Handling Web Elements and Mouse Events

29TH MAY, 2023

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Web Elements

Introduction

- Anything that is present on the web page is a WebElement such as text box, button, etc.
- WebElement represents an HTML element.

Types of Web Element

1) Textbox
2) Button
3) Radio button
4) Checkbox
5) Dropdown
6) Link
7)Label

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Web Elements Actions Class

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Actions Class

- Actions are mainly triggered using two peripherals – Keyboard and Mouse.
- Actions like clicking a button, entering a keyword in the search bar are prime examples of how we use a mouse or keyboard.
- These interactions are automated by using the Actions class in Selenium.
- The Actions class contains a collection of actions that can be performed in a web application.
- Two broad categories are Keyboard and Mouse Actions.

Actions Class

1. Mouse Actions:

- **Click():** Performs click on the element
- **doubleClick():** Performs double click on the element
- **clickAndHold():** Performs long click on the mouse without releasing it
- **dragAndDrop():** Drags the element from one point and drops to another
- **moveToElement():** Shifts the mouse pointer to the center of the element
- **contextClick():** Performs right-click on the mouse

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Actions Class

2. Keyboard Actions:

- **sendKeys():** Sends a series of keys to the element
- **keyUp():** Performs key release
- **keyDown():** Performs keypress without release

Action Class

- Action in Selenium is an interface that provides two methods – build() and perform().
- The commands of the Action Interface are implemented by the Action class.
- The build() method generates a composite action containing all the actions in the chain. These actions are ready to be performed.
- The build() method returns a composite action.
- In scenarios where the action chain contains only one action, you can avoid the build() method and directly call the perform() method.

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How to implement the Actions Class?

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Implementation Steps

- To implement the Actions class in Selenium automation script, follow the steps given below:

Step 1: First, we have to import the package

org.openqa.selenium.interactions.Actions.

Step 2: To use the methods provided by the Actions class, we need to create an object of this class and pass the WebDriver as an argument.

```
// instantiate the WebDriver
WebDriver driver = new ChromeDriver();

// create an object of the Actions class
Actions act = new Actions(driver);
```


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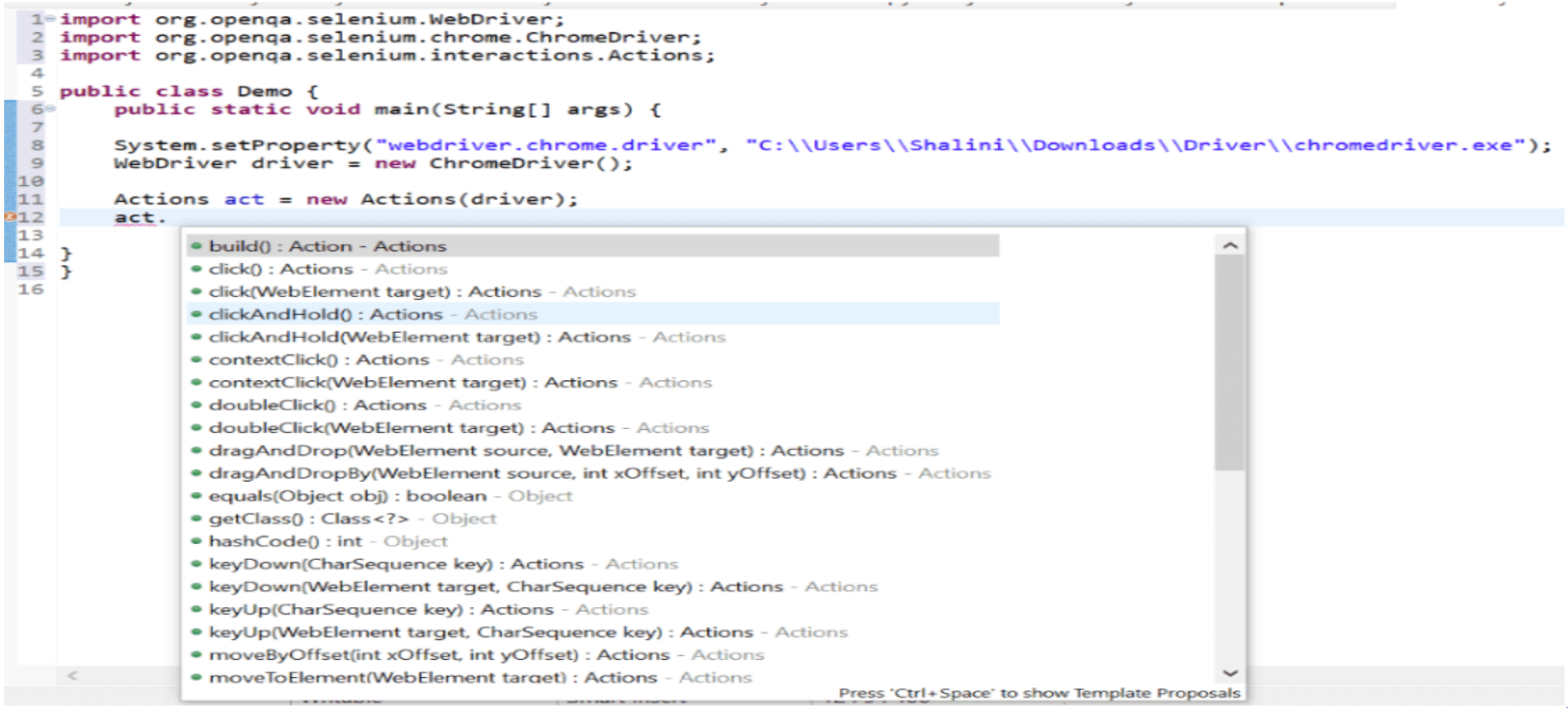
Implementation Steps

Step 3: The object created can now be used to perform any actions. You can see various actions that are provided by this class once you create an object.



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An Example Program using moveToElement(), click(), perform() and build() methods

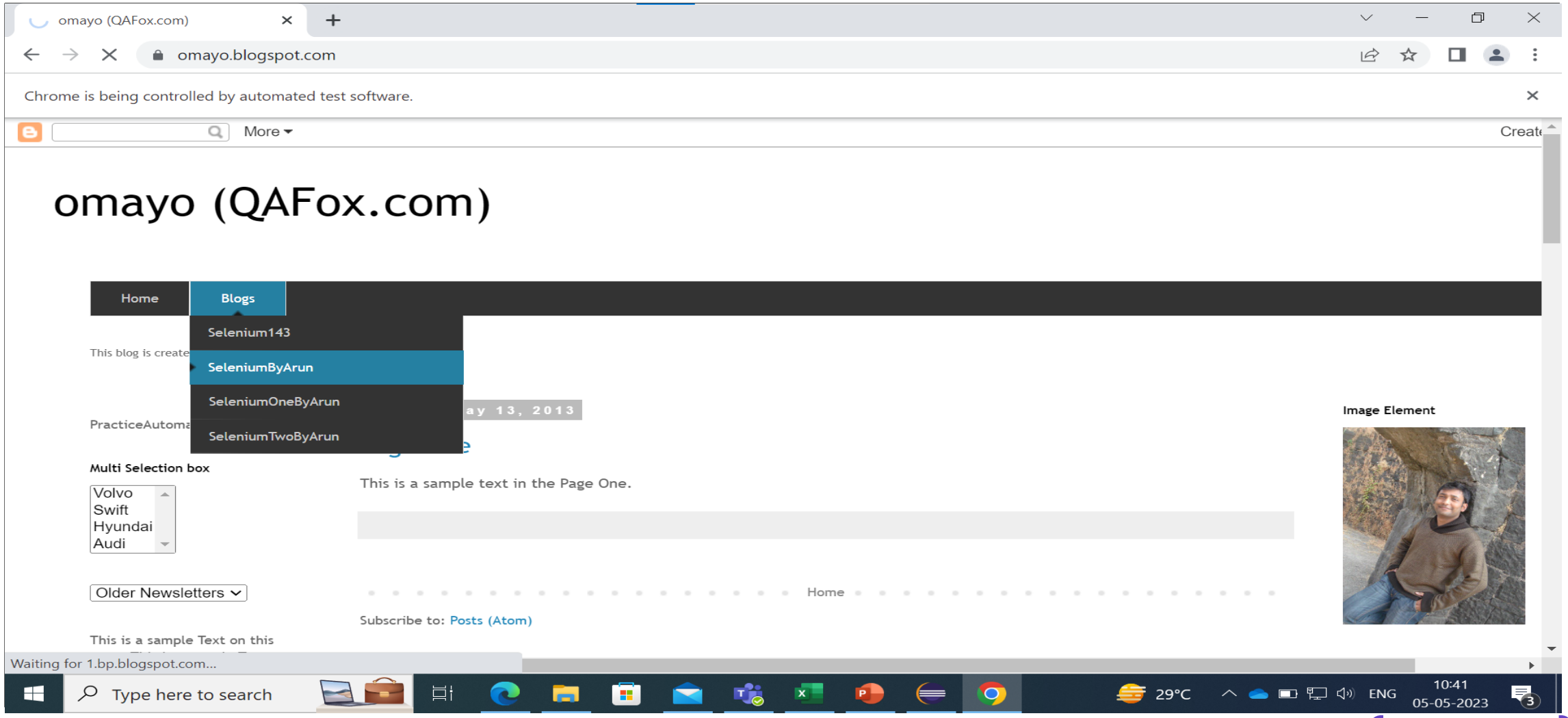
```
public class WebElementActions {
public static void main(String[] args)
{
System.setProperty("webdriver.chrome.driver", "C:\\workspace\\ChromeDriver\\chromedriver.exe");
WebDriver driver = new ChromeDriver();
driver.manage().window().maximize();
driver.get("https://omayo.blogspot.com/");
WebElement blogsmenuElement = driver.findElement(By.id("blogsmenu"));
// actions object creation
Actions action = new Actions(driver);
action.moveToElement(blogsmenuElement).perform();

WebElement Option2 = driver.findElement(By.xpath("//span[text()='SeleniumByArun']"));
action.moveToElement(Option2).click().build().perform();

//action.click().perform();
}
}
```

Why do we need selenium waits?

Output



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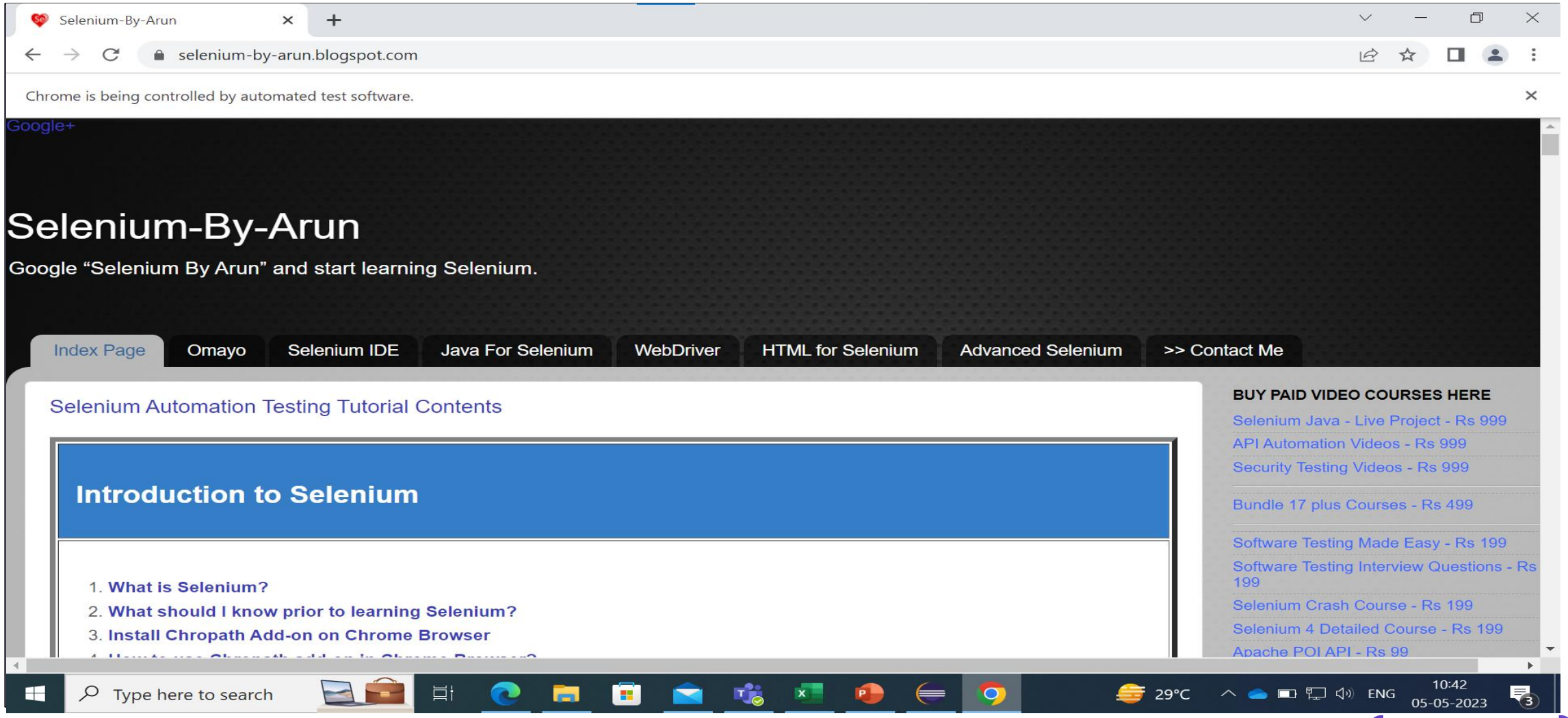
Why do we need selenium waits?

Output



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An Example Program using contextClick()

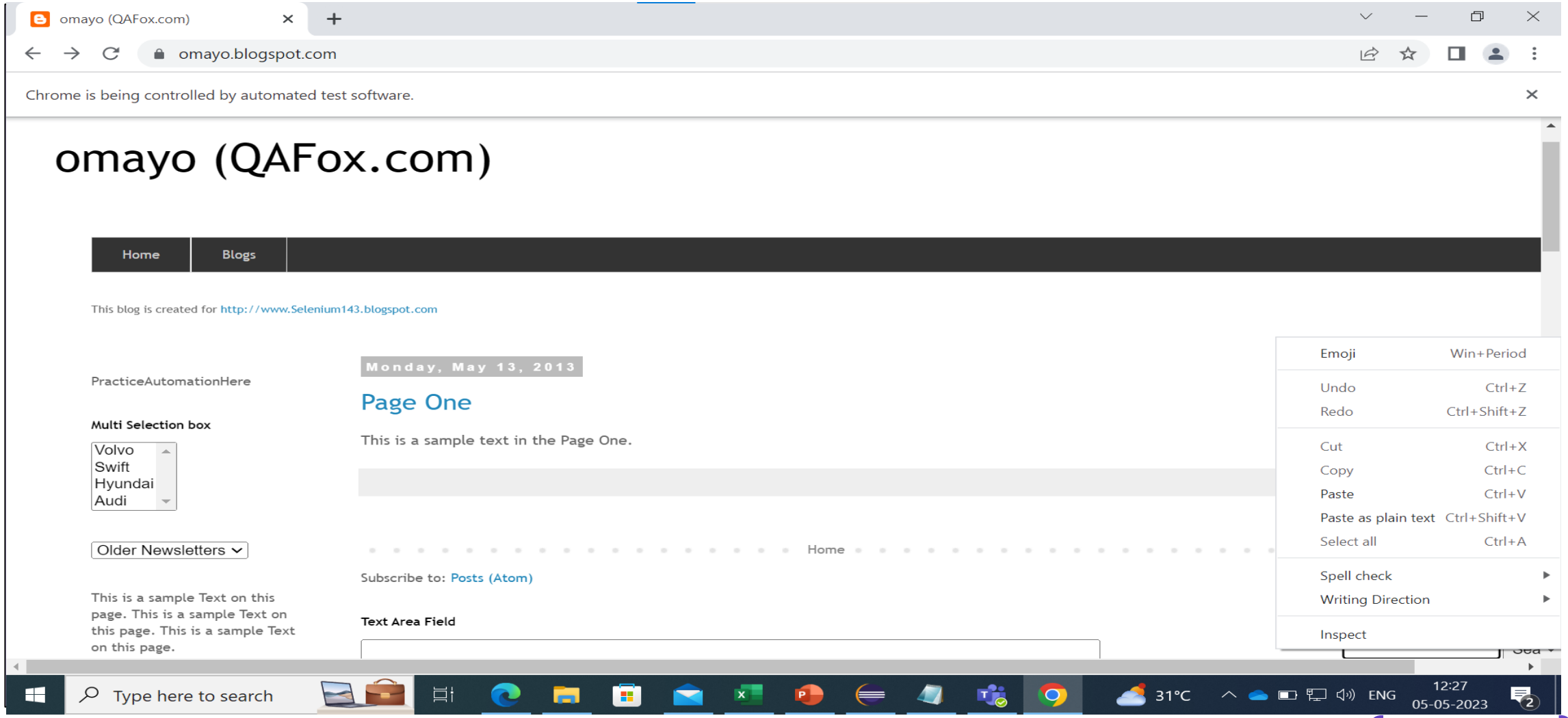
```
public class WebElementActions {
public static void main(String[] args)
{
System.setProperty("webdriver.chrome.driver", "C:\\workspace\\ChromeDriver\\chromedriver.exe");
WebDriver driver = new ChromeDriver();
driver.manage().window().maximize();
driver.get("https://omayo.blogspot.com/");
WebElement blogsmenuElement = driver.findElement(By.id("blogsmenu"));
// actions object creation
Actions action = new Actions(driver);

WebElement searchfield = driver.findElement(By.xpath("//input[@name='q']"));
action.contextClick(searchfield).perform();

//action.click().perform();
}
}
```

How to Implement Actions class?

Output



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An Example Program using doubleClick()

```
public class WebElementActions {
public static void main(String[] args)
{
System.setProperty("webdriver.chrome.driver", "C:\\workspace\\ChromeDriver\\chromedriver.exe");
WebDriver driver = new ChromeDriver();
driver.manage().window().maximize();
driver.get("https://omayo.blogspot.com/");
WebElement blogsmenuElement = driver.findElement(By.id("blogsmenu"));
// actions object creation
Actions action = new Actions(driver);

WebElement doubleclick = driver.findElement(By.id("testdoubleclick"));
action.doubleClick(doubleclick).perform();

//action.click().perform();
}
}
```


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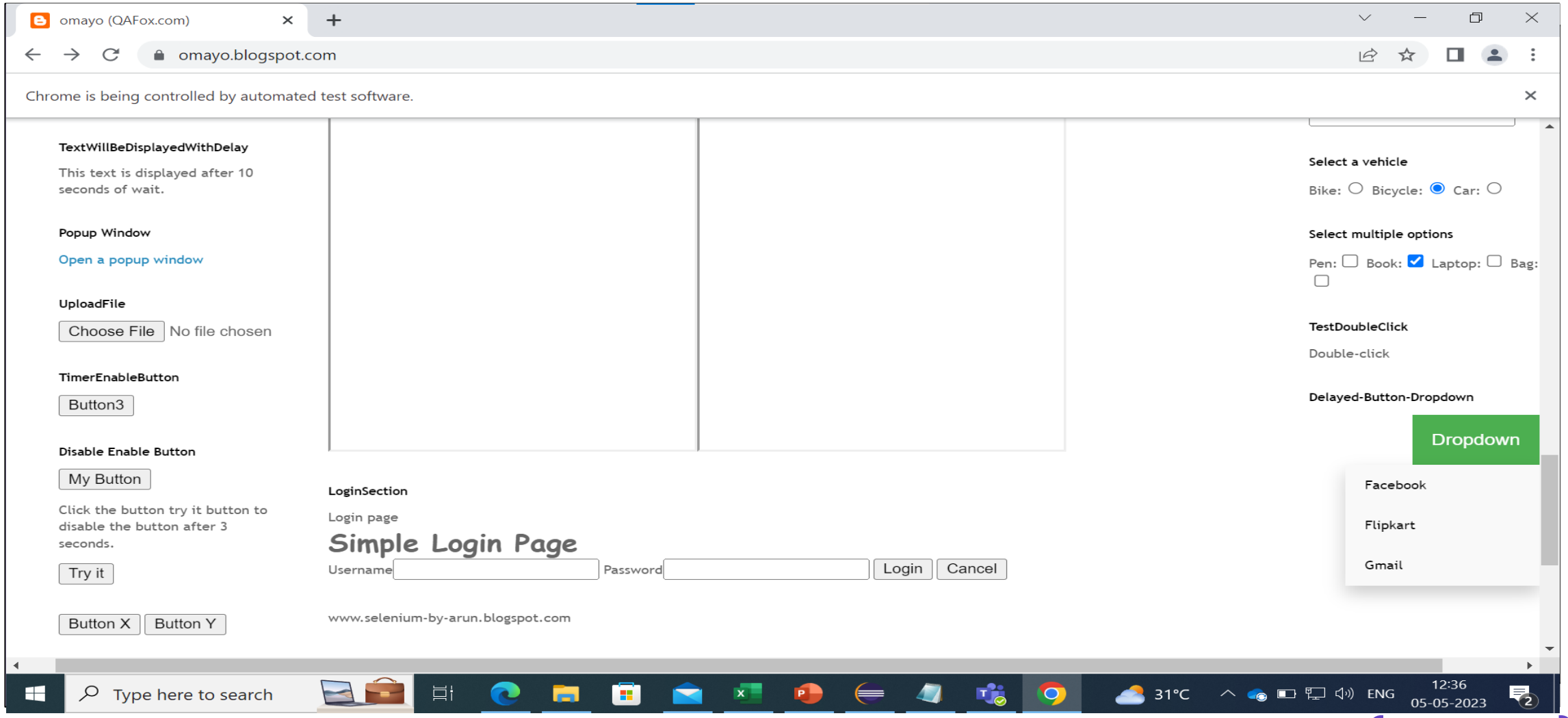
Why do we need selenium waits?

Output



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An Example Program using clickAndHold(), release() and dragAndDrop()

```
public class WebElementActions {
public static void main(String[] args)
{
System.setProperty("webdriver.chrome.driver", "C:\\workspace\\ChromeDriver\\chromedriver.exe");
WebDriver driver = new ChromeDriver();
driver.manage().window().maximize();

Actions action = new Actions(driver);
driver.get("http://dhtmlgoodies.com/scripts/drag-drop-custom/demo-drag-drop-3.html");
WebElement box1 = driver.findElement(By.id("box1"));
WebElement box2 = driver.findElement(By.id("box101"));
action.clickAndHold(box1).moveToElement(box2).release().build().perform();

action

}
}
```


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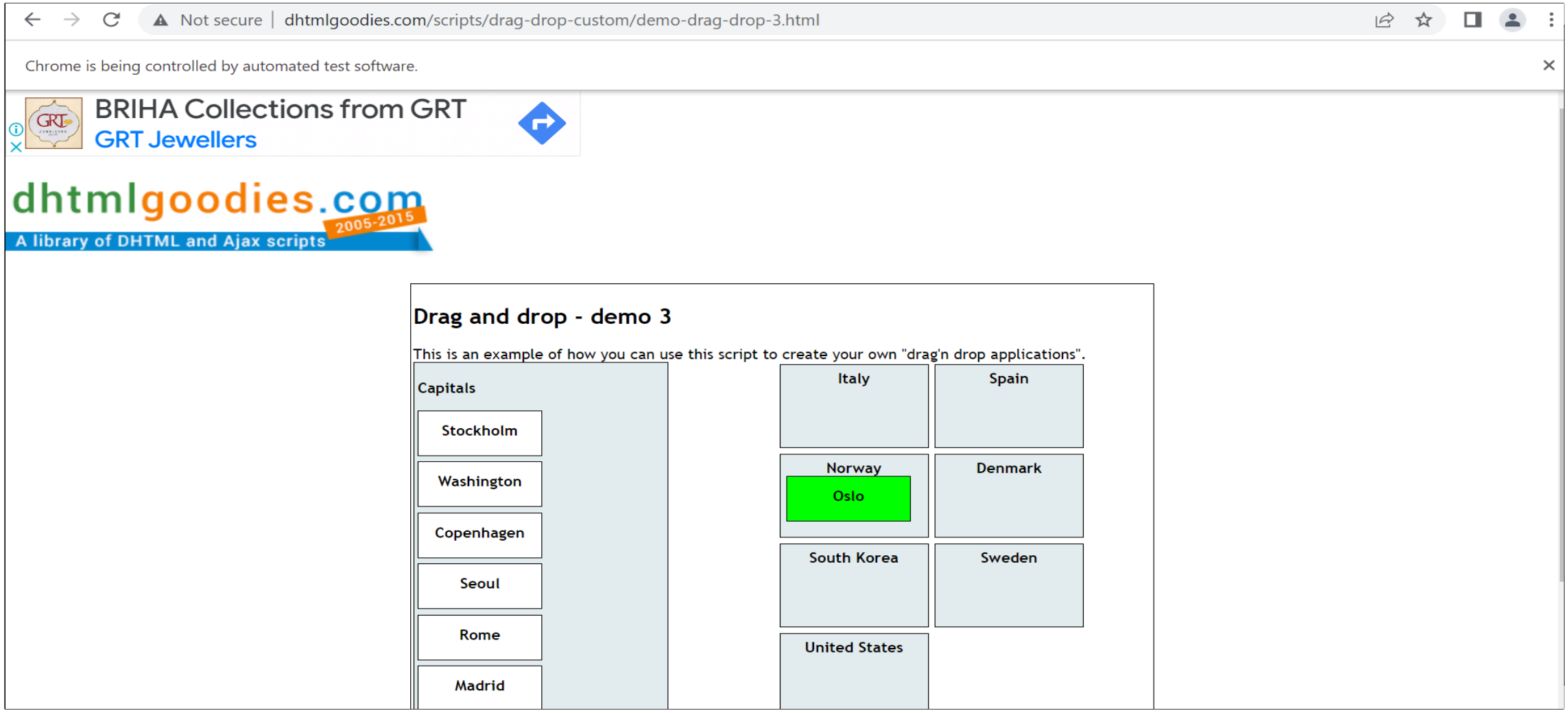
How to Implement Actions class?

Output



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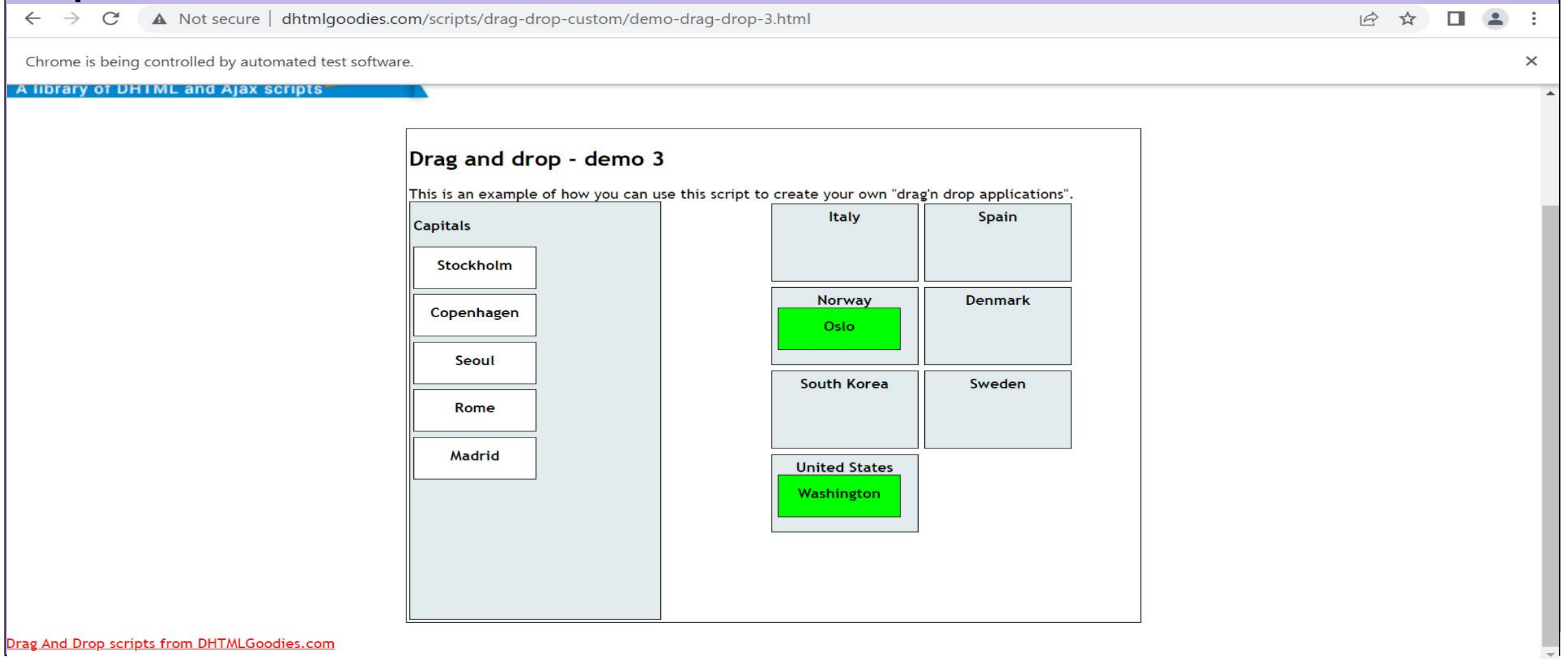
How to Implement Actions class?

Output

Output:



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An Example Program using keyDown(), keyUp() and sendKeys() methods

```
public class WebElementActions {
public static void main(String[] args)
{
System.setProperty("webdriver.chrome.driver", "C:\\workspace\\ChromeDriver\\chromedriver.exe");
WebDriver driver = new ChromeDriver();
driver.manage().window().maximize();
driver.get("https://omayo.blogspot.com/");
String parentWindowhandle=driver.getWindowHandle();
System.out.println("Main Window is" + parentWindowhandle);

WebElement compendiumDevlink = driver.findElement(By.id("blogsmenu"));

// actions object creation
Actions action = new Actions(driver);

WebElement compendiumDevlink = driver.findElement(By.linkText("compendiumdev"));
action.keyDown(Keys.CONTROL).moveToElement(compendiumDevlink).click().keyUp(Keys.CONTROL
).build().perform();
```


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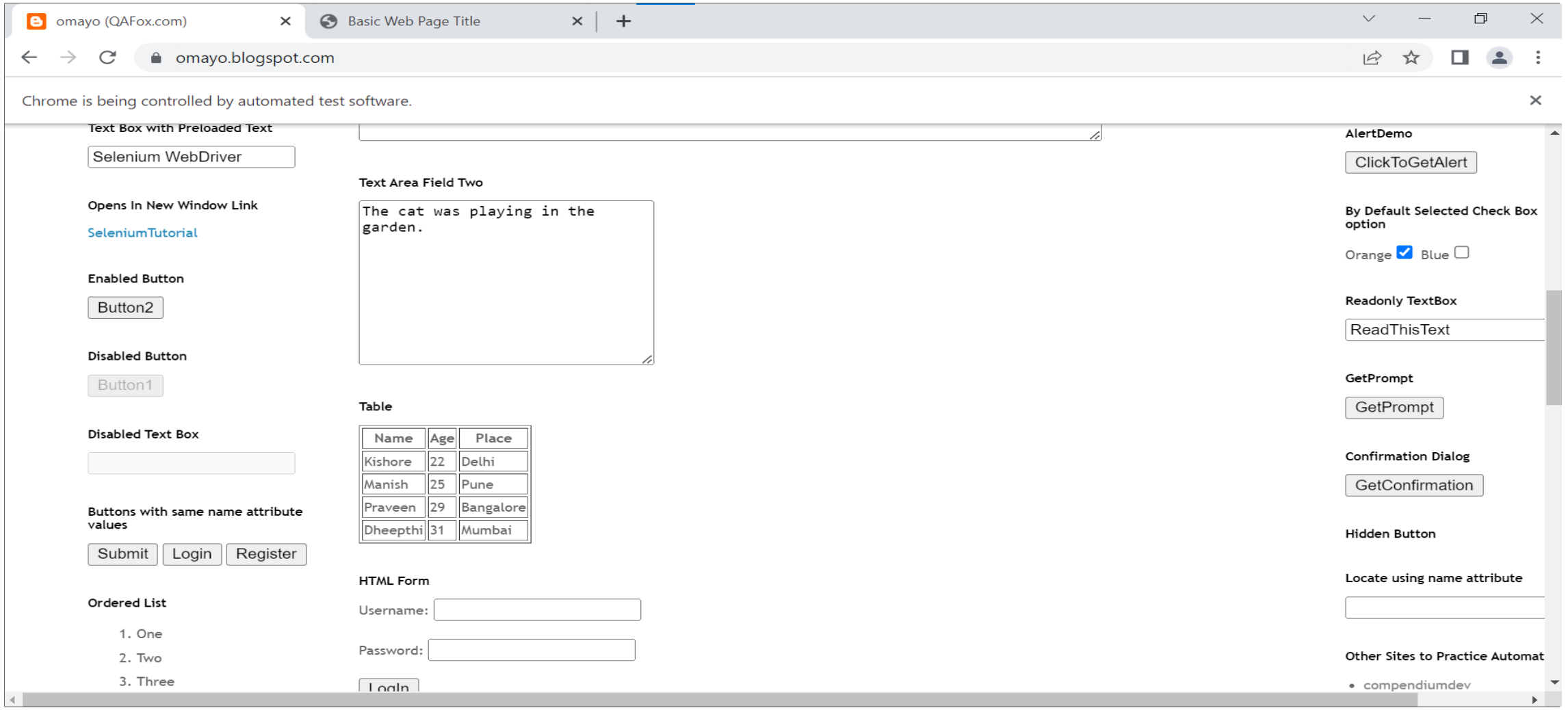
An Example Program using keyDown(), keyUp() and sendKeys() methods

```
Set <String> windowhandles = driver.getWindowHandles();
for(String handles : windowhandles)
{
driver.switchTo().window(handles);
}
Thread.sleep(3000);
System.out.println("Child Window is" + windowhandles);
driver.switchTo().window(parentWindowhandle);
}
}
```

Why do we need selenium waits?

Output



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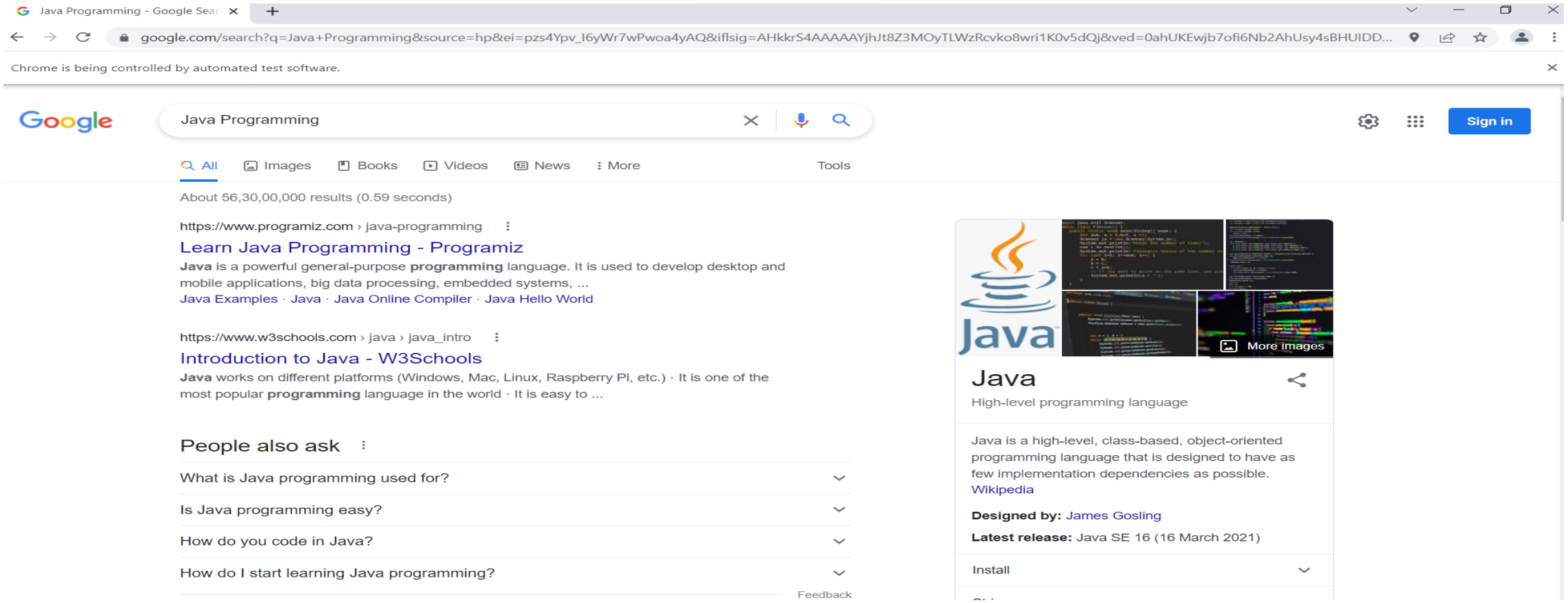
Program 1

```
public class Opengoole {

public static void main(String[] args) {
// TODO Auto-generated method stub
        System.setProperty("webdriver.chrome.driver","E:\\Testing\\chromedriver.exe");
        WebDriver driver=new ChromeDriver();
        driver.manage().timeouts().implicitlyWait(20, TimeUnit.SECONDS);
        driver.get("http://www.google.com");
        WebElement searchBox=driver.findElement(By.name("q"));
        searchBox.sendKeys("Java Programming"+Keys.ENTER);
}

}
```

Output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High-level programming language
Java is a high-level, class-based, object-oriented programming language that is designed to have as few implementation dependencies as possible.
Wikipedia
Designed by: James Gosling
Latest release: Java SE 16 (16 March 2021)
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