



QUANDO UN DATO È CANCELLATO?

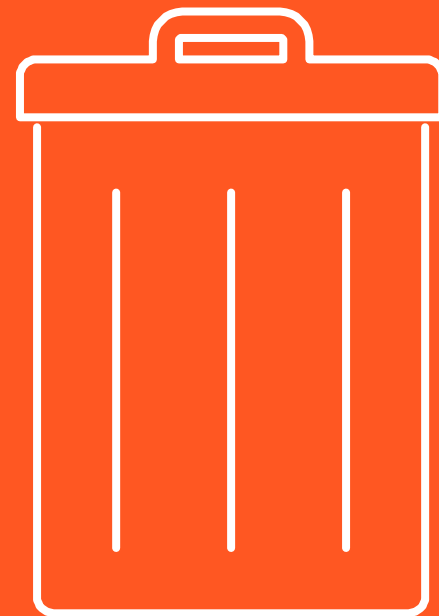
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w.eeopen

1.

CANCELLARE





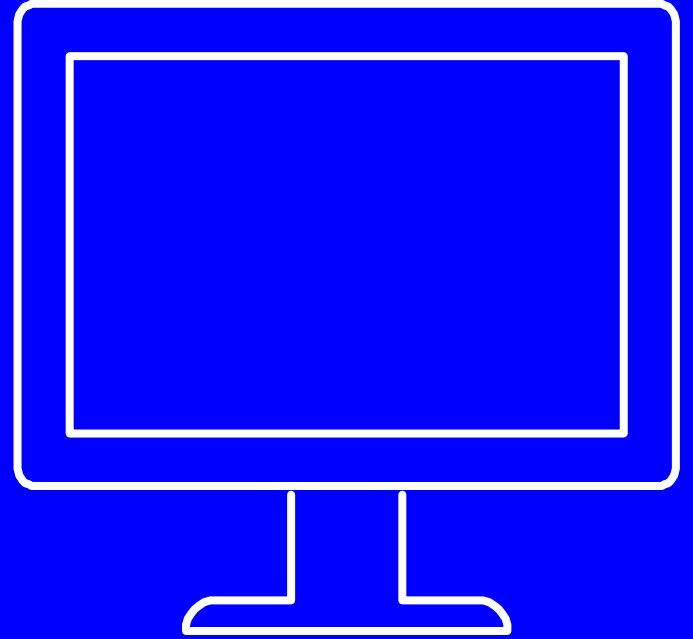
COSA SIGNIFICA **CANCELLARE** UN DATO?

Cose da sapere:

- ▶ Architettura dei supporti di memoria di massa
- ▶ Formattazione
- ▶ Filesystem e tabelle di partizionamento

2.

Hard Disk Drive

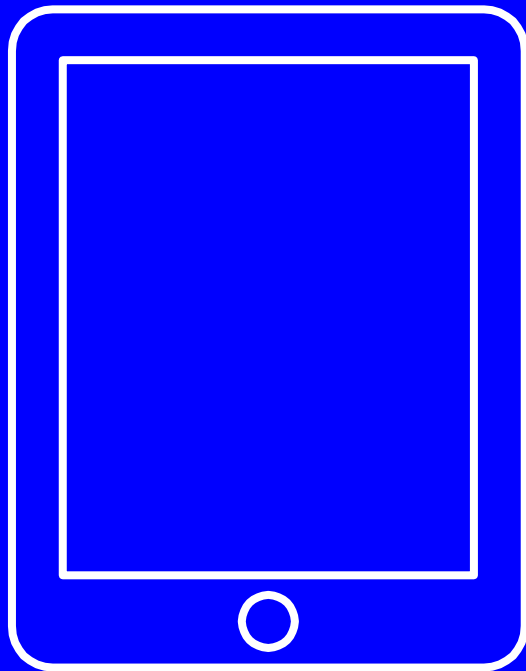


Disco Rigido



3.

Memorie Flash



Disco allo stato solido

Memorie NAND Flash

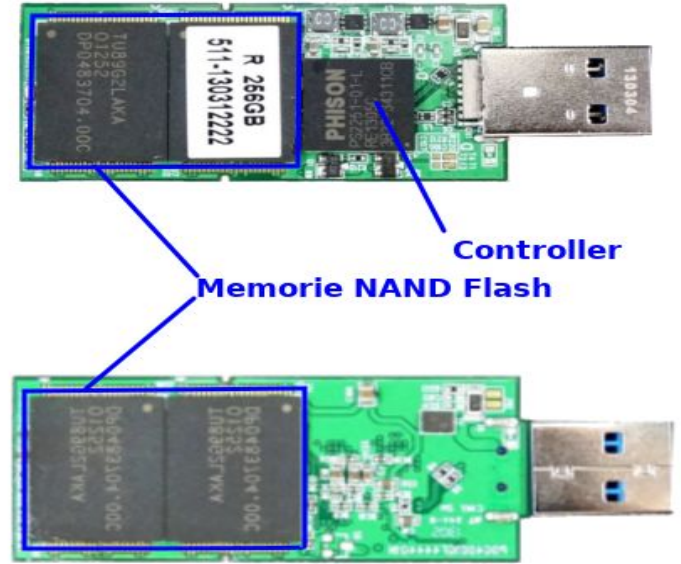
Controller

Cache

SATA Interface

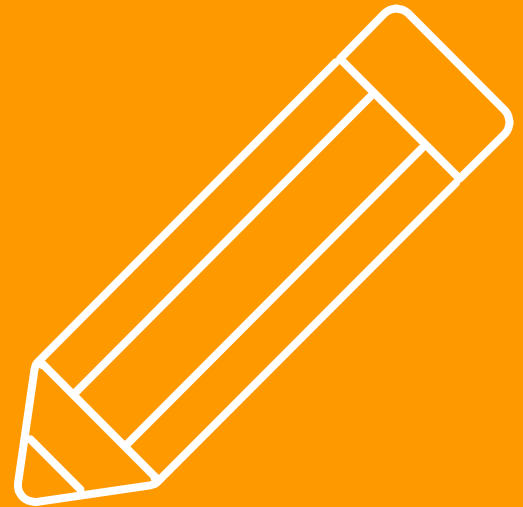


USB Stick



4.

Scrivere





SCRITTURA DI UN DATO

- ▶ Spostare da memoria RAM a memoria di massa.
- ▶ Scrittura a blocchi

5.

Formattazione





NON ABBIATE PAURA

Formattare *il computer* **non** significa distruggerlo...



...MA RICORDATE!

La formattazione non cancella fisicamente il contenuto dei file dal disco.

6.

**Tabelle di
partizionamento**



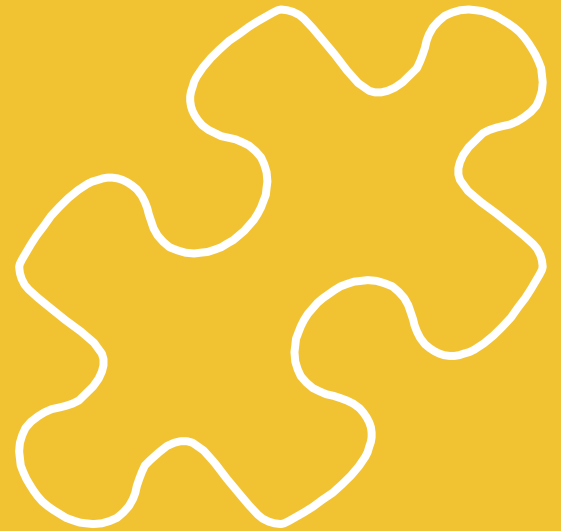


LA **TABELLA** DI PARTIZIONAMENTO:

- ▶ MBR (Master Boot Record)
- ▶ GPT (GUID Partition Table)

7.

FileSystem





CHE COS'È UN **FILESYSTEM**?

- ▶ FAT, vFAT, FAT16, FAT32, exFAT
- ▶ NTFS
- ▶ Ext2, Ext3, Ext4
- ▶ Swap Area

LA METAFORA DEL **MAGAZZINO**

DISCO RIGIDO

AZIENDA

Dato

Scatolone

Blocco

Scaffale

FileSystem

Magazziniere

Tabella delle partizioni

Magazzini

Disco Rigido

Azienda



COSA AVVIENE DUNQUE QUANDO SI **CANCELLA** UN DATO?

```
int unlink(const char *pathname);
```

<http://man7.org/linux/man-pages/man2/unlink.2.html>



QUINDI COME SI **CANCELLA** DAVVERO?

```
user@hostname ~ $ shred --help
```

```
Usage: shred [OPTION]... FILE...
```

Mandatory arguments to long options are mandatory for short options too.

- f, --force change permissions to allow writing if necessary
- n, --iterations=N overwrite N times instead of the default (3)
 - random-source=FILE get random bytes from FILE
- s, --size=N shred this many bytes (suffixes like K, M, G accepted)
- u truncate and remove file after overwriting
 - remove[=HOW] like -u but give control on HOW to delete; See below
- v, --verbose show progress
- x, --exact do not round file sizes up to the next full block;
 - this is the default for non-regular files
- z, --zero add a final overwrite with zeros to hide shredding
- help display this help and exit
- version output version information and exit



QUINDI COME SI **FORMATTA** DAVVERO?

```
user@hostname ~ $ dd --help
```

```
Usage: dd [OPERAND]...
```

```
or: dd OPTION
```

Copy a file, converting and formatting according to the operands.

```
bs=BYTES      read and write up to BYTES bytes at a time (default: 512);
```

```
cbs=BYTES      convert BYTES bytes at a time
```

```
conv=CONVS     convert the file as per the comma separated symbol list
```

```
count=N        copy only N input blocks
```

```
ibs=BYTES      read up to BYTES bytes at a time (default: 512)
```

```
if=FILE        read from FILE instead of stdin
```

```
iflag=FLAGS    read as per the comma separated symbol list
```

```
obs=BYTES      write BYTES bytes at a time (default: 512)
```

```
of=FILE        write to FILE instead of stdout
```

```
oflag=FLAGS    write as per the comma separated symbol list
```

```
seek=N         skip N obs-sized blocks at start of output
```

```
skip=N         skip N ibs-sized blocks at start of input
```

```
status=LEVEL   The LEVEL of information to print to stderr;
```

```
'none' suppresses everything but error messages,
```

```
'noxfer' suppresses the final transfer statistics,
```

```
'progress' shows periodic transfer statistics
```



ALTRI **TOOL** UTILI: HDPARM

```
user@hostname ~ $ hdparm
```

```
hdparm - get/set hard disk parameters - version v9.52, by Mark Lord.
```

```
Usage: hdparm [options] [device ...]
```



ALTRI TOOL UTILI: REDEEMER

```
user@hostname ~ $ redeemer --help
REDEEMER v1.3 - Hard Disk Drive slaughtering shell script.
Author: Stefano Enrico Mendola (aka Hyd3L, STE col teschio)
Copyright (C) 2017 WEEE Open - Politecnico di Torino
This program comes with ABSOLUTELY NO WARRANTY.
Since this is a free software, you are welcome to
redistribute it under the terms of the GNU GPLv3.
```

```
usage: ./redeemer [OPTIONS] [DEVICES]
```

```
options:
```

- c --check : execute badblocks before redemption
- s --shutdown : halt after the end of the redemption.
- l --laviano : execute only a zerofill pass.
- n --no-sync : execute steps without syncing disks.
- d --dry-run : print output only, no write operations.
- h --help : show this screen and quit.

<http://github.com/weee-open/redeemer>

8.

II Team

w.e.e.e.o.p.e.n.



w.e.e.e.o.p.e.n.

OBIETTIVI DEL TEAM:

- ▶ Riduzione del quantitativo di RAEE
- ▶ Promozione del riuso
- ▶ Diffusione del software libero
- ▶ Produzione di materiale e attività divulgative



THANKS!

Domande?

w.eeeopen

CONTATTI:

- ▶ Sito web: <http://weeeopen.polito.it>

Credits

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