

NAME

pidfile_open, **pidfile_write**, **pidfile_close**, **pidfile_remove** - library for PID files handling

LIBRARY

System Utilities Library (libutil, -lutil)

SYNOPSIS

```
#include <libutil.h>
```

```
struct pidfh *
```

```
pidfile_open(const char *path, mode_t mode, pid_t *pidptr);
```

```
int
```

```
pidfile_write(struct pidfh *pfh);
```

```
int
```

```
pidfile_close(struct pidfh *pfh);
```

```
int
```

```
pidfile_remove(struct pidfh *pfh);
```

```
int
```

```
pidfile_fileno(struct pidfh *pfh);
```

DESCRIPTION

The **pidfile** family of functions allows daemons to handle PID files. It uses `flopen(3)` to lock a pidfile and detect already running daemons.

The **pidfile_open()** function opens (or creates) a file specified by the *path* argument and locks it. If *pidptr* argument is not NULL and file can not be locked, the function will use it to store a PID of an already running daemon or -1 in case daemon did not write its PID yet. The function does not write process' PID into the file here, so it can be used before **fork()**ing and exit with a proper error message when needed. If the *path* argument is NULL, `/var/run/<progrname>.pid` file will be used. The **pidfile_open()** function sets the O_CLOEXEC close-on-exec flag when opening the pidfile.

The **pidfile_write()** function writes process' PID into a previously opened file. The file is truncated before write, so calling the **pidfile_write()** function multiple times is supported.

The **pidfile_close()** function closes a pidfile. It should be used after daemon **fork()**s to start a child process.

The **pidfile_remove()** function closes and removes a pidfile.

The **pidfile_fileno()** function returns the file descriptor for the open pidfile.

RETURN VALUES

The **pidfile_open()** function returns a valid pointer to a *pidfh* structure on success, or NULL if an error occurs. If an error occurs, *errno* will be set.

The **pidfile_write()**, **pidfile_close()**, and **pidfile_remove()** functions return the value 0 if successful; otherwise the value -1 is returned and the global variable *errno* is set to indicate the error.

The **pidfile_fileno()** function returns the low-level file descriptor. It returns -1 and sets *errno* if a NULL *pidfh* is specified, or if the pidfile is no longer open.

EXAMPLES

The following example shows in which order these functions should be used. Note that it is safe to pass NULL to **pidfile_write()**, **pidfile_remove()**, **pidfile_close()** and **pidfile_fileno()** functions.

```
struct pidfh *pfh;
pid_t otherpid, childpid;

pfh = pidfile_open("/var/run/daemon.pid", 0600, &otherpid);
if (pfh == NULL) {
    if (errno == EEXIST) {
        errx(EXIT_FAILURE, "Daemon already running, pid: %jd.",
            (intmax_t)otherpid);
    }
    /* If we cannot create pidfile from other reasons, only warn. */
    warn("Cannot open or create pidfile");
    /*
     * Even though pfh is NULL we can continue, as the other pidfile_*
     * function can handle such situation by doing nothing except setting
     * errno to EDOOFUS.
     */
}

if (daemon(0, 0) == -1) {
    warn("Cannot daemonize");
    pidfile_remove(pfh);
    exit(EXIT_FAILURE);
}
```

```
    }

    pidfile_write(pfh);

    for (;;) {
        /* Do work. */
        childpid = fork();
        switch (childpid) {
            case -1:
                syslog(LOG_ERR, "Cannot fork(): %s.", strerror(errno));
                break;
            case 0:
                pidfile_close(pfh);
                /* Do child work. */
                break;
            default:
                syslog(LOG_INFO, "Child %jd started.", (intmax_t)childpid);
                break;
        }
    }

    pidfile_remove(pfh);
    exit(EXIT_SUCCESS);
}
```

ERRORS

The **pidfile_open()** function will fail if:

- [EEXIST] Some process already holds the lock on the given pidfile, meaning that a daemon is already running. If *pidptr* argument is not NULL the function will use it to store a PID of an already running daemon or -1 in case daemon did not write its PID yet.
- [ENAMETOOLONG] Specified pidfile's name is too long.
- [EINVAL] Some process already holds the lock on the given pidfile, but PID read from there is invalid.

The **pidfile_open()** function may also fail and set *errno* for any errors specified for the `fstat(2)`, `open(2)`, and `read(2)` calls.

The **pidfile_write()** function will fail if:

[EDOOOFUS] Improper function use. Probably called before **pidfile_open()**.

The **pidfile_write()** function may also fail and set *errno* for any errors specified for the `fstat(2)`, `ftruncate(2)`, and `write(2)` calls.

The **pidfile_close()** function may fail and set *errno* for any errors specified for the `close(2)` and `fstat(2)` calls.

The **pidfile_remove()** function will fail if:

[EDOOOFUS] Improper function use. Probably called not from the process which made **pidfile_write()**.

The **pidfile_remove()** function may also fail and set *errno* for any errors specified for the `close(2)`, `fstat(2)`, `write(2)`, and `unlink(2)` system calls and the `flopen(3)` library function.

The **pidfile_fileno()** function will fail if:

[EDOOOFUS] Improper function use. Probably called not from the process which used **pidfile_open()**.

SEE ALSO

`open(2)`, `daemon(3)`, `flopen(3)`

HISTORY

The functions **pidfile_open()**, **pidfile_write()**, **pidfile_close()** and **pidfile_remove()** first appeared in FreeBSD 5.5.

AUTHORS

The **pidfile** functionality is based on ideas from John-Mark Gurney <jmg@FreeBSD.org>.

The code and manual page was written by Pawel Jakub Dawidek <pjd@FreeBSD.org>.