

int shmget(key_t key, int size, int flags);

Allocates a shared memory segment.

- `key` is the key associated with the shared memory segment you want.
- `size` is the size in bytes of the shared memory segment you want allocated. Memory gets allocated in pages, so chances are you'll probably get a little more memory than you wanted.
- `flags` indicate how you want the segment created and its access permissions. The general rule is just to use `0666 | IPC_CREAT | IPC_EXCL` if the caller is making a new segment. If the caller wants to use an existing share region, simply pass 0 in the flag.

Shmget will fail if:

1. Size specified is greater than the size of the previously existing segment. Size specified is less than the system imposed minimum, or greater than the system imposed maximum.
2. No shared memory segment was found matching `key`, and `IPC_CREAT` was not specified.
3. The kernel was unable to allocate enough memory to satisfy the request.
4. `IPC_CREAT` and `IPC_EXCL` were specified, and a shared memory segment corresponding to `key` already exists.

RETURN VALUES

Upon successful completion, **shmget()** returns the positive integer identifier of a shared memory segment. Otherwise, -1 is returned

void *shmat(int shmid, const void *shmaddr, int shmflg);

Maps a shared memory segment onto your process's address space.

- `shmid` is the id as returned by `shmget()` of the shared memory segment you wish to attach.
- `Addr` is the address where you want to attach the shared memory. For simplicity we will pass `NULL`. `NULL` means that kernel itself will decide where to attach it to address space of the process.

Shmat() will fail if:

1. No shared memory segment was found corresponding to the given id.

RETURN VALUES

Upon success, **shmat()** returns the address where the segment is attached; otherwise, -1 is returned and *errno* is set to indicate the error.

Upon success, **shmdt()** returns 0; otherwise, -1 is returned and *errno* is set to indicate the error.

int shmdt(void *addr);

This system call is used to detach a shared memory region from the process's address space.

- Addr is the address of the shared memory

shmdt will fail if:

1. The address passed to it does not correspond to a shared region.

RETURN VALUES

On success, **shmdt()** returns 0; on error -1 is returned

How To Delete Shared Memory Region:

int shmctl(int shmid, int cmd, struct shmid_ds *buf);

shmctl() performs the control operation specified by *cmd* on the System V shared memory segment whose identifier is given in *shmid*.

For Deletion we will use **IPC_RMID** flag.

IPC_RMID marks the segment to be destroyed. The segment will actually be destroyed only after the last process detaches it (The caller must be the owner or creator of the segment, or be privileged). The *buf* argument is ignored.

Return Value:

For **IPC_RMID** operation, 0 is returned on success; else -1 is returned.

Shmctl(shmid, IPC_RMID, NULL);