

CS472 WEB PROGRAMMING

LECTURE 2:

CSS: DIVERSITY FROM UNITY

Except where otherwise noted, the contents of this document are Copyright 2012 Marty Stepp, Jessica Miller, Victoria Kirst and Roy McElmurry IV. All rights reserved. Any redistribution, reproduction, transmission, or storage of part or all of the contents in any form is prohibited without the author's expressed written permission. Slides have been modified for Maharishi University of Management Computer Science course CS472 in accordance with instructors agreement with authors.

Maharishi University of Management - Fairfield, Iowa © 2016



All rights reserved. No part of this slide presentation may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying or recording, or by any information storage and retrieval system, without permission in writing from Maharishi University of Management.

Wholeness Statement

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

Separating style rules from HTML enables the same underlying content to have multiple appearances. *The same underlying pure consciousness (or unified field) takes form as the infinite diversity of the manifest universe.*

Main Point Preview

The CSS Properties for color, font, text, background, and lists 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.creativeblog.com/web-design/10-design-concepts-web-developers-need-know-11135255>



The bad way to produce styles

- Tags such as **strong**, **em**, **u**, and **font** are discouraged in strict HTML

<p>

Welcome to Greasy Joe's.

You will never, ever, <u>EVER</u> beat

OUR prices!

</p>


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

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
- <http://csszengarden.com/>


Bad Practices, why?

Embedding style sheets



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

Inline styles: the style attribute



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

Note: It has higher precedence than embedded or linked styles



Cascading Style Sheets (CSS): `<link>`

- CSS describes the appearance and layout of information on a web page
 - (as opposed to HTML, which describes the content of the page)
- Can be embedded in HTML or placed into separate `.css` file (preferred)

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

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

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

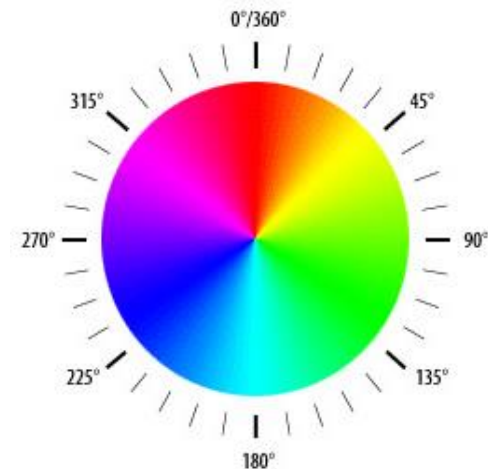
This paragraph uses the style above.

property	description
color	color of the element's text
background-color	color that will appear behind the element

Specifying colors

- **Color names:** aqua, black, blue, fuchsia, gray, green, lime, maroon, navy, olive, purple, red, silver, teal, white, yellow
- **RGB & RGBA codes:** red, green, and blue values from 0 to 255
- **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 degree on color wheel (from 0 to 360) - 0 (or 360) is red, 120 is green, 240 is blue.
 - Hsla demo <https://codepen.io/kman/pen/KwapPZ>
 - [Google css color picker](#)

```
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

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

- If first font not found on user's computer, the next is tried.
- Placing generic font name at end of font-family ensures always find use a valid font
 - CSS generic font names: serif, sans-serif, cursive, fantasy, monospace
- Serifed fonts easier to read on printed pages, hard to read on computer screens,



font-size, font-weight, font-style

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

CS472 WAP
course has a lot
of fun!





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 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
- vw and vh represent 1% of viewport width and height
- <https://webflow.com/blog/how-and-why-to-use-vh-and-vw-in-webflow>
- https://www.w3schools.com/cssref/tryit.asp?filename=trycss_unit_vw

CSS properties for text

Text has to do with words and layout and spacing of letters and words

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 shadow color

CSS properties for text



```
h2 {  
  /* also overline, line-through, blink, or none. Effects can be combined */  
  text-decoration: underline overline;  
  /* Shadow is specified as X-offset, Y-offset, and optional color */  
  text-shadow: -2px 5px gray; }  
  
p {  
  /* Alignment of text within its element, left, right, center, or justify */  
  text-align: center;  
  /* Space between the lines in two paragraphs */  
  line-height: 30px;  
  /* Space between words in <p> elements should be 30 pixels */  
  word-spacing: 30px;  
  /* Indent the first line of all <p> elements with 50 pixels */  
  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

```
body {
```

```
    /* image to place in background */
```

```
    background-image: url("../images/draft.jpg");
```

```
    /* How bg image should be repeated */
```

```
    /* repeat (default), repeat-x, repeat-y, or no-repeat */
```

```
    background-repeat: repeat-x;
```

```
    /* placement of bg image within element. two tokens, can be  
    top, left, right, bottom, center, a percentage, or a length  
    value in px, pt, etc */
```

```
    background-position: 370px 20px;
```

```
}
```



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; }
```

<https://dzone.com/articles/html-5-reverse-ordered-lists>

```
i. first item  
ii. second item  
iii. third item
```

Main Point

We discussed the CSS Properties for color, font, text, background, and lists, 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>

Main Point Preview

- 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 (groups of elements) and even more so with id selectors (individual elements).

Life is found in layers.

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

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




Inheriting styles

- Styles get inherited from containing elements
- **Not all properties are inherited** (notice link's color below)
 - E.g., margin

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

CS472 Web Programming

This [course](#) provides a systematic introduction to programming interactive and dynamic web applications.

Browser CSS Reset code

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

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



Styles that Conflict

```
/* 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;
```

```
}
```

```
<p> This paragraph will use background color grey! </p>
```

```
<h2> This heading will use background color blue! </h2>
```

This paragraph will use background color grey!

This heading will use background color blue!

Chrome Styles Pane

- Invoke the DevTools inspector on element
- displays styles for selected DOM node
- gray background are read-only
- exclamation marks mean that property name and/or value is not understood by the browser,
 - is ignored
- A style declaration may contain several properties with the same name. Only the last one takes effect, canceling the preceding ones.
 - will be struck out, like overridden properties.

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 (reference)
 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).
 - Inheritance is how elements in the HTML markup inherit properties from their parent elements
 - cascade is how different CSS rule sets are applied to HTML elements, and how conflicting rules do or don't override each other.



Override Rules

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

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

Lorem Ipsum

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.

```
<aside>
```

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

```
</aside>
```

```
em#recent.awesome { color: orange; }
```

```
aside { color: gray; }
```

```
p { color: green; }
```

```
em { color: yellow; }
```

```
.awesome { color: blue; }
```

```
em.awesome { color: red; }
```

```
#recent { color: black; }
```

Which awesome color?

Specificity and conflicts

- Specificity- decide which one should win when two or more rules conflict.
- Rules: each rule's overall selector is given a score based upon approximately the following rules. The rule with the highest score wins if there's a conflict.
 - Any HTML element mentioned in the rule scores 1 point
 - Any class mentioned in the rule scores 10 points
 - Any ID mentioned in the rule scores 100 points
- Examples:
 - p.banner - 11
 - div.box > p - 12
 - body #logo .box p.banner - 122

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

```
<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>
```

```
#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-fami
```

Our mission is to provide the most

See our spectacular spatula specials

Today only, satisfaction guaranteed

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**
 - Do not exist in the DOM, are created with CSS
 - Style the first letter, or line, of an element
 - ::first-line, ::first-letter
 - Insert content (pseudo element) before, or after, the content of an element
 - ::before, ::after

```
selector:pseudo-class { property:value; } /* single colon */
```

```
selector::pseudo-element { property:value; } /* double colon */
```

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
:nth-child(expr)		targets specific children of a given element
:first-child, :last-child		
:not(selector)		all elements that do not match the given CSS selector
::first-line		the first line of text inside an element
::first-letter		the first letter of text inside an element

[Complete list](#)

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 context selectors

```
selector1 selector2 { properties }
```

Applies the given properties to **selector2 only** if it is inside a selector1 on the page

```
selector1 > selector2 { properties }
```

- Applies the given properties to **selector2 only** if it is direct child of selector1 (in the DOM)
 - mnemonic: think of > as indicating a direct link (to a child)

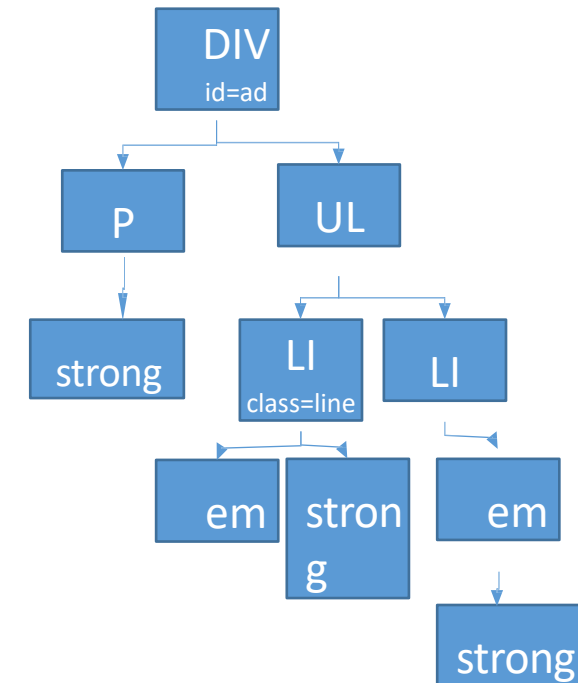


Example

```
<div id="ad">
  <p>Shop at <strong>Hardwick's Hardware</strong></p>
  <ul>
    <li class="line"><em>The </em><strong>best</strong>
      prices!</li>
    <li><em><strong>Act while supplies last!</strong></em></li>
  </ul>
</div>
```

```
ul > li { background-color: blue; }
li strong { color: red; }
li > strong { color: green; }
#ad li.line strong { text-decoration: underline; }
```

See example: [lesson3_examples/contextselector.html](#),
[contextselectordirect.html](#)



add *content* to your website using CSS

- CSS has a property called content.
- only be used with the pseudo elements ::after and ::before.
- The ::after selector inserts something after the content of each selected element(s).
 - Use the content property to specify the content to insert.
 - Use the ::before selector to insert something before the content.
- https://www.w3schools.com/cssref/tryit.asp?filename=trycss_sel_after

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.

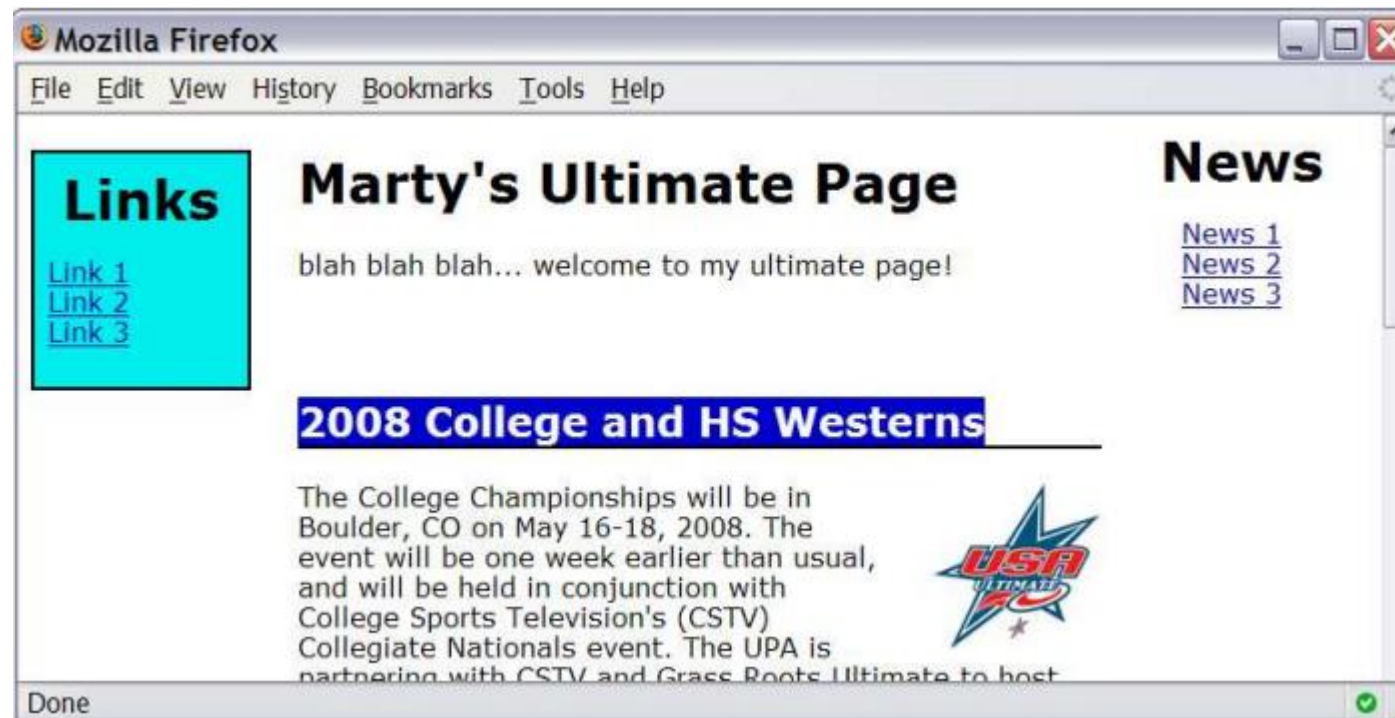
Life is found in layers.

Main Point Preview

The <div> tag provides a generic block level element that can be used for any division or section of your page. The 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.*

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



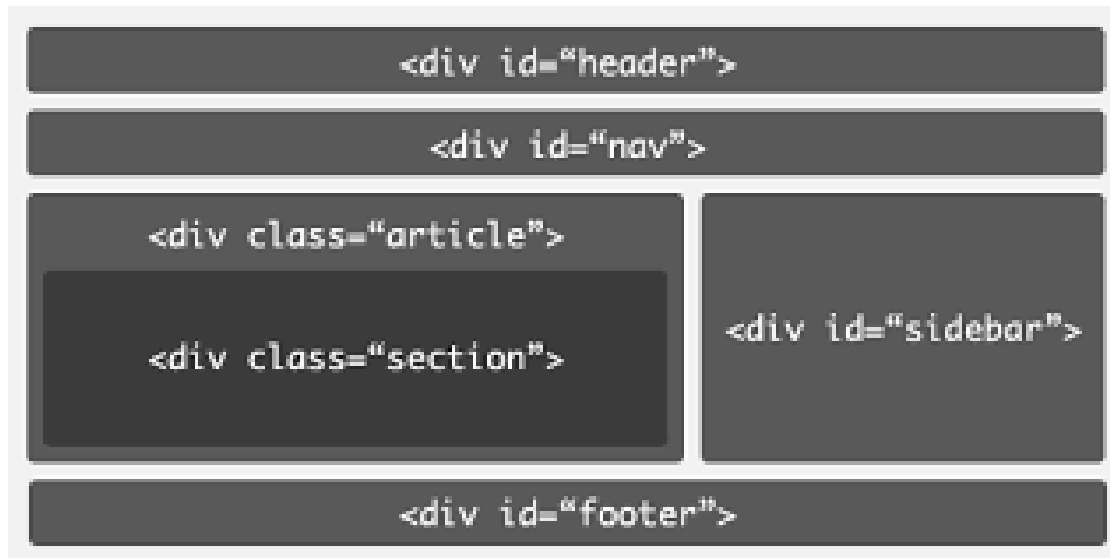
Sections of a page: `<div>` vs ``

- `<div>` is a block element
- `` 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`s
 - 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 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="http://jigsaw.w3.org/css-validator/check/referer">  
      
  </a>  
</p>
```


CONNECTING THE PARTS OF KNOWLEDGE WITH THE WHOLENESS OF KNOWLEDGE CSS: Diversity from Unity

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.
-

3. **Transcendental consciousness** is the field that underlies all differences.
4. **Impulses within the Transcendental field:** pure consciousness is a field of infinite possibilities that gives rise to the great diversity of the relative world, the same underlying content can appear as many expressions.
5. **Wholeness moving within itself:** In Unity Consciousness, one experiences that this unbounded diversity is nothing but the Self.

