

NAME

posix_fallocate – allocate file space

LIBRARY

Standard C library (*libc*, *-lc*)

SYNOPSIS

```
#include <fcntl.h>
```

```
int posix_fallocate(int fd, off_t offset, off_t len);
```

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

```
posix_fallocate():
    _POSIX_C_SOURCE >= 200112L
```

DESCRIPTION

The function **posix_fallocate()** ensures that disk space is allocated for the file referred to by the file descriptor *fd* for the bytes in the range starting at *offset* and continuing for *len* bytes. After a successful call to **posix_fallocate()**, subsequent writes to bytes in the specified range are guaranteed not to fail because of lack of disk space.

If the size of the file is less than *offset+len*, then the file is increased to this size; otherwise the file size is left unchanged.

RETURN VALUE

posix_fallocate() returns zero on success, or an error number on failure. Note that *errno* is not set.

ERRORS**EBADF**

fd is not a valid file descriptor, or is not opened for writing.

EFBIG

offset+len exceeds the maximum file size.

EINTR

A signal was caught during execution.

EINVAL

offset was less than 0, or *len* was less than or equal to 0, or the underlying filesystem does not support the operation.

ENODEV

fd does not refer to a regular file.

ENOSPC

There is not enough space left on the device containing the file referred to by *fd*.

EOPNOTSUPP

The filesystem containing the file referred to by *fd* does not support this operation. This error code can be returned by C libraries that don't perform the emulation shown in NOTES, such as musl libc.

ESPIPE

fd refers to a pipe.

VERSIONS

posix_fallocate() is available since glibc 2.1.94.

ATTRIBUTES

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

Interface	Attribute	Value
posix_fallocate()	Thread safety	MT-Safe (but see NOTES)

STANDARDS

POSIX.1-2001.

POSIX.1-2008 says that an implementation *shall* give the **EINVAL** error if *len* was 0, or *offset* was less than 0. POSIX.1-2001 says that an implementation *shall* give the **EINVAL** error if *len* is less than 0, or *offset* was less than 0, and *may* give the error if *len* equals zero.

NOTES

In the glibc implementation, **posix_fallocate()** is implemented using the **fallocate(2)** system call, which is MT-safe. If the underlying filesystem does not support **fallocate(2)**, then the operation is emulated with the following caveats:

- The emulation is inefficient.
- There is a race condition where concurrent writes from another thread or process could be overwritten with null bytes.
- There is a race condition where concurrent file size increases by another thread or process could result in a file whose size is smaller than expected.
- If *fd* has been opened with the **O_APPEND** or **O_WRONLY** flags, the function fails with the error **EBADF**.

In general, the emulation is not MT-safe. On Linux, applications may use **fallocate(2)** if they cannot tolerate the emulation caveats. In general, this is only recommended if the application plans to terminate the operation if **EOPNOTSUPP** is returned, otherwise the application itself will need to implement a fallback with all the same problems as the emulation provided by glibc.

SEE ALSO

fallocate(1), **fallocate(2)**, **lseek(2)**, **posix_fadvise(2)**