300 - Regular expressions

Curs 2021 - 2022

ASIX M01-ISO UF1-A01-16 Regular expressions

Regular expressions

Description

Key Concepts:
- ❏ basic regular expressions
- ❏ exteded regular expressions

Commands:
- ❏ grep, grep -i, grep -v, grep -E, egrep
- ❏ cut
- ❏ sort
- ❏ tr
- ❏ expand/unexpand
- ❏ sed
- ❏ paste
- ❏ join

Regular expressions

Using grep with regular expressions

grep

- ● grep pattern file...
- ● -i ignore case
- ● -v not match
- ● -w word
- ● -n num
- ● -c count
- ● -A [N] after lines
- ● -B [N] before lines
- ● -E extended
- ● -q no output
- ● -l list filename only

```
$ grep root /etc/passwd
root:x:0:0:root:/root:/bin/bash
operator:x:11:0:operator:/root:/sbin/nologin
```

```
$ grep 100 /etc/passwd
games:x:12:100:games:/usr/games:/sbin/nologin
guest:x:1000:1000:guest:/home/guest:/bin/bash
ecanet:x:1001:1001::/home/ecanet:/bin/bash
```

```
$ cat > noms.txt
pere
Anna
MARTA
pau
joan
Julio
jordi
miquel
^d
```

```
$ grep "anna" noms.txt

$ grep "Anna" noms.txt
Anna

$ grep -i "Anna" noms.txt
Anna
```

```
$ grep -v  j noms.txt
pere
Anna
MARTA
pau
Julio
miquel

$ grep -v -i j noms.txt
pere
Anna
MARTA
pau
miquel
```

```
$ grep guest /etc/* 2> /dev/null
/etc/group:guest:x:1000:
/etc/group-:guest:x:1000:
Binary file /etc/ld.so.cache matches
/etc/libguestfs-tools.conf:# /etc/libguestfs-tools.conf or .libguestfs-tools.rc
/etc/libguestfs-tools.conf:# See libguestfs-tools.conf(5) man page for documentation.
/etc/libguestfs-tools.conf:# Uncomment the following line to make guestfish, guestmount,
/etc/passwd:guest:x:1000:1000:guest:/home/guest:/bin/bash
/etc/passwd-:guest:x:1000:1000:guest:/home/guest:/bin/bash
/etc/subgid:guest:100000:65536
/etc/subgid-:guest:100000:65536
/etc/subuid:guest:100000:65536
/etc/subuid-:guest:100000:65536
```

```
$ grep -c bin /etc/passwd
51

$ grep -w bin /etc/passwd
root:x:0:0:root:/root:/bin/bash
bin:x:1:1:bin:/bin:/sbin/nologin
sync:x:5:0:sync:/sbin:/bin/sync
guest:x:1000:1000:guest:/home/guest:/bin/bash
ecanet:x:1001:1001::/home/ecanet:/bin/bash
```

```
$ grep -n root /etc/passwd
1:root:x:0:0:root:/root:/bin/bash
10:operator:x:11:0:operator:/root:/sbin/nologin

$ grep -c root /etc/passwd
2
```

```
$ grep operator /etc/passwd
operator:x:11:0:operator:/root:/sbin/nologin

$ grep -A 2 operator /etc/passwd
operator:x:11:0:operator:/root:/sbin/nologin
games:x:12:100:games:/usr/games:/sbin/nologin
ftp:x:14:50:FTP User:/var/ftp:/sbin/nologin

$ grep -B 3 operator /etc/passwd
shutdown:x:6:0:shutdown:/sbin:/sbin/shutdown
halt:x:7:0:halt:/sbin:/sbin/halt
mail:x:8:12:mail:/var/spool/mail:/sbin/nologin
operator:x:11:0:operator:/root:/sbin/nologin
```

Basic regular expressions

- [char] 1 char from the charset
- ^   begin line
- $ end line
- .   1 character
- _*   0-n occurrences precedent char

```
$ grep "home" /etc/passwd
guest:x:1000:1000:guest:/home/guest:/bin/bash
ecanet:x:1001:1001::/home/ecanet:/bin/bash

$ grep root /etc/passwd
root:x:0:0:root:/root:/bin/bash
operator:x:11:0:operator:/root:/sbin/nologin

$ grep ^root /etc/passwd
root:x:0:0:root:/root:/bin/bash

$ grep bash$ /etc/passwd
root:x:0:0:root:/root:/bin/bash
guest:x:1000:1000:guest:/home/guest:/bin/bash
ecanet:x:1001:1001::/home/ecanet:/bin/bash
$ grep [jJm]oan noms.txt
joan

$ echo "pere pare pire pore pure" | grep "p[aou]re"
pere pare pire pore pure

$ echo "nom1 nom2 nom3 nom8 nom9 noma nomb nomc" | grep "nom[0-8]"
nom1 nom2 nom3 nom8 nom9 noma nomb nomc

$ grep [0-3] /etc/passwd
root:x:0:0:root:/root:/bin/bash
bin:x:1:1:bin:/bin:/sbin/nologin
daemon:x:2:2:daemon:/sbin:/sbin/nologin
adm:x:3:4:adm:/var/adm:/sbin/nologin
sync:x:5:0:sync:/sbin:/bin/sync
```

```
$ echo pim pam pum repim | grep p.m
pim pam pum repim
```

```
$ echo piim paamp pumpum repiim | grep p.m
piim paamp pumpum repiim

$ echo piim paamp pumpum repiim | grep p..m
piim paamp pumpum repiim

$ echo "name-23 name.45 name/34" | grep name.
name-23 name.45 name/34
```

```
$ echo namea:nameaa:nameaaa:nameaaa: | grep "a"
namea:nameaa:nameaaa:nameaaa:

$ echo namea:nameaa:nameaaa:nameaaa: | grep "aa"
namea:nameaa:nameaaa:nameaaa:

$ echo namea:nameaa:nameaaa:nameaaa: | grep "a."
namea:nameaa:nameaaa:nameaaa:

$ echo namea:nameaa:nameaaa:nameaaa: | grep "aa*"
namea:nameaa:nameaaa:nameaaa:

$ echo namea:nameaa:nameaaa:nameaaa: | grep "a*"
```

```
$ echo aa:bb:ab:a:bb:aaa:bb:aaaa | grep "a."
aa:bb:ab:a:bb:aaa:bb:aaaa

$ echo aa:bb:ab:a:bb:aaa:bb:aaaa | grep "aa"
aa:bb:ab:a:bb:aaa:bb:aaaa

$ echo aa:bb:ab:a:bb:aaa:bb:aaaa | grep "aa*"
aa:bb:ab:a:bb:aaa:bb:aaaa

$ echo aa:bb:ab:a:bb:aaa:bb:aaaa | grep "aaa*"
aa:bb:ab:a:bb:aaa:bb:aaaa
```

```
$ echo aa:bb:ab:a:bb:aaa:bb:aaaa | grep ":a:"
aa:bb:ab:a:bb:aaa:bb:aaaa

$ echo aa:bb:ab:a:bb:aaa:bb:aaaa | grep ":a.:"
aa:bb:ab:a:bb:aaa:bb:aaaa

$ echo aa:bb:ab:a:bb:aaa:bb:aaaa | grep ":aa:"

$ echo aa:bb:ab:a:bb:aaa:bb:aaaa | grep ":aa*:"
aa:bb:ab:a:bb:aaa:bb:aaaa
```

Extended regular expressions

- _+   1 or + precedent char
- _?   0 or 1 precedent char
- {} {n} {n,} {1,m} {n,m}
- |
- ()

- equivalences:
    - char{0,n} char*
    - char{1,n} char+
    - char{0,1] char?

```
## 1
$ echo :user:user1:user2:user11:user221: | grep ":user[0-9]:"
:user:user1:user2:user11:user221:

$ echo :user:user1:user2:user11:user221: | grep -E ":user[0-9]+"
:user:user1:user2:user11:user221:

$ echo :user:user1:user2:user11:user221: | grep -E ":user[0-9]?"
:user:user1:user2:user11:user221:
```

```
## 2
$ cat > users.txt
user
pere
user1
marta
user2
user11
ramon
user221
usera
userb
```

```
##3
$ grep "user" users.txt
user
user1
user2
user11
user221
usera
userb

$ grep "user[0-9]$" users.txt
user1
user2

$ grep -E "user[0-9]?$" users.txt
user
user1
user2

$ grep -E "user[0-9]+$" users.txt
user1
user2
user11
user221
```

```
##4
$ grep -E "user[0-9][0-9]$" users.txt
user11

$ grep -E "user[0-9]{2}$" users.txt
user11

$ grep -E "user[0-9]{2,}$" users.txt
user11
user221

$ grep -E "user[0-9]{,2}$" users.txt
user
user1
user2
user11

$ grep -E "user[0-9]{2,3}$" users.txt
user11
user221
```

```
#5
$ echo "dni:66454753S" | grep -E ":[0-9]{8}"
dni:66454753S

$ echo "dni:664547530000S" | grep -E ":[0-9]{8}"
dni:664547530000S
$ echo "dni:66454753S" | grep -E ":[0-9]{8}$"

$ echo "dni:66454753S" | grep -E ":[0-9]{8}[A-Z]$"
dni:66454753S

$ echo "dni:664547530000S" | grep -E ":[0-9]{8}$"
```

```
#6
$ grep -E "root|operator" /etc/passwd
root:x:0:0:root:/root:/bin/bash
operator:x:11:0:operator:/root:/sbin/nologin

$ grep -E "1$|2$" users.txt
user1
user2
user11
user221
```

```
#7
# validate data format dd-mm-aaaa
$ echo "22-11-2021" | grep -E "^[0-9]{2}-[0-9]{2}-[0-9]{4}$"
22-11-2021

# Validate car format
$ echo "7774MM" | grep -E "[0-9]{4}[A-Z]{2}"
7774MM

$ echo "77749999MMaaaa" | grep -E "[0-9]{4}[A-Z]{2}"
77749999MMaaaa

$ echo "7774MM" | grep -E "^[0-9]{4}[A-Z]{2}$"
7774MM

# validate data format dd-mm-aaaa and dd/mm/aaaa
...
```

```
# 8
$ echo "Mis Miss Mississ tresMiss" | grep -E "M(iss)*"
Mis Miss Mississ tresMiss

$ echo "192.168.12.15" | grep -E "^([0-9]{1,3}\.){3}[0-9]{1,3}"
192.168.12.15
```

Basic text filters

- head
- tail
- expand/unexpand
- cut
- sort
- tr

head

```
#1  head

$ cat noms.txt
pere
Anna
MARTA
pau
joan
Julio
jordi
miquel

$ wc -l noms.txt
8 noms.txt
$
$ head -n 2 noms.txt
pere
Anna

$ head -n -3 noms.txt
pere
Anna
MARTA
pau
joan
```

tail

```
# 2
$ tail -n 2 noms.txt
jordi
miquel
```

expand/unexpand

```
#3
$ echo "text  with  two spaces" | unexpand -a -t2
text    with    two spaces

$ echo -e "text\twith\ttabulations"  | expand  -t 2
text  with  tabulations
```

cut

```
#4
$ cut -d: -f1,3,4 /etc/passwd | head -n5
root:0:0
bin:1:1
daemon:2:2
adm:3:4
lp:4:7

$ cut -d: -f1-2,4,6- /etc/passwd | head -n5
root:x:0:/root:/bin/bash
bin:x:1:/bin:/sbin/nologin
daemon:x:2:/sbin:/sbin/nologin
adm:x:4:/var/adm:/sbin/nologin
lp:x:7:/var/spool/lpd:/sbin/nologin
```

```
#5
```

```
$ ls -l | cut -c2-9
otal 8
rw-rw-r-
rw-rw-r-
```

sort | uniq

- lexicographic order (default)
- -r reverse
- -n -g -H numeric order
- -t_ delimiter
- -knº key field
- -u (uniq)

```
#6
$ sort /etc/passwd | head -n5
abrt:x:173:173::/etc/abrt:/sbin/nologin
adm:x:3:4:adm:/var/adm:/sbin/nologin
akmods:x:977:969:User is used by akmods to build akmod
packages:/var/cache/akmods/:/sbin/nologin
apache:x:48:48:Apache:/usr/share/httpd:/sbin/nologin
avahi:x:70:70:Avahi mDNS/DNS-SD Stack:/var/run/avahi-daemon:/sbin/nologin

$ sort -r noms.txt
pere
pau
miquel
MARTA
Julio
jordi
joan
Anna
```

```
#7
$ sort -t: -k3 /etc/passwd | head -n5
root:x:0:0:root:/root:/bin/bash
guest:x:1000:1000:guest:/home/guest:/bin/bash
ecanet:x:1001:1001::/home/ecanet:/bin/bash
qemu:x:107:107:qemu user:/:/sbin/nologin
operator:x:11:0:operator:/root:/sbin/nologin

$ sort -t: -k3n /etc/passwd | head -n5
root:x:0:0:root:/root:/bin/bash
bin:x:1:1:bin:/bin:/sbin/nologin
daemon:x:2:2:daemon:/sbin:/sbin/nologin
adm:x:3:4:adm:/var/adm:/sbin/nologin
lp:x:4:7:lp:/var/spool/lpd:/sbin/nologin

$ sort -t: -k4n -k3nr /etc/passwd | head -n10
operator:x:11:0:operator:/root:/sbin/nologin
halt:x:7:0:halt:/sbin:/sbin/halt
shutdown:x:6:0:shutdown:/sbin:/sbin/shutdown
sync:x:5:0:sync:/sbin:/bin/sync
root:x:0:0:root:/root:/bin/bash
bin:x:1:1:bin:/bin:/sbin/nologin
daemon:x:2:2:daemon:/sbin:/sbin/nologin
adm:x:3:4:adm:/var/adm:/sbin/nologin
lp:x:4:7:lp:/var/spool/lpd:/sbin/nologin
mail:x:8:12:mail:/var/spool/mail:/sbin/nologin
```

```
#8
$ cat > bdades.txt
anna:12:barcelona
pere:5:girona
```

```
pau:33:girona
julia:22:barcelona
marta:22:girona

$ sort -t: -k2n bdades.txt
pere:5:girona
anna:12:barcelona
julia:22:barcelona
marta:22:girona
pau:33:girona

$ sort -t: -k3 -k2n bdades.txt
anna:12:barcelona
julia:22:barcelona
pere:5:girona
marta:22:girona
pau:33:girona
```

```
#9
$ cut -d: -f4 /etc/passwd | head -n 5
0
1
2
4
7

$ cut -d: -f4 /etc/passwd | wc -l
51

$ cut -d: -f4 /etc/passwd | sort | uniq -c | head -n 5
      5 0
      1 1
      1 100
      1 1000
      1 1001

$ cut -d: -f4 /etc/passwd | sort -u | head -n 5
0
1
100
1000
1001
```

```
#10
$ cat bdades.txt
anna:12:barcelona
pere:5:girona
pau:33:girona
julia:22:barcelona
marta:22:girona

$ cut -d: -f2  bdades.txt | sort -n
5
12
22
22
33

$ cut -d: -f2  bdades.txt | sort -n -u
5
12
22
33

$ cut -d: -f2  bdades.txt | sort -n | uniq -c
      1 5
      1 12
      2 22
      1 33
```

tr | normalize

- char to char (no text)
- delete
- squeeze
- normalize

```
#11
$ echo "supersecretpassword" | tr 'aeiou' '43701'
s1p3rs3cr3tp4ssw0rd

$ echo "mama meva maravella" | tr 'mama' 'papa'
papa peva paravella

$ echo "text in lower case" | tr [a-z] [A-Z]
TEXT IN LOWER CASE

$ echo "text in lower case" | tr 'ex' '9X'
t9Xt in low9r cas9

$ echo "la mr estava salada, salada estava la mar" | tr a i
li mr estivi silidi, silidi estivi li mir

$ echo "secret number is 1111" | tr [0-9] X
secret number is XXXX

$ echo "pere,marta,anna"
pere,marta,anna

$ echo "pere,marta,anna" | tr ',' '\n'
pere
marta
anna

$ head -n1 /etc/passwd
root:x:0:0:root:/root:/bin/bash

$ head -n1 /etc/passwd | tr ':' '\t'
root    x       0       0       root    /root   /bin/bash
```

```
#12
$ tr [a-z] [A-Z] < noms.txt
PERE
ANNA
MARTA
PAU
JOAN
JULIO
JORDI
MIQUEL

$ tr [a-z] [A-Z] < noms.txt  > upper.txt

$ tr [A-Z] [a-z] < upper.txt > upper.txt
$ cat upper.txt
```

```
#13
$ echo "deleted text witout letter e" | tr -d e
dltd txt witout lttr

$ tr -d 'aeiou' < noms.txt
pr
Ann
MARTA
p
jn
Jl
```

```
jrd
mql
```

```
#14
$ echo "text  with  unniform    espaces in it  " | tr -s ' '
text with unniform espaces in it

$ echo "text  with  unniform    espaces in it  " | tr  ' ' ':'
text::with::unniform::::::espaces:in:it::

$ echo "text  with  unniform    espaces in it  " | tr --squeeze ' ' ':'
text:with:unniform:espaces:in:it
```

```
$ echo -e "text \t with \t\t\t  uniform  spaces and \t\t tabs"
text     with                  uniform  spaces and              tabs

$ echo -e "text \t with \t\t\t  uniform  spaces and \t\t tabs" | tr ' \t' ':'
text:::with:::::::uniform::spaces:and::::tabs

$ echo -e "text \t with \t\t\t  uniform  spaces and \t\t tabs" | tr -s ' \t' ':'
text:with:uniform:spaces:and:tabs

$ echo -e "text \t with \t\t\t  uniform  spaces and \t\t tabs" | tr -s ' \t' ' '
text with uniform spaces and tabs

$ echo -e "text \t with \t\t\t  uniform  spaces and \t\t tabs" | tr -s ' \t' '\t'
text	with	uniformspaces and	tabs

$ echo -e "text \t with \t\t\t  uniform  spaces and \t\t tabs" | tr -s '[:blank:]' '\t'
text	with	uniformspaces and	tabs

$ echo -e "text \t with \t\t\t  uniform  spaces and \t\t tabs" | tr -s '[:blank:]' ' '
text with uniform spaces and tabs
```

```
#15
$ grep -v "#"  /etc/fstab
/dev/mapper/fedora-root /                       ext4    defaults        1 1
UUID=027d32d8-de03-40d5-ad80-453618bd71a8 /boot                 ext4    defaults
1 2
UUID=7F70-2AC1          /boot/efi               vfat    umask=0077,shortname=winnt 0 2
/dev/mapper/fedora-home /home                   ext4    defaults        1 2
/dev/mapper/fedora-swap swap                    swap    defaults        0 0

$ grep -v "#"  /etc/fstab | tr -s [:blank:] ' '
/dev/mapper/fedora-root / ext4 defaults 1 1
UUID=027d32d8-de03-40d5-ad80-453618bd71a8 /boot ext4 defaults 1 2
UUID=7F70-2AC1 /boot/efi vfat umask=0077,shortname=winnt 0 2
/dev/mapper/fedora-home /home ext4 defaults 1 2
/dev/mapper/fedora-swap swap swap defaults 0 0
```

```
#16
$ ls / -l | head -n5
total 68
drwxr-xr-x.   2 root root  4096 Apr 16  2021 backups
lrwxrwxrwx.   1 root root     7 Jan 28  2020 bin -> usr/bin
dr-xr-xr-x.   7 root root  4096 Jul  5 20:01 boot
drwxr-xr-x.  23 root root  4320 Oct 21 15:53 dev

$ ls / -l | head -n5 | tr -s [:blank:] '\t'
total  68
drwxr-xr-x.   2     root   root   4096   Apr   16    2021   backups
lrwxrwxrwx.   1     root   root   7      Jan   28    2020   bin   ->      usr/bin
dr-xr-xr-x.   7     root   root   4096   Jul   5     20:01  boot
drwxr-xr-x.   23    root   root   4320   Oct   21    15:53  dev
```

sed: editing text

- -n silent
- -i in place
- s search & replace
- d delete
- p print
- line
- start,end
- /regex/

```
#1
$ head -n4 /etc/passwd
root:x:0:0:root:/root:/bin/bash
bin:x:1:1:bin:/bin:/sbin/nologin
daemon:x:2:2:daemon:/sbin:/sbin/nologin
adm:x:3:4:adm:/var/adm:/sbin/nologin

$ head -n4 /etc/passwd | sed 's/adm/ADM/'
root:x:0:0:root:/root:/bin/bash
bin:x:1:1:bin:/bin:/sbin/nologin
daemon:x:2:2:daemon:/sbin:/sbin/nologin
ADM:x:3:4:adm:/var/adm:/sbin/nologin

$ head -n4 /etc/passwd | sed 's/adm/ADM/g'
root:x:0:0:root:/root:/bin/bash
bin:x:1:1:bin:/bin:/sbin/nologin
daemon:x:2:2:daemon:/sbin:/sbin/nologin
ADM:x:3:4:ADM:/var/ADM:/sbin/nologin
```

```
#2
$ echo "hola bon dia, bonet" | sed 's/bon/MOLT BON/'
hola MOLT BON dia, bonet

$ echo "hola bon dia, bonet" | sed 's/bon/MOLT BON/g'
hola MOLT BON dia, MOLT BONet
```

```
#3
$ head -n 4 /etc/passwd | sed 's/bin//g'
root:x:0:0:root:/root://bash
:x:1:1::/:/s/nologin
daemon:x:2:2:daemon:/s:/s/nologin
adm:x:3:4:adm:/var/adm:/s/nologin

$ echo "some words may not be words woth to say" | sed 's/word//g'
some s may not be s woth to say
```

```
#4
$ cat noms.txt
pere
Anna
MARTA
pau
joan
Julio
jordi
miquel

$ sed '2,4''d' noms.txt
pere
joan
```

```
Julio
jordi
miquel

$ sed '1,4''d' noms.txt
joan
Julio
jordi
miquel

$ sed '4,$''d' noms.txt
pere
Anna
MARTA
```

```
#5
$ sed '1''p' noms.txt
pere
pere
Anna
MARTA
pau
joan
Julio
jordi
miquel

$ sed '1,4 p' noms.txt
pere
pere
Anna
Anna
MARTA
MARTA
pau
pau
joan
Julio
jordi
miquel

$ sed -n  '1 p' noms.txt
pere

$ sed -n '1,4 p' noms.txt
pere
Anna
MARTA
pau
```

```
#6
$ sed  '1 s/e/XXX/' noms.txt
pXXXre
Anna
MARTA
pau
joan
Julio
jordi
miquel

$ sed -e '1,4 s/a/A/g' noms.txt
pere
AnnA
MARTA
pAu
joan
Julio
jordi
miquel
```

```
$ sed -e '5,$ s/o/000/g' noms.txt
pere
Anna
MARTA
pau
j000an
Juli000
j000rdi
miquel
```

```
#7
$ sed '/e/ d' noms.txt
Anna
MARTA
pau
joan
Julio
jordi

$ sed '/^[jJ]/ d' noms.txt
pere
Anna
MARTA
pau
miquel

$ sed '/^[jJ]/ s/o/000/' noms.txt
pere
Anna
MARTA
pau
j000an
Juli000
j000rdi
miquel
```

```
#8
$ sed -i s/MARTA/marta/ noms.txt

$ cat noms.txt
pere
Anna
marta
pau
joan
Julio
jordi
miquel
```

```
#9
$ echo "935550055"
935550055

$ echo "935550055" | sed -r 's/^[0-9]{2}//'
5550055

$ echo "935550055" | sed -r 's/^[0-9]{2}/(93) /'
(93) 5550055

$ echo "915550055" | sed -r 's/^[0-9]{2}/(93) /'
(93) 5550055

$ echo "935550055" | sed -r 's/^([0-9]{2})/(\1) /'
(93) 5550055

$ echo "935550055" | sed -r 's/^([0-9]{2})([0-9]{3})([0-9]{2})([0-9]{2})/(\1) \2 \3 \4 /'
(93) 555 00 55
```

```
#10
$ echo "pere:15" | sed -r 's/^(.*):.*$/\1/'
pere

$ echo "pere:15" | sed -r 's/^(.*):/--\1--/'
--pere--15

$ echo "pere:15" | sed -r 's/^(.*):(.*)$/\2:\1/'
15:pere
```

```
$ grep "^root" /etc/passwd | cut -d: -f1,3
root:0

$ grep "^root" /etc/passwd | cut -d: -f1,3 | sed -r 's/^(.*):(.*)$/\2:\1/'
0:root

$ grep "^root" /etc/passwd | cut -d: -f1,3 | sed -r 's/^(.*):(.*)$/\1(\2)/'
root(0)
```

Paste and join

paste

```
#1
$ cat bdades.txt
anna:12:barcelona
pere:5:girona
pau:33:girona
julia:22:barcelona
marta:22:girona

$ cut -f1 -d:  bdades.txt > name.txt
$ cut -f3 -d:  bdades.txt > city.txt
$ cut -f2 -d:  bdades.txt > age.txt
```

```
#2
$ paste name.txt edat.txt
anna    12
pere    5
pau     33
julia   22
marta   22

$ paste name.txt city.txt
anna    barcelona
pere    girona
pau     girona
julia   barcelona
marta   girona

$ paste city.txt age.txt -d:
barcelona:12
girona:5
girona:33
barcelona:22
girona:22

$ paste city.txt name.txt age.txt  -d' '
barcelona anna 12
girona pere 5
girona pau 33
barcelona julia 22
girona marta 22
```

join

```
#1
$ paste name.txt age.txt > join1
$ paste name.txt city.txt > join2

$ join join1 join2
anna 12 barcelona
pere 5 girona
pau 33 girona
julia 22 barcelona
marta 22 girona

# sort join1 > join1s
# sort join2 > join2s
```

```
#2
$ cat join1s
anna    12
doe     17
julia   22
marta   35
pau     33
pere    5
unknown 35

$ cat join2s
anna    barcelona
jesus   lleida
julia   barcelona
lluis   lleida
marta   girona
pau     girona
pere    girona


# join
$ join join1s join2s
anna 12 barcelona
julia 22 barcelona
marta 35 girona
pau 33 girona
pere 5 girona

# left join
$ join -a1 join1s join2s
anna 12 barcelona
doe 17
julia 22 barcelona
marta 35 girona
pau 33 girona
pere 5 girona
unknown 35

# right join
$ join -a2 join1s join2s
anna 12 barcelona
jesus lleida
julia 22 barcelona
lluis lleida
marta 35 girona
pau 33 girona
pere 5 girona

# full outer join
$ join -a1 -a2 join1s join2s
anna 12 barcelona
doe 17
jesus lleida
julia 22 barcelona
lluis lleida
marta 35 girona
```

```
pau 33 girona
pere 5 girona
unknown 35
```

```
#3
$ cat status
menor   12
menor   17
major   22
major   35
major   33
menor    5
major   35

$ join  -j1 2  -j2 2 join1s status
12 anna menor
17 doe menor
22 julia major
35 marta major
33 pau major
5 pere menor
35 unknown major
```

Exercicis d'exemple

1. Github LPIC-1 103.7-Exercices.md
2. Github LPIC-1 103.7-Exercices_alternate_2.pdf
3. Github LPIC-1 103.2-Exercices.md
4. LPI Exercices 103.7 Search text files using regular expressions