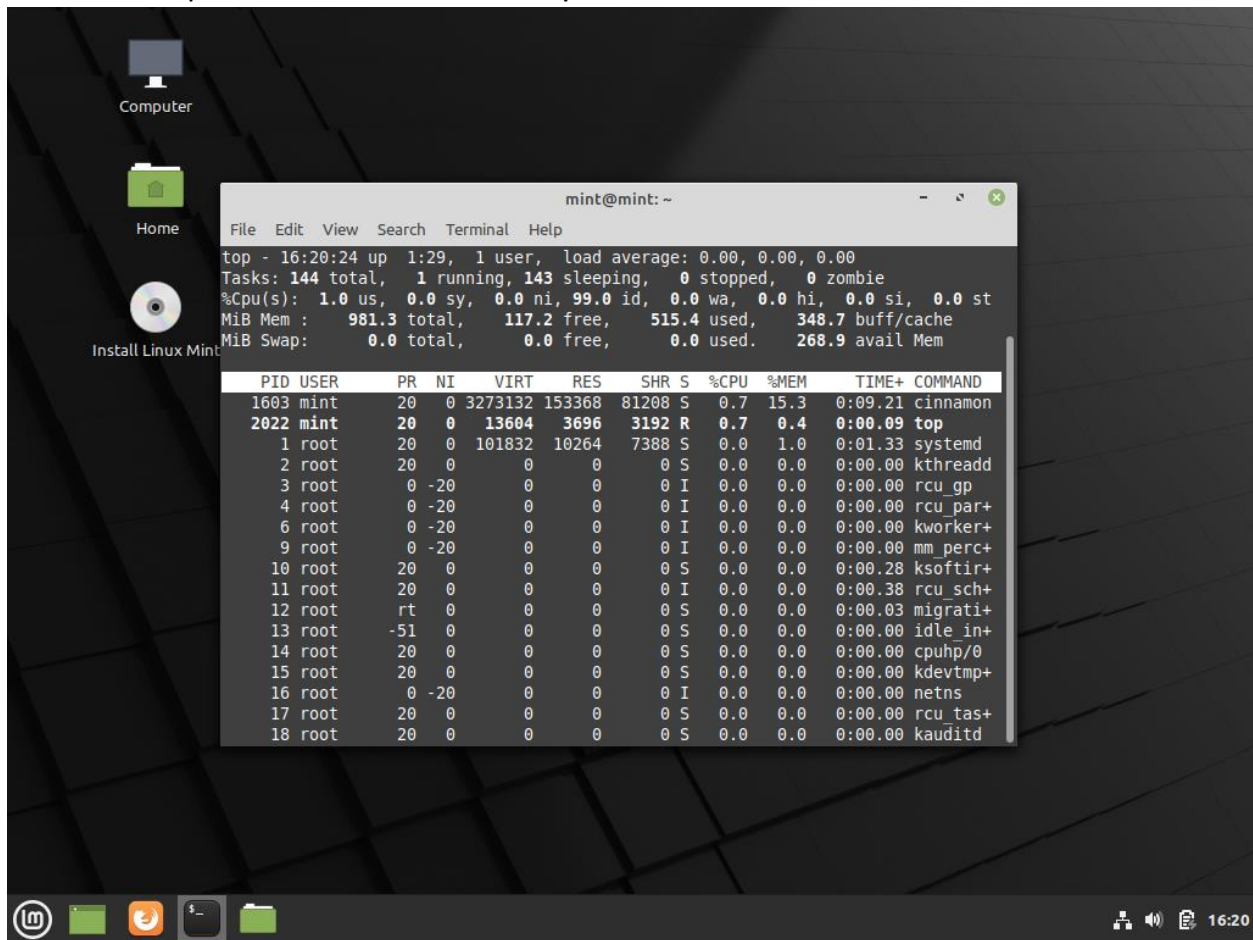


## Operációs rendszerek – 3B. Gyakorlat

Top

Az éppen futó processzekről készít egy leírást, melyik process mennyire foglalja le a memóriát, a processzort. Működése folyamatos.



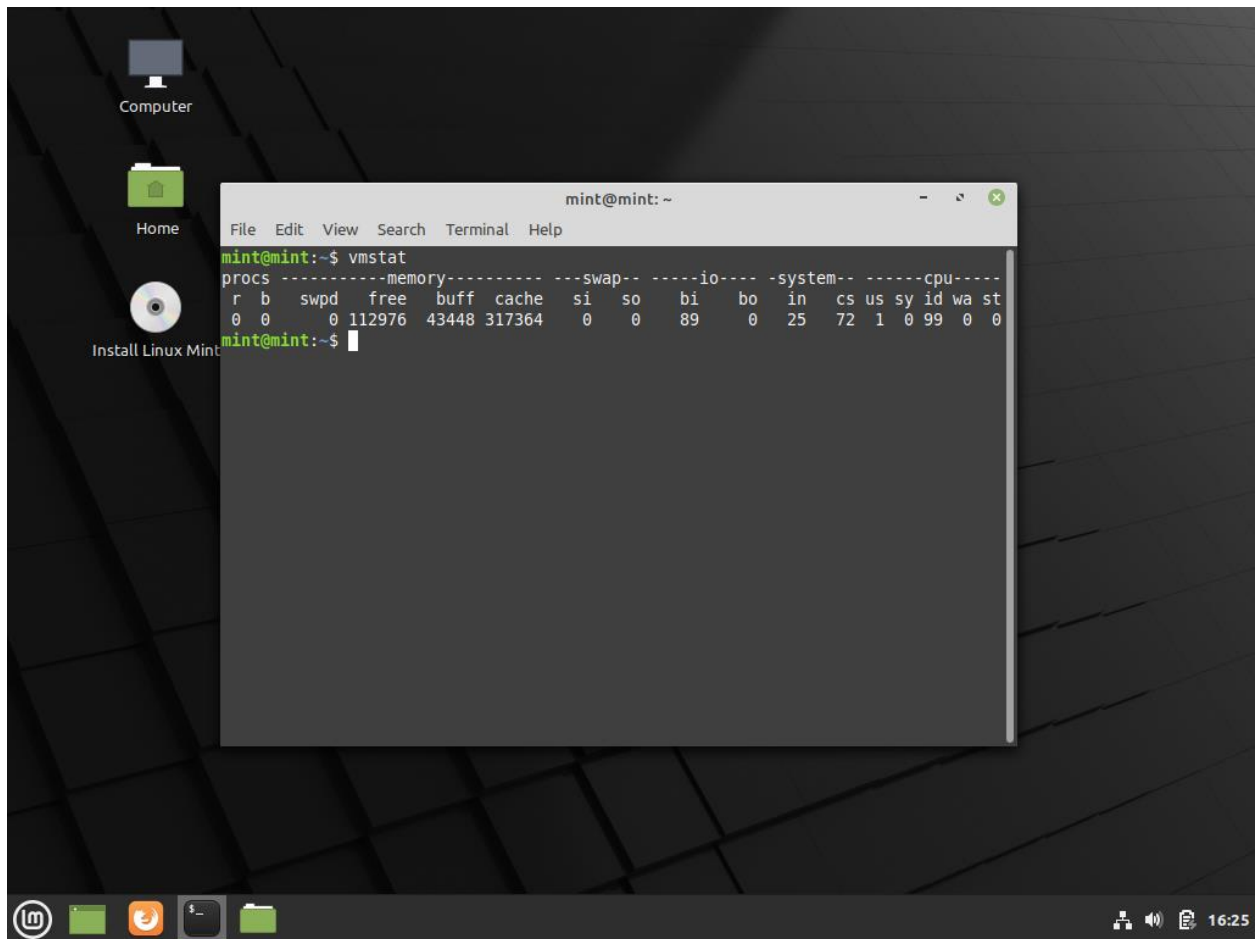
The screenshot shows a Linux Mint desktop environment. A terminal window is open, displaying the output of the 'top' command. The terminal window title is 'mint@mint: ~'. The output shows system statistics and a list of running processes. The processes listed include 'cinnamon', 'top', 'systemd', 'kthreadd', 'rcu\_gp', 'rcu\_par+', 'kworker+', 'mm\_perc+', 'ksoftir+', 'rcu\_sch+', 'migrati+', 'idle\_in+', 'cpuhp/0', 'kdevtmp+', 'netns', 'rcu\_tas+', and 'kauditd'.

```
File Edit View Search Terminal Help
top - 16:20:24 up 1:29, 1 user, load average: 0.00, 0.00, 0.00
Tasks: 144 total, 1 running, 143 sleeping, 0 stopped, 0 zombie
%Cpu(s): 1.0 us, 0.0 sy, 0.0 ni, 99.0 id, 0.0 wa, 0.0 hi, 0.0 si, 0.0 st
MiB Mem : 981.3 total, 117.2 free, 515.4 used, 348.7 buff/cache
MiB Swap: 0.0 total, 0.0 free, 0.0 used, 268.9 avail Mem

  PID USER      PR  NI    VIRT    RES    SHR S  %CPU  %MEM    TIME+  COMMAND
 1603 mint      20   0 3273132 153368  81208 S   0.7   15.3   0:09.21 cinnamon
 2022 mint      20   0  13604    3696   3192 R   0.7    0.4   0:00.09 top
    1 root       20   0 101832   10264   7388 S   0.0    1.0   0:01.33 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+
    6 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 mm_perc+
   10 root       20   0      0      0      0 S   0.0    0.0   0:00.28 ksoftir+
   11 root       20   0      0      0      0 I   0.0    0.0   0:00.38 rcu_sch+
   12 root       rt    0      0      0      0 S   0.0    0.0   0:00.03 migrati+
   13 root      -51   0      0      0      0 S   0.0    0.0   0:00.00 idle_in+
   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 kdevtmp+
   16 root        0 -20      0      0      0 I   0.0    0.0   0:00.00 netns
   17 root       20   0      0      0      0 S   0.0    0.0   0:00.00 rcu_tas+
   18 root       20   0      0      0      0 S   0.0    0.0   0:00.00 kauditd
```

## Vmstat

A rendszerről és a memóriáról mutat adatokat

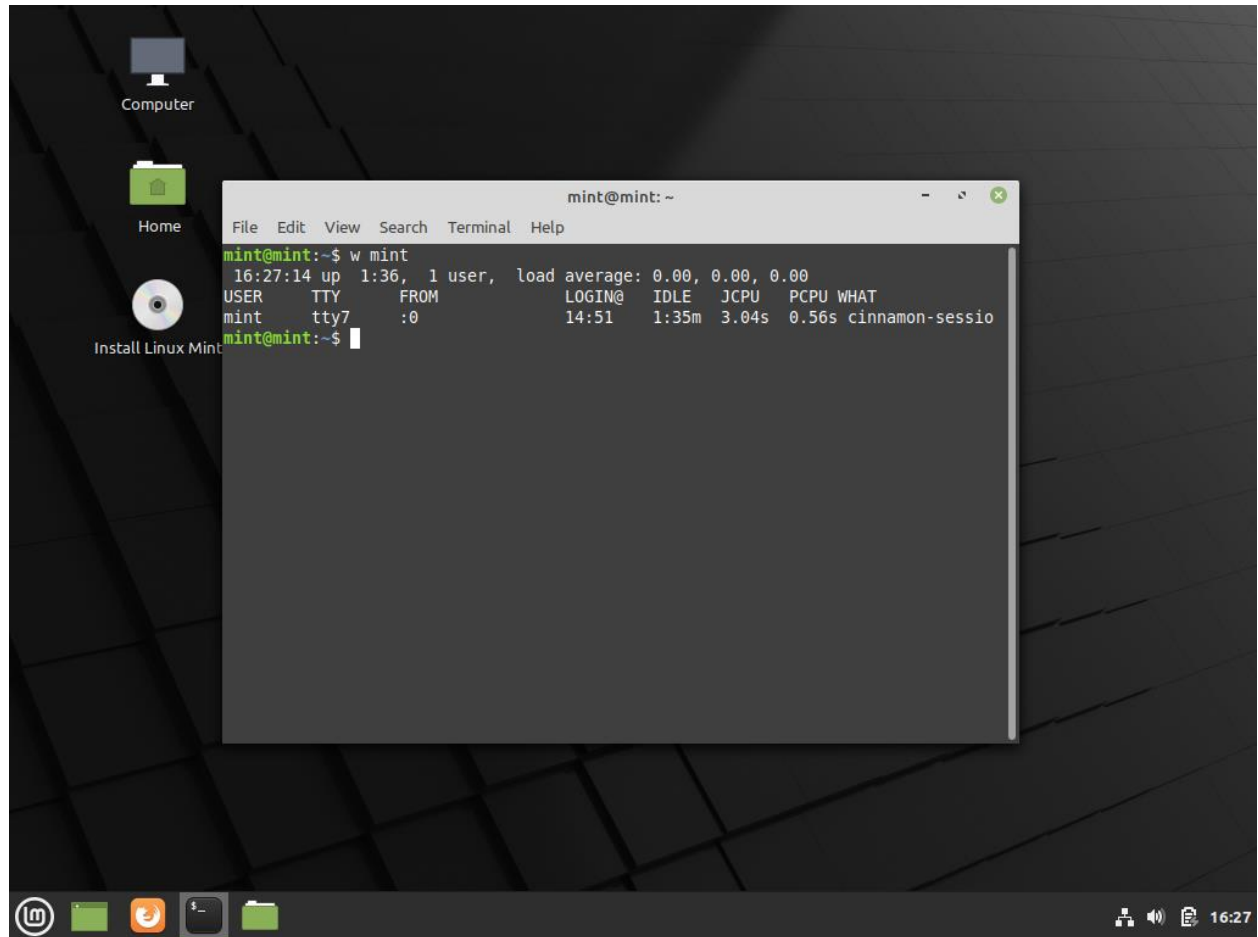


The screenshot shows a Linux Mint desktop environment. A terminal window is open, displaying the output of the `vmstat` command. The output is a table of system statistics. The desktop background is dark with a grid pattern. On the left, there are icons for 'Computer', 'Home', and 'Install Linux Mint'. The bottom panel shows the Linux Mint logo, a taskbar with icons for a file manager, terminal, and other applications, and a system tray with network, volume, and battery indicators, along with the time 16:25.

```
mint@mint: ~  
File Edit View Search Terminal Help  
mint@mint:~$ vmstat  
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 112976 43448 317364 0 0 89 0 25 72 1 0 99 0 0  
mint@mint:~$
```

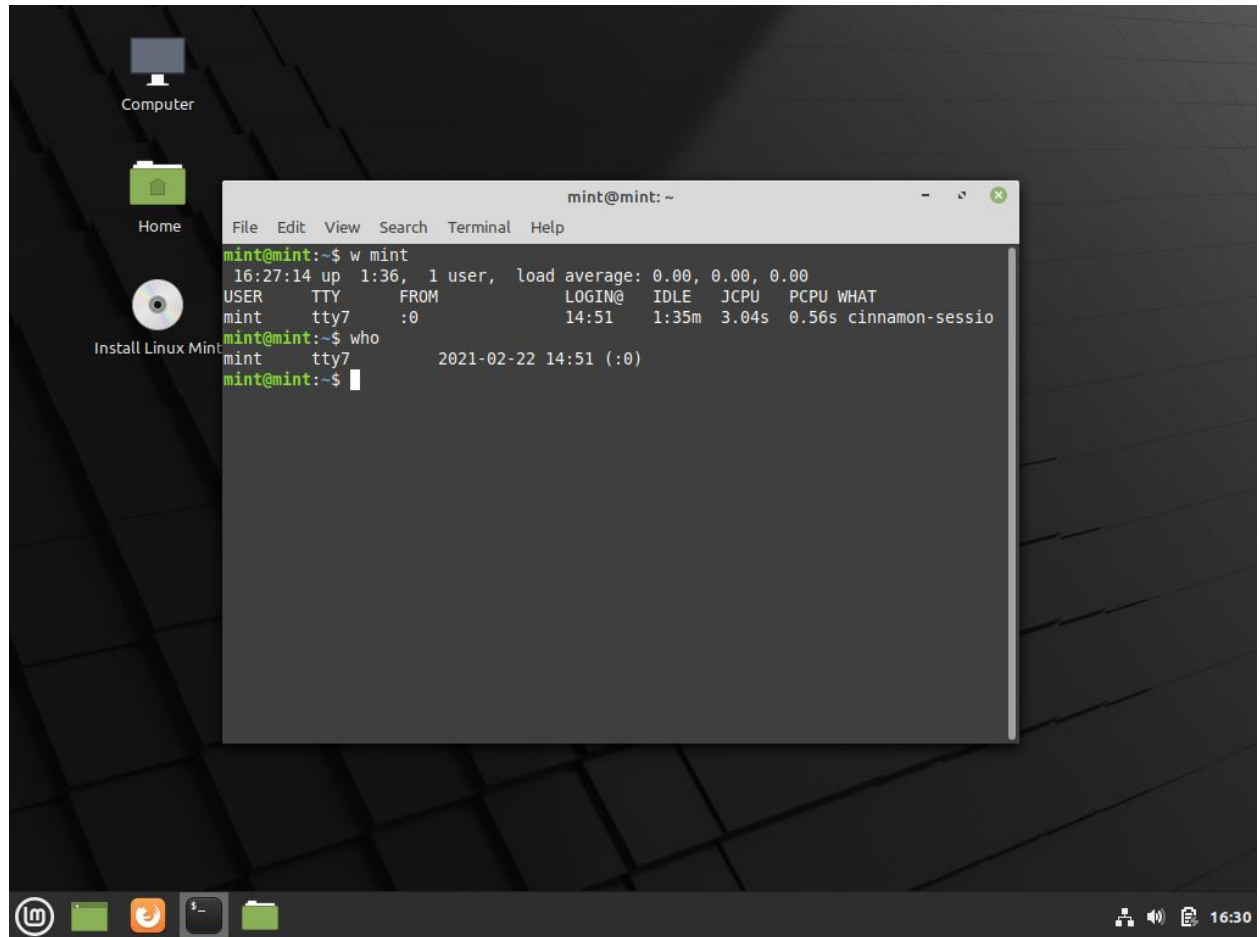
## W – Felhasználó

Az összes aktív felhasználó adatait megadja



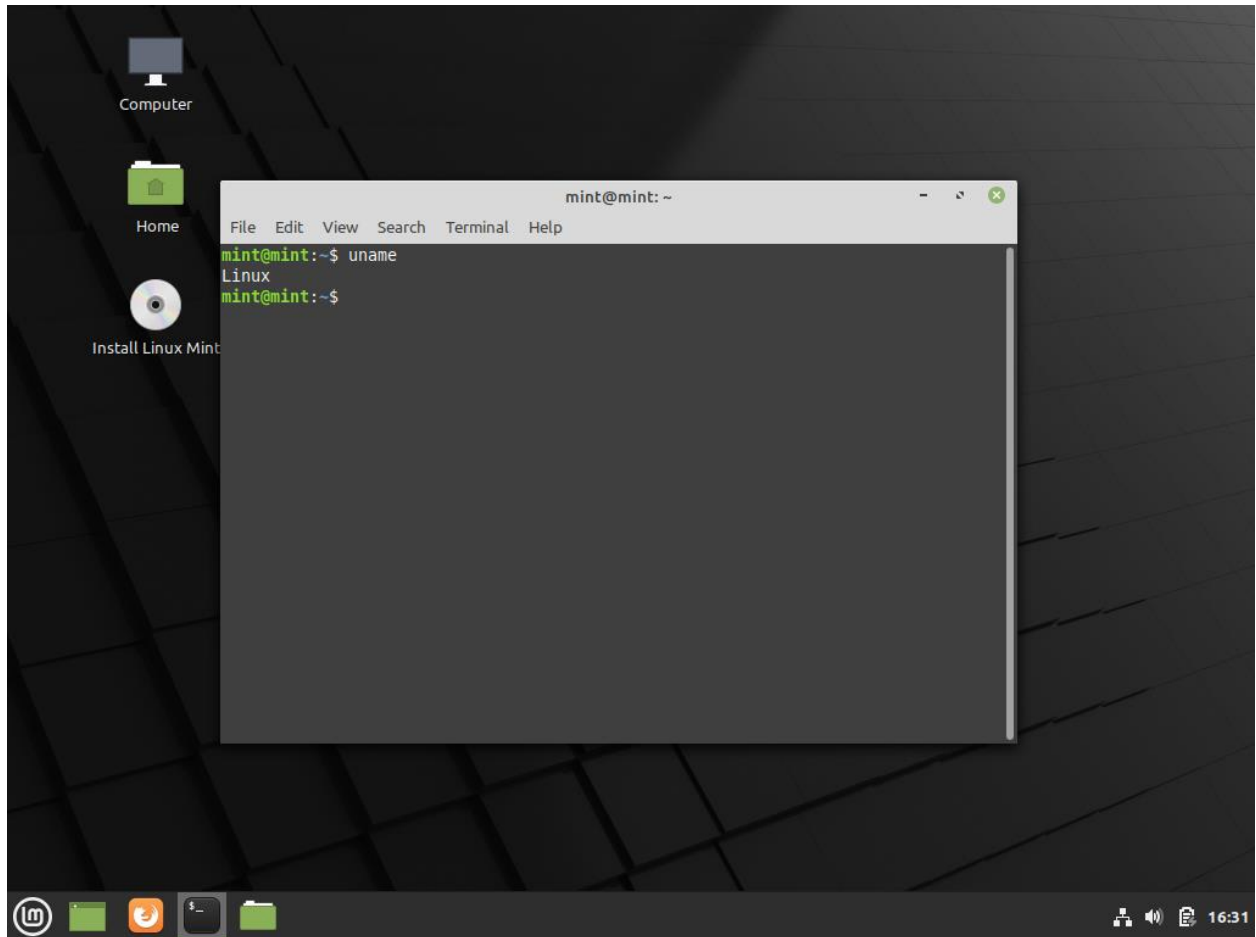
Who

Kevesebb adatot ad meg mint a W



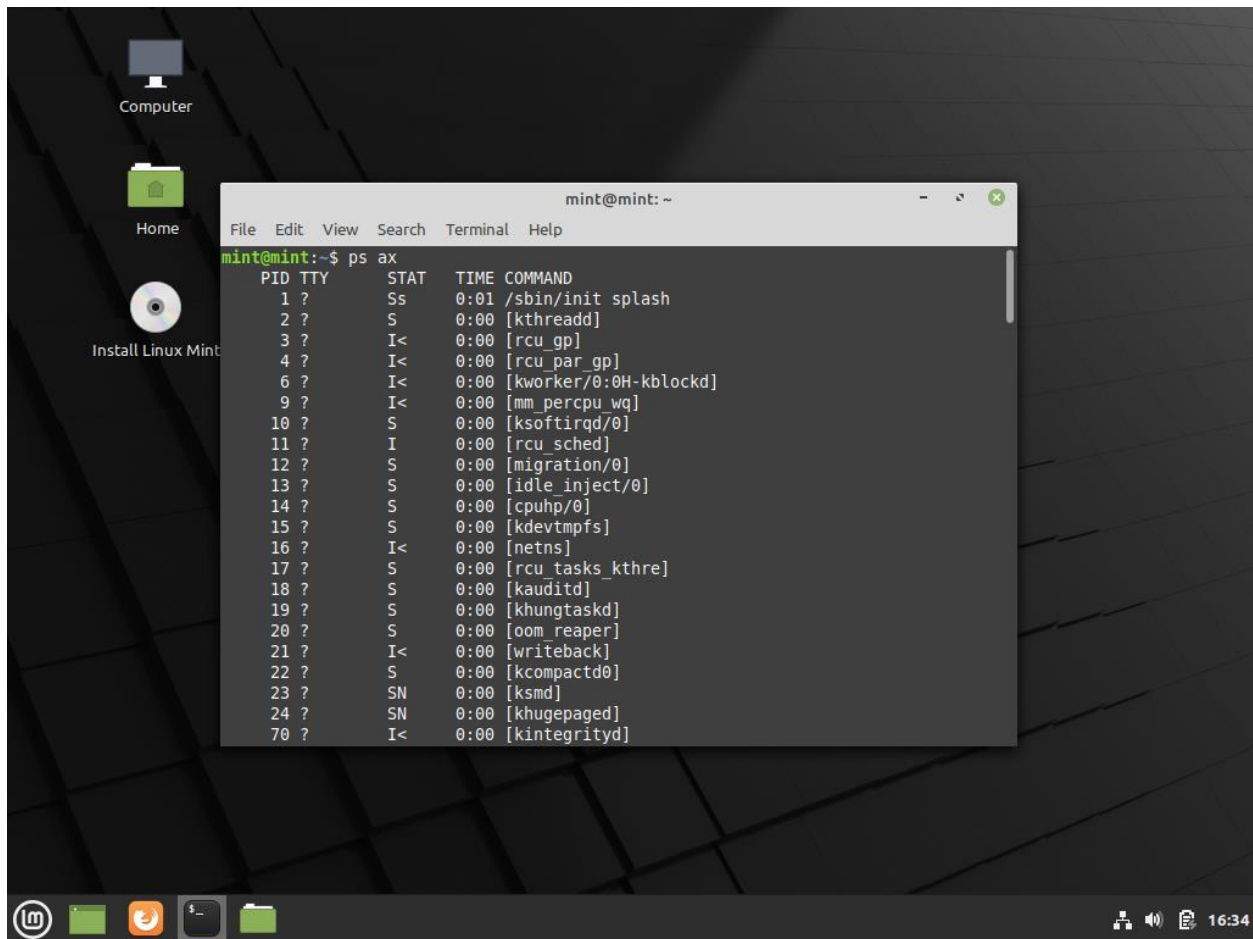
Uname

Megadja a szerver rövid nevét



PS (AX)

Aktuális processzekről készít jelentést



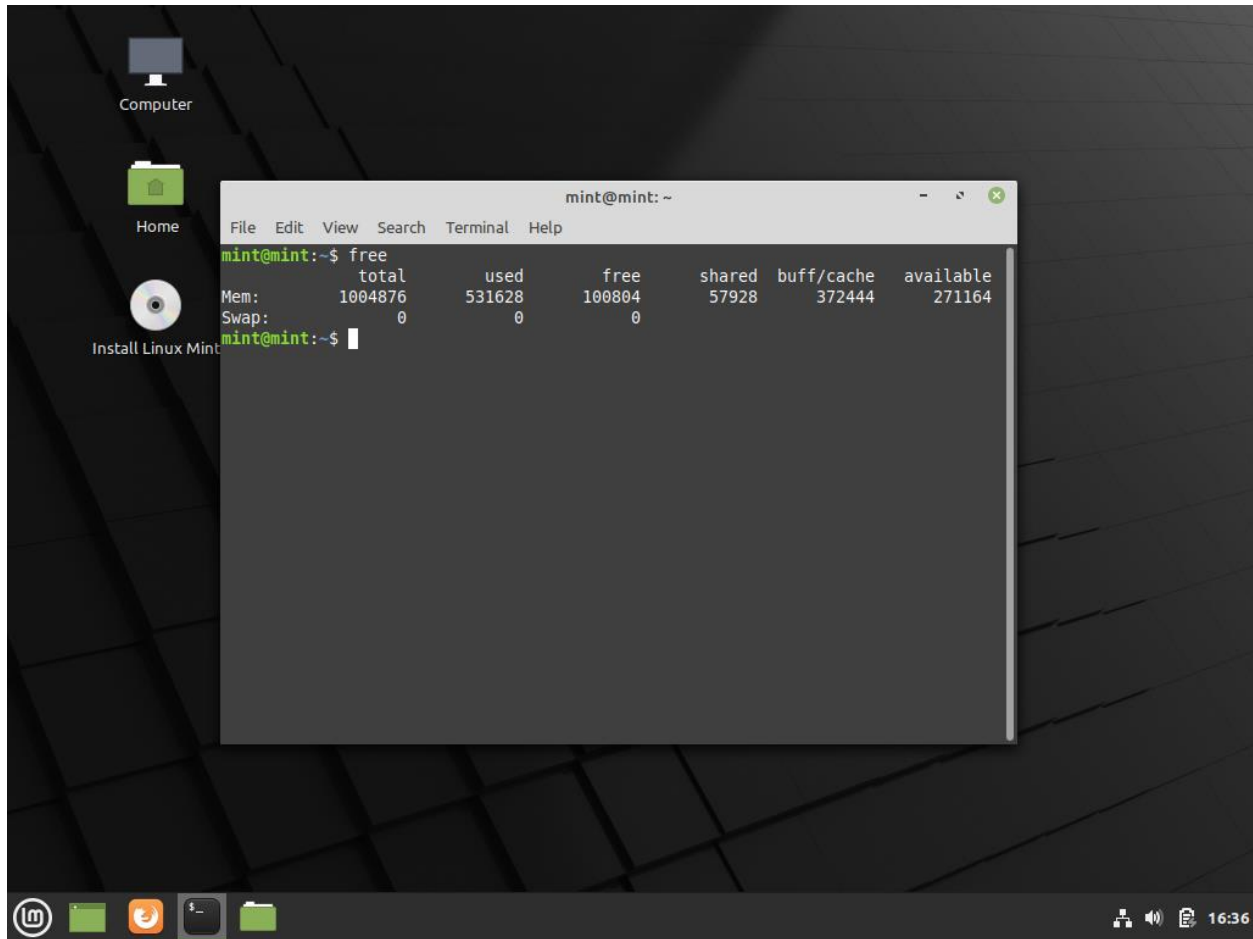
The screenshot shows a Linux Mint desktop environment. On the left sidebar, there are icons for 'Computer', 'Home', and 'Install Linux Mint'. A terminal window is open in the center, displaying the output of the 'ps ax' command. The terminal window has a title bar that reads 'mint@mint: ~' and a menu bar with 'File', 'Edit', 'View', 'Search', 'Terminal', and 'Help'. The output of the command is as follows:

```
mint@mint:~$ ps ax
PID TTY          STAT       TIME COMMAND
  1 ?           Ss         0:01 /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 [kdevtmpfs]
 16 ?           I<          0:00 [netns]
 17 ?           S           0:00 [rcu_tasks_kthre]
 18 ?           S           0:00 [kauditd]
 19 ?           S           0:00 [khungtaskd]
 20 ?           S           0:00 [oom_reaper]
 21 ?           I<          0:00 [writeback]
 22 ?           S           0:00 [kcompactd0]
 23 ?           SN          0:00 [ksmd]
 24 ?           SN          0:00 [khugepaged]
 70 ?           I<          0:00 [kintegrityd]
```

The desktop background is a dark, abstract pattern. The bottom panel shows the Linux Mint logo, a taskbar with icons for a file manager, a terminal, and a web browser, and a system tray on the right with icons for network, volume, and a clock showing 16:34.

Free

Fizikai memória és a swap által használt és szabad terület, ezek összege, pufferek, szabad pufferek száma.



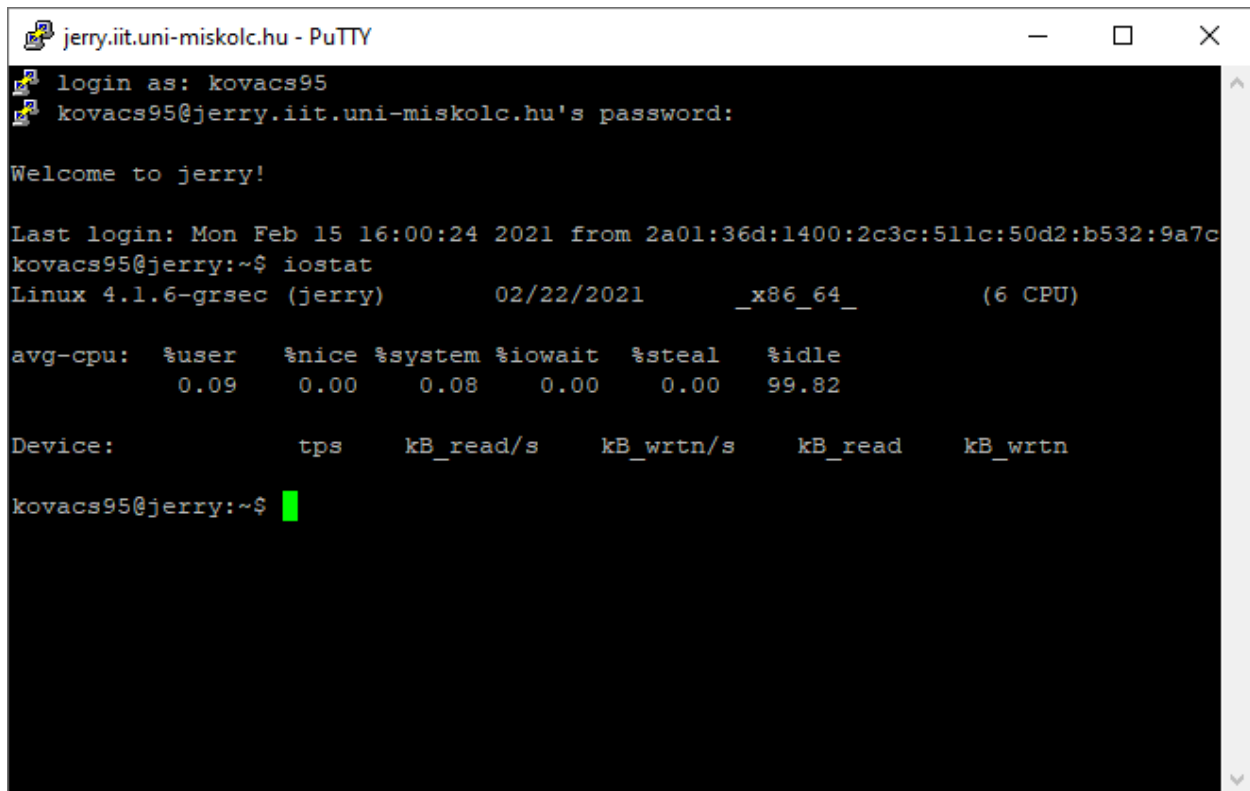
The screenshot shows a Linux Mint desktop environment. A terminal window is open, displaying the output of the 'free' command. The desktop background is dark with a grid pattern. On the left side, there are icons for 'Computer', 'Home', and 'Install Linux Mint'. The terminal window has a title bar that says 'mint@mint: ~' and a menu bar with 'File', 'Edit', 'View', 'Search', 'Terminal', and 'Help'. The output of the 'free' command is as follows:

```
mint@mint:~$ free
              total        used        free      shared  buff/cache   available
Mem:          1004876       531628       100804         57928        372444        271164
Swap:              0              0              0
```

The desktop panel at the bottom contains several icons, including the Linux Mint logo, a green square, an orange square, a terminal icon, and a folder icon. The system tray on the right shows network, volume, and battery status icons, along with the time '16:36'.

## Iostat

CPU statisztika és a számítógép I/O eszközei, a hálózati fájlrendszerek és a partíciókat kijelzi.



```
jerry.iit.uni-miskolc.hu - PuTTY
login as: kovacs95
kovacs95@jerry.iit.uni-miskolc.hu's password:

Welcome to jerry!

Last login: Mon Feb 15 16:00:24 2021 from 2a01:36d:1400:2c3c:511c:50d2:b532:9a7c
kovacs95@jerry:~$ iostat
Linux 4.1.6-grsec (jerry)          02/22/2021          _x86_64_          (6 CPU)

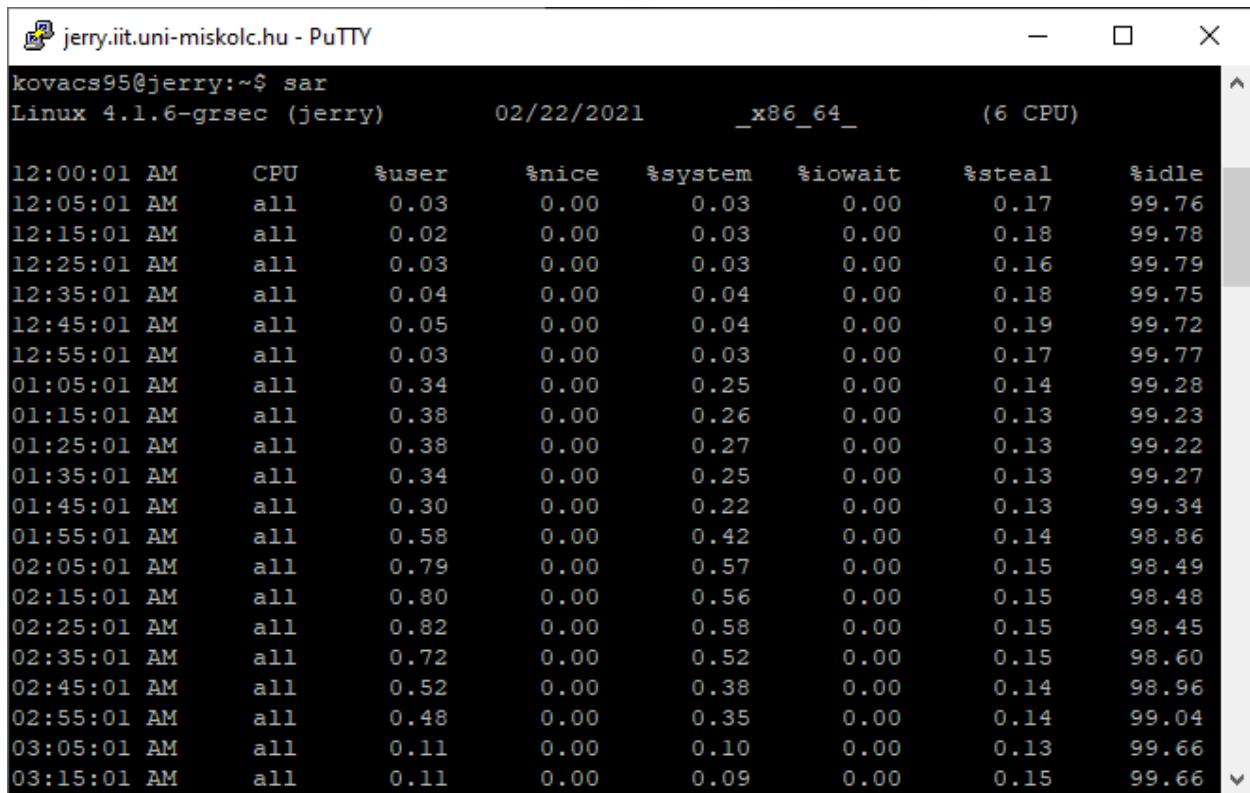
avg-cpu:  %user   %nice %system %iowait  %steal   %idle
            0.09    0.00    0.08    0.00    0.00   99.82

Device:            tps    kB_read/s    kB_wrtn/s    kB_read    kB_wrtn
kovacs95@jerry:~$
```



Sar

Aktivitási adatok jelzése és összegyűjtése, mentés.

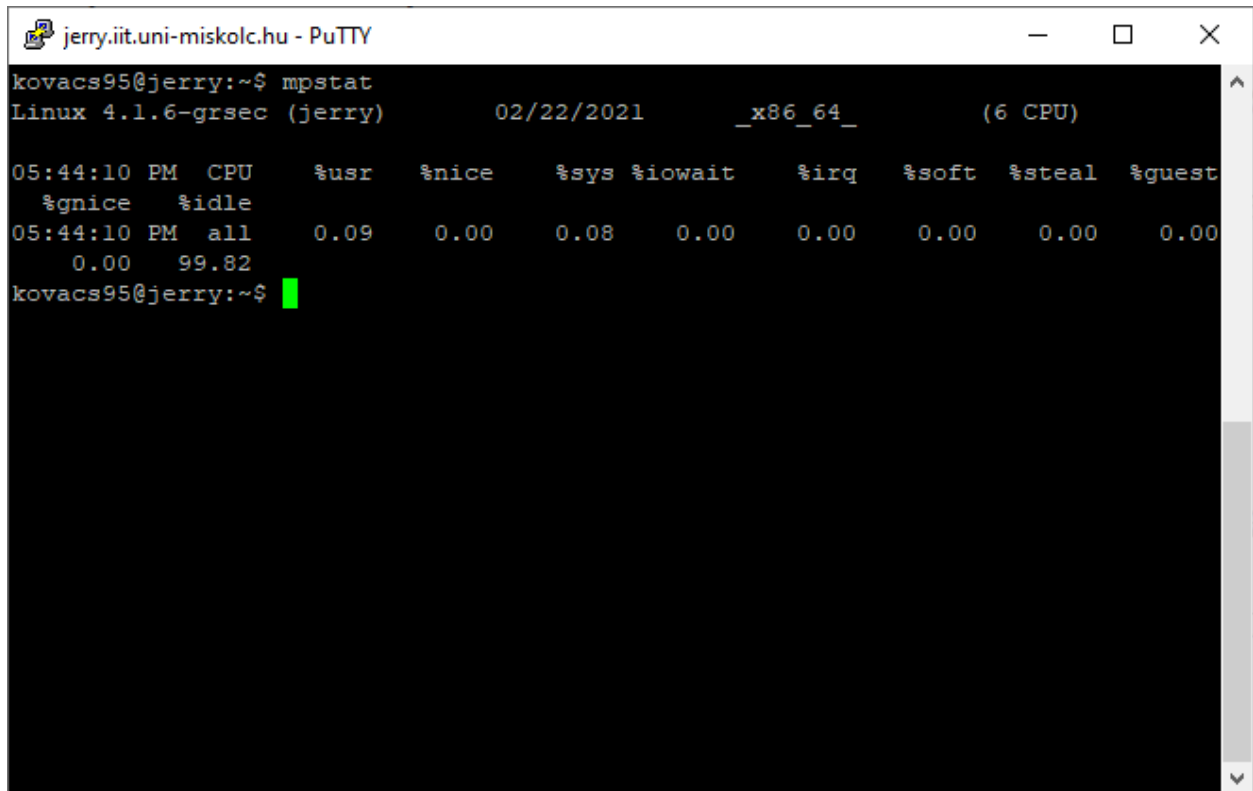


```
jerry.iit.uni-miskolc.hu - PuTTY
kovacs95@jerry:~$ sar
Linux 4.1.6-grsec (jerry)      02/22/2021      _x86_64_      (6 CPU)

12:00:01 AM    CPU    %user    %nice    %system    %iowait    %steal    %idle
12:05:01 AM    all     0.03     0.00     0.03     0.00     0.17     99.76
12:15:01 AM    all     0.02     0.00     0.03     0.00     0.18     99.78
12:25:01 AM    all     0.03     0.00     0.03     0.00     0.16     99.79
12:35:01 AM    all     0.04     0.00     0.04     0.00     0.18     99.75
12:45:01 AM    all     0.05     0.00     0.04     0.00     0.19     99.72
12:55:01 AM    all     0.03     0.00     0.03     0.00     0.17     99.77
01:05:01 AM    all     0.34     0.00     0.25     0.00     0.14     99.28
01:15:01 AM    all     0.38     0.00     0.26     0.00     0.13     99.23
01:25:01 AM    all     0.38     0.00     0.27     0.00     0.13     99.22
01:35:01 AM    all     0.34     0.00     0.25     0.00     0.13     99.27
01:45:01 AM    all     0.30     0.00     0.22     0.00     0.13     99.34
01:55:01 AM    all     0.58     0.00     0.42     0.00     0.14     98.86
02:05:01 AM    all     0.79     0.00     0.57     0.00     0.15     98.49
02:15:01 AM    all     0.80     0.00     0.56     0.00     0.15     98.48
02:25:01 AM    all     0.82     0.00     0.58     0.00     0.15     98.45
02:35:01 AM    all     0.72     0.00     0.52     0.00     0.15     98.60
02:45:01 AM    all     0.52     0.00     0.38     0.00     0.14     98.96
02:55:01 AM    all     0.48     0.00     0.35     0.00     0.14     99.04
03:05:01 AM    all     0.11     0.00     0.10     0.00     0.13     99.66
03:15:01 AM    all     0.11     0.00     0.09     0.00     0.15     99.66
```

mpstat

több processzoros számítógép esetén használják.



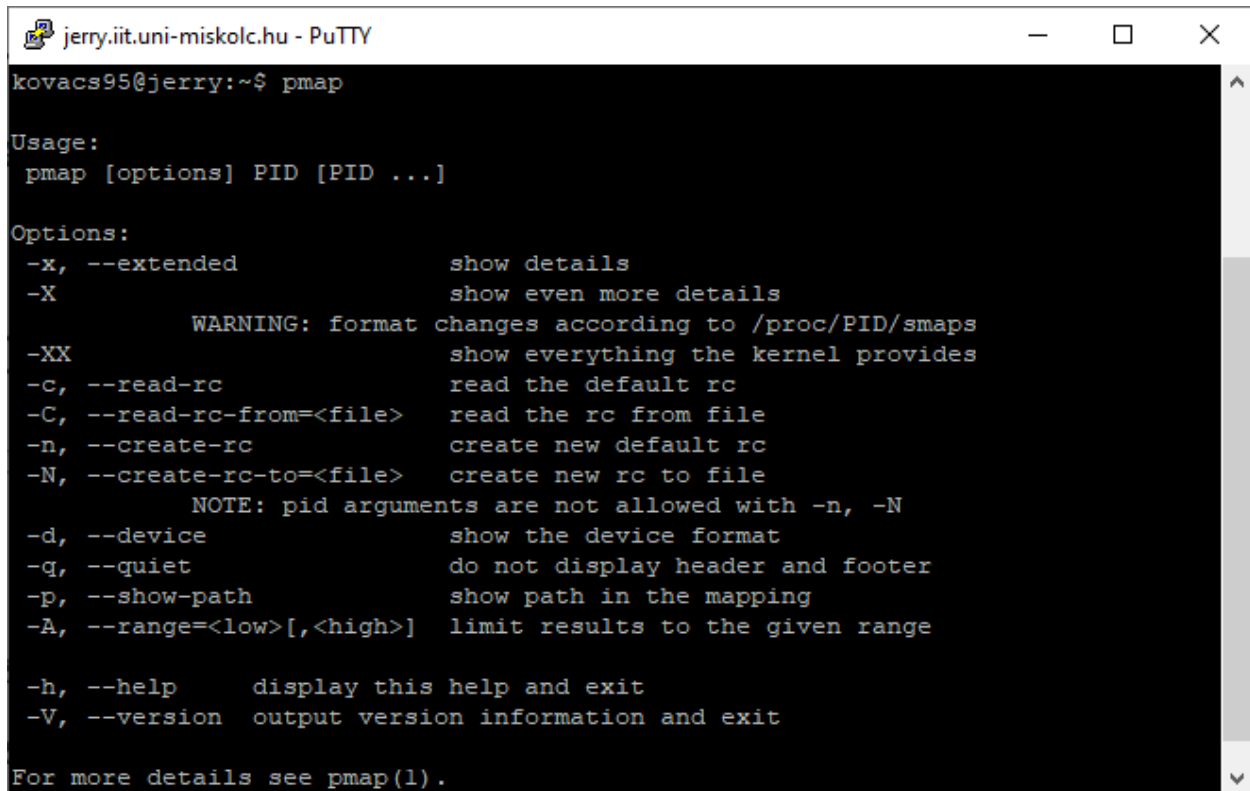
The screenshot shows a PuTTY terminal window titled "jerry.iit.uni-miskolc.hu - PuTTY". The user "kovacs95@jerry" is at the prompt "~\$". They have entered the command "mpstat". The output shows system information: "Linux 4.1.6-grsec (jerry)", date "02/22/2021", architecture "\_x86\_64\_", and "(6 CPU)". Below this is a table of CPU statistics for all CPUs. The table has columns for time, CPU, %usr, %nice, %sys, %iowait, %irq, %soft, %steal, and %guest. The first row shows the time "05:44:10 PM" and "CPU". The second row shows the time "05:44:10 PM" and "all". The third row shows the values "0.09", "0.00", "0.08", "0.00", "0.00", "0.00", "0.00", "0.00", and "0.00". The fourth row shows the values "0.00" and "99.82". The prompt "kovacs95@jerry:~\$" is followed by a green cursor.

```
jerry.iit.uni-miskolc.hu - PuTTY
kovacs95@jerry:~$ mpstat
Linux 4.1.6-grsec (jerry)      02/22/2021      _x86_64_      (6 CPU)

05:44:10 PM  CPU      %usr   %nice    %sys %iowait    %irq   %soft  %steal  %guest
 %gnice   %idle
05:44:10 PM  all       0.09    0.00    0.08   0.00     0.00    0.00   0.00   0.00
          0.00   99.82
kovacs95@jerry:~$
```

pmap

processz memória használatát jelzi.



```
jerry.iit.uni-miskolc.hu - PuTTY
kovacs95@jerry:~$ pmap

Usage:
  pmap [options] PID [PID ...]

Options:
  -x, --extended          show details
  -X                      show even more details
  WARNING: format changes according to /proc/PID/smmaps
  -XX                     show everything the kernel provides
  -c, --read-rc           read the default rc
  -C, --read-rc-from=<file> read the rc from file
  -n, --create-rc        create new default rc
  -N, --create-rc-to=<file> create new rc to file
  NOTE: pid arguments are not allowed with -n, -N
  -d, --device           show the device format
  -q, --quiet            do not display header and footer
  -p, --show-path        show path in the mapping
  -A, --range=<low>[,<high>] limit results to the given range

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

For more details see pmap(1).
```

## GTK Stress Testing

A software segítségével beállíthatjuk tesztelhetjük gépünk határait.

Beállíthatjuk, hogy mennyire és milyen szeretnénk megterhelni a számítógépet, és terhelés közben nyomon tudjuk követni a gép fogyasztását, illetve, hogy honnan veszi el az erőforrást.

Read all

GtkStressTesting

Stress tests

CPU: All methods30 minsWorkers: AutoStart

ElapsedBogo OpsBOPSUST

Processor

Processor #0

NameIntel Core i5-2400Cores4

SpecificationIntel(R) Core(TM) i5-2400 CPU @ 3.10GHzThreads4

PackageMicrocode0x2fBogomips6185.72

Family6 (6h)Model42 (2Ah)Stepping7 (7h)

FlagsMMX, SSE(1, 2, 3, 3S, 4.1, 4.2), AVX(1), AES, CLMUL, VT-x, x86-64More...

BugsCpu Meltdown, itlb Multihit, L1Tf, Mds, Spec Store Bypass, Spectre V1, Spectre V2, SwaggsMore...

Cache

L1 Data	4 x 32 KiB (128 KiB)	8-way	64 sets
L1 Inst.	4 x 32 KiB (128 KiB)	8-way	64 sets
Level 2	4 x 256 KiB (1 MiB)	8-way	512 sets
Level 3	1 x 6 MiB (6 MiB)	12-way	8192 sets

Motherboard

VendorDell Inc.

Model0D28YY

RevisionA02

VendorDell Inc.

VersionA11

Date12/30/2011

Memory

(Click "Read all")

SizeSpeedRank

TypeType Detail

ManufacturerPart Number

Press "Read all" button on the top-left corner to read RAM information

CPU usage

GST v0.7.1