

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>

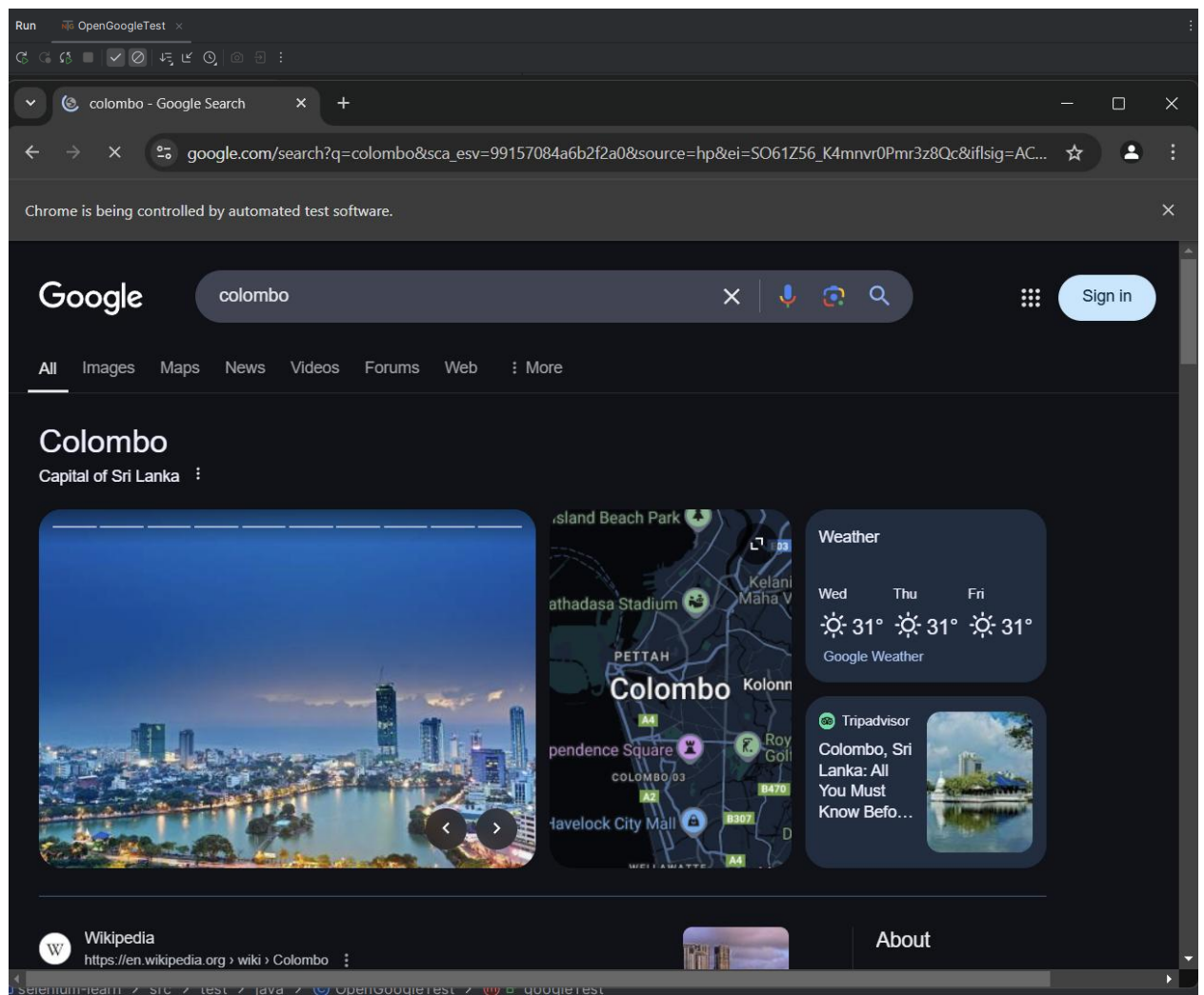
  </dependency>
  <!-- https://mvnrepository.com/artifact/org.testng/testng -->
  <dependency>
    <groupId>org.testng</groupId>
    <artifactId>testng</artifactId>
    <version>7.10.2</version>
    <scope>test</scope>
  </dependency>
</dependencies>
```

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
```

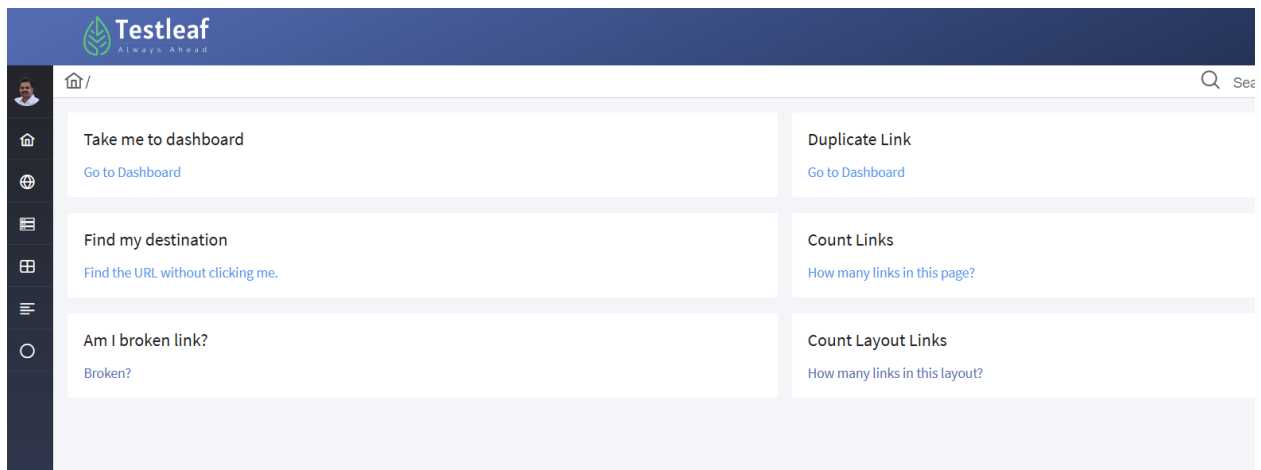
❖ Output



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 - Pe), and Mohan Ba (Head - To). A notification bubble from IntelliJ IDEA Community Edition indicates 'Tests Passed 1 passed'.