

# Computer Software

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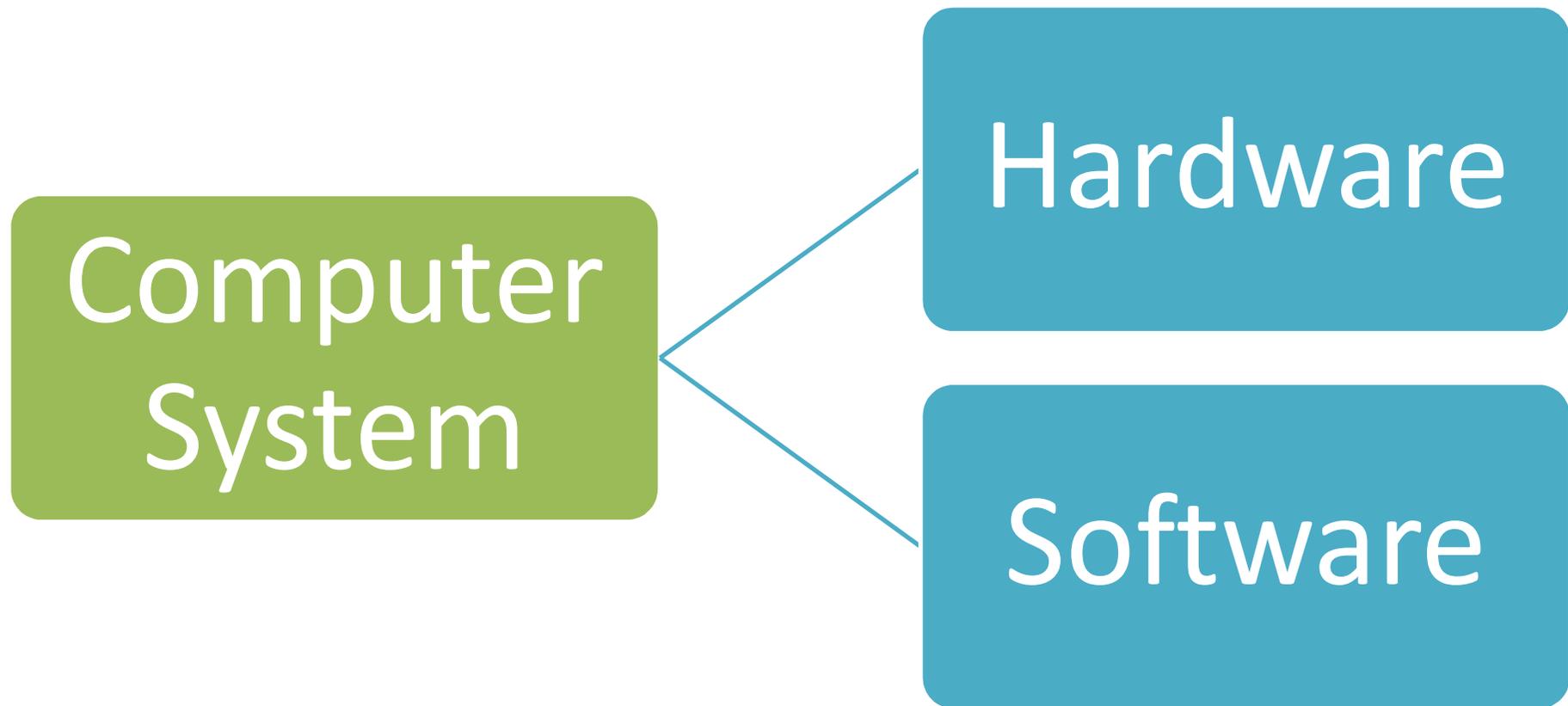
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# Introduction

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# Hardware Vs Software

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- Hardware is the physical part of the computer system.
- Software is the computer program which loads into computer system for particular task.
- Operating system is a system software which is required to activate the hardware part of the computer system.

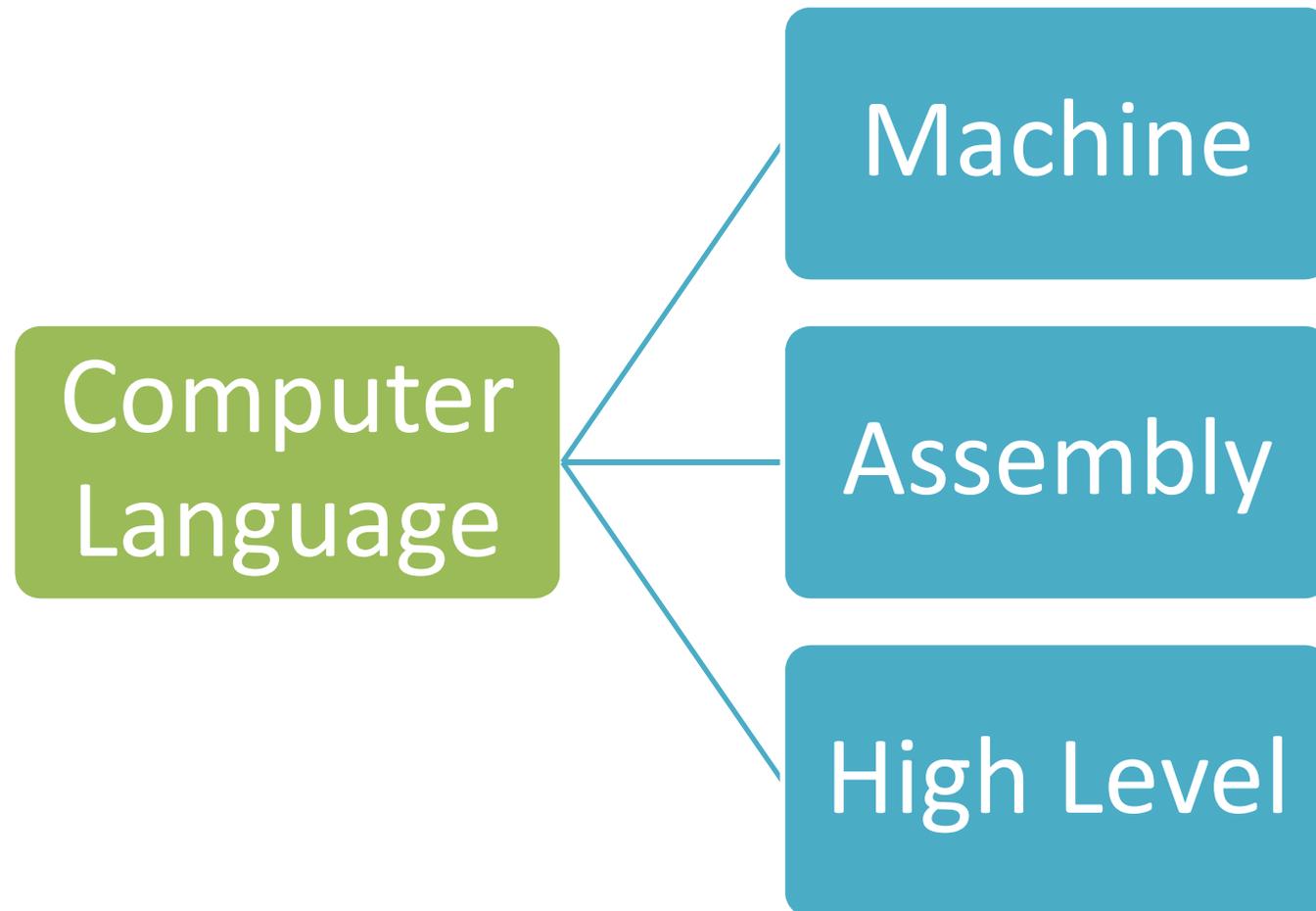
# Software

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- Software is the set of instruction that tells the computer what to do and when to do it.
- The computer uses this instruction to manipulate data, and enhance the proper functioning of the hardware components.
- When the user installs a software, it is stored in the secondary storage, then it is transferred via the hardware of the system to and from the CPU.

# Computer Language

- Language



# Computer Language (Cont...)

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- Machine Language
  - **0's and 1's Format.**
- Assembly Language
  - **0's and 1's Format is converted to some small words like, ADD, SUB etc.**
- High Level Language
  - **Just like common English language.**

# Types of Software

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- System software
  - They are usually written to accomplish loading, execution, storage, and retrieval of files from/into the computer.
  - They are basically operating system, utility software, and language translators.
- Application software
  - Application Software is a computer program designed to help people perform a certain type of task.
  - Examples, Game softwares.
- An application thus differs from
  - an operating system (which runs a computer)
  - a utility (which performs maintenance or general-purpose tasks)
  - a language translator (with which computer programs are created).

# Language Translator

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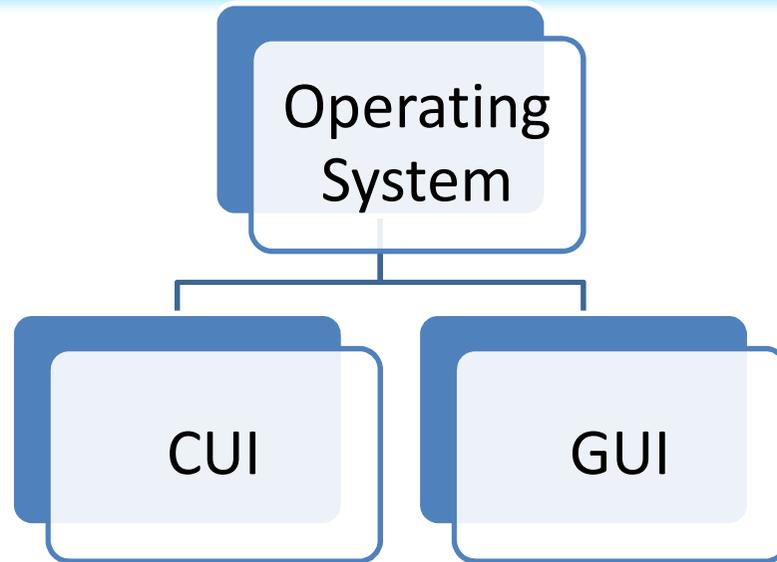
- Compiler
- Interpreter

# Operating System

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- An Operating system is a program that controls the execution of application programs and acts as an interface between the user of a computer and the computer hardware.

# Operating System (Cont...)



CUI

- Provide command line interface
- Require commands for every task

GUI

- Provide Graphical User Interface
- Icons are there for all the tasks

# Functions of OS

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- Memory Management
- Processor Management
- Device Management
- File Management
- Security
- Control over system performance
- Job accounting
- Error detecting aids
- Coordination between other software and users

# Types of OS

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- Batch Processing
  - A group of job is stored in an off-line device like punch card.
  - Operating system executes the jobs one after another in a sequential manner.
  - Used to maximize CPU usage.
- Multiprogramming
  - Multiple programs can be executed simultaneously.
  - Several algorithms are there for multiprogramming.
- Time Sharing OS
  - A time quantum is fixed to execute multiple jobs one after another in a round-robin fashion.
  - The first job executes for the particular time quantum, then next job and so on until all the jobs finish execution.

# Features of DOS

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- Provides CUI (command user interface)
- Commands are required to perform any task.
- Mouse cannot be used to operate.

# Features of Windows

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- It provides graphical user interface (GUI).
- All the commands which should be written in command line interface or DOS, those commands are converted into icons.
- Double click or select the icons and get the work executed.

# DOS (Disk Operating System)

- **Requires Commands for all the task to be performed.**
- **Some commands with its syntax are given below.**

❖ **Time (shows the system time)**

**Syntax:                      time** ↩

❖ **Date (shows the system date)**

**Syntax:                      date** ↩

❖ **Copy con (used to create a file)**

**Syntax:                      copy con <file name>.<extension>** ↩

❖ **Copy (used to copy a file)**

**Syntax:                      copy <source address> <destinationa address>** ↩

❖ **Move** (used to move the existing file from one position to another)

Syntax: `move <source address> <destination address>` ↩

❖ **Md/mkdir** (used to make a directory)

Syntax: `md <directory name>` ↩

or `mkdir <directory name>` ↩

❖ **Cd** (used to change the directory)

Syntax: `cd <directory name>` ↩

❖ **Cd..** (used to move to parent directory)

Syntax: `cd..` ↩

➤ **Rename/ren** (used to rename a file)

Syntax: `ren <old name of file> <new name>` ↩

or `rename<old name> <new name>` ↩

# Different Types of computer virus

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- **Boot Virus :**

- stores itself at the start of a disk and becomes activated by reading, starting or restarting the computer when that disk is in the boot drive.
- This type of virus affects the boot sector of a floppy or hard disk. This is a crucial part of a disk, in which information on the disk itself is stored together with a program that makes it possible to boot (start) the computer from the disk. Examples of boot viruses include: Polyboot.B, AntiEXE

# Cont...

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- **Worms**
- **Trojans or Trojan Horses**
  - programs that have some hidden, generally malicious functionality that the computer does not expect.
- Spyware
- Adware
- Ransomware

# How Viruses are Spread

- Viruses are spread by running infected programs or opening infected files. This can occur by using any of the following methods:
  - Passing floppy disks from PC to PC
  - Downloading (copying) infected files from the Internet
  - Opening an email attachment
  - Booting a PC with an infected bootable disk.
- Computer viruses work in two phases: infection phase and the attack phase.
  - Infection phase: in order to infect a computer, a virus has to possess the chance to get executed before it can infect the computer system and spread to others. Events that can trigger the execution of virus are included above.
  - Attack phase: viruses do destructive things such as deleting files, erasing data on a hard disk, sending random emails or slowing down the processor by sending millions of looped instructions. Since most users will try their best to delete the virus once it launches the attack, most virus delay revealing their presence by launching their attack only after they have had ample opportunity to spread. This means the attack may be delayed for a long time after the infection.

# Prevention of Computer Virus

- Computer users can prepare for a viral infection by creating backups of legitimate original software and data files regularly so that the computer system can be restored if necessary. However, the best prevention may be the installation of current and well-designed antiviral software. Such software can prevent a viral infection and thereby help stop its spread.
- Or obtain a virus checker for your own machine then register the program with the manufacturers. They will regularly send you updated versions of the software while your agreement is current. New viruses keep appearing, so out of date virus software will not protect you and the checker is essential. Install the available security patches, particularly for Microsoft products. Keep your floppy disk write-protected whenever possible.
- If you are really cautious, change the set-up option in your computer's BIOS so that it will always boot from the hard disk, not from floppies.
- Write protect MS Word's Normal template to get limited protection against macro viruses. This template will be a file called Normal.dot. Select the Read Only bod. Note that this will not disinfect existing infected files.
- In Word, turn on the Macro Virus Protection Option in Tools, then Options, then Security Tab and finally Macro Security button, by setting the level of security you desire for the macros.. This will warn you if files contain macros. You or a colleague may have created the macros for some legitimate purpose but they could also be viruses. If a warning appears, open the file only it comes from a trusted source. Note that this procedure will warn you about macros (whether malicious or benign) but will not disinfect existing infected files.

# Antivirus software

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- **Antivirus or anti-virus software (often abbreviated as AV), sometimes known as antimalware software, is computer software used to prevent, detect and remove malicious software.**
- Antivirus (or anti- virus)software is used to safeguard a computer from malware, including viruses, computer worms, and Trojan horses

# Computer Security

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- **Backup**
- **Encryption**
- **Approved Users**
- **Passwords**
- **Firewalls**
- **Intrusion Detection Systems**