EXPLORE YOUR COMPUTER

GOALS

- Learn the different types of files
- Browse the file system
- Create/delete/move folders and files from the command line

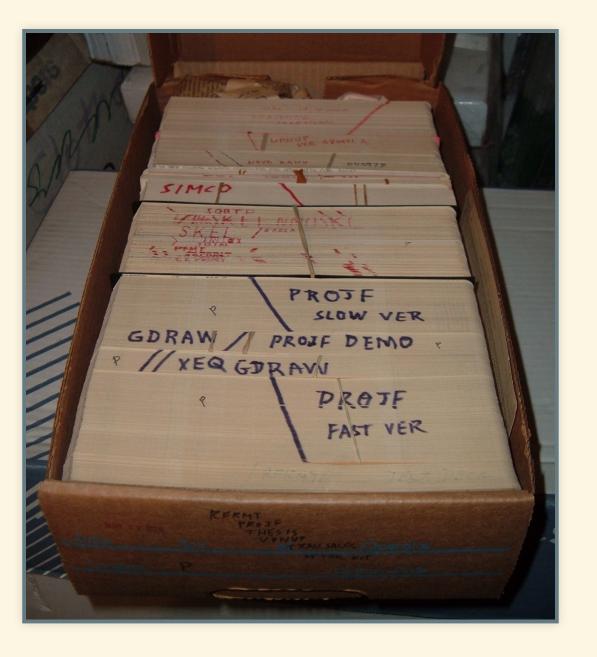
FILES, FORMATS AND CHARACTER ENCODING

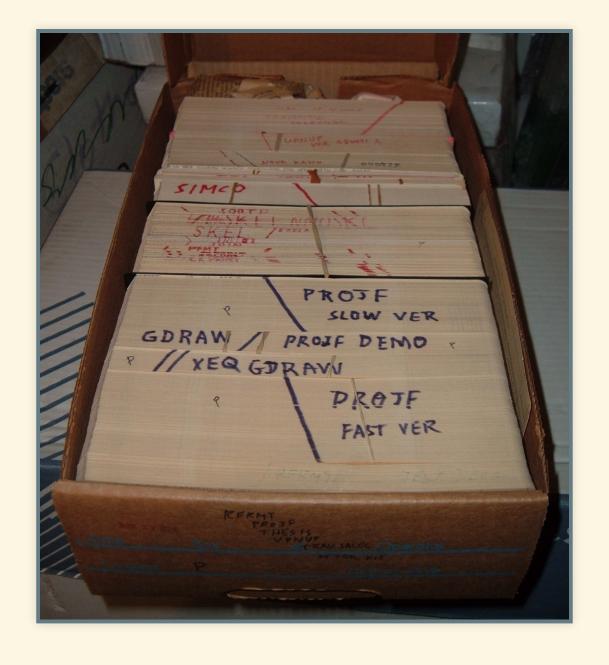
FILE TYPES

- executable files: they contain programs
- data files: they contain different types of information: text, image, audio, video.

FILE TYPES (ANOTHER TAXONOMY)

- text files: data is stored using electronic text (characters). They are human-readable.
- binary files: data is stored in binary format. They are computer-readable but not human-readable.





Punched card decks by ArnoldReinhold

FORMATS

- The file extension can be used as a hint to the format
- The format tells us the specific software we need to read it and/or manipulate it (e.g. data files) or run it (i.e. executable files)

CHARACTER ENCODING

- Any "text" is created from characters.
- Characters that are needed for a specific purpose are grouped into a character set.
- To refer to a character in an unambiguous way, each character is associated to a code point (a number).
- Characteres are stored in the computers as one of more **bytes**.
- A character encoding is a set of mappings between the bytes and the character set.

WHAT CHARACTER ENCODING?

UTF-8

WHAT CHARACTER ENCODING? UTF-8



Your machine might be using a different encoding by default (eg. Windows-1252 or CP-1252)

IN THIS COURSE WE WILL WORK WITH:

- .txt plain text
- csv tabular plain text (comma-separated values)
- json JavaScript Object Notation. It stores and trasmits data consisting of attribute-value pairs and collections of elements
- py source code in the script language Python
- ipynb notebook documents used by Jupyter Notebook, interactive computational environment to work with Python

THE FILE SYSTEM

THE TERMINAL

- Also known as console, command-line interface
- It processes commands to a computer program in the form of lines of text

TO OPEN THE TERMINAL

- Linux: press CTRL + ALT + T
- Windows: press Windows + X; select Windows
 PowerShell or open the start menu and type
 "Powershell"
- Mac: in the Finder, open
 /Applications/Utilities (or use Launchpad and type "Terminal")

COMMAND

It is a request the user sends to the OS for it to execute it. Elements:

- 1. Name of a executable program (e.g. python)
- 2. A set of options whose name is preceded by one or two hyphens (e.g. -i or --help)
- 3. A set of arguments to define the file(s) or the data that must be used

COMMAND EXAMPLE

python my_wonderful_collation_script.py

FILE/DIRECTORY NAMING CONVENTIONS



Do not use whitespaces!

(and avoid special characters as well)

PATHS

- A path specifies a unique location in a file system. It points to a location by following the directory tree hierarchy, thus it looks like a slash-separated list of directory names followed by either a directory name or a file name. Eg.:
 - macOS: /Users/username/Desktop
 - Linux: /home/username/Desktop
 - Windows: C:\Users\username\Desktop

PATH REPRESENTATION (CONVENTIONS)

- root directory
 - UNIX: /
 - Windows: \ (relative to current working directory root) or drive_letter: \
- directory separator
 - UNIX: /
 - Windows: \

PATH REPRESENTATION (CONVENTIONS)

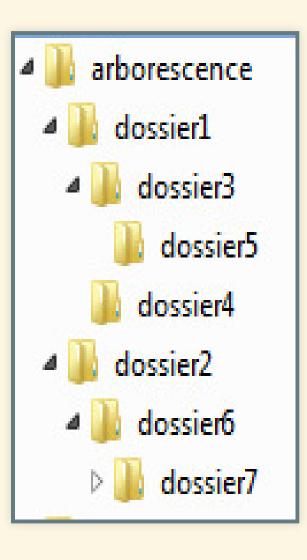
- current directory: .
- parent directory: . .

TYPES OF PATH

- relative: path in relation to the current location
- absolute: path in relation to the disk root

TO CHANGE FOLDER

- UNIX: cd directory_name
- Windows: Set-Location directory_name or cd directory_name or chdir directory_name

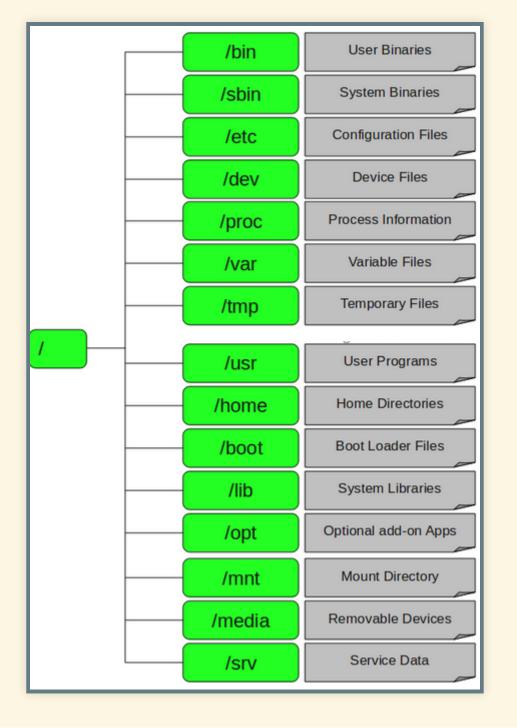


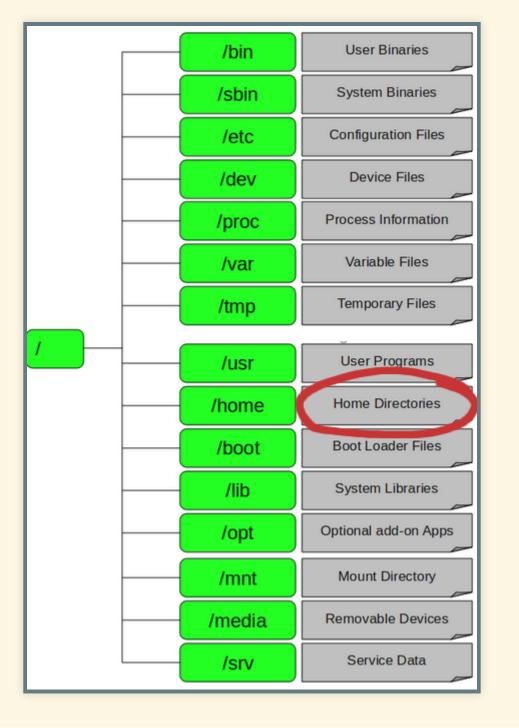
We are in "dossier3"

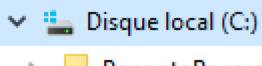
- "my" absolute path:
 - /arborescence/dossier1/doss
- to move to dossier5 (relative path): dossier5
- to move to dossier1 (relative path):
- to move to dossier4 (relative path):
 - ../dossier4
- to move to root: cd /

DIRECTORIES

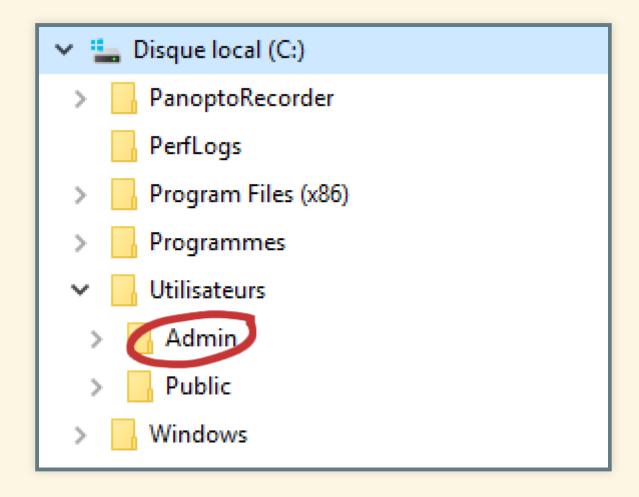
When we open the terminal, we are at the root of our personal folder

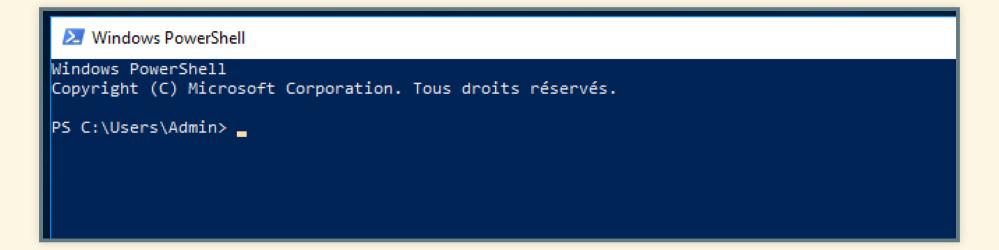




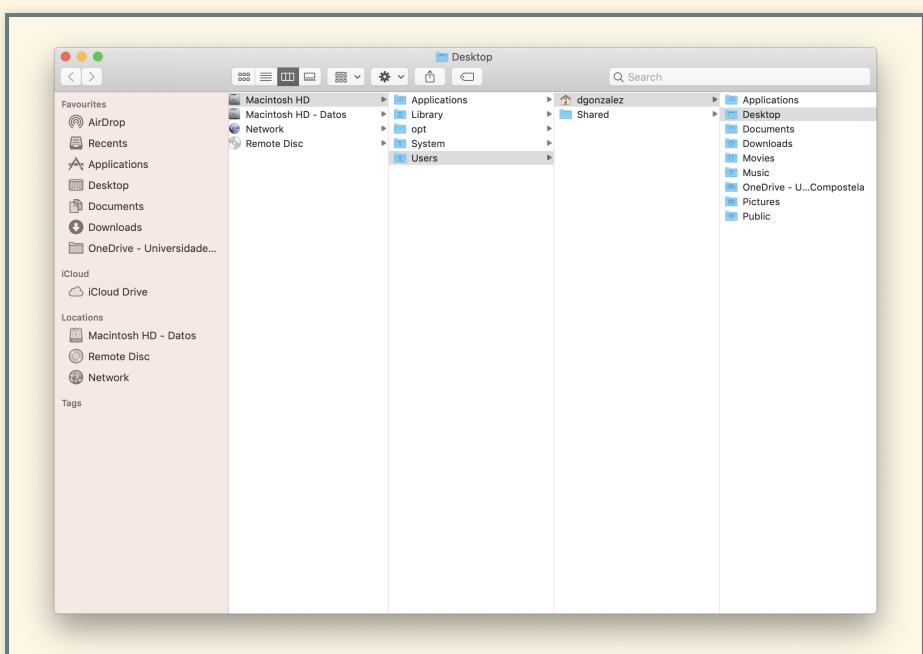


- > PanoptoRecorder
 - PerfLogs
- Program Files (x86)
- > Programmes
- Utilisateurs
 - > Admin
 - > Public
- > Windows









LIST THE CONTENTS OF A DIRECTORY

- UNIX: ls
- Windows: **ls** or **dir**

EXERCISE 1

- 1. Open the terminal
- 2. List all files and directories
- 3. Go to your desktop

MODIFYING THE FILE SYSTEM

CREATE A DIRECTORY

- UNIX: mkdir directory_name
- Windows: mkdir directory_name or New-Item directory_name

COPY A FILE

cp file_name_source file_name_output

MOVE A FILE

mv file_name_source file_name_output

DELETE A FILE

rm file_name

DELETE A DIRECTORY

rm -r directory_name

EXERCISE 2

Using the command line:

- 1. Open the terminal and go to your desktop or documents folder
- 2. Create the folder "my_data"
- 3. Bonus (optional): Copy or move at least one of the files with which you want to work in this course

ADDITIONAL MATERIALS

OS: WINDOWS

 Dawson, Ted: "Introduction to the Windows Command Line with PowerShell". The Programming Historian.

OS: ALL

- Milligan, Ian & Baker, James: "Introduction to the Bash Command Line". The Programming Historian.
- W3C: "Character encodings for beginners".
- Priceton University Library: "File naming and structure". Research Data Management at Princeton.

RESOURCES

- Encoding Explorer (by Webatic)
- FileInfo (database with file formats and extensions)