INDEX

NAME: Sanjay chetlure STD.: ______ SEC.: ______ ROLL NO.: ______ SUB.: Selenium

S. No.	Date	Title	Page No.	Teacher's Sign / Remarks

S. No.	Date	Title	Page No.	Teacher's Sign / Remarks
		Eclipse Shortcuts		
	1	CTRL + D → Delete Row		
→	2	ALT + UP/DOWN Arrow → move Row up & Down.		
	3	ALT + Left/Right Arrow → move Last location		edited.
	4	CTRL + E → Shows a list of all open editors.		
→	5	CTRL + Shift + O → import missing classes & vanish unused imports.		
	6	CTRL + Fn + F6 → move betn open editor.		
	7	CTRL + Fn + F7 → move betn views		
→	8	CTRL + Fn + F11 → Run the application.		
	9	CTRL + M → maximize tab		
→	10	CTRL + Shift + F → You can make code beautiful layout		
	11	CTRL + Shift + T → Finding class.		
	12	CTRL + Shift + R → we can find class as well as xml.		
	13	CTRL + 1 → quick fix		

* Some of the testing Automation tools :

1. Selenium - Open Source,
2. Sahi/Sahipro
3. Test Complete } both will not accept Java, Javascript
4. Rhenorex
5. Qtp
6. Salendroid
7. Appium

* Automation Testing :

Testing an appln features with the help of automation tool & executing Test Script is called A.T.

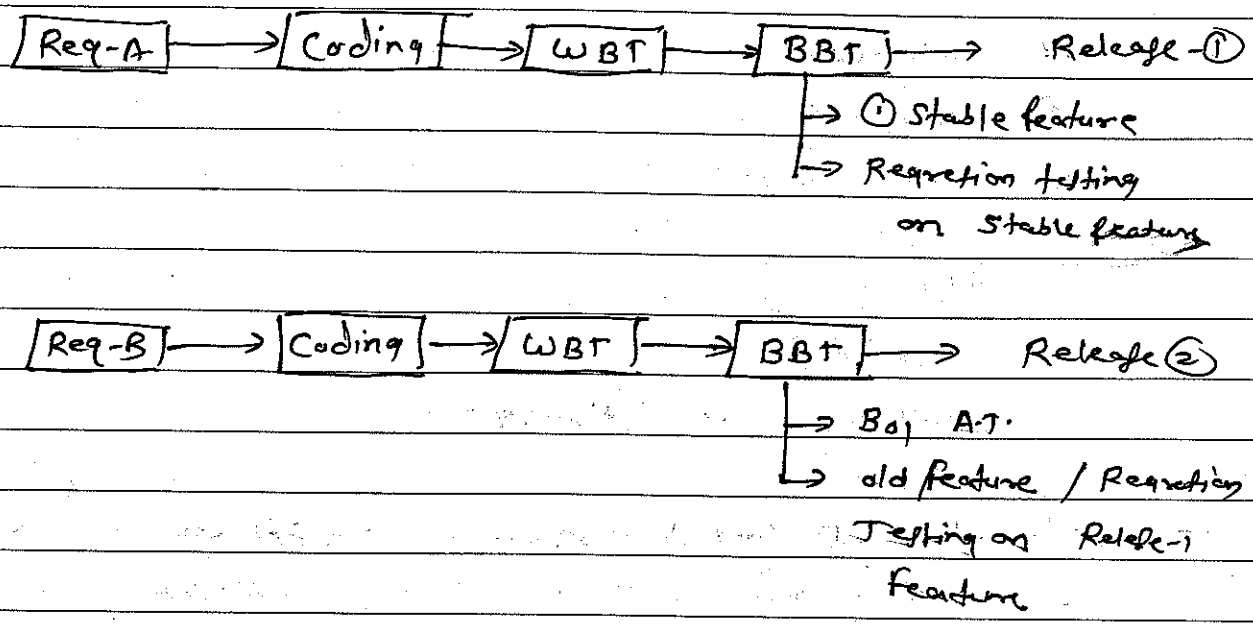
* Disadvantages of manual Testing

1. Compatibility testing is difficult
2. Test cycle duration will be increased
3. more human efforts are required
4. Regretion Testing is time Consuming

* Advantages of A.T. / why we should go for A.T.

1. Reusibility of Test script
2. project redyration will be reduced
3. cross browser / cross platform testing is possible - C.T.
4. less human efforts are required
5. To overcome the drawbacks of Regretion testing
6. Cost of the project will be reduced.
7. It is Reliable & efficient.

* When we should do automation testing ?



Automation testing tool will able to perform testing on appln but to perform any action as a TE we need to give commands these commands are called Scripting.

* Advantages of Selenium :-
  1. open Source
  2. muti language Supportable
  3. Cross browser testing is possible
  4. Cross platform is possible.
  5. only for web based appln

* Disadvantages of Selenium :-
  1. we can't automate standalone appln
  2. Adhoc Test cases can't be automated
  3. we can't automate Captcha,
  4. Selenium will not support file uploading

classmate
Date
Page

* Java Concepts used in automation :-

1. Inheritence
2. abstraction
3. interface
4. polymorphism
5. Casting (up casting)
6. Encapsulation
7. Arrays, Collections
8. Generics
9. for loop, for each loop, while loop & Iterator.

Assignment - (1)

(1) List out the languages supported by Selenium

→ C#, Java, Perl, PHP, python & ruby groovy, Scala.

(2) List out open source & Licenced tools

→

open source	Licence tools
1) Selenium	1) QTP
2) Serenity	2) Test Complete
3) Robot framework	3) Sahi pro
4) Redwood HQ	4) Rememor
5) Sahi	
6) Canoo webtest	
7) macros	

(3) Can we automate -ve scenarios

→ Yes

(4) while doing A.T. when a build came for testing 1st what type of TS will be executed

→ Smoke Test scripts

(5) Can we automate Adhoc Test Cases?
→ No

(6) What type of Testing will be done in A.T.
→ Regretion testing.

* Selenium Flavours

(1) Selenium IDE (Integrated Devp. environment)
- only run in the Firefox
- record & plaback option.
- we can't do C.T.

(2) Selenium RC (Remote Control)
- Supports C.T. (run in multiple browsers)
- we can run scripts in Java only

(3) Selenium webdriver - (Selenium tool)
- Interaction of browsers is very easy
- Supports cross browsers / cross platform testing.

(4) Selenium grid
- Supports cross platform Testing

(5) Selendroid
- automation of mobile (only android mobiles)

(6) Appium
- android & iOS phones

* S/w Required for Selenium

① JDK - 1.8 version - latest

② Selenium Standalone Server Jar file 2.53.0 / 2.53.1

③ Eclipse - Neon version → latest - 3.0.1

④ Firefox - 43.0.1 / 47.0.1

* once Firefox is installed setup following setting *

① open firefox browser, select menu option (≡)

② select - options - general - click on default browser check box, make sure that home page section is blank.

③ select advanced section & click on never check for update radio button.

* Selenium Jar file should be downloaded from following URL www.seleniumhq.org

→ click on downloads

↳ Previous Release

↳ 2.53.0

↳ 2.53.1 Server Standalone Jar

* Configuration of Selenium Jar file to our project.

Step ① create folder in any one of the drive

② open eclipse → click on file - Switch workspace

→ select other - brows created folder

③ Java project structure should be as follows

workspace

↳ Java project

↳ src

↳ package

↳ class

④ Create a Java project in selected workspace.

Note:

Selenium Jar file is containg pre-defined programs or inbuild fns which need to be imported to perform actions.

⑤ Right click on created project → properties → Java build path → library section → add external Jar file → downloaded jar file & click on apply & ok buttons.

Note:-

If multiple projects are created in same workspace then for every project Selenium should be configured

Q. Write a script to open firefox driver

```
import org.openqa.selenium.firefox.FirefoxDriver;
public class First
  {
    psvm (String [] args)
    {
    FirefoxDriver A= new FirefoxDriver();
    }
  }
```

* get() method :- This method is used to open appln.

Q. write a test script to open facebook appln in Firefox browser

```
public class first
{
    Psvm (String [] args)
    {
        FirefoxDriver A = new FirefoxDriver();
        A.get ("http://www.facebook.com");
    }
}
```

↑ "String"

Note :-

Last page for exceptions.

① "webdriver exception" -
It happens when URL is not well formed.

* close() method : This method is used to close the current browser

eg. A.close();

Q. What happens if we interrupt the browser, while TS is executing

we will get "unreachable browser exception".

Note :- "Not Connected exception" -
this exception happens when Selenium Jar file unable to interaction with Firefox browser

classmate
Date
Page

* getTittle() method :- To get the tittle of web page of an O/p.

Q. write a T.s. to get tittle of the google web page of step ① open Firefox browser
② open google webpage
③ get tittle of an O/p.

getTittle method is used to get the tittle of web page of an o/p.
Return type of gettittle is String.

```
FirefoxDriver Rv = new FirefoxDriver();
Rv.get("http://www.google.com");
String Rv1= Rv.getTittle();
Sop(Rv1);
```

* getcurrentURL() method :
Used to get URL of an o/p

Q. write a TS to get URL of an o/p.

```
FirefoxDriver Rv= new FirefoxDriver();
Rv.get("http://google.com");
String A = Rv.getTittle();
Sop(A);
```

Note:
If return type is int, then we can't write Sop(A);
instead it should be return A;

* imp Java program:-

```
class Sample
    psvm (String [] args)
    {
      int a=0;
      Sop(a);
    }
    public int test1()
    { int b=0
      Sop(b)  X
      return b;
    }
    public String test2()
      {
        String a="Hello";
        return a;
      }
```

```
psvm (String [] args)
{
Sample A = new Samp();
    B = A.test();
(For void Return type not Required)
int c = A.test1();
String D = A.test2();
}
```

Note ① while calling a method identify return type & type of argument that method will accept.

② If we get return type, then Return type will be directing to class or interface, so method present inside class or interface can be called or access by using Ref. variable.

* Important methods in String

① Equals():-

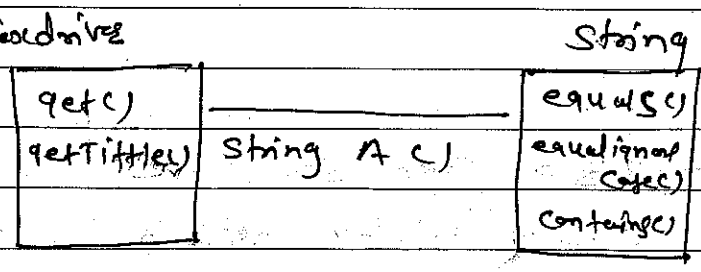
- used to Compare two string values.
- Its a case sensitive
- entire String need to be be mentioned

② equalsIgnoreCase() :- use to compare 2 string
- Its not a case sensitive
- Entire string need to be mention.

③ Contains() :- . use for comparision.
- Its a case sensitive
- few character will be mentioned in the sequence

Q. Write a TS to write fb welcome page is displayed or not.

```
FirefoxDriver Rv = new FirefoxDriver();
    Rv.get("http://facebook.com");
String A = Rv.getTittle();
 if (A.Containg("Facebook"))
  {
  Sop("Welcome page displayed");
  }
 else
  {
    Sop("page not found");
  }
 Rv.close();
```



Q. write a TS to close the browser without using close() method.

- We can use quit()
- close() is use to close current browser only
- quit() is used to close all browser. which are opened by selenium.

```
FirefoxDriver A = new FirefoxDriver();
A.get("URL");
A.quit();
```

Q. write a TS to open fb appln without using get method.

```
FirefoxDriver RV = new FirefoxDriver();
// Navigation ele = rv.navigate();
   R-T      RV      Value
ele.to("URL"); //
RV.navigate().to("URL");
```

* Diff. betn get & navigate()

get()	Navigate()
① this method is use to open an appln by entering URL in address field	① this method is use to open an appln, move forward, backward & Refresh browser

* Setsize() :- this method is use to change size of the browser page.
  - this method will take dimension arg. which need to be import from org.openqa.selenium.

* Setposition() :-
  this method is use to change the position of browser page by taking point arg. as an input

* maximize() :-

this method is used to maximize browser.

Note :-

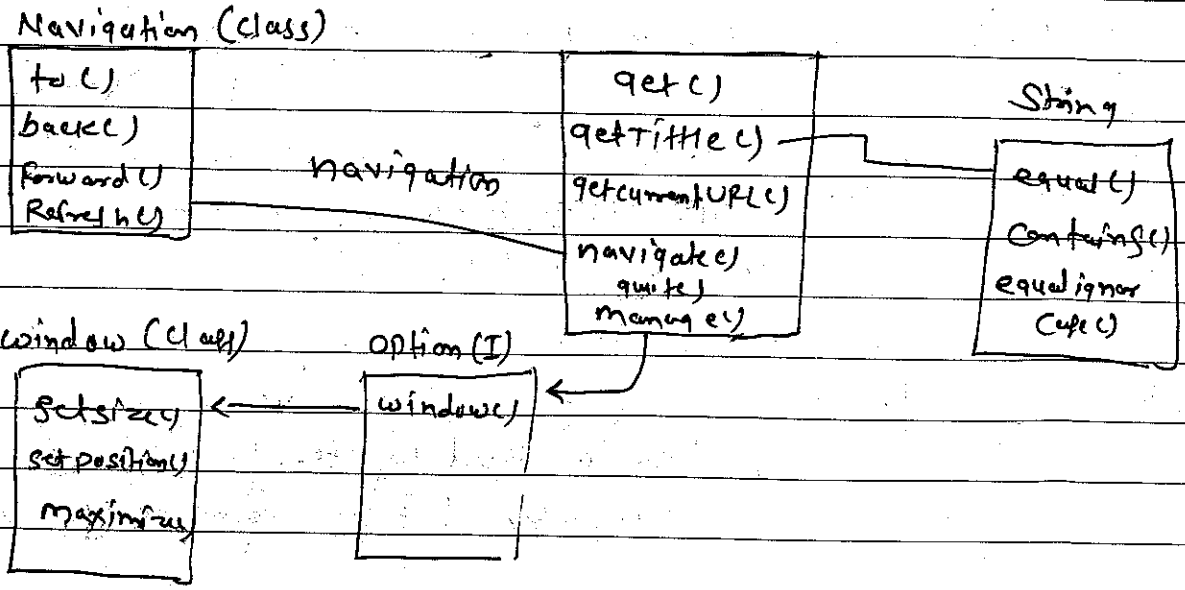
- We can't minimize browser

Q. Write TS to perform actions ① open ff browser ② open fb appln ③ open flipcart ④ go back to fb ⑤ move to f/w to flipcart & refresh browser

```
firefoxdriver Rv = new Firefoxdriver();
Rv.navigate().to("http://facebook.com");
Rv.navigate().to("http://flipcart.com");
Rv.navigate().back();
Rv.navigate().forward();
Rv.navigate().Refresh();
```

Q. Write TS to change size of browser, position of browser, maximize the browser

```
firefoxdriver Rv = new Firefoxdriver();
Rv.get("URL");
Dimension D = new Dimension(100,200);
Rv.manage().window().setsize(D);
Point P = new Point(200,200);
Rv.manage().window().setposition(P);
```



classmate
Date 4-July
Page

Q. write a Test Script to perform following actions.
step ① open Firefox browser ② open google webpage
③ ~~Thread~~ wait for 2 sec. & display title of em o/p.
④ open facebook appln & get URL of an o/p.
⑤ wait for 2 sec. & get yantra.com
⑥ wait for 3 sec. & navigate back to fb page.
⑦ Verify fb page is displayed or not.
⑧ wait for 3 sec. & change size of the browser to (300,300)
⑨ wait for 2sec & change position of the browser to (400,300)
⑩ wait for 2 sec & maximize the browser.
⑪ wait for 2sec move forward to yantra.com & verify webpage is displayed or not.
⑫ wait for 2sec. Refresh the browser
⑬ wait for 2sec. close the browser

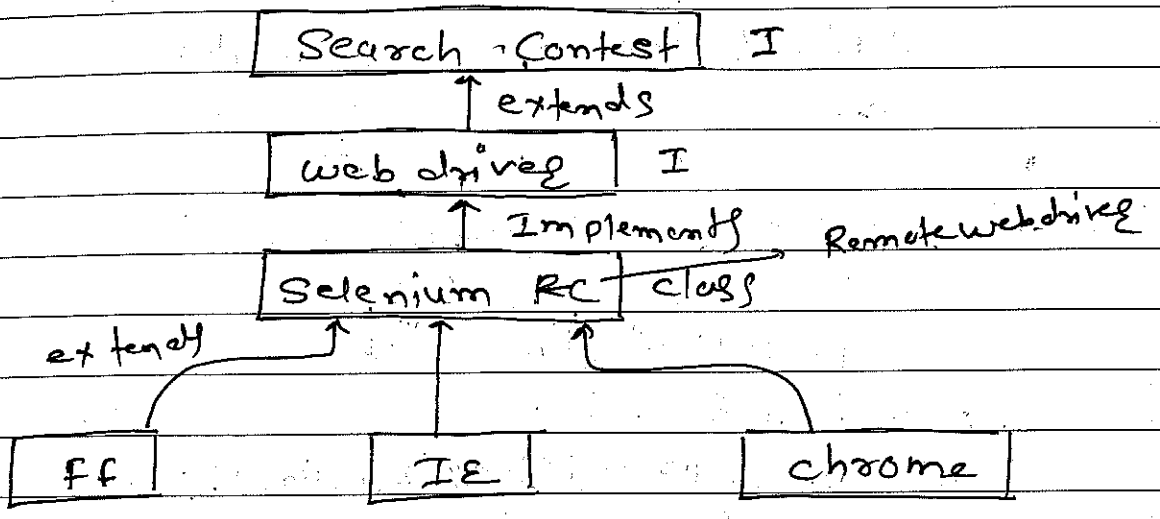
```
Class practice
{
    psvm (String [] args) throws interrupted exception
    {
firefoxdriver Rv = new firefoxdriver();
        Rv.get("http://www.google.com)
        Thread.sleep(3000);
    String A = Rv.getTitle();
        Sop("A);
    Rv.navigate().to("http://facebook.com");
    String B = Rv.getCurrentURL();
        Sop(B);
    Thread.sleep(2000);
Rv.navigate().to("http://www.yantra.com");
    Thread.sleep(3000);
    Rv.navigate().back();
```

```
String c = Rv. gettitte ();
    if ( c. Conteins ("facebook");
     {
        Sop (" facebook welcome page is displayed");
     }
    else
       {
          Sop (" welCome page not found");
       }
  Thread. sleep(3000);
   Dimension D = new Dimension (300,300);
     Rv. manage(). window(). Setsize (D);
   Thread . sleep(2000);
      point p = new point(400,300)
     Rv. manage(). window(). Set position (p);
    Thread. Sleep (2000);
   Rv. manage(). window (). maximize();
      Thread, sleep (2000);
     Rv. navigate(). Forward();
     String m = rv. gettittle();            getTitte
      if( m. Conteins ("yan");
       {
         Sop (" web page displayed")
       }
      else
       {
           Sop (" web page not found");
       }
  Thread, Sleep (3000);
    Rv. navigate(). Refresh();
   Thread. Sleep (2000);
   Rv. close();
```

classmate
Date
Page

*

* Selenium Architecture



1) Search Context is a supermost interface which contains abstract methods & inherited to web driver

2) web driver is an interface which contains abs. methods of Search Context & its own abstract methods.

3) All the abstract methods are overriden/ in Selenium ~~RC~~ Remote web driver Implemented class

4) Selenium Remote web driver:
it is a class which implements all abstract methods of both interface

5) browsers such as Firefox, Chrome driver, IE driver etc extends to remote ~~class~~ Remote web driver class.

6) To Run appln is multiple browsers (Compatibility test.)
ie. writing a Test script by using single browser eg. firefox, but runs the same script in diff browser

To achive this we need to use runtime polymorphism, by using upcasting in selenium

∴ Webdriver drive = new Firefoxdriver();

Q. write a TS to open firefox browser

```
public class First
{
  psvm (String [] args)
  {
    Webdriver d = new Firefoxdriver()
      d.get("URL");
  }
}
```

Q. write a TS to open IE browser

```
public class Demo
{
  psvm (String [] args)
  {
    Webdriver Rv = new InternetExplorer();
      Rv.get("URL");
  }
}
```

O/p Illegal state Exception

Native method : methods which are use by end users present in browser web page
eg. close, Refresh

- Selenium Tool is Developed with reference to native methods of [FF browser]

- Native methods will be diffrent from browser to browser to run Selenium Script in other browser, methods need to be Converted, according to browser native methods, So we need to download external drivers from Selenium website.

- Before writing a TS we need to set properties for Converting of native methods using following Command,

System.setproperty ("webdriver. browsername.driver", "path of drive")
(ie) (File — Select + shift + Right click)

* TO open IE driver :-

```
→ public class Demo1
  {
     psvm(String [] args)
  { system.setproperty("webdriver.ie.driver", "path")
     Webdriver driver = new internetexplorerdriver();
```

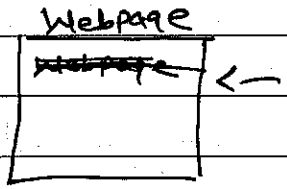
* TO open chrome drive :-

```
System.setproperty ("webdriver.chrome.driver", "path")
   Webdriver driver = new chromedriver();
```

Topic-2 HTML

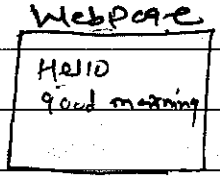
- Hypertext markup language used for creating of webpages
- HTML coding is not case sensitive
- we can write HTML code in notepad/edit+
- while saving HTML file extension of file should be - filename.HTML extension

Q. Write Html code to create dummy webpage.



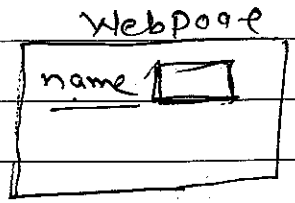

```
<Html>
  <title>
    webpage
  </title>
</Html>
```

Q. Write a Html code to create following webpage

① 


```
<Html>
  <Title>
    webpage
  </title>
  <body>
    Hello good morning
  </body>
</Html>
```

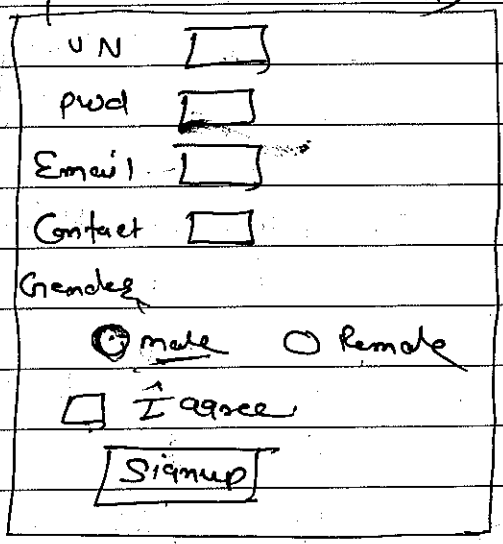
(2)




```
<Html>
<body>
name <input type="text">
</body>
</Html>
```

w3schools.com

Q. write a Html code to create following webpage (signup)




```
<Html>
  <Body>
   UN <input type="text"> <br>
  pwd <input type="password"> <br>
  Email <input type="text"> <br>
  Contact <input type="text"> <br>
   Gender
      <input type="radio"> male
      <input type="radio"> female <br>
    <input type="checkbox"> I agree <br>
    <input type="button" Value="Signup">
  </Body>
</Html>
```

Q. Write a Html code to create following signin page

```
<Html>
  <body>
UN <input type="text" value="admin"><br>
pwd <input type="password" value="manage"><br>
<input type="button" value="Login">
<input type="button" value="Cancel">
```

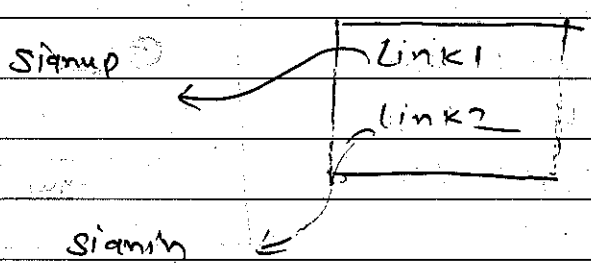
Sign in

UN [admin]

pwd [manage]

[Login] [Cancel]

Q Write a Html code to create following web page

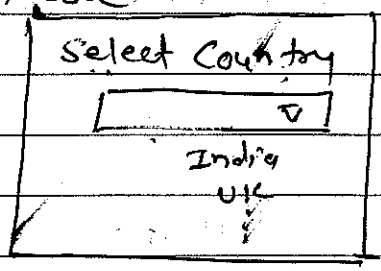



```
<Html>
  <body>
    <a href="signup.Html">link1</a>
    <a href="signin.Html">link2</a>
```

Note:

While creating links linked webpages should be present in same folder

Q. write a Html Code to create a list box




```
<Html>
    <body>
Select Country <Select>
        <Select>
            <option> India </option>
            <option> USA </option>
            <option> UK </option>
            <option> Australia </option>
            <option> England </option>
        </Select>
    </body>
</Html>
```

Note:-

TO Create multi Selectable list box we need to use Keyword multiple = "true"

Syntax < Select multiple = "true" >

Q. write a Html code to create a table in webpage

td/th

Sr NO	Book type	Cost
1	manual	100
2	SaL	200
3	Java	300
4	Selenium	400

```
<Html>
<body>
 <table border="10">
   <tbody>
     <tr>
        <th> Sr NO </th>
        <th> Book type </th>
        <th> Cost </th>
     </tr>
     <tr>
        <td> 1 </td>
        <td> manual </td>
        <td> $100 </td>
     </tr>
     <tr>
        <td> 2 </td>
        <td> SaL </td>
        <td> 200 </td>
     </tr>
     <tr>
        <td> 3 </td>
        <td> Java </td>
        <td> 300 </td>
     </tr>
     <tr>
        <td> 4 </td>
        <td> selenium </td>
        <td> 400 </td>
     </tr>
   </tbody>
 </table>
</body>
</Html>
```

Summery

1) TO create a webpage we need to use Keyword "Html".

2) Every keyword should be closed within angular braces using forward slash "/"

3) TO create a component or element we need to use a Keyword "input".

4) TO create list box we need to use "Select" Keyword

5) TO create a link we need to use Keyword "a" with hiper Reference → "hre"

6) TO create a webtable we need to use Keyword "table"

7) TO create an image we need to use "img" Keyword.

8) Tagname :- any keyword which will be presented immidiatly after angular brace ← Sy less than Symbol (<)

eg. Html, title, body, tr, th,

9) Attribute :- Any keyword which will be presented after tagname with equal to (=) Symbol until greater than angular brace (>)

Syntax:

Property name = property value

eg. type="text", id=username, class= text

10) Text :- Any keyword which will be presented after angular brace greater than (>) Symbol & until end of that keyword tag, is known as Text

eg <tr> <th> S.No </th> ✓ text = S.No.

<th> Booktype < /th> ✓ text = Booktype

<th> Cost ✗

Q. Why Html Coding is required in Selenium

To identify an element uniquely & to perform action with the help of selenium, Html Coding is neccesary

* procedure to identify Html code for an elem in web page

Step (1) Right click on web page & Select inspect element option

(2) Select inspect symbol ( ) & move the mouse pointer to the element which Html Code is required, click on it.

Note:-

Sometimes for few appln Right click option will be disable, to identify Html Coding we need to use "firebug". it is an extension of Firefox browser

* Procedure to install Firebug *

Step (1) Open Firefox browser

(2) click on menu option (≡) & select add on

(3) enter firebug text in search field & click on search

(4) click on install option for firebug s/w

(5) after installation, restart your browser

Note:-

for IE & Chrome we need to use F12 to get Html Code

Locators

"These are use to identify an ~~id~~ element with the help of locater types

- To identify an element present in browser webpage we need to use "findElement()" method

Syntax: F.F.D Rv = new F.F.D
Rv.FindElement(By arg)

- FindElement() method will identifies element with the help of By class which Containg static methods

- All the static methods present in By class are known as locater types.

```
Sample rv = new Sample();
rv.test1("Hi");
```
→ String

```
String ref = "Hi";
rv.test1(ref);

int ref1 = rv.test2();
rv.test3(ref1);
```

```
class Sample
{
public void test1(String arg)
{ Sop("Hi");
}
public int test2()
{
  int a;
  return a;
}
public void test3(int a)
```

classmate

Date
Page

class FFD

class BY {

public webElement findelement()
(By arg)

public static Tagname
(String arg)
{
=
}

{
=
}

FF.f Rv = new F.f.D()
Rv. findelement (ref)

BY ref = BY. Tagname ("Hi")

* Locator Types

1. tagName () → tagname
2. id ()
3. class Name()
4. name ()
} → attributes
5. linkText ()
6. partial LinkText ()
} → text
7. CSS Selector ()
8. X path ()
} → Expressions

- All the locator type will take String arg. as an input & returntype is BY.

- Returntype of findelement () method is webelement

(1) Tagname

Q. Write a TS. to Enter name in a webpage

Name [ ]

→ manual steps (1) Open f.f browser
(2) open webpage by entering URL
(3) identify name field & Enter name.

```
public class Tagname
  {
    PSVm (String [] args)
      {
    Webdriver driver = new webdriver
    driver.get ("URL") → filename / path

    By RV = By.tagName ("input");
    webelement RV1 = driver.findElement (RV);
          RV1.sendKeys ("Admin");
      }
  }
```

Note:-

When Selenium unable to locate an element by using Html code, then we will get No Such element Exception

Q. write a Html code to open following webpage

```
<Html>
   <body>
   UN <input type="text"> <br>
   pwd <input type="password" id="pass">

   </body>
```

Q. write a TS to enter UN & Pass in above webpage

```
webdriver d = new FirefoxDriver();
   d.get("URL");
//UN
   BY ref1 = BY.tagname("input");
webelement rv1 = d.findelement(ref1);
   rv1.sendkeys("admin");

// pwd
   BY ref2 = BY.tagname("input");
   webelement rv2 = d.findelement(ref2);
      rv2.sendkeys("manager");
```

O/p   UN [admin manager]
       pwd [ ]

· In a webpage multiple elements are presented with Same tagname & we use tagname locatortype to identify any element, ~~then & we~~ then Selenium will performs action on 1st element present in webpage

② **Id :-**

this locator type is use if any element Html Conteing id attribute

```
webdriver driver = new firefoxdriver();
driver.get("URL")

BY ref1 = BY.tagname("input");
webelement RV1 = driver.findElement(ref1);
RV1.SendKeys("admin");

BY ref2 = BY.id("pass");
webelement Rv2 = driver.findElement(ref2);
rv2.SendKeys("manager");
```

O/P
UN [admin]
pwd [manager]

Q. write a TS to Login to Fb appl^n.

```
webdriver driver = new firefoxdriver();
driver.get("http://facebook.com");
// UN
BY rv1 = BY.id("email");
webelement ref1 = driver.findElement(rv1);
ref1.SendKeys("admain@manager");
// pwd
BY rv2 = BY.id("pass");
webelement ref2 = driver.findelement(rv2);
ref2.SendKeys("admin");
```

// login

```
By rv3 = By.id("loginbutton");
webelement ref3 = driver.FindElement(rv3);
ref3.SendKeys(ref3.click());
```

* optimization of code

```
By rv1 = By.id("email");
webelement ref1 = driver.FindElement(rv1);
ref1.SendKeys("admin");
```

optimization (1)

```
webelement ref1 = driver.FindElement(By.id("email"));
ref1.SendKeys("admin");
```

optimization (2)

```
driver.FindElement(By.id("Email")).SendKeys("admin");
```

- optimization (1) is use when we need to perform multiple actions on same element
- optimization (2) is use when single action need to be perform on that element.

Q. Write a TS to perform following action in Facebook application ① identify email field & enter email ID ② remove mail ID, & enter Contact NO. ③ identify pwd field & enter pwd

```
webdriver driver = new firefoxdriver();
driver.get("facebook");

//optimization

webelement ref1 = driver.findelement(By.id("email"));
ref1.sendkey("admin@123gmail.com");
ref1.clear();
ref1.sendKeys("9975407785");

driver.findelement(By.id("pass")).sendKeys("manager");
```

Firstname ☐ <Html>
Lastname ☐ <body>
Email ☐ Firstname <input id="name" type="text">
Contact ☐ Lastname <input id="name" class="last" type="reset">
Email <input type="text" class="email">
Contact <input type="text" id="Contact" class="number">

When we can't use id locater type
① when id is duplicate
② If id attribute is not present in Html Code for an element

Note:- If an element Contains id, class attribute in Html Code then we can use id

a. write TS to automate above webpage

```
WebDriver driver = new FirefoxDriver();
driver.get("URL");

// Firstname
driver.findElement(By.id("name")).SendKeys("admin");

// Lastname                    // Here id is duplicate so we can't use id. So - take classname.
driver.findElement(By.className("last")).SendKeys("manager");

// Email
driver.findElement(By.className("email")).SendKeys("  ");

// Contact
driver.findElement(By.id("Contact")).SendKeys("  ");
```

CLASS
Date
Page

Q. write a TS to perform following actions on fb web page
(1) open Fb appln (2) enter email id (3) click on forgott accou-
(4) enter emailID in find acc field (5) click on search button
(6) Select radio button for send via email option
(7) click on Continue option (8) enter code & click on Continue option (9) enter new pwd.

```
webdriver d = new firefoxdriver();
    d.get ("facebook.com");
//email
    d.findElement (BY.id ("email")).sendKeys ("Sanjay-chetlure@g--");
// forgot
    d.findelement (BY.~~id~~ partiallinktext ("forgot acc.")).click();
// find Acc
d.findelement (BY.id ("identify_email")).sendkeys ("Sanjay.chetlur@--");
// Submit
d.findelement (BY.id ("did_ submit")).click();
// Code via email
    d.findelement (BY.id ("send_email")).click();
// Continue
    d.findelement (BY.classname ("_42ft_4jy0 _ ____.")).click();
// New pwd
d.findelement (BY.id ("password_new")).sendkeys ("___.");
```

O/P

⇒ NO Such elementException

This Exception will happen because of Syncronisation

classmate

Date

Page

Syncronisation

functionality of get & findelement method

① get() :- this method is use to open appln welcome page & stops execution of script unit page is Completly loaded. once page is loaded rest of the script execution starts.

② Findelement() :- this method will identifies an element in webpage & performs action. while page is loading components may not displayed at the time findelement() try to identify element is displayed or not. if it's not displayed ~~Ret~~ then returns an exception, No suchelement Exception.

Deffn :- "matching of Selenium TS Running Speed with appln Speed is known as Syncronisation".

- To achieve Syncronisation following methods are used:
  1. Thread Class
  2. Implicit wait()
  3. Explicit wait()

① Thread class :-

Syntax : Thread.sleep(mili Seconds);

Sleep method Should be used before navigating to the webpage so that while webpage is loading, selenium script will be stop execution

* Disadvantage of :-

(1) If multiple webpage navigation is there then, while writing a TS, we need to write multiple sleep() method statements.

(2) Selenium speed is Reduced, because even webpage is loaded earlier findelement will not perform action until Sleep time is Completed.

- So to overcome the above drawback we need to use implicit wait().

(2) Implicit wait() :-

Syntax:

driver.manage().timeOuts().implicitWait(arg 0, arg 1);

Time Timeunit.

- Implict wait Statement Should be the 2nd Statement in a T.S.
- while page is loading implicit wait will make findelement to wait for half Seconds
- After half Second search element is visible or not, if it visible, then perform action otherwise wait for half Second
- this process will happens until implicit time is Completed.
- If element is not displayed within given time then we will get No Such Element Exception.

eg. d.manage().timeouts().implicitWait(20, timeunit.days
.hr
.millisec
.

* **Pooling :-**

Searching for an element for every half second in implicit wait is known as pooling.

Note:- pooling time can be change by Fluentwait

(3) **name**

Q. Write a Html code to create following web page.

```
<Html>
  <Body>
    firstname <input id="name" type='text' ><br>
    middlename <input id="name" class='middle', type='text'>
                                                <br>
    Email <input id="email" class="ID" name="EmailID"
                                type='text' <br>
    pwd <input id='pass' class='pwd' type='password' <br>
    Confirmpwd <input id='pass', class='pwd' name='confirm'
                                type='text' ><br>
    <input type='button' id='signup' value=signup>
  </Body>
</Html>
```

FN
MN
LN
Email
pwd
C. pwd
Signup

class="

* When we should use name locater type
  1) If ID & ~~A~~ className attributes are not present in Html code of an element, then we need to use name attribute to identify an element

  2) When ID & classname attributes are Duplicate, then we need to use name attribute

Note:- If any element, Contains ID, class & Name attributes then priority is ID → Name → classname.

```
webdriver d= new FirefoxDriver();
d.get("URL");
//FN
d.findElement(BY.id("name")).sendKeys("admin");
//MN
d.findElement(BY.ClassName("middle")).sendKeys("manager");
//LN
d.findElement(BY.name("Last")).sendKeys("LastName");
//pwd
d.findElement(BY.id("pass")).sendKeys("manager");
//C.pwd
d.findElement(BY.name("Confirm")).sendKeys("manager");
// Email
d.findElement(BY.id("Email")).sendKeys("admin@manager.
Com");
```

Actitime 2.015-2.

classmate
Date ______
Page ______

* getText()

This method is use to get text present for an element in Html code as an output

Q. Write a TS to get error msg as an output by entering invalid UN & pwd in actiTime appl'n.

```
webdriver d= new firefoxdriver
    d.get("http:// localhost:8080/login.do");
//UN
    d.Findelement(BY.id("username")).Sendkeys("admin");
//pwd
    d.Findelement(BY.name("pwd")).Sendkeys("manager");
//login
    d.Findelement(BY.id("loginbutton")). click();
// Error
Webelement ref= d.Findelement(BY.Classname("errormsg"))
    String str = ref.getText();
        Sop(str);
```

O/p UN or pwd is invalid, please try again.

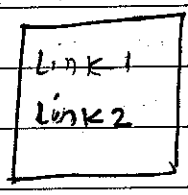
Assignment Q. Write a TS to perform following action in actitime appln ① login to actitime appln by using valid UN & pwd. ② click on Task option in Homepage ③ Enter task Name in filter task field & click on apply button ④ display total No. of result count as an output ⑤ click on logout

classmate
Date
Page

Qe.② Write a TS to get all the text fields content of an output in amazon signup page.

Link Test

Q. Write a Html code to creat following web page




```
<Html>
  <Body>
    <a href="Signup.Html"> link1 </a> <br>
    <a href="Login.Html"> link2 </a> <br>
  </Body>
</Html>
```

* When we should use link test & partial Link test

- If tagname is duplicate, id, classname, name attribute are not present in Html code of an element then we should use link test or partial link test.
- If id, classname, name attributes are duplicate

* Diff. betn Partial linktest & link test.

(1) linktest: used to identify an element By taking entire test of an input

(2) Partial Link Test:- used to identify any element by taking few chars of a test of an input.

Q. Write a TS to automate above webpage:

```
Webdriver d = new Firefoxdriver();
d.get("URL");
// Link1
d.findelement(By.tagname("a")).click();
// back
d.navigate().back();
// Link2
// d.findelement(By.linkTexat("Link2")).click();
d.findelement(By.partialLinkTexat("2")).click();
d.close();
```

Q. write a TS to disp. texat present in both Links as an o/p.

```
Webdriver d = new Firefoxdriver();
d.get("URL");
String S1 = d.findelement(By.partialLinkText("Link1")).getText();
Sop(S1);
String S2 = d.findelement(By.partialLinkText("Link2")).getText();
Sop(S2);
```

Q. write a Html code to create following webpage

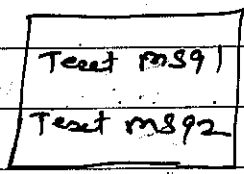
Link1
Texat msg
Link2

```
<Html>
<body>
<a href="signup.Html"> Link1 </a> <br>
<Span> Texat msg </Span>
<a href = "Login.Html"> Link2 </a>
</body>
</Html>
```

Q. write a TS to disp. Tesxt of an o/p for above webpage.

```
Webdrive d = new firefoxdrive();
d.get("URL")
String s1 = d.findelement(By.linkTesxt("link1")).gettext();
Sop(s1)
//Tesxt
String s2 = d.findelement(By.tagname("span").gettext();
Sop(s2);
// Link2
String s3 = d.findelement(By.linktesxt("link2")).gettext();
Sop(s3);
```

Q. write a Html code to create a following webpage.




```
<Html>
  <Body>
    <span> Tesxt msg1 </span>
    <span> Tesxt msg2 </span>
  </Body>
</Html>
```

Q. write a TS to display above webpage of an o/p.

```
Webdrive d = new firefoxdrive();
d.get("URL");
String s1 = d.findelement(By.tagname("span")).gettext();
Sop(s1);
String s2 = d.findelement(By.partiallinktext("message2")).gettext();
Sop(s2);
```

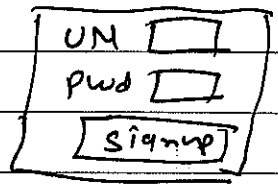
o/p ⇒ Test msg

Exception - No Such element Exception

Note:-

- Partial linktext & linktext locator types are use to identify elements with the help of linktext presented in link. but not for normal text

Q Write a Html code to create following web page




```
<Html>
  <Body>
    UN<input type="text"><br>
    pwd<input type="password"><br>
    <input type="button" value="Signup">
  </Body>
</Html>
```

* When we should use CSS Selector

- If tagname is duplicate
- ID, class, name attributes are not present then we need to use CSS Selector
- If ID, class, name attributes are duplicate, then we need to use CSS Selector.

Syntax:- tagname [property name = 'property value']

eg. input [type = 'text']

BY. CSSSelector("tagname [Property name = 'Property value']

⑧ Xpath :-

① ~~Relative~~ absulute

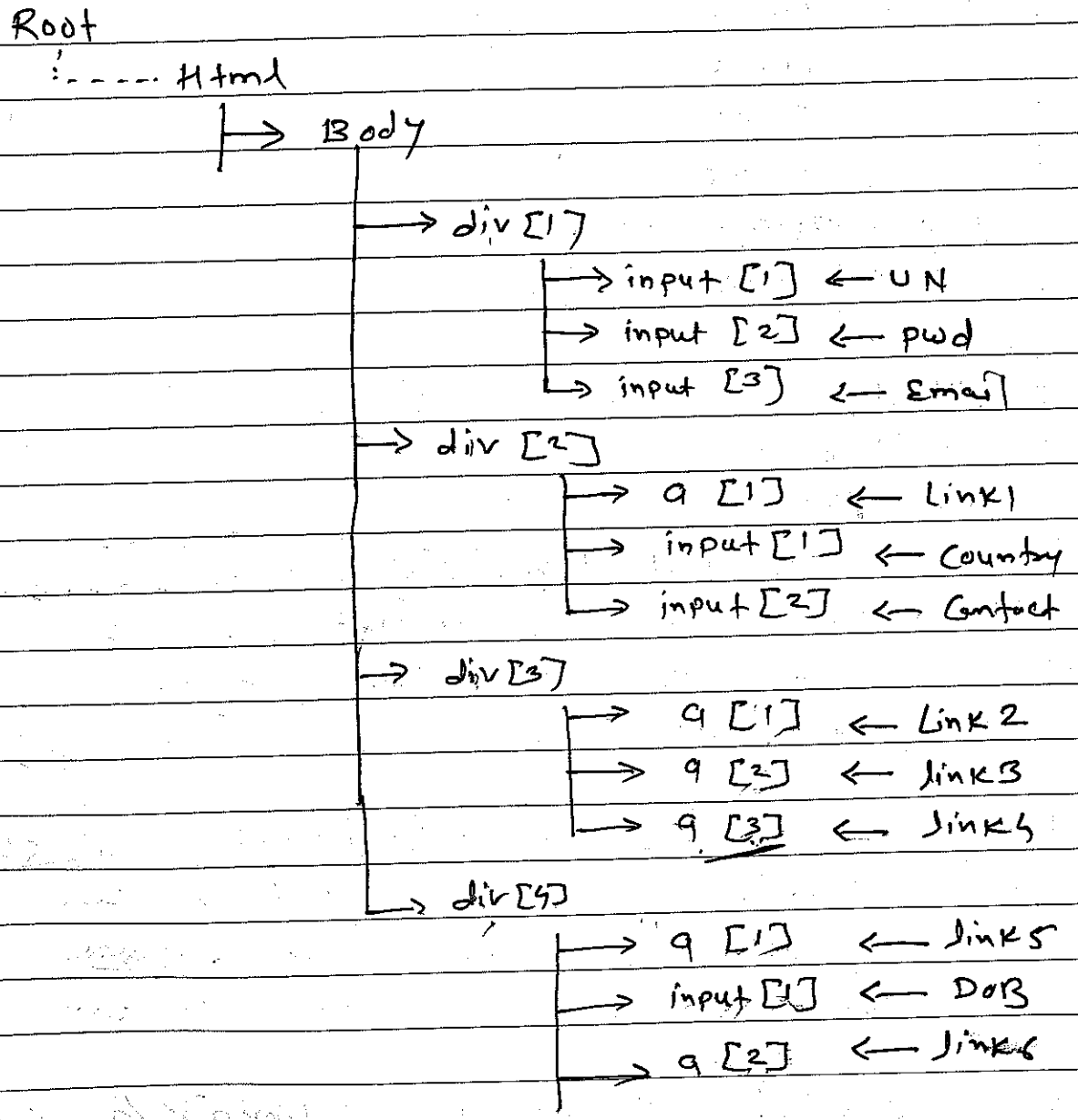
Q. write a Html code to create following web page

U.N
pwd
Email
Link1
Country
Contact
Link2
Link3
Link4
Link5
DOB
Link6

```
<Html>
  <body>
   <div>
      UN <input type="teset" > <br>
    pwd < input type = "password" > <br >
    Email < input type= " teset " > <br>
  </div>
  < div >
    < a href = " sample1. html " > Link1 </a > <br>
    Country < input type = " teset " > <br>
    Contact < input type = " teset " > <br>
  </div>
   <div>
   < a href = " Sample2. Html " > Link2 < /a > <br>
   < a href = " Sample3. Html " > Link3 </a > <br>
  < a href = " Sample4. Html " > Link4 </a > <br>
  </div>
```

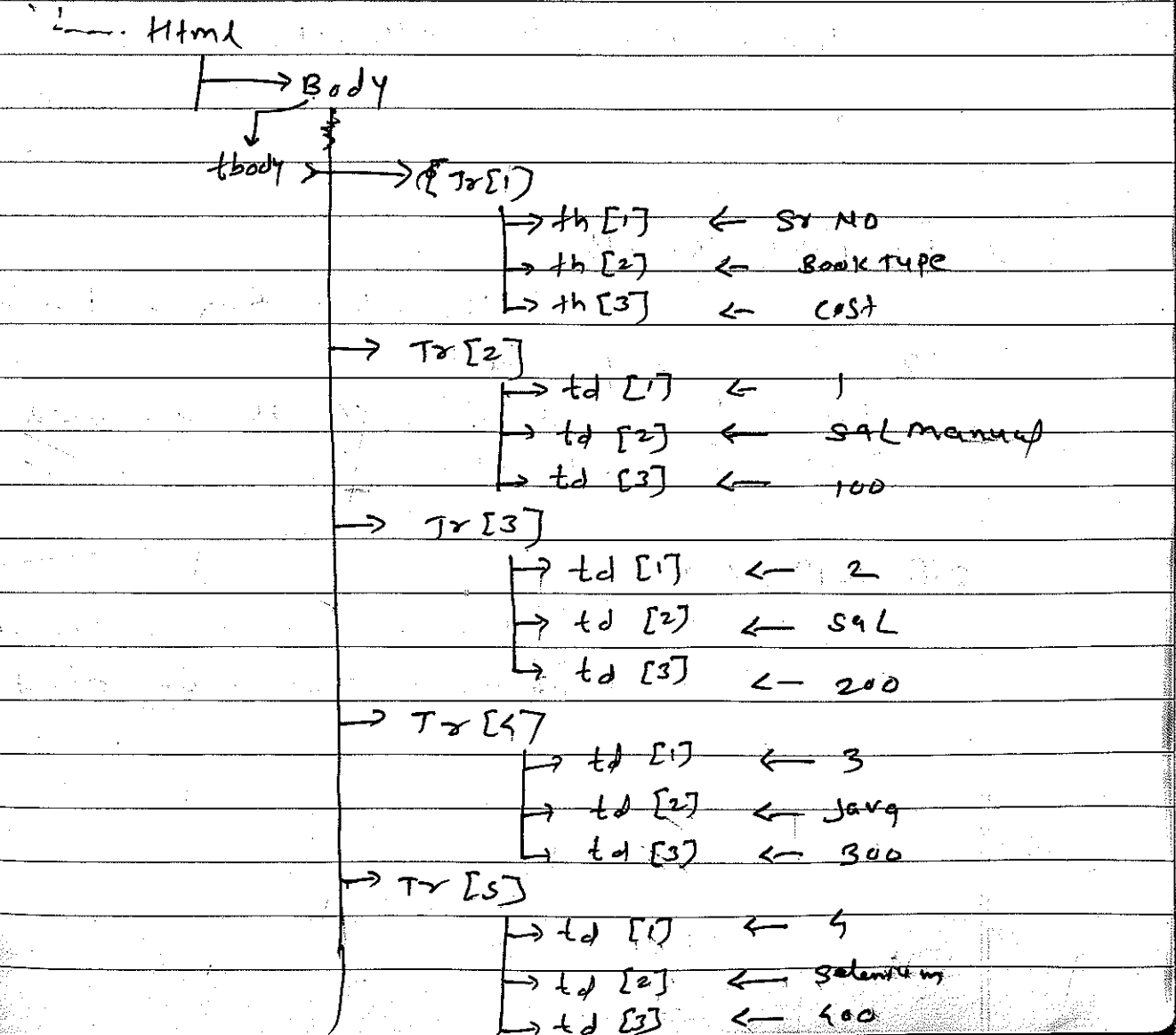
```
<div>
  <a href = "samples.Html"> Links </a> <br>
  DoB <input type = "text"> <br>
  <a href = "Samples.Html"> Links </a>
```

Tree Diagram :-



Element	AbsoluteXpath
① Contact	
② Link4	/Html/Body/div[3] /a[3]
③ All Links	/Html/Body/div /a
④ input tag 1st child	/Html/Body/div/input[1]
⑤ Link1, Link2, Link5	/Html/Body/div/a[1]
⑥ Link2, link3, link4	/Html/Body/div[3] /a
⑦ Link1, Link6	/Html/Body/div[2]/a[1] | Html/Body/div[4]/a[2]

⑧ Tree Diagram for table



	Element	Absolute X path
①	Cost 300	/Html/body/tbody/tr[4]/td[3]
②	Selenium	/Html/body/tbody/tr[5]/td[2]
③	Send Second row	/Html/body/Tbody/tr[3]/td
④	All Books cost	/Html/body/Tbody/tr/td[3]
⑤	SQL & Selenium	/Html/body/tbody/tr[3]/td[2]
		/Html/body/tbody/tr[5]/td[2]

* Disadvantage of Absolute Xpath
  1. Xpath is too lengthy & time Consuming.
  2. Identifying of an element by developing Html tree diagram is Difficult.

② Relative Xpath

"Navigating from root of the parent to any child"

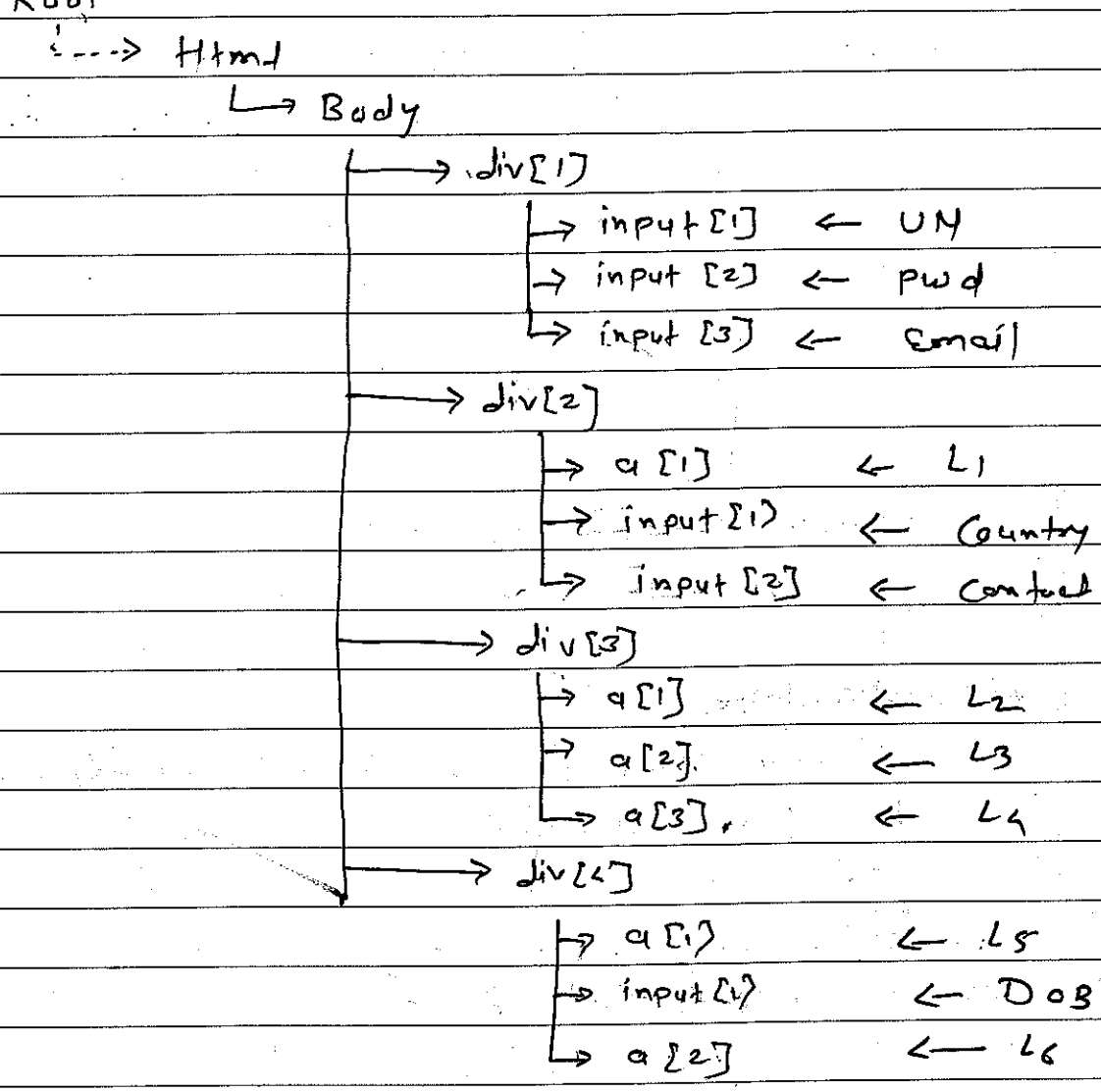
- To achive Relative Xpath we need to use Double forward slash (//).

Diff bet^n / & //

/. use to navigate from parent to imm. child

//. use to navigate from root to any child

eg



Element	Relative X-path
① All Links	//div/a or //a
② Contact	//div[2]/input[2]
③ L4	//div[3]/a[3] or //a[3]
④ input tag should be 1st child	//div/input[1] or //input[1]
⑤ L1, L2 & L5	//a[1] or //div/a[1]
⑥ L2, L3 & L4	//div[3]/a
⑦ L1 & L6	//div[2]/a[1] | //div[5]/a[2]

Assignment - Find relative X-path on table

* Disadvantage :-

① writting Html tree Diagram & identifying an element is Difficult.

③ Xpath by attribute :-

Advantage :-

① We can identify element by using attributes without finding Html tree diagram

Syntax: //tagname [@ property name = 'property value']

eg. //input [@id = 'UN']

Q. Write a TS to register in Trello.com

```
Webdriver d= new firefoxdriver();
d.manage().timeouts().implicitWait(20, TimeUnit.Seconds);
d.get("http://trello.com");
//Signup button
d.FindElement(By.xpath("//a [@class='global-----'] ").click();
//Name
d.findelement(By.xpath("//input [@id='name'] ").SendKey(admin);
// Email
d.findelement(By.Xpath("//input[@type='email'] ").SendKey("--");
// pwd
// d.findelement(By.xpath("//input [@name='password'] ")).SendKey(--);
```

Q. Write a TS to search for mobiles in flipkart appln

```
Webdriver d= new firefoxdriver();
d.manage().timeouts().implicitWait(20, TimeUnit.Seconds);
d.get("http://flipcart.com");
d.FindElement(By.xpath("//input[@class=' ']").SendKey(mobile);
d.findelement(By.xpath("//button[@type='submit']").click();
```

When we move from 1 page to another then only we have to use Synchronisation. For same page no synchronisation Required.

* we can use multiple attribute

eg `//input [@id=" "] [@class=' ']`

* If then

Q. Write a Html Code to Create following web page.

Text msg1
Text msg2
Text msg3
Link1

```
<Html>
 <Body>
    <Span> Text msg1 </Span>
    <Span> Text msg2 </Span>
    <Span> Text msg3 </Span>
  <a href = "Sample.Html" > link1 </a>
 </Body>
</Html>
```

(4) Xpath By Text :-

Sometimes Developer may Create an element by using tagname + text

- To identify that text we we Can't use locator type CSS selector & Xpath by attribute

Syntax :- //tagname [text() = 'text value']

- By using Xpath by text we Can identify normal text and link text also

Q. Write TS to disp. above webpage of an dlp.

```
WebDriver d = new FirefoxDriver();
Sop(d.findElement(By.xpath("//Span[text()='text msg1']").getText());
Sop(d.findElement(By.xpath("//Span[text()='text msg2']").getText());
Sop(d.findElement(By.xpath("//Span[text()='text msg3']").getText());
Sop(d.findElement(By.xpath("//a[text()='Link1']").getText());
```

Note :- If any element containing text with spaces, while identifying that element using Xpath by text, we need to mention space also.

eg Test msg 2

Xpath by Text ⇒ //span[text() = ' Test msg 2 ']

- Space can be created in 2 ways
  1. By using space keyboard stroke
  2. By using non-breakable space keyword ⇒ ( )
- If space is created by using non-breakable space within the text, then we can't use Xpath by text.
- So, we will go for next type ie Xpath by Contains.

(5) Xpath by Contains :-

Syntax : //tagname[contains(Text(), 'Text value')]

(1 nbsp gives 1 space)

Q. write a Html code to create following webpage

NTR
Mani
Allu arjun
mahesh baby

```
<Html>
 <body>
  <span> NTR </span> <br>
 <span>  Mani  </span> <br>
 <span>   Allu Arjun   </span> <br>
 <span>  prabhas   </span> <br>
 <span> mahesh   baby </span>
 </body>
```

Element	Xpath by Text	Xpath by Contains
① N.T.R.	① //Span [text() = 'NTR']	① //Span [Contains (text(), 'NTR')
② Nani'	② //Span [text() = 'Nani'] X	② //Span [Contains (text(), 'nani']
	②' //Span [text() = '_Nani_']	②' //Span [Contains (text(), '_Nani_']
③ Ally arjun	③ //span [text() = 'Ally arjun'] X	③ //Span [Contains (text(), 'Ally arjun']
	③' //Span [text() = '_Ally arjun_'] X	③' //Span [Contains (text(), '__Allyarjun_')]
④ mahesh babu	X (not possible)	④ //Span [Contains (text(), 'mahesh babu') X
		④' //Span [Contains (text(), 'mahesh')]
⑤ prabhas	X (not possible)	//Span [Contains (text(), 'prabhas')]

Note :- (I) Any element html code Contains text :

(a) If we use xpath by text then entire text need to be mention

(b) If we use Xpath by Contains then few characters of text in sequence need to be used

(II) If any element Contain only text then we Can use Xpath by text & Xpath by Contains

(III) If any Element Containg text with normal space:-

(a) If we use xpath by text we need to mention text with space.

(b) If we use Containg we need to mention text with or without space.

(IV) If Element Containg text with nbsp :-

(a) we Can't use xpath by text

(b) we can use xpath by Containg by using only text (should not use here nbsp.).

* Traversing :-

Navigating from one tag to another tag is known as traversing.

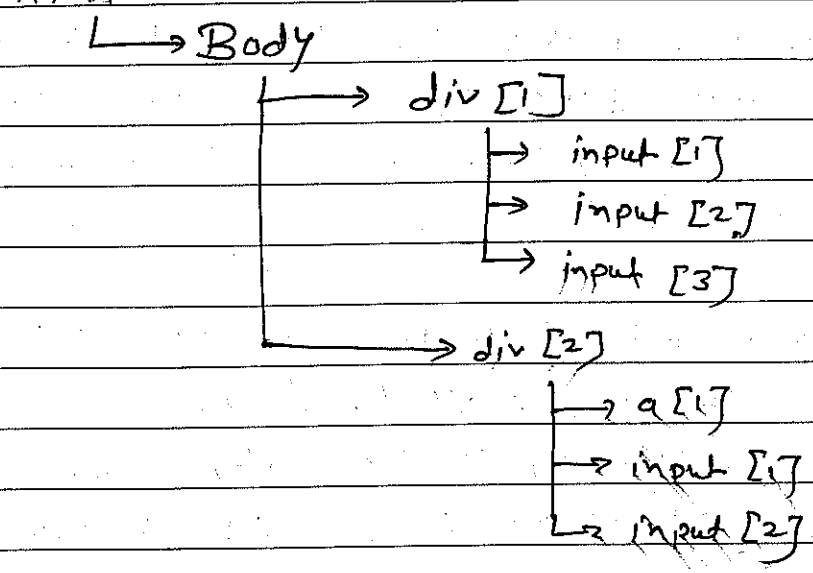
- It is of 2 types

1) Forward traversing
2) Backward traversing

1) Forward Traversing :-

- Navigating from parent tag to child tag & from child tag to immidiate child tag.
- Forward traversing can be achieved by using
  a) xpath by Containg
  b) Absolute X path
  c) Relative xpath
  d) xpath by attribute
  e) xpath by text.

eg.



* To identify link :-

1) Absolute Xpath : /Html/Body/div[2]/a[1]
2) Relative xpath : //div[2]/a
3) xpath by attribute : //a[@href='Sample1.Html']
4) Xpath by Text : //a[text()='Link1']
5) Xpath by Contains : //a[contains(text(),'Link1')]

2) Backward Traversing :-

- Navigating from child to parent tag is backward traversing.
- To use backward traversing, forward traversing is mandatory.
- To navigate from child to parent we need to use /.. (only)

eg.

//a[text()='Link1']/../../..
(/.. → div, /../.. → body, /../../.. → Html)

* Alternate way :- By using parent Key :

eg. //a[text()='Link1']/parent::div

- we can enter multiple continuously

eg:

//a [text() = 'link1'] /parent::div /parent::body /
parent::html

- To navigate form any child to any parent we use keyword → /ancestor::
parent name,

eg. //a [text() = 'link1'] /ancestor::html,]

Q. Write a TS to display cost of selenium book of an o/p [ref. to html table]

```
WebDriver d = new FirefoxDriver();
d.get("URL");
WebElement Rv = d.FindElement(By.XPath("//td//[text()='500']"));
String S1 = Rv.getText();
Sop(S1);
```

o/p → 500

- If cost of selenium changing frequently then above T.S. will not work. these types of elements are known as "dynamic Elements"

* To handle Dynamic elements we need to use 'independent & dependent Concept' which will follow Traversing.

* Procedure to handle Dynamic elements :-

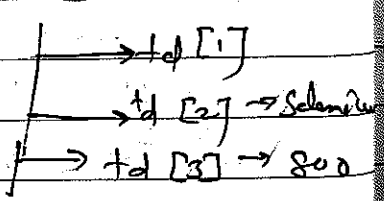
Step-① Identify Idenpendant & dependant element
independant - Selenium / ~~Realme~~ Redmi
Dependant - Cost / Review

Step② write xpath to identify independent element
// td [text() = 'Selenium']

Step③ • Identify Common parent betn independant & dependant & write Xpath upto Common Parent
Note :- move the mouse pointer on independent element Html Code

• Navigate in upword dirn on each html code tag, which tag will highlights betn indep. & Depd. element that is Common parent tag.

// td [text() = 'Selenium'] /..



Step④ • IDentify dependant element & write Xpath
Note: Expand Common parent tag, move the mouse pointer in downward dirn which tag will highlights dependant element ie. dept. tag.

// td [text() = 'Selenium'] /.. td[3]

Q. write a TS to identify reviews for Redmi Note 4 (Gold 64 gb)

Step-1 dependent - review
independ - mobile name

Step-2 xpath for independant element
//div [text() = 'Redmi Note 4 (Gold, 64 gb)]

Step (3) TO identify Common Parent
//div [text() = 'Redmi Note 4 (Gold, 64 gb)] /..

Step (4) TO identify dependant
//div [text() = 'Redmi Note 4 (Gold, 64 gb)] /.. //span [contains (text(), 'Reviews')]

```
WebDriver d = new FirefoxDriver();
d.manage().timeouts().implicitlyWait(20, TimeUnit.SECONDS);
d.get("http://www.flipkart.com");
//Search
d.findElement(By.xpath("//input[@class='LM6RPg']")).
                    sendKeys("redmi");
//buttons
d.findElement(By.xpath("//button[@class='vh79eN']")).
                    click();
//64gb
String str = "//Step 4 Html code"
String str1 = d.findElement(By.xPath(str)).getText();
Sop(str1);
```

Q. Write a TS TO identify redmi note 4 gold 64 gb mobile price.

Step-① Dependant element - price
independant - Mob. Name

Step-② Xpath for independent-
// div [text() = 'redmi Note 4 (gold, 64 gb)']

Step-③ Xpath for parent
→ -//- /.. /..

Step-④ Xpath for Dependent
→ -//- //div [@ class = '_1vC4OE_2rQ-NK']

* When we should use indept. & Dependt. Concept
① TO identify dynamic elements
② When multiple elements are developed using same html code.

Q. write a TS to click on download link for java lang. in Selenium website.

WebDriver d = new FirefoxDriver();
d.manage().timeouts().implicitlyWait(10, TimeUnit.SECONDS);
d.get("http// seleniumhq.org /download/");
// Links
d.findElement(By.xpath("//div [@style='display: block;']//
a [@id='close']")).click();

d.findElement(By.xpath("//td [text()='Java']/../../a [text()='Downl
click();

(HW) • write a TS to select add to Compare checkbox for Realmi note 4 gold 64 gb.

Xpath by index :-

Syntax :- (Xpath Expression) [index]

index = 1, 2, 3 — n

- Sometimes even after using all types of xpath we may get matching element or duplicates
- To identify element uniquely from that matching element we need to use xpath by index

- when xpath expression is written within brackets, temp storage will be created for all matching elements. to identify element we need to use index.

eg. refer to activitime task feature

→ To identify 1st checkbox

xtml code :- (//input[@type='checkbox'])[1]

→ To identify last checkbox

xtml code :- (//input[@type='checkbox'])[7]

→ To find last checkbox we can use [last()] keyword

eg. (//input[@type='checkbox'])[last()]

→ To find 2nd last checkbox

eg. (//input[@type='checkbox'])[last()-1]

→ To find 1st 3 checkbox.

eg. (//input[@type='checkbox'])[position()<=3]

→ To find last 3 checkbox

eg. (//input[@type='checkbox'])(position()>=last()-2)

→ To find Alternate checkbox or odd number index checkbox

eg. (//input[@type='checkbox'])[position() mod(2)=1]

for even no index → [position() mod(2)=0]

* Webdriver & Webelement :-

- "Webdriver is an interface which contains abstract methods use to perform actions on browser"

List of methods present in webdriver

1) findelement()
2) close()
3) findelements()
4) getCurrentURL()
5) getTitle()
6) getPageSource()
7) manage()
8) navigate()
9) getwindowHandle()
10) getwindowHandles()
quit()

* Webelement :-

"It is an interface which contains abstract method use to perform action on elements present in webpage

List of methods present in webelement

1) clear()	7) getcssvalue()	13) Submit
2) click()	8) getlocation()	14) SendKeys
3) findelement()	9) getText()	15) notify()
4) findelements()	10) getsize()	16) notifyall
5) getAttribute()	11) getTagname()	17) isSelected
6) getclass	12) getText()	18)

WebDriver driver		WebElement
close()		
findElement()		clear();
findElements()	WebElement E1 =	click()
get(currentURL)		
getTitle()		
getPageSource()		sendKeys()
manage()		
navigate()		
⋮		
quit()		

* method present in Webdrive *

close:- use to close the current browser

get:- use to open an App/n

findelement:- use to identify webelement or component present in webpage

getCurrentURL():- use to get URL of an o/p

getTitle() use to get current webpage as of o/p.

manage() use to peeform browser actions like Setsize, Setposition

Navigate() Alteenate method use to open app/n

quit() Alteenate method use to close browser

getPageSource() use to get Source Code of a webpage as an o/p.

Q write a TS to display actitime login page Source Code as an o/p.

```
Webdrive d= new Firefoxdrive()
d.get("http://localhost:8084/login.do");
String s1 = d.getPageSource();
Sop(s1);
```

classmate
Date
Page

* Methods Present in Webelement *

SendkeysC/ This method is use to entee teset in teselt field

click() use to Select radio button, cheakboxes & to click on buttons

Q. write a TS to enteE UN & pwd in actitime login page & click on login button without using click method

- To peEform Keyboard actions we need to use Keys class which contains static method

- Keys argument taken as an input by Sendkeys method

```
Webdrivee d= new firefoxdriveE()
d.get("http://localhost:8080/login.do");
UN//
d.findelement (BY.xpath("input[@ id='useEname']")).SendKeys("ad");
//pwd
d.findelement (BY.xpath ("//input [@name ='pwd']")).SendKeys ('manag
//login
d.findelement (BY.id ("loginbutton")).SendKeys(Keys.ENTER);
```

Q. write TS to peEform following actions in actitime login page EnteE UN, → Copy UN & paste it in pwd field

```
webdrivee d= new firefoxdriveE();
d.get("http://localhost:8080/login.do");
UN// Webelement UN = d.findelement(BY.xpath("//input [@id='useEname
UN.SendKeys ("admin");
UN.SendKeys ( Key. ConNtrol + "a");      or ~~Key. "a~~
                                         Control. "a"
UN.SendKeys (Key. Control + "c");
```

```
// pwd
d.findElement(By.xpath("//input[@name='pwd']")).sendKeys(Keys.Control
+"v");
```

Q. Write a TS to enter UN, copy UN & paste in pwd field without identifying pwd field in actitime

```
WebDriver d = new FirefoxDriver();
d.get("http://localhost:8888/login.do");
UN//
UN = d.findElement(By.xpath("input[@id='username']"));
un.sendKeys("admin");
un.sendKeys(Keys.Control + "a");
un.sendKeys(Keys.Control + "c");
un.sendKeys(Keys.Tab + "" + Keys.Control + "v");
```

isSelected() :- This method is use to verify checkbox & radio buttons are selected or not

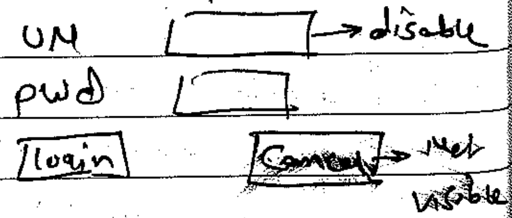
Q. Write a TS to verify checkbox is Selected or not in actitime login page

```
WebDriver d = new FirefoxDriver();
d.get("http://localhost:8080/login.do");
// Chk
WebElement chk = d.findElement(By.xpath("input[@id='keep-
                                        -LoggedIn
// without Selecting
if(chk.isSelected)
{
  Sop("checkbox is Selected");
}
```

```
else
 {
    Sop (" Cheek bose is  not Selected");
 }
chk. click();
 if ( chk. isselected ())
  {
   Sop (" Cheekbose is Selected")
  }
 else
  {
    Sop (" cheek bose is not selected");
  }
```

String
Collections → list
Arrays → generic

Q. write a Html code to Create following webpage




```
<Html>
  <body>
    UN <input type = "text" value = "admin" disabled <br>
   pwd < input type = "password"  id = "pwd" > <br>
      <input type = "button" value = "login" >
     <input type = "button" value = "cancel" hidden>
  </body>
</Html>
```

classmate
Date
Page

IsEnabled() this method is used to verify Component or element is Enabled or not.

IsDisplayed() this method is used to verify Compnent is displayed or not.

Q writ a TS to verify UN & pwd fields are unabled or not & login & Cancel button displayed or not.

```
WebDriver d = new FirefoxDriver();
d.get("URL");
//UN  WebElement UN = d.findElement(By.xpath("//input[@type='text']"));
if(UN.isEnabled())
{
    Sop("UN is enabled");
}
else
{ Sop("UN" is disabled")
}
// pwd
WebElement pwd = d.findElement(By.xpath("//input[@id='pwd']"));
if(pwd.isEnabled)
{
    Sop("pwd is enabled");
}
else
{
    Sop("pwd is disabled");
}
```

```
// login
~~if ( login~~
    webelement login = d.findelement (By.xpath ("//input [@v...
                                                  = "login"]);
if ( login. isdisplayed())
   {
       Sop (" login is displayed ");
   }
   elfe
   { Sop (" login is not displayed ");
   }

// Cancel
webelement Cancel = d.findelement (By.xpath ("//input [@value =
                                              'Cancel']"));
if ( Cancel. is Displayed ())
 {
    Sop (" Cancel button is displayed ");
 }
 elfe
  {
     Sop ("Cancel button is not displayed ");
  }
```

getTagname() this method is use to get tagname present in Html code of an o/p of an element of an o/p

getAttribute() this method is use to get attribute value present in Html code ~~of~~ of an an element of an o/p.

eg

UN [ ] → UN <input id="username" class="UN" type="text">

↑ getTagname() getTagname ("property name")

Q. Write a TS to display tagname & attribute value of an o/p. in actitime login page

```
Webdriver d = new Firefoxdriver();
d.get("http://localhost:8080/login.do");
//pwd
Webelement ar = d.Findelement(By.name("pwd"));
// tagname
String tag = ar.getTagname();
Sop(tag);
// attribute
String Str = ar.getAttribute("placeholder");
Sop(Str);
String str1 = ar.getattribute("class");
Sop("="+Str1);
```

o/p
input
password
text field pwd field

Q. What will happen if we try to perform action on disable components.

We will get invalid Element state Exception

Q. write a TS to enter text in google search field of google web page

```
Webdriver d = new Firefoxdriver();
d.get("http://www.google.com");
d.Findelement(By.xpath("//input[@id='lst-ib']")).SendKeys("Selenium");
```

Note:-

Developer may create Component with multiple Html Code & few html Statements will be disabled, so To identify that element we can't use disabled Statements.

getText()

This method is used to get the text present in Html Code of an element.

Q. Write a TS to display text present in Search field of an o/p.

```
webdriver d = new firefoxdriver();
d.get("http://flipkart.com");
webelement sv = d.findelement(By.xpath("//input[@class='lnsRpg']"));
sv.sendKeys("redmi");
String str = sv.getAttribute("value");
Sop(str);
```

o/p => redmi

Q. Write a Html Code to create following web page,

```
<Html>
  <Body>
      <input span> Text msg </span> <br>
    UN <input type = "text" value = "admin" >
  </Body> pwd <input type = "password" value >
</Html>
```

Text msg

UN [admin]

pwd [Manager] user entered

Q. write TS to display textmsg & admin text present in above webpage of an O/P

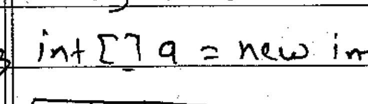
```
webdriver d = new firefoxdriver ( )
    d.get("URL");
→ webelement rv1 = d.findelement (BY.tagName ("Span"));
    String Str1 = rv1.getText();
    Sop (Str1);
→ webelement rv2 = d.findelement (BY.tagname ("input"));
    String Str2 = rv2.getAttribute ("value");
        Sop(Str2);
→ webelement rv3 = d.findelement (BY.xpath ("//input [@type='password']"
    rv3.Sendkeys ("manager");
    String str3 = rv3.getAttribute ("value");
        Sop ( Str3));
```

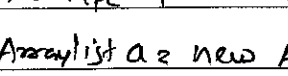
O/P Text msg
admin
manager

Array	Collections	Generics
* Collection of Similar data (Same D.T.)	* heterogeneous * size vary.	* Similar D.T. * Size vary

Syn: D.T [] Rv = new DT [size] | listtype=a new listtype(); | listtype <DT> rv=new listtype<D.T>();

eg int [] a = new int [5] | Arraylist a = new Arraylist(); | eg. Arraylist <int> Rv = new Arraylist <int>





a.add(c)

→ add a.[0]

→ Check size = "length" → To check size ⇒ a.size(); Rv.size()

classmate
Date
Page

Findelement:-

- Findelement use to identify single element present in webpage returntype is webelement
- **Findelements:-**

use to identify multiple elements, returntype is list<webelement>

Q. write a TS to identify total no. of links present in google webpage of an O/P.

```
Webdriver d = New firefoxdriver();
d.get("http://google.com")
List<webelement> L= d.findelements(By.xpath("//a"));
int size = L.size();
Sop(size);
```

*functionality of getText():

- If text is present for identified element then displays text of an o/p.
- IF Text is not present then display blank

Q. write a TS to identify each link text of an o/p. in google webpage

```
Webdriver d: new Firefoxdriver()
d.get("http://google.com");
List<webelement> L = d.findelements(By.xpath("//a"));
int size = L.size();
Sop(size);
```

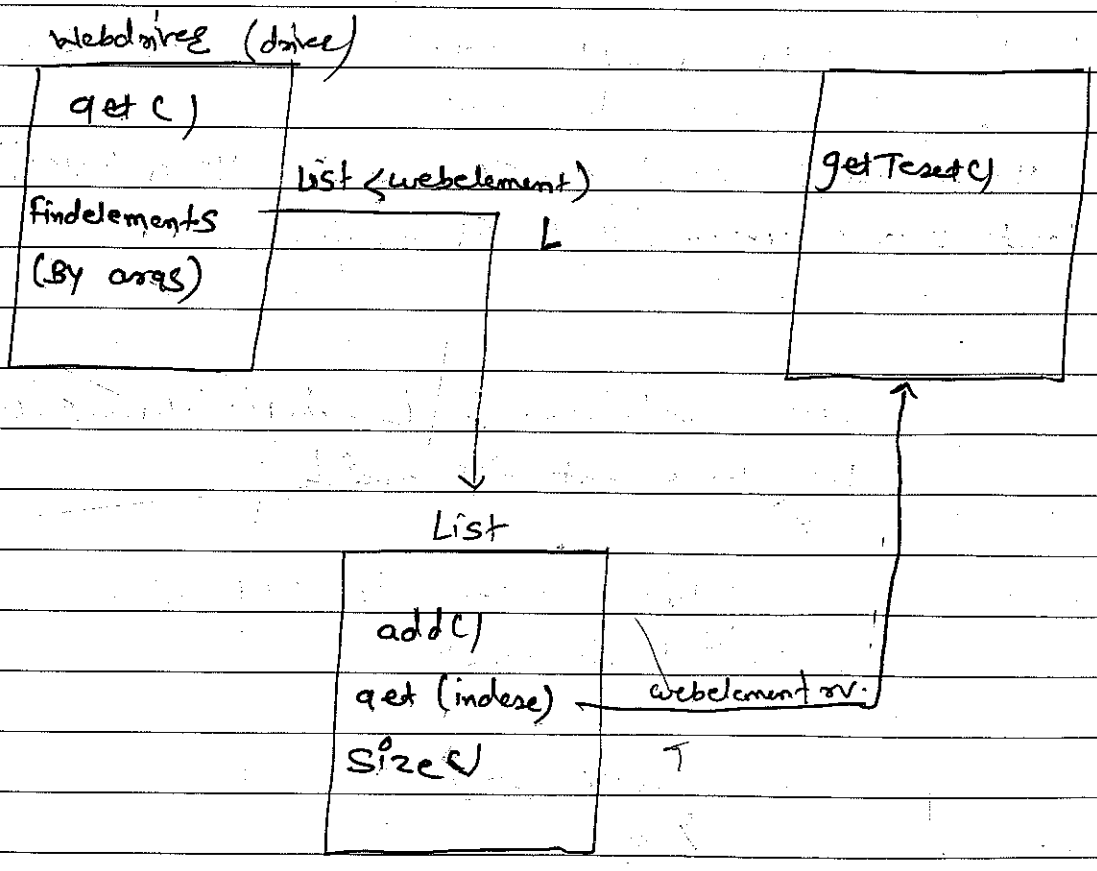
// using for loop

```
for(i=0; i<L.size(); i++)
{
    WebElement rv = L.get(i);
    String str = rv.getText();
    Sop(str);
}
```

// using for each

Return type ↑ — → from where we have to fetch data

```
for(WebElement rv : L)
{
    String str = rv.getText();
    Sop(str);
}
```

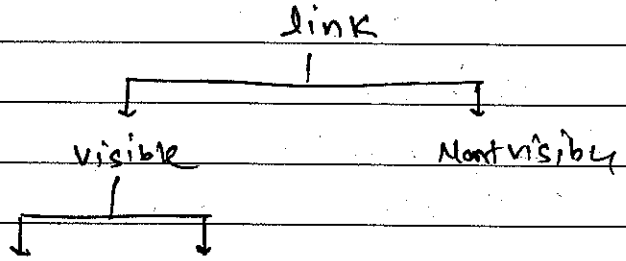


HW:- ① write a TS to display Text present for Links as an O/P. if text is not empty.

② write a TS to display total no. of links visible & total no. of list not visible Count as an O/P.

③ write a TS to display Text present for links as an O/P in alphabetical order.

④ write TS. to Perform following action



1) display all links as an O/P

2) No. of links visible Count, No. of links having text & not having text.

3) No. of links nonvisible Count, No. of links having text & not having text as an O/P.

Q④ 1)

```
List <webelement> L = d.findelement(xpath("//a"));
For( webelement ele : L)
{
    String Str = ele.getText();
    if (Str.length() > 0)
    {
        Sop (Str)
    }
```

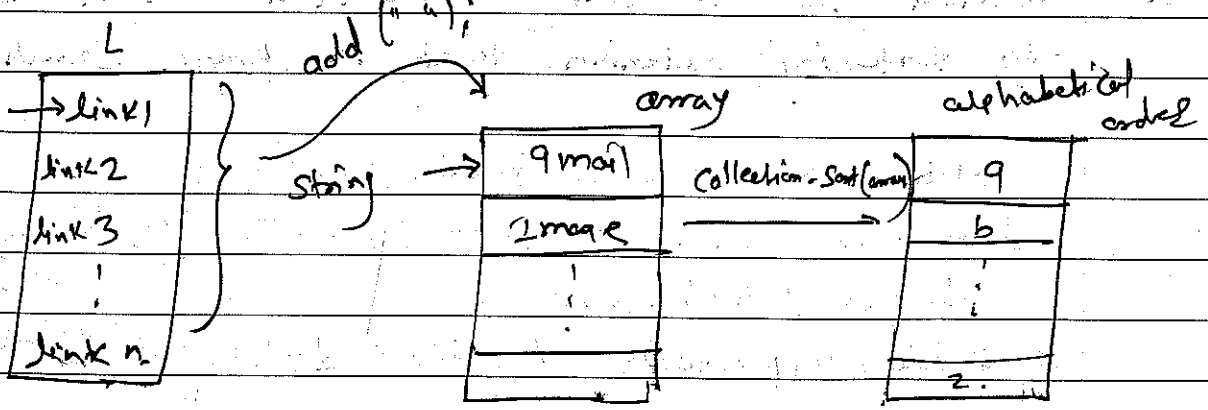
for loop ⇒ to fetch 1st n elements

for each ⇒ to fetch data continuously till the end of loop

Q(3)

```
List <webelement> L = d.findelements(By.xpath("//a"));
Arraylist <String> array = new arraylist <String> ();

for (webelement ele : L)
{ if(s)
        String Str = ele.getText();
        if (Str.length() > 0)
        {
            S.O.P(Str)
            Array.add (Str);
        }
}
    Collections.Sort (array);
for (String Str1 : array)
{   sop(Str1);
}
```



classmate
Date
Page

* Handling of auto-suggestions :-

Q. Write a TS to display autosuggesting size of an o/p by entering selenium text in google search field.

```
WebDriver d = new FirefoxDriver();
d.manage().timeouts().implicitlyWait(10, TimeUnit.SECONDS);
d.get("http://www.google.com");
//Search
d.findElement(By.xpath("input[@id='lst-ib']")).
                                    sendKeys("Selenium");
//autosuggestions
List<WebElement> L = d.findElements(By.xpath("//div[Contains(text(),Selenium)]"));
Sop("size of autoSuggestions " + L.size());
```

o/p = 4

Q. Write a TS to display autosuggesting text of an o/p. by entering selenium text in google search field.

```
WebDriver d = new FirefoxDriver();
d.manage().timeouts().implicitlyWait(10, TimeUnit.SECONDS);
d.get(http://google.com);
d.findElement(By.xpath("//input[@id='lst-ib']")).sendKeys("Selenium");

List<WebElement> L = d.findElements(By.xpath("//div[Contains(text(),
                                                    Selenium
for(WebElement ele : L)

String Str = Ele.getText();
Sop(Str);
```

classmate
Date ____
Page ____

Q. Write a TS to Select Selenium webdriver option from autosuggestions by entering "Selenium" text in google search field.

```
Webdriver d = new FirefoxDriver();
d.manage().timeouts.implicitlywait().(10, timeouts.Second)
d.get("http://google.com)

d.findelement(BY.xpath("//input[@id='list-ib']).sendKeys("Selenium"))
List <webelement> L
= d.findelement(BY.xpath("//contains[@ text(), selenium)

for(webelement ele : L)
{
    String str = ele.getText();
    if (str.contains("webdriver"))
    {
        ele.click();
        break;
    }
}
d.close();
```

Q. Diff. betn findelement & findelements

findelement	findelements
1) use to identify single element	1) use to identify multiple element
2) R.T. of findelement is webelement	2) R.T. of findelements is list of webelements>
3) If findelement unable to identify Component by using locater type we will get "8 No Such element exception"	3) If findelements unable to identify Components by using locater type we will not get any exceptions. & size will be zero.

* getCssValue :-

this method is used to get CSS property of an output

* getSize() :-

this method is used to get Height & width of a Component.

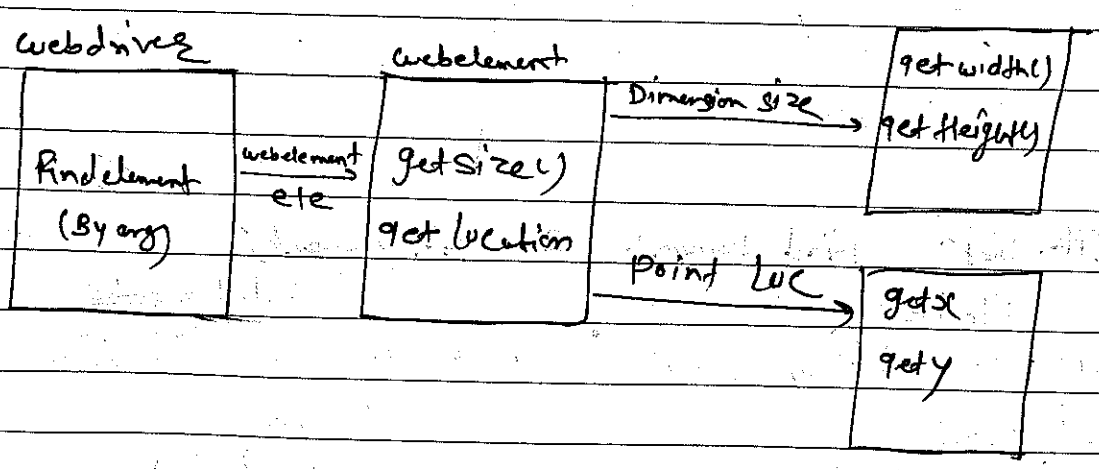
* getLocation() :-

this method is used to get location of Component present in webpage.

Q. Write a TS to perform following actions on google web Search field a) identify font size of an input taken by Search field.

b) Height & width of Search field

c) Location of Search field



```
WebDriver d = new FirefoxDriver();
d.get("http://www.google.com");
// Search
WebElement ele = d.findElement(By.xpath("//input[@id='lst-ib']"));
// font size
String font = ele.getCssValue("font-size");
Sop("font size is" + font);

// size
Dimension size = ele.getSize();
int width = size.getWidth();
Sop("Search field width" + width);
int height = ele.getSize().getHeight();
Sop("Search field height" + height);
// location
Point Loc = ele.getLocation();
int x = loc.getX();
Sop("Search field X position" + x);
int y = Loc.getY();
Sop("Search field Y position" + y);
d.close();
```

★ Handling of List boxes :-

Approch ① :-

By using Keyboard actions :

Approch ② :-

By using SendKeys & Keyboard actions.

Approch ③ :-

By using Select class.

- Select class is containing single argument constructer which takes webelement arg. & non-static methods.
- TO select options present in list box by using select class we need to use following methods.
  - ① selectByIndex() → int arg.
  - ② selectByValue() → string arg.
  - ③ selectByVisibleText() → String arg.

★ procedure to handle list box by using select class

Step ① Identify list box which need to be handle & store it in reference variable.

Step ② Create an Object of Select class with single arg. constructer

Step ③ Use Select class methods to Select options.

Q. Write a TS to enter date of Birth in facebook signup feature

```
Webdriver d = new Firefoxdriver();
d.get("http://facebook.com");
// Approach ①
   // Date
Webelement date = d.findelement(By.xpath("//select[@id='day']"));
   Thread.sleep(2000);
      date.click();
   thread.sleep(2000);
   date.SendKeys(Keys.Arrow_UP);
   thread.sleep(2000);
   date.SendKeys(Keys.Arrow_UP);
   thread.sleep(2000);
   date.SendKeys(Keys.Enter);

// Aproch ②
   // month
   Webelement month = d.findelement(By.xpath("//select[@id='month']"));
   thread.sleep(2000);
      month.click();
   month.SendKeys("a");
   thread.sleep(2000);
   month.SendKeys("a");
   month.SendKeys(Keys.Enter);

// Aproch ③
   // year
      Webelement year = d.findelement(By.xpath("select[@id='year']"));
      Select sv = new Select(year);
```

rv. selectBY indexe(12);
thread. sleep (2000);
rv. selectBY Value ("1990");
thread. sleep (2000);
rv. select BY visibleText ("2000");
rv. close();

* List of methods present in select class.
1) deselect All()
2) deselect BY index()
3) deselect BY Value()
4) deselect By visibletext()
5) get All selected option()
6) get first selected option()
7) get options()
8) is multiple()
9) select by index()
10) select by value()
11) select by visibletext().

HW ① write a TS to handle select country list box in Fatcow. Com
② write a TS to perform following action in actitime task feature
1) Select All check boxes in Flw dism
2) deselect All the checkboxes in reverse order
3) Select 1st check box & last checkbox, by using findelement & findelements methods.

(2)

```
WebDriver d = new FirefoxDriver();
d.get("http://localhost/login.do");
d.findElement(By.xpath("//input[@id='username']")).sendKeys("admin");
d.findElement(By.xpath("//input[@id and @class='textfield pwdfield']")).sendKeys("manager");
d.findElement(By.xpath("//a[@id='loginbutton']")).click();
d.findElement(By.xpath("//a[@class='contentTasks']")).click();
List<WebElement> rv = d.findElements(By.xpath("//input[@type='checkbox']"));
for(WebElement s1 : rv)                    // Selecting checkbox
{
    s1.click();
    Thread.sleep(1000);
}
Collections.reverse(rv);                   // Selecting checkbox in reverse order
for(WebElement s2 : rv)
{
    s2.click();
    Thread.sleep(1000);
}
for(int i=0; i<rv.size(); i++)             // Selecting 1st & last
{
    if(i==0 || i==(rv.size()-1))
    {
        rv.get(i).click();
    }
}
```

classmate
Date
Page

* getoptions() :- this method is use to get all the options present in listbox of an o/p
- Return type of getoptions() method is List<WebElements>

Q. Write a TS to identify size of month List box in facebook appln.

```
WebDriver d = new FirefoxDriver();
d.get("Facebook.com");

List<WebElement> List = d.findElements(By.xpath("//select[@id='month']"));

Select s1 = new Select(List);
```

(or `Sop(s1.getoptions().size());`)

```
List<WebElement> list1 = s1.getoption();
int size = list1.size();
Sop(size);
```

Q. Write a TS to display month list box options of an o/p in Fb appln.

```
WebDriver d = new FirefoxDriver();
d.get("http://facebook.com");
WebElement L = d.findElement(By.xpath("By.xp
```

```
Select s1 = new Select(L);
List<WebElement> List = s1.getoption s();
for(WebElement s2 : List)
{
    Sop(s2.getText());
}
```

Q. Write a TS to display month dd list base option in alphabetical order.

```
Select S1 = new Select(L);
List<WebElement> List = S1.getOptions();
Collections.sort(List);   ArrayList<String> rv = new <ArrayList<String>>();
for(WebElement ele : List)
{
    String S2 = ele.getText();
    Sop(ele.getText());
    rv.add(S2)
}
Collections.sort(rv);
for(String Str1 : rv)
{
    Sop(Str);
}
```

(for sorting operation Arraylist should be created)

* isMultiple :- this method is use to verify list_boxes are single selectable or multi selectable.

List box → single-selectable
List box → multi-selectable

Q. Write a TS to verify month list box is multiselectable or not.

```
WebDriver d = new FirefoxDriver();
d.get("http://facebook.com");
WebElement rv = d.findElement(By.xpath("
Select S1 = new Select(rv);
if(S1.isMultiple())
{
    Sop("Listbox is multiSelectable");
}
else
{
    Sop("Listbox is not multiSelectable");
}
```

Q. Write a TS to select all the options in multiselectable list box.


```
WebDriver d = new FirefoxDriver();
d.get("URL");
WebElement rv = d.findElement(By.xpath("
Select S1 = new Select(rv);

List<WebElement> list = S1.getOptions();

for(int i=0; i<list.size(); i++)
{
    S1.selectByIndex(i);
}
```

* getAllSelectedOptions :- this method is use to get only selected options of an output

Q. write a TS to select alternate option in a list-box & display selected options as an output

```
WebDriver d = new FirefoxDriver();
d.get("URL");
WebElement RV = d.findElement(By.xpath("
Select S1 = new Select(S1)
List<WebElement> list = S1.getOptions()
for(int i=0; i<listSize(); i=i+2
{
    S1.selectByIndex(i);
}

List<WebElement> List1 = S1.getAllSelectedOptions
```

```
for (int i=0; i< list1.size(); i++)
{
    list1.getindex(i).getText();
}
```

* To Deselect any selected option in a list box we need to use
  1) Deselect All
  2) Deselect by index
  3) Deselect by value
  4) Deselect by visible text

these are possible only on multiselected option

Note :- we can perform 3 deselect option only on multiselectable list box.

Q. what will happen we we try to deselect selected option in single selectable list box.
→ unsupported operation Exception.

Q. what will happen if we try to perform deselect action on multiselectable list box if any option is not selected Deselect action will not be perform
→ No exception will

* getFirstSelected Option :-

1. this method is used to display 1st selected option in a multiselectable list base as an output
• Return type of this method is "webelement"

eg.

```
Select S1 = new Select (RV);
List<WebElement> list = Select.getOptions();
for (i=0; i<list.size(); i++)
{
    Select S1.selectByIndex(i);
}
WebElement ele = S1.getFirstSelectedOption();
Sop (ele.getText());
```

2. In single Selecteble list box to display selected option of an output we can use this method.

```
Select S1 = new Select (RV);
S1.selectByIndex(10);
WebElement RV1 = S1.getFirstSelectedOption();
Sop (RV1.getText);
```

3. In a single Selecteble list box if we don't select any option & perform this method then, default option displayed in list box will be our o/p.

```
Select S1 = new Select (RV);
WebElement RV1 = S1.getFirstSelectedOption();
Sop (RV1.getText());
```

o/p → By default option.

* Handling of Customized list box

- Listboxes which are created without using select tag are known as customised list box
- We can't use Select class to select options present in Customized listbox
- To handle customized list box we can use following aproches:

  Aproch ① :- By using Keys class

  Aproch ② :- By using SendKeys & Keys class.

Q. write a TS to enter destination or origin field in yatra.com

```
WebDriver d = new FirefoxDriver();
d.get("http://www.yatra.com");
// aproch ①
WebElement origin = d.FindElement(By.xpath("//input[@id='BE_flig
origin.click();

origin.SendKeys(Keys.Arrow_Down);
origin.SendKeys(Keys.Enter);

// aproch ②
WebElement dest = d.FindElement(By.xpath("//input[@id='BE_fl
dest.click();
thread.sleep(1000);
origin.SendKeys("banglore");
```

Q. What will happen if we try to select any option in Customised list base by using Select class.

→ it will through "UnExpected TagName Exception".

* Dropdown :-

Options will be displayed if we move mouse pointer on any element that options are known as dropdown

Q write a TS to click on login button present in my to account of yatra.com (direct 14)

```
WebDriver d = new FirefoxDriver();
d.get("http://www.yatra.com");
d.findElement(By.xpath("//a[@id='signinBtn']")).click();
```

Q write a TS to select yatra for travel agents option in my accounts dropdown of yatra.com

```
WebDriver d = new FirefoxDriver();
d.get("http://www.yatra.com");
d.findElement(By.xpath("(//a[contains(text(),'travel agent')])[2]")).click();
```

O/P: Element not visible Exception.

1) we can handle dropdown options directly if drop down are displaying by default.

2) If dropdowns are displayed by moving mouse pointer on an element we can't perform actions directly.

TO handle dropdown we need to use "Actions class"

```
Actions EV = new Actions(driver)
EV.moveTOElement( )
```

```
class Actions
{
Actions (webdriver arg)
{
≡
}
public .. moveTOElement (webelement arg)
{
≡
}
```

* procedure To handle dropdown :-

Step(1): Identify dropdown element & store it in Reference variable

Step(2) : Create an object of actions class with webdriver arg of an input.

Step(3) : By using actions class method handle dropdown

```
WebDriver d = new FirefoxDriver();
d.get("http://yatra.com");
```

Step ①

```
WebElement rv = d.findElement(By.xPath("//a[Contains(text(),'My Account')]");
```

Step ②

```
Actions Action = new Actions(d); → webdriver arg.
Action.moveToElement(rv).perform();

d.findElement(By.xPath("//a[Contains(text(),'Travel agents')])[2]")).click();
```

* List of method present in actions class.

All methods are non-static method

1) click
2) build()
3) clickAndHold()
5) Contextclick()
5) doubleclick()
6) DragAndDrop
7) KeyDown
8) KeyUp
9) MoveToElement
10) Perform
11) Pause
12) Release
13) SendKeys
14) moveByOffset

Q. Write a TS To perform Eight click action and Select inspect element option

```
Webdriver d = new FireFoxdriver();
d.get("http://actimind.com");
webelement rv = d.findelement(By.xpath("//img[@src=
                                        "img
// mouse
    Action action = new Actions(d);
    action.moveToElement(rv).perform();
// Right click
    action.contextClick().perform();
// Aprouch ①
    Thread.sleep(2000);
action.sendKeys(Keys.Arrowdown).perform();
action.sendKeys(Keys.Enter).perform();
// Aprouch ②
    action.sendKeys("i").perform(); → shortcut
```

* Contextclick() :- This method is used to perform right click mouse action

* SendKeys(): this method is used to perform Keyboard Strokes

Q. Diff. bet^n Contextclick() & Contextclick(webelement)

Contextclick()	Contextclick(webelement)
① perform right click	① perform right click on a Compenant.

eg

```
action.contextClick(rv).perform();
```

Q. write a TS to perform Left click action on about Company action in actimind appln.

```
WebDriver d = new FirefoxDriver();
d.get("http://actimind.com");
WebElement rv = d.findElement(By.xpath("//a--"));
Action action = new Actions();
// action.moveToElement(rv).perform();
// action.click().perform();

action.moveToElement(rv).click().build().perform();
// action.click(rv).perform();
```

* click():-
this method is used to perform mouse left click action.

* Build():-
this method is used to combine multiple actions in single statement.

* Diff bet^n Build & perform :-

Build	perform
used for combing of multiple action in single statement & to execute one by one action	use to execute each action

* Keydown & KeyUp :-

these methods are used to handle Keyboard buttons Continuously

A. Keydown :- used to press Keyboard button.

B. KeyUp :- Use to release pressed Keyboard button.

eg. KeyDown (Key.Shift).SendKeys (Keys.Control + "" + Key.Tab);

Note :- SendKeys is used to perform only (2) actions.

```
Webdriver d = new firefoxDriver();
d.get("http://www.facebook.com");
// Email
webelement rv = d.findelement(By.xpath("____"));
Action action = new Action(d);
action.SendKeys(rv, "anvesh").perform();
action.KeyDown(SendKeys(Keys.Shift).perform();
action.SendKeys(rv, "Kumar").perform();
action.KeyUp(Key.Shift).Perform();
action.SendKeys(rv, "@gmail.com").perform();
```

O/P

Control + T is to open new Tab

Control + W is to close

HW

a. write a TS to perform following actions in actimind appln

① open actimind.com ② right click on product & service ③ select open in new Tab option ④ switch to new Tab ⑤ select web calling option ⑥ close that new opened Tab.

* **Drag & drop :-**
- This method is use to perform mouse drag & drop action.

* **click & Hold :-**
- This method is use to perform mouse left click & hold the element

* **Release :-**
- This method is used to release performed mouse action

* **moveBy Offset :-**
- This method is use to change position of an element

* **Double click :-**
- This method is use to perform Double click action on an element

URL :- ① http://Jqueryui.com/resources/demos/droppable/default.html

② http://only-testing blog.

Q. write a TS to perform drag & drop action.

```
WebDriver d = new FirefoxDriver();
d.get("URL");
WebElement drag = d.findElement(By.xpath("//div[@id='draggable']"));
WebElement drop = d.findElement(By.xpath("//div[@id='droppable']"));
Action Action = new Action();
```

// Approach ①

// action.dragAndDrop(drag, drop).perform

Source Target

// Approach ②

Thread.sleep(2000);

action.moveToElement(drag).perform();

Thread.sleep(2000);

action.clickAndHold().perform();

Thread.sleep(2000);

action.moveTo Element(drop).perform();

Thread.sleep();

action.release().perform();

d.close()

Note:- To perform moveByOffset

Action.moveByOffset(200, 300).perform();

* Popups :-

Pop-ups are the small or separate window which will be displayed when we perform action on any component present in webpage.

- These pop-ups can be handled by Selenium directly, Sometimes we may need to use 3rd party tool also to handle pop-ups.

HCAA

Types of pop-ups :-

1. Hidden Division pop-up
2. Alert pop-up
3. Child-browser pop-up
4. Authentication pop-up
5. File upload Popup
6. File Download popup
7. window popup.

NOTe :- 1. If we are able to inspect elements present in pop-ups then we can use Selenium directly to handle that pop-up.

2. If we are unable to inspect elements present in popup then we need to use 3rd party tools to handle pop-ups.

(1) Hidden Division pop-up :-

Properties :- 1. It's a colourfull
2. These pop-ups are created by using div tag & Style attribute)
3. We can inspect the element present in pop-up
4. We can't drag & drop.

Q. Write a TS to handle hidden division pop-up in Task feature of actitime application.

```
WebDriver d = new FirefoxDriver();
d.get("http://localhost:8080/login.do");
//UN
d.findElement(By.xpath("___")).sendKeys("admin");
//pwd
d.findElement(By.xpath("___")).sendKeys("manager");
// Login
d.findElement(By.xpath("___")).click();
// Task
d.findElement(By.xpath("___")).click();
// checkbox
d.findElement(By.xpath("(//input[@type='checkbox'])[1]")).click();
// Delete
d.findElement(By.xpath("___")).click();
// popup → Cancel
Thread.sleep(2000);
d.findElement(By.xpath("___")).click();
d.close();
```

Q. Write a TS to select Todays date in departure field of yatra.com

classmate
Date
Page

② Aleet popup

properties: ① We can't inspect elements present inside the pop-ups

② we can drag and drop (this property can be seen while executing Selenium script).

③ These Popup will contain exclamation (!) or question mark(?) symbol. So these popup are also known as Confirmation or JavaScript Popup.

④ These popups will contain OK or Cancel button.

- To handle Aleet popups we need to use "Aleet" interface which contains abstract methods like
  1) Accept - use to click on OK button.
  2) dismiss - use to click on Cancel button.
  3) getTeset - use to get the Teset present in aleet popup.

- To perform actions on aleet popup we need to shift Selenium focus from main page to aleet - which can be done by using switchTO() method

eg Aleet aleet = d.SwitchTO().aleet();

Q. Write a TS to handle alert popup in Task feature of actitime application.

```
WebDriver d = new FirefoxDriver();
d.get("http://localhost:8080/login.do");
//UN
d.findElement(By.xpath("__")).sendKeys("admin");
// pwd
// ~~Task~~ login
// Task
// Delete
d.findElement(By.xpath("//div[text()='
        ("input[@value='Delete Selected
                Tasks']")).click();
Alert alert = d.switchTo().alert();
alert.accept();
```

Q. What happens if we try to handle Cancel button present in ~~hidden~~ other popup by using alert popup.

We will get no alert present exception.

Q. What happens if we try to perform action without handling alert popup

We will get Unhandled alert exception

(3) Child browser popups :-

properties (1) We can drag & drop

(2) We can inspect the element present in popup.

(3) these popup will Contain Address field, maximize minimize & close option.

- TO handle child browser popup we need to switch Selenium focus from main page to child browser or window

driver.switchTO.window(String args);

- IF multiple child browsers are displayed to handle we need to identify webpage Address or window address. which is unique.

- To get that Webpage address we need to use
  1) getwindowhandle() - use to get address of main window
  2) getwindowHandles() - use to get address of main window & child browsers.

Q. write a TS to get reference Id of main web page in naukri.com

```
Webdriver driver = new FirefoxDriver();
d.get("http://www.naukri.com");
String rv = d.getWindowHandle();
Sop(rv);
```

Q. write a TS to display Ref. Id's of parent & child windows as an output. in naukri.com.

```
Webdriver d = new FirefoxDriver();
d.get("http://naukri.com");
Set<String> rv = d.getwindowHandles();
int size = rv.size();
Sop(size);
for(String str : rv)
{
Sop(str);
}
```

Set doesn't allow duplicate values

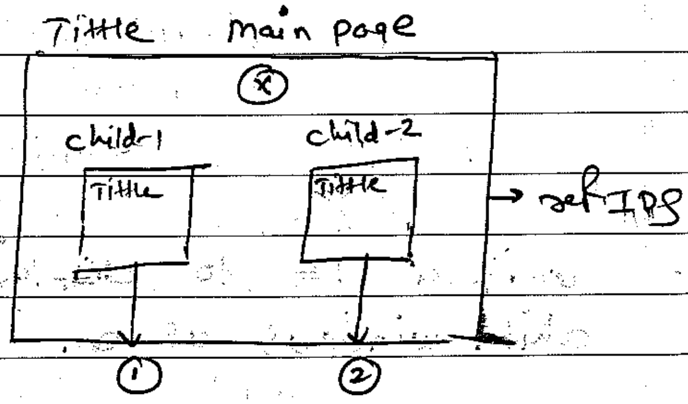
classmate

Date ______
Page ______

		List	Set
	1)	heterogeneous	heterogeneous
	2)	size varies	size varies
	3)	add()	add()
1) *	4)	fetch - get (index)	X (table)
	5)	size()	size()
	6)	for / foreach	foreach / Iterator
2) *	7)	Duplicate ✓	(not allowed)
3) *		Null ✓	✗ (exactly single)

Q. Write a TS to display titles of parent & child browsers as an output.

```
Webdriver d = new Firefoxdriver();
d.get("http://naukri.com");
Set<String> set = d.getWindowHandles();
for (String str : set)
{
    d.switchTo().window(str);
    Sop(d.getTittle);
}
```



close() :- use to close parent browser

quit() :- use to close parent & child browser

Q. Write a TS to close parent & child browsers without using quit method.

```
WebDriver d = new FirefoxDriver();
d.get("http://naukri.com");
Set<String> set = d.getWindowHandles();
for(String str : set)
{
    d.switchTo().window(str).close();
}
```

Q. Write a TS to close only child browsers?

```
for(int i=1; i<=set.size(); i++)
{
    if(i>1)
    {
        d.switchTo().window(str);
        d.close();
    }
}
```

or

```
String str1 = d.getWindowHandle();
Set<String> set = d.getWindowHandles();
for(String str2 : set)
{
    if(!str1.equals(str2))
    {
        d.switchTo().window(str2);
        d.close();
    }
}
```

Q. Write a TS to login with facebook option in yatra.com.

```
WebDriver d = new FirefoxDriver();
d.get("http://yatra.com");
d.manage().window timeout().implicitlywait(10, TimeUnit.Seconds);
d.findElement(By.xpath("//a[@id='signInButton']")).click.
d.findElement(By.xpath("//button[@id='facebookSignin']")).click
String str1 = d.getwindowHandle();
Set<String> set = d.getwindowHandles();
for(String str2 : set)
{
  if(!str2.equal(str1))
  {
    d.switchTO.window(str2);
//UN   d.findElement(By.xpath("___")).SendKeys("admin");
//pwd  d.findElement(By.xpath("___")).SendKeys("___");
//click d.findElement(By.xpath("___")).click();
```

* Handling of child browser pop-ups by using Iterators

Q. Write a TS to display references IDs of parent & child browsers as an o/p by using Iterator

```
WebDriver d = new FirefoxDriver();
d.get("http://yatra.com");
Set<String> set = d.getWindowHandles();
Iterator<String> Itr = Set.Iterator();
while(Itr.hasNext())
{
String str = Itr.next();
SOP(str);
}
```

Note:- • If we don't know the size then to fetch the data we need to use both hasnext & next

• If we know the size then to fetch data we can use next method directly.

```
eg    Set<String> set = d.getWindowHandles();
      Iterator<String> itr = set.iterator();
      String str1 = itr.next();
      Sop(str1);
      String str2 = itr.next();
      Sop(str2);
```

Assign ① Write a TS to display child browser title on an output by using Iterator Concept. without using hasnext() method.

Assign ② Write a TS to Login with facebook in yatra.com by using Iterator Concept.

Assign ②

```
WebDriver d = new FirefoxDriver();
d.get("yatra.com");
WebElement RV = d.findElement(By.xpath("(//a[@class='dropdown-toggle'])[2]"));
Action action = new Action(d);
action.moveToElement(RV);
d.findElement(By.xpath("//a[@id='signInBtn']")).click();
d.findElement(By.xpath("//button[@id='facebookSignIn']")).click();
Set<String> set = d.getWindowHandles();
Iterator<String> it = set.iterator();
it.next();
String rv2 = it.next();
d.switchTo().window(RV2);
```

// My Account

// login

// facebook

```
// UN    d.findElement(By.xpath("//input[@id='email']")).sendKeys("____");
// pwd   dr.findElement(By.xpath("_____").sendKeys("____");
// Login d.findElement(By.xpath("____").click();
```

Assign ①

```
Webdriver d = new FirefoxDriver();
d.get("http://naukri.com");
String str = d.getWindowHandle();
Set<String> set = dr.getwindowHandles();
for(String str2 : set)
{
    if(!str2.equals(str1));
    {Sop(d.ge
    {
        dr.switchTo().window(str2);
        Sop(d.getTitle());
    }
}
```

* using iterator

```
Webdriver d = new FirefoxDriver();
d.get("yatra.com");
Set<String>set = d.getwindowHandles()
Iterator It = set.iterator();
It.next();
String RV = It.next();
d.switchTo().window(RV);
Sop(dr.getTitle);
```

④ File upload popup :-

properties :- 1) We can drag & drop

2) We can't inspect the element present in popup.

3) These popup will contain title File upload, open & Cancel button.

Q. write a Html code to create file upload popup.

```
<Html>
  <Body>
    upload Doc <input type="file" id="fileupload">
  </Body>
</Html>
```

Shift + right click

↓

copy path

Aproch ① : By using Sendkeys method :-

Within the Sendkeys we need to enter path of the file which need to be uploaded.

Q. write a TS to upload a file in file upload popup.

```
Webdriver d = new Firefoxdriver()
d.get("URL");
// Fileupload                    //input[@id='fileupload']
d.findelement("By.xpath("Path of file")].
                                  Sendkeys("Path of file");
```

* limitations :-

- We can use above aproch if fileupload popup is created by using a "tagname" input" + attribute "type = file".

Aproch-② (2)

Selenium will not interact with desktop guI's. Sometimes in applications desktop guI are required which can't be perform using Selenium so we need to use "AutoIT".

* AutoIT :-
  - It is an automation tool use to interact with desktop UI's.
  - In AutoIT user can record & playback scripts or manually script can be return in "AU3" format

- Download AutoIt S/w from following URL
http://www.autoitscript.com/site/autoit/downloads/

* procedure to install AutoIT *

step-① - Extract AutoIt form zip file
② - Double click on AutoIt Setup. → click on next → click on I agree
③ - select O.S. (recomanded 86). Click on next
④ - Select edit Script & proceed installation.

* AutoIt S/w required
1) AutoIt Help :- use to identify commands, syntax & usage
2) AutoIt window info :- use to get Component info. present in windows UI.
3) AutoIt Script editor :- use to write autoit script by using Autoit Commands.

* procedure to Handle file upload popup using Autoit

Step ① Write Selenium Script until file upload Popup is displayed.

② Handle ~~out~~ fileupload popup using autoit scripting.

A. In fileupload pop-up we need to focus on filename Component, where path of the file which need to be open. Should be return.

(A). TO focus on a Component we need to use "Control focus" AutoIt Command

Syntax:-

ControlFocus ("title", "text", ControlID)

(B) To enter path of a file in filename Component we need to use "ControlSetText" Command

Syntax:

ControlSetText ("title", "text", ControlID, "new text" (path of file))

(C) TO click on open or Cancel button we need to use "Control click" Command.

Syntax:-

Controlclick ("title", "text", ControlID)

(D) open Script editor & write autoit Script by using above Command.

- ControlID = Class + instance
- text is optional.

(E) Save that autoit file in "au3" format in a Common location.

Note:- TO verify autoit code is having errors or not press "F5" button.

③ Convert Aus format file to exe formet file
- right click on file → select Compile Script (based on OS).

Note:- If we make any changes for aus file then creat new exe file.

④ To execute exe files by using Selenium we need to use following Command.

Runtime.getRuntime().exec("path of the exe file")
↑
class

AutoIt Script

ControlFocus("File upload", "-", "Edit1")
Sleep(2000)
ControlSetText("File upload", "-", "Edit1", "Path of file")
Sleep(2000)
ControlClick("Fileupload", "-", "Button1")

Selenium code

WebDriver d = new FirefoxDriver()
d.get("URL of Html file");
// Fileupload
d.findElement(By.xpath("//input[@id='Fileupload']")).click()
Runtime.getRuntime().exec("path of exe path");

classmate
Date
Page

(5) Authentication popup :-

properties (1) These popups will Contens tittle Authentication, (UN) (pwd) (Text fields)

(2) We Can drag & drop

(3) Can't inspect the elements present within the popup.

• WinwaitActive() this method is use to Stop execution of autoIt script until requested window is displayed.

Syntax :-

WinwaitActive("title")

Aproch (1) using AutoIt

Q. write a TS to handle Authentication popup.

AutoItScript

```
WinwaitActive ("Authentication Required")
Send ("WeekEnd")
Sleep (2000)
Send ("{Tab}")
Sleep (2000)
Send ("Weekend")
Sleep (2000)
Send ("{Tab}")
Send (2000)
Send ("{ENTER}")
```

```
Webdriver d= new FirefoxDriver();
d.get(" d.manage().timeout().implicitlyWait (10, timeunit-Secon)
1→11 ← Runtime.getRuntime().exec ("path of exe file");
d.get ("http:// pune -aSPIDER- ANVESH : 8443/Svn/
        aspiders /");
```

Aproch ② By entering UN & Pwd within URL

Syntax :-

http// : UN : Pwd @ URL

```
Webdriver d= new FirefoxDriver()
d.manage().timeouts().implicitlyWait(10, timeunit.Seconds)
d.get("https://Weekend:Weekend@PUNE-
        @SPIDER-ANVESH:8443/SVN/
        @SPIDER/")
```

* limitations :- We can't use this aproch if UN & Pwd. Field Contains Special Char. like @

URL : http://www.anqpwd-Charges.net/

⑥ File Download popup :-

properties ① We can drag & drop

② We can't inspect the element present in popup

③ These pop-up will contains Save & Cancel buttons

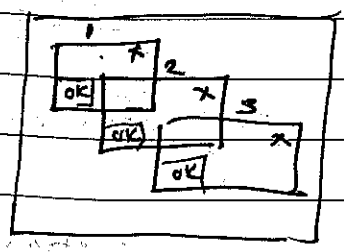
```
WinwaitActive("Opening selenium-Server-
        Standalone-3.5.0.Jar")
Send("{Tab}")
Sleep(2000)
Send("{Tab}")
```

Sleep(2000)
Send("{ENTER}")
IO Exception

Webdriver d = new Firefoxdriver()
d.get("http://seleniumhq.org/download/");
// Link
d.findelement(By.xpath("//a[text()='3.5.0']")).click
Runtime.getRuntime().exec("path of exe file");

Q. If multiple alert popups are displayed in a webpage How will you handle.

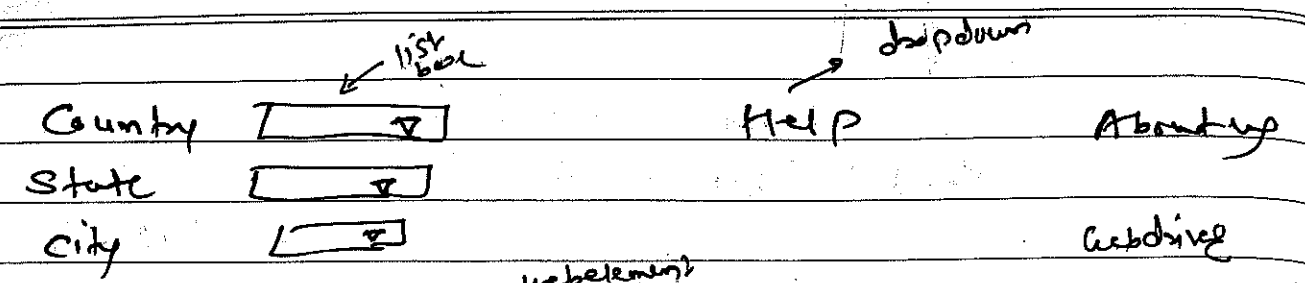
TO handle each alert popup we need to use switchTO() method because after handling 1 alert popup Selenium bydefault will navigate to main page




```
Alert a1 = d.switchTO().alert();
a1.accept();
Alert a2 = d.switchTO.alert();
a2.accept();
Alert a3 = d.switchTO().alert();
a3.accept();
```

NOTE:- 1) If a webpage Contains multiple list-boxes TO handle each list-box we should create Select class object separately

2) If webpage Contains multiple dropdowns to handle all the dropdowns. Single Action class object is required.



webelement

```
Select S1 = new Select (country)
    S1.SelectByIndex( )

Select S2 = new Select (State)
    S2.SelectByIndex( )

Select S3 = new Select (City)
    S3.SelectByIndex( )
```

```
Actions Act = new Acti
Act.moveToElement(help)
Act.moveto element (About
```

* Handling of Iframes

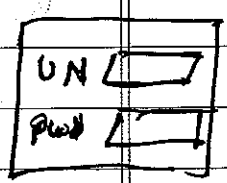
Iframe :- Displaying webpage of a part of another webpage is known as iframe.

- iframes will be created by using a tagname "iframe" & Attribute "src = " webpage name"

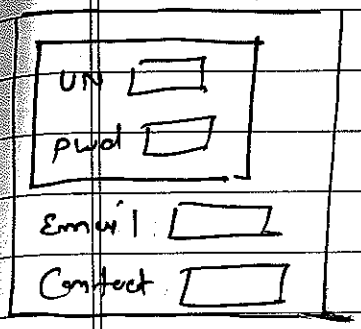
Q. Write a html code to create iframe

frame.Html

```
<Html>
<Body>
UN <input id = "username" type = "text" ><br>
pwd <input id = "Pwd" type = "password" ><br>
</Body>
</Html>
```



main.Html



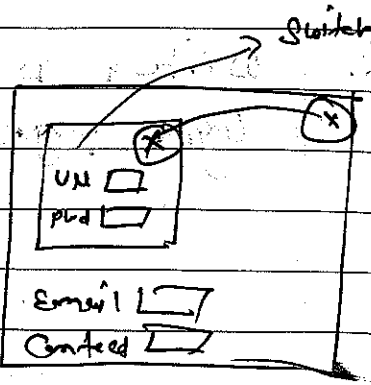

```
<Html>
<Body>
<iframe src="frame.html" id="frame"></iframe>
<br>
Email <input id="email" type="text"><br>
Context <input id="Context" type="text">
</Body>
</Html>
```

① Encapsulation

② Java Design pattern
- what
- why
- Types

③ Pom
- Advantages

- To Handle iframe we need to switch Selenium focus from main page to frame by using following syntax.



d.switchTo().frame(arg)

- index of frame ← int arg
- id value ← ~~id value~~ String arg
- using findElement ← webelement arg

Q. Write a TS to handle above webpage

```
Web.
    d.get (" URL")
// frame
    // d.switchTo().frame(0);
    // d.switchTo().frame("frame");
WebElement rv = d.findElement(By.id("frame"));
    d.switchTo().frame(rv);
// UN
    d.findElement(By.id("username")].sendKeys("admin");
```

- To identify whether components are presented in iframe or not by using firepath inspect element, if it is presented in main page at right top corner of firebug s/w it display "top window"
- If it is presented in iframe then it display iframe # id value

Q. Write a TS to enter Email id & pwd in zoho Com login page

```
Webdriver d = new FirefoxDriver();
    d.get("https://www.zoho.com/crm");
// login
    d.findElement(By.xpath("(//a[text()='Login'])[1]")).cl
// frame
    // d.switchTo().frame(1);
    // d.switchTo().frame("zohoiam");
// Email
d.findElement(By.xpath("//input[@id='id']")).sendKeys("
pwd // d.findElement(By.xpath("_____")).sendKeys( );
```

- Once Actions are performed on Components present in iframe. Selenium will not navigate by default to main page
- To navigate from iframe to main page we need to use following methods.
  1) window()
  2) parentFrame()
  3) defaultContent()

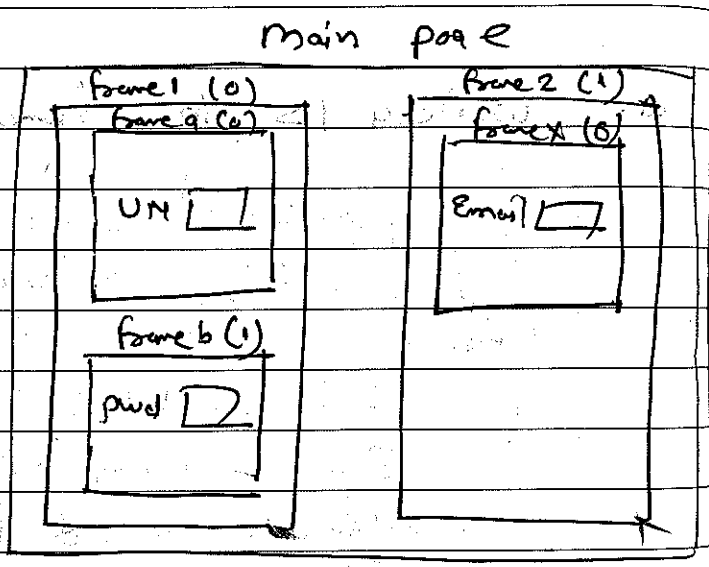
Q. write a TS to handle (iframe + main) page Html code

```
WebDriver d = new FFD();
d.get("URL");
// frame
// d.switchTo().frame(0);
// d.switchTo().frame("frame");
WebElement rv = d.findElement(By.id("frame"));
d.switchTo().frame(rv);
// UN
d.findElement(By.id("uname")).sendKeys("admin");
// pwd
d.findElement(By.id("pwd")).sendKeys("manager");
// main
// Approch ①
String str = d.getWindowHandle()
d.switchTo().window(str);
// approch ②
// d.switchTo().parentFrame();
// approch ③
d.switchTo().defaultContent();
// Email d.findElement(By.id("email")).sendKeys("_____");
```

* Handling of Nested iframe *

* parentframe(): this method is use to navigate from child frame to immidiate parent frame.

* DefaultContent():- use to navigate from any child frame to main page.



//UN

d.switchTO().frame(a)

d.switchTO() frame(0)

d.findelement("__").sendkey("__");

// pwd

d.switchTO().parentframe()

d.findelement("__").sendKeys("__").

d.switchTO().frame(1)

// Email

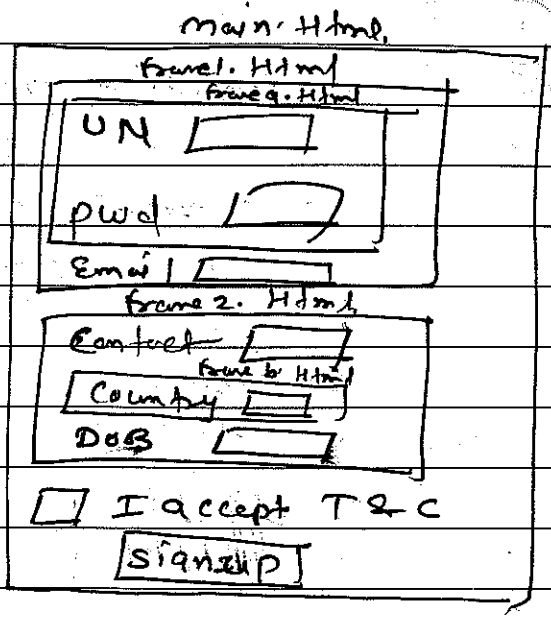
d.switchTO().defaultContent();

d.switchTO().frame(1)

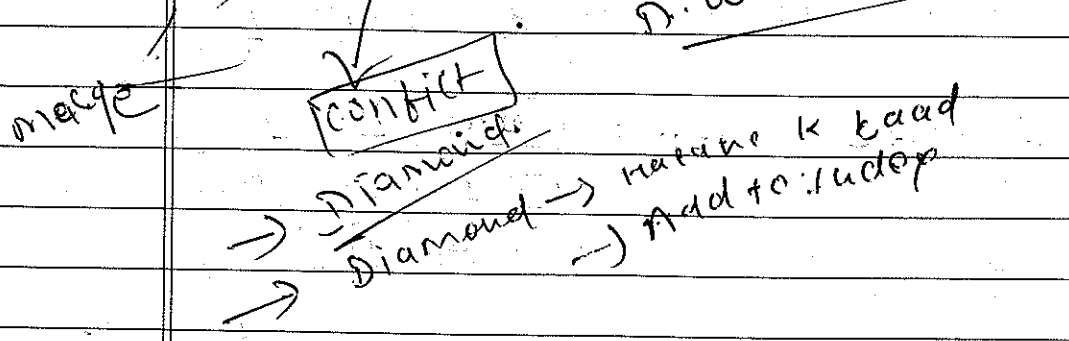
d.switchTO().frame(0).

d.findelement("__").sendKey("__");

Assign



1. Add to Index
2. commit & push
3. pull simple



pt demo

* Parameterisation :-

- Fetching of data from an external source & using it in Selenium TS. is known as parameterisation.

- It can be Achieve by using excel sheet, CSV files, TestNG Data provider

* Handling of Excel sheet :-

To Handle excel sheet we need to Configure excel library to Selenium project

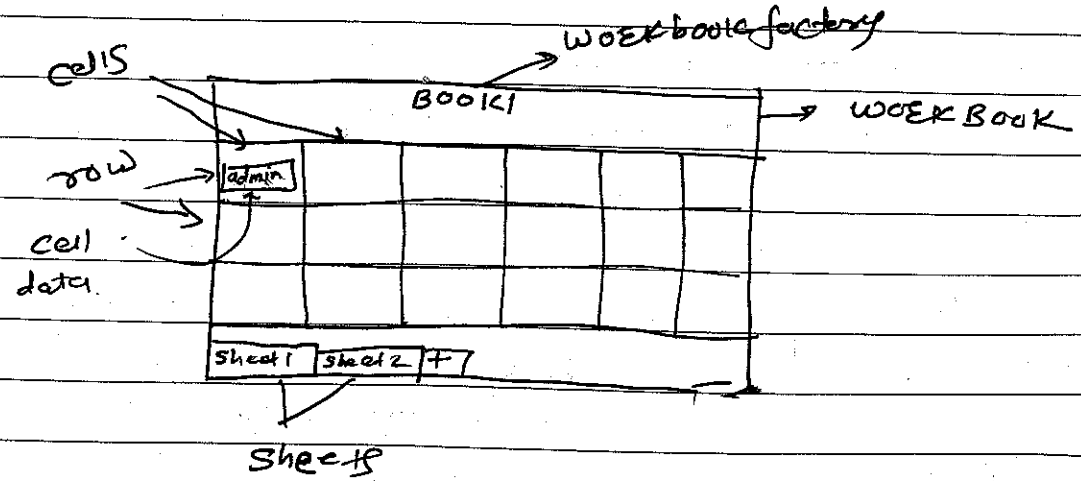
- Download excel library from following URL
  https://poi.apache.org/download.html

* Procedure to Configure excel library to Selenium project.

Step ① Extract POI zip file

② Open POI folder → Create a New Folder → Copy all jar files (13) in that Folder

③ Open eclipse right click on Selenium project → click on properties → Java Build path → libraries → click on add External jar files → Add all the jar files to selenium project



- By using Excel sheet either we can read or write data
- To read data from Excel sheet we need to use FileInputStream (class)
- To write data into Excel sheet we need to use FileOutputStream (class).
- Rows & cell count in Excel sheet will be in index

Procedure to handle Excel sheet

Step① Create an Excel sheet with some data & save it in any drive.

Step①: Identify path of Excel sheet & store it in 1 referenced variable

Step② Create an object of FileInputStream with Excel path reference as an input.

Step③ To open Excel sheet we need to use a static method create presented in WorkBook - factory class.

Ble - interface All other given-class are abstract

Step④ To open specific sheet in an excel we need to use getSheet() method which is present in Workbook.

Step⑤ To identify row in a sheet we need to use getRow() method present in Sheet.

FileInputStream file = new FileInputStream ("Path"); → classmate

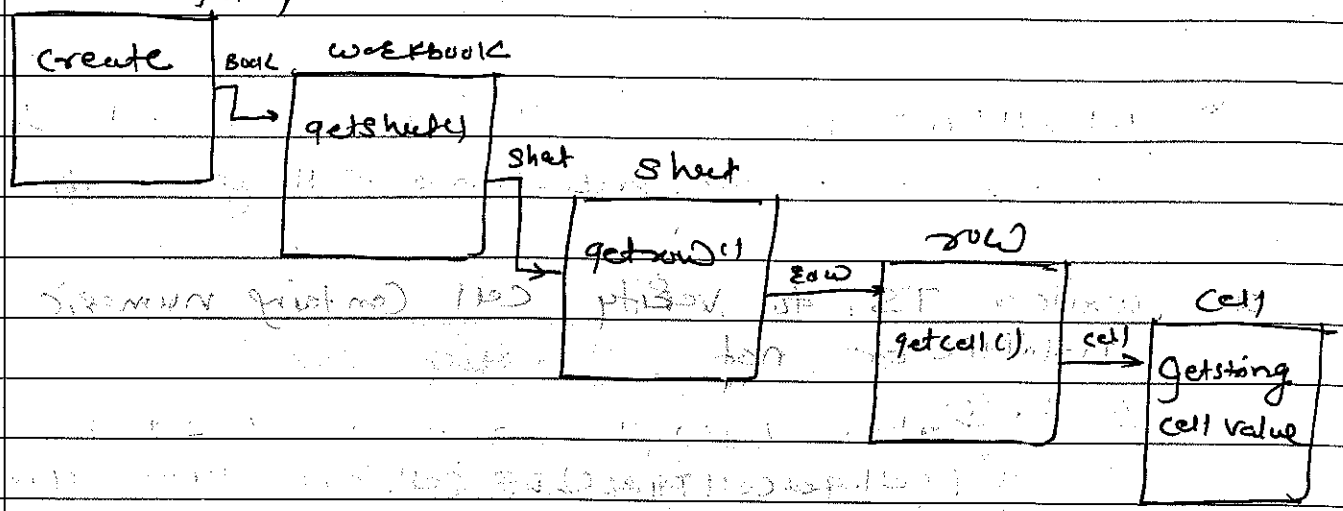
String A = workbookFactory.create(file).getsheet("Data Page").getRow(1).getcell(0).getStringCellValue();

Sop(A);

Step⑥: To identify specific cell in a row we need to use getcell() present in a row.

Step⑦: To fetch String cell datatype we need to use (getString cell value()) method.

Note:- * To fetch Numeric value (getNumeric cell value())



Q.

```
// Step①
    String path = "____";
// Step②
    FileInputStream file = new FileInputStream(path);
// Step③
    WorkBook book = WorkBookFactory.create(file);
// Step④
    Sheet sheet = Book.getSheet("Sheet 2");
// Step⑤
    Row row = sheet.getRow(1);
// Step⑥
    Cell cell = row.getCell(0);
// Step⑦
    String str = cell.getStringCellValue();
    SOP(str);
```

* IllegelStateException:- If we try to fetch String datatype value by using Numeric cell value we will get this exception.

* NullPointerException:- If we try to fetch data from empty cell will get this exception

* getCellType():- This method is use to get data type present in a cell of an o/p

Q. write a TS to verify cell Containg numeric DataType or not

```
// Step-6
    if (cell.getCellType() == Cell.CELL_TYPE_NUMERIC)
    {
        double num = cell.getNumericCellValue();
        Sop(num);
    }
    else
    {
        String str = cell.getStringCellValue();
        Sop(str);
    }
```

Note:- ① Without Verifying cell Datatype we Can display cell value of an o/p by using ToString() method

```
String Str = cell.ToString();
Sop(Str);
```

NOTE②: We can also use cell reference Type to display cell Data type of an o/p.

```
Sop(cell);
```

★ getLastRowNum(): this method is used to identify total no. of rows present in an excel Sheet.

- output will be in index format.

Q. write a TS to get total no. of row present in excel Sheet of an output.

```
// Step①
    String path = "_____";
//Step②
    FileInputStream File = new FileInputStream(path);
// Step③
    Workbook book = WorkbookFactory.create(File);
// Step④
    Sheet sheet = book.getSheet("Sheet1");
// Step⑤
    int Lastrow = sheet.getLastRowNum();
        Sop(Lastrow);
```

★ getLastCellNum() use to get number of cell used in a specific row of an output.

- output will be normal Count.

Q. write a TS to get total no. of cell present in Used in Excel Sheet of Speatic row of an o/p.

Sheet.getRow(2);

lastcell = row.getLastCellNum();
op(lastcell);

Q. Write a TS to get total no. of row present in each row of an O/P.

```
int Lastrow = Sheet.getLastRowNum();
for(int i=0; i<=(Lastrow); i++)
{
    for(int j=0;
    Row row = Sheet.getRow(i)
short Lastcell = row.getLastCellNum();
    Sop(Lastcell);
}
```

Q. Write a TS to get celldata of an output if it is 2×2

0	admin	manager
1	admin1	manager1

```
Sheet sheet = book.getSheet("  ");
for(int i=0; i<=1; i++)
{
    Row row = sheet.getRow(i);
    for(int j=0; j<=1; j++)
    {
        Cell cell = row.getCell(j);
        Sop(J);
    }
    Sop ln("  ");
}
```

admin
mang 123
pm xyz abc
TL
pm xyz abc

```
int Lastrow = sheet.getLastrow()
for(int i= 0;  i<= Lastrow ;  i++)
   {
Row row  = Sheet.getrow(i);
Short Lastcell = row.getLastCellNum();
for( int j= 0 ;   j < Lastcell ;   j++)
   {
        Cell cell = row.getcell(j);
        Sop(cell);
   }
        Soptln(" ");
}
```

a. write a TS to enter UN & pwd in actitime appln by fetching data from excel sheet.

```
Webdriver d= new FirefoxDriver();
        d.get("http://localhost:8080/login.do");
// Excel
String path = '____'
FileInputStream file = new FileInputStream();
Row row = WorkbookFactory.create(file).getSheet("sheet").
                                    getrow(1);
String username = row.getCell(0).getStringCellValue();
String password = row.getCell(1).getStringCellValue();
// UN  d.findElement(By.xpath("____")).SendKeys(username);
// pwd  d.findElement(By.xpath("____")).SendKeys(password);
```

Page object module (POM)

* **Encapsulation:**

Hiding D.m & fetching data with the help of getter & setter method.

- In encapsulation D.m. should be
  - (A) Declared globally with an access level private
  - (B) initialize & utilize
  - (C)
- If in a Java program global & local variables are present, we can access global variable but not local. local variable can be used within method
- Local variable will override global variable
- If local & global variable names are same then local variable can override global variable by using this keyword.

1. By refering to the req. doc, Arch will design the appln by using Java Design patterns like,
   1. Singleton
   2. Multi
   3. Factory
   4. POM.

By refering to those designs developer will develop the appln, similarly to design TS Automation TE will use POM

* Pom :-

- It's a Java design pattern use for design of classes in TS.

- pom strictly follows encapsulation concept
  - (A) D.m. should be declared globally with an access level private
  - (B) initialize within a constructor with an access level public
  - (C) utilize within a method with an access level public

Note:-

No. of D.m that need to be created under a pom class will depends on no. of component that need to be handle in a web page.

- pom class will not containing main() method to run a pom class, we require another class with main() ie: Test class.

Note:

Test class will contain All navigation steps to test an appln

UN → [ ]

<##input type="text" id="username"

d.findelement(By.xpath("___")).sendkeys();

Encapsulation

WebElement UN;

UN = d.findelement(By.xpath("___")).sendkeys();

UN.sendkey("___");

class Sample: → pom class

```
{
private webelement UN;
public Sample (webdriver driver)
  {
    UN = driver.findelement(BY.xpath("_"));
  }
public void Username()
  {
    UN.SendKeys(" ");
  }
}
```

```
Class Test
{
  main()
  {
    webdriver driver = new firefoxdriver()
        driver.get(" ");
    Sample S1 = new Sample(driver);
        S1.UnSername();
  }
```

Q. write a TS to login to actitime application by writing code in pom.?

public class Actitime → pom class

```
// Declare
{
    private webelement UN;
    private webelement PWD;
    private webelement CHK;
}   private webelement Log;
```

```
//Initialization    public PActitime(WebDriver driver)
                    {
                    UN = driver.FindElement(By.XPath("__"));
                    pwd = driver.FindElement(By.XPath("__"));
                    CHK = driver.FindElement(By.XPath("__"));
                    log = driver.FindElement(By.XPath("__"));
                    }
//Utilization

public void Username()
{
    UN.SendKeys("admin");
}
public void password()
{
    pwd.SendKeys("manager");
}
public void checkbox()
{
    CHK.click();
}
public void login();
{
    log.click();
}
```

Test

```
class Actitimelogin
{
    psvm(String[] args)
    {
        WebDriver drive = new FirefoxDriver();
        drive.get("");
        Actitime ar = new Actitime(drive);
        ar.username();
        ar.password();
        ar.checkbox();
        ar.login();
    }
}
```

case ①

```
class Actitimelogin
{
    private WebElement UN;
    public Actitime()
    {
        UN = drive.findElement();
    }
}
```

Result - Drive is not declared

case ②

```
class Actitimelogin
{
    private WebElement UN;
    WebDriver drive;
```

```
public Actitime login()
{
    UN = drive.findelement();
}
public void username()
{
    UN.sendkeys("admin");
}
```

Result:- Null pointer Exception

→ drive is declared but not initialized

case (3)

```
class Actitimelogin
{
  private webelement UN;
webdrive drive = new firedrive();
 public Actitimelogin()
{
    UN = drive.findelement();
}
 pubic void username()
  {
    UN.sendkeys();
}
}
```

Result: No such element found

Correct Way

```
class Actitimelogin
{
private webelement UN;
public Actitimelogin(webdriver driver)
{
UN = driver.findelement();
}
public void username()
{
UN.sendkeys("admin");
}
```

eg② write a TS to register in facebook application by using pom concept

// pom class

```
public class facebooklogin
{
private webelement firstname;
private webelement Lastname;
private webelement Email;
private webelement password;
private webelement Day;
private webelement months;
private webelement Year;
private webelement female;
private webelement male;
private webelement create;
```

Note:- We should not pass UN, pwd, etc values directly within pom class, that value, should pass by using Test class, by calling methods.

```
public facebookLogin(webdriver driver)
  {
Firstname = driver.findElement(By.xpath("__"));
Lastname = driver.findElement(By.xpath("__"));
Email = driver.findElement(By.xpath("__"));
password = driver.findElement(By.xPath("__"));
Day = driver.findElement(By.xpath("__"));
month = driver.findElement(By.xpath("__"));
Year = driver.findElement(By.xpath("__"));
female = driver.findElement(By.xpath("__"));
male = driver.findElement(By.xpath("__"));
create = driver.findElement(By.xpath("__"));
}

public void First(String first)
{
  Firstname.SendKeys(First);
}
public void Last(String last)
  {
    Lastname.SendKeys(Last);
  }
public void Email(String email)
  {
    Email.SendKeys(email);
  }
public void pwd(String pwd)
  {
    password.SendKey(pwd);
  }
```

```
public void DoB(int a, int b, int c)
{
    Select day = new Select(day);
        day.selectbyindex(a);
    Select month = new Select(month);
        month.selectby index(b);
    Select year = new Select(year);
        year.select by index(c);

public void male()
{
    male.click();
}
public void create()
{
    create.click();
}

// Test class

    public class Tfacebook
    {
        psvm(String[] args)
        {
            webdriver driver = new FirefoxDriver();
            driver.get("http://facebook.com");
        facebooklogin rv = new facebooklogin()
            rv.first("admin")
            rv.Last("manage");
            rv.Email("admin@manage.com");
            rv.pwd("_____");
```

```
rv.DOB(10, 8, 15);
rv.male();
rv.create();

    }
}
```

Q. Write a TS to display error msg of an o/p. by entering invalid UN & pwd. in actitime login page by using POM Concept.

```
pubic class InvalidActitimeLogin
{
    private WebElement UN;
    private WebElement pwd;
    private webelement login;
    private WebElement errormsg;

    public InvalidActitimeLogin(WebDriver driver)
    {
    UN = driver.FindElement(By.id("username"));
    pwd = driver.FindElement(By.name("pwd"));
    login = driver.FindElement(By.id("loginbutton"));
    errormsg = driver.FindElement(By.xpath("_____"));
    }

    public void UN(String A)
    {
      UN.SendKeys(A);
    }
```

```
public void pwd ( String B)
{
    pwd. sendKeys (B);
}
public void login ()
{
    login.click();
}
public ~~void~~ String error ()
{
String str= Errormsg. getText()'
    return str;
}

class Invalid
{
  psvm (String [] args)
  {
    Webdriver driver = new Firefoxdriver()
    driver.get(" _URL ");
Invalid Actitime login  RV= new InvalidActitime login (driver
        RV. UN ("admin");
        RV. pwd (" manager ");
        RV. login();
  String msg = rv.error();
            Sop (msg);
  }}
```

O/P → StateElement Reference Exception or

NO Such Element Exception.

Date
Page

```
class A                      Class B
{                            {
 A()                          psvm(String [] args)
 {                            {
   int a=10;                   A rv = new A();
   sop(a);                     rv.Test();
 }
                               o/p => 10
public void Test()                    Hi
{
  sop("Hi");
}
```

* <u>Disadvantage of pom :-</u>
  - pom will initialize all the Components before performing actions, Sometimes appln may Contains few Components which will be hidden & displayed once we performed action on Components, that hidden Components will not be displayed while pom initializing so it displays "~~so~~ ~~st~~ **No Such element exception**" or "<u>state element reference exception</u>"

  - To overcome drawbacks of pom we need to use "<u>Page factory</u>" which is an extension of <u>pom.</u>

Q. which Java Design pattern will be use to work Selenium TS?
→ pom with extension of Page factory

* Page factory:

- It is a class which contains static methods like initelements

- To initialize D.m. in pagefactory we need to use init element method within the constructor

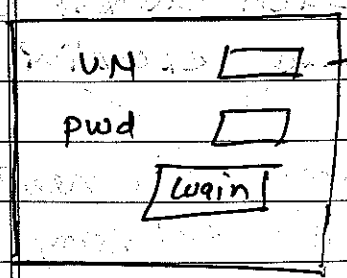
- Syntax:

```
pagefactory.initelement(arg1, arg2)
```

- Initelements will initialize D.m. by identifying each component present in webpage, by using @ findby annotation, which takes locatertype of an argument

- Syntax:

```
@FindBy (locatertype = "value/expression")
private webelement D.m.;
```



→ <input type="text" id="username">

Pom

```
class Sample
{
    private webelement UN;
    public Sample(webdriver driver)
    {
        UN = driver.findelement(By.xpath("__"))
    }
    public void username(String str)
    {
        UN.sendKeys("admin" str);
    }
}
```

Complete Initialization →

Date ____
Page ____

pagefactory

```
class sample
{
    @findBy (id = "username")
    private webelement UN;
  public sample (webdriver driver)
  {
   pagefactory.initelement (driver, this);
  }       ↓ class        ↓ static method     ↳ object
   public void username (String Str)
    {
        UN.sendkeys (~~"admin"~~ str);
    }
```

Test

```
class Test
{
   main
  {
  webdriver driver = new F.F.D();
   Sample rv = new Sample (driver);
       rv.username (admin);
```

classmate
Date
Page

* Working of page factory

① While executing TS init elements method will Converts all the data members ② Findby annotation to Findelement, this process is known as basic initialization or early initialization.

```
@FindBy (id = "username")
private webelement UN;
```

↓ Converted to

```
UN = driver.Findelement (BY.id ("username"));
```

② TO perform action on Component we need to call methods

③ Before performing each action init elements method will identify Component present or not then it will do Complete initialization. this process is known as late or lazy initialization

* Difference bet^n page factory & POM

POM	Page factory
① It will initialize All the D.M. present in a class Completly before performing actions on the Components	It will initialize D.M.S present in a class before performing and each actions
② It will use if webpage is not containing Hidden Components	② It will be used if webpage Containing Hidden elements.

Q. Write a TS to login to actitime applⁿ by entering invalid UN & pwd & Display Error msg of an o/p. by using page factory Concept.

```
public class Actitimeloginlnvalid
{
  @ Findby (id = "Usename")
  private webelement Usename;
  @ Find By (name = "pwd")
  private webelement password;
  @ Find By (CSS="a[id='loginButton']")
  private webelement login
@ find By (xPath = "(//span[@class='errormsg'])[1]")
  private webelement Errormsg;

public Actitimeloginlnvalid (webdrive driver)
{
   pageFactory.initelement (driver, this)
}

public void UN (String str1)
{
  Username.SendKeys (str1);
}
public void pwd (String str2)
{
   password.SendKey (str2)
}
  public void signin()
  {
    Login.click();
  }
```

```
public String Error()
{
String str = Errormsg.getText();
return str;
}
}
```

```
public class Invalid
{
  psvm(String[] args)
{
webdriver driver = new FirefoxDriver();
driver.get("URL");
ActitimeLoginInvalid RV = new ActitimeLoginInvalid();
RV.UN("admin1");
RV.pwd("manager123");
RV.signIn();
String str = rv.Error();
Sop(str);
```

HW.

1. Advantages of pom?
2. What is TestNG.?
3. Diff. betn TestNG & Junit? which one will use?

* Advantages of Pom?

1) Code reusability
2) Accurate
3) easy to maintain

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Page ______

* Diff betⁿ ~~normal~~ normal Scripting & pom Scripting

Normal Test - Script

TS-1

```
W.D rv= new f.f.D();
rv.get ("fb");
rv.findelement (BY.xpath))
rv.findelement (BY.xpath))'
}
```

TS 2

```
W.D rv= new f.f.D();
rv.get ("____");
UN  rv.findelel. (BY.id (" ")).SendKey();
Pwd rv.findelem (BY.id (" ")).SendKey();
login rv.findelem (BY.name ("")).~~SendKey()~~; Click().
```

TS-3

```
WD rv = new f.f.D()
rv.get ("____");
UN  rv.findel (BY.id (" ")).SendKey();
pwd rv.findel (BY.id (" ")).SendKey()'
login rv.findel (BY.name(" ")).click();
```

TS-4

```
W.D. rv = new f.f.D()
rv.get (" ");
UN  rv.findele (BY.id (" ")).Send
pwd rv.findele (BY.id (" ")).Send
login rv.findele (BY.name (" ")).click
```

Pom Test-Script

```
@ findby ( )
private W.E. ~~Creat~~ UN;

@ findby ( )
private W.E. create;

public Sample (W.D.rv)
{ pageFactory.initelem (rv, this)
}
}
```

TS-1

```
WD.rv = new f.f.D()
rv.get ("____")'
Sample s1 = new Sample()'
s1.firstName(),
s1.LastName(),
}
```

TS-2

```
WD rv = new ffD();
rv.get ("____")'
Sample s1 = new Sample()
s1.UN()
s1.Pwd()'
s1.click()
}
```

TS-3

— " —

TS-4

— " —

Manual TCs for facebook welcomepage

1) validate or check whether user able to register in facebook appln or not.

Navigation - Step ① open ff. browser
② enter URL
③ enter all fields with valid data & click on create account

2) validate or check whether user able to login with registered UN & pwd or not.

Navigation - Step ① open ff. browser
② enter URL
③ enter UN & pwd fields with valid data & click on login.

3) validate or check whether user able to login with unregister UN & pwd or not

Navigation - Step ① open ff. browser
② enter URL
③ enter UN & pwd fields with invalid data & click on login

4) validate or check whether user able to login by entering UN or pwd with valid data & UN or pwd with invalid data

Navigation - Step-① Open f.f. browser
② enter URL
③ enter valid UN
④ enter invalid pwd
⑤ click on login.

* **Pom class :-**

1. Pom class Depends on webpage present in an application
2. For each webpage pom class will be created, No. of pom classes will depends on no. of webpages present in an application
3. In each pom class D.m. are created in encapsulation Concept by using page factory.
4. No. of ~~Components~~ D.M.s present in a pom class will depends on no. of web page Components
5. Each D.m. should be initialized, & utilized within the pom Class.

Declared

* **Test class :-**

1. Test class Depends on no. of Test-cases written by manual T.E.
2. Test class will Contains navigation steps & inputs that need to be given to Components.
3. In Test class Data Can or input Can be given directly or through External source like excel.

* **Advantages of Pom :-**

(1) Object repository is independent of test cases, So we can use same Object repo. for a diff. purpose with diff tools eg. TestNG & Cucumber

(2) Code becomes less & optimized because of the reusable page methods in Pom

(3) method gets more readable manner

(4) Page object pattern says operations & flows in UI should be seperated from verification. this Concept makes our code cleaner & easy to understand

```
public void Facebook_login_or_signup (WD driver)
{
    PageFactory.initElements (driver, this)
}

public void signup (String first, String last, String email,
                    String pwd, int a, int b, String c)
{
    FirstName.SendKeys (first);
    LastName.SendKeys (Last);
    Email.SendKeys (email);
    ReEmail.SendKeys (email);
    password.SendKeys (pwd);
    Select day = new Select (Day)
        day.SelectByIndex (9);
    Select month = new Select (month);
        month.SelectByIndex (b);
    Select year = new Select (year);
        year.SelectByValue (c);
        male.click();
        Create.click();

public void login (String str1, String str2, String str3)
{
    login_Email.SendKeys (Str1);
    login_password.SendKeys (Str2);
        login.click();
}
```

TC①

```
public class TC1
{
    psvm (String [] args)
    {
        WebDriver driver = new RFD();
        driver.get("http://www.facebook.com");
Facebook_Login_or_Signup RV = new Facebook_Login_or_Signup(driver);
        RV.signup("Samba", "bunga", "samba.bunga@gmail.com",
                  "abcd", 8, 6, "1992");
```

TC②

```
public class TC2
{
    psvm (String [] args)
    {
        WebDriver driver = new RFD();
        driver.get("http://Facebook.com");
Facebook_Login_or_Signup RV = new Facebook_Login_or_Signup(driver)
        RV.login("xyz", "abc");
```

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Date
Page

VVIMP TestNG

- Automation TE will generate pom class & Test classes to test an appln
- No. of pom classes generated will depends on no. of web pages of that appln
- No. of Test classes generated will depends on no. of Test Cases written by manual TE.
- When a build came for Testing
  1) manual TE will be busy in testing new features & unstable features by executing Test cases
  2) Automation TE will Test previous builds Stable features Regretion testing by executing test classes
- Automation TE need to execute each test class manually, which is a difficult process
- AT the end of build execution Automation TE need to generate report of no. of Test classes executed, pass & fail
- when a new build came for testing Automation TE need to re-execute failed Test classes of previous build
- Above process is time Consuming & Automation TE Can't write new Test classes for Stable feature
- To overcome above drawbacks in execution of test classes we need to use "TestNG".

* **Test NG:-**

It is a Java unit frameworks use for writing of test classes

* **Advantages:-**

① All Test classes will be executed
② generates report
③ execute only failed Test classes in new build

procedure to install TestNG:-

step① Open eclipse → click on Help → click on eclipse marketplace → enter TestNG in search field → click on search

step② click on install & procedure installation steps, click on Finish, Restart eclipse.

procedure to configure TestNG to project:

step① Right click on project → click on properties → click on Java build path → libraries → Add library → Select TestNG → click next → Finish.

- In TestNG Test class will be created with test method
- Under Test method all test case navigation should be written.
- TestNG Test class will not contain any main method to execute Test methods
- To execute test methods in TestNG we need to use annotations like "@Test"

Normal Test Class

```
Test class Test
{
  main()
  {
  webdriver d = new F.F.D();
    d.get("URL");
    :
  }
}
```

TestNG Test class

```
class Test
{
  @Test
  public void Sample()
  {
  webdriver d = new F.F.D();
    d.get("URL");
  }
}
```

Q. write a TS to display Test using TestNG Test class

```
public class Testclass1
{
  @TestNG
    public void Sample()
    {
      Sop("Hello");
    }
}
```

Note :-

After executing TestNG Test class Refresh project, Test o/p folders will be generated within that, we have emailable report

- If we sop() to display test of an output then result will be displayed in Console but not in emailable report

- TO display o/p in report we need to use a static method log present in Reporter class.

Reporter.log("Hi") → o/p
- Console ✗
- report ✓

Reporter.log("Hi", true) → o/p
- Console ✓
- report ✓

```
public class TestClass1
{
    @Test
    public void Sample()
    {
        Reporter.log("Hi", true);
    }
}
```

- single Test class may Contain multiple Test methods, TO execute each Test method we need to write annotation @Test

```
public class Testclass2
{
    @Test
    public void CreateAccount()
    {
        Reporter.log("CreateAccount", true)
    }
```

```
@Test
public void EditAccount()
{
    Reporter.log("EditAccount", true)
}
@Test
public void DeleteAccount()
{
    Reporter.log("DeleteAccount", true)
}
}
```

Executes in alphabetical order.

o/p → CreateAccount
DeleteAccount
EditAccount

Note :- TestNG will execute test method in alphabetical order

* Priority * (not good option)

- To change test methods execution order we need to use a keyword priority
- priority can be (a) Bydefault = 0 (d) Duplicate
  (b) +ve integer
  (c) -ve integer
- priority can't be (a) Decimals
  (b) Variables

```
public class Testclass2
{   @Test(priority=0)
    public void CreateAccount()
    {   @Test(priority=0)
        Reporter.log("createAccount", true)
    }
```

```
@Test ( priority = 1 )
public void EditAccount()
{
  reporter.log ("EditAccount", true)
}
@Test ( priority = 2)
public void DeleteAccount()
{
  reporter.log ("DeleteAccount", true)
}
}
```

If Test methods priority is Duplicate then only Duplicate methods execution will happens in alphabetical order

- few test methods execution will depends on other test method execution, if that test method is not executed then these methods test execution should not happen.

- If test method b, Depends on test method a, then to make test method b to depend on test method a, we need to use a keyword "dependsOnMethods"

```
public class TestClass3
{
  @Test
  public void signin()
  {
    reporter.log("signin", true);
  }
```

```
@Test (dependsOnMethods = "signin")
public void Composemail()
{
    reporter.log ("Composemail", true)
}
}
```

o/p

signin

Composemail

* Some of Imp a

① @BeforeClass

this annotation is use for execution of few test methods Before executing a test class

② @afterclass

this annotation is use for execution of few test methods after executing a test class.

③ @Beforemethod

It is use for execution of few test methods before executing every test method with an annotation @Test.

④ @Aftermethod

use for execution of few ~~test~~ test method after execution of every test method with annotation @Test

⑤ @Test

use for execution of Test method.

public class Annotation * Not in Real time
{

@ Before class
public void openbrowser()
{
Reporter.log("openbrowser", true);
}

@ After class
public void closebrowser()
{
Reporter.log("closebrowser", true);
}

@ Before class method
public void login()
{
Reporter.login("login", true);

@ Test
public void CreateAccount()
{
Reporter.login("CreateAccount", true)
}

@ Test
public void DeleteAccount()
{
Reporter.login("DeleteAccount", true)
}

@ After method()
public void logout()
{ Reporter.logout("logout", true)
}

}

O/p
↓
Open browser
Login
CreateAccount
Logout
Login
DeleteAccount
Logout
Close browser.

O/p
↓
TestA
Test B
Test C

- If a Test method execution depends on multiple test methods then we need to use Depends on methods parameter as follows:

```
@Test(dependsOnMethods = {"~~TestA~~ methodname1",
                          "methodname2"})

public class Depends
{
  @Test
  public void TestA()
  {
    Reporter.log("TestA", true);
  }
  @Test
  public void TestB()
  {
    Reporter.log("TestB", true);
  }
  @Test
  public void TestC()
  {
    Reporter.log("TestC", true);
  }
}
```

O/P
↓
TestA
TestB
TestC

- Sometimes same Test method need to be executed multiple times which can be possible by using parameter

Invocation Count

```
public class Invocation
{ @Test(InvocationCount=10)
  {
    Reporter.log("Compressmail", true)
  }
```

(10 times)

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Date ______
Page ______

Test - Suite :-

It is use to execute all test - classes

Deffⁿ :-

" It is xml file which Contains all the test classes which need to be executed

* procedure to create Test - Suite :-
  - Right click on Test class Package
  - Select TestNG → Convert to TestNG
  - Enter Suitename & testname & click on finish
  - Refresh Test - O/P folder in selenium project

Result :- TestNG.xml file will be Created

- Double click on xml file & code will be as follows.

```
                          "suite morning"
                           ↗
<suite name = " name of suite" >
  <test name = " Test 01 " >
    < classes >
      < class name = " testNG. ~~class~~ Annotations" />
      < class name = "testNG. Invocation " />
      < class name = testNG. Depends " />


    < / classes )
  </test > <!-- Test 01 -- >
<Suite > <! -- Suite morning -- >
```

* procedure to Run Test - Suite
  - Right click on TestNG. xml file →
  - Select Run as → testNG Suite

Result :-

① All Test classes will be executed
② & emailable.esp will be generated in test-o/p folder
② Refresh Test-o/p folder, New folder will be created which containing results.
③ under Test-o/p folder Test•NG — Result.xml, TestNG - Failed.xml files will be created.

* Enabled
* If a Test class contains multiple test methods to skip 1 test method execution we need to use a Keyword "enabled = false"

eg.

```
public class Enable
{
@ Test (enabled = false)
public void Test1()
{
Reporter.log ("Test1", true)
}
@ Test
public void Test2()
{
Reporter.log ("Test2", true)
}
}
```

o/p
⇓
Test2

Keywords in Test
↓
Enabled
priority
Invocation count
timeout
dependson method

* Timeout :-
To Stop the methods ~to
If a test class Contains multiple test methods if 1 test method is time Consuming to execute then TestNG by default fail the test method & executes the other methods

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Date ____

Page ____

- To execute that test method we need to use Keyword timeout = time in milisecond
  eg. @Test (timeout = 1000)

→ Verifications using TestNG ←

Example to verify checkbox is selected or not

```
class sample
{ main()
{     w.D. d = new f.f.D()
          d.get("URL");
webelement rv = d.findelement(BY.xpath("___"));
      if (rv.isSelected)
        { sop("CHK is selected");
        }
      else
        { sop("checkbox is not selected");        } verification
        }
```

- If above verification process is used to verify expected result of a Test Case, length of Test Script will be increase & Test script will take more time for execution.
- To reduce length of Test script we need to use assert Class for verification which contains Static method.

* Important Static methods present in Assert class
  All Static method should be imported from org.testNG.

1. Assert equals()
2. assert not equals()
3. assertTrue()
4. assert false()
5. assert Null()
6. assert Not Null()
7. fail()

(1) assertequals():- Used to verify expected & actual results, if both results are same then o/p is pass, otherwise Fail.

eg. @Test
public void Test1()
String str1 = "Hello";
String str2 = "Hi";
Assert.assertequals(str1, str2);
class
actual
expected.

o/p
↓
Fail

(2) assert Not Equals():- use to verify expected & actual results, if both results are not same o/p is pass, otherwise fail

eg. @Test
public void Assert.assertNotequals(str1, str2); Pass

o/p
↓

(3) assertTrue():- this method is use to verify Conditions are true or false, if condition is true o/p is pass otherwise fail.

eg. Assert.assertTrue(rv.isdisplayed)
(rv.isSelected)
(rv.ismultiple)
(rv.ismultiple)

④ assertFalse() :- use to verify conditions are true or false, if condition is true o/p is Fail, & if condition is false then o/p is pass.

⑤ assertNull() :- this method is use to verify Component or text field empty or not, if it is empty o/p is pass otherwise fail.

```
Assert.assertNull(str);
```

o/p ↓ fail.

⑥ assertNotNull() :- use to verify Component or text field empty or not, if it not empty then o/p is pass otherwise fail.

⑦ fail() :- This method is use to intentionally fail test method

eg

```
@Test
public void Fail()
{
  Sop("Hi");
  Assert.fail();
}
```

o/p ↓ fail.

- In a Test class if one of the test method is fail then testNG will stop execution of failed testmethods & other testmethods execution will be continued

```
@Test
public void Test1()
{ Reporter.log("Test", true);
  Assert.fail()
}
@Test
public void Test2()
{ Reporter.log("Test2", true);
}
```

o/p

real ← Test1 → failed

atom ← Test2 → pass

- In a Test class in one of the test method is failed & that test method execution Required for other test method execution then other test methods will be skipped.

```
@ Test
public void Test1()
{ Reporter.log("Hi", true)
  Assert.fail();
}
@ Test (dependsOnMethods = "Test1")
public void Test2()
{ Reporter.log("Hello", true)
}
```

o/p
↓
Test1 – failed
Test2 – skipped

* Disadvantage of Assert class.
- If a test class is Containing multiple test method, in one of the test method, multiple verifications are presented, while executing if one verification is failed then rest of the verification will not be verified & testNG will execute reset method by failing verification field method.

```
public class SampleAssert
{   @ Test
    public void Sample()
    {  String str = "Hello";
       Assert.assertEquals(str, "Hi");
       Report.log("Hello", true)
       String str2 = "Hi";
       Assert.assertEquals(str2, "Hi");
       Reporter.log("Hi", true);
    }
    @ Test
    public void Sample1()
    { Reporter.log("Testing", true);
```

o/p
↓
Test

Passed ↓ 1
Failed ↓ 1

* Softassert :- (All

- To overcome above drawbacks we need to use Soft assert "It's a class which Contains non-static methods use to do verification."

- Soft assert will do verification, if any verification is failed, notifies & executes the rest of verification in a test method.

eg
```
@Test
public void sample1()
{ String str = "Hello";
  Softassert soft = new Softassert();
  soft.assertequals(str, "Hi");
Reporter.log("Hello", true);
  String str2 = "Hi";
  soft.assertequals(str2, "Hi");
Reporter.log("Hi", true);
  soft.assertAll();
}
@Test
Public void Sample2()
{
  Reporter.log("Testing", true)
}
```

O/P
↓
Hello
Hi
Testing

If we dont write assertAll then it will not notify

* Excluding & Including of Test methods to execute a test class with the help of TestNG.xml file.

- By using TestNG.xml file we can skip execution of test methods & also we can execute specified test methods of a test class

```
public class exclude
{   @Test (priority = 0)
    public void openbrowse()
{   Reporter.log("", true)
    @Test (priority = 1)
    public void login()
    {
    } Reporter.log("login", true)
    @Test (priority=2)
    public void Composemail()
    {
    } Reporter.log("Composemail", true)
    @Test (priority=3)
    public void draftmail()
    {  Report log ("draftmail", true)
    }
    @Test (priority=4)
    public void logout()
    {  Reporter.log("logout", true)
    }
    @Test (priority=5)
    public void log closebrowse()
    {
    Reporter.log("closebrowse", true)
    }
```

U4 N3 W1

(12) No alert present Exception :-
If we try to perform action on other popup using alert popup

(1) Webdriver Exception :-
When "URL" is not well formed properly.

(2) Unreachable browser Exception :-
when we intercept the browser while running script

(3) Illegal state Exception :-
this Exception happens when we try to open other browser Except ff browser directly

(5) No such Element Exception:
Reason (1) when used Html Code is wrong or incorrect to identify an element.
(2) Because of Synchronisation

(6) Invalid Element State Exception
If we try to handle disabled Element.

(7) Unsupported operation Exception
If we try to deselect option on single selectable list box then we will get

(8) Element Not Visible Exception
Element Not Visible to

(9) Not Connected Exception
When Selenium Jar file unable to interact with browser

(10) ~~Unhandled Alert~~ Alert ~~Present~~ Exception
try to perform action without handling alert

(11) Unexpected Tagname exception
If we try to handle customized list-box using Select class