Robot framework
Web Automation - (Selenium for Desktop & Appium for Mobile)

Tho Pham

Version: 0.4

Agenda

- Prerequisites:
    - Have knowledge on Robot Framework https://box.tma.com.vn/index.php/s/K8tmelQVK267Pwp
    - Have experiences on Selenium https://box.tma.com.vn/index.php/s/PDJAY74PwfYANww
    - Download ZIP https://github.com/phamtantho/robotframework
        - ► On Windows: Put on D:/ and unzip
        - ► On Mac: Put on Desktop/ and unzip; go inside selenium_grid > run cmd: chmod 755 *
    - Have Macbook, iOS and Android devices

- Part 1 - Desktop:
    - Introduce Selenium Grid
    - Test web on windows (Chrome, Firefox, Edge)
    - Test web on MacOS (Chrome, Firefox, Safari)
    - Page Object Model (POM)

- Part 2 - Mobile:
    - Test web on Android (Chrome)
    - Test web on iOS (Safari)
    - Bonus: Headless browsers

Selenium Grid
Introduction

- Selenium-Grid allows you run your tests on different machines against different browsers and operating systems in parallel

- More details: *https://www.seleniumhq.org/docs/07_selenium_grid.jsp*

Selenium Grid
Architecture

◉ **The Hub**

- ■ The hub is the central point where you load your tests into.

- ■ There should only be one hub in a grid.

- ■ The hub is launched only on a single machine, i.g a computer whose O.S is Windows 10

- ■ The machine containing the hub is where the tests will be run, but you will see the browser being automated on the node.
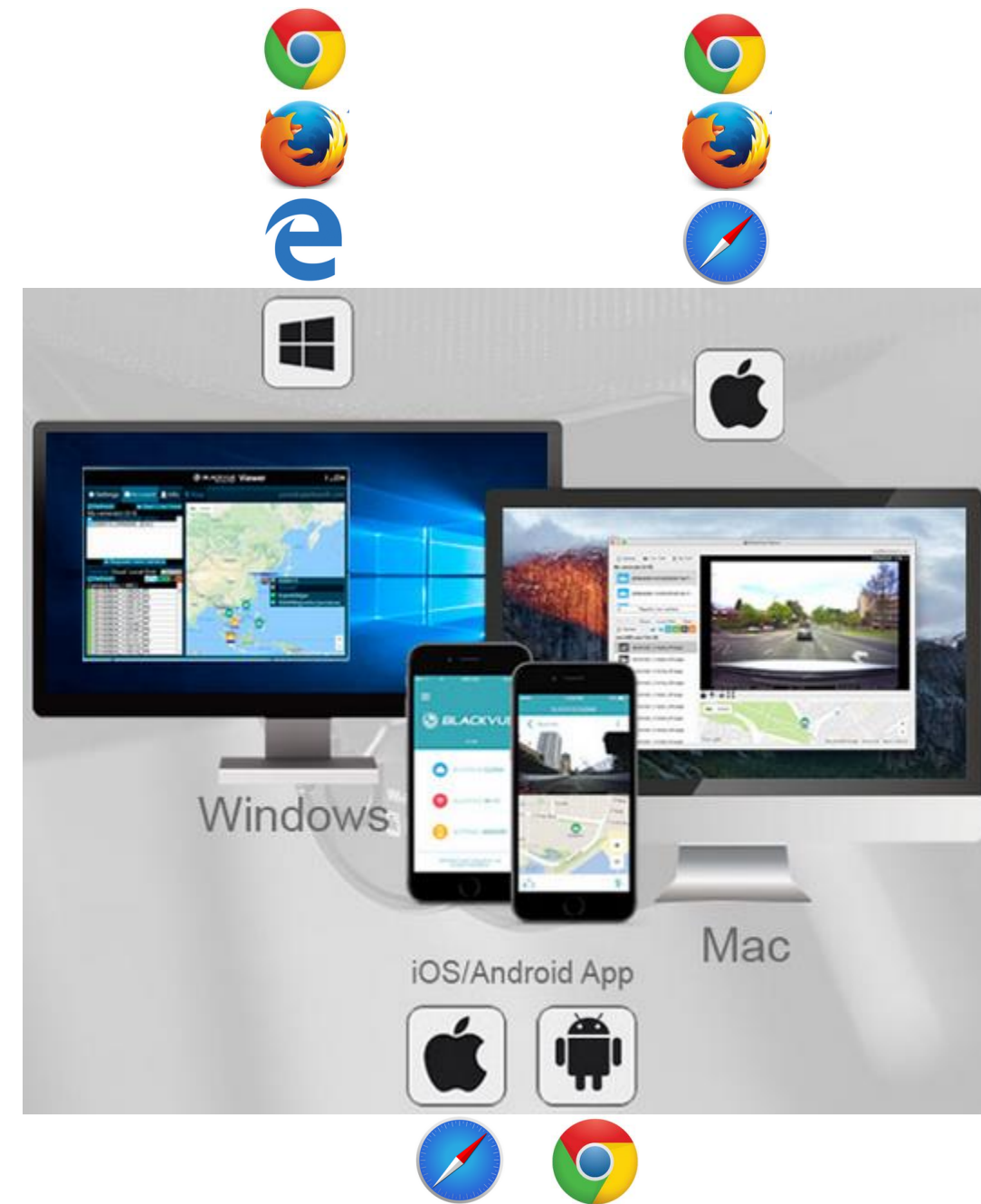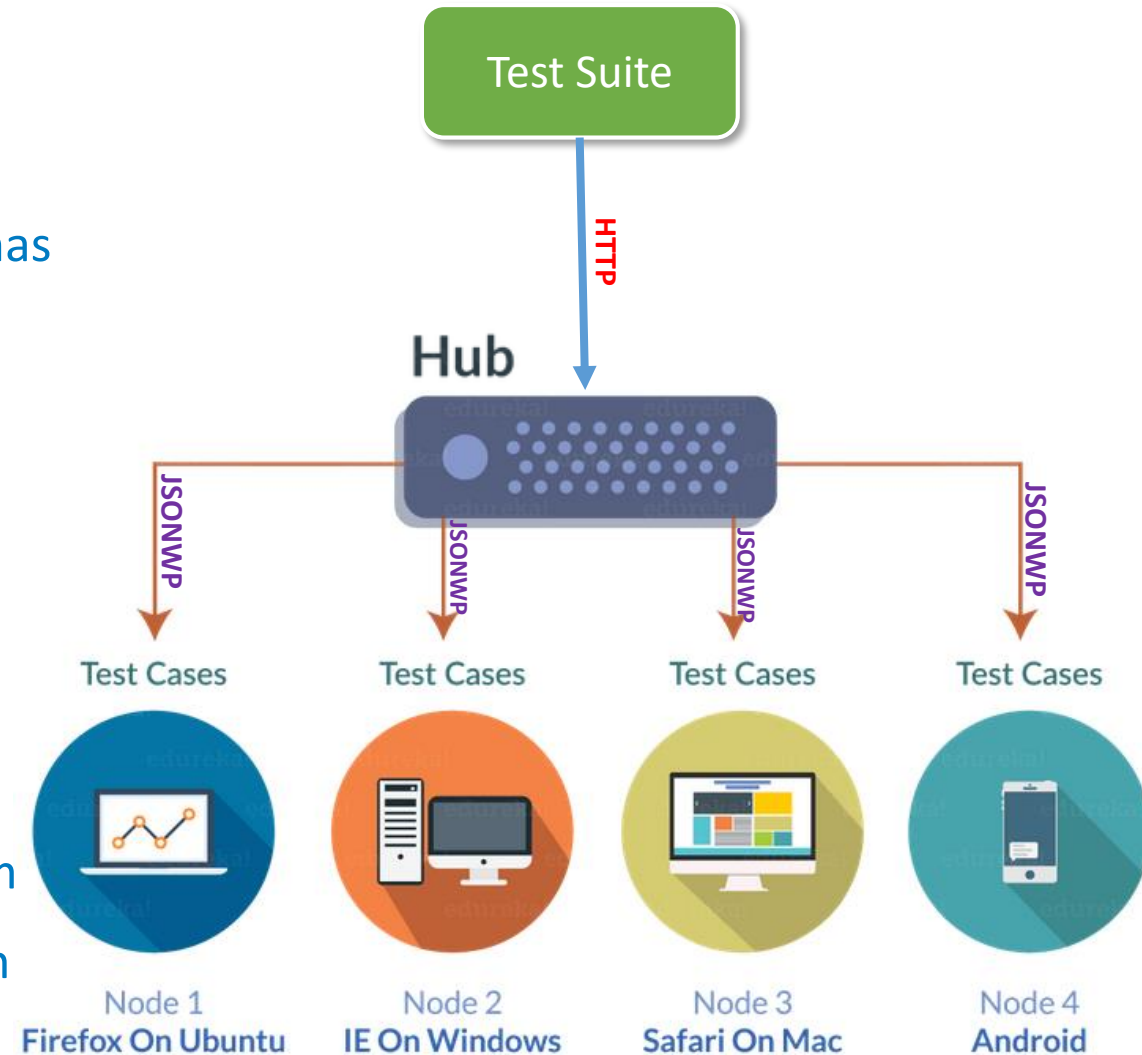
Selenium Grid
Architecture

● The Nodes

■ Nodes are the Selenium instances that will execute the tests that you loaded on the hub.

■ There can be one or more nodes in a grid.

■ Nodes can be launched on multiple machines with different platforms and browsers.

■ The machines running the nodes need not be the same platform as that of the hub.

Windows

iOS/Android App

Mac

Selenium Grid
Architecture

⊙ **The Nodes**

- ■ Nodes are the Selenium instances that will execute the tests that you loaded on the hub.

- ■ There can be one or more nodes in a grid.

- ■ Nodes can be launched on multiple machines with different platforms and browsers.

- ■ The machines running the nodes need not be the same platform as that of the hub.

Windows

Mac

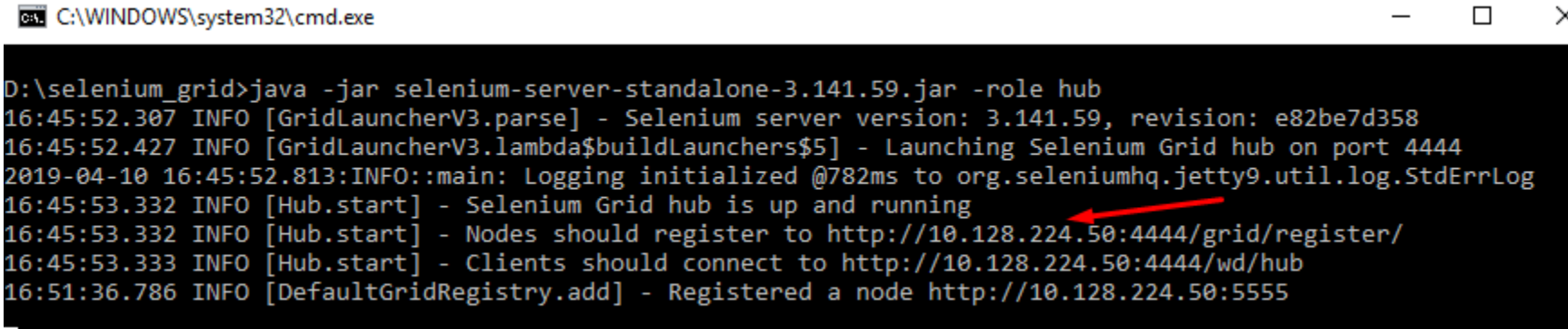iOS/Android App

Selenium Grid
How it works

1. The hub receives a test to be executed along with information on which browser and platform

2. The hub 'knows' the configuration of each node that has been 'registered' to it

3. The hub selects an available node that has the requested browser-platform combination

4. Once a node has been selected, Selenium commands initiated by the test are sent to the hub, which passes them to the node assigned to that test

5. The node runs the browser, and executes the Selenium commands within that browser against the application under test.

Test Suite

HTTP

Hub

JSONWP | JSONWP | JSONWP | JSONWP

Test Cases | Test Cases | Test Cases | Test Cases

Node 1
Firefox On Ubuntu | Node 2
IE On Windows | Node 3
Safari On Mac | Node 4
Android

Selenium Grid
Start hub

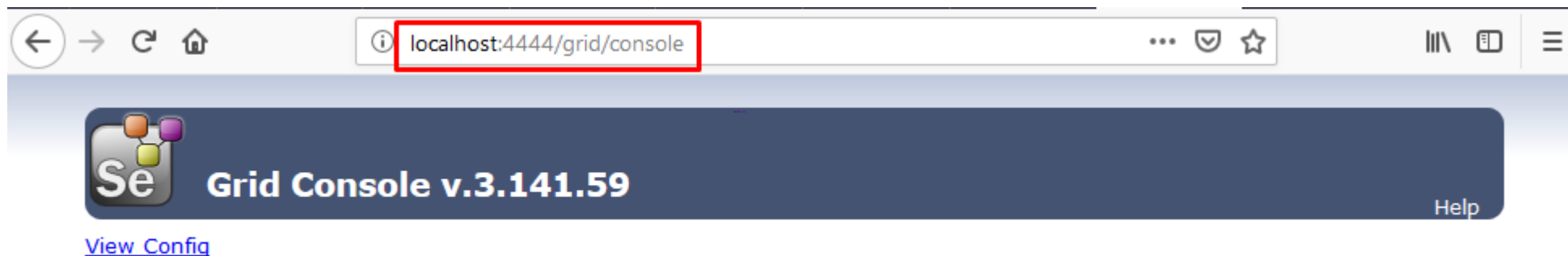- Go to folder selenium_grid
  - On windows: double-click **start_hub_on_windows.bat**
  - On mac: open terminal, go to selenium_grid and run ./**start_hub_on_mac.sh**
- Take note the hub's IP. In this case 10.128.224.50

- Verify hub status: Open page *<localhost or hub's IP>:4444/grid/console*
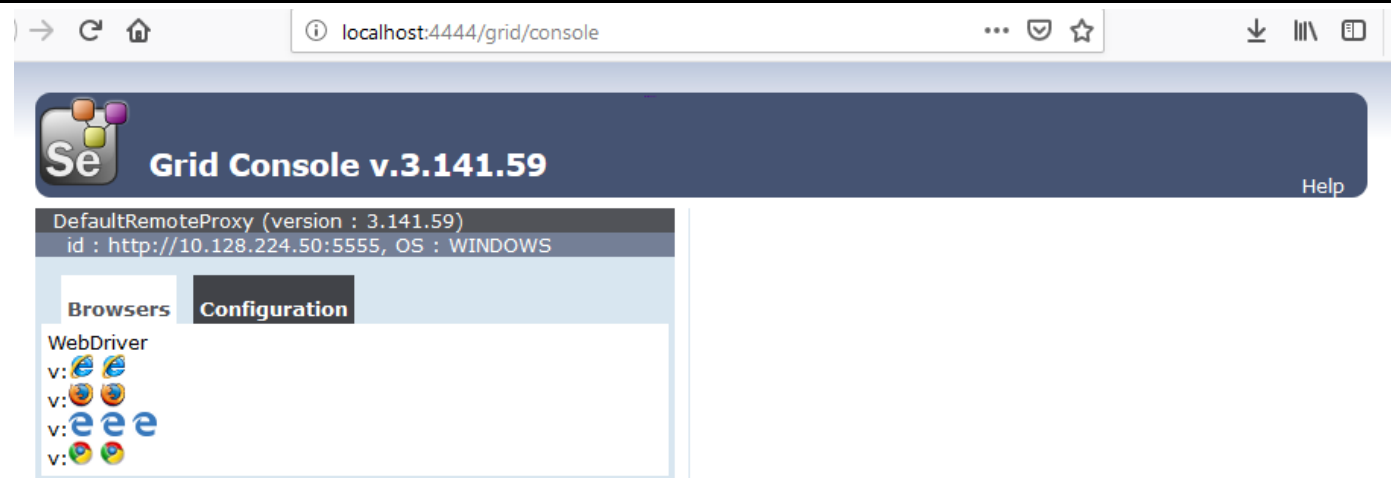
Test web on desktop
Start node on windows

- Go to selenium_grid
    - Update hub's IP in file config_win.bat
        - Line: "hub": "http://<hub's IP>:4444",
    - Double click **start_node_on_windows.bat**

Test web on desktop
Start node on mac

◉ Go to selenium_grid

■ Update hub's IP in file start_node_on_mac.sh

► Line: "hub": "http://<hub's IP>:4444",

■ Run cmd **./start_node_on_mac.sh**

```
C:\WINDOWS\system32\cmd.exe                                              —    □    ✕

D:\selenium_grid>java -jar selenium-server-standalone-3.141.59.jar -role node -nodeConfig config_win.json -hub http://10.128.224.50:4444/grid/register/
16:51:34.889 INFO [GridLauncherV3.parse] - Selenium server version: 3.141.59, revision: e82be7d358
16:51:35.010 INFO [GridLauncherV3.lambda$buildLaunchers$7] - Launching a Selenium Grid node on port 5555
2019-04-10 16:51:35.590:INFO::main: Logging initialized @965ms to org.seleniumhq.jetty9.util.log.StdErrLog
16:51:35.808 INFO [WebDriverServlet.<init>] - Initialising WebDriverServlet
16:51:35.889 INFO [SeleniumServer.boot] - Selenium Server is up and running on port 5555
16:51:35.890 INFO [GridLauncherV3.lambda$buildLaunchers$7] - Selenium Grid node is up and ready to register to the hub
16:51:36.071 INFO [SelfRegisteringRemote$1.run] - Starting auto registration thread. Will try to register every 5000 ms.
16:51:36.594 INFO [SelfRegisteringRemote.registerToHub] - Registering the node to the hub: http://10.128.224.50:4444/grid/register
16:51:36.787 INFO [SelfRegisteringRemote.registerToHub] - The node is registered to the hub and ready to use
```

Se Grid Console v.3.141.59

Help

DefaultRemoteProxy (version : 3.141.59)
  id : http://10.128.224.50:5555, OS : WINDOWS

Browsers   Configuration

WebDriver
v:
v:
v:
v:

DefaultRemoteProxy (version : 3.141.59)
  id : http://10.102.1.118:6666, OS : MAC

Browsers   Configuration

WebDriver
v:
v:
v:

Sample test
Sample test 1

- Go to Robot_web_testing > test_browsers

- Take a look on this sample test

- Execute and observe the results

- Add more nodes from nearby classmates

    - PC1: Hub

    - PC2: node1

    - PC3: node2

    - …

- Execute and observe the results

Sample test
Disadvantages

- **Duplicated code**
  - Duplicated functionality
  - Duplicated locators

- **Consequences**
  - Fragile project
  - Less maintainable
  - Hard to read and follow

1	Open Browser	http://demo.guru99.com/test/newtours/index.php	chrome
2	Title Should Be	Welcome: Mercury Tours	
3	Maximize Browser Window		
4	Log To Console	Register an account	
5	Click Element	link=REGISTER	
6	Input Text	name=firstName	Tho
7	Input Text	name=lastName	Pham
8	Input Text	name=phone	0908224292
9	Input Text	id=userName	pttho@tma.com.vn
10	Input Text	name=address1	111 Nguyen Dinh Chinh, P15
11	Input Text	name=city	PN
12	Input Text	name=state	HCM
13	Input Text	name=postalCode	9999
14	Select From List By Value	name=country	VIETNAM
15	Input Text	name=email	Tho
16	Input Password	name=password	123456
17	Input Password	name=confirmPassword	123456
18	Click Button	name=submit	
19	Wait Until Page Contains	Thank you for registering	10s

Page Object Model (POM)
What is POM and its advantages

◉ POM is a design pattern to create **Object Repository** for web UI elements

◉ Each web page in the application has corresponding page class that contains:
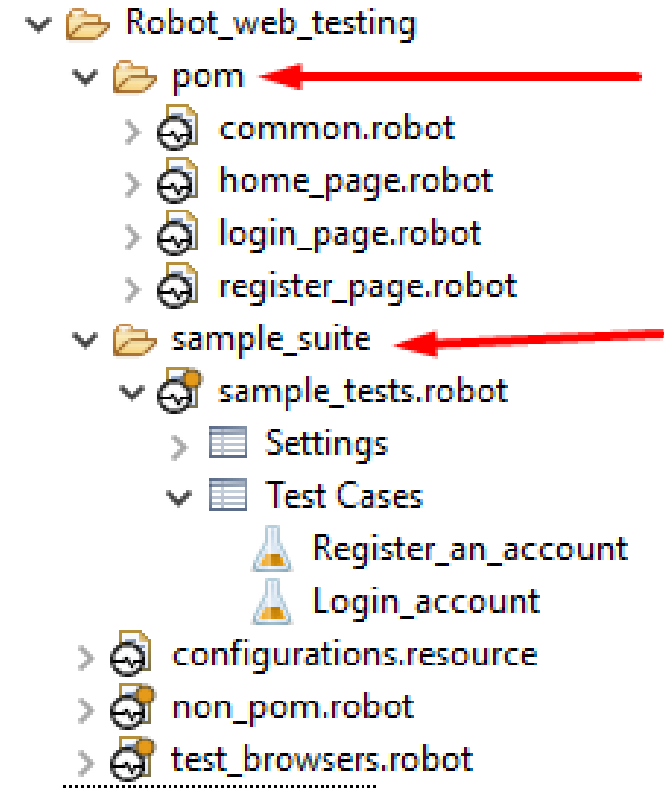
  ■ WebElements

  ■ Methods

2	Title Should Be	Welcome: Mercury Tours	
3	Maximize Browser Window		
4	Log To Console	Register an account	
5	Click Element	link=REGISTER	

HomePage

6	Input Text	name=firstName	Tho
7	Input Text	name=lastName	Pham
8	Input Text	name=phone	0908224292
9	Input Text	id=userName	pttho@tma.com.vn
10	Input Text	name=address1	111 Nguyen Dinh Chinh, P15
11	Input Text	name=city	PN
12	Input Text	name=state	HCM
13	Input Text	name=postalCode	9999
14	Select From List By Value	name=country	VIETNAM
15	Input Text	name=email	Tho
16	Input Password	name=password	123456
17	Input Password	name=confirmPassword	123456
18	Click Button	name=submit	
19	Wait Until Page Contains	Thank you for registering	10s

RegisterPage

Reference: https://www.guru99.com/page-object-model-pom-page-factory-in-selenium-ultimate-guide.html

Page Object Model (POM)
Sample test

- Go to Robot_web_tesing > pom and sample_suite

- Take a look on test scripts

- Execute on remote nodes and observe results

Robot Framework
Q&A

THANK YOU !

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