Module: Selenium WebDriver

Trainer: Ankush Vankore

No of Sessions: 19

Contains

* WebDriver
  + Introduction
  + Installation
  + WebDriver Methods
    - get()
    - getTitle()
    - getCurrentUrl()
    - getPageSource()
  + Locators
    - Name
    - Id
    - ClassName
    - CssSelector
    - Xpath
    - LinkText
    - PartialLinkText
    - TagName
    - RelativeLocator
  + Handling different Controls
    - Text Box
    - Command Button
    - Radio button
    - Check Box
    - Dropdown List
    - List Box
    - Hyperlinks
    - FileUpload
  + Synchronization
    - Thread.Sleep()
    - ImplicitWait
    - ExplicitWait
    - FluentWait
    - PageLoadTimeout
  + Handling Tables
  + Handling Multiple Windows
  + Handling Alerts
  + JavascriptExecutor
    - Clicking
    - Scrolling
  + Taking Screenshot
  + Robot Class
  + Action Class
    - Click
    - Right Click
    - Double Click
    - Drag and Drop
* TestNG
  + Configuration
  + Single Test
  + Multiple Tests
  + Setting priority
  + Annotations
    - BeforeTest
    - AfterTest
    - BeforeMethod
    - AfterMethod
    - DataProvider
    - Parameters
  + Assertions
  + Parallel Execution
  + Reports
  + Liner Framework
  + Modular Framework
  + Keyword Driven Framework
  + Page Object Model (POM)
  + Data Driven Testing
    - Reading data from Excel file
    - Writing data to Excel file
* Maven & Cucumber
  + Configuration
  + Configuration of pom.xml file
  + Adding dependencies
  + Creating Feature file
  + Creating Step Definition
  + Creating Runner Class
  + Keywords
  + Hooks
  + Tags
  + Reports
  + Data driven testing via cucumber

Revision of Java

* Basics
  + Variables
  + Data types
  + Conditions
    - If, if-else, switch case
  + Loops
    - for loop
    - for each / enhanced for loop
  + Writing and calling Methods
  + Arrays
  + Creating class and Objects
  + Static Members and static methods
  + Collections
    - **List**
    - Set
    - Map
  + Exception Handling
    - throws keyword

Software Testing

Process of checking **C**orrectness, **C**ompleteness, **S**ecurity & **Q**uality of developed software application.

Process

* Creating Test Scenarios
* Creating Test cases
* Creating Test Data
  + ECP
  + BVA
  + EG
* Execution
* Report the bug / defect

Manual Testing: Hand-Eye-Brain

* Entering some data (in text box)
* Selecting the values (from list box, dropdown list, check box, radio buttons)
* Taking action (Clicking on button)
* Navigation (Clicking on a link)
* Mark the test case as Pass or Fail

**Automation Testing:**

Performing above actions with the help of a machine. A machine in this context is nothing but Automation Testing Tool.

Every automation tool is a software.

Instructions needs to be provided in specific programming language.

Advantages:

* Faster
* Time Saving
* Avoids repetitions
* Less human efforts
* Ensure Quality
* Less human errors
* Accuracy
* Saves money
* Regression testing
* 24 / 7 test possible
* Reusability
* Test report
* Productivity

Need

* Faster execution
* Accuracy
* Less human errors
* Compatibility Testing
* Easy reporting

When to automate?

* Stable requirements
* Repeated test scenarios
* Large amount of data to be tested
* Performance testing
* More accuracy
* Compatibility Testing
* CICD

Types of automation Testing

* Unit testing
  + JUnit
  + NUnit
* API Testing
  + Postman
  + RESTAPI
* GUI (Functional Testing)
  + Selenium WebDriver
  + Tosca
  + QTP
  + Cucumber
  + Playwright
* Mobile Testing
  + Appium

Process of Automation

* Planning
* Tool selection
  + Technology
  + Market presence
  + Ease of the tool
  + Cost of tool
  + Support availability
  + Automated Report
* Generate the script
* Create the test data
* Execution
* Report
* Maintance

**Selenium**

Suite / Bundle of test automation tools to test web / browser based (Web Sites) application.

**Components of Selenium**

1. Selenium IDE (Record and Play)
2. Selenium Grid (Parallel Execution)
3. Selenium RC – Deprecated
4. Selenium WebDriver

**Selenium WebDriver**

* Tool to test Web Based application
* An interface in Java
* An API

Selenium WebDriver Configuration

1. Create 2 folders (Except on C: )
   1. YourName\_WebDriverDemos
   2. WebDriver Jar Files

**Pre-Requisite for Selenium WebDriver**

1. Minimum Windows 10
2. Minimum Java 11 (Check on command prompt via java –version)
3. Any 1 updated Browser
4. Editor for scripting
   * Eclipse
   * Idea Intellij
5. Selenium Jar File
   * Launch selenium.dev site
   * Click on Downloads
   * Download Latest stable version (Latest stable version [4.30.0](https://github.com/SeleniumHQ/selenium/releases/download/selenium-4.30.0/selenium-server-4.30.0.jar))
   * Cut paste this file to 2nd folder we have created.

**Configuration of WebDriver with Eclipse**

* Launch Eclipse
* Select the 1st folder which you have created earlier as a workspace.
* Create a new Java Project
  + File 🡪 New 🡪 Java Project
  + While Creating make Create module-info.java file check box OFF.
  + Click on Finish
* Create a package inside this folder
* Create a class
* Right click on your project 🡪 Build Path 🡪 Configure Build Path 🡪 Libraries 🡪 Click on Class Path 🡪 Click on Add External Jars… 🡪 Open the 2nd folder created earlier and select the Jar file that we have downloaded. 🡪 Click on Apply and Close

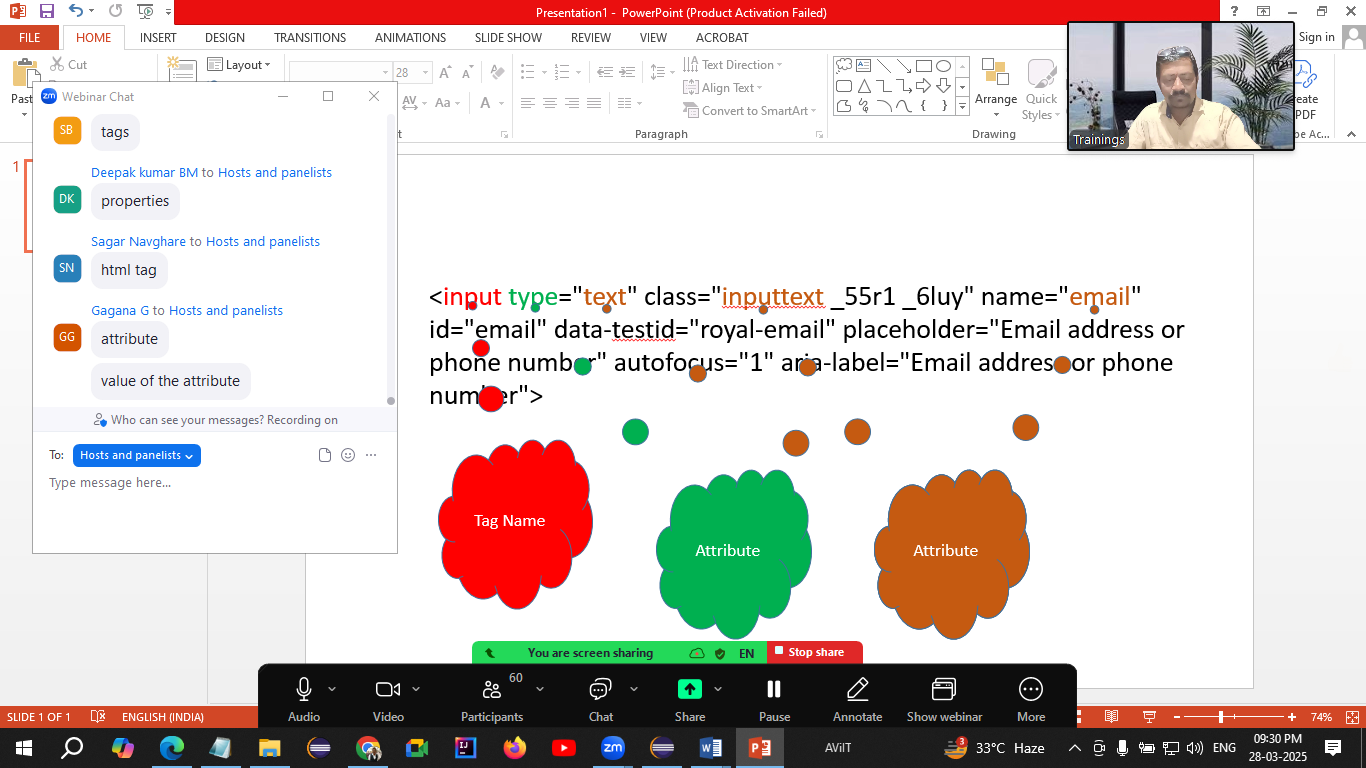
WebDriver Methods

1. Launching the browser 🡪 Create object of WebDriver interface.  
   This will launch the blank browser window
2. get() 🡪 Launch the specific website (URL)
3. close() 🡪 Close the current browser window which is launched by WebDriver object.
4. driver.manage().window().maximize() 🡪 Maximize the browser window.
5. getTitle() 🡪 Returns the title of the web page. (String)
6. getCurrentUrl() 🡪 Returns the URL of the web page. (String)
7. findElement() 🡪 Read a single control or WebElement from the page. (WebElement)

**Locators:**

This is the way to find out any control on the web page.

1. Name
2. Id
3. ClassName
4. CssSelector
5. XPath
6. LinkText
7. PartialLinkText
8. TagName
9. RelativeLocator



**WebElement**

* Every control (even text) is treated as WebElement in Selenium.
* Is an interface.

Methods of WebElement

* sendKeys() 🡪 Used to enter some text in the text box.   
  If already there is some text box then next text will be appended to the earlier text.
* click() 🡪 Used to click on any control.

Common Exceptions in WebDriver

1. InvalidArgumentException 🡪 Your URL is not in the correct format. URL should be Absolute (start with http / https)
2. SessionNotCreatedException 🡪 When the version of browser and selenium is mismatched.
3. NoSuchElementException 🡪 Selenium is not able to locate this control, possible reasons are
   1. The value of locator is wrong.
   2. The value of locator is dynamic.