

Introduction to PowerShell



Bryan Cafferky
BPC Global Solutions LLC

Bryan Cafferky

Data Solutions Consultant and Trainer with BPC Global Solutions LLC

Microsoft MVP

Decades of IT experience

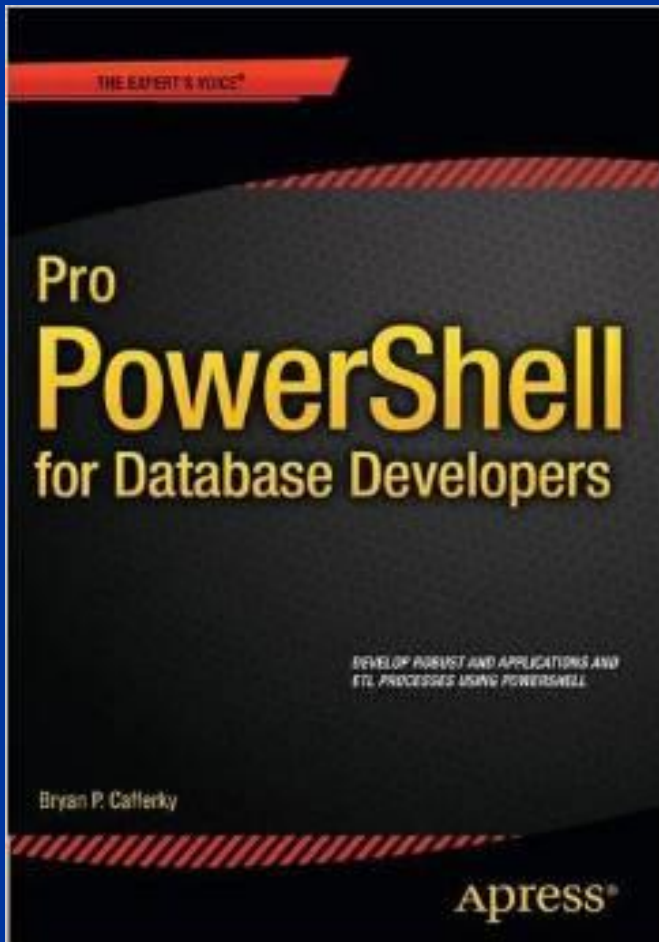
Author of Pro PowerShell for Database Developers by Apress

SQL PASS Chapter Lead: The Rhode Island Microsoft BI User Group

Lead the Southern New England R User Group



@bryancafferky
bryan256@msn.com



- In-Depth Coverage of PowerShell Options and Configuration Features.
- How to Create and Deploy Script Modules.
- Advanced Functions that Inherit the PowerShell Common Parameters Support.
- Reading and Writing to Databases.
- How to Use PowerShell for Application Development.
- Extensive Code Samples with Step by Step Walk Through.
- Creating and Extending Custom PowerShell Objects.

Available on Amazon

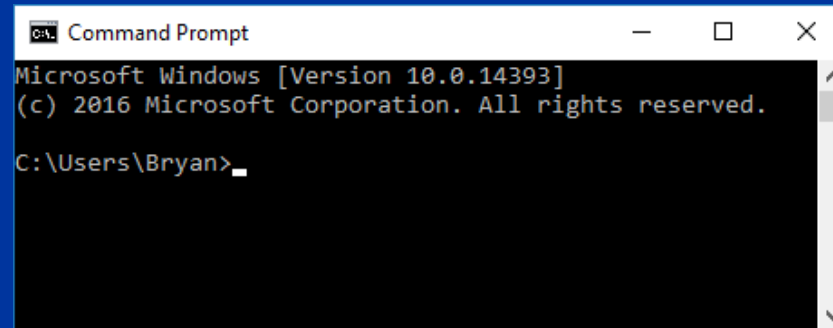
What's Ahead?

- What is PowerShell?
- Why You Need It?
- The PowerShell Command Line Interpreter
- The PowerShell Integrated Script Editor
- A Brief Tour of the Language



PowerShell - A Shell Built for Windows

- The legacy Windows Shell is the Command Prompt, a carry over from DOS. It is not designed to work with Windows.



- The completely new and re-architected Windows Shell is PowerShell.
- PowerShell was designed from the ground up to integrate with .Net and anything in the Windows environment.

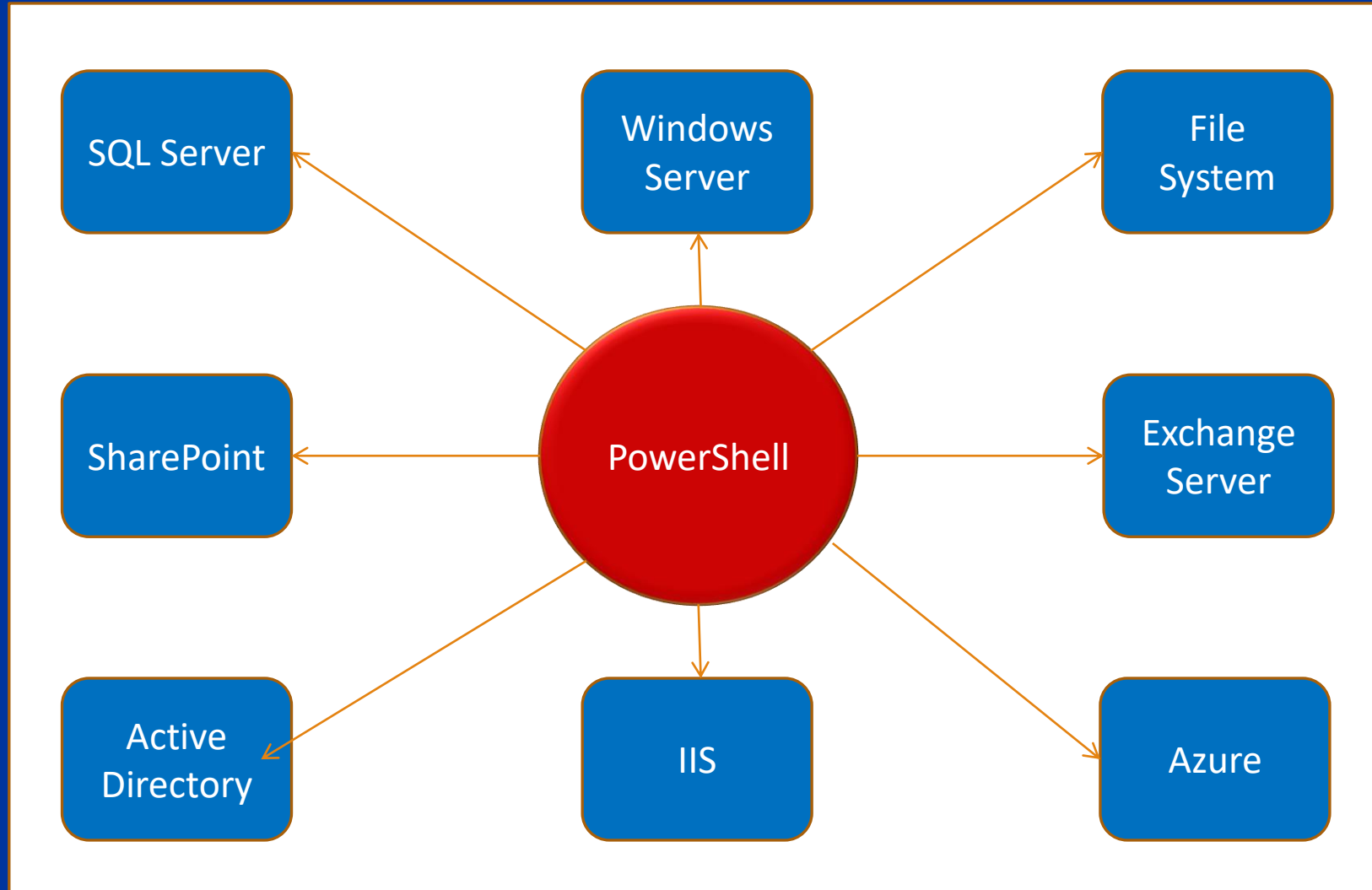
What is a Shell?

- A prompt at which you enter commands.
- Operating systems that do not have a GUI such as Linux present allow users to interact via a shell.
- A list of statements can be stored in a text file and executed.
- Scripts are used to perform tasks like backups.

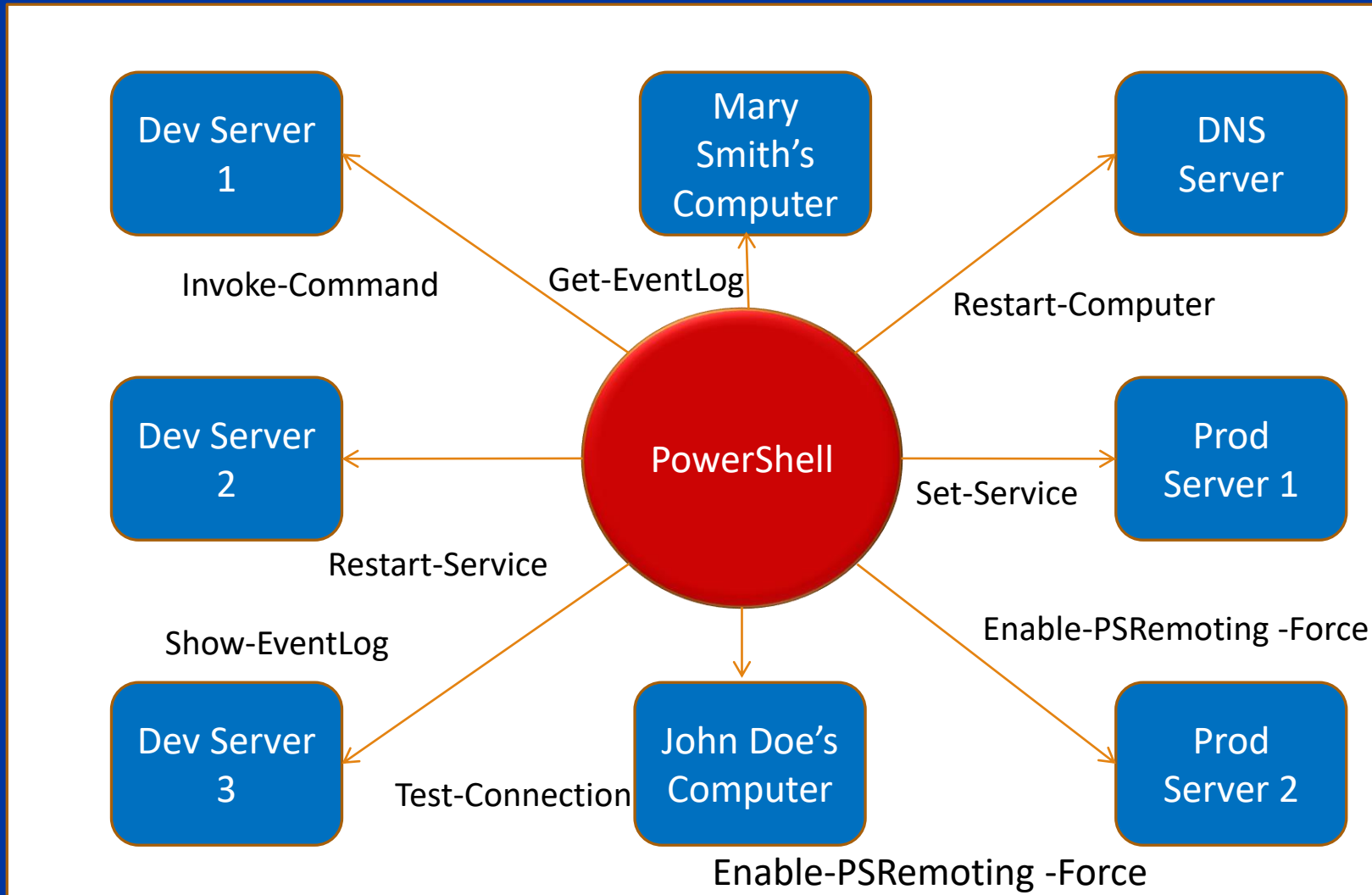
Why Do We Need a Shell?

- Often need a way to perform repetitive tasks.
- Graphical Interfaces are good for interactive non repetitive work.
- Shells let us automate work.

PowerShell Connects It All



Can Control Network Resources



PowerShell Features

Supports Traditional Shell Features like *Piping*

Access to Hardware in the Environment

Built In Integration with .NET

Support for Variables, Objects, Collections, Arrays,
and Hash Tables

Can Administer Azure Resources

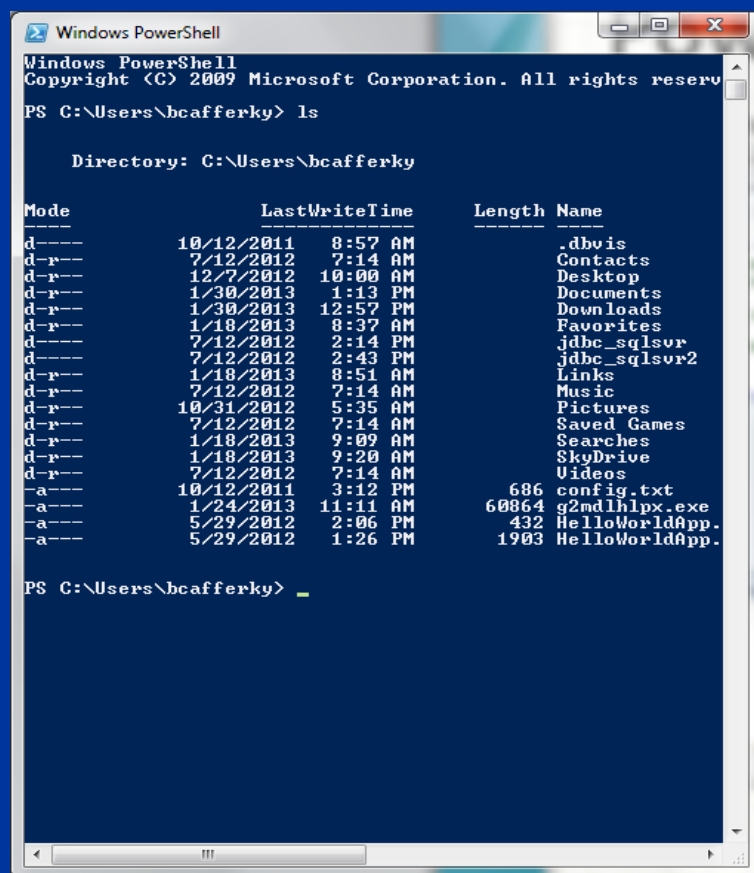
Two Ways to Use PowerShell

- Command Line Interpreter (CLI)
- Integrated Script Editor (ISE)



PowerShell Environments

The PowerShell CLI



A screenshot of the Windows PowerShell Command Line Interface (CLI) window. The title bar reads "Windows PowerShell". The window shows the command prompt with the prompt "PS C:\Users\bcafferky> ls". Below the command, the output displays the directory contents of C:\Users\bcafferky, including folders like .dbvis, Contacts, Desktop, Documents, Downloads, Favorites, jdbc_sqlsvr, jdbc_sqlsvr2, Links, Music, Pictures, Saved Games, Searches, SkyDrive, and Videos, as well as files like config.txt, g2mdlhlpx.exe, HelloWorldApp, and HelloWorldApp.

```
Windows PowerShell
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PS C:\Users\bcafferky> ls

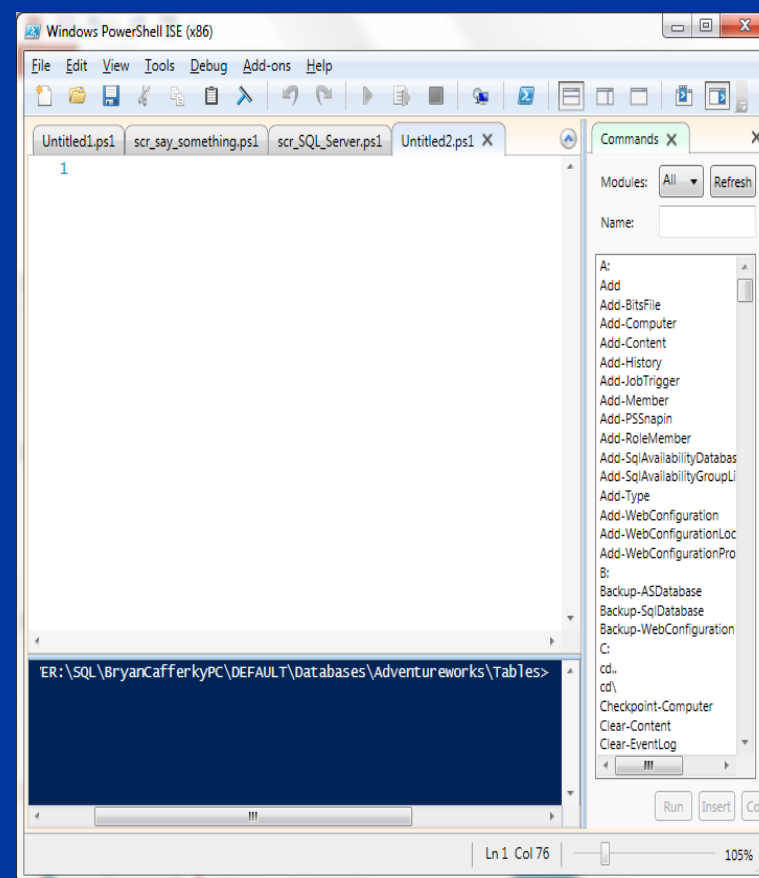
Directory: C:\Users\bcafferky

Mode                LastWriteTime         Length Name
----                -
d-----          10/12/2011  8:57 AM             .dbvis
d-r-----         7/12/2012  7:14 AM             Contacts
d-r-----        12/7/2012  10:00 AM             Desktop
d-r-----         1/30/2013   1:13 PM             Documents
d-r-----         1/30/2013  12:57 PM             Downloads
d-r-----         1/18/2013   8:37 AM             Favorites
d-r-----         7/12/2012  2:14 PM             jdbc_sqlsvr
d-r-----         7/12/2012  2:43 PM             jdbc_sqlsvr2
d-r-----         1/18/2013   8:51 AM             Links
d-r-----         7/12/2012  7:14 AM             Music
d-r-----        10/31/2012  5:35 AM             Pictures
d-r-----         7/12/2012  7:14 AM             Saved Games
d-r-----         1/18/2013   9:09 AM             Searches
d-r-----         1/18/2013   9:20 AM             SkyDrive
d-r-----         7/12/2012  7:14 AM             Videos
-a-----        10/12/2011  3:12 PM             686 config.txt
-a-----        1/24/2013  11:11 AM          60864 g2mdlhlpx.exe
-a-----         5/29/2012   2:06 PM             432 HelloWorldApp
-a-----         5/29/2012   1:26 PM          1903 HelloWorldApp

PS C:\Users\bcafferky> _
```

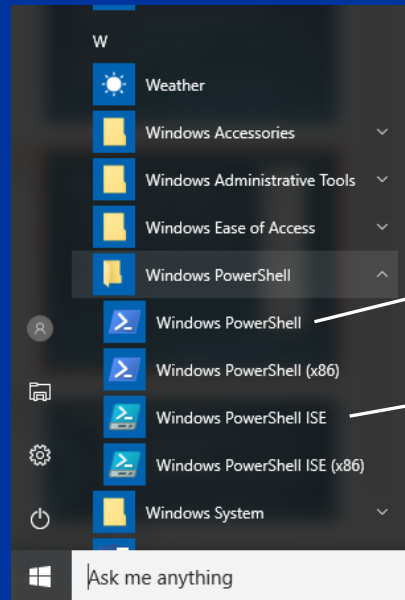
... or ...

The PowerShell ISE



Starting PowerShell

Windows 10



CLI

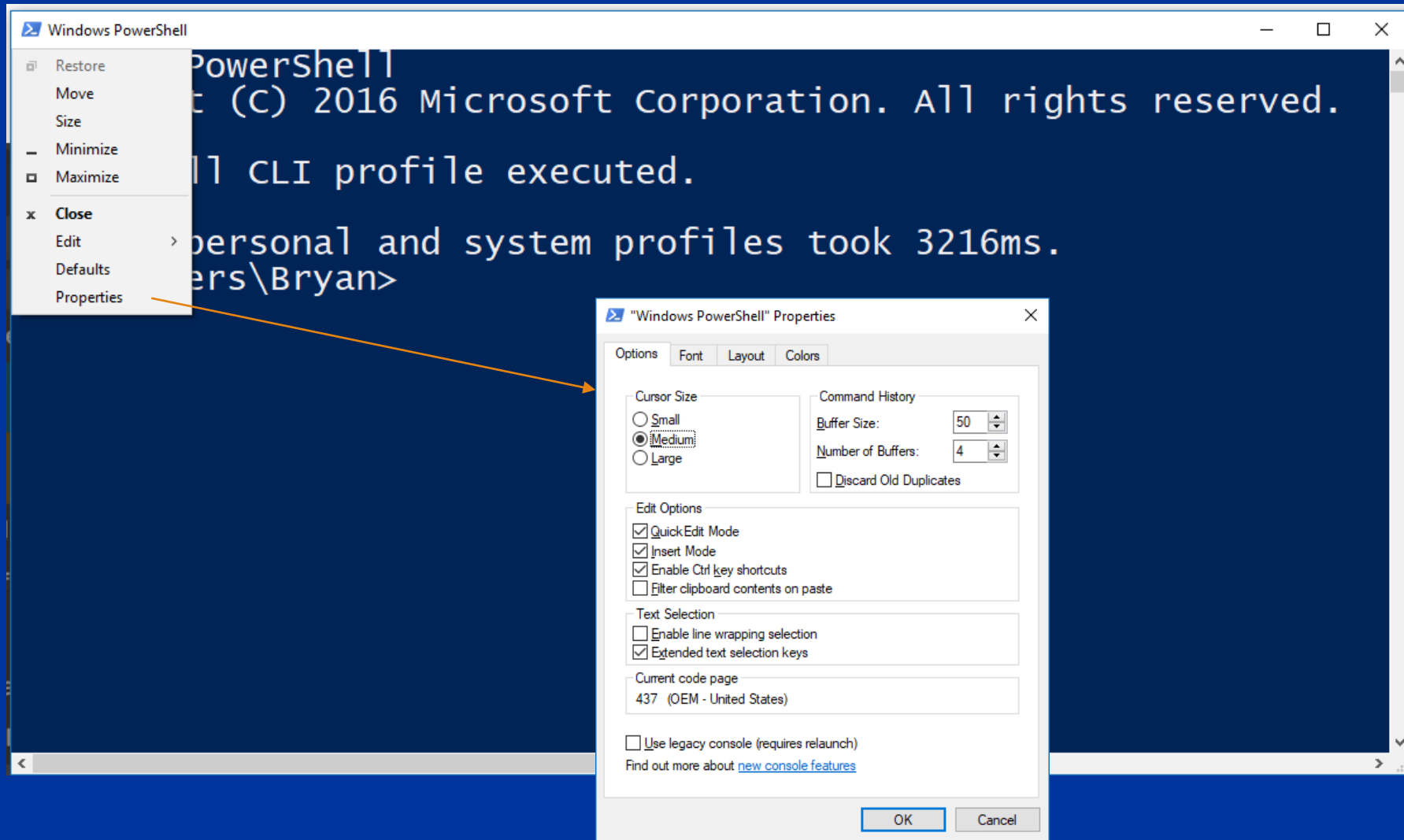
ISE

- (x86) = 32 bit versions

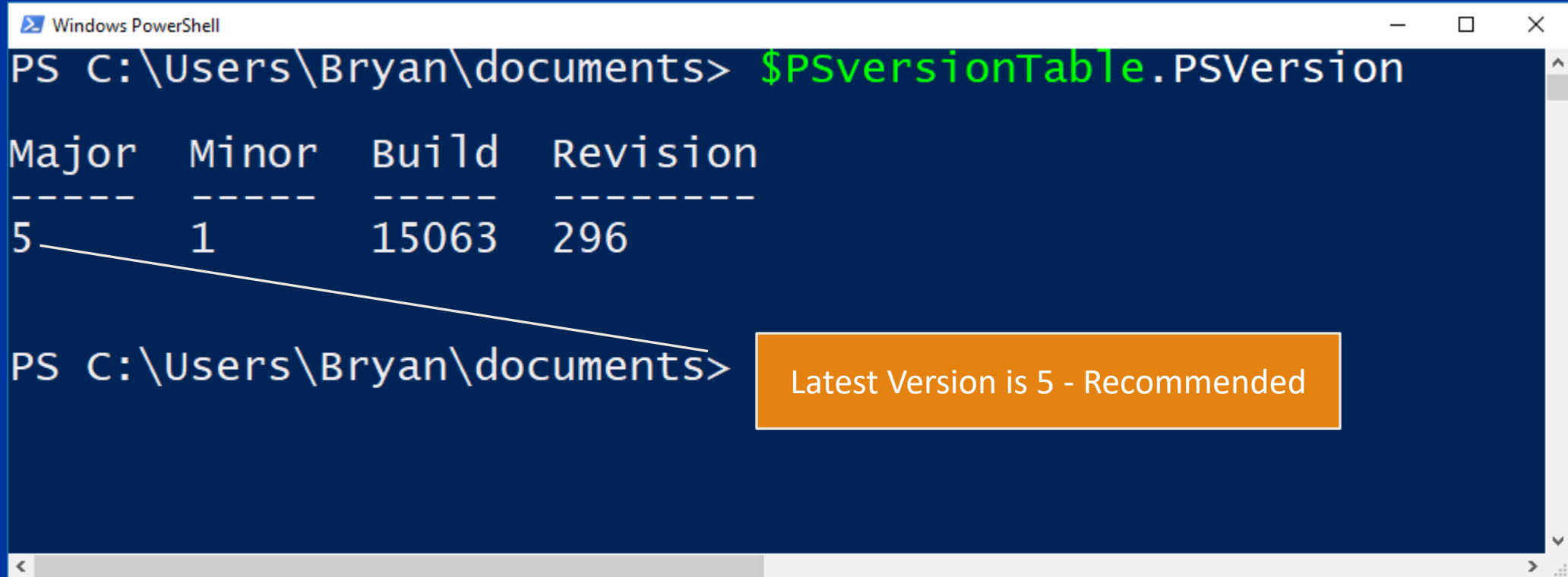
Pre Windows 10



CLI Properties



Checking Your PowerShell Version



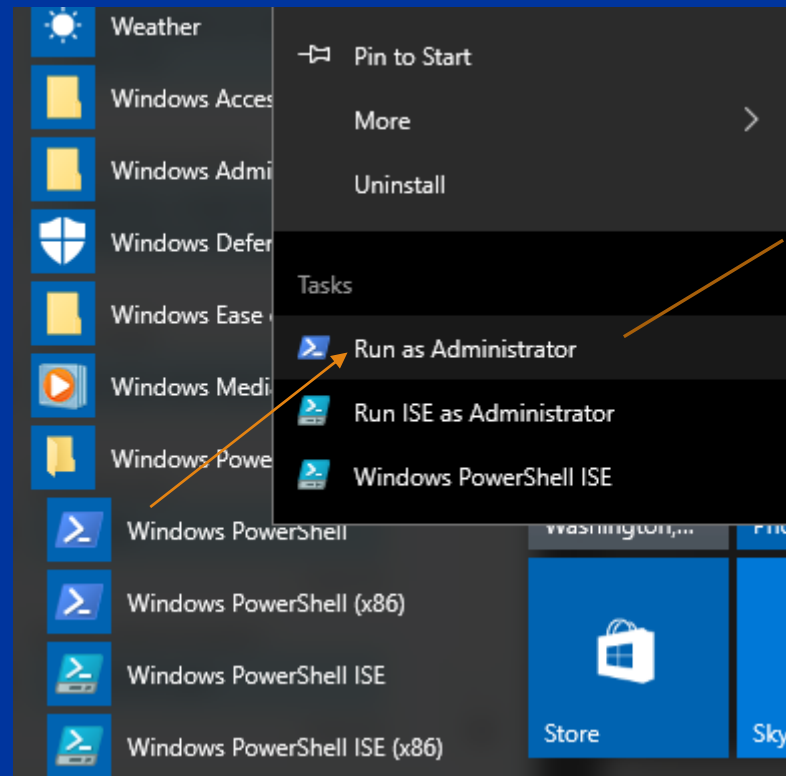
```
Windows PowerShell
PS C:\Users\Bryan\documents> $PSversionTable.PSVersion
```

Major	Minor	Build	Revision
-----	-----	-----	-----
5	1	15063	296

PS C:\Users\Bryan\documents>

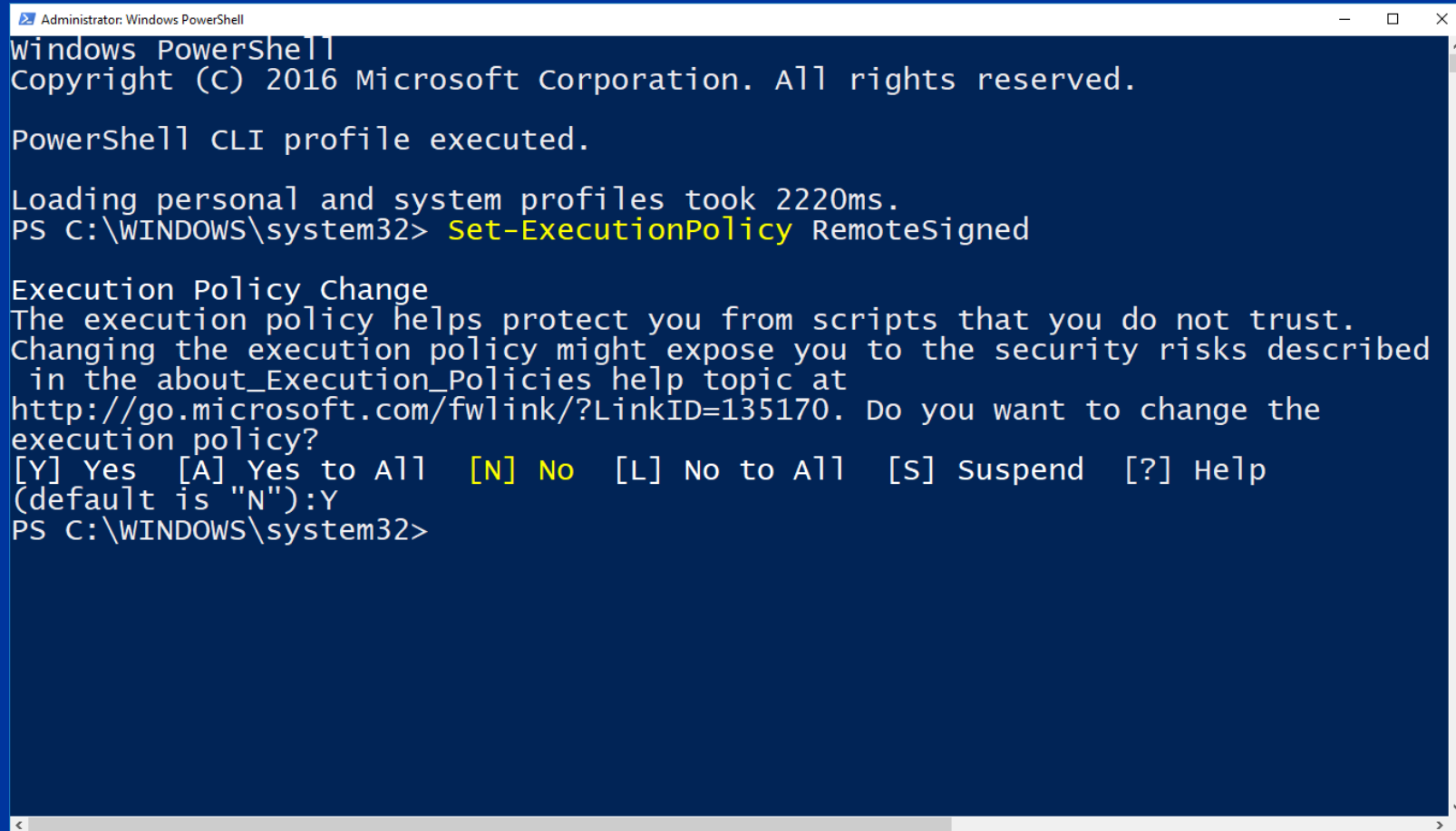
Latest Version is 5 - Recommended

Enabling Scripting



Need to run as
Administrator

Setting the Execution Policy to Allow Scripts



```
Administrator: Windows PowerShell
Windows PowerShell
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PowerShell CLI profile executed.

Loading personal and system profiles took 2220ms.
PS C:\WINDOWS\system32> Set-ExecutionPolicy RemoteSigned

Execution Policy Change
The execution policy helps protect you from scripts that you do not trust.
Changing the execution policy might expose you to the security risks described
in the about_Execution_Policies help topic at
http://go.microsoft.com/fwlink/?LinkID=135170. Do you want to change the
execution policy?
[Y] Yes  [A] Yes to All  [N] No  [L] No to All  [S] Suspend  [?] Help
(default is "N"):Y
PS C:\WINDOWS\system32>
```

PowerShell CLI Demo

- Set-ExecutionPolicy
- \$PSVersionTable.Version
- Using AzureRM

PowerShell: Set-ExecutionPolicy options

- Set-Executionpolicy unrestricted *# Must have elevated permissions*
- Set-ExecutionPolicy Restricted

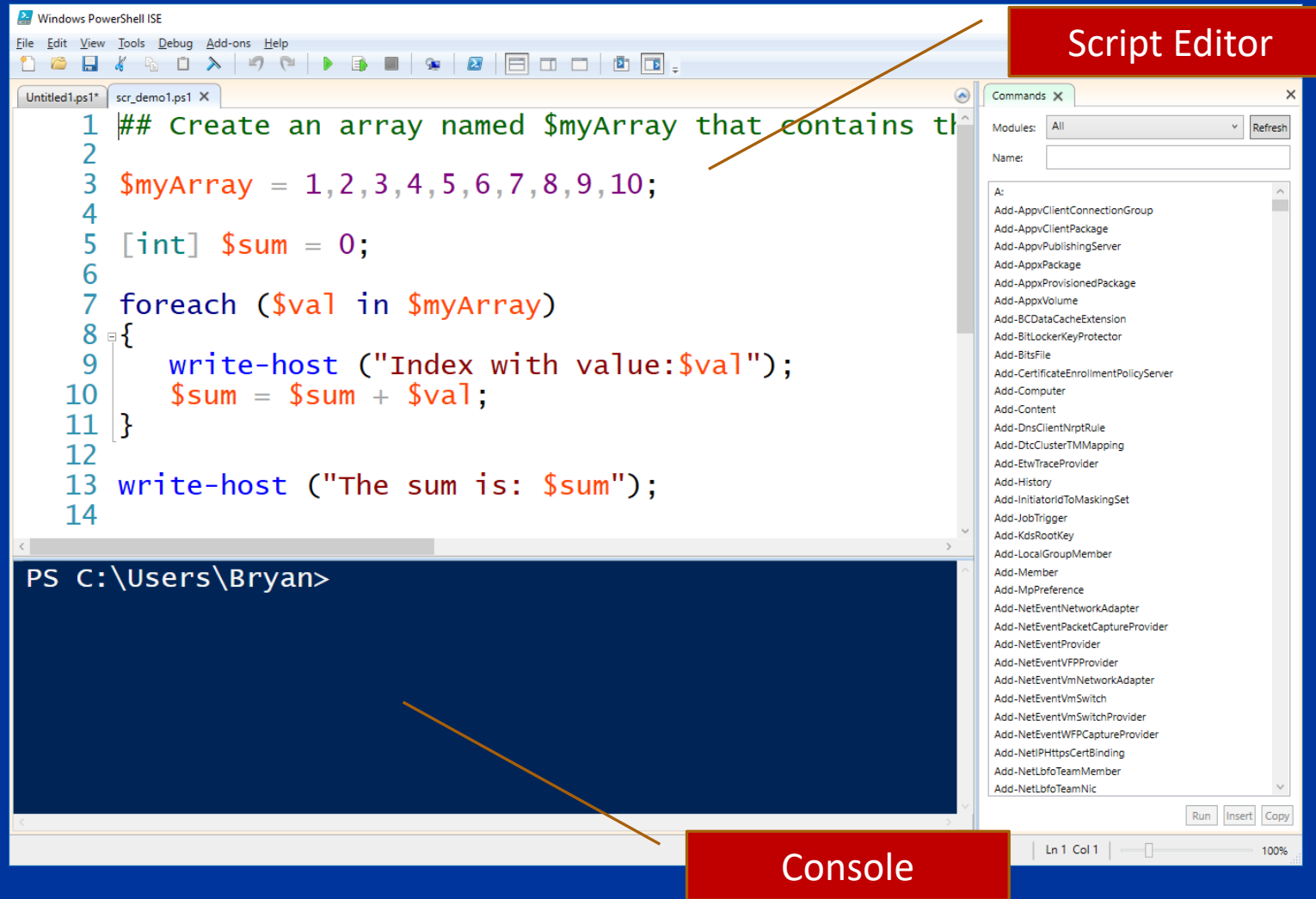
Restricted - No scripts can be run. Windows PowerShell can be used only in interactive mode.

AllSigned - Only scripts signed by a trusted publisher can be run.

RemoteSigned - Downloaded scripts must be signed by a trusted publisher before they can be run.

Unrestricted - No restrictions; all Windows PowerShell scripts can be run.

The PowerShell ISE



ISE Demo

PowerShell Cmdlets

- Performs a Single Action
- Name is a verb and noun separated by a dash (-), i.e. Get-Help, Get-Process, and Start-Service
- Are designed to be used in combination with other cmdlets
- Verbs Helps Identify What the Cmdlet Does:
 - "get" cmdlets only retrieve data,
 - "set" cmdlets only establish or change data,

Cmdlet Examples

Get-Help *

Get-Process

Get-Location

Set-Location C:\

Write-Host "Hello"

Get-WMIObject Win32_BIOS

Set-ExecutionPolicy RemoteSigned

Cmdlet Examples

Microsoft has a list of approved cmdlet verbs.

The noun has more flexibility but should be the object of the verb.

Language Demo

Language Syntax

for inline comment and <# #> for comment block.

Variable names start with \$.

```
1  ## Create an array named $myArray that contains the numbers 1 through 7.
2
3  $myArray = 1,2,3,4,5,6,7
4
5  [int] $sum = 0;
6
7  foreach ($val in $myArray)
8  {
9      write-host ("Index with value:$val");
10     $sum = $sum + $val;
11 }
12
13 write-host ("The sum is: $sum");
14
```

Strong data typing.

Braces mark code blocks.

Variables in strings expand by default when printed.

Review

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