

## Sistemas Operacionais: TP01 – Uso de Fork na Criação de Processos

**Professor:** Dr. José Macedo

**Aluno:**

- Breno da Silva Oliveira (427528)
- Matheus Teixeira Guimarães (434054)

Respostas:

**2ª Questão:**

a)

```
[node1] (local) root@192.168.0.8 ~/so
$ ./fib 3 7
1, 2, 3, 5, 8
[node1] (local) root@192.168.0.8 ~/so
$
```

b) Processo principal: PID = 3228, como pode ser visto na figura abaixo

```
Mem: 26761012K used, 6168968K free, 366500K shrd, 104012K buff, 12690576K cached
CPU: 31% usr 18% sys 0% nic 50% idle 0% io 0% irq 0% sirq
Load average: 7.68 5.86 4.96 6/4154 3248
```

| PID  | PPID | USER | STAT | VSZ   | %VSZ | CPU | %CPU | COMMAND   |
|------|------|------|------|-------|------|-----|------|---|
| 51   | 19   | root | S    | 1435m | 4%   | 5   | 0%   | containerd --config /var/run/docker/containerd/containerd.toml --lo |
| 19   | 1    | root | S    | 1391m | 4%   | 0   | 0%   | dockerd   |
| 22   | 20   | root | S    | 5300  | 0%   | 6   | 0%   | /bin/bash -l  |
| 35   | 1    | root | S    | 4360  | 0%   | 2   | 0%   | sshd: /usr/sbin/sshd -o PermitRootLogin=yes -o PrintMotd=no [listen |
| 3228 | 22   | root | S    | 2552  | 0%   | 5   | 0%   | ./fib 2 6   |
| 1    | 0    | root | S    | 1576  | 0%   | 5   | 0%   | /bin/sh -c cat /etc/hosts >/etc/hosts.bak && sed 's/^::1.*//' /     |
| 3248 | 22   | root | R    | 1576  | 0%   | 6   | 0%   | top   |
| 20   | 1    | root | S    | 804   | 0%   | 7   | 0%   | script -q -c /bin/bash -l /dev/null                                 |
| 3230 | 3228 | root | Z    | 0     | 0%   | 4   | 0%   | [fib]   |

c) Processo aberto: PID = 3230 e 3228, como pode ser visto na figura acima

d)

```
[node1] (local) root@192.168.0.28 ~/So/Trabalho 01
$ strace ./fib 2 6
execve("./fib", ["/./fib", "2", "6"], 0x7ffff21de16f0 /* 24 vars */) = 0
arch_prctl(ARCH_SET_FS, 0x7fcae7ad1d48) = 0
set_tid_address(0x7fcae7ad2314) = 20844
open("/etc/ld-musl-x86_64.path", O_RDONLY|O_CLOEXEC) = -1 ENOENT (No such file or directory)
open("/lib/libstdc++.so.6", O_RDONLY|O_CLOEXEC) = -1 ENOENT (No such file or directory)
open("/usr/local/lib/libstdc++.so.6", O_RDONLY|O_CLOEXEC) = -1 ENOENT (No such file or directory)
open("/usr/lib/libstdc++.so.6", O_RDONLY|O_CLOEXEC) = 3
fcntl(3, F_SETFD, FD_CLOEXEC) = 0
fstat(3, {st_mode=S_IFREG|0755, st_size=1657328, ...}) = 0
read(3, "\177ELF\2\1\1\0\0\0\0\0\0\0\0\0\3\0\0\1\0\0\0x\371\0\0\0\0\0"... , 960) = 960
mmap(NULL, 1675264, PROT_READ, MAP_PRIVATE, 3, 0) = 0x7fcae78a4000
mmap(0x7fcae795b000, 569344, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED, 3, 0xb7000) = 0x7fcae795b000
mmap(0x7fcae79e6000, 274432, PROT_READ, MAP_PRIVATE|MAP_FIXED, 3, 0x142000) = 0x7fcae79e6000
mmap(0x7fcae7a2a000, 77824, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED, 3, 0x185000) = 0x7fcae7a2a000
```

```
brk(0x55f73f9c6000) = 0x55f73f9c6000
rt_sigprocmask(SIG_BLOCK, ~[], [], 8) = 0
fork() = 20845
rt_sigprocmask(SIG_SETMASK, [], NULL, 8) = 0
nanosleep(1, 1, 2{tv_sec=10, tv_nsec=0}, {tv_sec=9, tv_nsec=999896000}) = ? ERESTART_RESTARTBLOCK (Interrupted by signal)
--- SIGCHLD {si_signo=SIGCHLD, si_code=CLD_EXITED, si_pid=20845, si_uid=0, si_status=0, si_utime=0, si_stime=0} ---
restart_syscall(<... resuming interrupted nanosleep ...>) = 0
wait4(-1, NULL, 0, NULL) = 20845
ioctl(1, TIOCGWINSZ, {ws_row=17, ws_col=113, ws_xpixel=0, ws_ypixel=0}) = 0
writev(1, [{iov_base="", 3, 5}, {iov_base="\n", iov_len=1}], 2, 3, 5) = 7
exit_group(0) = ?
+++ exited with 0 +++
```