Backend & APIs

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Time to explore something new!

- Up until now, we've been messing with things the user directly sees - ***the frontend***
- Now we get to do some things that are super important but some users may never realize happens - ***the backend***

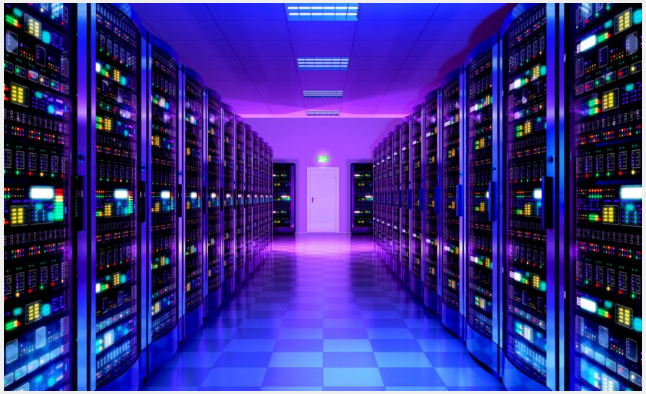
Motivation

- At the moment our catbook is static, it doesn't really change with user data

- How is user data generated?
- Where is it stored?
- ***How do I ask for data?***

The answer to all of these questions is more or less standardized!

Client and Server



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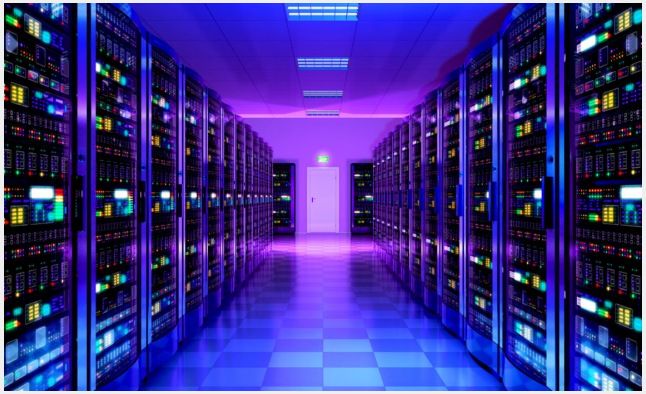

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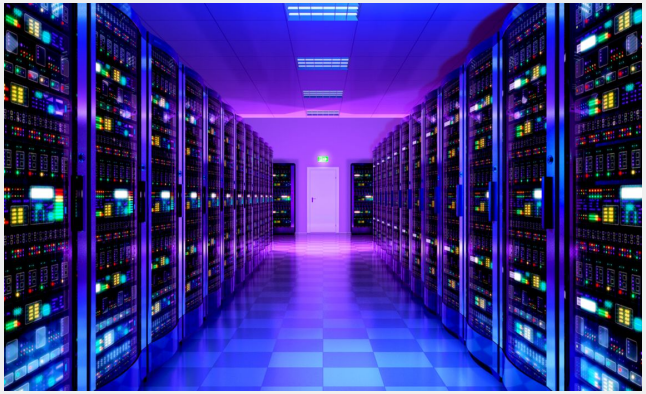

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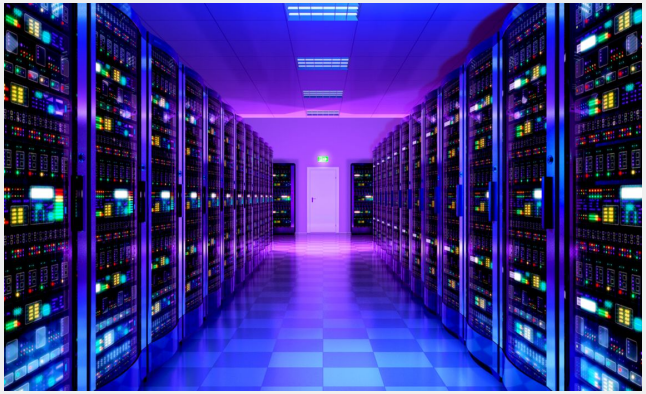

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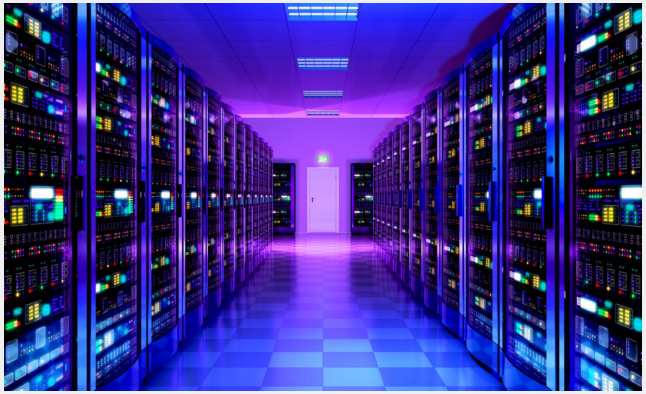

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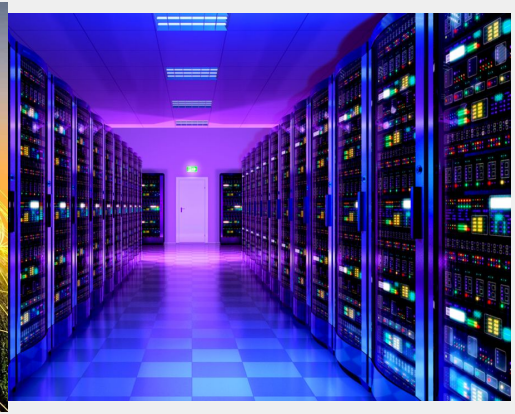

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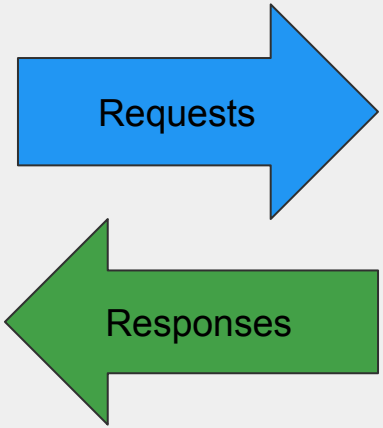
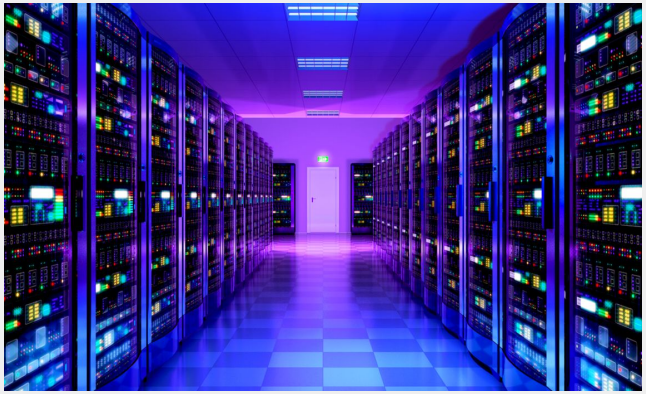




A slight text-based recap

- When you type a link to the address bar:
- You and your teammates' browsers are **clients**
- The device that holds your site's information is the **server**
- To get data from the server, your client must make a **request**
- To send data back to the client, the server sends back a **response**

How do we send information?

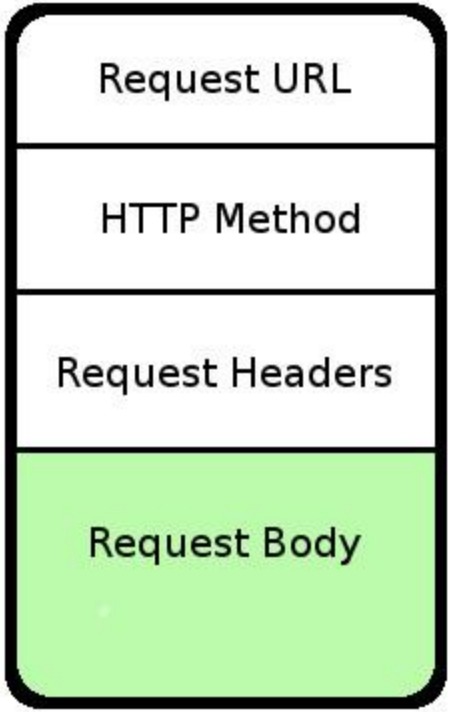
- How can you access information from servers miles away?
- Sadly email is not an acceptable answer.
- It has to do with a specific type of request/response


https://www


http://www

What is HTTP?

- It's short for “Hypertext Transfer Protocol”
- Hmm... HTML and HTTP both have the Hyper Text prefixed
- You’ve been using HTTP requests and responses this whole time!


Request URL
HTTP Method
Request Headers
Request Body

Query

- You'll see a bunch of talk about "req.body" and "req.query" stuff later
- That query thing exists as part of the Request URL
- http://catbook2021.herokuapp.com/api/comment**?parent=5e9bac164f99d406062859b6**
- That is a query bit that will tell the server which comment to give back

HTTP Methods

- GET, well, gets data
- POST creates data
- PUT modifies data
- DELETE, well, deletes data
- You can find the rest here: https://developer.mozilla.org/en-US/docs/Web/HTTP/Methods

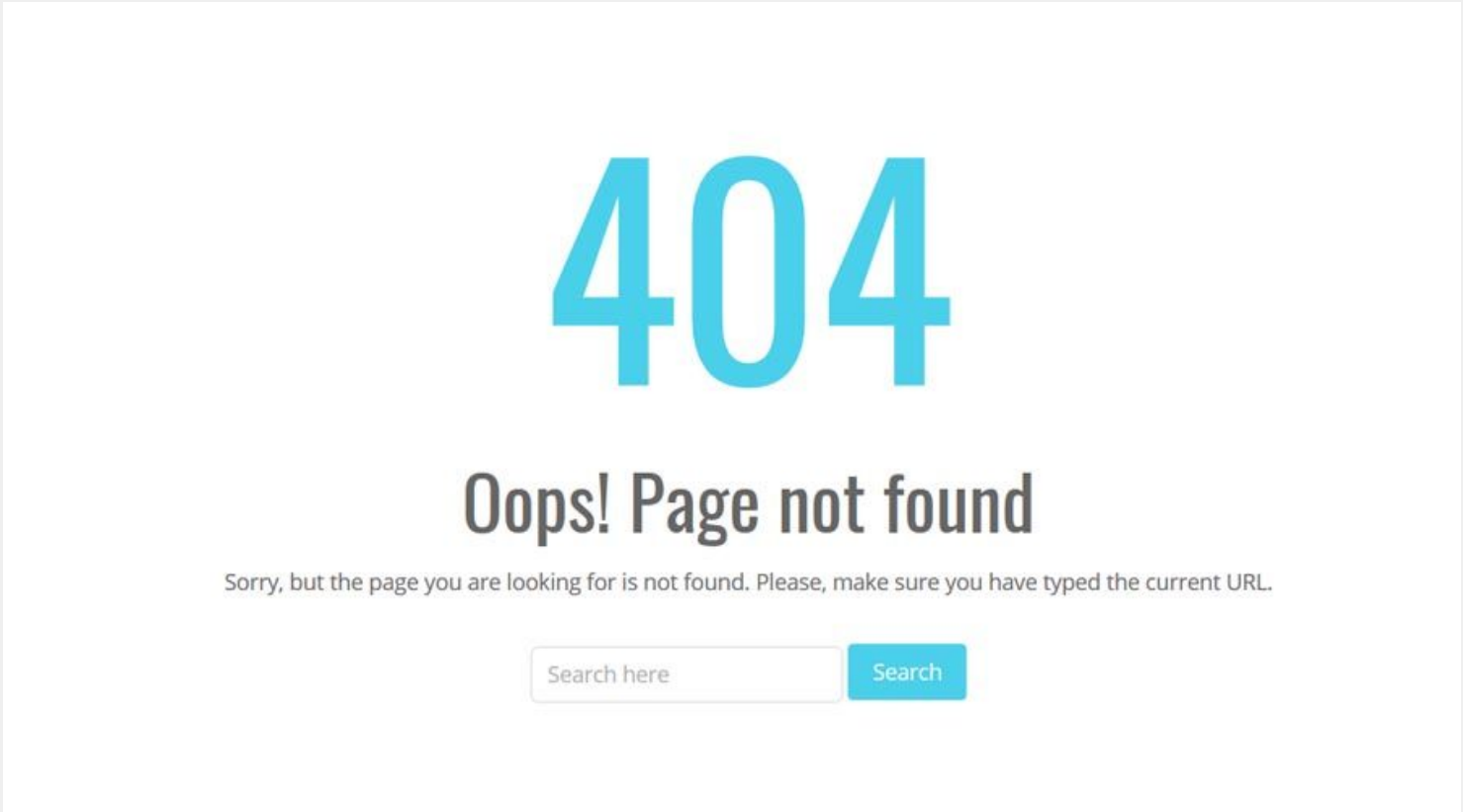
What about everything else?

- HTTP uses the request line to state its method and destination
- It uses the request body to give other info if needed (such as POST)
- It uses the header to do other fancy stuff

Responses

- Responses also contain status codes and usually whatever you requested
- Status codes (1xx, 2xx, 3xx, 4xx, 5xx) tell how the request went
- You've likely seen a few...

The Dreaded 404




200 OK
made on imgur


500
Internal server error
ICANHASCHEEZBURGER.COM


400 BAD REQUEST

Status Codes

- 1xx- informational
- 2xx- you succeeded
- 3xx- redirect
- 4xx- you did something wrong
- 5xx- server did something wrong
- https://www.restapitutorial.com/httpstatuscodes.html

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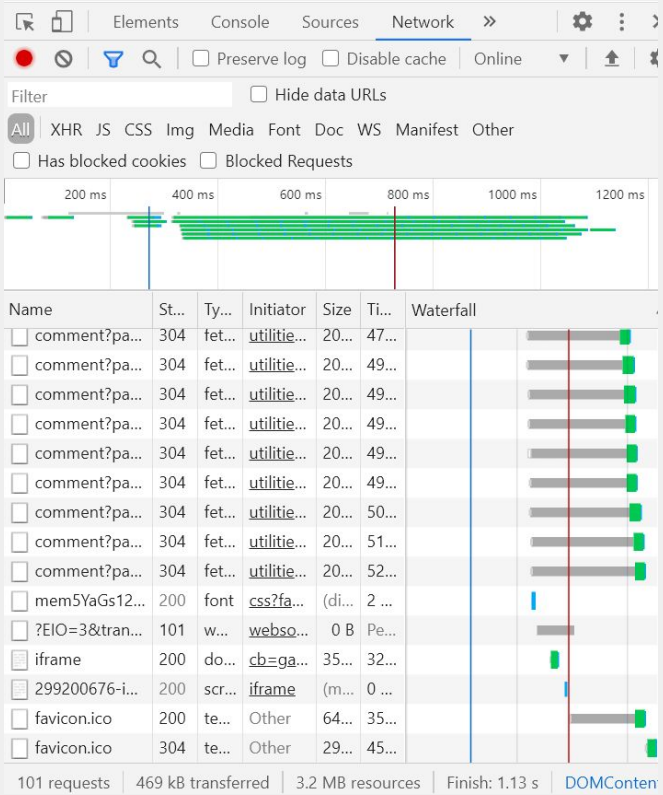
Your requests are just out of sight...

- Open up some random page (maybe try catbook!)
- Open the developer section with Ctrl-Shift-i or Cmd-Shift-i or whatever applicable shortcut/method
- You should see a “Network” tab
- If you open it and refresh the page, you should see all the request the page made just to load the site!

Here's what that looks like for Catbook



Let’s make a couple requests…

- And I mean a couple.
- The first one
- The second one

Any questions?

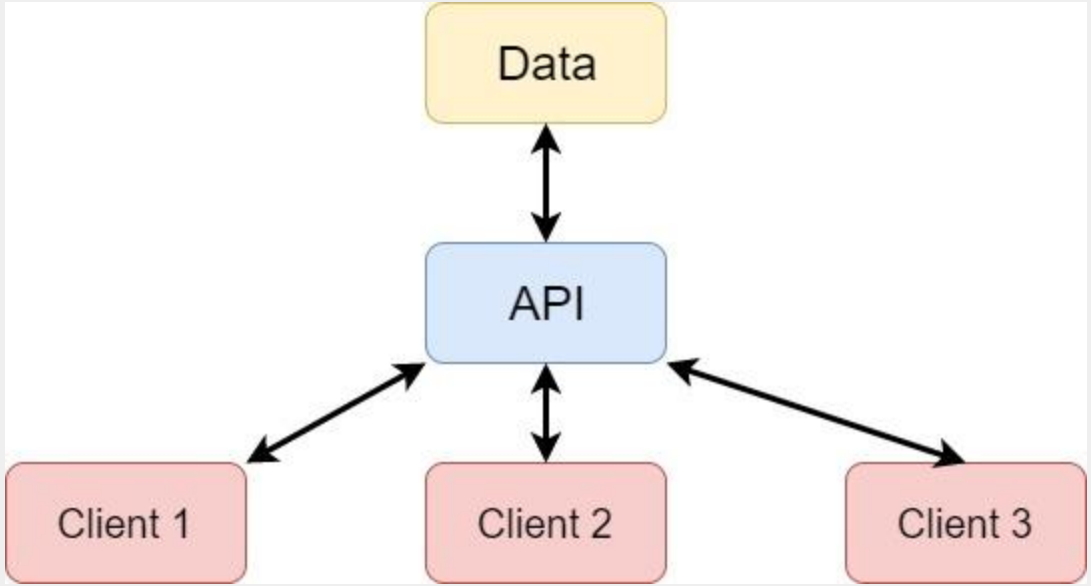
APIs

- “Application Program Interface”
- Simply a set of endpoints a service allows you to make requests to
- Companies such as Google, Amazon, and Facebook all provide APIs to allow others to implement their services

The Purpose of an API

- You need to access data
- You're not going to access data on servers directly, that's both extremely inconvenient and a security nightmare
- APIs provide structured places (endpoints) for you to send requests to!
- Now you can do a bunch of things, simply by asking the right people very nicely.

The Purpose of an API

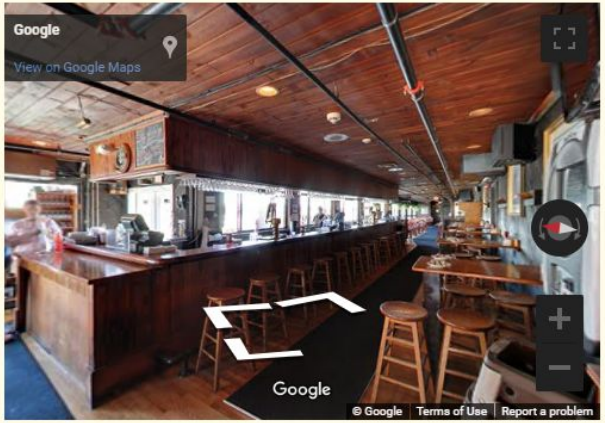


Endpoints

- By accessing a URL, you are making a request to an endpoint
- catbook2020.herokuapp.com/api/stories, a GET request for all stories
- catbook2020.herokuapp.com/api/story, a POST request to make a story
- Multiple endpoints can exist under the same URL, but are differentiated based on the type of request
- catbook2020.herokuapp.com/api/comment, gets or adds a comment based on GET or POST

BOSTON SAIL LOFT

Located in the North End/Waterfront neighborhood of Boston, the Sail Loft is just a 5 minute stroll from historic Faneuil Hall and Quincy Market through Christopher Columbus Park. The most convenient T stations are: the Aquarium Stop along the Blue line, Government Center along the Green line or Haymarket along the Orange and Green line. If you are driving to visit the Sail Loft, we recommend several different lots along Atlantic Avenue including the Lewis Wharf Parking Lot or the Union Wharf Parking Lot. We do not offer valet or validation on parking.



CONTACT US

Cool API Examples

- There’s the Google Maps stuff mentioned a moment ago
- The Dog API
- https://beta.openai.com/, check out their blog to drool over stuff

What does an API look like?

Swagger is a fantastic API resource and this entire sentence is one long link, do you have a problem?