**Document complete instructions to execute automated tests**

Selenium Architecture

Selenium has a client-server architecture, and includes both client and server components.

Selenium Client includes:

* The WebDriver API, which you use to develop test scripts to interact with page and application elements
* The **RemoteWebDriver** class, which communicates with a remote Selenium server

Selenium Server includes:

* A server component, to receive requests from Selenium Client 's RemoteWebDriver class
* The WebDriver API, to run tests against web browsers on a server machine
* Selenium Grid, implemented by Selenium Server in command-line options for grid features, including a central hub and nodes for various environments and desired browser capabilities

There are **seven basic elements** of a Selenium test script, which apply to any test case and any application under test (AUT):

1. Create a WebDriver instance.
2. Navigate to a Web page.
3. Locate an HTML element on the Web page.
4. Perform an action on an HTML element.
5. Anticipate the browser response to the action.
6. Run tests and record test results using a test framework.
7. Conclude the test.

The following example includes code for all steps for Testcase#1. User provides file path to write output search titles as an argument to run the code.

**package** proquest;

**import** java.io.FileWriter;

**import** java.io.IOException;

**import** java.io.PrintWriter;

**import** java.util.List;

**import** java.util.concurrent.TimeUnit;

**import** org.openqa.selenium.By;

**import** org.openqa.selenium.WebDriver;

**import** org.openqa.selenium.WebElement;

**import** org.openqa.selenium.firefox.FirefoxDriver;

**public** **class** Test1Google {

**public** **static** **void** main(String[] args) **throws** IOException {

// **TODO** Auto-generated method stub

//Take file path as an argument

String fileName = args[0];

System.*setProperty*("webdriver.gecko.driver",

"C:/Users/vallagenah/Desktop/Garbage/geckodriver-v0.26.0-win64/geckodriver.exe");

**try** {

WebDriver driver = **new** FirefoxDriver();

//System.out.println(driver.getTitle());

driver.manage().window().maximize();

driver.get("https://www.google.com/");

driver.manage().timeouts().implicitlyWait(10, TimeUnit.***SECONDS***);

//search url: https://www.google.co.in/#q=ProQuest

WebElement element = driver.findElement(By.*name*("q")); //finding the web element using name locator

element.sendKeys("ProQuest\n"); // send also a "\n"

element.submit();

//Get search result and iterate the list to get all the search titles from that page

List<WebElement> results = driver.findElements(By.*xpath*("//span[@class='S3Uucc']"));

System.***out***.println(results.size());

PrintWriter writer = **new** PrintWriter(**new** FileWriter(fileName, **true**));

**for**(**int** i=0; i<results.size(); i++){

writer.printf("%s\r\n", results.get(i).getText());

}

writer.close();

}

**catch**(Exception e)

{

System.***out***.println(e.getMessage());

}

}

}

The following example includes code for all steps for Testcase#2. User provides file path as an argument to output the screenshot as an image file in the OS to run the code.

**package** proquest;

**import** java.io.File;

**import** java.io.IOException;

**import** java.util.List;

**import** java.util.concurrent.TimeUnit;

**import** org.apache.commons.io.FileUtils;

**import** org.openqa.selenium.By;

**import** org.openqa.selenium.OutputType;

**import** org.openqa.selenium.TakesScreenshot;

**import** org.openqa.selenium.WebDriver;

**import** org.openqa.selenium.WebElement;

**import** org.openqa.selenium.firefox.FirefoxDriver;

**public** **class** Test2QAScreenshot {

**public** **static** **void** takeSnapShot(WebDriver webdriver,String fileName) **throws** Exception{

//Convert web driver object to TakeScreenshot

TakesScreenshot scrShot =((TakesScreenshot)webdriver);

//Call getScreenshotAs method to create image file

File SrcFile=scrShot.getScreenshotAs(OutputType.***FILE***);

//Move image file to new destination

File DestFile=**new** File(fileName);

//Copy file at destination

FileUtils.*copyFile*(SrcFile, DestFile);

}

**public** **static** **void** main(String[] args) **throws** IOException {

// **TODO** Auto-generated method stub

String imagePath = args[0];

System.*setProperty*("webdriver.gecko.driver", "C:/Users/vallagenah/Desktop/Garbage/geckodriver-v0.26.0-win64/geckodriver.exe");

**try** {

WebDriver driver = **new** FirefoxDriver();

driver.manage().window().maximize();

driver.get("https://www.google.com/");

driver.manage().timeouts().implicitlyWait(10, TimeUnit.***SECONDS***);

//Search url: https://www.google.co.in/#q=ProQuest

WebElement element = driver.findElement(By.*name*("q")); //finding the web element using name locator

element.sendKeys("ProQuest\n"); // send also a "\n"

element.submit();

//Get search result links

List<WebElement> results = driver.findElements(By.*xpath*("//cite[@class='iUh30']"));

//get 1st result's URL

String proquest\_url=results.get(0).getText();

driver.get("https://"+proquest\_url+"/");

driver.manage().timeouts().implicitlyWait(10, TimeUnit.***SECONDS***);

//Click on search icon

driver.findElement(By.*xpath*("/html/body/div[1]/nav[2]/div/div[2]/ul[1]/li[8]/a/i")).click();

//type qa to text box

driver.findElement(By.*xpath*("/html/body/div[1]/nav[2]/div/div[2]/ul[1]/li[8]/ul/li/form/div/span[1]/input[2]")).sendKeys("QA");

driver.findElement(By.*xpath*("/html/body/div[1]/nav[2]/div/div[2]/ul[1]/li[8]/ul/li/form/div/span[2]/button/i")).click();

//Call take screenshot function

*takeSnapShot*(driver, imagePath) ;

System.***out***.println("Snapshot saved in path: "+imagePath);

}

**catch**(Exception e)

{

System.***out***.println(e.getMessage());

}

}

}