

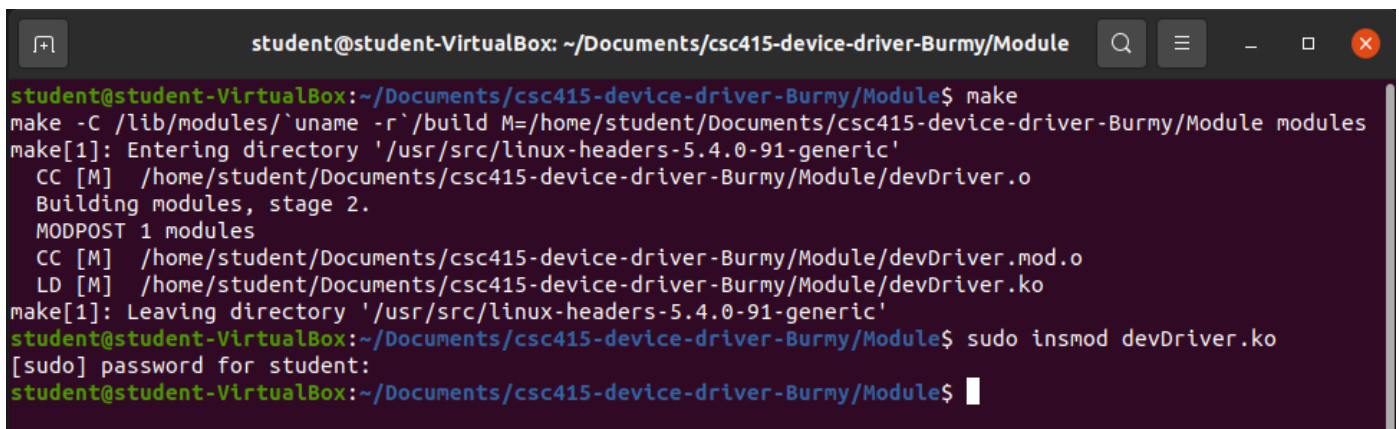
## Assignment 6 – Device-Driver

### Description:

This assignment is a simple Linux kernel module that takes in a message from the user and returns that message in all capital letters. It is written in C and is a valid and loadable device driver with at least some minimal user/application functionality. There are two directories. The first is Module that has your kernel module. There is also a Test file for the device driver that has our test user application. Takes the user's message and sends it to the module. This message is then displayed to the user in the terminal. Methods such as open, release, read and write are included in the driver. It is also able to be unloaded, and indicates that it has been unloaded from the system.

### Steps to run the program:

1. Once you are in the assignment directory, using your terminal first navigate to the “Module” directory and run “make”.
2. After that type “sudo insmod devDriver.ko”

A terminal window titled 'student@student-VirtualBox: ~/Documents/csc415-device-driver-Burmy/Module' showing the execution of 'make' and 'sudo insmod devDriver.ko'. The output of 'make' shows the compilation of 'devDriver.o' and 'devDriver.mod.o', and the linking of 'devDriver.ko'. The output of 'sudo insmod devDriver.ko' shows the password prompt and the successful loading of the module.

```
student@student-VirtualBox: ~/Documents/csc415-device-driver-Burmy/Module$ make
make -C /lib/modules/`uname -r`/build M=/home/student/Documents/csc415-device-driver-Burmy/Module modules
make[1]: Entering directory '/usr/src/linux-headers-5.4.0-91-generic'
  CC [M]  /home/student/Documents/csc415-device-driver-Burmy/Module/devDriver.o
Building modules, stage 2.
MODPOST 1 modules
  CC [M]  /home/student/Documents/csc415-device-driver-Burmy/Module/devDriver.mod.o
  LD [M]  /home/student/Documents/csc415-device-driver-Burmy/Module/devDriver.ko
make[1]: Leaving directory '/usr/src/linux-headers-5.4.0-91-generic'
student@student-VirtualBox: ~/Documents/csc415-device-driver-Burmy/Module$ sudo insmod devDriver.ko
[sudo] password for student:
student@student-VirtualBox: ~/Documents/csc415-device-driver-Burmy/Module$
```

3. Then go to the “Test” directory and again run “make”
4. Then lastly run “sudo make run” which will run the program.

```
student@student-VirtualBox: ~/Documents/csc415-device-driver-Burmy/Test
student@student-VirtualBox:~/Documents/csc415-device-driver-Burmy/Module$ cd ..
student@student-VirtualBox:~/Documents/csc415-device-driver-Burmy$ cd Test
student@student-VirtualBox:~/Documents/csc415-device-driver-Burmy/Test$ make
gcc -c -o Burmy_Anmol_HW6_main.o Burmy_Anmol_HW6_main.c -g -I.
gcc -o Burmy_Anmol_HW6_main Burmy_Anmol_HW6_main.o -g -I. -l pthread
student@student-VirtualBox:~/Documents/csc415-device-driver-Burmy/Test$ sudo make run
./Burmy_Anmol_HW6_main
Device Open Success.

Enter a short string to send to the kernel:
this is a test message

Message written to the device: 'this is a test message'
Press 'ENTER' key to read the message back from the device

Reading from the device...
Converted message: 'THIS IS A TEST MESSAGE'

Closing Device.
student@student-VirtualBox:~/Documents/csc415-device-driver-Burmy/Test$
```