Cascading Style Sheets

CSCI 311
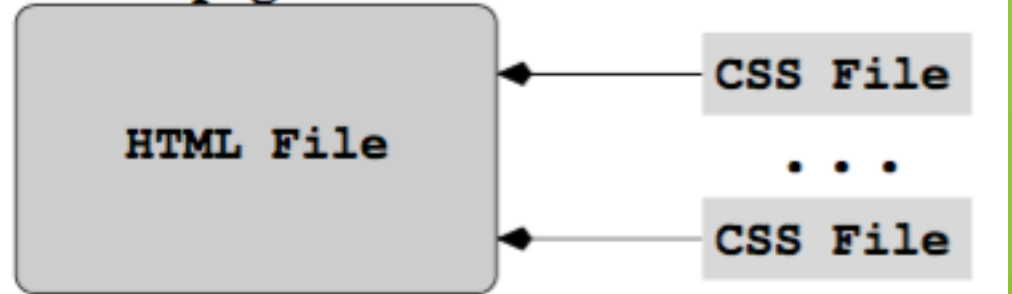
Learning Objectives

- Learn how to use CSS to style the page
- Learn to separate style from structure

Styling with CSS

- Structure is separated from style in HTML5

- CSS (Cascading Style Sheets) handle the styling

- Keeps the presentation or style separate or decoupled from both the content and the structure

A Webpage

HTML File

CSS File

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CSS File

Style declaration

- General Form:
  - `property:value`
- Properties
  - > 100 different properties
  - some apply to any elements, others to specific elements or kinds of elements

Selectors

- General Form:
  - `selector { property1:value1; property2:value2;}`
- Selectors
  - let us designate which HTML elements are affected by which styles
  - There are different kinds of selectors
- Class and id
  - in our html we can define the class and id attributes of html elements
  - many elements can share a class
  - id must be unique

Kinds of Selectors

▶ Type (element) selector:
  ▶ associates a rule with every instance of that element
  ▶ example:
    ▶ h3 {line-height:140%;}

▶ Universal selector:
  ▶ * symbol selects every HTML element
  ▶ for example, can be used for all elements in a class:
    ▶ *.class

▶ Class selector:
  ▶ .className selects the elements in that named class

Kinds of Selectors

▶ Attribute Selector:

    ▶ [attr] selects elements with a given attribute (with any value)

    ▶ example

        ▶ [title]{ color: blue;}

    ▶ can also specify the value:

        ▶ [alt="bug"] {background-color: red;}

▶ id selector:

    ▶ associates a rule with the HTML element that matches the unique id

    ▶ example:

        ▶ #menuItem {color:blue;}

Kinds of Selectors

- Descendent selector
  - sequence of space separated selectors
  - selects the last selector contained in the previous (descendants)
  - example:
    - nav#left a img (selects a link anchoring img in nav with id="left")
- Child selector
  - selects elements that are **immediate** children of a specified element:
  - example:
    - div > h3 (selects all h3 elements that are **immediate** children of a div

Kinds of Selector

- Adjacent Sibling Selector
  - selects all elements are immediate siblings
  - example:
    - div + h3 (selects all h3 that are declared at same level and immediately after a div)
- General Sibling Selector
  - selects all elements are siblings
  - example:
    - div ~ h3 (selects all h3 that are declared at same level as a div)

Kinds of selectors

- Pseudo-class selectors
  - permits selection based on conditions at run-time or hierarchical structure of the document
  - section:target selects section immediately after the user clicks it
  - examples:
    - a:link {color:#00c;}
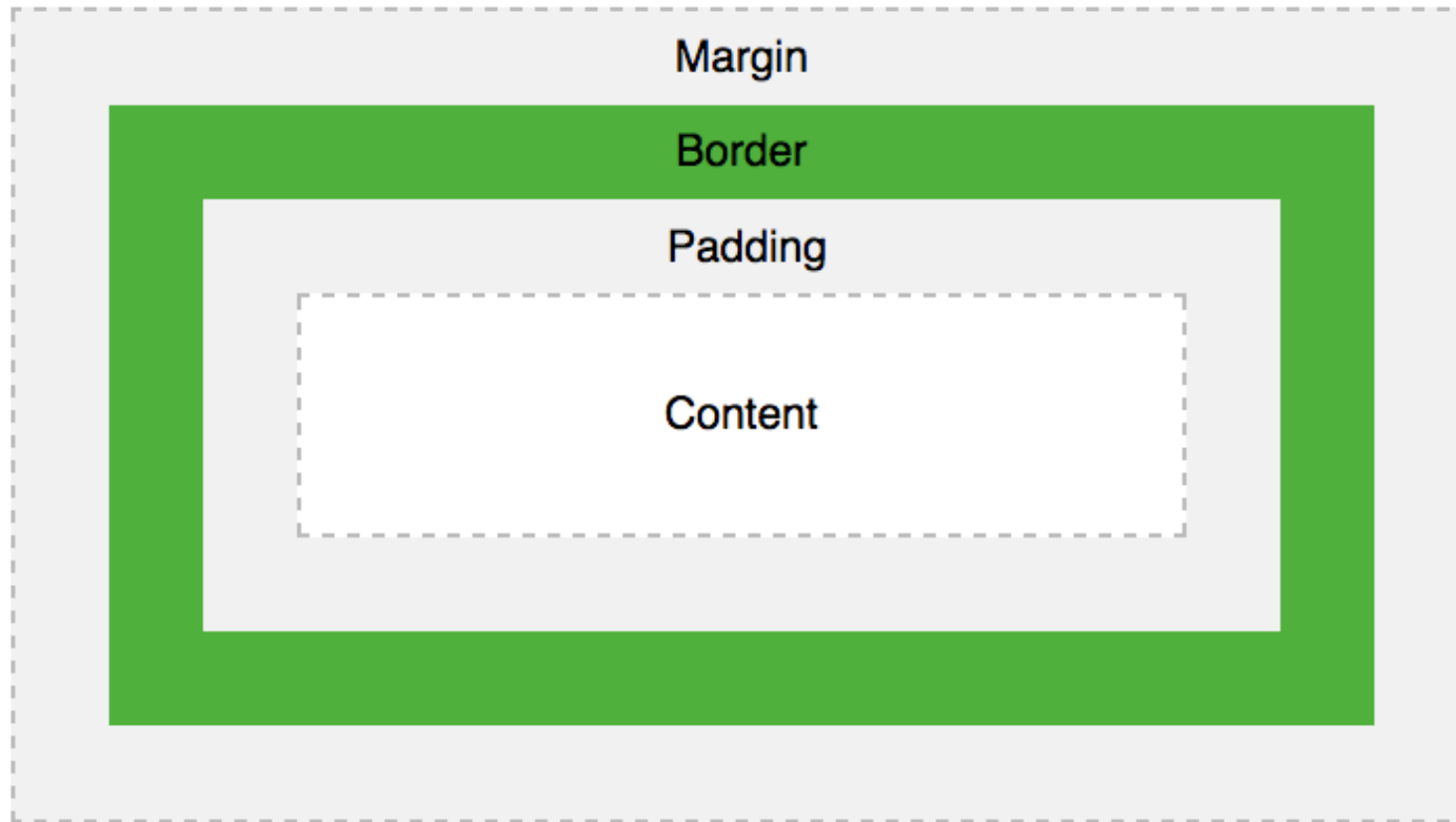   - a.visited {color:#300;}
    - a.active
    - a.hover...

Selectors, more examples

Selector	Selector Type(s)
`body {background-color: white}`	Element or Type
`*.fine {font-size: x-small;}` `.fine {font-size: x-small;}`	universal and class class
`h2.red {color:#933;}`	class
`table.navpanel img {display:block;}`	contextual
`a.box:hover {border:#c91 1px solid;}`	pseudo-class in class
`p, ul {line-height:150%;}`	element shorthand

Example

- Now, for a demo!
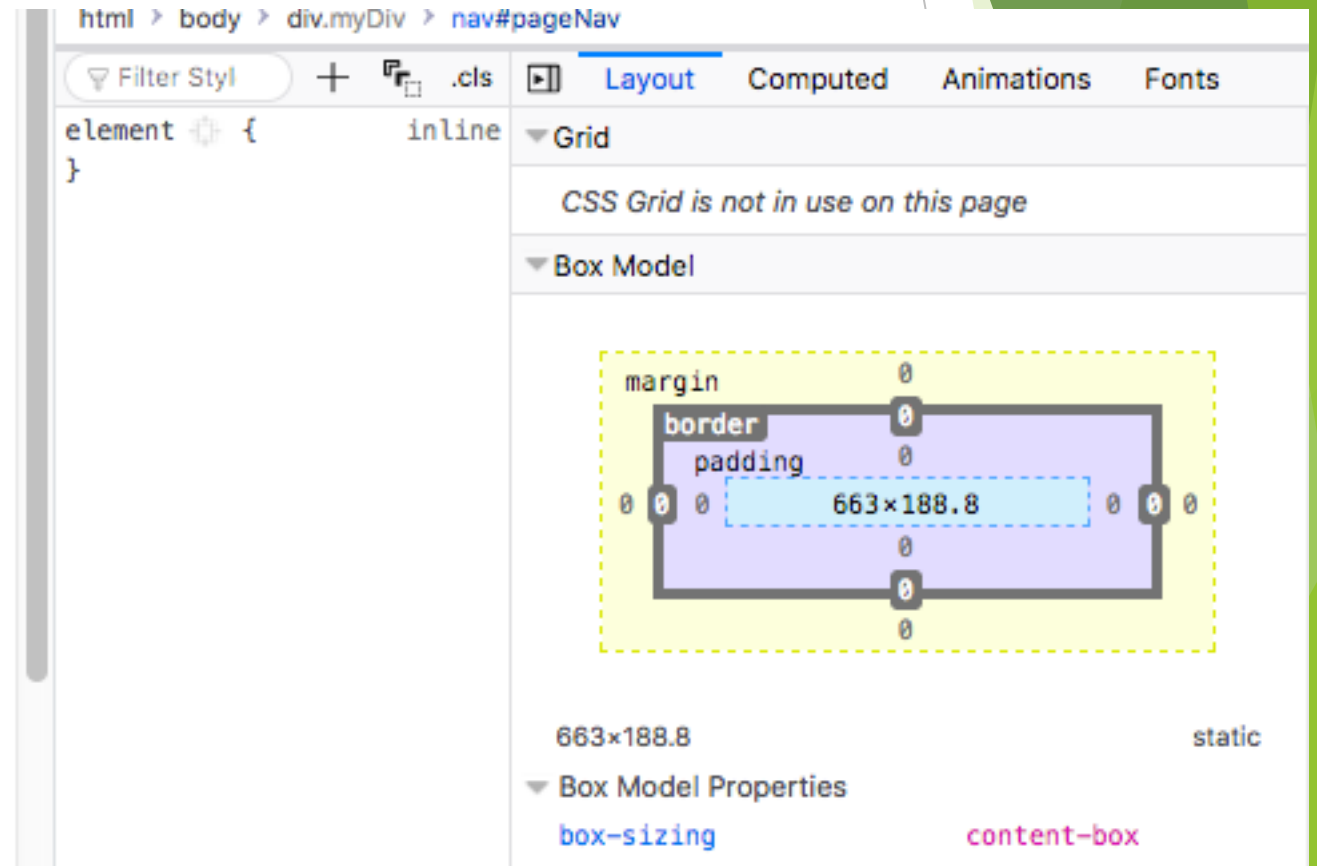
Block-level box model

Explanation of the different parts:

- **Content** - The content of the box, where text and images appear
- **Padding** - Clears an area around the content. The padding is transparent
- **Border** - A border that goes around the padding and content
- **Margin** - Clears an area outside the border. The margin is transparent

Viewing the box model in Inspector

- Can see the box model in your browser
- Very helpful for debugging!
- Right-click
  - Inspect Element (Firefox)
  - Inspect (Chrome)
  - Activate Debugging (Safari)
  - …

Page Formatting Model

- <body> or <iframe> (root of the document tree) is the initial containing box or *root box*
    - inside this box, a stack of block boxes of same width as root box
- Each box consists of:
    - border
    - margin (transparent)
    - padding
    - content
- width and height of content refer only to the content area
- background colour of the content "shows through" the padding
- margin is transparent and colour of parent shows through

Display property

- display:block
  - if parent block element contains only block elements, child elements are formatted in block mode
  - available width for each child box is computed
  - each box is just high enough for its contents
  - vertical separation is determined by the top and bottom margins of adjacent boxes
- display:inline
  - if parent block element contains only inline elements and text, child elements are formatted in *inline mode*
  - inline boxes flow *horizontally* to fill available line width
  - breaks automatically to form separate lines when needed

Display property

- display:inline-block
  - inline block shrinks to fit size of content
  - replace elements (img, audio, video) are formated as inline blocks
- display:list-item
  - ul and ol lists are formatted with a marker in front of one or more block boxes
- display: none
  - contents are not displayed

Display property

▶ Many display properties for table-like behavior (can be added to divs or spans)

▶ display: table

▶ display: table-cell

▶ display: table-row

▶ display: table-head-group

▶ More here: https://www.w3schools.com/CSSref/pr_class_display.asp

Example

- What's going on here?
- <h3> is a block element that contains only line elements
- <p> is another block element that contains 5 inline boxes :
  - text, img, text, img, text

Margin, Border and Padding

- Margin is set with the following properties:
  - margin-top, margin-right, margin-bottom, margin-left
- Can set the length of any of these to auto, and then it is determined by available space and value of opposite margin
- example:

  <div style="width:700px;">

  - pushes image to right side of containing div
- Border and Padding are set similarly

Margin, Border, and Padding

- padding:2px
- margin:50px 10% 50px 10%
- one value: all sides
  - padding: 10px;
- two values:
  - padding: 2px 5px;
- three values:
  - margin: 2px 15px 3px;
- four values:
  - margin: 10% 3px 2px 20%;

Border Styles

- Different styles available:
    - 2D:
        - dotted, dashed, solid, double
    - 3D
        - groove, ridge, inset, outset
- https://www.w3schools.com/CSSref/pr_border-style.asp

Border Width

- thin
- medium
- thick
- a given length
- https://www.w3schools.com/CSSref/pr_border-width.asp

Border Colour

- can be rgb or transparent

- Example:

    div#border { width:40px; height:40px;

    background-color: white;

    border-bottom: 15px solid red;

    border-right: 15px solid blue;

    border-left: 15px solid darkblue;

    border-top: 15px solid darkred; display: inline-block;

    vertical-align: middle; margin-left: 2em; }

https://www.w3schools.com/CSSref/pr_border-color.asp