MacRuby on Rails

Abstract

MacRuby is an implementation of Ruby 1.9 that is built directly on top of Mac OS X core technologies. Recently, MacRuby has become viable as a tool for developing useful desktop applications for Mac OS X. However, as of March 2011, MacRuby is still missing some functionality that is present in cRuby. Therefore, MacRuby is not able to run Ruby on Rails. In my presentation, I will explain how I modified MacRuby to make it a suitable foundation for running Rails. I would also like to explain some of the technical intricacies that I discovered along the way.

RUBYCONF 2011
SEPTEMBER 29 - OCTOBER 1, NEW ORLEANS, LA

RubyConf2011 – 2011/09/30
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This presentation was made possible by NaCl

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  - Network Applied Communication Laboratory Ltd.

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- Hobby
  - MacRuby committer
  - cRuby committer (Readline module)

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My Company

My Company

- Network Applied Communication Laboratory Ltd.

My Company

- Network Applied Communication Laboratory Ltd.
  - a.k.a NaCl

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  - Shimane, Japan
  - Since 2001 (My 10th Anniversary!)

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  - Since 2001 (My 10th Anniversary!)
  - 57 people (many Rubyists!?)

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  - Shimane, Japan
  - Since 2001 (My 10th Anniversary!)
  - 57 people (many Rubyists!?)
  - SI, Training, etc...

The NaCl Way

The NaCl Way

The NaCl Way

The NaCl Way

First, I want You to be happy.

The NaCl Way

First, I want You to be happy.

Next, I want you to make Your Family happy.

The NaCl Way

First, I want You to be happy.

Next, I want you to make Your Family happy.

Finally, if you have more happiness left, then please share it with Our Company :)

The NaCl Way

(as I see it)

The NaCl Way

(as I see it)

Employee

- First: Employee

The NaCl Way

(as I see it)

Employee > Employee's Family

- First: Employee
- Next: Employee Family

The NaCl Way

(as I see it)

Employee > Employee's Family >> Company

- First: Employee
- Next: Employee Family
- Finally: Company

NaCl
Network Applied Communication Laboratory

オープンソース・フロンティア
株式会社ネットワーク応用通信研究所

The NaCl W

(as I se

Employee

- Next Employee
- Finally Company

I love my company!!

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MacRuby on Rails

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MacRuby Unofficial Character
Ruby Ninja @lrz

MacRuby on Rails

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MacRuby

Ruby customized for Mac OS X

MacRuby

MacRuby

- MacRuby is a unique blend of Ruby 1.9 and Objective-C.

MacRuby

- MacRuby is a unique blend of Ruby 1.9 and Objective-C.
- The goal of the MacRuby project is to be 100% compatible syntactically and behaviorally with Ruby 1.9.

Ruby 1.9

Application
Ruby 1.9
Ruby VM
Built-in GC
Built-in Library
Standard Library
System libraries
OS
(Linux,Windows,Mac OS X,etc...)

MacRuby

Application
MacRuby
Ruby VM
Built-in GC
Built-in Library
Standard Library
System libraries
Mac OS X

MacRuby

Ap on
Ruby
P M
Built-in
GC
Built-in
Library
Standard
Library
System libraries
Mac OS X

MacRuby

Ruby
Built-in Library
Standard Library
System libraries
Mac OS X
AutoZone

MacRuby

Ruby
Standard
Library
System libraries
Mac OS X
AutoZone
Foundation

MacRuby

Foundation

```
"kouji".transform("latin-hiragana")
#=> こうじ
```

MacRuby

Ruby
Standard
Library
System libraries
Mac OS X
AutoZone
Foundation

MacRuby

Application
MacRuby
AutoZone
LLVM
Generational Threaded GC
Built-in Library
Standard Library
Foundation
System libraries
Mac OS X

Cocoa

MacRuby X Cocoa

MacRuby X Cocoa

```
framework "cocoa"

def playSound(name)
  sound = NSSound.soundNamed(name)
  sound.play
end
```

MacRuby X Cocoa

This is a sample program that plays a sound.

```
framework "cocoa"

def playSound(name)
  sound = NSSound.soundNamed(name)
  sound.play
end
```

HelloMacRuby

HelloMacRuby

HelloMacRuby

HelloMacRuby

Ruby script: Controller

```
class AppController
  attr_accessor :textField

  def hello(sender)
    @textField.stringValue =  "Hello,MacRuby!"
  end
end
```

View

HelloMacRuby

Ruby script: Controller

```
class AppController
  attr_accessor :textField

  def hello(sender)
    @textField.stringValue =  "Hello,MacRuby!"
  end
end
```

View

HelloMacRuby

Ruby script: Controller

```
class AppController
  attr_accessor :textField

  def hello(sender)
    @textField.stringValue =  "Hello,MacRuby!"
  end
end
```

View

MacRuby on Rails

Making Ruby on Rails work on MacRuby

Current Status

Current Status

$ rails new demo

```
kouji:/Users/kouji/work/MacRuby/MacRuby/issues/work:0
dhcp219$ env VM_DISABLE_RBO=1 macruby -S rails new demo
      create
      create  README
      create  Rakefile
      create  config.ru
      create  .gitignore
      create  Gemfile
      create  app
      create  app/controllers/application_controller.rb
      create  app/helpers/application_helper.rb
      create  app/mailers
      create  app/models
      create  app/views/layouts/application.html.erb
      create  config
      create  config/routes.rb
      create  config/application.rb
      create  config/environment.rb
      create  config/environments
      create  config/environments/development.rb
      create  config/environments/production.rb
      create  config/environments/test.rb
      create  config/initializers
      create  config/initializers/backtrace_silencers.rb
```

Current Status

$ rails new demo

```
kouji:/Users/kouji/work/MacRuby/MacRuby/issues/work:0
dhcp219$ env VM_DISABLE_RBO=1 macruby -S rails new demo
      create
      create  README
      create  Rakefile
      create  config.ru
      create  .gitignore
      create  Gemfile
      create  app
      create  app/controllers
      create  app/helpers
      create  app/models
      create  app/mailers
      create  app/views
      create  config
      create  config/environments
      create  config/initializers
      create  config/locales
      create  config/boot.rb
      create  config/environment.rb
      create  config/application.rb
      create  config/database.yml
      create  config/routes.rb
      create  config/deploy.rb
      create  config/deploy/production.rb
      create  config/deploy/staging.rb
      create  config/deploy/development.rb
      create  config/deploy/shared.rb
      create  config/deploy/shared/db.rb
      create  config/deploy/shared/db/backup.rb
      create  config/deploy/shared/db/restore.rb
      create  config/deploy/shared/db/setup.rb
      create  config/deploy/shared/db/symlink.rb
      create  config/deploy/shared/db/migrate.rb
      create  config/deploy/shared/db/seed.rb
      create  config/deploy/shared/db/rollback.rb
      create  config/deploy/shared/db/status.rb
      create  config/deploy/shared/db/version.rb
      create  config/deploy/shared/db/dump.rb
      create  config/deploy/shared/db/load.rb
      create  config/deploy/shared/db/create.rb
      create  config/deploy/shared/db/drop.rb
      create  config/deploy/shared/db/reset.rb
      create  config/deploy/shared/db/rake.rb
      create  config/deploy/shared/db/console.rb
      create  config/deploy/shared/db/dbconsole.rb
      create  config/deploy/shared/db/runner.rb
      create  config/deploy/shared/db/server.rb
      create  config/deploy/shared/db/generate.rb
      create  config/deploy/shared/db/destroy.rb
      create  config/deploy/shared/db/plugin.rb
      create  config/deploy/shared/db/gem.rb
      create  config/deploy/shared/db/bundle.rb
      create  config/deploy/shared/db/rake.rb
      create  config/deploy/shared/db/console.rb
      create  config/deploy/shared/db/dbconsole.rb
      create  config/deploy/shared/db/runner.rb
      create  config/deploy/shared/db/server.rb
      create  config/deploy/shared/db/generate.rb
      create  config/deploy/shared/db/destroy.rb
      create  config/deploy/shared/db/plugin.rb
      create  config/deploy/shared/db/gem.rb
      create  config/deploy/shared/db/bundle.rb
```

$ rails generate scaffold ...

```
kouji:/Users/kouji/work/MacRuby/MacRuby/issues/work/demo:0
dhcp219$ env VM_DISABLE_RBO=1 macruby -S rails generate scaffold Bookmark title:
string description:text url:string
      invoke  active_record
      create    db/migrate/20110714234202_create_bookmarks.rb
      create    app/models/bookmark.rb
      invoke    test_unit
      create      test/unit/bookmark_test.rb
      create      test/fixtures/bookmarks.yml
       route  resources :bookmarks
      invoke  scaffold_controller
      create    app/controllers/bookmarks_controller.rb
      invoke    erb
      create      app/views/bookmarks
      create      app/views/bookmarks/index.html.erb
      create      app/views/bookmarks/edit.html.erb
      create      app/views/bookmarks/show.html.erb
      create      app/views/bookmarks/new.html.erb
      create      app/views/bookmarks/_form.html.erb
      invoke    test_unit
      create      test/functional/bookmarks_controller_test.rb
      invoke    helper
      create      app/helpers/bookmarks_helper.rb
      invoke      test_unit
```

Current Status

$ rails new demo

```
kouji:/Users/kouji/work/MacRuby/MacRuby/issues/work:0
dhcp219$ env VM_DISABLE_RBO=1 macruby -S rails new demo
      create
      create  README
      create  Rakefile
      create  config.ru
      create  .gitignore
      create  Gemfile
      create  app
      create  app/controllers
      create  app/helpers
      create  app/models
      create  app/mailers
      create  app/views
      create  config
      create  config/boot.rb
      create  config/environment.rb
      create  config/environments
      create  config/initializers
      create  config/locales
      create  config/locales/en.yml
      create  config/routes.rb
      create  config/application.rb
      create  config/environments/development.rb
      create  config/environments/production.rb
      create  config/environments/test.rb
      create  config/initializers/backtrace_silencers.rb
      create  config/initializers/inflections.rb
      create  config/initializers/mime_types.rb
      create  config/initializers/session_store.rb
      create  config/initializers/secret_token.rb
      create  config/locales/en.yml
      create  db
      create  db/seeds.rb
      create  doc
      create  doc/README_FOR_APP
      create  lib
      create  lib/tasks
      create  lib/tasks/.gitkeep
      create  log
      create  log/development.log
      create  log/production.log
      create  log/test.log
      create  public
      create  public/favicon.ico
      create  public/index.html
      create  public/robots.txt
      create  public/images
      create  public/images/rails.png
      create  public/stylesheets
      create  public/stylesheets/.gitkeep
      create  public/javascripts
      create  public/javascripts/application.js
      create  public/javascripts/controls.js
      create  public/javascripts/dragdrop.js
      create  public/javascripts/effects.js
      create  public/javascripts/prototype.js
      create  public/javascripts/rails.js
      create  script
      create  script/rails
      create  script/rails.bat
      create  script/rails.sh
      create  test
      create  test/fixtures
      create  test/fixtures/.gitkeep
      create  test/functional
      create  test/functional/.gitkeep
      create  test/integration
      create  test/integration/.gitkeep
      create  test/unit
      create  test/unit/.gitkeep
      create  test/test_helper.rb
      create  vendor
      create  vendor/plugins
      create  vendor/plugins/.gitkeep
      create  vendor/stylesheets
      create  vendor/stylesheets/.gitkeep
      create  vendor/vendors
      create  vendor/vendors/.gitkeep
      create  vendor/Gemfile
      create  vendor/Gemfile.lock
      create  vendor/.gitignore
      create  vendor/.bundle
      create  vendor/.bundle/config
      create  vendor/vendor
      create  vendor/vendor/.gitignore
      create  vendor/vendor/gems
      create  vendor/vendor/gems/environment.rb
      create  vendor/vendor/gems/ruby
      create  vendor/vendor/gems/ruby/1.9.1
      create  vendor/vendor/gems/ruby/1.9.1/.gitignore
      create  vendor/vendor/gems/ruby/1.9.1/bundler
      create  vendor/vendor/gems/ruby/1.9.1/bundler/.gitignore
      create  vendor/vendor/gems/ruby/1.9.1/bundler/gems
      create  vendor/vendor/gems/ruby/1.9.1/bundler/gems/.gitignore
      create  vendor/vendor/gems/ruby/1.9.1/bundler/gems/extensions
      create  vendor/vendor/gems/ruby/1.9.1/bundler/gems/extensions/.gitignore
      create  vendor/vendor/gems/ruby/1.9.1/bundler/gems/extensions/x86-darwin-10
      create  vendor/vendor/gems/ruby/1.9.1/bundler/gems/extensions/x86-darwin-10/.gitignore
      create  vendor/vendor/gems/ruby/1.9.1/bundler/gems/extensions/x86-darwin-10/1.9.1
      create  vendor/vendor/gems/ruby/1.9.1/bundler/gems/extensions/x86-darwin-10/1.9.1/.gitignore
      create  vendor/vendor/gems/ruby/1.9.1/bundler/gems/extensions/x86-darwin-10/1.9.1/bundler
      create  vendor/vendor/gems/ruby/1.9.1/bundler/gems/extensions/x86-darwin-10/1.9.1/bundler/.gitignore
      create  vendor/vendor/gems/ruby/1.9.1/bundler/gems/extensions/x86-darwin-10/1.9.1/bundler/gems
      create  vendor/vendor/gems/ruby/1.9.1/bundler/gems/extensions/x86-darwin-10/1.9.1/bundler/gems/.gitignore
      create  vendor/vendor/gems/ruby/1.9.1/bundler/gems/extensions/x86-darwin-10/1.9.1/bundler/gems/extensions
      create  vendor/vendor/gems/ruby/1.9.1/bundler/gems/extensions/x86-darwin-10/1.9.1/bundler/gems/extensions/.gitignore
      create  vendor/vendor/gems/ruby/1.9.1/bundler/gems/extensions/x86-darwin-10/1.9.1/bundler/gems/extensions/x86-darwin-10
      create  vendor/vendor/gems/ruby/1.9.1/bundler/gems/extensions/x86-darwin-10/1.9.1/bundler/gems/extensions/x86-darwin-10/.gitignore
      create  vendor/vendor/gems/ruby/1.9.1/bundler/gems/extensions/x86-darwin-10/1.9.1/bundler/gems/extensions/x86-darwin-10/1.9.1
      create  vendor/vendor/gems/ruby/1.9.1/bundler/gems/extensions/x86-darwin-10/1.9.1/bundler/gems/extensions/x86-darwin-10/1.9.1/.gitignore
      create  vendor/vendor/gems/ruby/1.9.1/bundler/gems/extensions/x86-darwin-10/1.9.1/bundler/gems/extensions/x86-darwin-10/1.9.1/bundler
      create  vendor/vendor/gems/ruby/1.9.1/bundler/gems/extensions/x86-darwin-10/1.9.1/bundler/gems/extensions/x86-darwin-10/1.9.1/bundler/.gitignore
      create  vendor/vendor/gems/ruby/1.9.1/bundler/gems/extensions/x86-darwin-10/1.9.1/bundler/gems/extensions/x86-darwin-10/1.9.1/bundler/gems
      create  vendor/vendor/gems/ruby/1.9.1/bundler/gems/extensions/x86-darwin-10/1.9.1/bundler/gems/extensions/x86-darwin-10/1.9.1/bundler/gems/.gitignore
      create  vendor/vendor/gems/ruby/1.9.1/bundler/gems/extensions/x86-darwin-10/1.9.1/bundler/gems/extensions/x86-darwin-10/1.9.1/bundler/gems/extensions
      create  vendor/vendor/gems/ruby/1.9.1/bundler/gems/extensions/x86-darwin-10/1.9.1/bundler/gems/extensions/x86-darwin-10/1.9.1/bundler/gems/extensions/.gitignore
      create  vendor/vendor/gems/ruby/1.9.1/bundler/gems/extensions/x86-darwin-10/1.9.1/bundler/gems/extensions/x86-darwin-10/1.9.1/bundler/gems/extensions/x86-darwin-10
      create  vendor/vendor/gems/ruby/1.9.1/bundler/gems/extensions/x86-darwin-10/1.9.1/bundler/gems/extensions/x86-darwin-10/1.9.1/bundler/gems/extensions/x86-darwin-10/.gitignore
      create  vendor/vendor/gems/ruby/1.9.1/bundler/gems/extensions/x86-darwin-10/1.9.1/bundler/gems/extensions/x86-darwin-10/1.9.1/bundler/gems/extensions/x86-darwin-10/1.9.1
      create  vendor/vendor/gems/ruby/1.9.1/bundler/gems/extensions/x86-darwin-10/1.9.1/bundler/gems/extensions/x86-darwin-10/1.9.1/bundler/gems/extensions/x86-darwin-10/1.9.1/.gitignore
      create  vendor/vendor/gems/ruby/1.9.1/bundler/gems/extensions/x86-darwin-10/1.9.1/bundler/gems/extensions/x86-darwin-10/1.9.1/bundler/gems/extensions/x86-darwin-10/1.9.1/bundler
      create  vendor/vendor/gems/ruby/1.9.1/bundler/gems/extensions/x86-darwin-10/1.9.1/bundler/gems/extensions/x86-darwin-10/1.9.1/bundler/gems/extensions/x86-darwin-10/1.9.1/bundler/.gitignore
      create  vendor/vendor/gems/ruby/1.9.1/bundler/gems/extensions/x86-darwin-10/1.9.1/bundler/gems/extensions/x86-darwin-10/1.9.1/bundler/gems/extensions/x86-darwin-10/1.9.1/bundler/gems
      create  vendor/vendor/gems/ruby/1.9.1/bundler/gems/extensions/x86-darwin-10/1.9.1/bundler/gems/extensions/x86-darwin-10/1.9.1/bundler/gems/extensions/x86-darwin-10/1.9.1/bundler/gems/.gitignore
      create  vendor/vendor/gems/ruby/1.9.1/bundler/gems/extensions/x86-darwin-10/1.9.1/bundler/gems/extensions/x86-darwin-10/1.9.1/bundler/gems/extensions/x86-darwin-10/1.9.1/bundler/gems/extensions
      create  vendor/vendor/gems/ruby/1.9.1/bundler/gems/extensions/x86-darwin-10/1.9.1/bundler/gems/extensions/x86-darwin-10/1.9.1/bundler/gems/extensions/x86-darwin-10/1.9.1/bundler/gems/extensions/.gitignore
      create  vendor/vendor/gems/ruby/1.9.1/bundler/gems/extensions/x86-darwin-10
```

Current Status

$ rails new demo

```
kouji:/Users/kouji/work/MacRuby/MacRuby/issues/work:0
dhcp219$ env VM_DISABLE_RBO=1 macruby -S rails new demo
      create
      create  README
      create  Rakefile
      create  config.ru
      create  .gitignore
      create  Gemfile
      create  app
      create  app/controllers
      create  app/helpers
      create  app/models
      create  app/mailers
      create  app/views
      create  config
      create  config/boot.rb
      create  config/environment.rb
      create  config/environments
      create  config/initializers
      create  config/locales
      create  config/locales/en.yml
      create  config/application.rb
      create  config/environments/development.rb
      create  config/environments/production.rb
      create  config/environments/test.rb
      create  config/initializers/backtrace_silencers.rb
      create  config/initializers/inflections.rb
      create  config/initializers/mime_types.rb
      create  config/initializers/session_store.rb
      create  config/initializers/secret_token.rb
      create  config/boot.rb
      create  config/database.yml
      create  db
      create  db/seeds.rb
      create  doc
      create  doc/README_FOR_APP
      create  lib
      create  lib/tasks
      create  lib/tasks/.gitkeep
      create  log
      create  log/development.log
      create  log/production.log
      create  log/test.log
      create  public
      create  public/favicon.ico
      create  public/index.html
      create  public/robots.txt
      create  public/images
      create  public/images/rails.png
      create  public/stylesheets
      create  public/stylesheets/.gitkeep
      create  public/javascripts
      create  public/javascripts/application.js
      create  public/javascripts/controls.js
      create  public/javascripts/dragdrop.js
      create  public/javascripts/effects.js
      create  public/javascripts/prototype.js
      create  public/javascripts/rails.js
      create  script
      create  script/rails
      create  script/rails.bat
      create  script/rails.sh
      create  test
      create  test/fixtures
      create  test/fixtures/.gitkeep
      create  test/functional
      create  test/functional/.gitkeep
      create  test/integration
      create  test/integration/.gitkeep
      create  test/unit
      create  test/unit/.gitkeep
      create  test/test_helper.rb
      create  vendor/plugins
      create  vendor/plugins/.gitkeep
      create  Gemfile
      create  app
      create  app/controllers
      create  app/controllers/application_controller.rb
      create  app/helpers
      create  app/helpers/application_helper.rb
      create  app/mailers
      create  app/models
      create  app/views
      create  app/views/layouts
      create  app/views/layouts/application.html.erb
      create  app/assets
      create  app/assets/images
      create  app/assets/images/.gitkeep
      create  app/assets/stylesheets
      create  app/assets/stylesheets/application.rb
      create  app/assets/stylesheets/application.rb
      create  app/assets/stylesheets/application.rb
```

7 months ago...

7 months ago...

March 2011

7 months ago...

March 2011

- I thought, "Does Rails work on MacRuby?".

7 months ago...

March 2011

- I thought, "Does Rails work on MacRuby?".
- I managed to **install** Rails.

```
$ sudo macgem install rails
7 gems installed

$ sudo macgem install sqlite3-ruby
2 gems installed
```

Perhaps...

Perhaps...

- I thought, "OK, it installed, but surely the Rails generators won't work...".

Perhaps...

- I thought, "OK, it installed, but surely the Rails generators won't work...".
- However, I managed to create a Rails project!?

```
$ macruby -S rails new demo
        create
        create  README
  ...
        create  vendor/plugins
        create  vendor/plugins/.gitkeep
```

Are you kidding me?

Are you kidding me?

- I tried to generate a scaffold...

Are you kidding me?

- I tried to generate a scaffold...
- It failed. After all Rails didn't work on MacRuby.

```
$ macruby -S rails generate scaffold Bookmark
title:string description:text url:string
...
Assertion failed: ((size_t)pos <
current_exceptions.size()), function
pop_current_exception, file vm.cpp, line 3434.
zsh: abort      macruby -S rails generate scaffold
Bookmark title:string description:text
```

Are you kidding me?

- I tried to generate a scaffold...
- It failed. After all Rails didn't work on MacRuby.

```
$ macruby -S rails generate scaffold Bookmark
titl
...
As
cu
po
zsh
Bookmark title:string description:text
```

```
$ macruby -S rails server
...
Assertion failed: ((size_t)pos < current_exceptions.size()),
function pop_current_exception, file vm.cpp, line 3434.
zsh: abort      macruby -S rails server
```

My approach

Run Rails
SEGV or abort
Research
Coding
Run RubySpec
Run Rails

My approach

Required knowledge and technology

- cRuby
- Objective-C
- C++
- LLVM

#860 catch/throw

- MacRuby aborts if you use catch and throw inside a rescue clause.

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```
begin
  raise
rescue
  catch(:foo) { throw :foo }
  p :ok
end
```

#860 catch/throw

- MacRuby aborts if you use catch and throw inside a rescue clause.

```
begin
  raise
rescue
  catch(:foo) { throw :foo }
  p :ok
end
```

```
:ok
Assertion failed: ((size_t)pos < current_exceptions.size()),
function pop_current_exception, file vm.cpp, line 3448.
```

#860 catch/throw

➡ MacRuby aborts if you use catch and throw inside a rescue clause.

```
begin
  raise
rescue
  catch(:foo) { throw :foo }
  p :ok
end
```

'throw' pops an Exception from the stack.

```
:ok
Assertion failed: ((size_t)pos < current_exceptions.size()),
function pop_current_exception, file vm.cpp, line 3448.
```

#860 catch/throw

➡ MacRuby aborts if you use catch and throw inside a rescue clause.

```
begin
  raise
rescue
  catch(:foo) { throw :foo }
  p :ok
end
```

'throw' pops an Exception from the stack.

MacRuby tries to pop an Exception when the rescue block ends, and causes an error!

```
:ok
Assertion failed: ((size_t)pos < current_exceptions.size()),
function pop_current_exception, file vm.cpp, line 3448.
```

#860 catch/throw

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```
catch(:ambiguous) {
  begin
    raise
  rescue
    throw :ambiguous
  end
}
```

#860 catch/throw

```
catch(:ambiguous) {
  begin
    raise
  rescue
    throw :ambiguous
  end
}
```

If reached "end", pop Exception.
However can't reach here in this case.

#860 catch/throw

```
catch(:ambiguous) {
  begin
    raise
  rescue
    throw :ambiguous
  end
}
```

So we should pop Exception when we perform "throw".

If reached "end", pop Exception.
However can't reach here in this case.

#860 catch/throw

```
catch(:ambiguous) {
  begin
    raise
  rescue
    throw :ambiguous
  end
}
```

So we should pop Exception when we perform "throw".

If reached "end", pop Exception.
However can't reach here in this case.

Before being fixed(60723bf~), 'throw' always popped the current Exception.

#860 catch/throw

```
vm.cpp:4321:
VALUE
RoxorVM::ruby_throw(VALUE tag, VALUE value)
{
...
    // We must pop the current VM exception in case we are in a rescue handler,
    // since we are going to unwind the stack.
    if (current_exception() != Qnil) {
      pop_current_exception();
    }
...
```

popped the current Exception.

#860 catch/throw

- ➡ Fixed that MacRuby pop Exceptions if it only needs.(60723bf)

#860 catch/throw

➡ Fixed that MacRuby pop Exceptions if it only needs.(60723bf)

```
vm.cpp:4318:
VALUE
RoxorVM::ruby_throw(VALUE tag,VALUE value)
{
...
    rb_vm_catch_t *catch_ptr = iter->second;
    while (catch_ptr->current_exception != current_exception()) {
      pop_current_exception();
    }
...
```

#860 catch/throw

➡ Fixed that MacRuby pop Exceptions if it only needs.(60723bf)

```
vm.cpp:4318:
VALUE
RoxorVM::ruby_
{
...
    rb_vm_catch_t *catch_ptr = iter->second;
    while (catch_ptr->current_exception != current_exception()) {
      pop_current_exception();
    }
...
```

pop Exception if processing Exception by catch(catch_ptr->current_exception) and current Exception (current_exception()) are equal.

#860 catch/throw

```
begin
  raise
rescue
  catch(:ambiguous) {
    begin
      raise
    rescue
      begin
        raise
      rescue
        throw :ambiguous
      end
    end
  }
  p :ok
end
```

#860 catch/throw

```
begin
  raise
rescue
  catch(:ambiguous) {
    begin
      raise
    rescue
      begin
        raise
      rescue
        throw :ambiguous
      end
    end
  }
  p :ok
end
```

Exception A

#860 catch/throw

```
begin
  raise
rescue
  catch(:ambiguous) {
    begin
      raise
    rescue
      begin
        raise
      rescue
        throw :ambiguous
      end
    end
  }
  p :ok
end
```

Exception A

store Exception A
catch_ptr->current_exception = current_exception();

#860 catch/throw

```
begin
  raise
rescue
  catch(:ambiguous) {
    begin
      raise
    rescue
      begin
        raise
      rescue
        throw :ambiguous
      end
    end
  }
  p :ok
end
```

Exception A

store Exception A
catch_ptr->current_exception = current_exception();

Exception B

#860 catch/throw

```
begin
  raise
rescue
  catch(:ambiguous) {
    begin
      raise
    rescue
      begin
        raise
      rescue
        throw :ambiguous
      end
    end
  }
  p :ok
end
```

Exception A

store Exception A
catch_ptr->current_exception = current_exception();

Exception B

Exception C

#860 catch/throw

```
begin
  raise
rescue
  catch(:ambiguous) {
    begin
      raise
    rescue
      begin
        raise
      rescue
        throw :ambiguous
      end
    end
  }
  p :ok
end
```

Exception A

store Exception A
catch_ptr->current_exception = current_exception();

Exception B

Exception C

pop Exception C and Exception B in comparison with Exception A which we recorded in order of Exception C, B, A

#860 catch/throw

```
begin
  raise
rescue
  catch(:ambiguous) {
    begin
      raise
    rescue
      begin
        raise
      rescue
        throw :ambiguous
      end
    end
  }
  p :ok
end
```

Exception A

store Exception A
catch_ptr->current_exception = current_exception();

Exception B

Exception C

pop Exception C and Exception B in comparison with Exception A which we recorded in order of Exception C, B, A

pop Exception A

#1192 Constant Lookup

➡ Almost can't lookup nested constants.

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```
module A
  B = 10
  Object.class_eval { B }
end
```

cRuby

MacRuby

#1192 Constant Lookup

➡ Almost can't lookup nested constants.

```
module A
  B = 10
  Object.class_eval { B }
end
```

cRuby

MacRuby

```
reduction.rb:3:in `block': uninitialized constant
B (NameError)
```

#1192 Constant Lookup

cRuby

Lexical Scope

Lexical Constant Lookup

#1192 Constant Lookup

```
1 module A
2   module B
3     CONST = "B's Const"
4       module ::A
5         p CONST
6       end
7   end
8 end
```

cRuby

Lexical Scope

Lexical Constant Lookup

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Before fixed (6b101bd~), didn't implement the Lexical Constant Lookup

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1:module A
2:  module B
3:    CONST = "B's Const"
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5:        p CONST
6:      end
7:  end
8: end
```

MacRuby

#1192 Constant Lookup

Before fixed (6b101bd~), didn't implement the Lexical Constant Lookup

```
1:module A
2:  module B
3:    CONST = "B's Const"
4:      module ::A
5:        p CONST
6:      end
7:  end
8: end
```

MacRuby

```
-e:5:in `block': uninitialized constant A::CONST (NameError)
```

Constant Lookup is complex

class_eval(&Block)

```
module A
  CONST = "A's CONST"
  def f
    class_eval {
      p CONST
    }
  end
end

class K
  CONST = "K's CONST"
  extend A
  f
end
```

class_eval(String)

```
01:module A
02:  CONST = "A's CONST"
03:  def f
04:    class_eval <<-EOS
05:      p CONST
06:    EOS
07:  end
08:end
09:
10:class K
11:  CONST = "K's CONST"
12:  extend A
13:  f
14end
```

class_eval(&Block)

cRuby

```
01: module A
02:   CONST = "A's CONST"
03:   def f()
04:     class_eval {
05:       p CONST
06:     }
07:   end
08: end
09:
10: class K
11:   CONST = "K's CONST"
12:   extend A
13:   f()
14: end
```

Lexical Scope

class_eval(&Block)

cRuby

```
01: module A
02:   CONST = "A's CONST"
03:   def f()
04:     class_eval {
05:       p CONST
06:     }
07:   end
08: end
09:
```

Lexical Scope

"A's CONST"

```
11:   CONST = "K's CONST"
12:   extend A
13:   f()
14: end
```

class_eval(String)

```
01: module A
02:   CONST = "A's CONST"
03:   def f()
04:     class_eval <<-EOS
05:       p CONST
06:     EOS
07:   end
08: end
09:
10: class K
11:   CONST = "K's CONST"
12:   extend A
13:   f()
14: end
```

cRuby

Dynamic Scope

class_eval(String)

```
01: module A
02:   CONST = "A's CONST"
03:   def f()
04:     class_eval <<-EOS
05:       p CONST
06:     EOS
07:   end
08: end
09:
```

cRuby

```
"K's CONST"
11:   CONST = "K's CONST"
12:   extend A
13:   f()
14: end
```

Dynamic Scope

Constant Lookup is complex

class_eval(String)

```
01:module A
02:  CONST = "A's CONST"
03:  def f
04:    class_eval <<-EOS
05:      p CONST
06:    EOS
07:  end
08:end
09:
10:class K
11:  CONST = "K's CONST"
12:  extend A
13:  f
14end
```

class_eval(&Block)

```
module A
  CONST = "A's CONST"
  def f
    class_eval {
      p CONST
    }
  end
end

class K
  CONST = "K's CONST"
  extend A
  f
end
```

Constant Lookup is complex

class_eval(String)

```
01:module A
02:  CONST = "A's CONST"
03:  def f
04:    class_eval <<-EOS
05:      p CONST #=> "K's CONST"
06:    EOS
07:  end
08:end
09:
10:class K
11:  CONST = "K's CONST"
12:  extend A
13:  f
14end
```

class_eval(&Block)

```
module A
  CONST = "A's CONST"
  def f
    class_eval {
      p CONST
    }
  end
end

class K
  CONST = "K's CONST"
  extend A
  f
end
```

Constant Lookup is complex

class_eval(String)

```
01:module A
02:  CONST = "A's CONST"
03:  def f
04:    class_eval <<-EOS
05:      p CONST #=> "K's CONST"
06:    EOS
07:  end
08:end
09:
10:class K
11:  CONST = "K's CONST"
12:  extend A
13:  f
14end
```

class_eval(&Block)

```
module A
  CONST = "A's CONST"
  def f
    class_eval {
      p CONST #=> "A's CONST"
    }
  end
end

class K
  CONST = "K's CONST"
  extend A
  f
end
```

Constant Lookup is complex

class_eval(String)

```
01:module A
02:  CONST = "A's CONST"
03:  def f
04:    class_eval <<-EOS
05:      p CONST #=> "K's CONST"
06:    EOS
07:  end
08:end
09:
10:class K
11:  CONST = "K's CONST"
12:  extend A
13:  f
14end
```

lookup CONST in order of Constant K, A, Object

class_eval(&Block)

```
module A
  CONST = "A's CONST"
  def f
    class_eval {
      p CONST #=> "A's CONST"
    }
  end
end

class K
  CONST = "K's CONST"
  extend A
  f
end
```

Constant Lookup is complex

class_eval(String)

```
01:module A
02:  CONST = "A's CONST"
03:  def f
04:    class_eval <<-EOS
05:      p CONST #=> "K's CONST"
06:    EOS
07:  end
08:end
09:
10:class K
11:  CONST = "K's CONST"
12:  extend A
13:  f
14end
```

lookup CONST in order of Constant K, A, Object

class_eval(&Block)

```
module A
  CONST = "A's CONST"
  def f
    class_eval {
      p CONST #=> "A's CONST"
    }
  end
end

class K
  CONST = "K's CONST"
  extend A
  f
end
```

lookup CONST in order of Constant A, Object.
Does not lookup from K.

Managed somehow

A very complex bug

Lexical

A very complex bug

```
01: module A
02:   B = 42
03: end
04:
05: A.class_eval do
06:   def self.f
07:     p B
08:   end
09: end
10:
11: A.f
```

Lexical

A very complex bug

CAUTION
'class_eval' doesn't add receiver(A) to constant lookup scope.

Lexical

```
04:
05: A.class_eval do
06:   def self.f
07:     p B
08:   end
09: end
10:
11: A.f
```

A very complex bug

A very complex bug

```
Ruby 1.9
42
```

A very complex bug

```
Ruby 1.9
42
```

```
Ruby 1.8.7
-e:8:in `f': uninitialized constant B (NameError)
```

A very complex bug

A cRuby's Bug

Ruby 1.9
42

Ruby 1.8.7
-e:8:in `f': uninitialized constant B (NameError)

A very complex bug

```
01: module A
02:   B = 42
03: end
04:
05: A
06:
```

```
ed constant B (NameError)
```

A cRuby's Bug

Demo

$ rails new demo

```
kouji:/Users/kouji/work/MacRuby/MacRuby/issues/work:0
dhcp219$ env VM_DISABLE_RBO=1 macruby -S rails new demo
      create
      create  README
      create  Rakefile
      create  config.ru
      create  .giti
      create  Gemfi
      create  app
      create  app/c
      create  app/h
      create  app/m
      create  app/m
      create  app/v
      create  confi
      create  confi
      create  confi
      create  confi
      create  confi
      create  confi
      create  confi
      create  confi
      create  confi
      create  confi
```

$ rails generate scaffo

```
kouji:/Users/kouji/work/MacRuby/MacRuby/issues/work/demo:0
dhcp219$ env VM_DISABLE_RBO=1 macruby -S rails generate scaffold Boo
string description:text url:string
      invoke  active_record
      create    db/migrate/20110714234202_create_bookmarks.rb
      create    app/models/bookmark.rb
      invoke    test_u
      create
      create
       route  resc
      invoke  scaf
      create    ap
      invoke    er
      create
      create
      create
      create
      create
      create
      create
      invoke    te
      create
      invoke    he
      create
      invoke
```

$ rails server

```
Last login: Wed Jul 13 10:42:18 on ttys011
kouji:/Users/kouji:0
dhcp219$ cd /Users/kouji/work/MacRuby/MacRuby/iss
kouji:/Users/kouji/work/MacRuby/MacRuby/issues/wo
dhcp219$ env VM_DISABLE_RBO=1 macruby -S rails se
=> Booting WEBrick
=> Rails 3.0.7 application starting in developmen
=> Call with -d to detach
=> Ctrl-C to shutdown server
[2011-07-15 08:32:52] INFO  WEBrick 1.3.1
[2011-07-15 08:32:52] INFO  ruby 1.9.2 (2008-06-0
[2011-07-15 08:32:52] INFO  WEBrick::HTTPServer#start: pid=20943 port=3000
```

Ruby on Rails: Welcome aboard

http://localhost:3000/

Welcome aboard

You're riding Ruby on Rails!

About your application's environment

Getting started

Here's how to get rolling:

1. Use rails generate to create your models and controllers

   To see all available options, run it without parameters.

2. Set up a default route and remove or rename this file

   Routes are set up in config/routes.rb.

3. Create your database

   Run rake db:migrate to create your database. If you're not using SQLite (the default), edit config/database.yml with your username and password.

Browse the documentation

- Rails API
- Ruby standard library
- Ruby core
- Rails Guides

#1390 rb_vm_prepare_block

➡ Abort when I pressed "About your application's environment" in rails 3.0.7 Welcome Page.

```
Assertion failed: ((b->flags & flags) == flags), function
rb_vm_prepare_block, file dispatcher.cpp, line 1406.
zsh: abort      env VM_DISABLE_RBO=1 macruby -S rails server
```

MacRuby trip by the train continues...

MacRuby trip by the ...

http://www.macruby.org/

MacRuby trip by the ...

http://www.macruby.org/

@macruby

MacRuby trip by the ...

http://www.macruby.org/

@macruby

GitHub:MacRuby/MacRuby

MacRuby trip by the ...

http://www.macruby.org/

@macruby

GitHub:MacRuby/MacRuby

macruby-devel@lists.macosforge.org

Conclusion

- MacRuby
  - A unique blend of Ruby 1.9 and Objective-C.
  - The goal is to be 100% compatible with Ruby 1.9.
- MacRuby on Rails
  - We became to show the Welcome Page.
  - But we have many things to complete.

Q & A

- I'd like you to give me a simple question and speak more slowly.
- or contact @takaokouji_en by Twitter
- or send e-mail to MacRuby ML

Acknowledgment

- RubyConf team
- Tor
- Everyone