Software Development Engineer in Test Curriculum

AXONE

Module 1 – TypeScript Fundamentals

Chapter 1: Introduction

- On-board all participants
- Quick round of introductions
- Course structure
- Introduction to TypeScript
- Introduction to Generative AI
- Environment Setup
- Develop & run "Hello World!"

Chapter 2: TypeScript Basics

- Variables in TypeScript
- Data Types
- Type annotations & Inference
- Code comments
- Naming conventions
- Using Generative AI: Practice TypeScript basics with AI-generated coding challenges for fun and interactive learning.

Chapter 3: Control Flow & Functions

- Operators & Operator Precedence
- Decision making
- Ternary Operator
- Loops
- Functions
- Default parameters & Rest operator
- Scope
- Using Generative AI: Get instant feedback and explanations by asking the AI to simplify code snippets.

Chapter 4: Working with Data & Objects

- Arrays & Array manipulations
- Spread and Rest operators
- String manipulations
- Math calculations
- Date and Time handling
- Objects & Interfaces
- Classes and Inheritance
- TypeScript Modules & Namespaces
- Using Generative AI: Build fun projects where AI suggests improvements or rewrites your code for practice.

Module 2 – Playwright Basics, Git, and Testing

Chapter 1: Playwright Setup and Overview

- Introduction to Playwright
- Playwright Setup with TypeScript
- Playwright project structure
- Writing & running the first test
- Playwright Test Runner
- Using Generative AI: Use AI to generate test scripts and walk through how they work in Playwright.

Chapter 2: Test Writing and Execution

- Writing simple Playwright tests
- Running tests in supported browsers
- Locators
- Inspecting elements
- Constructing reliable locators
- Using Generative AI: Create browser test scripts using AI-generated examples and get immediate feedback on test results.

Chapter 3: Version Control with Git

- Introduction to Git and Git workflows
- Setting up a Git repository for Playwright projects
- Common Git commands
- Working with Git in VS Code
- GitHub for remote repositories and collaboration
- Using Generative AI: AI-assisted Git commands to automate and optimize Git workflow management.

Chapter 4: Interacting with Web Elements

- Handling input elements
- Mouse and Keyboard events in Playwright
- Custom commands in Playwright
- Using Generative AI: Simulate real-world UI interactions and tweak tests with AI assistance for fun experimentation.

Chapter 5: Assertions and Browser Interactions

- Basic assertions with Playwright
- Handling Cookies & Local Storage
- Browser navigation and refresh
- Handling Alerts, Popups, and Dialogs
- Switching between Windows and Frames
- Mouse events & Interactions
- Using Generative AI: Ask AI to automatically generate tests for common interactions, making learning faster and more exciting.

Chapter 6: Behavior-Driven Development with Cucumber

- Introduction to Cucumber and BDD
- Setting up Cucumber with Playwright and TypeScript
- Writing feature files and step definitions
- Running Cucumber tests with Playwright

- Using Generative AI: AI-assisted generation of feature files and step definitions to speed up BDD workflows.

Module 3 – Advanced Playwright and CI/CD

Chapter 1: Test Optimization and Configuration

- Playwright Configurations
- Environment variables in Playwright
- Headless mode testing
- Parallel test execution and retries
- Configuring Playwright reporters
- Using Generative AI: Use AI to troubleshoot configuration issues or generate optimized test configurations quickly.

Chapter 2: API Testing

- API testing with Playwright
- Asserting status codes and validating headers
- Mocking external services during tests
- Using Generative AI: Get AI to generate API tests and mock responses for deeper understanding of Playwright's API testing capabilities.

Chapter 3: Page Object Model

- Introduction to Page Object Model
- Creating POM structure in Playwright
- Reusing components across test suites
- File uploads and handling media
- Using Generative AI: Build POM structures interactively with AI suggestions to ensure proper code reuse and test structure.

Chapter 4: Continuous Integration and Docker

- Integrating Playwright tests into CI/CD pipelines
- Setting up Jenkins for automated test execution
- Creating Jenkins jobs and pipelines for Playwright tests
- Running Playwright tests in Jenkins CI
- Introduction to Docker
- Running Playwright tests inside Docker containers
- CI integration with Docker for running headless Playwright tests
- Using Generative AI: Automate the setup of CI pipelines and Docker configurations with AI-guided commands and scripts.