

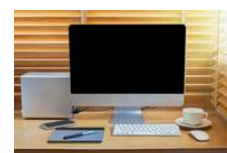
Computer Details in a Nutshell



A Dictionary Definition of Computer:

A programmable electronic device designed to accept data, perform prescribed mathematical and logical operations at high speed, and display the results of these operations. Mainframes, desktop and laptop computers, tablets, and smart phones are some of the different types of computers.

<https://www.dictionary.com/browse/computer>



Programmable Device



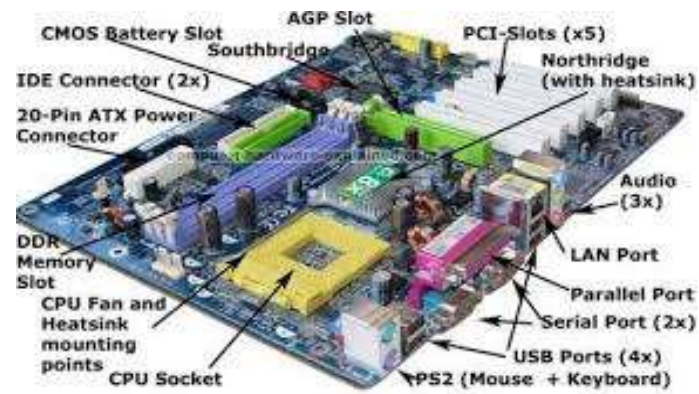
Hardware + Software

A Passing Look at the Basic Computer Hardware

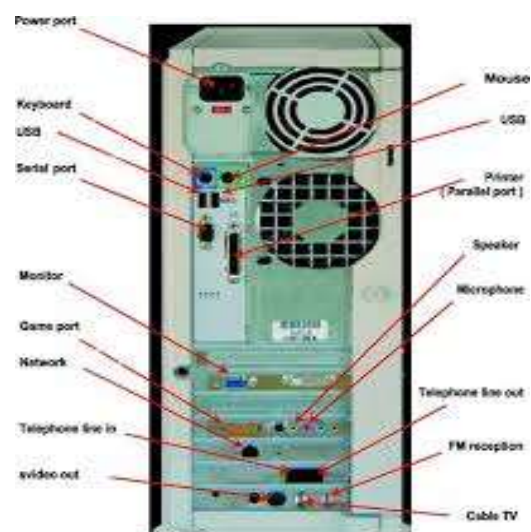
A Hardware

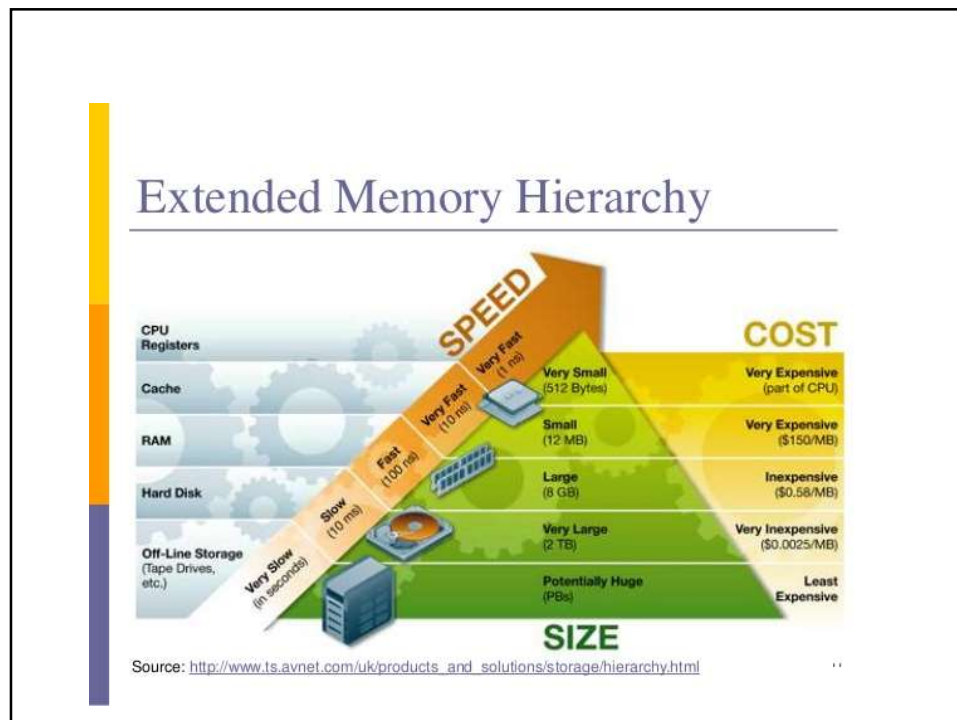
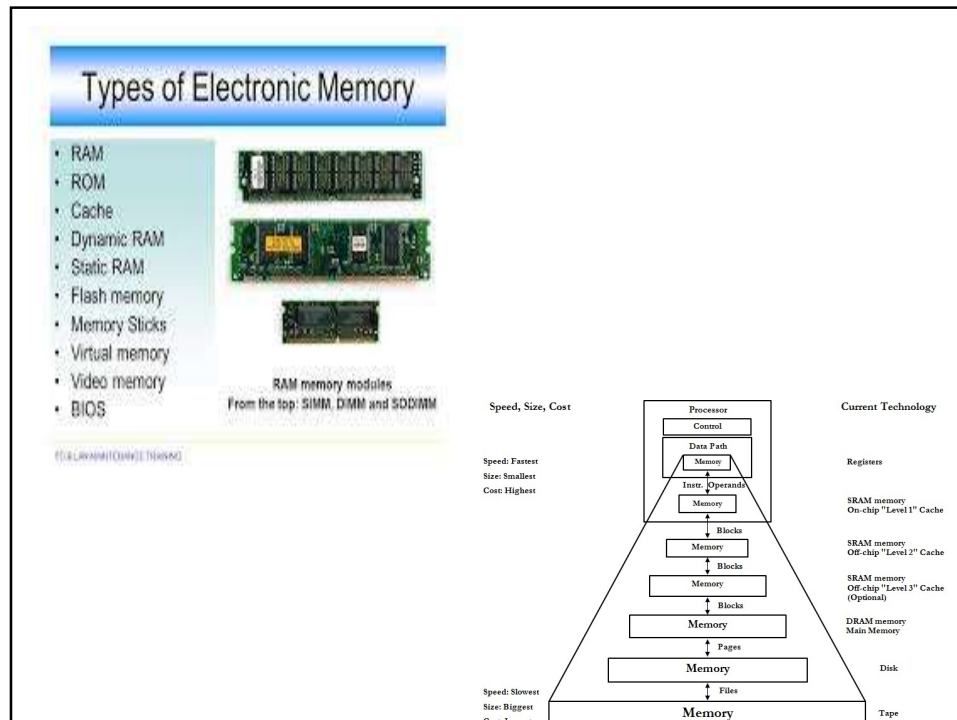


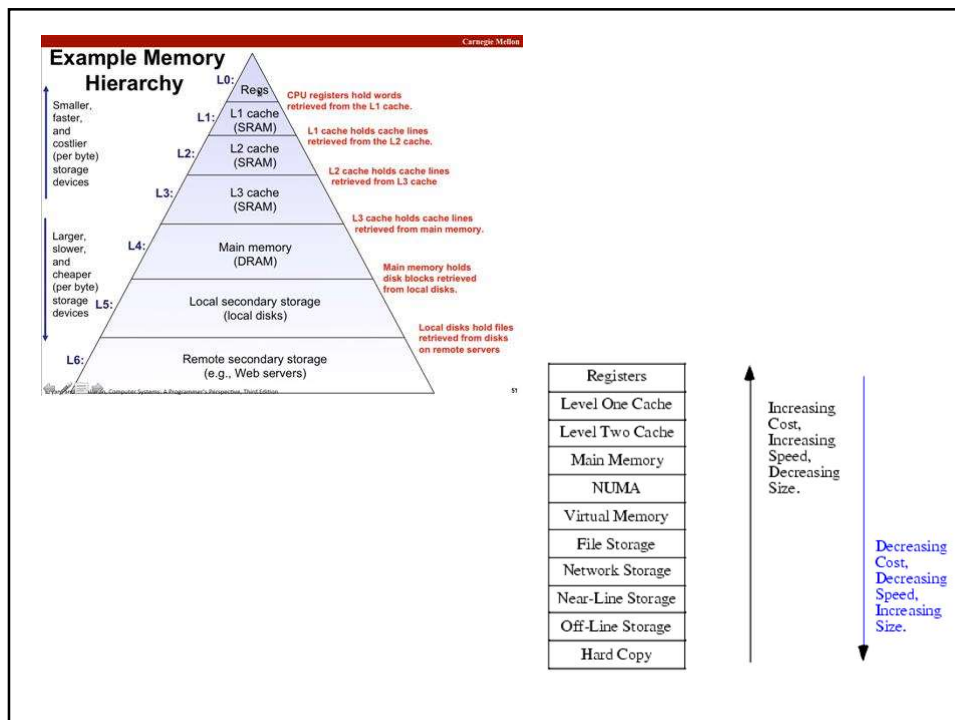
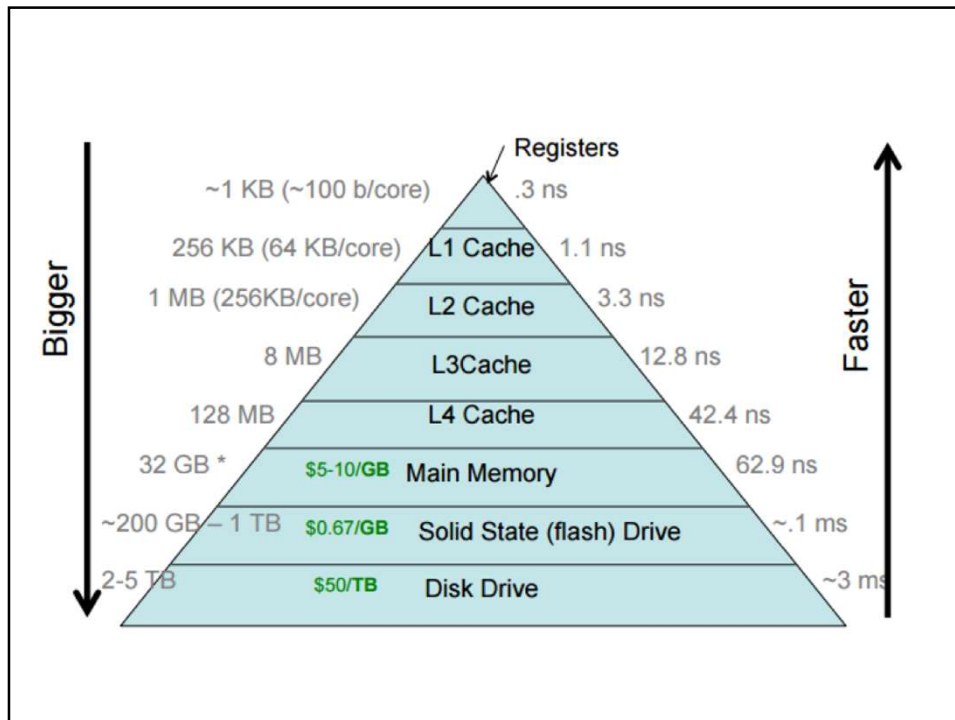
Motherboard

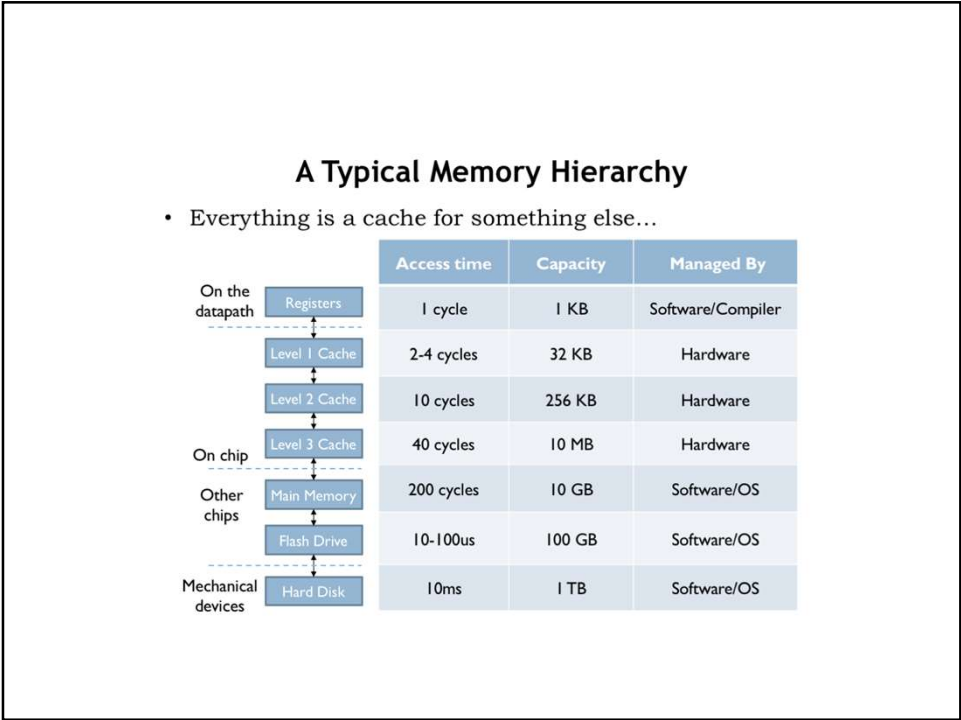
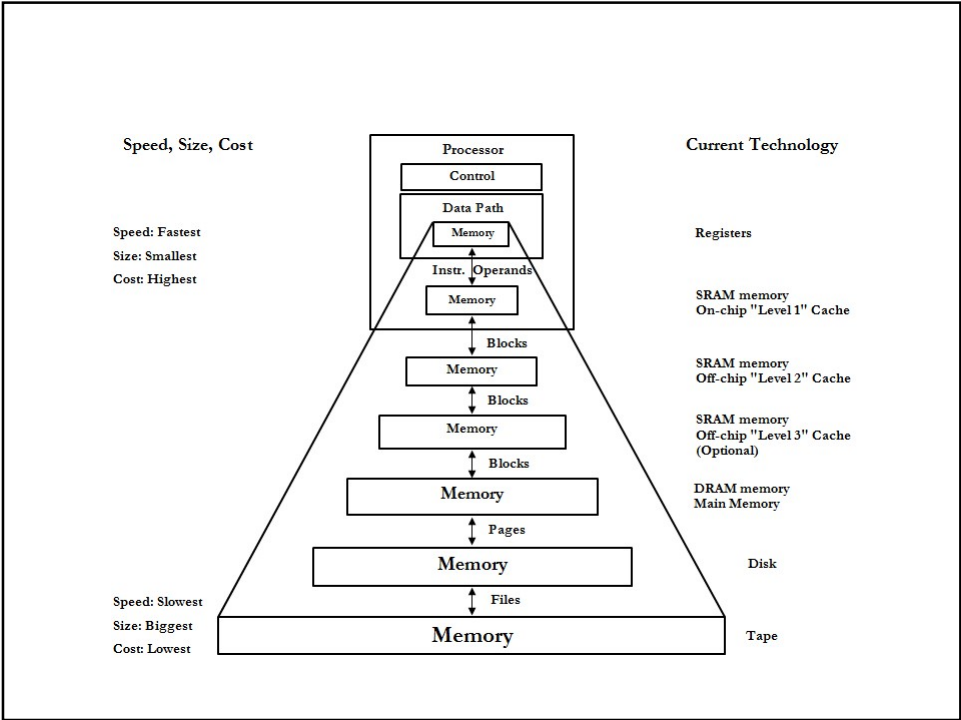


Back view of the Cabinet









A Passing Look at the Basic Computer Software

System Software

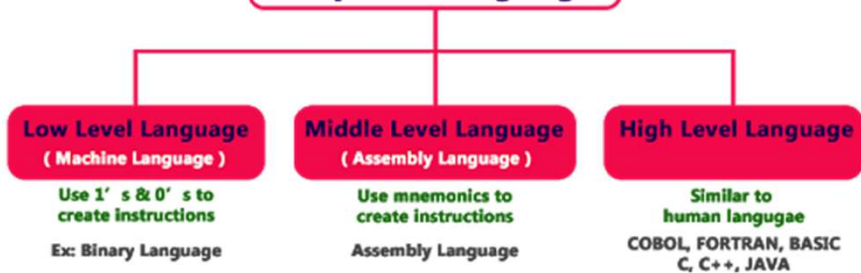
- **Operating System**
 - MS-DOS
 - MS Windows 7/Vista/8/10/Pro ..,
 - Linux/Ubuntu/RedHat/FEDORA/SOLARIS
 - Apple mac OS
 - Mavericks (OS X 10.9)
 - Yosemite (OS X 10.10)
 - El Capitan (OS X 10.11)
 - Mojave (OS X 10.14), etc
- **Device drivers**
- **Middleware.**
- **Utility software**
- **Shells and windowing systems**

Application Software

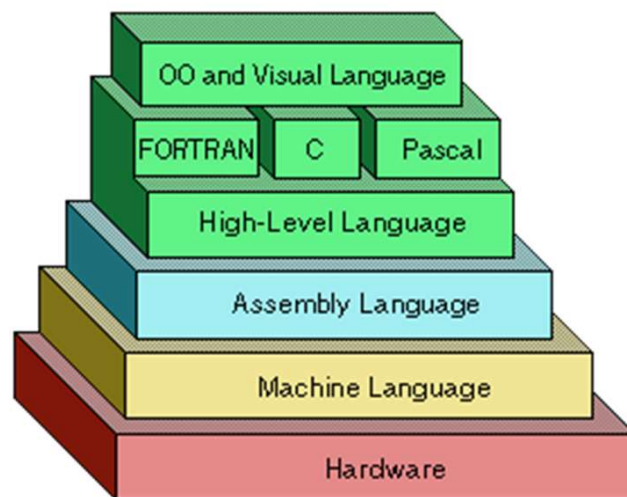
- **WORD Processing**
 - MSWord/Notepad/Wordpad/Gvim/Vim/Emacs/..,
- **DataBase**
 - Oracle/MS Access/..
- **Spreadsheet**
 - Apple Numbers/MS-Excel/..
- **MultiMedia**
 - Media Player/Real Player
- etc.

To develop these and many more we need Computer Languages, Compilers etc.

Computer Languages



Computer ← {Compiler/Assembler/Interpreter..} → Human

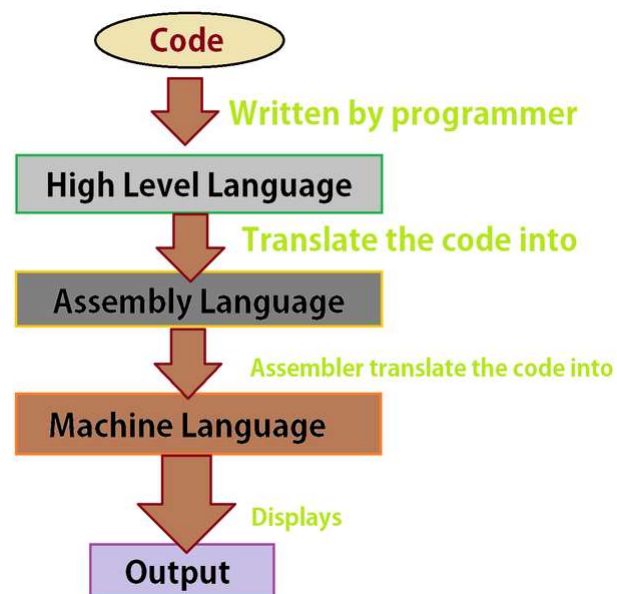


Level 6	User	Executable Programs
Level 5	High Level Language	C++ , Java
Level 4	Assembly Language	Assembly Code
Level 3	System Software	Operating System
Level 2	Machine	Instruction Set Architecture
Level 1	Control	Microcode
Level 0	Digital Logic	Circuits , Gates

Computers are used to compute! Computing?

A **computation** is any type of calculation that includes both arithmetical and non-arithmetical steps and which follows a well-defined model (e.g. an algorithm). Mechanical or electronic devices (or, historically, people) that perform **computations** are known as **computers**.

<https://en.wikipedia.org/wiki/Computation>



Types of Computing Environments

- Personal **Computing** Environment
- Time Sharing **Computing** Environment
- Client Server **Computing** Environment
- Distributed **Computing** Environment
- Cloud **Computing** Environment
- Cluster **Computing** Environment
- etc...

Types of Computers



Brief History of Computers

1 st Generation Computer (use of Vacuum Tubes)	ENIAC, EDSAC, EDVAC, UNIVAC – I, etc. (1942-55)
2 nd Generation Computer (use of Transistors, Diodes)	IBM 1401, IBM 1620, CDC 1604, etc. (1955-64)
3 rd Generation Computer (use of Integrated Circuits)	IBM-360, ICL-2900, ICL- 1900 series, etc. (1964-75)
4 th Generation Computer (use of Microprocessors)	Desktops/Laptop (1975-89)
5 th Generation Computer (use of Massive No. CPUs)	Desktops/Laptops/ Palmtops/ Notebook etc. (1989-Present)



Lec-1: Basics-I

Summary of today's Lecture

- Introduction to Course
- Computer Hardware
- Computer Software
- History of Computers and Computer Languages

Lec-2: Basics-II

Summary of the last Lecture

- **Introduction to Course**
- **Computer Hardware**
- **Computer Software**
- **History of Computers and Computer Languages**