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# Advanced React training: Unit testing & Optimization

2 days (14 hours)

## Presentation

Our React Advanced course will introduce you to advanced React concepts such as state management, hooks, controlled components, component composition, performance optimization and much more.

In this course, you'll start by taking a closer look at hooks, functions that add functionality to a functional component, such as `useState`, `useEffect` and `useMemo`. We'll see how to use them to simplify code and improve application performance.

We'll also look at how to use controlled components to manage forms and user input, and how to use component composition to create reusable user interfaces.

Like all our training courses, this one will introduce you to the latest stable release and its new features ([React 19](#) and [Redux 5](#)).

## Objectives

- Know the state of the art in testing (tools, advantages/disadvantages, best practices)
- Set up unit tests, component tests, Redux state tests and GUI rendering tests
- Creating data sets / mocks
- Automate UI & End-to-End (E2E) testing
- Good coding practices (React components / Redux actions / API calls) to facilitate testing
- Identify and solve performance problems
- Carry out practical tests in different situations

## Target audience

- Web Developer
- Extreme Programming (XP) test team

## Prerequisites

- Fundamental knowledge of React, or ideally have completed our [React training course](#)
- [Test My Knowledge](#)

## SOFTWARE REQUIREMENTS

- Windows 10 or MacOS or Linux preferred (Ubuntu 22.04 type, VM of at least 8 GB or Physical)
- Code editor, such as [Visual Studio Code](#), installed on your computer
- Nodejs installed

## RECOMMENDATIONS FOR PRE- AND POST-COURSE READING

- [The React Conf YouTube channel](#), featuring presentations and video tutorials from leading React developers
- [Robin Wieruch's blog](#), which offers tips and code examples for the React developers
- The [book React: Up & Running](#) by Stoyan Stefanov
- React developer forums for chatting with other users and asking questions about the framework

## OUR ADVANCED REACT TRAINING PROGRAM

### OPTIMIZATIONS

- Memory leak detection
- Memoization reminder
- Error management

### DATA FETCHING

- Installing react-query
- Queries
- Mutations
- Cache management and configuration

NEXTJS

- Installation
- Route creation
- Client Side Rendering
- Server Side rendering
- Static Site Generation
- Incremental Static Regeneration
- API Route

## SAFETY WITH JWT

- What is JWT
- Using and storing a token
- XSS and React

## UNIT AND FUNCTIONAL TESTING

- Mocks
- Fakes
- Stuns
- Dummy
- Spy
- Snapshot
- Jest and React-testing-library
- E2E tests
- Example of clean architecture
- Hook testing
- Testing components with hooks
- Asynchronous testing

## Companies concerned

This 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 training: 60% Practical, 40% Theory. Training material distributed in

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.