AMBIENT-IT

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Sign Up

API Design Training with OpenAPI & Swagger

2 days (14 hours)

Overview

OpenAPI is a reference specification for designing, documenting, and standardizing HTTP APIs. When used with Swagger tools, it enables the creation of consistent, usable, and easy-to-maintain API contracts.

Our API Design with OpenAPI and Swagger training course will teach you how to structure REST APIs using a contract-based approach, either before or during their development.

You'll learn to model resources, operations, parameters, and responses, and then precisely describe data schemas using OpenAPI 3.x. You'll learn how to organize a reusable specification using components, references, and naming conventions.

The course also covers interactive documentation with Swagger UI, editing and validating a contract with Swagger Editor, as well as describing errors, security, and API versioning.

By the end of the course, you will be able to produce a reliable API definition, facilitate communication between teams, and prepare for the generation of documentation, tests, clients, or service skeletons.

Like all our training courses, this one will introduce you to **the latest stable version** of the technology and its new features.

Objectives

- Design REST API contracts that are consistent with OpenAPI 3.x
- Model resources, operations, parameters, responses, and errors
- Structure a maintainable specification using components and $ref references
- Document and test an API using Swagger Editor and Swagger UI
- Describe an API’s security and versioning mechanisms

Target Audience

- Backend developer
- Full-stack developers
- Software architect
- API Project Manager
- Software Tester

Prerequisites

- Proficiency in REST API principles and the HTTP protocol
- Knowledge of JSON and YAML formats
- Experience developing or using web services
- Basic understanding of HTTP status codes and client-server communication

Technical Prerequisites

- Workstation running Windows 10 or 11, macOS, or Linux, with at least 8 GB of RAM
- A modern web browser, such as Google Chrome, Mozilla Firefox, or Microsoft Edge
- Code editor installed, such as Visual Studio Code
- Stable internet connection allowing access to API documentation and testing tools

Course Outline: API Design with OpenAPI & Swagger

[Day 1 - Morning]

Fundamentals of API Design and OpenAPI

- The API-first approach and the role of the API contract in the development cycle
- Principles of REST API design: resources, URIs, HTTP verbs, and status codes
- Exploring the structure of an OpenAPI 3.x document in YAML or JSON
- Description of metadata, servers, tags, and paths using `info`, `servers`, and `paths`
- Naming conventions, resource granularity, and consistency of operations
- Hands-on workshop: Creating the initial contract for a catalog management API in Swagger Editor

[Day 1 - Afternoon]

Modeling operations and data

- Defining GET, POST, PUT, PATCH, and DELETE operations
- Handling path parameters, request parameters, headers, and request bodies
- Designing Responses: Media Types, Headers, Examples, and HTTP Status Codes
- Object modeling with Schema Object, types, formats, constraints, and enumerations
- Factoring Models with Components and Reuse via $ref
- Hands-on workshop: modeling CRUD operations, schemas, and responses for the catalog API

[Day 2 - Morning]

Contract Quality, Documentation, and Security

- Designing Consistent Error Responses and Describing Functional Cases
- Using examples to make an API contract understandable and testable
- Interactive documentation and endpoint exploration with Swagger UI
- Overview of security mechanisms: API Key, HTTP Bearer, and OAuth 2.0
- Syntax validation, contract review, and inconsistency detection with Swagger Editor
- Hands-on workshop: Adding errors, examples, and Bearer authentication to the specification

[Day 2 - Afternoon]

API Industrialization and Governance

- Versioning strategies, backward compatibility, and deprecation of operations
- Organizing a large specification: segmentation, shared components, and team conventions
- Using the contract to generate documentation, clients, and service skeletons
- The Role of OpenAPI in Testing, Mocking, Continuous Integration, and Technical-Business Collaboration
- Publication Checklist: Readability, Security, Completeness, Consistency, and Maintainability
- Hands-on workshop: finalizing, validating, and presenting an OpenAPI specification ready for sharing

Target Audience

This training is intended for both individuals and companies—large or small—seeking to train their teams in a new advanced IT technology or to acquire specific business knowledge or modern methodologies.

Prerequisites

The assessment conducted upon enrollment complies with Qualiopi quality standards. Upon final registration, the learner receives a self-assessment questionnaire that allows us to evaluate their estimated proficiency with various types of technology, as well as their expectations and personal goals for the upcoming training, within the limits imposed by the selected format. This

questionnaire also allows us to anticipate certain connection or internal security issues within the company (intra-company or virtual classroom) that could pose problems for the monitoring and smooth running of the training session.

Teaching Methods

Hands-On Course: 60% Hands-On, 40% Theory. Training materials distributed in digital format to all participants.

Organization

The course alternates between theoretical input from the instructor—supported by examples and reflection sessions—and group work.

Assessment

At the end of the session, a multiple-choice quiz is administered to verify that participants have successfully acquired the skills.

Certification

A certificate will be issued to each trainee who has completed the entire training program.