

# PowerShell Quick Style Guide

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This guide is intended to be a short overview of [The PowerShell Best Practices and Style Guide](#).

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All attributions and credits for [The PowerShell Best Practices and Style Guide](#) go to Don Jones, Matt Penny, Carlos Perez, Joel Bennett and the PowerShell Community.

If you rather search a cheat sheet, I recommend the PDF from Warren Frame: [PowerShell Cheat Sheet](#)  
(Source: [PowerShell Cheat Sheet](#), all credits go to [Warren Frame](#).)

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## Style Guide

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### Code Layout and Formatting

- Capitalization Conventions
  - Use *PascalCase* or *camelCase* for all public identifiers: module names, function or cmdlet names, class, enum, and attribute names, public fields or properties, global variables and constants, parameters etc.

```
[String] $MyVariable = "A typed variable."
```

- PowerShell language keywords are written in *lowercase* (e.g. `if`, `foreach`), as well as operators such as `-eq` and `-match`.

```
if ($MyVariable -eq "AnyValue") {  
    # ...  
}
```

- Keywords in comment-based help are written in *UPPERCASE* (e.g. `.SYNOPSIS`).

```
<#  
.SYNOPSIS  
    A short description...  
#>
```

- Function names should follow PowerShell's *Verb-Noun* naming conventions, using *PascalCase* within both Verb and Noun (list allowed verbs with the cmdlet `Get-Verb`).

```
function Invoke-HttpRequest {  
    # ...  
}
```

- Start all scripts or functions with [CmdletBinding()].

```
function Invoke-HttpRequest {
    [CmdletBinding()]
    param (
        # ...
    )
}
```

- Follow either the *Stroustrup* or the *One True Brace Style (1TBS or OTBS)* brace style. Write the opening brace always on the same line and the closing brace on a new line!

```
function Invoke-HttpRequest {
    # ...
    end {
        if ($MyVariable -eq "AnyValue") {
            # either Stroustrup:
        }
        elseif {
            # or 1TBS:
        } else {
            # ...
        }
    }
}
```

- Indentation and line handling
  - Use four spaces per indentation level (and never tabs!).
  - Lines should not have trailing whitespace.
  - Limit lines to 115 characters when possible, but avoid backticks.
  - Surround function and class definitions with two blank lines (similar to Python).
  - Method definitions within a class are surrounded by a single blank line (similar to Python).
  - End each file with a single blank line.
  - I recommend using [EditorConfig](#) plugin to automatically set indentation levels and trim trailing whitespaces. Example config (create new file .editorconfig in root folder):

```
root = true

[*]
indent_style = space
indent_size = 4
charset = utf-8
trim_trailing_whitespace = true
insert_final_newline = true
```

- Put spaces around keywords, operators and special characters

```
# Bad
if($MyVariable-eq"AnyValue"){
    $Index=$MyVariable.Length+1
}

# Good
if ($MyVariable -eq "AnyValue") {
    $Index = $MyVariable.Length + 1
}
```

- Avoid using semicolons ; as line terminators
  - PowerShell will not complain about extra semicolons, but they are unnecessary.
  - When declaring hashtables, which extend past one line, put each element on it's own line.

Read the full page [Code Layout and Formatting](#) for more information.

## Function Structure

- When declaring simple functions leave a space between the function name and the parameters.
- For advanced functions follow PowerShell's *Verb-Noun* naming conventions as mentioned in section [Code Layout and Formatting](#).
- Avoid using the return keyword in your functions. Just place the object variable on its own.

```
function MyAddition ($Number1, $Number2) {  
    $Result = $Number1 + $Number2  
    $Result  
}
```

- When using blocks, return objects inside the process block and not in begin or end.
- When using parameters from pipeline use at least a process block.
- Specify an OutputType attribute if the advanced function returns an object or collection of objects.

```
function Invoke-HttpRequest {  
    [CmdletBinding()]  
    [OutputType([PSObject])]  
    param(  
        # ...  
    )  
}
```

- For validating function or script parameters, use validation attributes (e.g. ValidateNotNullOrEmpty or ValidatePattern)

```
function Invoke-HttpRequest {  
    [CmdletBinding()]  
    param (  
        [Parameter(Mandatory = $true, ValueFromPipeline = $true, Position = 0)]  
        [ValidatePattern("^http(s)?.*")]  
        [String] $Url  
    )  
    # ...  
}
```

Read the full page [Function Structure](#) for more information.

## Documentation and Comments

- Indent comments to the same level as the corresponding code.
- Each comment line should start with a # and a single space.
- Keep comments up-to-date when code changes.
- Write comments in English and as complete sentences.
- Inline comments should be separated with two spaces.

```
$MyVariable = $null # Declare variable
```

- Comments should serve to your reasoning and decision-making, not attempt to explain what a command does.

```
# Bad  
# Decrease Length by one  
$LastIndex = $MyVariable.Length - 1
```

```
# Good  
# Indices usually start at 0, thus subtract one to access the last char.  
$LastIndex = $MyVariable.Length - 1
```

- When documenting functions, place the comment inside the function at the top, instead of above.
- Provide usage examples when documenting functions (.EXAMPLE)

Read the full page [Documentation and Comments](#) for more information.

## Naming Conventions

- Use the full name of each command instead of aliases or short forms.
- Additionally, use full parameter names.

```
# Bad
gps Explorer

# Good
Get-Process -Name Explorer
```

- Use full, explicit paths when possible (avoid .. or .).

```
# Bad
$Result = & ".\Invoke-AnotherScript.ps1" -Param1 "Value"

# Good
$Result = & "$PSScriptRoot\Invoke-AnotherScript.ps1" -Param1 "Value"
```

- Avoid using ~, instead use \$env:USERPROFILE or \$HOME.

Read the full page [Naming Conventions](#) for more information.

## Tips and Common Pitfalls

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- When creating a new file, ensure that the encoding is *UTF-8*. Be aware that the PowerShell ISE creates files with encoding *UTF-8 with BOM* by default. See also [What's the difference between UTF-8 and UTF-8 without BOM?](#).
- See Get-Verb to list all approved PowerShell verbs, always use one of them for your functions.
- \$ErrorActionPreference is set to Continue by default, thus the script continues to run even after an error happens. Add the following code at the beginning of your script to change the default behavior:

```
if (-not $PSCmdlet.MyInvocation.BoundParameters.ErrorAction) {
    $ErrorActionPreference = "Stop"
}
```

- The results of each statement are added to the output stream and thus returned as script output, not only the ones containing the return keyword.
  - Use \$null = {{statement}} or {{statement}} | Out-Null, to ignore certain results.
- When invoking other scripts within your script, use explicit not relative paths.
  - Since PowerShell 3.0 you can get the directory of the current script with \$PSScriptRoot.
- Avoid blocking/waiting statements, like Read-Host or Get-Credential, in scripts that are run as child processes or in background.
- When using ConvertTo-Json be aware that the default value for the parameter -Depth is only 2.

```
-Depth [<Int32>]
    Specifies how many levels of contained objects are included in the JSON representation. The default value is 2.
```

- Additionally ConvertTo-Json replaces special characters with *Unicode* escape characters. See also [ConvertTo-Json problem containing special characters](#). If you need the unescaped characters, use the following code:

```
$UnescapedJson = [Regex]::Unescape($EscapedJson)
```

- For returning/printing a string with a colon (:) or text right after a variable, use "\${MyVariable}" instead of "\$MyVariable".

```
# Error
Write-Verbose "$Result: $env:USERNAME_Will_Be_A_Pro"

# Good
Write-Verbose "${Result}: ${env:USERNAME}_Will_Be_A_Pro"
```

- Since PowerShell is a dynamically typed language, it won't return an empty array or an array with only one item, but either \$null or the item on its own. See also [PowerShell doesn't return an empty array as an array](#). To return such an array, use the following code:

```
if ($Result.Length -le 1) {
    , $Result # Force PowerShell to return $Result as array.
} else {
    $Result # $Result is an array anyway.
}
```