

Code of helloworld_lkm_init(void):

```
static int __init helloworld_lkm_init(void) {
    struct task_struct *tasks;
    int process_count = 0;

    printk(KERN_INFO "Hello, CS5231 Student!\n");

    // Traverse the process list
    for_each_process(tasks) {
        // Check if the process is running (not in a stopped state)
        if (get_current_state() == TASK_RUNNING) {
            process_count++;
        }
    }

    printk(KERN_INFO "Number of running processes: %d\n", process_count);

    //get time
    printk(KERN_INFO "Current Epoch time is %llu\n",
ktime_get_real_seconds());
    return 0; // success
}
```

Loading:

```
student@cs5231:~/Desktop$ sudo insmod ./hello_world_lkm.ko
[sudo] password for student:
student@cs5231:~/Desktop$ lsmod | head
Module                Size  Used by
hello_world_lkm        16384  0
isofs                  49152  1
vboxvideo              45056  0
drm_ttm_helper         16384  1 vboxvideo
nls_iso8859_1          16384  1
binfmt_misc            24576  1
snd_intel8x0           49152  2
snd_ac97_codec         155648 1 snd_intel8x0
ac97_bus               16384  1 snd_ac97_codec
```

Unloading:

```
student@cs5231:~/Desktop$ sudo rmmod hello_world_lkm
student@cs5231:~/Desktop$ dmesg | tail
[ 22.300613] loop11: detected capacity change from 0 to 8
[ 33.356121] rfkill: input handler disabled
[ 48.966236] rfkill: input handler enabled
[ 53.747380] ISO 9660 Extensions: Microsoft Joliet Level 3
[ 53.749600] ISO 9660 Extensions: RRIP_1991A
[ 54.194426] rfkill: input handler disabled
[ 398.047173] Hello, CS5231 Student!
[ 398.047190] Number of running processes: 186
[ 398.047191] Current Epoch time is 1694066014
[ 454.143929] Goodbye, CS5231 Student!
student@cs5231:~/Desktop$
```