

Operációs rendszerek BSc

4. Gyak.

2022. 03. 01.

Készítette:

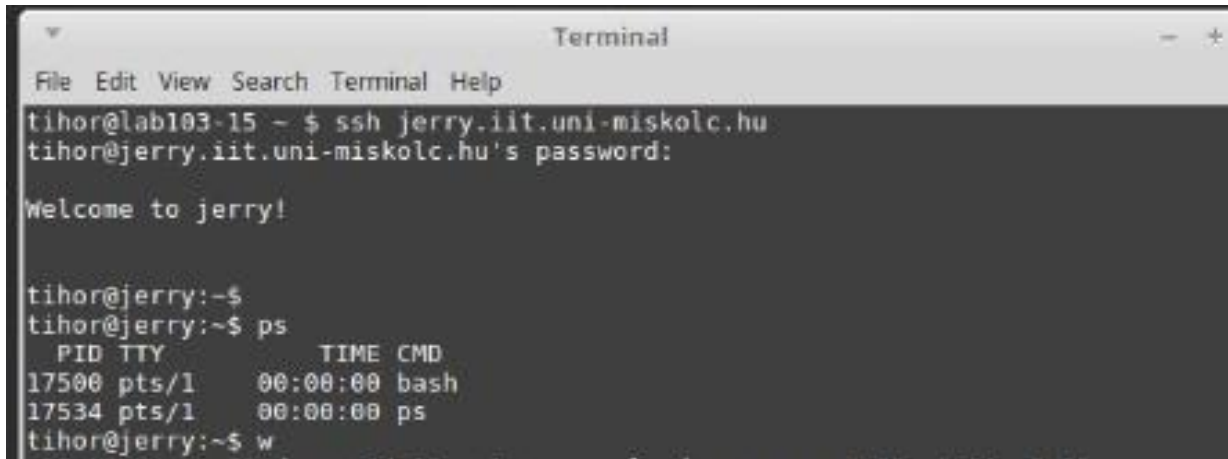
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THDWDR

Miskolc, 2022

I. Téma: Linux OS parancsok használata

1. feladat – Linux OS-n futtassa a következő parancsokat, vizsgálja meg milyen szolgáltatásokat biztosít.

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

A screenshot of a Linux terminal window titled "Terminal". The window has a menu bar with "File", "Edit", "View", "Search", "Terminal", and "Help". The terminal shows a user named "tihor" at "lab103-15" using "ssh" to connect to "jerry.iit.uni-miskolc.hu". After entering the password, the user is welcomed to "jerry!". The user then runs the "ps" command, which displays a table of running processes. The table has columns for "PID", "TTY", "TIME", and "CMD". Two processes are listed: "bash" with PID 17500 and "ps" with PID 17534. The user then enters the "w" command, but the output is partially cut off.

```
tihor@lab103-15 ~ $ ssh jerry.iit.uni-miskolc.hu
tihor@jerry.iit.uni-miskolc.hu's password:

Welcome to jerry!

tihor@jerry:~$
tihor@jerry:~$ ps
  PID TTY          TIME CMD
 17500 pts/1    00:00:00 bash
 17534 pts/1    00:00:00 ps
tihor@jerry:~$ w
```

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

- használjon a parancshoz kapcsolót, amely memória kihasználtságot és a lemez információkat mutatja.
- használjon a parancshoz kapcsolót, amely aktív és inaktív memória lapokat mutatja!

```
Terminal
File Edit View Search Terminal Help
13:18:37 up 79 days, 14:13, 1 user, load average: 0.00, 0.01, 0.05
USER      TTY      FROM          LOGIN@  IDLE   JCPU   PCPU WHAT
tihor@jerry:~$ vmstat 3
procs -----memory----- --swap-- --io-- --system-- --cpu--
r b   swpd   free   buff  cache   si   so    bi   bo    in   cs us sy id wa st
0 0     0 5003052   2152 1967876    0    0     0    0     0    0  0  0  0 100  0
0 0     0 5003148   2152 1967876    0    0     0    0     0    0  0  0  0 100  0
0 0     0 5003180   2152 1967876    0    0     0    0     0    0  0  0  0 100  0
0 0     0 5003296   2152 1967876    0    0     0    0     0    0  0  0  0 100  0
0 0     0 5003304   2152 1967876    0    0     0    0     0    0  0  0  0 100  0
0 0     0 5003304   2152 1967876    0    0     0    0     0    0  0  0  0 100  0
0 0     0 5003272   2152 1967876    0    0     0    0     0    0  0  0  0 100  0
0 0     0 5003272   2152 1967876    0    0     0    0     0    0  0  0  0 100  0
tihor@jerry:~$ vmstat -m
vmstat: your kernel does not support slabinfo or your permissions are insufficient
tihor@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 5002956 999860 1702572    0    0     0    0     0    0  0  0  0 100  0
tihor@jerry:~$
```

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

```
tihor@jerry:~$ w
13:18:24 up 79 days, 14:12, 1 user, load average: 0.00, 0.01, 0.05
USER      TTY      FROM          LOGIN@   IDLE   JCPU   PCPU WHAT
tihor@jerry:~$ w tihor
13:18:37 up 79 days, 14:13, 1 user, load average: 0.00, 0.01, 0.05
USER      TTY      FROM          LOGIN@   IDLE   JCPU   PCPU WHAT
tihor@jerry:~$
```

d.) Jelenítse meg a szerver futásának kezdő idejét.

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

e.) ps - aktuális processzekről készít jelentést. Opciói:

- Jelenítse meg az összes processz kiválasztását!

```
tihor@jerry:~$ ps -A
  PID TTY          TIME CMD
17499 ?           00:00:00 sshd
17500 pts/1       00:00:00 bash
17691 pts/1       00:00:00 ps
```

- Jelenítse meg az egyes processzek paramétereit!

```
tihor@jerry:~$ ps -Alf
F S UID        PID  PPID  C  PRI  NI ADDR SZ WCHAN  STIME TTY          TIME CMD
S S tihor      17499 17493  0   80   0 - 21759 -          13:11 ?           00:00:00 sshd:
S S tihor      17500 17499  0   80   0 - 4133 -          13:11 pts/1       00:00:00 -bash
R R tihor      17709 17500  0   80   0 - 8327 -          13:25 pts/1       00:00:00 ps -A
```

- Jelenítse meg az egyes processzek szálait is!

```
tihor@jerry:~$ ps -Alm
F S UID        PID  PPID  C  PRI  NI ADDR SZ WCHAN  TTY          TIME CMD
S - 9261 17499 17493  0   -   - - 21759 -          ?           00:00:00 sshd
S S 9261        -    -    0   80   0 - - - -          -           00:00:00 -
S - 9261 17500 17499  0   -   - - 4133 -          pts/1       00:00:00 bash
S S 9261        -    -    0   80   0 - - - -          -           00:00:00 -
S - 9261 17717 17500  0   -   - - 8082 -          pts/1       00:00:00 ps
R R 9261        -    -    0   80   0 - - - -          -           00:00:00 -
```

- Jelenítse meg a szerver összes processzeit!

```
tihor@jerry:~$ ps ax
  PID TTY          STAT       TIME COMMAND
17499 ?                S          0:00 sshd: tihor@pts/1
17500 pts/1        Ss          0:00 -bash
17721 pts/1        R+          0:00 ps ax
tihor@jerry:~$
```

- Jelenítse meg milyen processzek futnak a rendszerben

```
tihor@jerry:~$ ps -U tihor -u tihor u
USER      PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND
tihor    17499  0.0  0.0  87036  4432 ?        S    13:11   0:00 sshd: tihor@pts
tihor    17500  0.0  0.0  16532  5172 pts/1    Ss   13:11   0:00 -bash
tihor    17730  0.0  0.0  33312  3040 pts/1    R+   13:27   0:00 ps -U tihor -u
tihor@jerry:~$ pstree
```

- Jelenítse meg a futó processzek listáját fa elrendezésben

```
tihor@jerry:~$ ps -U tihor -u tihor u
USER      PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND
tihor    17499  0.0  0.0  87036  4432 ?        S    13:11   0:00 sshd: tihor@pts
tihor    17500  0.0  0.0  16532  5172 pts/1    Ss   13:11   0:00 -bash
tihor    17730  0.0  0.0  33312  3040 pts/1    R+   13:27   0:00 ps -U tihor -u
tihor@jerry:~$ pstree
?--?--sshd--bash--pstree
tihor@jerry:~$ ps -p 1286 comm=
error: unknown user-defined format specifier "mm"

Usage:
ps [options]

Try 'ps --help <simple|list|output|threads|misc|all>'
  or 'ps --help <s|l|o|t|m|a>'
for additional help text.

For more details see ps(1).
tihor@jerry:~$ free
              total        used        free      shared  buff/cache   available
Mem:           8025292       1056220       4998656        172848       1970416       6753792
Swap:          2097148           0         2097148
tihor@jerry:~$
```

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

```
tihor@jerry:~$ free
              total        used        free      shared  buff/cache   available
Mem:           8025292       1056220       4998656        172848       1970416       6753792
Swap:          2097148           0         2097148
tihor@jerry:~$ iostat
```

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

```
tihor@jerry:~$ iostat
Linux 4.1.6-grsec (jerry)      02/28/2022      _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
tihor@jerry:~$
```

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

```
tihor@jerry:~$ sar
Invalid system activity file: /var/log/sysstat/sa28
tihor@jerry:~$
```

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

```
tihor@jerry:~$ mpstat
Linux 4.1.6-grsec (jerry)      02/28/2022      _x86_64_      (6 CPU)

01:29:04 PM CPU      %usr   %nice    %sys %iowait    %irq   %soft  %steal  %guest
               %gnice   %idle
01:29:04 PM all        0.03    0.00    0.03    0.00    0.00    0.00    0.00    0.00
               0.00   99.94
tihor@jerry:~$
```

j.) pmap - processz memória használatát jelzi


```
Terminal
File Edit View Search Terminal Help
01:29:04 PM all 0.03 0.00 0.03 0.00 0.00 0.00 0.00 0.00
0.00 99.94
tihor@jerry:~$ 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
```

II. Téma: Windows OS - PowerShell parancsok használat

2. feladat – Készítse el Windows OS a saját gépen az alábbi feladatokat.

1. Kérdezze le a PowerShellVerzió!

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

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

PS C:\Users\TEMP.IIT> $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

PS C:\Users\TEMP.IIT>
```

2. Kérdezze le a mai dátumot?

```
Windows PowerShell
+ FullyQualifiedErrorId : CommandNotFoundException

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

2022. február 28., hétfő 12:45:35

PS C:\Users\TEMP.IIT>
```

3. Kérdezze le a szolgáltatásokat?

```
Windows PowerShell

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

Status      Name                      DisplayName
-----
Stopped     AarSvc_12471f             Agent Activation Runtime_12471f
Running     AdobeARMservice           Adobe Acrobat Update Service
Stopped     AJRouter                  AllJoyn Router Service
Stopped     ALG                       Application Layer Gateway Service
Running     AMD External Ev...        AMD External Events Utility
Stopped     AppIDSvc                  Application Identity
Stopped     Appinfo                   Application Information
Stopped     AppMgmt                   Application Management
Running     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     autotimesvc               Cellular Time
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_12471f
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
Running     camsvc                    Capability Access Manager Service
Stopped     CaptureService_...        CaptureService_12471f
Running     cbdhsvc_12471f            Clipboard User Service_12471f
Running     CDPSvc                    Connected Devices Platform Service
```

4. Kérdezze le a C:\ meghajtó lévő könyvtárakat ill. fájlokat?


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

Directory: C:\Users\TEMP.IIT

Mode                LastWriteTime         Length Name
----                -
d-r---      2022. 02. 28.    12:23           3D Objects
d-r---      2022. 02. 28.    12:23           Contacts
d-r---      2022. 02. 28.    12:24           Desktop
d-r---      2022. 02. 28.    12:23           Documents
d-r---      2022. 02. 28.    12:23           Downloads
d-r---      2022. 02. 28.    12:23           Favorites
d-r---      2022. 02. 28.    12:23           Links
d-r---      2022. 02. 28.    12:23           Music
d-r---      2022. 02. 28.    12:27           OneDrive
d-r---      2022. 02. 28.    12:23           Pictures
d-r---      2022. 02. 28.    12:23           Saved Games
d-r---      2022. 02. 28.    12:24           Searches
d-r---      2022. 02. 28.    12:23           Videos
```

5. Kérdezze a parancsok rövidített neveit? (alias)

```
Windows PowerShell

PS C:\Users\TEMP.IIT> 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
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
Alias            fl -> Format-List
Alias            foreach -> ForEach-Object
Alias            ft -> Format-Table
Alias            fw -> Format-Wide
Alias            gal -> Get-Alias
Alias            gbp -> Get-PSBreakpoint
```

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

```
Windows PowerShell

PS C:\Users\TEMP.IIT> New-Alias "processz" Get-Process
PS C:\Users\TEMP.IIT> processz
processz : The term 'Get-Process' is not recognized as the name of a cmdlet, function, script file, or operable program. Check the spelling of the name, or if a path was included, verify that the path is correct and try again.
At line:1 char:1
+ processz
+ ~~~~~
+ CategoryInfo          : ObjectNotFound: (Get-Process:String) [], CommandNotFoundException
+ FullyQualifiedErrorId : CommandNotFoundException

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

CommandType      Name
-----
Alias            processz -> Get-Process

PS C:\Users\TEMP.IIT>
```

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

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

Name	Status
AarSvc_12471f	Stopped
AdobeARMservice	Running
AJRouter	Stopped
ALG	Stopped
AMD_External_Events_UTILITY	Running
AppIDSvc	Stopped
AppInfo	Stopped
AppMgmt	Stopped
AppReadiness	Running
AppVClient	Stopped
AppXSvc	Running
aspnet_state	Stopped
AssignedAccessManagerSvc	Stopped
AudioEndpointBuilder	Running
AudioSrv	Running
autotimesvc	Stopped
AxInstSV	Stopped
BcastDVRUserService_12471f	Stopped
BDESVC	Stopped
BFE	Running
BITS	Running
BluetoothUserService_12471f	Stopped
BrokerInfrastructure	Running
Browser	Running
BTAGService	Stopped

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

Name	Status
AarSvc_12471f	Stopped
AdobeARMservice	Running
AJRouter	Stopped
ALG	Stopped
AMD_External_Events_UTILITY	Running
AppIDSvc	Stopped
AppInfo	Stopped
AppMgmt	Stopped
AppReadiness	Running
AppVClient	Stopped
AppXSvc	Running
aspnet_state	Stopped
AssignedAccessManagerSvc	Stopped
AudioEndpointBuilder	Running
AudioSrv	Running
autotimesvc	Stopped
AxInstSV	Stopped
BcastDVRUserService_12471f	Stopped
BDESVC	Stopped
BFE	Running
BITS	Running
BluetoothUserService_12471f	Stopped
BrokerInfrastructure	Running

```
Windows PowerShell

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

Name       : AarSvc_12471f
Status     : Stopped

Name       : AdobeARMService
Status     : Running

Name       : ADRouter
Status     : Stopped

Name       : ALG
Status     : Stopped

Name       : AMD External Events Utility
Status     : Running

Name       : AppIDSvc
Status     : Stopped

Name       : Appinfo
Status     : Stopped

Name       : AppMgmt
Status     : Stopped
```

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

```
Windows PowerShell

PS C:\Users\TEMP.IIT> 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 WwanSvc        WWAN AutoConfig
Running wuauclt        Windows Update
Running WSearch        Windows Search
Running wscntfrt       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 WManSvc        Windows Management Service
Stopped wlpasvc        Local Profile Assistant Service
Stopped wldidsvc       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 WFDSCongMgrSvc  Wi-Fi Direct Services Connection Ma...
```

```
Windows PowerShell

PS C:\Users\TEMP.IIT> Get-Service | Sort-Object name

Status Name DisplayName
-----
Stopped AarSvc_12471f Agent Activation Runtime_12471f
Running AdobeARMService Adobe Acrobat Update Service
Stopped AJRouter AllJoyn Router Service
Stopped ALG Application Layer Gateway Service
Running AMD External Ev... AMD External Events Utility
Stopped AppIDSvc Application Identity
Stopped Appinfo Application Information
Stopped AppMgmt Application Management
Running 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 autotimesvc Cellular Time
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_12471f
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
```

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

```
PS C:\Users\TEMP.IIT> 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

PS C:\Users\TEMP.IIT>
```

10. Csoportosítsa állapot szerint az objektumokat!

```
PS C:\Users\TEMP.IIT> Get-Service | Group-Object status

Count Name Group
-----
172 Stopped {AarSvc_12471f, AJRouter, ALG, AppIDSvc...}
104 Running {AdobeARMService, AMD External Events Utility, AppReadiness, AppXsvc...}
1 StartPending {SQLPBDMS}
```

11. Számolja meg az objektumokat!

```
PS C:\Users\TEMP.IIT> (Get-Service).count
277
PS C:\Users\TEMP.IIT>
```

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

```
+ FullyQualifiedErrorId : GenericMeasurePropertyNotFound,Microsoft.PowerShell.Commands.MeasureObjectCommand
PS C:\Users\TEMP.IIT> Get-Process | Measure-Object -Property id -Maximum -Minimum -Average -Sum

Count      : 152
Average    : 4743,23684210526
Sum        : 720972
Maximum    : 12220
Minimum    : 0
Property   : Id

PS C:\Users\TEMP.IIT>
```

13. Kérdezze le a Windows időt!

```
Windows PowerShell

+ FullyQualifiedErrorId : CommandNotFoundException

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

2022. február 28., hétfő 12:45:35

PS C:\Users\TEMP.IIT>
```

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

```
2022. február 28., hétfő 12:45:35

PS C:\Users\TEMP.IIT> $szoveg = "Miskolc"
PS C:\Users\TEMP.IIT> $szoveg | Get-Member

TypeName: System.String
Name      MemberType Definition
-----
Clone     Method      System.Object Clone(), System.Object ICloneable.Clone()
CompareTo Method      int CompareTo(System.Object value), int CompareTo(string strB), int IComparable.CompareTo(S...
Contains  Method      bool Contains(string value)
CopyTo    Method      void CopyTo(int sourceIndex, char[] destination, int destinationIndex, int count)
EndsWith  Method      bool EndsWith(string value), bool EndsWith(string value, System.StringComparison comparison...
Equals    Method      bool Equals(System.Object obj), bool Equals(string value), bool Equals(string value, System...
GetEnumerator Method    System.CharEnumerator GetEnumerator(), System.Collections.IEnumerator IEnumerable.GetEnumerator...
GetHashCode Method    int GetHashCode()
GetType   Method      type GetType()
GetTypeCode Method    System.TypeCode GetTypeCode(), System.TypeCode IConvertible.GetTypeCode()
IndexOf   Method      int IndexOf(char value), int IndexOf(char value, int startIndex), int IndexOf(string value)...
IndexOfAny Method    int IndexOfAny(char[] anyOf), int IndexOfAny(char[] anyOf, int startIndex), int IndexOfAny(...
Insert    Method      string Insert(int startIndex, string value)
IsNormalized Method    bool IsNormalized(), bool IsNormalized(System.Text.NormalizationForm normalizationForm)
LastIndexOf Method    int LastIndexOf(char value), int LastIndexOf(char value, int startIndex), int LastIndexOf(s...
LastIndexOfAny Method    int LastIndexOfAny(char[] anyOf), int LastIndexOfAny(char[] anyOf, int startIndex), int Las...
Normalize Method      string Normalize(), string Normalize(System.Text.NormalizationForm normalizationForm)
PadLeft   Method      string PadLeft(int totalWidth), string PadLeft(int totalWidth, char paddingChar)
PadRight  Method      string PadRight(int totalWidth), string PadRight(int totalWidth, char paddingChar)
```

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

```
Windows PowerShell

PS C:\Users\TEMP.IIT> $Szoveg.length
7
PS C:\Users\TEMP.IIT> $Szoveg.ToUpper()
MISKOLC
PS C:\Users\TEMP.IIT> $Szoveg.Peplace("ri","@@")
Method invocation failed because [System.String] does not contain a method named 'Peplace'.
At line:1 char:1
+ $Szoveg.Peplace("ri","@@")
+ ~~~~~
+ CategoryInfo          : InvalidOperation: (:) [], RuntimeException
+ FullyQualifiedErrorId : MethodNotFound

PS C:\Users\TEMP.IIT> $Szoveg.Replace("ri","@@")
Miskolc
PS C:\Users\TEMP.IIT> $Szoveg.Replace("Ni","@@")
@@@skolc
PS C:\Users\TEMP.IIT> $Szoveg -contains "sko"
False
PS C:\Users\TEMP.IIT> $Szoveg.Split("k")
Misk
olc
PS C:\Users\TEMP.IIT>
```

Fájlkezelés (txt file)

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

Végezze el a következő feladatokat!

- a) Definiálás
- b) Beolvasás
- c) Tartalom megjelenítés
- d) Sorok száma
- e) Fájl adatok

Windows PowerShell

```
PS C:\Users\TEMP.IIT> $f = "C:\Users\TEMP.IIT\Documents\THDWDR.txt"
PS C:\Users\TEMP.IIT> $THDWDR
PS C:\Users\TEMP.IIT> $THDWDR = Get-Content $f
PS C:\Users\TEMP.IIT> $THDWDR
valami valami
PS C:\Users\TEMP.IIT> $THDWDR.Count
1
PS C:\Users\TEMP.IIT> Get-Item $f
```

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

Mode	LastWriteTime	Length	Name
-a----	2022. 02. 28. 13:02	13	THDWDR.txt

```
PS C:\Users\TEMP.IIT>
```

