55039: Windows® PowerShell® Scripting and Toolmaking

Duration: 5 Days
Method: Instructor-Led Training (ILT) | Live Online Training

Course Description

This course will help participants to further their skills in Windows PowerShell and administrative automation. It will teach them the correct patterns and practices for building reusable, tightly scoped units of automation.

Target Audience

This course is intended for:
- IT professionals who are interested in furthering their skills in Windows PowerShell and administrative automation.
- Administrators in a Microsoft®-centric environment who want to build reusable units of automation, automate business processes, and enable less-technical colleagues to accomplish administrative tasks.

Prerequisites

To attend this course, candidates must have experience in:
- Basic Windows administration.
- Using Windows PowerShell to:
  - Query and modify system information.
  - Discover commands and their usage.
- Using WMI and/or CIM to query system information.

Course Objectives

Upon successful completion of this course, attendees will be able to:
- Describe the correct patterns for building modularized tools in Windows PowerShell.
- Build highly modularized functions that comply with native PowerShell patterns.
- Build controller scripts that expose user interfaces and automate business processes.
- Manage data in a variety of formats.
- Write automated tests for tools.
- Debug tools.

Course Topics

Module 1: Tool Design
- Tools Do One Thing
- Tools Are Flexible
- Tools Look Native

Module 2: Start with a Command
- Why Start with a Command?
- Discovery and Experimentation

Module 3: Build a Basic Function and Module
- Start with a Basic Function
- Create a Script Module
- Check Prerequisites
- Run the New Command

Module 4: Adding CmdletBinding and Parameterizing
- About CmdletBinding and Common Parameters
- Accepting Pipeline Input
- Mandatory-ness
- Parameter Validation
- Parameter Aliases

Module 5: Emitting Objects as Output
- Assembling Information
- Constructing and Emitting Output
- Quick Tests

Module 6: An Interlude: Changing Your Approach
- Examining a Script
- Critiquing a Script
- Revising the Script

Module 7: Using Verbose, Warning, and Informational Output
- Knowing the Six Channels

- Adding Verbose and Warning Output
- Doing More with Verbose Output
- Informational Output

Module 8: Comment-Based Help
- Where to Put Your Help
- Getting Started
- Going Further with Comment-Based Help
- Broken Help

Module 9: Handling Errors
- Understanding Errors and Exceptions
- Bad Handling
- Two Reasons for Exception Handling
- Handling Exceptions in Our Tool
- Capturing the Actual Exception
- Handling Exceptions for Non-Commands
- Going Further with Exception Handling
- Deprecated Exception Handling

Module 10: Basic Debugging
- Two Kinds of Bugs
- The Ultimate Goal of Debugging
- Developing Assumptions
- Write-Debug
- Set-PSBreakpoint
- The PowerShell ISE

Module 11: Going Deeper with Parameters
- Parameter Positions
- Validation
- Multiple Parameter Sets
- Value from Remaining Arguments
- Help Messages
- Aliases
- More CmdletBinding

Course Topics *Continued*

Module 12: Writing Full Help
- External Help
- Using PlatyPs
- Supporting Online Help
- "About" Topics
- Making Your Help Updatable

Module 13: Unit Testing Your Code
- Sketching Out the Test
- Making Something to Test
- Expanding the Test
- Going Further with Pester

Module 14: Extending Output Types
- Understanding Types
- The Extensible Type System
- Extending an Object
- Using Update-TypeData

Module 15: Analysing Your Script
- Performing a Basic Analysis
- Analysing the Analysis

Module 16: Publishing Your Tools
- Begin with a Manifest
- Publishing to PowerShell Gallery
- Publishing to Private Repositories

Module 17: Basic Controllers: Automation Scripts and Menus
- Building a Menu
- Using UIChoice
- Writing a Process Controller

Module 18: Proxy Functions
- A Proxy Example
- Creating the Proxy Base
- Modifying the Proxy
- Adding or Removing Parameters

Module 19: Working with XML Data
- Simple: CliXML
- Importing Native XML
- ConvertTo-XML
- Creating Native XML from Scratch

Module 20: Working with JSON Data
- Converting to JSON
- Converting from JSON

Module 21: Working with SQL Server Data
- SQL Server Terminology and Facts
- Connecting to the Server and Database
- Writing a Query
- Running a Query
- Invoke-Sqlcmd
- Thinking about Tool Design Patterns

Module 22: Final Exam
- Lab Problem
- Break Down the Problem
- Do the Design
- Test the Commands
- Code the Tool

LABS INCLUDED