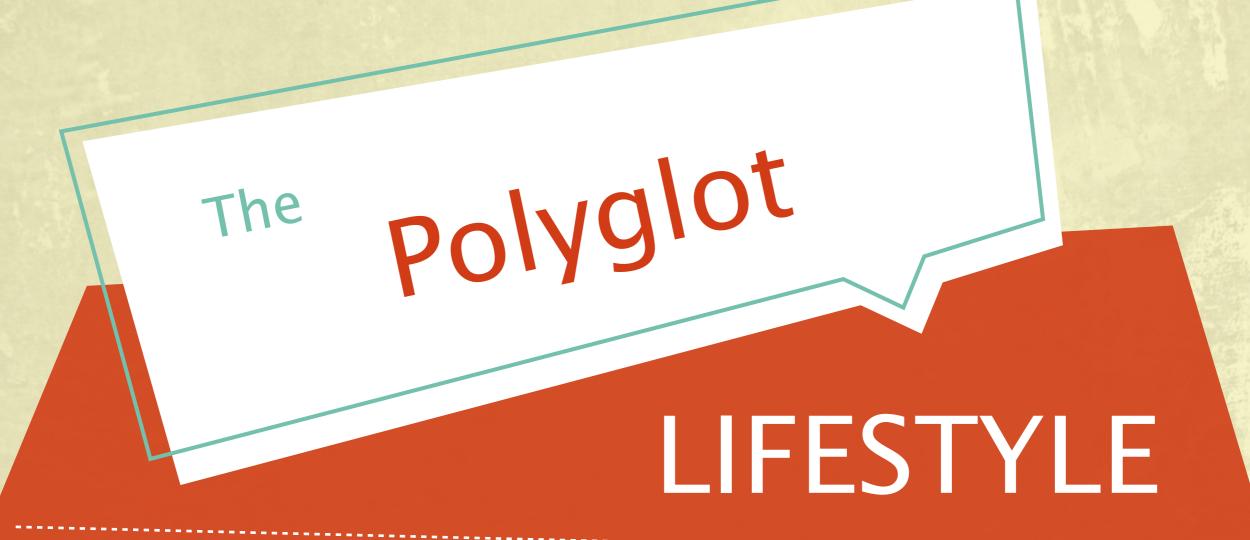


Johnny Winn







Johnny Winn







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Family

Why

is he sharing this?



Learning



Learning

Knowledge is constructed rather than acquired

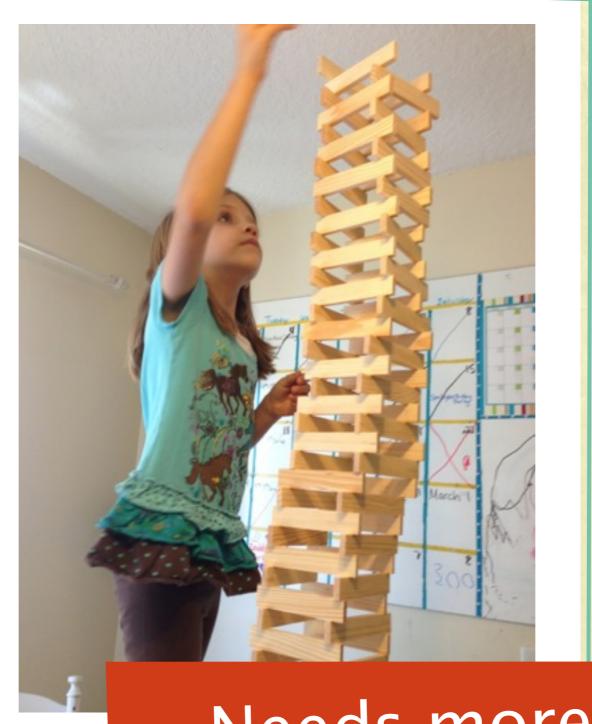
constructivism

Gather resources to support the learning process

scaffolding

What

does this have to do with programming?



Needs more scaffolding

HOW

do we live the Polyglot Lifestyle?

HOW

do we live the Polyglot Lifestyle?

Just Enough

Elixir



MIX It ALL Together



The fun

IN Function

```
johnny@MAXX:~$ iex
Erlang R16B02 (erts-5.10.3) [source] [64-bit] [smp:4:4] [async-threads:10] [hipe] [kernel-poll:false]
Interactive Elixir (0.12.5-dev) - press Ctrl+C to exit (type h() ENTER for help)
iex(1)> ■
```

johnny@MAXX:~\$ irb 2.0.0p195 :001 > johnny@MAXX:~\$ irb 2.0.0p195 :001 >

```
johnny@MAXX:~$ iex
Erlang R16B02 (erts-5.10.3) [source] [64-bit] [smp:4:4] [async-threads:10] [hipe] [kernel-poll:false]
Interactive Elixir (0.12.5-dev) - press Ctrl+C to exit (type h() ENTER for help)
iex(1)>
```

default values \\true

variables

elixir-lang.org/crash-course.html

```
1 defmodule Math do
    def sum([]), do: 0
    def sum([hlt]) do
     h + sum(t)
    end
8 end
```

sum.ex 1,1 All

"sum.ex" 8L, 87C written

```
1 def sum(list, acc=0)
     if list.length == 0
       puts acc
    else
     i = list.pop
      sum(list, acc + 1)
     end
8 end
 9
10 sum((1...50000).to_a)
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
```

redo.rb 10,14 Top

"redo.rb" 54L, 348C written

johnny@MAXX:~/projects/ruby\$ ruby redo.rb
redo.rb:2: stack level too deep (SystemStackError)
johnny@MAXX:~/projects/ruby\$

```
1 define_method(:acc) do llist, nl
    if list.length == 0
      puts n
    else
    i = list.pop
     n = i + n
     redo
    end
9 end
10
11 def sum(list)
    acc(list, ∅)
13 end
14
15 sum (1...500000).to_a
```

redo.rb 1,1 All

"redo.rb" 15L, 180C

johnny@MAXX:~/projects/ruby\$ ruby redo.rb

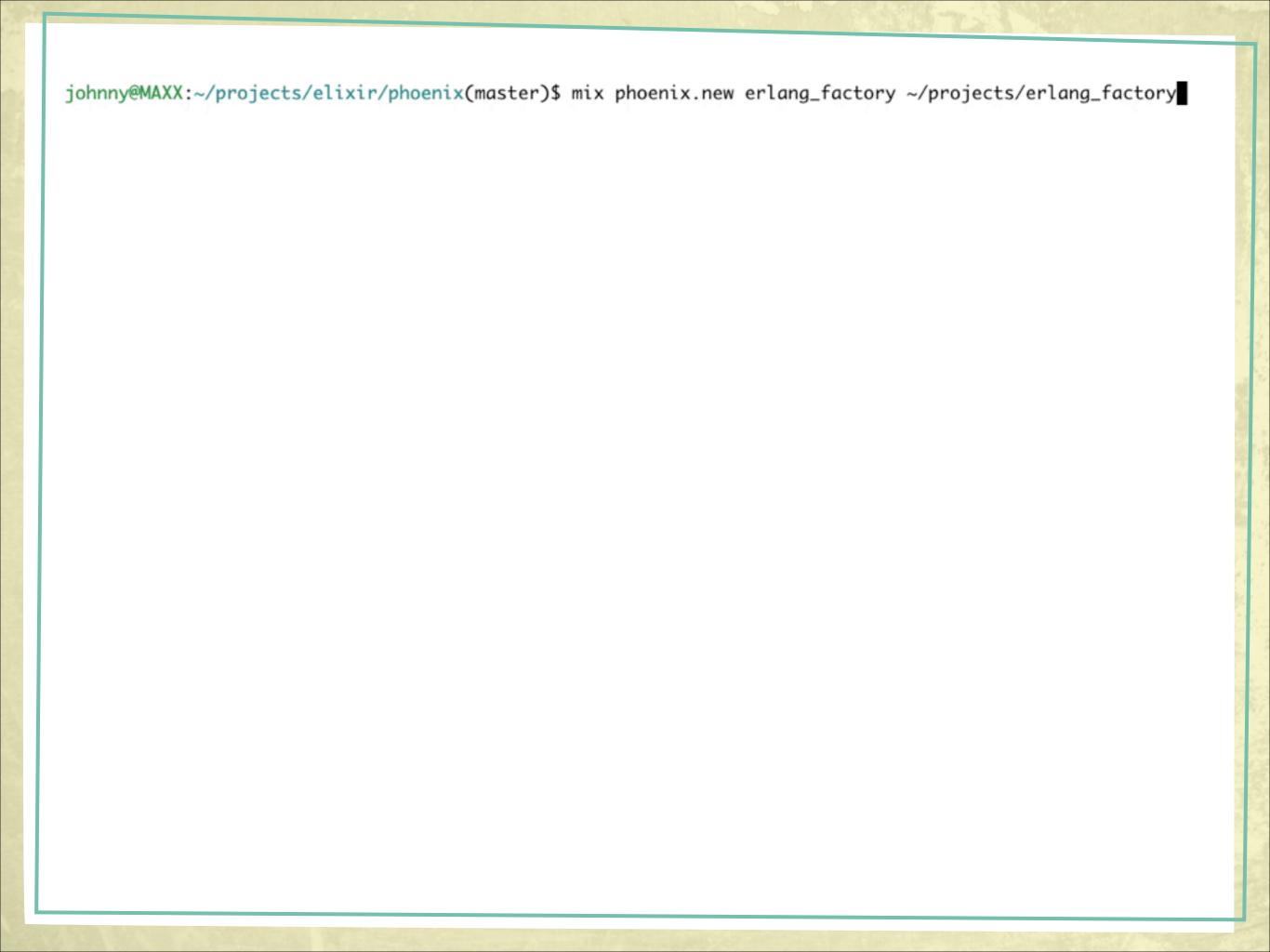
124999750000

johnny@MAXX:~/projects/ruby\$

Throw

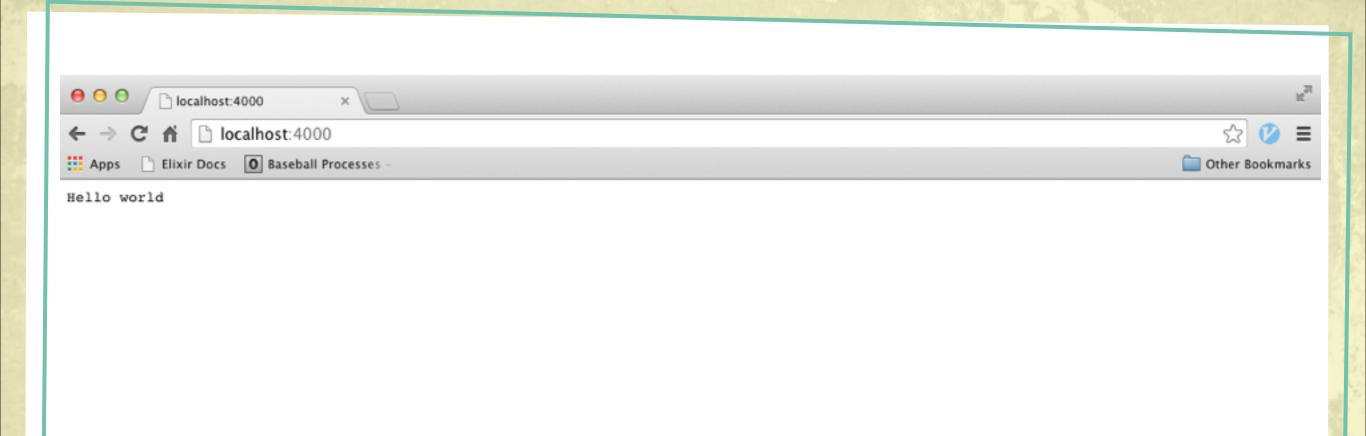
In The mix

```
1 defmodule Mix. Tasks. Phoenix. New do
     use Mix.Task
 3
 4
     @shortdoc "Creates Phoenix application"
5
6
     @template_dir "template"
 7
 8
     def run([]) do
       Mix.shell.info """
9
       Supply application name and destination path.
10
11
12
       e.g.
13
         mix phoenix.new photo_blog /home/johndoe/
14
15
     end
16
    @doc """
17
18
     Creates Phoenix application.
19
     def run([name, path]) do
20
21
       application_name = Mix.Utils.underscore(name)
22
       application_module = Mix.Utils.camelize(name)
23
       project_path = make_project_path(path, application_name)
24
25
       bindings = [application_name: application_name,
                   application_module: application_module]
26
27
28
      Mix.Generator.create_directory(project_path)
29
30
      lc source_path inlist template_files do
31
        destination_path = make_destination_path(project_path, source_path, application_name)
32
33
        if File.dir?(source_path) do
```



```
johnny@MAXX:~/projects/elixir/phoenix(master)$ mix phoenix.new erlang_factory ~/projects/erlang_factory
 creating /Users/johnny/projects/erlang_factory
 creating /Users/johnny/projects/erlang_factory/.gitignore
 creating /Users/johnny/projects/erlang_factory/README.md
 creating /Users/johnny/projects/erlang_factory/lib
 creating /Users/johnny/projects/erlang_factory/lib/erlang_factory
 creating /Users/johnny/projects/erlang_factory/lib/erlang_factory.ex
 creating /Users/johnny/projects/erlang_factory/lib/erlang_factory/controllers
 creating /Users/johnny/projects/erlang_factory/lib/erlang_factory/controllers/pages.ex
 creating /Users/johnny/projects/erlang_factory/lib/erlang_factory/router.ex
 creating /Users/johnny/projects/erlang_factory/lib/erlang_factory/supervisor.ex
 creating /Users/johnny/projects/erlang_factory/mix.exs
 creating /Users/johnny/projects/erlang_factory/mix.lock
 creating /Users/johnny/projects/erlang_factory/test
 creating /Users/johnny/projects/erlang_factory/test/erlang_factory_test.exs
 creating /Users/johnny/projects/erlang_factory/test/test_helper.exs
johnny@MAXX:~/projects/elixir/phoenix(master)$ cd ~/projects/erlang_factory/
johnny@MAXX:~/projects/erlang_factory$ mix do deps.get, compile
```

```
Compiled lib/phoenix/config/app.ex
Compiled lib/phoenix/config/config.ex
Compiled lib/phoenix/config/fallback.ex
Compiled lib/phoenix/plugs/code_reloader.ex
Compiled lib/phoenix/plugs/error_handler.ex
Compiled lib/phoenix/controller/controller.ex
lib/phoenix/plugs/logger.ex:15: warning: variable conn is unused
Compiled lib/phoenix/plugs/logger.ex
Compiled lib/phoenix/router/errors.ex
Compiled lib/phoenix/router/console_formatter.ex
Compiled lib/phoenix/router/options.ex
Compiled lib/phoenix/examples/controller.ex
Compiled lib/phoenix/router/resources_context.ex
Compiled lib/phoenix/router/mapper.ex
Compiled lib/phoenix/router/path.ex
lib/phoenix/router/router.ex:3: warning: unused alias Controller
Compiled lib/phoenix/router/router.ex
Compiled lib/phoenix/supervisor.ex
Compiled lib/phoenix/router/stack.ex
Compiled lib/phoenix/router/scope_context.ex
Compiled lib/phoenix/examples/router.ex
Generated phoenix.app
Compiled lib/erlang_factory/controllers/pages.ex
Compiled lib/erlang_factory.ex
Compiled lib/erlang_factory/supervisor.ex
Compiled lib/erlang_factory/router.ex
Generated erlang_factory.app
johnny@MAXX:~/projects/erlang_factory$ mix run -e 'ErlangFactory.Router.start' --no-halt mix.exs
```



```
Compiled lib/phoenix/config/fallback.ex
Compiled lib/phoenix/plugs/code_reloader.ex
Compiled lib/phoenix/plugs/error_handler.ex
Compiled lib/phoenix/controller/controller.ex
lib/phoenix/plugs/logger.ex:15: warning: variable conn is unused
Compiled lib/phoenix/plugs/logger.ex
Compiled lib/phoenix/router/errors.ex
Compiled lib/phoenix/router/console_formatter.ex
Compiled lib/phoenix/router/options.ex
Compiled lib/phoenix/examples/controller.ex
Compiled lib/phoenix/router/resources_context.ex
Compiled lib/phoenix/router/mapper.ex
Compiled lib/phoenix/router/path.ex
lib/phoenix/router/router.ex:3: warning: unused alias Controller
Compiled lib/phoenix/router/router.ex
Compiled lib/phoenix/supervisor.ex
Compiled lib/phoenix/router/stack.ex
Compiled lib/phoenix/router/scope_context.ex
Compiled lib/phoenix/examples/router.ex
Generated phoenix.app
Compiled lib/erlang_factory/controllers/pages.ex
Compiled lib/erlang_factory.ex
Compiled lib/erlang_factory/supervisor.ex
Compiled lib/erlang_factory/router.ex
Generated erlang_factory.app
johnny@MAXX:~/projects/erlang_factory$ mix run -e 'ErlangFactory.Router.start' --no-halt mix.exs
>> Running Elixir.ErlangFactory.Router with Cowboy with [port: 4000, ssl: true]
```

```
1 defmodule Mix.Tasks.Server.Start do
   use Mix.Task
   def run(args) do
     Mix.shell.info "Starting the server..."
     Mix.shell.cmd "mix run -e 'ErlangFactory.Router.start' --no-halt mix.exs"
   end
9 end
```

lib/mix/tasks/server.ex

1,1

A⁻



THE RISE OF

PHOENIX

```
1 defmodule ErlangFactory.Config.Router do
    use Phoenix.Router, port: 4000
   get "/", ErlangFactory.Controllers.Pages, :index, as: :page
5 end
```

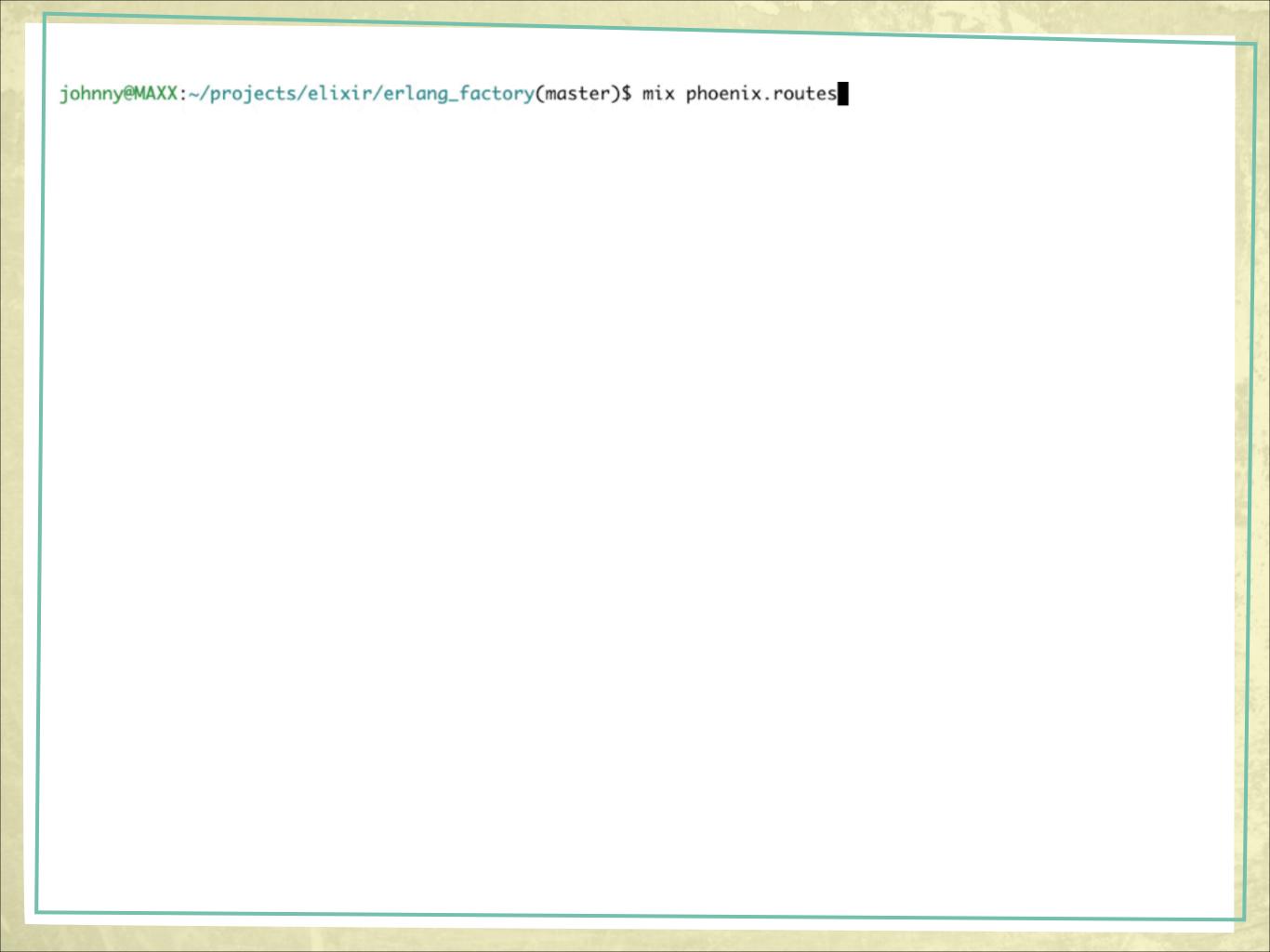
```
1 defmodule ErlangFactory.Config.Router do
     use Phoenix.Router, port: 4000, dispatch: [
        { :_, [
            {"/stylesheets/[...]", :cowboy_static, {:dir, "public/stylesheets"}},
            {"/javascript/[...]", :cowboy_static, {:dir, "public/javscript"}},
            {:_, Plug.Adapters.Cowboy.Handler, { __MODULE__, [] }}
       ]}
9
     get "/", ErlangFactory.Controllers.Pages, :index, as: :page
10
11 end
```

lib/erlang_factory/config/router.ex

1,1

A11

"lib/erlang_factory/config/router.ex" 11L, 399C



```
1 defmodule ErlangFactory.Controllers.Pages do
   use Phoenix.Controller
   def index(conn) do
    text conn, "Hello world"
   end
7 end
```

lib/erlang_factory/controllers/pages.ex

1,1

A11

"lib/erlang_factory/controllers/pages.ex" 7L, 131C written

Calliope

the muse

```
1 defmodule Phoenix.Controller do
      import Plug.Connection
  3
      defmacro __using__(_options) do
  4
  5
        quote do
          import Plug.Connection
          import unquote(__MODULE__)
  8
        end
  9
      end
 10
 11
      def haml(conn, haml, args//[]) do
 12
        html(conn, Calliope.render(haml, conn.params ++ args))
 13
      end
 14
 15
      def json(conn, json), do: json(conn, 200, json)
 16
      def json(conn, status, json) do
 17
        send_response(conn, status, "application/json", json)
 18
      end
 19
 20
      def html(conn, html), do: html(conn, 200, html)
 21
      def html(conn, status, html) do
 22
        send_response(conn, status, "text/html", html)
 23
      end
 24
 25
      def text(conn, text), do: text(conn, 200, text)
 26
      def text(conn, status, text) do
deps/phoenix/lib/phoenix/controller/controller.ex [+]
```

4 more lines

1,1

Tor

```
1 defmodule Calliope.Safe do
 3
    @doc """
    Calliope.Safe is a utility for evaluating code and escaping HTML tag
     characters.
 5
     .....
 7
    @html_escape [
      { "&", "&"},
9
       { "<", "&lt;" },
10
      { ">", "&rt;" },
11
       { "\"", "&quote;" },
12
      { "'", "'" },
13
14
15
16
     def eval_safe_script(<< "Safe.script", script :: binary >>, args) do
17
       evaluate_script(args, script)
18
     end
19
     def eval_safe_script(script, args) do
20
       clean args |> evaluate_script script
21
     end
22
23
     def evaluate_script(args, script) do
       { result, _ } = Code.string_to_quoted!(script) |> Code.eval_quoted(args)
24
25
      result
26
     end
```

~/projects/elixir/calliope/lib/calliope/safe.ex

1,1

Top

remember

Tthe Ecto

```
1 defmodule ErlangFactory.Mixfile do
    use Mix.Project
    def project do
      [ app: :erlang_factory,
        version: "0.0.1",
        elixir: "~> 0.12.2",
                                            ecto deps
        deps: deps ]
9
    end
10
11
    def application do
12
      [mod: { ErlangFactory, [] }]
13
    end
14
15
    defp deps do
16
        { :phoenix, github: "nurugger07/phoenix", branch: "render_haml_with_calliope"},
17
       { :postgrex, github: "ericmj/postgrex"},
18
        { :ecto, github: "elixir-lang/ecto"}
19
20
21
    end
22 end
```

mix.exs

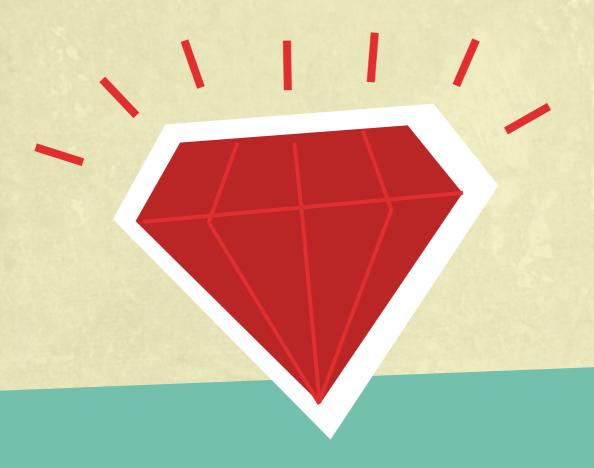
"mix.exs" 22L, 450C

1,1

Al'

now what's

Missing?



Rul Oy

where ruby

Solines

```
1 source 'https://rubygems.org'
  2 ruby '2.0.0'
  4 gem 'sass'
Gemfile
"Gemfile" 4L, 55C written
```

talk gems

SASS

In Sassy

```
1 defmodule Mix.Tasks.Server.Start do
     use Mix.Task
    @sass_dir "public/stylesheets/sass"
     @css_dir "public/stylesheets"
    def run() do
      Mix.shell.info "Compile sass"
      Mix.shell.cmd("sass --update #{@sass_dir}:#{@css_dir}")
      Mix.shell.info "Starting the server..."
10
       Mix.shell.cmd "mix run -e 'ErlangFactory.Config.Router.start' --no-halt mix.exs"
11
12
     end
13 end
```

lib/mix/tasks/server.ex

1.1

٨٦

"lib/mix/tasks/server.ex" 13L, 371C written

Behavior-driven Development

```
1 source 'https://rubygems.org'
2 ruby '2.0.0'
4 gem 'sass'
6 gem 'cucumber', require: false
7 gem 'selenium-webdriver'
8 gem 'capybara'
9 gem 'rspec'
```

Gemfile

"Gemfile" 9L, 139C written

1,1 All

```
1 require 'capybara'
2 require 'capybara/cucumber'
3 require 'capybara/rspec'
5 Capybara.run_server = false
6 Capybara.app_host = 'http://localhost:4000'
7 Capybara.default_driver = :selenium
```

test/features/support/cucumber.rb [+] 1,1 Al

4 fewer lines

Cucumber config

1 ExUnit.start 2 ErlangFactory.Config.Router.start test/test_helper.exs
"test/test_helper.exs" 2L, 47C test server

```
1 defmodule CucumberTest do
   use ExUnit.Case
   test :run_cucumber do
    Mix.shell.cmd "cucumber test/features --format progress"
   end
7 end
```

test/cucumber_test.exs 1,1 All

"test/cucumber_test.exs" 7L, 140C

run cucumber

```
Scenario: Visitor visits home page
Given the following posts:

Headline | Content | Published On |
Hell Is Other Robots | A crummy world of plot holes and spelling errors! | 2/14/2014 |
A Pharaoh to Remember | The T goes \"tuh\". | 3/17/2014 |
When Aliens Attack | We need to have a look inside you with this camera | 12/31/2013 |
When I am on the home page
Then I should see the published posts
```

test/features/visitor_views_posts.feature

1,

Δ11

```
create_table "locations",
  force: true do |t|
t.string "street_1", null: false
t.string "city", null: false
t.string "state", null: false
t.string "zip", null: false
t.string "street_2"
```

Maintaining Database

Schema

```
1 source 'https://rubygems.org'
 2 ruby '2.0.0'
 4 gem 'sass'
 6 gem 'builder', '~> 3.1.0'
 7 gem 'activerecord', '~>4.0.0'
 8 gem 'pg'
9 gem 'cucumber', require: false
10 gem 'selenium-webdriver'
11 gem 'capybara'
12 gem 'rspec'
```

Gemfile [+] 1,1 All

7 lines <ed 1 time

```
1 #!/usr/bin/env rake
 3 require 'active_record'
 5 Dir['test/features/support/models/*'].each do Ifile!
     require File.expand_path(file)
 7 end
 9 namespace :db do
     PG\_SPEC = {
10
       :adapter => 'postgresql',
11
    :host
                => 'localhost',
12
    :database => 'blog_dev',
13
      :username => 'postgres',
14
15
16
17
     def connection(config)
18
      ActiveRecord::Base.establish_connection(config)
19
      ActiveRecord::Migration.verbose = false
20
     end
21
22
     def run_migrations(direction, config)
23
      connection(config)
      ActiveRecord::Migration.descendants.each { Iml m.send(direction) }
24
25
     end
26
```

Rakefile 1,1 Top

```
1 #!/usr/bin/env rake
 3 require 'active_record'
 5 Dir['test/features/support/models/*'].each do Ifile!
     require File.expand_path(file)
 7 end
 9 namespace :db do
10
    PG\_SPEC = {
11
       :adapter => 'postgresql',
                 => 'localhost',
12
    :host
       :database => 'blog_dev',
13
       :username => 'postgres',
14
15
16
    def connection(config)
17
18
       ActiveRecord::Base.establish_connection(config)
19
       ActiveRecord::Migration.verbose = false
20
     end
21
22
     def run_migrations(direction, config)
23
       connection(config)
       ActiveRecord::Migration.descendants.each { Iml m.send(direction) }
24
25
     end
26
```

Rakefile 1,1 Top

```
26
27
     task :migrate do
28
       run_migrations(:up, PG_SPEC)
29
     end
30
31
     task :rollback do
       run_migrations(:down, PG_SPEC)
32
33
     end
34
35
     namespace :test do
       def config
36
         PG_SPEC.merge({:database => 'blog_test'})
37
38
       end
39
       task :prepare do
40
         run_migrations(:up, config)
41
42
       end
43
       task :rollback do
44
         run_migrations(:down, config)
45
46
       end
47
     end
48
49 end
```

Rakefile 49,1 Bot

```
1 class CucumberPosts < ActiveRecord::Migration
     def self.up
 3
       execute <<-SQL
         CREATE TABLE IF NOT EXISTS posts (
           id serial PRIMARY KEY,
          headline varchar(255) NOT NULL,
           content text NOT NULL,
          user_id integer NOT NULL,
 9
          published_on date);
10
11
     SQL
12
     end
13
14
     def self.down
15
       execute "DROP TABLE IF EXISTS posts;"
16
     end
17
18 end
```

test/features/support/models/posts.rb

"test/features/support/models/posts.rb" 18L, 369C written

1,1

Δ11

MIGRATE!

johnny@MAXX:~/projects/elixir/erlang_factory(master)\$ rake db:migrate db:test:prepare MIGRATE!



Fireworks!

```
1 Given "the following posts:" do Itable!
     # pending
 3 end
 5 When "I am on the home page" do
    visit "/"
7 end
 8
 9 Then "I should see the published posts" do
     page.should have_content "Hell Is Other Robots"
10
11
     page.should have_content "A crummy world of plot holes and spelling errors!"
12
     page.should have_content "When Aliens Attack"
13
     page.should_not have_content "A Pharaoh to Remember"
14
15 end
```

test/features/step_definitions/posts_steps.rb

1,

All

"test/features/step_definitions/posts_steps.rb" 15L, 386C written

take a step

```
1 class CucumberPosts < ActiveRecord::Migration
     attr_accessor :headline, :content, :published_on, :user_id
 3
     def initialize(args)
 4
       args = Hash[args.map{ | k, v| [k.gsub(" ", "_").downcase.to_sym, v] }]
       args.each do Ikey, vall
 6
         instance_variable_set("@#{key}", val)
       end
 9
     end
10
11
    def user_id
12
    @user_id II 1
13
     end
14
15
     def self.insert(post)
16
       execute <<-SOL
         INSERT INTO posts (headline, content, published_on, user_id)
17
         VALUES ('#{post.headline}', '#{post.content}',
18
19
                 '#{post.published_on}', #{post.user_id});
20
       SQL
21
     end
22
23
     def self.clear
24
       execute %q{DELETE FROM posts;}
25
     end
26
```

test/features/support/models/posts.rb [+]

1,1

Top

```
Given "the following posts:" do Itable!
     table.hashes.map do IhashI
       CucumberPosts.insert CucumberPosts.new(hash)
 5 end
  7 When "I am on the home page" do
     visit "/"
 9 end
 10
11 Then "I should see the published posts" do
12
      page.should have_content "Hell Is Other Robots"
      page.should have_content "A crummy world of plot holes and spelling errors!"
13
      page.should have_content "When Aliens Attack"
14
15
16
      page.should_not have_content "A Pharaoh to Remember"
17 end
test/features/step_definitions/posts_steps.rb [+]
                                                                                           1.1
```

4 more lines

connect me

```
1 require 'capybara'
 2 require 'capybara/cucumber'
 3 require 'capybara/rspec'
 5 Dir['test/features/support/models/*'].each do Ifile!
     require File.expand_path(file)
 7 end
 9 Capybara.run_server = false
10 Capybara.app_host = 'http://localhost:4000'
11 Capybara.default_driver = :selenium
12
13 After do
14 ActiveRecord::Migration.descendants.each { Iml m.send(:clear) }
15 end
```

test/features/support/cucumber.rb

1,

A11

"test/features/support/cucumber.rb" 15L, 352C

Clean up

johnny@MAXX:~/projects/elixir/erlang_factory(master*)\$ mix test entity support

time to Mix it

together

```
1 alias Ecto.Adapters.Postgres
  3 defmodule Repo do
     use Ecto.Repo, adapter: Postgres
     @env Mix.env
     def url, do: "ecto://postgres@localhost/blog_#{@env}"
   end
~/projects/elixir/ruby_conf/web/entities/repo.ex
                                                                                 All
                                                                  1,1
```

```
1 defmodule ErlangFactory.Supervisor do
     use Supervisor.Behaviour
     def start_link do
       :supervisor.start_link(__MODULE__, [])
     end
     def init([]) do
       children = [ worker(ErlangFactory.Repo, []) ]
10
11
       # See http://elixir-lang.org/docs/stable/Supervisor.Behaviour.html
       # for other strategies and supported options
12
13
       supervise(children, strategy: :one_for_one)
14
     end
15 end
```

lib/erlang_factory/supervisor.ex

"lib/erlang_factory/supervisor.ex" 15L, 383C

1,1

۸1:

the worker

```
1 defmodule Post do
      use Ecto.Model
  3
      queryable "posts" do
  4
       field :headline, :string
        field :content, :string
  6
        field :published_on, :datetime
      end
 9 end
10
11 defmodule PostQueries do
12
      import Ecto.Query
13
      alias ErlangFactory.Repo
14
15
 16
      def published do
17
        Enum.filter_map(all, &is_published?(&1), &{ &1.headline, &1.content })
18
      end
19
 20
      def is_published?(post), do: post.published_on < :erlang.date</pre>
 21
 22
      defp all do
 23
        query = from p in Post,
 24
                select: p
 25
        Repo.all(query)
 26
      end
lib/erlang_factory/models/post.ex
```

1,1

Tot

```
1 defmodule ErlangFactory.Controllers.Pages do
    use Phoenix.Controller
   @views "lib/erlang_factory/views"
    def index(conn) do
      haml conn, File.read!("#{@views}/pages/index.haml"), posts: PostQueries.published
    end
9 end
```

lib/erlang_factory/controllers/pages.ex

1,

Δ11

"lib/erlang_factory/controllers/pages.ex" 9L, 225C

the controller

```
1 !!!
  2 %html{lang: "en-US"}
      %head
        %title Erlang Factory 2014
  4
        %meta{charset: "UTF-8"}
        <meta content="width=device-width", maximum-scale=1.0, user-scalable=0, name="viewport">
       /[if IE]
          <script src="/javascripts/html5.js" type="text/javascript"></script>
        %link{href: "/stylesheets/app.css", media: "screen", rel: "stylesheet", type: "text/css"}
        %link{href: "http://fonts.googleapis.com/css?family=Raleway:800,200|Merriweather:400,400italic", rel
 10
    : "stylesheet", type: "text/css"}
11
 12
      %body
        %header
 13
 14
          .container
 15
            %h1
 16
              %a{href: "#"} Erlang Factory 2014
 17
          .container
 18
            %p An Erlang Conference with an Elixir Problem
 19
 20
         .container
 21
          %section
 22
            - lc { headline, content } inlist posts do
 23
              %article
 24
                %h2= headline
 25
                %p= content
lib/erlang_factory/views/pages/index.baml
                                                                                            1,1
                                                                                                           Top
```

johnny@MAXX:~/projects/elixir/erlang_factory(master)\$ mix test passing tests

wrapping up

So now what?

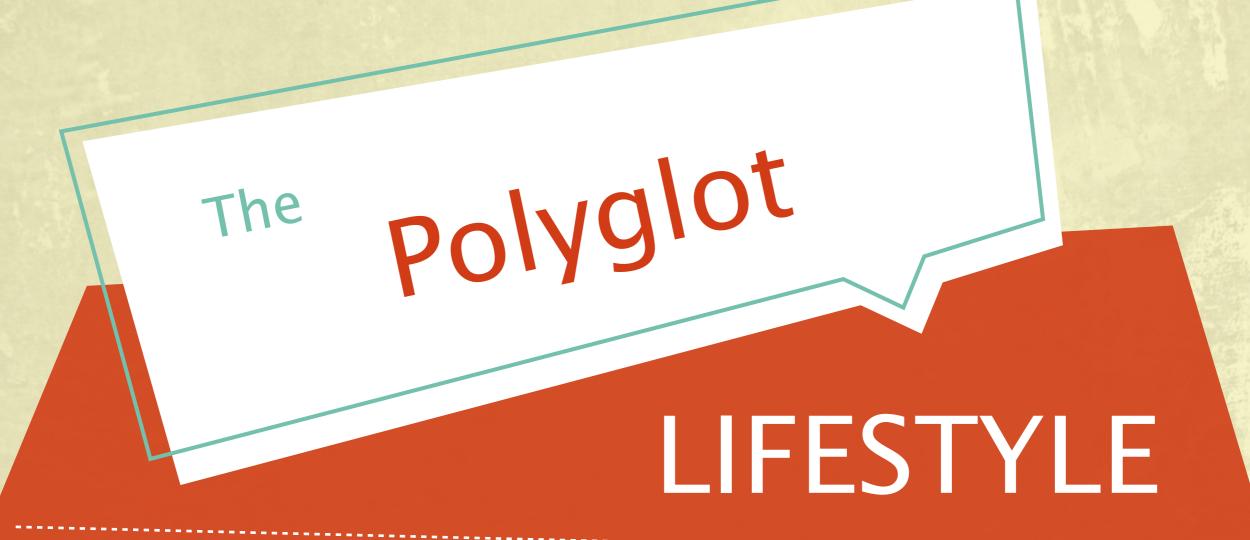
```
1 defmodule CucumberTest do
     use ExUnit.Case
     # Notify us that there was a failed cucumber step
     test :run_cucumber do
       Mix.Shell.cmd "cucumber test/features --format progress",
         fn(data) ->
           refute "(::) failed steps (::)" == String.strip data
         end
     end
11 end
```

test/cucumber_test.exs 1,1 Al

"test/cucumber_test.exs" 11L, 282C

the refactor

johnny@MAXX:~/projects/elixir/erlang_factory(master*)\$ mix test the refactor



Johnny Winn





Want TO LEARN More about

EIXIT

Elixir => http://elixir-lang.org/

Elixir Sips => http://elixirsips.com/

Phoenix => phoenixframework/phoenix

Calliope => nurugger07/calliope

Ecto => elixir-lang/ecto