

ThoughtWorks®

JRuby Internals



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Vanity slide

From Stockholm, Sweden

ThoughtWorks

JRuby core developer

loke creator

... ask me about programming languages

ThoughtWorks

Global consulting firm

US, Canada, UK, Australia, India, China - and Scandinavia

1100 people worldwide

Ruby

Agile

Open Source

Martin Fowler

Studios - Mingle, Cruise, Twist

What is JRuby

Implementation of the Ruby language

Java 1.5+

Open Source

Compatible with Ruby 1.8.6 p114

Current version 1.2, 1.3RC1

Community

Project started in 2001

Lots of different developers during the years

Currently:

- 8 Core developers

- 70-80 contributors

Outstanding contributions

- Like Marcin's Oniguruma port (60k lines of C code)

 - Joni is probably the fastest Regexp engine for Java right now

- RbYAML, JvYAML, JvYAMLb

- JNA-Posix

- JOpenSSL

Differences

Most compatible alternative implementation

Native threads

vs green threads

Native (C) Ruby extensions not supported

No continuations

No fork (daemonize, etc.)

ObjectSpace disabled by default

Compatibility

Using the RubySpecs

Applications are king

Rails, RubyGems, Rake, RSpec

Testing is cool

~ 50,000 expectations/assertions

Prevents regressions

Better definition of Ruby

Ruby Object model

Object

- Flags

- Class

- Instance variables

Classes

- Something that contains behavior

- Method table and super class

Singleton class

- Meta class, Shadow class, Eigen class

Modules

- Include class

Tricky Ruby

binding

eval and ilk

super

Frame local variables

\$~, \$!

Last line

retry

Thread scheduler behavior

Constants

JRuby pieces

Parser

Runtime

Interpreter

Compiler

Java integration

Lexing/Parsing

Hand written lexer

Parser generated with Jay

Yacc/Bison derived

Runtime objects

org.jruby.Ruby

org.jruby.runtime.ThreadContext

org.jruby.Ruby*

RubyClass

RubyBasicObject, RubyObject

RubyHash

Interpreter

`org.jruby.evaluator.ASTInterpreter`

Uses polymorphism on nodes

`org.jruby.ast.*`

Compiler

`org.jruby.compiler`

Walks the tree and outputs Java bytecode

Generates code on a method by method basis

Java Integration

Several pieces, spread around

`org.jruby.javasupport` is the core

Generates proxy wrappers around classes and objects

Extensions

For cases where you really want to do something in Java

But having it look like a Ruby method

Example: activerecord-jdbc

Generated code: mongrel, hpricot

Naming rule:

`require 'fox/bax/buu_foon'`

will look for, and add to classpath: `fox/bax/buu_foon.jar` if available

will try to load Java class `fox.bax.BuuFoonService`

that class should implement `BasicLibraryService`

Q

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