

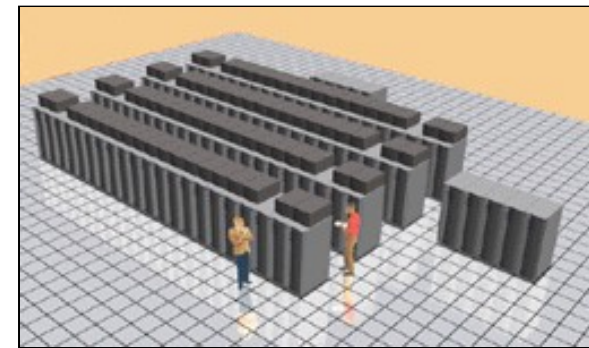
Dal sistema operativo all' hardware

Di cosa parleremo ?

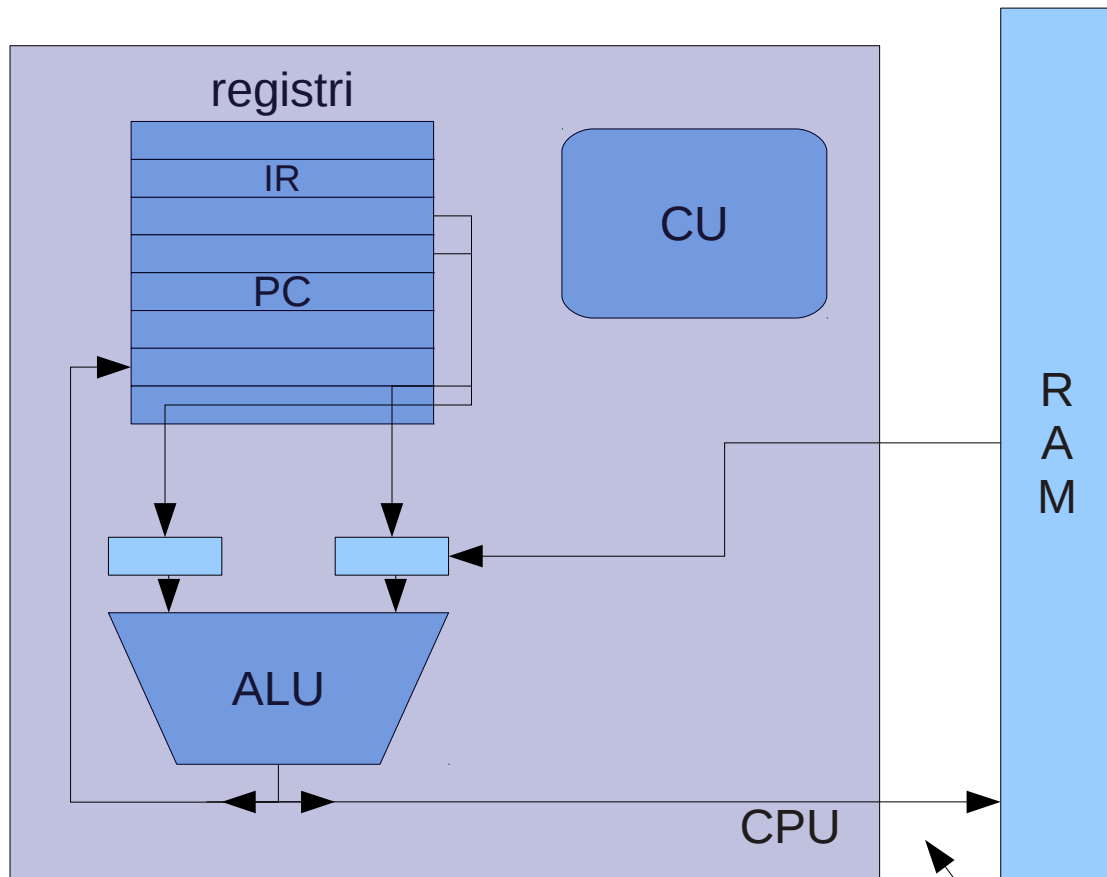
- Il computer (processore e memoria principale)
- Cosa avviene all'avvio del computer?
- processi
- Scheda madre
- Alimentatore
- Memorie Secondarie (floppy disk, hard disk, CD, DVD, PENDRIVE, ecc)

Tipi di elaboratori

- *Mobile devices (PDA – SmartPhones)*
- *Personal computers (utilizzo personale)*
 - Desktop
 - Laptop
- *Workstations*
 - Utilizzo professionale, CAD, pochi utenti (<5)
- *Minicalcolatore*
 - Maggior numero di utenti, condivisione risorse
- *Mainframe*
 - Numero elevato di periferiche, archivi di grandi dimensioni
- *Supercomputer → Ultracomputer*
 - Applicazioni tecniche e scientifiche che richiedono la massima potenza di calcolo



Il calcolatore

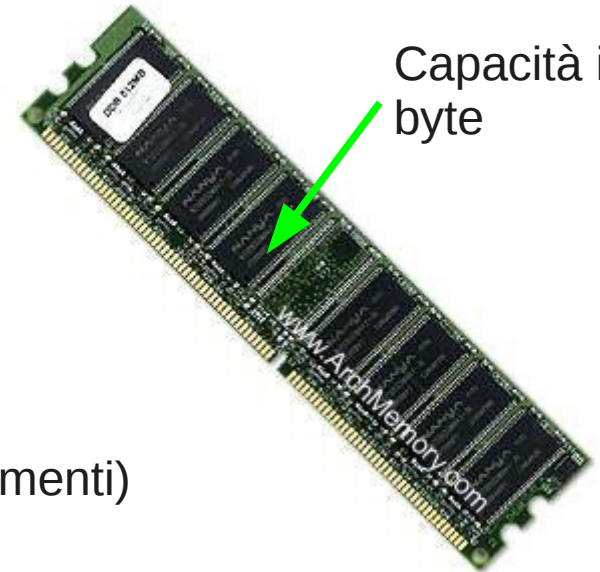


dal modello di Von Neumann
(anni '50)

Velocità in
Hertz

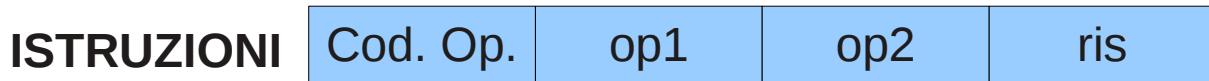


Capacità in
byte

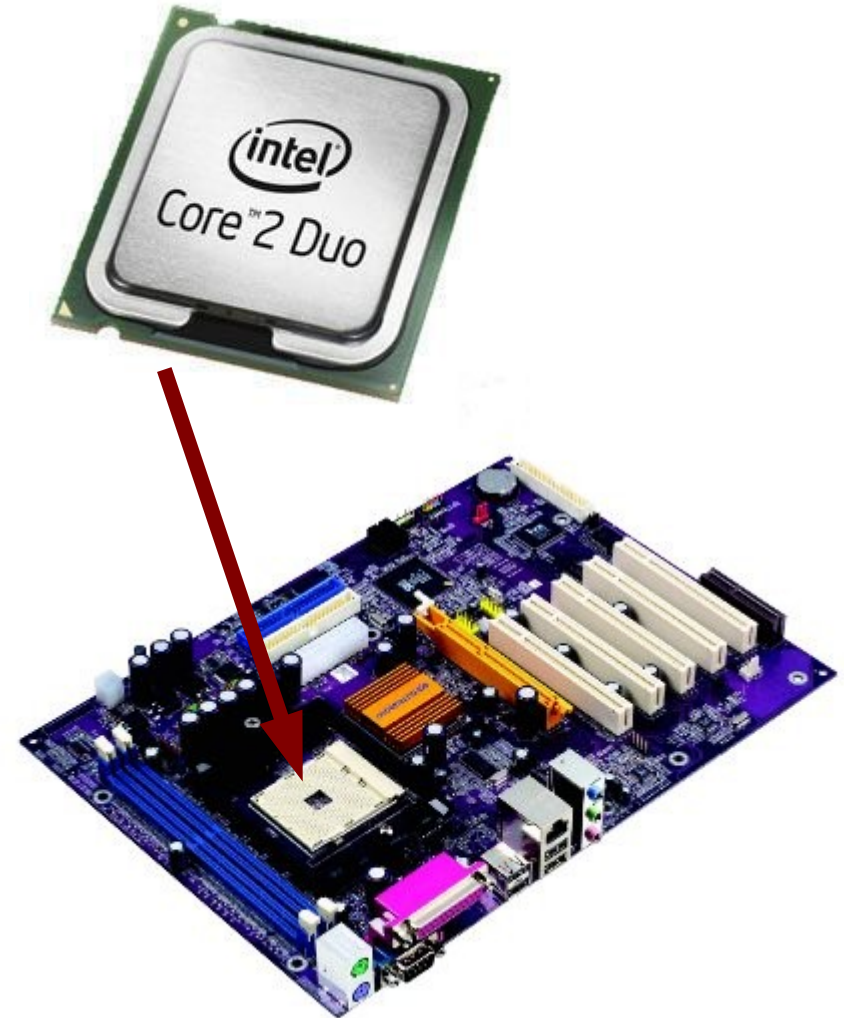
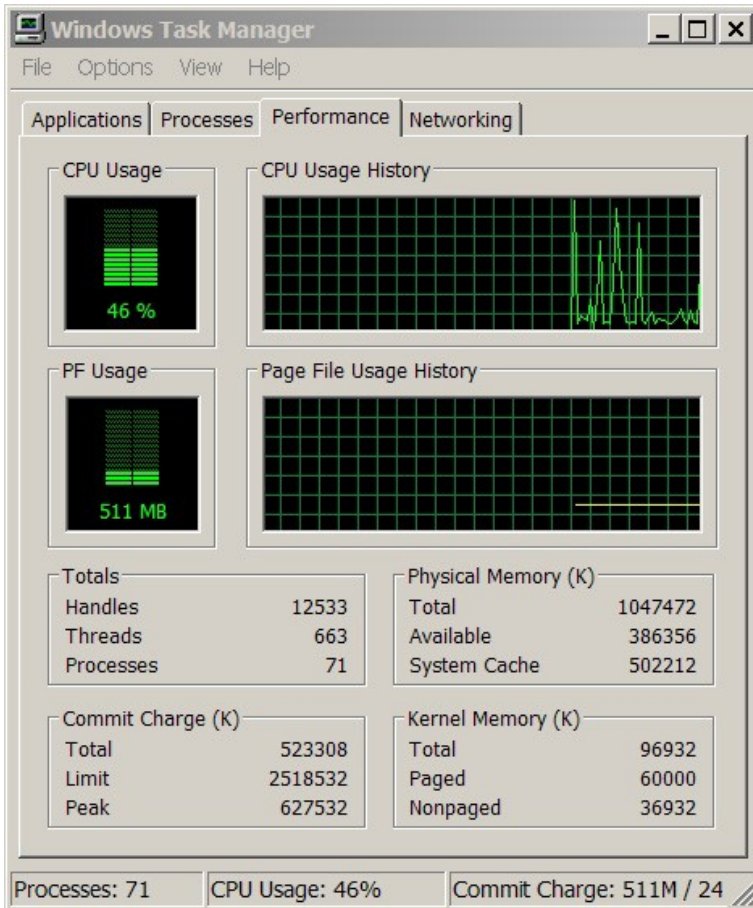


BUS (collegamenti)

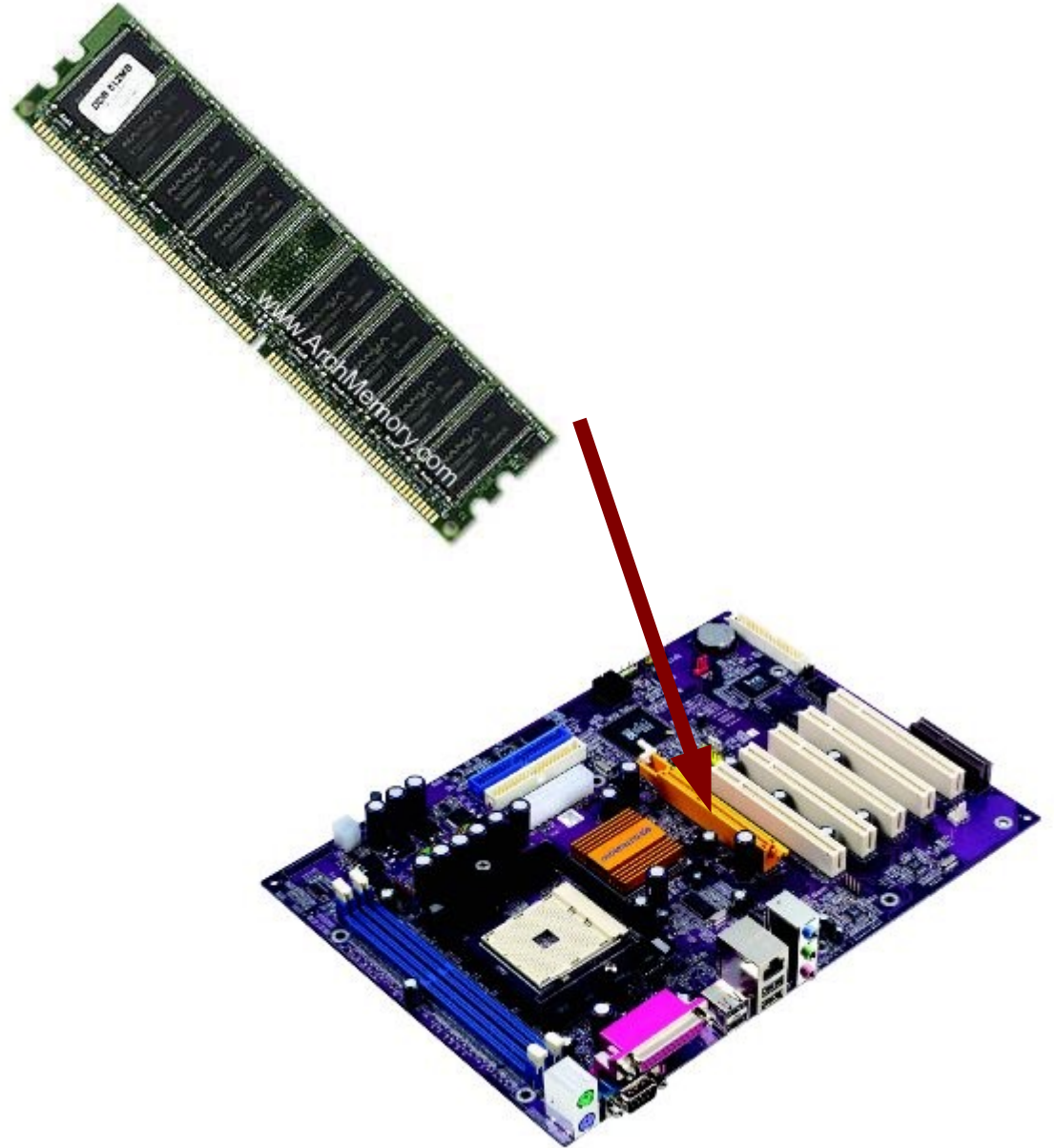
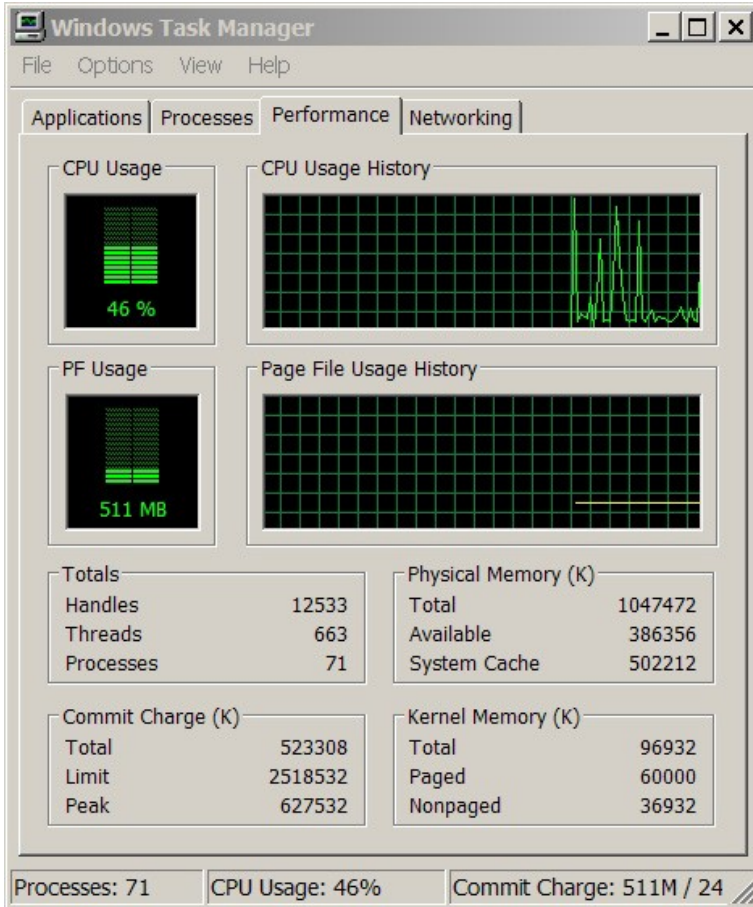
+ PERIFERICHE



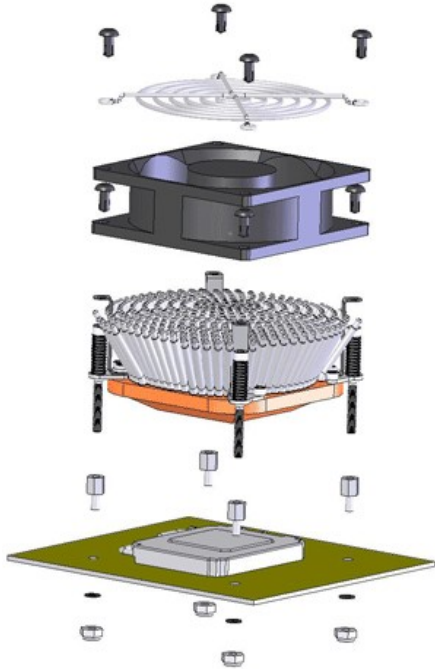
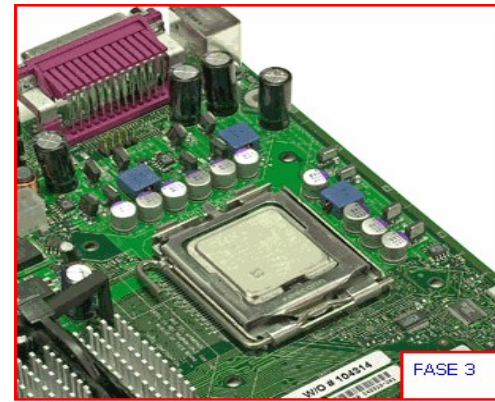
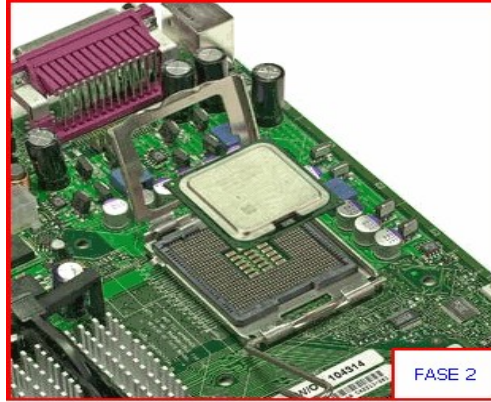
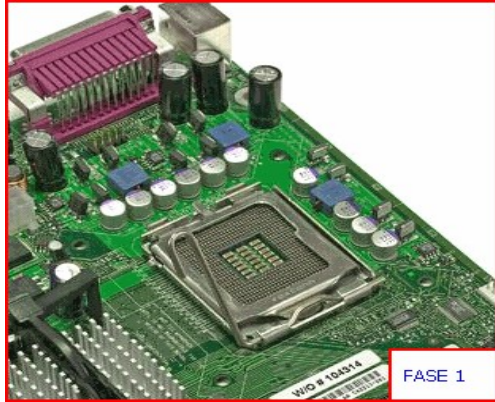
Quale processore?



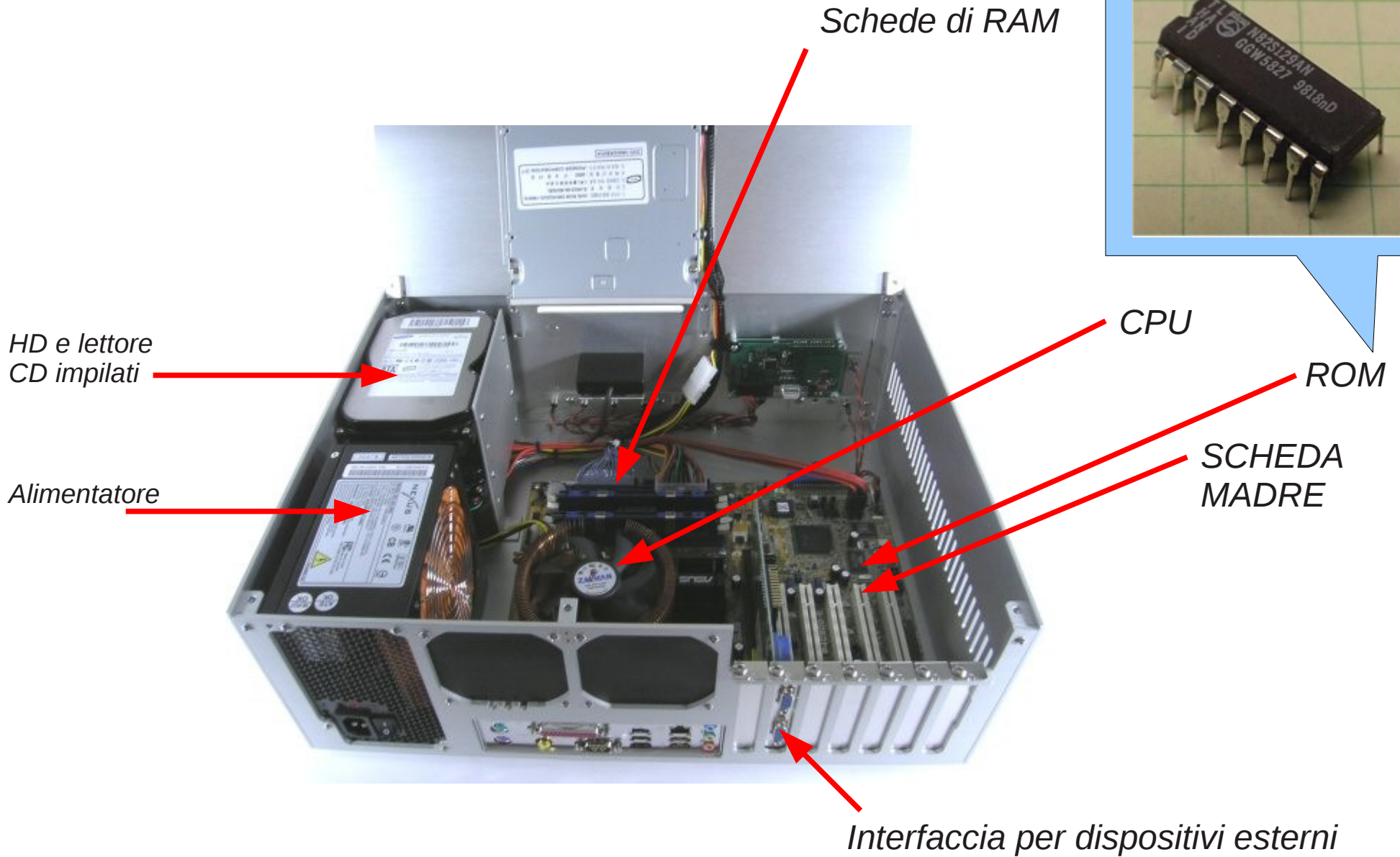
Quale memoria?



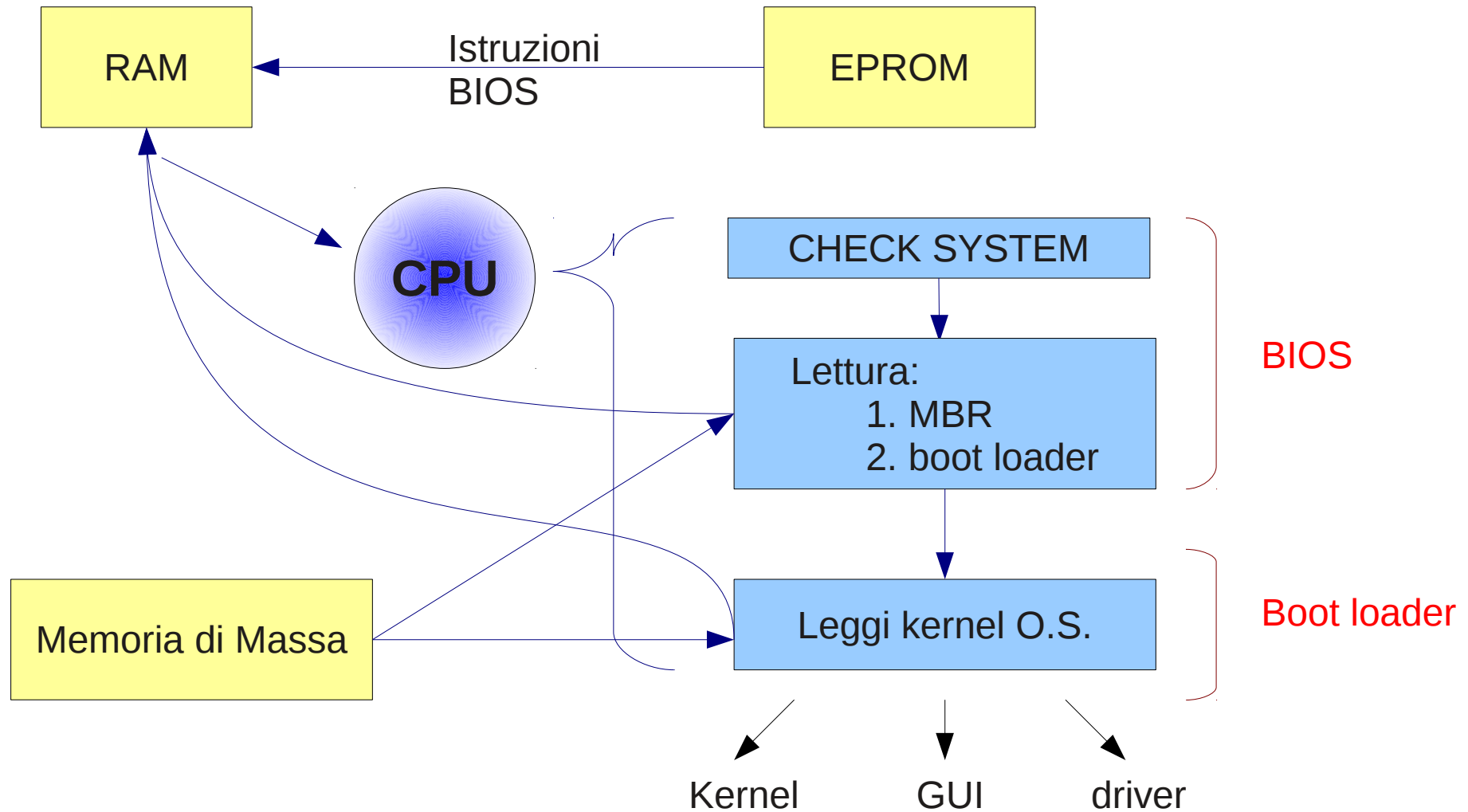
Processore



Dentro il CASE



La fase di BOOT

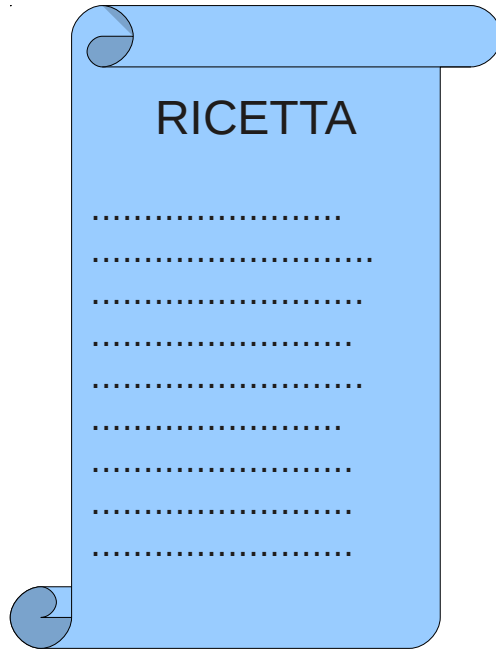


Come si esegue un programma?

- Le istruzioni di un programma sono eseguite da un **processore**.
- Per essere eseguito velocemente un programma deve essere caricato in una memoria veloce: **memoria centrale (RAM)**.
- Il processore preleva le istruzioni dalla memoria e le esegue una dopo l'altra.
- Un programma in esecuzione si definisce **processo**.

Rapporto Programma-Processo

PROGRAMMA



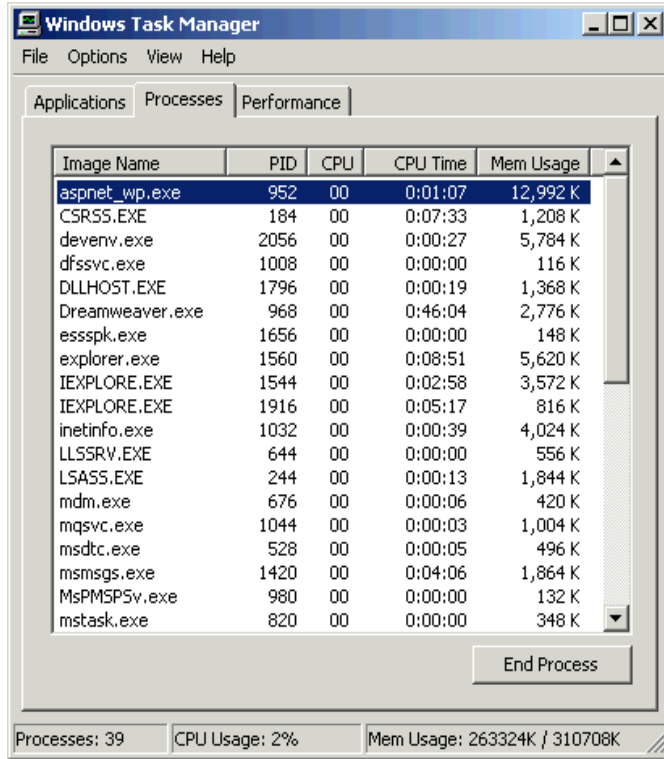
DATI



PROCESSO



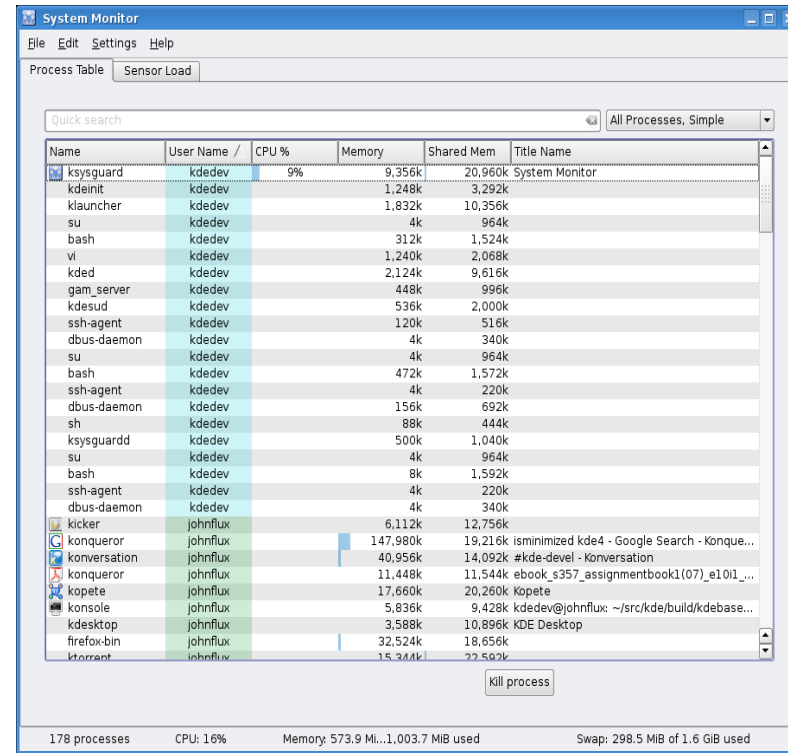
Dove sono i Programmi? Task Manager, ksysguard e RAM



Windows Task Manager - Processes tab

Image Name	PID	CPU	CPU Time	Mem Usage
aspnet_wp.exe	952	00	0:01:07	12,992 K
CSRSS.EXE	184	00	0:07:33	1,208 K
devenv.exe	2056	00	0:00:27	5,784 K
dfssvc.exe	1008	00	0:00:00	116 K
DLLHOST.EXE	1796	00	0:00:19	1,368 K
Dreamweaver.exe	968	00	0:46:04	2,776 K
essspk.exe	1656	00	0:00:00	148 K
explorer.exe	1560	00	0:08:51	5,620 K
IEXPLORE.EXE	1544	00	0:02:58	3,572 K
IEXPLORE.EXE	1916	00	0:05:17	816 K
inetinfo.exe	1032	00	0:00:39	4,024 K
LLSSRV.EXE	644	00	0:00:00	556 K
LSASS.EXE	244	00	0:00:13	1,844 K
mdm.exe	676	00	0:00:06	420 K
mqsvc.exe	1044	00	0:00:03	1,004 K
msdtc.exe	528	00	0:00:05	496 K
msmsgs.exe	1420	00	0:04:06	1,864 K
MsPMSPsv.exe	980	00	0:00:00	132 K
mstask.exe	820	00	0:00:00	348 K

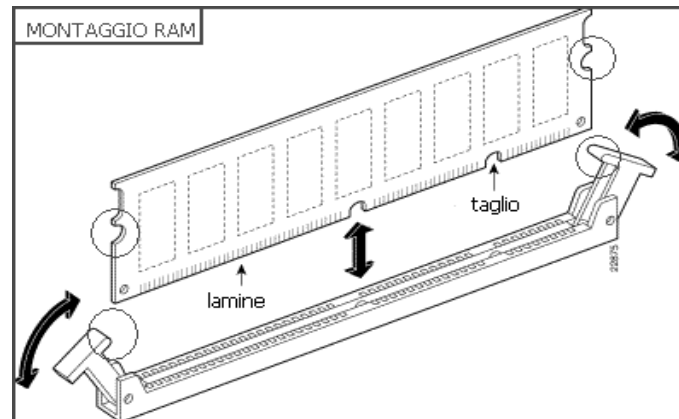
Processes: 39 | CPU Usage: 2% | Mem Usage: 263324K / 310708K



System Monitor - Process Table

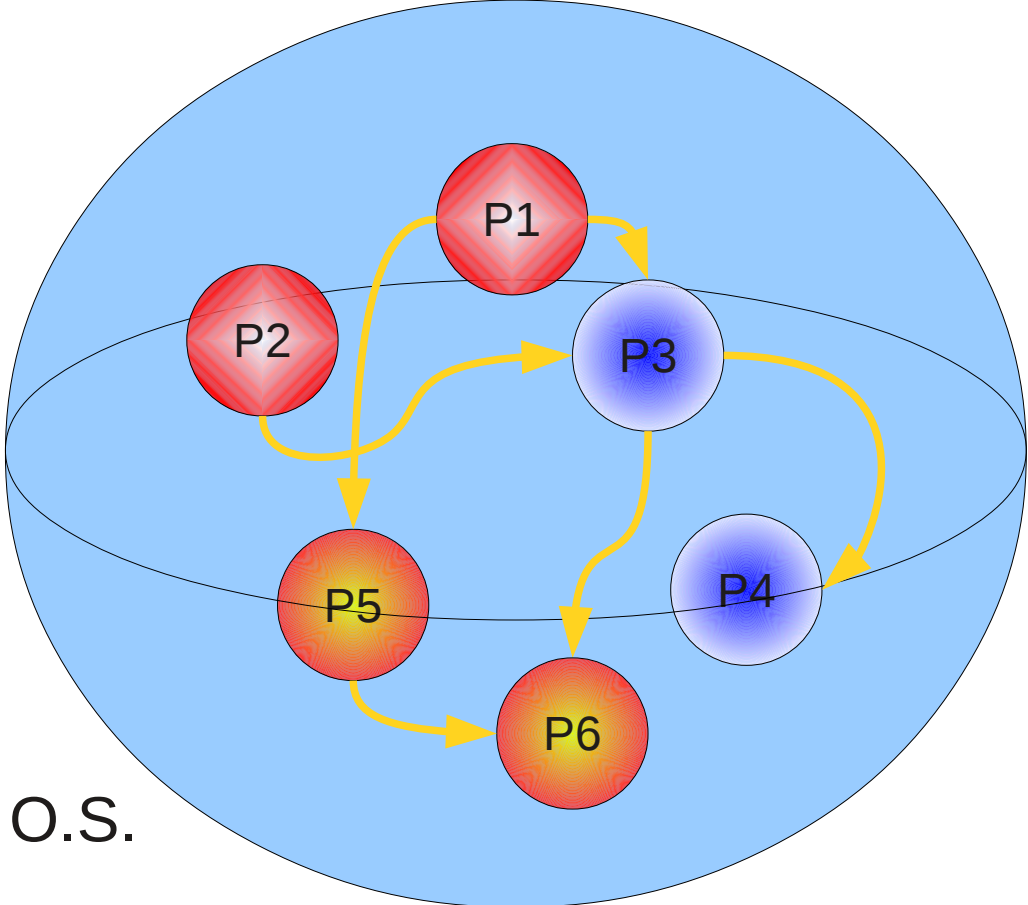
Name	User Name /	CPU %	Memory	Shared Mem	Title Name
ksysguard	kddev	9%	9,356k	20,960k	System Monitor
kdeinit	kddev		1,248k	3,292k	
klauncher	kddev		1,832k	10,356k	
su	kddev		4k	964k	
bash	kddev		312k	1,524k	
vi	kddev		1,240k	2,068k	
kdcd	kddev		2,124k	9,616k	
gam_server	kddev		448k	996k	
kdesud	kddev		536k	2,000k	
ssh-agent	kddev		120k	516k	
dbus-daemon	kddev		4k	340k	
su	kddev		4k	964k	
bash	kddev		472k	1,572k	
ssh-agent	kddev		4k	220k	
dbus-daemon	kddev		156k	692k	
sh	kddev		88k	444k	
ksysguardd	kddev		500k	1,040k	
su	kddev		4k	964k	
bash	kddev		8k	1,592k	
ssh-agent	kddev		4k	220k	
dbus-daemon	kddev		4k	340k	
kicker	johnflux		6,112k	12,756k	
konqueror	johnflux		147,980k	19,216k	isminimized kde4 - Google Search - Konque...
konversation	johnflux		40,956k	14,092k	#kde-devel - Konversation
konqueror	johnflux		11,448k	11,544k	ebook_s357_assignmentbook1(07)_e101_...
kopete	johnflux		17,660k	20,260k	Kopete
konsole	johnflux		5,836k	9,428k	kddev@johnflux: ~/src/kde/build/kdebase...
kdesktop	johnflux		3,588k	10,896k	KDE Desktop
firefox-bin	johnflux		32,524k	18,656k	
konqueror	johnflux		15,344k	22,592k	

178 processes | CPU: 16% | Memory: 573.9 Mi...1,003.7 MiB used | Swap: 298.5 MiB of 1.6 GiB used

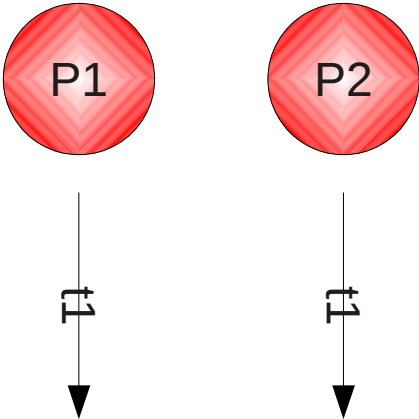
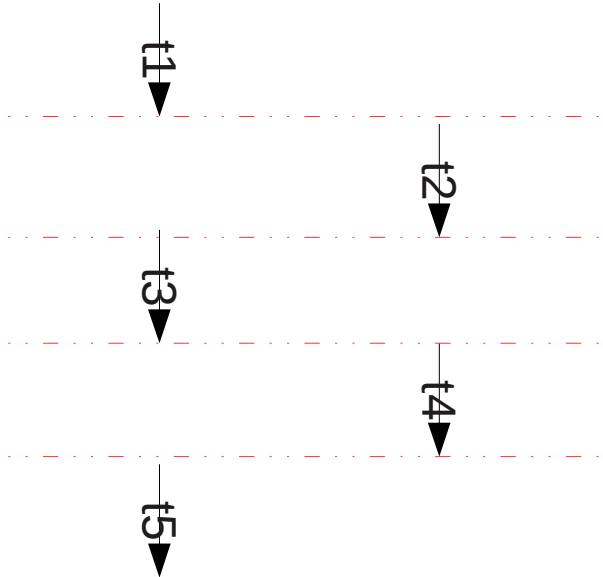
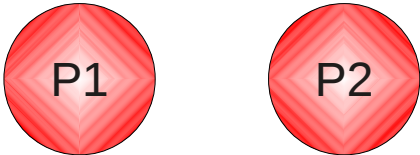
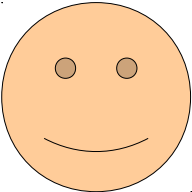


Processi e Sistema Operativo

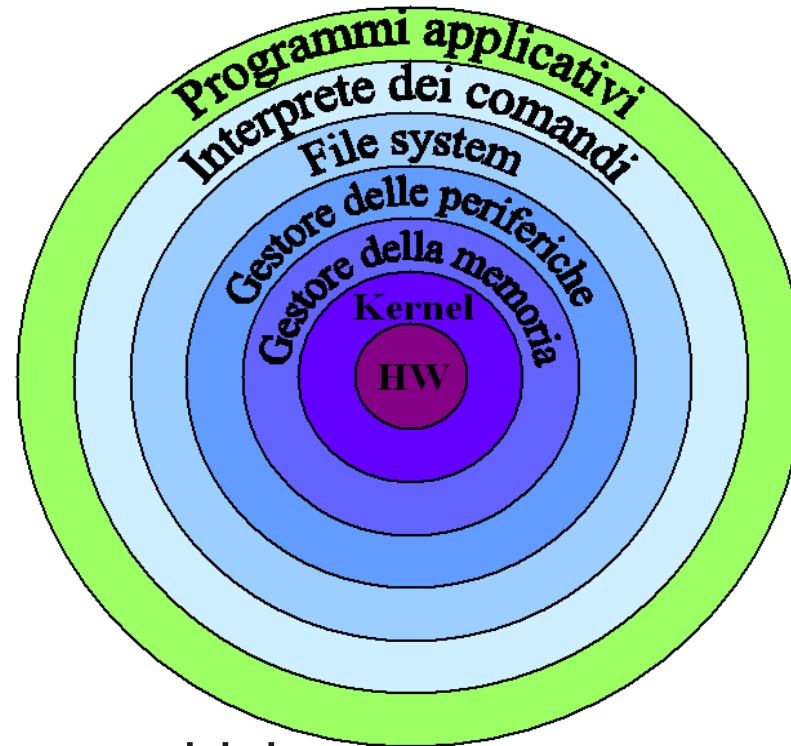
multitasking



Time Sharing



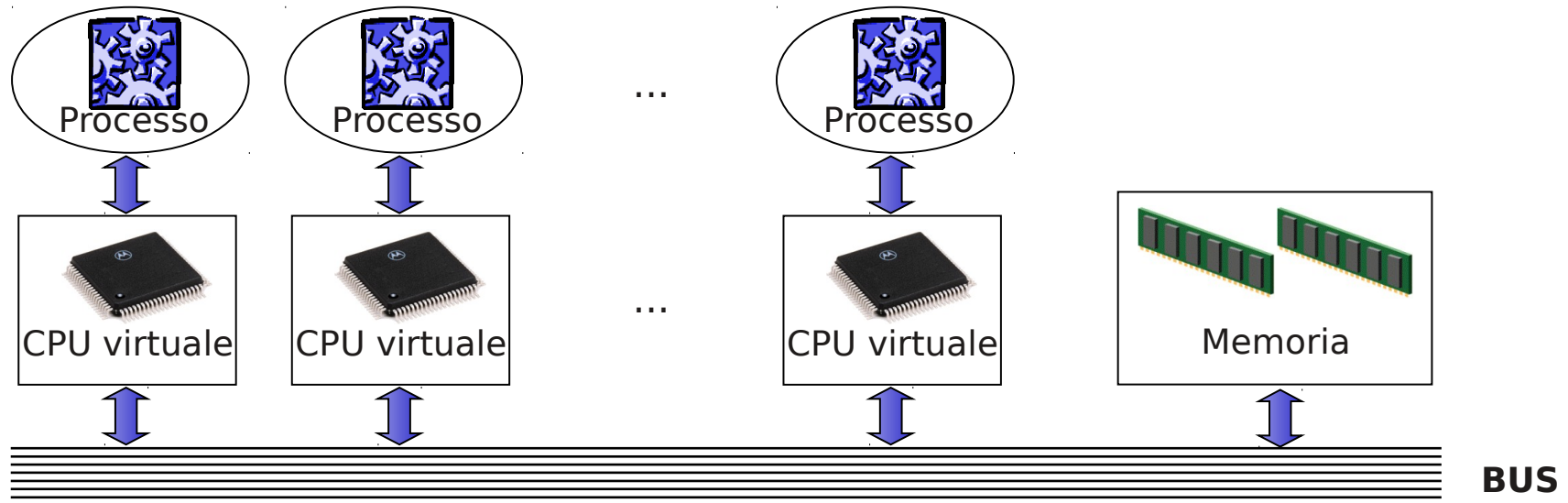
Struttura di un sistema operativo



- Modello a strati gerarchici
 - Struttura organizzata su diversi livelli
 - Ogni livello fornisce funzionalità specifiche.

Nucleo del sistema operativo (kernel)

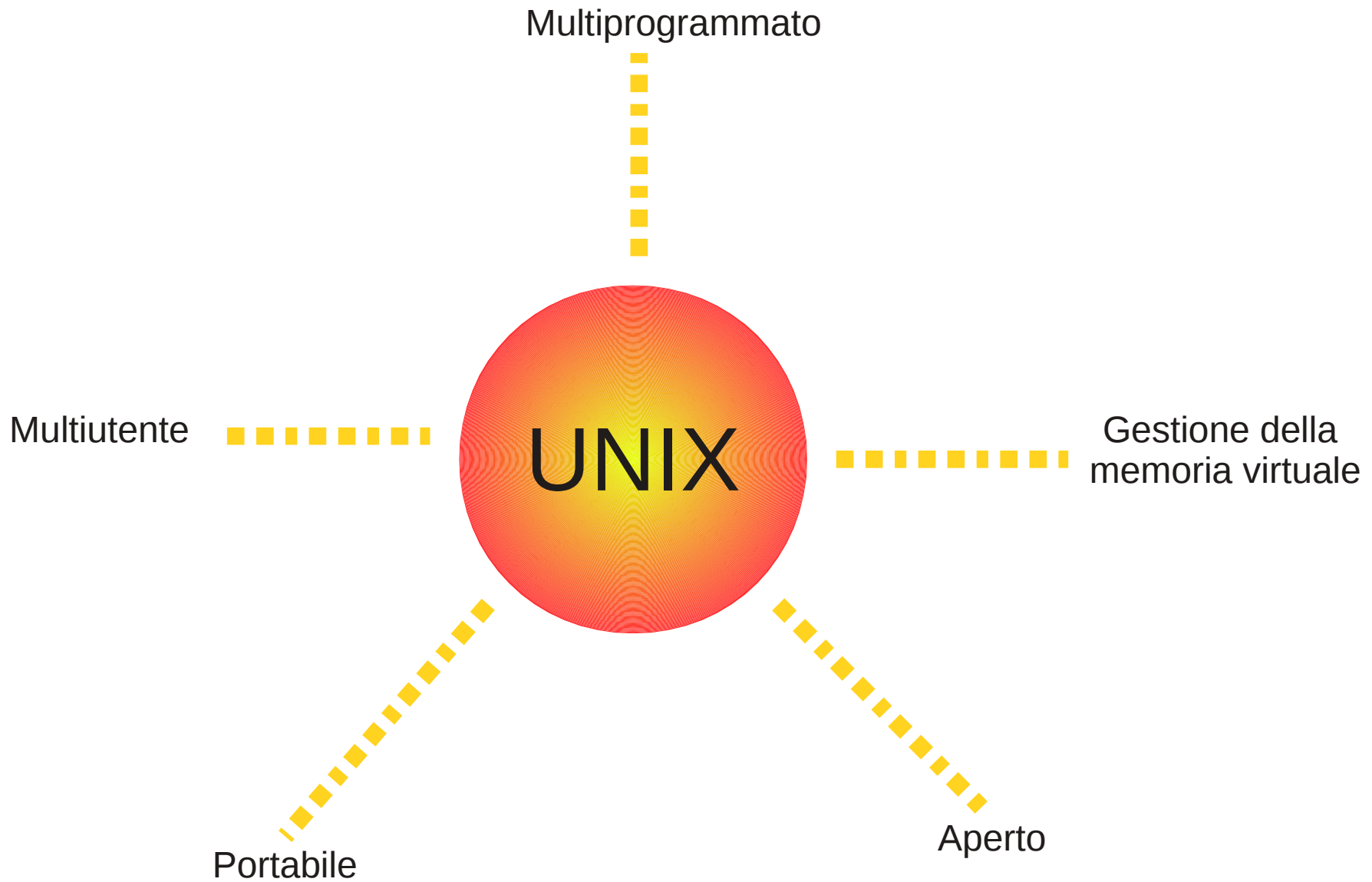
- Compiti del nucleo:
 - strato che dialoga direttamente con l'hardware
 - esecuzione dei programmi e risposta a eventi generati dalle periferiche
- Requisito fondamentale: consentire a utenti/programmi diversi la *condivisione delle risorse*
 - Offrire *virtualmente* ad ogni utente/programma *tutta la macchina*
 - Tante *CPU virtuali*



Unix & Linux

Di cosa parleremo ?

- Caratteristiche dei sistemi UNIX;
- Sistema Operativo LINUX, distribuzione;
- Le GUI di LINUX



Linux

Sistema Operativo **Open Source**

a pagamento

Lo stesso codice è fruibile liberamente

Programma gratuito

DISTRIBUZIONI

• *DEBIAN*

• *UBUNTU*

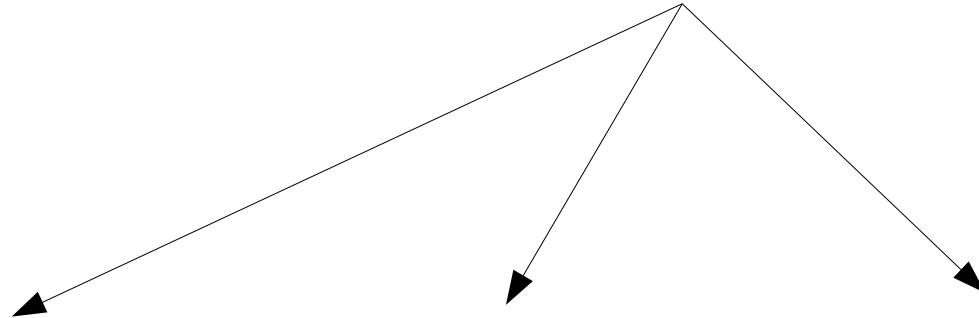
• *RED HAT*

• *SUSE*

Linux GUI



un processo come tanti altri



KDE

GNOME

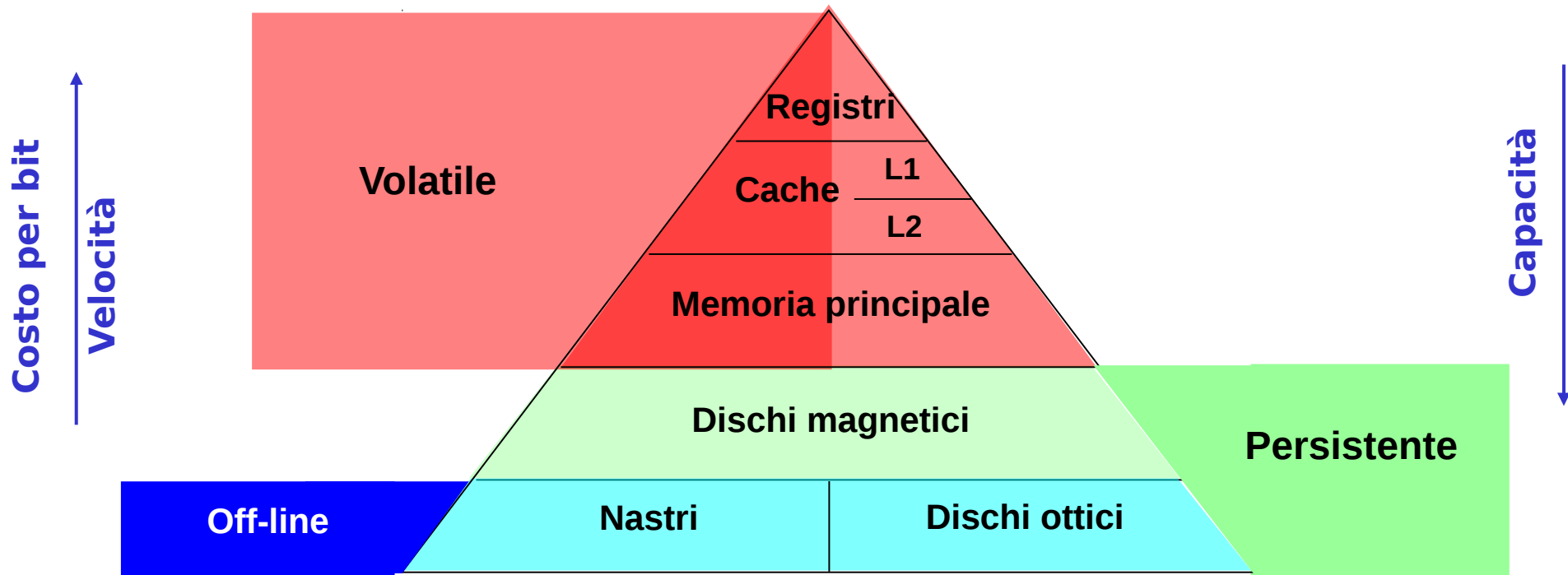
... ..

Memoria di Massa

Di cosa parleremo ?

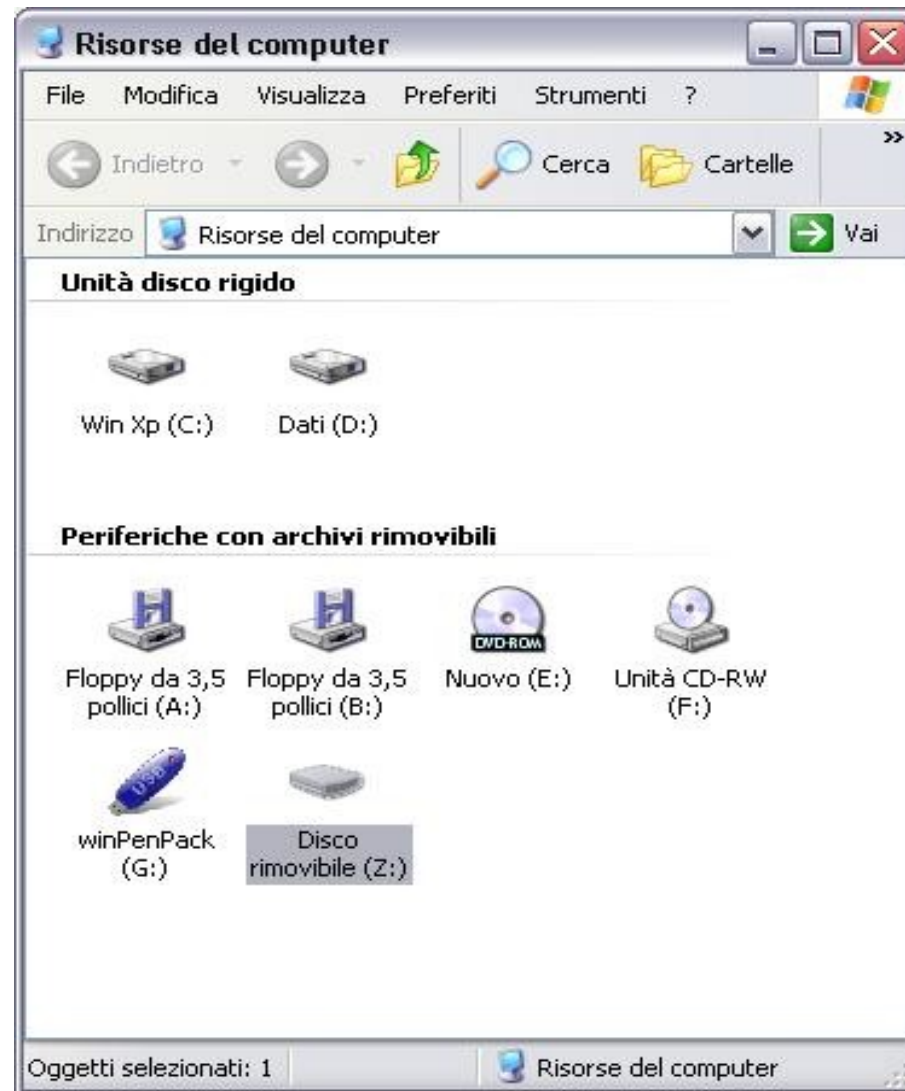
- Gerarchie di Memoria;
- Dispositivi di memoria di massa;

Gerarchia di memoria



- Questa organizzazione permette di disporre una grande quantità di memoria al costo più basso, consentendo allo stesso tempo una velocità di accesso pari a quella garantita dalla tecnologia più veloce.
- L'assunzione fondamentale è che la frequenza degli accessi diminuisca scendendo lungo la gerarchia.

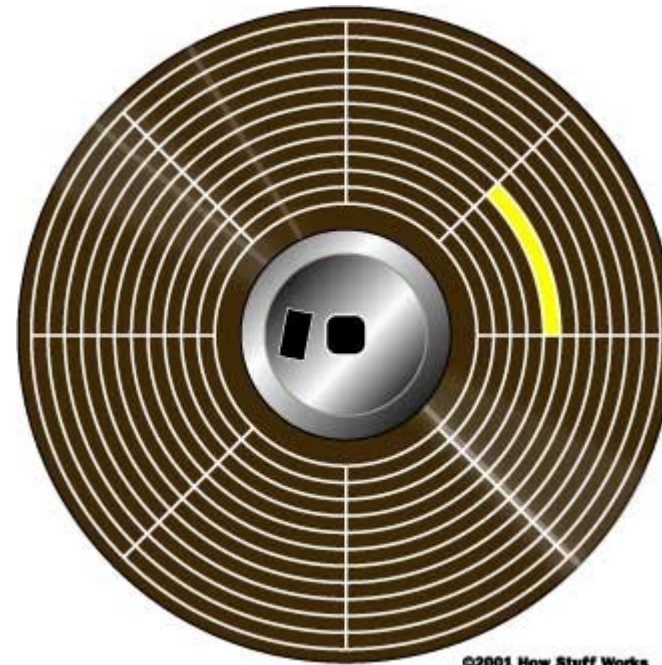
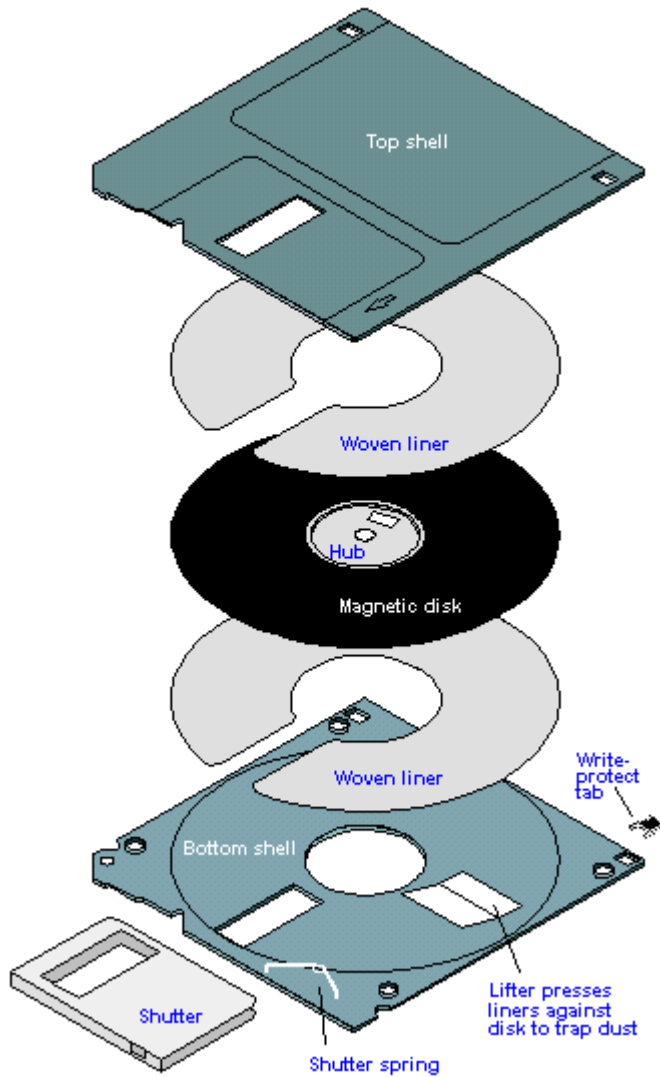
Memorie Secondarie



Memorie Secondarie – Floppy Disk

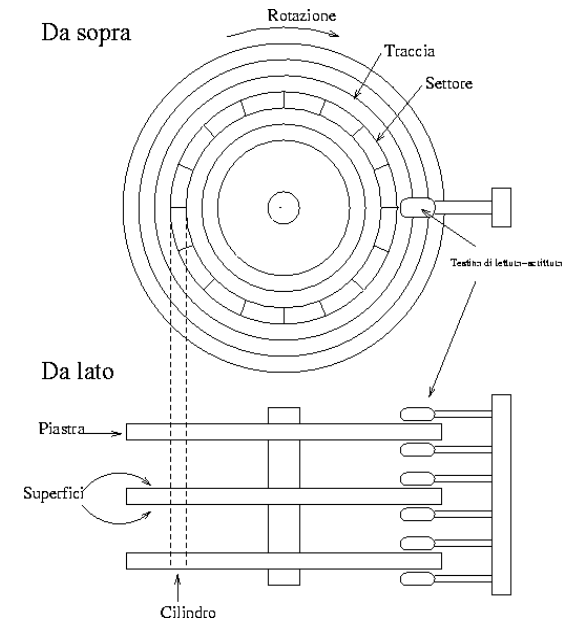
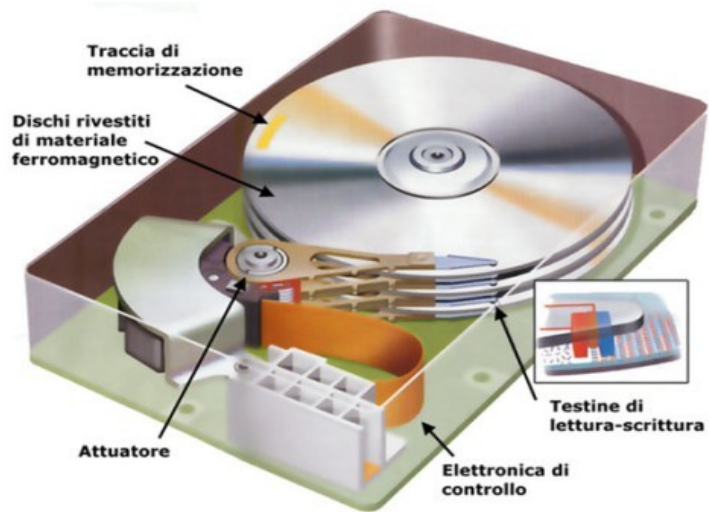
$$T = T_a + T_{rt} + T_{rs} + T_{ls}$$

From Computer Desktop Encyclopedia
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Memorie Secondarie – Hard Disk

$$T = T_{rt} + T_{rs} + T_{ls}$$



Proprietà - Disco locale (C:)

Condivisione: Generale
 Protezione: Strumenti
 Gestione quote: Hardware

Tipo: Disco locale
 File system: NTFS

Spazio utilizzato: 58.633.003.008 byte 54,6 GB
 Spazio disponibile: 36.296.675.328 byte 33,8 GB
 Capacità: 94.929.678.336 byte 88,4 GB

Unità C:

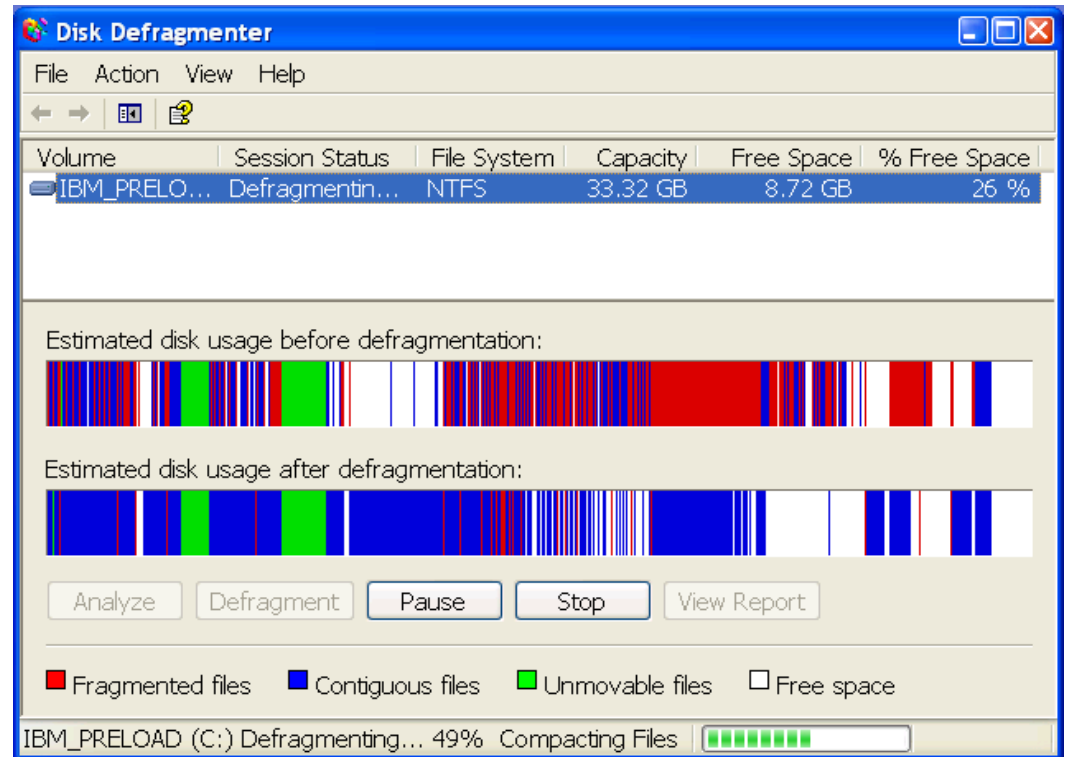
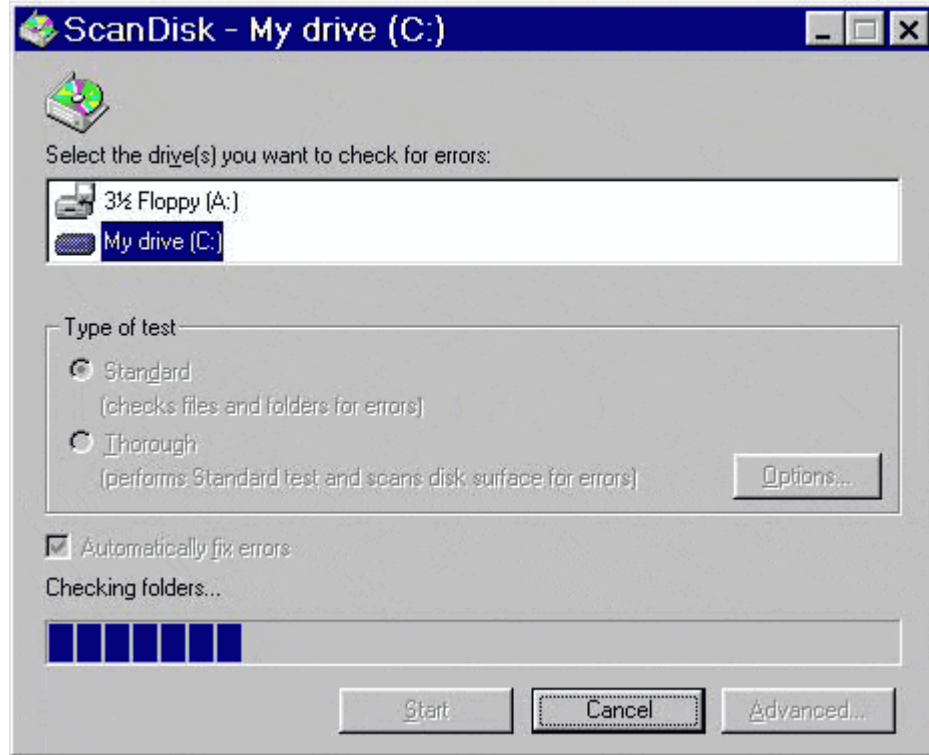
Comprimi unità per risparmiare spazio su disco
 Indicizza unità per una ricerca rapida dei file

KDiskFree

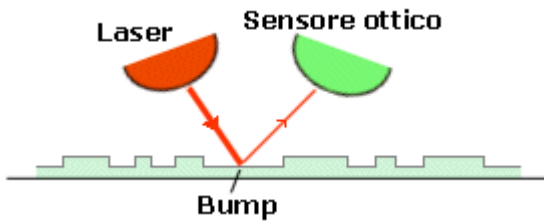
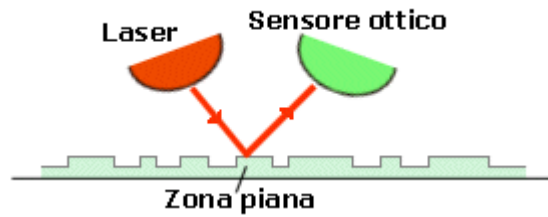
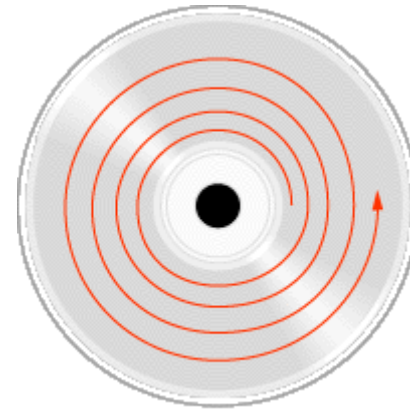
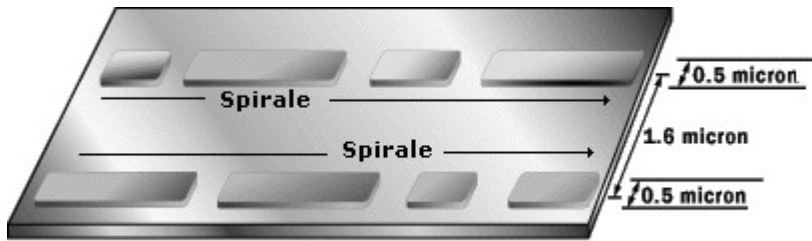
File Settings Help

Icon	Device	Type	Size	Mount Point	Free	Full %	Usage
	//dars-pc/da...	smbfs	N/A	/dars-pcdrvd	0 B	N/A	
	//dars-pc/da...	smbfs	N/A	/dars-pcdrve	0 B	N/A	
	//dars-pc/da...	smbfs	N/A	/dars-pcdrvf	0 B	N/A	
	/dev/sda1	ntfs	146.9 GB	/windows/C	128.1 GB	12.8%	
	/dev/sda2	vfat	10.4 GB	/windows/E	3.2 GB	69.2%	
	/dev/sda6	ext3	49.8 GB	/	41.2 GB	17.4%	
	/dev/sda7	ext3	68.4 GB	/home	23.8 GB	65.1%	
	/dev/sdb1	ntfs-3g	263.8 GB	/windows/D	244.1 GB	7.5%	
	/dev/sdb5	vfat	15.6 GB	/windows/L	12.4 GB	20.7%	
	/dev/sdg4	auto	N/A	/media/zip	0 B	N/A	
	debugfs	debugfs	N/A	/sys/kernel/de...	0 B	N/A	
	udev	?	1,013.2 MB	/dev	1,013.0...	0.0%	

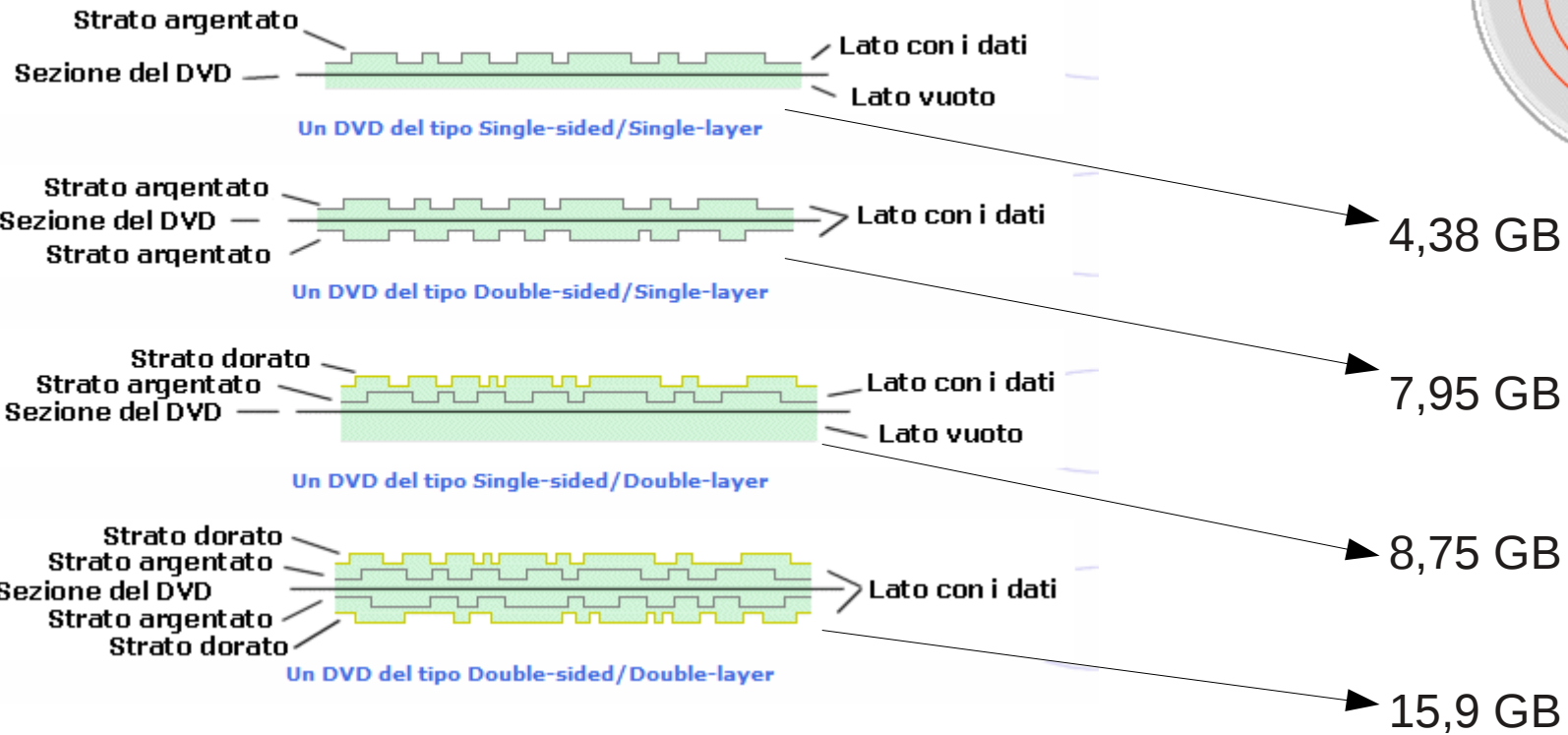
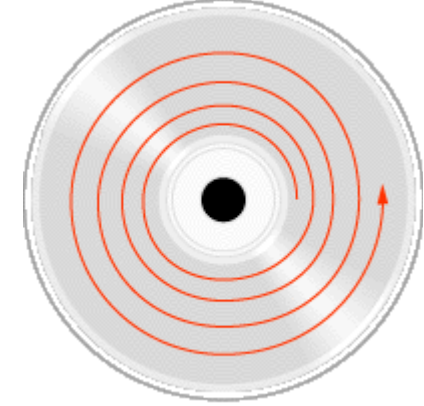
Memorie Secondarie – Hard Disk



Memoria principale - CD



Memoria principale - DVD



Caratteristica	CD	DVD
DISTANZA TRA LE SPIRE	1600 NANOMETRI	740 NANOMETRI
LUNGHEZZA MINIMA BUMPS/PITS (DVD A SINGOLO STRATO)	830 NANOMETRI	400 NANOMETRI
LUNGHEZZA MINIMA BUMPS/PITS (DVD A DOPPIO STRATO)	830 NANOMETRI	440 NANOMETRI

Memoria principale - PENDRIVE



EEPROM + PORTA USB

