

Different Ways of Testing Applications



Course Outline



Software development challenges

What is test-driven development?

Different ways of testing applications

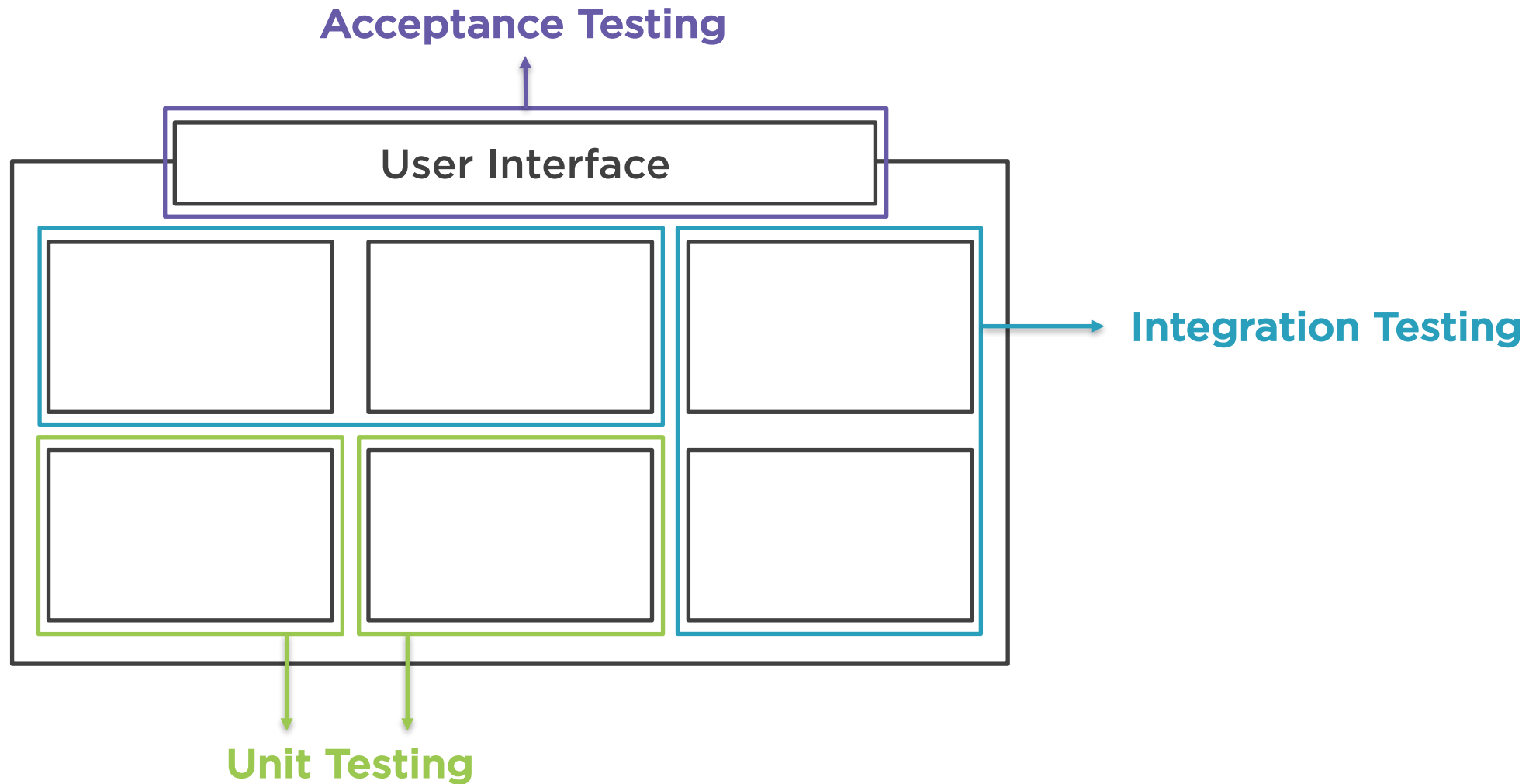
Test-driven development in action

Strategies/techniques for testing code

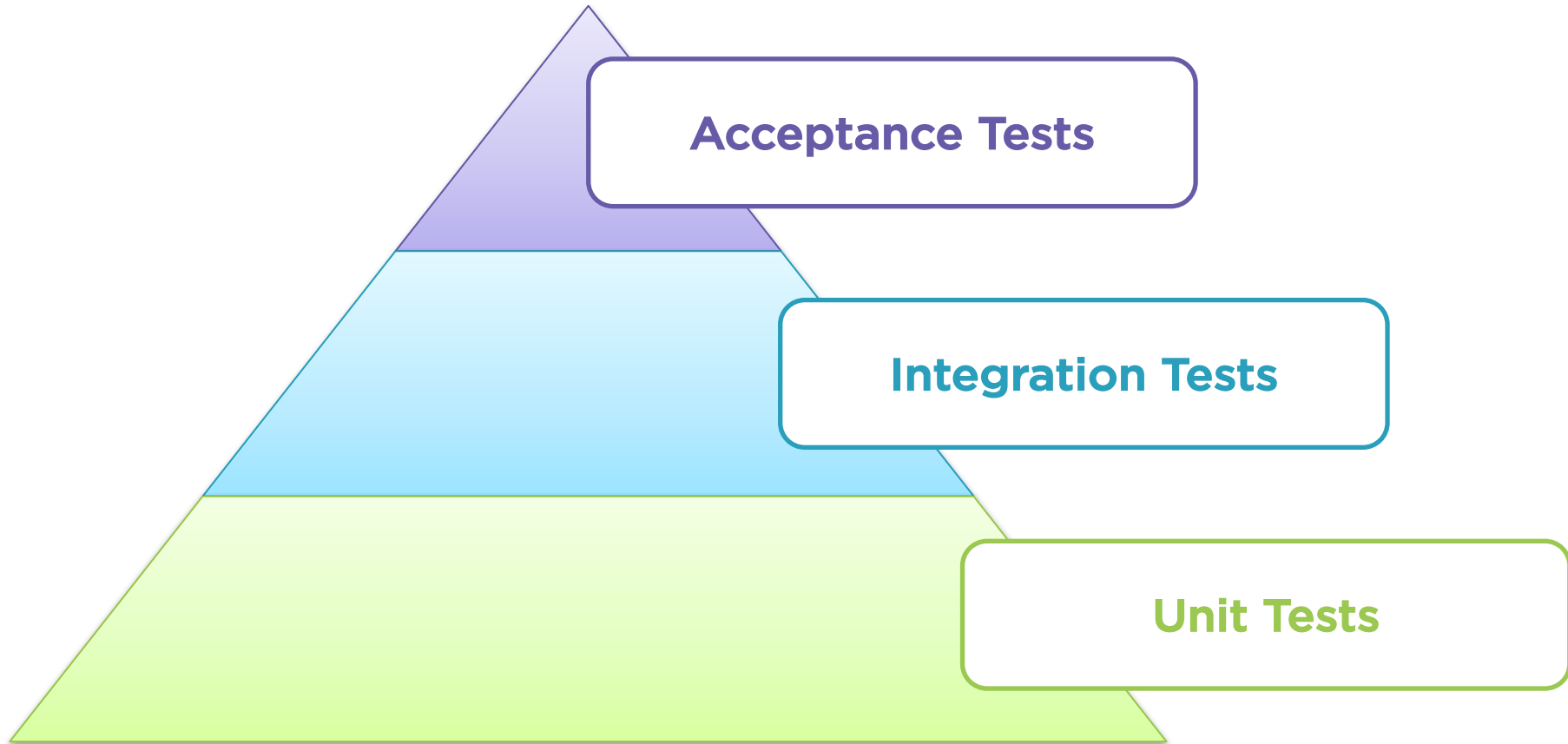
Test-driven development gotchas

Different Types of Testing

Software Testing



Balanced Testing

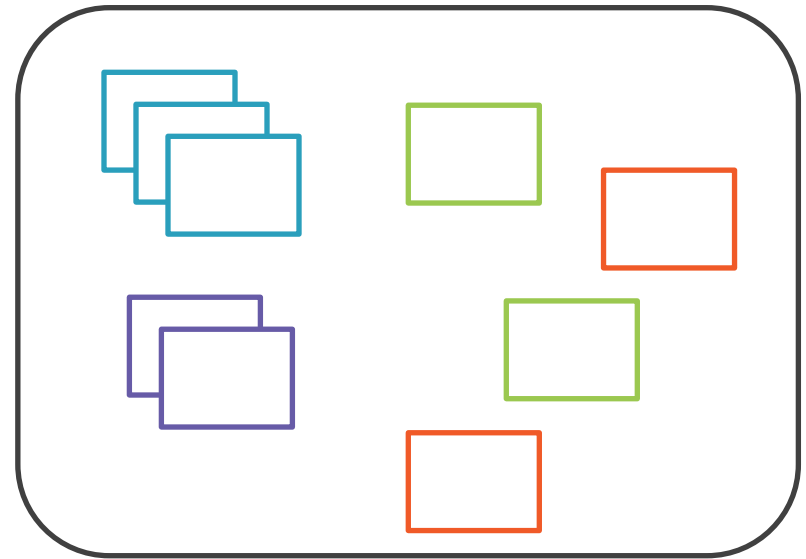


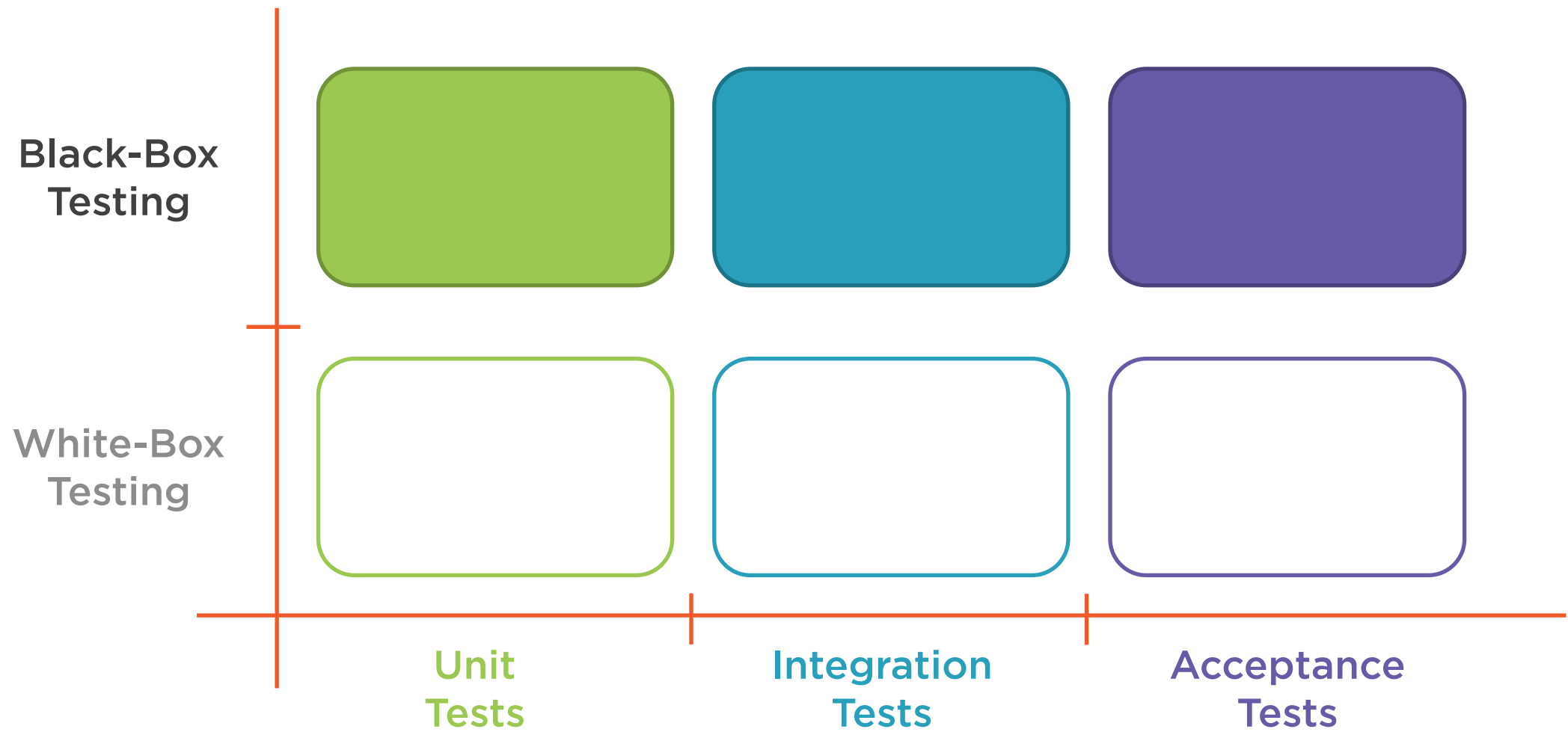
Testing Styles

Black Box Testing



White Box Testing





Many Other Types of Testing

Penetration Testing

Boundary Testing

Fuzz Testing

Smoke Testing

Stress Testing

A/B Testing

Testing Frameworks and Tools

xUnit Frameworks

SUnit (Smalltalk)



JUnit (Java)

NUnit RUnit CppUnit EUnit PerlUnit PHPUnit xUnit.net

Mocha AVA py.test minitest FsTest

https://en.wikipedia.org/wiki/List_of_unit_testing_frameworks

User Interface Frameworks



Selenium

Visual Studio Coded UI Test
(Microsoft)

Test Studio
(Telerik)



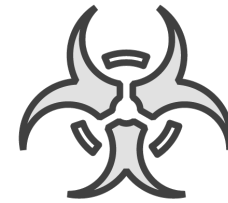
Watir

Silk Test
(Micro Focus)

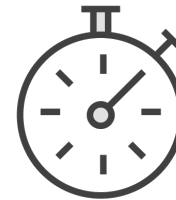
System Frameworks

Simian Army

[*https://github.com/Netflix/SimianArmy*](https://github.com/Netflix/SimianArmy)



Chaos Monkey



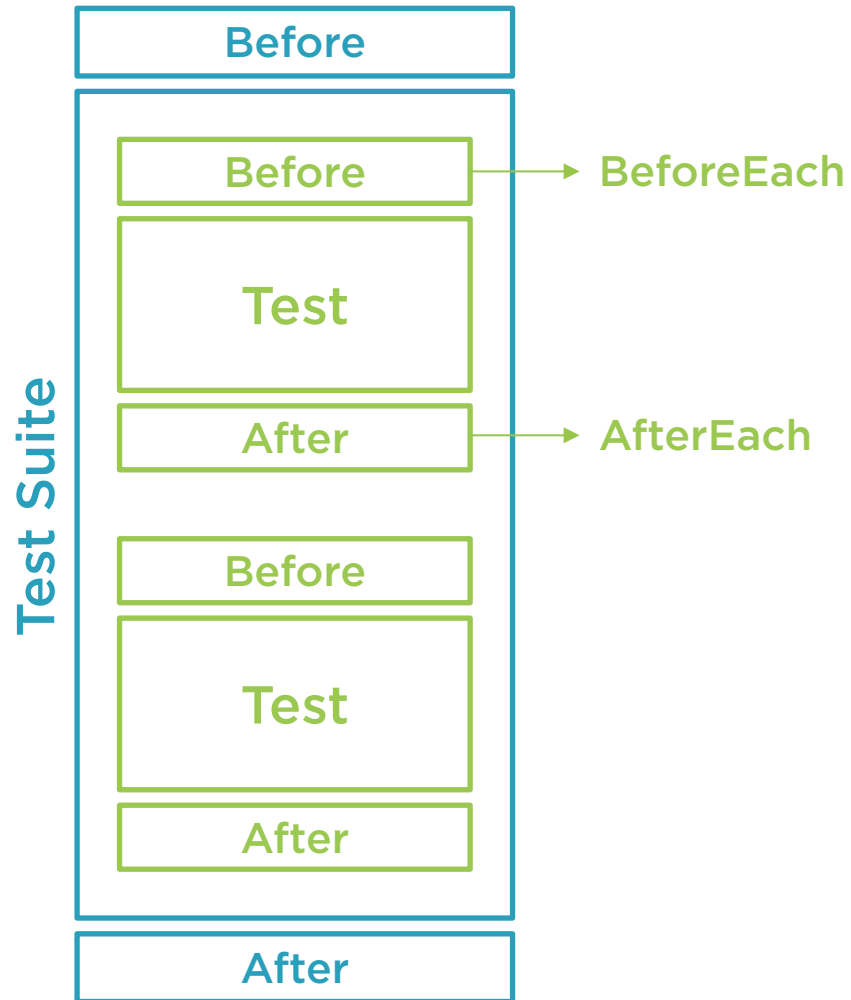
Latency Monkey



Janitor Monkey

Testing Concepts

Test Concepts



Test

Before Test

After Test

Test Suite

Before Suite

After Suite

Verification Concepts

Assert

```
Assert.IsTrue(someBoolean);  
Assert.IsFalse(someBoolean);
```

```
Assert.IsNull(someValue);
```

```
Assert.AreEqual(3, someValue);
```

```
Assert.Contains(obj, someCollection);
```

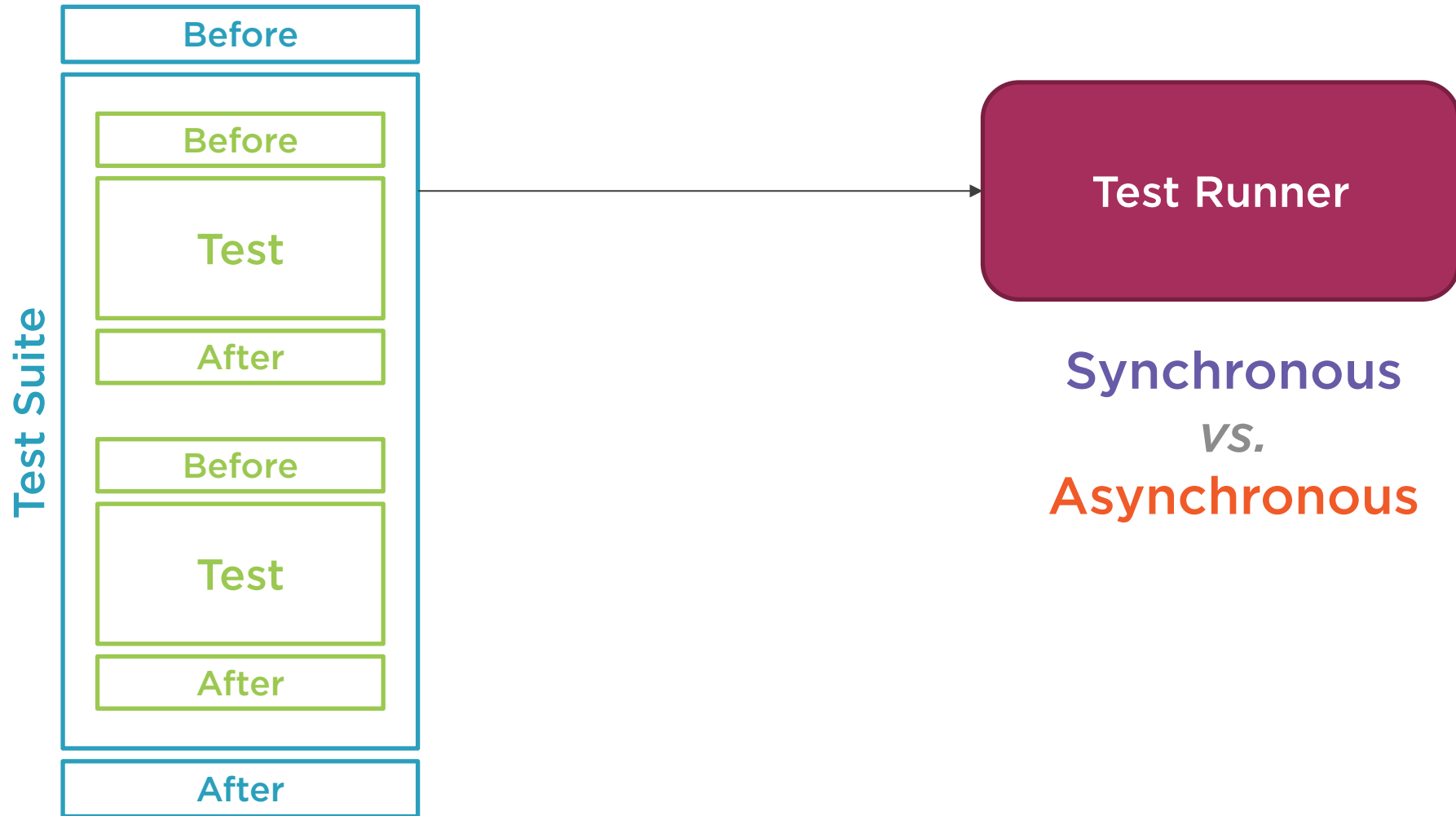
```
Assert.StartsWith("foo", someString);
```

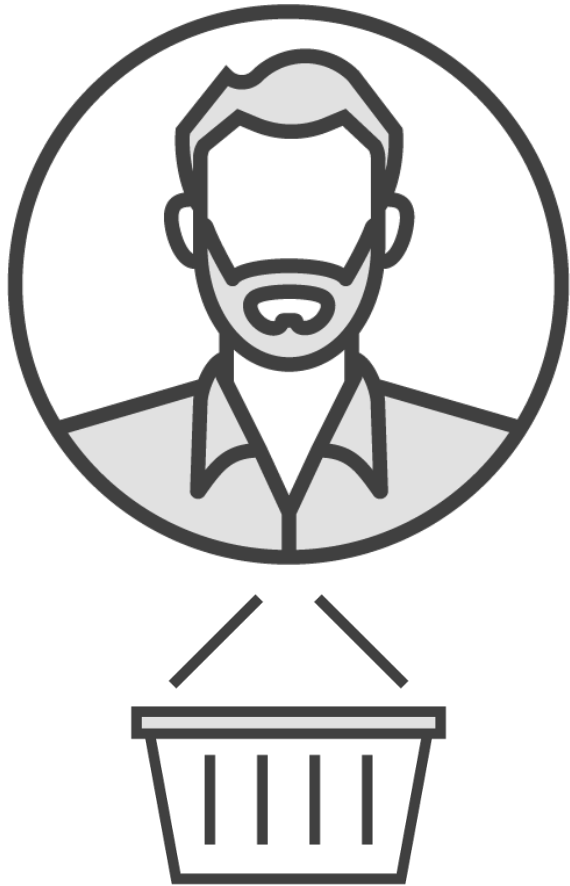
```
someBoolean.Should().BeTrue();
```

```
someList.Should().HaveCount(4);
```

```
someString.Should()  
    .StartWith("Hello")  
    .And  
    .EndWith("World");
```

Test Execution





User Item Suite

Add Item to Cart

Remove Item From Cart

Change Item Quantity

```
myCart.Add(someItem);
```

```
Assert(myCart.Items.Length == 1);
```

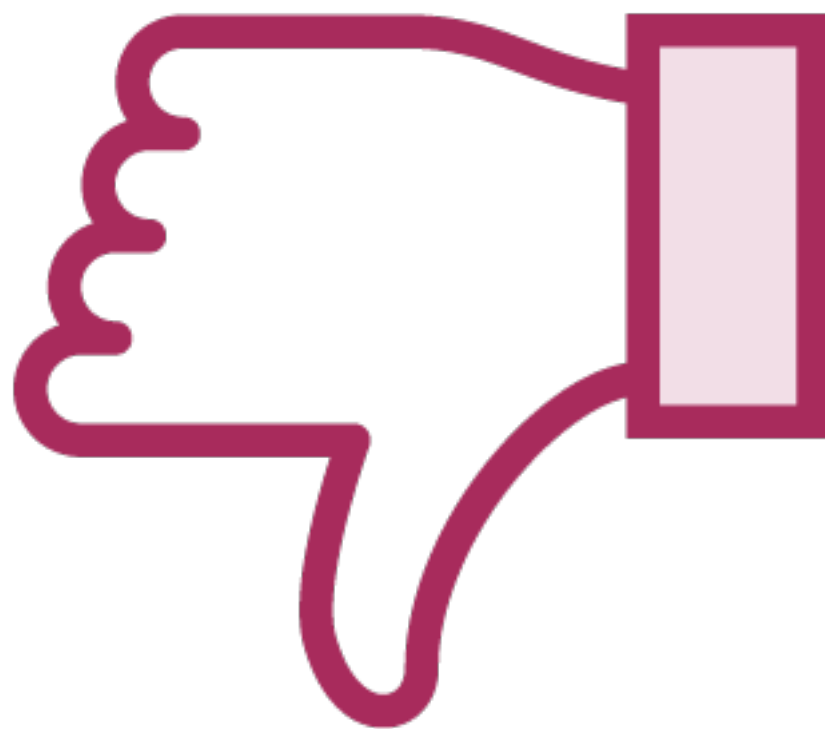
```
myCart.Remove(someItem);
```

```
Assert(myCart.Items.Length == 0);
```

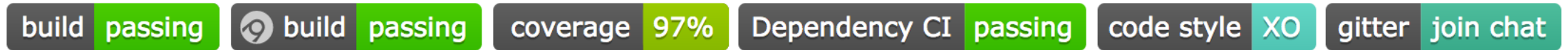
Cart Management Suite

Reorder Items In Cart

Insights from Testing



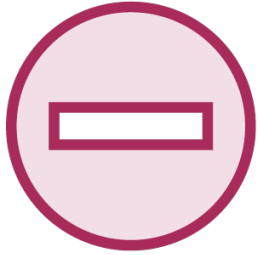
<https://github.com/avajs/ava>



How much of my code is reached by tests?

Are all my dependencies working?

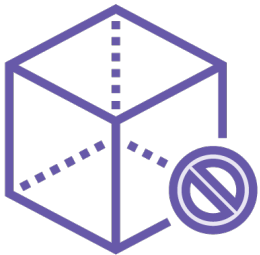
Is my code written well?



Did any previously working features break?



How does the new code perform under load?



Were there breaking changes that can stop partners' code from working?

Summary



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What is Test-Driven Development?

Different ways of testing applications

Test-Driven Development in action

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Test-Driven Development gotchas