

Testing with Selenium For Beginners

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Introduction to Selenium

4/11/17

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1. Introduction of Selenium

1.1. What is Selenium?

Selenium is a set of different software tools each with a different approach to supporting test automation. Most Selenium QA Engineers focus on the one or two tools that most meet the needs of their project, however learning all the tools will give you many different options for approaching different test automation problems. The entire suite of tools results in a rich set of testing functions specifically geared to the needs of testing of web applications of all types. These operations are highly flexible, allowing many options for locating UI elements and comparing expected test results against actual application behavior. One of Selenium's key features is the support for executing one's tests on multiple browser platforms.

1.2. Supported Platforms

- Windows
- OS X
- Linux
- Solaris

1.3. Supported Languages

- Java
- C#
- Ruby
- Python
- PHP
- Perl

1.4. Supported Browsers

- Internet Explorer
- Mozilla Firefox
- Google Chrome
- Safari

For more visit: <http://www.seleniumhq.org/>

2. Steps to install and configure Selenium

2.1. Install Java

[Java TV](#)
[New to Java](#)
[Community](#)
[Java Magazine](#)

- Java Developer resources. From your Oracle account, select **subscriptions**, expand **Technology**, and subscribe to **Java**.
- Java Developer Day hands-on workshops (free) and other events
- Java Magazine

JDK 8u121 checksum

Java SE Development Kit 8u121

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Product / File Description	File Size	Download
Linux ARM 32 Hard Float ABI	77.86 MB	jdk-8u121-linux-arm32-vfp-hflt.tar.gz
Linux ARM 64 Hard Float ABI	74.83 MB	jdk-8u121-linux-arm64-vfp-hflt.tar.gz
Linux x86	162.41 MB	jdk-8u121-linux-i586.rpm
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Windows x64	195.51 MB	jdk-8u121-windows-x64.exe

Java SE Development Kit 8u121 Demos and Samples Downloads

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Linux ARM 64 Hard Float ABI	9.94 MB	jdk-8u121-linux-arm64-vfp-hflt-demos.tar.gz
Linux x86	52.66 MB	jdk-8u121-linux-i586-demos.rpm
Linux x86	52.51 MB	jdk-8u121-linux-i586-demos.tar.gz
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Linux x64	52.55 MB	jdk-8u121-linux-x64-demos.tar.gz
Mac OS X	53.09 MB	jdk-8u121-macosx-x86_64-demos.zip
Solaris SPARC 64-bit	13.61 MB	jdk-8u121-solaris-sparcv9-demos.tar.Z
Solaris SPARC 64-bit	9.33 MB	jdk-8u121-solaris-sparcv9-demos.tar.gz

Starting with the April 2014 Oracle JDK release, all JDK 8u121 and JRE 8u121 versions will treat JARs signed with MD5 as unsigned. Learn more and view testing instructions.

For more information on cryptographic algorithm support, please check the JRE and JDK Crypto Roadmap.

- Installation Instructions
- Release Notes
- Oracle License
- Java SE Products
- Third Party Licenses
- Certified System Configurations
- Readme Files
 - JDK ReadMe
 - JRE ReadMe

JDK
[DOWNLOAD](#)

Server JRE
[DOWNLOAD](#)

JRE
[DOWNLOAD](#)

Which Java package do I need?

- Software Developers: JDK** (Java SE Development Kit). For Java Developers. Includes a complete JRE plus tools for developing, debugging, and monitoring Java applications.
- Administrators running applications on a server: Server JRE** (Server Java Runtime Environment). For deploying Java applications on servers. Includes tools for JVM monitoring and tools commonly required for server applications, but does not include browser integration (the Java plug-in), auto-update, nor an installer. [Learn more](#)
- End user running Java on a desktop: JRE** (Java Runtime Environment). Covers most end-users needs. Contains everything required to run Java applications on your system.

Java SE 7 and Java SE 6 updates

Updates for Java SE 7 released after April 2015, and updates for Java SE 6 released after April 2013 are only available to Oracle Customers through [My Oracle Support](#) (requires support login).

Java SE Advanced offers users commercial features, access to critical bug fixes, security fixes.

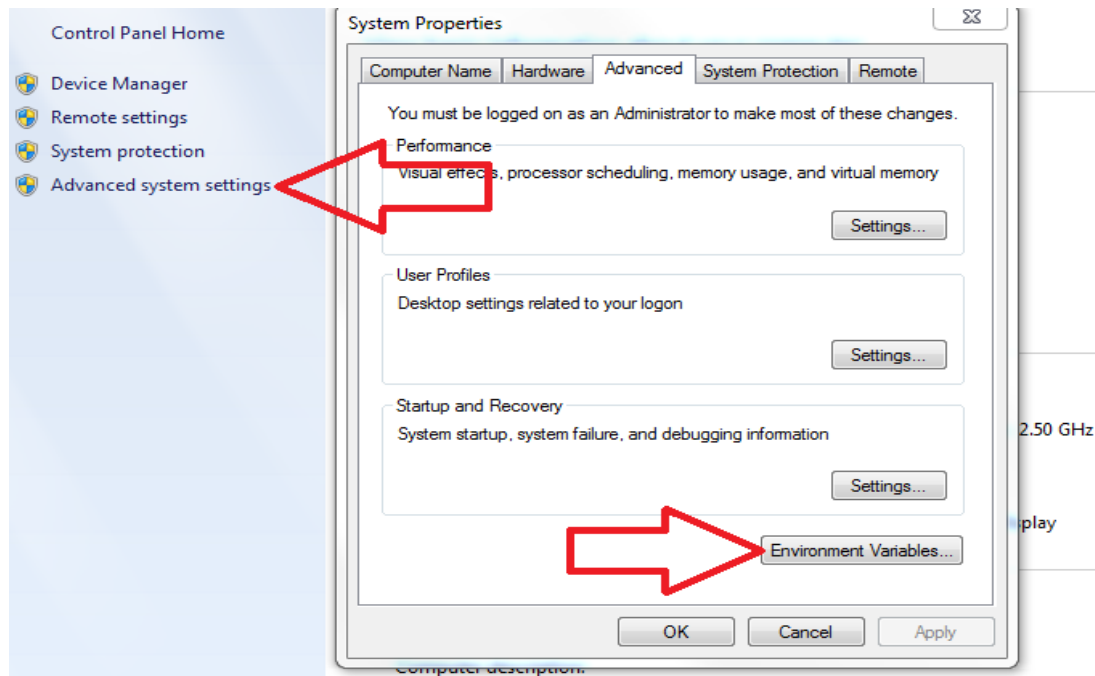
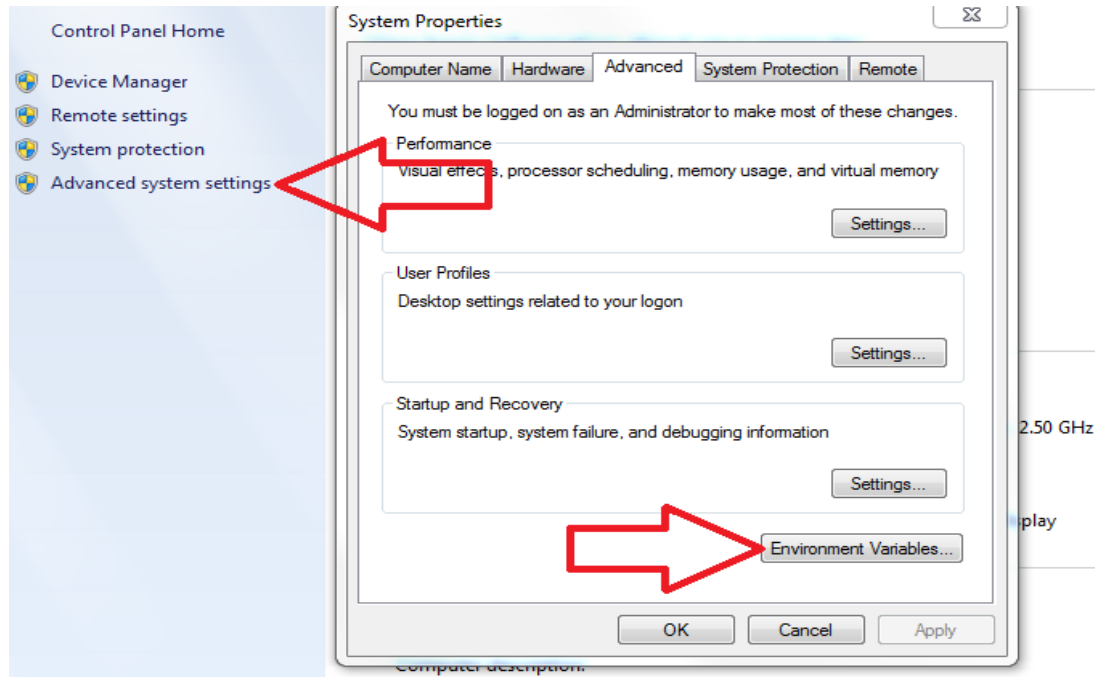
[Java Cn Ia](#)

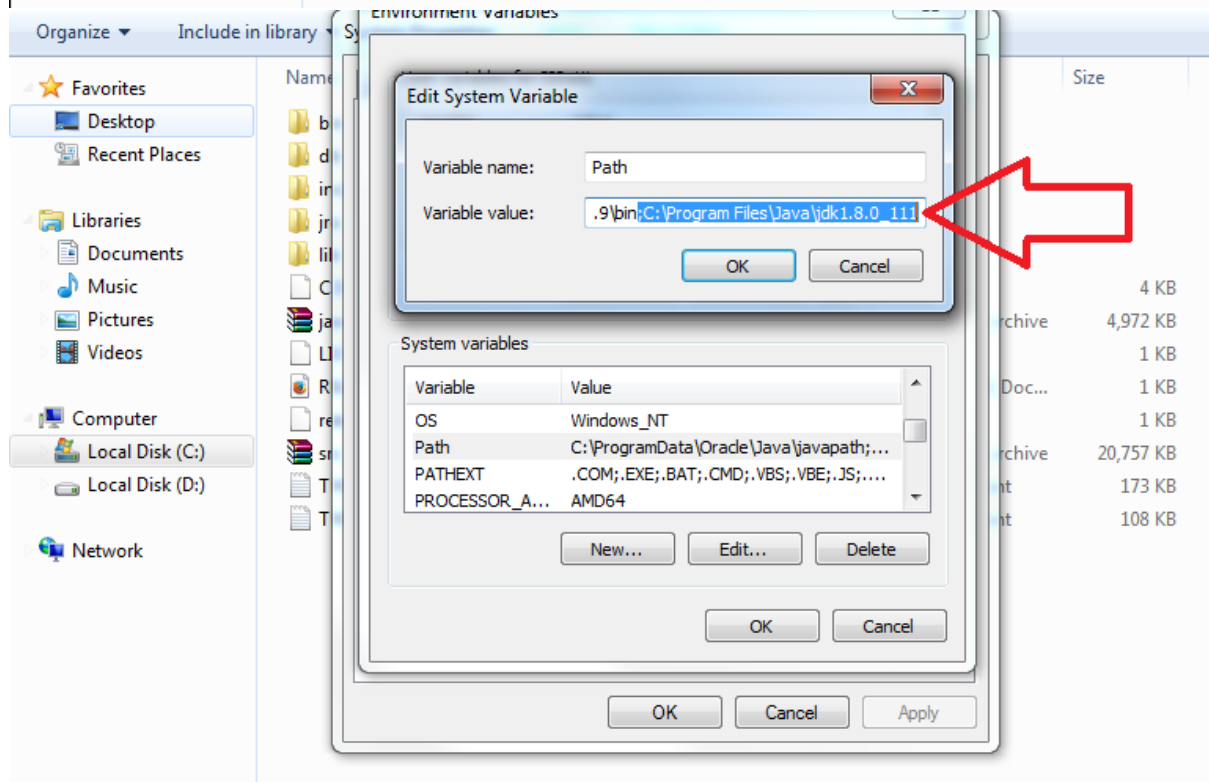
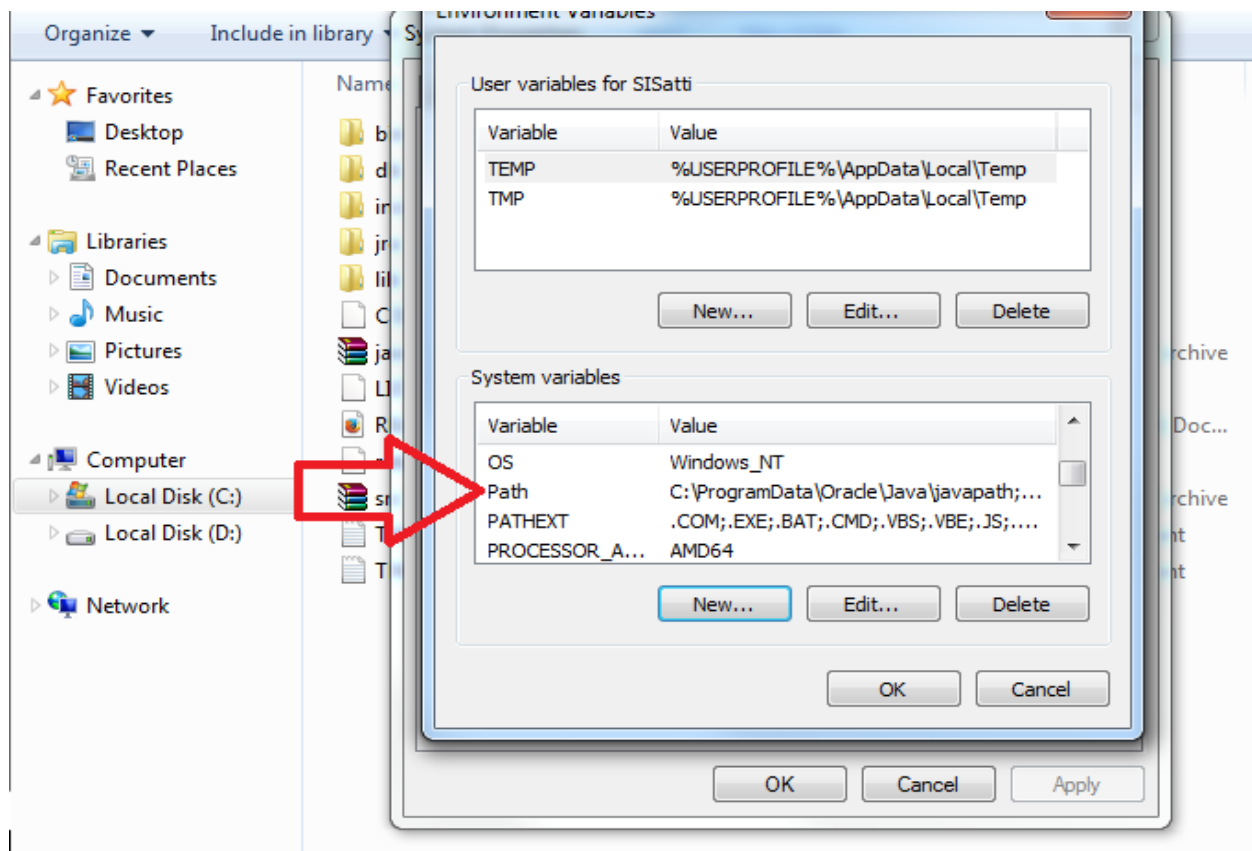
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- [Java.com](#)

[Tutorials](#)

[Java.com](#)

2.2. Set Environment Variables (JAVA_HOME and Bin Path)





2.3. [Install Eclipse](#) Note: Download java compatible eclipse version

2.4. [Download Selenium Jars](#)

See who supports the Selenium project.



Selenium Client & WebDriver Language Bindings

In order to create scripts that interact with the Selenium Server (Selenium RC, Selenium Remote WebDriver) or create local Selenium WebDriver scripts, you need to make use of language-specific client drivers. These languages include both 1.x and 2.x style clients.

While language bindings for [other languages exist](#), these are the core ones that are supported by the main project hosted on google code.

Language	Client Version	Release Date			
Java	3.0.1	2016-10-18	Download	Change log	Javadoc
C#	3.0.0	2016-10-13	Download	Change log	API docs
Ruby	3.0.0	2016-10-13	Download	Change log	API docs
Python	Selenium 3.0.2	2016-11-29	Download	Change log	API docs
Javascript (Node)	3.0.0-beta-2	2016-08-07	Download	Change log	API docs

C# NuGet

NuGet latest release is 3.0.0, Released on 2016-10-13

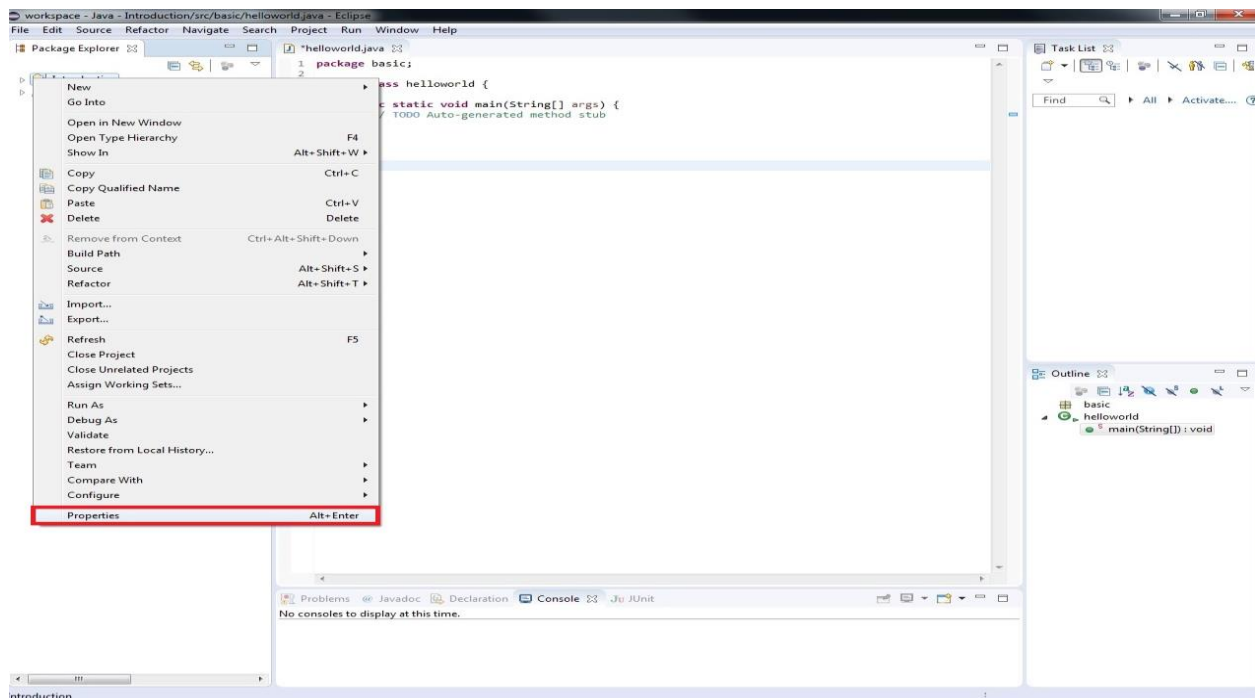
- [RC](#)
- [WebDriver](#)
- [WebDriverBackedSelenium](#)
- [Support](#)

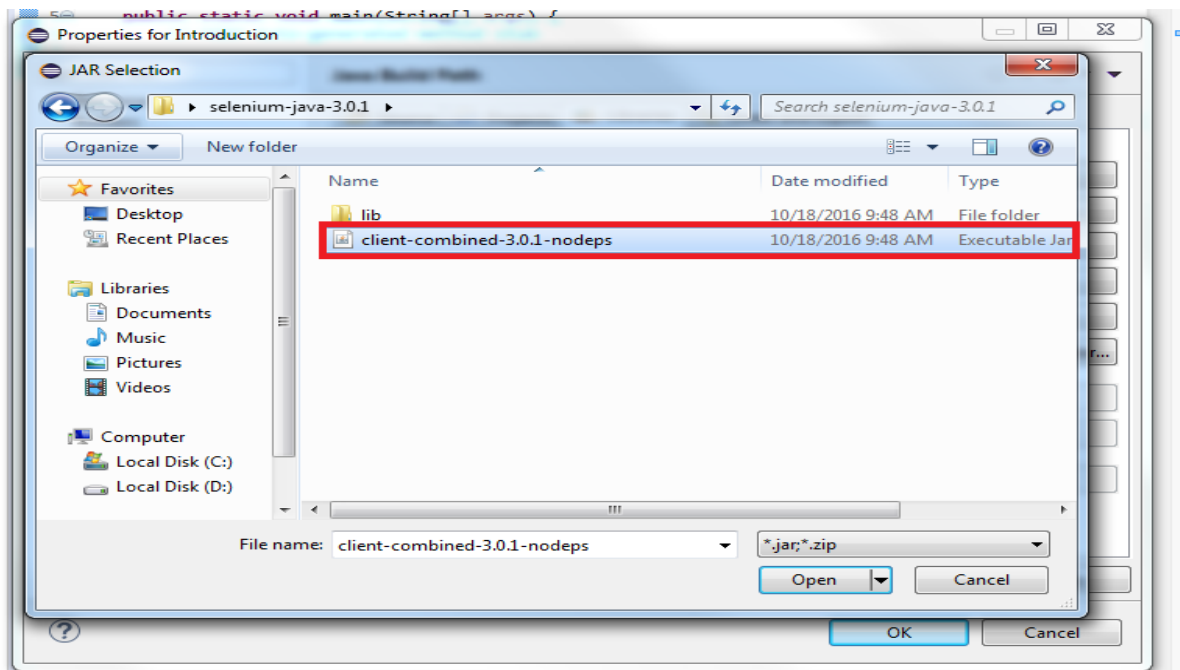
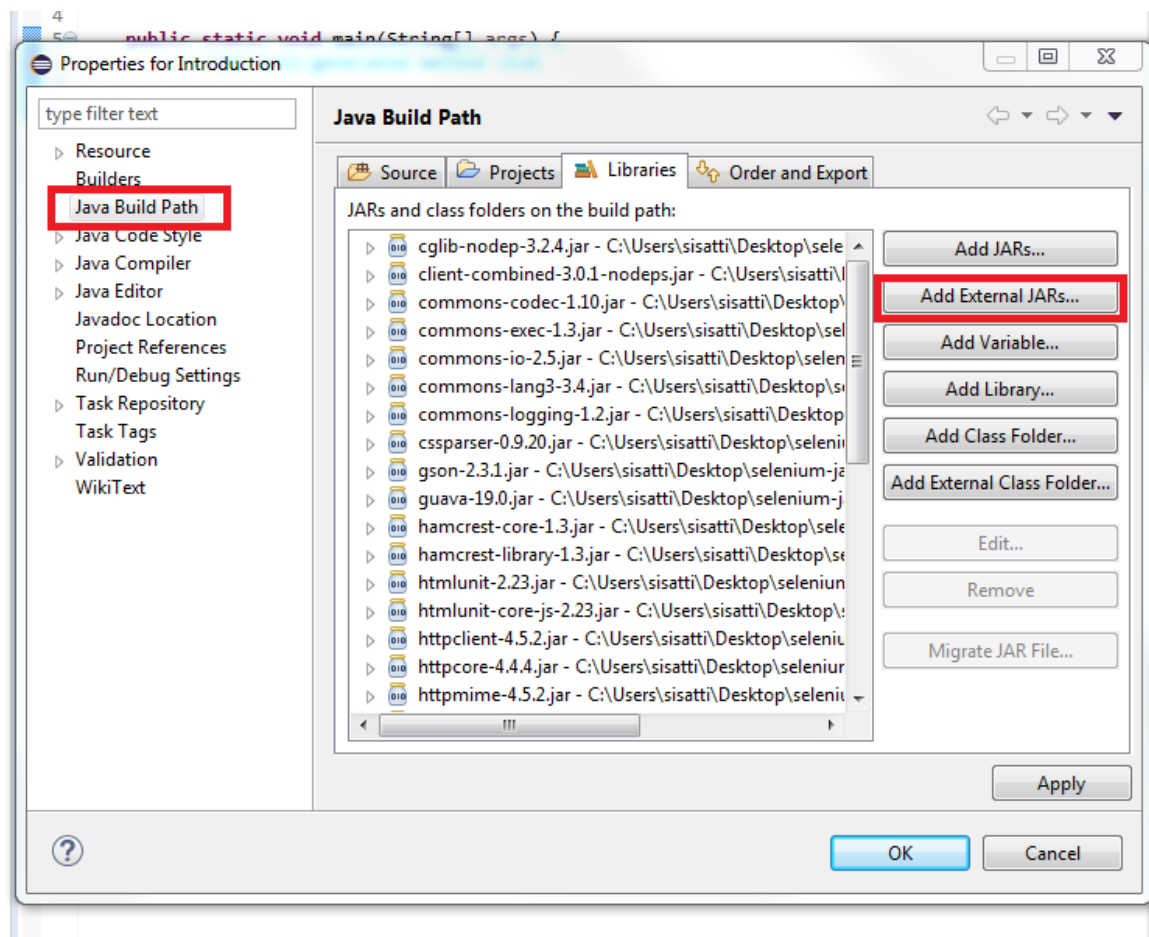
SafariDriver - DEPRECATED - use Apple's SafariDriver with Safari 10+

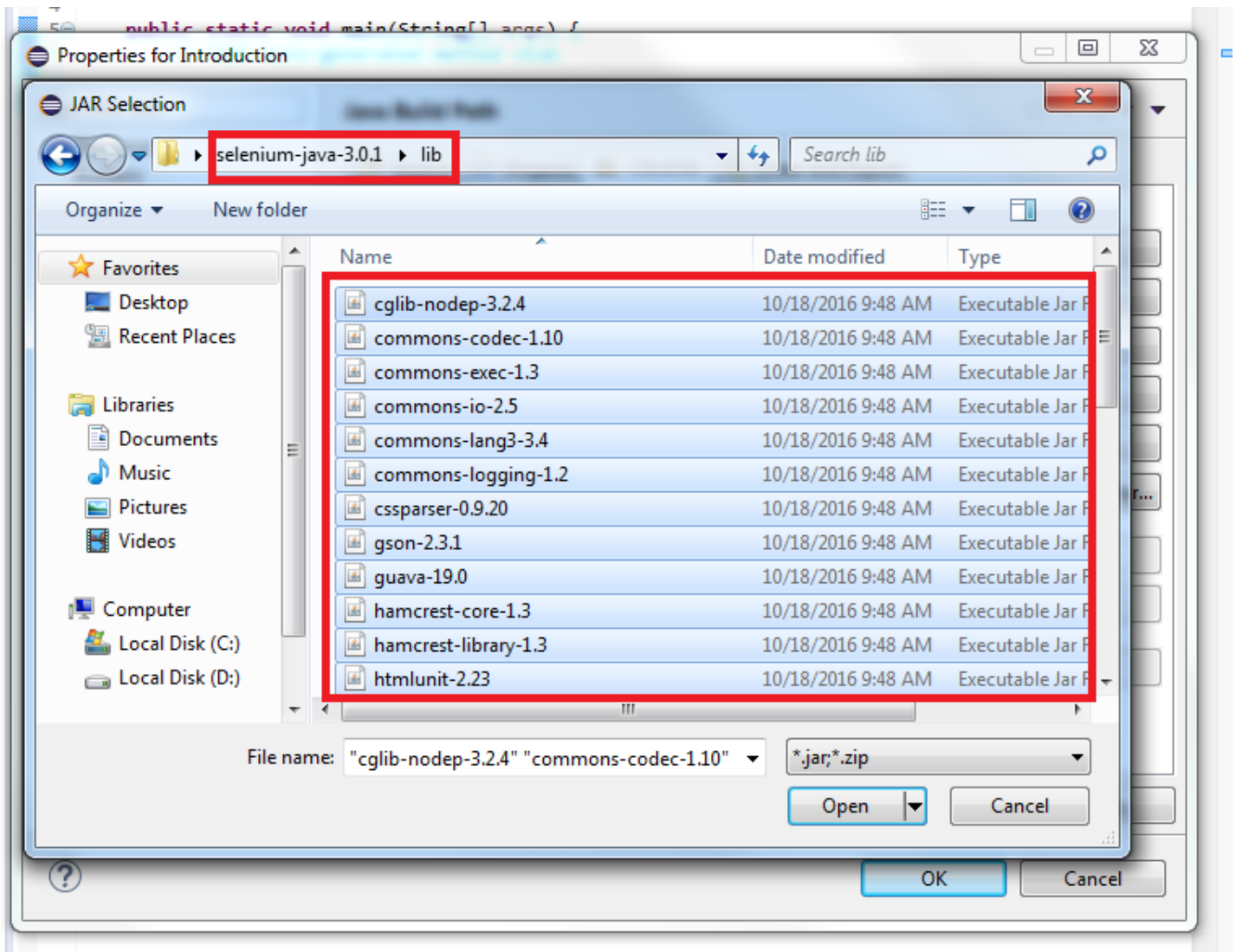
SafariDriver now requires manual installation of the extension prior to automation

- Latest release [2.48.0](#)
- [Wiki Page](#)

2.5. Import Downloaded Jars in Java Project (Create java project before)







3. Initialization of Third Party Drivers

3.1. Initialization of Firefox web driver







If you are using selenium 3 release with Firefox 48 or above version, you have to configure GeckoDriver.


URL: <https://github.com/mozilla/geckodriver/releases/> (download compatible version)


Fixed



- Check for single-character key codes in action sequences now counts characters instead of bytes

Downloads


 geckodriver-v0.13.0-arm7hf.tar.gz	1.94 MB
 geckodriver-v0.13.0-linux32.tar.gz	1.78 MB
 geckodriver-v0.13.0-linux64.tar.gz	1.72 MB
 geckodriver-v0.13.0-macos.tar.gz	1.2 MB
 geckodriver-v0.13.0-win32.zip	2.09 MB
 geckodriver-v0.13.0-win64.zip	2.1 MB

 [Source code \(zip\)](#)

 [Source code \(tar.gz\)](#)

 v0.12.0
 45f1245

v0.12.0

 AutomatedTester released this 20 days ago · 6 commits to master since this release

Unzip downloaded file and provide its full path as

```
System.SetProperty("webdriver.gecko.driver", "full path");
```

3.1.1. Sample Code

```
package basic;
```

```
import org.openqa.selenium.WebDriver;
import org.openqa.selenium.firefox.FirefoxDriver;
import org.openqa.selenium.remote.service.DriverCommandExecutor;
```

```
public class Firefox {
    public static void main(String[] args) {
        System.setProperty("webdriver.gecko.driver", "C:\\geckodriver.exe");
        WebDriver driver = new FirefoxDriver();
        driver.get("https://www.thenews.com.pk/");
        System.out.println(driver.getTitle());
        System.out.println(driver.getCurrentUrl());
        driver.close();
    }
}
```

```
}
}
```

3.2. Initialization of Chrome web driver

Open following link: <http://www.seleniumhq.org/download/>

The CFP for Selenium Conf 2017 is now OPEN! Learn more about the conference and how to submit your talk [HERE](#).
Download [previous versions here](#).

Third Party Drivers, Bindings, and Plugins

Selenium can be extended through the use of plugins. Here are a number of plugins created and maintained by third parties. For more information on how to create your own plugin or have it listed, consult the docs.

Please note that these plugins are not supported, maintained, hosted, or endorsed by the Selenium project. In addition, be advised that the plugins listed below are not necessarily licensed under the Apache License v.2.0. Some of the plugins are available under another free and open source software license; others are only available under a proprietary license. Any questions about plugins and their license of distribution need to be raised with their respective developer(s).

Third Party Browser Drivers NOT DEVELOPED by seleniumhq

Browser	Version	Change Log	Issue Tracker	Implementation Status	Release Date
Mozilla GeckoDriver			issue tracker		
Google Chrome Driver	2.25	change log	issue tracker	selenium wiki page	Released 2016-10-22
Opera	0.2.2		issue tracker	selenium wiki page	Released 2014-11-06
GhostDriver	(PhantomJS)		issue tracker	SeConf talk	
Microsoft Edge Driver			issue tracker	Implementation Status	
SafariDriver			issue tracker		
Windows Phone			issue tracker		
Windows Phone	4.14.028.10		issue tracker		Released 2013-11-23
Selendroid - Selenium for Android			issue tracker		

Download latest version.

3.2.1. Sample Code

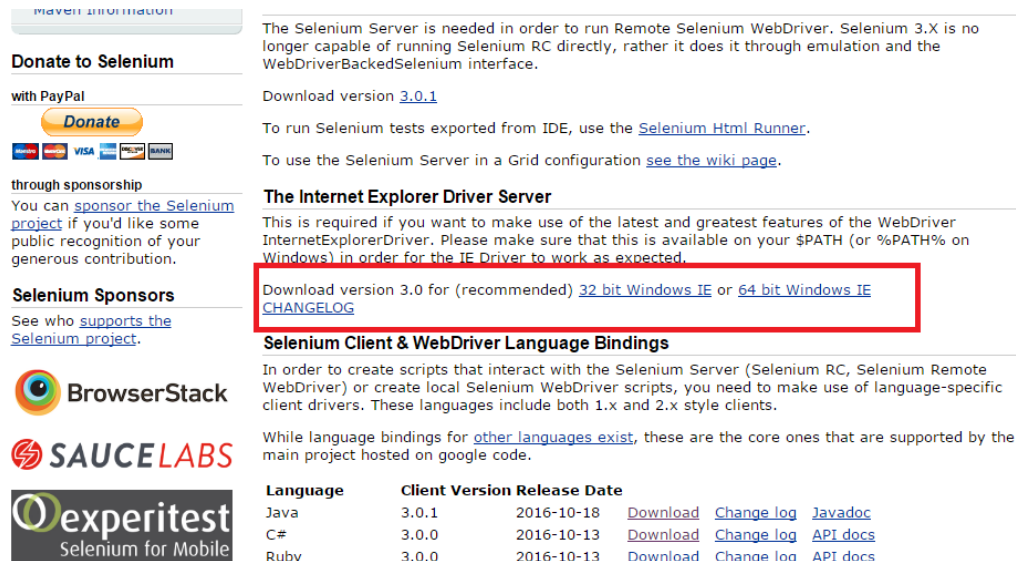
```
package basic;

import org.openqa.selenium.WebDriver;
import org.openqa.selenium.chrome.ChromeDriver;
import org.openqa.selenium.remote.service.DriverCommandExecutor;
public class Chrome {

    public static void main(String[] args) {
        System.setProperty("webdriver.chrome.driver", "C:\\chromedriver.exe");
        WebDriver driver=new ChromeDriver();
        driver.get("https://www.thenews.com.pk/");
    }
}
```

3.3. Initialization of Internet Explorer web driver

Visit: <http://www.seleniumhq.org/download/> and download latest version from “The Internet Explorer Driver Server”.



The Selenium Server is needed in order to run Remote Selenium WebDriver. Selenium 3.X is no longer capable of running Selenium RC directly, rather it does it through emulation and the WebDriverBackedSelenium interface.

Download version [3.0.1](#)

To run Selenium tests exported from IDE, use the [Selenium Html Runner](#).

To use the Selenium Server in a Grid configuration [see the wiki page](#).

The Internet Explorer Driver Server

This is required if you want to make use of the latest and greatest features of the WebDriver InternetExplorerDriver. Please make sure that this is available on your \$PATH (or %PATH% on Windows) in order for the IE Driver to work as expected.

Download version 3.0 for (recommended) [32 bit Windows IE](#) or [64 bit Windows IE](#)
[CHANGELOG](#)

Selenium Client & WebDriver Language Bindings

In order to create scripts that interact with the Selenium Server (Selenium RC, Selenium Remote WebDriver) or create local Selenium WebDriver scripts, you need to make use of language-specific client drivers. These languages include both 1.x and 2.x style clients.

While language bindings for [other languages exist](#), these are the core ones that are supported by the main project hosted on google code.

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Java	3.0.1	2016-10-18	Download	Change log	Javadoc
C#	3.0.0	2016-10-13	Download	Change log	API docs
Ruby	3.0.0	2016-10-13	Download	Change log	API docs

3.3.1. Sample Code

package basic;

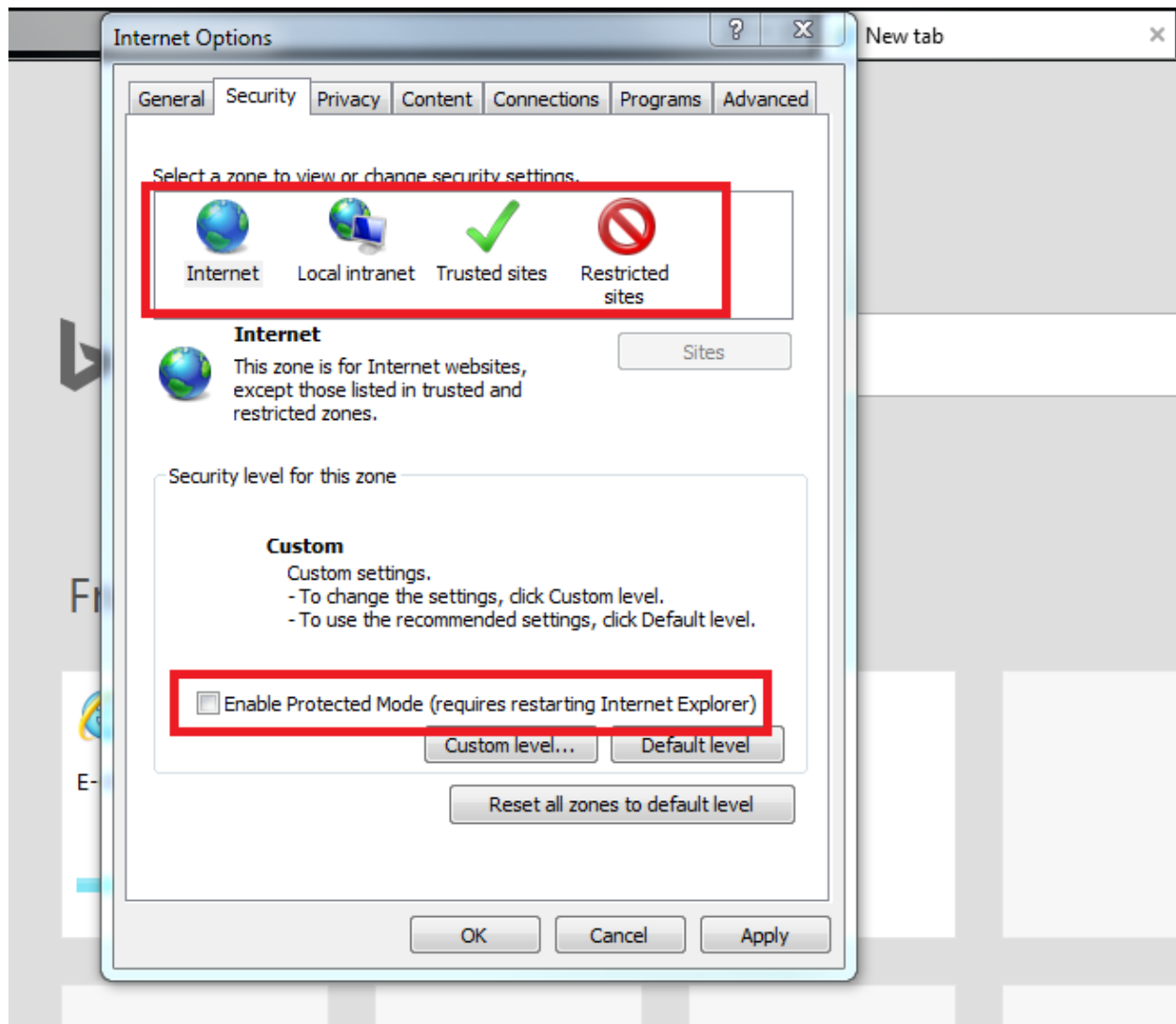
```
import org.openqa.selenium.WebDriver;
import org.openqa.selenium.ie.InternetExplorerDriver;
import org.openqa.selenium.remote.service.DriverCommandExecutor;

public class IE {

    public static void main(String[] args) {
        System.setProperty("webdriver.ie.driver", "C:\\\\IEDriverServer.exe");
        WebDriver driver=new InternetExplorerDriver();
        driver.get("https://www.thenews.com.pk/");
    }
}
```

If you are getting errors. Do following steps.

Open IE > Settings > Internet Options > Security (Un-Check option “Enable Protected Mode” for all zones)



3.4. Initialization of Safari web driver

To initialize safari driver install latest release from: <http://www.seleniumhq.org/download/>

- [WebDriverBackedSelenium](#)
- [Support](#)

SafariDriver - DEPRECATED - use Apple's SafariDriver with Safari 10+

SafariDriver now requires manual installation of the extension prior to automation

- Latest release [2.48.0](#)
- [Wiki Page](#)

Selenium IDE

Selenium IDE is a Firefox plugin which records and plays back user interactions with the browser. Use this to either create simple scripts or assist in exploratory testing. It can also export Remote Control or WebDriver scripts, though they tend to be somewhat brittle and should be overhauled into some sort of Page Object-y structure for any kind of resiliency.

Download latest released version [from addons.mozilla.org](http://addons.mozilla.org) or view the [Release Notes](#) and then [install](#)

For more visit: <https://hiromia.blogspot.com/2015/01/how-to-run-chrome-and-ie-browser-in.html>

4. Locator Tools and Techniques

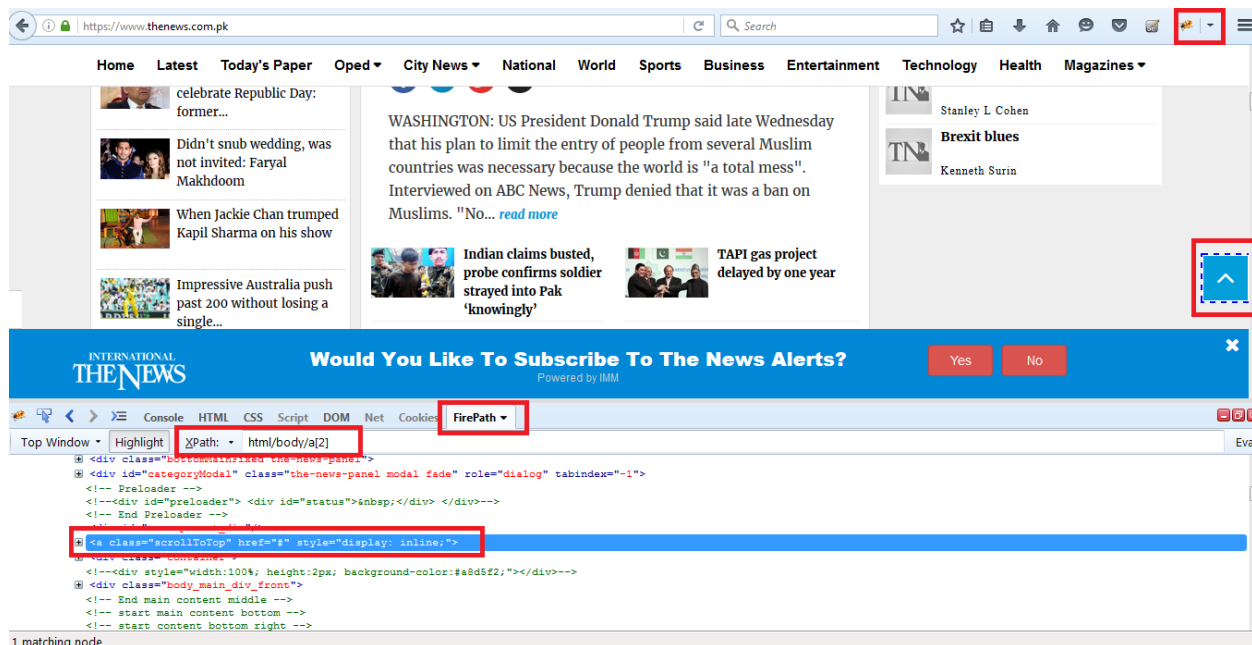
4.1. Tools to Identify Locators

4.1.1. Add-ons for Firefox

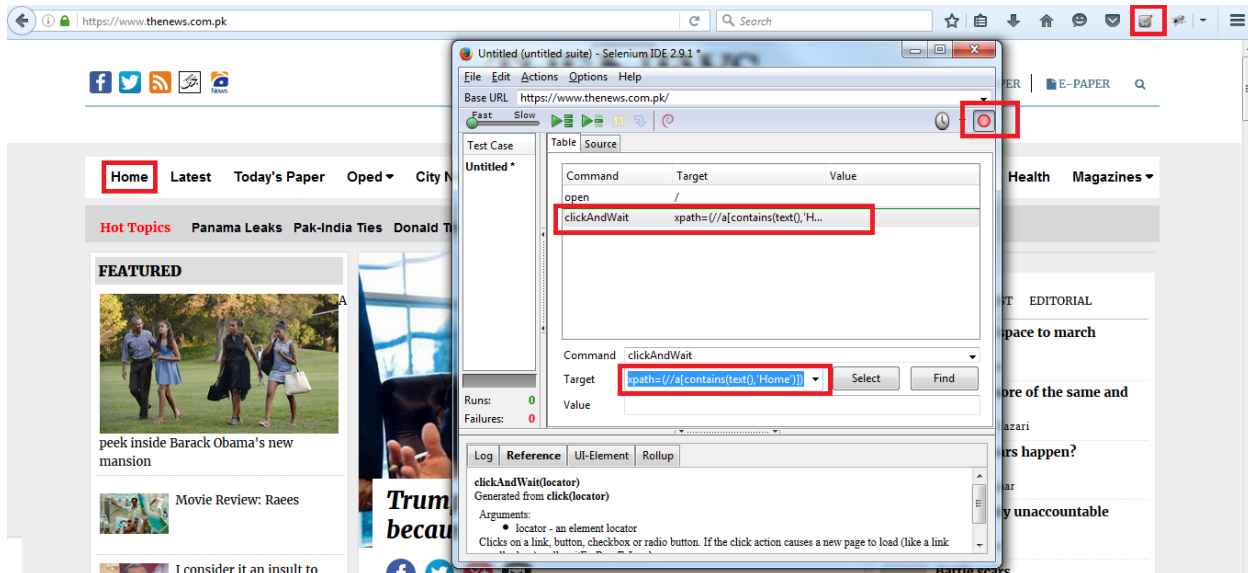
- Fire Bug (<https://addons.mozilla.org/en-US/firefox/addon/firebug/>)



- Fire Path (<https://addons.mozilla.org/en-US/firefox/addon/firepath/>)



- Selenium IDE (<http://www.seleniumhq.org/projects/ide/>)



4.1.2. Developer tool for Chrome and IE

Shortcut key for Chrome: Ctrl+Shift+I

F12 for IE

4.2. Locator Techniques

4.2.1. Xpath

4.2.2. ID

4.2.3. ClassName

4.2.4. Name

4.2.5. LinkText

4.2.6. CssSelector

4.2.7. Partial Link Text

4.2.8. Sample Code Using Locators

```
package basic;
```

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

```
public class locator {
```

```
    public static void main(String[] args) {
        // TODO Auto-generated method stub
        System.setProperty("webdriver.gecko.driver", "C:\\\\geckodriver.exe");
```



```

WebDriver driver = new FirefoxDriver();
driver.get("https://www.thenews.com.pk/");

driver.findElement(By.xpath("//*[@id='header']/div/div[2]/div[2]/div/ul/li[3]/a")).click();
driver.findElement(By.xpath("//*[@id='search']")).sendKeys("abc");
driver.findElement(By.name("search_text")).click();
driver.findElement(By.xpath("//*[@id='navbar']/ul/li[1]/a")).click();
driver.findElement(By.LinkText("THIRD-PARTY ADVERTISEMENT POLICY")).click();
driver.close();

}

}

```

4.2.9. Customized Xpath Using attributes

You can write customized xpath by using tagname and attributes with their values.

```
<input type="submit" jsaction="sf.chk" name="btnK" aria-label="Google Search"
value="Google Search"/>
```

You can write customized xpath of following source code as:

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

```
//input[@name='btnK']
```

```
//*[@name='btnK']
```

4.2.10. Customized CSS Selector

You can write customized css selector by using class name.

```
<input id="search" class="search_field" type="text" autocomplete="off" name="search"/>
```

Template for customized css selector is:

```
[attribute='value']
```

```
[class=' search_field']
```

Use “#” for Css id and “.” for class.

```
driver.findElement(By.CssSelector("#search_text")).click();
```

```
driver.findElement(By.CssSelector(".search_text")).click();
```

5. Techniques to Automate Web UI

5.1. How to Pass Values in Input fields (Sample Code)

```
package basic;

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

public class Testing {
    public static void main(String[] args) {
        System.setProperty("webdriver.gecko.driver", "C:\\\\geckodriver.exe");
        WebDriver driver = new FirefoxDriver();
        driver.get("http://www.whichairline.com/");
        driver.findElement(By.xpath("//*[@id='location-input-div-originData']/div")).click();
        driver.findElement(By.xpath("//*[@id='location-input-div-originData']/div")).sendKeys("Islamabad, Pakistan");
        driver.close();
    }
}
```

5.2. Checkbox handling (Sample Code)

```
package basic;

import org.openqa.selenium.By;
import org.openqa.selenium.WebDriver;
import org.openqa.selenium.WebElement;
import org.openqa.selenium.firefox.FirefoxDriver;
import org.openqa.selenium.support.ui.ExpectedConditions;
import org.openqa.selenium.support.ui.WebDriverWait;

public class Checkboxes {

    public static void main(String[] args) throws InterruptedException {
        // TODO Auto-generated method stub
        System.setProperty("webdriver.gecko.driver", "C:\\\\geckodriver.exe");
        WebDriver driver = new FirefoxDriver();
        driver.get("http://www.whichairline.com/");

        driver.findElement(By.id("general-navigation-hotels-selenium")).click();
        WebElement element = (new WebDriverWait(driver, 10)).until(ExpectedConditions.elementToBeClickable(By.xpath("//*[@id='frm-hotelsForm-form']/fieldset/div/div[1]/div[2]/div[1]")));
        System.out.println(driver.findElement(By.xpath("//*[@id='frm-hotelsForm-form']/fieldset/div/div[1]/div[2]/div[1]")).isSelected());
        driver.findElement(By.xpath("//*[@id='frm-hotelsForm-form']/fieldset/div/div[1]/div[2]/div[1]")).click();
    }
}
```

```

        System.out.println(driver.findElement(By.xpath("//*[@id='frm-hotelsForm-form']/fieldset/div/div[1]/div[2]/div[1]")).isSelected());
        driver.close();
    }
}

```

5.3. Dropdown Handling (Sample Code)

```

package basic;

import org.openqa.selenium.By;
import org.openqa.selenium.WebDriver;
import org.openqa.selenium.WebElement;
import org.openqa.selenium.firefox.FirefoxDriver;
import org.openqa.selenium.support.ui.ExpectedConditions;
import org.openqa.selenium.support.ui.Select;
import org.openqa.selenium.support.ui.WebDriverWait;

public class StaticDropDown {

    public static void main(String[] args) throws InterruptedException {
        // TODO Auto-generated method stub
        System.setProperty("webdriver.gecko.driver", "C:\\\\geckodriver.exe");
        WebDriver driver = new FirefoxDriver();
        driver.get("http://www.whichairline.com/");
        driver.findElement(By.xpath("//*[@id='menu-currency']/p")).click();
        WebElement element1 = (new WebDriverWait(driver,
            10)).until(ExpectedConditions.elementToBeClickable(By.xpath("//*[@id='menu-currency']/div/select")));
        WebElement element = driver.findElement(By.xpath("//*[@id='menu-currency']/div/select"));
        WebElement element2 = (new WebDriverWait(driver,
            10)).until(ExpectedConditions.elementToBeClickable(By.xpath("//*[@id='menu-currency']/div/select")));
        Select dropdown = new Select(element);
        dropdown.selectByIndex(4);
    }
}

```

For details visit: <http://toolsqa.com/selenium-webdriver/dropdown-multiple-select-operations/>

5.4. Radio Buttons Handling (Sample Code)

```

package basic;

import org.openqa.selenium.By;
import org.openqa.selenium.WebDriver;
import org.openqa.selenium.firefox.FirefoxDriver;
import org.openqa.selenium.remote.service.DriverCommandExecutor;

```

```

public class RadioButton {

    public static void main(String[] args) {
        // TODO Auto-generated method stub
        System.setProperty("webdriver.gecko.driver", "C:\\\\geckodriver.exe");
        WebDriver driver = new FirefoxDriver();
        driver.get("http://echoecho.com/htmlforms10.htm");
        //for static radio button
        driver.findElement(By.xpath("//input[@name='radio1']")).click();
        //for dynamically click on radio button
        int count = driver.findElements(By.xpath("//input[@name='group1']")).size();

        for (int i=0; i < count; i++)
        {
            driver.findElements(By.xpath("//input[@name='group1']")).get(i).click();
        }

        for (int j=0; j < count; j++)
        {
            String txt =
            driver.findElements(By.xpath("//input[@name='group1']")).get(j).getAttribute("
            value");
            if(txt.equals("Cheese"))
            {
                driver.findElements(By.xpath("//input[@name='group1']")).get(j).click();
            }
        }
    }
}

```

5.5. JavaScript Alerts Handling (Sample Code)

```

package basic;

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

public class JavaAlerts {

    public static void main(String[] args) throws InterruptedException {
        // TODO Auto-generated method stub
        System.setProperty("webdriver.gecko.driver", "C:\\\\geckodriver.exe");
        WebDriver driver = new FirefoxDriver();
        driver.get("http://www.javascripter.net/faq/alert.htm");
        driver.findElement(By.xpath("html/body/p[1]/table/tbody/tr/td[1]/form/input")).click();
        String txt = driver.switchTo().alert().getText();
        if(txt.equals("Hello from JavaScript!"))
        {
            Thread.sleep(1000);
        }
    }
}

```

```

        driver.switchTo().alert().accept(); //Accept for positive scenarios like Ok, done,
        Yes
    }
}
}

```

5.6. Web Elements Handling (Sample Code)

```
package basic;
```

```

import org.openqa.selenium.By;
import org.openqa.selenium.WebDriver;
import org.openqa.selenium.WebElement;
import org.openqa.selenium.firefox.FirefoxDriver;
import org.openqa.selenium.support.ui.ExpectedConditions;
import org.openqa.selenium.support.ui.WebDriverWait;

```

```
import junit.framework.Assert;
```

```
@SuppressWarnings("deprecation")
```

```
public class WebElementValidation {
```

```

    public static void main(String[] args) throws InterruptedException {
        // TODO Auto-generated method stub
        System.setProperty("webdriver.gecko.driver", "C:\\\\geckodriver.exe");
        WebDriver driver = new FirefoxDriver();
        driver.get("https://www.makemytrip.com/");
        System.out.println("Before clicking on Multicity button");
        Assert.assertFalse(driver.findElement(By.xpath("//*[@id='js-MultiCityOptions']")).isDisplayed());
        System.out.println(driver.findElement(By.xpath("//*[@id='js-MultiCityOptions']")).isDisplayed());
        driver.findElement(By.xpath("//*[@id='js-switch_option']/div[3]/label")).click();
        System.out.println("After clicking on Multicity button");
        Assert.assertTrue(driver.findElement(By.xpath("//*[@id='js-MultiCityOptions']")).isDisplayed());
        System.out.println(driver.findElement(By.xpath("//*[@id='js-MultiCityOptions']")).isDisplayed());
        //to check link is enabled or not

        System.out.println(driver.findElement(By.xpath("//*[@id='ch_funnel_more']")).isEnabled());
        String txt = driver.findElement(By.xpath("./*[@id='hp-banner']/div[1]/div/div[5]/div/section/h4/b")).getText();
        if(txt.equals("Flights Mega Sale!"))
        {
            System.out.println("Text Verified (Flights Mega Sale!)");
        }
        else
        {
            System.out.println("Flights Mega Sale! Text not found");
        }
    }
}

```

```

        driver.findElement(By.xpath("//*[@id='hp-widget__paxCounter']")).click();
        Thread.sleep(5000L);
        WebElement element1 = (new WebDriverWait(driver,
        10)).until(ExpectedConditions.elementToBeClickable(By.xpath("//*[@id='js-
        adult_counter']/li[3]")));
        driver.findElement(By.xpath("//*[@id='js-adult_counter']/li[3]")).click();
    }
}

```

6. Techniques to Automate Advance Web UI

6.1. Actions Class (Sample Code)

Action Class to handle mouse actions and pass capital letters in fields.

```

package basic;

import org.openqa.selenium.By;
import org.openqa.selenium.Keys;
import org.openqa.selenium.WebDriver;
import org.openqa.selenium.WebElement;
import org.openqa.selenium.chrome.ChromeDriver;
import org.openqa.selenium.interactions.Actions;
public class MouseAction {

    public static void main(String[] args) throws InterruptedException {
        // TODO Auto-generated method stub
        System.setProperty("webdriver.chrome.driver", "C:\\\\chromedriver.exe");
        WebDriver driver=new ChromeDriver();
        driver.get("https://fantasy.premierleague.com/");
        Actions ac = new Actions(driver);
        WebElement element =
        driver.findElement(By.xpath("//*[@id='mainNav']/nav/ul/li[5]/a"));
        Thread.sleep(3000L);
        ac.moveToElement(element).build().perform(); //for mouse hover
        Thread.sleep(3000L);
        // for Capital letters
        WebElement element1 = driver.findElement(By.xpath("//*[@id='ismjs-
        username']"));
        ac.keyDown(Keys.SHIFT).moveToElement(element1).sendKeys("test").build().perform();
        Thread.sleep(1000L);
        //to Right click
        ac.contextClick(element1).build().perform();
        Thread.sleep(3000L);
        //for double click
        ac.doubleClick(element1).build().perform();
        Thread.sleep(1000L);
    }
}

```

6.2. Multiple Windows Handling (Sample Code)

```
package basic;

import java.util.Iterator;

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

public class MultiWindows {

    public static void main(String[] args) {
        // TODO Auto-generated method stub
        System.setProperty("webdriver.gecko.driver", "C:\\geckodriver.exe");
        WebDriver driver = new FirefoxDriver();

        driver.get("https://accounts.google.com/SignUp?service=mail&continue=https%3A%2F%2Fmail.google.com%2Fmail%2F&ltmpl=default");
        driver.findElement(By.xpath("//*[@id='wrapper']/div[2]/div/div[1]/p/a")).click();
        java.util.Set<String> handles = driver.getWindowHandles();
        Iterator<String> ir = handles.iterator();
        String parentpage = ir.next();
        String childpage = ir.next();
        driver.switchTo().window(childpage);
        System.out.println(driver.getTitle());
    }
}
```

6.3. Dynamically Data Handling (Sample Code)

```
package basic;

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

public class Counting {

    public static void main(String[] args) {
        // TODO Auto-generated method stub
        System.setProperty("webdriver.gecko.driver", "C:\\geckodriver.exe");
        WebDriver driver = new FirefoxDriver();
        driver.get("http://www.ebay.co.uk/");
        //counts of whole site links
        System.out.println(driver.getTitle());
        System.out.println("Total number of links");
        System.out.println(driver.findElements(By.tagName("a")).size());
        //count of links in the footer section of the site
    }
}
```

```

System.out.println("Total links from footer");
WebElement footer = driver.findElement(By.xpath("//*[@id='glbfooter']"));
System.out.println(footer.findElements(By.tagName("a")).size());
//count of specific column
System.out.println("Counts of sell col from footer");
WebElement colSell = driver.findElement(By.xpath("//*[@id='gf-BIG']/table/tbody/tr/td[2]/ul"));
System.out.println(colSell.findElements(By.tagName("a")).size());
//how to get links from sell col
String Beforeclicking = null;
String Afterclicking;
for(int i=0; i<colSell.findElements(By.tagName("a")).size();i++)
{
    if(colSell.findElements(By.tagName("a")).get(i).getText().contains("Sell for Charity"))
    {
        Beforeclicking = driver.getTitle();
        colSell.findElements(By.tagName("a")).get(i).click();
        break;
    }
}
Afterclicking = driver.getTitle();
if(Beforeclicking!=Afterclicking)
{
    if(driver.getPageSource().contains("Support a good cause when you sell"))

        System.out.println("Test case Pass");

}
else
{
    System.out.println("Test case Failed");
}
}
}

```

6.4. Auto form filling Handling (Sample Code)

```

package basic;

import org.openqa.selenium.By;
import org.openqa.selenium.WebDriver;
import org.openqa.selenium.firefox.FirefoxDriver;
import org.openqa.selenium.support.ui.ExpectedConditions;
import org.openqa.selenium.support.ui.WebDriverWait;

public class AutoSuggestion {

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

```



```

public static void main(String[] args) {
    // TODO Auto-generated method stub
    WindowsUtils.tryToKillByName("notepad.exe");
    System.setProperty("webdriver.gecko.driver", "C:\\geckodriver.exe");
    WebDriver driver = new FirefoxDriver();
    driver.get("http://www.google.com/");
    File scrFile = ((TakesScreenshot)driver).getScreenshotAs(OutputType.FILE);
    // Now you can do whatever you need to do with it, for example copy somewhere
    FileUtils.copyFile(scrFile, new File("c:\\screenshot.png"));
}
}

```

For more visit:

<http://toolsqa.com/selenium-webdriver/implicit-explicit-n-fluent-wait/>
<http://learn-automation.com/handle-untrusted-certificate-selenium/>

7. Data Driven Testing:

7.1. Data Driven Testing Using Excel

7.1.1. Install POI Apache

Use following link to install POI Apache

<http://poi.apache.org/download.html>

Binary Distribution#

- [poi-bin-3.16-beta2-20170202.tar.gz](#) (19.61 MB, signature (.asc))
 MD5 checksum: [aed02c8a6c17a85e045dd95a084500c7](#)
 SHA1 checksum: [bcfaf5bb72c5cee6213c10d5c8eff3ca8b3104ce](#)
- [poi-bin-3.16-beta2-20170202.zip](#) (27.88 MB, signature (.asc))
 MD5 checksum: [6763f03c8019248a7035600aadb67b51](#)
 SHA1 checksum: [7afe68191bf5e075a75921e1e73cb16b3752d373](#)

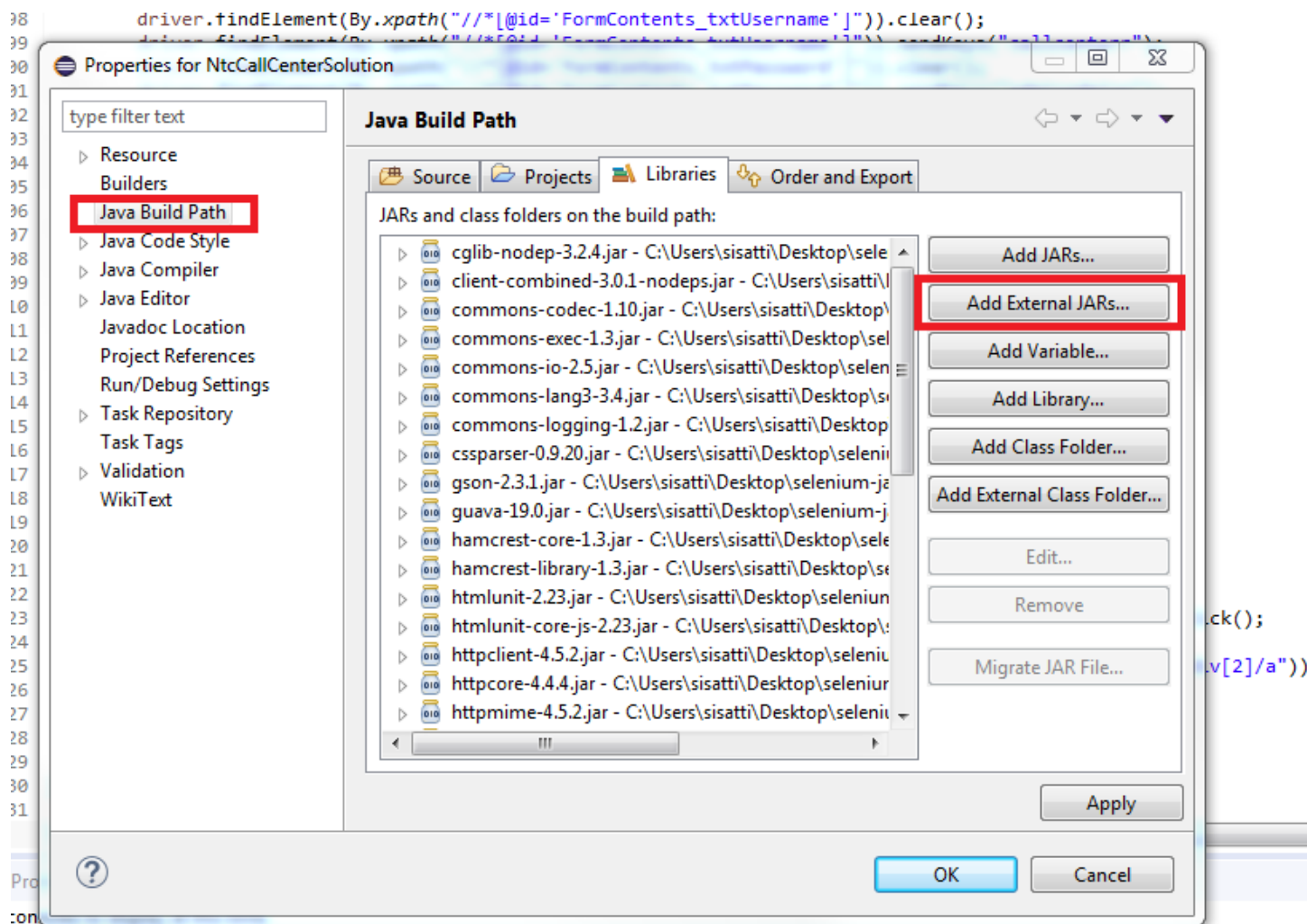
HTTP

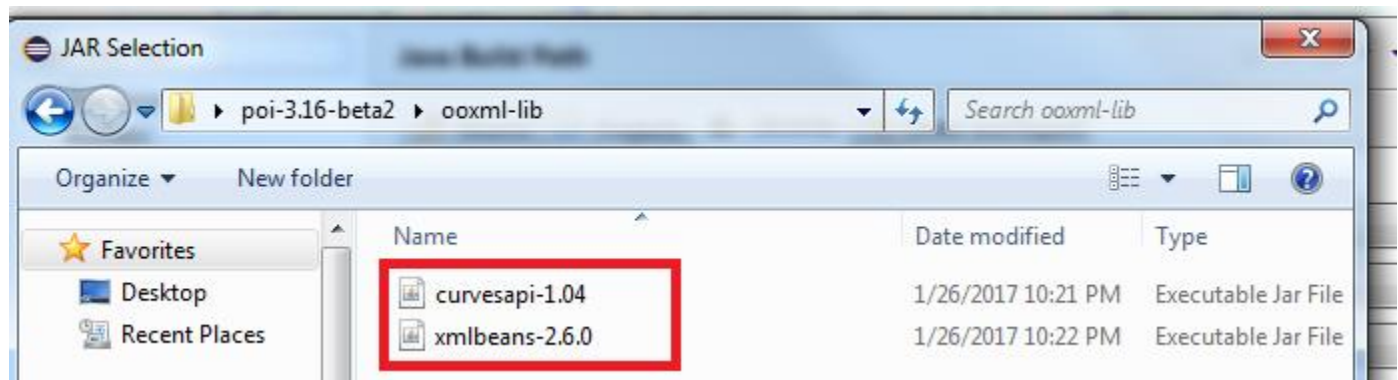
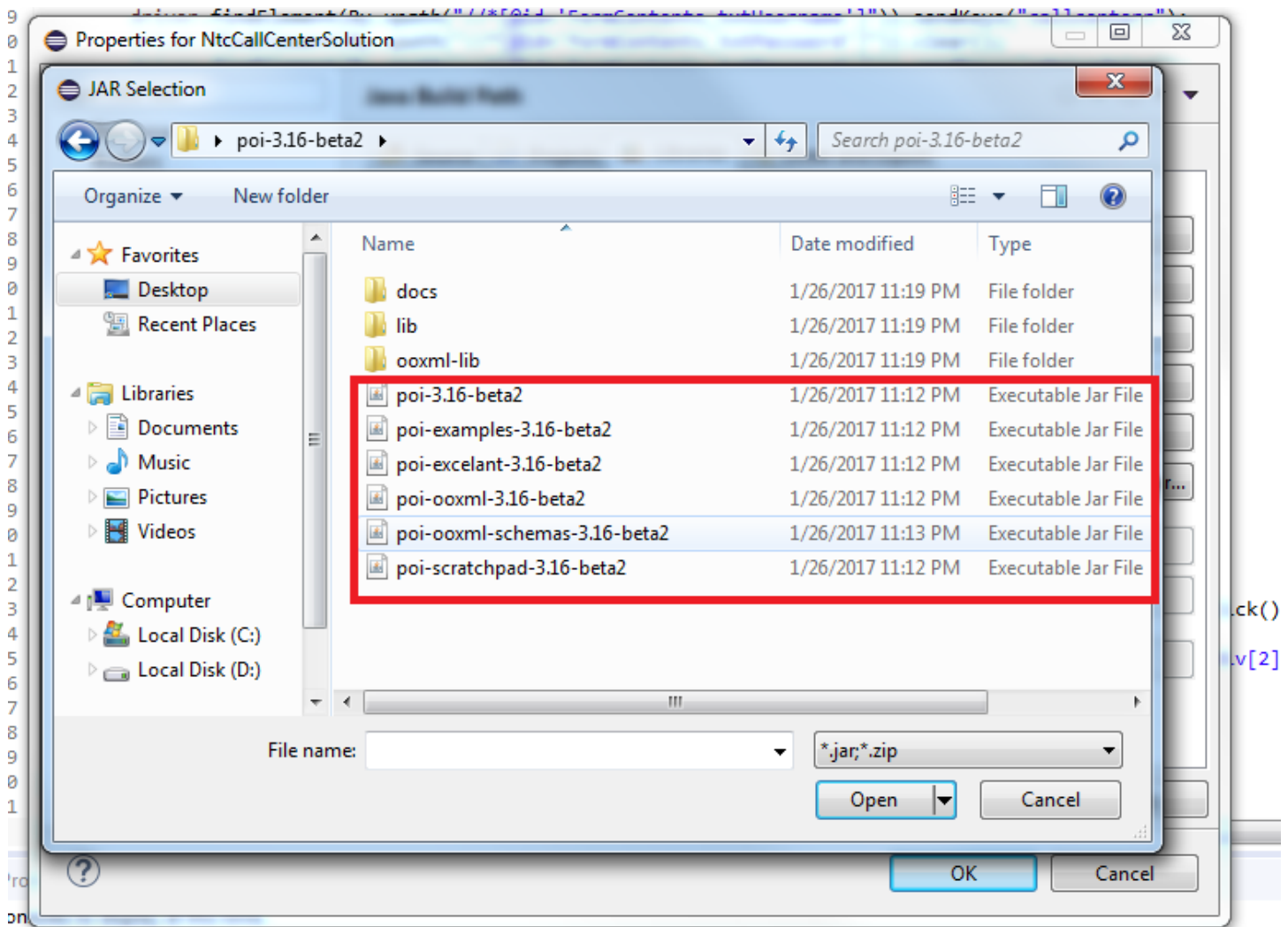
<http://www-eu.apache.org/dist/poi/dev/bin/poi-bin-3.16-beta2-20170202.zip>

<http://www-us.apache.org/dist/poi/dev/bin/poi-bin-3.16-beta2-20170202.zip>

7.1.2. Import POI jars in Project

Right click on project then go to properties





7.1.3. Create Excel Sheet

[illegible]

7.1.4. Sample Code

```
package basic;

import java.io.FileInputStream;
import java.io.IOException;

import org.apache.poi.xssf.usermodel.XSSFCell;
import org.apache.poi.xssf.usermodel.XSSFRow;
import org.apache.poi.xssf.usermodel.XSSFSheet;
import org.apache.poi.xssf.usermodel.XSSFWorkbook;

public class ExcelDriver {
    public static XSSFWorkbook wb;
    public static XSSFSheet sheet;
    public static XSSFRow row;
    public static XSSFCell cell;
```

```

public static FileInputStream fi;

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

    String value = getCelldata(2,2);
    System.out.println(value);
}

public static String getCelldata(int rownum, int col) throws IOException {
    fi = new FileInputStream("C:\\data.xlsx");
    wb = new XSSFWorkbook(fi);
    sheet = wb.getSheet("data");
    row = sheet.getRow(2);
    cell = row.getCell(2);
    return cell.getStringCellValue();
}
}

```

7.2. Data Driven Testing Using Database

7.2.1. Install MySQL

<https://dev.mysql.com/downloads/installer/>

- [MySQL Installer Documentation and Change History](#)

Please report any bugs or inconsistencies you observe to our [Bugs Database](#).

Thank you for your support!

Generally Available (GA) Releases

Development Releases

MySQL Installer 5.7.17

Select Platform:

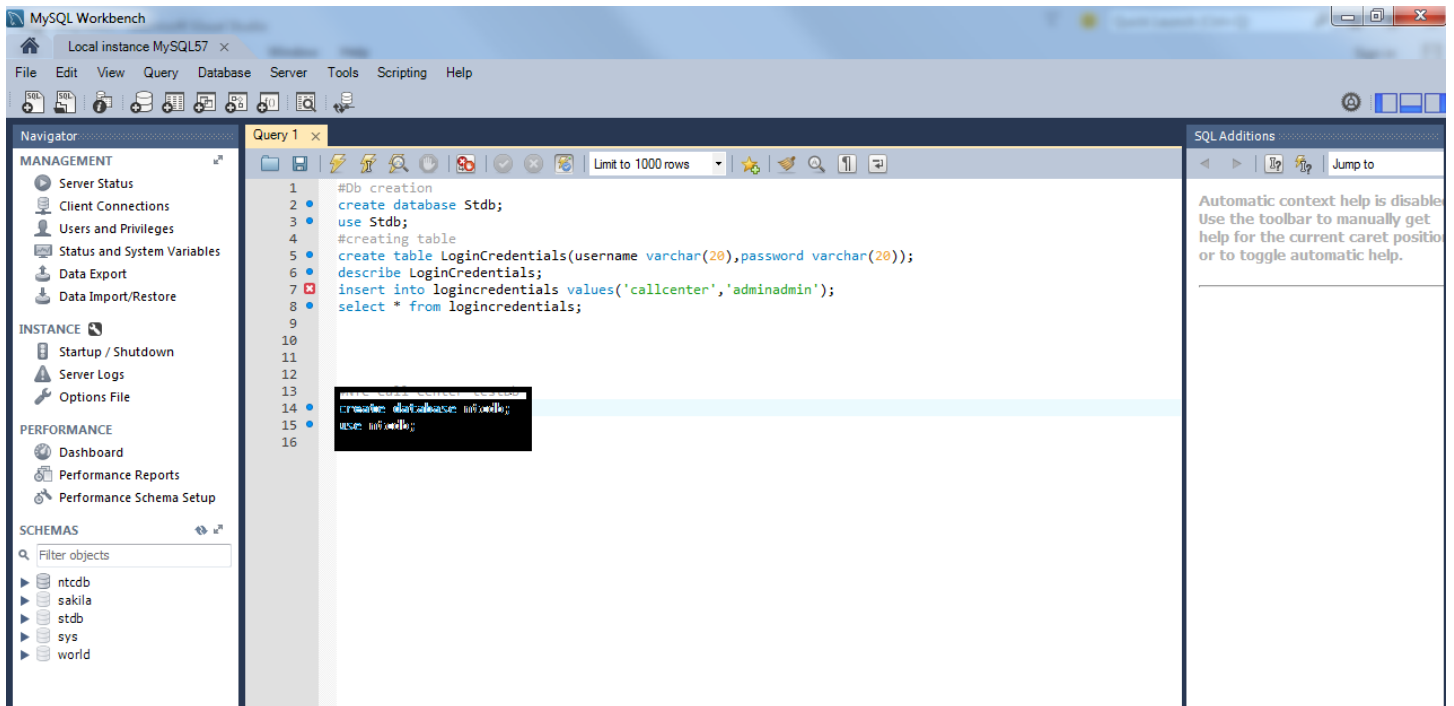
Microsoft Windows

Looking for previous GA versions?

Windows (x86, 32-bit), MSI Installer <small>(mysql-installer-web-community-5.7.17.0.msi)</small>	5.7.17	1.7M	Download
		MD5: df80081cd386da03240c4fb4bae37758 Signature	
Windows (x86, 32-bit), MSI Installer <small>(mysql-installer-community-5.7.17.0.msi)</small>	5.7.17	386.6M	Download
		MD5: e03723eb6c6bac271a848bd9031ea859 Signature	

 We suggest that you use the [MD5 checksums](#) and [GnuPG signatures](#) to verify the integrity of the packages you download.

7.2.2. Create Database



7.2.3. Sample Code to retrieve data from tables

```
package dbproject;
```

```
import java.sql.DriverManager;
import java.sql.ResultSet;
import java.sql.SQLException;
```

```
import com.mysql.jdbc.Connection;
import com.mysql.jdbc.Statement;
```

```
public class jdbcconnection {
```

```
    public static void main(String[] args) throws SQLException {
        // TODO Auto-generated method stub
        String host = "localhost";
        String port = "3306";
        Connection con = (Connection) DriverManager.getConnection("jdbc:mysql://" + host + ":" +
port + "/stdb", "root", "4321");
        Statement s = (Statement) con.createStatement();
        ResultSet rs=s.executeQuery("select * from logincredentials;");
        while(rs.next())
        {
            System.out.println(rs.getString("username"));
            System.out.println(rs.getString("password"));
        }
    }
}
```

```
}  
}
```