**The memory triangle. What does it represent regarding speed, cost, distance from CPU?**

They repressents from top to bottom those hardware components that are the most costy, quickest, and are closer to the cpu.

**What do these acronyms stand for? What do the technologies mean? RAM, ROM, DRAM, SRAM,**

-It is the rapressentation of the first or first two letters of a word

-Random access memory

[volatile memory](http://www.computerhope.com/jargon/v/volamemo.htm) and requires power in order to keep the data accessible, if power is lost all data contained in memory lost.

 A random-access memory device allows [data](http://en.wikipedia.org/wiki/Data) items to be read and written in roughly the same amount of time regardless of the order in which data items are accessed

-Rom Read only memory

As the name indicates, data stored in ROM may only be read; it is either modified with extreme difficulty or not at all.

 Unlike Random Access Memory ([RAM](http://www.computerhope.com/jargon/r/ram.htm)), ROM is [non-volatile](http://www.computerhope.com/jargon/n/nonvolat.htm) which means it keeps its contents regardless of whether or not it has power.

-Dinamic Random Memory

 these cells must be refreshed with new electricity every few [milliseconds](http://www.computerhope.com/jargon/m/measure.htm) allowing the memory to keep its charge and hold the data as long as needed.

This type of memory is a [volatile memory](http://www.computerhope.com/jargon/v/volamemo.htm) and if the computer is powered off, the information within the memory is lost.

-Static Random Memory

SRAM exhibits [data remanence](http://en.wikipedia.org/wiki/Data_remanence),[[1]](http://en.wikipedia.org/wiki/Static_random-access_memory" \l "cite_note-skorobogatov-1) but it is still [*volatile*](http://en.wikipedia.org/wiki/Volatile_memory) in the conventional sense that data is eventually lost when the memory is not powered.

* SRAM is more expensive and less dense than DRAM and is therefore not used for high-capacity, low-cost applications such as the main [memory](http://en.wikipedia.org/wiki/Computer_memory) in [personal computers](http://en.wikipedia.org/wiki/Personal_computer).

**What is meant by volatile and non-volatile,**

Volatile memory, contrary to non-volatile memory, is computer memory that requires power to maintain the stored information; it retains its contents while powered on but when the power is interrupted the stored data is immediately lost.

Volatile memory has several uses, for example as a RAM drive. In addition to usually being faster than forms of mass storage such as a hard drive, volatility can protect sensitive information, which becomes unavailable on power-down.

Non volatile

is computer memory that can get back stored information even when not powered

that can get back stored information even when not powered. Examples of non-volatile memory include [read-only memory](http://en.wikipedia.org/wiki/Read-only_memory), [flash memory](http://en.wikipedia.org/wiki/Flash_memory),

**Advantages/disadvantages of DRAM versus SRAM. (speed versus cost)**

Dram

Advantages:

•Very dense

•Cost per bit is low

•Driver of new technologies

Disadvantages:

•Process complexity

•Design complexity

•Read and Refresh periodically

•External circuitry more complicated

**Sram**

* **Simplicity:** SRAMs don't require external refresh circuitry or other work in order for them to keep their data intact.
* **Speed:** SRAM is faster than DRAM.

In contrast, SRAMs have the following weaknesses, compared to DRAMs:

* **Cost:** SRAM is, byte for byte, several times more expensive than DRAM.
* **Size:** SRAMs take up much more space than DRAMs (which is part of why the cost is higher).

Read more: Difference Between SRAM and DRAM | Difference Between | SRAM vs DRAM <http://www.differencebetween.net/technology/difference-between-sram-and-dram/#ixzz3LZRq7oe5>

**Asynchronous RAM (see DRAM) : fast page mode, burst mode**

This refers to the fact that the memory is not synchronized to the system clock. A memory access is begun, and a certain period of time later the memory value appears on the bus.

- Fast page mode or FPM memory

is slightly faster than conventional DRAM. While standard DRAM requires that a row and column be sent for each access, FPM works by sending the row address just once for many accesses to memory in locations near each other, improving access time. FPM memory itself is an improved version of its predecessor, page mode memory, which is very rarely seen now.

-Burst mode (alternatively burst-mode)

is a generic electronics term referring to any situation in which a device is transmitting data repeatedly without going through all the steps required to transmit each piece of data in a separate transaction. The usual reason for having a burst mode capability, or using burst mode, is to increase data throughput.[1] The steps left out while performing a burst mode transaction may include A: waiting for input from another device; B: waiting for an internal process to terminate before continuing the transfer of data; or C: transmitting information which would be required for a complete transaction, but which is inherent in the use of burst mode.[2]

**Synchronous RAM ( SDRAM). SDRAM is faster than DRAM. Clock allows sequential logic circuits (programs). Burst mode can more efficiently synchronize with the bus than with asynchronous DRAM.**

What do these acronyms stand for? What do the technologies mean? ROM: PROM, EPROM, EEPROM, Flash

- A programmable read-only memory (PROM)

The key difference from a standard ROM is that the data is written into a ROM during manufacture, while with a PROM the data is programmed into them after manufacture. Once programed it can not be erased

-EPROM

erasable programmable read only memory,(EPROM)

is a type of memory chip that retains its data when its power supply is switched off.

 Once programmed, an EPROM can be erased by exposing it to strong [ultraviolet](http://en.wikipedia.org/wiki/Ultraviolet) light source (such as from a mercury-vapor light). EPROMs are easily recognizable by the transparent [fused quartz](http://en.wikipedia.org/wiki/Fused_quartz) window in the top of the package, through which the [silicon](http://en.wikipedia.org/wiki/Silicon) chip is visible, and which permits exposure to [UV light](http://en.wikipedia.org/wiki/UV_light) during erasing. It can be erased and completely reprogramed for a limited number of times

-EEPROM

Electrically Erasable Programmable Read-Only Memory

is a type of non-volatile memory used in computers and other electronic devices to store small amounts of data that must be saved when power is removed, e.g., calibration tables or device configuration.

 Le operazioni di scrittura, cancellazione e riscrittura hanno luogo elettricamente.

-flash

is an electronic non-volatile computer storage medium that can be electrically erased and reprogrammed.

There are two main types of flash memory, which are named after the NAND and NOR logic gates. The internal characteristics of the individual flash memory cells exhibit characteristics similar to those of the corresponding gates.

**Latency. CAS latency**

delay time between the moment a memory controller tells the memory module to access a particular memory column on a RAM module, and the moment the data from the given array location is available on the module's output pins.

Flash memory is sometimes considered to be non-volatile random access memory. NVRAM is memory that behaves like a RAM but does not lose its value when the power goes off. However, FLASH memory is limited in its rewritability and does not truly behave like RAM.

**Magnetic, optical, solid state**

**Magnetic**

Hard drives are the primary storage device in most personal computers. Hard drives use

**Advatege**

Inexpensive storage

Very fast access to data

Direct access on any part of the drive

Very large amounts of storage spacemagnets to record data on rotating metal platters.

**Disadvantage**

Data can be altered by magnetic fields, dust, mechanical problems

Gradually lose their charge over time – data lost

Hard disks eventually fail which stops the computer from working

The surface of the disk, can lose data within sectors with regular crashes

Cannot transfer the disk to another computer easily

**Optical**

Optical drives include CD’s, DVD’s and Blu-ray disks and they all use a lens to read and write information. CD-R, DVD-R, BD-R can be written to once and are then Read only, while CD-RW, DVD-RW, BD-RW are Read Write so they can be written many times.

**Advatage**

Optical discs are portable and can be read on many different devices

Very inexpensive

Memory is retained even when the power is turned off

Durable and last a long time

Archived data cannot be overwritten on read only CD-R, DVD-R, BD-R formats

Can random access data no matter where or when it was stored

**Disadvantage**

Require special drives to read/write

Compared to other storage devices they have little storage

Can be expensive per GB/TB

There are compatibility issues with different drives

Lack of standards for grading quality and for longevity tests

You can write once on read only CD-R, DVD-R, BD-R formats

**Solid state**

Solid state drives use flash memory and could possibly make conventional hard drives obsolete. They are compatible with SATA or SAS, and use standard form factors of 3.5-, 2.5- or 1.8-inch.

**Advantage**

Start-up faster due to no spin-up and they are faster than magnetic hard drives

When seeks on the hard disk seeks are limited they have faster launch times

They last longer and some are waterproof

All data stored can be scanned quickly for security purposes

**Disadvatage**

Solid State Storage devices are expensive

Vulnerable to abrupt power loss, magnetic fields, and electrical and static charges

Limited writes cycles wear out after 100,000-300,000

High endurance

Larger erase blocks make random write speeds slow

**tracks, sectors, cylinders**

A disk is divided into tracks, cylinders, and sectors. A track is that portion of a disk which passes under a single stationary head during a disk rotation, a ring 1 bit wide. A cylinder is comprised of the set of tracks described by all the heads (on separate platters) at a single seek position. Each cylinder is equidistant from the center of the disk. A track is divided into segments of sectors, which is the basic unit of storage.

A subdivision of a track on a magnetic disk or optical each sector stores a fixed amount

**latency, seek latency, rotational latency**

Mechanical latencies, measured in milliseconds, include both seek time and rotational latency. Seek Time is measured defines the amount of time it takes a hard drive’s read/write head to find the physical location of a piece of data on the disk. Latency is the average time for the sector being accessed to rotate into position under a head, after a completed seek. It is easily calculated from the spindle speed, being the time for half a rotation. A drive’s average access time is the interval between the time a request for data is made by the system and the time the data is available from the drive. Access time includes the actual seek time, rotational latency, and command processing overhead time.

**fragmentation**

In computer storage, fragmentation is a phenomenon in which storage space is used inefficiently, reducing capacity or performance and often both. The exact consequences of fragmentation depend on the specific system of storage allocation in use and the particular form of fragmentation. In many cases, fragmentation leads to storage space being "wasted", and in that case the term

also refers to the wasted space itself. For other systems (e.g. the FAT file system) the space used to store given data (e.g. files) is the same regardless of the degree of fragmentation (from none to extreme).

**Optical drives: pits and lands, writable, rewritable, double density**

lasers in CD, DVD, Blu-Ray DVD