

**NAME**

openpty, login\_tty, forkpty – terminal utility functions

**SYNOPSIS**

```
#include <pty.h>

int openpty(int *amaster, int *aslave, char *name,
            const struct termios *termp,
            const struct winsize *winp);

pid_t forkpty(int *amaster, char *name,
              const struct termios *termp,
              const struct winsize *winp);
```

```
#include <utmp.h>
```

```
int login_tty(int fd);
```

Link with `-lutil`.

**DESCRIPTION**

The **openpty()** function finds an available pseudoterminal and returns file descriptors for the master and slave in *amaster* and *aslave*. If *name* is not NULL, the filename of the slave is returned in *name*. If *termp* is not NULL, the terminal parameters of the slave will be set to the values in *termp*. If *winp* is not NULL, the window size of the slave will be set to the values in *winp*.

The **login\_tty()** function prepares for a login on the terminal *fd* (which may be a real terminal device, or the slave of a pseudoterminal as returned by **openpty()**) by creating a new session, making *fd* the controlling terminal for the calling process, setting *fd* to be the standard input, output, and error streams of the current process, and closing *fd*.

The **forkpty()** function combines **openpty()**, **fork(2)**, and **login\_tty()** to create a new process operating in a pseudoterminal. The file descriptor of the master side of the pseudoterminal is returned in *amaster*. If *name* is not NULL, the buffer it points to is used to return the filename of the slave. The *termp* and *winp* arguments, if not NULL, will determine the terminal attributes and window size of the slave side of the pseudoterminal.

**RETURN VALUE**

If a call to **openpty()**, **login\_tty()**, or **forkpty()** is not successful, `-1` is returned and *errno* is set to indicate the error. Otherwise, **openpty()**, **login\_tty()**, and the child process of **forkpty()** return 0, and the parent process of **forkpty()** returns the process ID of the child process.

**ERRORS**

**openpty()** fails if:

**ENOENT**

There are no available terminals.

**login\_tty()** fails if **ioctl(2)** fails to set *fd* to the controlling terminal of the calling process.

**forkpty()** fails if either **openpty()** or **fork(2)** fails.

**ATTRIBUTES**

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

Interface	Attribute	Value
<b>forkpty()</b> , <b>openpty()</b>	Thread safety	MT-Safe locale
<b>login_tty()</b>	Thread safety	MT-Unsafe race:ttyname

**CONFORMING TO**

These are BSD functions, present in glibc. They are not standardized in POSIX.

## NOTES

The **const** modifiers were added to the structure pointer arguments of **openpty()** and **forkpty()** in glibc 2.8.

In versions of glibc before 2.0.92, **openpty()** returns file descriptors for a BSD pseudoterminal pair; since glibc 2.0.92, it first attempts to open a UNIX 98 pseudoterminal pair, and falls back to opening a BSD pseudoterminal pair if that fails.

## BUGS

Nobody knows how much space should be reserved for *name*. So, calling **openpty()** or **forkpty()** with non-NULL *name* may not be secure.

## SEE ALSO

**fork(2)**, **ttynname(3)**, **pty(7)**

## COLOPHON

This page is part of release 5.02 of the Linux *man-pages* project. A description of the project, information about reporting bugs, and the latest version of this page, can be found at <https://www.kernel.org/doc/man-pages/>.