COMPONENTI DI UNIX >

- Kernel
- Shell
- File System
- Utilities / Applications

KERNEL >

Livello più basso. Accede ai

- Componenti HW
- Processi :

   Programmi eseguiti da umani o sistemi.
   Spesso uno chiama l'altro (forking)

- Memoria

   Gestita tramite le funzioni autonome.

   → Paging

   Quando un processo non ha abbastanza memoria
   il kernel "sposta" porzioni di memoria di
   altri processi nell' Hard disk.
   Al bisogno viene restituito.

   → Swap

   Spostamento di interi processi con bassa
   priorità nell' Hard Disk. Al bisogno o si
   runnano li oppure si ri-spostano in RAM

SHELL >

Interfaccia tra utente e sistema operativo. 3 tipi

- Bourne Shell (sh)
- C shell (csh)
- Korn shell (Ksh)

FILE SYSTEM > Letteralmente gestisce files

UTILITIES > Applicazioni con cui si lavora nel S.O. (esclusa shell)

CARTELLE UTILI >

Directory	Content
bin/	Common programs, shared by the system, the system administrator and the users.
boot/	The startup files and the kernel.
dev/	Contains references to all the CPU peripheral hardware.
etc/	Most important system configuration files are in /etc, this directory contains data similar to those in the Control Panel in Windows
home/	Home directories of the common users.
lib/	Library files, includes files for all kinds of programs needed by the system and the users.
lost+found/	Every partition has a lost+found in its upper directory. Files that were saved during failures are here.
mnt/	Standard mount point for external file systems, e.g. a CD-ROM or a digital camera.
opt/	Typically contains extra and third party software.
root/	The administrative user's home directory. Mind the difference between /, the root directory and /root, the home directory of the root user.
sbin/	Programs for use by the system and the system administrator.
tmp/	Temporary space for use by the system, cleaned upon reboot, so don't use this for saving anything
usr/	Programs, libraries, documentation etc. for all user-related programs.
var/	Storage for all variable files and temporary files created by users, such as log files, the mail queue, the print spooler area, space for temporary storage of files downloaded from the Internet, or to keep an image of a CD before burning it.

ACCOUNT >

Consente l'accesso al sistema e ha permessi.

Tipi di account

- super user / root :

  Può fare tutto

- system acc. :

  Può gestire componenti di sistema (mail, ssh...)
  si trovano in /etc/passwd

- User accounts

  Account dedicati agli utenti.

  Si possono organizzare in gruppi per gestire permessi.

PERMESSI >

Ogni file / cartella ha dei permessi per 3 cat:

- user : il creatore della risorsa

- group: il gruppo assegnato

- others: chi non è ne user ne group

OWNERSHIP ➤

Di File e cartelle viene assegnata al creatore (default)
root può modificarla con chown.
L'owner può deciderne i permessi assegnandoli a
user, groups e others

Permissions

Characters	Apply to	Definition
rwx (characters 2–4)	The owner (known as user in Unix) of the file	The owner of the file has read (or view), write, and execute permission to the file.
r-x (characters 5–7)	The group to which the file belongs	The users in the owning group (users) can read the file and execute the file if it has executable components (commands, and so forth). The group does not have write permission: the - character fills the space of a denied permission.
r-- (characters 8–10)	Everyone else (others)	Anyone else with a valid login to the system can only read the file: write and execute permissions are denied (--).

`-rwxr-xr--`

Changing Permissions

- To change file or directory permissions, you use the **chmod** (change mode) command. There are two ways to use **chmod**: symbolic mode and absolute mode.

- In symbolic mode, + (−) adds (removes) the designated permission(s) to a file or directory

  `chmod o+wx myfile`

  - Adds write and execute permissions for others

- In Absolute mode

  `chmod 754 myfile`

111	101	100
rwx	**rwx**	**rwx**
7	5	4

META CHARACTERS ➤

- **?** fa match di 1 carattere qualsiasi
- ***** = = di tutti i caratteri
- **[..]** = = di 1 carattere tra quelli in [..]

- suppose that the working directory contains the files:

  `date help1 help2 help3 myprog.f myprog.o`

- You can add wildcards to the target argument of the **ls** command to find any or all of these files in a single search.

Argument + Wildcard	Files Matched
help?	help1 help2 help3
myprog.[fo]	myprog.f myprog.o
*	date help1 help2 help3 myprog.f myprog.o
*.f	myprog.f
help*	help1 help2 help3

DIREZIONAMENTO I/O ➤

- output (>, >>)
  - → in > dest   mette il contenuto nel file dest (sovrascrive)
  - → in >> dest   come so ma NON sovrascrive
- input <
  comm < date   imposta i valori di un file come input

```
$ ls > ls_output
```

- The > character takes the output of *ls*, which would normally go to the screen, and writes it to the *ls_output* file.

- For example, assume that you want to alphabetize a list of terms contained in a file called 'terms'. You can use the sort command in combination with the input redirection operator <, as in:

```
sort < terms
```

- Input and output redirection can also be combined. For example, the following command will sort the items in the terms file and then send the output of the sort into a new file called terms-alpha.

```
sort < terms > terms-alpha
```

- **pipe |**

concatence   I/O   tra commandi

```
$ ls -l /etc | more
total 1780
-rw-r--r--  1 root    root    15221   Feb 28 2001 a2ps.cfg
-rw-r--r--  1 root    root     2561   Feb 28 2001 a2ps-site.cfg
-rw-r--r--  1 root    root       47   Dec 28 2001 adjtime
...
```

Navigating the File System

Command	Description
cat	Concatenate: displays a file.
cd	Change directory: moves you to the directory identified
cp	Copy: copies one file/directory to specified location.
file	Identifies the file type (binary, text, etc).
find	Finds a file/directory.
head	Shows the beginning of a file.
less	Browses through a file from end or beginning.
ls	List: shows the contents of the directory specified.
mkdir	Make directory: creates the specified directory.
more	Browses through a file from beginning to end.
mv	Move: moves the location of or renames a file/directory.
pwd	Print working directory: shows the current directory the user is in.
rm	Remove: removes a file.
tail	Shows the end of a file.
touch	Creates a blank file or modifies an existing file's attributes.
which	Shows the location of a file if it is in your PATH.