Selenium with Python

Course Agenda

- Selenium Basics
- Selenium python basics
- Creating WhatsApp bot using selenium
- Web Scraping an e-commerce website

What is Testing ?

(What is Testing)

Once we develop a software component/ product, we have to analyze and inspect its features and also evaluate the component for potential errors and bugs so that when it gets delivered in the market, it is free of any bugs and errors. It is the point where we need extensive testing of the software.

Testing is done when the application is build , is ready to test and deployed in the test servers / environments.

(What is Manual Testing ?)

(Manual Testing)

Manual testing means the (web) application is tested manually by QA testers. Tests need to be performed manually in every environment, using a different data set and the success/ failure rate of every transaction should be recorded.

Manual testing is mandatory for every newly developed software before automated testing. This testing requires great efforts and time, but it gives the surety of bug-free software.

(Challenges in Manual Testing)

- Manual Testing requires more time or more resources
- GUI Objects Size difference and Color combinations etc.. are not easy to find in Manual Testing
- Executing the same tests, again and again, is time taking process as well as Tedious.

(What is Automation Testing ?)

(Automation Testing)

As the name suggests. automation testing takes software testing activities and executes them via an automation toolset or framework. In simple words, it is a type of testing in which a tool executes a set of tasks in a defined pattern automatically.

This automation testing method uses scripted sequences that are executed by testing tools. Automated testing tools execute examinations of the software, report outcomes and compare results with earlier test runs.

(Introduction to Selenium)

(What is Selenium?)

Selenium was introduced by Jason Huggins in 2004. Jason Huggins an Engineer at Thoughtworks. He was doing his work on some web application and he suddenly required testing.

Testing done using Selenium is often referred to as Selenium Testing.

Selenium is an open-source tool and portable framework that is used for automating the tests administered on web browsers. It is only used for testing web applications such as Shopping Carts, Email Programs like Gmail, Yahoo.

(Why Selenium with Python ?)

(Why Selenium with python ?)

- Python runs very faster and makes use of indentation to initiate and end blocks. It is very simple as well as compact as compared to other programming languages.
- The most important tool for easy user interfaces that is WebDriver has strong bindings for Python.
- Runs rapidly while making a comparison of another programming
- The programming language is also free and available as open source.
  Whoever needs it can easily download it and use freely in any environment
- Easy to code and easy to read

(Advantages of Selenium Testing)

(Advantages of Selenium Testing)

- Various programming languages are supported to write the test scripts
- Selenium supports various browsers like Mozilla Firefox, Google Chrome etc.
- Selenium supports parallel test execution.
- Selenium is an open source software.
- Selenium supports different operating systems like Windows, Linux, Mac etc.

(Limitations of Selenium Testing)

(Limitations of Selenium Testing)

- Selenium supports web based applications only
- The irresponsibility of new features. They may work or may not.
- Selenium can’t perform testing on images.
- Captchas are not automated using Selenium.
- Barcodes can’t be automated using Selenium.

Selenium suite of tools

Selenium suite of tools

Selenium is a tool having lot of software which have a different method for supporting the automation testing technique . It comprises of four major components which include:

1.Selenium Integrated Development Environment (IDE)

2.Selenium Remote Control ()

3.Selenium WebDriver

4.Selenium Grid

Selenium suite of tools

Selenium RC

This is a framework in which a developer writes about test instances which help to go with checks for the different internet functions.
The test instances written by a developer consists of test cases in the preferred programming language which helps to check the User Interface part.

The main engine of Selenium RC is supported by JavaScript.

Selenium RC doesn’t follow pure OOP.

Selenium suite of tools

Selenium IDE

- Selenium integrated tool is the easiest web automation tool present in the selenium suite. It is very easy to learn.
- It is an add-on of Firefox so that tests are created quickly through its works and functionality. This feature is similar to QTP (Quick Test Professional).
- It is so simple, and thus, is only used for prototyping tools and not for developing complex test suites.

NOTE : Selenium IDE only supports Firefox and Chrome plug-in, which means you are not able to record your test cases other than these two.

Selenium suite of tools

Selenium GRID

In this tool we have a Client-Server which help us to do the parallel testing
On various browsers and different operating system combinations.
You are allowed to connect multiple remote machines with a server using which
You can run a script for automating the browser.
The server which is mentioned in the above two lines is called as the Hub which
Interacts with multiple clients

Selenium grid is used for two different cases :

1. To reduce the time
2. To run test on different browsers

Selenium suite of tools

Selenium WebDriver

Selenium WebDriver is an open-source assemblage of API's and it is the most important component of Selenium Tool's Suite. It is used for testing web applications. WebDriver API is integrated with the latest release of selenium which is "Selenium 2.0" provided with a simpler and a condensed programming look.
Test Scripts in Selenium WebDriver can be developed with any supported programming language and can be executed in any modern or fancy browsers.

Selenium WebDriver supports Java, C#, PHP, Python, Perl, Ruby.

Navigating links using get method

get method

How to navigate links using Python Selenium ?

get() is used to navigate particular URL(website) and wait till page load.

WebDriver will wait until the page has fully loaded before returning control to your test or script.

Syntax :

```
driver.get(url)
```

Selenium Locators

Selenium Locators

Selenium have wide range of locators which helps to locate elements on a web page.

Selenium Locators

Selenium gives user options to locate elements in different ways.

- Id
- Name
- Linktext
- Partial Linktext
- Tag Name
- Class Name

Selenium Locators

Locate element by ID

Locating by ID is the most frequent method of locating elements. But IDs are supposed to be unique.

Syntax :

```
findElement(By.id(“ ”))
```

Selenium Locators

Locate element by Name

This is a fall back option when Id for element is not present. But mostly the names are used again and again, so make sure that the name is unique on the page before using it.

Syntax :

```
findElement(By.name(‘    ’))
```

Selenium Locators

Locate element by LinkText

LinkText helps to find the hyperlink on a webpage. We use the anchor tag to locate the element using LinkText.

Syntax :

```
findElement(By.linktext('Link'));
```

Selenium Locators

Locate element by Partial LinkText

In a LinkText element , sometimes we could need to find the link by the portion of a text.
Therefore in the above mentioned condition we use the Partial LinkText.

Syntax :

```
findElement(By.partialLinkText('Link'))
```

Selenium Locators

Locate element by Tag Name

Tag Name we can use for the elements like drop downs, check boxed, radio buttons. Following html is for drop down with 3 values. To select that drop down we will use tag Name locator.

Syntax :

```
findElement(By.tagname(“    ”))
```

Selenium Locators

Locate element by Class Name

This locator we can use as a fall back option for either name or Id. But the same condition applied here Class name should be unique or selenium will locate the first element present on the page with the class name we have used to locate element.

Syntax :

```
findElement(By.classname(“  ”))
```

Pytest

Pytest

- Framework used for unit testing
- The projects are hosted on GitHub
- Open-source library
- Able to write simple as well as complex tests

Pytest library doesn’t comes by default installed so we need to install it using the pip command

Summary

Let's Take a quick recap for all the topics

Thank You