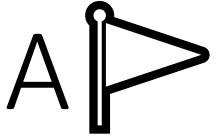


Automation Testing

Using Selenium



- What is automation?
- What is automation testing?
- How to automate a software?
 - How to open a webpage in a browser?
 - How to access GUI elements on webpage?
 - How to use the GUI elements on webpage?
- How to test a software through automation?
 - Test cases and Test scripts
- One bonus topic



Automation

Automation testing



How to automate a software?

- An automation tool that can be used to test web portals
- Useful is finding validation issues
- Platform independent



Components of Selenium Tool Suite

- Selenium IDE
- Selenium WebDriver
- Selenium Grid
- Selenium RC

Selenium IDE

- Record and playback tool
- Helpful in testing the process flow of the system under test
- Best fit for repetitive tasks and re-testing of resolved issues
- Re-creation of issues becomes easy



Exercise: Automate CDAC website (15 minutes)

- Navigate through CDAC website for "Products and Services" menu.
- Select "High Performance, Grid and Cloud Computing".
- Click on "More".
- Scroll using browser window scroll bar and not mouse scroll button.

Issues faced by testers while using IDE

- Code not maintainable
 - Not suitable for regression testing
 - Cannot use multiple sets of test data
 - No support for test reports
- Hence, we use Selenium WebDriver.

Selenium WebDriver

- Web automation framework
- Automates the testing of any web application on different browsers
- Java interface is present in package "org.openqa.selenium"
- Can handle almost any type of GUI elements



Selenium WebDriver

How WebDriver supports multiple web browsers?

Name of Driver Server and Class	System Properties	WebDriver Description
GeckoDriver WebDriver driver=new FirefoxDriver();	webdriver.gecko.driver	Gecko Driver is the link between your tests in Selenium and the Firefox browser.
ChromeDriver WebDriver driver=new ChromeDriver();	webdriver.chrome.driver	Chrome Driver is a separate executable that WebDriver uses to control Chrome. It starts a server on the local system to run the automation code.
EdgeDriver WebDriver driver=new EdgeDriver();	webdriver.edge.driver	Exactly same as Chrome Driver, but it is not an open-source tool. It is owned by Microsoft.

How to open a webpage in a browser?

- Using the get method declared in the WebDriver interface we can open any webpage by providing the URL as a parameter in the method call.
- A new window of the selected Browser driver will be opened with the URL webpage getting loaded in the window.
- Syntax: `void get(String url)`
- Example:
 - `WebDriver driver=new ChromeDriver();`
 - `driver.get("https://www.google.co.in")`

Other useful methods in WebDriver

- `String getCurrentUrl()`
- `String getTitle()`
- `void close()`
- `void quit()`
- `driver.manage().window().maximize();`
- `driver.manage().timeouts().implicitlyWait(10);`

How to access GUI elements on webpage?

- Interface WebElement: Locates a GUI element
- Class By: Identifies the located GUI element
- Example:
 - `WebElement we_txtUserName;`
 - `we_txtUserName=driver.findElement(By.<method>("username"));`

Selenium locators

- `By.id("String")`
- `By.name("String")`
- `By.className("String")`
- `By.cssSelector("String")`
- `By.linkText("String")`
- `By.partialLinkText("String")`
- `By.xpath("String")`

How to use the GUI elements on webpage?

- WebElement interface click() method
- WebElement interface sendKeys() method
- WebElement interface clear() method

Example

- Open Google Chrome browser.
- Load Google Search page.
- Enter a search term.
- Hit enter.

Exercise (20 minutes)

- Go to <https://facebook.com>
- Right click on any element like email, password or login button.
- Go to Inspect menu.
- Try to identify the various HTML tags, attributes and values.
- Give the names to project, package, class, etc. exactly as mentioned in the screenshots.

How to segregate our Selenium code into test cases/scripts?



TestNG



Test cases and Test scripts

- TCID1: Test if login function accepts only valid e-mail address.
- TCID2: Test if password is a combination of uppercase and lowercase alphabets, digits and special characters.

```
@Test(priority=1)
    public void testUsername()
    {
        //code to test login function
        //
    }

@Test(priority=2)
    public void testPassword()
    {
        //code to test form submission functions
        //
    }
```


Features

- @Test
- Priority
- @DataProvider
- Multithreaded execution
- XML based test configuration and results

Install TestNG

Plugin in Eclipse

Example

- Fetch data from data provider.
- Pass the data onto online form using Selenium.

Exercise (15 minutes)

- Create a new Maven project using the PDF already shared.
- Create a new class LoginTestNG in a new package testNGPrograms.
- Automate the same login process into Facebook.
- Just replace the main() method by @Test annotation.

Maven

- Project lifecycle management tool
- Resolves the following problems:
 - Adding set of supporting files like executable jar files in each project.
 - Creating the right project structure
 - Building and Deploying the project
- Management of the following aspects in a software project:
 - Source code
 - Builds/Releases
 - Documentation
 - Reporting and Distribution

Maven dependencies

- Selenium Java
- Web Driver Manager
- TestNG

Thanku thee!!!