Joshua Meharg

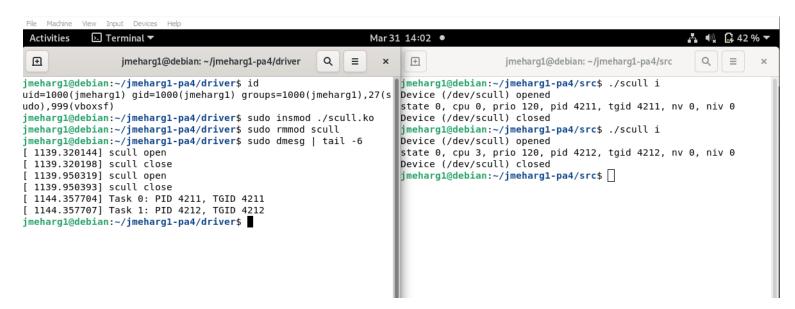
I pledge my honor I have abided by the Stevens Honor System

```
Activities

    Terminal ▼

                                                               Mar 31 13:57 •
                  jmeharg1@debian: ~/jmeharg1-pa4/driver
                                                                      ⊞
                                                                                        jmeharg1@debian: ~/jmeharg1-pa4/src
                                                                                                                                 \equiv
jmeharg1@debian:~/jmeharg1-pa4/driver$ id
                                                                     jmeharg1@debian:~/<mark>jmeharg1-pa4/src$</mark> ./scull i
uid=1000(jmeharg1) gid=1000(jmeharg1) groups=1000(jmeharg1),27(s
                                                                     Device (/dev/scull) opened
udo).999(vboxsf)
                                                                     state 0, cpu 0, prio 120, pid 3607, tgid 3607, nv 3, niv 1
jmeharg1@debian:~/jmeharg1-pa4/driver$ uname -a
                                                                     Device (/dev/scull) closed
Linux debian 5.10.0-21-amd64 #1 SMP Debian 5.10.162-1 (2023-01-2
                                                                     jmeharg1@debian:~/jmeharg1-pa4/src$ ./scull i
1) x86 64 GNU/Linux
                                                                     Device (/dev/scull) opened
jmeharg1@debian:~/jmeharg1-pa4/driver$ ls -l /dev/scull
                                                                     state 0, cpu 2, prio 120, pid 3608, tgid 3608, nv 0, niv 0
crw-r--r-- 1 root root 247, 0 Mar 31 13:55 /dev/scull
                                                                     Device (/dev/scull) closed
jmeharg1@debian:~/jmeharg1-pa4/driver$ sudo insmod ./scull.ko
                                                                     jmeharg1@debian:~/jmeharg1-pa4/src$
jmeharg1@debian:~/jmeharg1-pa4/driver$
```

Showing that the /dev/scull special character file has been created with major number 247 and two calls to ./scull I produce the task_info fields



Shows that I have implemented a linked list to keep track of ./scull i calls as shown by the sudo dmesg | tail -6 command

```
Activities

    Terminal ▼

                                                             Mar 31 14:07 •
                                                                                                                     jmeharg1@debian: ~/jmeharg1-pa4/driver
                                                                    +
                                                                                     jmeharg1@debian: ~/jmeharg1-pa4/src
                                                                                                                            \equiv
jmeharg1@debian:~/jmeharg1-pa4/driver$ id
                                                                  jmeharg1@debian:~/jmeharg1-pa4/src$ ./scull p
uid=1000(jmeharq1) qid=1000(jmeharq1) qroups=1000(jmeharq1),27(s Device (/dev/scull) opened
udo),999(vboxsf)
                                                                  state 0, cpu 3, prio 120, pid 4268, tgid 4268, nv 0, niv 0
jmeharg1@debian:~/jmeharg1-pa4/driver$ sudo insmod ./scull.ko
                                                                  state 0, cpu 3, prio 120, pid 4268, tgid 4268, nv 0, niv 0
jmeharg1@debian:~/jmeharg1-pa4/driver$ sudo rmmod scull
                                                                  state 0, cpu 5, prio 120, pid 4269, tgid 4269, nv 0, niv 0
jmeharg1@debian:~/jmeharg1-pa4/driver$ sudo dmesg | tail -6
                                                                  state 0, cpu 1, prio 120, pid 4270, tgid 4270, nv 0, niv 0
[ 1437.374172] scull open
                                                                  state 0, cpu 5, prio 120, pid 4269, tgid 4269, nv 0, niv 0
 1437.374658] scull close
                                                                  state 0, cpu 1, prio 120, pid 4270, tgid 4270, nv 0, niv 0
 1443.637341] Task 0: PID 4268, TGID 4268
                                                                  state 0, cpu 0, prio 120, pid 4271, tgid 4271, nv 0, niv 0
 1443.6373441 Task 1: PID 4269. TGID 4269
                                                                  state 0, cpu 0, prio 120, pid 4271, tgid 4271, nv 0, niv 0
 1443.637345] Task 2: PID 4270, TGID 4270
                                                                  Device (/dev/scull) closed
 1443.637346] Task 3: PID 4271, TGID 4271
                                                                  jmeharg1@debian:~/jmeharg1-pa4/src$
jmehargl@debian:~/jmehargl-pa4/driver$
```

Shows that I have implemented the ./scull p command to create child processes that run the ./scull i concurrently as shown by the different CPU usage command twice each and that my linked list only adds unique PID TGIDs.



Shows that I have implemented the ./scull t command to create threads that run the ./scull i command concurrently as shown by the consistent tgid number.