

Enhancing your Application Development Environment Through Effective Unit Testing



Three days; Instructor Led Course; Scenario Based Learning

Introduction

This three-day, instructor-led course provides participants with a firm understanding of how to correctly implement unit testing in the development environment. Participants will start by learning the fundamentals and quickly move on to more advanced topics. By the completion of the course, participants will not only be able to write unit tests, but they will write those tests according to industry-prescribed best practices. The activity-based focus of the course will allow the participants to learn by performing real-world unit testing scenarios.

Audience

This course is intended for:

- Application Developers who have no prior experience with unit testing
- Application Developers who have some experience with unit testing and would like to increase their skill level
- Information Technology managers who need a better understanding of the unit testing process

At course completion, participants will be able to:

- Understand how unit testing can improve the development process
- Integrate unit testing into project planning
- Identify different unit testing frameworks
- Choose the best unit testing framework for the organization

- Identify the attributes that make up a good unit test
- Follow basic unit testing best practices
- Identify the different types of unit tests
- Understand the basic unit testing patterns
- Use Test Driven Development/Design
- Install and configure a unit testing framework
- Run unit test
- Debug unit test
- Identify what to test (and what not to test)
- Use advanced features in unit testing frameworks
- Use additional testing tools/add-in
- Determine your unit test's code coverage
- Effectively test legacy code
- Write tests that are easy to maintain
- Effectively test code that access external dependencies
- Test code that accesses a database
- Architect solutions so that they are easy to test
- Use mocks and stubs in tests
- Identify various mocking frameworks
- Choose the best mocking framework for the organization
- Integrate tests into an automated build
- Integrate tests into the production environment
- Write unit tests for mobile applications
- Write unit tests for Window Workflows (WF)
- Extend and customize a unit testing framework

Prerequisites

Before attending this course, participants must:

- Have used Visual Studio (any version)
- Understand the basic foundations of .NET
- Understand basic C# or VB.NET code

Course Outline

Module 1: Unit Testing Fundamentals

This module introduces participants to the basic unit testing concepts and will provide a base for the rest of the session.

Lessons

- Introduction to unit testing theory
- Introduction to unit testing frameworks
- How to determine what unit testing framework is right for your organization
- How unit testing will impact your project planning

Scenarios:

None

Module 2: Getting Started Writing Unit Tests

This module teaches participants how to begin writing basic unit tests.

Lessons

- How to write a good unit test
- How to structure your unit tests

Scenarios:

- Install and configure a unit testing framework
- Write your first test
- Run your tests and capture the results
- Debug your test code
- Identify what to test and what not to test

Module 3: Using Advanced Unit Testing Framework Features

This module teaches participants how to use several, advanced unit testing features. It will also introduce participants to several unit testing add-ins and utilities.

Lessons

- Available advanced features
- Choosing the best testing add-ins and utilities

Scenarios:

- Use advanced features to create better unit tests
- Data drive a unit test
- Install and configure unit testing add-ins and utilities

Module 4: Unit Testing in the Real World

This module teaches participants how to write unit tests for real world code that may not be well structured for testing.

Lessons

- How to deal with legacy code
- How to structure your code to make it more testable
- How to ensure your tests will be easy to maintain

Scenarios:

- Write unit tests for code that has external dependencies
- Write unit tests for code that doesn't return a value
- Refactor untestable code into testable code

Module 5: Using Mocking Frameworks

This module teaches participants the fundamentals of mocking frameworks. The participants will learn when to use mock objects and the basic syntax for creating and using these objects in your unit tests.

Lessons

- Introduction to mocking frameworks
- How to determine what mocking framework is right for your organization

Scenarios:

- Install and configure a mocking framework
- Write unit tests using a mocking framework

Module 6: Taking Unit Testing to the Next Level

This module teaches participants advanced unit testing topics that allows them to move beyond the basics of writing and running tests.

Lessons

- Other testing challenges that can arise
- Other ways to leverage unit testing assets
- Additional methods to raise quality

Scenarios:

- Extend an existing unit testing framework
- Write unit tests for a mobile application
- Write unit tests for Windows Workflows
- Run unit tests during your automated build
- Run your unit tests in production
- Perform code analysis on your application