

Windows PowerShell Scripting and Toolmaking



Training recipients

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

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



Training program

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
 - Parameter 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



Expected preparation of the participant

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



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Language

- Training: English
- Materials: English