```
osc@ubuntu:~/final-src-osc10e/ch2$ ls
hello.c  Makefile  simple.c
osc@ubuntu:~/final-src-osc10e/ch2$ vi simple.c
```

```c
/**
 * simple.c
 *
 * A simple kernel module.
 *
 * To compile, run makefile by entering "make"
 *
 * Operating System Concepts - 10th Edition
 * Copyright John Wiley & Sons - 2018
 */

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

/* This function is called when the module is loaded. */
int simple_init(void)
{
        printk(KERN_INFO "Loading Module\n");

        return 0;
}

/* This function is called when the module is removed. */
void simple_exit(void) {
        printk(KERN_INFO "Removing Module\n");
}

/* Macros for registering module entry and exit points. */
module_init( simple_init );
module_exit( simple_exit );

MODULE_LICENSE("GPL");
MODULE_DESCRIPTION("Simple Module");
MODULE_AUTHOR("SGG");
```

```
obj-m += simple.o
all:
        make -C /lib/modules/$(shell uname -r)/build M=$(PWD) modules
clean:
        make -C /lib/modules/$(shell uname -r)/build M=$(PWD) clean
```

```
osc@ubuntu:~/final-src-osc10e/ch2$ make
make -C /lib/modules/4.4.0-87-generic/build M=/home/osc/final-src-osc10e/ch2 modules
make[1]: Entering directory '/usr/src/linux-headers-4.4.0-87-generic'
  CC [M]  /home/osc/final-src-osc10e/ch2/simple.o
  Building modules, stage 2.
  MODPOST 1 modules
  CC      /home/osc/final-src-osc10e/ch2/simple.mod.o
  LD [M]  /home/osc/final-src-osc10e/ch2/simple.ko
make[1]: Leaving directory '/usr/src/linux-headers-4.4.0-87-generic'
```

```
osc@ubuntu:~/final-src-osc10e/ch2$ sudo insmod simple.ko
[sudo] password for osc:
osc@ubuntu:~/final-src-osc10e/ch2$ dmesg
```

```
[   41.225027] [drm] VRAM 01000000
[   41.252458] e1000: enp0s3 NIC Link is Up 1000 Mbps Full Duplex, Flow Control: RX
[   41.316933] [TTM] Zone  kernel: Available graphics memory: 379024 kiB
[   41.316948] [TTM] Initializing pool allocator
[   41.316988] [TTM] Initializing DMA pool allocator
[   41.326457] intel_rapl: no valid rapl domains found in package 0
[   41.363134] fbcon: vboxdrmfb (fb0) is primary device
[   42.741799] Console: switching to colour frame buffer device 100x37
[   42.918603] vboxvideo 0000:00:02.0: fb0: vboxdrmfb frame buffer device
[   42.946391] [drm] Initialized vboxvideo 1.0.0 20130823 for 0000:00:02.0 on minor 0
[   43.662507] ppdev: user-space parallel port driver
[   44.543035] Adding 784380k swap on /dev/sda5.  Priority:-1 extents:1 across:784380k FS
[   46.121554] cgroup: new mount options do not match the existing superblock, will be ignored
[  652.636757] simple: module verification failed: signature and/or required key missing - tainting
kernel
[  652.641488] Loading Module
```

Module	Size	Used by
simple	16384	0
rfcomm	81920	4
ccm	20480	9
bnep	24576	2
nls_iso8859_1	16384	1
x86_pkg_temp_thermal	20480	0
intel_powerclamp	20480	0
coretemp	20480	0
kvm_intel	241664	0
kvm	651264	1 kvm_intel
irqbypass	16384	1 kvm
crct10dif_pclmul	16384	1
crc32_pclmul	16384	0
ghash_clmulni_intel	16384	0
mei_hdcp	24576	0
intel_rapl_msr	20480	0
aesni_intel	372736	6

```c
#include <linux/init.h>
#include <linux/kernel.h>
#include <lunix/module.h>
#include <linux/list.h>
#include <linux/types.h>

MODULE_LICENSE("GPL");
MODULE_DESCRIPTION("Birhtday List Module");
MODULE_AUTHOR("SGG");

struct birthday {
        int day;
        int month;
        int year;
        struct list_head list;
}

//Inserting Elements into the Linked List

static LIST_HEAD(birthday_list);

struct birthday *peerson;

person = kmalloc(sizeof(*person), GFP_KERNEL);
person->day = 2;
person->month = 8;
person->year = 1995;
INIT_LIST_HEAD(&person->list);

_init List_add_tail(&person->list, &birthday_list);
```

```c
//Traversing the Linked List

struct birthday *ptr;

list_for_each_entry(ptr, &birthday_list, list){
        list_add_tail(&ptr, &list);
        birthday_list++;
}

//Removing elements from the Linked List

struct birthday *ptr, *next;

_exit List_for_each_entry_safe(ptr, next, &birthday_list, list){
        list_add_tail(&next, &list);
        birthday_list++;
        list_del(&prt->list);
        kfree(ptr);
}
module_init(List_add_tail);
module_exit(List_for_each_entry_safe);
```

```
obj-m += sem2.o
all:
        make -C/lib/modules/$(shell uname -r)/build M=$(PWD) modules
clean:
        make -C/lib/modules/$(shell uname -r)/build M=$(PWD) clean
```