



## ***Rocky Enterprise Linux 9.2 Manual Pages on command 'regex.3'***

**C:~>man regex.3**

REGEX(3)                      Linux Programmer's Manual                      REGEX(3)

### NAME

regcomp, regexec, regerror, regfree - POSIX regex functions

### SYNOPSIS

```
#include <sys/types.h>
#include <regex.h>
int regcomp(regex_t *preg, const char *regex, int cflags);
int regexec(const regex_t *preg, const char *string, size_t nmatch,
             regmatch_t pmatch[], int eflags);
size_t regerror(int errcode, const regex_t *preg, char *errbuf,
                size_t errbuf_size);
void regfree(regex_t *preg);
```

### DESCRIPTION

#### POSIX regex compiling

regcomp() is used to compile a regular expression into a form that is suitable for subsequent regexec() searches.

regcomp() is supplied with preg, a pointer to a pattern buffer storage area; regex, a pointer to the null-terminated string and cflags, flags used to determine the type of compilation.

All regular expression searching must be done via a compiled pattern buffer, thus regexec() must always be supplied with the address of a regcomp() initialized pattern buffer.

cflags may be the bitwise-or of zero or more of the following:

#### REG\_EXTENDED

Use POSIX Extended Regular Expression syntax when interpreting regex. If not set, POSIX Basic Regular Expression syntax is used.

#### REG\_ICASE

Do not differentiate case. Subsequent regexec() searches using this pattern buffer will be case insensitive.

#### REG\_NOSUB

Do not report position of matches. The nmatch and pmatch arguments to regexec() are ignored if the pattern buffer supplied was compiled with this flag set.

#### REG\_NEWLINE

Match-any-character operators don't match a newline.

A nonmatching list ([^...]) not containing a newline does not match a new? line.

Match-beginning-of-line operator (^) matches the empty string immediately after a newline, regardless of whether eflags, the execution flags of regexec(), contains REG\_NOTBOL.

Match-end-of-line operator (\$) matches the empty string immediately before a newline, regardless of whether eflags contains REG\_NOTEOL.

#### POSIX regex matching

regexec() is used to match a null-terminated string against the precompiled pattern buffer, preg. nmatch and pmatch are used to provide information regarding the location of any matches. eflags may be the bitwise-or of one or both of REG\_NOTBOL and REG\_NOTEOL which cause changes in matching behavior described below.

#### REG\_NOTBOL

The match-beginning-of-line operator always fails to match (but see the compilation flag REG\_NEWLINE above). This flag may be used when different portions of a string are passed to regexec() and the beginning of the string should not be interpreted as the beginning of the line.

#### REG\_NOTEOL

The match-end-of-line operator always fails to match (but see the compilation flag REG\_NEWLINE above).

## REG\_STARTEND

Use `pmatch[0]` on the input string, starting at byte `pmatch[0].rm_so` and ending before byte `pmatch[0].rm_eo`. This allows matching embedded NUL bytes and avoids a `strlen(3)` on large strings. It does not use `nmatch` on input, and does not change `REG_NOTBOL` or `REG_NEWLINE` processing. This flag is a BSD extension, not present in POSIX.

## Byte offsets

Unless `REG_NOSUB` was set for the compilation of the pattern buffer, it is possible to obtain match addressing information. `pmatch` must be dimensioned to have at least `nmatch` elements. These are filled in by `regexec()` with substring match addresses. The offsets of the subexpression starting at the *i*th open parenthesis are stored in `pmatch[i]`. The entire regular expression's match addresses are stored in `pmatch[0]`. (Note that to return the offsets of *N* subexpression matches, `nmatch` must be at least *N*+1.) Any unused structure elements will contain the value -1.

The `regmatch_t` structure which is the type of `pmatch` is defined in `<regex.h>`.

```
typedef struct {
    regoff_t rm_so;
    regoff_t rm_eo;
} regmatch_t;
```

Each `rm_so` element that is not -1 indicates the start offset of the next largest substring match within the string. The relative `rm_eo` element indicates the end offset of the match, which is the offset of the first character after the matching text.

## POSIX error reporting

`regerror()` is used to turn the error codes that can be returned by both `regcomp()` and `regexec()` into error message strings.

`regerror()` is passed the error code, `errcode`, the pattern buffer, `preg`, a pointer to a character string buffer, `errbuf`, and the size of the string buffer, `errbuf_size`. It returns the size of the `errbuf` required to contain the null-terminated error message string. If both `errbuf` and `errbuf_size` are nonzero, `errbuf` is filled in with the first `errbuf_size - 1` characters of the error message and a terminating null byte (`'\0'`).

## POSIX pattern buffer freeing

Supplying `regfree()` with a precompiled pattern buffer, `preg` will free the memory allocated to the pattern buffer by the compiling process, `regcomp()`.

## RETURN VALUE

`regcomp()` returns zero for a successful compilation or an error code for failure.

`regexexec()` returns zero for a successful match or `REG_NOMATCH` for failure.

## ERRORS

The following errors can be returned by `regcomp()`:

### REG\_BADBR

Invalid use of back reference operator.

### REG\_BADPAT

Invalid use of pattern operators such as group or list.

### REG\_BADRPT

Invalid use of repetition operators such as using '\*' as the first character.

### REG\_EBRACE

Un-matched brace interval operators.

### REG\_EBRACK

Un-matched bracket list operators.

### REG\_ECOLLATE

Invalid collating element.

### REG\_ECTYPE

Unknown character class name.

### REG\_EEND

Nonspecific error. This is not defined by POSIX.2.

### REG\_EESCAPE

Trailing backslash.

### REG\_EPAREN

Un-matched parenthesis group operators.

### REG\_ERANGE

Invalid use of the range operator; for example, the ending point of the range occurs prior to the starting point.

### REG\_ESIZE

Compiled regular expression requires a pattern buffer larger than 64 kB.

