

## Java Selenium Automation Testing – Complete Industry Roadmap

This roadmap helps in:

- ✓ Crack Automation Testing Interviews
  - ✓ Build Real-Time Frameworks
  - ✓ Survive & Grow in IT Industry
  - ✓ Work confidently in Agile Projects
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### Java Fundamentals

(Java is mandatory before Selenium)

#### Core Java Topics

- Introduction to Java
  - JDK, JRE, JVM
  - Variables & Data Types
  - Operators
  - Conditional Statements
  - Loops
  - Arrays
  - Strings
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### OOP Concepts

Very important for framework development.

- Class & Object
- Constructor
- Method Overloading
- Method Overriding
- Inheritance

- Encapsulation
  - Polymorphism
  - Abstraction
  - Interface
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## 3 **Advanced Java**

Frequently asked in interviews.

- Collections Framework
    - List
    - Set
    - Map
  - ArrayList
  - HashMap
  - Iterator
  - Exception Handling
  - File Handling
  - Wrapper Classes
  - String Class
  - StringBuffer vs StringBuilder
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## 4 **Selenium WebDriver Basics**

### **Selenium Introduction**

- What is Selenium
- Selenium Components
- Selenium Architecture
- Browser Drivers

- Selenium Setup
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## **5 Locators**

Most important Selenium topic.

- id
- name
- className
- tagName
- linkText
- partialLinkText
- CSS Selector
- XPath

## **XPath Topics**

- Absolute XPath
  - Relative XPath
  - Dynamic XPath
  - XPath Functions
  - Axes Methods
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## **6 Web Element Handling**

- Click & SendKeys
- Radio Buttons
- Checkboxes
- Dropdowns
- Auto Suggestions
- Alerts & Popups

- Frames
  - Multiple Windows
  - Web Tables
  - Calendar Handling
  - Mouse Actions
  - Keyboard Actions
  - Drag & Drop
  - File Upload
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### **⚠ Waits in Selenium**

Very important in real-time projects.

- Implicit Wait
  - Explicit Wait
  - Fluent Wait
  - Synchronization Issues
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### **🔧 Selenium Advanced Concepts**

- JavaScript Executor
  - Handling Dynamic Elements
  - Screenshot Capture
  - Broken Links Testing
  - Headless Browser Testing
  - Cross Browser Testing
  - Parallel Execution
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### **🔧 TestNG Framework**

## TestNG Topics

- Annotations
  - Assertions
  - Priorities
  - DependsOnMethods
  - Groups
  - Parameterization
  - DataProvider
  - Listeners
  - Retry Mechanism
  - XML Configuration
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## 10 Maven Build Tool

- Maven Introduction
  - pom.xml
  - Dependencies
  - Plugins
  - Maven Lifecycle
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## 11 Automation Framework Development

Most important for 10+ LPA interviews.

### Framework Concepts

- Page Object Model (POM)
- Page Factory
- Data-Driven Framework
- Hybrid Framework

- Reusable Utilities
  - Base Class Design
  - Config File Handling
  - Excel Integration
  - Logging
  - Reporting
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## **12** Git & GitHub

- Git Basics
- Repository Creation
- Commit & Push
- Branching
- Pull Requests
- Merge Conflicts

Mandatory in companies.

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## **13** Jenkins CI/CD

- Jenkins Installation
  - Job Creation
  - Maven Integration
  - GitHub Integration
  - Scheduled Execution
  - Automation in CI/CD Pipeline
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## **14** SQL for Automation Testers

- SELECT Queries

- WHERE Clause
- JOINS
- GROUP BY
- ORDER BY

Used for backend validation.

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## **15 API Testing Basics**

Automation testers are expected to know API basics.

Topics:

- Postman
  - HTTP Methods
  - Status Codes
  - JSON Validation
  - REST Assured Basics
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## **16 Agile & Jira**

Mandatory for real-time projects.

### **Agile Topics**

- Scrum Process
- Sprint Planning
- Daily Standups
- User Stories
- Retrospective

### **Jira Topics**

- Story Creation
- Bug Creation

- Sprint Tracking
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## **17** Real-Time Project Implementation

Students should practice:

- Login Automation
  - E-Commerce Automation
  - Payment Flow Testing
  - End-to-End Framework Design
  - Cross Browser Execution
  - Data-Driven Testing
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## **18** Interview Preparation

### Frequently Asked Interview Questions

- Difference between findElement & findElements
  - Difference between close & quit
  - Exception Handling
  - XPath Types
  - Waits in Selenium
  - POM Framework
  - TestNG Annotations
  - Parallel Execution
  - Collections in Java
  - String vs StringBuffer
  - Real-Time Challenges
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## **19** Industry Survival Skills

## **Technical Skills**

- Debugging
- Framework Maintenance
- Root Cause Analysis
- Reporting Failures
- CI/CD Understanding

## **Soft Skills**

- Communication
  - Client Calls
  - Agile Meetings
  - Email Communication
  - Team Collaboration
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## **Recommended Teaching Plan**

### **Week 1**

Java Basics + OOPs

### **Week 2**

Advanced Java + Collections

### **Week 3**

Selenium Basics + Locators

### **Week 4**

Advanced Selenium + Waits

### **Week 5**

TestNG + Maven

### **Week 6**

Framework Development

## **Week 7**

Git + Jenkins + SQL

## **Week 8**

Real-Time Project + Mock Interviews

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### **Important Industry Advice**

Those who learn only Selenium commands struggle in projects.

To become industry-ready, you must learn:

- ✓ Core Java Strongly
- ✓ Framework Design
- ✓ Git & Jenkins
- ✓ Agile Process
- ✓ Real-Time Scenarios
- ✓ Debugging Skills
- ✓ Communication Skills

This combination helps you crack high-paying Automation Testing roles confidently.