

Отчет по лабораторной работе №7

1. При помощи команды ps aux вывожу список всех системных процессов

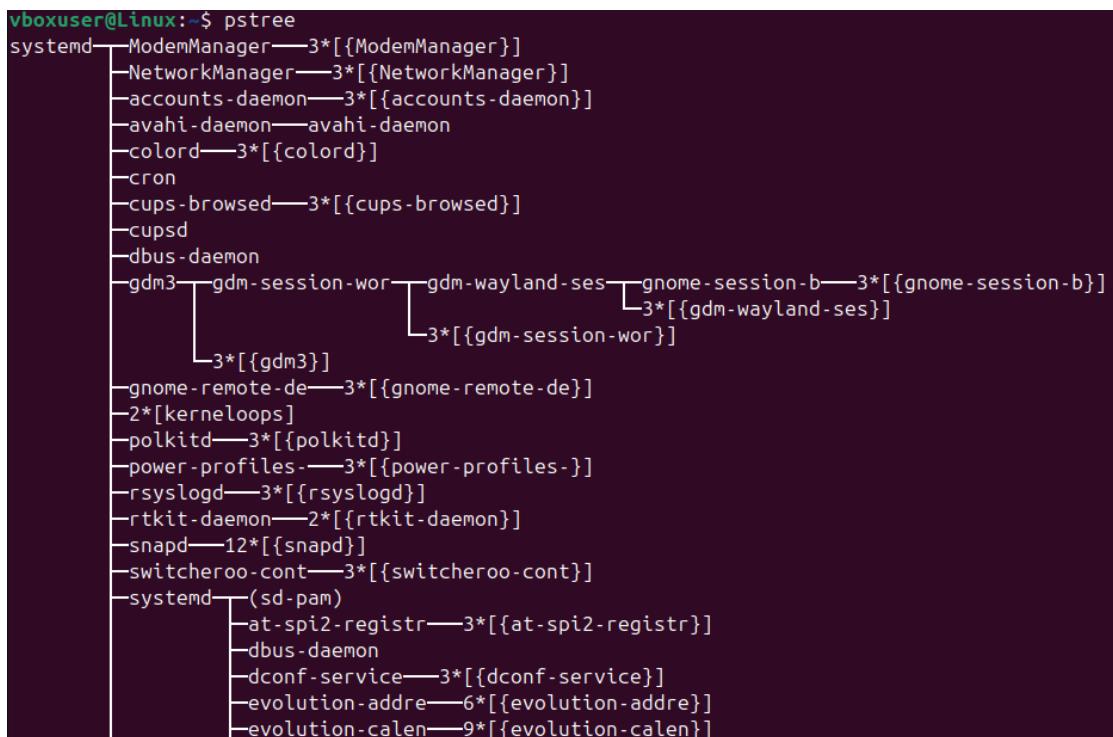
Ps = process вывод списка процессов

Aux = а (исключает фоновые процессы) + u (устанавливает ограничение на определенного юзера) + x (все процессы запущенные вместе с системой)

USER	PID	%CPU	%MEM	VSZ	RSS	TTY	STAT	START	TIME	COMMAND
root	1	0.2	0.2	23024	14020	?	Ss	07:59	0:02	/sbin/init splash
root	2	0.0	0.0	0	0	?	S	07:59	0:00	[kthreadd]
root	3	0.0	0.0	0	0	?	S	07:59	0:00	[pool_workqueue_release]
root	4	0.0	0.0	0	0	?	I<	07:59	0:00	[kworker/R-rcu_gp]
root	5	0.0	0.0	0	0	?	I<	07:59	0:00	[kworker/R-sync_wq]
root	6	0.0	0.0	0	0	?	I<	07:59	0:00	[kworker/R-kvfree_rcu_reclaim]
root	7	0.0	0.0	0	0	?	I<	07:59	0:00	[kworker/R-slub_flushwq]
root	8	0.0	0.0	0	0	?	I<	07:59	0:00	[kworker/R-netns]
root	10	0.0	0.0	0	0	?	I	07:59	0:00	[kworker/0:1-cgroup_destroy]
root	11	0.0	0.0	0	0	?	I<	07:59	0:00	[kworker/0:0H-events_highpri]
root	12	0.0	0.0	0	0	?	I	07:59	0:00	[kworker/u20:0-ipv6_addrconf]
root	13	0.0	0.0	0	0	?	I<	07:59	0:00	[kworker/R-mm_percpu_wq]
root	14	0.0	0.0	0	0	?	I	07:59	0:00	[rcu_tasks_kthread]
root	15	0.0	0.0	0	0	?	I	07:59	0:00	[rcu_tasks_rude_kthread]
root	16	0.0	0.0	0	0	?	I	07:59	0:00	[rcu_tasks_trace_kthread]
root	17	0.0	0.0	0	0	?	S	07:59	0:00	[ksoftirqd/0]
root	18	0.0	0.0	0	0	?	I	07:59	0:00	[rcu_preempt]
root	19	0.0	0.0	0	0	?	S	07:59	0:00	[rcu_exp_par_gp_kthread_worker/0]
root	20	0.0	0.0	0	0	?	S	07:59	0:00	[rcu_exp_gp_kthread_worker]
root	21	0.0	0.0	0	0	?	S	07:59	0:00	[migration/0]
root	22	0.0	0.0	0	0	?	S	07:59	0:00	[idle_inject/0]

2. Вывод дерева процессов

Pstree – из названия следует, что выводит дерево процессов, процесс и зависящий (следующий из него) от него процесс



3. Получаем список из 5 процессов, с наибольшим потреблением процессорного времени. Сделал это при помощи команды top

```
vboxuser@Linux:~$ top

top - 08:20:10 up 20 min, 1 user, load average: 0.00, 0.06, 0.09
Tasks: 233 total, 1 running, 232 sleeping, 0 stopped, 0 zombie
%Cpu(s): 0.4 us, 0.6 sy, 0.0 ni, 99.0 id, 0.1 wa, 0.0 hi, 0.1 si, 0.0 st
MiB Mem : 5153.5 total, 2663.2 free, 1173.2 used, 1581.6 buff/cache
MiB Swap: 0.0 total, 0.0 free, 0.0 used. 3980.4 avail Mem

 PID USER      PR  NI    VIRT    RES    SHR S %CPU %MEM TIME+ COMMAND
2820 vboxuser  20   0 5418876 423276 146180 S  7.3  8.0  0:57.36 gnome-shell
5155 vboxuser  20   0 625704 56672 45552 S  1.1  1.1  0:02.33 gnome-terminal-
5224 vboxuser  20   0 14516  5800  3624 R  0.5  0.1  0:00.02 top
3270 vboxuser  20   0 236768 7136 6624 S  0.3  0.1  0:00.05 ibus-engine-sim
5220 root     20   0      0      0      0 I  0.3  0.0  0:00.01 kworker/u23:1-events_unbound
 1 root     20   0 23024 14020 9412 S  0.0  0.3  0:34.02 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_workqueue_release
 4 root     0 -20      0      0      0 I  0.0  0.0  0:00.00 kworker/R-rcu_gp
 5 root     0 -20      0      0      0 I  0.0  0.0  0:00.00 kworker/R-sync_wq
 6 root     0 -20      0      0      0 I  0.0  0.0  0:00.00 kworker/R-kvfree_rcu_reclaim
 7 root     0 -20      0      0      0 I  0.0  0.0  0:00.00 kworker/R-slub_flushwq
```

3.2 – нажимаю N, чтобы попасть в строку “maximum task” и ввожу 5 (кол-во отображаемых процессов)

```
MiB Swap: 0.0 total, 0.0 free, 0.0 used. 3934.3 avail Mem
Maximum tasks = 0, change to (0 is unlimited) 5
 PID USER      PR  NI    VIRT    RES    SHR S %CPU %MEM TIME+ COMMAND
2820 vboxuser  20   0 5418860 423724 146244 S  4.8  8.0  0:41.18 gnome-shell
```

Результат:

```
PID USER      PR  NI    VIRT    RES    SHR S %CPU %MEM TIME+ COMMAND
2820 vboxuser  20   0 5414732 424748 146244 R  5.0  8.0  1:00.24 gnome-shell
5155 vboxuser  20   0 625924 56928 45552 S  1.1  1.1  0:02.94 gnome-terminal-
 373 root     20   0 30580 8280 4696 S  0.2  0.2  0:02.27 systemd-udevd
2939 vboxuser  20   0 462580 12176 7004 S  0.2  0.2  0:00.47 ibus-daemon
 1 root     20   0 23024 14020 9412 S  0.0  0.3  0:34.11 systemd
```

3.3. далее нажимаю F и попадаю в меню, где выбираю строку time+ , нажимаю s и для выхода q

* PID	= Process Id	SWAP	= Swapped Size (KiB)	RSlk	= RES Locked (KiB)
* USER	= Effective User Name	CODE	= Code Size (KiB)	RSsh	= RES Shared (KiB)
* PR	= Priority	DATA	= Data+Stack (KiB)	CGNAME	= Control Group name
* NI	= Nice Value	nMaj	= Major Page Faults	NU	= Last Used NUMA node
* VIRT	= Virtual Image (KiB)	nMin	= Minor Page Faults	LOGID	= Login User Id
* RES	= Resident Size (KiB)	nDRT	= Dirty Pages Count	RSS	= Executable Path
* SHR	= Shared Memory (KiB)	WCHAN	= Sleeping in Function	PSS	= Res Mem (smaps), KiB
* S	= Process Status	Flags	= Task Flags <sched.h>	PSan	= Proportion RSS, KiB
* %CPU	= CPU Usage	CGROUPS	= Control Groups	PSfd	= Proportion Anon, KiB
* %MEM	= Memory Usage (RES)	SUPGIDS	= Supp Groups IDs	PSsh	= Proportion File, KiB
* TIME+	= CPU Time, hundredths	SUPGRPS	= Supp Groups Names	USS	= Proportion Shrd, KiB
* COMMAND	= Command Name/Line	TGID	= Thread Group Id	ioR	= Unique RSS, KiB
PPID	= Parent Process pid	OOMa	= OOMEM Adjustment	ioRop	= I/O Bytes Read
UID	= Effective User Id	OOMs	= OOMEM Score current	ioW	= I/O Read Operations
RUID	= Real User Id	ENVIRON	= Environment vars	ioWop	= I/O Bytes Written
RUSER	= Real User Name	vMj	= Major Faults delta	AGID	= I/O Write Operations
SUID	= Saved User Id	vMn	= Minor Faults delta	AGNI	= Autogroup Identifier
SUSER	= Saved User Name	USED	= Res+Swap Size (KiB)	STARTED	= Autogroup Nice Value
GID	= Group Id	nsIPC	= IPC namespace Inode		

Итог

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
2820	vboxuser	20	0	5418860	424740	146244	S	1.3	8.0	0:46.44	gnome-shell
5155	vboxuser	20	0	625924	56928	45552	S	0.0	1.1	0:03.80	gnome-terminal-
942	root	20	0	2144516	40936	25596	S	0.0	0.8	0:03.55	snapd
1	root	20	0	23024	14020	9412	S	0.0	0.3	0:02.25	systemd
3185	vboxuser	20	0	424040	31776	18396	S	0.0	0.6	0:01.92	ibus-extension-

4. Находим 2 процесса, у которых более 2-х потоков. Через состояние процесса.

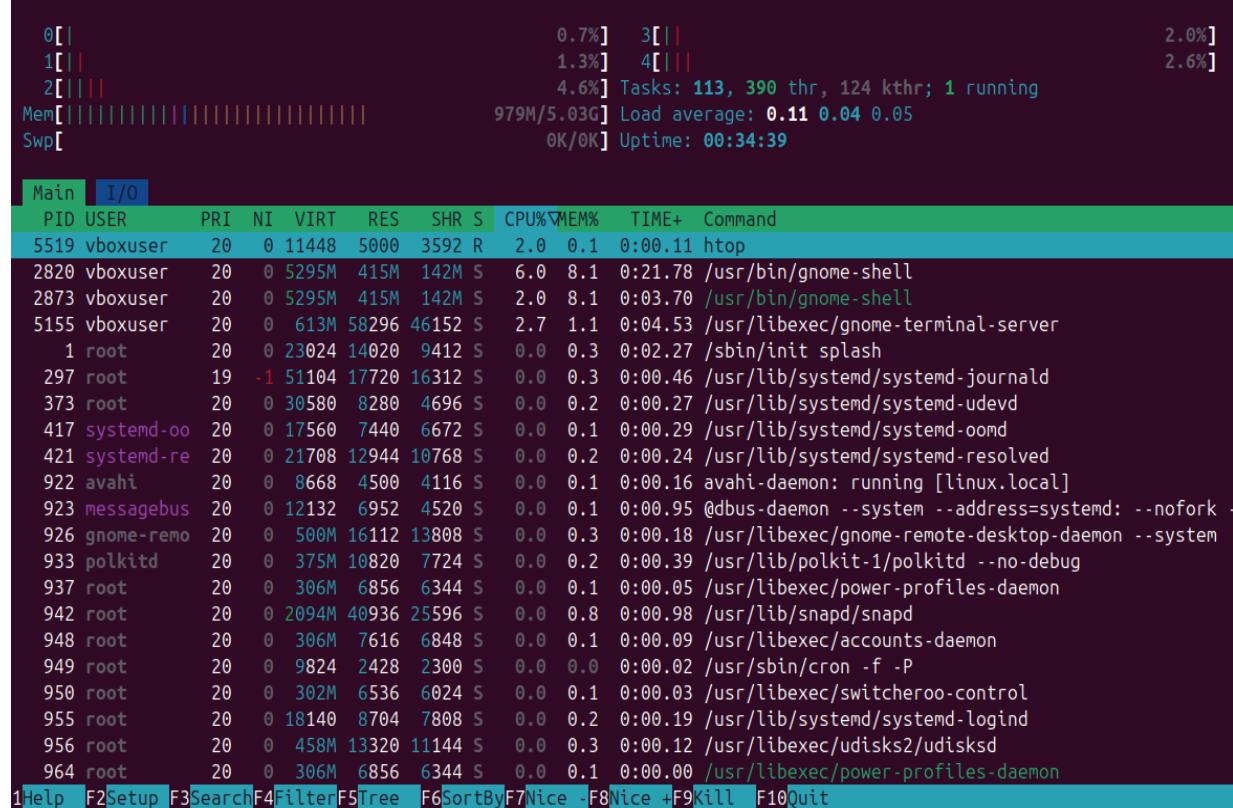
Для этого использую sudo (super user d) – от имени админа.

Apt inatall – установка приложения

«Htop» – название проги

```
vboxuser@Linux:~$ sudo apt install htop
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Suggested packages:
  lm-sensors
The following NEW packages will be installed:
  htop
0 upgraded, 1 newly installed, 0 to remove and 80 not upgraded.
Need to get 171 kB of archives.
After this operation, 434 kB of additional disk space will be used.
Get:1 http://ru.archive.ubuntu.com/ubuntu noble/main amd64 htop amd64 3.3.0-4build1
Fetched 171 kB in 6s (27.5 kB/s)
Selecting previously unselected package htop.
(Reading database ... 150391 files and directories currently installed.)
Preparing to unpack .../htop_3.3.0-4build1_amd64.deb ...
Unpacking htop (3.3.0-4build1) ...
Setting up htop (3.3.0-4build1) ...
Processing triggers for desktop-file-utils (0.27-2build1) ...
Processing triggers for hicolor-icon-theme (0.17-2) ...
Processing triggers for gnome-menus (3.36.0-1.1ubuntu3) ...
Processing triggers for man-db (2.12.0-4build2) ...
vboxuser@Linux:~$
```

Чтобы запустить вводим Нтоп



Htop – улучшенная версия top

(таблица процессов)

Нажимая f6 вхожу в режим сортировки, управляя стрелочками.

Выбираю процент загрузки процессора .

Sort by	PID	USER	P
PID	2820	vboxuser	
USER	5519	vboxuser	
PRIORITY	2852	vboxuser	
NICE	2873	vboxuser	
M_VIRT	5155	vboxuser	
M_RESIDENT	1	root	
M_SHARE	297	root	
STATE	373	root	
PERCENT_CPU	417	systemd-oo	
PERCENT_MEM	421	systemd-re	
TIME	922	avahi	
Command	923	messagebus	
	926	gnome-remo	
	933	polkittd	
	937	root	

Итог

Mem	0[1[2[0.0%]	3[1[0.0%]	4[0.0%]	Tasks: 112, 38
Swp	976M/5.03G]	Load average:	OK/OK]	Uptime: 00:38:						
<hr/>										
Main	I/O	PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU% ▷ MEM%
2820	vboxuser	20	0	5295M	415M	142M	S	0.3	8.1	0:22.75 /usr/bi
5155	vboxuser	20	0	613M	58648	45864	S	0.3	1.1	0:05.02 /usr/li
5519	vboxuser	20	0	11580	5128	3592	R	0.3	0.1	0:01.53 htop
1	root	20	0	23024	14020	9412	S	0.0	0.3	0:02.27 /sbin/i
297	root	19	-1	51104	17720	16312	S	0.0	0.3	0:00.46 /usr/li
373	root	20	0	30580	8280	4696	S	0.0	0.2	0:00.28 /usr/li
417	systemd-oo	20	0	17560	7440	6672	S	0.0	0.1	0:00.30 /usr/li
421	systemd-re	20	0	21708	12944	10768	S	0.0	0.2	0:00.25 /usr/li
922	avahi	20	0	8668	4500	4116	S	0.0	0.1	0:00.16 avahi-d
923	messagebus	20	0	12132	6952	4520	S	0.0	0.1	0:00.96 @dbus-c
926	gnome-remo	20	0	500M	16112	13808	S	0.0	0.3	0:00.18 /usr/li
933	polkittd	20	0	375M	10820	7724	S	0.0	0.2	0:00.39 /usr/li
937	root	20	0	306M	6856	6344	S	0.0	0.1	0:00.05 /usr/li
942	root	20	0	2094M	40936	25596	S	0.0	0.8	0:00.98 /usr/li
948	root	20	0	306M	7616	6848	S	0.0	0.1	0:00.09 /usr/li
949	root	20	0	9824	2428	2300	S	0.0	0.0	0:00.02 /usr/st
950	root	20	0	302M	6536	6024	S	0.0	0.1	0:00.03 /usr/li
955	root	20	0	18140	8704	7808	S	0.0	0.2	0:00.19 /usr/li
956	root	20	0	458M	13320	11144	S	0.0	0.3	0:00.12 /usr/li
964	root	20	0	306M	6856	6344	S	0.0	0.1	0:00.00 /usr/li
965	root	20	0	306M	6856	6344	S	0.0	0.1	0:00.00 /usr/li
969	syslog	20	0	217M	5512	4360	S	0.0	0.1	0:00.05 /usr/st

Выхожу при помощи «q» и ввожу ps -o thcount 2820

Thcount – считает кол-во процессоров использующих процесс

2820, 5519 – айди процесса

-о формат ввода

```
vboxuser@Linux:~$ htop
vboxuser@Linux:~$ ps -o thcount 2820
THCNT
 28
vboxuser@Linux:~$ ps -o thcount 5519
THCNT
```

5. Используем top чтобы изменить приоритеты 2 процессов

Нажимаю «r» чтобы воспользоваться переназначением приоритета

top - 08:56:19 up 56 min, 1 user, load average: 0.02, 0.05, 0.01										
Tasks: 234 total, 1 running, 233 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,										
MiB Mem : 5153.5 total, 2503.8 free, 1212.0 used, 1707.7 buff/cache										
MiB Swap: 0.0 total, 0.0 free, 0.0 used. 3941.5 avail Mem										
PID to renice [default pid = 2820] S										
PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+ CO
2820	vboxuser	20	0	5422728	425324	146292	S	1.8	8.1	1:03.93 gr
5155	vboxuser	20	0	628104	58648	45864	S	0.4	1.1	0:06.95 gr
1	root	20	0	23024	14020	9412	S	0.0	0.3	0:02.30 sy
2	root	20	0	0	0	0	S	0.0	0.0	0:00.02 kt
3	root	20	0	0	0	0	S	0.0	0.0	0:00.00 po
4	root	0	-20	0	0	0	I	0.0	0.0	0:00.00 ku
5	root	0	-20	0	0	0	I	0.0	0.0	0:00.00 ku
6	root	0	-20	0	0	0	I	0.0	0.0	0:00.00 ku
7	root	0	-20	0	0	0	I	0.0	0.0	0:00.00 ku
8	root	0	-20	0	0	0	I	0.0	0.0	0:00.00 ku
11	root	0	-20	0	0	0	I	0.0	0.0	0:00.00 ku
12	root	20	0	0	0	0	I	0.0	0.0	0:00.00 ku
13	root	0	-20	0	0	0	I	0.0	0.0	0:00.00 ku
14	root	20	0	0	0	0	I	0.0	0.0	0:00.00 go
15	root	20	0	0	0	0	I	0.0	0.0	0:00.00 go
16	root	20	0	0	0	0	I	0.0	0.0	0:00.00 go
17	root	20	0	0	0	0	S	0.0	0.0	0:00.09 ks
18	root	20	0	0	0	0	I	0.0	0.0	0:00.89 go
19	root	20	0	0	0	0	S	0.0	0.0	0:00.00 go
20	root	20	0	0	0	0	S	0.0	0.0	0:00.23 go

Renice PID 2820 to value -10										
PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+ CO
2820	vboxuser	20	0	5422780	426168	146292	S	3.3	8.1	1:08.03 gn
5155	vboxuser	20	0	628104	58648	45864	S	0.9	1.1	0:07.58 gn
5564	vboxuser	20	0	14516	5872	3696	R	0.2	0.1	0:00.18 top
1	root	20	0	23024	14020	9412	S	0.0	0.3	0:02.30 sy
2	root	20	0	0	0	0	S	0.0	0.0	0:00.02 kt
3	root	20	0	0	0	0	S	0.0	0.0	0:00.00 po
4	root	0	-20	0	0	0	I	0.0	0.0	0:00.00 kw
5	root	0	-20	0	0	0	I	0.0	0.0	0:00.00 kw
6	root	0	-20	0	0	0	I	0.0	0.0	0:00.00 kw
7	root	0	-20	0	0	0	I	0.0	0.0	0:00.00 kw
8	root	0	-20	0	0	0	T	0.0	0.0	0:00.00 kw

Ввел -10 вместо 0

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+ COMMAND
2820	vboxuser	20	0	5422764	426168	146292	S	1.2	8.1	1:08.68 gnome-shell
5155	vboxuser	20	0	628104	58648	45864	S	0.2	1.1	0:07.71 gnome-terminal-
120	root	20	0	0	0	0	I	0.0	0.0	0:00.22 kworker/u23:2-eve
199	root	20	0	0	0	0	I	0.0	0.0	0:01.54 kworker/1:3-event
2939	vboxuser	20	0	462580	12176	7004	S	0.0	0.2	0:01.21 ibus-daemon
18	root	20	0	0	0	0	R	0.0	0.0	0:00.95 rcu_preempt
61	root	20	0	0	0	0	S	0.0	0.0	0:00.21 kcompactd0
417	systemd+	20	0	17560	7440	6672	S	0.0	0.1	0:00.45 systemd-oomd
923	message+	20	0	12132	6952	4520	S	0.0	0.1	0:00.98 dbus-daemon
942	root	20	0	2144516	41192	25596	S	0.0	0.8	0:25.04 snapd
2519	vboxuser	20	0	610720	7168	6528	S	0.0	0.1	0:00.08 xdg-document-po
3335	vboxuser	20	0	3009808	63704	47160	S	0.0	1.2	0:01.20 gjs
3846	root	0	-20	0	0	0	I	0.0	0.0	0:00.31 kworker/1:2H-kblo
5518	root	20	0	0	0	0	I	0.0	0.0	0:00.10 kworker/u22:3-eve
5575	root	20	0	0	0	0	I	0.0	0.0	0:00.01 kworker/u22:1-eve
1	root	20	0	23024	14020	9412	S	0.0	0.3	0:02.30 systemd

Tasks: 235 total, 1 running, 234 sleeping, 0 stopped, 0 zombie
%Cpu(s): 0.1 us, 0.1 sy, 0.0 ni, 99.8 id, 0.0 wa, 0.0 hi, 0.0 si, 0.0 idle
MiB Mem : 5153.5 total, 2492.3 free, 1215.8 used, 1715.4 buff/cache
MiB Swap: 0.0 total, 0.0 free, 0.0 used. 3937.7 avail Mem

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+ COMMAND
2820	vboxuser	20	0	5422764	426168	146292	S	1.6	8.1	1:10.69 gnome-shell
5155	vboxuser	20	0	628104	58648	45864	S	0.3	1.1	0:08.00 gnome-terminal-
2939	vboxuser	20	0	462580	12176	7004	S	0.1	0.2	0:01.26 ibus-daemon
95	root	0	-20	0	0	0	I	0.0	0.0	0:00.13 kworker/3:0
199	root	20	0	0	0	0	I	0.0	0.0	0:01.58 kworker/1:0
5541	root	20	0	0	0	0	I	0.0	0.0	0:00.07 kworker/u22:0
5564	vboxuser	20	0	14516	5872	3696	R	0.0	0.1	0:00.24 top
1	root	20	0	23024	14020	9412	S	0.0	0.3	0:02.30 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_work
4	root	0	-20	0	0	0	I	0.0	0.0	0:00.00 kworker/R
5	root	0	-20	0	0	0	I	0.0	0.0	0:00.00 kworker/R
6	root	0	-20	0	0	0	I	0.0	0.0	0:00.00 kworker/R
7	root	0	-20	0	0	0	I	0.0	0.0	0:00.00 kworker/R
8	root	0	-20	0	0	0	I	0.0	0.0	0:00.00 kworker/R
11	root	0	-20	0	0	0	I	0.0	0.0	0:00.00 kworker@0
12	root	20	0	0	0	0	I	0.0	0.0	0:00.00 kworker/u
13	root	0	-20	0	0	0	I	0.0	0.0	0:00.00 kworker/R
14	root	20	0	0	0	0	I	0.0	0.0	0:00.00 rcu_tasks
15	root	20	0	0	0	0	I	0.0	0.0	0:00.00 rcu_tasks
16	root	20	0	0	0	0	I	0.0	0.0	0:00.00 rcu_tasks
17	root	20	0	0	0	0	S	0.0	0.0	0:00.09 ksoftirqd
18	root	20	0	0	0	0	I	0.0	0.0	0:00.97 rcu_preem
19	root	20	0	0	0	0	S	0.0	0.0	0:00.00 rcu_exp_R

6. Получаем список открытых файлов пользователя

Lsof – список открытых файлов, какой процесс какие файлы использует.

-u – имя пользователя

COMMAND	PID	USER	FD	TYPE	DEVICE	SIZE/OFF	NODE	NAME
systemd	2449	vboxuser	cwd	unknown				/proc/2449/cwd (readlink: Permission denied)
systemd	2449	vboxuser	rtd	unknown				/proc/2449/root (readlink: Permission denied)
systemd	2449	vboxuser	txt	unknown				/proc/2449/exe (readlink: Permission denied)
systemd	2449	vboxuser	0	unknown				/proc/2449/fd/0 (readlink: Permission denied)
systemd	2449	vboxuser	1	unknown				/proc/2449/fd/1 (readlink: Permission denied)
systemd	2449	vboxuser	2	unknown				/proc/2449/fd/2 (readlink: Permission denied)
systemd	2449	vboxuser	3	unknown				/proc/2449/fd/3 (readlink: Permission denied)
systemd	2449	vboxuser	4	unknown				/proc/2449/fd/4 (readlink: Permission denied)
systemd	2449	vboxuser	5	unknown				/proc/2449/fd/5 (readlink: Permission denied)
systemd	2449	vboxuser	6	unknown				/proc/2449/fd/6 (readlink: Permission denied)
systemd	2449	vboxuser	7	unknown				/proc/2449/fd/7 (readlink: Permission denied)
systemd	2449	vboxuser	8	unknown				/proc/2449/fd/8 (readlink: Permission denied)
systemd	2449	vboxuser	9	unknown				/proc/2449/fd/9 (readlink: Permission denied)
systemd	2449	vboxuser	10	unknown				/proc/2449/fd/10 (readlink: Permission denied)
)								
systemd	2449	vboxuser	11	unknown				/proc/2449/fd/11 (readlink: Permission denied)
)								
systemd	2449	vboxuser	12	unknown				/proc/2449/fd/12 (readlink: Permission denied)
)								
systemd	2449	vboxuser	13	unknown				/proc/2449/fd/13 (readlink: Permission denied)
)								
systemd	2449	vboxuser	14	unknown				/proc/2449/fd/14 (readlink: Permission denied)
)								

7. Текущее состояние системной памяти

Free – статистика по постоянно запоминающему устройству

	total	used	free	shared	buff/cache	available
Mem:	5277196	1244236	2550692	34956	1759824	4032960
Swap:	0	0	0			

8. Справка дискового пространства (использование)

Df – дает полную инфу

-h – показывает, сколько занято и свободно в числах

Filesystem	Size	Used	Avail	Use%	Mounted on
tmpfs	516M	1.7M	514M	1%	/run
/dev/sda2	25G	5.4G	18G	23%	/
tmpfs	2.6G	0	2.6G	0%	/dev/shm
tmpfs	5.0M	8.0K	5.0M	1%	/run/lock
tmpfs	516M	144K	516M	1%	/run/user/1000

9. Информация о процессе при помощи каталога /proc

Ls – l выводит список содержимого каталога в длинном формате

3 – номер процесса

```
vboxuser@Linux:~$ ls -l /proc/3
ls: cannot read symbolic link '/proc/3/cwd': Permission denied
ls: cannot read symbolic link '/proc/3/root': Permission denied
ls: cannot read symbolic link '/proc/3/exe': Permission denied
total 0
-r--r--r--  1 root root 0 Nov  6 09:14 arch_status
dr-xr-xr-x  2 root root 0 Nov  6 09:14 attr
-rw-r--r--  1 root root 0 Nov  6 09:14 autogroup
-r-----  1 root root 0 Nov  6 09:14 auxv
-r--r--r--  1 root root 0 Nov  6 07:59 cgroup
--w-----  1 root root 0 Nov  6 09:14 clear_refs
-r--r--r--  1 root root 0 Nov  6 07:59 cmdline
-rw-r--r--  1 root root 0 Nov  6 09:14 comm
-rw-r--r--  1 root root 0 Nov  6 09:14 coredump_filter
-r--r--r--  1 root root 0 Nov  6 09:14 cpu_resctrl_groups
-r--r--r--  1 root root 0 Nov  6 09:14 cpuset
lrwxrwxrwx  1 root root 0 Nov  6 09:14 cwd
-r-----  1 root root 0 Nov  6 08:12 environ
lrwxrwxrwx  1 root root 0 Nov  6 09:14 exe
dr-x-----  2 root root 0 Nov  6 09:14 fd
dr-xr-xr-x  2 root root 0 Nov  6 09:14 fdinfo
-rw-r--r--  1 root root 0 Nov  6 09:14 gid_map
-r-----  1 root root 0 Nov  6 09:14 io
-r-----  1 root root 0 Nov  6 09:14 ksm_merging_pages
```