



afmb
architecture et fonction
des macromolécules biologiques

Aix*Marseille
université

short introduction to Linux

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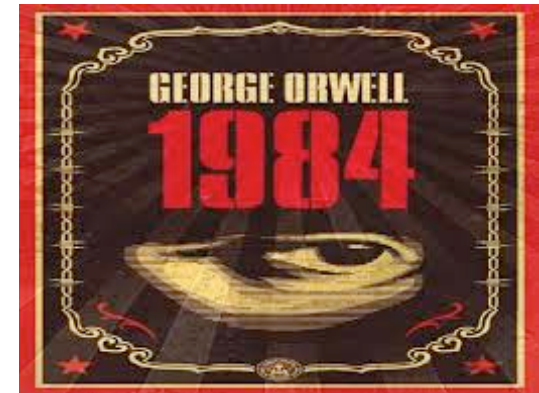
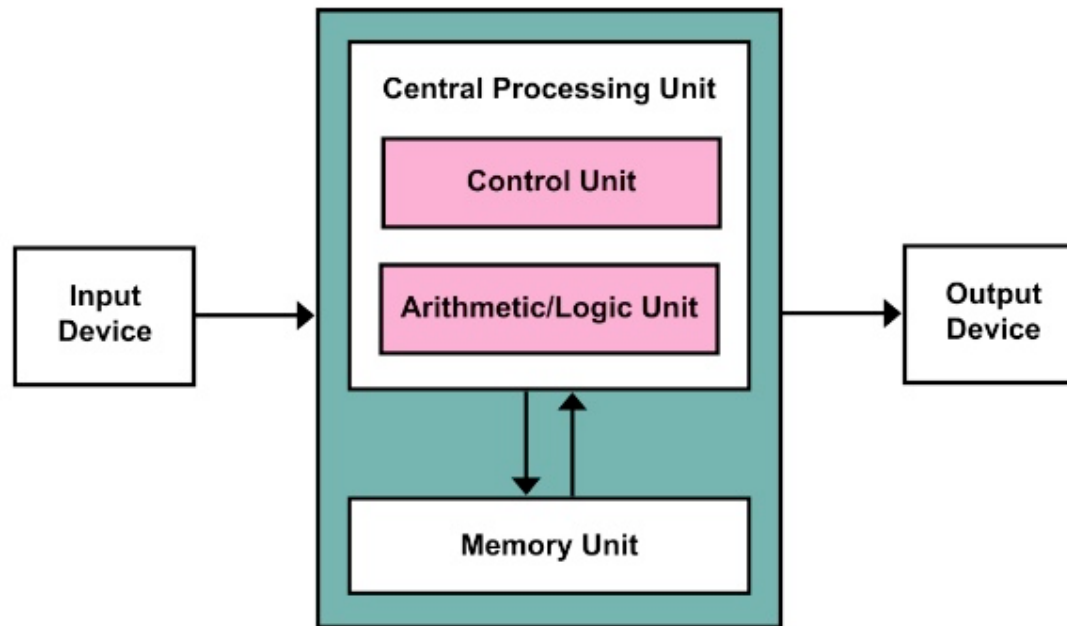


**Ecole Nationale de
Biologie Structurale
Intégrative**

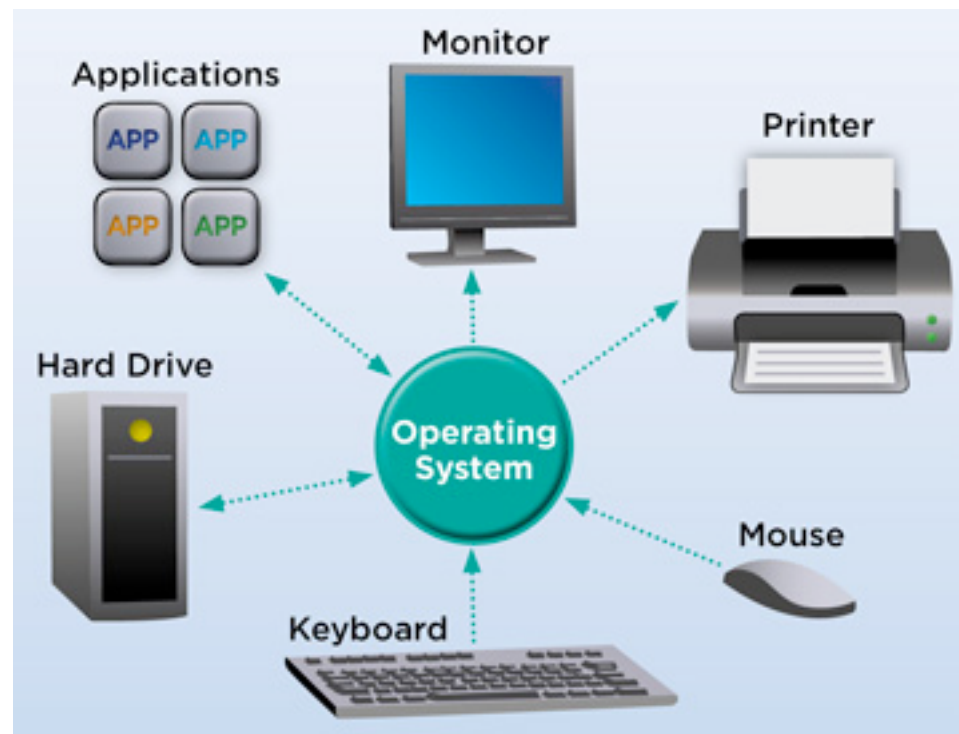
**Juin 2019
Ile d'Oléron**



von Neumann Architecture



The mouse remained relatively obscure until the appearance of the Macintosh in 1984.



1960, MULTICS: Multiplexed Operating and Computing System
General Electric, Massachusetts Institute of Technology and Bell Laboratories

1969, UNICS stood for Uniplexed Operating and Computing System
Bell Laboratories

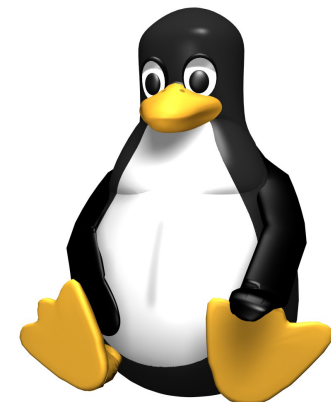
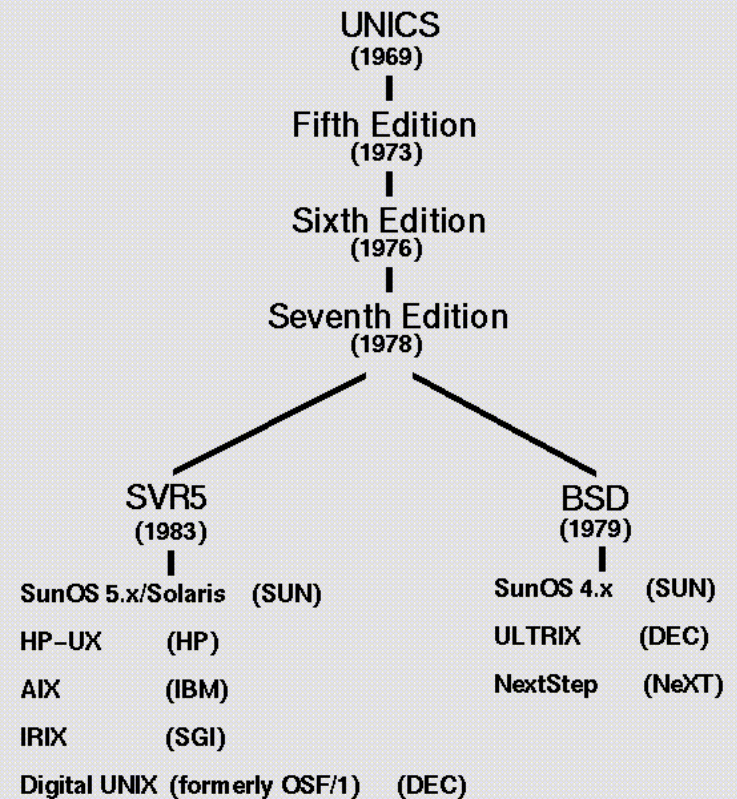
In **1973** Ken Thompson and Dennis Ritchie rewrote the Unix kernel in C



In **1991**, while studying computer science at University of Helsinki, Linus Torvalds began a project that later became the Linux kernel.



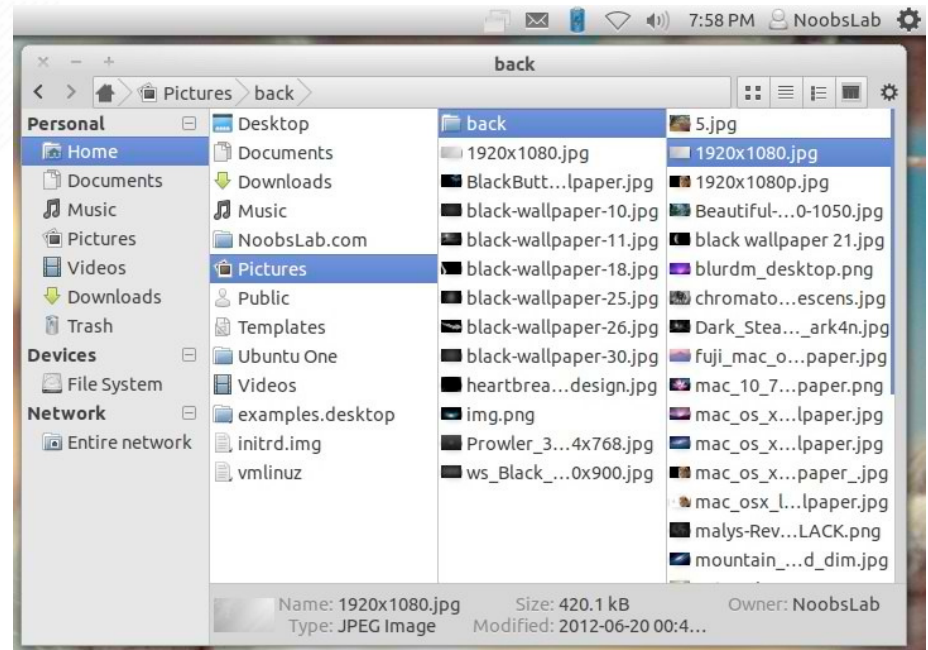
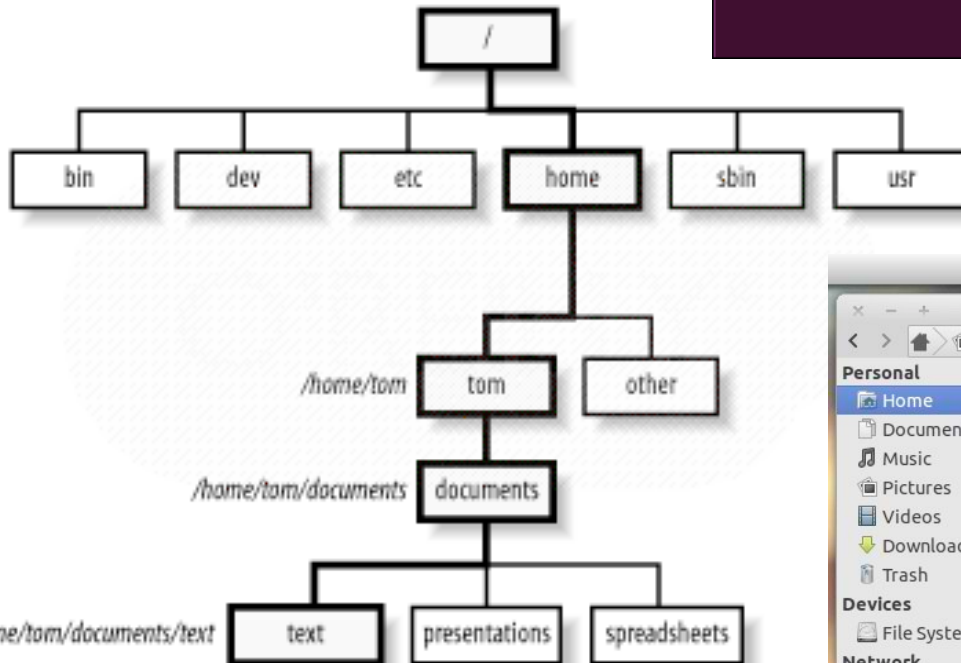
The Unix Family Tree



command line

```
chris@ubuntu: ~  
chris@ubuntu:~$ bash --version  
GNU bash, version 4.3.46(1)-release (x86_64-pc-linux-gnu)  
Copyright (C) 2013 Free Software Foundation, Inc.  
License GPLv3+: GNU GPL version 3 or later <http://gnu.org/licenses/gpl.  
  
This is free software; you are free to change and redistribute it.  
There is NO WARRANTY, to the extent permitted by law.  
chris@ubuntu:~$
```

Linux directory structure



GUI : Graphical User Interface

pwd : print work directory

```
>pwd  
/home/tom/documents/text
```

The root directory is the top-level directory of a file system.

cd : change directory (case sensitive !)
absolute or relative pathname

```
>cd /home/tom/documents
```

```
>cd ../
```

ls : list

```
>ls  
text  
presentations  
spreadsheets
```

linux file types

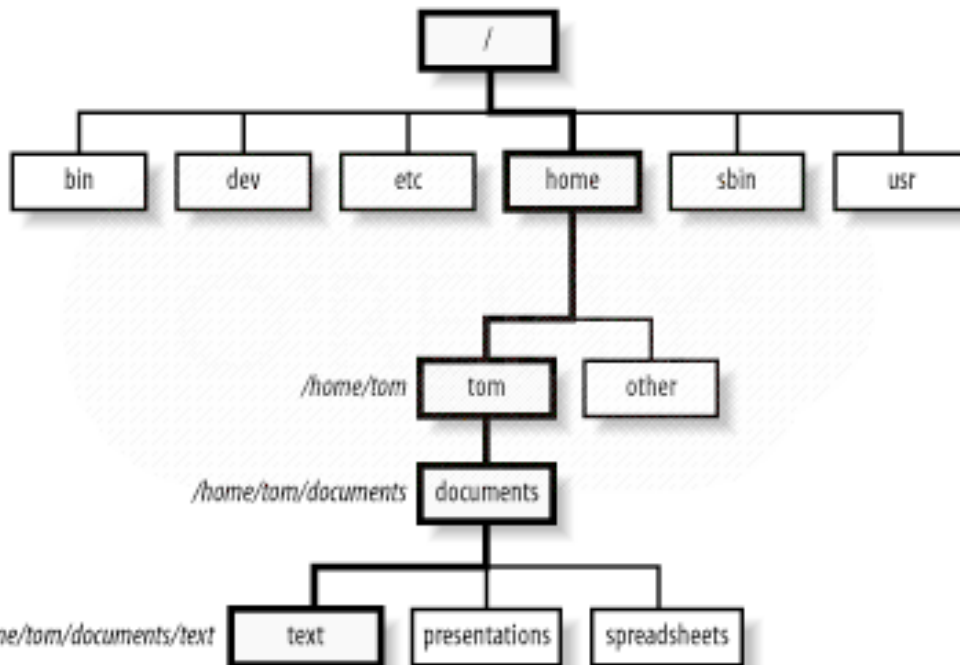
ordinary file (text or binary)

directory

symbolic link

...

Linux directory structure



executable : binary or text

```
>ls -l /bin/pwd
-rwxr-xr-x 1 root wheel 29008 Mar 28 2018 /bin/pwd*
>file /bin/pwd
/bin/cp: Mach-O 64-bit executable x86_64

>ls -l /sw/share/xtal/ccp4-6.1.3/bin/ccp4i
-rwxr-xr-x 1 root admin 131 Mar 12 2010 /sw/share/xtal/ccp4-6.1.3/bin/ccp4i*
>file /sw/share/xtal/ccp4-6.1.3/bin/ccp4i
/sw/share/xtal/ccp4-6.1.3/bin/ccp4i: POSIX shell script text executable, ASCII text
```

data : binary or text

```
>file dap_001.img
dap_001.img: data

>file ref-13.pdb
ref-13.pdb: ASCII text
```

ref-13.pdb

ATOM	25	CA	LEU A	29	15.964	30.866	27.865	1.00	51.83	C
ATOM	26	C	LEU A	29	15.852	29.354	28.160	1.00	55.83	C
ATOM	27	O	LEU A	29	16.591	28.842	28.995	1.00	56.52	O
ATOM	28	CB	LEU A	29	17.154	31.104	26.898	1.00	52.02	C
ATOM	29	CG	LEU A	29	17.120	30.381	25.526	1.00	56.30	C
ATOM	30	CD1	LEU A	29	16.021	30.905	24.639	1.00	56.33	C
ATOM	31	CD2	LEU A	29	18.414	30.528	24.815	1.00	57.90	C
ATOM	32	N	THR A	30	14.958	28.645	27.451	1.00	51.14	N
ATOM	33	CA	THR A	30	14.803	27.203	27.557	1.00	50.07	C
ATOM	34	C	THR A	30	15.273	26.589	26.220	1.00	52.75	C
ATOM	35	O	THR A	30	14.595	26.758	25.185	1.00	52.71	O
ATOM	36	CB	THR A	30	13.364	26.816	27.981	1.00	56.39	C
ATOM	37	CG	THR A	30	13.353	27.163	28.273	1.00	55.12	C

dap_001.img

