

# Lesson 2: Intro to HTML

45 minutes

## Overview

**Question of the Day: How can we tell the computer both *what* to put on the web page, and *how* to organize it?**

In this lesson students are introduced to HTML as a solution to the problem of how to communicate both the content and structure of a website to a computer. The lesson begins with a brief unplugged activity demonstrating the challenges of effectively communicating the structure of a web page. Students then look at an exemplar HTML page in Web Lab and discuss with their classmates how HTML tags help solve this problem. Students then write their first HTML. A wrap-up discussion helps to solidify the understanding of content vs. structure that was developed throughout the lesson.

## Purpose

This lesson introduces many new concepts and tools to students. They are introduced to HTML, the Web Lab tool, and how to navigate lesson resources on Code.org in general. While the understanding of HTML as a way to communicate the structure of a web page is a critical learning objective, this lesson has students do minimal programming since there are many other new ideas and tools to grasp. In the next lesson students will have more time to spend programming in HTML.

## Assessment Opportunities

1. **Explain that HTML allows a programmer to communicate the way content should be structured on a web page**

In the final reflection prompt, students should give an explanation of how HTML is used to structure content on a page.

2. **Write a simple HTML document that uses opening and closing tags to structure content**

Level 6 on Code Studio provides a mini-rubric to assess student use of HTML.

## Objectives

Students will be able to:

- Explain that HTML allows a programmer to communicate the way content should be structured on a web page
- Understand how to use lesson resources provided in Web Lab
- Write a simple HTML document that uses opening and closing tags to structure content

## Preparation

- Review the Code Studio levels

## Links

**Heads Up!** Please make a copy of any documents you plan to share with students.

For the teachers

- **CSD Unit 2 - Web Development** - Slides
- **Exemplar Text Website** - Website
- **HTML Tags** - Resource

For the students

- **Intro to Web Lab Part 2** - Video (**Download**)
- **Video: Intro to Web Lab Part 1** - Video (**Download**)

## Vocabulary

- **HTML** - Hypertext Markup Language, a language used to create web pages

### 3. Understand how to use lesson resources provided in Web Lab

As students progress through the HTML lesson, check that they are looking through the drop-down tips on the right hand side of the instructions, clicking into the map levels in the "Help and Tips" tab, and making use of the inspector tool.

## Standards

Full Course Alignment

### CSTA K-12 Computer Science Standards (2017)

- ▶ **AP** - Algorithms & Programming

## Agenda

### Lesson Modifications

**Warm Up (5 minutes)**  
**The Need for HTML**

**Activity (35 minutes)**  
**Exploring HTML**

**Wrap Up (5 minutes)**  
**Reflection**

- **HTML Element** - A piece of a website, marked by a start tag and often closed with an end tag
- **HTML Tag** - The special set of characters that indicates the start and end of an HTML element and that element's type
- **Website Content** - the text and images on a website
- **Website Structure** - how the content of a website is organized

## Introduced Code

- `<!DOCTYPE>`
- `<body></body>`
- `<head></head>`
- `<html></html>`
- `<p></p>`

## Teaching Guide

### Lesson Modifications



**Attention, teachers!** If you are teaching virtually or in a socially-distanced classroom, please **click here** to access modifications that can be used during this lesson.

### Warm Up (5 minutes)

#### The Need for HTML

**Display:** Show the image inside the **Exemplar Text Website**

💡 Teaching Tip

If this site is blocked for students, your IT department may need to whitelist `codeprojects.org`. This is the same site that students will use to publish their own web pages, so it's important that they have access.

**Prompt:** Imagine you wanted to explain to a person over the phone how to draw this web page. Write down clear instructions so that what they draw would perfectly match this image.

**Discuss:** Once students have written their instructions, have them briefly share their instructions with a neighbor.

#### Discussion Goal

**Goal:** Activities like this one are often used in CS courses to help highlight just how much precision is needed to communicate instructions to a computer. In this instance the goal is similar. You want to highlight the challenge of differentiating the actual content on the page and instructions indicating how it should be structured. This demonstration helps justify the creation of HTML in order to tag pieces of content to help the computer understand what they are and hence how they should look.

**Demo:** Run a quick demo using the instructions below.

- Pick one student to verbally share one of their instructions with you.
- The teacher should act as the person on the phone trying to draw the web page
- Publicly “draw” the website exactly as the student’s instructions say. For example, if told to “Write bigger”, write the word “bigger” on the page. If they don’t indicate where text goes then place text in random locations.
- As the student gives you instructions have them tell you if you have drawn it correctly. If you have not drawn it correctly, have them make their directions more specific until you can draw it correctly.
- Change students after a couple of instructions to get more students involved.
- Keep track of the instructions students give and the improvements they make to the instructions somewhere visible as well.
- Repeat this process until you have recreated most of the web page.

**Discuss:** Once you have finished drawing the site, quickly create a list of all the different kinds of information they needed to account for in their instructions. For example, location, size, font, etc.

#### Remarks

There’s a lot of information that we need to communicate if we want to create web pages. It’s not enough to just know what content you want to put on your page, like the actual words or images. You need to know where things should be and how they should look. Today we’re going to start learning the languages used on the web to represent this additional information.

**Question of the Day:** How can we tell the computer both *what* to put on the web page, and *how* to organize it?

**Key Vocabulary:**

- **website content** - the text and images on a website
- **website structure** - how the content of a website is organized

## Activity (35 minutes)

### Exploring HTML

#### Remarks

Today we are going to start working with a lot of resources. As we discover each type of resource, we’ll add it to the list here at the front of the room, and at the end of the lesson we’ll review how each is used.

**Display:** At the front of the room, write the heading “Resources” on the board or blank poster paper,

leaving space to list the various resources as they appear in the lesson.

#### 💡 Teaching Tip

**Using Resources:** Below you can find recommendations for using the many resources students are introduced to in the lesson. Wait until after students have seen all of these resources to review at the end of the lesson, but add them to the list and model the correct usage as they appear.

- **Videos:** Watched as a class, but students can always return to them.
- **Help and Tips Tab** This tab contains all of the relevant videos and map levels for a particular level.
- **Map Levels:** Contain text and diagrams explaining content. These are intended as helpful student resources, not class readings. They are a good place to go for review after learning content or when students get stuck in levels.
- **Level Instructions:** Instructions may introduce small pieces of new content. Each level features a "Do This" section explaining what students are supposed to do in that level. Set the expectation early that reading these instructions, not just the "Do This" section, is important.
- **Level Drop-down Tips:** Students can click these tips in the instruction areas of lessons. Students should use these as a first place to check for help before talking with peers or a teacher.
- **Inspector Tool:** Highlights the code corresponding to a web page element when hovered over in the Preview Area.
- **Bubble Color:** Bubbles may turn green but there is no validation of correctness. Green only means a student clicked Continue or Finish for a level. Set the understanding early that this is more a tool for them than an indication of either completeness or correctness.

#### 🖥️ 1

### Experiment with Web Lab

#### 💡 Teaching Tip

After giving students some time to explore the tool, ask them to share out anything that they have discovered. The video on the next level will give them a short tour, so it's okay if they don't notice everything.

#### Question to consider with the video:

- What are the different parts of Web Lab, and what are they used for?

#### 🎥 2

### Video: Intro to Web Lab - Part 1

#### 💬 Discussion Goal

**Discussion Goals:** While there are no broad learning goals for this video, students should understand that the instructions for Web Lab levels appear in the wide panel at the top, and the bottom three panels, from left to right, include the list of files that they are working on, the area where they type in their code, and the area where they see the results of their code. For now, they do not need to worry about every button, as they will be explained later, but they should understand that the inspector tool helps them to link parts of the web page with code that created them, and the refresh and save button allows them to update their webpage if it does not automatically update when they change the code.

Although it's not part of the video, the instructions pane will also often include drop down questions and answers that students can use when they are completing an activity, and in some levels the tabs at the top of the instructions pane will take students to a "Help and Tips" area that includes reference information relevant to the activities.



## Explore HTML

### 💡 Teaching Tip

**Using the Tool** As students explore the site, make sure that they understand how to use the inspector tool, the drop-down tips on the right side of the instruction pane, and the "Help and Tips" tab, which will give them access to the previous video.

**HTML Discussion** You should bring students back together once they've spent a couple of minutes looking through this level. The discussion prompts listed in the level should be used in a standard Think-Pair-Share structure.

- What text is appearing in both the code and the web page?
- How is this language communicating extra information about the way to represent text?

The goal of the discussion is to call out the features of HTML that students are noticing. The two primary takeaways (reinforced in the subsequent video as well) are that HTML uses a system of tags to surround content and indicate what it is and how it should be displayed.

### Questions to consider with the video:

- Why are HTML tags useful?
- What does the paragraph tag do?



## Video: Intro to Web Lab - Part 2

### 💬 Discussion Goal

#### Discussion Goals

#### Key Vocabulary:

- HTML - Hypertext Markup Language, a language used to create web pages
- HTML Element - A piece of a website, marked by a start tag and often closed with an end tag
- HTML Tag - The special set of characters that indicates the start and end of an HTML element and that element's type

As students discuss HTML tags, make sure they understand that HTML tags are used to structure, or organize, content on the screen. Talking about the organization, structure, or role of the content in the page (heading, paragraph, list, etc.) is more accurate than talking about specific aspects of its appearance (such as size or spacing).

Although certain structural roles may be associated with appearance (headings are larger), HTML does not specify anything in particular about the appearance. This allows users with different needs, such as the visually impaired, to interact with the structured content in a way that makes the most sense for them. Later in the unit, students will learn about styles and CSS, which allows them to specify the exact size, color, and spacing of their HTML elements.

The paragraph tag separates text into paragraphs. You may want to follow up this question by asking students how they think a web browser for the blind might deal with paragraphs. For example, while sighted people may use spacing and new lines to separate out paragraphs, what should a screen reader do?

 5

## Practice

 Teaching Tip 

**Using the Tool:** As students work on this level, make sure they see that there is a new map level available to them in the "Help and Tips" tab. This is a great place to look for extra resources that will help them to complete a level.

 6 

## Assessment

 Teaching Tip 

**Using the Tool:** This level contains a new tab, "Rubric", that gives guidance on how student work can be evaluated and lets you leave feedback. This makes the level particularly useful as an assessment. Students can see how their work is evaluated by clicking on the "Rubric" tab. Later, any teacher feedback will appear in the same area. **Click Here** to learn more about giving feedback to students

You can use this level as a formative assessment for students. Click inside the level to view a rubric and leave feedback to your students

 7

## Challenge

 Teaching Tip 

**Debugging:** As students begin to debug, this is a great time to emphasize a positive culture around debugging. This is a central skill that students will develop throughout the course. Emphasize that debugging is a normal part of the programming process, and that all programmers, even experts get bugs. More information can be found in the "Debugging Guide" linked on the CS Discoveries curriculum page at <https://studio.code.org/courses/csd>.

## Wrap Up (5 minutes)

### Reflection

**Question of the Day:** How can we tell the computer both *what* to put on the web page, and *how* to organize it?

**Journal Prompt:** In your own words, how does HTML help solve the problem of telling a computer what a web page looks like, not just what content is on it?

**Goal:** Students' answers will vary but will likely center around the fact that using tags helps the computer know what different pieces of content "are". Using these tags helps the computer know what the tags are supposed to look like. If this discussion needs to be returned to after students have seen more tags that's fine as well. In either case, use this discussion to motivate the content vs. structure wrap-up point.

As students discuss HTML as a solution, make sure that they are using the key vocabulary of the lesson:

- **website content** - the text and images on a website
- **website structure** - how the content of a website is organized
- **HTML** - Hypertext Markup Language, a language used to create web pages
- **HTML Element** - A piece of a website, marked by a start tag and often closed with an end tag
- **HTML Tag** - The special set of characters that indicates the start and end of an HTML element and that element's type

The content is the literal words that are being typed on the page. Using HTML, students are providing structure to the page, explaining how those pieces of content should be interpreted. Later in the unit students will learn CSS, a language that allows them to individually style elements. For now, however, the styles being applied based on their HTML tags are just the default styles of their web browser. Students don't need to fully understand this difference at this point, as it will be much clearer once they learn CSS later in the unit.

**Discuss:** After students have had time to reflect individually in the journal, allow them to discuss with a partner, then share with the class.

### *Remarks*

HTML uses tags to help the computer know what different pieces of content in the web page actually are. Right now we've only learned how to tell the computer that some text is a paragraph, or that part of your website is the body. We've already seen how that affects the way our web pages look and are structured. As we move forward we're going to learn more tags and see more examples of how this language helps us add structure to our webpages.

**Review:** Return to the list of lesson resources you wrote on the board and review as a class how they are supposed to be used. Refer to the teaching tip above for recommended uses.



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