



A man in a white shirt is speaking at a podium. Behind him are two women in white blouses. The background is dark with a 'FOX' logo in the bottom right corner.

**It's the Final Keynote!**

**Increase Creativity!**

# **Modern Dev Environments**

**Programmer Efficiency in 2023?**

# **Artificial Intelligence**

**ChatGPT**

**GitHub Copilot**

**Editors**

**VSCode**

# Language Servers





# Technical Content

Hi, I'm Aaron!



**@tenderlove**

**@tenderlove@mastodon.social**



***shopify***



 **RAILS**

The word "RAILS" is written in a bold, red, sans-serif font. To the left of the text is a red gear icon, which is a semi-circle with several small red squares protruding from its outer edge, resembling a cogwheel.

A woman with dark hair, wearing a black sleeveless top, is speaking at a conference. She is holding a small black object in her right hand. The background is a colorful geometric pattern with shades of yellow, orange, and pink. The text is overlaid on the image in a white, bold, sans-serif font.

**“I remain on the Rails core team for you.  
To make Rails better for the community”**

**—Eileen Uchitelle**

**“Notice me Senpai!”**

**—Aaron**

**RAILS CONF!!!!**

Bona Fide Mycologist









**Fresh**

**Chantrelle  
Mushrooms**

**39 99**  
**lb**

0000000004647



Product of  
USA



I don't value my time

# Other Hobbies







**I LOVE PROGRAMMING**



[http://youtube.com/  
tenderlovescoolstuff](http://youtube.com/tenderlovescoolstuff)

**REBELS**



**HTTP://YOUTUBE.COM/  
TENDERLOVESCOOLSTUFF**

**CLICK HERE!!**





**RAILS MONKEY  
PATCHED  
THAT??**



**RAILS**

**THAT'S NOT  
YOUR ACTIVE JOB!**





**I'M NOT SAYING IT WAS ACTIVE SUPPORT, BUT IT DEFINITELY WAS.**

I am old 🧓

I am old 🧓



The best time to be a programmer  
is **now**.

Syntax Highlighting 😄

# Garbage Collection



# **Convention over Configuration**

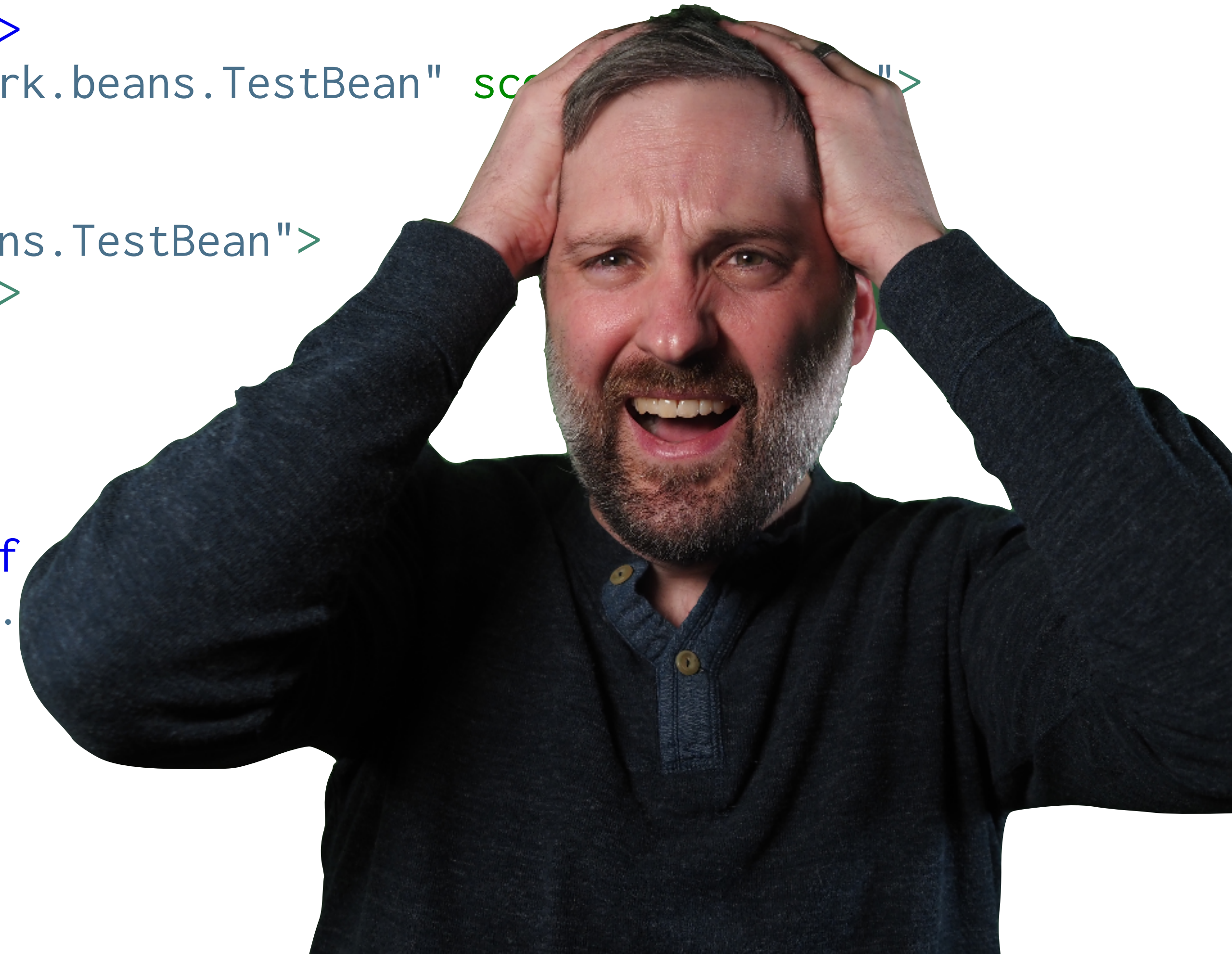
**Making Decisions *For* Us**

# Example Spring Java Bean

This is how we programmed in the early 2000's

```
<!-- target bean to be referenced by name -->  
<bean id="testBean" class="org.springframework.beans.TestBean" scope="prototype">  
  <property name="age" value="10"/>  
  <property name="spouse">  
    <bean class="org.springframework.beans.TestBean">  
      <property name="age" value="11"/>  
    </bean>  
  </property>  
</bean>
```

```
<!-- will result in 10, which is the value of  
<util:property-path id="name" path="testBean.spouse.age"/>
```



Meetings about column names

Design documents about DAOs

# Data Access Object

Rails: Follow the Convention and  
everything Just Works

Less Code

Fewer Decisions

Fewer Distractions



Thinking Sucks!

Think about **your app**,  
not primary key names



**THEY DID WHAT??**

**CHATGPT**

**GITHUB**

**COPILLOT**

Artificial Intelligence

**BING**

**CHAT**

**BARD**

# Fake Intelligence, Real Problems

Licensing Issues?

Ethics?

Believable Bullshit

user.rb

test &gt; dummy &gt; app &gt; models &gt; user.rb &gt; ...

```
1 # typed: true
2 # frozen_string_literal: true
3
4 require "aarch64"
5
6 class User < ApplicationRecord
7   def index
8     asm = Aarch64::Assembler
9     asm.add(:x0, :x0, :x1)
10  end
11
```



Could be true?

**“AI users are only wasting their own time”**

**Someone, Probably**

github.com

Watch 823 Fork 4.9k Star 32k

Code Issues 395 Pull requests 32 Discussions Actions Projects 1 Security 1 Insights

## ChatGPT says there is a beta with a command for managing projects #7312

started this conversation in General

5 days ago

I asked it how to list issues in a project and it said the following. When I said, this didn't work, it told me that is only available in the beta and told me how to install the beta with "brew install gh --devel" - that didn't work either. Furthermore, I asked where to find info about projects and it sent me to a 404 at: [https://cli.github.com/manual/gh\\_project](https://cli.github.com/manual/gh_project)

Does this thing have access to the future?

ChatGPT response:

To list the projects of a repository using the GitHub CLI, you can use the following command:

```
gh project list
```

This command will list all of the projects for the repository that you are currently in. By default, it will show the name, ID, and URL of each project.

If you want to see more details about a specific project, you can use the view subcommand with the project number, like this:

```
gh project view 123
```

Replace 123 with the ID of the project that you want to view.

You can also filter the list of projects by state (open or closed) or by type (repository, organization, or user). For example, to list all open projects for an organization, you can use the following command:

```
gh project list --state=open --type=org
```

This will show a list of all open projects for the current organization.

Category: General

Labels: None yet

Notifications:  You're not receiving notifications from this thread.

↑ 1

ChatGPT says there is a beta with a command for managing projects #7312  
5 days ago · 1 comments · 1 reply Return to top

↑ 1 🗨️ 1 reply

5 days ago Maintainer edited 🗨️ ⋮

Hi, large language models like ChatGPT don't actually "know" exactly how to use command line tools like `gh` so they make up command invocations that *sound* plausible but may or may not exist. Furthermore, older models such as ChatGPT 3.5 (the default model unless you pay for Plus) have a training set that goes only up to the year 2021 or so, and it follows that their training set does not know about features or extensions added to `gh` since then.

<https://twitter.com/vboykis/status/1646689444479528961>

The only truly comprehensive way to learn how to use `gh` is to [browse our manual](#), which lists all available commands and flags and includes a link to the list of all public extensions.

You can continue to use tools like ChatGPT to give you pointers about how to use command-line tools or programming concept, but when they turn out to be wrong (this will be often), I suggest that you switch to old-fashioned methods of finding the correct way, such as perusing documentation. What I do *not* suggest is opening an issue in that project's repository, since maintainers like myself did nothing wrong, but we now have to spend our valuable time explaining to our users why the command ChatGPT told them to use does not exist.

👍 9 🍌 2 ❤️ 9 🚀 2

Write a reply

---

Write Preview

H B I ≡ <> 🔗 ≡ ≡ ≡ @ ↻ ↶ 📎

Write a comment

Attach files by dragging & dropping, selecting or pasting them. 📎

Comment

📘 Remember, contributions to this repository should follow its [contributing guidelines](#), [security policy](#), and [code of conduct](#).

Hi, large language models like ChatGPT don't actually "know" exactly how to use command line tools like ████████████████████, so **they make up command invocations that sound plausible but may or may not exist.**

– VPP (Very Patient Person)





Drudgery

github.com

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rails / rails Public Edit Pins Unwatch 2.4k Fork 21.1k Starred 52.7k

Code Issues 377 Pull requests 443 Discussions Actions Projects 2 Security 3 Insights Settings

## Enable force\_ssl=true in production by default #47852

Open searls wants to merge 6 commits into rails:main from searls:patch-2

Conversation 4 Commits 6 Checks 8 Files changed 9 +69 -51

**searls** commented 2 weeks ago Contributor

I will admit to deploying an app into production and leaving it there for weeks before realizing that authenticated traffic was being transported un-secured HTTP. I'd been operating under the false assumption that `config.force_ssl` would be `true` in production by default for new apps.

Suggesting this change to gauge interest and start a conversation. Since this option was introduced, the state of the web has really changed with Let's Encrypt certificates, and HTTPS has become table stakes for most hosting services. It feels like the time is right to enable Strict-Transport-Security by default for new apps.

16 👍 4 ❤️ 1 🗨️

**rails-bot** bot added the **railties** label 2 weeks ago

**zenspider** commented 2 weeks ago Contributor

Hell yes

1 ❤️

**byroot** commented 2 weeks ago Member

A bunch of railties test need to be updated, as they boot the app in production mode and try to do requests.

Other than that, yeah I'm 👍 on the change.

Reviewers: ghiculescu, rafael franca, dhh

Assignees: No one—assign yourself

Labels: railties

Projects: None yet

Milestone: No milestone

Development: Successfully merging this pull request may close these issues. None yet

Notifications: Unsubscribe

You're receiving notifications because you're watching this repository.

4 railties/test/application/asset\_debugging\_test.rb

Viewed

```
50 50
51 51      # the debug_assets params isn't used if compile is off
52  -   get "/posts?debug_assets=true"
52  +   get("/posts?debug_assets=true", {}, "HTTPS" => "on")
53 53      assert_match(/<script src="\s\/assets\/application-([0-z]+)\.js">
<\s\/script>/, last_response.body)
54 54      assert_no_match(/<script src="\s\/assets\/xmlhr-([0-z]+)\.js">
<\s\/script>/, last_response.body)
55 55      end
@@ -62,7 +62,7 @@ class ::PostsController < ActionController::Base ; end
62 62
63 63      class ::PostsController < ActionController::Base ; end
```

**“Copilot, please fix these tests”**

**— Me, in the future**

```
get "/posts?debug_assets=true"
```

```
get("/posts?debug_assets=true", {}, "HTT
```

```
get "/posts?debug_assets=true"
```

```
get("/posts?debug_assets=true", {}, "HTTPS" => "on")
```

```
get "/posts?debug_assets=true"
```

```
get("/posts?debug_assets=true", {}, "HTTPS" => "on")
```

```
get "/posts?debug_assets=true"
```

```
get("/posts?debug_assets=true", {}, "HTTPS" => "on")
```

```
get "/posts?debug_assets=true"
```

```
get("/posts?debug_assets=true", {}, "HTTPS" => "on")
```

```
get "/posts?debug_assets=true"
```

```
get("/posts?debug_assets=true", {}, "HTTPS" => "on")
```

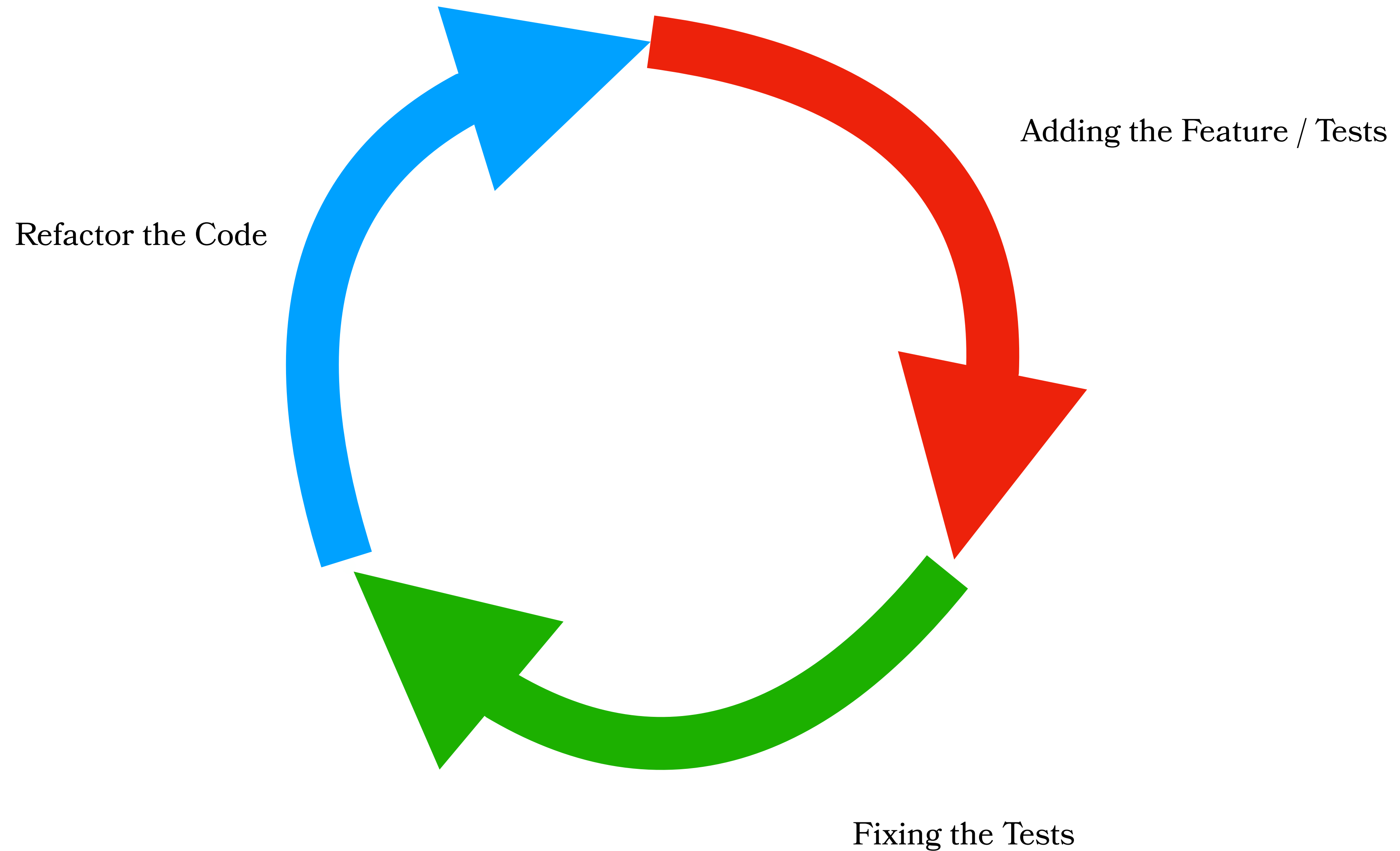
```
get "/posts?debug_assets=true"
```

```
get("/posts?debug_assets=true", {}, "HTTPS" => "on")
```

```
get "/posts?debug_assets=true"
```

```
get("/posts?debug_assets=true", {}, "HTTPS" => "on")
```

# Red, Green, Refactor





Spend Less Time on  
“Boring” Tasks

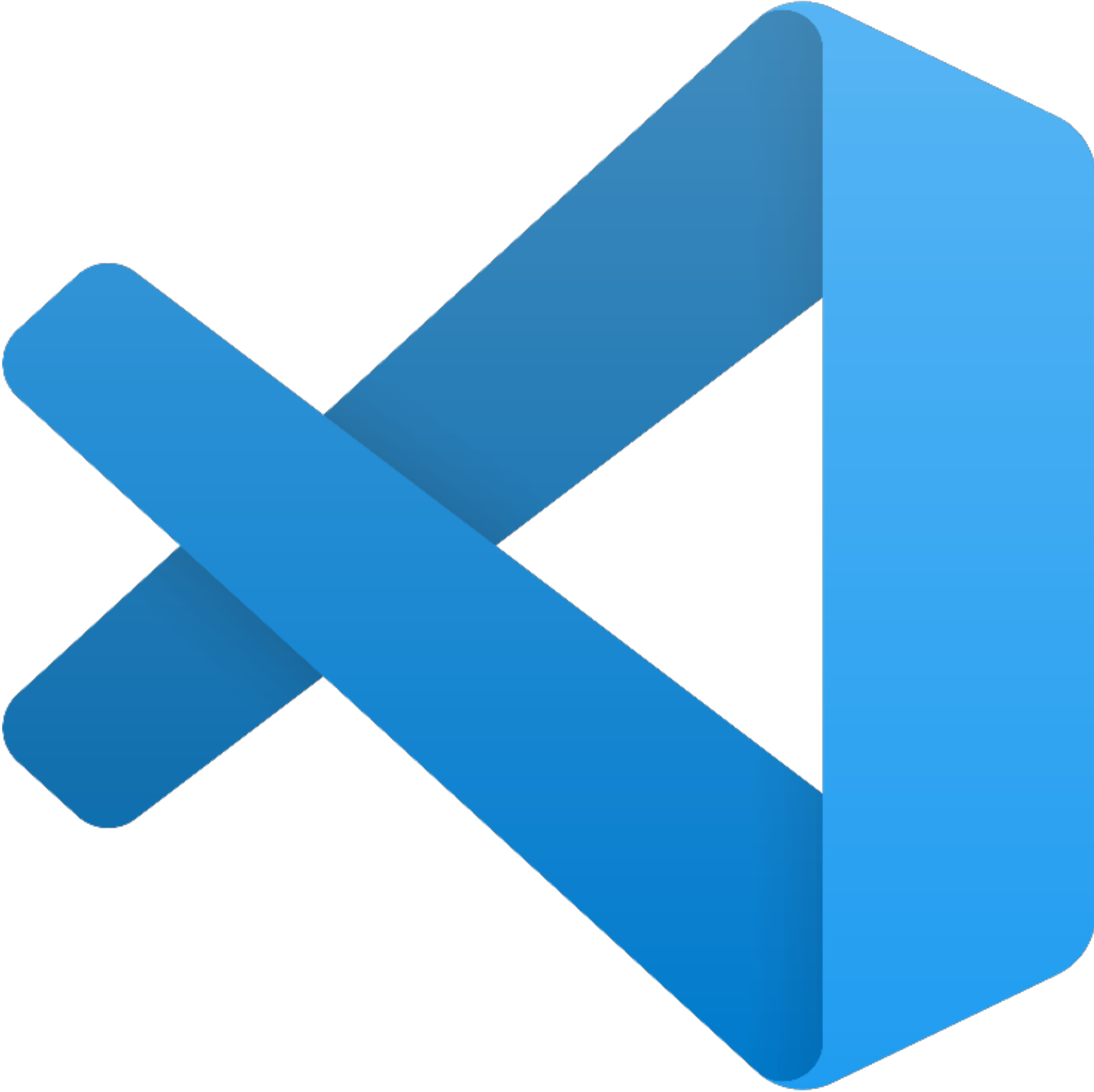


**REDUCE**

**REUSE**

**RECYCLE**

**Editors**



**AWKWARD!**



# Language Server

# **Language Server Protocol (LSP)**

Language Server is a *Program*



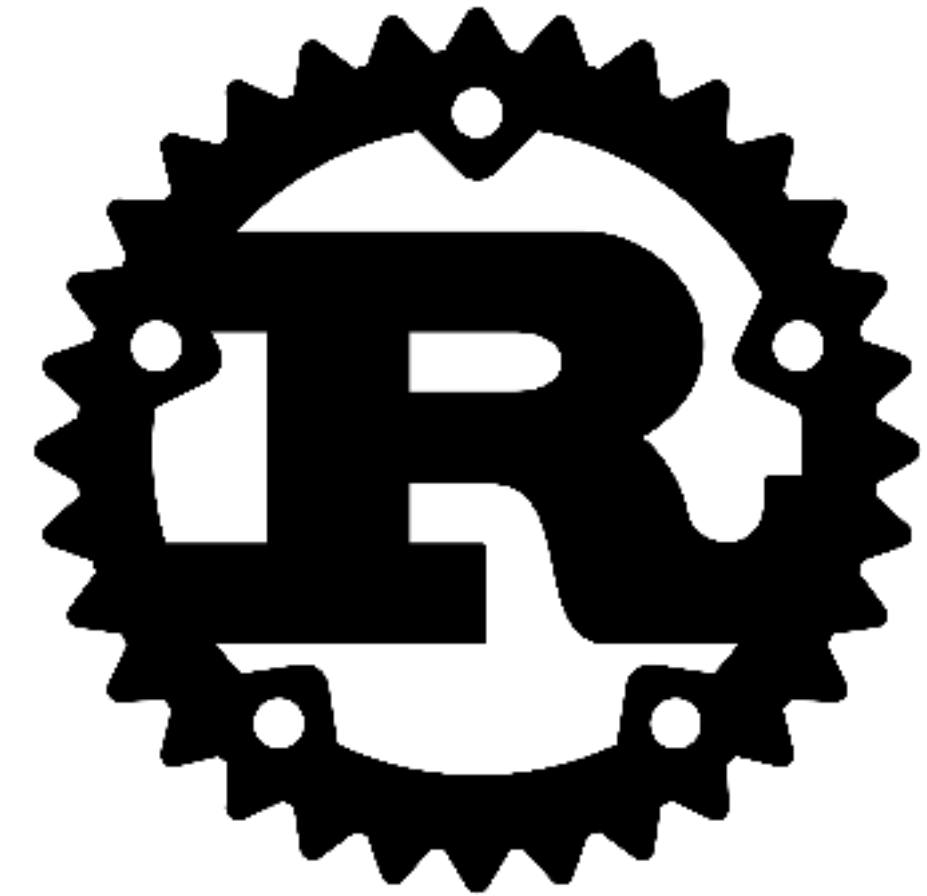
Language Server Protocol



clangd

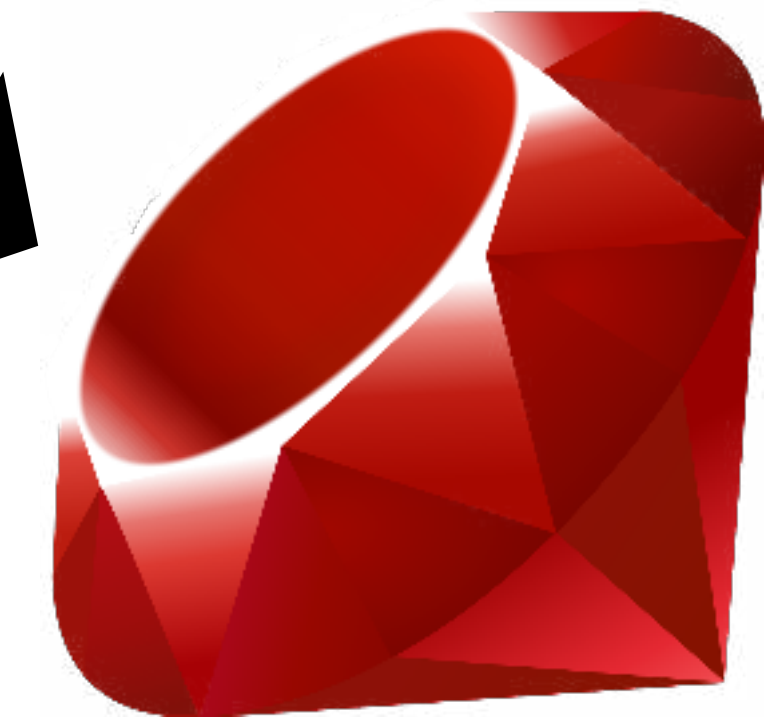
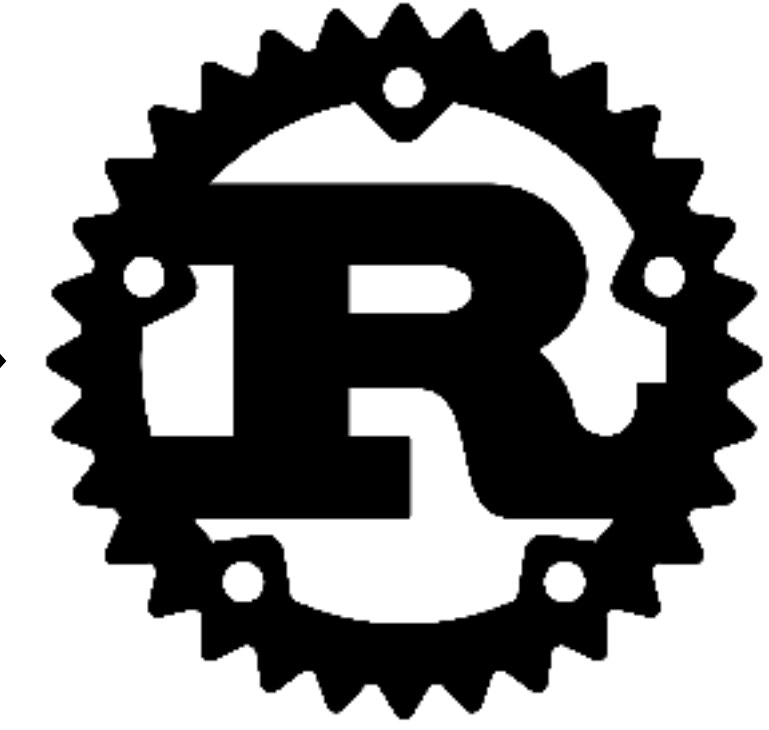
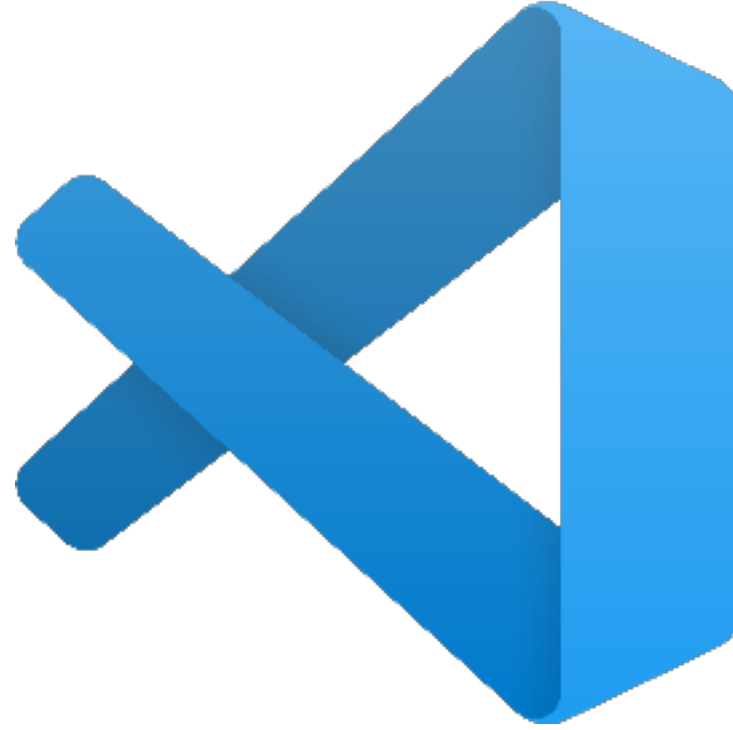


clangd

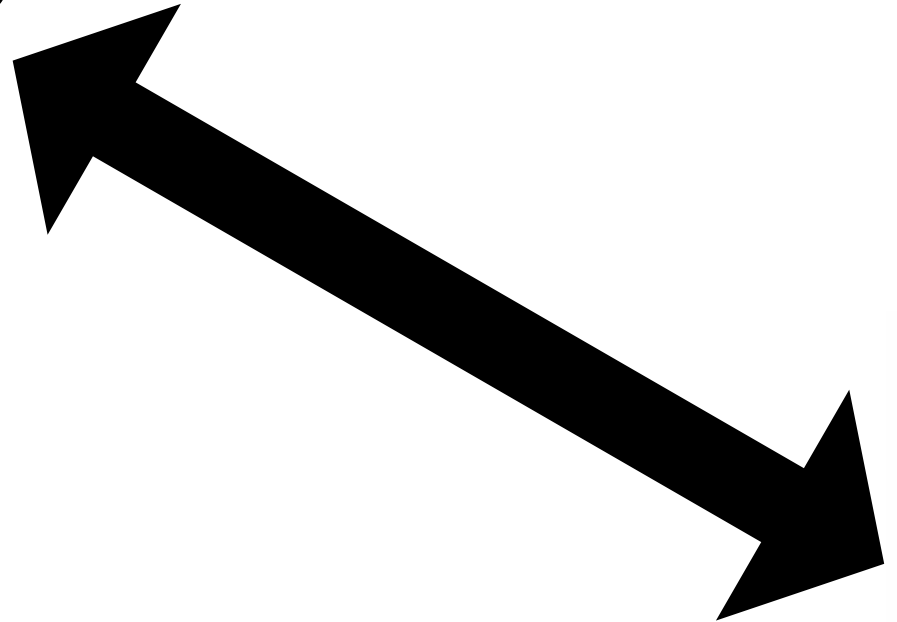
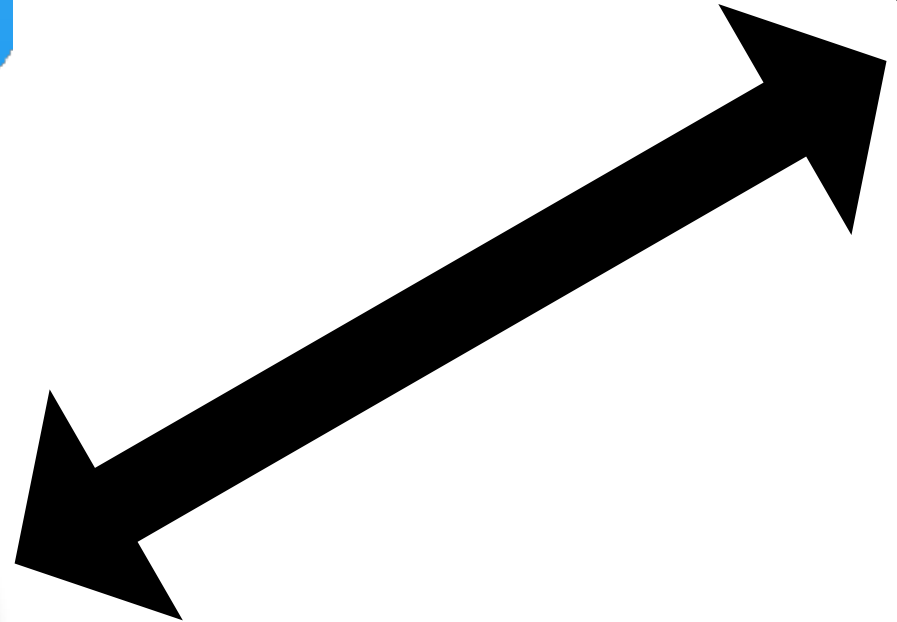
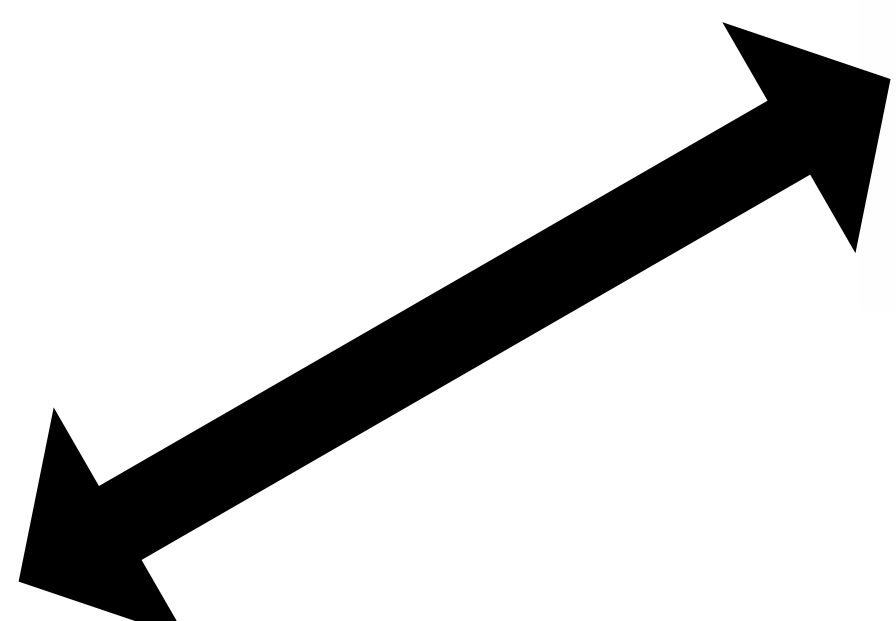
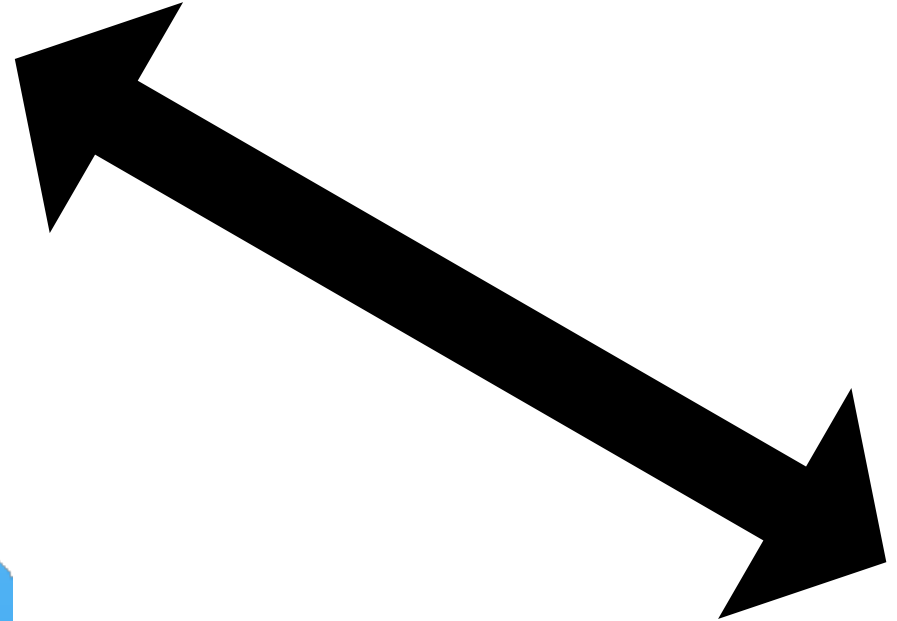


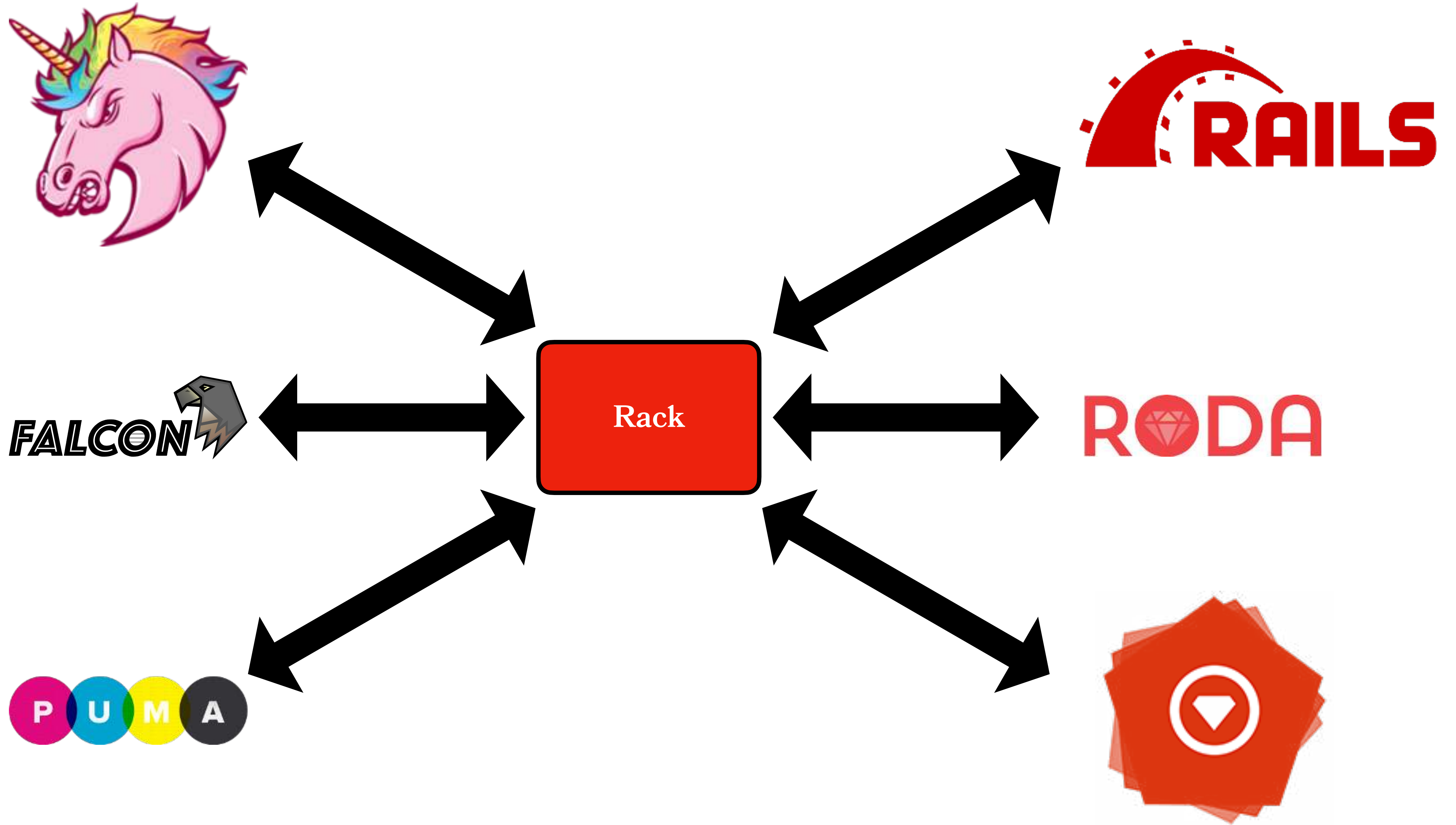
Language Server Protocol





Language  
Server  
Protocol







# Technical Content

# Developing a Language Server



# VSCode Extension

EXTENSIONS: MARKETPLACE

erb

- erb** Syntax Highlighting for Ruby ERB files  
Craig Maslowski 230K ★ 4 [Install](#)
- Erb** ERB language support for Visual Studio Code  
Riey 21K ★ 5 [Install](#)
- Simple Ruby ERB** Provides simple Ruby and ERB language, code snippets a...  
Victor Ortiz Heredia 163K ★ 4 [Install](#)
- ERB Linter** execute erb-lint for ERB code.  
manuelpuyol 86K ★ 5 [Install](#)
- ERB Formatter/Beautify** Format/Beautify ERB files  
Ali Ariff [Install](#)
- ERB-VSCode-Snippets** A collection of Visual Studio Code snippets useful for writi...  
ZneuRay 33K [Install](#)
- erb-types** stupid cat 2K ★ 5 [Install](#)
- ERB Toggle** Toggle command for ERB tags  
Kirill Platonov 3K ★ 5 [Install](#)
- ERB Formatter** Format ERB files with speed and precision.  
Elia Schito 7K [Install](#)
- ERB Helper Tags** A collection of ERB snippets  
Rayhan Wirjowerdojo 19K ★ 3 [Install](#)
- ERB Linter** execute erb-lint for ERB code.  
Carlos Moran 336 [Install](#)
- ERB Commenter** allow to comment erb file  
seto biralo 38 [Install](#)
- erb for emuera continue** Provide snippets and syntaxes for Erb files required for e...  
wmzj 87 [Install](#)
- Erb html codeblock highlighter** Highlight the codeblock of the ERB code in html.erb files 296 [Install](#)

user.rb

```
test > dummy > app > models > user.rb > ...
1 # typed: true
2 # frozen_string_literal: true
3
4 require "aarch64"
5
6 class User < ApplicationRecord
7   def index
8     asm = Aarch64::Assembler.new
9     asm.add(
10
11
```

main\* 0 0 -- INSERT -- Ln 9, Col 13 Spaces: 2 UTF-8 LF Ruby

# Configuring Vim

## Add clangd support

```
# Tell Vim to find vim-lsp  
packadd vim-lsp
```

```
# Use clangd if available
```

```
if executable('clangd')
```

```
  au User lsp_setup call lsp#register_server({
```

```
    \ 'name': 'clangd',
```

```
    \ 'cmd': ['clangd'],
```

```
    \ 'allowlist': ['c'],
```

```
    \ })
```

```
endif
```

Use the "clangd"  
command

Only enable it on C  
files

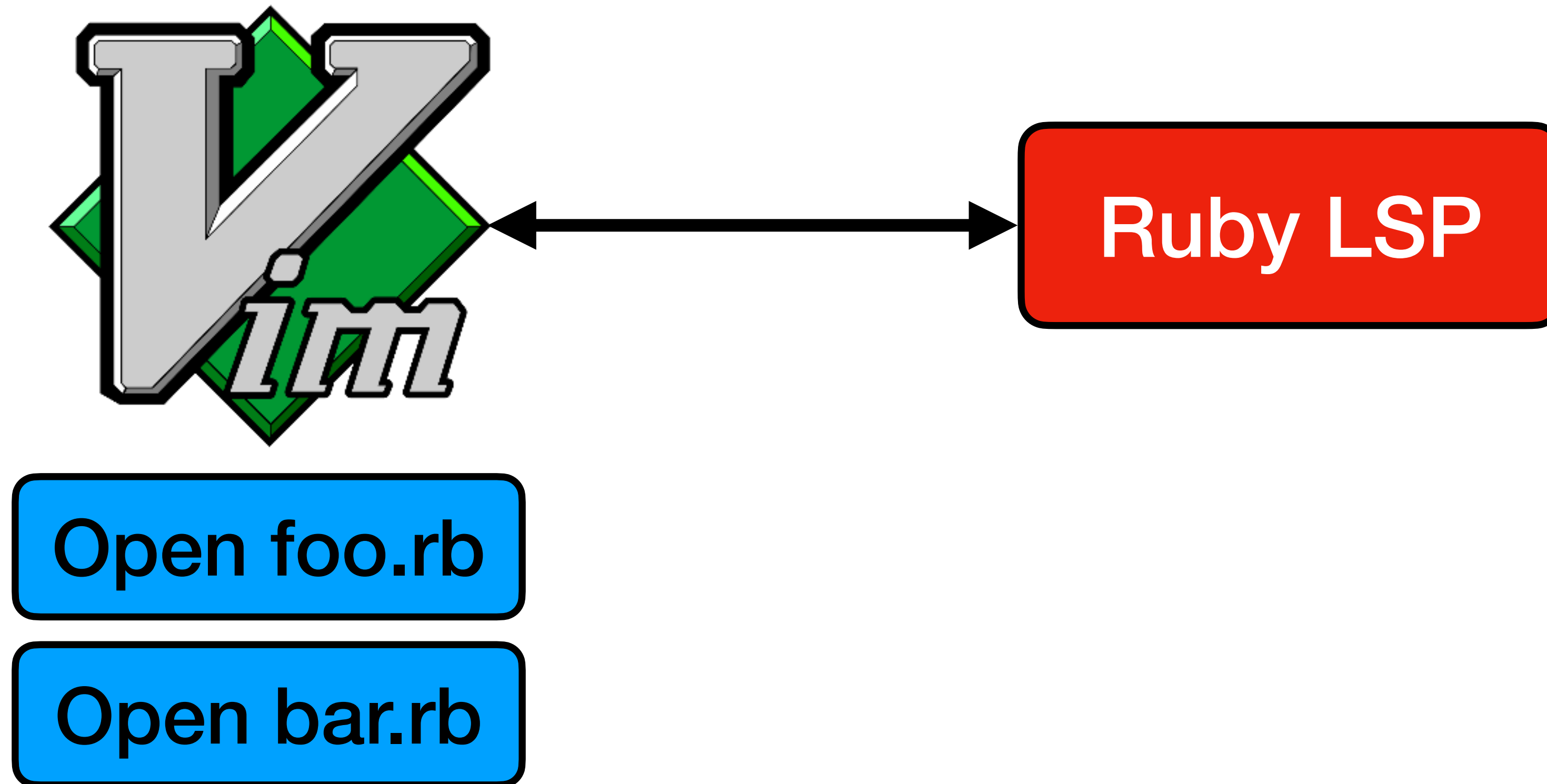
# Check Syntax

But only check syntax on Save

```
def foo  
  if  
  end
```

**Communicate via  
STDIN / STDOUT *or* TCP**

# Typical Order of Operations



# Language Server Protocol

Just JSON with a header

```
Content-Length: 1234\r\n
Content-Type: application/vscode-jsonrpc; charset=utf-8\r\n
\r\n
{ cool:"stuff",live:"stream"...}
```



**Not Request / Response**

**Events, encoded as JSON**

**Respond to events with `id`**

# Event Message Reader

## Read Messages from \$stdin and Parse



```
module LSP
  class Reader
    def initialize
      @io = $stdin.binmode
    end

    def read
      buffer = @io.gets("\r\n\r\n")
      content_length = buffer.match(/Content-Length: (\d+)/i)[1].to_i
      message = @io.read(content_length)
      JSON.parse message, symbolize_names: true
    end
  end
end
```

Read Header in  
to a Buffer

Read JSON event  
and parse

Get Content  
Length

# Event Message Writer

Write Hash as JSON to \$stdout



```
module LSP
  class Writer
    def initialize
      @io = $stdout.binmode
    end

    def write response
      str = JSON.dump(response.merge("jsonrpc" => "2.0"))
      @io.write "Content-Length: #{str.bytesize}\r\n"
      @io.write "\r\n"
      @io.write str
      @io.flush
    end
  end
end
```

**Calculate and write length** (arrow pointing to `#{str.bytesize}`)

**Send JSON Body** (arrow pointing to `@io.write str`)

# Event Loop



```
module LSP
  def self.run
    reader = Reader.new
    writer = Writer.new

    # Handle events
    subscriber = LSP::Events.new

    loop do
      # Read an event
      message = reader.read

      # Ask the handler to handle the event
      subscriber.handle message[:method], message, writer
    end
  end
end
```

# First Event

## “initialize” event



Content-Length: 2683\r\n

\r\n

```
{"id":1,"jsonrpc":"2.0","method":"initialize","params":{"rootUri":"file:///Users/aaron/git/lsp-stream","capabilities":{"workspace":{"workspaceFolders":false,"configuration":true,"symbol":{"dynamicRegistration":false},"applyEdit":true},"window":{"workDoneProgress":false},"textDocument":{"callHierarchy":{"dynamicRegistration":false},"rename":{"prepareSupport":true,"dynamicRegistration":false,"prepareSupportDefaultBehavior":1},"codeAction":{"isPreferredSupport":true,"disabledSupport":true,"codeActionLiteralSupport":{"codeActionKind":{"valueSet":["","quickfix","refactor","refactor.extract","refactor.inline","refactor.rewrite","source","source.organizeImports"]}},"dynamicRegistration":false},"completion":{"completionItem":{"snippetSupport":false,"resolveSupport":{"properties":["additionalTextEdits"]},"documentationFormat":["markdown","plaintext"]},"dynamicRegistration":false,"completionItemKind":{"valueSet":["10","11","12","13","14","15","16","17","18","19","20","21","22","23","24","25","1","2","3","4","5","6","7","8","9"]}}},"formatting":{"dynamicRegistration":false},"codeLens":{"dynamicRegistration":false},"inlayHint":{"dynamicRegistration":false},"hover":{"dynamicRegistration":false,"contentFormat":["markdown","plaintext"]},"rangeFormatting":{"dynamicRegistration":false},"declaration":{"dynamicRegistration":false,"linkSupport":true},"references":{"dynamicRegistration":false},"typeHierarchy":{"dynamicRegistration":false},"foldingRange":{"rangeLimit":5000,"dynamicRegistration":false,"lineFoldingOnly":true},"documentSymbol":{"symbolKind":{"valueSet":["10","11","12","13","14","15","16","17","18","19","20","21","22","23","24","25","26","1","2","3","4","5","6","7","8","9"]},"dynamicRegistration":false,"labelSupport":false,"hierarchicalDocumentSymbolSupport":false},"publishDiagnostics":{"relatedInformation":true},"synchronization":{"dynamicRegistration":false,"willSaveWaitUntil":false,"willSave":false,"didSave":true},"documentHighlight":{"dynamicRegistration":false},"implementation":{"dynamicRegistration":false,"linkSupport":true},"typeDefinition":{"dynamicRegistration":false,"linkSupport":true},"semanticTokens":{"serverCancelSupport":false,"requests":{"full":false,"range":false},"multilineTokenSupport":false,"dynamicRegistration":false,"overlappingTokenSupport":false,"tokenTypes":["type","class","enum","interface","struct","typeParameter","parameter","variable","property","enumMember","event","function","method","macro","keyword","modifier","comment","string","number","regexp","operator"],"tokenModifiers":[],"formats":["relative"]},"signatureHelp":{"dynamicRegistration":false},"definition":{"dynamicRegistration":false,"linkSupport":true}}},"rootPath":"/Users/aaron/git/lsp-stream","clientInfo":{"name":"vim-lsp"},"processId":51035,"trace":"off"}}
```

# First Event

## “initialize” event

```
Content-Length: 2683\r\n\r\n{"id":1,"jsonrpc":"2.0","method":"initialize"
```

```
}
```



# Event Handling

## Dispatch to methods based on event names



```
module LSP
  class Events
    DISPATCH = {
      "initialize" => :on_initialize,
      "textDocument/didSave" => :did_save
    }

    def handle method, message, writer
      send(DISPATCH.fetch(method) { :unknown }, message, writer)
    end

    def on_initialize message, writer
      # ...
    end
  end
end
```

Map event names  
to methods

Look up methods  
and call them

# Initialize Message

Tells the editor what features your server supports (server → editor)



```
module LSP
  class Events
    def on_initialize message, writer
      result = {
        "capabilities" => {
          "textDocumentSync" => {
            "openClose" => true, "change" => 1, "save" => true
          }
        }
      }
      writer.write(message[:id], result)
    end
  end
end
```

Three black arrows with white text pointing upwards towards the code. The first arrow is labeled 'Open / Close' and points to the 'openClose' field in the capabilities object. The second arrow is labeled 'Change' and points to the 'change' field. The third arrow is labeled 'Save' and points to the 'save' field.

# Document Was Saved

Editor  Server



```
{"method": "textDocument/didSave", "params": {  
  "textDocument": {  
    "uri": "file:///Users/aaron/git/minitest/test.rb"}}}
```

# Document Was Saved

Editor  Server



```
{"method": "textDocument/didSave", "params": {  
  "textDocument": {  
    "uri": "file:///Users/aaron/git/minitest/test.rb"}}}}
```

# Document Was Saved

Editor  Server



```
{"method": "textDocument/didSave", "params": {  
  "textDocument": {  
    "uri": "file:///Users/aaron/git/minitest/test.rb"}}}}
```

# Save Events

## Parse the File, Report Document Diagnostics



```
module LSP
  class Events
    def did_save message, writer
      doc = message.dig(:params, :textDocument)
      file = doc[:uri].delete_prefix("file://")

      result = { :uri => doc[:uri],
                 :diagnostics => [] }

      error = check_syntax file

      if error
        line_number = error.message[/(\s*<=:\d+\/)].to_i
        line = File.readlines(file)[line_number - 1]

        result = {
          :uri => doc[:uri], :diagnostics => [ {
            "range" => {
              "start" => { "character" => 0, "line" => line_number - 1 },
              "end" => { "character" => line.bytesize, "line" => line_number - 1 },
            },
            "message" => error.message.lines.first,
            "severity" => 1
          }, ], }
      end

      writer.write(method: "textDocument/publishDiagnostics", params: result)
    end
  end
end
```

**Set our default response**

**Check Syntax**

**Extract the Line Information**

**Construct Error Report**

**Send Error Report**

# Checking Syntax

Try compiling the file

```
def check_syntax file
  RubyVM::InstructionSequence.compile_file(file)
  nil
rescue SyntaxError => e
  e # only return syntax errors
rescue Exception
  nil # ignore anything else
end
```



**THAT'S IT!**



# Entire Language Server

It fits on one slide!



```
#!/Users/aaron/.rubies/arm64/ruby-trunk/bin/ruby

require "json"

module LSP
  class Writer
    def initialize
      @io = $stdout.binmode
    end

    def write response
      str = JSON.dump(response.merge("jsonrpc" => "2.0"))
      @io.write "Content-Length: #{str.bytesize}\r\n"
      @io.write "\r\n"
      @io.write str
      @io.flush
    end
  end

  class Reader
    def initialize
      @io = $stdin.binmode
    end

    def read
      buffer = @io.gets("\r\n\r\n")
      content_length = buffer.match(/Content-Length: (\d+)/i)[1].to_i
      message = @io.read(content_length)
      JSON.parse message, symbolize_names: true
    end
  end

  class Events
    DISPATCH = {
      "initialize" => :on_initialize,
      "textDocument/didSave" => :did_save
    }

    def handle method, message, writer
      send DISPATCH.fetch(method) { :unknown }, message, writer
    end

    def on_initialize message, writer
      result = {
        "capabilities" => {
          "textDocumentSync" => { "openClose" => true, "change" => 1, "save" => true }
        }
      }

      writer.write(id: message[:id], result: result)
    end
  end
end
```

```
1 def foo x
  0   if x
  1   end
  2 end
```

~  
~  
~  
~  
~  
~  
~  
~  
~  
~  
~

Implement Other Events

Implement other Checks

# Language Server Protocol

<https://microsoft.github.io/language-server-protocol/>



[https://gist.github.com/tenderlove/  
9a18be7a27ba7a074a8ba8fbf554e794](https://gist.github.com/tenderlove/9a18be7a27ba7a074a8ba8fbf554e794)



# Application Record

**So Many Generated Methods!**

```
class User < ApplicationRecord  
end
```

# Routes Files

## Even More Generated Methods!

```
Rails.application.routes.draw do  
  resources :users  
  resources :posts  
end
```

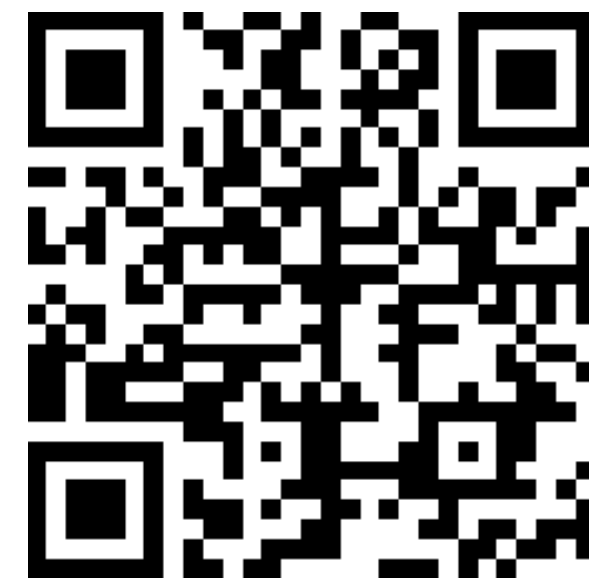


# Tapioca

<https://github.com/Shopify/tapioca>

**“What if Rails had a built-in Language Server?”**

**— Me, in my head, but now out loud at RailsConf**



# Prototype: Refreshing

<https://github.com/tenderlove/refreshing>

Hover Info for *Active Record*

```
10  
9  
8 ··# GET /users/1 or /users/1.json  
7 ··def show  
6 ··end  
5  
4 ··# GET /users/new  
3 ··def new  
2 ···@user = User.new  
1 ··end  
20  
1 ··# GET /users/1/edit  
2 ··def edit  
3 ··end  
4  
5 ··# POST /users or /users.json  
6 ··def create  
7 ···@user = User.new(user_params)  
8
```

Jump to “Definition”



```
10  
9  
8 ··# GET /users/1 or /users/1.json  
7 ··def show  
6 ··end  
5  
4 ··# GET /users/new  
3 ··def new  
2 ···@user = User.new  
1 ··end  
20  
1 ··# GET /users/1/edit  
2 ··def edit  
3 ··end  
4  
5 ··# POST /users or /users.json  
6 ··def create  
7 ···@user = User.new(user_params)  
8
```

# Hover Info for URL Helpers

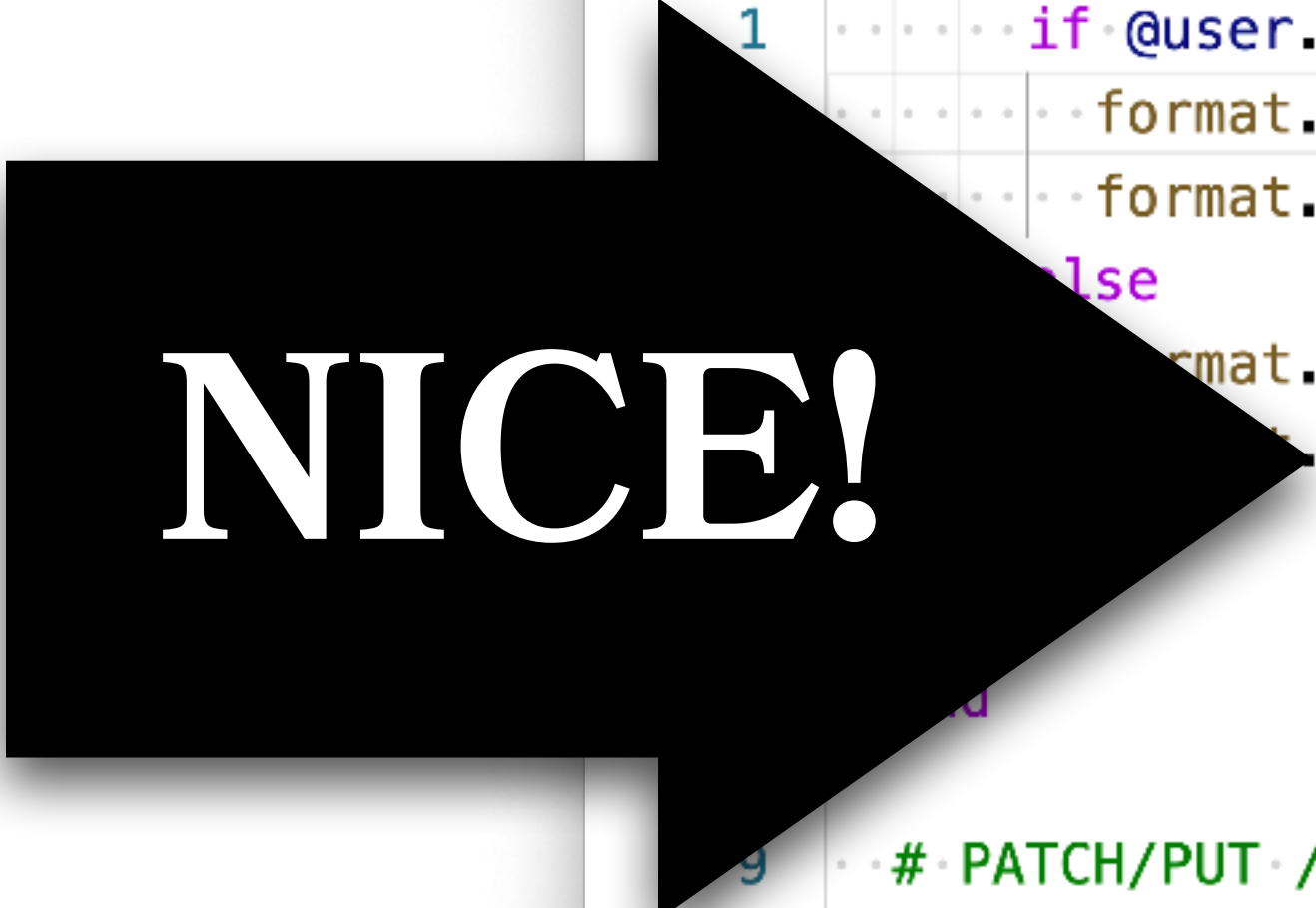
```
22 · # POST /users or /users.json
23 · def create
24 ·   @user = User.new(user_params)
25
26 ·   respond_to do |format|
27 ·     if @user.save
28 ·       format.html { redirect_to user_url(@user), notice: "User was successfully created." }
29 ·       format.json { render :show, status: :created, location: @user }
30 ·     else
31 ·       format.html { render :new, status: :unprocessable_entity }
32 ·       format.json { render json: @user.errors, status: :unprocessable_entity }
33 ·     end
34 ·   end
35 · end
36
37 · # PATCH/PUT /users/1 or /users/1.json
38 · def update
39 ·   respond_to do |format|
40 ·     if @user.update(user_params)
41 ·       format.html { redirect_to user_url(@user), notice: "User was successfully updated." }
42 ·       format.json { render :show, status: :ok, location: @user }
43 ·     else
44 ·       format.html { render :edit, status: :unprocessable_entity }
45 ·       format.json { render json: @user.errors, status: :unprocessable_entity }
46 ·     end
```

Failed to activate chruby environment: Command failed: /opt/home...

```
[Extension Development Host] users_controller.rb — blogsite
users_controller.rb U x routes.rb M index.html.erb U settings.json Settings posts_controller.rb
app > controllers > users_controller.rb
6 # POST /users or /users.json
5 def create
4   @user = User.new(user_params)
3
2   respond_to do |format|
1     if @user.save
        format.html { redirect_to user_url(@user), notice: "User was successfully created." }
        format.json { render :show, status: :created, location: @user }
      else
        format.html { render :new, status: :unprocessable_entity }
        format.json { render json: @user.errors, status: :unprocessable_entity }
      end
    end
  end
end

9 # PATCH/PUT /users/1 or /users/1.json
10 def update
11   respond_to do |format|
12     if @user.update(user_params)
13       format.html { redirect_to user_url(@user), notice: "User was successfully updated." }
14       format.json { render :show, status: :ok, location: @user }
15     else
16       format.html { render :edit, status: :unprocessable_entity }
17       format.json { render json: @user.errors, status: :unprocessable_entity }
18     end
19   end
20 end
21
22 # DELETE /users/1 or /users/1.json
```

- URI Pattern: /users/:id(.:format)
- Controller#Action: users#show



couldn't run htmlbeautifier 'spawn htmlbeautifier ENOENT'

# Jump to Definition for URL Helpers



```
6 · # POST /users or /users.json
5 · def create
4 ·   @user = User.new(user_params)
3
2 ·   respond_to do |format|
1 ·     if @user.save
28 ·       format.html { redirect_to user_url(@user), notice: "User was successfully created." }
1 ·       format.json { render :show, status: :created, location: @user }
2 ·     else
3 ·       format.html { render :new, status: :unprocessable_entity }
4 ·       format.json { render json: @user.errors, status: :unprocessable_entity }
5 ·     end
6 ·   end
7 · end
8
9 · # PATCH/PUT /users/1 or /users/1.json
10 · def update
11 ·   respond_to do |format|
12 ·     if @user.update(user_params)
13 ·       format.html { redirect_to user_url(@user), notice: "User was successfully updated." }
14 ·       format.json { render :show, status: :ok, location: @user }
15 ·     else
16 ·       format.html { render :edit, status: :unprocessable_entity }
17 ·       format.json { render json: @user.errors, status: :unprocessable_entity }
18 ·     end
```

# Automatic Refreshing and Error Highlighting

# Users

[New user](#)

```
[Extension Development Host] index.html.erb -- blogsite
users_controller.rb U routes.rb M index.html.erb U X settings.json Settings posts_controller.rb
app > views > users > <> index.html.erb
4 <p style="color: green"><%= notice %></p>
3
2 <h1>Users</h1>
1
5 <div id="users">
1 <%= @users.each do |user| %>
2 <%= render user %>
3 <p>
4 <%= link_to "Show this user", user %>
5 </p>
6 <%= end %>
7 </div>
8
9 <%= link_to "New user", new_user_path %>
10
```

couldn't run htmlbeautifier 'spawn htmlbeautifier ENOENT'

main\* 0 0 1 change, after #4 34 seconds ago Ln 5, Col 7 Spaces: 2 UTF-8 LF ERB

We're all TDD'ing our views  
though, right?

More Ideas!





# Ruby LSP Rails

<https://github.com/Shopify/ruby-lsp-rails>



# Language Server Hacks



App **Must** Be Running

# Fetching Active Record Columns

## Check that the constant inherits from Active Record

```
if token && token =~ /^[A-Z]/
  begin
    const = Object.const_get(token)
    value = "# #{const.name}\n"
    if const < ActiveRecord::Base
      name_header = "Column Name"
      type_header = "Column Type"
      info = [[name_header, type_header]] + const.columns.map { |column|
        ["`" + column.name.to_s + "`", column.type.to_s]
      }
      max_name_len = info.map(&:first).sort_by(&:length).last.length
      max_type_len = info.map(&:last).sort_by(&:length).last.length

      name_header, type_header = *info.shift
      value << ("| " + name_header.ljust(max_name_len))
      value << (" | " + type_header.ljust(max_type_len) + " |\n")
      value << ("| " + ("-" * max_name_len))
      value << (" | " + ("-" * max_type_len) + " |\n")
      info.each do |name, type|
        value << ("| " + name.ljust(max_name_len))
        value << (" | " + type.ljust(max_type_len) + " |\n")
      end
    end
  end
rescue NameError
end
end
```

# Fetching Active Record Columns

## Check that the constant inherits from Active Record

```
if token && token =~ /^[A-Z]/
  begin
    const = Object.const_get(token)
    value = "# #{const.name}\n"
    if const < ActiveRecord::Base
      name_header = "Column Name"
      type_header = "Column Type"
      info = [[name_header, type_header]] + const.columns.map { |column|
        ["`" + column.name.to_s + "`", column.type.to_s]
      }
      max_name_len = info.map(&:first).sort_by(&:length).last.length
      max_type_len = info.map(&:last).sort_by(&:length).last.length

      name_header, type_header = *info.shift
      value << ("| " + name_header.ljust(max_name_len))
      value << (" | " + type_header.ljust(max_type_len) + " |\n")
      value << ("| " + ("-" * max_name_len))
      value << (" | " + ("-" * max_type_len) + " |\n")
      info.each do |name, type|
        value << ("| " + name.ljust(max_name_len))
        value << (" | " + type.ljust(max_type_len) + " |\n")
      end
    end
  end
rescue NameError
end
end
```

# Fetching Active Record Columns

## Check that the constant inherits from Active Record

```
if token && token =~ /^[A-Z]/
  begin
    const = Object.const_get(token)
    value = "# #{const.name}\n"
    if const < ActiveRecord::Base
      name_header = "Column Name"
      type_header = "Column Type"
      info = [[name_header, type_header]] + const.columns.map { |column|
        ["`" + column.name.to_s + "`", column.type.to_s]
      }
      max_name_len = info.map(&:first).sort_by(&:length).last.length
      max_type_len = info.map(&:last).sort_by(&:length).last.length

      name_header, type_header = *info.shift
      value << ("| " + name_header.ljust(max_name_len))
      value << (" | " + type_header.ljust(max_type_len) + " |\n")
      value << ("| " + ("-" * max_name_len))
      value << (" | " + ("-" * max_type_len) + " |\n")
      info.each do |name, type|
        value << ("| " + name.ljust(max_name_len))
        value << (" | " + type.ljust(max_type_len) + " |\n")
      end
    end
  rescue NameError
  end
end
```

# URL Helper Information

“rake routes” already knows this info!

```
value = ''

if token && token =~ /^([a-z_]+)(_path|_url)$/
  # check if it's a route helper
  if Rails.application.routes.named_routes.key?($1)
    route = Rails.application.routes.named_routes.get($1)
    controller = route.requirements[:controller]
    action = route.requirements[:action]
    value = "* URI Pattern:      `#{route.path.spec}` \n* Controller#Action: `#{controller}
##{action}`"
  else
    value = "Something else"
  end
else
  # Other Stuff
end
```

# URL Helper Information

“rake routes” already knows this info!

```
value = ''

if token && token =~ /^([a-z_]+)(_path|_url)$/
  # check if it's a route helper
  if Rails.application.routes.named_routes.key?($1)
    route = Rails.application.routes.named_routes.get($1)
    controller = route.requirements[:controller]
    action = route.requirements[:action]
    value = "* URI Pattern:      '#{route.path.spec}'\n* Controller#Action:  '#{controller}
##{action}'"
  else
    value = "Something else"
  end
else
  # Other Stuff
end
```

# URL Helper Information

“rake routes” already knows this info!

```
value = ''

if token && token =~ /^([a-z_]+)(_path|_url)$/
  # check if it's a route helper
  if Rails.application.routes.named_routes.key?($1)
    route = Rails.application.routes.named_routes.get($1)
    controller = route.requirements[:controller]
    action = route.requirements[:action]
    value = "* URI Pattern:      `#{route.path.spec}` \n* Controller#Action: `#{controller}
##{action}`"
  else
    value = "Something else"
  end
else
  # Other Stuff
end
```

# Helper Definitions

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# Print source location when inspecting routes #47877

Merged tenderlove merged 1 commit into rails:main from luanzeba:route-source-location last week

Conversation 3 Commits 1 Checks 8 Files changed 7 +63 -28

luanzeba commented 2 weeks ago

In larger route files, or when routes are spread across multiple files, it can be difficult to get from the output of the route inspector to the relevant route definition.

This commit adds a route source location to the route, and uses that in the HtmlTableFormatter (for rails/info and the debug exceptions middleware) and the Expanded formatter (for rails routes -E).

To avoid doing extra work in production, it only sets the source location in development.

This commit injects the application's backtrace cleaner so we can use it to remove the rails root from the path. This also means we don't get source locations for the routes defined by Rails.

If mounting an engine from a gem, we'll get a source location for where we mount it in the application, but not for the routes defined in the gem itself. That's probably good enough, since Rails already prints routes for an engine separately under the title "Routes for Foo::Engine".

```
--[ Route 14 ]-----
Prefix      | new_gist
Verb        | GET
URI         | /gist(.:format)
Controller#Action | gists/gists#new
Source Location | config/routes/gist.rb:3
--[ Route 15 ]-----
Prefix      | new
Verb        | GET
URI         | /gist/new(.:format)
Controller#Action | gists/gists#new
Source Location | config/routes/gist.rb:4
```

cc @tenderlove

rails-bot bot added the actionpack label 2 weeks ago

Reviewers: rafaelfranca

Assignees: No one—assign yourself

Labels: actionpack

Projects: None yet

Milestone: No milestone

Development: Successfully merging this pull request may close these issues. None yet

Notifications: Unsubscribe

4 participants

Lock conversation

# Route Source Location

**bin/rails routes -E**

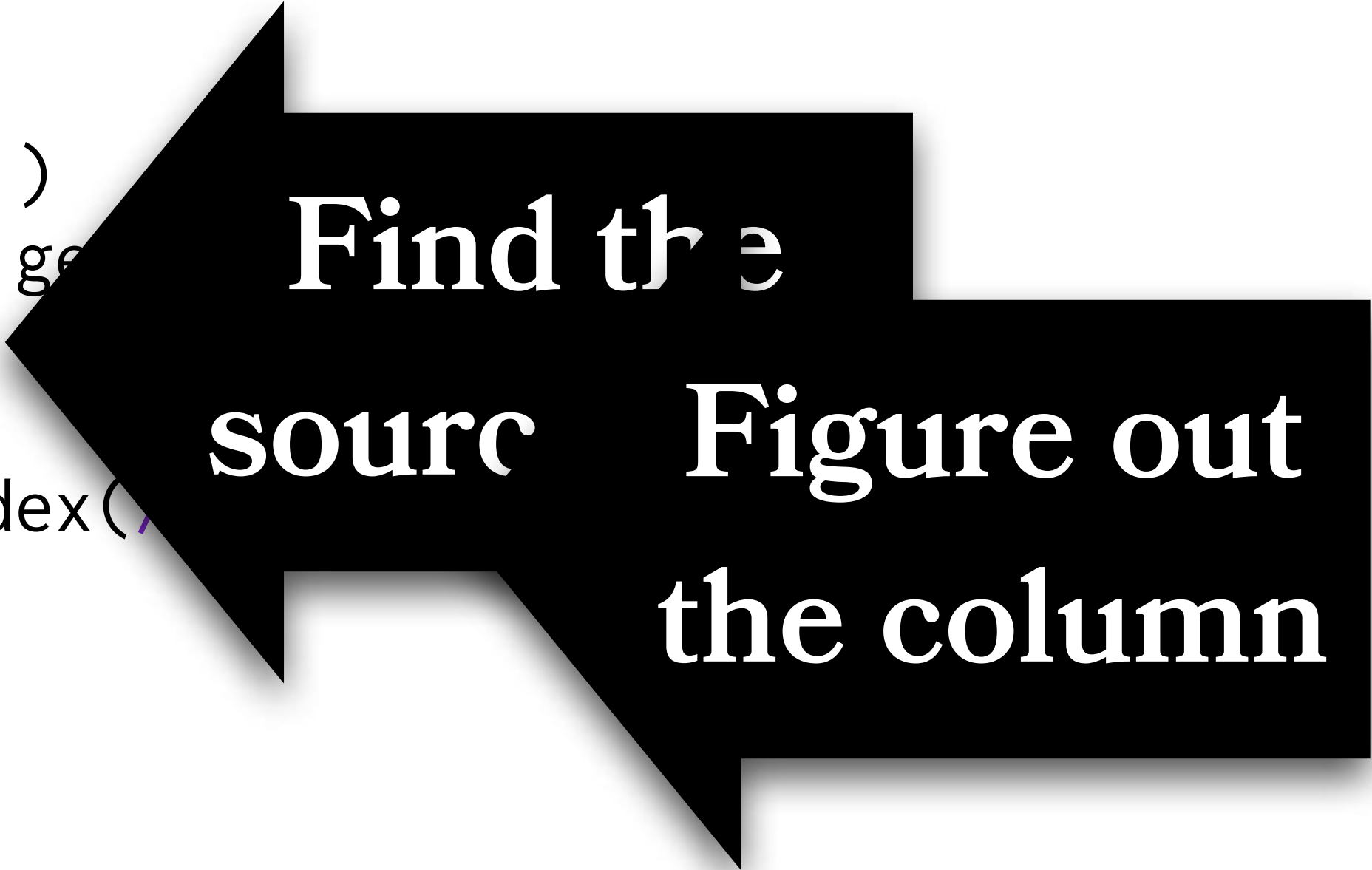
```
[aaron@tc-lan-adapter 🐛 ~/g/blogsite (main)]$ bin/rails routes -E
--[ Route 1 ]-----
Prefix          | users
Verb            | GET
URI             | /users(.:format)
Controller#Action | users#index
Source Location  | config/routes.rb:6
--[ Route 2 ]-----
Prefix          |
Verb            | POST
URI             | /users(.:format)
Controller#Action | users#create
Source Location  | config/routes.rb:6
--[ Route 3 ]-----
Prefix          | new_user
Verb            | GET
URI             | /users/new(.:format)
Controller#Action | users#new
Source Location  | config/routes.rb:6
```



# Route Source Location

## Language Server Lookup

```
if Rails.application.routes.named_routes.key?($1)
  route = Rails.application.routes.named_routes.get($1)
  file, line = route.source_location.split(':')
  file = File.join(@root, file)
  char = File.readlines(file)[line.to_i - 1].index($1)
  uri = "file://" + file
  result = {
    :uri => uri,
    :range => {
      start: { line: line.to_i - 1, character: char },
      end: { line: line.to_i, character: 0 }
    }
  }
  writer.write(id: request[:id], result: result)
end
```



Find the  
source Figure out  
the column



Send info  
back to editor

# Error Information

# ERB is converted to Ruby

Exceptions in the generated code must be mapped to the source

## Source ERB

```
<p style="color: green"><%= notice %></p>

<h1>Users</h1>

<div id="users">
  <% @users.each do |user| %>
    <%= render user %>
    <p>
      <%= link_to "Show this user", user %>
    </p>
  <% end %>
</div>

<%= link_to "New user", new_user_path %>
```

## Evaluated Ruby

```
#coding:ASCII-8BIT
_erbout = +''; _erbout.<< "<p style=\"color: green\">".freeze;
_erbout.<<(( notice ).to_s); _erbout.<< "</p>\n\n<h1>Users</
h1>\n\n<div id=\"users\">\n  ".freeze

; @users.each do |user| ; _erbout.<< "\n    ".freeze
; _erbout.<<(( render user ).to_s); _erbout.<< "\n    <p>\n
".freeze

; _erbout.<<(( link_to "Show this user", user ).to_s); _erbout.<<
"\n    </p>\n  ".freeze

; end ; _erbout.<< "\n</div>\n\n".freeze

; _erbout.<<(( link_to "New user", new_user_path ).to_s);
_erbout.<< "\n".freeze
; _erbout
```

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Code Pull requests 378 Actions Security 21 Insights

## Add node\_id\_for\_location function #6593

Merged mame merged 1 commit into ruby:master from eileencodes:add-node-location on Oct 30, 2022

Conversation 8 Commits 1 Checks 91 Files changed 3 +40 -0

**eileencodes** commented on Oct 19, 2022 Contributor

We want to use error highlight with eval'd code, specifically ERB templates. We're able to recover the generated code for eval'd templates and can get a parse tree for the ERB generated code, but we don't have a way to get the node id from the backtrace location. So we can't pass the right node into error highlight.

This patch gives us an API to get the node id from the backtrace location so we can find the node in the AST.

Co-authored-by: Aaron Patterson [tenderlove@ruby-lang.org](mailto:tenderlove@ruby-lang.org)

**eileencodes** added a commit to eileencodes/error\_highlight that referenced this pull request on Oct 19, 2022

Support nodes in spot **Partially verified** 76118f4

**eileencodes** mentioned this pull request on Oct 19, 2022

Support nodes in spot [ruby/error\\_highlight#26](#) **Merged**

**eileencodes** force-pushed the add-node-location branch from b1e2b4e to 1aed99c 6 months ago **Compare**

**eileencodes** commented on Oct 19, 2022 Contributor Author

Error highlight PR showing why we need this: [ruby/error\\_highlight#26](#)

cc/ @mame do you want me to open a redmine ticket? Happy to if there needs to be discussion about this.

Reviewers: No reviews

Assignees: No one—assign yourself

Labels: None yet

Milestone: No milestone

Notifications: **Unsubscribe** Customize

You're receiving notifications because you're watching this repository.

3 participants

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## Support nodes in spot #26

Merged mame merged 1 commit into ruby:master from eileencodes:support-nodes-in-spot on Oct 30, 2022

Conversation 2 Commits 1 Checks 2 Files changed 2 +33 -2

**eileencodes** commented on Oct 19, 2022 Contributor

Fixes a bug where `spot` was using the wrong local variable.

We want to use error highlight with code that has been eval'd, specifically ERB templates. We can recover the compiled source code of the ERB template but we need an API to pass the node into error highlight's `spot`.

Required Ruby PR: [ruby/ruby#6593](#)

Co-authored-by: Aaron Patterson [tenderlove@ruby-lang.org](mailto:tenderlove@ruby-lang.org)

**eileencodes** added a commit to eileencodes/ruby that referenced this pull request on Oct 19, 2022

Add `node_id_for_location` function Partially verified ✓ 1aed99c

**eileencodes** mentioned this pull request on Oct 19, 2022

Add `node_id_for_location` function [ruby/ruby#6593](#) Merged

**mame** commented on Oct 23, 2022 Member

Thanks! Could you please guard the new test with `if defined?(RubyVM::AbstractSyntaxTree.node_id_for_location)` or something to prevent the failure on Ruby 3.1?

**Support nodes in spot** Partially verified ✓ fd1ca61

Reviewers: No reviews

Assignees: No one—assign yourself

Labels: None yet

Milestone: No milestone

Development: Successfully merging this pull request may close these issues. None yet

Notifications: Customize

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2 participants

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# Add column information inside ERB templates #46171


Merged tenderlove merged 21 commits into main from refactor-errors on Oct 11, 2022

Conversation 0 Commits 21 Checks 4 Files changed 26 +728 -265

tenderlove commented on Oct 1, 2022 • edited Member

This PR builds on the work done in #45818. It adds column information to exceptions that occur inside ERB templates. Here are some "before" and "after" screenshots.

Before:



```
Showing /Users/aaron/git/blogsite/app/views/posts/index.html.erb where line #9 raised:
undefined method `length` for nil:NilClass

Extracted source (around line #9):
7 Errors get highlighted.
8
9 Posts: <%= @post.length %>
10
11 Neat!
12
```

Tip: You may want to add gem 'error\_highlight', '=> 0.4.0' into your Gemfile, which will display the fine-grained error location.

Rails.root: /Users/aaron/git/blogsite

[Application Trace](#) | [Framework Trace](#) | [Full Trace](#)  
app/views/posts/index.html.erb:9

**Request**

Reviewers: No reviews

Assignees: No one—assign yourself

Labels: actionpack, actionview, activesupport, railties

Projects: None yet

Milestone: No milestone

Development: Successfully merging this pull request may close these issues. None yet

Notifications: Unsubscribe

You're receiving notifications because you're watching this repository.

1 participant

# NoMethodError in Posts#index

Showing `/Users/aaron/git/blogsite/app/views/posts/index.html.erb` where line **#9** raised:

```
undefined method `length' for nil:NilClass
```

Extracted source (around line **#9**):

```
7 Errors get highlighted.  
8  
9 Posts: <% @post.length %>  
10  
11 Neat!  
12
```

Tip: You may want to add gem `'error_highlight', '>= 0.4.0'` into your Gemfile, which will display the fine-grained error location.

Rails.root: `/Users/aaron/git/blogsite`

[Application Trace](#) | [Framework Trace](#) | [Full Trace](#)

[app/views/posts/index.html.erb:9](#)

## Request

# NoMethodError in Posts#index

Showing `/Users/aaron/git/blogsite/app/views/posts/index.html.erb` where line **#9** raised:

```
undefined method `length' for nil:NilClass
```

Extracted source (around line **#9**):

```
7 Errors get highlighted.  
8  
9 Posts: <% @post.length %>  
10  
11 Neat!  
12
```

Tip: You may want to add gem 'error\_highlight', '>= 0.4.0' into your Gemfile, which will display the fine-grained error location.

Rails.root: `/Users/aaron/git/blogsite`

[Application Trace](#) | [Framework Trace](#) | [Full Trace](#)

[app/views/posts/index.html.erb:9](#)

## Request

Thank you Mame!

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# Use error\_highlight gem to locate the columns where an error was raised #45818

Merged byroot merged 1 commit into rails:main from mame:support-error\_highlight on Aug 23, 2022

Conversation 36 Commits 1 Checks 4 Files changed 13 +119 -18

mame commented on Aug 11, 2022 Contributor

## Summary

This PR uses error\_highlight (available since Ruby 3.1) to display the fine-grained location where an error occurred, not only a line number but also a column range of the code fragment in question.

Here is an example of gsub misspelled as gsub:

```
NoMethodError in ApplicationController#hello
undefined method `gsub' for "Hello world":String
Did you mean?
  gsub
  gsub!
```

Extracted source (around line #4):

```
2 def hello
3   str = "hello world"
4   str.gsub("oo", "bar")
5 end
6 end
```

This would be more useful for a method chain in one line. When undefined method '[]' for nil:NilClass occurs in a chain of [] s, you can immediately see which [] caused the error. This is an example of :articles misspelled as :article:

```
NoMethodError in ApplicationController#hello
```

Reviewers: byroot, yahonda, jhawthorn, st0012

Assignees: No one—assign yourself

Labels: actionpack, activesupport, railties

Projects: None yet

Milestone: No milestone

Development: Successfully merging this pull request may close these issues. None yet

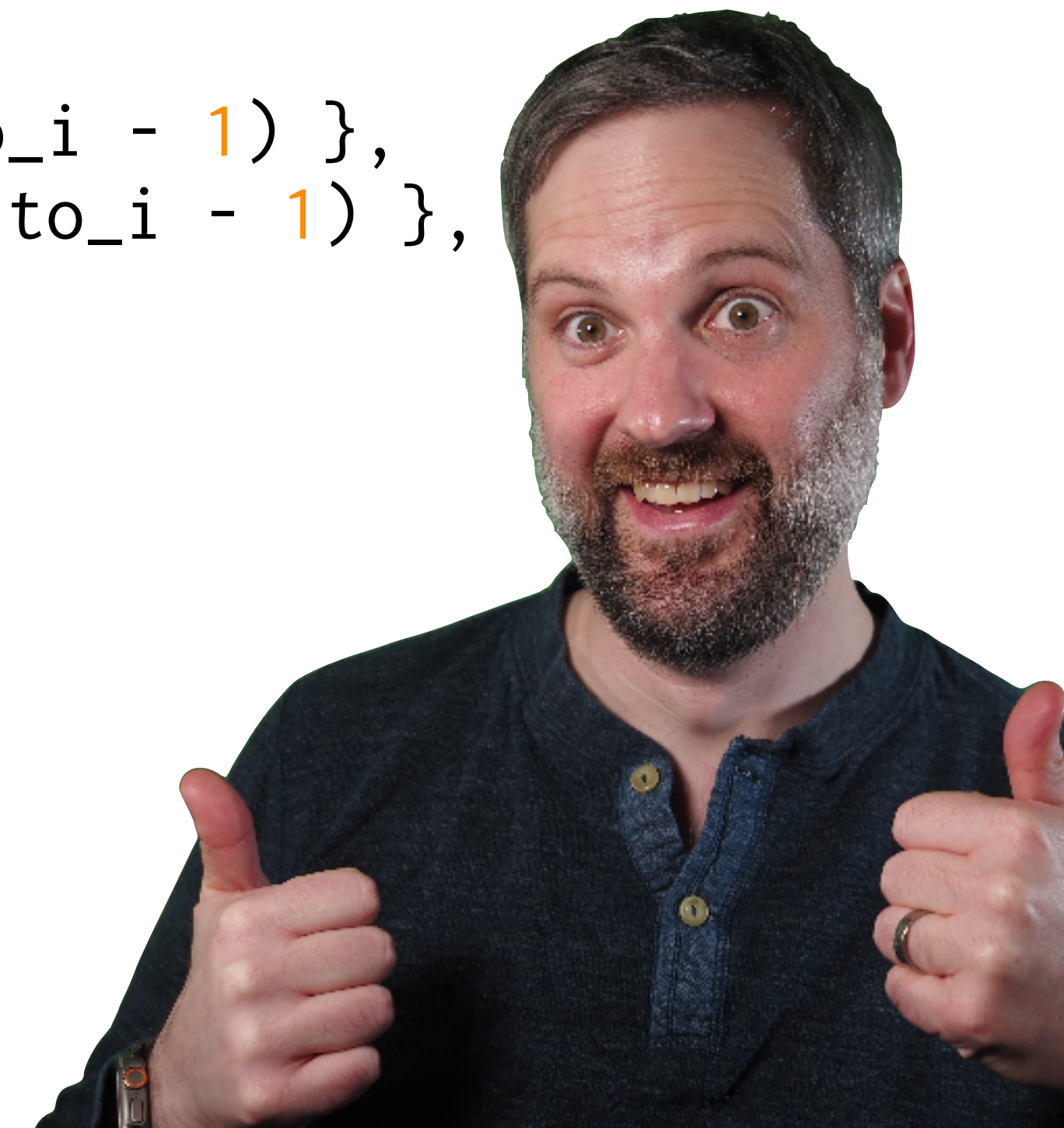
Notifications: Customize

Unsubscribe

# Language Server Integration

## Simply Monkey Patch Rails! (Sorry Eileen)

```
class ActionDispatch::DebugView
  def send_exception ex
    resp = {
      uri: "file://" + ex.file_name,
      diagnostics: [
        "range" => {
          "start" => { "character" => 0, "line" => (ex.line_number.to_i - 1) },
          "end" => { "character" => 65536, "line" => (ex.line_number.to_i - 1) },
        },
        "severity" => 1,
        "message" => ex.message
      ]
    }
    Refreshing::LSP::ERROR_QUEUE << [:error, resp]
  end
end
```



# Language Server Integration Cont.

## Pop off the queue and send to the editor

```
Thread.new do
  while item = ERROR_QUEUE.pop
    type, val = *item
    if type == :clear
      subscriber.files.each do |file, version|
        val = { uri: file, version: version, diagnostics: [] }
        writer.write(method: "textDocument/publishDiagnostics", params: val)
      end
    else
      val[:version] = subscriber.files[val[:uri]]
      writer.write(method: "textDocument/publishDiagnostics", params: val)
    end
  end
end
```

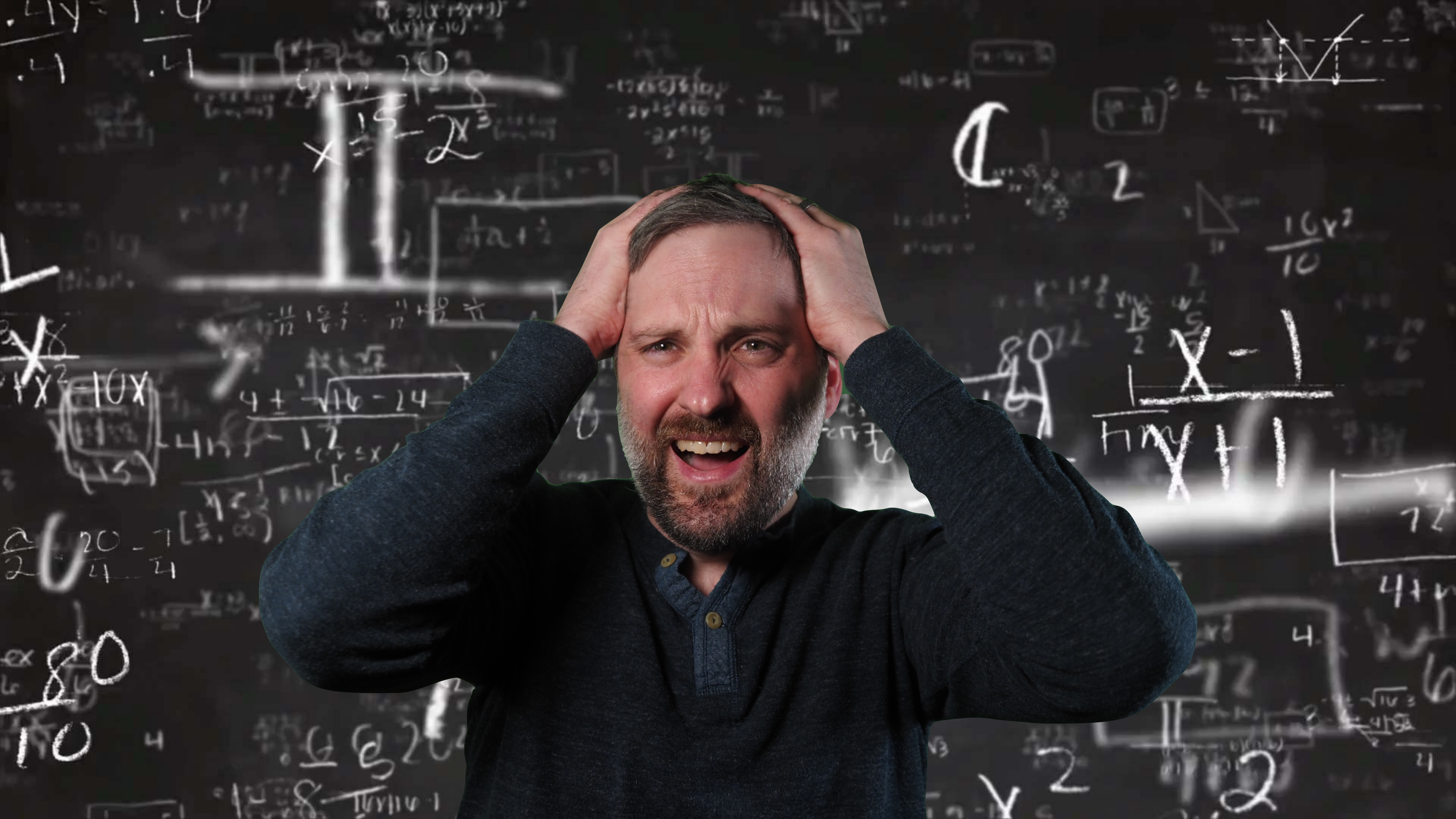
This is a Rube Goldberg Machine

Ruby Goldberg?

My Pitch.



Different Servers Have  
Different Features



[Extension Development Host] index.html.erb — blogsite


EXTENSIONS: MARKETPLACE rails

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users\_controller.rb U routes.rb M index.html.erb U X settings.json Settings posts\_controller.rb

app > views > users > index.html.erb

```
1 <p style="color: green"><%= notice %></p>
2
3 <h1>Users</h1>
4
5 <div id="users">
6   <%= @users.each do |user| %>
7     <%= render user %>
8     <p>
9       <%= link_to "Show this user", user %>
10    </p>
11  <%= end %>
12 </div>
13
14 <%= link_to "New user", new_user_path %>
15
```



# **Rails Should Include a Language Server**

**Only One**

**I might not value my time,  
but I highly value yours**

**Thank You!**

**Increased Creativity!**

**THANK YOU!**

