Selenium feature and what we need to know:

* Selenium is open-source automated testing tool. Before selenium came into exit, Tool called QTP ->(HP) was Automation tool used industry. As QTP was paid Version and it is costly to afford. Now no one will go for paid version After open source tool selenium is available in market.
* It is for web-based applications – this automated tool is used to test the application that runs on our web browser ex: goggle, amazon, zoom, uber etc.
* Support multiple browser: Chrom, Fire Fox, Internet Explorer, Safari, Opera Driver -> but no one uses this for preform testing.
* Work in Multiple platform: windows, Apple, Linux.
* Selenium can be coded In multiple language : Java, c#, python, Ruby, Java Script, PHP.
* Different between Selenium and Web driver?

Diagram

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Selenium wed driver architecture:

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Let see how it works:

* We write our code to test some feature in application like net bean, eclipse, etc. this side is called as client
* We are asking our code to test in browser e.g., chrome.
* Our code is not directly sent to the chrome browser.
* For every browser there will be browser driver.
* So, first out code will be sent to browser driver in Json format.
* Then this browser driver will read the code if the action (e.g. click) that are(initiate its action) asked do in actual browser.
* Then the response is sent back to browser driver in Javascript format.
* Browser drivers convert the result into json and send it back to the client.

Install Java & Eclipse - Setup Maven Project from Scratch:

We have created new project in our eclipse, we have to created our selenium code here, they don’t know what it is, we have give them selenium library , selenium jar to perform it action for that we take help of maven.

What is maven in brief:

Maven is the central repository for java-based project.

If some one develops a java-based library, they will put that in the Maven so if we want to use that library we can go to the maven website and get that.

Ex: selenium created some library and hosted (pushed it in the maven repository) in maven we can go to the maven website and get that.

<https://mvnrepository.com/> -- where get library for all the java based project.

Graphical user interface

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A screenshot of a computer

Description automatically generated with medium confidence

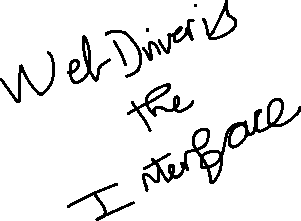
10. Understanding the core concept of Browser driver classes and Web driver Interface.

Now I want to run my automation in chrome browser.

Step 1. I want to invoke the Browser.

To perform automation in chrome.

Chrome has released a class called chrome driver.



This chrome driver has method.

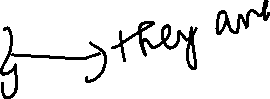
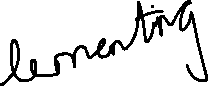
So we can implement this method in our code by creating a object form them

Chrome Driver driver = new Chrome Driver ()

Now I want to implement this in Firefox, safari.

They also have Firefox driver -> method, Safari drive -> method.

So, Chrome Driver -> method



Firefox driver -> method



Safari drive -> method

How they have same method and function and name.

So, they are under the web driver(head).

They follow the instruction given by the web driver.

The web driver is an interface which has related method, with empty bodies. They don’t have code inside the method. The chrome driver / Firefox/ safari has to implement that this method.

So now we need to implement the method of web driver.

Not only that as we need to automate in chrome, they also have method on their own.

So, we need web driver method + chrome driver method.

As we implement chrome driver method we cant use them in other browser like they wont accept chrome in Firefox. So we are going to the web driver method.

Web driver driver = new chrome driver();

Note:

What is interface:

It’s a contract. With only method signature, and without method body, we cannot create object for the interface.

web Driver is the interface which only gives us the method signature. The classes implement these signatures.

A screen shot of a computer

Description automatically generated with low confidenceA screen shot of a computer

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Different between quit () and close ()?

The quit () operation is used to close the web driver and close() operation close the current window.

Basic core java

* Explains Data types.
* How to initialize the variable.
* How to print the value.
* Use of + operator.
* How to initialise the array.
* Different between array and array list.
* What is a string?
* How many ways we can define the string? – one with literal, with new keyword.
* What is different between these two ways?
* How to reverse character?
* Static means

Selenium Web Driver Locators

What are locators and how it is useful for selenium?

Locators are used to identify the html element in the web page. The locators are.

|  |
| --- |
| ID |
| XPath |
| CSS Selector |
| Name |
| Class Name |
| Tag Name |
| Link Text |
| Partial Link Text |

How it is useful for the selenium?

* We need to perform the action such as click, typing etc. in the web Page.
* But how do the selenium know exactly perform action on the correct location for that purpose selenium use locators for help.
* With help of locator’s selenium access to the correct location and perform its action.

Locators with Css Selector: using tool selector hub, chropath, we can use in console to identify unique css path

If we have

Class Name:

Class Name ->**Tagname.classname** -> e.g., Button.Signinbutton, p.error or .error.

Id:

Id **-> Tagname#id** -> e.g., input#inputusername

If we don’t have class name or Id: //customised syntax

**Tagname[attribute = ‘value’] ->** e.g.: input[placeholder=’username’]

Indexing: **Tagname[attribute = ‘value’]:nth-child(index) – child items**

Tagname:

driver.findElement(By.*tagName*("p")).getText();

Css selector:**( No css element to identify based upon text)**

**eg: form p (parent tagname childtagname)**

The is an issue -> that selenium perform action fastly -> to print error message it at least takes 2 to 3 sec

->So, it needs to wait -> what can we do for this -> we are using **implicit wait.**

What is implicit wait in Selenium?

Implicit Wait directs the Selenium WebDriver to wait for a certain measure of time before throwing an exception.

Driver.manage().timeouts().implicitlyWait(Duration.*ofSeconds*(5));

Xpath : <https://www.guru99.com/xpath-selenium.html>

<https://www.swtestacademy.com/css-selenium/>

Syntax: //**Tagname[@attribute = ‘value’], //Tagname, //Tagname[text() = ‘Text here’] , //\* [text() = ‘Text here’]**

\* - stands for any thing in xpath any element which has the text

<input type="text" placeholder="Name">

//input[@placeholder="Name"]

Indexing: //input[@placeholder="Name"][1]

// tagname[text() = ‘text here’] 🡪 identify the element based upon text.

In Console :

Css:

Graphical user interface, text, application, email

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Traverse using sibling: (Parent to child traverse, sibling to sibling):(Not Possible in Css)

//header/div/button[1]/following-sibling::button[1]

<https://www.tutorialspoint.com/what-is-following-sibling-in-selenium>

Note points following sibling:

1. They should have same parents.

2.The sibling should be located at the equal level

Traverse from child to parent: Not Possible in css

//header/div/button[1]/parent:: (parent Name)

//header/div/button[1]/parent::div

A picture containing text

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Refer : CssCustomisedSyntax program.

1. driver.manage().timeouts().implicitlyWait(Duration.ofSeconds(5));

This timeout is used to specify the amount of time the driver should wait while searching for an element if it is not immediately present

1. Thread. Speed(3000)

When the application is in changing state from one view to another. We might run into to the interception time error. At that time, we have to wait until it gets stable. Thread.Speed(3000) will wait for some time until that view change completely.

1. driver.manage().timeouts().implicitlyWait() vs Thread. Speed():

|  |  |
| --- | --- |
| This time out is used wait for the element to show | This is used when we two elements are clashes each other(Interception time error ) |

1. input[type\* =’pass’] – use of \*, Regular expression syntax in css:

Assume that the word password the word changes everything as pass remain as it is so, at that time we use \* which search All the type which has \* and give us result of word with contain pass.

1. $('input[type\*="pass"]')

If we are using console, we this type of syntax.

1. Regular expression syntax in xpath:

//button[contains(@class,'submit’)] – to check well the submit is present or not

1. Identifying the element based upon text:

Syntax: //button[text() = ‘Log Out’]

1. Absolute and relative xpath.
2. Traverse from using sibling.

Graphical user interface, text

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1.Handling Static drop downs

-> The options in this drop down is fixed.

Now we going to perform selecting the values in drop down. Then we came to know they have html tag Select. How to perform operation if they have select tag. Let’s see that.

Select Tag:

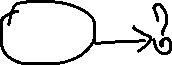
How to select the values in drop drown list if they have html tag called select



* Select tag -> provide the methods to select and deselect the options.
* To access those method, We are creating the Object for the Select Class (As Select is an ordinary class, its object is created by the keyword New)

Graphical user interface, text, application, email

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* They want the web element
* So we need to pass the web element so that they can control it.

What is web element?

* Anything that is present on the web page is a Web Element such as text box, button, etc.
* Web Element represents an HTML element.
* Selenium WebDriver encapsulates a simple form element as an object of the WebElement.
* It basically represents a DOM element and all the HTML documents are made up by these HTML elements.

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Type 1 Declare :



Type 2 Declare:



Timeline

Description automatically generated

getFirstSelectedOption(): Help us to get the first selected option from the drop down

* We can get a selected option in a dropdown in Selenium webdriver.
* The method getFirstSelectedOption() returns the selected option in the dropdown.
* Once the option is fetched we can apply getText() method to fetch the text

Refer : StaticDropdownHasSelectTag Program

2. Dynamic Drop Down

The value in the drop down can be changes based on selecting other values.

Refer:





driver.findElement(By.xpath("(//a[@value ='CJB'])[2]")).click()



Reason for this program - in this application there are same values how can we specifically tell the selenium to select to select the one. that is done in the program by giving them index value.



3. Handling multiple instances in webpage (parent child relationship in xpath) //div[@id='ctl00\_mainContent\_ddl\_destinationStation1\_CTNR'] //a[@value ='CJB']

