

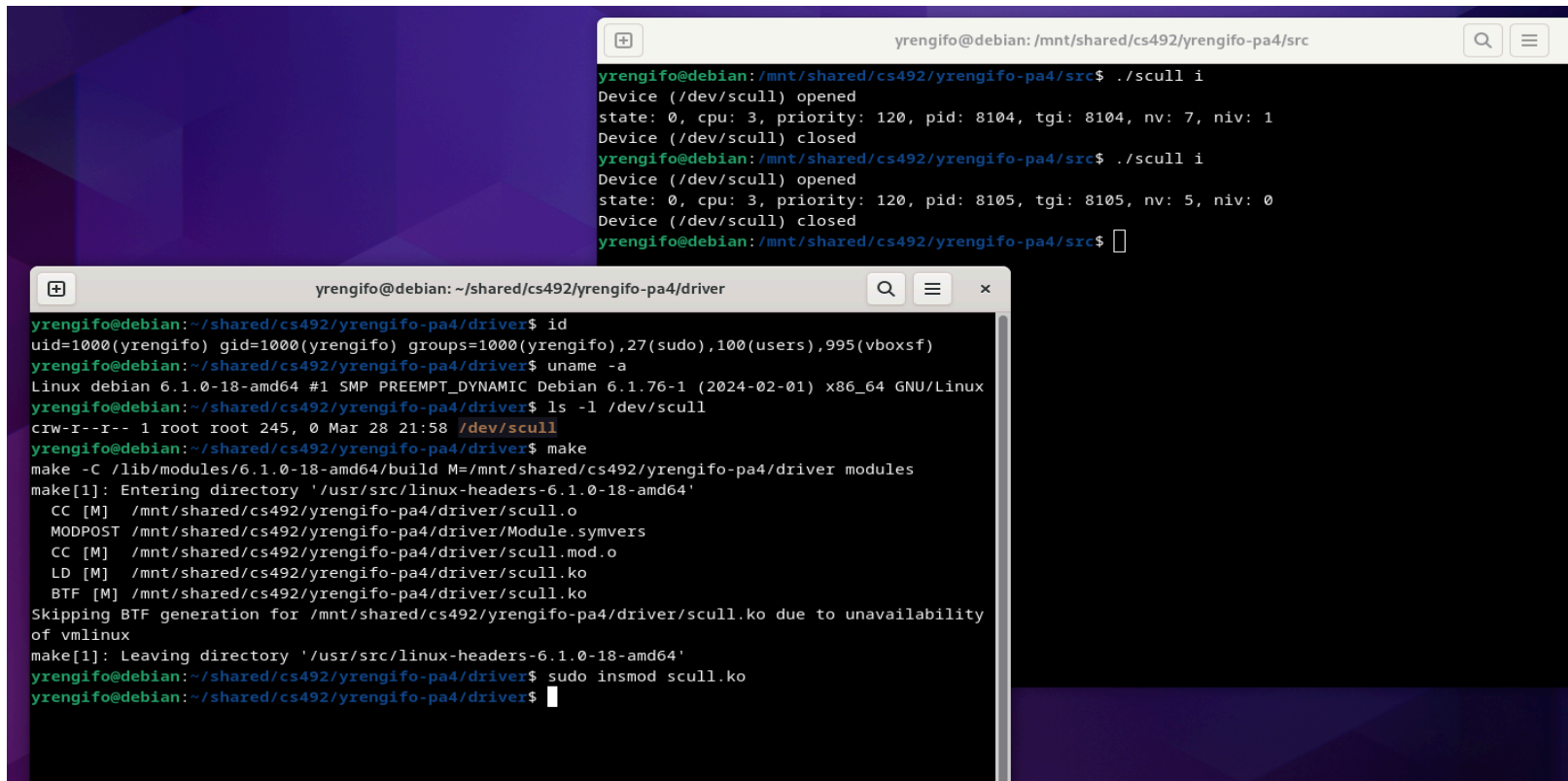
Yuvan Rengifo

I pledge my honor that I have abided by the Stevens Honor System.

Pa-4

3.2-

- id, uname -a, ls -l /dev/scull, make, insmod .ko
- ./scull i output

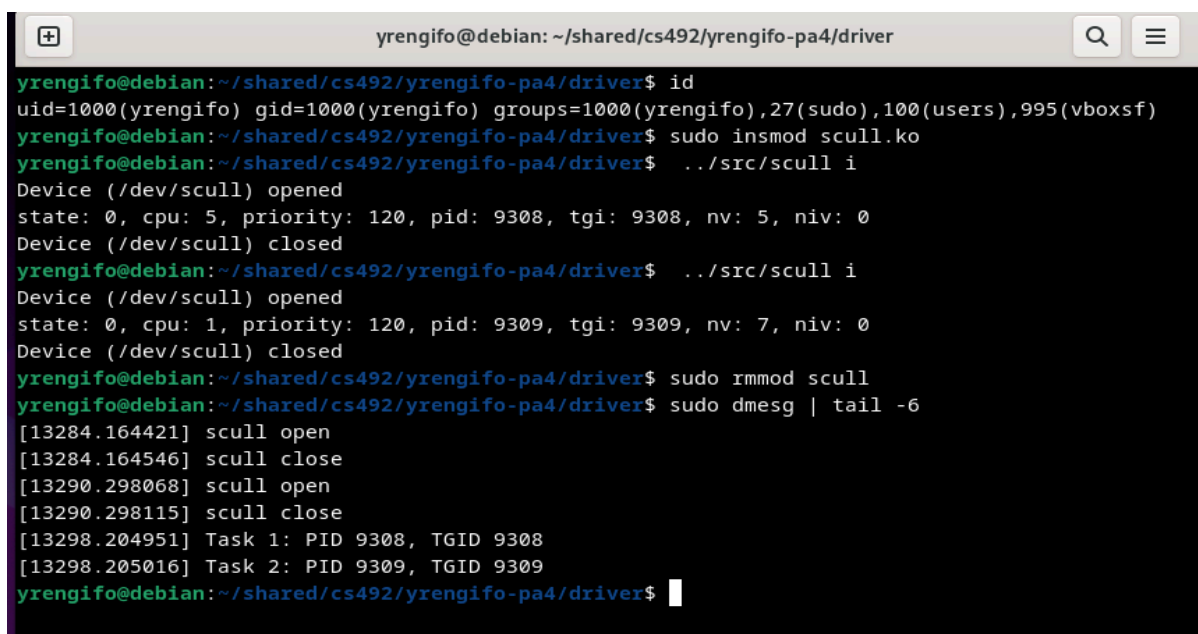


```
yrengifo@debian: /mnt/shared/cs492/yrengifo-pa4/src
yrengifo@debian:/mnt/shared/cs492/yrengifo-pa4/src$ ./scull i
Device (/dev/scull) opened
state: 0, cpu: 3, priority: 120, pid: 8104, tgi: 8104, nv: 7, niv: 1
Device (/dev/scull) closed
yrengifo@debian:/mnt/shared/cs492/yrengifo-pa4/src$ ./scull i
Device (/dev/scull) opened
state: 0, cpu: 3, priority: 120, pid: 8105, tgi: 8105, nv: 5, niv: 0
Device (/dev/scull) closed
yrengifo@debian:/mnt/shared/cs492/yrengifo-pa4/src$

yrengifo@debian: ~/shared/cs492/yrengifo-pa4/driver
yrengifo@debian:~/shared/cs492/yrengifo-pa4/driver$ id
uid=1000(yrengifo) gid=1000(yrengifo) groups=1000(yrengifo),27(sudo),100(users),995(vboxsf)
yrengifo@debian:~/shared/cs492/yrengifo-pa4/driver$ uname -a
Linux debian 6.1.0-18-amd64 #1 SMP PREEMPT_DYNAMIC Debian 6.1.76-1 (2024-02-01) x86_64 GNU/Linux
yrengifo@debian:~/shared/cs492/yrengifo-pa4/driver$ ls -l /dev/scull
crw-r--r-- 1 root root 245, 0 Mar 28 21:58 /dev/scull
yrengifo@debian:~/shared/cs492/yrengifo-pa4/driver$ make
make -C /lib/modules/6.1.0-18-amd64/build M=/mnt/shared/cs492/yrengifo-pa4/driver modules
make[1]: Entering directory '/usr/src/linux-headers-6.1.0-18-amd64'
  CC [M] /mnt/shared/cs492/yrengifo-pa4/driver/scull.o
  MODPOST /mnt/shared/cs492/yrengifo-pa4/driver/Module.symvers
  CC [M] /mnt/shared/cs492/yrengifo-pa4/driver/scull.mod.o
  LD [M] /mnt/shared/cs492/yrengifo-pa4/driver/scull.ko
  BTF [M] /mnt/shared/cs492/yrengifo-pa4/driver/scull.ko
Skipping BTF generation for /mnt/shared/cs492/yrengifo-pa4/driver/scull.ko due to unavailability of vmlinux
make[1]: Leaving directory '/usr/src/linux-headers-6.1.0-18-amd64'
yrengifo@debian:~/shared/cs492/yrengifo-pa4/driver$ sudo insmod scull.ko
yrengifo@debian:~/shared/cs492/yrengifo-pa4/driver$
```

4.1 -

- id, insmod, 2x scull i, rmmod, dmesg | tail -6



```
yrengifo@debian: ~/shared/cs492/yrengifo-pa4/driver
yrengifo@debian:~/shared/cs492/yrengifo-pa4/driver$ id
uid=1000(yrengifo) gid=1000(yrengifo) groups=1000(yrengifo),27(sudo),100(users),995(vboxsf)
yrengifo@debian:~/shared/cs492/yrengifo-pa4/driver$ sudo insmod scull.ko
yrengifo@debian:~/shared/cs492/yrengifo-pa4/driver$ ../src/scull i
Device (/dev/scull) opened
state: 0, cpu: 5, priority: 120, pid: 9308, tgi: 9308, nv: 5, niv: 0
Device (/dev/scull) closed
yrengifo@debian:~/shared/cs492/yrengifo-pa4/driver$ ../src/scull i
Device (/dev/scull) opened
state: 0, cpu: 1, priority: 120, pid: 9309, tgi: 9309, nv: 7, niv: 0
Device (/dev/scull) closed
yrengifo@debian:~/shared/cs492/yrengifo-pa4/driver$ sudo rmmod scull
yrengifo@debian:~/shared/cs492/yrengifo-pa4/driver$ sudo dmesg | tail -6
[13284.164421] scull open
[13284.164546] scull close
[13290.298068] scull open
[13290.298115] scull close
[13298.204951] Task 1: PID 9308, TGID 9308
[13298.205016] Task 2: PID 9309, TGID 9309
yrengifo@debian:~/shared/cs492/yrengifo-pa4/driver$
```

4.2- id, insmod, scull p, rmmod, dmesg

```
yrengifo@debian: ~/shared/cs492/yrengifo-pa4/driver
yrengifo@debian:~/shared/cs492/yrengifo-pa4/driver$ id
uid=1000(yrengifo) gid=1000(yrengifo) groups=1000(yrengifo),27(sudo),100(users),
995(vboxsf)
yrengifo@debian:~/shared/cs492/yrengifo-pa4/driver$ sudo insmod scull.ko
yrengifo@debian:~/shared/cs492/yrengifo-pa4/driver$ ../src/scull p
Device (/dev/scull) opened
state: 0, cpu: 0, priority: 120, pid: 2979, tgi: 2979, nv: 0, niv: 0
state: 0, cpu: 0, priority: 120, pid: 2979, tgi: 2979, nv: 0, niv: 0
state: 0, cpu: 6, priority: 120, pid: 2981, tgi: 2981, nv: 0, niv: 0
state: 0, cpu: 6, priority: 120, pid: 2981, tgi: 2981, nv: 0, niv: 0
state: 0, cpu: 2, priority: 120, pid: 2982, tgi: 2982, nv: 0, niv: 0
state: 0, cpu: 2, priority: 120, pid: 2982, tgi: 2982, nv: 0, niv: 1
state: 0, cpu: 0, priority: 120, pid: 2980, tgi: 2980, nv: 0, niv: 0
state: 0, cpu: 0, priority: 120, pid: 2980, tgi: 2980, nv: 1, niv: 0
Device (/dev/scull) closed
yrengifo@debian:~/shared/cs492/yrengifo-pa4/driver$ sudo rmmod scull.ko
yrengifo@debian:~/shared/cs492/yrengifo-pa4/driver$ sudo dmesg | tail -6
[ 1205.061740] scull open
[ 1205.162016] scull close
[ 1224.097787] Task 1: PID 2979, TGID 2979
[ 1224.097792] Task 2: PID 2981, TGID 2981
[ 1224.097793] Task 3: PID 2982, TGID 2982
[ 1224.097794] Task 4: PID 2980, TGID 2980
yrengifo@debian:~/shared/cs492/yrengifo-pa4/driver$
```

4.3- id, insmod, scull t, rmmod, dmesg | tail

```
yrengifo@debian: ~/shared/cs492/yrengifo-pa4/driver
yrengifo@debian:~/shared/cs492/yrengifo-pa4/driver$ id
uid=1000(yrengifo) gid=1000(yrengifo) groups=1000(yrengifo),27(sudo),100(users),995(vboxsf)
yrengifo@debian:~/shared/cs492/yrengifo-pa4/driver$ sudo insmod scull.ko
[sudo] password for yrengifo:
yrengifo@debian:~/shared/cs492/yrengifo-pa4/driver$ ../src/scull t
Device (/dev/scull) opened
state: 0, cpu: 7, priority: 120, pid: 3625, tgi: 3623, nv: 0, niv: 0
state: 0, cpu: 7, priority: 120, pid: 3625, tgi: 3623, nv: 0, niv: 0
state: 0, cpu: 3, priority: 120, pid: 3624, tgi: 3623, nv: 0, niv: 0
state: 0, cpu: 3, priority: 120, pid: 3624, tgi: 3623, nv: 1, niv: 0
state: 0, cpu: 4, priority: 120, pid: 3627, tgi: 3623, nv: 0, niv: 0
state: 0, cpu: 1, priority: 120, pid: 3626, tgi: 3623, nv: 0, niv: 0
state: 0, cpu: 3, priority: 120, pid: 3626, tgi: 3623, nv: 2, niv: 0
state: 0, cpu: 4, priority: 120, pid: 3627, tgi: 3623, nv: 1, niv: 1
Device (/dev/scull) closed
yrengifo@debian:~/shared/cs492/yrengifo-pa4/driver$ sudo rmmod scull
yrengifo@debian:~/shared/cs492/yrengifo-pa4/driver$ sudo dmesg | tail -6
[ 2210.493515] scull open
[ 2210.686030] scull close
[ 2229.723208] Task 1: PID 3625, TGID 3623
[ 2229.723216] Task 2: PID 3624, TGID 3623
[ 2229.723219] Task 3: PID 3626, TGID 3623
[ 2229.723221] Task 4: PID 3627, TGID 3623
yrengifo@debian:~/shared/cs492/yrengifo-pa4/driver$
```