Linux

An introduction

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Linux ?

References

Somewhere on the baie-lgf, are some Linux books.

Linux ? A kernel...

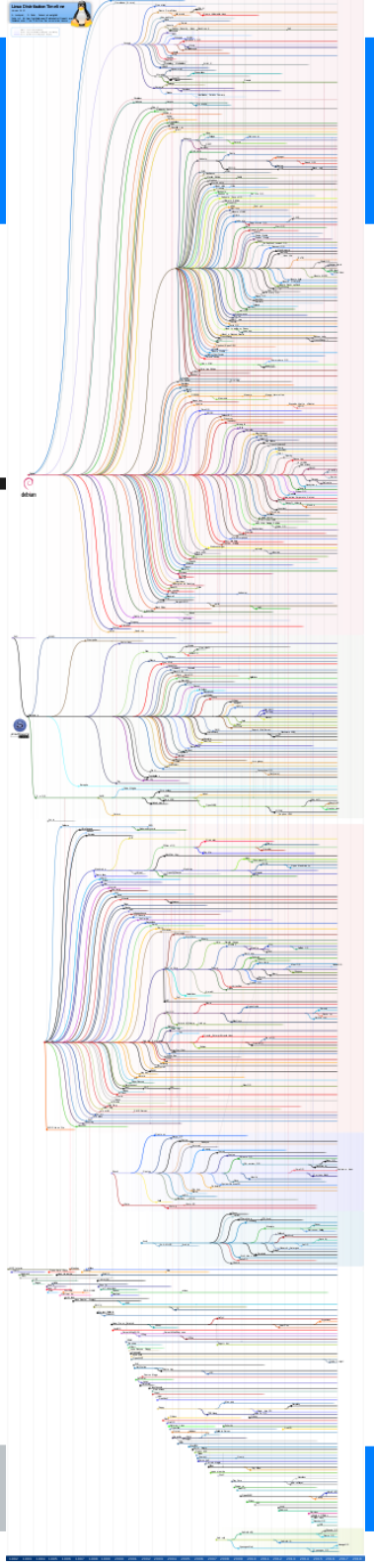
- 1991: released by Linus Torvalds, for fun
- 1993: 100 developers working on it
- 1996: version 2
- 1998–99: graphical interfaces: KDE, Gnome
- 2000: Dell is 2nd provider of linux based system
- 2011: version 3
- 2013: Android (based on linux) has 75% of the market

And more

- Supplied programs: web, mail, images…
- A shell: the command line ! Bash, zsh, tcsh
- X/Wayland : graphical system. Because sometimes it’s better with a mouse. Sometimes.

In practice: a “distro”

- **Put together, they make a L distribution**
  - Ubuntu
  - OpenSuse
  - Fedora
  - And more
  - Much, much more…



At EMSE: Ubuntu

- **On 16.04 : desktop is Unity**
- **Default shell: bash**
- **Access it during boot:**
  - Power up the computer
  - A menu appear: GRUB bootloader
  - Select Ubuntu
  - Problem starts already

The users

- **root: the all powerful admin, called the superuser**
- **The rest of common mortals:**
  - Limited access by default
  - Can be local account, created by an admin
  - Or/and, in our case at EMSE, a distant account, enable by the LDAP, which acts like a telephone dictionary
    - You can login with your mail id without the @ part, for instance, aurelien.villani
    - That is, in theory…

The services

On any OS, there are background tasks running, called *daemons*, started when the computer starts.

- **Systemd : d, for daemons. Or just for system D…**

```
sudo systemctl status cups.service
  cups.service - CUPS Printing Service
   Loaded: loaded (/usr/lib/systemd/system/cups.service; enabled; vendor preset: enabled)
   Active: active (running) since mer. 2018-01-24 13:11:15 CET; 2h 44min ago
 Main PID: 1806 (cupsd)
    Tasks: 1 (limit: 512)
   CGroup: /system.slice/cups.service
           └─1806 /usr/sbin/cupsd -f
janv. 24 13:11:15 Arrakis systemd[1]: Started CUPS Printing Service.
```

Systemd: example

sudo systemctl [start/stop/status/enable/disable] stuff.service

- **sudo: superuser do. If you can, run following command as root**
- **systemctl: the control command for systemd**
- **start/stop/status/enable/disable**
- **Name.service : usually, sytem services are named this way, and live in /etc/systemd/system**
- **I'll explain the filesystem structure in a moment**

Back to our login problem

- **We need to login as root.**
- **Then open a terminal**
- **And restart the service dealing with the ldap:**
  - systemctl restart …
  - Or sometimes, the old way works: ***service lwsmd restart***
- **Logout**
- **Try to login with your own**

Install stuff

Software are most of the time fetched from *repositories*

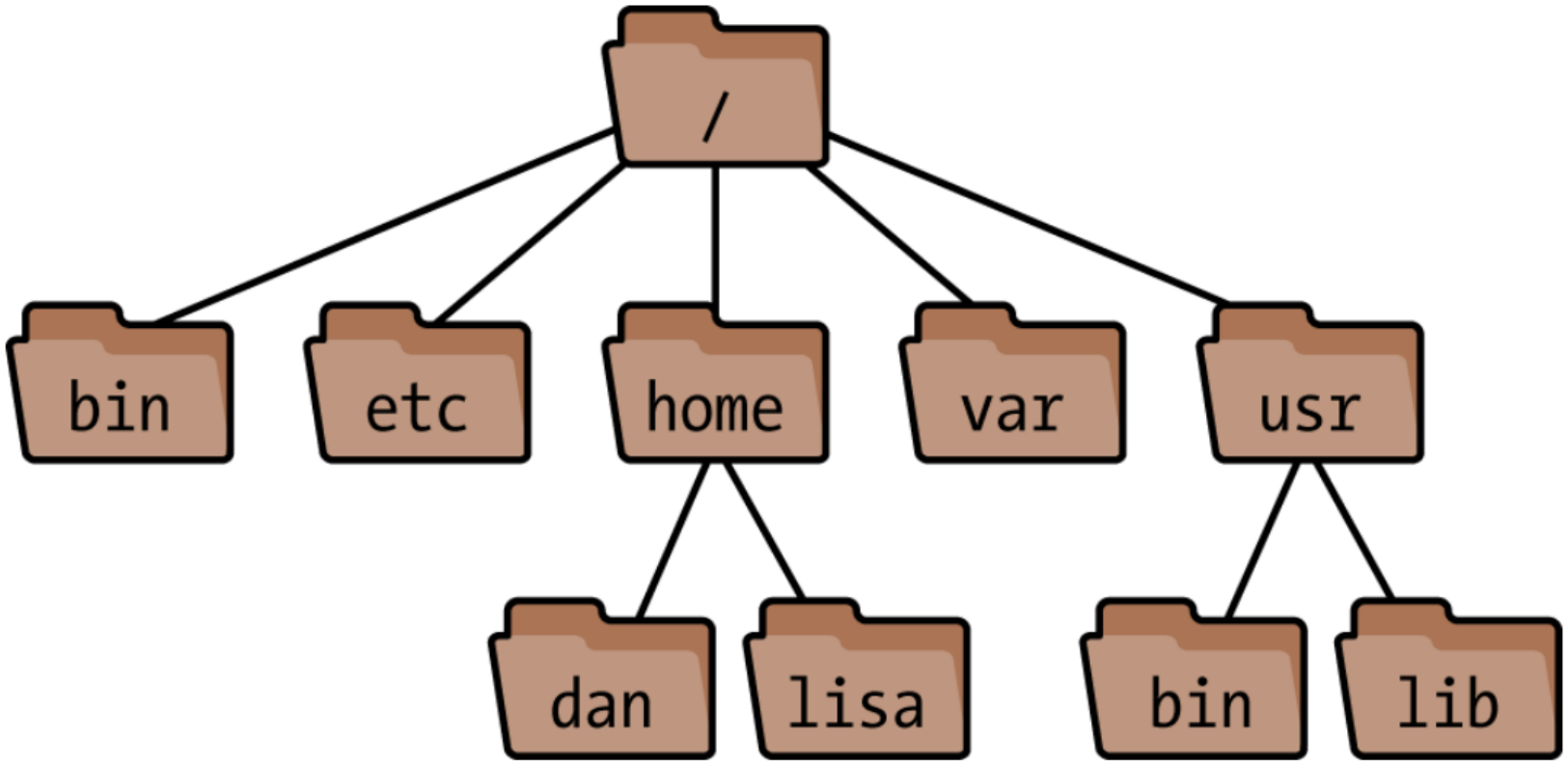
On Ubuntu:

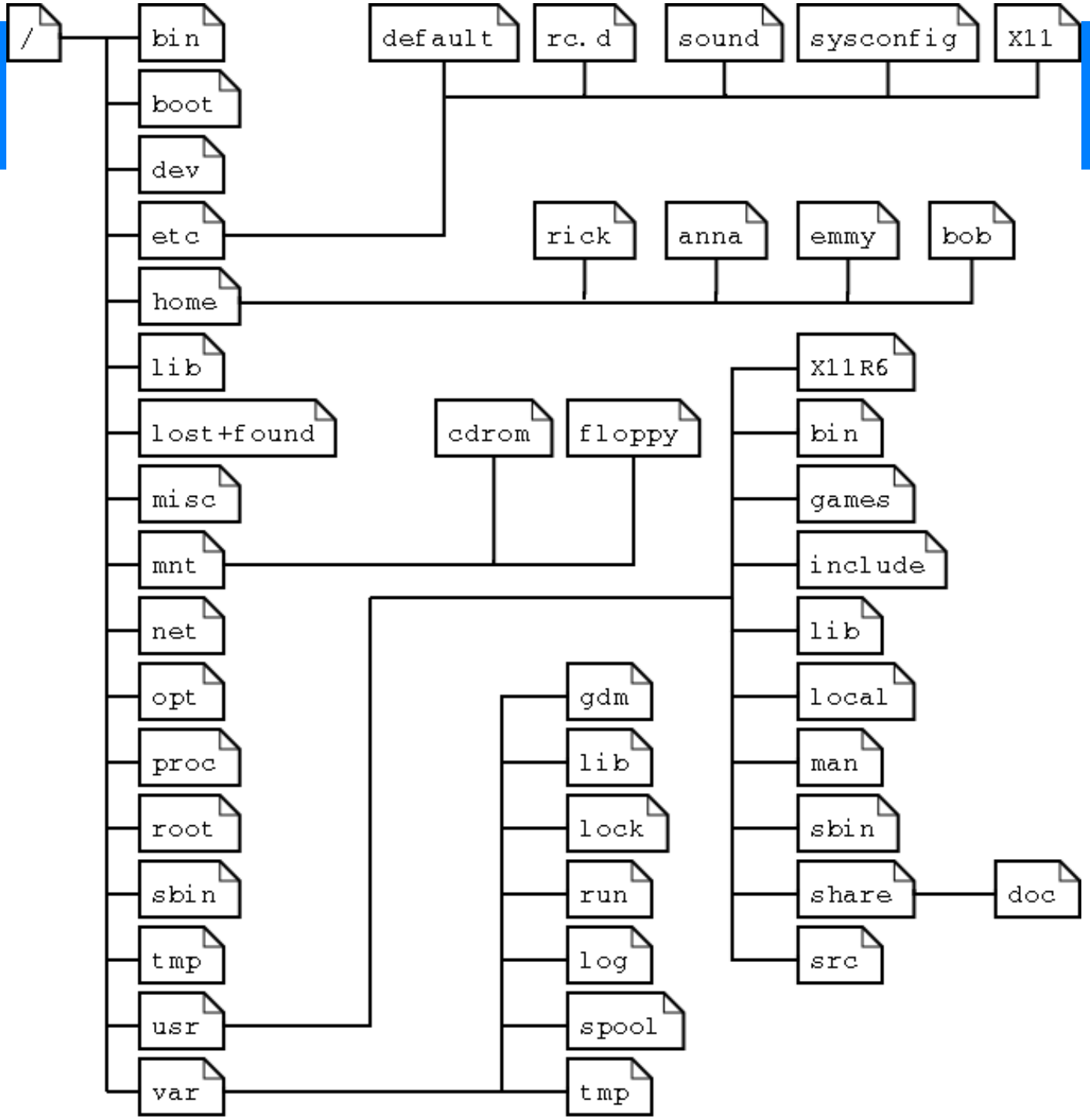
- **GUI: synaptic, not installed by default**

With command line:

- **sudo apt-get update**
- **sudo apt-cache search synaptic**
- **sudo apt-get install synaptic**

The filesystem




/
bin
boot
dev
etc
home
lib
lost+found
misc
mnt
net
opt
proc
root
sbin
tmp
usr
var
default
rc.d
sound
sysconfig
X11
rick
anna
emmy
bob
cdrom
floppy
gdm
lib
lock
run
log
spool
tmp
X11R6
bin
games
include
lib
local
man
sbin
share
doc
src

The shell

- **The desktop is nothing particular compared to Windows and MacOs, we will not cover it**
- **The shell(bash in most cases) is much more interesting. Try:**
  - ls
  - touch mytralala
  - ls
  - mv mytralala mydingdingdong
  - ls
  - echo foo > mydingdingdong
  - cp mydingdingdong bar
  - rm mydingdingdong
  - ls
  - cat bar

The shell

Hidden files:

- **Touch .findmeifyoucan**
- **ls**
- **ls -a**

Permissions

Show them with *ls -l*

- **read, write, execute**
- **for (current) user, group, others**

Others, please don’t read my file:

- chmod o-r myfile

Environment variables

Exists like on windows.

Starts with $

- **echo $SHELL**
- **whoami**
- **echo $USER**
- **((1==1)); echo $?**
- **(($USER==whoami)); echo $?**
- **echo $FOO**
- **export FOO=BAR**
- **echo $FOO**

First script

Directly in shell:

- while true; do echo "Navy: hey, listen !" && sleep 1; done;
- when you are bored, press *Ctrl+c*

In a script:

- gedit foo.sh &
- chmod +x foo.sh
- ./foo.sh navy 5

```
#!/bin/bash

echo "My name is $1 and I'm an
annoying fairy"

for i in `seq 1 $2`
do
      echo "Hey, listen !"
      sleep 0.5
done
```

Compile stuff

And more

ssh, etc