Bash Implementation

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ps (processes)

```
ps -efH
```

- `e` selects all processes
- `f` full format listing
- `H` shows process hierarchy

chmod (permissions)

- can take arguments in either octal or alphanumeric form
- you can `add +` , `delete -` , or `set =`

```
 NAME
    chmod - change file mode bits

SYNOPSIS
    chmod [OPTION]... MODE[,MODE]... FILE...
    chmod [OPTION]... OCTAL-MODE FILE...

OCTAL NOTATION

Execute - 1
Read    - 4
Write   - 2
```

- `chmod 755 readme.md` would give RWX-RX-RX
- `chmod 655 readme.md` would give RW-RX-RX
- `chmod 7-5-1 readme.md` would give RWX-RX-X
- `chmod a+x,u-r file1.txt file2.py` would give X-R-

wc (word count)

```
 NAME
    wc - print newline, word, and byte counts for each file

SYNOPSIS
    wc [OPTION]... [FILE]...
    wc [OPTION]... --files0-from=F

DESCRIPTION


Print  newline,  word, and byte counts for each FILE, and a total line if more than one FILE is specif

With no FILE, or when FILE is -, read standard input.

The options below may be used to select which counts are printed, always in the following order: newli


    -c, --bytes
        print the byte counts

    -m, --chars
        print the character counts

    -l, --lines
        print the newline counts

    -w, --words
        print the word counts
```

Which

```
 Which (1)


NAME
       which - shows the full path of (shell) commands.

SYNOPSIS
       which [options] [--] programname [...]
```

Sleep

```
 NAME
    sleep - delay for a specified amount of time

SYNOPSIS
    sleep NUMBER[SUFFIX]...
    sleep OPTION

DESCRIPTION

Pause  for NUMBER seconds.  SUFFIX may be 's' for seconds (the default), 'm' for minutes, 'h' for hour
```

Sed

```
 NAME
    sed - stream editor for filtering and transforming text

SYNOPSIS
    sed [OPTION]... {script-only-if-no-other-script} [input-file]...

DESCRIPTION


Sed  is  a stream editor.  A stream editor is used to perform basic text transformations on an input s

-n, --quiet, --silent
    suppress automatic printing of pattern space

-e script, --expression=script
    add the script to the commands to be executed

-f script-file, --file=script-file
    add the contents of script-file to the commands to be executed

--follow-symlinks
    follow symlinks when processing in place

-i[SUFFIX], --in-place[=SUFFIX]
    edit files in place (makes backup if SUFFIX supplied)

-l N, --line-length=N
    specify the desired line-wrap length for the l command

--posix
    disable all GNU extensions.

-E, -r, --regexp-extended
    use extended regular expressions in the script (for portability use POSIX -E).

-s, --separate
    consider files as separate rather than as a single, continuous long stream.

--sandbox
    operate in sandbox mode (disable e/r/w commands).
```

SEQ

```
 NAME
       seq - print a sequence of numbers

SYNOPSIS
       seq [OPTION]... LAST
       seq [OPTION]... FIRST LAST
       seq [OPTION]... FIRST INCREMENT LAST

DESCRIPTION

Print numbers from FIRST to LAST, in steps of INCREMENT. Mandatory arguments to long options are manda

    -f, --format=FORMAT
        use printf style floating-point FORMAT

    -s, --separator=STRING
        use STRING to separate numbers (default: \n)

    -w, --equal-width
        equalize width by padding with leading zeroes

If  FIRST or INCREMENT is omitted, it defaults to 1.  That is, an omitted INCREMENT defaults to 1 even
```

LN

```
 NAME
       ln - make links between files

SYNOPSIS
       ln [OPTION]... [-T] TARGET LINK_NAME
       ln [OPTION]... TARGET
       ln [OPTION]... TARGET... DIRECTORY
       ln [OPTION]... -t DIRECTORY TARGET...

DESCRIPTION

In the 1st form, create a link to TARGET with the name LINK_NAME.  In the 2nd form, create a link to T

Mandatory arguments to long options are mandatory for short options too.

    --backup[=CONTROL]
        make a backup of each existing destination file

    -b     like --backup but does not accept an argument

    -d, -F, --directory
        allow the superuser to attempt to hard link directories
    -f, --force
        remove existing destination files

    -i, --interactive
        prompt whether to remove destinations

    -L, --logical
        dereference TARGETs that are symbolic links

    -n, --no-dereference
        treat LINK_NAME as a normal file if it is a symbolic link to a directory

    -P, --physical
        make hard links directly to symbolic links

    -r, --relative
        with -s, create links relative to link location

    -s, --symbolic
        make symbolic links instead of hard links

    -S, --suffix=SUFFIX
        override the usual backup suffix

    -t, --target-directory=DIRECTORY
        specify the DIRECTORY in which to create the links

    -T, --no-target-directory
        treat LINK_NAME as a normal file always

    -v, --verbose
        print name of each linked file
```

LS

```
 NAME
       ls - list directory contents

SYNOPSIS
       ls [OPTION]... [FILE]...

DESCRIPTION

List information about the FILEs (the current directory by default).  Sort entries alphabetically if n

Mandatory arguments to long options are mandatory for short options too.
```

```
-a, --all
        do not ignore entries starting with .

-A, --almost-all
        do not list implied . and ..

--author
        with -l, print the author of each file

-b, --escape
        print C-style escapes for nongraphic characters

--block-size=SIZE
with -l, scale sizes by SIZE when printing them; e.g., '--block-size=M'; see SIZE format below

-B, --ignore-backups
        do not list implied entries ending with ~

-c     with -lt: sort by, and show, ctime (time of last modification of file status information); w

-C     list entries by columns

--color[=WHEN]
        color the output WHEN; more info below

-d, --directory
        list directories themselves, not their contents

-D, --dired
        generate output designed for Emacs' dired mode

-f     list all entries in directory order

-F, --classify[=WHEN]
        append indicator (one of */=>@|) to entries WHEN

--file-type
        likewise, except do not append '*'

--format=WORD
        across -x, commas -m, horizontal -x, long -l, single-column -1, verbose -l, vertical -C

--full-time
        like -l --time-style=full-iso

-g     like -l, but do not list owner

--group-directories-first
        group directories before files; can be augmented with a --sort option, but any use of --sor

-G, --no-group
```

```
       -G, --no-group
               in a long listing, don't print group names

       -h, --human-readable
               with -l and -s, print sizes like 1K 234M 2G etc.

       --si   likewise, but use powers of 1000 not 1024

       -H, --dereference-command-line
               follow symbolic links listed on the command line

       --dereference-command-line-symlink-to-dir
               follow each command line symbolic link that points to a directory

       --hide=PATTERN
               do not list implied entries matching shell PATTERN (overridden by -a or -A)

       --hyperlink[=WHEN]
               hyperlink file names WHEN

       --indicator-style=WORD
               append indicator with style WORD to entry names: none (default), slash (-p), file-type (--

       -i, --inode
               print the index number of each file

       -I, --ignore=PATTERN
               do not list implied entries matching shell PATTERN

       -k, --kibibytes
               default to 1024-byte blocks for file system usage; used only with -s and per directory tota

       -l     use a long listing format

       -L, --dereference
               when showing file information for a symbolic link, show information for the file the link r

       -m     fill width with a comma separated list of entries

       -n, --numeric-uid-gid
               like -l, but list numeric user and group IDs

       -N, --literal
               print entry names without quoting

       -o     like -l, but do not list group information

       -p, --indicator-style=slash
               append / indicator to directories

       -q, --hide-control-chars
               print ? instead of nongraphic characters
```

```
        print ? instead of nongraphic characters

--show-control-chars
        show nongraphic characters as-is (the default, unless program is 'ls' and output is a term

-Q, --quote-name
        enclose entry names in double quotes

--quoting-style=WORD
        use quoting style WORD for entry names: literal, locale, shell, shell-always, shell-escape

-r, --reverse
        reverse order while sorting

-R, --recursive
        list subdirectories recursively

-s, --size
        print the allocated size of each file, in blocks

-S     sort by file size, largest first

--sort=WORD
        sort by WORD instead of name: none (-U), size (-S), time (-t), version (-v), extension (-X

--time=WORD
        change the default of using modification times; access time (-u): atime, access, use; chan

        with -l, WORD determines which time to show; with --sort=time, sort by WORD (newest first)

--time-style=TIME_STYLE
        time/date format with -l; see TIME_STYLE below

-t     sort by time, newest first; see --time

-T, --tabsize=COLS
        assume tab stops at each COLS instead of 8

-u     with -lt: sort by, and show, access time; with -l: show access time and sort by name; other

-U     do not sort; list entries in directory order

-v     natural sort of (version) numbers within text

-w, --width=COLS
        set output width to COLS.  0 means no limit

-x     list entries by lines instead of by columns

-X     sort alphabetically by entry extension

-Z, --context
```

```
  -Z, --context
         print any security context of each file

  --zero end each output line with NUL, not newline

  -1     list one file per line
```