMPUTER LANGUAGE ?

- There are mainly THREE different languages:
 - Machine Level language
 - Assembly Level Language
 - High Level Language
- **Machine Level language :**
 - The low-level language is a programming language that provides no abstraction from the hardware, and it is represented in 0 or 1 forms, which are the machine instructions.
 - The languages that come under this category are the Machine level language and Assembly language.

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WHAT IS COMPUTER LANGUAGE ?

- **Assembly Level Language :**
 - The assembly language contains some human-readable commands such as mov, add, sub, etc.
 - The problems which we were facing in machine-level language are reduced to some extent by using an extended form of machine-level language known as assembly language.
- **High Level Language :**
 - The high-level language is a programming language that allows a programmer to write the programs which are independent of a particular type of computer.
 - The high-level languages are considered as high-level because they are closer to human languages than machine-level languages.

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TRANSLATOR :

- A translator is a programming language processor that converts a computer program from one language to another.
- It takes a program written in source code and converts it into machine code.
- It discovers and identifies the error during translation.
- There are **3** different types of translators :
 - Compiler
 - Interpreter
 - Assembler

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TRANSLATOR (Compiler) :

- A compiler is a translator used to convert high-level programming language to low-level programming language.
- It converts the whole program in one session and reports errors detected after the conversion.
- The compiler takes time to do its work as it translates high-level code to lower-level code all at once and then saves it to memory.
- A compiler is processor-dependent and platform-dependent.
- But it has been addressed by a special compiler, a cross-compiler and a source-to-source compiler.

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TRANSLATOR (Interpreter) :

- Just like a compiler, is a translator used to convert high-level programming language to low-level programming language.
- It converts the program one at a time and reports errors detected at once while doing the conversion.
- With this, it is easier to detect errors than in a compiler.
- An interpreter is faster than a compiler as it immediately executes the code upon reading the code.
- It is often used as a debugging tool for software development as it can execute a single line of code at a time.
- An interpreter is also more portable than a compiler as it is not processor-dependent, you can work between hardware architectures.

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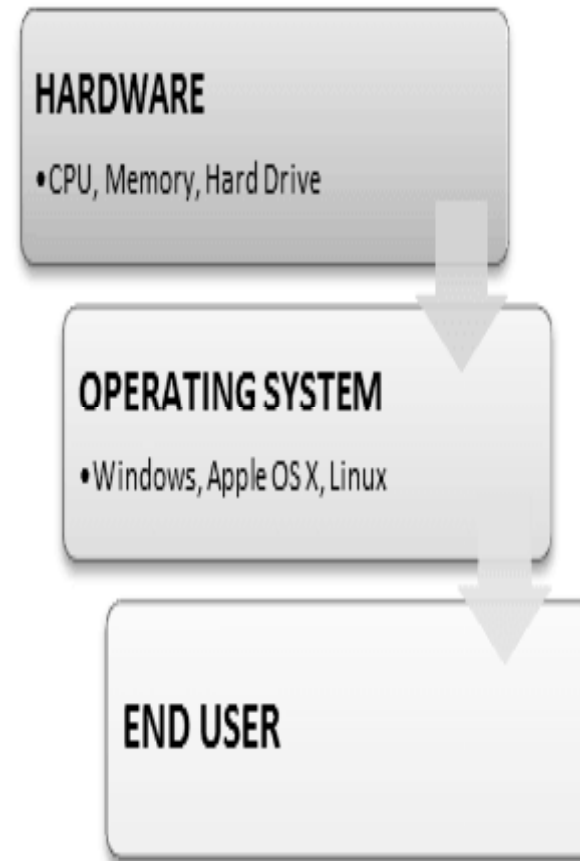
TRANSLATOR (Assembler) :

- An assembler is a translator used to translate assembly language to machine language. It is like a compiler for the assembly language but interactive like an interpreter.
- Assembly language is difficult to understand as it is a low-level programming language. An assembler translates a low-level language, an assembly language to an even lower-level language, which is the machine code.
- The machine code can be directly understood by the CPU.

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OPERATING SYSTEM :

- An OPERATING SYSTEM (OS) is an interface between a computer user and computer hardware.
- An operating system is a software which performs all the basic tasks like file management, memory management, process management, handling input and output, and controlling peripheral devices such as disk drives and printers.



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OPERATING SYSTEM :

- **Following are the popular types of OS :**

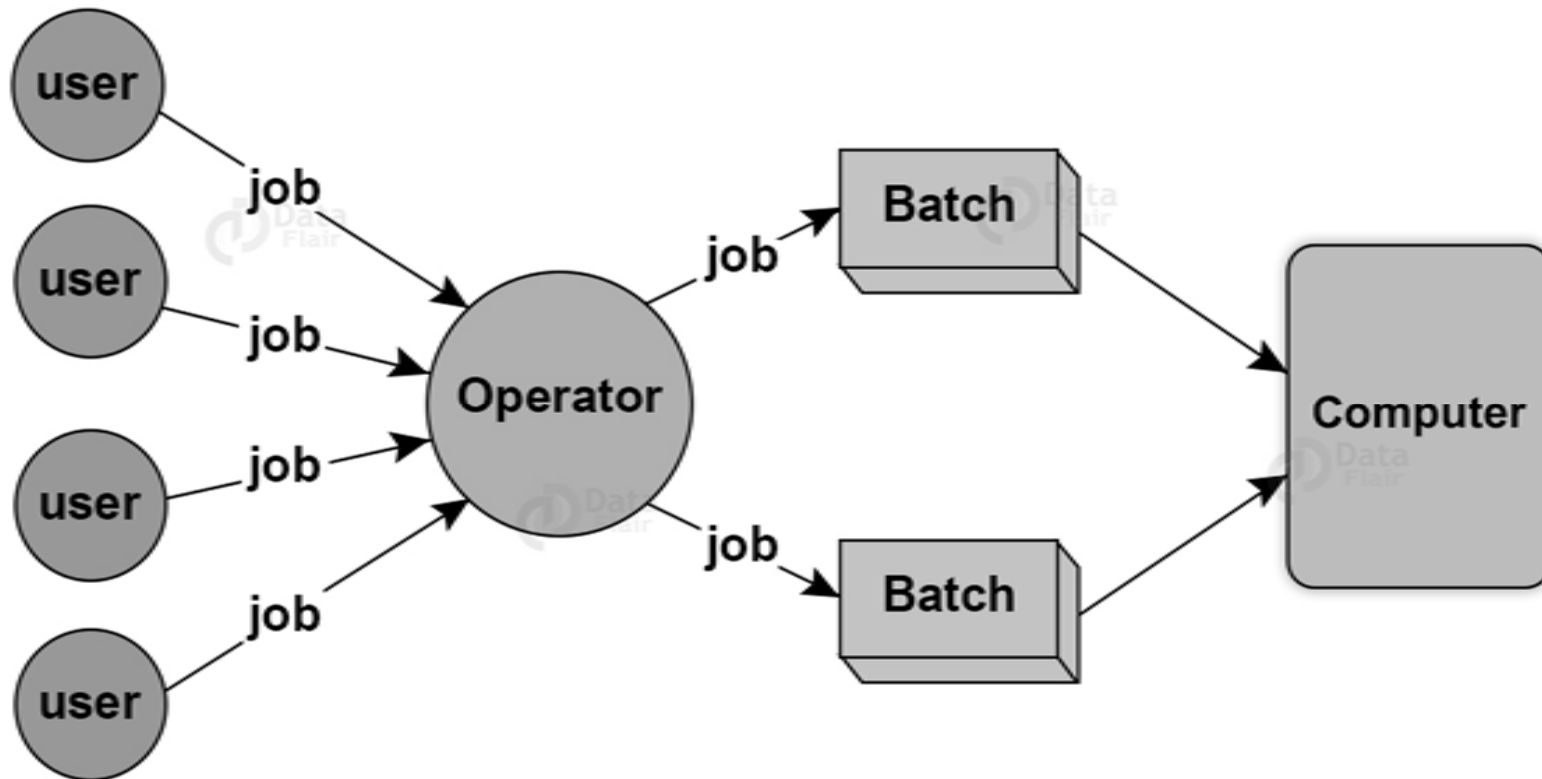
- Batch Operating System
- Multitasking/Time Sharing OS
- Multiprocessing OS
- Real Time OS
- Distributed OS
- Network OS
- Mobile OS

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Batch O/S:

- In this OS, users do not interact with the computer directly.
- Each user prepares its job on an OFF-LINE device like PUNCH CARDS and submits it to the computer operator.
- To speed up the processing, jobs with similar needs are batched together and run as a group.
- The programmers exit their programs with the operator and the operator then sorts the programs with similar requirements into batches.

Batch O/S:



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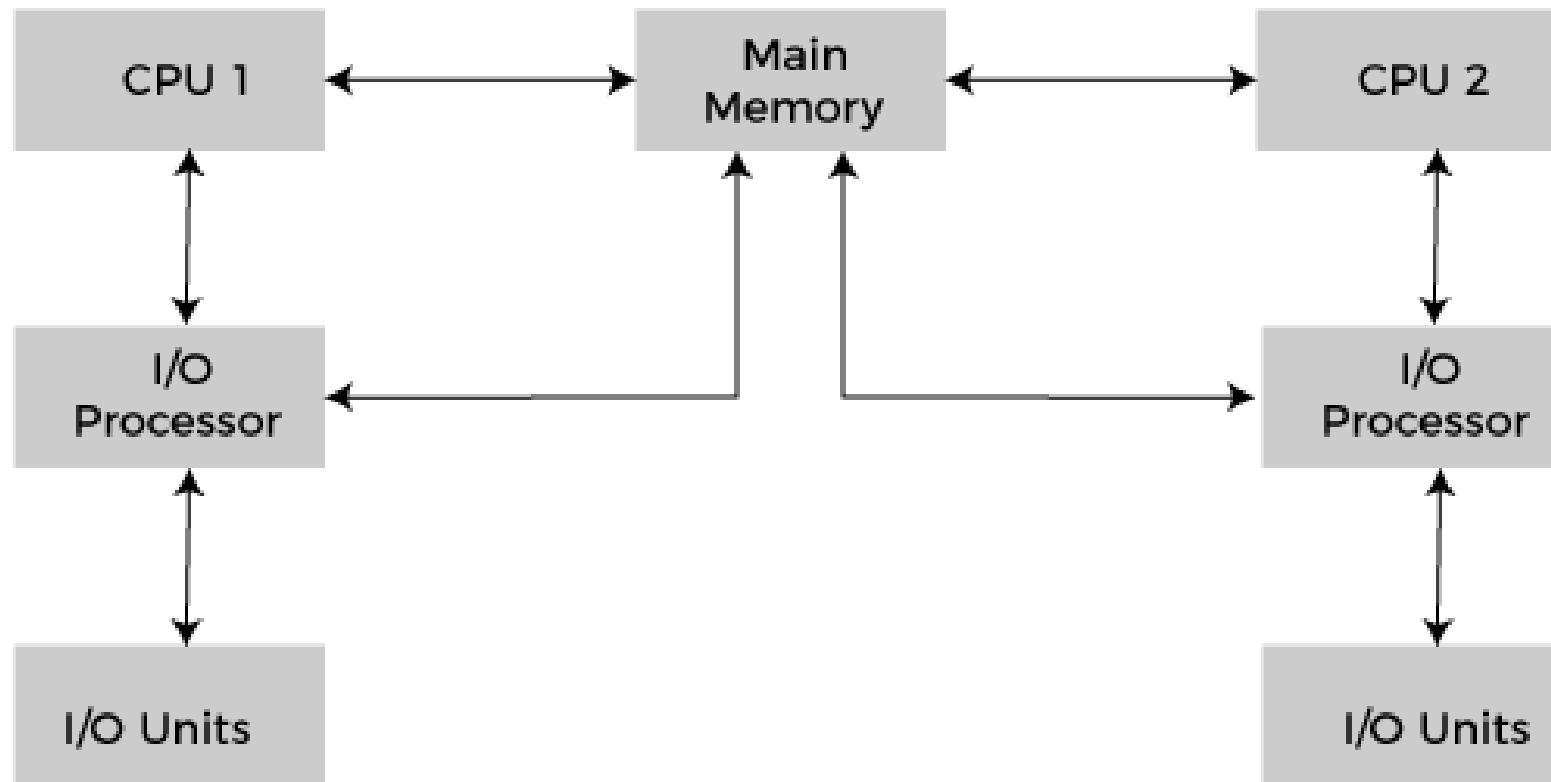
MULTIPROCESSING O/S:

- A multiprocessing operating system (OS) is one in which two or more central processing units (CPUs) control the functions of the computer.
- MULTIPROCESSING operating systems perform the same functions as SINGLE-PROCESSOR OS.
- They schedule and monitor operations and calculations in order to complete user-initiated tasks.
- The MULTIPROCESSING OS divide the work up into various subtasks and then assign these subtasks to different central processing units (CPUs).

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MULTIPROCESSING O/S:

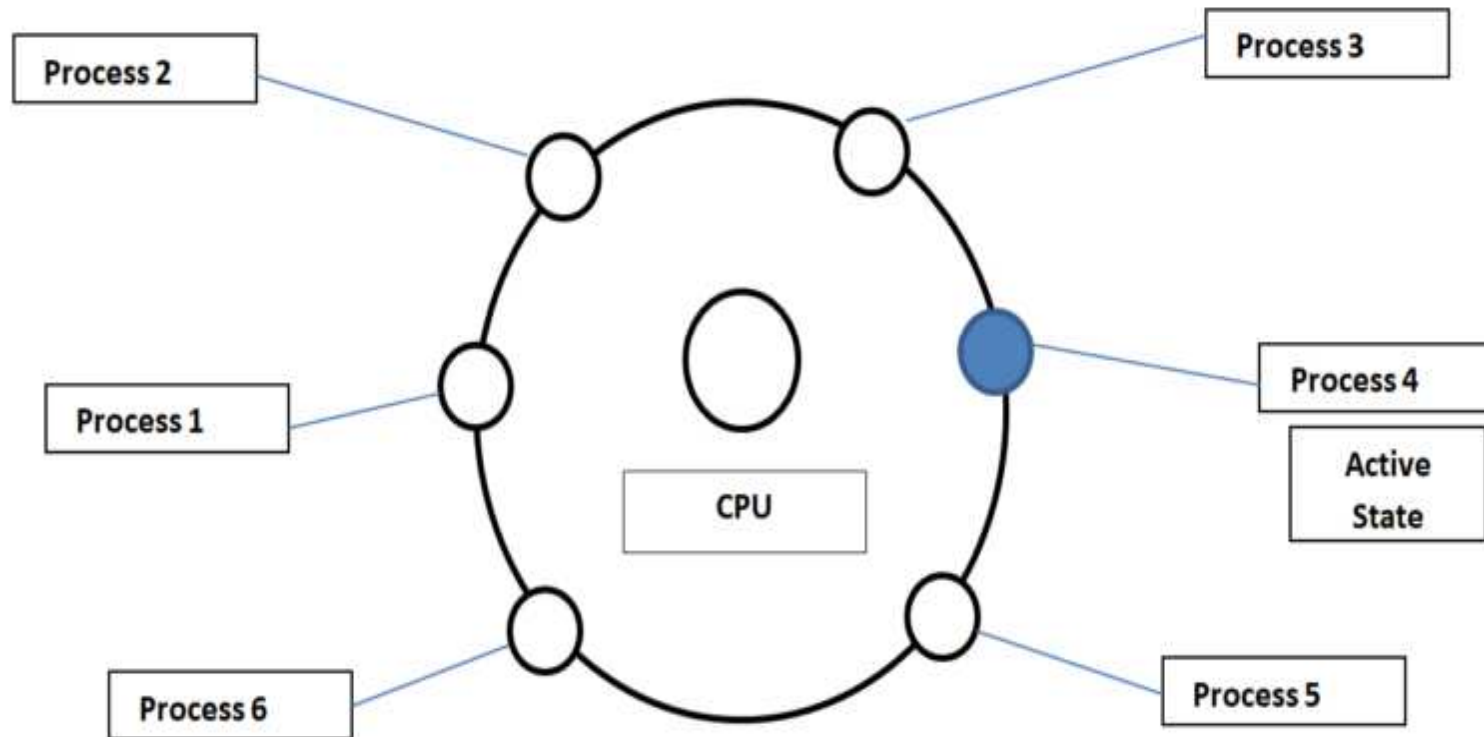


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TIME SHARING O/S:

- A TIME SHARED operating system allows multiple users to share computers simultaneously.
- Each action or order at a time the shared system becomes smaller, so only a little CPU time is required for each user.
- As the system rapidly switches from one user to another, each user is given the impression that the entire computer system is dedicated to its use, although it is being shared among multiple users.
- TIME SHARING is a logical extension of MULTIPROGRAMMING.

TIME SHARING O/S:



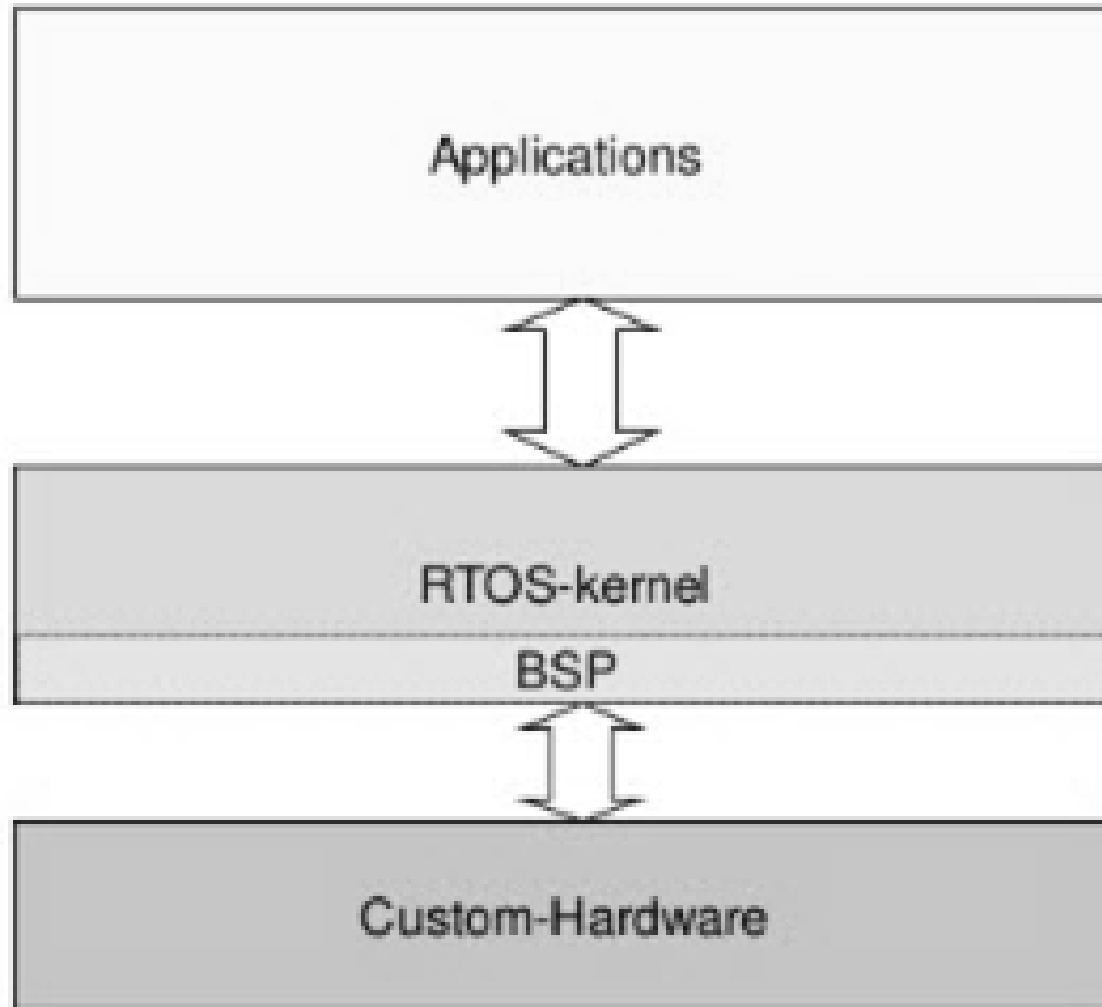
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REAL TIME O/S:

- REAL-TIME OPERATING SYSTEMS (RTOS) are used in environments where a large number of events, mostly external to the computer system, must be accepted and processed in a short time or within certain deadlines.
- With an RTOS, the processing time is measured in tenths of seconds. This system is time-bound and has a fixed deadline. The processing in this type of system must occur within the specified constraints. Otherwise, This will lead to system failure.
- **Examples:** Airline traffic control systems, Command Control Systems, Airlines reservation system, Heart Pacemaker, Network Multimedia Systems, Robot etc.

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REAL TIME O/S:



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SOFTWARE PACKAGES:

- SOFTWARE PACKAGE is a collection of programs that perform similar functions or have similar features.
- For example, Microsoft Office includes multiple applications such as Excel, Word, and PowerPoint.
- Video and audio editing software may also be available as packaged software, used for editing music and video files used in a movie.
- Some programs included in packaged software may be available for purchase individually.

WORD PROCESSING PACKAGES:

- The WORD PROCESSING software is used to apply the basic editing and design and also helps in manipulating the text to your pages whereas the word processor, is a device that provides editing, input, formatting, and output of the given text with some additional features.
 - Wordpad
 - Notepad
 - Microsoft Word
 - Lotus word pro
 - WordPerfect (Windows only)
 - AppleWorks (Mac only)
 - OpenOffice Writer
- Examples :

SPREAD SHEET PACKAGES:

- A SPEEDSHEET or WORKSHEET is a file made of rows and columns that have sort data ,arrange data easily and calculate numerical data.
- That make a software program unique is its ability to calculate values using mathematical formulas and the data in cells.
- **Examples :**
 - Microsoft Excel
 - Apple Numbers
 - Quip
 - EtherCalc
 - Zoho Sheets
 - LibreOffice
 - Apache OpenOffice Calc
 - Google Sheet

GRAPHICAL PACKAGES:

- A graphics package is an application that can be used to create and manipulate images on a computer.
- There are two main types of graphics package:
 - PAINTING PACKAGES
 - DRAWING PACKAGES
- **Examples :**
 - Ms Paint
 - Instant artist
 - CorelDraw
 - Adobe Photoshop
 - Harvard graphic

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DATABASE PACKAGES:

- Database software is software that is designed to create databases and to store, manage, search, and extract the information contained within them.
- Database software exists to protect the information in the database and ensure that it's both accurate and consistent. Its functions include storage, backup and recovery, and presentation and reporting.
- **Examples :**
 - MySQL
 - MS SQL Server
 - MongoDB
 - Oracle
 - PostgreSQL
 - Cassandra

PRESENTATION PACKAGES:

- A presentation program is a software package used to display information in the form of a slide show.
- It has THREE major functions:
- **Editor** : It allows text to be inserted and format
- **Method**: It is for insert and manipulating graphics
- **SLIDE-SHOW** : To display the content.
- **Examples** :
 - MS Power Point
 - Impress(OpenOffice)
 - Harvard graphic
 - Movie Maker
 - PostgreSQL
 - HP-IDraw

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ANIMATION/VIDEO/AUDIO PACKAGES:

- Computer animation is the process used for digitally generating animated images.
- The more general term computer-generated imagery (CGI) encompasses both static scenes and dynamic images, while computer animation only refers to moving images.
- This Types of Packages can Insert, Edit or Manipulate Animation, Video/Audio editing.
- **Examples :**
 - SFX
 - Adobe Character Animator
 - Pinnacle Studio
 - Filmora
 - Window Movie Maker
 - IMovie

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-By Hiral Pandya