

# LPIC-1 101-500 – Lesson 2

## 103.2 Process text streams using filters



# Concatenate files with `cat`

- `$ cat /etc/fstab # show the contents of the fstab file`
- `$ cat /etc/fstab /etc/mtab # concatenate the output of fstab and mtab to stdout.`
- `$ cat /etc/fstab /etc/mtab > /tmp/fsmtab # concatenate fstab and mtab to one file (fsmtab)`

## Options:

- `-n # number output lines`



# Concatenate bzip2 compressed files with `bzip2`

- `$ bzip2 file1.bz2 # show the contents of the file1.bz2 file`
- `$ bzip2 file1.bz2 file2.bz2 # concatenate the output of file1.bz2 and file2.bz2 to stdout`
- `$ bzip2 file1.bz2 file2.bz2 > file12 # concatenate the output of file1.bz2 and file2.bz2 to file12`



# Concatenate xz compressed files with `xzcat`

- `$ xzcat file1.xz # show the contents of the file1.xz file`
- `$ xzcat file1.xz file2.xz # concatenate the output of file1.xz and file2.xz to stdout`
- `$ xzcat file1.xz file2.xz > file12 # concatenate the output of file1.xz and file2.xz to file12`



# Concatenate gzip compressed files with `zcat`

- `$ zcat file1.gz # show the contents of the file1.gz file`
- `$ zcat file1.gz file2.gz # concatenate the output of file1.gz and file2.gz to stdout`
- `$ zcat file1.gz file2.gz > file12 # concatenate the output of file1.gz and file2.gz to file12`



# View files with `less`

- `$ less /etc/vim/vimrc # show the contents of the vimrc file with scrolling`
- `q`: Quit `less`
- `gg`: Go to the top of the file
- `G`: Go to the bottom of the file



# Number lines from a file with `nl`


- `$ nl /etc/bash.bashrc # number all non empty lines in bash.bashrc`

## Options:

- `-b a # number empty lines as well`
- `-b n # no numbering`



# Remove section from lines with `cut`

- `$ cut -b10 /etc/fstab # show the 10th byte from each line in fstab`
  - `$ cut -c10 /etc/fstab # show the 10th character from each line in fstab`
  - `$ cut -d: -f1 /etc/passwd # use ":" as a delimiter instead of the default Tab and show the first field`
- 



# Show the beginning of a file with `head`

- `$ head /etc/passwd # show the 10 first lines of the passwd file`

## Options:

- `-c 50 # show the first 50 characters`
- `-n 20 # show the first 20 lines`

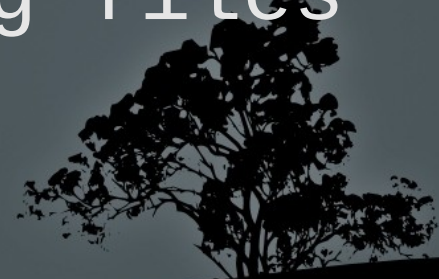


# Show the end of a file with `tail`

- `$ tail /var/log/syslog # show the last 10 lines of syslog`

## Options:

- `-c 50 # show the last 50 characters`
- `-n 20 # show the last 20 lines`
- `-f # monitor a file as it grows. Useful for watching log files`



# Join two files with `paste`

- `$ paste colors.txt animals.txt #`  
the lines in the two files are joined with 'Tab' as the delimiter.

## Options:


- `-d@ #` use '@' as the delimiter
- `-s #` place the contents of each file on a different line



# Show files in octal with `od`

- `$ od colors.txt # show the colors.txt file in octal format of 2 bytes`

## Options:

- `-x # show output in hexadecimal`
  - `-d # show output in decimal`
  - `-a # show characters`
  - `-c # show characters and special characters`
- 


# Manipulate text with `sed`

- `$ sed -e "s/Red/Green/" rainbow.txt # replace the first occurrence of "Red" with "Green", in a line, and display to stdout`
- `$ sed -i -e "s/Red/Green/" rainbow.txt # replace the first occurrence of "Red" with "Green" and write back to rainbow.txt`
- `$ sed -e "s/Red/Green/g" rainbow.txt # replace all occurrences of "Red" with "Green", in a line, and display to stdout`
- `$ sed -e "s/Red//" rainbow.txt # remove the first occurrence of "Red", in a line`
- `$ sed -e "/Purple/d" rainbow.txt # remove all lines containing "Purple"`

# Sort command output with `sort`

- `$ sort unsorted.txt # alphabetic sorting of unsorted.txt`

## Options:

- `-f # ignore upper or lower case`
  - `-n # numeric sorting`
  - `-r # reverse sorting`
  - `-t: # use ":" as delimiter`
  - `-k6 # use the 6th column for sorting`
  - `-u # suppress duplicate values`
- 

# Split files with `split`

- `$ split -5 unsorted.txt # split unsorted.txt in smaller files of 5 lines (instead of the default 1000)`



# Translate characters with `tr`

- `$ cat animals | tr a-z A-Z #`  
convert upper case to lower case

## Special Characters:

- `\\` → `\` (backslash)
- `\a` → bell
- `\b` → backspace
- `\f` → form feed
- `\n` → newline
- `\r` → carriage return
- `\t` → horizontal tab





# Translate characters with `tr`

- `$ tr '1-3' 'a-c' < colors.txt #`  
translate occurrences of 1,2,3 to a,b,c respectively
- `$ tr -d '1-3' < colors.txt #`  
delete occurrences of 1,2,3



# Suppress duplicate records with `uniq`

- `$ sort multiples.txt | uniq # sort names first, then delete double entries`

## Options:


- `-d # display only repeated entries`
- `-u # display only unique entries`
- `-c # count each occurrence`



# Print newline, word, and byte counts with `wc`

- `$ wc unformatted.txt unsorted.txt`  
# show the count of characters,  
words and lines for each file and  
their sum total

## Options:

- `-c` # display character count only
  - `-w` # display word count only
  - `-l` # display line count only
- 

# Generate file hashes with `md5sum`, `sha256sum` and `sha512sum`

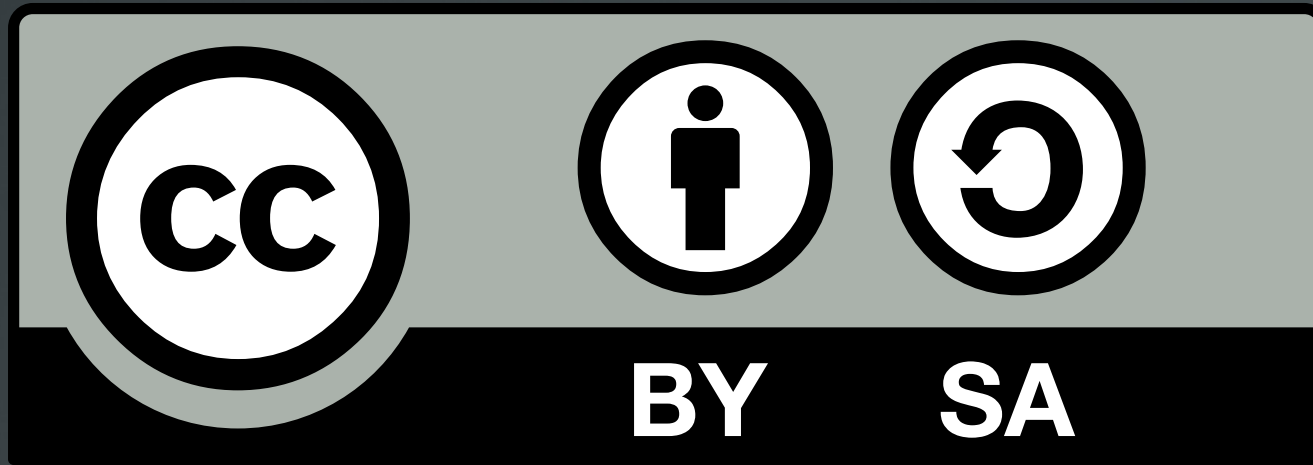
These are security tools to verify the hash of a download or a package

- `$ md5sum debian-10.5.0-amd64-netinst.iso # Not very secure`  
`a3ebc76aec372808ad80000108a2593a debian-10.5.0-amd64-netinst.iso`
- `$ sha256sum debian-10.5.0-amd64-netinst.iso # recommended`  
`93863e17ac24eeaa347dfb91dddac654f214c189e0379d7c28664a306e0301e7 debian-10.5.0-amd64-netinst.iso`
- `$ sha512sum debian-10.5.0-amd64-netinst.iso # Strongest`  
`0a6aee1d9aafc1ed095105c052f9fdd65ed00ea9274188c9cd0072c8e6838ab40e246d45a1e6956d74ef1b04a1fc042151762f25412e9ff0cbf49418eef7992e debian-10.5.0-amd64-netinst.iso`

## Options:

- `-c # use a file for checking`

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