

Operációs rendszerek BSc

4. Gyak.

2022. 03. 02

Készítette: Kriston Ádám Bsc

Program Tervező Informatikus

SYQ7E2

Miskolc, 2022.03.02

1. feladat:

a.

```
top - 23:53:29 up 87 days, 48 min, 1 user, load average: 0.05, 0.03, 0.05
Tasks: 3 total, 1 running, 2 sleeping, 0 stopped, 0 zombie
%Cpu(s): 0.0 us, 0.0 sy, 0.0 ni,100.0 id, 0.0 wa, 0.0 hi, 0.0 si, 0.0 st
KiB Mem : 8025292 total, 4912992 free, 1140208 used, 1972092 buff/cache
KiB Swap: 2097148 total, 2097148 free, 0 used, 6669788 avail Mem
```

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
10246	kriston4	20	0	87036	4632	3736	S	0.0	0.1	0:00.00	sshd
10247	kriston4	20	0	16432	5056	2996	S	0.0	0.1	0:00.08	bash
10266	kriston4	20	0	39780	3412	2856	R	0.0	0.0	0:00.01	top

b

```
kriston4@jerry:~$ 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 4909624 2152 1969940 0 0 0 0 0 0 0 0 0 100 0
 0
```

```
kriston4@jerry:~$ 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 4912012 989192 1798192 0 0 0 0 0 0 0 0 0 100 0 0
kriston4@jerry:~$
```

c

```
kriston4@jerry:~$ w kriston4
 23:57:56 up 87 days, 52 min, 1 user, load average: 0.00, 0.01, 0.05
USER      TTY      FROM          LOGIN@   IDLE   JCPU   PCPU WHAT
kriston4@jerry:~$
```

d

```
kriston4@jerry:~$ uname -a
Linux jerry 4.1.6-grsec #8 SMP Thu Sep 10 13:55:04 CEST 2015 x86_64 GNU/Linux
kriston4@jerry:~$
```

e

```
kriston4@jerry:~$ ps -A
  PID TTY          TIME CMD
 10307 ?            00:00:00 sshd
 10308 pts/0        00:00:00 bash
 10406 pts/0        00:00:00 ps
kriston4@jerry:~$ ps -ALF
UID          PID  PPID  LWP  C NLWP  SZ  RSS  PSR  STIME TTY          TIME CMD
kriston4 10307 10299 10307 0 1 21759 4476 0 Mar07 ?            00:00:00 sshd: kriston4@pts/0
kriston4 10308 10307 10308 0 1 4108 5064 1 Mar07 pts/0        00:00:00 -bash
kriston4 10425 10308 10425 0 1 8327 3072 4 00:02 pts/0        00:00:00 ps -ALF
kriston4@jerry:~$ ps -ALFH
error: thread display conflicts with forest display
kriston4@jerry:~$ ps axu
USER      PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND
kriston4 10307  0.0  0.0  87036 4476 ?        Ss   Mar07    0:00 sshd: kriston4@pts/0
kriston4 10308  0.0  0.0  16432 5064 pts/0    Ss   Mar07    0:00 -bash
kriston4 10545  0.0  0.0  33308 3032 pts/0    R+   00:06    0:00 ps axu
```

```
kriston4@jerry:~$ pstree
?---?---sshd---bash---pstree
```

```
kriston4@jerry:~$ ps -p 1286 -o comm=
kriston4@jerry:~$ ps -p 1286 -o comm=
```

f

```
kriston4@jerry:~$ free
              total        used        free      shared  buff/cache   available
Mem:          8025292      1141956      4911228       172864       1972108       6668040
Swap:         2097148           0       2097148
kriston4@jerry:~$ free --b
              total        used        free      shared  buff/cache   available
Mem:          8217899008  1169199104  5029261312  177012736  2019438592  6828236800
Swap:         2147479552           0  2147479552
kriston4@jerry:~$ free -k
              total        used        free      shared  buff/cache   available
Mem:          8025292      1141936      4911248       172864       1972108       6668060
Swap:         2097148           0       2097148
kriston4@jerry:~$ free -m
              total        used        free      shared  buff/cache   available
Mem:           7837         1115         4796           168           1925           6511
Swap:          2047           0         2047
kriston4@jerry:~$ free -g
              total        used        free      shared  buff/cache   available
Mem:             7           1           4           0           1           6
Swap:            1           0           1
kriston4@jerry:~$ free -t
              total        used        free      shared  buff/cache   available
Mem:          8025292      1141564      4911620       172864       1972108       6668432
Swap:         2097148           0       2097148
Total:       10122440      1141564      7008768
kriston4@jerry:~$ free -s
free: option requires an argument -- '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).
```

```

kriston4@jerry:~$ iostat
Linux 4.1.6-grsec (jerry)      03/08/2022      _x86_64_      (6 CPU)

avg-cpu:  %user   %nice %system %iowait  %steal   %idle
           0.03    0.00    0.03    0.00    0.00   99.94

Device:            tps    kB_read/s    kB_wrtn/s    kB_read  kB_wrtn

kriston4@jerry:~$ iostat -c
Linux 4.1.6-grsec (jerry)      03/08/2022      _x86_64_      (6 CPU)

avg-cpu:  %user   %nice %system %iowait  %steal   %idle
           0.03    0.00    0.03    0.00    0.00   99.94

kriston4@jerry:~$ iostat -d
Linux 4.1.6-grsec (jerry)      03/08/2022      _x86_64_      (6 CPU)

Device:            tps    kB_read/s    kB_wrtn/s    kB_read  kB_wrtn

kriston4@jerry:~$ iostat -N
Linux 4.1.6-grsec (jerry)      03/08/2022      _x86_64_      (6 CPU)

avg-cpu:  %user   %nice %system %iowait  %steal   %idle
           0.03    0.00    0.03    0.00    0.00   99.94

Device:            tps    kB_read/s    kB_wrtn/s    kB_read  kB_wrtn

kriston4@jerry:~$ iostat -n
Usage: iostat [ options ] [ <interval> [ <count> ] ]
Options are:
[ -c ] [ -d ] [ -h ] [ -k | -m ] [ -N ] [ -t ] [ -V ] [ -x ] [ -y ] [ -z ]
[ -j { ID | LABEL | PATH | UUID | ... } ]
[ [ -H ] -g <group_name> ] [ -p [ <device> [,...] | ALL ] ]
[ <device> [...] | ALL ]
kriston4@jerry:~$ iostat -h
Linux 4.1.6-grsec (jerry)      03/08/2022      _x86_64_      (6 CPU)

avg-cpu:  %user   %nice %system %iowait  %steal   %idle
           0.03    0.00    0.03    0.00    0.00   99.94

Device:            tps    kB_read/s    kB_wrtn/s    kB_read  kB_wrtn

kriston4@jerry:~$ iostat -k
Linux 4.1.6-grsec (jerry)      03/08/2022      _x86_64_      (6 CPU)

avg-cpu:  %user   %nice %system %iowait  %steal   %idle
           0.03    0.00    0.03    0.00    0.00   99.94

Device:            tps    kB_read/s    kB_wrtn/s    kB_read  kB_wrtn

```

h

```
kriston4@jerry:~$ sar
Cannot open /var/log/sysstat/sa08: No such file or directory
Please check if data collecting is enabled
```

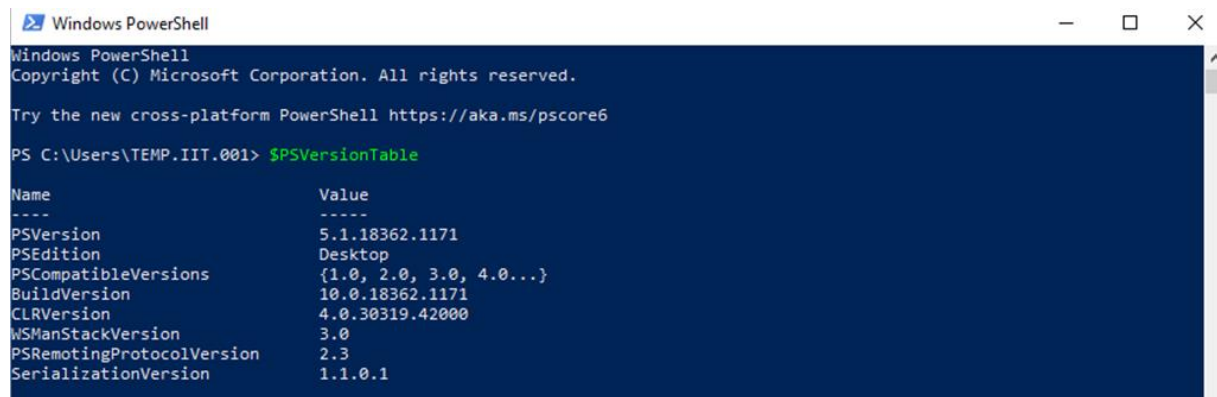
i

```
kriston4@jerry:~$ mpstat
Linux 4.1.6-grsec (jerry)      03/08/2022      _x86_64_      (6 CPU)

12:15:10 AM  CPU      %usr   %nice    %sys %iowait    %irq   %soft  %steal  %guest  %gnice   %idle
12:15:10 AM  all        0.03    0.00    0.03   0.00     0.00    0.00   0.00   0.00   0.00    99.94
```

2. feladat:

1



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

Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Users\TEMP.IIT.001> $PSVersionTable

Name                           Value
----                           -
PSVersion                      5.1.18362.1171
PSEdition                      Desktop
PSCompatibleVersions           {1.0, 2.0, 3.0, 4.0...}
BuildVersion                   10.0.18362.1171
CLRVersion                     4.0.30319.42000
WSManStackVersion              3.0
PSRemotingProtocolVersion      2.3
SerializationVersion           1.1.0.1
```

2

```
PS C:\Users\TEMP.IIT.001> Get-Date

2022. március 2., szerda 12:33:33
```

3

PS C:\Users\TEMP.IIT.001> Get-Process

Handles	NPM(K)	PM(K)	WS(K)	CPU(s)	Id	SI	ProcessName
350	21	10596	28024	0,36	7064	1	ApplicationFrameHost
147	9	1868	6016		2808	0	armsvc
176	11	6308	11908	0,06	3016	0	audiodg
245	14	4260	15220	0,14	856	1	backgroundTaskHost
356	16	3192	14424	0,13	10540	1	browser_broker
203	9	1976	6396	0,08	1096	1	chrome
336	15	30336	63184	2,27	1100	1	chrome
365	18	78040	122428	34,20	2324	1	chrome
892	19	104180	134432	18,06	3868	1	chrome
224	17	21636	36620	0,80	4656	1	chrome
245	14	7452	11220	0,38	5028	1	chrome
265	16	7108	16344	0,13	5540	1	chrome
239	14	14440	25296	0,23	6656	1	chrome
372	24	18536	31808	11,63	6728	1	chrome
372	20	55284	100424	13,41	7212	1	chrome
1691	59	87240	148924	50,31	7408	1	chrome
480	67	252952	245800	108,16	7540	1	chrome
287	16	27808	74740	4,78	7860	1	chrome
263	16	22912	43616	94,94	8344	1	chrome
478	17	30672	50128	4,77	8560	1	chrome
338	17	32828	71644	1,78	9192	1	chrome
124	6	1148	164		10172	0	CompatTelRunner
594	26	68500	32560		10292	0	CompatTelRunner
327	18	39928	32720		10908	0	CompatTelRunner
265	14	4392	15648	0,23	620	1	conhost
161	10	6740	8932		1840	0	conhost
163	10	6776	444		7804	0	conhost
119	8	6460	5220		7876	0	conhost
161	10	6744	384		9908	0	conhost
412	16	3808	13220	1,94	5448	1	ctfmon
679	24	1736	4772		524	0	csrss
584	18	2540	5024		612	1	csrss
250	23	5244	13492	0,17	4100	1	dllhost
139	8	1808	7836	0,53	6232	1	dllhost
828	44	98644	64080		1116	1	dwm
2048	81	47876	87140	24,72	5632	1	explorer
187	10	1928	5828		7712	0	fdhost
100	7	1148	4932		8488	0	fdlauncher
38	8	4204	7780		976	1	fontdrvhost
38	5	1456	2424		980	0	fontdrvhost
0	0	60	8		0	0	Idle
485	43	53656	17752		10720	0	Launchpad

4

```
PS C:\Users\TEMP.IIT.001> Get-ChildItem

Directory: C:\Users\TEMP.IIT.001

Mode                LastWriteTime         Length Name
----                -
d-----          2021. 10. 14.             8:48      .dotnet
d-r---          2022. 03. 02.            12:12    3D Objects
d-r---          2022. 03. 02.            12:12    Contacts
d-r---          2022. 03. 02.            12:40    Desktop
d-r---          2022. 03. 02.            12:40    Documents
d-r---          2022. 03. 02.            12:12    Downloads
d-r---          2022. 03. 02.            12:12    Favorites
d-r---          2022. 03. 02.            12:12    Links
d-r---          2022. 03. 02.            12:12    Music
d-r---          2022. 03. 02.            12:20    OneDrive
d-r---          2022. 03. 02.            12:12    Pictures
d-r---          2022. 03. 02.            12:12    Saved Games
d-r---          2022. 03. 02.            12:13    Searches
d-r---          2022. 03. 02.            12:12    Videos
```

5

```
PS C:\Users\TEMP.IIT.001> 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            dmsn -> 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            etns -> 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
```


6

```

PS C:\Users\TEMP.IIT.001> New-Alias processz Get-process
PS C:\Users\TEMP.IIT.001> processz

```

Handles	NPM(K)	PM(K)	WS(K)	CPU(s)	Id	SI	ProcessName
338	20	10308	27800	0,36	7064	1	ApplicationFrameHost
147	9	1868	6000		2808	0	armsvc
340	15	3020	13952	0,13	10540	1	browser_broker
203	9	1976	6340	0,08	1096	1	chrome
336	15	30308	55108	2,28	1100	1	chrome
338	17	98284	141216	55,72	2324	1	chrome
913	18	98604	130816	22,98	3868	1	chrome
224	17	21672	36656	0,91	4656	1	chrome
242	14	7420	11148	0,53	5028	1	chrome
260	16	7040	16196	0,13	5540	1	chrome
239	14	14436	25332	0,27	6656	1	chrome
311	18	18420	31060	12,38	6728	1	chrome
381	20	54416	94348	13,56	7212	1	chrome
1667	59	87648	131444	60,34	7408	1	chrome
472	57	203776	176876	174,72	7540	1	chrome
287	16	24028	70692	5,53	7860	1	chrome
263	16	23816	45472	180,42	8344	1	chrome
486	17	31588	50572	10,20	8560	1	chrome
335	17	34792	75068	2,38	9192	1	chrome
119	7	6432	5152		7876	0	conhost
267	13	4212	15592	0,97	10040	1	conhost
406	15	3780	13228	2,41	5448	1	ctfmon
644	23	1736	4712		524	0	csrss
591	18	2508	5028		612	1	csrss
244	17	3840	12732	0,25	4100	1	dllhost
139	8	2000	7808	0,55	6232	1	dllhost
832	44	98552	46240		1116	1	dwm
2037	81	46860	86536	28,38	5632	1	explorer
187	10	1928	5772		7712	0	fdhost
98	6	1064	4936		8488	0	fdlauncher
38	8	4384	8280		976	1	fontdrvhost
38	5	1456	2420		980	0	fontdrvhost
0	0	60	8		0	0	Idle
476	42	53200	16664		10720	0	Launchpad

7

```

PS C:\Users\TEMP.IIT.001> Get-Service | fl name, status

```

Name	: AarSvc_10af7a
Status	: Stopped
Name	: AdobeARMservice
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	: aspnet_state
Status	: Stopped
Name	: AssignedAccessManagerSvc
Status	: Stopped
Name	: AudioEndpointBuilder
Status	: Running
Name	: Audiosrv
Status	: Running

8

```
PS C:\Users\TEMP.IIT.001> Get-Service | ft name, status
```

Name	Status
AarSvc_10af7a	Stopped
AdobeARMservice	Running
AJRouter	Stopped
ALG	Stopped
AppIDSvc	Stopped
Appinfo	Running
AppMgmt	Stopped
AppReadiness	Stopped
AppVClient	Stopped
AppXSvc	Running
aspnet_state	Stopped
AssignedAccessManagerSvc	Stopped
AudioEndpointBuilder	Running
Audiosrv	Running
autotimesvc	Stopped
AxInstSV	Stopped
BcastDVRUserService_10af7a	Stopped
BDESVC	Stopped
BFE	Running
BITS	Running
BluetoothUserService_10af7a	Stopped
BrokerInfrastructure	Running
Browser	Running
BTAGService	Stopped
BthAvctpSvc	Running
bthserv	Stopped
camsvc	Stopped
CaptureService_10af7a	Stopped
cbdhsvc_10af7a	Running

9

```
PS C:\> 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

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

Count	Name	Group
168	Stopped	{AarSvc_8e8dee3, AJRouter, ALG, AppIDSvc...}
105	Running	{Appinfo, AppXSvc, AudioEndpointBuilder, Audiosrv...}

11

```
PS C:\> (Get-Service).count
273
```

12

```
PS C:\> Get-Process | Measure-Object -Property id -Maximum -Minimum -Average -Sum
Count      : 165
Average    : 6298,83636363636
Sum        : 1039308
Maximum    : 17848
Minimum    : 0
Property   : Id
```

13

14

15

```
PS C:\> $szoveg = "miskolc"
PS C:\> $szoveg.Length
7
PS C:\> $szoveg.ToUpper()
MISKOLC
PS C:\> $szoveg.Replace("m", "i")
iiskolc
PS C:\> $szoveg.Contains("m")
True
PS C:\> $szoveg.Split("m")
iskolc
```

16