



Developing Windows Azure and Web Services

Course ID#: 1411-753-12-W

35 Hrs

Course Content

Course Description:

In the Developing Windows Azure And Web Services course, students will learn how to design and develop services that access local and remote data from various data sources. Students will also learn how to develop and deploy services to hybrid environments, including on-premises servers and Windows Azure.

Prerequisites:

This course is intended for both novice and experienced .NET developers who have a minimum of six months programming experience, and want to learn how to develop services and deploy them to hybrid environments.

Before attending this course, students must have:

- Experience with C# programming, and concepts such as Lambda expressions, LINQ, and anonymous types.
- Understanding the concepts of n-tier applications.
- Experience with querying and manipulating data with ADO.NET.
- Knowledge of XML data structures.

Topics:

Module 1: Overview of service and cloud technologies

Lessons

- Key Components of Distributed Applications
- Data and Data Access Technologies
- Service Technologies
- Cloud Computing
- Exploring Blue Yonder Airlines' Travel Companion Application

Lab: Exploring the work environment

- Create a Windows Azure SQL Database
- Create an Entity Data Model
- Create an ASP.NET Web API service
- Deploy a web application to Windows Azure

Module 2: Querying and manipulating data using Entity Framework

Lessons

- ADO.NET overview
- Creating an entity data model
- Querying data
- Manipulating data

Lab: Creating a data access layer using Entity Framework

- Explore the data model and integration test projects
- Create a data model
- Query and manipulate data



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Module 3: Creating and consuming ASP.NET Web API services

Lessons

- What are HTTP services?
- Creating an ASP.NET Web API service
- Handling HTTP requests and responses
- Hosting and consuming ASP.NET Web API services

Lab: Creating the travel reservation ASP.NET Web API service

- Create an ASP.NET Web API service
- Consume an ASP.NET Web API service

Module 4: Extending and securing ASP.NET Web API services

- This module explains how to extend and secure ASP.NET web API services to support real world scenarios.

Lessons

- The ASP.NET Web API request pipeline
- The ASP.NET Web API response pipeline
- Creating OData services
- Implementing Security in ASP.NET Web API services
- Injecting dependencies into controllers

Lab: Extending Travel Companion's ASP.NET Web API services

- Create a dependency resolver for repositories
- Add a new media type for RSS requests
- Add OData capabilities to the flight schedule service
- Apply validation rules in the booking service
- Secure the communication between client and server

Module 5: Creating WCF services

Lessons

- Advantages of creating services with WCF
- Creating and implementing a contract
- Configuring and hosting WCF services
- Consuming WCF services

Lab: Creating and consuming the WCF booking service

- Create the WCF booking service
- Configure and host the WCF service
- Consume the WCF service from the ASP.NET Web API booking service

Module 6: Designing and extending WCF services

Lessons

- Applying design principles to service contracts
- Handling distributed transactions
- WCF pipeline architecture
- Extending the WCF pipeline

Lab: Designing and extending WCF services

- Create a custom error handler runtime component
- Add support for distributed transactions to the WCF booking service
- Use asynchronous WCF client calls

Module 7: Implementing Security in WCF services

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Lessons

- Transport security
- Message security



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- Configuring service authentication and authorization

Module 7 continued

Lab: Securing a WCF service

- Secure the WCF service
- Configure the ASP.NET Web API booking service for secured communication

Module 8: Windows Azure Service Bus

Lessons

- Windows Azure Service Bus Relays
- Windows Azure Service Bus Queues
- Windows Azure Service Bus Topics

Lab: Windows Azure Service Bus

- Use a service bus relay for the WCF booking service
- Publish booking updates to clients using Windows Azure Service Bus Topics

Module 9: Hosting services

Lessons

- Hosting services on-premises
- Hosting services in Windows Azure

Lab: Hosting Services

- Host the WCF booking service in IIS
- Host the ASP.NET Web API services in a Windows Azure Web role
- Host the booking management service in a Windows Azure Web Site

Module 10: Deploying Services

Lessons

- Web Deployment with Visual Studio

- Creating and deploying Web Application packages
- Command-line tools for web deployment packages
- Deploying to Windows Azure
- Continuous delivery with TFS and GIT
- Best practices for production deployment

Lab: Deploying services

- Deploying an updated service to Windows Azure
- Updating a Windows Azure Web Site with Web Deploy
- Exporting and importing an IIS deployment package

Module 11: Windows Azure Storage

Lessons

- Introduction to Windows Azure storage
- Windows Azure Blob Storage
- Windows Azure Table Storage
- Windows Azure Queue Storage
- Restricting access to Windows Azure Storage

Lab: Windows Azure Storage

- Storing content in Windows Azure storage
- Accessing Windows Azure storage
- Creating shared access signatures for blobs

Module 12: Monitoring and diagnostics

Lessons

- Performing diagnostics using tracing
- Configuring service diagnostics
- Monitoring IIS
- Monitoring services using Windows Azure diagnostics
- Debugging using IntelliTrace



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- Collecting Windows Azure metrics

Module 12 continued

Lab: Monitoring and Diagnostics

- Configuring WCF tracing and message logging
- Configuring Windows Azure diagnostics

Module 13: Identity management and access control

Lessons

- Claim-based identity concepts
- Access Control Service
- Configuring services to use federated identities
- Handling federated identities in the client side

Lab: Identity management and access control

- Configure Windows Azure ACS
- Integrate ACS with the ASP.NET Web API
- Examine the authentication procedure in the client application



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Module 14: Scaling Services

Lessons

- Introduction to scalability
- Load balancing
- Scaling on-premises services with distributed cache
- Windows Azure caching
- Caveats of scaling services
- Scaling globally

Lab: Scalability

- Use Windows Azure Caching
- Support federated security in a scaled environment