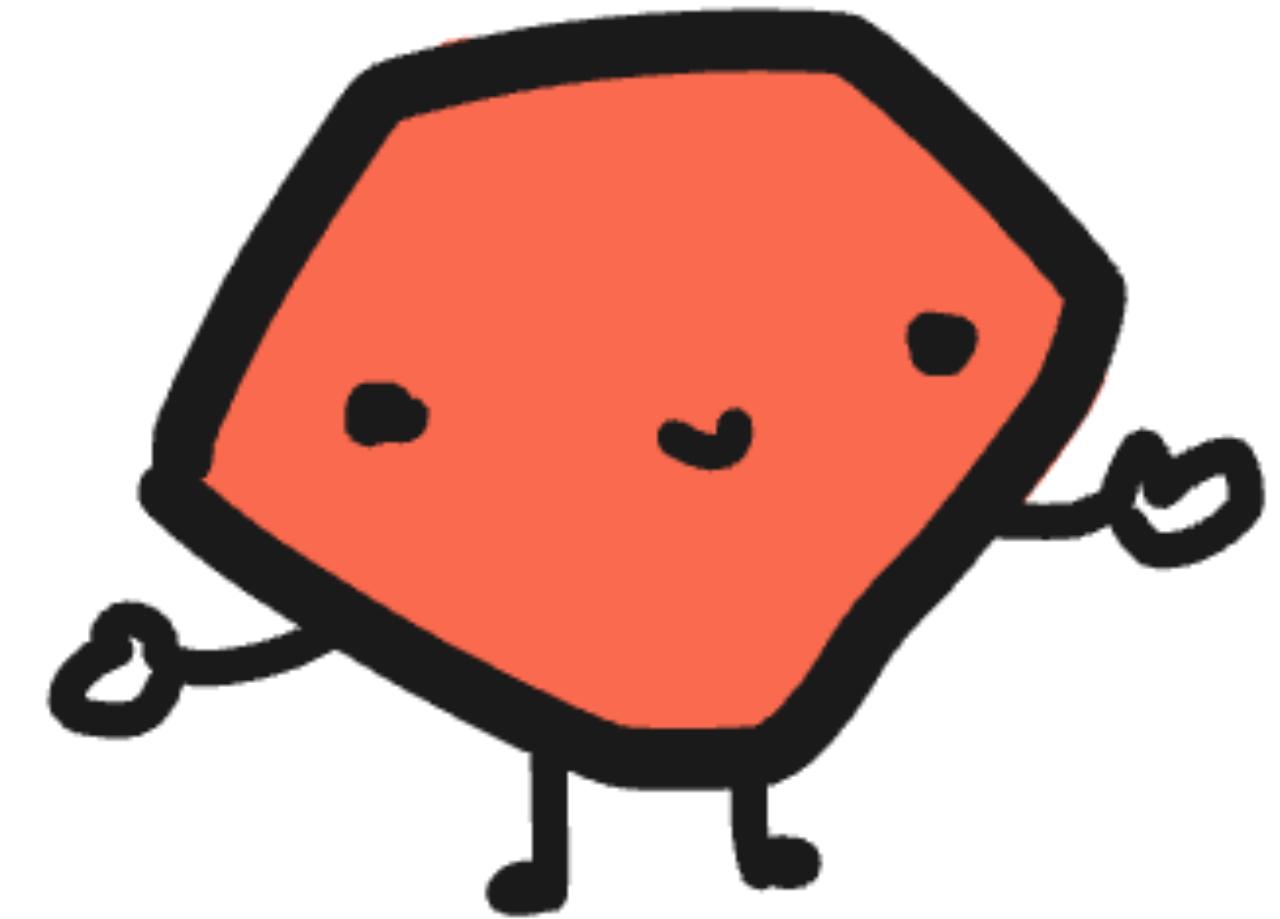


# Demystifying the Ruby package ecosystem



RubyConf 2023

**Many of your friendships, relationships and professional connections could be the result of conversations that started with a simple question like, "How about this weather we're having?"**

**- Indeed Editorial team**

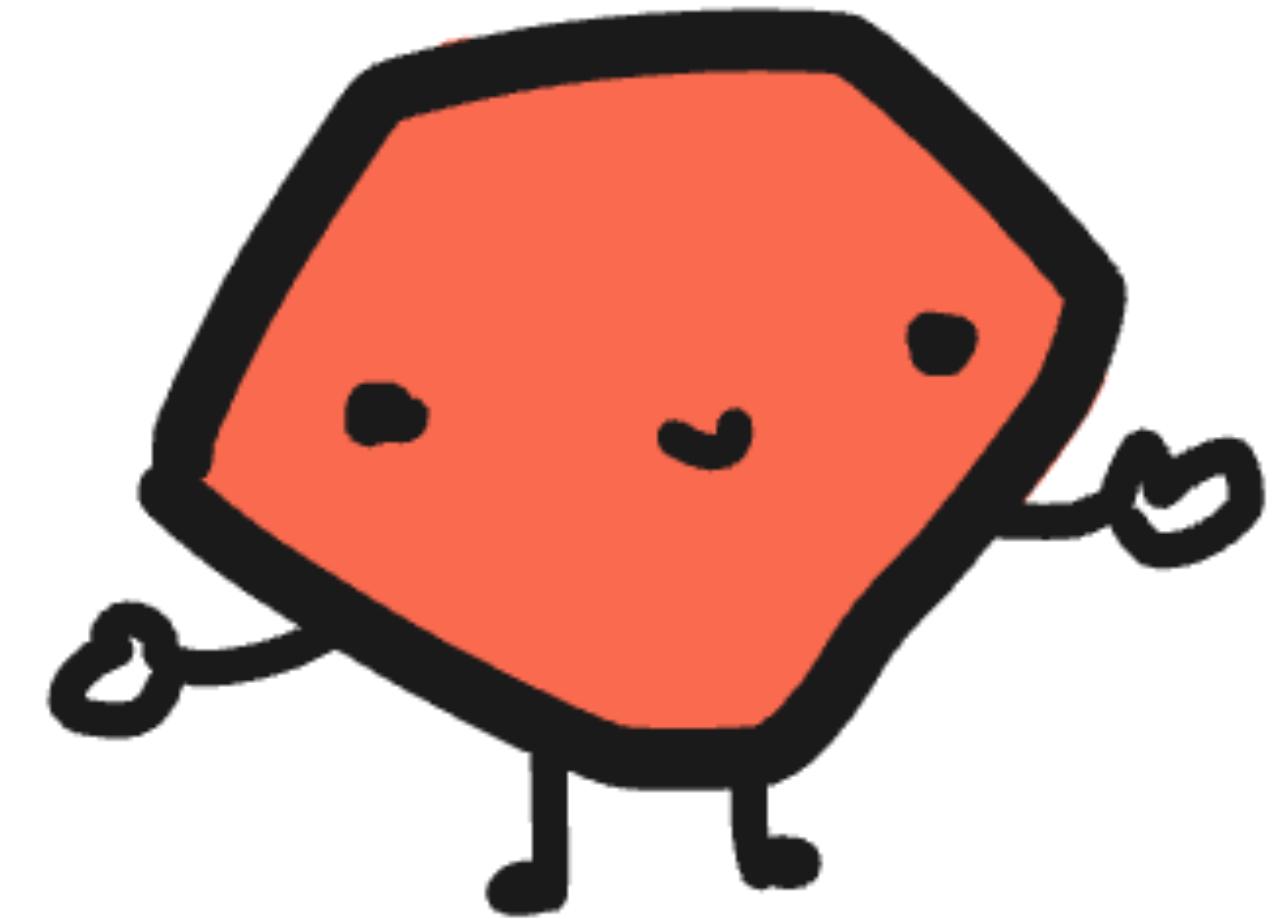
[indeed.com/career-advice/career-development/small-talk-topics](https://www.indeed.com/career-advice/career-development/small-talk-topics)

## **4. Weather**

Weather is a safe topic, and most people have opinions on the local climate. If the conversation goes well, you can transition to more interesting topics later on.

[socialself.com/blog/small-talk-questions](http://socialself.com/blog/small-talk-questions)

# Demystifying the Ruby package ecosystem



RubyConf 2023

**Raise your hand** 

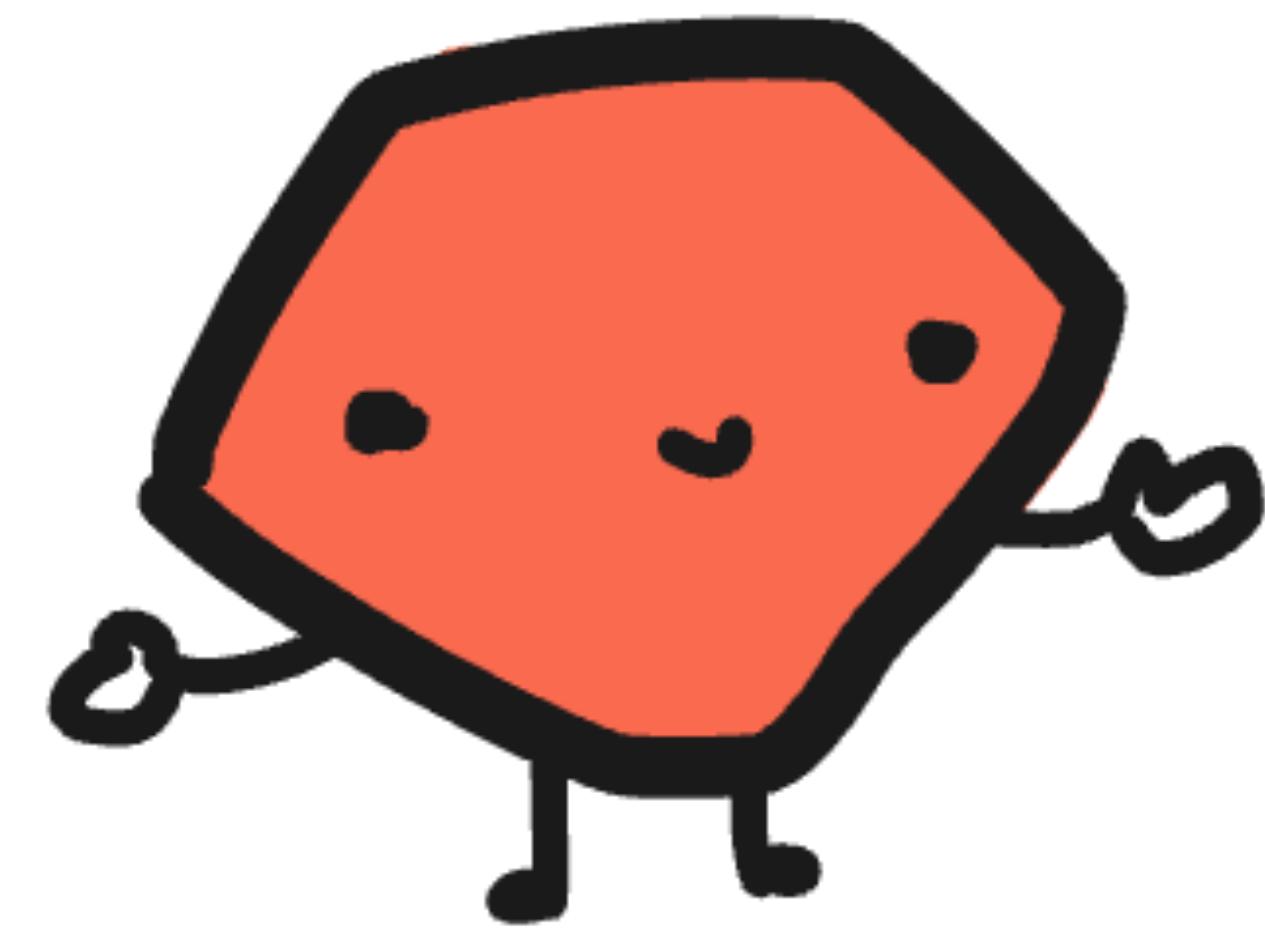
**bundle install**



```
Fetching gem metadata from https://rubygems.org/.....  
Resolving dependencies...  
Fetching timeout 0.4.0  
Fetching public_suffix 5.0.3  
Fetching nio4r 2.5.9  
Fetching racc 1.7.1  
Fetching aes_key_wrap 1.1.0  
Fetching mini_mime 1.1.5  
Fetching minitest 5.20.0  
Fetching amazing_print 1.5.0  
Installing timeout 0.4.0  
Installing racc 1.7.1 with native extensions  
Fetching attr_required 1.0.1  
Installing public_suffix 5.0.3  
Installing aes_key_wrap 1.1.0  
Installing amazing_print 1.5.0  
Installing attr_required 1.0.1  
Installing mini_mime 1.1.5  
Installing minitest 5.20.0  
Fetching pagy 6.0.4  
Installing nio4r 2.5.9 with native extensions  
Fetching thor 1.2.2  
Fetching zeitwerk 2.6.11  
Installing pagy 6.0.4  
Fetching aws-partitions 1.811.0  
Fetching bcrypt 3.1.19  
Fetching msgpack 1.7.2  
Fetching brakeman 6.0.1
```













**175 000 gems**



**175 000 gems**  
**Rails application**



rails



RELEASES

BLOG

GEMS

GUIDES

SIGN IN

SIGN UP

# search *for rails*

[Advanced Search →](#)

DISPLAYING GEMS 1 - 30 OF 10000 IN TOTAL

[FILTER: NAME \(5734\)](#) [DESCRIPTION \(13255\)](#) [SUMMARY \(13635\)](#) [UPDATED LAST WEEK \(63\)](#) [UPDATED LAST MONTH \(224\)](#)**rails** 7.0.7.2

Full-stack web application framework.

**462,429,799**

DOWNLOADS

**rails-i18n** 7.0.8

Common locale data and translations for Rails i18n.

**70,135,647**

DOWNLOADS

**rails-html-sanitizer** 1.6.0

This gem is responsible to sanitize HTML fragments in Rails applications.

**386,889,827**

DOWNLOADS



**175 000 gems**

**Rails application**

**API to manage gems**

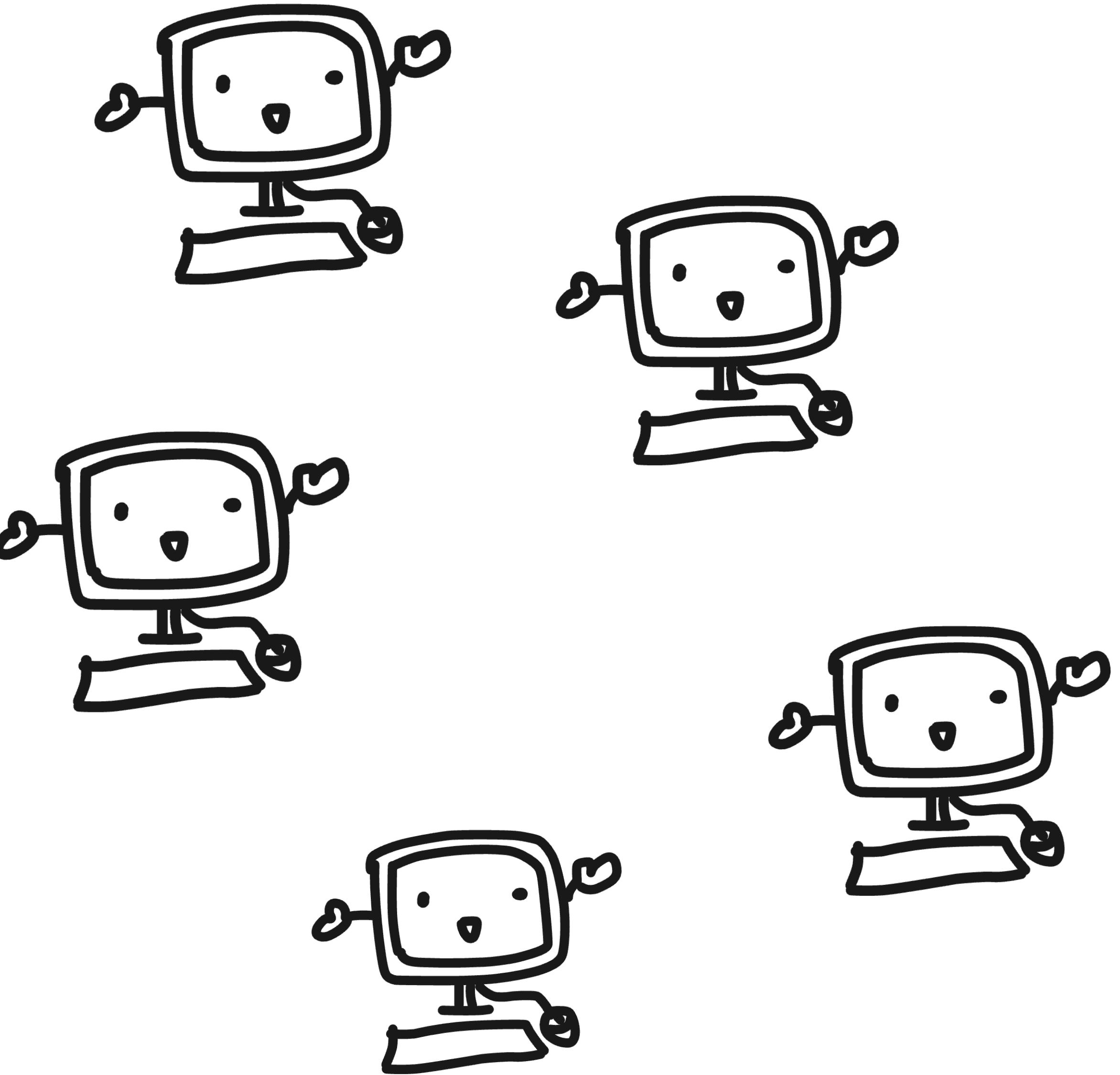




# Manage gems



```
$ gem install rails  
$ gem build cool_gem.gemspec  
$ gem owner cool_gem --add cool_author@example.com
```



# github.com/rubygems/rubygems

The screenshot shows the GitHub repository page for `rubygems/rubygems`. The page includes the repository navigation bar with links for Code, Issues (227), Pull requests (91), Discussions, Actions, Security (1), and Insights. The main content area displays the repository details: `rubygems` (Public), 135 branches, 614 tags, and 27,622 commits. A recent merge pull request from `deivid-rodriguez` is highlighted. On the right side, there's an `About` section with a brief description of the project: "Library packaging and distribution for Ruby.", a link to `rubygems.org`, and several navigation links: Readme, View license, Code of conduct, Activity, and 3.4k stars.

`rubygems / rubygems`

Type  to search | [+ ↗](#) | [\( \)](#) | [\( \)](#) | [\( \)](#) | [\( \)](#) | [\( \)](#) | [\( \)](#) | [\( \)](#)

[Code](#) [Issues 227](#) [Pull requests 91](#) [Discussions](#) [Actions](#) [Security 1](#) [Insights](#)

**rubygems** Public

Sponsor Edit Pins Watch 169 Fork 1.8k Star 3.4k

master 135 branches 614 tags Go to file Add file Code

deivid-rodriguez Merge pull request #6925 from composerinteralia/preve... bf1a8cb 2 days ago 27,622 commits

File	Description	Time
<code>.bundle</code>	Use bundler to manage development dependencies	4 years ago
<code>.githooks</code>	Move util/rubocop to bin directory	5 months ago
<code>.github</code>	Bump actions/checkout from 3.6.0 to 4.1.0	last week
<code>bin</code>	Specify -c .rubocop.yml for bin/rubocop (performance)	2 months ago
<code>bundler</code>	Merge pull request #6925 from composerinteralia/prevent-standalon...	2 days ago
<code>exe</code>	Rename bindir as exe	5 months ago

**About**

Library packaging and distribution for Ruby.

[rubygems.org](#)

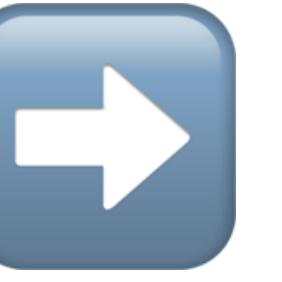
[ruby](#) [package-manager](#) [rubygems](#)

[Readme](#) [View license](#) [Code of conduct](#) [Activity](#) [3.4k stars](#)

# Agenda

1. Gem installation
2. Gems and Rails
3. The dark side of gems

**Slides and references**



**gem install**

**gem install rails**



```
Fetching activesupport-7.1.2.gem
Fetching actionview-7.1.2.gem
Fetching actionpack-7.1.2.gem
Fetching activemodel-7.1.2.gem
Fetching railties-7.1.2.gem
Fetching activerecord-7.1.2.gem
Fetching activejob-7.1.2.gem
Fetching activestorage-7.1.2.gem
Fetching rails-7.1.2.gem
Fetching actiontext-7.1.2.gem
Fetching actionmailer-7.1.2.gem
Fetching actionmailbox-7.1.2.gem
Fetching actionable-7.1.2.gem
Successfully installed activesupport-7.1.2
Successfully installed actionview-7.1.2
Successfully installed actionpack-7.1.2
Successfully installed railties-7.1.2
Successfully installed activemodel-7.1.2
Successfully installed activerecord-7.1.2
Successfully installed activejob-7.1.2
Successfully installed activestorage-7.1.2
Successfully installed actiontext-7.1.2
Successfully installed actionmailer-7.1.2
Successfully installed actionmailbox-7.1.2
Successfully installed actionable-7.1.2
Successfully installed rails-7.1.2
13 gems installed
```

**gem install name -v version**

**rails**

**7.0.2**

**“> 6.0”**

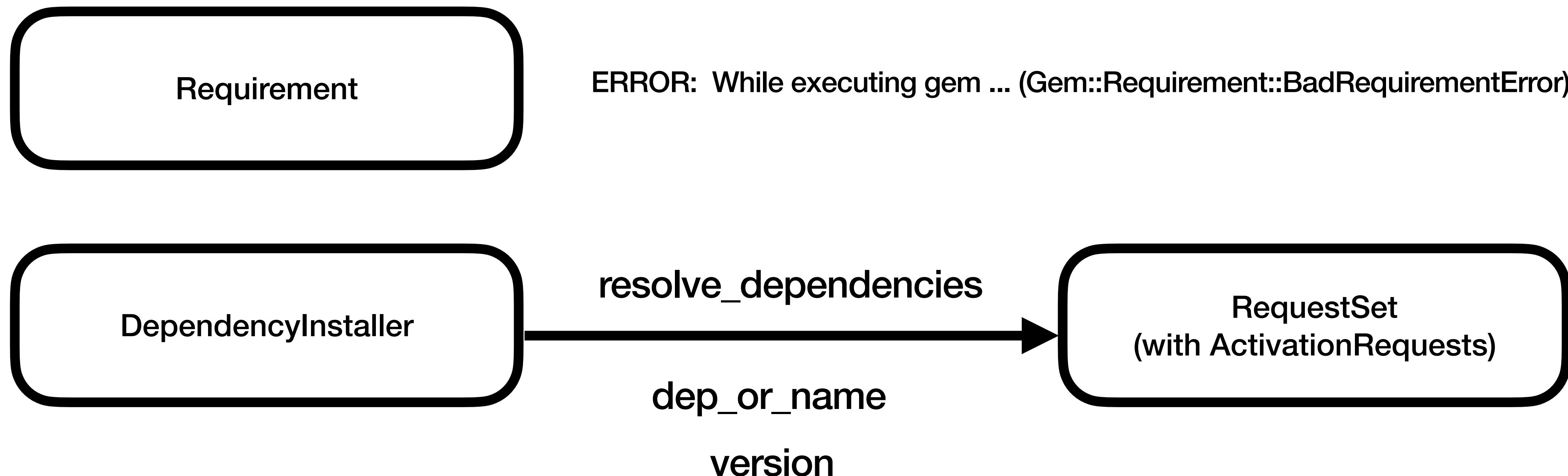
**$\geq 0$**

In lib/rubygems/commands/install\_command.rb

```
def install_gem(name, version)
```

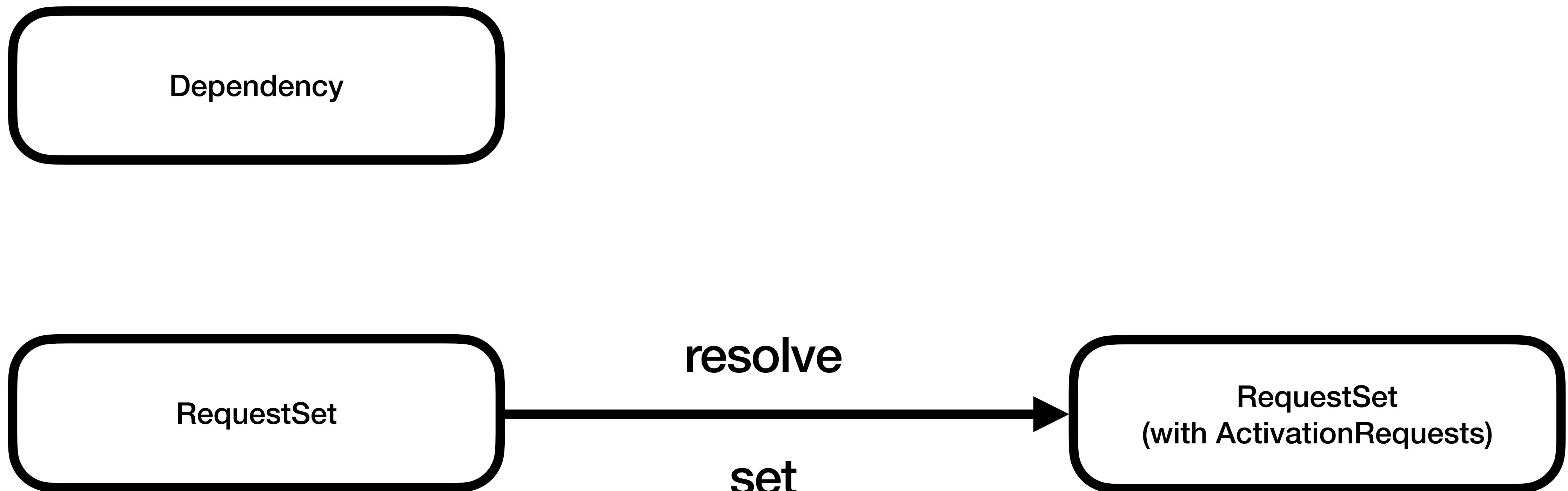
## In lib/rubygems/commands/install\_command.rb

```
def install_gem( name , version )
```



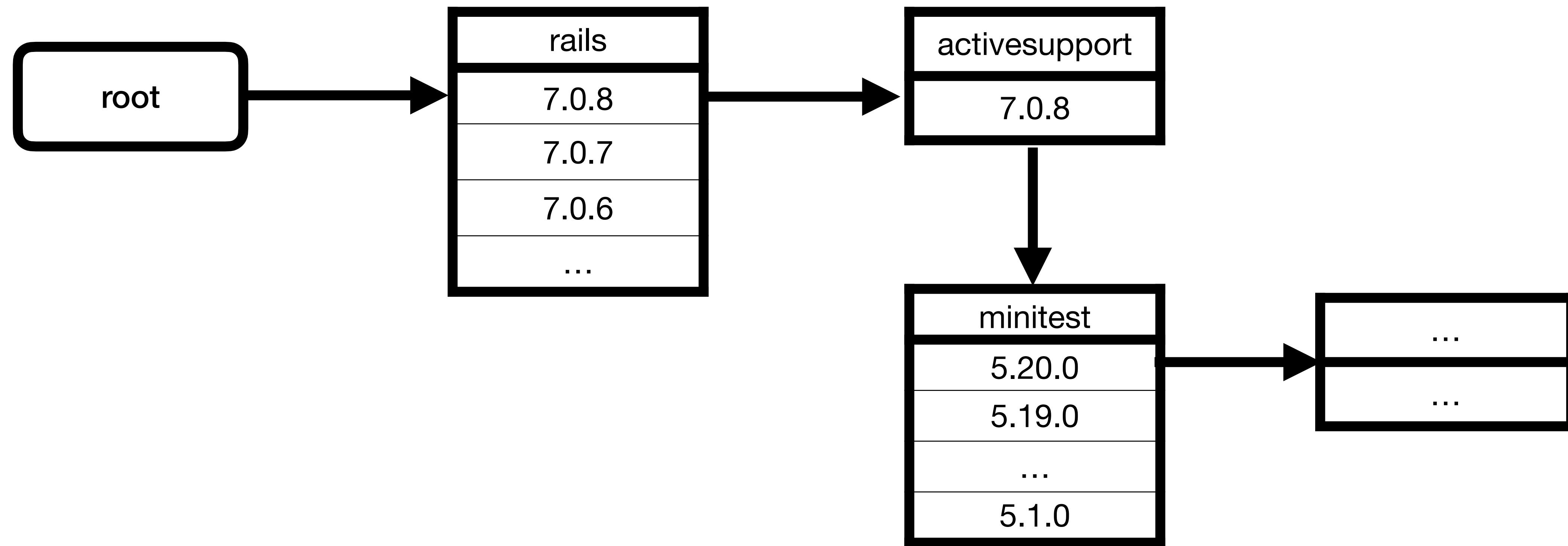
In lib/rubygems/dependency\_installer.rb

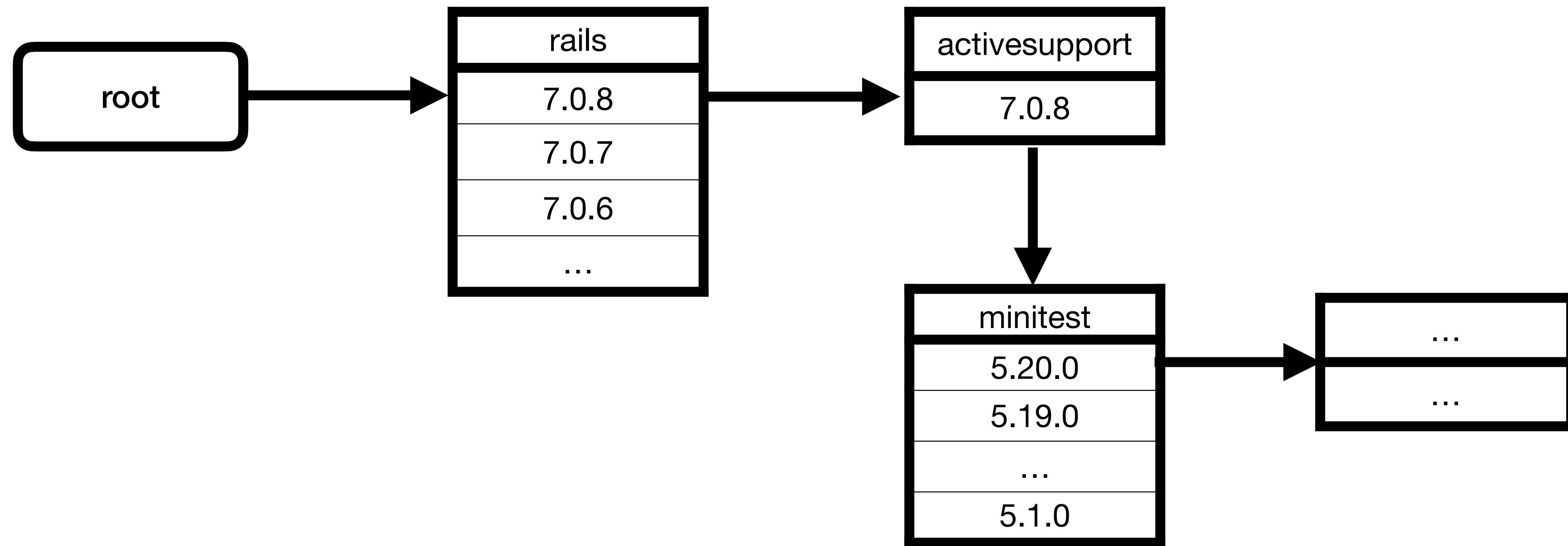
```
def resolve_dependencies( dep_or_name ,version)
```

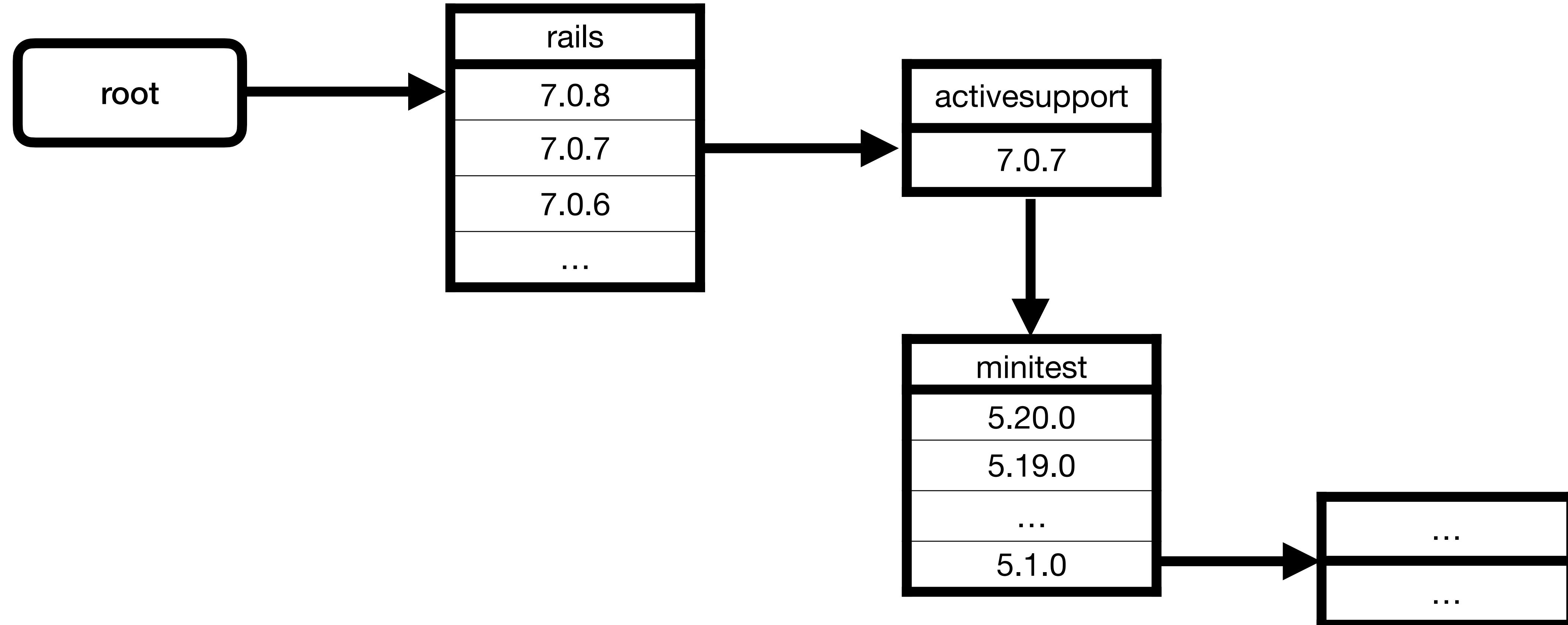


# Molinillo

[github.com/CocoaPods/Molinillo](https://github.com/CocoaPods/Molinillo)







<https://index.rubygems.org/info/rails>

---  
2.2.2 actionmailer:= 2.2.2,actionpack:= 2.2.2,activerecord:= 2.2.2,activeresource:= 2.2.2,activesupport:= 2.2.2,rake:>= 0.8.3|checksum:84fd0ee92f92088cff81d1a4bcb61306bd4b7440b8634d7ac3d1396571a2133f  
2.3.2 actionmailer:= 2.3.2,actionpack:= 2.3.2,activerecord:= 2.3.2,activeresource:= 2.3.2,activesupport:= 2.3.2,rake:>= 0.8.3|checksum:ac61e0356987df34dbbafb803b98f153a663d3878a31f1db7333b7cd987fd044  
2.0.5 actionmailer:= 2.0.5,actionpack:= 2.0.5,activerecord:= 2.0.5,activeresource:= 2.0.5,activesupport:= 2.0.5,rake:>= 0.7.2|checksum:5e8a6e36f2537b795b7bb237e2aea18a166349e1e54e463a64beba5ae84cd406  
2.1.0 actionmailer:= 2.1.0,actionpack:= 2.1.0,activerecord:= 2.1.0,activeresource:= 2.1.0,activesupport:= 2.1.0,rake:>= 0.8.1|checksum:9a9a2b7c710926e83d76ed308e5863be0c9011146bc983703437820d9cd405fe  
2.1.1 actionmailer:= 2.1.1,actionpack:= 2.1.1,activerecord:= 2.1.1,activeresource:= 2.1.1,activesupport:= 2.1.1,rake:>= 0.8.1|checksum:44f2f19ddd15f51725a5b92447adefbc9ee5a500fcb8db6e9bdb4a3a7ead7438  
2.1.2 actionmailer:= 2.1.2,actionpack:= 2.1.2,activerecord:= 2.1.2,activeresource:= 2.1.2,activesupport:= 2.1.2,rake:>= 0.8.1|checksum:4a55304ae08e3fcd2a2e2bb627d442e5aa9f1b1d6a542587b97ed0cee6079276  
1.2.6 actionmailer:= 1.3.6,actionpack:= 1.13.6,actionwebservice:= 1.2.6,activerecord:= 1.15.6,activesupport:= 1.4.4,rake:>= 0.7.2|checksum:5e83cfcc2a47d9c4bb5390ffee63e69b32034da281d51b2955c605dcdbecf5c79,ruby:> 0.0.0  
2.0.0 actionmailer:= 2.0.0,actionpack:= 2.0.0,activerecord:= 2.0.0,activeresource:= 2.0.0,activesupport:= 2.0.0,rake:>= 0.7.2|checksum:e4ed2b3b62babf3afc27d507ca6198776cb9e640f29503950e5c7900d96f468d,ruby:> 0.0.0  
2.0.1 actionmailer:= 2.0.1,actionpack:= 2.0.1,activerecord:= 2.0.1,activeresource:= 2.0.1,activesupport:= 2.0.1,rake:>= 0.7.2|checksum:64e35d0669cff20baf406d8e4d0ca55ecc842ce75ea8e78b9102f663af57d8c4,ruby:> 0.0.0  
2.0.2 actionmailer:= 2.0.2,actionpack:= 2.0.2,activerecord:= 2.0.2,activeresource:= 2.0.2,activesupport:= 2.0.2,rake:>= 0.7.2|checksum:aef11c0c3e237c9e46feab39277cd8190f1ee36a5fc6d6215ed7c9327b19bddf6  
2.0.4 actionmailer:= 2.0.4,actionpack:= 2.0.4,activerecord:= 2.0.4,activeresource:= 2.0.4,activesupport:= 2.0.4,rake:>= 0.7.2|checksum:85a7294bc816e6104b11b34403750f032f7e36ec15cb412cf489b3a11e64f03  
1.2.1 actionmailer:= 1.3.1,actionpack:= 1.13.1,actionwebservice:= 1.2.1,activerecord:= 1.15.1,activesupport:= 1.4.0,rake:>= 0.7.1|checksum:4bd8daec4cdabae8d70a4d00706512d0d1d8f8415b904f3bc8e40be1f693d67e,ruby:> 0.0.0  
1.2.2 actionmailer:= 1.3.2,actionpack:= 1.13.2,actionwebservice:= 1.2.2,activerecord:= 1.15.2,activesupport:= 1.4.1,rake:>= 0.7.1|checksum:4bd8daec4cdabae8d70a4d00706512d0d1d8f8415b904f3bc8e40be1f693d67e,ruby:> 0.0.0



```
def parse(line)
  version_and_platform, rest = line.split(" ", 2)
  version, platform = version_and_platform.split("-", 2)
  dependencies, requirements = rest.split("|", 2).map { |s| s.split(",") } if rest
  dependencies = dependencies ? dependencies.map { |d| parse_dependency(d) } : []
  requirements = requirements ? requirements.map { |d| parse_dependency(d) } : []
  [version, platform, dependencies, requirements] created into APISpecification
end
```

version-platform

dependencies

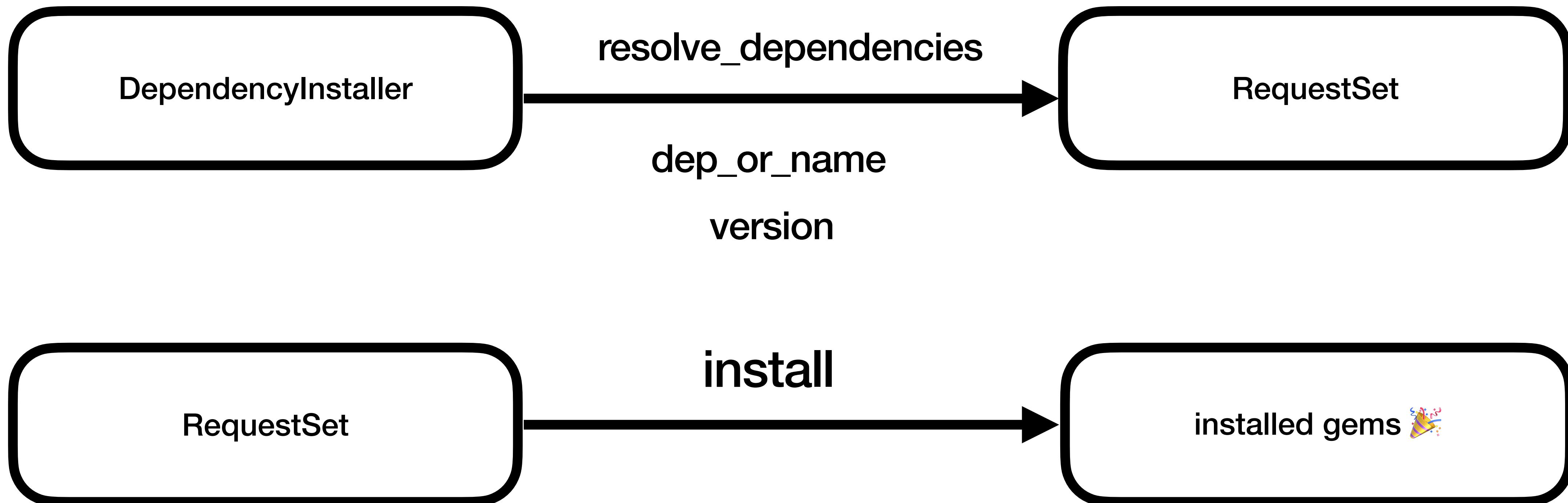
requirements

1.15.4-x86\_64-linux mini\_portile2:> 2.8.2,racc:> 1.4|checksum:e4a801..., ruby:>= 2.7.0

<gem\_name>:<version>,<gem\_name2>:<version2>...

## In lib/rubygems/commands/install\_command.rb

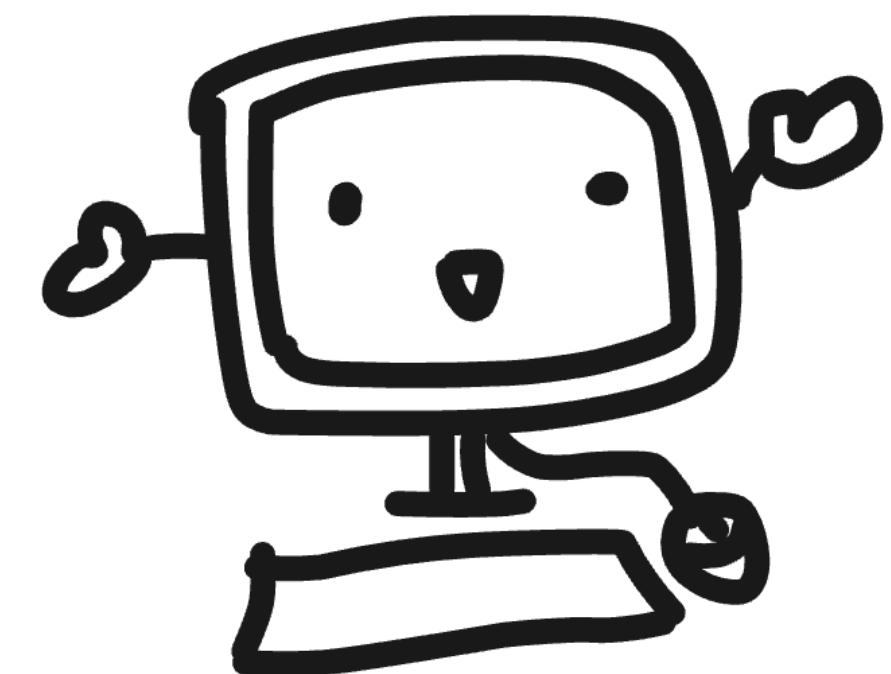
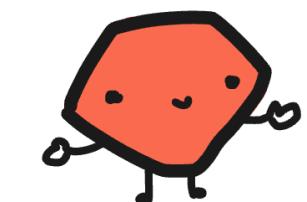
```
def install_gem( name , version )
```



RubyGems.org S3 bucket  
(rubygems.org/gem/rails-7.0.8.gem)



**rails-7.0.8.gem**



**<gem\_name>-<version>.gem**

# rake release

1. gem build
2. gem push

**gem build <gem\_name>.gemspec**



**<gem\_name>-<version>.gem**

# gem push





Search Gems...



RELEASES

BLOG

GEMS

GUIDES

SIGN IN

SIGN UP

# rails 7.0.8

Ruby on Rails is a full-stack web framework optimized for programmer happiness and sustainable productivity. It encourages beautiful code by favoring convention over configuration.

#### GEMFILE:

```
gem 'rails', '~> 7.0', '>= 7.0.8'
```



#### INSTALL:

```
gem install rails
```



#### VERSIONS:

**7.1.0.beta1** - September 13, 2023 (7 KB)  
**7.0.8** - September 09, 2023 (7 KB)  
**7.0.7.2** - August 22, 2023 (7 KB)  
**7.0.7.1** - August 22, 2023 (7 KB)  
**7.0.7** - August 09, 2023 (7 KB)

[Show all versions \(460 total\) →](#)

#### RUNTIME DEPENDENCIES (13):

**actionable** = 7.0.8  
**actionmailbox** = 7.0.8  
**actionmailer** = 7.0.8  
**actionpack** = 7.0.8  
**actiontext** = 7.0.8  
**actionview** = 7.0.8  
**activejob** = 7.0.8  
**activemodel** = 7.0.8  
**activerecord** = 7.0.8  
**activestorage** = 7.0.8  
**activesupport** = 7.0.8  
**bundler** >= 1.15.0  
**railties** = 7.0.8

[Show all transitive dependencies →](#)

#### OWNERS:



#### PUSHED BY:



Star

53,472

#### TOTAL DOWNLOADS

**463,890,147**

#### FOR THIS VERSION

**138,295**

#### LICENSE:

**MIT**

#### REQUIRED RUBY VERSION:

**>= 2.7.0**

#### NEW VERSIONS REQUIRE MFA:

**TRUE**

#### VERSION PUBLISHED WITH MFA:

**TRUE**

#### REQUIRED RUBYGEMS VERSION:

**>= 1.8.11**

#### LINKS:

[Homepage](#)[Changelog](#)[Source Code](#)[Documentation](#)[Mailing List](#)[View GitHub](#)[Download](#)[Review Changes](#)[Badge](#)[Subscribe](#)

## rails-7.0.8.gem

7.0 KB • 2 minutes ago



**rails-7.0.8.gem**



**rails-7.0.8**  
3 items



**checksums.yaml.  
gz**



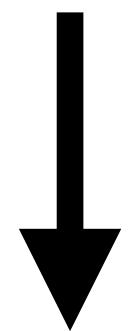
**data.tar.gz**



**metadata.gz**



data



CHANGELOG.md



exe



lib



MIT-LICENSE



RDOC\_MAIN.rdoc



README.rdoc

**gem unpack <gem\_name>**



# gem unpack activesupport

---

▼  <b>activesupport-7.0.8</b>	Today at 11:09 PM	--	Folder
 <b>CHANGELOG.md</b>	Today at 11:09 PM	17 KB	Markdo...ument
▼  <b>lib</b>	Today at 11:09 PM	--	Folder
>  <b>active_support</b>	Today at 11:09 PM	--	Folder
 <b>active_support.rb</b>	Today at 11:09 PM	4 KB	Ruby Source
 <b>MIT-LICENSE</b>	Today at 11:09 PM	1 KB	Document
 <b>README.rdoc</b>	Today at 11:09 PM	1 KB	Document

---

# Store the gem data

3.2.2	Sep 15, 2023 at 1:25 PM	--	Folder
bin	Today at 7:08 PM	--	Folder
build_info	Aug 11, 2023 at 2:27 PM	--	Folder
bundler	Jun 5, 2023 at 3:52 PM	--	Folder
cache	Today at 7:08 PM	--	Folder
doc	Sep 15, 2023 at 1:44 PM	--	Folder
extensions	Jun 5, 2023 at 3:54 PM	--	Folder
gems	Today at 10:22 PM	--	Folder
actionable-6.0.6.1	Sep 10, 2023 at 7:36 PM	--	Folder
app	Sep 10, 2023 at 7:36 PM	--	Folder
CHANGELOG.md	Sep 10, 2023 at 7:36 PM	6 KB	Markdo...ument
lib	Sep 10, 2023 at 7:36 PM	--	Folder
MIT-LICENSE	Sep 10, 2023 at 7:36 PM	1 KB	Document
README.md	Sep 10, 2023 at 7:36 PM	950 bytes	Markdo...ument
actionable-6.1.5	Jul 31, 2023 at 2:22 PM	--	Folder

`~/.gem/ruby/3.2.2/gems`

# Store the .gem file

⌄	3.2.2	Sep 15, 2023 at 1:25 PM	-- Folder
>	bin	Today at 7:08 PM	-- Folder
>	build_info	Aug 11, 2023 at 2:27 PM	-- Folder
>	bundler	Jun 5, 2023 at 3:52 PM	-- Folder
⌄	cache	Today at 7:08 PM	-- Folder
	actionable-6.0.6.1.gem	Sep 10, 2023 at 7:36 PM	42 KB Document
	actionable-6.1.5.gem	Jul 31, 2023 at 2:22 PM	42 KB Document
	actionable-6.1.7.4.gem	Jul 31, 2023 at 2:24 PM	42 KB Document
	actionable-7.0.4.3.gem	Aug 2, 2023 at 3:04 PM	45 KB Document
	actionable-7.0.5.1.gem	Jun 28, 2023 at 9:50 PM	45 KB Document

[~/.gem/ruby/3.2.2/cache](#)

# Store the .gem file

3.2.2	Sep 15, 2023 at 1:25 PM	--	Folder
bin	Today at 7:08 PM	--	Folder
build_info	Aug 11, 2023 at 2:27 PM	--	Folder
bundler	Jun 5, 2023 at 3:52 PM	--	Folder
cache	Today at 7:08 PM	--	Folder
doc	Sep 15, 2023 at 1:44 PM	--	Folder
extensions	Jun 5, 2023 at 3:54 PM	--	Folder
gems	Today at 7:08 PM	--	Folder
plugins	Jun 5, 2023 at 3:55 PM	--	Folder
specifications	Today at 7:08 PM	--	Folder
actionable-6.0.6.1.gemspec	Sep 10, 2023 at 7:36 PM	2 KB	Document
actionable-6.1.5.gemspec	Jul 31, 2023 at 2:22 PM	2 KB	Document
actionable-6.1.7.4.gemspec	Jul 31, 2023 at 2:24 PM	2 KB	Document
actionable-7.0.4.3.gemspec	Aug 2, 2023 at 3:04 PM	2 KB	Document
actionable-7.0.5.1.gemspec	Jun 28, 2023 at 9:50 PM	2 KB	Document

`~/.gem/ruby/3.2.2/specifications`

# Installing the gem's executables

⌄	3.2.2	Today at 11:26 PM	--	Folder
⌄	bin	Today at 7:36 PM	--	Folder
└	analyze	Jul 10, 2023 at 10:08 AM	565 bytes	Unix Executable File
└	anbt-sql-formatter	Aug 11, 2023 at 2:24 PM	615 bytes	Unix Executable File
└	ascii85	Jun 5, 2023 at 3:54 PM	549 bytes	Unix Executable File
└	assets-precompile	Jul 10, 2023 at 10:08 AM	581 bytes	Unix Executable File
└	bootsnap	Aug 23, 2023 at 1:37 PM	555 bytes	Unix Executable File
└	brakeman	Aug 2, 2023 at 3:12 PM	555 bytes	Unix Executable File
└	bundle	Aug 23, 2023 at 1:44 PM	564 bytes	Unix Executable File
└	bundler	Aug 23, 2023 at 1:44 PM	566 bytes	Unix Executable File
└	byebug	Jun 5, 2023 at 3:55 PM	543 bytes	Unix Executable File
└	check-test-rules	Jul 10, 2023 at 10:08 AM	579 bytes	Unix Executable File
└	cli-kit	Jun 5, 2023 at 3:55 PM	549 bytes	Unix Executable File
└	clockwork	Aug 11, 2023 at 2:24 PM	561 bytes	Unix Executable File

`require "active_support"`

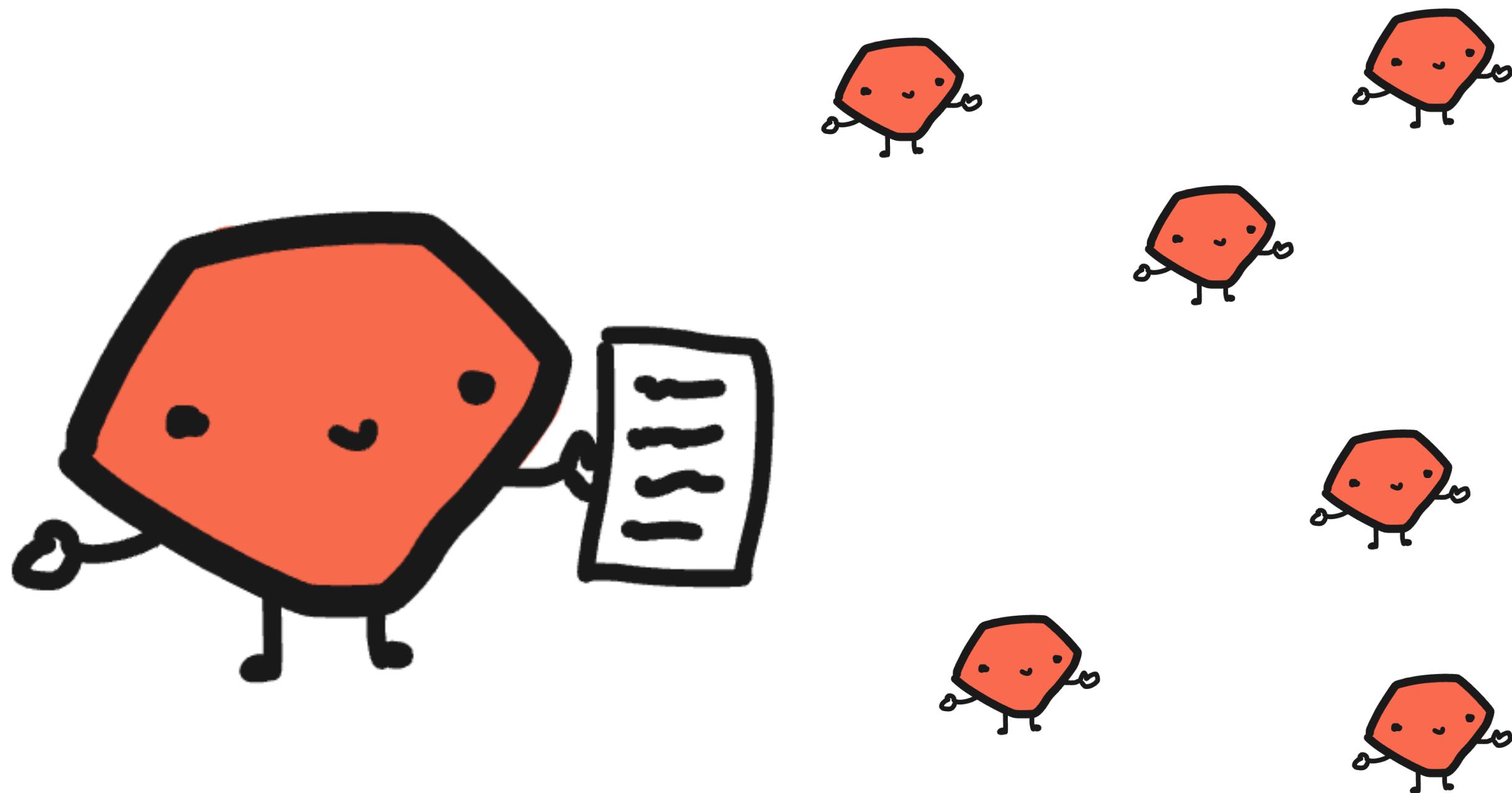
Adds gem path to `$LOAD_PATH`

```
jennyshen@Jennys-MBP-2 ➤ ~ irb
irb(main):001> "Isn't RubyConf 2023 amazing".blank?
(irb):1:in `<main>': undefined method `blank?' for "Isn't RubyConf 2023 amazing":String (NoMethodError)
  from /Users/jennyshen/.gem/ruby/3.1.0/gems/irb-1.8.3/exe/irb:9:in `<top (required)>'
  from /Users/jennyshen/.gem/ruby/3.1.0/bin/irb:25:in `load'
  from /Users/jennyshen/.gem/ruby/3.1.0/bin/irb:25:in `<main>'
irb(main):002> require "active_support"
=> true
irb(main):003> "Isn't RubyConf 2023 amazing".blank?
=> false
```

```
irb(main):004> $LOAD_PATH  
=>  
["/Users/jennyshen/.gem/ruby/3.2.2/gems/reline-0.3.8/lib",  
 "/Users/jennyshen/.gem/ruby/3.2.2/gems/irb-1.8.1/lib",  
 "/Users/jennyshen/.gem/ruby/3.2.2/gems/stringio-3.0.8/lib",  
 "/Users/jennyshen/.gem/ruby/3.2.2/extensions/arm64-darwin-22/3.2.0/stringio-3.0.8",  
 "/Users/jennyshen/.gem/ruby/3.2.2/gems/psych-5.1.0/lib",  
 "/Users/jennyshen/.gem/ruby/3.2.2/extensions/arm64-darwin-22/3.2.0/psych-5.1.0",  
 "/Users/jennyshen/.gem/ruby/3.2.2/gems/activesupport-7.0.8/lib",  
 "/Users/jennyshen/.gem/ruby/3.2.2/gems/concurrent-ruby-1.2.2/lib/concurrent-ruby",  
 "/Users/jennyshen/.gem/ruby/3.2.2/gems/i18n-1.14.1/lib",  
 "/Users/jennyshen/.gem/ruby/3.2.2/gems/tzinfo-2.0.6/lib",  
 "/Users/jennyshen/.gem/ruby/3.2.2/gems/timeout-0.4.0/lib",  
 "/opt/rubies/3.2.2/lib/ruby/site_ruby/3.2.0",  
 "/opt/rubies/3.2.2/lib/ruby/site_ruby/3.2.0/arm64-darwin22",  
 "/opt/rubies/3.2.2/lib/ruby/site_ruby",  
 "/opt/rubies/3.2.2/lib/ruby/vendor_ruby/3.2.0",  
 "/opt/rubies/3.2.2/lib/ruby/vendor_ruby/3.2.0/arm64-darwin22",  
 "/opt/rubies/3.2.2/lib/ruby/vendor_ruby",
```

gem install 

**bundle install**



## In `bundler/lib/bundler/cli/install.rb`

```
def run
```

1. Build a definition

2. Install the definition

In `bundler/lib/bundler/dsl.rb`

`def self.evaluate`



## In bundler/lib/bundler/dsl.rb

```
● ● ●

def eval_gemfile(gemfile, contents = nil)
  expanded_gemfile_path = Pathname.new(gemfile).expand_path(@gemfile.parent)
  original_gemfile = @gemfile
  @gemfile = expanded_gemfile_path
  @gemfiles << expanded_gemfile_path
  contents ||= Bundler.read_file(@gemfile.to_s)
  instance_eval(contents.dup.tap { |x| x.untaint if RUBY_VERSION < "2.7" }, @gemfile.to_s, 1)
rescue Exception => e # rubocop:disable Lint/RescueException
  message = "There was an error " \
    "#{$e.is_a?(GemfileEvalError) ? "evaluating" : "parsing"} " \
    "`#{File.basename gemfile.to_s}`: #{e.message}"
  raise DSLError.new(message, gemfile, e.backtrace, contents)
ensure
  @gemfile = original_gemfile
end
```

```
gem "rails", "~> 7.0.7"
```

Gemfile

---

```
def gem(name, *args)
```

```
@dependencies <<
```

Dependency

DSL

`source “https://rubygems.org”`

Gemfile

---

`def source(source, args*, &blk)`

DSL

`@sources.add_global_rubygems_source(source)`

```
source "https://rubygems.org" do  
  gem "rails"  
end
```

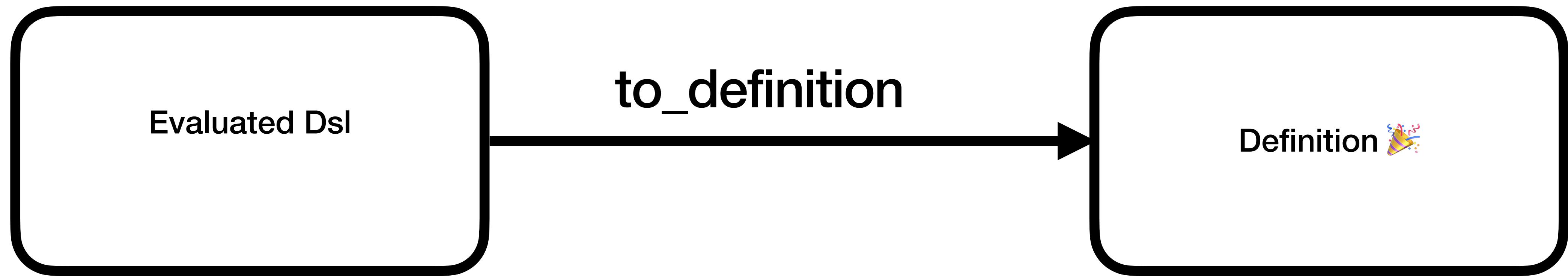
Gemfile

---

```
def source(source, args*, &blk)
```

DSL

```
old_source = @source  
@source = source  
yield block  
@source = old_source
```



## In `bundler/lib/bundler/cli/install.rb`

```
def run
```

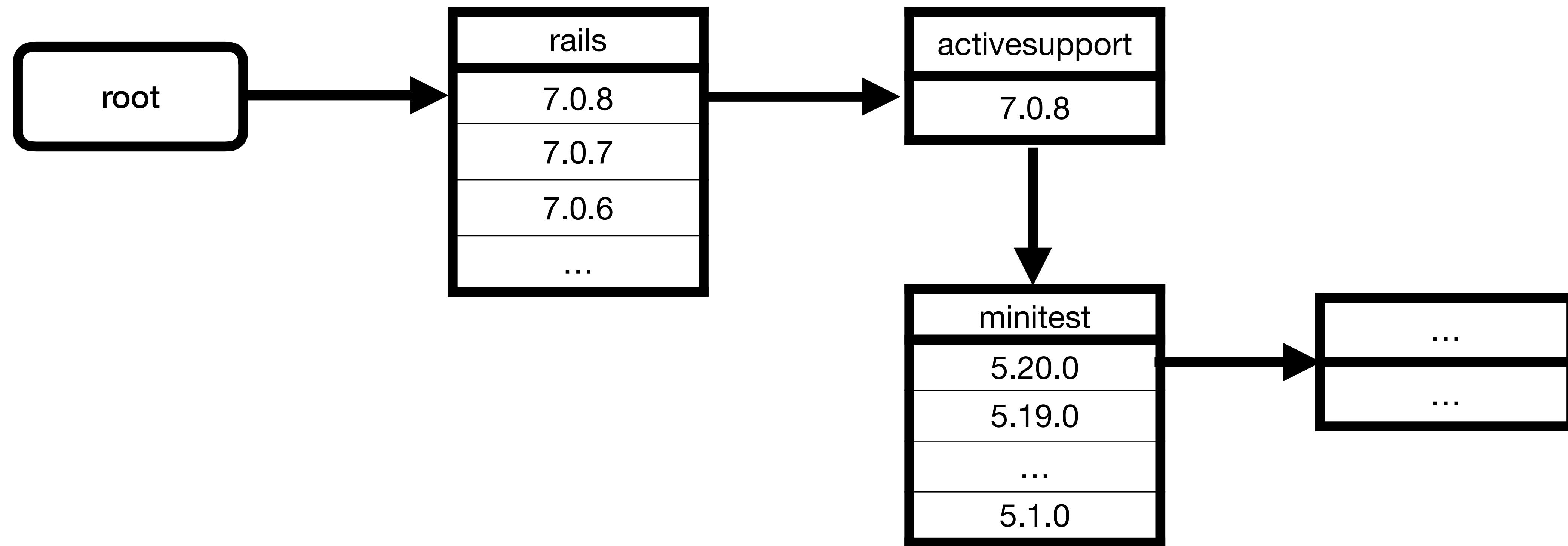
1. Build a definition

2. Install the definition

# Pub grub

[github.com/jhawthorn/pub\\_grub](https://github.com/jhawthorn/pub_grub)

# Conflict-driven clause learning



# Traits

**rails >= 7.1.0**

# Incompatibilities

## Gems to install

**cool >= 1.1.0 beans <= 2.0.1**

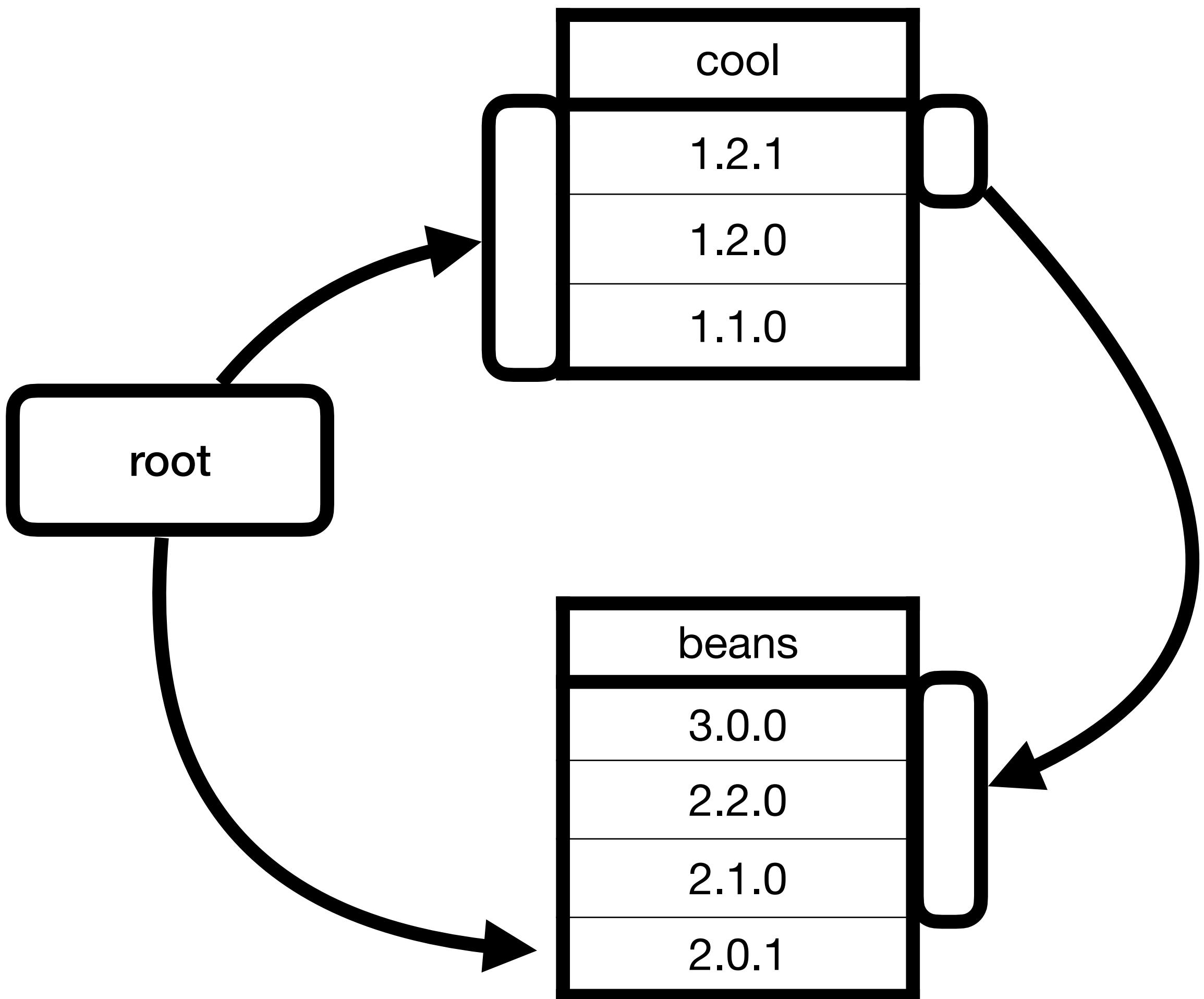
## Incompatibilities

root any, not cool < 1.1.0

root any, not beans > 2.0.1

cool > 1.2.0, not beans > 2.0.1

root any, not cool > 1.2.0



# **Compact index**

# rubygems.org/versions

```
created_at: 2023-10-01T00:00:04Z
---
- 1 05d0116933ba44b0b5d0ee19bfd35ccc
-A 0.0.0 8b1527991f0022e46140907a7fc4cf4
.cat 0.0.1 631fd60a806eaf5026c86fff3155c289
.omghi 1,2 7a67c0434100c2ab635b9f4865ee86bd
0mq 0.1.0,0.1.1,0.1.2,0.2.0,0.2.1,0.3.0,0.4.0,0.4.1,0.5.0,0.5.1,0.5.2,0.5.3 6146193f8f7e944156b0b42ec37bad3e
0xdm5 0.1.0 2a81ab3e47a9049c21603ed29555fe78
0xffffffff 0.0.1,0.1.0 0a4a9aae24152cdb467be02f40482f9
0xn3va-hola 0.0.1 9301d41e85019788507ac3efe548e818
10tol-crack 0.1.3,0.1.2,0.1.1 e7218e76477e2137355d2e7ded094925
1234567890_ 1.0,1.1,1.2 75f21ffffe3703239725b848bf82d3143
12_hour_time 0.0.2,0.0.3,0.0.4 4e58bc03e301f704950410b713c20b69
16watts-fluently 0.3.1,0.3.0 555088e2b18e97e0293cab1d90dbb0d2
189seg 0.0.1 c4d329f7d3eb88b6e60235896be0242
196demo 0.0.0 e00c558565f7b03a438fdbd93d854b7de
19cah 0.0.1,0.1.0 9153be52b14f2193ad1dbd83b3f9a94d
10S 0.1.0 c379eb80dd9b53e8b99e5507c8aebcb0
1_as_identity_function 1.0.0,1.0.1 bee2f0fbcc3c5c83008c0b8fc64cb168
1ndl 1.1,1.2.0,1.3.0 bca9elb3d107a08e2439a49f723ecbc5
1hdoc 0.1.3,0.2.0,0.2.2,0.2.4 7076f29c196df12047a3700c4d6e5915
1pass 0.1.0,0.1.1,0.1.2 d209547aae4b8f3d67123f18f738ac99
2019-GCPL-CLI-Table 0.0.0 701fd94052f871fa4c78f11250211fc0
2048-ruby 0.1,0.2 f433f10e026d7d8a865317a2fc6cef3
21-day-challenge-countdown 0.1.0,0.1.1,0.1.2 57e8873fe713063f4e54e85bbbb709bb
234ewd 3.2.1 61052c77454b2ce074f8368258813072
24games 0.2.1,0.2.2,0.2.3,0.2.4 9e4d164dec466b7fe285653289e8468f
24point 0.0.1,0.0.2 80d1d0efb3811e31f40160237cc9c115
2DArray 0.1.0,0.1.2,0.1.3,0.1.5,0.1.6 848ea9e77b596cad24688a44c57a25c3
2Performant 0.0.1,0.0.2,0.0.3,0.0.4,0.0.5,0.0.6,0.0.7,0.0.8,0.1.0,0.1.1,0.1.3 9acd247bfb2dcba53f82c53e5302c1
2cdn 0.1.0,0.1.2,0.1.3,0.1.4,0.1.5,0.1.6,0.1.7,0.1.8 72065c6903dbcecaebe49e17a1b20e65
2do 0.0.2 ffc496f9624dbb3e99384c7299e4e602
2fa 0,0.0.1,0.0.2 8325a05c30e5170fa24d17433574c087
2gis 0.0.0 e90a62f976841b275dc5db69fb648b5d
360_services 0.0.1,0.0.2,0.0.3,0.0.4,1.0.0,1.0.1,0.0.5,0.0.6,0.0.7,0.0.8,1.0.2,1.0.3,1.0.4,1.0.5,1.0.6,1.0.7,1.0.8,1.0.9,1.1.0,1.0.10,1.1.1,1.1.2,1.1.3 cbe090a735103a08bf3e53c6e47a6174
--
```

# rubygems.org/info/<gem>

```
---  
2.2.2 actionmailer:= 2.2.2,actionpack:= 2.2.2,activerecord:= 2.2.2,activeresource:= 2.2.2,activesupport:= 2.2.2,rake:>= 0.8.3|checksum:84fd0ee92f92088cff81d1a4bcb61306bd4b7440b8634d7ac3d1396571a2133f  
2.3.2 actionmailer:= 2.3.2,actionpack:= 2.3.2,activerecord:= 2.3.2,activeresource:= 2.3.2,activesupport:= 2.3.2,rake:>= 0.8.3|checksum:ac61e0356987df34dbbafb803b98f153a663d3878a31f1db7333b7cd987fd044  
2.0.5 actionmailer:= 2.0.5,actionpack:= 2.0.5,activerecord:= 2.0.5,activeresource:= 2.0.5,activesupport:= 2.0.5,rake:>= 0.7.2|checksum:5e8a6e36f2537b795b7bb237e2aea18a166349e1e54e463a64beba5ae84cd406  
2.1.0 actionmailer:= 2.1.0,actionpack:= 2.1.0,activerecord:= 2.1.0,activeresource:= 2.1.0,activesupport:= 2.1.0,rake:>= 0.8.1|checksum:9a9a2b7c710926e83d76ed308e5863be0c9011146bc983703437820d9cd405fe  
2.1.1 actionmailer:= 2.1.1,actionpack:= 2.1.1,activerecord:= 2.1.1,activeresource:= 2.1.1,activesupport:= 2.1.1,rake:>= 0.8.1|checksum:44f2f19ddd15f51725a5b92447adefbc9ee5a500fc8db6e9bdb4a3a7ead7438  
2.1.2 actionmailer:= 2.1.2,actionpack:= 2.1.2,activerecord:= 2.1.2,activeresource:= 2.1.2,activesupport:= 2.1.2,rake:>= 0.8.1|checksum:4a55304ae08e3fc2a2e2bb627d442e5aa9f1b1d6a542587b97ed0cee6079276  
1.2.6 actionmailer:= 1.3.6,actionpack:= 1.13.6,actionwebsocket:= 1.2.6,activerecord:= 1.15.6,activesupport:= 1.4.4,rake:>= 0.7.2|checksum:5e83cfcc2a47d9c4bb5390ffee63e69b32034da281d51b2955c605dcdbecf5c79,ruby:> 0.0.0  
2.0.0 actionmailer:= 2.0.0,actionpack:= 2.0.0,activerecord:= 2.0.0,activeresource:= 2.0.0,activesupport:= 2.0.0,rake:>= 0.7.2|checksum:e4ed2b3b62babf3afc27d507ca6198776cb9e640f29503950e5c7900d96f468d,ruby:> 0.0.0  
2.0.1 actionmailer:= 2.0.1,actionpack:= 2.0.1,activerecord:= 2.0.1,activeresource:= 2.0.1,activesupport:= 2.0.1,rake:>= 0.7.2|checksum:64e35d0669cff20baf406d8e4d0ca55ecc842ce75ea8e78b9102f663af57d8c4,ruby:> 0.0.0  
2.0.2 actionmailer:= 2.0.2,actionpack:= 2.0.2,activerecord:= 2.0.2,activeresource:= 2.0.2,activesupport:= 2.0.2,rake:>= 0.7.2|checksum:aef11c0c3e237c9e46feab39277cd8190f1ee36a5fc6215ed7c9327b19bddf6  
2.0.4 actionmailer:= 2.0.4,actionpack:= 2.0.4,activerecord:= 2.0.4,activeresource:= 2.0.4,activesupport:= 2.0.4,rake:>= 0.7.2|checksum:85a7294bc816e6104b11b34403750f032f7e36ec15cb412cf489b3a11e64f03  
1.2.1 actionmailer:= 1.3.1,actionpack:= 1.13.1,actionwebsocket:= 1.2.1,activerecord:= 1.15.1,activesupport:= 1.4.0,rake:>= 0.7.1|checksum:4bd8daec4cdabae8d70a4d00706512d0d1d8f8415b904f3bc8e40be1f693d67e,ruby:> 0.0.0  
1.2.2 actionmailer:= 1.3.2,actionpack:= 1.13.2,actionwebsocket:= 1.2.2,activerecord:= 1.15.2,activesupport:= 1.4.1,rake:>= 0.7.1|checksum:4bd8daec4cdabae8d70a4d00706512d0d1d8f8415b904f3bc8e40be1f693d67e,ruby:> 0.0.0
```

**cached at `~/.bundle/cache/compact_index`**

# Better error messages

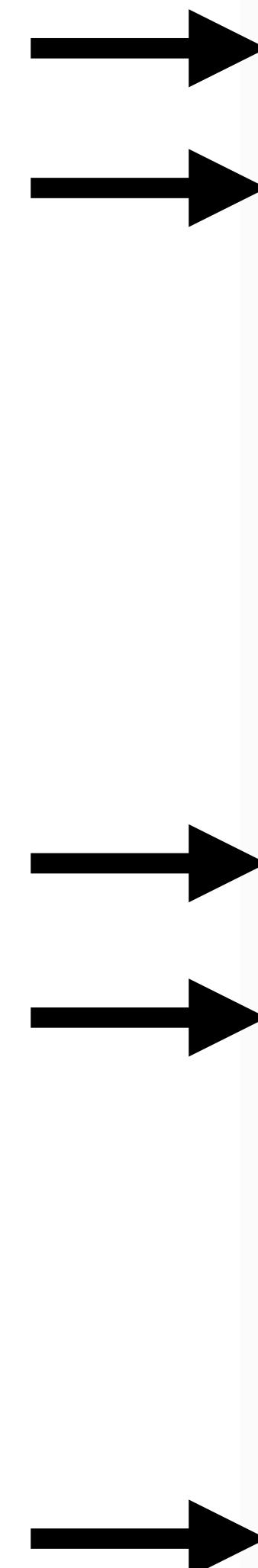


Could not find compatible versions

Because roadie-rails >= 2.3.0 depends on railties >= 5.1, < 7.1  
and rails >= 7.1.0 depends on railties = 7.1.0,  
roadie-rails >= 2.3.0 is incompatible with rails >= 7.1.0.

So, because Gemfile depends on rails ~> 7.1.0  
and Gemfile depends on roadie-rails ~> 3.0,  
version solving has failed.

# Gemfile.lock



```
remote: https://rubygems.org/
specs:
  actioncable (7.0.7.2)
  actionpack (= 7.0.7.2)
  activesupport (= 7.0.7.2)
  nio4r (~> 2.0)
  websocket-driver (>= 0.6.1)
  actionmailbox (7.0.7.2)
  actionpack (= 7.0.7.2)
  activejob (= 7.0.7.2)
  ...
  actionpack (7.0.7.2)
  actionview (= 7.0.7.2)
  activesupport (= 7.0.7.2)
  rack (~> 2.0, >= 2.2.4)
  ...

PLATFORMS
  arm64-darwin-21

DEPENDENCIES
  bootsnap
  capybara
  debug
  importmap-rails
  jbuilder
  puma (~> 5.0)
  rails (~> 7.0.7, >= 7.0.7.2)
  redis (~> 4.0)
  ...

RUBY VERSION
  ruby 3.2.2p0

BUNDLED WITH
  2.4.13
```

**require “bundler/setup”**

**Turns on the bundler runtime**

## In `bundler/lib/bundler/runtime.rb`

```
● ● ●

def setup(*groups)
  ...

  # Activate the specs
  load_paths = specs.map do |spec|
    check_for_activated_spec!(spec)

    Bundler.rubygems.mark_loaded(spec)
    spec.load_paths.reject { |path| $LOAD_PATH.include?(path) }
  end.reverse.flatten

  Bundler.rubygems.add_to_load_path(load_paths)

  ...
end
```

# **Dependencies and Rails**

# **How are gems automatically required?**

**require “insert-cool-gem”**



```
require_relative "boot"

require "rails/all"

# Require the gems listed in Gemfile, including any gems
# you've limited to :test, :development, or :production.
Bundler.require(*Rails.groups)

module RailsApp
  class Application < Rails::Application
    # Initialize configuration defaults for originally generated Rails version.
    config.load_defaults 7.0

    # Configuration for the application, engines, and railties goes here.
    #
    # These settings can be overridden in specific environments using the files
    # in config/environments, which are processed later.
    #
    # config.time_zone = "Central Time (US & Canada)"
    # config.eager_load_paths << Rails.root.join("extras")
  end
end
```

```
source "https://rubygems.org"
git_source(:github) { |repo| "https://github.com/#{repo}.git" }

ruby "3.1.0"

# Bundle edge Rails instead: gem "rails", github: "rails/rails", branch: "main"
gem "rails", "~> 7.0.7", ">= 7.0.7.2"

# The original asset pipeline for Rails [https://github.com/rails/sprockets-rails]
gem "sprockets-rails"

# Use sqlite3 as the database for Active Record
gem "sqlite3", "~> 1.4"

# Use the Puma web server [https://github.com/puma/puma]
gem "puma", "~> 5.0"

# Use JavaScript with ESM import maps [https://github.com/rails/importmap-rails]
gem "importmap-rails"

# Hotwire's SPA-like page accelerator [https://turbo.hotwired.dev]
gem "turbo-rails"

# Hotwire's modest JavaScript framework [https://stimulus.hotwired.dev]
gem "stimulus-rails"

# Build JSON APIs with ease [https://github.com/rails/jbuilder]
gem "jbuilder"

# Use Redis adapter to run Action Cable in production
gem "redis", "~> 4.0"

# Use Kredis to get higher-level data types in Redis [https://github.com/rails/kredis]
# gem "kredis"

# Use Active Model has_secure_password [https://guides.rubyonrails.org/active_model_basics.html#securepassword]
# gem "bcrypt", "~> 3.1.7"

# Windows does not include zoneinfo files, so bundle the tzinfo-data gem
gem "tzinfo-data", platforms: %i[ mingw mswin x64_mingw jruby ]

# Reduces boot times through caching; required in config/boot.rb
gem "bootsnap", require: false

# Use Sass to process CSS
# gem "sassc-rails"

# Use Active Storage variants [https://guides.rubyonrails.org/active_storage_overview.html#transforming-images]
# gem "image_processing", "~> 1.2"

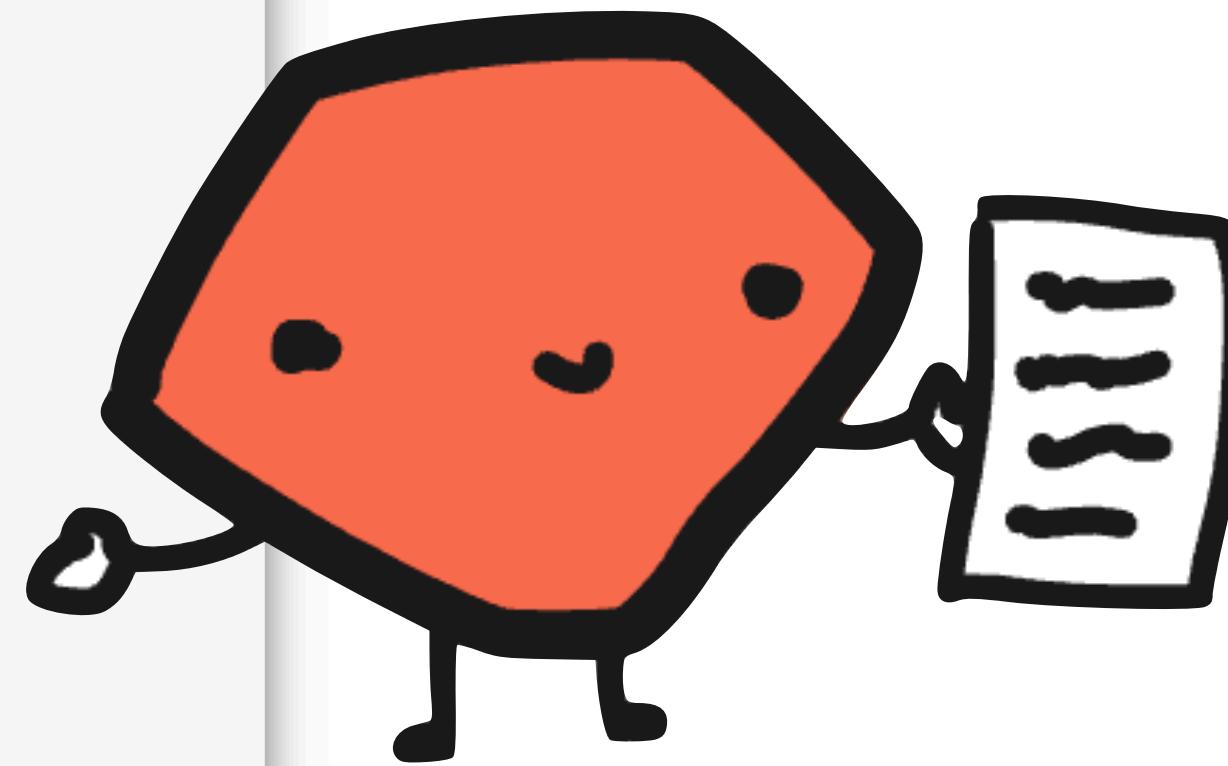
group :development, :test do
  # See https://guides.rubyonrails.org/debugging_rails_applications.html#debugging-with-the-debug-gem
  gem "debug", platforms: %i[ mri mingw x64_mingw ]
end

group :development do
  # Use console on exceptions pages [https://github.com/rails/web-console]
  gem "web-console"

  # Add speed badges [https://github.com/MiniProfiler/rack-mini-profiler]
  # gem "rack-mini-profiler"

  # Speed up commands on slow machines / big apps [https://github.com/rails/spring]
  gem "spring"
end

group :test do
  # Use system testing [https://guides.rubyonrails.org/testing.html#system-testing]
  gem "capybara"
  gem "selenium-webdriver"
  gem "webdrivers"
end
```



# **binstubs**

**bundle exec rails s**

**rails s**

**bin/rails s**



```
#!/usr/bin/env ruby
APP_PATH = File.expand_path("../config/application", __dir__)
require_relative "../config/boot"
require "rails/commands"
```

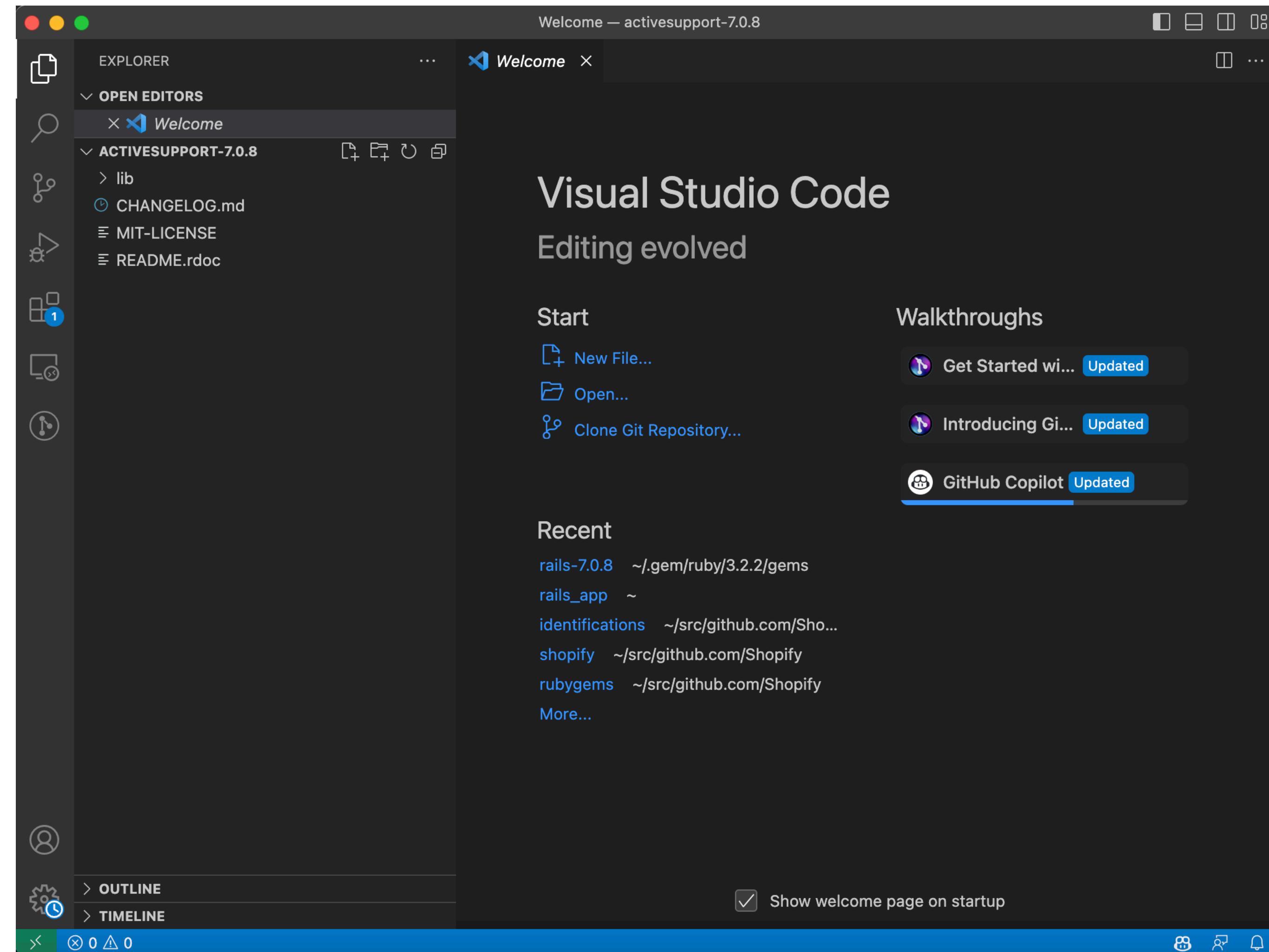
**bundle install – binstubs**  
**bundle binstub <gem>**

# Debugging gems in a Rails application

# **bundle show <gem>**

**eg. /Users/jennyshen/.gem/ruby/3.1.2/gems/  
activesupport-7.0.8**

```
BUNDLER_EDITOR="code" bundle  
open <gem>
```





*spring* stop

Oh no 🙄 all my gems are broken

gem pristine



**gem “rails”, path: “path/to/rails/clone”**



# The dark side of gems

# Wrong gem

**gem install rials**

jennyshen@Jennys-MacBook-Pro-2 ➜ ~ |

**Execute dangerous code** 

# Typosquatting

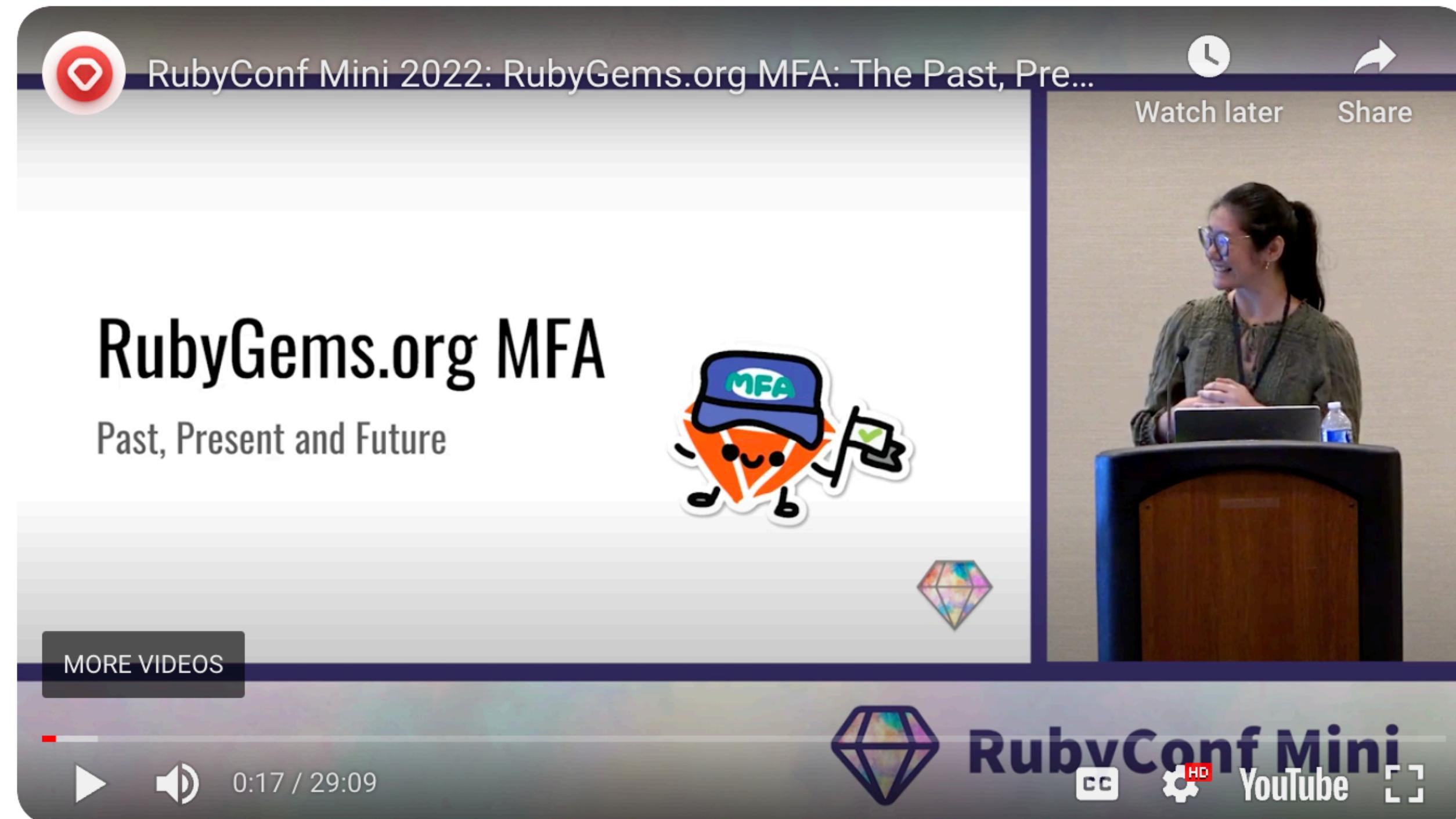
# RubyGems accounts



**Publish a malicious version**

# **Multi-factor authentication**

# Popular gem maintainers



# **WebAuthn support**



Search Gems...



RELEASES

BLOG

GEMS

GUIDES

SIGN IN

SIGN UP

# Multi-factor authentication

## Security Device

Authenticate with a security device such as Touch Id, YubiKey, etc.

[Authenticate with security device](#)

## OTP code

You can use a valid [recovery code](#) if you have lost access to your multi-factor authentication device or to your security device.

## OTP or recovery code

[Authenticate](#)

```
jennyshen@Jennys-MacBook-Pro-2 ~ ➔ gem signin  
Enter your RubyGems.org credentials.  
Don't have an account yet? Create one at https://rubygems.org/sign\_up
```

Email: jenny.shen@shopify.com

Password:

API Key name [Jennys-MacBook-Pro-2.local-jennyshen-20231005143915]:

Please select scopes you want to enable for the API key (y/n)

index\_rubygems [yN]

push\_rubygem [yN] y

yank\_rubygem [yN]

add\_owner [yN]

remove\_owner [yN]

access\_webhooks [yN]

show\_dashboard [yN]

would you like to enable MFA for this key? (Strongly recommended) [y/N] y

You have enabled multi-factor authentication. Please visit [https://rubygems.org/webauthn\\_verification/k21W18MM3reCnzdW?port=56872](https://rubygems.org/webauthn_verification/k21W18MM3reCnzdW?port=56872) to authenticate via security device. If you can't verify using WebAuthn but have OTP enabled, you can re-run the gem signin command with the `--otp [your\_code]` option.

You are verified with a security device. You may close the browser window.

Signed in with API key: Jennys-MacBook-Pro-2.local-jennyshen-20231005143915.

**Enable MFA if you own a gem!**

# **Safe automated gem pushes**

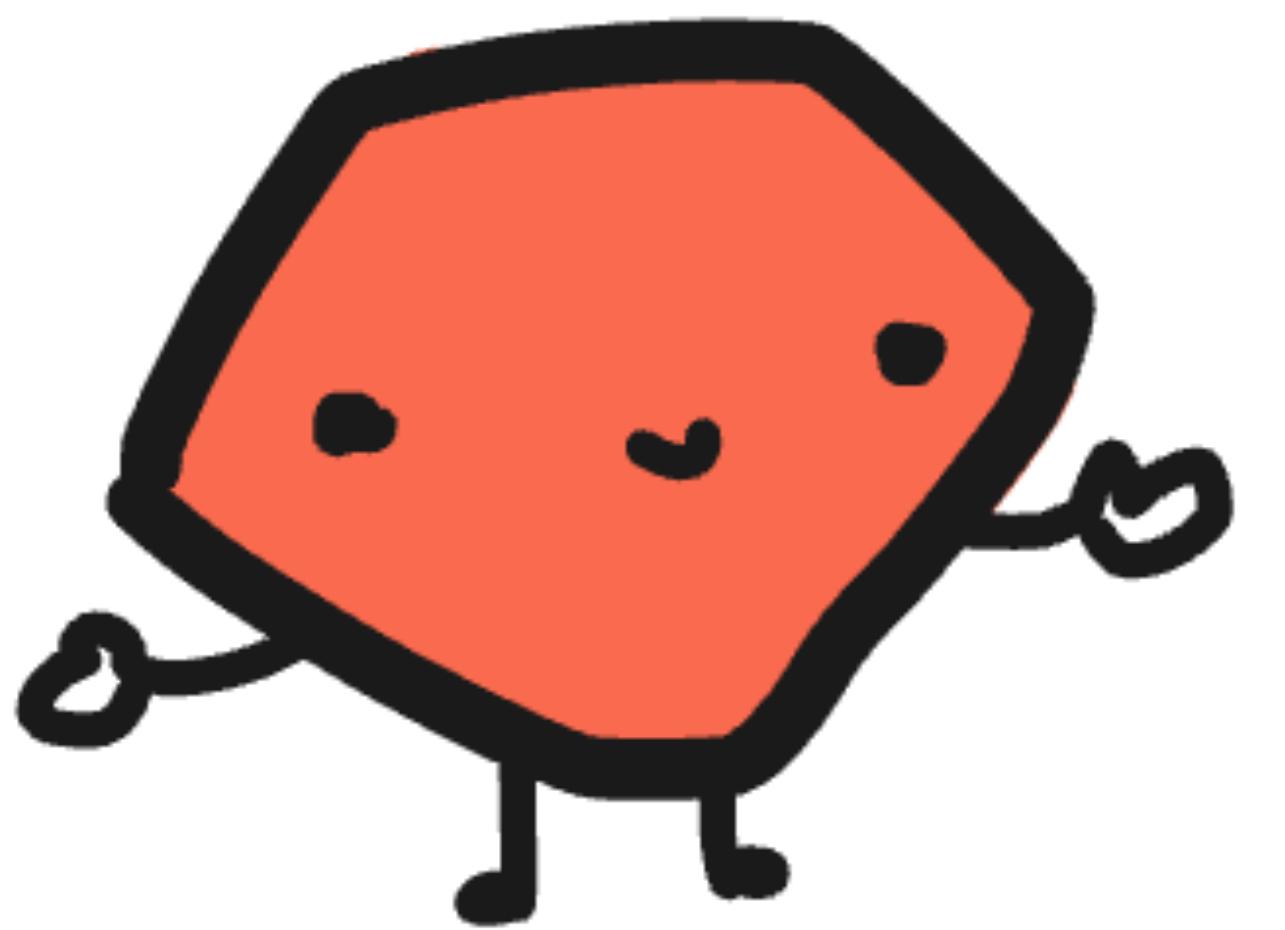




# Selecting gems for your application

**Less is more**

# Reputability



# Thanks!



Reach out @jenshenny