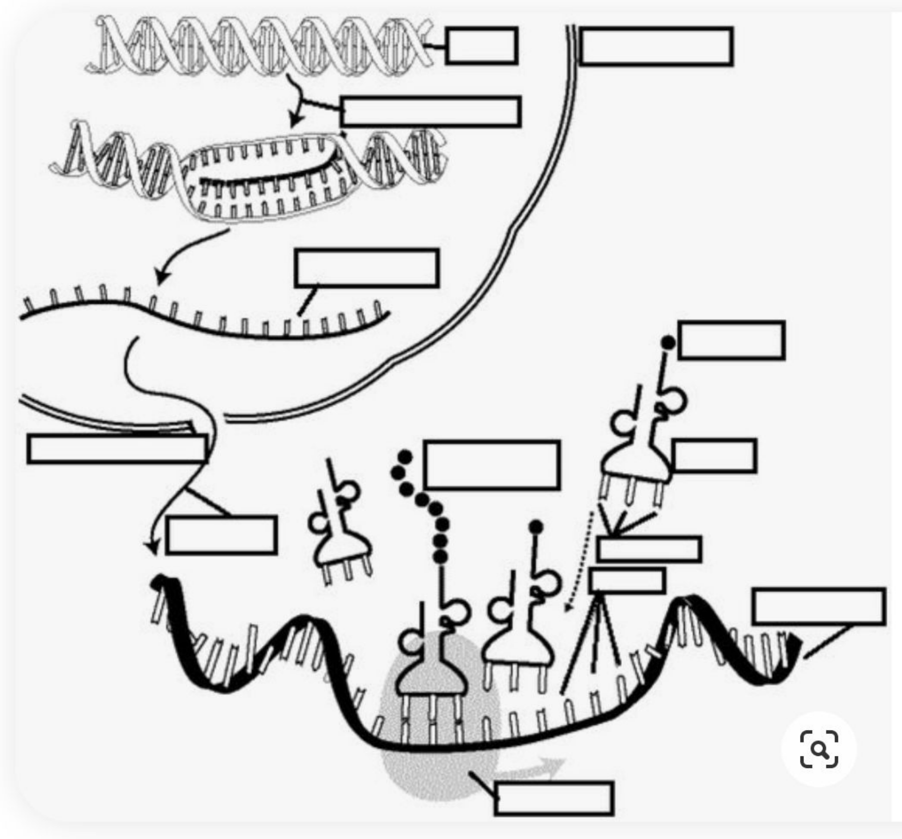
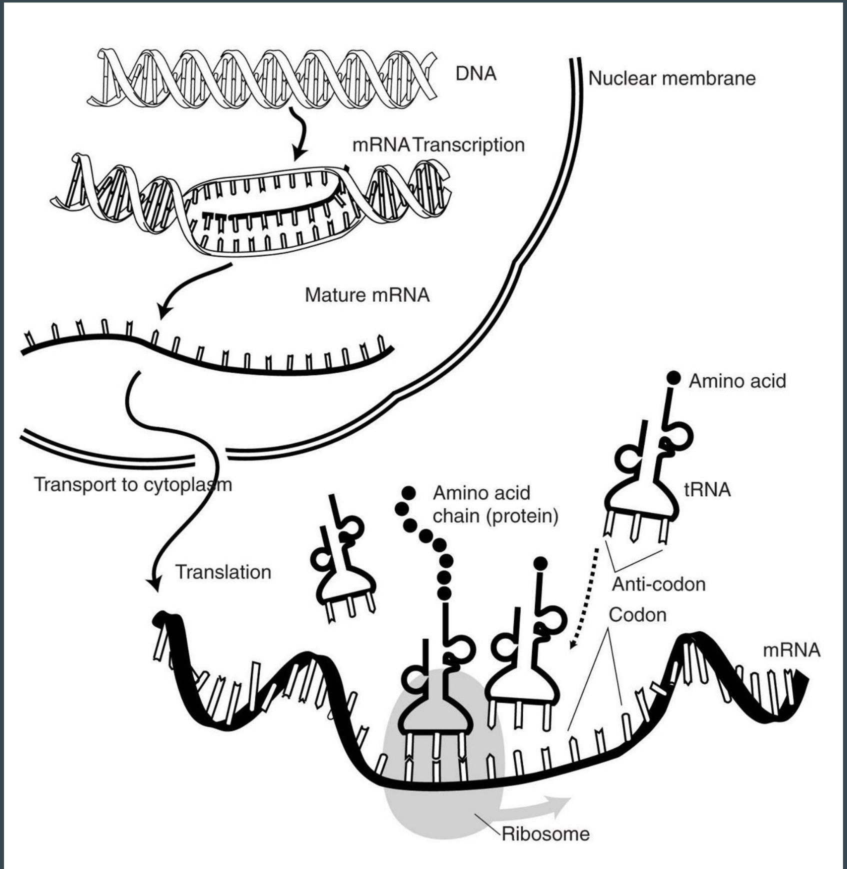
First, a word about who knows what…



DNA transcription and translation



A History of Unix/Linux

•••

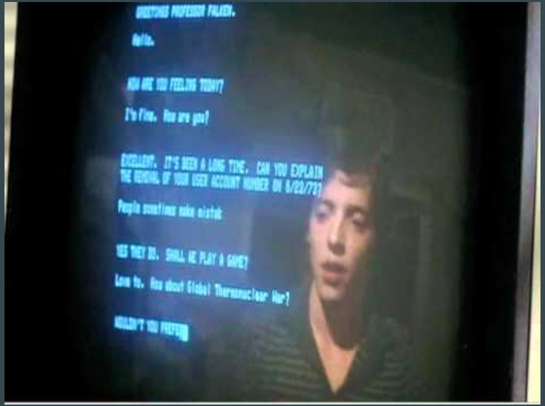
December 2, 2019
#dataSanJose19
Diggs, S.

Why?

Lots of things in a Unix (Linux) system only make sense in a historical context.

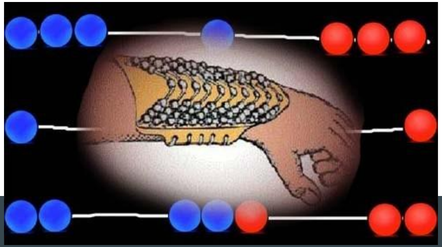
Bonus Movie Quote: “Shall we play a game?”

- What movie / year?
- Who said this?



```
GREETINGS PROFESSOR FALKEN.

Hello.

HOW ARE YOU FEELING TODAY?

I'm fine. How are you?

EXCELLENT. IT'S BEEN A LONG TIME. CAN YOU EXPLAIN
THE REMOVAL OF YOUR USER ACCOUNT NUMBER ON 6/22/73?

People sometimes make mistak

YES THEY DO. SHALL WE PLAY A GAME?

Love to. How about Global Thermonuclear War?

WOULDN'T YOU PREFER
```

From Nepohualtzintzin to the transistor

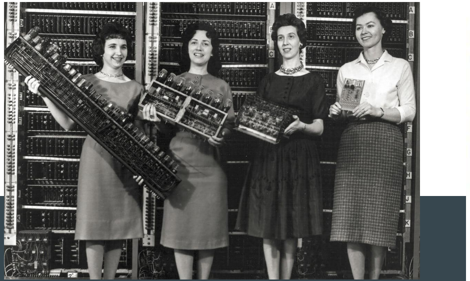


The Mayan Abacus

Pre-colonial Americas

Loom Punch Card

The inspiration for the IBM computer punch card , ca. 1850-1900



ENIAC (ca. 1940’s)

Electronic Numerical Integrator and Computer, 20,000 vacuum tubes.

Transistors

Semiconductor successor to the vacuum tube, ca. 1950’s

From the mainframe to the Android (and IOS)

IBM (ca. 1954)

First mass-produced transistor-based computer (mainframe)

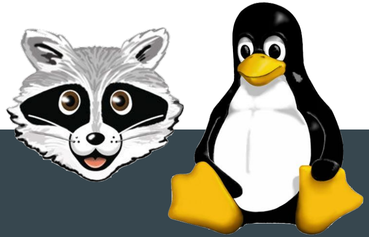
PDP-11 (ca. 1970)

Digital Equipment Corporaton's personal data computer, ~ $10,000 USD

Bell Laboratories

UNIX (ca. 1970)

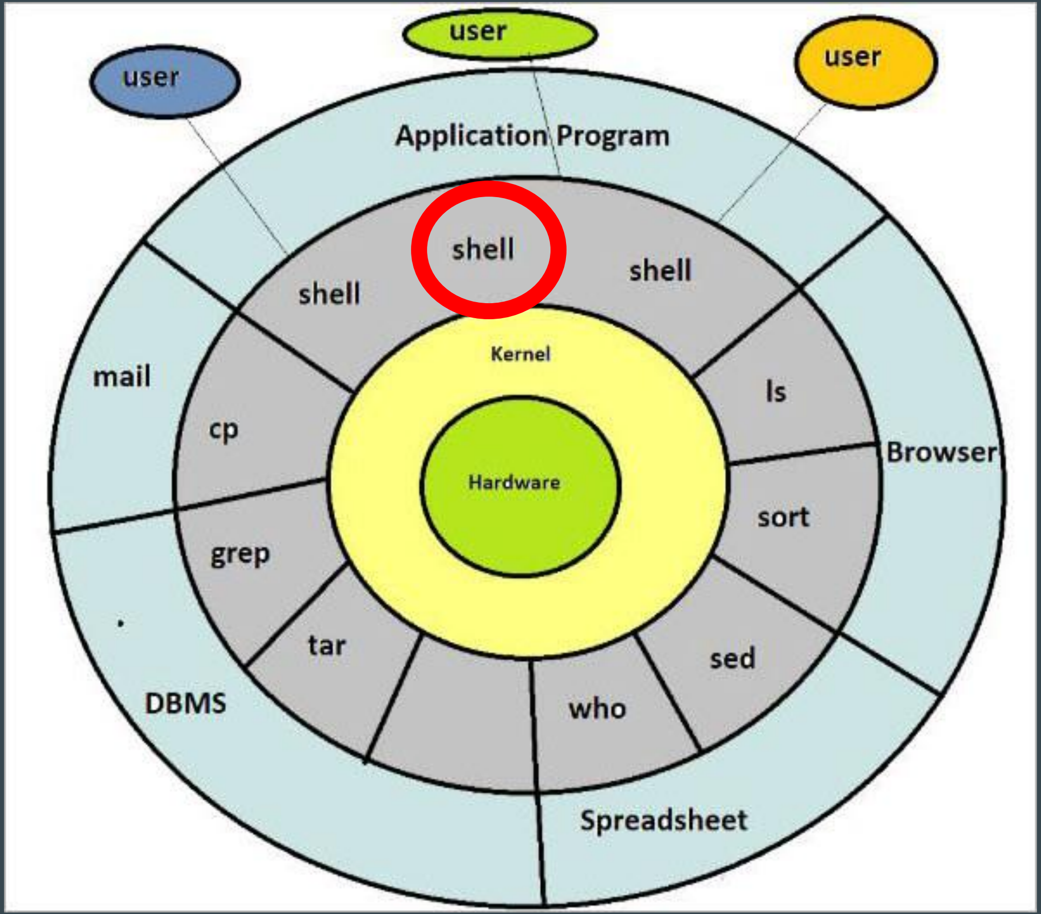
D. Ritchie authored the C Programming Language and then he and K. Thompson wrote a multitasking operating system



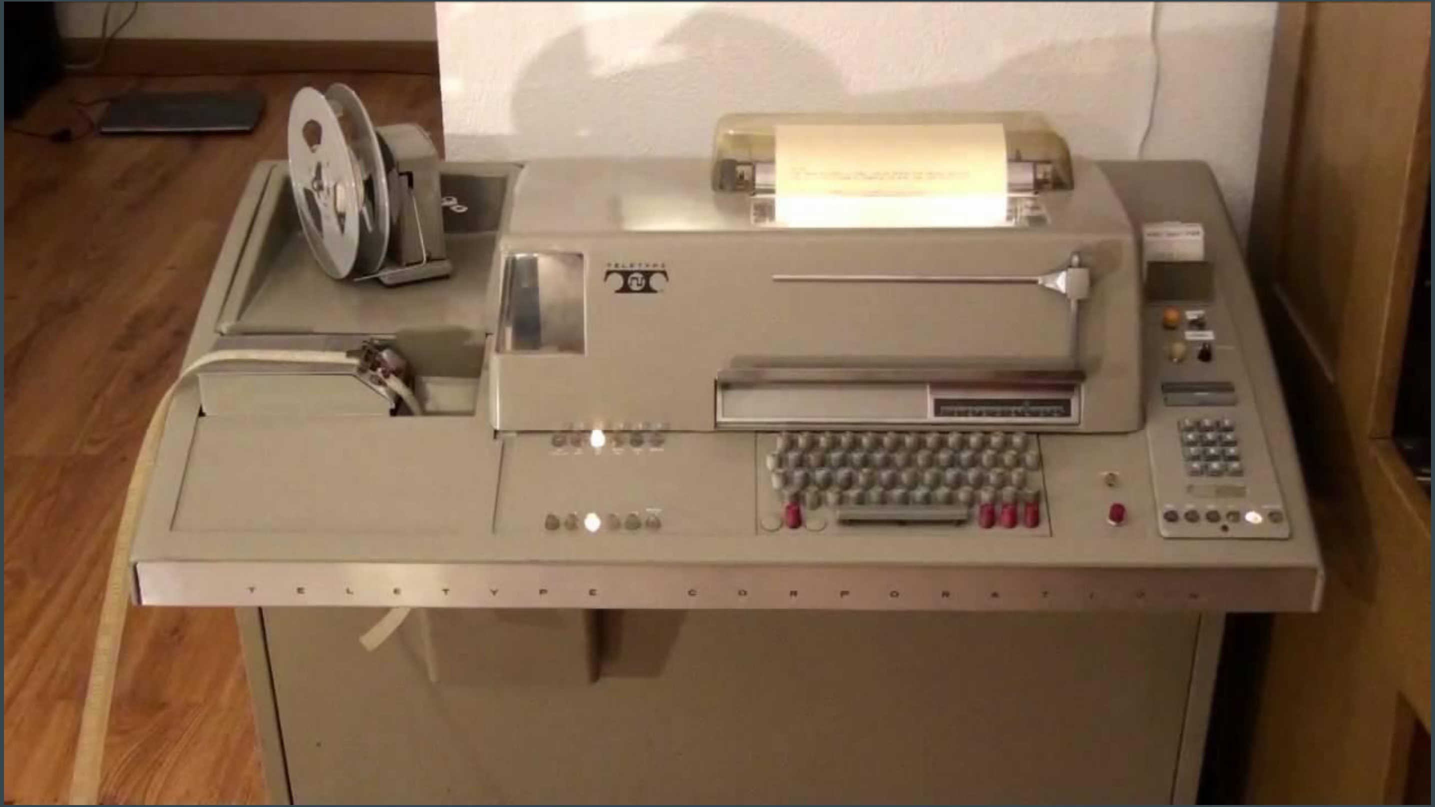
MINIX/Linux

Tannenbaum's free version of UNIX inspired Linus Torvalds to write Linux (ca. 1987 and 1993 respectively)

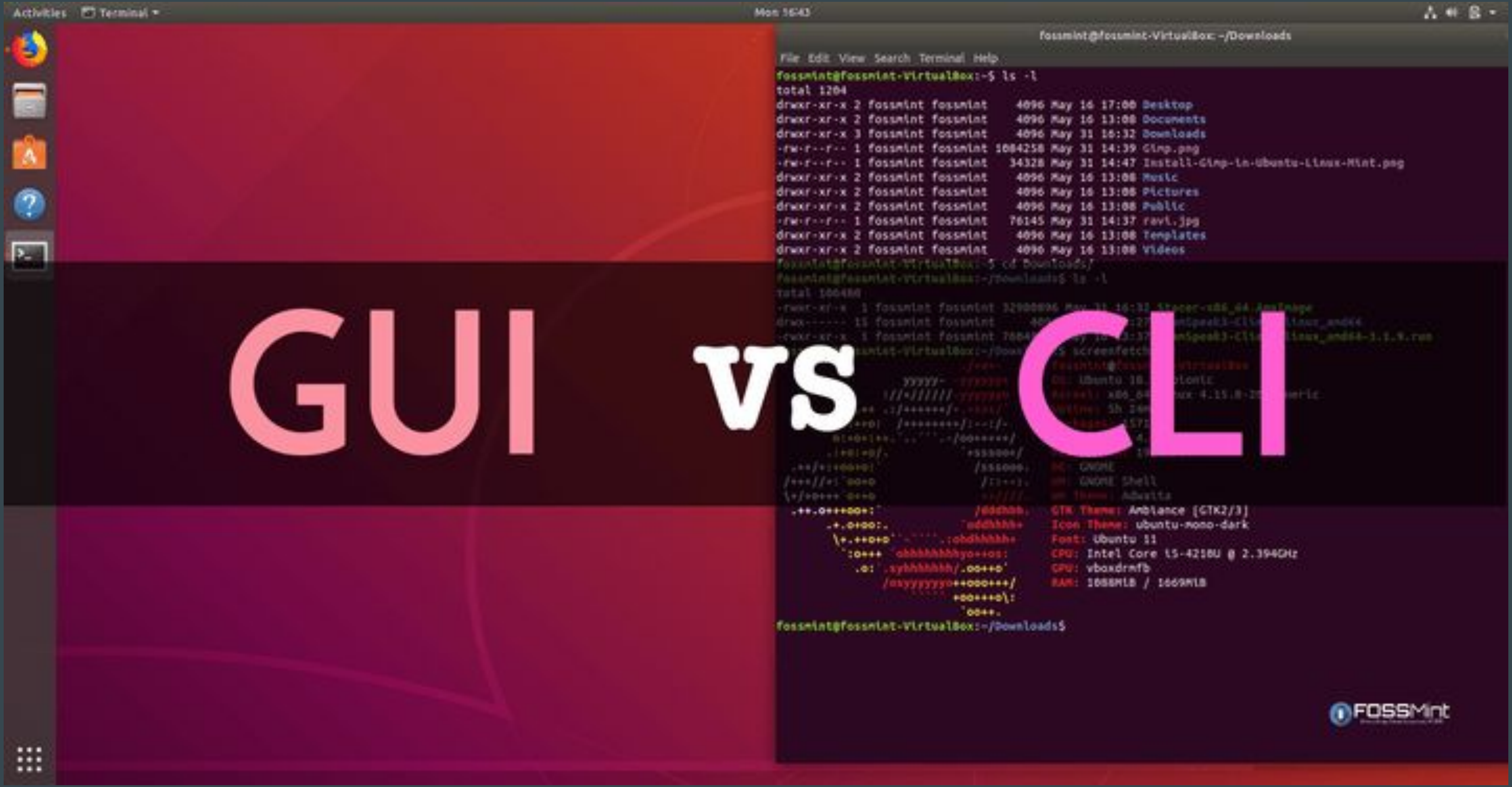
You’re Learning the **Shell**, not (necessarily) Linux


user
user
user
Application Program
shell
shell
shell
mail
cp
Kernel
ls
Hardware
Browser
sort
grep
tar
sed
who
DBMS
Spreadsheet

The screen is in your head (or it used to be)

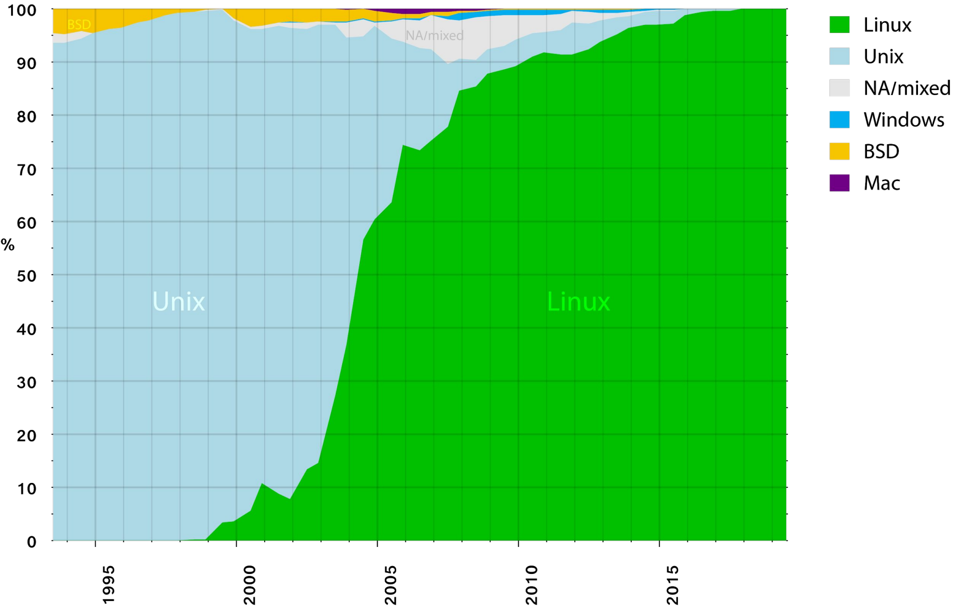


Why CLI?

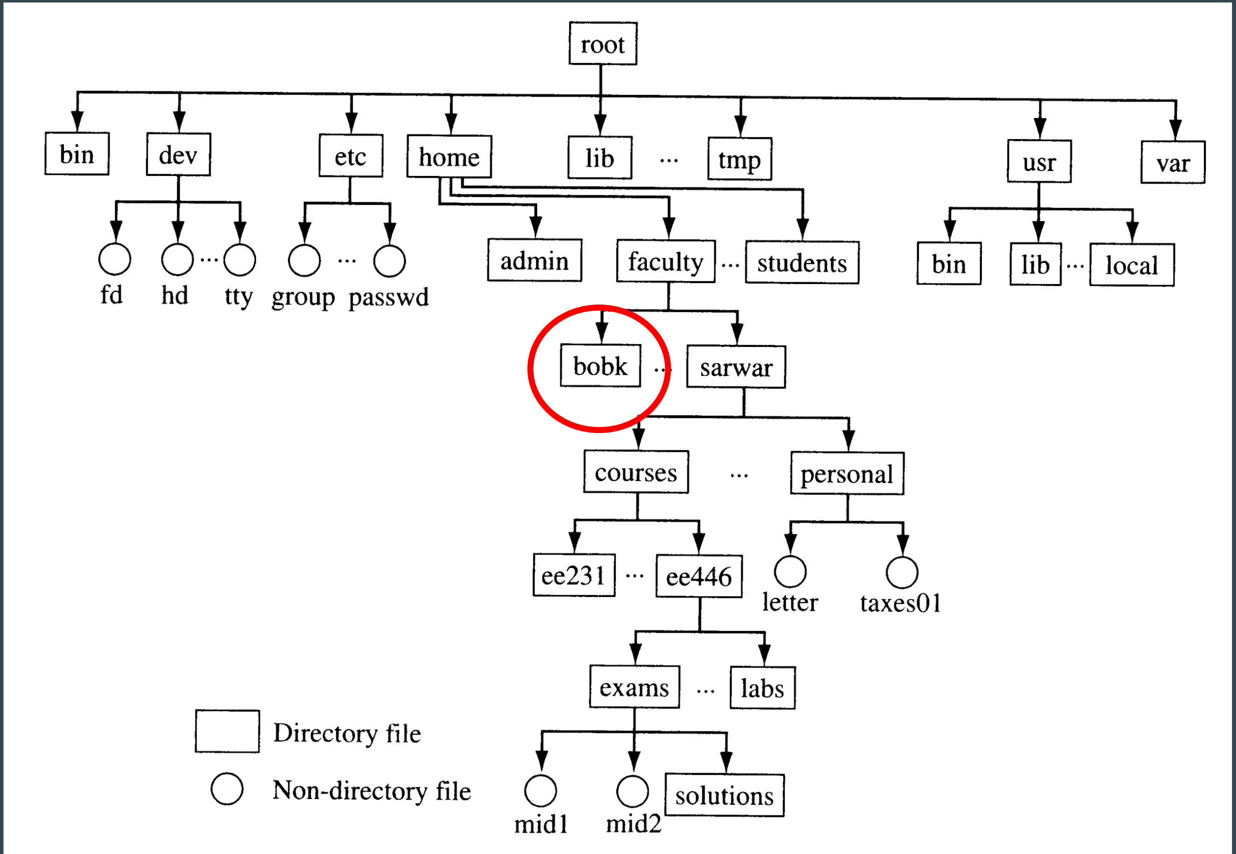

Activities
Terminal
Mon 16:43
fossmint@fossmint-VirtualBox: ~/Downloads
File Edit View Search Terminal Help
GUI
vs
CLI
FOSSMint

~~~
fossmint@fossmint-VirtualBox:~$ ls -l
total 1204
drwxr-xr-x 2 fossmint fossmint    4096 May 16 17:00 Desktop
drwxr-xr-x 2 fossmint fossmint    4096 May 16 13:08 Documents
drwxr-xr-x 3 fossmint fossmint    4096 May 31 16:32 Downloads
-rw-r--r-- 1 fossmint fossmint 1084258 May 31 14:39 Gimp.png
-rw-r--r-- 1 fossmint fossmint   34328 May 31 14:47 Install-Gimp-in-Ubuntu-Linux-Mint.png
drwxr-xr-x 2 fossmint fossmint    4096 May 16 13:08 Music
drwxr-xr-x 2 fossmint fossmint    4096 May 16 13:08 Pictures
drwxr-xr-x 2 fossmint fossmint    4096 May 16 13:08 Public
-rw-r--r-- 1 fossmint fossmint   76145 May 31 14:37 ravi.jpg
drwxr-xr-x 2 fossmint fossmint    4096 May 16 13:08 Templates
drwxr-xr-x 2 fossmint fossmint    4096 May 16 13:08 Videos
fossmint@fossmint-VirtualBox:~$ cd Downloads/
fossmint@fossmint-VirtualBox:~/Downloads$ ls -l
total 100480
-rwxr-xr-x  1 fossmint fossmint 32900096 May 31 16:32 Stacer-x86_64.AppImage
drwx------ 11 fossmint fossmint     40
-rwxr-xr-x  1 fossmint fossmint 7604
fossmint@fossmint-VirtualBox:~/Down          $ screenfetch
                          ./+o+-       fossmint@foss
                  yyyyy- -yyyyyy+      OS: Ubuntu 18.        bionic
               ://+//////-yyyyyyo      Kernel: x86_64       nux 4.15.0-2      eric
           .++ .:/++++++/-.+sss/`      Uptime: 5h 14m
         .:++o:  /++++++++/:--:/-      Packages: 1571
        o:+o+:++.`..```.-/oo+++++/                4.
       .:+o:+o/.          `+sssoo+/               19
  .++/+:+oo+o:`             /sssooo.   DE: GNOME
 /+++//+:`oo+o               /::--:.   WM: GNOME Shell
 \+/+o+++`o++o               ++////.   WM Theme: Adwaita
  .++.o+++oo+:`             /dddhhh.   GTK Theme: Ambiance [GTK2/3]
       .+.o+oo:.          `oddhhhh+    Icon Theme: ubuntu-mono-dark
        \+.++o+o``-````.:ohdhhhhh+     Font: Ubuntu 11
         `:o+++ `ohhhhhhhhyo++os:      CPU: Intel Core i5-4210U @ 2.394GHz
           .o:`.syhhhhhhh/.oo++o`      GPU: vboxdrmfb
               /osyyyyyyo++ooo+++/     RAM: 1088MiB / 1669MiB
                   ````` +oo+++o\:
                          `oo++.
fossmint@fossmint-VirtualBox:~/Downloads$
~~~

Supercomputer O/S
(and cloud instances)

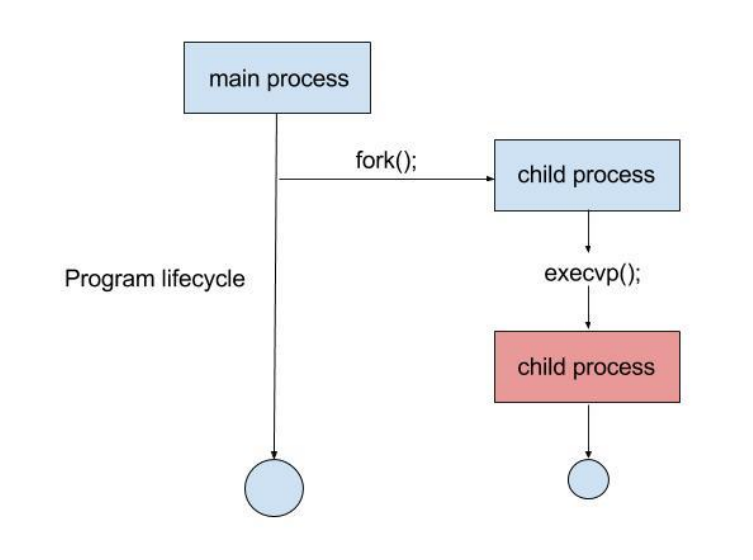


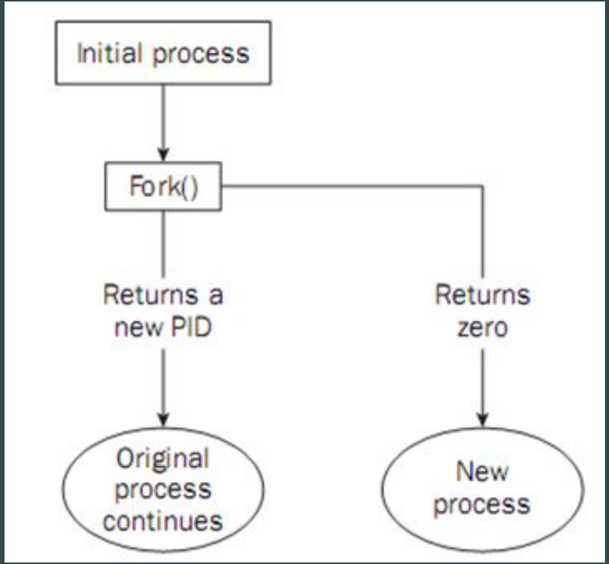
Remember, `pwd` is your friend



... one more thing ...

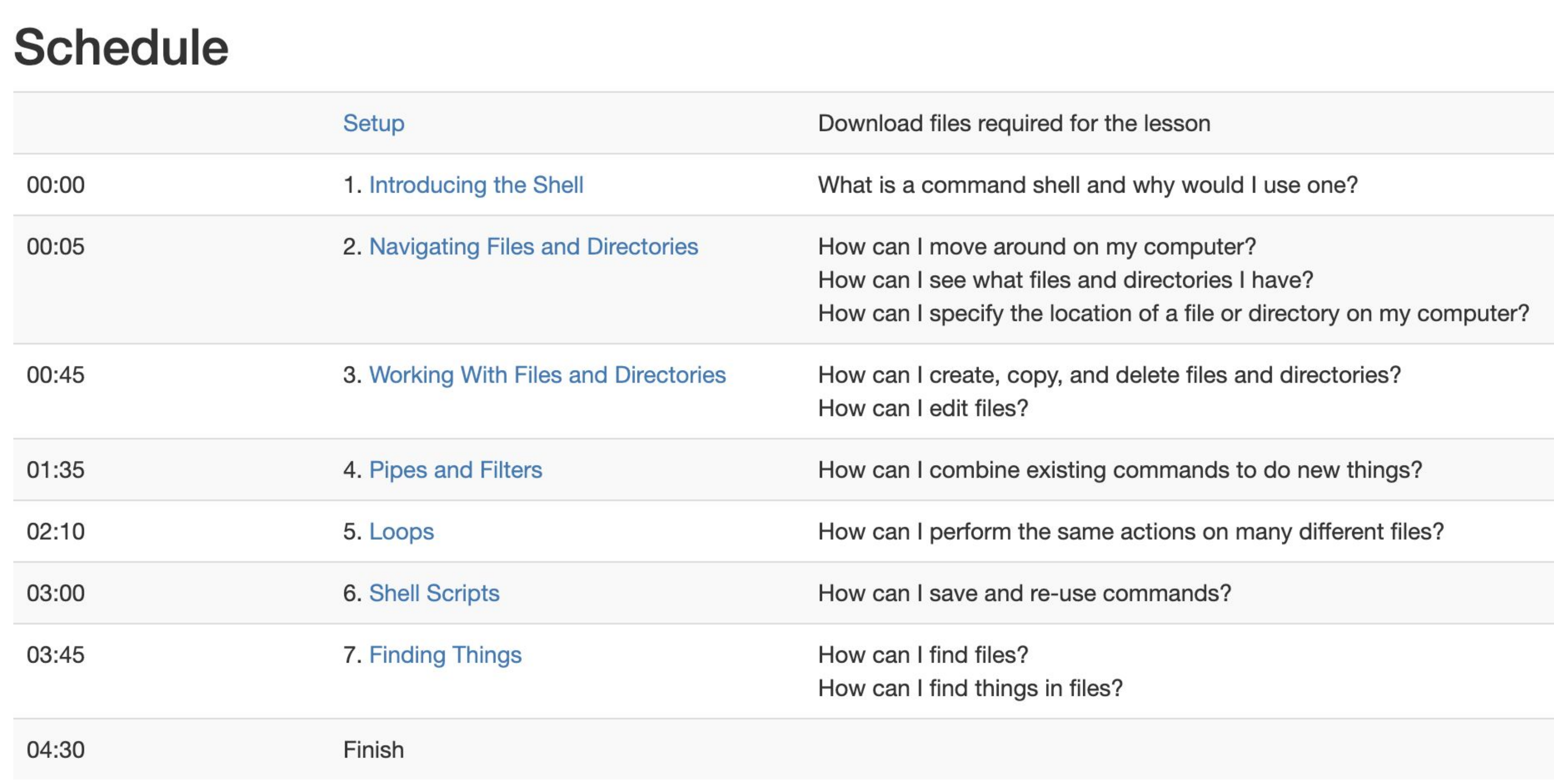
If you know this already...





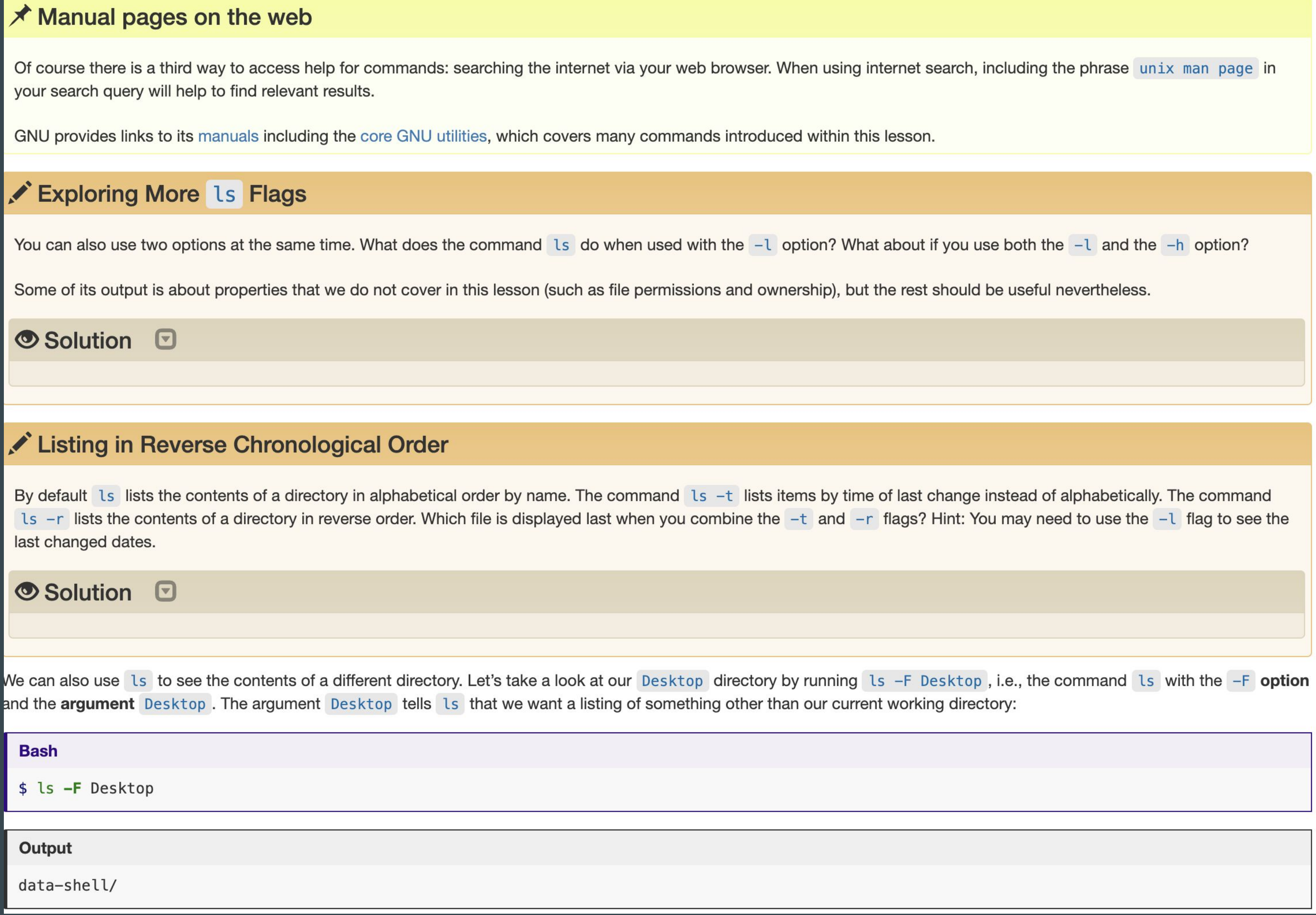
DEFINICIÓN DE *SPOILER*

Spoiler es un término inglés que, en nuestra lengua, suele emplearse para nombrar al texto que anticipa la trama de una película, un libro u otra obra. De este modo, al encontrarse con un spoiler, una persona pierde la oportunidad de sorprenderse al ver o leer la obra en cuestión, algo que sí podría suceder si no contase con dicha información. También puede ser una persona.



Schedule

	Setup	Download files required for the lesson
00:00	1. Introducing the Shell	What is a command shell and why would I use one?
00:05	2. Navigating Files and Directories	How can I move around on my computer? How can I see what files and directories I have? How can I specify the location of a file or directory on my computer?
00:45	3. Working With Files and Directories	How can I create, copy, and delete files and directories? How can I edit files?
01:35	4. Pipes and Filters	How can I combine existing commands to do new things?
02:10	5. Loops	How can I perform the same actions on many different files?
03:00	6. Shell Scripts	How can I save and re-use commands?
03:45	7. Finding Things	How can I find files? How can I find things in files?
04:30	Finish	



Manual pages on the web

Of course there is a third way to access help for commands: searching the internet via your web browser. When using internet search, including the phrase `unix man page` in your search query will help to find relevant results.

GNU provides links to its manuals including the core GNU utilities, which covers many commands introduced within this lesson.

Exploring More `ls` Flags

You can also use two options at the same time. What does the command `ls` do when used with the `-l` option? What about if you use both the `-l` and the `-h` option?

Some of its output is about properties that we do not cover in this lesson (such as file permissions and ownership), but the rest should be useful nevertheless.

Solution

Listing in Reverse Chronological Order

By default `ls` lists the contents of a directory in alphabetical order by name. The command `ls -t` lists items by time of last change instead of alphabetically. The command `ls -r` lists the contents of a directory in reverse order. Which file is displayed last when you combine the `-t` and `-r` flags? Hint: You may need to use the `-l` flag to see the last changed dates.

Solution

We can also use `ls` to see the contents of a different directory. Let's take a look at our `Desktop` directory by running `ls -F Desktop`, i.e., the command `ls` with the `-F` **option** and the **argument** `Desktop`. The argument `Desktop` tells `ls` that we want a listing of something other than our current working directory:

Bash

```
$ ls -F Desktop
```

Output

```
data-shell/
```

System Setup

https://swcarpentry.github.io/shell-novice/data/data-shell.zip

```
$  curl https://swcarpentry.github.io/shell-novice/data/data-shell.zip
 > data-shell.zip
```

To follow along:
https://swcarpentry.github.io/shell-novice