

Understanding How Websites Work for Web Scraping

Aaron Geller



Hello
Select your address

All

cool gadgets



USA



Hello, Sign In
Account & Lists



Returns
& Orders



0
Cart

All Best Sellers Customer Service

Prime New Releases Today's Deals Books Fashion Kindle Books Toys & Games

Gift Cards Pharmacy Amazon Home Registry Sell

Get ready for summer fun

1-48 of over 4,000 results for "cool gadgets"

Sort by: Featured

Eligible for Free Shipping

Free Shipping by Amazon

All customers get FREE Shipping on orders over \$25 shipped by Amazon

Delivery Day

Get it by Tomorrow

Department

Toys & Games

Toys & Games Activities & Amusements

Cell Phone Accessories

Power Tools & Hand Tools

Outdoor Recreation

Lighting & Ceiling Fans

Kitchen & Dining

Audio Headphones

See All 34 Departments

Avg. Customer Review

★★★★★ 5 & Up

★★★★★ 4 & Up

★★★★★ 3 & Up

★★★★★ 2 & Up

Toy Character

Lego City

Speed Racer

Yu-Gi-Oh!

Batman

Lego Creator

Marvel

Guardians of the Galaxy

Brand

SMALL FISH

Shashibo

calary

Price

Under \$25

\$25 to \$50

\$50 to \$100

\$100 to \$200

\$200 & Above

EILIKS

Outdoor Survival Gear, Cool Gadgets Gifts for Men

Shop the Outdoor Camping Survival Gear Store on Amazon



EILIKS Survival Gear Kit, Emergency EDC Survival Tools 24 in 1 SOS Earthquake Aid Equipment, C...

★★★★★ 2,022

prime



Gifts for Men Dad Husband, Survival Gear and Equipment Kit 20 in 1, Emergency Escape Tool...

★★★★★ 43

prime



EILIKS Emergency Sleeping Bag Camping Bivy Sacks, Waterproof Lightweight Thermal Life Te...

★★★★★ 37

prime

Sponsored

Price and other details may vary based on size and color



Sponsored

Survival Kit, Professional Emergency Survival Gear and Equipment Supplies for Outdoor Camping Adventures Hiking Great Gifts for...

★★★★★ 2

\$23⁹⁹

prime Get it as soon as Thu, May 13



Pen Gifts for Men, Huwoo Cool Gadgets Tools Multi Tech Pen for Men, Personalized Gifts for Dad or Him, Funny Gift for Christmas,...

★★★★★ 553

\$8⁹⁹

prime Get it as soon as Tomorrow, May 11



3D Illusion Platform Night Lighting Touch Button 7 Color Change Decor LED Lamp

★★★★★ 1,369

\$11⁶⁴

prime Get it as soon as Thu, May 13
FREE Shipping on orders over \$25 shipped by Amazon



Gifts for Dad&Men Fathers Day- Magnetic Pickup Tool with LED, Telescoping Magnet Flashlight Pickup Stick Cool Gadget,Birthday...

\$14⁹⁹

Save 8% with coupon

prime Get it as soon as Tomorrow, May 11



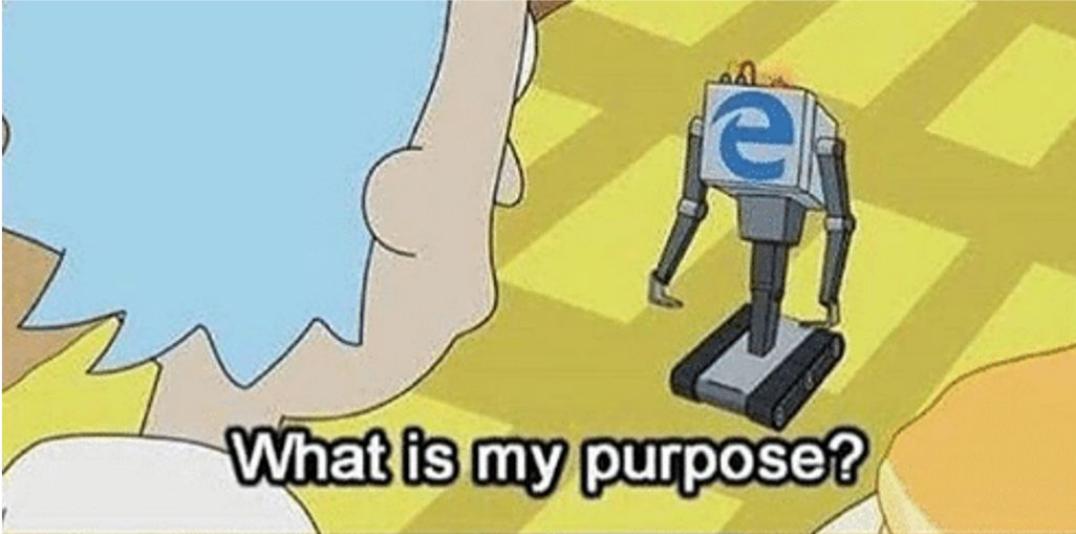
What lies beneath?

Don't look behind you... it's... it's... code!!!

Browsers “simply” interpret code that is written in HTML + CSS + Javascript to display the websites that you love.

There are many choices for browsers out there. Uniformity across browsers, in how the code is interpreted and displayed is sometimes a problem. I recommend sticking with Chrome or Firefox for web development.





What is my purpose?





The Big Three

HTML



CSS



Javascript



Title of an Awesome Website

Subtitle

Author

This is a paragraph. With lots of super cool words in it that everyone will want to read. Lorem ipsum dolor sit amet, consectetur adipiscing elit. Fusce a fermentum nunc. Proin consequat dolor vitae velit lacinia blandit. Sed congue lacus nec nisi tempor lobortis. Curabitur felis urna, tempus quis laoreet quis, maximus vel ante. Vivamus fringilla ex mauris, et gravida urna placerat quis. Suspendisse dapibus sapien in interdum bibendum. Ut ut suscipit enim. Suspendisse iaculis iaculis diam sed tempus. Vivamus volutpat dolor vel metus suscipit tempor. Quisque efficitur purus id blandit ornare. Vestibulum massa libero, tempor in lacus at, ullamcorper suscipit dui. Maecenas feugiat nisi massa, eu hendrerit ex tincidunt non. Aliquam in eleifend nisl.



Vigo the Catpathian, Ghostbusters II + awesome internet people

What is HTML?

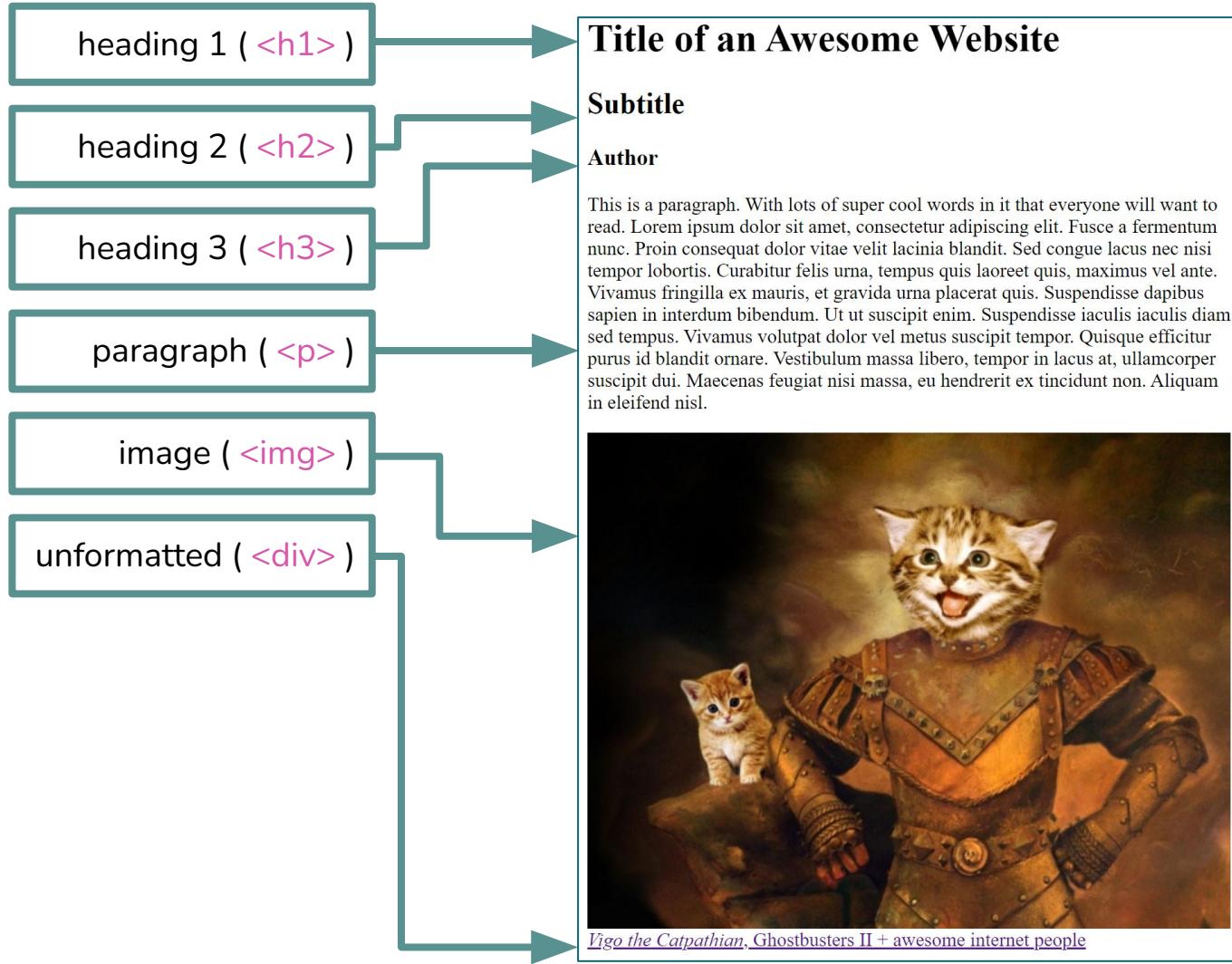
HyperText Markup Language

- Sets the basic structure of a website
- Uses elements (also attributes like “id” and “class”) to identify different types of content

```
<p> This is a paragraph. </p>
```

If we use a house as a metaphor, HTML is the walls, roof, foundation and all structural elements.

[Here is an HTML-only CodePen to explore.](#)





Basic HTML commands

`<html></html>`

Your entire website should live in between these.

`<head></head>`

The header contains special information, like the page title and links to external libraries or style sheets.

`<body></body>`

Everything that should be visible on the website goes in here (usually the largest portion of the code).

`<h1></h1>`

Up to six levels of headers are available with `<h1>` as the largest.

`<p></p>`

Paragraph; most normal text can go inside these tags.

`<a>`

Links to other websites.

`, <i></i>`

Bold (``) and italics (`<i>`).

``

Lists; in between these you insert items with the `` tag. There are also numbered lists with ``.

``

Images.

`<div></div>`

Unformatted element; very useful for defining different layouts and objects you will style/manipulate.



What is CSS?

Cascading Style Sheets

- Sets the colors, sizes, mood of a website
- Attached styles to HTML elements

```
p {  
    font-family: Verdana;  
    text-align: justify;  
    font-size: 14px;  
    margin: 20px 10px 10px 10px;  
}
```

If we use a house as a metaphor, CSS is the paint, wallpaper, tiles, siding, etc.

[Here is a CodePen with HTML+CSS to explore.](#)

Title of an Awesome Website

Subtitle

Author

This is a paragraph. With lots of super cool words in it that everyone will want to read. Lorem ipsum dolor sit amet, consectetur adipiscing elit. Fusce a fermentum nunc. Proin consequat dolor vitae velit lacinia blandit. Sed congue lacus nec nisi tempor lobortis. Curabitur felis urna, tempus quis laoreet quis, maximus vel ante. Vivamus fringilla ex mauris, et gravida urna placerat quis. Suspendisse dapibus sapien in interdum bibendum. Ut ut suscipit enim. Suspendisse iaculis iaculis diam sed tempus. Vivamus volutpat dolor vel metus suscipit tempor. Quisque efficitur purus id blandit ornare. Vestibulum massa libero, tempor in lacus at, ullamcorper suscipit dui. Maecenas feugiat nisi massa, eu hendrerit ex tincidunt non. Aliquam in eleifend nisl.



Title of an Awesome Website

Subtitle

Author

This is a paragraph. With lots of super cool words in it that everyone will want to read. Lorem ipsum dolor sit amet, consectetur adipiscing elit. Fusce a fermentum nunc. Proin consequat dolor vitae velit lacinia blandit. Sed congue lacus nec nisi tempor lobortis. Curabitur felis urna, tempus quis laoreet quis, maximus vel ante. Vivamus fringilla ex mauris, et gravida urna placerat quis. Suspendisse dapibus sapien in interdum bibendum. Ut ut suscipit enim. Suspendisse iaculis iaculis diam sed tempus. Vivamus volutpat dolor vel metus suscipit tempor. Quisque efficitur purus id blandit ornare. Vestibulum massa libero, tempor in lacus at, ullamcorper suscipit dui. Maecenas feugiat nisi massa, eu hendrerit ex tincidunt non. Aliquam in eleifend nisl.



Vigo the Catpathian, Ghostbusters II + awesome internet people

Title of an Awesome Website

Subtitle

Author

This is a paragraph. With lots of super cool words in it that everyone will want to read. Lorem ipsum dolor sit amet, consectetur adipiscing elit. Fusce a fermentum nunc. Proin consequat dolor vitae velit lacinia blandit. Sed congue lacus nec nisi tempor lobortis. Curabitur felis urna, tempus quis laoreet quis, maximus vel ante. Vivamus fringilla ex mauris, et gravida urna placerat quis. Suspendisse dapibus sapien in interdum bibendum. Ut ut suscipit enim. Suspendisse iaculis iaculis diam sed tempus. Vivamus volutpat dolor vel metus suscipit tempor. Quisque efficitur purus id blandit ornare. Vestibulum massa libero, tempor in lacus at, ullamcorper suscipit dui. Maecenas feugiat nisi massa, eu hendrerit ex tincidunt non. Aliquam in eleifend nisl.



Vigo the Catpathian, Ghostbusters II + awesome internet people



Basic CSS manipulations

colors

Foreground, background, borders, shadows, etc. Enter either as string, hex code or rgb.

spacing

Margins for exterior spacing; padding for interior spacing.

position

Can be absolute on the page, or relative to other object.

fonts

Font family, style, size, line height, text alignment, etc.

sizes

Width, height.

borders

Styles, thickness, color (or none).

box shadow

Shadows around objects (lots of control on the look).

transform

Move, rotate, and scale objects.

animations

Some simple animations can be done with only css (e.g., blinking text). Transition times can be defined.



Connecting HTML and CSS

link

In order to use your stylesheet, e.g., index.css, in your website, you need to link it within the header of the HTML document with, e.g., `<link rel="stylesheet" type="text/css" href="index.css" />`

element

Any HTML element (e.g., `<p>`, `<h1>`, ``, `<a>`, etc.) can be given custom styles, for example `p{ text-align: justify; }`.

id

Given an HTML object with attribute `id="foo"`, you access that in CSS with `#foo{ mystyle : value; }`. Generally an id should be unique and only used once in the HTML.

class

Given an HTML object with attribute `class="fee"`, you access that in CSS with `.fee{ mystyle: value; }`. Classes are meant to be reused. They can also serve as a way to select multiple objects in javascript.

inline

Sometimes it is beneficial to include the style “inline” within the HTML code, with the attribute `style = “mystyle1 : value1; mystyle2 : value2;”`. These supersede the styles that may be in the CSS for that object. These are also the styles that could be modified with javascript.

What is JS?

Javascript

- Modifies website content
- Initiates functions on user actions (e.g., mouse clicks)

```
function toggleDropdown(id){  
    var drop = document.getElementById(id);  
    console.log(id, drop, drop.style.display);  
    if (drop.style.display == "block"){  
        drop.style.display = "none";  
    } else {  
        drop.style.display = "block";  
    }  
}
```

If we use a house as a metaphor, JS tells the doors and windows how to open when you pull/push the handle.

[Here is a CodePen with HTML+CSS+JS to explore.](#)

Subtitle

Author

This is a paragraph. With lots of super cool words in it that everyone will want to read. Lorem ipsum dolor sit amet, consectetur adipiscing elit. Fusce a fermentum nunc. Proin consequat dolor vitae velit lacinia blandit. Sed congue lacus nec nisi tempor lobortis. Curabitur felis urna, tempus quis laoreet quis, maximus vel ante. Vivamus fringilla ex mauris, et gravida urna placerat quis. Suspendisse dapibus sapien in interdum bibendum. Ut ut suscipit enim. Suspendisse iaculis iaculis diam sed tempus. Vivamus volutpat dolor vel metus suscipit tempor. Quisque efficitur purus id blandit ornare. Vestibulum massa libero, tempor in lacus at, ullamcorper suscipit dui. Maecenas feugiat nisi massa, eu hendrerit ex tincidunt non. Aliquam in eleifend nisl.





Javascript is awesome!

Basically anything that you can dream of doing with your website, can be done in javascript. And someone has probably already done it and posted online with their steps (and/or code).

There are LOTS of javascript libraries that you can download and use. My favorites are [d3.js](#) , [three.js](#), [dat.gui](#) [p5.js](#) and [ml5.js](#) .

If you're used to coding in languages like python, javascript will come very naturally.

Some ideas of what you might use javascript for:

- Select an HTML element and change its style (e.g., color, size, location, etc.).
- Initiate actions when a user clicks/hovers/touches/drags some HTML element.
- Read in a .csv (or other type of) data file and use that to populate a webpage.
- Generate 2D or 3D plots of data and allow the user to manipulate it in real time
- Populate a database from user inputs to a form (e.g., connect to a Google Sheet)
- Initiate a download of a data file or an image of a plot that you've generated on the page.



Web development utils

There are apps like *Dreamweaver*, platforms like *WordPress*, online templates you can download, etc. They all have HTML+CSS+JS under the hood. Personally, I prefer to write my own code and know exactly what is in there.

text editor

e.g., [VSCode](#), [Sublime](#) or any other app without markup (not Word)

browser

e.g., [Chrome](#) or [Firefox](#)

Python

to start a local server (or any other app that can do this)

Steps:

1. In terminal : `python -m http.server`
2. In browser : `http://localhost:8000/`

Expert tips: GitHub can host your websites for free on their [github.io pages](#). Also, [w3schools.com](#) is an EXCELLENT resource for web development questions.

For example...:

The image shows a desktop setup with three main windows:

- Terminal Window:** The title bar says "introToHTMLCSSJS". The command line shows "(base) [ageller@williamson:introToHTMLCSSJS] \$".
- Code Editor:** The title bar says "dropdown.js". It contains the following JavaScript code:

```
1 //this is a simple javascript function to toggle the display on/off for the dropdown menu
2 function toggleDropdown(id){
3     //grab the correct dropdown content element based on it's ID
4     var drop = document.getElementById(id);
5
6     //console.log is your best friend for debugging!
7     console.log(id, drop, drop.style.display);
8
9     //toggle the display style
10    if (drop.style.display == "block"){
11        drop.style.display = "none";
12    } else {
13        drop.style.display = "block";
14    }
15}
16 }
```
- Web Browser:** The address bar shows "google.com". The page displays the Google search interface with the "Google" logo, a search bar, and "Google Search" and "I'm Feeling Lucky" buttons. A banner at the bottom of the page reads "Celebrate Asian Pacific American Heritage Month: Explore cultural artifacts and more".

View Source

For many websites you can view the source code very easily. If you're curious about how a website achieved a certain look, this can show you.

my title localhost:8000

Title of an Awesome Website

Subtitle

Author

This is a paragraph. With lots of super cool words in it that everyone will want to read. *Lorem ipsum dolor sit amet, consectetur adipiscing elit. Fusce a fermentum nunc. Proin consequat dolor vitae velit lacinia blandit. Sed congue lacus nec nisi tempor lobortis. Curabitur felis urna, tempus quis laoreet quis, maximus vel ante. Vivamus fringilla ex mauris, et gravida urna placerat quis. Suspendisse dapibus sapien in interdum bibendum. Ut ut suscipit enim. Suspendisse iaculis iaculis diam sed tempus. Vivamus volutpat dolor vel metus suscipit tempor. Quisque efficitur purus id blandit ornare. Vestibulum massa libero, tempor in lacus at, ullamcorper suscipit dui. Maecenas feugiat nisi massa, eu hendrerit ex tincidunt non. Aliquam in eleifend nisl.*



Vigo the Catpathian, Ghostbusters II + awesome internet people



**Let's look at all the
code that produces the
awesome *Catpathian*
website...**



Activities

For beginners (and/or if you don't have Python or you prefer not to run the website locally):

- Go to CodePen : <https://codepen.io/ageller/pen/mdWEPwV>

If instead you want to run and edit the files locally:

- Download (or clone) the files from the GitHub repo : <https://github.com/ageller/IntroToHTMLCSSJS>
- Start a web server (using python) and load the website in your browser.
- Open index.html, index.css, dropdown.js from the “examples/htmlcssjs/” directory in your text editor.

Once you have finished either of the above:

1. Use the inspect tool on the “Author” to view that element in the browser’s developer tools.
2. Within your HTML, CSS and/or JS code, change the text that currently says “Author” to your name.
3. Within your HTML, CSS and/or JS code, change the color of your name and underline it.
4. Within your HTML, CSS and/or JS code, create an interaction such that when you click on your name, the Catpathian image shrinks to half the page width.
5. *Bonus:* Modify this last interaction such that the image shrinks when you hover over your name, and then turns back to the normal size when your mouse is no longer over your name.



Web Architecture

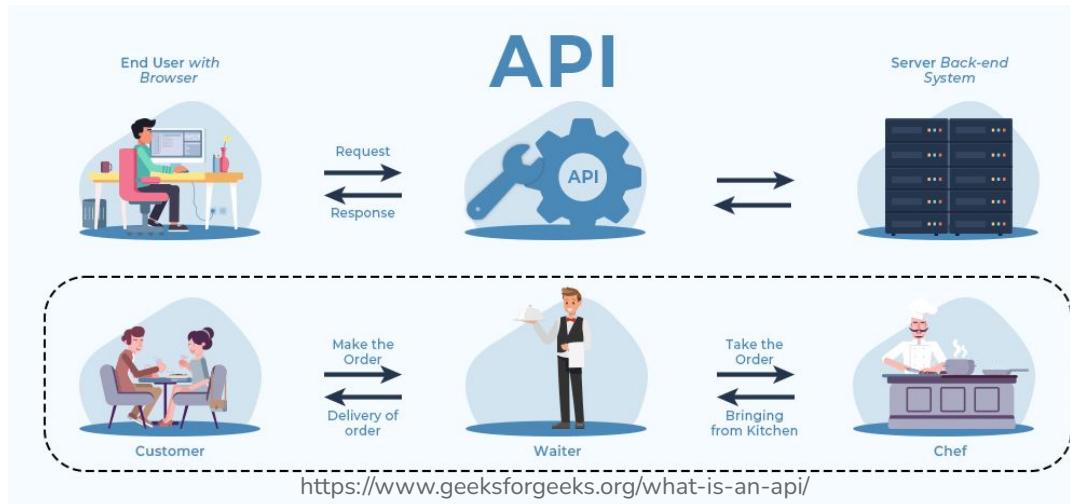
- **Client (front end)** : user's browser that requests web pages
- **Server (back end)** : computer that hosts the website, sends data to client (via internet)





Web Architecture

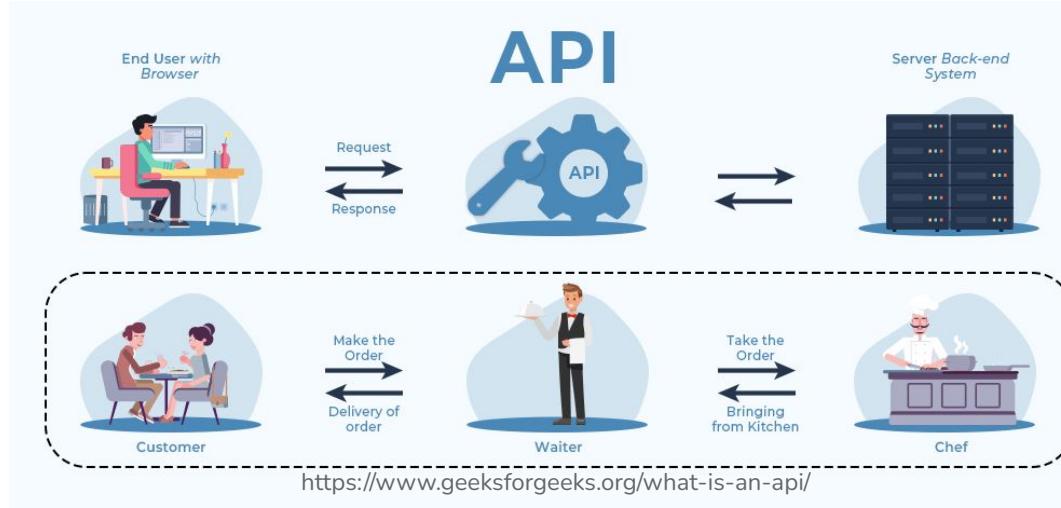
- **Client (front end)** : user's browser that requests web pages
- **Server (back end)** : computer that hosts the website, sends data to client (via internet)
- **Web API** : interface that allows user to request data from server programmatically





Web Architecture

- **Client (front end)** : user's browser that requests web pages
- **Server (back end)** : computer that hosts the website, sends data to client (via internet)
- **Web API** : interface that allows user to request data from server programmatically
- **Static vs. Dynamic Content** : Static content is fixed when the page loads, while dynamic content can change without a page reload and can be created via JavaScript.
 - *Scraping dynamic content may require tools that can render JavaScript to access the full content of a page (e.g., selenium).*





Basic HTTP Requests

- **GET:** Requests data from a server (e.g., when you visit a webpage).
- **POST:** Submits data to be processed to a server (e.g., filling out a form).
- **Common return codes:**
 - **200 (OK):** Request succeeded, content returned.
 - **404 (Not Found):** Requested resource is not available.
 - **503 (Service Unavailable):** Server is temporarily unable to handle the request.





Basic HTTP Requests

- **GET:** Requests data from a server (e.g., when you visit a webpage).
- **POST:** Submits data to be processed to a server (e.g., filling out a form).
- **Common return codes:**
 - **200 (OK):** Request succeeded, content returned.
 - **404 (Not Found):** Requested resource is not available.
 - **503 (Service Unavailable):** Server is temporarily unable to handle the request.

GET scenario

You want to collect daily weather forecasts from a weather website. Each page of the website that displays the weather forecast for a city uses a specific URL that includes parameters defining the city and date.





Basic HTTP Requests

- **GET:** Requests data from a server (e.g., when you visit a webpage).
- **POST:** Submits data to be processed to a server (e.g., filling out a form).
- **Common return codes:**
 - **200 (OK):** Request succeeded, content returned.
 - **404 (Not Found):** Requested resource is not available.
 - **503 (Service Unavailable):** Server is temporarily unable to handle the request.

GET scenario

You want to collect daily weather forecasts from a weather website. Each page of the website that displays the weather forecast for a city uses a specific URL that includes parameters defining the city and date.



POST scenario

You want to scrape a job listing site where the only way to view listings is by first selecting certain criteria (e.g., job type, location, experience level) on a form. The website does not update the URL in a way that allows direct access via a GET request.



Legal Considerations

- **Terms of Service (ToS):** Many websites restrict scraping in their ToS; violating these can lead to legal actions.
- **Copyright:** Ensure the data collected is not protected by copyright.
- **Access Restrictions:** Circumventing anti-scraping measures or accessing secured areas without permission is typically illegal.
- **Best Practices:**
 - **Seek Permission**, especially if ToS/Copyright is unclear on the website.
 - **Adhere to Published APIs**, as they are generally intended for public consumption and are legally safer.
 - **Document** your scraping activities, including the purpose and methods used.



Ethical Considerations

- **Practicalities**
 - **Respect Robots.txt:** Files that specify the parts of the website that should not be accessed by scrapers (e.g., <https://www.google.com/robots.txt>).
 - **Rate Limiting:** Avoid overwhelming a website's server by making requests at a reasonable rate.
 - **Data Usage:** Be transparent about how you use the scraped data, especially if personal or sensitive information is involved.
- **Implications**
 - **Privacy Concerns:** Be cautious when handling personal data; avoid collecting identifiable information unless absolutely necessary.
 - **Impact on Websites:** Excessive requests can harm small websites by consuming bandwidth and server resources.
 - **Social Responsibility:** How could your data collection/usage affect individuals or communities?



In Summary

HTML + CSS + JS are your tools for web development.
All you need is a browser, a text editor and Python.

HTML sets the structure (e.g., walls of the house).

CSS sets the style (e.g., color of the paint).

Javascript allows changes and actions (e.g., how to open the doors of the house).

The browser interprets this code to show the website.

Much of the content of websites can be “scraped”.

The sky's the limit...

[Also, see this step-by-step tutorial on W3schools.](#)

The screenshot shows the Firefly application running in a web browser. At the top, there is a navigation bar with icons for back, forward, search, and other controls, followed by the text "Loading ...". Below the bar, the title "Explore the Aquarius Asteroid's Orbit and Impact!" is displayed in green. A detailed description of the simulation is provided, mentioning the Aquarius Project and its goal to search for a meteor that impacted in Lake Michigan on Feb. 4, 2017. It describes the simulation's purpose of visualizing the solar system's orbits and the impact point. The main area features a dark space background with several celestial bodies represented by colored circles (blue, red, yellow, green) and their corresponding orbital paths. A small text box in the upper right corner says "Click to begin." and lists instructions for interacting with the tool. The overall interface is clean and modern, designed for scientific exploration.



(Extra Slides Below)

index.html

```
<html>
  <head>
    <!-- title and other meta data go in the "head" portion -->
    <title>my title</title>
    <!-- my style sheet -->
    <link rel="stylesheet" type="text/css" href="index.css" />
  </head>
  <body>
    <!-- all website content that will be visible to the user go in the body -->
    <!-- here is the text that I will display -->
    <h1>Title of an Awesome Website </h1>
    <h2> Subtitle </h2>
    <h3> Author </h3>
    <p> This is a paragraph. With lots of super cool words in it that everyone will want to read. Lorem ipsum dolor sit amet, consectetur adipiscing elit. Fusce a fermentum nunc. Proin consequat dolor vitae velit lacinia blandit. Sed congue lacus nec nisi tempor lobortis. Curabitur felis urna, tempus quis laoreet quis, maximus vel ante. Vivamus fringilla ex mauris, et gravida urna placerat quis. Suspendisse dapibus sapien in interdum bibendum. Ut ut suscipit enim. Suspendisse iaculis diam sed tempus. Vivamus volutpat dolor vel metus suscipit tempor. Quisque efficitur purus id blandit ornare. Vestibulum massa libero, tempor in lacus at, ullamcorper suscipit dui. Maecenas feugiat nisi massa, eu hendrerit ex tincidunt non. Aliquam in eleifend nisl.
    </p>
    <!-- here is an image I will display -->
    <div id="image">
      </img>
      <div class="imageCredit">&lt;u>Vigo the Catpathian</u>, Ghostbusters II + awesome internet people</div>
    </div>
    <!-- here is a menu. This will only be visible when the css and js files are linked in -->
    <div id="hamburger" onclick="toggleDropdown('dropdown')">
      <div></div>
      <div></div>
      <div></div>
    </div>
    <div id="dropdown" style="display:none">
      <div><a href="https://www.w3schools.com/css/css_dropdowns.asp" target="_blank">item 1</a></div>
      <div><a href="https://www.w3schools.com/css/css_dropdowns.asp" target="_blank">item 2</a></div>
      <div><a href="https://www.w3schools.com/css/css_dropdowns.asp" target="_blank">item 3</a></div>
    </div>
    <!-- load my javascript -->
    <script src="dropdown.js"></script>
  </body>
</html>
```

Title of an Awesome Website

Subtitle

Author



item 1

item 2

item 3

This is a paragraph. With lots of super cool words in it that everyone will want to read. Lorem ipsum dolor sit amet, consectetur adipiscing elit. Fusce a fermentum nunc. Proin consequat dolor vitae velit lacinia blandit. Sed congue lacus nec nisi tempor lobortis. Curabitur felis urna, tempus quis laoreet quis, maximus vel ante. Vivamus fringilla ex mauris, et gravida urna placerat quis. Suspendisse dapibus sapien in interdum bibendum. Ut ut suscipit enim. Suspendisse iaculis iaculis diam sed tempus. Vivamus volutpat dolor vel metus suscipit tempor. Quisque efficitur purus id blandit ornare. Vestibulum massa libero, tempor in lacus at, ullamcorper suscipit dui. Maecenas feugiat nisi massa, eu hendrerit ex tincidunt non. Aliquam in eleifend nisl.



thian, Ghostbusters II + awesome internet people

index.html

```
<html>
  <head>
    <!-- title and other meta data go in the "head" portion -->
    <title>my title</title>

    <!-- my style sheet -->
    <link rel="stylesheet" type="text/css" href="index.css" />
  </head>

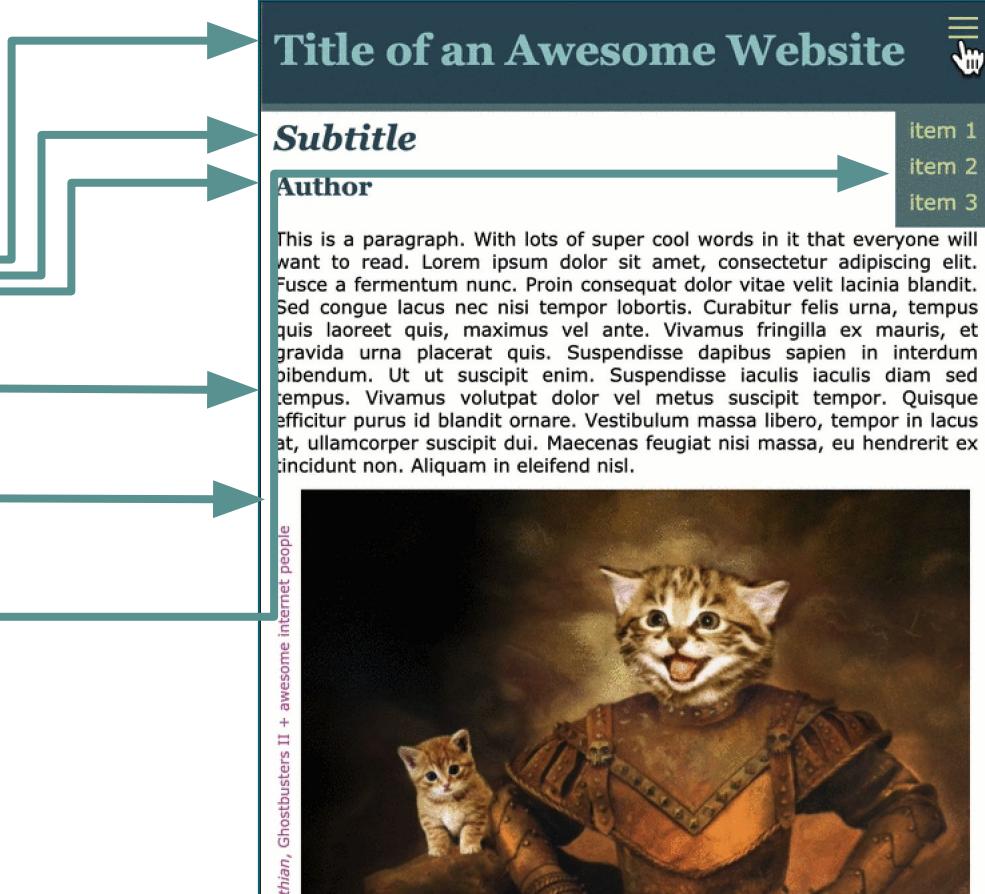
  <body>
    <!-- all website content that will be visible to the user go in the body -->

    <!-- here is the text that I will display -->
    <h1>Title of an Awesome Website </h1>
    <h2> Subtitle </h2>
    <h3> Author </h3>
    <p> This is a paragraph. With lots of super cool words in it that everyone will want to read. Lorem ipsum dolor sit amet, consectetur adipiscing elit. Fusce a fermentum nunc. Proin consequat dolor vitae velit lacinia blandit. Sed congue lacus nec nisi tempor lobortis. Curabitur felis urna, tempus quis laoreet quis, maximus vel ante. Vivamus fringilla ex mauris, et gravida urna placerat quis. Suspendisse dapibus sapien in interdum bibendum. Ut ut suscipit enim. Suspendisse iaculis diam sed tempus. Vivamus volutpat dolor vel metus suscipit tempor. Quisque efficitur purus id blandit ornare. Vestibulum massa libero, tempor in lacus at, ullamcorper suscipit dui. Maecenas feugiat nisi massa, eu hendrerit ex tincidunt non. Aliquam in eleifend nisl.
    </p>

    <!-- here is an image I will display -->
    <div id="image">
      </img>
      <div class="imageCredit"><a href="#">Vigo the Catpathian</a>, Ghostbusters II + awesome internet people</div>
    </div>

    <!-- here is a menu. This will only be visible when the css and js files are linked in -->
    <div id="hamburger" onclick="toggleDropdown('dropdown')">
      <div></div>
      <div></div>
      <div></div>
    </div>
    <div id="dropdown" style="display:none">
      <div><a href="https://www.w3schools.com/css/css_dropdowns.asp" target="_blank">item 1</a></div>
      <div><a href="https://www.w3schools.com/css/css_dropdowns.asp" target="_blank">item 2</a></div>
      <div><a href="https://www.w3schools.com/css/css_dropdowns.asp" target="_blank">item 3</a></div>
    </div>

    <!-- load my javascript -->
    <script src="dropdown.js"></script>
  </body>
</html>
```



index.html + index.css

```
<html>
<head>
    <!-- title and other meta data go in the "head" portion -->
    <title>my title</title>

    <!-- my style sheet -->
    <link rel="stylesheet" type="text/css" href="index.css" />

</head>

<body>
    <!-- all website content that will be visible to the user go in the body -->

    <!-- here is the text that I will display -->
    <h1> Title of an Awesome Website </h1>
    <h2> Subtitle </h2>
    <h3> Author </h3>

    <p> This is a paragraph. With lots of super cool words in it that everyone will want to read. Lorem ipsum dolor sit amet, consectetur adipiscing elit. Fusce a fermentum nunc. Proin consequat dolor vitae velit lacinia blandit. Sed congue lacus nec nisi tempor lobortis. Curabitur felis urna, tempus quis laoreet quis, maximus vel ante. Vivamus fringilla ex mauris, et gravida urna placerat quis. Suspendisse dapibus sapien in interdum bibendum. Ut ut suscipit enim. Suspendisse iaculis diam sed tempus. Vivamus volutpat dolor vel metus suscipit tempor. Quisque efficitur purus id blandit ornare. Vestibulum massa libero, tempor in lacus at, ullamcorper suscipit dui. Maecenas feugiat nisi massa, eu hendrerit ex tincidunt non. Aliquam in eleifend nisl.
    </p>

    <!-- here is an image I will display -->
    <div id="image">
        </img>
        <div class="imageCredit">&lt;img alt="Vigo the Catpathian" /&gt; Vigo the Catpathian II + awesome internet people</div>
    </div>

    <!-- here is a menu. This will only be visible when the css and js files are linked in -->
    <div id="hamburger" onclick="toggleDropdown('dropdown1')">
        <div></div>
        <div></div>
        <div></div>
    </div>
    <div id="dropdown" style="display:none">
        <div><a href="https://www.w3schools.com/css/css_dropdowns.asp" target="_blank">item 1</a></div>
        <div><a href="https://www.w3schools.com/css/css_dropdowns.asp" target="_blank">item 2</a></div>
        <div><a href="https://www.w3schools.com/css/css_dropdowns.asp" target="_blank">item 3</a></div>
    </div>

    <!-- load my javascript -->
    <script src="dropdown.js"></script>
</body>
</html>
```

```
1  body {
2      margin:0;
3      font-family: Verdana;
4      text-align: left;
5  }
6  p {
7      text-align: justify;
8      font-size: 14px;
9      margin:20px 10px 10px 10px;
10 }
11 h1 {
12     font-family: Georgia;
13     background-color: #285667;
14     padding:10px;
15     margin:0;
16     font-size: 32px;
17     color: #94fccc;
18     line-height: 60px;
19     border-bottom: 6px solid #5c8485;
20 }
21 h2 {
22     font-family: Georgia;
23     font-size: 26px;
24     margin:0 0 10px;
25     padding:0;
26     color: #285667;
27     font-style: italic;
28 }
29 h3 {
30     font-family: Georgia;
31     font-size: 20px;
32     margin:10px;
33     color: #285667;
34     padding:0;
35 }
36 img {
37     margin-left:20px;
38     width:95px;
39 }
40 #image{
41     margin:10px;
42 }
43 .imageCredit{
44     font-size: 11px;
45     color: #bd79e;
46     transform: rotate(-90deg);
47     transform-origin: left top;
48 }
49 #hamburger{
50     position: absolute;
51     top: 10px;
52     right: 10px;
53     cursor: pointer;
54 }
55 #hamburger div{
56     width: 22px;
57     height: 4px;
58     background-color: #d5e19f;
59     margin: 3px 0;
60 }
61 #dropdown{
62     position: absolute;
63     top: 10px;
64     right: 10px;
65     display: none;
66     background-color: #5c8485;
67     color:#d5e19f;
68     padding:6px;
69 }
70 #dropdown div{
71     padding:4px;
72 }
73 #dropdown {
74     color:#d5e19f;
75     text-decoration: none;
76 }
```

Title of an Awesome Website

Subtitle

Author

This is a paragraph. With lots of super cool words in it that everyone will want to read. Lorem ipsum dolor sit amet, consectetur adipiscing elit. Fusce a fermentum nunc. Proin consequat dolor vitae velit lacinia blandit. Sed congue lacus nec nisi tempor lobortis. Curabitur felis urna, tempus quis laoreet quis, maximus vel ante. Vivamus fringilla ex mauris, et gravida urna placerat quis. Suspendisse dapibus sapien in interdum bibendum. Ut ut suscipit enim. Suspendisse iaculis diam sed tempus. Vivamus volutpat dolor vel metus suscipit tempor. Quisque efficitur purus id blandit ornare. Vestibulum massa libero, tempor in lacus at, ullamcorper suscipit dui. Maecenas feugiat nisi massa, eu hendrerit ex tincidunt non. Aliquam in eleifend nisl.



thian, Ghostbusters II + awesome internet people



item 1

item 2

item 3

index.html + index.css

```
<h1> Title of an Awesome Website </h1>
```

```
h1 {  
    font-family: Georgia;  
    background-color: #285667;  
    padding: 10px;  
    margin: 0;  
    font-size: 32px;  
    color: #94cfcc;  
    line-height: 60px;  
    border-bottom: 6px solid #5c8485;  
}
```

Title of an Awesome Website

index.html + index.css

```
<div class="imageCredit"><i>Vigo the Catpathian</i>, Ghostbusters II + awesome internet people</div>
```

```
.imageCredit{  
    font-size: 11px;  
    color: #bd579e;  
    transform: rotate(-90deg);  
    transform-origin: left top;  
}
```

Vigo the Catpathian, Ghostbusters II + awesome internet people

index.html + index.css + dropdown.js

```
<html>
<head>
    <!-- title and other meta data go in the "head" portion -->
    <title>my title</title>

    <!-- my style sheet -->
    <link rel="stylesheet" type="text/css" href="index.css" />

</head>

<body>
    <!-- all website content that will be visible to the user go in the body -->

    <!-- here is the text that I will display -->
    <h1> Title of an Awesome Website </h1>
    <h2> Subtitle </h2>
    <h3> Author </h3>

    <p> This is a paragraph. With lots of super cool words in it that everyone will want to read. Lorem ipsum dolor sit amet, consectetur adipiscing elit. Fusce a fermentum nunc. Proin consequat dolor vitae velit lacinia blandit. Sed congue lacus nec nisi tempor lobortis. Curabitur felis urna, tempus quis laoreet quis, maximus vel ante. Vivamus fringilla ex mauris, et gravida urna placerat quis. Suspendisse dapibus sapien in interdum bibendum. Ut ut suscipit enim. Suspendisse iaculis diam sed tempus. Vivamus volutpat dolor vel metus suscipit tempor. Quisque efficitur purus id blandit ornare. Vestibulum massa libero, tempor in lacus at, ullamcorper suscipit dui. Maecenas feugiat nisi massa, eu hendrerit ex tincidunt non. Aliquam in eleifend nisl.
    </p>

    <!-- here is an image I will display -->
    <div id="image">
        </img>
        <div class="imageCredit">&lt;img alt="Vigo the Catpathian" /&gt;, Ghostbusters II + awesome internet people</div>
    </div>

    <!-- here is a menu. This will only be visible when the css and js files are linked in -->
    <div id="hamburger" onclick="toggleDropdown('dropdown1')">
        <div></div>
        <div></div>
        <div></div>
    </div>
    <div id="dropdown" style="display:none">
        <div><a href="https://www.w3schools.com/css/css_dropdowns.asp" target="_blank">item 1</a></div>
        <div><a href="https://www.w3schools.com/css/css_dropdowns.asp" target="_blank">item 2</a></div>
        <div><a href="https://www.w3schools.com/css/css_dropdowns.asp" target="_blank">item 3</a></div>
    </div>

    <!-- load my javascript -->
    <script src="dropdown.js"></script>
</body>
</html>
```

```
1  body {
2      margin:0;
3      font-family: Verdana;
4      text-align: left;
5  }
6  p {
7      text-align: justify;
8      font-size: 14px;
9      margin:20px 10px 10px 10px;
10 }
11 h1 {
12     font-family: Georgia;
13     background-color: #285667;
14     padding:10px;
15     margin:0;
16     font-size: 32px;
17     color: #94fccc;
18     line-height: 60px;
19     border-bottom: 6px solid #5c8485;
20 }
21 h2 {
22     font-family: Georgia;
23     font-size: 26px;
24     margin:0 0 10px;
25     padding:0;
26     color: #285667;
27     font-style: italic;
28 }
29 h3 {
30     font-family: Georgia;
31     font-size: 20px;
32     margin:10px;
33     color: #285667;
34     padding:0;
35 }
36 img {
37     margin-left:20px;
38     width:95px;
39 }
40 #image{
41     margin:10px;
42 }
43 .imageCredit{
44     font-size: 11px;
45     color: #0d579e;
46     transform: rotate(-90deg);
47     transform-origin: left top;
48 }
49 #hamburger{
50     position: absolute;
51     top: 10px;
52     right: 10px;
53     cursor: pointer;
54 }
55 #hamburger div{
56     width: 22px;
57     height: 4px;
58     background-color: #d5e1ff;
59     margin: 3px 0;
60 }
61 #dropdown{
62     position: absolute;
63     top: 40px;
64     right: 10px;
65     display: none;
66     background-color:#5c8485;
67     color:#d5e1ff;
68     padding:6px;
69 }
70 #dropdown div{
71     padding:4px;
72 }
73 #dropdown {
74     color:#d5e1ff;
75     text-decoration: none;
76 }
```

Title of an Awesome Website

Subtitle

Author

This is a paragraph. With lots of super cool words in it that everyone will want to read. Lorem ipsum dolor sit amet, consectetur adipiscing elit. Fusce a fermentum nunc. Proin consequat dolor vitae velit lacinia blandit. Sed congue lacus nec nisi tempor lobortis. Curabitur felis urna, tempus quis laoreet quis, maximus vel ante. Vivamus fringilla ex mauris, et gravida urna placerat quis. Suspendisse dapibus sapien in interdum bibendum. Ut ut suscipit enim. Suspendisse iaculis diam sed tempus. Vivamus volutpat dolor vel metus suscipit tempor. Quisque efficitur purus id blandit ornare. Vestibulum massa libero, tempor in lacus at, ullamcorper suscipit dui. Maecenas feugiat nisi massa, eu hendrerit ex tincidunt non. Aliquam in eleifend nisl.

```
1 //this is a simple javascript function to toggle the display
2 //on/off for the dropdown menu
3 function toggleDropdown(id){
4     //grab the correct dropdown content element based on
5     //it's ID
6     var drop = document.getElementById(id);
7
8     //console.log is your best friend for debugging!
9     console.log(id, drop, drop.style.display);
10
11     //toggle the display style
12     if (drop.style.display == "block") {
13         drop.style.display = "none";
14     } else {
15         drop.style.display = "block";
16     }
}
```

index.html + index.css + dropdown.js

```
<div id="hamburger" onclick="toggleDropdown('dropdown')">
  <div></div>
  <div></div>
  <div></div>
</div>
<div id="dropdown" style="display:none">
  <div><a href="https://www.w3schools.com/css/css_dropdowns.asp" target="_blank">item 1</a></div>
  <div><a href="https://www.w3schools.com/css/css_dropdowns.asp" target="_blank">item 2</a></div>
  <div><a href="https://www.w3schools.com/css/css_dropdowns.asp" target="_blank">item 3</a></div>
</div>

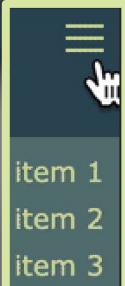
<!-- load my javascript --&gt;
&lt;script src="dropdown.js"&gt;&lt;/script&gt;</pre>
```

```
#hamburger{
  position: absolute;
  top: 10px;
  right: 10px;
  cursor: pointer;
}
#hamburger div{
  width: 22px;
  height: 2px;
  background-color: #d5e19f;
  margin: 5px 0;
}
#dropdown{
  position: absolute;
  top: 80px;
  right: 0px;
  display: none;
  background-color: #5c8485;
  color: #d5e19f;
  padding: 6px;
}
#dropdown div{
  padding: 4px;
}
#dropdown a{
  color: #d5e19f;
  text-decoration: none;
}
```

```
function toggleDropdown(id){
  //grab the correct dropdown content element based on
  //it's ID
  var drop = document.getElementById(id);

  //console.log is your best friend for debugging!
  console.log(id, drop, drop.style.display);

  //toggle the display style
  if (drop.style.display == "block"){
    drop.style.display = "none";
  } else {
    drop.style.display = "block";
  }
}
```





Adding an Interactive Plot

- GitHub pages and `<iframe>` are your best friends for this.
 - Create an interactive figure that can be displayed as a website (e.g., using Bokeh or Plotly, as we've done in previous workshops).
 - Host your interactive figure online using a github.io page ([instructions here](#)), or any other web hosting service that you prefer.
 - Use an html `<iframe>` tag to bring the github.io (or other) page into your new website.
- See example on CodePen here : <https://codepen.io/ageller/pen/KKxppQX>
- Note, there are other ways to do this as well (e.g., include the interactive figure code directly within your website), but imho the iFrame method is the easiest way.