

# SELENIUM-JAVA AUTOMATION TESTING COURSE CONTENT

## PRE-SELENIUM

### **Core Java Programming**

- *Introduction to Java*
- *History of java*
- *Comparison with C and C++*
- *Features of Java*
- *JDK,JRE,JVM overview*
- *JDK Directory Structure*
- *Basic Java Program through command prompt*



### **Installation and Setup:**

- *Download and install JDK/JRE*
- *Set Environment variables*
- *Download Eclipse IDE*
- *Coding standards followed in Eclipse*
- *Naming standards followed in Eclipse*
- *Features of Eclipse IDE*



### **Packages**

- *Introduction to packages*
- *Need for packages*
- *package declaration in Java*
- *Import statement in Java*
- *static import in java*
- *Resolving name clashes in packages*



### **OOPS and its application in Java:**

- *Classes and Objects*
- *Defining a class, instance variable and method in Java*
- *Defining a class, variable and method in Java*
- *Creating objects out of a class*
- *Method calls via object references*



### **Abstraction**

- *Interfaces and Abstract classes*
- *Abstract and non-abstract methods*



## **Inheritance**

- *extends and implements keywords in Java*
- *Types of inheritance*
- *Super class and Sub class*
- *this keyword, super keyword in Java for inheritance*
- *Concrete classes in Java*
- *Aggregation and Association*

## **Polymorphism:**

- *Compile time polymorphism –Overloading of methods*
- *Run time polymorphism –Overriding of methods*
- *Method Overriding rules and method overloading rules*
- *Introduction to Object class and it's methods*

## **Encapsulation:**

- *Protection of data*
- *Java Bean, POJO*
- *Getters/Setters*
- *Memory management in Java*
- *Heap*
- *Stack*
- *Garbage Collection*

## **Data types**

- *Primitive Data types*
- *Data type Declarations*
- *Data type Ranges and its calculation*
- *Memory allocation for each Data type*
- *Variable Names Conventions*
- *Numeric Literals, Character Literals*
- *String Literals*
- *Arrays*
- *Array of Object References*
- *Enumerated Data types*
- *Non-Primitive Data types*

## **Operators:**

- *Expressions in Java*
- *Assignment Operator*
- *Arithmetic Operators*

- *Relational Operators*
- *Logical Operators*
- *Conditional Operators*
- *Operator Precedence*
- *Implicit Type Conversions*
- *Upcasting and downcasting*
- *Strict typing*
- *Type conversion*

### **Conditional Control Statements**

- *Flowchart for conditional statements*
- *If statement*
- *If-else statement*
- *If-else-if statement*
- *Switch statement*
- *String in switch case*

### **Looping Control Statements**

- *For loop*
- *While loop*
- *Do-while loop*
- *Unconditional Control Statements*
- *break statement*
- *labelled break statement*
- *return statement*
- *continue statement*

### **Scanner class:**

- *Scanner and BufferedReader*
- *Methods to get Primitive data types*
- *match method*
- *delimiter method*
- *findInLine method*
- *skip,close method*
- *useRadix method*
- *useLocale method*
- *IOException method*

**De-bugging:**

- *Launching and debugging java code*
- *Breakpoints*
- *Debug perspective*
- *Stepping commands*
- *Trace point, Trigger point*
- *Breakpoints grouping*
- *Breakpoints sorting*

**Access Modifiers in Java**

- *Role of access modifiers*
- *Private access modifier*
- *Role of private constructor*
- *Default access modifier*
- *Protected access modifier*
- *Public access modifier*
- *Access Modifier with Method Overriding*

**Types of variable:**

- *variable*
- *variable memory storage*
- *Static variable*
- *Local variable*
- *Global/Instance Variable*
- *variable widening*
- *variable narrowing*

**Constructor:**

- *Constructor*
- *Default constructor*
- *Non-arg based constructor*
- *Parameterised constructor*
- *Difference between Constructor and Method*
- *Constructor chaining*
- *this and super method*
- *constructor overloading*

**Singleton class:**

- *Singleton class*
- *Normal class vs singleton class*

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- *Use of Singleton class*
- *JDBC Using Model Object and Singleton Class*
- *Collections.singleton method in Java*
- *Private Constructors and Singleton Classes in Java*
- *Java Singleton Design Pattern Practices*

### **String:**

- *String data type*
- *String declaration*
- *String Tokenizer*
- *String methods*
- *String types*
- *String memory allocation*
- *Manipulations in string*
- *Interfaces and classes in String*

### **Arrays:**

- *Declaration*
- *Instantiation*
- *Initialization of Java Array*
- *Single dimensional Array*
- *Multi-dimensional Array*
- *Anonymous Array*
- *Cloning an Array*

### **Wrapper class:**

- *Need of Wrapper classes*
- *Autoboxing and Unboxing*
- *Primitive Wrapper Classes*
- *Utility methods of Wrapper classes*
- *valueOf and xxxValue methods*
- *parseXxx and toString method*

### **Generics:**

- *Need for Generics*
- *How Generics works in Java*
- *Types of Generics*
- *Generic Type Class or Interface*
- *Generic Type Method or Constructor*
- *Generic Type Arrays*
- *Generics with Wildcards*

- *Unbounded Wildcards*
- *Bounded Wildcards*

### **Collection:**

- *Java Collection Framework*
- *Hierarchy of Collection Framework*
- *Collection interface*
- *Iterator interface*
- *Methods of collection interface*
- *List*
- *Set*
- *Queue*
- *Collections utility class*

### **Map:**

- *Introduction to Map interface*
- *Methods in Map*
- *Iterating a Map*
- *Map hierarchy*
- *Sorted Map*
- *LinkedHashMap*
- *TreeMap*
- *HashMap*
- *HashTable*

### **Exception handling:**

- *Exception types*
- *Usage of Try*
- *Usage of Catch*
- *Usage of Throw*
- *Usage of Throws*
- *Usage of Finally*
- *Built-in Exceptions,*
- *Creating own Exception classes*

### **Java Regex:**

- *Regular expression*
- *MatchResult interface*
- *Matcher class*
- *Pattern class*
- *PatternSyntaxException class*
- *Regex Quantifiers*
- *Regular Expression Character classes*
- *Regex Metacharacters*

**File operations:**

- *File Handling in Java*
- *Stream*
- *Java File Methods*
- *File Operations in Java*
- *File reader*
- *File writer*
- *Buffered Reader*
- *File permissions*

**Date and Time:**

- *Method & Description*
- *Date Comparison*
- *Date Formatting Using SimpleDateFormat*
- *SimpleDateFormat Codes*
- *Date Formatting Using printf*
- *Date and Time Conversion Characters*
- *Sleeping for a While*
- *GregorianCalendar Class*

**Serialization:**

- *Serialization in Java*
- *Need for Serialization in Java*
- *Serializing an Object*
- *Deserializing an object*
- *Advantages and Disadvantages of Serialization in Java*
- *Practical examples of Serialization in Java*
- *Externalizable Interface*
- *Transient Keyword*
- *Serial Version UID*
- *Controversies of Serialization in Java*
- *Best Practices while using Serialization in Java*

**Multi-threading:**

- *Concepts of Thread*
- *Thread life cycle*
- *Creating threads using Thread class and Runnable interface*
- *Synchronization*
- *Thread priorities*
- *Inter Thread communication.*

**jdk 1.5 features:**

- *Autoboxing*
- *Generics*
- *Enhanced for loop*
- *Varargs*
- *Enums*
- *Static imports*
- *C-lang printf()*
- *StringBuilder*
- *Metadata*

#### ***jdk 1.7 features:***

- *String in Switch Expression.*
- *Underscores Between Digits in Numeric Literals.*
- *Integral Types as Binary Literals.*
- *Handling multiple exceptions in a single catch block.*
- *Try-with-resources Statement.*
- *Automatic Type Inference in Generic object instantiation.*

#### ***Memory management:***

- *JVM Memory Structure*
- *Heap area*
- *Method Area*
- *JVM Stacks*
- *Native method Stacks*
- *Program counter (PC) registers*
- *Working of Garbage Collector*
- *Memory leaks in Java*

#### ***SQL:***

- *Introduction to SQL*
- *Table creation*
- *SQL Insert*
- *SQL Update*
- *Applying Constraints*
- *SQL Syntax*
- *SQL Data Types*
- *SQL Operators*
- *SQL Database*
- *SQL Select*
- *SQL Clause*
- *SQL Delete*
- *SQL Join*
- *SQL Keys*

#### ***JDBC Connection:***

- *Establishing connection*



- *Types of JDBC driver*
- *JDBC-ODBC Bridge Driver,*
- *Native Driver,*
- *Network Protocol Driver, and*
- *Thin Driver*
- *Running query*
- *Extracting Result*

### **Java programs:**

- *Check the given number is odd or not*
- *Check the given number is even or not*
- *Print first 100 odd numbers*
- *Print first 100 even numbers*
- *Count the number of even numbers from 1 to 100*
- *Count the number of odd numbers from 1 to 100*
- *Find the factorial of a given number*
- *Generating fibonacci series*
- *Find the reverse of the given number*
- *Check the given number is palindrome or not*
- *Check the given number is armstrong or not*
- *Find the sum of the digits in a number*
- *Find the number of digits in a number*
- *Find the product of digits in a number*

### **Coding standards:**

- *Coding Standards for Classes*
- *Coding Standards for Interface*
- *Coding Standards for Methods*
- *Coding Standards for Variables*
- *Coding Standards for Constants*
- *Java Bean Coding Standards*
- *Getter Methods*
- *Setter Methods*

## **Selenium Introduction**

- *Types of Applications (Desktop, Web, Mobile, Hybrid)*
- *Software Testing Methods (Manual and Test Automation).*
- *Selenium Introduction*
- *Selenium Components*
- *Selenium vs. Other Testing Tools*
- *Advantages of Selenium*
- *Integration of Selenium with Other Tools*

## **Selenium Components:**

- *Purposes and functionalities*
- *Understanding the components*
- *Selenium RC*
- *Selenium IDE*
- *Selenium webdriver*
- *Selenium Grid*
- *When to use Grid*

## **WebDriver**

- *Third party drivers and plugins*
- *Driver requirements*
- *What is WebDriver*
- *Selenium Architecture*
- *Simple Program in Selenium WebDriver*
- *WebDriver methods*

## **Types Of Browser Launch**

- *Desired Capability*
- *Downloading driver file*
- *Downloading selenium jarfile*
- *Chrome Browser Launching*
- *Safari Browser Launching*
- *InternetExplorer Browser Launching*
- *Installing FireBug and FirePath*
- *Firefox Browser Launching*

## **Locators**

- *Id*

- *name*
- *classname*
- *xpath*
- *tagName*
- *linkText*
- *partialLinkText*
- *cssSelector*

### **Xpath**

- *Contains Xpath*
- *Text Xpath*
- *Text Contains Xpath*
- *Attribute with contains*
- *Following*
- *Ancestor*
- *Child*
- *Preceding*
- *Following-sibling*
- *Parent*
- *Self*
- *Descendant*

### **Types Of Xpath**

- *Relative Xpath*
- *Absolute Xpath*
- *Difference between Absolute Xpath and Relative Xpath*
- *Limitations in Absolute xpath*
- *Advantages of using Relative xpath*

### **Check Box**

- *Finding checkboxes count*
- *Checking the visibility of Check Box*
- *Checking the properties of Check Box*
- *Identifying common locator for all checkboxes*
- *Checking toggled attribute*

### **Text Box**

- *Handling the Text Box*
- *Checking the visibility of Text Box*
- *Checking the properties of Text Box*

- *Identifying common locator for all TextBoxes*
- *Finding Textboxes count*

### **Radio Button**

- *Handling the Radio Button*
- *Checking the visibility of Radio Button*
- *Checking the properties of Radio Button*
- *Identifying common locator for all Radiobuttons*
- *Finding radiobuttons count*

### **WebElement**

- *What are WebElements in Selenium*
- *Different types of WebElements*
- *Operations performed on the WebElements*
- *How to locate the WebElements on the web page*
- *Different WebElement methods*
- *Difficulties while handling webElements*

### **Dynamic Locators**

- *Absolute XPath method*
- *Relative XPath method*
- *Identify by index*
- *Preceding-sibling,Following-sibling concept*
- *Ancestor ,parent concept*
- *Common tagname(\*) method*
- *Multiple attributes to locate an element*

### **Desired Capability**

- *Need for Desired Capabilities*
- *Different types of Desired Capabilities Methods*
- *Example for set capability method*
- *Setting the Property*
- *Getting the Property*

### **Navigation Commands**

- *Navigate To Command*
- *Forward Command*
- *Back Command*
- *Refresh Command*
- *navigate method over get method*

- *Navigation by using JavascriptExecutor*

### **WebDriver Commands**

- *Fetching a web page*
- *Locating elements and sending user inputs*
- *Clearing User inputs*
- *Fetching data over any web element*
- *Performing Click event*
- *Navigating backward in browser history*
- *Navigating forward in browser history*
- *Refresh/ Reload a web page*
- *Closing Windows*
- *Closing Browser*
- *Handling Windows*
- *Handling Frames*
- *Handling Drag and Drop*

### **Actions**

- *Drag and Drop*
- *Mouseover Action*
- *Right Click*
- *Double Click*
- *Performing Multiple Actions*
- *Accessing modifier keys using Actions class*

### **Alerts**

- *Switching into Alert*
- *Alert methods*
- *Types of Alert*
- *Handling the Alert*
- *Passing the inputs to Alerts*
- *Entering text into Alert*
- *Get the text present in Alert*

## **Pop-ups**

- *Handling the Window based popups*
- *Handling the Notification popups*
- *Handling pop-ups using Robot class*
- *Handling the Login popups*
- *Chrome Options*
- *FirefoxOptions*
- *InternetExplorerOptions*

## **Robot Class**

- *Need of Robot Class*
- *Methods to implement this class*
- *Mouse click using Robot class*
- *Limitations*
- *Copy Operations*
- *Cut Operations*
- *Paste Operations*
- *File Uploading*
- *Alert Handling*

## **Waits**

- *Need for Waits*
- *Static waits*
- *Dynamic waits*
- *Implicit Waits*
- *Explicit Waits*
- *Fluent Waits*
- *WebDriver Waits*

## **JavaScript**

- *WebElement Highlighting*
- *Click Operation*
- *Fetching the Data from Weblement*
- *Sending the Inputs to WebElement*
- *Scrolling Operations*
- *Highlighting a WebElement*

### **ScrollUp/ScrollDown**

- *Scroll the web page by pixel*
- *Scroll the web page by the visibility of the element*
- *Scroll down the web page at the bottom of the page*
- *Horizontal scroll on the web page*
- *Multiple Scroll*
- *ScrollBy coordinates*

### **Frames**

- *Need for Frames*
- *Identifying a Frame*
- *Switching to Frames using Selenium WebDriver*
- *Different ways of switching*
- *Dynamic frames handling*
- *Frames Size*
- *Concept of Nested Frames*

### **Windows Handling**

- *Importance of Windows Handling*
- *Handling the Multiple Windows*
- *Windows Handling using Set*
- *Windows Handling using List*

### **WebTable**

- *Analyzing WebTable structure in DOM*
- *Handling multiple webtables in a page*
- *Dynamically changing WebTable handling*
- *Extracting values from webTable*
- *Analyzing the Tagnames*
- *Different Scenarios with WebTable*

### **Dynamic WebTable**

- *Handling Dynamic Tables In Selenium*
- *Analyzing the Dynamic WebTable*
- *Analyzing the HTML Tags in Dynamic WebTable*
- *Different Scenario with Dynamic WebTable*

## **ScreenShot**

- *Need of Screenshot in Automation testing*
- *Capture Screenshot in Selenium*
- *Capture Full Page Screenshot*
- *Taking a Screenshot of a particular element of the page*
- *Taking a Screenshot with different file formats*
- *Random name generation for screenshots*

## **Image**

- *Finding images count in webpage*
- *Finding broken images count in webpage*
- *Finding broken image URL*
- *JavaScriptExecutor code to verify if image*
- *code to print desired output as per image*

## **Links**

- *Identifying URL*
- *Validating URL*
- *To Find a broken links*
- *HTTP response code*
- *Collect all the links in the web page*

## **DropDown**

- *Select class in Selenium WebDriver*
- *Different Select commands*
- *Multiple Select commands*
- *Deselect Commands*
- *Get All options*
- *Dropdown without Select tag*
- *Handling dropdown with values changing its position dynamically.*

## **Maven**

- *Introduction to Apache Maven*
- *Maven Dependencies*
- *Maven Plugins*
- *Controlling The Build*
- *Maven Release Process*
- *Deploying to a Repository*
- *Using Snapshots*



## **JIRA**

- *Introduction To JIRA*
- *Test Management In JIRA (Zephyr)*
- *Advanced Search And Introduction To JQL (JIRA Query Language)*
- *Generating Reports In JIRA*
- *Introduction To JIRA Agile*

## **Data Driven:**

- *Data Driven Explanation*
- *Excel Types*
- *Apache poi-ooxml*
- *Interface , class , methods in apache poi-ooxml*
- *Read Data from excel*
- *Write data in excel*
- *update data in excel*
- *Creation of Automation scripts reading data from excel*

## **POM Framework:**

- *Page Object Model*
- *Advantages of POM*
- *Implementing POM*
- *Object repository creation*
- *Page Factory*
- *POM Annotation*
- *Getters and setters*
- *AjaxElementLocalFactory*

## **JUNIT Framework:**

- *JUNIT Test Framework*
- *download and installation of junit*
- *JUNIT Annotation & API*
- *JUNIT Assert*
- *Create JUNIT Test Suite*
- *JUNIT Ignore Test*
- *JUNIT ErrorCollector*
- *JUNIT Parameterized Test*
- *JUNIT Vs Testng*
- *Execution metrics from JUNIT*

## **TESTNG Framework:**

- *TESTNG with Selenium*
- *Advantages of TESTNG over JUnit*
- *TESTNG Annotation & API*
- *Create TESTNG Suite*
- *TESTNG Parameterized Test*
- *Parameters*
- *Data Provider*
- *Re-running failed Test Cases*
- *RetryAnalyzer*
- *IAnnotationTransformer*
- *TESTNG Assertions*
- *Hard Assert*
- *Soft Assert*
- *Run Multiple test case*
- *Customized,PDF,&Email Testng reports in selenium webDriver*
- *TESTNG Ignore Test*
- *Grouping in TestNG*
- *Cross browser execution*

### **Cucumber Framework:**

- *BDD Introduction*
- *Cucumber Introduction*
- *How to download & Installation plugin*
- *Gherkin Language*
- *Feature files*
- *TestRunner with junit*
- *Step Definition*
- *CucumberOptions*

### **Manual testing**

- *Software build process*
- *SDLC*
- *STLC*
- *Introduction to Testing*
- *Manual and Automation Testing*
- *Testing Techniques*
- *Testing principles*
- *Test scenario and Testcases preparation*
- *Software testing methodologies*
- *Functional and non-functional testing*
- *Detailed explanation for Waterfall methodology*
- *Detailed explanation for Agile Methodology*
- *Defect raising using JIRA*

### ***Resume preparation***

- *Your resume is arguably the most critical part of the modern job application process.*
- *A well-organized, tailored resume will increase your chances of landing an interview while a poorly written resume could get lost in the sea of applicants.*
- *We will help you to prepare your impressive resume with best specification of your skill set*