Command-Line Operations : The Shell

Don't fear the command line ...

Shell ↔ Graphical User Interface (GUI)

Graphical User Interface : displays to interact with the computer

- Open and manipulate files and folders
- Interact with programs in an intuitive way

Potential disadvantes :

- **unpractical for long sequence of operations** with different or repeated datastes

- **No storage of commands** are not denoted in a 'log-book' for all user commands, bad repeatibility

- **GUI's are unsuitable for cluster analysis** on different computers

- **GUI's are not universal**, only work on the operating system of choice

Command lines can deal with this ...

Starting (the S)hell

Starting the shell

Shells are the programs that display the command line

In OS X there are different shells, the default one: bash shell

Type: SHELL

A command-line view of the file-system

File-system : nested hierarchy of folders
root directory : most inclusive folder, contains all other files and folders
Not to be confused with multiple roots (c:, d:, … in dos), desktop, or home directory

The path

/Users/lang/Documents/asymmetry/Literature/data.txt

absolute / relative paths

Starting (the S)hell

The path

absolute path
/Users/lang/Documents/asymmetry/Literature/data.txt

Working directory : the one you are currently in

Relative path : relative to the working directory

/asymmetry/Literature/data.txt
when working directory is: /Users/lang/Documents/

Navigating your computer from the shell

Listing files with 'ls' and figuring out where you are with 'pwd'

Open the terminal, starts with home directory

Command : ls (list)

type : **ls Bureau**

Command : **pwd** (print working directory) tells you where you are

Command **cd** (change directory, move around)

Type : **cd** directory to move into a nested diretory, **cd ..** to move back or up

Type : **cd ~/...** Directory to jump directly into it instead fo writing the absolute path
Type : **cd ~** , to go home...

Navigating your computer from the shell

Adding and removing directories with 'mkdir' and 'rmdir'

Type : **mkdir ...** (make directory)
Type : **rmdir ...** (remove directory) they are really deleted, not just in the trash

copying files

type : **cp original.txt copy.txt** (copies the file with a name change)

type : **cp original.txt / … path** (copies the file into a different directory)

cd into a new directoy
type : **cp … path/original.txt ./** (moves file from another direcory into this one)

Navigating your computer from the shell

moving files

type : **mv original.txt copy.txt** (renames the file)

type : **mv original.txt / … path** (moves file into a different directory)

cd into a new directoy
type : **mv … path/original.txt ./** (moves file from another direcory into this one)

Command line shortcuts

Up arrow, Tab

Try it out … avoid usage of names for folder and files with speces

Will be replaced in the command line by \ space,

Modifying command behaviour with arguments

Ls, cd, pwd, … are little programs that read in bits of information do sth.

Pieces of information, passed to a program at the command line are called **arguments**

Different arguments:

type : ls	**lists files and folders**
type : ls -a	**lists files and folders , plus hidden .folders**
type : ls -l	**lists files and folders with indication of hierarchy of permission to read, to read (r) and write (w) and date of storage**
type : ls -a -l	**the ultimate information**

Viewing file contents with 'less'

To launch a file

Type : **less filename**

Navigate with :

q	quit
Space	next page
b	back page
##g	go to line ##
G	go to end
↑↓	scroll up and down
/abc	search for text abc
n	Find next abc
?	Find previous abc
h	help

Viewing help files at the command line with 'man'

Type : **man ls**

man uses less to diplay the manual, so navigate with the same commands:

q	quit
Space	next page
b	back page
##g	go to line ##
G	go to end
↑↓	scroll up and down
/abc	search for text abc
n	Find next abc
?	Find previous abc
h	help

The command line finally makes your life 'easier'

Wildcards in path descriptions

* = any number, character (except slash), (in regular expressions : .*

Type : **ls D***	lists all documents that begin with D
Type : **ls *.txt**	lists all txt files
Type : **ls D*/*.txt**	lists all txt.files that are inside a directory that starts with D
Type : **ls D*/*/*.txt**	lists all txt.files in a directory inside a D... directory

Copying and moving multiple files

Type : **cp ../path/* .txt ./**	copies all txt.files from a specified directory into the working directory

Ending your terminal session

Type : exit (sometimes logout or quit)