How to use PowerShell Get ChildItem Cmdlet

lazyadmin.nl/powershell/get-childitem

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The PowerShell Get ChildItem cmdlet retrieves the child items from the specified location(s). The cmdlet is mainly used to retrieve files and folders, but it can also be used to get registry items and certificates.

The true strength of the cmdlet is in the filter options that we have. We can use different filters to only select specific child items and determine how many nested levels we want to retrieve or not.

In this article, we are going to take a look at how to use the Get ChildItem cmdlet in PowerShell and how to use the different filtering options.

PowerShell Get ChildItem

If your run the Get-ChildItem cmdlet without any parameter, then it will get all items from the current working directory. It won't get the nested items, hidden files, or system files. Only the files and folders from the first level. So using the correct parameters is really important when using the cmdlet.

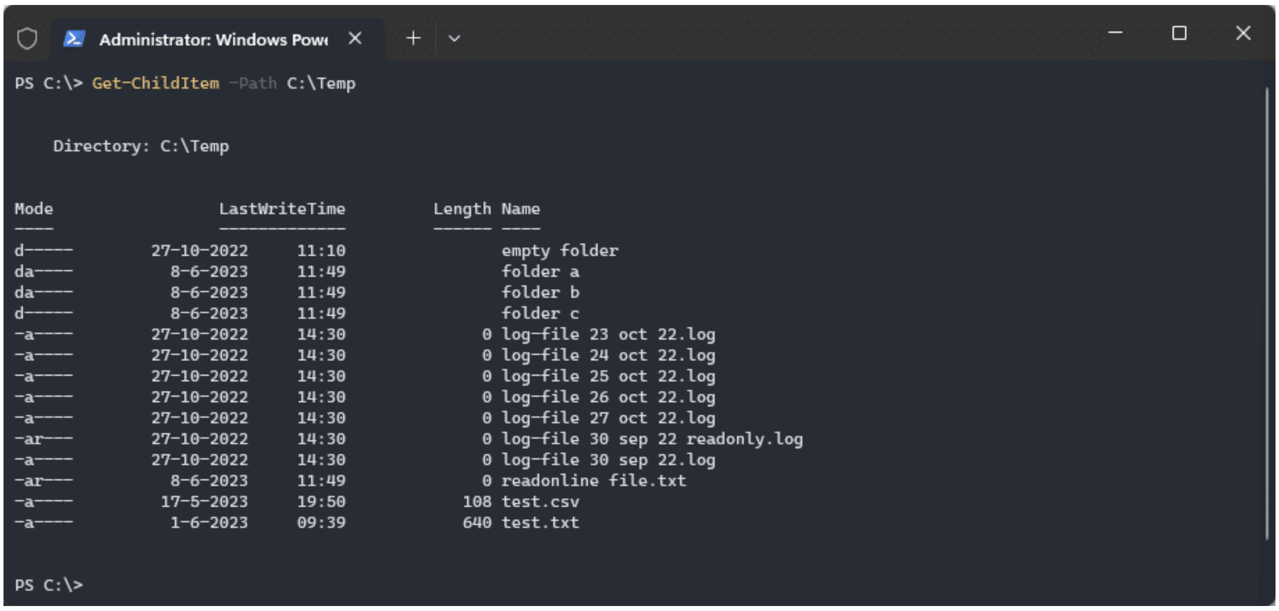
With the `Get-ChildItem` cmdlet (or its shorthand `gci`) we can use the following parameters:

Parameter	Description
-Path	Specifies the path to get the child items from
-Filter	Most efficient way to filter items
-Include	Get's only specified items from the path. Can be used with wildcards
-Exclude	Excludes specified items from the path. Can be used with wildcards
-Recurse	Searches also through the subdirectories
-Depth	Determines the number of subdirectory levels to include
-Force	Also returns hidden and system files
-Name	Returns only the names of the items
-Directory	Returns only directories
-File	Returns only files
-Hidden	Get only hidden items
-Readonly	Get only read-only items

Get-ChildItems cmdlet parameters

To simply get the files from a specified location you can use the -path parameter:

Get-ChildItem -Path C:\Temp



```
PS C:\> Get-ChildItem -Path C:\Temp


    Directory: C:\Temp


Mode                 LastWriteTime         Length Name
----                 -------------         ------ ----
d-----        27-10-2022     11:10                empty folder
da----          8-6-2023     11:49                folder a
da----          8-6-2023     11:49                folder b
d-----          8-6-2023     11:49                folder c
-a----        27-10-2022     14:30              0 log-file 23 oct 22.log
-a----        27-10-2022     14:30              0 log-file 24 oct 22.log
-a----        27-10-2022     14:30              0 log-file 25 oct 22.log
-a----        27-10-2022     14:30              0 log-file 26 oct 22.log
-a----        27-10-2022     14:30              0 log-file 27 oct 22.log
-ar---        27-10-2022     14:30              0 log-file 30 sep 22 readonly.log
-a----        27-10-2022     14:30              0 log-file 30 sep 22.log
-ar---          8-6-2023     11:49              0 readonline file.txt
-a----         17-5-2023     19:50            108 test.csv
-a----          1-6-2023     09:39            640 test.txt


PS C:\>
```

This will return only the items from the selected directory and not from the subfolder.

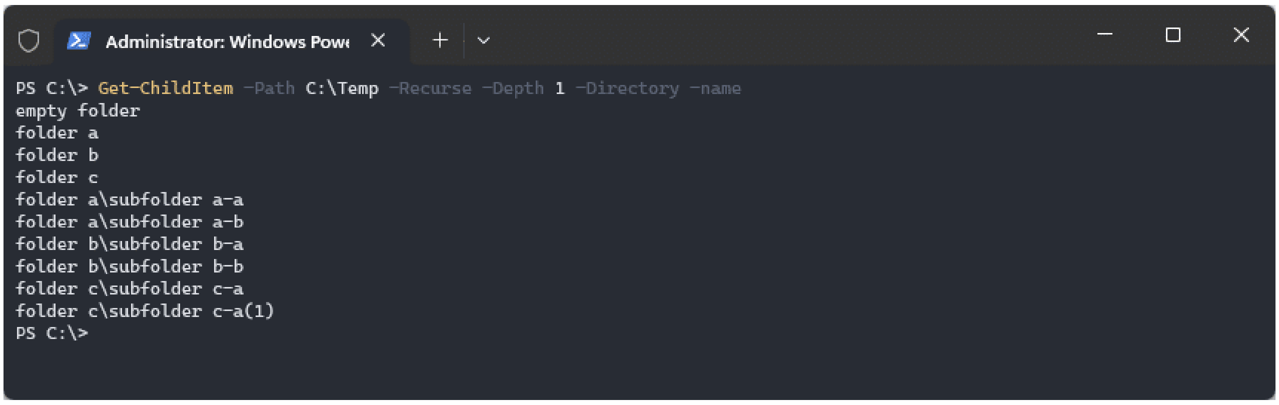
Including Subdirectories with Recurse and Depth

So the first parameters we are going to take a look at are the `-Recurse` and `-Depth` parameters. These parameters allow us to include items from subfolders as well. By default the -Recurse parameter will go through all nested folders:

Get-ChildItem -Path C:\Temp -Recurse

To limit this we can include the parameter `-depth`. This will take a number specifying how many levels deep it should go through the subfolders. In the screenshot below I also included the `-Directory` parameter and `-Name` parameter. The first gets only the directories and the latter returns only the folder names, instead of the complete object:

Get-ChildItem -Path C:\Temp -Recurse -Depth 1 -Directory -name



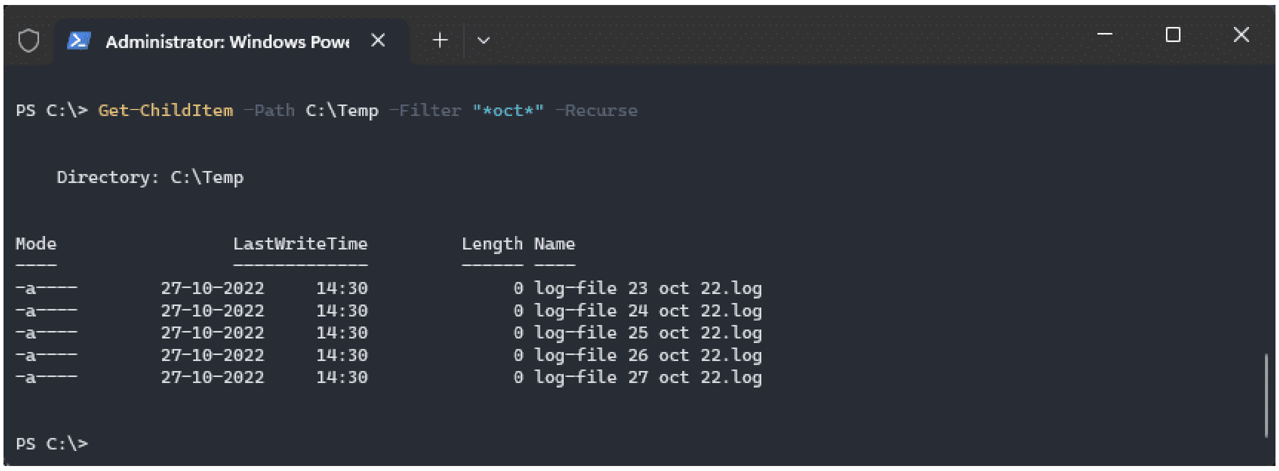
```
PS C:\> Get-ChildItem -Path C:\Temp -Recurse -Depth 1 -Directory -name
empty folder
folder a
folder b
folder c
folder a\subfolder a-a
folder a\subfolder a-b
folder b\subfolder b-a
folder b\subfolder b-b
folder c\subfolder c-a
folder c\subfolder c-a(1)
PS C:\>
```

Using the Filter

Filters are more efficient than the other parameters for this cmdlet. When you use - Include for example, then the filter is done after PowerShell has retrieved all the objects. The filter, however, is passed to the .NET API to filter out objects, making it a lot faster.

So the filter can be used to get only specific file types or folders. The filter isn't really advanced, we can only use the `*` and `?` wildcards in the string. For example, to get all files that have the word `oct` in it, we can do:

Get-ChildItem -Path C:\Temp -Filter "*oct*" -Recurse



```
PS C:\> Get-ChildItem -Path C:\Temp -Filter "*oct*" -Recurse


    Directory: C:\Temp


Mode                 LastWriteTime         Length Name
----                 -------------         ------ ----
-a----        27-10-2022     14:30              0 log-file 23 oct 22.log
-a----        27-10-2022     14:30              0 log-file 24 oct 22.log
-a----        27-10-2022     14:30              0 log-file 25 oct 22.log
-a----        27-10-2022     14:30              0 log-file 26 oct 22.log
-a----        27-10-2022     14:30              0 log-file 27 oct 22.log


PS C:\>
```

We can also apply the filter to the file types, for example, to get all `.log` files, we can simply filter the filename on `*.log`:

```
Get-ChildItem -Path C:\Temp -Filter "*.log" -Recurse -Name
# Result
log-file 23 oct 22.log
log-file 24 oct 22.log
log-file 25 oct 22.log
log-file 26 oct 22.log
log-file 27 oct 22.log
log-file 30 sep 22 readonly.log
log-file 30 sep 22.log
folder b\subfolder log-file.log
```

The filter can also be used against directories, simply specify a part of the folder name that you want to include in the filter:

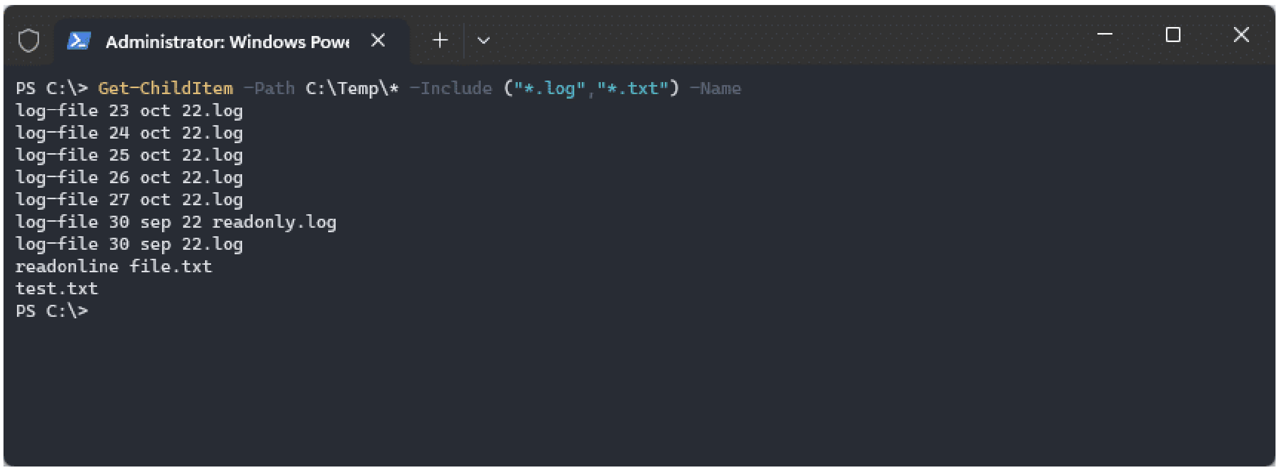
```
Get-ChildItem -Path C:\Temp -Filter "folder *" -Recurse -Name
# Result
folder a
folder b
folder c
```

Include and Exlude items

Even though the filter parameter is the most efficient way to filter items, it those have its limitations. The filter in Get-ChildItem only accepts a single string. You can't get all `.txt` and `.log` files for example. This is where the `-Include` and `-Exclude` parameters come in. They accept an array of one or more strings to include or exclude.

For example, to get all log and txt files we can do:

```
Get-ChildItem -Path C:\Temp\* -Include ("*.log","*.txt") -Name
```



```
PS C:\> Get-ChildItem -Path C:\Temp\* -Include ("*.log","*.txt") -Name
log-file 23 oct 22.log
log-file 24 oct 22.log
log-file 25 oct 22.log
log-file 26 oct 22.log
log-file 27 oct 22.log
log-file 30 sep 22 readonly.log
log-file 30 sep 22.log
readonline file.txt
test.txt
PS C:\>
```

Note that we need to add an `*` to the path to include all items. Also, the parentheses are not necessary, but personally prefer it because it makes it easier to read the code.

The exclude parameter returns all results, except files matching the patterns specified. So if we would change the include parameter of exclude in the previous example, then the result would be:

```
Get-ChildItem -Path C:\Temp\* -exclude ("*.log","*.txt") -Name
# Results
empty folder
folder a
folder b
folder c
test.csv
```

Return only Files or Directories

Another use parameters that we can use are the `-File` and `-Directory` parameters. These parameters make sure that only files or directories are returned in the results. For example, if you want to get the complete folder structure of a folder, then can simply use the command below:

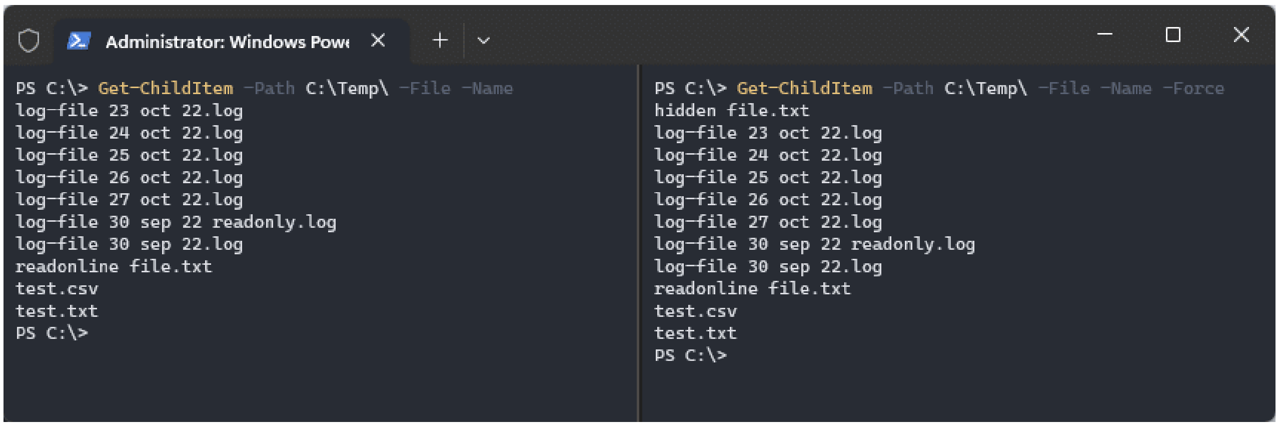
```
Get-ChildItem -Path C:\Temp\ -Recurse -Directory -Name
# Result
empty folder
folder a
folder b
folder c
folder a\subfolder a-a
folder a\subfolder a-b
folder b\subfolder b-a
folder b\subfolder b-b
folder c\subfolder c-a
folder c\subfolder c-a(1)
```

You can also combine these parameters with other parameters, like `-include` or `-filter`.

Get Readonly, System, and Hidden Files

Hidden files are excluded from the results. If you want to include these files in your results as well then you can use the -Force parameter. This will return all the files from the given directory.

If you look at the screenshot below, you can see on the left side that `hidden file.txt` isn’t included. But if we add the `-Force` parameter, then the hidden file (or directory) is included as well:



```
PS C:\> Get-ChildItem -Path C:\Temp\ -File -Name
log-file 23 oct 22.log
log-file 24 oct 22.log
log-file 25 oct 22.log
log-file 26 oct 22.log
log-file 27 oct 22.log
log-file 30 sep 22 readonly.log
log-file 30 sep 22.log
readonline file.txt
test.csv
test.txt
PS C:\>
```

```
PS C:\> Get-ChildItem -Path C:\Temp\ -File -Name -Force
hidden file.txt
log-file 23 oct 22.log
log-file 24 oct 22.log
log-file 25 oct 22.log
log-file 26 oct 22.log
log-file 27 oct 22.log
log-file 30 sep 22 readonly.log
log-file 30 sep 22.log
readonline file.txt
test.csv
test.txt
PS C:\>
```

We can also select only the hidden, read-only, or system files. For this, we can use their respective parameter. Note that you can't combine these:

```
# Return all hidden files
Get-ChildItem -Path C:\Temp\* -Hidden
# Return all readonly files
Get-ChildItem -Path C:\Temp\* -Readonly
# Return all system files
Get-ChildItem -Path C:\Temp\* -System
```

Advanced Filtering with Get ChildItem

We have discussed the parameters that you can use with the PowerShell cmdlet Get-ChildItem. These parameters allow you to filter the results mainly on a part of the name, extension, or file attribute. But what if you need more? For example, get all the files older than x days. Or all files that are larger than 1 MB?

In these cases, we can use the normal PowerShell `where-object` cmdlet to filter the results that we got from the Get ChildItem cmdlet.

Find Large Files

To return all files that are larger than 1MB we can use the following command:

```
Get-ChildItem -Path C:\Temp -Recurse | Where-Object { $_.Length -gt 1MB } | Select-Object Name, Directory, Length
# Result
Name Directory Length
---- --------- ------
10mb - Copy (2).bin C:\Temp 10485760
10mb - Copy (3).bin C:\Temp 10485760
10mb - Copy (4).bin C:\Temp 10485760
10mb - Copy (8).bin C:\Temp 10485760
10mb - Copy (9).bin C:\Temp 10485760
bin file.bin C:\Temp\folder b 10485760
dummy file.bin C:\Temp\folder b 10485760
```

Files older than

Another common option is to get all files that are older than x days or hours. For this, we can use the same principle as with finding large files. We are first going to get all files from the giving directory with the Get ChildItem cmdlet, and then select the results that we need.

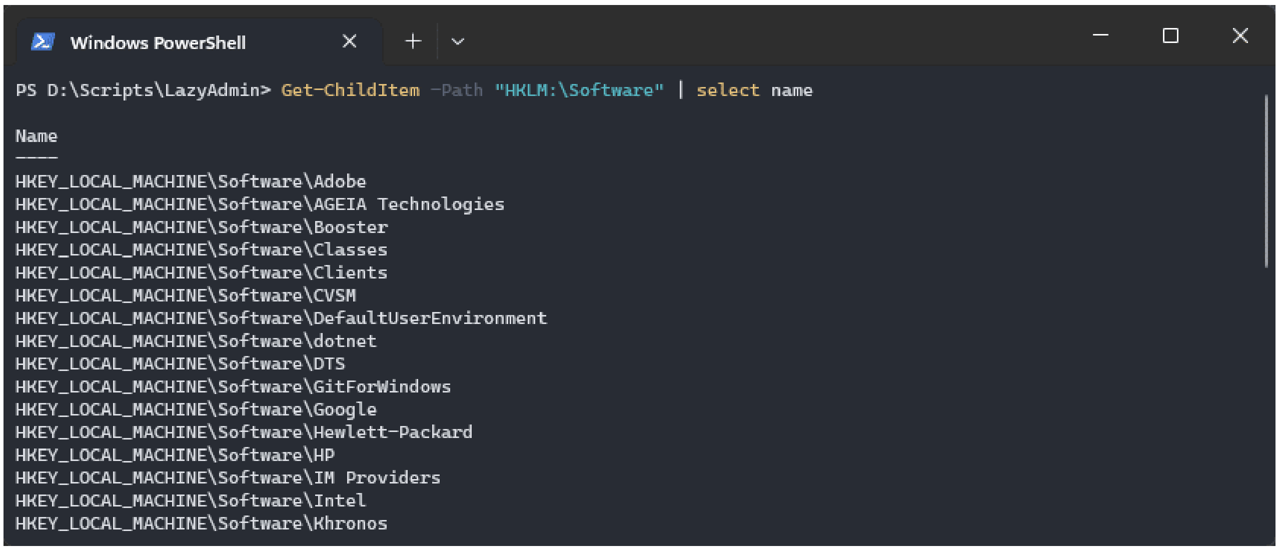
For example, to get all the files that are created in the last 12 hours, we can compare the file `LastWriteTime` attribute against the current DateTime minus 12 hours.

```
Get-ChildItem -Path C:\temp | Where-Object { $_.LastWriteTime -gt (Get-
Date).AddHours(-12) }
# Result
Name Directory LastWriteTime
---- --------- -------------
folder a 8-6-2023 11:49:21
folder b 8-6-2023 14:08:31
folder c 8-6-2023 11:49:21
readonline file.txt C:\temp 8-6-2023 11:49:49
```

Get Registry Items with PowerShell

Until now we have only looked at retrieving files and folders with the Get ChildItem cmdlet in PowerShell. But we can also find and retrieve registry items with the cmdlet. For example, to simply get all registry keys from a given path, we just use the -path parameter and specify the registry path:

```
Get-ChildItem -Path "HKLM:\Software"
```



```
PS D:\Scripts\LazyAdmin> Get-ChildItem -Path "HKLM:\Software" | select name

Name
----
HKEY_LOCAL_MACHINE\Software\Adobe
HKEY_LOCAL_MACHINE\Software\AGEIA Technologies
HKEY_LOCAL_MACHINE\Software\Booster
HKEY_LOCAL_MACHINE\Software\Classes
HKEY_LOCAL_MACHINE\Software\Clients
HKEY_LOCAL_MACHINE\Software\CVSM
HKEY_LOCAL_MACHINE\Software\DefaultUserEnvironment
HKEY_LOCAL_MACHINE\Software\dotnet
HKEY_LOCAL_MACHINE\Software\DTS
HKEY_LOCAL_MACHINE\Software\GitForWindows
HKEY_LOCAL_MACHINE\Software\Google
HKEY_LOCAL_MACHINE\Software\Hewlett-Packard
HKEY_LOCAL_MACHINE\Software\HP
HKEY_LOCAL_MACHINE\Software\IM Providers
HKEY_LOCAL_MACHINE\Software\Intel
HKEY_LOCAL_MACHINE\Software\Khronos
```

Just like with files and folders, we can also get all the registry keys (subkeys) of the specified path. For this, we can use the `-Recurse` parameter and optionally combine it with `-Depth`:

```
Get-ChildItem -Path "HKLM:\Software" -Recurse -Depth 1
```

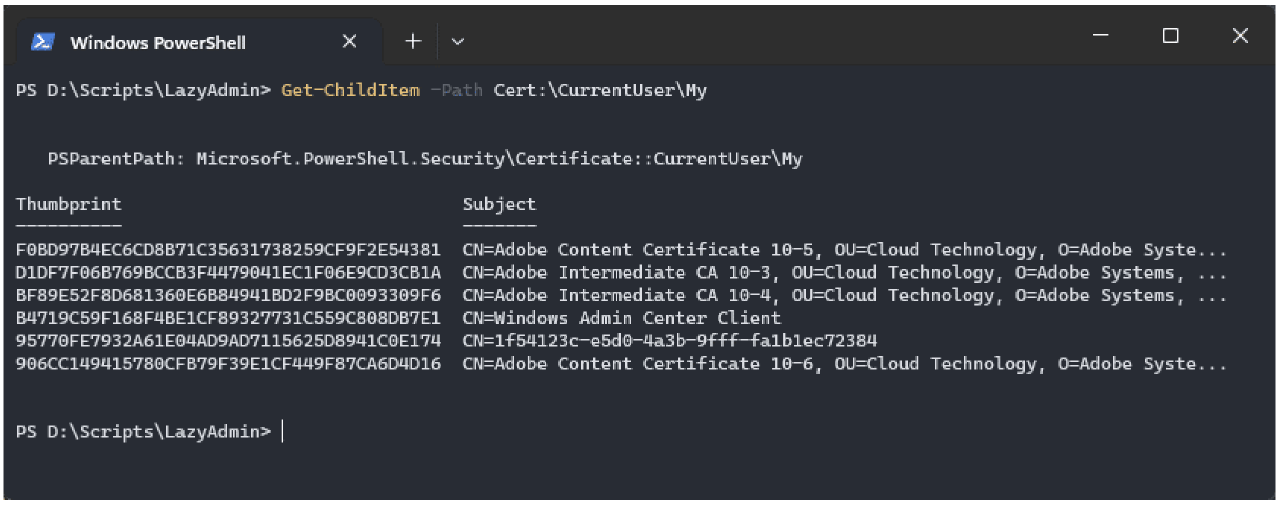
To get the value of the registry key you will need to use the cmdlet `Get-ItemProperty` and specify the path of the item that you want to view:

Get-ItemProperty -path "HKLM:\Software\Adobe\Photoshop\140.0"

Get Certificates with Get-ChildItem

The last option that I want to show is the ability to get Certificates with the PowerShell `Get-ChildItem` cmdlet. For example, to view all certificates that are currently stored in the `CurrentUser\My certificate` store, we can simply specify the path, starting with `cert:`

Get-ChildItem -Path Cert:\CurrentUser\My



```
PS D:\Scripts\LazyAdmin> Get-ChildItem -Path Cert:\CurrentUser\My


   PSParentPath: Microsoft.PowerShell.Security\Certificate::CurrentUser\My

Thumbprint                                Subject
----------                                -------
F0BD97B4EC6CD8B71C35631738259CF9F2E54381  CN=Adobe Content Certificate 10-5, OU=Cloud Technology, O=Adobe Syste...
D1DF7F06B769BCCB3F4479041EC1F06E9CD3CB1A  CN=Adobe Intermediate CA 10-3, OU=Cloud Technology, O=Adobe Systems, ...
BF89E52F8D681360E6B84941BD2F9BC0093309F6  CN=Adobe Intermediate CA 10-4, OU=Cloud Technology, O=Adobe Systems, ...
B4719C59F168F4BE1CF89327731C559C808DB7E1  CN=Windows Admin Center Client
95770FE7932A61E04AD9AD7115625D8941C0E174  CN=1f54123c-e5d0-4a3b-9fff-fa1b1ec72384
906CC149415780CFB79F39E1CF449F87CA6D4D16  CN=Adobe Content Certificate 10-6, OU=Cloud Technology, O=Adobe Syste...


PS D:\Scripts\LazyAdmin> |
```

To filter or search through the certificate store we won't be using the `-filter` or `-include` parameter, instead we can use the -DNSName parameter for this. For example, to retrieve the Windows Admin Center certificate we can do:

```
Get-ChildItem -Path Cert:\CurrentUser\My -DNSName "*Windows*"
# Result
Thumbprint Subject
---------- -------
B4719C59F168F4BE1CF89327731C559C808DB7E1 CN=Windows Admin Center Client
```

Wrapping Up

The Get-ChildItem cmdlet allows you to easily select the items that you need from a given directory or registry path. Keep in mind that the -filter parameter is the most efficient one to use in the case of files and folders.

I hope you found this article helpful, if you have any questions, just drop a comment below.

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