Developing Mobile Applications Using the Microsoft .NET Compact Framework

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Syllabus and sample modules for Course
2556.

Introduction

The goal of this course is to provide developers with the knowledge and skills to develop mobile enterprise solutions by using the Smart Device Extensions for Microsoft Visual Studio® .NET and the Microsoft .NET Compact Framework.

Audience

This course is intended for experienced, professional software developers who work in corporate enterprise development teams and independent software vendors. Most students will be Microsoft Visual Basic® .NET, Microsoft Visual C#™, or Java developers.
These developers want to build end-to-end solutions in an enterprise environment that includes mobile devices as part of the environment.

This course may also benefit Microsoft Windows® CE developers who have typically used native code (either C or C++) or eVB 3.0 to build Windows CE applications.

Prerequisites

Before attending this class, students must have:

- Familiarity with the following .NET Framework concepts:
  - Managed versus native code
  - Common language runtime
  - Microsoft Intermediate Language (MSIL)
  - Execution engine
  - Just-in-time (JIT) execution
  - Assemblies
- Experience using a .NET language, such as Visual Basic .NET or Visual C#.
- Experience creating Windows client applications using the .NET Framework.
- Experience creating data access components that use ADO.NET to retrieve or update data in a database.
- Familiarity with basic SQL statements, such as SELECT queries.
- Experience building ASP.NET applications.
- Experience using Extensible Markup Language (XML).

Students should have equivalent knowledge to the material covered in the following courses:

- Course 2559: Introduction to Visual Basic .NET Programming with Microsoft .NET
- Course 2373: Programming with Microsoft Visual Basic .NET

-OR-

- Course 2609: Introduction to C# Programming with Microsoft .NET
- Course 2124: Programming with C#

At Course Completion

After completing this course, students will be able to:

- Explain the .NET Compact Framework and technologies used in mobile enterprise application development.

- Set up and configure the mobile application development environment.
- Build a simple client application for a mobile device.
- Manage offline data access.
- Access remote data.
- Synchronize mobile data.
- Design applications appropriately for a mobile environment.
- Create secure applications for a mobile environment.
- Debug and test mobile device applications.
- Build and deploy a sample mobile enterprise application.

Microsoft Certified Professional Exams

No Microsoft Certified Professional exams are associated with this course.

Course Materials

The student kit includes a comprehensive workbook and other necessary materials for this class.

http://download.microsoft.com/download/1/0/c/10c18e4a-f88f-4c7e-b40f-9abc80388620/course-2556-module-3.pdf

Course Outline

Module 1: Introduction to Mobile Device Application Development

The following topics are covered in this module:

- Platform, Tools, and Technologies
- Application Design Considerations
- Overview of the .NET Compact Framework

After completing this module, you will be able to:

- Describe common scenarios in a mobile enterprise solution.
- Design mobile device applications that account for application architecture, client application requirements, and performance.
- Describe the role of the .NET Compact Framework and Smart Device Extensions in the development of mobile device applications.
- Identify key difference between the .NET Compact Framework and the full .NET Framework.
- Identify the server and client tools that are required in a mobile application development environment.
- Configure the Pocket PC 2002 Emulator.

Module 2: Working with the User Interface

The following topics are covered in this module:

Working with Events

- General User Interface Considerations
- Designing the User Interface
- User Input
- Customizing Controls

After completing this module, you will be able to:

- Develop mobile applications that use Windows Forms events.
- Create user interfaces for mobile device applications that incorporate appropriate design characteristics.
- Create forms for mobile device applications that incorporate appropriate navigation and user input techniques.
- Use inheritance to develop custom controls.
- Use exception handling.

Module 3: Working with Local Data

The following topics are covered in this module:

Using DataSets

- Using XML
- Using SQL Server CE

After completing this module, you will be able to:

- Use DataSets to manipulate data in a disconnected scenario.
- Populate DataSets from data sources such as XML files and Microsoft SQL Server™ 2000 Windows CE Edition (SQL Server CE) databases.
- Persist DataSet data as an XML file.
- Bind a DataSet to a DataGrid on a Windows Form.
- Work with the XmlDocument class to manipulate XML data.
- Access, change, and update a local SQL Server CE data store.

Module 4: Accessing Remote Data

The following topics are covered in this module:

- Using XML Web Services
- Using the .NET Framework Data Provider for SQL Server
- Other Remote Data Access Options

After completing this module, you will be able to:

- Create an XML Web service that obtains data from a remote database.
- Consume an XML Web service.
- Access data in a SQL Server database by using the .NET Framework Data Provider for SQL Server.
- Use HTTP classes to download non-relational data.
- Describe how to work with Windows Sockets for advanced data download.

Module 5: Synchronizing Data with SQL Server CE

The following topics are covered in this module:

- Overview of Data Synchronization
- Using RDA (Remote Data Access)
- Using Merge Replication
- Choosing the Appropriate Synchronization Option

After completing this module, you will be able to:

- Use RDA to synchronize data between a SQL Server CE local database and a remote SQL Server database.
- Use RDA to execute SQL commands on a remote SQL Server database.
- Create a publication on SQL Server 2000 that makes selected data available for mobile devices that subscribe to the publication.

- Use merge replication to synchronize data between a SQL Server CE local database and a remote SQL Server database.
- Determine the appropriate synchronization strategy for various scenarios.

Module 6: Creating Secure Applications for a Mobile Environment

The following topics are covered in this module:

- Overview of Security in an Enterprise Environment
- Cryptography
- Code Signing
- Security on SQL Server CE

After completing this module, you will be able to:

- Explain how the Microsoft Windows, Microsoft Internet Information Services (IIS), and Microsoft SQL Server™ security models work together to authenticate users.
- Identify the security features that are supported by the Microsoft .NET Compact Framework.
- Use code signing to improve application security.
- Use cryptographic techniques to protect data.
- Use hashing to prevent unauthorized access to data.
- Describe the security model that is used by Microsoft SQL Server™ 2000 Windows CE Edition (SQL Server CE).

Module 7: Deploying Mobile Applications

The following topics are covered in this module:

Testing and Debugging Applications

- Distributing Applications

After completing this module, you will be able to:

- Test and debug a mobile device application.
- Distribute a mobile device application by using CAB files.
- Create a plan for deploying a mobile device application.

Module 8: Building a Sample Mobile Enterprise Application

The following topics are covered in this module:

- Introduction to the Survey Sample Application
- Creating the Server Side Components
- Using a Smart Client

After completing this module, you will be able to:

- Build and deploy the Survey sample XML Web services application.