

COURSE OUTLINE

Windows PowerShell Scripting and Toolmaking

Course code: 55039B

Duration: 5 Days

Prerequisite:

- 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

Course Description:

This three- to five-day instructor-led is intended for IT professionals who are interested in furthering their skills in Windows PowerShell and administrative automation. The course assumes a basic working knowledge of PowerShell as an interactive command-line shell and teaches students the correct patterns and practices for building reusable, tightly scoped units of automation.

Course Objectives:

- 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

Intended Audience:

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.

Course Outlines:

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

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: Analyzing Your Script

- Performing a basic analysis
- Analyzing 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 examples
- Creating the proxy base
- Modifying the proxy
- Adding or removing parameters

Module 19: Working with XML Data

- Simple: CliXML
- Importing native XML
- Convert To-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

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