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CSP 2022: Making a Website from a text editor

HTML (hypertext markup language) is the standard language that is used for a browser to render what you see from a web page. Common browsers are Chrome, Firefox, Safari, Samsung Internet, Microsoft Edge.

Programs in other languages can be used to write HTML that is shown on your screen, or humans can write the HTML directly. XML (extensible markup language) is similar in structure to HTML but is generally used more for a way to store data in an organized, hierarchical way. Markup languages use tags to define elements within a document. To illustrate, here is an example of some HTML code:

```
<!doctype html>
<html lang="en">
  <head>
    <meta charset="utf-8">
    <title>DDubs' Demo Website</title>
  </head>
  <body>
    <h1>
      My first web page
    </h1>
    <p>
      I don't know what to write.
    </p>
  </body>
  <footer>
    Here's my footer
  </footer>
</html>
```

The opening html tag is `<html>` and the closing html tag is `</html>`. There are also opening and closing tags for a head, a title, a body, a heading, a paragraph and a footer. These tags identify the elements in my web page. Thus, there is a head element with a title element inside of it. There is a paragraph element and a heading element inside the body element. The head, body and footer are all elements in the html document. Notice the hierarchical organization. There are also single tag elements that have only one tag, not both opening and closing tags. Such is the case with the meta element shown above.

It is easy to create simple websites with an editor, like Adobe DreamWeaver, for example, without having to write code. Most professional web developers, however, need to work more directly with the underlying code to achieve the exact features that clients want. The web pages you create will be simple; we are not aiming for elegant. However, the *way* the web pages *work* will be exposed to you so you can see what the code does. If you wish to develop more elegant websites using a web design application, your knowledge of HTML and CSS code will give you much more power to customize your site and fix problems.

Part I: Make a Web Page

1. Create a new document in a text editor (Caret, Text, Notepad++, or, if necessary, googleDocs).
 - a. Type or paste the following text into the editor.

```
<!doctype html>
<html lang="en">
  <head>
    <meta charset="utf-8">
    <title>Jane Jones' Website</title>
  </head>
  <body>
    <h1>
      This is easy and fun!
    </h1>
  </body>
</html>
```

Unlike the Python interpreter reading a Python file, a browser reading an HTML file does not care much about white space (new lines, tabs, spaces). The indentation shown in the HTML above makes it easier for a human to see how the code is structured, but the indentation does not affect the rendering by a browser.

Web servers are usually configured to serve the file named `index.html`, if no other name is specified by the client.

- b. Save this file in a folder called (your name or initials)IceCreamStore with the name `index.html`.

Navigate to your folder and double click on your file...it should open up in your default browser and look like a web page. It is a web page! ...except it is not stored on a web server, so you can only view the page you've written from the device in which this file is located. If you want it published on the web, you'd just have to put it on a web server and let people know the URL to access the file. For now, just keep in mind that it is an html file that is rendering what you see on the web page.

Part II: Content and Style

The code that you provide in an HTML file specifies the content that will be displayed by the web browser. It contains text and possibly references to external files like images or music.

2. The tags you may use in HTML provide limited stylistic functionality. I want to have a new main home page for this folder, so rename the other file you made, `demo.html`. Copy the following HTML into a new file and save the file as `index.html`.

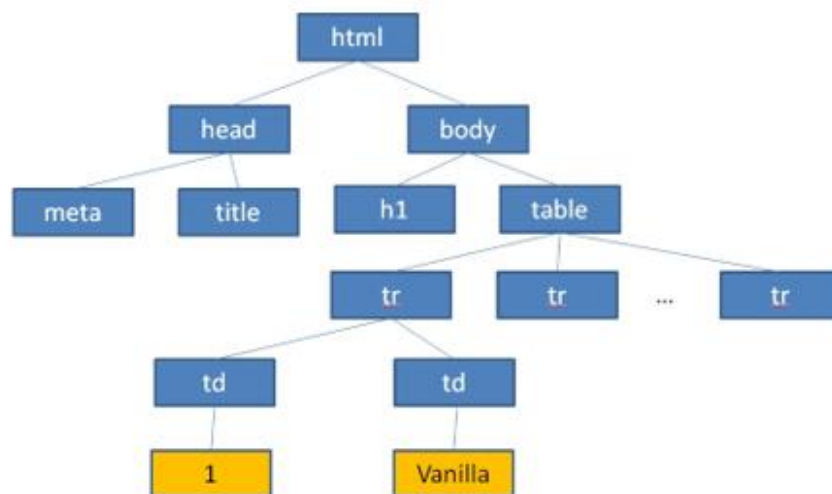
```
<!DOCTYPE html>
<html>
  <head>
    <meta charset="utf-8">
    <title>I Scream For Ice Cream!</title>
  </head>
  <body>
    <h1>Most Popular Ice Cream Flavors</h1>
    <table>
      <tr><th>Rank</th><th>Flavor</th></tr>
      <tr><td>1</td><td>Vanilla</td></tr>
      <tr><td>2</td><td>Strawberry</td></tr>
      <tr><td>3</td><td>Chocolate</td></tr>
      <tr><td>4</td><td>ice cream and Cream</td></tr>
      <tr><td>5</td><td>Mint Chocolate Chip</td></tr>
    </table>
  </body>
</html>
```

4. Use what you observe when you view that file as a web page (or use the w3schools documentation) to explain what each of the following tags defines:

<code>h1</code>	<code>table</code>	<code>tr</code>	<code>td</code>
A Heading	A table	A row in the table	An element in the table

The structure of a web page can be viewed as a tree. The root node is the `<html>` tag, which has two children: the `<head>` tag and the `<body>` tag. The `<head>` tag generally contains information about the page, whereas the `<body>` tag contains content. Like a human, each html file should have only one head element and one body element.

In the tree diagram shown below, is “Vanilla” part of the `<head>` or part of the `<body>`?



Adding Images

5. Add an image to your page as follows.

- a. Find an image of ice cream online and save it as `icecream.jpg` in your folder.
- b. You can display the ice cream picture on your web page by adding this line of code within the `<body>` **element**. An element is one object within the document, usually started and ended by an HTML tag.

```

```

- c. Save the modified HTML and refresh the view in the browser. You should see your page with an image of ice cream.

A good website has well organized files. Understanding the directory structure of the web server will allow you to create a site with well-organized files.

6. Create a directory named `Images` within your project folder.
7. Drag or otherwise move the `ice cream.jpg` file into the `Images` folder.

What happens when you reload your web page in the browser?

this: 

8. The `img` tag has an `alt` attribute that will display text if the image cannot be loaded or displayed. That `alt` text can be spoken by a screen reader for a web user with a vision impairment.

- a. Modify your `img` tag from the previous step to look like this: ``.

- b. Save the new HTML and refresh the browser tab in which you were rendering the page.

- c. What changes?

The words “Picture of ice cream” are put next to the broken picture

9. You have a broken link on your page because the ice cream image isn’t in the location that the HTML has recorded. You can fix this by specifying the path to that image resource. There are two methods to specify a path.

- a. A **relative path** tells the browser to ask for a location starting with the path of the file currently being rendered. Because “Images” is a folder within the directory containing `index.html`, you could refer to the image using ``, where `src` assumes the current document's directory as the place to find the folder `Images`.

b. An **absolute path** to a resource starts from the root of the web server.

10. Decide whether to use absolute or relative references to load your image. Explain the advantages of using a relative filename for our projects.

A relative filename makes it easier to read the code and makes it easier to type out because it's shorter usually.

11. Because you are going to give the folder to me, ***use only relative file names*** for the references in your html.

Adding some Style: Cascading Style Sheets

12. Create a new file in your project folder called `index.css`. Copy the following Cascading Style Sheet (CSS) code, paste it into your file, and save the file. Style sheets let you apply a variety of visual effects, such as font, boldness, center alignment, or background color to your web page. The standards and specifications for using CSS are maintained by W3C®, the World Wide Web Consortium.

```
2      body{
3          font-family: "Marker Felt", "Comic
4      Sans MS", fantasy;
5          color: #003366;
6      }
7
8      h1 {
9          font-size: 1.3em;
10         text-align: center;
11     }
12
13     table {
14         margin-left: auto;
15         margin-right: auto;
16         text-align: left;
17         border-collapse: collapse;
18         cellpadding: 0px;
19     }
20
21     tr {
22         border: 1px solid #ffffff;
23         text-align: center;
24         background-color: #9FB6CD;
25     }
26
27     th {
28         text-align: center;
29         color: #ffffff;
30         background-color: #003366;
31     }
```

An **external style sheet** is a file that exists independently of your HTML document and contains only style rules. For this external style sheet to influence the appearance of your website, you will need to reference it within the `<head>` element of your HTML document. This type of styling is referred to as a linked style sheet.

13. Paste the following code into your `index.html` file within the `<head>` element and save that file.

```
<link href="index.css" rel="stylesheet" type="text/css">
```

14. Save both the `index.html` and `index.css` files and reload the `index.html` page in your browser.

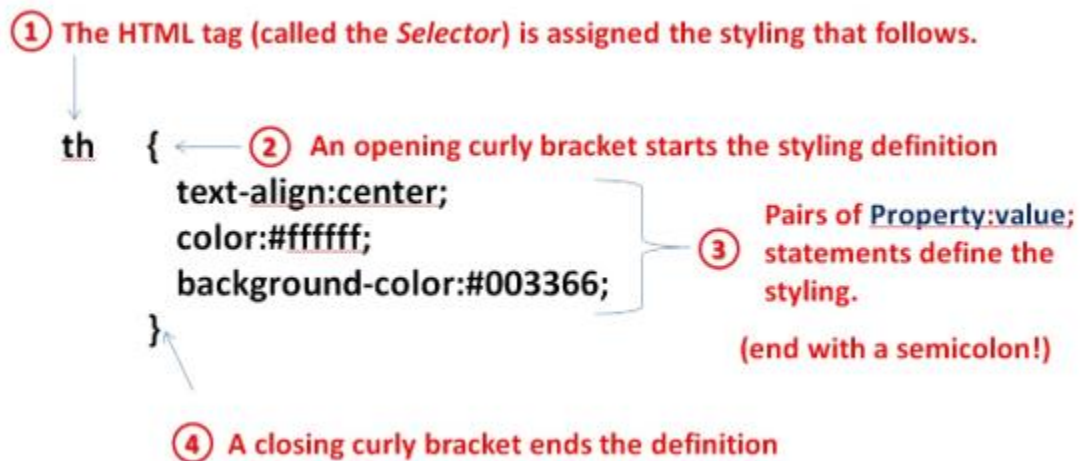
What changes in appearance do you notice? (provide a snip of the rendered page)



Most Popular Ice Cream Flavors

Rank	Flavor
1	Vanilla
2	Strawberry
3	Chocolate
4	Ice cream and Cream
5	Mint Chocolate Chip

The following is a diagram of the syntax of a single style definition in CSS. The source code appears on lines 27–31 of `index.css` shown above.



The **selector** tells CSS which part of the HTML should be stylized. There are several different **properties** of any given selector, which you can use CSS to modify. This particular definition modifies the text alignment, color, and background color of cells within a table. A **value** must be specified for each property.

What does line 10 in step 12 tell us about how `<h1>` text will appear on this web page?

It tells us that the text will be in the center.

Linked style sheets are a good way to set up rules for how different parts of your entire web page will look. There are two other ways of incorporating CSS that allow you to set up rules for specific parts of your page. The “cascading” part of Cascading Style Sheets refers to more general definitions being overridden by definitions that are more specific to the context that you’re focusing on. The external style sheet may be referenced by dozens or even hundreds of pages. You can use an **internal style sheet** within the `<head>` element of your page to specify styles just for this document. (This is not the best technique to use, I will explain later; however, I do want you to see the three places you can apply style rules.)

15. Paste the following into your `index.html` file within the `<head>` element.

```
<style>
  td {color: #FF0000;}
</style>
```

Save the changes and refresh your view of the page in your browser. What has changed? (provide a snip of the rendered page)

Most Popular Ice Cream Flavors



Rank	Flavor
1	Vanilla
2	Strawberry
3	Chocolate
4	Ice cream and Cream
5	Mint Chocolate Chip

16. Internal style sheets give you the power to control the contents of a single document. You can set up a rule for an even more specific part of a document using an **inline style attribute**. With this technique style rules are contained entirely within a single tag. Choose one `<td>` tag in your `index.html` file to change from this: `<td>` to this: `<td style="color:#00FF00; background-color:sienna;">`. (or choose a different background-color)

What changes when you save the file and refresh the rendered tab in the browser?
(provide a snip of the rendered page)

Most Popular Ice Cream Flavors



Rank	Flavor
1	Vanilla
2	Strawberry
3	Chocolate
4	ice cream and Cream
5	Mint Chocolate Chip

The page looks a little sloppy at this point. Center your image and make the text and background colors of the ice cream flavors look better. Get rid of the red text. Every line in the table should have different text and background color that make sense for that ice cream flavor, but keep it uniform within a line. Put your name, month and year in a comment tag at the top. Comment tags look like this:

<!-- Put your comment in here. --> or <!--D. Willson March 2022 -->

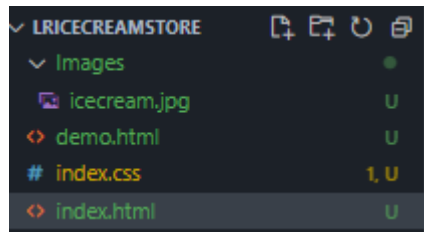
Paste in snips of what index.html looks like when it's rendered in your browser:

Most Popular Ice Cream Flavors



Rank	Flavor
1	Vanilla
2	Strawberry
3	Chocolate
4	ice cream and Cream
5	Mint Chocolate Chip

Paste a snip of the contents of your folder (it should have index.html, demo.html, your Images folder, and index.css.)



Paste a snip of the index.html code including your docstring:

```
index.html > ...
1 <!-- Linus Reynolds May 2022 -->
2 <!DOCTYPE html>
3 <html>
4   <head>
5     <meta charset="utf-8">
6     <title>I Scream For Ice Cream!</title>
7     <link href="index.css" rel="stylesheet" type="text/css">
8   </head>
9   <body>
10    <h1>Most Popular Ice Cream Flavors</h1>
11    
12    <table>
13      <tr><th>Rank</th><th>Flavor</th></tr>
14      <tr><td id="first">1</td><td id="first">Vanilla</td></tr>
15      <tr><td id="second">2</td><td id="second">Strawberry</td></tr>
16      <tr><td id="third">3</td><td id="third">Chocolate</td></tr>
17      <tr><td id="fourth">4</td><td id="fourth">ice cream and Cream</td></tr>
18      <tr><td id="fifth">5</td><td id="fifth">Mint Chocolate Chip</td></tr>
19    </table>
20  </body>
21 </html>
22
```