

How the Web Works

In this lab, you'll be working with a partner to explore a little more about the internet, the web, requests, responses and more. You'll be reading and writing about concepts as well as practicing some of the commands that we saw during the lecture earlier.

Topic 1: The Internet and the World Wide Web

- 1) What is the internet? (hint: [here](#))

A worldwide network made up of networks that uses the internet protocol suite.

- 2) What is the world wide web? (hint: [here](#))

An interconnected system of webpages built as an application on the internet

- 3) Partner One: read [this page](#) on how the internet works, Partner Two: read [this page](#) on how the world wide web works. When you're done reading, come back together and answer the following questions

- a) What are networks?

Interconnected computers.

- b) What are servers?

Computers that store the sites, webpages, etc.

- c) What are routers?

Controls signals from computers: where they come from, and where they go.

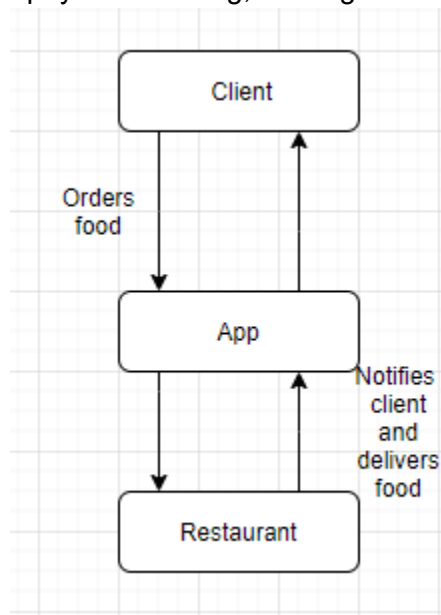
- d) What are packets?

Small chunks of data

- 4) Come up with a metaphor for the internet and the web, you can do a single one if you think of one that puts them together or two separate ones (feel free to use one you've heard today or read about if you can't think of a new one, but spend at least 10 minutes trying to think of something different before you resort to that)

It is like ordering food from a food service like Ubereats or Doordash.

- 5) Draw out a diagram of the infrastructure of the internet and how a request and response travel using your metaphor (like the map and letters we saw during the lecture). Insert the drawing into this document (can be a picture of a physical drawing, a Google Drawing, a Figma drawing, etc)



Topic 2: IP Addresses and Domains

- 1) What is the difference between an IP address and a domain name?

An IP address is the actual unique location on the web, and a domain name is a “nickname” to make IP addresses easier to remember for humans.

- 2) What's devmountain.com's IP address? (Hint: use 'ping' in the terminal)

172.66.43.107

- 3) Try to access devmountain.com by its IP address. It shouldn't work because we have our sites protected by a service called CloudFlare. Why might it be important to not let users access your site directly at the IP address?

It is important so that you are protected from threats like malicious bots, DDOS attacks, and more.

- 4) How do our browsers know the IP address of a website when we type in its domain name? (If you need a refresher, go read [this comic](#) linked in the handout from this lecture)

First it checks its cache and then asks the OS which checks its cache then if it still isn't found it asks the resolver which checks the root and other resources to find the server attached to that DNS and eventually the IP

Topic 3: How a web page loads into a browser

The steps of how a web page is requested and sent are in the table below. However, **they are out of order**. Unscramble them and explain your thinking/reasoning in the second two columns of the table.

Steps Scrambled	Steps in Correct Order	Why did you put this step in this position?
<i>Example: Here is an example step</i>	<i>Here is an example step</i>	- I put this step first because ____ - I put this step before/after ____ because ____
Request reaches app server	2	This is where the client is making the request
HTML processing finishes	5	Browser runs the html received from the server
App code finishes execution	3	Server processes request from user.
Initial request (link clicked, URL visited)	1	This step begins the whole process.
Page rendered in browser	6	User can now see the html page that was processed
Browser receives HTML, begins processing	4	This is the response from the server and the webpage that was sent

Topic 4: Requests and Responses

Setup

- Download the folder for this exercise from Frodo.
- Make sure you unzip it.
- Open it in VS Code
- Run `npm i` in the terminal (make sure you're in the web-works folder you just downloaded).
 - You'll know it was successful if you see a node_modules folder in the web-works folder.

- Run `node server.js` in the terminal (also in the web-works folder) and you should see a log to the terminal saying 'serving up port 4500'
- You'll be using this file to figure out what will happen when you make requests to this server, so read it over to see what's going on. We'll be getting into the two GET functions and the POST function.

Part A: GET /

- You'll start by looking at the function that runs when we make a get request to /, which looks like this: <http://localhost:4500> or <http://localhost:4500/>
 - You'll use the curl command to make a request and read the response in your terminal
- 1) Predict what you'll see as the body of the response:
This will give me "`<h1>Jurrni</h1><h2>Journaling your journies</h2>`"
 - 2) Predict what the content-type of the response will be:
This should be in text/html
 - Open a terminal window and run `curl -i http://localhost:4500`
 - 3) Were you correct about the body? If yes, how/why did you make your prediction? If not, what was it and why?
I was correct and I made my prediction based on the function in lines 26-28.
 - 4) Were you correct about the content-type of the response? If yes, how/why did you make your prediction? If not, what was it and why?
I was correct and I made my prediction based off what we saw in lecture today.

Part B: GET /entries

- Now look at the next function, the one that runs on get requests to /entries.
 - You'll use the curl command again. This time, you'll need to figure out how to modify it to get the response that you need.
- 1) Predict what you'll see as the body of the response:
This should give me the previous entries.
 - 2) Predict what the content-type of the response will be:
No idea, maybe text/html?
 - In your terminal, run a curl command to get request this server for /entries
 - 3) Were you correct about the body? If yes, how/why did you make your prediction? If not, what was it and why?
I was correct, and I made my prediction based on the function on lines 30-32.
 - 4) Were you correct about the content-type of the response? If yes, how/why did you make your prediction? If not, what was it and why?
No, I was not correct. I really had no idea what to expect..

Part C: POST /entry

- Last, read over the function that runs a post request.
- 1) At a base level, what is this function doing? (There are four parts to this)
This function creates a new entry to the journal by making a newEntry object. That's all I know.
 - 2) To get this function to work, we need to send a body object with our request. Looking at the function in server.js, what properties do you know you'll need to include on that body object? And what data types will they be (hint: look at the objects in the entries array)?
It will need to include a global ID, date, and content, both of which will be strings.
 - 3) Plan the object that you'll send with your request. Remember that it needs to be written as a JSON object inside strings. JSON objects properties/keys and values need to be in **double quotes** and separated by commas.
 - 4) What URL will you be making this request to?

localhost:4500

- 5) Predict what you'll see as the body of the response:
I should see a new entry with
- 6) Predict what the content-type of the response will be:
 - In your terminal, enter the curl command to make this request. It should look something like the example below, with the information you decided on in steps 3 and 4 instead of the ALL CAPS WORDS.
 - `curl -i -X POST -H 'Content-type: application/json' -d JSONOBJECT URL`
- 7) Were you correct about the body? If yes, how/why did you make your prediction? If not, what was it and why?
I was correct because I knew it would pump out an entry like the pre-existing ones.
- 8) Were you correct about the content-type of the response? If yes, how/why did you make your prediction? If not, what was it and why?

Yes because I knew it would be an application/json because I set the content type.

Submission

1. Save this document as a PDF
2. Go to Github and create a new repository. (Click the little + in the upper right hand corner.)
3. Name your repository "web-works" (or something like that).
4. Click "uploading an existing file" under the "Quick setup heading".
5. Choose your web works PDF document to upload.
6. Add "commit message" under the heading "Commit changes". A good commit message would be something like "Adding web works problems."
7. Click commit changes.

Further Study: More curl

Visit [this link](#) and do the exercises using the website provided. Keep track of the commands you used in this document. (Don't forget to resubmit to GitHub when you complete this section)