2.14 Using Stubs



This section will guide you to:

* Create a Windows Class Library Project for adding test fixture to show stubs and run all the tests in test explorer

**Development Environment**

* Windows 10
* Visual Studio 2019 Community Version

This guide has ten subsections, namely:

2.14.1 Creating a Windows class library project for creating target classes to test

2.14.2 Adding a class for testing purposes

2.14.3 Creating a Windows class library project for running NUnit tests

2.14.4 Setting up NUnit as part of a Visual Studio project

2.14.5 Setting up NUnit3TestAdapter as part of a Visual Studio project

2.14.6 Setting up Moq as part of a Visual Studio project

2.14.7 Adding Test Fixture for showing Stubs

2.14.8 Building the project

2.14.9 Running all the tests in Test Explorer

2.14.10 Pushing the code to your GitHub repositories

**Step 2.14.1:** Creating a Windows class library project for creating target classes to test

* Open Visual Studio.
* From the top menu, click **File->New->Project**
* Select **(Class Library (.NET Framework)** from the displayed project types
* Click **Next**
* Name the **Project Name** as Phase4Section2.5 and click **Create**

**Step 2.14.2:** Adding a class for testing purposes

* From the **Solution Explorer,** right click **Phase4Section2.5** and click **Add->Class**
* NAme the name as Calculator.cs and click **Add**
* Add the following code:

**using** System;

**using** System.Collections.Generic;

**using** System.Linq;

**using** System.Text;

**using** System.Threading.Tasks;

**namespace** Phase4Section2.\_5

{

**public** **interface** ICalculator

{

**int** add(**int** x, **int** y);

**int** addStrings(**string** x, **string** y);

}

**public** **class** Calculator:ICalculator

{

**public** **int** add(**int** x, **int** y)

{

**return** x + y;

}

**public** **int** addStrings(**string** x, **string** y)

{

**int** a = 0, b = 0;

Int32.TryParse(x, **out** a);

Int32.TryParse(y, **out** b);

**if** (a == 0 || b == 0)

**throw** **new** InvalidOperationException("String values are not valid integers");

**return** a + b;

}

}

**public** **class** FakeCalculator : ICalculator

{

**public** **int** add(**int** x, **int** y)

{

**return** 10;

}

**public** **int** addStrings(**string** x, **string** y)

{

**return** 10;

}

}

}

**Step 2.14.3:** Creating another Windows class library project for running NUnit tests

* In **Solution Explorer,** right click the Solution item and click **Add->New Project**
* Select **(Class Library (.NET Framework)** from the displayed project types
* Click **Next**
* Name the **Project Name** as Phase4Section2.5.Tests and click **Create**

**Step 2.14.4:** Setting up NUnit as part of the project

* From the **Solution Explorer,** right click **Phase4Section2.5.Tests** and click **Manage Nuget Packages**
* Click on **Browse** tab and search for NUnit
* Click on the NUnit item and click **Install**

**Step 2.14.5:** Setting up NUnit3TestAdapter as part of the project

* From the **Solution Explorer,** right click on **Phase4Section2.3** and click **Manage Nuget Packages**
* Click on **Browse** tab and search for NUnit3TestAdapter
* Click on the NUnit3TestAdapter item and click **Install**

**Step 2.14.6:** Setting up Moq as part of the project

* From the **Solution Explorer** right click **Phase4Section2.5.Tests** and click **Manage Nuget Packages**
* Click on **Browse** tab and search for Moq
* Click on the Moq item and click **Install**

**Step 2.14.7:** Adding Test Fixture to show Stubs

* From the **Solution Explorer,** expand **Phase4Section2.5.Tests** and double click **Class1.cs**
* Add the following code:

**using** System;

**using** System.Collections.Generic;

**using** System.IO;

**using** System.Linq;

**using** System.Text;

**using** System.Threading.Tasks;

**using** Moq;

**using** NUnit.Framework;

**namespace** Phase4Section2.\_5.Tests

{

[TestFixture]

**public** **class** Class1

{

[Test]

**public** **void** Stub()

{

**int** x = 9, y = 19;

Mock<ICalculator> mockCalc = **new** Mock<ICalculator>();

mockCalc

.Setup(c => c.add(It.IsAny<Int32>(), It.IsAny<Int32>()))

.Returns(x + y);

ICalculator calc = mockCalc.Object;

Assert.That(calc.add(x, y), Is.EqualTo(x + y));

}

}

}

**Step 2.14.8:** Building the project

* From the top menu, choose **Build->Build Solution**
* If any compile errors are shown, fix them as required

**Step 2.14.9:** Running all the tests in Test Explorer

* From the top menu, choose **Test->Windows->Test Explorer**
* In Test Explorer, click on **Run All**
* This will execute the tests and show the results in Test Explorer

**Step 2.14.10:** Pushing the code to your GitHub repositories

Open your command prompt and navigate to the folder where you have created your files.

cd <folder path>

Initialize your repository using the following command:

git init

Add all the files to your git repository using the following command:

git add .

Commit the changes using the following command:

git commit -m “Changes have been committed.”

Push the files to the folder you created initially using the following command:

git push -u origin master