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(POSIX) Threads

package for man pages: manpages-posix-dev glibc-doc

  sudo apt-get install manpages-posix-dev glibc-doc

setting cores:

  taskset -c 0 <program> -> execute program only with core 0


#include <pthread.h>
gcc/g++ -pthread

defensive programming -> int functions returning success (0) ou failure (!= 0)

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SO Concurrency library:

Defensive programming removed (all other documentation applies)

#include "thread.h"

(In the following description, the library functions names are the names without text inside [].)

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THREADS:
opaque type: pthread_t // never compare pthread_t variables

[p]thread_create
[p]thread_join
[p]thread_detach
[p]thread_exit
[p]thread_equal -> returns int (C boolean)
[p]thread_self -> returns pthread_t

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MUTEX:
opaque type: pthread_mutex_t

PTHREAD_MUTEX_INITIALIZER
 or
[pthread_]mutex_init
[pthread_]mutex_destroy

[pthread_]mutex_lock(mtx)
[pthread_]mutex_trylock(mtx)
[pthread_]mutex_unlock(mtx)

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CONDITION VARIABLE:
opaque type: pthread_cond_t

PTHREAD_COND_INITIALIZER
 or
[pthread_]cond_init
[pthread_]cond_destroy

[pthread_]cond_wait(cvar, mtx)
[pthread_]cond_signal(cvar)
[pthread_]cond_broadcast(cvar)

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C-Library

Beware of Thread-safe functions!

usleep
nanosleep
rand_r
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