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The Art of Unit Testing DotNetNuke Extensions

Session Code: NN04

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<http://dnnGallery.net>

<http://r2idnn.com>

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Questions Answered

- What is Unit Testing?
- Why do I care?
- What does it look like?
- How can I unit test in DNN?
- What tools do I use?
- Can I see some codez please?

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Why are we here?

- To write better software
- Cheaper, Better, Faster
- Longer term / holistic view

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Unit Testing Benefits [1]

- Facilitates Change
- Simplifies integration
- Provides Documentation
- Design

[1] http://en.wikipedia.org/wiki/Unit_testing

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What do unit tests test?

- Smallest piece of testable software^[3]
- Logical and/or complex code
- Core business logic
- High traffic code / mission critical
- Or, in TDD: everything!

[3] <http://msdn.microsoft.com/en-us/library/aa292197.aspx>

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Simple Code

```
namespace SimpleLibrary
{
    using System;

    public class Fibonacci
    {
        public static int Calculate(int x)
        {
            if (x < 0)
                throw new ArgumentOutOfRangeException("x",
                    "Must be greater than or equal to zero.");

            return (x > 1) ? Calculate(x - 1) + Calculate(x - 2) : x;
        }
    }
}
```

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Simple Test

```
namespace SimpleLibrary.Tests
{
    using ...

    public class FibonacciTest
    {
        [Test]
        public void Fibonacci_NumberGreaterThanOne_ReturnsExpectedResult()
        {
            int result = Fibonacci.Calculate(12);
            Assert.AreEqual(144, result);
        }
    }
}
```

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Unit Test Characteristics

Unit tests should be: [2]

- Automated & Repeatable
- Easy to implement
- Once written, it remains for future use
- Anyone should be able to run it
- It should run at the push of a button
- Run quickly



[2] The Art of Unit Testing, Roy Osherove, Manning Publications 2009

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Testing Frameworks

- Unit Testing “Glue”
 - (Addresses the Automated & Repeatable)
- csUnit, MbUnit, MSTest, Nunit, xUnit
- Pick one and go

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MUnit

- Class and Method Attributes
- Assertions

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Gallio

- Test Runner
 - Also displays results
- Visual Studio Integration
- ReSharper Integration

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What is testable code?

- Is all code testable?
- Single Responsibility/Separation of Concerns
- Dealing with dependencies

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Seams

- “...place where you can alter behavior of your program without editing it in that place” - (Feathers, 2005)
- Plug-in / Injection

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Seam / Constructor Injection

```
public class Fibonacci
{
    private readonly IGenericDependency genericDependency;

    public Fibonacci()
    {
        genericDependency = new GenericDependency();
    }

    public Fibonacci(IGenericDependency dependency)
    {
        genericDependency = dependency;
    }

    public int Calculate(int x) ...
}
```

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Seam / Property Injection

```
public class Fibonacci
{
    public IGenericDependency Dependency { get; set; }

    public Fibonacci()
    {
        Dependency = new GenericDependency();
    }

    public int Calculate(int x) ...
}
```

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Two Consumers

- Production Code
- Tests
- Seams help cater to the test

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Fakes!

- Stubs
 - Return results
 - Throw exceptions
- Mocks
 - Verify behavior

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Isolation Frameworks

- Help us create fakes
- And verify expectations
- Moq, Nmock, Rhino Mocks, Typemock Isolator

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My Setup

- MBUnit - Unit testing framework
- MOQ - Isolation framework
- Gallio - Test runner
 - Integrated into Visual Studio / Resharper

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Testable Code & ASP.NET

- ASP.NET Frameworks
 - ASP.NET MVC
 - WebForms
- DotNetNuke (based on WebForms)
 - WebFormsMVP

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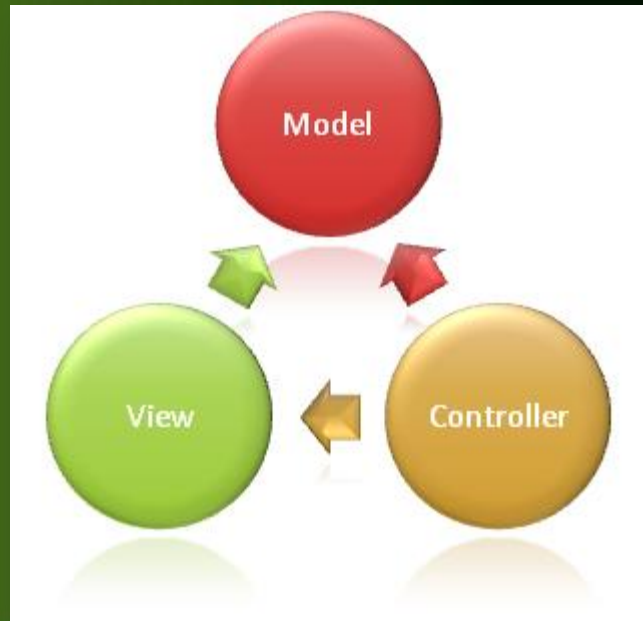
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ASP.NET MVC

- Test friendly? Yep.
- Naturally separates business logic



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Web Forms

- Is web forms less testable?
 - Probably safe to say yes.
- Doesn't explicitly enforce structure

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WebFormsMVP

- Separation of concerns
- Increased Testability
- “Cleaner Architecture”
- Retains basic characteristics of WebForms

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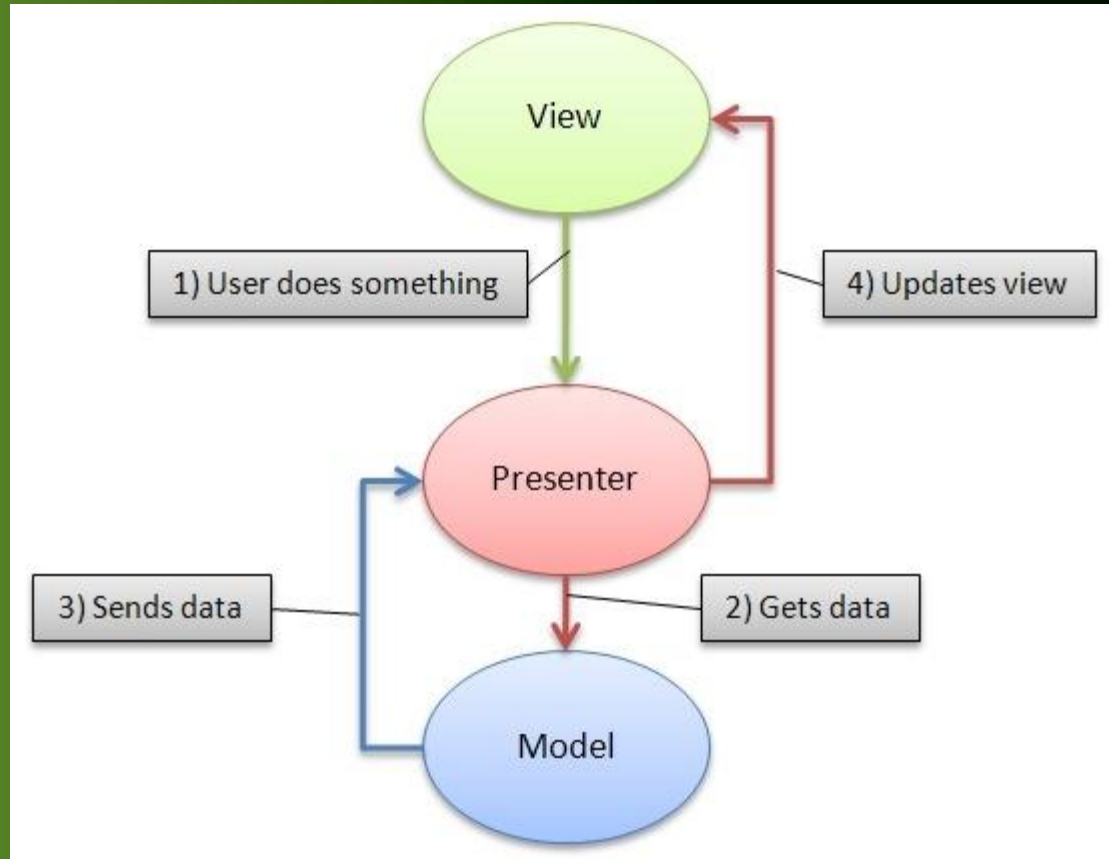
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WebFormsMVP



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WebFormsMVP Characteristics

- Requires the view to give control to Presenter
- The view and presenter pass around a model
- Interfaces used for testability

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WebFormsMVP in DNN

- Introduced in Version 5.3
- WebFormsMVP.dll bundled
- Thin layer on top to provide context

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WebFormsMVP in DNN

- View
 - ModuleView
 - IModuleView
- Model
- Presenter
 - ModulePresenter base class

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The View

```
[PresenterBinding(typeof(UserListPresenter))]  
public partial class UserList :  
    ModuleView<UserListModel>, IUserList  
{  
  
}
```

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The View Interface

```
public interface IViewUserList :  
    IModuleView<UserListModel>  
{  
  
}
```

// place where we wire up events

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The Model

```
public class UserListModel()  
{  
    Public List<UserInfo> Users {get;set;}  
}
```

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The Presenter

```
public class UserListPresenter :  
    ModulePresenter<IViewUserList,  
    UserListModel>
```

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Real World DNN Tests

- DotNetNuke Core Tests
- Vocabulary & Messaging Modules
- DotNetNuke_Community_UnitTests.sln

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BeerCollectionMVP

- C#
- WebFormsMVP
- DotNetNuke Module
- Web Application Project
- Visual Studio 2010
- MOQ & MbUnit
- <http://github.com/irobinson>

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Key Take-Aways

- Unit testing increases confidence in your code. Code is more changeable.
- Therefore Unit Testing is a desirable practice
- WebFormsMVP allows us to better conduct unit testing in DotNetNuke

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Recommended Resources

- Unit Testing
 - The Art of Unit Testing by Roy Oshero
 - Working with Legacy Code by Michael Feathers
- WebFormsMVP
 - Podcast: Hanselminutes Episode 202
 - <http://webformsmvp.com>

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Evaluation form

Vul je evaluatieformulier in en maak kans op een van de prachtige prijzen!!

Fill out your evaluation form and win one of the great prizes!!

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