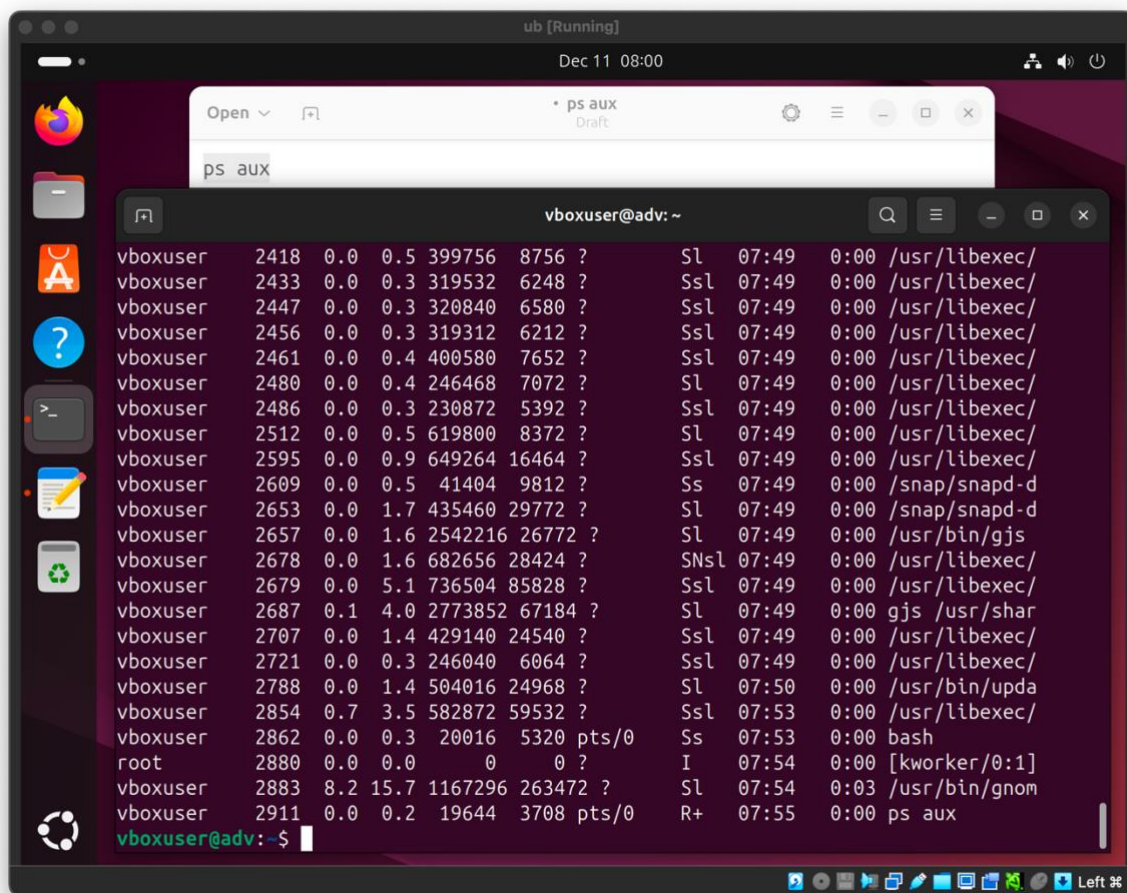
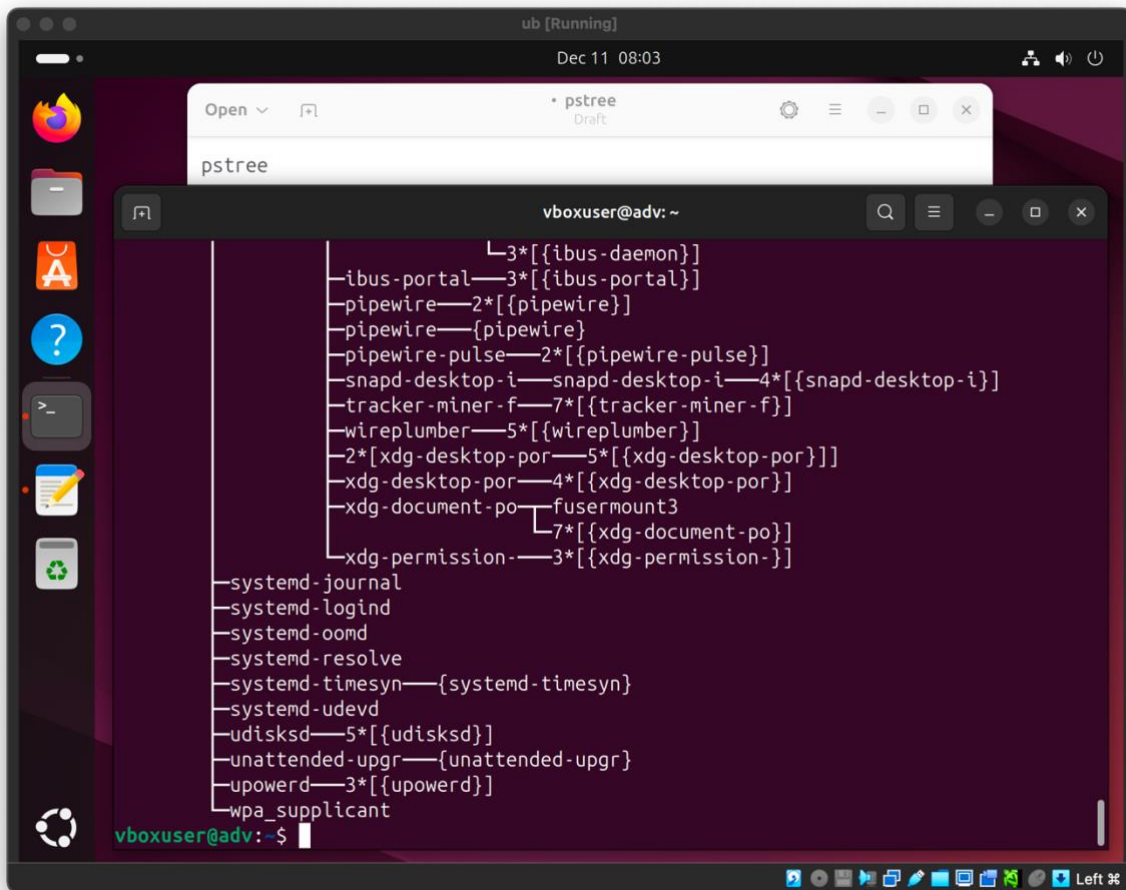


1. Вывести список всех процессов системы :



```
ub [Running]
Dec 11 08:00
Open ▾ [?] * ps aux Draft
ps aux
vboxuser@adv: ~
vboxuser 2418 0.0 0.5 399756 8756 ? S 07:49 0:00 /usr/libexec/
vboxuser 2433 0.0 0.3 319532 6248 ? Ss 07:49 0:00 /usr/libexec/
vboxuser 2447 0.0 0.3 320840 6580 ? Ss 07:49 0:00 /usr/libexec/
vboxuser 2456 0.0 0.3 319312 6212 ? Ss 07:49 0:00 /usr/libexec/
vboxuser 2461 0.0 0.4 400580 7652 ? Ss 07:49 0:00 /usr/libexec/
vboxuser 2480 0.0 0.4 246468 7072 ? S 07:49 0:00 /usr/libexec/
vboxuser 2486 0.0 0.3 230872 5392 ? Ss 07:49 0:00 /usr/libexec/
vboxuser 2512 0.0 0.5 619800 8372 ? S 07:49 0:00 /usr/libexec/
vboxuser 2595 0.0 0.9 649264 16464 ? Ss 07:49 0:00 /usr/libexec/
vboxuser 2609 0.0 0.5 41404 9812 ? Ss 07:49 0:00 /snap/snapd-d
vboxuser 2653 0.0 1.7 435460 29772 ? S 07:49 0:00 /snap/snapd-d
vboxuser 2657 0.0 1.6 2542216 26772 ? S 07:49 0:00 /usr/bin/gjs
vboxuser 2678 0.0 1.6 682656 28424 ? Ss 07:49 0:00 /usr/libexec/
vboxuser 2679 0.0 5.1 736504 85828 ? Ss 07:49 0:00 /usr/libexec/
vboxuser 2687 0.1 4.0 2773852 67184 ? S 07:49 0:00 gjs /usr/shar
vboxuser 2707 0.0 1.4 429140 24540 ? Ss 07:49 0:00 /usr/libexec/
vboxuser 2721 0.0 0.3 246040 6064 ? Ss 07:49 0:00 /usr/libexec/
vboxuser 2788 0.0 1.4 504016 24968 ? S 07:50 0:00 /usr/bin/upda
vboxuser 2854 0.7 3.5 582872 59532 ? Ss 07:53 0:00 /usr/libexec/
vboxuser 2862 0.0 0.3 20016 5320 pts/0 Ss 07:53 0:00 bash
root 2880 0.0 0.0 0 0 ? I 07:54 0:00 [kworker/0:1]
vboxuser 2883 8.2 15.7 1167296 263472 ? S 07:54 0:03 /usr/bin/gnom
vboxuser 2911 0.0 0.2 19644 3708 pts/0 R+ 07:55 0:00 ps aux
vboxuser@adv:~$
```

2. Вывести дерево процессов.

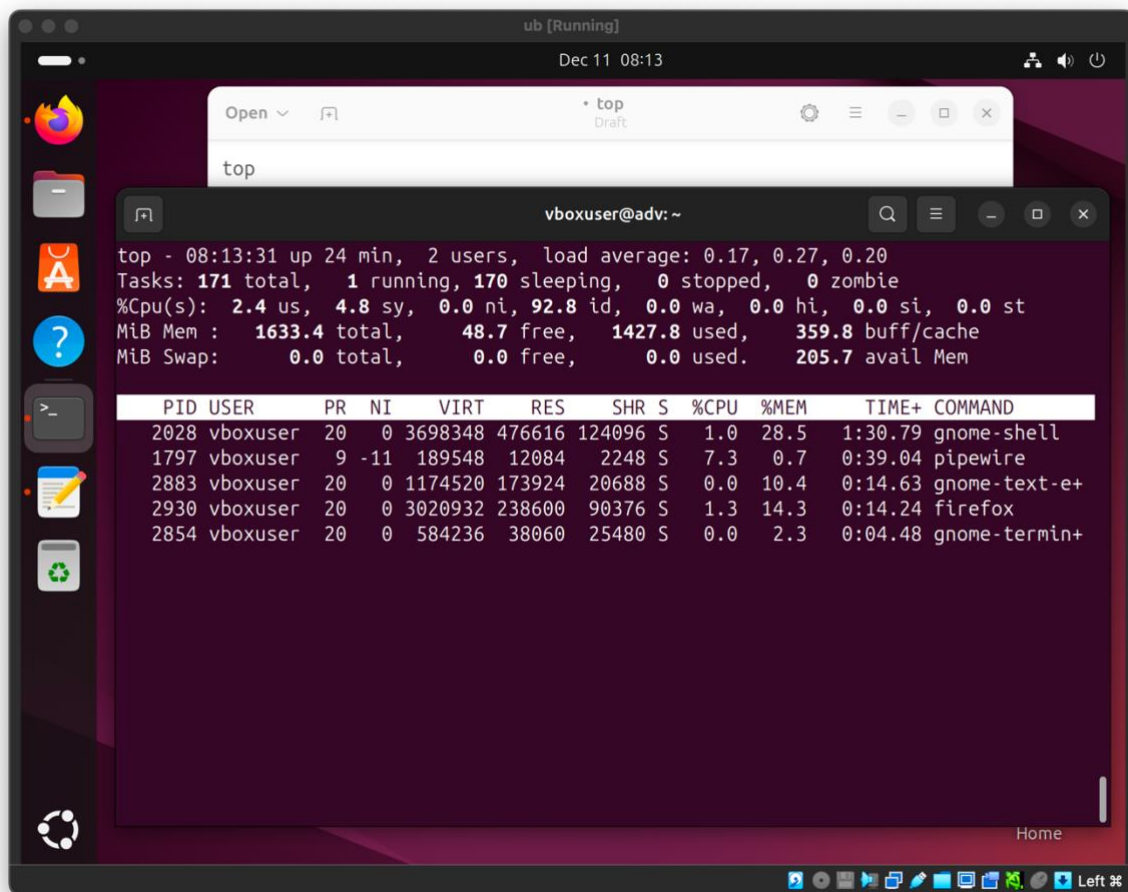


```
ub [Running]
Dec 11 08:03
Open ▾
• pstree
Draft
pstree

vboxuser@adv: ~
├── 3*[{ibus-daemon}]
├── ibus-portal──3*[{ibus-portal}]
├── pipewire──2*[{pipewire}]
├── pipewire──{pipewire}
├── pipewire-pulse──2*[{pipewire-pulse}]
├── snapd-desktop-i──snapd-desktop-i──4*[{snapd-desktop-i}]
├── tracker-miner-f──7*[{tracker-miner-f}]
├── wireplumber──5*[{wireplumber}]
├── 2*[xdg-desktop-por──5*[{xdg-desktop-por}]]
├── xdg-desktop-por──4*[{xdg-desktop-por}]
├── xdg-document-po──fusermount3
│   └── 7*[{xdg-document-po}]
├── xdg-permission-──3*[{xdg-permission-}]
├── systemd-journal
├── systemd-logind
├── systemd-oomd
├── systemd-resolve
├── systemd-timesyn──{systemd-timesyn}
├── systemd-udev
├── udisksd──5*[{udisksd}]
├── unattended-upgr──{unattended-upgr}
├── upowerd──3*[{upowerd}]
└── wpa_supplicant

vboxuser@adv:~$
```

3. С помощью команды `top` получить список 5 процессов, потребляющих наибольшее количество процессорного времени.



4. Найти 2 процесса, имеющих более ДВУХ потоков. Использовать состояние процесса
- Отсортировали:

```
ub [Running]
Dec 11 08:20

Open ▾ | sudo apt install htop
Draft

sudo apt install htop

vboxuser@adv: ~

CPU[|||||] 11.0% Tasks: 111, 449 thr, 62 kthr; 1 running
Mem[|||||] 1.33G/1.60G Load average: 0.21 0.19 0.18
Swp[|||||] 0K/0K Uptime: 00:31:32

Main I/O
PID USER PRI NI VIRT RES SHR S CPU% MEM% TIME+ Command
1832 vboxuser -21 0 189M 14920 2268 S 5.2 0.9 1:06.45 /usr/bin/pipewire
3991 vboxuser 20 0 19836 2856 1448 R 3.9 0.2 0:05.39 htop
2028 vboxuser 20 0 3610M 430M 90092 S 1.9 26.4 1:46.71 /usr/bin/gnome-shell
3721 vboxuser 20 0 2433M 47952 16020 S 0.6 2.9 0:00.02 /snap/firefox/5434/u
1 root 20 0 24004 8976 4240 S 0.0 0.5 0:00.90 /sbin/init splash
245 root 19 -1 58500 10404 8996 S 0.0 0.6 0:00.71 /usr/lib/systemd/sys
300 root 20 0 31996 4364 652 S 0.0 0.3 0:00.11 /usr/lib/systemd/sys
761 systemd-oo 20 0 16868 2380 1612 S 0.0 0.1 0:00.81 /usr/lib/systemd/sys
764 systemd-re 20 0 21688 5316 2884 S 0.0 0.3 0:00.15 /usr/lib/systemd/sys
771 systemd-ti 20 0 90532 1940 1044 S 0.0 0.1 0:00.06 /usr/lib/systemd/sys
822 systemd-ti 20 0 90532 1940 1044 S 0.0 0.1 0:00.00 /usr/lib/systemd/sys
903 avahi 20 0 6228 928 672 S 0.0 0.1 0:00.06 avahi-daemon: runnin
904 messagebus 20 0 9900 3520 960 S 0.0 0.2 0:00.38 @dbus-daemon --syste
908 gnome-remo 20 0 508M 2504 200 S 0.0 0.1 0:00.01 /usr/libexec/gnome-r
910 polkitd 20 0 374M 4316 1076 S 0.0 0.3 0:00.18 /usr/lib/polkit-1/po

F1Help F2Setup F3Search F4Filter F5Tree F6SortBy F7Nice F8Nice F9Kill F10Quit
```

Сами процессы:

```
ub [Running]
Dec 11 08:29

Open ▾ | ps o thcount 2028 ps
Draft

ps o thcount 2028
ps o thcount 3255

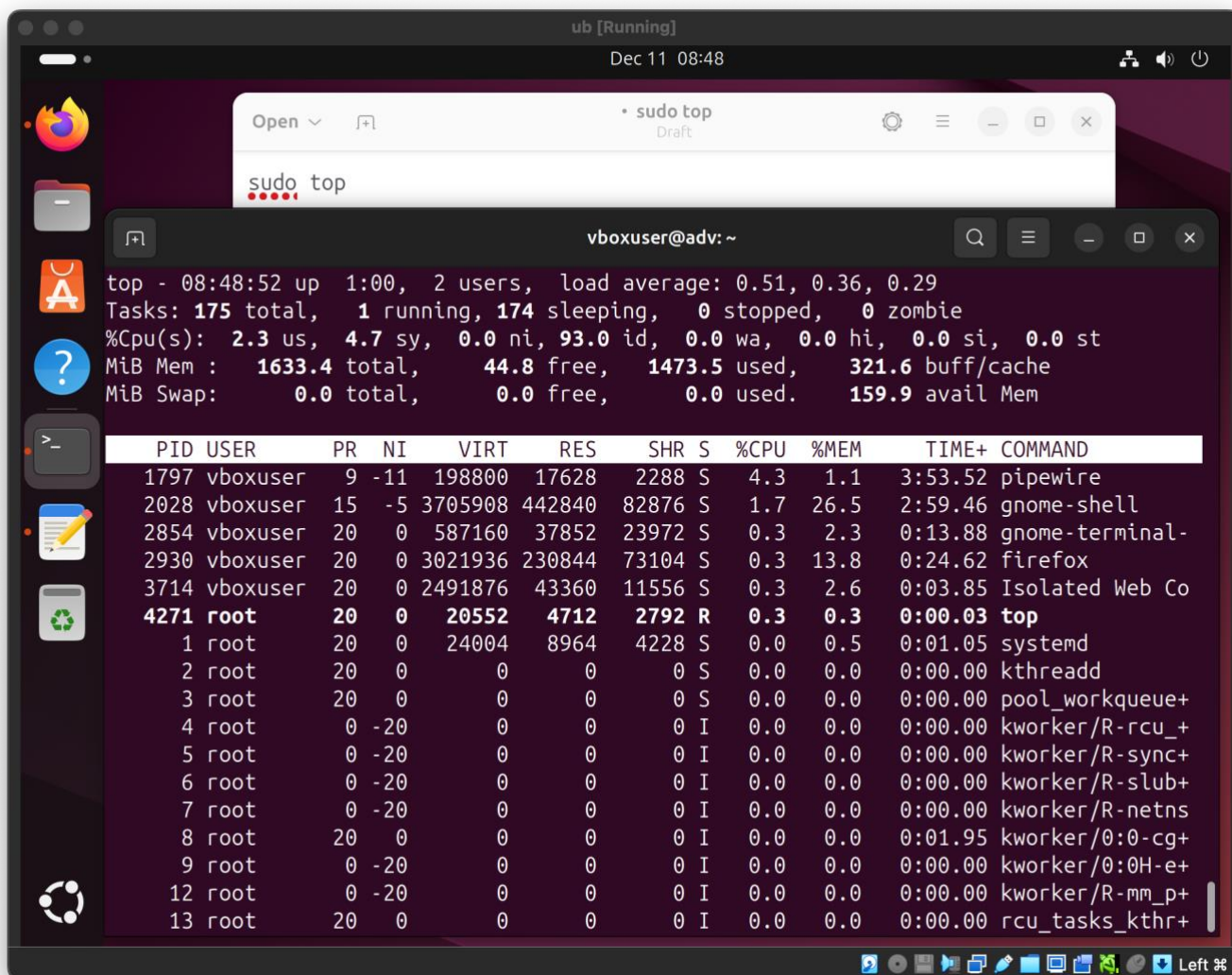
vboxuser@adv: ~

[171 kB]
Fetched 171 kB in 0s (362 kB/s)
Selecting previously unselected package htop.
(Reading database ... 154786 files and directories currently installed.)
Preparing to unpack .../htop_3.3.0-4build1_arm64.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 (0.18-1) ...
Processing triggers for gnome-menus (3.36.0-1ubuntu3) ...
Processing triggers for man-db (2.12.1-3) ...
vboxuser@adv:~$ htop
vboxuser@adv:~$ ps -o thcount 3991
THCNT
vboxuser@adv:~$ ps -o thcount 2028
THCNT
13
vboxuser@adv:~$ ps -o thcount 3991
THCNT
vboxuser@adv:~$ ps -o thcount 3255
THCNT
16
vboxuser@adv:~$
```



5. Используя команду `top`, изменить приоритеты 2 процессов.

До:



```
top - 08:48:52 up 1:00, 2 users, load average: 0.51, 0.36, 0.29
Tasks: 175 total, 1 running, 174 sleeping, 0 stopped, 0 zombie
%Cpu(s): 2.3 us, 4.7 sy, 0.0 ni, 93.0 id, 0.0 wa, 0.0 hi, 0.0 si, 0.0 st
MiB Mem : 1633.4 total, 44.8 free, 1473.5 used, 321.6 buff/cache
MiB Swap: 0.0 total, 0.0 free, 0.0 used. 159.9 avail Mem

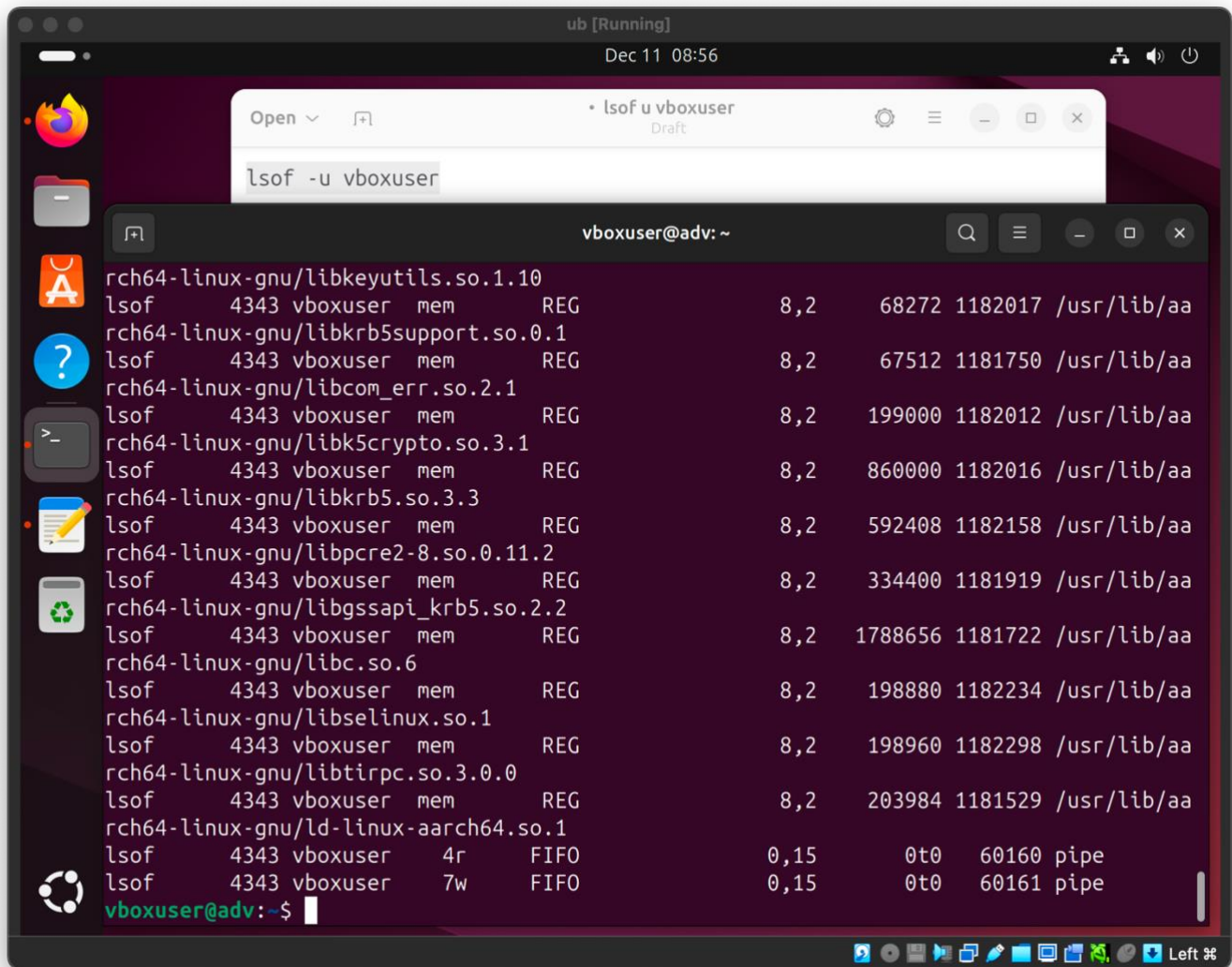
  PID USER      PR  NI   VIRT   RES   SHR  S  %CPU  %MEM    TIME+  COMMAND
 1797 vboxuser   9  -11  198800  17628  2288  S   4.3   1.1   3:53.52 pipewire
 2028 vboxuser  15   -5 3705908 442840 82876  S   1.7  26.5   2:59.46 gnome-shell
 2854 vboxuser  20    0  587160  37852 23972  S   0.3   2.3   0:13.88 gnome-terminal-
 2930 vboxuser  20    0 3021936 230844 73104  S   0.3  13.8   0:24.62 firefox
 3714 vboxuser  20    0 2491876  43360 11556  S   0.3   2.6   0:03.85 Isolated Web Co
 4271 root      20    0   20552   4712   2792  R   0.3   0.3   0:00.03 top
     1 root      20    0    24004   8964   4228  S   0.0   0.5   0:01.05 systemd
     2 root      20    0         0         0         0  S   0.0   0.0   0:00.00 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_+
     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
     8 root      20    0         0         0         0  I   0.0   0.0   0:01.95 kworker/0:0-cg+
     9 root       0  -20         0         0         0  I   0.0   0.0   0:00.00 kworker/0:0H-e+
    12 root       0  -20         0         0         0  I   0.0   0.0   0:00.00 kworker/R-mm_p+
    13 root      20    0         0         0         0  I   0.0   0.0   0:00.00 rcu_tasks_kthr+
```

После: приоритизировали Firefox и gnome-shell

```
top - 08:53:50 up 1:04, 2 users, load average: 0.57, 0.39, 0.30
Tasks: 173 total, 1 running, 172 sleeping, 0 stopped, 0 zombie
%Cpu(s): 1.7 us, 8.7 sy, 0.0 ni, 89.5 id, 0.0 wa, 0.0 hi, 0.0 si, 0.0 st
MiB Mem : 1633.4 total, 51.4 free, 1474.6 used, 313.8 buff/cache
MiB Swap: 0.0 total, 0.0 free, 0.0 used. 158.8 avail Mem
```

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
1797	vboxuser	9	-11	198800	17628	2288	S	12.0	1.1	4:24.94	pipewire
2028	vboxuser	10	-10	3705908	442012	82236	S	0.7	26.4	3:07.10	gnome-shell
30	root	20	0	0	0	0	S	0.3	0.0	0:00.53	kcompactd0
956	root	20	0	348560	6424	3480	S	0.3	0.4	0:00.56	NetworkManager
2854	vboxuser	20	0	587160	36316	22436	S	0.3	2.2	0:15.09	gnome-terminal-
2930	vboxuser	5	-15	3021936	227316	68368	S	0.3	13.6	0:26.09	firefox
3714	vboxuser	20	0	2491896	42592	10660	S	0.3	2.5	0:04.13	Isolated Web Co
1	root	20	0	24004	8976	4240	S	0.0	0.5	0:01.10	systemd
2	root	20	0	0	0	0	S	0.0	0.0	0:00.00	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_+
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
8	root	20	0	0	0	0	I	0.0	0.0	0:02.16	kworker/0:0-ev+
9	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworker/0:0H-e+
12	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworker/R-mm_p+

6. Получить список открытых файлов пользователя aa (vboxuser)

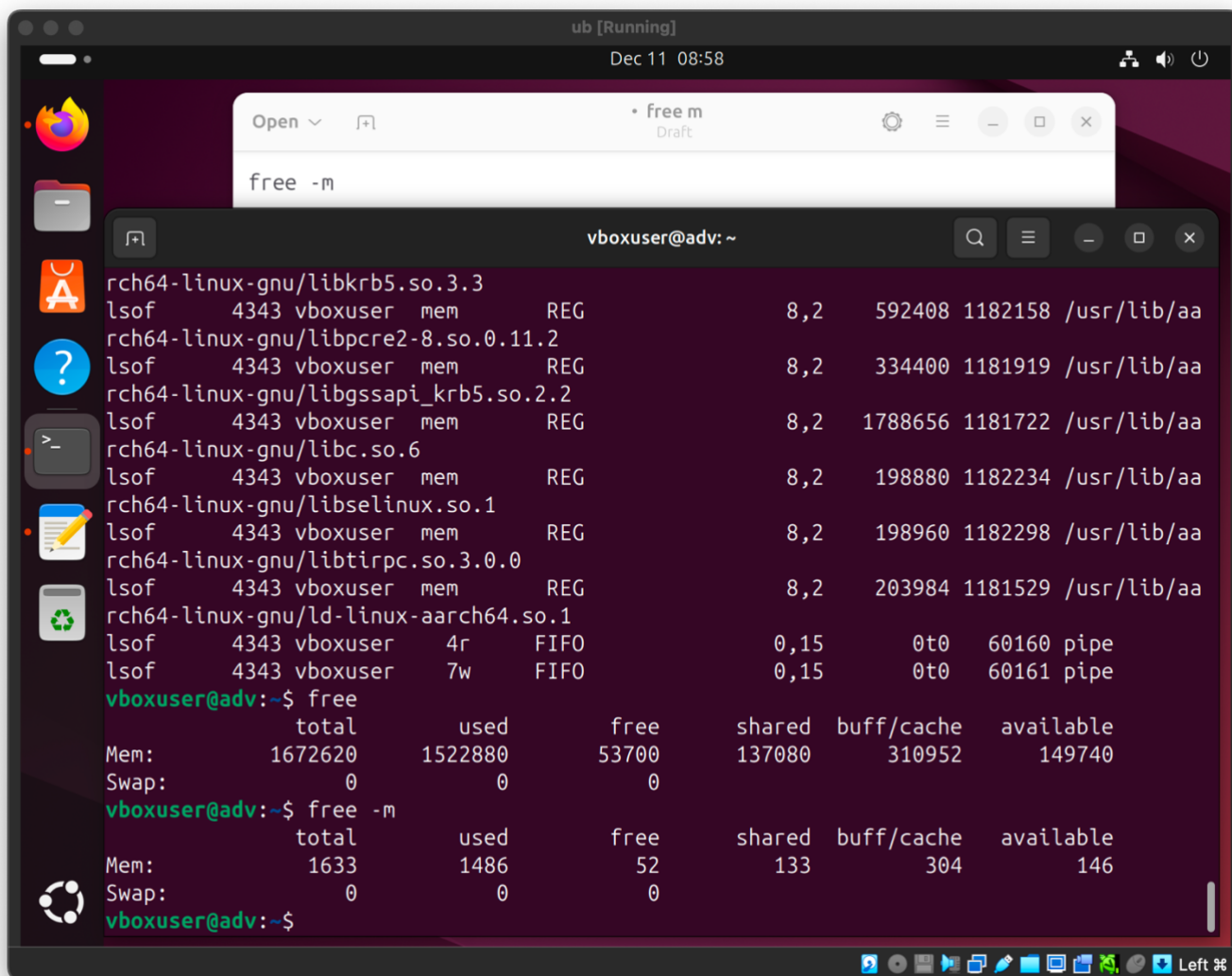


```
ub [Running]
Dec 11 08:56
Open ▾ ⓘ • lsof u vboxuser
Draft
lsof -u vboxuser

vboxuser@adv: ~
rch64-linux-gnu/libkeyutils.so.1.10
lsof 4343 vboxuser mem REG 8,2 68272 1182017 /usr/lib/aa
rch64-linux-gnu/libkrb5support.so.0.1
lsof 4343 vboxuser mem REG 8,2 67512 1181750 /usr/lib/aa
rch64-linux-gnu/libcom_err.so.2.1
lsof 4343 vboxuser mem REG 8,2 199000 1182012 /usr/lib/aa
rch64-linux-gnu/libk5crypto.so.3.1
lsof 4343 vboxuser mem REG 8,2 860000 1182016 /usr/lib/aa
rch64-linux-gnu/libkrb5.so.3.3
lsof 4343 vboxuser mem REG 8,2 592408 1182158 /usr/lib/aa
rch64-linux-gnu/libpcre2-8.so.0.11.2
lsof 4343 vboxuser mem REG 8,2 334400 1181919 /usr/lib/aa
rch64-linux-gnu/libgssapi_krb5.so.2.2
lsof 4343 vboxuser mem REG 8,2 1788656 1181722 /usr/lib/aa
rch64-linux-gnu/libc.so.6
lsof 4343 vboxuser mem REG 8,2 198880 1182234 /usr/lib/aa
rch64-linux-gnu/libselinux.so.1
lsof 4343 vboxuser mem REG 8,2 198960 1182298 /usr/lib/aa
rch64-linux-gnu/libtirpc.so.3.0.0
lsof 4343 vboxuser mem REG 8,2 203984 1181529 /usr/lib/aa
rch64-linux-gnu/ld-linux-aarch64.so.1
lsof 4343 vboxuser 4r FIFO 0,15 0t0 60160 pipe
lsof 4343 vboxuser 7w FIFO 0,15 0t0 60161 pipe
vboxuser@adv:~$
```

7. Получить текущее состояние системной памяти

Память заканчивается.....



8. Получить справку об использовании дискового пространства.



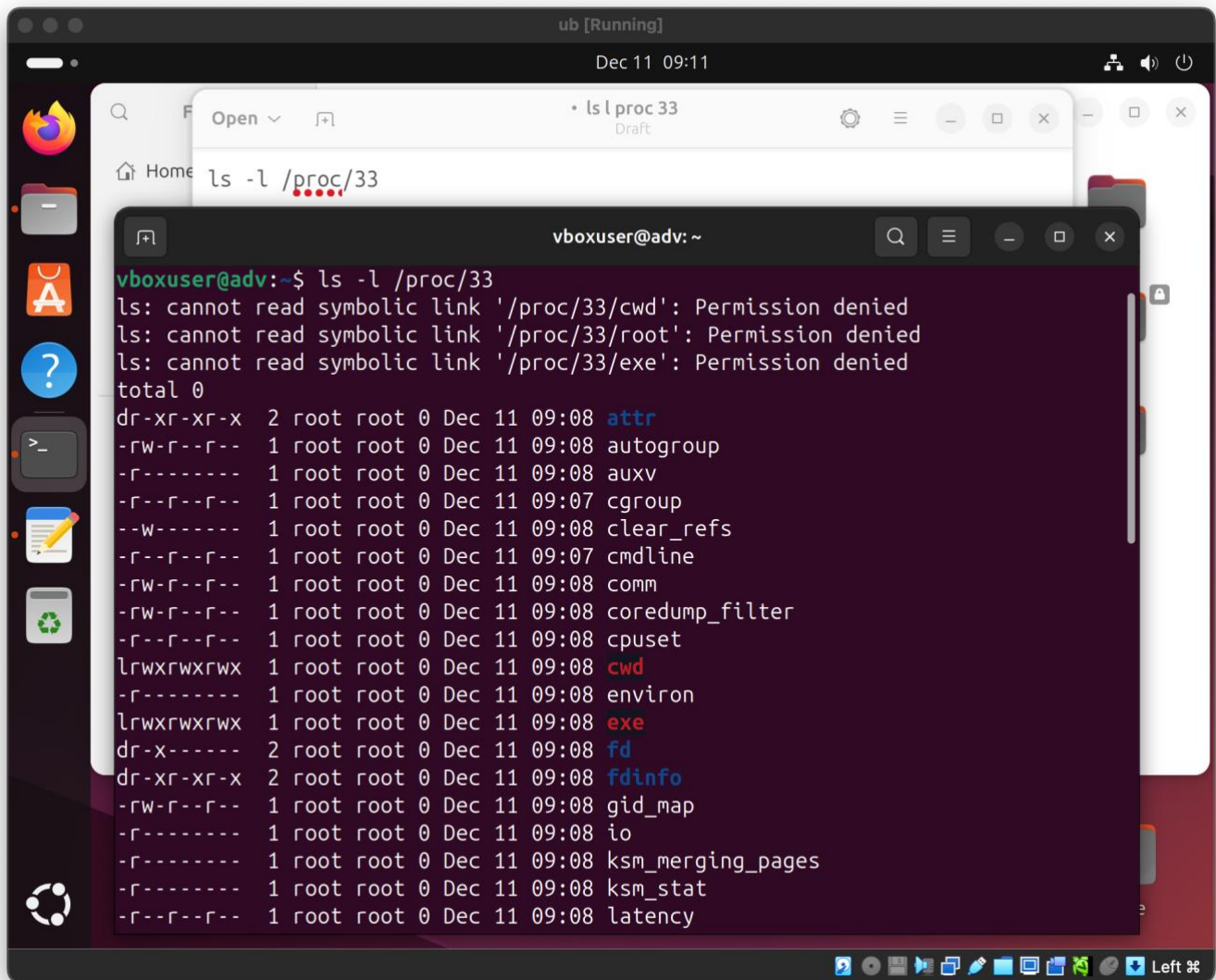
Его много::

The screenshot shows a Linux desktop environment with a dark theme. A terminal window is open, displaying the output of the 'df -h' command. The output is as follows:

```
Mem:          1633      1486         52       133       304       146
Swap:           0           0           0
vboxuser@adv:~$ df -h
Filesystem      Size  Used Avail Use% Mounted on
tmpfs           164M   1.6M  162M   1% /run
/dev/sda2       24G   6.4G   16G  29% /
tmpfs           817M     0   817M   0% /dev/shm
efivarfs        256K   13K  244K   5% /sys/firmware/efi/efivars
tmpfs           5.0M   8.0K   5.0M   1% /run/lock
tmpfs           817M   3.9M   813M   1% /tmp
tmpfs           1.0M     0    1.0M   0% /run/credentials/systemd-journald.service
tmpfs           1.0M     0    1.0M   0% /run/credentials/systemd-udev-load-credentials.se
rvice
tmpfs           1.0M     0    1.0M   0% /run/credentials/systemd-sysctl.service
tmpfs           1.0M     0    1.0M   0% /run/credentials/systemd-tmpfiles-setup-dev-early
.service
tmpfs           1.0M     0    1.0M   0% /run/credentials/systemd-tmpfiles-setup-dev.servi
ce
/dev/sda1       1.1G   6.4M   1.1G   1% /boot/efi
tmpfs           1.0M     0    1.0M   0% /run/credentials/systemd-tmpfiles-setup.service
tmpfs           1.0M     0    1.0M   0% /run/credentials/systemd-resolved.service
tmpfs          164M  120K  164M   1% /run/user/1000
```

The terminal window title is 'vboxuser@adv: ~'. The desktop background is dark purple. The taskbar at the bottom contains several icons, including a terminal, a file manager, and a web browser. The system clock in the top right corner shows 'Dec 11 09:00'.

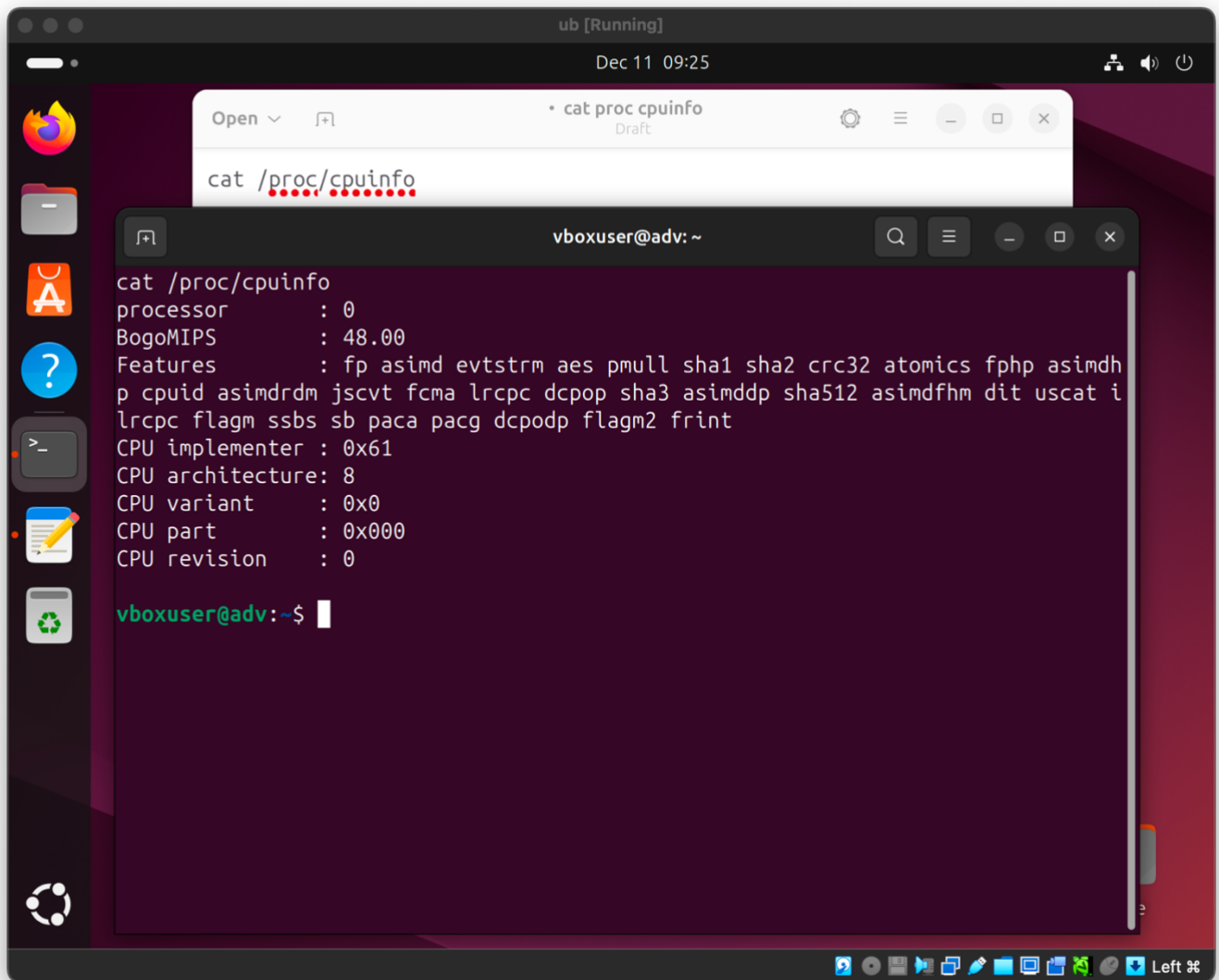
9. Вывести информацию о каком-либо процессе, используя содержимое каталога /proc



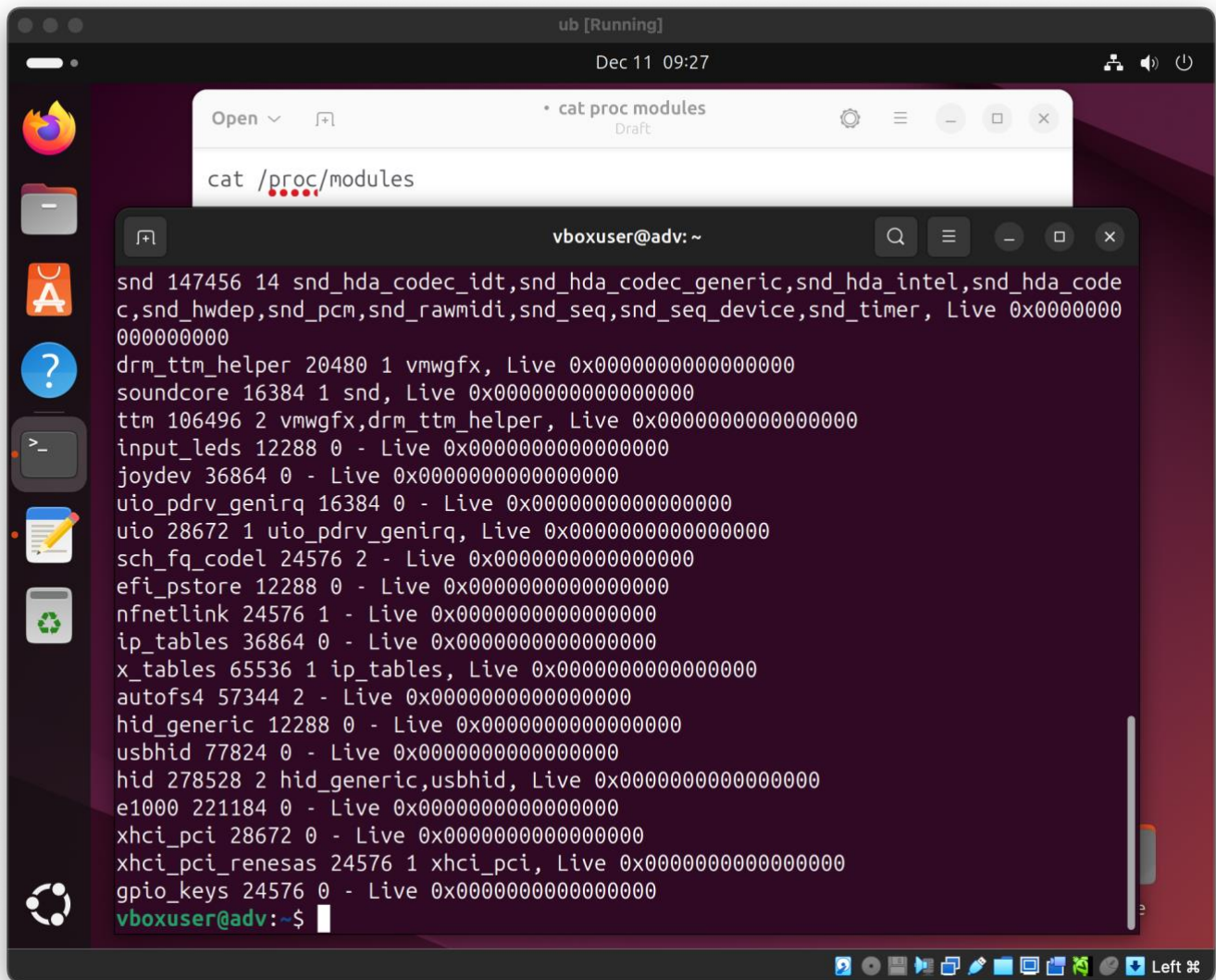
```
vboxuser@adv: ~  
vboxuser@adv:~$ ls -l /proc/33  
ls: cannot read symbolic link '/proc/33/cwd': Permission denied  
ls: cannot read symbolic link '/proc/33/root': Permission denied  
ls: cannot read symbolic link '/proc/33/exe': Permission denied  
total 0  
dr-xr-xr-x 2 root root 0 Dec 11 09:08 attr  
-rw-r--r-- 1 root root 0 Dec 11 09:08 autogroup  
-r----- 1 root root 0 Dec 11 09:08 auxv  
-r--r--r-- 1 root root 0 Dec 11 09:07 cgroup  
--w----- 1 root root 0 Dec 11 09:08 clear_refs  
-r--r--r-- 1 root root 0 Dec 11 09:07 cmdline  
-rw-r--r-- 1 root root 0 Dec 11 09:08 comm  
-rw-r--r-- 1 root root 0 Dec 11 09:08 coredump_filter  
-r--r--r-- 1 root root 0 Dec 11 09:08 cpuset  
lrwxrwxrwx 1 root root 0 Dec 11 09:08 cwd  
-r----- 1 root root 0 Dec 11 09:08 environ  
lrwxrwxrwx 1 root root 0 Dec 11 09:08 exe  
dr-x----- 2 root root 0 Dec 11 09:08 fd  
dr-xr-xr-x 2 root root 0 Dec 11 09:08 fdinfo  
-rw-r--r-- 1 root root 0 Dec 11 09:08 gid_map  
-r----- 1 root root 0 Dec 11 09:08 io  
-r----- 1 root root 0 Dec 11 09:08 ksm_merging_pages  
-r----- 1 root root 0 Dec 11 09:08 ksm_stat  
-r--r--r-- 1 root root 0 Dec 11 09:08 latency
```

10. Вывести информацию о процессоре ПК, используя содержимое каталога /proc

У процессора 8 ядер



11. Вывести список модулей, используемых в настоящий момент ядром ОС.



The screenshot shows a Linux desktop environment with a dark theme. A terminal window is open, displaying the output of the command `cat /proc/modules`. The output lists various kernel modules and their status (Live or Unloaded). A draft window titled "cat proc modules" is also visible in the background.

```
ub [Running]
Dec 11 09:27
Open ▾ [+] • cat proc modules
Draft
cat /proc/modules

vboxuser@adv: ~
snd 147456 14 snd_hda_codec_idt,snd_hda_codec_generic,snd_hda_intel,snd_hda_code
c,snd_hwdep,snd_pcm,snd_rawmidi,snd_seq,snd_seq_device,snd_timer, Live 0x00000000
0000000000
drm_ttm_helper 20480 1 vmwgfx, Live 0x0000000000000000
soundcore 16384 1 snd, Live 0x0000000000000000
ttm 106496 2 vmwgfx,drm_ttm_helper, Live 0x0000000000000000
input_leds 12288 0 - Live 0x0000000000000000
joydev 36864 0 - Live 0x0000000000000000
uio_pdrv_genirq 16384 0 - Live 0x0000000000000000
uio 28672 1 uio_pdrv_genirq, Live 0x0000000000000000
sch_fq_codel 24576 2 - Live 0x0000000000000000
efi_pstore 12288 0 - Live 0x0000000000000000
nfnetlink 24576 1 - Live 0x0000000000000000
ip_tables 36864 0 - Live 0x0000000000000000
x_tables 65536 1 ip_tables, Live 0x0000000000000000
autofs4 57344 2 - Live 0x0000000000000000
hid_generic 12288 0 - Live 0x0000000000000000
usbhid 77824 0 - Live 0x0000000000000000
hid 278528 2 hid_generic,usbhid, Live 0x0000000000000000
e1000 221184 0 - Live 0x0000000000000000
xhci_pci 28672 0 - Live 0x0000000000000000
xhci_pci_renesas 24576 1 xhci_pci, Live 0x0000000000000000
gpio_keys 24576 0 - Live 0x0000000000000000
vboxuser@adv:~$
```

И с помощью команды:



