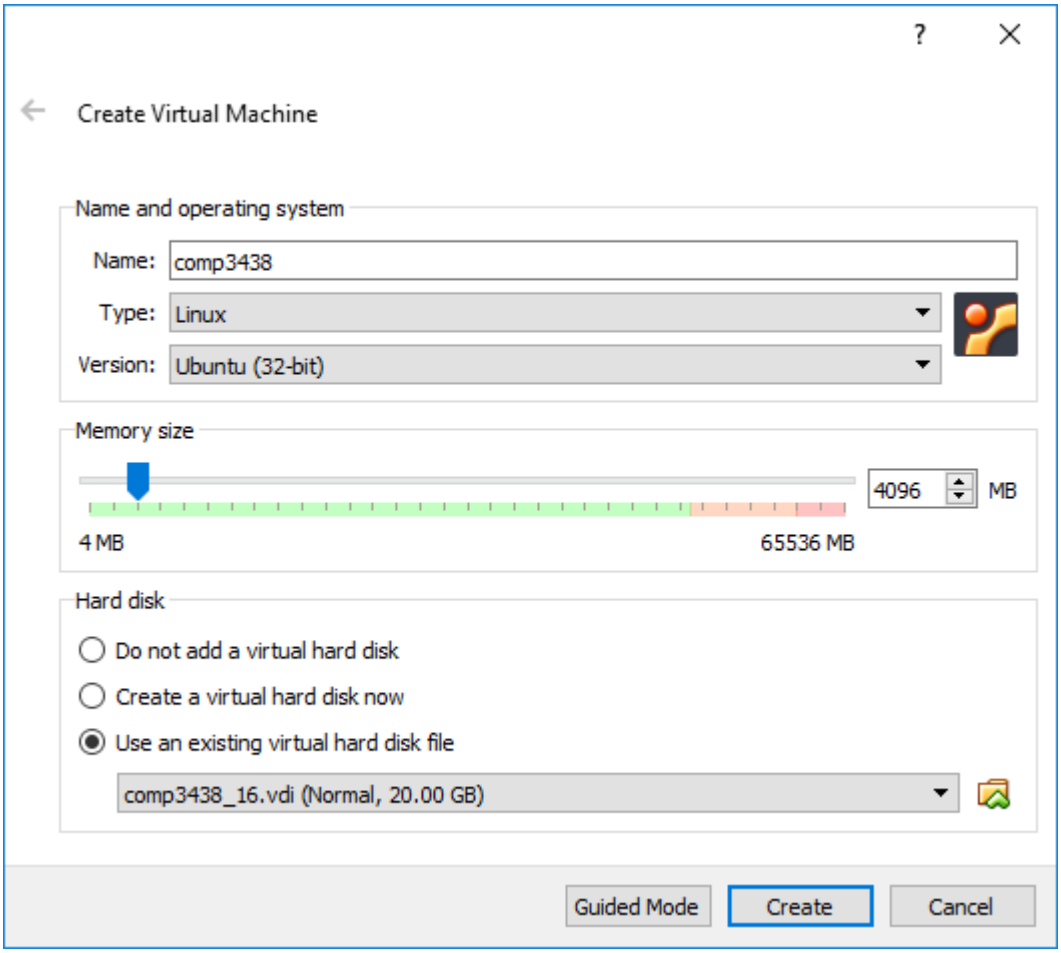
Lab4 Report

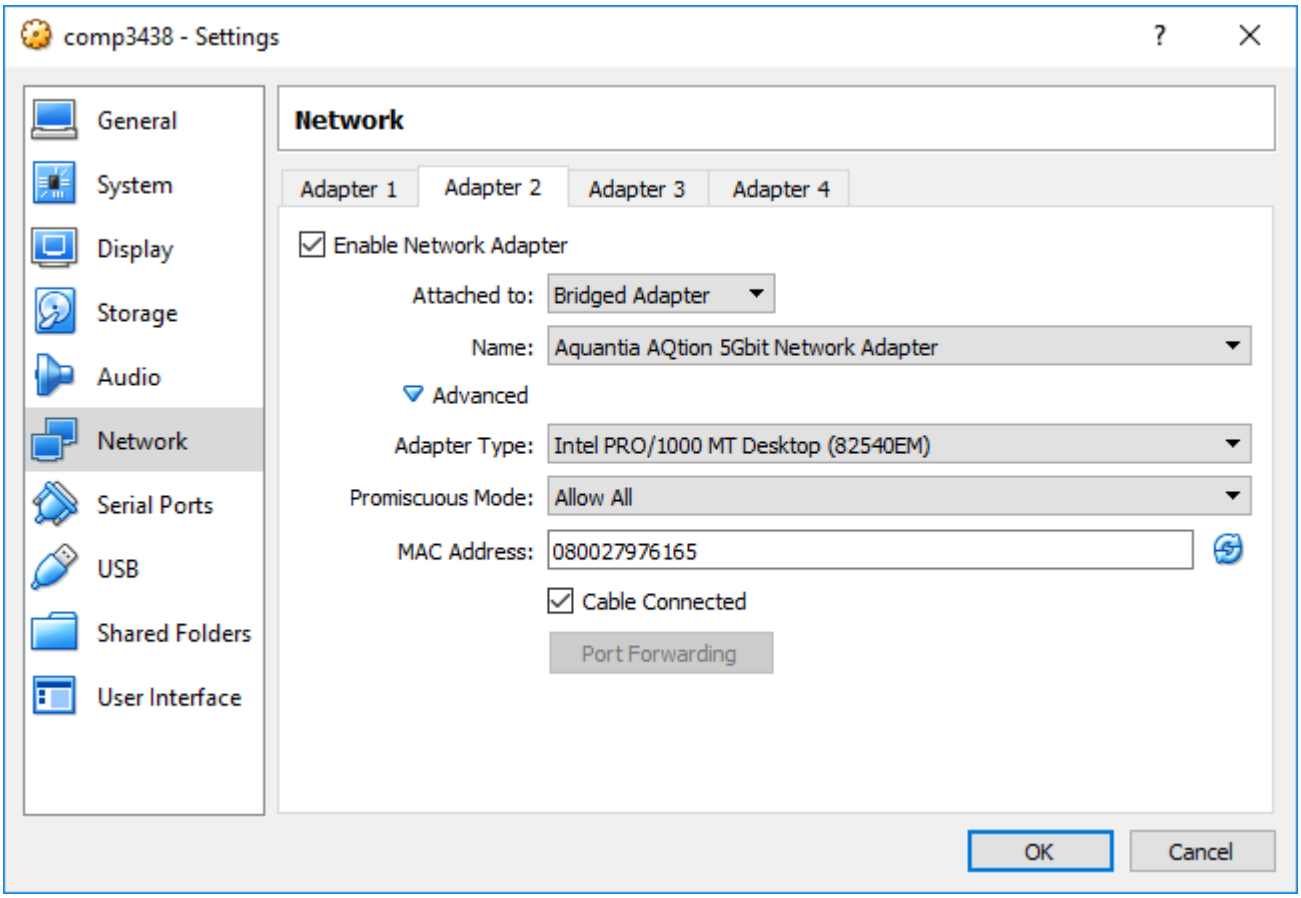
JAHJA Darwin, 16094501d

Setup the VM

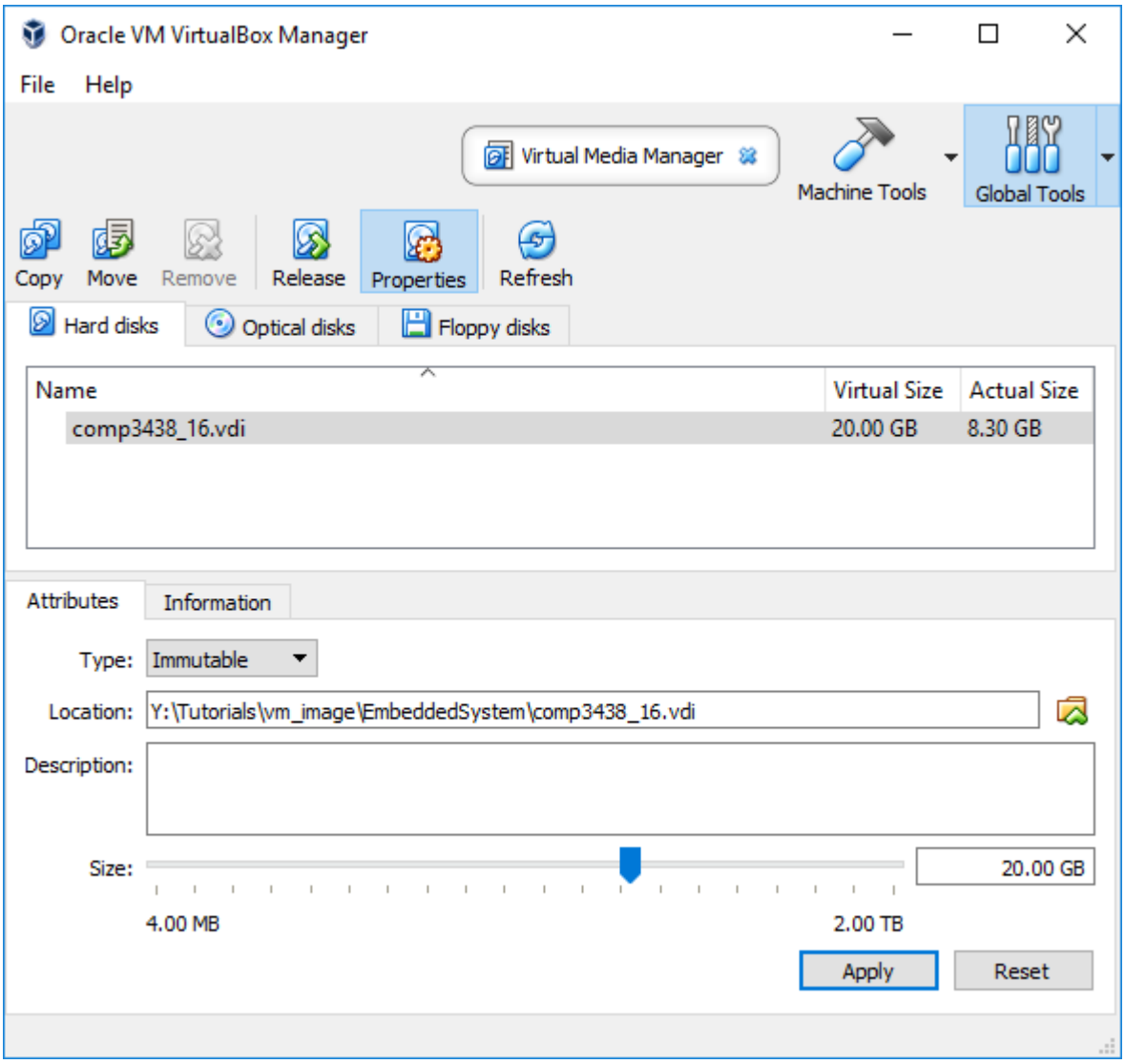
1. Basic settings:



2. Network settings:



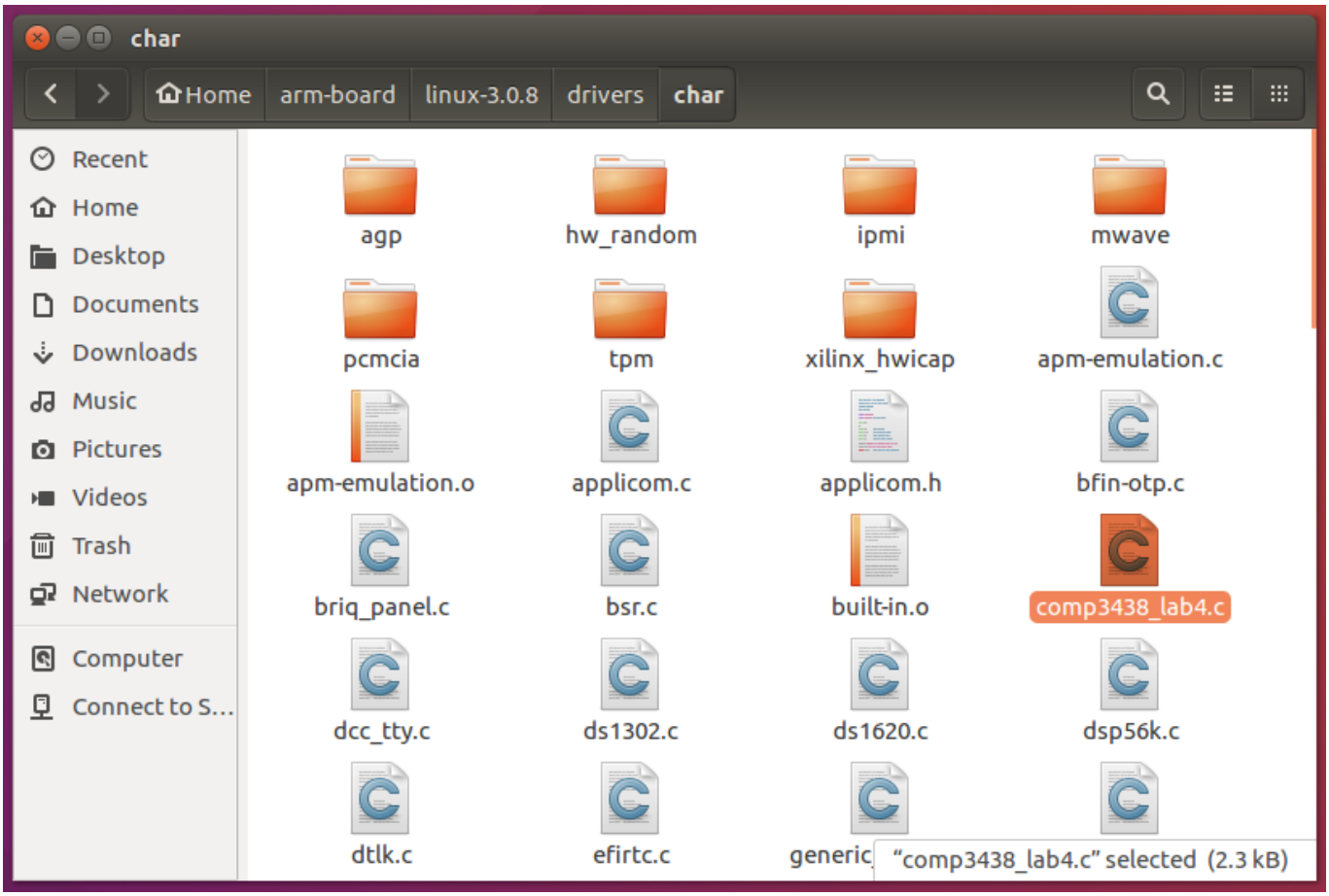
3. Make vdi file immutable:



4. Start the VM.

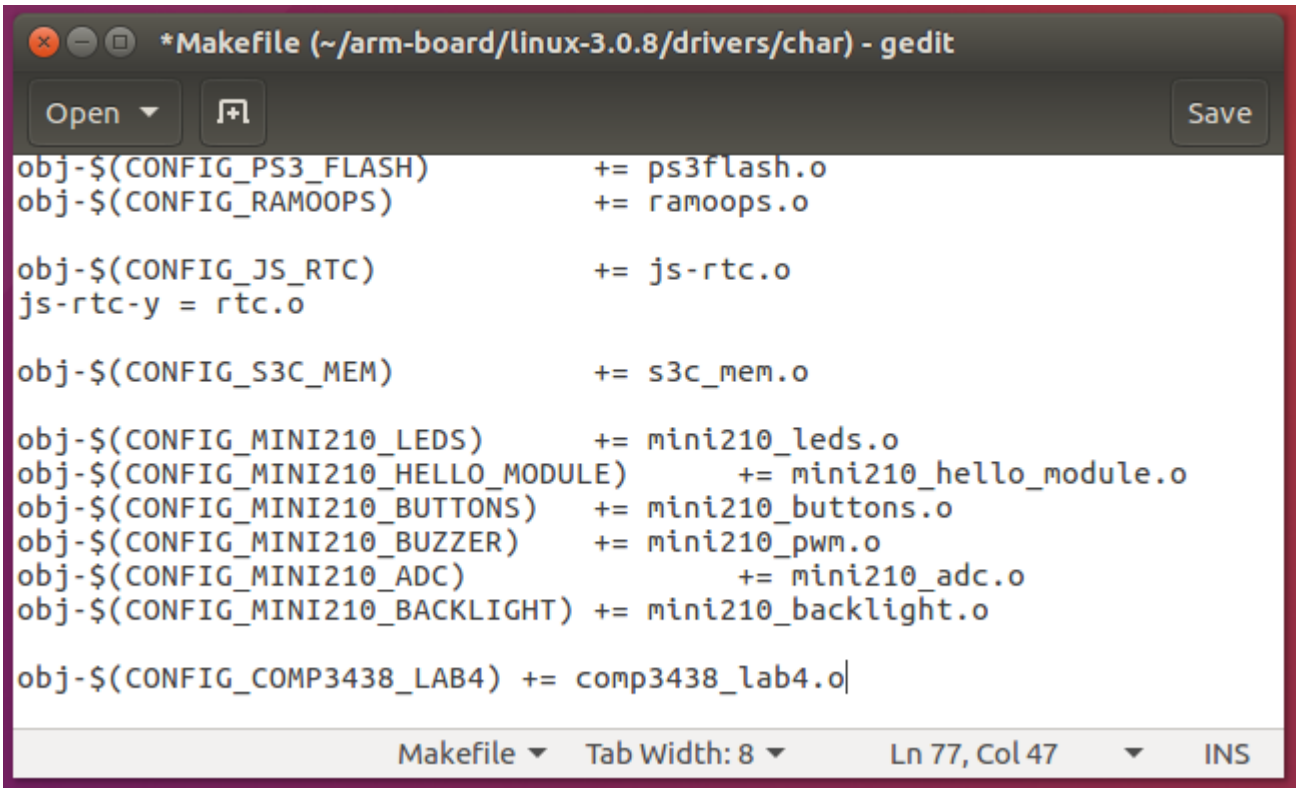
Create a Character device driver

1. Put the 'comp3438_lab4.c' file in 'arm-board/linux-3.0.8/drivers/char/'



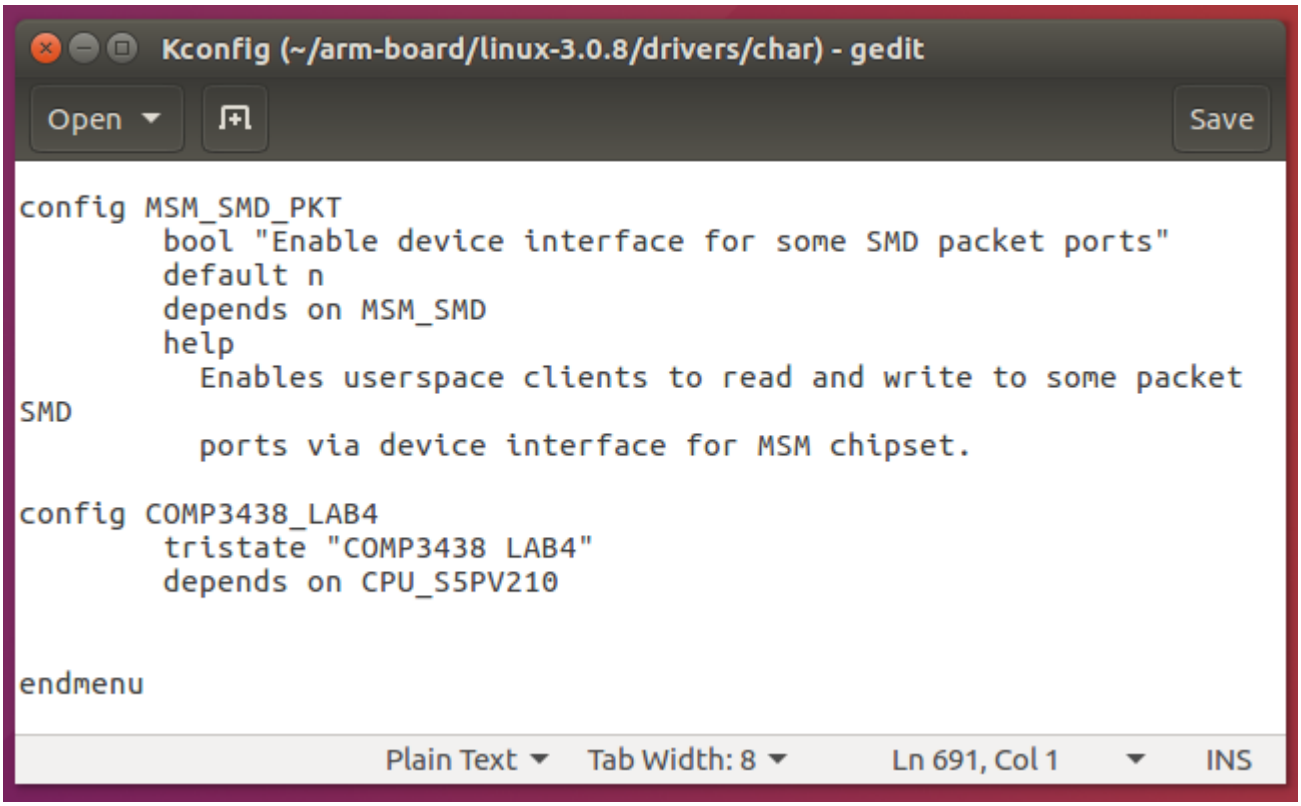
2. Open the 'arm-board/linux-3.0.8/drivers/char/Makefile' and add the following line at the end.

```
obj-$(CONFIG_COMP3438_LAB4) += comp3438_lab4.o
```



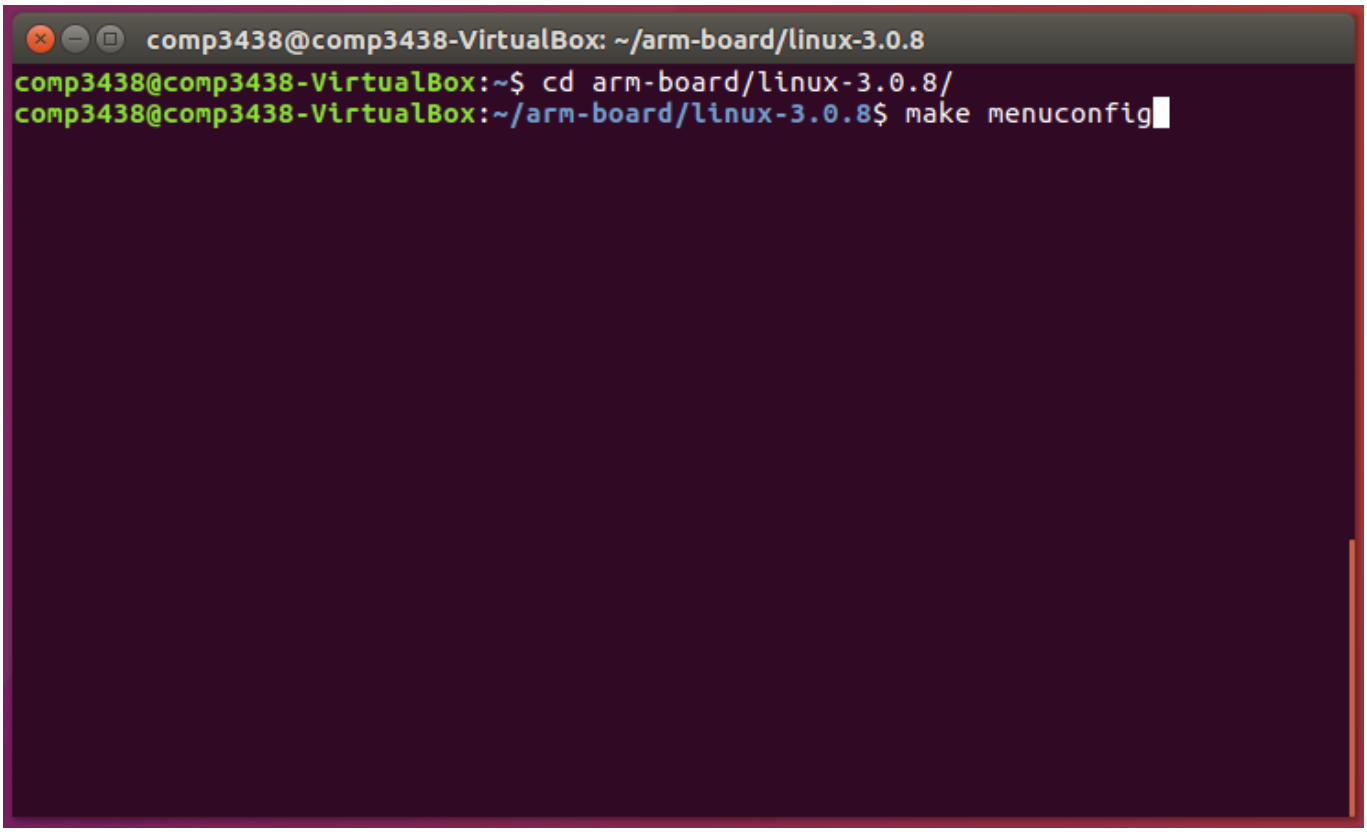
3. Open the "arm-board/linux-3.0.8/drivers/char/Kconfig" and add the following lines at the end before "endmenu".

```
...

config COMP3438_LAB4
    tristate "COMP3438 LAB4"
    depends on CPU_S5PV210

endmenu
```

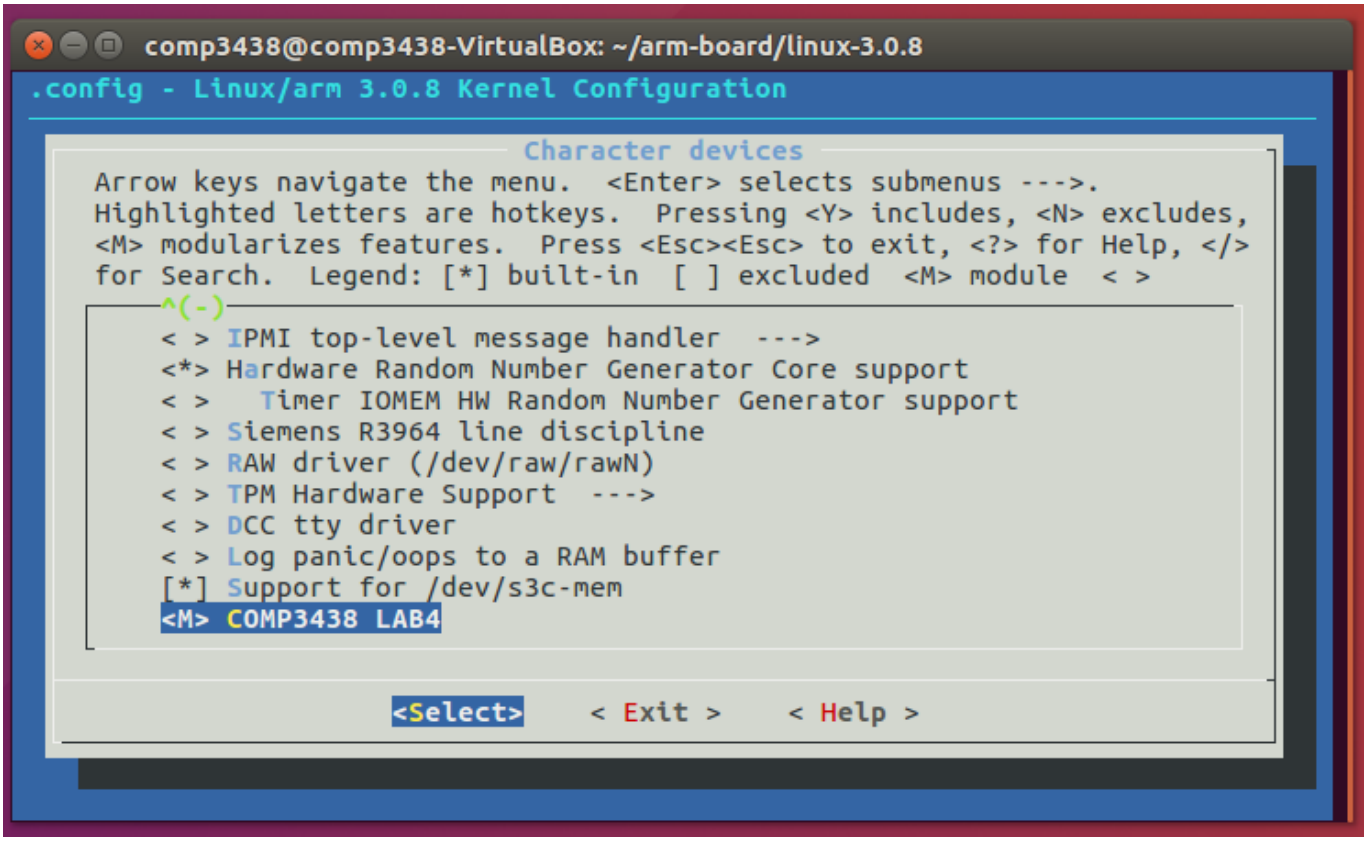


4. In the terminal, run:

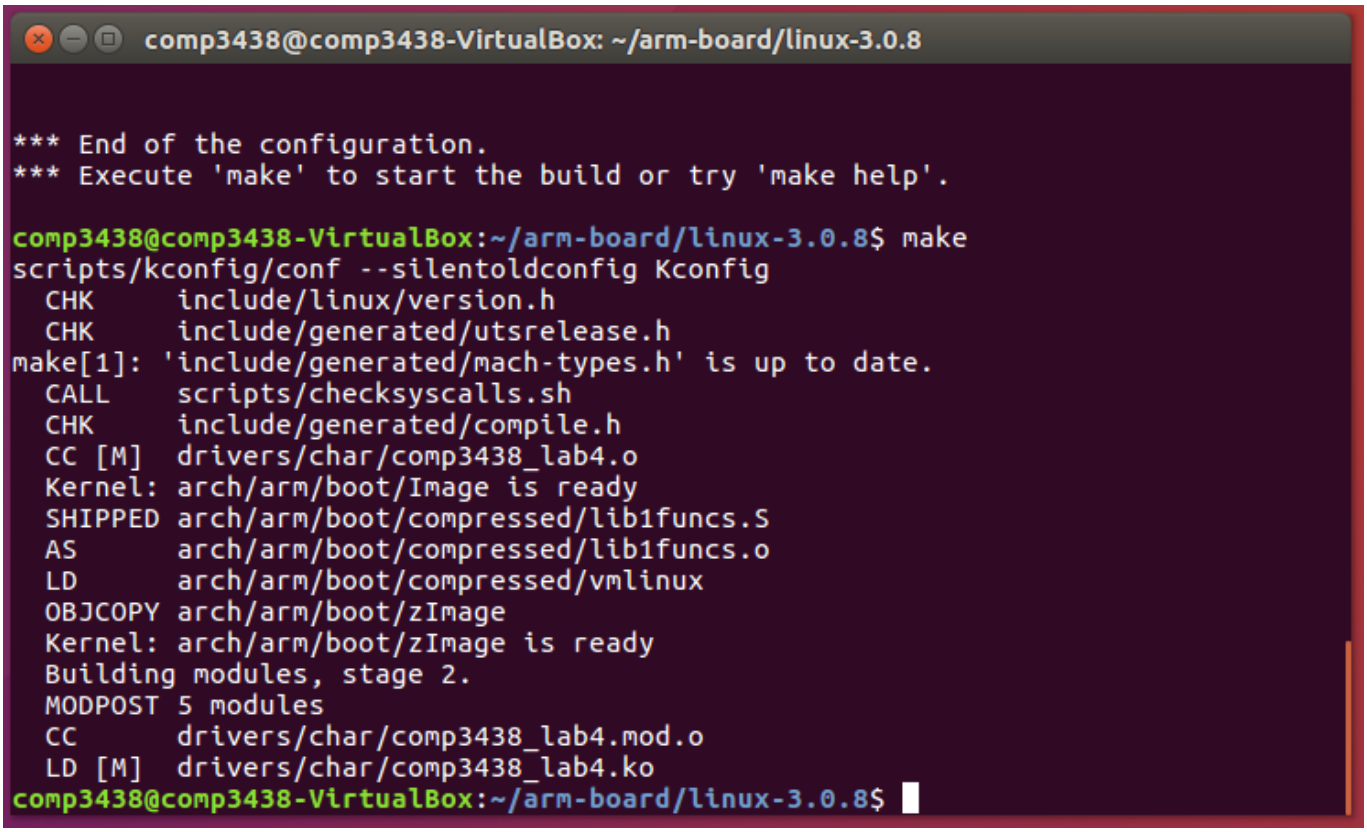
```
cd ~/arm-board/linux-3.0.8” and run
make menuconfig
```

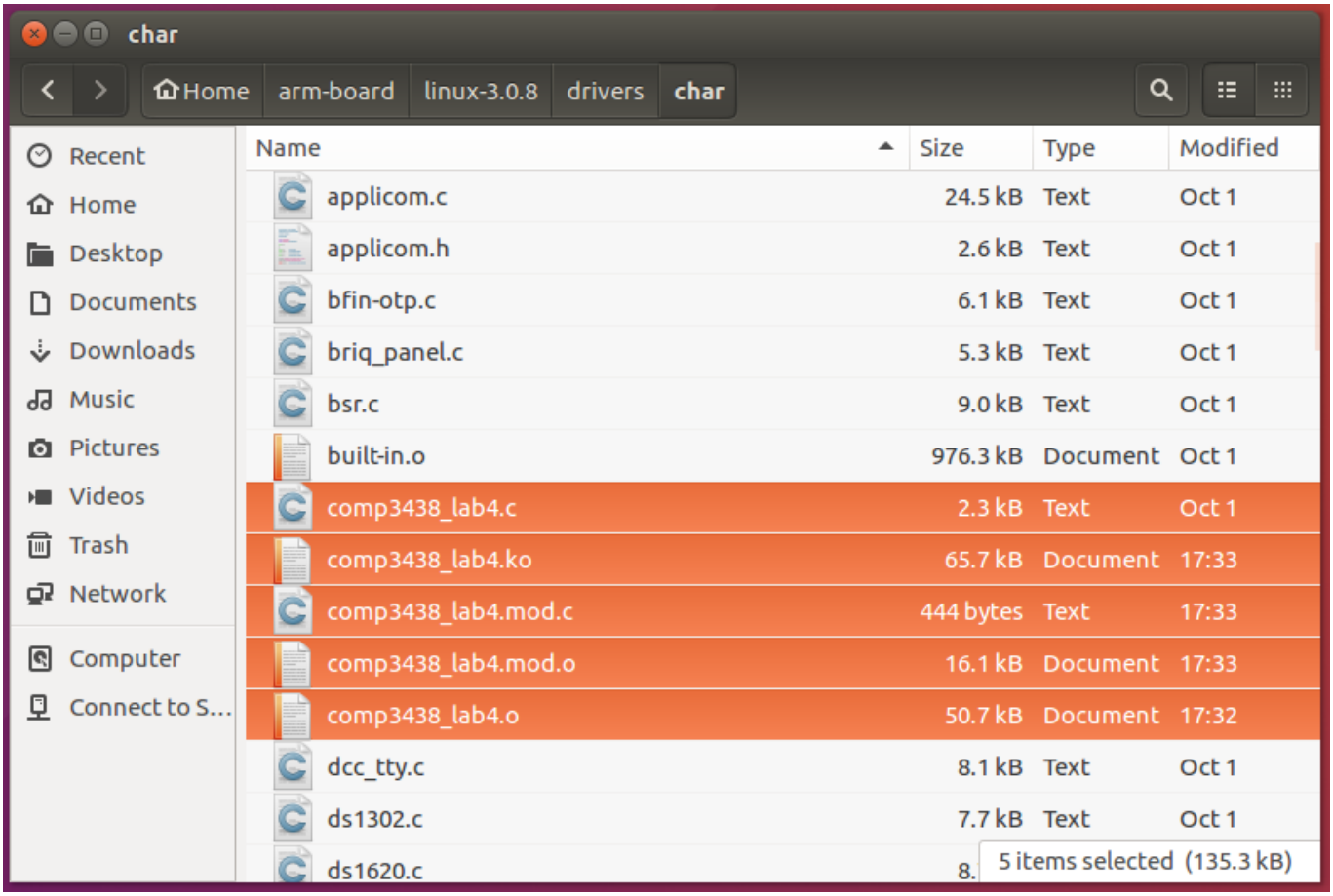


5. In the menu, Go to *Device Drivers* > *character devices* > *COMP3438 LAB4*. Press 'M', save and exit.



6. Run `make` to compile the driver. It will create the driver files in "arm-board/linux-3.0.8/drivers/char"

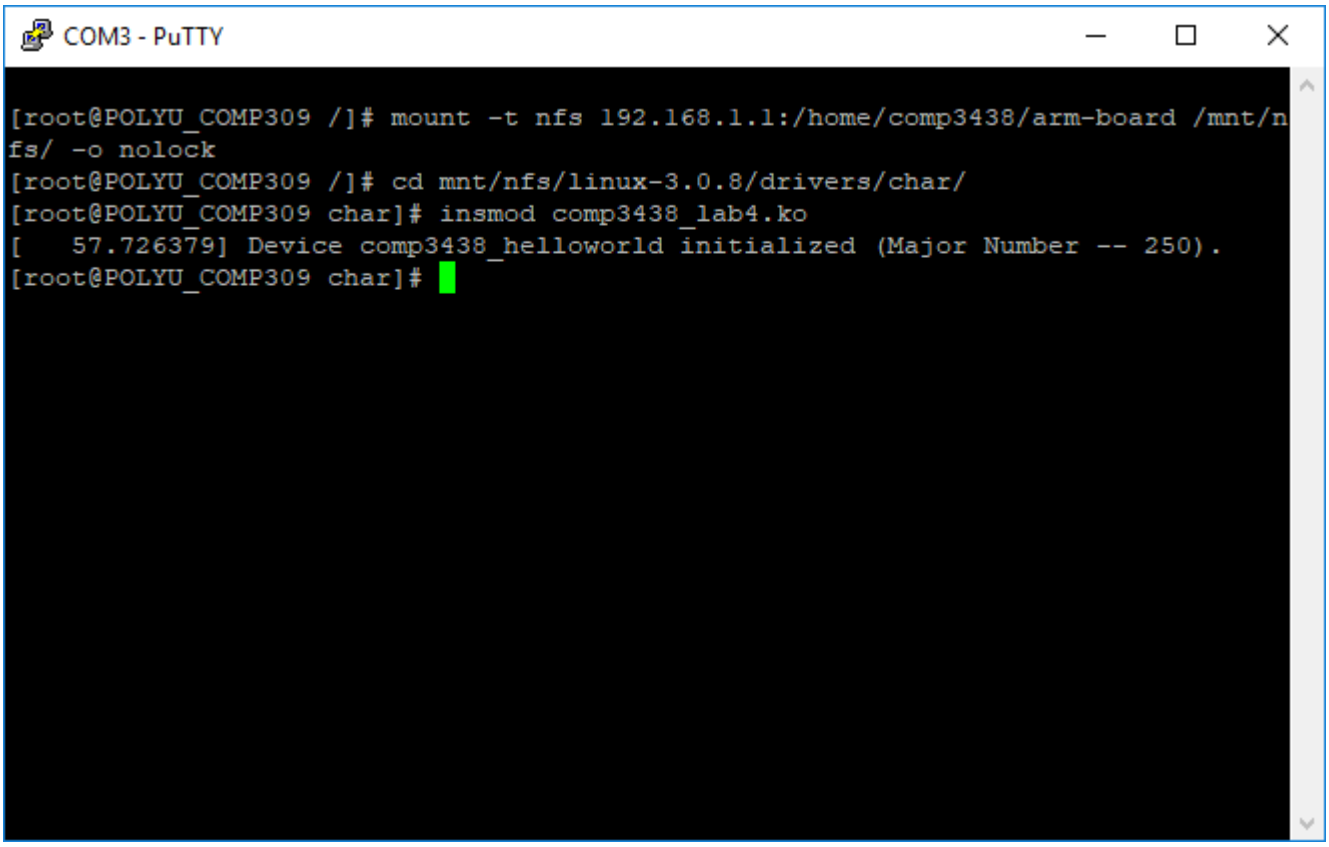




Load the driver on the embedded board

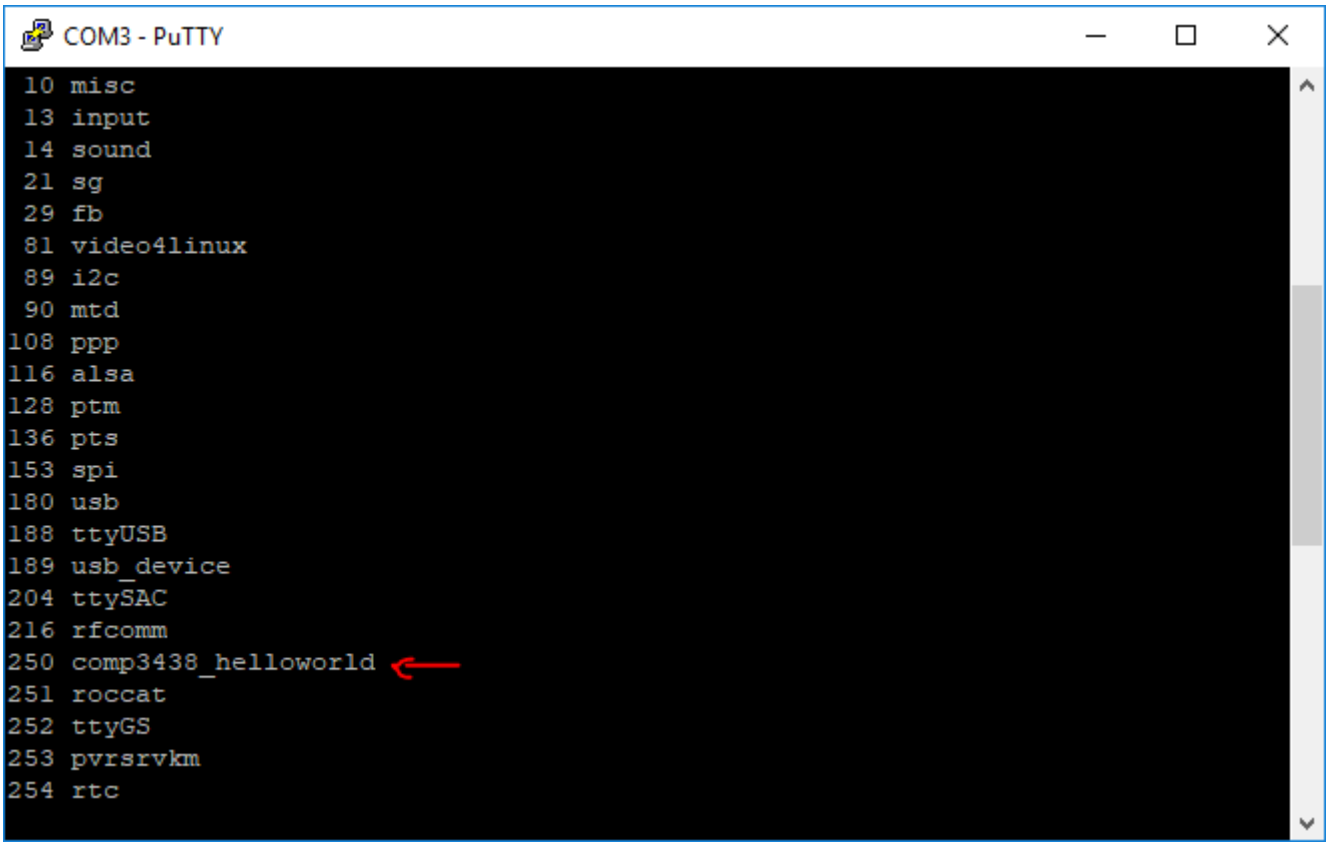
1. Open putty and mount "/home/comp3438/arm-board" to the embedded board. And dynamically load the driver in kernel.

```
# Run in putty terminal
mount -t nfs 192.168.1.1:/home/comp3438/arm-board /mnt/nfs -o nolock
cd /mnt/nfs/linux-3.0.8/drivers/char
insmod comp3438_lab4.ko
```



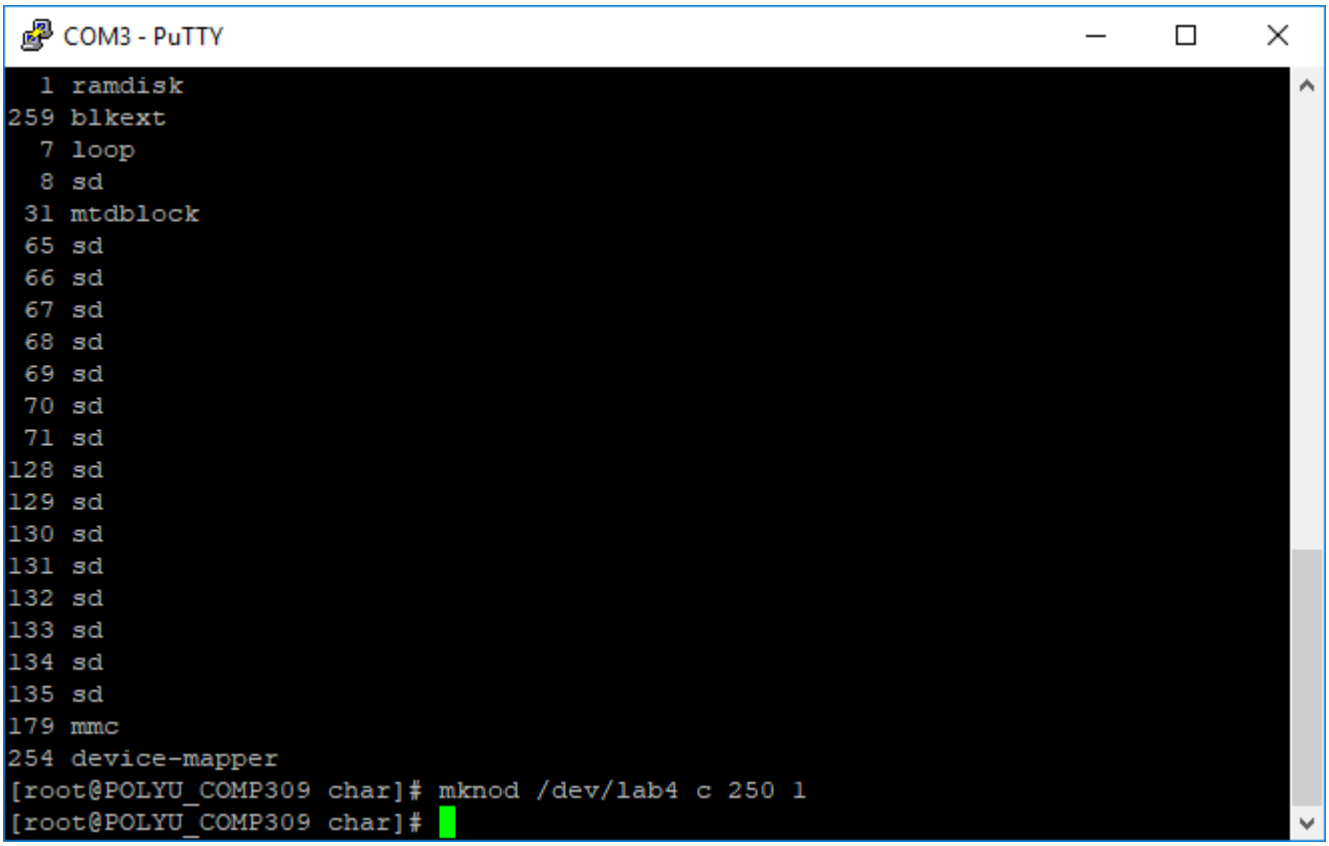
2. Check if device driver is added to the system.

```
cat /proc/devices
```



3. Link the driver to a device file.

```
mknod /dev/lab4 c 250 1
```

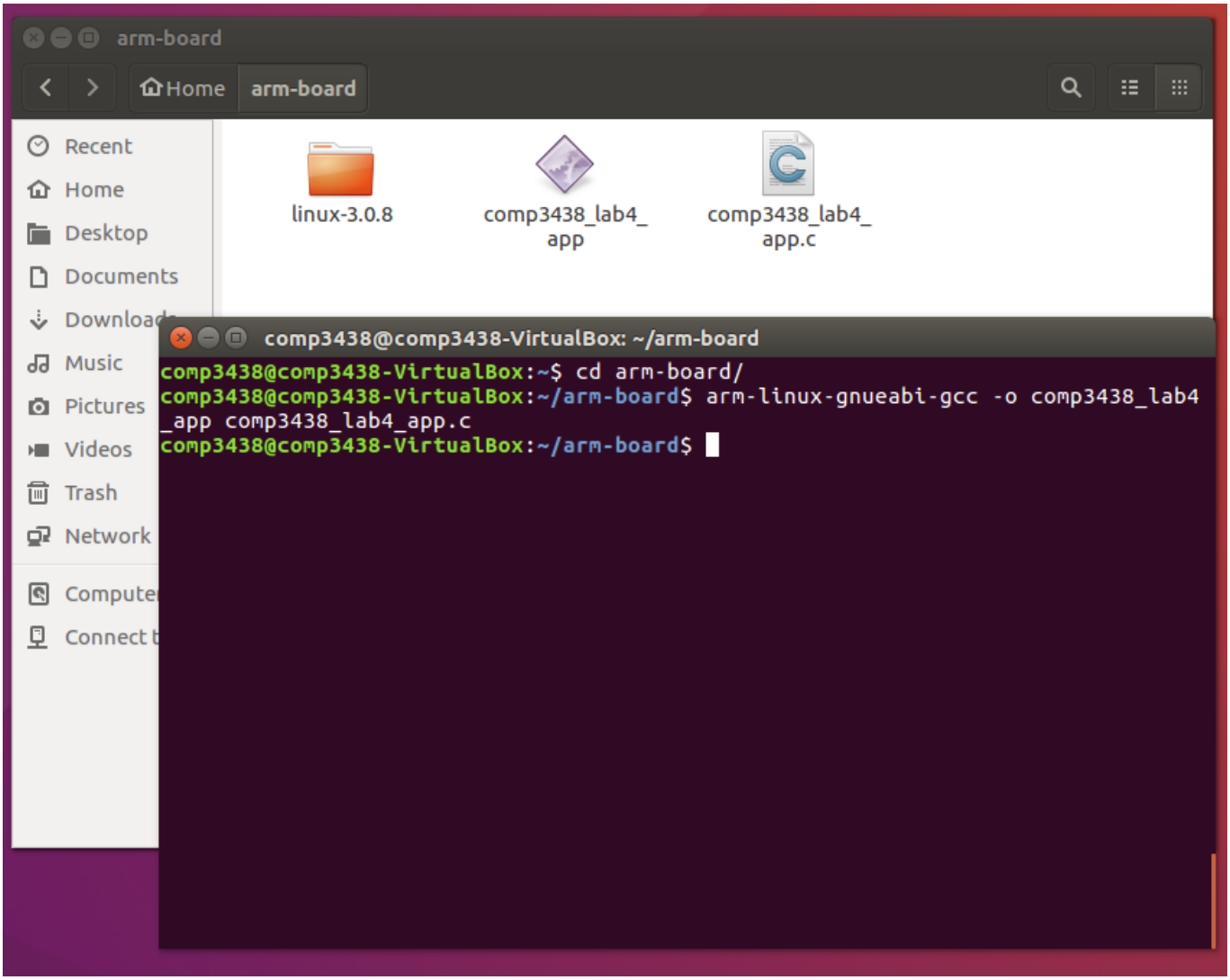


Now, the device is attached to the file. we can read from the file using unix system calls.

Read from the driver by writing C code

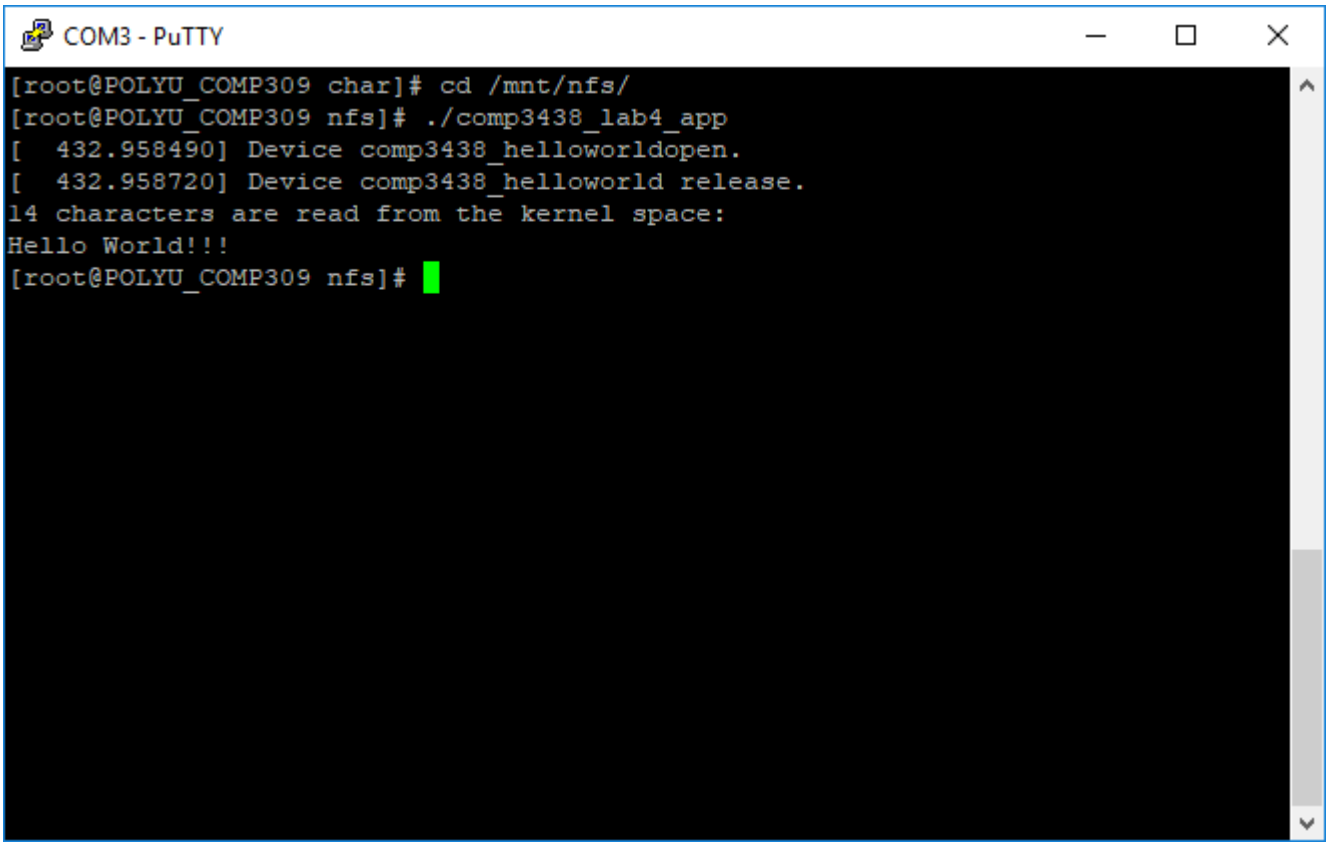
1. Put "comp3438_lab4_app.c" in 'arm-board/' and compile the code.

```
cd arm-board/
arm-linux-gnueabi-gcc -o comp3438_lab4_app comp3438_lab4_app.c
```



3. In putty terminal, go to "/mnt/nfs" and run the compiled file.

```
cd /mnt/nfs/
./comp3438_lab4_app
```


COM3 - PuTTY
[root@POLYU_COMP309 char]# cd /mnt/nfs/
[root@POLYU_COMP309 nfs]# ./comp3438_lab4_app
[432.958490] Device comp3438_helloworldopen.
[432.958720] Device comp3438_helloworld release.
14 characters are read from the kernel space:
Hello World!!!
[root@POLYU_COMP309 nfs]#