GMOペパボ

Gemification for Ruby 2.5/3.0

Future of Ruby standard libraries

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self.introduce

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self.introduce

=>
{
  name: “SHIBATA Hiroshi”,
  nickname: “hsbt”,
  organizations: [“pepabo”, “ruby_core_team”, “asakusarb”],
  commit_bits: [“ruby”, “rake”, “rubygems”, “rdoc”, “psych”, “syck”, “ruby-build”, “railsgirls”, “railsgirls-jp”, …],
  sites: [“hsbt.org”, “ruby-lang.org”, “rubyci.org”, “railsgirls.com”, “railsgirls.jp”],
}







https://pepabo.com

asakusarb

foo category:bar/baz comment:foobar

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hanami 1

misc 1

000_Log 2

(no category) 5

README.md

Edit



1.

Library ecosystem of Ruby

Packaging and Disribution(1)

- RAA(Ruby Application Archive)
  - 2013/08: raa.ruby-lang.org 終了のご報告 https://www.ruby-lang.org/ja/news/2013/08/08/rip-raa/
- RubyForge
  - 2009/10: RubyForge To Be Phased Out, RubyGems.org Takes Over Gem Hosting https://www.infoq.com/news/2009/10/rubyforge-phased-out-rubygemsorg
- gems.github.com
  - 2009/10: Gem Building is Defunct https://www.infoq.com/news/2009/10/github-stops-gem-building



Packaging and Disribution(2)

- gemcutter.org:
  - https://github.com/rubygems/gemcutter
  - You can use `gem yank` command after you did invoke `gem i gemcutter`.
- rubygems.org:
  - gemcutter.org was renamed to rubygems.org.
- bundler:
  - 2010: Released to 1.0.0 version.



A History of Ruby(Short Ver.)

- Ruby 1.8.7 bundled a lot of library named standard library a.k.a stdlib. — 2008
- Ruby 1.9.x bundled rubygems that is ruby library packaging and distributing. — 2009
- Many of libraries was born after that. Example for rspec, nokogiri, rake and thor. It's start time for Ruby language and library ecosystems.

- First Authors of famous library is burnout. — 2013
- Some of useful gems are changed maintainers of second generation.

- Ruby 2.4, 2.5 — 2017



What’s a standard library?

What’s Standard library?

- We called its “標準添付ライブラリ” in Japanese.
- It needs to `require` difference from embedded libraries like String, Thread, etc.
- https://tech.pepabo.com/2017/09/11/rubykaigi-2017/
- It can be used without Bundler or RubyGems



Classification of standard libraries

This matrix shows number of standard libraries and their classifications in Ruby 2.4.

	Standard Libraries	Default Gems	Bundled Gems
Pure Ruby	69	1	7
C extensions	23	5	0



What differences these libraries?

- **Standard Libraries**
  - **Upstream: Only Ruby core repository(svn.ruby-lang.org)**
  - **Release cycle: 1 year**
- **Default Gems**
  - **Upstream: Ruby core repository and GitHub**
  - **Release cycle: 1year or maintainers matter**
- **Bundled Gems**
  - **Upstream: Only GitHub**
  - **Release cycle: Maintainers matter**



What number of these libraries - 2.4.0 to 2.5.0

In Ruby 2.4

Standard Libraries

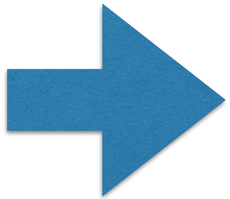
- **Pure ruby: 69**
- **Extensions: 23**

Default gems

- **Pure ruby: 1**
- **Extensions: 5**

Bundled Gems

- **Pure ruby: 7**
- **Extensions: 0**



In Ruby 2.5

Standard Libraries

- **Pure ruby: 64 (-5)**
- **Extensions: 14 (-9)**

Default gems

- **Pure ruby: 6 (+5)**
- **Extensions: 14 (+9)**

Bundled Gems

- **Pure ruby: 7**
- **Extensions: 0**



2.

Default gems

Inside default gems

- `tool/rbinstall.rb` put gemspec files for default gems on Ruby core repository.
- We can release default gems to the rubygems.org. It's a Standard library that seems to be installed as a gem.
- Rubygems have a detection method for default gems.

```
>> Gem.loaded_specs["did_you_mean"].default_gem?
=> false
>> require 'openssl'
=> true
>> Gem.loaded_specs["openssl"].default_gem?
=> true
```



ruby/openssl

Status of OpenSSL binding

- OpenSSL is already extracted default gems. You can update it separated ruby core releases same as rubygems, rdoc, bigdecimal.
- https://github.com/ruby/openssl
  - It's maintained by @rhenium
  - Upstream was changed github repository from svn.ruby-lang.org
  - He aggressively maintains new feature of openssl



Security release

We hard to fix and release these security issue. so all of release maintainer are volunteer work.

But If your Ruby supports Default gems/Bundled gems, You can upgrade these gems without upgrading ruby interpreter.



ruby/psych

Whats psych?

A libyaml wrapper for Ruby

It supports bundled libyaml-* sources. You can build psych without libyaml-devel(dev) packages.

```
# Load YAML in to a Ruby object
Psych.load('--- foo') # => 'foo'

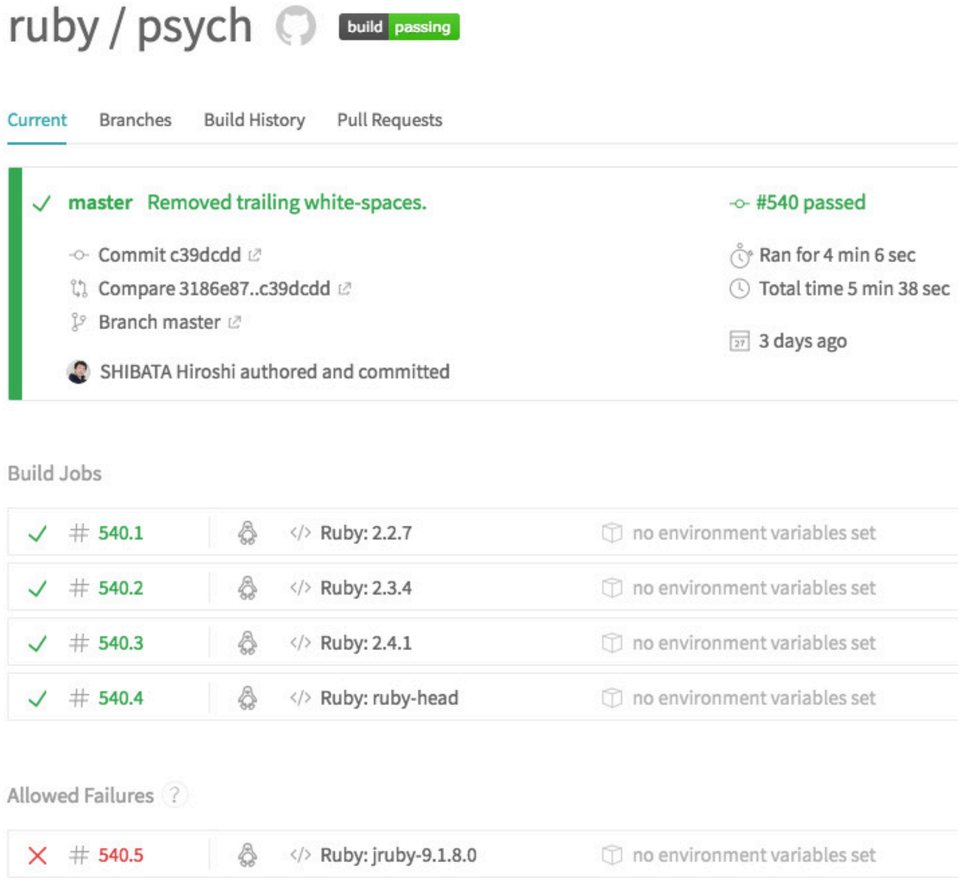
# Emit YAML from a Ruby object
Psych.dump("foo")     # => "--- foo\n...\n"
```



JRuby integration

- We need to support Java implementation now.
- I guarantee compatibility for other implementation used by Travis.

In current status, It compatibility was breaking.
Because It's beta status.



ruby/rdoc

Whats rdoc?

RDoc produces HTML and online documentation for Ruby projects.

```
#  puts listings.product + "\n" + listings.price
 #
 # _Generates_
 #
 #  Chicken Fried Steak
 #  A well messages pattie, breaded and fried.
 #
 #  Chicken Fried Steak -- 9.95
 #  A well messages pattie, breaded and fried.
 #
 def initialize(str, safe_level=nil, trim_mode=nil, eoutvar='_erbout')
   @safe_level = safe_level
   compiler = make_compiler(trim_mode)
   set_eoutvar(compiler, eoutvar)
   @src, @encoding, @frozen_string = *compiler.compile(str)
   @filename = nil
   @lineno = 0
 end
```



Public Class Methods

`new(str, safe_level=nil, trim_mode=nil, eoutvar='_erbout')`

Constructs a new ERB object with the template specified in *str*.

An ERB object works by building a chunk of Ruby code that will output the completed template when run. If *safe_level* is

If *trim_mode* is passed a String containing one or more of the following modifiers, ERB will adjust its code generation as

```
%  enables Ruby code processing for lines beginning with %
<> omit newline for lines starting with <% and ending in %>
>  omit newline for lines ending in %>
-  omit blank lines ending in -%>
```

eoutvar can be used to set the name of the variable ERB will build up its output in. This is useful when you need to run m
variable to be used inside a String.

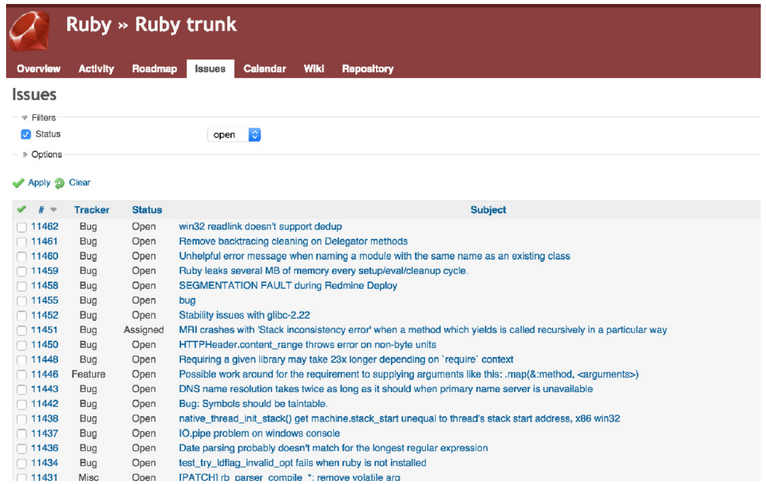
Example

```
require "erb"

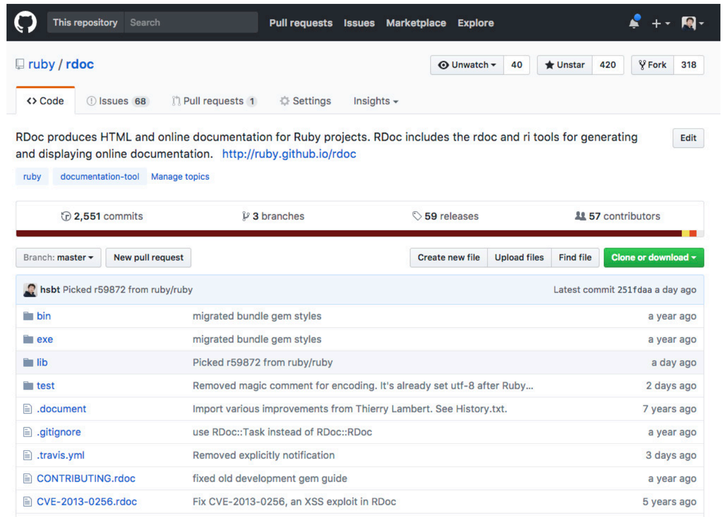
# build data class
class Listings
  PRODUCT = { :name => "Chicken Fried Steak",
```

Current status of rdoc

- I moved canonical repository to ruby/rdoc.
- I handle a project of rdoc and management releases(not product management)
- Our official tracker named “bugs.ruby-lang.org” is high threshold. But GitHub resolve this by pull requests.



VS



3.

Bundled gems

Inside Bundled gems

- It was installed by `tool/rbinstall.rb` on Ruby core repository.
- You can see list of Bundled gems via `gems/bundled_gems`
- We bundled *.gem and unpacked files to tarball package for Bundled gems.
- `make install` installed Bundled gem your box.



test-unit/minitest

Why separated the test framework?

The following libraries uses minitest directly in Ruby 2.3:

- **rubygems**
- **rdoc**

Other libraries uses test-unit. rubygems and rdoc are developed at github.com/rubygems/rubygems and github.com/ruby/rdoc. We need to support these libraries and their tests.



A problem of test-unit/minitest

- It has difference behaviors and namespace from released gems that are test-unit and minitest.
- [Bug #9660] test/unit, minitest & bundler
- We gave up to maintain compatibility with released gems.
- But @zenspider said “I AM against shipping ruby without a testing library.”



ruby/rake

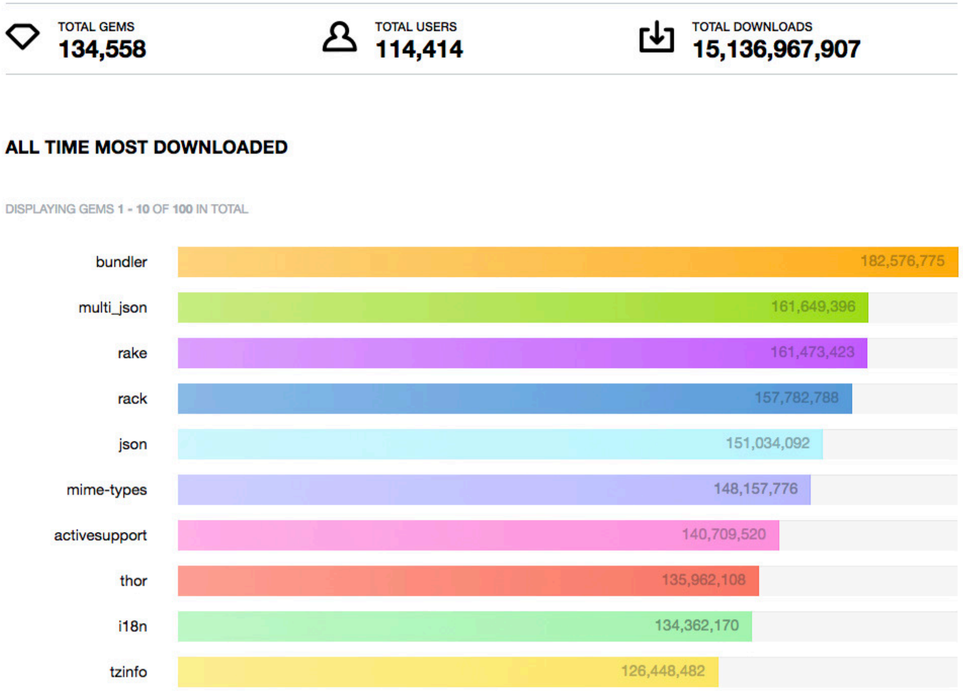
Make in Ruby

Rake is a Make-like program implemented in Ruby. Tasks and dependencies are specified in standard Ruby syntax.

```
task :awesome do
  puts :bar
end

task beat: [:awesome] do
  puts :buzz
end

task default: :beat
```



ruby/rake

- Rake was originally created by Jim Weirich, who unfortunately passed away in February 2014.
- This repository was originally hosted at github.com/jimweirich/rake, It has been moved to github.com/ruby/rake by @drbrain
- Rake adopted SemVer policy. (v0.9.x to v10.x.y)
- @drbrain and @hsbt maintain ruby/rake now.



Concerns of bundled gems

- We couldn’t support to compile C extension on Bundled gems.
- Bundled gems couldn’t support cross compilation.

Ex. We need to make Date gem to bundled gem before extracted from ruby core.



Concerns of bundled gems(2)

We need test suite for bundled gem with ruby trunk.

- https://gist.github.com/unak/a80b03d9a33de59bedb52e2711410e0d
- https://github.com/ko1/rubyhackchallenge/issues/25

No one guarantee work bundled gems and develop version of ruby.



4.

What’s Gemification?

Gemification for standard library

https://bugs.ruby-lang.org/issues/5481

- We extracted stdlibs like net-telnet, xmlrpc, rake to bundled gems.
  - These are extracted under the https://github.com/ruby/ . And shipped on rubygems.org
  - Other gems are also extracted at the future.



What’s problem of Gemification?

- It issue size is too big for human.
- I resolved it used default gems and bundled gems.
- We can promote standard libraries to default gems, after that we promote it to bundled gems.
- I am moving toward the final goal for Gemification.



Pros of Gemification

- Maintainers can release gem for bugfix, new feature independent with Ruby core.
- Easily backport stable version from develop version. Ruby users can use new feature on stable version.
- If upstream is available on GitHub, Ruby users easily send patch via Pull request.
- Ruby interpreter developper can concentrate development Ruby internal.



Cons of Gemification

- Abandoned and complex dependency on rubygems and bundler.
- Maintainers need to maintain ruby core and GitHub repositories both.
- It’s hard to maintain compatibility.



How to merge upstream from others

I merged upstream into ruby/ruby periodically using following instructions.

```
$ git clone https://github.com/ruby/ruby
$ git clone https://github.com/rubygems/rubygems
$ cd ruby
$ rm -rf lib/rubygems test/rubygtems lib/rubygems.rb
$ cp -rf ../../rubygems/rubygems/lib/rubygems ./lib
$ cp -rf ../../rubygems/rubygems/lib/rubygems.rb ./lib
$ cp -rf ../../rubygems/rubygems/test/rubygems ./test
$ git checkout lib/rubygems/LICENSE.txt
```

ruby and rubygems guarantee to work to test and code each other. it’s the same situation for ruby and rdoc



backport is hard

rubygems still supports Ruby 1.8.

```
% g show a34fb569e41cd87866e644d92a9df4be89b3cad2 test/rubygems/test_gem_package.r
commit a34fb569e41cd87866e644d92a9df4be89b3cad2
Author: Eric Hodel <drbrain@segment7.net>
(snip)
--- test/rubygems/test_gem_package.rb
+++ test/rubygems/test_gem_package.rb
@@ -638,7 +638,7 @@ class TestGemPackage < Gem::Package::TarTestCase
                     e.message
       io
     end
-    tf.close!
+    tf.close! if tf.respond_to? :close!
   end

   def test_verify_empty
```



5.

RubyGems and Gemification for Ruby 2.5

What’s rubygems

RubyGems is a package management framework for Ruby.

- **rubygems/rubygems.org:**
  - **The Ruby community's gem host.**
  - **rubygems.org is maintain by infrastructure team of rubygems. It is different team from rubygems cli team.**

- **rubygems/rubygems:**
  - **Command line tool of rubygems**
  - **Rubygems are created by Seattle.rb**



Current problem of rubygems

Bundler team funded RubyTogether take over rubygems/rubygems

In the past, We easily discuss maintenance plan and policy about ruby and rubygems to @tenderlove and @drbrain.

I hard to backport a patch to rubygems from ruby core. Because these patch only need ruby trunk. It is needless stable versions.



Reserved words on rubygems.org

Rubygems block reserved name same as standard libraries.

- **But you can see: https://rubygems.org/gems/fileutils/versions/0.7**
- **If you install fileutils-0.7, fileutils-0.7 break your ruby environment.**

Why???



fiddle

fiddle is standard library for wrapper of libffi. But fiddle was already reserved another implementation(https://github.com/bsm/fiddle) on rubygems.org

I did coordinate to transfer above namespace and override CRuby implementation(https://github.com/ruby/fiddle) now.



gdbm 1.3.1

This library provides a gdbm library compatible with the MRI standard library, but using Ruby-FFI rather than a C extension. This allows gdbm to easily be used from alternative Ruby implementations, such as JRuby. It can also be used with MRI, if there is some kind of need for that.

VERSIONS:

1.3.1 - April 29, 2016 (9 KB)
1.3.0 - December 14, 2014 (9 KB)
1.2 - May 3, 2010 (12 KB)
1.1 - December 1, 2009 (12 KB)
1.0 - October 10, 2009 (12 KB)

Show all versions (6 total) →

AUTHORS:

Justin Collins

OWNERS:

SHA 256 CHECKSUM:

fad4bed21852e402fc37dbd6770c40cd12ccc2bd9cd8fbde07a9603b4925a72f

Star

TOTAL DOWNLOADS
21,259

FOR THIS VERSION
2,052

GEMFILE:

```
gem 'gdbm', '~> 1.3
```

INSTALL:

```
gem install gdbm
```

LICENSES:

N/A

REQUIRED RUBY VERSION:

>= 0

LINKS:

Homepage

Source Code

Documentation

What we will do?

I must offer to transfer ownership of these gems to rubygems.org and overwrite it used by ruby stdlib.

My plan for reserved gems:

- Transfer request to owners of reserved gems.
- Removed gemification gems from blacklist on rubygems.org.
- Override reserved gems by standard libraries.



Default gems on Ruby 2.5

Current status of Default gems.

```
bigdecimal (default: 1.3.2)
bundler (default: 1.15.4)
cmath (default: 0.0.1)
csv (default: 0.1.0)
date (default: 0.0.1)
dbm (default: 1.0.0.beta1)
digest (default: 0.1.0)
etc (default: 0.2.1)
fcntl (default: 0.0.1)
fiddle (default: 1.0.0.beta2)
fileutils (default: 0.7.2)
gdbm (default: 2.0.0.beta1)
io-console (default: 0.4.6)
ipaddr (default: 1.0.0)
json (default: 2.1.0)
openssl (default: 2.1.0.beta1)
psych (default: 3.0.0.beta3)
rdoc (default: 6.0.0.beta2, 5.1.0)
scanf (default: 0.0.1)
sdbm (default: 0.0.1)
stringio (default: 0.0.1)
strscan (default: 0.0.1)
webrick (default: 1.4.0.beta1)
zlib (default: 0.1.0)
```

I'm going to promote following libraries to default gem at Ruby 2.5.0

- matrix
- digest
- ostruct
- stringio



6.

Gamification for Ruby 3.0

Reducing Ruby package size

- In Ruby 2.5, We added “bundler” to default gems.
- Bundler will be integrated RubyGems until Ruby 3.0 releasing.
- I will promote all of standard libraries to default gems.
- I will promote all of default gems without Rubygems dependencies to bundled gems.



Bundle Bundler to Ruby core

- Bundler uses rspec.
- I made `test-bundler` task that is invoking rspec examples of Bundler.

```
~/D/r/trunk > mk test-bundler
./miniruby -I../../github.com/ruby/ruby/lib -I. -I.ext/common  ../../github.com/ruby/ruby/tool/runruby.rb
--extout=.ext  -- --disable-gems -C "../../github.com/ruby/ruby" bin/gem install --no-ri --no-rdoc \
    --install-dir spec/rspec --conservative 'rspec:~> 3.5'
Run options: exclude {:ruby_repo=>true, :rubygems_master=>true, :git=>"=< 2.14.1", :rubygems=>"=< 2.6.13",
:ruby=>"=< 2.5.0", :realworld=>true, :sudo=>true}
.....................................................................................
.....................................................................................
.....................
```



Migration status of Rubygems and Bundler

- rubygems-2.7.0 uses bundler on only test code.
- After bundler-2.0 released, We will target rubygems-3.0
- Ruby 2.5.0 have rubygems(-2.6.13) and bundler(-1.15.4), It helps migration plan of rubygems/bundler.



Activated problem for Rubygems

- **Rubygems have a activated problem with default gems.**
- **https://bugs.ruby-lang.org/issues/13847**

```
$ ruby -ropenssl -e 'p OpenSSL::VERSION'
"2.0.5"

$ cat Gemfile
# frozen_string_literal: true
source "https://rubygems.org"

gem 'openssl', '2.0.4'

$ bundle exec ruby -ropenssl -e 'p OpenSSL::VERSION'
/path/to/2.4.1/lib/ruby/gems/2.4.0/gems/bundler-1.15.4/lib/bundler/runtime.rb:317:in
`check_for_activated_spec!': You have already activated openssl 2.0.5, but your Gemfile
requires openssl 2.0.4. Prepending `bundle exec` to your command may solve this.
(Gem::LoadError)
```



require :into

https://bugs.ruby-lang.org/issues/10320

```
require 'libfile', into: :Lib
```

Matz has some concerns about ruby internal.

- Conflicts versions of a shared library like libyaml-., libssl-, libffi, etc...
- Order of LOADED_FEATURE

So, This feature is difficult to implement on current ruby specification now.



What are requirements of Rubygems?

```
base64
benchmark
cgi
digest
English
erb
fileutils
find
io/console
monitor
net/http
net/https
openssl
optparse
pathname
pp
rbconfig
resolv
set
shellwords
socket
stringio
strscan
tempfile
thread
time
timeout
tmpdir
tsort
uri
webrick
Win32API
zlib
```



Does Gemification make happy Rubyists?

- It’s heavy to maintain like github triage, gem release, resolve dependency.
- I should provide a benefit of gemification for Ruby core team.



Conclusion

Summary of Today's talk

- I described about a standard libraries of the Ruby language.
- I introduced specification of default gems/bundled gems of Ruby.
- I shared current status of Rubygems and Gemification projects.
- I shared my plan towards Ruby 3.0.





Towards Ruby 3.0

Appendix

Current status of psych

- Original author is Aaron Patterson a.k.a @tenderlove
  - https://github.com/tenderlove/psych

- Now, canonical repository of psych is https://github.com/ruby/psych
- I separated release cycle for psych from ruby core release.



History of RDoc

- Canonical repository of RDoc was rdoc/rdoc.

- Ruby 2.4 changed Integer Unification. Therefore json-2.x breaks Ruby 2.4.x or later.
- You could not install rails with Ruby 2.4 at it time.
- `gem i rails` was stopped caused by json dependency via rdoc/sdoc.

See details: https://www.hsbt.org/diary/20160829.html



Summary of Default gems

- It behavior is same as Standard libraries.
- You can upgrade their via `gem update foo` on old stable version of Ruby.
- You can upgrade their standalone when it was discovered vulnerability.
- I can develop JRuby implementation simultaneously.
- I can hangover unmaintained gems(standard libraries)



Summary of Bundled gems

- We need to put it to Gemfile on Bundler environment.
- We can uninstall it
- Originally started as an installation mechanism of gem which you want to put in Ruby installation without attaching as standard
- Ruby core team added useful gem to bundled gems for Rubyists.

