

NAME

timer_settime, timer_gettime – arm/disarm and fetch state of POSIX per-process timer

SYNOPSIS

```
#include <time.h>
```

```
int timer_settime(timer_t timerid, int flags,
                  const struct itimerspec *new_value,
                  struct itimerspec *old_value);
int timer_gettime(timer_t timerid, struct itimerspec *curr_value);
```

Link with `-lrt`.

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

`timer_settime()`, `timer_gettime()`: `_POSIX_C_SOURCE >= 199309`

DESCRIPTION

timer_settime() arms or disarms the timer identified by *timerid*. The *new_value* argument is an *itimerspec* structure that specifies the new initial value and the new interval for the timer. The *itimerspec* structure is defined as follows:

```
struct timespec {
    time_t tv_sec;          /* Seconds */
    long tv_nsec;          /* Nanoseconds */
};

struct itimerspec {
    struct timespec it_interval; /* Timer interval */
    struct timespec it_value;    /* Initial expiration */
};
```

Each of the substructures of the *itimerspec* structure is a *timespec* structure that allows a time value to be specified in seconds and nanoseconds. These time values are measured according to the clock that was specified when the timer was created by **timer_create()**

If *new_value->it_value* specifies a non-zero value (i.e., either subfield is non-zero), then **timer_settime()** arms (starts) the timer, setting it to initially expire at the given time. (If the timer was already armed, then the previous settings are overwritten.) If *new_value->it_value* specifies a zero value (i.e., both subfields are zero), then the timer is disarmed.

The *new_value->it_interval* field specifies the period of the timer, in seconds and nanoseconds. If this field is non-zero, then each time that an armed timer expires, the timer is reloaded from the value specified in *new_value->it_interval*. If *new_value->it_interval* specifies a zero value then the timer expires just once, at the time specified by *it_value*.

By default, the initial expiration time specified in *new_value->it_value* is interpreted relative to the current time on the timer's clock at the time of the call. This can be modified by specifying **TIMER_ABSTIME** in *flags*, in which case *new_value->it_value* is interpreted as an absolute value as measured on the timer's clock; that is, the timer will expire when the clock value reaches the value specified by *new_value->it_value*. If the specified absolute time has already passed, then the timer expires immediately, and the overrun count (see **timer_getoverrun(2)**) will be set correctly.

If the value of the **CLOCK_REALTIME** clock is adjusted while an absolute timer based on that clock is armed, then the expiration of the timer will be appropriately adjusted. Adjustments to the **CLOCK_REALTIME** clock have no effect on relative timers based on that clock.

If *old_value* is not NULL, then it returns the previous interval of the timer (in *old_value->it_interval*) and the amount of time until the timer would previously have next expired (in *old_value->it_value*).

timer_gettime() returns the time until next expiration, and the the interval, for the timer specified by *timerid*, in the buffer pointed to by *curr_value*. The time remaining until the next timer expiration is returned in *curr_value.it_value*; this is always a relative value, regardless of whether the **TIMER_ABSTIME** flag was used when arming the timer. If the value returned in *curr_value.it_value* is zero, then the timer is currently disarmed. The timer interval is returned in *curr_value.it_interval*. If the value returned in *curr_value.it_interval* is zero, then this is a "one-shot" timer.

RETURN VALUE

On success, **timer_settime()** and **timer_gettime()** return 0. On error, -1 is returned, and *errno* is set to indicate the error.

ERRORS

These functions may fail with the following errors:

EFAULT

new_value, *old_value*, or *curr_value* is not valid a pointer.

EINVAL

timerid is invalid.

timer_settime() may fail with the following errors:

EINVAL

new_value.it_value is negative; or *new_value.it_value.tv_nsec* is negative or greater than 999,999,999.

VERSIONS

These system calls are available since Linux 2.6.

CONFORMING TO

POSIX.1-2001

EXAMPLE

See **timer_create(2)**.

SEE ALSO

timer_create(2), **timer_settime(2)**, **timer_getoverrun(2)**, **time(7)**

COLOPHON

This page is part of release 3.22 of the Linux *man-pages* project. A description of the project, and information about reporting bugs, can be found at <http://www.kernel.org/doc/man-pages/>.