Building a Web App With Python and Flask

Ian Candy

About Ian

- Managing Section Lead, Flatiron School
- Flatiron Immersive Graduate
- Has Been Writing More Ruby Than Python (Please forgive any ends)

Overview

- Why Build Web Apps with Flask?
- How the Internet Works
- Flask Hello World
- Routes and Templates
- Data Visualizations with d3

Why Flask?

- Great documentation
- Simple, but scalable
- Python!

LEARN
to use the
Internet
Level II

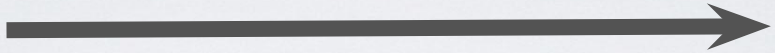
HOW THE WEB WORKS

1. Browsers Make a Request

2. Server Responds with Content

HOW THE WEB WORKS

1. Browsers Make a Request



```
Request URL: http://localhost:3000/
Request Method: GET
Status Code: 200 OK
▼ Request Headers      view parsed
  GET / HTTP/1.1
  Host: localhost:3000
  Connection: keep-alive
  Cache-Control: max-age=0
  User-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10_7_2) AppleWebKit/535.2 (KHTML, lik
  e Gecko) Chrome/15.0.874.106 Safari/535.2
  Accept: text/html,application/xhtml+xml,application/xml;q=0.9,*/*;q=0.8
  Accept-Encoding: gzip,deflate,sdch
  Accept-Language: en-US,en;q=0.8
  Accept-Charset: ISO-8859-1,utf-8;q=0.7,*;q=0.3
  Cookie: _mixtape_sample_session=BAh7CEkiD3Nlc3Npb25faWQGOgZFRkkiJTcyMzYxZmFjMzlhNzgxNzkx
  YTEzNmVmYTdkNDM1NzdlBjsAVEkiEF9jc3JmX3Rva2VuBjsARkkiMUxJQ0tiRkdQSzAzTEk5OGNSY05SKzUzN2FF
  dkYvZGpaYWNMcnVpZVRHcUE9BjsARkkiCmZsYXNoBjsARm86JUFjdGlvbkRpc3BhdGNoOjpGbGFzaDo6Rmxhc2hI
  YXNoCToKQHVzZWRvOghTZXQGOgpAaGFzaHsGOgtub3RpY2VUOgxAY2xvc2VkRjoNQGZsYXNoZXN7BjsKSSImTWl4
  dGFwZSB3YXMgc3VjY2Vzc2Z1bGx5IGNyZWF0ZWQuBjsARjoJQG5vdzA%3D--0195ea67620a5d8ca936750ec70e
  238f19dd624b
  If-Modified-Since: Sun, 06 Nov 2011 18:48:25 GMT
```

HOW THE WEB WORKS

2. Server Responds with Content

```
HTTP/1.1 200 OK
Last-Modified: Sun, 06 Nov 2011 18:48:25 GMT
Content-Type: text/html
Content-Length: 5907
Server: WEBrick/1.3.1 (Ruby/1.9.2/2011-07-09)
Date: Sun, 06 Nov 2011 18:50:01 GMT
Connection: Keep-Alive
<!DOCTYPE html>
<html>
  <head>
    <title>Ruby on Rails: Welcome aboard</title>
    <style type="text/css" media="screen">
      body {
        margin: 0;
        margin-bottom: 25px;
        padding: 0;
        background-color: #f0f0f0;
        font-family: "Lucida Grande", "Bitstream Vera Sans", "Verdana";
        font-size: 13px;
        color: #333;
      }
```

HOW THE WEB WORKS

Communication happens over TCP/IP, namely HTTP

```
[14:24:24] ~ $ curl localhost:3000
<!DOCTYPE html>
<html>
  <head>
    <title>Ruby on Rails: Welcome aboard</title>
    <style type="text/css" media="screen">
      body {
        margin: 0;
        margin-bottom: 25px;
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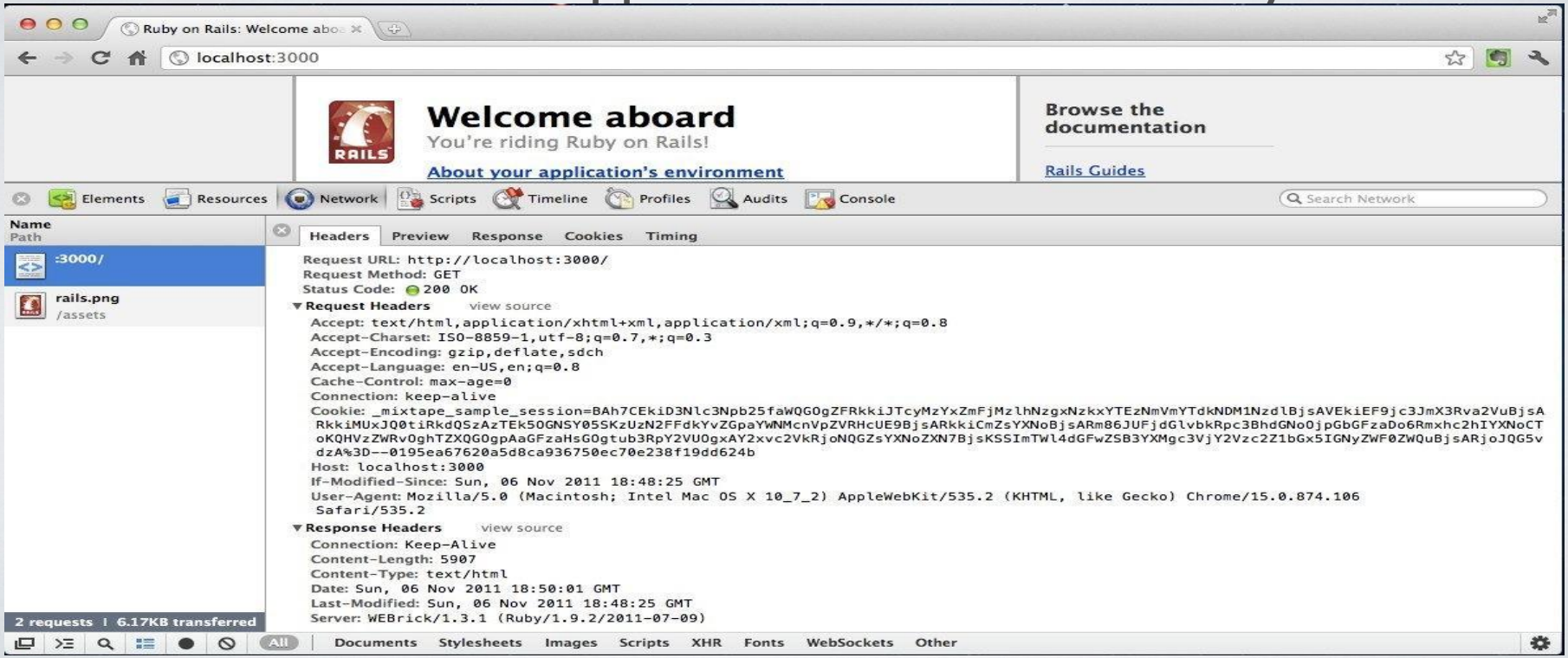


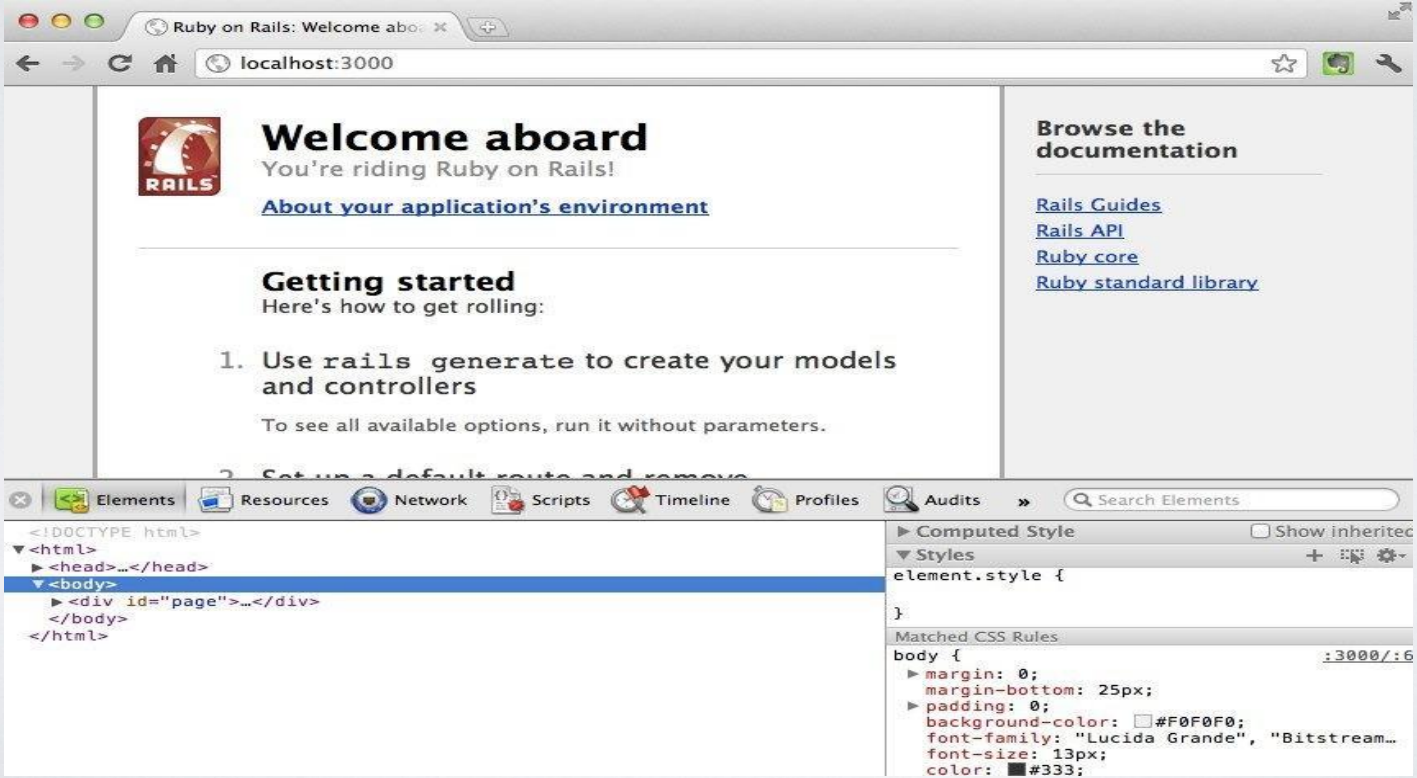
HOW THE WEB WORKS

HTTP requests use verbs to describe the interaction

HEAD	Asks for a response like a GET but without the body
GET	Retrieves a representation of a resource
POST	Submits data to be processed in the body of the request
PUT	Uploads a representation of a resource in the body of the request
DELETE	Deletes a specific resource.
TRACE	Echoes back the received request
OPTIONS	Returns the HTTP methods the server supports
CONNECT	Converts the request to a TCP/IP tunnel (generally for SSL)
PATCH	Apply a partial modification of a resource

HOW THE WEB WORKS

Servers send back HTML, browsers render Content



Getting Started With Flask

http://github.com/ipc103/flask-d3-wordcloud

```
pip install Flask
```

```
1  from flask import Flask
2
3  app = Flask(__name__)
4
5  @app.route("/")
6  def index():
7      return "Hello World!"
8
9
10 app.run()
```

Live Coding: Setting Up Flask

d3.js

About d3

- Created at Stanford by Jeff Heer, Mike Bostock, and Vadim Ogievetsky
- Utilizes Web Standards for Data Visualizations
- Almost infinitely customizable

D3 Examples

- https://beta.observablehq.com/@mbostock/d3-histogram
- https://beta.observablehq.com/@mbostock/d3-zoomable-sunburst
- https://jfire.io/animations/

BONUS: Flask Forms

- Flask-wtf - great library for forms
- Easily create forms, validate inputs, and collect params
- Great thing about Flask - customizable

Resources

- http://exploreflask.com/en/latest
- https://d3js.org/
- https://www.jasondavies.com/wordcloud/
- https://realpython.com/web-development-with-flask-fetching-data-with-requests/