Practical No. 3. FindElement() and FindElements() Methods in Selenium

Date: ________________

Aim:

To find web elements using findElement() and findElements() methods.

Theory:

A web page is comprised of many different HTML elements, such as buttons, links, a body, labels, forms, and so on, that are named Web Elements in the context of WebDriver. Together, these elements on a web page will achieve the business functionality

There are different types of Web Elements such as <html>, <body>, <form>, <label>, <input>, and <a>, which together make a web page.

For example,

```
<label>Enter Username: </label>
```

Here, <label> is the start tag of the WebElement label. Enter Username: is the text present on the label element.

Similarly, take another WebElement:

```
<input type="text" name="Username"/>
```

Consider following HTML code

```
<html>
<body>
<form id="loginForm">
<label>Enter Username: </label>
<input type="text" name="Username"/>
<label>Enter Password: </label>
<input type="password" name="Password"/>
<input type="submit"/>
</form>
<a href="forgotPassword.html">Forgot Password ?</a>
</body>
</html>
```

In the preceding code, type and name are the attributes of the WebElement input with values text and Username, respectively.

Interaction with a web page requires a user to locate the web element.

There are multiple ways to uniquely identify a web element within the web page such as

- ID,
- Name,
- Class Name,
- Link Text,
- Partial Link Text,
- Tag Name □ XPATH.

findElement() and findElements() method

findElement() method is used to uniquely identify a (one) web element within the web page.

Whereas findElements() method is used to uniquely identify the list of web elements within the web page.

Syntax:

WebElement elementName = driver.findElement(By.LocatorStrategy("LocatorValue"));

The findElement() and By() methods instruct WebDriver to locate a WebElement on a web page, and once found, the findElement() method returns the WebElement instance of that element.

Actions such as click, type, and so on, are performed on a returned Web Element using the methods declared in the WebElement interface.

So, the input parameter for the findElement() method is the By instance.

The By instance is a WebElement-locating mechanism.

The return type of the findElement() method is the WebElement instance that represents the actual HTML element or component of the web page. The method returns the first WebElement that the driver comes across which satisfies the locating-mechanism condition. This WebElement instance will act as a handle to that component from then on. Appropriate actions can be taken on that component by the test script developer using this returned WebElement instance.

If WebDriver doesn't find the element, it throws a runtime exception named NoSuchElementException, which the invoking class or method should handle. The test script developer is advised to avoid using this method if he/she thinks the WebElement will not be present on the web page. For those purposes, we can use another method of WebDriver named findElements.

```
public class GoogleSearch { public
static void main(String[] args){
WebDriver driver = new
FirefoxDriver();
driver.get("http://www.google.com");
WebElement searchBox = driver.findElement(By.name("q"));
searchBox.sendKeys(“Finolex Academy");
searchBox.submit();
}
}
```

findElements() syntax:

FindElements in Selenium command takes in By object as the parameter and returns a list of web elements.

It returns an empty list if there are no elements found using the given locator strategy and locator value.

Below is the syntax of find elements command.

List<WebElement> elementName = driver.findElements(By.LocatorStrategy("LocatorValue"));

Example:

```
public    class    LocatingByTagname1    {
public static void main(String[] args) {
        System.setProperty("webdriver.gecko.driver","D:\\selenium_drivers\\geckodriver.exe");
        WebDriver driver = new FirefoxDriver();
        driver.get("http://demo.guru99.com/test/facebook.html");
        List   <WebElement>   list   =   driver.findElements(By.tagName("input"));
        for(int i = 0; i < list.size(); i++)
                {
                System.out.println(list.get(i).getAttribute("name"));
                }
        }
}
```

Implementation

1. Locate all elements with tagname “input” on the given website http://demo.guru99.com/test/facebook.html

   Program:

   import java.util.List;

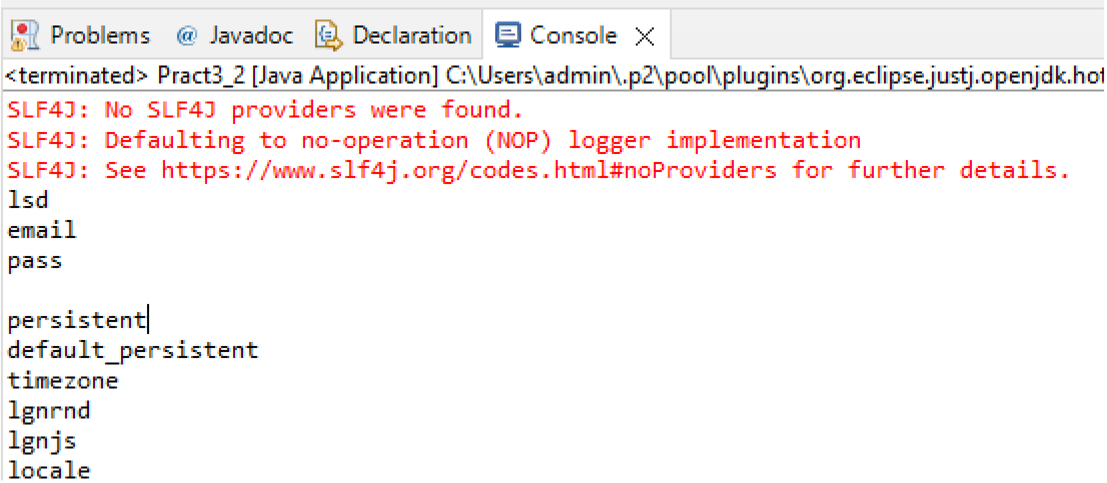
```
import org.openqa.selenium.By;
import org.openqa.selenium.WebDriver;
import org.openqa.selenium.WebElement;
import org.openqa.selenium.firefox.FirefoxDriver;

public class Pract3_1 {

    public static void main(String[] args) {
            // TODO Auto-generated method stub

    System.setProperty("webdriver.gecko.driver","E:\\SEM3\\STQA\\Selinium_Setup\\gec
kodriver.exe");
            WebDriver driver = new FirefoxDriver();
            driver.get("https://demo.guru99.com/test/facebook.html");
            List<WebElement> list = driver.findElements(By.tagName("input"));
            for(int i=0;i<list.size();i++)
            {
            System.out.println(list.get(i).getAttribute("name"));
            }
    }
}
```

Output:



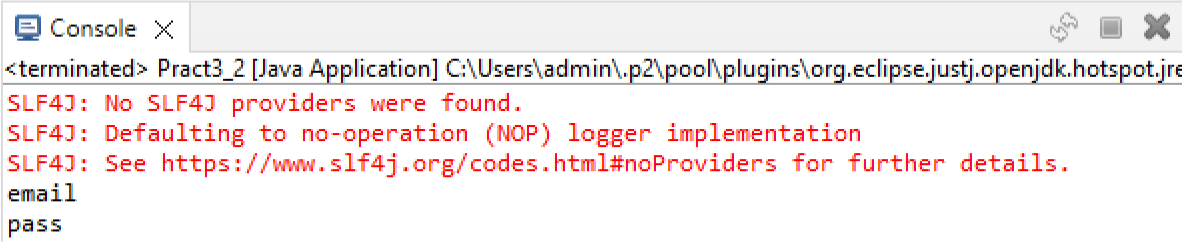
```
<terminated> Pract3_2 [Java Application] C:\Users\admin\.p2\pool\plugins\org.eclipse.justj.openjdk.hot
SLF4J: No SLF4J providers were found.
SLF4J: Defaulting to no-operation (NOP) logger implementation
SLF4J: See https://www.slf4j.org/codes.html#noProviders for further details.
lsd
email
pass

persistent
default_persistent
timezone
lgnrnd
lgnjs
locale
```

2. Locate all elements with classname “inputtext” on the given website http://demo.guru99.com/test/facebook.html

```
Program: import java.util.List;
import org.openqa.selenium.By;
import org.openqa.selenium.WebDriver;
import org.openqa.selenium.WebElement;
import org.openqa.selenium.firefox.FirefoxDriver;
public class Pract3_2 {
    public static void main(String[] args) {
            // TODO Auto-generated method stub
    System.setProperty("webdriver.gecko.driver","E:\\SEM3\\STQA\\Selinium_Setup\\gec
kodriver.exe");
            WebDriver driver = new FirefoxDriver();
            //navigate to webpage
            driver.get("http://demo.guru99.com/test/facebook.html");
            //locate element by the classname
            List<WebElement> textbox = driver.findElements(By.className("inputtext"));
            for (int i=0; i<textbox.size();i++)
            {
            System.out.println(textbox.get(i).getAttribute("name"));
            }
            //type in textboxes
             textbox.get(0).sendKeys("Siddhivinayak0209");
             textbox.get(1).sendKeys("1200");
    }
}
```

Output:



```
<terminated> Pract3_2 [Java Application] C:\Users\admin\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre
SLF4J: No SLF4J providers were found.
SLF4J: Defaulting to no-operation (NOP) logger implementation
SLF4J: See https://www.slf4j.org/codes.html#noProviders for further details.
email
pass
```

Conclusion: Learnt to find single as well as multiple elements using findElement() and findElements().