

Goals for today:

- 1. Learn about iteration in design/
sketching**

- 2. Learn about APIs and objects**

- 3. Visualize weather data from an API in
your sketches**

Logistics, etc

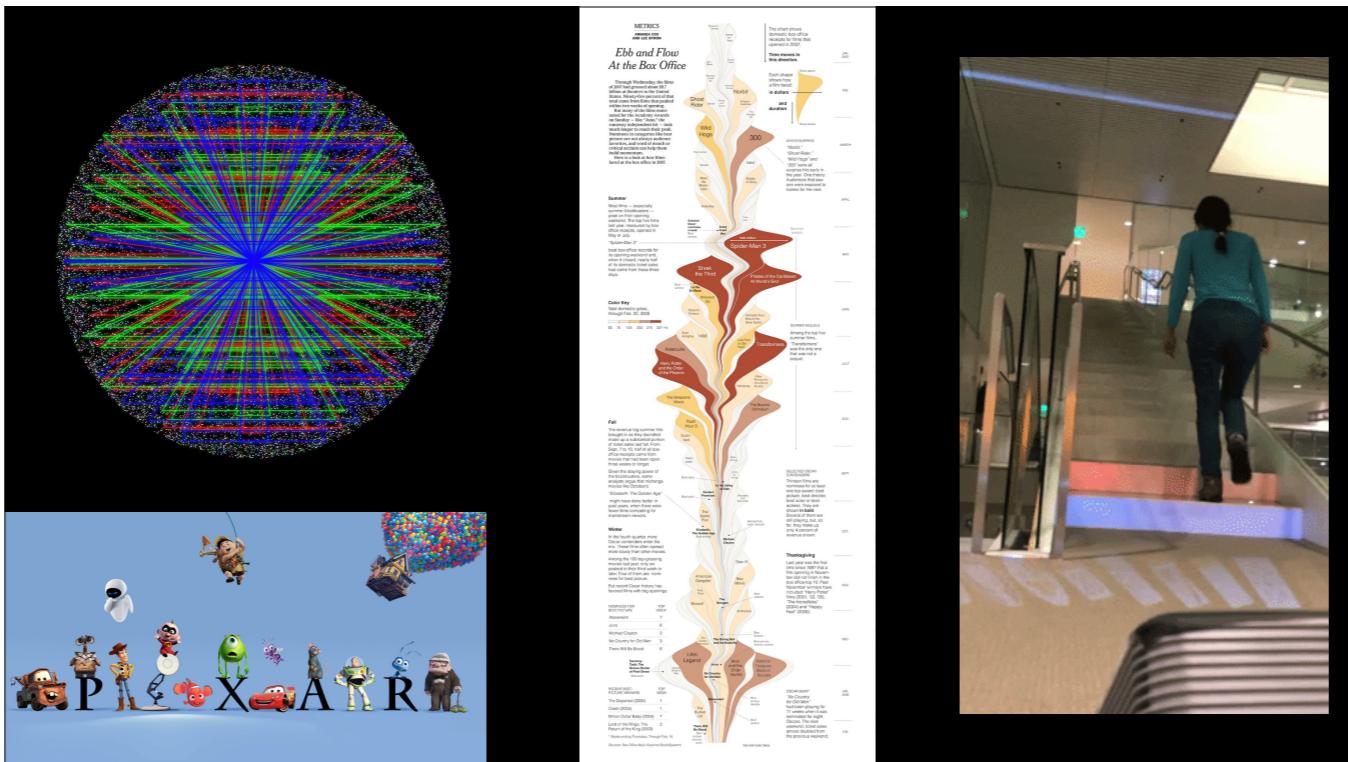
Link to materials: <https://ninalutz.github.io/gallaudet-creative-coding/>

This includes CC coding videos and all of the code laid out, the code and PDFs, glossaries, and more fun stuff!

Contact me: nlutz@mit.edu

So what is creative coding?

It's really the intersection of visual art and computer science!



It can include drawing with code, computer graphics, projection mapping, data visualization, and more!

Special languages for creative coding

- p5.js
- Processing
- openFrameworks (co-invented by Zach Lieberman, who is at MIT Media Lab and a super successful creative coder)
- Unity
- And more!



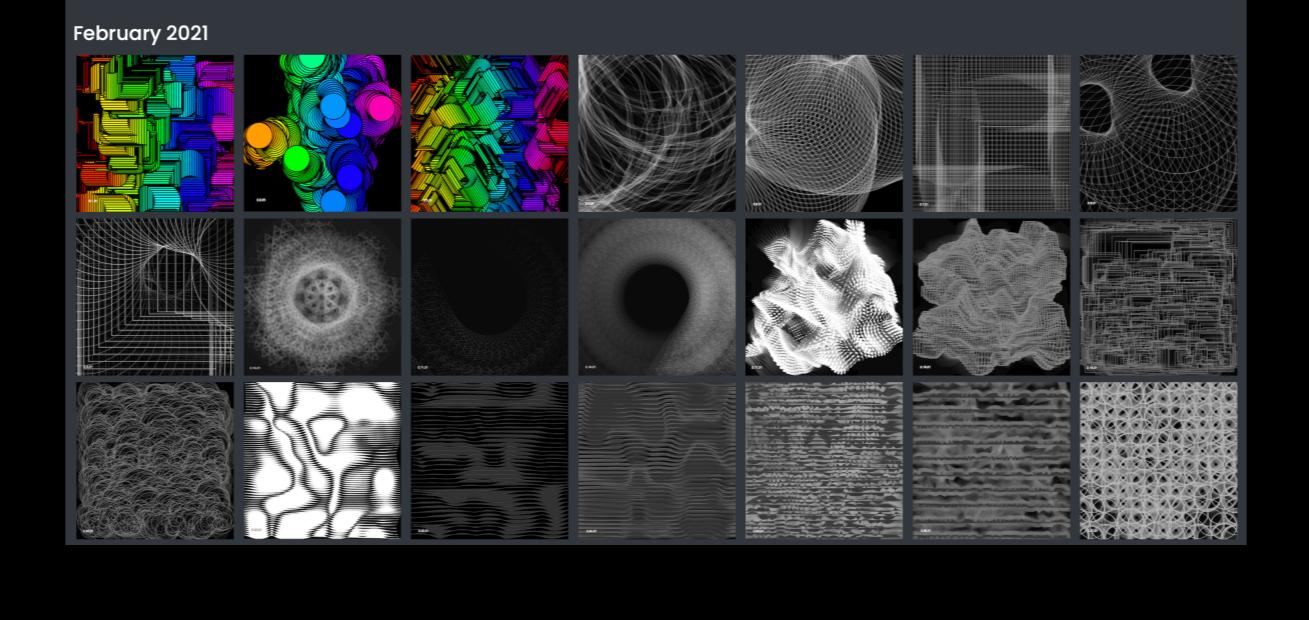
Watch Zach's Video



**What is the importance of
sketching in creative coding?**

(drop ideas in the chat)

Article: <https://nlutz-54627.medium.com/a-year-2020-of-almost-daily-code-sketches-b7893521428a#1f30>



Sketching is great for learning new techniques, experimentation, practice, and iteration! And sharing sketching can be rewarding!

People interact with your art in new ways and you get to explore new mediums

The image displays two screenshots from a Twitter thread. The left screenshot shows a tweet from **ninasketches** (@ninasketches) dated Nov 10, 2020, featuring two abstract line drawings. Below it is a reply from **Tova Stein** (@TovaStein2) dated Nov 15, 2020, asking how the artist makes their work. The right screenshot shows a tweet from **ninasketches** (@ninasketches) dated Feb 26, 2021, advertising products like masks and phone cases made from the artist's artwork.

ninasketches @ninasketches · Nov 10
11.10.20

Tova Stein @TovaStein2

Replying to @ninasketches

These are so cool! How are you making them?

12:23 PM · Nov 15, 2020 · Twitter Web App

ninasketches @ninasketches

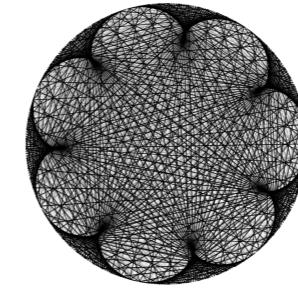
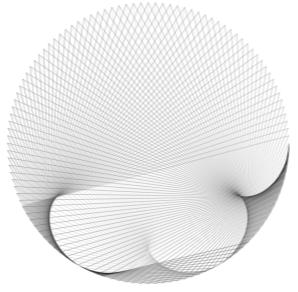
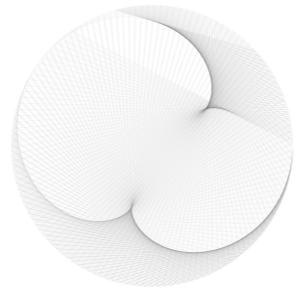
A friendly reminder that some of the art here is on sale on various products (including masks and phone cases and clothes and more) at redbubble.com/shop/ninasketches...

8:32 PM · Feb 26, 2021 · Twitter Web App

[View Tweet activity](#)

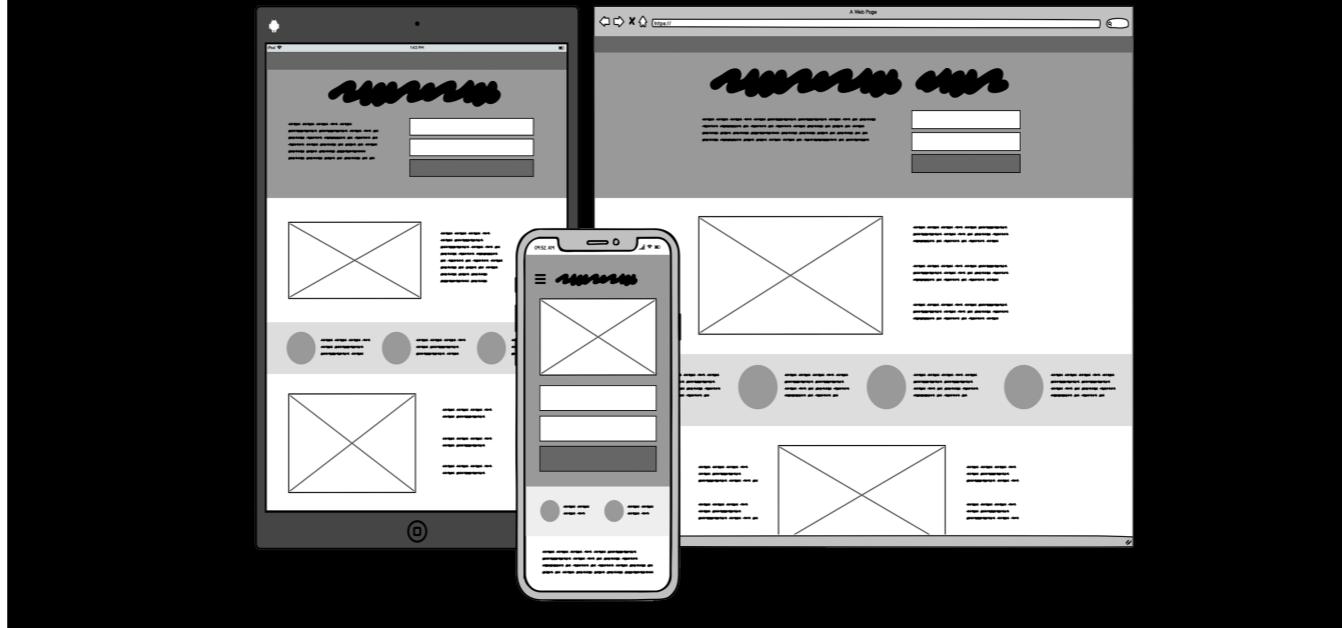
It's also really rewarding because people respond to your work and you can explore new mediums for your work.

These are all the same sketch with less than 4 lines of change

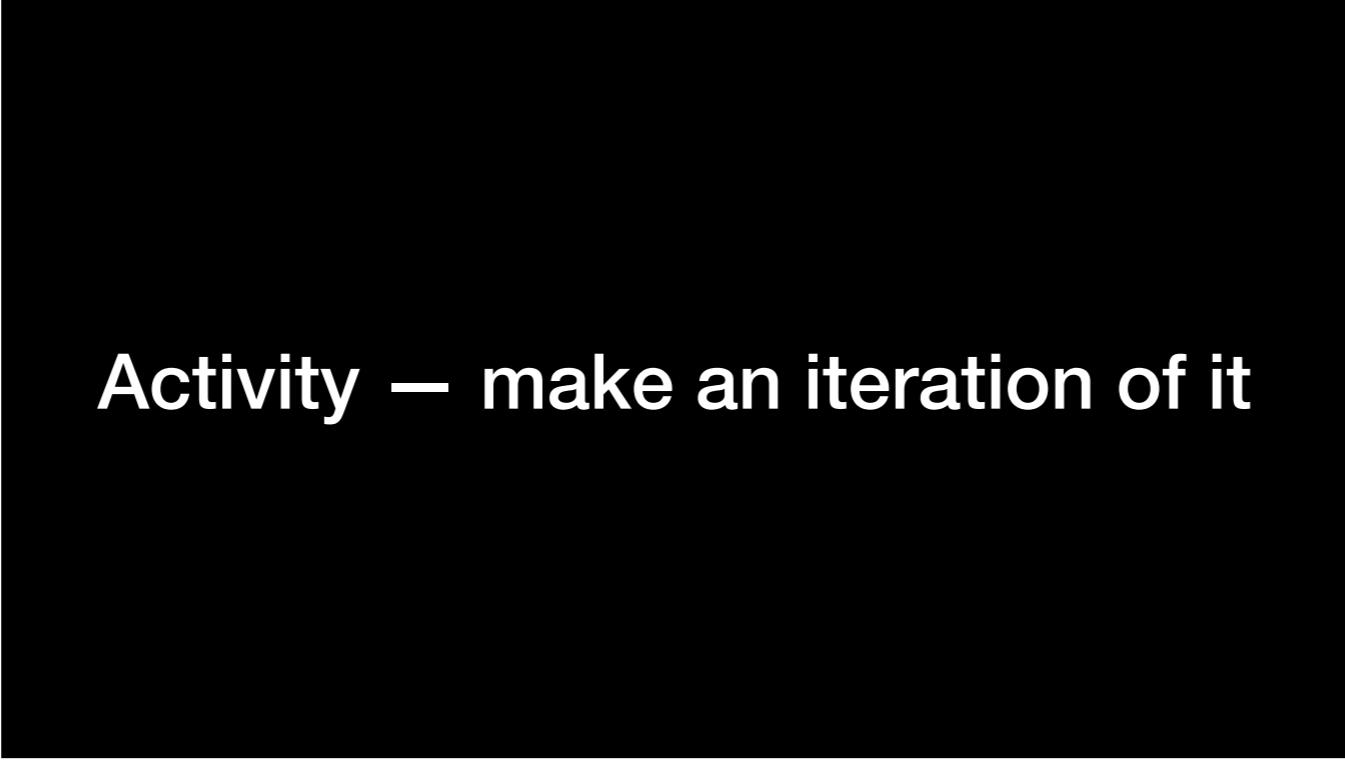


Example of iterative sketches - go to the website at <https://ninalutz.github.io/gallaudet-creative-coding/#session1> and try to make another iteration of it in p5.js. The video of this code and the iterations here is also on the website.

In industry sketching and iteration are done via wireframes



In industry sketching and iteration are done for websites and software via wireframes and paper prototypes — this is part of UI/UX design and something that is done between web developers and designers. There are a lot of tools for this including Adobe XD



Activity – make an iteration of it

<https://ninalutz.github.io/gallaudet-creative-coding/#session1>

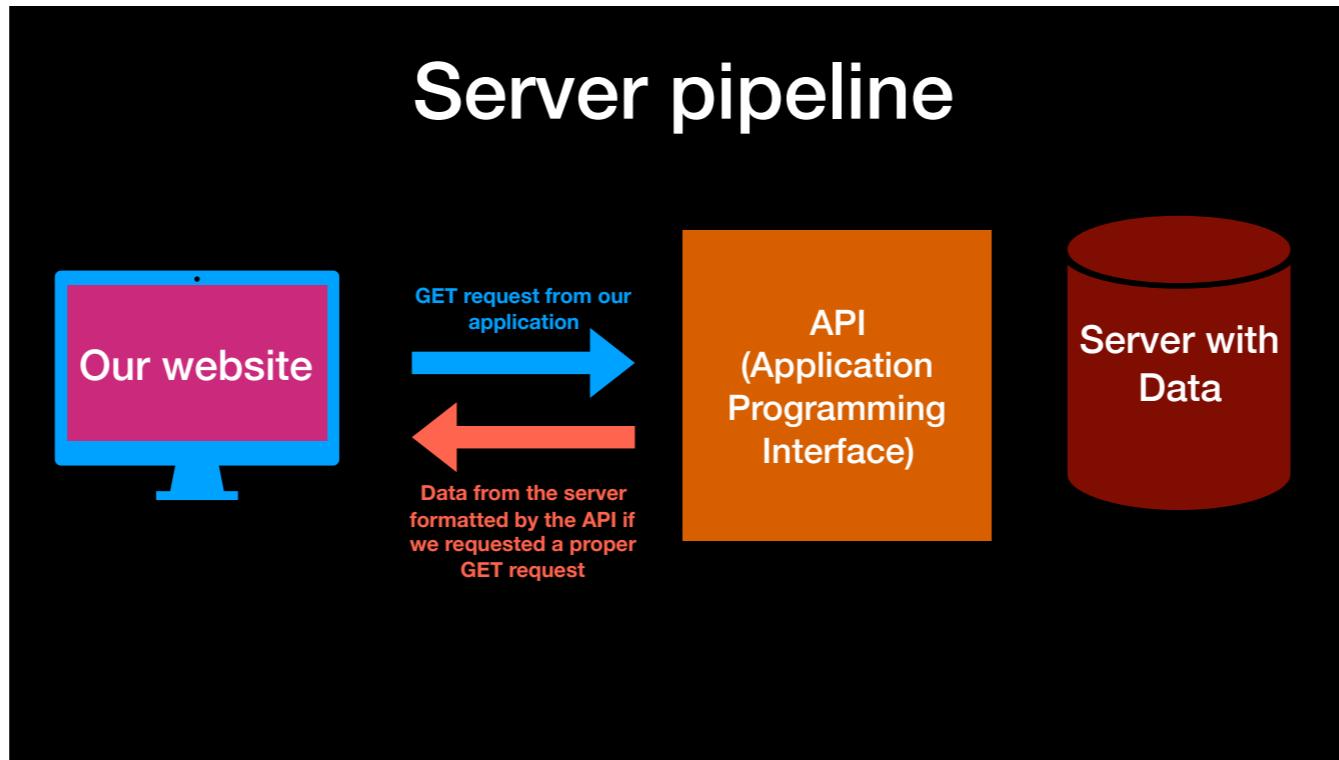
Sketching with data

Lots of versions of sketching with data

- Data visualization
- Data physicalization
- Data storytelling
- More!

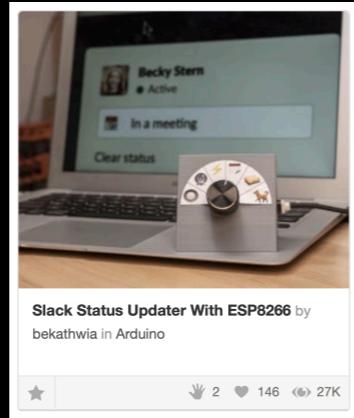
First step – getting data into your sketch

Server pipeline



Data lives on a server. There is an API that ensures only proper GET requests will return data to an application from that server. This is done through a GET request in your code, usually using an API key for security purposes.

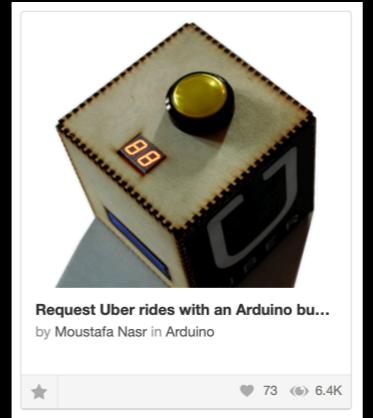
Lots of cool APIs



Slack Status Updater With ESP8266 by
bekathwia in Arduino



Arduino Traffic Display Using Google ...
by witnessmenow in Arduino



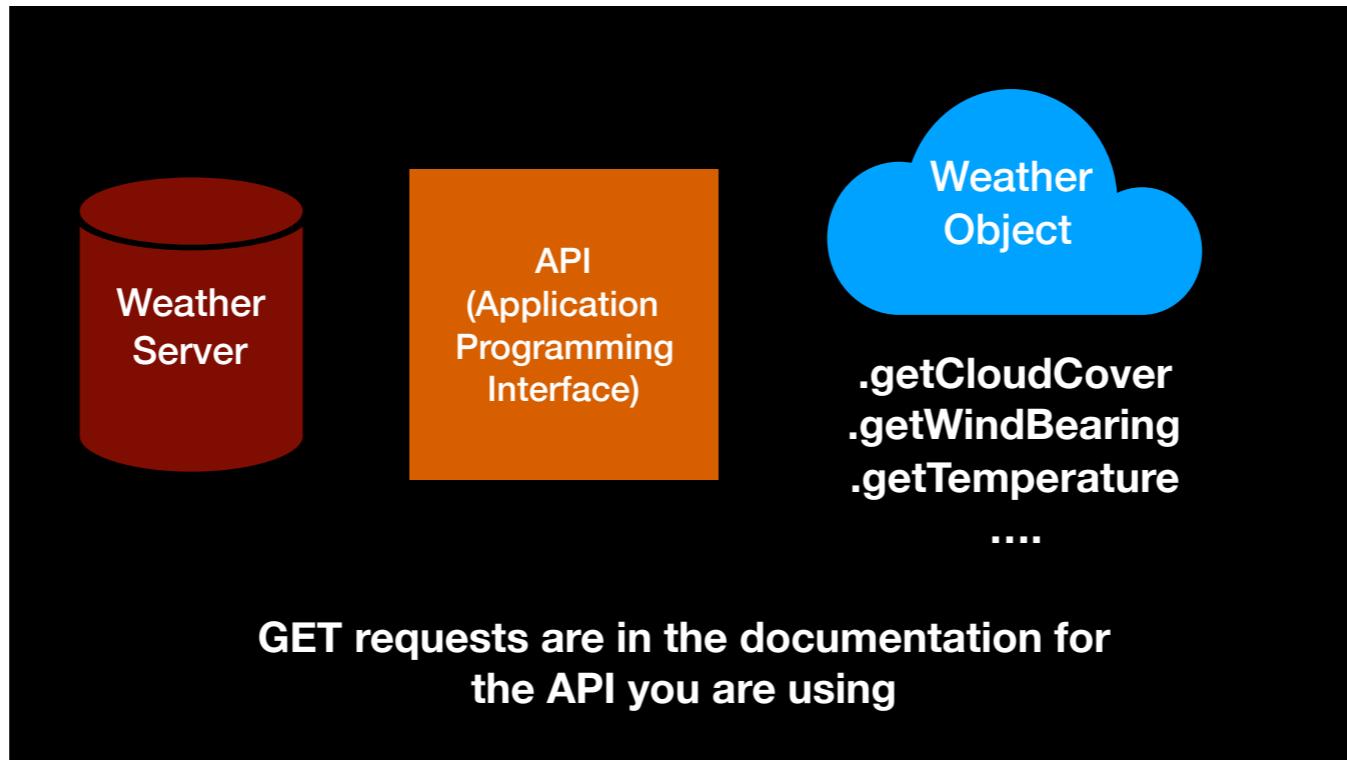
Request Uber rides with an Arduino bu...
by Moustafa Nasr in Arduino

Most websites you use everyday have an API!

Lots of other cool API examples and projects on websites like Instructables

Basically the entire web is built off APIs for different services

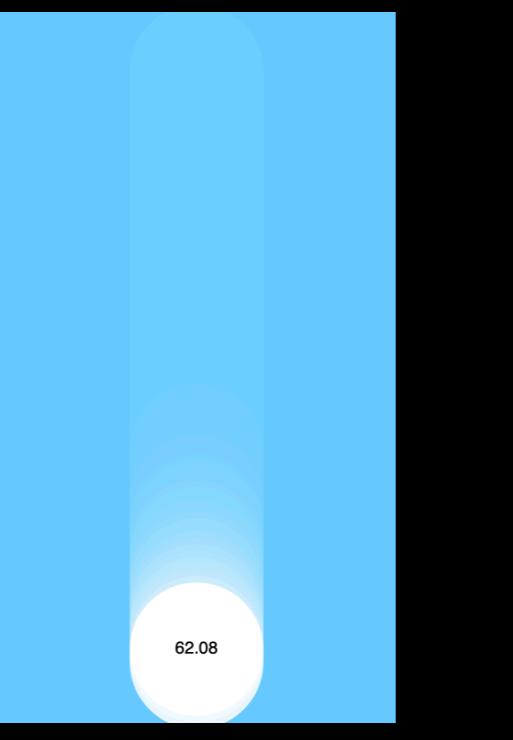
A lot of APIs return objects to
the code and these objects
have other properties that you
can **get**



The weather server has all of the raw data, which is packaged into a weather object by the API, which we can use in our websites.

Questions?

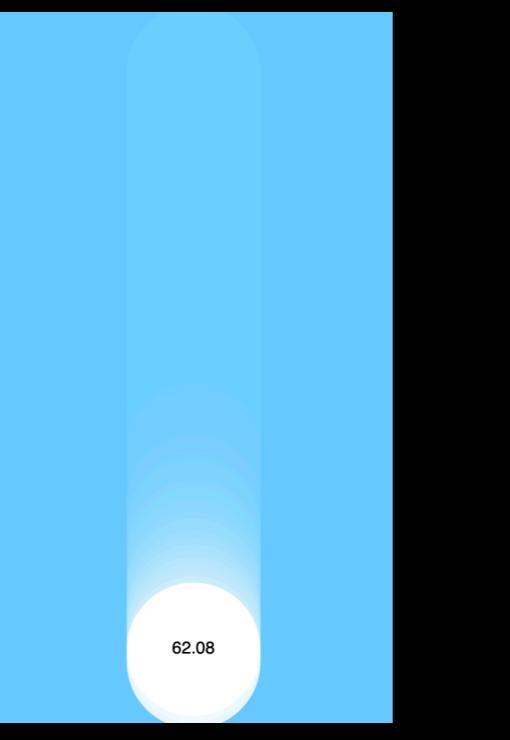
Worked example - Weather API Drawing



This is what we'll be coding together when we get back from break

10 min break! :)

Worked example - Weather API Drawing



Video is available here: https://drive.google.com/drive/folders/1QDpCLRFKBfkjgig1O_vb8D0fbCZDGrl

Other ways to get data into your P5.js sketches

- CSV and JSON files
- Sensors
- More!

JSON file

- Structure for a lot of programming languages
- Used often in the web
- Standardized way to store information

```
SampleRecords.json
1 [           "trackid": "AA-1234",
2   {           "reported_dt": "12/31/2019 23:59:59",
3     "longitude": -111.12500000,
4     "latitude": 33.37500000
5   },
6   {
7     "trackid": "BB-7890",
8       "reported_dt": "12/31/2019 23:59:59",
9       "longitude": -113.67500000,
10      "latitude": 35.87500000
11   },
12   {
13     "trackid": "CC-4545",
14       "reported_dt": "12/31/2019 23:59:59",
15       "longitude": -115.57500000,
16       "latitude": 37.67500000
17   }
18 ]
19 ]
20 ]
```

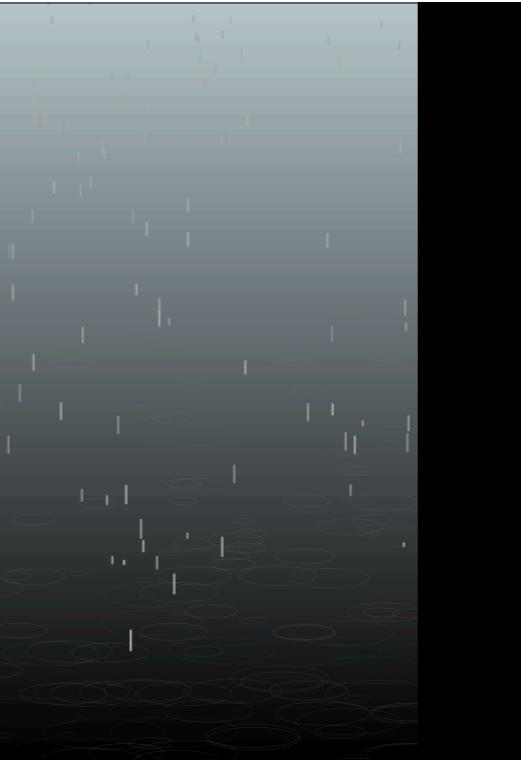
CSV file

- Comma separated values
- Just like a spreadsheet or google sheet you can open on your computer!

Objects

- The weather object we get from the API is a class in the code
- Classes are used in object oriented programming to minimize code reuse
- Primitives in p5.js like `ellipse(50, 50, 100, 100)` are examples of classes

Worked example - Drops



Video is available here: https://drive.google.com/drive/folders/1QDpCLRFKBfkjgig1O_vb8D0fbCZDGrl

Homework: 3 iterative sketches
about weather

Download the
“weather_homework_template”
folder to make your sketch in

Office Hours

Wednesday 12pm - 2pm EDT

<https://mit.zoom.us/j/97839583579>

Interpreters will be there :)

I'm also available via email for questions! :)