How Web Works Exercise:

Author: Mahad Osman

Date: Sat Oct 15th, 2022

Exercise how the works

Part One: Solidify Terminology

In your own terms, define the following terms:

- What is HTTP?

  ▼ Hyper Text transfer protocol is a set of rules of how we communicate between a browser and a server

- What is a URL?
  - Is a universal resource locator aka what we use to find a website via a DNS server
- What is DNS?
  - Domain name system. It takes host names and translates them into IP addresses for us.
- What is a query string?
  - A query string is the extra information provided on a url such as search terms, etc. It can also take multiple arguments
- What are two HTTP verbs and how are they different?
  - The main two HTTP Verbs are Post and GET and they are as different as they can get.
  - GET is what we use to retrieve information where as POST is what we use to write data to be processed at the resource

- What is an HTTP request?
    - An HTTP request is when an HTTP method is used to perform an action. Get will retrieve information where post will push information to a server.
- What is an HTTP response?
    - AN HTTP response is what we receive back from a request with a status code indicating if we were sucessful or not.
- What is an HTTP header? Give a couple examples of request and response headers you have seen.
    - It is an additional field in a request or response that passes in additional meta data such as content type in a response or say host name in a request
- What are the processes that happen when you type "http://somesite.com/some/page.html" into a browser?
    - Name converts to IP using DNS
    - Web Browser HTTP Requests to that IP address
    - Internal work is if it not immediately found through the closest channels than the server communicates with a DNS database server to find our domain
    - A response is sent back, if the server is found it will be 200
    - HTML is passed back from the server to our web browser

Part Two: Practice Tools

1. Using ***curl***, make a ***GET*** request to the *icanhazdadjoke.com* API to find all jokes involving the word "pirate"

```
curl https://icanhazdadjoke.com/search?term=pirate
```

2. Use ***dig*** to find what the IP address is for *icanhazdadjoke.com*

```
mahadosman@Mahads-MacBook-Pro demo % dig icanhazdadjoke.com

; <<>> DiG 9.10.6 <<>> icanhazdadjoke.com
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 4405
;; flags: qr rd ra; QUERY: 1, ANSWER: 2, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1220
;; QUESTION SECTION:
;icanhazdadjoke.com.    IN  A

;; ANSWER SECTION:
icanhazdadjoke.com. 300 IN  A 104.21.66.15
icanhazdadjoke.com. 300 IN  A 172.67.198.173

;; Query time: 352 msec
;; SERVER: 2607:f798:18:10:0:640:7125:5204#53(2607:f798:18:10:0:640:7125:5204)
;; WHEN: Sat Oct 15 18:57:58 EDT 2022
;; MSG SIZE  rcvd: 79
```

3. Make a simple web page and serve it using ***python3 -m http.server***. Visit the page in a browser.

Part Three: Explore Dev Tools

Build a very simple HTML form that uses the GET method (it can use the same page URL for the action) when the form is submitted.

Add a field or two to the form and, after submitting it, explore in Chrome Developer tools how you can view the request and response headers.

Edit the page to change the form type to POST, refresh in the browser and re-submit. Do you still see the field in the query string? Explore in Chrome how you can view the request and response headers, as well as the form data.

Part Four: Explore the URL API

At times, it’s useful for your JavaScript to look at the URL of the browser window and change how the script works depending on parts of that (particularly the query string).

Read about the URL API

Try some of the code examples in the Chrome Console so that you can get comfortable with the basic methods and properties for instances of the URL class.