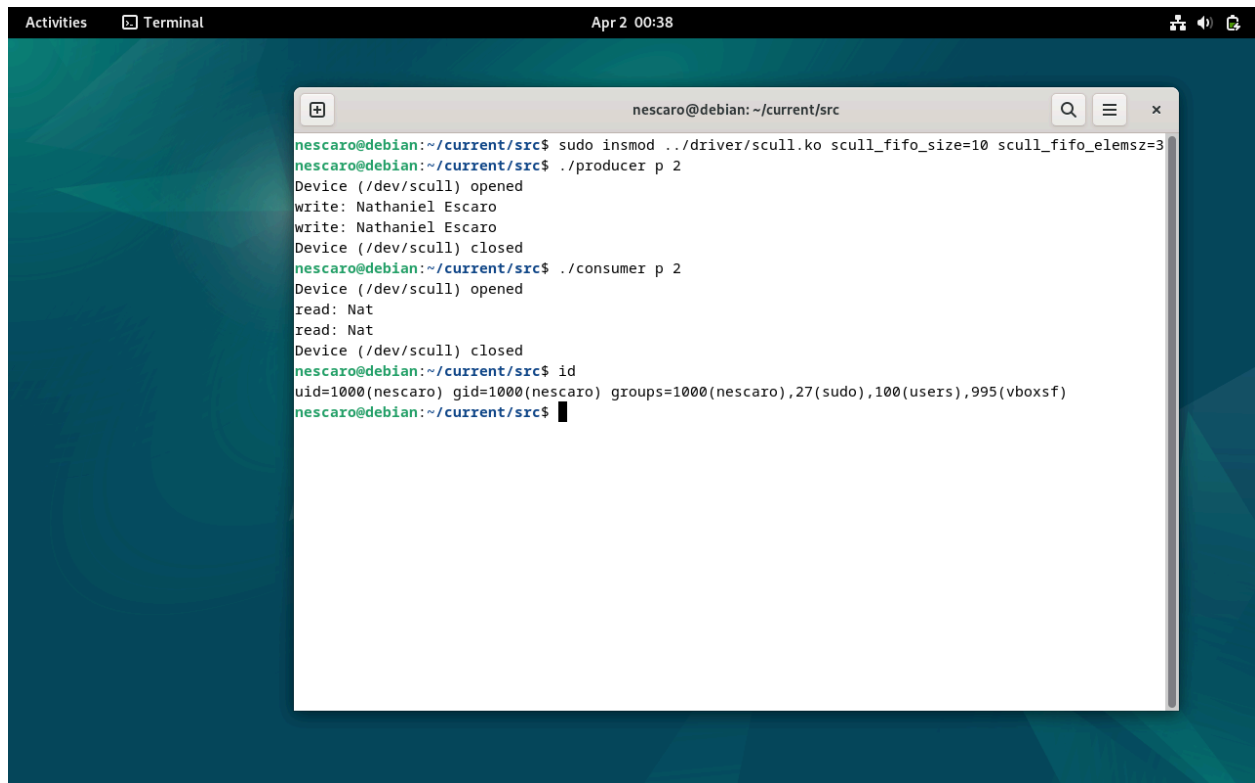


Nathaniel Escaro

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

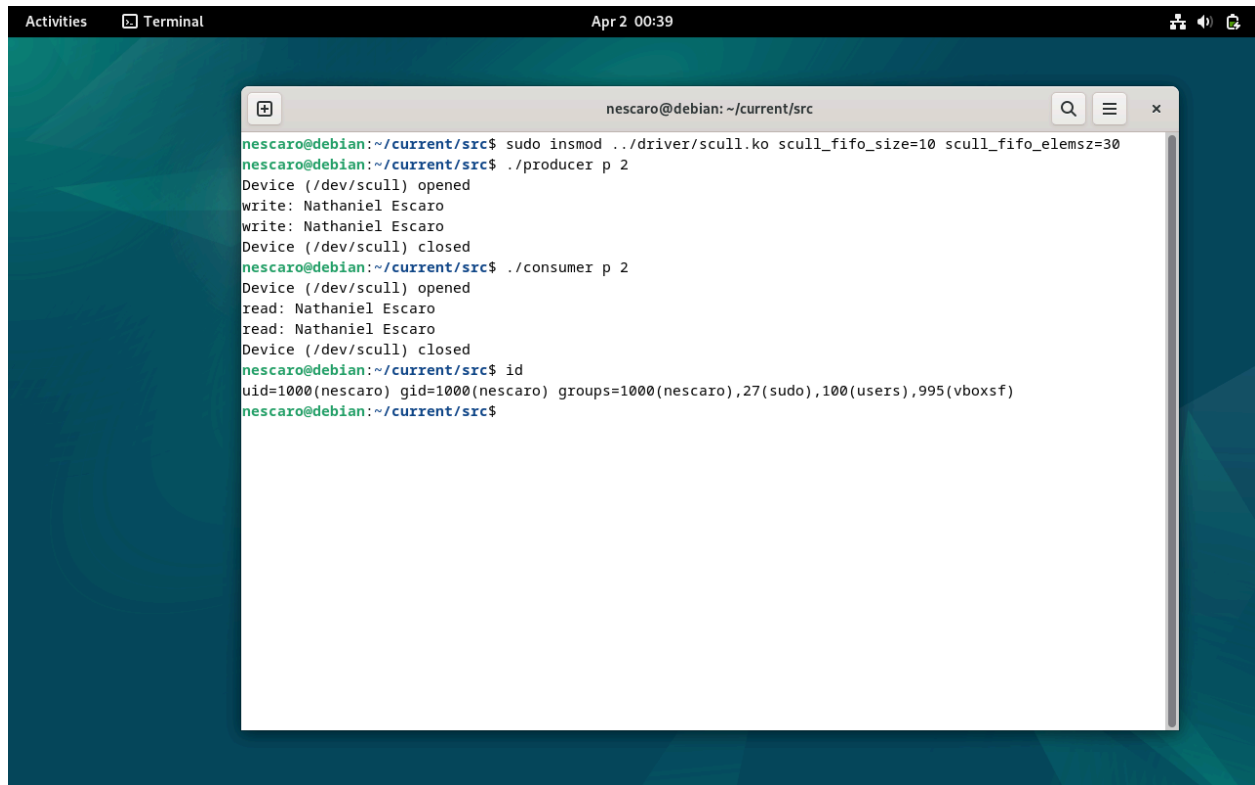
PA5 Screenshots

This screenshot shows that the scull module is loaded with size 10 and element size 3. Then, the producer writes to the queue two times and the consumer reads from the queue two times as well, but it can only read (and write) a maximum of 3 characters due to the element size.



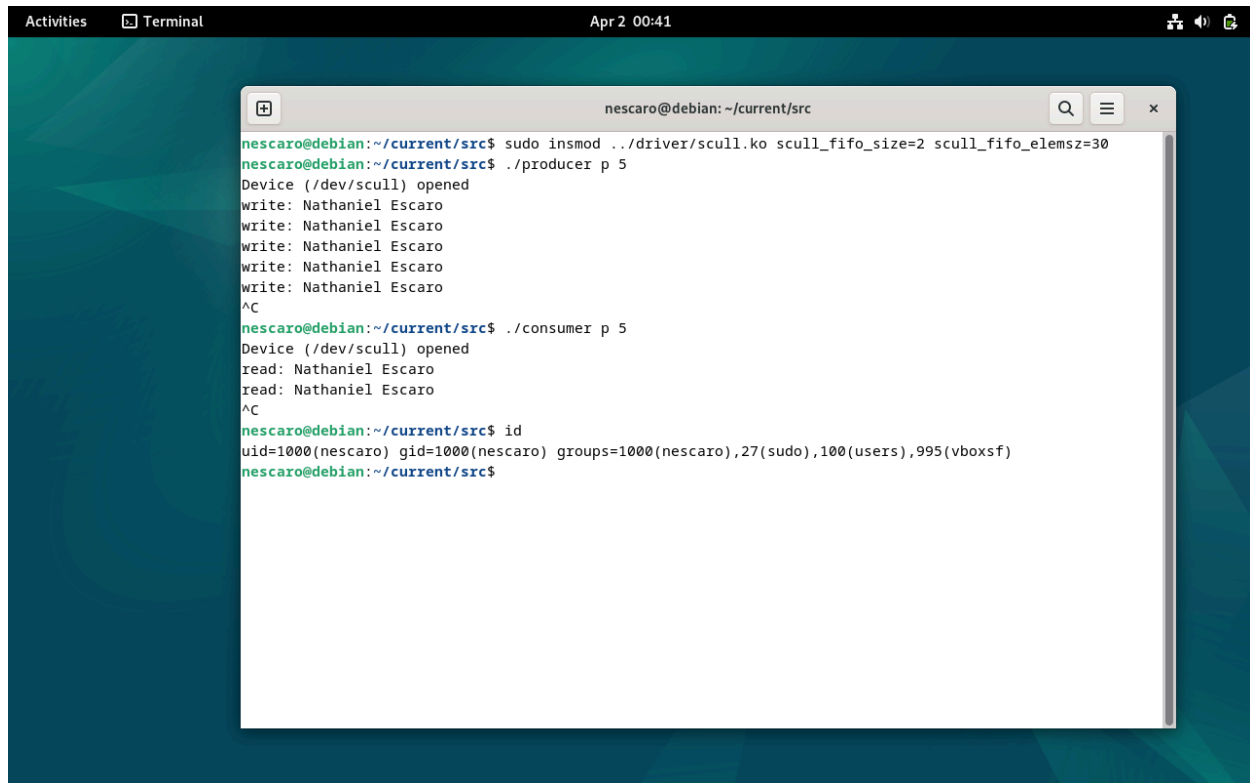
```
nescaro@debian: ~/current/src
nescaro@debian:~/current/src$ sudo insmod ../driver/scull.ko scull_fifo_size=10 scull_fifo_elemsz=3
nescaro@debian:~/current/src$ ./producer p 2
Device (/dev/scull) opened
write: Nathaniel Escaro
write: Nathaniel Escaro
Device (/dev/scull) closed
nescaro@debian:~/current/src$ ./consumer p 2
Device (/dev/scull) opened
read: Nat
read: Nat
Device (/dev/scull) closed
nescaro@debian:~/current/src$ id
uid=1000(nescaro) gid=1000(nescaro) groups=1000(nescaro),27(sudo),100(users),995(vboxsf)
nescaro@debian:~/current/src$
```

This screenshot shows that the scull module is loaded with size 10 and element size 30. Then, the producer writes two times into the queue and the consumer read two times from the queue. This time, the producer and consumer can write/read the whole input due to the larger element size given.

A terminal window titled 'nescaro@debian: ~/current/src' with a search icon, menu icon, and close button. The terminal shows the following commands and output:

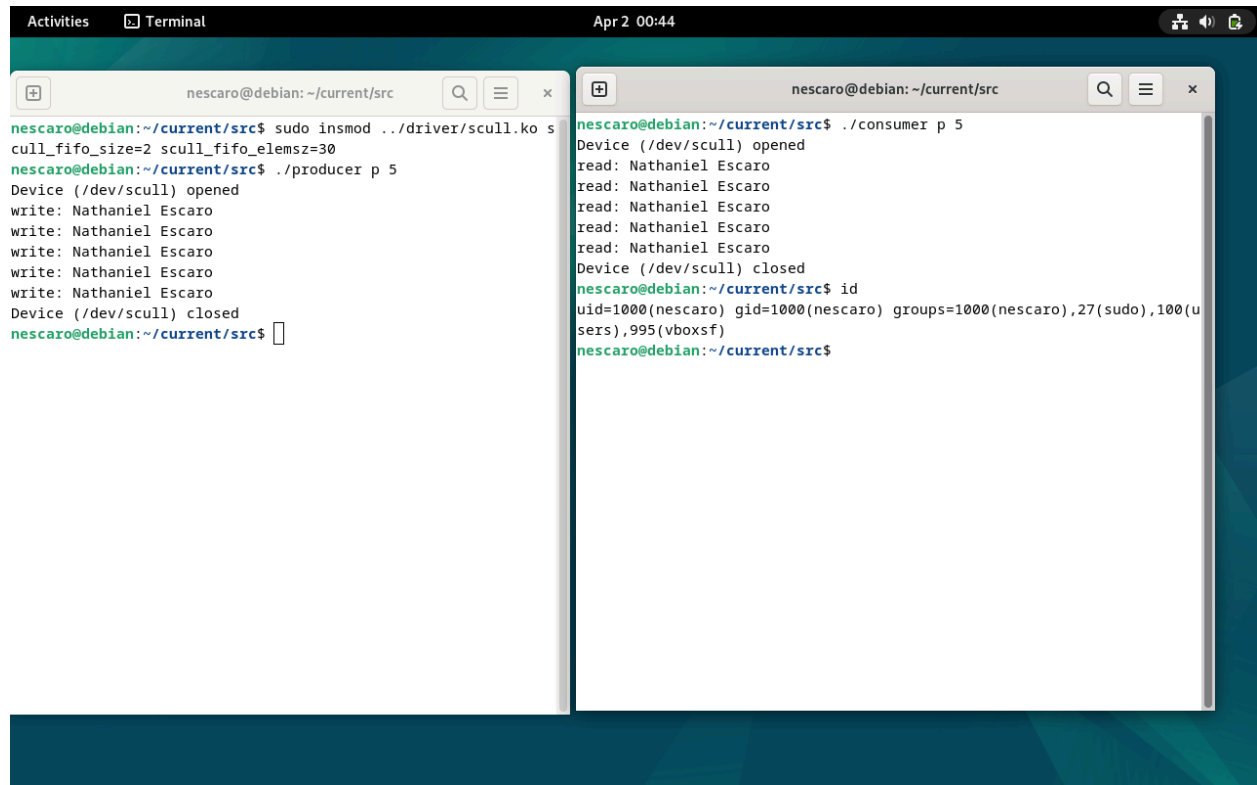
```
nescaro@debian:~/current/src$ sudo insmod ../driver/scull.ko scull_fifo_size=10 scull_fifo_elemsz=30
nescaro@debian:~/current/src$ ./producer p 2
Device (/dev/scull) opened
write: Nathaniel Escaro
write: Nathaniel Escaro
Device (/dev/scull) closed
nescaro@debian:~/current/src$ ./consumer p 2
Device (/dev/scull) opened
read: Nathaniel Escaro
read: Nathaniel Escaro
Device (/dev/scull) closed
nescaro@debian:~/current/src$ id
uid=1000(nescaro) gid=1000(nescaro) groups=1000(nescaro),27(sudo),100(users),995(vboxsf)
nescaro@debian:~/current/src$
```

This screenshot shows that the scull module is loaded with size of 2 and element size of 30. Then, the producer attempts to write to the queue 5 times, but gets blocked waiting for readers after the second write. We interrupt the process(es) and then call consumers to read from the queue 5 times. However, since the producer was interrupted, all readers fall asleep after the second successful read.



```
nescaro@debian: ~/current/src
nescaro@debian:~/current/src$ sudo insmod ../driver/scull.ko scull_fifo_size=2 scull_fifo_elemsz=30
nescaro@debian:~/current/src$ ./producer p 5
Device (/dev/scull) opened
write: Nathaniel Escaro
write: Nathaniel Escaro
write: Nathaniel Escaro
write: Nathaniel Escaro
write: Nathaniel Escaro
^C
nescaro@debian:~/current/src$ ./consumer p 5
Device (/dev/scull) opened
read: Nathaniel Escaro
read: Nathaniel Escaro
^C
nescaro@debian:~/current/src$ id
uid=1000(nescaro) gid=1000(nescaro) groups=1000(nescaro),27(sudo),100(users),995(vboxsf)
nescaro@debian:~/current/src$
```

This screenshots shows that the scull module is loaded with size 2 and element size 30. The producer runs in a separate terminal, writing to the queue 5 times. At the same time, the consumer reads from the queue 5 times. They both take turns accessing the queue and terminate successfully.



The image shows two terminal windows side-by-side. The left window shows the execution of the producer program, and the right window shows the execution of the consumer program. Both programs interact with the /dev/scull device.

```
nescaro@debian: ~/current/src
nescaro@debian:~/current/src$ sudo insmod ../driver/scull.ko s
cull_fifo_size=2 scull_fifo_elemsz=30
nescaro@debian:~/current/src$ ./producer p 5
Device (/dev/scull) opened
write: Nathaniel Escaro
write: Nathaniel Escaro
write: Nathaniel Escaro
write: Nathaniel Escaro
write: Nathaniel Escaro
Device (/dev/scull) closed
nescaro@debian:~/current/src$
```

```
nescaro@debian:~/current/src$ ./consumer p 5
Device (/dev/scull) opened
read: Nathaniel Escaro
read: Nathaniel Escaro
read: Nathaniel Escaro
read: Nathaniel Escaro
read: Nathaniel Escaro
Device (/dev/scull) closed
nescaro@debian:~/current/src$ id
uid=1000(nescaro) gid=1000(nescaro) groups=1000(nescaro),27(sudo),100(u
sers),995(vboxsf)
nescaro@debian:~/current/src$
```