CH-4[B]

LANGUAGES, OPERATING SYSTEMS, AND SOFTWARE PACKAGES

INTRODUCTION

- What is a **language ?**

→A programming **language** is a vocabulary and set of grammatical rules for instructing a **computer** or computing device to perform specific tasks. The term programming **language** usually refers to high-level **languages**, such as BASIC, C, C++, COBOL, Java, FORTRAN, Ada, and Pascal.

- What is a **OS?**

→An **operating system** is the most important software that runs on a **computer**. It manages the **computer's**memory and processes, as well as all of its software and hardware. It also allows you to communicate with the **computer** without knowing how to speak the**computer's** language.

- What is a **software?**

→It is considered as set of programs, which is then executed to perform a well-defined function.

- A program consists of a set of instructions which are used to perform a specific task in an orderly manner.

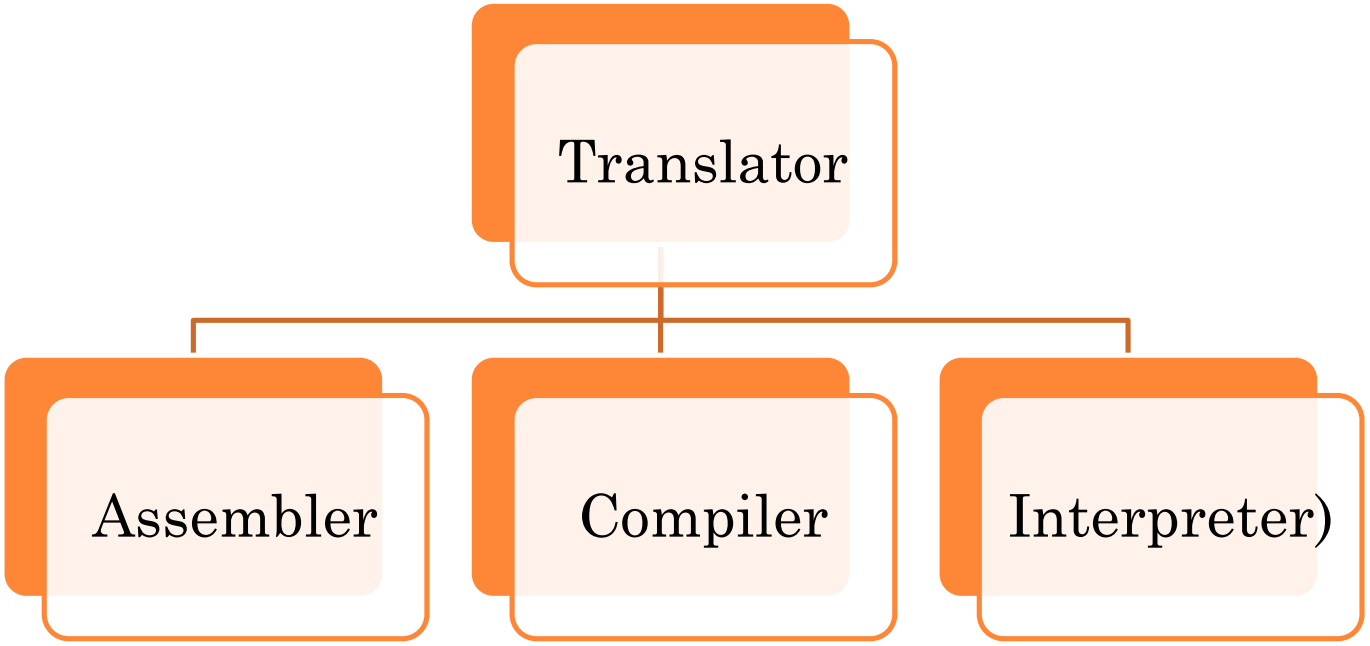
- What is a **Packages?**

→A Dictionary of **Computing**. **application package** (software **package**) A collection of programs or modules that is directed at some generic **application** and can be tailored (perhaps with some additions) to the needs of a specific instance of that**application**. "**application package**."

Translator

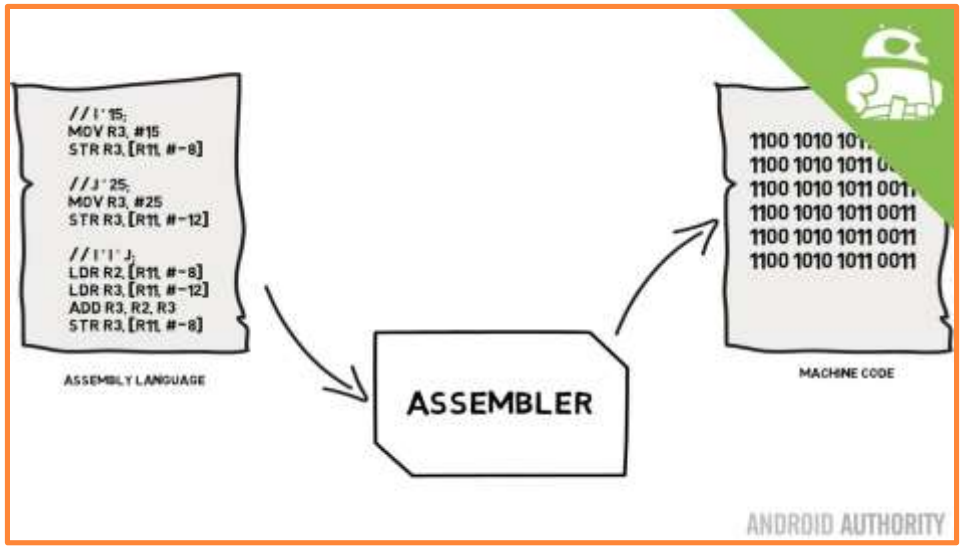
What is a Translator ?

- **Language translator** is a program which is used to translate instructions that are written in the *source code to object code* i.e. from high-level language



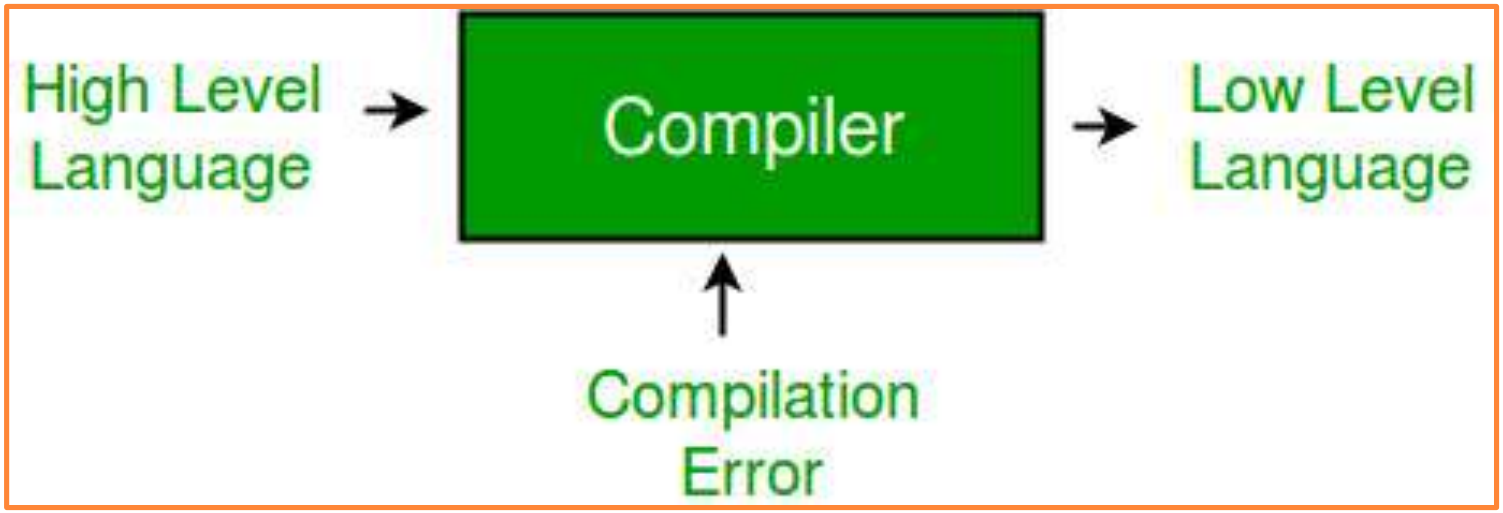
ASSEMBLER

- In addition to high level languages and machine language, there is another language called the assembly language.
- Assembly language is in between the *high level languages and machine language*.
- This language is not *easily readable and understandable by the programmer* like a high level programming language.



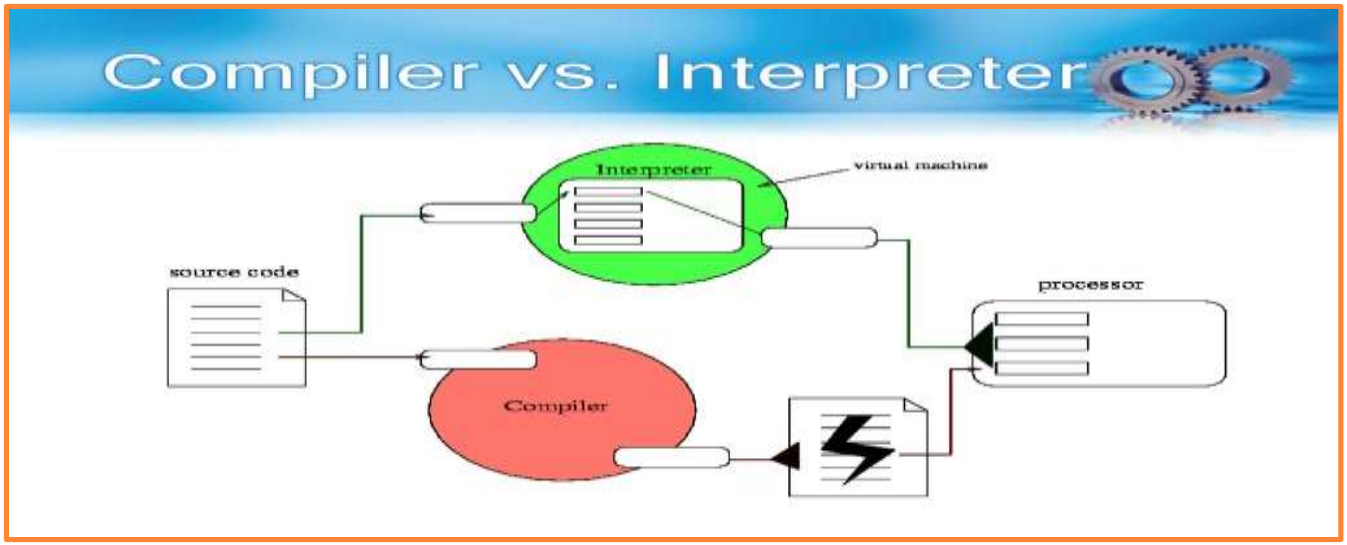
COMPILER

- A compiler is a language translator that converts high level programs into machine understandable machine codes.
- Programming languages such as C, C++ uses a compiler for language conversion.
- The execution time is lower in these languages.
- Therefore, they are considered fast languages.

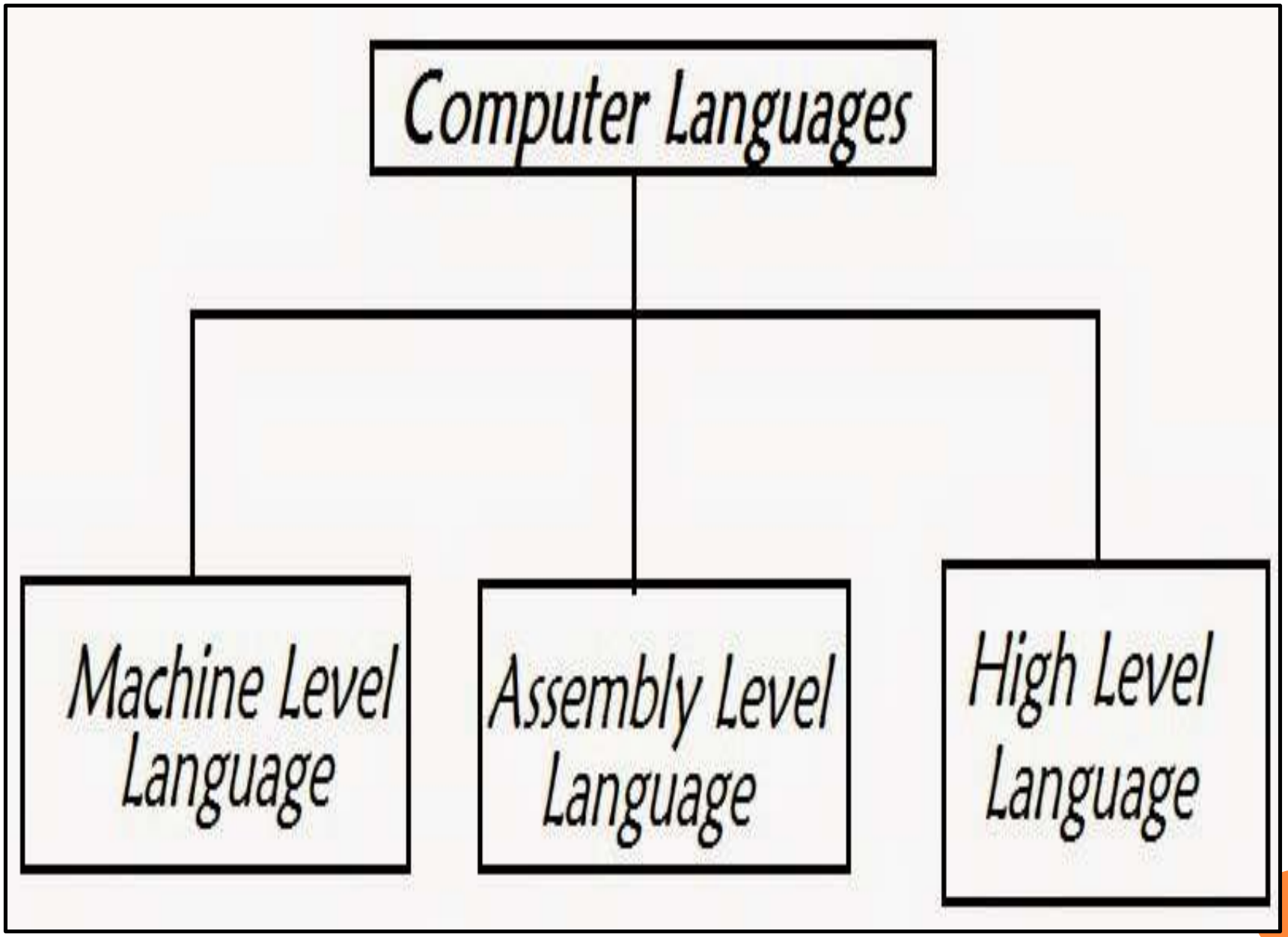


INTERPRETER

- An interpreter is also a language translator that converts high level programs into machine codes.
- convert the source code to machine code line by line.
- As it checks line by line, the scanning time is lower. But the overall execution time is higher.
- Example of interpreter based language:
  - PHP, JavaScript ,BASIC

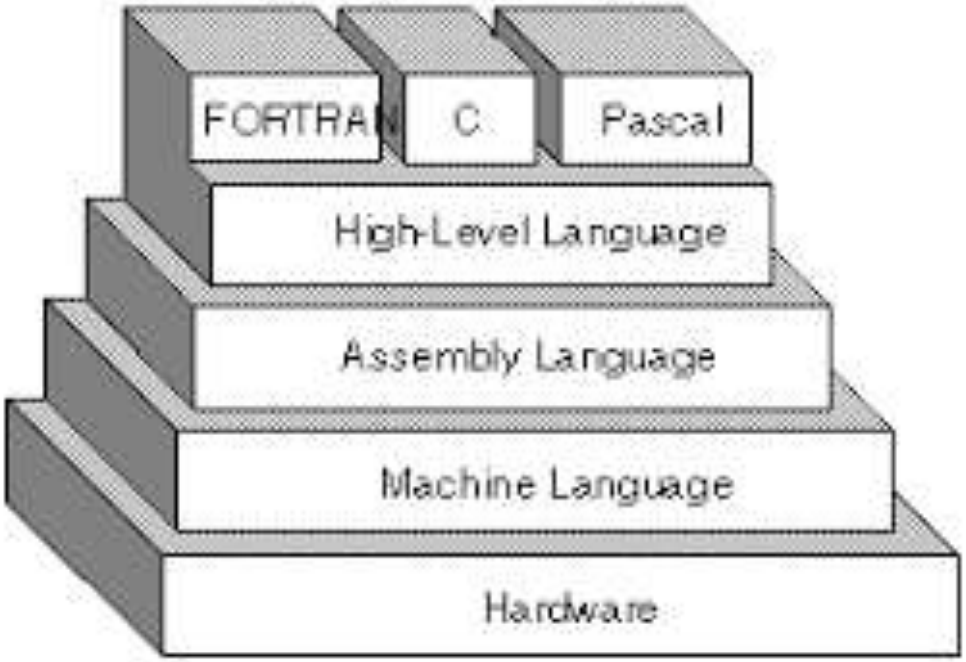


Types of Languages


Computer Languages
Machine Level Language
Assembly Level Language
High Level Language

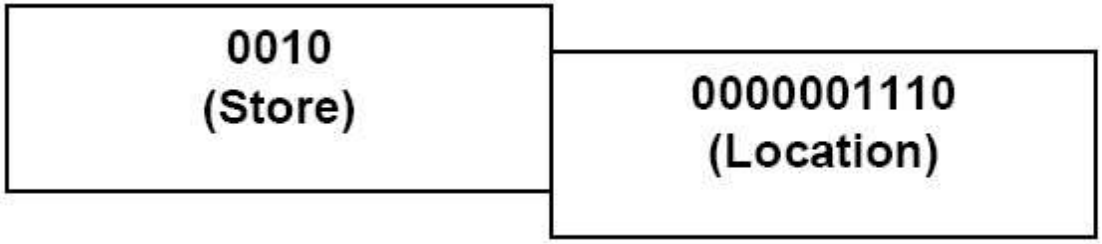
Machine Level Language

- **machine language** is a collection of binary digits or bits that the computer reads and interprets.
- A computer cannot directly understand the **programming languages** used to create computer programs, so the program code must be compiled.



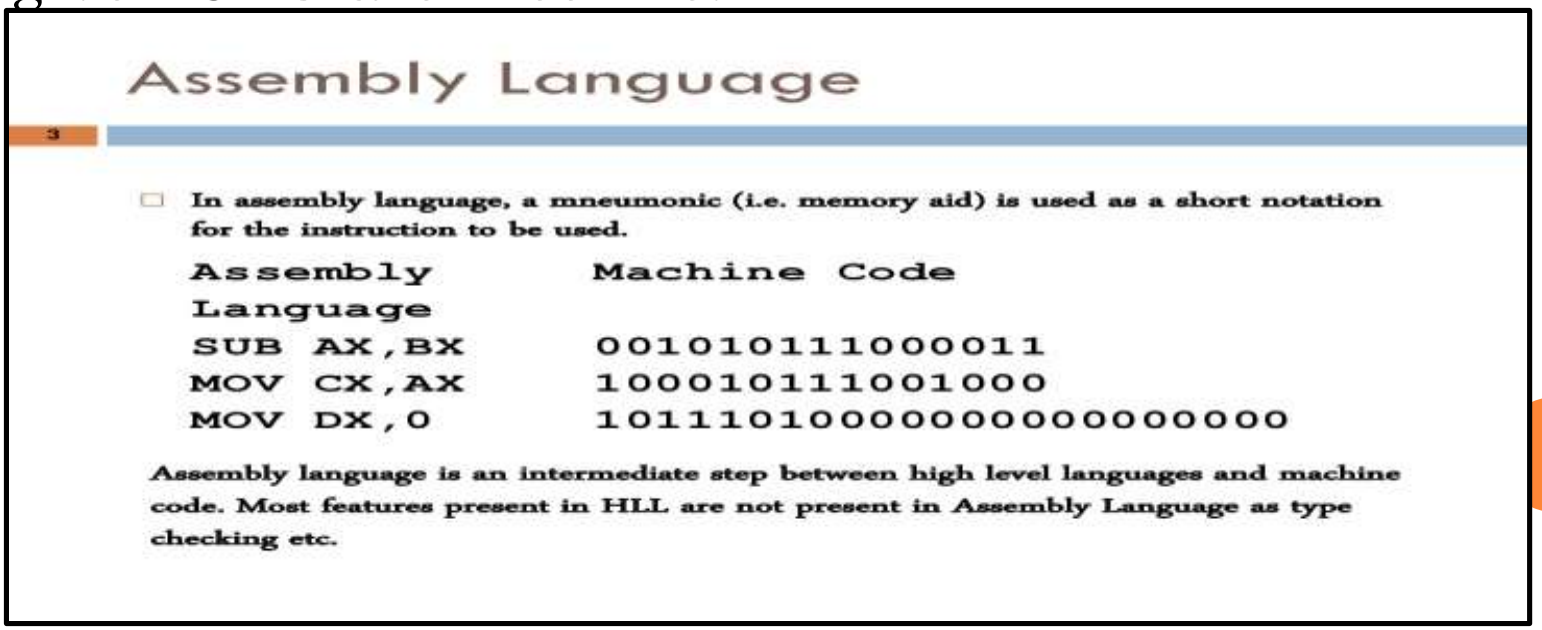
- Machine language is made up of only two symbols “0” and “1” with all its different combinations.

An instruction prepared in any machine language has two-part format, as shown under:



ASSEMBLY LANGUAGE

- An **assembly language** is a low-**level programming language** for microprocessors and other programmable devices.
- It is not just a single **language**, but rather a group of **languages**.
- An **assembly language** implements a symbolic representation of the machine code needed to program a given CPU architecture.



Format of assembly language is similar to machine language:

Mnemonic Code	Symbolic Address

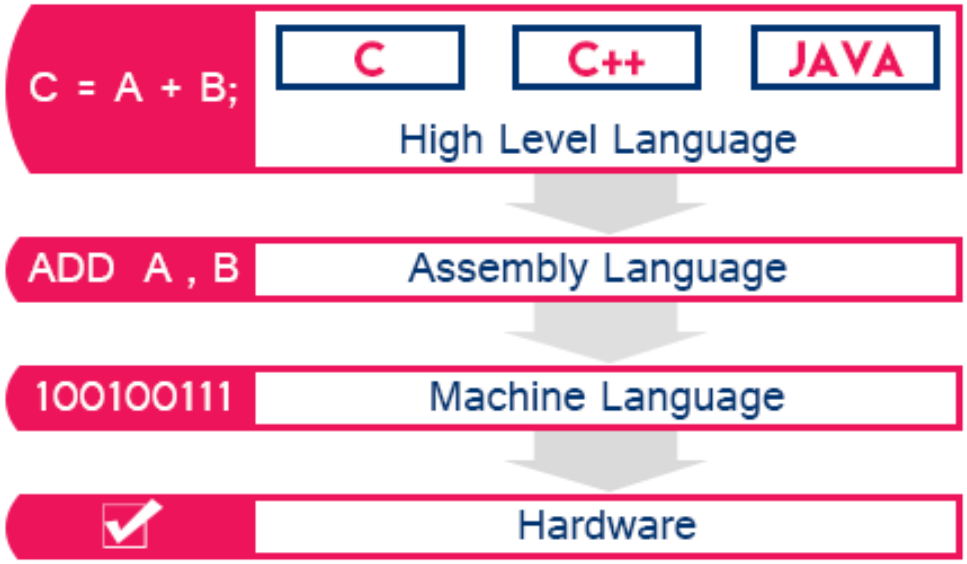
Examples of commands are MOV, ADD, SUB, INC, etc. Examples of Variable names are SUM, MARKS, AVERAGE, etc. Examples of Register Names are AX, DX, CX, etc.

Example of Assembly language instruction:

ADD	AX	NUM1

High Level Language

- A **high-level language** is any programming language that enables development of a program in a much more user-friendly programming context and is generally .
- Use by 3GL, 4GL, 5GL.



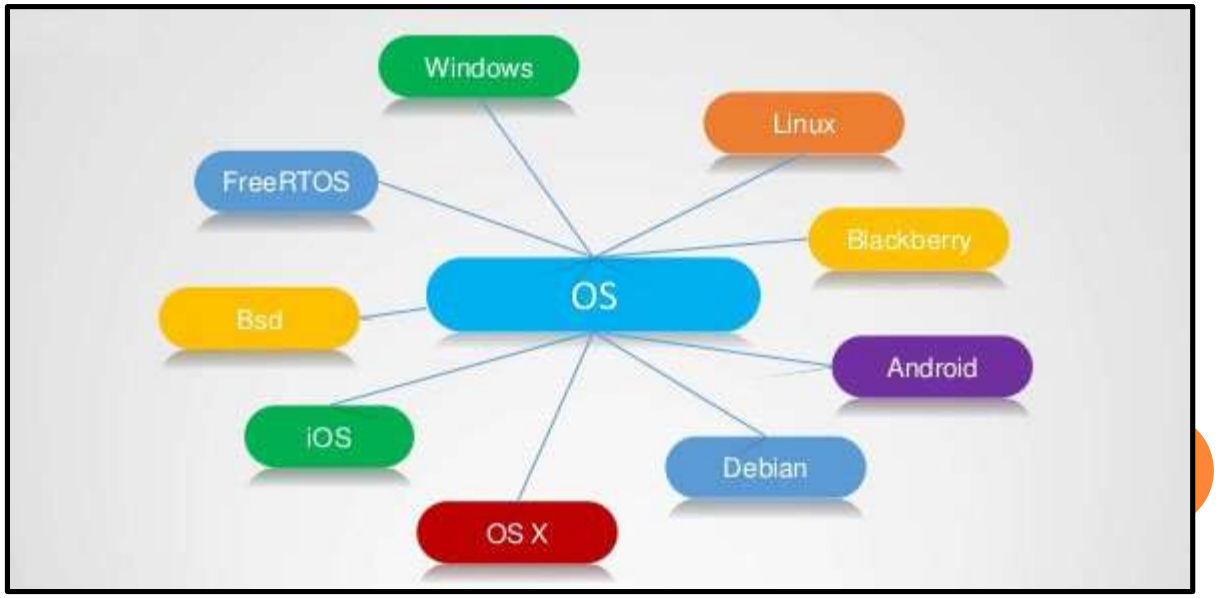
- -Facilities
  - 4GL supports many facilities that a user can easily adopt and can use
  - in developing a user-oriented software. Facilities provided by 4GL are:
- Query Facilities
- Report Generators
- Screen Generators
- Application Generators
- Graphic Facilities
- Artificial Intelligence (AI) 5GL.

Types of Operating Systems

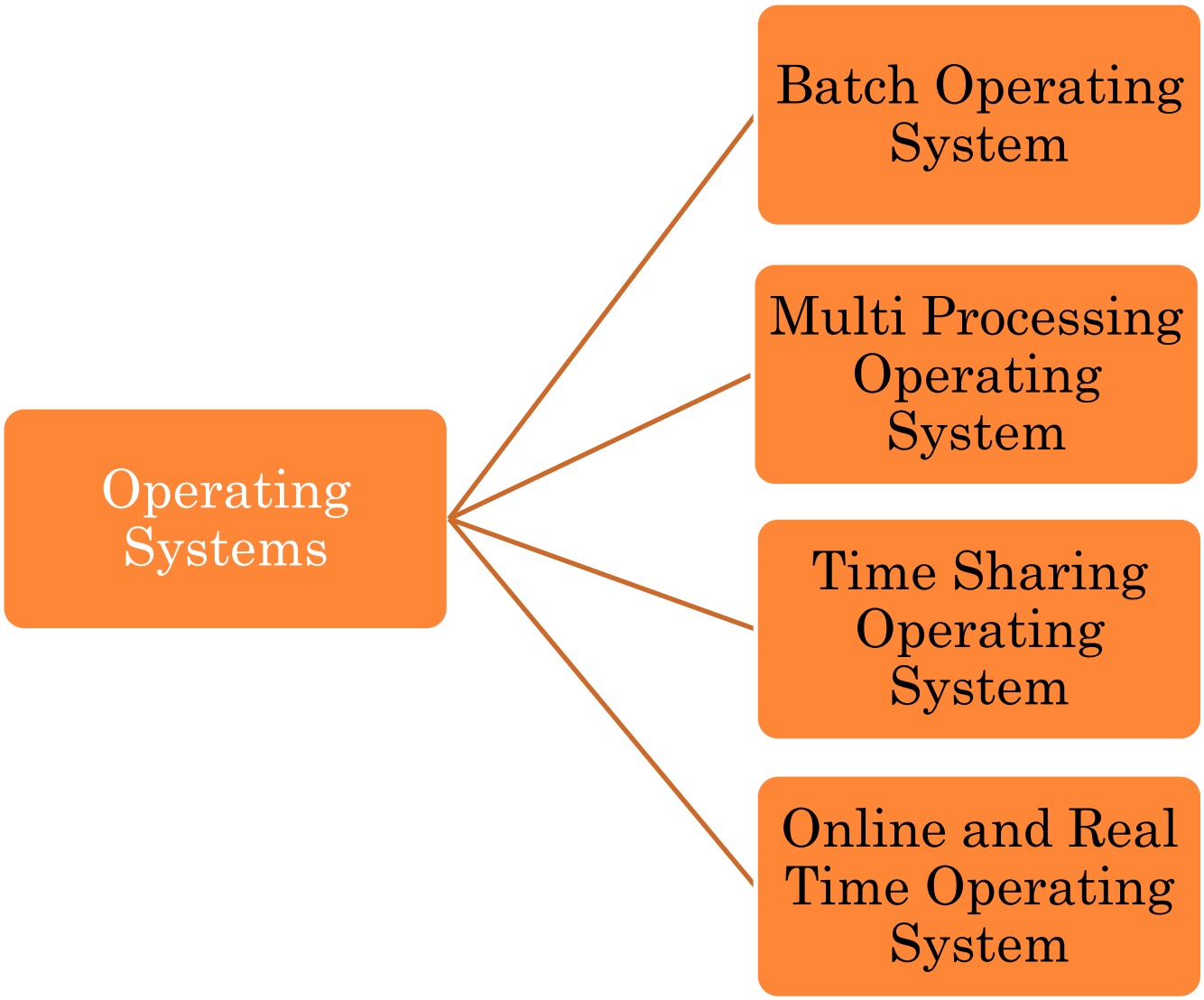
WHAT IS A OPERATING SYSTEMS ?

- An **operating system** (OS) is **system** software that manages computer hardware and software resources and provides common services for computer programs.
- The dominant desktop **operating system** is Microsoft Windows with a market share of around 82.74%.


Linux
Apple
Microsoft Windows
IBM
ubuntu
UNIX
android
MS DOS
MS DOS
Mac OS
BlackBerry
OS/2 WARP

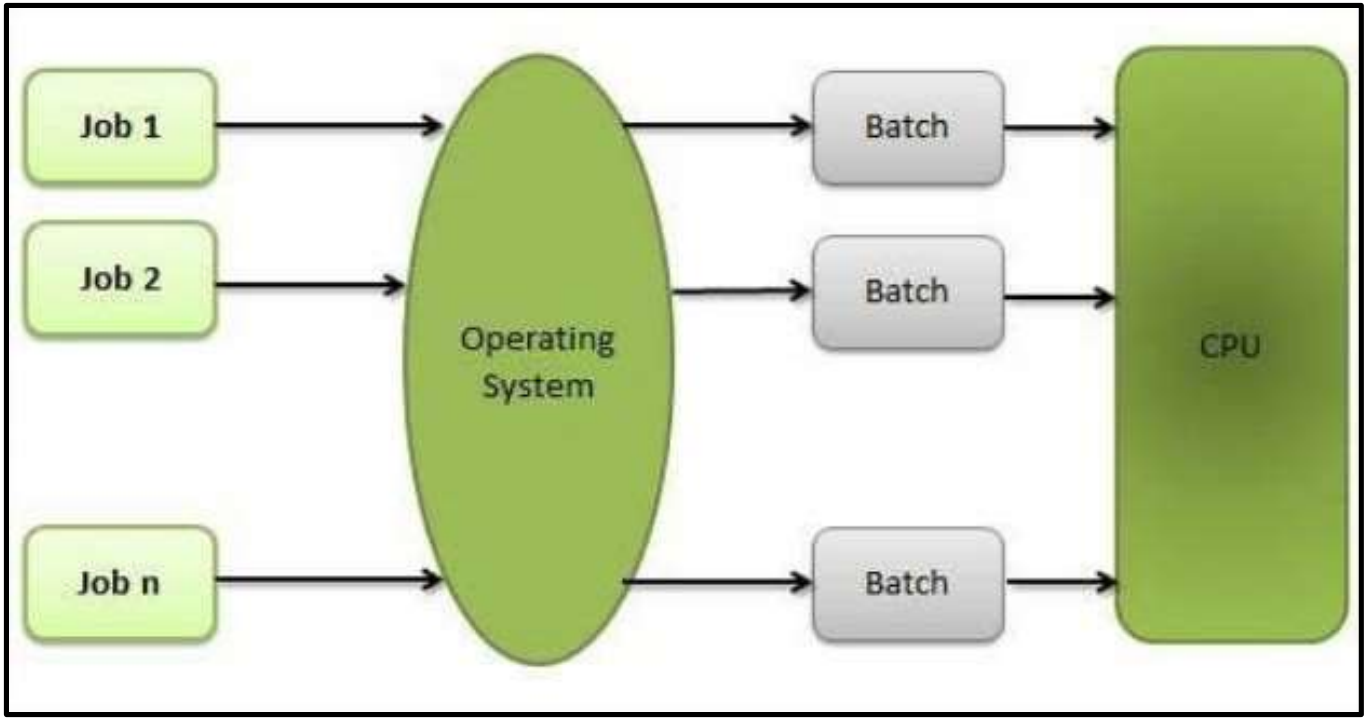

Windows
Linux
FreeRTOS
Blackberry
OS
Bsd
Android
iOS
Debian
OS X

Types of Operating Systems



1. Batch Operating System

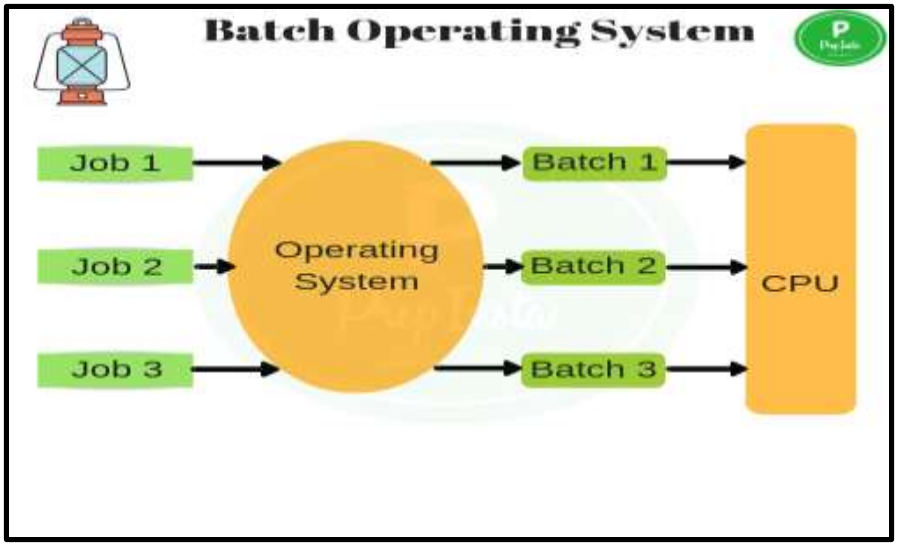
- Batch processing is a technique in which an Operating System collects the programs and data together in a batch before processing starts. An operating system does the following activities related to batch processing .



- The OS defines a job which has predefined sequence of commands, programs and data as a single unit.

- The OS keeps a number a jobs in memory and executes them without any manual information.

- Jobs are processed in the order of submission, i.e., first come first served fashion.
- When a job completes its execution, its memory is released and the output for the job gets copied into an output spool for later printing or processing.



2. Multi Processing Operating System

- **Multiprocessor Operating System** refers to the use of two or more central **processing** units (CPU) within a single computer **system**.
- These **multiple** CPUs are in a close communication sharing the computer bus, memory and other peripheral devices.
- These **systems** are referred as tightly coupled **systems**.

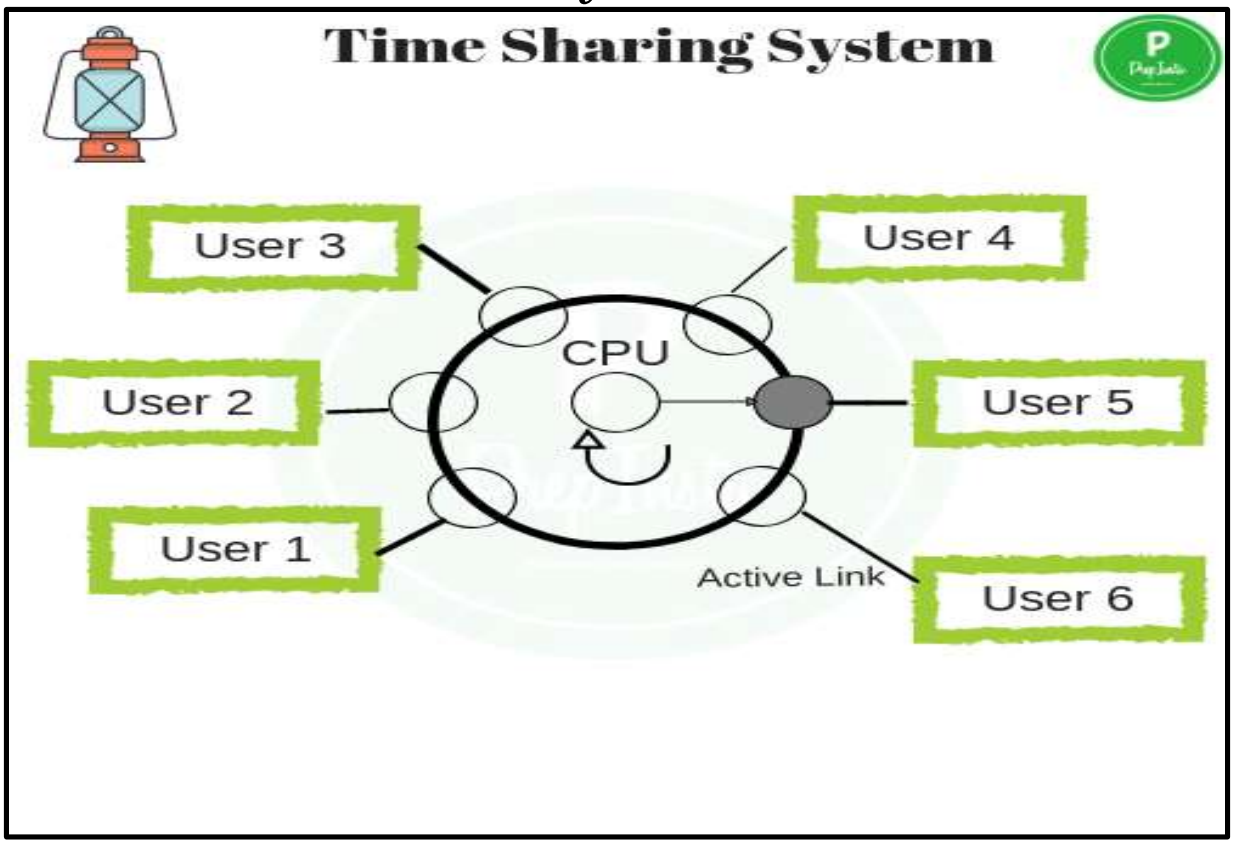
- In order to employ multiprocessing operating system effectively, the computer system must have the followings:

- **1. Motherboard Support:** A motherboard capable of handling multiple processors. This means additional sockets or slots for the extra chips and a chipset capable of handling the multiprocessing arrangement.

- **2. Processor Support:** processors those are capable of being used in a multiprocessing system.

3. Time Sharing Operating System

- A **time shared system** uses CPU scheduling and multiprogramming to provide each user with a small portion of a **time-shared** computer.
- It allows many users to **share the** computer resources simultaneously.

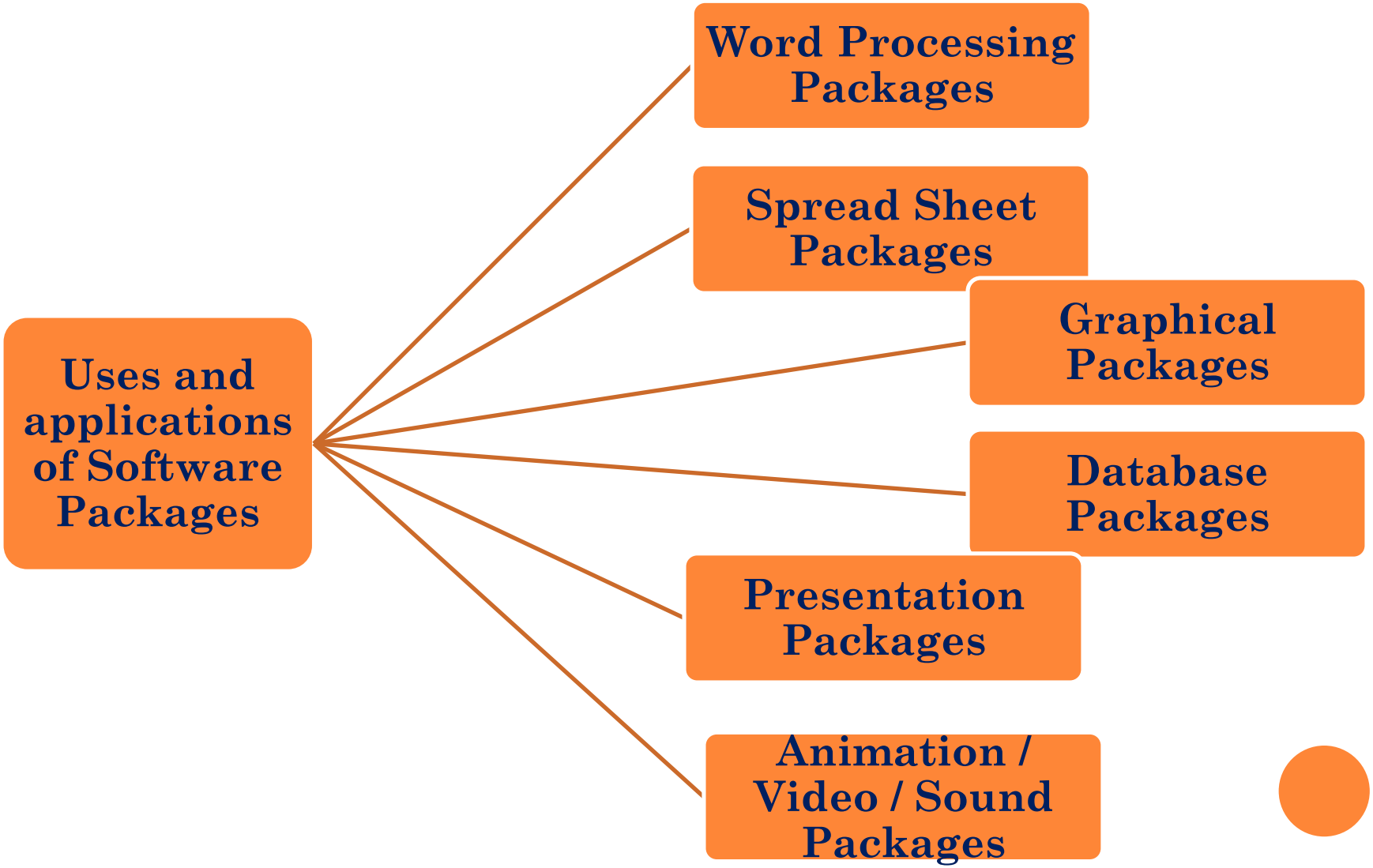


4. Online and Real Time Operating System

- A **real-time operating system** is a multitasking **operating system** designed for **real-time** applications.

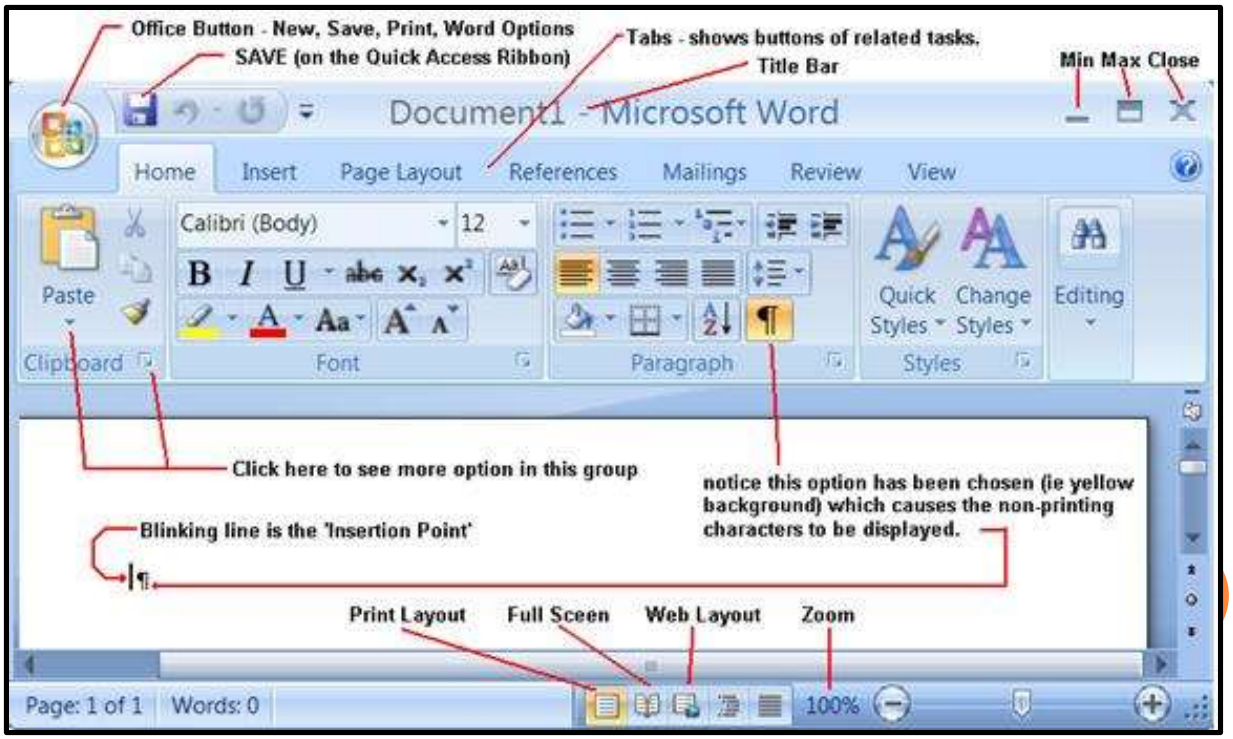
Uses and applications of Software Packages

Uses and applications of Software Packages



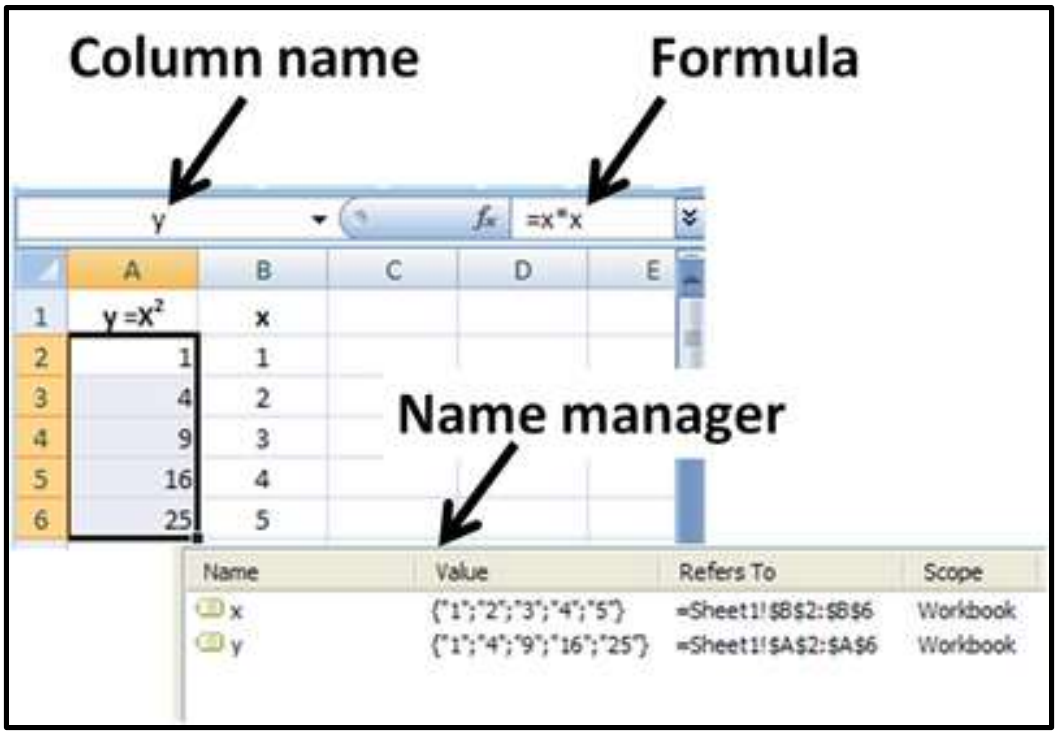
Word Processing Packages

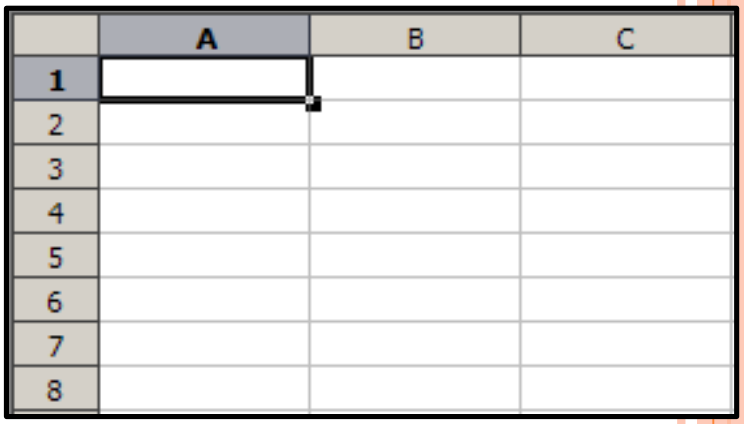
- A **word processor** is software or a device that allows users to create, edit, and print documents.
- It enables you to write text, store it electronically, display it on a screen, modify it by entering commands and characters from the keyboard, and print it.
- Of all computer applications, **word processing** is the most common.



Spread Sheet Packages

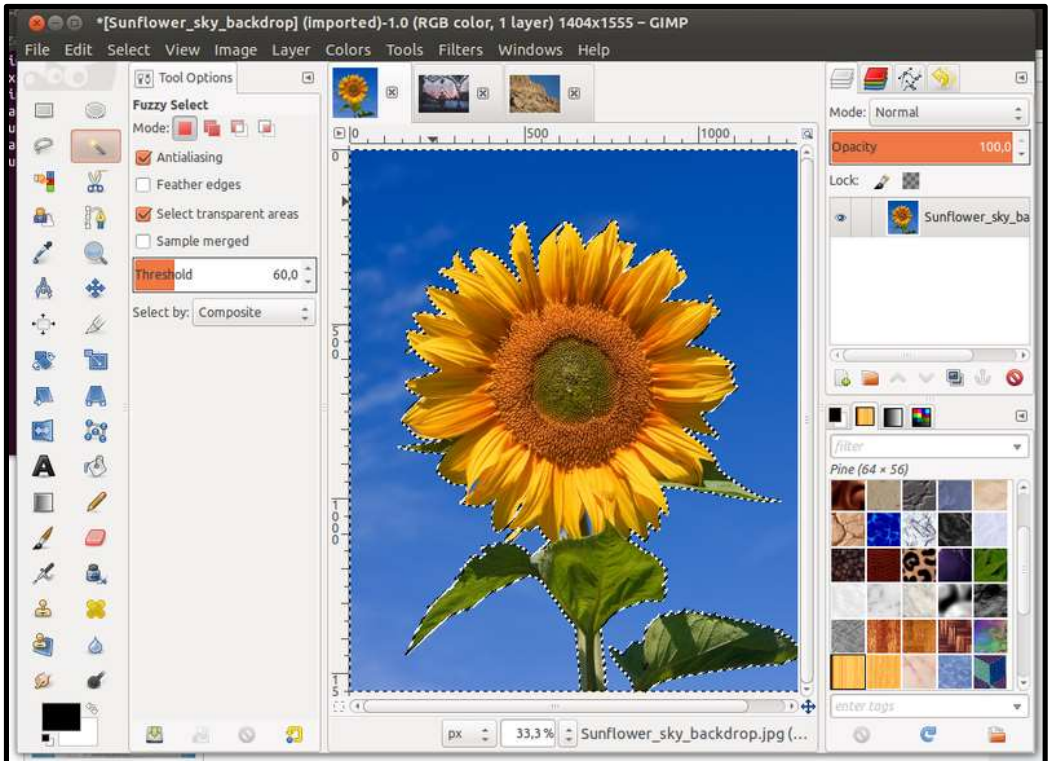
- A **spreadsheet** or worksheet is a file made of rows and columns that help sort data, arrange data easily, and calculate numerical data.
- A **spreadsheet package** is a general purpose computer **package**that is designed to perform calculations.

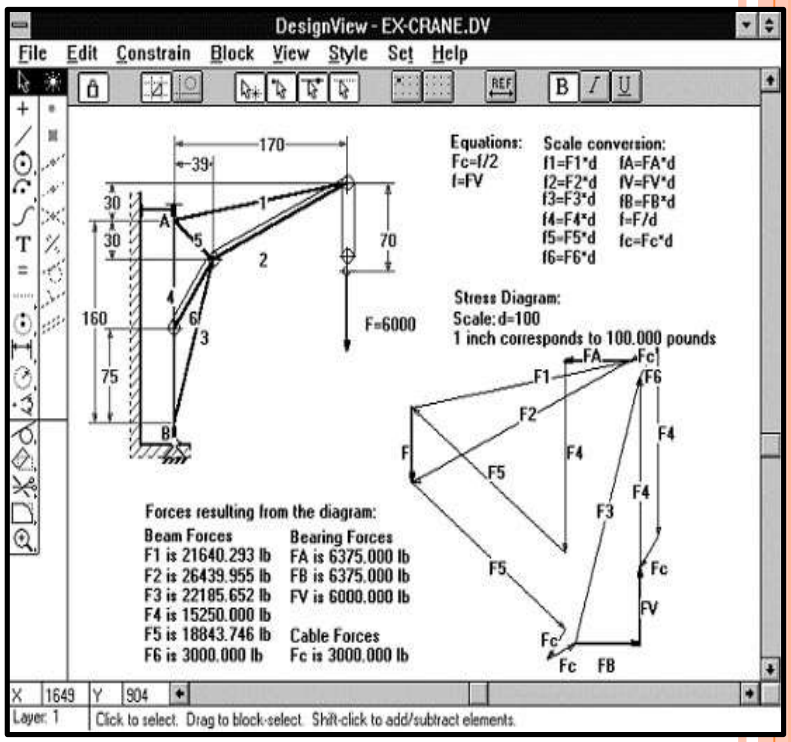




Graphical Packages

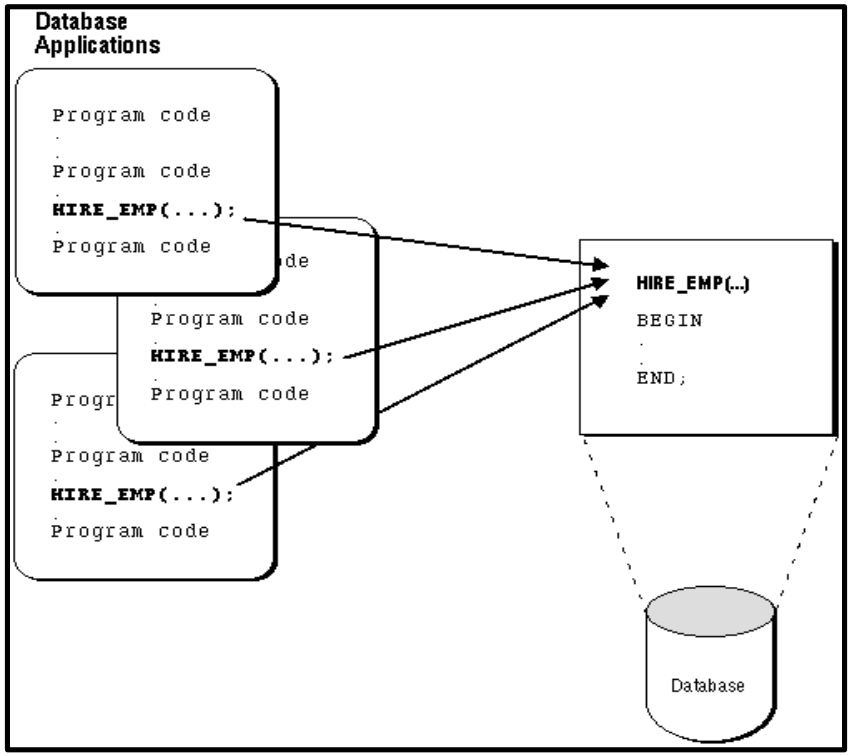
- A **graphics package** is an application that can be used to create and manipulate images on a computer.
- There are two main types of **graphics package**:
  - Painting **packages**.
  - Drawing **packages**.

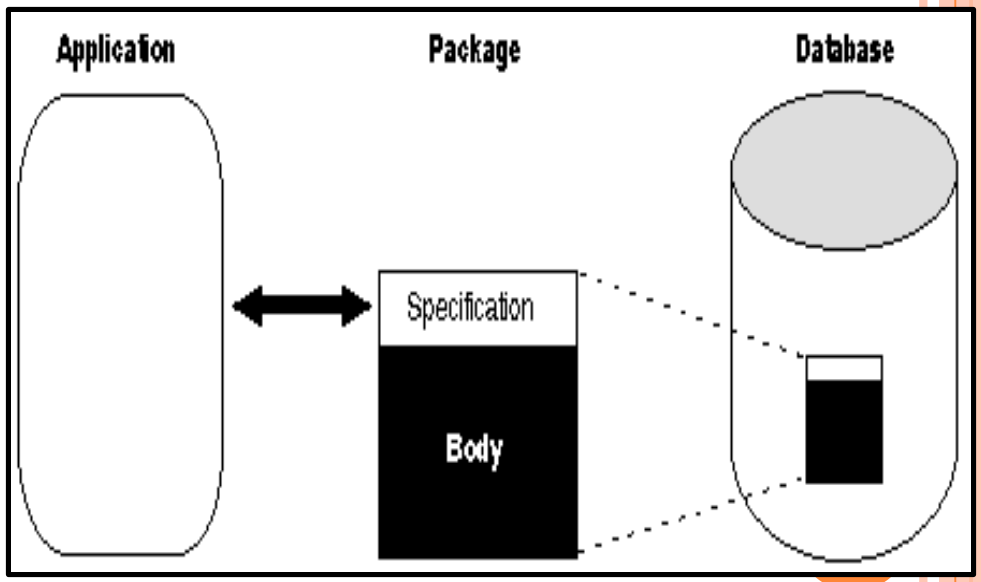




Database Packages

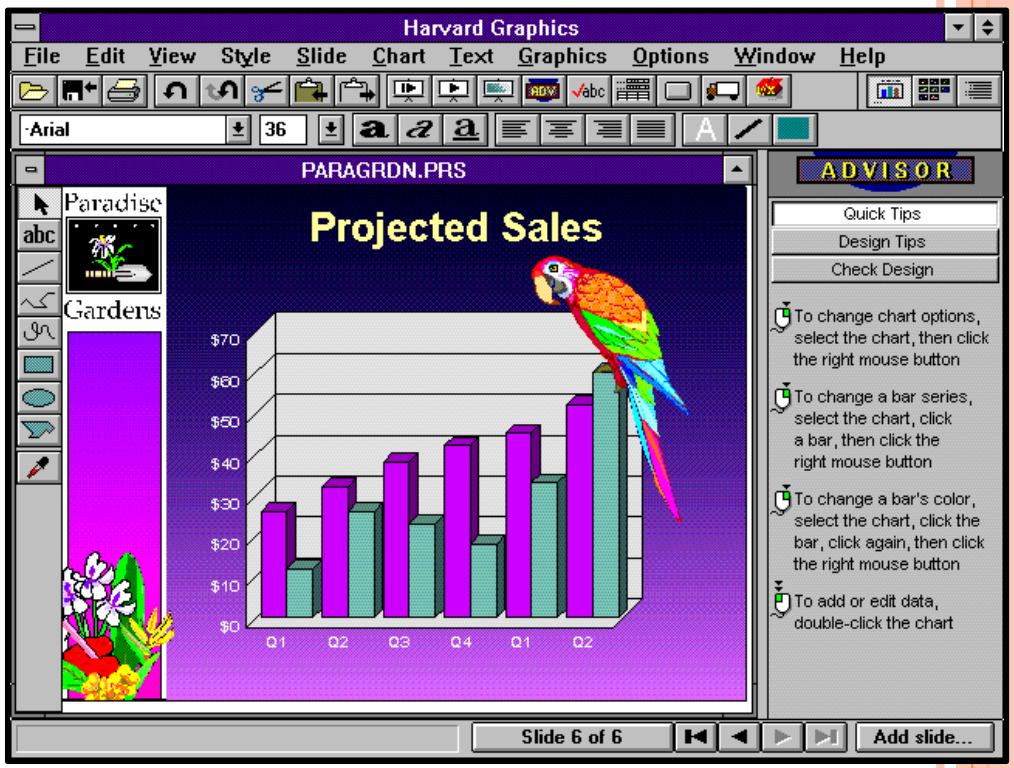
- A **package** is a schema object that groups logically related PL/SQL types, variables, constants, subprograms, cursors, and exceptions.
- A **package** is compiled and stored in the **database**, where many applications can share its contents.





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: an editor that allows text to be inserted and formatted, a method for inserting and manipulating graphic images, and a slide-show system to display the content.



Animation / Video / Sound Packages

- graphics **software** applications support features for creating simple 2D (dimensional) **animated** graphics.
- **Animation Sounds** in both Wav and MP3 formats.
- Many of the tools and application **packages** you will be working with facilitate the inclusion of **video** in the output options. **Video** is a complex form of output.