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NAME

Intro, intro - introduction to system calls and error numbers

SYNOPSIS

#include <errno.h>

DESCRIPTION

[material below extracted from 19 pages of description]

Semaphore Identifier

A semaphore identifier (**semid**) is a unique positive integer created by a **semget** system call. Each semid has a set of semaphores and a data structure associated with it. The data structure is referred to as **semid_ds** and contains the following members:

```
struct   ipc_perm sem_perm;    /* operation permission struct */
struct   sem * sem_base;       /* ptr to first semaphore in set */
ushort   sem_nsems;            /* number of sems in set */
time_t   sem_otime;            /* last operation time */
time_t   sem_ctime;            /* last change time */
                               /* Times measured in secs since */
                               /* 00:00:00 GMT, Jan. 1, 1970 */
```

Here are descriptions of the fields of the **semid_ds** structure:

sem_perm is an **ipc_perm** structure that specifies the semaphore operation permission (see below). This structure includes the following members:

```
uid_t    uid;    /* user id */
gid_t    gid;    /* group id */
uid_t    cuid;   /* creator user id */
gid_t    cgid;   /* creator group id */
mode_t   mode;   /* r/a permission */
ulong    seq;    /* slot usage sequence number */
key_t    key;    /* key */
```

sem_nsems is equal to the number of semaphores in the set. Each semaphore in the set is referenced by a nonnegative integer referred to as a **sem_num**. **sem_num** values run sequentially from 0 to the value of **sem_nsems** minus 1.

sem_otime is the time of the last **semop** operation.

sem_ctime is the time of the last **semctl** operation that changed a member of the above structure.

A semaphore is a data structure called **sem** that contains the following members:

```
ushort   semval;    /* semaphore value */
pid_t    sempid;    /* pid of last operation */
ushort   semncnt;   /* # awaiting semval > cval */
ushort   semzcnt;   /* # awaiting semval = 0 */
```

semval is a non-negative integer that is the actual value of the semaphore.

sempid is equal to the process ID of the last process that performed a semaphore operation on this semaphore.

semncnt is a count of the number of processes that are currently suspended awaiting this semaphore's semval to become greater than its current value.

semzcnt is a count of the number of processes that are currently suspended awaiting this semaphore's semval to become 0.