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Selenium_ its an open source automated testing tool

. popular tool in testing web application

. free to use

Advantage :

- support wide variety of browsers and programing language
- .free and open source
- . support CICD tool

Disadvantage: only able to test web applications

Selenium is a test suit: it has various components

1. Selenium IDE(integrated development environment):
Record and playback tool because it's a plugin used In chrome and Firefox

Advantage :

- No need to know the programing language

Disadvantage:

- Can record the process users do and generates test script
- Unable to edit or control the test script
- Can only use Firefox and chrome

2. Selenium RC(Remote Control):
Stopped using far before

3. **Selenium web Driver** (using) :

Advantages:

- it has web elements such as radio buttons, combo box, etc..
- Helps in direct interaction with the elements

4. Selenium Grid

It has hub node architecture

Can be able to automate or execute in parallel environments or os

Frameworks are needed for report generation, perform types of testing etc.. without framework selenium is not able to do such actions

Test NG, J unit , Cucumber

Test NG (using)

Architecture of selenium

Selenium 3 and 4 are the versions

Selenium 3 has json wire protocol for data transfer

Selenium 4 is latest It has w3c protocol for data transfer (www)

Web Driver initialization (test suit component)

WebDriver_ It's a Predefined interface class

Browser commands

- `getTitle()`
- `getCurrentUrl()`
- `getWindowHandle()`
- `getPageSource`

Navigation Commands

- `navigate().to()`
- `navigate().back()`
- `navigate().forward()`
- `navigate().refresh()`

Difference between close and quit

Close

- Closes only the current window
- Other windows/processes remain open
- Uses when testing a single window without affecting others

Quit

- Closes the entire application
- All windows/processes are terminated
- When testing full application exit behavior

Web elements

Web elements are the building blocks of a webpage that users interact with.

Eg: Text Box ,Button, Link (Anchor Tag, Dropdown, Radio Button

Html Tags

<head>.....open tag

<body>....open tag

<\body>.....close tag

<\head>....close tag

Attribute type

<tittle Colour="red">

Attribute value

<tittle Colour=" red">

Locators

Locators are used to identify and interact with web elements on a webpage.

To find single element we use

- .findelement(By.)

To find multiple elements we use

- .findelements(By.)

Types of locators

- 1 **ID** driver.findElement (By.id ("id..."))
2. **Name** driver.findElement (By.name ("name..."))
3. **Class Name** driver.findElement (By.className (" class..name.."))

4. **Tag Name** : `driver.findElement(By.tagName("tagname.."))`
5. **Link Text** : `driver.findElement(By.linkText("linktext.."))`
6. **Partial Link Text** : `driver.findElement(By.partialLinkText("partial form link"))`
7. **CSS Selector** : `driver.findElement(By.cssSelector(tagname[attribute='value']))`

Identify or locate elements from top to bottom

Xpath selector : can identify or locate elements from both top to bottom and bottom to top

Plugin like: XPath Helper, SelectorsHub, DevTools

`: driver.findElement(By.xpath(//tagname[attribute='value']))`

Absolute x path: Full path from the root node (html) to the elements *not using*

Relative x path : Path starts from current node in the DOM * using *

Xpath text: to find or locate with the text `//button[text()='Show Message']`

Starts with: to find or locate with the text that starts with `//button[starts-with(text(),'Show ']`

And : to find or locate elements with attributes specifically. both attributes providing should be correct `(//button[@id='button-one' and @type='button'])`

Or: to find or locate elements with attributes not specifically. attributes providing any one should be correct `("//button[@id='button-one' or @id='button-one-electronics']");`

X path Access methods

1. Parent
2. Child
3. Following
4. Preceding
5. ancestor
6. descendant

WebElement commands

1. Sendkeys: to view the value selected in console
2. Click: to click the value
3. Clear: to clear the selection
4. Colour: to view the colour

Dropdown Methods:

Select is a predefined class which has all the methods which we need to access

1. `selectByIndex(3);`
2. `selectByValue("python");`
3. `selectByVisibleText("C#");`

checkbox

```
driver.findElement(By.xpath("//label[text()='Option 1']"));
checkbox.click();
```

multiple selections can be made

radiobutton:

```
WebElement radiobutton=driver.findElement(By.xpath("//input[@value='purple']"));
radiobutton.click();
```

single selection can only be made

methods:

```
System.out.println(checkbox.isSelected());
```

```
showmessagebutton.isEnabled();
```

```
System.out.println(showmessagebutton.isDisplayed());
```

Table Handling

click

```
WebElement datatable=driver.findElement(By.id("dataTable"));
System.out.println(datatable.getText());
```