School of Computer Science

Web and Database Computing 2019

Lecture 4: Introduction to CSS

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seek LIGHT

Previously in WDC

We looked at HTML and how it is used to express the content and structure of a Web Page

- Basic Syntax.
- Tags and Attributes.
- Validation.

Adding Style to your webpages

You can follow along in the lecture slides,
but also following the guide at https://www.w3schools.com/css/

What is CSS

Cascading **S**tyle **S**heets is a set of layered rules that describe how the elements of a HTML document should appear.

- HTML was never designed to hold style information.
- The introduction of basic style attributes and tags made documents messy and hard-to-maintain.
- CSS separates the the style information from the elements.
- CSS allows us to style multiple web pages with a single stylesheet.

An example from w3schools:

CSS Syntax

```
h1 {
    color: red;
    font-family: 'Noto Sans';
}
```

CSS Syntax

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h1 {
    color: red;
    font-family: 'Noto Sans';
}
```

Each set of CSS rules is represented by a block of declarations applied to a selector.

- The **selector** specifies the HTML element(s) that the style rules will be applied to.
- The **declaration block** contains a set of **declarations** separated by semicolons (;). These are the style rules that will be applied to the selected element(s).
- Each **declaration** consists of a **property**-**value** pair separated by a colon (:)

CSS Syntax

CSS also supports comments:

```
/* This is a comment */
```

- Comments start with **/*** and end with ***/**
- Comments may span multiple lines

Adding CSS to our webpages

There are 3 ways you can add style information to a document:

1. Using an External Style Sheet

Place your CSS in a separate file e.g. `style.css`

```
h1 {
  color: red;
  font-family: 'Noto Sans';
}
```

Link the stylesheet using a link tag in your document's head:

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

Adding CSS to our webpages

There are 3 ways you can add style information to a document:

2. Using an Internal Style Sheet

Place your CSS in a **<style>** tag in your document's head

```
<head>
  <style>
    h1 {
      color: red;
      font-family: 'Noto Sans';
    }
  </style>
</head>
```

Adding CSS to our webpages

There are 3 ways you can add style information to a document:

3. Inline directly on the element you want to style

Use a style attribute on the chosen element

```
<body>
  <h1 style="color: red; font-family: 'Noto Sans';">This is a heading</h1>
</body>
```

Basic styles

CSS Colours

You can set the colour of:

- Text, using the **`color`** property
- Backgrounds, using the **`background-color`** property
- Borders, using the **`border-color`** property

HTML Result Edit in JSFiddle

```
<style>
  div {
    background-color: skyblue;
    color: grey;
    border-color: blue;
  }
</style>

<div>
    <h1>Colours!</h1>
</div>
```

CSS Colours Notation

You can represent colour using:

- **Standard names**
  HTML includes 140 standard colours usable by name
  e.g. **Red**, **DarkBlue**, **LightSlateGrey**

- **RGB value**
  Specified based on their Red, Green, and Blue components
  Each component takes an intensity value from 0 to 255
  e.g. **rgb(255,0,0)**, **rgb(0,0,139)**, **rgb(119,136,153)**

- **HEX value**
  A Hexadecimal representation of the RGB value.
  e.g. **#FF0000**, **#00008B**, **#778899**

HTML Result Edit in JSFiddle

```
<div style="background-color: MediumSeaGreen">MediumSeaGreen<
<div style="background-color: LightSteelBlue ">LightSteelBlue
<div style="background-color: Tomato">Tomato</div>
<br />
<div style="background-color: rgb(60, 179, 113)">rgb(60, 179,
<div style="background-color: rgb(176, 196, 222)">rgb(176, 19
<div style="background-color: rgb(255, 99, 71)">rgb(255, 99,
<br />
<div style="background-color: #3cb371">#3cb371</div>
<div style="background-color: #b0c4de">#b0c4de</div>
<div style="background-color: #ff6347">#ff6347</div>
<br />
<div style="background-color: hsl(147, 50%, 47%)">hsl(147, 50
<div style="background-color: hsl(214, 41%, 78%)">hsl(214, 41
<div style="background-color: hsl(9, 100%, 64%)">hsl(9, 100%,
<br />
<div style="width: 50%; overflow-x: visible; background-color
  <div style="width: 200%; background-color: rgba(60, 179, 11
  <div style="width: 200%; background-color: rgba(176, 196, 2
  <div style="width: 200%; background-color: rgba(255, 99, 71
</div>
```

CSS Colours Notation

You can represent colour using:

- **HSL value**
  Specified based on their Hue (as a value from 0-355), Saturation (as a percentage from 0% to 100%), and Lightness (as a percentage from 0% to 100%) components
  e.g. `hsl(0,100%,50%)`, `hsl(240,100%,27%)`, `hsl(210,14%,53%)`

- **RGBA & HSLA**
  Same as RGB and HSL, but includes an Alpha channel (Opacity).
  e.g.

  `rgba(255,0,0,50%)`

HTML Result Edit in JSFiddle

```
<div style="background-color: MediumSeaGreen">MediumSeaGreen<
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  <div style="width: 200%; background-color: rgba(255, 99, 71
</div>
```

CSS Backgrounds

Any visible element can have a background.

Backgrounds can be:

- Colours
  You've already seen examples of this
- Images & Gradients
  Using the `background-image` property

HTML Result Edit in JSFiddle

```
<div style="background-color: Salmon; ">
 Some content
</div>
<br />
<div style="background-image: url(https://cdn.pixabay.com/pho
 Some more content
</div>
<br />
<div style="background-image: linear-gradient(to right, skybl
 Even more content
</div>
```

CSS Backgrounds

Background Images & Gradients can be manipulated using:

- The `background-repeat` property
- The `background-attachment` property
- The `background-position` property
- The `background-size` property

The different background properties can also be shortened into a single `background` property, e.g.

CSS Result Edit in JSFiddle

```
body {
  background-color: PowderBlue;
  background-image: url(https://i.imgur.com/dofJuza.png), url
  background-size: 9em 6em, 7em 7em;
  background-repeat: repeat;
}
```

```
background: rgb(220, 220, 220) url("texture.png") no-repeat center top;
```

CSS Fonts

The `font-family` property allows you to select the font used.

- You can use any font available on the host system, as well as web fonts.
- Not all systems will have the same fonts e.g.
  Windows may not have Helvetica, while Linux doesn't have Arial.
- You can specify fonts in order of preference, and the browser will use the first available one.
  `font-family: 'Noto Sans', Arial, Helvetica;`
- There are several generic font-families `serif`, `sans-serif`, `monospace`, `cursive` that can be used instead of a font name and will select the appropriate system font
  `font-family: 'Courier New', monospace;`

CSS Font Style and Weight

The `font-style` property allows you to set a font to be italic.

- `font-style: italic` or `font-style: normal`
- Can also use `inherit` value which uses the same value as its parent element

The `font-weight` property allows you to set a font's weight (i.e. boldness).

- `font-weight: bold` or `font-weight: normal`
- Can also use a weight value: 100,200,300,400(normal),500,600,700(bold),800,900

CSS Font Size

The `font-size` property allows you to select size of the font used.

- Can be a named value e.g. `medium xx-small small large x-large smaller larger`
- Can be a pixel value e.g. `20px`
- Can be a percentage value e.g. `120%`
- Can be a relative value e.g. `1.2em` **Recommended**

Quiz!


WER WIRD
MILLIONÄR
WER WIRD
Who dares have the hubris to assume they deserve
great wealth for mere excellence in trivia?

How this will work

- 5 questions in the next 5 slides
  These do **not** appear in the PDF of the slideshow
- Answers in the online quiz visible after all 3 attempts
- 3 attempts at the quiz
- Keep highest mark
- Can be completed any time in the next 24h
- 0.5% of your final grade

Questions in lecture recording

Selectors

CSS Tag Selectors

CSS selectors allow application of styles based on a variety of different properties of elements.

The simplest of these is by element type/tag name

```
h2 {
  /* Applies to all h2 tags */
}

a {
  /* Applies to all a tags */
}
```

CSS Class and ID

The next of these is by element id or class name

```
#someid {
  /* Applies to the element with id someid */
}

.someclass {
  /* Applies to all elements with class someclass */
}
```

CSS Combined Selectors

CSS selectors can be combined for better specifcity.

Descendent:

```
div a {
  /* Applies to a tags that are descendents of divs */
}
```

Combining class and tag name:

```
div.someclass {
  /* Applies to divs with class someclass */
}
```

Select multiple tags:

```
div, a {
  /* Applies to divs AND a tags */
}
```

CSS Combined Selectors

Those are *just the basic selectors*.

See https://www.w3schools.com/cssref/css_selectors.asp for a full list.

This week

Due:

- Prac Exercise 1 due 11:59pm Friday.

Next lecture:

- Friday we will be looking at layout and the box model.

Further learning:

- Start working through the CSS tutorial at https://www.w3schools.com/css/
- Try looking at the stylesheets for some of the webapges you use.
- If posting in the discussion forum, try styling your posts with inline styles.


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