

Web Application Testing In Ruby



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Outline

- Introduction To Ruby
- Introduction To HTML
- A Sample Web Application
- Watir and its World
- Demo
- Other Tools That Are Available
- Why Use Watir
- Questions
- More Info



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What is Ruby?

- A script language – interpreted rather than compiled. (perl, VBScript)
- Written by Matz, (Yukihiro Matsumoto)
 - Started writing it in 1994
- Written in C, so will work on any platform that has a C compiler:
 - Windows
 - Linux
 - MS-DOS
 - PlayStation?



What Is Ruby(2) ?

- Ruby programs are text files.
 - Tools like cvs, grep can be used
- Any text editor can be used
 - The windows installer includes the SCITE editor
 - Notepad
 - Eclipse (which includes a debugger)
 - Emacs
- Normally have a .rb extension
 - .rbw will launch a ruby application without a console window. Only useful for GUI applications
- Execute a program by:

```
c:\> ruby my_program.rb
```



What Is Ruby(3) ?

- Ruby has many existing libraries:
 - Network access, ftp, http etc
 - Smtplib, pop (email)
 - database connectivity
 - Graphics FOX, TK
 - XML
- The RAA(ruby application archive) lists 1345 projects
- The Ruby Interactive Shell (irb) allows commands to be typed in directly.
 - Other languages that have this are Python and TCL



Why is it called Ruby?

- Influenced by Perl, Matz wanted to use a jewel name for his new language, so he named Ruby after a colleague's birthstone.
- Later, he realized that Ruby comes right after Perl in several situations. In birthstones, pearl is June, ruby is July. When measuring font sizes, pearl is 5pt, ruby is 5.5pt. He thought Ruby was a good name for a programming language newer (and hopefully better) than Perl.

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Introduction To HTML(1)

- HTML is the 'language' used to tell a web browser what to display, and how to display it
- Its hard to write autotests for a web application without knowing some HTML



Introduction To HTML(2)

- A Control (like a button, text field etc) has this format

```
<input type=button value='click me'  
name='myName' id='myID'>
```

- The name and or ID are optional, but they are a huge help in testing
- Other attributes are also optional



Simple HTML Page

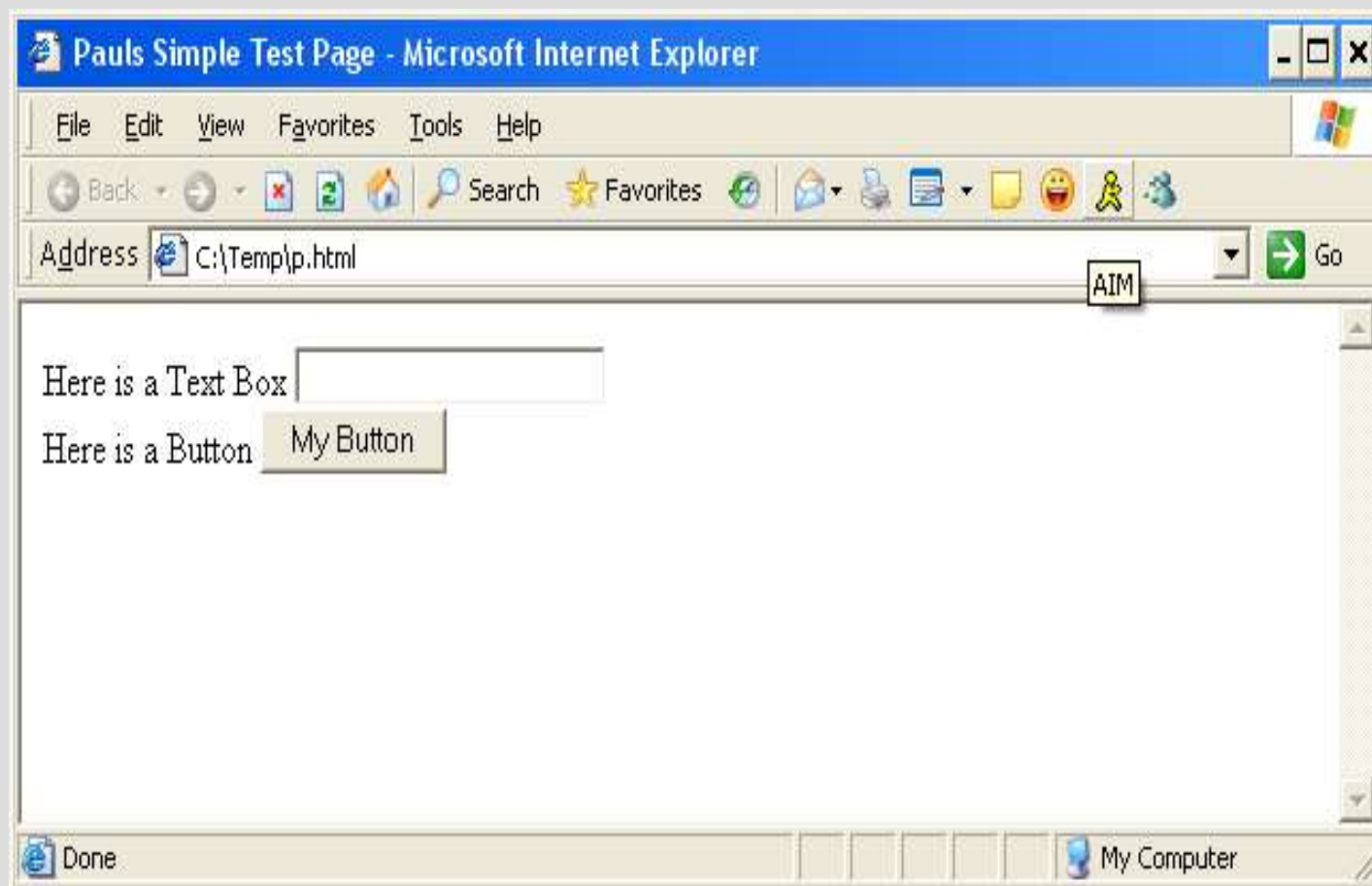
- Here is a simple HTML page

```
<html>
<head>
<title>Pauls Simple Test Page</title>
</head>
<body>
Here is a Text Box <input type = text>
<br>
Here is a Button
<input type = button value="My Button">
</body>
</html>
```

- This is actually badly formed HTML – controls like button and text should really be in a <form> tag



Here it is In a Browser





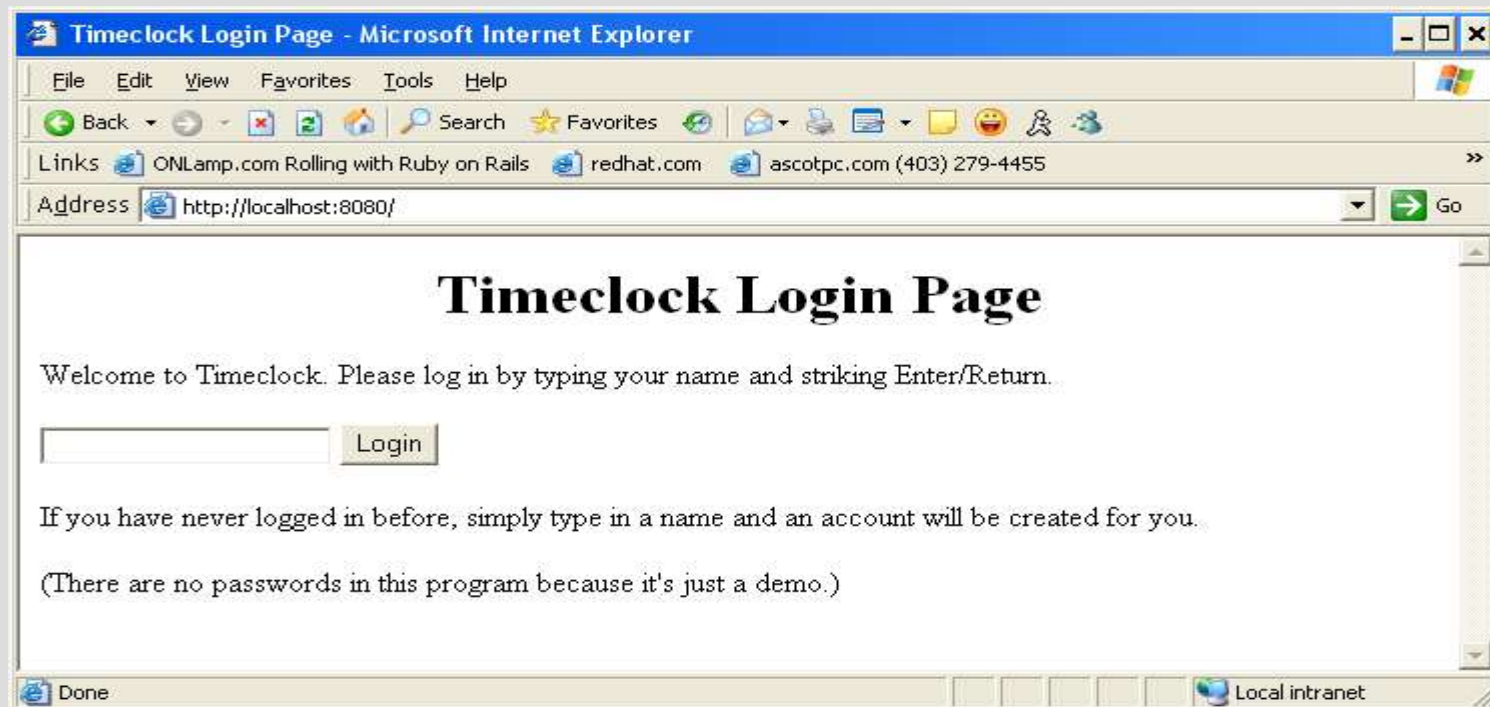
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TimeClock

- Written by Brian Marrick for Tracking how much time he spent on each project he was working on





TimeClock (2)

Paul's Timeclock

Pause the Day Stop the Day

All the jobs
Click to start one
ruby article

Paused jobs
Click to restart one
None

Job 'ruby article' started at 02:33 PM on 02005/03/06.
Job 'ruby article' is running. 0.00 hours accumulated. Refresh

Pause ruby article
Stop ruby article

Or create a new job
 Create

Recent Records

ruby article	2:33 PM	0.00 hours	running
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Done Local intranet



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What Does WATIR mean?



- Web
- Application
- Testing
- In
- Ruby



What Is WATIR?

- Watir is a web application testing library for ruby
- It is open source (BSD Open Source License)
- Written by Bret Pettichord and myself , with a long list of contributors



What WATIR is not.

- Watir is not a record/playback tool
 - It may have some sort of recorder in the future
- Watir is not a link checker
 - But you could easily write one
- Watir is not a testcase management tool
 - But you could use ruby to write one



Watir – an Introduction

- Watir Accesses an HTML page using the COM interface of Internet Explorer
 - COM is also known as:
 - ActiveX
 - OLE
- The COM interface allows an external program to control Internet Explorer.
 - Similar interfaces exist for Word, Excel, PowerPoint and Outlook
- We Can get Full Access to the contents of an HTML page

Watir - Including the library



- In our text file we would need to include the library:

```
#Include The Library  
require 'watir'  
include Watir
```

```
# create our browser and goto a page  
ie=IE.start('http://www.google.com')
```

How Does Watir Access HTML Objects?



- Many commercial tools use their own mappings of objects in the page
 - Difficult to edit
- Watir provides many different ways of accessing the objects

Accessing an HTML element button



- HTML:

- `<input type = button name ='button1' value = 'Click Me' >`

- In a Browser



- We Can access it in Watir Using this:

- `ie.button(:name , 'button1')`

- Or

- `ie.button(:value , 'Click Me')`

- Or

- `ie.button(:index , 1)`

What do we Want To Do With The Button?



- **Click It**

```
ie.button(:value , 'Click Me').click
```

- **See if it exists**

```
ie.button(:value , 'Click Me').exists?
```

- **Is it Enabled**

```
ie.button(:value , 'Click Me').enabled?
```

- **Give it focus**

```
ie.button(:value , 'Click Me').focus
```

Accessing an HTML element link



- HTML:

- `Pickaxe`

- In a Browser:

Pickaxe

- We Can access it in Watir Using this:

- `ie.link(:url, /pragmatic/)`

- Or

- `ie.link(:text, "Pickaxe")`

- Or

- `ie.link(:index, 1)`



What do we want to do with the link?

- The same methods for button also apply to links:
 - click
 - exists?
 - Enabled?
- We can also get some properties for the link:

```
ie.link(:text , "Pickaxe").href
```

```
ie.link(:text , "Pickaxe").id
```

```
ie.link(:text , "Pickaxe").name
```

Accessing an HTML element - text box



- HTML:
- `<input type = "text" name = "typeinme" >`
- In a Browser:

Type in Me:

- We Can access it in Watir Using this:
`ie.text_field(:name, "typeinme")`
- Or
`ie.text_field(:afterText , /Me:/)`
- Or
`ie.text_field(:index , 1)`



What do we want to do with the Text Box?

- **Click It -**

```
ie.text_field(:name, "typeinme").click
```

- **Find out something about it ?**

```
ie.text_field(:name, "typeinme").to_s
```

- **See if it exists**

```
ie.text_field(:name, "typeinme").exists?
```

- **Is it Enabled**

```
ie.text_field(:name, "typeinme").enabled?
```

- **Give it focus**

```
ie.text_field(:name, "typeinme").focus
```

- **Set A value**

```
ie.text_field(:name, "typeinme").set("Hello There!")
```

- **Retreive its value**

```
ie.text_field(:name, "typeinme").value
```



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Demo – Use Watir to Drive The TimeClock



- We will use the Watir Library to Drive the timeclock
- The command we enter will form the basis for a regression test for the time clock
- The Timeclock has some test-hooks, that make testing easier – we may not get on to these!



Demo – Using irb

- In a command prompt, type irb
- We will attach to an existing window

```
irb
irb>require 'watir'
=>true
irb>include Watir
=>Object
ie=IE.attach(:title, "Timeclock Login Page")
```



Demo – Using irb (2)

- To see the HTML of a page

```
irb>ie.html
=> "<H1>\r\n<P align=center>Timeclock Login
Page </P></H1>\r\n<P>Welcome to Timeclock.
Please log in by typing your name and
striking Enter/Return. </P>\r\n<FORM
action=login method=get><INPUT
maxLength=100 name=name></INPUT><INPUT
type=submit value=Login
name=submit_logon></INPUT>....."
```



Demo – Using irb (3)

- To show what objects are on the page

```
irb>ie.show_all_objects
-----Objects in page -----
text      name=name          id=    value=          alt=
submit    name=submit_logon id=    value=Login     alt=
```



Demo – Using irb (4)

- To access the text field
 - flash
 - set
 - get its contents
 - **Verify its contents**

```
irb>ie.text_field(:name, "name").flash  
=>10
```

```
irb>ie.text_field(:name, "name").set("Paul")  
=>"Paul"
```

```
irb>ie.text_field(:name, "name").value  
=>"Paul"
```

```
irb>ie.text_field(:name, "name").verify_contains("gg")  
=>false
```



Demo – Using irb (5)

- To access the button
 - flash
 - click

```
irb>ie.button(:index, 1).flash  
=>10
```

```
irb>ie.button(:index, 1).click  
=>nil
```



Demo – Using irb (6)

- To control navigation
 - back
 - forward
 - refresh

```
irb>ie.back  
=>0
```

```
irb>ie.forward  
=>0
```

```
irb>ie.refresh  
=>0
```



Demo – Using irb (7)

- To view text

```
irb>ie.text
=> "Probable Program Error \r\nAn exception was raised:
Errno::EACCES('Permission denied -
c:/timeclock_data/user-data/') \r\nPlease report this
problem to marick@testing.com. \r\nPlease include this
detail:
'\r\n../timeclock/server/PersistentUser.rb:32....
```



Demo – Using irb (8)

- To see if a page contains some text

```
irb>if ie.contains_text("Probable Program Error")
irb>  puts "Error!"
irb>end
Error!
=>nil
```



Demo – Using irb (9)

- To access a checkbox

```
irb>ie.checkbox(:index,1).flash  
=>10  
irb>ie.checkbox(:index,1).set  
=>nil  
irb>ie.checkbox(:index,1).clear  
=>0
```



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Other Tools That Are Available (1)

- The tools we will talk about access IE in the same way as WATIR
- Many Other tools, such as httpUnit, that 'act' as a browser also exist
 - HttpUnit
 - jWebUnit
 - HtmlUnit
 - WWW:Mechanize (both perl and ruby)



Other Tools That Are Available

(2)

- Perl (if you really have to)
 - Samie
 - <http://samie.sourceforge.net/>
 - Win32::IE::Mechanize
 - <http://search.cpan.org/~abeltje/Win32-IE-Mechanize/>
- Java
 - Jiffie
 - <http://jiffie.sourceforge.net/>
 - Avignon
 - <http://www.nolacom.com/avignon/index.asp>
- Python
 - Pamie
 - <http://pamie.sourceforge.net/>



Other Tools That Are Available

(2)

- These don't apply to a particular language:
- leUnit
 - Also A Browser Driver
 - written by James Li in Calgary
 - <http://ieunit.sourceforge.net/>
- Selenium
 - A browser driver that works with IE, Mozilla, Safari
 - support for many languages:
 - .net
 - ruby
 - python
 - java
 - <http://selenium.thoughtworks.com/index.html>
 - Future integration with watir a possibility



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Why Use Watir?

- Its Free
- Numerous ways to access elements
- Ruby is a nice language to use
 - Perl is very cryptic
 - Java needs to be compiled
 - Vbscript – difficult to do includes
- Irb makes creating scripts easy

Why Use Watir – Compared to Commercial Tools



- Its Free!
- It uses a real programming language
 - Its Not VendorScript
- Developers are able to write code for you
- Developers are more likely to want to help
- Integration with unit tests and other developer tools
- Mailing list provides support
- Features can be added easily
- We encourage contributions from the community

What People Are Saying About Watir



- <http://wtr.rubyforge.org/wiki/wiki.pl?WatirTestimonials>
- Already WATIR outperforms QuickTest in many areas.
- Watir Rocks! I have played with it for only about an hour and accomplished what I had wanted to do (but did not have the wherewithall) for ages. Truly awesome !!
- In my opinion, WATIR has no peer as a framework to drive functional test automation in Internet Explorer



Questions?

- Is it Only Internet Explorer thats Supported?
 - Right now, yes!
- What about Firefox, mozilla, Opera, Safari?
 - There are 3 ways we are looking at getting Mozilla support.
 - Selenium
 - JSSH
 - Gtk::MozEmbed



Where Do I go For More Info?

- The WATIR home page and mailing list
<http://wtr.rubyforge.org>
- Email me: paul.rogers@shaw.ca
- My web site: <http://www.paulrogers.ca>
- Better Software, April 2005,
 - “Watir Works” by Jonathan Kohl and Paul Rogers
- Ruby Home Page:
 - <http://www.ruby-lang.org>
- comp.lang.ruby newsgroup



Where Do I go For More Info?

- Star East, May16-20, Orlando
 - “Scripting Web Tests”, Bret Pettichord and Paul Rogers
 - <http://www.sqe.com/stareast/>
- Various other conferences may also have this class
 - Agile2005, Denver
 - <http://agile2005.com>
 - PNSQC, Portland, September
 - <http://www.pnsqc.org/>
- Jonathan Kohl will be teaching classes on using Watir later in the year in Calgary
 - www.kohl.ca