

Chapter 1: Introducing PowerShell Core

```
Terminal
PS /home/ram> Update-Help
Updating Help for module Microsoft.PowerShell.Management
Locating Help Content...
[ooooooooooooooooooooooooooooooooooooooooooooooooooooooooooooooooooooooooooooooooooooooooooooooooooooooooooooo]
```

```
Terminal
PS /home/ram> Get-Help Write-Host

NAME
    Write-Host

SYNOPSIS
    Writes customized output to a host.

SYNTAX
    Write-Host [[-Object] <Object>] [-BackgroundColor {Black | DarkBlue | DarkGreen |
    DarkCyan | DarkRed | DarkMagenta | DarkYellow | Gray | DarkGray | Blue | Green |
    Cyan | Red | Magenta | Yellow | White}] [-ForegroundColor {Black | DarkBlue |
    DarkGreen | DarkCyan | DarkRed | DarkMagenta | DarkYellow | Gray | DarkGray | Blue |
    Green | Cyan | Red | Magenta | Yellow | White}] [-NoNewline] [-Separator <Object>]
    [<CommonParameters>]

DESCRIPTION
    The `Write-Host` cmdlet customizes output. You can specify the color of text by

RELATED LINKS
    Clear-Host
    Out-Host
```

```
Terminal
PS /home/ram> Get-Help Get-Command | Out-String -Stream | Select-String -Pattern 'wildcard'

`Get-Command` that uses the exact name of the command, without wildcard characters,
automatically imports the module that contains the command so that you can use the
command immediately. To enable, disable, and configure automatic importing of modules,
use the `$PSModuleAutoLoadingPreference` preference variable. For more information, see
about_Preference_Variables (About/about_Preference_Variables.md).

PS /home/ram> █
```

```
Terminal
PS /home/ram> Get-Command -Noun Module

CommandType      Name                Version            Source
-----
Function         Find-Module         1.6.7             PowerShell...
Function         Install-Module     1.6.7             PowerShell...
Function         Publish-Module     1.6.7             PowerShell...
Function         Save-Module        1.6.7             PowerShell...
Function         Uninstall-Module  1.6.7             PowerShell...
Function         Update-Module      1.6.7             PowerShell...
Cmdlet           Get-Module          6.1.1.0          Microsoft...
Cmdlet           Import-Module      6.1.1.0          Microsoft...
Cmdlet           New-Module          6.1.1.0          Microsoft...
Cmdlet           Remove-Module      6.1.1.0          Microsoft...

PS /home/ram> █
```

```
Terminal
PS /home/ram> Find-Module Docker

Version          Name                Repository          Description
-----
1.3.2            Docker              PSGallery           This modu...

PS /home/ram> █
```



```
Terminal
PS /home/ram> Import-Csv ./sample.csv

WS      : 161226752
CPU     : 23.42
Id      : 1914
SI      : 1566
ProcessName : io.elementary.a

WS      : 199598080
CPU     : 77.84
Id      : 1050
SI      : 1040
ProcessName : gnome-shell

WS      : 216113152
CPU     : 0.67
Id      : 19250
SI      : 1566
ProcessName : atom

WS      : 474685440
CPU     : 619.05
Id      : 1568
SI      : 1566
ProcessName : Xorg

WS      : 1387864064
CPU     : 1890.29
Id      : 15720
```

```
Terminal
PS /home/ram> Import-Csv ./sample.csv | Get-Member

TypeName: System.Management.Automation.PSCustomObject

Name      MemberType Definition
-----
Equals    Method      bool Equals(System.Object obj)
GetHashCode Method      int GetHashCode()
GetType   Method      type GetType()
ToString  Method      string ToString()
CPU       NoteProperty string CPU=23.42
Id        NoteProperty string Id=1914
ProcessName NoteProperty string ProcessName=io.elementary.a
SI        NoteProperty string SI=1566
WS        NoteProperty string WS=161226752

PS /home/ram> 
```

```
Terminal
PS /home/ram> Import-Csv ./sample.csv | Format-Table

WS          CPU      Id    SI    ProcessName
--          ---     --    --    -
161226752  23.42   1914  1566  io.elementary.a
199598080  77.84   1050  1040  gnome-shell
216113152  0.67    19250 1566  atom
474685440  619.05  1568  1566  Xorg
1387864064 1890.29 15720 1566  firefox

PS /home/ram> 
```

```
Terminal
PS /home/ram> ls -l
total 40
drwxr-xr-x  2 ram ram 4096 Apr  6 2018 Desktop
drwxr-xr-x  8 ram ram 4096 Nov 12 13:15 Documents
drwxr-xr-x  5 ram ram 4096 Nov 13 23:35 Downloads
drwxr-xr-x  9 ram ram 4096 Nov  7 13:39 gems
drwxr-xr-x  2 ram ram 4096 Apr  6 2018 Music
drwxr-xr-x 19 ram ram 4096 Nov 14 09:01 Pictures
drwxr-xr-x  2 ram ram 4096 Apr  6 2018 Public
drwxr-xr-x  4 ram ram 4096 Aug  2 11:43 snap
drwxr-xr-x  2 ram ram 4096 Nov 12 13:58 Templates
drwxr-xr-x  2 ram ram 4096 Nov 13 20:55 Videos
PS /home/ram> 
```

```
Terminal
PS /home/ram> Get-ChildItem

Directory: /home/ram

Mode                LastWriteTime         Length Name
----                -
d-----            4/6/18      1:05 PM          Desktop
d-----           11/12/18      1:15 PM          Documents
d-----           11/13/18     11:35 PM          Downloads
d-----           11/7/18       1:39 PM          gems
d-----            4/6/18      1:05 PM          Music
d-----           11/14/18      9:02 AM          Pictures
d-----            4/6/18      1:05 PM          Public
d-----            8/2/18      11:43 AM          snap
d-----           11/12/18      1:58 PM          Templates
d-----           11/13/18      8:55 PM          Videos

PS /home/ram> 
```

```
Terminal
PS /home/ram> ls -l | awk '{print $6, $7, $8, $9}'

Apr 6 2018 Desktop
Nov 12 13:15 Documents
Nov 13 23:35 Downloads
Nov 7 13:39 gems
Apr 6 2018 Music
Nov 14 09:02 Pictures
Apr 6 2018 Public
Aug 2 11:43 snap
Nov 12 13:58 Templates
Nov 13 20:55 Videos
PS /home/ram> █
```

```
Terminal
PS /home/ram> Get-ChildItem | Select-Object LastWriteTime, Name

LastWriteTime      Name
-----
4/6/18 1:05:23 PM  Desktop
11/12/18 1:15:35 PM  Documents
11/13/18 11:35:10 PM Downloads
11/7/18 1:39:37 PM   gems
4/6/18 1:05:23 PM   Music
11/14/18 9:04:35 AM  Pictures
4/6/18 1:05:23 PM   Public
8/2/18 11:43:35 AM  snap
11/12/18 1:58:13 PM  Templates
11/14/18 9:04:27 AM  test subdirectory
11/13/18 8:55:55 PM  Videos

PS /home/ram> █
```

```
Terminal
PS /home/ram> mkdir 'test subdirectory'
PS /home/ram> ls -l | awk '{print $6, $7, $8, $9}'

Apr 6 2018 Desktop
Nov 12 13:15 Documents
Nov 13 23:35 Downloads
Nov 7 13:39 gems
Apr 6 2018 Music
Nov 14 09:04 Pictures
Apr 6 2018 Public
Aug 2 11:43 snap
Nov 12 13:58 Templates
Nov 14 09:04 test
Nov 13 20:55 Videos
PS /home/ram> █
```

```
Terminal
PS /home/ram> Get-ChildItem | Select-Object LastWriteTime, Name

LastWriteTime      Name
-----
4/6/18 1:05:23 PM  Desktop
11/12/18 1:15:35 PM Documents
11/13/18 11:35:10 PM Downloads
11/7/18 1:39:37 PM  gems
4/6/18 1:05:23 PM  Music
11/14/18 9:04:35 AM Pictures
4/6/18 1:05:23 PM  Public
8/2/18 11:43:35 AM  snap
11/12/18 1:58:13 PM Templates
11/14/18 9:04:27 AM test subdirectory
11/13/18 8:55:55 PM Videos

PS /home/ram> █
```

```
Terminal
File Edit View Search Terminal Help
PS /home/ram> ls | Get-Member

TypeName: System.String

Name      MemberType      Definition
-----
Clone     Method          System.Object Clone(), System.Object ICloneable...
CompareTo Method          int CompareTo(System.Object value), int Compare...
Contains  Method          bool Contains(string value)
CopyTo    Method          void CopyTo(int sourceIndex, char[] destination...
EndsWith  Method          bool EndsWith(string value), bool EndsWith(stri...
Equals    Method          bool Equals(System.Object obj), bool Equals(str...
GetEnumerator Method        System.CharEnumerator GetEnumerator(), System.C...
GetHashCode Method        int GetHashCode(), int GetHashCode(System.Strin...
GetType   Method          type GetType()
GetTypeCode Method        System.TypeCode GetTypeCode(), System.TypeCode ...
IndexOf   Method          int IndexOf(char value), int IndexOf(char value...
IndexOfAny Method        int IndexOfAny(char[] anyOf), int IndexOfAny(ch...
Insert    Method          string Insert(int startIndex, string value)
IsNormalized Method        bool IsNormalized(), bool IsNormalized(System.T...
LastIndexOf Method        int LastIndexOf(char value), int LastIndexOf(ch...
```

```

Terminal
File Edit View Search Terminal Help
PS /home/ram> Get-Alias

CommandType      Name                                     Version          Source
-----
Alias             ? -> Where-Object
Alias             % -> ForEach-Object
Alias             cd -> Set-Location
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             copy -> Copy-Item
Alias             cpi -> Copy-Item
Alias             cvpa -> Convert-Path
Alias             dbp -> Disable-PSBreakpoint
Alias             del -> Remove-Item
Alias             dir -> Get-ChildItem
Alias             ebp -> Enable-PSBreakpoint

```

```

Terminal
File Edit View Search Terminal Help
PS /home/ram> Get-Item '/home/ram' | Get-Member

TypeName: System.IO.DirectoryInfo

Name              MemberType      Definition
-----
LinkType          CodeProperty    System.String LinkType{get=GetLinkType;}
Mode              CodeProperty    System.String Mode{get=Mode;}
Target            CodeProperty    System.Collections.Generic.IEnumerable`1[System.String, System.Privat...
Create            Method          void Create()
CreateSubdirectory Method          System.IO.DirectoryInfo CreateSubdirectory(string path)
Delete            Method          void Delete(), void Delete(bool recursive)
EnumerateDirectories Method          System.Collections.Generic.IEnumerable[System.IO.DirectoryInfo] Enumer...
EnumerateFiles    Method          System.Collections.Generic.IEnumerable[System.IO.FileInfo] EnumerateFi...
EnumerateFileSystemInfos Method          System.Collections.Generic.IEnumerable[System.IO.FileSystemInfo] Enume...
Equals            Method          bool Equals(System.Object obj)
GetDirectories    Method          System.IO.DirectoryInfo[] GetDirectories(), System.IO.DirectoryInfo[] ...
GetFiles          Method          System.IO.FileInfo[] GetFiles(string searchPattern), System.IO.FileInf...
GetFileSystemInfos Method          System.IO.FileSystemInfo[] GetFileSystemInfos(string searchPattern), S...
GetHashCode       Method          int GetHashCode()
GetLifetimeService Method          System.Object GetLifetimeService()
GetObjectData     Method          void GetObjectData(System.Runtime.Serialization.SerializationInfo info...
GetType           Method          type GetType()
InitializeLifetimeService Method          System.Object InitializeLifetimeService()
MoveTo            Method          void MoveTo(string destDirName)
Refresh           Method          void Refresh()
ToString          Method          string ToString()
PSChildName       NoteProperty    string PSChildName=ram
PSDrive           NoteProperty    PSDriveInfo PSDrive=/

```



```
Select PowerShell 6 (x64)
PowerShell 6.1.0
Copyright (c) Microsoft Corporation. All rights reserved.

https://aka.ms/pscore6-docs
Type 'help' to get help.

PS C:\Users\Ram> Get-Command -Noun execution*

CommandType      Name                               Version      Source
-----
Cmdlet           Get-ExecutionPolicy              6.1.0.0     Microsoft.PowerShell.Security
Cmdlet           Set-ExecutionPolicy              6.1.0.0     Microsoft.PowerShell.Security

PS C:\Users\Ram>
```

```
PowerShell 6 (x64)
PS C:\Users\Ram> Get-ExecutionPolicy
RemoteSigned
PS C:\Users\Ram>
```

```
Administrator: PowerShell 6 (x64)
PS C:\Users\Ram> Set-ExecutionPolicy -ExecutionPolicy Undefined -Scope LocalMachine
PS C:\Users\Ram> Get-ExecutionPolicy -List

Scope ExecutionPolicy
-----
MachinePolicy      Undefined
UserPolicy         Undefined
Process            Undefined
CurrentUser        Undefined
LocalMachine       Undefined

PS C:\Users\Ram>
```

```
PowerShell 6 (x64)
PS C:\Users\Ram> Get-Help Set-ExecutionPolicy

NAME
    Set-ExecutionPolicy

SYNOPSIS
    Changes the user preference for the PowerShell execution policy.

SYNTAX
    Set-ExecutionPolicy [-ExecutionPolicy] {Unrestricted | RemoteSigned | AllSigned | Restricted | Default |
    Bypass | Undefined} [[-Scope] {Process | CurrentUser | LocalMachine | UserPolicy | MachinePolicy}]
    [-Confirm] [-Force] [-WhatIf] [<CommonParameters>]

DESCRIPTION
    The Set-ExecutionPolicy cmdlet changes the user preference for the PowerShell execution policy.

    The execution policy is part of the security strategy of PowerShell. It determines whether you can load
    configuration files (including your PowerShell profile) and run scripts, and it determines which
    scripts, if any, must be digitally signed before they will run. For more information, see
    about_Execution_Policies (http://go.microsoft.com/fwlink/?LinkID=135170).

    To change the execution policy for the default (LocalMachine) scope, start PowerShell with the "Run as
```

```
Administrator: PowerShell 6 (x64)
PS C:\Users\Ram> Set-ExecutionPolicy -ExecutionPolicy Undefined -Scope LocalMachine
PS C:\Users\Ram> Get-ExecutionPolicy -List

Scope ExecutionPolicy
-----
MachinePolicy      Undefined
UserPolicy         Undefined
Process            Undefined
CurrentUser        Undefined
LocalMachine       Undefined

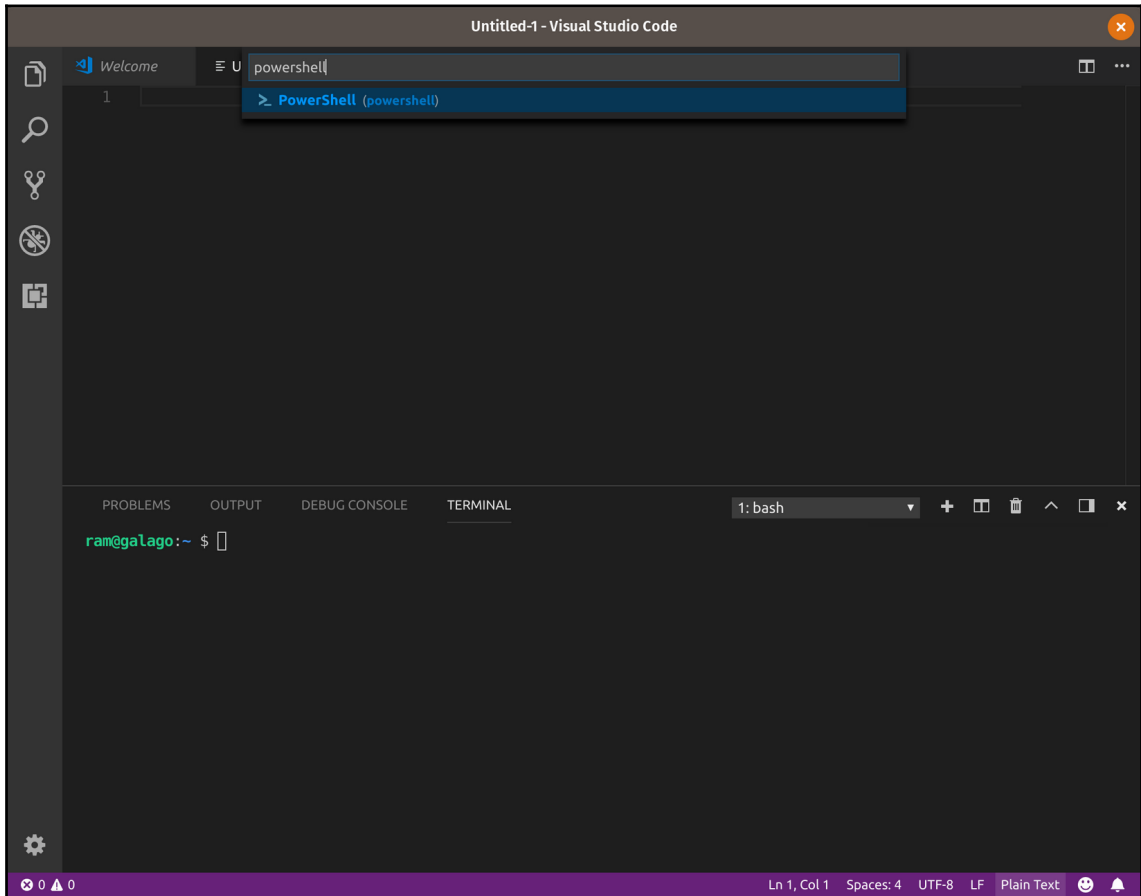
PS C:\Users\Ram>
```

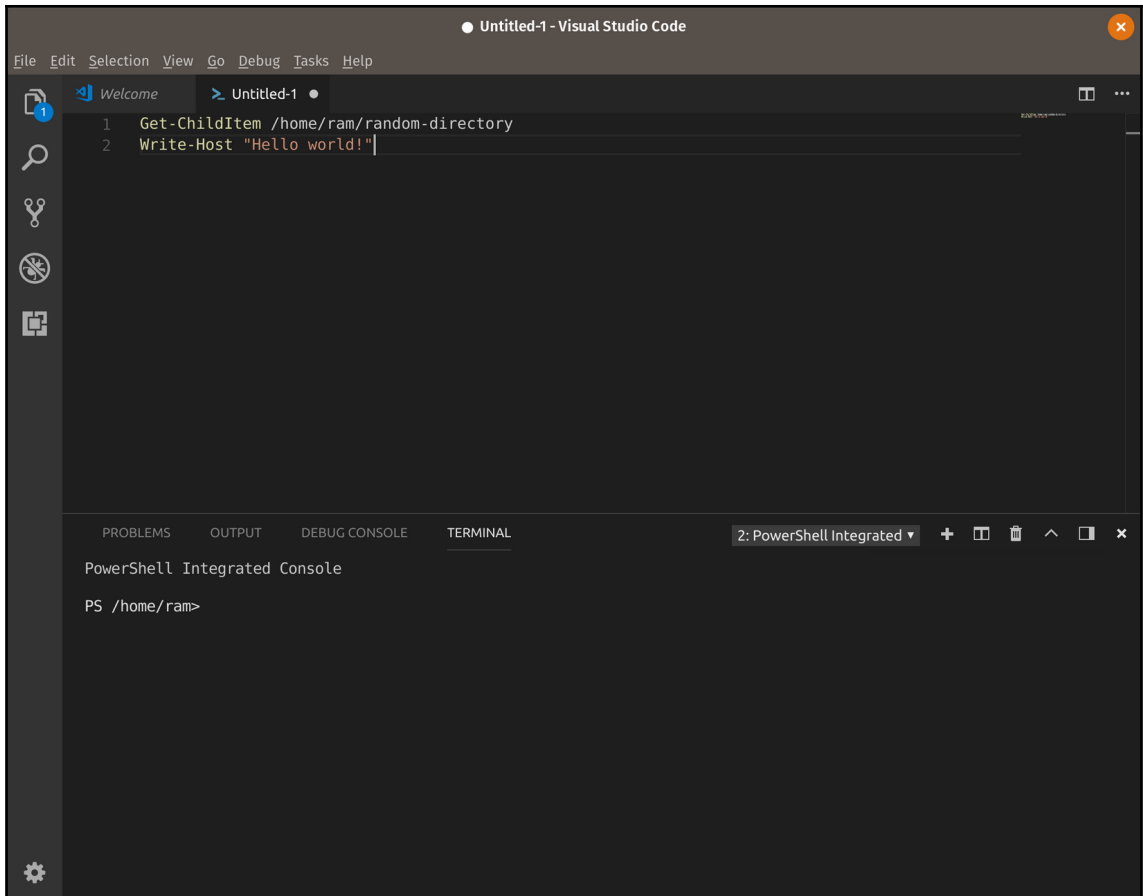
```
Select Administrator: PowerShell 6 (x64)
PS C:\Users\Ram> Set-ExecutionPolicy -ExecutionPolicy Undefined -Scope LocalMachine
PS C:\Users\Ram> Get-ExecutionPolicy -List

Scope ExecutionPolicy
-----
MachinePolicy      Undefined
UserPolicy         Undefined
Process            Undefined
CurrentUser        Undefined
LocalMachine       Undefined

PS C:\Users\Ram> Get-ExecutionPolicy
Restricted
PS C:\Users\Ram>
```

Chapter 2: Preparing for Administration Using PowerShell





The image shows a Visual Studio Code window titled "Untitled-1 - Visual Studio Code". The editor contains a PowerShell script with two lines:

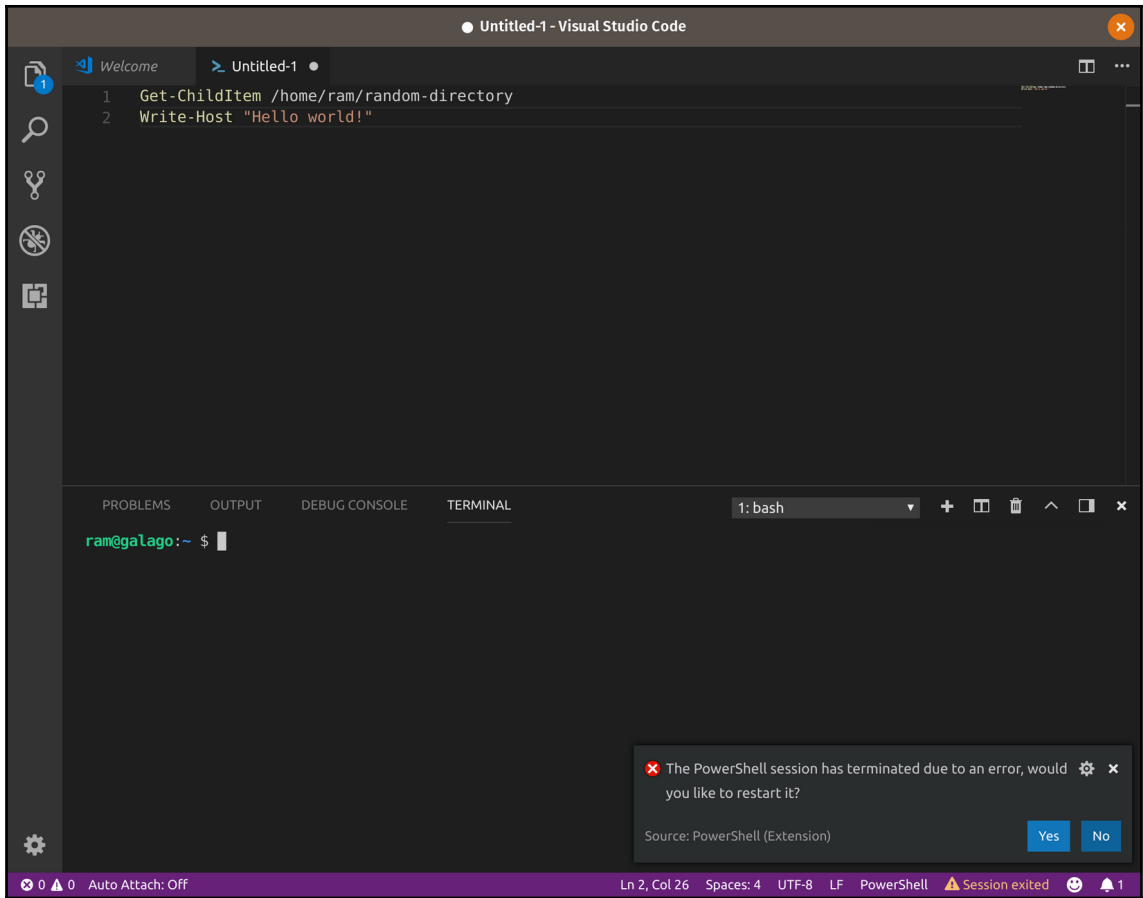
```
1 Get-ChildItem /home/ram/random-directory
2 Write-Host "Hello world!"
```

The terminal window, titled "2: PowerShell Integrated", shows the execution of the script. The output is as follows:

```
PS /home/ram> Get-ChildItem /home/ram/random-directory
Write-Host "Hello world!"
Get-ChildItem : Cannot find path '/home/ram/random-directory' because it does not exist.
At line:1 char:1
+ Get-ChildItem /home/ram/random-directory
+ ~~~~~
+ CategoryInfo          : ObjectNotFound: (/home/ram/random-directory:String) [Get-ChildItem], ItemNotFoundException
+ FullyQualifiedErrorId : PathNotFound,Microsoft.PowerShell.Commands.GetChildItemCommand

Hello world!
PS /opt/microsoft/powershell/6.1.0-preview.2> |
```

The status bar at the bottom indicates "Ln 2, Col 26 Spaces: 4 UTF-8 LF PowerShell 6.1".



The image shows a Visual Studio Code window titled "Untitled-1 - Visual Studio Code". The editor contains a PowerShell script with two lines:

```
1 Get-ChildItem /home/ram/random-directory
2 Write-Host "Hello world!"
```

The terminal output shows the execution of the script:

```
PowerShell Integrated Console
PS /home/ram> Set-Variable ErrorActionPreference SilentlyContinue
PS /home/ram> Get-ChildItem /home/ram/random-directory
Write-Host "Hello world!"
Hello world!
PS /opt/microsoft/powershell/6.1.0-preview.2> Get-Variable Error
Name           Value
----           -
Error          {Cannot find path '/home/ram/random-directory' because it does not exist.}
```

The terminal prompt is now `PS /opt/microsoft/powershell/6.1.0-preview.2>`. The status bar at the bottom indicates "Ln 1, Col 1 Spaces: 4 UTF-8 LF PowerShell 6.1".

The image shows a screenshot of the Visual Studio Code editor. The main editor window displays a PowerShell script with two lines:

```
1 Get-ChildItem /home/ram/random-directory
2 Write-Host "Hello world!"
```

The terminal window at the bottom shows the execution of the script. It starts with the command `Write-Host "Hello world!"`, which outputs `Hello world!`. Then, the command `PS /opt/microsoft/powershell/6.1.0-preview.2> Get-Variable Error` is executed, resulting in a table:

Name	Value
----	----
Error	{Cannot find path '/home/ram/random-directory' because it does not exist.}

Following this, the command `PS /opt/microsoft/powershell/6.1.0-preview.2> Get-Variable Error | Select-Object -ExpandProperty Value` is executed, which outputs the error message: `Get-ChildItem : Cannot find path '/home/ram/random-directory' because it does not exist.`. The terminal then shows the execution of the script's first line, `+ Get-ChildItem /home/ram/random-directory`, which results in a detailed error message:

```
+ -----
+ CategoryInfo          : ObjectNotFound: (/home/ram/random-directory:String) [Get-ChildItem], ItemNotFoundException
+ FullyQualifiedErrorId : PathNotFound,Microsoft.PowerShell.Commands.GetChildItemCommand
```

The terminal prompt is `PS /opt/microsoft/powershell/6.1.0-preview.2>`. The status bar at the bottom indicates the current position is `Ln 1, Col 1`, with `Spaces: 4`, `UTF-8` encoding, `LF` line endings, and `PowerShell 6.1` version.


```
Terminal
PS /home/ram> New-Item $PROFILE -ItemType File
New-Item : Could not find a part of the path '/home/ram/.config/powershell/Microsoft.PowerShell_profile.ps1'.
At line:1 char:1
+ New-Item $PROFILE -ItemType File
+ ~~~~~
+ CategoryInfo          : WriteError: (/home/ram/.conf...ell_profile.ps1:String) [New-Item
], DirectoryNotFoundException
+ FullyQualifiedErrorId : NewItemIOError,Microsoft.PowerShell.Commands.NewItemCommand

PS /home/ram> New-Item $PROFILE -ItemType File -Force

Directory: /home/ram/.config/powershell

Mode                LastWriteTime         Length Name
----                -
-----                03/06/2018    17:34             0 Microsoft.PowerShell_profile.ps1

PS /home/ram> █
```

```
Terminal
ram@galago:~ $ pwsh
PowerShell v6.1.0-preview.2
Copyright (c) Microsoft Corporation. All rights reserved.

https://aka.ms/pscore6-docs
Type 'help' to get help.

PS /home/ram> $ErrorActionPreference
Continue
PS /home/ram> vim $PROFILE
PS /home/ram> exit
ram@galago:~ $ pwsh
PowerShell v6.1.0-preview.2
Copyright (c) Microsoft Corporation. All rights reserved.

https://aka.ms/pscore6-docs
Type 'help' to get help.

PS /home/ram> $ErrorActionPreference
SilentlyContinue
PS /home/ram> Get-ChildItem /home/ram/random-directory
PS /home/ram> █
```

The image shows a screenshot of the Visual Studio Code editor interface. The main editor window displays a PowerShell script with the following code:

```
1 function prompt {
2     $Location = (Get-Location).Path.ToString()
3     switch -Wildcard ($Location) {
4         "/home/$env:USERNAME" { $Location = '~'; break }
5         "/home/$env:USERNAME/Documents" { $Location = 'Documents'; break }
6         "/home/$env:USERNAME/Downloads" { $Location = 'Downloads'; break }
7         "/home/$env:USERNAME/Pictures" { $Location = 'Pictures'; break }
8         "/home/$env:USERNAME/Videos" { $Location = 'Videos'; break }
9         "/home/$env:USERNAME/Music" { $Location = 'Music'; break }
10        "/home/$env:USERNAME/Documents/code" { $Location = 'Code'; break }
11        "/home/$env:USERNAME/*" { $Location = $Location.Replace("/home/$env:USERNAME/", '~'); break }
12    }
13    }
14
15    Write-Host "PS " -NoNewline
16    Write-Host `
17        ($($env:USERNAME) + "@" + "[System.Net.Dns]::GetHostByName((hostname)).HostName ") `
18        -NoNewLine -ForegroundColor Cyan
19    Write-Host "$Location" -NoNewline -ForegroundColor Green
20    Write-Host ("`n> ") -NoNewline
21    return " "
22 }
```

Below the editor, the TERMINAL panel is active, showing the execution of the script in a PowerShell session:

```
PS ram@galago ~
> 
```

The status bar at the bottom of the window indicates the current position (Ln 12, Col 13), spacing (Spaces: 4), encoding (UTF-8), line ending (LF), shell (PowerShell), and version (6.1).


```
Terminal
PS /home/ram> Get-Help Remove-Item -Parameter Path

-Path <String[]>
  Specifies a path of the items being removed. Wildcard characters are permitted.

  Required?                true
  Position?                1
  Default value            None
  Accept pipeline input?   True (ByPropertyName, ByValue)
  Accept wildcard characters? false

PS /home/ram> █
```

```
PowerShell 6.0.2
PS C:\Users\Ram> ls -l
Get-ChildItem : Missing an argument for parameter 'LiteralPath'. Specify a parameter of type 'System.String[]' and try again.
At line:1 char:4
+ ls -l
+ ~~~
+ CategoryInfo          : InvalidArgument: (:) [Get-ChildItem], ParameterBindingException
+ FullyQualifiedErrorId : MissingArgument,Microsoft.PowerShell.Commands.GetChildItemCommand

PS C:\Users\Ram> █
```

```
PowerShell 6.0.2
PS C:\Users\Ram> Get-Alias ls

CommandType      Name                Version            Source
-----
Alias            ls -> Get-ChildItem

PS C:\Users\Ram>
```

Terminal

```
PS /home/ram> Get-Alias ls
Get-Alias : This command cannot find a matching alias because an alias with the name 'ls'
does not exist.
At line:1 char:1
+ Get-Alias ls
+ ~~~~~
+ CategoryInfo          : ObjectNotFound: (ls:String) [Get-Alias], ItemNotFoundException
+ FullyQualifiedErrorId : ItemNotFoundException,Microsoft.PowerShell.Commands.GetAliasComm
and

PS /home/ram> 
```

```
Terminal
PS /home/ram> Get-Command -Parameter ComputerName
Get-Command : Parameter cannot be processed because the parameter name 'Parameter' is ambiguous. Possible matches include: -ParameterName -ParameterType.
At line:1 char:13
+ Get-Command -Parameter ComputerName
+
+ CategoryInfo          : InvalidArgument: (:) [Get-Command], ParameterBindingException
+ FullyQualifiedErrorId : AmbiguousParameter,Microsoft.PowerShell.Commands.GetCommandCommand

PS /home/ram> 
```

```
Terminal
PS /home/ram> Get-Command -Parameter ComputerName
Get-Command : Parameter cannot be processed because the parameter name 'Parameter' is ambiguous. Possible matches include: -ParameterName -ParameterType.
At line:1 char:13
+ Get-Command -Parameter ComputerName
+
+ CategoryInfo          : InvalidArgument: (:) [Get-Command], ParameterBindingException
+ FullyQualifiedErrorId : AmbiguousParameter,Microsoft.PowerShell.Commands.GetCommandCommand

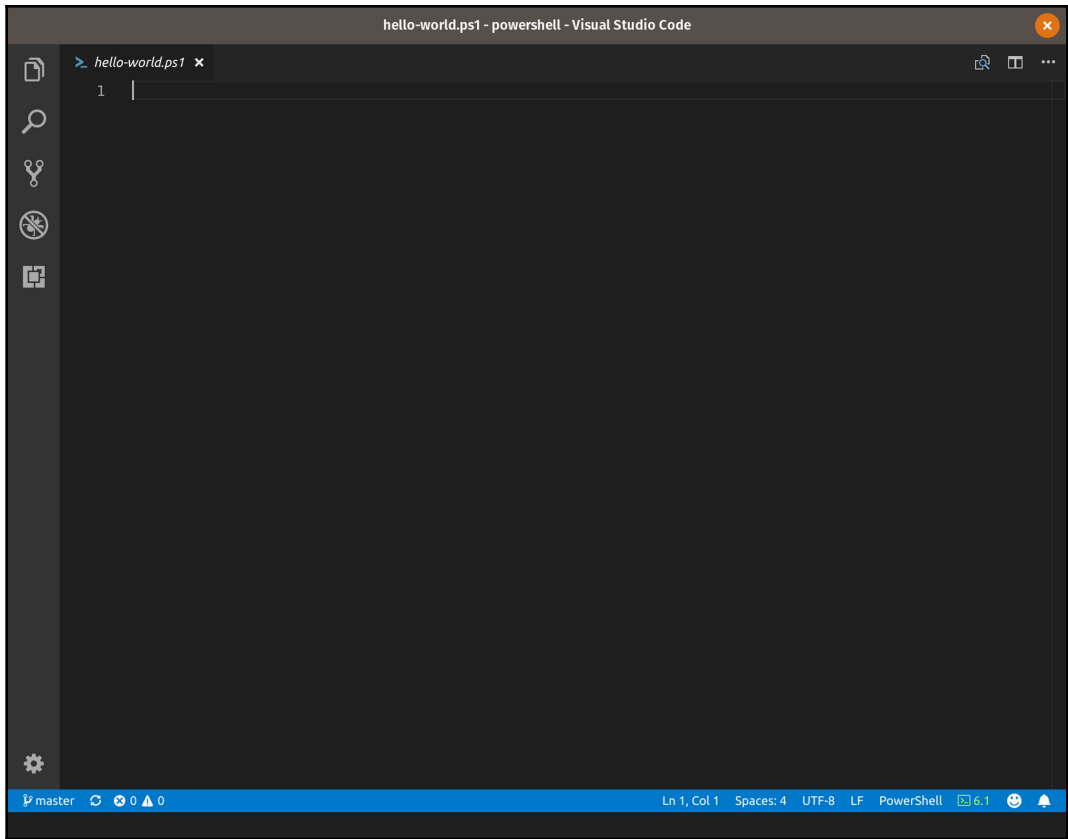
PS /home/ram> Get-Command -Parameter
ParameterName ParameterType
PS /home/ram> Get-Command -ParameterName ComputerName

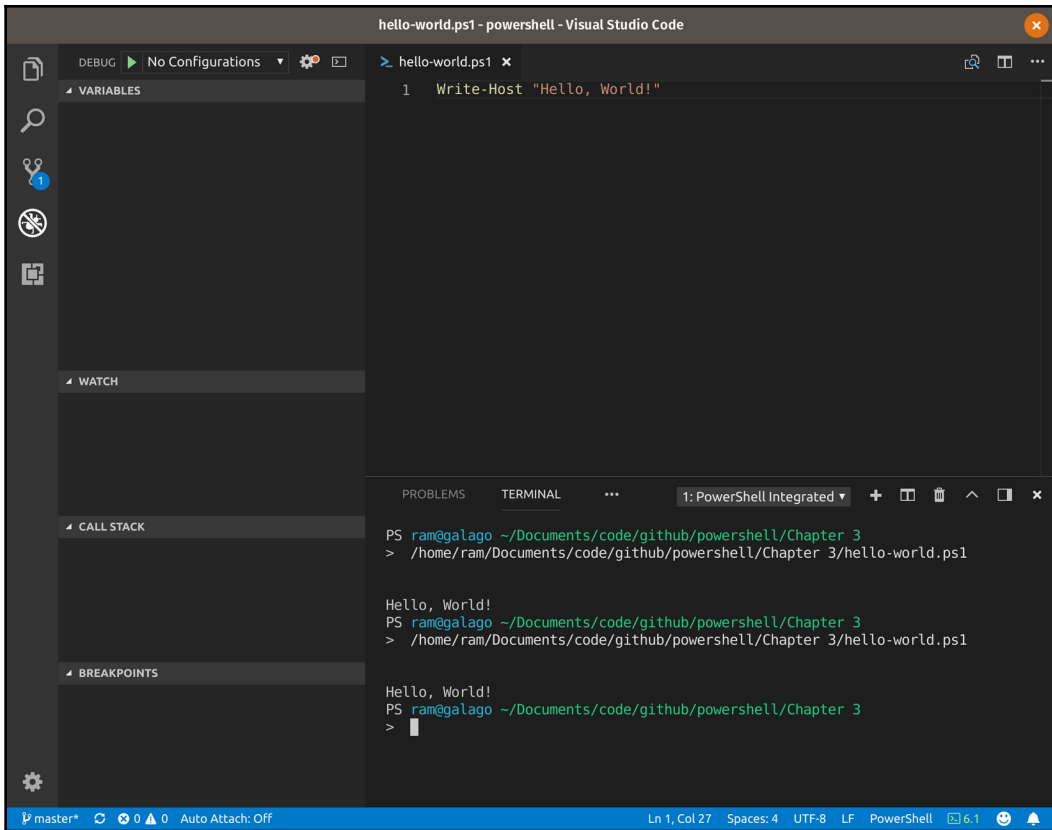
CommandType      Name                               Version      Source
-----
Cmdlet           Enter-PSSession                   6.1.0.0     Microsof...
Cmdlet           Get-PSSession                     6.1.0.0     Microsof...
Cmdlet           Invoke-Command                    6.1.0.0     Microsof...
Cmdlet           New-PSSession                     6.1.0.0     Microsof...
Cmdlet           Receive-Job                       6.1.0.0     Microsof...
Cmdlet           Remove-PSSession                  6.1.0.0     Microsof...
Cmdlet           Send-MailMessage                  3.1.0.0     Microsof...
Cmdlet           Test-Connection                   3.1.0.0     Microsof...
```

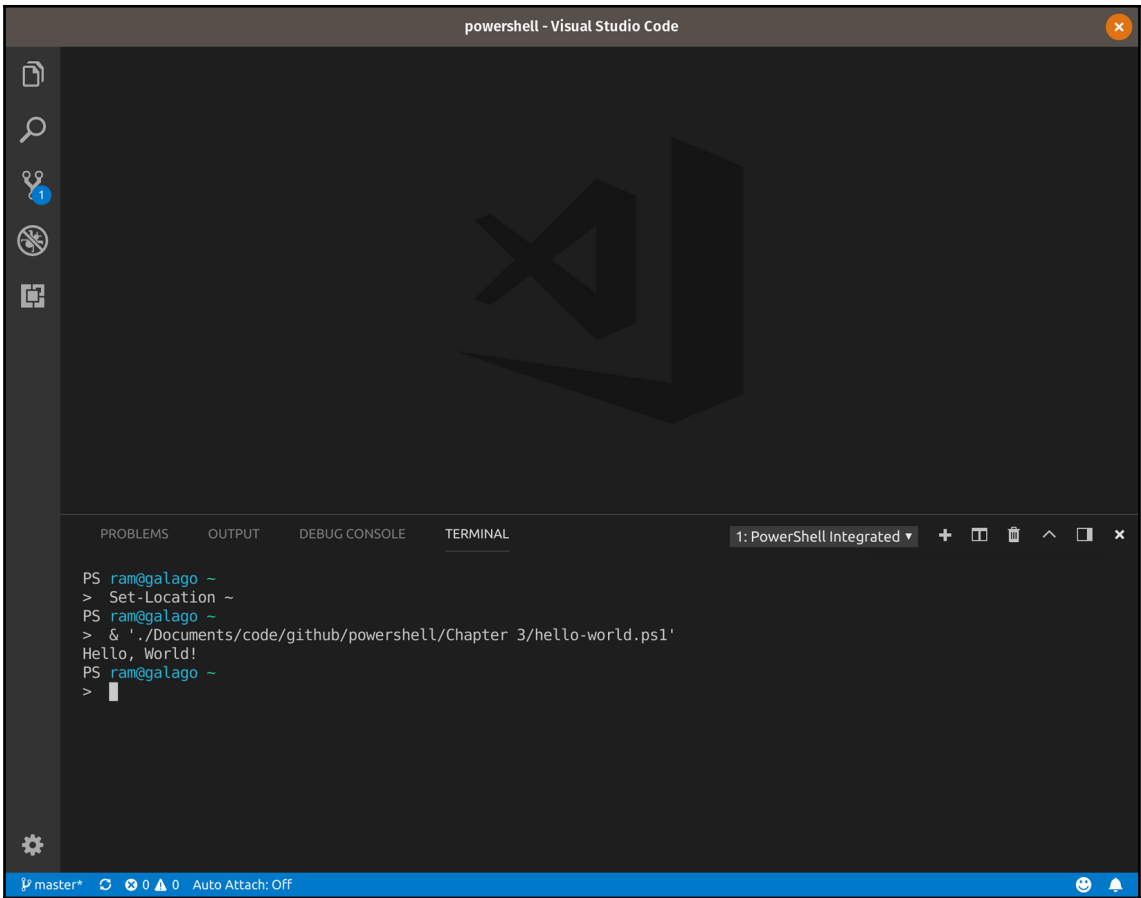
```
Terminal
PS /home/ram> Get-Command -ParameterName Cn

CommandType      Name                               Version      Source
-----
Cmdlet           Enter-PSSession                   6.1.0.0     Microsof...
Cmdlet           Get-PSSession                     6.1.0.0     Microsof...
Cmdlet           Invoke-Command                    6.1.0.0     Microsof...
Cmdlet           New-PSSession                     6.1.0.0     Microsof...
Cmdlet           Receive-Job                       6.1.0.0     Microsof...
Cmdlet           Remove-PSSession                  6.1.0.0     Microsof...

PS /home/ram> 
```







The image shows a Visual Studio Code window with a PowerShell script named `hello-world.ps1` open in the editor. The script contains two lines of code:

```
1 Write-Host "Hello, World!"
2 $Message = "I was dot-sourced!"
```

Below the editor, the PowerShell Integrated Console is open, showing the execution of the script. The terminal output is as follows:

```
PS ram@galago ~/Documents/code/github/powershell
> cd ./chapter-3
PS ram@galago ~/Documents/code/github/powershell/chapter-3
> & ./hello-world.ps1
Hello, World!
PS ram@galago ~/Documents/code/github/powershell/chapter-3
> $Message
PS ram@galago ~/Documents/code/github/powershell/chapter-3
> . ./hello-world.ps1
Hello, World!
PS ram@galago ~/Documents/code/github/powershell/chapter-3
> $Message
I was dot-sourced!
PS ram@galago ~/Documents/code/github/powershell/chapter-3
>
```

The status bar at the bottom of the window indicates the current file is on line 2, column 32, with 4 spaces, using UTF-8 encoding and LF line endings. The PowerShell version is 6.1.

```
Terminal
ram@galago:~ $ pwsh -c Get-ChildItem

Directory: /home/ram

Mode                LastWriteTime         Length Name
----                -
d-----           06/04/2018         13:05      Desktop
d-----           18/05/2018         16:01      Documents
d-----           03/06/2018         16:31      Downloads
d-----           26/05/2018         18:04      gems
d-----           06/04/2018         13:05      Music
d-----           07/06/2018         16:13      Pictures
d-----           06/04/2018         13:05      Public
d-----           06/04/2018         13:05      Templates
d-----           10/04/2018         03:41      Videos

ram@galago:~ $
```

```
Terminal
ram@galago:~ $ pwsh -f ./Documents/code/github/powershell/chapter-3/hello-world.ps1
Hello, World!
ram@galago:~ $
```

```
Terminal
Directory: /home/ram/test-transcript

Mode                LastWriteTime         Length Name
----                -
-----            08/06/2018    03:05             0 testing-transcript.txt

PS /home/ram> @'
In publishing and graphic design, lorem ipsum is a placeholder text commonly used to demon
strate the visual form of a document without relying on meaningful content (also called gr
eeking).
Replacing the actual content with placeholder text allows designers to design the form of
the content before the content itself has been produced.
-Wikipedia
'@ | Out-File ./test-transcript/testing-transcript.txt -Append
PS /home/ram> Remove-Item -Path ./test-transcript/ -Recurse
PS /home/ram> Stop-Transcript
*****
PowerShell transcript end
End time: 20180608030658
*****
PS /home/ram> 
```

Chapter 3: First Steps in Administration Using PowerShell

```
Terminal
PS /home/ram/Downloads> Get-Date | Get-Member

TypeName: System.DateTime

Name                MemberType          Definition
----                -
Add                 Method              datetime Add(timespan value)
AddDays             Method              datetime AddDays(double value)
AddHours            Method              datetime AddHours(double value)
AddMilliseconds     Method              datetime AddMilliseconds(double value)
AddMinutes          Method              datetime AddMinutes(double value)
AddMonths           Method              datetime AddMonths(int months)
AddSeconds          Method              datetime AddSeconds(double value)
AddTicks            Method              datetime AddTicks(long value)
AddYears            Method              datetime AddYears(int value)
CompareTo           Method              int CompareTo(System.Object value), int CompareTo(...
Equals              Method              bool Equals(System.Object value), bool Equals(date...
GetDateTimeFormats Method              string[] GetDateTimeFormats(), string[] GetDateTim...
GetHashCode         Method              int GetHashCode()
GetObjectData       Method              void ISerializable.GetObjectData(System.Runtime.Se...
GetType             Method              type GetType()
GetTypeCode         Method              System.TypeCode GetTypeCode(), System.TypeCode ICo...
IsDaylightSavingTime Method              bool IsDaylightSavingTime()
```

```
Terminal
PS /home/ram> $Date = Get-Date
PS /home/ram> $Date.Day
Day           DayOfWeek      DayOfYear
PS /home/ram> "$Date.Day/$Date.Month/$Date.Year"
```

```
Terminal
PS /home/ram> Get-Date -Format d
11/14/18
PS /home/ram> Get-Date -Format g
11/14/18 9:09 AM
PS /home/ram> Get-Date -Format U
Wednesday, November 14, 2018 3:39:21 AM
PS /home/ram> Get-Date -Format yyyy/MM/dd
2018/11/14
PS /home/ram> Get-Date -Format yyyyMMddhhmmss
20181114090941
PS /home/ram> █
```

```
Terminal
PS /home/ram> (Get-Date).Subtract((Get-Date '5 June 2016'))

Days           : 892
Hours          : 9
Minutes        : 10
Seconds        : 30
Milliseconds   : 807
Ticks          : 771018308076507
TotalDays      : 892.382301014476
TotalHours     : 21417.1752243474
TotalMinutes   : 1285030.51346084
TotalSeconds   : 77101830.8076507
TotalMilliseconds : 77101830807.6507

PS /home/ram> █
```

```
Terminal
PS /home/ram> Get-Process | Measure-Object -Property WS, CPU -Average -Sum -Minimum -Maximum

Count           : 286
Average         : 19055895.2727273
Sum             : 5449986048
Maximum        : 634781696
Minimum         : 0
StandardDeviation :
Property       : WS

Count           : 286
Average         : 1.2354545454545454
Sum             : 353.34
Maximum        : 82.44
Minimum         : 0
StandardDeviation :
Property       : CPU

PS /home/ram> █
```

```
Terminal
PS /home/ram> Stop-Process code
Stop-Process : Cannot bind parameter 'InputObject'. Cannot convert the "code" value of type "System.String" to type "System.Diagnostics.Process".
At line:1 char:14
+ Stop-Process code
+ ~~~~~
+ CategoryInfo          : InvalidArgument: (:) [Stop-Process], ParameterBindingException
+ FullyQualifiedErrorId : CannotConvertArgumentNoMessage,Microsoft.PowerShell.Commands.StopProcessCommand

PS /home/ram> Stop-Process (Get-Process code)
PS /home/ram> Get-Process code
Get-Process : Cannot find a process with the name "code". Verify the process name and call the cmdlet again.
At line:1 char:1
+ Get-Process code
+ ~~~~~
+ CategoryInfo          : ObjectNotFound: (code:String) [Get-Process], ProcessCommandException
+ FullyQualifiedErrorId : NoProcessFoundForGivenName,Microsoft.PowerShell.Commands.GetProcessCommand

PS /home/ram> █
```

```
Terminal
PS /home/ram> Get-Help Get-Process -Parameter IncludeUserName
-IncludeUserName [<SwitchParameter>]
  Indicates that the UserName value of the Process object is returned with results of the command.

  Required?                true
  Position?                named
  Default value            False
  Accept pipeline input?   False
  Accept wildcard characters? false

PS /home/ram> █
```



```
Terminal
PS /home/ram> Get-Process -IncludeUserName | grep ram | Measure-Object -Property WS -Sum
Measure-Object : Cannot process argument because the value of argument "Property" is not valid. Change the value of the "Property" argument and run the operation again.
At line:1 char:43
+ ... rocess -IncludeUserName | grep ram | Measure-Object -Property WS -Sum
+ ~~~~~
+ CategoryInfo          : InvalidArgument: (:) [Measure-Object], PSArgumentException
+ FullyQualifiedErrorId : GenericMeasurePropertyNotFound,Microsoft.PowerShell.Commands.MeasureObjectCommand

PS /home/ram> 
```

```
Terminal
PS /home/ram> Get-Process -IncludeUserName | Where-Object UserName -eq $env:USER | Measure-Object -Property WS -Sum

Count          : 89
Average        :
Sum            : 4979838976
Maximum        :
Minimum        :
StandardDeviation :
Property       : WS

PS /home/ram> 
```

```
Terminal
PS /home/ram> Get-Process -IncludeUserName | grep ram | awk '{print $1}' | ForEach-Object {[Double]$_} | Measure-Object -Sum

Count          : 85
Average        :
Sum            : 4272.34
Maximum        :
Minimum        :
StandardDeviation :
Property       :

PS /home/ram> TADAA! 
```

```
Terminal
PS /home/ram/code/PowerShell/demos/crontab> Get-Module -Name CronTab | Format-List

Name           : CronTab
Path           : /home/ram/code/PowerShell/demos/crontab/CronTab/CronTab.psm1
Description    : Sample module for managing CronTab
ModuleType    : Script
Version       : 0.1.0.0
NestedModules  : {}
ExportedFunctions : {Get-CronJob, Get-CronTabUser, New-CronJob, Remove-CronJob}
ExportedCmdlets :
ExportedVariables :
ExportedAliases :

PS /home/ram/code/PowerShell/demos/crontab> 
```

```
Terminal
PS /home/ram/code/PowerShell/demos/crontab> Get-Command -Module CronTab

CommandType      Name                Version      Source
-----
Function         Get-CronJob         0.1.0.0     CronTab
Function         Get-CronTabUser    0.1.0.0     CronTab
Function         New-CronJob         0.1.0.0     CronTab
Function         Remove-CronJob     0.1.0.0     CronTab

PS /home/ram/code/PowerShell/demos/crontab> 
```

Chapter 4: Passing Data through the Pipeline

```
Terminal
PS /home/ram/random> Get-ChildItem -Path .

Directory: /home/ram/random

Mode                LastWriteTime         Length Name
----                -
d-----           11/14/18  12:01 PM             cities
-----           11/14/18  12:03 PM    2780821 bangalore.jpg
-----           11/14/18  12:02 PM    734909  coffee.jpg
-----           11/14/18  12:01 PM             0 crunched-numbers.csv
-----           11/14/18  12:01 PM             0 demo.doc
-----           11/14/18  12:01 PM             0 himalayas.jpg
-----           11/14/18  12:03 PM    9117515 matrix-like-wm.mp4
-----           11/14/18  12:01 PM             0 my-plugin.rb
-----           11/14/18  12:03 PM    3747493 piratos-wowa.me.mp3
-----           11/14/18  12:01 PM             0 random-text.txt
-----           11/14/18  12:01 PM             0 screenshot-001.png
-----           11/14/18  12:01 PM             0 screenshot-002.png
-----           11/14/18  12:01 PM             0 screenshot-003.png
-----           11/14/18  12:02 PM    908099  volcano.jpg

PS /home/ram/random> 
```

```
Terminal
PS /home/ram/random> Get-ChildItem -Path . | Select-Object LastWriteTime, Length, Name

LastWriteTime      Length  Name
-----
11/14/18 12:01:58 PM      cities
11/14/18 12:03:38 PM 2780821 bangalore.jpg
11/14/18 12:02:31 PM 734909  coffee.jpg
11/14/18 12:01:56 PM 0      crunched-numbers.csv
11/14/18 12:01:56 PM 0      demo.doc
11/14/18 12:01:56 PM 0      himalayas.jpg
11/14/18 12:03:26 PM 9117515 matrix-like-wm.mp4
11/14/18 12:01:56 PM 0      my-plugin.rb
11/14/18 12:03:29 PM 3747493 piratos-wowa.me.mp3
11/14/18 12:01:56 PM 0      random-text.txt
11/14/18 12:01:56 PM 0      screenshot-001.png
11/14/18 12:01:56 PM 0      screenshot-002.png
11/14/18 12:01:56 PM 0      screenshot-003.png
11/14/18 12:02:14 PM 908099  volcano.jpg

PS /home/ram/random> 
```

```
Terminal
PS /home/ram/random> Get-ChildItem -Path . | Select-Object Name, Length, LastWriteTime

Name                Length  LastWriteTime
-----
cities              11/14/18 12:01:58 PM
bangalore.jpg      2780821 11/14/18 12:03:38 PM
coffee.jpg         734909  11/14/18 12:02:31 PM
crunched-numbers.csv 0        11/14/18 12:01:56 PM
demo.doc           0        11/14/18 12:01:56 PM
himalayas.jpg      0        11/14/18 12:01:56 PM
matrix-like-wm.mp4 9117515 11/14/18 12:03:26 PM
my-plugin.rb       0        11/14/18 12:01:56 PM
piratos-wowa.me.mp3 3747493 11/14/18 12:03:29 PM
random-text.txt    0        11/14/18 12:01:56 PM
screenshot-001.png 0        11/14/18 12:01:56 PM
screenshot-002.png 0        11/14/18 12:01:56 PM
screenshot-003.png 0        11/14/18 12:01:56 PM
volcano.jpg        908099  11/14/18 12:02:14 PM

PS /home/ram/random> 
```

```
Terminal
PS /home/ram/random> Get-Process pwsh | Select-Object -ExpandProperty Threads | Select-Object -ExpandProperty Id
4563
4564
4565
4568
4569
4570
4571
4577
4578
4579
4588
4589
4593
8119
8121
8122
8123
8124
8125
8126
```

```
Terminal
PS /home/ram/random> Get-ChildItem -Path . | Where-Object -FilterScript {$_ .Length -GT 0 -and $_.Extension -EQ '.jpg' -and $_.Name -CMatch '^c' -and $_.LastWriteTime.Minute -LT 30}

Directory: /home/ram/random

Mode                LastWriteTime         Length Name
----                -
-----                11/14/18  12:02 PM         734909 coffee.jpg

PS /home/ram/random> █
```

```
Terminal
PS /home/ram/random> Get-ChildItem -File | Group-Object Extension

Count Name                               Group
-----
1 .csv                                     {/home/ram/random/crunched-numbers.csv}
1 .doc                                     {/home/ram/random/demo.doc}
4 .jpg                                     {/home/ram/random/bangalore.jpg, /home/ram/random/coff...
1 .mp3                                     {/home/ram/random/piratos-wow.me.mp3}
1 .mp4                                     {/home/ram/random/matrix-like-wm.mp4}
3 .png                                     {/home/ram/random/screenshot-001.png, /home/ram/random...
1 .rb                                     {/home/ram/random/my-plugin.rb}
1 .txt                                     {/home/ram/random/random-text.txt}

PS /home/ram/random> 
```

```
Terminal
PS /home/ram/random> Get-ChildItem -Path . -File | Group-Object -Property Extension | Where-Object Name -EQ .jpg | Select-Object -ExpandProperty Group

Directory: /home/ram/random

Mode                LastWriteTime         Length Name
----                -
-----
-----
11/14/18 12:03 PM      2780821 bangalore.jpg
11/14/18 12:02 PM       734909 coffee.jpg
11/14/18 12:01 PM           0 himalayas.jpg
11/14/18 12:02 PM       908099 volcano.jpg

PS /home/ram/random> 
```

```
Terminal
PS /home/ram/random> Get-ChildItem -Path . -File | Sort-Object -Property Length, Name -Descending

Directory: /home/ram/random

Mode                LastWriteTime         Length Name
----                -
-----
11/14/18  12:03 PM          9117515 matrix-like-wm.mp4
11/14/18  12:03 PM          3747493 piratos-wowa.me.mp3
11/14/18  12:03 PM          2780821 bangalore.jpg
11/14/18  12:02 PM           908099 volcano.jpg
11/14/18  12:02 PM           734909 coffee.jpg
11/14/18  12:01 PM              0 screenshot-003.png
11/14/18  12:01 PM              0 screenshot-002.png
11/14/18  12:01 PM              0 screenshot-001.png
11/14/18  12:01 PM              0 random-text.txt
11/14/18  12:01 PM              0 my-plugin.rb
11/14/18  12:01 PM              0 himalayas.jpg
11/14/18  12:01 PM              0 demo.doc
11/14/18  12:01 PM              0 crunched-numbers.csv

PS /home/ram/random> 
```

```
Terminal
PS /home/ram/random> Get-ChildItem -Path . -File | Group-Object -Property Extension | Where-Object Count -GT 1 | ForEach-Object {$_.Group | Sort-Object Length -Bottom 2}

Directory: /home/ram/random

Mode                LastWriteTime         Length Name
----                -
-----
11/14/18  12:02 PM           908099 volcano.jpg
11/14/18  12:03 PM          2780821 bangalore.jpg
11/14/18  12:01 PM              0 screenshot-002.png
11/14/18  12:01 PM              0 screenshot-003.png

PS /home/ram/random> 
```

```
Terminal
PS /home/ram/random> Get-Help Get-Item -Parameter Path

-Path <String[]>
    Specifies the path to an item. This cmdlet gets the item at the specified location.
    Wildcards are permitted. This parameter is required, but the parameter name ("Path")
    is optional.

    Use a dot ('.') to specify the current location. Use the wildcard character ('*') to
    specify all the items in the current location.

    Required?                true
    Position?                1
    Default value            None
    Accept pipeline input?   True (ByPropertyName, ByValue)
    Accept wildcard characters? true

PS /home/ram/random> 
```

```
Terminal
PS /home/ram> "$HOME/random" | Get-Item

Directory: /home/ram

Mode                LastWriteTime         Length Name
----                -
d-----          11/14/18 12:03 PM             random

PS /home/ram> 
```



```
Terminal
PS /home/ram> '21 June 2018' | Get-Date
Thursday, June 21, 2018 12:00:00 AM

PS /home/ram> Get-Help Get-Date -Parameter *

-Date <DateTime>
  Specifies a date and time. By default, `Get-Date` gets the current system date and
  time.

  Type the date in a format that is standard for the system locale, such as dd-MM-yyyy
  (German [Germany]) or MM/dd/yyyy (English [United States]).

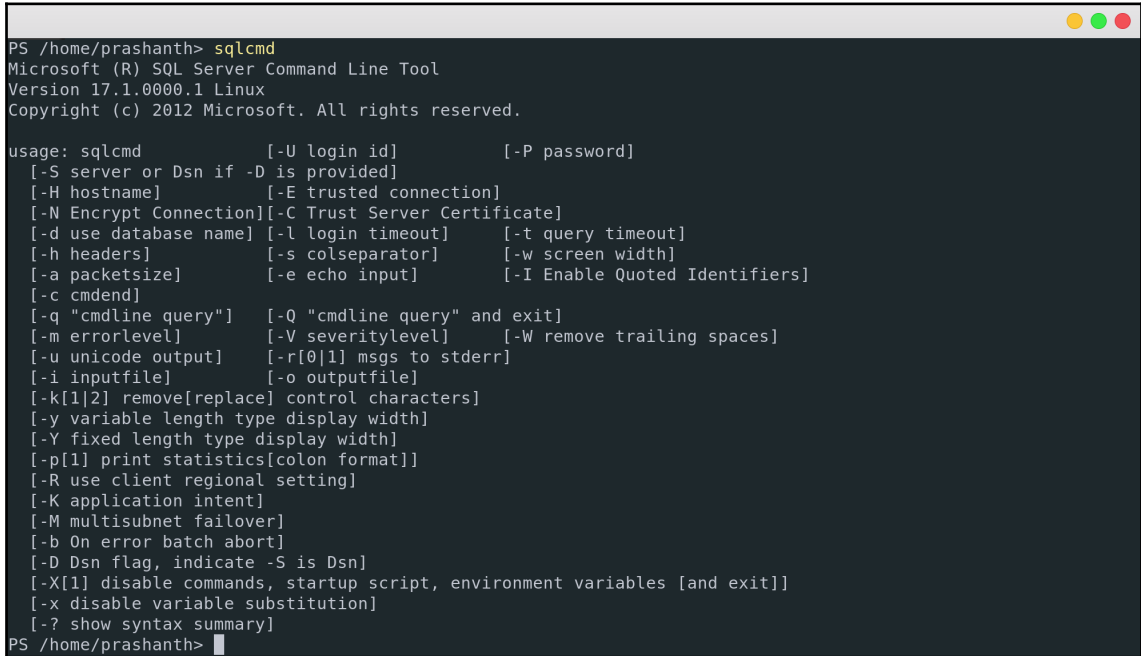
  Required?                false
  Position?                0
  Default value            Current date
  Accept pipeline input?   True (ByPropertyName, ByValue)
  Accept wildcard characters? false

-Day <Int32>
  Specifies the day of the month that is displayed. Enter a value from 1 to 31. The
  default is the current day.
```

```
Terminal
PS /home/ram> Get-Item . | Select-Object FullName | Get-ChildItem
Get-ChildItem : Cannot find path '/home/ram/@{FullName=/home/ram}' because it does not exist.
At line:1 char:39
+ Get-Item . | Select-Object FullName | Get-ChildItem
+ ~~~~~
+ CategoryInfo          : ObjectNotFound: (/home/ram/@{FullName=/home/ram}:String) [Get-ChildItem], ItemNotFoundException
+ FullyQualifiedErrorId : PathNotFound,Microsoft.PowerShell.Commands.GetChildItemCommand

PS /home/ram> █
```

Chapter 5: Using Variables and Objects



```
PS /home/prashanth> sqlcmd
Microsoft (R) SQL Server Command Line Tool
Version 17.1.0000.1 Linux
Copyright (c) 2012 Microsoft. All rights reserved.

usage: sqlcmd          [-U login id]          [-P password]
      [-S server or Dsn if -D is provided]
      [-H hostname]      [-E trusted connection]
      [-N Encrypt Connection][-C Trust Server Certificate]
      [-d use database name] [-l login timeout]      [-t query timeout]
      [-h headers]        [-s colseparator]          [-w screen width]
      [-a packetsize]    [-e echo input]            [-I Enable Quoted Identifiers]
      [-c cmdend]
      [-q "cmdline query"] [-Q "cmdline query" and exit]
      [-m errorlevel]     [-V severitylevel]        [-W remove trailing spaces]
      [-u unicode output] [-r[0|1] msgs to stderr]
      [-i inputfile]     [-o outputfile]
      [-k[1|2] remove[replace] control characters]
      [-y variable length type display width]
      [-Y fixed length type display width]
      [-p[1] print statistics[colon format]]
      [-R use client regional setting]
      [-K application intent]
      [-M multisubnet failover]
      [-b On error batch abort]
      [-D Dsn flag, indicate -S is Dsn]
      [-X[1] disable commands, startup script, environment variables [and exit]]
      [-x disable variable substitution]
      [-? show syntax summary]
PS /home/prashanth> █
```

The image shows a Visual Studio Code window with a C# class named `Person` and a PowerShell terminal running commands to instantiate and use the class.

```
class Person {
    [string]$Name
    [int32]$Age
    [int32]$Salary

    Person () {}

    Person ([string]$Name, [int32]$Age) {
        $this.Name = $Name
        $this.Age = $Age
    }

    [int32] sal ([int32]$Salary, [int32]$Comm) {
        return $Salary * $Comm
    }
}
```

Terminal Output:

```
PS /opt/microsoft/powershell/6.1.0-preview.2> [Person]::New

OverloadDefinitions
-----
Person new()
Person new(string Name, int Age)

PS /opt/microsoft/powershell/6.1.0-preview.2> [Person]::New('Prashanth', 34)

Name Age Salary
----
Prashanth 34 0

PS /opt/microsoft/powershell/6.1.0-preview.2>
```

Terminal Status Bar: Ln 15, Col 6 Spaces: 4 UTF-8 LF PowerShell 6.1

```
• Untitled-1 - Visual Studio Code
> Untitled-1
1 class Person {
2     [string]$Name
3     [Int32]$Age
}

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL 2: PowerShell Integrate
PS /opt/microsoft/powershell/6.1.0-preview.2> $Person | Get-Member

    TypeName: Person

Name      MemberType Definition
-----
Equals    Method      bool Equals(System.Object obj)
GetHashCode Method      int GetHashCode()
GetType   Method      type GetType()
sal       Method      int sal(int Salary, int Comm)
ToString  Method      string ToString()
Age       Property    int Age {get;set;}
Name      Property    string Name {get;set;}
Salary    Property    int Salary {get;set;}

PS /opt/microsoft/powershell/6.1.0-preview.2> $Person | Select-Object Name, Age, Salary

Name Age Salary
-----
Prashanth 34      0

PS /opt/microsoft/powershell/6.1.0-preview.2> $Person.sal(200,2)
400
PS /opt/microsoft/powershell/6.1.0-preview.2>

Auto Attach: Off Ln 15, Col 6 Spaces: 4 UTF-8 LF PowerShell 6.1
```

```
PS /home/prashanth> $User = 'Prashanth'
PS /home/prashanth> $Password = 'Y94b^E$85CBLU%at'
PS /home/prashanth> $SecurePassword = ConvertTo-SecureString $Password -AsPlainText -Force
PS /home/prashanth> $Credentials = New-Object -TypeName System.Management.Automation.PSCredential -ArgumentList $User, $SecurePassword
PS /home/prashanth> $Credentials | Get-Member

    TypeName: System.Management.Automation.PSCredential

Name      MemberType Definition
-----
Equals    Method      bool Equals(System.Object obj)
GetHashCode Method      int GetHashCode()
GetNetworkCredential Method      System.Net.NetworkCredential GetNetworkCredential()
GetObjectData Method      void GetObjectData(System.Runtime.Serialization.SerializationInfo info, Sy...
GetType   Method      type GetType()
ToString  Method      string ToString()
Password  Property    securestring Password {get;}
UserName  Property    string UserName {get;}

PS /home/prashanth>
```

```
PS /home/prashanth> $Process = (Get-Process | Select-Object Name, Id, WS, StartTime)[4]
PS /home/prashanth> $CustomProcess = New-Object -TypeName PSObject -Property @{
>> ProcessName = $Process.Name
>> ProcessId = $Process.Id
>> WorkingSet = $Process.WS
>> StartedAt = $Process.StartTime
>> }
PS /home/prashanth> $CustomProcess

ProcessName      StartedAt ProcessId WorkingSet
-----
accounts-daemon  11/07/18 1:54:15 pm      845    4235264

PS /home/prashanth> █
```

```
PS /home/prashanth> $CustomProcess = [ordered]@{
>> ProcessName = $Process.Name
>> ProcessId = $Process.Id
>> WorkingSet = $Process.WS
>> StartedAt = $Process.StartTime
>> }
PS /home/prashanth> New-Object -TypeName PSObject -Property $CustomProcess

ProcessName      ProcessId WorkingSet StartedAt
-----
accounts-daemon      845    4235264 11/07/18 1:54:15 pm

PS /home/prashanth> █
```

```
PS /home/prashanth> $CustomProcess = [ordered]@{
>> ProcessName = $Process.Name
>> ProcessId = $Process.Id
>> WorkingSet = $Process.WS
>> RunningMins = [math]::Floor(((Get-Date) - $Process.StartTime).TotalMinutes)
>> }
PS /home/prashanth> New-Object -TypeName PsObject -Property $CustomProcess

ProcessName ProcessId WorkingSet RunningMins
-----
accounts-daemon      845    4235264      14

PS /home/prashanth> █
```

```
Terminal
PS /home/ram/random> $FilesWithAge | Format-Table -AutoSize
```

Name	Length	LastWriteTime	Age	ComputerName	Modified
cities		20/06/2018 13:15:14	20	galago	20/06/2018 13:15:14
bangalore.jpg	0	20/06/2018 13:15:14	20	galago	20/06/2018 13:15:14
coffee.jpg	211787	20/06/2018 13:24:47	20	galago	20/06/2018 13:24:47
crunched-numbers.csv	464	01/07/2018 19:59:04	9	galago	01/07/2018 19:59:04
demo.doc	0	20/06/2018 13:15:14	20	galago	20/06/2018 13:15:14
file-list.csv	1917	02/07/2018 12:14:26	8	galago	02/07/2018 12:14:26
file-list.xml	73088	02/07/2018 13:40:16	8	galago	02/07/2018 13:40:16
himalayas.jpg	0	20/06/2018 13:15:14	20	galago	20/06/2018 13:15:14
matrix-like-wm.mp4	5001938	20/06/2018 13:26:10	20	galago	20/06/2018 13:26:10
my-plugin.rb	0	20/06/2018 13:15:14	20	galago	20/06/2018 13:15:14
piratos-wowa.me.mp3	3747493	20/06/2018 13:28:42	20	galago	20/06/2018 13:28:42
random-text-1.txt	4680	01/07/2018 18:13:27	9	galago	01/07/2018 18:13:27
random-text-2.txt	4500	01/07/2018 18:14:28	9	galago	01/07/2018 18:14:28
screenshot-001.png	0	20/06/2018 13:15:14	20	galago	20/06/2018 13:15:14
screenshot-002.png	0	20/06/2018 13:15:14	20	galago	20/06/2018 13:15:14
screenshot-003.png	0	20/06/2018 13:15:14	20	galago	20/06/2018 13:15:14
volcano-copy.jpg	78954	30/06/2018 11:34:15	10	galago	30/06/2018 11:34:15
volcano.jpg	63538	20/06/2018 13:23:23	20	galago	20/06/2018 13:23:23

```
Terminal
PS /home/ram/random> Get-ChildItem . | Select-Object Name, Length, ComputerName, Age, Modified | Format-Table -AutoSize
```

Name	Length	ComputerName	Age	Modified
cities				
bangalore.jpg	0	galago	20	20/06/2018 13:15:14
coffee.jpg	211787	galago	20	20/06/2018 13:24:47
crunched-numbers.csv	464	galago	9	01/07/2018 19:59:04
demo.doc	0	galago	20	20/06/2018 13:15:14
file-list.csv	1917	galago	8	02/07/2018 12:14:26
file-list.xml	73088	galago	8	02/07/2018 13:40:16
himalayas.jpg	0	galago	20	20/06/2018 13:15:14
matrix-like-wm.mp4	5001938	galago	20	20/06/2018 13:26:10
my-plugin.rb	0	galago	20	20/06/2018 13:15:14
piratos-wowa.me.mp3	3747493	galago	20	20/06/2018 13:28:42
random-text-1.txt	4680	galago	9	01/07/2018 18:13:27
random-text-2.txt	4500	galago	9	01/07/2018 18:14:28
screenshot-001.png	0	galago	20	20/06/2018 13:15:14
screenshot-002.png	0	galago	20	20/06/2018 13:15:14
screenshot-003.png	0	galago	20	20/06/2018 13:15:14
volcano-copy.jpg	78954	galago	10	30/06/2018 11:34:15
volcano.jpg	63538	galago	20	20/06/2018 13:23:23

```
Terminal
PS /home/ram/random> Get-ChildItem . -File | Select-Object Name, Length, Age, Modified

Name                Length Age Modified
-----
bangalore.jpg       0     21 20/06/2018 13:15:14
coffee.jpg         211787 21 20/06/2018 13:24:47
crunched-numbers.csv 464    10 01/07/2018 19:59:04
demo.doc            0     21 20/06/2018 13:15:14
file-list.csv       1917   9 02/07/2018 12:14:26
file-list.xml       73088  9 02/07/2018 13:40:16
himalayas.jpg       0     21 20/06/2018 13:15:14
matrix-like-wm.mp4  5001938 21 20/06/2018 13:26:10
my-plugin.rb        0     21 20/06/2018 13:15:14
```

```
Terminal
PS /home/ram/random> Get-TypeData -TypeName $TypeData | Select-Object -ExpandProperty Members

Key      Value
----
Mode     System.Management.Automation.Runspaces.CodePropertyData
VersionInfo System.Management.Automation.Runspaces.ScriptPropertyData
BaseName System.Management.Automation.Runspaces.ScriptPropertyData
Target   System.Management.Automation.Runspaces.CodePropertyData
LinkType System.Management.Automation.Runspaces.CodePropertyData
Modified System.Management.Automation.Runspaces.AliasPropertyData
Age      System.Management.Automation.Runspaces.ScriptPropertyData
```

Chapter 6: Working with Strings

```
Terminal
PS /home/ram> "I'm a string, and I'm currently being "double-quote" challenged"
```

```
Terminal
PS /home/ram> "I'm a string, and the home directory I've been asked to show is $HOME."
I'm a string, and the home directory I've been asked to show is /home/ram.
PS /home/ram>
```

```
Terminal
PS /home/ram> "I'm a string.\nI love showing up on the screen."
I'm a string.
I love showing up on the screen.
PS /home/ram>
```

```
Terminal
PS /home/ram> "The files and directories under random are:\n$Random.FullName"
The files and directories under random are:
cities bangalore.jpg coffee.jpg crunched-numbers.csv demo.doc file-list.csv file-list.xml
himalayas.jpg matrix-like-wm.mp4 my-plugin.rb new-dir-paths.txt piratos-wow.me.mp3 random
-text-1.txt random-text-2.txt random-text.txt screenshot-001.png screenshot-002.png screen
shot-003.png volcano-copy.jpg volcano.jpg.FullName
PS /home/ram>
```



```
Terminal
diff --git a/ch06/06-rawcontent.txt b/ch06/06-rawcontent.txt
index 101c83d..99d8bbe 100644
--- a/ch06/06-rawcontent.txt
+++ b/ch06/06-rawcontent.txt
@@ -1,10 +1,4 @@
-----
--title: Command line, anybody?
--date: '2017-04-01 21:17'
--tags:
--- windows
--category: tyro
-----
+## Command line, anybody?

We're Windows people. We love the GUI. We don't use the boring plain window with grey text. All that is so yesterday, aye? We are more used to moving the mouse, clicking at places, and then touch the keyboard only when we have something to type. We love that experience, be it Aero&trade; effect, or some other sassy visuals. Command line, again, is so yesterday.

@@ -26,13 +20,7 @@ It's now time to download Windows PowerShell.

It will ask you for a restart, so be prepared. Once it's done, you're all set to follow t
:[]
```

```
Terminal
his blog. If you'd like to get updates very time a post is added, follow me on Facebook.
-----
--title: Basics of Windows
--date: '2017-04-03 12:00'
--tags:
--- windows
--category: tyro
-----
+## Basics of Windows

Among all the jazz of ClearType fonts and graphics, we often take for granted what is actually some serious task&mdash;running the hardware of a computer. Ever wondered how different the actual working of a computer is, compared to what we see on the screen? In reality, it's overwhelmingly difficult to imagine how computers work, especially today. It's hard to believe that two voltage-based states of a bunch of transistors and gates are able to show to us what we see on the screen. These things finish off some tasks in seconds, that humans would usually take anywhere from a few minutes to several days to accomplish.

@@ -75,14 +63,7 @@ So there were problems with this approach, in that the output was not always used.

The post is quite long for a read. Let's give ourselves a break here, and resume in the n
:[]
```

Chapter 7: Flow Control Using Branches and Loops

```
Terminal
PS /home/ram/Documents/code/github/powershell> & ./ch07/03-Wait-BeforeDressCode.ps1
We party on weekends!
Poor you, working today. Wear orange.
PS /home/ram/Documents/code/github/powershell> █
```

```
Terminal
PS /home/ram/Documents/code/github/powershell> & ./ch07/05-Write-GuestSeatDetails.ps1
Welcome, Mr Jain! Your seat is in the 1st row, to the left the aisle.
Welcome, Mr Jacobs! Your seat is in the 3rd row, to the right the aisle.
Welcome, Ms Sanders! Your seat is in the 2nd row, to the left the aisle.
Welcome, Mr Shah! Your seat is in the 13th row, to the right the aisle.
Welcome, Mr Hugo! Your seat is in the 5th row, to the left the aisle.
PS /home/ram/Documents/code/github/powershell> █
```

```
08-Remove-EmptyDirectories.ps1 - powershell - Visual Studio Code
08-Remove-EmptyDirectories.ps1 x
1 $Iteration = 0
2 do {
3     $AllDirectories = (Get-ChildItem -Path $HOME/random -Recurse -Directory).FullName
4     $EmptyDirectories = $AllDirectories | Where-Object {(Get-ChildItem $PSItem).Count -eq 0}
5     $EmptyDirectories | Remove-Item

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL 2: PowerShell Integrat...
PS /home/ram/Documents/code/github/powershell> ./ch07/08-Remove-EmptyDirectories.ps1
Iteration 0. Removed the following 9 directories.
/home/ram/random/dir-03/dir-08/dir-10
/home/ram/random/dir-02/dir-05/dir-06
/home/ram/random/dir-01/dir-07/dir-09/dir-13
/home/ram/random/dir-04/dir-11/dir-12/dir-14
/home/ram/random/dir-04/dir-11/dir-12/dir-15
/home/ram/random/dir-04/dir-11/dir-12/dir-16
/home/ram/random/dir-04/dir-11/dir-12/dir-17
/home/ram/random/dir-04/dir-11/dir-12/dir-18/dir-19
/home/ram/random/dir-04/dir-11/dir-12/dir-18/dir-20
Iteration 1. Removed the following 4 directories.
/home/ram/random/dir-03/dir-08
/home/ram/random/dir-02/dir-05
/home/ram/random/dir-01/dir-07/dir-09
/home/ram/random/dir-04/dir-11/dir-12/dir-18
Iteration 2. Removed the following 4 directories.
/home/ram/random/dir-02
/home/ram/random/dir-03
/home/ram/random/dir-01/dir-07
/home/ram/random/dir-04/dir-11/dir-12
Iteration 3. Removed the following 2 directories.
/home/ram/random/dir-01
/home/ram/random/dir-04/dir-11
Iteration 4. Removed the following 1 directories.
/home/ram/random/dir-04
Iteration 5. Removed the following 0 directories.
PS /home/ram/Documents/code/github/powershell> █

master 0:31 0 0 ▲ 0 Ln 3, Col 58 Spaces: 4 UTF-8 LF PowerShell 6.1
```

```
08-Remove-EmptyDirectories.ps1 - powershell - Visual Studio Code

> 08-Remove-EmptyDirectories.ps1 x
1 $Iteration = 0
2 do {
3     $AllDirectories = (Get-ChildItem -Path $HOME/random -Recurse -Directory).FullName
4     $EmptyDirectories = $AllDirectories | Where-Object {(Get-ChildItem $PSItem).Count -eq 0}

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL 2: PowerShell Integrate
PS /home/ram/Documents/code/github/powershell> ./ch07/09-Remove-EmptyDirectories.ps1
Iteration 0
Removed the following 9 directories. '9 = 0' is False
/home/ram/random/dir-03/dir-08/dir-10
/home/ram/random/dir-02/dir-05/dir-06
/home/ram/random/dir-01/dir-07/dir-09/dir-13
/home/ram/random/dir-04/dir-11/dir-12/dir-14
/home/ram/random/dir-04/dir-11/dir-12/dir-15
/home/ram/random/dir-04/dir-11/dir-12/dir-16
/home/ram/random/dir-04/dir-11/dir-12/dir-17
/home/ram/random/dir-04/dir-11/dir-12/dir-18/dir-19
/home/ram/random/dir-04/dir-11/dir-12/dir-18/dir-20
Iteration 1
Removed the following 4 directories. '4 = 0' is False
/home/ram/random/dir-03/dir-08
/home/ram/random/dir-02/dir-05
/home/ram/random/dir-01/dir-07/dir-09
/home/ram/random/dir-04/dir-11/dir-12/dir-18
Iteration 2
Removed the following 4 directories. '4 = 0' is False
/home/ram/random/dir-02
/home/ram/random/dir-03
/home/ram/random/dir-01/dir-07
/home/ram/random/dir-04/dir-11/dir-12
Iteration 3
Removed the following 2 directories. '2 = 0' is False
/home/ram/random/dir-01
/home/ram/random/dir-04/dir-11
Iteration 4
Removed the following 1 directories. '1 = 0' is False
/home/ram/random/dir-04
Iteration 5
Removed the following 0 directories. '0 = 0' is True
PS /home/ram/Documents/code/github/powershell>

master 0 0 0 Ln 3, Col 58 Spaces: 4 UTF-8 LF PowerShell 6.1
```

Chapter 8: Performing Calculations

```
Terminal
PS /home/ram/Documents/code/github/powershell> & ./ch08/02-Clear-LogFiles.ps1
The following files will be deleted:
/home/ram/random/my-plugin.rb /home/ram/random/piratos-wowa.me.mp3 /home/ram/random/random
-text.txt /home/ram/random/screenshot-001.png /home/ram/random/screenshot-002.png /home/ra
m/random/screenshot-003.png /home/ram/random/volcano.jpg /home/ram/random/cities/cairo.htm
l /home/ram/random/cities/dubai.html /home/ram/random/cities/mumbai.html /home/ram/random/
cities/nyc.html /home/ram/random/cities/paris.html

FilesToDelete SpaceCleared TotalFiles
-----
12          9143114          18

PS /home/ram/Documents/code/github/powershell> █
```

```
Terminal
PS /home/ram/Documents/code/github/powershell> (& ./ch08/02-Clear-LogFiles.ps1).SpaceCleared
The following files will be deleted:
/home/ram/random/my-plugin.rb /home/ram/random/piratos-wowa.me.mp3 /home/ram/random/random-t
ext.txt /home/ram/random/screenshot-001.png /home/ram/random/screenshot-002.png /home/ram/ra
ndom/screenshot-003.png /home/ram/random/volcano.jpg /home/ram/random/cities/cairo.html /hom
e/ram/random/cities/dubai.html /home/ram/random/cities/mumbai.html /home/ram/random/cities/n
yc.html /home/ram/random/cities/paris.html
9143114
PS /home/ram/Documents/code/github/powershell> █
```

```
Terminal
PS /home/ram/Documents/code/github/powershell> (& ./ch08/02-Clear-LogFiles.ps1).SpaceCleared
/[math]::Pow(1024, 2)
The following files will be deleted:
/home/ram/random/my-plugin.rb /home/ram/random/piratos-wowa.me.mp3 /home/ram/random/random-t
ext.txt /home/ram/random/screenshot-001.png /home/ram/random/screenshot-002.png /home/ram/ra
ndom/screenshot-003.png /home/ram/random/volcano.jpg /home/ram/random/cities/cairo.html /hom
e/ram/random/cities/dubai.html /home/ram/random/cities/mumbai.html /home/ram/random/cities/n
yc.html /home/ram/random/cities/paris.html
8.71955299377441
PS /home/ram/Documents/code/github/powershell> █
```

```
Terminal
PS /home/ram/Documents/code/github/powershell> $FileCleanupInfo.SpaceCleared/1kb
8928.822265625
PS /home/ram/Documents/code/github/powershell> $FileCleanupInfo.SpaceCleared/1mb
8.71955299377441
PS /home/ram/Documents/code/github/powershell> $FileCleanupInfo.SpaceCleared/1gb
0.00851518847048283
PS /home/ram/Documents/code/github/powershell> █
```

```
Terminal
PS /home/ram/Documents/code/github/powershell> $FileCleanupInfo.SpaceCleared/(250*1e9)*100
0.0036572456
PS /home/ram/Documents/code/github/powershell> █
```

```
Terminal
PS /home/ram/Documents/code/github/powershell> ./ch08/05-ConvertTo-Rgb.ps1
Enter the hexadecimal RGB value: #23feab
Here are the R, G and B levels for the supplied hex value:
35
254
171
PS /home/ram/Documents/code/github/powershell> █
```

```
Terminal
PS /home/ram/Documents/code/github/powershell> & ./ch08/06-ConvertTo-OtherBases.ps1
Enter an integer: 89
Octal representation: 131
Hexadecimal representation: 59
Binary representation: 1011001
PS /home/ram/Documents/code/github/powershell> █
```

```
Terminal
PS /home/ram/Documents/code/github/powershell> [Enum]::GetValues([System.IO.FileAttributes
]) | Select-Object `
>> @{ n = 'Property'; e = { $_ } }, `
>> @{ n = 'Integer'; e = { [int]$_ } }, `
>> @{ n = 'Hexadecimal'; e = { [Convert]::ToString([int]$_, 16) } }, `
>> @{ n = 'Binary'; e = { [Convert]::ToString([int]$_, 2) } }

Property Integer Hexadecimal Binary
-----
ReadOnly      1 1          1
Hidden        2 2          10
System        4 4          100
Directory     16 10         10000
Archive       32 20         100000
Device        64 40         1000000
Normal       128 80         10000000
Temporary    256 100        100000000
SparseFile   512 200        1000000000
ReparsePoint 1024 400       10000000000
Compressed   2048 800       100000000000
Offline     4096 1000      1000000000000
NotContentIndexed 8192 2000    10000000000000
Encrypted   16384 4000    100000000000000
IntegrityStream 32768 8000  1000000000000000
NoScrubData 131072 20000 10000000000000000

PS /home/ram/Documents/code/github/powershell> █
```

Chapter 9: Using Arrays and Hashtables

```
Terminal
PS /home/ram/Documents/code/github/powershell> & ./ch09/08-Compare-ServerName.ps1

InputObject SideIndicator
-----
heinap      =>
aptoor      =>
shaeco      =>
modusp      =>
hulont      =>
jublam      =>
urilip      =>
exeini      =>
eullib      =>
kemers      <=
bysher      <=
arsure      <=
uphawa      <=
chlelo      <=
zioldy      <=
dirlec      <=
aoradu      <=
honclu      <=

PS /home/ram/Documents/code/github/powershell> 
```

```
Terminal
PS /home/ram/Documents/code/github/powershell> . ./ch09/09-New-MemoryList.ps1
227.16015625
PS /home/ram/Documents/code/github/powershell> $Processes.'pwsh' = 150
PS /home/ram/Documents/code/github/powershell> $Processes['pwsh']
150
PS /home/ram/Documents/code/github/powershell> $Processes['code']
119.3125
PS /home/ram/Documents/code/github/powershell> $Processes.'code' = 21
PS /home/ram/Documents/code/github/powershell> $Processes['code']
21
PS /home/ram/Documents/code/github/powershell> # If you do not have `code` running, call a
different process. 
```



```
Terminal
PS /home/ram/Documents/code/github/powershell> $Processes | Get-Member

TypeName: System.Collections.Hashtable

Name           MemberType      Definition
----           -
Add            Method          void Add(System.Object key, System.Object valu...
Clear          Method          void Clear(), void IDictionary.Clear()
Clone          Method          System.Object Clone(), System.Object ICloneabl...
Contains       Method          bool Contains(System.Object key), bool IDictio...
ContainsKey    Method          bool ContainsKey(System.Object key)
ContainsValue  Method          bool ContainsValue(System.Object value)
CopyTo         Method          void CopyTo(array array, int arrayIndex), void...
Equals         Method          bool Equals(System.Object obj)
GetEnumerator   Method          System.Collections.IDictionaryEnumerator GetEn...
GetHashCode    Method          int GetHashCode()
GetObjectData  Method          void GetObjectData(System.Runtime.Serializatio...
GetType        Method          type GetType()
OnDeserialization Method        void OnDeserialization(System.Object sender), ...
Remove         Method          void Remove(System.Object key), void IDictiona...
ToString       Method          string ToString()
Item           ParameterizedProperty System.Object Item(System.Object key) {get;set;}
Count          Property        int Count {get;}
```

Chapter 10: Handling Files and Directories

```
Terminal
PS /home/ram> & /home/ram/Documents/code/github/powershell/ch11/02-Test-Redirection.ps1
Get-ChildItem : Cannot find path '/home/ram/random/dir-05' because it does not exist.
At /home/ram/Documents/code/github/powershell/ch11/02-Test-Redirection.ps1:3 char:1
+ Get-ChildItem $HOME/random/dir-05 > $HOME/random/error.txt
+ ~~~~~
+ CategoryInfo          : ObjectNotFound: (/home/ram/random/dir-05:String) [Get-ChildItem]
, ItemNotFoundException
+ FullyQualifiedErrorId : PathNotFound,Microsoft.PowerShell.Commands.GetChildItemCommand

Listing the contents of ~/random/dir-03 and appending the list to file-list.txt.

Directory: /home/ram/random/dir-03

Mode                LastWriteTime         Length Name
----                -
d-----            7/16/18   4:18 AM           dir-08

PS /home/ram> █
```

```
Terminal
PS /home/ram> & /home/ram/Documents/code/github/powershell/ch11/02-Test-Redirection.ps1

Directory: /home/ram/random/dir-03

Mode                LastWriteTime         Length Name
----                -
d-----            7/16/18   4:18 AM           dir-08

PS /home/ram> Get-Content /home/ram/random/error.txt
Get-ChildItem : Cannot find path '/home/ram/random/dir-05' because it does not exist.
At /home/ram/Documents/code/github/powershell/ch11/02-Test-Redirection.ps1:3 char:1
+ Get-ChildItem $HOME/random/dir-05 2>&1 | Out-File $HOME/random/error. ...
+ ~~~~~
+ CategoryInfo          : ObjectNotFound: (/home/ram/random/dir-05:String) [Get-ChildItem]
, ItemNotFoundException
+ FullyQualifiedErrorId : PathNotFound,Microsoft.PowerShell.Commands.GetChildItemCommand

PS /home/ram> Get-Content /home/ram/random/message.txt
Listing the contents of ~/random/dir-03 and appending the list to file-list.txt.
PS /home/ram> █
```

```
Terminal
PS /home/ram/Documents/code/github/powershell/ch11> & ./03-Modify-FileContent.ps1

Directory: /home/ram/random

Mode                LastWriteTime         Length Name
----                -
d-----            8/31/18  11:44 AM             backup
Here are the contents before and after the modifications:
Message (before):
Listing the contents of ~/random/dir-03 and appending the list to file-list.txt.
Message (now):
Successfully sent the contents of ~/random/dir-03 and appending the list to file-list.txt
8/31/18 11:44:12 AM
Press ENTER to continue: 
```

```
Terminal

File list (now):

Directory: /home/ram/random/dir-04

Mode                LastWriteTime         Length Name
----                -
d-----            7/16/18   4:18 AM             dir-11

Directory: /home/ram/random/dir-03

Mode                LastWriteTime         Length Name
----                -
d-----            7/16/18   4:18 AM             dir-08

8/31/18 11:44:12 AM
Press ENTER to continue: 
```

08-Read-MdmLog.ps1 - powershell - Visual Studio Code

DEBUG PowerShell Launch Current File

VARIABLES

WATCH

```

$Timestamp: "2018-09-06T00:09:45.351-0500"
$jsonData: @{eventTypeid=979dba5297b4c8c8a9f...
  eventTypeid: "979dba5297b4c8c8a9fb59d25f33f...
  timestamp: 1536210585273
  tenantid: 1
  tenantGuid: "5b73c758-57af-47b2-a6d4-d7b6c5...
  externalTenantId: "S650643799"
  correlationId: "7876c65b-2ba4-7648-9a94-1ef...
  hostName: "svrbbp.mydomain.com"
  version: "5.63.87-SNAPSHOT"
  severity: "CLEARED"
  tags: [Object[3]]
  userDeviceInfo: @{{enrollmentType=MDM_CONTRO...
    enrollmentType: "MDM_CONTROLS"
    perimeterUuid: "afa57869b-3f76-7e74-98d8-...
    userInfo: @{{userGuid=af78905c-806f-49a8-b...
      userGuid: "af78905c-806f-49a8-b491-3f3fc...
      userName: "NBFA091"
      emailAddress: "Joyce.Rose@mydomain.com"
      deviceInfo: @{{deviceOSFamily=ios; id=1332...
        perimeterState: "ENROLLED"
        deviceActionType: "INSTALL_APP"

```

CALL STACK PAUSED ON BREAKPOINT

BREAKPOINTS

08-Read-MdmLog.ps1 ch11

```

1 $AllLogLines = Get-Content ../08-mdm-reinstall-log.log
2 $UserTable = @()
3
4 foreach ($Line in $AllLogLines) {
5     $Timestamp = ($Line.Split(' '))[0]
6
7     $Line = $Line -replace ".+(DeviceActionEvent)\ \{"", '{'
8     $Line = $Line -replace '\}$'
9
10    $JsonData = ConvertFrom-Json $Line
11    $UserInfo = $JsonData.userDeviceInfo.userInfo
12
13    $Record = [ordered]@{
14        Timestamp      = Get-Date $Timestamp -Format d
15        Username       = $UserInfo.userName
16        EmailAddress   = $UserInfo.emailAddress
17    }
18

```

PROBLEMS TERMINAL ... 2: PowerShell Integrate

PowerShell Integrated Console

```

PS /home/ram/Documents/code/github/powershell> /home/ram/Documents/co

Hit Line breakpoint on '/home/ram/Documents/code/github/powershell/ch

[DBG]: PS /home/ram/Documents/code/github/powershell/ch11>

```

Ln 11, Col 50 (45 selected) Spaces: 4 UTF-8 LF PowerShell 6.1

Chapter 11: Building Scripts and Functions

```
Terminal
PS /home/ram> & ./Documents/code/github/powershell/ch12/04-Start-Count.ps1
Counting to 25
Elapsed time: 10 seconds
[ooooooooooooooooooooooooooooooooooooo ]
```

```
Terminal
PS /home/ram> & ./Documents/code/github/powershell/ch12/05-Start-Count.ps1 -TotalTime 10
Counting to 10
Elapsed time: 5 seconds
[ooooooooooooooooooooooooooooooooooooo ]
```

```
Terminal
PS /home/ram/Documents/code/github/powershell> . ./ch12/06-Start-Count.ps1
PS /home/ram/Documents/code/github/powershell> Start-Count -TotalTime 10
Counting to 10
Elapsed time: 4 seconds
[ooooooooooooooooooooooooooooooooooooo ]
```

```
Terminal
PS /home/ram/Documents/code/github/powershell> . ./ch12/07-Start-Count.ps1
PS /home/ram/Documents/code/github/powershell> & $MyScriptBlock -TotalTime 10
Counting to 10
Elapsed time: 5 seconds
[ooooooooooooooooooooooooooooooooooooo ]
```

Chapter 12: Advanced Concepts of Functions

```
Terminal
PS /home/ram/Documents/code/github/powershell/ch13> . ./01-Start-Count.ps1
PS /home/ram/Documents/code/github/powershell/ch13> Start-Count

cmdlet Start-Count at command pipeline position 1
Supply values for the following parameters:
CurrentTime: 
```

```
Terminal
PS /home/ram/Documents/code/github/powershell> Get-Help New-PersonalMessage

NAME
    New-PersonalMessage

SYNTAX
    New-PersonalMessage [-PhoneNumber] <string> [-WavPath] <string> [<CommonParameters>]

    New-PersonalMessage [-PhoneNumber] <string> [-Message] <string> [<CommonParameters>]
```

```
Terminal
PS /home/ram/Documents/code/github/powershell> New-File file1.txt, file2.txt -WhatIf
11/15/2018 23:04:36
What if: Performing the operation "Create file1.txt file2.txt" on target "/home/ram/Docu
nts/code/github/powershell/ch12".
What if: Performing the operation "Create file1.txt file2.txt" on target "/home/ram/Docu
nts/code/github/powershell/ch12".
PS /home/ram/Documents/code/github/powershell> New-File file1.txt, file2.txt
11/15/2018 23:06:09

Confirm
Are you sure you want to perform this action?
Performing the operation "Create file1.txt file2.txt" on target
"/home/ram/Documents/code/github/powershell/ch12".
[Y] Yes [A] Yes to All [N] No [L] No to All [S] Suspend [?] Help (default is "Y"): 
```



```
Terminal
1 function New-File {
2   [CmdletBinding()]
3   param (
4     # The path to the file (or the name)
5     [Parameter(Mandatory=$true, Position=0)]
6     [string[]]
7     $Path
8   )
9   begin {
10    Write-Debug "Entered the begin block."
11    Write-Host "$(Get-Date)"
12   }
13   process {
14    Write-Debug "Entered the process block."
15    foreach ($Item in $Path) {
16      Write-Debug "Iterating for item, $Item."
17      New-Item -Path $Path -ItemType File
18    }
19   }
20   end {
21    Write-Debug "Entered the end block."
22   }
23 }
:set number 17,1 All
```

```
Terminal
PS /home/ram/Documents/code/github/powershell> Set-PSBreakpoint -Script ./ch14/02-New-File.ps1 -Line 17
ID Script Line Command Variable Action
--
1 02-New-File.ps1 17 New-Item -Path $Path -ItemType File

PS /home/ram/Documents/code/github/powershell> . ./ch14/02-New-File.ps1
10/08/2018 01:49:10
Entering debug mode. Use h or ? for help.

Hit Line breakpoint on '/home/ram/Documents/code/github/powershell/ch14/02-New-File.ps1:17'

At /home/ram/Documents/code/github/powershell/ch14/02-New-File.ps1:17 char:13
+ ~~~~~
+ New-Item -Path $Path -ItemType File
+ ~~~~~
[DBG]: PS /home/ram/Documents/code/github/powershell>> █
```



```
Terminal
PS /home/ram/Documents/code/github/powershell/ch13> . ./05-Find-Item.ps1
ping: ghostname: Name or service not known
PowerShell seems to have encountered an error while running the last command.
The exit code for the last operation is 2.
PowerShell seems to have encountered an error while running the last command.
The exit code for the last operation is .
PS /home/ram/Documents/code/github/powershell/ch13> █
```

Chapter 14: Enterprise Administration Using PowerShell

```
Administrator: PowerShell 6.1.0-preview.1
PS C:\Program Files\PowerShell\6.1.0-preview.1> $Session = New-PSSession -HostName wintel01 -UserName ram
ram@wintel01's password:
PS C:\Program Files\PowerShell\6.1.0-preview.1> $session

Id Name          Transport ComputerName ComputerType State ConfigurationName Availability
-----
3 Runspace2      SSH          wintel01      RemoteMachine Opened DefaultShell Available

PS C:\Program Files\PowerShell\6.1.0-preview.1> Enter-PSSession -Session $Session
[wintel01]: PS C:\Users\ram\Documents> ls
[wintel01]: PS C:\Users\ram\Documents> Get-Process | Sort-Object CPU | Select-Object -First 10

NPM(K)  PM(M)  WS(M)  CPU(s)  Id  SI  ProcessName
-----
8       1.34   1.20   0.00    904 0   armsvc
27      20.29  12.52  0.00    976 0   svchost
30      5.91   5.25   0.00    960 0   svchost
19      11.21  11.27  0.00    856 0   svchost
18      5.79   5.16   0.00    768 0   svchost
14      2.09   2.52   0.00    724 0   svchost
15      4.45   4.12   0.00    684 0   svchost
52      45.40  42.12  0.00    340 0   svchost
27      7.80   6.93   0.00    336 0   svchost
24      14.63  11.24  0.00    108 0   svchost

[wintel01]: PS C:\Users\ram\Documents> $IsWindows
True
[wintel01]: PS C:\Users\ram\Documents> █
```

```

Administrator: PowerShell 6.1.0-preview.1
PS C:\Program Files\PowerShell\6.1.0-preview.1> $Session

Id Name          Transport ComputerName ComputerType State ConfigurationName Availability
-----
7 Runspace6     SSH        10.2.6.68   RemoteMachine Opened DefaultShell Available

PS C:\Program Files\PowerShell\6.1.0-preview.1> Enter-PSSession $Session
[10.2.6.68]: PS /home/prashant> $IsLinux
True
[10.2.6.68]: PS /home/prashant> cat /etc/lsb-release
DISTRIB_ID=Ubuntu
DISTRIB_RELEASE=16.04
DISTRIB_CODENAME=xenial
DISTRIB_DESCRIPTION="Ubuntu 16.04.4 LTS"
[10.2.6.68]: PS /home/prashant> Get-Process | Sort-Object CPU | Select-Object -First 10

NPM(K)  PM(M)  WS(M)  CPU(s)  Id  SI ProcessName
-----
0        0.00   0.35   0.00    1625 624 (sd-pam)
0        0.00   0.00   0.00    76   0 kthrotld
0        0.00   0.00   0.00    2   0 kthreadd
0        0.00   0.00   0.00    19   0 ksmd
0        0.00   0.00   0.00    22   0 kintegrityd
0        0.00   0.00   0.00    15   0 khungtaskd
0        0.00   0.00   0.00    20   0 khugepaged
0        0.00   0.00   0.00    18   0 kcompactd0
0        0.00   0.00   0.00    4   0 kworker/0:0H
0        0.00   0.00   0.00    23   0 kblockd

[10.2.6.68]: PS /home/prashant>

```

```

Terminal
PS /home/prashant> $Session | Select-Object Id, Transport, ComputerName, State

Id Transport ComputerName State
-----
3 SSH        wintel01   Opened

PS /home/prashant> Enter-PSSession $Session
[wintel01]: PS C:\Users\ram\Documents> $IsWindows
True
[wintel01]: PS C:\Users\ram\Documents> Get-Process | Sort-Object CPU -Descending
| Select-Object -First 5

NPM(K)  PM(M)  WS(M)  CPU(s)  Id  SI ProcessName
-----
63      50.43  80.07  2.03    7040 0 pwsh
62      38.13  65.94  1.70    10068 0 pwsh
9       13.98  15.42  0.06    9176 0 audiodg
10      2.52   7.18   0.03    1792 0 sshd
10      2.45   7.08   0.03    4280 0 sshd

[wintel01]: PS C:\Users\ram\Documents> █

```

```
PS /home/packpub> Enter-PSSession -HostName 10.2.6.68 -UserName prashant
[10.2.6.68]: PS /home/prashant> $IsLinux
True
[10.2.6.68]: PS /home/prashant> cat /etc/lsb-release
DISTRIB_ID=Ubuntu
DISTRIB_RELEASE=16.04
DISTRIB_CODENAME=xenial
DISTRIB_DESCRIPTION="Ubuntu 16.04.4 LTS"
[10.2.6.68]: PS /home/prashant> Get-Process | Sort-Object CPU -Descending | S
elect-Object -First 5
```

NPM(K)	PM(M)	WS(M)	CPU(s)	Id	SI	ProcessName
0	0.00	141.70	108.37	2035	035	compiz
0	0.00	64.84	21.01	824	824	Xorg
0	0.00	71.04	5.21	3131	878	update-manager
0	0.00	32.51	4.23	2229	736	gnome-terminal-
0	0.00	84.56	3.72	2456	260	pwsh

```
[10.2.6.68]: PS /home/prashant> █
```

Chapter 15: PowerShell and Cloud Operations

```
prashanth@packtpub:~  
[prashanth@packtpub ~]$ sudo pwsh  
[sudo] password for prashanth:  
PowerShell v6.1.0-preview.2  
Copyright (c) Microsoft Corporation. All rights reserved.  
  
https://aka.ms/pscore6-docs  
Type 'help' to get help.  
  
PS /home/prashanth> Install-Module -Name AzureRM.NetCore  
PS /home/prashanth> Import-Module AzureRM.NetCore  
PS /home/prashanth> Login-AzureRmAccount  
WARNING: To sign in, use a web browser to open the page https://microsoft.com/devicelogin and enter the code G  
52NDHXBV to authenticate.  
  
Account          : PacktPubLinux@gmail.com  
SubscriptionName : Free Trial  
SubscriptionId   : 74d6872d-54f8-4240-91aa-4e19c7f0f18b  
TenantId        : a06f3a07-c723-464e-99af-5fc73b85b372  
Environment      : AzureCloud  
  
PS /home/prashanth> █
```

```

PS /home/prashanth> Install-Module -Scope CurrentUser -Name AWSPowerShell.NetCore -Force
PS /home/prashanth> Import-Module AWSPowerShell.NetCore
PS /home/prashanth> Get-Module -Name AWSPowerShell.NetCore

ModuleType Version      Name                               ExportedCommands
-----
Binary      3.3.283.0  AWSPowerShell.NetCore             {Add-AASScalableTarget, Add-ACMCertificateTag, A...

PS /home/prashanth> █

```

```

PS /home/prashanth> Get-Command Get*EC2* -Module AWSPowerShell.NetCore | ForEach-Object {
>> [pscustomobject] @{
>> 'Cmdlet' = $_.Name
>> 'Description' = (Get-Help $_.Name).Description.Text }
>> } | Format-Table -Wrap

Cmdlet          Description
-----
Get-EC2AccountAttributes Describes attributes of your AWS account. The following are the supported account
attributes:
- supported-platforms: Indicates whether your account can launch instances into
EC2-Classic and EC2-VPC, or only into EC2-VPC.
- default-vpc: The ID of the default VPC for your account, or none.
- max-instances: The maximum number of On-Demand Instances that you can run.
- vpc-max-security-groups-per-interface: The maximum number of security groups
that you can assign to a network interface.
- max-elastic-ips: The maximum number of Elastic IP addresses that you can
allocate for use with EC2-Classic.
- vpc-max-elastic-ips: The maximum number of Elastic IP addresses that you can
allocate for use with EC2-VPC.
Get-EC2ExportTasks    Describes one or more of your export tasks.
Get-EC2FlowLogs       Describes one or more flow logs. To view the information in your flow logs (the log
streams for the network interfaces), you must use the CloudWatch Logs console or
the CloudWatch Logs API.This operation automatically pages all available results to
the pipeline - parameters related to iteration are only needed if you want to
manually control the paginated output.
Get-EC2Hosts          Describes one or more of your Dedicated Hosts.
The results describe only the Dedicated Hosts in the region you're currently using.
All listed instances consume capacity on your Dedicated Host. Dedicated Hosts that
have recently been released will be listed with the state released.

```

```
PS /home/prashanth> Get-Command * -Type Cmdlet -Module AzureRM.Net* | Group-Object -Property Verb | Sort-Object Count -Descending | Format-Table -AutoSize
```

Count	Name	Group
82	Get	{Get-AzureRmApplicationGateway, Get-AzureRmApplicationGatewayAuthenticationCertificate, Get-A...
59	New	{New-AzureRmApplicationGateway, New-AzureRmApplicationGatewayAuthenticationCertificate, New-A...
51	Remove	{Remove-AzureRmApplicationGateway, Remove-AzureRmApplicationGatewayAuthenticationCertificate, ...}
46	Set	{Set-AzureRmApplicationGateway, Set-AzureRmApplicationGatewayAuthenticationCertificate, Set-A...
30	Add	{Add-AzureRmApplicationGatewayAuthenticationCertificate, Add-AzureRmApplicationGatewayBackend...
4	Test	{Test-AzureRmDnsAvailability, Test-AzureRmNetworkWatcherConnectivity, Test-AzureRmNetworkWac...
3	Start	{Start-AzureRmApplicationGateway, Start-AzureRmNetworkWatcherConnectionMonitor, Start-AzureRm...
3	Stop	{Stop-AzureRmApplicationGateway, Stop-AzureRmNetworkWatcherConnectionMonitor, Stop-AzureRmNet...
2	Reset	{Reset-AzureRmVirtualNetworkGateway, Reset-AzureRmVirtualNetworkGatewayConnectionSharedKey}
1	Move	{Move-AzureRmExpressRouteCircuit}
1	Resize	{Resize-AzureRmVirtualNetworkGateway}

```
PS /home/prashanth> █
```

The screenshot shows the Microsoft Azure portal interface in a Mozilla Firefox browser. The address bar displays the URL: `https://portal.azure.com/#@packtpublinuxgmail.onmicrosoft.com/dashboard/private/443be319`. The page title is "Dashboard - Microsoft Azure". Below the navigation bar, there is a "PowerShell PREVIEW" tab. The main content area shows the Azure Cloud Shell interface with a dark blue background and white text. The text includes: "Requesting a Cloud Shell. Succeeded. Connecting terminal...", "Welcome to Azure Cloud Shell (Preview)", "Type 'dir' to see your Azure resources", "Type 'help' to learn about Cloud Shell", "Welcome to the new PowerShell experience.", "For more info: <https://aka.ms/pscloudshell/refresh>", "Today's Tip: To edit files in the shell, use the built-in text editors: vim and nano", "VERBOSE: Authenticating to Azure ...", "VERBOSE: Building your Azure drive ...", "Azure: /", and "PS Azure:\> █".

```
PS /home/prashanth> Login-AzureRmAccount
WARNING: To sign in, use a web browser to open the page https://microsoft.com/devicelogin and enter the code H
YEVYD427 to authenticate.

Account          : PacktPubLinux@gmail.com
SubscriptionName : Free Trial
SubscriptionId   : 74d6872d-54f8-4240-91aa-4e19c7f0f18b
TenantId        : a06f3a07-c723-464e-99af-5fc73b85b372
Environment     : AzureCloud

PS /home/prashanth> █
```

```
NetworkRuleSet    : Microsoft.Azure.Commands.Management.Storage.Models.PSNetworkRuleSet
Context           : Microsoft.WindowsAzure.Commands.Common.Storage.LazyAzureStorageContext
ExtendedProperties : {}

PS /home/prashanth> $VNet = 'packtpub-vnet'
PS /home/prashanth> $Subnet = New-AzureRmVirtualNetworkSubnetConfig -Name FrontendSubnet -AddressPrefix 10.0.
1.0/24
PS /home/prashanth> $VNet = New-AzureRmVirtualNetwork -Name $VNet -ResourceGroupName $ResourceGroup -Location
$Location -AddressPrefix 10.0.0.0/16 -Subnet $Subnet
WARNING: The output object type of this cmdlet will be modified in a future release.
PS /home/prashanth> $NicName = 'vm-nic'
PS /home/prashanth> $Ip = New-AzureRmPublicIpAddress -Name $NicName -ResourceGroupName $ResourceGroup -Locatio
n $Location -AllocationMethod Dynamic
WARNING: The output object type of this cmdlet will be modified in a future release.
PS /home/prashanth> $Nic = New-AzureRmNetworkInterface -Name $NicName -ResourceGroupName $ResourceGroup -Locat
ion $Location -SubnetId $VNet.Subnets[0].Id -PublicIpAddressId $Ip.Id
WARNING: The output object type of this cmdlet will be modified in a future release.
PS /home/prashanth> $VmName = 'ubuntu-packtpub'
PS /home/prashanth> $Vm = New-AzureRmVMConfig -VMName $VmName -VMSize 'Basic_A1'
PS /home/prashanth> $Cred = Get-Credential

PowerShell credential request
Enter your credentials.
User: PacktPubLinux@gmail.com
Password for user PacktPubLinux@gmail.com: *****

PS /home/prashanth> $Vm = Set-AzureRmVMOperatingSystem -VM $Vm -Linux -ComputerName $VmName -Credential $Cred
PS /home/prashanth> █
```

```

Ubuntu_Snappy_Core_Docker Canonical eastus /Subscriptions/74d6872d-54f8-4240-91aa-4e19c7f0f18b/Provi...

PS /home/prashanth> Get-AzureRmVMImageSku -Location $Location -PublisherName 'Canonical' -Offer 'UbuntuServer'

Skus Offer PublisherName Location Id
----
12.04.3-LTS UbuntuServer Canonical eastus /Subscriptions/74d6872d-54f8-4240-91aa-4e19c7f0f18b/...
12.04.4-LTS UbuntuServer Canonical eastus /Subscriptions/74d6872d-54f8-4240-91aa-4e19c7f0f18b/...
12.04.5-DAILY-LTS UbuntuServer Canonical eastus /Subscriptions/74d6872d-54f8-4240-91aa-4e19c7f0f18b/...
12.04.5-LTS UbuntuServer Canonical eastus /Subscriptions/74d6872d-54f8-4240-91aa-4e19c7f0f18b/...
14.04.0-LTS UbuntuServer Canonical eastus /Subscriptions/74d6872d-54f8-4240-91aa-4e19c7f0f18b/...
14.04.1-LTS UbuntuServer Canonical eastus /Subscriptions/74d6872d-54f8-4240-91aa-4e19c7f0f18b/...
14.04.2-LTS UbuntuServer Canonical eastus /Subscriptions/74d6872d-54f8-4240-91aa-4e19c7f0f18b/...
14.04.3-LTS UbuntuServer Canonical eastus /Subscriptions/74d6872d-54f8-4240-91aa-4e19c7f0f18b/...
14.04.4-LTS UbuntuServer Canonical eastus /Subscriptions/74d6872d-54f8-4240-91aa-4e19c7f0f18b/...
14.04.5-DAILY-LTS UbuntuServer Canonical eastus /Subscriptions/74d6872d-54f8-4240-91aa-4e19c7f0f18b/...
14.04.5-LTS UbuntuServer Canonical eastus /Subscriptions/74d6872d-54f8-4240-91aa-4e19c7f0f18b/...
16.04-DAILY-LTS UbuntuServer Canonical eastus /Subscriptions/74d6872d-54f8-4240-91aa-4e19c7f0f18b/...
16.04-LTS UbuntuServer Canonical eastus /Subscriptions/74d6872d-54f8-4240-91aa-4e19c7f0f18b/...
16.04.0-LTS UbuntuServer Canonical eastus /Subscriptions/74d6872d-54f8-4240-91aa-4e19c7f0f18b/...
17.10 UbuntuServer Canonical eastus /Subscriptions/74d6872d-54f8-4240-91aa-4e19c7f0f18b/...
17.10-DAILY UbuntuServer Canonical eastus /Subscriptions/74d6872d-54f8-4240-91aa-4e19c7f0f18b/...
18.04-DAILY-LTS UbuntuServer Canonical eastus /Subscriptions/74d6872d-54f8-4240-91aa-4e19c7f0f18b/...
18.04-LTS UbuntuServer Canonical eastus /Subscriptions/74d6872d-54f8-4240-91aa-4e19c7f0f18b/...
18.10-DAILY UbuntuServer Canonical eastus /Subscriptions/74d6872d-54f8-4240-91aa-4e19c7f0f18b/...

PS /home/prashanth>

```

```

PS /home/prashanth> $Vm = Set-AzureRmVMSourceImage -VM $Vm -PublisherName 'Canonical' -Offer 'UbuntuServer' -S
kus '18.04-LTS' -Version 'latest'
PS /home/prashanth> $Vm = Add-AzureRmVMNetworkInterface -VM $Vm -Id $Nic.Id
PS /home/prashanth> $DiskName = 'ub-disk-packtpub'
PS /home/prashanth> $StorageAccount = Get-AzureRmStorageAccount -ResourceGroupName $ResourceGroup -Name $Stora
geAcc
StorageAccount StorageAcctName
PS /home/prashanth> $StorageAccount = Get-AzureRmStorageAccount -ResourceGroupName $ResourceGroup -Name $Stora
geAcctName
PS /home/prashanth> $OsDiskUri = $StorageAccount.PrimaryEndpoints.Blob.ToString()+ 'vhds/'+$DiskName+'.vhd'
PS /home/prashanth> $OsDiskUri
https://packtpubstorageacct.blob.core.windows.net/vhds/ub-disk-packtpub.vhd
PS /home/prashanth> $Vm = Set-AzureRmVMOSDisk -VM $Vm -Name $DiskName -VhdUri $OsDiskUri -CreateOption FromIma
ge
PS /home/prashanth>

```



```
PS /home/prashanth> New-AzureRmVM -ResourceGroupName $ResourceGroup -Location $Location -VM $Vm
```

```
RequestId IsSuccessStatusCode StatusCode ReasonPhrase
-----
True      OK OK
```

```
PS /home/prashanth> █
```

```
PS /home/prashanth> Get-AzureRmPublicIpAddress -ResourceGroupName $ResourceGroup
```

```
Name                : vm-nic
ResourceGroupName   : packtpub-demo
Location            : eastus
Id                  : /subscriptions/74d6872d-54f8-4240-91aa-4e19c7f0f18b/resourceGroups/packtpub-demo/
                    providers/Microsoft.Network/publicIPAddresses/vm-nic
Etag                : W/"0433bb40-1e6c-4d94-bce1-c273a1a58515"
ResourceGuid        : 14337550-ba7e-48df-8ba8-7dedff9f3d3b
ProvisioningState   : Succeeded
Tags                :
PublicIpAllocationMethod : Dynamic
IpAddress           : 168.62.42.54
PublicIpAddressVersion : IPv4
IdleTimeoutInMinutes : 4
IpConfiguration     : {
  "Id": "/subscriptions/74d6872d-54f8-4240-91aa-4e19c7f0f18b/resourceGroups/packtpub-demo/providers/Microsoft.Network/networkInterfaces/vm-nic/ipConfigurations/ipconfig1"
}
DnsSettings         : null
Zones               : {}
Sku                 : {
  "Name": "Basic"
}
IpTags              : []
```

```
PacktPubLinux@gmail.com@ubuntu-packtpub: ~
[prashanth@packtpub ~]$ ssh PacktPubLinux@gmail.com@168.62.42.54
PacktPubLinux@gmail.com@168.62.42.54's password:
Welcome to Ubuntu 18.04 LTS (GNU/Linux 4.15.0-1013-azure x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/advantage

System information as of Fri Jul  6 08:20:08 UTC 2018

System load:  0.0          Processes:    103
Usage of /:   3.9% of 28.90GB  Users logged in:  0
Memory usage: 18%          IP address for eth0: 10.0.1.4
Swap usage:  0%

Get cloud support with Ubuntu Advantage Cloud Guest:
http://www.ubuntu.com/business/services/cloud

0 packages can be updated.
0 updates are security updates.

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.
```

```
prashanth@packtpub-ubuntu: ~
Copying certs to the local machine directory...
Copying certs to the remote machine...
Setting Docker configuration on the remote daemon...
Checking connection to Docker...
Docker is up and running!
To see how to connect your Docker Client to the Docker Engine running on this virtual machine, run: /usr/local/bin/docker-machine env packtpub-ubuntu
PS /home/prashanth> docker-machine ssh packtpub-ubuntu
Welcome to Ubuntu 18.04 LTS (GNU/Linux 4.15.0-1013-azure x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/advantage

System information as of Fri Jul  6 09:51:46 UTC 2018

System load:  0.01         Processes:    127
Usage of /:   4.8% of 28.90GB  Users logged in:  0
Memory usage: 6%          IP address for eth0: 192.168.0.4
Swap usage:  0%          IP address for docker0: 172.17.0.1

Get cloud support with Ubuntu Advantage Cloud Guest:
http://www.ubuntu.com/business/services/cloud

22 packages can be updated.
6 updates are security updates.

prashanth@packtpub-ubuntu:~$ █
```

The screenshot shows a PowerShell terminal window within a Mozilla Firefox browser. The browser's address bar displays the URL `https://portal.azure.com/#blade/HubsExtension/Resources/resourceType/Microsoft.Resource`. The PowerShell prompt is `PS Azure:\>`. The user has entered the command `Get-AzureRmVM | Where-Object Name -match "ubun"`. The output is a table with the following columns: ResourceGroupName, Name, Location, VmSize, OsType, NIC, ProvisioningState, and Zone. The table contains one row of data: PACKTPUB-RG, packtpub-ubuntu, eastus, Basic_A1, Linux, packtpub-vm-nic, Succeeded.

```
PowerShell PREVIEW | Search resources, services, and docs | PacktPubLinux@gmail...  
Azure: /  
PS Azure:\> Get-AzureRmVM | Where-Object Name -match "ubun"  
  
ResourceGroupName      Name      Location  VmSize  OsType  NIC      ProvisioningState  Zone  
-----  
PACKTPUB-RG           packtpub-ubuntu  eastus  Basic_A1  Linux  packtpub-vm-nic  Succeeded  
  
Azure: /  
PS Azure:\>
```

The image shows a screenshot of a PowerShell terminal window running within a Mozilla Firefox browser. The browser's address bar shows the URL `https://portal.azure.com/#blade/HubsExtension/Resources/resourceType/Microsoft.Resource`. The PowerShell prompt is `PS Azure:\>`. The command `Start-AzureRmVM -ResourceGroupName $ResourceGroup -Name $Vm` has been entered. The output of the command is:

```
OperationId :
Status      :
StartTime   :
EndTime     :
Error       :
```

The terminal window also shows the prompt `Azure: /` and `PS Azure:\>` again, indicating the command has completed.

```
PowerShell | RESTART PASTE X
Connecting terminal...
VERBOSE: Authenticating to Azure ...
VERBOSE: Building your Azure drive ...
Azure:\
PS Azure:\> $PSVersionTable

Name                Value
----                -
PSVersion           5.1.14393.2312
PSEdition            Desktop
PSCompatibleVersions {1.0, 2.0, 3.0, 4.0...}
BuildVersion        10.0.14393.2312
CLRVersion           4.0.30319.42000
WSManStackVersion   3.0
PSRemotingProtocolVersion 2.3
SerializationVersion 1.1.0.1

Azure:\
PS Azure:\> $IsWindowsOS
True
Azure:\
PS Azure:\>

PowerShell | RESTART PASTE X
VERBOSE: Authenticating to Azure ...
VERBOSE: Building your Azure drive ...
Azure:\
PS Azure:\> $PSVersionTable

Name                Value
----                -
PSVersion           5.1.14393.2312
PSEdition            Desktop
PSCompatibleVersions {1.0, 2.0, 3.0, 4.0...}
BuildVersion        10.0.14393.2312
CLRVersion           4.0.30319.42000
WSManStackVersion   3.0
PSRemotingProtocolVersion 2.3
SerializationVersion 1.1.0.1

Azure:\
PS Azure:\> $IsWindowsOS
True
Azure:\
PS Azure:\> 
```

```
PowerShell | RESTART PASTE X
Memory usage: 18% IP address for eth0: 10.0.1.4
Swap usage: 0%

* Meet microk8s, a single-package, single-node K8s for developers
  and smart connected IoT devices. Much fun in teeny package.
  - http://bit.ly/microk8s

Get cloud support with Ubuntu Advantage Cloud Guest:
  http://www.ubuntu.com/business/services/cloud

0 packages can be updated.
0 updates are security updates.

Last login: Sat Jul 7 11:19:15 2018 from 13.92.215.129
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

prashanth@packtpub-ubuntu:~$
```

```
PowerShell | RESTART PASTE X
prashanth@packtpub-ubuntu:~$ curl https://packages.microsoft.com/keys/microsoft.as
c | sudo apt-key add -
% Total % Received % Xferd Average Speed Time Time Time Current
Dload Upload Total Spent Left Speed
100 983 100 983 0 0 9018 0 --:--:-- --:--:-- --:--:-- 9018
OK
prashanth@packtpub-ubuntu:~$ sudo curl -o /etc/apt/sources.list.d/microsoft.list h
tps://packages.microsoft.com/config/ubuntu/18.04/prod.list
% Total % Received % Xferd Average Speed Time Time Time Current
Dload Upload Total Spent Left Speed
100 77 100 77 0 0 754 0 --:--:-- --:--:-- --:--:-- 754
prashanth@packtpub-ubuntu:~$ sudo apt update
Get:1 https://packages.microsoft.com/ubuntu/18.04/prod bionic InRelease [2846 B]
Hit:2 http://azure.archive.ubuntu.com/ubuntu bionic InRelease
Get:3 http://azure.archive.ubuntu.com/ubuntu bionic-updates InRelease [88.7 kB]
Get:4 http://azure.archive.ubuntu.com/ubuntu bionic-backports InRelease [74.6 kB]
Get:5 http://security.ubuntu.com/ubuntu bionic-security InRelease [83.2 kB]
Get:6 https://packages.microsoft.com/ubuntu/18.04/prod bionic/main amd64 Packages
[14.3 kB]
Get:7 http://azure.archive.ubuntu.com/ubuntu bionic/main Sources [829 kB]
Get:8 http://azure.archive.ubuntu.com/ubuntu bionic/restricted Sources [5324 B]
Get:9 http://azure.archive.ubuntu.com/ubuntu bionic/multiverse Sources [181 kB]
```

```
root@packtpub-ubuntu: ~
# CLOUD_IMG: This file was created/modified by the Cloud Image build process
ClientAliveInterval 120
# Subsystem entry for PowerShell
Subsystem powershell /usr/bin/pwsh-preview -sshs -NoLogo -NoProfile
```

128,67 Bot

```
PowerShell | RESTART PASTE X
Usage of /: 5.1% of 28.90GB Users logged in: 1
Memory usage: 20% IP address for eth0: 10.0.1.4
Swap usage: 0%

* Meet microk8s, a single-package, single-node K8s for developers
and smart connected IoT devices. Much fun in teeny package.
- http://bit.ly/microk8s

Get cloud support with Ubuntu Advantage Cloud Guest:
http://www.ubuntu.com/business/services/cloud

22 packages can be updated.
6 updates are security updates.

Last login: Sat Jul 7 11:27:53 2018 from 122.166.136.219
prashanth@packtpub-ubuntu:~$ sudo -s
root@packtpub-ubuntu:~# systemctl restart ssh
root@packtpub-ubuntu:~#
```

Done

```

PS /home/prashanth> $VmIp = (Get-AzureRmPublicIpAddress -ResourceGroupName packtpub-rg).IpAddress
PS /home/prashanth> $VmIp
40.117.213.80
PS /home/prashanth> New-PSSession -HostName $VmIp -UserName prashanth
prashanth@40.117.213.80's password:

Id Name          Transport ComputerName ComputerType State ConfigurationName Availability
----
2 Runspace1     SSH       40.117.213.80 RemoteMachine Opened DefaultShell Available

PS /home/prashanth>

```

```

PS /home/prashanth> Get-PSSession

Id Name          Transport ComputerName ComputerType State ConfigurationName Availability
----
2 Runspace1     SSH       40.117.213.80 RemoteMachine Opened DefaultShell Available

PS /home/prashanth> $Session = Get-PSSession
PS /home/prashanth> Invoke-Command -Session $Session -ScriptBlock { Get-Process }

NPM(K)  PM(M)  WS(M)  CPU(s)  Id  SI ProcessName  PSComputerName
-----
0        0.00   2.36   0.00    7128 127 (sd-pam)      40.117.213.80
0        0.00   6.86   0.22    1066 066 accounts-daemon 40.117.213.80
0        0.00   2.34   0.08    1150 150 agetty        40.117.213.80
0        0.00   2.03   0.01    1164 164 agetty        40.117.213.80
0        0.00   0.00   0.00    26   0 ata_sff      40.117.213.80
0        0.00   2.45   0.00    1028 028 atd           40.117.213.80
0        0.00   0.00   0.00    12   0 cpuhp/0      40.117.213.80
0        0.00   3.25   0.00    1072 072 cron          40.117.213.80
0        0.00   0.00   0.00    23   0 crypto       40.117.213.80
0        0.00   4.34   0.07    1032 032 dbus-daemon  40.117.213.80
0        0.00   0.00   0.00    33   0 devfreq_wq   40.117.213.80
0        0.00   0.00   0.00    39   0 ecryptfs-kthrea 40.117.213.80
0        0.00   0.00   0.00    28   0 edac-poller  40.117.213.80
0        0.00   0.00   0.00    346   0 ext4-rsv-conver 40.117.213.80
0        0.00   0.00   0.00    929   0 ext4-rsv-conver 40.117.213.80
0        0.00   0.00   0.06    447   0 hv_balloon    40.117.213.80
0        0.00   2.10   0.11    1031 031 hv_kvq_daemon 40.117.213.80
0        0.00   0.00   0.00    32   0 hv_vmbus_con  40.117.213.80

```


IAM Management Console - Mozilla Firefox

IAM Management Con... x +

https://console.aws.amazon.com/iam/home?region=us-east-2#/users\$new?ste Search

aws Services Resource Groups packpublinux Global Support

Add user

1 2 3 4

Set user details

You can add multiple users at once with the same access type and permissions. [Learn more](#)

User name*

[+ Add another user](#)

Select AWS access type

Select how these users will access AWS. Access keys and autogenerated passwords are provided in the last step. [Learn more](#)

Access type* **Programmatic access**
Enables an **access key ID** and **secret access key** for the AWS API, CLI, SDK, and other development tools.

AWS Management Console access
Enables a **password** that allows users to sign-in to the AWS Management Console.

* Required [Cancel](#) [Next: Permissions](#)

[Feedback](#) [English \(US\)](#) © 2008 - 2018, Amazon Web Services, Inc. or its affiliates. All rights reserved. [Privacy Policy](#) [Terms of Use](#)

IAM Management Console - Mozilla Firefox

IAM Management Con... x +

https://console.aws.amazon.com/iam/home?region=us-east-2#/users\$new?ste Search

aws Services Resource Groups packpublinux Global Support

Add user

1 2 3 4

Set permissions for PacktPubLinux

Add user to group

Copy permissions from existing user

Attach existing policies directly

Create policy

Filter: Policy type AdministratorAccess Showing 1 result

	Policy name	Type	Attachments	Description
<input checked="" type="checkbox"/>	AdministratorAccess	Job function	1	Provides full access to AWS services and resources.

Cancel Previous **Next: Review**

Feedback English (US) © 2008 - 2018, Amazon Web Services, Inc. or its affiliates. All rights reserved. Privacy Policy Terms of Use

```

PS /home/prashanth> Initialize-AWSDefaultConfiguration

Credentials
Please enter your AWS Access and Secret Keys
AWS Access Key: AKIAJUJDK3UZAN7T2JLA
AWS Secret Key: doAfusJg5wsXmEXgy3KEHPizUQXiFPBQv1FpxIfa

Specify region
Please choose one of the following regions to use or specify one by system name
[] <Specify a different region> [] ap-northeast-1 [] ap-northeast-2 [] ap-south-1 [] ap-southeast-1
[] ap-southeast-2[] ca-central-1 [] eu-central-1 [] eu-west-1 [] eu-west-2 [] eu-west-3 [] sa-east-1
[] us-east-1[] us-east-2 [] us-west-1 [] us-west-2 [] cn-north-1 [] cn-northwest-1 [] us-gov-west-1
[?] Help(default is "<Specify a different region>"): us-east-2
PS /home/prashanth>

```

```

Specify region
Please choose one of the following regions to use or specify one by system name
[] <Specify a different region> [] ap-northeast-1 [] ap-northeast-2 [] ap-south-1 [] ap-southeast-1
[] ap-southeast-2[] ca-central-1 [] eu-central-1 [] eu-west-1 [] eu-west-2 [] eu-west-3 [] sa-east-1
[] us-east-1[] us-east-2 [] us-west-1 [] us-west-2 [] cn-north-1 [] cn-northwest-1 [] us-gov-west-1
[?] Help(default is "<Specify a different region>"): us-east-2
PS /home/prashanth> Set-AWSCredential -AccessKey AKIAJUJDK3UZAN7T2JLA -SecretKey doAfusJg5wsXmEXgy3KEHPizUQXiF
PBQv1FpxIfa -StoreAs PackPubLinux
PS /home/prashanth> Get-AWSCredential -ListProfileDetail

ProfileName      StoreTypeName      ProfileLocation
-----
PackPubLinux     SharedCredentialsFile /home/prashanth/.aws/credentials

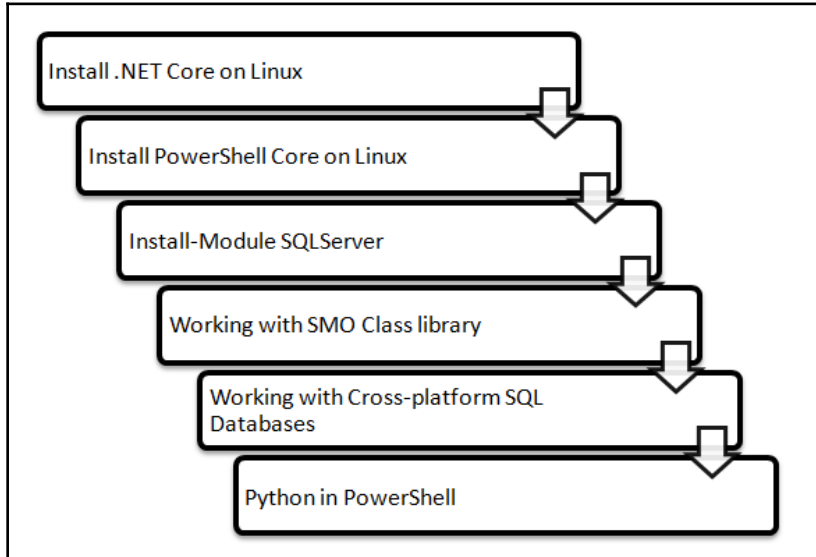
PS /home/prashanth> Initialize-AWSDefaultConfiguration -ProfileName PackPubLinux
PS /home/prashanth> Get-EC2Instance -Region us-east-2

GroupNames      : {}
Groups          : {}
Instances       : {packtpub-linux}
OwnerId         : 024287841517
RequesterId     :
ReservationId   : r-040a7b7e30e524a78

PS /home/prashanth>

```

Chapter 16: Using PowerShell for SQL Database Management



```
PS /home/prashanth> dotnet --info
.NET Command Line Tools (2.1.103)

Product Information:
  Version:           2.1.103
  Commit SHA-1 hash: 60218cecb5

Runtime Environment:
  OS Name:           centos
  OS Version:        7
  OS Platform:       Linux
  RID:               centos.7-x64
  Base Path:         /usr/share/dotnet/sdk/2.1.103/

Microsoft .NET Core Shared Framework Host

  Version : 2.0.6
  Build   : 74b1c703813c8910df5b96f304b0f2b78cdf194d

PS /home/prashanth> █
```

```
prashanth@packtpub:/home/prashanth/PacktPub
Running 'dotnet restore' on /home/prashanth/PacktPub/PacktPub.csproj...
Restoring packages for /home/prashanth/PacktPub/PacktPub.csproj...
Generating MSBuild file /home/prashanth/PacktPub/obj/PacktPub.csproj.nuget.g.props.
Generating MSBuild file /home/prashanth/PacktPub/obj/PacktPub.csproj.nuget.g.targets.
Restore completed in 165.84 ms for /home/prashanth/PacktPub/PacktPub.csproj.

Restore succeeded.

[root@packtpub PacktPub]# vim Program.cs
[root@packtpub PacktPub]# cat Program.cs
using System;
namespace PacktPub
{
    class Program
    {
        static void Main(string[] args)
        {
            Console.WriteLine("Introduction to .Net Core on Linux!");
        }
    }
}
[root@packtpub PacktPub]# dotnet run
Introduction to .Net Core on Linux!
[root@packtpub PacktPub]# █
```

```
PS /home/prashanth> Set-PSRepository -Name PsGallery -InstallationPolicy Trusted
PS /home/prashanth> Install-Module SqlServer
```

```
Installing package 'SqlServer'
Downloaded 4.97 MB out of 24.78 MB.
[oooooooooooo]
```

```
PS /home/prashanth> [AppDomain]::CurrentDomain.GetAssemblies() | Where-Object FullName -Match 'sql' | Select-Object -ExpandProperty Location
/usr/local/share/powershell/Modules/SqlServer/21.0.17279/coreclr/Microsoft.SqlServer.Management.PSSnapins.dll
/usr/local/share/powershell/Modules/SqlServer/21.0.17279/coreclr/Microsoft.SqlServer.ConnectionInfo.dll
/usr/local/share/powershell/Modules/SqlServer/21.0.17279/coreclr/Microsoft.SqlServer.Management.Sdk.Sfc.dll
/usr/local/share/powershell/Modules/SqlServer/21.0.17279/coreclr/Microsoft.SqlServer.SmoExtended.dll
/usr/local/share/powershell/Modules/SqlServer/21.0.17279/coreclr/Microsoft.SqlServer.SqlEnum.dll
/usr/local/share/powershell/Modules/SqlServer/21.0.17279/coreclr/Microsoft.SqlServer.Smo.dll
/opt/microsoft/powershell/6/System.Data.SqlClient.dll
/usr/local/share/powershell/Modules/SqlServer/21.0.17279/coreclr/Microsoft.SqlServer.Management.PSPProvider.dll
PS /home/prashanth>
```

Chapter 17: Using PowerShell with Docker

```
prashanth@galago:~  
Total download size: 102 k  
Installed size: 151 M  
Downloading packages:  
(1/2): pigz-2.3.3-1.el7.centos.x86_64.rpm | 68 kB 00:00  
(2/2): container-selinux-2.55-1.el7.noarch.rpm | 34 kB 00:00:10  
-----  
Total | 9.7 kB/s | 102 kB 00:00:10  
Running transaction check  
Running transaction test  
Transaction test succeeded  
Running transaction  
  Installing : pigz-2.3.3-1.el7.centos.x86_64 1/3  
  Installing : 2:container-selinux-2.55-1.el7.noarch 2/3  
  Installing : docker-ce-18.03.1.ce-1.el7.centos.x86_64 3/3  
  
  Verifying : docker-ce-18.03.1.ce-1.el7.centos.x86_64 1/3  
  
  Verifying : 2:container-selinux-2.55-1.el7.noarch 2/3  
  
  Verifying : pigz-2.3.3-1.el7.centos.x86_64 3/3  
  
Installed:  
  docker-ce.x86_64 0:18.03.1.ce-1.el7.centos  
  
Dependency Installed:  
  container-selinux.noarch 2:2.55-1.el7 pigz.x86_64 0:2.3.3-1.el7.centos  
  
Complete!  
[root@packtpub ~]#
```

```
prashanth@galago:~  
[root@packtpub ~]# yum info docker  
Loaded plugins: fastestmirror, langpacks  
Loading mirror speeds from cached hostfile  
* base: centos.excellmedia.net  
* extras: centos.excellmedia.net  
* updates: centos.excellmedia.net  
Available Packages  
Name      : docker  
Arch      : x86_64  
Epoch    : 2  
Version   : 1.13.1  
Release   : 63.git94f4240.el7.centos  
Size      : 16 M  
Repo      : extras/7/x86_64  
Summary   : Automates deployment of containerized applications  
URL       : https://github.com/docker/docker  
License   : ASL 2.0  
Description: Docker is an open-source engine that automates the deployment of any  
           : application as a lightweight, portable, self-sufficient container that will  
           : run virtually anywhere.  
           :  
           : Docker containers can encapsulate any payload, and will run consistently on  
           : and between virtually any server. The same container that a developer builds  
           : and tests on a laptop will run at scale, in production*, on VMs, bare-metal  
           : servers, OpenStack clusters, public instances, or combinations of the above.  
[root@packtpub ~]#
```

```
prashanth@galago:~  
[root@packtpub ~]# systemctl status docker  
● docker.service - Docker Application Container Engine  
   Loaded: loaded (/usr/lib/systemd/system/docker.service; disabled; vendor preset: disabled)  
   Active: inactive (dead)  
     Docs: https://docs.docker.com  
[root@packtpub ~]#
```



```
prashanth@galago:~  
[root@packtpub ~]# systemctl status docker  
● docker.service - Docker Application Container Engine  
   Loaded: loaded (/usr/lib/systemd/system/docker.service; enabled; vendor preset: disabled)  
   Active: active (running) since Tue 2018-06-12 11:59:08 IST; 18min ago  
     Docs: https://docs.docker.com  
   Main PID: 13411 (dockerd)  
   CGroup: /system.slice/docker.service  
           └─13411 /usr/bin/dockerd  
             └─13423 docker-containerd --config /var/run/docker/containerd/containerd.toml  
  
Jun 12 11:59:08 packtpub dockerd[13411]: time="2018-06-12T11:59:08+05:30" level=info msg=serving... a...rp  
c"  
Jun 12 11:59:08 packtpub dockerd[13411]: time="2018-06-12T11:59:08+05:30" level=info msg="containerd ...ne  
rd"  
Jun 12 11:59:08 packtpub dockerd[13411]: time="2018-06-12T11:59:08.197539053+05:30" level=info msg="G...nd  
s"  
Jun 12 11:59:08 packtpub dockerd[13411]: time="2018-06-12T11:59:08.198680128+05:30" level=info msg="L...rt  
."  
Jun 12 11:59:08 packtpub dockerd[13411]: time="2018-06-12T11:59:08.482780688+05:30" level=info msg="D...es  
s"  
Jun 12 11:59:08 packtpub dockerd[13411]: time="2018-06-12T11:59:08.685890880+05:30" level=info msg="L...ne  
."  
Jun 12 11:59:08 packtpub dockerd[13411]: time="2018-06-12T11:59:08.712025795+05:30" level=info msg="D...l-  
ce"  
Jun 12 11:59:08 packtpub dockerd[13411]: time="2018-06-12T11:59:08.712191337+05:30" level=info msg="D...io  
n"  
Jun 12 11:59:08 packtpub dockerd[13411]: time="2018-06-12T11:59:08.719228572+05:30" level=info msg="A...oc  
k"  
Jun 12 11:59:08 packtpub systemd[1]: Started Docker Application Container Engine.  
Hint: Some lines were ellipsized, use -l to show in full.  
[root@packtpub ~]#
```

```
prashanth@packtpub:/home/prashanth  
[root@packtpub prashanth]# docker run hello-world  
Unable to find image 'hello-world:latest' locally  
latest: Pulling from library/hello-world  
9bb5a5d4561a: Pull complete  
Digest: sha256:f5233545e43561214ca4891fd1157e1c3c563316ed8e237750d59bde73361e77  
Status: Downloaded newer image for hello-world:latest  
  
Hello from Docker!  
This message shows that your installation appears to be working correctly.  
  
To generate this message, Docker took the following steps:  
1. The Docker client contacted the Docker daemon.  
2. The Docker daemon pulled the "hello-world" image from the Docker Hub.  
   (amd64)  
3. The Docker daemon created a new container from that image which runs the  
   executable that produces the output you are currently reading.  
4. The Docker daemon streamed that output to the Docker client, which sent it  
   to your terminal.  
  
To try something more ambitious, you can run an Ubuntu container with:  
$ docker run -it ubuntu bash  
  
Share images, automate workflows, and more with a free Docker ID:  
https://hub.docker.com/  
  
For more examples and ideas, visit:  
https://docs.docker.com/engine/userguide/  
  
[root@packtpub prashanth]#
```

```
prashanth@packtpub:~  
[prashanth@packtpub ~]$ pwsh  
PowerShell v6.1.0-preview.2  
Copyright (c) Microsoft Corporation. All rights reserved.  
  
https://aka.ms/pscore6-docs  
Type 'help' to get help.  
  
PS /home/prashanth> Find-Module Docker  
  
Version          Name          Repository      Description  
-----          -  
1.3.2            Docker        PSGallery       This module helps with devel...
```

```
prashanth@packtpub:~  
[prashanth@packtpub ~]$ pwsh  
PowerShell v6.1.0-preview.2  
Copyright (c) Microsoft Corporation. All rights reserved.  
  
https://aka.ms/pscore6-docs  
Type 'help' to get help.  
  
PS /home/prashanth> Find-Module Docker  
  
Version          Name          Repository      Description  
-----          -  
1.3.2            Docker        PSGallery       This module helps with devel...
```

```
PS /home/prashanth> (Find-Module Docker).Description  
This module helps with development using Docker on localhost. It detects and automatically maps virtual hosts defined as the VIRTUAL_HOST environment variable to your computer.  
PS /home/prashanth>
```

```
PS /home/prashanth> Install-Module Docker  
  
Untrusted repository  
You are installing the modules from an untrusted repository. If you trust this repository, change its InstallationPolicy value by running the Set-PSRepository cmdlet. Are you sure you want to install the modules from 'PSGallery'?  
[Y] Yes [A] Yes to All [N] No [L] No to All [S] Suspend [?] Help (default is "N"): Y  
PS /home/prashanth>
```

```
PS /home/prashanth> Get-Command -Module Docker  
  
CommandType      Name          Version      Source  
-----  
Function         Install-Docker 1.3.2        Docker  
Function         Invoke-DockerCommand 1.3.2        Docker  
Function         Invoke-DockerComposeCommand 1.3.2        Docker  
Function         Set-ModuleDocker 1.3.2        Docker  
  
PS /home/prashanth>
```

```
root@packtpub:/home/prashanth/Downloads
[root@packtpub Downloads]# ls
Docker.0.1.0.zip  docker-ce-18.03.1.ce-1.el7.centos.x86_64.rpm
[root@packtpub Downloads]# mkdir /tmp/Docker
[root@packtpub Downloads]# unzip ./Docker.0.1.0.zip -d /tmp/Docker/
Archive:  ./Docker.0.1.0.zip
  inflating: /tmp/Docker/_rels/.rels
  inflating: /tmp/Docker/Docker.nuspec
  inflating: /tmp/Docker/en-US/Docker.PowerShell.dll-Help.xml
  inflating: /tmp/Docker/Docker.psd1
  inflating: /tmp/Docker/Docker.psm1
  inflating: /tmp/Docker/Docker.Format.ps1xml
  inflating: /tmp/Docker/clr/Docker.DotNet.dll
  inflating: /tmp/Docker/clr/Docker.DotNet.X509.dll
  inflating: /tmp/Docker/clr/Docker.PowerShell.dll
  inflating: /tmp/Docker/clr/Newtonsoft.Json.dll
  inflating: /tmp/Docker/clr/System Buffers.dll
  inflating: /tmp/Docker/clr/Tar.dll
  inflating: /tmp/Docker/coreclr/Docker.DotNet.dll
  inflating: /tmp/Docker/coreclr/Docker.DotNet.X509.dll
  inflating: /tmp/Docker/coreclr/Docker.PowerShell.dll
  inflating: /tmp/Docker/coreclr/Tar.dll
  inflating: /tmp/Docker/[Content_Types].xml
  inflating: /tmp/Docker/package/services/metadata/core-properties/2b9ed1ff72af462cb6521b96eeaba1c9.psmidcp
[root@packtpub Downloads]#
```

```
root@packtpub:/home/prashanth/Downloads
[root@packtpub Downloads]# ls -l /tmp/Docker/
total 28
drwxr-xr-x. 2 root root 158 Jun 13 14:23 clr
-rw-r--r--. 1 root root 722 Aug 27 2016 [Content_Types].xml
drwxr-xr-x. 2 root root 105 Jun 13 14:23 coreclr
-rw-r--r--. 1 root root 4294 Aug 27 2016 Docker.Format.ps1xml
-rw-r--r--. 1 root root 721 Aug 27 2016 Docker.nuspec
-rw-r--r--. 1 root root 4350 Aug 27 2016 Docker.psd1
-rw-r--r--. 1 root root 799 Aug 27 2016 Docker.psm1
drwxr-xr-x. 2 root root 44 Jun 13 14:23 en-US
drwxr-xr-x. 3 root root 22 Jun 13 14:23 package
drwxr-xr-x. 2 root root 19 Jun 13 14:23 _rels
[root@packtpub Downloads]#
```

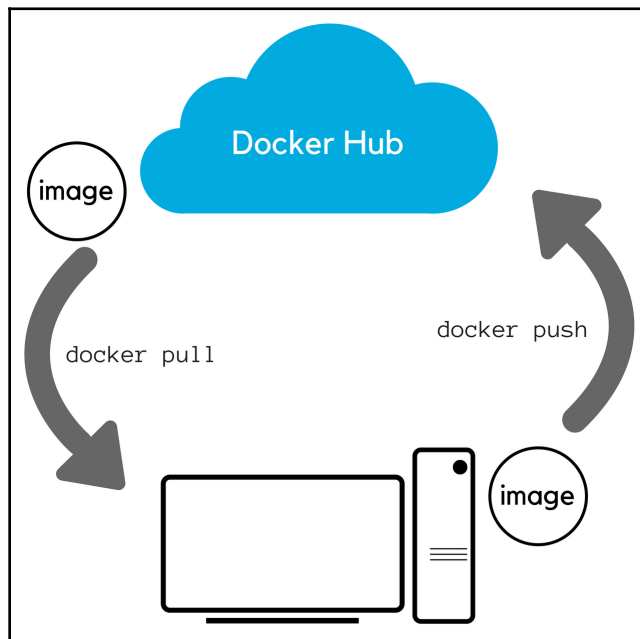
```
PS /home/prashanth> Import-Module -Name /tmp/Docker/Docker.psd1
PS /home/prashanth> Get-Module Docker

ModuleType Version Name ExportedCommands
-----
Script 0.1.0 Docker {ConvertTo-ContainerImage, Copy-ContainerFile, E...

PS /home/prashanth>
```

```
PS /home/prashanth> Get-Command -Module Docker
```

CommandType	Name	Version	Source
Alias	Attach-Container	0.1.0	Docker
Alias	Build-ContainerImage	0.1.0	Docker
Alias	Commit-Container	0.1.0	Docker
Alias	Exec-Container	0.1.0	Docker
Alias	Load-ContainerImage	0.1.0	Docker
Alias	Pull-ContainerImage	0.1.0	Docker
Alias	Push-ContainerImage	0.1.0	Docker
Alias	Run-ContainerImage	0.1.0	Docker
Alias	Save-ContainerImage	0.1.0	Docker
Alias	Tag-ContainerImage	0.1.0	Docker
Cmdlet	ConvertTo-ContainerImage	0.1.0	Docker
Cmdlet	Copy-ContainerFile	0.1.0	Docker
Cmdlet	Enter-ContainerSession	0.1.0	Docker
Cmdlet	Export-ContainerImage	0.1.0	Docker
Cmdlet	Get-Container	0.1.0	Docker
Cmdlet	Get-ContainerDetail	0.1.0	Docker
Cmdlet	Get-ContainerImage	0.1.0	Docker
Cmdlet	Get-ContainerNet	0.1.0	Docker
Cmdlet	Get-ContainerNetDetail	0.1.0	Docker
Cmdlet	Import-ContainerImage	0.1.0	Docker
Cmdlet	Invoke-ContainerImage	0.1.0	Docker
Cmdlet	New-Container	0.1.0	Docker
Cmdlet	New-ContainerImage	0.1.0	Docker
Cmdlet	New-ContainerNet	0.1.0	Docker
Cmdlet	Remove-Container	0.1.0	Docker



```
PS /home/prashanth> docker login
Login with your Docker ID to push and pull images from Docker Hub. If you don't have a Docker ID, head over to
https://hub.docker.com to create one.
Username: prashanthjayaram
Password:
Login Succeeded
PS /home/prashanth> █
```

```
PS /home/prashanth/Docker> Pull-ContainerImage hello-world:latest
latest: Pulling from library/hello-world
Digest: sha256:f5233545e43561214ca4891fd1157e1c3c563316ed8e237750d59bde73361e77
Status: Image is up to date for hello-world:latest

RepoTags          ID                Created           Size(MB)
-----          --                -
hello-world:latest sha256:e38bc07ac1... 11/04/18 6:11:49 pm  0.00

PS /home/prashanth/Docker> █
```

```
PS /home/prashanth/Docker> Run-ContainerImage hello-world

Hello from Docker!
This message shows that your installation appears to be working correctly.

To generate this message, Docker took the following steps:
 1. The Docker client contacted the Docker daemon.
 2. The Docker daemon pulled the "hello-world" image from the Docker Hub.
    (amd64)
 3. The Docker daemon created a new container from that image which runs the
    executable that produces the output you are currently reading.
 4. The Docker daemon streamed that output to the Docker client, which sent it
    to your terminal.

To try something more ambitious, you can run an Ubuntu container with:
$ docker run -it ubuntu bash

Share images, automate workflows, and more with a free Docker ID:
https://hub.docker.com/

For more examples and ideas, visit:
https://docs.docker.com/engine/userguide/

PS /home/prashanth/Docker> █
```

```

PS /home/prashanth/Docker> Get-Container

ID                Image                Command              Created              Status              Names
----                -
6644e1ecb0b87ede2... hello-world         /hello              13/06/18 10:36:07 am Exited (0) 20 hou... eag...
fdb160fc817522cb4... hello-world         /hello              12/06/18 9:04:22 am  Exited (0) 45 hou... pea...

PS /home/prashanth/Docker> Get-Container | Select-Object ID

ID
--
6644e1ecb0b87ede28738d69936c9c341ba29a3d56174e8fbf78d8cf58c39fb5
fdb160fc817522cb4b48d0b663a54d0d3a37c75247f556511aac6db8a10f42d

PS /home/prashanth/Docker>

```

```

PS /home/prashanth/Docker> Commit-Container 6644e1ecb0b87ede28738d69936c9c341ba29a3d56174e8fbf78d8cf58c39fb5

RepoTags          ID                Created              Size(MB)
-----
<none>:<none>     sha256:840b6de1dc... 14/06/18 6:19:29 am  0.00

PS /home/prashanth/Docker>

```

```

PS /home/prashanth/Docker> Tag-ContainerImage -Id 840 -Repository prashanthjayaram/packtpubhelloworld
PS /home/prashanth/Docker> Get-ContainerImage

RepoTags          ID                Created              Size(MB)
-----
prashanthjayaram/packtpubhelloworld:l... sha256:840b6de1dc... 14/06/18 6:19:29 am  0.00
hello-world:latest sha256:e38bc07ac1... 11/04/18 6:11:49 pm  0.00

PS /home/prashanth/Docker>

```

```

PS /home/prashanth/Docker> Submit-ContainerImage prashanthjayaram/packtpubhelloworld
The push refers to repository [docker.io/prashanthjayaram/packtpubhelloworld]
Submit-ContainerImage : errors:
denied: requested access to the resource is denied
unauthorized: authentication required
At line:1 char:1
+ Submit-ContainerImage prashanthjayaram/packtpubhelloworld
+ ~~~~~
+ CategoryInfo          : OperationStopped: (:) [Submit-ContainerImage], Exception
+ FullyQualifiedErrorId : Docker.PowerShell.Cmdlets.SubmitContainerImage

PS /home/prashanth/Docker> docker push prashanthjayaram/packtpubhelloworld
The push refers to repository [docker.io/prashanthjayaram/packtpubhelloworld]
2b8cbd0846c5: Layer already exists
latest: digest: sha256:cf0d1eaf7ebe4ddad87b5aa05c1c34f1b17884ce6031698968f2d19d3cf5028a size: 524
PS /home/prashanth/Docker>

```

The image shows a browser window displaying the Docker Hub page for the repository `prashanthjayaram/packtpubhelloworld`. The page is a public repository with the tag `latest` pushed a few seconds ago. Below the repository information, there is a table with columns for Tag Name, Compressed Size, and Last Updated. The `latest` tag has a compressed size of 985 B and was updated a few seconds ago. Below the table, there is a terminal window showing the command `Run-ContainerImage prashanthjayaram/packtpubhelloworld` being executed. The terminal output displays a "Hello from Docker!" message and explains the steps taken by Docker to run the container, including pulling the image from Docker Hub and creating a new container to run the executable. It also provides instructions on how to run an Ubuntu container and where to find more examples and ideas.

prashanthjayaram/packtpubhelloworld - Docker Hub - Mozilla Firefox

prashanthjayaram/pac... x +

https://hub.docker.com/r/prashanthjayaram/packtpubhelloworld

Search

Dashboard Explore Organizations Create prashanthjayaram

PUBLIC REPOSITORY

prashanthjayaram/packtpubhelloworld ☆

Last pushed: a few seconds ago

Repo Info Tags Collaborators Webhooks Settings

Tag Name	Compressed Size	Last Updated
latest	985 B	a few seconds ago

```
PS /home/prashanth/Docker> Run-ContainerImage prashanthjayaram/packtpubhelloworld

Hello from Docker!
This message shows that your installation appears to be working correctly.

To generate this message, Docker took the following steps:
1. The Docker client contacted the Docker daemon.
2. The Docker daemon pulled the "hello-world" image from the Docker Hub.
   (amd64)
3. The Docker daemon created a new container from that image which runs the
   executable that produces the output you are currently reading.
4. The Docker daemon streamed that output to the Docker client, which sent it
   to your terminal.

To try something more ambitious, you can run an Ubuntu container with:
$ docker run -it ubuntu bash

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For more examples and ideas, visit:
https://docs.docker.com/engine/userguide/

PS /home/prashanth/Docker> 
```

```

Userid      : "Microsoft (Release signing) <gpgsecurity@microsoft.com>"
Fingerprint: bc52 8686 b50d 79e3 39d3 721c eb3e 94ad be12 29cf
From       : https://packages.microsoft.com/keys/microsoft.asc
Running transaction check
Running transaction test
Transaction test succeeded
Running transaction
  Installing : 2:libunwind-1.2-2.el7.x86_64           1/3
  Installing : libicu-50.1.2-15.el7.x86_64           2/3
  Installing : powershell-6.1.0-preview.2-1.rhel.7.x86_64 3/3
  Verifying  : libicu-50.1.2-15.el7.x86_64           1/3
  Verifying  : 2:libunwind-1.2-2.el7.x86_64           2/3
  Verifying  : powershell-6.1.0-preview.2-1.rhel.7.x86_64 3/3

Installed:
  powershell.x86_64 0:6.1.0-preview.2-1.rhel.7

Dependency Installed:
  libicu.x86_64 0:50.1.2-15.el7          libunwind.x86_64 2:1.2-2.el7

Complete!
Removing intermediate container 5a3ce0e441cc
---> 2d8821f9ec66
Step 6/6 : CMD /usr/bin/pwsh
---> Running in 586b10b1c50a
Removing intermediate container 586b10b1c50a
---> 50eecb704824
Successfully built 50eecb704824
Successfully tagged packtpubdemo:latest
PS /home/prashanth/Docker>

```

```

[root@packtpub Docker]# docker run -it packtpubdemo
PowerShell v6.1.0-preview.2
Copyright (c) Microsoft Corporation. All rights reserved.

https://aka.ms/pscore6-docs
Type 'help' to get help.

PS />

```

```

PS /home/prashanth/Docker> Get-Container

```

ID	Image	Command	Created	Status	Names
465e6f660f4fce232...	packtpubdemo	/bin/sh -c /usr/b...	14/06/18 7:55:18 am	Exited (0) 14 min...	rom...
b8a59454f812b69c5...	packtpubdemo	/bin/sh -c /usr/b...	14/06/18 7:55:03 am	Exited (0) About ...	qui...
23ca51b661d04ed07...	packtpubdemo	/bin/sh -c /usr/b...	14/06/18 7:54:44 am	Exited (0) About ...	mys...
f80cfa2da47b3310b...	packtpubdemo	/bin/sh -c /usr/b...	14/06/18 7:51:40 am	Exited (0) About ...	mys...
e39c9d9a6d628fe55...	prashanthjay...	/hello	14/06/18 7:11:06 am	Exited (0) 2 hour...	ele...
6644e1ecb0b87ede2...	hello-world	/hello	13/06/18 10:36:07 am	Exited (0) 22 hou...	eag...
fdb160fc817522cb4...	hello-world	/hello	12/06/18 9:04:22 am	Exited (0) 2 days...	pea...

```

PS /home/prashanth/Docker>

```



```
PS /home/prashanth/Docker> Get-Container | Where-Object Status -like 'Exited*'

ID                Image                Command                Created                Status                Names
--                -
465e6f660f4fce232... packtpubdemo        /bin/sh -c /usr/b...  14/06/18 7:55:18 am    Exited (0) 18 min...  rom...
b8a59454f812b69c5... packtpubdemo        /bin/sh -c /usr/b...  14/06/18 7:55:03 am    Exited (0) About ...  qui...
23ca51b661d04ed07... packtpubdemo        /bin/sh -c /usr/b...  14/06/18 7:54:44 am    Exited (0) About ...  mys...
f80cfa2da47b3310b... packtpubdemo        /bin/sh -c /usr/b...  14/06/18 7:51:40 am    Exited (0) About ...  mys...
e39c9d9a6d628fe55... prashanthjay...    /hello                14/06/18 7:11:06 am    Exited (0) 2 hour...  ele...
6644e1ecb0b87ede2... hello-world        /hello                13/06/18 10:36:07 am    Exited (0) 22 hou...  eag...
fdb160fc817522cb4... hello-world        /hello                12/06/18 9:04:22 am    Exited (0) 2 days...  pea...

PS /home/prashanth/Docker>
```

```
PS /home/prashanth/Docker> Get-Container | Where-Object {$_.Status -like 'Up*' -and $_.Created -lt (Get-Date).AddHours(-6)}

ID                Image                Command                Created                Status                Names
--                -
465e6f660f4fce232... packtpubdemo        /bin/sh -c /usr/b...  14/06/18 7:55:18 am    Up 3 minutes          roma...

PS /home/prashanth/Docker>
```

```
PS /home/prashanth/Docker> Get-Container | grep bin
465e6f660f4fce232... packtpubdemo        /bin/sh -c /usr/b...  14/06/18 7:55:18 am    Up 5 minutes          roma...
b8a59454f812b69c5... packtpubdemo        /bin/sh -c /usr/b...  14/06/18 7:55:03 am    Exited (0) About ...  quir...
23ca51b661d04ed07... packtpubdemo        /bin/sh -c /usr/b...  14/06/18 7:54:44 am    Exited (0) About ...  myst...
f80cfa2da47b3310b... packtpubdemo        /bin/sh -c /usr/b...  14/06/18 7:51:40 am    Exited (0) About ...  myst...
PS /home/prashanth/Docker> Get-Container | grep bin | awk '{print $1}'
465e6f660f4fce232...
b8a59454f812b69c5...
23ca51b661d04ed07...
f80cfa2da47b3310b...
PS /home/prashanth/Docker>
```

```
PS /home/prashanth/Docker> Get-ContainerImage -All

RepoTags                ID                Created                Size (MB)
-----
packtpubdemo:latest     sha256:50eecb7048... 14/06/18 7:50:19 am    486.89
<none>:<none>            sha256:2d8821f9ec... 14/06/18 7:50:19 am    486.89
<none>:<none>            sha256:5c87d3721d... 14/06/18 7:49:52 am    259.12
<none>:<none>            sha256:636f017112... 14/06/18 7:49:51 am    259.12
<none>:<none>            sha256:0f93b021b0... 14/06/18 7:49:36 am    190.43
prashanthjayaram/packtpubhelloworld:l... sha256:840b6de1dc... 14/06/18 6:19:29 am    0.00
centos:latest           sha256:49f7960eb7... 04/06/18 10:19:34 pm    190.43
hello-world:latest     sha256:e38bc07ac1... 11/04/18 6:11:49 pm    0.00

PS /home/prashanth/Docker>
```

```
PS /home/prashanth/Docker> Get-ContainerImage | Select-Object * -First 1

ID           : sha256:50eecb70482400a16f1ac1ec7543f94927a5ec9bad9cb7554ebad08a99b919f1
ParentID     : sha256:2d8821f9ec669e608ab3b282510a8ce26a75a581f31a4849a8146de719472814
RepoTags     : {packtpubdemo:latest}
RepoDigests  :
Created      : 14/06/18 7:50:19 am
Size         : 510539448
VirtualSize  : 510539448
Labels       : {[org.label-schema.schema-version, = 1.0      org.label-schema.name=CentOS Base Image
                org.label-schema.vendor=CentOS      org.label-schema.license=GPLv2
                org.label-schema.build-date=20180531]}
```

PS /home/prashanth/Docker>