# Operációs rendszerek BSc

## 4. Gyak.

### 2022. 03. 01.

**Készítette:**

Dávid Rebeka
Programtervező informatikus
EQ4B3D

## Linux

**a,** Kérdezze le a futó processzek listáját terhelés szerint! Monitorozza a terhelést folyamatosan!

```
top - 14:54:09 up 3 min,  1 user,  load average: 0,09, 0,31, 0,16
Tasks: 183 total,   1 running, 182 sleeping,   0 stopped,   0 zombie
%Cpu(s):  0,1 us,  0,2 sy,  0,0 ni, 99,7 id,  0,0 wa,  0,0 hi,  0,0 si,  0,0 st
MiB Mem :   4427,5 total,   3078,6 free,    618,7 used,    730,2 buff/cache
MiB Swap:    923,3 total,    923,3 free,      0,0 used.   3571,9 avail Mem

  PID USER      PR  NI    VIRT    RES    SHR S  %CPU  %MEM     TIME+ COMMAND
  873 root      20   0  383936  83468  48348 S   1,0   1,8   0:01.37 Xorg
   93 root      20   0       0      0      0 I   0,3   0,0   0:00.03 kworker/u6:1-events_freezable_power_
 1259 davidre+  20   0 3821696 159996  94012 S   0,3   3,5   0:02.12 cinnamon
 1481 davidre+  20   0  468448  40572  31240 S   0,3   0,9   0:00.37 gnome-terminal-
    1 root      20   0  101728  11280   8332 S   0,0   0,2   0:00.79 systemd
    2 root      20   0       0      0      0 S   0,0   0,0   0:00.00 kthreadd
    3 root       0 -20       0      0      0 I   0,0   0,0   0:00.00 rcu_gp
    4 root       0 -20       0      0      0 I   0,0   0,0   0:00.00 rcu_par_gp
    5 root      20   0       0      0      0 I   0,0   0,0   0:00.00 kworker/0:0-events
    6 root       0 -20       0      0      0 I   0,0   0,0   0:00.00 kworker/0:0H-kblockd
    7 root      20   0       0      0      0 I   0,0   0,0   0:00.01 kworker/0:1-cgroup_destroy
    8 root      20   0       0      0      0 I   0,0   0,0   0:00.00 kworker/u6:0-events_unbound
    9 root       0 -20       0      0      0 I   0,0   0,0   0:00.00 mm_percpu_wq
   10 root      20   0       0      0      0 S   0,0   0,0   0:00.01 ksoftirqd/0
   11 root      20   0       0      0      0 I   0,0   0,0   0:00.05 rcu_sched
   12 root      rt   0       0      0      0 S   0,0   0,0   0:00.00 migration/0
   13 root     -51   0       0      0      0 S   0,0   0,0   0:00.00 idle_inject/0
   14 root      20   0       0      0      0 S   0,0   0,0   0:00.00 cpuhp/0
   15 root      20   0       0      0      0 S   0,0   0,0   0:00.00 cpuhp/1
   16 root     -51   0       0      0      0 S   0,0   0,0   0:00.00 idle_inject/1
   17 root      rt   0       0      0      0 S   0,0   0,0   0:00.26 migration/1
   18 root      20   0       0      0      0 S   0,0   0,0   0:00.01 ksoftirqd/1
   19 root      20   0       0      0      0 I   0,0   0,0   0:00.00 kworker/1:0-events
   20 root       0 -20       0      0      0 I   0,0   0,0   0:00.00 kworker/1:0H
   21 root      20   0       0      0      0 S   0,0   0,0   0:00.00 cpuhp/2
   22 root     -51   0       0      0      0 S   0,0   0,0   0:00.00 idle_inject/2
   23 root      rt   0       0      0      0 S   0,0   0,0   0:00.27 migration/2
   24 root      20   0       0      0      0 S   0,0   0,0   0:00.01 ksoftirqd/2
   25 root      20   0       0      0      0 I   0,0   0,0   0:00.00 kworker/2:0-ata_sff
   26 root       0 -20       0      0      0 I   0,0   0,0   0:00.00 kworker/2:0H-kblockd
   27 root      20   0       0      0      0 S   0,0   0,0   0:00.00 kdevtmpfs
   28 root       0 -20       0      0      0 I   0,0   0,0   0:00.00 netns
   29 root      20   0       0      0      0 S   0,0   0,0   0:00.00 rcu_tasks_kthre
   30 root      20   0       0      0      0 S   0,0   0,0   0:00.00 kauditd
   31 root      20   0       0      0      0 I   0,0   0,0   0:00.02 kworker/1:1-events
   32 root      20   0       0      0      0 S   0,0   0,0   0:00.00 khungtaskd
   33 root      20   0       0      0      0 S   0,0   0,0   0:00.00 oom_reaper
   34 root       0 -20       0      0      0 I   0,0   0,0   0:00.00 writeback
   35 root      20   0       0      0      0 S   0,0   0,0   0:00.00 kcompactd0
   36 root      25   5       0      0      0 S   0,0   0,0   0:00.00 ksmd
   37 root      39  19       0      0      0 S   0,0   0,0   0:00.00 khugepaged
   75 root      20   0       0      0      0 I   0,0   0,0   0:00.01 kworker/2:1-events
```

**b,** ) Kérdezze le a rendszer aktivitásról és a hardverről az információkat (a jelentések a folyamatokra, memóriára, blokk input/outputra, CPU tevékenységre és trap-re vonatkoznak.)

```
davidrebeka@davidrebeka-VirtualBox:~$ vmstat 3
procs -----------memory---------- ---swap-- -----io---- -system-- ------cpu-----
 r  b   swpd   free   buff  cache   si   so    bi    bo   in   cs us sy id wa st
 0  0      0 3151528  47056 701164    0    0   560    22  162  285  1  1 98  0
 0
 0  0      0 3151572  47056 701212    0    0     0     0  371  522  0  0 100  0
 0
 0  0      0 3151572  47056 701212    0    0     0     0  377  455  0  0 100  0
 0
 0  0      0 3151572  47056 701212    0    0     0     0  247  161  0  0 100  0
 0
 0  0      0 3151572  47056 701212    0    0     0     0  235  156  0  0 100  0
 0
 0  0      0 3151572  47056 701212    0    0     0     0  238  167  0  0 100  0
 0
 0  0      0 3151572  47056 701212    0    0     0     0  246  172  0  0 100  0
 0
 0  0      0 3151572  47056 701212    0    0     0     0  267  183  0  0 100  0
 0
 0  0      0 3151572  47056 701212    0    0     0     0  244  172  0  0 100  0
 0
 0  0      0 3151572  47056 701212    0    0     0     3  224  159  0  0 100  0
 0
 0  0      0 3151572  47056 701212    0    0     0     0  334  379  0  0 100  0
davidrebeka@davidrebeka-VirtualBox:~$ vmstat -m
vmstat: your kernel does not support slabinfo or your permissions are insufficie
nt
davidrebeka@davidrebeka-VirtualBox:~$
davidrebeka@davidrebeka-VirtualBox:~$ vmstat -a
procs -----------memory---------- ---swap-- -----io---- -system-- ------cpu-----
 r  b   swpd   free  inact active   si   so    bi    bo   in   cs us sy id wa st
 0  0      0 3150792 484828 721060    0    0   379    15  140  228  1  0 99  0
 0
davidrebeka@davidrebeka-VirtualBox:~$
```

**c,** Kérdezze le ki van bejelentkezve a rendszerbe, és éppen mit csinál.

```
davidrebeka@davidrebeka-VirtualBox:~$ w
 15:01:08 up 10 min,  1 user,  load average: 0,28, 0,20, 0,16
USER     TTY      FROM             LOGIN@   IDLE   JCPU   PCPU WHAT
davidreb  tty7     :0               14:50   10:46   2.81s  0.25s cinnamon-sessio
davidrebeka@davidrebeka-VirtualBox:~$
```

**d,** Kérdezze le a szerver futásának kezdő idejét.

```
davidrebeka@davidrebeka-VirtualBox:~$ uname
Linux
davidrebeka@davidrebeka-VirtualBox:~$
```

**e,** Kérdezze le az összes processz kiválasztását!

```
davidrebeka@davidrebeka-VirtualBox:~$ ps -A
  PID TTY          TIME CMD
    1 ?        00:00:00 systemd
    2 ?        00:00:00 kthreadd
    3 ?        00:00:00 rcu_gp
    4 ?        00:00:00 rcu_par_gp
    6 ?        00:00:00 kworker/0:0H-kblockd
    7 ?        00:00:00 kworker/0:1-cgroup_destroy
    9 ?        00:00:00 mm_percpu_wq
   10 ?        00:00:00 ksoftirqd/0
   11 ?        00:00:00 rcu_sched
   12 ?        00:00:00 migration/0
   13 ?        00:00:00 idle_inject/0
   14 ?        00:00:00 cpuhp/0
   15 ?        00:00:00 cpuhp/1
   16 ?        00:00:00 idle_inject/1
   17 ?        00:00:00 migration/1
   18 ?        00:00:00 ksoftirqd/1
   20 ?        00:00:00 kworker/1:0H
   21 ?        00:00:00 cpuhp/2
   22 ?        00:00:00 idle_inject/2
   23 ?        00:00:00 migration/2
   24 ?        00:00:00 ksoftirqd/2
   26 ?        00:00:00 kworker/2:0H-kblockd
   27 ?        00:00:00 kdevtmpfs
   28 ?        00:00:00 netns
   29 ?        00:00:00 rcu_tasks_kthre
   30 ?        00:00:00 kauditd
   31 ?        00:00:00 kworker/1:1-events
   32 ?        00:00:00 khungtaskd
   33 ?        00:00:00 oom_reaper
   34 ?        00:00:00 writeback
   35 ?        00:00:00 kcompactd0
   36 ?        00:00:00 ksmd
   37 ?        00:00:00 khugepaged
   75 ?        00:00:00 kworker/2:1-events
   84 ?        00:00:00 kintegrityd
   85 ?        00:00:00 kblockd
   86 ?        00:00:00 blkcg_punt_bio
   87 ?        00:00:00 tpm_dev_wq
   88 ?        00:00:00 ata_sff
   89 ?        00:00:00 md
   90 ?        00:00:00 edac-poller
   91 ?        00:00:00 devfreq_wq
   92 ?        00:00:00 watchdogd
```

Kérdezze le az egyes processzek paramétereit!

```
davidrebeka@davidrebeka-VirtualBox:~$ ps -AlF
F S UID          PID    PPID  C PRI  NI ADDR SZ WCHAN    RSS PSR STIME TTY          TIME CMD
4 S root           1       0  0  80   0 - 25432 -        11280   0 14:50 ?        00:00:00 /sbin/init splash
1 S root           2       0  0  80   0 -     0 -            0   1 14:50 ?        00:00:00 [kthreadd]
1 I root           3       2  0  60 -20 -     0 -            0   0 14:50 ?        00:00:00 [rcu_gp]
1 I root           4       2  0  60 -20 -     0 -            0   0 14:50 ?        00:00:00 [rcu_par_gp]
1 I root           6       2  0  60 -20 -     0 -            0   0 14:50 ?        00:00:00 [kworker/0:0H-kblockd]
1 I root           7       2  0  80   0 -     0 -            0   0 14:50 ?        00:00:00 [kworker/0:1-events]
1 I root           9       2  0  60 -20 -     0 -            0   0 14:50 ?        00:00:00 [mm_percpu_wq]
1 S root          10       2  0  80   0 -     0 -            0   0 14:50 ?        00:00:00 [ksoftirqd/0]
1 I root          11       2  0  80   0 -     0 -            0   1 14:50 ?        00:00:00 [rcu_sched]
1 S root          12       2  0 -40   - -     0 -            0   0 14:50 ?        00:00:00 [migration/0]
5 S root          13       2  0   9   - -     0 -            0   0 14:50 ?        00:00:00 [idle_inject/0]
1 S root          14       2  0  80   0 -     0 -            0   0 14:50 ?        00:00:00 [cpuhp/0]
1 S root          15       2  0  80   0 -     0 -            0   1 14:50 ?        00:00:00 [cpuhp/1]
5 S root          16       2  0   9   - -     0 -            0   1 14:50 ?        00:00:00 [idle_inject/1]
1 S root          17       2  0 -40   - -     0 -            0   1 14:50 ?        00:00:00 [migration/1]
1 S root          18       2  0  80   0 -     0 -            0   1 14:50 ?        00:00:00 [ksoftirqd/1]
1 I root          20       2  0  60 -20 -     0 -            0   1 14:50 ?        00:00:00 [kworker/1:0H]
1 S root          21       2  0  80   0 -     0 -            0   2 14:50 ?        00:00:00 [cpuhp/2]
5 S root          22       2  0   9   - -     0 -            0   2 14:50 ?        00:00:00 [idle_inject/2]
1 S root          23       2  0 -40   - -     0 -            0   2 14:50 ?        00:00:00 [migration/2]
1 S root          24       2  0  80   0 -     0 -            0   2 14:50 ?        00:00:00 [ksoftirqd/2]
1 I root          26       2  0  60 -20 -     0 -            0   2 14:50 ?        00:00:00 [kworker/2:0H-kblockd]
5 S root          27       2  0  80   0 -     0 -            0   1 14:50 ?        00:00:00 [kdevtmpfs]
1 I root          28       2  0  60 -20 -     0 -            0   2 14:50 ?        00:00:00 [netns]
1 S root          29       2  0  80   0 -     0 -            0   2 14:50 ?        00:00:00 [rcu_tasks_kthre]
1 S root          30       2  0  80   0 -     0 -            0   1 14:50 ?        00:00:00 [kauditd]
1 I root          31       2  0  80   0 -     0 -            0   1 14:50 ?        00:00:00 [kworker/1:1-mm_percpu_wq]
1 S root          32       2  0  80   0 -     0 -            0   1 14:50 ?        00:00:00 [khungtaskd]
1 S root          33       2  0  80   0 -     0 -            0   1 14:50 ?        00:00:00 [oom_reaper]
1 I root          34       2  0  60 -20 -     0 -            0   1 14:50 ?        00:00:00 [writeback]
1 S root          35       2  0  80   0 -     0 -            0   1 14:50 ?        00:00:00 [kcompactd0]
1 S root          36       2  0  85   5 -     0 -            0   1 14:50 ?        00:00:00 [ksmd]
1 S root          37       2  0  99  19 -     0 -            0   1 14:50 ?        00:00:00 [khugepaged]
1 I root          75       2  0  80   0 -     0 -            0   2 14:50 ?        00:00:00 [kworker/2:1-events]
1 I root          84       2  0  60 -20 -     0 -            0   1 14:50 ?        00:00:00 [kintegrityd]
1 I root          85       2  0  60 -20 -     0 -            0   2 14:50 ?        00:00:00 [kblockd]
1 I root          86       2  0  60 -20 -     0 -            0   2 14:50 ?        00:00:00 [blkcg_punt_bio]
1 I root          87       2  0  60 -20 -     0 -            0   0 14:50 ?        00:00:00 [tpm_dev_wq]
1 I root          88       2  0  60 -20 -     0 -            0   1 14:50 ?        00:00:00 [ata_sff]
1 I root          89       2  0  60 -20 -     0 -            0   2 14:50 ?        00:00:00 [md]
1 I root          90       2  0  60 -20 -     0 -            0   2 14:50 ?        00:00:00 [edac-poller]
1 I root          91       2  0  60 -20 -     0 -            0   0 14:50 ?        00:00:00 [devfreq_wq]
1 S root          92       2  0 -40   - -     0 -            0   1 14:50 ?        00:00:00 [watchdogd]
1 S root          95       2  0  80   0 -     0 -            0   1 14:50 ?        00:00:00 [kswapd0]
```

Kérdezze le az egyes processzek szálait is!

```
davidrebeka@davidrebeka-VirtualBox:~$ ps -AlFH
F S UID      PID   PPID  C PRI  NI ADDR SZ WCHAN    RSS PSR STIME TTY        TIME CMD
1 S root       2      0  0  80   0 -     0 -          0   0 14:50 ?      00:00:00 [kthreadd]
1 I root       3      2  0  60 -20 -     0 -          0   0 14:50 ?      00:00:00  [rcu_gp]
1 I root       4      2  0  60 -20 -     0 -          0   0 14:50 ?      00:00:00  [rcu_par_gp]
1 I root       6      2  0  60 -20 -     0 -          0   0 14:50 ?      00:00:00  [kworker/0:0H-kblockd]
1 I root       7      2  0  80   0 -     0 -          0   0 14:50 ?      00:00:00  [kworker/0:1-events]
1 I root       9      2  0  60 -20 -     0 -          0   0 14:50 ?      00:00:00  [mm_percpu_wq]
1 S root      10      2  0  80   0 -     0 -          0   0 14:50 ?      00:00:00  [ksoftirqd/0]
1 I root      11      2  0  80   0 -     0 -          0   2 14:50 ?      00:00:00  [rcu_sched]
1 S root      12      2  0 -40   - -     0 -          0   0 14:50 ?      00:00:00  [migration/0]
5 S root      13      2  0   9   - -     0 -          0   0 14:50 ?      00:00:00  [idle_inject/0]
1 S root      14      2  0  80   0 -     0 -          0   0 14:50 ?      00:00:00  [cpuhp/0]
1 S root      15      2  0  80   0 -     0 -          0   1 14:50 ?      00:00:00  [cpuhp/1]
5 S root      16      2  0   9   - -     0 -          0   1 14:50 ?      00:00:00  [idle_inject/1]
1 S root      17      2  0 -40   - -     0 -          0   1 14:50 ?      00:00:00  [migration/1]
1 S root      18      2  0  80   0 -     0 -          0   1 14:50 ?      00:00:00  [ksoftirqd/1]
1 I root      20      2  0  60 -20 -     0 -          0   1 14:50 ?      00:00:00  [kworker/1:0H]
1 S root      21      2  0  80   0 -     0 -          0   2 14:50 ?      00:00:00  [cpuhp/2]
5 S root      22      2  0   9   - -     0 -          0   2 14:50 ?      00:00:00  [idle_inject/2]
1 S root      23      2  0 -40   - -     0 -          0   2 14:50 ?      00:00:00  [migration/2]
1 S root      24      2  0  80   0 -     0 -          0   2 14:50 ?      00:00:00  [ksoftirqd/2]
1 I root      26      2  0  60 -20 -     0 -          0   2 14:50 ?      00:00:00  [kworker/2:0H-kblockd]
5 S root      27      2  0  80   0 -     0 -          0   1 14:50 ?      00:00:00  [kdevtmpfs]
1 I root      28      2  0  60 -20 -     0 -          0   2 14:50 ?      00:00:00  [netns]
1 S root      29      2  0  80   0 -     0 -          0   2 14:50 ?      00:00:00  [rcu_tasks_kthre]
1 S root      30      2  0  80   0 -     0 -          0   2 14:50 ?      00:00:00  [kauditd]
1 I root      31      2  0  80   0 -     0 -          0   1 14:50 ?      00:00:00  [kworker/1:1-events]
1 S root      32      2  0  80   0 -     0 -          0   1 14:50 ?      00:00:00  [khungtaskd]
1 S root      33      2  0  80   0 -     0 -          0   1 14:50 ?      00:00:00  [oom_reaper]
1 I root      34      2  0  60 -20 -     0 -          0   1 14:50 ?      00:00:00  [writeback]
1 S root      35      2  0  80   0 -     0 -          0   1 14:50 ?      00:00:00  [kcompactd0]
1 S root      36      2  0  85   5 -     0 -          0   1 14:50 ?      00:00:00  [ksmd]
1 S root      37      2  0  99  19 -     0 -          0   1 14:50 ?      00:00:00  [khugepaged]
1 I root      75      2  0  80   0 -     0 -          0   2 14:50 ?      00:00:00  [kworker/2:1-events]
1 I root      84      2  0  60 -20 -     0 -          0   1 14:50 ?      00:00:00  [kintegrityd]
1 I root      85      2  0  60 -20 -     0 -          0   2 14:50 ?      00:00:00  [kblockd]
1 I root      86      2  0  60 -20 -     0 -          0   2 14:50 ?      00:00:00  [blkcg_punt_bio]
1 I root      87      2  0  60 -20 -     0 -          0   0 14:50 ?      00:00:00  [tpm_dev_wq]
1 I root      88      2  0  60 -20 -     0 -          0   1 14:50 ?      00:00:00  [ata_sff]
1 I root      89      2  0  60 -20 -     0 -          0   2 14:50 ?      00:00:00  [md]
1 I root      90      2  0  60 -20 -     0 -          0   2 14:50 ?      00:00:00  [edac-poller]
1 I root      91      2  0  60 -20 -     0 -          0   0 14:50 ?      00:00:00  [devfreq_wq]
1 S root      92      2  0 -40   - -     0 -          0   1 14:50 ?      00:00:00  [watchdogd]
1 S root      95      2  0  80   - -     0 -          0   1 14:50 ?      00:00:00  [kswapd0]
```

Kérdezze le a szerver összes processzeit!

```
davidrebeka@davidrebeka-VirtualBox:~$ ps ax
  PID TTY      STAT   TIME COMMAND
    1 ?        Ss     0:00 /sbin/init splash
    2 ?        S      0:00 [kthreadd]
    3 ?        I<     0:00 [rcu_gp]
    4 ?        I<     0:00 [rcu_par_gp]
    6 ?        I<     0:00 [kworker/0:0H-kblockd]
    9 ?        I<     0:00 [mm_percpu_wq]
   10 ?        S      0:00 [ksoftirqd/0]
   11 ?        I      0:00 [rcu_sched]
   12 ?        S      0:00 [migration/0]
   13 ?        S      0:00 [idle_inject/0]
   14 ?        S      0:00 [cpuhp/0]
   15 ?        S      0:00 [cpuhp/1]
   16 ?        S      0:00 [idle_inject/1]
   17 ?        S      0:00 [migration/1]
   18 ?        S      0:00 [ksoftirqd/1]
   20 ?        I<     0:00 [kworker/1:0H]
   21 ?        S      0:00 [cpuhp/2]
   22 ?        S      0:00 [idle_inject/2]
   23 ?        S      0:00 [migration/2]
   24 ?        S      0:00 [ksoftirqd/2]
   26 ?        I<     0:00 [kworker/2:0H-kblockd]
   27 ?        S      0:00 [kdevtmpfs]
   28 ?        I<     0:00 [netns]
   29 ?        S      0:00 [rcu_tasks_kthre]
   30 ?        S      0:00 [kauditd]
   31 ?        I      0:00 [kworker/1:1-events]
   32 ?        S      0:00 [khungtaskd]
   33 ?        S      0:00 [oom_reaper]
   34 ?        I<     0:00 [writeback]
   35 ?        S      0:00 [kcompactd0]
   36 ?        SN     0:00 [ksmd]
   37 ?        SN     0:00 [khugepaged]
   84 ?        I<     0:00 [kintegrityd]
   85 ?        I<     0:00 [kblockd]
   86 ?        I<     0:00 [blkcg_punt_bio]
   87 ?        I<     0:00 [tpm_dev_wq]
   88 ?        I<     0:00 [ata_sff]
   89 ?        I<     0:00 [md]
   90 ?        I<     0:00 [edac-poller]
   91 ?        I<     0:00 [devfreq_wq]
   92 ?        S      0:00 [watchdogd]
   95 ?        S      0:00 [kswapd0]
   96 ?        S      0:00 [ecryptfs-kthrea]
```

Kérdezze le a futó processzek listáját fa elrendezésben

```
davidrebeka@davidrebeka-VirtualBox:~$ pstree
systemd─┬─ModemManager───2*[{ModemManager}]
        ├─NetworkManager───2*[{NetworkManager}]
        ├─3*[VBoxClient───VBoxClient───2*[{VBoxClient}]]
        ├─VBoxClient───VBoxClient───3*[{VBoxClient}]
        ├─VBoxService───8*[{VBoxService}]
        ├─accounts-daemon───2*[{accounts-daemon}]
        ├─acpid
        ├─agetty
        ├─avahi-daemon───avahi-daemon
        ├─colord───2*[{colord}]
        ├─cron
        ├─csd-printer───2*[{csd-printer}]
        ├─cups-browsed───2*[{cups-browsed}]
        ├─cupsd───dbus
        ├─dbus-daemon
        ├─gnome-keyring-d───3*[{gnome-keyring-d}]
        ├─irqbalance───{irqbalance}
        ├─2*[kerneloops]
        ├─lightdm─┬─Xorg───{Xorg}
        │         └─lightdm───cinnamon-sessio─┬─agent───2*[{agent}]
        │                                      ├─applet.py
        │                                      ├─blueberry-obex-───3*[{blueberry-obex-}]
        │                                      ├─cinnamon-killer───3*[{cinnamon-killer}]
        │                                      ├─cinnamon-launch─┬─cinnamon───7*[{cinnamon}]
        │                                      │                 └─2*[{cinnamon-launch}]
        │                                      ├─cinnamon-screen───3*[{cinnamon-screen}]
        │                                      ├─csd-a11y-keyboa───3*[{csd-a11y-keyboa}]
        │                                      ├─csd-a11y-settin───3*[{csd-a11y-settin}]
        │                                      ├─csd-automount───3*[{csd-automount}]
        │                                      ├─csd-background───3*[{csd-background}]
        │                                      ├─csd-clipboard───2*[{csd-clipboard}]
        │                                      ├─csd-color───3*[{csd-color}]
        │                                      ├─csd-cursor───2*[{csd-cursor}]
        │                                      ├─csd-housekeepin───3*[{csd-housekeepin}]
        │                                      ├─csd-keyboard───3*[{csd-keyboard}]
        │                                      ├─csd-media-keys───3*[{csd-media-keys}]
        │                                      ├─csd-mouse───3*[{csd-mouse}]
        │                                      ├─csd-orientation───3*[{csd-orientation}]
        │                                      ├─csd-power───3*[{csd-power}]
        │                                      ├─csd-print-notif───2*[{csd-print-notif}]
        │                                      ├─csd-screensaver───2*[{csd-screensaver}]
        │                                      ├─csd-sound───4*[{csd-sound}]
        │                                      ├─csd-wacom───3*[{csd-wacom}]
        │                                      ├─csd-xrandr───3*[{csd-xrandr}]
        │                                      └─csd-xsettings───3*[{csd-xsettings}]
```

Kérdezze le egy adott PID nevét: ps -p 1286 -o comm=

```
davidrebeka@davidrebeka-VirtualBox:~$ ps -p 1286 -o comm=
polkit-gnome-au
davidrebeka@davidrebeka-VirtualBox:~$
```

Kérdezze le az 5 legtöbb CPU memóriát fogyasztó PID.5 ps -auxf | sort -nr -k 3 | head -5 –

```
davidrebeka@davidrebeka-VirtualBox:~$ ps -auxf | sort -nr -k 3 | head -5 -
_apt        3247  2.5  0.2  26908  9772 ?        S    15:13   0:06      \_ /usr/lib/apt/methods/http
root        3230  1.3  3.4 222256 156732 ?       S    15:13   0:03  \_ /usr/sbin/synaptic --hide-main-window --non-int
eractive --parent-window-id 88080398 -o Synaptic::closeZvt=true --set-selections-file /tmp/tmpoh5u9j4_
root         873  0.5  2.2 404416 101340 tty7    Ssl+ 14:50   0:09  \_ /usr/lib/xorg/Xorg -core :0 -seat seat0 -auth /
var/run/lightdm/root/:0 -nolisten tcp vt7 -novtswitch
davidre+    1259  0.4  3.5 3821704 159716 ?      Sl   14:50   0:07      |   \_ cinnamon --replace
_apt        3248  0.3  0.2  26904  9960 ?        S    15:13   0:00      \_ /usr/lib/apt/methods/http
davidrebeka@davidrebeka-VirtualBox:~$
```

**f,** Kérdezze le a fizikai memória és a swap által használt és szabad terület, ezek összegét, pufferek, szabad pufferek száma! -$ free Használja a következő opciókat külön-külön [- b, - k, - m, - g, - t, - o, - s, - v] – mit kérdezett le!

```
davidrebeka@davidrebeka-VirtualBox:~$ free
              total        used        free      shared  buff/cache   available
Mem:        4533768      721360     2542136       19392     1270272     3552820
Swap:        945416           0      945416
davidrebeka@davidrebeka-VirtualBox:~$ free -b
              total        used        free      shared  buff/cache   available
Mem:     4642578432   738766848  2587697152    19857408  1316114432  3637772288
Swap:     968105984           0   968105984
davidrebeka@davidrebeka-VirtualBox:~$ free -k
              total        used        free      shared  buff/cache   available
Mem:        4533768      807864     2272024       19396     1453880     3462568
Swap:        945416           0      945416
davidrebeka@davidrebeka-VirtualBox:~$ free -m
              total        used        free      shared  buff/cache   available
Mem:           4427         810        1240          18        2376        3340
Swap:           923           0         923
davidrebeka@davidrebeka-VirtualBox:~$ free -g
              total        used        free      shared  buff/cache   available
Mem:              4           0           0           0           2           3
Swap:             0           0           0
davidrebeka@davidrebeka-VirtualBox:~$ free -t
              total        used        free      shared  buff/cache   available
Mem:        4533768      825616      891008       19396     2817144     3399296
Swap:        945416           0      945416
Total:      5479184      825616     1836424
```

```
davidrebeka@davidrebeka-VirtualBox:~$ free -o
free: érvénytelen kapcsoló -- "o"

Usage:
 free [options]

Options:
 -b, --bytes         show output in bytes
     --kilo          show output in kilobytes
     --mega          show output in megabytes
     --giga          show output in gigabytes
     --tera          show output in terabytes
     --peta          show output in petabytes
 -k, --kibi          show output in kibibytes
 -m, --mebi          show output in mebibytes
 -g, --gibi          show output in gibibytes
     --tebi          show output in tebibytes
     --pebi          show output in pebibytes
 -h, --human         show human-readable output
     --si            use powers of 1000 not 1024
 -l, --lohi          show detailed low and high memory statistics
 -t, --total         show total for RAM + swap
 -s N, --seconds N   repeat printing every N seconds
 -c N, --count N     repeat printing N times, then exit
 -w, --wide          wide output

     --help     display this help and exit
 -V, --version  output version information and exit

For more details see free(1).
davidrebeka@davidrebeka-VirtualBox:~$ free -s
free: a kapcsoló egy argumentumot igényel -- "s"

Usage:
 free [options]

Options:
 -b, --bytes         show output in bytes
     --kilo          show output in kilobytes
     --mega          show output in megabytes
     --giga          show output in gigabytes
     --tera          show output in terabytes
     --peta          show output in petabytes
 -k, --kibi          show output in kibibytes
 -m, --mebi          show output in mebibytes
 -g, --gibi          show output in gibibytes
     --tebi          show output in tebibytes
     --pebi          show output in pebibytes
 -h, --human         show human-readable output
     --si            use powers of 1000 not 1024
 -l, --lohi          show detailed low and high memory statistics
 -t, --total         show total for RAM + swap
 -s N, --seconds N   repeat printing every N seconds
 -c N, --count N     repeat printing N times, then exit
 -w, --wide          wide output

     --help     display this help and exit
 -V, --version  output version information and exit

For more details see free(1).
davidrebeka@davidrebeka-VirtualBox:~$ free -v
free: érvénytelen kapcsoló -- "v"

Usage:
 free [options]

Options:
 -b, --bytes         show output in bytes
     --kilo          show output in kilobytes
     --mega          show output in megabytes
     --giga          show output in gigabytes
     --tera          show output in terabytes
     --peta          show output in petabytes
 -k, --kibi          show output in kibibytes
 -m, --mebi          show output in mebibytes
 -g, --gibi          show output in gibibytes
     --tebi          show output in tebibytes
     --pebi          show output in pebibytes
 -h, --human         show human-readable output
     --si            use powers of 1000 not 1024
 -l, --lohi          show detailed low and high memory statistics
 -t, --total         show total for RAM + swap
 -s N, --seconds N   repeat printing every N seconds
 -c N, --count N     repeat printing N times, then exit
 -w, --wide          wide output

     --help     display this help and exit
 -V, --version  output version information and exit

For more details see free(1).
davidrebeka@davidrebeka-VirtualBox:~$
```

**g,** Kérdezze le az átlagos CPU terhelést vagy lemez aktivitást. - $ iostat Használja a következő opciókat [ -c ] [ -d ] [ -N ] [ -n ] [ -h ] [ -k | -m ] [ -t ] [ -V ] [ -x ] [ -z ] [ device […] | ALL ] [ -p [ device [,…] | ALL ] ] [ interval [ count ] ]

```
davidrebeka@davidrebeka-VirtualBox:~$ iostat
Linux 5.4.0-100-generic (davidrebeka-VirtualBox)        2022-03-01      _x86_64_(3 CPU)

avg-cpu:  %user   %nice %system %iowait  %steal   %idle
           6,52    0,00    3,84    0,71    0,00   88,93

Device             tps    kB_read/s    kB_wrtn/s    kB_dscd/s    kB_read    kB_wrtn    kB_dscd
sda             336,93     10491,67       454,22         0,00     787295      34085          0


davidrebeka@davidrebeka-VirtualBox:~$ iostat -c
Linux 5.4.0-100-generic (davidrebeka-VirtualBox)        2022-03-01      _x86_64_(3 CPU)

avg-cpu:  %user   %nice %system %iowait  %steal   %idle
           6,03    0,00    3,55    0,66    0,00   89,76


davidrebeka@davidrebeka-VirtualBox:~$ iostat -d
Linux 5.4.0-100-generic (davidrebeka-VirtualBox)        2022-03-01      _x86_64_(3 CPU)

Device             tps    kB_read/s    kB_wrtn/s    kB_dscd/s    kB_read    kB_wrtn    kB_dscd
sda             298,82      9303,89       402,99         0,00     787295      34101          0


davidrebeka@davidrebeka-VirtualBox:~$ iostat -N
Linux 5.4.0-100-generic (davidrebeka-VirtualBox)        2022-03-01      _x86_64_(3 CPU)

avg-cpu:  %user   %nice %system %iowait  %steal   %idle
           5,57    0,00    3,29    0,61    0,00   90,53

Device             tps    kB_read/s    kB_wrtn/s    kB_dscd/s    kB_read    kB_wrtn    kB_dscd
sda             287,06      8937,39       387,16         0,00     787295      34105          0


davidrebeka@davidrebeka-VirtualBox:~$ iostat -n
Használat: iostat [ kapcsolók ] [ <időköz> [ <darabszám> ] ]
Options are:
[ -c ] [ -d ] [ -h ] [ -k | -m ] [ -N ] [ -s ] [ -t ] [ -V ] [ -x ] [ -y ] [ -z ]
[ -j { ID | LABEL | PATH | UUID | ... } ]
[ --dec={ 0 | 1 | 2 } ] [ --human ] [ -o JSON ]
[ [ -H ] -g <group_name> ] [ -p [ <device> [,...] | ALL ] ]
[ <device> [...] | ALL ]
davidrebeka@davidrebeka-VirtualBox:~$ iostat -h
```

```
davidrebeka@davidrebeka-VirtualBox:~$ iostat -h
Linux 5.4.0-100-generic (davidrebeka-VirtualBox)        2022-03-01      _x86_64_(3 CPU)

avg-cpu:  %user   %nice %system %iowait  %steal   %idle
           5,2%    0,0%    3,1%    0,6%    0,0%   91,1%

      tps    kB_read/s    kB_wrtn/s    kB_dscd/s    kB_read    kB_wrtn    kB_dscd Device
   269,49         8,2M       363,5k        0,0k     768,9M      33,3M       0,6k sda
```

```
davidrebeka@davidrebeka-VirtualBox:~$ iostat -t
Linux 5.4.0-100-generic (davidrebeka-VirtualBox)        2022-03-01      _x86_64_(3 CPU)

2022-03-01 15:25:08
avg-cpu:  %user   %nice %system %iowait  %steal   %idle
           4,15    0,00    2,44    0,45    0,00   92,96

Device             tps    kB_read/s    kB_wrtn/s    kB_dscd/s    kB_read    kB_wrtn    kB_dscd
sda             214,07      6587,99       684,67         0,00     787331      81825          0


davidrebeka@davidrebeka-VirtualBox:~$ iostat -V
sysstat verzió: 12.2.0
(C) Sebastien Godard (sysstat <at> orange.fr)
davidrebeka@davidrebeka-VirtualBox:~$ iostat -x
Linux 5.4.0-100-generic (davidrebeka-VirtualBox)        2022-03-01      _x86_64_(3 CPU)

avg-cpu:  %user   %nice %system %iowait  %steal   %idle
           4,06    0,00    2,32    0,42    0,00   93,20

Device          r/s     rkB/s   rrqm/s  %rrqm r_await rareq-sz     w/s    wkB/s  wrqm/s  %wrqm w_await wareq-sz     d/s    dkB/s  drqm/s  %drqm d_await dareq-sz  aqu-sz  %util
sda          187,84   6190,54    77,34  29,17    0,25    32,96   13,33   643,33   11,37  46,04    0,31    48,27    0,00     0,00    0,00   0,00    0,00     0,00    0,00   8,08


davidrebeka@davidrebeka-VirtualBox:~$ iostat -z
Linux 5.4.0-100-generic (davidrebeka-VirtualBox)        2022-03-01      _x86_64_(3 CPU)

avg-cpu:  %user   %nice %system %iowait  %steal   %idle
           3,97    0,00    2,28    0,41    0,00   93,35

Device             tps    kB_read/s    kB_wrtn/s    kB_dscd/s    kB_read    kB_wrtn    kB_dscd
sda             196,72      6053,47       629,51         0,00     787375      81881          0
```

**h,** Kérdezze le a rendszer aktivitási adatok jelzéseit és összegyűjtését, mentését. $ sar Opciói: sar -n DEV | more

```
davidrebeka@davidrebeka-VirtualBox:~$ sar
/var/log/sysstat/sa01 nem nyitható meg: Nincs ilyen fájl vagy könyvtár
Ellenőrizze, hogy az adatgyűjtés engedélyezve van-e
davidrebeka@davidrebeka-VirtualBox:~$ sar -n DEV | more
/var/log/sysstat/sa01 nem nyitható meg: Nincs ilyen fájl vagy könyvtár
Ellenőrizze, hogy az adatgyűjtés engedélyezve van-e
davidrebeka@davidrebeka-VirtualBox:~$
```

**i,** Kérdezze le mindegyik elérhető processzor aktivitását több processzoros sz.gép használata esetén. - mpstat

```
davidrebeka@davidrebeka-VirtualBox:~$ mpstat
Linux 5.4.0-100-generic (davidrebeka-VirtualBox)       2022-03-01       _x86_64_
(3 CPU)

15:29:27     CPU    %usr   %nice    %sys %iowait    %irq   %soft  %steal  %guest
  %gnice   %idle
15:29:27     all    1,67    0,00    0,85    0,14    0,00    0,06    0,00    0,00
    0,00   97,28
davidrebeka@davidrebeka-VirtualBox:~$
```

**j,** Kérdezze le processz memória használatát jelzi. - pmap Opciói: [-d PID] vagy egy adott processz esetén: [pmap -d 47394]

## Windows