

sh-utils

COLLABORATORS

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Chapter 1

sh-utils

1.1 sh-utils.guide

GNU shell utilities

This manual minimally documents version GNU sh-utils 1.12 of the GNU shell utilities.

Introduction	Caveats, overview, and authors.
Common options	Common options.
Printing text	echo printf yes
Conditions	false true test expr
Redirection	tee
File name manipulation	dirname basename pathchk
Working context information	pwd stty printenv tty
User information	id logname whoami groups users who
System context	date uname hostname
Modified command invocation	env nice nohup su
Delaying	sleep
Index	General index.

1.2 sh-utils.guide/Introduction

Introduction

First of all, this manual is incomplete. The stty section, in particular, needs substantial reorganization and additional explanatory text before it will be up to the standard of other GNU manuals. Explanatory text in general is lacking; the manual presently assumes you pretty much know what to do, and just need to be reminded of how. Thus, if you are interested, please get involved in improving this manual. The entire GNU community will benefit.

Some of these programs are useful only when writing shell scripts;

utilities like these are, in fact, the "language" of shell scripts (to a great extent). Others are occasionally useful interactively.

The GNU shell utilities are mostly compatible with the POSIX.2 standard.

Please report bugs to bug-gnu-utils@prep.ai.mit.edu. Remember to include the version number, machine architecture, input files, and any other information needed to reproduce the bug. See Bugs.

This manual is based on the Unix man pages in the distribution, which were originally written by David MacKenzie and updated by Jim Meyering. Francois Pinard did the initial conversion to Texinfo format. Karl Berry did the indexing, some reorganization, and editing of the results. Richard Stallman contributed his usual invaluable insights to the overall process.

1.3 sh-utils.guide/Common options

Common options

Certain options are available in all these programs. Rather than writing identical descriptions for each of the programs, they are described here. (In fact, every GNU program accepts (or should accept) these options.)

Many of these programs take arbitrary strings as arguments. In those cases, `--help` and `--version` are taken as these options only if there is one and exactly one command line argument.

`--help`

Print a usage message listing all available options, then exit successfully.

`--version`

Print the version number, then exit successfully.

1.4 sh-utils.guide/Printing text

Printing text

This section describes commands that display text strings.

<code>echo</code> invocation	Print a line of text.
<code>printf</code> invocation	Format and print data.
<code>yes</code> invocation	Print a string until interrupted.

1.5 sh-utils.guide/echo invocation

echo: Print a line of text
=====

Synopsis:

```
echo [ OPTION ]... [ STRING ]...
```

echo writes each given STRING to standard output, with a space between each and a newline after the last one.

The program accepts the following options. Also see See Common options.

-n

Do not output the trailing newline.

-e

Enable interpretation of the following backslash-escaped characters in each STRING:

\a

alert (bell)

\b

backspace

\c

suppress trailing newline

\f

form feed

\n

new line

\r

carriage return

\t

horizontal tab

\v

vertical tab

\

backslash

\NNN

the character whose ASCII code is NNN (octal); if NNN is not a valid octal number, it is printed literally.

1.6 sh-utils.guide/printf invocation

printf: Format and print data
=====

Synopsis:

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

printf prints the FORMAT string, interpreting % directives and \ escapes in the same way as the C printf function. The FORMAT argument is re-used as necessary to convert all of the given ARGUMENTs.

printf has one additional directive, %b, which prints its argument string with \ escapes interpreted in the same way as in the FORMAT string.

printf interprets \0ooo in FORMAT as an octal number (if OOO is 0 to 3 octal digits) specifying a character to print, and \xhhh as a hexadecimal number (if HHH is 1 to 3 hex digits) specifying a character to print.

An additional escape, \c, causes printf to produce no further output.

The only options are a lone --help or --version. See Common options.

1.7 sh-utils.guide/yes invocation

yes: Print a string until interrupted
=====

yes prints the command line arguments, separated by spaces and followed by a newline, forever until it is killed. If no arguments are given, it prints y followed by a newline forever until killed.

The only options are a lone --help or --version. See Common options.

1.8 sh-utils.guide/Conditions

Conditions

This section describes commands that are primarily useful for their exit status, rather than their output. Thus, they are often used as the condition of shell if statements, or as the last command in a pipeline.

false invocation	Do nothing, unsuccessfully.
true invocation	Do nothing, successfully.
test invocation	Check file types and compare values.

expr invocation Evaluate expressions.

1.9 sh-utils.guide/false invocation

false: Do nothing, unsuccessfully
=====

false does nothing except return an exit status of 1, meaning failure. It can be used as a place holder in shell scripts where an unsuccessful command is needed.

Any arguments are ignored, except for a lone --help or --version (see Common options).

1.10 sh-utils.guide/true invocation

true: Do nothing, successfully
=====

true does nothing except return an exit status of 0, meaning success. It can be used as a place holder in shell scripts where a successful command is needed, although the shell built-in command `:` (colon) may be faster.

Any arguments are ignored, except for a lone --help or --version (see Common options).

1.11 sh-utils.guide/test invocation

test: Check file types and compare values
=====

test returns a status of 0 (true) or 1 (false) depending on the evaluation of the conditional expression `EXPR`. Each part of the expression must be a separate argument.

test has file status checks, string operators, and numeric comparison operators.

Because most shells have a built-in command by the same name, using the unadorned command name in a script or interactively may get you different functionality than that described here.

Besides the options below, test accepts a lone --help or --version. See Common options. A single non-option argument is also allowed: test returns true if the argument is not null.

File type tests	-[bcdfhLpSt]
Access permission tests	-[gkruwxOG]
File characteristics tests	-e -s -nt -ot -ef
String tests	-z -n = !=
Numeric tests	-eq -ne -lt -le -gt -ge
Connectives for test	! -a -o

1.12 sh-utils.guide/File type tests

File type tests

These options test for particular types of files. (Everything's a file, but not all files are the same!)

-b FILE
True if FILE exists and is a block special device.

-c FILE
True if FILE exists and is a character special device.

-d FILE
True if FILE exists and is a directory.

-f FILE
True if FILE exists and is a regular file.

-h FILE

-L FILE
True if FILE exists and is a symbolic link.

-p FILE
True if FILE exists and is a named pipe.

-S FILE
True if FILE exists and is a socket.

-t [FD]
True if FD is opened on a terminal. If FD is omitted, it defaults to 1 (standard output).

1.13 sh-utils.guide/Access permission tests

Access permission tests

These options test for particular access permissions.

-g FILE

True if FILE exists and has its set-group-id bit set.

-k FILE
True if FILE has its sticky bit set.

-r FILE
True if FILE exists and is readable.

-u FILE
True if FILE exists and has its set-user-id bit set.

-w FILE
True if FILE exists and is writable.

-x FILE
True if FILE exists and is executable.

-O FILE
True if FILE exists and is owned by the current effective user id.

-G FILE
True if FILE exists and is owned by the current effective group id.

1.14 sh-utils.guide/File characteristics tests

File characteristics tests

These options test other file characteristics.

-e FILE
True if FILE exists.

-s FILE
True if FILE exists and has a size greater than zero.

FILE1 -nt FILE2
True if FILE1 is newer (according to modification date) than FILE2.

FILE1 -ot FILE2
True if FILE1 is older (according to modification date) than FILE2.

FILE1 -ef FILE2
True if FILE1 and FILE2 have the same device and inode numbers,
i.e., if they are hard links to each other.

1.15 sh-utils.guide/String tests

String tests

These options test string characteristics. Strings are not quoted for test, though you may need to quote them to protect characters with special meaning to the shell, e.g., spaces.

```
-z STRING
    True if the length of STRING is zero.

-n STRING
STRING
    True if the length of STRING is non-zero.

STRING1 = STRING2
    True if the strings are equal.

STRING1 != STRING2
    True if the strings are not equal.
```

1.16 sh-utils.guide/Numeric tests

Numeric tests

Numeric relationals. The arguments must be entirely numeric (possibly negative), or the special expression -l STRING, which evaluates to the length of STRING.

```
ARG1 -eq ARG2
ARG1 -ne ARG2
ARG1 -lt ARG2
ARG1 -le ARG2
ARG1 -gt ARG2
ARG1 -ge ARG2
    These arithmetic binary operators return true if ARG1 is equal,
    not-equal, less-than, less-than-or-equal, greater-than, or
    greater-than-or-equal than ARG2, respectively.
```

For example:

```
test -1 -gt -2 && echo yes
=> yes
test -l abc -gt 1 && echo yes
=> yes
test 0x100 -eq 1
error--> test: integer expression expected before -eq
```

1.17 sh-utils.guide/Connectives for test

Connectives for test

The usual logical connectives.

`! EXPR`

True if EXPR is false.

`EXPR1 -a EXPR2`

True if both EXPR1 and EXPR2 are true.

`EXPR1 -o EXPR2`

True if either EXPR1 or EXPR2 is true.

1.18 sh-utils.guide/expr invocation

`expr: Evaluate expressions`

=====

`expr` evaluates an expression and writes the result on standard output. Each token of the expression must be a separate argument.

Operands are either numbers or strings. `expr` coerces anything appearing in an operand position to an integer or a string depending on the operation being applied to it.

Strings are not quoted for `expr`, though you may need to quote them to protect characters with special meaning to the shell, e.g., spaces.

Operators may given as infix symbols or prefix keywords. Parentheses may be used for grouping in the usual manner (you must quote parentheses to avoid the shell evaluating them, however).

Exit status:

0 if the expression is neither null nor 0,
1 if the expression is null or 0,
2 for invalid expressions.

Relations for <code>expr</code>	<code> & < <= = == != >= ></code>
Numeric expressions	<code>+ - * / %</code>
String expressions	<code>: match substr index length</code>
Examples of <code>expr</code>	Examples.

1.19 sh-utils.guide/Relations for expr

Relations for `expr`

The usual logical connectives and relations, in order of precedence.

|
 Yields its first argument if it is neither null nor 0, otherwise its second argument.

&
 Yields its first argument if neither argument is null or 0, otherwise 0.

< <= = == != >= >
 Compare the arguments and return 1 if the relation is true, 0 otherwise. == is a synonym for =. expr first tries to coerce both arguments to numbers and do a numeric comparison; if either coercion fails, it does a lexicographic comparison.

1.20 sh-utils.guide/Numeric expressions

Numeric expressions

Numeric operators, in order of increasing precedence. The connectives (previous section) have higher precedence, the string operators (following section) have lower.

+ -
 Addition and subtraction. Both arguments are coerced to numbers; an error occurs if this cannot be done.

* / %
 Multiplication, division, remainder. Both arguments are coerced to numbers; an error occurs if this cannot be done.

1.21 sh-utils.guide/String expressions

String expressions

String operators. These have lowest precedence.

STRING : REGEX

Perform pattern matching. The arguments are coerced to strings and the second is considered to be a (basic, a la grep) regular expression, with a ^ implicitly prepended. The first argument is then matched against this regular expression.

If the match succeeds and REGEX uses \(and \), the : expression returns the part of STRING that matched the subexpression; otherwise, it returns the number of characters matched.

If the match fails, the : operator returns the null string if \(and \) are used in REGEX, otherwise 0.

Only the first `\(... \)` pair is relevant to the return value; additional pairs are meaningful only for grouping the regular expression operators.

See Regular Expression Library, for details of regular expression syntax.

`match STRING REGEX`

An alternative way to do pattern matching. This is the same as `STRING : REGEX`.

`substr STRING POSITION LENGTH`

Returns the substring of `STRING` beginning at `POSITION` with length at most `LENGTH`. If either `POSITION` or `LENGTH` is negative or non-numeric, returns the null string.

`index STRING CHARACTER-CLASS`

Returns the first position in `STRING` where the first character in `CHARSET` was found. If no character in `CHARSET` is found in `STRING`, return 0.

`length STRING`

Returns the length of `STRING`.

The keywords cannot be used as strings.

1.22 sh-utils.guide/Examples of expr

Examples of `expr`

Here are a few examples, including quoting for shell metacharacters.

To add 1 to the shell variable `foo`, in Bourne-compatible shells:

```
foo=`expr $foo + 1`
```

To print the non-directory part of the file name stored in `$fname`, which need not contain a `/`.

```
expr $fname : '.*\/(^.*\)' '^\|' $fname
```

```
expr abc : 'a\(.\)c'
```

```
=> b
```

```
expr index abcdef cz
```

```
=> 3
```

```
expr index index a
```

```
error--> expr: syntax error
```

1.23 sh-utils.guide/Redirection

Redirection

Unix shells commonly provide several forms of redirection--ways to change the input source or output destination of a command. But one useful redirection is performed by a separate command, not by the shell; it's described here.

tee invocation Redirect output to multiple files.

1.24 sh-utils.guide/tee invocation

tee: Redirect output to multiple files

=====

The tee command copies standard input to standard output and also to any files given as arguments. This is useful when you want not only to send some data down a pipe, but also to save a copy.

Synopsis:

```
tee [ OPTION ]... [ FILE ]...
```

If a file being written to does not already exist, it is created. If a file being written to already exists, the data it previously contained is overwritten unless the `-a` option is used.

The program accepts the following options. Also see See Common options.

`-a`

`--append`

Append standard input to the given files rather than overwriting them.

`-i`

`--ignore-interrupts`

Ignore interrupt signals.

1.25 sh-utils.guide/File name manipulation

File name manipulation

This section describes commands that manipulate file names.

basename invocation Strip directory and suffix from a file name.

dirname invocation	Strip non-directory suffix from a file name.
pathchk invocation	Check file name portability.

1.26 sh-utils.guide/basename invocation

basename: Strip directory and suffix from a file name
=====

Synopsis:

basename NAME [SUFFIX]

The basename command removes any leading directory components from NAME. If SUFFIX is specified and is identical to the end of NAME, it is removed from NAME as well. basename prints the result on standard output.

The only options are --help and --version. See Common options.

1.27 sh-utils.guide/dirname invocation

dirname: Strip non-directory suffix from a file name
=====

Synopsis:

dirname NAME

dirname prints all but the final slash-delimited component of NAME. If NAME is a single component, dirname prints . (meaning the current directory).

The only options are --help and --version. See Common options.

1.28 sh-utils.guide/pathchk invocation

pathchk: Check file name portability
=====

Synopsis:

pathchk [OPTION]... NAME...

For each NAME, pathchk prints a message if any of these conditions is true:

1. one of the existing directories in NAME does not have search (execute) permission,

2. the length of NAME is larger than its filesystem's maximum file name length,
3. the length of one component of NAME, corresponding to an existing directory name, is larger than its filesystem's maximum length for a file name component.

The program accepts the following option. Also see See Common options.

-p

--portability

Instead of performing length checks on the underlying filesystem, test the length of each file name and its components against the POSIX.1 minimum limits for portability. Also check that the file name contains no characters not in the portable file name character set.

Exit status:

0 if all specified file names passed all of the tests,
1 otherwise.

1.29 sh-utils.guide/Working context information

Working context information

This section describes commands that display or alter the context in which you are working: the current directory, the terminal settings, and so forth. See also the user-related commands in the next section.

pwd invocation	Print working directory.
stty invocation	Print or change terminal characteristics.
printenv invocation	Print environment variables.
tty invocation	Print file name of terminal on standard input.

1.30 sh-utils.guide/pwd invocation

pwd: Print working directory

=====

pwd prints the fully resolved name of the current directory. That is, all components of the printed name will be actual directory names--none will be symbolic links.

Because most shells have a built-in command by the same name, using the unadorned command name in a script or interactively may get you

different functionality than that described here.

The only options are a lone `--help` or `--version`. See Common options.

1.31 sh-utils.guide/stty invocation

stty: Print or change terminal characteristics
=====

If given no arguments, `stty` prints the baud rate, line discipline number (on systems that support it), and line settings that have been changed from the values set by `stty sane`. Mode reading and setting are performed on the `tty` line connected to standard input.

`stty` accepts many non-option arguments that change aspects of the terminal line operation, as described below.

Synopses:

```
stty [ SETTING ]...
stty [ OPTION ]
```

The program accepts the following options. Also see See Common options.

`-a`

`--all`

Print all current settings in human-readable form.

`-g`

`--save`

Print all current settings in a form that can be used as an argument to another `stty` command to restore the current settings.

Many settings can be turned off by preceding them with a `-`. Such arguments are marked below with "May be negated" in their description. The descriptions themselves refer to the positive case, that is, when not negated (unless stated otherwise, of course).

Some settings are not available on all POSIX systems, since they use extensions. Such arguments are marked below with "Non-POSIX" in their description. On non-POSIX systems, those or other settings also may not be available, but it's not feasible to document all the variations: just try it and see.

Control	Control settings
Input	Input settings
Output	Output settings
Local	Local settings
Combination	Combination settings
Characters	Special characters
Special	Special settings

1.32 sh-utils.guide/Control

Control settings

Control settings:

parenb

Generate parity bit in output and expect parity bit in input. May be negated.

parodd

Set odd parity (even if negated). May be negated.

cs5

cs6

cs7

cs8

Set character size to 5, 6, 7, or 8 bits.

hup

hupcl

Send a hangup signal when the last process closes the tty. May be negated.

cstopb

Use two stop bits per character (one if negated). May be negated.

cread

Allow input to be received. May be negated.

cllocal

Disable modem control signals. May be negated.

crtscs

Enable RTS/CTS flow control. Non-POSIX. May be negated.

1.33 sh-utils.guide/Input

Input settings

ignbrk

Ignore breaks. May be negated.

brkint

Make breaks cause an interrupt signal. May be negated.

ignpar

Ignore parity errors. May be negated.

parmrk

Mark parity errors (with a 255-0-character sequence). May be negated.

inpck

Enable input parity checking. May be negated.

istrip

Clear high (8th) bit of input characters. May be negated.

inlcr

Translate newline to carriage return. May be negated.

igncr

Ignore carriage return. May be negated.

icrnl

Translate carriage return to newline. May be negated.

ixon

Enable XON/XOFF flow control (that is, CTRL-s/CTRL-Q). May be negated.

ixoff

tandem

Enable sending of stop character when the system input buffer is almost full, and start character when it becomes almost empty again. May be negated.

iucLC

Translate uppercase characters to lowercase. Non-POSIX. May be negated.

ixany

Allow any character to restart output (only the start character if negated). Non-POSIX. May be negated.

imaxbel

Enable beeping and not flushing input buffer if a character arrives when the input buffer is full. Non-POSIX. May be negated.

1.34 sh-utils.guide/Output

Output settings

These arguments specify output-related operations.

opost

Postprocess output. May be negated.

olcuc

Translate lowercase characters to uppercase. Non-POSIX. May be negated.

ocrnl

Translate carriage return to newline. Non-POSIX. May be negated.

onlcr

Translate newline to carriage return-newline. Non-POSIX. May be negated.

onocr

Do not print carriage returns in the first column. Non-POSIX. May be negated.

onlret

Newline performs a carriage return. Non-POSIX. May be negated.

ofill

Use fill (padding) characters instead of timing for delays. Non-POSIX. May be negated.

ofdel

Use delete characters for fill instead of null characters. Non-POSIX. May be negated.

nl1

nl0

Newline delay style. Non-POSIX.

cr3

cr2

cr1

cr0

Carriage return delay style. Non-POSIX.

tab3

tab2

tab1

tab0

Horizontal tab delay style. Non-POSIX.

bs1

bs0

Backspace delay style. Non-POSIX.

vt1

vt0

Vertical tab delay style. Non-POSIX.

ff1

ff0

Form feed delay style. Non-POSIX.

1.35 sh-utils.guide/Local

Local settings

isig

Enable interrupt, quit, and suspend special characters. May be negated.

icanon

Enable erase, kill, werase, and rprnt special characters. May be negated.

iexten

Enable non-POSIX special characters. May be negated.

echo

Echo input characters. May be negated.

echoe

crterase

Echo erase characters as backspace-space-backspace. May be negated.

echok

Echo a newline after a kill character. May be negated.

echonl

Echo newline even if not echoing other characters. May be negated.

noflsh

Disable flushing after interrupt and quit special characters. May be negated.

xcase

Enable input and output of uppercase characters by preceding their lowercase equivalents with \ , when icanon is set. Non-POSIX. May be negated.

tostop

Stop background jobs that try to write to the terminal. Non-POSIX. May be negated.

echopr

prterase

Echo erased characters backward, between \ and /. Non-POSIX. May be negated.

echoctl

ctlecho

Echo control characters in hat notation (^C) instead of literally. Non-POSIX. May be negated.

echoke

crtkill

Echo the kill special character by erasing each character on the

line as indicated by the echoprt and echoe settings, instead of by the echoctl and echok settings. Non-POSIX. May be negated.

1.36 sh-utils.guide/Combination

Combination settings

Combination settings:

evenp

parity

Same as parenb -parodd cs7. May be negated. If negated, same as -parenb cs8.

oddp

Same as parenb parodd cs7. May be negated. If negated, same as -parenb cs8.

nl

Same as -icrnl -onlcr. May be negated. If negated, same as icrnl -inlcr -igncr onlcr -ocrnl -onlret.

ek

Reset the erase and kill special characters to their default values.

sane

Same as:

```
cread -ignbrk brkint -inlcr -igncr icrnl -ixoff -iuclic -ixany
imaxbel opost -olcuc -ocrnl onlcr -onocr -onlret -ofill -ofdel
nl0 cr0 tab0 bs0 vt0 ff0 isig icanon iexten echo echoe echok -echonl
-noflsh -xcase -tostop -echoprt echoctl echoke
```

and also sets all special characters to their default values.

cooked

Same as brkint ignpar istrip icrnl ixon opost isig icanon, plus sets the eof and eol characters to their default values if they are the same as the min and time characters. May be negated. If negated, same as raw.

raw

Same as:

```
-ignbrk -brkint -ignpar -parmrk -inpck -istrip -inlcr -igncr
-icrnl -ixon -ixoff -iuclic -ixany -imaxbel -opost -isig -icanon
-xcase min 1 time 0
```

May be negated. If negated, same as cooked.

cbreak

Same as -icanon. May be negated. If negated, same as icanon.

pass8

Same as -parenb -istrip cs8. May be negated. If negated, same as parenb istrip cs7.

litout
Same as -parenb -istrip -opost cs8. May be negated. If negated, same as parenb istrip opost cs7.

decctlq
Same as -ixany. Non-POSIX. May be negated.

tabs
Same as tab0. Non-POSIX. May be negated. If negated, same as tab3.

lcase
LCASE
Same as xcase iuclc olcuc. Non-POSIX. May be negated.

crt
Same as echoe echoctl echoke.

dec
Same as echoe echoctl echoke -ixany intr ^C erase ^? kill C-u.

1.37 sh-utils.guide/Characters

Special characters

The special characters' default values vary from system to system. They are set with the syntax name value, where the names are listed below and the value can be given either literally, in hat notation (^C), or as an integer which may start with 0x to indicate hexadecimal, 0 to indicate octal, or any other digit to indicate decimal.

For GNU stty, giving a value of ^- or undef disables that special character. (This is incompatible with Ultrix stty, which uses a value of u to disable a special character. GNU stty treats a value u like any other, namely to set that special character to u.)

intr
Send an interrupt signal.

quit
Send a quit signal.

erase
Erase the last character typed.

kill
Erase the current line.

eof
Send an end of file (terminate the input).

`eol`
End the line.

`eol2`
Alternate character to end the line. Non-POSIX.

`swtch`
Switch to a different shell layer. Non-POSIX.

`start`
Restart the output after stopping it.

`stop`
Stop the output.

`susp`
Send a terminal stop signal.

`dsusp`
Send a terminal stop signal after flushing the input. Non-POSIX.

`rprnt`
Redraw the current line. Non-POSIX.

`werase`
Erase the last word typed. Non-POSIX.

`lnext`
Enter the next character typed literally, even if it is a special character. Non-POSIX.

1.38 sh-utils.guide/Special

Special settings

`min N`
Set the minimum number of characters that will satisfy a read until the time value has expired, when `-icanon` is set.

`time N`
Set the number of tenths of a second before reads time out if the min number of characters have not been read, when `-icanon` is set.

`ispeed N`
Set the input speed to N.

`ospeed N`
Set the output speed to N.

`rows N`
Tell the tty kernel driver that the terminal has N rows.
Non-POSIX.

`cols N`
`columns N`
 Tell the kernel that the terminal has N columns. Non-POSIX.

`size`
 Print the number of rows and columns that the kernel thinks the terminal has. (Systems that don't support rows and cols in the kernel typically use the environment variables `LINES` and `COLUMNS` instead; however, GNU `stty` does not know anything about them.) Non-POSIX.

`line N`
 Use line discipline N. Non-POSIX.

`speed`
 Print the terminal speed.

`N`
 Set the input and output speeds to N. N can be one of: 0 50 75 110 134 134.5 150 200 300 600 1200 1800 2400 4800 9600 19200 38400 exta extb. exta is the same as 19200; extb is the same as 38400. 0 hangs up the line if `-clocal` is set.

1.39 sh-utils.guide/printenv invocation

`printenv`: Print all or some environment variables

=====

Synopsis:

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

If no `VARIABLEs` are specified, `printenv` prints the value of every environment variable. Otherwise, it prints the value of each `VARIABLE` that is set, and nothing for those that are not set.

The only options are a lone `--help` or `--version`. See Common options.

Exit status:

```
0 if all variables specified were found
1 if at least one specified variable was not found
2 if a write error occurred
```

1.40 sh-utils.guide/tty invocation

`tty`: Print file name of terminal on standard input

=====

`tty` prints the file name of the `tty` connected to its standard input.

It prints not a tty if standard input is not a tty.

Synopsis:

```
tty [ OPTION ]...
```

The program accepts the following option. Also see See Common options.

```
-s
--silent
--quiet
    Print nothing; only return an exit status.
```

Exit status:

```
0 if standard input is a tty
1 if standard input is not a tty
2 if given incorrect arguments
3 if a write error occurs
```

1.41 sh-utils.guide/User information

User information

This section describes commands that print user-related information: logins, groups, and so forth.

id invocation	Print real and effective uid and gid.
logname invocation	Print current login name.
whoami invocation	Print effective user id.
groups invocation	Print group names a user is in.
users invocation	Print login names of users currently logged in.
who invocation	Print who is currently logged in.

1.42 sh-utils.guide/id invocation

```
id: Print real and effective uid and gid
=====
```

id prints information about the given user, or the process running it if no user is specified.

Synopsis:

```
id [ OPTION ]... [ USERNAME ]
```

By default, it prints the real user id, real group id, effective

user id if different from the real user id, effective group id if different from the real group id, and supplemental group ids.

Each of these numeric values is preceded by an identifying string and followed by the corresponding user or group name in parentheses.

The options cause id to print only part of the above information. Also see See Common options.

-g

--group

Print only the group id.

-G

--groups

Print only the supplementary groups.

-n

--name

Print the user or group name instead of the ID number. Requires -u, -g, or -G.

-r

--real

Print the real, instead of effective, user or group id. Requires -u, -g, or -G.

-u

--user

Print only the user id.

1.43 sh-utils.guide/logname invocation

logname: Print current login name
=====

logname prints the calling user's name, as found in the file /etc/utmp, and exits with a status of 0. If there is no /etc/utmp entry for the calling process, logname prints an error message and exits with a status of 1.

The only options are --help and --version. See Common options.

1.44 sh-utils.guide/whoami invocation

whoami: Print effective user id
=====

whoami prints the user name associated with the current effective user id. It is equivalent to the command id -un.

The only options are --help and --version. See Common options.

1.45 sh-utils.guide/groups invocation

groups: Print group names a user is in
=====

groups prints the names of the primary and any supplementary groups that each given USERNAME, or the current process if none are given, is in. If user names are given, the name of each user is printed before the list of that user's groups.

Synopsis:

```
groups [ USERNAME ]...
```

The group lists are equivalent to the output of the command `id -Gn`.

The only options are --help and --version. See Common options.

1.46 sh-utils.guide/users invocation

users: Print login names of users currently logged in
=====

users prints on a single line a blank-separated list of user names of users currently logged in to the current host. Each user name corresponds to a login session, so if a user has more than one login session, that user's name will appear the same number of times in the output.

Synopsis:

```
users [ FILE ]
```

With no FILE argument, users extracts its information from the file `/etc/utmp`. If a file argument is given, users uses that file instead. A common choice is `/etc/wtmp`.

The only options are --help and --version. See Common options.

1.47 sh-utils.guide/who invocation

who: Print who is currently logged in
=====

Synopsis:

```
who [ OPTION ] [ FILE ] [ am i ]
```

If given no non-option arguments, who prints the following information for each user currently logged on: login name, terminal line, login time, and remote hostname or X display.

If given one non-option argument, who uses that instead of /etc/utmp as the name of the file containing the record of users logged on. /etc/wtmp is commonly given as an argument to who to look at who has previously logged on.

If given two non-option arguments, who prints only the entry for the user running it (determined from its standard input), preceded by the hostname. Traditionally, the two arguments given are am i, as in who am i.

The program accepts the following options. Also see See Common options.

-m

Same as who am i.

-q

--count

Print only the login names and the number of users logged on.
Overrides all other options.

-s

Ignored; for compatibility with other versions of who.

-i

-u

--idle

After the login time, print the number of hours and minutes that the user has been idle. . means the user was active in last minute. old means the user was idle for more than 24 hours.

-H

--heading

Print a line of column headings.

-w

-T

--mesg

--message

--writable

After each login name print a character indicating the user's message status:

+ allowing write messages
- disallowing write messages
? cannot find terminal device

1.48 sh-utils.guide/System context

System context

This section describes commands that print or change system-wide information.

date invocation	Print or set system date and time.
uname invocation	Print system information.
hostname invocation	Print or set system name.

1.49 sh-utils.guide/date invocation

date: Print or set system date and time
=====

date with no arguments prints the current time and date, in the format of the %c directive (described below).

Synopses:

```
date [ OPTION ]... [ +FORMAT ]
date [ -u|--utc|--universal ] [ MMDDHHMM[[CC]YY][.SS] ]
```

If given an argument that starts with a +, date prints the current time and date (or the time and date specified by the --date option, see below) in the format defined by that argument, which is the same as in the strftime function. Except for directives, which start with %, characters in the format string are printed unchanged. The directives are described below.

By default, date pads numeric fields with zeroes. GNU date recognizes the following numeric modifiers between the % and the directive. These are GNU extensions.

```
-
    (hyphen) do not pad the field

-
    (underscore) pad the field with spaces
```

Time directives	%[HkIhMprsSTXZ]
Date directives	%[aAbBcdDhjmUwWxyY]
Literal directives	%[%nt]
Setting the time	Changing the system clock.
Options for date	Instead of the current time.
Examples of date	Examples.

1.50 sh-utils.guide/Time directives

Time directives

date directives related to times.

%H
hour (00...23)

%I
hour (01...12)

%k
hour (0...23)

%l
hour (1...12)

%M
minute (00...59)

%p
locale's AM or PM

%r
time, 12-hour (hh:mm:ss [AP]M)

%s
seconds since the epoch, i.e., 1 January 1970 00:00:00 UTC (a GNU extension)

%S
second (00...61)

%T
time, 24-hour (hh:mm:ss)

%X
locale's time representation (%H:%M:%S)

%Z
time zone (e.g., EDT), or nothing if no time zone is determinable

1.51 sh-utils.guide/Date directives

Date directives

date directives related to dates.

%a
locale's abbreviated weekday name (Sun...Sat)

%A
locale's full weekday name, variable length (Sunday...Saturday)

%b
locale's abbreviated month name (Jan...Dec)

%B
locale's full month name, variable length (January...December)

%c
locale's date and time (Sat Nov 04 12:02:33 EST 1989)

%d
day of month (01...31)

%D
date (mm/dd/yy)

%h
same as %b

%j
day of year (001...366)

%m
month (01...12)

%U
week number of year with Sunday as first day of week (00...53)

%w
day of week (0...6) with 0 corresponding to Sunday

%W
week number of year with Monday as first day of week (00...53)

%x
locale's date representation (mm/dd/yy)

%y
last two digits of year (00...99)

%Y
year (1970....)

1.52 sh-utils.guide/Literal directives

Literal directives

date directives that produce literal strings.

%%

```
    a literal %  
  
%n  
    a newline  
  
%t  
    a horizontal tab
```

1.53 sh-utils.guide/Setting the time

Setting the time

If given an argument that does not start with +, date sets the system clock to the time and date specified by that argument (as described below). You must have appropriate privileges to set the system clock. The --date and --set options may not be used with such an argument. The --universal option may be used with such an argument to indicate that the specified time and date are relative to Coordinated Universal Time rather than to the local time zone.

The argument must consist entirely of digits, which have the following meaning:

```
MM  
    month  
  
DD  
    day within month  
  
HH  
    hour  
  
MM  
    minute  
  
CC  
    first two digits of year (optional)  
  
YY  
    last two digits of year (optional)  
  
SS  
    second (optional)
```

The --set option also sets the system clock; see the next section.

1.54 sh-utils.guide/Options for date

Options for date

The program accepts the following options. Also see See Common options.

`-d DATESTR`
`--date=DATESTR`
Display the time and date specified in DATESTR instead of the current time and date. DATESTR can be in almost any common format. It can contain month names, timezones, am and pm, yesterday, ago, next, etc. The source file getdate.y implements this parsing for all GNU routines; we need precise documentation!

`-f DATEFILE`
`--file=DATEFILE`
Parse each line in DATEFILE as with `-d` and display the resulting time and date. If DATEFILE is `-`, use standard input. This is useful when you have many dates to process, because the system overhead of starting up the date executable many times can be considerable.

`-s DATESTR`
`--set=DATESTR`
Set the time and date to DATESTR, See `-d` above.

`-u`
`--utc`
`--universal`
Print or set the time and date in Universal Coordinated Time instead of in local (wall clock) time.

1.55 sh-utils.guide/Examples of date

Examples of date

Here are a few examples. Also see the documentation for the `-d` option in the previous section.

* To print the date of the day before yesterday:

```
date --date='2 days ago'
```

* To print the date of the day three months and one day hence:

```
date --date='3 months 1 day'
```

* To print the day of year of Christmas in the current year:

```
date --date='25 Dec' +%j
```

* To print the current full month name and the day of the month:

```
date '+%B %d'
```

But this may not be what you want because for the first nine days of the month, the %d expands to a zero-padded two-digit field, for example `date -d 1may '+%B %d'` will print May 01.

- * To print a date without the leading zero for one-digit days of the month, you can use the (GNU extension) `-` modifier to suppress the padding altogether.

```
date -d=1may '+%B %-d'
```

- * To print the current date and time in the format required by many non-GNU versions of `date` when setting the system clock:

```
date +%m%d%H%M%Y.%S
```

- * To set the system clock forward by two minutes:

```
date --set='+2 minutes'
```

1.56 sh-utils.guide/uname invocation

`uname`: Print system information

=====

`uname` prints information about the machine and operating system it is run on. If no options are given, `uname` acts as if the `-s` option were given.

Synopsis:

```
uname [ OPTION ]...
```

If multiple options or `-a` are given, the selected information is printed in this order:

```
SYSNAME NODENAME RELEASE OSVERSION MACHINE
```

The `OSVERSION`, at least, may well be multiple words. For example:

```
bash$ uname -a
=> Linux hayley 1.0.4 #3 Thu May 12 18:06:34 1994 i486
```

The program accepts the following options. Also see `See Common options`.

`-a`

`--all`

Print all of the below information.

`-m`

`--machine`

Print the machine (hardware) type.

`-n`

`--nodename`

Print the machine's network node hostname.

```
-r
--release
    Print the operating system release.

-s
--sysname
    Print the operating system name.

-v
    Print the operating system version.
```

1.57 sh-utils.guide/hostname invocation

```
hostname: Print or set system name
=====
```

With no arguments, `hostname` prints the name of the current host system. With one argument, it sets the current host name to the specified string. You must have appropriate privileges to set the host name.

Synopsis:

```
hostname [ NAME ]
```

The only options are `--help` and `--version`. See Common options.

1.58 sh-utils.guide/Modified command invocation

```
Modified command invocation
*****
```

This section describes commands that run other commands in some context different than the current one: a modified environment, as a different user, etc.

<code>env</code> invocation	Modify environment variables.
<code>nice</code> invocation	Modify scheduling priority.
<code>nohup</code> invocation	Immunize to hangups.
<code>su</code> invocation	Modify user and group id.

1.59 sh-utils.guide/env invocation

env: Run a command in a modified environment
=====

env runs a command with an environment modified as specified by the command line arguments.

Synopses:

```
env [ OPTION ]... [ NAME=VALUE ]... [ COMMAND [ ARGS ]... ]
env
```

Arguments of the form VARIABLE=VALUE set the environment variable VARIABLE to value VALUE. VALUE may be empty (VARIABLE=). Setting a variable to an empty value is different from unsetting it.

The first remaining argument specifies the program name to invoke; it is searched for according to the PATH environment variable. Any remaining arguments are passed as arguments to that program.

If no command name is specified following the environment specifications, the resulting environment is printed. This is like specifying a command name of printenv.

The program accepts the following options. Also see See Common options.

```
-u NAME
--unset=NAME
    Remove variable NAME from the environment, if it was in the
    environment.

-
-i
--ignore-environment
    Start with an empty environment, ignoring the inherited
    environment.
```

1.60 sh-utils.guide/nice invocation

nice: Run a command with modified scheduling priority
=====

If no arguments are given, nice prints the current scheduling priority, which it inherited. Otherwise, nice runs the given COMMAND with its scheduling priority adjusted. If no ADJUSTMENT is given, the priority of the command is incremented by 10. You must have appropriate privileges to specify a negative adjustment. The priority can be adjusted by nice over the range of -20 (the highest priority) to 19 (the lowest).

Synopsis:

```
nice [ OPTION ]... [ COMMAND [ ARG ]... ]
```

Because most shells have a built-in command by the same name, using the unadorned command name in a script or interactively may get you different functionality than that described here.

The program accepts the following option. Also see See Common options.

```
-n ADJUSTMENT
-ADJUSTMENT
--adjustment=ADJUSTMENT
    Add ADJUSTMENT instead of 10 to the command's priority.
```

1.61 sh-utils.guide/nohup invocation

nohup: Run a command immune to hangups
=====

nohup runs the given COMMAND with hangup signals ignored, so that the command can continue running in the background after you log out.

Synopsis:

```
nohup COMMAND [ ARG ]...
```

Also, the scheduling priority is increased by 5. If standard output is a tty, it and standard error are redirected so that they are appended to the file nohup.out; if that cannot be written to, they are appended to the file \$HOME/nohup.out. If that cannot be written to, the command is not run.

If nohup creates either nohup.out or \$HOME/nohup.out, it creates it with no "group" or "other" access permissions. It does not change the permissions if the output file already existed.

nohup does not automatically put the command it runs in the background; you must do that explicitly, by ending the command line with an &.

The only options are --help and --version. See Common options.

1.62 sh-utils.guide/su invocation

su: Run a command with substitute user and group id
=====

su allows one user to temporarily become another user. It runs a command (often an interactive shell) with the real and effective user id, group id, and supplemental groups of a given USER.

Synopsis:

```
su [ OPTION ]... [ USER [ ARG ]... ]
```

If no USER is given, the default is root, the super-user. The shell to use is taken from USER's passwd entry, or /bin/sh if none is specified there. If USER has a password, su prompts for the password unless run by a user with effective user id of zero (the super-user).

By default, su does not change the current directory. It sets the environment variables HOME and SHELL from the password entry for USER, and if USER is not the super-user, sets USER and LOGNAME to USER. By default, the shell is not a login shell.

Any additional ARGs are passed as additional arguments to the shell.

GNU su does not treat /bin/sh or any other shells specially (e.g., by setting argv[0] to -su, passing -c only to certain shells, etc.).

su can optionally be compiled to use syslog to report failed, and optionally successful, su attempts. (If the system supports syslog.) However, GNU su does not check if the user is a member of the wheel group; see below.

The program accepts the following options. Also see See Common options.

-c COMMAND

--command=COMMAND

Pass COMMAND, a single command line to run, to the shell with a -c option instead of starting an interactive shell.

-f

--fast

Pass the -f option to the shell. This probably only makes sense if the shell run is csh or tcsh, for which the -f option prevents reading the startup file (.cshrc). With Bourne-like shells, the -f option disables file name pattern expansion (globbing), which is not likely to be useful.

-

-l

--login

Make the shell a login shell. This means the following. Unset all environment variables except TERM, HOME, and SHELL (which are set as described above), and USER and LOGNAME (which are set, even for the super-user, as described above), and set PATH to a compiled-in default value. Change to USER's home directory. Prepend - to the shell's name, intended to make it read its login startup file(s).

-m

-p

--preserve-environment

Do not change the environment variables HOME, USER, LOGNAME, or SHELL. Run the shell given in the environment variable SHELL instead of the shell from USER's passwd entry, unless the user running su is not the superuser and USER's shell is restricted. A

restricted shell is one that is not listed in the file /etc/shells, or in a compiled-in list if that file does not exist. Parts of what this option does can be overridden by --login and --shell.

-s SHELL

--shell=SHELL

Run SHELL instead of the shell from USER's passwd entry, unless the user running su is not the superuser and USER's shell is restricted (see -m just above).

Why GNU su does not support the wheel group

=====

(This section is by Richard Stallman.)

Sometimes a few of the users try to hold total power over all the rest. For example, in 1984, a few users at the MIT AI lab decided to seize power by changing the operator password on the Twenex system and keeping it secret from everyone else. (I was able to thwart this coup and give power back to the users by patching the kernel, but I wouldn't know how to do that in Unix.)

However, occasionally the rulers do tell someone. Under the usual su mechanism, once someone learns the root password who sympathizes with the ordinary users, he or she can tell the rest. The "wheel group" feature would make this impossible, and thus cement the power of the rulers.

I'm on the side of the masses, not that of the rulers. If you are used to supporting the bosses and sysadmins in whatever they do, you might find this idea strange at first.

1.63 sh-utils.guide/Delaying

Delaying

Perhaps wait or other commands should be described here also?

sleep invocation Delay for a specified time.

1.64 sh-utils.guide/sleep invocation

sleep: Delay for a specified time

=====

sleep pauses for an amount of time specified by the sum of the values of the command line arguments.

Synopsis:

```
sleep [ NUMBER[smhd] ]...
```

Each argument is a number followed by an optional unit; the default is seconds. The units are:

```
s
    seconds

m
    minutes

h
    hours

d
    days
```

The only options are --help and --version. See Common options.

1.65 sh-utils.guide/Index

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date options	Options for date
-su	su invocation
\0ooo	printf invocation
\0xhhh	printf invocation
\c	printf invocation
access permission tests	Access permission tests

addition	Numeric expressions
am i	who invocation
and operator <1>	Connectives for test
and operator	Relations for expr
appropriate privileges <1>	nice invocation
appropriate privileges <2>	Setting the time
appropriate privileges	hostname invocation
arbitrary date strings, parsing	Options for date
arbitrary text, displaying	echo invocation
arithmetic tests	Numeric tests
background jobs, stopping at terminal write	Local
backslash escapes	echo invocation
basename	basename invocation
baud rate, setting	Special
beeping at input buffer full	Input
beginning of time	Time directives
block special check	File type tests
breaks, cause interrupts	Input
breaks, ignoring	Input
brkint	Input
bsN	Output
bugs, reporting	Introduction
built-in shell commands, conflicts with <1>	pwd invocation
built-in shell commands, conflicts with <2>	test invocation
built-in shell commands, conflicts with	nice invocation
C-s/C-q flow control	Input
case translation	Local
cbreak	Combination
change or print terminal settings	stty invocation
character size	Control
character special check	File type tests
characters, special	Characters
check file types	test invocation
clocal	Control
cols	Special
columns	Special
combination settings	Combination
commands for delaying	Delaying
commands for exit status	Conditions
commands for file name manipulation	File name manipulation
commands for invoking other commands	Modified command invocation
commands for printing text	Printing text
commands for printing the working context	Working context information
commands for printing user information	User information
commands for redirection	Redirection
commands for system context	System context
common options	Common options
compare values	test invocation
comparison operators	Relations for expr
conditions	Conditions
conflicts with shell built-ins <1>	nice invocation
conflicts with shell built-ins <2>	pwd invocation
conflicts with shell built-ins	test invocation
connectives, logical <1>	Connectives for test
connectives, logical	Relations for expr
context, system	System context
control characters, using ^C	Local

control settings	Control
cooked	Combination
coordinated universal time	Options for date
crN	Output
cread	Control
crt	Combination
crterase	Local
crtkill	Local
crtsects	Control
csN	Control
cstopb	Control
ctlecho	Local
current working directory, printing	pwd invocation
date	date invocation
date directives	Date directives
date strings, parsing	Options for date
dec	Combination
decctlq	Combination
delay for a specified time	sleep invocation
delaying commands	Delaying
destinations, multiple output	tee invocation
directives, date	Date directives
directives, literal	Literal directives
directives, time	Time directives
directory check	File type tests
directory components, printing	dirname invocation
directory, stripping from file names	basename invocation
dirname	dirname invocation
disabling special characters	Characters
displaying text	echo invocation
division	Numeric expressions
do nothing, successfully	true invocation
dsusp	Characters
echo <l>	Local
echo	echo invocation
echoctl	Local
echoe	Local
echok	Local
echoke	Local
echonl	Local
echoprt	Local
effective uid and gid, printing	id invocation
effective UID, printing	whoami invocation
eight-bit characters <l>	Control
eight-bit characters	Combination
eight-bit input	Input
ek	Combination
env	env invocation
environment variables, printing	printenv invocation
environment, preserving	su invocation
environment, printing	env invocation
environment, running a program in a modified	env invocation
eof	Characters
eol	Characters
eol2	Characters
epoch, seconds since	Time directives
equal string check	String tests

erase	Characters
evaluation of expressions	expr invocation
even parity	Control
evenp	Combination
examples of date	Examples of date
examples of expr	Examples of expr
executable file check	Access permission tests
existence-of-file check	File characteristics tests
exit status commands	Conditions
exit status of expr	expr invocation
exit status of pathchk	pathchk invocation
exit status of printenv	printenv invocation
exit status of true <1>	false invocation
exit status of true	true invocation
exit status of tty	tty invocation
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expressions, string	String expressions
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false	false invocation
fascism	su invocation
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file name pattern expansion, disabled	su invocation
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flow control, hardware	Control
flow control, software	Input
flushing, disabling	Local
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getdate.y	Options for date
globbing, disabled	su invocation
Greenwich Mean Time	Options for date
group wheel, not supported	su invocation
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hangups, immunity to	nohup invocation
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hat notation for control characters	Local
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hostname <1>	hostname invocation
hostname	uname invocation
hup[cl]	Control
icanon	Local
icrnl	Input
id	id invocation
idle time	who invocation
iexten	Local
ignbrk	Input

igncr	Input
ignpar	Input
imaxbel	Input
immunity to hangups	nohup invocation
index	String expressions
information, about current users	who invocation
inlcr	Input
inpck	Input
input settings	Input
intr	Characters
introduction	Introduction
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isig	Local
ispeed	Special
istrip	Input
iuc lc	Input
ixany	Input
ixoff	Input
ixon	Input
kill	Characters
last DAY	Options for date
LCASE	Combination
leading directory components, stripping	basename invocation
length	String expressions
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LINES	Special
literal directives	Literal directives
litout	Combination
lnext	Characters
local settings	Local
logical and operator <1>	Relations for expr
logical and operator	Connectives for test
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logical connectives	Relations for expr
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login name, printing	logname invocation
login sessions, printing users with	users invocation
login shell	su invocation
login shell, creating	su invocation
login time	who invocation
LOGNAME	su invocation
logname	logname invocation
lowercase, translating to output	Output
machine type	uname invocation
machine-readable stty output	stty invocation
manipulation of file names	File name manipulation
match	String expressions
matching patterns	String expressions
message status	who invocation
min	Special
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modem control	Control
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multiplication	Numeric expressions
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network node name	uname invocation
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newline echoing after kill	Local
newline, echoing	Local
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nice	nice invocation
nl	Combination
nlN	Output
no-op	true invocation
node name	uname invocation
noflsh	Local
nohup	nohup invocation
nohup.out	nohup invocation
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nonempty file check	File characteristics tests
nonzero-length string check	String tests
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numeric expressions	Numeric expressions
numeric field padding	date invocation
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ocrnl	Output
odd parity	Control
oddp	Combination
ofdel	Output
ofill	Output
olcuc	Output
older-than file check	File characteristics tests
onlcr	Output
onlret	Output
onocr	Output
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operating system release	uname invocation
operating system version	uname invocation
opost	Output
options for date	Options for date
or operator <l>	Connectives for test
or operator	Relations for expr
ospeed	Special
output settings	Output
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owned by effective uid check	Access permission tests
pad character	Output
pad instead of timing for delaying	Output
padding of numeric fields	date invocation
parenb	Control
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parity	Combination
parity errors, marking	Input
parity, ignoring	Input
parmrk	Input
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pass8	Combination
passwd entry, and su shell	su invocation
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print system information	uname invocation
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printing current user information	who invocation
printing current usernames	users invocation
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printing the effective UID	whoami invocation
printing the hostname	hostname invocation
printing user's login name	logname invocation
priority, modifying	nice invocation
prterase	Local
pwd	pwd invocation
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rprnt	Characters
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tandem	Input
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