

AUTOMATION:-

Simulation of any work using a system or a tool with minimum intervention is called as automation.

AUTOMATION TESTING:-

The process of converting manual test case steps into automation script is known as 'automation testing.' Here automation tool will simulate the manual testing steps. Popular automation tools like selenium, Tosca, UFT, RFT, SilkTest etc

Why automation is required?

- Manual testing of all work flows, all fields, all negative scenarios is time & cost consuming.
- It is difficult to test for multi-lingual sites manually.
- Automation does not require Human intervention. You can run automated test unattended (Overnight)
- Automation increases speed of execution.
- Automation helps increase test coverage.
- Manual testing can become boring & hence error prone.

Test case selection for automation →

- 1) High risk business critical test cases.
- 2) All the regression test cases except the test cases which requires manual interaction. For ex. otp, cache, image test verification, animation etc.
- 3) Test cases that are very tedious or difficult to perform manually.
- 4) Test cases which are time consuming.

Test cases which are not suitable for automation →

- 1) Test cases that are newly designed and not executed manually at least once.
- 2) Test cases for which the requirements are changing frequently.
- 3) Test cases which are executed on ad-hoc basis.

Benefits of Automation Testing -

- 1) 70% faster than the manual testing.
- 2) Wider test coverage of applⁿ features.
- 3) Reliable in results.
- 4) Ensure consistency.
- 5) Saves time & cost.

- 6) Improves accuracy.
- 7) Human intervention is not required while execution.
- 8) Increases efficiency.
- 9) Better speed in executing tests.
- 10) Reusable test scripts.
- 11)
- 12)
- 13)

Type of Testing that can be automated -

- 1) Smoke testing: Testing developed feature functionalities before through testing (Testing basic & critical features)
- 2) Unit Testing.
- 3) Integration Testing: Testing data flow betⁿ two feature functionalities.
- 4) Functional testing: Testing each & every comp. completely & thoroughly. Valid & invalid.
- 5) Keyword testing.
- 6) Regression testing: Executing old test cases to ensure if they are working fine coz of changed features.
- 7) Data Driven testing.
- 8) Black Box Testing: Testing or verifying features are working properly or not.

SELENIUM :-

- Selenium is a open source functional testing tool for web based applications, this tool is supported by thoughtworks & google company.
- Selenium core components →
 - i) Selenium Core (1.0)
 - ii) Selenium IDE (SIDE) (Selenium integrated Development environment)
 - iii) Selenium RC
 - iv) Selenium Web driver < $\begin{matrix} 2.0 \\ 3.0 \end{matrix}$
 - v) Selenium Grid

Selenium Web Driver →

- Selenium web driver is a set of API's developed by using java which simulates user interactions by using browser native support.
- Selenium web driver supports following programming languages for scripting -
 - 1) JAVA
 - 2) C #
 - 3) Ruby
 - 4) Python
 - 5) JAVA scripts etc

- Selenium web driver supports following browsers for automation -
 - i) Mozilla Firefox
 - ii) Google chrome
 - iii) Internet explorer
 - iv) Operamini
 - v) Microsoft Ace
 - vi) Safari
 - vii) Headless browser (HTML Unit Driver) fontom
 - viii) Windows browser
 - ix) Android browser

- Selenium web driver supports multiplatform testing like windows, linux, Mac, Solaris etc.

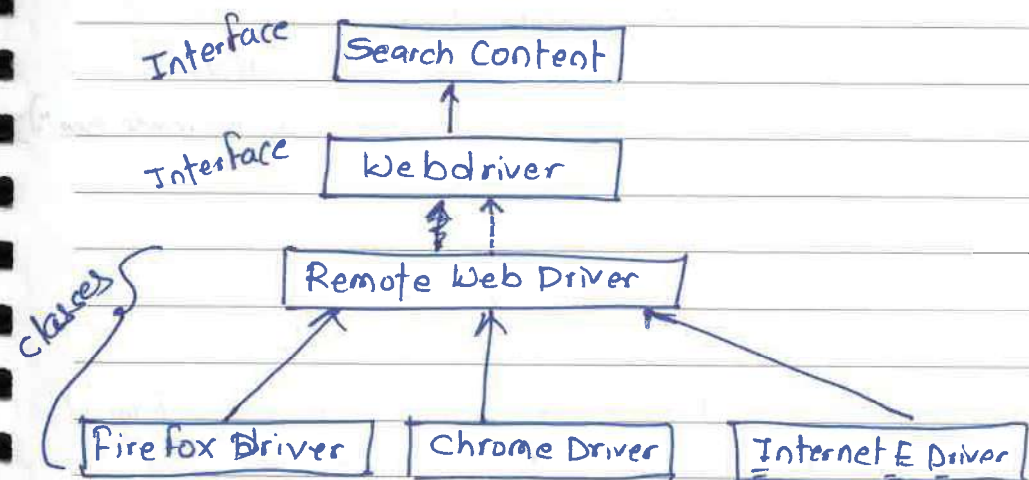
- In order to work with selenium web driver, we need to download selenium web driver API.

Steps to download selenium java bindings or APIs -

- 1) Open any browser & enter foll. url,
<https://www.seleniumhq.org/download/>
- 2) Click on previous releases link.

- 3) Click on required selenium version folder (2.53 or 3.8)
- 4) Download a zip file of required selenium JAVA binding by clicking on selenium-java-x.xx.x.zip (2.53.1 / 3.8.1)
- 5) After downloading above zip, unzip it into the required location.
- 6) Now open eclipse, create a new project or use an existing project, right click on that project & select properties.
- 7) In properties window, click on java build path, click on libraries tab, click on add external jars button & browse the location where u have unzipped selenium java bindings.
- 8) Select all the JAR files present inside unzipped folder (including libs folder) & attach to the project.

Selenium Architecture:-



In order to perform any operation on the browser, we should create & an instance of respective browser class.

Q. What is the difference in firefox object creation in selenium 2.0 & 3.0?

→ In selenium 2.0 Firefox Driver executable was inbuilt in selenium API hence no need to provide Firefox executable explicitly in the program.

FirefoxDriver fdriver = new FirefoxDriver();
In selenium 3.0, the Firefox executable got excluded from selenium API, hence we need to provide Firefox executable (Gecko Driver) explicitly by using,

about: support → To check version

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```
System.setProperty(key, value);  
System.setProperty("webdriver.gecko.driver",  
"Location of gecko driver unzip folder \\geckodriver.exe");
```

Steps of Download Gecko driver →

- 1) Open any browser & type below url,
<https://www.seleniumhq.org/download/>
- 2) Go to 3rd 'Third party Drivers, Bindings, Plugins' section & click on latest link of Mozilla Gecko driver.
- 3) Download latest Gecko driver zip file
(geckodriver-v0.23.0-win32.zip)
- 4) After downloading above zip file, unzip into the required location.

Note →

- 1) While working with selenium 2.0, it will provide support for Firefox version below 47 without gecko driver.
- 2) While working with selenium 3.0, the Firefox version should be above 47 & gecko driver is mandatory.

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WORKING WITH CHROME

BROWSER (Selenium 2.0 & 3.0)

- In order to work with chrome browser, we need to create an instance of chrome driver class but to launch the browser & to perform some activity on the browser, we need to specify the path of chrome driver executable by using `sys-`
`System.setProperty(key, value)` ← method

STEPS TO DOWNLOAD CHROME DRIVER EXECUTABLE -

- 1) Open any browser & enter the foll. url,
<https://www.seleniumhq.org/download/>
- 2) Go to "Third party Drivers, bindings, Plugins" section & click on "Latest link of Google chrome driver"
- 3) Click on latest release link (ChromeDriver 2.4)
- 4) Download "chromedriver-win32.zip" file & unzip it into the required location.
- 5) In order to work with chrome browser, write below mentioned statement -
`System.setProperty("webdriver.chrome.driver",
"Path of chrome driver unzipped folder \\
chromedriver.exe");`

WORKING WITH IE BROWSER:-

In order to work with IE browser, we need to create an instance of internet explorer driver class. But to work with IE browser, ie driver executable is also required.

STEPS TO DOWNLOAD IE DRIVER EXECUTABLE:-

- 1) Open any browser & enter the foll. url
<https://www.seleniumhq.org/download/>
- 2) Goto previous release section, then go to desired selenium java binding folder (2.53 or 3.14)
- 3) Now download "IEDriverServer-win32-xx.zip" (2.53.1.zip / 3.14.0.zip)
- 4) After downloading the zip file, unzip it into the required location & provide the path of ie driver executable by using -
system.set property ("webdriver.ie.driver",
"Path of ie driver unzipped folder\\IEDriverServer.exe")
InternetExplorerDriver idriver = new InternetExplorerDriver();

Note:-

All the above statements of browser launching is more specific to browser which means if we have written a script on Firefox then all the methods which will be used through

Firefox instance variable will be moved towards Firefox browser which is not a feasible solution if we have to run a script in different different browsers.

To overcome this, we can create an instance of required browser class & then upcast it to webdriver interface.

For e.g.

- 1) WebDriver driver = new InternetExplorerDriver();
- 2) " " = new ChromeDriver();
- 3) " " = new FirefoxDriver();

Note:-

1) Webdriver will not work on already opened browser, everytime it has to launch a browser & perform operation from the beginning.

- 2) Whenever a browser is launched by webdriver, it that browser following things will not be available →
 - i) Add-ons
 - ii) Plugins
 - iii) History
 - iv) cache & cookies