ActiveNET®

Enterprise Solution Company

Suryanarayana

Selenium

Web Application Testing Framework

Selenium IDE, RC, WebDriver & Grid

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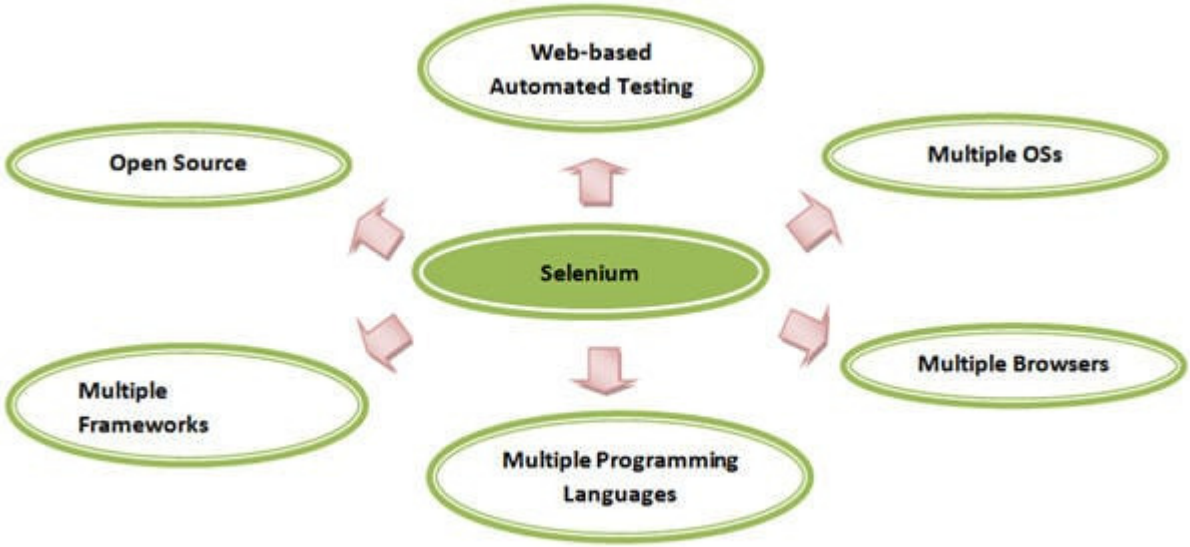
About Selenium

Selenium is one of the most popular Automated Testing suites. Selenium is designed in such a way to support and encourage Automation Testing of functional aspects of web-based applications and a wide range of browsers and platforms. Due to its existence in the open source community, it has become one of the most accepted tools amongst the testing professionals.



Selenium supports a broad range of browsers, technologies and platforms

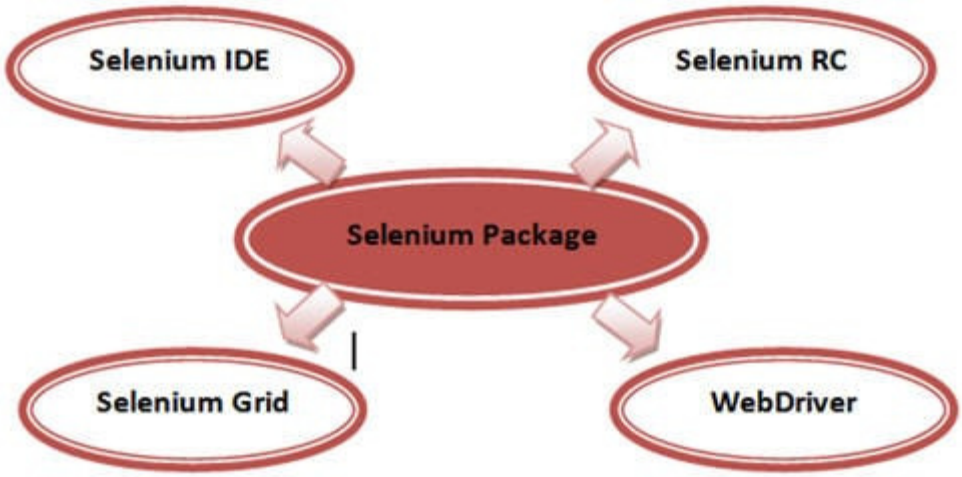
Selenium Components

Selenium is not just a single tool or a utility, its rather a package of several testing tools, hence it is referred as a Suite. Each of these tools is designed to cater different testing and test environment requirements.

The suite package constitutes of the following set of tools:

- Selenium Integrated Development Environment (IDE)
- Selenium Remote Control (RC)
- Selenium WebDriver
- Selenium Grid

Selenium RC and WebDriver, combined together are popularly known as ***Selenium 2***. **Selenium RC** alone is also referred as ***Selenium 1***.



Tool	Description
Selenium IDE	Selenium Integrated Development Environment (IDE) is a Firefox plug-in that lets testers to record their actions as they follow the workflow that they need to test.
Selenium RC	Selenium Remote Control (RC) was the flagship testing framework that allowed more than simple browser actions and linear execution. It makes use of the full power of programming languages such as Java, C#, PHP, Python, Ruby, and PERL to create more complex tests.
Selenium Web Driver	Selenium WebDriver is the successor to Selenium RC which sends commands directly to the browser and retrieves results.
Selenium Grid	Selenium Grid is a tool used to run parallel tests across different machines and different browsers simultaneously which results in minimized execution time.

Advantages and Disadvantages of Selenium IDE

Advantages	Disadvantages
Easy record and play back	A firefox plug-in, thus it support is limited to firefox only
Capable of converting tests in html, Java, C# and various other languages	Doesn't support iterations and conditional statements
No prior programming language experience is required	Doesn't support error handling
Logging capabilities using file logging plug-in	Doesn't support test script dependency or grouping
Debug and set breakpoints	Doesn't support database testing
Flexibility & extensibility	

Advantages and Disadvantages of Selenium RC

Advantages	Disadvantages
Supports programming languages and constructs	Test scripts do not directly communicate with the browser, selenium RC server needs to be running on enable communication
Supports a wide range of browsers and platforms	User is bound to have prior programming knowledge
Supports creation of user defined utilities like generics/exceptions to customize framework	Unable to handle alerts and navigations efficiently
Supports error handling and database testing	Doesn't support testing of WAP based applications (phone/android)
Supports test data driven testing	Faster than selenium IDE but slower than WebDriver
Supports logging and capturing screenshots	Doesn't support implementation of listeners
Supports testing frameworks like TestNG and JUnit	Unable to handle Ajax calls efficiently

Advantages and Disadvantages of Selenium WebDriver

Advantages	Disadvantages
Doesn't require selenium server to be started before executing test scripts	A more complex API
Directly communicates with the browser	User is bound to have prior programming knowledge
A purely object oriented interface	Doesn't support mobile testing
Supports dynamic finders	Migrating from selenium RC to WebDriver is a tiresome process
Offers a wide range of utilities and classes that help in handling alerts, navigations, Ajax calls & dropdowns	Unable to test application with flash/flex objects
Supports testing of WAP based applications (phone/android)	
Faster than Selenium RC	

Supported Browsers

Browser Name	Selenium IDE	Selenium RC	WebDriver
Mozilla Firefox	Yes	Yes	Yes
Google Chrome	No	Yes	Yes
Internet Explorer	No	Yes	Yes
Opera	No	Yes	Yes
Safari	No	Yes	Yes
HtmlUnit	No	No	Yes

Supported Programming Languages

Programming Language	Selenium IDE	Selenium RC	WebDriver
Java	No (Can generate code)	Yes	Yes
C#	No (Can generate code)	Yes	Yes
PHP	No (Can generate code)	Yes	Yes
Perl	No (Can generate code)	Yes	Yes
Ruby	No (Can generate code)	Yes	Yes
Python	No (Can generate code)	No	Yes

Supported Operating Systems

Operating System	Selenium IDE	Selenium RC	WebDriver
Windows	Yes	Yes	Yes
Mac OS	Yes	Yes	Yes
Linux	Yes	Yes	Yes
Solaris	Yes	Yes	Yes

Selenium Course Content

Overview
- **Introduction - Advantages of Selenium - Disadvantages of Selenium**
Selenium IDE
- **Selenium IDE - Download Selenium IDE - Features of Selenium IDE - Creating Selenium IDE Tests - Script Debugging - Inserting Verification Points – Pattern Matching – Selenium User Extensions – Different Browser Execution**
Environment Setup
- **Download and Install Java – Download and Configure Eclipse – Configure FireBug and FirePath – Configuring Selenium RC – Configuring Selenium Web Driver**
Selenium RC
- **What is Selenium RC – Selenium Architecture – RC Scripting**
Selenese Commands
- **Actions – Accessors – Assertions**
Web Driver
- **Architecture – Selenium RC Vs WebDriver – Scripting using WebDriver – FirefoxDriver, Firefox Profile, Firefox Preferences, InternetExplorerDriver, ChromeDriver, SafariDriver, OperaDriver, understanding WebDriver Events, Dealing with I/O**
Locators
- **Locators Usage – findElementById(), findElementsById(), findElementByName(), findElementsByName(), findElementByClassName(), findElementsByClassName(), findElementByXPath(), findElementsByXPath(), findElementByLinkText(), findElementsByLinkText(), findElement(), findElements(), Using XPath to find the nth element of type, Using element attributes in XPath queries, Actions on Web Elements – getAttribute(), sendKeys() clear(), submit(), getCssValue(), getLocation(), getSize(), getText(), getTagName(), isDisplayed(), isEnabled(), isSelected()**
Interactions
- **User Interactions – Text Box Interaction – Radio Button Interaction – Check Box Interaction - Dropdown Interaction – Synchronization – Drag & Drop – Keyboard Actions – Mouse Actions – Multi Select Action – Find All Links**
Test Design Techniques
- **Page Object Model – POM Flow Diagram – Data Driven using Excel – Parameterization – Log4j Logging – Exception Handling – Multi Browser Testing – Capture Screenshots – Capturing Videos**
TestNG
- **What is TestNG – Installing TestNG for Eclipse- Annotation in TestNG – TestNG-Eclipse Setup – First Step in TestNG**
Selenium Grid
- **Architecture – Working with Grid – Configuring the Hub – Configuring the Nodes – Develop the script and prepare the XML file – Test Execution – Result Analysis**