Selenium Training Course Syllabus

1. Pre-Selenium
2. Selenium
3. Post-Selenium

Pre-Selenium

Core Java

- Setup Java environment – Download JDK and Setup eclipse
- Keywords and Syntax
- variables, operators, and control flows
- OOPs overview from Java context
- Conditions, Loops, Access and non-access modifiers
- Exception Handling, File and DB handling
- Collections overview, and ArrayList example

Introduction to Java Programming Environment

- How to Install & set Path.
- A Simple Java Program
- Compiling & executing Java Program
- Phases of Java Program
- Analysis of a Java Program
- Understanding Syntax and Semantic Error
- Runtime Exception
- Name of a Java Source File
- Platform Independency
- Java Technology (JDK, JRE, JVM, JIT)
- Features of Java
- Text Editors
- Consoles

Fundamentals of Java Programming

- Naming convention of Java language
- Comments
- Statements
- Blocks (Static, Non-static/instance)
- Identifiers
- Keywords
- Literals
- Primitive Data Types, Range
- Reference (User defined) Data type

- Variables (Primitive, Reference)
- Type Casting, Default Value
- Operators
- Program/Interview questions
- Control Structures

Input Fundamentals and Datatypes in Java

- Java program inputs from Keyboard
- Methods of Keyboard inputs
- Scanner, Buffered Reader
- Problem Solving
- Java Array
- What is Array
- Array Declaration in java vs C and C++.
- Instantiation of an Array
- String vs character array.Accessing Array
- Elements, Default Value, for-each loop, varargs
- Length of an Array (What is –Array Index Out Of Bounds Exception)
- Increasing, Decreasing the Size and Copy of an Array
- Multi-Dimensional Arrays
- Application Compilation and Run

Object Oriented Programming

- Procedural Vs Object Oriented Program
- Different type of Program Procedural Vs Object Oriented.
- Top Down Vs Bottom Up Approach
- Introduction to Object Oriented
- Abstraction, Encapsulation, Inheritance,
- Polymorphism.
- Introduction to Classes and Objects
- Custom Class Definition
- Instance and Static Variables
- Different ways to create Object Instance
- Instance Variable and it's role in a Class
- Constructors, types of Constructor,
- Constructor Rule, Constructor Overloading
- Static Variable and it's use.
- Methods and their behavior.
- Constructor vs Methods
- "this" Keyword
- Java Access Modifiers (and Specifiers)
- Call by value, Call by reference

Command-Line Arguments

- What is a Command-Line Argument?
- Java Application with Command-Line Arguments
- Conversion of Command-Line Arguments
- Passing Command-Line Arguments
- Using methods (Static , Non Static)

Integrated Development Environment

- Using various Editors
- Program Compilation, Execution in Editor
- Using Eclipse IDE
- Project Set Up
- Source File Generation
- Application Compilation and Run

Inner Class

- First View of Inner Class
- Outer Class Access
- Types of Inner Class

Inheritance

- Complete concepts of Inheritance
- Sub-Classes
- Object Classes
- Constructor Calling Chain
- The use of "super" Keyword
- The use of "private" keyword inheritance.
- Reference Casting

Abstract Classes and Inheritance

- Introduction to Abstract Methods
- Abstract Classes and Interface
- Interface as a Type
- Interface v/s Abstract Class
- Interface Definition
- Interface Implementation
- Multiple Interfaces' Implementation
- Interfaces' Inheritance
- How to create object of Interface

Polymorphism

- Introduction to Polymorphism
- Types of Polymorphism
- Overloading Methods
- Overriding Methods
- Hiding Methods
- Final Class and Method
- "Is-A" vs "Has-A"
- Association Vs Aggregation

Package

- Package and Class path and its use
- First look into Packages
- First look into Class path
- Class path Setting
- Class Import
- Package Import
- Role of public, protected, default and private w.r.t package
- Namespace Management
- Package vs. Header File
- Creating and Using the Sub Package
- Sources and Class Files Management

Using Predefined Package & Other Classes

- Java.lang Hierarchy
- Object class and using toString(), equals(),hashCode(), clone(), finalize() etc
- Using Runtime Class, Process Class to play music, video from Java Program
- Primitives and Wrapper Class
- Math Class
- String, StringBuffer, StringBuilder Class
- String Constant Pool
- Wrapper Classes
- System Class using gc(), exit(), etc.

New Concepts in Package

- Auto boxing and Auto unboxing
- Static import.
- Instance of operator.
- Enum and its use in Java
- Working with jar

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Garbage Collection

- Garbage Collection Introduction
- Advantages of Garbage Collection
- Garbage Collection Procedure
- Java API

Exception Handling

- Introduction to Exceptions
- Effects of Exceptions
- Exception Handling Mechanism
- Try, catch, finally blocks
- Unchecked Exception
- Throw & throws keyword
- Custom Exception Class
- Chained Exception.
- Resource handling & multiple exception class

Multithreading

- Creating a Thread by inheriting from Thread class
- Run() and start() method.
- Constructor of Thread Class
- Various Method of Thread Class
- Runnable Interface Implementation
- Thread Group
- Thread States and Priorities
- Synchronization method, block
- Class & Object Level Lock
- Deadlock & its Prevention
- Inter thread Synchronization
- Life Cycle of Thread
- Deprecated methods : stop(), suspend(), resume(), etc

Input and Output Streams

- Types of Streams
- Stream Class Hierarchy
- Using File Class
- Copy and Paste the content of a file
- Byte Streams vs Character Streams
- Text File vs Binary File
- Character Reading from Keyboard by Input Stream Reader
- Reading a Line/String from Keyboard by Buffered Reader
- Standard I/O Streams Using Data Streams to read/write

- primitive data
- PrintStream vs PrintWriter Using StreamTokenizer and RandomAccessFile

Serialization

- Using Object Streams to read/write object
- Transient Keyword
- Serialization Process
- Deserialization Process

Collection Framework

- Generics(Templates)
- What is generic
- Creating User defined Generic classes
- The java.util package
- Collection
- What is Collection Framework
- List, Set & Map interfaces
- Using Vector, Array List, Stack,
- Linked List, etc.
- Using Collections class for sorting
- Using Hashtable, Hash Map, Tree Map,
- SortedMap, LinkedHashMap etc.
- Iterator, Enumerator.
- Using Queue, Deque, SortedQue, etc.
- Using HashSet, TreeSet, LinkedHashSet etc
- Using Random class
- Using Properties in a Java Program
- Using user defined class for DataStructure
- Using Date and Formatting Date class.
- Interview related Question and Answer

SQL for Testers

- Introduction to SQL
- SQL Syntax
- SQL Select, Distinct, Where
- SQL And, Or, Not
- SQL Order By
- SQL Insert, Update, Delete
- SQL Min and Max
- SQL Count, Avg, Sum
- SQL Like

- SQL Wildcards
- SQL In
- SQL Between
- SQL Aliases
- SQL Joins
- SQL Union
- SQL Group By
- SQL Having
- SQL Any, All
- SQL Case
- SQL Stored Procedures
- SQL Operators
- SQL Create, Drop, Alter Table
- SQL Constraints
- SQL Not Null
- SQL Unique
- SQL Primary Key, Foreign Key
- SQL Views
- SQL Injection
- SQL Data Types

Selenium

Introduction to Automation Testing

- What is Automation Testing?
- Advantages of Automation Testing?
- Fundamentals of test automation
- ROI in Automation
- Automation framework
- Various tools and comparison with Selenium

Introduction to Selenium

- What is Selenium?
- Components of Selenium Suite
- Advantages of Selenium
- Limitations of Selenium
- What is Selenium WebDriver?
- Advantages of Selenium
- What is the difference between Selenium and QTP?

Introduction to Selenium WebDriver

- Why WebDriver?
- Downloading webdriver Jars configuring in eclipse
- What Selenium is and how it is used in the industry
- Features of Selenium
- Selenium IDE – Overview with a couple of examples
- WebDriver Architecture
- Installation of Selenium and supporting tools/Frameworks
- Drivers for Firefox, IE, Chrome, Iphone, Android etc
- What is the difference between Selenium RC and WD?

Selenium IDE and RC Introduction

- Installing Selenium IDE
- Introduction to Selenium RC
- "Selenese" – Selenium Commands
- Actions, Asserts, Assessors.
- Developing Test Cases & Test Suites with Selenium-IDE

Installations

- eclipse-Oxygen
- JDK 1.8
- Firefox 47.0.1, firebug and file path
- Set up TestNG, Maven and Selenium (2.53.1 &3.0 +) for eclipse

Locating Techniques

- Simple WebDriver Program Demonstration
- Basics of HTML page, tags, attributes, and visible texts
- Importance of attributes in locating elements
- Installation of Firebug and Firepath in Firefox browser
- Locators and Eight Locating Techniques
- Creating robust locators using CSS and XPath

WebDriver Basics – I

- Execute Tests in Firefox, Chrome, and Internet Explorer
- WebDriver Commands: Driving Browsers and Handling Cookies
- WebElement Commands
- Handling Various WebElements
- WebDriver Timeout Methods

WebDriver Basics – II

- Handling Multiple elements using find Elements() method
- Handling Alerts, Pop-ups, and Frames
- Limitation of Implicit Wait and how Explicit Wait helps
- Advanced User Interactions
- Taking Screenshots
- Working with Firefox profiles
- Handling File Uploads Using AutoIT
- Introduction to Flash Application Testing using Selenium WebDriver

TestNG

- Arranging Tests in 3-As format
- F.I.R.S.T Principles and SRP
- Various Annotations in TestNG
- TestNG configuration file
- Configuration Annotations
- Attributes of @Test
- Parallel Test Execution Capability
- Assertion APIs
- Passing Parameters to Tests
- Configuring Test Suites
- Reports using TestNG
- Reports using ReportNG

WebDriver – Framework

- Introduction to various frameworks
- Page Object Design Pattern
- Data Driven Tests using TestNG and POI
- Introduction to Maven and ANT
- Use of Log4j
- Use of Listeners
- Typical components of a framework
- Overview of BDD, TDD
- Code Coverage in Java
- Overview of Sikuli tool for UI testing
- Introduction to Jenkins
- Configuring Jenkins to invoke Selenium Tests

Selenium Grid

- What is Selenium Grid?
- When to Use Selenium Grid
- Setting up Grid – Hub and Nodes?
- Configuring TestNG.xml to run tests on Grid

Database testing using webdriver

- Installing MySQL Database
- sql package
- Overview on Connection Interface, Statement Interface, Prepared Statement and Resultset Interfaces.
- Example program to Access Database.
- Some examples on SELECT,UPDATE and DELETE queries
- Some Webdriver examples using Data fetched from Database
- Automation Test Framework

Develop Test automation framework

- What is a framework
- Types of framework
- Data driven framework
- Modular driven framework
- Keyword driven framework
- User Defined Keyword driven framework with implementation
- Execute test scripts from the framework

BDD Framework with Cucumber

- Agile Testing
- Behaviour Driven Development (BDD)
- Advantages and Limitations of BDD
- Cucumber Fundamentals
- Gherkin Syntax in Cucumber
- Step Definition for Cucumber Feature File
- Advantages of Cucumber
- Implementing BDD Framework using Cucumber

Project Execution

- Automate an eCommerce Application
- Test Automation Requirements Description
- What Next? How to Start?
- High Level Framework
- Configurability—No To Hard-Coding

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- Modularity—Re-Use And DRY
- Test Data Management
- Logging And Reporting

Mobile App Test Automation Using Appium

- Introduction Mobile App Test Automation
- Introduction to Appium
- UIAutomator with Appium
- Locating Elements – UIAutomator framework
- Desired Capabilities for Android

Post Selenium

Maven Project Management Tool

- Introduction about maven
- High-Level Overview
- Ant vs Maven
- Installation of Maven
- Demo using Sample Maven Project

Version Control Tool GITHUB

- Downloading and configuring Github
- Difference between CVC Versus DVC
- Basic Git Commands
- Working with Repositories
- Setting up Repositories
- Local and Remote Repositories
- Create repository and cloning projects
- Committing and Syncing the code
- Reverting and Rolling Back the Code
- Branch and Merging Concepts and Implementation
- Stashing Changes
- Resolving the Conflicts

Continuous Integration Testing using Jenkins

- About Jenkins
- History of Jenkins
- Splitting of Projects
- What is Continuous Integration
- Installing Jenkins
- Creating a simple job
- Integrating Jenkins to the Project

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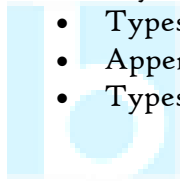
ANT

- What is Ant
- XSLT Report generation using TestNG and ANT
- Building utility functions
- Building BAT for project execution
- Building BAT to run tests using ANT

JUnit

- JUnit's Annotations
- JUnit's Methods
- JUnit Test Suites
- Ant Build and JUnit Reporting

Log4j

- Logging Introduction
- Log4J framework Introduction
- Layout Introduction
- Types of Layout
- Appender Introduction
- Types of Appender