SELENIUM

Selenium:

Selenium is platform-independent and an open-source tool used as a free automation testing suite of tools which has more benefits than other testing tools.

Advantages of automation testing:

- It supports the execution of repeated test cases.
- It facilitates parallel execution.
- It improves accuracy because there are no chances of human errors.
- It saves time and money.

Types of Locators:

- ID
- Name
- ClassName
- TagName
- linkText
- PartiallyLinkText
- Xpath
- CSS Selector

Xpath:

- Xpath is an XML path which is used to find locators on the webpage using DOM Structure.
- There are two types of Xpath:
    - Absolute xpath which is denoted by single slash
    - Relative xpath which is denoted by double slash.
- In our project we are using Relative xpath since we can directly find the element anywhere from the webpage but in Absolute xpath we have to find element from the head of DOM structure.

Difference between get() and navigate().to():

- get() method is used to go to particular website, but it does not maintain the browser history and cookies, so we can't use forward and backward button.
- navigate().to() method is also used to go to particular website, but it maintains the browser history and cookies, so we can use forward and backward button.

Types of navigation commands:

- driver.navigate().to("url") used to Navigate to the provided URL
- driver.navigate().refresh() used to refresh the current page
- driver.navigate().forward() does the same operation as clicking on the Forward Button of any browser.
- driver.navigate().back() does the same operation as clicking on the Back Button of any browser.

Difference between findElement() and findElements():

- findElement() is used to access any single element on the web page. It returns a single Web element.
- findElements() is used to find all the elements in the current web page matching the specified locator value. It returns List of Web elements.

How to clear all cookies stored in browser:

To clear all cookies stored by the current browser session, you can use the deleteAllCookies() method. This method is called on the WebDriver.

Debugging:

Debugging helps in identifying failures and understanding the control flow in our code. It is a very effective way to understand the execution flow. It's like a step-by-step execution.

Actions:

Actions is a predefined class which is used for mouse over actions in a webpage. It has few methods like

- moveToElement() is used to do mouse over actions
- doubleClick() is used for double click
- contextClick() is used for right click
- dragAndDrop() is to move a web element from one place to another
- keyUp() is for key release
- keyDown() is for key press

Robot:

Robot is a predefined class present in java.awt package which is used for performing keyboard actions in a webpage. It has few methods like

- keyPress() is used to press a key
- keyRelease() is used to release a key

Select:

Select is a predefined class which is used to perform dropdown in a webpage. It has few methods like

- isMultiple() is to verify whether dropdown is multiselected will returns true in Boolean value
- selectByIndex() is to select an option in dropdown by using index
- selectByValue() is to select an option in dropdown by using value
- selectByVisibleText() is to select an option in dropdown by using visible text
- getAllSelectedOptions() is to get the selected options in dropdown
- getFirstSelectedOptions() is to get the first selected option in dropdown
- deSelectByValue() is to deselect an option in dropdown by using index
- deSelectByIndex() is to deselect an option in dropdown by using index
- deSelectByVisibleText() is to deselect an option in dropdown by using index
- deSelectAll() is to deselect all the selected option in dropdown
- getOptions() is to get all options present in dropdown using list

JavaScript Executor:

It is an Interface. If locator found in DOM Structure but still it shows noSuchElement Exception due to hidden elements in the webpage and if in some case sendkeys and click methods were not working and to perform Scrollup and Scrolldown in a webpage, we go for JavaScript Executor. It has few methods like

- executeScript()
- ("arguements[0].setAttribute('value')",WebelementRef) used instead of sendkeys
- ("arguements[0].getAttribute()") used to get the particular value
- ("arguements[0].click()",WebelementRef) used instead of click
- ("arguements[0].scrollIntoView(true)",WebelementRef) used to scroll down
- ("arguements[0].scrollIntoView(false)",WebelementRef) used to scroll up

TakeScreenShot:

It is an Interface. It is used for capturing the webpage using getScreenShotAs() method. These captured images will be stored in a temporary location by default. We can store the captured image in our preferred location from the default temporary location using CopyFile() method present in FileUtils Class.

WebTable:

All the tables present in webpage is called webtable. First, we need to fetch the rows using tagname "tr" and iterate the rows, then fetch the data using tagname "td", then iterate the datas and pick a particular data from the webtable using if conditions, then fetch the data using tagname "th" and then iterate the headers. There are two types

- Static - Data are fixed.
- Dynamic - Data's keeps changing

Windows Handling:

Consider a webpage have multiple windows, we can say 10 windows, if we perform any actions in 2nd window it will throw noSuchElement Exception because the control is still in the parent window (i.e.)1st window. Now if you want to switch to the second window, we need to use driver.switchToWindow() method.
We can switch window by using String Id, String URL, String Title.
It has few methods like

- getWindowHandle() used to get parent window ID which returns String
- getWindowHandles() used to get all windows ID which returns Set<String>

Alert:

Alert is a kind of popup window or popup message. We can't find locators for an alert, if we are not handling alert, we can't do any operations. So to handle an alert we use a method driver.switchToAlert().

Alert has 3 types

- Simple Alert is handled by method accept();
- Confirm Alert is handled by accept(); dismiss();
- Prompt Alert is handled by sendKeys(); accept(); dismiss();

Frames:

It is webpage embedded inside a webpage. If any locators are placed inside a particular frame, then we need to switch in to that particular frame using driver.switchToFrame() method and need to access the locators.
It is mainly for security purpose. We can switch to particular frame using ID, Name, Index and Web Element Reference. It has few methods like

- parentFrame() used to switch to previous frame
- defaultContent(); used to switch to parent window

How to check which option in the dropdown is selected?

Using isSelected method, we can check the state of a dropdown's option.

How can we check if an element is getting displayed on a web page?

Using the isDisplayed method we can check if an element is getting displayed on a web page.

How can we check if an element is enabled for interaction on a web page?

Using the isEnabled method, we can check if an element is enabled or not.

Waits:

If locator is found but still noSuchElement Exception is thrown due to webpage loading and wait problems, we go for waits concept.

There are two types of waits:

- Static Wait:

  It will wait for the maximum time given though the locator is found.

  Example: Thread.Sleep

- Dynamic Wait:

  It will not wait for the maximum time, if locator is found it will navigate to next step. There are two types of dynamic waits

  - Implicit wait which is given common for all the locators
  - Explicit wait which is given only for a particular locator. There are two types of explicit waits
    - ✓ WebDriver wait which is given only in terms of seconds
    - ✓ Fluent wait which is given in all time formats and handle time out exception.