KOENIG SOLUTIONS · COURSE OUTLINE

React with Copilot: Hooks, Context API & Router

Learn to build, optimise and deploy React applications using Hooks, Context API and React Router with GitHub Copilot assistance.

4 Days	11	33	9
DURATION	MODULES	TOPICS	HANDS-ON LABS

COURSE OVERVIEW

This course covers React fundamentals alongside GitHub Copilot setup and usage for generating components, props, state and custom hooks. It then addresses state management with useState and useReducer, the Context API, custom hooks and routing with React Router, all supported by Copilot-assisted development. Later modules cover consuming RESTful APIs, performance optimisation with memoization techniques, and error handling and debugging using Chrome DevTools and React Developer Tools. The course concludes with testing React applications using Jest and React Testing Library, and deploying applications to hosting platforms with GitHub Actions.

WHO THIS COURSE IS FOR

- **React Developers**
- **Front-End Developers**
- **Software Engineers**
- **Web Developers**
- **QA Engineers**

PREREQUISITES

- Strong Knowledge of JS ES6 Programming

LEARNING OBJECTIVES

- Explain core React concepts and application architecture
- Configure GitHub Copilot within an IDE for code generation
- Develop functional components, props and custom hooks with Copilot
- Apply useState and useReducer for state management
- Implement the Context API for global state management
- Configure routing and nested routes with React Router
- Integrate RESTful APIs using fetch, Axios and useEffect
- Apply memoization techniques such as useMemo and useCallback

COURSE SYLLABUS

11 Modules, 33 Topics

DAY 1 Introduction to React and GitHub Copilot

01

Introduction to React

TOPICS

- **Overview of React:** Core concepts and architecture
- Setting up the React development environment
- Creating a new React application using Create React App (CRA)

02

GitHub Copilot Basics

TOPICS

- **Introduction to GitHub Copilot:** Features, setup, and integration
- Configuring GitHub Copilot in your IDE (e.g., Visual Studio Code)
- **Basic usage:** Generating code snippets, components, and hooks with Copilot

03

Developing React Components with Copilot

TOPICS

- Creating functional and class components using Copilot
- Implementing props, state, and event handling with AI assistance
- Using Copilot to generate reusable components and custom hooks

Building a Basic React Application with Copilot

3 Labs

DAY 2 Advanced React Concepts and Copilot Integration

04

State Management in React

TOPICS

- Understanding React's built-in state management
- Implementing useState and useReducer hooks for state management
- Using GitHub Copilot to generate state management logic

05

React Context API and Custom Hooks

TOPICS

- Using the Context API for global state management
- Creating custom hooks for reusable logic
- Leveraging GitHub Copilot to automate hook creation and context setup

06

Routing with React Router

TOPICS

- Setting up routing and navigation with React Router
- Implementing nested routes and dynamic routing
- Using GitHub Copilot to assist in routing configuration

Developing Advanced React Features with Copilot — 3 Labs

DAY 3 API Integration and Performance Optimization — 8 hours

07

Consuming RESTful APIs with React

TOPICS

- Making API calls with fetch and Axios
- Handling asynchronous operations and side effects with useEffect
- Using GitHub Copilot to generate API integration code

08

Performance Optimization in React

TOPICS

- Identifying performance bottlenecks in React applications
- Using memoization techniques (useMemo, useCallback) for optimization
- Leveraging GitHub Copilot to suggest performance enhancements

09

Error Handling and Debugging

TOPICS

- Implementing error boundaries and handling exceptions in React
- Debugging React applications with Chrome DevTools and React Developer Tools
- Using GitHub Copilot to assist in error handling and debugging processes

API Integration and Performance Optimization

3 Labs

DAY 4

Testing, Deployment, and Final Project

10

Testing React Applications

TOPICS

- Introduction to testing in React with Jest and React Testing Library
- Writing unit tests for components, hooks, and utilities
- Using GitHub Copilot to generate test cases and assertions

11

Deployment of React Applications

TOPICS

- Preparing React applications for production
- Deploying React apps to hosting platforms
- Automating deployment processes with GitHub Actions and Copilot

HANDS-ON LABS

Practise What You Learn

#	MODULE	ACTIVITY
01	**Building a Basic React Application with Copilot**	■ **Hands-on lab:** Create a simple React application ■ Practice generating and refining components with GitHub Copilot ■ Review and optimize the generated code for best practices
02	**Developing Advanced React Features with Copilot**	■ **Hands-on lab:** Implement state management and routing in a React application ■ Utilize GitHub Copilot to streamline development and debugging ■ Test and refine the application with AI-generated suggestions
03	**API Integration and Performance Optimization**	■ **Hands-on lab:** Integrate a RESTful API and optimize performance in a React application ■ Use GitHub Copilot to assist in coding and identifying performance improvements ■ Test and debug the application with Copilot's suggestions

WHAT IS INCLUDED

Everything You Need to Succeed

- Koenig course material for every module
- Delivery by certified instructors and subject matter experts
- Hands-on exercises throughout the course
- Course completion certificate from Koenig

ABOUT KOENIG

Who We Are

Established in 1993, Koenig Solutions is a globally recognised training provider with 35+ technology partnerships, 5,000+ training programmes and a network of certified instructors and subject matter experts, supporting individuals and enterprise teams worldwide.

FLEXIBLE DELIVERY

Learn the Way That Suits You

Classroom Training | Live Online Classes (ILO) | Fly-Me-A-Trainer (FMAT) | Flexi (Self-Paced) | 1-on-1 Training

Ready to Get Started?

Talk to a learning advisor about schedules, group training and customised delivery.

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