

Лабораторная работа 6

Управление процессами в ОС Linux

Баранов Никита Дмитриевич

- Баранов Никита Дмитриевич
- студент группы НПИбд-02-24
- Российский университет дружбы народов
- 1132242977@pfur.ru



Получить навыки управления процессами операционной системы.

1. Управление заданиями ОС.
2. Управление процессами ОС.
3. Задания для самостоятельной работы.

Запуск процессов sleep и dd

```
Activities Terminal Sep 7 16:32 en
root@ndbaranov:~

[baranov@ndbaranov ~]$ su -
Password:
[root@ndbaranov ~]# sleep 3600 &
[1] 5116
[root@ndbaranov ~]# dd if=/dev/zero of=/dev/null &
[2] 5118
[root@ndbaranov ~]# V
bash: V: command not found...
[root@ndbaranov ~]# sleep 7200
^Z
[3]+  Stopped                  sleep 7200
[root@ndbaranov ~]# jobs
[1]-  Running                  sleep 3600 &
[2]-  Running                  dd if=/dev/zero of=/dev/null &
[3]+  Stopped                  sleep 7200
[root@ndbaranov ~]# bg 3
[3]+  sleep 7200 &
[root@ndbaranov ~]# jobs
[1]-  Running                  sleep 3600 &
[2]-  Running                  dd if=/dev/zero of=/dev/null &
[3]+  Running                  sleep 7200 &
[root@ndbaranov ~]# fg 1
sleep 3600
^Z
[1]+  Stopped                  sleep 3600
[root@ndbaranov ~]# fg 1
sleep 3600
^C
[root@ndbaranov ~]# jobs
[2]-  Running                  dd if=/dev/zero of=/dev/null &
[3]+  Running                  sleep 7200 &
[root@ndbaranov ~]# fg 1
-bash: fg: 1: no such job
[root@ndbaranov ~]# fg 2
dd if=/dev/zero of=/dev/null
^C145184958+0 records in
145184958+0 records out
74334698496 bytes (74 GB, 69 GiB) copied, 128.402 s, 579 MB/s
[root@ndbaranov ~]# fg 3
sleep 7200
^C
[root@ndbaranov ~]#
```

Приостановка процесса и проверка jobs

```
Activities Terminal Sep 7 16:32 en
root@ndbaranov:~

[baranov@ndbaranov ~]$ su -
Password:
[root@ndbaranov ~]# sleep 3600 &
[1] 5116
[root@ndbaranov ~]# dd if=/dev/zero of=/dev/null &
[2] 5118
[root@ndbaranov ~]# V
bash: V: command not found...
[root@ndbaranov ~]# sleep 7200
^Z
[3]+  Stopped                  sleep 7200
[root@ndbaranov ~]# jobs
[1]-  Running                  sleep 3600 &
[2]-  Running                  dd if=/dev/zero of=/dev/null &
[3]+  Stopped                  sleep 7200
[root@ndbaranov ~]# bg 3
[3]+  sleep 7200 &
[root@ndbaranov ~]# jobs
[1]-  Running                  sleep 3600 &
[2]-  Running                  dd if=/dev/zero of=/dev/null &
[3]+  Running                  sleep 7200 &
[root@ndbaranov ~]# fg 1
sleep 3600
^Z
[1]+  Stopped                  sleep 3600
[root@ndbaranov ~]# fg 1
sleep 3600
^C
[root@ndbaranov ~]# jobs
[2]-  Running                  dd if=/dev/zero of=/dev/null &
[3]+  Running                  sleep 7200 &
[root@ndbaranov ~]# fg 1
-bash: fg: 1: no such job
[root@ndbaranov ~]# fg 2
dd if=/dev/zero of=/dev/null
^C145184958+0 records in
145184958+0 records out
74334698496 bytes (74 GB, 69 GiB) copied, 128.402 s, 579 MB/s
[root@ndbaranov ~]# fg 3
sleep 7200
^C
[root@ndbaranov ~]#
```

Возобновление процесса в фоне

```
Activities Terminal Sep 7 16:32 en
root@ndbaranov:~

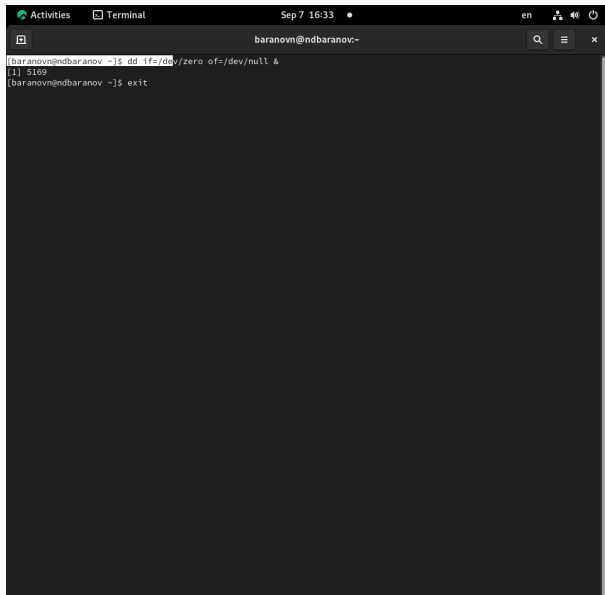
[baranov@ndbaranov ~]$ su -
Password:
[root@ndbaranov ~]# sleep 3600 &
[1] 5116
[root@ndbaranov ~]# dd if=/dev/zero of=/dev/null &
[2] 5118
[root@ndbaranov ~]# V
bash: V: command not found...
[root@ndbaranov ~]# sleep 7200
^Z
[3]+  Stopped                  sleep 7200
[root@ndbaranov ~]# jobs
[1]  Running                  sleep 3600 &
[2]-  Running                  dd if=/dev/zero of=/dev/null &
[3]+  Stopped                  sleep 7200
[root@ndbaranov ~]# bg 3
[3]+  sleep 7200 &
[root@ndbaranov ~]# jobs
[1]  Running                  sleep 3600 &
[2]-  Running                  dd if=/dev/zero of=/dev/null &
[3]+  Running                  sleep 7200 &
[root@ndbaranov ~]# fg 1
sleep 3600
^Z
[1]+  Stopped                  sleep 3600
[root@ndbaranov ~]# fg 1
sleep 3600
^C
[root@ndbaranov ~]# jobs
[2]-  Running                  dd if=/dev/zero of=/dev/null &
[3]+  Running                  sleep 7200 &
[root@ndbaranov ~]# fg 1
-bash: fg: 1: no such job
[root@ndbaranov ~]# fg 2
dd if=/dev/zero of=/dev/null
^C145184958+0 records in
145184958+0 records out
74334698496 bytes (74 GB, 69 GiB) copied, 128.402 s, 579 MB/s
[root@ndbaranov ~]# fg 3
sleep 7200
^C
[root@ndbaranov ~]#
```

Завершение процессов

```
Activities Terminal Sep 7 16:32 en
root@ndbaranov:~

[baranov@ndbaranov ~]$ su -
Password:
[root@ndbaranov ~]# sleep 3600 &
[1] 5116
[root@ndbaranov ~]# dd if=/dev/zero of=/dev/null &
[2] 5118
[root@ndbaranov ~]# V
bash: V: command not found...
[root@ndbaranov ~]# sleep 7200
^Z
[3]+  Stopped                  sleep 7200
[root@ndbaranov ~]# jobs
[1]  Running                  sleep 3600 &
[2]-  Running                  dd if=/dev/zero of=/dev/null &
[3]+  Stopped                  sleep 7200
[root@ndbaranov ~]# bg 3
[3]+  sleep 7200 &
[root@ndbaranov ~]# jobs
[1]  Running                  sleep 3600 &
[2]-  Running                  dd if=/dev/zero of=/dev/null &
[3]+  Running                  sleep 7200 &
[root@ndbaranov ~]# fg 1
sleep 3600
^Z
[1]+  Stopped                  sleep 3600
[root@ndbaranov ~]# fg 1
sleep 3600
^C
[root@ndbaranov ~]# jobs
[2]-  Running                  dd if=/dev/zero of=/dev/null &
[3]+  Running                  sleep 7200 &
[root@ndbaranov ~]# fg 1
-bash: fg: 1: no such job
[root@ndbaranov ~]# fg 2
dd if=/dev/zero of=/dev/null
^C145184958+0 records in
145184958+0 records out
74334698496 bytes (74 GB, 69 GiB) copied, 128.402 s, 579 MB/s
[root@ndbaranov ~]# fg 3
sleep 7200
^C
[root@ndbaranov ~]#
```


Запуск dd и выход из терминала



The image shows a terminal window titled "Terminal" with a dark background. The window's title bar includes "Activities", "Terminal", and the date/time "Sep 7 16:33". The terminal content shows the user "baranovn@ndbaranov" at the prompt. The command `dd if=/dev/zero of=/dev/null &` is entered and executed, resulting in the output `[1] 5169`. Finally, the `exit` command is entered, returning the user to the shell prompt.

```
Activity Terminal Sep 7 16:33 en [?] [?] [?]  
[?] baranovn@ndbaranov:~ [?] [?] [?]  
[?] baranovn@ndbaranov ~]$ dd if=/dev/zero of=/dev/null &  
[1] 5169  
[?] baranovn@ndbaranov ~]$ exit
```

Мониторинг процессов в top

```
Activities Terminal Sep 7 16:33 en en 40 50
[baranov@ndbaranov ~]$ top
top - 16:33:55 up 27 min, 2 users, load average: 0.88, 0.63, 0.48
Tasks: 227 total, 4 running, 223 sleeping, 0 stopped, 0 zombie
%Cpu(s): 3.0 us, 7.4 sy, 0.0 ni, 85.0 id, 0.1 wa, 4.4 hi, 0.2 si, 0.0 st
MiB Mem : 3655.2 total, 1178.9 free, 1311.3 used, 1429.7 buff/cache
MiB Swap: 4040.0 total, 4040.0 free, 0.0 used, 2343.9 avail Mem

  PID USER      PR  NI    VIRT    RES    SHR  S  %CPU  %MEM     TIME+ COMMAND
 5169 baranovn  20   0 220988   1664   1664 R   94.0   0.0   0:52.22 dd
 2198 baranovn  20   0 5084036 332312 132324 R    4.3   8.9   3:58.41 gnome-s+
 806 root       20   0 30056   11320   9088 S    0.3   0.3   0:00.51 systemd+
 2439 baranovn  20   0 603400   15916  10368 S    0.3   0.4   0:00.18 gsd-sma+
 5022 baranovn  20   0 766076   57304  41824 S    0.3   1.5   0:02.57 gnome-t+
 5214 baranovn  20   0 225904   4096   3328 R    0.3   0.1   0:00.00 top
    1 root       20   0 174012   17824  10676 S    0.0   0.5   0:02.43 systemd
    2 root       20   0      0      0      0 S    0.0   0.0   0:00.02 kthreadd
    3 root       20   0      0      0      0 S    0.0   0.0   0:00.00 pool_wa+
    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+
    9 root       0 -20      0      0      0 I    0.0   0.0   0:00.00 kworker+
   11 root       0 -20      0      0      0 I    0.0   0.0   0:00.00 kworker+
   12 root       20   0      0      0      0 I   10.63 0.0   0:10.63 kworker+
   13 root       20   0      0      0      0 I    0.0   0.0   0:00.00 rcu_tas+
```

Изменение приоритета процесса

```
Activities Terminal Sep 7 16:40 en
root@ndbaranov:~

[baranov@ndbaranov ~]$ su -
Password:
[root@ndbaranov ~]# dd if=/dev/zero of=/dev/null &
[1] 5344
[root@ndbaranov ~]# dd if=/dev/zero of=/dev/null &
[2] 5345
[root@ndbaranov ~]# dd if=/dev/zero of=/dev/null &
[3] 5346
[root@ndbaranov ~]#
[root@ndbaranov ~]# ps aux | grep dd
root      2  0.0  0.0      0  ?      S   16:06   0:00 [kthreadd]
root    1092  0.0  0.1 574012 3840  ?    Sl   16:06   0:00 /usr/sbin/VBoxService --pidfile /var/run/vboxadd-s
ervice.sh
baranovn 2356  0.0  0.8 955072 32212  ?    Ssl  16:06   0:00 /usr/libexec/evolution-addressbook-factory
root    5344  92.6  0.0 220988 1664 pts/0   R   16:35   0:12 dd if=/dev/zero of=/dev/null
root    5345  92.8  0.0 220988 1664 pts/0   R   16:35   0:12 dd if=/dev/zero of=/dev/null
root    5346  95.2  0.0 220988 1664 pts/0   R   16:35   0:11 dd if=/dev/zero of=/dev/null
root    5352  0.0  0.0 221796 2304 pts/0   S+  16:35   0:00 grep --color=auto dd
[root@ndbaranov ~]# renice -n 5 <PID>
-bash: syntax error near unexpected token 'newline'
[root@ndbaranov ~]# renice -n 5 <PID>
-bash: syntax error near unexpected token 'newline'
[root@ndbaranov ~]# renice -n 5 <PID>renice -n 5 <1092>
-bash: syntax error near unexpected token '1092'
[root@ndbaranov ~]# renice -n 5 <1092>
-bash: syntax error near unexpected token '1092'
[root@ndbaranov ~]# renice -n 5 <5352>
-bash: syntax error near unexpected token '5352'
[root@ndbaranov ~]# renice -n 5 <5346>
-bash: syntax error near unexpected token '5346'
[root@ndbaranov ~]# renice -n 5 5344
5344 (process ID) old priority 0, new priority 5
[root@ndbaranov ~]# ps fax | grep -B5 dd
  PID TTY          STAT       TIME COMMAND
    2 ?            S          0:00 [kthreadd]
...
 822 ?            S          0:00 /usr/sbin/chromydf -F 2
 829 ?            Sns        0:00 /usr/sbin/alsactl -s -n 19 -c -E ALSA_CONFIG_PATH=/etc/alsa/alsactl.conf --initfile=/lib
/alsa/init/00main rdaemon
 844 ?            Ssl        0:00 /usr/sbin/ModemManager
 847 ?            Ssl        0:00 /usr/bin/python3 -s /usr/sbin/firewalld --nofork --nopid
1089 ?            Sl         0:01 /usr/bin/VBoxDRMclient
1092 ?            Sl         0:00 /usr/sbin/VBoxService --pidfile /var/run/vboxadd-service.sh
...
2312 ?            Ssl        0:00 \_ /usr/libexec/goa-identity-service
2317 ?            Ssl        0:00 \_ /usr/libexec/evolution-calendar-factory
2324 ?            Ssl        0:00 \_ /usr/libexec/gvfs-mtp-volume-monitor
2334 ?            Ssl        0:00 \_ /usr/libexec/gvfs-gphoto2-volume-monitor
2344 ?            Ssl        0:00 \_ /usr/libexec/gvfs-goa-volume-monitor
2356 ?            Ssl        0:00 \_ /usr/libexec/evolution-addressbook-factory
```

Просмотр иерархии процессов и завершение

```
Activities Terminal Sep 7 16:43 en
baranov@ndbaranov:~

[root@ndbaranov ~]# renice -n 5 <PID>
-bash: syntax error near unexpected token 'newline'
[root@ndbaranov ~]# renice -n 5 <PID>
-bash: syntax error near unexpected token 'newline'
[root@ndbaranov ~]# renice -n 5 <PID>renice -n 5 <1092>
-bash: syntax error near unexpected token '1092'
[root@ndbaranov ~]# renice -n 5 <1092>
-bash: syntax error near unexpected token '1092'
[root@ndbaranov ~]# renice -n 5 <5352>
-bash: syntax error near unexpected token '5352'
[root@ndbaranov ~]# renice -n 5 <5346>
-bash: syntax error near unexpected token '5346'
[root@ndbaranov ~]# renice -n 5 5344
5344 (process ID) old priority 0, new priority 5
[root@ndbaranov ~]# ps fax | grep -B5 dd
  PID TTY          STAT       TIME COMMAND
    2 ?           S          0:00 [kthreadd]

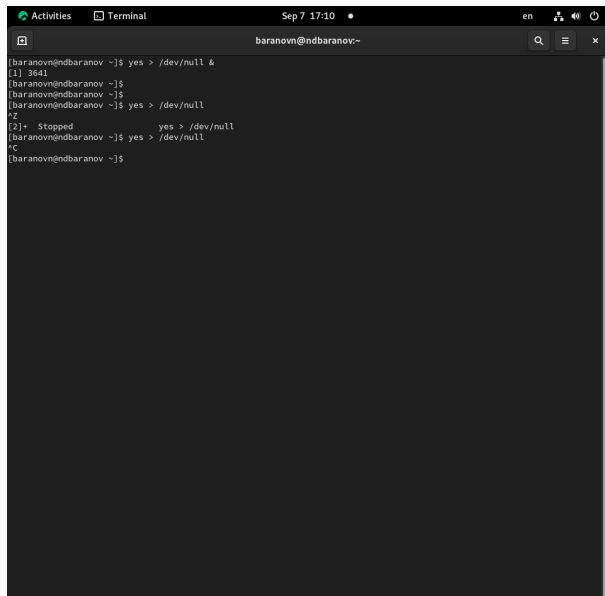
    822 ?           S          0:00 /usr/sbin/chronyd -F 2
    829 ?           Ss         0:00 /usr/sbin/alsactl -s -n 19 -c -E ALSA_CONFIG_PATH=/etc/alsa/alsactl.conf --initfile=/lib
/alsa/init/00main rdaemon
    844 ?           Ss         0:00 /usr/sbin/ModemManager
    847 ?           Ss         0:00 /usr/bin/python3 -s /usr/sbin/firewalld --nofork --nopid
   1089 ?           Sl         0:01 /usr/bin/VBoxDRMClient
   1092 ?           Sl         0:00 /usr/sbin/VBoxService --pidfile /var/run/vboxadd-service.sh

   2312 ?           Ss         0:00 \_ /usr/libexec/goa-identity-service
   2317 ?           Ss         0:00 \_ /usr/libexec/evolution-calendar-factory
   2324 ?           Ss         0:00 \_ /usr/libexec/gvfs-mtp-volume-monitor
   2334 ?           Ss         0:00 \_ /usr/libexec/gvfs-gphoto2-volume-monitor
   2344 ?           Ss         0:00 \_ /usr/libexec/gvfs-go-a-volume-monitor
   2356 ?           Ss         0:00 \_ /usr/libexec/evolution-addressbook-factory

   2885 ?           Ss         0:00 \_ /usr/libexec/gvfsd-metadata
   5257 ?           Ss         0:01 \_ /usr/libexec/gnome-terminal-server
   5275 pts/0       Ss         0:00 \_ bash
   5302 pts/0       S          0:00 \_ su -
   5313 pts/0       S          0:00 \_ -bash
   5344 pts/0       RN         5:22 \_ dd if=/dev/zero of=/dev/null
   5345 pts/0       R          5:21 \_ dd if=/dev/zero of=/dev/null
   5346 pts/0       R          5:20 \_ dd if=/dev/zero of=/dev/null
   5370 pts/0       R+         0:00 \_ ps fax
   5371 pts/0       S+         0:00 \_ grep --color=auto -B5 dd

[root@ndbaranov ~]# kill -9 <2885>
-bash: syntax error near unexpected token '2885'
[root@ndbaranov ~]# kill -9 <5313>
-bash: syntax error near unexpected token '5313'
[root@ndbaranov ~]# kill -9 5313
Killed
[baranov@ndbaranov ~]$
```

Работа с программой yes



A terminal window titled "Terminal" with a date and time of "Sep 7 17:10". The window shows a user named "baranov" at a host named "ndbaranov". The user enters the command "yes > /dev/null &". The terminal shows the process ID "3641" and then the command "yes > /dev/null" is repeated. The user then presses Ctrl-Z, which is shown as "*Z", and the terminal displays "[2]+ Stopped yes > /dev/null". The user then presses Ctrl-C, which is shown as "*C", and the terminal returns to the prompt "baranov@ndbaranov ~\$".

```
baranov@ndbaranov ~$ yes > /dev/null &
[1] 3641
baranov@ndbaranov ~$
baranov@ndbaranov ~$
baranov@ndbaranov ~$ yes > /dev/null
^Z
[2]+  Stopped                  yes > /dev/null
baranov@ndbaranov ~$ yes > /dev/null
^C
baranov@ndbaranov ~$
```

Управление заданиями yes (1)

The screenshot shows a terminal window with the following content:

```

[baranovn@ndbaranov ~]$
[baranovn@ndbaranov ~]$ jobs
[1]-  Running                  yes > /dev/null &
[2]-  Stopped                  yes > /dev/null
[3]+  Stopped                  yes
[baranovn@ndbaranov ~]$ fg 1
yes > /dev/null
^C
[baranovn@ndbaranov ~]$

```

Управление заданиями yes (2)

```

[baranov@ndbaranov ~]$ yes &
^C
[baranov@ndbaranov ~]$ [1] Running yes > /dev/null &
[2]- Stopped yes > /dev/null
[3]+ Stopped yes
[baranov@ndbaranov ~]$ fg 1
yes > /dev/null
^C
[baranov@ndbaranov ~]$ bg %2
[2]- yes > /dev/null &
[baranov@ndbaranov ~]$ jobs
[2]- Running yes > /dev/null &
[3]+ Stopped yes
[baranov@ndbaranov ~]$ nohup yes > /dev/null &

```

Мониторинг процессов yes в top

```
Activities Terminal Sep 7 17:19 en
baranov@ndbaranov:~
top - 17:19:20 up 32 min, 2 users, load average: 4.37, 3.59, 2.24
Tasks: 229 total, 9 running, 220 sleeping, 0 stopped, 0 zombie
%Cpu(s): 0.0 us, 0.6 sy, 0.0 ni, 94.7 id, 0.0 wa, 4.7 hi, 0.0 si, 0.0 st
MiB Mem : 3655.2 total, 2069.9 free, 1179.7 used, 651.3 buff/cache
MiB Swap: 4040.0 total, 4040.0 free, 0.0 used, 2475.0 avail Mem

  PID USER      PR  NI    VIRT    RES    SHR  S  %CPU  %MEM     TIME+ COMMAND
 3940 root        20   0   220948   1664   1664 R 100.0   0.0   2:44.17 yes
 3461 root        20   0   220948   1664   1664 R 100.0   0.0  12:45.46 yes
 3719 baranov     20   0   220948   1664   1664 R 100.0   0.0   5:10.21 yes
 2211 baranov   20   0 5002020 291952 130572 S   6.5   7.8   0:46.55 gnome-shell
 3983 baranov   20   0 903500   53488   40196 S   1.5   1.4   0:00.47 gnome-terminal-
 10 root        20   0   0         0         0 R   0.8   0.0   0:01.34 kworker/u16:0-events_unbound
 48 root        20   0   0         0         0 I   0.5   0.0   0:02.57 kworker/u16:2-events_unbound
 1 root        20   0 174012   16452   10684 S   0.0   0.4   0:03.03 systemd
 2 root        20   0   0         0         0 S   0.0   0.0   0:00.05 kthreadd
 3 root        20   0   0         0         0 S   0.0   0.0   0:00.00 pool_workqueue
 4 root        0 -20   0         0         0 I   0.0   0.0   0:00.00 kworker/R-rcu_g
 5 root        0 -20   0         0         0 I   0.0   0.0   0:00.00 kworker/R-sync_
 6 root        0 -20   0         0         0 I   0.0   0.0   0:00.00 kworker/R-slub_
 7 root        0 -20   0         0         0 I   0.0   0.0   0:00.00 kworker/R-netns
 9 root        0 -20   0         0         0 I   0.0   0.0   0:00.00 kworker/0:0H-events_highpri
11 root        0 -20   0         0         0 I   0.0   0.0   0:00.00 kworker/R-mm_pe
13 root        20   0   0         0         0 I   0.0   0.0   0:00.00 rcu_tasks_kthre
14 root        20   0   0         0         0 I   0.0   0.0   0:00.00 rcu_tasks_rude
15 root        20   0   0         0         0 I   0.0   0.0   0:00.00 rcu_tasks_trace
16 root        20   0   0         0         0 S   0.0   0.0   0:00.04 ksoftirqd/0
17 root        20   0   0         0         0 R   0.0   0.0   0:00.50 rcu_preempt
18 root        20   0   0         0         0 S   0.0   0.0   0:00.00 rcu_exp_par_gp
19 root        20   0   0         0         0 S   0.0   0.0   0:00.12 rcu_exp_gp_kthr
20 root        rt   0   0         0         0 S   0.0   0.0   0:00.03 migration/0
21 root       -51   0   0         0         0 S   0.0   0.0   0:00.00 idle_inject/0
23 root        20   0   0         0         0 S   0.0   0.0   0:00.00 cpuhp/0
24 root        20   0   0         0         0 S   0.0   0.0   0:00.00 cpuhp/1
25 root       -51   0   0         0         0 S   0.0   0.0   0:00.00 idle_inject/1
26 root        rt   0   0         0         0 S   0.0   0.0   0:01.01 migration/1
27 root        20   0   0         0         0 S   0.0   0.0   0:00.04 ksoftirqd/1
29 root        0 -20   0         0         0 I   0.0   0.0   0:00.00 kworker/1:0H-events_highpri
30 root        20   0   0         0         0 S   0.0   0.0   0:00.00 cpuhp/2
31 root       -51   0   0         0         0 S   0.0   0.0   0:00.00 idle_inject/2
32 root        rt   0   0         0         0 S   0.0   0.0   0:01.21 migration/2
33 root        20   0   0         0         0 S   0.0   0.0   0:00.11 ksoftirqd/2
35 root        0 -20   0         0         0 I   0.0   0.0   0:00.00 kworker/2:0H-events_highpri
36 root        20   0   0         0         0 S   0.0   0.0   0:00.00 cpuhp/3
37 root       -51   0   0         0         0 S   0.0   0.0   0:00.00 idle_inject/3
38 root        rt   0   0         0         0 S   0.0   0.0   0:01.03 migration/3
39 root        20   0   0         0         0 S   0.0   0.0   0:00.20 ksoftirqd/3
40 root        0 -20   0         0         0 I   0.0   0.0   0:00.49 kworker/3:0-ata_sff
41 root        0 -20   0         0         0 I   0.0   0.0   0:00.00 kworker/3:0H-events_highpri
43 root        20   0   0         0         0 S   0.0   0.0   0:00.03 kdevtmpfs
```


Попытка завершения процессов

```
Activities Terminal Sep 7 17:27 en
root@ndbaranov:~
4 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/R-rcu_g
5 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/R-sync_
6 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/R-slub
7 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/R-netns
9 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/0:0H-events_highpri
11 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/R-mm_pe
13 root 20 0 0 0 0 I 0.0 0.0 0:00.00 rcu_tasks_kthre
14 root 20 0 0 0 0 I 0.0 0.0 0:00.00 rcu_tasks_rude
15 root 20 0 0 0 0 I 0.0 0.0 0:00.00 rcu_tasks_trace
16 root 20 0 0 0 0 S 0.0 0.0 0:00.06 ksoftirqd/0
17 root 20 0 0 0 0 I 0.0 0.0 0:00.51 rcu_preempt
18 root 20 0 0 0 0 S 0.0 0.0 0:00.00 rcu_exp_par_gp_
19 root 20 0 0 0 0 S 0.0 0.0 0:00.12 rcu_exp_gp_kthr
20 root rt 0 0 0 0 S 0.0 0.0 0:00.03 migration/0
21 root -51 0 0 0 0 S 0.0 0.0 0:00.00 idle_inject/0
23 root 20 0 0 0 0 S 0.0 0.0 0:00.00 cpuhp/0
24 root 20 0 0 0 0 S 0.0 0.0 0:00.00 cpuhp/1
25 root -51 0 0 0 0 S 0.0 0.0 0:00.00 idle_inject/1
26 root rt 0 0 0 0 S 0.0 0.0 0:01.01 migration/1
27 root 20 0 0 0 0 S 0.0 0.0 0:00.05 ksoftirqd/1
29 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/1:0H-events_highpri
30 root 20 0 0 0 0 S 0.0 0.0 0:00.00 cpuhp/2
31 root -51 0 0 0 0 S 0.0 0.0 0:00.00 idle_inject/2
32 root rt 0 0 0 0 S 0.0 0.0 0:01.21 migration/2
33 root 20 0 0 0 0 S 0.0 0.0 0:00.11 ksoftirqd/2
35 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/2:0H-events_highpri
36 root 20 0 0 0 0 S 0.0 0.0 0:00.00 cpuhp/3
37 root -51 0 0 0 0 S 0.0 0.0 0:00.00 idle_inject/3
38 root rt 0 0 0 0 S 0.0 0.0 0:01.03 migration/3
39 root 20 0 0 0 0 S 0.0 0.0 0:00.29 ksoftirqd/3
40 root 20 0 0 0 0 I 0.0 0.0 0:00.49 kworker/3:0-ata_sff

[baranov@ndbaranov ~]$ kill 3461
bash: kill: (3461) - Operation not permitted
[baranov@ndbaranov ~]$ kill %2
bash: kill: %2: no such job
[baranov@ndbaranov ~]$ su -
Password:
[root@ndbaranov ~]# kill 3461
[root@ndbaranov ~]# kill %2
-bash: kill: %2: no such job
[root@ndbaranov ~]#
[root@ndbaranov ~]# kill %1
-bash: kill: %1: no such job
[root@ndbaranov ~]# jobs
[root@ndbaranov ~]#
[root@ndbaranov ~]# jobs
[root@ndbaranov ~]# kill -1 %3
-bash: kill: %3: no such job
[root@ndbaranov ~]# jobs
[root@ndbaranov ~]# top
```

Завершение процессов killall

```
Activities Terminal Sep 7 17:32 en
root@ndbaranov:~
32 root rt 0 0 0 0 S 0.0 0.0 0:01.22 migration/2
33 root 20 0 0 0 0 S 0.0 0.0 0:00.11 ksoftirqd/2
35 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/2:0H-events_highpri
36 root 20 0 0 0 0 S 0.0 0.0 0:00.00 cpuhp/3
37 root -51 0 0 0 0 S 0.0 0.0 0:00.00 idle_inject/3
38 root rt 0 0 0 0 S 0.0 0.0 0:01.03 migration/3
39 root 20 0 0 0 0 S 0.0 0.0 0:00.29 ksoftirqd/3
41 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/3:0H-events_highpri
43 root 20 0 0 0 0 S 0.0 0.0 0:00.03 kdevtmpfs
44 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/R-inet_
[root@ndbaranov ~]# killall
bash: killall: command not found...

killall[root@ndbaranov ~]#
[root@ndbaranov ~]# killall
Usage: killall [OPTION]... [--] NAME...
    killall -l, --list
    killall -V, --version

-e,--exact      require exact match for very long names
-I,--ignore-case case insensitive process name match
-g,--process-group kill process group instead of process
-y,--younger-than kill processes younger than TIME
-o,--older-than  kill processes older than TIME
-i,--interactive ask for confirmation before killing
-l,--list        list all known signal names
-q,--quiet       don't print complaints
-r,--regex      interpret NAME as an extended regular expression
-s,--signal SIGNAL send this signal instead of SIGTERM
-u,--user USER   kill only process(es) running as USER
-v,--verbose     report if the signal was successfully sent
-V,--version     display version information
-w,--wait        wait for processes to die
-n,--ns PID      match processes that belong to the same namespaces
                  as PID
-Z,--context REGEXP kill only process(es) having context
                  (must precede other arguments)

[root@ndbaranov ~]# killall yes
[root@ndbaranov ~]# yes > /dev/null &
[1] 4152
[root@ndbaranov ~]# nice -n 5 yes > /dev/null &
[2] 4153
[root@ndbaranov ~]# ps -l -p 4152,4153
F S UID PID PPID C PRI NI ADDR SZ WCHAN TTY TIME CMD
0 R 0 4152 4090 95 80 0 0 55237 - pts/1 00:00:58 yes
0 R 0 4153 4090 96 85 5 0 55237 - pts/1 00:00:31 yes
[root@ndbaranov ~]# renice -n 0 4153
4153 (process ID) old priority 5, new priority 0
[root@ndbaranov ~]#
```

Сравнение приоритетов процессов

```
Activities Terminal Sep 7 17:32 en
root@ndbaranov:~
32 root rt 0 0 0 0 S 0.0 0.0 0:01.22 migration/2
33 root 20 0 0 0 0 S 0.0 0.0 0:00.11 ksoftirqd/2
35 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/2:0H-events_highpri
36 root 20 0 0 0 0 S 0.0 0.0 0:00.00 cpuhp/3
37 root -51 0 0 0 0 S 0.0 0.0 0:00.00 idle_inject/3
38 root rt 0 0 0 0 S 0.0 0.0 0:01.03 migration/3
39 root 20 0 0 0 0 S 0.0 0.0 0:00.29 ksoftirqd/3
41 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/3:0H-events_highpri
43 root 20 0 0 0 0 S 0.0 0.0 0:00.03 kdevtmpfs
44 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/R-inet_
[root@ndbaranov ~]# killall
bash: killall: command not found...

killall[root@ndbaranov ~]#
[root@ndbaranov ~]# killall
Usage: killall [OPTION]... [--] NAME...
    killall -l, --list
    killall -V, --version

-e,--exact      require exact match for very long names
-I,--ignore-case case insensitive process name match
-g,--process-group kill process group instead of process
-y,--younger-than kill processes younger than TIME
-o,--older-than  kill processes older than TIME
-i,--interactive ask for confirmation before killing
-l,--list        list all known signal names
-q,--quiet       don't print complaints
-r,--regex      interpret NAME as an extended regular expression
-s,--signal SIGNAL send this signal instead of SIGTERM
-u,--user USER   kill only process(es) running as USER
-v,--verbose     report if the signal was successfully sent
-V,--version     display version information
-w,--wait        wait for processes to die
-n,--ns PID      match processes that belong to the same namespaces
                  as PID
-Z,--context REGEXP kill only process(es) having context
                  (must precede other arguments)

[root@ndbaranov ~]# killall yes
[root@ndbaranov ~]# yes > /dev/null &
[1] 4152
[root@ndbaranov ~]# nice -n 5 yes > /dev/null &
[2] 4153
[root@ndbaranov ~]# ps -l -p 4152,4153
F S UID PID PPID C PRI NI ADDR SZ WCHAN TTY TIME CMD
0 R 0 4152 4090 95 80 0 0 55237 - pts/1 00:00:58 yes
0 R 0 4153 4090 96 85 5 0 55237 - pts/1 00:00:31 yes
[root@ndbaranov ~]# renice -n 0 4153
4153 (process ID) old priority 5, new priority 0
[root@ndbaranov ~]#
```

Изменение приоритета renice

```
Activities Terminal Sep 7 17:32 en
root@ndbaranov:~
32 root rt 0 0 0 0 S 0.0 0.0 0:01.22 migration/2
33 root 20 0 0 0 0 S 0.0 0.0 0:00.11 ksoftirqd/2
35 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/2:0H-events_highpri
36 root 20 0 0 0 0 S 0.0 0.0 0:00.00 cpuhp/3
37 root -51 0 0 0 0 S 0.0 0.0 0:00.00 idle_inject/3
38 root rt 0 0 0 0 S 0.0 0.0 0:01.03 migration/3
39 root 20 0 0 0 0 S 0.0 0.0 0:00.29 ksoftirqd/3
41 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/3:0H-events_highpri
43 root 20 0 0 0 0 S 0.0 0.0 0:00.03 kdevtmpfs
44 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/R-inet_
[root@ndbaranov ~]# killall
bash: killall: command not found...

killall[root@ndbaranov ~]#
[root@ndbaranov ~]# killall
Usage: killall [OPTION]... [--] NAME...
    killall -l, --list
    killall -V, --version

-e,--exact      require exact match for very long names
-I,--ignore-case case insensitive process name match
-g,--process-group kill process group instead of process
-y,--younger-than kill processes younger than TIME
-o,--older-than  kill processes older than TIME
-i,--interactive ask for confirmation before killing
-l,--list        list all known signal names
-q,--quiet       don't print complaints
-r,--regex      interpret NAME as an extended regular expression
-s,--signal SIGNAL send this signal instead of SIGTERM
-u,--user USER   kill only process(es) running as USER
-v,--verbose     report if the signal was successfully sent
-V,--version     display version information
-w,--wait        wait for processes to die
-n,--ns PID      match processes that belong to the same namespaces
                  as PID
-Z,--context REGEXP kill only process(es) having context
                  (must precede other arguments)

[root@ndbaranov ~]# killall yes
[root@ndbaranov ~]# yes > /dev/null &
[1] 4152
[root@ndbaranov ~]# nice -n 5 yes > /dev/null &
[2] 4153
[root@ndbaranov ~]# ps -l -p 4152,4153
F S UID PID PPID C PRI NI ADDR SZ WCHAN TTY TIME CMD
0 R 0 4152 4090 95 80 0 0 55237 - pts/1 00:00:58 yes
0 R 0 4153 4090 96 85 5 0 55237 - pts/1 00:00:31 yes
[root@ndbaranov ~]# renice -n 0 4153
4153 (process ID) old priority 5, new priority 0
[root@ndbaranov ~]#
```

Получены навыки управления процессами в ОС Linux.