

**RESTful API Design, Development, and Testing using Insomnia**

**Course Number:** PROG-104
**Duration:** 2 days

**Overview**

This RESTful API Design, Development, and Testing using Insomnia training course teaches participants the fundamentals of developing and testing APIs. The class focuses on designing RESTful JSON APIs using OpenAPI 3 for documentation and code generation, and testing via [Insomnia](https://insomnia.rest/) GUI and CLI. **Note:** This course uses Insomnia’s app and CLI installed via npm. A GitHub account is optional but encouraged.

**Prerequisites**

Other than object-oriented development or architecture experience, no prior expertise is presumed.

**Materials**

All RESTful API using Insomnia training students receive comprehensive courseware including slides, design exercises, and sample solutions.

**Software Needed on Each Student PC**

* Google Chrome
* Other modern browsers as desired
* Other free software and lab files that Accelebrate would specify, including Node.js

**Objectives**

* Understand the REST architectural style and its motivations
* Implement OpenAPI specification design
* Utilize the Richardson Maturity Model to discuss design choices and induced properties
* Use Insomnia for API design, debugging, and testing
* Understand JSON representation of object data
* Incorporate API management approaches
* Implement automated CI/CD testing strategies
* Think about REST APIs vs. linked data, RPC models, and GraphQL

**Outline**

* Introduction
	+ REST API overview
	+ Previous API Concepts
* JSON
* Concepts of REST
	+ HTTP
	+ Nouns/Verbs
* Designing an API
	+ Swagger
	+ Sections of Specification
* OpenAPI Spec
	+ Info
	+ Servers
* API Concepts
* Richardson Maturity Model
	+ Levels
	+ Hypermedia
* Development and Testing
	+ C# and other examples
	+ Tools Available
* Development Standards
* OpenAPI Contract
	+ Paths
	+ Operations
* Automated Testing
	+ Chai Assertion Library
	+ Insomnia CLI
	+ Test Suites
* Versioning
	+ URL
	+ Header
	+ Both
* Security
	+ Authentication
	+ Authorization
	+ JWT
* Parameters
	+ Path
	+ Query String
	+ Header
	+ Cookie
	+ Serialization
* Request Bodies
* Responses
* Components
* CI/CD Testing
	+ Principles
	+ Best Practices
	+ Integration & Security Testing
* Using Insomnia for CI/CD Testing
	+ CLI
	+ Github Actions