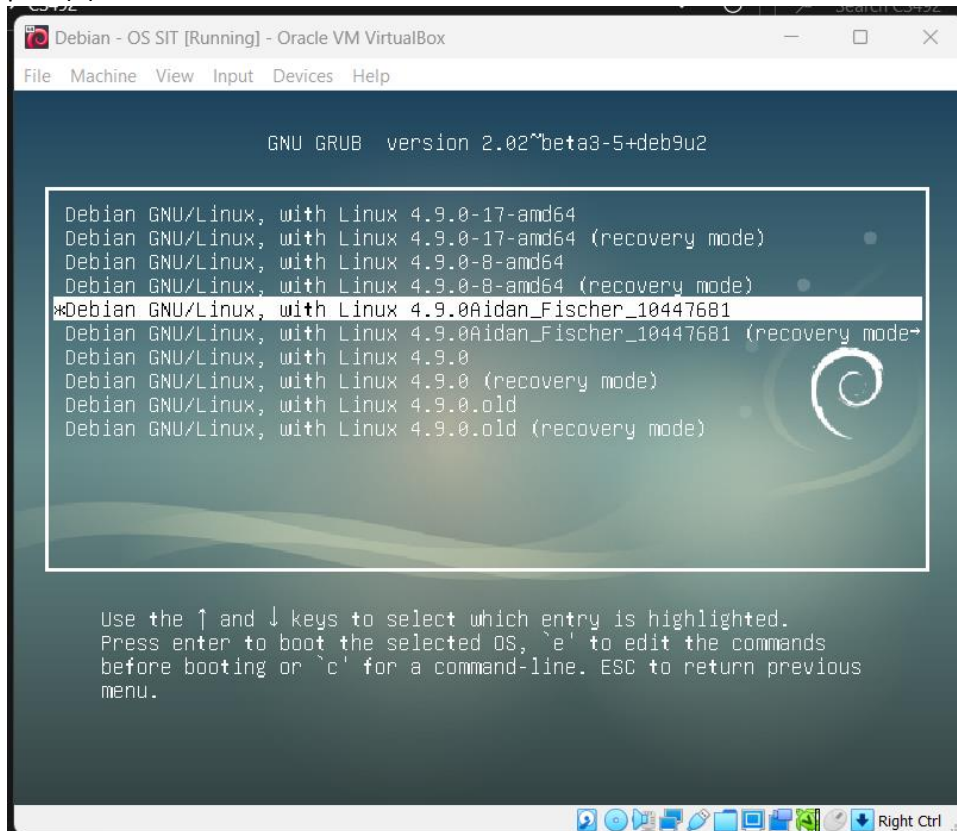
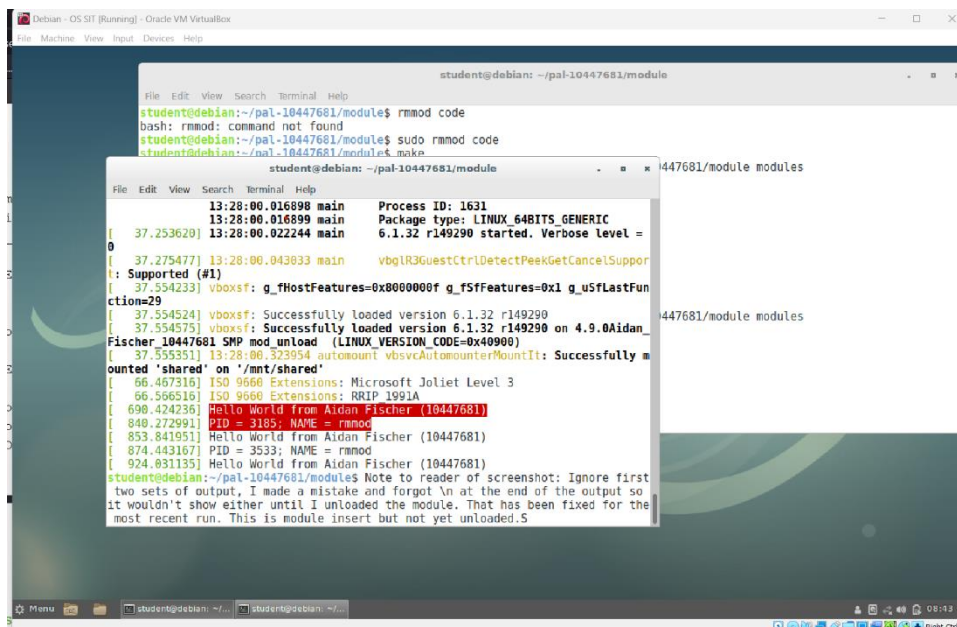


Aidan Fischer | I Pledge my honor that I have abided by the Stevens Honor System

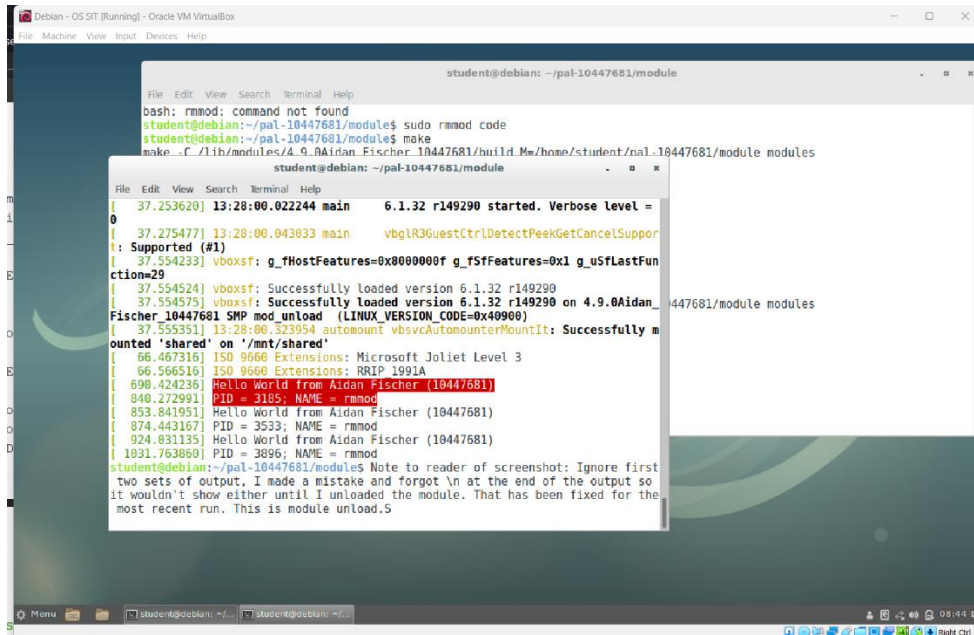
part (d): Kernel version in boot menu



Part (e): Kernel module immediately after load.



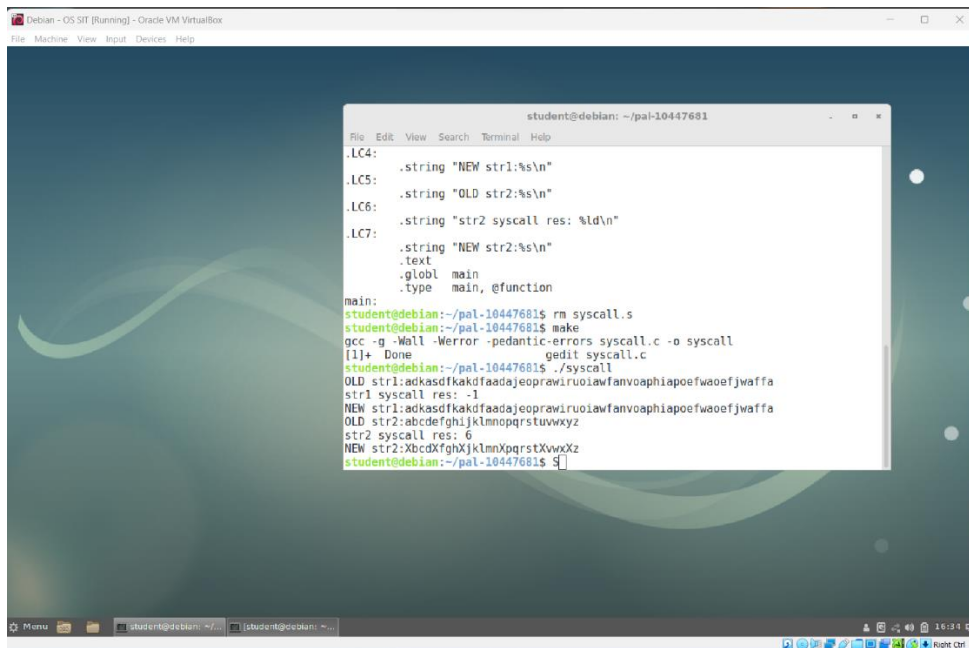
Part (e): Kernel module immediately after unload.



```
student@debian: ~/pal-10447681/module
bash: rmmod: command not found
student@debian:~/pal-10447681/module$ sudo rmmod code
student@debian:~/pal-10447681/module$ make
make -f /lib/modules/4.9.0-aidan_fischer-10447681/build_Me/home/student/nal-10447681/module modules
student@debian: ~/pal-10447681/module

[ 37.253620] 13:28:00.022244 main 6.1.32 r149290 started. Verbose Level = 0
[ 37.275477] 13:28:00.043033 main vbglr3GuestCtrlDetectPeekGetCancelSupport: Supported (#1)
[ 37.554233] vboxsf: g_ThostFeatures=0x8000000f g_r5fFeatures=0x1 g_usfLastFunction=29
[ 37.554524] vboxsf: Successfully loaded version 6.1.32 r149290
[ 37.554575] vboxsf: Successfully loaded version 6.1.32 r149290 on 4.9.0Aidan_Fischer_10447681 SMP mod unload (LINUX_VERSION_CODE=0x40900)
[ 37.555351] 13:28:00.521954 automount vbvsvAutomounterMountIt: Successfully mounted 'shared' on '/mnt/shared'
[ 66.467316] ISO 9660 Extensions: Microsoft Joliet Level 3
[ 66.56516] ISO 9660 Extensions: RRIP 1991A
[ 690.424236] Hello World from Aidan Fischer (10447681)
[ 840.272991] PID = 3185; NAME = rmmod
[ 853.841951] Hello World from Aidan Fischer (10447681)
[ 874.443167] PID = 3533; NAME = rmmod
[ 924.831135] Hello World from Aidan Fischer (10447681)
[ 1031.763060] PID = 3896; NAME = rmmod
student@debian:~/pal-10447681/module$ Note to reader of screenshot: Ignore first two sets of output. I made a mistake and forgot \n at the end of the output so it wouldn't show either until I unloaded the module. That has been fixed for the most recent run. This is module unload.S
```

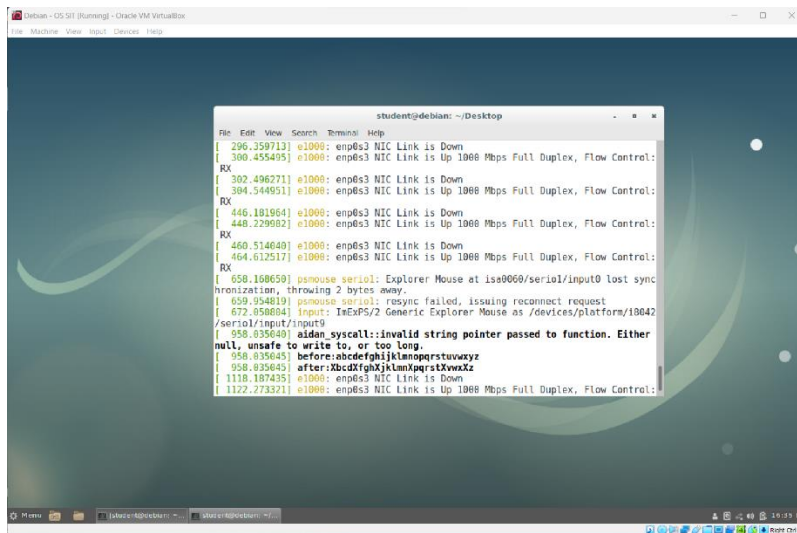
Part (h): syscall.c, direct output of program.



```
student@debian: ~/pal-10447681
File Edit View Search Terminal Help

.LC4: .string "NEW str1:%s\n"
.LC5: .string "OLD str2:%s\n"
.LC6: .string "str2 syscall res: %ld\n"
.LC7: .string "NEW str2:%s\n"
.text
.globl main
.type main, @function
main:
student@debian:~/pal-10447681$ rm syscall.s
student@debian:~/pal-10447681$ make
gcc -g -Wall -Werror -pedantic-errors syscall.c -o syscall
[11]+  Done                  gedit syscall.c
student@debian:~/pal-10447681$ ./syscall
OLD str1:adkasdfkdfadajeoprawiruoiafvanvoaphiafoefwaoefjwaffa
str1 syscall res: -1
NEW str1:adkasdfkdfadajeoprawiruoiafvanvoaphiafoefwaoefjwaffa
OLD str2:abcdfghijklmnopqrstuvwxyx
str2 syscall res: 6
NEW str2:XbcdXfghXjklmnXpqrstXvwxXz
student@debian:~/pal-10447681$
```

Part (h): syscall.c output, output of syscall into kernel log.



The screenshot shows a terminal window titled "student@debian: ~/Desktop" running on a Debian VM. The terminal displays kernel log messages, including network interface status changes and a kernel warning about a syscall. The messages are as follows:

```
[ 296.359713] e1000: enp6s3 NIC Link is Down
[ 300.455495] e1000: enp6s3 NIC Link is Up 1000 Mbps Full Duplex, Flow Control: RX
[ 302.496271] e1000: enp6s3 NIC Link is Down
[ 304.544951] e1000: enp6s3 NIC Link is Up 1000 Mbps Full Duplex, Flow Control: RX
[ 446.181964] e1000: enp6s3 NIC Link is Down
[ 448.229982] e1000: enp6s3 NIC Link is Up 1000 Mbps Full Duplex, Flow Control: RX
[ 460.514040] e1000: enp6s3 NIC Link is Down
[ 464.612517] e1000: enp6s3 NIC Link is Up 1000 Mbps Full Duplex, Flow Control: RX
[ 658.189659] psmouse serio1: Explorer Mouse at isa0060/serio1/input0 lost synchronization, throwing 2 bytes away.
[ 659.954819] psmouse serio1: rpsync failed, issuing reconnect request
[ 672.058684] input: IEXPS/2 Generic Explorer Mouse as /devices/platform/18042/serio1/input/input9
[ 958.835640] aidan: syscall: invalid string pointer passed to function. Either null, unsafe to write to, or too long.
[ 958.835645] before:abcdefghijklmnopqrstuvwxyz
[ 958.835645] after:AbcdTghXjklmXpqrStXwXz
[ 1118.187435] e1000: enp6s3 NIC Link is Down
[ 1122.273371] e1000: enp6s3 NIC Link is Up 1000 Mbps Full Duplex, Flow Control:
```