

# MANUAL + SELENIUM



## COURSE CURRICULUM

### Introduction to Software Application and Fundamental of Testing

- Overview of Software Application Testing
- Why is testing necessary
- Software testing Principles
- Psychology of software testing
- Causes of Software Defects
- Terms used in Software Testing [Defect, Error, Bug, Failure etc..]
- Overview of SDLC [Software Development Life Cycle]
- Overview of Project Execution Lifecycle
- Overview of Project Lifecycle

### Models of Software Engineering

- Waterfall Model
- Prototype model
- Spiral Model
- Incremental Model
- Iterative Model
- RAD (Rapid Application Development)
- V Model
- Agile Model

### Quality Management System

- What is Quality Management System and It's need
- What is Quality Assurance
- What is Quality Control
- Review process and Types of Review Process
- Different Roles and Responsibilities of reviewers
- Walkthrough
- Inspection
- Code Review
- Peer Review
- Verification Vs Validation
- Static & Dynamic Testing techniques
- Quality Standard CMM, ISO, 6Sigma

### Software Testing methodology

- White Box
- Black Box
- Grey Box

### Levels of Software Testing

- Unit Testing
- Integration Testing
- System testing
- UAT

## Testing Types/Approaches

- Smoke Testing
- Sanity Testing
- Re-Testing
- Regression Testing
- Ad-hoc and Exploratory testing
- Monkey & Gorilla Testing
- Alpha Testing
- Beta Testing
- Validation Testing
- Web Application Testing
- Accessibility Testing
- Recovery Testing
- System Compatibility
- Browser Compatibility Testing
- Cross Browser Testing
- Multiple Browser Testing
- Forward and backward compatibility
- Performance Testing
  - Load Testing
  - Stress Testing
  - Volume Testing
- Usability Testing
- Accessibility testing
- Security Testing
- Multilingual testing

## Introduction of different Test Estimation techniques and Reporting techniques

- Test plans estimates and strategies
- Different test approaches
- Test progress, monitoring and control
- Configuration management
- Risk and testing
- Identifying test condition and design test cases
- Categories test design techniques
- Specification based or black box techniques
  - BVA
  - ECP
  - Decision table testing
  - State transition testing
  - Orthogonal array
- Structure based or white box testing techniques
  - Cyclomatic complexity
  - Basis path testing
  - CFG
  - Statement coverage
  - Branch coverage
  - Path coverage
- Experience based techniques
- Risk based Testing
- Choosing a test techniques
- Bug/defect lifecycle
- Defect Severity & Priority

## Software Testing Life Cycle (STLC)

### Practical session on Live/Inbuilt and real time Projects (Lab Session)

- Creation Of Test Plan
- Creation Of Test Scenarios, Test Cases
- Test case execution

- Bug tracking and reporting
- Implementation of testing optimization Techniques (ECP, BVA, Decision Table...)
- Overview of Test Metrics, creation and its importance
- Types of Test Metrics
- Traceability Metrics
- Test report preparation
- Test closure Report preparation

### **Real Time Process testing terminologies**

- Test bed, Test Hardnesses, Test Suit, Test basis, Test artifacts, Different Environment(DEV,Test, Production), Requirements Volatility, Staging process, Build Process, Test Cycle, Re-spin, Test Efficiency, Hot fix, Patch,Base Line, Change request, Defect age, Defect clustering, Defect slippage, Impact Analysis,Defect root cause,Escalation process and more....

### **Agile Methodology**

- Introduction to Agile Methodology &Agile Manifesto
- Overview of Different Agile methods
- When to Use Scrum vs. When to Use Traditional Methods
- Scrum Process
- Scrum Roles
- Scrum Team
- Time-Box Concept
  - Event 1: The Sprint
  - Event 2: Sprint Planning
  - Event 3: Daily Scrum
  - Event 4: Sprint Review
  - Event 5: Sprint Retrospective
- Product Backlog Grooming
- Scrum Artifacts
  - Artifact 1: Product Backlog
  - Artifact 2: Sprint Backlog
  - Artifact 3: Increment
  - Artifact 4: Definition of “Done”
  - Artifact 5: Monitoring Progress toward a Goal
  - Artifact 6: Monitoring Sprint Progress
- Agile Tracking, Scrum Meeting and Daily Stand-ups
  - Product Backlog Grooming

### **Agile Test Management and Bug tracking/Reporting with JIRA**

- Introduction about Jira tool
  - What is an Issue?
  - What is a Project?
  - What is a Workflow
- Exploring the JIRA workspace
- Managing your user profile
- Navigating JIRA
- Creating an Issue
- Viewing Issues
- Editing Issues
- Transitions and Screens
- The Workflow Viewer
- Collaboration
- Search
- Detail View
- Configuring Filters
- Email Filter Results
- Standard & Custom Reports

## Database Testing Introduction

- What is Database Application?
- Overview about database structure
- Introduction about deferent database types
- Understanding data storage
- Back end & front end Testing
- General Database Basics
- Essential elements needed for database testing
- writing test plan for database testing
- Organizing DB Testing approach
- writing test cases for database testing

## Basic SQL

- Why should Test professionals know Structured Query Language?
- Writing the statement in SQL Plus
- Overview of DML , DDL, TCL,DCL
- DML : Insert , update , Delete , merge
- DDL : Create, Drop, Alter, Rename, Modify, Truncate
- TCL : Commit, Roleback, SavePoint

## SQL Functions:

- Single Row Function / Multiple Row Function
- String Function , Number Function , Date and Time Function, General Function

## Joining Tables

- Obtaining data from multiple tables
- Types of joins : Inner joins , Non-equi Join, Natural Join, ,Right outer join, Full outer Join

## Operators: (data using Group Function)

- Arithmetic Operator
- Relational/Logical
- Like Operator

## Constraints & View

- Not Null
- Unique
- Primary key

## Aggregating data using group functions

- GROUP BY
- HAVING

## Overview and concept Sub queries

- Single Row sub queries
- Multiple row Sub queries

# JAVA

## Introduction to Java

- Introduction to Java Programming Language,
- Uses of Java language, Java Syntax Rules & Coding Standards,
- Java Environment Setup, Write & Execute first Java Program,
- And Write Java Programs using Eclipse IDE

## Java Programming for Selenium

- Overview of Java Programming, Java Modifiers, Data Types,
- Variables, Operators, Flow Control, Arrays, String Handling,
- File Handling, Exception Handling, and Methods.
- Java OOPS: Inheritance, Polymorphism, Abstraction, and Encapsulation.

## Java Program Structure and Syntax

- Java Programming Structure, Writing Comments,
- Declaring Methods, Declaring Variables,

- Declaring Constants, Print Statements, usage of Operators,
- Writing Conditional Statements, Writing Loop Statements and Calling methods

### Java Conditional and Loop Statements

- Java Conditional and Loop Statements ,explains Types of Conditional statements in Java,
- Types of Conditions and usage of conditional statements.
- If statement and switch statements in Java with examples.
- Java loop structures, for loop, while loop, do while loop and enhanced for loop with examples.

### Strings and Arrays in Java

- Strings and Arrays in Java, explains String handling in Java,
- Creating Strings, String Concatenation, and String Comparison.
- Array declaration, types of Arrays, print Array, copy Array,
- Array methods and Advantages & Disadvantages of Arrays.

### Input Output Operations and File Handling

- Input and Output operations and File handling in Java,
- Explains reading different types of input and displaying output on the console.

### Collections Framework

- Introductions of Collections
- Types of collections
- Generic -List, Dictionary, Stack and Queue
- Non Generic- ArrayList, HashTable, Stack and Queue

# SELENIUM

### Introduction of Selenium:

- What is Automation Testing
- Use of automation Testing
- Tools for Automation Testing
- Why automation is important for you career?
- What is Selenium.
- Advantage of Selenium.
- History of Selenium.
- Component of Selenium.
- Architecture of Remote Control.
- Architecture of WebDriver.
- Architecture of GRID.
- Differences between API's Vs GUI's.

### Selenium IDE:

- Selenium IDE Introduction
- Record and Playback with Firefox and Chrome
- Debugging in Selenium IDE Script
- Introduction Katalone Studio
- Record and Playback through Katalone Studio

### Set up Eclipse:

- Download and install java
- Download and start Eclipse
- Download and configure WebDriver java client
- Set up a project
- Create packages
- Create a First Java test case
- Import WebDriver Source file

### WebDriver:

- WebDriver Interface
- WebElement Interface
- Launching Firefox browser

## Browser & Navigation Commands:

- How to Open a URL
- Verify Page title
- Strategy to get the Page Source
- Difference between Close & Quit
- Ways to Navigate Back & Forward
- How to Refresh Page
- Another way of Navigating to specific Page

## Locators:

- What are locators.
- HTML Basics.
- HTML language tags and attributes.
- ID, Name, Xpath, CSS etc.
- Difference between Absolute & Complete Xpath.
- Finding your first element.
- WebElement Commands.

## Element Identification:

- Element Inspector in Mozilla, Chrome and IE
- Element locator tool for Firefox Locator
- Firebug&Fire Path Add-Ons in Mozilla
- Various HTML locator strategies
- XPath Helper Plug-in for Chrome
- Selection of Effective Xpath
- Handling Dynamic objects/ids on the page

## Tables, Checkboxes & Radio buttons:

- Identify table rows and columns
- Extracting values from a cell
- Dynamically Identify Tables Data
- Select class in Selenium
- Drop Down Handle.
- Select multiple values from the list
- Select & Deselect operations by Index, Value & Visible Text.

## Selenium Waits, Alert & Switch Windows:

- Implicit and Explicit waits
- How to use Expected Conditions with Waits
- PageLoadTimeout & SetScriptTimeout property
- Simple use of Thread Sleep
- Concept of Fluent Wait in Selenium
- WebDriverWait and its uses
- Different WaitUntil Conditions
- Ways to handle Simple, Confirmation & Prompt Alert
- Concepts of Set Interface in Java
- Difference between Window Handle & Handles
- Switching & Closing Windows, Tabs & Popup's
- Concept of window ID
- Extracting window IDs with Selenium Object reference
- JavaScriptExecutor Interface
- Captured Screenshot
- Cookies Handles

## Action Class:

- What is Action Class & What can we do with Action Class
- Mouse Hover & Mouse Movement with Action
- Finding Coordinates of a Web Object
- Drag and Drop Action

### **TestNG Framework:**

- What is TestNG
- Benefits and Features of TestNG
- How to download TestNG
- Annotations in TestNG
- How to run Test Suite in TestNG
- Groups in TestNG
- Depend on in TestNG
- Test Case sequencing in TestNG
- TestNG Asserts
- TestNG Parameters
- Multi Browser testing in TestNG
- Parallel testing in TestNG
- Extent Report API

### **Cucumber :**

- Introduction Cucumber
- Using Cucumber
- Gherkins Language
- Creation of feature files and Step Definition
- Introduction TDD and BDD
- TDD Vs BDD
- Version Control (GitHub Introduction)

### **Log4j Logging:**

- Log4j Introduction
- Download Log4J
- Add Log4j Jar
- Test Case with Log4j
- Log4j Log Manager
- Log4j Appenders
- Log4j Loggers

### **Database Connections:**

- Database connection
- Database Testing in Selenium using MySql Server

### **Automation Framework:**

- What is Automation Framework
- Features of Automation Framework
- Benefits of using Automation Framework
- Different types of Automation Framework
- What is Data Driven Framework
- What is Modular Driven Framework
- What is Keyword Driven Framework
- Apache POI API
- POI Setup and Configuration
- Read and Write Excel file with Apache POI
- POM (Page Object Model)
- Page Factory

### **Maven:**

- Maven Introduction
- Install Maven in Eclipse IDE
- Install Maven on Windows
- Install Maven on Mac
- How to Create a New Maven Project
- How to Create a New Maven Project in Eclipse
- Configuration of POM & set multiple builds

## Jenkins:

- Jenkins Introduction.
- Installation & configuration of complete Jenkins setup.
- Scheduling of Maven build & set multiple builds in Jenkins.
- Overview of integration between Jenkins & GitHub.
- Overview of integration between Jenkins & AWS.
- Selenium Integration with Jenkins.

## GitHub

- Introduction of GitHub and Selenium integration.
- Installation of git binaries
- Github set up in eclipse IDE
- Building repository on git
- Test prepare in selenium using Github

## Automation Test Script Development (Project Based)

- Analyzing Manual Test Script
- Automation Test Script Development strategy
- Development Test Script according to manual script

## Interview Preparation :

- Technical Interview Preparation
- Mock interview Preparation
- HR Session
- Project implementation

Partners :



Java



development | consultancy | training

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