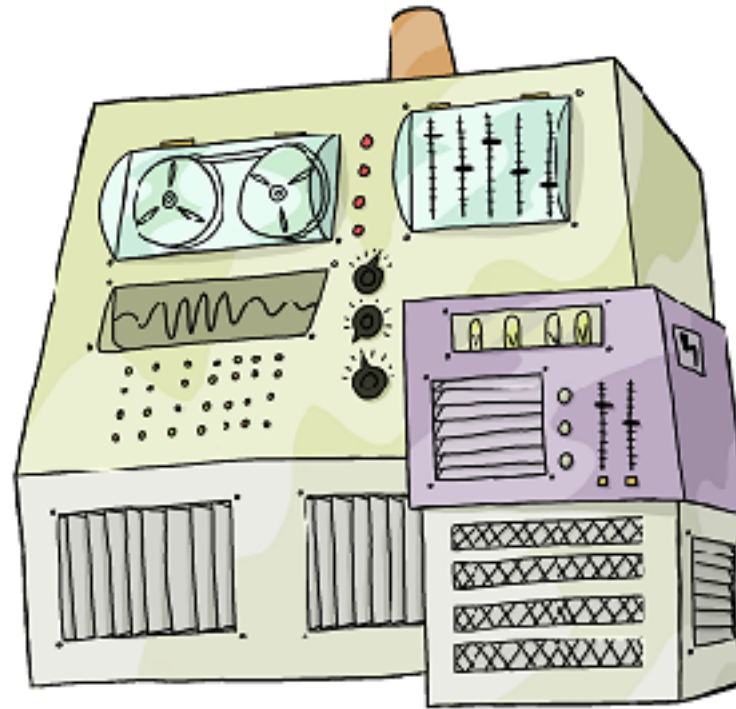
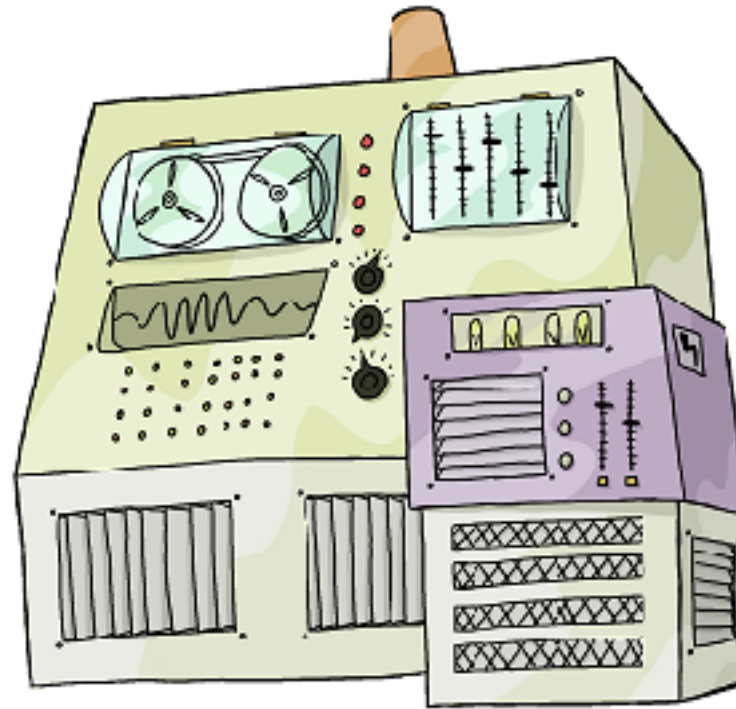


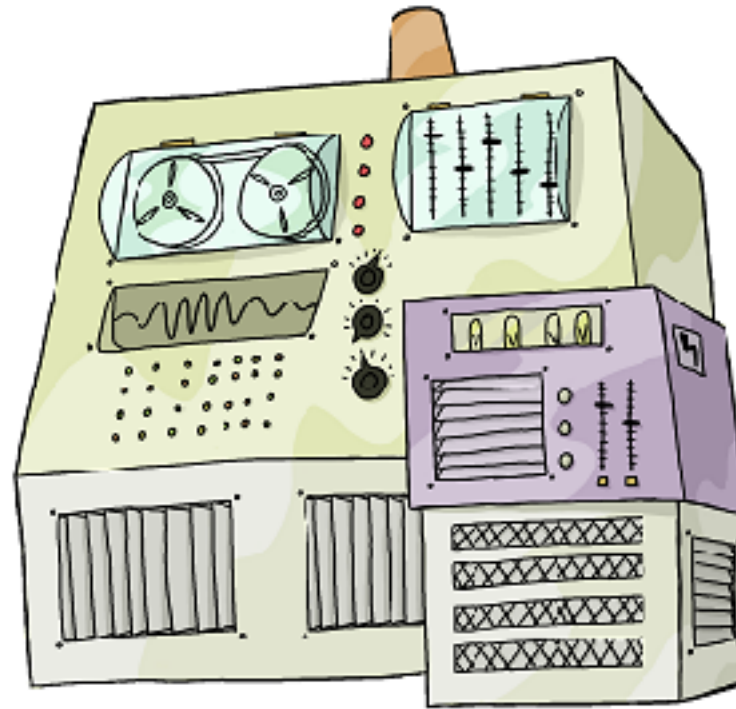
Introduction to Unix Shell

François Serra, Marco Di Stefano, Marc A. Marti-Renom
Genome Biology Group (CNAG)
Structural Genomics Group (CRG)



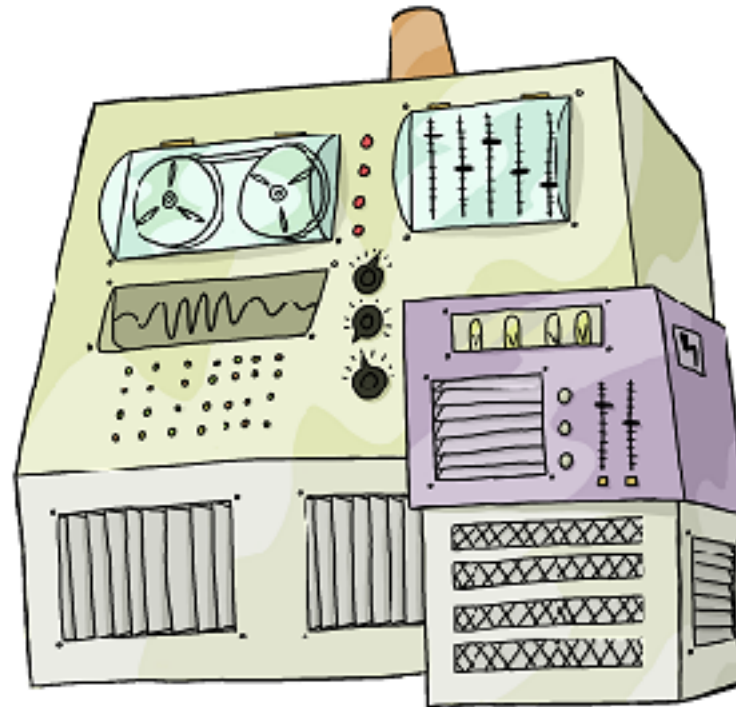


Run Programs



Run
Programs

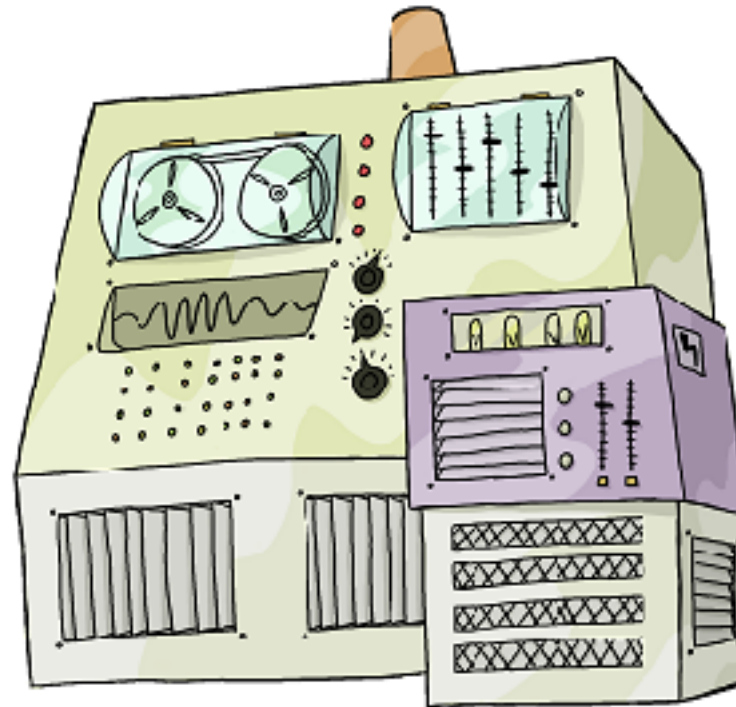
Store
Data



Run
Programs

Store
Data

Communicate
with each other



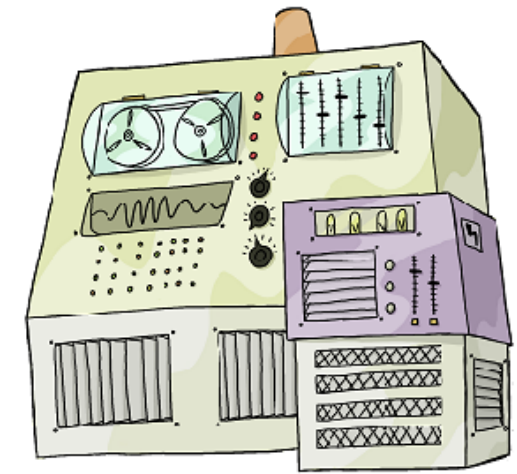
Run
Programs

Store
Data

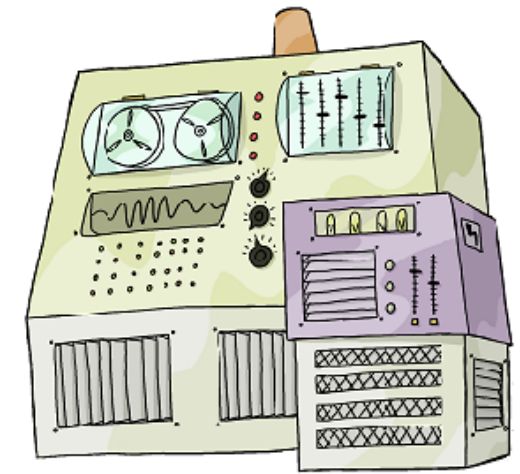
Communicate
with each other

Interact
with us

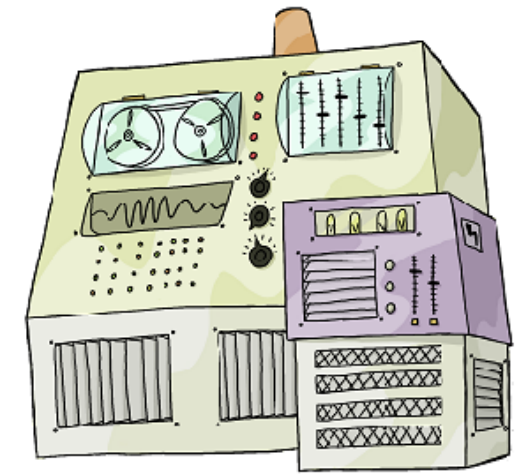
Interact
with us



Interact
with us



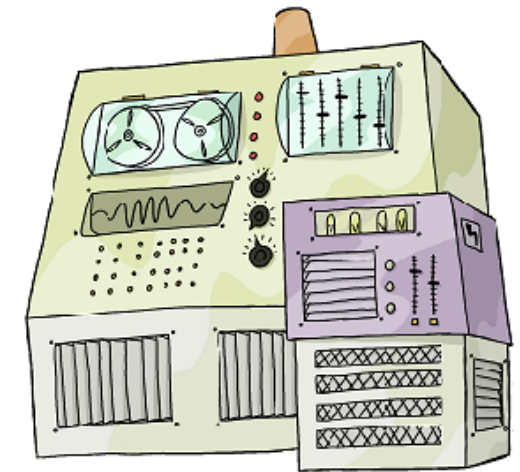
Telepathy



Interact
with us

Telepathy

Speech

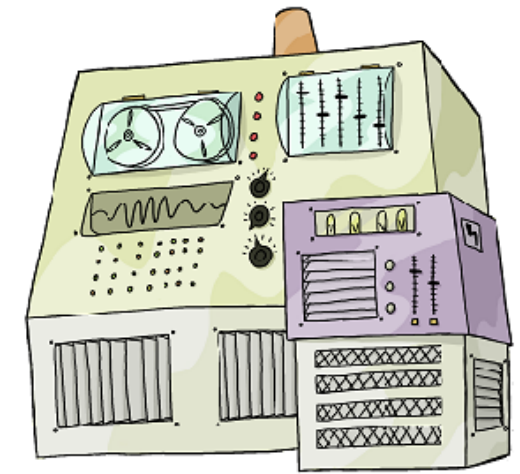


Interact
with us

Telepathy

Speech

WIMP
(windows, icons, mice, pointers)



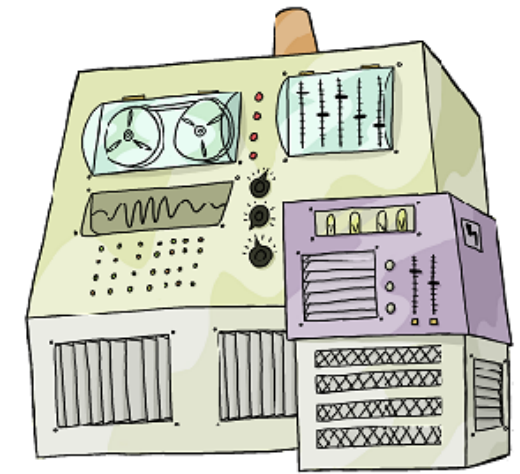
Interact
with us

Rewiring

Telepathy

Speech

WIMP



Interact
with us

Rewiring

Telepathy

Typewriter

Speech

WIMP

user logs in



user logs in
user types command



user logs in
user types command
computer executes command
and prints output



user logs in
user types command
computer executes command
and prints output
user types another command



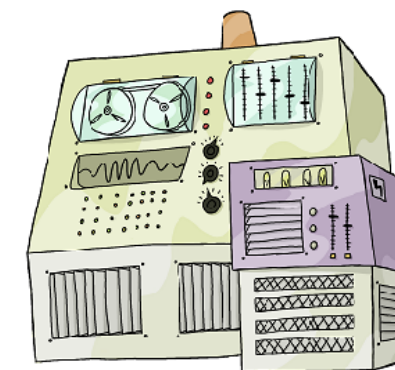
user logs in
user types command
computer executes command
and prints output
user types another command
**computer executes command
and prints output**



user logs in
user types command
computer executes command
and prints output
user types another command
computer executes command
and prints output
:
user logs off



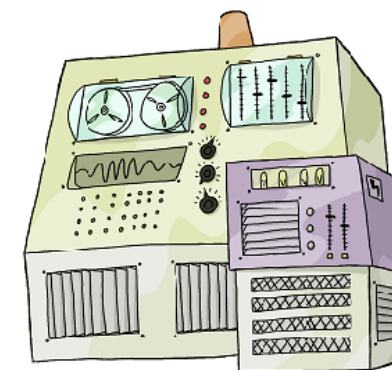
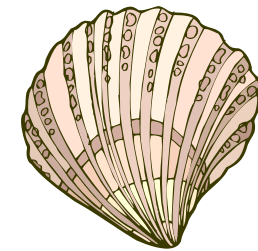
user logs in
user types command
computer executes command
and prints output
user types another command
computer executes command
and prints output
⋮
user logs off



user logs in
user types command
computer executes command
and prints output
user types another command
computer executes command
and prints output
:
user logs off

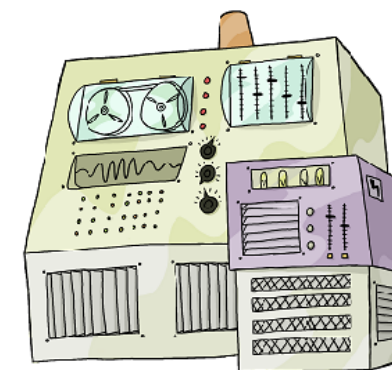
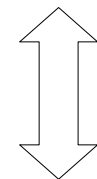
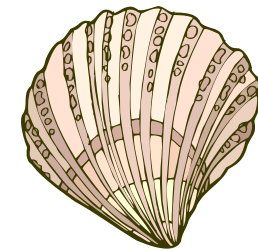
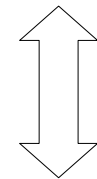


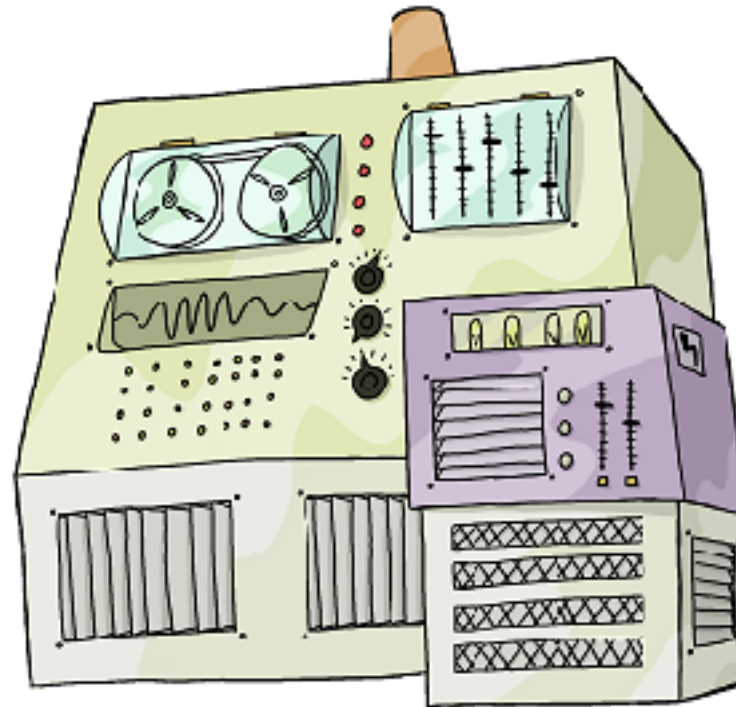
shell



user logs in
user types command
computer executes command
and prints output
user types another command
computer executes command
and prints output
⋮
user logs off

shell



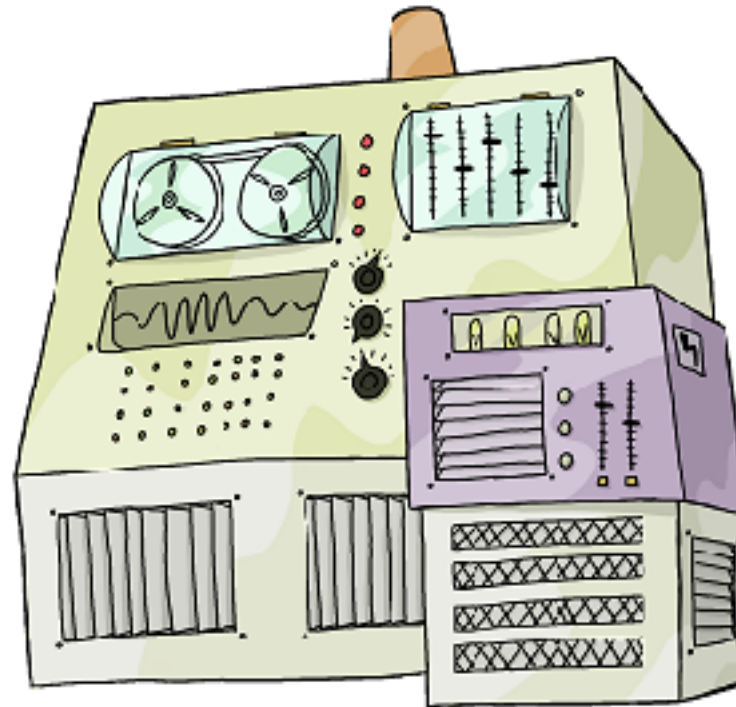


Run
Programs

Store
Data

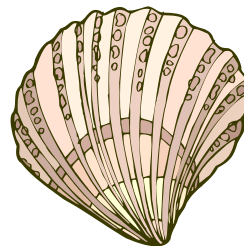
Communicate
with each other

Interact
with us



Run
Programs

Store
Data



shell

Communicate
with each other

Interact
with us

login: **vlad**

password: *********

\$

_____ shell prompt

login: **vlad**

password: *********

\$

_____ shell prompt

like Python's >>> and ...

login: **vlad**

password: *********

\$ whoami _____ check user ID

login: **vlad**

password: *********

\$ whoami

check user ID

shell finds the **whoami** program

login: **vlad**

password: *********

\$ whoami

check user ID

shell finds the **whoami** program

runs it

login: **vlad**

password: *********

\$ whoami

vlad

check user ID

shell finds the **whoami** program

runs it

prints its output

login: **vlad**

password: *********

\$ whoami

vlad

\$



check user ID

shell finds the **whoami** program

runs it

prints its output

displays a new prompt

login: **vlad**

password: *********

\$ whoami

vlad

\$ pwd

what is the *working directory*

login: **vlad**

password: *********

\$ **whoami**

vlad

\$ **pwd**

what is the *working directory*
the directory used when no other
directory is explicitly specified

login: **vlad**

password: *********

\$ whoami

vlad

\$ pwd

/home/vlad

\$

login: **vlad**

password: *********

\$ whoami

vlad

\$ pwd

/home/vlad

\$



root

/

login: **vlad**

password: *********

\$ whoami

vlad

\$ pwd

/home/vlad

\$



root

/

login: **vlad**

password: *********

\$ whoami

vlad

\$ pwd

/home/vlad

\$



root

/

login: **vlad**

password: *********

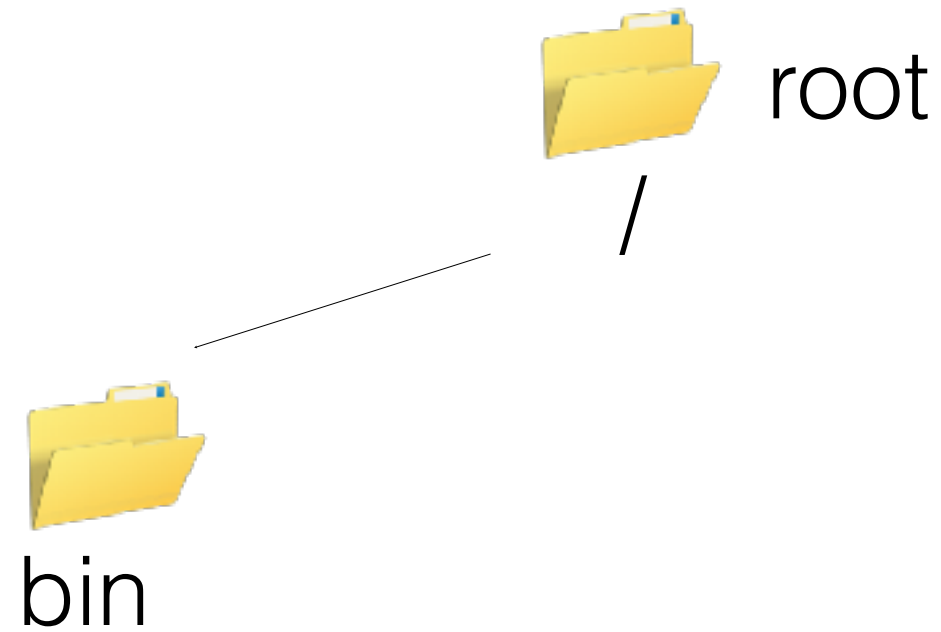
\$ **whoami**

vlad

\$ **pwd**

/home/vlad

\$



login: **vlad**

password: *********

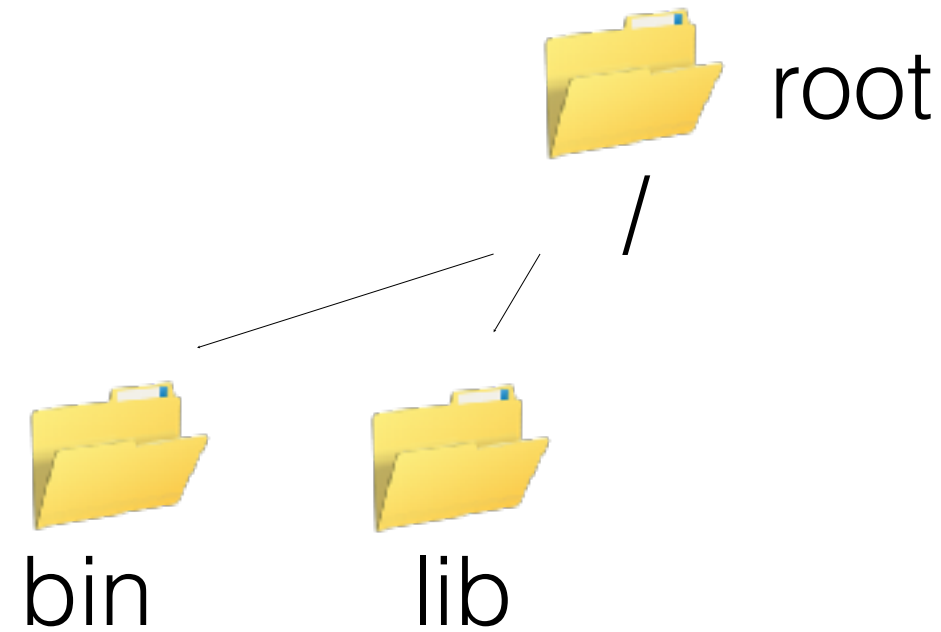
\$ whoami

vlad

\$ pwd

/home/vlad

\$



login: **vlad**

password: *********

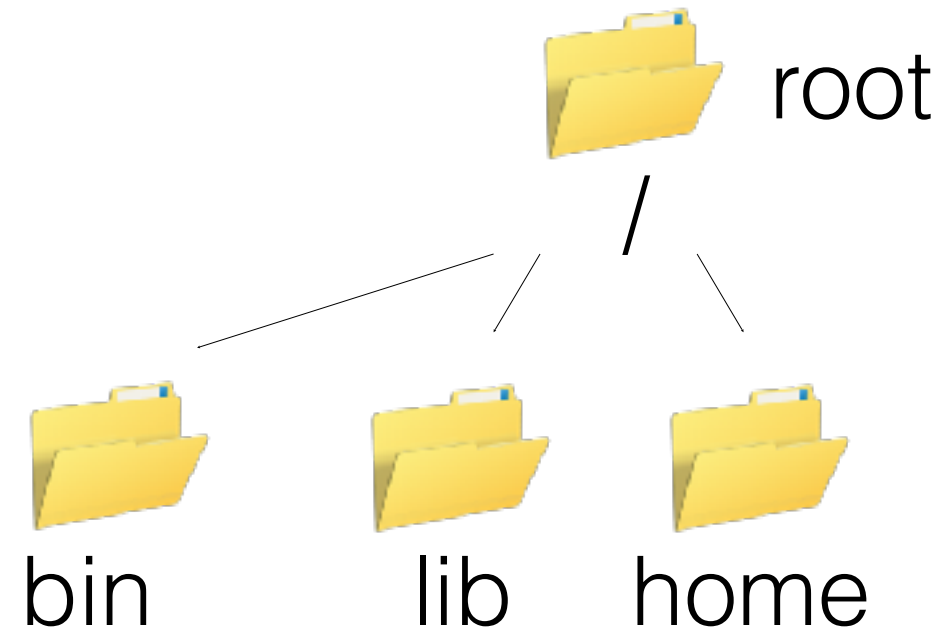
\$ whoami

vlad

\$ pwd

/home/vlad

\$



login: **vlad**

password: *********

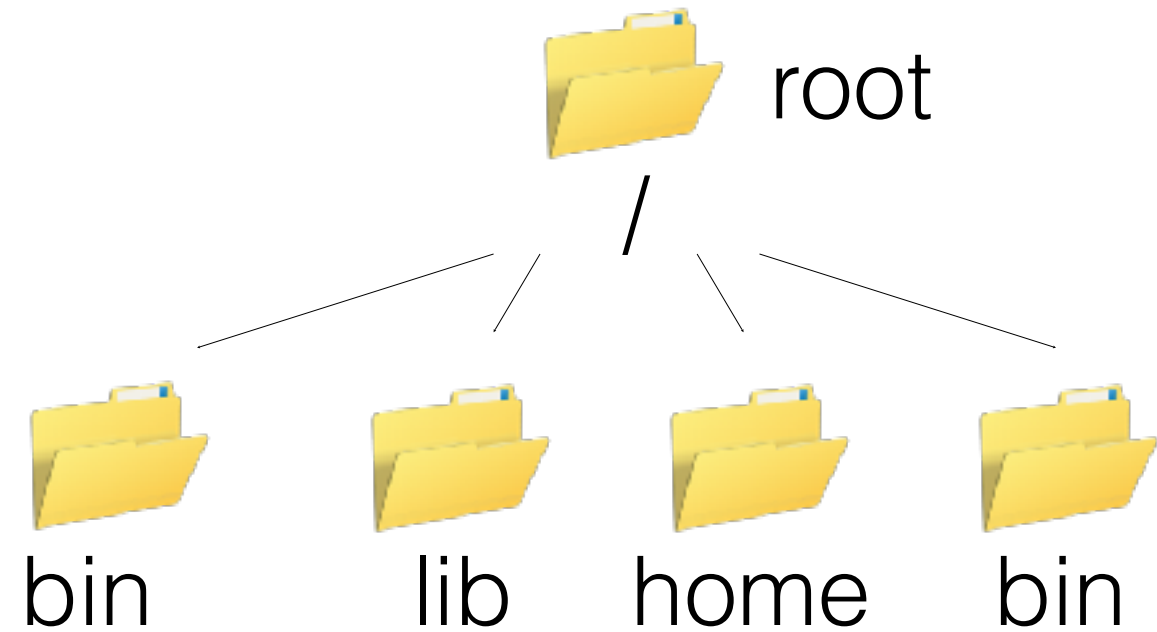
\$ whoami

vlad

\$ pwd

/home/vlad

\$



login: **vlad**

password: *********

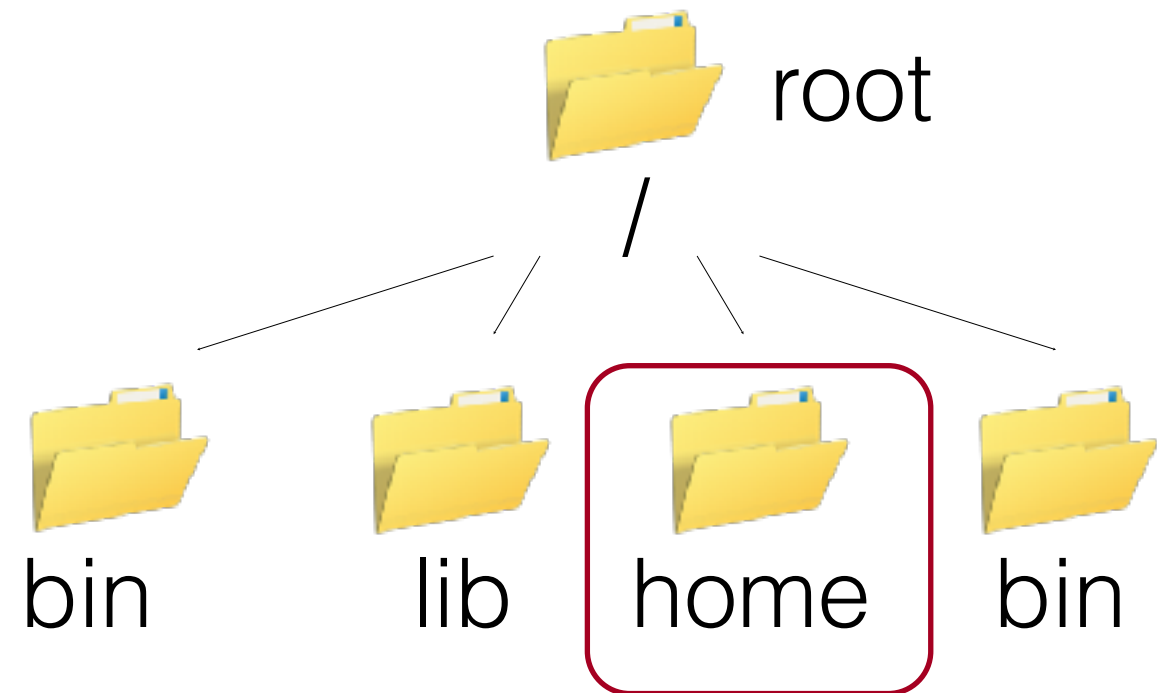
\$ whoami

vlad

\$ pwd

/home/vlad

\$



login: **vlad**

password: *********

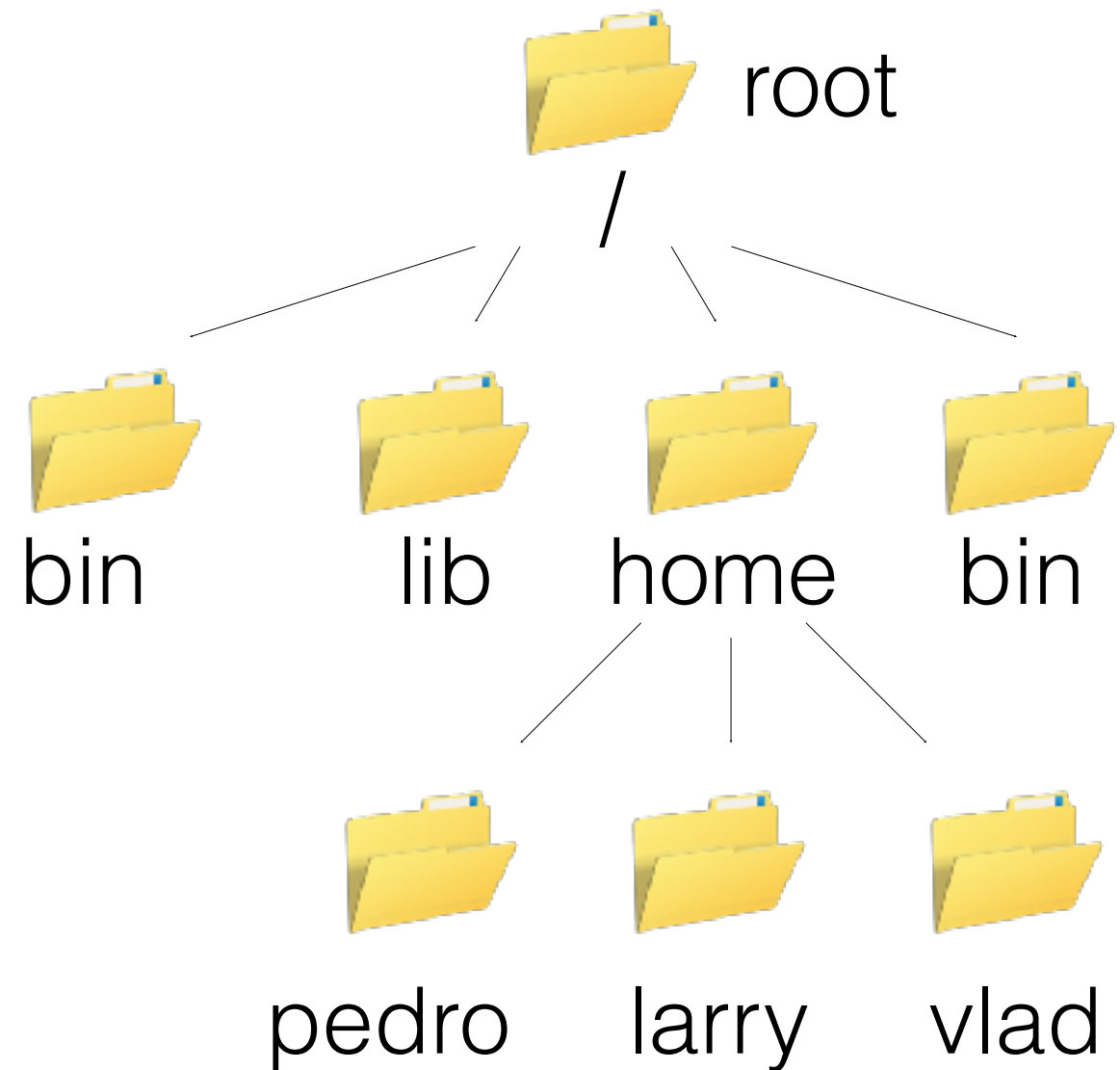
\$ whoami

vlad

\$ pwd

/home/vlad

\$



login: **vlad**

password: *********

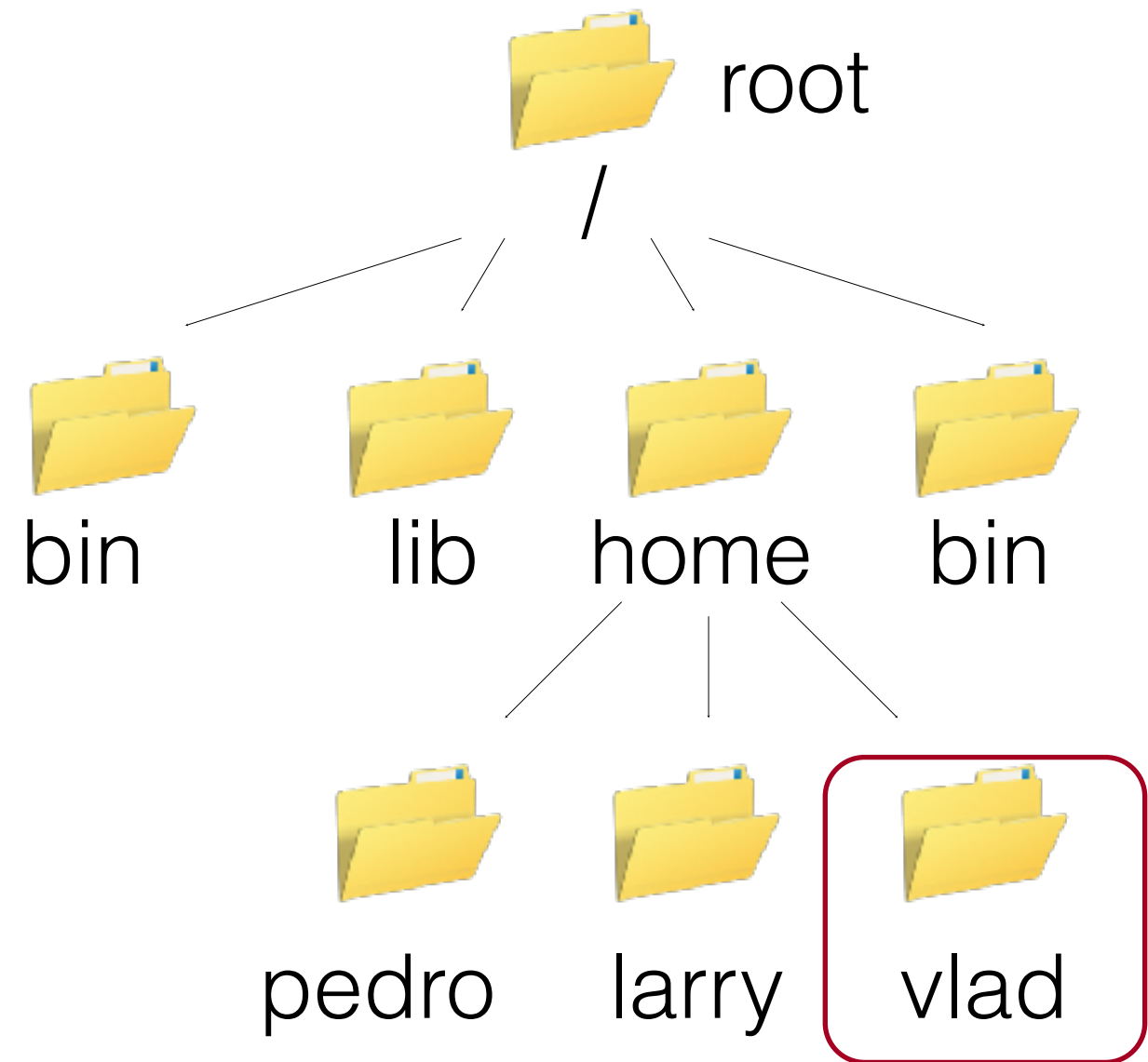
\$ whoami

vlad

\$ pwd

/home/vlad

\$



login: **vlad**

password: *********

\$ whoami

vlad

\$ pwd

/home/vlad

\$ ls _____ stands for "listing"

login: **vlad**

password: *********

\$ whoami

vlad

\$ pwd

/home/vlad

\$ ls

stands for "listing"

sadly more memorable than
most command names

login: **vlad**

password: *********

\$ whoami

vlad

\$ pwd

/home/vlad

\$ ls

bin data mail music

notes.txt papers

\$

login: **vlad**

password: *********

\$ **whoami**

vlad

\$ **pwd**

/home/vlad

\$ **ls -F**

an argument or flag modifying
the command's behavior

bin/ data/ mail/ music/

notes.txt papers/

\$

login: **vlad**

password: *********

\$ **whoami**

vlad

\$ **pwd**

/home/vlad

\$ **ls -F**

bin/ **data/** **mail/** **music/**

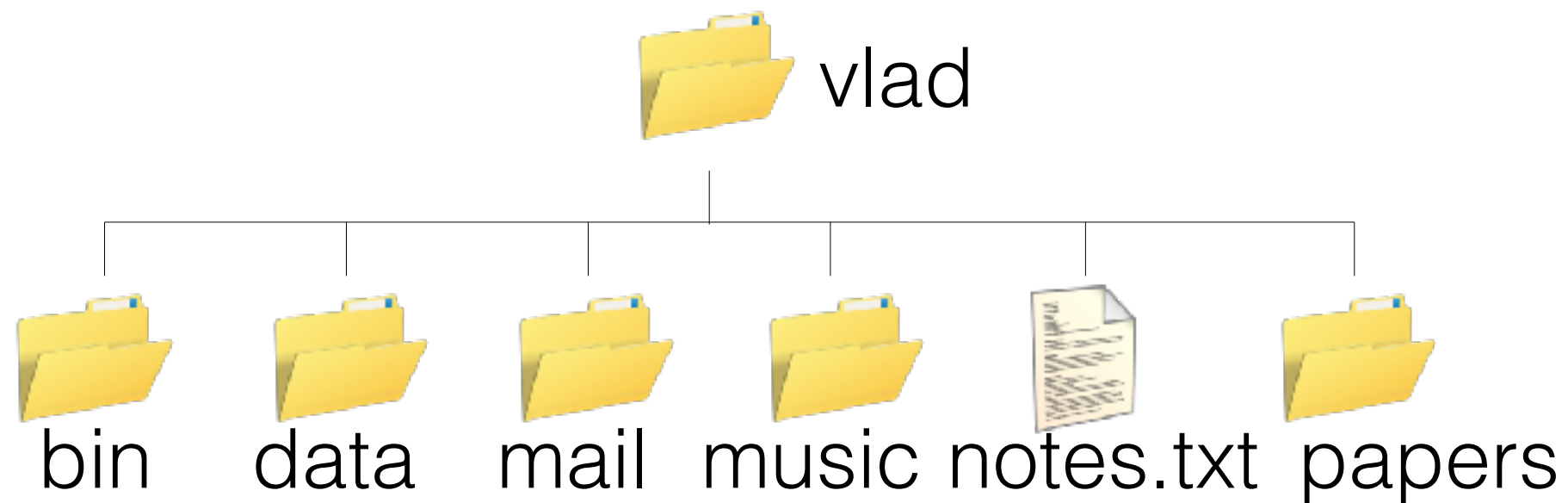
notes.txt **papers/**

\$

adds a trailing '/' to
directory names

\$ ls -F

**bin/ data/ mail/ music/
notes.txt papers/**

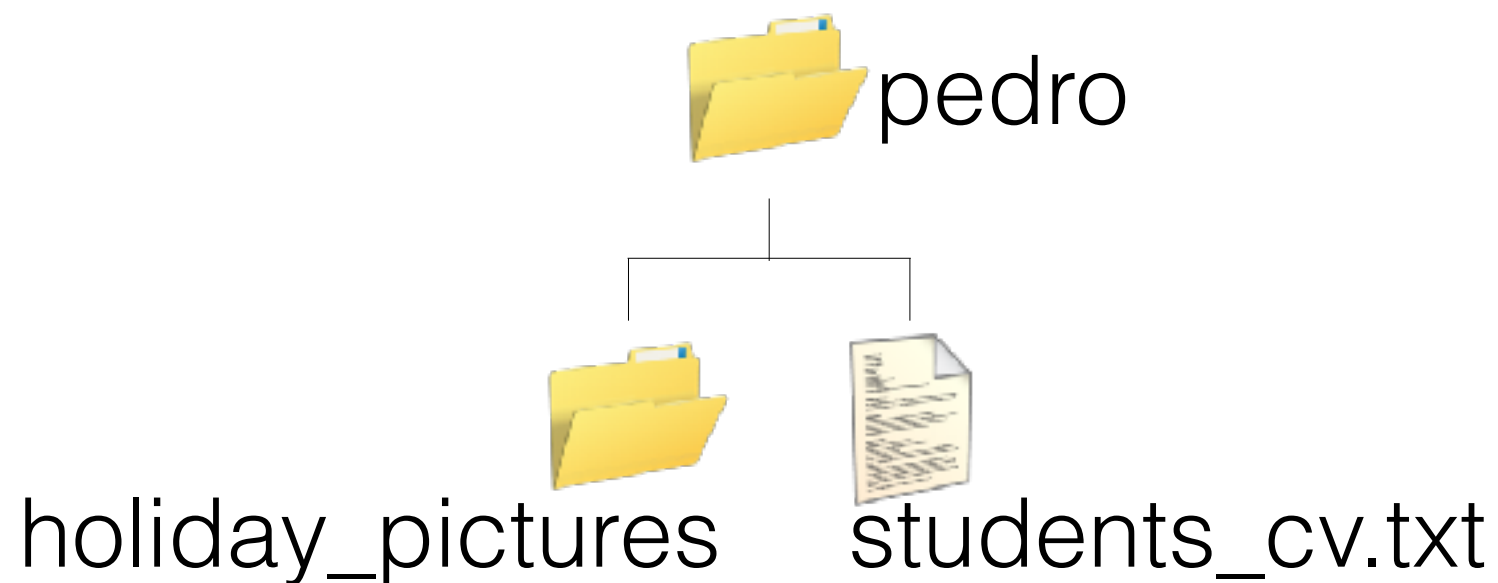


```
$ pwd
```

```
/home/vlad
```

```
$ ls /home/pedro -F
```

```
holidayPictures/ students_cv.txt
```



```
$ ls ../pedro -F
```

```
holidayPictures/ students_cv.txt
```

Lets start!!

Command	Description	Example	Action
<code>pwd</code>	print working directory	<code>pwd</code>	path and name of working dir. I am in now
<code>ls</code>	list contents of directory	<code>ls</code>	list contents of current dir.
		<code>ls test/</code>	list contents of the test dir. that hangs from the working dir.
		<code>ls -lh</code>	vertical list of dir. contents
<code>cd</code>	change directory	<code>cd</code>	go to home directory (same as <code>cd /home/user</code> or <code>cd ~/</code>)
		<code>cd /home/user/Docs</code>	go to the Docs directory
		<code>cd ..</code>	go to parent directory
<code>mkdir</code>	make directory	<code>mkdir test</code>	creates directory test/
<code>rmdir</code>	remove directory	<code>rmdir test</code>	remove test/ if empty
<code>rm</code>	remove file	<code>rm test.txt</code>	remove test.txt file
<code>cp</code>	copy	<code>cp fileA fileB</code>	copy fileA to fileB
<code>mv</code>	move or rename file or directory	<code>mv a b</code>	change name from a to b
		<code>mv a ..</code>	move a to parent directory
<code>more</code>	see file content	<code>more a.txt</code>	see contents of a.txt page by page
<code>cat</code>	see file content	<code>cat a.txt</code>	see contents of a.txt page, all the file at once
<code>head/tail</code>	see first/last lines of a file	<code>head -n 10 a.txt</code>	see the first 10 lines a file a.txt (last 10 would be with <code>tail</code>)
<code>zcat</code>	like cat but fir zipped files	<code>zcat a.txt.gz head</code>	see first 10 lines of a compressed file a.txt.gz
<code>nano</code>	simple text editor!	<code>nano a.txt</code>	edit a.txt (ctrl-X to exit)
<code>firefox</code>	a web browser	<code>firefox a.html</code> or <code>firefox a.jpg</code>	use web browser to view file
<code>ssh</code>	connect to a remote server	<code>ssh student@172.17.133.110</code>	go to the home folder of “student” in a given server
<code>scp</code>	copy from a remote server	<code>scp -r student@172.17.133.110:~/test .</code>	copy test directory from remote server at current pwd
<code>man</code>	manual on a command	<code>man ls</code>	manual page for the 'ls' command