

NAME

`pread`, `pwrite` – read from or write to a file descriptor at a given offset

SYNOPSIS

```
#include <unistd.h>
```

```
ssize_t pread(int fd, void *buf, size_t count, off_t offset);
```

```
ssize_t pwrite(int fd, const void *buf, size_t count, off_t offset);
```

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

```
pread(), pwrite():
```

```
  _XOPEN_SOURCE >= 500
```

```
  /* Since glibc 2.12: */ _POSIX_C_SOURCE >= 200809L
```

DESCRIPTION

`pread()` reads up to *count* bytes from file descriptor *fd* at offset *offset* (from the start of the file) into the buffer starting at *buf*. The file offset is not changed.

`pwrite()` writes up to *count* bytes from the buffer starting at *buf* to the file descriptor *fd* at offset *offset*. The file offset is not changed.

The file referenced by *fd* must be capable of seeking.

RETURN VALUE

On success, `pread()` returns the number of bytes read (a return of zero indicates end of file) and `pwrite()` returns the number of bytes written.

Note that it is not an error for a successful call to transfer fewer bytes than requested (see `read(2)` and `write(2)`).

On error, `-1` is returned and *errno* is set to indicate the cause of the error.

ERRORS

`pread()` can fail and set *errno* to any error specified for `read(2)` or `lseek(2)`. `pwrite()` can fail and set *errno* to any error specified for `write(2)` or `lseek(2)`.

VERSIONS

The `pread()` and `pwrite()` system calls were added to Linux in version 2.1.60; the entries in the i386 system call table were added in 2.1.69. C library support (including emulation using `lseek(2)` on older kernels without the system calls) was added in glibc 2.1.

CONFORMING TO

POSIX.1-2001, POSIX.1-2008.

NOTES

The `pread()` and `pwrite()` system calls are especially useful in multithreaded applications. They allow multiple threads to perform I/O on the same file descriptor without being affected by changes to the file offset by other threads.

C library/kernel differences

On Linux, the underlying system calls were renamed in kernel 2.6: `pread()` became `pread64()`, and `pwrite()` became `pwrite64()`. The system call numbers remained the same. The glibc `pread()` and `pwrite()` wrapper functions transparently deal with the change.

On some 32-bit architectures, the calling signature for these system calls differ, for the reasons described in `syscall(2)`.

BUGS

POSIX requires that opening a file with the `O_APPEND` flag should have no effect on the location at which `pwrite()` writes data. However, on Linux, if a file is opened with `O_APPEND`, `pwrite()` appends data to the end of the file, regardless of the value of *offset*.

SEE ALSO

lseek(2), read(2), readv(2), write(2)

COLOPHON

This page is part of release 5.05 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/>.