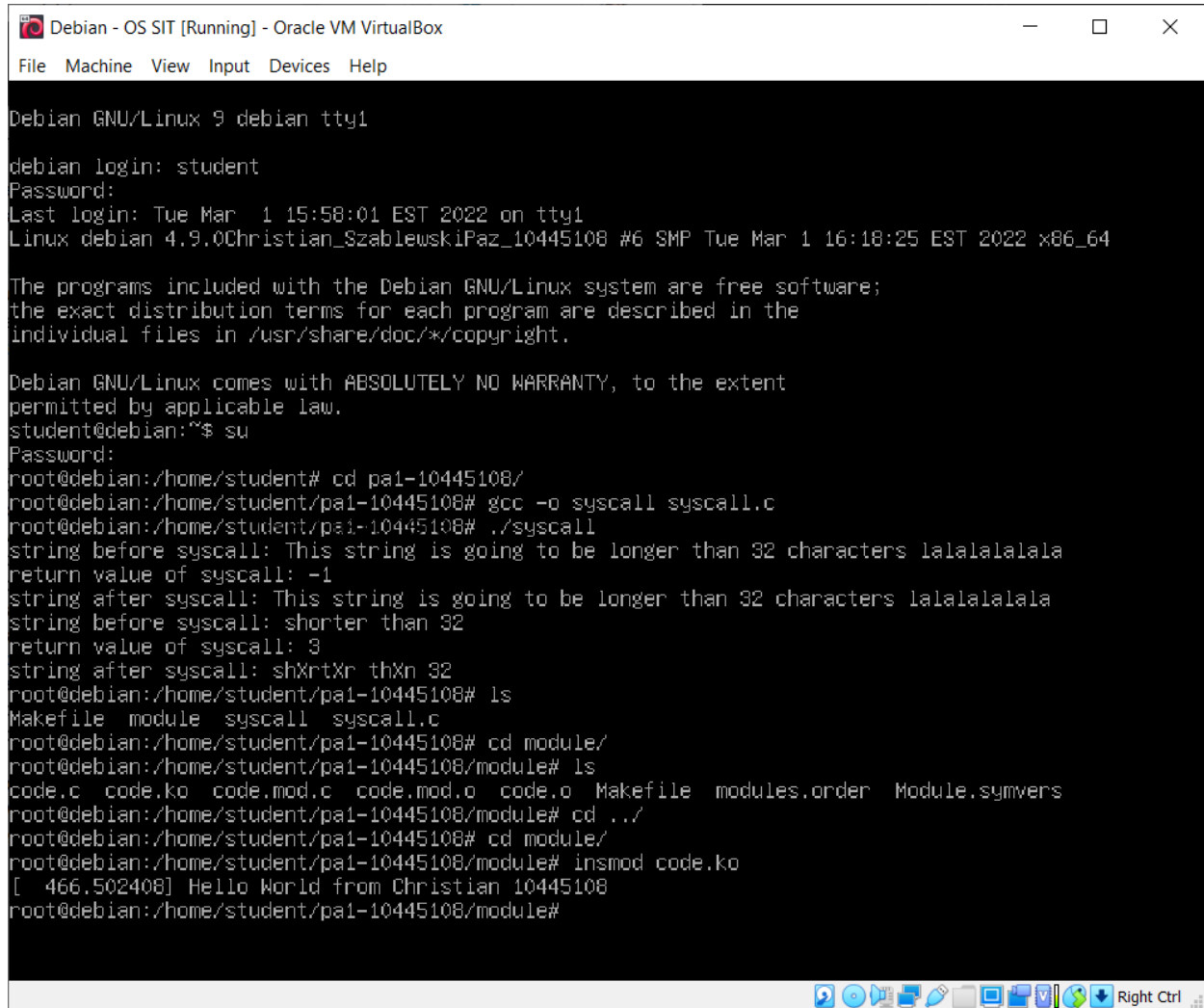


I pledge my honor that I have abided by the Stevens Honor System.
Insert text here Christian Szablewski-Paz



```
Debian GNU/Linux 9 debian tty1
debian login: student
Password:
Last login: Tue Mar  1 15:58:01 EST 2022 on tty1
Linux debian 4.9.0Christian_SzablewskiPaz_10445108 #6 SMP Tue Mar  1 16:18:25 EST 2022 x86_64

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
student@debian:~$ su
Password:
root@debian:/home/student# cd pa1-10445108/
root@debian:/home/student/pa1-10445108# gcc -o syscall syscall.c
root@debian:/home/student/pa1-10445108# ./syscall
string before syscall: This string is going to be longer than 32 characters lalalalalala
return value of syscall: -1
string after syscall: This string is going to be longer than 32 characters lalalalalala
string before syscall: shorter than 32
return value of syscall: 3
string after syscall: shXrtXr thXn 32
root@debian:/home/student/pa1-10445108# ls
Makefile module syscall syscall.c
root@debian:/home/student/pa1-10445108# cd module/
root@debian:/home/student/pa1-10445108/module# ls
code.c code.ko code.mod.c code.mod.o code.o Makefile modules.order Module.symvers
root@debian:/home/student/pa1-10445108/module# cd ../
root@debian:/home/student/pa1-10445108# cd module/
root@debian:/home/student/pa1-10445108/module# insmod code.ko
[ 466.502408] Hello World from Christian 10445108
root@debian:/home/student/pa1-10445108/module#
```

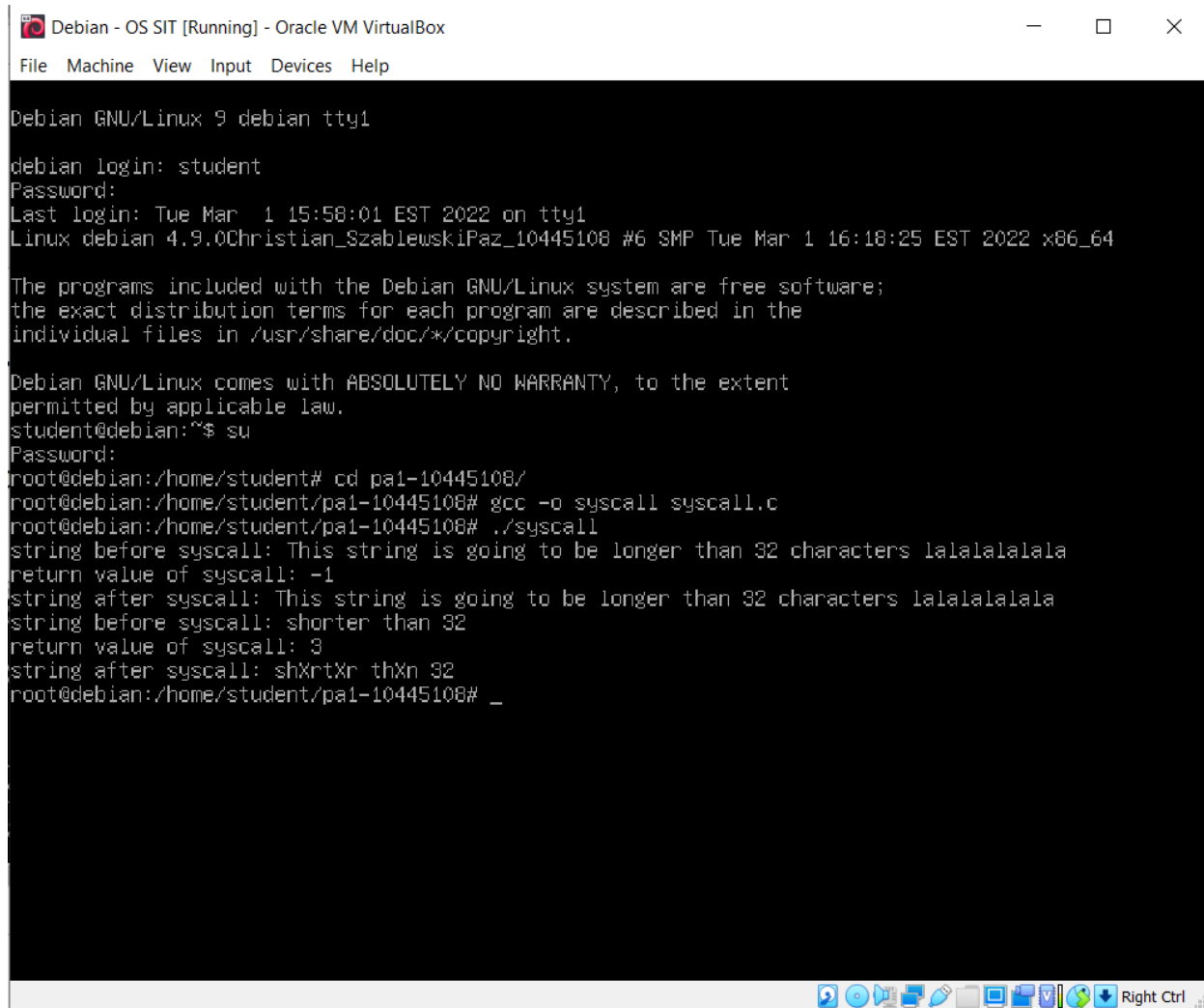
5. Insmod
(load module)

Insert text here

```
Debian - OS SIT [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
CONFIG_HAVE_INTEL_TXT=y
CONFIG_X86_64_SMP=y
CONFIG_ARCH_SUPPORTS_UPROBES=y
CONFIG_FIX_EARLYCON_MEM=y
CONFIG_DEBUG_RODATA=y
CONFIG_PGTABLE_LEVELS=4
CONFIG_DEFCONFIG_LIST="/lib/modules/$UNAME_RELEASE/.config"
CONFIG_IRQ_WORK=y
CONFIG_BUILDTIME_EXTABLE_SORT=y
CONFIG_THREAD_INFO_IN_TASK=y

#
# General setup
#
CONFIG_INIT_ENV_ARG_LIMIT=32
CONFIG_CROSS_COMPILE=""
# CONFIG_COMPILE_TEST is not set
CONFIG_LOCALVERSION="Christian.SzablewskiPaz_10445108"
# CONFIG_LOCALVERSION_AUTO is not set
CONFIG_HAVE_KERNEL_GZIP=y
CONFIG_HAVE_KERNEL_BZIP2=y
CONFIG_HAVE_KERNEL_LZMA=y
CONFIG_HAVE_KERNEL_XZ=y
CONFIG_HAVE_KERNEL_LZ0=y
CONFIG_HAVE_KERNEL_LZ4=y
CONFIG_KERNEL_GZIP=y
# CONFIG_KERNEL_BZIP2 is not set
# CONFIG_KERNEL_LZMA is not set
# CONFIG_KERNEL_XZ is not set
# CONFIG_KERNEL_LZ0 is not set
# CONFIG_KERNEL_LZ4 is not set
CONFIG_DEFAULT_HOSTNAME="(none)"
CONFIG_SWAP=y
CONFIG_SYSVIPC=y
CONFIG_SYSVIPC_SYSCTL=y
CONFIG_POSIX_MQUEUE=y
/LOCAL
```

2. LOCAL_VERSION
(corresponding kernel version)

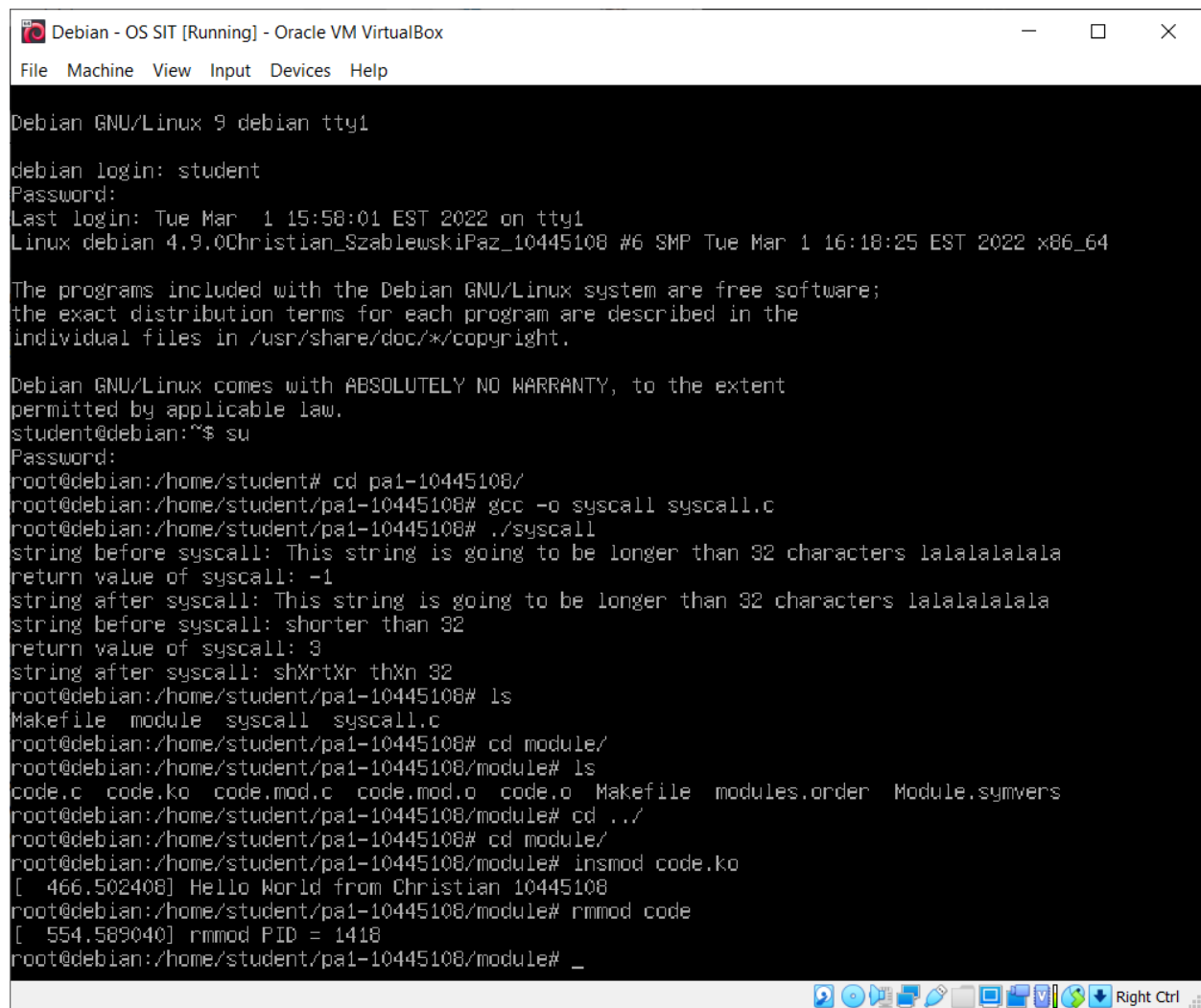


```
Debian GNU/Linux 9 debian tty1
debian login: student
Password:
Last login: Tue Mar  1 15:58:01 EST 2022 on tty1
Linux debian 4.9.0Christian_SzablewskiPaz_10445108 #6 SMP Tue Mar  1 16:18:25 EST 2022 x86_64

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student@debian:~$ su
Password:
root@debian:/home/student# cd pa1-10445108/
root@debian:/home/student/pa1-10445108# gcc -o syscall syscall.c
root@debian:/home/student/pa1-10445108# ./syscall
string before syscall: This string is going to be longer than 32 characters lalalalalala
return value of syscall: -1
string after syscall: This string is going to be longer than 32 characters lalalalalala
string before syscall: shorter than 32
return value of syscall: 3
string after syscall: shXrtXr thXn 32
root@debian:/home/student/pa1-10445108# _
```

11. syscall userspace
output of syscall.c



```
Debian GNU/Linux 9 debian tty1

debian login: student
Password:
Last login: Tue Mar  1 15:58:01 EST 2022 on tty1
Linux debian 4.9.0Christian_SzablewskiPaz_10445108 #6 SMP Tue Mar  1 16:18:25 EST 2022 x86_64

The programs included with the Debian GNU/Linux system are free software;
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permitted by applicable law.
student@debian:~$ su
Password:
root@debian:/home/student# cd pa1-10445108/
root@debian:/home/student/pa1-10445108# gcc -o syscall syscall.c
root@debian:/home/student/pa1-10445108# ./syscall
string before syscall: This string is going to be longer than 32 characters lalalalalala
return value of syscall: -1
string after syscall: This string is going to be longer than 32 characters lalalalalala
string before syscall: shorter than 32
return value of syscall: 3
string after syscall: shXrtXr thXn 32
root@debian:/home/student/pa1-10445108# ls
Makefile module syscall syscall.c
root@debian:/home/student/pa1-10445108# cd module/
root@debian:/home/student/pa1-10445108/module# ls
code.c code.ko code.mod.c code.mod.o code.o Makefile modules.order Module.symvers
root@debian:/home/student/pa1-10445108/module# cd ../
root@debian:/home/student/pa1-10445108# cd module/
root@debian:/home/student/pa1-10445108/module# insmod code.ko
[ 466.502408] Hello World from Christian 10445108
root@debian:/home/student/pa1-10445108/module# rmmod code
[ 554.589040] rmmod PID = 1418
root@debian:/home/student/pa1-10445108/module# ls
```

6. unload module

```
Debian - OS SIT [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
CONFIG_NEED_PER_CPU_PAGE_FIRST_CHUNK=y
CONFIG_ARCH_HIBERNATION_POSSIBLE=y
CONFIG_ARCH_SUSPEND_POSSIBLE=y
CONFIG_ARCH_WANT_HUGE_PMD_SHARE=y
CONFIG_ARCH_WANT_GENERAL_HUGETLB=y
CONFIG_ZONE_DMA32=y
root@debian:/home/student/pa1-10445108# cd ../
root@debian:/home/student# cd pa1
root@debian:/home/student/pa1# ls
arch      Documentation  ipc          Makefile     net          sound        vmlinux.o
block     drivers       Kbuild      mm           README       System.map
certs     firmware     Kconfig     modules.built-in  REPORTING-BUGS  tools
COPYING   fs           kernel      modules.order  samples       usr
CREDITS   include      lib         Module.symvers  scripts       virt
crypto    init         MAINTAINERS my_syscall     security      vmlinux
root@debian:/home/student/pa1# cd include/
root@debian:/home/student/pa1/include# ls
acpi      config  dt-bindings  keys  math-emu  misc  ras  scsi  target  video
asm-generic  crypto  generated  kvm  media  net  rdma  soc  trace  xen
clocksource  drm    Kbuild    linux  memory  pcncia  rxrpc  sound  uapi
root@debian:/home/student/pa1/include# cd ../
root@debian:/home/student/pa1# tail -F /var/log/messages
Mar  1 16:31:08 debian kernel: [  3.288369] 00:00:00.005099 main      5.2.16 r123759 started. Verbose level = 0
Mar  1 16:31:08 debian vboxadd-service.sh: VirtualBox Guest Addition service started.
Mar  1 16:31:09 debian kernel: [  4.871248] e1000: enp0s3 NIC Link is Up 1000 Mbps Full Duplex, Flow Control: RX
Mar  1 16:31:09 debian kernel: [  4.871945] IPv6: ADDRCONF(NETDEV_CHANGE): enp0s3: link becomes ready
Mar  1 16:31:56 debian kernel: [ 51.569239] 32
Mar  1 16:31:56 debian kernel: [ 51.569317] 15
Mar  1 16:31:56 debian kernel: [ 51.569322] before: shorter than 32
Mar  1 16:31:56 debian kernel: [ 51.569325] after: shXrtXr thXn 32
Mar  1 16:36:33 debian kernel: [ 328.791047] hrtimer: interrupt took 4052384 ns
Mar  1 16:51:55 debian kernel: [1249.744593] kworker/dying (962) used greatest stack depth: 12336 bytes left
```

12 .kernel log for system
call