html basics

HTML: hyper text markup language

- **html** is a standardized **markup language** for writing webpages.
- **markup languages** are used to annotate a document in a way that is *syntactically distinguishable* from the text. (this document was written in the markup language **markdown**)
- **hypertexts** are texts which *link* to other texts. (sometimes called **hypermedia** when referring to *networked media* other than text like video or images).

what *is* an HTML document?

HTML documents are plaintext documents that end in the extension `.html` . HTML documents consist of a standard structure of **elements** that can be recognized and rendered by all modern browsers. HTML documents are styled through **Cascading Style Sheets**, or **CSS**. These use the extension `.css` . An HTML document knows what stylesheet to use through a **link**... more on that later. HTML documents are transmitted across networks through **HTTP requests**. Your browser will **request** a webpage from an **IP address** (an Internet Protocol address (IP address) is a numerical label assigned to each device (e.g., computer, printer) participating in a computer network communicating through the Internet), then the associated server will send back the requested HTML page.

the basic skeleton of an HTML page

```
<!DOCTYPE html>
<html>
  <head>
    <meta charset="UTF-8">
    <title>My HTML Page</title>
  <link rel="stylesheet" href="MyStylesheet.css" type="text/css">
  </head>
  <body>

  </body>
</html>
```

the first line of the code, `<!DOCTYPE html>` just declares that the following document will be written in HTML. after that, the rest of the document is **nested** inside a single set of `<html>` tags. at this point our HTML is split into 2 sections, the `<head>` and the `<body>` .

the head

Between the `<head></head>` tags we put fairly obligatory information like the **charset** or character set of the text, the **title** of the page and a link to the **stylesheet** for your page. if you import fonts from **Google Fonts** or use **Javascript** files in your page, you would also link to them in this section.

IMPORTANT: Nothing in the `<head>` section will be rendered on the actual HTML page. this is just information for how the page will be rendered and accessed by browsers and databases.

the body

the actual content of your webpage lives between the `<body>` tags. here are some standard HTML elements you can use to organize your content within the body:

- `<p></p>` is used to enclose paragraphs.
- `<a href="http://my-link.org">my link</a>` is used to create links to other web pages.
- `<h1,2,3...6></h1,2,3...6>` is used do do different sizes of heading text. for example, the largest heading size would be `<h1>` and the smallest is `<h6>`.
- `<img src="http://my-site.org/image3.png" alt="Image 3" width="100" height"100">` embeds images in the page. the **alt** attribute is for text to be used if the image can't be loaded or for people using Accessibility Services to listen to the website. Width and height are self-explanatory. the src or source attribute is the only required one; the rest are optional.

some elements are a bit more complicated--for example, the `<video>` and `<audio>` elements. here is a typical use of the `<video>` element:

```
<video width="320" height="240" autoplay>
  <source src="movie.mp4" type="video/mp4">
  <source src="movie.ogg" type="video/ogg">
Your browser does not support the video tag.
</video>
```

You probably recognize some of the attributes from the image tag, like src and width/height. however, things are structured a bit differently with video. for example, you can use the **autoplay** attribute to make the video start playing automatically. additionally, the source URLs are nested inside the video element in `<source>` tags and paired with unique **types**. this is so that your browser picks the right video format for your computer. If all else fails, it will display the text instead.

the `<audio>` element works similarly.

```
<audio controls>
  <source src="horse.ogg" type="audio/ogg">
  <source src="horse.mp3" type="audio/mpeg">
Your browser does not support the audio element.
</audio>
```

the **controls** attribute means that transport controls (play, pause, etc) will be displayed on the page. **controls** can be used with the video element as well, just as **autoplay** can be used with audio. other attributes you can use include **loop**, **muted** and **preload**.

CSS

if you wrote your whole website in just HTML, it would work just fine but it would look really ugly-- without custom CSS, websites are usually just rendered in Times New Roman on a white background, left-aligned. instead, we can write a **style sheet** to make our website look however we want it to!

here's the standard syntax for stylesheets:

```
body {
    background-color: blue;
    font-family: Helvetica, Arial, sans-serif;
}

p {
    font-size: 12px;
}

a {
    text-decoration: none;
    color: yellow;
}

a:hover {
    background-color: red;
}
```

this would display our website with a blue background and using the font Helvetica. our main `<p>` text would be 12 pixels high and our links would be yellow and have no underline--when we **hover** over them with the mouse, they would get a red highlight.

There's a lot more you can do with HTML and CSS, but this should be enough information to get you started without feeling too overwhelmed.

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