

Updated on 04/12/2023

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# Pytest training: Master automated testing in Python

2 days (14 hours)

## Presentation

Our Pytest training course enables Python developers to improve their skills on this innovative testing tool, renowned for its efficiency and flexibility.

Thanks to this training, you'll be able to create, customize and optimize tests for your Python applications, ensuring their robustness and quality.

This training course will enable you to boost the reliability and maintenance of your applications through advanced testing techniques and test-driven development (TDD) strategies.

You can quickly create new tests directly from your development environment, using Pytest's default features, or by integrating plugins and additional modules.

This training will be run on **Pytest version 7.1**, the latest release.

## Objectives

- Understanding Pytest's interface and functions
- Create and customize tests for your Python applications
- Master the use of Pytest's advanced features, such as fixtures and markers
- Understand best practices for test management and test-driven development (TDD)

## Target audience

- **IT engineers**
- Developers

## Prerequisites

- Experience with the Python programming language
- Basic knowledge of object-oriented programming and software testing concepts would be a plus

## Our Pytest training program

### Introduction to Pytest and Python testing

- Understanding the importance of testing in software development
- Introduction to different types of tests
  - Unitary
  - Integration
  - Functional
- Discover Pytest: a testing framework for Python
- Installing and configuring Pytest
- Getting started: creating your first test with Pytest
- Understanding assertions and their role in testing
- Best practices for writing effective tests

### Deepening Pytest's key concepts

- Understanding Pytest fixtures and their use in test preparation
- Learn to use markers to categorize and select tests
- Exception handling with Pytest
- Use Pytest for regression testing
- How does Pytest deal with failed tests?
- Customizing Pytest output
- Understanding the importance of Test Driven Development (TDD) with Pytest

### Advanced use of Pytest

- Mastering test parameterization with Pytest
- Understanding and using Pytest plug-ins
- Managing parallel tests with xdist
- Testing Web applications with Pytest and Selenium
- Testing database applications with Pytest
- Learn to use mocks and doubles with Pytest
- Exploring the Pytest-cov module for test coverage

### Integrating Pytest into a continuous development environment

- Introduction to continuous integration and its importance
- Configuring Pytest with continuous integration tools such as Jenkins
- Generate test reports with Pytest for continuous integration tools
- Understand how Pytest can help maintain code quality
- Learn how to integrate Pytest with version control tools such as Git
- Using Pytest in continuous deployment pipelines
- Recommended practices for using Pytest in a continuous development environment

## Conclusion and future prospects

- Review of the main Pytest concepts
- Discussion of common testing challenges and how Pytest can help overcome them
- Explore resources to deepen your knowledge of Pytest
- Other useful Python testing tools
- [PRACTICE] Creating a complete test plan for a Python project using Pytest
- Discussion on the importance of keeping up to date with new Pytest versions and features

## Companies concerned

This training course is aimed at both individuals and companies, large or small, wishing to train their teams in a new advanced computer technology, or to acquire specific business knowledge or modern methods.

## Positioning on entry to training

Positioning at the start of training complies with Qualiopi quality criteria. As soon as registration is finalized, the learner receives a self-assessment questionnaire which enables us to assess his or her estimated level of proficiency in different types of technology, as well as his or her expectations and personal objectives for the training to come, within the limits imposed by the selected format. This questionnaire also enables us to anticipate any connection or security difficulties within the company (intra-company or virtual classroom) which could be problematic for the follow-up and smooth running of the training session.

## Teaching methods

Practical course: 60% Practical, 40% Theory. Training material distributed in digital format to all participants.

## Organization

The course alternates theoretical input from the trainer, supported by examples, with brainstorming sessions and group work.

## Validation

At the end of the session, a multiple-choice questionnaire verifies the correct acquisition of skills.

# Sanction

A certificate will be issued to each trainee who completes the course.