

Agenda

- **Selenium Advanced Concepts**



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Action Class

- Actions class is an ability provided by Selenium for handling keyboard and mouse events
- Operations like drag and drop, clicking on multiple elements with the control key
- Steps for Action class:

- Step 1 : Import action class

```
import org.openqa.selenium.interactions.Action;  
import org.openqa.selenium.interactions.Actions;
```

- Step 2 : Instantiate a new Actions object.

```
Actions builder = new Actions(driver);
```

- Step 3 : Instantiate an Action using the Actions object in previous step.
- The build() method is always the final method used so that all the listed actions will be compiled into a single step.

```
Action mouseOverHome = builder  
    .moveToElement(link_Home)  
    .build();
```

- Step 4 : Use the perform() method when executing the Action object we designed in Step 3.

```
mouseOverHome.perform();
```

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Action Class

Mouse Actions in Selenium

- `doubleClick()`: Performs double click on the element
- `clickAndHold()`: Performs long click on the mouse without releasing it
- `dragAndDrop()`: Drags the element from one point and drops to another
- `moveToElement()`: Shifts the mouse pointer to the center of the element
- `contextClick()`: Performs right-click on the mouse
- `release()`: Releases the depressed left mouse button at the current mouse location

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Action Class

Keyboard Actions in Selenium

- `sendKeys()`: Sends a series of keys to the element
- `keyUp()`: Performs key release
- `keyDown()`: Performs keypress without release

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Double Click Action

First find the element on which double click has to be performed

Use Action class's `doubleClick(WebElement).perform()`,

```
WebElement element = driver.findElement(By.linkText("Get started free"));
Actions action = new Actions(driver);
action.doubleClick(element).perform();
```

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Drag And Drop Action

Find Draggable element i.e. From element

Find droppable element i.e. to element

Use Action class's dragAndDrop(fromWebElement, toWebElement).perform()

```
Actions builder = new Actions(driver);  
WebElement from = driver.findElement(By.id("draggable"));  
WebElement to = driver.findElement(By.id("droppable"));  
//Perform drag and drop  
builder.dragAndDrop(from, to).perform();
```

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ContextClick Action

Context click is nothing but right click mouse action

Find the element on which context click (right click()) has to be performed

Use Action class's contextClick(WebElement).perform()

```
Actions action = new Actions(driver);  
WebElement btnElement = driver.findElement(By.id("rightClickBtn"));  
//Right Click the button to display Context Menu  
action.contextClick(btnElement).perform();
```

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sendKeys, keyUp and keyDown Action

Actions class sendkeys are typically used for copy and paste text on webpage

In the following code snippet, text from the text field is copied and then pasted in another text field

```
Actions actions = new Actions(driver);  
// Select the Current Address using CTRL + A  
actions.keyDown(Keys.CONTROL);  
actions.sendKeys("a");  
actions.keyUp(Keys.CONTROL);  
actions.build().perform();  
  
// Copy the Current Address using CTRL + C  
actions.keyDown(Keys.CONTROL);  
actions.sendKeys("c");  
actions.keyUp(Keys.CONTROL);  
actions.build().perform();  
  
//Press the TAB Key to Switch Focus to Permanent Address  
actions.sendKeys(Keys.TAB);  
actions.build().perform();  
  
//Paste the Address in the Permanent Address field using CTRL + V  
actions.keyDown(Keys.CONTROL);  
actions.sendKeys("v");  
actions.keyUp(Keys.CONTROL);  
actions.build().perform();
```

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JavascriptExecutor

JavaScriptExecutor is an interface that is used to execute JavaScript with Selenium

JavaScript is a programming language that interacts with HTML in a browser, and to use this function in Selenium, JavascriptExecutor is required

`executeScript(script, webElement)`

`executeAsyncScript(script, webElement)`

```
JavaScriptExecutor jse = (JavaScriptExecutor) driver;  
jse.executeScript("", cellAddress);  
  
executeScript(String script, Object... args) : Object - JavaScriptExec  
executeAsyncScript(String script, Object... args) : Object - Javascript
```

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How to scroll a Page

Using JavascriptExecutor, we can scroll to an element till its visible

Need to find that webelement first and then use scrollToView() javascript

```
JavascriptExecutor js = (JavascriptExecutor) driver;  
//Locating element by link text and store in variable "Element"  
WebElement Element = driver.findElement(By.LinkText("Try Selenium Testing For Free"));  
// Scrolling down the page till the element is found  
js.executeScript("arguments[0].scrollIntoView();", Element);
```

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How to scroll a Page

The scrollBy() javascript method involves two parameters, x, and y, that represent the horizontal and vertical pixel values, respectively

User can give x and y co-ordinates value as Zero, positive and negative to adjust where to scroll

```
JavascriptExecutor js = (JavascriptExecutor) driver;  
// Scrolling up by 350 pixels  
js.executeScript("window.scrollTo(0,-350)", "");  
// Scrolling down by 350 pixels  
js.executeScript("window.scrollTo(0,350)", "");
```

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Capture Screenshot

In order to capture a screenshot in Selenium, one has to utilize the method TakesScreenshot. This notifies WebDriver that it should take a screenshot in Selenium and store it

Screenshots are often helpful in case of debugging where and what failure is happened while execution

```
//Convert web driver object to TakesScreenshot  
TakesScreenshot scrShot = ((TakesScreenshot)driver);  
//Call getScreenshotAs method to create image file  
scrShot.getScreenshotAs(OutputType.FILE);
```

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Upload File

Using sendKeys method

The most basic way of uploading files in Selenium is using the sendKeys method

```
WebElement upload_file = driver.findElement(By.xpath("//input[@id='file_up']"));  
upload_file.sendKeys("C:/Users/Sonali/Desktop/upload.png");
```

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Download File

By leveraging the browser profile setting, you can download files in Selenium WebDriver without interacting with the download window pop-up.

Java

```
1 System.setProperty("webdriver.chrome.driver", "/Users/neeraj.kumar/Desktop/chromedriver");  
2  
3 ChromeOptions options = new ChromeOptions();  
4  
5 Map<String, Object> prefs = new HashMap<String, Object>();  
6 prefs.put("download.prompt_for_download", false);  
7 options.setExperimentalOption("prefs", prefs);  
8  
9 RemoteWebDriver driver = new ChromeDriver(options);
```

```
WebElement btnDownload = driver.findElement(By.xpath("//a[text()='chromedriver_win32.zip']"));  
btnDownload.click();
```

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Window handling In selenium

Test Scenario:

1. Go to the above URL.
2. **Get the current window's handle** and write to the console window. *It must be the first window handle.*
3. Locate the "Visit W3Schools.com!" link and click it.
4. **Get all window handles** and hold them in a list.
5. Write to total window handle number to the console. *It must be 2.*
6. Switch to the second window.
7. **Get the current window's handle** and write to the console window. *It must be a second window handle.*
8. Check the upper left side logo in the second window.
9. **Go back (Switch) to the first window.**
10. **Get the current window's handle** and write to the console window. *It must be the first window handle.*
11. Check the See Run Button Text. *It must contain "Run >" text.*

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Web Table handling

Company	Contact	Country
Alfreds Futterkiste	Maria Anders	Germany
Centro comercial Moctezuma	Francisco Chang	Mexico
Ernst Handel	Roland Mendel	Austria
Island Trading	Helen Bennett	UK
Laughing Bacchus Winecellars	Yoshi Tannamuri	Canada
Magazzini Alimentari Riuniti	Giovanni Rovelli	Italy

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Web Table in Selenium

Get number of rows of a web table in Selenium

Get number of columns of a web table in Selenium

```
int num_rows = driver.findElements(By.xpath("//*[@id='customers']/tbody/tr")).size();  
System.out.println("No of rows in web table are : "+ num_rows);  
  
int num_columns = driver.findElements(By.xpath("//*[@id='customers']/tbody/tr[2]/td")).size();  
System.out.println("No of columns in web table are : "+ num_columns);
```

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Web Table in Selenium

Fetch data from a specific table cell

```
WebElement cellAddress = driver
    .findElement(By.xpath("//*[@id='customers']/div/div/table[1]/tbody/tr[4]/td[3]"));
String value = cellAddress.getText();
System.out.println("The Cell Value is : " + value);
```

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