Поиск процессов с несколькими потоками: ps -eo nlwp,comm | awk '$1 > 1 {count++} END {print "Количество процессов с несколькими потоками:", count}'

```
user1@eltex-practice2-pg2-v7:/root$ ps -eo nlwp,comm | awk '$1 > 1 {count++} END {print "Количество процессов с несколькими потоками:", count}'
Количество процессов с несколькими потоками: 11
```

Запустить top и настроить вывод полей: Пишем top, нажимаем f для открытия настроек отображаемых полей, клавишей d отключение/включения поля, стрелки в бок для выбора поля и стрелки вверх/вниз его перемещения.

```
Fields Management for window 1:Def, whose current sort field is %CPU
   Navigate with Up/Dn, Right selects for move then <Enter> or Left commits,
   'd' or <Space> toggles display, 's' sets sort.  Use 'q' or <Esc> to end!

* PID       = Process Id          LOGID    = Login User Id
* USER      = Effective User Name  EXE      = Executable Path
* RUSER     = Real User Name       RSS      = Res Mem (smaps), KiB
* PR        = Priority             PSS      = Proportion RSS,  KiB
* NI        = Nice Value           PSan     = Proportion Anon, KiB
  VIRT      = Virtual Image (KiB)  PSfd     = Proportion File, KiB
  RES       = Resident Size (KiB)  PSsh     = Proportion Shrd, KiB
  SHR       = Shared Memory (KiB)  USS      = Unique RSS, KiB
* S         = Process Status       ioR      = I/O Bytes Read
* %CPU      = CPU Usage            ioRop    = I/O Read Operations
* %MEM      = Memory Usage (RES)   ioW      = I/O Bytes Written
* TIME+     = CPU Time, hundredths ioWop    = I/O Write Operations
* COMMAND   = Command Name/Line    AGID     = Autogroup Identifier
  PPID      = Parent Process pid   AGNI     = Autogroup Nice Value
  UID       = Effective User Id    STARTED  = Start Time from boot
  RUID      = Real User Id         ELAPSED  = Elapsed Running Time
  SUID      = Saved User Id        %CUU     = CPU Utilization
  SUSER     = Saved User Name      %CUC     = Utilization + child
  GID       = Group Id             nsCGROUP = CGRP namespace Inode
  GROUP     = Group Name           nsTIME   = TIME namespace Inode
  PGRP      = Process Group Id
  TTY       = Controlling Tty
  TPGID     = Tty Process Grp Id
  SID       = Session Id
  nTH       = Number of Threads
  P         = Last Used Cpu (SMP)
```

```
top - 12:23:10 up 8 days,  4:30,  2 users,  load average: 0.00, 0.00, 0.00
Tasks: 122 total,   1 running, 121 sleeping,   0 stopped,   0 zombie
%Cpu(s):  0.0 us,  0.0 sy,  0.0 ni, 99.9 id,  0.1 wa,  0.0 hi,  0.0 si,  0.0 st
MiB Mem :   2329.2 total,    558.4 free,    518.8 used,   1544.0 buff/cache
MiB Swap:   3185.0 total,   3184.5 free,      0.5 used.   1810.4 avail Mem

   PID USER     RUSER      PR  NI S  %CPU  %MEM     TIME+ COMMAND
 36520 root     root       20   0 S   0.0   0.2   4:54.35 qemu-ga
 66183 root     root       20   0 I   0.0   0.0   0:00.11 kworker/0:0-events
 65859 root     root       20   0 I   0.0   0.0   0:00.42 kworker/1:2-events
  1397 root     root       20   0 S   0.0   0.4   0:03.29 sshd
 36221 root     root       rt   0 S   0.0   1.1   0:39.29 multipathd
 66201 root     root       20   0 I   0.0   0.0   0:00.03 kworker/u4:0-events_unbound
 66234 root     root       20   0 I   0.0   0.0   0:00.05 kworker/u4:2-events_unbound
 66298 user1    user1      20   0 R   0.0   0.3   0:00.01 top
     1 root     root       20   0 S   0.0   0.6   0:14.80 systemd
     2 root     root       20   0 S   0.0   0.0   0:00.13 kthreadd
     3 root     root       20   0 S   0.0   0.0   0:00.00 pool_workqueue_release
     4 root     root        0 -20 I   0.0   0.0   0:00.00 kworker/R-rcu_g
     5 root     root        0 -20 I   0.0   0.0   0:00.00 kworker/R-rcu_p
     6 root     root        0 -20 I   0.0   0.0   0:00.00 kworker/R-slub_
     7 root     root        0 -20 I   0.0   0.0   0:00.00 kworker/R-netns
    12 root     root        0 -20 I   0.0   0.0   0:00.00 kworker/R-mm_pe
    13 root     root       20   0 I   0.0   0.0   0:00.00 rcu_tasks_kthread
    14 root     root       20   0 I   0.0   0.0   0:00.00 rcu_tasks_rude_kthread
    15 root     root       20   0 I   0.0   0.0   0:00.00 rcu_tasks_trace_kthread
    16 root     root       20   0 S   0.0   0.0   0:00.23 ksoftirqd/0
    17 root     root       20   0 I   0.0   0.0   0:05.78 rcu_preempt
    18 root     root       rt   0 S   0.0   0.0   0:02.63 migration/0
    19 root     root      -51   0 S   0.0   0.0   0:00.00 idle_inject/0
    20 root     root       20   0 S   0.0   0.0   0:00.00 cpuhp/0
```

Запуск команды passwd в другом окне

```
root@eltex-practice2-pg2-v7:~/Eltex-repo-2# cd
root@eltex-practice2-pg2-v7:~# su user1
user1@eltex-practice2-pg2-v7:/root$ passwd
Changing password for user1.
Current password:
```

Вывести все процессы для которых реальным пользователем является user1

```
top - 12:25:15 up 8 days,  4:32,  2 users,  load average: 0.00, 0.00, 0.00
Tasks: 125 total,   1 running, 124 sleeping,   0 stopped,   0 zombie
%Cpu(s):  0.0 us,  0.0 sy,  0.0 ni,100.0 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0 st
MiB Mem :   2320.5 total,    550.0 free,    518.4 used,   1544.1 buff/cache
MiB Swap:   3185.0 total,   3184.5 free,      0.5 used.   1802.0 avail Mem
Which user (blank for all) user1
   PID USER     RUSER      PR  NI S  %CPU  %MEM     TIME+ COMMAND
 36241 root     root       20   0 S   0.0   0.3   0:00.54 systemd-udevd
 36242 root     root       20   0 S   0.0   0.6   0:07.16 udisksd
 36251 systemd+ systemd+   20   0 S   0.0   0.4   0:10.43 systemd-network
 36252 root     root       -2   0 S   0.0   0.0   0:00.00 psimon
 36269 root     root       20   0 S   0.0   0.5   0:00.03 ModemManager
 36285 syslog   syslog     20   0 S   0.0   0.2   0:00.35 rsyslogd
 36289 root     root       19  -1 S   0.0   1.3   0:02.82 systemd-journal
 36513 root     root       -2   0 S   0.0   0.0   0:00.00 psimon
 36520 root     root       20   0 S   0.0   0.2   4:54.41 qemu-ga
 55488 root     root       20   0 S   0.0   0.2   0:00.00 dbus-daemon
 56241 root     root       20   0 S   0.0   0.3   0:00.00 sshd
 65661 root     root       20   0 S   0.0   0.4   0:00.08 sshd
 65760 root     root       20   0 S   0.0   0.3   0:00.04 bash
```

```
top - 12:36:47 up 8 days,  4:43,  2 users,  load average: 0.02, 0.01, 0.00
Tasks: 115 total,   1 running, 114 sleeping,   0 stopped,   0 zombie
%Cpu(s):  0.1 us,  0.1 sy,  0.0 ni, 99.7 id,  0.0 wa,  0.0 hi,  0.0 si,  0.1 st
MiB Mem :   2307.4 total,    520.9 free,    536.9 used,   1541.6 buff/cache
MiB Swap:   3185.0 total,   3184.5 free,      0.5 used.   1770.5 avail Mem

    PID USER      RUSER      PR  NI S  %CPU  %MEM     TIME+ COMMAND
  66461 user1     user1      20   0 S   0.0   0.2   0:00.00 bash
  66544 user1     user1      20   0 S   0.0   0.2   0:00.00 bash
  66563 user1     user1      20   0 R   0.0   0.3   0:00.09 top
```

Найти процесс passwd

```
66550 root      root       20   0 I   0.0   0.0   0:00.01 kworker/u4:1-ev
66563 user1     user1      20   0 R   0.0   0.3   0:00.15 top
66564 root      user1      20   0 S   0.0   0.2   0:00.01 passwd
```

Выполнить для него последовательно сигналы (для этого надо выделить его и нажать k): 15 (SIGTERM), 2 (SIGINT), 3 (SIGQUIT), 9(SIGKILL)

```
top - 12:45:00 up 8 days,  4:51,  2 users,  load average: 0.00, 0.00, 0.00
Tasks: 116 total,   1 running, 115 sleeping,   0 stopped,   0 zombie
%Cpu(s):  0.0 us,  0.0 sy,  0.0 ni,100.0 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0 st
MiB Mem :   2293.2 total,    509.7 free,    533.9 used,   1541.6 buff/cache
MiB Swap:   3185.0 total,   3184.5 free,      0.5 used.   1759.3 avail Mem
Send pid 66565 signal [15/sigterm] 15
    PID USER      RUSER      PR  NI S  %CPU  %MEM     TIME+ COMMAND
  66565 root      user1      20   0 S   0.0   0.2   0:00.00 passwd
  66566 root      root       20   0 I   0.0   0.0   0:00.00 kworker/0:1-events
  66568 root      root       20   0 I   0.0   0.0   0:00.00 kworker/1:0-cgroup_destroy
  66569 root      root       20   0 I   0.0   0.0   0:00.00 kworker/1:1
```

```
top - 12:45:20 up 8 days,  4:52,  2 users,  load average: 0.00, 0.00, 0.00
Tasks: 116 total,   2 running, 114 sleeping,   0 stopped,   0 zombie
%Cpu(s):  0.0 us,  0.0 sy,  0.0 ni,100.0 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0 st
MiB Mem :   2293.2 total,    509.5 free,    534.1 used,   1541.7 buff/cache
MiB Swap:   3185.0 total,   3184.5 free,      0.5 used.   1759.1 avail Mem
Send pid 66565 signal [15/sigterm] 2
    PID USER      RUSER      PR  NI S  %CPU  %MEM     TIME+ COMMAND
  66565 root      user1      20   0 S   0.0   0.2   0:00.00 passwd
  66566 root      root       20   0 I   0.0   0.0   0:00.00 kworker/0:1-events
  66568 root      root       20   0 I   0.0   0.0   0:00.00 kworker/1:0-cgroup_destroy
  66569 root      root       20   0 I   0.0   0.0   0:00.00 kworker/1:1
  36520 root      root       20   0 S   0.9   0.2   4:55.02 qemu-ga
```

```
top - 12:46:05 up 8 days,  4:52,  2 users,  load average: 0.00, 0.00, 0.00
Tasks: 114 total,   1 running, 113 sleeping,   0 stopped,   0 zombie
%Cpu(s):  0.0 us,  0.8 sy,  0.0 ni, 99.2 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0 st
MiB Mem :   2260.5 total,    498.7 free,    512.2 used,   1541.7 buff/cache
MiB Swap:   3185.0 total,   3184.5 free,      0.5 used.   1748.3 avail Mem
Send pid 66565 signal [15/sigterm] 9
    PID USER      RUSER       PR  NI S  %CPU  %MEM     TIME+ COMMAND
  66565 root      user1       20   0 S   0.0   0.2   0:00.00 passwd
  66566 root      root        20   0 I   0.0   0.0   0:00.00 kworker/0:1-events
  66183 root      root        20   0 I   1.3   0.0   0:00.43 kworker/0:0-events
```

После отправки сигнала 9(SIGKILL), окно с passwd оставило такое сообщение

```
passwd: password unchanged
user1@eltex-practice2-pg2-v7:~$
user1@eltex-practice2-pg2-v7:~$ passwd
Changing password for user1.
Current password: Killed
user1@eltex-practice2-pg2-v7:~$
```

Запустить команды vim ~/file_task3.txt и sleep 600 и остановить их с помощью
Ctrl + Z. Вывести информацию о них с помощью jobs.

```
~
"~/file_task3.txt" [New]

[1]+  Stopped                 vim ~/file_task3.txt
user1@eltex-practice2-pg2-v7:/root$ sleep 600
^Z
[2]+  Stopped                 sleep 600
user1@eltex-practice2-pg2-v7:/root$ jobs
[1]-  Stopped                 vim ~/file_task3.txt
[2]+  Stopped                 sleep 600
```

Перевести последнюю задачу в фон: ввести bg

```
user1@eltex-practice2-pg2-v7:/root$ bg
[2]+ sleep 600 &
user1@eltex-practice2-pg2-v7:/root$ jobs
[1]+  Stopped                 vim ~/file_task3.txt
[2]-  Running                 sleep 600 &
```

Изменить уровень NICE у задания sleep 600 на 10 и проверить

```
user1@eltex-practice2-pg2-v7:/root$ renice 10 -p $(pidof sleep)
66635 (process ID) old priority 0, new priority 10
```

```
user1@eltex-practice2-pg2-v7:/root$ ps -o pid,nice,cmd -C sleep
    PID  NI CMD
  66635  10 sleep 600
```

Сделать задание vim ~/file_ task3.txt активным и выйти из редактора

```
user1@eltex-practice2-pg2-v7:/root$ jobs
[1]+  Stopped                 vim ~/file_task3.txt
[2]-  Running                 sleep 600 &
```

```
user1@eltex-practice2-pg2-v7:/root$ fg %1
```

```
user1@eltex-practice2-pg2-v7:/root$ jobs
[2]+  Running                 sleep 600 &
```

Отправить сигнал 15 (SIGTERM) заданию sleep 600

```
user1@eltex-practice2-pg2-v7:/root$ jobs
[2]+  Running                 sleep 600 &
user1@eltex-practice2-pg2-v7:/root$ kill -15 %2
user1@eltex-practice2-pg2-v7:/root$ jobs
[2]+  Terminated              sleep 600
user1@eltex-practice2-pg2-v7:/root$
```

Сделать обработчик для сигналов SIGINT и SIGQUIT внутри командного интерпретатора и послать команды самому себе

```
user1@eltex-practice2-pg2-v7:/root$ trap 'echo "Меня голыми руками не возьмёшь!"' SIGINT SIGQUIT
user1@eltex-practice2-pg2-v7:/root$ kill -SIGINT $$
Меня голыми руками не возьмёшь!
user1@eltex-practice2-pg2-v7:/root$ kill -SIGQUIT $$
Меня голыми руками не возьмёшь!
```