Operating Systems Lab

Aadhitya Swarnesh

2.

Threads.c

```c
#include <linux/kthread.h>
#include <linux/module.h>
#include <linux/kernel.h>
#include <linux/sched.h>
#include <linux/time.h>
#include <linux/timer.h>
#include <linux/param.h>
#include <linux/init.h>

MODULE_LICENSE("GPL");
MODULE_AUTHOR("Aadhiya
Swarnesh");
MODULE_DESCRIPTION("Starting kthreads");

static struct task_struct *thread1;

int threadfn(void* data) {

    unsigned long j0, j1;
    int delay = 60*HZ;

printk(KERN_INFO "in thread1");
    j0 = jiffies;
    j1 = j0 + delay;

while(time_before(j0, j1)) {


        schedule();
    }

    return 0;
}

int thread_init(void) {
    const char message[8] = "thread1";
printk(KERN_INFO "in init");
```

```c
        thread1 = kthread_create(threadfn, NULL, message);
        if(thread1) {
                printk(KERN_INFO "in if statement");
                wake_up_process(thread1);
        }

        return 0;
}


void thread_cleanup(void)
    { int ret;
    ret = kthread_stop(thread1);
    if(!ret) {
            printk(KERN_INFO "thread stopped");
    }
}


module_init(thread_init);
module_exit(thread_cleanup);
```

Makefile:

```makefile
ifneq ($(KERNELRELEASE),)
    obj-m := A.o

else
KERNELDIR ?= /lib/modules/$(shell uname -r)/build
PWD := $(shell pwd)

default:
    $(MAKE) -C $(KERNELDIR) M=$(PWD) modules
endif
```

1)

```
#include <linux/module.h>
#include <linux/kernel.h>
#include <linux/init.h>
#include <linux/utsname.h>


static int __init my_init(void)
{
    printk(KERN_INFO "Registration Number:XXXXXX n");
    printl(KERN_INFO "Name: Aadhitya Swarnesh \n");
     printk(KERN_INFO "Kernel version %s\n", utsname()->version);
     printk(KERN_INFO "Kernel release %s\n", utsname()->release);

     return 0;
}

static void __exit my_exit(void)
{
    printk(KERN_INFO "exit module");

    return;
}

module_init(my_init);
module_exit(my_exit);

MODULE_LICENSE("GPL");
```

make
  • hello.ko is created
sudo insmod hello.ko
  • the kernel module is inserted
modinfo hello.ko
dmesg | tail -4
  • Last Four lines will be shown in the output