JAVA –

**Strings**

**Type Casting (Wrapper Classes)**

***Threads(Optionally)***

**File Handling**

**Exceptions**

**Collections**

***Looping and conditional statements***

**SELENIUM *(Browser Automation Tool)* :**

1. **Open Source free available software**
2. **Almost all the popular browsers //QTP (HP) – IE, Mozilla, Chrome**
3. **Platform independed // QTP (HP) –Platform dependent**
4. **Supports multiple Programming languages // QTP (HP) – VBS**
   1. **Java**
   2. **C#**
   3. **Ruby**
   4. **Python**
   5. **Perl**
   6. **Javascript**
   7. **PHP**
5. **No dedicated machine is required for execution // QTP (HP) – Dedicated machine is must**
6. **Parallel Execution( 2-n ) // QTP (HP) – not supported**
7. **Distributed Execution**

***Versions :***

1. ***Selenium-IDE (Record and Playback) used by Beginners***
   1. ***Same origin Policy***

AUT

Script

1. ***~~Selenium-RC~~***
   1. ***~~Virtual Server~~***

VS

AUT

Script

* 1. ***~~Execution was very slow~~***
  2. ***~~Proxy settings, then RC will fail to perform~~***
  3. ***~~SSL, Security~~***
  4. ***~~Client and Server config was very difficult~~***
  5. ***~~JavaScript~~***

1. ***Selenium Webdriver (2.0 , 3.0, (3.141.59), Selenium 4.0 alpha)***
   1. ***JAVA***
2. ***Selenium Grid – Distributed Execution***

***TestNG, Maven, Jenkins:***

***Official WebSite :***

<https://www.seleniumhq.org/>

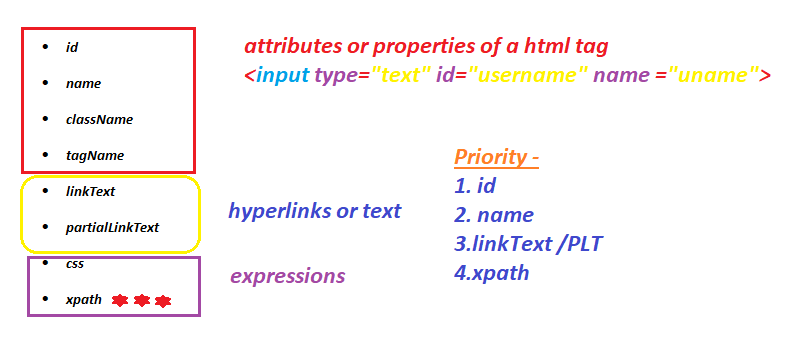
***Selenium IDE :***

***Addon with FF or Chrome***

***Script Generated by Selenium IDE is called Selenese***

***Selenese***

* ***Command - type of Action that we perform on WebElement (any component which you see on a Web Page)***
  + ***Command***
    - ***open – launch the application***
    - ***type***
    - ***click***
    - ***click at***
    - ***assert title***
    - ***assert text***
* ***Target- WebElement on we are performing action***
  + ***id***
  + ***name***
  + ***className***
  + ***tagName***
  + ***linkText***
  + ***partialLinkText***
  + ***css***
  + ***xpath***

******

* ***Value***
  + ***Optional Section , text to be typed***

***Validations in Selenium IDE:***

* ***Verify - will make the step fail and continue the execution***
* ***Assert - will make the step fail and stop the execution***

***POC – Proof of Concept***

***Asusual***

***nd 6.30 AM IST 🡪(9.30 PM CST)***

***Expressions :***

***We find the exact location of a web Element in the web page or DOM.***

***CSS - we can traverse only from parent tag to child tag in HTML DOM***

1. ***css=htmlTag[propertyname = ‘propertyValue’]***
2. ***css=htmlTag#idValue or #idValue***
3. ***css=htmlTag. valueOfClassAttribute or .valueOfClassAttribute***

***Xpath - we can traverse from parent tag to child tag in HTML DOM or from child tag to parent tag***

***Xml path🡺 location of a element in DOM***

1. ***Absolute xpath***

***/html/child/superchild/child/../.../.../...***

1. ***Relative xpath***

***// 🡺 anywhere in the html page***

***Syntax :***

1. ***Basic Xpath***

***//htmlTag[@propertyname=’propertyValue’]***

1. ***Traversing from parent to child***

***//htmlTag[@propertyname=’propertyvalue’]/childTagName***

***Or***

***//htmlTag[@propertyname=’propertyvalue’]//childTagName***

***Or***

***//htmlTag[@propertyname=’propertyvalue’]//childTagName[@propertyname=’propertyvalue’]***

1. ***Using regular Expressions in Xpath***

***If one property is not sufficient to find the element then we can go with Regular Expressions***

***3.1 AND***

***- if both the properties are matched then we get the element***

***//htmltag[@property1=’value1’ and @property2=’value2’]***

***3.2 OR***

***- if any one property is matched then we get the element***

***//htmltag[@property1=’value1’ or @property2=’value2’]***

1. ***Xpath Using Functions:***
   1. ***text()***

***//htmltag[text()=’textToSearch’]***

* 1. ***contains(arg1,arg2)***
     1. ***arg1 - > text function or attribute***
     2. ***arg2 -> partial value (partial text or partial attibute value)***

***//htmltag[conatins(text(),’partialtext’)]***

***//htmltag[contains(@attriburename,’partialValueOfAttribute’)]***

* 1. ***starts-with(arg1,arg2)***
     1. ***arg1 - > text function or attribute***
     2. ***arg2 -> partial value (partial text or partial attibute value)***

1. ***Dependent and Independent Elements (Navigating from child to parent)***

When ever we are identifying or playing with dependent and independent elements always write a xpath to independent element from there navigate to dependent element

1. Xpath of child
2. //parentHtmlTAG[ Xpath of child ]
3. ***Using axes Functions :***

6.1 following-sibling🡪 Will search all the sibling tags which is next to the current tag

Xpath of independentElement/**following-sibling::**SiblingTag

6.2 preceding-sibling🡪 Will search all the sibling tags which are previous to the current tag

Xpath of independentElement/**preceding-sibling::**SiblingTag

6.3 following🡪 Will search all the tags which is next to the current tag till the end of the page

Xpath of independentElement/**following::**SiblingTag

6.4 preceding🡪 Will search all the tags which is next to the current tag till the start of the page

Xpath of independentElement/**preceding::**SiblingTag

6.5 parent🡪 will navigate to parent tag from the current tag

//th[text()='Directed by']/parent::tr

6.6 child 🡪 will navigate to child tag from the current tag

//th[text()='Directed by']/parent::tr/child::td

6.7 ancestor🡪 will navigate to parent -> super parent-> super most parent....

|  |  |  |  |
| --- | --- | --- | --- |
| ***Application*** | ***Type*** | ***Element Name*** | ***Xpath*** |
| ***ActiTime*** | ***basic*** | ***UserName Text Box*** | ***//input[@placeholder='Username']***  ***//input[@id='username']***  ***//input[@name='username']*** |
| ***ActiTime*** | ***basic*** | ***Password Text Box*** | ***//input[@placeholder='Password']*** |
| ***ActiTime*** | ***Traversing Parent to immediate child*** | ***Login Button*** | ***//a[@id='loginButton']/div***  ***Or***  ***//div[text()='Login ']*** |
| ***ActiTime*** | ***Traversing Parent to child present somewhere*** | ***Search all div under login button*** | ***//td[@id='loginButtonContainer']//div*** |
| ***ActiTime*** | ***Traversing Parent to child present somewhere*** | ***Print All Module Names*** | ***//table[@id='topnav']//div[@class='label']*** |
| ***ActiTime*** | ***Using Regular Expression*** | ***Search both username and password*** | ***//input[@id='username' or @name='pwd']*** |
| ***ActiTime*** | ***Using Regular Expression*** | ***Search none of un and pwd*** | ***//input[@id='username' and @name='pwd']*** |
| ***ActiTime*** | ***Using Function*** | ***logo*** | ***//img[contains(@src,'timer')]*** |
| ***Actitime*** | ***Using contains Function*** | ***Search all Log*** | ***//div[contains(text(),'Log')]*** |
| ***google*** | ***Using starts-with function*** | ***Search all elements with IBM*** | ***//h3[starts-with(text(),'IBM')]*** |
|  |  |  |  |
| ***Redbus.in*** | ***Using text() with Regular Expression*** | ***Selecting a Date*** | ***//div[@id='rb-calendar\_onward\_cal']//td[text()='29' and (@class='wd day' or @class='current day' or @class='we day')]*** |
|  |  |  | ***//label[@for='radio-button' and contains(text(),'Highest')]*** |
| ***wikipedia*** | ***Child to parent*** | ***Search Director Name*** | ***//tr[th[text()='Directed by']]/td*** |
| ***mmt*** | ***Child to parent*** | ***Price of a holiday*** | ***//div[div[div[h3[contains(text(),'Spanish Delight 2020')]]]]//p[contains(@class,'latoBold ')]*** |
|  | ***Using ancestor axes function*** | ***Price of a holiday*** | ***//h3[contains(text(),'Spanish Delight 2020')]/ancestor::div[@class='boxShadow bdr packageListing pointer packageDetailsBox']//p[contains(@class,'latoBold ')]*** |
| ***gsmarena*** | ***Child to parent*** | ***Display features of any given phone*** | ***//tbody[tr[th[text()='Display']]]//td[@class='nfo']*** |
| ***wikipedia*** | ***Axes function*** | ***Search Director Name*** | ***//th[text()='Directed by']/following-sibling::td*** |
|  |  | ***Print index Number*** | ***//span[text()='Awards and nominations']/preceding-sibling::span*** |
|  |  | ***Parent and child axes function*** | ***//th[text()='Directed by']/parent::tr/child::td*** |
|  |  |  |  |

***WebDriver***

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| *Class / Interface* | *Method Name* | | *Return type* | *Arguments* | *Description* |
| WebDriver | **Get**() | | Void | String | Launch the browser |
| WebDriver | **findElement**() | | WebElement | By | To find the web element on web page. |
| WebElement | | **Sendkeys**() | Void | String | To perform type operation |
| WebElement | | **Click()** | Void | NA | To perform click operation |
| WebDriver | | **findElements** | List<WebElement> | By | To find the web element**s** on web page. |
| WebElement | | **getText()** | String | NA | Returns the text present out side the html tag |
| WebElement | | **getAttribute(String)** | String | String | Returns the Value present for a given attribute |
|  | |  |  |  |  |
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|  | |  |  |  |  |

***Synchronization***

Sync Issue or Synchronization Issue ->

Selenium 🡪 findElement 🡪 250 ms / 0 sec 🡺 **NoSuchElementException**

**Implicit Wait (common for all elements)– Will not work for the elements generated due to**

* **Ajax call**
* **Java script execution**
* **Angular JS**

**Explicit Wait (for a single Element ) –**

* **Ajax Call**
* **JavaScript**
* **Angular JS**
* **Too much time a particular element is taking**

Sync Issues

FluentWait

-own method / own logic to wait

-polling time

- ignore exceptions

500ms

Static Waits – Thread.sleep(ms)

WebDriverWait

Implicit Wait

Explicit Wait

Dynamic Waits

Fluent Wait :

1. Create a Wait object
   1. *Specify what is the element*
   2. *What is the max time to wait*
   3. *What is the polling time*
   4. *Is there any exception to ignore*
2. Write your own wait logic
   1. Override apply method present in Function Interface
   2. Write you wait logic inside apply method
3. Call until function from wait object