# Asserts and Testing Lifecycle

http://www.pluralsight.com/

## Outline

- Initialization and Cleanup of Unit Tests
- Assertions
- Working with TestContext
- Data Driven Unit Tests

# Initialization and CleanUp of Unit Tests

- **Configure a resource shared among your tests**
  - Database connection
  - Shared object
  - A log file

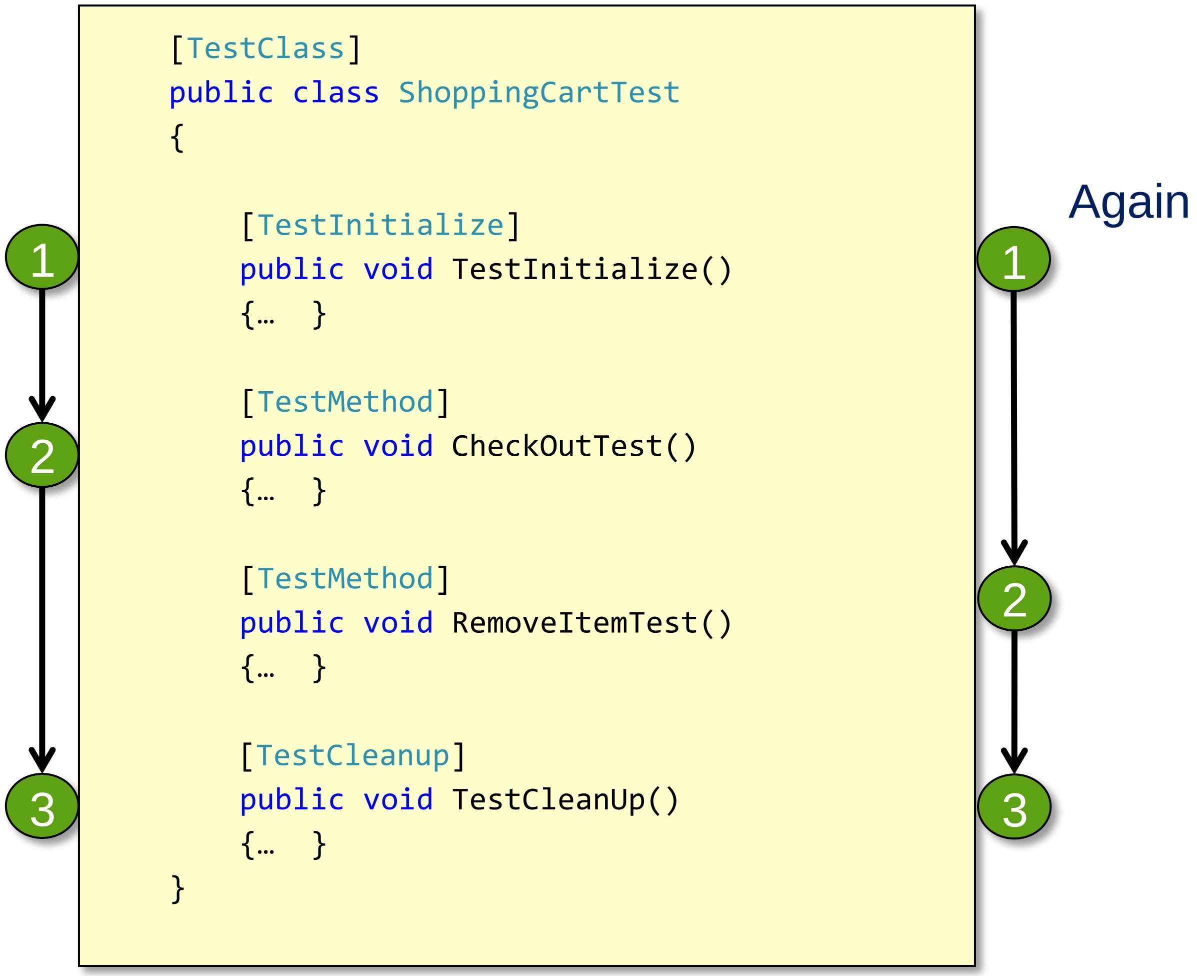
Initialize

&

CleanUp

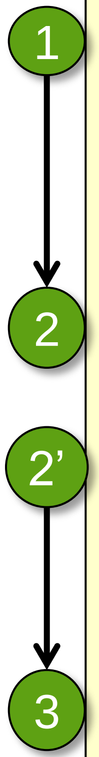
- Test Initialize and CleanUp
- Class Initialize and CleanUp
- Assembly Initialize and CleanUp

# TestInitialize and TestCleanUp



```
[TestClass]
public class ShoppingCartTest
{

    [TestInitialize]
    public void TestInitialize()
    {…  }

    [TestMethod]
    public void CheckOutTest()
    {…  }

    [TestMethod]
    public void RemoveItemTest()
    {…  }

    [TestCleanup]
    public void TestCleanUp()
    {…  }
}
```

# ClassInitialize and CleanUp



```
[TestClass]
public class ShoppingCartTest
{
    [ClassInitialize]
    public static void
     ClassInitialize(TestContext context)
    { …  }

    [TestMethod]
    public void Class_AddToCartTest()
    { …  }

    [TestMethod]
    public void Class_RemovedFromCartTest()
    { …  }

    [ClassCleanup]
    public static void ClassCleanUp()
    { …  }
}
```

# AssemblyInitialize and CleanUp

```
  [TestClass]
  public class ShoppingCartTest
  {

      [AssemblyInitialize]
1     public static void
                AssemblyInitialize
                (TestContext context)
      {…}

      [TestMethod]
2     public void CountAfterAddTest()
      {…}

      [TestMethod]
          public void
3               CountAfterRemoveTest()
      {…}

      [AssemblyCleanup]
5     public static void AssemblyCleanUp()
      {…}
  }
```

```
                          4
[TestClass]
public class ShoppingCartTest2
{
    [TestMethodAttribute]
    public void TestCountAfterAdd()
    {…}
}
```

# Asserting the facts

**What is an assertion?**

**If** (what is **expected** per requirement == **actual** value from program)

**Then** test pass

**Else** test fail

**Assert**

- Compare two input values
- Many methods with several overloads

**CollectionAssert**

- Compare two collections
- Check items in collection

**StringAssert**

- Compare strings

# TestContext

- **Set by the runtime**
- **Provides information about the unit test run environment**
    - Path to deployment directory
    - Test name

When testing Web Services
stores the URL of the Web Service

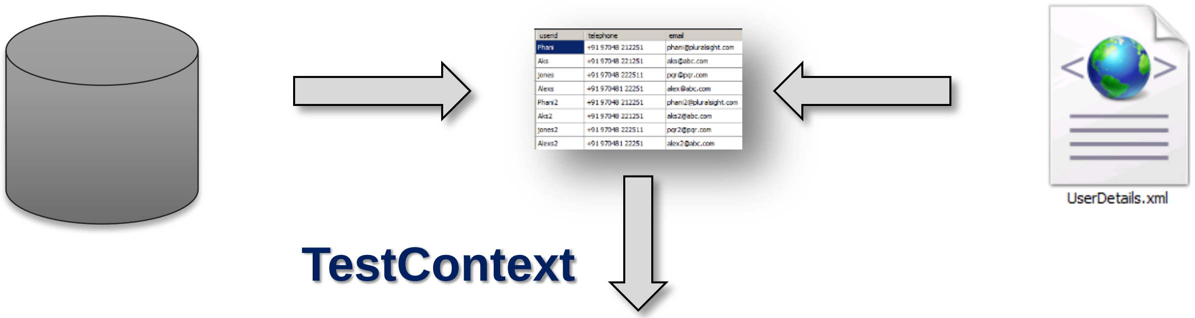
When testing ASP.NET apps
provides access to the Page Object

When using Data Driven tests
provides access to the data source
(data-rows)

# Driving Unit Tests with Data

```
// arrange
string userId = "userID";
string telephone = "123-456-789";
string email = "phani@pluralsight.com";

// act- API being tested
bool result = user.Add(userId, telephone, email);

// assert
Assert.IsTrue(result, "User could not be created!");
```

# Driving Unit Tests with Data



| userid | telephone | email |
|---|---|---|
| Phani | +91 97048 212251 | phani@pluralsight.com |
| Aks | +91 97048 221251 | aks@abc.com |
| Jones | +91 97048 222511 | pqr@pqr.com |
| Alexs | +91 970481 22251 | alex@abc.com |
| Phani2 | +91 97048 212251 | phani2@pluralsight.com |
| Aks2 | +91 97048 221251 | aks2@abc.com |
| Jones2 | +91 97048 222511 | pqr2@pqr.com |
| Alexs2 | +91 970481 22251 | alex2@abc.com |

```csharp
// arrange
string userId = Convert.ToString(TestContext.DataRow["userid"]);
string telephone = Convert.ToString(TestContext.DataRow["telephone"]);
string email = Convert.ToString(TestContext.DataRow["email"]);

// act
bool result = user.Add(userId, telephone, email);

// assert
Assert.IsTrue(result, "User could not be created!");
```

pluralsight
see what you can learn

# Summary

- **Initialization and cleanup of unit tests**
  - Test Initialize and cleanup
  - Class Initialize and cleanup
  - Assembly Initialize and cleanup
- **Assertions**
  - Assert, CollectionAssert, StringAssert
- **TestContext**
  - Run-time information
- **Data driven unit tests**