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CIS220.470
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Chapter 1 Hands-On Projects (1-3 -> 1-17)

Project 1-3

```
[student@COS-047 ~]$ date
Tue Feb 20 13:32:50 MST 2018
[student@COS-047 ~]$ Date
bash: Date: command not found...
Similar command is: 'date'
[student@COS-047 ~]$ date -u
Tue Feb 20 20:32:57 UTC 2018
```

Project 1-4

```
[student@COS-047 ~]$ cal
   February 2018
Su Mo Tu We Th Fr Sa
          1  2  3
 4  5  6  7  8  9 10
11 12 13 14 15 16 17
18 19 20 21 22 23 24
25 26 27 28
```

```
[student@COS-047 ~]$ cal -j 2009
                     2009

       January                   February
Sun Mon Tue Wed Thu Fri Sat   Sun Mon Tue Wed Thu Fri Sat
              1   2   3    32  33  34  35  36  37  38
  4   5   6   7   8   9  10    39  40  41  42  43  44  45
 11  12  13  14  15  16  17    46  47  48  49  50  51  52
 18  19  20  21  22  23  24    53  54  55  56  57  58  59
 25  26  27  28  29  30  31

        March                     April
Sun Mon Tue Wed Thu Fri Sat   Sun Mon Tue Wed Thu Fri Sat
 60  61  62  63  64  65  66              91  92  93  94
 67  68  69  70  71  72  73    95  96  97  98  99 100 101
 74  75  76  77  78  79  80   102 103 104 105 106 107 108
 81  82  83  84  85  86  87   109 110 111 112 113 114 115
 88  89  90               116 117 118 119 120

         May                       June
Sun Mon Tue Wed Thu Fri Sat   Sun Mon Tue Wed Thu Fri Sat
               121 122       152 153 154 155 156 157
123 124 125 126 127 128 129   158 159 160 161 162 163 164
130 131 132 133 134 135 136   165 166 167 168 169 170 171
137 138 139 140 141 142 143   172 173 174 175 176 177 178
144 145 146 147 148 149 150   179 180 181
151
         July                      August
Sun Mon Tue Wed Thu Fri Sat   Sun Mon Tue Wed Thu Fri Sat
         182 183 184 185                   213
186 187 188 189 190 191 192   214 215 216 217 218 219 220
193 194 195 196 197 198 199   221 222 223 224 225 226 227
200 201 202 203 204 205 206   228 229 230 231 232 233 234
```

```
207 208 209 210 211 212       235 236 237 238 239 240 241
                    242 243
      September                 October
Sun Mon Tue Wed Thu Fri Sat   Sun Mon Tue Wed Thu Fri Sat
      244 245 246 247 248               274 275 276
249 250 251 252 253 254 255   277 278 279 280 281 282 283
256 257 258 259 260 261 262   284 285 286 287 288 289 290
263 264 265 266 267 268 269   291 292 293 294 295 296 297
270 271 272 273           298 299 300 301 302 303 304

       November                  December
Sun Mon Tue Wed Thu Fri Sat   Sun Mon Tue Wed Thu Fri Sat
305 306 307 308 309 310 311         335 336 337 338 339
312 313 314 315 316 317 318   340 341 342 343 344 345 346
319 320 321 322 323 324 325   347 348 349 350 351 352 353
326 327 328 329 330 331 332   354 355 356 357 358 359 360
333 334                   361 362 363 364 365
```

```
[student@COS-047 ~]$ cal 7 1776
     July 1776
Su Mo Tu We Th Fr Sa
   1  2  3  4  5  6
 7  8  9 10 11 12 13
14 15 16 17 18 19 20
21 22 23 24 25 26 27
28 29 30 31
```

Project 1-5

```
[student@COS-047 ~]$ who
student  :0         2018-02-20 13:32 (:0)
student  pts/0      2018-02-20 13:32 (:0)
[student@COS-047 ~]$ who -H
NAME     LINE       TIME           COMMENT
student  :0         2018-02-20 13:32 (:0)
student  pts/0      2018-02-20 13:32 (:0)
[student@COS-047 ~]$ who -u
student  :0         2018-02-20 13:32   ?       16391 (:0)
student  pts/0      2018-02-20 13:32   .       17446 (:0)
[student@COS-047 ~]$ who -uH
NAME     LINE       TIME           IDLE         PID COMMENT
student  :0         2018-02-20 13:32   ?       16391 (:0)
student  pts/0      2018-02-20 13:32   .       17446 (:0)
[student@COS-047 ~]$ who -q
student student
# users=2
[student@COS-047 ~]$ who am i
student  pts/0      2018-02-20 13:32 (:0)
[student@COS-047 ~]$ who am i -H
NAME     LINE       TIME           COMMENT
student  pts/0      2018-02-20 13:32 (:0)
[student@COS-047 ~]$ whoami
student
[student@COS-047 ~]$ who mom likes
student  pts/0      2018-02-20 13:32 (:0)
```

Project 1-6

```
[student@COS-047 ~]$ clear
```

Project 1-7

```
[student@COS-047 ~]$ man who
WHO(1)                  User Commands                  WHO(1)

NAME
       who - show who is logged on

SYNOPSIS
       who [OPTION]... [ FILE | ARG1 ARG2 ]

DESCRIPTION
       Print information about users who are currently logged in.

       -a, --all
              same as -b -d --login -p -r -t -T -u

       -b, --boot
              time of last system boot

       -d, --dead
              print dead processes

       -H, --heading
              print line of column headings

       -l, --login
              print system login processes

       --lookup
              attempt to canonicalize hostnames via DNS

       -m     only hostname and user associated with stdin

       -p, --process
              print active processes spawned by init

       -q, --count
              all login names and number of users logged on

       -r, --runlevel
              print current runlevel

       -s, --short
              print only name, line, and time (default)

       -t, --time
              print last system clock change

      -T, -w, --mesg
              add user's message status as +, - or ?

       -u, --users
              list users logged in

       --message
              same as -T

       --writable
```

same as -T

--help display this help and exit

--version
output version information and exit

If FILE is not specified, use /var/run/utmp. /var/log/wtmp as FILE is common. If ARG1 ARG2 given, -m presumed: 'am i' or 'mom likes' are usual.

GNU coreutils online help: <http://www.gnu.org/software/coreutils/>
Report who translation bugs to <http://translationproject.org/team/>

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SEE ALSO
The full documentation for who is maintained as a Texinfo manual. If the info and who programs are properly installed at your site, the command

info coreutils 'who invocation'

should give you access to the complete manual.

GNU coreutils 8.22 November 2016 WHO(1)

[student@COS-047 ~]$ man man
MAN(1) Manual pager utils MAN(1)

NAME
man - an interface to the on-line reference manuals

SYNOPSIS
man [-C file] [-d] [-D] [--warnings[=warnings]] [-R encoding] [-L locale] [-m system[,...]] [-M path] [-S list] [-e extension] [-i|-I] [--regex|--wildcard] [--names-only] [-a] [-u] [--no-subpages] [-P pager] [-r prompt] [-7] [-E encoding] [--no-hyphenation] [--no-justification] [-p string] [-t] [-T[device]] [-H[browser]] [-X[dpi]] [-Z] [[section] page ...] ...
man -k [apropos options] regexp ...
man -K [-w|-W] [-S list] [-i|-I] [--regex] [section] term ...
man -f [whatis options] page ...
man -l [-C file] [-d] [-D] [--warnings[=warnings]] [-R encoding] [-L locale] [-P pager] [-r prompt] [-7] [-E encoding] [-p string] [-t] [-T[device]] [-H[browser]] [-X[dpi]] [-Z] file ...
man -w|-W [-C file] [-d] [-D] page ...
man -c [-C file] [-d] [-D] page ...
man [-?V]

DESCRIPTION

man is the system's manual pager. Each page argument given to man is normally the name of a program, utility or function. The manual page associated with each of these arguments is then found and displayed. A section, if provided, will direct man to look only in that section of the manual. The default action is to search in all of the available sections, following a pre-defined order and to show only the first page found, even if page exists in several sections.

The table below shows the section numbers of the manual followed by the types of pages they contain.

1 Executable programs or shell commands
2 System calls (functions provided by the kernel)
3 Library calls (functions within program libraries)
4 Special files (usually found in /dev)
5 File formats and conventions eg /etc/passwd
6 Games
7 Miscellaneous (including macro packages and conventions), e.g. man(7), groff(7)
8 System administration commands (usually only for root)
9 Kernel routines [Non standard]

A manual page consists of several sections.
Conventional section names include NAME, SYNOPSIS, CONFIGURATION, DESCRIPTION, OPTIONS, EXIT STATUS, RETURN VALUE, ERRORS, ENVIRONMENT, FILES, VERSIONS, CONFORMING TO, NOTES, BUGS, EXAMPLE, AUTHORS, and SEE ALSO.

The following conventions apply to the SYNOPSIS section and can be used as a guide in other sections.

bold text type exactly as shown.
italic text replace with appropriate argument.
[-abc] any or all arguments within [ ] are optional.
-a|-b options delimited by | cannot be used together.
argument ... argument is repeatable.
[expression] ... entire expression within [ ] is repeatable.

Exact rendering may vary depending on the output device. For instance, man will usually not be able to render italics when running in a terminal, and will typically use underlined or coloured text instead.

The command or function illustration is a pattern that should match all possible invocations. In some cases it is advisable to illustrate several exclusive invocations as is shown in the SYNOPSIS section of this manual page.

EXAMPLES

man ls
Display the manual page for the item (program) ls.

man -a intro
Display, in succession, all of the available intro manual pages contained within the manual. It is possible to quit between successive displays or skip any of them.

man -t alias | lpr -Pps
Format the manual page referenced by `alias', usually a shell man-

ual page, into the default troff or groff format and pipe it to the printer named ps. The default output for groff is usually PostScript. man --help should advise as to which processor is bound to the -t option.

man -l -Tdvi ./foo.1x.gz > ./foo.1x.dvi

This command will decompress and format the nroff source manual page ./foo.1x.gz into a device independent (dvi) file. The redirection is necessary as the -T flag causes output to be directed to stdout with no pager. The output could be viewed with a program such as xdvi or further processed into PostScript using a program such as dvips.

man -k printf

Search the short descriptions and manual page names for the keyword printf as regular expression. Print out any matches. Equivalent to apropos -r printf.

man -f smail

Lookup the manual pages referenced by smail and print out the short descriptions of any found. Equivalent to whatis -r smail.

OVERVIEW

Many options are available to man in order to give as much flexibility as possible to the user. Changes can be made to the search path, section order, output processor, and other behaviours and operations detailed below.

If set, various environment variables are interrogated to determine the operation of man. It is possible to set the `catch all' variable $MANOPT to any string in command line format with the exception that any spaces used as part of an option's argument must be escaped (preceded by a backslash). man will parse $MANOPT prior to parsing its own command line. Those options requiring an argument will be overridden by the same options found on the command line. To reset all of the options set in $MANOPT, -D can be specified as the initial command line option. This will allow man to `forget' about the options specified in $MANOPT although they must still have been valid.

The manual pager utilities packaged as man-db make extensive use of index database caches. These caches contain information such as where each manual page can be found on the filesystem and what its whatis (short one line description of the man page) contains, and allow man to run faster than if it had to search the filesystem each time to find the appropriate manual page. If requested using the -u option, man will ensure that the caches remain consistent, which can obviate the need to manually run software to update traditional whatis text databases.

If man cannot find a mandb initiated index database for a particular manual page hierarchy, it will still search for the requested manual pages, although file globbing will be necessary to search within that hierarchy. If whatis or apropos fails to find an index it will try to extract information from a traditional whatis database instead.

These utilities support compressed source nroff files having, by default, the extensions of .Z, .z and .gz. It is possible to deal with any compression extension, but this information must be known at com-

pile time. Also, by default, any cat pages produced are compressed using gzip. Each `global' manual page hierarchy such as /usr/share/man or /usr/X11R6/man may have any directory as its cat page hierarchy. Traditionally the cat pages are stored under the same hierarchy as the man pages, but for reasons such as those specified in the File Hierarchy Standard (FHS), it may be better to store them elsewhere. For details on how to do this, please read manpath(5). For details on why to do this, read the standard.

International support is available with this package. Native language manual pages are accessible (if available on your system) via use of locale functions. To activate such support, it is necessary to set either $LC_MESSAGES, $LANG or another system dependent environment variable to your language locale, usually specified in the POSIX 1003.1 based format:

<language>[_<territory>[.<character-set>[,<version>]]]

If the desired page is available in your locale, it will be displayed in lieu of the standard (usually American English) page.

Support for international message catalogues is also featured in this package and can be activated in the same way, again if available. If you find that the manual pages and message catalogues supplied with this package are not available in your native language and you would like to supply them, please contact the maintainer who will be coordinating such activity.

For information regarding other features and extensions available with this manual pager, please read the documents supplied with the package.

DEFAULTS

man will search for the desired manual pages within the index database caches. If the -u option is given, a cache consistency check is performed to ensure the databases accurately reflect the filesystem. If this option is always given, it is not generally necessary to run mandb after the caches are initially created, unless a cache becomes corrupt. However, the cache consistency check can be slow on systems with many manual pages installed, so it is not performed by default, and system administrators may wish to run mandb every week or so to keep the database caches fresh. To forestall problems caused by outdated caches, man will fall back to file globbing if a cache lookup fails, just as it would if no cache was present.

Once a manual page has been located, a check is performed to find out if a relative preformatted `cat' file already exists and is newer than the nroff file. If it does and is, this preformatted file is (usually) decompressed and then displayed, via use of a pager. The pager can be specified in a number of ways, or else will fall back to a default is used (see option -P for details). If no cat is found or is older than the nroff file, the nroff is filtered through various programs and is shown immediately.

If a cat file can be produced (a relative cat directory exists and has appropriate permissions), man will compress and store the cat file in the background.

The filters are deciphered by a number of means. Firstly, the command line option -p or the environment variable $MANROFFSEQ is interrogated. If -p was not used and the environment variable was not set, the ini-

tial line of the nroff file is parsed for a preprocessor string. To contain a valid preprocessor string, the first line must resemble

'\" <string>

where string can be any combination of letters described by option -p below.
If none of the above methods provide any filter information, a default set is used.

A formatting pipeline is formed from the filters and the primary formatter (nroff or [tg]roff with -t) and executed. Alternatively, if an executable program mandb_nfmt (or mandb_tfmt with -t) exists in the man tree root, it is executed instead. It gets passed the manual source file, the preprocessor string, and optionally the device specified with -T or -E as arguments.

OPTIONS

Non argument options that are duplicated either on the command line, in $MANOPT, or both, are not harmful. For options that require an argument, each duplication will override the previous argument value.

General options

-C file, --config-file=file
: Use this user configuration file rather than the default of ~/.manpath.

-d, --debug
: Print debugging information.

-D, --default
: This option is normally issued as the very first option and resets man's behaviour to its default. Its use is to reset those options that may have been set in $MANOPT. Any options that follow -D will have their usual effect.

--warnings[=warnings]
: Enable warnings from groff. This may be used to perform sanity checks on the source text of manual pages. warnings is a comma-separated list of warning names; if it is not supplied, the default is "mac". See the “Warnings” node in info groff for a list of available warning names.

Main modes of operation

-f, --whatis
: Equivalent to whatis. Display a short description from the manual page, if available. See whatis(1) for details.

-k, --apropos
: Equivalent to apropos. Search the short manual page descriptions for keywords and display any matches. See apropos(1) for details.

-K, --global-apropos
: Search for text in all manual pages. This is a brute-force search, and is likely to take some time; if you can, you should specify a section to reduce the number of pages that need to be searched. Search terms may be simple strings (the default), or

regular expressions if the --regex option is used.

-l, --local-file
Activate `local' mode. Format and display local manual files instead of searching through the system's manual collection. Each manual page argument will be interpreted as an nroff source file in the correct format. No cat file is produced. If '-' is listed as one of the arguments, input will be taken from stdin. When this option is not used, and man fails to find the page required, before displaying the error message, it attempts to act as if this option was supplied, using the name as a filename and looking for an exact match.

-w, --where, --path, --location
Don't actually display the manual pages, but do print the location(s) of the source nroff files that would be formatted.

-W, --where-cat, --location-cat
Don't actually display the manual pages, but do print the location(s) of the cat files that would be displayed. If -w and -W are both specified, print both separated by a space.

-c, --catman
This option is not for general use and should only be used by the catman program.

-R encoding, --recode=encoding
Instead of formatting the manual page in the usual way, output its source converted to the specified encoding. If you already know the encoding of the source file, you can also use manconv(1) directly. However, this option allows you to convert several manual pages to a single encoding without having to explicitly state the encoding of each, provided that they were already installed in a structure similar to a manual page hierarchy.

Finding manual pages
-L locale, --locale=locale
man will normally determine your current locale by a call to the C function setlocale(3) which interrogates various environment variables, possibly including $LC_MESSAGES and $LANG. To temporarily override the determined value, use this option to supply a locale string directly to man. Note that it will not take effect until the search for pages actually begins. Output such as the help message will always be displayed in the initially determined locale.

-m system[,...], --systems=system[,...]
If this system has access to other operating system's manual pages, they can be accessed using this option. To search for a manual page from NewOS's manual page collection, use the option -m NewOS.

The system specified can be a combination of comma delimited operating system names. To include a search of the native operating system's manual pages, include the system name man in the argument string. This option will override the $SYSTEM environment variable.

-M path, --manpath=path
Specify an alternate manpath to use. By default, man uses man-path derived code to determine the path to search. This option overrides the $MANPATH environment variable and causes option -m to be ignored.

A path specified as a manpath must be the root of a manual page hierarchy structured into sections as described in the man-db manual (under "The manual page system"). To view manual pages outside such hierarchies, see the -l option.

-S list, -s list, --sections=list
List is a colon- or comma-separated list of `order specific' manual sections to search. This option overrides the $MANSECT environment variable. (The -s spelling is for compatibility with System V.)

-e sub-extension, --extension=sub-extension
Some systems incorporate large packages of manual pages, such as those that accompany the Tcl package, into the main manual page hierarchy. To get around the problem of having two manual pages with the same name such as exit(3), the Tcl pages were usually all assigned to section l. As this is unfortunate, it is now possible to put the pages in the correct section, and to assign a specific `extension' to them, in this case, exit(3tcl). Under normal operation, man will display exit(3) in preference to exit(3tcl). To negotiate this situation and to avoid having to know which section the page you require resides in, it is now possible to give man a sub-extension string indicating which package the page must belong to. Using the above example, supplying the option -e tcl to man will restrict the search to pages having an extension of *tcl.

-i, --ignore-case
Ignore case when searching for manual pages. This is the default.

-I, --match-case
Search for manual pages case-sensitively.

--regex
Show all pages with any part of either their names or their descriptions matching each page argument as a regular expression, as with apropos(1). Since there is usually no reasonable way to pick a "best" page when searching for a regular expression, this option implies -a.

--wildcard
Show all pages with any part of either their names or their descriptions matching each page argument using shell-style wildcards, as with apropos(1) --wildcard. The page argument must match the entire name or description, or match on word boundaries in the description. Since there is usually no reasonable way to pick a "best" page when searching for a wildcard, this option implies -a.

--names-only

If the --regex or --wildcard option is used, match only page names, not page descriptions, as with whatis(1). Otherwise, no effect.

-a, --all

By default, man will exit after displaying the most suitable manual page it finds. Using this option forces man to display all the manual pages with names that match the search criteria.

-u, --update

This option causes man to perform an `inode level' consistency check on its database caches to ensure that they are an accurate representation of the filesystem. It will only have a useful effect if man is installed with the setuid bit set.

--no-subpages

By default, man will try to interpret pairs of manual page names given on the command line as equivalent to a single manual page name containing a hyphen or an underscore. This supports the common pattern of programs that implement a number of subcommands, allowing them to provide manual pages for each that can be accessed using similar syntax as would be used to invoke the subcommands themselves. For example:

```
$ man -aw git diff
/usr/share/man/man1/git-diff.1.gz
```

To disable this behaviour, use the --no-subpages option.

```
$ man -aw --no-subpages git diff
/usr/share/man/man1/git.1.gz
/usr/share/man/man3/Git.3pm.gz
/usr/share/man/man1/diff.1.gz
```

Controlling formatted output

-P pager, --pager=pager

Specify which output pager to use. By default, man uses less -s. This option overrides the $MANPAGER environment variable, which in turn overrides the $PAGER environment variable. It is not used in conjunction with -f or -k.

The value may be a simple command name or a command with arguments, and may use shell quoting (backslashes, single quotes, or double quotes). It may not use pipes to connect multiple commands; if you need that, use a wrapper script, which may take the file to display either as an argument or on standard input.

-r prompt, --prompt=prompt

If a recent version of less is used as the pager, man will attempt to set its prompt and some sensible options. The default prompt looks like

```
Manual page name(sec) line x
```

where name denotes the manual page name, sec denotes the section it was found under and x the current line number. This is achieved by using the $LESS environment variable.

Supplying -r with a string will override this default. The string may contain the text $MAN_PN which will be expanded to the name of the current manual page and its section name surrounded by `(' and `)'. The string used to produce the default could be expressed as

\ Manual\ page\ \$MAN_PN\ ?ltline\ %lt?L/%L.:
byte\ %bB?s/%s..?\ (END):?pB\ %pB\\%..
(press h for help or q to quit)

It is broken into three lines here for the sake of readability only. For its meaning see the less(1) manual page. The prompt string is first evaluated by the shell. All double quotes, back-quotes and backslashes in the prompt must be escaped by a preceding backslash. The prompt string may end in an escaped $ which may be followed by further options for less. By default man sets the -ix8 options.

If you want to override man's prompt string processing completely, use the $MANLESS environment variable described below.

-7, --ascii

When viewing a pure ascii(7) manual page on a 7 bit terminal or terminal emulator, some characters may not display correctly when using the latin1(7) device description with GNU nroff. This option allows pure ascii manual pages to be displayed in ascii with the latin1 device. It will not translate any latin1 text. The following table shows the translations performed: some parts of it may only be displayed properly when using GNU nroff's latin1(7) device.

Description	Octal	latin1	ascii
continuation hyphen	255	-	-
bullet (middle dot)	267	·	o
acute accent	264	´	'
multiplication sign	327	×	x

If the latin1 column displays correctly, your terminal may be set up for latin1 characters and this option is not necessary. If the latin1 and ascii columns are identical, you are reading this page using this option or man did not format this page using the latin1 device description. If the latin1 column is missing or corrupt, you may need to view manual pages with this option.

This option is ignored when using options -t, -H, -T, or -Z and may be useless for nroff other than GNU's.

-E encoding, --encoding=encoding

Generate output for a character encoding other than the default. For backward compatibility, encoding may be an nroff device such as ascii, latin1, or utf8 as well as a true character encoding such as UTF-8.

--no-hyphenation, --nh
Normally, nroff will automatically hyphenate text at line breaks even in words that do not contain hyphens, if it is necessary to do so to lay out words on a line without excessive spacing. This option disables automatic hyphenation, so words will only be hyphenated if they already contain hyphens.

If you are writing a manual page and simply want to prevent nroff from hyphenating a word at an inappropriate point, do notuse this option, but consult the nroff documentation instead;
for instance, you can put "\%" inside a word to indicate that it may be hyphenated at that point, or put "\%" at the start of a word to prevent it from being hyphenated.

--no-justification, --nj
Normally, nroff will automatically justify text to both margins. This option disables full justification, leaving justified only to the left margin, sometimes called "ragged-right" text.

If you are writing a manual page and simply want to prevent nroff from justifying certain paragraphs, do not use this option, but consult the nroff documentation instead; for instance, you can use the ".na", ".nf", ".fi", and ".ad" requests to temporarily disable adjusting and filling.

-p string, --preprocessor=string
Specify the sequence of preprocessors to run before nroff or troff/groff. Not all installations will have a full set of pre-processors. Some of the preprocessors and the letters used to designate them are: eqn (e), grap (g), pic (p), tbl (t), vgrind (v), refer (r). This option overrides the $MANROFFSEQ environment variable. zsoelim is always run as the very first pre-processor.

-t, --troff
Use groff -mandoc to format the manual page to stdout. This option is not required in conjunction with -H, -T, or -Z.

-T[device], --troff-device[=device]
This option is used to change groff (or possibly troff's) output to be suitable for a device other than the default. It implies -t. Examples (provided with Groff-1.17) include dvi, latin1, ps, utf8, X75 and X100.

-H[browser], --html[=browser]
This option will cause groff to produce HTML output, and will display that output in a web browser. The choice of browser is determined by the optional browser argument if one is provided, by the $BROWSER environment variable, or by a compile-time default if that is unset (usually lynx). This option implies -t, and will only work with GNU troff.

-X[dpi], --gxditview[=dpi]
This option displays the output of groff in a graphical window using the gxditview program. The dpi (dots per inch) may be 75, 75-12, 100, or 100-12, defaulting to 75; the -12 variants use a 12-point base font. This option implies -T with the X75,

X75-12, X100, or X100-12 device respectively.

-Z, --ditroff
groff will run troff and then use an appropriate post-processor to produce output suitable for the chosen device. If groff -mandoc is groff, this option is passed to groff and will suppress the use of a post-processor. It implies -t.

Getting help

-?, --help
Print a help message and exit.

--usage
Print a short usage message and exit.

-V, --version
Display version information.

EXIT STATUS

0 Successful program execution.

1 Usage, syntax or configuration file error.

2 Operational error.

3 A child process returned a non-zero exit status.

16 At least one of the pages/files/keywords didn't exist or wasn't matched.

ENVIRONMENT

MANPATH
If $MANPATH is set, its value is used as the path to search for manual pages.

MANROFFOPT
The contents of $MANROFFOPT are added to the command line every time man invokes the formatter (nroff, troff, or groff).

MANROFFSEQ
If $MANROFFSEQ is set, its value is used to determine the set of preprocessors to pass each manual page through. The default preprocessor list is system dependent.

MANSECT
If $MANSECT is set, its value is a colon-delimited list of sections and it is used to determine which manual sections to search and in what order.

MANPAGER, PAGER
If $MANPAGER or $PAGER is set ($MANPAGER is used in preference), its value is used as the name of the program used to display the manual page. By default, less -s is used.

The value may be a simple command name or a command with arguments, and may use shell quoting (backslashes, single quotes, or double quotes). It may not use pipes to connect multiple com-

mands; if you need that, use a wrapper script, which may take the file to display either as an argument or on standard input.

MANLESS
If $MANLESS is set, man will not perform any of its usual processing to set up a prompt string for the less pager. Instead, the value of $MANLESS will be copied verbatim into $LESS. For example, if you want to set the prompt string unconditionally to "my prompt string", set $MANLESS to '-Psmy prompt string'.

BROWSER
If $BROWSER is set, its value is a colon-delimited list of commands, each of which in turn is used to try to start a web browser for man --html. In each command, %s is replaced by a filename containing the HTML output from groff, %% is replaced by a single percent sign (%), and %c is replaced by a colon (:).

SYSTEM If $SYSTEM is set, it will have the same effect as if it had been specified as the argument to the -m option.

MANOPT If $MANOPT is set, it will be parsed prior to man's command line and is expected to be in a similar format. As all of the other man specific environment variables can be expressed as command line options, and are thus candidates for being included in $MANOPT it is expected that they will become obsolete. N.B. All spaces that should be interpreted as part of an option's argument must be escaped.

MANWIDTH
If $MANWIDTH is set, its value is used as the line length for which manual pages should be formatted. If it is not set, manual pages will be formatted with a line length appropriate to the current terminal (using an ioctl(2) if available, the value of $COLUMNS, or falling back to 80 characters if neither is available). Cat pages will only be saved when the default formatting can be used, that is when the terminal line length is between 66 and 80 characters.

MAN_KEEP_FORMATTING
Normally, when output is not being directed to a terminal (such as to a file or a pipe), formatting characters are discarded to make it easier to read the result without special tools. However, if $MAN_KEEP_FORMATTING is set to any non-empty value, these formatting characters are retained. This may be useful for wrappers around man that can interpret formatting characters.

MAN_KEEP_STDERR
Normally, when output is being directed to a terminal (usually to a pager), any error output from the command used to produce formatted versions of manual pages is discarded to avoid interfering with the pager's display. Programs such as groff often produce relatively minor error messages about typographical problems such as poor alignment, which are unsightly and generally confusing when displayed along with the manual page. However, some users want to see them anyway, so, if $MAN_KEEP_STDERR is set to any non-empty value, error output will be displayed as usual.

LANG, LC_MESSAGES
Depending on system and implementation, either or both of $LANG and $LC_MESSAGES will be interrogated for the current message locale. man will display its messages in that locale (if available). See setlocale(3) for precise details.

FILES
/etc/man_db.conf
man-db configuration file.

/usr/share/man
A global manual page hierarchy.
/usr/share/man/index.(bt|db|dir|pag)
A traditional global index database cache.

/var/cache/man/index.(bt|db|dir|pag)
An FHS compliant global index database cache.

SEE ALSO
apropos(1), groff(1), less(1), manpath(1), nroff(1), troff(1), whatis(1), zsoelim(1), setlocale(3), manpath(5), ascii(7), latin1(7), man(7), catman(8), mandb(8), the man-db package manual, FSSTND

HISTORY
1990, 1991 - Originally written by John W. Eaton (jwe@che.utexas.edu).

Dec 23 1992: Rik Faith (faith@cs.unc.edu) applied bug fixes supplied by Willem Kasdorp (wkasdo@nikhefk.nikef.nl).

30th April 1994 - 23rd February 2000: Wilf. (G.Wilford@ee.surrey.ac.uk) has been developing and maintaining this package with the help of a few dedicated people.
apropos(1), groff(1), less(1), manpath(1), nroff(1), troff(1), whatis(1), zsoelim(1), setlocale(3), manpath(5), ascii(7), latin1(7), man(7), catman(8), mandb(8), the man-db package manual, FSSTND

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30th October 1996 - 30th March 2001: Fabrizio Polacco <fpolacco@debian.org> maintained and enhanced this package for the Debian project, with the help of all the community.

31st March 2001 - present day: Colin Watson <cjwatson@debian.org> is now developing and maintaining man-db.

(END)
[student@COS-047 ~]$ whatis who

who (1) - show who is logged on
who (1p) - display who is on the system

Project 1-8

```
[student@COS-047 ~]$ echo $SHELL
/bin/bash

[student@COS-047 ~]$ who am i
student  pts/0       2018-02-20 13:32 (:0)
```

Project 1-9

```
[student@COS-047 ~]$ date;cal
Tue Feb 20 14:46:58 MST 2018
   February 2018
Su Mo Tu We Th Fr Sa
          1  2  3
 4  5  6  7  8  9 10
11 12 13 14 15 16 17
18 19 20 21 22 23 24
25 26 27 28
```

```
[student@COS-047 ~]$ date;who -uH
Tue Feb 20 14:47:28 MST 2018
NAME     LINE        TIME          IDLE        PID COMMENT
student  :0         2018-02-20 13:32   ?       16391 (:0)
student  pts/0       2018-02-20 13:32   .       17446 (:0)
```

Project 1-10

```
[student@COS-047 ~]$ date
Tue Feb 20 14:49:52 MST 2018
```

```
[student@COS-047 ~]$ who
student  :0          2018-02-20 13:32 (:0)
student  pts/0       2018-02-20 13:32 (:0)
```

```
[student@COS-047 ~]$ who -uH
NAME     LINE        TIME          IDLE        PID COMMENT
student  :0          2018-02-20 13:32   ?       16391 (:0)
student  pts/0       2018-02-20 13:32   .       17446 (:0)
```

```
[student@COS-047 ~]$ clear
```

```
[student@COS-047 ~]$ who
student  :0          2018-02-20 13:32 (:0)
student  pts/0       2018-02-20 13:32 (:0)
```

Project 1-11

```
[student@COS-047 ~]$ passwd
Changing password for user student.
Changing password for student.
(current) UNIX password:
New password:
Retype new password:
passwd: all authentication tokens updated successfully.
```

Project 1-12

```
[student@COS-047 ~]$ cat / ect / shells
cat: /: Is a directory
```

cat: ect: No such file or directory
cat: /: Is a directory
cat: shells: No such file or directory

[student@COS-047 ~]$ cat -n / ect / shells
cat: /: Is a directory
cat: ect: No such file or directory
cat: /: Is a directory
cat: shells: No such file or directory

Project 1-13 (Note: couldn't find termcap or mailcap in /etc. /usr/share/doc/systemd/README denied me permission to see it. What did I do wrong?)

[student@COS-047 ~]$ more / etc / termcap

*** /: directory ***

etc: No such file or directory

*** /: directory ***

termcap: No such file or directory
[student@COS-047 ~]$ more / etc / mailcap

*** /: directory ***

etc: No such file or directory

*** /: directory ***

mailcap: No such file or directory
[student@COS-047 ~]$ more / etc / usr/share/doc/systemd/README

*** /: directory ***

etc: No such file or directory

*** /: directory ***

usr/share/doc/systemd/README: No such file or directory
[student@COS-047 ~]$ /usr/share/doc/systemd/README
bash: /usr/share/doc/systemd/README: Permission denied

Project 1-14 (NOTE: Same problem with the files)
[student@COS-047 /]$ head / etc / Termcap
==> / <==
head: error reading '/': Is a directory

==> etc <==
head: error reading 'etc': Is a directory

==> / <==
head: error reading '/': Is a directory
head: cannot open 'Termcap' for reading: No such file or directory
[student@COS-047 /]$ head / etc / mailcap
==> / <==

head: error reading ‘/’: Is a directory

==> etc <==
head: error reading ‘etc’: Is a directory

==> / <==
head: error reading ‘/’: Is a directory
head: cannot open ‘mailcap’ for reading: No such file or directory

---

[student@COS-047 /]$ head / etc / termcap
==> / <==
head: error reading ‘/’: Is a directory

==> etc <==
head: error reading ‘etc’: Is a directory

==> / <==
head: error reading ‘/’: Is a directory
head: cannot open ‘termcap’ for reading: No such file or directory
[student@COS-047 /]$ head / etc / Termcap
==> / <==
head: error reading ‘/’: Is a directory

==> etc <==
head: error reading ‘etc’: Is a directory

==> / <==
head: error reading ‘/’: Is a directory
head: cannot open ‘Termcap’ for reading: No such file or directory
[student@COS-047 /]$ head / etc / mailcap
==> / <==
head: error reading ‘/’: Is a directory

==> etc <==
head: error reading ‘etc’: Is a directory

==> / <==
head: error reading ‘/’: Is a directory
head: cannot open ‘mailcap’ for reading: No such file or directory
[student@COS-047 /]$ head -n 5 / etc / termcap
==> / <==
head: error reading ‘/’: Is a directory

==> etc <==
head: error reading ‘etc’: Is a directory

==> / <==
head: error reading ‘/’: Is a directory
head: cannot open ‘termcap’ for reading: No such file or directory
[student@COS-047 /]$ tail / etc / termcap
==> / <==
tail: error reading ‘/’: Is a directory

==> etc <==
tail: error reading ‘etc’: Is a directory

==> / <==

tail: error reading ‘/’: Is a directory
tail: cannot open ‘termcap’ for reading: No such file or directory
[student@COS-047 /]$ tail -n 5 / etc / termcap
==> / <==
tail: error reading ‘/’: Is a directory

==> etc <==
tail: error reading ‘etc’: Is a directory

==> / <==
tail: error reading ‘/’: Is a directory
tail: cannot open ‘termcap’ for reading: No such file or directory

---

Project 1-15 (NOTE: Permissions denied)
[student@COS-047 /]$ who > current_users
bash: current_users: Permission denied
[student@COS-047 /]$ cat current_users
cat: current_users: No such file or directory

Project 1-16 (NOTE: Permissions denied again)
[student@COS-047 /]$ cal 2009 > year_2009
bash: year_2009: Permission denied
[student@COS-047 /]$ less year_2009
year_2009: No such file or directory

Project 1-17 (NOTE: Permissions denied, yet again)
[student@COS-047 /]$ cat > notes
bash: notes: Permission denied
[student@COS-047 /]$ Remember to order a new CD-ROM, and send the report by Thursday
bash: Remember: command not found...
[student@COS-047 /]$ cat notes
cat: notes: No such file or directory
[student@COS-047 /]$ cat >> notes
bash: notes: Permission denied
[student@COS-047 /]$ Also remember to make reservations for Sept. conference
bash: Also: command not found...
[student@COS-047 /]$ cal 9 2009 >> notes
bash: notes: Permission denied
[student@COS-047 /]$ less notes
notes: No such file or directory
[student@COS-047 /]$ q
