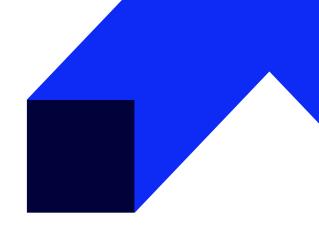


training code: MS 55039 / ENG DL 5d / EN

Windows PowerShell Scripting and Toolmaking





Purpose of the training

This course is intended for 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.



Benefits of completing the training

After completing this course, students 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



Expected Listener Preparation

Before attending this course, students must have:

- Experience at basic Windows administration
- Experience using Windows PowerShell to query and modify system information
- Experience using Windows PowerShell to discover commands and their usage
- Experience using WMI and/or CIM to query system information





Training Language

Training: EnglishMaterials: English



Duration

5 days / 35 hours

Training agenda

- 1. Module 1: Tool Design
 - Tools do one thing
 - Tools are flexible
 - · Tools look native
- 2. Module 2: Start with a Command
 - Why start with a command?
 - Discovery and experimentation
- 3. Module 3: Build a Basic Function and Module
 - Start with a basic function
 - Create a script module
 - Check prerequisites
 - Run the new command
- 4. Module 4: Adding CmdletBinding and Parameterizing
 - About CmdletBinding and common parameters
 - Accepting pipeline input
 - Mandatory-ness
 - Parameter validation
 - Parmeter aliases
- 5. Module 5: Emitting Objects as Output
 - Assembling information
 - Constructing and emitting output
 - · Quick tests
- 6. Module 6: An Interlude: Changing Your Approach



- · Examining a script
- Critiquing a script
- · Revising the script
- 7. Module 7: Using Verbose, Warning, and Informational Output
 - Knowing the six channels
 - Adding verbose and warning output
 - Doing more with verbose output
 - Informational output
- 8. Module 8: Comment-Based Help
 - · Where to put your help
 - Getting started
 - Going further with comment-based help
 - Broken help
- 9. 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
- 10. Module 10: Basic Debugging
 - · Two kinds of bugs
 - The ultimate goal of debugging
 - Developing assumptions
 - Write-Debug
 - · Set-PSBreakpoint
 - The PowerShell ISE
- 11. Module 11: Going Deeper with Parameters
 - Parameter positions
 - Validation
 - Multiple parameter sets
 - Value from remaining arguments
 - Help messages
 - Aliases
 - More CmdletBinding
- 12. Module 12: Writing Full Help
 - External help
 - Using PlatyPs



- Supporting online help
- "About" topics
- Making your help updatable
- 13. Module 13: Unit Testing Your Code
 - Sketching out the test
 - Making something to test
 - · Expanding the test
 - Going further with Pester
- 14. Module 14: Extending Output Types
 - Understanding types
 - The Extensible Type System
 - · Extending an object
 - Using Update-TypeData
- 15. Module 15: Analyzing Your Script
 - Performing a basic analysis
 - · Analyzing the analysis
- 16. Module 16: Publishing Your Tools
 - Begin with a manifest
 - Publishing to PowerShell Gallery
 - Publishing to private repositories
- 17. Module 17: Basic Controllers: Automation Scripts and Menus
 - Building a menu
 - Using UIChoice
 - Writing a process controller
- 18. Module 18: Proxy Functions
 - A proxy example
 - · Creating the proxy base
 - Modifying the proxy
 - Adding or removing parameters
- 19. Module 19: Working with XML Data
 - Simple: CliXML
 - · Importing native XML
 - ConvertTo-XML
 - Creating native XML from scratch
- 20. Module 20: Working with JSON Data
 - Converting to JSON
 - Converting from JSON
- 21. 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