

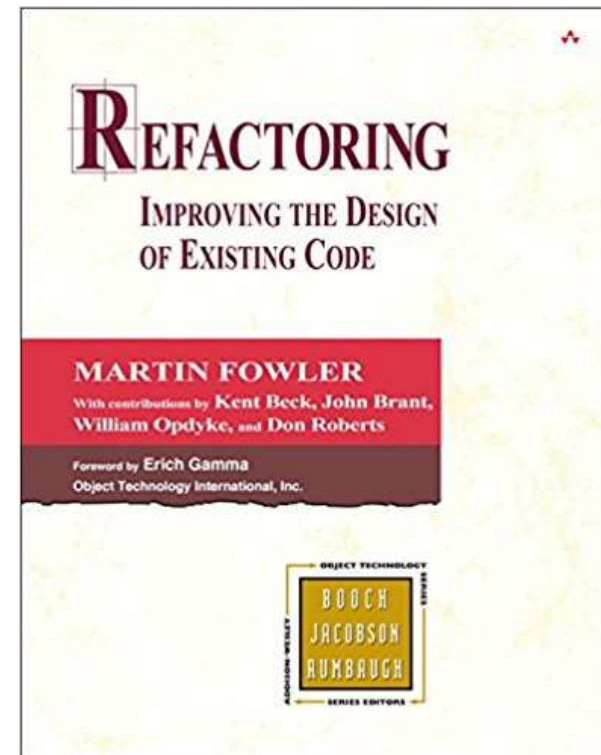
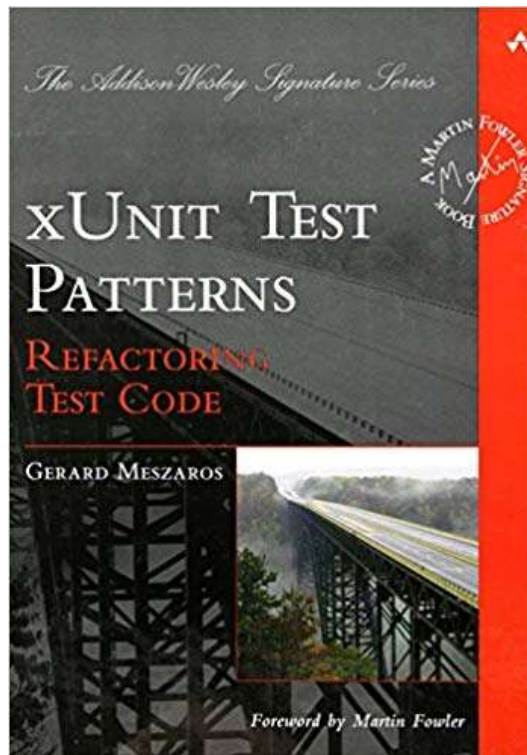
Unit Testing at Mock Speed

Sam Taggart

CLA, CTD, CPI, Champion, DQMH Trusted Advisor



Inspiration – Future Proofing



Kent Beck



Kent Beck 
@KentBeck



for each desired change, make the change easy (warning: this may be hard), then make the easy change

5:07 PM - Sep 25, 2012

 799  770 people are talking about this



VIPM Packages

https://gitlab.com/sas_public

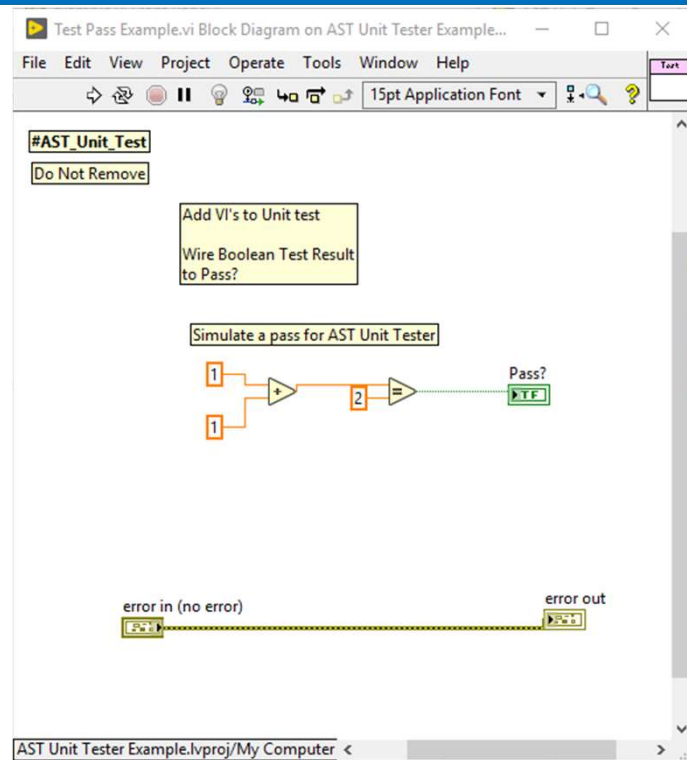
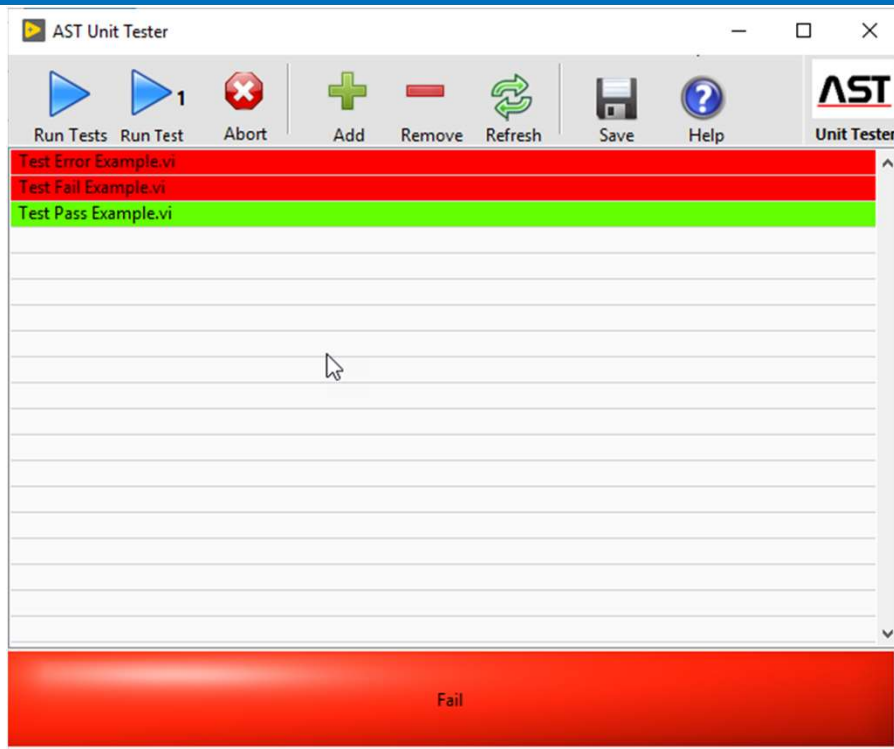
Specifically the class_refactoring_tools
project



More Info

- <https://automateddenver.com/sw-engineering/unit-testing/>
- <https://forums.ni.com/t5/Unit-Testing-Group/gp-p/5182?profile.language=en>

AST Tester Plug



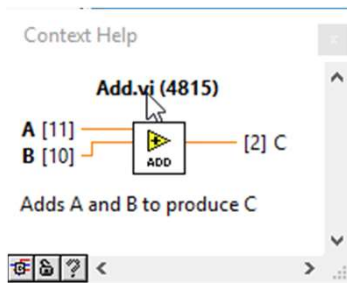
Agenda

- Test Doubles
- Dependency Injection
- Mock Objects
- Anatomy of Mock Objects
- Building Call Logs
- Example

Test Doubles



Indirect Inputs and Outputs

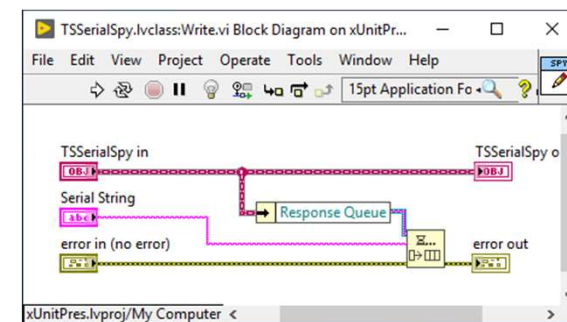
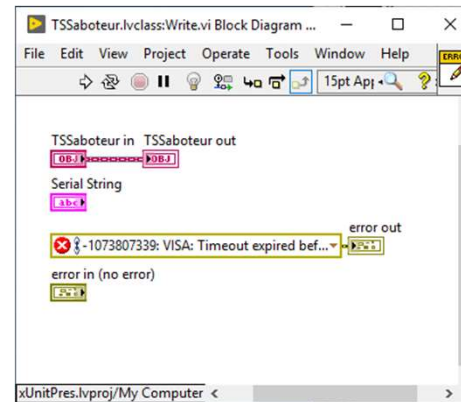
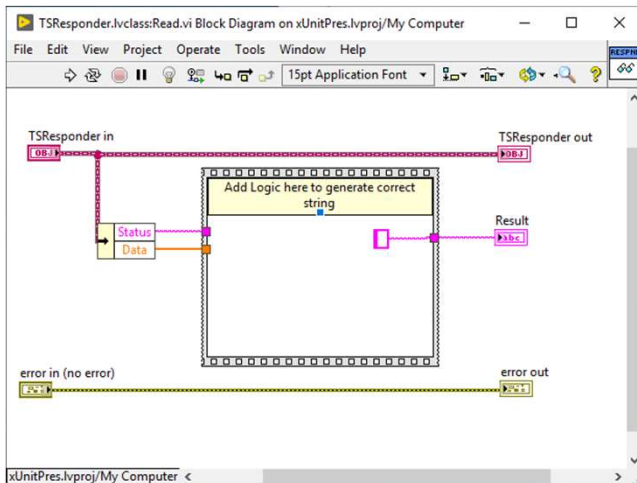


Versus

- Databases
- Hardware
- Timing
- Serial Port
- Network Comms
- File I/O
- Etc...

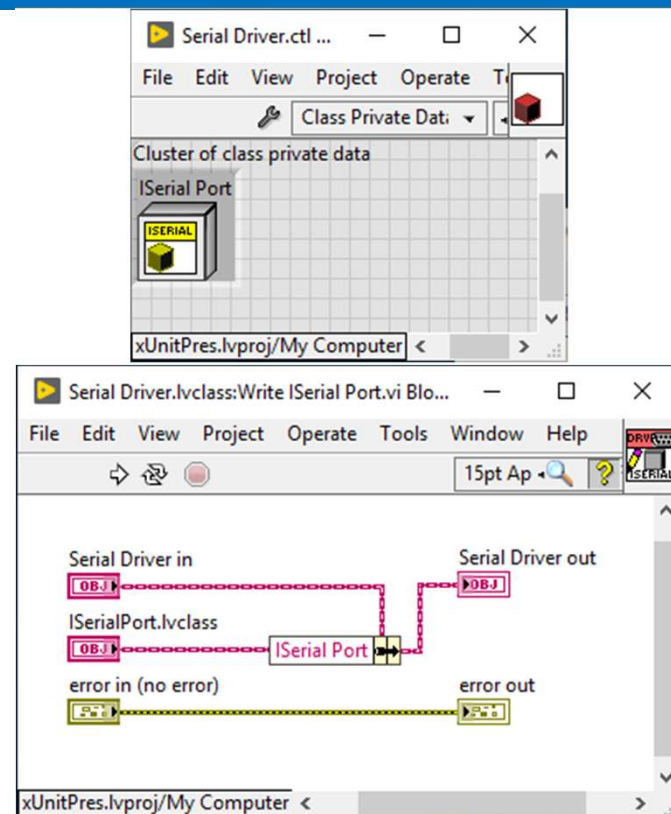
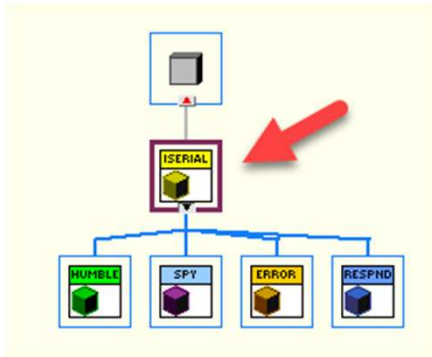
Test Double Types

- Responder – Returns Valid Data to SUT to allow it to continue
- Saboteur – Injects errors or incorrect data to SUT to verify error handling
- Spy – Allows test to examine indirect outputs of SUT



Installing Test Doubles

- Code to Interface not Implementation
- Dependency Injection



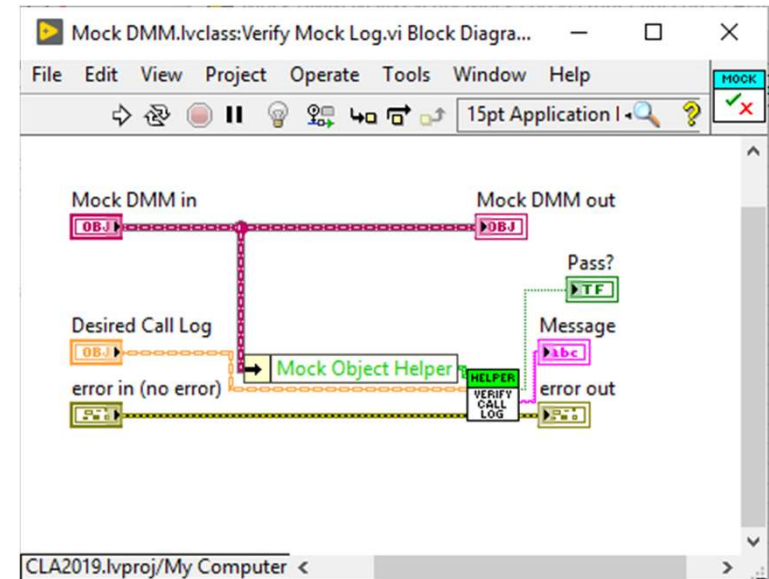
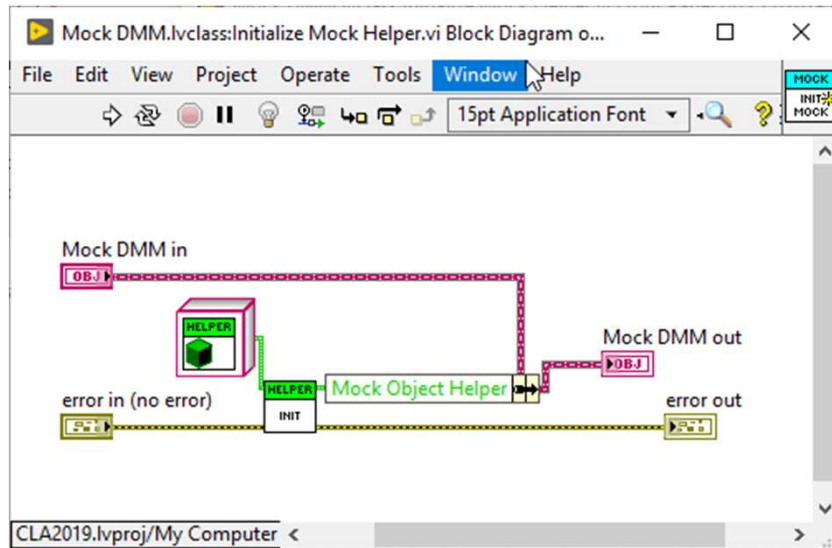
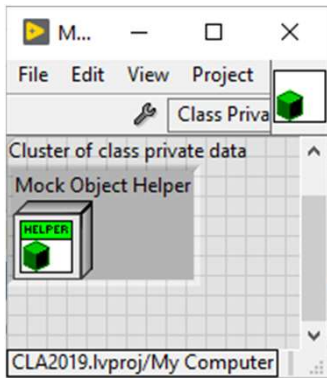
Creating an “Interface” Class

- Demo at end

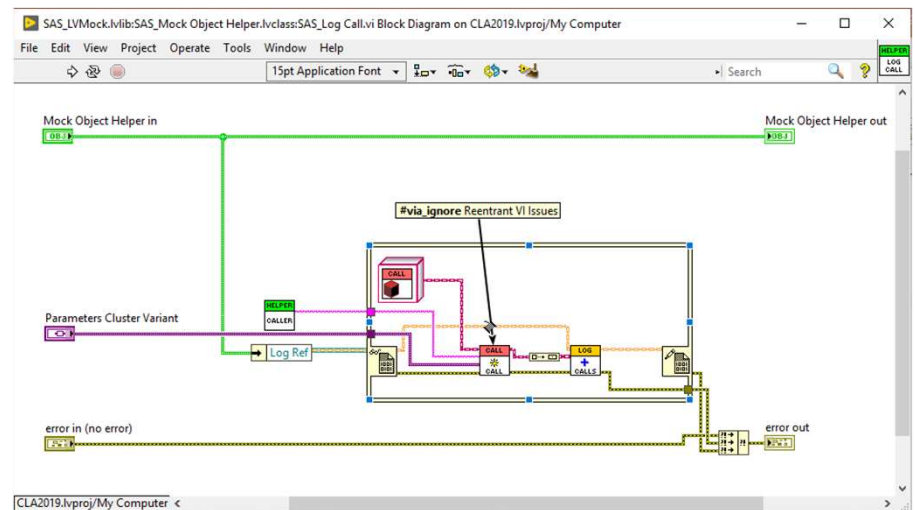
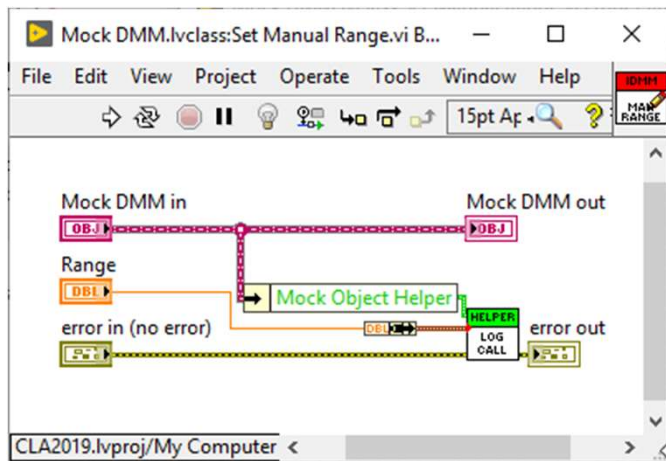
Mock Objects



Anatomy of a Mock Object



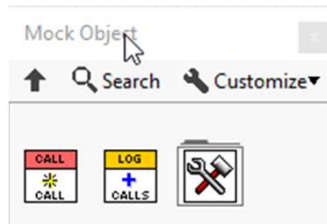
Logging Calls



Creating a Mock Object

- Demo at end

Building a desired call log



Context Help

SAS_Add Calls To Log.vi (4815)

Call Log in [11] LOG [3] Call Log out

Calls [10] CALLS [0] error out

error in (no error) [8]

Appends a set of calls to the call log.

SAS Mock Object Helper 1.1.0.2
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Icons: Home, Search, Help, Back, Forward

Context Help

SAS_Generate Call.vi (4815)

Parameters [7] [3] Call Out

Call Type [11] CALL

Method [10] CALL

Parameters Cluster [9] [0] error out

error in (no error) [8]

Numeric Tolerance (0) [6]

Parameters to ignore [4]

Creates a call object representing a method call.
The only required input is Method Name.

Uses

1. Method name with no other inputs indicates a method call with no input parameters.
2. Bundling the parameters together into a cluster and wiring it to the Parameters Cluster input enumerates the input parameters (labels) and their values. In this case float parameters will have the tolerance specified by Numeric Tolerance. Can be used in conjunction with other inputs.
3. Parameters to ignore identifies parameters whose values are ignored. Can be used in conjunction with other inputs.
4. A parameters array can be provided. This allows overriding the parameters class to specify custom verification behaviour. Can be used in conjunction with other inputs.

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Demos

