

# **Operációs rendszerek BSc**

**4. Gyak.**

**2022. 02. 28.**

**Készítette:**

Pócsi Ákos Bsc  
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**Miskolc, 2022**

## 1. feladat

a.) Jelenítse meg a futó processzek listáját terhelés szerint! Monitorozza a terhelést folyamatosan!

```
mint@mint: ~  
File Edit View Search Terminal Help  
top - 15:17:49 up 11 min, 1 user, load average: 0.01, 0.63, 0.82  
Tasks: 171 total, 1 running, 170 sleeping, 0 stopped, 0 zombie  
%Cpu(s): 0.3 us, 0.2 sy, 0.0 ni, 99.5 id, 0.1 wa, 0.0 hi, 0.0 si, 0.0 st  
MiB Mem : 4937.0 total, 3394.9 free, 584.0 used, 958.0 buff/cache  
MiB Swap: 0.0 total, 0.0 free, 0.0 used, 4009.2 avail Mem  
  
  PID USER      PR  NI   VIRT   RES   SHR  S  %CPU  %MEM    TIME+  COMMAND  
 1682 mint      20   0 4465156 196412 114528 S   2.7   3.9   0:29.46 cinnamon  
 1286 root       20   0 878152  84608  49048 S   1.3   1.7   0:04.87 Xorg  
 2088 mint      20   0 466272  39768  30888 S   0.7   0.8   0:00.82 gnome-terminal-  
 195 root       20   0      0      0      0 I   0.3   0.0   0:16.01 kworker/2:2-events  
    1 root       20   0 167616 11968  8812 S   0.0   0.2   0:04.93 systemd  
    2 root       20   0      0      0      0 S   0.0   0.0   0:00.01 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  
    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   0:00.17 kworker/u8:0-events_power_efficient  
    8 root       0 -20      0      0      0 I   0.0   0.0   0:00.00 mm_percpu_wq  
    9 root       20   0      0      0      0 S   0.0   0.0   0:00.00 ksoftirqd/0  
   10 root       20   0      0      0      0 I   0.0   0.0   0:00.17 rcu_sched  
   11 root      rt    0      0      0      0 S   0.0   0.0   0:00.03 migration/0  
   12 root     -51   0      0      0      0 S   0.0   0.0   0:00.00 idle inject/0  
   13 root       20   0      0      0      0 I   0.0   0.0   0:05.39 kworker/0:1-events  
   14 root       20   0      0      0      0 S   0.0   0.0   0:00.01 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   0:00.59 migration/1  
   18 root       20   0      0      0      0 S   0.0   0.0   0:00.03 ksoftirqd/1  
   19 root       20   0      0      0      0 I   0.0   0.0   0:05.47 kworker/1:0-mm_percpu_wq  
   20 root       0 -20      0      0      0 I   0.0   0.0   0:00.00 kworker/1:0H-kblockd  
   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   0:00.02 migration/2  
   24 root       20   0      0      0      0 S   0.0   0.0   0:00.00 ksoftirqd/2  
   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 cpuhp/3  
   28 root     -51   0      0      0      0 S   0.0   0.0   0:00.00 idle inject/3  
   29 root      rt    0      0      0      0 S   0.0   0.0   0:00.60 migration/3  
   30 root       20   0      0      0      0 S   0.0   0.0   0:01.37 ksoftirqd/3
```

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

```
mint@mint: ~  
File Edit View Search Terminal Help  
To run a command as administrator (user "root"), use "sudo <command>".  
See "man sudo_root" for details.  
  
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 3507508 162252 817544 0 0 138 0 59 99 1 0 96 3 0  
mint@mint:~$
```

```

mint@mint:~$ 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
 1 0     0 3496456 162252 819576    0    0   112     0   51   85 0 0 97 2 0
 0 0     0 3496456 162252 819576    0    0    0     0  182  284 1 0 99 0 0
 0 0     0 3496456 162252 819576    0    0    0     0   77  126 1 0 99 0 0
 0 0     0 3496456 162252 819576    0    0    0     0  103  174 1 0 99 0 0
 0 0     0 3496456 162252 819576    0    0    0     0   74  117 0 0 100 0 0
 0 0     0 3496456 162252 819576    0    0    0     0   78  126 1 0 99 0 0
 0 0     0 3496456 162252 819576    0    0    0     0   87  151 1 0 99 0 0
 0 0     0 3496456 162252 819576    0    0    0     0   96  168 1 0 99 0 0
 0 0     0 3496456 162252 819576    0    0    0     0   83  130 1 0 99 0 0
 0 0     0 3496456 162252 819576    0    0    0     0   91  143 1 0 99 0 0
 0 0     0 3496456 162252 819576    0    0    0     0  126  244 1 0 99 0 0
 0 0     0 3496456 162252 819576    0    0    0     0   98  164 1 0 99 0 0
 0 0     0 3496456 162252 819576    0    0    0     0   73  132 1 0 99 0 0
 0 0     0 3496456 162252 819576    0    0    0     0   81  152 1 0 99 0 0

```

```

mint@mint:~$ 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
 3 0     0 3500360 569184 782984    0    0   95     0   49   85 1 0 97 2 0

```

c.) Jelenítse meg ki van bejelentkezve a rendszerbe, és éppen mit csinál.

```

mint@mint:~$ w
15:26:24 up 20 min, 1 user, load average: 0.07, 0.20, 0.50
USER      TTY      FROM            LOGIN@   IDLE   JCPU   PCPU WHAT
mint      tty7      :0               15:07    19:21  8.75s  5.13s cinnamon-session --session cinnamon

```

d.) Jelenítse meg a szerver futásának kezdő idejét.

```

mint@mint:~$ uname
Linux
mint@mint:~$ uptime
15:30:06 up 23 min, 1 user, load average: 0.07, 0.13, 0.40
mint@mint:~$

```

e.) ps - aktuális processzekről készít jelentést.

```
mint@mint: ~  
File Edit View Search Terminal Help  
mint@mint:~$ ps ax  
  PID TTY          STAT       TIME COMMAND  
    1 ?        Ss       0:04 /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]  
    8 ?        I<        0:00 [mm_percpu_wq]  
    9 ?        S         0:00 [ksoftirqd/0]  
   10 ?        I         0:00 [rcu_sched]  
   11 ?        S         0:00 [migration/0]  
   12 ?        S         0:00 [idle_inject/0]  
   13 ?        I         0:05 [kworker/0:1-events]  
   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]  
   19 ?        I         0:05 [kworker/1:0-events]  
   20 ?        I<        0:00 [kworker/1:0H-kblockd]  
   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 [cpuhp/3]  
   28 ?        S         0:00 [idle_inject/3]  
   29 ?        S         0:00 [migration/3]  
   30 ?        S         0:01 [ksoftirqd/3]  
   32 ?        I<        0:00 [kworker/3:0H-kblockd]  
   33 ?        S         0:00 [kdevtmpfs]  
   34 ?        I<        0:00 [netns]  
   35 ?        S         0:00 [rcu_tasks_kthre]  
   36 ?        S         0:00 [kauditd]  
   37 ?        S         0:00 [khungtaskd]  
   38 ?        S         0:00 [oom_reaper]  
   39 ?        I<        0:00 [writeback]  
   40 ?        S         0:00 [kcompactd0]  
   41 ?        SN        0:00 [ksmd]  
   42 ?        SN        0:00 [khunlabeled]
```

```
mint@mint: ~  
File Edit View Search Terminal Help  
To run a command as administrator (user "root"), use "sudo <command>".  
See "man sudo_root" for details.  
mint@mint:~$ ps -A  
  PID TTY          TIME CMD  
    1 ?        00:00:04 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  
    8 ?        00:00:00 mm_percpu_wq  
    9 ?        00:00:00 ksoftirqd/0  
   10 ?        00:00:00 rcu_sched  
   11 ?        00:00:00 migration/0  
   12 ?        00:00:00 idle_inject/0  
   13 ?        00:00:05 kworker/0:1-events  
   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  
   19 ?        00:00:05 kworker/1:0-events  
   20 ?        00:00:00 kworker/1:0H-kblockd  
   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 cpuhp/3  
   28 ?        00:00:00 idle_inject/3  
   29 ?        00:00:00 migration/3  
   30 ?        00:00:01 ksoftirqd/3  
   32 ?        00:00:00 kworker/3:0H-kblockd  
   33 ?        00:00:00 kdevtmpfs  
   34 ?        00:00:00 netns  
   35 ?        00:00:00 rcu_tasks_kthre  
   36 ?        00:00:00 kauditd  
   37 ?        00:00:00 hungtaskd  
   38 ?        00:00:00 oom_reaper  
   39 ?        00:00:00 writeback
```



```
File Edit View Search Terminal Help
mint@mint:~
For more details see ps(1).
mint@mint:~$ ps -Al
F S UID PID PPID C PRI NI ADDR SZ WCHAN TTY TIME CMD
4 S 0 1 0 0 80 0 - 41904 - ? 00:00:04 systemd
1 S 0 2 0 0 80 0 - 0 - ? 00:00:00 kthreadd
1 I 0 3 2 0 60 -20 - 0 - ? 00:00:00 rcu_gp
1 I 0 4 2 0 60 -20 - 0 - ? 00:00:00 rcu_par_gp
1 I 0 6 2 0 60 -20 - 0 - ? 00:00:00 kworker/0:0H-kblockd
1 I 0 8 2 0 60 -20 - 0 - ? 00:00:00 mm_percpu_wq
1 S 0 9 2 0 80 0 - 0 - ? 00:00:00 ksoftirqd/0
1 I 0 10 2 0 80 0 - 0 - ? 00:00:00 rcu_sched
1 S 0 11 2 0 -40 - - 0 - ? 00:00:00 migration/0
5 S 0 12 2 0 9 - - 0 - ? 00:00:00 idle_inject/0
1 I 0 13 2 0 80 0 - 0 - ? 00:00:05 kworker/0:1-events
1 S 0 14 2 0 80 0 - 0 - ? 00:00:00 cpuhp/0
1 S 0 15 2 0 80 0 - 0 - ? 00:00:00 cpuhp/1
5 S 0 16 2 0 9 - - 0 - ? 00:00:00 idle_inject/1
1 S 0 17 2 0 -40 - - 0 - ? 00:00:00 migration/1
1 S 0 18 2 0 80 0 - 0 - ? 00:00:00 ksoftirqd/1
1 I 0 19 2 0 80 0 - 0 - ? 00:00:05 kworker/1:0-events
1 I 0 20 2 0 60 -20 - 0 - ? 00:00:00 kworker/1:0H-kblockd
1 S 0 21 2 0 80 0 - 0 - ? 00:00:00 cpuhp/2
5 S 0 22 2 0 9 - - 0 - ? 00:00:00 idle_inject/2
1 S 0 23 2 0 -40 - - 0 - ? 00:00:00 migration/2
1 S 0 24 2 0 80 0 - 0 - ? 00:00:00 ksoftirqd/2
1 I 0 26 2 0 60 -20 - 0 - ? 00:00:00 kworker/2:0H-kblockd
1 S 0 27 2 0 80 0 - 0 - ? 00:00:00 cpuhp/3
5 S 0 28 2 0 9 - - 0 - ? 00:00:00 idle_inject/3
1 S 0 29 2 0 -40 - - 0 - ? 00:00:00 migration/3
1 S 0 30 2 0 80 0 - 0 - ? 00:00:01 ksoftirqd/3
1 I 0 32 2 0 60 -20 - 0 - ? 00:00:00 kworker/3:0H-kblockd
5 S 0 33 2 0 80 0 - 0 - ? 00:00:00 kdevtmpfs
1 I 0 34 2 0 60 -20 - 0 - ? 00:00:00 netns
1 S 0 35 2 0 80 0 - 0 - ? 00:00:00 rcu_tasks_kthre
1 S 0 36 2 0 80 0 - 0 - ? 00:00:00 kauditd
1 S 0 37 2 0 80 0 - 0 - ? 00:00:00 khungtaskd
1 S 0 38 2 0 80 0 - 0 - ? 00:00:00 oom_reaper
1 I 0 39 2 0 60 -20 - 0 - ? 00:00:00 writeback
1 S 0 40 2 0 80 0 - 0 - ? 00:00:00 kcompactd0
```

```
File Edit View Search Terminal Help
mint@mint:~
mint@mint:~$ ps -AlF
F S UID PID PPID C PRI NI ADDR SZ WCHAN TTY TIME CMD
4 S root 1 0 0 80 0 - 41904 - 11976 3 15:06 ? 00:00:04 /sbin/init splash
1 S root 2 0 0 80 0 - 0 - 0 0 15:06 ? 00:00:00 [kthreadd]
1 I root 3 2 0 60 -20 - 0 - 0 0 15:06 ? 00:00:00 [rcu_gp]
1 I root 4 2 0 60 -20 - 0 - 0 0 15:06 ? 00:00:00 [rcu_par_gp]
1 I root 6 2 0 60 -20 - 0 - 0 0 15:06 ? 00:00:00 [kworker/0:0H-kblockd]
1 I root 8 2 0 60 -20 - 0 - 0 0 15:06 ? 00:00:00 [mm_percpu_wq]
1 S root 9 2 0 80 0 - 0 - 0 0 15:06 ? 00:00:00 [ksoftirqd/0]
1 I root 10 2 0 80 0 - 0 - 0 0 15:06 ? 00:00:00 [rcu_sched]
1 S root 11 2 0 -40 - - 0 - 0 0 15:06 ? 00:00:00 [migration/0]
5 S root 12 2 0 9 - - 0 - 0 0 15:06 ? 00:00:00 [idle_inject/0]
1 I root 13 2 0 80 0 - 0 - 0 0 15:06 ? 00:00:05 [kworker/0:1-events]
1 S root 14 2 0 80 0 - 0 - 0 0 15:06 ? 00:00:00 [cpuhp/0]
1 S root 15 2 0 80 0 - 0 - 0 1 15:06 ? 00:00:00 [cpuhp/1]
5 S root 16 2 0 9 - - 0 - 0 1 15:06 ? 00:00:00 [idle_inject/1]
1 S root 17 2 0 -40 - - 0 - 0 1 15:06 ? 00:00:00 [migration/1]
1 S root 18 2 0 80 0 - 0 - 0 1 15:06 ? 00:00:00 [ksoftirqd/1]
1 I root 19 2 0 80 0 - 0 - 0 1 15:06 ? 00:00:05 [kworker/1:0-events]
1 I root 20 2 0 60 -20 - 0 - 0 1 15:06 ? 00:00:00 [kworker/1:0H-kblockd]
1 S root 21 2 0 80 0 - 0 - 0 2 15:06 ? 00:00:00 [cpuhp/2]
5 S root 22 2 0 9 - - 0 - 0 2 15:06 ? 00:00:00 [idle_inject/2]
1 S root 23 2 0 -40 - - 0 - 0 2 15:06 ? 00:00:00 [migration/2]
1 S root 24 2 0 80 0 - 0 - 0 2 15:06 ? 00:00:00 [ksoftirqd/2]
1 I root 26 2 0 60 -20 - 0 - 0 2 15:06 ? 00:00:00 [kworker/2:0H-kblockd]
1 S root 27 2 0 80 0 - 0 - 0 3 15:06 ? 00:00:00 [cpuhp/3]
5 S root 28 2 0 9 - - 0 - 0 3 15:06 ? 00:00:00 [idle_inject/3]
1 S root 29 2 0 -40 - - 0 - 0 3 15:06 ? 00:00:00 [migration/3]
1 S root 30 2 0 80 0 - 0 - 0 3 15:06 ? 00:00:01 [ksoftirqd/3]
1 I root 32 2 0 60 -20 - 0 - 0 3 15:06 ? 00:00:00 [kworker/3:0H-kblockd]
5 S root 33 2 0 80 0 - 0 - 0 0 15:06 ? 00:00:00 [kdevtmpfs]
1 I root 34 2 0 60 -20 - 0 - 0 1 15:06 ? 00:00:00 [netns]
1 S root 35 2 0 80 0 - 0 - 0 3 15:06 ? 00:00:00 [rcu_tasks_kthre]
1 S root 36 2 0 80 0 - 0 - 0 3 15:06 ? 00:00:00 [kauditd]
1 S root 37 2 0 80 0 - 0 - 0 2 15:06 ? 00:00:00 [khungtaskd]
1 S root 38 2 0 80 0 - 0 - 0 2 15:06 ? 00:00:00 [oom_reaper]
1 I root 39 2 0 60 -20 - 0 - 0 2 15:06 ? 00:00:00 [writeback]
1 S root 40 2 0 80 0 - 0 - 0 1 15:06 ? 00:00:00 [kcompactd0]
1 S root 41 2 0 85 5 - 0 - 0 1 15:06 ? 00:00:00 [ksmd]
```

```

mint@mint:~$ 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 0 15:06 ?    00:00:00 [kthreadd]
1 I root           3         2    0 60 -20 -   0 -   0 -   0 0 15:06 ?    00:00:00 [rcu_gp]
1 I root           4         2    0 60 -20 -   0 -   0 -   0 0 15:06 ?    00:00:00 [rcu_par_gp]
1 I root           6         2    0 60 -20 -   0 -   0 -   0 0 15:06 ?    00:00:00 [kworker/0:0H-kblockd]
1 I root           8         2    0 60 -20 -   0 -   0 -   0 0 15:06 ?    00:00:00 [mm_percpu_wq]
1 S root           9         2    0 80   0 -   0 -   0 -   0 0 15:06 ?    00:00:00 [ksoftirqd/0]
1 I root          10         2    0 80   0 -   0 -   0 -   0 0 15:06 ?    00:00:00 [rcu_sched]
1 S root          11         2    0 -40 - -   0 -   0 -   0 0 15:06 ?    00:00:00 [migration/0]
5 S root          12         2    0  9 - -   0 -   0 -   0 0 15:06 ?    00:00:00 [idle_inject/0]
1 I root          13         2    0 80   0 -   0 -   0 -   0 0 15:06 ?    00:00:05 [kworker/0:1-events]
1 S root          14         2    0 80   0 -   0 -   0 -   0 0 15:06 ?    00:00:00 [cpuhp/0]
1 S root          15         2    0 80   0 -   0 -   0 -   0 1 15:06 ?    00:00:00 [cpuhp/1]
5 S root          16         2    0  9 - -   0 -   0 -   0 1 15:06 ?    00:00:00 [idle_inject/1]
1 S root          17         2    0 -40 - -   0 -   0 -   0 1 15:06 ?    00:00:00 [migration/1]
1 S root          18         2    0 80   0 -   0 -   0 -   0 1 15:06 ?    00:00:00 [ksoftirqd/1]
1 I root          19         2    0 80   0 -   0 -   0 -   0 1 15:06 ?    00:00:05 [kworker/1:0-events]
1 I root          20         2    0 60 -20 -   0 -   0 -   0 1 15:06 ?    00:00:00 [kworker/1:0H-kblockd]
1 S root          21         2    0 80   0 -   0 -   0 -   0 2 15:06 ?    00:00:00 [cpuhp/2]
5 S root          22         2    0  9 - -   0 -   0 -   0 2 15:06 ?    00:00:00 [idle_inject/2]
1 S root          23         2    0 -40 - -   0 -   0 -   0 2 15:06 ?    00:00:00 [migration/2]
1 S root          24         2    0 80   0 -   0 -   0 -   0 2 15:06 ?    00:00:00 [ksoftirqd/2]
1 I root          26         2    0 60 -20 -   0 -   0 -   0 2 15:06 ?    00:00:00 [kworker/2:0H-kblockd]
1 S root          27         2    0 80   0 -   0 -   0 -   0 3 15:06 ?    00:00:00 [cpuhp/3]
5 S root          28         2    0  9 - -   0 -   0 -   0 3 15:06 ?    00:00:00 [idle_inject/3]
1 S root          29         2    0 -40 - -   0 -   0 -   0 3 15:06 ?    00:00:00 [migration/3]
1 S root          30         2    0 80   0 -   0 -   0 -   0 3 15:06 ?    00:00:01 [ksoftirqd/3]
1 I root          32         2    0 60 -20 -   0 -   0 -   0 3 15:06 ?    00:00:00 [kworker/3:0H-kblockd]
5 S root          33         2    0 80   0 -   0 -   0 -   0 0 15:06 ?    00:00:00 [kdevtmpfs]
1 I root          34         2    0 60 -20 -   0 -   0 -   0 1 15:06 ?    00:00:00 [netns]
1 S root          35         2    0 80   0 -   0 -   0 -   0 3 15:06 ?    00:00:00 [rcu_tasks_kthre]
1 S root          36         2    0 80   0 -   0 -   0 -   0 3 15:06 ?    00:00:00 [kauditd]
1 S root          37         2    0 80   0 -   0 -   0 -   0 2 15:06 ?    00:00:00 [khungtaskd]
1 S root          38         2    0 80   0 -   0 -   0 -   0 2 15:06 ?    00:00:00 [oom reaper]
1 I root          39         2    0 60 -20 -   0 -   0 -   0 2 15:06 ?    00:00:00 [writeback]
1 S root          40         2    0 80   0 -   0 -   0 -   0 1 15:06 ?    00:00:00 [kcompactd0]
1 S root          41         2    0 85   5 -   0 -   0 -   0 1 15:06 ?    00:00:00 [ksmd]
1 S root          42         2    0 99 19 -   0 -   0 -   0 1 15:06 ?    00:00:00 [khugepaged]

```

```

mint@mint: ~
File Edit View Search Terminal Help
4 S colord 1624 1 0 80 0 - 61994 - 14440 2 15:07 ? 00:00:00 /usr/libexec/colord
mint@mint:~$ ps ax
PID TTY STAT TIME COMMAND
1 ? Ss 0:04 /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]
8 ? I< 0:00 [mm_percpu_wq]
9 ? S 0:00 [ksoftirqd/0]
10 ? I 0:00 [rcu_sched]
11 ? S 0:00 [migration/0]
12 ? S 0:00 [idle_inject/0]
13 ? I 0:05 [kworker/0:1-events]
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]
19 ? I 0:06 [kworker/1:0-events]
20 ? I< 0:00 [kworker/1:0H-kblockd]
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 [cpuhp/3]
28 ? S 0:00 [idle_inject/3]
29 ? S 0:00 [migration/3]
30 ? S 0:01 [ksoftirqd/3]
32 ? I< 0:00 [kworker/3:0H-kblockd]
33 ? S 0:00 [kdevtmpfs]
34 ? I< 0:00 [netns]
35 ? S 0:00 [rcu_tasks_kthre]
36 ? S 0:00 [kauditd]
37 ? S 0:00 [khungtaskd]
38 ? S 0:00 [oom_reaper]
39 ? I< 0:00 [writeback]
40 ? S 0:00 [kcompactd0]
41 ? CN 0:00 [kmemd]

```

```
mint@mint:~$ ps -p 2411 -o comm=
kworker/u8:0-events_unbound
mint@mint:~$
```

```
mint@mint:~$ ps -auxf | sort -nr -k 3 | head -5
mint 1682 4.0 3.7 4460748 192068 ? Sl 15:07 2:11 | \_ cinnamon --replace
root 1286 0.6 1.7 881972 88180 tty7 Ssl+ 15:07 0:21 \_ /usr/lib/xorg/Xorg -core :0 -seat seat0 -auth /var/run/
lightdm/root/:0 -nolisten tcp vt7 -novtswitch
root 766 0.6 0.2 27276 11056 ? Ss 15:06 0:22 /lib/systemd/systemd-udevd
root 195 0.5 0.0 0 0 ? I 15:06 0:16 \_ [kworker/2:2-mm_percpu_wq]
mint 2362 0.2 0.8 467100 40900 ? Ssl 15:34 0:03 \_ /usr/libexec/gnome-terminal-server
mint@mint:~$
```

f.) free - fizikai memória és a swap által használt és szabad terület, ezek összege, pufferek, szabad pufferek száma.

```
mint@mint:~$ free
              total        used        free      shared  buff/cache   available
Mem:          5056304       587276       3458852        105004        1010176        4115644
Swap:              0              0              0
mint@mint:~$
```

g.) iostat – jelenítse meg átlagos CPU terhelést vagy lemez aktivitást.

```
mint@mint:~$ iostat
Linux 5.4.0-58-generic (mint) 02/28/22 _x86_64_ (4 CPU)

avg-cpu:  %user   %nice %system %iowait  %steal   %idle
           0.40    0.00    0.17    0.59    0.00   98.85

Device            tps    kB_read/s    kB_wrtn/s    kB_dscd/s    kB_read    kB_wrtn    kB_dscd
loop0             53.77         54.10         0.00         0.00     203296         0         0
sda                0.05          1.16         0.00         0.00         4364         0         0
scd0               1.87         78.58         0.00         0.00     295278         0         0
```

h.) sar - aktivitási adatok jelzése és összegyűjtése, mentés.

```
mint@mint:~$ sar 4 5
Linux 5.4.0-58-generic (mint) 02/28/22 _x86_64_ (4 CPU)

16:15:43      CPU    %user   %nice   %system   %iowait   %steal   %idle
16:15:47    all     0.51    0.00    0.13    0.00    0.00   99.36
16:15:51    all     0.77    0.00    0.13    0.00    0.00   99.10
16:15:55    all     0.38    0.00    0.00    0.00    0.00   99.62
16:15:59    all     5.16    0.00    1.43    0.00    0.00   93.40
```

i.) mpstat - több processzoros sz.gép esetén használják.

```
mint@mint:~$ mpstat
Linux 5.4.0-58-generic (mint) 02/28/22 _x86_64_ (4 CPU)

16:09:50      CPU    %usr   %nice    %sys %iowait    %irq    %soft    %steal    %guest    %gnice   %idle
16:09:50    all     0.40    0.00    0.16    0.58    0.00    0.00    0.00    0.00    0.00   98.86
mint@mint:~$
```

j.) pmap - processz memória használatát jelzi.

```
mint@mint:~$ pmap -p 2411
2411:  [kworker/u8:0-events_power_efficient]
total                                0K
```



## 2. FELADAT

### 1. Kérdezze le a PowerShellVerzió!

```
PS C:\Users\pocsi> $PSVersionTable
```

Name	Value
PSVersion	5.1.19041.1320
PSEdition	Desktop
PSCompatibleVersions	{1.0, 2.0, 3.0, 4.0...}
BuildVersion	10.0.19041.1320
CLRVersion	4.0.30319.42000
WSManStackVersion	3.0
PSRemotingProtocolVersion	2.3
SerializationVersion	1.1.0.1

### 2. Kérdezze le a mai dátumot?

```
PS C:\Users\pocsi> Get-Date
```

2022. február 28., hétfő 17:23:42

### 3. Kérdezze le a szolgáltatásokat?

Kijelölés Windows PowerShell

```
PS C:\Users\pocsi> Get-Service
```

Status	Name	DisplayName
Running	AarSvc_64cea	Agent Activation Runtime_64cea
Running	AGMSvc	Adobe Genuine Monitor Service
Running	AGSSvc	Adobe Genuine Software Integrity Se...
Stopped	AJRouter	AllJoyn-útválasztó szolgáltatás
Stopped	ALG	Alkalmazási réteg átjárószolgáltatása
Stopped	AppIDSvc	Alkalmazásidentitás
Running	Appinfo	Alkalmazásinformációk
Stopped	AppMgmt	Alkalmazásvezérlés
Stopped	AppReadiness	Alkalmazás-előkészítő
Stopped	AppVClient	Microsoft App-V Client
Running	AppXSvc	AppX Deployment Service (AppXSVC)
Stopped	AssignedAccessM...	AssignedAccessManager szolgáltatás
Running	AudioEndpointBu...	Windows-hangvégpontépítő
Running	Audiosrv	Windows audio
Stopped	autotimesvc	Mobilhálózati idő
Stopped	AxInstSV	ActiveX Telepítő (AxInstSV)
Stopped	BcastDVRUserSer...	Játékvideó-rögzítő és Közvetítés fe...
Stopped	BDESVC	BitLocker meghajtótitkosítási szolg...
Running	BFE	Alap szűrőprogram
Stopped	BITS	Háttérben futó intelligens átviteli...
Running	BluetoothUserSe...	Felhasználói Bluetooth-támogatási s...
Running	BrokerInfrastru...	Háttérfeladatok infrastruktúra-szol...
Running	BTAGService	Bluetooth-hangátjáró szolgáltatás
Running	BthAvctpSvc	AVCTP-szolgáltatás
Running	bthserv	Bluetooth-támogatási szolgáltatás
Running	camsvc	Képesség hozzáférés-kezelési szolgá...
Stopped	CaptureService_...	CaptureService_64cea
Running	cbdhsvc_64cea	Vágólap felhasználói szolgáltatás_6...
Running	CDPSvc	Csatlakoztatott eszközök platformja...
Running	CDPUserSvc_64cea	Csatlakoztatott eszközök platformja...
Stopped	CertPropSvc	Tanúsítvány-terjesztés
Running	ClickToRunSvc	Microsoft Office Click-to-Run Service
Stopped	ClipSvc	Ügyfél-licenclési szolgáltatás (Cl...
Stopped	cloudidsvc	Microsoft felhőalapú identitásszolg...
Stopped	COMSysApp	COM+ System Application
Stopped	ConsentUxUserSv...	ConsentUX_64cea
Running	CoreMessagingRe...	CoreMessaging
Running	cplspcon	Intel(R) Content Protection HDCP Se...
Stopped	CredentialEnrol...	CredentialEnrollmentManagerUserSvc_...
Running	CryptSvc	Kriptográfiai szolgáltatások
Stopped	CscService	Offline fájlok
Running	DCOMLaunch	DCOM-kiszolgáló folyamatindítás



## 5. Kérdezze a parancsok rövidített neveit? (alias)

```
Windows PowerShell
PS C:\Users\pocsi> Get-Alias

CommandType      Name                                Version      Source
-----
Alias             % -> ForEach-Object
Alias             ? -> Where-Object
Alias             ac -> Add-Content
Alias             asnp -> Add-PSSnapin
Alias             cat -> Get-Content
Alias             cd -> Set-Location
Alias             CFS -> ConvertFrom-String          3.1.0.0     Microsoft.PowerShell.Utility
Alias             chdir -> Set-Location
Alias             clc -> Clear-Content
Alias             clear -> Clear-Host
Alias             clhy -> Clear-History
Alias             cli -> Clear-Item
Alias             clp -> Clear-ItemProperty
Alias             cls -> Clear-Host
Alias             clv -> Clear-Variable
Alias             cnsn -> Connect-PSession
Alias             compare -> Compare-Object
Alias             copy -> Copy-Item
Alias             cp -> Copy-Item
Alias             cpi -> Copy-Item
Alias             cpp -> Copy-ItemProperty
Alias             curl -> Invoke-WebRequest
Alias             cvpa -> Convert-Path
Alias             dbp -> Disable-PSBreakpoint
Alias             del -> Remove-Item
Alias             diff -> Compare-Object
Alias             dir -> Get-ChildItem
Alias             dsn -> Disconnect-PSession
Alias             ebp -> Enable-PSBreakpoint
Alias             echo -> Write-Output
Alias             epal -> Export-Alias
Alias             epsv -> Export-Csv
Alias             epsn -> Export-PSession
Alias             erase -> Remove-Item
Alias             etn -> Enter-PSession
Alias             exsn -> Exit-PSession
Alias             fc -> Format-Custom
Alias             fhx -> Format-Hex                  3.1.0.0     Microsoft.PowerShell.Utility
Alias             fl -> Format-List
Alias             foreach -> ForEach-Object
Alias             ft -> Format-Table
Alias             fw -> Format-Wide
Alias             gal -> Get-Alias
Alias             gbp -> Get-PSBreakpoint
Alias             gc -> Get-Content
Alias             gci -> Get-ChildItem
```

## 6. Készítsen egy „processz” nevű Alias, majd futtassa és kérdezze le?!

```
PS C:\Users\pocsi> New-Alias "processz" Get-Process
PS C:\Users\pocsi> processz

Handles  NPM(K)  PM(K)  WS(K)  CPU(s)  Id  SI ProcessName
-----
996      153     264108 210656 149,69  5592 1 Acrobat
773      43      29400  60924  29,75  14964 1 Acrobat
341      34      54340  44780  2,16   3984 1 AcroCEF
325      33      53336  44516  1,86   11856 1 AcroCEF
590      30      15824  32420  1,03   14996 1 AcroCEF
160      12      2872   8488   0,06   12656 1 acrotray
367      16      5896   15080  4564   0 AGMService
227      13      3048   10688  4556   0 AGSService
467      26      21860  29632  1,25   5548 1 ApplicationFrameHost
249      10      2156   7268   0,06   1892 1 chrome
237      14      19544  51200  0,23   2028 1 chrome
311      15      23880  51636  0,53   4012 1 chrome
338      23      20988  42520  8,42   6184 1 chrome
238      14      15436  33840  0,13   6740 1 chrome
236      16      7036   18680  0,08   6944 1 chrome
480      17      60668  98192  31,48  7032 1 chrome
256      15      21636  54056  0,56   8672 1 chrome
1337     42      256756 232332 69,22  9108 1 chrome
940      20      132456 181120 14,28  9264 1 chrome
252      15      21292  54380  0,30   10644 1 chrome
346      19      56992  69840  9,08   10804 1 chrome
222      14      12300  27256  0,05   11508 1 chrome
344      18      125784 190944 24,27  12404 1 chrome
```

```
PS C:\Users\pocsi> Get-Alias processz

CommandType      Name                                Version      Source
-----
Alias             processz -> Get-Process
```

## 7. Listázza ki az adott meghajtón lévő szolgáltatásokat - formázott lista/tábla?

```
Windows PowerShell

PS C:\Users\pocsi> Get-Service | fl name, status

Name       : AarSvc_acca06
Status     : Running

Name       : AGMSvc
Status     : Running

Name       : AGSSvc
Status     : Running

Name       : AJRouter
Status     : Stopped

Name       : ALG
Status     : Stopped

Name       : AppIDSvc
Status     : Stopped

Name       : Appinfo
Status     : Running

Name       : AppMgmt
Status     : Stopped

Name       : AppReadiness
Status     : Stopped

Name       : AppVClient
Status     : Stopped

Name       : AppXSvc
Status     : Running

Name       : AssignedAccessManagerSvc
Status     : Stopped

Name       : AudioEndpointBuilder
Status     : Running

Name       : Audiosrv
Status     : Running

Name       : autotimesvc
Status     : Stopped
```

```
Windows PowerShell

PS C:\Users\pocsi> Get-Service | ft name, status

Name                                     Status
----                                     -
AarSvc_acca06                           Running
AGMSvc                                  Running
AGSSvc                                  Running
AJRouter                                Stopped
ALG                                      Stopped
AppIDSvc                                Stopped
Appinfo                                 Running
AppMgmt                                 Stopped
AppReadiness                            Stopped
AppVClient                              Stopped
AppXSvc                                 Running
AssignedAccessManagerSvc                 Stopped
AudioEndpointBuilder                     Running
Audiosrv                                Running
autotimesvc                             Stopped
AxInstSV                                Stopped
BcastDVRUserService_acca06              Running
BDESVC                                  Stopped
BFE                                      Running
BITS                                    Running
BluetoothUserService_acca06             Running
BrokerInfrastructure                     Running
BTAGService                             Running
BthAvctpSvc                             Running
bthserv                                 Running
camsvc                                  Running
CaptureService_acca06                   Stopped
cbdhsvc_acca06                           Running
CDPSvc                                  Running
CDPUserService_acca06                   Running
CertPropSvc                             Stopped
ClickToRunSvc                           Running
ClipSvc                                 Running
cloudidsvc                              Stopped
COMSysApp                               Stopped
ConsentUxUserService_acca06             Stopped
CoreMessagingRegistrar                  Running
cplspcon                                 Running
CredentialEnrollmentManagerUserService_acca06 Stopped
CryptSvc                                 Running
CscService                              Stopped
DcomLaunch                              Running
defragsvc                               Stopped
DeviceAssociationBrokerSvc_acca06        Stopped
```

## 8. Rendezze sorba név szerint (növekvő/csökkenő) az objektumokat!

Windows PowerShell

```
PS C:\Users\pocsi> Get-Process | Sort-Object name
```

Handles	NPM(K)	PM(K)	WS(K)	CPU(s)	Id	SI	ProcessName
1012	49	26996	61536	3,64	6648	2	Acrobat
808	102	284404	322472	18,56	4704	2	Acrobat
616	32	16268	38280	0,80	13772	2	AcroCEF
325	34	52824	76300	1,97	9136	2	AcroCEF
335	34	54016	77252	2,19	4804	2	AcroCEF
157	12	2904	11160	0,03	1280	2	acrotroy
367	16	5996	15376		4564	0	AGMSERVICE
227	13	3048	11200		4556	0	AGSSERVICE
399	23	17844	33616	0,25	14940	2	ApplicationFrameHost
152	8	1600	8128		13280	0	AppVShNotify
158	8	1716	8832	0,00	1764	2	AppVShNotify
341	18	53492	101472	7,72	11476	2	chrome
204	14	7004	18020	0,08	11344	2	chrome
243	15	17068	35960	0,03	10960	2	chrome
264	15	16076	45644	0,20	13120	2	chrome
306	17	53712	110988	5,52	16216	2	chrome
241	15	22064	57328	0,33	15356	2	chrome
844	35	688712	713268	6,78	13996	2	chrome
371	33	18124	40528	6,48	8368	2	chrome
222	14	12344	27240	0,03	4476	2	chrome
1613	60	93288	171836	22,00	4464	2	chrome
232	14	15312	40184	0,11	8900	2	chrome
254	15	19084	52912	0,22	10696	2	chrome
200	10	2076	7948	0,02	10692	2	chrome
249	15	25252	60916	1,08	9368	2	chrome
274	14	4384	16980	2,45	8204	2	conhost
103	7	6248	4784		4244	0	conhost
754	49	47860	95232	0,64	14852	2	Cortana
467	17	4492	22740	1,31	11324	2	ctfmon
623	25	2856	7300		5912	2	csrss
841	29	2120	5380		840	0	csrss
541	21	9764	21324		3688	0	dasHost
178	11	2764	12528		8292	2	DAX3API
244	14	7004	13728		4480	0	DAX3API
208	17	3652	10632		11992	0	dllhost
231	16	3672	13120	0,06	5036	2	dllhost
96	7	1500	6312	0,81	2280	2	dptf_helper
1241	40	81332	109916		6148	2	dwm
129	7	2184	5752		4688	0	esif_uf
378	14	6512	15300	0,13	6588	2	ETDCtrl
184	9	1872	6748		3384	0	ETDSERVICE
3027	103	138432	175184	15,34	2820	2	explorer
189	9	1580	6352		4528	0	FMSERVICE64
44	17	9776	18764		13988	2	fontdrvhost
37	7	1840	2840		1188	0	fontdrvhost

Windows PowerShell

```
PS C:\Users\pocsi> Get-Process | Sort-Object name -Descending
```

Handles	NPM(K)	PM(K)	WS(K)	CPU(s)	Id	SI	ProcessName
835	53	49244	2912	0,63	10888	2	YourPhone
233	10	5432	6908		1212	0	WUDFHost
364	16	3764	12108		2560	0	WUDFHost
393	17	10528	18928		3732	0	WUDFHost
569	29	8296	28948		8380	0	wmpnetwk
297	13	5728	15168		10616	0	WmiPrvSE
184	12	2928	10840		11408	0	WmiPrvSE
105	7	1228	5400		4236	0	wlanext
283	13	2744	10868		14716	2	winlogon
169	12	1700	6588		928	0	wininit
270	30	9048	27532	0,03	8112	2	Win32Bridge.Server
562	25	40868	30732		2320	0	vmms
139	8	1916	8976		3208	0	vmcompute
128	10	1980	10136	0,00	16140	2	UserOOBEBroker
130	8	1660	7040		5372	0	unsecapp
166	10	1744	9448	0,50	5576	2	tposd
391	18	4308	15300		5640	0	tphkload
580	25	29072	60508	0,58	11076	2	TextInputHost
128	7	1284	5356		4848	0	TbtP2pShortcutService
277	35	7456	18392	0,33	11152	2	taskhostw
928	43	43264	4552	0,59	15556	2	SystemSettings
4793	0	196	140		4	0	System
479	15	6096	21652		3236	0	svchost
212	11	10952	19408		3056	0	svchost
350	13	3936	11252		3248	0	svchost
242	17	3996	13504		3376	0	svchost
112	8	1300	6452		3264	0	svchost
472	14	3612	9068		2960	0	svchost
330	17	4144	9024		2772	0	svchost
227	13	2760	9536		2756	0	svchost
234	14	2528	13288		2816	0	svchost
202	13	3052	11604		2912	0	svchost
440	19	13052	21516		2868	0	svchost
207	15	11252	9504		3956	0	svchost
363	14	3264	12656		3864	0	svchost
143	11	1820	6180		3992	0	svchost
284	15	3624	13164		4312	0	svchost
527	23	7068	17012		4068	0	svchost
166	12	2184	10592		3808	0	svchost
202	9	1912	7404		3480	0	svchost
216	8	1364	5448		3392	0	svchost
173	13	2232	8324		3488	0	svchost
441	35	18720	26176		3784	0	svchost
134	8	1612	6540		3548	0	svchost
162	7	1584	5708		1772	0	svchost
393	16	3080	9544		1740	0	svchost



9. Kérdezze le azokat a neveket melynek első két betűje wi!

```
PS C:\Users\pocsi> Get-Service | Where-Object { $_.name -like "wi*"}

Status  Name                DisplayName
-----  ----                -
Stopped WiaRpc              Állókép-beviteli események
Running WinDefend           Microsoft Defender víruskereső szol...
Running WinHttpAutoProx... WinHTTP automatikus webproxy-kereső...
Running Winmgmt       Windows Management Instrumentation
Stopped WinRM              Rendszerfelügyeleti webszolgáltatások
Stopped wisvc         Windows Insider szolgáltatás
```

10. Csoportosítsa állapot szerint az objektumokat!

```
PS C:\Users\pocsi> Get-Service | Group-Object status

Count Name                Group
-----  ----                -
128 Running              {AarSvc_acca06, AGMSERVICE, AGSService, Appinfo...}
163 Stopped              {AJRouter, ALG, AppIDSvc, AppMgmt...}
```

11. Számolja meg az objektumokat!

```
PS C:\Users\pocsi> Get-Process | Measure-Object

Count      : 214
Average    :
Sum        :
Maximum    :
Minimum    :
Property   :
```

12. Számolj meg az objektumok: max, min, avg, sum szerint!

```
PS C:\Users\pocsi> Get-Process | Measure-Object -Property id -Maximum -Minimum -Average -Sum

Count      : 213
Average    : 6509,220657277
Sum        : 1386464
Maximum    : 16216
Minimum    : 0
Property   : Id
```

13. Kérdezze le a Windows időt!

```
PS C:\Users\pocsi> Get-Service | Where-Object { $_.name -eq "w32time"}

Status  Name        DisplayName
-----  ----        -
Running W32Time     Windows Time
```

14. Hozzon létre egy szoveg nevű változót, melynek értéke: Miskolc

```
PS C:\Users\pocsi> $szoveg = "Miskolc"
PS C:\Users\pocsi> "$szoveg"
Miskolc
PS C:\Users\pocsi>
```

15. Végezze el a következő műveleteket ((length, ToUpper, Replace, Contains, Split) a \$szoveg változó értékeivel

```
PS C:\Users\pocsi> "$szoveg"
Miskolc
PS C:\Users\pocsi> $szoveg.Length
PS C:\Users\pocsi> $szoveg.Length
7
PS C:\Users\pocsi> $szoveg.ToUpper()
MISKOLC
PS C:\Users\pocsi> $szoveg.Replace("Miskolc","Debrecen")
Debrecen
PS C:\Users\pocsi> $szoveg.Split("k")
Mis
olc
PS C:\Users\pocsi>
```

16. Készítsen a C:\ meghajtóra egy neptunkod.txt fájl, melynek tartalma a teljes neve.

```
PS C:\Users\pocsi> New-Item neptunkod.txt

Directory: C:\Users\pocsi

Mode                LastWriteTime         Length Name
----                -
-a----          2022. 03. 06.   15:51             0 neptunkod.txt

PS C:\Users\pocsi> Set-Content neptunkod.txt 'Pócsi Ákos'
PS C:\Users\pocsi> Get-Content neptunkod.txt
Pócsi Ákos
PS C:\Users\pocsi>
```