

Advanced API Testing and Automation Practices

5.2 Mocking and Stubbing APIs

Learning objectives

- ▶ Understand the purpose of mocking and stubbing external APIs.
- ▶ Recognize the benefits of using mock APIs during development and testing.

Why Mock External APIs?

- ▶ External APIs may be:
 - ▶ Unstable
 - ▶ Slow
 - ▶ Rate-limited
 - ▶ Not available in dev/test
- ▶ Mocks allow:
 - ▶ Predictable responses
 - ▶ Fast test execution
 - ▶ Testing error scenarios
 - ▶ Isolation of your service

What Are Mocks and Stubs?

- ▶ Mock API
 - ▶ Simulates an external HTTP service and can record/verify calls.
- ▶ Stub
 - ▶ Predefined response returned for a specific request.
 - ▶ No logic
 - ▶ Always returns the same response

Tools: WireMock & MockServer

- ▶ WireMock
 - ▶ Simple to configure
 - ▶ Runs as a standalone server or embedded
 - ▶ Supports JSON stubs, request matching, delays, etc.
- ▶ MockServer
 - ▶ More advanced request verification
 - ▶ Supports dynamic expectations, proxying

Benefits for Development

- ▶ Work on integrations before the real API exists
- ▶ Run tests offline
- ▶ Share mock definitions across teams
- ▶ Recreate bugs by replaying specific responses

Key Takeaways

- ▶ Mocking allows testing external API behavior without the real service.
- ▶ WireMock and MockServer simulate predictable, controlled responses.
- ▶ Essential for testing:
 - ▶ Error handling
 - ▶ Edge cases
 - ▶ Slow/unavailable external systems
- ▶ Makes integration testing fast, safe, and reproducible.