Acceptance tests for VIVO

Why ”acceptance tests”?

- Comes from a military setting.
- Also know as
  - “integration tests”
  - “system tests”
  - “end-to-end tests”
- Definitely not “unit tests”

What is Selenium?

- A browser driver
- Mimics having a user
- Commands like:
  - Direct the browser to “http://localhost:8080/vivo”
  - Click on a certain button
  - Assert element is present on the page
  - Assert text is present on the page
  - …and more…

Previous acceptance tests in VIVO

Add persons, publications, roles…

Use custom forms for awards, education, positions…

Test search results, search configuration, boosting…

Check access privileges

Exercise APIs

Total: 28 “suites”

Process with previous acceptance tests

- Use Selenium-IDE, a Firefox plugin
- Run manually
  - Follow the checklist
  - Setup for each suite
  - Run the suite
  - Observe the results
- Requires about 3 hours

Problems with previous acceptance tests

- Run manually
- Not consistent: timing issues
- Not portable: uploaded files
- Not isolated
- Difficult to write, difficult to maintain

Status of previous acceptance tests

- During the NIH grant: run by Cornell
- VIVO 1.8, 1.9: run by Cornell
- VIVO 1.10: not run
- ”Not run” means “Not maintained”

Goals for new acceptance tests

- Fully automated
- Repeatable
- Portable
- Multi-browser
- Easier to write and maintain

The test harness

- Tests written in Ruby, run under RSpec
- Orthogonal:
    - Triple-stores and search index wiped after each “suite” (now “test”)
- Minimal setup:
    - TDB, so no MySQL required
    - Run in JettyRunner, so no Tomcat required
- Setup goal:
    - stub search engine, so no Solr required

Advantages of Ruby

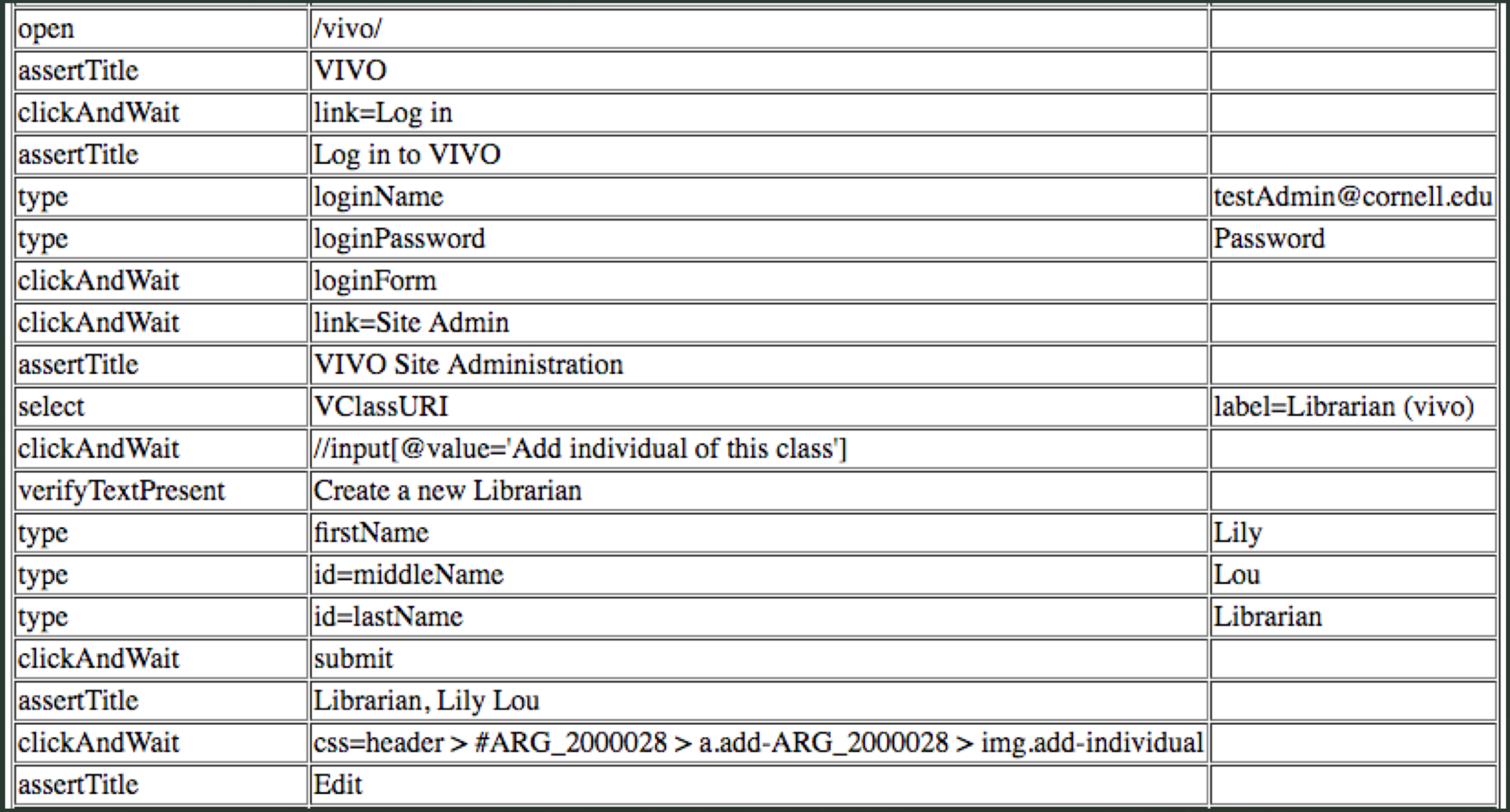
- … or any programming language
  - Selenium also supports Python, Java, PHP, Perl, or C#
- Write sub-routines
  - Login/logout
- Do things that are not provided by the existing vocabulary
  - Wait for indexing, wait for AJAX

Converting the old tests

- 28 suites, 242 tests, and 18423 steps.
- Automated conversion, followed by curation

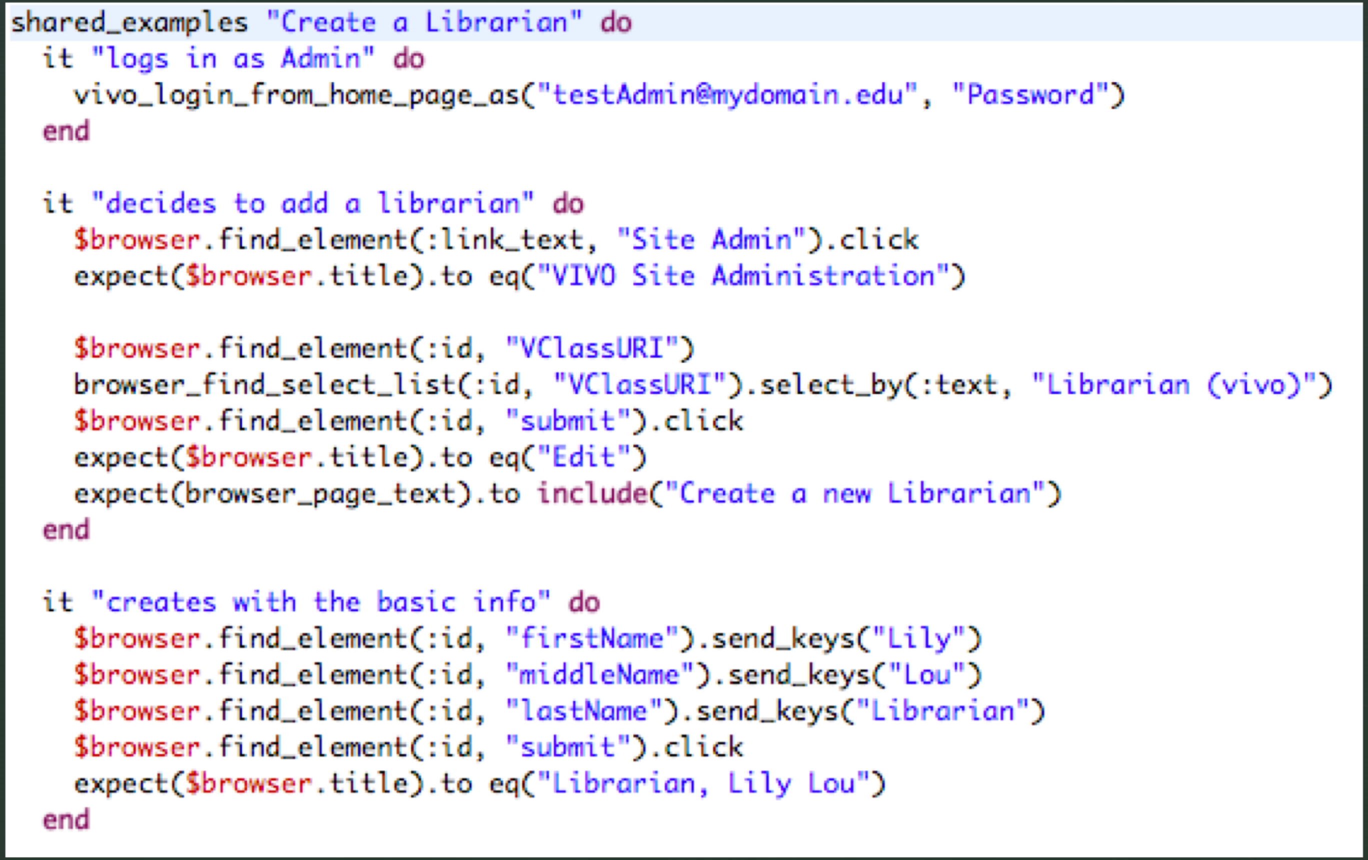
Selenium-IDE	RSpec
Suite	Test
Test	shared_examples

Old tests



open	/vivo/	
assertTitle	VIVO	
clickAndWait	link=Log in	
assertTitle	Log in to VIVO	
type	loginName	testAdmin@cornell.edu
type	loginPassword	Password
clickAndWait	loginForm	
clickAndWait	link=Site Admin	
assertTitle	VIVO Site Administration	
select	VClassURI	label=Librarian (vivo)
clickAndWait	//input[@value='Add individual of this class']	
verifyTextPresent	Create a new Librarian	
type	firstName	Lily
type	id=middleName	Lou
type	id=lastName	Librarian
clickAndWait	submit	
assertTitle	Librarian, Lily Lou	
clickAndWait	css=header > #ARG_2000028 > a.add-ARG_2000028 > img.add-individual	
assertTitle	Edit	

New tests



```
shared_examples "Create a Librarian" do
  it "logs in as Admin" do
    vivo_login_from_home_page_as("testAdmin@mydomain.edu", "Password")
  end

  it "decides to add a librarian" do
    $browser.find_element(:link_text, "Site Admin").click
    expect($browser.title).to eq("VIVO Site Administration")

    $browser.find_element(:id, "VClassURI")
    browser_find_select_list(:id, "VClassURI").select_by(:text, "Librarian (vivo)")
    $browser.find_element(:id, "submit").click
    expect($browser.title).to eq("Edit")
    expect(browser_page_text).to include("Create a new Librarian")
  end

  it "creates with the basic info" do
    $browser.find_element(:id, "firstName").send_keys("Lily")
    $browser.find_element(:id, "middleName").send_keys("Lou")
    $browser.find_element(:id, "lastName").send_keys("Librarian")
    $browser.find_element(:id, "submit").click
    expect($browser.title).to eq("Librarian, Lily Lou")
  end
```

What success?

- 4 of 28 running
- 2 weeks to go

How to go forward?

- Run the tests on a regular basis
  - Include in continuous integration?
  - Run the tests after each pull request?
- Write new tests for new functionality
- Improve the tests and the framework

How I plan to leave it

- https://github.com/j2blake/vivo-acceptance-tests
- A “one-command” execution environment
- A set of passing tests
    - and perhaps some that still fail.
- Instructions on how to install and run
- Suggestions for additional work

Discussion