

THE LAZY .NET PROGRAMMER'S GUIDE TO UNIT TESTING

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\$WHOAMI



LESTER BOTELLO

- Team Lead @ nventive
- 20+ years developing software
- Cross platform (Uno Platform, .NET MAUI, Flutter, Kotlin)
- DevSecOps enthusiast
- Bit of a gamer

UNIT TESTS **IN A NUTSHELL**



UNIT TESTS IN A NUTSHELL

WHY TEST YOUR APP?

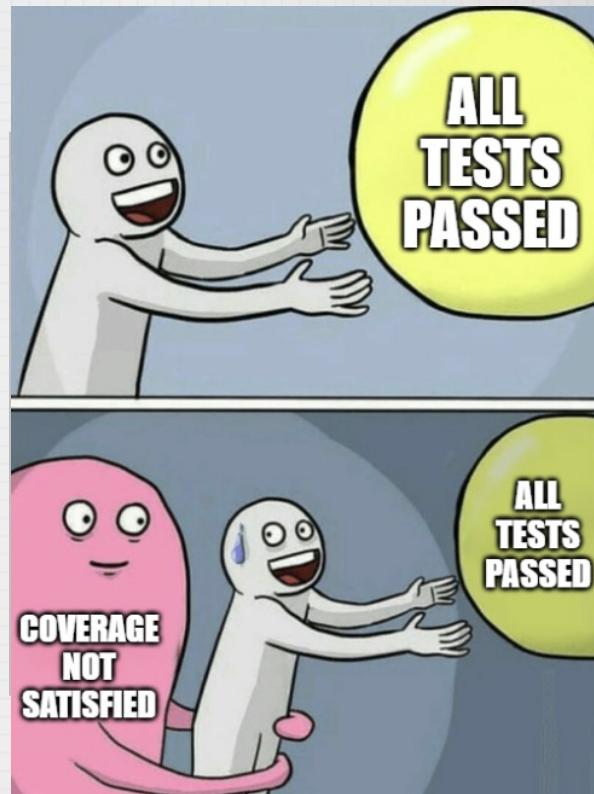
- Tests individual parts of the app's logic in isolation.
- Ensures correctness and helps shipping a quality product
- Reduces time spent performing functional testing
- Facilitates refactoring
- Can/should be made part of the CI/CD process
- Free code documentation! 😊



UNIT TESTS IN A NUTSHELL

CHALLENGES

- Getting 100% coverage could be difficult
 - Some functionality is difficult or impossible to unit test
 - Code coverage tools are not always accurate
- Writing unit tests take time
 - Some abstractions will require writing complete new fixtures to allow testing



IMPORTANT CONCEPTS



SYSTEM UNDER TEST (SUT)

The specific portion of the software that is being tested. A.K.A. the target of the test assertion



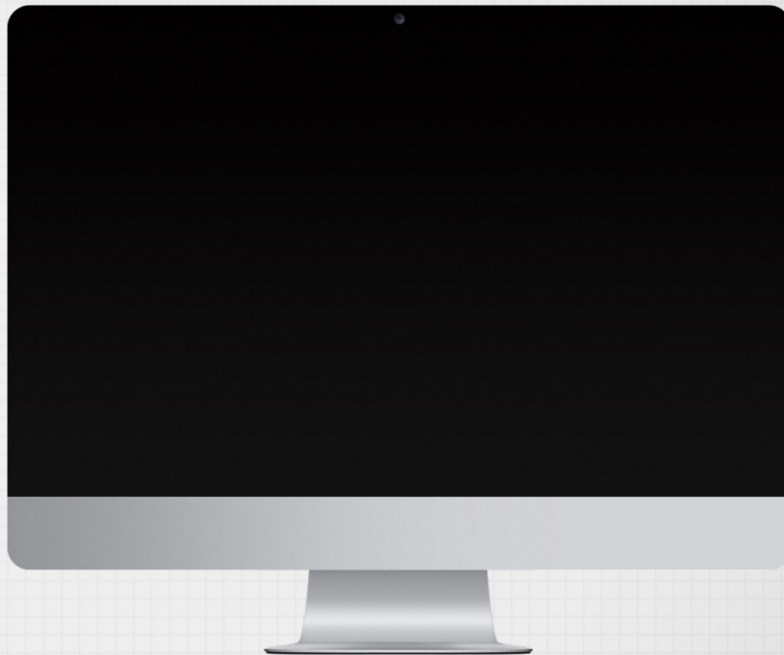
MOCK

An object that simulates the behaviour of a real object, but in a controlled way



FIXTURE

The fixed state or environment setup for a test or a group of tests.



TESTING WITH .NET



CHOOSE YOUR TESTING WEAPON

NUNIT

- Designed for verbosity
- Great as a test-as-documentation tool
- Mature and well-established
- Rich set of attributes for covering various test scenarios
- Powerful assertion library

XUNIT

- Designed for simplicity
- Strong .NET Core support
- Instance-per-test execution model
- Extremely extensible

MSTEST

- Shipped with Visual Studio on Windows
- As of V2 is open source.
- Includes [AssemblyInitialize] and [AssemblyCleanup] attributes

CHOOSE YOUR TESTING WEAPON

SOME ATTRIBUTES IN EACH TEST FRAMEWORK

DESCRIPTION	NUNIT	XUNIT	MSTEST
Marks a method as an individual test	[Test]	[Fact]	[TestMethod]
Marks a class as a group of unit tests	[TestFixture]	N/A	[TestClass]
Indicates test initialization in a method	[SetUp]	.ctor	[TestInitialize]
Indicates test cleanup in a method	[TearDown]	IDisposable.Dispose()	[TestCleanup]
Ignores a test case	[Ignore("reason")]	[Fact(Skip="reason")]	[Ignore]

Reference:



SOME OTHER TOOLS

MOCKING LIBRARIES

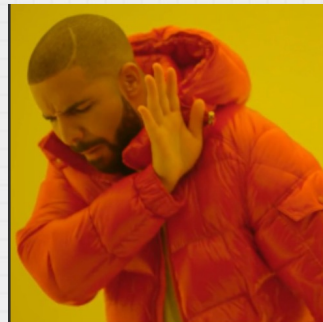
- Moq
- NSubstitute
- FakeItEasy
- JustMock

MISCELLANEOUS

- Fluent Assertions: Better test outcome evaluation
- AutoFixture: Test data generation and fixture customization.
- coverlet: Test coverage framework
- dotCover: Test coverage tool (commercial)

NOW LET'S

SEE SOME CODE



Slides



Code

RESOURCES AND FURTHER READING

- The Art of Unit Testing by Roy Osherove
- Unit Testing Principles, Practices, and Patterns by Vladimir Khorikov
- Ardalís Blog: (ardalis.com)
- .NET Foundation Blog (<https://dotnetfoundation.org/>)



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THANK YOU FOR YOUR TIME

