**1. Introduction to WebDriver**

**Selenium WebDriver** is a browser automation framework that allows you to execute your tests against different browsers. It interacts directly with the browser, emulating a real user’s actions, like clicking buttons, entering text, navigating between pages, and more.

The WebDriver interface contains methods that allow us to perform browser actions and interact with web elements.

**2. WebDriver Methods**

Let’s look at the important WebDriver methods one by one, with examples of how they can be used in automation scripts.

**3. Browser Navigation Methods**

1. **get(String URL)**
   * **Purpose**: Opens the specified URL in the browser.
   * **Example**:

java

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

1. **navigate().to(String URL)**
   * **Purpose**: Moves to a specific URL. Similar to get(), but part of the navigate() method.
   * **Example**:

java

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

1. **navigate().back()**
   * **Purpose**: Simulates the browser back button to go back to the previous page.
   * **Example**:

java

driver.navigate().back();

1. **navigate().forward()**
   * **Purpose**: Moves forward to the next page in the browser’s history.
   * **Example**:

java

driver.navigate().forward();

1. **navigate().refresh()**
   * **Purpose**: Refreshes the current page.
   * **Example**:

java

driver.navigate().refresh();

**4. Browser Window Management Methods**

1. **getTitle()**
   * **Purpose**: Returns the title of the current page.
   * **Example**:

java

String pageTitle = driver.getTitle();

System.out.println("Page Title: " + pageTitle);

1. **getCurrentUrl()**
   * **Purpose**: Returns the URL of the current page.
   * **Example**:

java

String currentUrl = driver.getCurrentUrl();

System.out.println("Current URL: " + currentUrl);

1. **getPageSource()**
   * **Purpose**: Returns the source code of the current page as a string.
   * **Example**:

java

String pageSource = driver.getPageSource();

System.out.println("Page Source: " + pageSource);

1. **close()**
   * **Purpose**: Closes the current browser window where the WebDriver is focused.
   * **Example**:

java

driver.close();

1. **quit()**
   * **Purpose**: Closes all browser windows opened by the WebDriver and ends the WebDriver session.
   * **Example**:

java

driver.quit();

**5. Web Element Interaction Methods**

1. **findElement(By locator)**
   * **Purpose**: Locates a web element based on the provided locator strategy (e.g., ID, name, XPath).
   * **Example**:

java

WebElement element = driver.findElement(By.id("username"));

1. **findElements(By locator)**
   * **Purpose**: Locates multiple elements matching the locator strategy and returns a list of elements.
   * **Example**:

java

List<WebElement> elements = driver.findElements(By.tagName("a"));

for (WebElement element : elements) {

System.out.println(element.getText());

}

1. **sendKeys(String input)**
   * **Purpose**: Sends input to a text field or text area.
   * **Example**:

java

WebElement username = driver.findElement(By.id("username"));

username.sendKeys("testUser");

1. **click()**
   * **Purpose**: Simulates a mouse click on the web element (e.g., button, link).
   * **Example**:

java

WebElement loginButton = driver.findElement(By.id("loginButton"));

loginButton.click();

1. **clear()**
   * **Purpose**: Clears the content of a text field or text area.
   * **Example**:

java

WebElement searchField = driver.findElement(By.name("q"));

searchField.clear();

1. **getText()**
   * **Purpose**: Retrieves the text content of a web element.
   * **Example**:

java

WebElement message = driver.findElement(By.id("welcomeMessage"));

String messageText = message.getText();

System.out.println("Message: " + messageText);

1. **getAttribute(String attribute)**
   * **Purpose**: Retrieves the value of a specified attribute of an element.
   * **Example**:

java

String value = driver.findElement(By.id("username")).getAttribute("value");

System.out.println("Input Value: " + value);

1. **isDisplayed()**
   * **Purpose**: Checks whether the element is visible or not.
   * **Example**:

java

boolean isVisible = driver.findElement(By.id("loginButton")).isDisplayed();

1. **isEnabled()**
   * **Purpose**: Checks whether the element is enabled (interactable) or not.
   * **Example**:

java

boolean isEnabled = driver.findElement(By.id("submit")).isEnabled();

1. **isSelected()**
   * **Purpose**: Checks whether a checkbox or radio button is selected or not.
   * **Example**:

java

boolean isChecked = driver.findElement(By.id("rememberMe")).isSelected();