Selenium 1: Introduction to Selenium

1) What is Selenium?

2) History of the Selenium Project

3) Selenium Components / Selenium's Tool Suite

4) Platforms supported by Selenium

5) Selenium License

6) Advantages and Disadvantages of Selenium

7) Testing Frameworks and Other Tools used in Selenium

1) What is Selenium?

i) Selenium is used for Functional & Regression Testing

ii) Selenium is Open source software to automate web browsers

iii) Selenium supports various operating environments

MS Windows,

Linux,

Macintosh etc...

iv) Selenium supports various Browsers to write and execute Test Scripts

Google Chrome,

Mozilla Firefox,

MS Internet Explorer/ MS Edge

Opera

Safari

etc....

v) Selenium supports various programming languages to write Programs (Test Scripts)

Java,

Python,

C#.NET,

Perl,

Ruby,

PHP

Note:

i) Selenium IDE doesn't support any Programming

ii) Selenium IDE supports Mozilla Firefox and Chrome browsers only

ii) Selenium Grid is only for Test Execution

iv) Selenium RC is out dated and it was removed from Selenium latest version/s

2) History of the Selenium Project

i) Selenium was first launched in 2004

ii) In 2006, Selenium WebDriver was launched at Google

iii) In 2008, the whole Selenium team decided to merge Selenium WebDriver with Selenium RC in order to form a powerful tool called Selenium 2.0

Selenium 1.0

(Selenium IDE + Selenium RC + Selenium Grid)

Selenium 1.0 + Selenium WebDriver = Selenium 2.0

Selenium 2.0

(Selenium IDE + Selenium RC + Selenium WebDriver + Selenium Grid)

Selenium 3.0 (October 2016)

(Selenium IDE + Selenium WebDriver + Selenium Grid)

Note: Selenium Team removed Selenium RC from the Suite

3) Selenium Components / Selenium's Tool Suite

Selenium IDE

Selenium RC

Selenium WebDriver

Selenium Grid

i) Selenium IDE Features:

Selenium IDE (Integrated Development Environment):

> It is a browser plug-in (Firefox and Chrome) and prototype tool

> It is used to create and execute Test cases using Firefox or Chrome browsers

> User can Record the Test Scripts or type Test scripts

> User can edit Test scripts (Add/Update/delete)

> User can create Test Suites

> User can debug Test Cases and Add Comments

Note: Selenium IDE Test Cases can be created using Element Locators and Selenese Commands

Drawbacks of Selenium IDE:

> It doesn't support Programming to enhance test cases, so it is not suitable for complex test design

> It doesn't support Parameterization/Data Driven Testing

(Parameterization - passing parameters (variables or arguments) instead of constant (fixed) values)

> No centralized maintenance of Objects/Elements

> It doesn't generate detailed Test Reports summary only

ii) Selenium RC -Out Dated

iii) Selenium WebDriver

Features:

> Selenium WebDriver doesn't have IDE and having Programming Interface only

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Selenium IDE: has IDE but no Programming interface

Selenium WebDriver: No IDE, only Programming Interface

UFT/QTP: has both IDE as well as Programming Interface

> Selenium WebDriver is used to create and execute Test cases/Test scripts

> Using Element Locators and WebDriver API Commands we can create Test scripts

> Selenium WebDriver supports various Operating environments, Browsers and programming languages

> Selenium WebDriver supports Batch Testing, Data Driven Testing, Cross Browser Testing and Database testing

Drawbacks of Selenium WebDriver:

> Selenium WebDriver has no IDE, so it takes more time and efforts to create Test Scripts

> No built in Object Repository

(*using POM we can create object repositories)

> No built-in Result Reporting facility

(* using Programming features or using Testing Framework Assert methods)

> No other Test Tool integration for Test management

> Difficult to configure Test Environment when it compares to other tools like UFT

iv) Selenium Grid:

> Selenium Grid is only for Test Execution and it doesn't Support Test Design

> Selenium Grid supports Parallel Testing

(It can execute Test scripts against different browsers and machines (computers)

4) Platforms supported by Selenium

Selenium works with various Operating systems, browsers, programming languages and Testing Frameworks

i) Operating Systems

MS Windows

Linux

Macintosh etc...

ii) Application Environment

      i) CUI (* doesn't support)

      ii) GUI - Desktop (* doesn't support)

         Web (Supports)

iii) Browsers

Google Chrome

Mozilla Firefox

MS Internet Explorer / MS Edge

Opera

Safari

etc...

iv) Programming Languages

Java

Python

C#.Net

Perl

PHP

Ruby

v) Testing Frameworks

Java - JUnit or TestNG

C#.Net - NUnit

PHP: Behat + mink

Python: unittest, pyunit, py.test

Ruby: RSpecc, Test::Unit

5) Selenium License

> Selenium is an Open Source Software, anybody can download and with free of cost

> Selenium Projects were released under Apache 2.0 license

i) Anybody can download and use Selenium with free of cost

ii) Anybody can modify the source code and use, and distribute to others

iii) Selling modified code is not allowed

6) Advantages and Disadvantages of Selenium

Advantages of Selenium

i) It is an Open Source Software

ii) It supports various Operating systems

iii) It supports various Programming languages

iv) It supports various browser environments

v) It supports parallel testing

vi) It uses less hardware resources

Etc...

Disadvantages of Selenium

i) It supports only web based applications

ii) No reliable technical support from anybody

iii) No other tool integration for Test Management

iv) No built-in Object Repository

v) No built-in Result Report facility

vi) Difficult to configure Test Environment

vii) Less support for Image based Testing

viii) It takes time and efforts to create Test cases

etc....

7) Testing Frameworks and Other Tools used in Selenium

i) Editor - Eclipse IDE - Editor for writing and executing programs

ii) Programming Platform - Java - To write Test Scripts and enhance Test Scripts

iii) Test Tool - Selenium WebDriver Java language binding - to write Test Steps

iv) Testing Framework - TestNG- prioritizing Test Cases, Grouping Test Cases, Executing Test batches, Parallel Testing and generate Test Reports.

v) Build Automation Tool - Maven - Easily setup Test Environment and easy Maintenance of the Environment

vi) CI Tool - Jenkins - Continuous Integration (integrating Testing process with development process) etc....