Computer Memory and its Types

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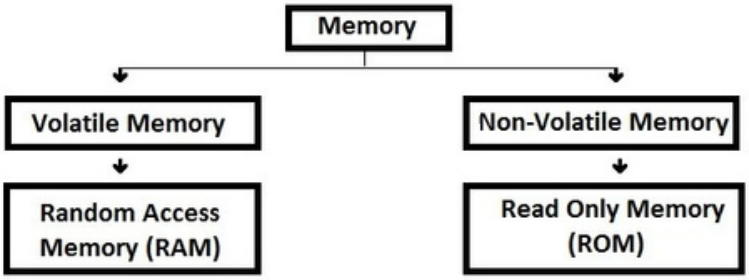
Computer memory is is one of the most important element in a computer system.



MEMORY HIERARCHY

The memory is characterized on the basis of two keys factors; capacity and access time. The lesser the access time, the faster is the speed of memory. The computer uses a hierarchy of memory that is organized in a manner to enable the fastest speed and largest capacity of memory.

Types of memory

Generally, the memory is classified into two categories

(a) Primary memory or Main memory
(b) Secondary memory or Auxiliary memory

PRIMARY MEMORY

The memory unit that communicates directly with the CPU is called Main Memory.

Primary memory is further classified into two categories:

1. Random Access Memory (RAM)
RAM is used for the temporary storage of input data, output data and intermediate results.
RAM is a microchip implemented using semiconductors.

There are two categories of RAM:
(a) Dynamic RAM (DRAM) **(b)** Static RAM (SRAM)

2. Read Only Memory (ROM)

It is known as non-volatile memory or permanent storage. Once a ROM chip is programmed at the time of manufacturing, it cannot be programmed or rewritten.

There are three categories of ROM:
(a) Programmable ROM (PROM)
(b) Erasable Programmable ROM (EPROM)
(c) Electrically Erasable Programmable ROM (EEPROM)

SECONDARY MEMORY

Secondary storage is used to store data and programs when they are not being processed. It is also non-volatile in nature. Due to this, the data remain in the secondary storage as long as it is not overwritten or deleted by the user. It is a permanent storage device.

Secondary memory devices include:

(a) **Magnetic Disks** :- (i) Hard Disk Drive (ii) Floppy Disk (iii) Memory Stick
(b) **Optical Disks** :- (i) CD (ii) DVD (iii) Blue-ray Disk

(c) **Solid State Disks** :-(i) Pen/Flash/Thumb Drive

Some important terms related to MEMORY MEASUREMENT

When we use a RAM, ROM, Floppy disk or hard disk, the data is measured using some unit. In computer terminology, they are called Nibble, Bit, Byte, Kilobyte, Megabyte, Gigabyte, Terabyte, Petabyte,Exabyte, Zettabyte.

UNITS OF COMPUTER MEMORY MEASUREMENTS

1 Bit = Binary Digit

8 Bits = 1 Byte = 2 Nibble

1024 Bytes = 1 KB (Kilo Byte)

1024 KB = 1 MB (Mega Byte)

1024 MB = 1 GB (Giga Byte)

1024 GB = 1 TB (Tera Byte)

1024 TB = 1 PB (Peta Byte)

1024 PB = 1EB (Exa Byte)

1024 EB = 1 ZB (Zetta Byte)

1024 ZB = 1 YB (Yotta Byte)

1024 YB = 1 (Bronto Byte)

1024 Brontobyte = 1 (Geop Byte)

Bits is the smallest memory measurement unit.

Geop Byte is the highest memory measurement unit.

Some Abbreviations :-

DVR :Digital Video Recorder
EBCDIC:Extended Binary Coded decimal Interchange Code
EDO :Extended Data Out
EDSAC :Electronic Delay Storage Automatic Calculator
EGA :Enhanced Graphic Array/Exterior Gateway Protocol