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Red Hat Enterprise Linux Release 9.2 Manual Pages on 'pthread_mutexattr_gettype.3p' command

\$ man pthread_mutexattr_gettype.3p

PTHREAD_MUTEXATTR_GETTYPE(3POSIX Programmer's ManPTHREAD_MUTEXATTR_GETTYPE(3P)

PROLOG

This manual page is part of the POSIX Programmer's Manual. The Linux implementation of this interface may differ (consult the corresponding Linux manual page for details of Linux behavior), or the interface may not be implemented on Linux.

NAME

pthread_mutexattr_gettype, pthread_mutexattr_settype ? get and set the mutex type attribute

SYNOPSIS

```
#include <pthread.h>

int pthread_mutexattr_gettype(const pthread_mutexattr_t *restrict attr,
    int *restrict type);

int pthread_mutexattr_settype(pthread_mutexattr_t *attr, int type);
```

DESCRIPTION

The pthread_mutexattr_gettype() and pthread_mutexattr_settype() functions, respectively, shall get and set the mutex type attribute. This attribute is set in the type parameter to these functions. The default value of the type attribute is PTHREAD_MUTEX_DEFAULT.

The type of mutex is contained in the type attribute of the mutex attributes. Valid mutex types include:

```
PTHREAD_MUTEX_NORMAL PTHREAD_MUTEX_ERRORCHECK PTHREAD_MUTEX_RECURSIVE
PTHREAD_MUTEX_DEFAULT
```

The mutex type affects the behavior of calls which lock and unlock the mutex. See `pthread_mutex_lock()` for details. An implementation may map `PTHREAD_MUTEX_DEFAULT` to one of the other mutex types.

The behavior is undefined if the value specified by the `attr` argument to `pthread_mutexattr_gettype()` or `pthread_mutexattr_settype()` does not refer to an initialized mutex attributes object.

RETURN VALUE

Upon successful completion, the `pthread_mutexattr_gettype()` function shall return zero and store the value of the type attribute of `attr` into the object referenced by the `type` parameter. Otherwise, an error shall be returned to indicate the error.

If successful, the `pthread_mutexattr_settype()` function shall return zero; otherwise, an error number shall be returned to indicate the error.

ERRORS

The `pthread_mutexattr_settype()` function shall fail if:

`EINVAL` The value type is invalid.

These functions shall not return an error code of `[EINTR]`.

The following sections are informative.

EXAMPLES

None.

APPLICATION USAGE

It is advised that an application should not use a `PTHREAD_MUTEX_RECURSIVE` mutex with condition variables because the implicit unlock performed for a `pthread_cond_timedwait()` or `pthread_cond_wait()` may not actually release the mutex (if it had been locked multiple times). If this happens, no other thread can satisfy the condition of the predicate.

RATIONALE

If an implementation detects that the value specified by the `attr` argument to `pthread_mutexattr_gettype()` or `pthread_mutexattr_settype()` does not refer to an initialized mutex attributes object, it is recommended that the function should fail and report an `[EINVAL]` error.

FUTURE DIRECTIONS

None.

SEE ALSO

`pthread_cond_timedwait()`, `pthread_mutex_lock()`

The Base Definitions volume of POSIX.1-2017, `<pthread.h>`

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