

CORSO DI METODI MOLECOLARI E BIOINFORMATICA

LM Biologia Evoluzionistica, Università di Padova

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Esercitazione 2

Padova, 4 dicembre 2018

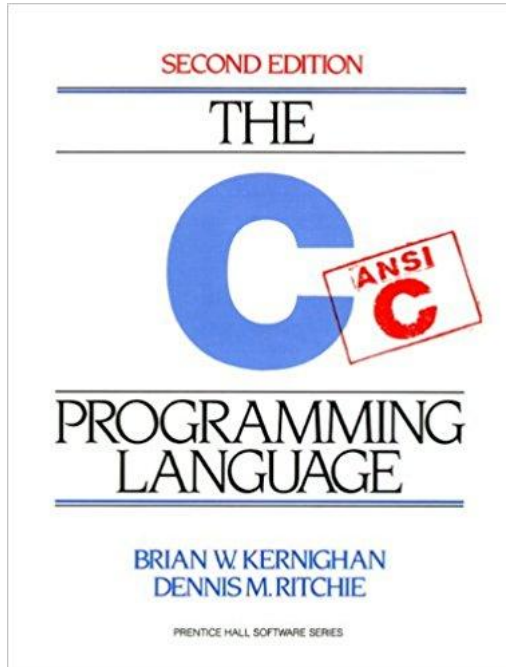
GUIDA

Obiettivo dell'esercitazione

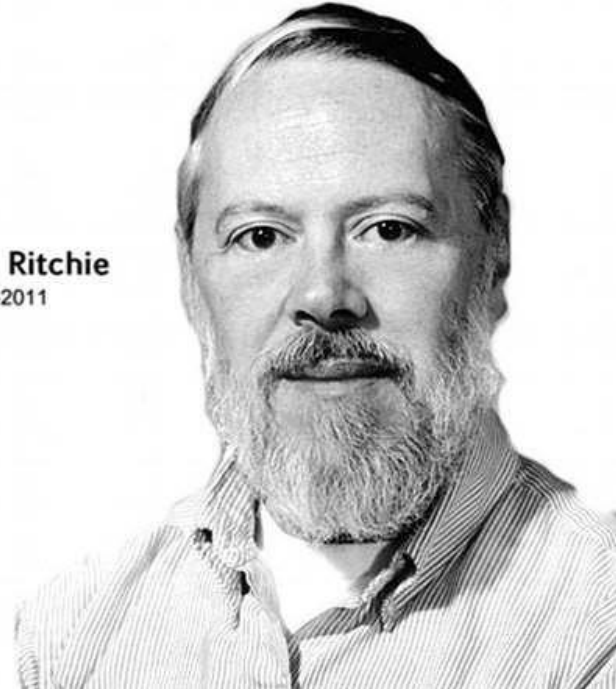
L'obiettivo dell'esercitazione è una breve introduzione alla **command line** dei sistemi Unix o Linux.

Verrà inoltre fatta un'introduzione su come installare nel proprio computer una macchina “virtuale” su cui far girare il sistema operativo Ubuntu Linux. Linux serve per potersi esercitare con i comandi Unix che verranno spiegati nel resto del corso.

Dennis Ritchie (September 9, 1941 – October 12, 2011)



Dennis Ritchie
1941-2011

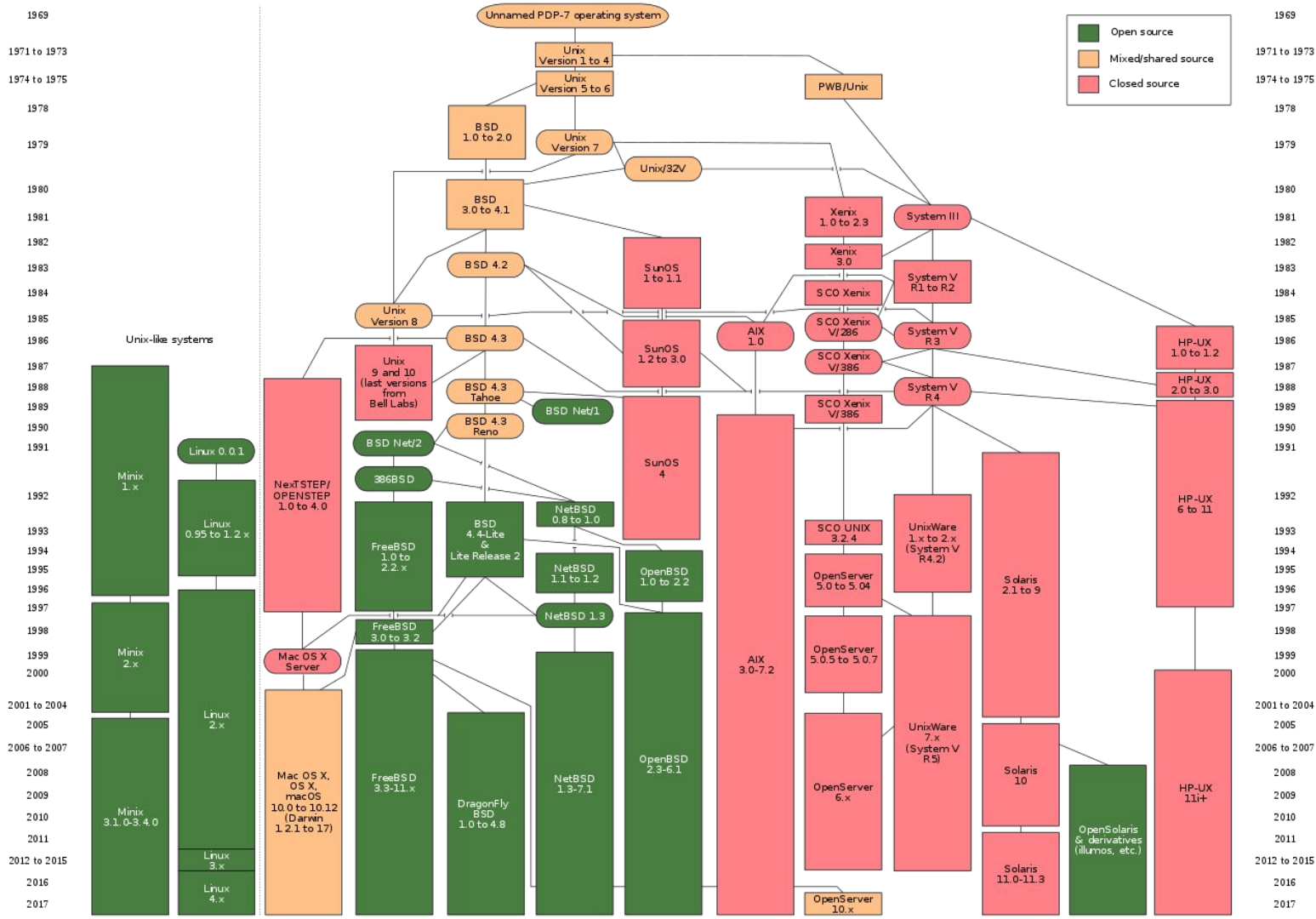


Ken Thompson (February 4, 1943)



Sistemi operativi UNIX





Distribuzioni linux



debian



ubuntu



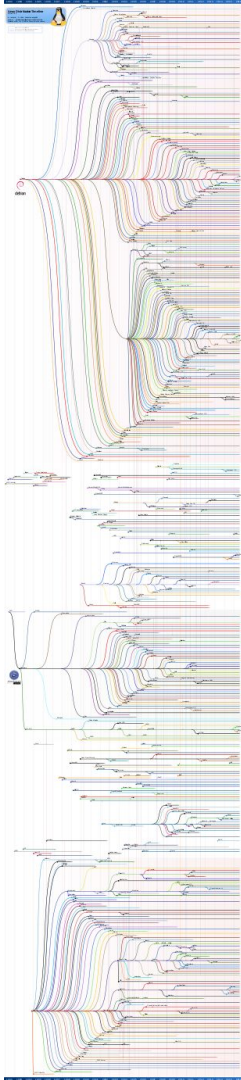
redhat



fedora

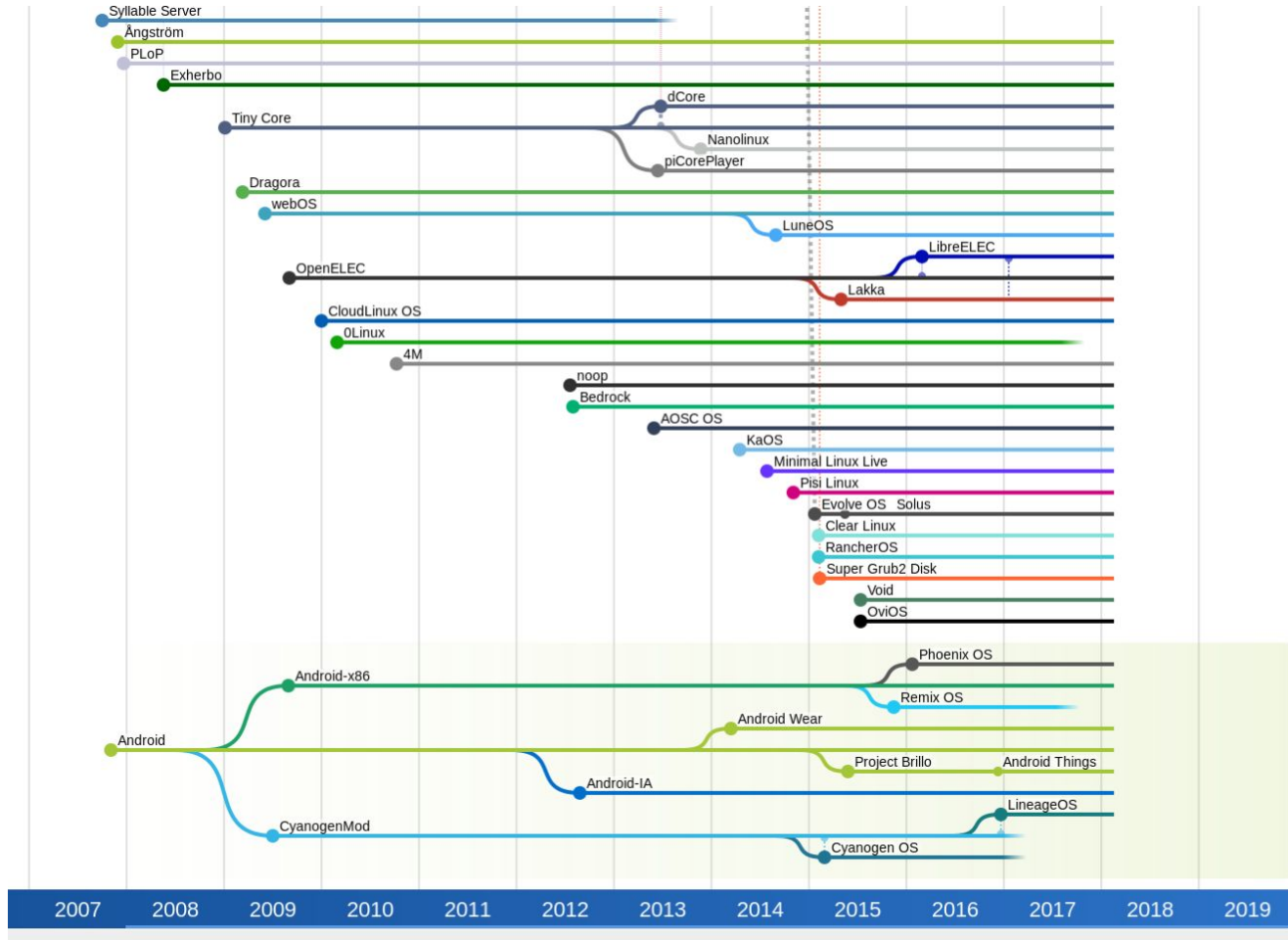


slackware
linux



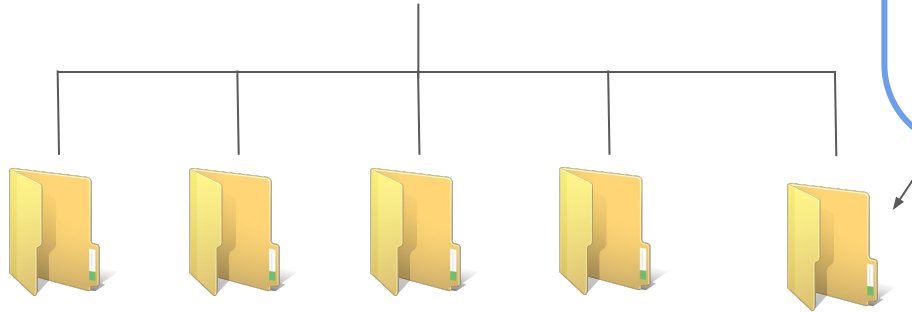
Linus Torvalds (December 28, 1969)



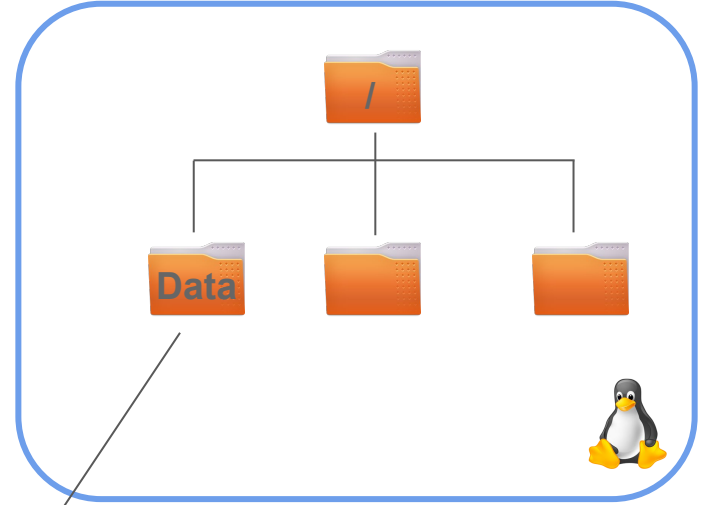


Virtual Machines

A digital hallway with green binary code walls and floor, featuring glowing rectangular doorways. The perspective is from the end of the hallway, looking down its length. The walls and floor are covered in a dense, green, pixelated pattern of binary code (0s and 1s). Several rectangular doorways, glowing with a bright green light, are visible along the walls, leading to other parts of the virtual space. The overall atmosphere is futuristic and digital.



Shared data



Creazione di una macchina virtuale

- Versione del sistema operativo guest: Ubuntu 17.10
- Dimensione del “disco virtuale”: 3.7 Giga (Controllare di avere abbastanza spazio sul proprio hard disk)

Alternative web per chi non vuole usare una macchina virtuale

- <https://bellard.org/jslinux>
- Installare Linux sul proprio computer (con partizione o cancellando Windows)

Command line

< CAN YOU MAKE ME A SANDWICH?>

< SUDO MAKE ME A SANDWICH >



< NO >

< OK >



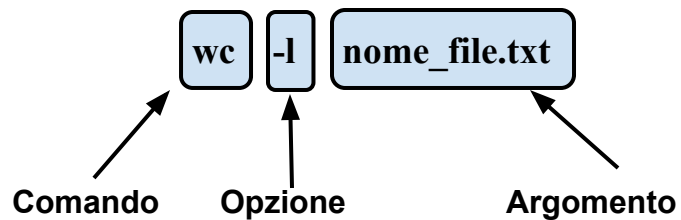
What is the command line?

The window, which is usually called the command line or command-line interface, is a text-based application for viewing, handling, and manipulating files on your computer. It's much like Windows Explorer or Finder on the Mac, but without the graphical interface. Other names for the command line are:

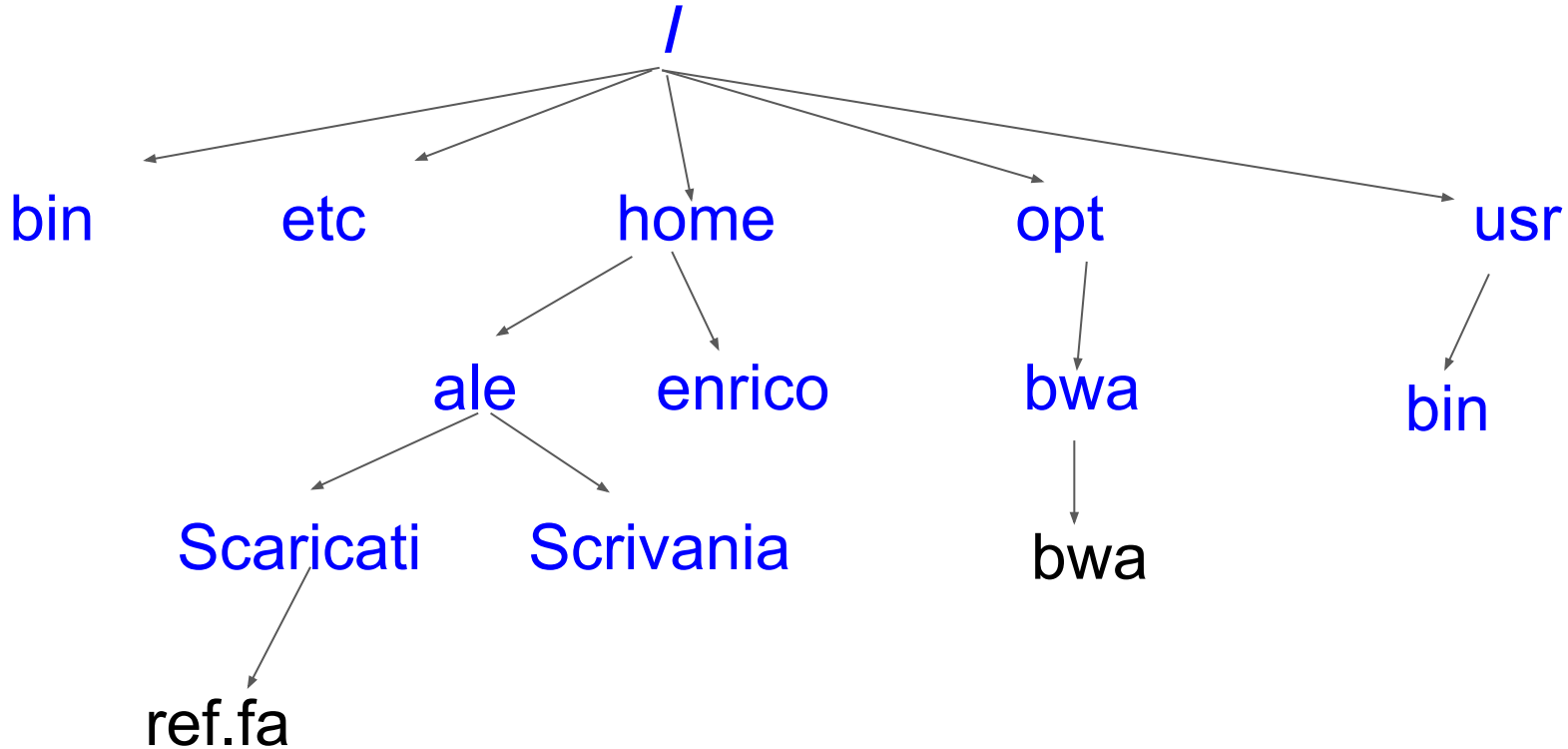
cmd, CLI, prompt, console or terminal.

MOVING AROUND (Filesystem UNIX)

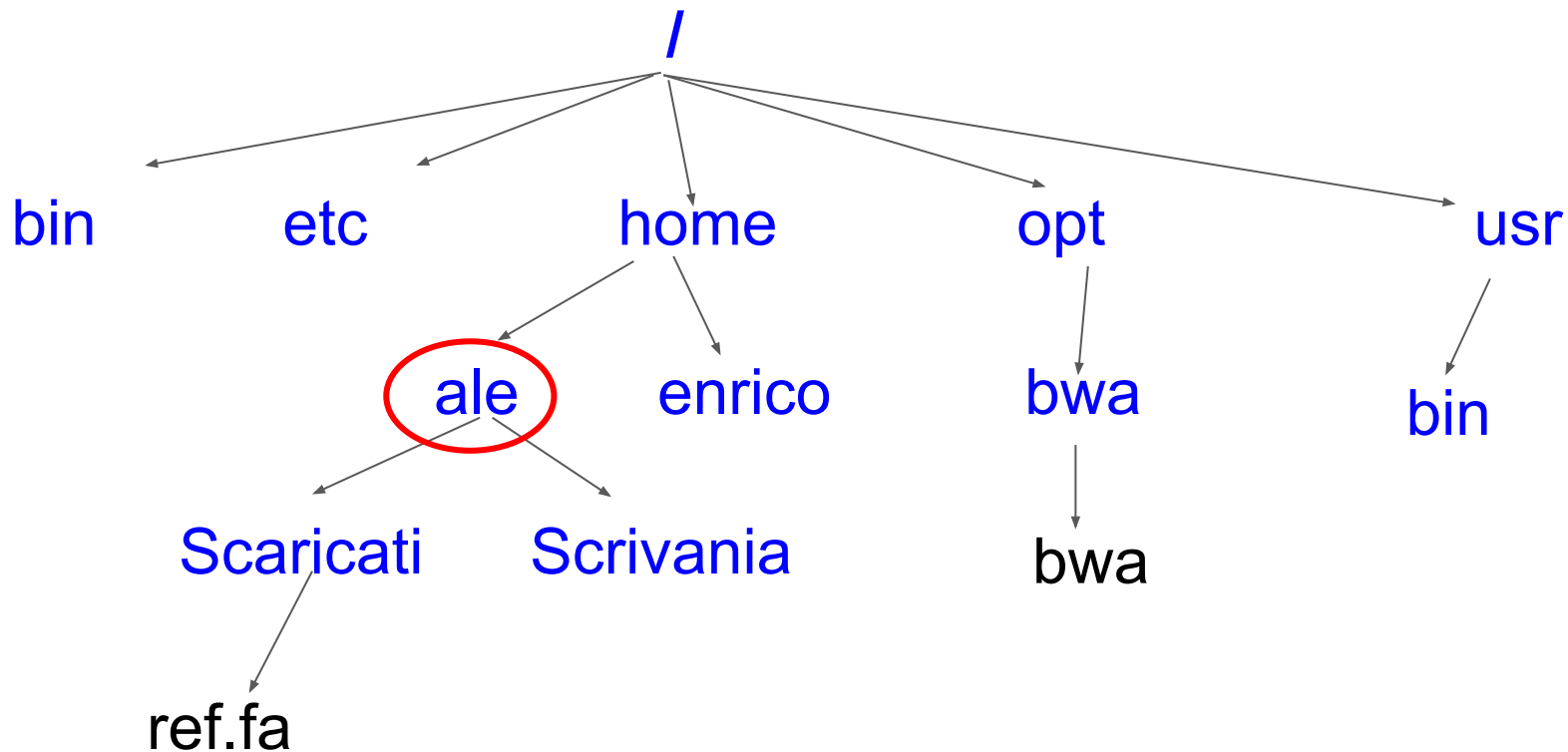
Anatomia di un comando UNIX



File system organization

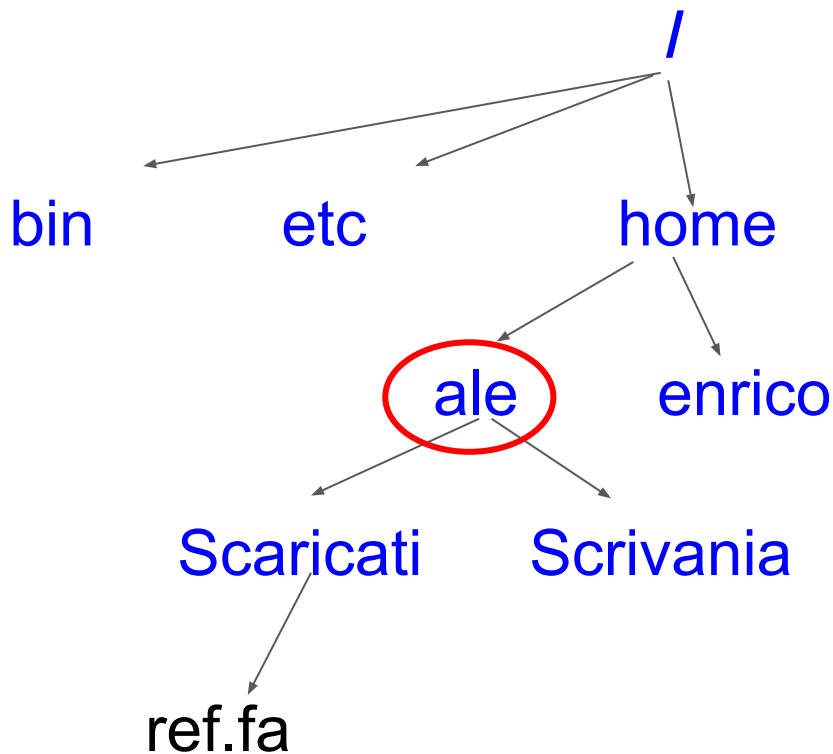


The “home” Directory



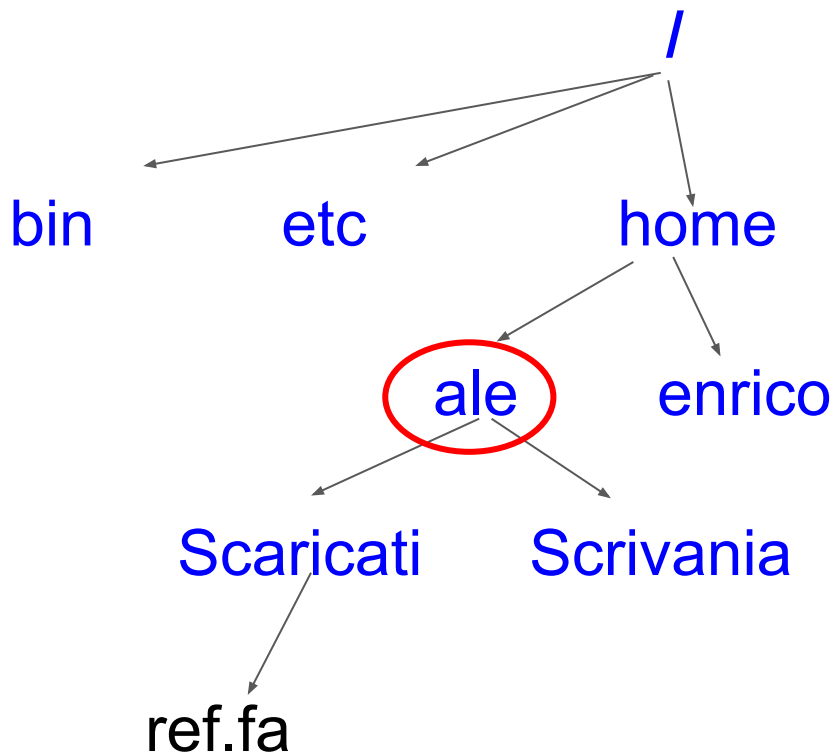
Each user has one

The current/working directory



The shell always has one current directory. It starts from user's home

The current/working direcotry



Print working directory:

```
$pwd  
/home/ale
```

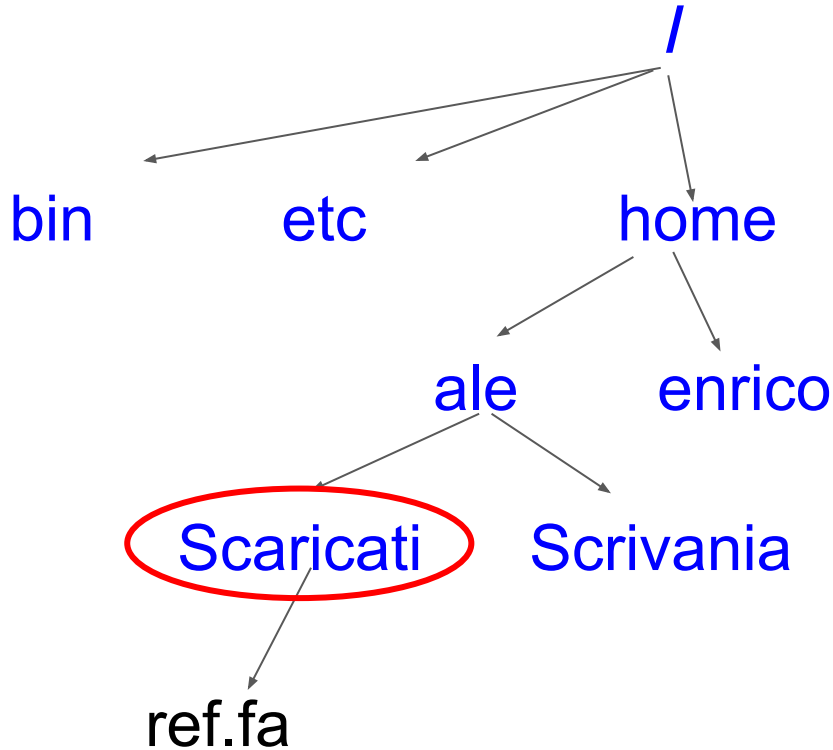
List files in current directory:

```
$ls  
Scaricati Scrivani
```

Change working directory

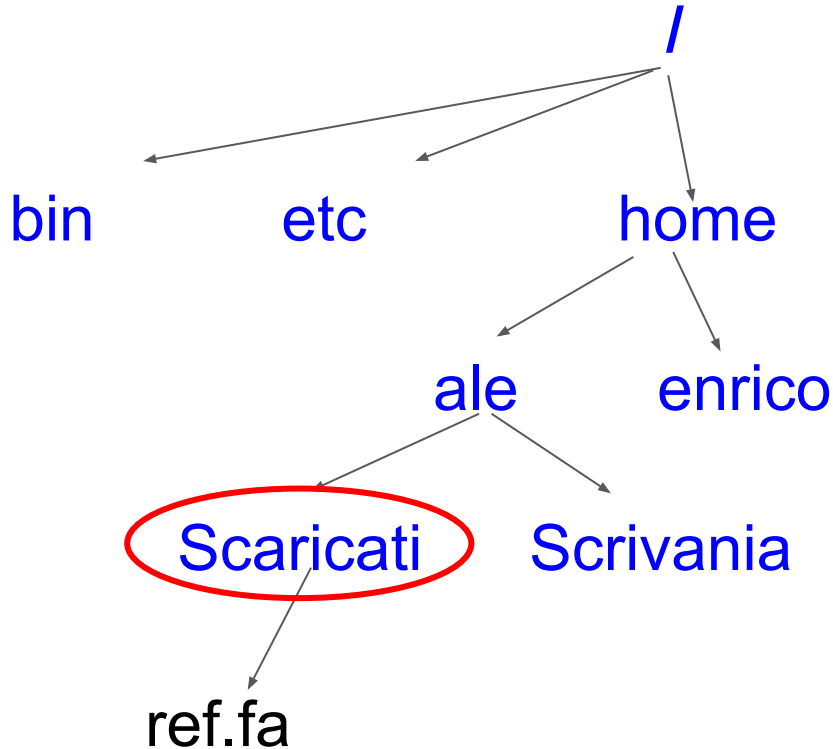
```
$cd Scaricati
```

The current/working direcotry



```
$pwd  
/home/ale/Scaricati  
$ls  
ref.fa
```

Absolute and Relative Paths



Relative paths depend on the current directory

Absolute path starts from /:

/home/ale

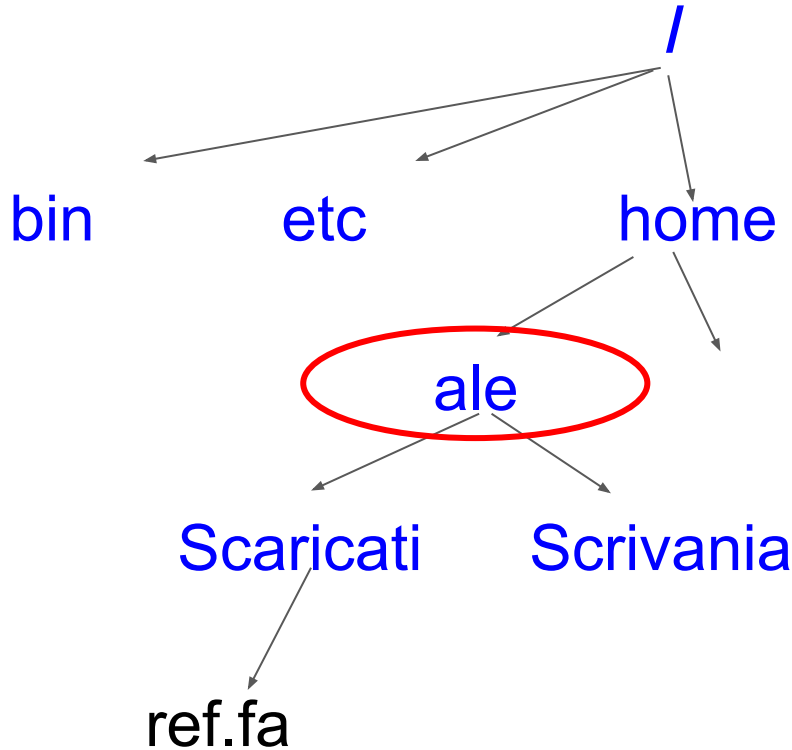
/opt/bwa/bwa

/home/ale/Scaricati/ref.fa

Relative paths start from the current directory:

ref.fa

Absolute and Relative Paths

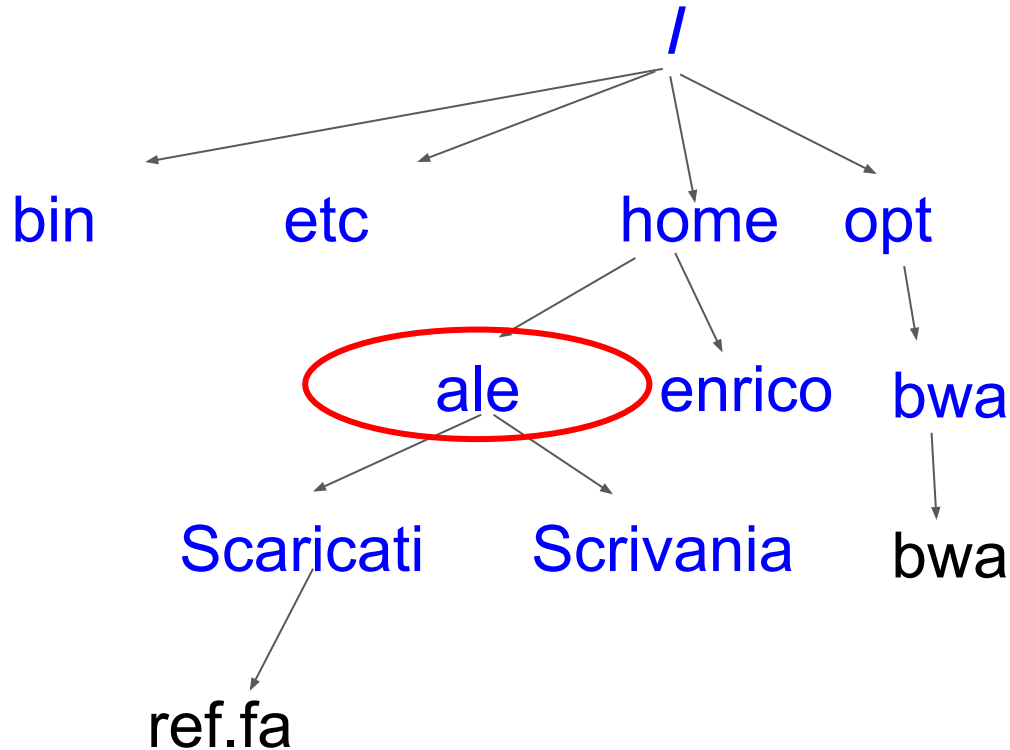


Relative paths start from the current directory:

```
$cd /home/ale
```

```
$cat Scaricati/ref.fa
```


Relative Paths and special directories “.” and “..”



“.” and “..” are always present
.. is the parent directory
. is the current directory

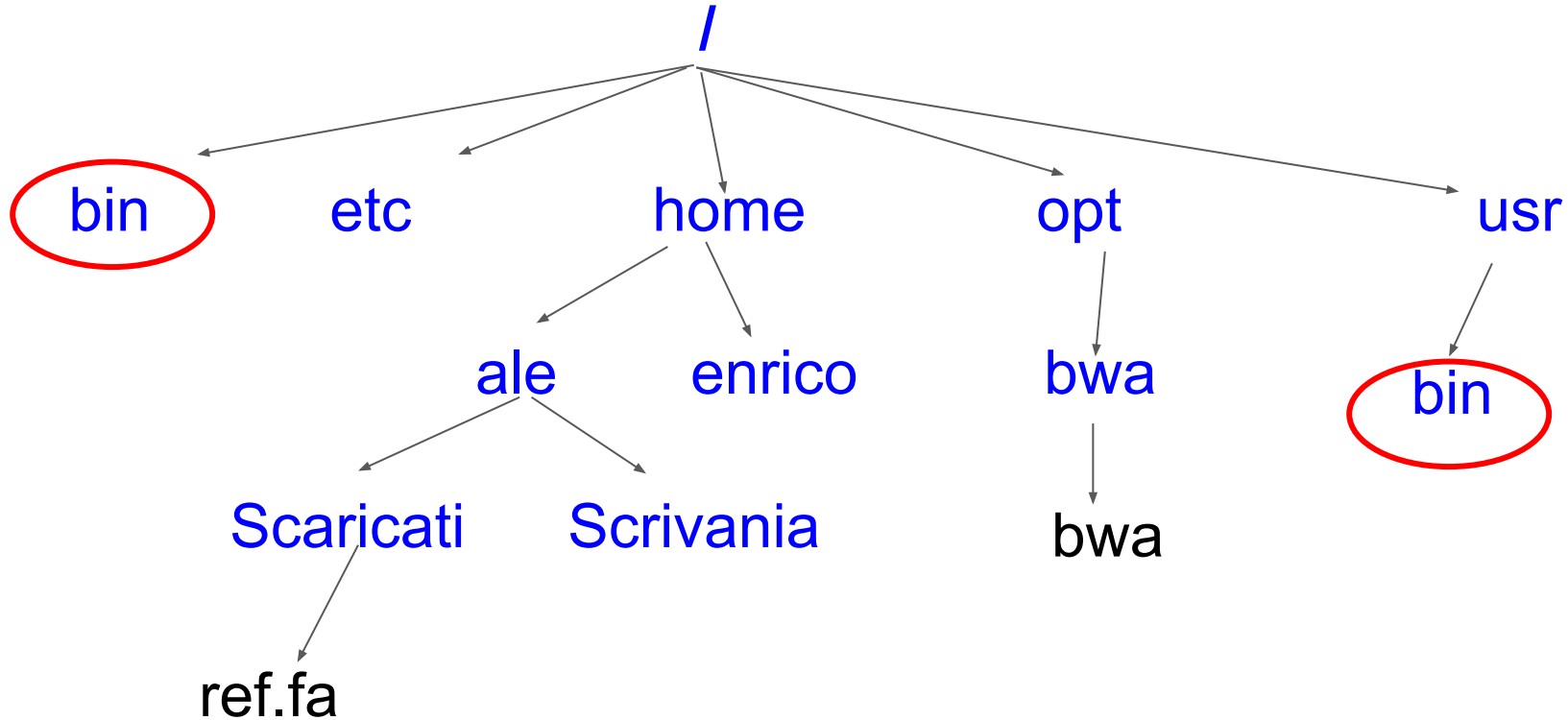
```
$pwd  
/home/ale  
ls ..  
ale enrico  
$cd ..  
$pwd  
/home/  
$ls ../opt/bwa  
bwa  
$cd  
$pwd  
/home/ale
```

The PATH environmental variable

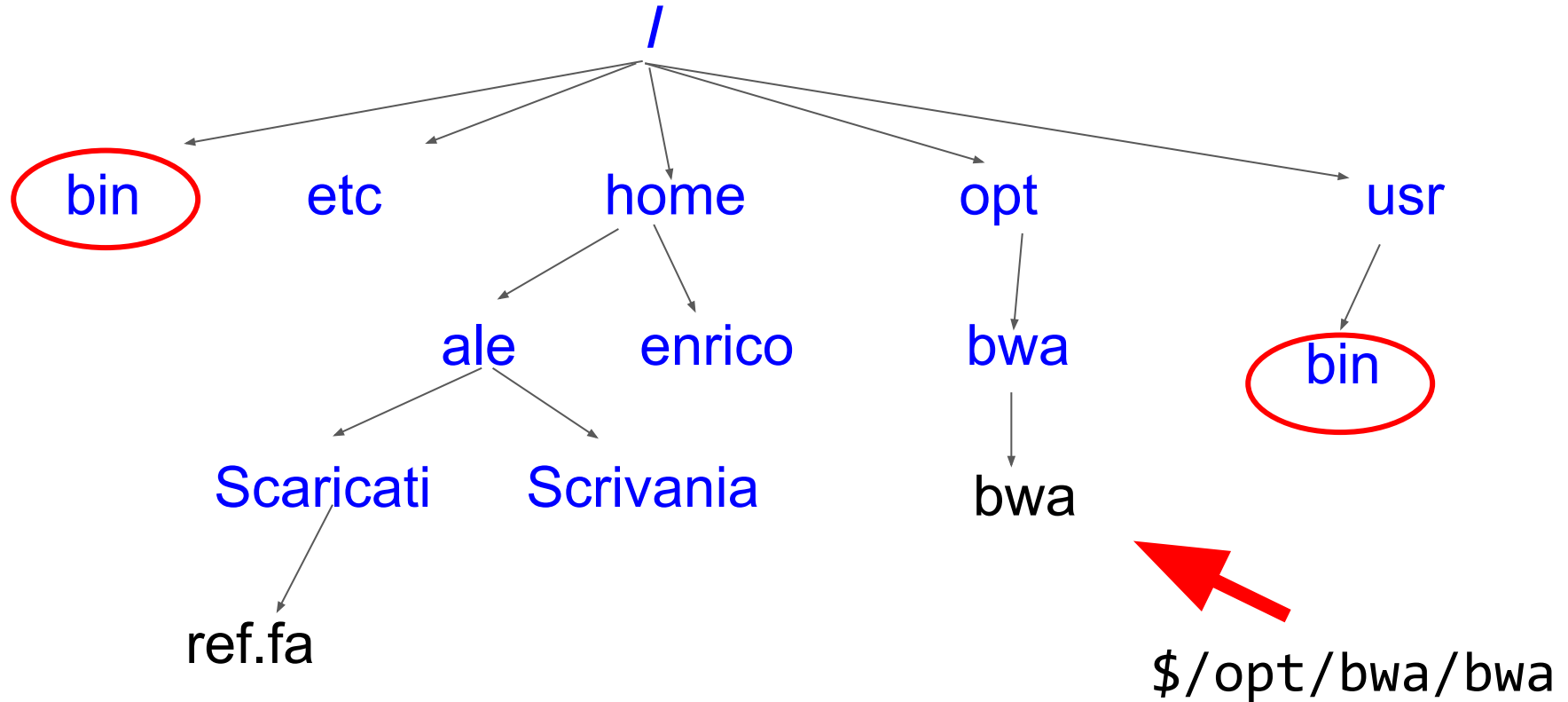
PATH is an environmental variable in Linux and other Unix-like operating systems that tells the shell which directories to search for executable files (i.e., ready-to-run programs) in response to commands issued by a user.

```
>>> echo $PATH
```

The PATH environmental variable

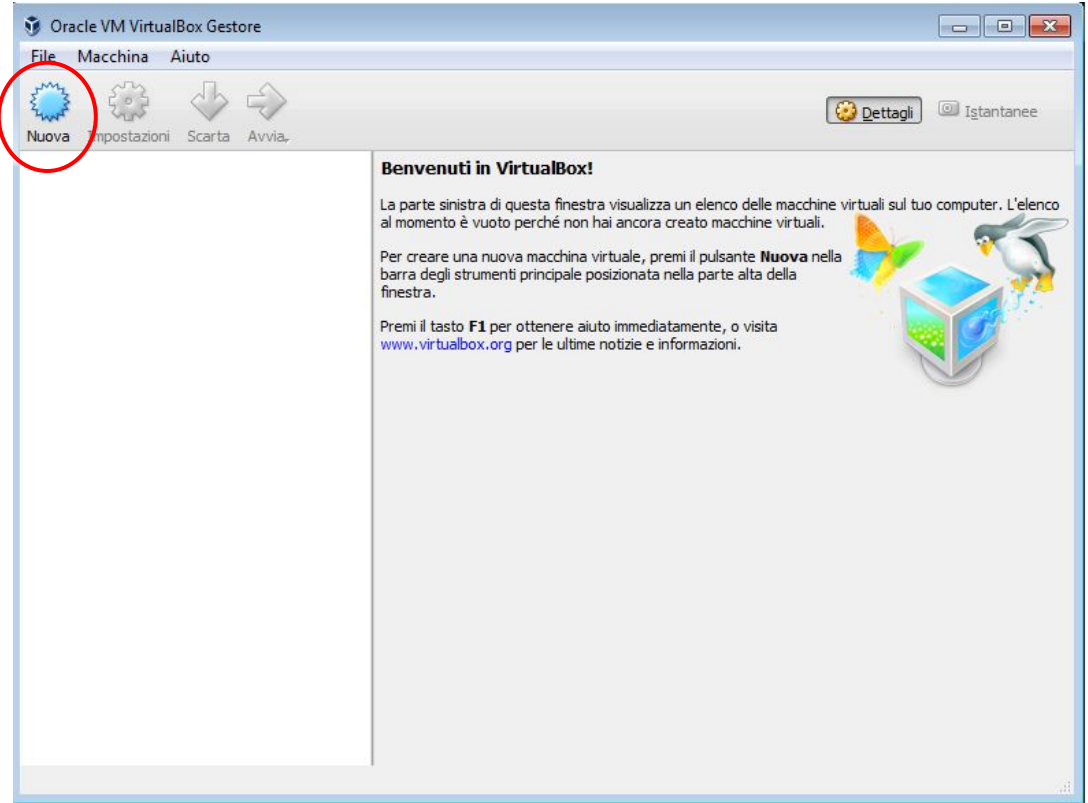


How to execute a program/command not in the PATH?

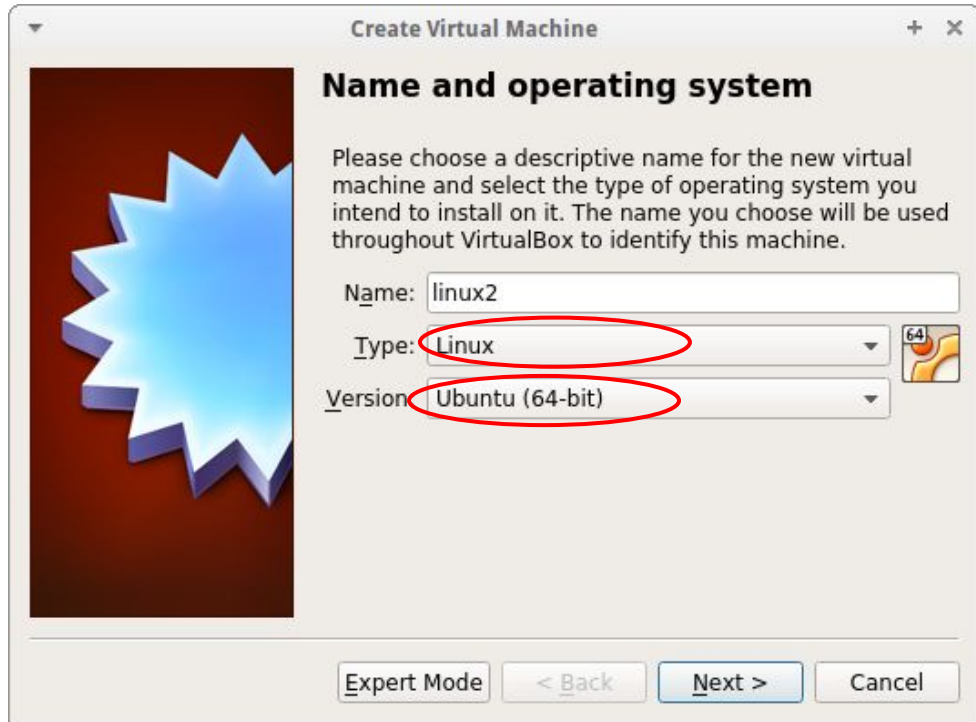




Cliccare sul tasto “Nuova”
per creare una nuova
“macchina virtuale”



Scegliere un nome per la nuova macchina virtuale, scegliere Linux come tipo di macchina virtuale e Ubuntu come versione e cliccare sul bottone “Avanti”




Create Virtual Machine

Name and operating system

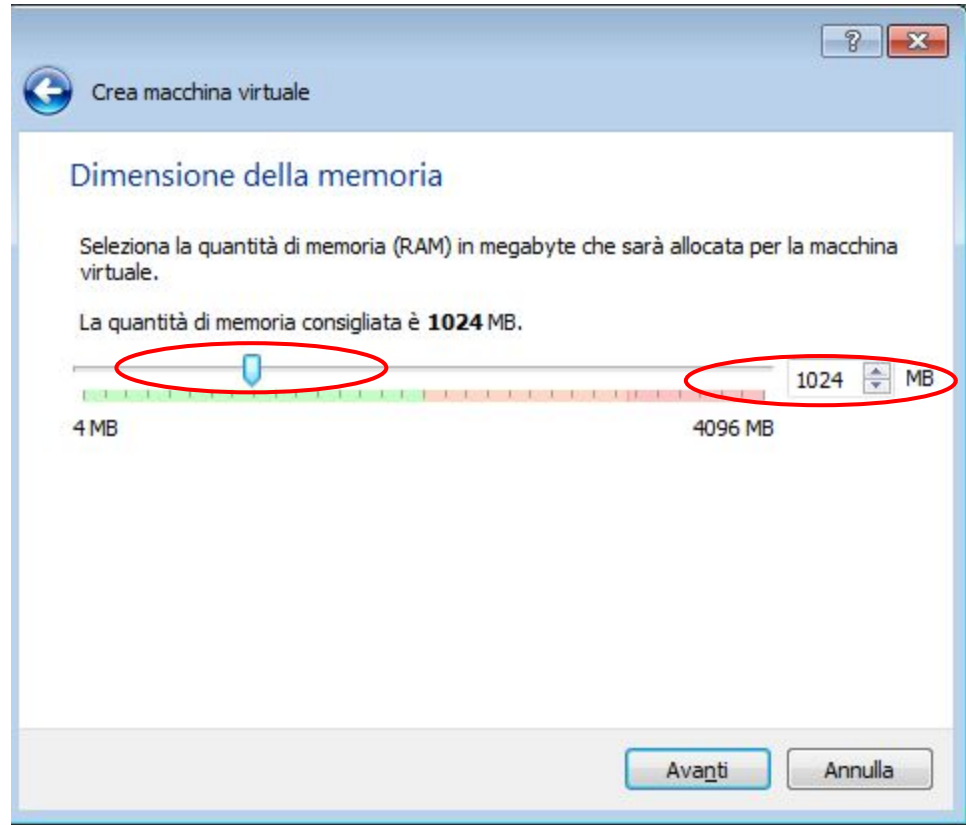
Please choose a descriptive name for the new virtual machine and select the type of operating system you intend to install on it. The name you choose will be used throughout VirtualBox to identify this machine.

Name:

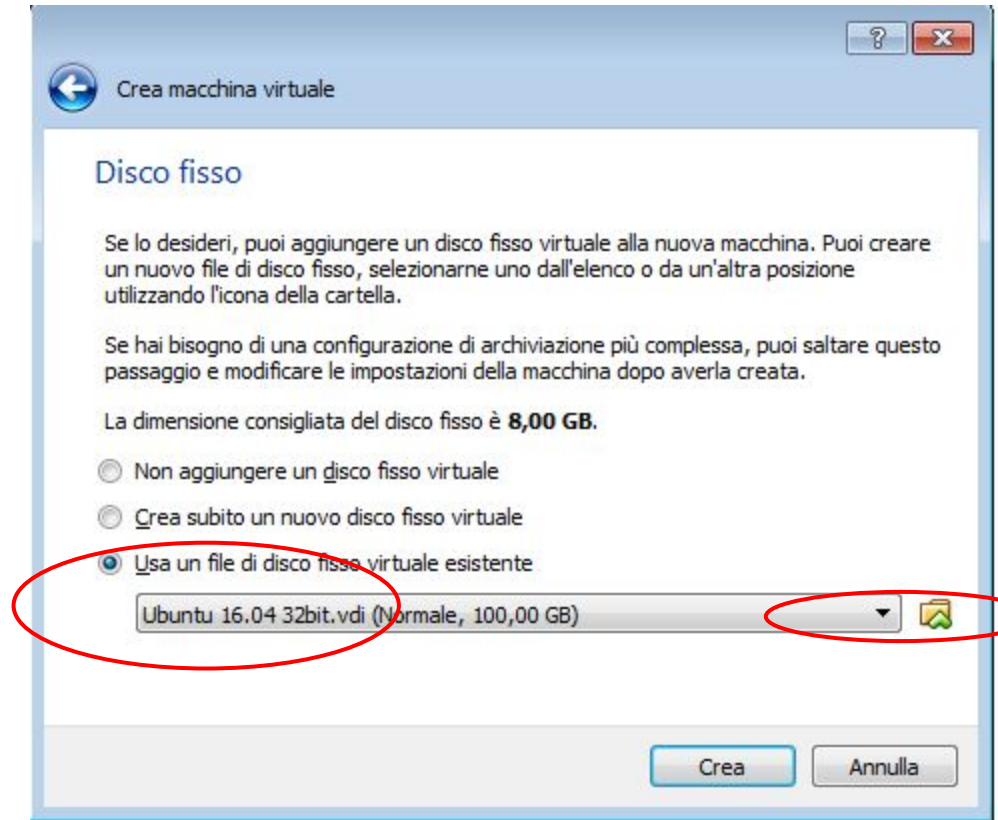
Type: 

Version:

In base alle caratteristiche del vostro computer, selezionare quanta memoria RAM assegnare alla macchina virtuale.



Scegliere l'opzione "Usa un disco fisso virtuale esistente" e scegliere il file .vdi che vi è stato fornito, cliccare "Crea"



Accendere la macchina virtuale e avviare il sistema operativo cliccando il bottone “Avvia”

