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SELENIUM

Selenium is a web testing tool which uses simple scripts to run tests directly within a browser. In simple terms, “it automates browsers”. It is a portable software testing framework for web applications that provides a record/playback tool for authoring tests without learning a test scripting language (Selenium IDE).

a) PROS OF SELENIUM

- 1) It support language and framework. i.e Java, Python, JavaScript, C#, Ruby, and Perl programming languages for software test automation.
- 2) It is open source tool availability. It is publically accessible and it is for free with no upfront costs.
- 3) It support multi browser and script for all browser .i.e Chrome, Firefox, Safari, Internet Explorer, Opera, and Edge browsers are the most used browsers worldwide and Selenium script is compatible with all the mentioned browsers.
- 4) It is flexible because it have some features like regrouping and refactoring of test cases. So these features helps developer and tester to change the code, reducing duplication, minimizing complications and improving maintainability.
- 5) It is easy to learn and use because it scripts are not something like writing hundred-page complex algorithm.

a) **CONS OF SELENIUM**

- 1) It is not reliable and technical support from anybody. It is the biggest disadvantage of Selenium Testing tool.
- 2) It only supports web-based applications only. But Selenium doesn't support Computer Desktop Applications, Mobile Native Applications and Mobile Hybrid Applications.
- 3) It has no Test Tool integration for Test Management. So we have to choose any tool from the market, if it is UFT, ALM is there for integration of Project/Test Management tasks.
- 4) It has no Built-in Reporting facility. So we need to take help from either JUnit or TestNG Testing Framework to generate Test Reports.
- 5) In this testing tool new features may not work properly. It is open source software nobody is responsible for new features usage, they may or may not work properly, it is vendor tool.

b) FUNCTIONALITY OF SELENIUM

When we start running a code from Eclipse IDE following steps will happen.

- 1) The Client driver will first establishes a connection with Selenium server.
- 2) Selenium Server will Perform following things.i.e
 - a. It will create a session for that particular request
 - b. It will launch the desired browser (that is we write in the code IE,FF,Chrome browser etc)
 - c. It loads the Selenium cores Javascript file into the specified browser (So as selenium server will have handle with the webpage for performing Selenese action)
- 3) Now the Client driver will send the program that we have written in eclipse IDE code as selenese and send it to Selenium server.
- 4) Selenium server is intelligent enough to understand the selenese command and triggers the corresponding javascript execution in the specified web browser.
- 5) Here Selenium Server act as a “Proxy Server” between the AUT (Application under Test) and actual browser, due to the restriction of “Same origin policy” selenium server performs “Proxy Injection”. Being a proxy gives Selenium Server the capability of “lying” about the AUT’s (Application under Test) real URL.

6) Now Selenium server requests the actual webserver for the page to open request and then it receives the page and sends it to the specified browser.

7) Now any operation or request to which the browser makes will eventually passes through the Selenium RC server to actual webserver and vice verse.

c) SUPPORTING LANGUAGES OF SELENIUM

It support a lot of different and many language that are given below in list.

- 1) Java
- 2) C#
- 3) Python
- 4) Ruby
- 5) PHP
- 6) Perl
- 7) JavaScript
- 8) R Programming
- 9) Objective-C
- 10) Haskell

d) SUPPORTING TESTS BY SELENIUM

There are many tests that are support by selenium testing tool.Here is the list of test:-

- 1) **Functional Testing:-** It is a type of software testing whereby the system is tested against the functional requirements/specifications.
- 2) **Regression Testing:-** It is used to confirm that a recent program or code change has not adversely affected existing features.
- 3) **Sanity Testing:-** It is to be conducted whenever a new build is received for testing
- 4) **Smoke Testing:-** It comprises of a non-exhaustive set of tests that aim at ensuring that the most important functions work.
- 5) **Responsive Testing:-** It is used to check the appearance of a website with RWD(Responsive Web Design).
- 6) **Cross Browser Testing:-**It is used for checking compatibility of application across multiple web browsers and ensures that web application works correctly across different web browsers.

7) UI testing (black box):- It is used to verify & validate UI components of web based applications.

8) Integration Testing:- It is used to expose faults in the interaction between integrated units.

e) CODE IN PYTHON TO DETECT BUGS

- 1) `from selenium.webdriver.common.keys import Keys`
- 2) `driver = webdriver.Firefox()`
- 3) `driver.get(http://www.python.org)`
- 4) `assert "Python" in driver.title`
- 5) `elem = driver.find_element_by_name("q")`
- 6) `elem.clear()`
- 7) `elem.send_keys("pycon")`
- 8) `elem.send_keys(Keys)`
- 9) `assert "No results found." not in driver.page_source`

BUG 1:- First we need to import webdriver module from selenium library.

BUG 2:- At line No.3 you need to code the website URL in quotes.

BUG 3:- At line No.8 you need to use return statement.

BUG 4:- At last we need to use close statement.

DEBUGGED CODE

```
from selenium import webdriver
from selenium.webdriver.common.keys import Keys
driver = webdriver.Firefox()
driver.get("http://www.python.org")
assert "Python" in driver.title
elem = driver.find_element_by_name("q")
elem.clear()
elem.send_keys("pycon")
elem.send_keys(Keys.RETURN)
assert "No results found." not in driver.page_source
driver.close()
```