Hard Disk Characteristics

The memories secondary (or Of mass) I am of the supports That allow Of to memorize inway permanent the data.

I am said " *Of mass* " in How much can to memorize a amount Of data superiorrespect at the memory principal.

These memories I am characterized from:

- **Non volatility:** the data stored Not they come lost at the shutdown of the computer

- **Great capacity Of storage:** a unit Of memory secondary has capacity greater (Also Of different orders Of size) respect at the memory central
- **Low costs:** The cost Of a memory secondary And minor respect at the memorycentral.

There technology used For there registration of the data can to be:

- **Magnetic type** in which data storage occurs by magnetizing the media surface with a dedicated read/write head. Data can be written, erased and rewritten an unlimited number of times, without the support being worn out. Examples Of supports magnetic I am The hard disk.

- **Optical Type** in which the memorization of the data happens "burning up" with a laser the surface of the support.

- **to state solid** in which the memorization happens on a flash memory

THE devices magnetic

Magnetic devices exploit the phenomenon of **polarity** according to which two magnets Yes they attract or they reject to second That the poly they are Of sign opposite to or the same.

Two of the uses more widespread Of this technology I am The **hard disk**
And the **floppy disk** .

Currently And of use common to possess a computer gifted Of one or more hard disk but,to get to today's levels it took years of studies and technological process. The history of harddisk And of archiving of the data in effects And started many years does.

Years '20: the punched cards they represented the only one way Of save and keep the

data;

Years '30: is born The tape magnetic That it was speeding up The process Of reading And writing.

1950s : IBM introduces the first hard disk, made up of 50 24" disks, 1.50 meters high,weighing almost 1000 kg and capable of storing 5 Mb, capable of reading and writing data in any order And Not necessarily sequential.

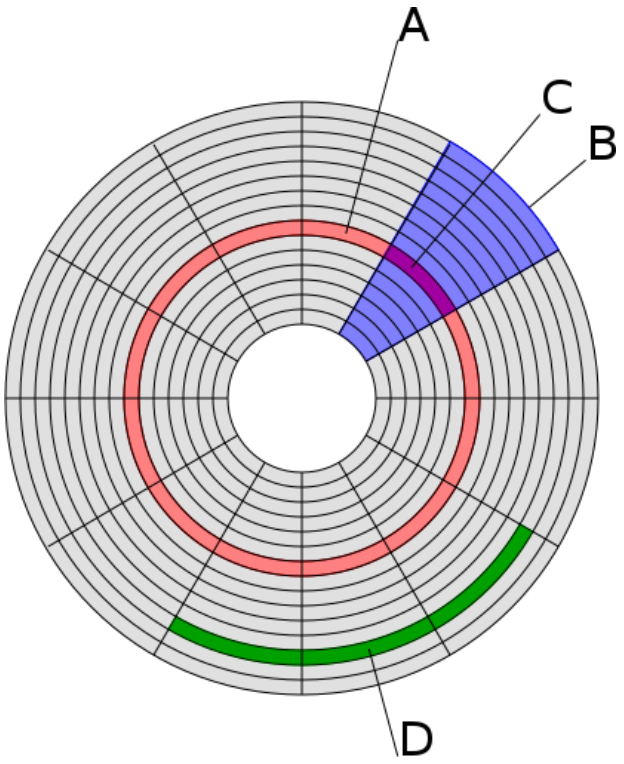
Structure Of a hard disk

Everyone The hard disk they have there itself structure physics And they use there itself logic Forto memorize data.

In particular, a disk fixed And composed from one or more dishes Of aluminum rotating onsame axis Of rotation, covered Of material magnetic And from heads Of reading And writing.

Each platter is made up of two surfaces or the **faces** of the disk; each face is divided into **tracks** and **sectors** ; the set of tracks in a given radial position is called **a cylinder** , While groups contiguous Of sectors they come called **clusters** .

Everything is fine trace Like this as the sectors I am identified uniquely with a number.



Structure Of a hard disk

Characteristics Of a hard disk

- The characteristics main Of a hard disk I am:

  - **there capacity:** in type expressed in gigabytes (GB);
  - **access time:** it is the average time needed for a given place in a random part of the hard disk can be found. The time taken it depends on the fact that the head must move, and at the same time the disk needs to spin until The given Interesting Not Yes finds under there head;
  - **there speed Of transfer:** And there amount Of data That the hard disk And theoretically capable of reading or writing to the disk at a given time time.

- Other characteristics influence in measure minor the performance Of a hard disk I am:

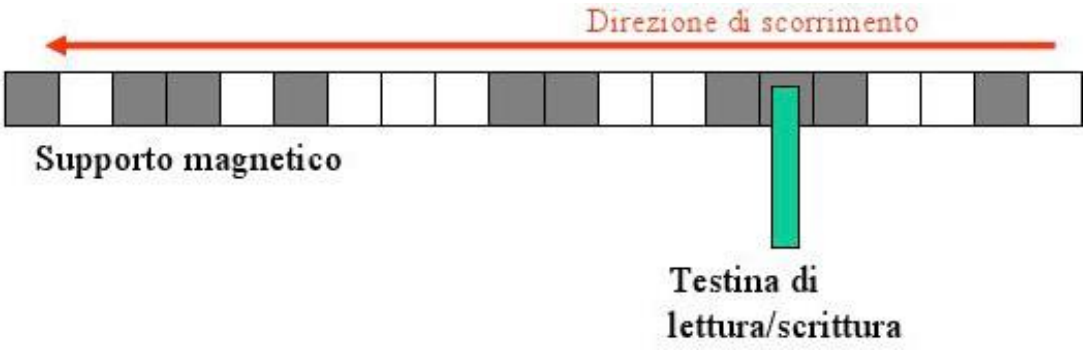
  - **The buffer of memory:** it is a small cache memory that has the task of storing the last data read or written from the disk. In case a program reads the same information repeatedly, this can be found In the buffer instead of on disk. The buffer being a electronic component and not mechanical, the transfer speed is much greater, over time, the capacity of this memory has gone Always increasing, currently 16 MB I am a dimension Enoughusual.
  - **the speed of the interface:** important as the type of technology used specifies the maximum speed at which information can be transferred from or For the hard disk. The main technologies used I am: FDI, FDI(*Integrated Drive Electronics*); ANDIDE; SCSI(*Small Computers System Interface*); FireWire; SATA; USB.

Reading And writing Of a hard disk

The head of a hard disk works like the needle of a turntable, but interacts with level magnetic with there surface of the disk without That happen any contact physicist.

The head acts on the direction of magnetization: each direction corresponds to a bit of information (1 or 0) and in this way the head " **writes** " the information that was given to it communicated, or " **law** " the state from the magnetization from the surface of the disk.

In particular, during the **writing phase** , the head emits electrical impulses that polarize in one of the two ways possible the particles magnetic present on the support, While in phase Of reading,the magnetic particles induce an electric current on the head which is different depending on the head from the polarity from the cell in reading.



Reading And writing hard disk

Formatting Of a hard disk

A disk new Not And divided in tracks And sectors in How much there partition can to varydepending on the operating system used. The process of dividing the record into tracks and sectors is called " **Formatting** ". Logically, with formatting, a disk is created directory principal, said **root** , to start from the Which the user can create the various subfoldersFor to save the own data.

Formatting can be done by the user or by the manufacturer firstOf enter The disk on the market.