IS2545: Lecture 13

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

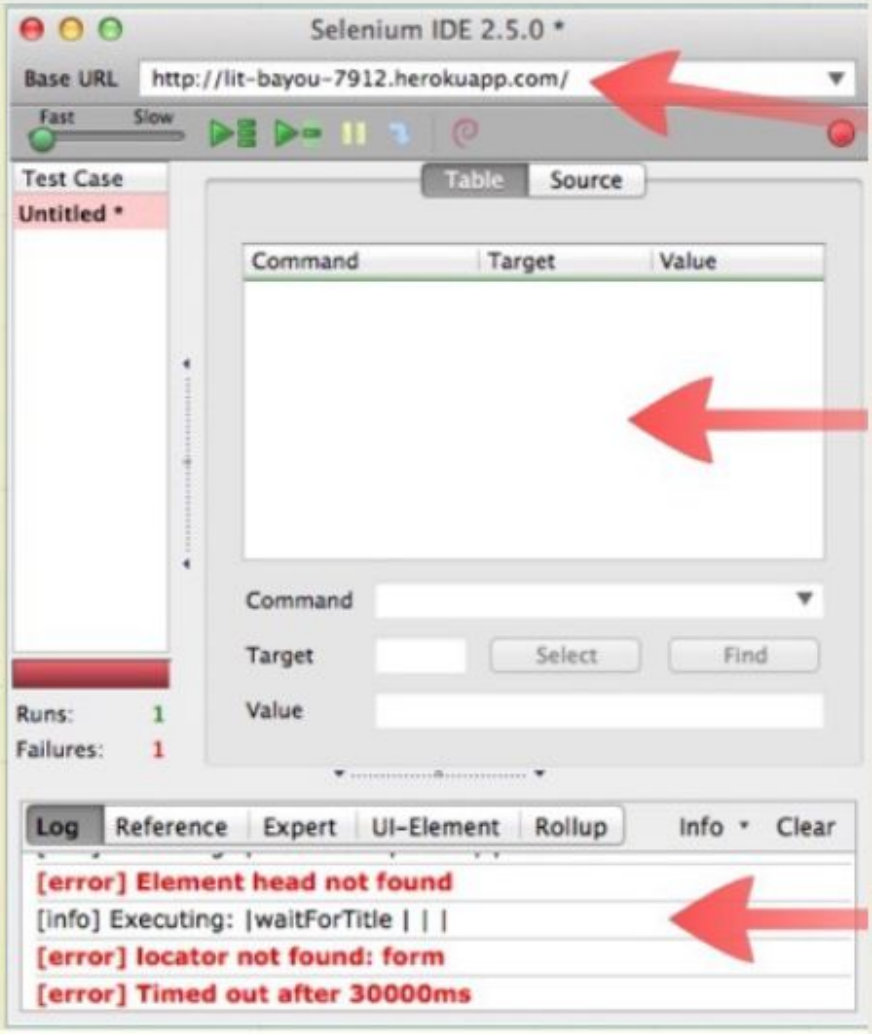
```
// Any downsides to this?
@Test
public void testWeb() {
    String expectedHtml = "<head></
head><body><strong>Hello, world!</strong></body>";
    String pageText = getPage("http://example.com");
    assertEquals(expectedHtml, pageText);
}
```

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’.



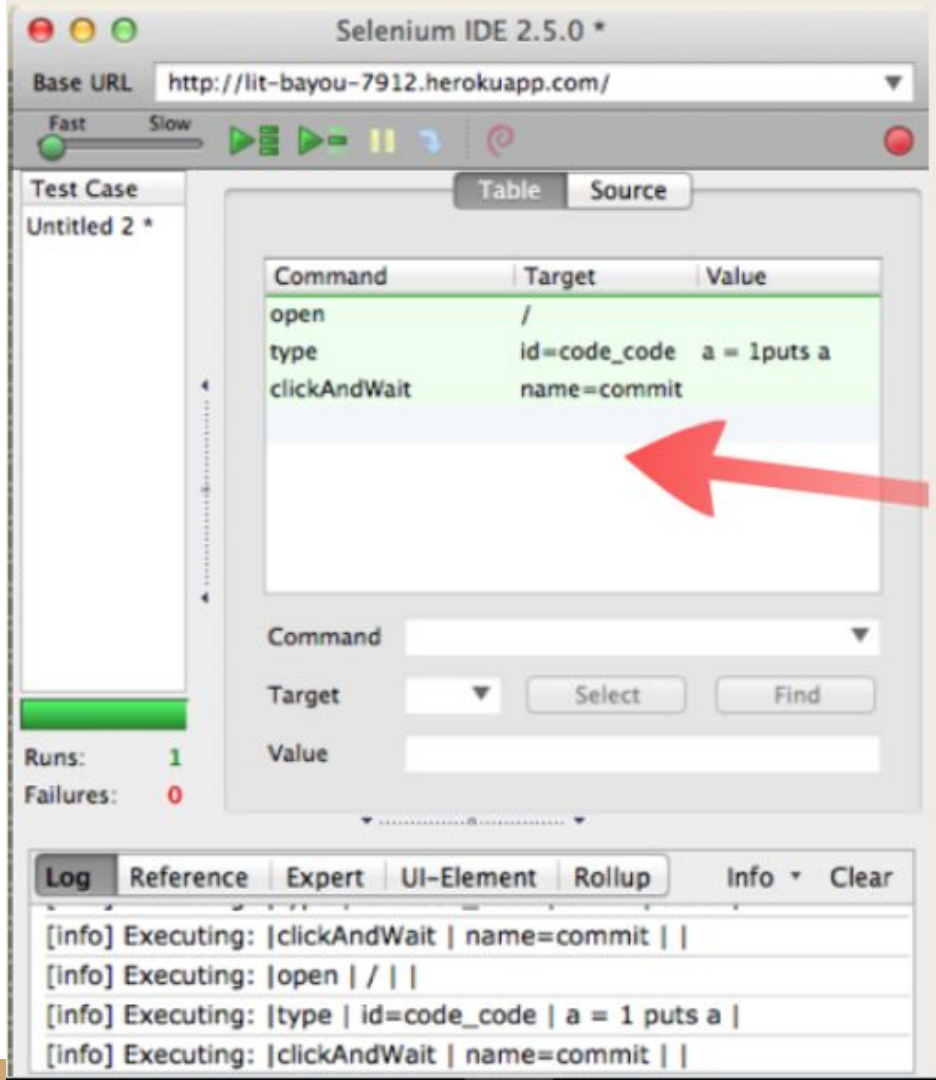
Starting URL

Commands

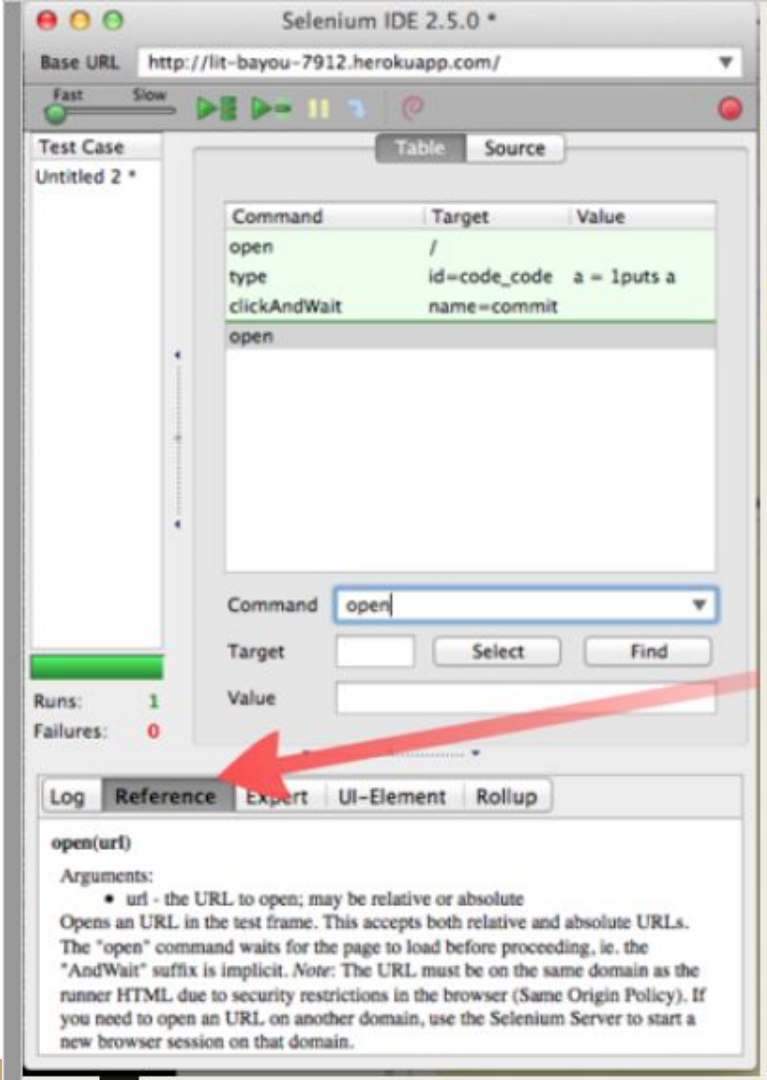
Logging output

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
http://lit-bayou-7912.herokuapp.com/
Fast
Slow
Test Case
Untitled 2 *
Table
Source
Command
Target
Value
open
/
type
id=code_code
a = 1puts a
clickAndWait
name=commit
Command
Target
Select
Find
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

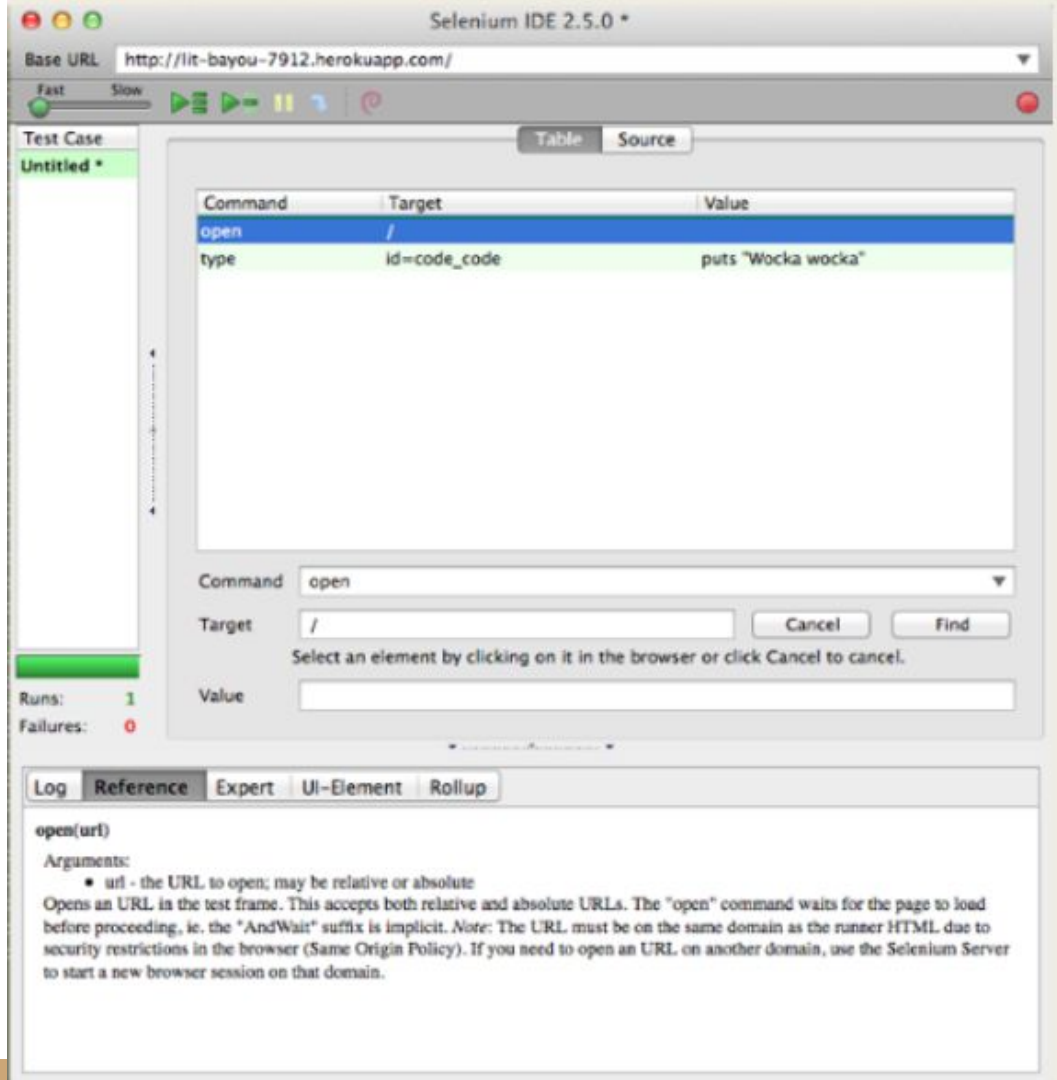


open <URL> - Opens either an absolute or relative URL

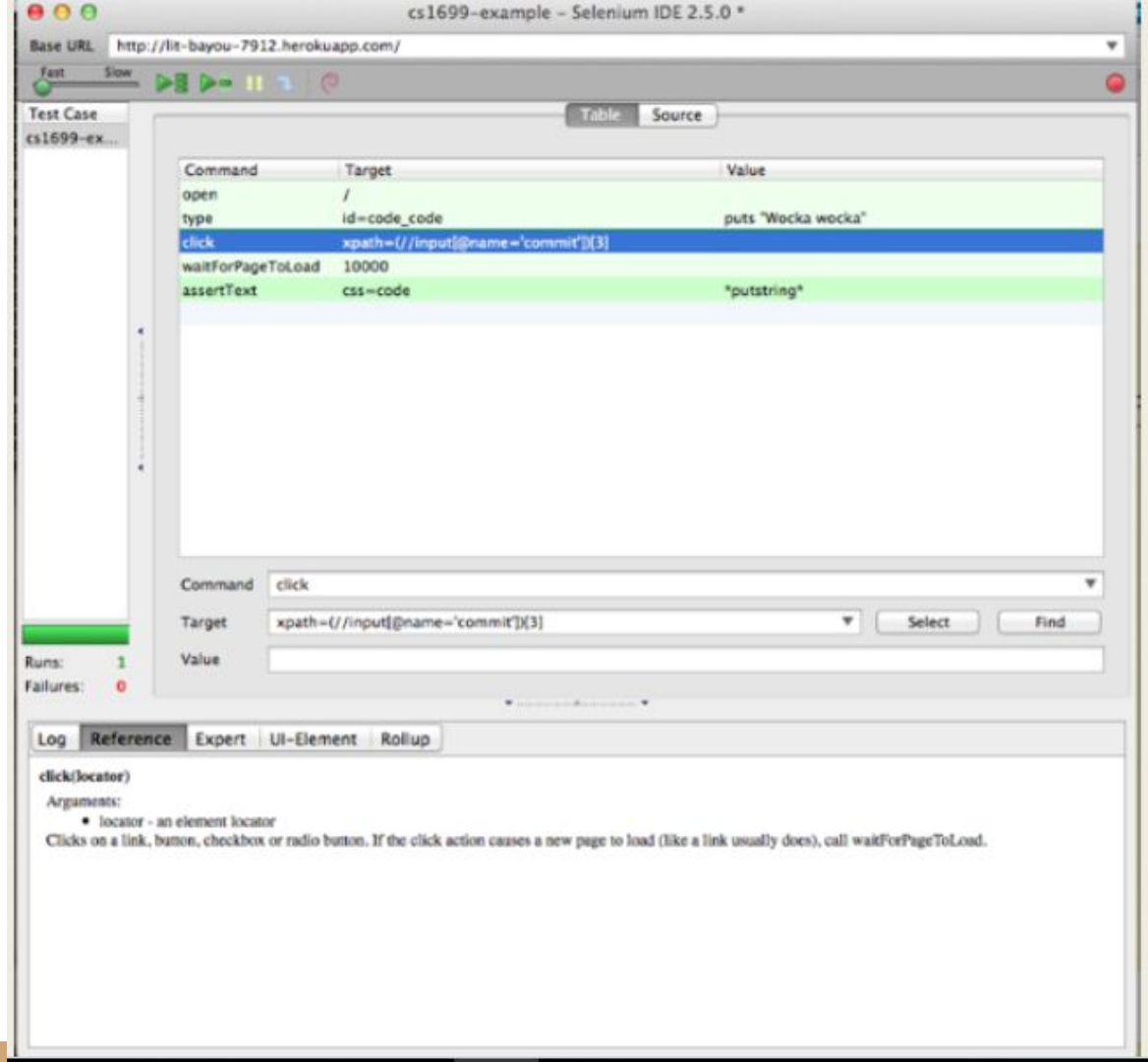
Note that you can check what an operation does by clicking on the "Reference" tab at the bottom

Notes

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



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



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

Avoiding intermittent failures

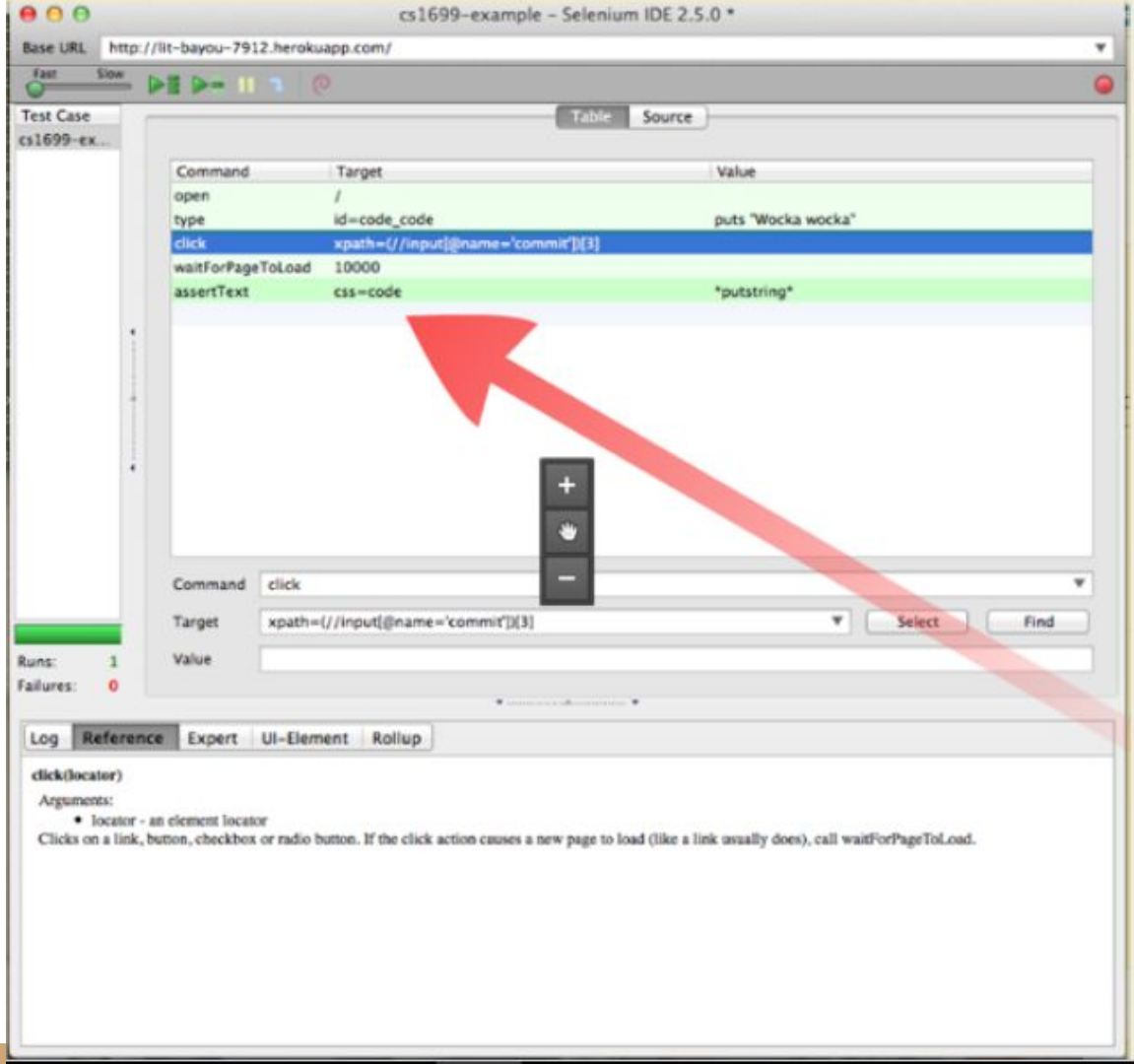
waitForPageToLoad

- 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 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/
Fast
Slow
Test Case
cs1699-ex...
Table
Source
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
xpath=(//input[@name='commit'])[3]
Select
Find
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.