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

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
    - 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

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

To increase the comfort of work and training's effectiveness we suggest using an additional monitor. The lack of additional monitor does not exclude participation in the training, however, it significantly influences the comfort of work during classes.

You can find information and requirements of participation in Distance Learning trainings at: https://www.altkomakademia.pl/en/how-it-works/about-courses/

Duration

5 days / 35 hours

Language

- Training: English
- Materials: English