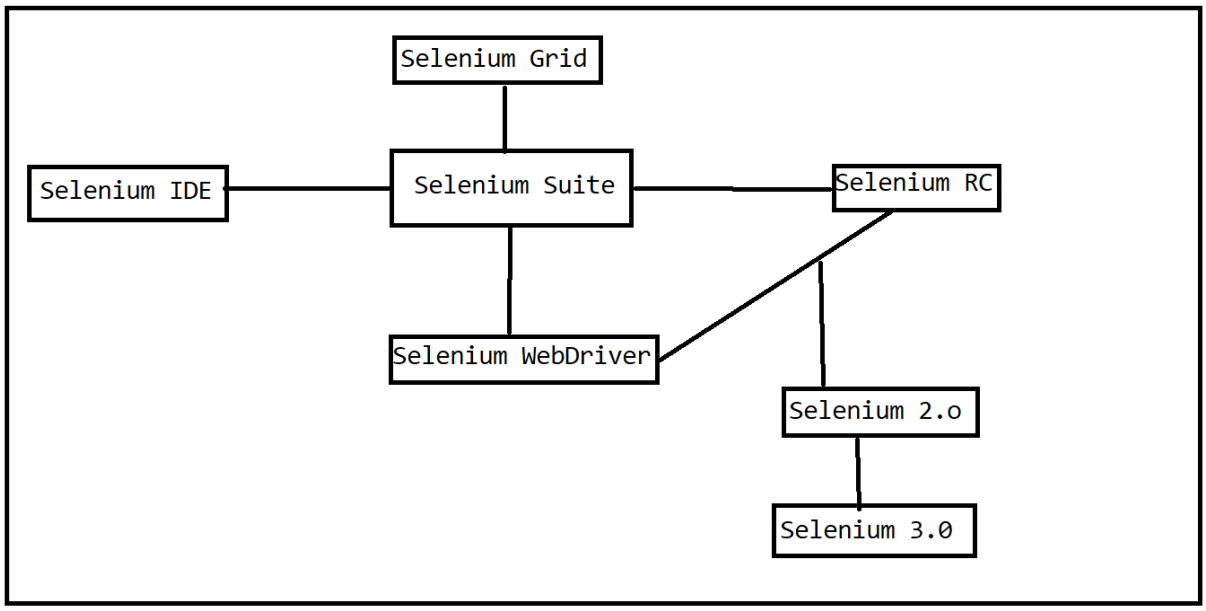
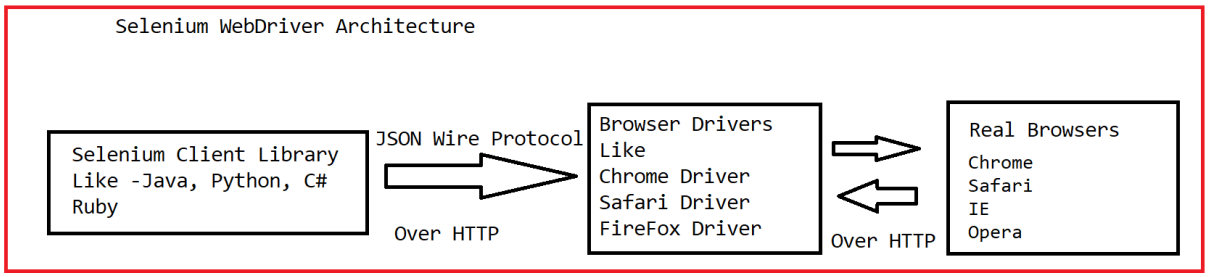
Component of Selenium





Selenium WebDriver has 4 component and these are as below

1) Selenium Client Library
2) JSON protocol
3) Browser specific Drivers
4) Real Browser Applications

Use of Each Component

1) Selenium Client Library :
   In which programming language are we going to write automation script, that programming language specific library(jar file/dependency) we need to add in the project

   Example : If we are going to write automation script in Java language then we need to add "selenium-java" library

2) JSON Wire protocol

JSON stands for JavaScript Object Notation

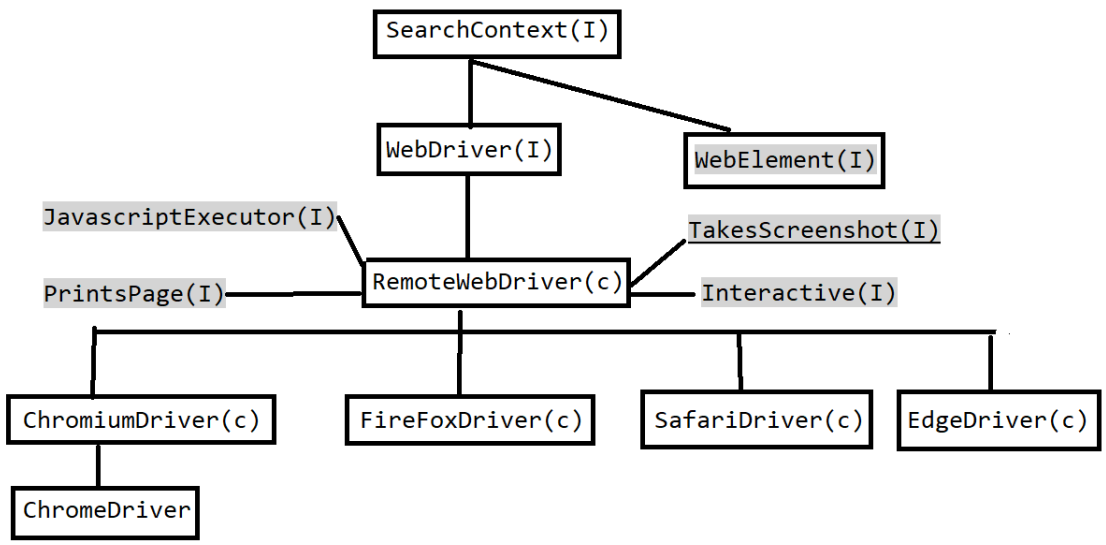
When we execute an automation script then that script we need to convert into Browser Driver understandable format, here One universal data exchange format is JSON

JSON is data exchange format between Client library and Browser Drivers

3) Browser Specific Driver: To run or to open Real browser application we need add Browser specific Drivers. These Drivers acts as server

4) Real browser Application: Your real browsers like Chrome Safari, Edge Firefox

Selenium WebDriver interface Hierarchy



Selenium WebDriver interface Hierarchy

-> In the selenium WebDriver interface Hierarchy
SearchContext interface is root interface

-> SearchContext interface has only two child interfaces
i) WebDriver interface
ii) WebElement interface

-> Implementation class of WebDriver interface is RemoteWebDriver

-> RemoteWebDriver has browsers specific child classes as below
a) ChromiumDriver b) SafariDriver c) EdgeDriver d) Firefox Driver

Note: To see any class or Any interface hierarchy: select that interface or class name --> right click -> open type hierarchy

Note: To see the source code: CTRL Shift +T (For Predefined class or interface)

ctrl+shift+R (For User Defined class or Interface)

About SearchContext interface

1) it is present in org.openqa.selenium package

2) It has two child interfaces a) WebDriver b) WebElement

3) It Find all elements within the current context using the given mechanism

4) It contains only two methods
   a) WebElement findElement(By by);
   b) List<WebElement> findElements(By by);

Note: To check methods present in the given class or interface ctrl+o

Note: With the help of By we can specify locating or searching mechanism We can find web elements on the following basis

1) by using id attribute :
2) on the basis on linktext
3) on the basis of partialtext
4) on the basis of name attribute
5) on the basis of tag name
6) on the basis of x Path
7) on the basis of class attribute
8) on the basis of css selectors

About WebDriver Interface

1) It is a child interface of SearchContext

2) It is present on org.openqa.selenium package

3) This interface enables the control of user agent(browsers)

4) This interface has many methods but key methods are
   1) get() : To Load new web page
   2) findElement(By) : To find single or one web element
   3) findElements(By) : To find multiple web elements
   4) quite() : Quits driver and close every associated window
   5) close() : Close the current window, quitting the browser if it's the last window currently open.

5) WebDriver interface has inner interfaces
   a) Options b) TimeOuts c)TargetLocators d)Navigation e) ImeHandler
   f) Window

6) RemoteWebDriver is an implementation class of WebDriver interface

About RemoteWebDriver class

1) It is implementation class of WebDriver interface

2) It is present in org.openqa.selenium.remote package

3) This is fully implementated class

4) This class implements following interfaces
   a) WebDriver
   b) JavascriptExecutor
   c) HasCapabilitie
   d) HasVirtualAuthenticator
   e) Interactive
   f) PrintsPage
   g) TakesScreenshot

5) RemoteWebDriver class has browser specific child class
   a) ChromiumDriver b) FireFoxDriver c) SafariDriver
   d) EdgeDriver

Q. Write a program to open a Chrome Browser and close it?

```
public class OpenChromeBrowser
{
    public static void main(String args[])
    {
        //set path of ChromeDriver
        System.setProperty("webdriver.chrome.driver","path");
        // Create an object ChromeDriver class

        WebDriver driver=new ChromeDriver();
        or
        ChromeDriver driver =new ChromeDriver();
        // open new page
        driver.get("https://www.google.com/");
        driver.close();
    }
}
```

Q. Write a program to open a Edge Browser and close it?

```
public class OpenEdgeBrowser
{
   public static void main(String args[])
   {
      System.setProperty("webdriver.edge.driver","path");
      WebDriver driver=new EdgeDriver();
      driver.get("https://www.google.com");
      driver.close();
   }
}
```

Q. Write a program to Internate Browser and close it

```
   public class OpenIEBrowser
   {
      public static void main(String args[])
      {
         System.setProperty("webdriver.ie.driver","path")
         WebDriver driver=new InternetExplorerDriver();
         driver.get("https://www.google.com");
         driver.close();
      }
   }
```

Q. Write a program to open FireFox Browser and close it

```
  public class OpenFFBrowser
  {
     public static void main(String args[])
     {
        System.setProperty("webdriver.gecko.driver","path");
        WebDriver driver=new FirefoxDriver();
        driver.get("https://www.google.com");
        driver.close();
     }
  }
```

Exercise

Q. Write a program to open google in edge browser and print its source code :[hint use method driver.getPageSource()]

Q. Write a program to open google in edge browser and print its title :[hint use method driver.getTitle()]

Q. Write a program to open google in edge browser and print current URL :[hint use method driver.getCurrentUrl()]

Exercise

Q. Write a program to open https://www.online.citibank.co.in in edge browser and find element by id attribute

Q. Write a program to open https://www.online.citibank.co.in in edge browser and find element by class attribute

Q. Write a program to open https://www.online.citibank.co.in in edge browser and find element by tag name

Q. Write a program to open https://www.online.citibank.co.in in edge browser and find element by linktext

Q. Write a program to open https://www.online.citibank.co.in in edge browser and find element by partiallinktext

Q. Write a program to open https://www.online.citibank.co.in in edge browser and find element by name attribute