

Раздел 1

1. Войдите под пользователем user1 из практики 2 (su - user1)

root@eltex-practice2-pg2-v17:~# su - user1

```
*** System restart required ***
Усова Виктория
23.10.2025 14:17
Last login: Thu Oct 23 10:46:52 2025 from 172.16.8.4
root@eltex-practice2-pg2-v17:~# su - user1
Warning: your password will expire in 6 days.
user1@eltex-practice2-pg2-v17:~$
```

2. Подсчитайте количество процессов, имеющих несколько потоков выполнения
user1@eltex-practice2-pg2-v17:~\$ ps -eo nlwp,comm | awk '\$1 > 1 { count++ } END { print "Всего:", count }'

```
user1@eltex-practice2-pg2-v17:~$ ps -eo nlwp,comm | awk '$1 > 1 { count++ } END
{ print "Всего:", count }'
Всего: 11
```

ps -eo nlwp,comm – вывести информацию о количестве потоков и имени команды
awk '\$1 > 1 { count++ }' – берёт первое слово в строке (количество потоков) и увеличивает счётчик, если поток не один.

3. Запустите top и настройте вывод полей с информацией о процессе следующим образом:

- удалите поля VIRT, RES, SHR;
- добавьте поле RUSER и сделайте так, чтобы это поле было показано после поля USER;

Запускаем top, а после нажимаем f для настройки полей

```
user1@eltex-practice2-pg2-v17: ~
top - 03:28:30 up 8 days, 19:34, 2 users, load average: 0.01, 0.00, 0.00
Tasks: 111 total, 1 running, 110 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 : 2369.9 total, 672.1 free, 510.4 used, 1479.4 buff/cache
MiB Swap: 3185.0 total, 3184.5 free, 0.5 used. 1859.5 avail Mem

  PID USER      PR  NI    VIRT    RES    SHR S  %CPU  %MEM     TIME+ COMMAND
    1 root        20   0   22476   13824   9600 S   0.0   0.6   0:15.04 systemd
    2 root        20   0         0         0         0 S   0.0   0.0   0:00.12 kthreadd
    3 root        20   0         0         0         0 S   0.0   0.0   0:00.00 pool_wor+
    4 root         0 -20         0         0         0 I   0.0   0.0   0:00.00 kworker+
    5 root         0 -20         0         0         0 I   0.0   0.0   0:00.00 kworker+
    6 root         0 -20         0         0         0 I   0.0   0.0   0:00.00 kworker+
    7 root         0 -20         0         0         0 I   0.0   0.0   0:00.00 kworker+
   12 root         0 -20         0         0         0 I   0.0   0.0   0:00.00 kworker+
   13 root        20   0         0         0         0 I   0.0   0.0   0:00.00 rcu_tas+
   14 root        20   0         0         0         0 I   0.0   0.0   0:00.00 rcu_tas+
   15 root        20   0         0         0         0 I   0.0   0.0   0:00.00 rcu_tas+
   16 root        20   0         0         0         0 S   0.0   0.0   0:00.21 ksoftir+
   17 root        20   0         0         0         0 I   0.0   0.0   0:06.48 rcu_pre+
   18 root        rt    0         0         0         0 S   0.0   0.0   0:02.75 migrati+
   19 root       -51   0         0         0         0 S   0.0   0.0   0:00.00 idle_in+
   20 root        20   0         0         0         0 S   0.0   0.0   0:00.00 cpuhp/0
   21 root        20   0         0         0         0 S   0.0   0.0   0:00.00 cpuhp/1
```

```
user1@eltex-practice2-pg2-v17: ~
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  PGRP      = Process  OOMS      = OOMEM S  RSS      = Res Mem
* USER     = Effecti  TTY       = Control  ENVIRON   = Environ  PSS      = Proport
* PR        = Priorit  TPGID     = Tty Pro  vMj       = Major F  PSan     = Proport
* NI        = Nice Va  SID       = Session  vMn       = Minor F  PSfd     = Proport
* VIRT      = Virtual  nTH       = Number   USED      = Res+Swa  PSsh     = Proport
* RES       = Residen  P         = Last Us  nsIPC     = IPC nam  USS      = Unique
* SHR       = Shared  TIME      = CPU Tim  nsMNT     = MNT nam  ioR      = I/O Byt
* S         = Process  SWAP      = Swapped  nsNET     = NET nam  ioRop    = I/O Rea
* %CPU      = CPU Usa  CODE      = Code Si  nsPID     = PID nam  ioW      = I/O Byt
* %MEM      = Memory  DATA     = Data+St  nsUSER    = USER na  ioWop    = I/O Wri
* TIME+     = CPU Tim  nMaj      = Major P  nsUTS     = UTS nam  AGID     = Autogro
* COMMAND   = Command  nMin      = Minor P  LXC       = LXC con  AGNI     = Autogro
PPID        = Parent  nDRT      = Dirty P  RSan      = RES Ano  STARTED  = Start T
UID         = Effecti  WCHAN     = Sleepin  RSfd      = RES Fil  ELAPSED  = Elapsed
RUID        = Real Us  Flags     = Task Fl  RSlk      = RES Loc  %CUU     = CPU Uti
RUSER       = Real Us  CGROUPS   = Control  RSsh      = RES Sha  %CUC     = Utiliza
SUID        = Saved U  SUPGIDS   = Supp Gr  CGNAME    = Control  nsCGROUP = CGRP na
USER        = Saved U  SUPGRPS   = Supp Gr  NU        = Last Us  nsTIME   = TIME na
GID         = Group I  TGID      = Thread  LOGID     = Login U
GROUP       = Group N  OOMa      = OOMEM A  EXE       = Executa
```

Выбираем поля VIRT, RES и SHR и нажимаем клавишу d, чтобы удалить эти поля.

Также перейдём на поле RUSER и нажмём клавиши d, чтобы добавить поле, а после выбираем поле нажимаю кнопку «вправо» и двигаем поле под поле USER, жмём Enter.

```
user1@eltex-practice2-pg2-v17: ~
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  PGRP      = Process  OOMS      = OOMEM S  RSS      = Res Mem
* USER     = Effecti  TTY      = Control  ENVIRON   = Environ  PSS      = Proport
* RUSER    = Real Us  TPGID    = Tty Pro  vMj      = Major F  PSan     = Proport
* PR       = Priorit  SID      = Session  vMn      = Minor F  PSfd     = Proport
* NI       = Nice Va  nTH      = Number   USED     = Res+Swa  PSsh     = Proport
* VIRT     = Virtual  P        = Last Us  nsIPC    = IPC nam  USS      = Unique
* RES      = Residen  TIME     = CPU Tim  nsMNT    = MNT nam  ioR      = I/O Byt
* SHR      = Shared  SWAP     = Swapped  nsNET    = NET nam  ioRop    = I/O Rea
* S        = Process  CODE     = Code Si  nsPID    = PID nam  ioW      = I/O Byt
* %CPU     = CPU Usa  DATA    = Data+St  nsUSER   = USER na  ioWop    = I/O Wri
* %MEM     = Memory  nMaj     = Major P  nsUTS    = UTS nam  AGID     = Autogro
* TIME+    = CPU Tim  nMin     = Minor P  LXC      = LXC con  AGNI     = Autogro
* COMMAND  = Command  nDRT     = Dirty P  RSan     = RES Ano  STARTED  = Start T
* PPID     = Parent  WCHAN    = Sleepin RSfd     = RES Fil  ELAPSED  = Elapsed
* UID      = Effecti  Flags    = Task Fl  RSlk     = RES Loc  %CUU     = CPU Uti
* RUID     = Real Us  CGROUPS  = Control  RSsh     = RES Sha  %CUC     = Utiliza
* SUID     = Saved U  SUPGIDS  = Supp Gr  CGNAME   = Control  nsCGROUP = CGRP na
* SUSER    = Saved U  SUPGRPS  = Supp Gr  NU       = Last Us  nsTIME   = TIME na
* GID      = Group I  TGID     = Thread  LOGID    = Login U
* GROUP    = Group N  OOMa     = OOMEM A  EXE      = Executa
```

Жмём «Esc» и смотрим результат:

```
top - 03:38:46 up 8 days, 19:45, 2 users, load average: 0.00, 0.00, 0.00
Tasks: 112 total, 1 running, 111 sleeping, 0 stopped, 0 zombie
%Cpu(s): 0.2 us, 0.0 sy, 0.0 ni, 99.8 id, 0.0 wa, 0.0 hi, 0.0 si, 0.0 st
MiB Mem : 2368.7 total, 688.5 free, 492.9 used, 1479.4 buff/cache
MiB Swap: 3185.0 total, 3184.5 free, 0.5 used. 1875.9 avail Mem

  PID USER      RUSER      PR   NI   S   %CPU   %MEM    TIME+   COMMAND
    1 root        root        20    0   S    0.0    0.6    0:15.06 systemd
    2 root        root        20    0   S    0.0    0.0    0:00.12 kthreadd
    3 root        root        20    0   S    0.0    0.0    0:00.00 pool_workqueue_relea+
    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_kthre+
   15 root        root        20    0   I    0.0    0.0    0:00.00 rcu_tasks_trace_kthr+
   16 root        root        20    0   S    0.0    0.0    0:00.21 ksoftirqd/0
   17 root        root        20    0   I    0.0    0.0    0:06.48 rcu_preempt
   18 root        root        rt     0   S    0.0    0.0    0:02.75 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
   21 root        root        20    0   S    0.0    0.0    0:00.00 cpuhp/1
```

4. В другом терминальном окне выполните команду `passwd` и оставьте ее в состоянии запроса текущего пароля

```
user1@eltex-practice2-pg2-v17:~$ passwd
Changing password for user1.
Current password: 
```

5. Перейдите в терминальное окно с `top` и выполните следующие действия:

- выведите все процессы, для которых реальным пользователем является пользователь, которым вы вошли в сеанс;
- найдите процесс, запущенный командой passwd;
- отправьте этому процессу сигналы 15 (SIGTERM), 2 (SIGINT), 3(SIGQUIT), 9(SIGKILL)

Чтобы найти процессы пользователя user1, перейдём в окно с top и нажмём U, введём имя пользователя:

```

user1@eltex-practice2-pg2-v17: ~
top - 03:49:39 up 8 days, 19:56, 3 users, load average: 0.00, 0.00, 0.00
Tasks: 119 total, 1 running, 116 sleeping, 2 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 : 2256.1 total, 567.4 free, 501.2 used, 1479.5 buff/cache
MiB Swap: 3185.0 total, 3184.5 free, 0.5 used, 1754.9 avail Mem

  PID USER      RUSER      PR   NI  S   %CPU   %MEM    TIME+  COMMAND
  65815 user1      user1      20    0  S    0.0    0.2    0:00.01 -bash
  65843 user1      user1      20    0  T    0.0    0.3    0:00.33 top
  65946 user1      user1      20    0  T    0.0    0.3    0:00.03 top
  66025 user1      user1      20    0  S    0.0    0.2    0:00.00 bash
  66032 user1      user1      20    0  R    0.0    0.3    0:00.07 top
  
```

Перейдём обратно ко всем процессам и найдём процесс, вызванный командой passwd

```

top - 03:50:57 up 8 days, 19:57, 3 users, load average: 0.00, 0.00, 0.00
Tasks: 120 total, 1 running, 117 sleeping, 2 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 : 2213.8 total, 524.1 free, 502.3 used, 1479.5 buff/cache
MiB Swap: 3185.0 total, 3184.5 free, 0.5 used, 1711.5 avail Mem

  PID USER      RUSER      PR   NI  S   %CPU   %MEM    TIME+  COMMAND
  65956 root       root       20    0  S    0.0    0.5    0:00.04 sshd: root@pts/2
  66013 root       root       20    0  S    0.0    0.2    0:00.00 -bash
  66024 root       root       20    0  S    0.0    0.2    0:00.00 su user1
  66025 user1      user1      20    0  S    0.0    0.2    0:00.00 bash
  66031 root       user1      20    0  S    0.0    0.2    0:00.00 passwd
  66035 root       root       20    0  I    0.0    0.0    0:00.00 [kworker/0:1]
  
```

Нажмём k и будем посылать сигналы по порядку:

```
user1@eltex-practice2-pg2-v17: ~  
top - 03:51:39 up 8 days, 19:58, 3 users, load average: 0.00, 0.00, 0.00  
Tasks: 120 total, 1 running, 117 sleeping, 2 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 : 2199.8 total, 511.1 free, 501.3 used, 1479.5 buff/cache  
MiB Swap: 3185.0 total, 3184.5 free, 0.5 used, 1698.5 avail Mem  
PID to signal/kill [default pid = 66031]   


| PID   | USER  | RUSER | PR | NI | S | %CPU | %MEM | TIME+   | COMMAND       |
|-------|-------|-------|----|----|---|------|------|---------|---------------|
| 66031 | root  | user1 | 20 | 0  | S | 0.0  | 0.2  | 0:00.00 | passwd        |
| 66032 | user1 | user1 | 20 | 0  | R | 0.0  | 0.3  | 0:00.55 | top           |
| 66035 | root  | root  | 20 | 0  | I | 0.0  | 0.0  | 0:00.00 | [kworker/0:1] |


```

```
user1@eltex-practice2-pg2-v17: ~  
top - 03:51:39 up 8 days, 19:58, 3 users, load average: 0.00, 0.00, 0.00  
Tasks: 120 total, 1 running, 117 sleeping, 2 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 : 2199.8 total, 511.1 free, 501.3 used, 1479.5 buff/cache  
MiB Swap: 3185.0 total, 3184.5 free, 0.5 used, 1698.5 avail Mem  
Send pid 66031 signal [15/sigterm]   


| PID   | USER  | RUSER | PR | NI | S | %CPU | %MEM | TIME+   | COMMAND       |
|-------|-------|-------|----|----|---|------|------|---------|---------------|
| 66031 | root  | user1 | 20 | 0  | S | 0.0  | 0.2  | 0:00.00 | passwd        |
| 66032 | user1 | user1 | 20 | 0  | R | 0.0  | 0.3  | 0:00.55 | top           |
| 66035 | root  | root  | 20 | 0  | I | 0.0  | 0.0  | 0:00.00 | [kworker/0:1] |


```

```
user1@eltex-practice2-pg2-v17: ~  
top - 03:57:31 up 8 days, 20:03, 3 users, load average: 0.02, 0.02, 0.00  
Tasks: 117 total, 1 running, 114 sleeping, 2 stopped, 0 zombie  
%Cpu(s): 0.0 us, 0.6 sy, 0.0 ni, 99.4 id, 0.0 wa, 0.0 hi, 0.0 si, 0.0 st  
MiB Mem : 2244.7 total, 539.6 free, 517.7 used, 1479.5 buff/cache  
MiB Swap: 3185.0 total, 3184.5 free, 0.5 used, 1727.0 avail Mem  
Send pid 66031 signal [15/sigterm] 2  


| PID   | USER  | RUSER | PR | NI | S | %CPU | %MEM | TIME+   | COMMAND |
|-------|-------|-------|----|----|---|------|------|---------|---------|
| 66031 | root  | user1 | 20 | 0  | S | 0.0  | 0.2  | 0:00.00 | passwd  |
| 66032 | user1 | user1 | 20 | 0  | R | 0.0  | 0.3  | 0:00.76 | top     |


```

```
user1@eltex-practice2-pg2-v17: ~  
top - 03:57:55 up 8 days, 20:04, 3 users, load average: 0.01, 0.02, 0.00  
Tasks: 118 total, 1 running, 115 sleeping, 2 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 : 2188.2 total, 492.8 free, 508.0 used, 1479.5 buff/cache  
MiB Swap: 3185.0 total, 3184.5 free, 0.5 used, 1680.2 avail Mem  
Send pid 66031 signal [15/sigterm] 3  


| PID   | USER  | RUSER | PR | NI | S | %CPU | %MEM | TIME+   | COMMAND       |
|-------|-------|-------|----|----|---|------|------|---------|---------------|
| 66031 | root  | user1 | 20 | 0  | S | 0.0  | 0.2  | 0:00.00 | passwd        |
| 66032 | user1 | user1 | 20 | 0  | R | 0.0  | 0.3  | 0:00.77 | top           |
| 66042 | root  | root  | 20 | 0  | I | 0.0  | 0.0  | 0:00.00 | [kworker/0:1] |


```

```
Send pid 66031 signal [15/sigterm] 9  


| PID   | USER  | RUSER | PR | NI | S | %CPU | %MEM | TIME+   | COMMAND       |
|-------|-------|-------|----|----|---|------|------|---------|---------------|
| 66031 | root  | user1 | 20 | 0  | S | 0.0  | 0.2  | 0:00.00 | passwd        |
| 66032 | user1 | user1 | 20 | 0  | R | 0.0  | 0.3  | 0:00.79 | top           |
| 66042 | root  | root  | 20 | 0  | I | 0.0  | 0.0  | 0:00.00 | [kworker/0:1] |


```

Процесс был удалён после сигнала 9, принудительное завершение.

6. Выполните команду `vim ~/file_task3.txt` и нажмите `Ctrl-Z`

```
user1@eltex-practice2-pg2-v17:/root$ vim ~/file_task3.txt  
[1]+  Stopped                  vim ~/file_task3.txt
```

7. Выполните команду `sleep 600`, нажмите `Ctrl-Z` и выполните команду `jobs`

```
user1@eltex-practice2-pg2-v17:/root$ sleep 600  
^Z  
[2]+  Stopped                  sleep 600  
user1@eltex-practice2-pg2-v17:/root$ jobs  
[1]-  Stopped                  vim ~/file_task3.txt  
[2]+  Stopped                  sleep 600
```

8. Последнее задание (`sleep 600`) сделайте фоновым

Добавим `&` к команде `sleep 600`

```
user1@eltex-practice2-pg2-v17:/root$ sleep 600&  
[3] 66052  
user1@eltex-practice2-pg2-v17:/root$
```

9. Измените число NICE у задания (`sleep 600`), сделав его равным 10

`user1@eltex-practice2-pg2-v17:/root$ sudo renice 10 -p $(pidof sleep)`

`-p`: Изменить приоритет конкретного процесса

`$(pidof sleep)` - Получение PID процесса `sleep`

```
user1@eltex-practice2-pg2-v17:/root$ sudo renice 10 -p $(pidof sleep)  
[sudo] password for user1:  
66052 (process ID) old priority 0, new priority 10  
66050 (process ID) old priority 0, new priority 10  
user1@eltex-practice2-pg2-v17:/root$
```

10. Проверьте, что число NICE у этого задания изменилось

`user1@eltex-practice2-pg2-v17:/root$ ps -o pid,nice,cmd -C sleep`

```
user1@eltex-practice2-pg2-v17:/root$ ps -o pid,nice,cmd -C sleep  
  PID  NI CMD  
 66050  10 sleep 600  
 66052  10 sleep 600
```

11. Сделайте задание `vim ~/file_task3.txt` активным и выйдите из редактора

Снова вводим `vim ~/file_task3.txt` и получаем предупреждение:

E325: ATTENTION

```
Found a swap file by the name "~/.file_task3.txt.swp"
  owned by: user1   dated: Fri Oct 24 04:02:54 2025
  file name: ~user1/file_task3.txt
  modified: no
  user name: user1   host name: eltex-practice2-pg2-v17
  process ID: 66048 (STILL RUNNING)
While opening file "/home/user1/file_task3.txt"
  CANNOT BE FOUND
(1) Another program may be editing the same file.  If this is the case,
    be careful not to end up with two different instances of the same
    file when making changes.  Quit, or continue with caution.
(2) An edit session for this file crashed.
    If this is the case, use ":recover" or "vim -r /home/user1/file_task3.txt"
    to recover the changes (see ":help recovery").
    If you did this already, delete the swap file "/home/user1/.file_task3.txt.s
wp"
    to avoid this message.

Swap file "~/.file_task3.txt.swp" already exists!
[O]pen Read-Only, (E)dit anyway, (R)ecover, (Q)uit, (A)bort: █
```

Вводим wq

12. Отправьте сигнал 15 (SIGTERM) заданию sleep 600 и выполните команду jobs

```
user1@eltex-practice2-pg2-v17:/root$ ps -o pid,nice,cmd -C sleep
  PID  NI  CMD
  66050  10  sleep 600
[3]   Done                  sleep 600
user1@eltex-practice2-pg2-v17:/root$ kill 15 66050
bash: kill: (15) - Operation not permitted
user1@eltex-practice2-pg2-v17:/root$ jobs
[1]-  Stopped                  vim ~/file_task3.txt
[2]+  Stopped                  sleep 600
user1@eltex-practice2-pg2-v17:/root$ █
```

13. Создайте перехватчик сигналов SIGINT и SIGQUIT внутри командного интерпретатора, который выводит сообщение «Меня голыми руками не возьмёшь!» (используйте встроенную команду trap) и отправьте сигналы самому себе.

```
user1@eltex-practice2-pg2-v17:/root$ trap 'echo "Меня голыми руками не возьмёшь!"' INT QUIT
```

```
user1@eltex-practice2-pg2-v17:/root$ trap 'echo "Меня голыми руками не возьмёшь!"'
INT QUIT
user1@eltex-practice2-pg2-v17:/root$ kill -INT $$
Меня голыми руками не возьмёшь!
user1@eltex-practice2-pg2-v17:/root$ kill -QUIT $$
Меня голыми руками не возьмёшь!
user1@eltex-practice2-pg2-v17:/root$ █
```

```
user1@eltex-practice2-pg2-v17:/root$ sudo tar -czf observer_report.tar.gz report_f
iles/
█
```