* **Selenium is open-Source Automation Testing tool**
* **It is exclusively for Web Based applications**.
* **Selenium supports multiple browsers -  
  Chrome, Firefox, Internet Explorer, Safari**
* **Selenium works with Multiple Platforms  
  Windows, Apple OS X, Linux**
* **Selenium can be coded in multiple languages -  
  Java, C#, Python, JavaScript, php, Ruby**
* Difference between Selenium and WebDriver?  
    
    
  Selenium WebDriver is the successor of Selenium Remote Control  
  which has been officially deprecated. The Selenium server (used by   
  both WebDriver and remote control) now also includes built-in grid capabilities.
* The **WebDriver client** translates the commands from your **script** into **HTTP requests** following the W3C WebDriver Protocol.  
    
    
  Why W3C WebDriver Protocol?

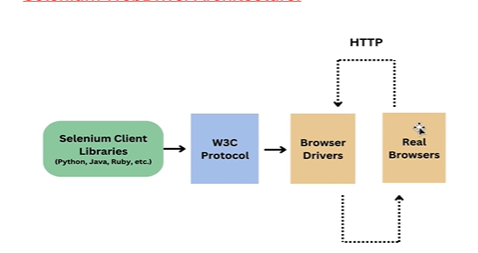
All modern browsers(Chrome, Firefox, Safari, Edge) natively support the  
W3C protocol ensuring consistent behavior.

* **These Http requests are sent to Browser Drivers**

What is Browser Driver?

* Each browser(chrome, Firefox, safari, etc) has its own dedicated driver.
* This driver is small program that acts as a translator between the Webdriver protocol and the browser itself.

Selenium WebDriver Architecture:



Finally the browser drivers interprets the http requests and control the actual web browser, carrying out the actions your test scripts define (opening pages, clicking buttons, filling forms, etc.)



A diagram of a company's logo

AI-generated content may be incorrect.

* After you trigger the Test, complete Selenium code (Client) which we have written will be converted to Json format
* Generated Json is sent to Browser Driver (Server) through http Protocol

Note: Each browser contains a separate browser driver

* Browser drivers communicate with its respective browser and executes the commands by interpreting Json which It received on the browser.
* Browser Driver receives responses back from the browser and it sends Json response back to Client.
* Selenium Web Driver Locators  
    
  As part of Automation, Selenium Performs actions (such as click, typing) on the page HTML Elements.
* The locators are the way to identify an HTML element on a web page.
* Selenium WebDriver uses any of the below locators to identify the element on the page and performs the action.
* Selenium Locators:- ID , Xpath , CSS Selector , name, Class Name, Tag Name, Link Text , Partial Link Text.

All Selenium Locators:  
  
1. id -> Finds an element by its id attribute (must be unique).

driver.findElement(By.id)(“username”));

2. name -> Finds an element by its name attribute.

driver.findElement(By.name(“email”));

3. className -> Finds element(s) by class name.

Driver.findElement(By.className(“login-btn”));

4)tagName -> Finds element(s) by tag (e.g., <input>, <button>).

driver.findElement(By.tagName(“button”));

5) linkText -> Finds <a> link element using the exact visible text.

driver.findElement(By.linkText(“Forgot Password?”));

6) partialLinkText -> Finds <a> link element using the partial visible text.

driver.findElement(By.partialLinkText(“Forgot”));

7) cssSelector -> Uses CSS selectors to find elements (very powerful).

driver.findElement(By.cssSelector(“#username”));

driver.findElement(By.cssSelector(“.btn-primary”));

driver.findElement(By.cssSelector(“input[name=’email’]”));

8) xpath -> Finds elements using XPath expressions (most flexible).

driver.findElement(By.xpath(“//input[@id=’username’]”));

driver.findElement(By.xpath(“//button[text()=’Login’]”));

driver.findElement(By.xpath(“//div[@class=’form’]//input[1]”));

**Selenium WebDriver with - Basics to Advanced + Frameworks**  
  
import java.time.Duration;

import org.openqa.selenium.By;

import org.openqa.selenium.chrome.ChromeDriver;

public class Locators {

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

System.setProperty(“webdriver.chrome.driver”,”/Users/preet/Documents/chromedriver”);

WebDriver driver = new ChromeDriver();

Driver.manage().timeouts().implicitlyWait(Duration.ofSeconds(5));

driver.get(<https://preet.com/locatorspractice/>”);

driver.findElement(By.id(“inputUserName”)).sendKeys(“rahul”);

driver.findElement(By.name(“inputPassword”)).sendKeys(“hello123”);

driver.findElement(By.className(“signInBtn”)).click();

System.out.println(driver.findElement(By.cssSelector(“p.error”)).getText());

driver.findElement(By.linkText(“Forgot your password?”)).click();

Thread.sleep(1000);

driver.findElement(By.xpath(“//input[@placeholder=’Name’]”)). sendKeys(“John”);

driver.findElementBy.cssSelector(“input[placeholder=’Email’]”)). sendKeys([john@rsa.com](mailto:john@rsa.com)”);  
  
driver.findElement(By.xpath(“//input[@type=’text’][2]”)).clear();

driver.findElement(By.cssSelector(“input[type=’text’]:nth-child(3)”)).sendKeys([john@gmail.com](mailto:john@gmail.com));

driver.findElemeent(By.xpath(“//form/input[3]”)).sendKeys(“9864353253”);

driver.findElement(By.cssSelector(“.reset-pwd-btn”)).click();

System.out.println(driver.findElement(By.cssSelector(“formp”)).getText());

driver.findElement(By.xpath(“//div[@class=’forgot-pwd-btn-container’]/button[1]”)).click();

Thread.sleep(1000);

driver.findElement(By.cssSelector(#inputUserName”)).sendKeys(“Rahul”);

driver.findElement(By.cssSelector(“input[type\*=’pass’]”)).sendKeys(“rahulShettyacademy”);

driver.findElement(By.id(“chkboxOne”)).click();

driver.findElement(By.xpath(“//button[contains(@class,’submit’)]”)).click();

}

}