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/*
 * #####
 * ## sema3.c
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 * ## 12.02.2013: Creation T
 * ## 07.05.2018:
 * #####
 */

#include <errno.h>
#include <stdio.h>
#include <stdlib.h>
#include <sys/signal.h>
#include <sys/types.h>
#include <sys/ipc.h>
#include <sys/sem.h>
#include <unistd.h>

/* Declaration des Types et des Variables */

extern int errno;

/* Programme principal */

int main()
{
    key_t    key = 3;

    int      semid, nsems, semnum;
    int      kr, val;

    int      b_EXISTS = 0;

/* Attachement Ensemble( 3 ) qui est constitue de 1 semaphore */

    printf( " sema3> \n" );
    printf( " sema3> Tentative Ouverture Ensemble SEMAPHORES( 3 ) avec IPC_EXCL\n" );
    printf( " sema3> \n" );

    nsems = 1;

    semid = semget( key, nsems, 0640 | IPC_CREAT | IPC_EXCL );

    if ( semid == -1 ) {
        if ( errno == EEXIST ) {

            b_EXISTS = 1;

            printf( " sema3> Ensemble de SEMAPHORES( 3 ) existant \n" );
            printf( " sema3> \n" );

            /* Re-ouverture sans IPC_EXCL */

            semid = semget( key, nsems, 0640 | IPC_CREAT );

            /* Affichage de la valeur associee au semaphore numero 0 */

            semnum = 0;

            val = semctl( semid, semnum, GETVAL, NULL );

            if ( val == -1 ) {

                perror( " sema3> Pb. recuperation valeur semaphore" );

            } else {

                printf( " sema3> Valeur du semaphore zero = %d\n", val );

            }

            printf( " sema3> \n" );

        } else {

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        perror( " sema3> Pb. Ouverture Ensemble SEMAPHORES( 3 )" ); exit( 1 );
    printf( " sema3> \n");
}
} else {

    printf( " sema3> Ensemble SEMAPHORES( 3 ) inexistant\n" );
    printf( " sema3> \n");
}

/* Destruction de l'ensemble de semaphores ( 3 ) */

semnum = 0;

kr = semctl(semid, semnum, IPC_RMID, NULL);

if ( kr == -1 ) {
    perror( " sema3> Pb. destruction semaphore\n" ); exit( 2 );
    printf( " sema3> \n");
} else if ( b_EXISTS ) {

    /* Affichage du message seulement si il existait avant */

    printf( " sema3> Destruction SEMAPHORE(3)\n" );
    printf( " sema3> \n");
}
}
/* --- fin sema3.c --- */
```