

Appium Flutter: Mobile Automation & Flutter Driver

10

MODULES

64

TOPICS

7

HANDS-ON ACTIVITIES

LEARNING OBJECTIVES

- Explain Flutter architecture, widgets, layouts and state management
- Configure a Flutter development environment and project structure
- Set up Appium with desired capabilities and emulator configuration
- Apply Flutter widget and integration testing techniques
- Implement UI tests using Flutter Driver with locators and assertions
- Handle gestures, navigation and state in Flutter UI tests
- Configure Appium Flutter Driver for automated test execution
- Analyse performance bottlenecks and apply Flutter app profiling

10 Modules, 64 Topics

01

Introduction to Flutter

INTRODUCTION TO FLUTTER

- Overview, advantages, architecture
- **Basic concepts:** Widgets, layouts, state management

SETTING UP FLUTTER DEVELOPMENT ENVIRONMENT

- Installation steps
- IDE setup (e.g., Visual Studio Code)
- Project creation and structure
- Flutter CLI commands overview

02

Activity

Introduction to Appium

INTRODUCTION TO APPIUM

- Overview, architecture, and components
- Benefits for mobile automation
- Comparison with other automation tools

SETTING UP APPIUM

- Installation on different platforms
- Configuration files (desired capabilities, server settings)
- Appium server setup and starting Appium sessions
- Emulator/device configuration for testing

03

Flutter Widgets

UNDERSTANDING FLUTTER WIDGETS

Stateless vs. Stateful widgets · **Common widgets:** Text, buttons, images, etc. · **Layouts:** Row, Column, Stack, etc. · Themes and styling in Flutter

04

Activity

UI Testing

FLUTTER UI TESTING BASICS

Widget testing fundamentals · Integration testing concepts · UI automation principles · Using the widget inspector for debugging

05

Activity

Introduction to Flutter Driver

INTRODUCTION TO FLUTTER DRIVER

- Features and capabilities
- Flutter Driver commands and APIs
- **Element locators:** Finding widgets in the UI
- Interacting with Flutter widgets using Flutter Driver

WRITING FLUTTER UI TESTS USING FLUTTER DRIVER

- Test structure and organization
- Assertions and validations
- Synchronization and waits in UI tests
- Best practices for writing robust UI tests

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Activity

Advanced Flutter UI Testing and Test Management

HANDLING GESTURES AND INTERACTIONS IN FLUTTER UI TESTS

- Taps, swipes, scrolls, and complex gestures
- **Testing user interactions:** Form submissions, dialogs, etc.

MANAGING STATE AND NAVIGATION IN FLUTTER APPS FOR TESTING

- Widget states and lifecycle
- State management Overview
- Navigation Fundamentals and Data passing
- Navigation stack management
- Deep linking and route testing

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Activity

Appium Flutter Driver Basics

UNDERSTANDING APPIUM FLUTTER DRIVER

Purpose and use cases · Architecture and components · Compatibility with Flutter versions

SETTING UP APPIUM FLUTTER DRIVER

Installation steps and dependencies · Configuration for Flutter projects · Device/emulator setup for Appium testing

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Activity

Test Automation

WRITING AUTOMATED TESTS FOR FLUTTER APPS USING APPIUM FLUTTER DRIVER

- Element locators in Appium
- Interacting with Flutter widgets using Appium
- Assertions and verifications in Appium Flutter tests
- Handling synchronization and waits in Appium tests

HANDLING COMMON AUTOMATION CHALLENGES

- Dynamic elements and identifiers
- Waits, retries, and timeouts
- Handling pop-ups and alerts in Flutter apps

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Activity

Advanced Appium Flutter Testing

ADVANCED TECHNIQUES IN APPIUM FLUTTER TESTING

- XPath selectors for complex UI elements
- Handling dynamic elements and identifiers
- Advanced assertions and verifications
- Dealing with complex UI scenarios

PERFORMANCE TESTING AND PROFILING FOR FLUTTER APPS USING APPIUM

- Identifying performance bottlenecks
- Memory profiling and optimization tips
- Test execution strategies for performance testing

Best Practices

BEST PRACTICES FOR EFFICIENT APPIUM FLUTTER TESTING

- Test data management strategies
- Parameterization in tests
- Test environment setup and cleanup
- Parallel execution and distributed testing

REVIEWING AND OPTIMIZING FLUTTER APP AUTOMATION SCRIPTS

- Code refactoring and modularization
- Reusable components and libraries
- Error handling and reporting improvements
- Maintaining and updating test suites for long-term reliability

HANDS-ON ACTIVITIES

Practise What You Learn

#	MODULE	ACTIVITY
01	Introduction to Flutter	Lab 1: Setting Up Flutter Development Environment: Participants install Flutter, set up a Flutter project, and explore Flutter CLI commands
02	Introduction to Appium	Lab 2: Setting Up Appium for Mobile Automation: Participants install Appium, configure desired capabilities, and set up emulators/devices for testing
04	UI Testing	Lab 3: Basic Flutter Widget Testing: Participants create basic widget tests for different Flutter widgets and perform UI validations
05	Introduction to Flutter Driver	Lab 4: Writing UI Tests with Flutter Driver: Participants write UI tests using Flutter Driver for a sample Flutter app and practice synchronization techniques
06	Advanced Flutter UI Testing and Test Management	Lab 5: Advanced Flutter UI Testing Scenarios: Participants work on advanced UI testing scenarios involving gestures, navigation, and widget states
07	Appium Flutter Driver Basics	Lab 6: Setting Up Appium Flutter Driver: Participants install and configure Appium Flutter Driver for testing Flutter apps
08	Test Automation	Lab 7: Appium Flutter Test Automation: Participants write automated tests using Appium Flutter Driver and handle common automation challenges
09	Advanced Appium Flutter Testing	Lab 8: Advanced Appium Flutter Testing Scenarios: Advanced Appium Flutter Testing Scenarios

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Everything You Need to Succeed

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