PESTER: PRACTICALLY PERFECT POWERSHELL

Fred Bainbridge
fredbainbridge.com
Automation Engineer
Wells Fargo

Jeff Scripter
@JeffTheScripter
Automation Engineer
Wells Fargo

Fred Bainbridge	Jeff Scripter
@FredBainbridge	@JeffTheScripter
Microsoft MVP	All around Excellence
20 years	15 years
Beer and Baseball	Beer, Coffee and Chocolate

POWERSHELL FOUNDATIONAL STUFF

- Source Control
  - Git
- Loosely Coupled Code
  - Modules \ Functions \ CmdLets
- Proper Tooling
  - VS Code

MMS

TESTING

Foundational stuff and testing definitions

MMS

PESTER INTRODUCTION

- Pester is the ubiquitous test and mock framework for PowerShell.

- https://github.com/pester/Pester

```
Install-Module Pester -Scope CurrentUser -Force -SkipPublisherCheck
```

MMS

UNIT AND ACCEPTANCE TESTING

- Testing the simplest most granular logic of your code. i.e. A Unit

- What is a Unit?
  - The smallest testable part of an application
    - Class, Method, Function
    - Logic Branches

- Acceptance Testing: Given these inputs I expect my code to execute as such and have this output.

MMS

UNIT TESTING CLARIFICATIONS

- This is not testing functionality!
- Unit testing is not easy (at first)
- Some code is hard to test.

UNIT VS INTEGRATION TESTING

- Integration testing depends on external sources. (Databases, Services, etc)
- Integration testing tests the entire application.
- Unit testing tests the logic of the functions, modules, methods.
- Have basic Unit testing practices mastered before tackling integration testing.

WHY UNIT TEST?

- You will find bugs in your code.
- It is the only way to self peer review your code.
- It separates you from the pack.

http://blog.celerity.com/the-true-cost-of-a-software-bug

PESTER

The part with all the demos.

PESTER LOVES FUNCTIONS

PESTER
LOVES
FUNCTIONS

MMS

BASIC PESTER COMPONENTS

- Describe
  - Each Pester starts with a Describe block
- Context (optional)
  - Logical grouping of It blocks.
- It
  - Validates the results of tests
- Should
  - Assertion of something

MMS

Simple Script and Test

demo1

MMS

More Context

demo2 and demo3

MMS

TESTING A MODULE?

- InModuleScope
  - Allows testing of internal (non-exported) code of a script module.
    - Functions, variables, aliases.
- Have a separate test for each CmdLet
- Name the Describe block the name of the CmdLet
  - Or whatever standard you want to use, but have one.

Module

MMS

MORE PESTER COMPONENTS

- Mock
  - Replacement for existing commands.
  - Enforces no interaction with the environment.
- Assertion
  - Ensure things did or did not happen.

Mocks and Assertions

demo5

MMS

PARAMETER FILTER

- Ensure a specific Mock is called or not.
- Ensure a specific Mock was called a certain amount of times.
- Ensure a Mock was called in a specific Scope.
- You can add a parameter filter to a Mock or an Assertion.

MMS

ParameterFilter

MMS

REMINDER

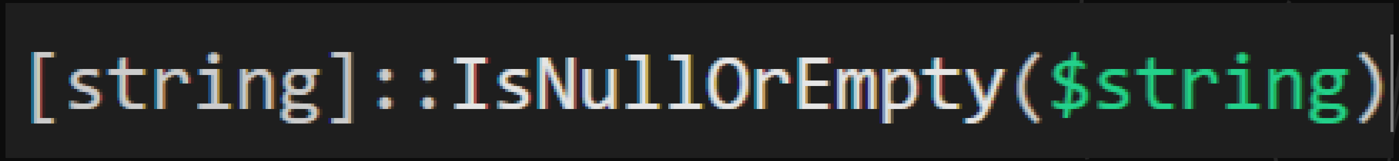
PESTER LOVES FUNCTIONS

Designing Testable Code

WORKING WITH .NET METHODS

- Pester cannot mock .NET methods.
  - Be prepared to write functions for each .NET method you need to test.

- Not every .NET method needs mocking
  - i.e.



```
[string]::IsNullOrEmpty($string)
```

.NET Methods

MORE PESTER COMPONENTS

- New-MockObject
  - This can create “real” objects of whatever type you need.
  - Super useful when needing to return something from a mocked function.
  - You need a modern version of Pester for this.
- TestCases
  - Pass in an array of parameters to an It block to test multiple “like” scenarios.

New-MockObject

MMS

Test Cases

MMS

PESTER MYTHS

- Pester is not for single developers.
- It is only for modules.
- Somethings are not testable.
- I don’t have the time. Or it is not worth the time.

MMS

DESIGNING FOR PESTER

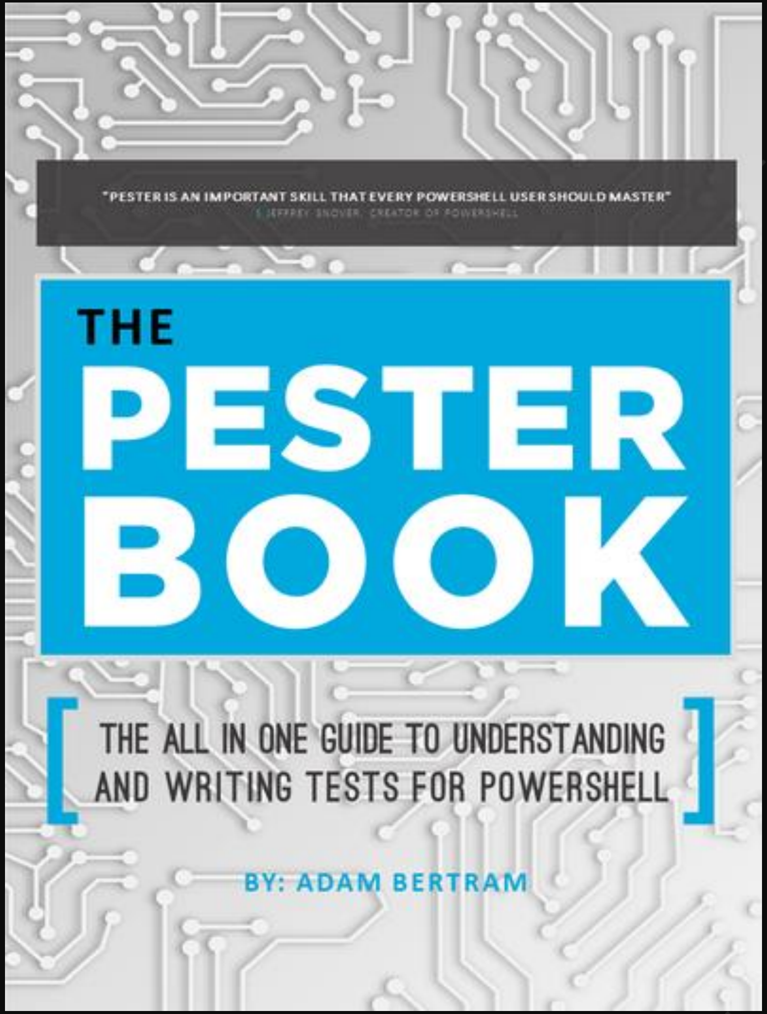
- Pester works best with Functions
- Functions should write to the pipeline.
  - Not write-host
- Functions should return one and only type of thing.
- Wrap your .NET Calls
- Loosely coupled code

TIPS FOR PESTER

- Write your tests first. (TDD)
- Test output
- Automate when possible
- Test negative assertions
  - Should Not

MMS

THE PESTER BOOK



"PESTER IS AN IMPORTANT SKILL THAT EVERY POWERSHELL USER SHOULD MASTER"
- JEFFREY SNOVER, CREATOR OF POWERSHELL

THE PESTER BOOK

[THE ALL IN ONE GUIDE TO UNDERSTANDING AND WRITING TESTS FOR POWERSHELL]

BY: ADAM BERTRAM

MMS

PESTER COMMUNITY

- Primary Developers: @MSH_Dave @nohwnd @JayKul more
- Issues List -> Contribute if you can!
- Want to contribute to Windows 10?

MMS

Extended Q&A

MMS

RADISSON BLU · MALL OF AMERICA

MMS