Lecture 2: CSS for Styling

In this lecture we introduce the basics of CSS as a way to give different visual styles to HTML elements, changing their preset default appearance. *The nature of life is to grow.*

Wholeness Statement

The basics of CSS give different visual styles to HTML elements, changing their preset default appearance.

CSS was a natural evolution to HTML that enhances the flexibility and sophistication of HTML for the specialized function of visual styling.   *Nature evolves by creating encapsulated subsystems to handle specialized functionalities*

The bad way to produce styles

Tags such as **`b`**, **`i`**, **`u`**, and **`font`** are discouraged in strict HTML (XHTML)

```html
<p>
   <font face="Arial">Welcome to Greasy Joe's.</font>
   You will <b>never</b>, <i>ever</i>, <u>EVER</u>
   beat <font size="+4" color="red">OUR</font> prices!
</p>
```

Welcome to Greasy Joe's. You will **never**, *ever*, EVER beat OUR prices!

Why is this bad?

Bad Practices, why?

Inline styles: the style attribute

```html
<p style="font-family: sans-serif; color: red;">This is a paragraph</p>
```

Note: It has higher precedence than embedded or linked styles

Embedded styles

```html
<head>
   <style type="text/css">
         p { font-family: sans-serif; color: red; }
           h2 { background-color: yellow; }
   </style>
</head>
```

Content vs. Presentation

- HTML is for content, the information on the page
- CSS is for presentation, how to display the page
- Keeping content separate from presentation is a very important web design principle
- If the HTML contains no styles, its entire appearance can be changed by swapping `.css` files

Linking external stylesheet (preferred way)

- Put all CSS rules in separate .css file
- Link in head section of html page using <link> tag.

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

Cascading style sheets

It's called Cascading Style Sheets because the properties of an element cascade together in this order:

1. Browser's default styles
2. External style sheet files (in a `<link>` tag)
3. Internal style sheets (in a `<style>` tag in the page header)
4. Inline style (the style attribute of an HTML element)

- Basically, cascading works from top to bottom inside the page (Depends on your order – later styles will always override top ones).

Basic CSS rule syntax

- A **CSS** file consists of one or more rules
- A rule's selector specifies HTML element(s) and applies style properties
  - The * selector, selects all elements
  - To add a comment we use: /*   */

```
selector {
  property: value;
  property: value;
  ...
}
p {
  font-family: sans-serif;
  color: red;
}
```

CSS properties for colors

```css
p {
  color: white;
  background-color: blue;
}
```

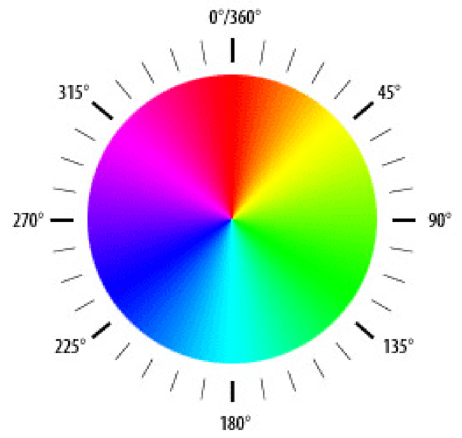
This paragraph uses the style above.

Specifying colors

- **Color names**: aqua, black, blue, fuchsia, gray, green, lime, maroon, navy, olive, purple, red, silver, teal, white (white), yellow
- **RGB & RGBA codes**: **red**, **green**, and **blue** values from 0 to 255
  - alpha (0-1) – defines opacity
- **HEX codes**: RGB values in base-16 from 00 (none) to FF (full)
- **HSL & HSLA codes:** HSL stands for **hue**, **saturation**, and **lightness**

  Hue is a degree on the color wheel (from 0 to 360) - 0 (or 360) is red, 120 is green, 240 is blue.

```css
h1 { color: red;   }
h2 { color: rgb(128, 0, 196); }
h3 { color: rgba(128, 0, 196, 0.5); }
h4 { color: #FF8800; }
h5 { color: hsla(120, 60%, 70%, 0.3); }
```



CSS properties for fonts

property	description	Values
font-family	which font will be used	serif or “Courier New”
font-size	how large the letters will be drawn	A unit value, percentage, or named value
font-style	used to enable/disable italic style	normal(default), italic, oblique
font-weight	used to enable/disable bold style	normal(default), bold, bolder,…
font	Sets all font properties	style weigh size family
Complete list of font properties		

CSS properties for fonts

- If the first font is not found on the user's computer, the next is tried
- Placing a generic font name at the end of your font-family value ensures that every computer will use a valid font

  Generic font names: serif, sans-serif, cursive, fantasy, monospace

```css
h1{ /* which font will be used */
    font-family: Georgia;
}
h2 { /* enclose multi-word font names in quotes */
    font-family: "Courier New";
}
h3 { /* can specify multiple fonts from highest to lowest priority
*/
    font-family: Garamond, "Times New Roman", serif;
}
```

font-size, font-weight, font-style

```css
p {
    /* how large the letters will be drawn */
    font-size: 14px;
    /* used to enable/disable bold style */
    font-weight: bold;
    /* used to enable/disable italic style */
    font-style: italic;
}
```

Size Units

- Units: pixels (**`px`**), point (**`pt`**), m-size (**`em`**)
- **`pt`** specifies number of points, where a point is 1/72 of an inch on screen
- **`px`** specifies a number of pixels on the screen
- **`em`** relative to the font-size of the element (2em means 2 times the size of the current font)

- Vague font sizes: xx-small, x-small, small, medium, large, x-large, xx-large, smaller, larger

- Fluid Layout: viewport height(vh), viewport width (vw)
- https://www.w3schools.com/cssref/tryit.asp?filename=trycss_unit_vw

@font-face

The **@font-face** rule allows you to specify font files. You no longer have to worry about whether the viewer of the site actually has the font that you specified using font-family

```
@font-face {
    font-family: myFont;
    src: url('chap03/Purisa.ttf');
}
p {
    font-family: myFont;
}
```

CSS properties for text

Property	Description	Values
text-align	alignment of text within its element	left, center, right, justify
text-decoration	decorations such as underlining	underline, overline, line-through, blink, none
text-indent	Indent first line	a size(px, pt, %, em)
line-height	vertical size of each line	a size(px, pt, %, em)
letter-spacing	Horizontal gap between letters	a size(px, pt, %, em)
word-spacing	Horizontal gap between words	a size(px, pt, %, em)
text-overflow	How to handle too-long text	clip, ellipsis, ellipsis-word
text-shadow	A “drop shadow” next to text	Two distances(px, pt, %, em) plus an optional shaow color

CSS properties for text

```
h2 {
   /* Can also be overline, line-through, blink, or none.
      Effects can be combined */
   text-decoration: underline overline;
   /* Shadow is specified as an X-offset, a Y-offset, and an optional color */
   text-shadow: -2px 5px gray;
}
p {
   /* Alignment of text within its element,
      can be left, right, center, or justify */
   text-align: center;
   line-height: 30px;
   word-spacing: 30px;
   /* Indent the first line */
   text-indent: 50px;
}
```

CSS properties for background

Property	Description	Values
background-color	color to fill background	A color
background-image	image to place in background	url(image URL)
background-position	placement of bg image within element	Two tokens for x/y as top, bottom, left, right, center, or a size(pt, px, %, em)
background-repeat	whether/how bg image should be repeated	repeat(default), repeat-x, repeat-y or no-repeat
background-attachment	whether bg image scrolls with page	scroll(default), fixed
background-size	scaling of bg image	a size(pt, px, %, em), cover, or contain
background	shorthand to set all background properties	

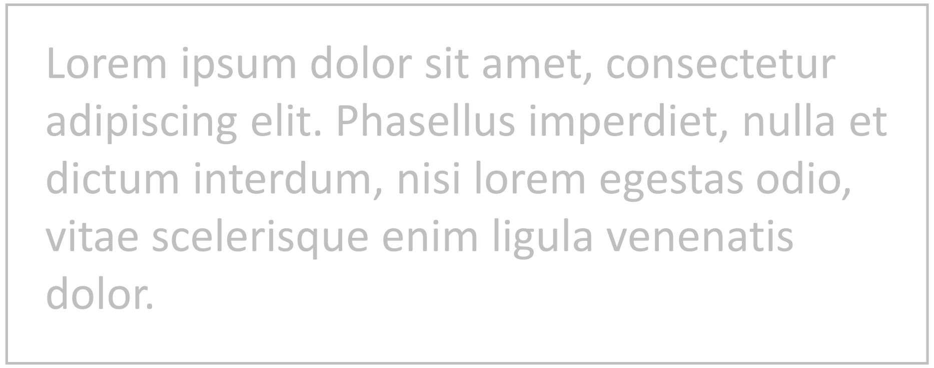
Background

```css
body {
    /* image to place in background */
    background-image: url("../images/draft.jpg");
    /* How bg image should be repeated */
    /* can be repeat (default), repeat-x, repeat-y, or no-repeat */
    background-repeat: repeat-x;
    /* placement of bg image within element */
    /* value consists of two tokens, can be top, left, right, bottom,
       center, a percentage, or a length value in px, pt, etc */
    background-position: 370px 20px;
}
p {
    /* shorthand to set all background properties */
    background: #ffffff url("image.png") no-repeat right top;
}
```

Opacity

The **`opacity`** property sets the opacity level for an element.
Value ranges from 1.0 (opaque) to 0.0 (transparent)

```
div {
    opacity: 0.5;
}
```



Lorem ipsum dolor sit amet, consectetur adipiscing elit. Phasellus imperdiet, nulla et dictum interdum, nisi lorem egestas odio, vitae scelerisque enim ligula venenatis dolor.

CSS properties for borders

```
border: border-width border-style border-color;
```

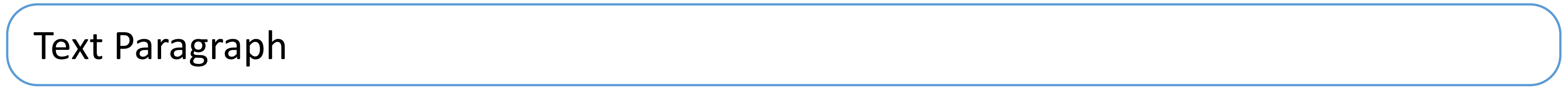
```
p { border: 5px solid red; }
```

border-color, border-width, border-style, border-bottom, border-left, border-right, border-top, border-bottom-color, border-bottom-style, border-bottom-width, border-left-color, border-left-style, border-left-width, border-right-color, border-right-style, border-right-width, border-top-color, border-top-style, border-top-width

```
h2 {
   border-left: thick dotted #CC0088;
   border-bottom-color: rgb(0, 128, 128);
   border-bottom-style: double;
}
```

Rounded corners with `border-radius`

```css
p {
   border: 3px solid blue;
   border-radius: 12px;
}
```



Text Paragraph

Each side's border radius can be set individually, separated by spaces

- **Four values:** top-left, top-right, bottom-right, bottom-left
- **Three values:** top-left, top-right and bottom-left, bottom-right
- **Two values:** top-left and bottom-right, top-right and bottom-left
- **One value:** all four corners are rounded equally

The `list-style-type` property

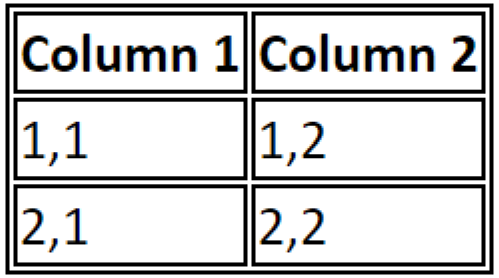
- **`none`** : No marker
- **`disc`** (default), **`circle`**, **`square`**
- **`decimal`** : 1, 2, 3, etc.
- **`decimal-leading-zero`** : 01, 02, 03, etc.
- **`lower-roman`** : i, ii, iii, iv, v, etc.
- **`upper-roman`** : I, II, III, IV, V, etc.
- **`lower-alpha`** : a, b, c, d, e, etc.
- **`upper-alpha`** : A, B, C, D, E, etc.
- **`lower-greek`** : alpha, beta, gamma, etc.

```
ol { list-style-type: lower-roman; }
```

Styling tables

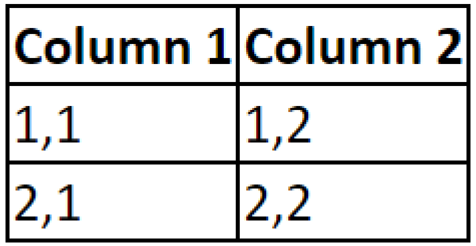
All standard CSS styles can be applied to a table, row, or cell

```
table, td, th {
    border: 2px solid black;
}
table {
    border-collapse: collapse;
}
td {
    background-color: yellow;
    text-align: center;
    width: 30%;
}
```



Column 1	Column 2
1,1	1,2
2,1	2,2

Without **`border-collapse`**



Column 1	Column 2
1,1	1,2
2,1	2,2

With **`border-collapse`**

By default, the overall table has a separate border from each cell inside, the **`border-collapse`** property merges these borders into one.

Main Point

We discussed the CSS Properties for color, font, text, background, lists and table which are the basic properties used on almost every page.

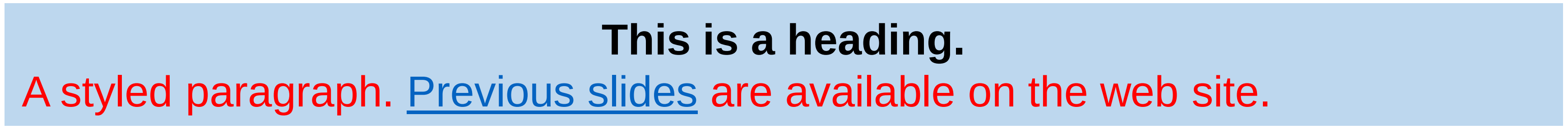
There are a lot of details here, but few concepts. As long as you know the general concepts the details will follow with practice. Highest first—capture the fort to control the entire territory.

http://www.creativebloq.com/web-design/10-design-concepts-web-developers-need-know-11135255

Style inheritance

- Some styles, like font family, text-alignment etc., are automatically inherited by child elements from their parent element.
- Others are not automatically inherited (margin, padding).

```css
body { font-family: sans-serif; background-color: blue; }
p { color: red; }
a { text-decoration: underline; }
h2 { font-weight: bold; text-align: center; }
```



This is a heading.

A styled paragraph. Previous slides are available on the web site.

Body styles

- To apply a style to the entire body of your page, write a selector for the body element
- Saves you from manually applying a style to each element

```css
body {
    font-size: 16px;
}
```

Browser CSS Reset code

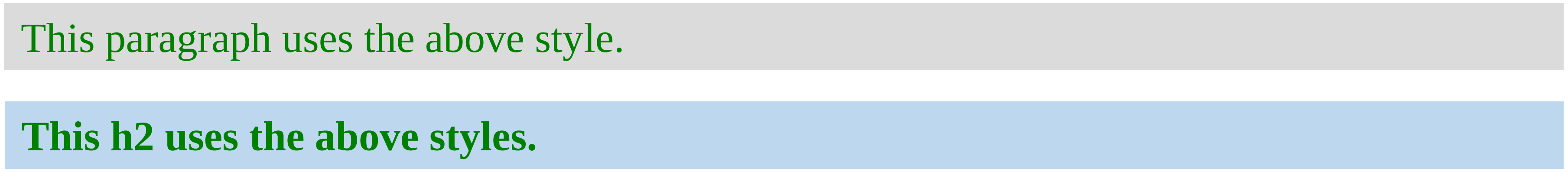
- It’s a good practice to reset some body values before we start coding our own CSS rules:

```
* {
  margin: 0;
  padding: 0;
  font-size: 100%;
  line-height: 1;
}
```

Multiple selectors, Conflict & Overriding

```css
 /* select multiple elements separated by commas */
p, h1, h2 {
   color: green;
   background-color: grey;
}
/* when two styles set conflicting values for the same
property, the latter style takes precedence */

h2 {
   background-color: blue;
}
```



This paragraph uses the above style.

This h2 uses the above styles.

The HTML `class` and `id` attribute

- **`id` attribute** allows you to give a unique ID to any element on a page
  - Each ID must be unique; can only be used once in the page
- **`class` attribute** is used to group some elements and give a style to only that group
  - unlike an id, a class can be reused as much as you like on the page

class vs id examples

```html
<p id="mission">Our mission is to provide the most</p>
<p class="special">See our spectacular spatula specials</p>
<p class="special shout">Today only, satisfaction guaranteed</p>
```

```css
#mission {
    font-style: italic;
    color: #000000;
}

.special {    /* any element with class="special" */
    background-color: yellow; font-weight: bold;
}
p.shout { /* only p elements with class="shout" */
    color: red;
    font-family: cursive;
}
```

Class naming

- focus on the semantics and meaning of the content vs appearance
- Bad example: redtext, bigfont
    - if change style later, it doesn't make sense to be called redtext.
- Good example:
    - warningMsg
    - errorMsg

CSS `pseudo-classes pseudo-elements`

- A **`pseudo-class`** is used to define a special state of an element
  - Style an element when a user mouse's over it
  - Style visited and unvisited links differently
  - Style an element when it gets focus
- A CSS **`pseudo-element`** is used to style specified parts of an element
  - Style the first letter, or line, of an element
  - Insert content before, or after, the content of an element

```
selector:pseudo-class { property:value; }
selector::pseudo-element { property:value; }
/* Notice the double colon notation - ::pseudo-element versus
:pseudo-class  */
```

CSS pseudo-classes pseudo-elements

class	description
:active	an activated or selected element
:focus	an element that has the keyboard focus
:hover	an element that has the mouse over it
:link	a link that has not been visited
:visited	a link that has already been visited
:first-child	an element that is the first one to appear inside another
:nth-child(N)	applies to **EVERY** Nth child of its parent (even, odd, n)
::first-letter	the first letter of text inside an element
::first-line	the first line of text inside an element

Example: Specify a background color for every <p> element that is the second child of its parent:

```
p:nth-child(2) {
    background: red;
}
```

Examples pseudo-classes

```
/* unvisited link */
a:link {
   color: #FF0000;
}
/* visited link */
a:visited {
   color: #00FF00;
}
/* mouse over link */
a:hover {
   color: #FF00FF;
}
/* click on a link */
a:active {
   color: #0000FF;
}
```

More info and examples: Pseudo-classes and Pseudo-elements

CSS Combinators

A CSS selector can combine more than one simple selector. Between the simple selectors, we can include a combinator.

There are four different combinators in CSS:

- Descendent selector (space)
- Child selector (>)
- Adjacent sibling selector (+)
- General sibling selector (~)

Descendant Selector

The descendant selector matches all elements that are descendants of a specifies element.

The following example selects all `<p>` elements inside `<div>` elements:

```
div p {
    background-color: yellow;
}
```

Example

Child selector

The child selector selects all that are the immediate children of a specified element.

The following example selects all `<p>` elements that are immediate children of a `<div>` element

```
div > p {
    background-color: yellow;
}
```

Change combinator in previous example and compare output.

Adjacent Sibling Selector

The adjacent sibling selector selects all elements that are the adjacent siblings of a specified element.

The following example selects all `<p>` elements that are placed immediately after `<div>` elements:

```css
div + p {
    background-color: yellow;
}
```

Change combinator in previous example and compare output.

General Sibling Selector

The general sibling selector selects all elements that are siblings of a specified element.

The following example selects all `<p>` elements that siblings of`<div>` elements:

```
div ~ p {
    background-color: yellow;
}
```

Change combinator in previous example and compare output.

Style Specificity

When multiple styles apply to an element and have the same origin precedence.

The most specific one applies. If they have the same specificity, then the later one will be used.

```css
aside { color: gray; }
p { color: green; }
em { color: yellow; }
.awesome { color: blue; }
em.awesome { color: red; }
#recent { color: black; }
em#recent.awesome { color: orange;}
```

Which awesome color?

```html
<aside>
 <p> <em id="recent" class="awesome">Which awesome color?</em> </p>
</aside>
```

Override Rules

```
<p class="RedColor BlueColor"> Lorem Ipsum </p>
```

```
#YellowColor{ color: yellow; }
.BlueColor{ color: blue; }
.RedColor{ color: red; }
```

Lorem Ipsum

What will happen if we add `id="YellowColor"` ?

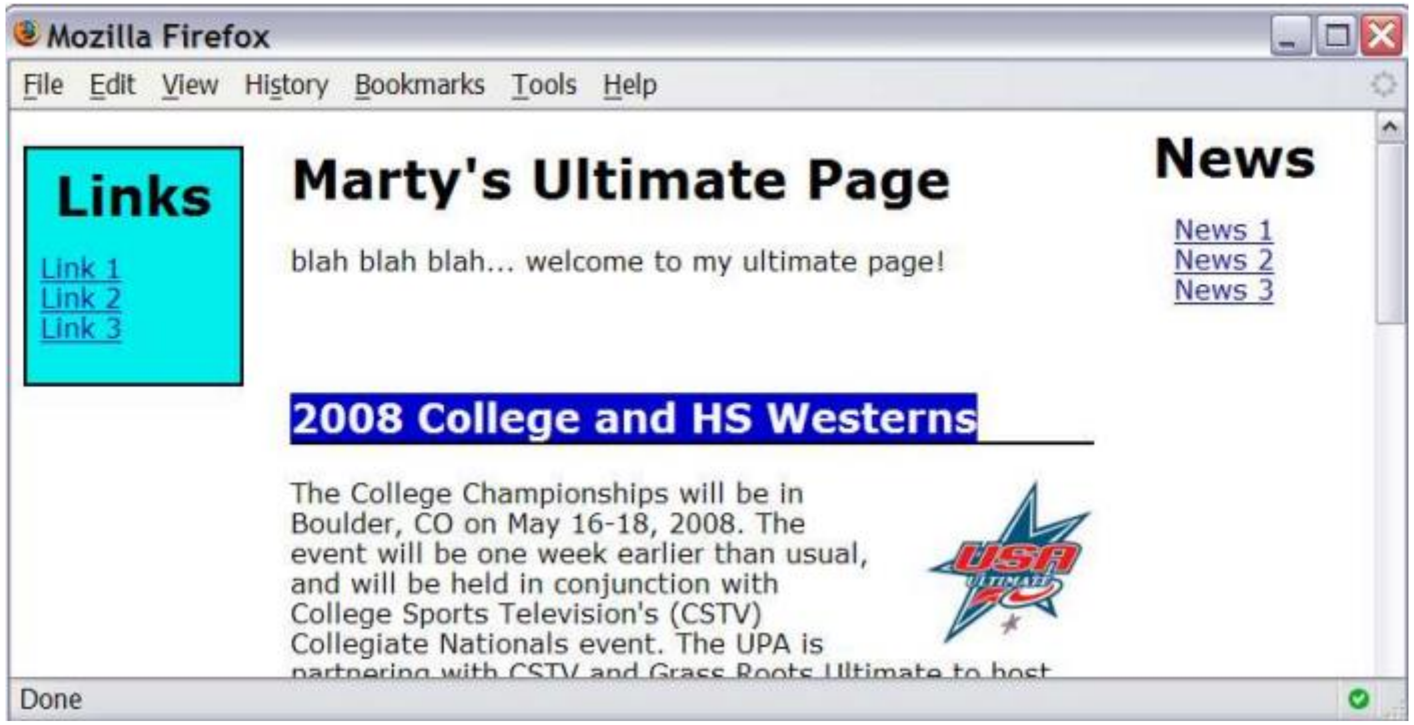
What will happen if we update the CSS code to `.BlueColor{ color: blue !important; }` ?

Main Point

- The Cascading in CSS indicates that there are multiple levels of style sheets. More specific styles overwrite more general styles. We can be more specific by using Class selectors (can apply to multiple elements) and even more so with id selectors (individual elements) and context selectors.
  Life is found in layers.

Motivation for page sections

- Want to be able to **style individual elements**, **groups of elements**, **sections of text** or of the page
- Want to create complex page layouts



Marty's Ultimate Page

blah blah blah... welcome to my ultimate page!

2008 College and HS Westerns

The College Championships will be in Boulder, CO on May 16-18, 2008. The event will be one week earlier than usual, and will be held in conjunction with College Sports Television's (CSTV) Collegiate Nationals event. The UPA is partnering with CSTV and Grass Roots Ultimate to host

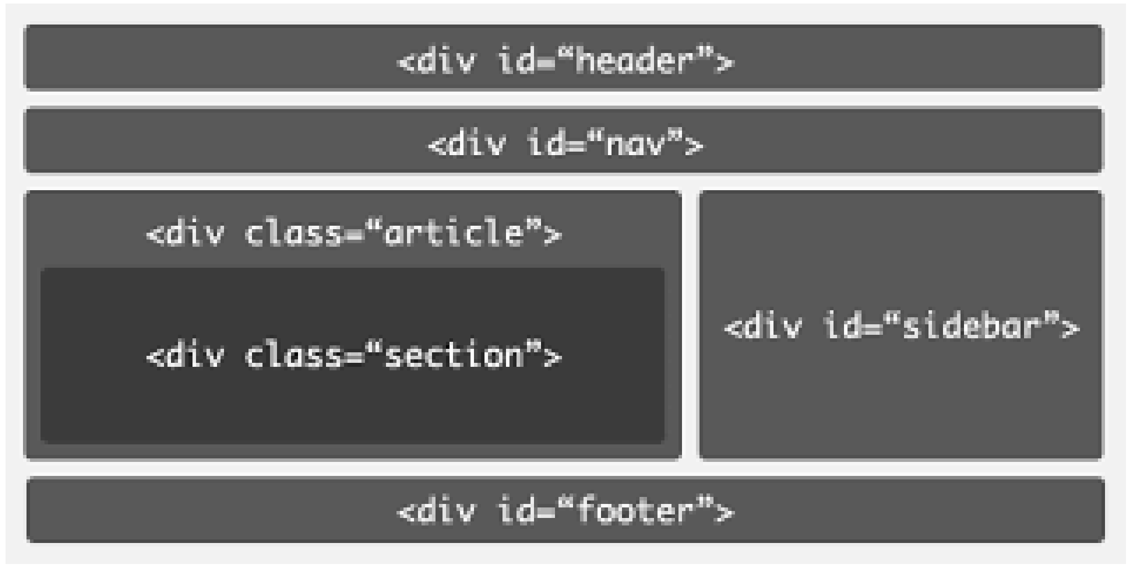
Sections of a page: `<div>` vs `<span>`

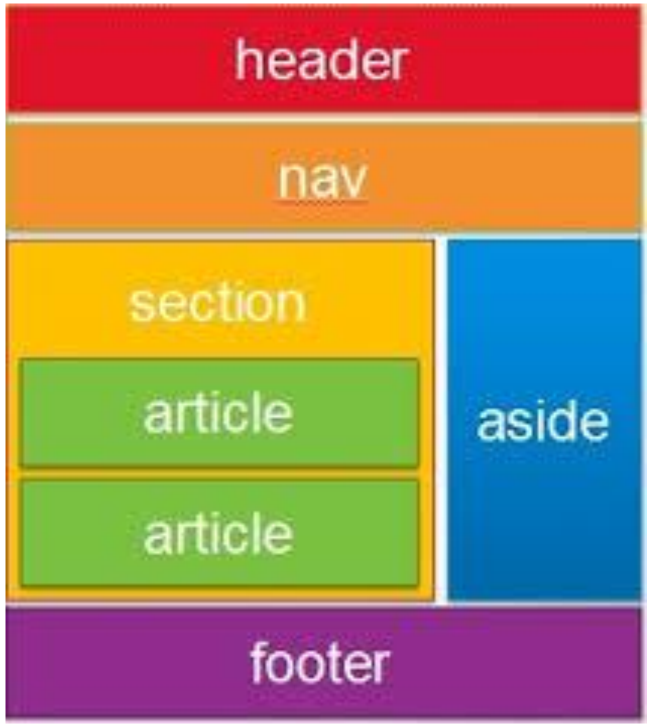
- **`<div>`** is a block element
- **`<span>`** is an inline element
- They have no onscreen appearance, but you can apply styles to them
- They carry no significant semantic meaning

```
<div class="shout">
     <h2>Hello</h2>
     <p class="special">See our specials!</p>
     <p>We'll beat <span class="shout">all
     prices!</span></p>
</div>
```

Review: HTML5 tags for page sections

- Serve the same purpose as `div` – more semantic and descriptive than `div`
  - Note in example, section can be section of an article or section of document containing articles





Main Point

The <div> tag provides a generic block level element that can be used for any division or section of your page. The <span> tag provides a generic inline element for specifying any range of text inside a box. By using these tags, combined with CSS selectors we can write powerful and reusable CSS rules to style and layout pages. *This is an example of efficiency through abstraction. We can have rules that apply to many different elements by abstracting over tags and classes. Do less and accomplish more by acting from abstract levels of awareness.*

W3C CSS Validator

- Check your CSS to make sure it meets the official CSS specifications
- More picky than the web browser, which may render malformed CSS correctly

```
<p>
   <a href="https://jigsaw.w3.org/css-validator/check/referer">
   <img src="https://jigsaw.w3.org/css-validator/images/vcss" alt="Valid CSS!" /></a>
</p>
```

CONNECTING THE PARTS OF KNOWLEDGE WITH THE WHOLENESS OF KNOWLEDGE

Changing Appearances

1. How a page is displayed is affected by both the HTML and the CSS
2. Although every HTML tag has a default way of displaying, it can easily be changed with CSS and should never be the basis for using it. Instead use HTML tags based on meaning.

---

1. **Transcendental consciousness** is the field that underlies all differences.
2. **Impulses within the Transcendental field:** the infinite dynamism of the unified field constantly expresses itself and becomes all aspects of creation.
3. **Wholeness moving within itself:** In Unity Consciousness, one experiences that this unbounded diversity is nothing but the self.