Red Hat Enterprise Linux Release 9.2 Manual Pages on 'times.2' command

$ man times.2

TIMES(2)   Linux Programmer's Manual   TIMES(2)

NAME

    times - get process times

SYNOPSIS

    #include <sys/times.h>

    clock_t times(struct tms *buf);

DESCRIPTION

    times() stores the current process times in the struct tms that buf

    points to. The struct tms is as defined in <sys/times.h>:

      struct tms {

        clock_t tms_utime; /* user time */

        clock_t tms_stime; /* system time */

        clock_t tms_cutime; /* user time of children */

        clock_t tms_cstime; /* system time of children */

      };

    The tms_utime field contains the CPU time spent executing instructions

    of the calling process.   The tms_stime field contains the CPU time

    spent executing inside the kernel while performing tasks on behalf of

    the calling process.

    The tms_cutime field contains the sum of the tms_utime and tms_cutime

    values for all waited-for terminated children.   The tms_cstime field

    contains the sum of the tms_stime and tms_cstime values for all waited-

    for terminated children.

Times for terminated children (and their descendants) are added in at
the moment wait(2) or waitpid(2) returns their process ID. In particu?
lar, times of grandchildren that the children did not wait for are
never seen.

All times reported are in clock ticks.

RETURN VALUE

times() returns the number of clock ticks that have elapsed since an
arbitrary point in the past. The return value may overflow the possi?
ble range of type clock_t. On error, (clock_t) -1 is returned, and er?
rno is set appropriately.

ERRORS

EFAULT tms points outside the process's address space.

CONFORMING TO

POSIX.1-2001, POSIX.1-2008, SVr4, 4.3BSD.

NOTES

The number of clock ticks per second can be obtained using:

    sysconf(_SC_CLK_TCK);

In POSIX.1-1996 the symbol CLK_TCK (defined in <time.h>) is mentioned
as obsolescent. It is obsolete now.

In Linux kernel versions before 2.6.9, if the disposition of SIGCHLD is
set to SIG_IGN, then the times of terminated children are automatically
included in the tms_cstime and tms_cutime fields, although POSIX.1-2001
says that this should happen only if the calling process wait(2)s on
its children.   This nonconformance is rectified in Linux 2.6.9 and
later.

On Linux, the buf argument can be specified as NULL, with the result
that times() just returns a function result. However, POSIX does not
specify this behavior, and most other UNIX implementations require a
non-NULL value for buf.

Note that clock(3) also returns a value of type clock_t, but this value
is measured in units of CLOCKS_PER_SEC, not the clock ticks used by
times().

On Linux, the "arbitrary point in the past" from which the return value

of times() is measured has varied across kernel versions. On Linux 2.4
and   earlier,   this   point   is the moment the system was booted. Since
Linux 2.6, this point is (2^32/HZ) - 300 seconds before system boot
time.   This variability across kernel versions (and across UNIX imple‐
mentations), combined with the fact that the returned value may over‐
flow the range of clock_t, means that a portable application would be
wise to avoid using this value. To measure changes in elapsed time,
use clock_gettime(2) instead.

   Historical

SVr1-3 returns long and the struct members are of type time_t although
they store clock ticks, not seconds since the Epoch. V7 used long for
the struct members, because it had no type time_t yet.

BUGS

A limitation of the Linux system call conventions on some architectures
(notably i386) means that on Linux 2.6 there is a small time window (41
seconds) soon after boot when times() can return -1, falsely indicating
that an error occurred. The same problem can occur when the return
value wraps past the maximum value that can be stored in clock_t.

SEE ALSO

time(1), getrusage(2), wait(2), clock(3), sysconf(3), time(7)

COLOPHON

This page is part of release 5.10 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/.

Linux   2017-09-15   TIMES(2)