NAME

remap_file_pages − create a non-linear file mapping

SYNOPSIS

```
#define _GNU_SOURCE
#include <sys/mman.h>

int remap_file_pages(void *addr, size_t size, int prot,
                     ssize_t pgoff, int flags);
```

DESCRIPTION

The **remap_file_pages**() system call is used to create a non-linear mapping, that is, a mapping in which the pages of the file are mapped into a non-sequential order in memory. The advantage of using **remap_file_pages**() over using repeated calls to **mmap**(2) is that the former approach does not require the kernel to create additional VMA (Virtual Memory Area) data structures.

To create a non-linear mapping we perform the following steps:

1. Use **mmap**(2) to create a mapping (which is initially linear). This mapping must be created with the **MAP_SHARED** flag.
2. Use one or more calls to **remap_file_pages**() to rearrange the correspondence between the pages of the mapping and the pages of the file. It is possible to map the same page of a file into multiple locations within the mapped region.

The *pgoff* and *size* arguments specify the region of the file that is to be relocated within the mapping: *pgoff* is a file offset in units of the system page size; *size* is the length of the region in bytes.

The *addr* argument serves two purposes. First, it identifies the mapping whose pages we want to rearrange. Thus, *addr* must be an address that falls within a region previously mapped by a call to **mmap**(2). Second, *addr* specifies the address at which the file pages identified by *pgoff* and *size* will be placed.

The values specified in *addr* and *size* should be multiples of the system page size. If they are not, then the kernel rounds *both* values *down* to the nearest multiple of the page size.

The *prot* argument must be specified as 0.

The *flags* argument has the same meaning as for **mmap**(2), but all flags other than **MAP_NONBLOCK** are ignored.

RETURN VALUE

On success, **remap_file_pages**() returns 0. On error, −1 is returned, and *errno* is set appropriately.

ERRORS

EINVAL
: *addr* does not refer to a valid mapping created with the **MAP_SHARED** flag.

EINVAL
: *addr*, *size*, *prot*, or *pgoff* is invalid.

VERSIONS

The **remap_file_pages**() system call appeared in Linux 2.5.46; glibc support was added in version 2.3.3.

CONFORMING TO

The **remap_file_pages**() system call is Linux-specific.

SEE ALSO

getpagesize(2), **mmap**(2), **mmap2**(2), **mprotect**(2), **mremap**(2), **msync**(2), **feature_test_macros**(7)

COLOPHON

This page is part of release 3.22 of the Linux *man-pages* project. A description of the project, and information about reporting bugs, can be found at http://www.kernel.org/doc/man-pages/.