The Sector Specialists

Mocks

Prepared by: (Sebastian Kaczmarkiewicz)

Confidential

Agenda

CLIENT LOGO
(edit Slide
Master)

- Dependencies
- Testable code
- Mock vs Stub
- Mocks frameworks
- Moq
- Summary
- References
- Q & A

Dependencies

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Dependency is an object in your system that your code under test interacts with, and over which you have no control.

Typical examples:

- Filesystem
- DB connection
- any external system references

Testable code

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```
...
Dependency dep = new Dependency();
dep.GetData();
...
```

A need for layer of inderection to break dependency. (Mostly by using Interface)

- Receive an interface at the constructor level and save it in a field for later use.
- Receive an interface as a property get or set and save it in a field for later use.
- Receive an interface just before the call in the method under test using
  - a parameter to the method (parameter injection).
  - a factory class.
  - a local factory method.

Mock vs Stub
Mock

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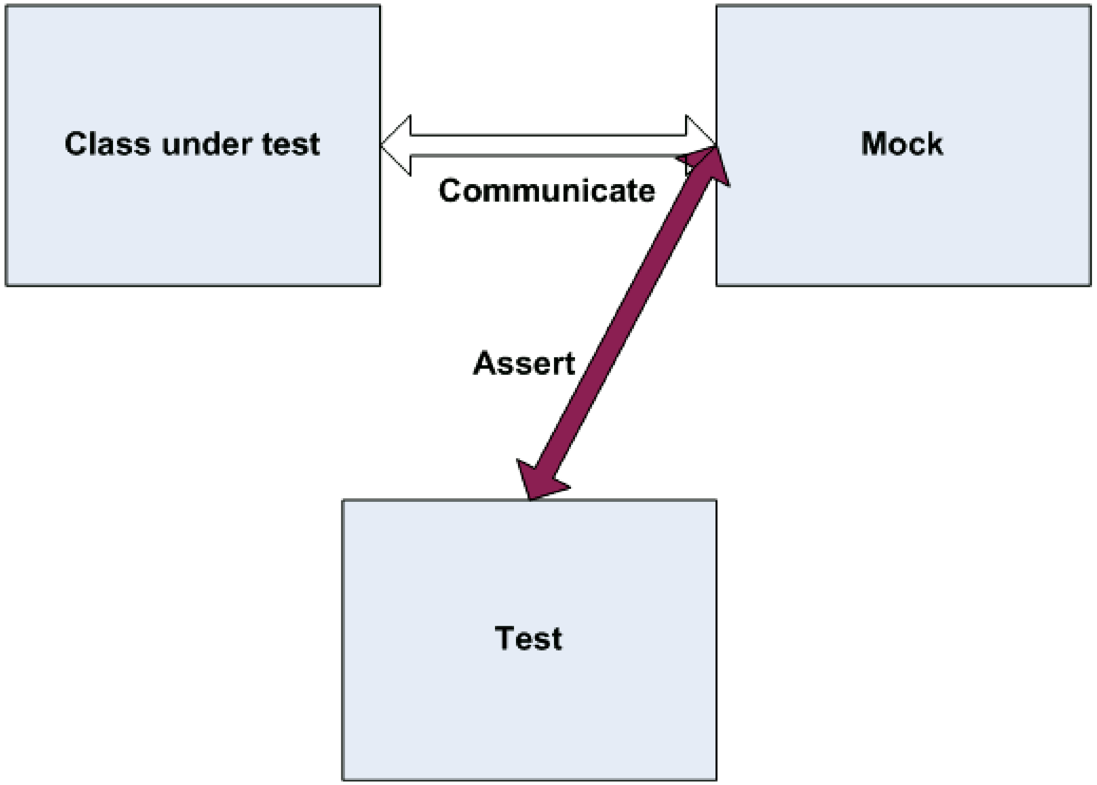
The class under test communicates with the mock object. The test uses the mock object to verify that the test passes.



Mock vs Stub
Stub

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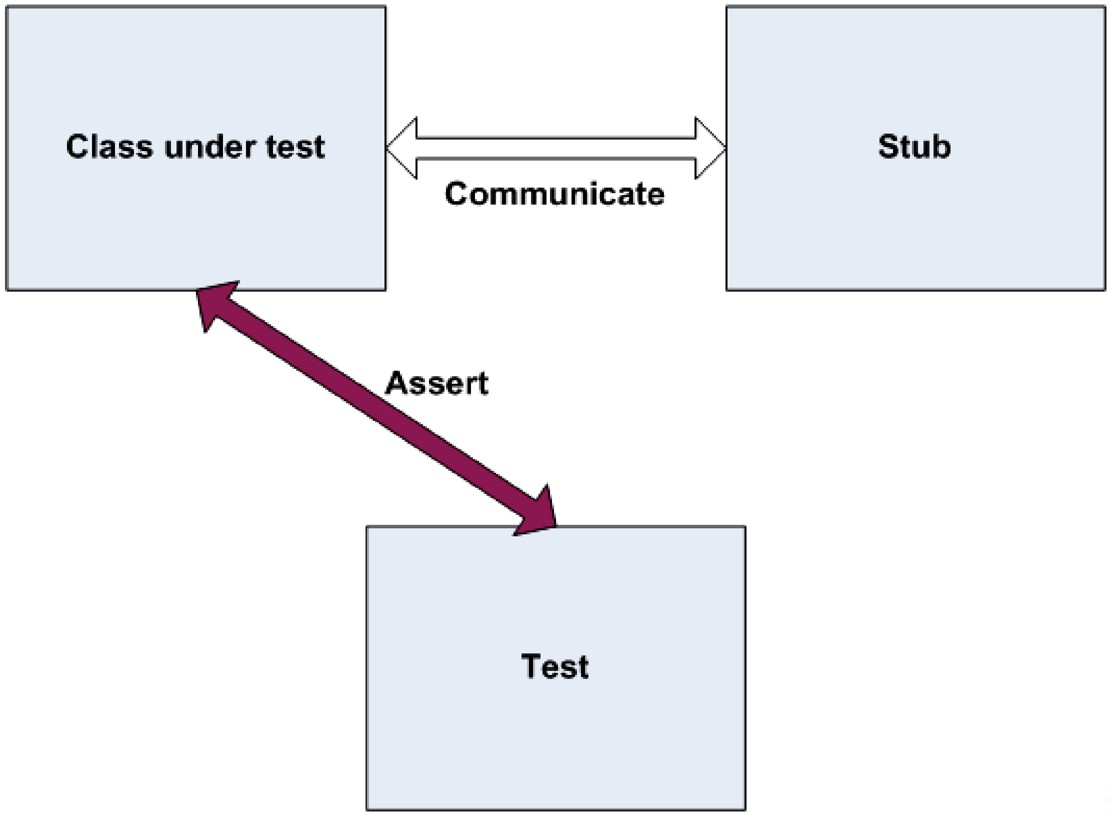
The assert is performed on the class under test. The stub aids in making sure the test runs smoothly.



Mock frameworks

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- Creating mocks and stubs easier
- Dynamic mocks
- Syntax: Record and replay, Arragnge-Act-Assert
- Parameter verification
- Multiple method calls verification

Frameworks:

- Microsoft Fakes – integrated with VS2012 Ultimate, no real mocks, (stub, mole, shim)
- Nmock – ported jMock, string for method name expectations
- TypeMock - compile-time mock checking, intercept the calls ant return own value
- Rihno Mocks – easy to use, free
- Moq – compile-time mock checking, free

Moq

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- Based on .NET 3.5 (utilize lambda expression)
- Free of charge
- Strong-typed
- Mock both interfaces and classes
- State-based testing and interaction testing
- Override expectations
- Intercept and raise events on mocks

Moq example

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```
var mock = new Mock<IFoo>();
mock.Setup(foo => foo.DoSomething("ping")).Returns(true);


// access invocation arguments when returning a value
mock.Setup(x => x.DoSomething(It.IsAny<string>())).Returns((string s) => s.ToLower());
// Multiple parameters overloads available


// access invocation arguments
mock.Setup(foo => foo.Execute(It.IsAny<string>())).Returns(true).Callback((string s) => calls.Add(s));


// Called at least once
mock.Verify(foo => foo.Execute("ping"), Times.AtLeastOnce());


// Raising an event on the mock
mock.Raise(m => m.FooEvent += null, new FooEventArgs(fooValue));
```

Summary

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- Stub and Mock
- Verification (parameter method calls)
- Creation of Mocks

References

- The Art of Unit Testing
- Moq

Example Q & A

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Q & A