

# **Operációs rendszerek BSc**

**4. Gyak.**

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**Készítette:**

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Programtervező informatikus

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## 1. feladat – Linux OS

### a. feladat – Futó processzek listázása terhelés szerint

Megvalósítás:

```
mint@mint: ~  
File Edit View Search Terminal Help  
mint@mint:~$ top  
top - 19:01:36 up 10 min, 1 user, load average: 0.04, 0.29, 0.28  
Tasks: 147 total, 2 running, 145 sleeping, 0 stopped, 0 zombie  
%Cpu(s): 4.1 us, 0.3 sy, 0.0 ni, 95.6 id, 0.0 wa, 0.0 hi, 0.0 si, 0.0 st  
MiB Mem : 6409.4 total, 4898.8 free, 547.9 used, 962.7 buff/cache  
MiB Swap: 0.0 total, 0.0 free, 0.0 used. 5520.0 avail Mem  


| PID  | USER | PR | NI  | VIRT    | RES    | SHR    | S | %CPU | %MEM | TIME+   | COMMAND  |
|------|------|----|-----|---------|--------|--------|---|------|------|---------|----------|
| 1689 | mint | 20 | 0   | 3272548 | 184792 | 111320 | R | 3.3  | 2.8  | 0:50.17 | cinnamon |
| 1054 | root | 20 | 0   | 285544  | 82232  | 47428  | S | 1.0  | 1.3  | 0:05.45 | Xorg     |
| 2030 | mint | 20 | 0   | 539428  | 39324  | 30736  | S | 0.7  | 0.6  | 0:00.91 | gnome-t+ |
| 1714 | mint | 20 | 0   | 712176  | 69040  | 47236  | S | 0.3  | 1.1  | 0:01.29 | nemo-de+ |
| 2153 | root | 20 | 0   | 0       | 0      | 0      | I | 0.3  | 0.0  | 0:00.03 | kworker+ |
| 2272 | mint | 20 | 0   | 13600   | 4028   | 3384   | R | 0.3  | 0.1  | 0:00.06 | top      |
| 1    | root | 20 | 0   | 101948  | 11616  | 8732   | S | 0.0  | 0.2  | 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+ |
| 7    | root | 20 | 0   | 0       | 0      | 0      | I | 0.0  | 0.0  | 0:00.05 | kworker+ |
| 8    | root | 0  | -20 | 0       | 0      | 0      | I | 0.0  | 0.0  | 0:00.00 | mm_perc+ |
| 9    | root | 20 | 0   | 0       | 0      | 0      | S | 0.0  | 0.0  | 0:00.22 | ksoftir+ |
| 10   | root | 20 | 0   | 0       | 0      | 0      | I | 0.0  | 0.0  | 0:00.28 | rcu sch+ |


```

### b. feladat – Információk a rendszer aktivitásról és a hardverről

Megvalósítás:

```
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 5015876 167372 818680 0 0 686 0 162 556 13 3 84 0  
0
```

### c. feladat – Rendszer bejelentkezések és tevékenység

Megvalósítás:

```
mint@mint:~$ w  
19:02:49 up 11 min, 1 user, load average: 0.04, 0.24, 0.26  
USER TTY FROM LOGIN@ IDLE JCPU PCPU WHAT  
mint tty7 :0 18:51 11:06 6.38s 0.44s cinnamon-sessio  
mint@mint:~$
```

**d. feladat** – Szerver futásának kezdő ideje

Megvalósítás:

```
mint@mint:~$ who -b
system boot 2022-03-03 18:51
mint@mint:~$
```

**e. feladat** – Aktuális processzekről való jelentés

Megvalósítás:

```
mint@mint:~$ ps -Alf
F S UID          PID     PPID  C PRI  NI ADDR SZ WCHAN  STIME TTY          TIME C
MD
4 S root          1         0  0  80   0 - 25487 -          18:51 ?          00:00:01 /
/sbin/init splash
1 S root          2         0  0  80   0 -    0 -          18:51 ?          00:00:00 [
kthreadd]
1 I root          3         2  0  60 -20 -    0 -          18:51 ?          00:00:00 [
rcu_gp]
1 I root          4         2  0  60 -20 -    0 -          18:51 ?          00:00:00 [
rcu_par_gp]
1 I root          6         2  0  60 -20 -    0 -          18:51 ?          00:00:00 [
kworker/0:0H-kblockd]
1 I root          7         2  0  80   0 -    0 -          18:51 ?          00:00:00 [
kworker/u2:0-events_power_efficient]
1 I root          8         2  0  60 -20 -    0 -          18:51 ?          00:00:00 [
mm_percpu_wq]
1 S root          9         2  0  80   0 -    0 -          18:51 ?          00:00:00 [
ksoftirqd/0]
1 I root         10         2  0  80   0 -    0 -          18:51 ?          00:00:00 [
rcu_sched]
1 S root         11         2  0 -40   - -    0 -          18:51 ?          00:00:00 [
migration/0]
5 S root         12         2  0   9   - -    0 -          18:51 ?          00:00:00 [

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]
  7 ?            I           0:00 [kworker/u2:0-events_power_efficient]
  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]
 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]
```

- f. **feladat** – Fizikai memória és a swap által használt ész szabad terület, ezek összege, pufferek és szabad pufferek száma

Megvalósítás:

```
mint@mint:~$ free
              total        used        free      shared  buff/cache   available
Mem:        6563264       552004       5024088        103788        987172       5660912
Swap:              0              0              0
```

- g. **feladat** – Átlagos CPU terhelés

Megvalósítás:

```
mint@mint:~$ iostat
Linux 5.4.0-58-generic (mint)  03/03/22      _x86_64_      (1 CPU)

avg-cpu:  %user   %nice %system %iowait  %steal   %idle
           13.97    0.00    2.65    0.07    0.00   83.31

Device            tps    kB_read/s    kB_wrtn/s    kB_dscd/s    kB_read    kB_w
rtn    kB_dscd
loop0           213.06       215.29         0.00         0.00      204071
0
sda              0.62       15.42         0.00         0.00       14617
0
scd0              7.49       313.75         0.00         0.00      297394
0
```

- h. **feladat** – Rendszer aktivitási adatok

Megvalósítás:

```
mint@mint:~$ sar 4 5
Linux 5.4.0-58-generic (mint)  03/03/22      _x86_64_      (1 CPU)

19:07:41      CPU    %user   %nice   %system   %iowait   %steal   %idle
19:07:45    all    14.32    0.00    0.50     0.00     0.00   85.18
19:07:49    all    12.75    0.00    0.50     0.00     0.00   86.75
19:07:53    all     8.75    0.00    0.00     0.00     0.00   91.25
19:07:57    all    16.11    0.00    1.53     0.00     0.00   82.35
19:08:01    all    35.68    0.00    4.02     0.00     0.00   60.30
Average:    all    17.51    0.00    1.31     0.00     0.00   81.18
```

## i. feladat – Processzor aktivitás

Megvalósítás:

```
mint@mint:~$ mpstat
Linux 5.4.0-58-generic (mint) 03/03/22 _x86_64_ (1 CPU)

19:08:23 CPU %usr %nice %sys %iowait %irq %soft %steal %guest
          %gnice %idle
19:08:23 all 14.20 0.00 2.49 0.06 0.00 0.05 0.00 0.00
          0.00 83.20
```

## j. feladat – Processz memória használata

Megvalósítás:

```
mint@mint:~$ pmap

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

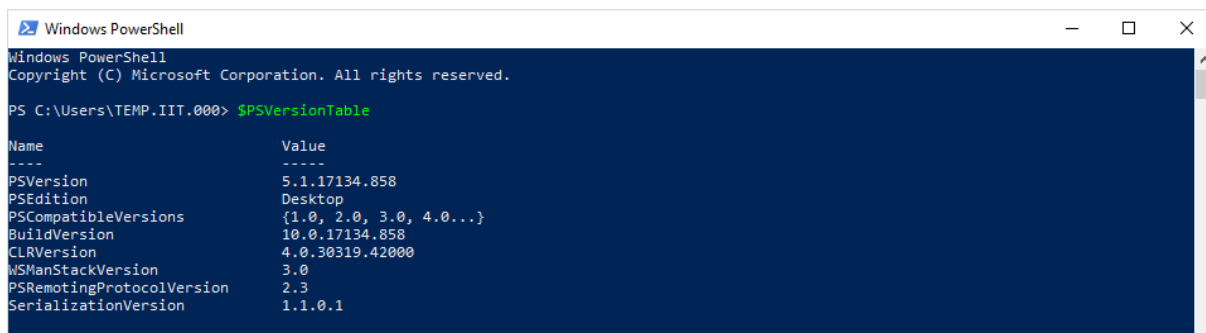
Options:
  -x, --extended          show details
  -X                      show even more details
                        WARNING: format changes according to /proc/PID/smaps
  -XX                    show everything the kernel provides
  -c, --read-rc           read the default rc
  -C, --read-rc-from=<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 pman(1)
```

## 2. feladat – Windows PowerShell

### 1. feladat – PowerShell verziójának lekérése



```
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

PS C:\Users\TEMP.IIT.000> $PSVersionTable

Name                           Value
----                           -
PSVersion                      5.1.17134.858
PSEdition                      Desktop
PSCompatibleVersions           {1.0, 2.0, 3.0, 4.0...}
BuildVersion                   10.0.17134.858
CLRVersion                     4.0.30319.42000
WSManStackVersion              3.0
PSRemotingProtocolVersion      2.3
SerializationVersion           1.1.0.1
```

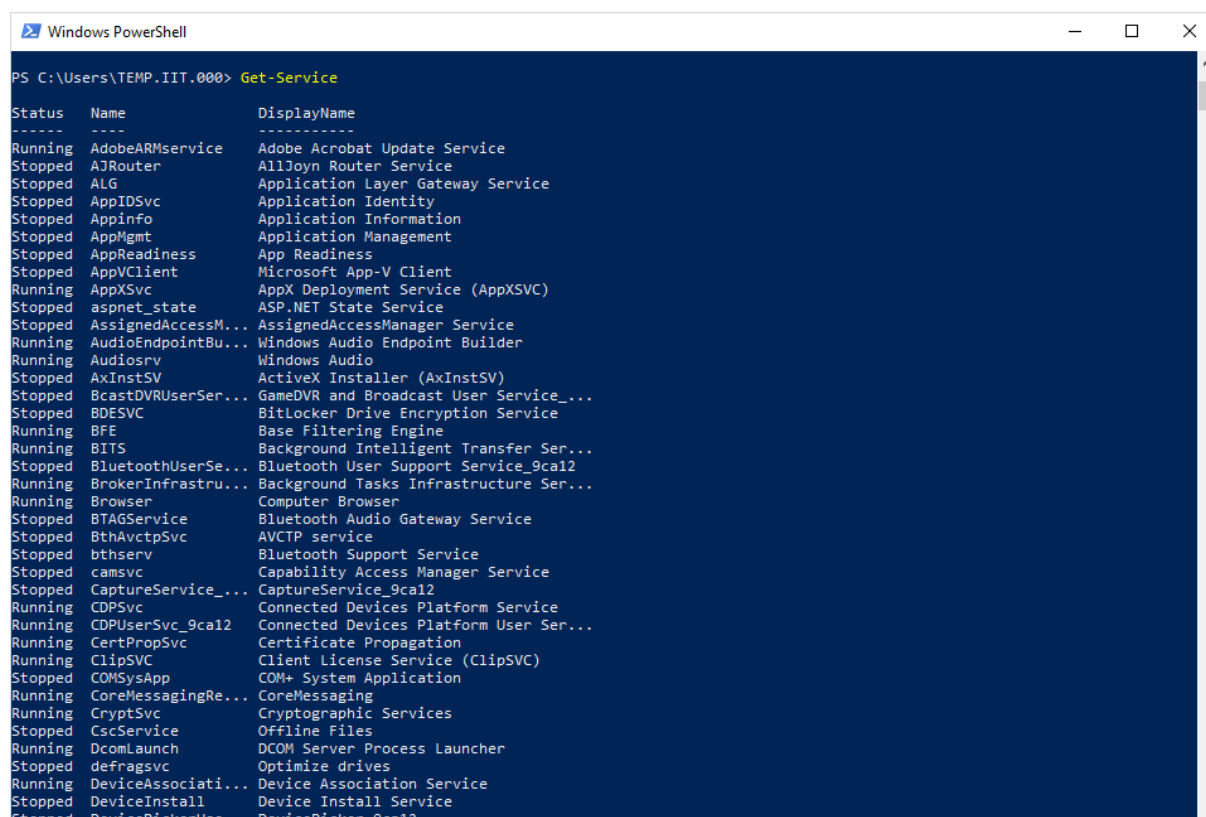
### 2. feladat – Aktuális dátum és idő lekérdezése



```
PS C:\Users\TEMP.IIT.000> Get-Date

2022. március 2., szerda 12:31:20
```

### 3. feladat – Szolgáltatások lekérdezése



```
PS C:\Users\TEMP.IIT.000> Get-Service

Status Name                DisplayName
-----
Running AdobeARMService      Adobe Acrobat Update Service
Stopped AJRouter        AllJoyn Router Service
Stopped ALG             Application Layer Gateway Service
Stopped AppIDSvc        Application Identity
Stopped AppInfo         Application Information
Stopped AppMgmt         Application Management
Stopped AppReadiness    App Readiness
Stopped AppVClient      Microsoft App-V Client
Running AppXSvc         AppX Deployment Service (AppXSVC)
Stopped aspnet_state    ASP.NET State Service
Stopped AssignedAccessM... AssignedAccessManager Service
Running AudioEndpointBu... Windows Audio Endpoint Builder
Running Audiosrv        Windows Audio
Stopped AxInstSV        ActiveX Installer (AxInstSV)
Stopped BcastDVRUserSer... GameDVR and Broadcast User Service_...
Stopped BDESVC          BitLocker Drive Encryption Service
Running BFE             Base Filtering Engine
Running BITS            Background Intelligent Transfer Ser...
Stopped BluetoothUserSe... Bluetooth User Support Service_9ca12
Running BrokerInfrastru... Background Tasks Infrastructure Ser...
Running Browser         Computer Browser
Stopped BTAGService     Bluetooth Audio Gateway Service
Stopped BthAvctpSvc     AVCTP service
Stopped bthserv         Bluetooth Support Service
Stopped camsvc          Capability Access Manager Service
Stopped CaptureService_... CaptureService_9ca12
Running CDPsvc          Connected Devices Platform Service
Running CDPUserSvc_9ca12 Connected Devices Platform User Ser...
Running CertPropSvc     Certificate Propagation
Running ClipSvc         Client License Service (ClipSvc)
Stopped COMSysApp       COM+ System Application
Running CoreMessagingRe... CoreMessaging
Running CryptSvc        Cryptographic Services
Stopped CscService      Offline Files
Running DcomLaunch      DCOM Server Process Launcher
Stopped defragsvc       Optimize drives
Running DeviceAssociati... Device Association Service
Stopped DeviceInstall    Device Install Service
Stopped DeviceDiskUsa... DeviceDiskUsa_9ca12
```

#### 4. feladat – C:\ meghajtón lévő könyvtárak és fájlok lekérdezése

```
Windows PowerShell
PS C:\Users\TEMP.IIT.000> Get-Service

Status Name DisplayName
-----
Running AdobeARMService Adobe Acrobat Update Service
Stopped ATRouter Alljoyn Router Service
Stopped ALG Application Layer Gateway Service
Stopped AppIDSvc Application Identity
Stopped Appinfo Application Information
Stopped AppMgmt Application Management
Stopped AppReadiness App Readiness
Stopped AppVClient Microsoft App-V Client
Running AppXSvc AppX Deployment Service (AppXSVC)
Stopped aspnet_state ASP.NET State Service
Stopped AssignedAccessM... AssignedAccessManager Service
Running AudioEndpointBu... Windows Audio Endpoint Builder
Running Audiosrv Windows Audio
Stopped AxInstSV ActiveX Installer (AxInstSV)
Stopped BcastDVRUserSer... GameDVR and Broadcast User Service...
Stopped BDESVC BitLocker Drive Encryption Service
Running BFE Base Filtering Engine
Running BITS Background Intelligent Transfer Ser...
Stopped BluetoothUserSe... Bluetooth User Support Service_9ca12
Running BrokerInfrastru... Background Tasks Infrastructure Ser...
Running Browser Computer Browser
Running BTAGService Bluetooth Audio Gateway Service
Stopped BthAvctpSvc AVCTP service
Stopped bthserv Bluetooth Support Service
Stopped camsvc Capability Access Manager Service
Stopped CaptureService_... CaptureService_9ca12
Running CDPSvc Connected Devices Platform Service
Running CDPUserSvc_9ca12 Connected Devices Platform User Ser...
Running CertPropSvc Certificate Propagation
Running ClipSvc Client License Service (ClipSvc)
Stopped COMSysApp COM+ System Application
Running CoreMessagingRe... CoreMessaging
```

#### 5. feladat – Parancsok rövidített nevének (alias) lekérdezése

```
Windows PowerShell
-a--- 2016. 08. 02. 20:57 0 Recovery.txt

PS C:\> Get-Alias

CommandType Name Version Source
-----
Alias % -> ForEach-Object
Alias ? -> Where-Object
Alias ac -> Add-Content
Alias asnp -> Add-PSnapin
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 dnsn -> Disconnect-PSession
Alias ebp -> Enable-PSBreakpoint
Alias echo -> Write-Output
Alias epal -> Export-Alias
Alias epcsv -> Export-Csv
Alias epsn -> Export-PSession
Alias erase -> Remove-Item
Alias etsn -> 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
```

## 6. feladat – „processz” nevű alias létrehozása, futtatása

```
Windows PowerShell

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

Handles	NPM(K)	PM(K)	WS(K)	CPU(s)	Id	SI	ProcessName
301	18	9740	11612	0,25	4472	1	ApplicationFrameHost
141	9	2136	5808		5584	0	armsvc
205	13	3260	14248	0,13	4980	1	backgroundTaskHost
163	10	1960	8404	0,09	2336	1	browser_broker
348	60	108220	51280	26,73	424	1	chrome
131	9	2064	6132	0,08	2100	1	chrome
365	20	57640	96668	19,66	5264	1	chrome
220	14	10752	23296	0,17	9508	1	chrome
302	19	12740	30444	3,53	10564	1	chrome
236	14	7060	15384	0,25	10880	1	chrome
1307	49	61092	125256	19,00	11184	1	chrome
664	27	70572	11932		1760	0	CompatTelRunner
115	6	1156	140		4364	0	CompatTelRunner
147	9	5668	372		4372	0	conhost
248	13	4032	11984	2,00	6924	1	conhost
149	9	5668	380		8052	0	conhost
116	7	5360	4460		9992	0	conhost
382	15	4412	13300	4,33	5368	1	ctfmon
650	23	1876	4536		520	0	csrss
575	16	2712	4612		612	1	csrss
138	8	2024	11300	0,48	6316	1	dllhost
172	9	2208	10376	0,11	8216	1	dllhost
634	43	83076	39204		1228	1	dwm
2550	88	58780	97776	50,67	5352	1	explorer
179	10	1884	5480		9984	0	fdhost
99	7	1128	4544		9868	0	fdlauncher
855	62	37976	19848	1,05	3012	1	firefox
1105	118	234084	236712	98,39	6444	1	firefox
1912	116	164400	152632	96,78	8152	1	firefox
482	92	253048	182156	46,91	8272	1	firefox
403	32	37196	30696	36,48	8840	1	firefox
1040	73	37016	45552	1,16	9856	1	firefox

## 7. feladat – Meghajtón lévő szolgáltatások listázása (formázott lista/tábla)

```
Windows PowerShell

242      11      1852      6076      988      0 WUDFHost

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

```
Name      : AdobeARMSvc
Status    : Running

Name      : AJRouter
Status    : Stopped

Name      : ALG
Status    : Stopped

Name      : AppIDSvc
Status    : Stopped

Name      : AppInfo
Status    : Stopped

Name      : AppMgmt
Status    : Stopped

Name      : AppReadiness
Status    : Stopped

Name      : AppVClient
Status    : Stopped

Name      : AppXSvc
Status    : Running

Name      : aspnet_state
Status    : Stopped

Name      : AssignedAccessManagerSvc
Status    : Stopped

Name      : AudioEndpointBuilder
Status    : Running
```



```
Windows PowerShell

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

Name                                     Status
----                                     -
AdobeARMSvc                            Running
AJRouter                               Stopped
ALG                                     Stopped
AppIDSvc                               Stopped
AppInfo                                 Stopped
AppMgmt                                 Stopped
AppReadiness                           Stopped
AppVClient                             Stopped
AppXSvc                                Running
AspNetState                            Stopped
AssignedAccessManagerSvc               Stopped
AudioEndpointBuilder                  Running
AudioSvc                               Running
AxInstSV                              Stopped
BcastDVRUserService_9ca12             Stopped
BDESvc                                 Stopped
BFE                                     Running
BITS                                   Stopped
BluetoothUserService_9ca12            Stopped
BrokerInfrastructure                   Running
Browser                                Running
BTAGSvc                                Stopped
BthAvctpSvc                           Stopped
bthserv                               Stopped
camsvc                                 Stopped
CaptureService_9ca12                  Stopped
CDPSvc                                 Running
CDPUserService_9ca12                   Running
CertPropSvc                           Running
ClipSvc                               Running
COMSysApp                             Stopped
CoreMessagingRegistrar                Running
CryptSvc                              Running
CscSvc                                 Stopped
DcomLaunch                             Running
defragsvc                             Stopped
DeviceAssociationService               Running
DeviceInstall                         Stopped
DevicePickerUserService_9ca12          Stopped
DevicesFlowUserService_9ca12           Stopped
DevQueryBroker                        Stopped
Dhcp                                    Running
diagnosticshub.standardcollector.service Stopped
```

```
Windows PowerShell

XboxNetApiSvc                           Stopped

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

Name                                     Status
----                                     -
AdobeARMSvc                            Running
AJRouter                               Stopped
ALG                                     Stopped
AppIDSvc                               Stopped
AppInfo                                 Stopped
AppMgmt                                 Stopped
AppReadiness                           Stopped
AppVClient                             Stopped
AppXSvc                                Stopped
AspNetState                            Stopped
AssignedAccessManagerSvc               Stopped
AudioEndpointBuilder                  Running
AudioSvc                               Running
AxInstSV                              Stopped
BcastDVRUserService_9ca12             Stopped
BDESvc                                 Stopped
BFE                                     Running
BITS                                   Stopped
BluetoothUserService_9ca12            Stopped
BrokerInfrastructure                   Running
Browser                                Running
BTAGSvc                                Stopped
BthAvctpSvc                           Stopped
bthserv                               Stopped
camsvc                                 Stopped
CaptureService_9ca12                  Stopped
CDPSvc                                 Running
CDPUserService_9ca12                   Running
CertPropSvc                           Running
ClipSvc                               Stopped
COMSysApp                             Stopped
CoreMessagingRegistrar                Running
CryptSvc                              Running
CscSvc                                 Stopped
DcomLaunch                             Running
defragsvc                             Stopped
DeviceAssociationService               Running
DeviceInstall                         Stopped
DevicePickerUserService_9ca12          Stopped
```

## 8. feladat – Objektumok, névszerinti sorba rendezése (növekvő, csökkenő)

```
Windows PowerShell
XboxNetApiSvc Stopped

PS C:\> Sort-Object
PS C:\> Get-Service | Sort-Object name

Status Name DisplayName
-----
Running AdobeARMSvc Adobe Acrobat Update Service
Stopped AJORouter AllJoyn Router Service
Stopped ALG Application Layer Gateway Service
Stopped AppIDSvc Application Identity
Stopped Appinfo Application Information
Stopped AppMgmt Application Management
Stopped AppReadiness App Readiness
Stopped AppVClient Microsoft App-V Client
Stopped AppXSvc AppX Deployment Service (AppXSVC)
Stopped aspnet_state ASP.NET State Service
Stopped AssignedAccessM... AssignedAccessManager Service
Running AudioEndpointBu... Windows Audio Endpoint Builder
Running Audiosrv Windows Audio
Stopped AxInstSV ActiveX Installer (AxInstSV)
Stopped BcastDVRUserSer... GameDVR and Broadcast User Service_...
Stopped BDESVC BitLocker Drive Encryption Service
Running BFE Base Filtering Engine
Stopped BITS Background Intelligent Transfer Ser...
Stopped BluetoothUserSe... Bluetooth User Support Service_9ca12
Running BrokerInfrastru... Background Tasks Infrastructure Ser...
Running Browser Computer Browser
Stopped BTAGService Bluetooth Audio Gateway Service
Stopped BthAvctpSvc AVCTP service
Stopped bthserv Bluetooth Support Service
Stopped camsvc Capability Access Manager Service
Stopped CaptureService_... CaptureService_9ca12
Running CDPSvc Connected Devices Platform Service
Running CDPUserSvc_9ca12 Connected Devices Platform User Ser...
Running CertPropSvc Certificate Propagation
Stopped ClipSvc Client License Service (ClipSvc)
Stopped COMSysApp COM+ System Application
Running CoreMessagingRe... CoreMessaging
Running CryptSvc Cryptographic Services

Windows PowerShell

PS C:\> Get-Service | Sort-Object name -Descending

Status Name DisplayName
-----
Stopped XboxNetApiSvc Xbox Live Networking Service
Stopped XboxGipSvc Xbox Accessory Management Service
Stopped XblGameSave Xbox Live Game Save
Stopped XblAuthManager Xbox Live Auth Manager
Stopped xbgm Xbox Game Monitoring
Stopped WwanSvc WWAN AutoConfig
Running wuauserv Windows Update
Running WSearch Windows Search
Running wscsvc Security Center
Running WpnUserService_... Windows Push Notifications User Ser...
Running WpnService Windows Push Notifications System S...
Stopped WPDBusEnum Portable Device Enumerator Service
Stopped WpcMonSvc Parental Controls
Stopped workfolderssvc Work Folders
Stopped WMPNetworkSvc Windows Media Player Network Sharin...
Stopped wmiApSrv WMI Performance Adapter
Stopped wlpasvc Local Profile Assistant Service
Running wldsvc Microsoft Account Sign-in Assistant
Stopped WlanSvc WLAN AutoConfig
Stopped wisvc Windows Insider Service
Stopped WinRM Windows Remote Management (WS-Manag...
Running Winmgmt Windows Management Instrumentation
Running WinHttpAutoProx... WinHTTP Web Proxy Auto-Discovery Se...
Running WinDefend Windows Defender Antivirus Service
Stopped WiaRpc Still Image Acquisition Events
Stopped WFDSConMgrSvc Wi-Fi Direct Services Connection Ma...
Stopped WerSvc Windows Error Reporting Service
Stopped wercplsupport Problem Reports and Solutions Contr...
Stopped WEPHOSTSVC Windows Encryption Provider Host Se...
Stopped Wecsvc Windows Event Collector
Stopped WebClient WebClient
Running WdNisSvc Windows Defender Antivirus Network ...
Running WdiSystemHost Diagnostic System Host
Running WdiServiceHost Diagnostic Service Host
Stopped Wcnscvc Windows Connect Now - Config Registr...
Running Wcmsvc Windows Connection Manager
Stopped WbioSvc Windows Biometric Service
Stopped wbengine Block Level Backup Engine Service
Stopped WarpJITSvc WarpJITSvc
Stopped WalletService WalletService
Stopped WaaSMedicSvc Windows Update Medic Service
Running W32Time Windows Time
Stopped VSStandardColle... Visual Studio Standard Collector Se...
Stopped VSStandardColle... Visual Studio Standard Collector Se...
Stopped VSS Volume Shadow Copy
```

## 9. feladat – Nevek lekérdezése amelyeknek első két betűje „wi”

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

Status Name DisplayName
-----
Stopped WiaRpc Still Image Acquisition Events
Running WinDefend Windows Defender Antivirus Service
Running WinHttpAutoProx... WinHTTP Web Proxy Auto-Discovery Se...
Running Winmgmt Windows Management Instrumentation
Stopped WinRM Windows Remote Management (WS-Manag...
Stopped wisvc Windows Insider Service
```

## 10. feladat – Objektumok állapot szerinti csoportosítása

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

Count Name Group
-----
96 Running {AdobeARMservice, AudioEndpointBuilder, Audiosrv, BFE...}
172 Stopped {AJRouter, ALG, AppIDSvc, Appinfo...}
```

## 11. feladat – Objektumok megszámlálása

```
PS C:\> Get-Service | Measure-Object

Count : 268
Average :
Sum :
Maximum :
Minimum :
Property :
```

## 12. feladat – Objektumok megszámlálása (max, min, avg, sum szerint)

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

Count : 146
Average : 4319,50684931507
Sum : 630648
Maximum : 11908
Minimum : 0
Property : Id
```

## 13. feladat – Windows idő lekérdezése

```
PS C:\> Get-Date -format "HH:mm"
12:55
PS C:\>
```

## 14. feladat – „szoveg” változó létrehozása és értékadás: *Miskolc*

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

## 15. feladat – Műveletek végrehajtása a változó értékeivel

```
PS C:\> $szoveg.length
7
PS C:\> $szoveg.ToUpper()
MISKOLC
PS C:\> $szoveg.Replace("kolc","l")
Misi
PS C:\> $szoveg.Split("k")
Mis
olc
PS C:\> $szoveg.Split("s").Split("o")
Mi
k
lc
PS C:\>
```

## 16. feladat – Txt fájl létrehozása és feladatok végrehajtása

```
PS C:\> $n= "C:\Users\TEMP.IIT.000\Desktop\C0LLER.txt"
PS C:\> $C0LLER = Get-Content $n
PS C:\> $C0LLER
Holczer Vanda
PS C:\> $C0LLER.Count
1
PS C:\> $C0LLER = Get-Content $n
PS C:\> Get-Item $n

Directory: C:\Users\TEMP.IIT.000\Desktop

Mode                LastWriteTime         Length Name
----                -
-a----          2022. 03. 02.      13:07             13 C0LLER.txt

PS C:\>
```