

Enterprise API Development & Web Services Architecture

Duration: 5 days/ 40 hrs

Prerequisite: Knowledge of API development

Module 1. Introduction to .NET Web Api

- Introduction.
- REST in ASP.NET Core.
- Exercise - Create a web API project.
- ASP.NET Core Web API Controllers.
- Exercise - Add a data store.
- Exercise - Add a controller.

Module2. ASP.NET Web API Fundamentals

- Routing - Convention and Attribute Routing
- Route Constraints
- Action Result
- Content Negotiation
- Media Type Formatters
- Model Binding
- Model Validation
- Handling Validation Errors
- Dependency Injection.
- Exception Handling

Module 3. Building RESTful Services with ASP.NET Web API

- Building ASP.NET Web API
- ASP.NET Web API CRUD Operations
- Testing Web API Using Postman
- Consuming Web API in ASP.NET MVC
- Performing CRUD Operations using ASP.NET MVC

Module 4. Introduction to Entity Framework

- Entity Framework
- Overview of ORM Products
- Entity Framework introduction
- Using Database First Approach, Code First Approach.
- Using LINQ to Entities to perform CRUD operations" and connection with MS SQL Server.
- Migrations.

Module 5. Introduction to LINQ

- Introduction to LINQ Queries
- LINQ and Generic Types
- Basic LINQ Query Operations
- Data Transformations with LINQ

- C# Features That Support LINQ
- Walkthrough: Writing Queries in C# (LINQ)
- Standard Query Operators Overview
- Overview
- Query Expression Syntax for Standard Query Operators
- Classification of Standard Query Operators by Manner of Execution
- Sorting Data
- Set Operations
- Filtering Data
- Join Operations
- Grouping Data

Module 6. Introduction to Web Services

- Introduction to the Course
- What are Web Services? - With Live example
- Types of Web Services - SoapUI and REST API
- What is Web Services Description Language (WSDL)? Importance of WSDL in Web Services
- Difference between the Web Services Description Language (WSDL) and SoapUI Protocol

Module 7. Exploring SoapUI Tool Basic Features

- Installing and Documenting SoapUI
- Calculator Web Service Example
- Creating Test Suites and Test Cases
- Local Web Service Installation for Practice
- Explaining Web Service Operations in Detail

Module 8. Web Services Testing (Manual) with SoapUI - Free Version

- Basic Assertions for Test validations
- Advanced Assertions for Validating Responses
- Strategy to Use Xpath Assertions in Tests
- Properties Access-data Driven Strategy
- Accessing Properties from Test Case, Suite, and Project Level
- How to Send Values from Response to another Request-property Transfer?

Module 9. Web Services Automation Testing in SoapUI - Free version

- Introduction to Groovy Script Test Step
- Importance of TestRunner and Context Variable
- TestRunner Methods for the get Property() and set Property()
- Accessing and Updating Properties through Groovy Methods
- Parsing the XML Requests and Responses with XML Holder API
- Triggering the SoapUI Requests through Groovy Code
- Automating Services - Practice Exercises
- Validating the Service Responses with Assertions

Module 10. REST API Testing (Manual) with SoapUI Free version

- REST API Concepts
- REST API - Types of HTTP Methods
- Practical Example on the GET and the POST
- Add Place Post HTTP Example Using SoapUI
- End-to-End Test of SoapUI Features on the Post HTTP API

Module 11. REST API Automation Testing with SoapUI Free version

- JSON Script Assertion Window Automation
- Parsing the JSON Responses for API Validation
- Examples of REST API Automation with JSON as a Response
- Examples of REST API Automation with XML as a Response

Module 12. Rest API JSON Assertions and Validations

- Flicker API Introduction
- JSON Path Extraction from Responses
- JSON Assertions on Parsed Responses
- Advance Example on JSON Assertions

Module 13. End-to-End Framework Design

- Framework Design Plan
- Understand Preparing API Tests from Functional Documents
- Building Rest API Project in SoapUI
- Creating Test Cases from the Defined API
- End-to-End Testing on Library API
- Install Eclipse and Java for API Automation Testing
- Creating of Java API Project for the Framework Setup
- Web Services Description Language (WSDL) Project Concepts for Java Tests Setup
- TestNG Integration to Java API Tests
- Different Combinations of Tests for Web Services Description Language (WSDL) API
- Defining TestNG.xml file for One Single Trigger Point to All Tests
- Commands to Trigger TestNG Java API Tests
- HTML Reports and Jenkins Installation
- Integrating the Framework with Jenkins

Module 14. SoapUI Pro Tool Extra Features

- Basics of Pro Tool - Version
- Data Source
- Data Sink
- DatGen Types
- Test Case Debugging and Breakpoints
- Reporting Techniques
- Jasper Reports and Web Recording

Module 15. Security Testing with SoapUI

- List of Security Threats
- Security Test Cases

Module 16. Database Testing with SoapUI

- Database Concepts
- Creating a Database from Scratch
- SoapUI and Java Database Connectivity (JDBC) Connection
- SQL Queries Testing with SoapUI Features
- SQL Builder - SoapUI Pro

Module 17. Load Testing on REST API

- Performance Testing Tool used for Testing REST API
- Putting Load on REST API Call Order By Dat