Streams and the Write Cmdlets

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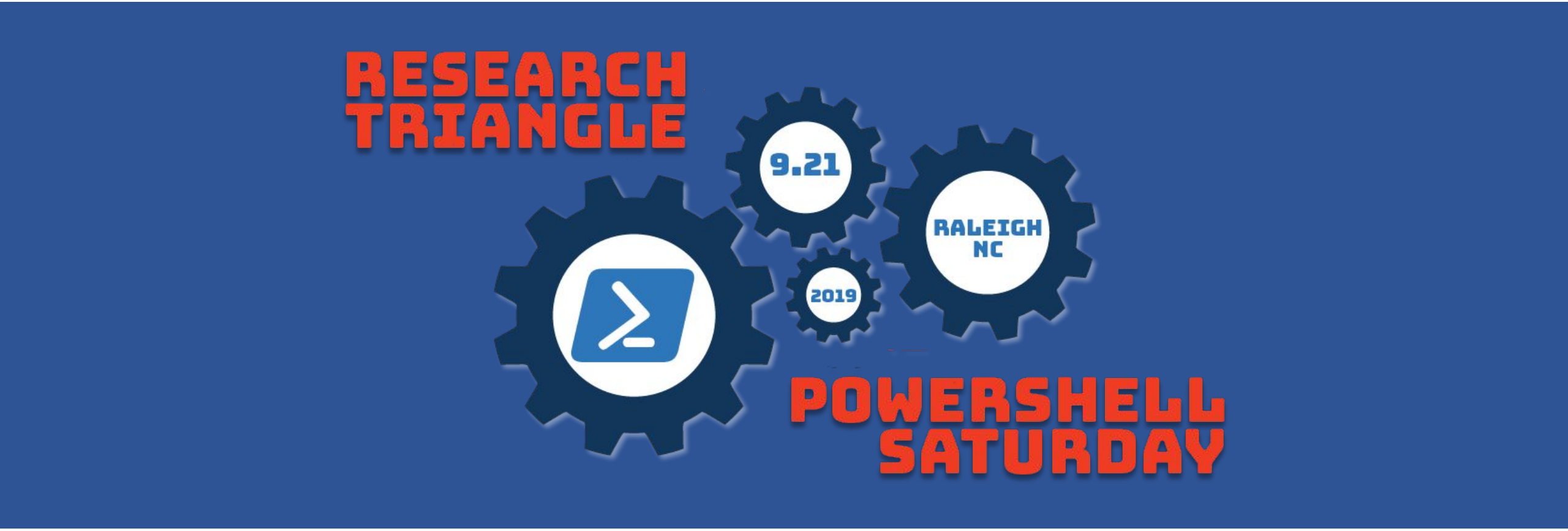

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A Story on Reusability

Packaging designed for reuse.

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A Story on Reusability

Packaging can accept other, similar products.

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Packaging can accept different but still pretty similar products.

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Packaging that doesn't care about the context, it just does it's one task really well.

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A Story on Reusability

Writing code for maximum reuse makes life easy and so much more fun.

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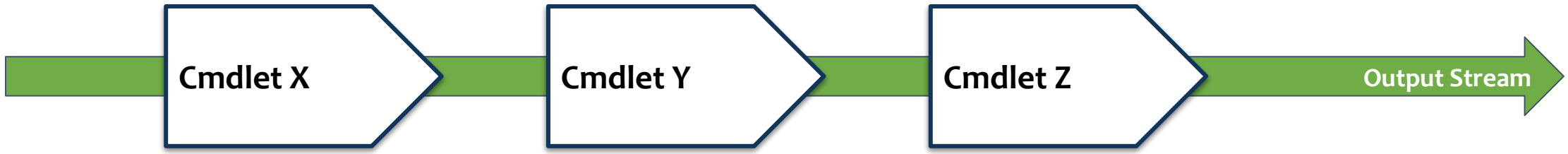
Reusability, Output, and the Pipeline

Each cmdlet accepts and outputs objects on the output stream



PowerShell 2.0 Streams

Number	Name	Cmdlet	Introduced
1	Success	Write-Output	PowerShell 2.0
2	Error	Write-Error	PowerShell 2.0

Reusability, Output, and the Pipeline


```
Windows PowerShell
PS C:\> Get-Item *, 'Fake Item' | Sort-Object | Out-GridView
Get-Item : Cannot find path 'C:\Fake Item' because it does not exist.
At line:1 char:1
+ Get-Item *, 'Fake Item' | Sort-Object | Out-GridView
+ ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
    + CategoryInfo          : ObjectNotFound: (C:\Fake Item:String) [Get-Item], ItemNotFou
    + FullyQualifiedErrorId : PathNotFound,Microsoft.PowerShell.Commands.GetItemCommand

PS C:\>
```

Get-Item *, 'Fake Item' | Sort-Object | Out-GridView

Filter

Add criteria

Mode	LastWriteTime	Length	Name
d-----	3/19/2019 12:52:43 AM		PerfLogs
d-r---	9/14/2019 5:44:26 PM		Program Files
d-r---	9/14/2019 5:03:23 PM		Program Files (x86
d-r---	8/30/2019 1:24:45 AM		Users
d-----	9/14/2019 5:44:33 PM		Windows

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PowerShell 3.0 Streams

Number	Name	Cmdlet	Introduced
1	Success	Write-Output	PowerShell 2.0
2	Error	Write-Error	PowerShell 2.0
3	Warning	Write-Warning	PowerShell 3.0
4	Verbose	Write-Verbose	PowerShell 3.0
5	Debug	Write-Debug	PowerShell 3.0

Reusability, Output, and the Pipeline

Windows PowerShell

```
PS C:\> Find-Module PS* -Verbose | Sort-Object Name | Out-GridView
VERBOSE: Repository details, Name = 'PSGallery', Location = 'https://www.powershellgaller
VERBOSE: Repository details, Name = 'PSGallery', Location = 'https://www.powershellgaller
VERBOSE: Using the provider 'PowerShellGet' for searching packages.
VERBOSE: The -Repository parameter was not specified.  PowerShellGet will use all of the
VERBOSE: Getting the provider object for the PackageManagement Provider 'NuGet'.
VERBOSE: The specified Location is 'https://www.powershellgallery.com/api/v2' and Package
VERBOSE: Searching repository 'https://www.powershellgallery.com/api/v2/FindPackagesById(
VERBOSE: Total package yield:'0' for the specified package 'PS*'.
VERBOSE: Searching repository 'https://www.powershellgallery.com/api/v2/' for 'PS*'.
VERBOSE: Total package yield:'532' for the specified package 'PS*'.
PS C:\>
```

Find-Module PS* -Verbose | Sort-Object Name | Out-(

Filter

Add criteria

Version	Name	Repository	Descri
1.0.1	PS.B2	PSGallery	A Pow
1.1.3	PS.BitBucket	PSGallery	Bitbuc
0.0.2	ps.checkModuleUpdates	PSGallery	Power
1.0.19	PS.HealthChecks	PSGallery	A Pow
0.0.5	ps.slack	PSGallery	Power
0.0.1.5	PS1C	PSGallery	Power
0.1.0	PS1EAE	PSGallery	Wrapr

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PowerShell 5.0+ Streams

Number	Name	Cmdlet	Introduced
1	Success	Write-Output	PowerShell 2.0
2	Error	Write-Error	PowerShell 2.0
3	Warning	Write-Warning	PowerShell 3.0
4	Verbose	Write-Verbose	PowerShell 3.0
5	Debug	Write-Debug	PowerShell 3.0
6	Information	Write-Information	PowerShell 5.0

Testing all the Write Cmdlets

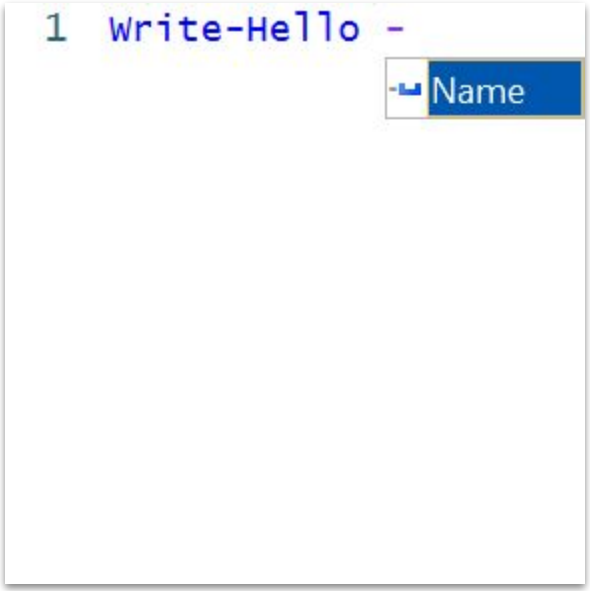
```powershell
function Write-Hello ([string[]]$Name = $env:USERNAME) {
    foreach ($item in $Name) {
        #Streams cmdlets
        Write-Debug -Message "WRITE-DEBUG: Hello, $item. Welcome to PSSaturday."
        Write-Error -Message "WRITE-ERROR: Hello, $item. Welcome to PSSaturday."
        Write-Information -MessageData "WRITE-INFORMATION: Hello, $item. Welcome to PSSaturday."
        Write-Output "WRITE-OUTPUT: Hello, $item. Welcome to PSSaturday."
        Write-Verbose -Message "WRITE-VERBOSE: Hello, $item. Welcome to PSSaturday."
        Write-Warning -Message "WRITE-WARNING: Hello, $item. Welcome to PSSaturday."

        #Non-streams cmdlets
        Write-Progress -Activity "WRITE-Progress: Hello, $item. Welcome to PSSaturday."
        Write-Host "WRITE-HOST: Hello, $item. Welcome to PSSaturday."

        "Hello, $item. This is the actual output."
    }
}
```

Testing all the Write Cmdlets (Again)

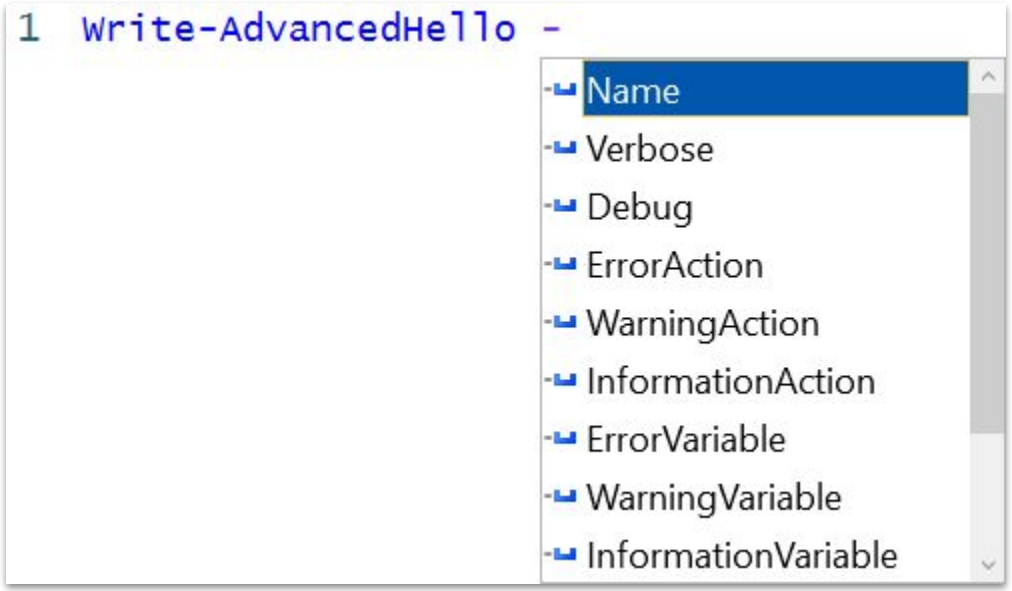
```powershell
function Write-AdvancedHello {
    [CmdletBinding()]
    Param ([string[]]$Name = $env:USERNAME)
    foreach ($item in $Name) {
        #Streams cmdlets
        Write-Debug -Message "WRITE-DEBUG: Hello, $item. Welcome to PSSaturday."
        Write-Error -Message "WRITE-ERROR: Hello, $item. Welcome to PSSaturday."
        Write-Information -MessageData "WRITE-INFORMATION: Hello, $item. Welcome to PSSaturday."
        Write-Output "WRITE-OUTPUT: Hello, $item. Welcome to PSSaturday."
        Write-Verbose -Message "WRITE-VERBOSE: Hello, $item. Welcome to PSSaturday."
        Write-Warning -Message "WRITE-WARNING: Hello, $item. Welcome to PSSaturday."

        #Non-streams cmdlets
        Write-Progress -Activity "WRITE-Progress: Hello, $item. Welcome to PSSaturday."
        Write-Host "WRITE-HOST: Hello, $item. Welcome to PSSaturday."

        "Hello, $item. This is the actual output."
    }
}
```

Always use “[CmdletBinding()]”

Without “[CmdletBinding()]”



With “[CmdletBinding()]”



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Preference Variables

Cmdlet	Preference Variable	Available Values (Default)
Write-Output		
Write-Error	$ErrorActionPreference	Stop, Inquire, **(Continue)**, Suspend, SilentlyContinue
Write-Warning	$WarningPreference	Stop, Inquire, **(Continue)**, SilentlyContinue
Write-Verbose	$VerbosePreference	Stop, Inquire, Continue, **(SilentlyContinue)**
Write-Debug	$DebugPreference	Stop, Inquire, Continue, **(SilentlyContinue)**
Write-Information	$InformationActionPreference	Stop, Inquire, Continue, Suspend, **(SilentlyContinue)**

Write-Information vs Write-Host

	Write-Host (v5.0+)	Write-Information
Accepts Pipeline Input	✔	⛔
Writes to Information Stream	✔	✔
Supports message tagging	⛔	✔
Supports *InformationAction* and *InformationVariable*	🔺	✔
Supports foreground and background colors	✔	⛔

🔺 Yes, but *InformationAction* not affected by 'Continue', and 'SilentlyContinue' for backwards compatibility.

Related Links

- PowerShell Streams and using the right Write-* Cmdlet

- Write-Debug, Write-Error, Write-Host, Write-Information, Write-Output, Write-Progress, Write-Verbose

- about_CommonParameters
- about_Functions_Advanced
- about_Preference_Variables
- about_Redirection

- Understanding Streams, Redirection, and Write-Host in PowerShell
- Welcome to the PowerShell Information Stream