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### **Course 6368A: Programming with the Microsoft .NET Framework using Microsoft Visual Studio 2008**

*Course Length: 5 days*

#### **About this Course**

This five-day instructor-led course provides students with an introduction to developing n-tier applications for the Microsoft .NET 3.5 environment using Microsoft Visual Studio 2008 SP1. Both this course and the 6367A course prepare the student for the 646x series of Technology Specialist courses.

#### **Audience Profile**

This course is intended for software development professionals that have a minimum of six months experience developing applications in an object-oriented environment using C#, Visual Basic, or Java (or delegates should have completed course 6367).

Delegates attending this course are planning to use the .NET Framework for future business application development. This course is intended for developers who wish to expand their understanding of application development in the .NET Framework. It provides an initial foundation in .NET that can be built upon with the more advanced .NET training. Programmers attending this course should ensure that they are familiar with the Visual Studio IDE.

Object-oriented programming and the .NET Framework are the basic building blocks that all professional developers need to acquire before moving on to the more advanced courses and TS Certification.

#### **At Course Completion**

After completing this course, students will be able to:

- Manage a software development process
- Create classes in Visual Studio 2008
- Add data validation to ASP.NET and Windows Form applications
- Debug and profile applications
- Monitor and log .NET Framework applications
- Test .NET Framework applications
- Use the new language features in VB.NET and C# that support LINQ
- Use LINQ to Datasets, LINQ to Objects, LINQ to XML, LINQ to Entities, and LINQ to SQL
- Implement security in .NET applications
- Create and send an SMTP mail message
- Create and set network credentials
- Configure .NET Framework applications
- Deploy a .NET Framework application
- Build a shared folder implementation
- Create a Windows Presentation Foundation application



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## Course Outline

**Module 1: Software Design and Development in Visual Studio 2008** This module helps students to design and develop software using Visual Studio 2008.

### Lessons

- Introduction to Software Design and Development
- Introduction to Software Development Frameworks and Methodologies
- Introduction to the Microsoft .NET Framework Applications
- N-Tier Application Development

### Lab : Software Design and Development

- Exercise 1: Managing a Software Development Process
- Exercise 2: Recommend an Architecture
- Exercise 3: Discussion

After completing this module, students will be able to:

- Describe software design and development.
- Describe Microsoft .NET Framework Applications.
- Describe N-Tier Development.

## Module 2: Object-Oriented Programming with Microsoft Visual Studio 2008

This module helps students to design and develop software using Visual Studio 2008.

### Lessons

- Object-Oriented Programming Concepts
- Defining a Class
- Creating a Class Instance
- Introduction to Inheritance
- Defining and Implementing Interfaces
- Creating and Using Delegates and Events
- Generics

### Lab : Creating Classes in Visual Studio 2008

- Exercise 1: Create a Customer and Person Class Using the Class Designer
- Exercise 2: Create a BasicProduct and FullProduct in the Code Editor Window
- Exercise 3: Extend the DAL to use the a class to pass data

After completing this module, students will be able to:

- Describe object-oriented programming concepts.
- Define a Class.
- Describe how to create a Class Instance.
- Describe how to implement inheritance.
- Describe how to define and implement an interfaces.



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Describe how to create and use delegates and events.

## **Module 3: Data Validation**

This module introduces data validation and explains how to validate Windows Forms and ASP.NET applications.

### **Lessons**

Introduction to Data Validation?  
Validating Windows Forms Applications  
Validating ASP.NET Applications

### **Lab : Data Validation**

Exercise 1: Adding data validation to the ASP.NET application  
Exercise 2: Adding data validation to the sales interface

After completing this module, students will be able to:

Describe the general concepts around data validation.  
Describe the technologies and techniques to be used to validate Windows Forms applications.  
Describe the technologies and techniques to be used when validating ASP.NET Applications.

## **Module 4: Debugging and Profiling .NET Applications**

This module helps students to debug and profile applications using Visual Studio 2008.

### **Lessons**

Code Tracing and Debugging  
Application Profiling

### **Lab : Code Tracing**

Exercise 1: Add Tracing to a Windows Forms Application

After completing this module, students will be able to:

- Add trace and debug statements to applications to use for debugging .
- Use the common language runtime (CLR) Profiler to optimize applications.
- Use the Performance Explorer to analyze performance bottlenecks in applications.

## **Module 5: Monitoring and Logging .NET Framework Applications**

This module introduces the concept of instrumentation, as well as one of the instrumentation methods.

### **Lessons**

Introduction to Instrumentation  
Event Logs



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## **Lab : Monitoring and Logging .NET Framework Applications**

Exercise: Writing to a Custom Event Log

After completing this module, students will be able to:

- Discuss the basics of instrumentation
- Name the various technologies that are available for instrumentation
- Explain what the event logs are.
- Use the event logs to instrument your application.
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## **Module 6: Testing Microsoft .NET Framework Applications**

This module helps students to implement software testing using Visual Studio 2008.

### **Lessons**

Introduction to Software Testing  
Using Visual Studio 2008 Testing Tools

## **Lab : Software Testing**

Exercise 1: Using the object test bench  
Exercise 2: Creating and running a unit test

After completing this module, students will be able to:

Describe the basic concepts behind software testing.  
Use the tools available in VS 2008 to implement software testing.

## **Module 7: Introduction to LINQ**

This module introduces new language features and LINQ concepts

### **Lessons**

What Is New in VB.NET and C#  
Introduction to LINQ  
LINQ Data Providers

## **Lab : Using New Language Features**

Exercise 1: Define variables using local type inference  
Exercise 2: Define objects using the new object initializers  
Exercise 3: Define an anonymous type  
Exercise 4: Create an extension method for a string  
Exercise 5: Use a Lambda expression

## **Lab : Simple LINQ-to-Object Queries**

Exercise 1: Extract a subset of objects from a collection



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Exercise 2: Order the objects according to a specific field

## Lab : Using LINQ to Datasets and LINQ to Objects

Exercise 1: Filter the rows of a dataset according to a specific customer code

After completing this module, students will be able to:

- Describe some of the new language features in C# 3.0 and VB.NET 9.0.
- Describe what LINQ is.
- Describe the basic architecture of LINQ.
- Describe the various LINQ constructs.
- Write a basic LINQ query.
- List the various LINQ Data Providers that Microsoft provides.
- Use the LINQ to Objects provider.
- Use the LINQ to Datasets provider.
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## Module 8: Data Access with LINQ

This module introduces new language features and LINQ concepts

### Lessons

LINQ to XML  
LINQ to Entities  
LINQ to SQL

## Lab : Data Access with LINQ

Exercise 1: Replace a XSLT solution with LINQ to XML

Exercise 2: Build a Data Access Layer around a new Entity Framework model of the AdventureWorksLT database

Exercise 3: Build a tool to update Product information in the AdventureWorks database

After completing this module, students will be able to:

Describe LINQ to XML  
Use LINQ to XML to create new XML trees  
Use LINQ to XML to query XML trees  
Describe the Entity Framework  
Describe LINQ to Entities  
Create an Entity Framework Model  
Use the Entity Framework and LINQ to Entities to query a database  
Use the Entity Framework and LINQ to Entities to modify a database  
Describe LINQ to SQL  
Create a LINQ to SQL Model  
Use LINQ to SQL to query a database  
Use LINQ to SQL to modify a database

## Module 9: Implementing Security in .NET Applications

This module explains important security concepts and how to apply them in .Microsoft NET Framework applications.



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## Lessons

Security Overview  
Implementing Code Access Security  
Implementing Role-Based Security  
Using Cryptography Services

## Lab : Security in the .NET Framework

Exercise 1: Use Code Access Security to lock down file permissions  
Exercise 2: Use role-based security to implement security requirements  
Exercise 3: Encrypting data

After completing this module, students will be able to:

Describe security in the .NET Framework.  
Implement code access security.  
Implement role-based security.  
Use the cryptographic services in the .NET Framework.

## Module 10: Network Programming

This module explains how to extend our applications onto the network to access resources and send email.

## Lessons

Introduction to Network Programming  
Setting Credentials  
Sending Mail

## Lab : Network Programming

Exercise 1: Use Code Access Security to Lock Down File Permissions  
Exercise 2: Sending Email on Receipt of an Order

After completing this module, students will be able to:

- Explain the basics of network programming.
- Create and send an SMTP mail message.
- Create and set network credentials.

## Module 11: Creating Distributed Applications

This module introduces the concept of distributed applications and shows you how to create and consume XML Web services by using the Microsoft .NET Framework and Microsoft Visual Studio 2008. It also covers the key features of Windows Communication Foundation (WCF) and explains how to build WCF services and clients.

## Lessons

Introduction to Distributed Applications



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Creating and Consuming XML Webservices  
Building Windows Communication Foundation Services and Clients

## **Lab : Creating a Windows Communication Foundation Service**

Exercise 1: Expose the DAL by Means of Web Services  
Exercise 2: Adding Windows Communication Foundation to the Solution

After completing this module, students will be able to:

Describe the options for creating distributed .NET Framework applications and the key features of WCF.  
Create and consume XML Web services.  
Build WCF services and clients.

## **Module 12: Configuring .NET Framework Applications**

This module helps students to configure applications using Visual Studio 2008.

### **Lessons**

Introduction to Configuring Applications  
Using .NET Configuration Files

## **Lab : Application Configuration**

Exercise 1: Set the connectionstring in the web.config File  
Exercise 2: Reading an Application Setting from a Configuration File

After completing this module, students will be able to:

- Describe .NET configuration files.
- Name the most common configuration files.
- Explain how the various configuration files interact.
- Configure applications using .NET configuration files.

## **Module 13: Deploying .NET Framework Applications**

This module introduces many of the features and options that Visual Studio 2008 and the Microsoft .NET Framework provide to help you build, test, and deploy applications.

### **Lessons**

Introduction to Assemblies  
Overview of MSBuild  
Deploying .NET Framework Applications by Using ClickOnce  
Deploying .NET Framework Applications by Using Windows Installer

## **Lab : Deploying a .NET Framework Application**

Exercise 1: Publish the MiddleTierWS Web Service and Secure It  
Exercise 2: Create a Windows Installer Package for the SalesInterface Application



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Exercise 3: Deploy the SalesInterface Application Using Click-Once Deployment Technologies

After completing this module, students will be able to:

- Describe assemblies and explain features of assemblies that relate to deployment.
- Explain how to use MSBuild to build an application.
- Deploy applications by using ClickOnce.
- Deploy applications by using Windows Installer.

## **Module 14: Windows Presentation Foundation Applications**

This module introduces the concepts of using the Windows Presentation Foundation (WPF) applications to extend the range and flexibility of the applications that can be developed using the .NET Framework 3.5 and Visual Studio 2008.

### **Lessons**

Introduction to Windows Presentation Foundation  
Introduction to XAML  
Programming Windows Presentation Foundation Applications

### **Lab : Building Windows Presentation Foundation Applications**

Exercise 1: Creating a Windows Presentation Foundation Application

After completing this module, students will be able to:

- Discuss the basic concepts behind WPF applications
- Explain the basic concepts behind XAML
- Create a simple WPF application