



University of  
**Sheffield**

**COM1001 SPRING SEMESTER**

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# Controllers

# Controllers

A Sinatra application can have several routes – as many as we want

A set of routes for an application are collectively referred to as a **Controller**.

**The job of a controller is to generate HTTP responses for incoming HTTP requests.**

**HTTP requests are matched to an appropriate route via the HTTP method and the resource identifier that it specifies.**



# Live Demonstration:

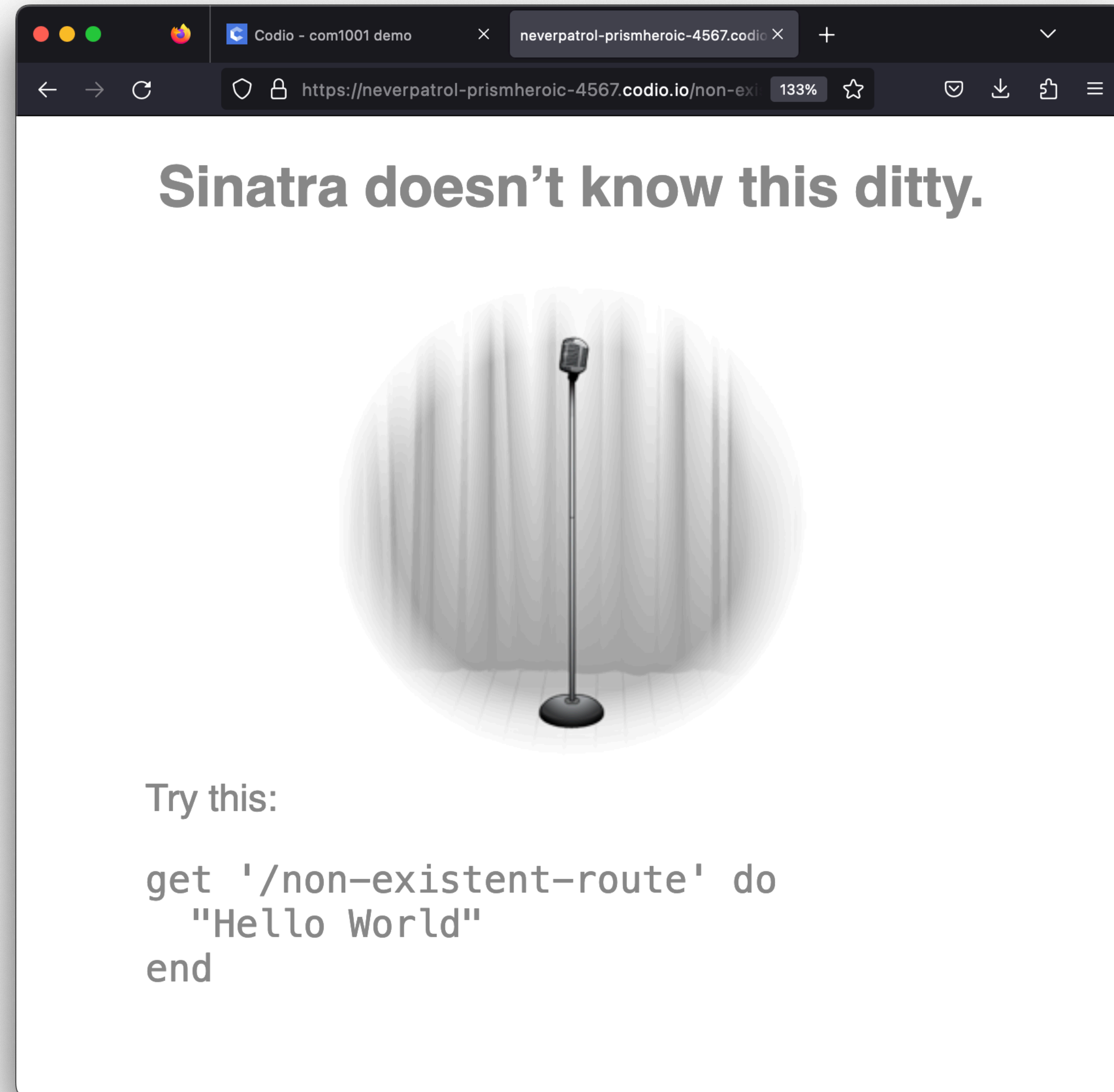
## week1/controller\_example

(from the COM1001 GitHub repository)

### Featuring:

- Multiple routes
- Multiple controller files – introducing `require_rel` and the `require_all` gem
- Using the `rerun` command to avoid re-starting the web server every time a change is made
- What happens when there is no route matching the HTTP request – the HTTP 404 error page
- What happens when the code fails with an error – the HTTP 500 error page

# When a HTTP Request Doesn't Map to a Route



If Sinatra cannot map the HTTP request to a block with a matching route, it triggers a **HTTP 404 Not Found** status and returns this page.

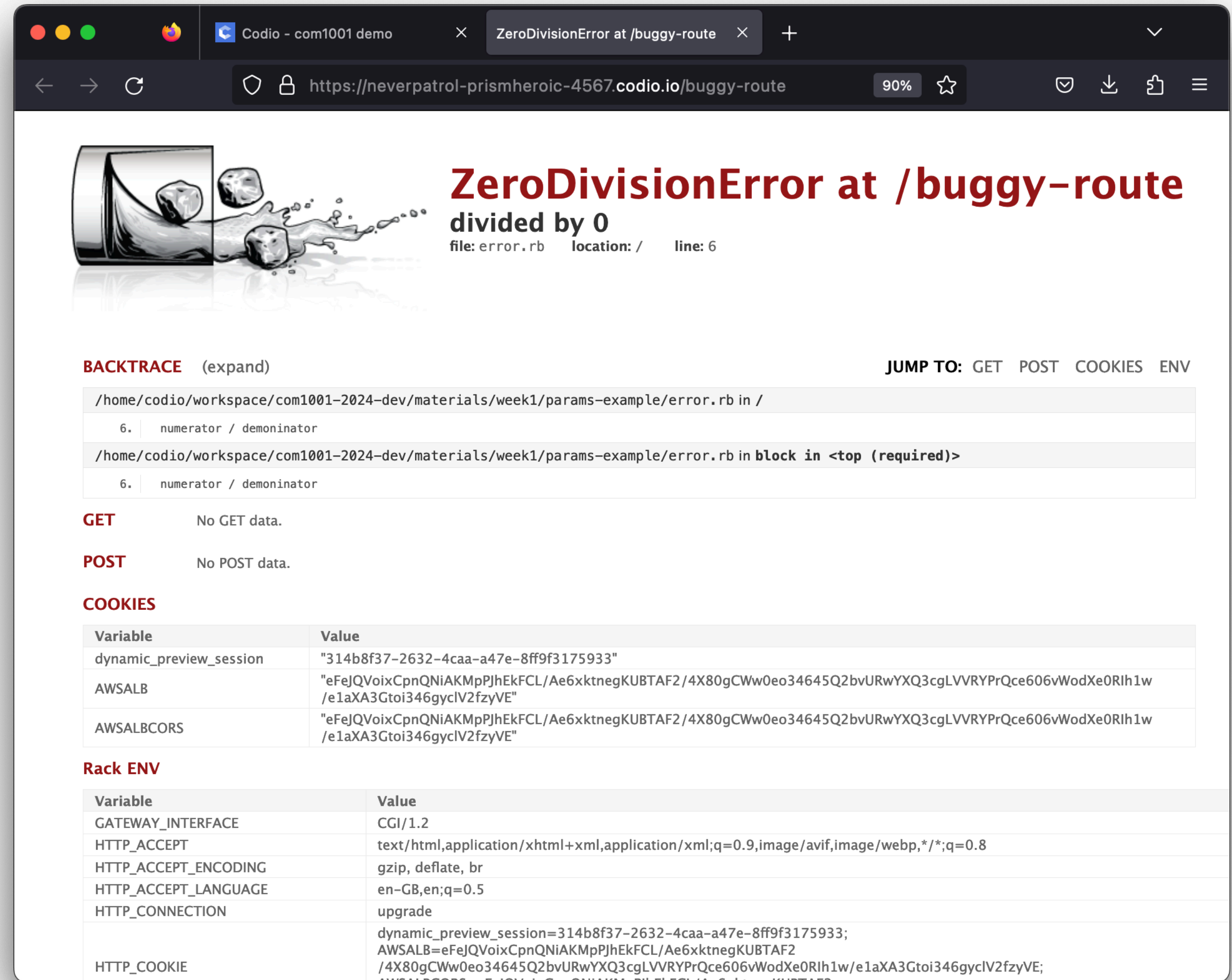
This might be due to a problem with our Ruby code, or it could be that a user mistyped the URL into their browser.



# When the Application Contains a Fatal Bug

```
get "/buggy-route" do
  numerator = 5
  denominator = 0
  numerator / denominator
end
```

Sinatra encounters an error and so triggers a **HTTP 500 Internal Server Error** status message. In this instance, Sinatra usefully presents us with diagnostic information that may help with debugging.



**ZeroDivisionError at /buggy-route**  
divided by 0  
file: error.rb location: / line: 6

**BACKTRACE** (expand) JUMP TO: GET POST COOKIES ENV

```
/home/codio/workspace/com1001-2024-dev/materials/week1/params-example/error.rb in /
6. | numerator / demoninator
/home/codio/workspace/com1001-2024-dev/materials/week1/params-example/error.rb in block in <top (required)>
6. | numerator / demoninator
```

**GET** No GET data.  
**POST** No POST data.

**COOKIES**

Variable	Value
dynamic_preview_session	"314b8f37-2632-4caa-a47e-8ff9f3175933"
AWSALB	"eFeJQVoixCpnQNiAKMpPJhEkFCL/Ae6xktnegKUBTAF2/4X80gCWw0eo34645Q2bvURwYXQ3cgLVVRYPrQce606vWodXe0Rih1w/e1aXA3Gtoi346gycIV2fzyVE"
AWSALBCORS	"eFeJQVoixCpnQNiAKMpPJhEkFCL/Ae6xktnegKUBTAF2/4X80gCWw0eo34645Q2bvURwYXQ3cgLVVRYPrQce606vWodXe0Rih1w/e1aXA3Gtoi346gycIV2fzyVE"

**Rack ENV**

Variable	Value
GATEWAY_INTERFACE	CGI/1.2
HTTP_ACCEPT	text/html,application/xhtml+xml,application/xml;q=0.9,image/avif,image/webp,*/*;q=0.8
HTTP_ACCEPT_ENCODING	gzip, deflate, br
HTTP_ACCEPT_LANGUAGE	en-GB,en;q=0.5
HTTP_CONNECTION	upgrade
dynamic_preview_session	dynamic_preview_session=314b8f37-2632-4caa-a47e-8ff9f3175933;
AWSALB	AWSALB=eFeJQVoixCpnQNiAKMpPJhEkFCL/Ae6xktnegKUBTAF2/4X80gCWw0eo34645Q2bvURwYXQ3cgLVVRYPrQce606vWodXe0Rih1w/e1aXA3Gtoi346gycIV2fzyVE;
AWSALBCORS	AWSALBCORS=eFeJQVoixCpnQNiAKMpPJhEkFCL/Ae6xktnegKUBTAF2/4X80gCWw0eo34645Q2bvURwYXQ3cgLVVRYPrQce606vWodXe0Rih1w/e1aXA3Gtoi346gycIV2fzyVE;

# The HTTP response from a Sinatra Route

The body of the HTTP response is the return value of the block of the route that matches the HTTP request.

In Ruby, **we don't need to use the return keyword if it's the last line of a block**, it's just the value.

Hence in the Hello World example, the response of the HTTP body is "Hello, World".

```
require "sinatra"

get "/hello-world" do
  "Hello, World!"
end
```

# Controllers – Summary

- Sinatra applications consist of a series of **routes**.
- A set of routes is called a **controller**.
- **Sinatra works by matching incoming HTTP requests to a route.** The matched route generates the body of the HTTP response.
- If Sinatra cannot match a route, it generates a 404 HTTP error.