

From Paralysis to Static Analysis: A Heroic Tale of the Epic Struggles Between Ruby 1.8 and Ruby 1.9

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Ruby Nation
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Ruby

A Programmer's Best Friend

1.8.6



I . 9 . I



Friday, September 11, 2009



Tons of
Improvements!

Yarrrrrrrv



SOCIALLIFE.COM



Friday, September 11, 2009

But sadly, growing up
is hard to do

What does this mean for me?

Your Computer and You

Things you can expect to happen as you mature as a Ruby developer.

Dev Environment

[muness.blogspot.com/
2009/02/easily-switch-
between-ruby-186-
and-191.html](http://muness.blogspot.com/2009/02/easily-switch-between-ruby-186-and-191.html)

DEMO

Case Study: RCov 1.9

Once you see it you can't un-see it

RCov

Static analysis



Aaron Bedra

Commit c309a83 (view @ github) Branch refs/heads/master
purposely failing build for presentation purposes

Failed 2 minutes ago in less than 20 seconds

Runtime ruby18



Build Log

```
rm -r coverage
(in /mnt/repos/relevance/castronaut)
/usr/local/lib/ruby/site_ruby/1.8/rubygems/custom_require.rb:31: warning: The :env option is deprecated;
use :environment instead.
Example disabled: notifies the user on STDERR
Example disabled: does a system exit(0)
.
.
.
```

Finished in 1.798095 seconds

250 examples, 0 failures

| File | Lines | LOC | COV |
|---|-------|-----|--------|
| lib/castronaut/support/sample.rb | 21 | 17 | 23.5% |
| lib/castronaut/adapters/ldap/user.rb | 40 | 33 | 75.8% |
| lib/castronaut/configuration.rb | 108 | 88 | 86.4% |
| lib/castronaut/adapters/development/user.rb | 25 | 21 | 95.2% |
| app/config.rb | 17 | 15 | 100.0% |
| lib/castronaut/presenters/login.rb | 84 | 62 | 100.0% |
| lib/castronaut/presenters/process_login.rb | 149 | 113 | 100.0% |
| lib/castronaut/models/consumeable.rb | 18 | 13 | 100.0% |
| lib/castronaut.rb | 40 | 35 | 100.0% |
| lib/castronaut/models/proxy_granting_ticket.rb | 70 | 50 | 100.0% |
| ...stronaut/adapters/restful_authentication/user.rb | 50 | 40 | 100.0% |
| lib/castronaut/utilities/random_string.rb | 24 | 21 | 100.0% |
| lib/castronaut/authentication_result.rb | 24 | 16 | 100.0% |
| lib/castronaut/presenters/service_validate.rb | 68 | 50 | 100.0% |
| lib/castronaut/models/proxy_ticket.rb | 43 | 30 | 100.0% |
| lib/castronaut/models/login_ticket.rb | 53 | 35 | 100.0% |
| lib/castronaut/adapters/ldap/adapter.rb | 15 | 11 | 100.0% |
| lib/castronaut/models/dispenser.rb | 14 | 10 | 100.0% |
| lib/castronaut/adapters.rb | 13 | 11 | 100.0% |
| lib/castronaut/models/service_ticket.rb | 91 | 63 | 100.0% |
| lib/castronaut/models/ticket_granting_ticket.rb | 52 | 37 | 100.0% |
| lib/castronaut/adapters/development/adapter.rb | 13 | 11 | 100.0% |
| app/controllers/application.rb | 42 | 3 | 100.0% |
| castronaut.rb | 7 | 6 | 100.0% |
| lib/castronaut/presenters/logout.rb | 56 | 39 | 100.0% |
| lib/castronaut/ticket_result.rb | 27 | 19 | 100.0% |
| lib/castronaut/presenters/proxy_validate.rb | 7 | 48 | 100.0% |
| ...onaut/adapters/restful_authentication/adapter.rb | 15 | 11 | 100.0% |
| Total | 1246 | 940 | 96.4% |

96.4% 28 file(s) 1246 Lines 940 LOC
rake aborted!
Coverage must be at least 99.9% but was 97.0%
(See full trace by running task with --trace)
Coverage: 97.0% (threshold: 99.9%)

Mauricio Fernandez

Chad Humphries && Aaron Bedra

Relevance

Getting Started

TATFT?

Pick a project, any
project. Run the
tests.

YOUR SHIPMENT OF FAIL



HAS BEEN DELIVERED



LetsGoDigital



Gobs of incredibly ridiculous code

A C extension to speed up analysis

So where do you
start?

Let's get the heavy
lifting done first

The Ruby 1.9 C API

Most of the exposed
libs from 1.8 are now
strictly internal

env.h



node.h



**RCov's extension is
made up of two
primary files**

callsite

rcovrt



Let's start with the
easy parts

len and ptr are no
longer members of
array and string

RSTRING(str)->len

RARRAY(x)->ptr

RSTRING(str)->len

RSTRING_LEN(str)

RARRAY(x)->ptr

RARRAY_PTR(x)

But you have to
maintain backwards
compatibility!

Make a macro

```
#ifndef RARRAY_LEN
#define RARRAY_LEN(arr) RARRAY(arr)->len
#define RSTRING_LEN(str) RSTRING(str)->len
#define RSTRING_PTR(str) RSTRING(str)->ptr
#endif
```

Or you could create
separate code
branches and let
mkmf do the work

```
if RUBY_VERSION =~ /1.9/
  $CFLAGS << ' -DRUBY_19_COMPATIBILITY'
  create_makefile("rcovrt", "1.9/")
else
  create_makefile("rcovrt", "1.8/")
end
```

CODE DEMO

And that's just the C
extension side...

Let's take a look at
the Ruby side

There are a few
common errors that
we can get out of the
way

Use ‘then’ instead of
‘:’ in case statements

to_a no longer exists
directly on String

String.lines.to_a

```
if str.respond_to?(:lines)
  return str.lines.to_a
else
  return str.to_a
end
```

Now that we have
scratched the
surface...

DEMO

Lessons Learned

- C extensions will be your largest time sink.
- Take note of the common errors!
- rxml is no longer your friend.

Where do I go from here?

[github.com/relevance/
rcov](https://github.com/relevance/rcov)

[github.com/abedra/
presentations](https://github.com/abedra/presentations)



**github.com/
relevance/rcov/issues**

Contact

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Discussion and Questions