

NAME

BusyBox - The Swiss Army Knife of Embedded Linux

SYNTAX

```
busybox <applet> [arguments...] # or
<applet> [arguments...]         # if symlinked
```

DESCRIPTION

BusyBox combines tiny versions of many common UNIX utilities into a single small executable. It provides minimalist replacements for most of the utilities you usually find in GNU coreutils, util-linux, etc. The utilities in BusyBox generally have fewer options than their full-featured GNU cousins; however, the options that are included provide the expected functionality and behave very much like their GNU counterparts.

BusyBox has been written with size-optimization and limited resources in mind. It is also extremely modular so you can easily include or exclude commands (or features) at compile time. This makes it easy to customize your embedded systems. To create a working system, just add /dev, /etc, and a Linux kernel. BusyBox provides a fairly complete POSIX environment for any small or embedded system.

BusyBox is extremely configurable. This allows you to include only the components you need, thereby reducing binary size. Run 'make config' or 'make menuconfig' to select the functionality that you wish to enable. Then run 'make' to compile BusyBox using your configuration.

After the compile has finished, you should use 'make install' to install BusyBox. This will install the 'bin/busybox' binary, in the target directory specified by CONFIG_PREFIX. CONFIG_PREFIX can be set when configuring BusyBox, or you can specify an alternative location at install time (i.e., with a command line like 'make CONFIG_PREFIX=/tmp/foo install'). If you enabled any applet installation scheme (either as symlinks or hardlinks), these will also be installed in the location pointed to by CONFIG_PREFIX.

USAGE

BusyBox is a multi-call binary. A multi-call binary is an executable program that performs the same job as more than one utility program. That means there is just a single BusyBox binary, but that single binary acts like a large number of utilities. This allows BusyBox to be smaller since all the built-in utility programs (we call them applets) can share code for many common operations.

You can also invoke BusyBox by issuing a command as an argument on the command line. For example, entering

```
/bin/busybox ls
```

will also cause BusyBox to behave as 'ls'.

Of course, adding '/bin/busybox' into every command would be painful. So most people will invoke BusyBox using links to the BusyBox binary.

For example, entering

```
ln -s /bin/busybox ls
./ls
```

will cause BusyBox to behave as 'ls' (if the 'ls' command has been compiled into BusyBox). Generally speaking, you should never need to make all these links yourself, as the BusyBox build system will do this for you when you run the 'make install' command.

If you invoke BusyBox with no arguments, it will provide you with a list of the applets that have been compiled into your BusyBox binary.

COMMON OPTIONS

Most BusyBox applets support the **--help** argument to provide a terse runtime description of their behavior. If the CONFIG_FEATURE_VERBOSE_USAGE option has been enabled, more detailed usage information will also be available.

COMMANDS

Currently available applets include:

```
[, [[, acpid, addgroup, adduser, adjtimex, ar, arp, arping, ash,
awk, basename, beep, blkid, brctl, bunzip2, bzip2, cal, cat,
catv, chat, chattr, chgrp, chmod, chown, chpasswd, chpst, chroot,
chrt, chvt, cksum, clear, cmp, comm, cp, cpio, crond, crontab,
cryptpw, cut, date, dc, dd, deallocvt, delgroup, deluser, depmod,
devmem, df, dhcprelay, diff, dirname, dmesg, dnsd, dnsdomainname,
dos2unix, dpkg, du, dumpkmap, dumpleases, echo, ed, egrep, eject,
env, envdir, envuidgid, expand, expr, fakeidentd, false, fbset,
fbsplash, fdflush, fdformat, fdisk, fgrep, find, findfs, flash_lock,
flash_unlock, fold, free, freeramdisk, fsck, fsck.minix, fsync,
ftpd, ftpget, ftpget, fuser, getopt, getty, grep, gunzip, gzip, hd,
hdparm, head, hexdump, hostid, hostname, httpd, hush, hwclock, id,
ifconfig, ifdown, ifenslave, ifplugd, ifup, inetd, init, inotifyd,
insmod, install, ionice, ip, ipaddr, ipcalc, ipcrm, ipcs, iplink,
iproute, iprule, iptunnel, kbd_mode, kill, killall, killall5, klogd,
last, length, less, linux32, linux64, linuxrc, ln, loadfont,
loadkmap, logger, login, logname, logread, losetup, lpd, lpq, lpr,
ls, lsattr, lsmod, lzmacat, lzop, lzopcat, makemime, man, md5sum,
mdev, msg, microcom, mkdir, mkdosfs, mkfifo, mkfs.minix, mkfs.vfat,
mknod, mkpasswd, mkswap, mktemp, modprobe, more, mount, mountpoint,
mt, mv, nameif, nc, netstat, nice, nmeter, nohup, nslookup, od,
openvt, passwd, patch, pgrep, pidof, ping, ping6, pipe_progress,
pivot_root, pkill, popmaildir, printenv, printf, ps, pscan, pwd,
raidautorun, rdate, rdev, readlink, readprofile, realpath,
reformime, rename, reset, resize, rm, rmdir, rmmod, route, rpm,
rpm2cpio, rtcwake, run-parts, runlevel, runsv, runsvdir, rx, script,
scriptreplay, sed, sendmail, seq, setarch, setconsole, setfont,
setkeycodes, setlogcons, setsid, setuidgid, sh, shasum, sha256sum,
sha512sum, showkey, slattach, sleep, softlimit, sort, split,
start-stop-daemon, stat, strings, stty, su, sulogin, sum, sv,
svlogd, swapoff, swapon, switch_root, sync, sysctl, syslogd, tac,
tail, tar, taskset, tcpsvd, tee, telnet, telnetd, test, tftp, tftpd,
time, timeout, top, touch, tr, traceroute, true, tty, ttysize,
udhcp, udhcpd, udpsvd, umount, uname, uncompress, unexpand, uniq,
unix2dos, unlzma, unlzop, unzip, uptime, usleep, uudecode, uuencode,
vconfig, vi, vlock, volname, watch, watchdog, wc, wget, which, who,
whoami, xargs, yes, zcat, zcip
```

COMMAND DESCRIPTIONS

acpid

```
acpid [-d] [-c CONFDIR] [-l LOGFILE] [-e PROC_EVENT_FILE] [EVDEV_EVENT_FILE...]
```

Listen to ACPI events and spawn specific helpers on event arrival

Options:

```
-d          Do not daemonize and log to stderr
-c DIR     Config directory [/etc/acpi]
-e FILE    /proc event file [/proc/acpi/event]
-l FILE    Log file [/var/log/acpid]
```

Accept and ignore compatibility options -g -m -s -S -v

addgroup

addgroup [-g GID] [user_name] group_name

Add a group or add a user to a group

Options:

```
-g GID     Group id
-S         Create a system group
```

adduser

adduser [OPTIONS] user_name

Add a user

Options:

```
-h DIR          Home directory
-g GECOS        GECOS field
-s SHELL        Login shell
-G GRP          Add user to existing group
-S             Create a system user
-D             Do not assign a password
-H             Do not create home directory
-u UID          User id
```

adjtimex

adjtimex [-q] [-o offset] [-f frequency] [-p timeconstant] [-t tick]

Read and optionally set system timebase parameters. See [adjtimex\(2\)](#).

Options:

```
-q          Quiet
-o offset   Time offset, microseconds
-f frequency Frequency adjust, integer kernel units (65536 is 1ppm)
            (positive values make clock run faster)
-t tick     Microseconds per tick, usually 10000
-p timeconstant
```

ar

ar [-o] [-v] [-p] [-t] [-x] ARCHIVE FILES

Extract or list FILES from an ar archive

Options:

```
-o          Preserve original dates
-p          Extract to stdout
-t          List
-x          Extract
-v          Verbose
```

arp

arp
[-vn][-H type] [-i if] -a [hostname]

```
[-v] [-i if] -d hostname [pub]
[-v] [-H type] [-i if] -s hostname hw_addr [temp]
[-v] [-H type] [-i if] -s hostname hw_addr [netmask nm] pub
[-v] [-H type] [-i if] -Ds hostname ifa [netmask nm] pub
```

Manipulate ARP cache

Options:

```
-a          Display (all) hosts
-s          Set new ARP entry
-d          Delete a specified entry
-v          Verbose
-n          Don't resolve names
-i IF       Network interface
-D          Read <hwaddr> from given device
-A, -p AF   Protocol family
-H HWTYPE   Hardware address type
```

arping

```
arping [-fqbdUA] [-c count] [-w timeout] [-I dev] [-s sender] target
```

Send ARP requests/replies

Options:

```
-f          Quit on first ARP reply
-q          Quiet
-b          Keep broadcasting, don't go unicast
-D          Duplicated address detection mode
-U          Unsolicited ARP mode, update your neighbors
-A          ARP answer mode, update your neighbors
-c N        Stop after sending N ARP requests
-w timeout  Time to wait for ARP reply, in seconds
-I dev      Interface to use (default eth0)
-s sender    Sender IP address
target      Target IP address
```

awk

```
awk [OPTIONS] [AWK_PROGRAM] [FILE]...
```

Options:

```
-v VAR=VAL   Set variable
-F SEP       Use SEP as field separator
-f FILE      Read program from file
```

basename

```
basename FILE [SUFFIX]
```

Strip directory path and .SUFFIX from FILE

beep

```
beep -f freq -l length -d delay -r repetitions -n
```

Options:

```
-f          Frequency in Hz
-l          Length in ms
-d          Delay in ms
-r          Repetitions
-n          Start new tone
```

blkid

```
blkid
```

Print UUIDs of all filesystems

brctl

brctl COMMAND [BRIDGE [INTERFACE]]

Manage ethernet bridges

Commands:

show	Show a list of bridges
addbr BRIDGE	Create BRIDGE
delbr BRIDGE	Delete BRIDGE
addif BRIDGE IFACE	Add IFACE to BRIDGE
delif BRIDGE IFACE	Delete IFACE from BRIDGE
setageing BRIDGE TIME	Set ageing time
setfd BRIDGE TIME	Set bridge forward delay
sethello BRIDGE TIME	Set hello time
setmaxage BRIDGE TIME	Set max message age
setpathcost BRIDGE COST	Set path cost
setportprio BRIDGE PRIO	Set port priority
setbridgeprio BRIDGE PRIO	Set bridge priority
stp BRIDGE [1 0]	STP on/off

bunzip2

bunzip2 [OPTIONS] [FILE]

Uncompress FILE (or standard input if FILE is '-' or omitted)

Options:

-c	Write to standard output
-f	Force

bzcat

bzcat FILE

Uncompress to stdout

bzip2

bzip2 [OPTIONS] [FILE]...

Compress FILE(s) with bzip2 algorithm. When FILE is '-' or unspecified, reads standard input. Implies -c.

Options:

-c	Write to standard output
-d	Decompress
-f	Force
-1..-9	Compression level

cal

cal [-jy] [[month] year]

Display a calendar

Options:

-j	Use julian dates
-y	Display the entire year

cat

cat [-u] [FILE]...

Concatenate FILE(s) and print them to stdout

Options:

-u Use unbuffered i/o (ignored)

catv

catv [-etv] [FILE]...

Display nonprinting characters as ^x or M-x

Options:

-e End each line with \$
-t Show tabs as ^I
-v Don't use ^x or M-x escapes

chat

chat EXPECT [SEND [EXPECT [SEND...]]]

Useful for interacting with a modem connected to stdin/stdout. A script consists of one or more "expect-send" pairs of strings, each pair is a pair of arguments. Example: chat " ATZ OK ATD123456 CONNECT " ogin: pppuser word: ppppass '~'

chattr

chattr [-R] [-+=AacDdijsStTu] [-v version] files...

Change file attributes on an ext2 fs

Modifiers:

- Remove attributes
+ Add attributes
= Set attributes

Attributes:

A Don't track atime
a Append mode only
c Enable compress
D Write dir contents synchronously
d Do not backup with dump
i Cannot be modified (immutable)
j Write all data to journal first
s Zero disk storage when deleted
S Write file contents synchronously
t Disable tail-merging of partial blocks with other files
u Allow file to be undeleted

Options:

-R Recursively list subdirectories
-v Set the file's version/generation number

chgrp

chgrp [-RhLHPcvf]... GROUP FILE...

Change the group membership of each FILE to GROUP

Options:

-R Recurse
-h Affect symlinks instead of symlink targets
-L Traverse all symlinks to directories
-H Traverse symlinks on command line only
-P Do not traverse symlinks (default)
-c List changed files

```
-v      Verbose
-f      Hide errors
```

chmod

`chmod [-Rcvf] MODE[,MODE]... FILE...`

Each MODE is one or more of the letters ugoa, one of the symbols +-= and one or more of the letters rwxst

Options:

```
-R      Recurse
-c      List changed files
-v      List all files
-f      Hide errors
```

chown

```
chown [-RhLHPcvf]... OWNER[<.:>[GROUP]] FILE...
```

Change the owner and/or group of each FILE to OWNER and/or GROUP

Options:

```
-R      Recurse
-h      Affect symlinks instead of symlink targets
-L      Traverse all symlinks to directories
-H      Traverse symlinks on command line only
-P      Do not traverse symlinks (default)
-c      List changed files
-v      List all files
-f      Hide errors
```

chpasswd

chpasswd [--md5|--encrypted]

Read user:password from stdin and update /etc/passwd

Options:

```
-e,--encrypted  Supplied passwords are in encrypted form
-m,--md5        Use MD5 encryption instead of DES
```

chpst

```
chpst [-vP012] [-u USER[:GRP]] [-U USER[:GRP]] [-e DIR]  
[-/ DIR] [-n NICE] [-m BYTES] [-d BYTES] [-o N]  
[-p N] [-f BYTES] [-c BYTES] PROG ARGS
```

Change the process state and run PROG

Options:

```
-u USER[:GRP]    Set uid and gid
-U USER[:GRP]    Set $UID and $GID in environment
-e DIR           Set environment variables as specified by files
                  in DIR: file=1st_line_of_file
-/ DIR           Chroot to DIR
-n NICE          Add NICE to nice value
-m BYTES        Same as -d BYTES -s BYTES -l BYTES
-d BYTES        Limit data segment
-o N            Limit number of open files per process
-p N            Limit number of processes per uid
-f BYTES        Limit output file sizes
-c BYTES        Limit core file size
-v             Verbose
-P             Create new process group
-0             Close standard input
-1             Close standard output
-2             Close standard error
```

chroot

chroot NEWROOT [PROG [ARGS]]

Run PROG with root directory set to NEWROOT

chrt

chrt [OPTIONS] [PRIO] [PID | PROG [ARGS]]

Manipulate real-time attributes of a process

Options:

-p	Operate on pid
-r	Set scheduling policy to SCHED_RR
-f	Set scheduling policy to SCHED_FIFO
-o	Set scheduling policy to SCHED_OTHER
-m	Show min and max priorities

chvt

chvt N

Change the foreground virtual terminal to /dev/ttyN

cksum

cksum FILES...

Calculate the CRC32 checksums of FILES

clear

clear

Clear screen

cmp

cmp [-l] [-s] FILE1 [FILE2 [SKIP1 [SKIP2]]]

Compares FILE1 vs stdin if FILE2 is not specified

Options:

-l	Write the byte numbers (decimal) and values (octal) for all differing bytes
-s	Quiet

comm

comm [-123] FILE1 FILE2

Compare FILE1 to FILE2, or to stdin if - is specified

Options:

-1	Suppress lines unique to FILE1
-2	Suppress lines unique to FILE2
-3	Suppress lines common to both files

cp

cp [OPTIONS] SOURCE DEST

Copy SOURCE to DEST, or multiple SOURCE(s) to DIRECTORY

Options:

```

-a      Same as -dpR
-d,-P   Preserve links
-H,-L   Dereference all symlinks (default)
-p      Preserve file attributes if possible
-f      Force overwrite
-i      Prompt before overwrite
-R,-r   Recurse
-l,-s   Create (sym)links

```

cpio

cpio [-[tiopdmvu] [-F FILE] [-H newc]

Extract or list files from a cpio archive, or create a cpio archive Main operation mode:

```

-t      List
-i      Extract
-o      Create
-p      Passthrough

```

Options:

```

-d      Make leading directories
-m      Preserve mtime
-v      Verbose
-u      Overwrite
-F      Input file
-H      Define format

```

crond

crond -fbS -l N -d N -L LOGFILE -c DIR

```

-f      Foreground
-b      Background (default)
-S      Log to syslog (default)
-l      Set log level. 0 is the most verbose, default 8
-d      Set log level, log to stderr
-L      Log to file
-c      Working dir

```

crontab

crontab [-c DIR] [-u USER] [-ler][FILE]

```

-c      Crontab directory
-u      User
-l      List crontab
-e      Edit crontab
-r      Delete crontab
FILE    Replace crontab by FILE ('-': stdin)

```

cryptpw

cryptpw [OPTIONS] [PASSWORD] [SALT]

Crypt the PASSWORD using `crypt(3)`

Options:

```

-P,--password-fd=NUM  Read password from fd NUM
-m,--method=TYPE      Encryption method TYPE
-S,--salt=SALT

```

cut

cut [OPTIONS] [FILE]...

Print selected fields from each input FILE to standard output

Options:

```
-b LIST Output only bytes from LIST
-c LIST Output only characters from LIST
-d CHAR Use CHAR instead of tab as the field delimiter
-s      Output only the lines containing delimiter
-f N    Print only these fields
-n      Ignored
```

date

date [OPTIONS] [+FMT] [TIME]

Display time (using +FMT), or set time

Options:

```
[-s] TIME      Set time to TIME
-u            Work in UTC (don't convert to local time)
-R           Output RFC-822 compliant date string
-I[SPEC]      Output ISO-8601 compliant date string
              SPEC='date' (default) for date only,
              'hours', 'minutes', or 'seconds' for date and
              time to the indicated precision
-r FILE      Display last modification time of FILE
-d TIME      Display TIME, not 'now'
-D FMT       Use FMT for -d TIME conversion
```

Recognized TIME formats:

```
hh:mm[:ss]
[YYYY.]MM.DD-hh:mm[:ss]
YYYY-MM-DD hh:mm[:ss]
[[[ [YY]YY]MM]DD]hh]mm[.ss]
```

dc

dc expression...

Tiny RPN calculator. Operations: +, add, -, sub, *, mul, /, div, %, mod, **, exp, and, or, not, eor, p - print top of the stack (without altering the stack), f - print entire stack, o - pop the value and set output radix (value must be 10 or 16).

Examples: 'dc 2 2 add' -> 4, 'dc 8 8 * 2 2 + /' -> 16.

dd

dd [if=FILE] [of=FILE] [ibs=N] [obs=N] [bs=N] [count=N] [skip=N]
[seek=N] [conv=notrunc|noerror|sync|fsync]

Copy a file with converting and formatting

Options:

```
if=FILE      Read from FILE instead of stdin
of=FILE      Write to FILE instead of stdout
bs=N        Read and write N bytes at a time
ibs=N       Read N bytes at a time
obs=N       Write N bytes at a time
count=N     Copy only N input blocks
skip=N      Skip N input blocks
seek=N      Skip N output blocks
conv=notrunc Don't truncate output file
conv=noerror Continue after read errors
conv=sync   Pad blocks with zeros
conv=fsync  Physically write data out before finishing
```

Numbers may be suffixed by c (x1), w (x2), b (x512), kD (x1000), k (x1024), MD (x1000000), M (x1048576), GD (x1000000000) or G (x1073741824)

deallocvt

deallocvt [N]

Deallocate unused virtual terminal /dev/ttyN

delgroup

delgroup [USER] GROUP

Delete group GROUP from the system or user USER from group GROUP

deluser

deluser USER

Delete USER from the system

devmem

devmem ADDRESS [WIDTH [VALUE]]

Read/write from physical address

```
ADDRESS Address to act upon
WIDTH   Width (8/16/...)
VALUE   Data to be written
```

df

df [-Pkmhai] [-B SIZE] [FILESYSTEM...]

Print filesystem usage statistics

Options:

```
-P      POSIX output format
-k      1024-byte blocks (default)
-m      1M-byte blocks
-h      Human readable (e.g. 1K 243M 2G)
-a      Show all filesystems
-i      Inodes
-B SIZE Blocksize
```

dhcrelay

dhcrelay CLIENT_IFACE[,CLIENT_IFACE2...] SERVER_IFACE [SERVER_IP]

Relay DHCP requests between clients and server

diff

diff [-abdiNqrTstw] [-L LABEL] [-S FILE] [-U LINES] FILE1 FILE2

Compare files line by line and output the differences between them. This implementation supports unified diffs only.

Options:

```
-a      Treat all files as text
-b      Ignore changes in the amount of whitespace
-d      Try hard to find a smaller set of changes
-i      Ignore case differences
-L      Use LABEL instead of the filename in the unified header
-N      Treat absent files as empty
-q      Output only whether files differ
-r      Recursively compare subdirectories
-S      Start with FILE when comparing directories
-T      Make tabs line up by prefixing a tab when necessary
-s      Report when two files are the same
-t      Expand tabs to spaces in output
```

```
-U      Output LINES lines of context
-w      Ignore all whitespace
```

dirname

dirname FILENAME

Strip non-directory suffix from FILENAME

dmesg

dmesg [-c] [-n LEVEL] [-s SIZE]

Print or control the kernel ring buffer

Options:

```
-c      Clear ring buffer after printing
-n LEVEL Set console logging level
-s SIZE Buffer size
```

dnssd

dnssd [-c config] [-t seconds] [-p port] [-i iface-ip] [-d]

Small static DNS server daemon

Options:

```
-c      Config filename
-t      TTL in seconds
-p      Listening port
-i      Listening ip (default all)
-d      Daemonize
```

dos2unix

dos2unix [OPTION] [FILE]

Convert FILE in-place from DOS to Unix format. When no file is given, use stdin/stdout.

Options:

```
-u      dos2unix
-d      unix2dos
```

dpkg

dpkg [-ilCPru] [-F option] package_name

Install, remove and manage Debian packages

Options:

```
-i      Install the package
-l      List of installed packages
-C      Configure an unpackaged package
-F depends Ignore dependency problems
-P      Purge all files of a package
-r      Remove all but the configuration files for a package
-u      Unpack a package, but don't configure it
```

du

du [-aHLdclsxhmk] [FILE]...

Summarize disk space used for each FILE and/or directory. Disk space is printed in units of 1024 bytes.

Options:

```

-a      Show file sizes too
-H      Follow symlinks on command line
-L      Follow all symlinks
-d N    Limit output to directories (and files with -a) of depth < N
-c      Show grand total
-l      Count sizes many times if hard linked
-s      Display only a total for each argument
-x      Skip directories on different filesystems
-h      Sizes in human readable format (e.g., 1K 243M 2G )
-m      Sizes in megabytes
-k      Sizes in kilobytes (default)

```

dumpkmap

```
dumpkmap > keymap
```

Print a binary keyboard translation table to standard output

dumpleases

```
dumpleases [-r|-a] [-f LEASEFILE]
```

Display DHCP leases granted by udhcpd

Options:

```

-f,--file=FILE  Leases file to load
-r,--remaining  Interpret lease times as time remaining
-a,--absolute   Interpret lease times as expire time

```

echo

```
echo [-neE] [ARG...]
```

Print the specified ARGs to stdout

Options:

```

-n      Suppress trailing newline
-e      Interpret backslash-escaped characters (i.e., \t=tab)
-E      Disable interpretation of backslash-escaped characters

```

ed

```
ed
```

eject

```
eject [-t] [-T] [DEVICE]
```

Eject specified DEVICE (or default /dev/cdrom)

Options:

```

-s      SCSI device
-t      Close tray
-T      Open/close tray (toggle)

```

env

```
env [-iu] [-] [name=value]... [PROG [ARGS]]
```

Print the current environment or run PROG after setting up the specified environment

Options:

```

-, -i    Start with an empty environment
-u       Remove variable from the environment

```

envdir

envdir dir prog args

Set various environment variables as specified by files in the directory dir and run PROG

envuidgid

envuidgid account prog args

Set \$UID to account's uid and \$GID to account's gid and run PROG

expand

expand [-i] [-t NUM] [FILE|-]

Convert tabs to spaces, writing to standard output

Options:

```
-i,--initial      Do not convert tabs after non blanks
-t,--tabs=N      Tabstops every N chars
```

expr

expr EXPRESSION

Print the value of EXPRESSION to standard output

EXPRESSION may be:

```
ARG1 | ARG2      ARG1 if it is neither null nor 0, otherwise ARG2
ARG1 & ARG2      ARG1 if neither argument is null or 0, otherwise 0
ARG1 < ARG2      1 if ARG1 is less than ARG2, else 0. Similarly:
ARG1 <= ARG2
ARG1 = ARG2
ARG1 != ARG2
ARG1 >= ARG2
ARG1 > ARG2
ARG1 + ARG2      Sum of ARG1 and ARG2. Similarly:
ARG1 - ARG2
ARG1 * ARG2
ARG1 / ARG2
ARG1 % ARG2
STRING : REGEXP  Anchored pattern match of REGEXP in STRING
match STRING REGEXP  Same as STRING : REGEXP
substr STRING POS LENGTH Substring of STRING, POS counted from 1
index STRING CHARS  Index in STRING where any CHARS is found, or 0
length STRING      Length of STRING
quote TOKEN        Interpret TOKEN as a string, even if
                   it is a keyword like 'match' or an
                   operator like '/'
(EXPRESSION)       Value of EXPRESSION
```

Beware that many operators need to be escaped or quoted for shells. Comparisons are arithmetic if both ARGs are numbers, else lexicographical. Pattern matches return the string matched between \ (and \) or null; if \ (and \) are not used, they return the number of characters matched or 0.

fakeidentd

fakeidentd [-fiw] [-b ADDR] [STRING]

Provide fake ident (auth) service

Options:

```
-f      Run in foreground
-i      Inetd mode
-w      Inetd 'wait' mode
-b ADDR Bind to specified address
STRING Ident answer string (default: nobody)
```

false

false

Return an exit code of FALSE (1)

fbset

fbset [OPTIONS] [MODE]

Show and modify frame buffer settings

fb splash

fb splash -s IMGFILE [-c] [-d DEV] [-i INIFILE] [-f CMD]

Options:

```

-s      Image
-c      Hide cursor
-d      Framebuffer device (default /dev/fb0)
-i      Config file (var=value):
        BAR_LEFT,BAR_TOP,BAR_WIDTH,BAR_HEIGHT
        BAR_R,BAR_G,BAR_B
-f      Control pipe (else exit after drawing image)
        commands: 'NN' (% for progress bar) or 'exit'
```

fdflush

fdflush DEVICE

Force floppy disk drive to detect disk change

fdformat

fdformat [-n] DEVICE

Format floppy disk

Options:

```

-n      Don't verify after format
```

fdisk

fdisk [-ul] [-C CYLINDERS] [-H HEADS] [-S SECTORS] [-b SSZ] DISK

Change partition table

Options:

```

-u      Start and End are in sectors (instead of cylinders)
-l      Show partition table for each DISK, then exit
        (for certain MO disks) use 2048-byte sectors
-C CYLINDERS  Set number of cylinders/heads/sectors
-H HEADS
-S SECTORS
```

find

find [PATH...] [EXPRESSION]

Search for files. The default PATH is the current directory, default EXPRESSION is '-print'

EXPRESSION may consist of:

```

-follow      Dereference symlinks
-xdev        Don't descend directories on other filesystems
```

```

-maxdepth N      Descend at most N levels. -maxdepth 0 applies
                  tests/actions to command line arguments only
-mindepth N      Do not act on first N levels
-name PATTERN    File name (w/o directory name) matches PATTERN
-iname PATTERN   Case insensitive -name
-path PATTERN    Path matches PATTERN
-regex PATTERN   Path matches regex PATTERN
-type X          File type is X (X is one of: f,d,l,b,c,...)
-perm NNN        Permissions match any of (+NNN), all of (-NNN),
                  or exactly (NNN)
-mtime DAYS      Modified time is greater than (+N), less than (-N),
                  or exactly (N) days
-mmin MINS       Modified time is greater than (+N), less than (-N),
                  or exactly (N) minutes
-newer FILE      Modified time is more recent than FILE's
-inum N          File has inode number N
-user NAME       File is owned by user NAME (numeric user ID allowed)
-group NAME      File belongs to group NAME (numeric group ID allowed)
-depth          Process directory name after traversing it
-size N[bck]     File size is N (c:bytes,k:kbytes,b:512 bytes(def.)).
                  +/-N: file size is bigger/smaller than N
-print          Print (default and assumed)
-print0         Delimit output with null characters rather than
                  newlines
-exec CMD ARG ;  Run CMD with all instances of {} replaced by the
                  matching files
-prune          Stop traversing current subtree
-delete         Delete files, turns on -depth option
(EXPR)         Group an expression

```

findfs

findfs LABEL=label or UUID=uuid

Find a filesystem device based on a label or UUID

flash_lock

flash_lock MTD_DEVICE OFFSET SECTORS

Lock part or all of an MTD device. If SECTORS is -1, then all sectors will be locked, regardless of the value of OFFSET

flash_unlock

flash_unlock MTD_DEVICE

Unlock an MTD device

fold

fold [-bs] [-w WIDTH] [FILE]

Wrap input lines in each FILE (standard input by default), writing to standard output

Options:

```

-b      Count bytes rather than columns
-s      Break at spaces
-w      Use WIDTH columns instead of 80

```

free

free

Display the amount of free and used system memory

freeramdisk

freeramdisk DEVICE

Free all memory used by the specified ramdisk

fsck

`fsck [-ANPRTV] [-C fd] [-t fstype] [fs-options] [filesystems...]`

Check and repair filesystems

Options:

```
-A      Walk /etc/fstab and check all filesystems
-N      Don't execute, just show what would be done
-P      With -A, check filesystems in parallel
-R      With -A, skip the root filesystem
-T      Don't show title on startup
-V      Verbose
-C n    Write status information to specified filedescriptor
-t type List of filesystem types to check
```

fsck.minix

`fsck.minix [-larvsmf] /dev/name`

Check MINIX filesystem

Options:

```
-l      List all filenames
-r      Perform interactive repairs
-a      Perform automatic repairs
-v      Verbose
-s      Output superblock information
-m      Show "mode not cleared" warnings
-f      Force file system check
```

fsync

`fsync [OPTIONS] FILE...` Write files' buffered blocks to disk

Options:

```
-d      Avoid syncing metadata
```

ftpd

`ftpd [-wvS] [-t N] [-T N] [DIR]`

Anonymous FTP server

ftpd should be used as an inetd service. ftpd's line for inetd.conf: 21 stream tcp nowait root ftpd ftpd /files/to/serve It also can be ran from tcpsvd:

```
tcpsvd -vE 0.0.0.0 21 ftpd /files/to/serve
```

Options:

```
-w      Allow upload
-v      Log to stderr
-S      Log to syslog
-t, -T  Idle and absolute timeouts
DIR     Change root to this directory
```

ftpget

`ftpget [OPTIONS] HOST LOCAL_FILE REMOTE_FILE`

Retrieve a remote file via FTP

Options:

```

-c,--continue      Continue previous transfer
-v,--verbose       Verbose
-u,--username      Username
-p,--password      Password
-P,--port          Port number

```

ftpput

ftpput [OPTIONS] HOST REMOTE_FILE LOCAL_FILE

Store a local file on a remote machine via FTP

Options:

```

-v,--verbose       Verbose
-u,--username      Username
-p,--password      Password
-P,--port          Port number

```

fuser

fuser [OPTIONS] FILE or PORT/PROTO

Find processes which use FILES or PORTs

Options:

```

-m      Find processes which use same fs as FILES
-4      Search only IPv4 space
-6      Search only IPv6 space
-s      Silent: just exit with 0 if any processes are found
-k      Kill found processes (otherwise display PIDs)
-SIGNAL Signal to send (default: TERM)

```

getopt

getopt [OPTIONS]

Options:

```

-a,--alternative      Allow long options starting with single -
-l,--longoptions=longopts  Long options to be recognized
-n,--name=progname    The name under which errors are reported
-o,--options=optstring  Short options to be recognized
-q,--quiet            Disable error reporting by getopt(3)
-Q,--quiet-output     No normal output
-s,--shell=shell      Set shell quoting conventions
-T,--test             Test for getopt(1) version
-u,--unquoted         Don't quote the output

```

getty

getty [OPTIONS] BAUD_RATE TTY [TERMTYPE]

Open a tty, prompt for a login name, then invoke /bin/login

Options:

```

-h      Enable hardware (RTS/CTS) flow control
-i      Do not display /etc/issue before running login
-L      Local line, do not do carrier detect
-m      Get baud rate from modem's CONNECT status message
-w      Wait for a CR or LF before sending /etc/issue
-n      Do not prompt the user for a login name
-f ISSUE_FILE  Display ISSUE_FILE instead of /etc/issue
-l LOGIN      Invoke LOGIN instead of /bin/login
-t SEC      Terminate after SEC if no username is read
-I INITSTR    Send INITSTR before anything else
-H HOST      Log HOST into the utmp file as the hostname

```

grep

`grep [-HhriLnqvsoweFEABCz] PATTERN [FILE]...`

Search for PATTERN in each FILE or standard input

Options:

- H Prefix output lines with filename where match was found
- h Suppress the prefixing filename on output
- r Recurse
- i Ignore case distinctions
- l List names of files that match
- L List names of files that do not match
- n Print line number with output lines
- q Quiet. Return 0 if PATTERN is found, 1 otherwise
- v Select non-matching lines
- s Suppress file open/read error messages
- c Only print count of matching lines
- o Show only the part of a line that matches PATTERN
- m MAX Match up to MAX times per file
- w Match whole words only
- F PATTERN is a set of newline-separated strings
- E PATTERN is an extended regular expression
- e PTRN Pattern to match
- f FILE Read pattern from file
- A Print NUM lines of trailing context
- B Print NUM lines of leading context
- C Print NUM lines of output context
- z Input is NUL terminated

gunzip

`gunzip [OPTIONS] [FILE]...`

Uncompress FILEs (or standard input)

Options:

- c Write to standard output
- f Force
- t Test file integrity

gzip

`gzip [OPTIONS] [FILE]...`

Compress FILEs (or standard input)

Options:

- c Write to standard output
- d Decompress
- f Force

hd

`hd FILE...`

hd is an alias for hexdump -C

hdparm

`hdparm [OPTIONS] [DEVICE]`

Options:

- a Get/set fs readahead
- A Set drive read-lookahead flag (0/1)
- b Get/set bus state (0 == off, 1 == on, 2 == tristate)
- B Set Advanced Power Management setting (1-255)
- c Get/set IDE 32-bit IO setting
- C Check IDE power mode status

```

-d      Get/set using_dma flag
-D      Enable/disable drive defect-mgmt
-f      Flush buffer cache for device on exit
-g      Display drive geometry
-h      Display terse usage information
-i      Display drive identification
-I      Detailed/current information directly from drive
-k      Get/set keep_settings_over_reset flag (0/1)
-K      Set drive keep_features_over_reset flag (0/1)
-L      Set drive doorlock (0/1) (removable harddisks only)
-m      Get/set multiple sector count
-n      Get/set ignore-write-errors flag (0/1)
-p      Set PIO mode on IDE interface chipset (0,1,2,3,4,...)
-P      Set drive prefetch count
-Q      Get/set DMA tagged-queuing depth (if supported)
-r      Get/set readonly flag (DANGEROUS to set)
-R      Register an IDE interface (DANGEROUS)
-S      Set standby (spindown) timeout
-t      Perform device read timings
-T      Perform cache read timings
-u      Get/set unmaskirq flag (0/1)
-U      Un-register an IDE interface (DANGEROUS)
-v      Defaults; same as -mcudkrag for IDE drives
-V      Display program version and exit immediately
-w      Perform device reset (DANGEROUS)
-W      Set drive write-caching flag (0/1) (DANGEROUS)
-x      Tristate device for hotswap (0/1) (DANGEROUS)
-X      Set IDE xfer mode (DANGEROUS)
-y      Put IDE drive in standby mode
-Y      Put IDE drive to sleep
-Z      Disable Seagate auto-powersaving mode
-z      Re-read partition table

```

head

head [OPTIONS] [FILE]...

Print first 10 lines of each FILE to standard output. With more than one FILE, precede each with a header giving the file name. With no FILE, or when FILE is -, read standard input.

Options:

```

-n NUM  Print first NUM lines instead of first 10
-c NUM  Output the first NUM bytes
-q      Never output headers giving file names
-v      Always output headers giving file names

```

hexdump

hexdump [-bcCdefnosvxR] FILE...

Display file(s) or standard input in a user specified format

Options:

```

-b      One-byte octal display
-c      One-byte character display
-C      Canonical hex+ASCII, 16 bytes per line
-d      Two-byte decimal display
-e FORMAT STRING
-f FORMAT FILE
-n LENGTH  Interpret only LENGTH bytes of input
-o      Two-byte octal display
-s OFFSET  Skip OFFSET bytes
-v      Display all input data
-x      Two-byte hexadecimal display
-R      Reverse of 'hexdump -Cv'

```

hostid

hostid

Print out a unique 32-bit identifier for the machine

hostname

hostname [OPTIONS] [HOSTNAME | -F FILE]

Get or set hostname or DNS domain name

Options:

```
-s          Short
-i          Addresses for the hostname
-d          DNS domain name
-f          Fully qualified domain name
-F FILE    Use FILE's content as hostname
```

httpd

httpd [-ifv[v]] [-c CONFFILE] [-p [IP:]PORT] [-u USER[:GRP]] [-r REALM] [-h HOME] or httpd -d/-e/-m STRING

Listen for incoming HTTP requests

Options:

```
-i          Inetd mode
-f          Do not daemonize
-v[v]      Verbose
-c FILE    Configuration file (default httpd.conf)
-p [IP:]PORT Bind to ip:port (default *:80)
-u USER[:GRP] Set uid/gid after binding to port
-r REALM   Authentication Realm for Basic Authentication
-h HOME    Home directory (default .)
-m STRING  MD5 crypt STRING
-e STRING  HTML encode STRING
-d STRING  URL decode STRING
```

hwclock

hwclock [-r|--show] [-s|--hctosys] [-w|--systohc] [-l|--localtime] [-u|--utc] [-f FILE]

Query and set hardware clock (RTC)

Options:

```
-r          Show hardware clock time
-s          Set system time from hardware clock
-w          Set hardware clock to system time
-u          Hardware clock is in UTC
-l          Hardware clock is in local time
-f FILE    Use specified device (e.g. /dev/rtc2)
```

id

id [OPTIONS] [USER]

Print information about USER or the current user

Options:

```
-u          Print user ID
-g          Print group ID
-G          Print supplementary group IDs
-n          Print name instead of a number
-r          Print real user ID instead of effective ID
```

ifconfig

ifconfig [-a] interface [address]

Configure a network interface

Options:

```
[add ADDRESS[/PREFIXLEN]]
[del ADDRESS[/PREFIXLEN]]
[[-]broadcast [ADDRESS]] [[-]pointopoint [ADDRESS]]
[netmask ADDRESS] [dstaddr ADDRESS]
[outfill NN] [keepalive NN]
[hw ether|infiniband ADDRESS] [metric NN] [mtu NN]
[[-]trailers] [[-]arp] [[-]allmulti]
[multicast] [[-]promisc] [txqueuelen NN] [[-]dynamic]
[mem_start NN] [io_addr NN] [irq NN]
[up|down] ...
```

ifdown

ifdown [-ainmvf] ifaces...

Options:

```
-a      De/configure all interfaces automatically
-i FILE Use FILE for interface definitions
-n      Print out what would happen, but don't do it
        (note: doesn't disable mappings)
-m      Don't run any mappings
-v      Print out what would happen before doing it
-f      Force de/configuration
```

ifenslave

ifenslave [-cdf] master-iface <slave-iface...>

Configure network interfaces for parallel routing

Options:

```
-c, --change-active      Change active slave
-d, --detach             Remove slave interface from bonding device
-f, --force              Force, even if interface is not Ethernet
```

ifplugd

ifplugd [OPTIONS]

Network interface plug detection daemon

Options:

```
-n      Do not daemonize
-s      Do not log to syslog
-i IFACE Interface
-f/-F   Treat link detection error as link down/link up
        (otherwise exit on error)
-a      Do not up interface automatically
-M      Monitor creation/destruction of interface
        (otherwise it must exist)
-r PROG Script to run
-x ARG  Extra argument for script
-I      Don't exit on nonzero exit code from script
-p      Don't run script on daemon startup
-q      Don't run script on daemon quit
-l      Run script on startup even if no cable is detected
-t SECS Poll time in seconds
-u SECS Delay before running script after link up
-d SECS Delay after link down
-m MODE API mode (mii, priv, ethtool, wlan, auto)
-k      Kill running daemon
```

ifup

ifup [-ainmvf] ifaces...

Options:

```
-a      De/configure all interfaces automatically
-i FILE Use FILE for interface definitions
-n      Print out what would happen, but don't do it
        (note: doesn't disable mappings)
-m      Don't run any mappings
-v      Print out what would happen before doing it
-f      Force de/configuration
```

inetd

```
inetd [-fe] [-q N] [-R N] [CONFFILE]
```

Listen for network connections and launch programs

Options:

```
-f      Run in foreground
-e      Log to stderr
-q N    Socket listen queue (default: 128)
-R N    Pause services after N connects/min
        (default: 0 - disabled)
```

init

```
init
```

Init is the parent of all processes

inotifyd

```
inotifyd PROG FILE1[:MASK] ...
```

Run PROG on filesystem changes. When a filesystem event matching MASK occurs on FILEn, PROG <actual_event(s)> <FILEn> [<subfile_name>] is run. Events:

```
a      File is accessed
c      File is modified
e      Metadata changed
w      Writable file is closed
0      Unwritable file is closed
r      File is opened
D      File is deleted
M      File is moved
u      Backing fs is unmounted
o      Event queue overflowed
x      File can't be watched anymore
```

If watching a directory:

```
m      Subfile is moved into dir
y      Subfile is moved out of dir
n      Subfile is created
d      Subfile is deleted
```

inotifyd waits for PROG to exit. When x event happens for all FILEs, inotifyd exits

insmod

```
insmod [OPTIONS] MODULE [symbol=value]...
```

Load the specified kernel modules into the kernel

Options:

```
-f      Force module to load into the wrong kernel version
-k      Make module autoclean-able
-v      Verbose
-q      Quiet
-L      Lock to prevent simultaneous loads of a module
-m      Output load map to stdout
```

```
-o NAME Set internal module name to NAME
-x      Do not export externs
```

install

install [-cdDsp] [-o USER] [-g GRP] [-m MODE] [source] dest|directory

Copy files and set attributes

Options:

```
-c      Just copy (default)
-d      Create directories
-D      Create leading target directories
-s      Strip symbol table
-p      Preserve date
-o USER Set ownership
-g GRP  Set group ownership
-m MODE Set permissions
```

ionice

ionice [-c 1-3] [-n 0-7] [-p PID] [PROG]

Change I/O scheduling class and priority

Options:

```
-c      Class. 1:realtime 2:best-effort 3:idle
-n      Priority
```

ip

ip [OPTIONS] {address | route | link | tunnel | rule} {COMMAND}

ip [OPTIONS] OBJECT {COMMAND} where OBJECT := {address | route | link | tunnel | rule} OPTIONS := { -f[amily]
{ inet | inet6 | link } | -o[neline] }

ipaddr

ipaddr { {add|del} IFADDR dev STRING | {show|flush}
[dev STRING] [to PREFIX] }

ipaddr {add|delete} IFADDR dev STRING ipaddr {show|flush} [dev STRING] [scope SCOPE-ID] [to PREFIX] [label
PATTERN] IFADDR := PREFIX | ADDR peer PREFIX [broadcast ADDR] [anycast ADDR] [label STRING] [scope
SCOPE-ID] SCOPE-ID := [host | link | global | NUMBER]

ipcalc

ipcalc [OPTIONS] ADDRESS[/[NETMASK] [NETMASK]

Calculate IP network settings from a IP address

Options:

```
-b,--broadcast Display calculated broadcast address
-n,--network   Display calculated network address
-m,--netmask   Display default netmask for IP
-p,--prefix    Display the prefix for IP/NETMASK
-h,--hostname  Display first resolved host name
-s,--silent    Don't ever display error messages
```

ipcrm

ipcrm [-MQS key] [-mq s id]

Upper-case options MQS remove an object by shmkey value. Lower-case options remove an object by shmid value.

Options:


```

-mM      Remove memory segment after last detach
-qQ      Remove message queue
-sS      Remove semaphore

```

ipcs

```
ipcs [[-smq] -i shmid] | [[-asmq] [-tcplu]]
```

```

-i          Show specific resource
Resource specification:

```

```

-m          Shared memory segments
-q          Message queues
-s          Semaphore arrays
-a          All (default)

```

```
Output format:
```

```

-t          Time
-c          Creator
-p          Pid
-l          Limits
-u          Summary

```

iplink

```
iplink { set DEVICE { up | down | arp { on | off } | show [DEVICE] }
```

```
iplink set DEVICE { up | down | arp | multicast { on | off } | dynamic { on | off } | mtu MTU } iplink show [DEVICE]
```

iproute

```
iproute { list | flush | { add | del | change | append |
                                replace | monitor } ROUTE }
```

```
iproute { list | flush } SELECTOR iproute get ADDRESS [from ADDRESS iif STRING] [oif STRING] [tos TOS] iproute
{ add | del | change | append | replace | monitor } ROUTE SELECTOR := [root PREFIX] [match PREFIX] [proto
RTPROTO] ROUTE := [TYPE] PREFIX [tos TOS] [proto RTPROTO] [metric METRIC]
```

iprule

```
iprule {[list | add | del] RULE}
```

```
iprule [list | add | del] SELECTOR ACTION
```

```

SELECTOR := [from PREFIX] [to PREFIX] [tos TOS] [fwmark FWMARK]
[dev STRING] [pref NUMBER]
ACTION := [table TABLE_ID] [nat ADDRESS]
[prohibit | reject | unreachable]
[realms [SRCREALM/]DSTREALM]
TABLE_ID := [local | main | default | NUMBER]

```

iptunnel

```
iptunnel { add | change | del | show } [NAME]
[mode { ipip | gre | sit }]
[remote ADDR] [local ADDR] [ttl TTL]
```

```
iptunnel { add | change | del | show } [NAME]
[mode { ipip | gre | sit }] [remote ADDR] [local ADDR]
[[i|o]seq] [[i|o]key KEY] [[i|o]csum]
[ttl TTL] [tos TOS] [[no]pmtudisc] [dev PHYS_DEV]
```

kbd_mode

```
kbd_mode [-a|k|s|u] [-C TTY]
```

Report or set the keyboard mode

Options:

```
-a      Default (ASCII)
-k      Medium-raw (keyboard)
-s      Raw (scancode)
-u      Unicode (utf-8)
-C TTY  Affect TTY instead of /dev/tty
```

kill

kill [-l] [-SIG] PID...

Send a signal (default: TERM) to given PIDs

Options:

```
-l      List all signal names and numbers
```

killall

killall [-l] [-q] [-SIG] process-name...

Send a signal (default: TERM) to given processes

Options:

```
-l      List all signal names and numbers
-q      Do not complain if no processes were killed
```

killall5

killall5 [-l] [-SIG] [-o PID]...

Send a signal (default: TERM) to all processes outside current session

Options:

```
-l      List all signal names and numbers
-o PID  Do not signal this PID
```

klogd

klogd [-c N] [-n]

Kernel logger

Options:

```
-c N    Only messages with level < N are printed to console
-n      Run in foreground
```

last

last [-HW] [-f file]

Show listing of the last users that logged into the system

Options:

```
-W      Display with no host column truncation
-f file Read from file instead of /var/log/wtmp
```

length

length STRING

Print STRING's length

less

less [-EMNmh~I?] [FILE]...

View a file or list of files. The position within files can be changed, and files can be manipulated in various ways.

Options:

```
-E      Quit once the end of a file is reached
-M, -m  Display status line with line numbers
        and percentage through the file
-N      Prefix line number to each line
-I      Ignore case in all searches
-~      Suppress ~s displayed past the end of the file
```

ln

ln [OPTIONS] TARGET... LINK|DIRECTORY

Create a link LINK or DIRECTORY/TARGET to the specified TARGET(s)

Options:

```
-s      Make symlinks instead of hardlinks
-f      Remove existing destination files
-n      Don't dereference symlinks - treat like normal file
-b      Make a backup of the target (if exists) before link operation
-S suf  Use suffix instead of ~ when making backup files
```

loadfont

loadfont < font

Load a console font from standard input

loadkmap

loadkmap < keymap

Load a binary keyboard translation table from standard input

logger

logger [OPTIONS] [MESSAGE]

Write MESSAGE to the system log. If MESSAGE is omitted, log stdin.

Options:

```
-s      Log to stderr as well as the system log
-t TAG  Log using the specified tag (defaults to user name)
-p PRIO Priority (numeric or facility.level pair)
```

login

login [-p] [-h HOST] [[-f] USER]

Begin a new session on the system

Options:

```
-f      Do not authenticate (user already authenticated)
-h      Name of the remote host
-p      Preserve environment
```

logname

logname

Print the name of the current user

logread

logread [OPTIONS]

Show messages in syslogd's circular buffer

Options:

-f Output data as log grows

losetup

losetup [-o OFS] LOOPDEV FILE - associate loop devices

losetup -d LOOPDEV - disassociate

losetup [-f] - show

Options:

-o OFS Start OFS bytes into FILE
-f Show first free loop device

lpd

lpd SPOOLDIR [HELPER [ARGS]]

SPOOLDIR must contain (symlinks to) device nodes or directories with names matching print queue names. In the first case, jobs are sent directly to the device. Otherwise each job is stored in queue directory and HELPER program is called. Name of file to print is passed in \$DATAFILE variable. Example:

```
tcpsvd -E 0 515 softlimit -m 999999 lpd /var/spool ./print
```

lpq

lpq [-P queue[@host[:port]]] [-U USERNAME] [-d JOBID...] [-fs]

Options:

-P lp service to connect to (else uses \$PRINTER)
-d Delete jobs
-f Force any waiting job to be printed
-s Short display

lpr

lpr -P queue[@host[:port]] -U USERNAME -J TITLE -Vmh [FILE]...

Options:

-P lp service to connect to (else uses \$PRINTER)
-m Send mail on completion
-h Print banner page too
-V Verbose

ls

ls [-lAacCdeFilnpLRrSsTtuvwxXhk] [FILE]...

List directory contents

Options:

-l List in a single column
-A Don't list . and ..
-a Don't hide entries starting with .
-C List by columns
-c With -l: sort by ctime
--color[={always,never,auto}] Control coloring
-d List directory entries instead of contents
-e List full date and time

```

-F      Append indicator (one of */=@|) to entries
-i      List inode numbers
-l      Long listing format
-n      List numeric UIDs and GIDs instead of names
-p      Append indicator (one of */=@|) to entries
-L      List entries pointed to by symlinks
-R      List subdirectories recursively
-r      Sort in reverse order
-S      Sort by file size
-s      List the size of each file, in blocks
-T NUM  Assume tabstop every NUM columns
-t      With -l: sort by modification time
-u      With -l: sort by access time
-v      Sort by version
-w NUM  Assume the terminal is NUM columns wide
-x      List by lines
-X      Sort by extension
-h      List sizes in human readable format (1K 243M 2G)

```

lsattr

lsattr [-Radlv] [FILE]...

List file attributes on an ext2 fs

Options:

```

-R      Recursively list subdirectories
-a      Do not hide entries starting with .
-d      List directory entries instead of contents
-l      List long flag names
-v      List the file's version/generation number

```

lsmod

lsmod

List the currently loaded kernel modules

lzmacat

lzmacat FILE

Uncompress to stdout

lzop

lzop [-cfvd123456789CF] [FILE]...

```

-c      Write to standard output
-f      Force
-v      Verbose
-d      Decompress
-F      Don't store or verify checksum
-C      Also write checksum of compressed block
-1..9   Compression level

```

lzopcat

lzopcat [-vCF] [FILE]...

```

-v      Verbose
-F      Don't store or verify checksum

```

makemime

makemime [OPTIONS] [FILE]...

Create multipart MIME-encoded message from FILES

Options:

```
-o FILE Output. Default: stdout
-a HDR  Add header. Examples:
        "From: user@host.org", "Date: `date -R`"
-c CT   Content type. Default: text/plain
-C CS   Charset. Default: us-ascii
```

Other options are silently ignored

man

man [OPTIONS] [MANPAGE]...

Format and display manual page

Options:

```
-a      Display all pages
-w      Show page locations
```

md5sum

md5sum [OPTIONS] [FILE]... or: md5sum [OPTIONS] -c [FILE]

Print or check MD5 checksums

Options:

```
-c      Check sums against given list
-s      Don't output anything, status code shows success
-w      Warn about improperly formatted checksum lines
```

mdev

mdev [-s]

```
-s      Scan /sys and populate /dev during system boot
```

It can be run by kernel as a hotplug helper. To activate it: `echo /bin/mdev >/proc/sys/kernel/hotplug` It uses `/etc/mdev.conf` with lines `[-]DEVNAME UID:GID PERM [>|=PATH] [@|$]*PROG`

mesg

mesg [y|n]

Control write access to your terminal

```
yAllow write access to your terminal
nDisallow write access to your terminal
```

microcom

microcom [-d DELAY] [-t TIMEOUT] [-s SPEED] [-X] TTY

Copy bytes for stdin to TTY and from TTY to stdout

Options:

```
-d      Wait up to DELAY ms for TTY output before sending every
        next byte to it
-t      Exit if both stdin and TTY are silent for TIMEOUT ms
-s      Set serial line to SPEED
-X      Disable special meaning of NUL and Ctrl-X from stdin
```

mkdir

mkdir [OPTIONS] DIRECTORY...

Create DIRECTORY

Options:

```
-m      Mode
-p      No error if exists; make parent directories as needed
```

mkdosfs

mkdosfs [-v] [-n LABEL] FILE_OR_DEVICE [SIZE_IN_KB]

Make a FAT32 filesystem

Options:

```
-v      Verbose
-n LBL  Volume label
```

mkfifo

mkfifo [OPTIONS] name

Create named pipe (identical to 'mknod name p')

Options:

```
-m MODE Mode (default a=rw)
```

mkfs.minix

mkfs.minix [-c | -l filename] [-nXX] [-iXX] /dev/name [blocks]

Make a MINIX filesystem

Options:

```
-c      Check device for bad blocks
-n [14|30] Maximum length of filenames
-i INODES Number of inodes for the filesystem
-l FILENAME Read bad blocks list from FILENAME
-v      Make version 2 filesystem
```

mkfs.vfat

mkfs.vfat [-v] [-n LABEL] FILE_OR_DEVICE [SIZE_IN_KB]

Make a FAT32 filesystem

Options:

```
-v      Verbose
-n LBL  Volume label
```

mknod

mknod [OPTIONS] NAME TYPE MAJOR MINOR

Create a special file (block, character, or pipe)

Options:

```
-m      Create the special file using the specified mode (default a=rw)
TYPES include:
b:      Make a block device
c or u: Make a character device
p:      Make a named pipe (MAJOR and MINOR are ignored)
```

mkpasswd

mkpasswd [OPTIONS] [PASSWORD] [SALT]

Crypt the PASSWORD using `crypt(3)`

Options:

```
-P,--password-fd=NUM    Read password from fd NUM
-m,--method=TYPE        Encryption method TYPE
-S,--salt=SALT
```

mkswap

`mkswap DEVICE`

Prepare block device to be used as swap partition

mktemp

`mktemp [-dt] [-p DIR] [TEMPLATE]`

Create a temporary file with name based on TEMPLATE and print its name. TEMPLATE must end with XXXXXX (e.g. `[/dir/]nameXXXXXX`).

Options:

```
-d      Make a directory instead of a file
-t      Generate a path rooted in temporary directory
-p DIR  Use DIR as a temporary directory (implies -t)
```

For -t or -p, directory is chosen as follows: \$TMPDIR if set, else -p DIR, else /tmp

modprobe

`modprobe [-knqrsvb] MODULE [symbol=value...]`

Options:

```
-k      Make module autoclean-able
-n      Dry run
-q      Quiet
-r      Remove module (stacks) or do autoclean
-s      Report via syslog instead of stderr
-v      Verbose
-b      Apply blacklist to module names too
```

more

`more [FILE]...`

View FILE or standard input one screenful at a time

mount

`mount [flags] DEVICE NODE [-o OPT,OPT]`

Mount a filesystem. Filesystem autodetection requires `/proc`.

Options:

```
-a      Mount all filesystems in fstab
-f      Dry run
-i      Don't run mount helper
-r      Read-only mount
-w      Read-write mount (default)
-t FSTYPE  Filesystem type
-O OPT    Mount only filesystems with option OPT (-a only)

-o OPT:
loop      Ignored (loop devices are autodetected)
[a]sync   Writes are [a]synchronous
[no]atime Disable/enable updates to inode access times
[no]diratime Disable/enable atime updates to directories
```


[no]relatime	Disable/enable atime updates relative to modification time
[no]dev	(Dis)allow use of special device files
[no]exec	(Dis)allow use of executable files
[no]suid	(Dis)allow set-user-id-root programs
[r]shared	Convert [recursively] to a shared subtree
[r]slave	Convert [recursively] to a slave subtree
[r]private	Convert [recursively] to a private subtree
[un]bindable	Make mount point [un]able to be bind mounted
bind	Bind a directory to an additional location
move	Relocate an existing mount point
remount	Remount a mounted filesystem, changing its flags
ro/rw	Read-only/read-write mount

There are EVEN MORE flags that are specific to each filesystem You'll have to see the written documentation for those filesystems

mountpoint

mountpoint [-q] <[-dn] DIR | -x DEVICE>

Check if the directory is a mountpoint

Options:

-q	Quiet
-d	Print major/minor device number of the filesystem
-n	Print device name of the filesystem
-x	Print major/minor device number of the blockdevice

mt

mt [-f device] opcode value

Control magnetic tape drive operation

Available Opcodes:

bsf bsfm bsr bss datacompression drvbuffer eof eom erase fsf fsfm fsr fss load lock mkpart nop offline ras1 ras2 ras3 reset
retension rewind rewoffline seek setblk setdensity setpart tell unload unlock weof wset

mv

mv [OPTIONS] SOURCE DEST or: mv [OPTIONS] SOURCE... DIRECTORY

Rename SOURCE to DEST, or move SOURCE(s) to DIRECTORY

Options:

-f	Don't prompt before overwriting
-i	Interactive, prompt before overwrite

nameif

nameif [-s] [-c FILE] [{IFNAME MACADDR}]

Rename network interface while it in the down state

Options:

-c FILE	Use configuration file (default: /etc/mactab)
-s	Use syslog (LOCAL0 facility)
IFNAME MACADDR	new_interface_name interface_mac_address

nc

nc [OPTIONS] HOST PORT - connect nc [OPTIONS] -l -p PORT [HOST] [PORT] - listen

Options:

```

-e PROG      Run PROG after connect (must be last)
-l           Listen mode, for inbound connects
-n           Don't do DNS resolution
-s ADDR      Local address
-p PORT      Local port
-u           UDP mode
-v           Verbose
-w SEC       Timeout for connects and final net reads
-i SEC       Delay interval for lines sent
-o FILE      Hex dump traffic
-z           Zero-I/O mode (scanning)

```

netstat

netstat [-laentuwrxWp]

Display networking information

Options:

```

-l           Display listening server sockets
-a           Display all sockets (default: connected)
-e           Display other/more information
-n           Don't resolve names
-t           Tcp sockets
-u           Udp sockets
-w           Raw sockets
-x           Unix sockets
-r           Display routing table
-W           Display with no column truncation
-p           Display PID/Program name for sockets

```

nice

nice [-n ADJUST] [PROG [ARGS]]

Run PROG with modified scheduling priority

Options:

```

-n ADJUST    Adjust priority by ADJUST

```

nmeter

nmeter format_string

Monitor system in real time

Format specifiers:

```

%Nc or %[cN]  Monitor CPU. N - bar size, default 10
               (displays: S:system U:user N:niced D:iowait I:irq i:softirq)
%[niface]     Monitor network interface 'iface'
%m            Monitor allocated memory
 %[mf]         Monitor free memory
 %[mt]         Monitor total memory
 %s            Monitor allocated swap
 %f            Monitor number of used file descriptors
 %Ni           Monitor total/specific IRQ rate
 %x            Monitor context switch rate
 %p            Monitor forks
 %[pn]         Monitor # of processes
 %b            Monitor block io
 %Nt           Show time (with N decimal points)
 %Nd           Milliseconds between updates (default:1000)
 %r            Print <cr> instead of <lf> at EOL

```

nohup

nohup PROG [ARGS]

Run PROG immune to hangups, with output to a non-tty

nslookup

nslookup [HOST] [SERVER]

Query the nameserver for the IP address of the given HOST optionally using a specified DNS server

od

od [-aBbcDdeFfHhLiLlOovXx] [-t TYPE] [FILE]

Write an unambiguous representation, octal bytes by default, of FILE to standard output. With no FILE or when FILE is -, read standard input.

openvt

openvt [-c N] [-sw] [PROG [ARGS]]

Start PROG on a new virtual terminal

Options:

-c N	Use specified VT
-s	Switch to the VT
-w	Wait for PROG to exit

passwd

passwd [OPTIONS] [USER]

Change USER's password. If no USER is specified, changes the password for the current user.

Options:

-a	Algorithm to use for password (choices: des, md5)
-d	Delete password for the account
-l	Lock (disable) account
-u	Unlock (re-enable) account

patch

patch [-p NUM] [-i DIFF] [-R] [-N]

-p NUM	Strip NUM leading components from file names
-i DIFF	Read DIFF instead of stdin
-R	Reverse patch
-N	Ignore already applied patches

pgrep

pgrep [-flnovx] [-s SID|-P PPID]PATTERN]

Display process(es) selected by regex PATTERN

Options:

-l	Show command name too
-f	Match against entire command line
-n	Show the newest process only
-o	Show the oldest process only
-v	Negate the match
-x	Match whole name (not substring)
-s	Match session ID (0 for current)
-P	Match parent process ID

pidof

pidof [OPTIONS] [NAME...]

List PIDs of all processes with names that match NAMES

Options:

```
-s          Show only one PID
-o PID      Omit given pid
            Use %PPID to omit pid of pidof's parent
```

ping

ping [OPTIONS] HOST

Send ICMP ECHO_REQUEST packets to network hosts

Options:

```
-4, -6      Force IPv4 or IPv6 hostname resolution
-c CNT      Send only CNT pings
-s SIZE     Send SIZE data bytes in packets (default:56)
-I IFACE/IP Use interface or IP address as source
-W SEC      Seconds to wait for the first response (default:10)
            (after all -c CNT packets are sent)
-w SEC      Seconds until ping exits (default:infinite)
            (can exit earlier with -c CNT)
-q          Quiet, only displays output at start
            and when finished
```

ping6

ping6 [OPTIONS] HOST

Send ICMP ECHO_REQUEST packets to network hosts

Options:

```
-c CNT      Send only CNT pings
-s SIZE     Send SIZE data bytes in packets (default:56)
-I IFACE/IP Use interface or IP address as source
-q          Quiet, only displays output at start
            and when finished
```

pivot_root

pivot_root NEW_ROOT PUT_OLD

Move the current root file system to PUT_OLD and make NEW_ROOT the new root file system

pkill

pkill [-l|-SIGNAL] [-fnovx] [-s SID|-P PPID|PATTERN]

Send a signal to process(es) selected by regex PATTERN

Options:

```
-l          List all signals
-f          Match against entire command line
-n          Signal the newest process only
-o          Signal the oldest process only
-v          Negate the match
-x          Match whole name (not substring)
-s          Match session ID (0 for current)
-P          Match parent process ID
```

popmaildir

popmaildir [OPTIONS] Maildir [connection-helper ...]

Fetch content of remote mailbox to local maildir

Options:

```

-b          Binary mode. Ignored
-d          Debug. Ignored
-m          Show used memory. Ignored
-V          Show version. Ignored
-c          Use tcpclient. Ignored
-a          Use APOP protocol. Implied. If server supports APOP -> use it
-s          Skip authorization
-T          Get messages with TOP instead with RETR
-k          Keep retrieved messages on the server
-t timeout  Network timeout
-F "program arg1 arg2 ..."  Filter by program. May be multiple
-M "program arg1 arg2 ..."  Deliver by program
-R size     Remove old messages on the server >= size (in bytes). Ignored
-Z N1-N2    Remove messages from N1 to N2 (dangerous). Ignored
-L size     Do not retrieve new messages >= size (in bytes). Ignored
-H lines    Type specified number of lines of a message. Ignored

```

printenv

```
printenv [VARIABLE...]
```

Print all or part of environment. If no environment VARIABLE specified, print them all.

printf

```
printf FORMAT [ARGUMENT...]
```

Format and print ARGUMENT(s) according to FORMAT, where FORMAT controls the output exactly as in C printf

ps

```
ps
```

Report process status

Options:

```

-o col1,col2=header  Select columns for display
-T                  Show threads

```

pscan

```
pscan [-cb] [-p MIN_PORT] [-P MAX_PORT] [-t TIMEOUT] [-T MIN_RTT] HOST
```

Scan a host, print all open ports

Options:

```

-c          Show closed ports too
-b          Show blocked ports too
-p          Scan from this port (default 1)
-P          Scan up to this port (default 1024)
-t          Timeout (default 5000 ms)
-T          Minimum rtt (default 5 ms, increase for congested hosts)

```

pwd

```
pwd
```

Print the full filename of the current working directory

raidautorun

```
raidautorun DEVICE
```

Tell the kernel to automatically search and start RAID arrays

rdate

rdate [-sp] HOST

Get and possibly set the system date and time from a remote HOST

Options:

```
-s      Set the system date and time (default)
-p      Print the date and time
```

rdev

rdev

Print the device node associated with the filesystem mounted at '/'

readlink

readlink [-fnv] FILE

Display the value of a symlink

Options:

```
-f      Canonicalize by following all symlinks
-n      Don't add newline
-v      Verbose
```

readprofile

readprofile [OPTIONS]

Options:

```
-m mapfile      (Default: /boot/System.map)
-p profile      (Default: /proc/profile)
-M mult         Set the profiling multiplier to mult
-i             Print only info about the sampling step
-v             Verbose
-a             Print all symbols, even if count is 0
-b             Print individual histogram-bin counts
-s             Print individual counters within functions
-r             Reset all the counters (root only)
-n             Disable byte order auto-detection
```

realpath

realpath pathname...

Return the absolute pathnames of given argument

reformime

reformime [OPTIONS] [FILE]...

Parse MIME-encoded message

Options:

```
-x prefix      Extract content of MIME sections to files
-X prog [args] Filter content of MIME sections through prog.
                Must be the last option
```

Other options are silently ignored.

renice

renice {{-n INCREMENT} | PRIORITY} [[-p | -g | -u] ID...]

Change priority of running processes

Options:

```
-n      Adjust current nice value (smaller is faster)
-p      Process id(s) (default)
-g      Process group id(s)
-u      Process user name(s) and/or id(s)
```

reset

reset

Reset the screen

resize

resize

Resize the screen

rm

rm [OPTIONS] FILE...

Remove (unlink) the FILE(s). Use '--' to indicate that all following arguments are non-options.

Options:

```
-i      Always prompt before removing
-f      Never prompt
-r,-R   Remove directories recursively
```

rmdir

rmdir [OPTIONS] DIRECTORY...

Remove the DIRECTORY, if it is empty

Options:

```
-p|--parents    Include parents
--ignore-fail-on-non-empty
```

rmmod

rmmod [OPTIONS] [MODULE]...

Unload the specified kernel modules from the kernel

Options:

```
-w      Wait until the module is no longer used
-f      Force unloading
-a      Remove all unused modules (recursively)
```

route

route [{add|del|delete}]

Edit kernel routing tables

Options:

```
-n      Don't resolve names
-e      Display other/more information
-A inet{6}    Select address family
```

rpm

```
rpm -i -q[ildc]p package.rpm
```

Manipulate RPM packages

Options:

```
-i      Install package
-q      Query package
-p      Query uninstalled package
-i      Show information
-l      List contents
-d      List documents
-c      List config files
```

rpm2cpio

```
rpm2cpio package.rpm
```

Output a cpio archive of the rpm file

rtcwake

```
rtcwake [-a | -l | -u] [-d DEV] [-m MODE] [-s SEC | -t TIME]
```

Enter a system sleep state until specified wakeup time

```
-a,--auto      Read clock mode from adjtime
-l,--local     Clock is set to local time
-u,--utc       Clock is set to UTC time
-d,--device=DEV Specify the RTC device
-m,--mode=MODE Set the sleep state (default: standby)
-s,--seconds=SEC Set the timeout in SEC seconds from now
-t,--time=TIME Set the timeout to TIME seconds from epoch
```

run-parts

```
run-parts [-t] [-l] [-a ARG] [-u MASK] DIRECTORY
```

Run a bunch of scripts in a directory

Options:

```
-t      Print what would be run, but don't actually run anything
-a ARG  Pass ARG as argument for every program
-u MASK Set the umask to MASK before running every program
-l      Print names of all matching files even if they are not executable
```

runlevel

```
runlevel [utmp]
```

Find the current and previous system runlevel

If no utmp file exists or if no runlevel record can be found, print "unknown"

runsv

```
runsv dir
```

Start and monitor a service and optionally an appendant log service

runsvdir

```
runsvdir [-P] [-s SCRIPT] dir
```

Start a runsv process for each subdirectory. If it exits, restart it.

```
-P      Put each runsv in a new session
-s SCRIPT Run SCRIPT <signo> after signal is processed
```


rx

rx FILE

Receive a file using the xmodem protocol

script

script [-afqt] [-c PROG] [OUTFILE]

Options:

```
-a      Append output
-c      Run PROG, not shell
-f      Flush output after each write
-q      Quiet
-t      Send timing to stderr
```

scriptreplay

scriptreplay timingfile [typescript [divisor]]

Play back typescripts, using timing information

sed

sed [-efnr] SED_CMD [FILE]...

Options:

```
-e CMD  Add CMD to sed commands to be executed
-f FILE Add FILE contents to sed commands to be executed
-i      Edit files in-place
-n      Suppress automatic printing of pattern space
-r      Use extended regex syntax
```

If no -e or -f is given, the first non-option argument is taken as the sed command to interpret. All remaining arguments are names of input files; if no input files are specified, then the standard input is read. Source files will not be modified unless -i option is given.

sendmail

sendmail [OPTIONS] [RECIPIENT_EMAIL]...

Read email from stdin and send it

Standard options:

```
-t      Read additional recipients from message body
-f sender  Sender (required)
-o options Various options. -oi implied, others are ignored
```

Busybox specific options:

```
-w seconds  Network timeout
-H 'PROG ARGS' Run connection helper
Examples:
-H 'exec openssl s_client -quiet -tls1 -starttls smtp
    -connect smtp.gmail.com:25' <email.txt
    [4<username_and_passwd.txt | -au<username> -ap<password>]
-H 'exec openssl s_client -quiet -tls1
    -connect smtp.gmail.com:465' <email.txt
    [4<username_and_passwd.txt | -au<username> -ap<password>]
-S server[:port] Server
-au<username>  Username for AUTH LOGIN
-ap<password> Password for AUTH LOGIN
-am<method>   Authentication method. Ignored. LOGIN is implied
```

Other options are silently ignored; -oi -t is implied Use makemime applet to create message with attachments

seq

seq [-w] [-s SEP] [FIRST [INC]] LAST

Print numbers from FIRST to LAST, in steps of INC. FIRST, INC default to 1

Options:

```
-w      Pad to last with leading zeros
-s SEP  String separator
```

setarch

setarch personality program [args...]

Personality may be:

```
linux32      Set 32bit uname emulation
linux64      Set 64bit uname emulation
```

setconsole

setconsole [-r|--reset] [DEVICE]

Redirect system console output to DEVICE (default: /dev/tty)

Options:

```
-r      Reset output to /dev/console
```

setfont

setfont FONT [-m MAPFILE] [-C TTY]

Load a console font

Options:

```
-m MAPFILE  Load console screen map
-C TTY      Affect TTY instead of /dev/tty
```

setkeycodes

setkeycodes SCANCODE KEYCODE...

Set entries into the kernel's scancode-to-keycode map, allowing unusual keyboards to generate usable keycodes.

SCANCODE may be either xx or e0xx (hexadecimal), and KEYCODE is given in decimal

setlogcons

setlogcons N

Redirect the kernel output to console N (0 for current)

setsid

setsid PROG [ARG...]

Run PROG in a new session. PROG will have no controlling terminal and will not be affected by keyboard signals (Ctrl-C etc). See [setsid\(2\)](#) for details.

setuidgid

setuidgid account prog args

Set uid and gid to account's uid and gid, removing all supplementary groups and run PROG

sha1sum

sha1sum [OPTIONS] [FILE]... or: sha1sum [OPTIONS] -c [FILE]

Print or check SHA1 checksums

Options:

```
-c      Check sums against given list
-s      Don't output anything, status code shows success
-w      Warn about improperly formatted checksum lines
```

sha256sum

sha256sum [OPTIONS] [FILE]... or: sha256sum [OPTIONS] -c [FILE]

Print or check SHA256 checksums

Options:

```
-c      Check sums against given list
-s      Don't output anything, status code shows success
-w      Warn about improperly formatted checksum lines
```

sha512sum

sha512sum [OPTIONS] [FILE]... or: sha512sum [OPTIONS] -c [FILE]

Print or check SHA512 checksums

Options:

```
-c      Check sums against given list
-s      Don't output anything, status code shows success
-w      Warn about improperly formatted checksum lines
```

showkey

showkey [-a | -k | -s]

Show keys pressed

Options:

```
-a      Display decimal/octal/hex values of the keys
-k      Display interpreted keycodes (default)
-s      Display raw scan-codes
```

slattach

slattach [-cehmLF] [-s SPEED] [-p PROTOCOL] DEVICE

Attach network interface(s) to serial line(s)

Options:

```
-p PROT Set protocol (slip, cslip, slip6, clisp6 or adaptive)
-s SPD  Set line speed
-e      Exit after initializing device
-h      Exit when the carrier is lost
-c PROG Run PROG when the line is hung up
-m      Do NOT initialize the line in raw 8 bits mode
-L      Enable 3-wire operation
-F      Disable RTS/CTS flow control
```

sleep

sleep [N]...

Pause for a time equal to the total of the args given, where each arg can have an optional suffix of (s)econds, (m)inutes, (h)ours, or (d)ays

softlimit

softlimit [-a BYTES] [-m BYTES] [-d BYTES] [-s BYTES] [-l BYTES]

[-f BYTES] [-c BYTES] [-r BYTES] [-o N] [-p N] [-t N]
PROG ARGS

Set soft resource limits, then run PROG

Options:

```
-a BYTES      Limit total size of all segments
-m BYTES      Same as -d BYTES -s BYTES -l BYTES -a BYTES
-d BYTES      Limit data segment
-s BYTES      Limit stack segment
-l BYTES      Limit locked memory size
-o N          Limit number of open files per process
-p N          Limit number of processes per uid
```

Options controlling file sizes:

```
-f BYTES      Limit output file sizes
-c BYTES      Limit core file size
```

Efficiency opts:

```
-r BYTES      Limit resident set size
-t N          Limit CPU time, process receives
              a SIGXCPU after N seconds
```

sort

sort [-nrugMcszbdftmSTokt] [-o FILE] [-k start[.offset][opts][.end[.offset][opts]] [-t CHAR] [FILE]...

Sort lines of text

Options:

```
-b           Ignore leading blanks
-c           Check whether input is sorted
-d           Dictionary order (blank or alphanumeric only)
-f           Ignore case
-g           General numerical sort
-i           Ignore unprintable characters
-k           Sort key
-M           Sort month
-n           Sort numbers
-o           Output to file
-k           Sort by key
-t CHAR      Key separator
-r           Reverse sort order
-s           Stable (don't sort ties alphabetically)
-u           Suppress duplicate lines
-z           Lines are terminated by NUL, not newline
-mST        Ignored for GNU compatibility
```

split

split [OPTIONS] [INPUT [PREFIX]]

Options:

```
-b n[k|m]    Split by bytes
-l n         Split by lines
-a n         Use n letters as suffix
```

start-stop-daemon

start-stop-daemon [OPTIONS] [-S|-K] ... [-- arguments...]

Search for matching processes, and then -K: stop all matching processes. -S: start a process unless a matching process is found.

Process matching:

```
-u,--user USERNAME|UID  Match only this user's processes
-n,--name NAME          Match processes with NAME
                        in comm field in /proc/PID/stat
-x,--exec EXECUTABLE    Match processes with this command
                        in /proc/PID/cmdline
-p,--pidfile FILE       Match a process with PID from the file
All specified conditions must match

-S only:
-x,--exec EXECUTABLE    Program to run
-a,--startas NAME       Zeroth argument
-b,--background         Background
-N,--nicelevel N        Change nice level
-c,--chuid USER[:[GRP]] Change to user/group
-m,--make-pidfile       Write PID to the pidfile specified by -p

-K only:
-s,--signal SIG         Signal to send
-t,--test               Match only, exit with 0 if a process is found

Other:
-o,--oknodo             Exit with status 0 if nothing is done
-v,--verbose            Verbose
-q,--quiet              Quiet
```

stat

stat [OPTIONS] FILE...

Display file (default) or filesystem status

Options:

```
-c fmt  Use the specified format
-f      Display filesystem status
-L      Dereference links
-t      Display info in terse form
```

Valid format sequences for files:

```
%a  Access rights in octal
%A  Access rights in human readable form
%b  Number of blocks allocated (see %B)
%B  The size in bytes of each block reported by %b
%d  Device number in decimal
%D  Device number in hex
%f  Raw mode in hex
%F  File type
%g  Group ID of owner
%G  Group name of owner
%h  Number of hard links
%i  Inode number
%n  File name
%N  Quoted file name with dereference if symlink
%o  I/O block size
%s  Total size, in bytes
%t  Major device type in hex
%T  Minor device type in hex
%u  User ID of owner
%U  User name of owner
%x  Time of last access
%X  Time of last access as seconds since Epoch
%y  Time of last modification
%Y  Time of last modification as seconds since Epoch
%z  Time of last change
%Z  Time of last change as seconds since Epoch
```

Valid format sequences for file systems:

```

%a      Free blocks available to non-superuser
%b      Total data blocks in file system
%c      Total file nodes in file system
%d      Free file nodes in file system
%f      Free blocks in file system
%i      File System ID in hex
%l      Maximum length of filenames
%n      File name
%s      Block size (for faster transfer)
%S      Fundamental block size (for block counts)
%t      Type in hex
%T      Type in human readable form

```

strings

strings [-afo] [-n LEN] [FILE]...

Display printable strings in a binary file

Options:

```

-a      Scan whole file (default)
-f      Precede strings with filenames
-n LEN  At least LEN characters form a string (default 4)
-o      Precede strings with decimal offsets

```

stty

stty [-a|g] [-F DEVICE] [SETTING]...

Without arguments, prints baud rate, line discipline, and deviations from stty sane

Options:

```

-F DEVICE  Open device instead of stdin
-a         Print all current settings in human-readable form
-g         Print in stty-readable form
[SETTING]  See manpage

```

su

su [OPTIONS] [-] [username]

Change user id or become root

Options:

```

-p, -m  Preserve environment
-c CMD  Command to pass to 'sh -c'
-s SH   Shell to use instead of default shell

```

sulogin

sulogin [OPTIONS] [TTY]

Single user login

Options:

```

-t N      Timeout

```

sum

sum [-rs] [FILE]...

Checksum and count the blocks in a file

Options:

```
-r      Use BSD sum algorithm (1K blocks)
-s      Use System V sum algorithm (512byte blocks)
```

sv

sv [-v] [-w sec] command service...

Control services monitored by runsv supervisor. Commands (only first character is enough):

status: query service status up: if service isn't running, start it. If service stops, restart it once: like 'up', but if service stops, don't restart it down: send TERM and CONT signals. If ./run exits, start ./finish if it exists. After it stops, do not restart service exit: send TERM and CONT signals to service and log service. If they exit, runsv exits too pause, cont, hup, alarm, interrupt, quit, 1, 2, term, kill: send STOP, CONT, HUP, ALRM, INT, QUIT, USR1, USR2, TERM, KILL signal to service

svlogd

svlogd [-ttv] [-r c] [-R abc] [-l len] [-b buflen] dir...

Continuously read log data from standard input, optionally filter log messages, and write the data to one or more automatically rotated logs

swapoff

swapoff [-a] [DEVICE]

Stop swapping on DEVICE

Options:

```
-a      Stop swapping on all swap devices
```

swapon

swapon [-a] [-p pri] [DEVICE]

Start swapping on DEVICE

Options:

```
-a      Start swapping on all swap devices
-p pri  Set swap device priority
```

switch_root

switch_root [-c /dev/console] NEW_ROOT NEW_INIT [ARGS]

Free initramfs and switch to another root fs:

chroot to NEW_ROOT, delete all in /, move NEW_ROOT to /, execute NEW_INIT. PID must be 1. NEW_ROOT must be a mountpoint.

Options:

```
-c DEV  Reopen stdio to DEV after switch
```

sync

sync

Write all buffered blocks to disk

sysctl

sysctl [OPTIONS] [VALUE]...

Configure kernel parameters at runtime

Options:

```
-n      Don't print key names
-e      Don't warn about unknown keys
-w      Change sysctl setting
-p FILE Load sysctl settings from FILE (default /etc/sysctl.conf)
-a      Display all values
-A      Display all values in table form
```

syslogd

syslogd [OPTIONS]

System logging utility. Note that this version of syslogd ignores /etc/syslog.conf.

Options:

```
-n      Run in foreground
-O FILE Log to given file (default:/var/log/messages)
-l n    Set local log level
-S      Smaller logging output
-s SIZE Max size (KB) before rotate (default:200KB, 0=off)
-b NUM  Number of rotated logs to keep (default:1, max=99, 0=purge)
-R HOST[:PORT] Log to IP or hostname on PORT (default PORT=514/UDP)
-L      Log locally and via network (default is network only if -R)
-D      Drop duplicates
-C[size(KiB)] Log to shared mem buffer (read it using logread)
```

tac

tac [FILE]...

Concatenate FILE(s) and print them in reverse

tail

tail [OPTIONS] [FILE]...

Print last 10 lines of each FILE to standard output. With more than one FILE, precede each with a header giving the file name. With no FILE, or when FILE is -, read standard input.

Options:

```
-c N[kbm] Output the last N bytes
-n N[kbm] Print last N lines instead of last 10
-f        Output data as the file grows
-q        Never output headers giving file names
-s SEC    Wait SEC seconds between reads with -f
-v        Always output headers giving file names
```

If the first character of N (bytes or lines) is a '+', output begins with the Nth item from the start of each file, otherwise, print the last N items in the file. N bytes may be suffixed by k (x1024), b (x512), or m (1024^2).

tar

tar [-czjXzxtvO] [-X FILE] [-f TARFILE] [-C DIR] [FILE(s)]...

Create, extract, or list files from a tar file

Options:

```
c      Create
x      Extract
t      List
Archive format selection:

z      Filter the archive through gzip
j      Filter the archive through bzip2
a      Filter the archive through lzma
```



```

    Z      Filter the archive through compress
File selection:

    f      Name of TARFILE or "-" for stdin
    O      Extract to stdout
exclude   File to exclude
    X      File with names to exclude
    C      Change to directory DIR before operation
    v      Verbose

```

taskset

```
taskset [-p] [MASK] [PID | PROG [ARGS]]
```

Set or get CPU affinity

Options:

```
-p      Operate on an existing PID
```

tcpsvd

```
tcpsvd [-hEv] [-c N] [-C N[:MSG]] [-b N] [-u USER] [-l NAME] IP PORT PROG
```

Create TCP socket, bind to IP:PORT and listen for incoming connection. Run PROG for each connection.

```

IP          IP to listen on. '0' = all
PORT        Port to listen on
PROG [ARGS] Program to run
-l NAME     Local hostname (else looks up local hostname in DNS)
-u USER[:GRP] Change to user/group after bind
-c N        Handle up to N connections simultaneously
-b N        Allow a backlog of approximately N TCP SYNs
-C N[:MSG]  Allow only up to N connections from the same IP
             New connections from this IP address are closed
             immediately. MSG is written to the peer before close
-h          Look up peer's hostname
-E          Do not set up environment variables
-v          Verbose

```

tee

```
tee [OPTIONS] [FILE]...
```

Copy standard input to each FILE, and also to standard output

Options:

```

-a      Append to the given FILEs, do not overwrite
-i      Ignore interrupt signals (SIGINT)

```

telnet

```
telnet [-a] [-l USER] HOST [PORT]
```

Connect to telnet server

Options:

```

-a      Automatic login with $USER variable
-l USER Automatic login as USER

```

telnetd

```
telnetd [OPTIONS]
```

Handle incoming telnet connections

Options:

```

-l LOGIN      Exec LOGIN on connect
-f ISSUE_FILE Display ISSUE_FILE instead of /etc/issue
-K           Close connection as soon as login exits
            (normally wait until all programs close slave pty)
-p PORT      Port to listen on
-b ADDR[:PORT] Address to bind to
-F           Run in foreground
-i           Run as inetd service
-w SEC       Run as inetd service in wait mode, linger time SEC
-S           Log to syslog (implied by -i or without -F and -w)

```

test

test EXPRESSION]

Check file types, compare values etc. Return a 0/1 exit code depending on logical value of EXPRESSION

tftp

tftp [OPTIONS] HOST [PORT]

Transfer a file from/to tftp server

Options:

```

-l FILE Local FILE
-r FILE Remote FILE
-g      Get file
-p      Put file
-b SIZE Transfer blocks of SIZE octets

```

tftpd

tftpd [-cr] [-u USER] [DIR]

Transfer a file on tftp client's request

tftpd should be used as an inetd service. tftpd's line for inetd.conf: 69 dgram udp nowait root tftpd tftpd /files/to/serve It also can be ran from udpsvd:

```
udpsvd -vE 0.0.0.0 69 tftpd /files/to/serve
```

Options:

```

-r      Prohibit upload
-c      Allow file creation via upload
-u      Access files as USER

```

time

time [OPTIONS] PROG [ARGS]

Run PROG. When it finishes, its resource usage is displayed.

Options:

```
-v      Verbose
```

timeout

timeout [-t SECS] [-s SIG] PROG [ARGS]

Runs PROG. Sends SIG to it if it is not gone in SECS seconds. Defaults: SECS: 10, SIG: TERM.

top

top [-b] [-nCOUNT] [-dSECONDS] [-m]

Provide a view of process activity in real time. Read the status of all processes from /proc each SECONDS and show the status for however many processes will fit on the screen.

touch

touch [-c] [-d DATE] FILE [FILE]...

Update the last-modified date on the given FILE[s]

Options:

```
-c      Do not create files
-d DT   Date/time to use
```

tr

tr [-cds] STRING1 [STRING2]

Translate, squeeze, and/or delete characters from standard input, writing to standard output

Options:

```
-c      Take complement of STRING1
-d      Delete input characters coded STRING1
-s      Squeeze multiple output characters of STRING2 into one character
```

traceroute

```
traceroute [-FIdnrv] [-f 1st_ttl] [-m max_ttl] [-p port#] [-q nqueries]
                                                    [-s src_addr] [-t tos] [-w wait] [-g gateway] [-i iface]
                                                    [-z pausesecs] HOST [data size]
```

Trace the route to HOST

Options:

```
-F      Set the don't fragment bit
-I      Use ICMP ECHO instead of UDP datagrams
-l      Display the ttl value of the returned packet
-d      Set SO_DEBUG options to socket
-n      Print hop addresses numerically rather than symbolically
-r      Bypass the normal routing tables and send directly to a host
-v      Verbose
-m max_ttl  Max time-to-live (max number of hops)
-p port#    Base UDP port number used in probes
            (default 33434)
-q nqueries  Number of probes per 'ttl' (default 3)
-s src_addr  IP address to use as the source address
-t tos      Type-of-service in probe packets (default 0)
-w wait     Time in seconds to wait for a response
            (default 3 sec)
-g         Loose source route gateway (8 max)
```

true

true

Return an exit code of TRUE (0)

tty

tty

Print file name of standard input's terminal

Options:

```
-s      Print nothing, only return exit status
```

ttysize

ttysize [w] [h]

Print dimension(s) of standard input's terminal, on error return 80x25

udhcp

udhcp [-Cfbnqtvo] [-c CID] [-V VCLS] [-H HOSTNAME] [-i
INTERFACE]

[-p pidfile] [-r IP] [-s script] [-O dhcp-
option]...

```
-V,--vendorclass=CLASSID      Vendor class identifier
-i,--interface=INTERFACE      Interface to use (default eth0)
-H,-h,--hostname=HOSTNAME     Client hostname
-c,--clientid=CLIENTID       Client identifier
-C,--clientid=none            Suppress default client identifier
-p,--pidfile=file              Create pidfile
-r,--request=IP                IP address to request
-s,--script=file               Run file at DHCP events (default /usr/share/udhcp/default.script)
-t,--retries=N                 Send up to N request packets
-T,--timeout=N                 Try to get a lease for N seconds (default 3)
-A,--tryagain=N                Wait N seconds (default 20) after failure
-O,--request-option=OPT       Request DHCP option OPT (cumulative)
-o,--no-default-options       Do not request any options (unless -O is also given)
-f,--foreground                Run in foreground
-b,--background                Background if lease is not immediately obtained
-S,--syslog                    Log to syslog too
-n,--now                       Exit with failure if lease is not immediately obtained
-q,--quit                      Quit after obtaining lease
-R,--release                   Release IP on quit
-a,--arping                    Use arping to validate offered address
```

udhcpd

udhcpd [-fS] [configfile]

DHCP server

```
-f      Run in foreground
-S      Log to syslog too
```

udpsvd

udpsvd [-hEv] [-c N] [-u USER] [-l NAME] IP PORT PROG

Create UDP socket, bind to IP:PORT and wait for incoming packets. Run PROG for each packet, redirecting all further packets with same peer ip:port to it.

```
IP          IP to listen on. '0' = all
PORT        Port to listen on
PROG [ARGS] Program to run
-l NAME     Local hostname (else looks up local hostname in DNS)
-u USER[:GRP] Change to user/group after bind
-c N        Handle up to N connections simultaneously
-h          Look up peer's hostname
-E          Do not set up environment variables
-v          Verbose
```

umount

umount [flags] FILESYSTEM|DIRECTORY

Unmount file systems

Options:

```
-a      Unmount all file systems
-r      Try to remount devices as read-only if mount is busy
```

```

-l      Lazy umount (detach filesystem)
-f      Force umount (i.e., unreachable NFS server)
-d      Free loop device if it has been used

```

uname

uname [-amnrspv]

Print system information

Options:

```

-a      Print all
-m      The machine (hardware) type
-n      Hostname
-r      OS release
-s      OS name (default)
-p      Processor type
-v      OS version

```

uncompress

uncompress [-c] [-f] [name...]

Uncompress .Z file[s]

Options:

```

-c      Extract to stdout
-f      Overwrite an existing file

```

unexpand

unexpand [-f][-a][-t NUM] [FILE|-]

Convert spaces to tabs, writing to standard output

Options:

```

-a,--all      Convert all blanks
-f,--first-only  Convert only leading blanks
-t,--tabs=N    Tabstops every N chars

```

uniq

uniq [-fscduw]... [INPUT [OUTPUT]]

Discard duplicate lines

Options:

```

-c      Prefix lines by the number of occurrences
-d      Only print duplicate lines
-u      Only print unique lines
-f N    Skip first N fields
-s N    Skip first N chars (after any skipped fields)
-w N    Compare N characters in line

```

unix2dos

unix2dos [OPTION] [FILE]

Convert FILE in-place from Unix to DOS format. When no file is given, use stdin/stdout.

Options:

```

-u      dos2unix
-d      unix2dos

```

unlzma

unlzma [OPTIONS] [FILE]

Uncompress FILE (or standard input if FILE is '-' or omitted)

Options:

```
-c      Write to standard output
-f      Force
```

unlzop

unlzop [-cfvCF] [FILE]...

```
-c      Write to standard output
-f      Force
-v      Verbose
-F      Don't store or verify checksum
```

unzip

unzip [-opts[modifiers]] file[.zip] [list] [-x xlist] [-d exdir]

Extract files from ZIP archives

Options:

```
-l      List archive contents (with -q for short form)
-n      Never overwrite existing files (default)
-o      Overwrite files without prompting
-p      Send output to stdout
-q      Quiet
-x      Exclude these files
-d      Extract files into this directory
```

uptime

uptime

Display the time since the last boot

usleep

usleep N

Pause for N microseconds

uudecode

uudecode [-o outfile] [infile]

Udecode a file Finds outfile name in uuencoded source unless -o is given

uuencode

uuencode [-m] [infile] stored_filename

Uuencode a file to stdout

Options:

```
-m      Use base64 encoding per RFC1521
```

vconfig

vconfig COMMAND [OPTIONS]

Create and remove virtual ethernet devices

Options:

```
add          [interface-name] [vlan_id]
rem          [vlan-name]
set_flag     [interface-name] [flag-num] [0 | 1]
set_egress_map [vlan-name] [skb_priority] [vlan_qos]
set_ingress_map [vlan-name] [skb_priority] [vlan_qos]
set_name_type [name-type]
```

vi

vi [OPTIONS] [FILE]...

Edit FILE

Options:

```
-c      Initial command to run ($EXINIT also available)
-R      Read-only - do not write to the file
-H      Short help regarding available features
```

vlock

vlock [OPTIONS]

Lock a virtual terminal. A password is required to unlock.

Options:

```
-a      Lock all VTs
```

volname

volname [DEVICE]

Show CD volume name of the DEVICE (default /dev/cdrom)

watch

watch [-n seconds] [-t] PROG [ARGS]

Run PROG periodically

Options:

```
-n      Loop period in seconds (default 2)
-t      Don't print header
```

watchdog

watchdog [-t N[ms]] [-T N[ms]] [-F] DEV

Periodically write to watchdog device DEV

Options:

```
-T N      Reboot after N seconds if not reset (default 60)
-t N      Reset every N seconds (default 30)
-F        Run in foreground
```

Use 500ms to specify period in milliseconds

wc

wc [OPTIONS] [FILE]...

Print line, word, and byte counts for each FILE, and a total line if more than one FILE is specified. With no FILE, read standard input.

Options:

```

-c      Print the byte counts
-l      Print the newline counts
-L      Print the length of the longest line
-w      Print the word counts

```

wget

wget [-c|--continue] [-s|--spider] [-q|--quiet] [-O|--output-document
file]

```

[--header 'header: value'] [-Y|--proxy on/off] [-P  
DIR]
[-U|--user-agent agent] url

```

Retrieve files via HTTP or FTP

Options:

```

-s      Spider mode - only check file existence
-c      Continue retrieval of aborted transfer
-q      Quiet
-P      Set directory prefix to DIR
-O      Save to filename ('-' for stdout)
-U      Adjust 'User-Agent' field
-Y      Use proxy ('on' or 'off')

```

which

which [COMMAND]...

Locate a COMMAND

who

who [-a]

Show who is logged on

Options:

```

-a      show all

```

whoami

whoami

Print the user name associated with the current effective user id

xargs

xargs [OPTIONS] [PROG [ARGS]]

Run PROG on every item given by standard input

Options:

```

-p      Ask user whether to run each command
-r      Do not run command if input is empty
-0      Input is separated by NUL characters
-t      Print the command on stderr before execution
-e[STR] STR stops input processing
-n N    Pass no more than N args to PROG
-s N    Pass command line of no more than N bytes
-x      Exit if size is exceeded

```

yes

yes [OPTIONS] [STRING]

Repeatedly output a line with STRING, or 'y'

zcat

zcat FILE

Uncompress to stdout

zcip

zcip [OPTIONS] IFACE SCRIPT

Manage a ZeroConf IPv4 link-local address

Options:

-f	Run in foreground
-q	Quit after obtaining address
-r 169.254.x.x	Request this address first
-v	Verbose

With no -q, runs continuously monitoring for ARP conflicts, exits only on I/O errors (link down etc)

LIBC NSS

GNU Libc (glibc) uses the Name Service Switch (NSS) to configure the behavior of the C library for the local environment, and to configure how it reads system data, such as passwords and group information. This is implemented using an /etc/nsswitch.conf configuration file, and using one or more of the /lib/libnss_* libraries. BusyBox tries to avoid using any libc calls that make use of NSS. Some applets however, such as login and su, will use libc functions that require NSS.

If you enable CONFIG_USE_BB_PWD_GRP, BusyBox will use internal functions to directly access the /etc/passwd, /etc/group, and /etc/shadow files without using NSS. This may allow you to run your system without the need for installing any of the NSS configuration files and libraries.

When used with glibc, the BusyBox 'networking' applets will similarly require that you install at least some of the glibc NSS stuff (in particular, /etc/nsswitch.conf, /lib/libnss_dns*, /lib/libnss_files*, and /lib/libresolv*).

Shameless Plug: As an alternative, one could use a C library such as uClibc. In addition to making your system significantly smaller, uClibc does not require the use of any NSS support files or libraries.

MAINTAINER

Denis Vlasenko <vda.linux@googlemail.com>

AUTHORS

The following people have contributed code to BusyBox whether they know it or not. If you have written code included in BusyBox, you should probably be listed here so you can obtain your bit of eternal glory. If you should be listed here, or the description of what you have done needs more detail, or is incorrect, please send in an update.

Emanuele Aina <emanuele.aina@tiscali.it> run-parts

Erik Andersen <andersen@codepoet.org>

Tons of new stuff, major rewrite of most of the core apps, tons of new apps as noted in header files. Lots of tedious effort writing these boring docs that nobody is going to actually read.

Laurence Anderson <l.d.anderson@warwick.ac.uk>

rpm2cpio, unzip, get_header_cpio, read_gz interface, rpm

Jeff Angielski <jeff@theptrgroup.com>

ftpput, ftpget

Edward Betts <edward@debian.org>

expr, hostid, logname, whoami

John Beppu <beppu@codepoet.org>

du, nslookup, sort

Brian Candler <B.Candler@pobox.com>

tiny-ls(ls)

Randolph Chung <tausq@debian.org>

fbset, ping, hostname

Dave Cinege <dcinege@psychosis.com>

more(v2), makedevs, dumptmp, modularization, auto links file, various fixes, Linux Router Project maintenance

Jordan Crouse <jordan@cosmicpenguin.net>

ipcalc

Magnus Damm <damm@opensource.se>

tftp client insmod powerpc support

Larry Doolittle <ldoolitt@recycle.lbl.gov>

pristine source directory compilation, lots of patches and fixes.

Glenn Engel <glenne@engel.org>

httpd

Gennady Feldman <gfeldman@gena01.com>

Sysklogd (single threaded syslogd, IPC Circular buffer support, logread), various fixes.

Karl M. Hegbloom <karlheg@debian.org>

cp_mv.c, the test suite, various fixes to utility.c, &c.

Daniel Jacobowitz <dan@debian.org>

mktemp.c

Matt Kraai <kraai@alumni.cmu.edu>

documentation, bugfixes, test suite

Stephan Linz <linz@li-pro.net>

ipcalc, Red Hat equivalence

John Lombardo <john@deltanet.com>

tr

Glenn McGrath <bug1@iinet.net.au>

Common unarchiving code and unarchiving applets, ifupdown, ftpgetput, nameif, sed, patch, fold, install, uudecode.
Various bugfixes, review and apply numerous patches.

Manuel Novoa III <mjn3@codepoet.org>

cat, head, mkfifo, mknod, rmdir, sleep, tee, tty, uniq, usleep, wc, yes, msg, vconfig, make_directory, parse_mode, dirname, mode_string, get_last_path_component, simplify_path, and a number trivial libbb routines

also bug fixes, partial rewrites, and size optimizations in ash, basename, cal, cmp, cp, df, du, echo, env, ln, logname, md5sum, mkdir, mv, realpath, rm, sort, tail, touch, uname, watch, arith, human_readable, interface, dntmp, ifconfig, route

Vladimir Oleynik <dzo@simtreas.ru>

cmdedit; xargs(current), httpd(current);
ports: ash, crond, fdisk, inetd, stty, traceroute, top;
locale, various fixes
and irreconcilable critic of everything not perfect.

Bruce Perens <bruce@pixar.com>

Original author of BusyBox in 1995, 1996. Some of his code can still be found hiding here and there...

Tim Riker <Tim@Rikers.org>

bug fixes, member of fan club

Kent Robotti <robotti@metconnect.com>

reset, tons and tons of bug reports and patches.

Chip Rosenthal <chip@unicom.com>, <crosenth@covad.com>

wget - Contributed by permission of Covad Communications

Pavel Roskin <proski@gnu.org>

Lots of bugs fixes and patches.

Gyepi Sam <gyepi@praxis-sw.com>

Remote logging feature for syslogd

Linus Torvalds <torvalds@transmeta.com>

mkswap, fsck.minix, mkfs.minix

Mark Whitley <markw@codepoet.org>

grep, sed, cut, xargs(previous),
style-guide, new-applet-HOWTO, bug fixes, etc.

Charles P. Wright <cpwright@villagenet.com>

gzip, mini-netcat(nc)

Enrique Zanardi <ezanardi@ull.es>

tarcat (since removed), loadkmap, various fixes, Debian maintenance

Tito Ragusa <farmatito@tiscali.it>

devfsd and size optimizations in strings, openvt and dealloct.