**PRE-SELENIUM**

* **Core Java Programming**

Introduction to Java

History of java

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

* **Data types:**

Primitive Datatypes

Datatype Declarations

Datatype Ranges and its calculation

Memory allocation for each Datatype

Variable Names Conventions

Numeric Literals, Character Literals

String Literals

Arrays

Array of Object References

Enumerated Data Types

Non-Primitive Datatypes

* **Operators:**

Expressions in Java

Assignment Operator

Arithmetic Operators

Relational Operators

Logical Operators

Conditional Operators

Operator Precedence

Implicit Type Conversions

Upcasting and down casting

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/Jump Statements

break statement

labelled break statement

return statement

continue statement

* **Scanner class:**

Diff between Scanner and Buffered Reader

Methods to get Primitive datatypes

match method

delimiter method

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

Classes and Objects

Defining a class;

Defining instance variables and methods

Defining a class, variable and method in Java

Method Signature; method call

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

Super class and Sub class

this keyword, super keyword in Java for inheritance

Concrete classes in Java

* **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

Getters/Setters

Memory management in Java

* **De-bugging:**

Launching and debugging java code

Breakpoints

Debug perspective

Stepping commands

Trace point, Trigger point

* **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

* **Constructor:**

Constructor

Default constructor

Parameterized constructor

Difference between Constructor and Method

* **String**

String datatype

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

* **Collection**

Java Collection Framework

Hierarchy of Collection Framework

Collection interface

Iterator interface

Methods of collection interface

List

Set

Collections utility class

* **Map**

Introduction to Map interface

Methods in Map

Iterating a Map

Map hierarchy

HashMap

* **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 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

Find the reverse of the string

Check the given string is palindrome or not

Print each word's first letter of the given string in capital number

Print the duplicate numbers in array

Print the Unique elements in array

Remove the duplicate character in string

Remove the duplicate words in string

Write code to print patterns

Pre-increment post increment example

prime number or not

Anagram or not

Usage of Collections.min(),max() and sort()

Usage of Arrays.min(),max() and sort()

Print numbers as String

**SELENIUM:**

**Selenium Introduction**

• Types of Applications (Desktop, Web, Mobile, Hybrid)

• Software Testing Methods (Manual and Test Automation).

• Selenium Introduction

• Selenium Components

**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 jar file

• Chrome Browser Launching

• Safari Browser Launching

• Internet Explorer Browser Launching

• Firefox Browser Launching

**Locators**

• Inspecting elements in different browsers .

• Id

• name

• className

• xpath

• tagName

• linkText

• partiallyLinkText

• cssSelector

**Types of Xpath’s**

• Relative Xpath

• Absolute Xpath

• Difference between Absolute Xpath and Relative Xpath

• Limitations in Absolute xpath

• Advantages of using Relative xpath

**Xpath writing techniques**

• Contains Xpath

• Text Xpath

• Text Contains Xpath

• Attribute with contains

• Following

• Ancestor

• Child

• Preceding

• Following-sibling

• Parent

• Self

• Descendant

**WebElement**

• What are Web Elements in Selenium

• Different types of Web Elements

• Operations performed on the Web Elements

• How to locate the Web Elements on the web page

• Different WebElement methods

• Difficulties while handling web Elements

**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

• Mouse Hover Action

• Right Click

• Double Click

• Performing Multiple Actions

**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

**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 WebElement

• Sending the Inputs to WebElement

• Scrolling Operations

• Highlighting a WebElement

**Scroll Up/Scroll Down**

• 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

• Scroll By 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

**Web Table**

• Analyzing Web Table structure in DOM

• Handling multiple web tables in a page

• Dynamically changing Web Table handling

• Extracting values from web Table

• Analyzing the Tag names

• Different Scenarios with Web Table

**Dynamic Web Table**

• Handling Dynamic Tables In Selenium

• Analyzing the Dynamic Web Table

• Analyzing the HTML Tags in Dynamic Web Table

• Different Scenario with Dynamic Web Table

**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 formates

• Random name generation for screenshots

**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.

**File Upload/File Download**

• Uploading files in Selenium WebDriver using Sendkeys

• Uploading files in Selenium WebDriver using Robot Class

• Download files in Selenium WebDriver using Sendkeys

• Download files in Selenium WebDriver using Robot Class

**Frameworks:**

**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 Case

• TESTNG Assert

• Hard Assert

• Soft Assert

• Run Multiple test case

• Customized, PDF,&Email TESTNG reports in selenium web Driver

• TESTNG Ignore Test

**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

**Keyword-driven framework**

• Introduction to keyword-driven framework

• Function Library.

• Excel Sheet To Store Keywords.

• Design Test Case Template.

• Object Repository for Locators.

• Test Scripts or Driver Script.

• Retrieving data using keywords

**Hybrid framework**

• Components of Hybrid Driven Framework

• Function Library

• Excel Sheet to store Keywords

• Design Test Case Template

• Object Repository for Elements/Locators

• Test Scripts or Driver Script

**POM Framework:**

• Page Object Model

• Advantages of POM

• Implementing POM

• Object repository creation

• Page Factory

• POM Annotation

• Getters and setters

**Cucumber Framework:**

• BDD Introduction

• Cucumber Introduction

• How to download & Installation plugin

• Gherkin Language

• Feature files

• Test Runner with junit

• Step Definition

• Scenario and Scenario Outline

• Back Ground and Hooks

• Base Class and POM Integration

• Cucumber Options

• Reports

• Rerun failed scenarios

**Maven**

• Introduction to Apache Maven

• Maven Dependencies

• Maven Plugins

• Controlling The Build

• Maven Release Process

• Deploying to a Repository

**Git**

• Introduction To Git

• Working Locally With Git

• Working Remotely With Git

• Branching, Merging And Rebasing With Git

• Using The GitHub Website

• GitHub For Windows Basics

• Teamwork With GitHub For Windows

• Social Coding With GitHub

**Jenkins**

• Continuous Integration or Continuous Deployment concepts

• Installing and Configuring Jenkins

• Freestyle Project Configuration

• Jenkins Pipelines

• Testing With Jenkins

• Pipeline Enhancements o Multi-branch Pipelines and Code Promotion