

Selenium

What is Selenium?

Selenium is an open-source tool used for automating web browsers. It provides a suite of tools and libraries that allow developers to automate interactions with web applications, such as clicking buttons, filling out forms, navigating between pages, and more. Selenium is widely used for **web testing**, but it can also be used for web scraping, automating repetitive tasks, and other browser-based automation tasks.

Selenium supports multiple programming languages, including **Python**, **Java**, **C#**, **Ruby**, and **JavaScript**, making it accessible to developers from different backgrounds.

Key Features of Selenium:

1. **Supports Multiple Browsers** – Works with Chrome, Firefox, Edge, Safari, etc.
2. **Cross-Platform** – Runs on Windows, macOS, and Linux.
3. **Supports Various Programming Languages** – Java, Python, C#, JavaScript, Ruby, etc.
4. **Automates Web UI Testing** – Useful for functional and regression testing.
5. **Integrates with Testing Frameworks** – Works with JUnit, TestNG, NUnit, etc.
6. **Headless Browser Execution** – Can run tests without opening a visible browser.

Selenium Components:

1. **Selenium WebDriver** – The main tool used for browser automation.
2. **Selenium IDE** – A browser extension for recording and replaying test scripts.
3. **Selenium Grid** – Runs tests on multiple machines and browsers in parallel.
4. **Selenium RC**-RC server interact with browser(It is not direct process).

First Install this dependency

```
<dependencies>
  <!-- https://mvnrepository.com/artifact/org.seleniumhq.selenium/selenium-java -->
  <dependency>
    <groupId>org.seleniumhq.selenium</groupId>
    <artifactId>selenium-java</artifactId>
    <version>4.28.0</version>

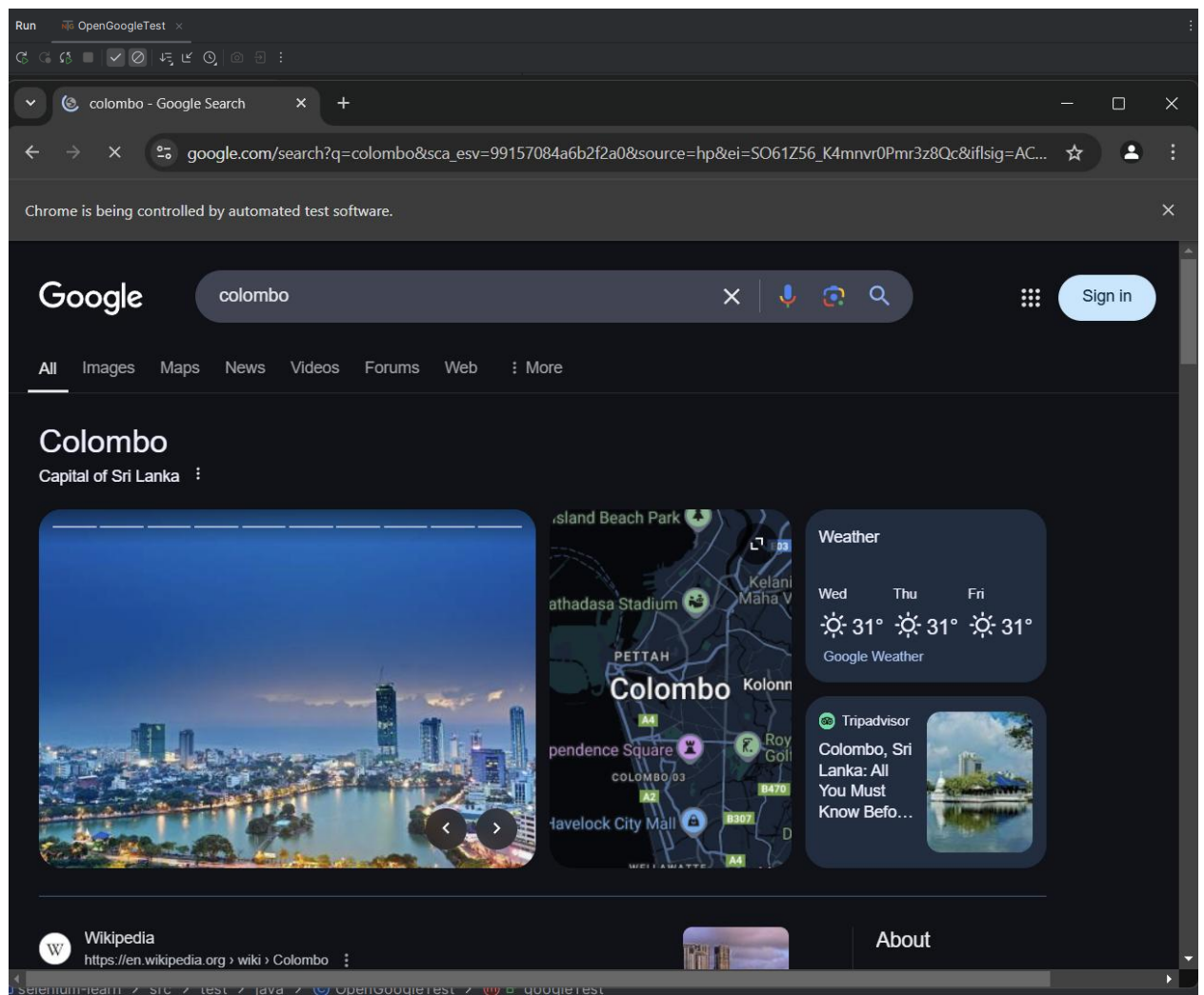
  </dependency>
  <!-- https://mvnrepository.com/artifact/org.testng/testng -->
  <dependency>
    <groupId>org.testng</groupId>
    <artifactId>testng</artifactId>
    <version>7.10.2</version>
    <scope>test</scope>
  </dependency>
</dependencies>
```

Launch Chrome Browsers using Selenium WebDriver

❖ Code

```
1 import org.openqa.selenium.By;
2 import org.openqa.selenium.Keys;
3 import org.openqa.selenium.WebDriver;
4 import org.openqa.selenium.chrome.ChromeDriver;
5 import org.testng.annotations.Test;
6
7 public class OpenGoogleTest {
8
9     @Test
10    public void googleTest(){
11        WebDriver driver = new ChromeDriver();
12        driver.get("https://www.google.com/");
13        driver.findElement(By.name("q")).sendKeys("colombo" + Keys.ENTER);
14        //driver.quit();
15    }
16 }
17
```

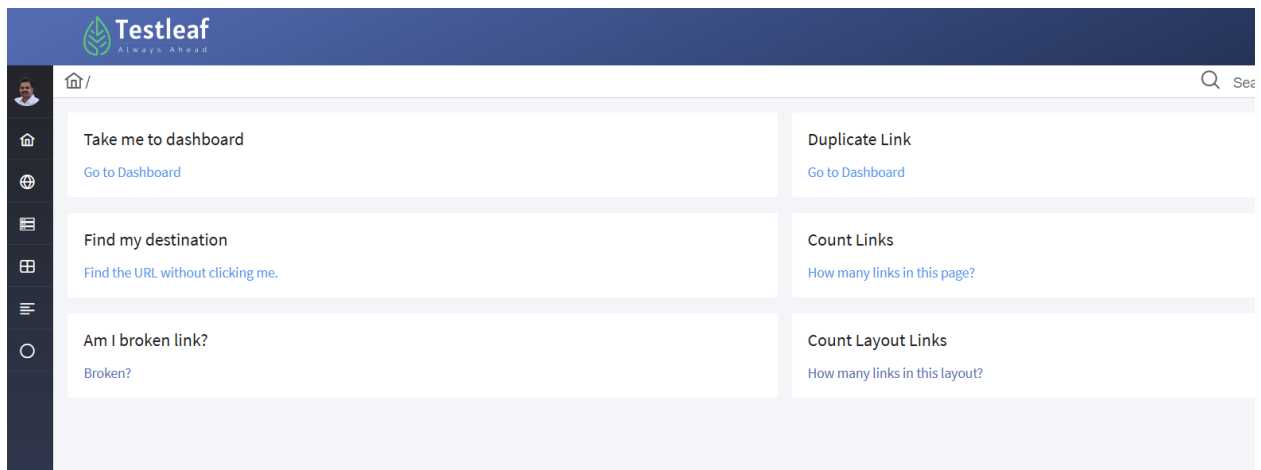
❖ Output



Selenium Locators:

- By ID = `By.id()`
- By Name = `By.name()`
- By Class Name = `By.className()`
- By Tag Name = `By.tagName()`
- By Link Text = `By.linkText()`
- By CSS Selector = `By.cssSelector()`
- By XParth = `By.xpath()`
- By Partial Text = `By.partialLinkText()`

❖ Working With Links



- Code

```

public class LinkExample {

    WebDriver driver; 4 usages

    @BeforeMethod
    public void OpenLinkTestPage(){
        driver = new ChromeDriver();
        driver.manage().window().maximize();
        driver.get("https://www.leafground.com/link.xhtml");
    }

    @Test
    public void LinkTest(){
        //Take me to dashbord
        WebElement HomeLink= driver.findElement(By.linkText("Go to Dashboard"));
        HomeLink.click();
    }
}

```

- Output

The screenshot shows the IntelliJ IDEA test runner interface. On the left, a tree view shows the test hierarchy: 'Rerun Failed Tests' (7 sec 931 ms), 'selenium-learn' (7 sec 931 ms), 'LinkExample' (7 sec 931 ms), and 'LinkTest' (3 sec 903 ms). On the right, the test results pane shows 'Tests passed: 1 of 1 test - 7 sec 931 ms'. Below this, it states 'Process finished with exit code 0'.

The screenshot displays the Testleaf dashboard. At the top, it says 'Chrome is being controlled by automated test software.' The dashboard features several key metrics: 'LEARNERS' at 25,000 (24% more than previous 12 months), 'VIDEO VIEWS' at 42,000/Month (47% more than previous months), and 'ACTIVITIES' at 1288/Day (19% more than previous months). Below these are four cards: '180+ Questions attended', '122 Assignments reviewed', '48 Office Walk-ins', and '288 EdTech Users Online'. The 'Weekly Tasks' section includes a checklist with items like 'Daily Quiz', 'Weekly Assignments', 'Weekly Coding', 'Doubt Clarification', 'Recordings View', and 'Resume Writing'. The 'Resolution Center' has fields for 'E-mail Address' and a 'Message' box. The 'Team' section lists members: Hari Radhakrishnan (Head - Projects), Saravanan (Head - Projects), and Mohan B. A notification bubble from IntelliJ IDEA Community Edition indicates 'Tests Passed 1 passed'.

❖ Working with TextBox

Xpath = //tagname[@attribute='value']

The screenshot displays the Testleaf web application interface. On the left, a sidebar contains navigation icons. The main content area is divided into two columns. The left column contains several test scenarios with input fields: 'Type your name' (with 'Babu Manickam' entered), 'Append Country to this City.' (with 'Chennai' entered), 'Verify if text box is disabled' (with 'Disabled' entered), 'Clear the typed text.' (with 'Can you clear me, please?' entered), 'Retrieve the typed text.' (with 'My learning is superb so far,' entered), 'Type email and Tab. Confirm control moved to next element.' (with 'Your email and tab' entered), and 'Type about yourself' (with 'About yourself' entered). The right column contains more test scenarios: 'Just Press Enter and confirm error message*' (with an empty field), 'Click and Confirm Label Position Changes' (with 'Username' entered), 'Type your name and choose the third option' (with 'Search' entered and a dropdown arrow), 'Type your DOB (mm/dd/yyyy) and confirm date chosen' (with an empty field and a calendar icon), 'Type number and spin to confirm value changed' (with an empty field and a spin button), 'Type random number (1-100) and confirm slider moves correctly' (with a slider bar), and 'Click and Confirm Keyboard appears' (with an empty field).

• Code

```
9 public class TextBoxExample {
22 @Test
23 public void TextBoxTest(){
24 //Type your name
25 WebElement name = driver.findElement(By.id("j_idt88:name"));
26 name.sendKeys(KeysToSend: "Sumeth Vindunu");
27
28 //Append country to this city
29 WebElement countryname =driver.findElement(By.id("j_idt88:j_idt91"));
30 countryname.clear();
31 countryname.sendKeys(KeysToSend: " Sri Lanka");
32
33 //verify is textbox is disable
34 boolean isDisable=driver.findElement(By.id("j_idt88:j_idt93")).isEnabled();
35 System.out.println("Is text box is enabled :"+isDisable);
36
37 //Clear the type text
38 //*[@id="j_idt88:j_idt95"]
39 WebElement clearetex =driver.findElement(By.xpath( xpathExpression: "//*[@id='j_idt88:j_idt95']"));
40 clearetex.clear();
41
42 //retview the type text
43 WebElement text=driver.findElement(By.id("j_idt88:j_idt97"));
44 String value=text.getAttribute( name: "value");
45 System.out.println("text inside the input is "+value);
46
47 //06) Type email and Tab. Confirm control moved to next element.
48 driver.findElement(By.id("j_idt88:j_idt99")).sendKeys( KeysToSend: "sumethvindunu@gmail.com" + Keys.TAB + "Confirmed control moved to next ele
49
50 }
```

- Output

