#### **NAME**

grantpt, ptsname, ptsname\_r, unlockpt - pseudo-terminal access functions

## **LIBRARY**

```
Standard C Library (libc, -lc)
```

### **SYNOPSIS**

```
#include <stdlib.h>

int
grantpt(int fildes);

char *
ptsname(int fildes);

int
ptsname_r(int fildes, char *buffer, size_t buflen);

int
unlockpt(int fildes);
```

# **DESCRIPTION**

The **grantpt**(), **ptsname**(), and **unlockpt**() functions allow access to pseudo-terminal devices. These three functions accept a file descriptor that references the master half of a pseudo-terminal pair. This file descriptor is created with posix\_openpt(2).

The **grantpt**() function is used to establish ownership and permissions of the slave device counterpart to the master device specified with *fildes*. The slave device's ownership is set to the real user ID of the calling process, and the permissions are set to user readable-writable and group writable. The group owner of the slave device is also set to the group "tty".

The **ptsname**() function returns the full pathname of the slave device counterpart to the master device specified with *fildes*. This value can be used to subsequently open the appropriate slave after posix\_openpt(2) and **grantpt**() have been called.

The **ptsname\_r**() function is the thread-safe version of **ptsname**(). The caller must provide storage for the results of the full pathname of the slave device in the *buffer* and *bufsize* arguments.

The **unlockpt**() function clears the lock held on the pseudo-terminal pair for the master device specified with *fildes*.

#### RETURN VALUES

The **grantpt**(), **ptsname\_r**(), and **unlockpt**() functions return the value 0 if successful; otherwise the value -1 is returned and the global variable *errno* is set to indicate the error.

The **ptsname**() function returns a pointer to the name of the slave device on success; otherwise a NULL pointer is returned.

#### **ERRORS**

The **grantpt**(), **ptsname**(), **ptsname\_r**() and **unlockpt**() functions may fail and set *errno* to:

[EBADF] *fildes* is not a valid open file descriptor.

[EINVAL] *fildes* is not a master pseudo-terminal device.

In addition, the **ptsname\_r**() function may set *errno* to:

[ERANGE] The buffer was too small.

In addition, the **grantpt**() function may set *errno* to:

[EACCES] The slave pseudo-terminal device could not be accessed.

# **SEE ALSO**

```
posix_openpt(2), pts(4), tty(4)
```

#### **STANDARDS**

The **ptsname**() function conforms to IEEE Std 1003.1-2008 ("POSIX.1").

This implementation of **grantpt**() and **unlockpt**() does not conform to IEEE Std 1003.1-2008 ("POSIX.1"), because it depends on posix\_openpt(2) to create the pseudo-terminal device with proper permissions in place. It only validates whether *fildes* is a valid pseudo-terminal master device. Future revisions of the specification will likely allow this behaviour, as stated by the Austin Group.

# **HISTORY**

The **grantpt**(), **ptsname**() and **unlockpt**() functions appeared in FreeBSD 5.0.