

CS1632: Lecture 12

Web Testing with Selenium
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History of Selenium

- 2004
- Jason Huggins
- ThoughtWorks in Chicago
- Open-source
- Works with most operating systems and browsers
- Version 1
 - Monolithic
 - Only supported one programming language
- Version 2
 - Client/server
 - Supports Java, C#, Ruby, Python, and JavaScript

Selenium Grid

- Hub/node
- Simultaneous, distributed, automated testing

Selenium IDE

Build tests via a point and click interface.

Good for beginners.

Selenium learning resources

Check out my blog for lots of posts about Selenium:

<http://asphaltpanthers.com/>

Many online tutorials for learning selenium:

<http://www.guru99.com/selenium-tutorial.html>

GUI Automation

So far, all of our testing has been with specific, text based input and output.

Not every user interface is text-based.

Though testing a GUI requires different techniques, the goal remains the same, compare the actual result with the expected result.

One approach to testing web pages

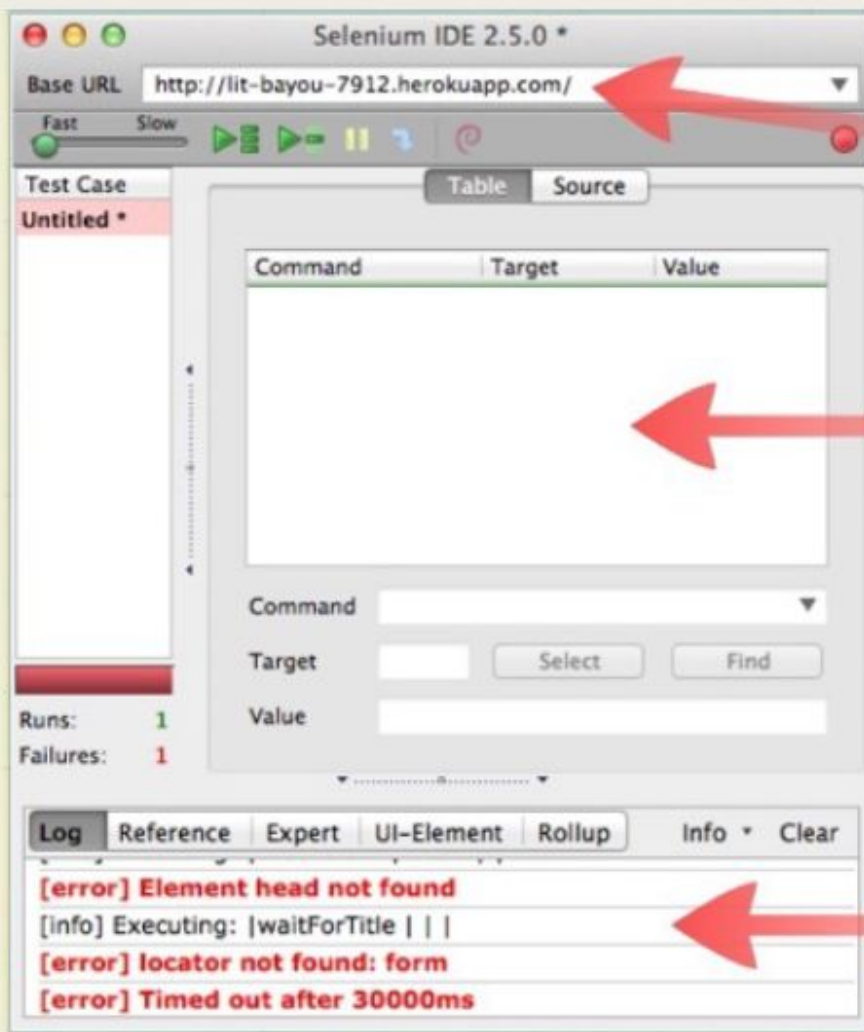
```
// Any downsides to this?  
@Test  
public void testWeb() {  
    String expectedHtml = "<head></  
head><body><strong>Hello, world!</strong></body>";  
    String pageText = getPage("http://example.com");  
    assertEquals(expectedHtml, pageText);  
}
```

Downsides

- Fragile
 - Change the page, change the entire test
- What about JavaScript?
 - Just check that the right JavaScript is on the page?
- Unreadable
- Simplistic and low-level
- No semantic understanding
 - Links
 - Textboxes
 - Etc.

Getting started with Selenium

1. Download and install Firefox.
2. Go to <https://addons.mozilla.org/en-US/firefox/addon/selenium-ide/>
3. Select 'Add to Firefox'.



Starting URL

Commands

Logging output

Simple Scripting

1. File -> New Test Case
2. Record an operation (red circle)
3. Stop recording
4. Run test suite (green triangle)

Selenium IDE 2.5.0 *

Base URL

Fast Slow

Test Case

Untitled 2 *

Table Source

Command	Target	Value
open	/	
type	id=code_code	a = 1 puts a
clickAndWait	name=commit	

Command

Target

Value

Runs: 1

Failures: 0

Log Reference Expert UI-Element Rollup Info Clear

[info] Executing: |clickAndWait | name=commit | |

[info] Executing: |open | / | |

[info] Executing: |type | id=code_code | a = 1 puts a |

[info] Executing: |clickAndWait | name=commit | |

Our code

Selenium IDE 2.5.0 *

Base URL

Fast Slow

Test Case
Untitled 2 *

Command	Target	Value
open	/	
type	id=code_code	a = 1puts a
clickAndWait	name=commit	
open		

Command

Target

Value

Runs: 1
Failures: 0

Log Reference Expert UI-Element Rollup

open(url)
Arguments:
• url - the URL to open; may be relative or absolute
Opens an URL in the test frame. This accepts both relative and absolute URLs. The "open" command waits for the page to load before proceeding, ie. the "AndWait" suffix is implicit. *Note:* The URL must be on the same domain as the runner HTML due to security restrictions in the browser (Same Origin Policy). If you need to open an URL on another domain, use the Selenium Server to start a new browser session on that domain.

open <URL> - Opens either an absolute or relative URL

Note that you can check what an operation does by clicking on the "Reference" tab at the bottom

Notes

- You can move steps around by just clicking and dragging.
- You can add comments by selecting “Add new comment”.

Selenium IDE 2.5.0 *

Base URL: <http://lit-bayou-7912.herokuapp.com/>

Fast Slow

Test Case: Untitled *

Command	Target	Value
open	/	
type	id=code_code	puts "Wocka wocka"

Command: open

Target: /

Value:

Select an element by clicking on it in the browser or click Cancel to cancel.

Runs: 1

Failures: 0

Log Reference Expert UI-Element Rollup

open(url)

Arguments:

- url - the URL to open; may be relative or absolute

Opens an URL in the test frame. This accepts both relative and absolute URLs. The "open" command waits for the page to load before proceeding, i.e. the "AndWait" suffix is implicit. *Note:* The URL must be on the same domain as the runner HTML due to security restrictions in the browser (Same Origin Policy). If you need to open an URL on another domain, use the Selenium Server to start a new browser session on that domain.

The type command will type in a given target (e.g. textbox)

cs1699-example - Selenium IDE 2.5.0 *

Base URL: http://lit-bayou-7912.herokuapp.com/

Fast Slow

Test Case: cs1699-ex...

Command	Target	Value
open	/	
type	id=code_code	puts "Wocka wocka"
click	xpath=//*[@name='commit']	
waitForPageToLoad	10000	
assertText	css=code	*putstring*

Command: click

Target: xpath=//*[@name='commit']

Value:

Runs: 1

Failures: 0

Log Reference Expert UI-Element Rollup

click(locator)

Arguments:

- locator - an element locator

Clicks on a link, button, checkbox or radio button. If the click action causes a new page to load (like a link usually does), call waitForPageToLoad.

Click <target>
will click on an
element on the
web page

Avoiding intermittent failures

`waitForPageToLoad`

- Waits for another page to load with an optional timeout.
- If you don't wait, Selenium goes as fast as it can, and may do a check before the page is ready.
- This means that your assertions may fail simply because the page hasn't finished loading.
- Intermittent failures are a common symptom of poorly written web tests.

...andWait

clickAndWait

- A combination of 'click' and 'waitForPageToLoad'.
- There are other '...andWait' variants since waiting for a page to load is very common.

cs1699-example - Selenium IDE 2.5.0 *

Base URL: <http://lit-bayou-7912.herokuapp.com/>

Test Case: cs1699-ex...

Command	Target	Value
open	/	
type	id=code_code	puts "Wocka wocka"
click	xpath=//*[@input[@name='commit']][3]	
waitForPageToLoad	10000	
assertText	css=code	*putstring*

Command: click

Target:

Value:

Runs: 1

Failures: 0

Log Reference Expert UI-Element Rollup

click(locator)

Arguments:

- locator - an element locator

Clicks on a link, button, checkbox or radio button. If the click action causes a new page to load (like a link usually does), call `waitForPageToLoad`.

assertion

Assertions

- assertText / assertTextPresent
- assertElementPresent
- assertEditable
- assertAlert
- assertCookie
- assertEval

Select

- Select can be helpful to find a way to specify a target.
- Lots of ways to specify an element on a webpage.
- Select can help you find one that works.