NAME

shm_overview − overview of POSIX shared memory

DESCRIPTION

The POSIX shared memory API allows processes to communicate information by sharing a region of memory.

The interfaces employed in the API are:

shm_open(3) Create and open a new object, or open an existing object. This is analogous to **open**(2). The call returns a file descriptor for use by the other interfaces listed below.

ftruncate(2) Set the size of the shared memory object. (A newly created shared memory object has a length of zero.)

mmap(2) Map the shared memory object into the virtual address space of the calling process.

munmap(2) Unmap the shared memory object from the virtual address space of the calling process.

shm_unlink(3) Remove a shared memory object name.

close(2) Close the file descriptor allocated by **shm_open**(3) when it is no longer needed.

fstat(2) Obtain a *stat* structure that describes the shared memory object. Among the information returned by this call are the object's size (*st_size*), permissions (*st_mode*), owner (*st_uid*), and group (*st_gid*).

fchown(2) To change the ownership of a shared memory object.

fchmod(2) To change the permissions of a shared memory object.

Versions

POSIX shared memory is supported since Linux 2.4 and glibc 2.2.

Persistence

POSIX shared memory objects have kernel persistence: a shared memory object will exist until the system is shut down, or until all processes have unmapped the object and it has been deleted with **shm_unlink**(3)

Linking

Programs using the POSIX shared memory API must be compiled with *cc −lrt* to link against the real-time library, *librt*.

Accessing shared memory objects via the filesystem

On Linux, shared memory objects are created in a (**tmpfs**(5)) virtual filesystem, normally mounted under */dev/shm*. Since Linux 2.6.19, Linux supports the use of access control lists (ACLs) to control the permissions of objects in the virtual filesystem.

NOTES

Typically, processes must synchronize their access to a shared memory object, using, for example, POSIX semaphores.

System V shared memory (**shmget**(2), **shmop**(2), etc.) is an older shared memory API. POSIX shared memory provides a simpler, and better designed interface; on the other hand POSIX shared memory is somewhat less widely available (especially on older systems) than System V shared memory.

SEE ALSO

fchmod(2), **fchown**(2), **fstat**(2), **ftruncate**(2), **memfd_create**(2), **mmap**(2), **mprotect**(2), **munmap**(2), **shmget**(2), **shmop**(2), **shm_open**(3), **shm_unlink**(3), **sem_overview**(7)