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

\$ man random_r.3

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

NAME

random_r, srandom_r, initstate_r, setstate_r - reentrant random number generator

SYNOPSIS

```
#include <stdlib.h>

int random_r(struct random_data *buf, int32_t *result);

int srandom_r(unsigned int seed, struct random_data *buf);

int initstate_r(unsigned int seed, char *statebuf,
               size_t statelen, struct random_data *buf);

int setstate_r(char *statebuf, struct random_data *buf);
```

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

```
random_r(), srandom_r(), initstate_r(), setstate_r():

/* Glibc since 2.19: */ _DEFAULT_SOURCE

|| /* Glibc versions <= 2.19: */ _SVID_SOURCE || _BSD_SOURCE
```

DESCRIPTION

These functions are the reentrant equivalents of the functions described in random(3). They are suitable for use in multithreaded programs where each thread needs to obtain an independent, reproducible sequence of random numbers.

The random_r() function is like random(3), except that instead of using state information maintained in a global variable, it uses the state information in the argument pointed to by buf, which must have been

previously initialized by `initstate_r()`. The generated random number is returned in the argument result.

The `srandom_r()` function is like `srandom(3)`, except that it initializes the seed for the random number generator whose state is maintained in the object pointed to by `buf`, which must have been previously initialized by `initstate_r()`, instead of the seed associated with the global state variable.

The `initstate_r()` function is like `initstate(3)` except that it initializes the state in the object pointed to by `buf`, rather than initializing the global state variable. Before calling this function, the `buf.state` field must be initialized to `NULL`. The `initstate_r()` function records a pointer to the `statebuf` argument inside the structure pointed to by `buf`. Thus, `statebuf` should not be deallocated so long as `buf` is still in use. (So, `statebuf` should typically be allocated as a static variable, or allocated on the heap using `malloc(3)` or similar.)

The `setstate_r()` function is like `setstate(3)` except that it modifies the state in the object pointed to by `buf`, rather than modifying the global state variable. `state` must first have been initialized using `initstate_r()` or be the result of a previous call of `setstate_r()`.

RETURN VALUE

All of these functions return 0 on success. On error, -1 is returned, with `errno` set to indicate the cause of the error.

ERRORS

`EINVAL` A state array of less than 8 bytes was specified to `initstate_r()`.

`EINVAL` The `statebuf` or `buf` argument to `setstate_r()` was `NULL`.

`EINVAL` The `buf` or result argument to `random_r()` was `NULL`.

ATTRIBUTES

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

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?Interface ? Attribute ? Value ?

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