# Grape internals

# Rack

What is this?

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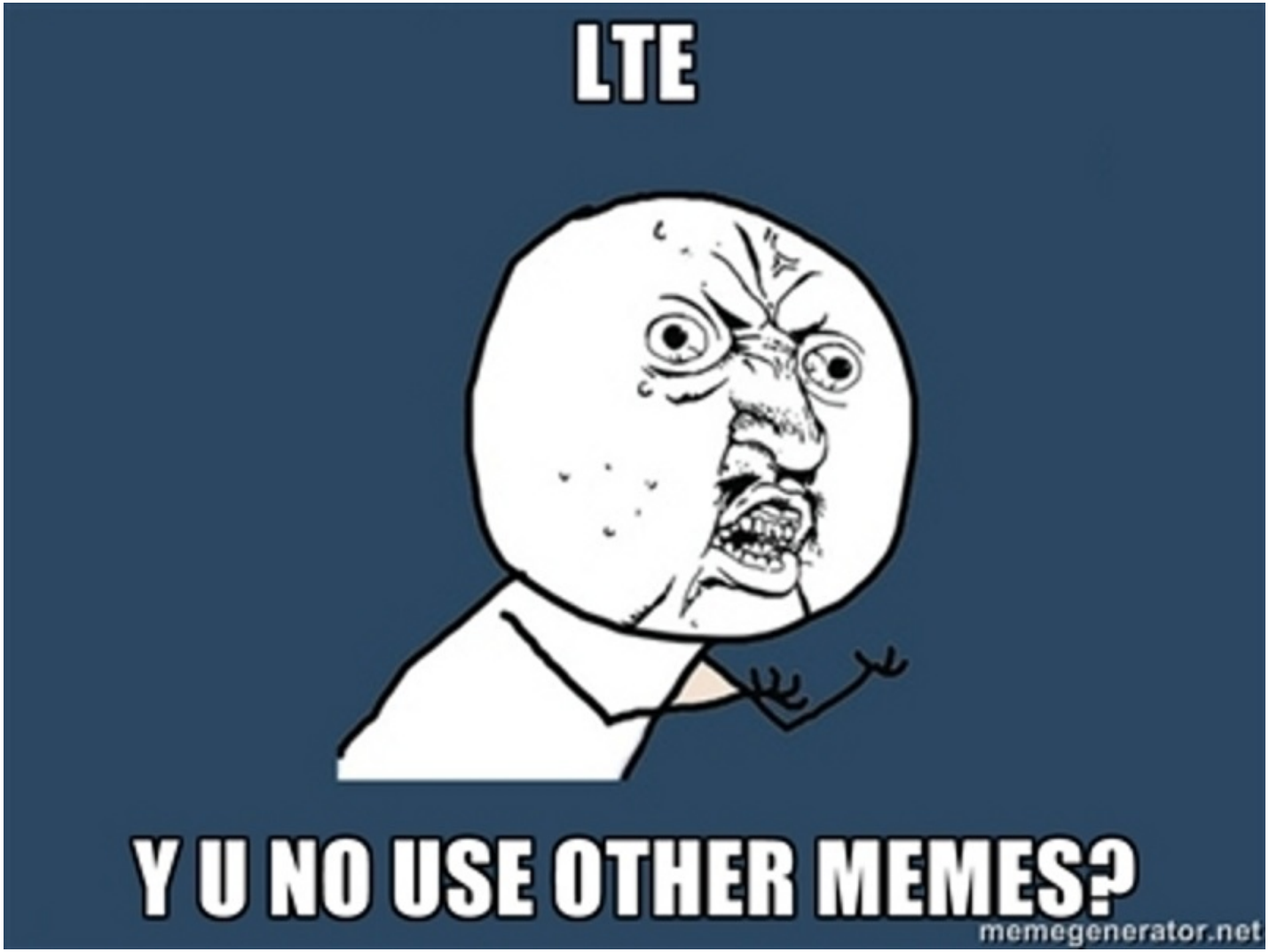
LTE
Y U NO USE OTHER MEMES?
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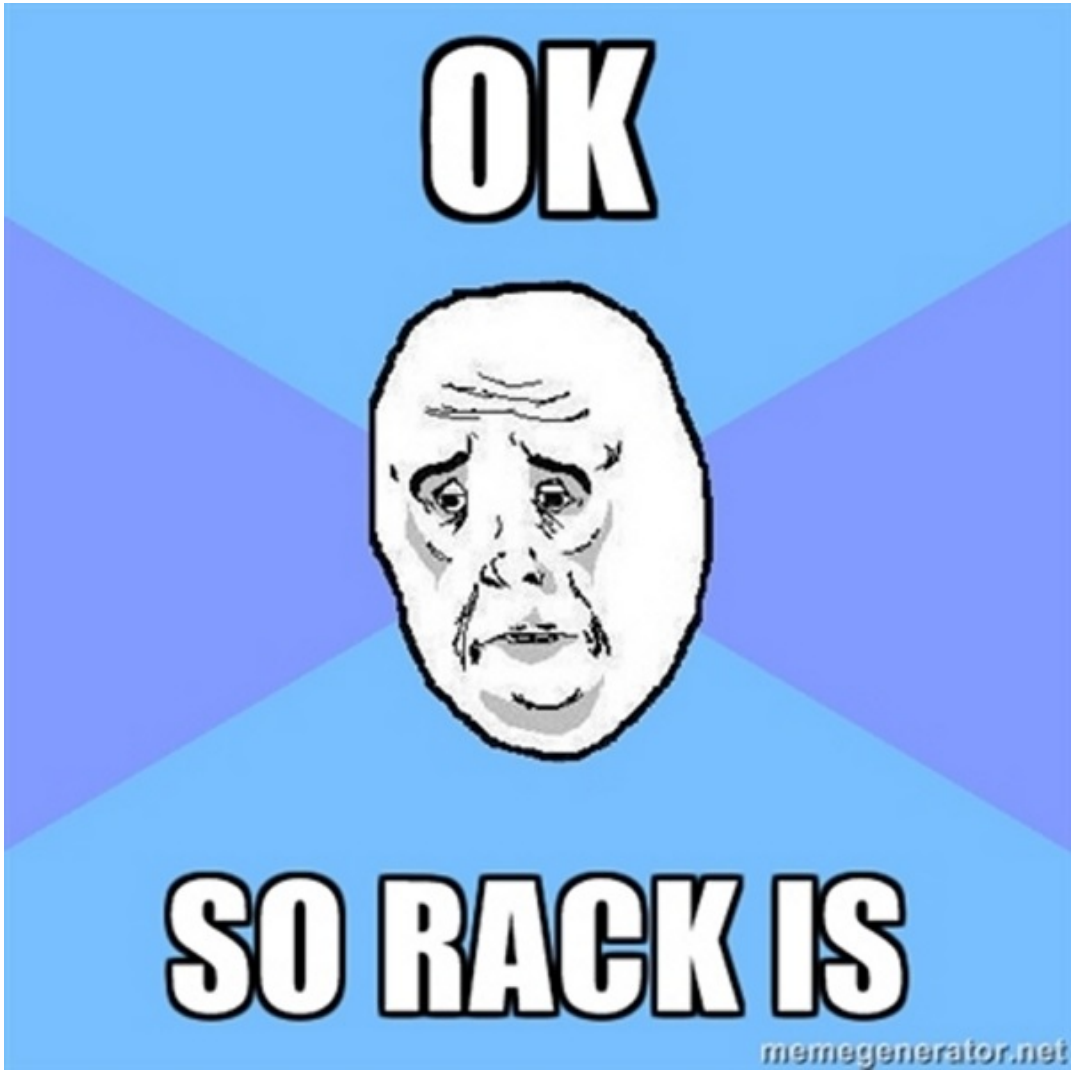
OK
SO RACK IS
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Rack provides a minimal interface between webservers supporting Ruby and Ruby frameworks.

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# Interface

# Super simple!

```
class RackApplication
  def call(env)
    [200, {}, ["Hello world!"]]
  end
end
```

# Rack

```
class RackApplication
  def call(env)
    [200, {}, ["Hello world!"]]
  end
end
```

# Muzang

```
class MuzangPlugin
  def call(connection, message)
    # stuff
  end
end
```


NOT SURE IF RACK IS LIKE MUZANG
OR MUZANG IS LIKE RACK
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.call method - nice trick!

```
class RackApplication
  def call(env)
    [200, {}, ["Hello world"]]
  end
end

RackApplication.new.call #=> [200, {}, ["Hello world"]]

p = Proc.new { |env| [200, {}, ["Hello world"]] }
p # has call method :)
p.call # => [200, {}, ["Hello world"]]
```

# So... proc can also be rack application

# Application vs. Middleware

Middleware should accept instance of next aaplication or middleware as first argument of constructor

```
class RackMiddleware
  def initialize(app)
    @app = app
  end

  def call(env)
    # stuff here
    @app.call(env)
  end
end
```

# How middleware works?

```
use RackMiddleware
run RackApplication
```

```
use RackMiddleware
# @use << proc { |app| RackMiddleware.new app }
run RackApplication
```

```
use RackMiddleware
# --------------
 @use << proc { |app| RackMiddleware.new app }
 @use #=> [ proc { |app| RackMiddleware.new app } ]
# --------------

run RackApplication
# --------------
 @app #=> <RackApplication:0x000000023ef2e0>
 @use.reverse.inject(@app) do |app, mid|
    mid.call(app)
 end.call(REQUEST)
# --------------
```

```
class RackMiddleware1
  def initialize(app); @app = app; end
  end

  def call(env); @app.call(env); end
end

use RackMiddleware1
use RackMiddleware2
use RackMiddleware3
use RackMiddleware4

run RackApplication

@r4 = RackMiddleware4.new(RackApplication)
@r3 = RackMiddleware3.new(@r4)
@r2 = RackMiddleware2.new(@r3)
@r1 = RackMiddleware1.new(@r2)

@r1.call("REQUEST")
# fire @r1.call method
```


CREATE RACK MIDDLEWARE
DON'T EXECUTE CALL METHOD
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Grape

```
class My::API < Grape::API
end
```

# Nice DSL

```
class My::API < Grape::API
  version 'v1'

  resource :status do
    # GET /status/current
    get :current do
      "my current status"
    end

    # POST /status/current
    post :current do
      params[:current_status]
    end
  end
end
```

# What really happened?

```
# GET /status/current
get :current do
  "my current status"
end
```

```
class Grape::API
  class << self
    def get(paths = ['/'], options = {}, &block)
      route('GET', paths, options, &block)
    end
end
```

# Grape::Endpoint

```
class Grape::API
  class << self
    def get(paths = ['/'], options = {}, &block)
      route('GET', paths, options, &block)
    end

    def route(met, paths, route_options = {}, &block)
      endpoint_options = {
        :method => methods,
        :path => paths,
        :route_options => (route_options || {})
      }
      endpoints << Grape::Endpoint.new(settings.clone,
                                       endpoint_options,
                                       &block)
    end
end
```

```
class Grape::Endpoint
  def initialize(settings, options = {}, &block)
    @settings = settings
    @block    = block # create in My::API scope
    @options  = options
  end
end
```

So we have the endpoint, this is our rack application?


CALL METHOD
EXIST
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```
class Grape::Endpoint
  def call(env)
    dup.call!(env)
  end
end
```

```
class Grape::Endpoint
 def call(env)
  dup.call!(env)
 end

 def call!(env)
  # ...
  builder = build_middleware
  builder.run lambda{|env|self.run(env)}
  builder.call(env)
 end
end
```

```
def build_middleware
  b = Rack::Builder.new
  b.use Grape::Middleware::Error
  b.use Rack::Auth::Basic
  b.use Rack::Auth::Digest::MD5
  b.use Grape::Middleware::Prefixer
  b.use Grape::Middleware::Versioner
  b.use Grape::Middleware::Formatter

  b
end
```

```
def run(env)
  @request = Rack::Request.new(@env)

  self.extend helpers
  run_filters befores
  response_text = instance_eval &self.block
  run_filters afters

  [status, header, [body || response_text]]
end
```

# Flow

Create block in Grape::API context

Send block to Grape::Endpoint

Execute block in new context


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# No render method :(

# Rabl!

RABL (Ruby API Builder Language)

```
# notices/index.rabl
collection @notices => :notice
attributes :name, :id

# [ { "notice":{"name":"Name", "id":"ID"}},
#   { "notice":{"name":"Name2", "id":"ID2"}} ]
```

# Sinatra

```
get "/v1/errors/:error_id/notices" do
  @notices = error.notices
  render(:rabl, "notices/index")
end
```

# How to use rabl in grape?

```
# Gemfile
gem 'grape-rabl'

# config.ru
require 'grape/rabl'

class My::API < Grape::API
  get "/notices", :rabl => "notices/index" do
    @notices = error.notices
  end
end
```

# How it works?

```
def build_middleware
  b = Rack::Builder.new
  b.use Grape::Middleware::Error
  b.use Rack::Auth::Basic
  b.use Rack::Auth::Digest::MD5
  b.use Grape::Middleware::Prefixer
  b.use Grape::Middleware::Versioner
  b.use Grape::Middleware::Formatter # <- !!!!oneone

  b
end
```

```
module Grape
  module Middleware
    class Formatter
      alias :old_after :after

      def after
        current_endpoint = env['api.endpoint']
        engine = ::Tilt.new(view_path(template))
        engine.render(current_endpoint, {})
        Rack::Response.new(rendered, status, headers).to_a
      end
    end
  end
end
```

# Why endpoint? # Magic

```
vars = @scope.instance_variables
vars.each { |name|
  instance_variable_set(name,
                        object.instance_variable_get(name))
}

def method_missing(name, *args, &block)
  if @scope.respond_to?(name)
    @scope.send(name, *args, &block)
  else
    super
  end
end
```

# Why grape?

Because of Yoda


GRAPE
USE IT; YOU SHOULD
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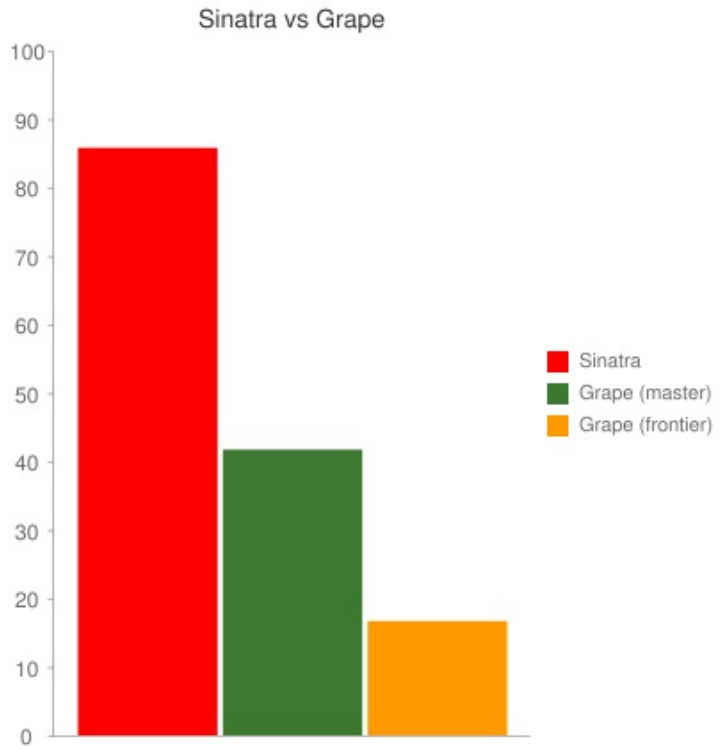
#basedonmyobversation

ab -c 10 -n 10000 http://localhost:4567/test




ANY
QUESTIONS?
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