LECTURE 29

HTML AND CSS

MCS 275 Spring 2023
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LECTURE 29: HTML AND CSS

Reminders and announcements:

- Homework 11 coming later today.

- More DB example code coming to the repository this weekend.

PREP FOR SQL LAB

Install the SQLite command line shell to prepare for this week's lab.

- Linux, MacOS: You already have it
- Windows users: Check this instruction video and/or written instructions.

The lab will also involve using SQLite from within Python programs.

NEW UNIT

We're starting a unit on programming for the web, leading up to building web applications in Python.

Why?

- Major Python application domain
- Lets us develop a complex example program over a series of lectures

CORE WEB TECHNOLOGIES

HTML - Hypertext Markup Language. Web page content language.

CSS - Cascading Style Sheets. Web page style language. (margins, fonts, colors, ...)

JS - JavaScript. The language that runs in the browser to provide complex interactivity on web sites.

HTTP - Hypertext Transfer Protocol. The network protocol typically used to send all of the above from a server to the browser (client).

Opening **developer tools** in your browser with Ctrl-Shift-i will let you explore most of these for live pages.

HTML

First developed in 1993 by physicist Tim Berners-Lee.

Uses plain text with **tags** to indicate the structure of a document (and to add links, images, other resources).

Many versions of HTML exist, but the modern and most widely-used one is called HTML5.

HTML EXAMPLE

```
<!doctype html>
<html>
  <head>
    <title>Document title as seen in browser tab</title>
  </head>
  <body>
    Content you'll see in the browser window.
  </body>
</html>
```

Indenting is optional. Note how start tags and end tags (like `<tagname>` and `</tagname>`) function like parentheses, surrounding the text they apply to.

A FEW USEFUL TAGS

p	paragraph
ul	unordered (bullet) list
ol	ordered (numbered) list
li	item in a list
strong	important text to be emphasized

A FEW USEFUL TAGS

h1, h2, ..., h6	headings for document, section, subsection, etc.
div	Component (division) of a document
a	link to another resource
img	image (no end tag)

LOCATIONS

URL - Uniform Resource Locator. A string that describes where a resource (e.g. web page) is, and how to get it (e.g. HTTP).

The `a` and `img` tags require a URL to be specified in an **attribute**. Attributes are key=value pairs in the start tag, e.g.

```
See the <a href="http://example.com/">example.com web site</a>

My kitten, Mr. Mittens: <img src="kitten.jpg">
```

CSS

HTML is for a document's **content**, with logical parts indicated by tags.

CSS is a related language for specifying **presentation** or **style** (spacing, color, typeface, etc.)

CSS EXAMPLE

```css
body {
    font-family: sans-serif;
    background: #C0C0C0;
    max-width: 45rem;
    padding: 2rem;
    margin: auto;
}
a {
    color: #000050;
    text-decoration: none;
}
a:hover {
    text-decoration: underline;
}
```

One way to apply it to a HTML document is to place the CSS code within a `style` tag in the header.

JSFIDDLE

jsfiddle is a convenient online tool for experimenting with HTML and CSS.

EXTERNAL STYLESHEET

Place inside the `<head>` of your HTML document:

```
<link rel="stylesheet" href="style.css">
```

Putting content and style in separate files is a good idea! Often, many HTML documents use the same CSS.

MARKDOWN

The markdown language used to format notebook text cells is actually just a shorthand for writing certain HTML.

The Python package `Markdown` can be installed to get a markdown-to-HTML converter.

REFERENCES

- [HTML tutorial from W3Schools](#) (all in-browser)

- [jsfiddle](#)

- Countless web design books in the O'Reilly technical library (free to anyone with a UIC email address).

REVISION HISTORY

- 2022-04-04 Last year's lecture on this topic finalized
- 2023-03-31 Updated for 2023