



TEST AUTOMATION PRACTICE WITH SELENIUM WEBDRIVER

**Benkó Adrián
Bondár Tamás**

EPAM Systems, Budapest, 2019

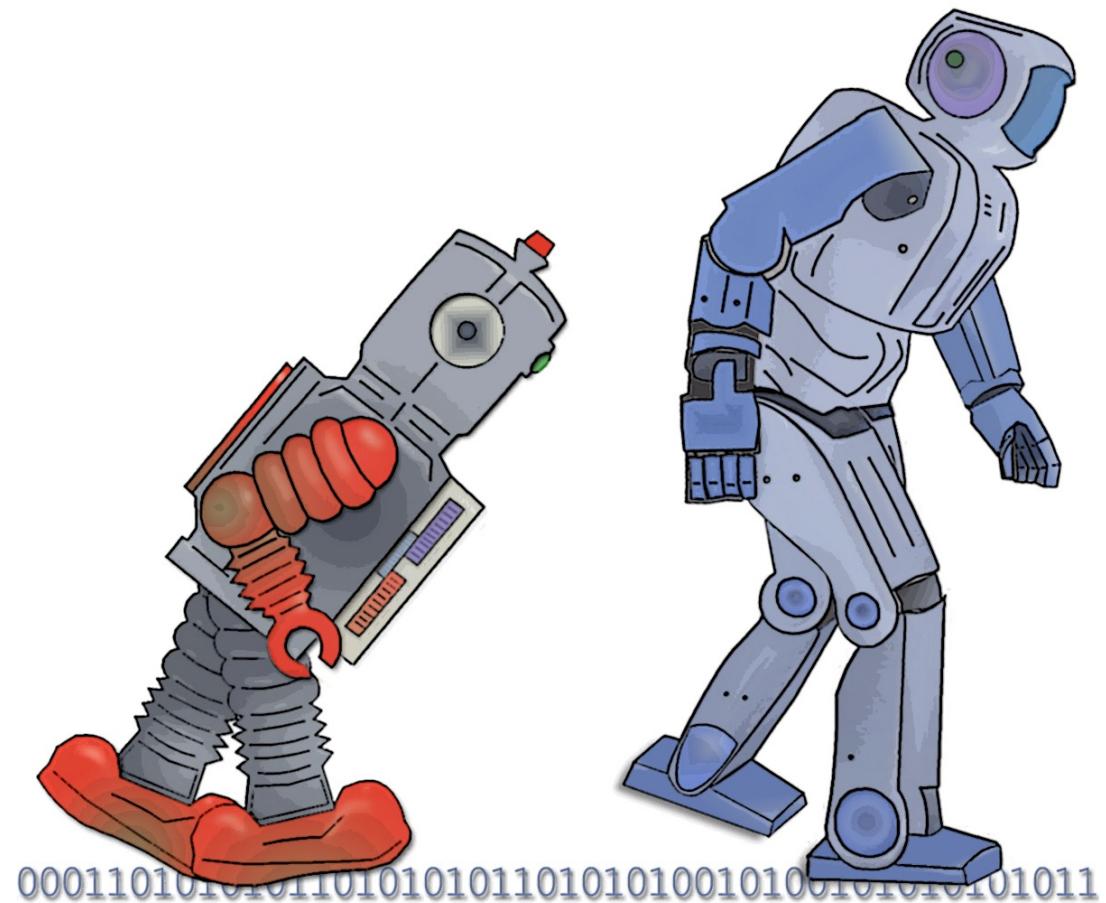
Advanced Agenda

1 Interrogation

2 Manipulation

3 Window handling

4 Screenshots



CHAPTER 1

INTERROGATION

Interrogation

Window Title

- `driver.getTitle()`

Current URL

- `driver.getCurrentUrl()`

Page Source

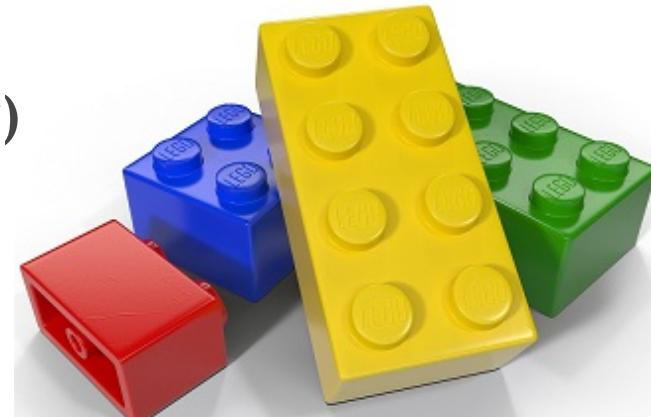
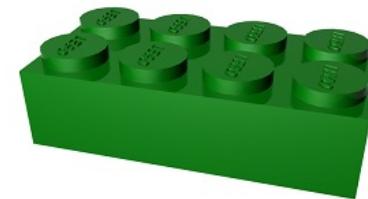
- `driver.getPageSource()`



Interrogation

Locating web elements

- `driver.findElement(org.openqa.selenium.By)`
 - 0 match -> throws exception
 - 1 match -> returns a WebElement instance
 - 2+ matches -> returns only the first match from web page
- `driver.findElements(org.openqa.selenium.By)`
 - 0 match -> returns an empty list
 - 1 match -> returns a list with one WebElement
 - 2+ matches -> returns list with all matching WebElements



Interrogation

By class

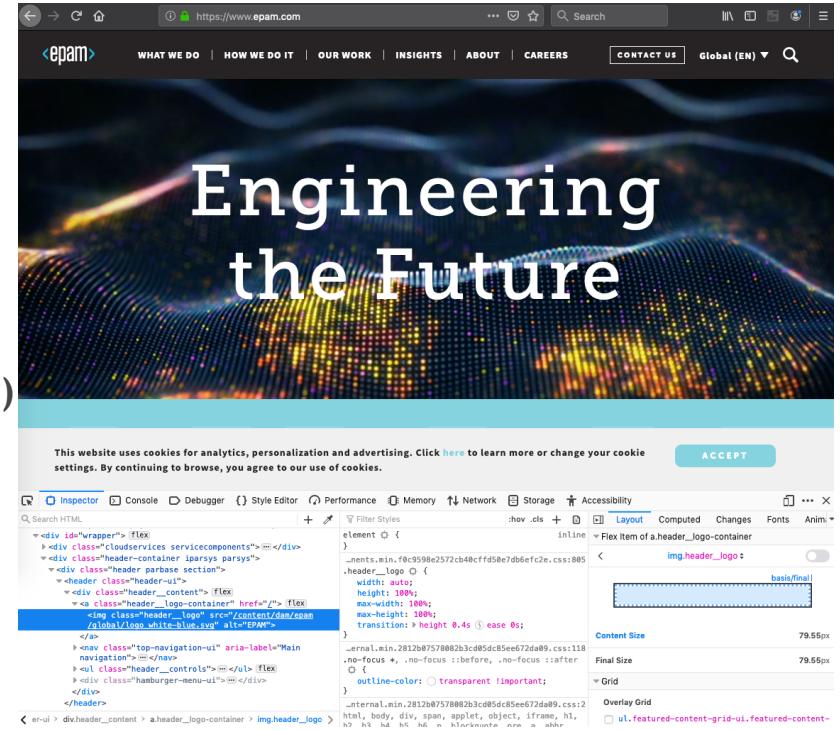
- Supports various locator strategies
- By locating mechanisms
 - id
 - className
 - linkText
 - partialLinkText
 - name
 - tagName
 - cssSelector
 - xpath



Interrogation

Inspecting elements in web browsers

- Firefox
 - Right click -> Inspect element / F12
- Chrome
 - Built-in (Right click -> Inspect element / F12)
- IE
 - Built-in (Tools -> Developer Tools / F12)



Interrogation

Id

- `driver.findElement(By.id("some_id"));`
- Ideal solution, however...
 - Ids don't always exist
 - Their uniqueness is not enforced
 - Used by developers as well



ClassName

- `driver.findElement(By.className("some_class_name"));`

Interrogation

Linktext

- `driver.findElement(By.linkText("Sign in"));`
- `driver.findElement(By.partiallinkText("Sign"));`

Name

- `<input id="modCustLoginPassword" name="password">`
- `driver.findElement(By.name("password"));`

Interrogation

tagName

- <**label**>Email address</**label**>
- driver.findElement(By.**tagName**("label"));

Support classes

- Return all that matches **each** of the locators in sequence
 - driver.findElements(new **ByChained**(by1, by2))
- Return all that matches **any** of the locators in sequence
 - driver.findElements(new **ByAll**(by1, by2))

Interrogation

CssSelector

- Absolute path
 - `driver.findElement(By.cssSelector("html>body>div>p>input"));`
- Relative path
 - `driver.findElement(By.cssSelector("input"));`
- Attribute selection
 - `driver.findElement(By.cssSelector("button[name]"));`
 - `driver.findElement(By.cssSelector("button[name='cancel']"));`
 - `driver.findElement(By.cssSelector("img:not[alt]"));`



Interrogation

CssSelector

- Id selection
 - `driver.findElement(By.cssSelector("#save"));`
- Class selection
 - `driver.findElement(By.cssSelector(".login"));`
- Combined selection
 - `driver.findElement(By.cssSelector("button#save"));`
 - `driver.findElement(By.cssSelector("input.login"));`



Interrogation

CssSelector

- First matching child of the specified tag
 - `driver.findElement(By.cssSelector("div#students:first-child"));`
- Nth matching child of the specified tag
 - `driver.findElement(By.cssSelector("#loginForm:nth-child(3)"));`
- First matching enabled tag
 - `driver.findElement(By.cssSelector("button:enabled"));`

Interrogation

XPath

- Absolute path
 - `driver.findElement(By.xpath("html/body/p/input"));`
- Relative path
 - `driver.findElement(By.xpath("//input"));`
- Attribute selection
 - `driver.findElement(By.xpath("//input[@id='username']"));`
 - `driver.findElement(By.xpath("//*[@id='myId']"))`



Interrogation

Element interrogation

- `element.getText();`
- `element.getAttribute();`
- `element.getTagName();`
- `element.isDisplayed();`
- `element.isEnabled();`
- `element.isSelected();` -> checkbox is selected or not
- `selectElement.isMultiple();` -> multi select listbox or not
- `selectElement.getOptions();` -> listbox select options

CHAPTER 2

MANIPULATION

Manipulation

Click

- `element.click()`

- Button
- Link
- Checkbox
- Combobox



Submit

- `form.submit()`

- Form

Manipulation

Shift + Click

- `New Actions(driver).keyDown(Keys.SHIFT).click(element).`
`keyUp(Keys.SHIFT).build().perform();`

Special Actions

- `new Actions(driver).moveToElement(element).build().perform();`
- `new Actions(driver).contextClick().build().perform();`
- `new Actions(driver).doubleClick().build().perform();`
- `new Actions(driver).clickAndHold().build().perform();`
- `new Actions(driver).release().build().perform();`

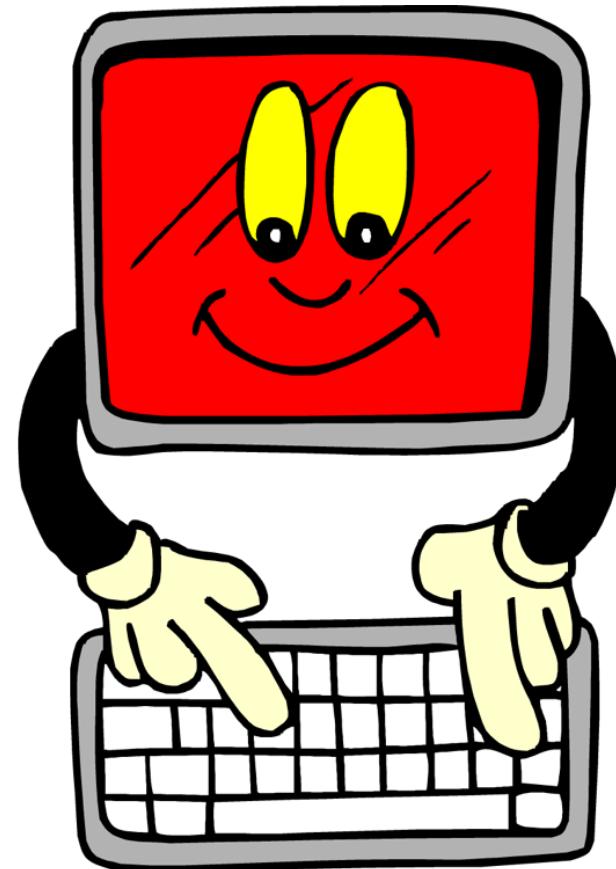
Manipulation

Type text

- element.sendKeys("string")
 - Input field

Clear text

- element.clear()



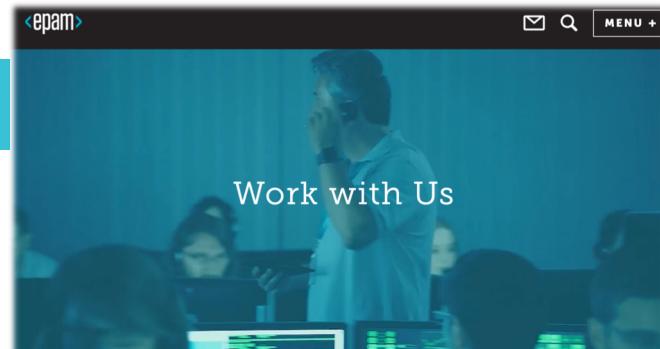
Manipulation

Listbox Selection

- new Select(element).selectByIndex(elementCount)

Listbox Manipulating Commands

- select[ByIndex, ByVisibleText, ByValue]
- deselect[ByIndex, ByVisibleText, ByValue]
- deselectAll()



CHAPTER 3

WINDOW HANDLING

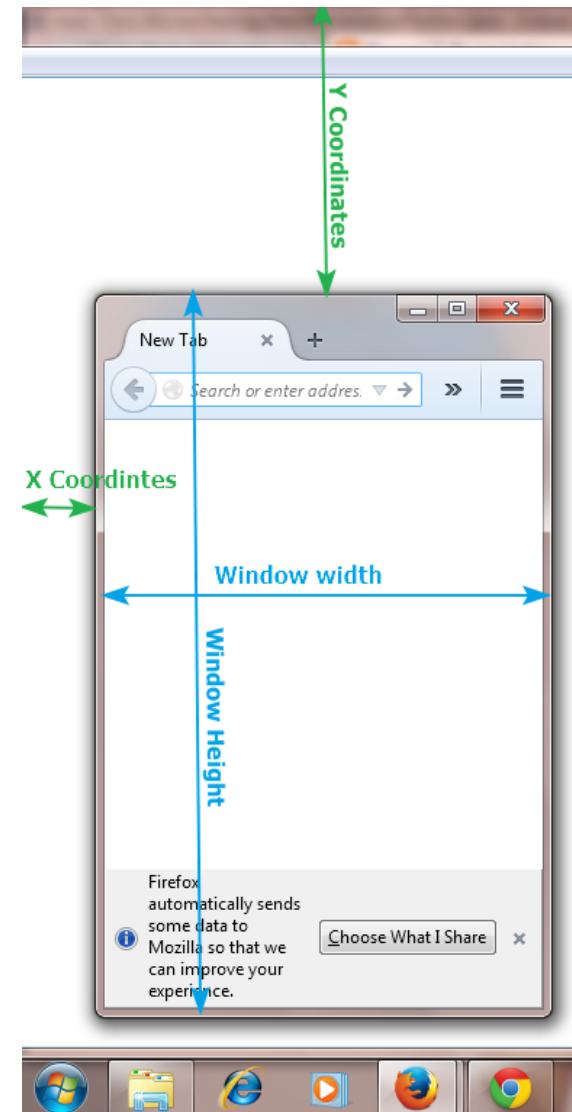
Window Handling

Size

- `driver.manage().window().getSize().getHeight();`
- `driver.manage().window().setSize(Dimension d);`
- `driver.manage().window().maximize();`

Position

- `driver.manage().window().getPosition().getX();`
- `driver.manage().window().getPosition().getY();`
- `driver.manage().window().setPosition(Point p);`



Window Handling

Handles

- `String windowHandle = driver.getWindowHandle();`
- `Iterator<String> windowIterator = browser.getWindowHandles();`

Switch To

- `driver.switchTo().window(windowHandle);`

CHAPTER 4

SCREENSHOTS

Screenshots

Advantages

- Keep track of changing UI
- Store pages with error



Example

- File screenshot =

```
((TakesScreenshot)driver).getScreenshotAs(OutputType.FILE);
```

- FileUtils.copyFile(screenshot, new File(fileSource));

Questions

