

**NAME**

timeradd, timersub, timercmp, timerclear, timerisset – timeval operations

**SYNOPSIS**

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

```
void timeradd(struct timeval *a, struct timeval *b,
              struct timeval *res);
```

```
void timersub(struct timeval *a, struct timeval *b,
              struct timeval *res);
```

```
void timerclear(struct timeval *tvp);
```

```
int timerisset(struct timeval *tvp);
```

```
int timercmp(struct timeval *a, struct timeval *b, CMP);
```

Feature Test Macro Requirements for glibc (see **feature\_test\_macros(7)**):

All functions shown above:

Since glibc 2.19:

```
_DEFAULT_SOURCE
```

Glibc 2.19 and earlier:

```
_BSD_SOURCE
```

**DESCRIPTION**

The macros are provided to operate on *timeval* structures, defined in *<sys/time.h>* as:

```
struct timeval {
    time_t      tv_sec;      /* seconds */
    suseconds_t tv_usec;     /* microseconds */
};
```

**timeradd()** adds the time values in *a* and *b*, and places the sum in the *timeval* pointed to by *res*. The result is normalized such that *res->tv\_usec* has a value in the range 0 to 999,999.

**timersub()** subtracts the time value in *b* from the time value in *a*, and places the result in the *timeval* pointed to by *res*. The result is normalized such that *res->tv\_usec* has a value in the range 0 to 999,999.

**timerclear()** zeros out the *timeval* structure pointed to by *tvp*, so that it represents the Epoch: 1970-01-01 00:00:00 +0000 (UTC).

**timerisset()** returns true (nonzero) if either field of the *timeval* structure pointed to by *tvp* contains a non-zero value.

**timercmp()** compares the timer values in *a* and *b* using the comparison operator *CMP*, and returns true (nonzero) or false (0) depending on the result of the comparison. Some systems (but not Linux/glibc), have a broken **timercmp()** implementation, in which *CMP* of *>=*, *<=*, and *==* do not work; portable applications can instead use

```
!timercmp(..., <)
!timercmp(..., >)
!timercmp(..., !=)
```

**RETURN VALUE**

**timerisset()** and **timercmp()** return true (nonzero) or false (0).

**ERRORS**

No errors are defined.

**CONFORMING TO**

Not in POSIX.1. Present on most BSD derivatives.

**SEE ALSO**

**gettimeofday(2), time(7)**

**COLOPHON**

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