**Lab 5: Parallel Execution of Tests using Selenium Grid on AWS**

Objective:*Set up a Selenium Grid on AWS to run tests on different browsers in parallel.*

Tasks:

1. Set up Selenium Grid Hub on EC2.

2. Register multiple nodes with different browsers.

3. Run a test suite in parallel across nodes.

Documentation:

- Introduction to Selenium Grid.

- Setting up Hub and Nodes on EC2.

- Parallel execution in Selenium.

Prerequisites:

1- An AWS account with administrative access.

2- Python Automation Course

3- Python Selenium Course

4- Bash Script Deep Dive Course

5- Previous Lab completed

Implementation Documentation:

### **Introduction to Selenium Grid**

Selenium Grid is a powerful tool that allows you to run multiple Selenium tests in parallel across different browsers, operating systems, and machines. It consists of a hub and multiple nodes. The hub controls the execution of tests on different nodes.

#### **Step 1: Setting Up Selenium Grid Hub on EC2**

* Log in to your AWS account.
* Launch a new EC2 instance (Choose an OS based on your preference ubuntu).
* Install Java on the EC2 instance.
* Download and start the Selenium Grid Hub:

| sudo apt update  sudo apt install default-jre  #download standalone selenium  wget https://selenium-release.storage.googleapis.com/3.141/selenium-server-standalone-3.141.59.jar  # Start the Selenium Grid Hub on your EC2 instance.  java -jar selenium-server-standalone-3.141.59.jar -role hub |
| --- |

*Access the hub using http://<EC2-Public-IP>:4444/grid/console.*

### **Setting up Hub and Nodes on EC2**

#### **Step 2: Registering Nodes with Different Browsers**

* Launch multiple EC2 instances (nodes) with different configurations (e.g., different browsers and operating systems).
* Install Java on each node.
* Download and start the Selenium Standalone Server on each node as shown above
* Type following command to register the nodes

| http://<Hub-IP>:4444/grid/register |
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* Nodes will be registered with the hub.

### Parallel Execution in Selenium

#### **Step 3: Running a Test Suite in Parallel**

You can use EC2 or Local Machine. It's totally up to you to run the test suite in parallel.

| from selenium import webdriver import time  # Define the capabilities (browser, platform) capabilities = {  "browserName": "chrome",  "platform": "LINUX" }  options = webdriver.ChromeOptions() options.set\_capability("browserName", "chrome") options.set\_capability("platform", "LINUX")  # Start the browsers, make sure to replace your Public IPs driver1 = webdriver.Remote(  command\_executor='http://172.31.19.249:4444/wd/hub',  options=options )  driver2 = webdriver.Remote(  command\_executor='http://172.31.19.249:4444/wd/hub',  options=options )  # Close the browsers time.sleep(5) driver1.quit() driver2.quit() |
| --- |

#### **Explanation:**

* We import necessary libraries and define desired capabilities for different browsers.
* We start the browsers using webdriver.Remote by specifying the node's URL.
* We perform tests on the browsers as usual.
* Finally, we close the browsers.

**Conclusion:**

By following these steps, you have successfully set up a Selenium Grid on AWS and executed tests in parallel across different nodes with different browsers. This lab demonstrates the power of parallel test execution for efficient and faster testing.