Automated Web Page Testing with Selenium IDE: A Tutorial

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What is Selenium IDE?

- An open-source tool for building automated test suites of web pages
- An extension to Firefox
- Named for the antidote for Mercury poisoning (Mercury Interactive created WinRunner)

Recommended First Steps for Learning Selenium*

1. Learn how to create tests in Selenium IDE.

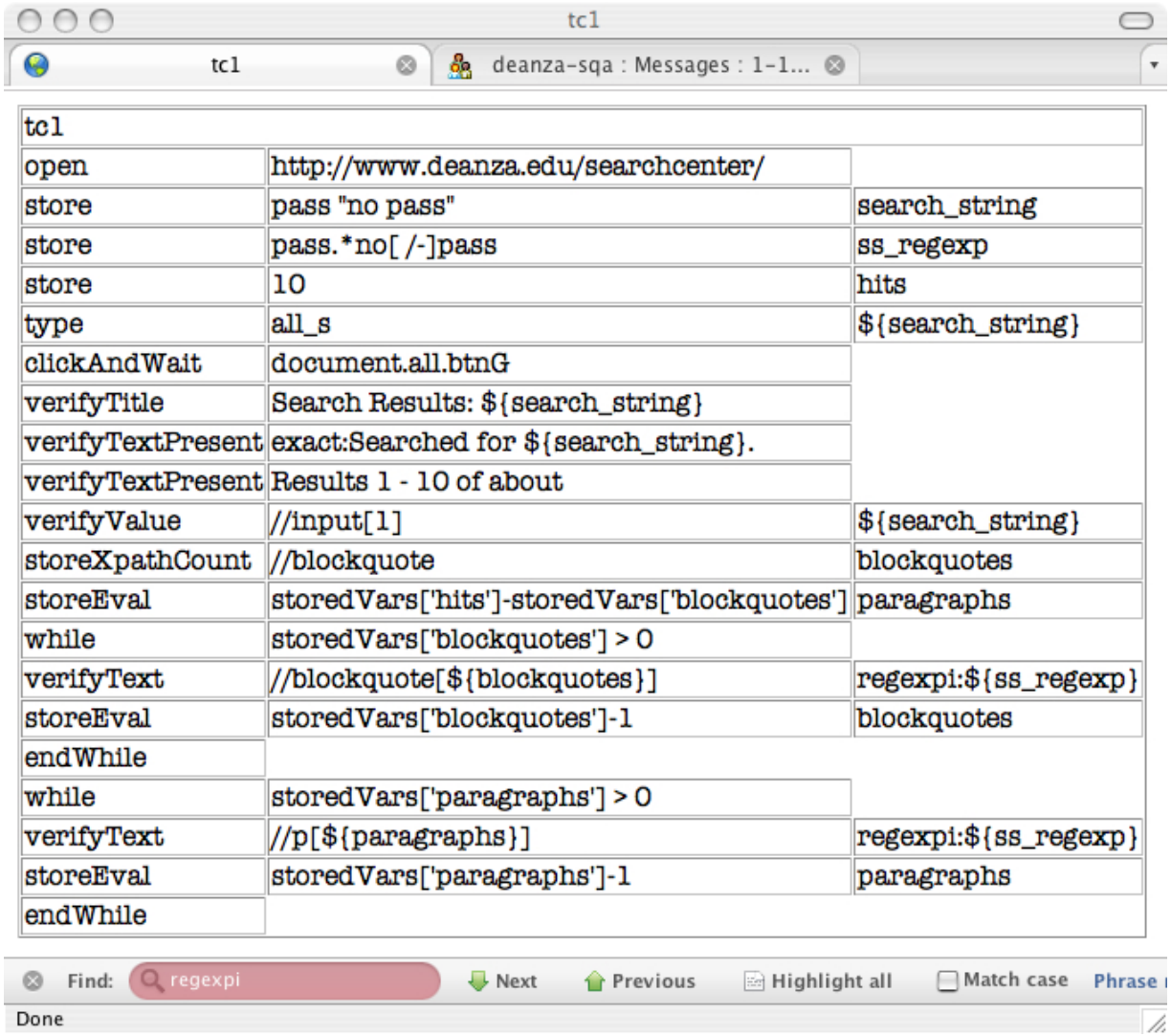
2. Learn how to run Selenium IDE (SIDE) tests against different browsers/platforms using Selenium RC (Remote Control) server.

3. Learn how to write Selenium tests in any one of several supported languages using Selenium RC drivers.

SIDE Test Case Structure

- 3-column HTML table
- Calls to the Selenium API (in the first column of each row of table)
- JavaScript code
  - For ***script*** argument to a Selenium command
  - In a user-created extension file
  - Potentially for any command's argument via **javascript{*code*}**

SIDE Test Case Structure

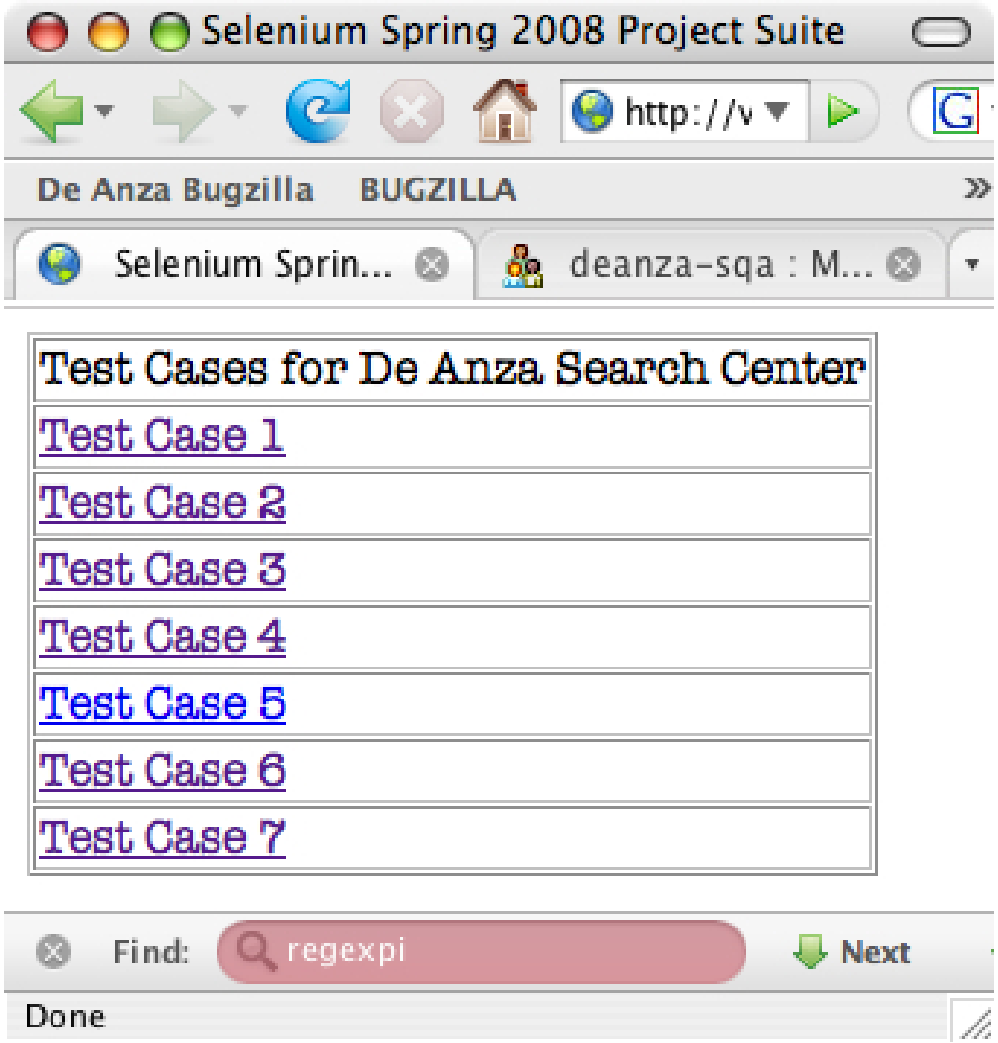


tc1		
open	http://www.deanza.edu/searchcenter/	
store	pass "no pass"	search_string
store	pass.*no[/-]pass	ss_regexp
store	10	hits
type	all_s	${search_string}
clickAndWait	document.all.btnG	
verifyTitle	Search Results: ${search_string}	
verifyTextPresent	exact:Searched for ${search_string}.	
verifyTextPresent	Results 1 - 10 of about	
verifyValue	//input[1]	${search_string}
storeXpathCount	//blockquote	blockquotes
storeEval	storedVars['hits']-storedVars['blockquotes']	paragraphs
while	storedVars['blockquotes'] > 0	
verifyText	//blockquote[${blockquotes}]	regexpi:${ss_regexp}
storeEval	storedVars['blockquotes']-1	blockquotes
endWhile		
while	storedVars['paragraphs'] > 0	
verifyText	//p[${paragraphs}]	regexpi:${ss_regexp}
storeEval	storedVars['paragraphs']-1	paragraphs
endWhile		

SIDE Test Suite Structure

- 1-column HTML table
- One link to each test, in the only column of each row of table

SIDE Test Suite Structure



Skills Needed to Use SIDE Effectively

- HTML
- JavaScript, including DOM (Document Object Model)
- Regular expressions
- Xpath expressions

Installation of SIDE

1. Point Firefox at Selenium IDE installation page on OpenQA web site.

2. Select the download link for 1.0 Beta 2.

3. If nothing happens, then select the **Edit Options** button just above the page. Then select the **Allow** button on the **Allowed Sites** pop-up, followed by the **Close** button.

Installation of SIDE

4. Select the download link for 1.0 Beta 2 again.

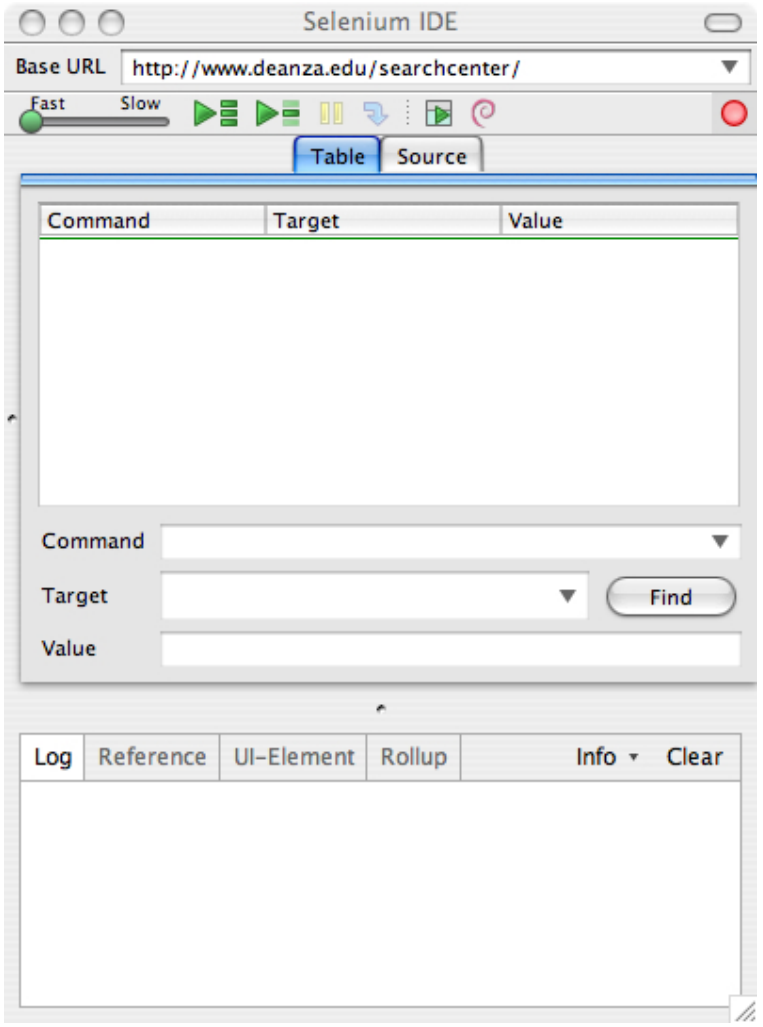
5. Select the **Install Now** button of the **Software Installation** window.

6. Select the **Restart Firefox** button of the **Add-ons** window.

Bringing Up SIDE

Firefox's

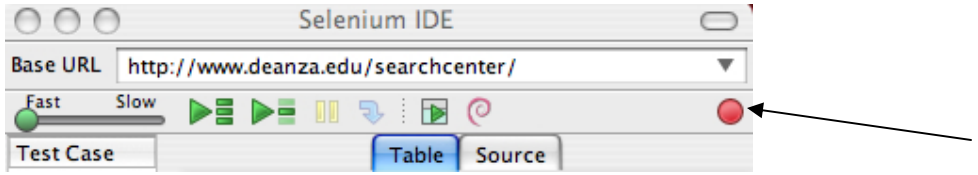
Tools => Selenium IDE



Example: Link-Checking

1. Point Firefox browser at SUT, De Anza A-Z Directory.

2. Click on the red **Record** button to start recording if needed (it is already on by default when SIDE is first brought up).



3. Click on browser window to give it focus.

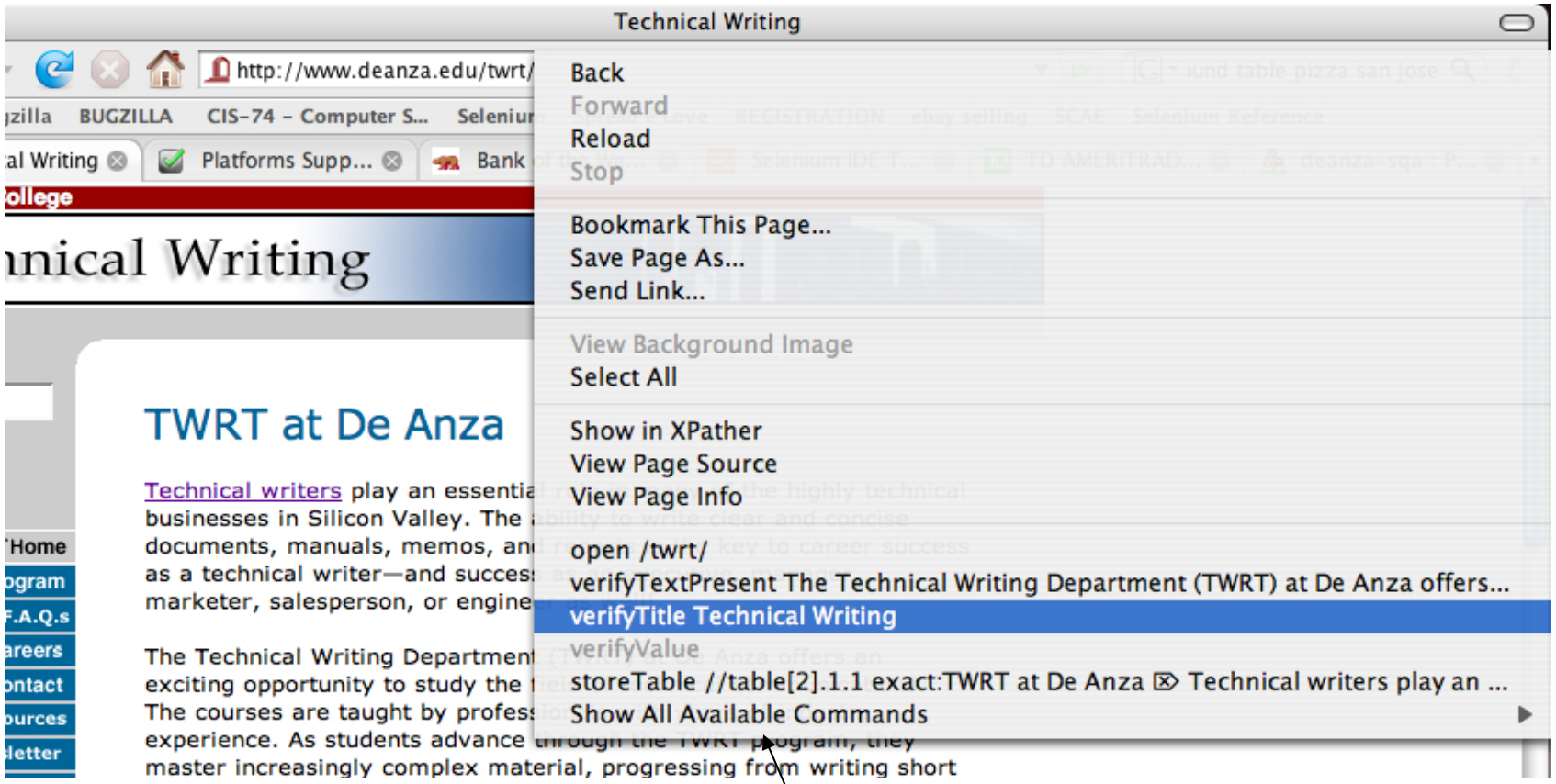
Example: Link-Checking

4. Click on letter **T** from alphabetical horizontal navigation bar.

5. Select **Technical Writing** link, and wait for new page to load.

6. Select **verifyTitle Technical Writing** from context menu.

Example: Link-Checking



Always look here if desired Selenium command isn't listed

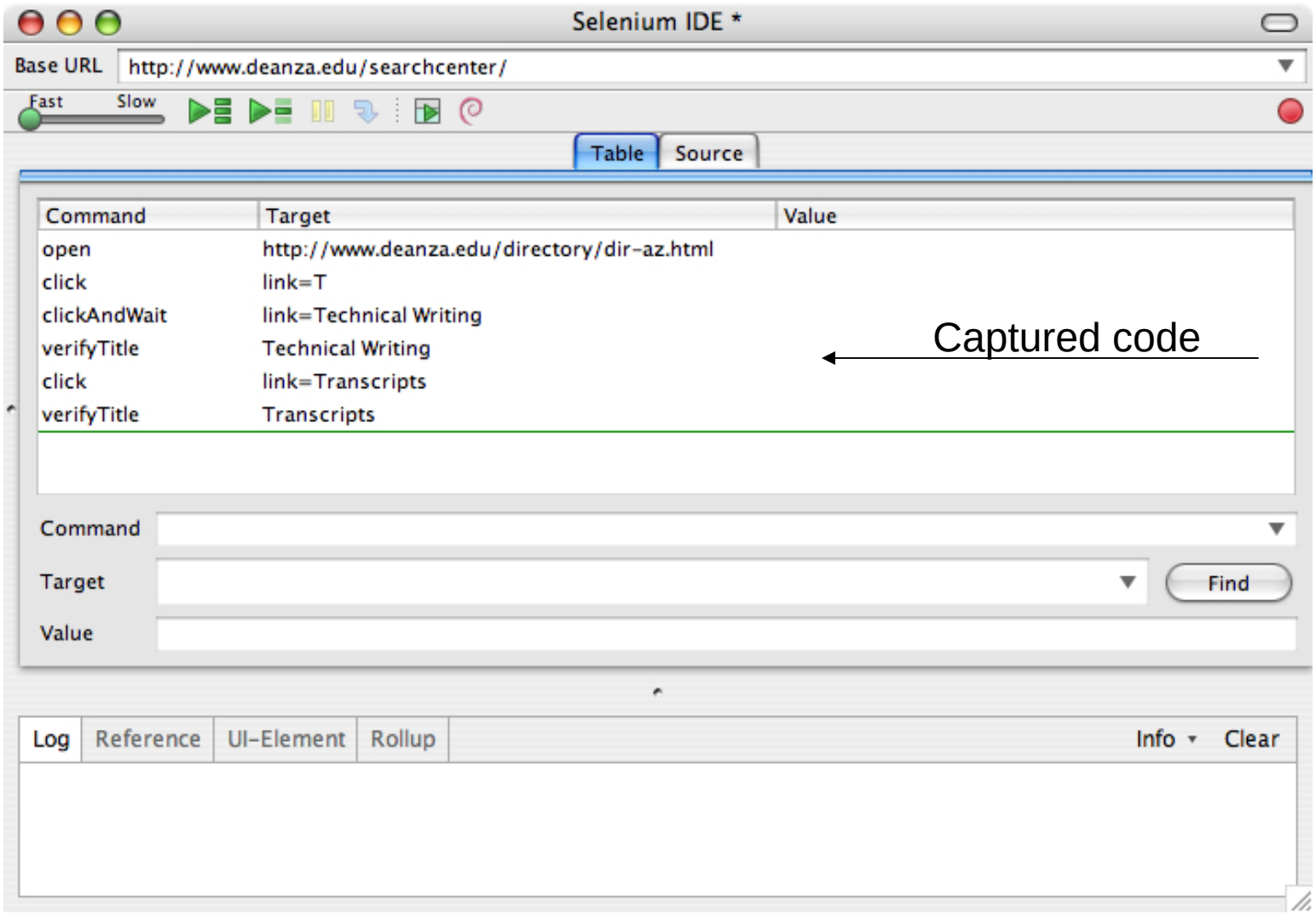
Example: Link-Checking

7. Select browser's **Back** button.

8. Repeat the last three steps for the **Transcripts** link.

9. Click the red **Record** button to stop recording.

Example: Link-Checking



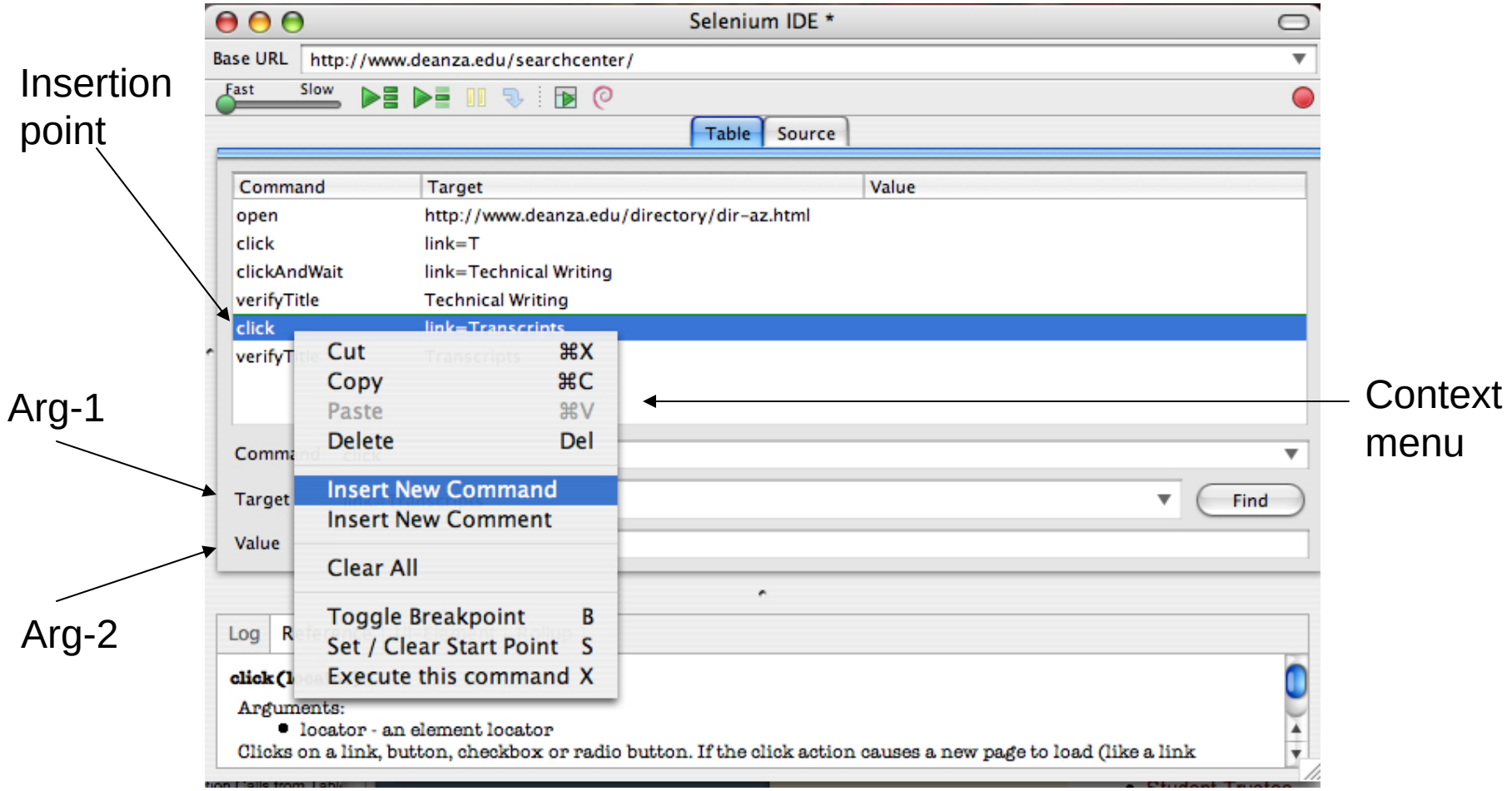
Example: Link-Checking

- At this point, all of the user actions except the clicks on the **Back** button have been recorded.
- To take care of these clicks, add calls to the **goBackAndWait** command.

Inserting Selenese Commands from Table View

1. Select **Table** tab of Selenium IDE.
2. Select third **click/clickAndWait**.
3. Bring up the context menu of IDE and select **Insert New Command**.

Inserting Selenese Commands from Table View

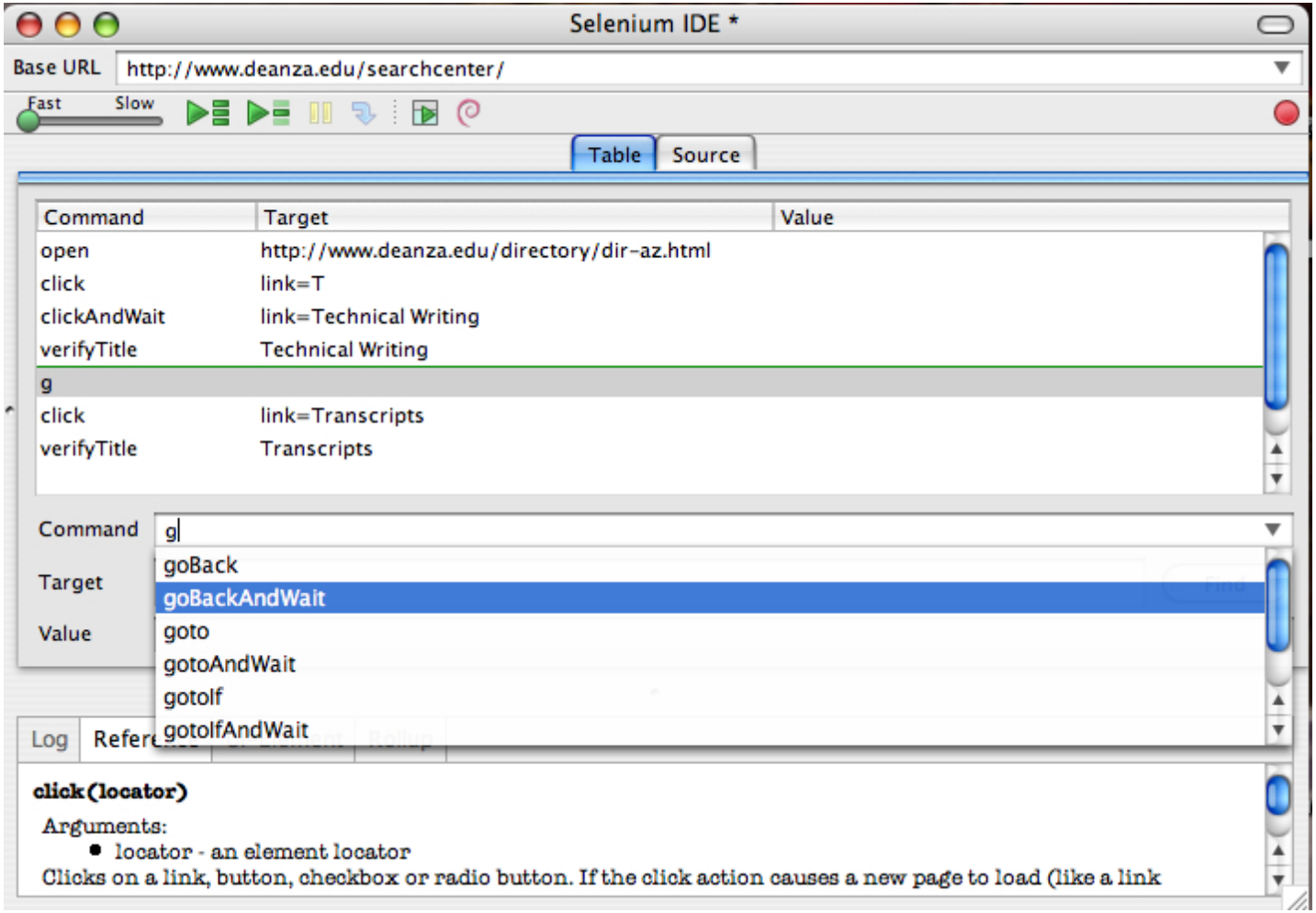


Inserting Selenese Commands from Table View

4. Type "g" into **Command** field.

5. Select **goBackAndWait** from command menu.

Inserting Selenese Commands from Table View



Command menu

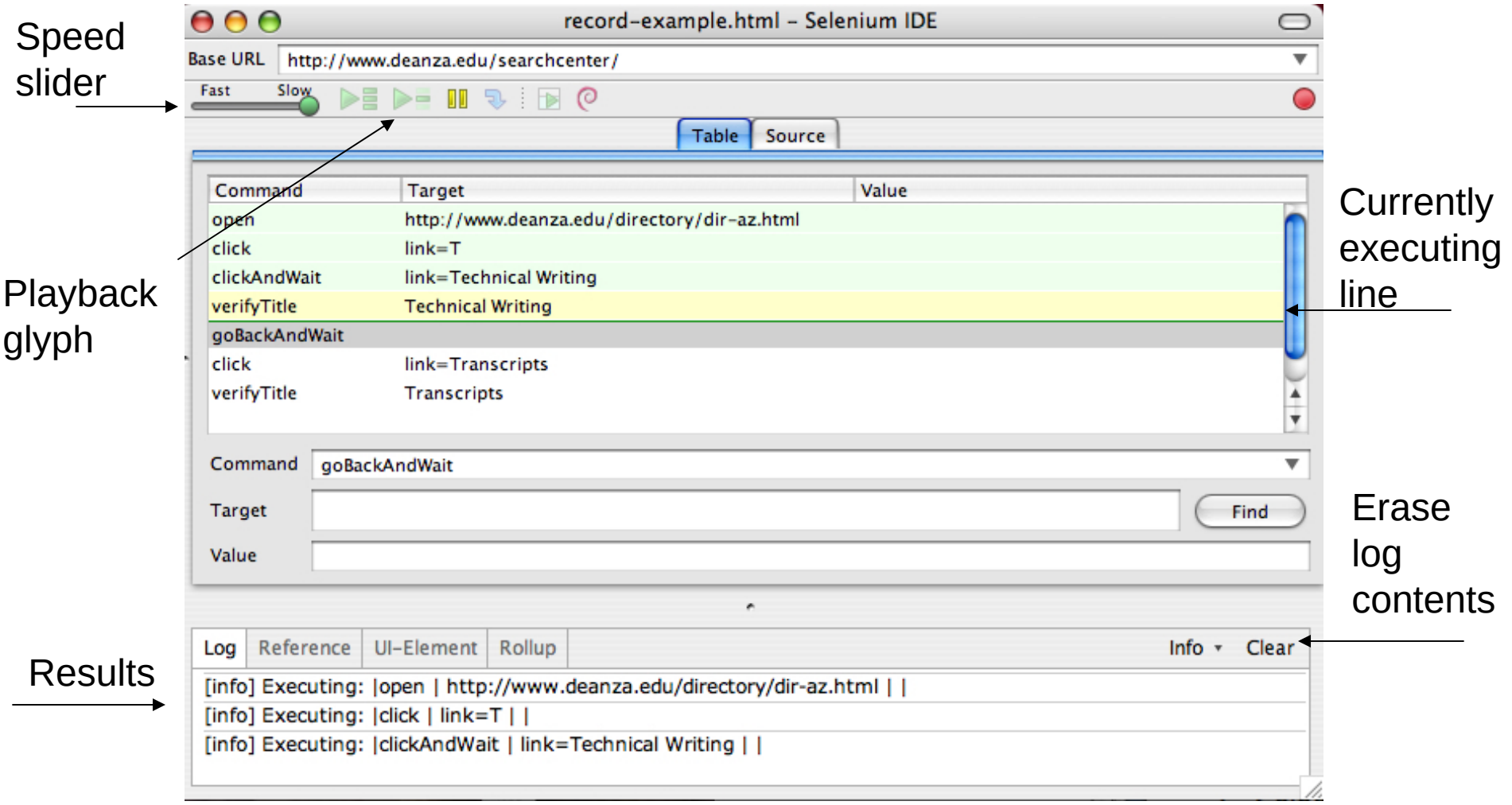
Replaying a Test

1. Select **File=>Save Test Case As** to save the test.

2. Drag the speed slider to **Slow**.

3. Select the second green right-pointing arrow (*Play from the beginning or start point*).

Replaying a Test



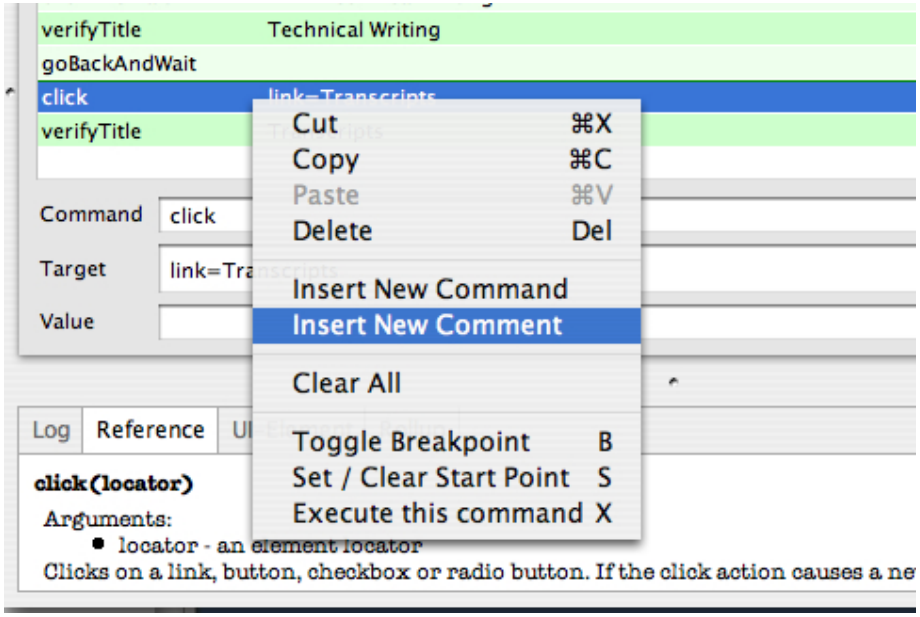
Analyzing the Results

- From **Table** view, observe the green vs. red shading.

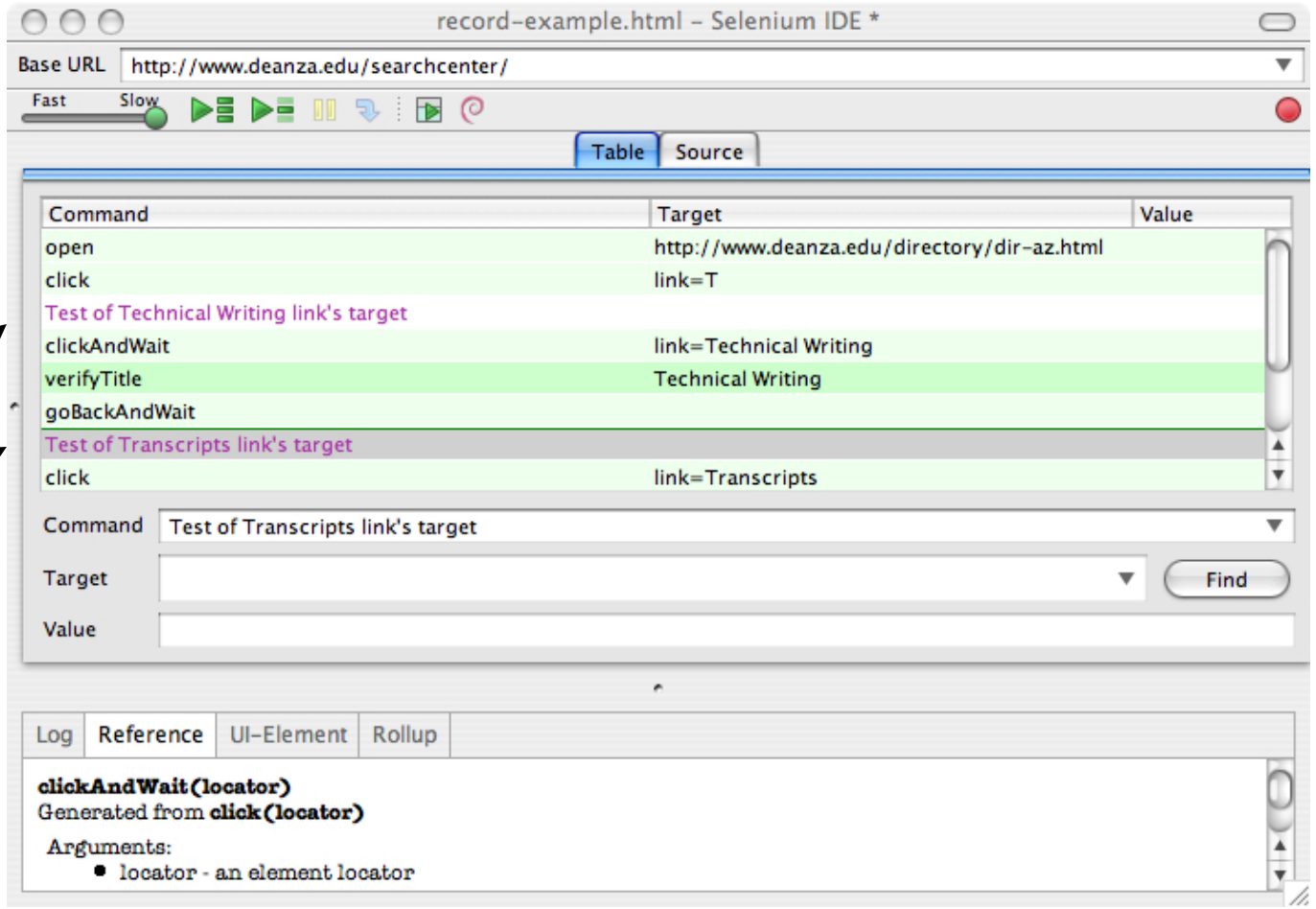
- From **Table** or **Source** view, select the **Log** tab and look for errors (bold red font).

Adding Comments from Table View

Bring up the context menu of IDE and select **Insert New Comment**.



Adding Comments from Table View



Comments

Assertions

Prefixes	Sample Suffixes
assert	Alert
	NotAlert
verify	Confirmation
	NotConfirmation
waitFor	TextPresent
	TextNotPresent
	Title
	NotTitle

Selenium IDE Variables

- Created primarily via store* commands:
  - store (expression,variableName)
  - storeAlert (variableName)
  - storeAllButtons (variableName)
  - and dozens of others!

- Accessed via **${*variable*}** syntax, e.g.,
  - **echo *variable* = ${*variable*}**

Patterns, Locators, Scripts

Most arguments required by the Selenium API fall into three categories:

Patterns

Locators

Scripts

Patterns: glob (the default)

glob:*pattern*

***** (anything/nothing)

? (any single character)

Example: **verifyTitle glob:Technical *Writing**

More robust test now--it allows additional characters, such as extraneous spaces, to be present between the words.

Patterns: regexp

regexp:*regexp*

regexpi:*regexp* (case-insensitive match)

All JavaScript's regular expression metacharacters are supported, including:

- ***** (0 or more of preceding character)
- + (1 or more of preceding character)
- **?** (0 or 1 of preceding character)
- **{n}** (*n* of preceding character)
- **a|b** (alternation: a OR b)
- **[aeiou]** (character class: any one of the chars)

Patterns: regexp

Example: Verifying search results for course CIS-200W

/* Allow 0 to ~ spaces between department & dash */
verifyTextPresent regexp:CIS *-200W-

/* Disallow course numbers 000-199 and 300-999 */
verifyTextNotPresent -[0-13-9][0-9][0-9].?-

/* Disallow course numbers 201-209 */
verifyTextNotPresent regexp:-20[1-9].?-

Patterns: exact

exact:*string*

Seems a bit pointless!

The default **glob:** pattern-matching without any special characters does the same thing.

Locators: identifier=

identifier=*identifier*

- Specifies first element with matching **id** attribute if one exists; otherwise, first element with matching **name** attribute.

- Default locator tag if identifier doesn't start with **document** (DOM locator) or ***//*** (Xpath).

/* Enter a stored search string into input field */

type all_s ${search_string}

Locators: id=

id=*id*

Specifies first element with matching **id** attribute.

/* Enter a stored search string into input field */

type id=all_s ${search_string}

Locators: name=

name=*name*

Specifies first element with matching **name** attribute.

/* Enter a stored search string into input field */

type name=q ${search_string}

Locators: dom=

dom=*javascriptExpression*
document*.restOfJavascriptExpression*

/* Choose item from drop-down with specified label */
select
document.schsearch.Uniq_Course_ID
Computer Information Systems (CIS)

Locators: xpath=

xpath=*xpathExpression*
//restOfXpathExpression

/* Select checkbox with value attribute of “Tu” */
click //input[@value='Tu']

/* Select checkbox with id attribute containing “Thu” */
click //input[contains(@id,'Thu')]

Locators: xpath=

For more info on using **xpath** locators with Selenium, including how the Firefox extension **xpather** can help, see Help with Xpath on the Openqa Wiki.

Locators: link=

link=*textPattern*

Note that the argument is a **textPattern**, not a **textString**!

/* “Assessment and Placement Information” link */

click

link=regexp:Assessment +.* +Placement +Information

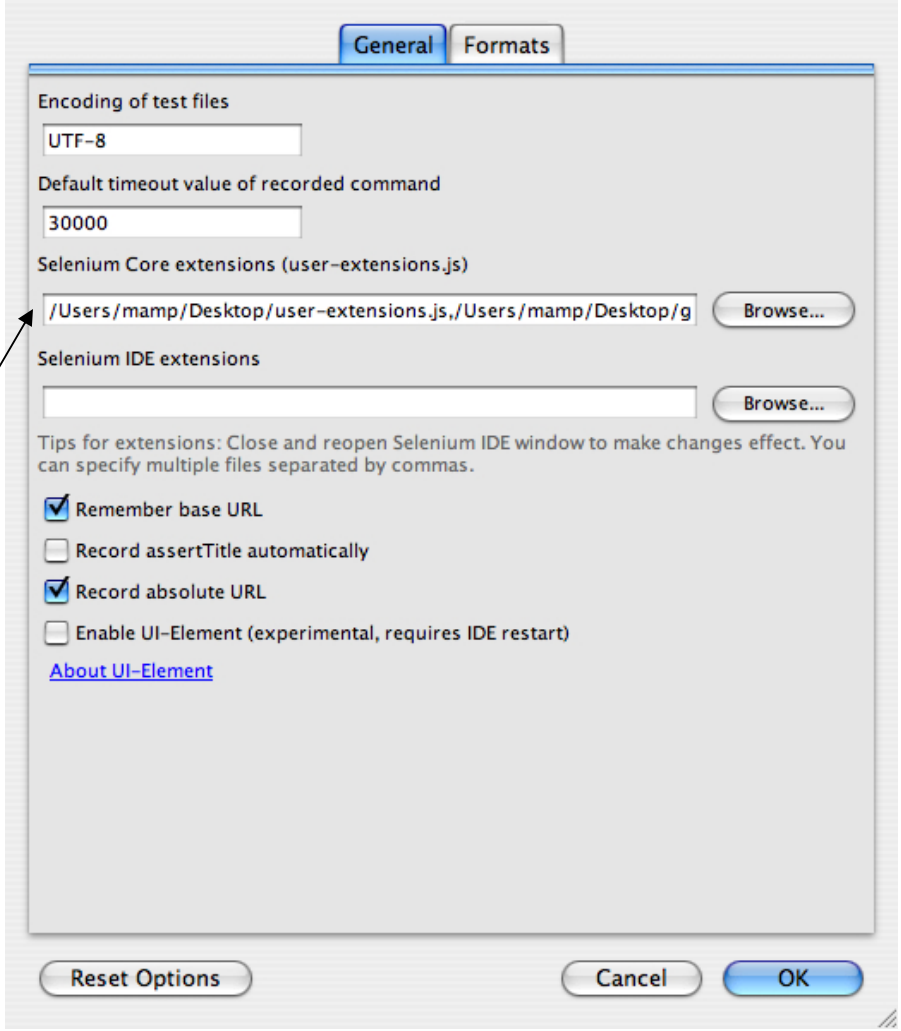
Scripts

storeEval **(** ***script,*** ***variableName*** **)**	storeEval this.browserbot.bodyText().match(/ of about +([0-9]+)\./)[1] hits
storeExpression **(** ***expression,*** ***variableName*** **)**	storeExpression **javascript{**this.browserbot.bodyText().match(/of about +([0-9]+)\./)[1]**}** hits

Extensions to SIDE

Write your own or download one such as goto_sel_ide.js which provides loops and conditionals.

Specify via **Options=>Options** window



SIDE Gotchas/Shortcomings

- Log file cannot be saved other than via copy/paste.
- User clicks on links are sometimes recorded as **click** rather than **clickAndWait.**
- Test suite functionality is minimal.
- No built-in subroutines, loops, or conditionals.
- Xpath implementation seems buggy.

Execution on Other Platforms

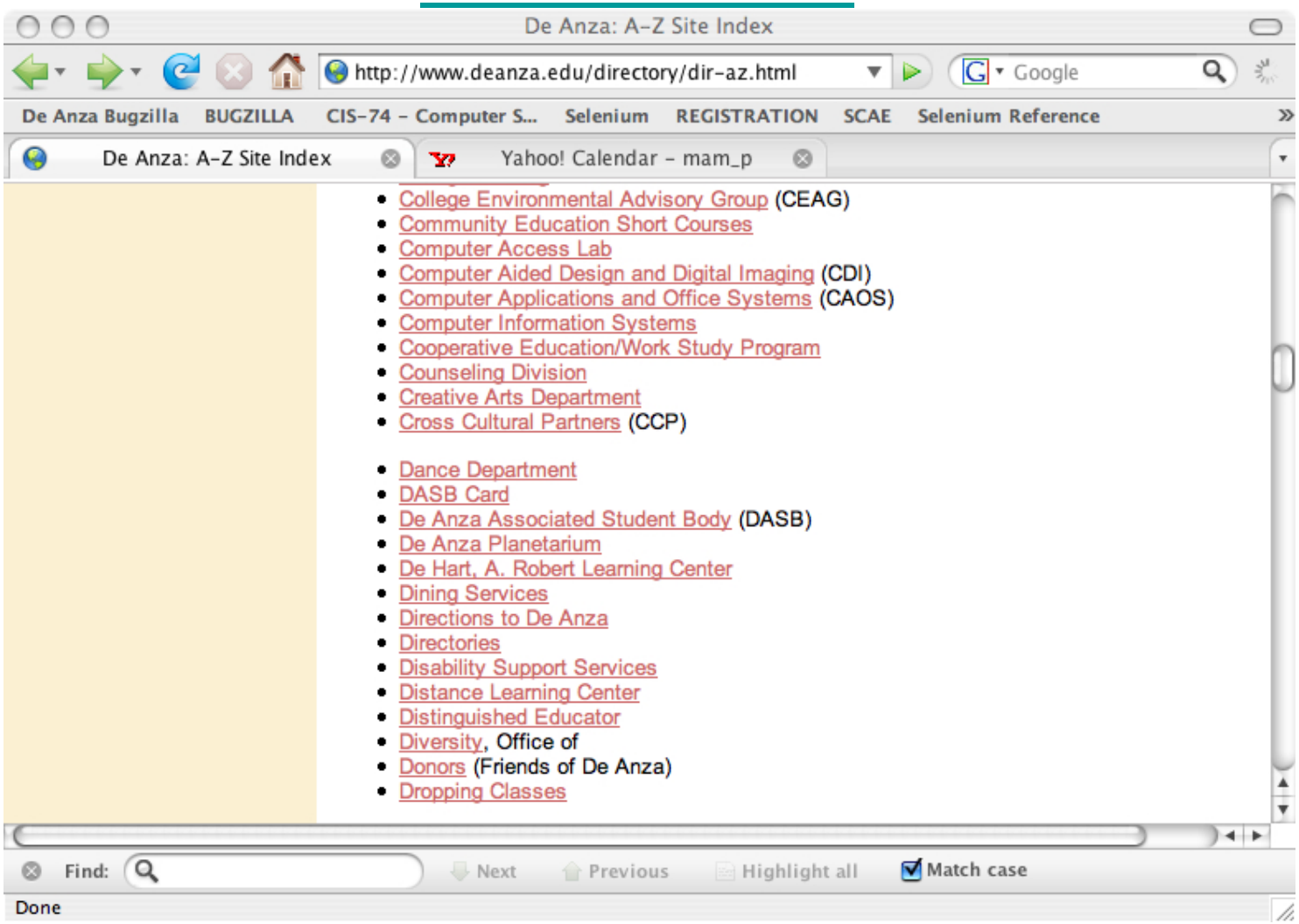
1. Download the Selenium RC server.

2. java -jar selenium-server.jar -htmlSuite *browserString startURL suiteFile resultFile*

Example:

java -jar selenium-server.jar -htmlSuite "*chrome" http://www.ebay.com ~/Desktop/De*/SIDE-S2008/testsuite/testsuite.html /tmp/results.html

Demo: Checking ***All*** De Anza A-Z Links



Demo: Checking ***All*** De Anza A-Z Links

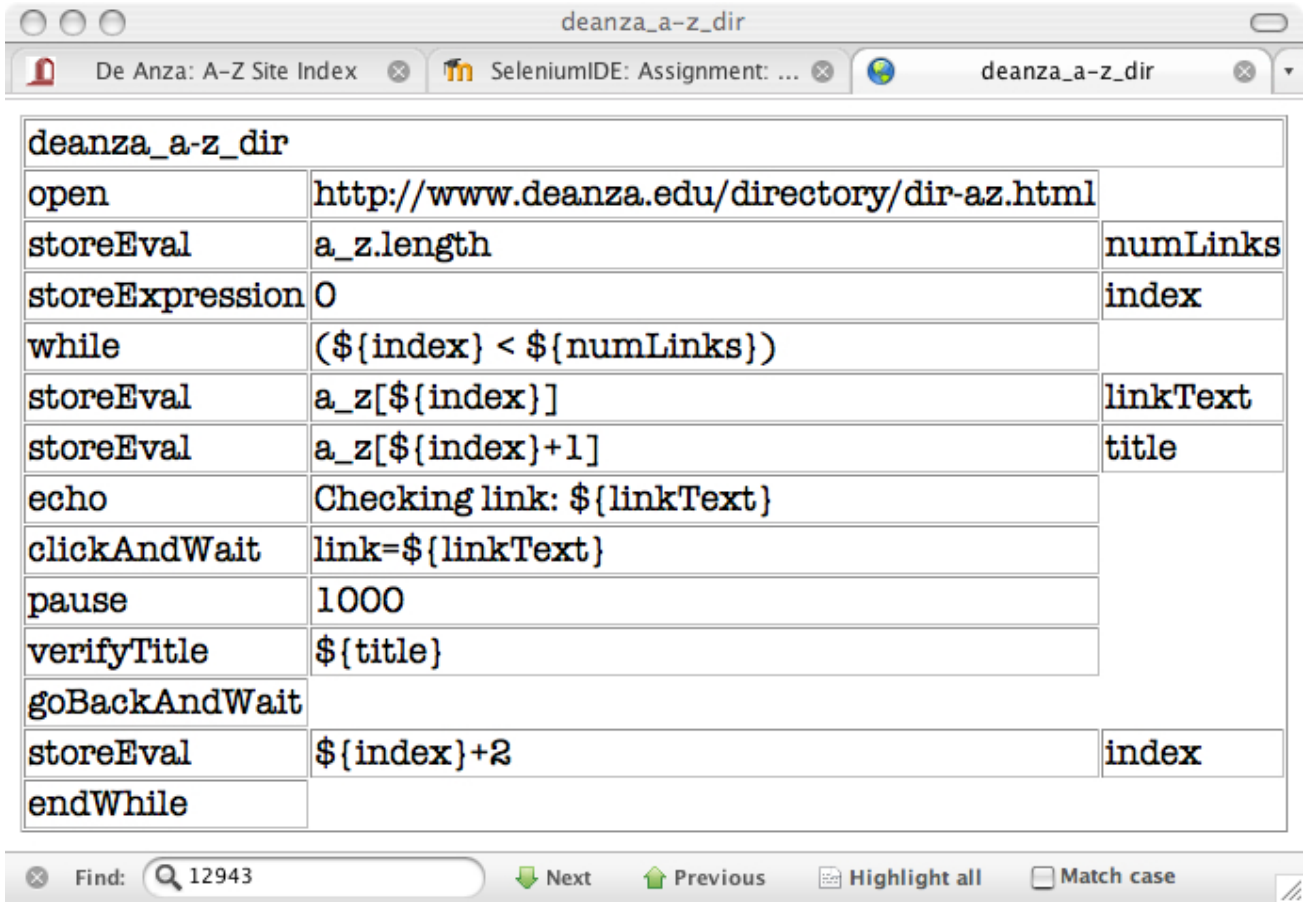
JavaScript extension file (the ***golden*** file):

```
var a_z = new Array();
// One pair/link:  link-text followed by landing page title
a_z.push("About De Anza","About De Anza");
a_z.push("Calendar","Academic Calendar/Final Exam Schedule");
a_z.push("Academic Freedom Policy","Academic Freedom");
.
.
.
a_z.push("Astronomy Department","regexp:D e A n z a C o l l e g
    e Physical Sciences, Math., & Engineering Division
    (PSME).*http://nebula.deanza.edu");
```

Demo: Checking ***All*** De Anza A-Z Links

Test case:

Requires extension



deanza_a-z_dir		
open	http://www.deanza.edu/directory/dir-az.html	
storeEval	a_z.length	numLinks
storeExpression	0	index
while	(${index} < ${numLinks})	
storeEval	a_z[${index}]	linkText
storeEval	a_z[${index}+1]	title
echo	Checking link: ${linkText}	
clickAndWait	link=${linkText}	
pause	1000	
verifyTitle	${title}	
goBackAndWait		
storeEval	${index}+2	index
endWhile		

In-Depth SIDE Courses

- **De Anza College CIS-140**: *Automated Web Page Testing with Selenium IDE*
- **Santa Clara Adult Education's High Tech Academy:** *Software Test Automation using Selenium IDE*
- **Portnov QA School**

Questions? Want a copy of these slides?

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