

Создаем файл test1.c со следующим содержанием:

```
GNU nano 6.2
#include <linux/module.h>
#include <linux/kernel.h>

int init_module(void)
{
    pr_info("TEST MODULE IS LOADED!");
    return 0;
}

void cleanup_module(void)
{
    pr_info("TEST MODULE IS UNLOADED!");
}

MODULE_LICENSE("GPL");
```

Создаем Makefile:

```
GNU nano 6.2
obj-m += test1.o

all:
    make -C /lib/modules/6.8.0-79-generic/build M=$(PWD) modules

clean:
    make -C /lib/modules/6.8.0-79-generic/build M=$(PWD) clean
```

Собираем модуль:

```
computer@computer-HP-Laptop-15-bw0xx:~/modules/1$ make
make -C /lib/modules/6.8.0-79-generic/build M=/home/computer/modules/1 modules
make[1]: Entering directory '/usr/src/linux-headers-6.8.0-79-generic'
warning: the compiler differs from the one used to build the kernel
The kernel was built by: x86_64-linux-gnu-gcc-12 (Ubuntu 12.3.0-1ubuntu1~22.04) 12.3.0
You are using: gcc-12 (Ubuntu 12.3.0-1ubuntu1~22.04.2) 12.3.0
CC [M] /home/computer/modules/1/test1.o
MODPOST /home/computer/modules/1/Module.symvers
CC [M] /home/computer/modules/1/test1.mod.o
LD [M] /home/computer/modules/1/test1.ko
BTF [M] /home/computer/modules/1/test1.ko
Skipping BTF generation for /home/computer/modules/1/test1.ko due to unavailability of vmlinux
make[1]: Leaving directory '/usr/src/linux-headers-6.8.0-79-generic'
```

Устанавливаем модуль:

```
computer@computer-HP-Laptop-15-bw0xx:~/modules/1$ ls
Makefile modules.order Module.symvers test1.c test1.ko test1.mod test1.mod.c test1.mod.o test1.o
computer@computer-HP-Laptop-15-bw0xx:~/modules/1$ sudo insmod test1.ko
[sudo] password for computer:
```

Проверяем его наличие в списке модулей:

```
computer@computer-HP-Laptop-15-bw0xx:~/modules/1$ lsmod
Module                Size  Used by
test1                  12288  0
xt_conntrack           12288  1
xt_MASQUERADE          16384  1
bridge                 421888 0
stp                    12288  1 bridge
```

Проверяем сообщения ядра:

```
computer@computer-HP-Laptop-15-bw0xx:~/modules/1$ sudo dmesg | grep TEST
[ 848.667919] TEST MODULE IS LOADED!
computer@computer-HP-Laptop-15-bw0xx:~/modules/1$
```

Удаляем модуль:

```
computer@computer-HP-Laptop-15-bw0xx:~/modules/1$ sudo rmmod test1
computer@computer-HP-Laptop-15-bw0xx:~/modules/1$
```

Снова проверяем сообщения ядра:

```
computer@computer-HP-Laptop-15-bw0xx:~/modules/1$ sudo dmesg | grep TEST
[ 848.667919] TEST MODULE IS LOADED!
[ 1099.254922] TEST MODULE IS UNLOADED!
computer@computer-HP-Laptop-15-bw0xx:~/modules/1$
```