**Lesson 12** Introduction to HTML

**What is the relationship between a p5 sketch and HTML?**

| **Overview** | |
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| This lesson introduces the web development context for the p5 sketches. Students will learn about the **index.html** file associated with each p5 sketch, and edit this file to add information to their final projects. | |
| **Lesson Objectives** | |
| Students will be able to   * Describe the structure of an .html file * Create new HTML tags to add information to their p5 web pages * Use attributes within HTML tags * Describe the differences between HTML and JavaScript | |
| **Suggested Duration** | |
| One period (45 minutes) | |
| **Blueprint Foundations Student Outcomes (**https://blueprint.cs4all.nyc/outcomes/) | |
| Networks Analyze | **Explain** what markup languages are and the role they play in creating websites. |
| Networks Prototype | **Explain** how I used at least three different markup tags to build a website. |
| Networks Communicate | **Present** my thoughts, ideas, or interests through a website built using markup. |
| **Vocabulary** | |
| * **HTML** - HTML stands for “HyperText Markup Language.” It is the most basic building block of the Web. It describes and defines the content and layout of a web page. | |
| **Planning Notes** | |
| * N/A | |
| **Resources** | |
| * Video Tutorial: [What is HTML?](https://www.youtube.com/watch?v=URSH0QpxKo8) * [HTML Basics](https://drive.google.com/file/d/1sL82riFKtwn5-WGFY-GrGyLWtXfDCWN_/view?usp=sharing) | |
| **Assessments** | |
| * Circulate during the **Student Activity.** Check for students’ ability to:   + Use proper HTML syntax including opening and closing tags, and attributes when necessary.   + Write a clear description that explains their final project * Assess student’s responses in the **Wrap Up**. Check for the ability to:   + Explain the difference in how head and body tags are used   + Explain the differences between HTML and Javascript | |

| **Do Now:** |
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| * Have your students answer the following prompt:   + Imagine someone discovered your custom emoji on the internet. Right now, your p5 sketch is only an image--**it has no explanation about the final project.** Make a list of information that would help explain the project to someone outside this classroom. |
| **Discussion: HTML** |
| * Tell students that in order to fully document the final project, information needs to be added to their p5 sketches so that it can be understandable to anyone who sees it.   + Ask students to share their responses from the **Do Now** and make a list of types of information that would be useful to include.   + Explain to students that they will add this information by using a **new coding language**. Instead of Javascript, they will use HTML. HTML defines the content, structure, and layout of web pages. |
| **Teacher Demo: HTML** |
| * Use an example like the one below ([linked here](https://editor.p5js.org/mparker/sketches/Za4eafEqP)) to introduce HTML syntax, building it out using the following progression:      1. Begin by showing **only** the <html> and <body> tags. Explain that they are called “tags” and that they are used to define the structure of the webpage. The actual **content** of the webpage gets **nested** inside the body tags. 2. Add an <h1> tag. Explain that this is a “header” tag, and it is used for writing headings, or the most important information. Point out that the text content is written in between an **opening tag** and **closing tag**, which uses a forward slash. 3. Add an <h2> tag. Explain that this is used for writing subheadings--information that is important, but not as important as the main heading <h1> 4. Add a <p> tag. Explain that this is a paragraph tag, which is used for writing paragraphs. 5. As a mini-challenge, ask students to use Google to try to figure out what are the names of tags used for adding links and images. 6. Add an <a> tag to the example. Explain that this tag requires an **attribute** called “href” where the URL is pasted. 7. Add an <img> tag to the example, noting a different **attribute**, “src” where the URL to the image is pasted. Note: Students often have trouble using the correct link to the image, so be very deliberate about walking them through the process of getting the actual image link (which will often end in .jpg or .png)    1. Ask students what is different about the <img> tag. Students should notice that it does not use a closing tag. Explain that not all tags require closing tags. 8. Optional: You may show students how to move the image to the next line by using the line break tag, <br>  * Now open up an [example emoji project](https://editor.p5js.org/mparker/sketches/EEQmFD-DE), like the one used below. Explain that each p5 project is actually its own web page. So far, students have only used Javascript to add visual content to their pages. By clicking on the small arrow just below and to the left of the “play” button, students can access and edit the HTML inside the **index.html** file.      * Ask students which tags and attributes they recognize, and which are new. Explain that the two tags students need to know are the <head> and <script> tags:   + While the body tag defines the content that we can see, the head tag is more like a brain, which has information that helps the web page function, but isn’t actually seen by the people looking at the page.   + Crucially, **the <script> tag allows Javascript to run inside the web page**. The script tags nested in the <head> use an “src” attribute to link to the actual p5 javascript library. The script tag in the <body> links to the javascript file sketch.js where students have coded their emojis. * Delete the <script> tag inside the body, and ask students for predictions about what will happen when the sketch is run. Without the reference to the sketch.js file, the canvas disappears. * Copy and paste the tags from the first demo into the emoji example project. Show how each tag corresponds to the web page: |
| **Student Activity: Begin Presentation Page** |
| * Have students duplicate their emoji sketches and rename them to something like “Final Project Name HTML”. * Students should edit the **index.html** file by adding content **inside the <body> tags** using the following prompts:  1. Use an <h1> tag to add a title to your project page    1. e.g. “Unit 1 Final Project: Angry Duck Emoji” 2. Use an <h2> tag to add your name to the project page    1. e.g. “Programmed by Ms. Featherworth” 3. Use a <p> tag to write a short summary of your project, including how this emoji represents yourself or your community 4. BONUS: Use an <img> tag to add an image of an emoji that inspired the one that you created in p5 5. BONUS: Using Google or trial and error, try to turn the image into a link that takes you to <https://p5js.org/reference/> by using <a> tags around the image tag. |
| **Wrap Up** |
| * **[Design Journal]** Students should answer the following prompts:   + What is HTML used for? How is it different from Javascript?   + What is the difference between a <head> tag and a <body> tag? |
| **Extensions** |
| N/A |