



Linux Ubuntu 26.04 Manual Pages on command 'popen.3'

\$ man popen.3

popen(3) Library Functions Manual popen(3)

NAME

popen, pclose - pipe stream to or from a process

LIBRARY

Standard C library (libc, -lc)

SYNOPSIS

```
#include <stdio.h>
```

```
FILE *popen(const char *command, const char *type);
```

```
int pclose(FILE *stream);
```

Feature Test Macro Requirements for glibc (see feature_test_macros(7)):

popen(), pclose():

```
_POSIX_C_SOURCE >= 2
```

```
|| /* glibc <= 2.19: */ _BSD_SOURCE || _SVID_SOURCE
```

DESCRIPTION

The popen() function opens a process by creating a pipe, forking, and invoking the shell.

Since a pipe is by definition unidirectional, the type argument may specify only reading or writing, not both; the resulting stream is correspondingly read-only or write-only.

The command argument is a pointer to a null-terminated string containing a shell command line. This command is passed to /bin/sh using the -c flag; interpretation, if any, is performed by the shell.

The type argument is a pointer to a null-terminated string which must contain either the letter 'r' for reading or the letter 'w' for writing. Since glibc 2.9, this argument can additionally include the letter 'e', which causes the close-on-exec flag (FD_CLOEXEC) to be

set on the underlying file descriptor; see the description of the `O_CLOEXEC` flag in `open(2)` for reasons why this may be useful.

The `return` value from `popen()` is a normal standard I/O stream in all respects save that it must be closed with `pclose()` rather than `fclose(3)`. Writing to such a stream writes to the standard input of the command; the command's standard output is the same as that of the process that called `popen()`, unless this is altered by the command itself. Conversely, reading from the stream reads the command's standard output, and the command's standard input is the same as that of the process that called `popen()`.

Note that output `popen()` streams are block buffered by default.

The `pclose()` function waits for the associated process to terminate and returns the exit status of the command as returned by `wait4(2)`.

RETURN VALUE

popen(): on success, returns a pointer to an open stream that can be used to read or write to the pipe; if the fork(2) or pipe(2) calls fail, or if the function cannot allocate memory, NULL is returned.

`pclose()`: on success, returns the exit status of the command; if `wait4(2)` returns an error, or some other error is detected, `-1` is returned.

On failure, both functions set `errno` to indicate the error.

ERRORS

The `popen()` function does not set `errno` if memory allocation fails. If the underlying `fork(2)` or `pipe(2)` fails, `errno` is set to indicate the error. If the `type` argument is invalid, and this condition is detected, `errno` is set to `EINVAL`.

If `pclose()` cannot obtain the child status, `errno` is set to `ECHILD`.

ATTRIBUTES

For an explanation of the terms used in this section, see `attributes(7)`.

[illegible]

?	Interface	?	Attribute	?	Value	?
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[illegible]

? popen(), pclose() ? Thread safety ? MT-Safe ?

[illegible]

VERSIONS

The 'e' value for type is a Linux extension.

STANDARDS

POSIX.1-2008.

HISTORY

POSIX.1-2001.

CAVEATS

Carefully read Caveats in `system(3)`.

BUGS

Since the standard input of a command opened for reading shares its `seek` offset with the process that called `popen()`, if the original process has done a buffered read, the command's input position may not be as expected. Similarly, the output from a command opened for writing may become intermingled with that of the original process. The latter can be avoided by calling `fflush(3)` before `popen()`.

Failure to execute the shell is indistinguishable from the shell's failure to execute the command, or an immediate exit of the command. The only hint is an exit status of 127.

SEE ALSO

`sh(1)`, `fork(2)`, `pipe(2)`, `wait4(2)`, `fclose(3)`, `fflush(3)`, `fopen(3)`, `stdio(3)`, `system(3)`

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`popen(3)`