

# Tecniche di programmazione in chimica computazionale

## Introduction to Linux

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# Our goal

- Practical introduction to the use of [Linux](#)

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- [Environment](#) variables

- Two physical/logical **layers**:
  - **hardware**: physical components
  - **software**: instructions (on a set of data) for a computer
- Originally, instructions written in the **physical format**
- **Idea**: write instructions according to rules close to the programmer

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- High-level languages, **independent** on the hardware



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- **UNIX** was the name of the project
- Computers **communicate** each other because they share the same “language” (a part the kernel, see next slides)
- **70s and 80s**: UNIX not usable on microcomputers (like PCs), too slow

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- Linux is developed and distributed under the [GNU General Public License \(GPL\)](#)
- The GNU project ([www.gnu.org](http://www.gnu.org)) was founded in 1984 with the goal of developing high quality, free software
- GNU is a recursive acronym for “[GNU's Not UNIX](#)”

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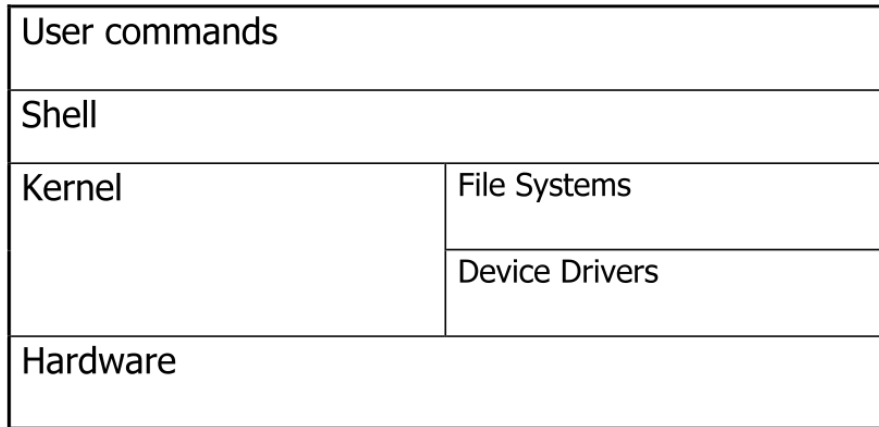
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- They all use the Linux kernel:
  - Ubuntu
  - Fedora
  - SuSe Linux
  - Debian
  - CentOS
  - ...
- Compatible each other

# The Linux system



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- **Bash** is popular and easy to use

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- They allow software to interact with a `device driver`

# The filesystem (I)

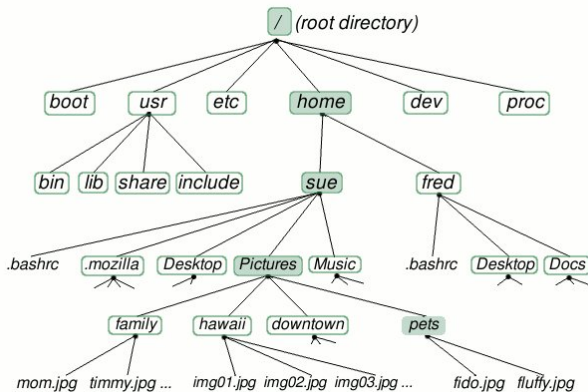
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- Only one root (/)



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- `/var` → various other files: mail, web server etc.
- `/opt` → extra software

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# How to launch a Linux command

- Synopsis of any Linux command:  
command name **options (flags)** **arguments**

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- vi (vim) → [vimtutor](#)  
Open a terminal and type [vimtutor](#)

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- `man`: manual and info of commands

- / → The root directory

# Special file names

- / → The root directory
- . → The current directory
- .. → The parent (previous) directory
- ~ → My home directory

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- **grep**: find and display a string in a given file

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- **tar**: stores and extracts files from a tape or disk archive
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- **find**: searches for files in a directory hierarchy
- **bc -l**: calculator

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- **which**: locates a command

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