APIU – Certified API, REST & Microservices Tester (APIU-CARMT)

In the modern world there is an increased trend of promoting reuse in software via exposing software functions as standard interfaces called APIs. Most cloud as well as SaaS and utility IT applications are made available as APIs and more recently microservices.

**This course is for testers and practitioners who work with APIs. It provides a comprehensive view of:**

* The different components of API and Microservices testing
* Relation of MSA (Microservices Architecture) to API and SOA
* Different standards for API
* Test design techniques for API testing
* Life cycle of API testing techniques including security, load, and interoperability
* A hands-on view of API testing with popular tools like soapUI and Postman
* Automation at API testing level
* Contract First Testing in Microservices
* Extended Tools for Microservices testing

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**Learning Objectives**

* LO1 – Understand the Life cycle of API testing techniques.
* LO2 – Understand How API testing complements UI testing.
* LO3 – Know the different API standards.
* LO4 – Understand differences between MSA SOA and APIs
* LO5 – Implement API testing in popular tools like soapUI and Postman.
* LO6 – Implement Automation including content inspection based use cases in API testing projects.
* LO7 – Design API related test cases and test scenarios.
* LO8 – Understand and Implement contract first testing in Microservices.

​**Course Content**

**The Basics**

* SOA Microservices and API
* What is Microservices?
* What is SOA?
* What is API?

**Architectures compared**

* SOA Vs Microservices
* API Vs Microservices
* Examples of API
* Examples of Microservices
* Understanding Microservices Architecture
* How Microservices Architecture Works

**SOA API standards**

* SOAP vs REST
* Web services architecture
* SOAP Basics
* Testing SOAP Requests (sopaui)
* WSDL
* Testing WSDL based stub generation (soapui)
* Test Design and Execution for SOAP with soapui

**REST Architecture**

* REST basics and Best Practices
* Basic Testing REST (Curl, Postman, RESTAssured)
* GET Request
* POST Request
* PUT Request
* DELETE Request

**Microservices Architecture**

* Relation to SOA
* Contract first
* Common Deployments in CI/CD
* End-to-End microservices testing

​**Testing Life Cycle for API Testing**

* Deriving Test Cases for API - Principles and Techniques with Example
* Test Management for API testing
* Methods
* Boundary Value
* Equivalence Partitioning

**Mocking REST Requests**

* Mocking with SOAPUI
* Mocking in PostMan
* Recording Responses

**Securing REST Requests**

* Authentication with POSTMan
* Authentication with RESTAssured

**Assertions and Automation Testing (POSTMan)**

* Different types of Assertions
* Response Code Assertions
* JSON Content Inspection Assertion
* Header Inspection Assertions
* Variables at different scopes - global, session
* Pre-Request Scripts
* Test Scripts

**Data Driven Automation Testing**

* Loading Data from Excel for automation in POSTMan
* Collection Requests
* Command Line Execution with POSTMan

**Orchestration of REST Services in POSTMan**

* Simple Sequence of Services
* Chaining of Services

**Extending testing to Microservices**

* Reusing API Testing for Microservices
* Orchestration testing of Microservices
* Service virtualization for Microservices testing
* Resiliency Testing

​**Contract First Testing in Microservices**

* Interface testing
* Service Virtualization testing
* Mocking
* Consumer driven Contract testing

**Tool Demos (Additional to the ones already covered in POSTMan)**

* CURL
* RestAssured

​​**Prerequisites:**

* At least 2 years of testing experience.
* Familiarity with Web Applications
* A basic knowledge of Javascript (highly recommended)