



Build your own Constellation Web Page!

#IBMSTEM4Girls



Build a web page that includes a drawing of a constellation

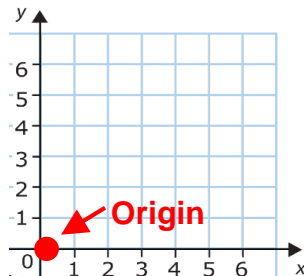
Activity Outline:

1. Find the coordinates for each star in your constellation.
2. Grab the Sublime editor and web page starter files.
3. Learn a little about the files that will make up your web page.
4. Get the computer to draw the stars in the correct position on your page.
5. Make your web page look super awesome!

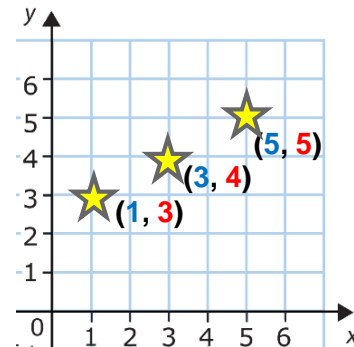


Find the coordinates of each star in your constellation

Imagine the sky as an **x-y coordinate plane**, with the origin $(0,0)$ positioned at the bottom left corner.



For each star in your constellation grid, find the **x** and **y** location and write it as (x, y) .





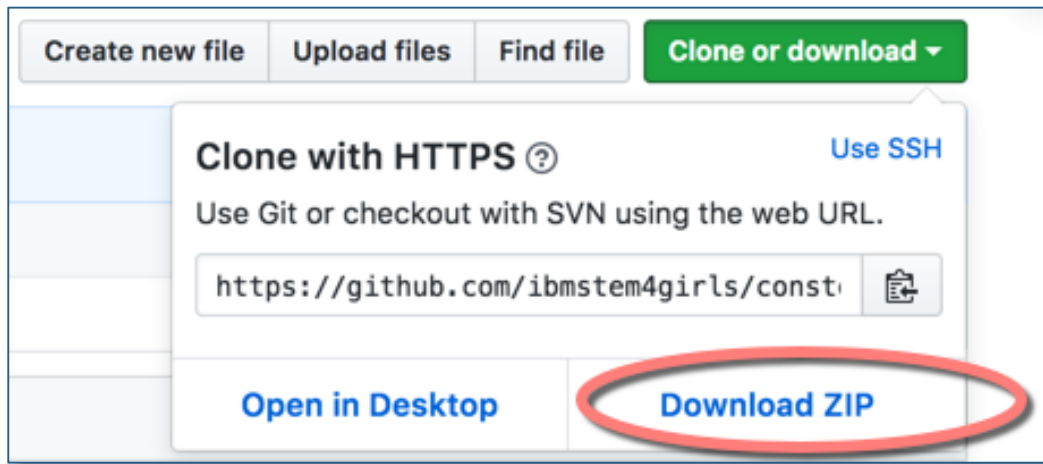
Building a web page: Download and install an editor

1. Go to <https://www.sublimetext.com>.
2. Click the **Download** tab at the top of the page.
3. Select the download package for your computer (Mac or Windows)
4. Unzip the package to install.
5. Install the program based on your computer type:
 - Mac users:** Click the .dmg file and follow the installation steps.
 - PC users:** Click the Sublime Setup file and follow the installation steps.



Building a web page: Download the starter files

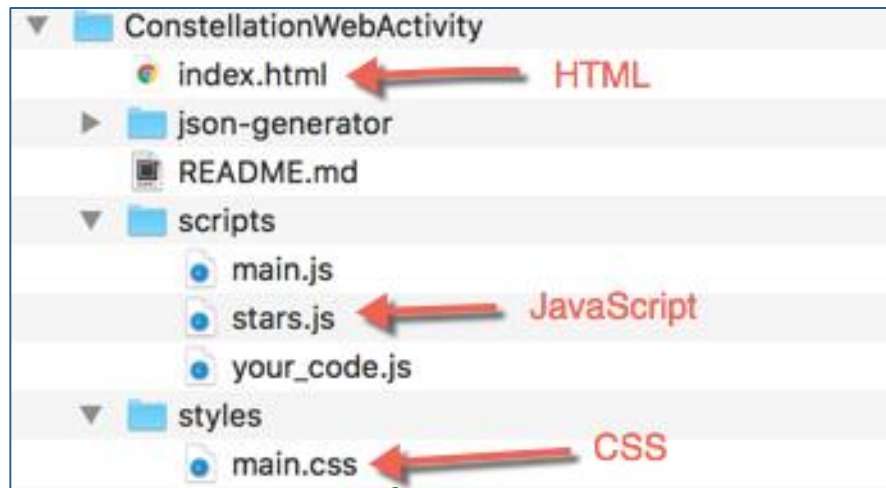
1. Go to <https://github.com/ibmstem4girls/constellations>
2. Click the **Clone or Download** button.
3. Click **Download ZIP**.





Building a web page: Unzip the package and look inside

1. Find the .zip file that you just downloaded, either in the bottom of your browser window or in the folder you downloaded it to.
2. Click the file to unzip it.
3. Look inside to see three kinds of files: .html, .js, and .css.





Three Elements of a Web Page

1. **HTML** “The frame”
Webpage structure



2. **JavaScript** “The moving parts”
Interactivity and Functionality



3. **CSS** “The look”
Look and feel



A web page!



What is HTML (or HyperText Markup Language)?

- Tagging language that tells a web browser how to display content on a web page.
- HTML tags:
 - Have angle brackets `< >` on both ends, with a keyword in the middle:
`<p>`, `<title>`
 - Come in **pairs** with an opening tag and a closing tag with a forward slash:
`<p>` `</p>`, `<title>` `</title>`
 - Can be nested inside of another pair of tags, like this
`<p>``````</p>`



HTML tags



Start tag #1



`<p>`Today I ate ice cream for breakfast.

End tag #1

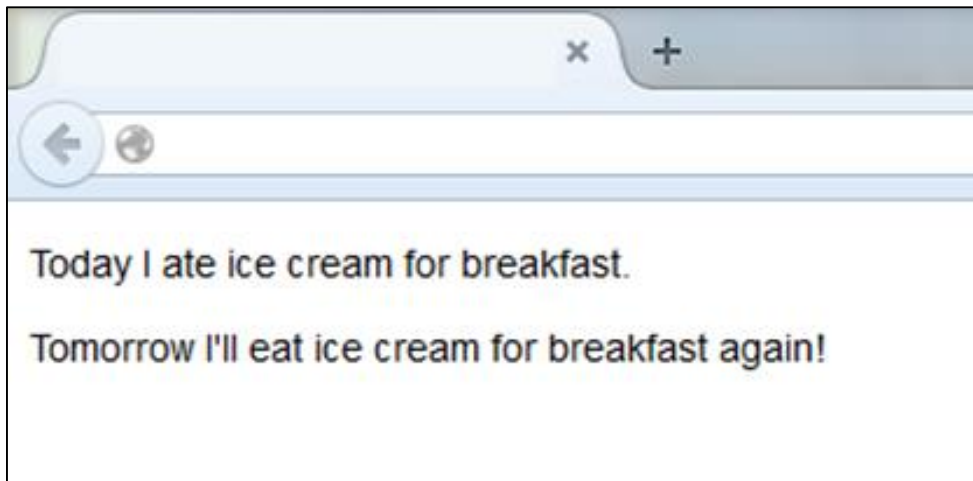


`<p>`Tomorrow I'll eat ice cream for breakfast again!

End tag #2



Start tag #2





Some useful HTML tags



`<link rel="stylesheet" href="main.css">`: Creates a link to additional files, such as your CSS file

`<script src="myScript.js"></script>`: Adds JavaScript to your web page as a separate JavaScript file.

`<h1> ... <h6>`: Creates headings in the web page, with heading 1 appearing larger than heading 2, which is larger than heading 3.

`An awesome link`: Anchor tag, creates a link to another web page.

``: Displays a picture in the web page



What is CSS (or Cascading Style Sheets)?

- Controls the styling on a webpage using specific properties, such as font color, font size, borders, text alignment, etc.

```
h1 {  
  background-color: yellow;  
  color: purple;  
  font-weight: bold;  
}
```





Let's edit our webpage!

**FOLLOW
ALONG
CAREFULLY**

First, open the **index.html** file in two ways: one using the **Sublime** editor, and one using a web browser.

Mac users:

1. Right-click the **index.html** file and select **Open with > Sublime Text.app**
2. Right-click the file again and select **Open with > Firefox (or Internet Explorer)**

PC users:

1. Right-click the **index.html** file and select **Open with Sublime Text**
2. Right-click the file again and select **Open with > Firefox (or Internet Explorer)**





Let's edit our webpage!

**FOLLOW
ALONG
CAREFULLY**

1. Return to the **index.html** file in **Sublime**.
 - a. Find the `<h1>` tag in the `<body>` section.
 - b. Delete the text “Your constellation name goes here!”.
 - c. Add the name of your constellation between the `<h1>` and `</h1>` tags.
2. Save the file.
3. Right click anywhere in the file and click “Open in browser” to open it in a browser. Ensure your changes are there.





Editing CSS

**FOLLOW
ALONG
CAREFULLY**

1. Open the **main.css** file in the **Sublime** text editor.
2. Change the colour of the text in the `<h1>` tag.

TIP: Choose a common colour, such as pink or blue, and then try one less common, such as lilac.

3. Save the main.css file and refresh your browser to view your changes.





What is JavaScript?

FOLLOW
ALONG
CAREFULLY

The most widely used programming language, which adds functionality and interaction to web pages. Any webpage you see today most likely uses JavaScript

Your star coordinates will be put into the JavaScript of your web page!





Let's add our stars!

FOLLOW
ALONG
CAREFULLY

1. Navigate into folder called “json-generator”.
2. Double click on json-generator.html to open in Browser.
3. Choose the constellation Name and enter the (x,y) coordinates for your **first star**, the colour, and the number of spikes.
4. Click on “Add Star”.
5. Repeat step 3-4 until all stars are added.





Let's add our stars!

FOLLOW
ALONG
CAREFULLY

You should see something like this in the box below. Notice that you have one “info chunk” for each star, grouped in `{}`.

Copy and paste the text in the box into stars.js!

```
constellation = {  
  "name" : "Orion",  
  "stars":  
  [{"id": "star0", "x_coordinate": 1, "y_coordinate": 1, "color": "yellow", "number_of_spikes": 5}]  
};
```





Oops! I made a mistake

FOLLOW
ALONG
CAREFULLY

1. If you make a mistake, you can delete the star.

2. Find the Star ID.

```
"name" : "Orion",  
  
"stars":  
  
[{"id": "star0", "x_coordinate":  
{"id": "star1", "x_coordinate":  
{"id": "star2", "x_coordinate":
```

3. Copy the ID name into top right box and press "Delete Star."



To delete a star, enter the ID here, then click
"Delete Star!"

star ID:

star1

Delete Star



Let's add the coordinates!

FOLLOW
ALONG
CAREFULLY



1. Navigate into the “**scripts**” folder
2. Right click on “**stars.js**” and open in the Sublime editor.
3. Remove the old code in stars.js
4. Copy and paste the text from the black code box in the json-generator into **stars.js**
5. Save the file
6. Open [index.html](#) to see your constellation!



Additional steps

In your **index.html** file:



1. Add your name, grade and school to the **<footer>**. Keep the `
` tags! (They add a new line)
2. Add text to the paragraph `<p>` tags.

In your **main.css** file:



1. Change the font-size of “.myparagraph” in the **main.css** file. Save and refresh your web page.
2. Add a background colour to your footer section, e.g. `background-color: green;`
3. Change the border colour of your footer section, e.g. `border-color: orange;`

<http://www.webmonkey.com/2010/02/css-properties/> if you want to see other CSS properties you can add!
http://www.webmonkey.com/2010/02/html_cheatsheet/ to learn more HTML tags!

Additional JavaScript coding



1. Uncomment the following line in **index.html** by deleting the comment tags: `<!--` and `-->` that surround the following line of code:

- `<script src="scripts/your_code.js"></script>`

2. Uncomment line 8 in **your_code.js** and **save**.

Refresh the browser and open the dev tools using the F12 button.

- sibling `<p>` should show up after my-description element.

3. Uncomment line 11 and see what happened to the index.html page.

- new text on the page.

4. Uncomment line 14 and see how the text has been changed.

- the text is now pink!



Saving and sharing your work

Ask one of the Activity Assistants to copy your work onto a USB so that you can share your constellation on the club website.