15/02/2017

SELENIUM :-

Important JAVA topics:

1) Collections → list & Set
2) Looping Statements → for loop & enhanced for loop.
3) Condition Statements
4) OOPs concepts → Encapsulation, Inheritance, polymorphism, abstraction. (Defn & example)
5) Exception → what? Types? How to handle?
6) Final, Finally & Finalize.
7) Methods of String class. Such as charAt, compareTo, equals, contains, equalsIgnoreCase, indexOf, length(), replace, split, toCharArray, toLowerCase, toString, toUpperCase, trim, join;

```
class A {
    private static String s = "java";
    static String testA() {
        return s;
    }
}
```

```
String v = A.testA();
int l = v.length();
S.O.P(l);
```

```
int l = A.testA().length()
S.O.P(l);
```

In java, we cannot write a method inside a method.
In the above example, the method length() is present inside the object which is returned by the testA() method (String object).

Required Softwares:
1) JDK 1.8
2) Eclipse IDE >= MARS.
3) Mozilla Firefox → 45v, 49v.

In mozilla firefox - Tools → Advanced → Update →
→ Never check for Updates.
→ Uncheck the checkboxes.

4) Google Chrome → 56v.

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Interview Questions:

1) What is Selenium?

Selenium is a free and open source web application automation tool.

2) What type of applications we cannot automate using Selenium?

→ Standalone (desktop applications)
→ Client Server applications.
→ Mobile applications.

NOTE: In Selenium, there is a tool called Selendroid which is used for automating android applications. We also have a tool called APPIUM, using which we can automate mobile applications of Android, iOS, Windows etc.

3) What are the languages supported by Selenium?

→ Java
→ C#
→ Ruby
→ Python
→ Javascript.
→ perl
→ PHP
→ Haskell
→ Objective-C
→ R
→ Dart
→ Tcl.

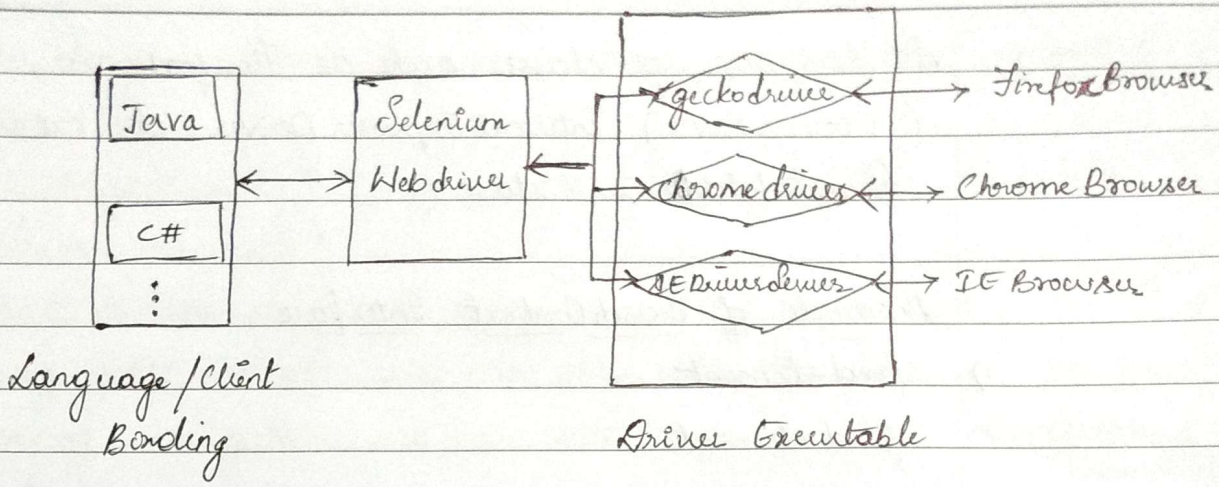
4) What is the latest version of Selenium? 3.0.1.

5) What are the flavours of Selenium?

→ Selenium CORE
→ Selenium IDE
→ Selenium RC
→ Selenium Webdriver

ARCHITECTURE of SELENIUM:

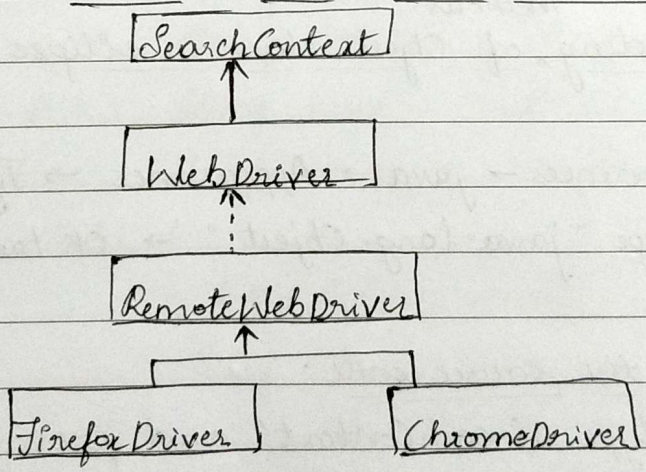
Selenium supports multiple languages such as Java, C# language, which are called as language /client binding. They communicate with S.W.D.



Selenium Webdriver performs actions on the browser using browser specific driver executables, such as geckodriver for firefox, chromedriver for google chrome, IEDriver Server for internet explorer. etc.

Selenium uses JSONwire protocol. JSON stands for Javascript Object Notation.

SELENIUM ARCHITECTURE OF JAVA BINDING.



SearchContext is the supermost interface which is extended by WebDriver interface.

Abstract method of these two interfaces are implemented in RemoteWebDriver Class.

All the browser classes such as FirefoxDriver, ChromeDriver, (IEDriverServer) InternetExplorerDriver. etc extends from RemoteWebDriver class

Methods of SearchContext Interface:

1) findElement
2) findElements.

Methods of WebDriver Interface.

1) close
2) get
3) getCurrentUrl
4) getPageSource
5) getTitle
6) getWindowHandle
7) getWindowHandles
8) manage
9) navigate
10) quit
11) switchTo.

Methods finding of Object class in eclipse.

Window
~~Window~~ → Preferences → java → Appearance → Type Filters → add → type "java.lang.Object" → OK twice.

Steps to see the source code.

In eclipse type 'SearchContext' and press Ctrl+Space, so that import statement is generated. Note down the fully qualified name. Ex: org.openqa.selenium.SearchContext.

Goto Selenium download page www.seleniumhq.org/download click on source code, then click on java. → client → src → org/openqa/selenium → SearchContext.java.

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1) How do you close a browser without using close() method ?
quit()

2) How do you open a page without using get() method ?
driver.navigate();

3) What is the difference between get & navigate ?
using get() method, we can only enter the URL ; whereas using navigate, we can enter the URL, back, forward & refresh.

Casting in Selenium : Converting sub-class object into super class is called upcasting. In selenium we do upcasting, so that we can execute the same script/code in any browsers.

```
public class Demo {
    P.S. String key1 = "webdriver.gecko.driver";
    P.S String value1 = "./software/geckodrive.exe";
    P.S String key2 = "webdriver.chrome.driver";
    P.S String value2 = "./software/chromedriver.exe";
    static {
        S.O.P(key1, value1);
        S.O.P(key2, value2);
    }

P.S V testBrowser(WebDriver driver) {
    driver.get("http://www.google.com");
    String title = g.driver.getTitle();
    S.O.P(title);
driver.quit();
}
```

```
P.S.V.M (String[] args)
{ WebDriver driver = new FirefoxDriver();
Demo.testBrowser(driver);
Demo.testBrowser(ChromeDriver());
}
```

Q> Explain WebDriver driver = new FirefoxDriver(); ?

WebDriver is an Interface.
driver is a reference variable
new is a keyword used to create an object
= is an assignment operator
FirefoxDriver is constructor used to initialize nonstatic member of the object.
; statement delimitor.

To achieve run time polymorphism, following 3 steps are mandatory -

1) Inheritance. Ex. FirefoxDriver inherits from WebDriver
2) Method Overriding. Ex. All the methods of WebDriver interface is overrided in subclasses
3) Upcasting - Ex:

```
WebDriver driver = new ChromeDriver();
```

Element : 1) Anything present on the page is called as element such as textbox, button, image, link etc.
2) Elements are created using HTML code and HTML stands for Hyper Text Markup Language.
3) In HTML, elements are created using tag, attribute & text

Ex: 1) Open the Notepad

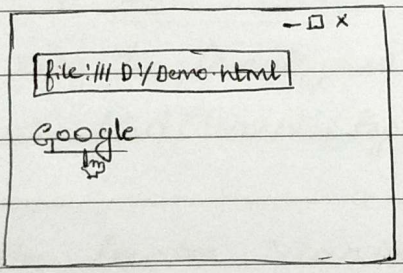
2) Write the following code:

```
<html>
<body>
<a id="a1" name="n1" class="c1" href="http://www.google.com">
Google </a>
</body>
</html>
```

3) Go to file select 'save'

4) Navigate to required location · Ex: D:/ (file location) and specify the name as 'demo.html' & click save.

5) Double click on file, ~~then~~ It opens in a browser.



Ex for tag: <html>, <body>, <a>

Ex for attributes: id, name, class, href.

Ex for text: Google.

Locators: Locators are the static method of 'By' class which are used to locate the element in the page.

'By' class is an abstract class.

In Selenium there are 8 types of locators:-

1) tagName
2) id
3) name
4) className
5) linkText
6) partialLinkText
7) cssSelector
8) xpath.

{ listed on basis of performance & speed }

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When we use any of these locators to find element and the number of matching elements in the application is more than one —

→ then, findElement() method returns the address of first matching Element.

→ If the specified locator is not matching with any of the element, then findElement() method will throw NoSuchElementException

* → Return type of findElement() method is WebElement and it is an Interface.

Methods of WebElement Interface:

1) clear();
2) click();
3) findElement();
4) findElements();
5) getAttribute();
6) getCssValue();
7) getLocation();
8) getRect();
9) getScreenshotAs();
10) getSize();
11) getTagName();
12) getText();
13) isDisplayed();
14) isEnabled();
15) isSelected();
16) SendKeys();
17) Submit();

Using the Locators:

Refer to Demo0.java.

Optimized code:

driver.findElement(By.tagName("a")).click();

Meaning of above statement is, In the above browser find the element by using tagName 'a' and click it

Using the locator "id":

Refer to Demo0.java.

driver.findElement(By.id("a2")).click();

Using the locator "name":

Refer to Demo0.java

driver.findElement(By.name("n1")).click();

Using the locator "className":

Refer to Demo0.java

driver.findElement(By.className("c1")).click();

Using the Locator "linkText"

Refer to Demo0.java

driver.findElement(By.linkText("Google")).click();

"partialLinkText" → When the link is partially dynamic it is used. Can be used only to locate only the link present on the page (tag should be 'a'). If we try to use on any other element, we get NoSuchElementException.

driver.findElement(By.partialLinkText("go")).click();

__/__/____

Using the locator cssSelector

→ CSS stands for Cascading Style Sheet

→ Css selector is an expression which has following syntax

tag [AttributeName = 'Attribute Value']

Ex1: a [id='a1']

NOTE: In CSS # is a shortcut for id. So the above expression can be written as a#a1

Ex2: a[class = 'c1']

. (dot) is the shortcut for class. ⇒ a.c1

~~driver.cssSelect~~

driver.findElement(By.cssSelector("a.c1")).click();