NAME

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

LIBRARY

Standard C library (*libc*, *−lc*)

SYNOPSIS

```
#include <unistd.h>

ssize_t pread(int fd, void buf[.count], size_t count,
        off_t offset);
ssize_t pwrite(int fd, const v oid buf[.count], 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 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 in Linux 2.1.60; the entries in the i386 system call table were added in Linux 2.1.69. C library support (including emulation using **lseek**(2) on older kernels without the system calls) was added in glibc 2.1.

STANDARDS

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 Linux 2.6: **pread**() became **pread64**(), and **pwrite**() became **pwrite64**(). The system call numbers remained the same. The glibc**pr ead**() 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)