pwd

pwd stands for “print working directory”. It outputs the name of the directory you are currently in, called the *working directory*.

cd

cd stands for “change directory”. Just as you would click on a folder in Windows Explorer or Finder, cd switches you into the directory you specify. In other words, cd changes the working directory.

cd ..

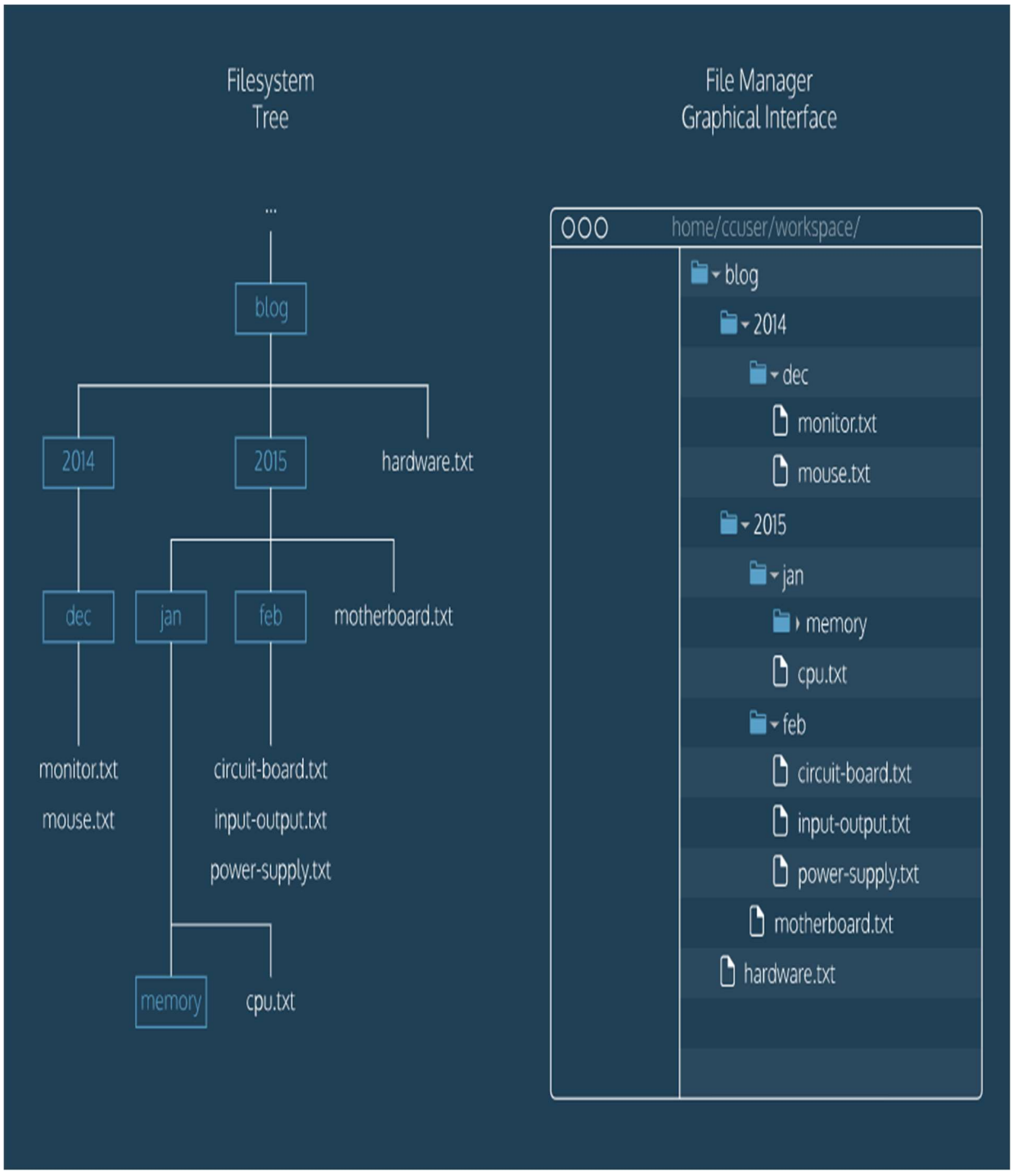
To move up one directory, use cd ..

mkdir

The mkdir command stands for “make directory”. It takes in a directory name as an argument, and then creates a new directory in the current working directory.

touch

The touch command creates a new file inside the working directory. It takes in a filename as an argument, and then creates an empty file in the current working directory.



- The *command line* is a text interface for the computer's operating system. To access the command line, we use the terminal.
- A *filesystem* organizes a computer's files and directories into a tree structure. It starts with the *root directory*. Each parent directory can contain more child directories and files.
- From the command line, you can navigate through files and folders on your computer:
    - `pwd` outputs the name of the current working directory.
    - `ls` lists all files and directories in the working directory.
    - `cd` switches you into the directory you specify.
    - `mkdir` creates a new directory in the working directory.
    - `touch` creates a new file inside the working directory.

ls -i

[-adfhktwW] [section] [-M path] [-P pager] [-S list]
[-m system] [-p string] name ...

a : find all matching entries
c : do not use cat file
d : print gobs of debugging information
D : as for -d, but also display the pages
f : same as whatis(1)
h : print this help message
k : same as apropos(1)
K : search for a string in all pages
t : use troff to format pages for printing

w : print location of man page(s) that would be displayed
(if no name given: print directories that would be searched)
W : as for -w, but display filenames only

C file : use `file' as configuration file
M path : set search path for manual pages to `path'
P pager : use program `pager' to display pages
S list : colon separated section list
m system : search for alternate system's man pages
p string : string tells which preprocessors to run
e - [n]eqn(1) p - pic(1) t - tbl(1)

g - grap(1) r - refer(1) v - vgrind(1)

ls -l

[-adfhktwW] [section] [-M path] [-P pager] [-S list]
[-m system] [-p string] name ...

a : find all matching entries
c : do not use cat file
d : print gobs of debugging information
D : as for -d, but also display the pages
f : same as whatis(1)
h : print this help message
k : same as apropos(1)
K : search for a string in all pages
t : use troff to format pages for printing
w : print location of man page(s) that would be displayed
(if no name given: print directories that would be searched)
W : as for -w, but display filenames only

C file : use `file' as configuration file

M path : set search path for manual pages to `path'
P pager : use program `pager' to display pages
S list : colon separated section list
m system : search for alternate system's man pages
p string : string tells which preprocessors to run
e - [n]eqn(1) p - pic(1) t - tbl(1)

g - grap(1) r - refer(1) v - vgrind(1)

The **echo** command accepts the string "Hello" as *standard input*, and echoes the string "Hello" back to the terminal as *standard output*.

Let's learn more about standard input, standard output, and standard error:

1. *standard input*, abbreviated as **stdin**, is information inputted into the terminal through the keyboard or input device.
2. *standard output*, abbreviated as **stdout**, is the information outputted after a process is run.
3. *standard error*, abbreviated as **stderr**, is an error message outputted by a failed process.

Redirection reroutes standard input, standard output, and standard error to or from a different location.

cat -- concatenate and print files

cat [-benstuv] [file ...]
The cat utility reads files sequentially, writing them to the standard
output. The file operands are processed in command-line order. If file

is a single dash (`-') or absent, cat reads from the standard input. If
file is a UNIX domain socket, cat connects to it and then reads it until
EOF. This complements the UNIX domain binding capability available in
inetd(8).

The options are as follows:

-b Number the non-blank output lines, starting at 1.

-e Display non-printing characters (see the -v option), and display

a dollar sign (`$') at the end of each line.

|

| is a “pipe”. The **|** takes the standard output of the command on the left, and *pipes* it as standard input to the command on the right. You can think of this as “command to command” redirection.

Multiple **|** ‘s can be chained together. Here the standard output of **cat volcanoes.txt** is “piped” to the **wc** command. The standard output of **wc** is then “piped” to **cat**. Finally, the standard output of **cat** is redirected to **islands.txt**.

sort

sort takes the standard input and orders it alphabetically for the standard output.

uniq

uniq stands for “unique” and filters out adjacent, duplicate lines in a file. A more effective way to call **uniq**is to call **sort** to alphabetize a file, and “pipe” the standard output to **uniq**.

GREP(1) BSD General Commands Manual GREP(1)

NNAAMMEE

ggrreepp, eeggrreepp, ffggrreepp, zzggrreepp, zzeeggrreepp, zzffggrreepp -- file pattern searcher

SSYYNNOOPPSSIISS

ggrreepp [--aabbccddDDEEFFGGHHhhIIiiJJLLllmmnnOOooppqqRRSSssUUVVvvwwxxZZ] [--AA _n_u_m] [--BB _n_u_m] [--CC[_n_u_m]]
[--ee _p_a_t_t_e_r_n] [--ff _f_i_l_e] [----bbiinnaarryy--ffiilleess=_v_a_l_u_e] [----ccoolloorr[=_w_h_e_n]]
[----ccoolloouurr[=_w_h_e_n]] [----ccoonnttexxtt[=_n_u_m]] [----llaabbeell] [----lliinnee--bbuufffferreedd]
[----nnuullll] [_p_a_t_t_e_r_n] [_f_i_l_e _._._.]

DDEESSCCRRIIPPTTIIOONN

The ggrreepp utility searches any given input files, selecting lines that
match one or more patterns. By default, a pattern matches an input line

if the regular expression (RE) in the pattern matches the input line
without its trailing newline. An empty expression matches every line.
Each input line that matches at least one of the patterns is written to
the standard output.

ggrreepp is used for simple patterns and basic regular expressions (BREs);
eeggrreepp can handle extended regular expressions (EREs). See re_format(7)
for more information on regular expressions. ffggrreepp is quicker than both
ggrreepp and eeggrreepp, but can only handle fixed patterns (i.e. it does not
interpret regular expressions). Patterns may consist of one or more
lines, allowing any of the pattern lines to match a portion of the input.

zzggrreepp, zzeeggrreepp, and zzffggrreepp act like ggrreepp, eeggrreepp, and ffggrreepp, respectively,
but accept input files compressed with the compress(1) or gzip(1) com-
pression utilities.

The following options are available:

--AA _n_u_m, ----aaffttteerr--ccoonnttteexxtt=_n_u_m
Print _n_u_m lines of trailing context after each match. See also
the --BB and --CC options.

--aa, ----tteexxtt
Treat all files as ASCII text. Normally ggrreepp will simply print
``Binary file ... matches'' if files contain binary characters.
Use of this option forces ggrreepp to output lines matching the spec-
ified pattern.

--BB _n_u_m, ----bbeeffoorree--ccoonnttexxtt=_n_u_m
Print _n_u_m lines of leading context before each match. See also
the --AA and --CC options.

--bb, ----bbyyttee--ooffffsseett
The offset in bytes of a matched pattern is displayed in front of
the respective matched line.

--CC[_n_u_m, ----ccoonnttexxtt=_n_u_m]
Print _n_u_m lines of leading and trailing context surrounding each
match. The default is 2 and is equivalent to --AA _2 --BB _2. Note:
no whitespace may be given between the option and its argument.

--cc, ----ccoouunntt
Only a count of selected lines is written to standard output.

----ccoolloouurr=[_w_h_e_n, ----ccoolloorr=[_w_h_e_n]]
Mark up the matching text with the expression stored in

GREP_COLOR environment variable. The possible values of when can
be `never', `always' or `auto'.

--DD _a_c_t_i_o_n, ----ddeevviicceess=_a_c_t_i_o_n
Specify the demanded action for devices, FIFOs and sockets. The
default action is `read', which means, that they are read as if
they were normal files. If the action is set to `skip', devices
will be silently skipped.

--dd _a_c_t_i_o_n, ----ddiirreeccttoorriieess=_a_c_t_i_o_n
Specify the demanded action for directories. It is `read' by
default, which means that the directories are read in the same
manner as normal files. Other possible values are `skip' to
silently ignore the directories, and `recurse' to read them
recursively, which has the same effect as the --RR and --rr option.

--EE, ----eexxtteennddeedd--rreeggeexxpp
Interpret _p_a_t_t_e_r_n as an extended regular expression (i.e. force
ggrreepp to behave as eeggrreepp).

--ee _p_a_t_t_e_r_n, ----rreeggeexxpp=_p_a_t_t_e_r_n
Specify a pattern used during the search of the input: an input

line is selected if it matches any of the specified patterns.

This option is most useful when multiple --ee options are used to specify multiple patterns, or when a pattern begins with a dash (`-').

----eexxcclluuddee

If specified, it excludes files matching the given filename pattern from the search. Note that ----eexxcclluuddee patterns take priority over ----iinncclluuddee patterns, and if no ----iinncclluuddee pattern is specified, all files are searched that are not excluded. Patterns are matched to the full path specified, not only to the filename component.

----eexxcclluuddee--ddiirr

If --RR is specified, it excludes directories matching the given filename pattern from the search. Note that ----eexxcclluuddee--ddiirr patterns take priority over ----iinncclluuddee--ddiirr patterns, and if no ----iinncclluuddee--ddiirr pattern is specified, all directories are searched that are not excluded.

--FF, ----ffiixxeedd--ssttrriinnggss

Interpret _p_a_t_t_e_r_n as a set of fixed strings (i.e. force ggrreepp to
behave as ffggrreepp).

--ff _f_i_l_e, ----ffiillee=_f_i_l_e
Read one or more newline separated patterns from _f_i_l_e. Empty
pattern lines match every input line. Newlines are not consid-
ered part of a pattern. If _f_i_l_e is empty, nothing is matched.

--GG, ----bbaassiicc--rreeggeexxpp
Interpret _p_a_t_t_e_r_n as a basic regular expression (i.e. force ggrreepp
to behave as traditional ggrreepp).

--HH Always print filename headers with output lines.

--hh, ----nnoo--ffiilleennaammee
Never print filename headers (i.e. filenames) with output lines.

----hheellpp Print a brief help message.

--II Ignore binary files. This option is equivalent to
----bbiinnaarryy--ffiillee=_w_i_t_h_o_u_t_-_m_a_t_c_h option.

--ii, ----iiggnnoorree--ccaassee
Perform case insensitive matching. By default, ggrreepp is case sen-
sitive.

----iinncclluuddee
If specified, only files matching the given filename pattern are
searched. Note that ----eexxcclluuddee patterns take priority over
----iinncclluuddee patterns. Patterns are matched to the full path speci-
fied, not only to the filename component.

----iinncclluuddee--ddiirr
If --RR is specified, only directories matching the given filename
pattern are searched. Note that ----eexxcclluuddee--ddiirr patterns take pri-
ority over ----iinncclluuddee--ddiirr patterns.

--JJ,, ----bbzz22ddeeccoommppprreessss
Decompress the bzip2(1) compressed file before looking for the
text.

--LL, ----ffiilleess--wwiitthhoouutt--mmaattcchh
Only the names of files not containing selected lines are written
to standard output. Pathnames are listed once per file searched.
If the standard input is searched, the string ``(standard
input)" is written.

--ll, ----ffiilleess--wwiitthh--mmaattcchheess
Only the names of files containing selected lines are written to

standard output. ggrreepp will only search a file until a match has
been found, making searches potentially less expensive. Path-
names are listed once per file searched. If the standard input
is searched, the string ``(standard input)'' is written.

----mmmmaapp Use mmap(2) instead of read(2) to read input, which can result in
better performance under some circumstances but can cause unde-
fined behaviour.

--mm _n_u_m_, ----mmaaxx--ccoouunntt=_n_u_m
Stop reading the file after _n_u_m matches.

--nn, ----lliinnee--nnuummbbeerr
Each output line is preceded by its relative line number in the
file, starting at line 1. The line number counter is reset for
each file processed. This option is ignored if --cc, --LL, --ll, or --qq
is specified.

----nnuulllll Prints a zero-byte after the file name.

--OO If --RR is specified, follow symbolic links only if they were
explicitly listed on the command line. The default is not to
follow symbolic links.

--oo,, ----oonnllyy--mmaattcchhiinngg
Prints only the matching part of the lines.

--pp If --RR is specified, no symbolic links are followed. This is the
default.

--qq, ----qquuiieett, ----ssiilleennttt
Quiet mode: suppress normal output. ggrreepp will only search a file
until a match has been found, making searches potentially less
expensive.

--RR, --rr, ----rreeccuurrssiivvee
Recursively search subdirectories listed.

--SS If --RR is specified, all symbolic links are followed. The default
is not to follow symbolic links.

--ss, ----nnoo--mmeessssaaggeess
Silent mode. Nonexistent and unreadable files are ignored (i.e.
their error messages are suppressed).

--UU, ----bbiinnaarryy
Search binary files, but do not attempt to print them.

--VV, ----vveerrssiioonn
Display version information and exit.

--vv, ----iinnvveerrtt--mmaattcchh

Selected lines are those _n_o_t matching any of the specified pat-
terns.

--ww, ----wwoorrdd--rreeggeexxpp
Th**e** expression is searched for as a word (as if surrounded by
`[[:<:]]' and `[[:>:]]'; see re_format(7)).

--xx, ----lliinnee--rreeggeexxpp
Only input lines selected against an entire fixed string or regu-
lar expression are considered to be matching lines.

--yy Equivalent to --ii. Obsoleted.

--ZZ, --zz, ----ddeeccoommppprreessss
Force ggrreepp to behave as zzggrreepp.

----bbiinnaarryy--ffiilleess=_v_a_l_u_e
Controls searching and printing of binary files. Options are
_b_i_n_a_r_y, the default: search binary files but do not print them;
_w_i_t_h_o_u_t_-_m_a_t_c_h: do not search binary files; and _t_e_x_t: treat all
files as text.

----ccoonnttexxtt[=_n_u_m]
Print _n_u_m lines of leading and trailing context. The default is
2.

----lliinnee--bbuuffffeerreedd

Force output to be line buffered. By default, output is line
buffered when standard output is a terminal and block buffered
otherwise.

If no file arguments are specified, the standard input is used.

EENNVVIIRROONNMMEENNTT

GREP_OPTIONS May be used to specify default options that will be placed
at the beginning of the argument list. Backslash-escaping
is not supported, unlike the behavior in GNU grep.

EEXXIITT SSTTAATTUUSS

The ggrreepp utility exits with one of the following values:

0 One or more lines were selected.
1 No lines were selected.
>1 An error occurred.

EEXXAAMMPPLLEESS

To find all occurrences of the word `patricia' in a file:

```
$ grep 'patricia' myfile
```

To find all occurrences of the pattern `.Pp' at the beginning of a line:

```
$ grep '^\.Pp' myfile
```

The apostrophes ensure the entire expression is evaluated by ggrreepp instead
of by the user's shell. The caret `^' matches the null string at the
beginning of a line, and the `\' escapes the `.', which would otherwise
match any character.

To find all lines in a file which do not contain the words `foo' or
`bar':

```
$ grep -v -e 'foo' -e 'bar' myfile
```

A simple example of an extended regular expression:

```
$ egrep '19|20|25' calendar
```

Peruses the file `calendar' looking for either 19, 20, or 25.

SSEEEE AALLSSOO

ed(1), ex(1), gzip(1), sed(1), re_format(7)

SSTTAANNDDAARRDDSS

The ggrreepp utility is compliant with the IEEE Std 1003.1-2008 (``POSIX.1'')
specification.

The flags [--AAaaBBbbCCDDddGGHHhhIIJJLLmmooPPRRSSUUVVwwZZ] are extensions to that specification,
and the behaviour of the --ff flag when used with an empty pattern file is
left undefined.

All long options are provided for compatibility with GNU versions of this
utility.

Historic versions of the ggrreepp utility also supported the flags [--rruuyy].
This implementation supports those options; however, their use is
strongly discouraged.

HHIISSTTOORRYY
The ggrreepp command first appeared in Version 6 AT&T UNIX.

BBUUGGSS
The ggrreepp utility does not normalize Unicode input, so a pattern contain-
ing composed characters will not match decomposed input, and vice versa.

grep I

grep stands for "*global regular expression print*". It searches files for lines that match a pattern and returns the results. It is also case sensitive.

grep -i

enables the command to be case insensitive.

grep II

grep -R searches all files in a directory and outputs filenames and lines containing matched results. -R stands for "recursive". `grep -Rl` searches all files in a directory and outputs only filenames with matched results. `-R` stands for "recursive" and `l` stands for "files with matches".

sed

sed stands for "stream editor". It accepts standard input and modifies it based on an expression, before displaying it as output data. It is similar to "find and replace". s: stands for "substitution". it is always used when using sed for substitution.

> redirects standard output of a command to a file, overwriting previous content.

>> redirects standard output of a command to a file, appending new content to old content.

< redirects standard input to a command.

| redirects standard output of a command to another command.

A number of other commands are powerful when combined with redirection commands:

sort: sorts lines of text alphabetically.

uniq: filters duplicate, adjacent lines of text.

grep: searches for a text pattern and outputs it.

sed : searches for a text pattern, modifies it, and outputs it.

Show hidden ("dot") files with `ls -a`
Show file details with `ls -l`
Combine multiple flags like `ls -l -a`
You can sometimes chain flags like `ls -la` instead of `ls -l -a`

`head` outputs the first few lines of a file. The `-n` flag specifies the number of lines to show (the default is 10):