Power Shell 101

Module 2 Hands-on Activity – PowerShell in VSCode

4/20/2019 Developed by Sion Yoon
4/20/2019 Tested by Sam Chung
Center for Information Assurance (CIAE) at City University of Seattle

Learning Outcomes

- Learn about cmdlet, alias, and PSDrives in PowerShell.
- Learn how to map a new PSDrive

Resources

- Cmdlet Overview
  https://docs.microsoft.com/en-us/powershell/developer/cmdlet/cmdlet-overview
- About Providers
  https://docs.microsoft.com/en-us/powershell/module/microsoft.powershell.core/about/about_providers?view=powershell-6
- https://www.youtube.com/watch?v=_AiTBoH4IwA

Activities

- Using cmdlet
- Using alias
- Mapping PSDrives
- Q&A

Cmdlet

1) Open PowerShell in VSCode

2) Cmdlets are lightweight PowerShell scripts that perform a single function. PowerShell uses a verb-noun name pair to name cmdlets. For example, type “get-location”

```
PS C:\Users\sion> get-location

Path
----
C:\Users\sion
```

3) "get-help" can be used to learn more about the command. To learn about the get-location cmdlet, type "get-help get-location" or "help get-location".

```
PS C:\Users\sion> help get-location

NAME
    Get-Location

SYNTAX
    Get-Location [-PSProvider <string[]>] [-PSDrive <string[]>] [-UseTransaction]  [<CommonParameters>]

    Get-Location [-Stack] [-StackName <string[]>] [-UseTransaction]  [<CommonParameters>]


ALIASES
    gl
    pwd


REMARKS
```

Alias

4) Alias are shortcuts or alternate names for cmdlets. Use aliases when you do not want to type the verb-noun format. To get a list of aliases, type "get-alias" or "gal". Notice that many UNIX commands ("ls", "cd", etc.) are set up as aliases by default.

```
PS C:\Users\sion> get-alias

CommandType     Name
-----------     ----
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
Alias           chdir -> Set-Location
Alias           clc -> Clear-Content
Alias           clear -> Clear-Host
Alias           clhy -> Clear-History
Alias           cli -> Clear-Item
Alias           clp -> Clear-ItemProperty
```

5) To get a list of aliases that start with the letter c, type "gal c*"

```
PS C:\Users\sion> gal c*

CommandType     Name
-----------     ----
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-PSSession
Alias           compare -> Compare-Object
Alias           copy -> Copy-Item
```

6) You can use an alias, and it works the same as the cmdlet that it references. Type “Clear-Host” or “clear” or “cls”.

```
PS C:\Users\sion> Clear-Host
```

Mapping PSDrives

7) PowerShell providers connect different forms of storage to PowerShell and make the forms of storage look like a file system. The providers provide access to data and components that would not be easily accessible at the command line. Type “get-psdrive” to see the list of providers.

```
PS C:\Users\sion> get-psdrive

Name           Used (GB)     Free (GB) Provider      Root
----           ---------     --------- --------      ----
Alias                                  Alias
C                  59.65         58.64 FileSystem    C:\
Cert                                   Certificate   \
Env                                    Environment
Function                               Function
HKCU                                   Registry      HKEY_CURRENT_USER
HKLM                                   Registry      HKEY_LOCAL_MACHINE
Variable                               Variable
WSMan                                  WSMan
```

8) To map a new drive, let’s start by creating a folder named ‘test’. Type “mkdir test”

```
    Directory: C:\Users\sion


Mode                 LastWriteTime         Length Name
----                 -------------         ------ ----
d-----        4/20/2019   3:47 PM                test
```

9) To learn how to map a new drive, type “help new-psdrive”.

```
PS C:\Users\sion> help new-psdrive

NAME
    New-PSDrive

SYNTAX
    New-PSDrive [-Name] <string> [-PSProvider] <string> [-Root] <string> [-Description <string>] [-Scope <string>] [-Persist]
    [-Credential <pscredential>] [-WhatIf] [-Confirm] [-UseTransaction]  [<CommonParameters>]


ALIASES
    ndr
    mount
```

10) If you look at the syntax, you will see that you can map a new drive by typing “new-psdrive test filesystem c:\users\sion\test” for my case.
You will need to input your root path.

```
PS C:\Users\sion> new-psdrive test filesystem c:\users\sion\test

Name           Used (GB)     Free (GB) Provider      Root
----           ---------     --------- --------      ----
test                0.00         57.61 FileSystem    C:\users\sion\test
```

11) To go the test drive that you just created, type “cd test:”

```
PS C:\Users\sion> cd test:
PS test:\>
```

12) Let’s go back to the psdrive to check if the new drive is there.
Type, “get-psdrive”.
Remember this is a psdrive and only exist within PowerShell.

```
PS test:\> get-psdrive

Name           Used (GB)     Free (GB) Provider      Root
----           ---------     --------- --------      ----
Alias                                  Alias
C                  60.68         57.61 FileSystem    C:\
Cert                                   Certificate   \
Env                                    Environment
Function                               Function
HKCU                                   Registry      HKEY_CURRENT_USER
HKLM                                   Registry      HKEY_LOCAL_MACHINE
test                0.00         57.61 FileSystem    C:\users\sion\test
Variable                               Variable
WSMan                                  WSMan
```

13) Now if you go back to the c drive, type “cd c:”

```
PS test:\> cd c:
PS C:\Users\sion>
```

14) Let’s now undo what we have done by typing “remove-psdrive test”

```
PS C:\Users\sion> remove-psdrive test
```

15) Go back to your psdrive again to check if the drive has been removed by typing “get-psdrive”

```
Name           Used (GB)     Free (GB) Provider      Root
----           ---------     --------- --------      ----
Alias                                  Alias
C                  60.48         57.81 FileSystem    C:\
Cert                                   Certificate   \
Env                                    Environment
Function                               Function
HKCU                                   Registry      HKEY_CURRENT_USER
HKLM                                   Registry      HKEY_LOCAL_MACHINE
Variable                               Variable
WSMan                                  WSMan
```

16) Remove the test folder by typing “rmdir test”

```
PS C:\Users\sion> rmdir test
```

Q&A

Justify your answers with at least one reference, then export this file to PDF version

1) List out five cmdlets that you would use often and describe the function for each cmdlet.
   Get-Help: This cmdlet shows what specific cmdlet's do
   Get-Command: displays cmdlets that are related in function and are installed on the local machine
   Get-Childtem: similar to the dir command but can be used outside file systems, such as in the Window's registry and environment variables.
   Foreach-Object: processes object using script block and either calling a property or method directly
   Get-Member: displays the properties and methods of an object

Reference:

Franciscus, D. (n.d.). Five PowerShell cmdlets for Beginners. Retrieved October 18, 2020, from https://www.codemag.com/Article/1905051/Five-PowerShell-cmdlets-for-Beginners

2) What would happen if you map a new PSDrive just as you have done in our activity and close your PowerShell session? Is the PSDrive persistent or non-persistent?
   If non-persistent, what would you do to make it persistent?

   New PSDrives are temporary drives that are only specific to the current PowerShell session. If the session is ended then the PSDrive ceases to exist. The New-PSDrive cmdlet can utilize the persist parameter to make the PSDrive persistent, so by default it is non-persistent and temporary. To make PSDrive persistent use the *New-PSDrive – Persist* command.

   Reference:
Microsoft. (n.d.). New-PSDrive (Microsoft.PowerShell.Management) - PowerShell. Retrieved October 18, 2020, from https://docs.microsoft.com/en-us/powershell/module/microsoft.powershell.management/new-psdrive?view=powershell-7

PUSH YOUR WORK TO GITHUB

Once you completed the Hands-on practice, do the following to push your work to GitHub

Open the terminal from the VSCode by hitting the control + ~ key, make sure you are in the right path, for example: KimNguyen/Desktop/ISEC505/HOP02-KimNguyenMai/Module 2

Type the following command:

>>> **git add .** (to copy all changes you have made)
>>> **git commit -m "Submission for Module 2 – YOUR GITHUB USERNAME"** (To add a message to your submission)
>>> **git push origin master** (to upload your work to Github)