#### How The Web Works

### Part One: Solidify Terminology

- 1. HTTP stands for Hypertext Transfer Protocol. It is a protocol used for communication between web servers and web clients (browsers) on the Internet.
- 2. A URL (Uniform Resource Locator) is a web address that identifies a specific resource (such as a webpage, image, or file) on the Internet.
- 3. DNS (Domain Name System) is a system that translates domain names (like google.com) into IP addresses (like 216.58.194.174) that computers use to communicate with each other on the Internet.
- 4. A query string is a part of a URL that contains data that is sent to a web server as part of an HTTP request. It's usually indicated by a question mark followed by key-value pairs.
- 5. Two common HTTP verbs are GET and POST. GET is used to retrieve information from a server, while POST is used to submit data to a server.
- 6. An HTTP request is a message sent by a web client (such as a browser) to a web server, asking for a specific resource.
- 7. An HTTP response is a message sent by a web server to a web client in response to an HTTP request, containing the requested data or resources.
- 8. An HTTP header is a piece of metadata that provides additional information about an HTTP request or response. Examples of request headers may include "Authorization" which includes credentials (such as a username and password) needed to access a protected resource, and "Accept-Language" (specifying the preferred language for the response). Response headers may include "Date", which indicates the date and time when the response was sent, and "Server" which specifies the name and version of the web server software used to generate the response.

- 9. When a user types "http://somesite.com/some/page.html" into a browser, several processes occur:
  - The browser parses the URL into its component parts (protocol, domain, and path).
  - The browser uses DNS to look up the IP address associated with the domain name "somesite.com".
  - The browser sends an HTTP GET request to the server at that IP address, requesting the resource at the specified path ("/some/page.html").
  - The server receives the request, processes it, and sends an HTTP response back to the browser containing the requested resource (the HTML file).
  - The browser receives the response, parses the HTML, and renders the page for the user to view.

#### Part Two: Practice Tools

```
marissa@DESKTOP-AC4JTDP: $ curl -H "Accept: application/json" https://icanhazdadjoke.com/search?term=pirate
{"current_page":1,"limit":20,"next_page":1,"previous_page":1,"results":[{"id":"SvzIBAQS0Dd","joke":"What did the pirate
say on his 80th birthday? Aye Matey!"},{"id":"QuscibaMClb","joke":"What does a pirate pay for his corn? A buccaneer!"},{
"id":"2gii3LeN7Ed","joke":"Why couldn't the kid see the pirate movie? Because it was rated arrr!"},{"id":"Sn0f2gqjiqc","
joke":"Why are pirates called pirates? Because they arrr!"},{"id":"exXSCtkOKe","joke":"Why do pirates not know the alpha
bet? They always get stuck at \"C\"."}],"search_term":"pirate","status":200,"total_jokes":5,"total_pages":1}
marissa@DESKTOP-AC4JTDP: $ dig icanhazdadjoke.com
  ; <>>> DiG 9.18.1-1ubuntu1.2-Ubuntu <<>> icanhazdadjoke.com
  ;; global options: +cmd
      Got answer:
  ;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 20630
;; flags: qr rd ad; QUERY: 1, ANSWER: 2, AUTHORITY: 0, ADDITIONAL: 0
;; WARNING: recursion requested but not available
  ;; QUESTION SECTION:
  ;icanhazdadjoke.com.
                                                                    IN
                                                                                     Α
  ;; ANSWER SECTION:
  icanhazdadjoke.com.
                                                                     IN
                                                                                                      104.21.66.15
                                                                                     Α
                                                                                                      172.67.198.173
  icanhazdadjoke.com.
                                                   0
                                                                    IN
  ;; Query time: 0 msec
  ;; SERVÉR: 172.28.208.1#53(172.28.208.1) (UDP)
 ;; WHEN: Sun Feb 26 00:32:47 EST 2023
;; MSG SIZE rcvd: 86
  marissa@DESKTOP-AC4JTDP:~$
♦ How Web Works Exercise
★ ♦ My First Server
                                                                                                                                                                                   o index.html ×
                                                                                                                                  D
 ← → C ☆ ① localhost:8000/index.html
                                                                                    e a * • • • :
 ★ Bookmarks M Gmail 

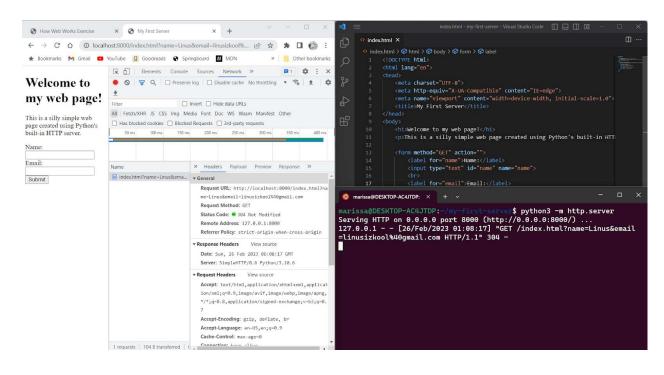
YouTube 

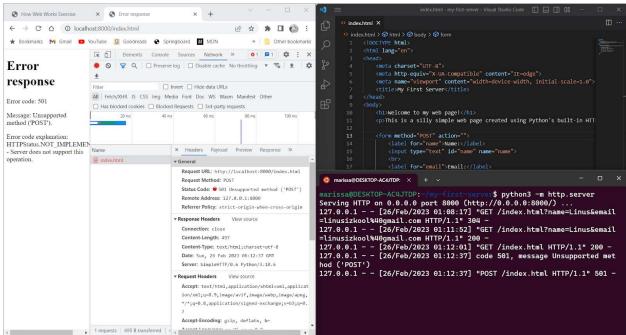
Goodreads 

Springboard 

M MDN
                                                                                                     » | Other bookmarks
                                                                                                                                          index.html
                                                                                                                                                                                             <html lang="en":
                                                                                                                                                                                             Welcome to my web page!
This is a silly simple web page created using Python's built-in HTTP server.
                                                                                                                                                                                            <body>
  <hi>web page!</hi>
  This is a silly simple web page created
                                                                                                                                    marissa@DESKTOP-AC4JTDP:~$ cd my-first-server
                                                                                                                                  marissa@DESKTOP-ACUJTOP: $ cd my-first-server
marissa@DESKTOP-ACUJTOP: "y-first-server$ python3 -m http.server
Serving HTTP on 0.0.0.0 port 8000 (http://0.0.0.0:8000/) ...
127.0.0.1 - - [26/Feb/2023 00:43:28] "GET /index.html HTTP/1.1" 200 -
127.0.0.1 - - [26/Feb/2023 00:43:28] GET /favicon.ico HTTP/1.1" 400 -
127.0.0.1 - - [26/Feb/2023 00:43:28] "GET /favicon.ico HTTP/1.1" 400 -
```

## Part Three: Explore Dev Tools





# Part Four: Explore the URL API

