

Web Automation Testing Using Java & Selenium

✦ Module 1: Introduction to Automation Testing

- What is Automation Testing?
 - Manual Testing vs Automation Testing
 - Why Selenium for Web Automation?
 - Advantages of Selenium WebDriver
 - Understanding Test Automation Frameworks
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✦ Module 2: Core Java for Selenium

Java Basics

- Java Setup & Installation
- Data Types, Variables & Operators
- Control Statements (Loops, If-Else, Switch)

Object-Oriented Programming (OOP)

- Classes and Objects
- Constructors
- Inheritance & Polymorphism
- Encapsulation & Abstraction
- Method Overloading & Overriding

Advanced Java Concepts

- Exception Handling
 - Collections Framework (List, Set, Map)
 - File Handling (Read/Write Operations)
 - Multi-Threading Basics
 - Java 8 Features (Lambdas, Streams API, Functional Interfaces)
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✦ Module 3: Selenium WebDriver – Getting Started

- Introduction to Selenium & Its Components
 - Selenium WebDriver Architecture
 - Setting Up Selenium with Java (Maven & Dependencies)
 - Writing First Selenium Script
 - Browser Drivers & Cross-Browser Testing (Chrome, Firefox, Edge)
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Module 4: Locators & Web Element Interactions

- Understanding Different Locators in Selenium:
 - ID, Name, Class Name, Tag Name
 - Link Text & Partial Link Text
 - CSS Selectors
 - XPath (Absolute & Relative)
 - Handling Web Elements:
 - Click, SendKeys, Clear
 - Handling Checkboxes, Radio Buttons, Dropdowns
 - Handling Alerts, Popups, Frames, and iFrames
 - Working with JavaScript Executor in Selenium
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Module 5: Handling Dynamic Web Elements

- Implicit vs Explicit vs Fluent Wait
 - Stale Element Exception & How to Handle It
 - Shadow DOM & Handling Web Components
 - Synchronization in Selenium
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Module 6: Advanced Selenium – User Actions

- Mouse Hover & Right Click (Action Class)
- Drag and Drop
- Handling Multiple Browser Windows & Tabs

- Handling Auto-Suggestive Dropdowns & Web Tables
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Module 7: Selenium Grid – Parallel Execution

- What is Selenium Grid?
 - Running Tests on Multiple Browsers & Devices
 - Distributed Testing with Selenium Grid
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Module 8: TestNG Framework for Selenium

- Introduction to TestNG
 - Annotations in TestNG
 - Running Test Cases with TestNG XML
 - Assertions in TestNG (SoftAssert & HardAssert)
 - TestNG Listeners & Reporting
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Module 9: Page Object Model (POM)

- What is Page Object Model?
 - Implementing POM in Selenium
 - Page Factory with @FindBy Annotation
 - Advantages of POM in Test Automation
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Module 10: Data-Driven Testing (DDT)

- Reading Data from Excel using Apache POI
 - Parameterization with TestNG
 - Using JSON & Properties Files for Test Data
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Module 11: Selenium with CI/CD (Jenkins & Git)

- Introduction to CI/CD in Testing

- Setting Up Git & GitHub for Test Automation
 - Integrating Selenium with Jenkins for Automated Test Execution
 - Running Selenium Tests in CI/CD Pipeline
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Module 12: Logging & Reporting in Selenium

- Logging with Log4j
 - Generating HTML Reports with Extent Reports
 - Capturing Screenshots for Failed Tests
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Module 13: API Testing with RestAssured

- Basics of REST API & HTTP Methods
 - API Request-Response Handling in RestAssured
 - Validating API Responses & Integrating with Selenium
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Module 14: Database Testing in Selenium

- JDBC Connection with Selenium
 - Fetching Data from Databases for Validation
 - Database Query Execution in Automation Scripts
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Module 15: Behavior-Driven Development (BDD) with Cucumber

- Introduction to BDD & Cucumber
 - Writing Gherkin Scenarios
 - Implementing Step Definitions in Java
 - Running Cucumber Tests in Selenium
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Module 16: Real-Time Web Testing Project

- Developing a Selenium Framework from Scratch

- End-to-End Web Application Testing (E-commerce, Banking, CRM)
- Optimizing & Debugging Selenium Tests
- Best Practices in Selenium Automation
- Interview Preparation & Commonly Asked Questions