

A *gentle* introduction to the command-line

Command-whatnow?

Command-whatnow?

```
root@lolita | zsh:"
```

```
''' # Killall wpa_supplicant  
''' # wlan0ch3k@lolita  
killing dhcpc (if any)  
killing wpa_supplicant (if any)  
wpa_supplicant no process killed  
no wpa found running  
setting device  
connecting WLAN  
starting WPA supplicant  
acquire BSSID lease  
  
wlan0: dhcpcd 4.0.13 starting  
wlan0: waiting for carrier  
wlan0: link up  
wlan0: broadcasting for a lease  
wlan0: offered 10.0.0.17 from 10.0.0.1  
wlan0: acknowledged 10.0.0.17 from 10.0.0.1  
wlan0: checking for available leases on attached networks  
wlan0: leased 10.0.0.17 for 864000 seconds  
'''  
'''
```

```
ch3ka@lolita | zsh:"/projects/i3
```

```
From git://code.stephberg.de/i3  
 3b0760...aa43db master -> origin/master  
 a0352a...e4813d next -> origin/next  
Updating a0352a0...e4813d  
Fast forward  
 0 files changed, 0 insertions(+), 0 deletions(-)  
 0 files changed, 0 insertions(+), 0 deletions(-)  
 include/config.h | 4 ++  
 include/data.h | 6 ++++  
 include/handlers.h | 7 +  
 include/layout.h | 3 ++  
 include/workspace.h | 12 ++++++  
 src/config.c | 10 ++++++  
 src/floating.c | 7 +  
 src/layouts.c | 40 +++++++  
 src/layouts.h | 77 +++++++  
 src/main.c | 3 ++  
 src/manage.c | 9 +  
 src/resource.c | 29 +++++++  
 src/workspace.c | 19 +++++++  
 src/xinerama.c | 21 ++++++  
 16 files changed, 237 insertions(+), 0 deletions(<-)  
"/projects/i3 %
```

```
ch3ka@lolita | synccry -f 10.0.0.43:"/incoming"
```

```
DEBUG: CWindowsClipboard.cpp:532: available targets: TIMESTAMP (258), TARGETS (25  
(2), MULTIPLE (256), UTF8_STRING (285), COMPOUND_TEXT (284), TEXT (253), STRING (31),  
DEBUG: CWindowsClipboard.cpp:559: added format 0 for target UTF8_STRING (255) (62  
bytes)  
DEBUG: CWindowsClipboard.cpp:348: close clipboard 0  
INFO: CScreen.cpp:98: entering screen  
INFO: CScreen.cpp:116: leaving screen  
DEBUG: CWindowsClipboard.cpp:313: open clipboard 0  
DEBUG: CWindowsClipboard.cpp:401: open fall clipboard 0  
DEBUG: CWindowsClipboard.cpp:532: available targets: TIMESTAMP (258), TARGETS (25  
(2), MULTIPLE (256), UTF8_STRING (285), COMPOUND_TEXT (284), TEXT (253), STRING (31),  
DEBUG: CWindowsClipboard.cpp:559: added format 0 for target UTF8_STRING (255) (62  
bytes)  
DEBUG: CWindowsClipboard.cpp:348: close clipboard 0  
DEBUG: CWindowsClipboard.cpp:313: open clipboard 1  
DEBUG: CWindowsClipboard.cpp:493: ICCM fill clipboard 1  
DEBUG: CWindowsClipboard.cpp:532: available targets: TIMESTAMP (258), TARGETS (25  
(2), MULTIPLE (256), UTF8_STRING (285), COMPOUND_TEXT (284), TEXT (253), STRING (31),  
DEBUG: CWindowsClipboard.cpp:559: added format 0 for target UTF8_STRING (255) (62  
bytes)  
DEBUG: CWindowsClipboard.cpp:348: close clipboard 1
```

```
root@lolita | zsh:"
```

```
''' Connect time: 34.6 minutes.  
''' Last boot at Sun Sep 6 21:22:21 2009  
''' The PPP daemon has died: A nodem hung up the phone (exit code = 16)  
''' nae pppd explains pppd error codes in more detail.  
''' Try again and look into /var/log/messages and the wvdial and pppd man pages for  
''' more information.  
''' Auto Reconnect will be attempted in 8 seconds  
''' Cannot open /dev/ttysUSB0: No such file or directory  
''' Cannot open /dev/ttysUSB0: No such file or directory  
''' Cannot open /dev/ttysUSB0: No such file or directory  
''' hibernate=ram  
''' hibernate=ram  
''' hibernate=ram  
''' hibernate=ram  
'''
```

```
ch3ka@lolita | zsh:"/cache
```

```
/dev/loop0 2.9G 1.2G 1.7G 41% /usr/portage  
/dev/kernfs: Input/output error  
"/cache" is mounted  
/dev/mapper/vg-root on / type ext3 (rw,noatime)  
proc on /proc type proc (rw,noexec,nodev,noexec)  
sysfs on /sys type sysfs (rw,noexec,nodev,noexec)  
tmpfs on /tmp type tmpfs (rw,noexec,nodiratime,noatime)  
devpts on /dev/pts type devpts (rw,noexec,gid5,mode=620)  
/dev/mapper/vg-tmp on /tmp type ext3 (rw,noatime)  
/dev/mapper/vg-home on /home type ext3 (rw,noatime)  
/dev/mapper/vg-var on /var type ext3 (rw,noatime)  
/dev/mapper/vg-opt on /opt type ext3 (rw,noatime)  
usbfs on /tmp/hub type usb (rw,noexec,nouid,devnode=0x64,devgid=05)  
securityfs on /sys/kernel/security type securityfs (rw,noexec,nouid,nodev)  
/dev/loop0 on /usr/portage type ext2 (rw)  
/dev/kbd on /mnt/test type vfat (rw)  
"/cache" is unmounted
```

```
ch3ka@lolita | scrot -d5 terminalz.jpg ":"/projects/i3
```

```
CC src/xinerama.o
```

```
SUBDIR i3-msg
```

```
CC Main.o
```

```
LINK i3-msg
```

```
"/projects/i3 % sudo make install
```

```
LINK i3
```

```
SUBDIR i3-msg
```

```
LINK i3-msg
```

```
INSTALL
```

```
LINK i3-msg
```

```
INSTALL
```

```
"/projects/i3 % scrot -d5 terminalz.jpg
```

```
["
```

```
ch3ka@lolita | http://:incoming
```

```
1 [ 100%] 0.0.0.0:22 [ 100%] Tasks: 88 total, 1 running  
2 [ 100%] 0.0.0.0:22 [ 100%] Load average: 0.36 0.28 0.26  
3 [ 100%] 0.0.0.0:22 [ 100%] Uptime: 5 days, 06:36:02  
Sup[ 100%]
```

Time	Proc	Mem	User	System	Tasks	Load Average	Uptime
19:48:53	ch3ka	20 0	56.9%	26.0%	3 [100%]	0.36 0.28 0.26	5 days, 06:36:02
19:49:04	ch3ka	20 0	56.2%	26.1%	1 [100%]	0.3 0.2 0.2	5 days, 06:36:02
19:49:48	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:50:00	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:50:44	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:51:41	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:52:00	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:52:11	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:52:22	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:52:33	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:52:44	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:52:55	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:53:06	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:53:17	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:53:28	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:53:39	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:53:50	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:54:01	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:54:12	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:54:23	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:54:34	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:54:45	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:54:56	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:55:07	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:55:18	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:55:29	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:55:40	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:55:51	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:55:52	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:55:53	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:55:54	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:55:55	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:55:56	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:55:57	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:55:58	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:55:59	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:56:00	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:56:01	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:56:02	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:56:03	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:56:04	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:56:05	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:56:06	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:56:07	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:56:08	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:56:09	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:56:10	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:56:11	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:56:12	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:56:13	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:56:14	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:56:15	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:56:16	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:56:17	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:56:18	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:56:19	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:56:20	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:56:21	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:56:22	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:56:23	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:56:24	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:56:25	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:56:26	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:56:27	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
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19:56:30	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:56:31	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:56:32	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:56:33	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
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19:56:35	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:56:36	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:56:37	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:56:38	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:56:39	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:56:40	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:56:41	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:56:42	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:56:43	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:56:44	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:56:45	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:56:46	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:56:47	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:56:48	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:56:49	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:56:50	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:56:51	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:56:52	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:56:53	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
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19:56:55	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:56:56	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:56:57	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:56:58	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:36:02
19:56:59	ch3ka	20 0	56.9%	26.3%	1 [100%]	0.26 0.24 0.22	5 days, 06:

Command-whatnow?

command-line or terminal:

an interface to communicate with the computer

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Provides a *privileged* access to the computer resources!

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Provides a *privileged* access to the computer resources!

It is *sooooooo* easy to use with public AI models!

A simplified view

A simplified view

Computer



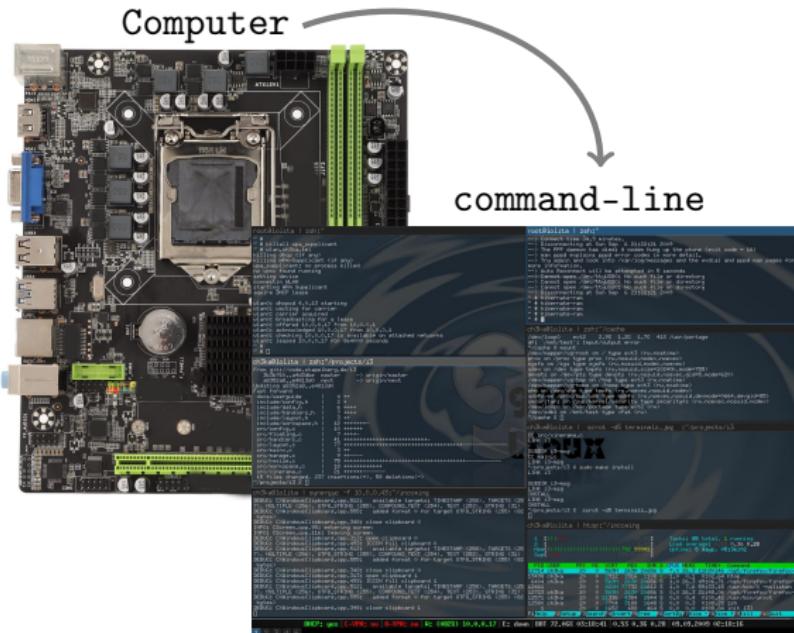
A simplified view

Computer

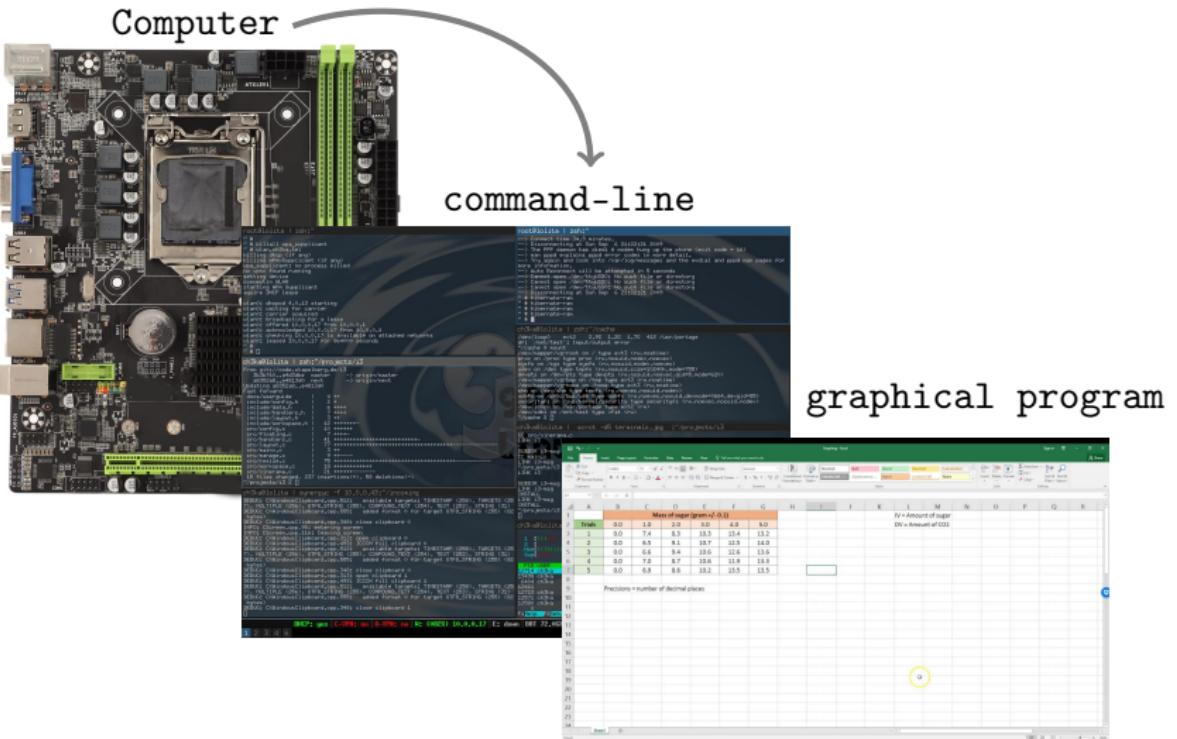


command-line

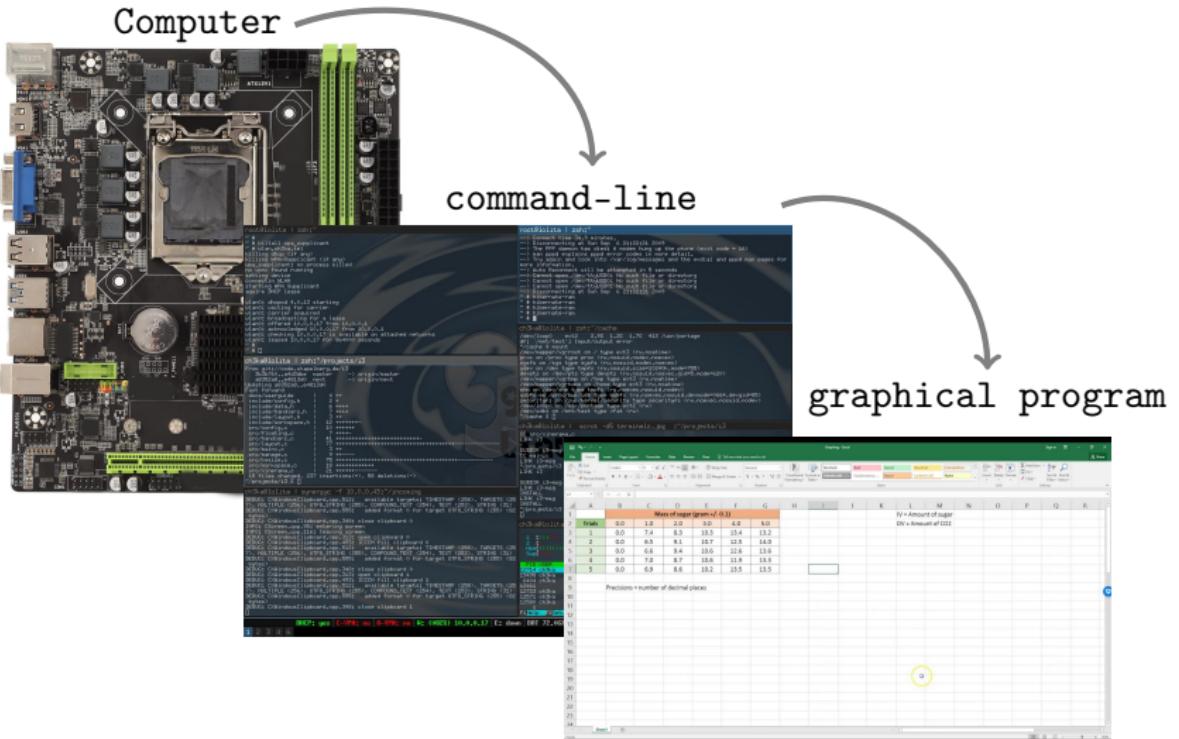
A simplified view



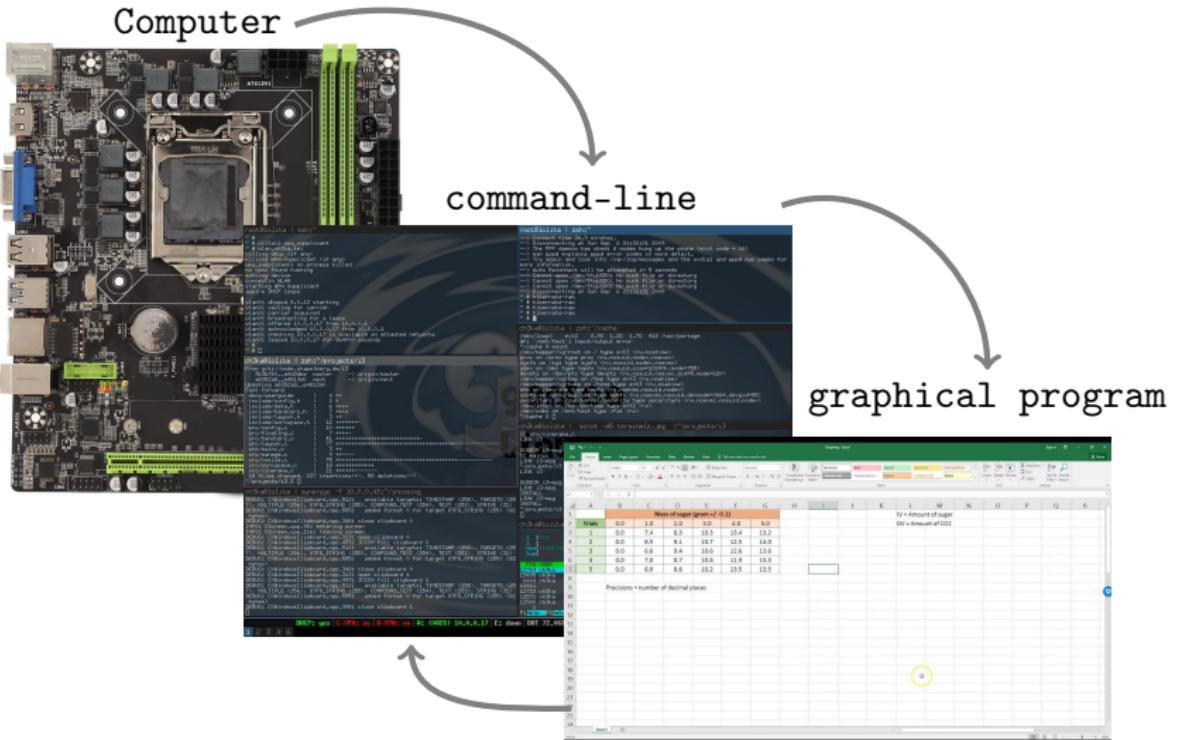
A simplified view



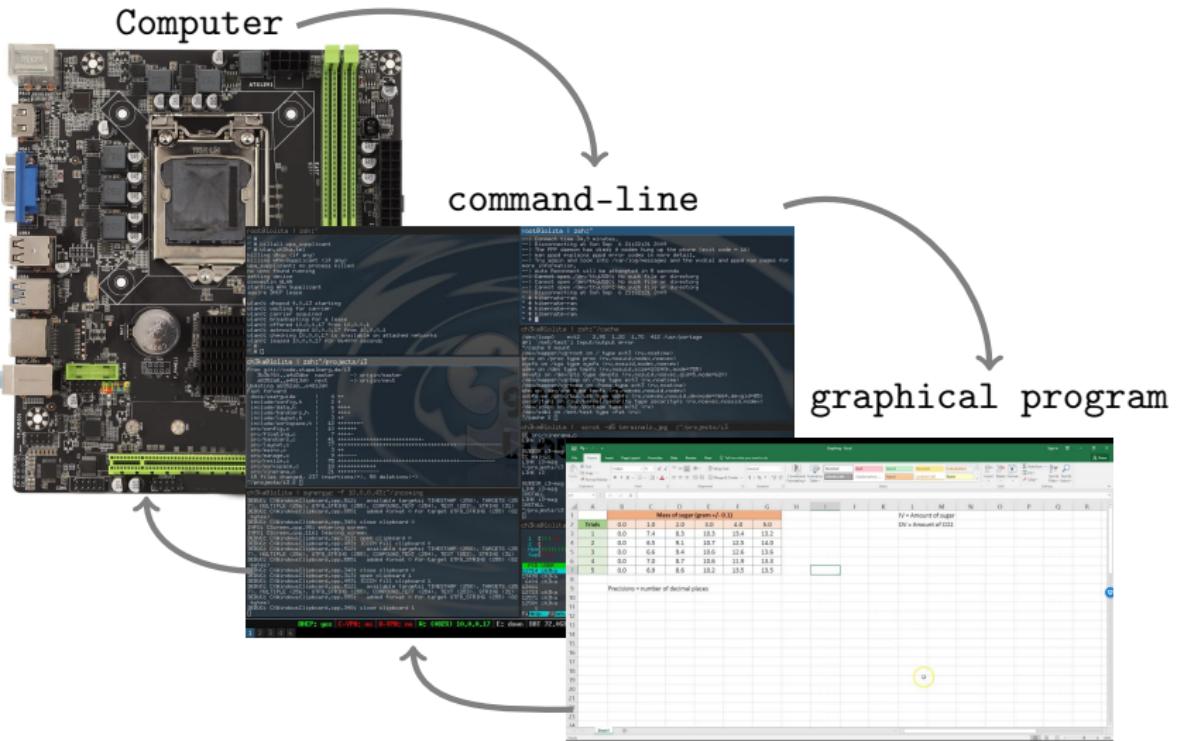
A simplified view



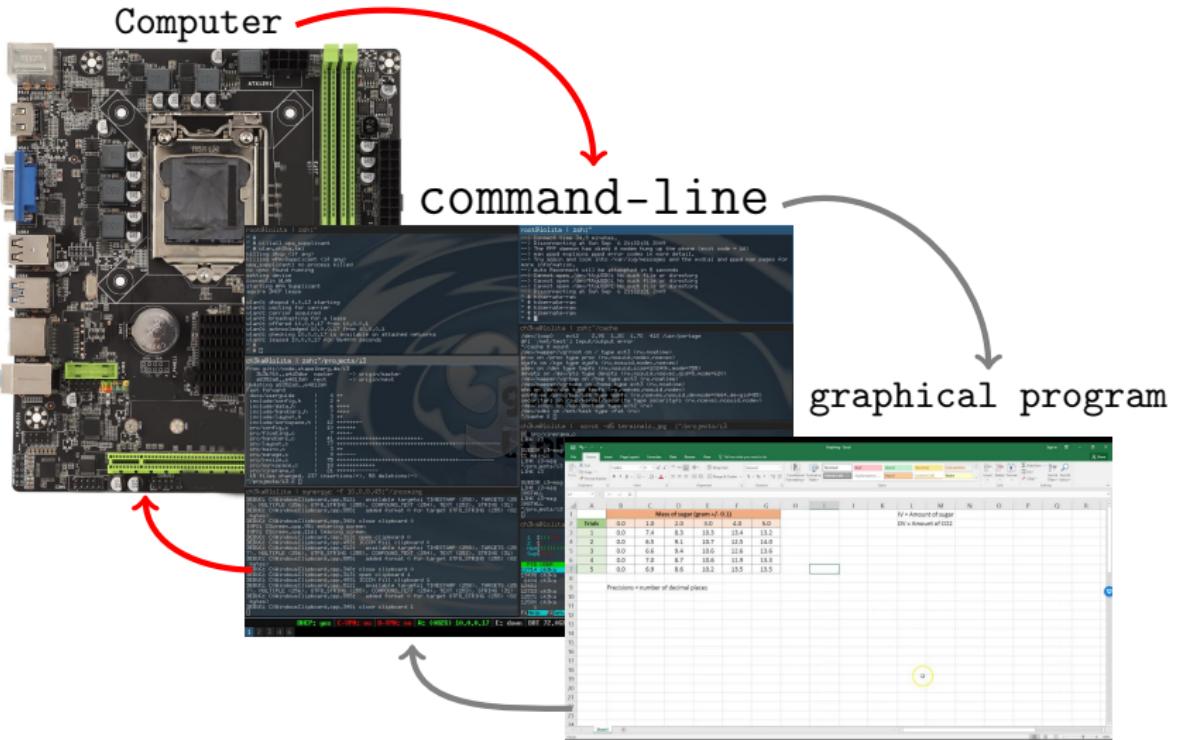
A simplified view



A simplified view



A simplified view



Why bother?

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- **Reliability:**
very stable (since *circa* 1970)

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- **Reliability:**

- very stable (since *circa* 1970)

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- **Speed:**

- faster interface, optimised programs, small memory use

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- **Reliability:**
very stable (since *circa* 1970)
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faster interface, optimised programs, small memory use
- **Modularity:**
Simple building bricks, but they all work together

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- **Reliability:**
very stable (since *circa* 1970)
- **Freedom:**
not limited by the small subset of options authorised by the graphical program
- **Speed:**
faster interface, optimised programs, small memory use
- **Modularity:**
Simple building bricks, but they all work together
- **Universality:**
The commands work on all **Linux** versions and on **Mac** as well!

Syntax

Syntax

prompt : ~\$

Syntax

prompt : ~\$ command

Syntax

```
prompt:~$ command arg1
```

Syntax

```
prompt:~$ command arg1 arg2
```

Syntax

```
prompt:~$ command arg1 arg2 ...
```

Syntax

prompt:~\$ command arg1 arg2 ... argN

Some output more or less coherent
with your expectations.

Syntax

prompt:~\$ command arg1 arg2 ... argN

Some output more or less coherent
with your expectations.

prompt:~\$

COMMAND	ARGUMENTS	DESCRIPTION
---------	-----------	-------------

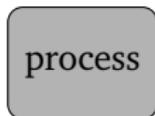
COMMAND	ARGUMENTS	DESCRIPTION
pwd	none	show the current directory
ls	possible	show the contents of the location
cd	always	change the directory location to

COMMAND	ARGUMENTS	DESCRIPTION
pwd	none	show the current directory
ls	possible	show the contents of the location
cd	always	change the directory location to
	always	pipe output to
>	always	write output to
»	always	append output to

COMMAND	ARGUMENTS	DESCRIPTION
pwd	none	show the current directory
ls	possible	show the contents of the location
cd	always	change the directory location to
	always	pipe output to
>	always	write output to
»	always	append output to
head	always	show the first lines of
apropos	always	show the commands with the word

Piping & redirection

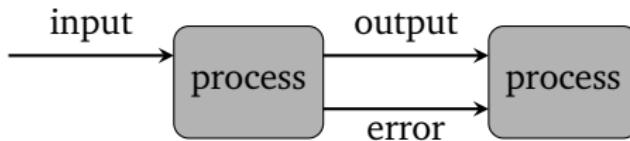
Piping & redirection



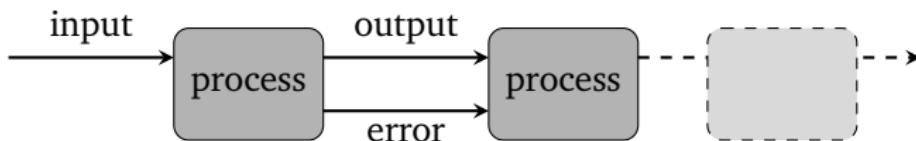
Piping & redirection



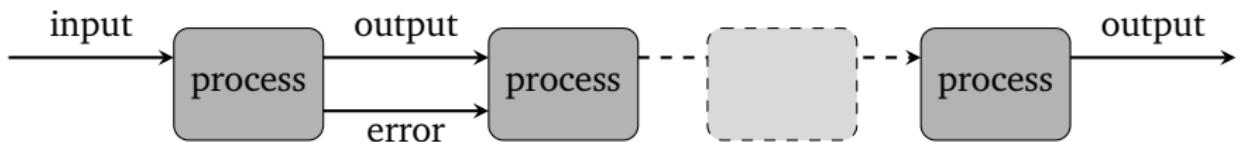
Piping & redirection



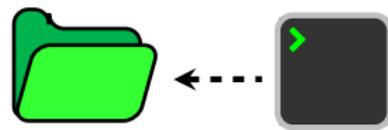
Piping & redirection



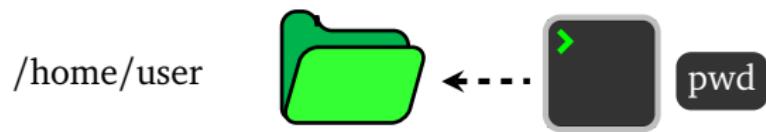
Piping & redirection



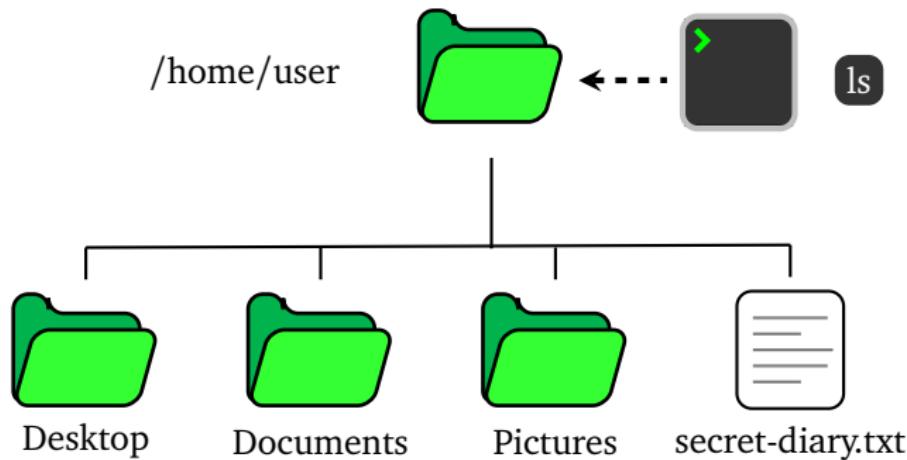


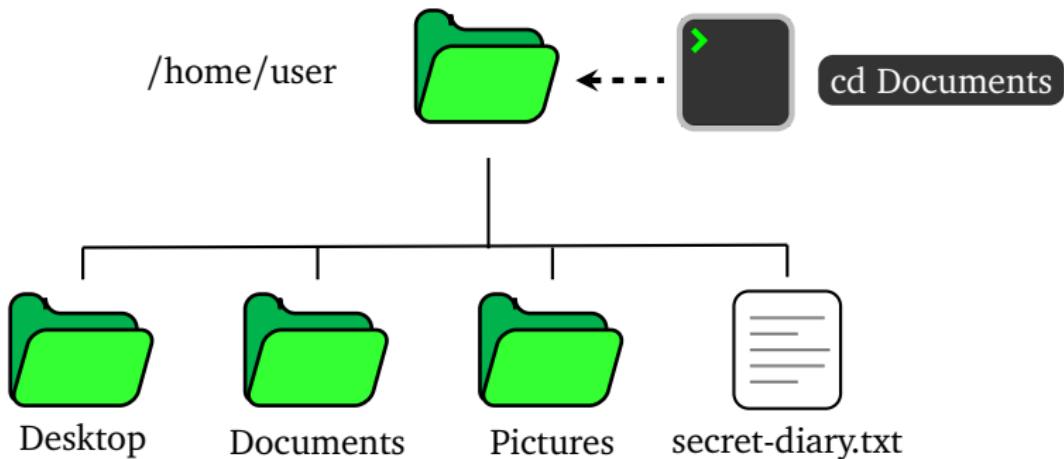








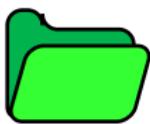




/home/user



cd Documents



Desktop



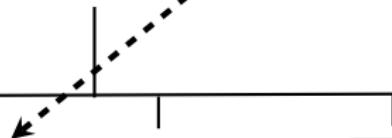
Documents

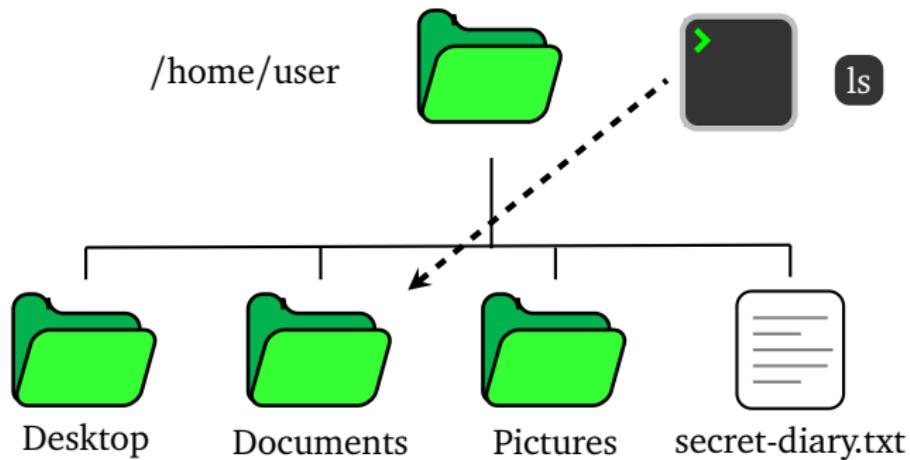


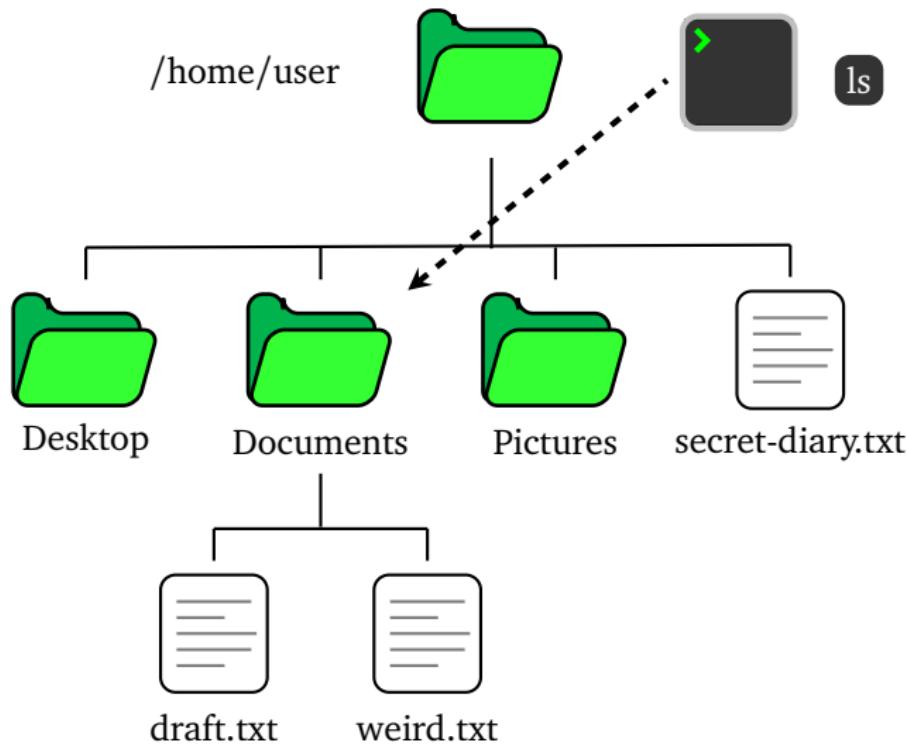
Pictures

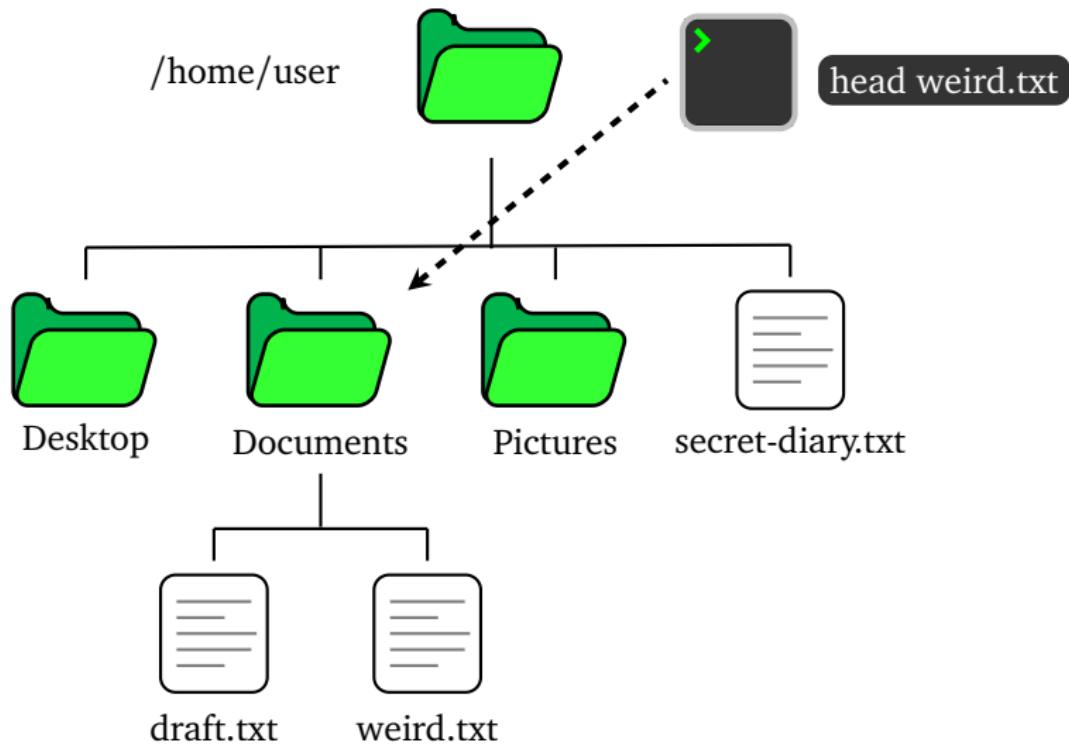


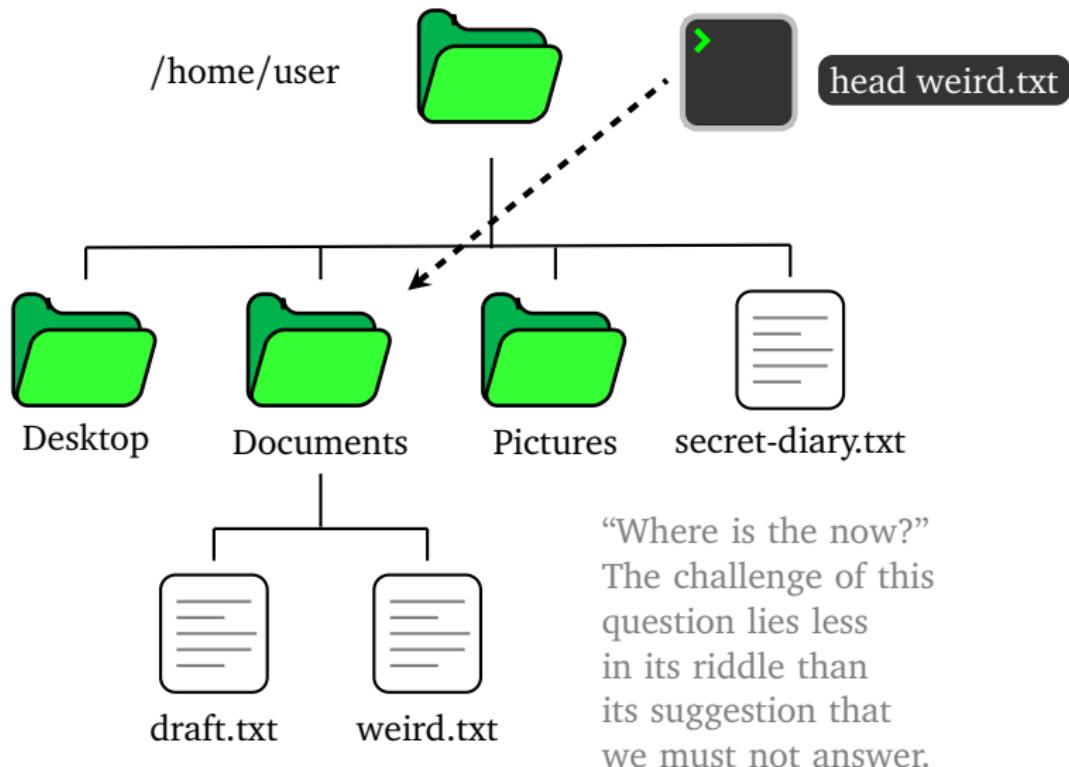
secret-diary.txt

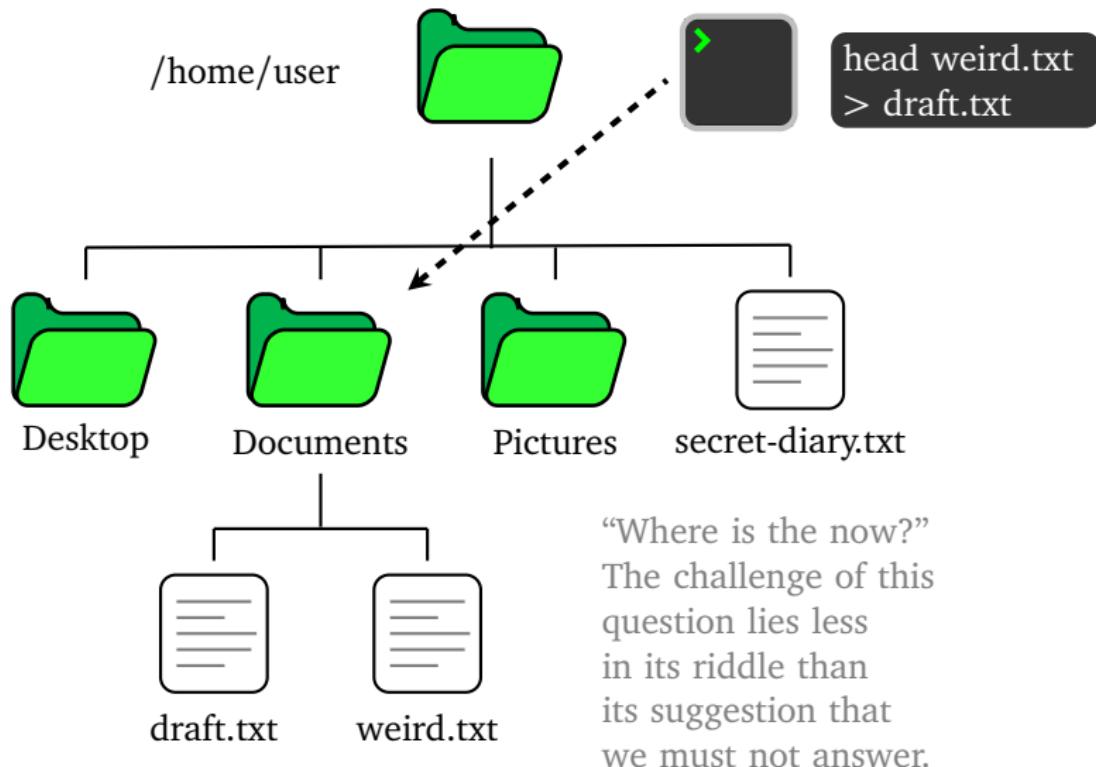


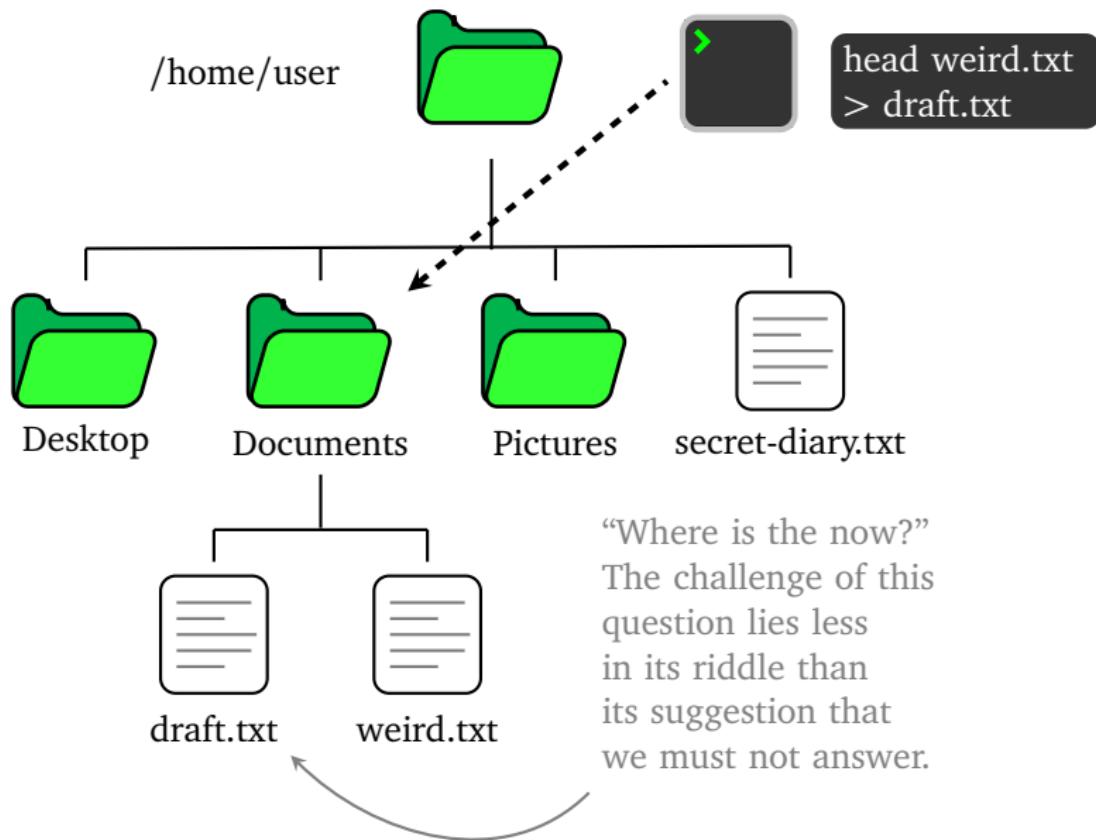












Some basic commands

```
user@computer:~$
```

Some basic commands

```
user@computer:~$ pwd
```

Some basic commands

```
user@computer:~$ pwd  
/home/user/
```

Some basic commands

```
user@computer:~$ pwd  
/home/user/  
user@computer:~$
```

Some basic commands

```
user@computer:~$ pwd  
/home/user/  
user@computer:~$ ls
```

Some basic commands

```
user@computer:~$ pwd  
/home/user/  
user@computer:~$ ls  
Desktop Documents Pictures secret-diary.txt
```

Some basic commands

```
user@computer:~$ pwd  
/home/user/  
user@computer:~$ ls  
Desktop Documents Pictures secret-diary.txt  
user@computer:~$
```

Some basic commands

```
user@computer:~$ pwd  
/home/user/  
user@computer:~$ ls  
Desktop Documents Pictures secret-diary.txt  
user@computer:~$ cd Documents
```

Some basic commands

```
user@computer:~$ pwd  
/home/user/  
user@computer:~$ ls  
Desktop Documents Pictures secret-diary.txt  
user@computer:~$ cd Documents  
user@computer:~/Documents$
```

Some basic commands

```
user@computer:~$ pwd  
/home/user/  
user@computer:~$ ls  
Desktop Documents Pictures secret-diary.txt  
user@computer:~$ cd Documents  
user@computer:~/Documents$ ls
```

Some basic commands

```
user@computer:~$ pwd  
/home/user/  
user@computer:~$ ls  
Desktop Documents Pictures secret-diary.txt  
user@computer:~$ cd Documents  
user@computer:~/Documents$ ls  
weird.txt draft.txt
```

Some basic commands

```
user@computer:~$ pwd  
/home/user/  
user@computer:~$ ls  
Desktop Documents Pictures secret-diary.txt  
user@computer:~$ cd Documents  
user@computer:~/Documents$ ls  
weird.txt draft.txt  
user@computer:~/Documents$
```

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```
user@computer:~$ pwd  
/home/user/  
user@computer:~$ ls  
Desktop Documents Pictures secret-diary.txt  
user@computer:~$ cd Documents  
user@computer:~/Documents$ ls  
weird.txt draft.txt  
user@computer:~/Documents$ head
```

Some basic commands

```
user@computer:~$ pwd  
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user@computer:~$ ls  
Desktop Documents Pictures secret-diary.txt  
user@computer:~$ cd Documents  
user@computer:~/Documents$ ls  
weird.txt draft.txt  
user@computer:~/Documents$ head weird.txt
```

Some basic commands

```
user@computer:~$ pwd  
/home/user/  
user@computer:~$ ls  
Desktop Documents Pictures secret-diary.txt  
user@computer:~$ cd Documents  
user@computer:~/Documents$ ls  
weird.txt draft.txt  
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“Where is the now?” The challenge of this question lies  
less in its riddle than its suggestion that we must not  
answer.
```

Some basic commands

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user@computer:~$ pwd  
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user@computer:~$ ls  
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user@computer:~$ cd Documents  
user@computer:~/Documents$ ls  
weird.txt draft.txt  
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user@computer:~/Documents$
```

Some basic commands

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user@computer:~$ pwd  
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```

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weird.txt draft.txt  
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user@computer:~/Documents$ head weird.txt > draft.txt
```

Some basic commands

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user@computer:~$ pwd  
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user@computer:~/Documents$
```

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/home/user/  
user@computer:~$ ls  
Desktop Documents Pictures secret-diary.txt  
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user@computer:~/Documents$ ls  
weird.txt draft.txt  
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“Where is the now?” The challenge of this question lies  
less in its riddle than its suggestion that we must not  
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user@computer:~/Documents$ head weird.txt > draft.txt  
user@computer:~/Documents$ cd ..
```

Some basic commands

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user@computer:~$ pwd  
/home/user/  
user@computer:~$ ls  
Desktop Documents Pictures secret-diary.txt  
user@computer:~$ cd Documents  
user@computer:~/Documents$ ls  
weird.txt draft.txt  
user@computer:~/Documents$ head weird.txt  
“Where is the now?” The challenge of this question lies  
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answer.  
user@computer:~/Documents$ head weird.txt > draft.txt  
user@computer:~/Documents$ cd ..  
user@computer:~$
```

A close-up photograph of two meerkats resting on a dry, reddish-brown ground. One meerkat is lying on its side, facing the camera, while the other is partially visible behind it. Both have their heads tucked down, appearing to be sleeping or resting. The background is blurred.

Time for a break?

**And now,
Some practical examples**

Example 1: Finding old files

Problem:

You want to find a csv dataset which has "musculus" in the name and that was last modified in 1978.

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Problem:

You want to find a csv dataset which has "musculus" in the name and that was last modified in 1978.

Solution:

```
find /home/timothe/ -name "*musculus*.csv"
```

Now, let's obtain the date for both files

```
find /home/timothe/ -name "*musculus*.csv" -ls
```

Example 2: Renaming files

Problem:

Someone miss-labelled samples. They were thinking the DNA was extracted from fox hairs, but indeed they were obtained from a kingfisher. A *very different animal* altogether. There are **1000 files**. How can we re-label them correctly?

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Vulpes vulpes

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Vulpes vulpes



Ceyx erithaca

Example 2: Renaming files

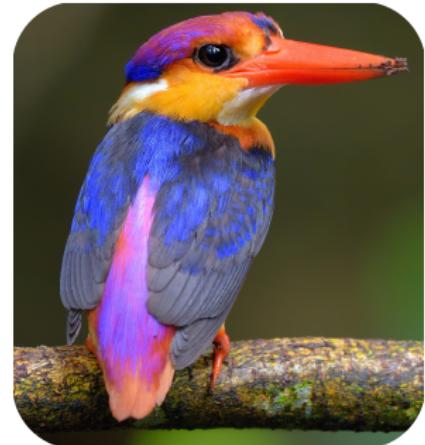
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Vulpes vulpes

$\xrightarrow{x\ 1000}$



Ceyx erithaca

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Someone miss-labelled samples. They were thinking the DNA was extracted from fox hairs, but indeed they were obtained from a kingfisher. A *very different animal* altogether. There is **1000 files**. How can we re-label them correctly?

Solution:

Checking that the pattern works:

```
for i in $(ls *.fa);  
do  
echo ${i/Vulpes-vulpes/Ceyx-erithaca};  
done
```

The actual relabelling:

```
for i in $(ls *.fa);  
do  
mv $i ${i/Vulpes-vulpes/Ceyx-erithaca};  
done
```

Example 3: Extracting data

Problem:

You need to extract from an RNA expression dataset¹ all the genes expressed in the heart and order them by decreasing expression (nTPM). Then, save this to a new file called `heart_consensus_rna-decreasing.tsv`.

We have the file, *but how to do it?*

¹Dataset contains consensus transcript expression levels summarized per gene in 51 tissues based on transcriptomics data from HPA and GTEx (data obtained from proteinatlas.org).

Example 3: Solution (part 1)

Printing the first rows

```
head rna_tissue_consensus.tsv
```

Finding the genes expressed in the heart

First finding the command for the job

```
apropos -a "lines" "pattern" "match"
```

Finding the corresponding lines in the data

```
grep heart rna_tissue_consensus.tsv
```

The right command

```
apropos -a counts file
```

How many lines are they?

```
grep heart rna_tissue_consensus.tsv | wc -l
```

Example 3: Solution (part 2)

Finding out resources for sorting

```
apropos sorting
```

Sorting the file

```
sort -Vk 5 rna_tissue_consensus.tsv
```

Sorting the file with some visibility

```
sort -Vk 5 rna_tissue_consensus.tsv | head
```

Sorting the file in decreasing order with some visibility

```
sort -rVk 5 rna_tissue_consensus.tsv | head
```

Ordering the heart data

```
grep heart rna_tissue_consensus.tsv | sort -rVk 5 | head
```

Final step, saving the data to a new file

```
grep heart rna_tissue_consensus.tsv | \
    sort -rVk 5 > heart_consensus_rna-decreasing.tsv
```

Example 4: Using help

Problem:

You need to obtain the average value for each gene in multiple tsv files containing two columns: a gene_id and an expression_value.

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HARD Problem!:

You need to obtain the average value for each gene in multiple tsv files containing two columns: a gene_id and an expression_value.

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Solution:

Ask your favorite LLM, AI prompt for a bash solution!

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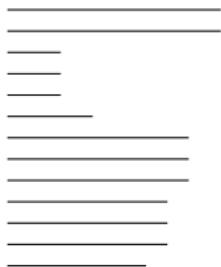
Solution:

Ask your favorite LLM, AI prompt for a bash solution!

The minimal query and the bash solution are included in the material.

When to use help?

**Long and/or
boring task**



When to use help?

Long and/or
boring task



*Can you imagine
simple instructions
for someone else to
do it?*

When to use help?

Long and/or
boring task



*Can you imagine
simple instructions
for someone else to
do it?*

Yes!

Query an AI

When to use help?

Long and/or
boring task



*Can you imagine
simple instructions
for someone else to
do it?*

Yes!

Query an AI

solution bash script

Online resources

Books to learn about and how to use the command-line:

- “Pour aller plus loin avec la ligne de commande”: [link](#)
- “COMMAND LINE”: [link](#)
- “The Linux Command Line”: [link](#)

*All the necessary material and instructions to reproduce
the examples presented here are available online!*

github.com/timothevanmeter/command-line-introduction

Thank you for your attention!

