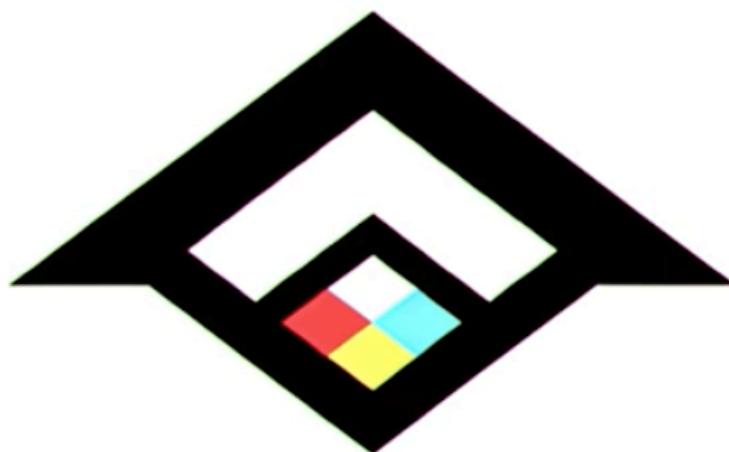


Debugger Driven Development with Pry

by
Joel Turnbull



DEBUGGER DRIVEN DEVELOPMENT with **PRY**



GASLIGHT

@JoelTurnbull

DEBUGGER DRIVEN DEVELOPMENT with PRY

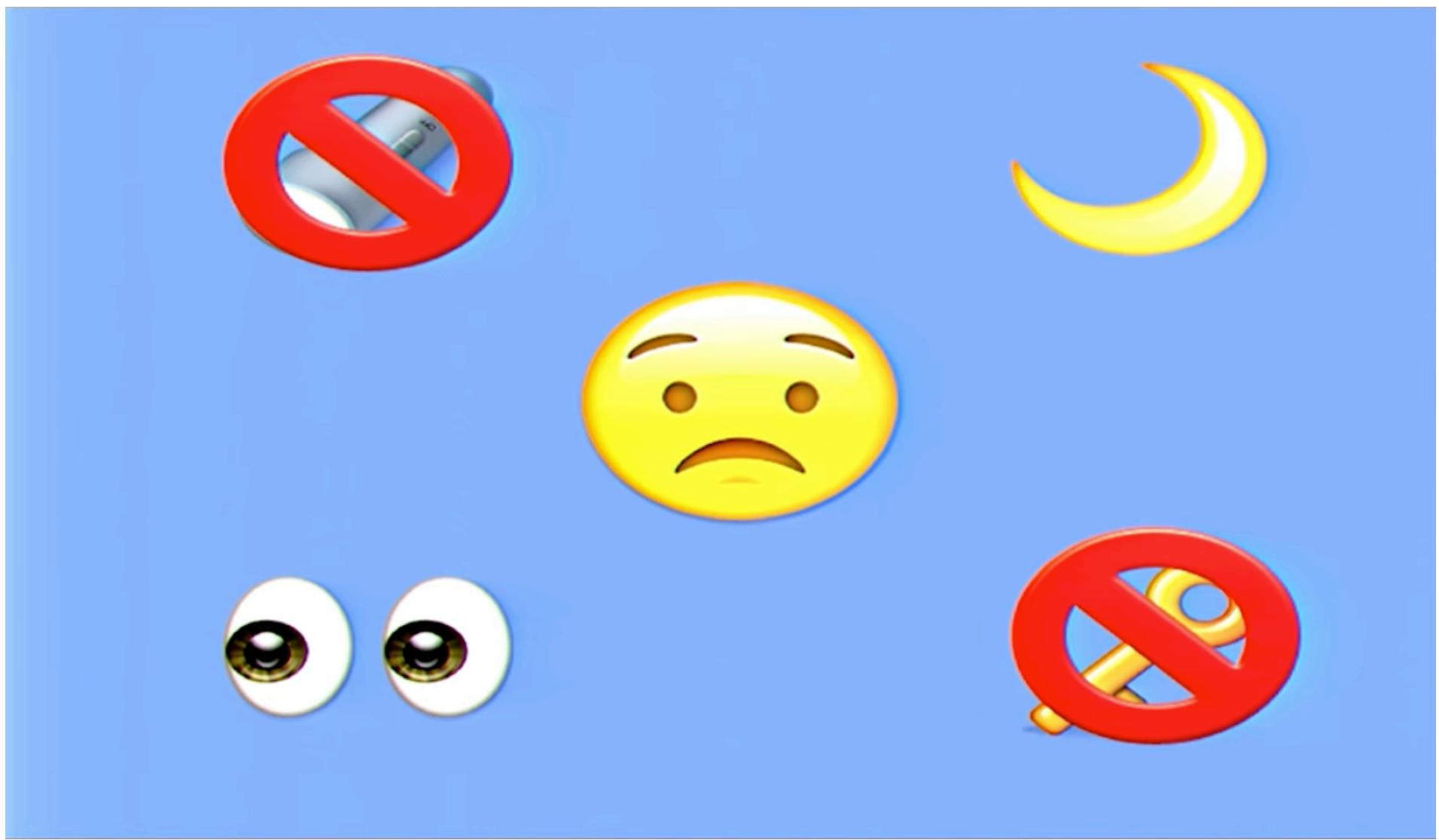




+ DEBUGGERS =









FIX
SOFTWARE







GET TO THE CODE

DEBUGGER **DRIVEN** **DEVELOPMENT** with **PRY**



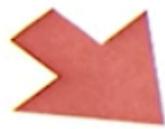
REPL DRIVEN DEVELOPMENT with PRY



Pry - an IRB alternative and runtime developer console

pryrepl.org/ Pry

Pry also aims to be more than an IRB **replacement**; it is an attempt to bring **REPL** driven programming to the Ruby language. It is currently not as powerful as ...



IRB

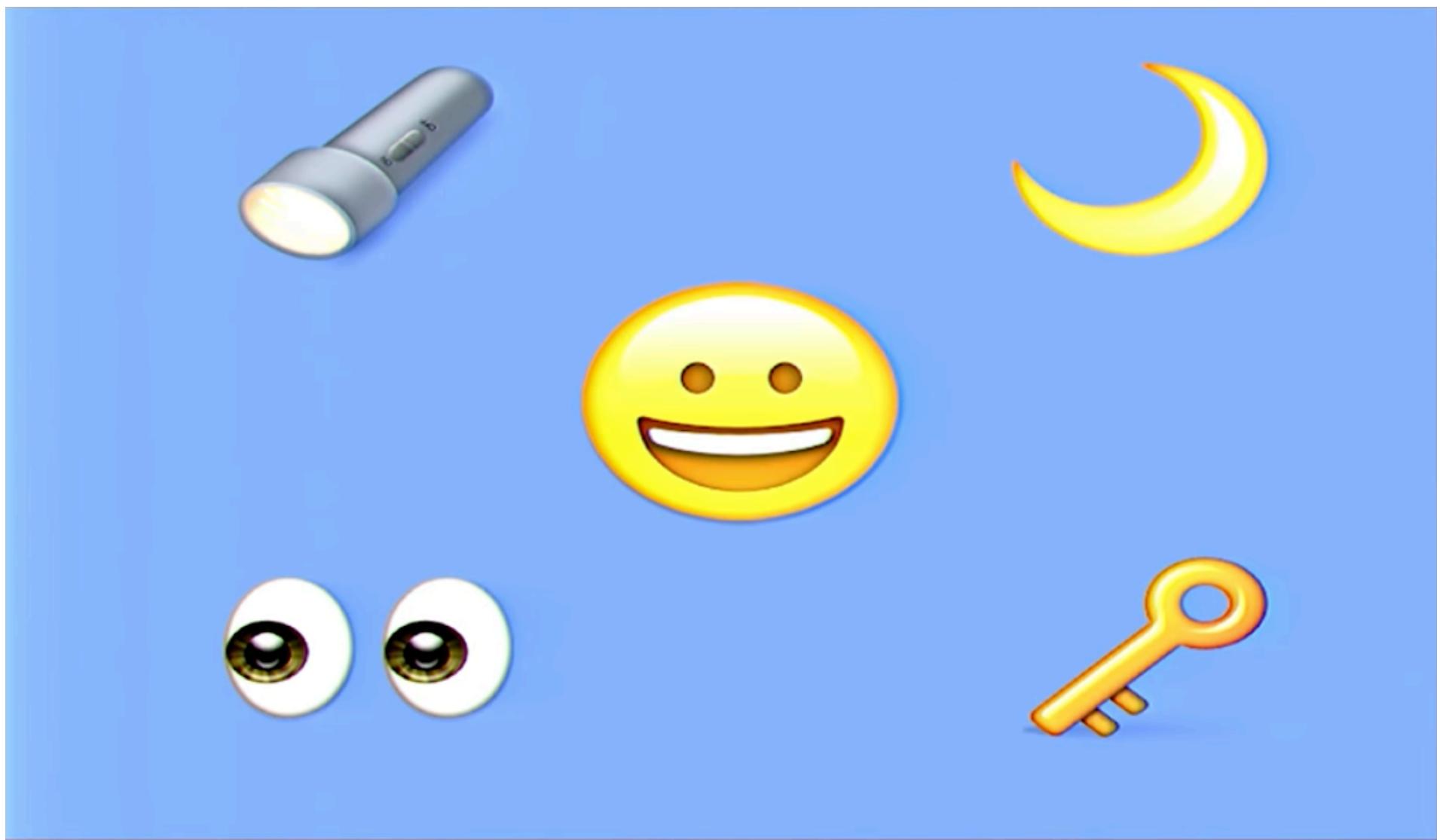


Pry

IRB
➡

RUNTIME

➡ Pry



Pry vs. IRB

Syntax Highlighting

Tab Completion



Pry vs. IRB

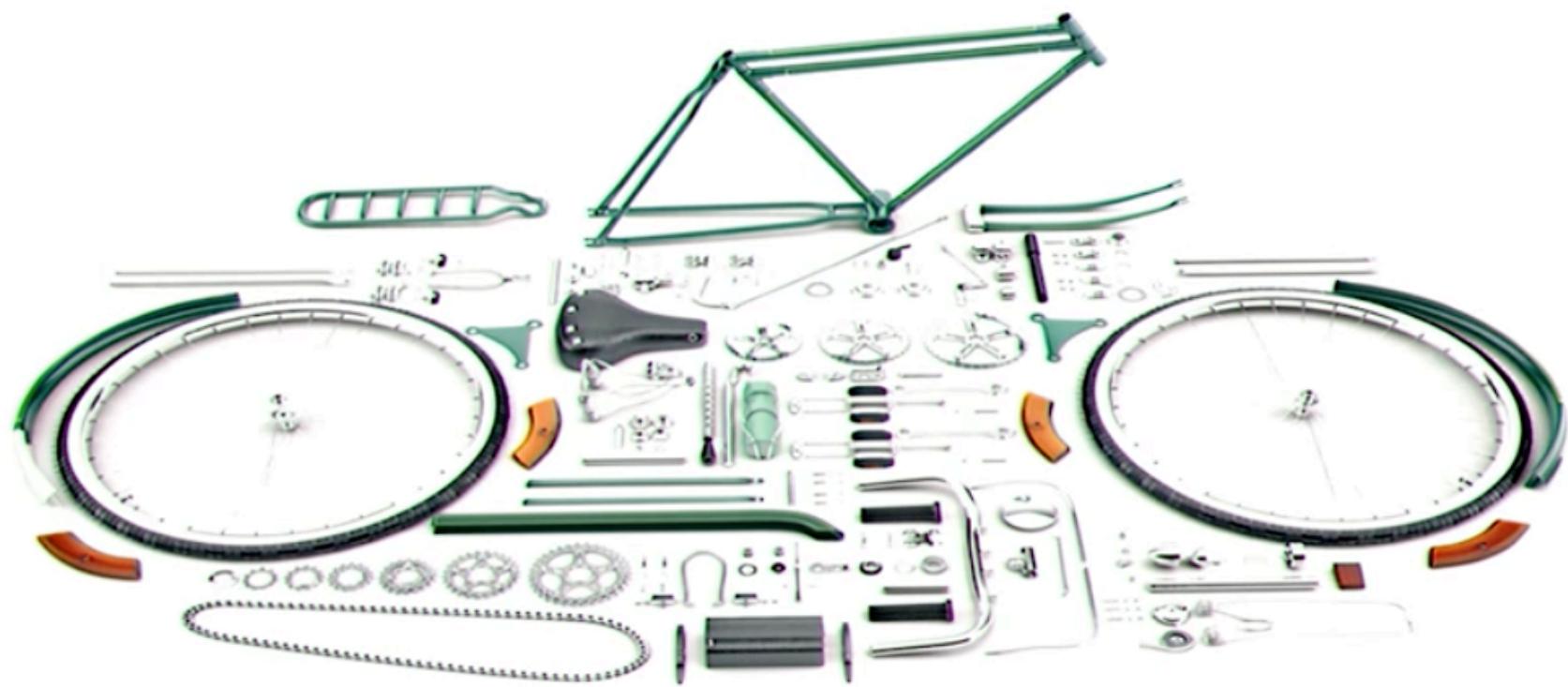
Enhanced **Introspection**





DRTFM





Pry vs. IRB

Enhanced **Introspection**



Pry vs. IRB

Enhanced **Introspection**

Extendability through
Plugins



vim

ruby

bash

vim

bowling\$ rescue rails s

Chrome File Edit View History Bookmarks Window Help ⏱ ⏴ 83% Thu 2:16 PM Joel Turnbull

Bowling

localhost:3000/bowling_games/1/edit

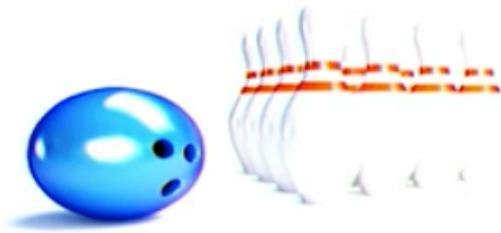
Frame 1 Frame 2

6	3	4	4
---	---	---	---

Roll it! 0 1 2 3 4 5 6 7 8 9

10

oculus.png Clojure-Logo.png MouseLocator.dmg Bowling.jpg Show All



```
vim          ruby          bash          vim
3 a/v/b/edit.html.erb
1 class BowlingGamesController < ApplicationController
2   def edit
3     binding.pry
4     @bowling_game = BowlingGame.find(params[:id])
5   end
6
7   def update
8     bowling_game = BowlingGame.find(params[:id])
9     pins = params[:pins]
10    Throw.create(pins:pins, bowling_game:bowling_game)
11    redirect_to edit_bowling_game_path(bowling_game)
12  end
13 end
~  

<ng_games_controller.rb [ruby] (11/13, 3) All
1 class BowlingGame < ActiveRecord::Base
2   has_many :throws
3
4   def frames
5     throws.each_slice(2)
6   end
7 end
~  

~  

~  

bowling_game.rb      [wrap][ruby] (1/7, 1) All
/binding.pry
```

```
vim          ruby          bash          vim
1 <h2></h2>
2 <%= image_tag "Bowling.jpg", style: "width: 100%; height: auto;" %>
3 <table>
4   <tr>
5     <% binding.pry; frames = @bowling_game.frames %>
6     <% frames.each_with_index do |frame, i| %>
7       <td colspan="2"><%= "Frame #{i+1}" %>
8     <% end %>
9   </tr>
10  <tr>
11    <% frames.each do |frame| %>
12      <td><%= frame[0].pins %></td>
13      <td><%= frame[1].pins %></td>
14    <% end %>
15  </tr>
16 </table>
17
18 Roll it!
19 <% (0..10).each do |pins| %>
20   <%= form_tag bowling_game_path, method: :put do %>
21     <%= hidden_field_tag(:pins, pins) %>
22     <%= submit_tag("Roll") %>
23   <% end %>
24 <% end %>
```

```
edit.html.erb      [eruby] (5/24, 8) All
```

```
vim          ruby          bash          vim
Started GET "/assets/jquery.js?body=1" for 127.0.0.1 at 2014-0
-24 14:16:12 -0500

Started GET "/bowling_games/1/edit" for 127.0.0.1 at 2014-04-2
14:17:04 -0500
Processing by BowlingGamesController#edit as HTML
  Parameters: {"id"=>"1"}

Frame number: 0/77

From: /Users/joeturnbull/pry-talk/bowling/app/controllers/bow
ling_games_controller.rb @ line 3 BowlingGamesController#edit:

  2: def edit
=> 3:   binding.pry
  4:   @bowling_game = BowlingGame.find(params[:id])
  5: end

[1] pry(<BowlingGamesController>) >
```

vim

ruby

bash

vim

Frame number: 0/109

From: /Users/joeturnbull/pry-talk/bowling/app/views/bowling_games/edit.html.erb @ line 5 ActionView::CompiledTemplates#_app_views_bowling_games_edit_html_erb____4350926911887059966_7027068382080:

```
1: <h2></h2>
2: <%= image_tag "Bowling.jpg", style: "width: 134px" %>
3: <table>
4:   <tr>
=> 5:     <% binding.pry; frames = @bowling_game.frames %>
6:     <% frames.each_with_index do |frame,i| %>
7:       <td colspan="2"><%= "Frame #{i+1}" %></td>
8:     <% end %>
9:   </tr>
10:  <tr>
```

[1] pry(#<#<Class:0x007fd2567b92a8>>) > █

```
vim          ruby          bash          vim
2: <%= image_tag "Bowling.jpg", style: "width: 134px" %>
3: <table>
4:   <tr>
=> 5:     <% binding.pry; frames = @bowling_game.frames %>
6:     <% frames.each_with_index do |frame,i| %>
7:       <td colspan="2"><%= "Frame #{i+1}" %></td>
8:     <% end %>
9:   </tr>
10:  <tr>
```

```
[3] pry(#<#<Class:0x007fd2567b92a8>>) > step
```

```
From: /Users/joeturnbull/pry-talk/bowling/app/models/bowling_
ame.rb @ line 5 BowlingGame#frames:
```

```
4: def frames
=> 5:   throws.each_slice(2)
6: end
```

```
[4] pry(#<BowlingGame>) >
```

```
vim          ruby          bash          vim
9:    </tr>
10:   <tr>

[3] pry(#<#<Class:0x007fd2567b92a8>>) > step
From: /Users/joeturnbull/pry-talk/bowling/app/models/bowling_
ame.rb @ line 5 BowlingGame#frames:

  4: def frames
=> 5:   throws.each_slice(2)
  6: end

[4] pry(#<BowlingGame>) > throws
  Throw Load (0.3ms)  SELECT "throws".* FROM "throws" WHERE "
throws"."bowling_game_id" = ?  [{"bowling_game_id": 1}]
=> #<ActiveRecord::Associations::CollectionProxy:0x007fd2567b92a8>
[{:throw_id=>86, :bowling_game_id=>1, :pins=>6}, {:throw_id=>287, :bowling_game_id=>1, :pins=>3}, {:throw_id=>288, :bowling_game_id=>1, :pins=>4}, {:throw_id=>289, :bowling_game_id=>1, :pins=>4}]
[5] pry(#<BowlingGame>) > sell
```

Chrome File Edit View History Bookmarks Window Help ⏱ ⏴ 82% Thu 2:18 PM Joel Turnbull

Bowling

localhost:3000/bowling_games/1/edit

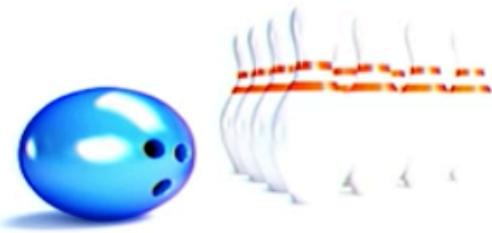
Frame 1 Frame 2

6	3	4	4
---	---	---	---

Roll it! 0 1 2 3 4 5 6 7 8 9

10

oculus.png Clojure-Logo.png MouseLocator.dmg Bowling.jpg Show All



```
bash          ruby          bash          vim
309:   if e.is_a?(Template::Error)
310:     e.sub_template_of(self)
311:     raise e
312:   else
313:     template = self
314:     unless template.source
315:       template = refresh(view)
316:       template.encode!
317:     end
=> 318:     raise Template::Error.new(template, e)
319:   end
320: end

ActionView::Template::Error: undefined method `pins' for nil:NilClass
from /Users/joeturnbull/pry-talk/bowling/app/views/bowling_games/edit.html.erb:13:in `block in _app_views_bowling_games_edit.html_erb____4350926911887059966_70270665870480'
[1] pry(#<ActionView::Template>) > show-stack
```

bash

less

bash

vim

Showing all accessible frames in stack (101 in total):

```
--> #0 [method]    handle_render_error <ActionView::Template#hand
#1 [rescue]    rescue in render <ActionView::Template#render(
#2 [block]      block (2 levels) in render_template <ActionVie
#3 [block]      block in instrument <ActionView::AbstractRende
#4 [block]      block in instrument <ActiveSupport::Notificati
#5 [method]    instrument <ActiveSupport::Notifications::Inst
#6 [method]    instrument <ActiveSupport::Notifications.instru
#7 [method]    instrument <ActionView::AbstractRenderer#instru
#8 [block]      block in render_template <ActionView::Template
#9 [method]    render_with_layout <ActionView::TemplateRender
#10 [method]   render_template <ActionView::TemplateRenderer
#11 [method]   render <ActionView::TemplateRenderer#render(
#12 [method]   render_template <ActionView::Renderer#render_
#13 [method]   render <ActionView::Renderer#render(context,
#14 [method] _render_template <ActionView::Rendering#_rend
#15 [method] _render_template <ActionController::Streaming
```



```
bash          ruby          bash          vim
ms/actionview-4.1.0.beta1/lib/action_view/renderer/template_re
nderer.rb @ line 47 ActionView::TemplateRenderer#render_template
:

44: def render_template(template, layout_name = nil, local
= nil) #:nodoc:
45:   view, locals = @view, locals || {}
46:
=> 47:   render_with_layout(layout_name, locals) do |layout|
48:     instrument(:template, :identifier => template.iden
ifier, :layout => layout.try(:virtual_path)) do
49:       template.render(view, locals) { |*name| view._lo
out_for(*name) }
50:     end
51:   end
52: end

[6] pry(#<ActionView::TemplateRenderer>) > template
=> app/views/bowling_games/edit.html.erb
[7] pry(#<ActionView::TemplateRenderer>) >
```

bash

less

bash

vim

Showing all accessible frames in stack (101 in total):

```
--  
#0 [method]    handle_render_error <ActionView::Template#hand  
#1 [rescue]   rescue in render <ActionView::Template#render()  
#2 [block]     block (2 levels) in render_template <ActionVie  
#3 [block]     block in instrument <ActionView::AbstractRende  
#4 [block]     block in instrument <ActiveSupport::Notificati  
#5 [method]    instrument <ActiveSupport::Notifications::Inst  
#6 [method]    instrument <ActiveSupport::Notifications.instr  
#7 [method]    instrument <ActionView::AbstractRenderer#instr  
#8 [block]     block in render_template <ActionView::Template  
#9 [method]    render_with_layout <ActionView::TemplateRender  
=> #10 [method]  render_template <ActionView::TemplateRender  
#11 [method]   render <ActionView::TemplateRenderer#render()  
#12 [method]   render_template <ActionView::Renderer#render_<  
#13 [method]   render <ActionView::Renderer#render(context,  
#14 [method]   _render_template <ActionView::Rendering#_rend  
#15 [method]   _render_template <ActionController::Streaming
```

:|

bash

ruby

bash

vim

Showing all accessible frames in stack (101 in total):

```
--  
#0 [method]    handle_render_error <ActionView::Template#hand  
#1 [rescue]   rescue in render <ActionView::Template#render()  
#2 [block]    block (2 levels) in render_template <ActionVie  
#3 [block]    block in instrument <ActionView::AbstractRende  
#4 [block]    block in instrument <ActiveSupport::Notificati  
#5 [method]    instrument <ActiveSupport::Notifications::Inst  
#6 [method]    instrument <ActiveSupport::Notifications.instr  
#7 [method]    instrument <ActionView::AbstractRenderer#instr  
#8 [block]    block in render_template <ActionView::Template  
#9 [method]    render_with_layout <ActionView::TemplateRender  
=> #10 [method]  render_template <ActionView::TemplateRender  
#11 [method]  render <ActionView::TemplateRenderer#render()  
#12 [method]  render_template <ActionView::Renderer#render_<  
#13 [method]  render <ActionView::Renderer#render(context,  
#14 [method] _render_template <ActionView::Rendering#_rend  
#15 [method] _render_template <ActionController::Streaming  
[8] pry(#<ActionView::TemplateRenderer>) > cd-cause
```

```
bash          ruby          bash          vim
views_bowling_games_edit_html_erb____4350926911887059966_702706
5870480:

8:      <% end %>
9:    </tr>
10:   <tr>
11:     <% frames.each do |frame| %>
12:       <td><%= frame[0].pins %></td>
=> 13:       <td><%= frame[1].pins %></td>
14:     <% end %>
15:   </tr>
16: </table>
17:
18: Roll it!

NoMethodError: undefined method `pins' for nil:NilClass
from /Users/joelturnbull/pry-talk/bowling/app/views/bowling_games/edit.html.erb:13:in `block in _app_views_bowling_games_edit.html_erb____4350926911887059966_70270665870480'
[1] pry(#<#<Class:0x007fd25427b5b8>>) >
```

```
bash          ruby          bash          vim
8:      <% end %>
9:    </tr>
10:   <tr>
11:     <% frames.each do |frame| %>
12:       <td><%= frame[0].pins %></td>
=> 13:       <td><%= frame[1].pins %></td>
14:     <% end %>
15:   </tr>
16: </table>
17:
18: Roll it!
```



```
NoMethodError: undefined method `pins' for nil:NilClass
from /Users/joeturnbull/pry-talk/bowling/app/views/bowling_games/edit.html.erb:13:in `block in _app_views_bowling_games_edit_html_erb____4350926911887059966_70270665870480'
[1] pry(#<#<Class:0x007fd25427b5b8>>)> frame[1]
=> nil
[2] pry(#<#<Class:0x007fd25427b5b8>>)>
```

```
bash          ruby          bash          vim
10:   <tr>
11:     <% frames.each do |frame| %>
12:       <td><%= frame[0].pins %></td>
=> 13:       <td><%= frame[1].pins %></td>
14:     <% end %>
15:   </tr>
16: </table>
17:
18: Roll it!
```

NoMethodError: undefined method `pins' for nil:NilClass
from /Users/joeturnbull/pry-talk/bowling/app/views/bowling_games/edit.html.erb:13:in `block in _app_views_bowling_games_edit.html_erb____4350926911887059966_70270665870480'
[1] pry(#<#<Class:0x007fd25427b5b8>>) > frame[1]
=> **nil**
[2] pry(#<#<Class:0x007fd25427b5b8>>) > frame[1] ? frame[1].pins : "-"
=> "-"
[3] pry(#<#<Class:0x007fd25427b5b8>>) >

```
bash          ruby          bash          vim
10:   <tr>
11:     <% frames.each do |frame| %>
12:       <td><%= frame[0].pins %></td>
=> 13:       <td><%= frame[1].pins %></td>
14:     <% end %>
15:   </tr>
16: </table>
17:
18: Roll it!
```



```
NoMethodError: undefined method `pins' for nil:NilClass
from /Users/joeturnbull/pry-talk/bowling/app/views/bowling_games/edit.html.erb:13:in `block in _app_views_bowling_games_edit.html_erb____4350926911887059966_70270665870480'
[1] pry(#<#<Class:0x007fd25427b5b8>>) > frame[1]
=> nil
[2] pry(#<#<Class:0x007fd25427b5b8>>) > frame[1] ? frame[1].pins : "-"
=> "-"
[3] pry(#<#<Class:0x007fd25427b5b8>>) > copy-history
```

```
bash          ruby          bash          vim
=> 13:      <td><%= frame[1].pins %></td>
14:      <% end %>
15:      </tr>
16: </table>
17:
18: Roll it!
```

NoMethodError: undefined method `pins' for nil:NilClass
from /Users/joeturnbull/pry-talk/bowling/app/views/bowling_games/edit.html.erb:13:in `block in _app_views_bowling_games_edit.html_erb____4350926911887059966_70270665870480'
[1] pry(#<#<Class:0x007fd25427b5b8>>) > frame[1]
=> **nil**
[2] pry(#<#<Class:0x007fd25427b5b8>>) > frame[1] ? frame[1].pins : "-"
=> "-"
[3] pry(#<#<Class:0x007fd25427b5b8>>) > copy-history
-*-*- Copy history to clipboard -*-*-
frame[1] ? frame[1].pins : "-"
[4] pry(#<#<Class:0x007fd25427b5b8>>) >

bash vim bash vim

a/v/b/edit.html.erb

```
1 <h2></h2>
2 <%= image_tag "Bowling.jpg", style: "width: 134px" %>
3 <table>
4   <tr>
5     <% frames = @bowling_game.frames %>
6     <% frames.each_with_index do |frame,i| %>
7       <td colspan="2"><%= "Frame #{i+1}" %></td>
8     <% end %>
9   </tr>
10  <tr>
11    <% frames.each do |frame| %>
12      <td><%= frame[0].pins %></td>
13      <td><%= frame[1].pins %></td>
14    <% end %>
15  </tr>
16 </table>
```

edit.html.erb

[wrap] [eruby] (13/24, 7) Top

```
bash vim bash vim
2 <%= image_tag "Bowling.jpg", style: "width: 134px" %>
3 <table>
4   <tr>
5     <% frames = @bowling_game.frames %>
6     <% frames.each_with_index do |frame,i| %>
7       <td colspan="2"><%= "Frame #{i+1}" %></td>
8     <% end %>
9   </tr>
10  <tr>
11    <% frames.each do |frame| %>
12      <td><%= frame[0].pins %></td>
13      <td><%= frame[1] ? frame[1].pins : "-" %></td>
14    <% end %>
15  </tr>
16 </table>
17
[+] edit.html.erb [wrap][eruby] (13/24, 45) Top
"app/views/bowling_games/edit.html.erb" 24 lines, 606 characters written
Press ENTER or type command to continue
```

bash

ruby

bash

vim

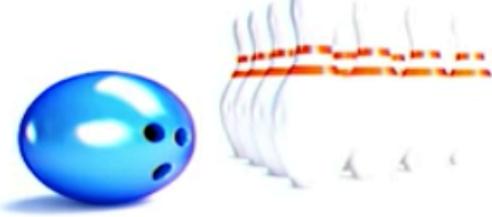
[4] pry(#<#<Class:0x007fd25427b5b8>>) > try-again

Chrome File Edit View History Bookmarks Window Help ⏱ ⏴ 81% Thu 2:21 PM Joel Turnbull

Bowling

localhost 3000/bowling_games/1/edit

Q ⌂ R ⌂ ⌂ ⌂



Frame 1 Frame 2 Frame 3

6	3	4	4	9	-
---	---	---	---	---	---

Roll it! 0 1 2 3 4 5 6 7 8 9

10

oculus.png Clojure-Logo.png MouseLocator.dmg Bowling.jpg Show All

Pry vs. IRB

Enhanced **Introspection**

Extendability through
Plugins



Pry Tools

binding.pry

pry-debugger

pry-rescue

pry-stack_explorer

Pry Commands

cd-cause

pry-rescue

play

pry

edit

pry

copy-history

pry-clipboard

try-again

pry-rescue

Pry - an IRB alternative and runtime developer console

pryrepl.org/ ▾ Pry ▾

Pry also aims to be more than an IRB **replacement**; it is an attempt to bring **REPL** driven programming to the Ruby language. It is currently not as powerful as ...

RUNTIME DEVELOPER CONSOLE





**INTROSPECTIVE
DYNAMIC
REFLECTIVE**



RUNTIME DEVELOPER CONSOLE



WORKFLOW PROBLEMS





Recommended

WORKFLOW PROBLEMS

implicit context switching

guesswork

backwards





WORKFLOW PROBLEMS

implicit context switching

guesswork

backwards



RUNTIME DEVELOPMENT



bash

ruby

vim

vim

```
class_generator.rb
1 require 'pry'
2
3 # Given a class name like "BowlingGame"
4 # Create a file bowling_game.rb
5 # And write a class definition to it like:
6 # class BowlingGame
7 #
8 # end
9
10 klass = ARGV[0]
11
12 file_name = file_name_for_class(klass)
13 class_definition = class_definition_for_class(klass)
14 create_class(file_name, class_definition)
```

~

~

~

~

~

~

class_generator.rb

[wrap] [ruby] (1/14, 1) All

```
bash          ruby          bash          vim
class_generator$ ruby class_generator.rb
class_generator.rb:12:in `<main>': undefined method `file_name_for_class'
' for main:Object (NoMethodError)
class_generator$
```

```
bash          ruby          ruby          vim
class_generator$ rescue class_generator.rb

Frame number: 0/7
Frame type: eval

From: /Users/joelturnbull/pry-talk/class_generator/class_generator.rb @
line 12 :

7: #
8: # end
9:
10: klass = ARGV[0]
11:
=> 12: file_name = file_name_for_class(klass)
13: class_definition = class_definition_for_class(klass)
14: create_class(file_name, class_definition)

NoMethodError: undefined method `file_name_for_class' for main:Object
from /Users/joelturnbull/pry-talk/class_generator/class_generator.rb:12
in `<main>'
[1] pry(main)> █
```

bash

ruby

ruby

vim

```
class_generator$ rescue class_generator.rb
```

```
Frame number: 0/7
```

```
Frame type: eval
```

```
From: /Users/joelturnbull/pry-talk/class_generator/class_generator.rb @  
line 12 :
```

```
7: #  
8: # end  
9:  
10: klass = ARGV[0]  
11:  
=> 12: file_name = file_name_for_class(klass)  
13: class_definition = class_definition_for_class(klass)  
14: create_class(file_name, class_definition)
```

```
NoMethodError: undefined method `file_name_for_class' for main:Object  
from /Users/joelturnbull/pry-talk/class_generator/class_generator.rb:12  
in `<main>'
```

```
[1] pry(main)> edit -c
```

bash

ruby

vim

vim

```
class_generator.rb
1 require 'pry'
2
3 # Given a class name like "BowlingGame"
4 # Create a file bowling_game.rb
5 # And write a class definition to it like:
6 # class BowlingGame
7 #
8 # end
9
10 klass = ARGV[0]
11
12 file_name = file_name_for_class(klass)
13 class_definition = class_definition_for_class(klass)
14 create_class(file_name, class_definition)
```

~

~

~

~

~

~

```
class_generator.rb
:qa!
```

[wrap] [ruby] (12/14, 1) All

bash

ruby

vim

vim

class_generator.rb

```
1 require 'pry'  
2  
3 # Given a class name like "BowlingGame"  
4 # Create a file bowling_game.rb  
5 # And write a class definition to it like:  
6 # class BowlingGame  
7 #  
8 # end  
9  
10 def file_name_for_class(klass)  
11   raise  
12 end  
13  
14 klass = ARGV[0]  
15  
16 file_name = file_name_for_class(klass)  
17 class_definition = class_definition_for_class(klass)  
18 create_class(file_name, class_definition)
```

~

~

class_generator.rb

[wrap] [ruby] (12/18, 1) All

"class_generator.rb" 18 lines, 354 characters

```
bash          ruby          ruby          vim
[1] pry(main)> try-again

Frame number: 0/8
Frame type: method

From: /Users/joelturnbull/pry-talk/class_generator/class_generator.rb @
line 11 Object#file_name_for_class:

  10: def file_name_for_class(klass)
=> 11:   raise
  12: end

RuntimeError:
from /Users/joelturnbull/pry-talk/class_generator/class_generator.rb:11
in `file_name_for_class'
[1] pry(main)> █
```

bash

ruby

ruby

vim

```
class_generator$ rescue class_generator.rb BowlingGame
```

```
bash          ruby          ruby          vim
class_generator$ rescue class_generator.rb BowlingGame

Frame number: 0/8
Frame type: method

From: /Users/joelturnbull/pry-talk/class_generator/class_generator.rb @
line 11 Object#file_name_for_class:

 10: def file_name_for_class(klass)
=> 11:   raise
 12: end

RuntimeError:
from /Users/joelturnbull/pry-talk/class_generator/class_generator.rb:11
in `file_name_for_class'
[1] pry(main)> █
```

bash

ruby

ruby

vim

```
class_generator$ rescue class_generator.rb BowlingGame
```

Frame number: 0/8

Frame type: method

From: /Users/joelturnbull/pry-talk/class_generator/class_generator.rb @
line 11 Object#file_name_for_class:

```
10: def file_name_for_class(klass)
=> 11:   raise
12: end
```

RuntimeError:

```
from /Users/joelturnbull/pry-talk/class_generator/class_generator.rb:11
in `file_name_for_class'
[1] pry(main)> klass
=> "BowlingGame"
[2] pry(main)> █
```

```
bash          ruby          ruby          vim
class_generator$ rescue class_generator.rb BowlingGame

Frame number: 0/8
Frame type: method

From: /Users/joelturnbull/pry-talk/class_generator/class_generator.rb @
line 11 Object#file_name_for_class:

 10: def file_name_for_class(klass)
=> 11:   raise
 12: end

RuntimeError:
from /Users/joelturnbull/pry-talk/class_generator/class_generator.rb:11
in `file_name_for_class'
[1] pry(main)> klass
=> "BowlingGame"
[2] pry(main)> "bowling_game.rb"
=> "bowling_game.rb"
[3] pry(main)> █
```

bash

ruby

ruby

vim

[3] pry(main)> ls klass

bash

ruby

less

vim

Comparable#methods: < <= > >= between?

String#methods:

%	chr	gsub	rindex	succ!
*	clear	gsub!	rjust	sum
+	codepoints	hash	rpartition	swapcase
<<	concat	hex	rstrip	swapcase!
<=>	count	include?	rstrip!	to_c
==	crypt	index	scan	to_f
====	delete	insert	scrub	to_i
=~	delete!	inspect	scrub!	to_r
□	downcase	intern	setbyte	to_s
□=	downcase!	length	shell_split	to_sym
ascii_only?	dump	lines	shellescape	tr
b	each_byte	ljust	shellsplit	tr!
bytes	each_char	lstrip	size	tr_s
bytesize	each_codepoint	lstrip!	slice	tr_s!
byteslice	each_line	match	slice!	unpack
capitalize	empty?	next	split	upcase
capitalize!	encode	next!	squeeze	upcase!
casecmp	encode!	oct	squeeze!	upto
center	encoding	ord	start_with?	valid_encoding?
chars	end_with?	partition	strip	

:]

bash	ruby	ruby	ruby	vim
%	chr	gsub	rindex	succ!
*	clear	gsub!	rjust	sum
+	codepoints	hash	rpartition	swapcase
<<	concat	hex	rstrip	swapcase!
<=>	count	include?	rstrip!	to_c
==	crypt	index	scan	to_f
====	delete	insert	scrub	to_i
=~	delete!	inspect	scrub!	to_r
□	downcase	intern	setbyte	to_s
□=	downcase!	length	shell_split	to_str
ascii_only?	dump	lines	shellescape	to_sym
b	each_byte	ljust	shellsplit	tr
bytes	each_char	lstrip	size	tr!
bytesize	each_codepoint	lstrip!	slice	tr_s
byteslice	each_line	match	slice!	tr_s!
capitalize	empty?	next	split	unpack
capitalize!	encode	next!	squeeze	upcase
casecmp	encode!	oct	squeeze!	upcase!
center	encoding	ord	start_with?	upto
chars	end_with?	partition	strip	valid_encoding?
[4] pry(main)> klass.downcase				
=> "bowlinggame"				
[5] pry(main)> █				

bash	ruby	ruby	vim
+	codepoints	hash	rpartition
<<	concat	hex	swapcase
<=>	count	include?	swapcase!
==	crypt	index	to_c
====	delete	insert	to_f
~~	delete!	inspect	to_i
[]	downcase	intern	to_r
[]=	downcase!	length	to_s
ascii_only?	dump	lines	to_str
b	each_byte	ljust	to_sym
bytes	each_char	lstrip	tr
bytesize	each_codepoint	lstrip!	tr!
byteslice	each_line	match	tr_s
capitalize	empty?	next	tr_s!
capitalize!	encode	next!	unpack
casecmp	encode!	oct	upcase
center	encoding	ord	upcase!
chars	end_with?	partition	upto
		strip	valid_encoding?
[4] pry(main)> klass.downcase			
=> "bowlinggame"			
[5] pry(main)> require "active_support/inflector"			
=> true			
[6] pry(main)> █			

bash

ruby

less

vim

Comparable#methods: < <= > >= between?

String#methods:

%	dasherize	lines	split
*	deconstantize	ljust	squeeze
+	delete	lstrip	squeeze!
<<	delete!	lstrip!	start_with?
<=>	demodulize	match	strip
==	downcase	mb_chars	strip!
====	downcase!	next	sub
=~	dump	next!	sub!
□	each_byte	oct	succ
□=	each_char	ord	succ!
ascii_only?	each_codepoint	parameterize	sum
b	each_line	partition	swapcase
bytes	empty?	pluralize	swapcase!
bytesize	encode	prepend	tableize
byteslice	encode!	replace	titlecase
camelcase	encoding	reverse	titleize
camelize	end_with?	reverse!	to_c
capitalize	eql?	rindex	to_f
capitalize!	force_encoding	rjust	to_i
casecmp	foreign_key	rpartition	to_r

:]

```
bash          ruby          ruby          vim
bytes         empty?        pluralize    swapcase!
bytesize       encode        prepend      tableize
byteslice      encode!       replace      titlecase
camelcase      encoding     reverse      titleize
camelize       end_with?    reverse!     to_c
capitalize     eql?         rindex      to_f
capitalize!    force_encoding   rjust      to_i
casecmp        foreign_key   rpartition to_r
[7] pry(main)> ls ActiveSupport::Inflector
constants: Inflections
ActiveSupport::Inflector#methods:
  camelize      demodulize   ordinalize  tableize
  classify      foreign_key  parameterize titleize
  constantize   humanize    pluralize   transliterate
  dasherize     inflections safe_constantize underscore
  deconstantize ordinal     singularize
ActiveSupport::Inflector#methods:
  camelize      demodulize   ordinalize  tableize
  classify      foreign_key  parameterize titleize
  constantize   humanize    pluralize   transliterate
  dasherize     inflections safe_constantize underscore
  deconstantize ordinal     singularize
[8] pry(main)>
```

```
bash          ruby          ruby          vim
byteslice    encode!       replace       titlecase
camelcase    encoding     reverse      titleize
camelize     end_with?   reverse!     to_c
capitalize   eql?        rindex       to_f
capitalize!  force_encoding rjust       to_i
casecmp      foreign_key rpartition  to_r
[7] pry(main)> ls ActiveSupport::Inflector
constants: Inflections
ActiveSupport::Inflector#methods:
  camelize      demodulize  ordinalize  tableize
  classify      foreign_key parameterize titleize
  constantize   humanize   pluralize   transliterate
  dasherize     inflections safe_constantize underscore
  deconstantize ordinal    singularize
ActiveSupport::Inflector#methods:
  camelize      demodulize  ordinalize  tableize
  classify      foreign_key parameterize titleize
  constantize   humanize   pluralize   transliterate
  dasherize     inflections safe_constantize underscore
  deconstantize ordinal    singularize
[8] pry(main)> klass.underscore
=> "bowling_game"
[9] pry(main)>
```

```
bash          ruby          ruby          vim
camelize      end_with?    reverse!
capitalize    eql?        rindex
capitalize!   force_encoding  rjust
casecmp       foreign_key   rpartition
[7] pry(main)> ls ActiveSupport::Inflector
constants: Inflections
ActiveSupport::Inflector#methods:
  camelize      demodulize  ordinalize   tableize
  classify      foreign_key parameterize titleize
  constantize   humanize   pluralize    transliterate
  dasherize     inflections safe_constantize underscore
  deconstantize ordinal    singularize
ActiveSupport::Inflector#methods:
  camelize      demodulize  ordinalize   tableize
  classify      foreign_key parameterize titleize
  constantize   humanize   pluralize    transliterate
  dasherize     inflections safe_constantize underscore
  deconstantize ordinal    singularize
[8] pry(main)> klass.underscore
=> "bowling_game"
[9] pry(main)> "#{klass.underscore}.rb"
=> "bowling_game.rb"
[10] pry(main)>
```

```
bash          ruby          ruby          vim
casecmp      foreign_key   rpartition   to_r
[7] pry(main)> ls ActiveSupport::Inflector
constants: Inflections
ActiveSupport::Inflector#methods:
  camelize      demodulize   ordinalize   tableize
  classify      foreign_key  parameterize titleize
  constantize   humanize    pluralize    transliterate
  dasherize     inflections safe_constantize underscore
  deconstantize ordinal     singularize

ActiveSupport::Inflector#methods:
  camelize      demodulize   ordinalize   tableize
  classify      foreign_key  parameterize titleize
  constantize   humanize    pluralize    transliterate
  dasherize     inflections safe_constantize underscore
  deconstantize ordinal     singularize

[8] pry(main)> klass.underscore
=> "bowling_game"
[9] pry(main)> "#{klass.underscore}.rb"
=> "bowling_game.rb"
[10] pry(main)> copy-history
-*-* Copy history to clipboard -*-*- "#{klass.underscore}.rb"
[11] pry(main)> █
```

```
bash          ruby          ruby          vim
casecmp      foreign_key   rpartition   to_r
[7] pry(main)> ls ActiveSupport::Inflector
constants: Inflections
ActiveSupport::Inflector#methods:
  camelize      demodulize   ordinalize   tableize
  classify      foreign_key  parameterize titleize
  constantize   humanize    pluralize    transliterate
  dasherize     inflections safe_constantize underscore
  deconstantize ordinal     singularize
ActiveSupport::Inflector#methods:
  camelize      demodulize   ordinalize   tableize
  classify      foreign_key  parameterize titleize
  constantize   humanize    pluralize    transliterate
  dasherize     inflections safe_constantize underscore
  deconstantize ordinal     singularize
[8] pry(main)> klass.underscore
=> "bowling_game"
[9] pry(main)> "#{klass.underscore}.rb"
=> "bowling_game.rb"
[10] pry(main)> copy-history
-*-* Copy history to clipboard -*-*- "#{klass.underscore}.rb"
[11] pry(main)> edit -c
```

bash

ruby

vim

vim

```
class_generator.rb
1 require 'pry'
2
3 # Given a class name like "BowlingGame"
4 # Create a file bowling_game.rb
5 # And write a class definition to it like:
6 # class BowlingGame
7 #
8 # end
9
10 def file_name_for_class(klass)
11   raise
12 end
13
14 klass = ARGV[0]
15
16 file_name = file_name_for_class(klass)
17 class_definition = class_definition_for_class(klass)
18 create_class(file_name, class_definition)
```

~

~

class_generator.rb

[wrap] [ruby] (11/18, 3) All

```
bash          ruby          vim          vim
+ class_generator.rb
1 require 'pry'
2
3 # Given a class name like "BowlingGame"
4 # Create a file bowling_game.rb
5 # And write a class definition to it like:
6 # class BowlingGame
7 #
8 # end
9
10 def file_name_for_class(klass)
11   "#{klass.underscore}.rb"
12 end
13
14 klass = ARGV[0]
15
16 file_name = file_name_for_class(klass)
17 class_definition = class_definition_for_class(klass)
18 create_class(file_name, class_definition)

~
~

[:+] class_generator.rb          [wrap] [ruby] (12/18, 1) All
```

```
bash          ruby          vim          vim
class_generator.rb
1 require 'pry'
2 require 'active_support/inflector'
3
4 # Given a class name like "BowlingGame"
5 # Create a file bowling_game.rb
6 # And write a class definition to it like:
7 # class BowlingGame
8 #
9 # end
10
11 def file_name_for_class(klass)
12   "#{klass.underscore}.rb"
13 end
14
15 klass = ARGV[0]
16
17 file_name = file_name_for_class(klass)
18 class_definition = class_definition_for_class(klass)
19 create_class(file_name, class_definition)

~
class_generator.rb          [wrap] [ruby] (12/19, 1) All
:
```

bash

ruby

vim

vim

```
class_generator.rb
5 # Create a file bowling_game.rb
6 # And write a class definition to it like:
7 # class BowlingGame
8 #
9 # end
10
11 def file_name_for_class(klass)
12   "#{klass.underscore}.rb"
13 end
14
15 def class_definition_for_class(klass)
16   "class #{klass}\n\nend"
17 end
18
19 def create_class(file_name, class_definition)
20   raise
21 end
22
23 klass = ARGV[0]
24
```

[wrap] [ruby] (20/27, 3) 57%

bash

ruby

ruby

vim

[11] pry(main)> try-again

```
bash          ruby          ruby          vim
[11] pry(main)> try-again

Frame number: 0/8
Frame type: method

From: /Users/joelturnbull/pry-talk/class_generator/class_generator.rb @
line 20 Object#create_class:

  19: def create_class(file_name,class_definition)
=> 20:   raise
  21: end

RuntimeError:
from /Users/joelturnbull/pry-talk/class_generator/class_generator.rb:20
in `create_class'
[1] pry(main)> █
```

```
bash          ruby          ruby          vim
[11] pry(main)> try-again

Frame number: 0/8
Frame type: method

From: /Users/joelturnbull/pry-talk/class_generator/class_generator.rb @
line 20 Object#create_class:

  19: def create_class(file_name,class_definition)
=> 20:   raise
  21: end

RuntimeError:
from /Users/joelturnbull/pry-talk/class_generator/class_generator.rb:20
in `create_class'
[1] pry(main)> file_name
=> "bowling_game.rb"
[2] pry(main)> class_definition
=> "class BowlingGame\n\nend"
[3] pry(main)> File
=> File
[4] pry(main)> █
```

```
bash          ruby          ruby          vim
[11] pry(main)> try-again

Frame number: 0/8
Frame type: method

From: /Users/joelturnbull/pry-talk/class_generator/class_generator.rb @
line 20 Object#create_class:

  19: def create_class(file_name,class_definition)
=> 20:   raise
  21: end

RuntimeError:
from /Users/joelturnbull/pry-talk/class_generator/class_generator.rb:20
in `create_class'
[1] pry(main)> file_name
=> "bowling_game.rb"
[2] pry(main)> class_definition
=> "class BowlingGame\n\nend"
[3] pry(main)> File
=> File
[4] pry(main)> ls File
```

```
bash          ruby          ruby          vim
[11] pry(main)> try-again

Frame number: 0/8
Frame type: method

From: /Users/joelturnbull/pry-talk/class_generator/class_generator.rb @
line 20 Object#create_class:

  19: def create_class(file_name,class_definition)
=> 20:   raise
  21: end

RuntimeError:
from /Users/joelturnbull/pry-talk/class_generator/class_generator.rb:20
in `create_class'
[1] pry(main)> file_name
=> "bowling_game.rb"
[2] pry(main)> class_definition
=> "class BowlingGame\n\nend"
[3] pry(main)> File
=> File
[4] pry(main)> ls File
```

bash

ruby

less

vim

constants:

ALT_SEPARATOR	PATH_SEPARATOR	RELATIVE_SAMEDIR	SEPARATOR
Constants	RELATIVE_PARENTDIR	Separator	Stat

I0.methods:

binread	copy_stream	new	popen	select	write
binwrite	for_fd	open	read	sysopen	
console	foreach	pipe	readlines	try_convert	

File.methods:

absolute_path	expand_path	path	stat
atime	extname	pipe?	sticky?
basename	file?	read_binary	symlink
blockdev?	fnmatch	readable?	symlink?
chardev?	fnmatch?	readable_real?	truncate
chmod	ftype	readlink	umask
chown	growned?	realdirpath	unlink
cleanpath	identical?	realpath	utime
ctime	join	relative_path	world_readable?
delete	lchmod	rename	world_writable?
directory?	lchown	setgid?	writable?
dirname	link	setuid?	writable_real?
executable?	lstat	size	zero?
executable_real?	mtime	size?	
exist?	open!	socket?	
exists?	owned?	split	

File#methods:

atime	chown	flock	mtime	size	truncate
-------	-------	-------	-------	------	----------

:|

bash

ruby

ruby

vim

constants:

ALT_SEPARATOR	PATH_SEPARATOR	RELATIVE_SAMEDIR	SEPARATOR
Constants	RELATIVE_PARENTDIR	Separator	Stat

I0.methods:

binread	copy_stream	new	popen	select	write
binwrite	for_fd	open	read	sysopen	
console	foreach	pipe	readlines	try_convert	

File.methods:

absolute_path	expand_path	path	stat
atime	extname	pipe?	sticky?
basename	file?	read_binary	symlink
blockdev?	fnmatch	readable?	symlink?
chardev?	fnmatch?	readable_real?	truncate
chmod	ftype	readlink	umask
chown	growned?	realdirpath	unlink
cleanpath	identical?	realpath	utime
ctime	join	relative_path	world_readable?
delete	lchmod	rename	world_writable?
directory?	lchown	setgid?	writable?
dirname	link	setuid?	writable_real?
executable?	lstat	size	zero?
executable_real?	mtime	size?	
exist?	open!	socket?	
exists?	owned?	split	

File#methods:

atime	chown	flock	mtime	size	truncate
-------	-------	-------	-------	------	----------

[5] pry(main)> show-doc Filew

bash

ruby

ruby

vim

constants:

ALT_SEPARATOR	PATH_SEPARATOR	RELATIVE_SAMEDIR	SEPARATOR
Constants	RELATIVE_PARENTDIR	Separator	Stat

I0.methods:

binread	copy_stream	new	popen	select	write
binwrite	for_fd	open	read	sysopen	
console	foreach	pipe	readlines	try_convert	

File.methods:

absolute_path	expand_path	path	stat
atime	extname	pipe?	sticky?
basename	file?	read_binary	symlink
blockdev?	fnmatch	readable?	symlink?
chardev?	fnmatch?	readable_real?	truncate
chmod	ftype	readlink	umask
chown	growned?	realdirpath	unlink
cleanpath	identical?	realpath	utime
ctime	join	relative_path	world_readable?
delete	lchmod	rename	world_writable?
directory?	lchown	setgid?	writable?
dirname	link	setuid?	writable_real?
executable?	lstat	size	zero?
executable_real?	mtime	size?	
exist?	open!	socket?	
exists?	owned?	split	

File#methods:

atime	chown	flock	mtime	size	truncate
-------	-------	-------	-------	------	----------

[5] pry(main)> show-doc File.write

bash

ruby

less

vim

exists? owned? split

File#methods:

 atime chown flock mtime size truncate

[5] pry(main)> show-doc File.write

From: io.c (C Method):

Owner: #<Class:IO>

Visibility: public

Signature: write(*arg1)

Number of lines: 32

Opens the file, optionally seeks to the given offset, writes string, then returns the length written.

write ensures the file is closed before returning.

If offset is not given, the file is truncated. Otherwise, it is not truncated.

If the last argument is a hash, it specifies option for internal open(). The key would be the following. open_args: is exclusive to others.

encoding: string or encoding

specifies encoding of the read string. encoding will be ignored if length is specified.

:|

```
bash          ruby          ruby          vim
otherwise it would cause error.

perm: fixnum
specifies perm argument for open().

open_args: array
specifies arguments for open() as an array.

IO.write("testfile", "0123456789", 20) # => 10
# File could contain: "This is line one\nThis is line two\n"
IO.write("testfile", "0123456789")      #=> 10
# File would now read: "0123456789"
[6] pry(main)> show-source File.write

From: io.c (C Method):
Owner: #<Class:IO>
Visibility: public
Number of lines: 5

static VALUE
rb_io_s_write(int argc, VALUE *argv, VALUE io)
{
    return io_s_write(argc, argv, 0);
}
[7] pry(main)> █
```

```
bash          ruby          ruby          vim
IO.write("testfile", "0123456789")      #=> 10
# File would now read: "0123456789"
[6] pry(main)> show-source File.write

From: io.c (C Method):
Owner: #<Class:IO>
Visibility: public
Number of lines: 5

static VALUE
rb_io_s_write(int argc, VALUE *argv, VALUE io)
{
    return io_s_write(argc, argv, 0);
}
[7] pry(main)> whereami

Frame number: 0/8
Frame type: method

From: /Users/joeturnbull/pry-talk/class_generator/class_generator.rb @ line 20 0b:
ct#create_class:

  19: def create_class(file_name,class_definition) >>
=> 20:   raise
  21: end

[8] pry(main)>
```

bash

ruby

ruby

vim

[8] pry(main)> whereami

Frame number: 0/8

Frame type: method

From: /Users/joeturnbull/pry-talk/class_generator/class_generator.rb @ line 20 0b:
ct#create_class:

```
19: def create_class(file_name,class_definition)
=> 20:   raise
21: end
```

[9] pry(main)> F

```
bash          ruby          ruby          vim
[8] pry(main)> whereami
Frame number: 0/8
Frame type: method
From: /Users/joeturnbull/pry-talk/class_generator/class_generator.rb @ line 20 0b:
ct#create_class:
19: def create_class(file_name,class_definition)
=> 20:   raise
21: end

[9] pry(main)> File.write(file_name,class_definition)
=> 22
[10] pry(main)> █
```

```
bash          ruby          ruby          vim
[8] pry(main)> whereami

Frame number: 0/8
Frame type: method

From: /Users/joeturnbull/pry-talk/class_generator/class_generator.rb @ line 20 0b:
ct#create_class:

 19: def create_class(file_name,class_definition)
=> 20:   raise
 21: end

[9] pry(main)> File.write(file_name,class_definition)
=> 22
[10] pry(main)> .ls
README           class_generator.rb tools
bowling_game.rb    demo_check.bash
[11] pry(main)>
```

```
bash          ruby          ruby          vim
[8] pry(main)> whereami
Frame number: 0/8
Frame type: method

From: /Users/joeturnbull/pry-talk/class_generator/class_generator.rb @ line 20 0b:
ct#create_class:

19: def create_class(file_name,class_definition)
=> 20:   raise
21: end

[9] pry(main)> File.write(file_name,class_definition)
=> 22
[10] pry(main)> .ls
README           class_generator.rb tools
bowling_game.rb    demo_check.bash
[11] pry(main)> .cat bowling_game.rb
class BowlingGame
end[12] pry(main)> █
```

```
bash          ruby          ruby          vim
[8] pry(main)> whereami
Frame number: 0/8
Frame type: method

From: /Users/joeturnbull/pry-talk/class_generator/class_generator.rb @ line 20 0b:
ct#create_class:

 19: def create_class(file_name,class_definition)
=> 20:   raise
 21: end

[9] pry(main)> File.write(file_name,class_definition)
=> 22
[10] pry(main)> .ls
README           class_generator.rb tools
bowling_game.rb    demo_check.bash
[11] pry(main)> .cat bowling_game.rb
class BowlingGame

[12] pry(main)> File.write(file_name,class_definition)
=> 22
[13] pry(main)> copy-history
-*-*- Copy history to clipboard -*-*-
File.write(file_name,class_definition)
[14] pry(main)> .rm
```

```
bash          ruby          ruby          vim
Frame type: method

From: /Users/joeturnbull/pry-talk/class_generator/class_generator.rb @ line 20 Obj
ct#create_class:

19: def create_class(file_name, class_definition)
=> 20:   raise
21: end

[9] pry(main)> File.write(file_name, class_definition)
=> 22
[10] pry(main)> .ls
README           class_generator.rb tools
bowling_game.rb    demo_check.bash
[11] pry(main)> .cat bowling_game.rb
class BowlingGame

[12] pry(main)> File.write(file_name, class_definition)
=> 22
[13] pry(main)> copy-history
-*-*- Copy history to clipboard -*-*-
File.write(file_name, class_definition)
[14] pry(main)> rm bowling_game.rb
NameError: undefined local variable or method `bowling_game' for main:Object
from (pry):12:in `create_class'
[15] pry(main)> .rm bowling_game.rb
[16] pry(main)> .l
```

```
bash          ruby          ruby          vim
ct#create_class:

19: def create_class(file_name,class_definition)
=> 20:   raise
21: end

[9] pry(main)> File.write(file_name,class_definition)
=> 22
[10] pry(main)> .ls
README          class_generator.rb tools
bowling_game.rb    demo_check.bash
[11] pry(main)> .cat bowling_game.rb
class BowlingGame

[12] pry(main)> File.write(file_name,class_definition)
=> 22
[13] pry(main)> copy-history
-*-*- Copy history to clipboard -*-*-
File.write(file_name,class_definition)
[14] pry(main)> rm bowling_game.rb
NameError: undefined local variable or method `bowling_game' for main:Object
from (pry):12:in `create_class'
[15] pry(main)> .rm bowling_game.rb
[16] pry(main)> .ls
README          demo_check.bash
class_generator.rb tools
[17] pry(main)> █
```

```
bash          ruby          vim          vim
+ class_generator.rb
1 require 'pry'
2 require 'active_support/inflector'
3
4 # Given a class name like "BowlingGame"
5 # Create a file bowling_game.rb
6 # And write a class definition to it like:
7 # class BowlingGame
8 #
9 # end
10
11 def file_name_for_class(klass)
12   "#{klass.underscore}.rb"
13 end
14
15 def class_definition_for_class(klass)
16   "class #{klass}\n\nend"
17 end
18
19 def create_class(file_name, class_definition)
20
21   raise
22 end
23
24 klass = ARGV[0]
[+] class_generator.rb          [wrap][ruby] (21/28, 3) Top
-- INSERT --
```

```
bash          ruby          vim          vim
+ class_generator.rb
1 require 'pry'
2 require 'active_support/inflector'
3
4 # Given a class name like "BowlingGame"
5 # Create a file bowling_game.rb
6 # And write a class definition to it like:
7 # class BowlingGame
8 #
9 # end
10
11 def file_name_for_class(klass)
12   "#{klass.underscore}.rb"
13 end
14
15 def class_definition_for_class(klass)
16   "class #{klass}\n\nend"
17 end
18
19 def create_class(file_name, class_definition)
20   File.write(file_name, class_definition)
21 end
22
23 klass = ARGV[0]
24
```

[+] class_generator.rb [wrap] [ruby] (21/27, 1) Top
:

bash

ruby

bash

vim

[18] pry(main)> try-again
class_generator\$

bash

ruby

vim

vim

```
bowling_game.rb
1 class BowlingGame
2
3 end
```



bowling_game.rb

[wrap] [ruby] (1/3, 1) All

"bowling_game.rb" [Incomplete last line] 3 lines, 22 characters

RUNTIME DEVELOPMENT



RUNTIME DEV RECAP

building not fixing

validating before codifying

exploring and informing

no reloading

TDD with PRY





Failure

DEIB JESAGER



TDD with PRY



Pharo3.0.image

Phar

ZnClient

Zinc

- Zinc-Character-Encoding
- Zinc-FileSystem
- Zinc-HTTP
 - Client-Server
 - Core
 - Deprecated
 - Exceptions
 - Logging

Groups Hierarchy □ Class side Comments

Object subclass: #ZnClient
instanceVariableNames: 'request response connection lastUsed options session log'
classVariableNames: ''
category: 'Zinc-HTTP-Client-Server'

accept:
addPart:
addPath:
addPathSegment:
applicationFormUrlE
beOneShot
canReuseConnectio
cleanupConnection
convenience
initialization
initialize-release
logging
notifications

BowlingGameTest >>#testBowlingGameInitia

Run Selected Run Profiled Run Coverage Run Fai

Run Selected Run Profiled Run Coverage Run Fai

Pharo3.0.image

Phar



BowlingGameTest>>#testBowlingGame

Bowling

- Last Modified Classes
- Most Viewed Classes
- Work
- BowlingGame**

BowlingGameTest

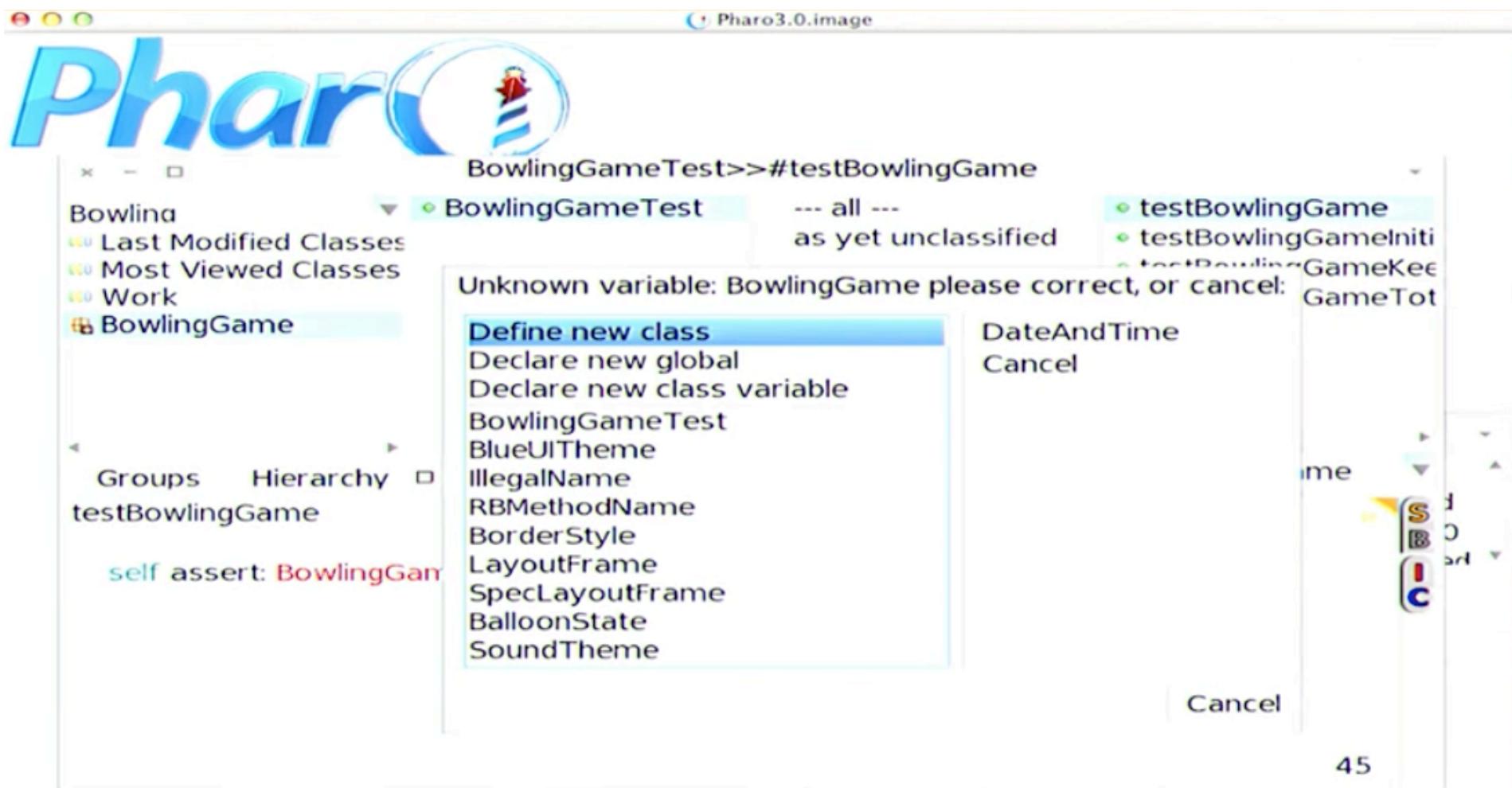
... all ...
as yet unclassified

- testBowlingGame
- testBowlingGameInit
- testBowlingGameKeep
- testBowlingGameTotal

Groups Hierarchy □ Class side Comments BowlingGameTest >>#testBowlingGame

```
testBowlingGame
self assert: BowlingGame new notNil
```

45



45

Run Selected Run Profiled Run Coverage Run Fai
BowlingGameTest>>#testBowli... Test Runner Unknown variable: BowlingGa...

Pharo3.0.image

Phar



BowlingGameTest>>#testBowlingGame

Bowling

- Last Modified Classes
- Most Viewed Classes
- Work
- BowlingGame**

Groups Hierarchy □ Class side Comments BowlingGameTest >>#testBowlingGame

testBowlingGame

```
self assert: BowlingGame new notNil
```

45

Run Selected Run Profiled Run Coverage Run Fail

Pharo3.0.image

BowlingGameTest>>#testBowlingGameInitialScore

Bowling

- ↳ Last Modified Classes
- ↳ Most Viewed Classes
- ↳ Work
- ↳ BowlingGame

↳ BowlingGame

↳ BowlingGameTest

--- all ---
as yet unclassified

- testBowlingGame
- testBowlingGameIniti
- testBowlingGameKee
- testBowlingGameTot

Groups Hierarchy □ Class side Comments BowlingGameTest >>#testBowlingGameInitialScore

```
self assert: BowlingGame new score == 0
```

59

BowlingGameTest>>#testBowli... Test Runner

Run Selected Run Profiled Run Coverage Run Fai

Pharo3.0.image

MessageNotUnderstood: BowlingGame>>score

```
BowlingGame score
BowlingGameTest testBowlingGameInitialScore
BowlingGameTest(TestCase) performTest
[...] in BowlingGameTest(TestCase) runCase
BlockClosure ensure:
BowlingGameTest(TestCase) runCase
Proceed Restart Into Over Through Full Stack Run to h Where i meTo
score self shouldBeImplemented.
```

Groups Hier testBowlingGame

```
self assert: Bo
```

< > EyeInspector thisContext BowlingGame>>score

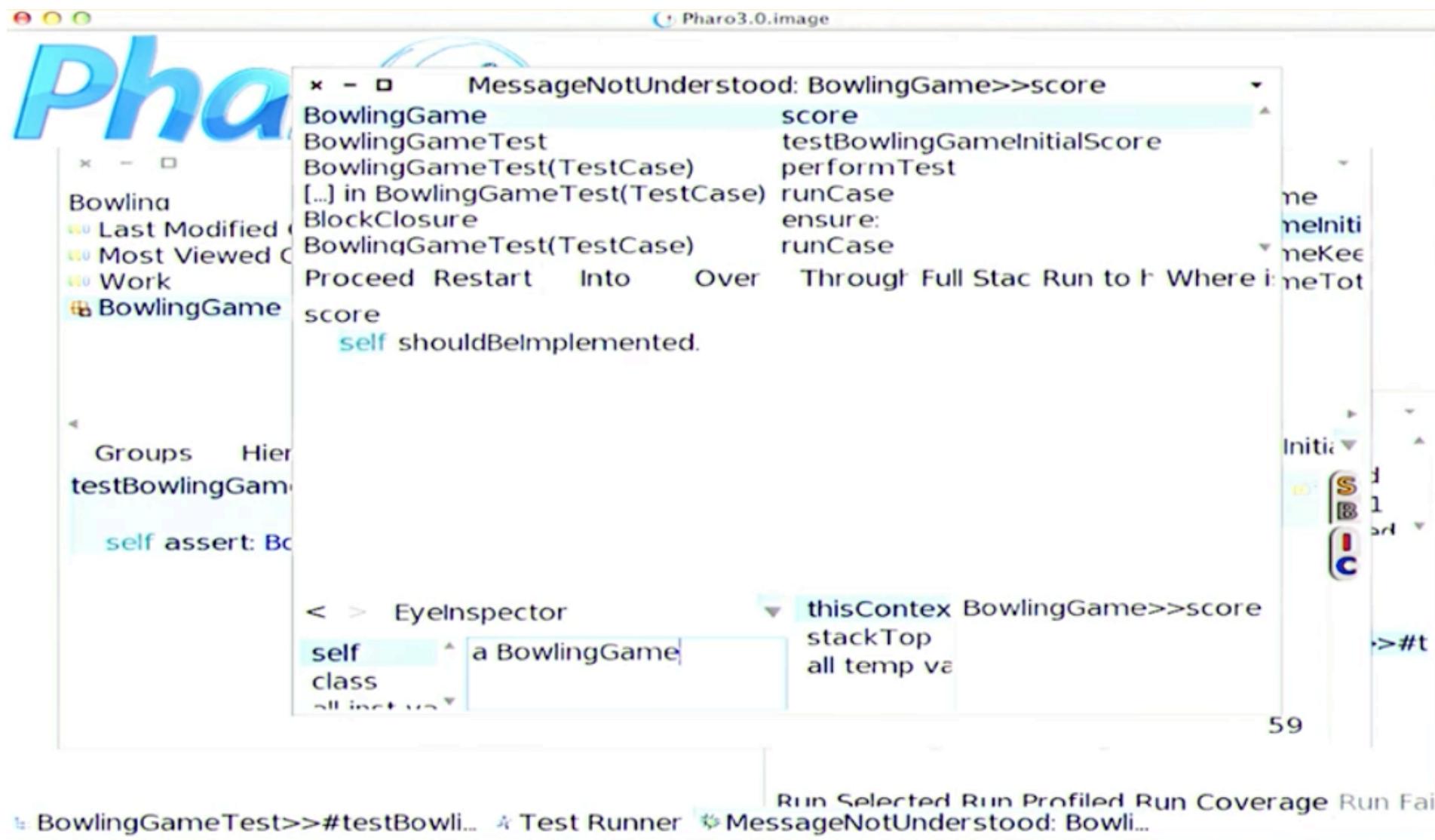
```
self stackTop
class all temp va
```

a BowlingGame

59

Run Selected Run Profiled Run Coverage Run Fail

BowlingGameTest>>#testBowli... Test Runner MessageNotUnderstood: Bowli...



Pharo3.0.image

BowlingGameTest>>#testBowlingGameInitialScore

BowlingGameTest

- ↳ BowlingGame
- ↳ BowlingGameTest

... all ...
as yet unclassified

- testBowlingGame
- testBowlingGameIniti
- testBowlingGameKee
- testBowlingGameTot

BowlingGame

Last Modified Classes

Most Viewed Classes

Work

Groups Hierarchy Class side Comments

testBowlingGameInitialScore

```
self assert: BowlingGame new score == 0
```

Test Runner

Bc Bowlin Hit return

BowlingGan BowlingGan

4 run, 4 passes, 0 skipped, 0 expected failures, 0 failures, 0 errors, 0 unexpected

Run Selected Run Profiled Run Coverage Run Fai

BowlingGameTest>>#testBowli... Test Runner

Pry vs. IRB

Enhanced **Introspection**

Extendability through
Plugins



pry-define-it

<https://github.com/joeturnbull/pry-define-it>

```
bash          ruby          vim          vim
.pryrc
1 require 'active_support/inflector'
2
3 Pry::Commands.create_command "define-it", "Commands for co
e generation reported during a Pry session for use in TDD"
do
4
5   def process
6     last_exception = context[:pry_instance].last_exception
7     if last_exception.class == NameError
8       klass = last_exception.name.to_s
9       code  = "class #{klass}\n\nend"
10      file  = "#{klass.underscore}.rb"
11
12      File.open(file, 'w') { |f| f.write(code) }
13
14    silence_warnings do
@                                [wrap] [ruby] (1/37, 1) Top
@ .pryrc
".pryrc" 37 lines, 1333 characters
```

bash

ruby

vim

vim

```
s/bowling_game_spec.rb
1 require_relative '../spec_helper'
2
3 describe "a bowling game" do
4   it "is a thing" do
5     expect(BowlingGame.new).to_not be_nil
6   end
7
8   it "has a score" do
9     expect(BowlingGame.new.score).to eq(0)
10  end
11
12  it "keeps a score" do
13    game = BowlingGame.new
14    game.bowl(4)
15    expect(game.score).to eq(4)
16  end
17
18  it "calculates a score" do
```

bowling_game_spec.rb

[wrap] [ruby] (1/24, 1) Top

"spec/bowling_game_spec.rb" 24 lines, 446 characters

bash

ruby

vim

vim

```
s/bowling_game_spec.rb
7
8  it "has a score" do
9    expect(BowlingGame.new.score).to eq(0)
10 end
11
12 it "keeps a score" do
13   game = BowlingGame.new
14   game.bowl(4)
15   expect(game.score).to eq(4)
16 end
17
18 it "calculates a score" do
19   game = BowlingGame.new
20   game.bowl(4)
21   game.bowl(5)
22   expect(game.score).to eq(9)
23 end
24 end
```

bowling_game_spec.rb

[wrap] [ruby] (20/24, 1) Bot

bash

ruby

vim

bash

rspec_bowling\$ rescue rspec

```
bash          ruby          vim          ruby
Frame number: 1/24
Frame type: block

From: /Users/joeturnbull/pry-talk/rspec_bowling/spec/bowling_
ame_spec.rb @ line 5 :

  1: require_relative '../spec_helper'
  2:
  3: describe "a bowling game" do
  4:   it "is a thing" do
=> 5:     expect(BowlingGame.new).to_not be_nil
  6:   end
  7:
  8:   it "has a score" do
  9:     expect(BowlingGame.new.score).to eq(0)
10:   end

NameError: uninitialized constant BowlingGame
from /Users/joeturnbull/pry-talk/rspec_bowling/spec/bowling_g
ame_spec.rb:5:in `block (2 levels) in <top (required)>'
[1] pry(#<RSpec::Core::ExampleGroup::Nested_1>) > █
```

```
bash          ruby          vim          ruby
Frame number: 1/24
Frame type: block

From: /Users/joeturnbull/pry-talk/rspec_bowling/spec/bowling_
ame_spec.rb @ line 5 :

  1: require_relative '../spec_helper'
  2:
  3: describe "a bowling game" do
  4:   it "is a thing" do
=> 5:     expect(BowlingGame.new).to_not be_nil
  6:   end
  7:
  8:   it "has a score" do
  9:     expect(BowlingGame.new.score).to eq(0)
10:   end

NameError: uninitialized constant BowlingGame
from /Users/joeturnbull/pry-talk/rspec_bowling/spec/bowling_g
ame_spec.rb:5:in `block (2 levels) in <top (required)>'
[1] pry(#<RSpec::Core::ExampleGroup::Nested_1>) > define-it
```

bash

ruby

vim

ruby

```
From: /Users/joeturnbull/pry-talk/rspec_bowling/spec/bowling_
ame_spec.rb @ line 9 :
```

```
4:   it "is a thing" do
5:     expect(BowlingGame.new).to_not be_nil
6:   end
7:
8:   it "has a score" do
=> 9:     expect(BowlingGame.new.score).to eq(0)
10:  end
11:
12:  it "keeps a score" do
13:    game = BowlingGame.new
14:    game.bowl(4)
```

```
NoMethodError: undefined method `score' for #<BowlingGame:0x00
ff6d12032d8>
from /Users/joeturnbull/pry-talk/rspec_bowling/spec/bowling_g
ame_spec.rb:9:in `block (2 levels) in <top (required)>'
[1] pry(#<RSpec::Core::ExampleGroup::Nested_1>) > █
```

bash

ruby

vim

per15.16

From: /Users/joeturnbull/pry-talk/rspec_bowling/spec/bowlingame_spec.rb @ line 9 :

```
4:   it "is a thing" do
5:     expect(BowlingGame.new).to_not be_nil
6:   end
7:
8:   it "has a score" do
=> 9:     expect(BowlingGame.new.score).to eq(0)
10:  end
11:
12:  it "keeps a score" do
13:    game = BowlingGame.new
14:    game.bowl(4)
```

```
NoMethodError: undefined method `score' for #<BowlingGame:0x00
ff6d12032d8>
from /Users/joeturnbull/pry-talk/rspec_bowling/spec/bowlingg
ame_spec.rb:9:in `block (2 levels) in <top (required)>'
[1] pry(#<RSpec::Core::ExampleGroup::Nested_1>) > define-it
```

bash

ruby

vim

vims

bowling_game.rb

```
1 class BowlingGame
2
3   def score()
4     [ ]
5   end
6
7 end
```

~
~
~
~
~
~
~
~
~
~
~
~
~
~

bowling_game.rb

[wrap] [ruby] (4/7, 5) All

```
bash          ruby          vim          ruby
ame_spec.rb @ line 9 :

4:   it "is a thing" do
5:     expect(BowlingGame.new).to_not be_nil
6:   end
7:
8:   it "has a score" do
=> 9:     expect(BowlingGame.new.score).to eq(0)
10:  end
11:
12:  it "keeps a score" do
13:    game = BowlingGame.new
14:    game.bowl(4)

NoMethodError: undefined method `score' for #<BowlingGame:0x00
ff6d12032d8>
from /Users/joeturnbull/pry-talk/rspec_bowling/spec/bowling_g
ame_spec.rb:9:in `block (2 levels) in <top (required)>'
[1] pry(#<RSpec::Core::ExampleGroup::Nested_1>) > define-it
[2] pry(#<RSpec::Core::ExampleGroup::Nested_1>) > try-again
.
```

```
bash          ruby          vim          ruby
From: /Users/joelturnbull/pry-talk/rspec_bowling/spec/bowling_
ame_spec.rb @ line 14 :

  9:     expect(BowlingGame.new.score).to eq(0)
10:   end
11:
12:   it "keeps a score" do
13:     game = BowlingGame.new
=> 14:     game.bowl(4)
15:     expect(game.score).to eq(4)
16:   end
17:
18:   it "calculates a score" do
19:     game = BowlingGame.new

NoMethodError: undefined method `bowl' for #<BowlingGame:0x007
f6cfe3b958>
from /Users/joelturnbull/pry-talk/rspec_bowling/spec/bowling_g
ame_spec.rb:14:in `block (2 levels) in <top (required)>'
[1] pry(#<RSpec::Core::ExampleGroup::Nested_1>) > █
```

bash

ruby

vim

ruby

```
From: /Users/joeturnbull/pry-talk/rspec_bowling/spec/bowling_
ame_spec.rb @ line 14 :
```

```
 9:     expect(BowlingGame.new.score).to eq(0)
10:   end
11:
12:   it "keeps a score" do
13:     game = BowlingGame.new
=> 14:     game.bowl(4)
15:     expect(game.score).to eq(4)
16:   end
17:
18:   it "calculates a score" do
19:     game = BowlingGame.new
```

```
NoMethodError: undefined method `bowl' for #<BowlingGame:0x007
f6cfe3b958>
```

```
from /Users/joeturnbull/pry-talk/rspec_bowling/spec/bowling_g
ame_spec.rb:14:in `block (2 levels) in <top (required)>'
```

```
[1] pry(#<RSpec::Core::ExampleGroup::Nested_1>) try-again █
```

bash

ruby

vim

wms

bowling_game.rb

```
1 class BowlingGame
2
3   def score()
4     0
5   end
6
7   def bowl(fixnum0)
8   end
9
10
11 end
```

~
~
~
~
~
~
~

bowling_game.rb
-- INSERT --

[wrap] [ruby] (8/11, 5) All

```
bash          ruby          vim          ruby
From: /Users/joeturnbull/pry-talk/rspec_bowling/spec/bowling_
ame_spec.rb @ line 22 :

17:
18:   it "calculates a score" do
19:     game = BowlingGame.new
20:     game.bowl(4)
21:     game.bowl(5)
=> 22:     expect(game.score).to eq(9)
23:   end
24: end

RSpec::Expectations::ExpectationNotMetError:
expected: 9
      got: 5

(compared using ==)
from /Users/joeturnbull/pry-talk/rspec_bowling/vendor/ruby/2.
.0/gems/rspec-expectations-2.14.5/lib/rspec/expectations/fail_
ith.rb:32:in `fail_with'
[1] pry(#<RSpec::Core::ExampleGroup::Nested_1>) > █
```

```
bash          ruby          vim          ruby
From: /Users/joelturnbull/pry-talk/rspec_bowling/spec/bowling_
ame_spec.rb @ line 22 :

17:
18:   it "calculates a score" do
19:     game = BowlingGame.new
20:     game.bowl(4)
21:     game.bowl(5)
=> 22:     expect(game.score).to eq(9)
23:   end
24: end

RSpec::Expectations::ExpectationNotMetError:
expected: 9
      got: 5

(compared using ==)
from /Users/joelturnbull/pry-talk/rspec_bowling/vendor/ruby/2.
.0/gems/rspec-expectations-2.14.5/lib/rspec/expectations/fail_
ith.rb:32:in `fail_with'
[1] pry(#<RSpec::Core::ExampleGroup::Nested_1>) > define-it
```

```
bash          ruby          vim          ruby
From: /Users/joelturnbull/pry-talk/rspec_bowling/spec/bowling_
ame_spec.rb @ line 22 :

17:
18:   it "calculates a score" do
19:     game = BowlingGame.new
20:     game.bowl(4)
21:     game.bowl(5)
=> 22:     expect(game.score).to eq(9)
23:   end
24: end

RSpec::Expectations::ExpectationNotMetError:
expected: 9
      got: 5

(compared using ==)
from /Users/joelturnbull/pry-talk/rspec_bowling/vendor/ruby/2.
.0/gems/rspec-expectations-2.14.5/lib/rspec/expectations/fail_
ith.rb:32:in `fail_with'
[1] pry(#<RSpec::Core::ExampleGroup::Nested_1>) > edit BowlingF
```

```
bash          ruby          vim          ruby
ame_spec.rb @ line 22 :

17:
18:   it "calculates a score" do
19:     game = BowlingGame.new
20:     game.bowl(4)
21:     game.bowl(5)
=> 22:     expect(game.score).to eq(9)
23:   end
24: end

RSpec::Expectations::ExpectationNotMetError:
expected: 9
      got: 5

(compared using ==)
from /Users/joeturnbull/pry-talk/rspec_bowling/vendor/ruby/2.0/gems/rspec-expectations-2.14.5/lib/rspec/expectations/fail_with.rb:32:in `fail_with'
[1] pry(#<RSpec::Core::ExampleGroup::Nested_1>) > edit BowlingGame
```

bash

ruby

vim

vim

```
bowling_game.rb
1 class BowlingGame
2
3   def initialize
4     @score = 0
5   end
6
7   def score()
8     @score
9   end
10
11  def bowl(fixnum0)
12    @score = fixnum0
13  end
14
15 end
```

~

~

~

bowling_game.rb

[wrap] [ruby] (1/15, 1) All

```
bash          ruby          vim          ruby
17:
18:   it "calculates a score" do
19:     game = BowlingGame.new
20:     game.bowl(4)
21:     game.bowl(5)
=> 22:     expect(game.score).to eq(9)
23:   end
24: end

RSpec::Expectations::ExpectationNotMetError:
expected: 9
      got: 5

(compared using ==)
from /Users/joeturnbull/pry-talk/rspec_bowling/vendor/ruby/2.
.0/gems/rspec-expectations-2.14.5/lib/rspec/expectations/fail_
ith.rb:32:in `fail_with'
[1] pry(#<RSpec::Core::ExampleGroup::Nested_1>) > edit BowlingG
ame
[2] pry(#<RSpec::Core::ExampleGroup::Nested_1>) > try-again
```

```
bash          ruby          vim          ruby
from /Users/joeturnbull/pry-talk/rspec_bowling/vendor/ruby/2.
.0/gems/rspec-expectations-2.14.5/lib/rspec/expectations/fail_
ith.rb:32:in `fail_with'
[1] pry(#<RSpec::Core::ExampleGroup::Nested_1>) > edit BowlingG
ame
[2] pry(#<RSpec::Core::ExampleGroup::Nested_1>) > try-again

Frame number: 0/24
Frame type: method

From: /Users/joeturnbull/pry-talk/rspec_bowling/bowling_game.
b @ line 12 BowlingGame#bowl:

  11: def bowl(fixnum0)
=> 12:   @scores << fixnum0
  13: end

NoMethodError: undefined method `<<' for nil:NilClass
from /Users/joeturnbull/pry-talk/rspec_bowling/bowling_game.r
:12:in `bowl'
[1] pry(#<BowlingGame>) > edit BowlingGame
```

bash

ruby

vim

vim

bowling_game.rb

```
1 class BowlingGame
2
3   def initialize
4     @score = [0]
5   end
6
7   def score()
8     @scores.reduce(:+)
9   end
10
11  def bowl(fixnum0)
12    @scores << fixnum0
13  end
14
15 end
```

~

~

~

bowling_game.rb

[wrap] [ruby] (4/15, 1) All

bash

ruby

wim

vims

bowling_game.rb

```
1 class BowlingGame
2
3   def initialize
4     @score = 0
5   end
6
7   def score()
8     @scores.reduce(:+)
9   end
10
11  def bowl(fixnum0)
12    @scores << fixnum0
13  end
14
15 end
```

~
~
~

bowling_game.rb

[wrap] [ruby] (8/15, 22) All

"bowling_game.rb" 15 lines, 159 characters written

bash

ruby

vim

vim

bowling_game.rb

```
1 class BowlingGame
2
3   def initialize
4     @score = [0]
5   end
6
7   def score()
8     @scores.reduce(:+)
9   end
10
11  def bowl(fixnum0)
12    @scores << fixnum0
13  end
14
15 end
```

~

~

~

bowling_game.rb

[wrap] [ruby] (4/15, 16) All

"bowling_game.rb" 15 lines, 161 characters written

```
bash          ruby          vim          ruby
17:
18:   it "calculates a score" do
19:     game = BowlingGame.new
20:     game.bowl(4)
21:     game.bowl(5)
=> 22:     expect(game.score).to eq(9)
23:   end
24: end

RSpec::Expectations::ExpectationNotMetError:
expected: 9
      got: 5

(compared using ==)
from /Users/joeturnbull/pry-talk/rspec_bowling/vendor/ruby/2.
.0/gems/rspec-expectations-2.14.5/lib/rspec/expectations/fail_
ith.rb:32:in `fail_with'
[1] pry(#<RSpec::Core::ExampleGroup::Nested_1>) > edit BowlingG
ame
[2] pry(#<RSpec::Core::ExampleGroup::Nested_1>) > try-again
```

```
bash          ruby          vim          ruby
from /Users/joelturnbull/pry-talk/rspec_bowling/vendor/ruby/2.
.0/gems/rspec-expectations-2.14.5/lib/rspec/expectations/fail_
ith.rb:32:in `fail_with'
[1] pry(#<RSpec::Core::ExampleGroup::Nested_1>) > edit BowlingG
ame
[2] pry(#<RSpec::Core::ExampleGroup::Nested_1>) > try-again

Frame number: 0/24
Frame type: method

From: /Users/joelturnbull/pry-talk/rspec_bowling/bowling_game.
b @ line 12 BowlingGame#bowl:

  11: def bowl(fixnum0)
=> 12:   @scores << fixnum0
  13: end

NoMethodError: undefined method `<<' for nil:NilClass
from /Users/joelturnbull/pry-talk/rspec_bowling/bowling_game.r
:12:in `bowl'
[1] pry(#<BowlingGame>) > █
```

```
bash          ruby          vim          ruby
from /Users/joeturnbull/pry-talk/rspec_bowling/vendor/ruby/2.
.0/gems/rspec-expectations-2.14.5/lib/rspec/expectations/fail_
ith.rb:32:in `fail_with'
[1] pry(#<RSpec::Core::ExampleGroup::Nested_1>) > edit BowlingG
ame
[2] pry(#<RSpec::Core::ExampleGroup::Nested_1>) > try-again

Frame number: 0/24
Frame type: method

From: /Users/joeturnbull/pry-talk/rspec_bowling/bowling_game.
b @ line 12 BowlingGame#bowl:

  11: def bowl(fixnum0)
=> 12:   @scores << fixnum0
  13: end

NoMethodError: undefined method `<<' for nil:NilClass
from /Users/joeturnbull/pry-talk/rspec_bowling/bowling_game.r
:12:in `bowl'
[1] pry(#<BowlingGame>) > edit BowlingGame
```

bash

ruby

vim

wim

bowling_game.rb

```
1 class BowlingGame
2
3   def initialize
4     @scores = [0]
5   end
6
7   def score()
8     @scores.reduce(:+)
9   end
10
11  def bowl(fixnum0)
12    @scores << fixnum0
13  end
14
15 end
```

~

~

~

bowling_game.rb

[wrap] [ruby] (4/15, 11) All

"bowling_game.rb" 15 lines, 162 characters written

```
bash          ruby          vim          bash
Frame number: 0/24
Frame type: method

From: /Users/joeturnbull/pry-talk/rspec_bowling/bowling_game.
b @ line 12 BowlingGame#bowl:

  11: def bowl(fixnum0)
=> 12:   @scores << fixnum0
  13: end

NoMethodError: undefined method `<<' for nil:NilClass
from /Users/joeturnbull/pry-talk/rspec_bowling/bowling_game.r
:12:in `bowl'
[1] pry(#<BowlingGame>) > edit BowlingGame
[2] pry(#<BowlingGame>) > try-again
.

Finished in 3 minutes 0.8 seconds
4 examples, 0 failures
rspec_bowling$
```

pry-define-it

<https://github.com/joeturnbull/pry-define-it>

CONCLUSION





DRTFM





FIX
SOFTWARE



~~FIX~~
DEBUGGER
WARE

BUILD SOFTWARE

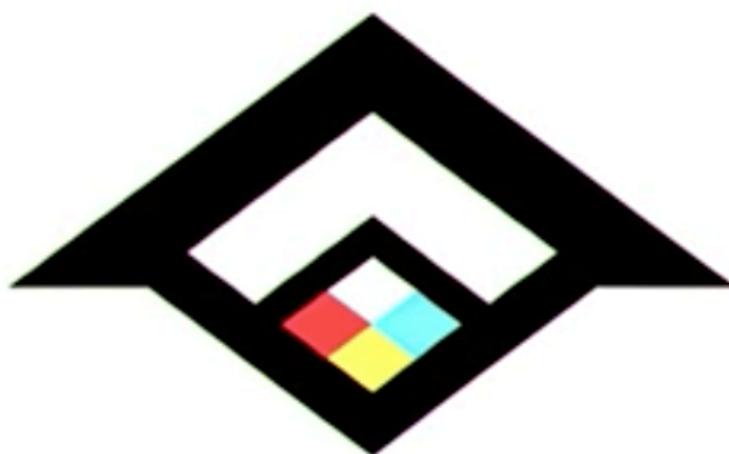


~~BUHLER~~
DEBUGGER



GET TO THE CODE

DEBUGGER DRIVEN DEVELOPMENT with **PRY**



GASLIGHT

@JoelTurnbull
