ruby/debug

The best investment for your productivity

2022-11-14

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- Work at Shopify’s Ruby Developer Experience Team

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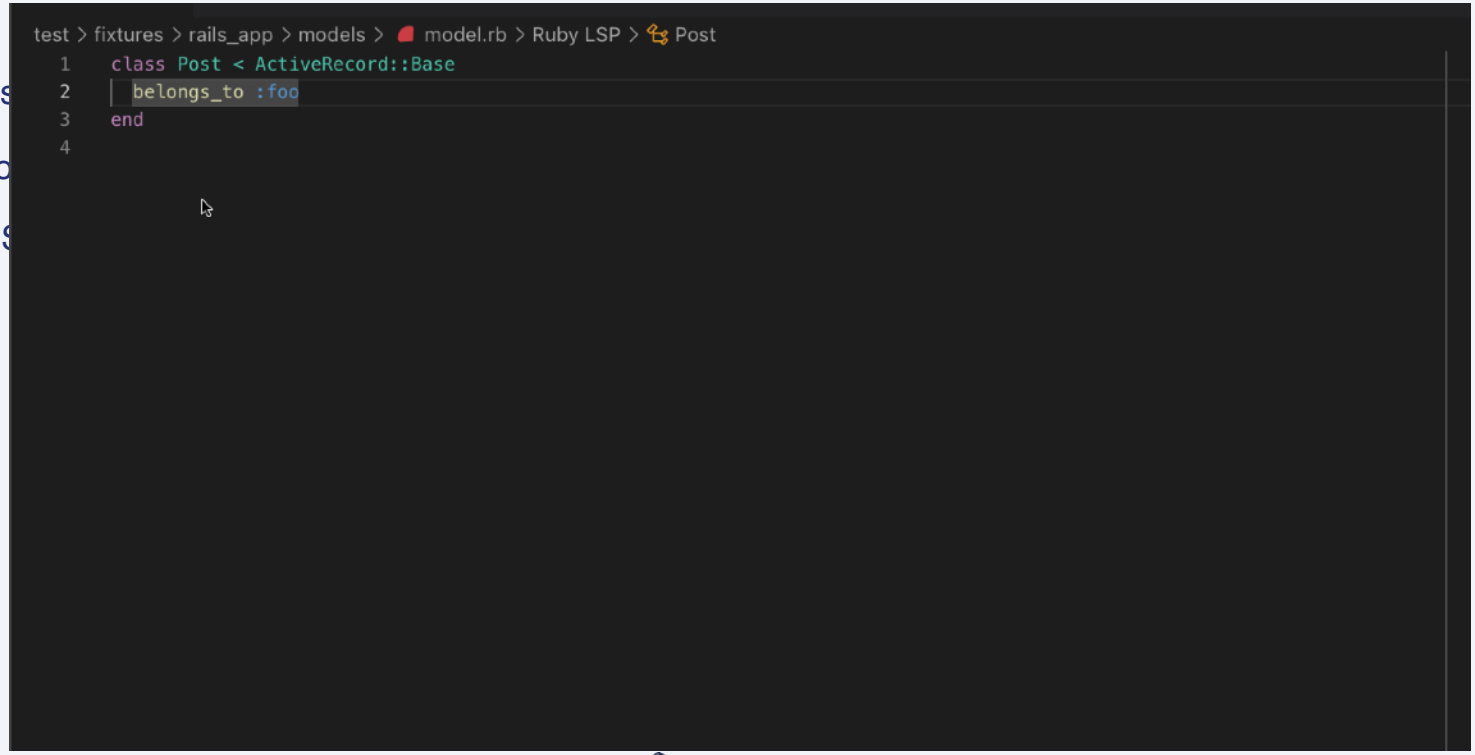
https://github.com/Shopify/ruby-lsp

- Taiwanes
- Active co
- Work at S



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- ❤️ Pubs 🍺

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- ❤️ Pubs 🍺
- Github: @st0012 Twitter: @_st0012

  Mastodon: @st0012@ruby.social

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10 June, 2019

10 Jun

- About us
- Want to speak?

Archives By Year

- 2022
- 2021
- 2020
- 2019
- 2018
- 2017
- 2016
- 2015
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- 2013
- 2012
- 2011
- 2010
- 2009
- 2008
- 2007
- 2006

Meeting Calendar

June 2019 Meeting

The June 2019 meeting of LRUG will be on *Monday the 10th of June*, from *6:00pm* to *8:00pm* (meeting start at *6:30pm*). The venue, Code Node between Moorgate and Liverpool St. stations, is provided by Skills Matter. Full venue and registration details are given below.

Hosted By

skills matter

Thanks!

Agenda

User-First Internationalisation

Tom Lord:

> Expanding a website internationally comes with many challenges; perhaps none more difficult than translating its content. In this talk, we will discuss pros and cons of various tools and techniques that my team have used to tackle this problem in ruby (along with some insight into how this differs for statically typed languages) - with a pragmatic goal of providing the best possible end-user experience at all times.

Simplify writing code with deliberate commits

Joel Chippindale:

> As developers, a key part of our work, is in breaking down large gnarly complex problems into smaller simpler ones. But this is hard and there are many distractions along the way. In this talk I will take you through 5 habits to adopt around commiting your code which will help you keep focussed on these smaller simpler problems and make it easier for you to write good code.

A practical guide for conducting efficient code reviews

Gonçalo Morais

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10 Jun

June 2019 Meeting

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Meeting Cale

ed By

Gonçalo Morais

Let’s Talk About Debugging

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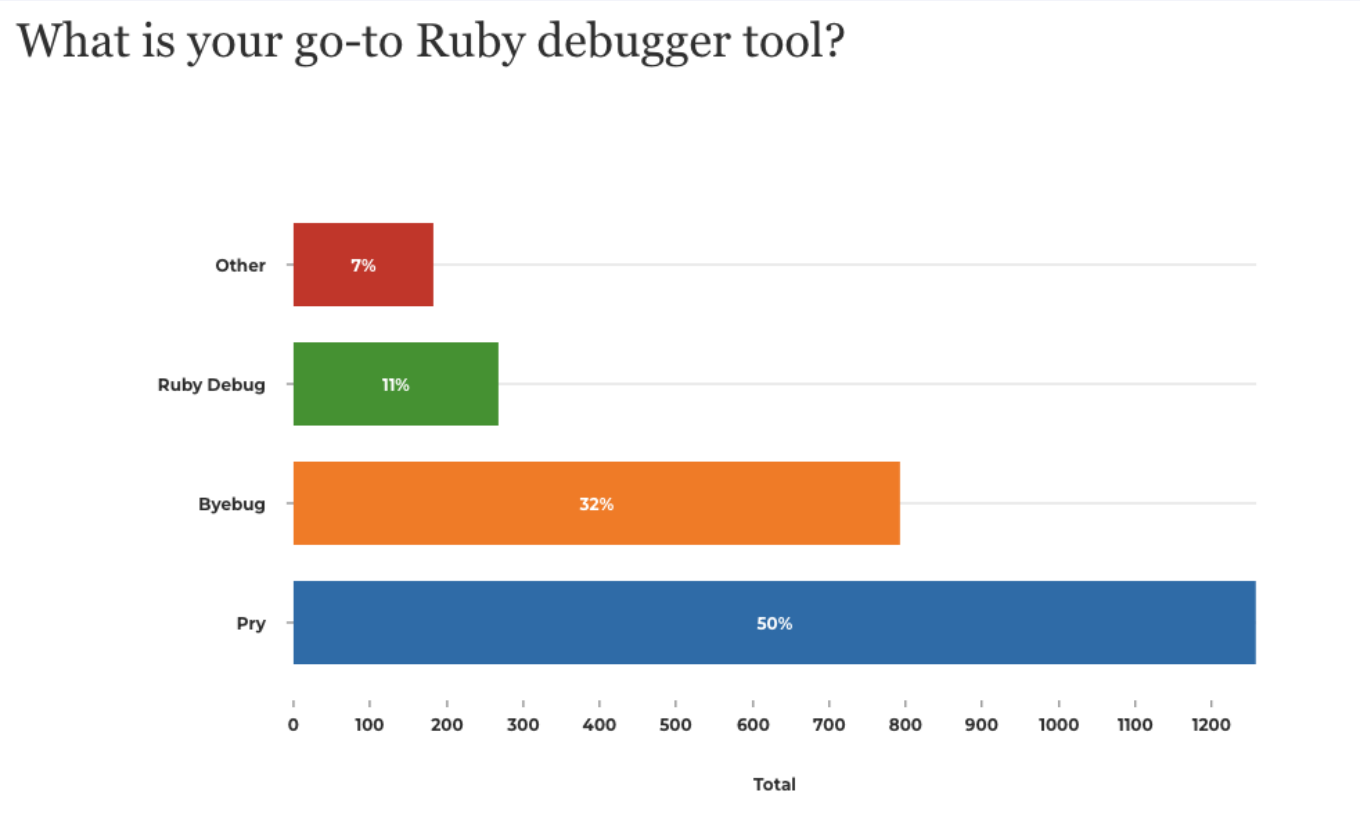
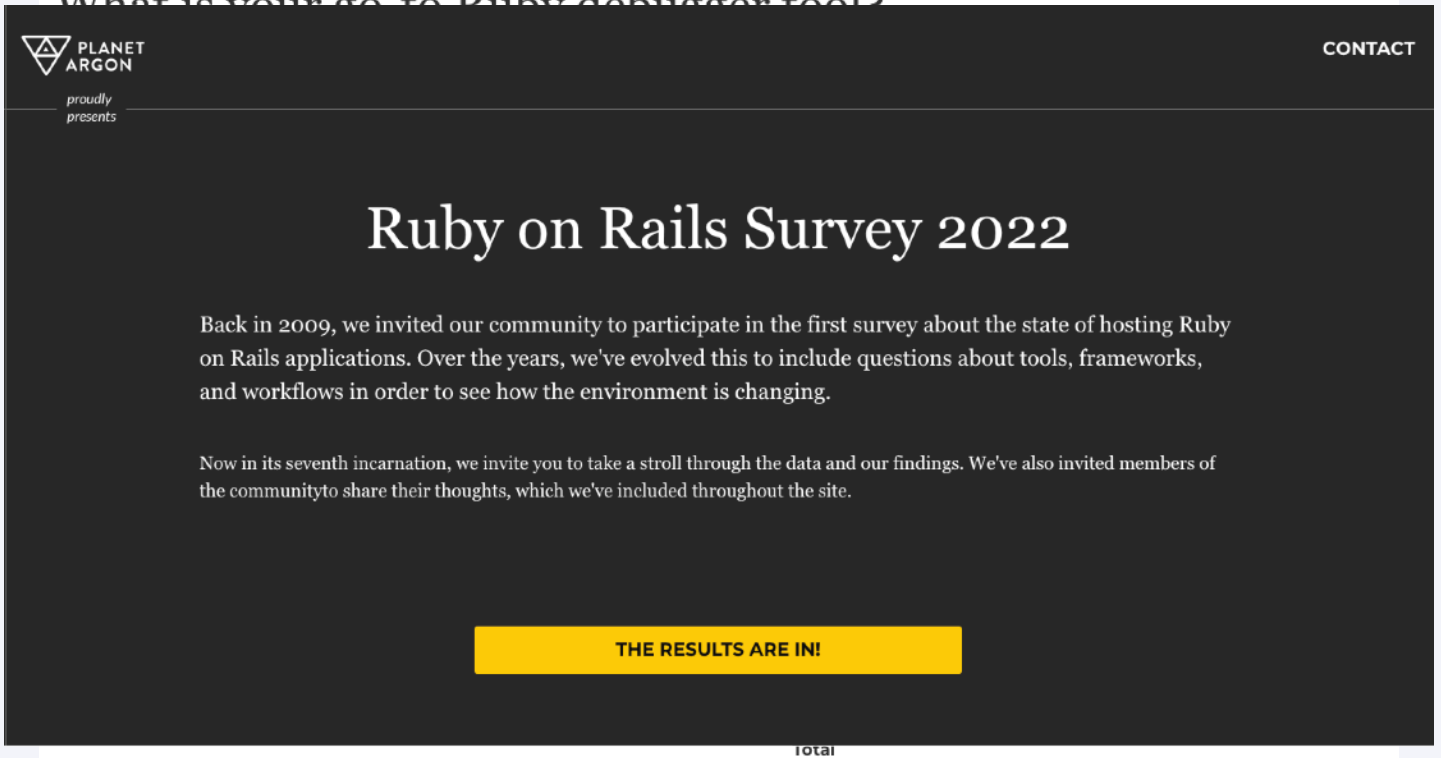
What’s Your Primary Debugging Tool?

What Do Ruby Developers Use For Debugging?



https://rails-hosting.com/2022



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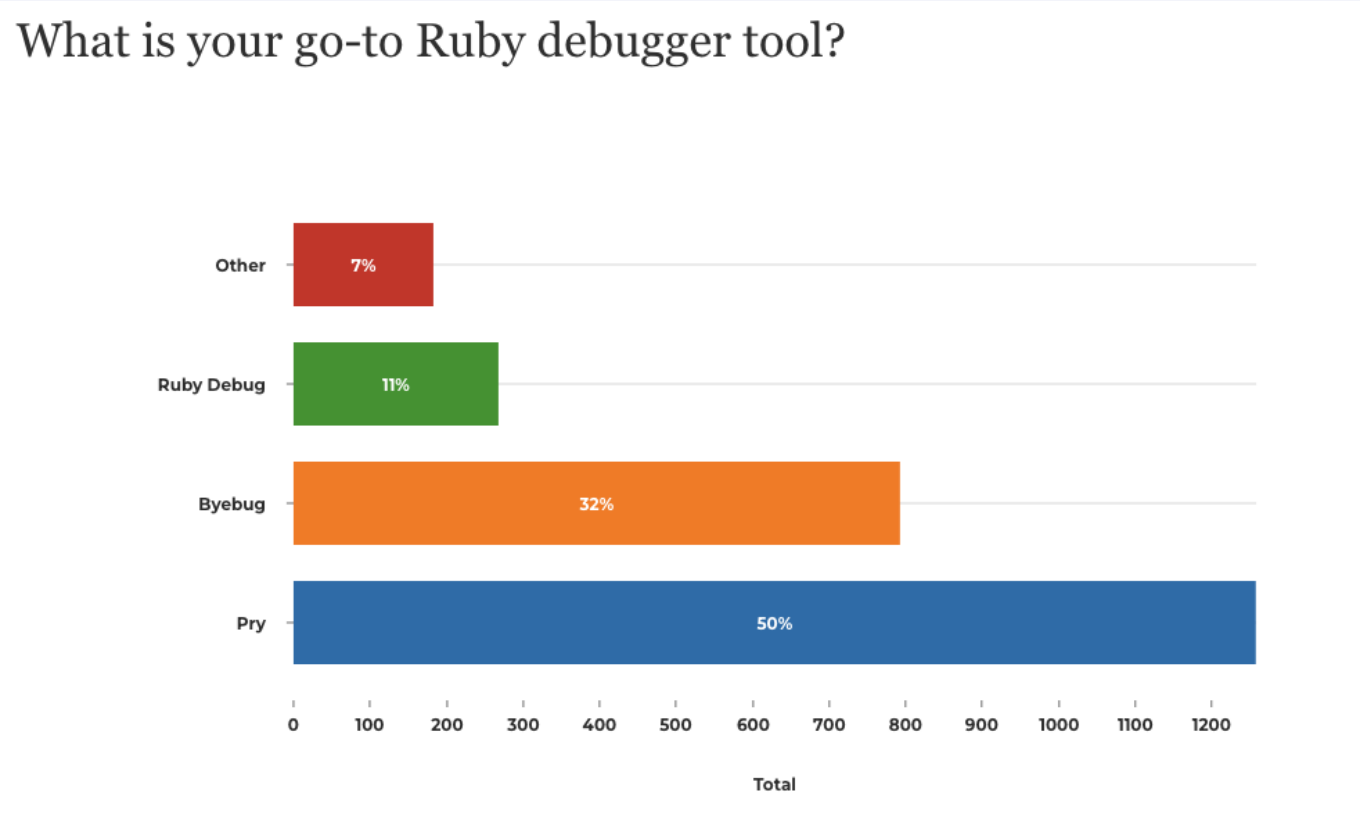
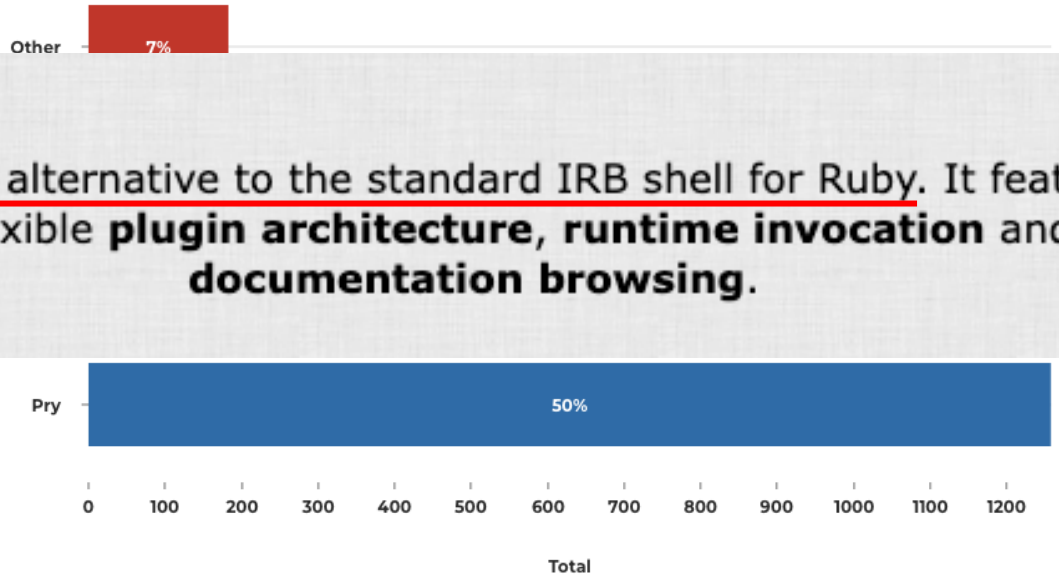


https://rails-hosting.com/2022

What is your go-to Ruby debugger tool?



Pry is a **powerful** alternative to the standard IRB shell for Ruby. It features **syntax highlighting**, a flexible **plugin architecture**, **runtime invocation** and **source and documentation browsing**.

https://rails-hosting.com/2022

Why Don’t People Use Debuggers?

Common Debugger Features

- Step-debugging
- Frame Navigation
- Breakpoint Commands

Common Debugger Features

- Step-debugging
- Frame Navigation
- Breakpoint Commands
- Scriptable Breakpoint (ruby/debug only)

Example

```ruby
require "debug"
load "lib.rb"

binding.b
result = foo(100)

if result == 202
  puts("foo works as expected")
else
  puts("foo returned incorrect value: #{result}")
end
```

main.rb

Example

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main.rb

Example

```ruby
require "debug" 👈 require the debugger
load "lib.rb"

binding.b
result = foo(100)

if result == 202
  puts("foo works as expected")
else
  puts("foo returned incorrect value: #{result}")
end
```

main.rb

Example

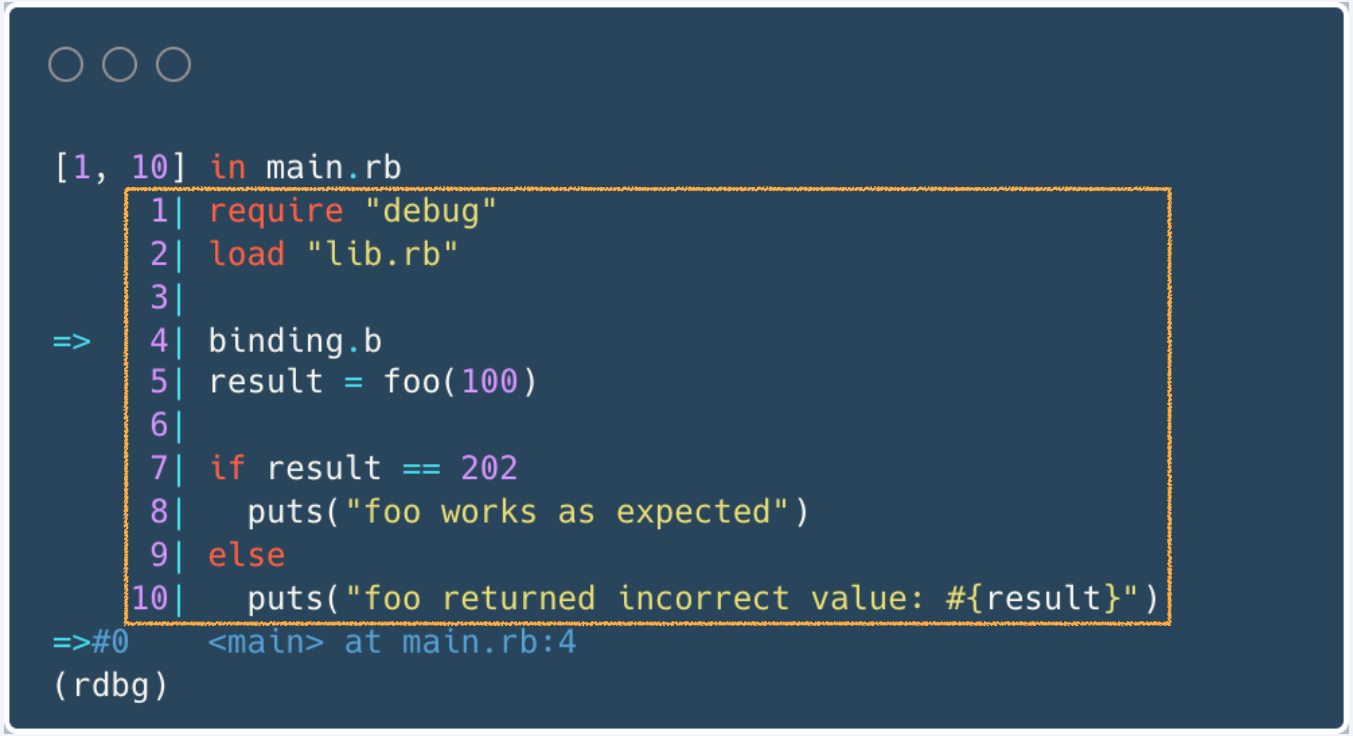
```ruby
require "debug" 👈 require the debugger
load "lib.rb"

binding.b 👈 set a breakpoint
result = foo(100)

if result == 202
  puts("foo works as expected")
else
  puts("foo returned incorrect value: #{result}")
end
```

main.rb

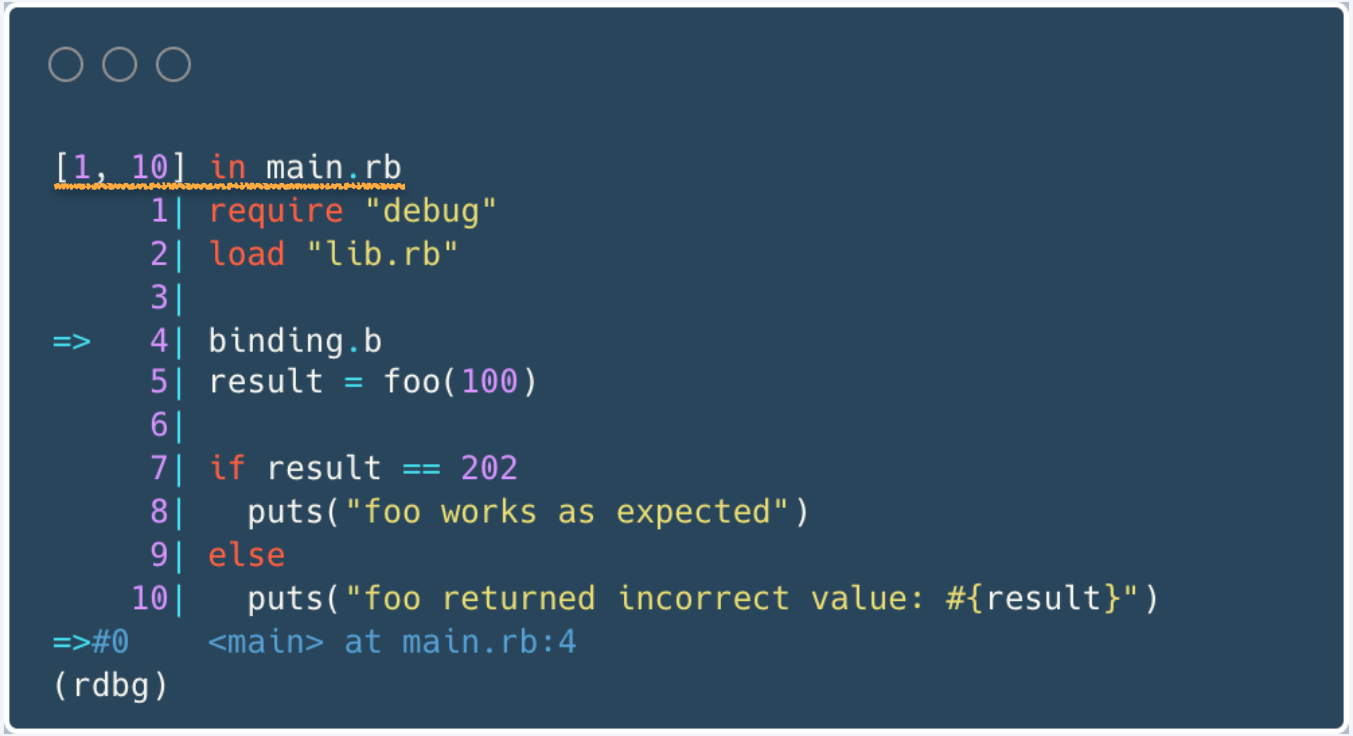
Entering a debugging session

```
[1, 10] in main.rb
     1| require "debug"
     2| load "lib.rb"
     3|
=>   4| binding.b
     5| result = foo(100)
     6|
     7| if result == 202
     8|   puts("foo works as expected")
     9| else
    10|   puts("foo returned incorrect value: #{result}")
=>#0    <main> at main.rb:4
(rdbg)
```

Entering a debugging session



Entering a debugging session



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```

Step Debugging

Micro-managing our program

Step Debugging

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     1| require "debug"
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<main>

Step Debugging

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step

<main>

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step

next

<main>

Step Debugging

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```

<main>

Step Debugging

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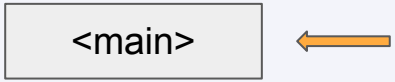
(rdbg) s    # step command
[1, 10] in main.rb
     1| require "debug"
     2| load "lib.rb"
     3|
     4| binding.b
=>   5| result = foo(100)
     6|
     7| if result == 202
     8|   puts("foo works as expected")
     9| else
    10|   puts("foo returned incorrect value: #{result}")
=>#0    <main> at main.rb:5
(rdbg)
```



Step Debugging

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(rdbg) s    # step command
[1, 10] in main.rb
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Step Debugging

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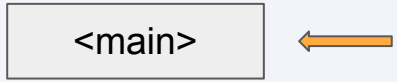
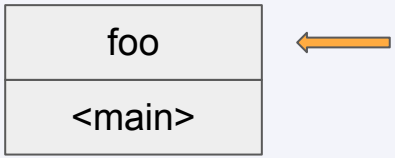


Step Debugging

```
(rdbg) s    # step command
[1, 10] in lib.rb
     1| def foo(n)
=>   2|   bar(n)
     3| end
     4|
     5| def bar(n)
     6|   baz(n)
     7| end
     8|
     9| def baz(n)
    10|   num = plus_1(n)
=>#0    Object#foo(n=100) at lib.rb:2
  #1    <main> at main.rb:5
(rdbg)
```



Step Debugging

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[1, 10] in lib.rb
     1| def foo(n)
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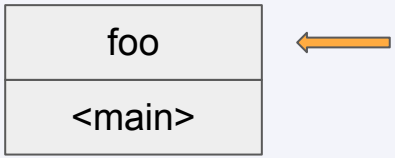

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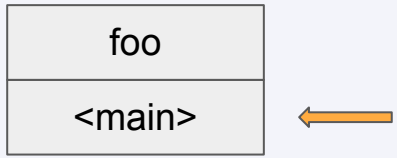
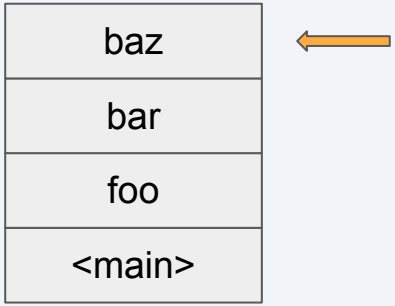


Step Debugging

```
(rdbg) s 2    # step command
[5, 14] in lib.rb
     5| def bar(n)
     6|   baz(n)
     7| end
     8|
     9| def baz(n)
=>  10|   num = plus_1(n)
    11|   double(num)
    12| end
    13|
    14| def plus_1(n)
=>#0    Object#baz(n=100) at lib.rb:10
  #1    Object#bar(n=100) at lib.rb:6
  # and 2 frames (use `bt' command for all frames)
(rdbg)
```



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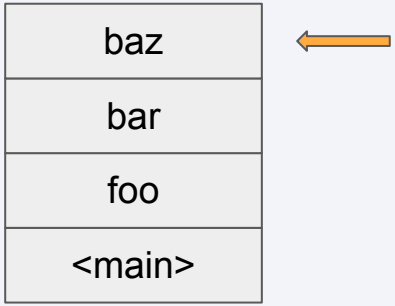

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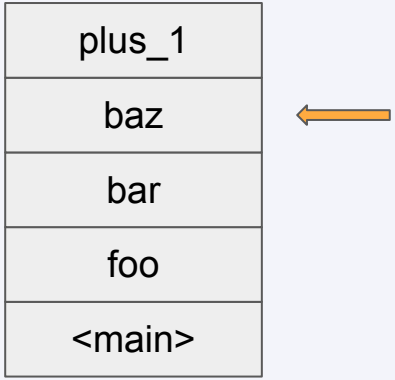

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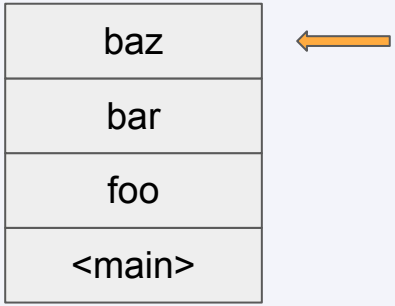

Step Debugging

```
(rdbg) n    # next command
[6, 15] in lib.rb
     6|   baz(n)
     7| end
     8|
     9| def baz(n)
    10|   num = plus_1(n)
=>  11|   double(num)
    12| end
    13|
    14| def plus_1(n)
    15|   n - 1
=>#0    Object#baz(n=100) at lib.rb:11
  #1    Object#bar(n=100) at lib.rb:6
  # and 2 frames (use `bt' command for all frames)
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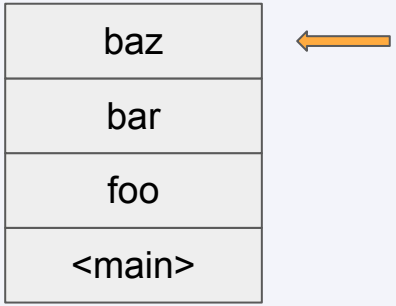
```



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(rdbg) i    # info command
%self = main
n = 100
num = 99
(rdbg)
```

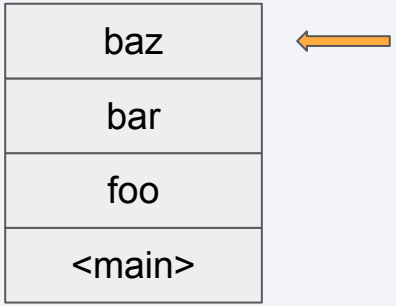

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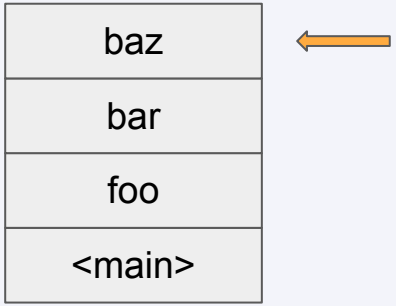

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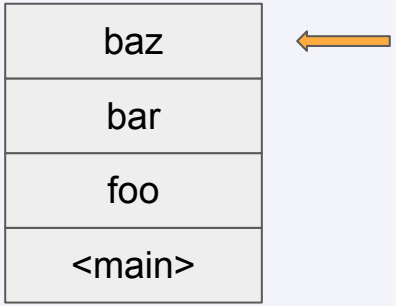

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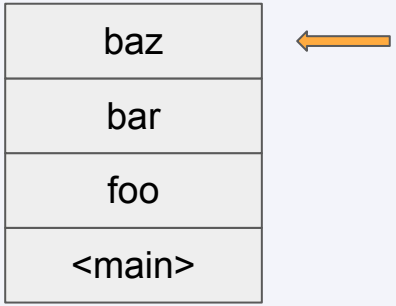
num = 99
(rdbg)
```



Step Debugging

Step Debugging

```
(rdbg) num
99
(ruby) methods.count
66
(rdbg) ls    # outline command
Object.methods: inspect  to_s
locals: n  num
(rdbg)
```

Step Debugging

```
(rdbg) num
99
(ruby) methods.count
66
(rdbg) ls    # outline command
Object.methods: inspect  to_s
locals: n  num
(rdbg)
```

Step Debugging

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locals: n  num
(rdbg)
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Step Debugging

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(rdbg) num
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Object.methods: inspect  to_s
locals: n  num
(rdbg)
```
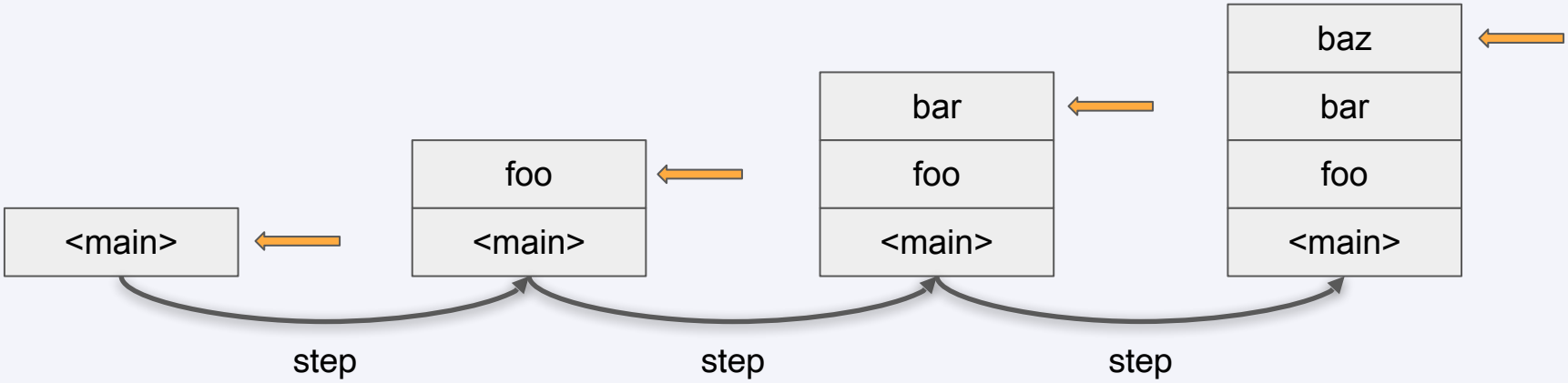

Step Debugging

Step Debugging



Frame Navigation

The best friend of step-debugging

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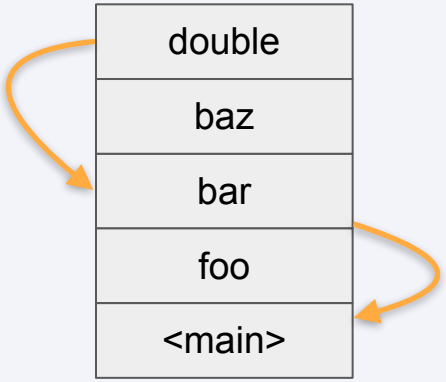
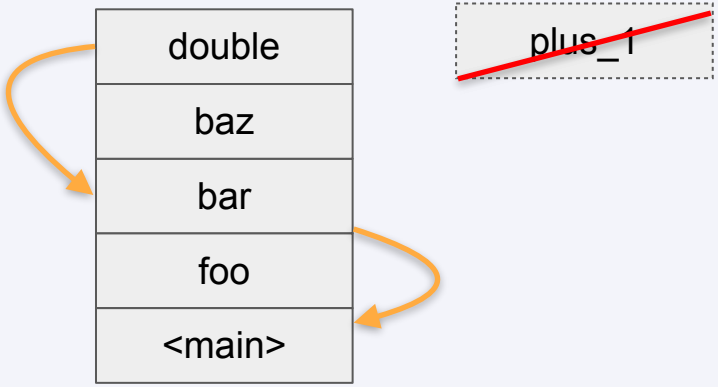
Frame Navigation

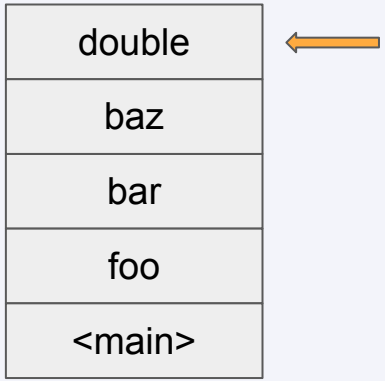
Frame Navigation



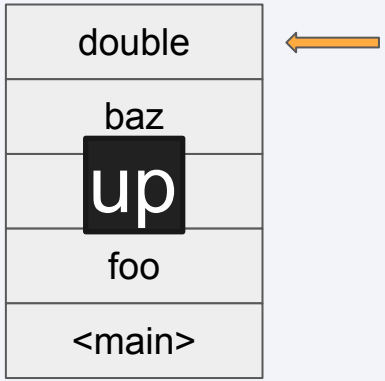
Frame Navigation



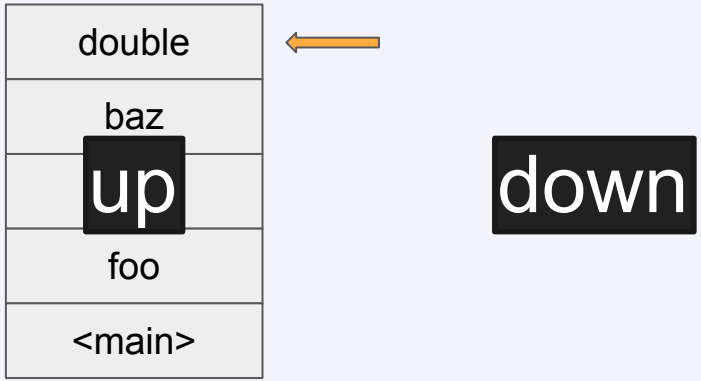
Frame Navigation



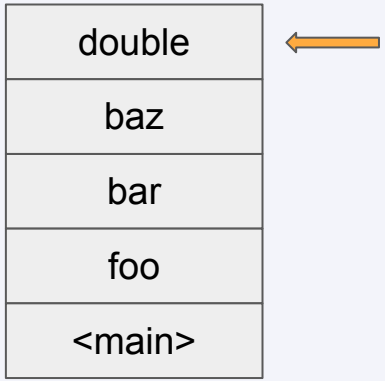
Frame Navigation



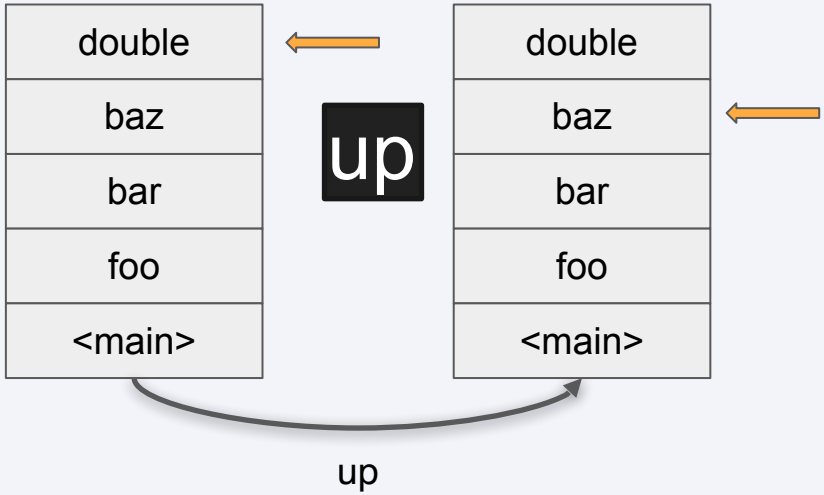
Frame Navigation



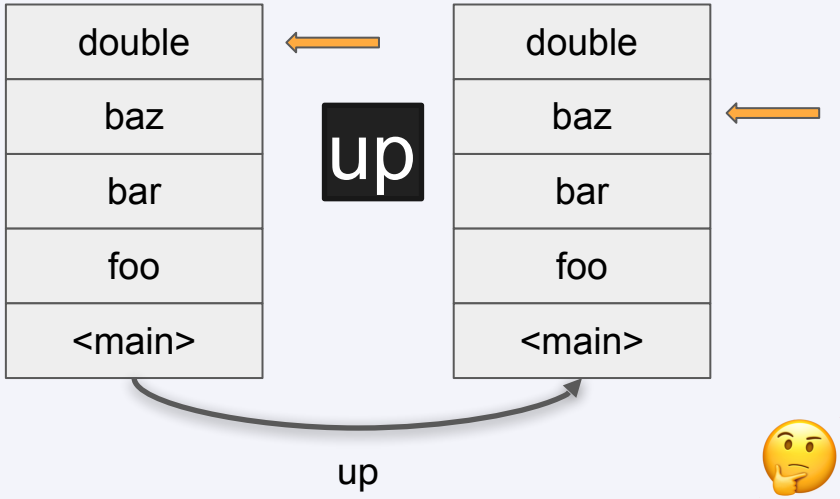
Frame Navigation



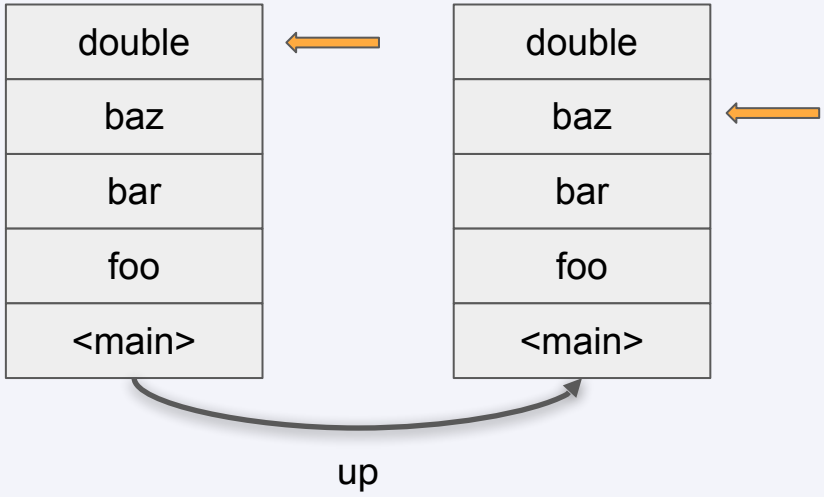
Frame Navigation



Frame Navigation



Frame Navigation



Frame Navigation

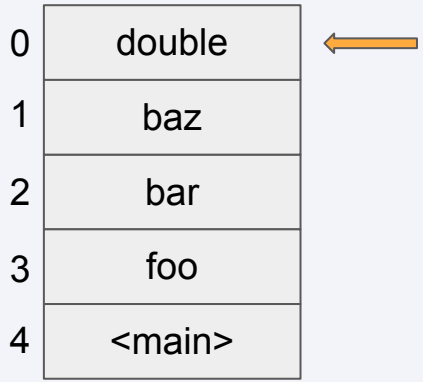
```
(rdbg) bt    # backtrace command
=>#0    Object#double(n=99) at lib.rb:19
  #1    Object#baz(n=100) at lib.rb:11
  #2    Object#bar(n=100) at lib.rb:6
  #3    Object#foo(n=100) at lib.rb:2
  #4    <main> at main.rb:5
(rdbg)
```

up

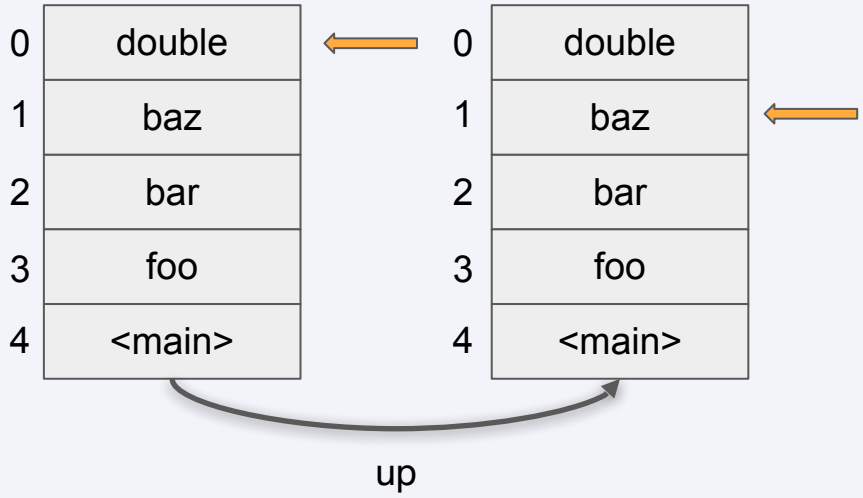
Frame Navigation

Frame Navigation

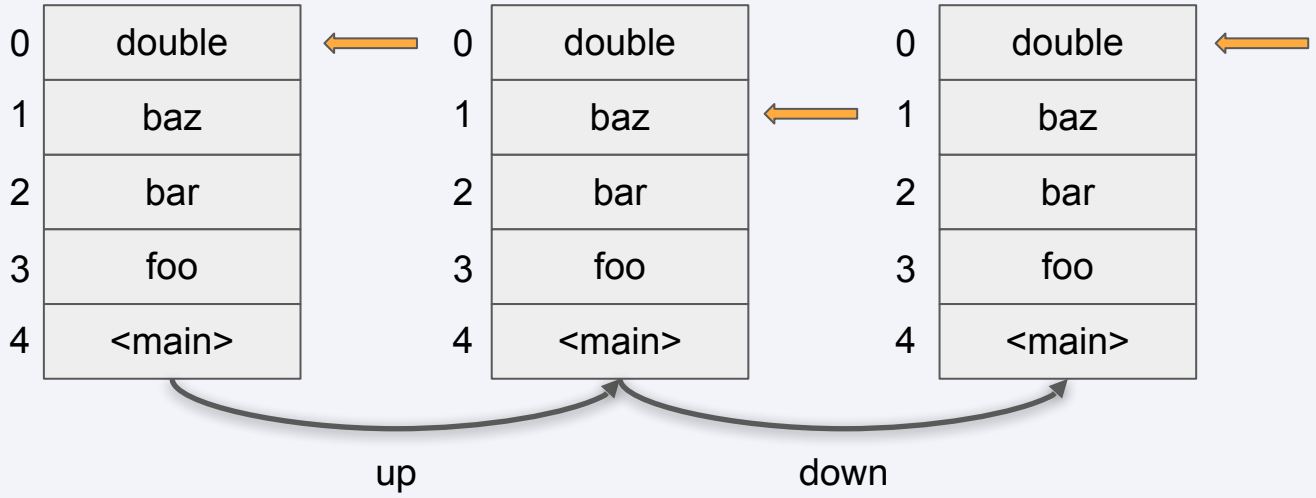
Frame Navigation



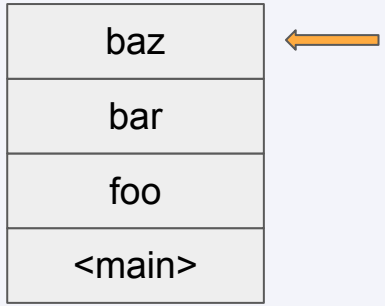
Frame Navigation



Frame Navigation

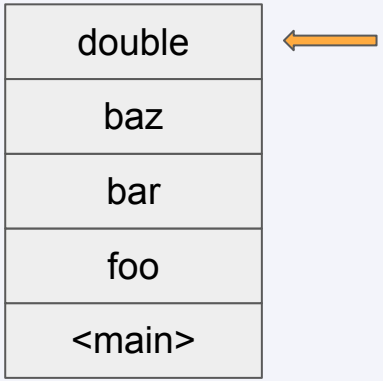


Frame Navigation



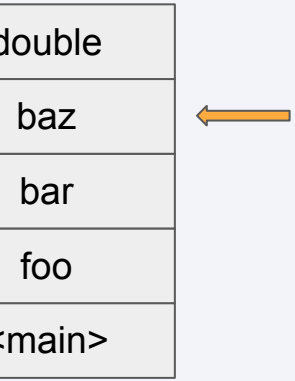
Frame Navigation

```
(rdbg) s    # step command
[14, 20] in lib.rb
    14| def plus_1(n)
    15|   n - 1
    16| end
    17|
    18| def double(n)
=>  19|   n * 2
    20| end
=>#0    Object#double(n=99) at lib.rb:19
  #1    Object#baz(n=100) at lib.rb:11
  # and 3 frames (use `bt' command for all frames)
(rdbg)
```



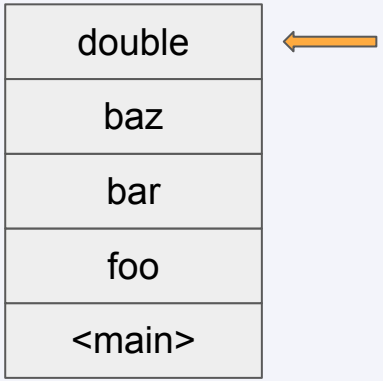
Frame Navigation

```
(rdbg) up    # command
=>  11|   double(num)
=>#1    Object#baz(n=100) at lib.rb:11
(rdbg) list    # command
     6|   baz(n)
     7| end
     8|
     9| def baz(n)
    10|   num = plus_1(n)
=>  11|   double(num)
    12| end
    13|
    14| def plus_1(n)
    15|   n - 1
(rdbg)
```



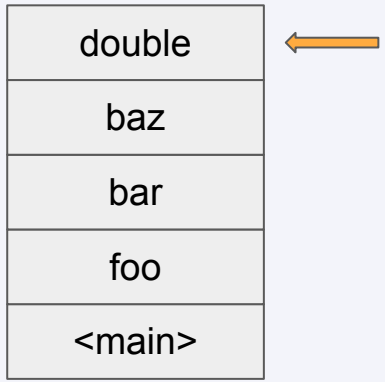
Frame Navigation

```
(rdbg) down    # command
=>  19|   n * 2
=>#0    Object#double(n=99) at lib.rb:19
(rdbg) list    # command
    14| def plus_1(n)
    15|   n - 1
    16| end
    17|
    18| def double(n)
=>  19|   n * 2
    20| end
(rdbg)
```



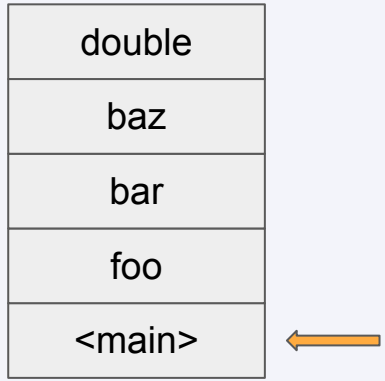
Frame Navigation

```
(rdbg) bt    # backtrace command
=>#0    Object#double(n=99) at lib.rb:19
  #1    Object#baz(n=100) at lib.rb:11
  #2    Object#bar(n=100) at lib.rb:6
  #3    Object#foo(n=100) at lib.rb:2
  #4    <main> at main.rb:5
(rdbg)
```



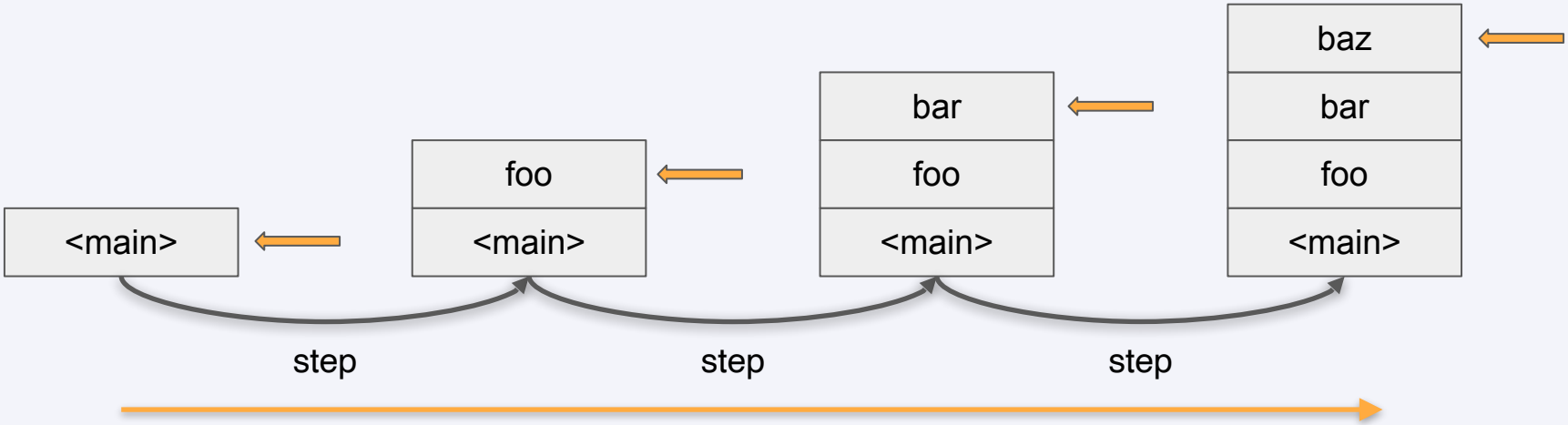
Frame Navigation

```
(rdbg) frame 4    # command
=>   5| result = foo(100)
=>#4    <main> at main.rb:5
(rdbg) list    # command
     1| require "debug"
     2| load "lib.rb"
     3|
     4| binding.b
=>   5| result = foo(100)
     6|
     7| if result == 202
     8|   puts("foo works as expected")
     9| else
    10|   puts("foo returned incorrect value: #{result}")
(rdbg)
```

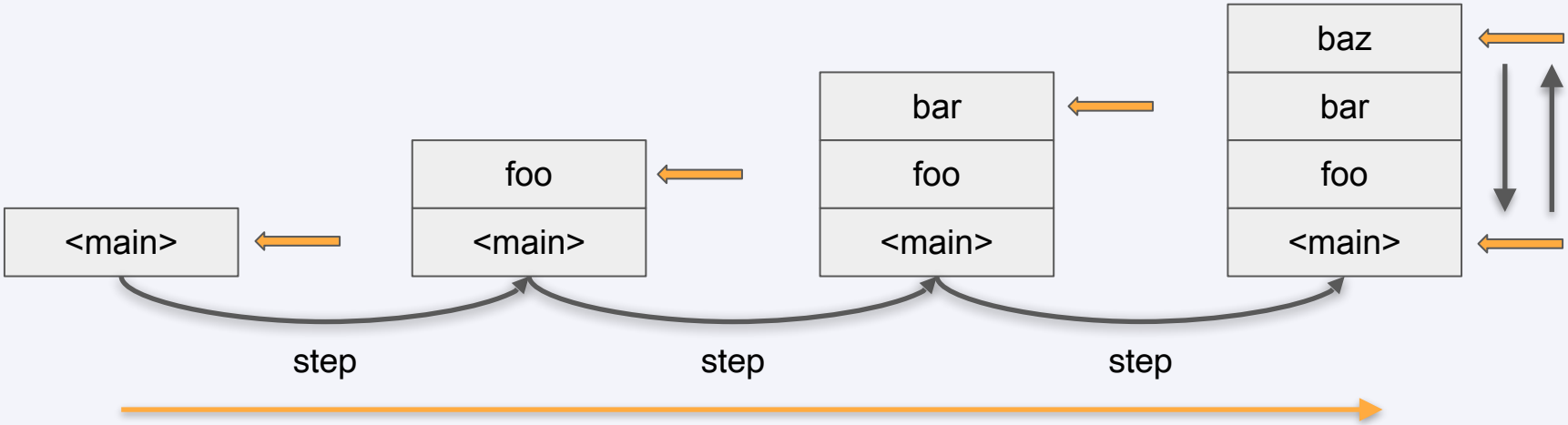


Step-debugging + Frame Navigation

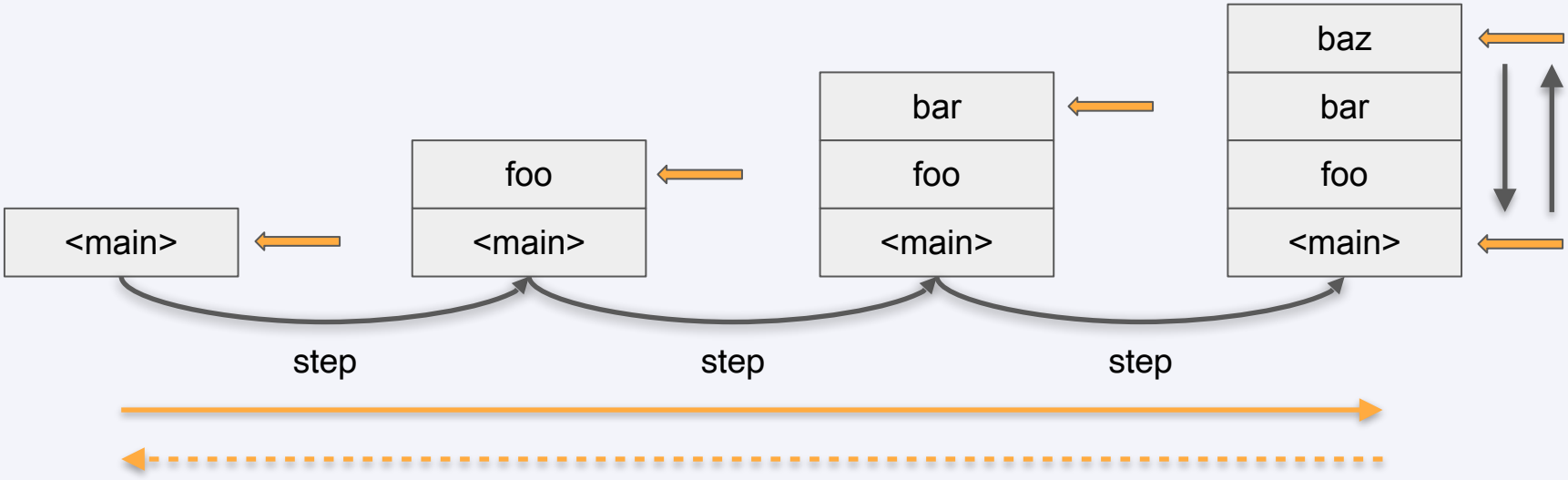
Step-debugging + Frame Navigation



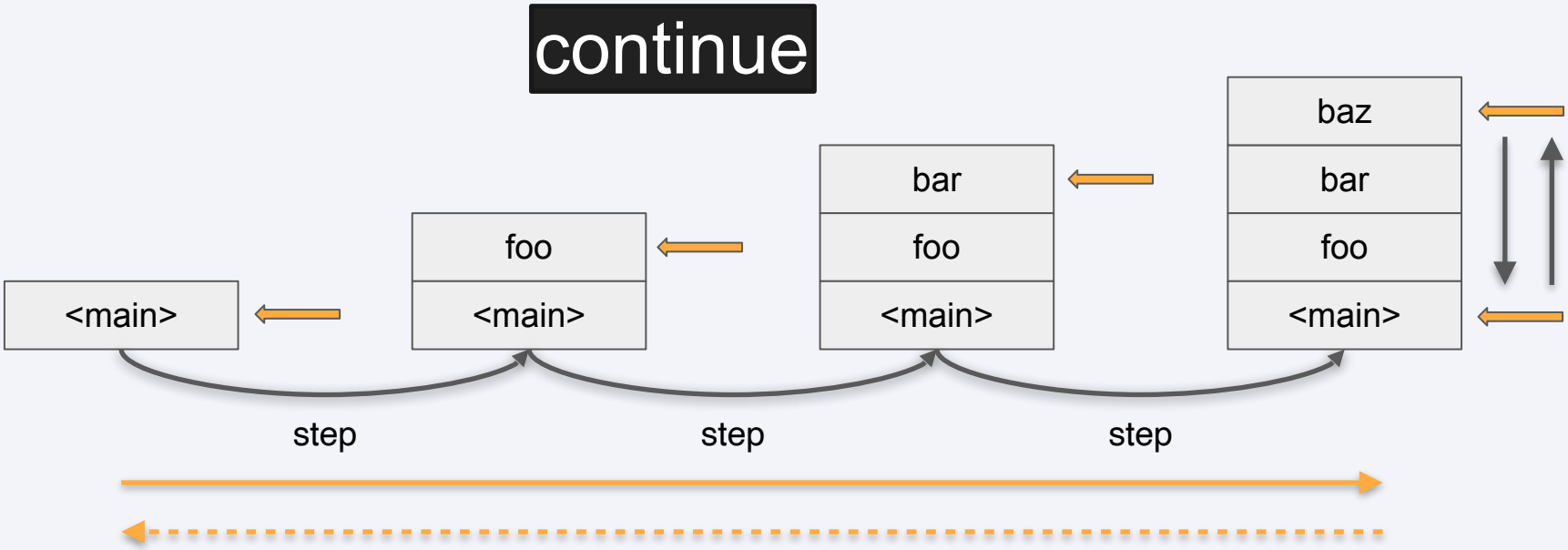
Step-debugging + Frame Navigation



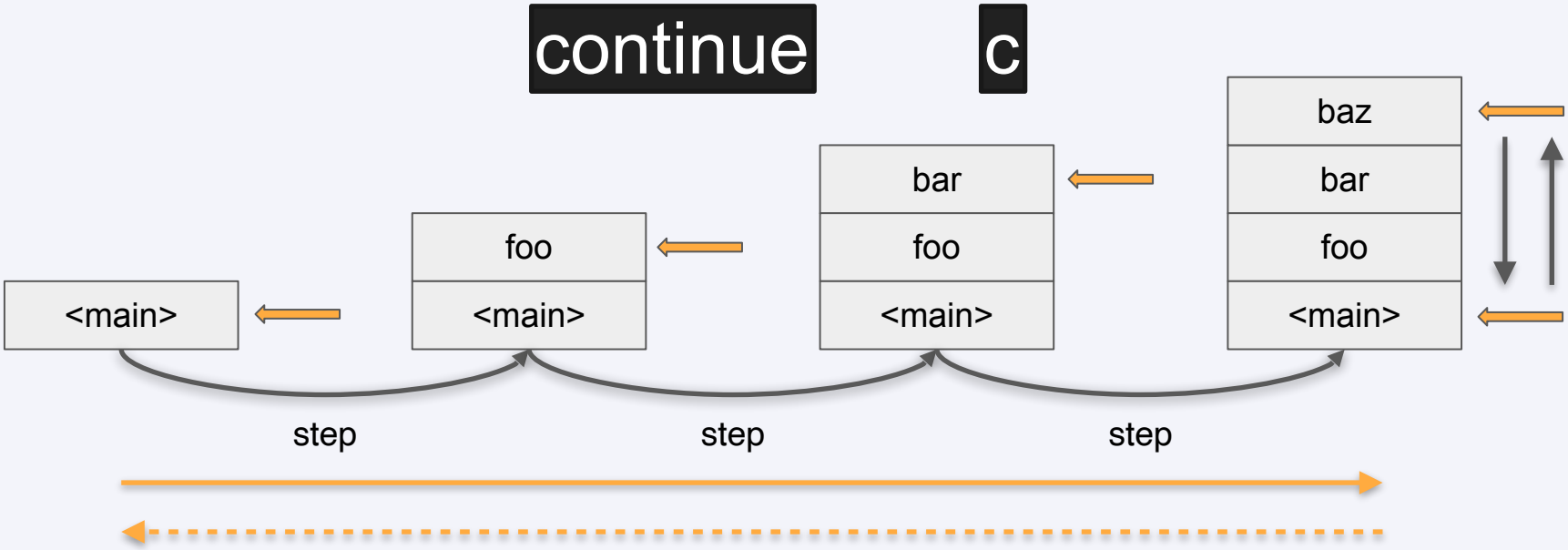
Step-debugging + Frame Navigation



Step-debugging + Frame Navigation



Step-debugging + Frame Navigation



Step-debugging + Frame Navigation - Commands

	Command
Step in	s[tep]
Step over	n[ext]
Finish	fin[ish]
Move to frame	f[rame] <id>
Move up a frame	up
Move down a frame	down
Continue	c[ontinue]

	Command
Show backtrace	bt, backtrace
Display variables	i[nfo]

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Breakpoint Commands

Teleporting in our program

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Breakpoint Commands - Example

```ruby
# app/controllers/posts_controller.rb
def show
  @post = find_post
  binding.b
  # other code
end
```

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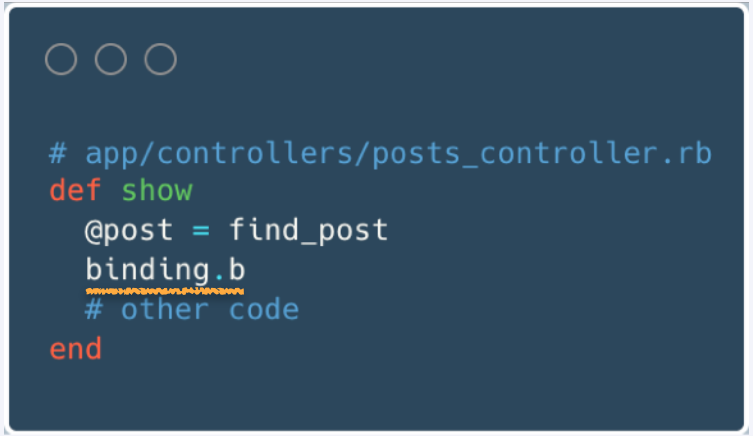
Breakpoint Commands - Example



```ruby
# app/controllers/posts_controller.rb
def show
  @post = find_post
  binding.b
  # other code
end
```

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Breakpoint Commands - Example

```ruby
# app/controllers/posts_controller.rb
def show
  @post = find_post
  binding.b
  # other code
end
```

```ruby
# app/models/post.rb
class Post
  def title
    # might have a bug here
  end
end
```

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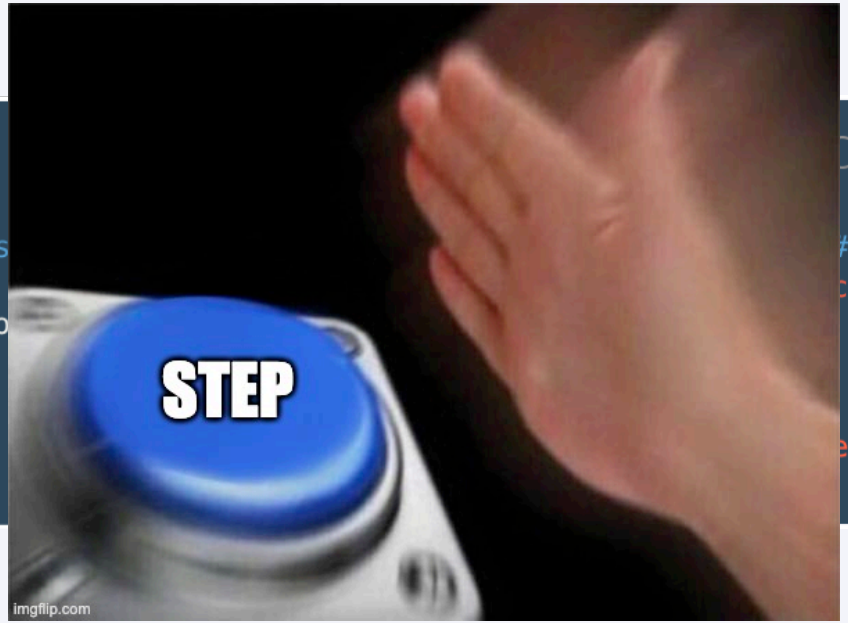
Breakpoint Commands - Don’t Do This: The Stepping Warrior Way

```
# app/controllers
def show
  @post = find_po
  binding.b
  # other code
end
```




```
# app/models/post.rb
class Post
  def title
    # might have a bug here
  end
end
```

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Breakp pping Warrior Way

Breakpoint Commands - Don’t Do This: The Pry Way

1. Open app/models/post.rb
2. Put another binding.b in Post#title
3. Restart the program
4. Stop at PostsController#show again
5. Type @post.title

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Breakpoint Commands - Teleport with breakpoints

```ruby
# app/controllers/posts_controller.rb
def show
  @post = find_post
  binding.b
  # other code
end
```

```ruby
# app/models/post.rb
class Post
  def title
    # might have a bug here
  end
end
```

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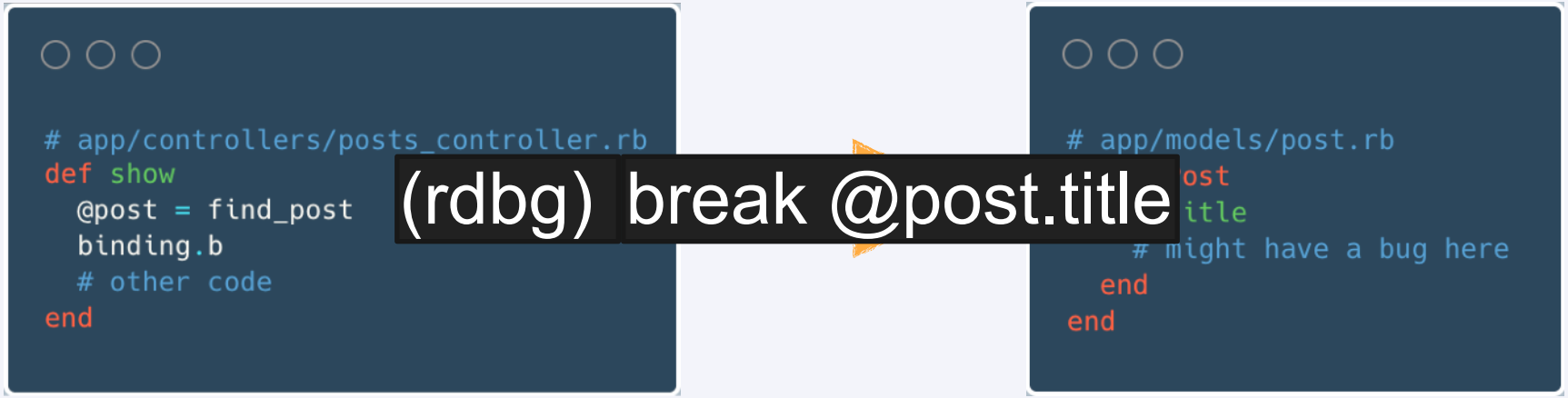
Breakpoint Commands - Teleport with breakpoints



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Breakpoint Commands

	Command
On line	b[reak] <line>
On file:line	b[reak] <file>:<line>
On a method	b[reak] <class>#<method>
On a class method	b[reak] <class>.<method>
On an instance's method	b[reak] <obj>.<method>
On exceptions	catch <exception_class>

	Command
List all breakpoints	b[reak]
Delete a breakpoint	del[ete] <id>
Delete all breakpoints	del[ete]

Breakpoint Commands

	Command
On line	b[reak] <line>
On file:line	b[reak] <file>:<line>
On a method	b[reak] <class>#<method>
On a class method	b[reak] <class>.<method>
On an instance's method	b[reak] <obj>.<method>
On exceptions	catch <exception_class>

	Command
List all breakpoints	b[reak]
Delete a breakpoint	del[ete] <id>
Delete all breakpoints	del[ete]

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Breakpoint Commands

	Command
On line	b[reak] <line>
On file:line	b[reak] <file>:<line>
On a method	b[reak] <class>#<method>
On a class method	b[reak] <class>.<method>
On an instance's method	b[reak] <obj>.<method>
On exceptions	catch <exception_class>

	Command
List all breakpoints	b[reak]
Delete a breakpoint	del[ete] <id>
Delete all breakpoints	del[ete]

Breakpoint Commands

	Command
On line	b[reak] <line>
On file:line	b[reak] <file>:<line>
On a method	b[reak] <class>#<method>
On a class method	b[reak] <class>.<method>
On an instance's method	b[reak] <obj>.<method>
On exceptions	catch <exception_class>

	Command
List all breakpoints	b[reak]
Delete a breakpoint	del[ete] <id>
Delete all breakpoints	del[ete]

Breakpoint Commands

	Command
On line	b[reak] <line>
On file:line	b[reak] <file>:<line>
On a method	b[reak] <class>#<method>
On a class method	b[reak] <class>.<method>
On an instance's method	b[reak] <obj>.<method>
On exceptions	catch <exception_class>

	Command
List all breakpoints	b[reak]
Delete a breakpoint	del[ete] <id>
Delete all breakpoints	del[ete]

Breakpoint Commands

	Command
On line	b[reak] <line>
On file:line	b[reak] <file>:<line>
On a method	b[reak] <class>#<method>
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	Command
List all breakpoints	b[reak]
Delete a breakpoint	del[ete] <id>
Delete all breakpoints	del[ete]

Breakpoint Commands

	Command
On line	b[reak] <line>
On file:line	b[reak] <file>:<line>
On a method	b[reak] <class>#<method>
On a class method	b[reak] <class>.<method>
On an instance's method	b[reak] <obj>.<method>
On exceptions	catch <exception_class>

	Command
List all breakpoints	b[reak]
Delete a breakpoint	del[ete] <id>
Delete all breakpoints	del[ete]

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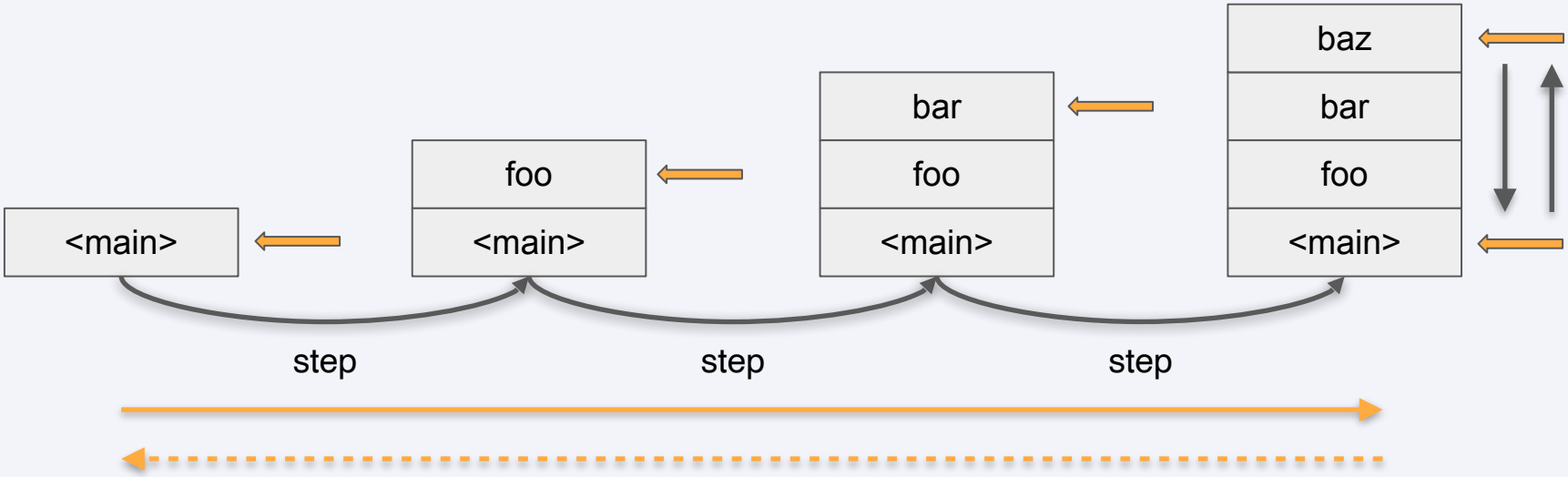
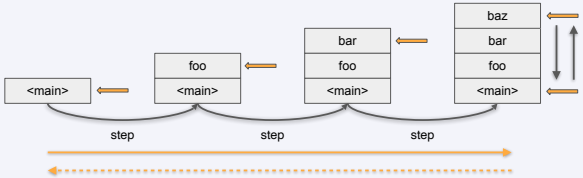
Step-debugging + Frame Navigation + Breakpoint Commands

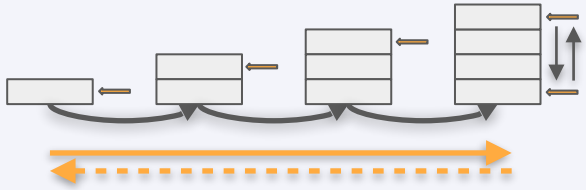


Step-debugging + Frame Navigation + Breakpoint Commands



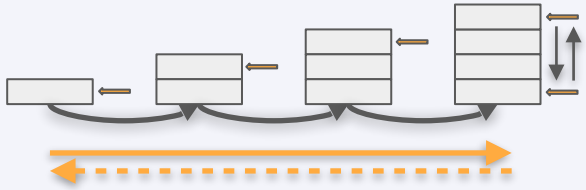
Step-debugging + Frame Navigation + Breakpoint Commands

Investigation -1 (binding.b)



Step-debugging + Frame Navigation + Breakpoint Commands

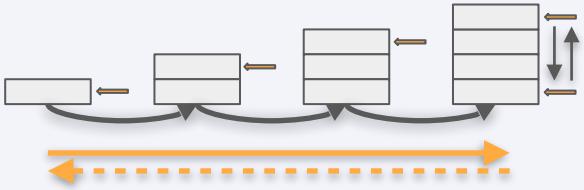
Investigation -1 (binding.b)



Set destination (break Foo#bar)

Step-debugging + Frame Navigation + Breakpoint Commands

Investigation -1 (binding.b)



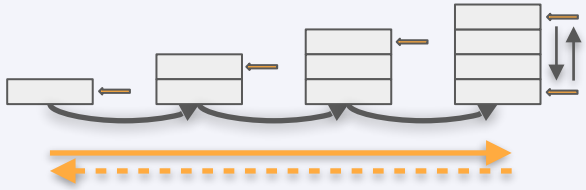
Set destination (break Foo#bar)

continue

Triggers breakpoint

Step-debugging + Frame Navigation + Breakpoint Commands

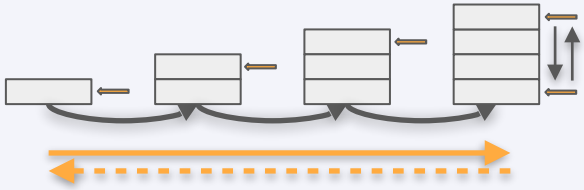
Investigation -1 (binding.b)



Set destination (break Foo#bar)

continue

Investigation - 2 (Foo#bar)



Mobility Inside A Running Program

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Mobility Inside A Running Program

- Reduced program execution
- Reduced code editing
- Reduced distraction

Scriptable Breakpoint

Debug like we program

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Scriptable Breakpoints

```
binding.b
```

Scriptable Breakpoints

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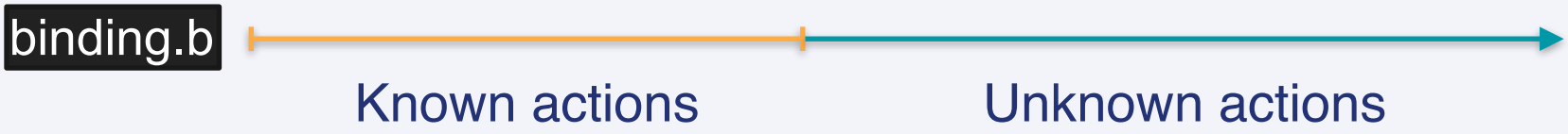
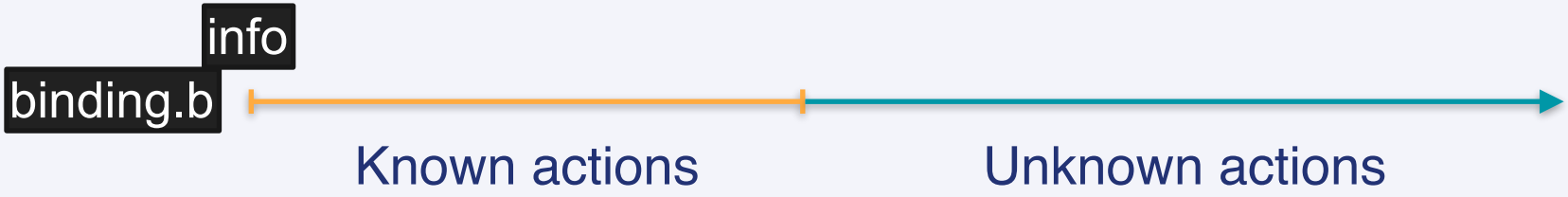
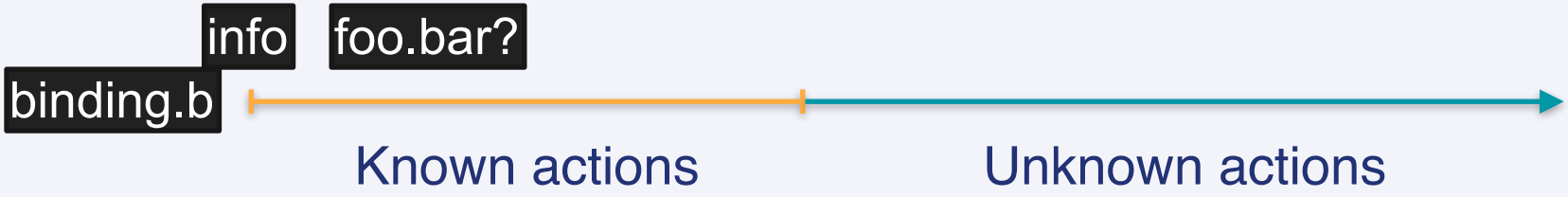
Scriptable Breakpoints



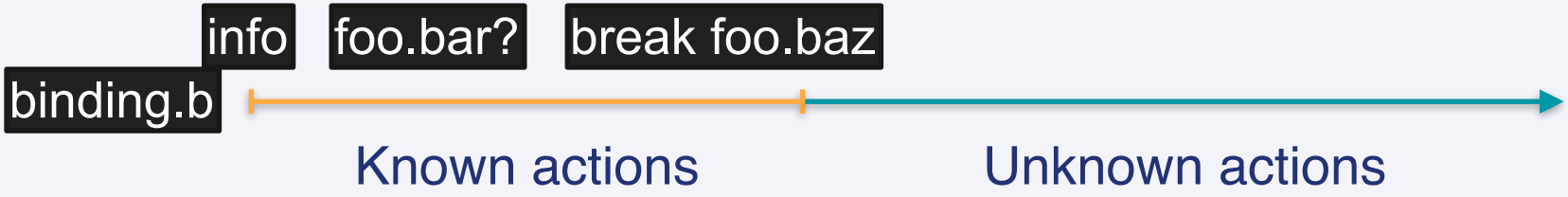
Scriptable Breakpoints



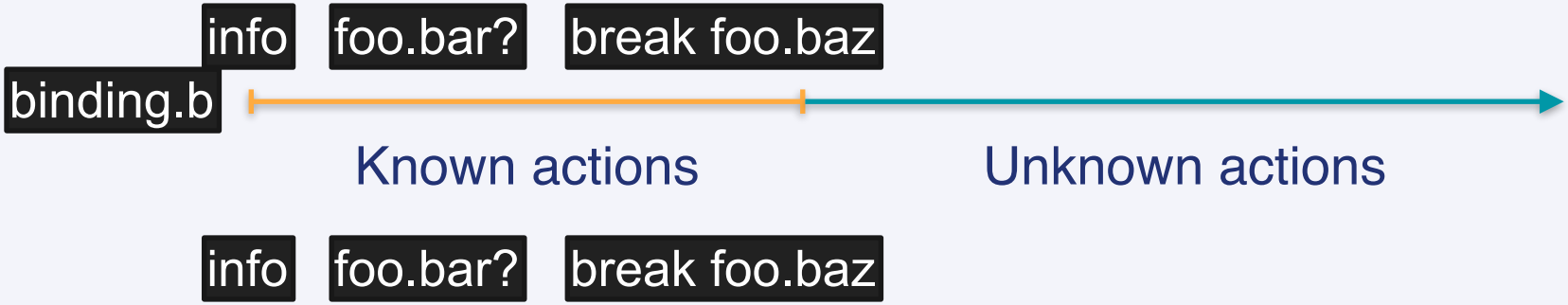
Scriptable Breakpoints



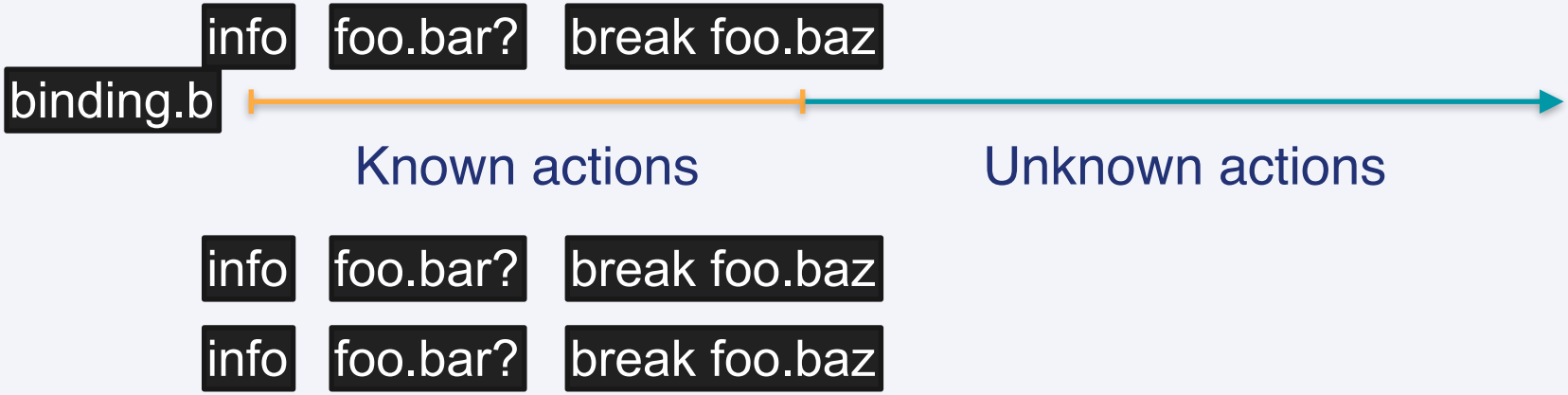
Scriptable Breakpoints



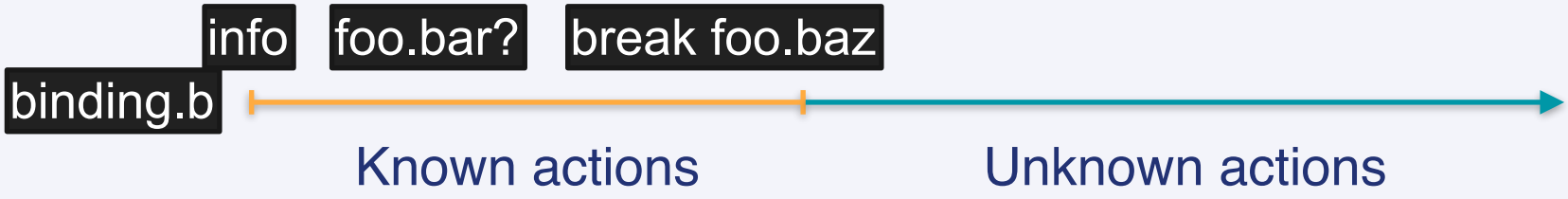
Scriptable Breakpoints



Scriptable Breakpoints

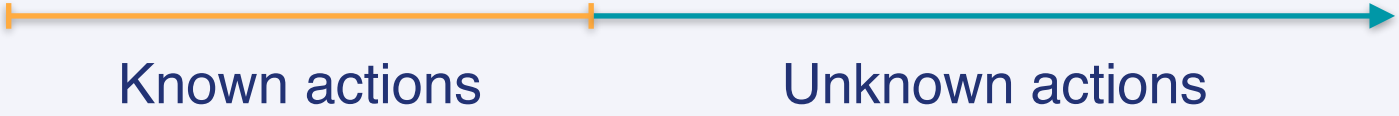


Scriptable Breakpoints



Scriptable Breakpoints

```
binding.b(pre: "info ;; foo.bar? ;; break foo.baz")
```



Scriptable Breakpoints - The "pre" and "do" keywords

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- binding.b(pre: "cmd")
    1. Execute <cmd>
    2. Stops at the breakpoint

Scriptable Breakpoints - The "pre" and "do" keywords

- binding.b(pre: "cmd")
    1. Execute <cmd>
    2. Stops at the breakpoint
- binding.b(do: "cmd")
    1. Execute <cmd>
    2. Continue the program

Scriptable Breakpoints - Multiple Commands

- Separate commands or expressions with ";;"
- binding.b(do: "cmd1 ;; cmd2")
- binding.b(pre: "var = foo ;; bar(var)")

Scriptable Breakpoints - Breakpoint Commands Support

- (rdbg) break Foo#bar do: info
- (rdbg) catch StandardError pre: bt

Scriptable Breakpoints - Example

```ruby
# create an old encryptor
old_secret = SecureRandom.base64(24)
old_encryptor = ActiveSupport::MessageEncryptor.new old_secret

# create a new encryptor
new_secret = SecureRandom.base64(24)
new_encryptor = ActiveSupport::MessageEncryptor.new new_secret

# let the new encryptor rotate to old_secret when needed
new_encryptor.rotate old_secret

# the new encryptor should decrypt the message after rotating to the old secret
msg = new_encryptor.decrypt_and_verify(old_encryptor.encrypt_and_sign(nil))
puts("Message is #{msg.inspect}") #=> Message is nil
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```

```
activesupport-7.0.3.1/lib/active_support/message_verifier.rb:178:in `verify':
ActiveSupport::MessageVerifier::InvalidSignature (ActiveSupport::MessageVerifier::InvalidSignature)
```

```ruby
new_encryptor.rotate old_secret

# the new encryptor should decrypt the message after rotating to the old secret
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binding.b(do: "i ;; break new_encryptor.decrypt_and_verify pre: i")

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```

break new_encryptor.decrypt_and_verify

info

Scriptable Breakpoints - Example

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```
[12, 21] in test.rb
    12| new_encryptor = ActiveSupport::MessageEncryptor.new new_secret
    13|
    14| # let the new encryptor rotate to old_secret when needed
    15| new_encryptor.rotate old_secret
    16|
=>  17| binding.b(do: "i ;; break new_encryptor.decrypt_and_verify pre: i")
    18|
    19| # the new encryptor should descrypt the message after rotating to the old secret
    20| msg = new_encryptor.decrypt_and_verify(old_encryptor.encrypt_and_sign(nil))
    21| puts("Message is #{msg.inspect}") #=> Message is nil
=>#0    <main> at test.rb:17
(rdbg:binding.break) i
%self = main
old_secret = "2LRxl68OgB/023KjhIkFzHck1pSJ0HvL"
old_encryptor = #<ActiveSupport::MessageEncryptor:0x00000001046be388 @secret="2LRxl68OgB/023KjhIkFzHck1pSJ0HvL", @sign_secret=ni...>
new_secret = "BwIjFx+YSGRbkp9yU219CkLiwVeQJj13"
new_encryptor = #<ActiveSupport::MessageEncryptor:0x00000001046bd348 @secret="BwIjFx+YSGRbkp9yU219CkLiwVeQJj13", @sign_secret=ni...>
msg = nil
(rdbg:binding.break) break new_encryptor.decrypt_and_verify pre: i
#0 BP - Method new_encryptor.decrypt_and_verify at /Users/hung-wulo/.gem/ruby/3.1.2/gems/activesupport-7.0.3.1/lib/active_support/
messages/rotator.rb:21 pre: i
[17, 26] in ~/.gem/ruby/3.1.2/gems/activesupport-7.0.3.1/lib/active_support/messages/rotator.rb
    17|
    18|       module Encryptor
    19|         include Rotator
    20|
    21|         def decrypt_and_verify(*args, on_rotation: @on_rotation, **options)
=>  22|           super
    23|         rescue MessageEncryptor::InvalidMessage, MessageVerifier::InvalidSignature
    24|           run_rotations(on_rotation) { |encryptor| encryptor.decrypt_and_verify(*args, **options) } || raise
    25|         end
    26|
=>#0    ActiveSupport::Messages::Rotator::Encryptor#decrypt_and_verify(args=["TkxwcjlMWpFalU0SlNYQUlZWk03UT09LS0zQ29..., on_rotatio
n=nil, options={}) at ~/.gem/ruby/3.1.2/gems/activesupport-7.0.3.1/lib/active_support/messages/rotator.rb:22
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new_secret = "BwIjFx+YSGRbkp9yU219CkLiwVeQJj13"
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on_rotation = nil
options = {}
@aead_mode = false
@cipher = "aes-256-cbc"
@digest = "SHA1"
@on_rotation = nil
@options = {}
@rotations = [#<ActiveSupport::MessageEncryptor:0x00000001046bcc18 @secret="2LRxl68OgB/023KjhIkFzHck1pSJ0HvL", @sign_secret=nil, ...
@secret = "BwIjFx+YSGRbkp9yU219CkLiwVeQJj13"
@serializer = Marshal
@sign_secret = nil
@verifier = #<ActiveSupport::MessageVerifier:0x00000001046bd140 @secret="BwIjFx+YSGRbkp9yU219CkLiwVeQJj13", @digest="SHA1", @ser...>
(rdbg)
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    25|         end
    26|
=>#0    ActiveSupport::Messages::Rotator::Encryptor#decrypt_and_verify(args=["TkxwcjJ2MWpFalU0SlNYQUlZWk03UT09LS0zQ29..., on_rotatio
n=nil, options={}) at ~/.gem/ruby/3.1.2/gems/activesupport-7.0.3.1/lib/active_support/messages/rotator.rb:22
  #1    <main> at test.rb:20

Stop by #0  BP - Method  new_encryptor.decrypt_and_verify at /Users/hung-wulo/.gem/ruby/3.1.2/gems/activesupport-7.0.3.1/lib/active_
support/messages/rotator.rb:21 pre: i
(rdbg:break) i
%self = #<ActiveSupport::MessageEncryptor:0x00000001046bd348 @secret="BwIjFx+YSGRbkp9yU219CkLiwVeQJj13", @sign_secret=nil, @ciph...>
args = ["TkxwcjJ2MWpFalU0SlNYQUlZWk03UT09LS0zQ29xRWJEZGhySFp6QXVyUGxyYVh3PT0=--8fe73db0fa8ed2ac7d3b53e1980b035290a90ba5"]
on_rotation = nil
options = {}
@aead_mode = false
@cipher = "aes-256-cbc"
@digest = "SHA1"
@on_rotation = nil
@options = {}
@rotations = [#<ActiveSupport::MessageEncryptor:0x00000001046bcc18 @secret="2LRxl68OgB/023KjhIkFzHck1pSJ0HvL", @sign_secret=nil, ...
@secret = "BwIjFx+YSGRbkp9yU219CkLiwVeQJj13"
@serializer = Marshal
@sign_secret = nil
@verifier = #<ActiveSupport::MessageVerifier:0x00000001046bd140 @secret="BwIjFx+YSGRbkp9yU219CkLiwVeQJj13", @digest="SHA1", @ser...>
(rdbg)
```

```
[17, 26] in ~/.gem/ruby/3.1.2/gems/activesupport-7.0.3.1/lib/active_support/messages/rotator.rb
    17|
    18|       module Encryptor
    19|         include Rotator
    20|
    21|         def decrypt_and_verify(*args, on_rotation: @on_rotation, **options)
=>  22|           super
    23|         rescue MessageEncryptor::InvalidMessage, MessageVerifier::InvalidSignature
    24|           run_rotations(on_rotation) { |encryptor| encryptor.decrypt_and_verify(*args, **options) } || raise
    25|         end
    26|
=>#0    ActiveSupport::Messages::Rotator::Encryptor#decrypt_and_verify(args=["TkxwcjJ2MWpFalU0SlNYQUlZWk03UT09LS0zQ29..., on_rotatio
n=nil, options={}) at ~/.gem/ruby/3.1.2/gems/activesupport-7.0.3.1/lib/active_support/messages/rotator.rb:22
  #1    <main> at test.rb:20

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@secret = "BwIjFx+YSGRbkp9yU219CkLiwVeQJj13"
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(rdbg)
```

Scriptable Breakpoints - Benefits

- Reduces manual operations and human errors
- Helps you plan debugging workflow ahead
- Utilises editor features like autocompletion
- Makes our debugging experience sharable

Why ruby/debug

Advantage of ruby/debug
• Maintained by Ruby core • Colorised output • Powerful breakpoints and tracers • Advanced remote debugging support • Native VSCode integration

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Disadvantage of ruby/debug

- Doesn’t work with Fiber
- Activated when required (Issue #797)
    - gem "debug", require: false
- Less learning resources

Some Resources

Byebug migration guide

https://st0012.dev/from-byebug-to-ruby-debug

ruby/debug cheatsheet

https://st0012.dev/ruby-debug-cheatsheet

Happy debugging!