

HTML5 & CSS3: New Markup & Styles for the Emerging Web

Jason A. Clark
Head of Digital Access and Web Services
Montana State University Libraries
jaclark@montana.edu
twitter.com/jaclark

The HTML 5 specification

The HTML 5 specification (<http://dev.w3.org/html5/spec/Overview.html>) goes into great detail to list the multitude of additions and extensions. Here's a quick distillation of some of the top level features of the standard.

- Semantic and Functional Markup
 - New markup tags such as header, footer, nav, section, article, aside, figure, and the contenteditable attribute allow for better divisions of content and provide meaningful human and machine readable tags.
- Smart Forms
 - New field types like email and date allow search boxes and text inputs access to better tools for validating and interacting with user requests.
- Geolocation
 - Part of the location API maintained by World Wide Web Consortium (w3c) which does what you would expect: allows your browser (and therefore, your web app) to track a user's physical location.
- Native Video and Audio
 - Simple markup that allows embedding, streaming, and playback of video and audio. Markup like `<video src="turkish.mp4" controls></video>` will create a video player right in your browser without the need for a plugin.
- Offline Storage
 - Think of this like "Cookies on Steroids". This new functionality enables full, persistent database-like storage within the browser. You can take your apps offline and still be making edits and changes to your data.
- Canvas Element
 - Developers can create graphics, images, games, and visualizations by using the `<canvas>` tag to draw elements into the browser using simple programming and markup. Again, there is no need for a plugin.
- Drag and Drop, Web Workers
 - A focus on common user interface conventions such as drag and drop as well as threaded processing of data behind the scenes with Web Workers make it easy to build common web apps like real-time chat into your site.

New Semantic Markup Elements

Tag	Description
<article>	For external content, like text from a news-article, blog, forum, or any other content from an external source
<aside>	For content aside from the content it is placed in. The aside content should be related to the surrounding content
<command>	A button, or a radiobutton, or a checkbox
<details>	For describing details about a document, or parts of a document
<summary>	A caption, or summary, inside the details element
<figure>	For grouping a section of stand-alone content, could be a video
<figcaption>	The caption of the figure section
<footer>	For a footer of a document or section, could include the name of the author, the date of the document, contact information, or copyright information
<header>	For an introduction of a document or section, could include navigation
<hgroup>	For a section of headings, using <h1> to <h6>, where the largest is the main heading of the section, and the others are sub-headings
<mark>	For text that should be highlighted
<meter>	For a measurement, used only if the maximum and minimum values are known
<nav>	For a section of navigation
<progress>	The state of a work in progress
<ruby>	For ruby annotation (Chinese notes or characters)
<rt>	For explanation of the ruby annotation
<rp>	What to show browsers that do not support the ruby element
<section>	For a section in a document. Such as chapters, headers, footers, or any other sections of the document
<time>	For defining a time or a date, or both
<wbr>	Word break. For defining a line-break opportunity.

New Media Elements

Tag	Description
<audio>	For multimedia content, sounds, music or other audio streams
<video>	For video content, such as a movie clip or other video streams
<source>	For media resources for media elements, defined inside video or audio elements
<embed>	For embedded content, such as a plug-in

The Canvas Element

Tag	Description
<canvas>	For making graphics with a script

New Form Elements

Tag	Description
<datalist>	A list of options for input values
<keygen>	Generate keys to authenticate users
<output>	For different types of output, such as output written by a script

New Form Input Elements

Type	Description
tel	The input value is of type telephone number
search	The input field is a search field
url	The input value is a URL
email	The input value is one or more email addresses
datetime	The input value is a date and/or time
date	The input value is a date
month	The input value is a month
week	The input value is a week
time	The input value is of type time
datetime-local	The input value is a local date/time
number	The input value is a number
range	The input value is a number in a given range
color	The input value is a hexadecimal color, like #FF8800

A Minimal HTML5 Boilerplate

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="utf-8" />
  <title>HTML5 boilerplate - future proof for older browsers</title>
  <link rel="stylesheet" href="style.css" />
  <!--[if IE]>
  <script src="http://html5shiv.googlecode.com/svn/trunk/html5.js"></script>
  <![endif]-->
</head>
<body>
  <h1>HTML5 boilerplate</h1>
  <!--more page content-->
</body>
</html>
```

The CSS3 specification

The CSS3 specification contains several new properties and selectors, and many of them have already been implemented in modern browsers. I'm highlighting a few of these new features, but this list is just a start. A complete CSS3 reference is available at

www.w3schools.com/css3/css3_reference.asp

CSS3 Font Properties

Property	Description
@font-face	A rule that allows websites to download and use fonts other than the "web-safe" fonts
font-size-adjust	Preserves the readability of text when font fallback occurs
font-stretch	Selects a normal, condensed, or expanded face from a font family

CSS3 Border Properties

Property	Description
border-bottom-left-radius	Defines the shape of the border of the bottom-left corner
border-bottom-right-radius	Defines the shape of the border of the bottom-right corner
border-image	A shorthand property for setting all the border-image-* properties
border-image-outset	Specifies the amount by which the border image area extends beyond the border box
border-image-repeat	Specifies whether the image-border should be repeated, rounded or stretched
border-image-slice	Specifies the inward offsets of the image-border
border-image-source	Specifies an image to be used as a border
border-image-width	Specifies the widths of the image-border
border-radius	A shorthand property for setting all the four border-*-radius properties
border-top-left-radius	Defines the shape of the border of the top-left corner
border-top-right-radius	Defines the shape of the border of the top-right corner
box-shadow	Attaches one or more drop-shadows to the box

CSS3 Text Properties

Property	Description
hanging-punctuation	Specifies whether a punctuation character may be placed outside the line box
punctuation-trim	Specifies whether a punctuation character should be trimmed
text-align-last	Describes how the last line of a block or a line right before a forced line break is aligned when text-align is "justify"
text-emphasis	Applies emphasis marks, and the foreground color of the emphasis marks, to the element's text
text-justify	Specifies the justification method used when text-align is "justify"
text-outline	Specifies a text outline
text-overflow	Specifies what should happen when text overflows the containing element
text-shadow	Adds shadow to text
text-wrap	Specifies line breaking rules for text
word-break	Specifies line breaking rules for non-CJK scripts
word-wrap	Allows long, unbreakable words to be broken and wrap to the next line

CSS3 Color Properties

Property	Description
color-profile	Permits the specification of a source color profile other than the default
Opacity	Sets the opacity level for an element
rendering-intent	Permits the specification of a color profile rendering intent other than the default

CSS3 Transition Properties

Property	Description
transition	A shorthand property for setting the four transition properties
transition-property	Specifies the name of the CSS property the transition effect is for
transition-duration	Specifies how many seconds or milliseconds a transition effect takes to complete
transition-timing-function	Specifies the speed curve of the transition effect
transition-delay	Specifies when the transition effect will start

CSS3 2D/3D Transform Properties

Property	Description
transform	Applies a 2D or 3D transformation to an element
transform-origin	Allows you to change the position on transformed elements
transform-style	Specifies how nested elements are rendered in 3D space
perspective	Specifies the perspective on how 3D elements are viewed
perspective-origin	Specifies the bottom position of 3D elements
backface-visibility	Defines whether or not an element should be visible when not facing the screen

CSS3 Hyperlink Properties

Property	Description
target	A shorthand property for setting the target-name, target-new, and target-position properties
target-name	Specifies where to open links (target destination)
target-new	Specifies whether new destination links should open in a new window or in a new tab of an existing window
target-position	Specifies where new destination links should be placed

CSS3 Grid Properties

Property	Description
grid-columns	Specifies the width of each column in a grid
grid-rows	Specifies the height of each column in a grid

CSS3 Multi-column Properties

Property	Description
column-count	Specifies the number of columns an element should be divided into
column-fill	Specifies how to fill columns
column-gap	Specifies the gap between the columns
column-rule	A shorthand property for setting all the column-rule-* properties
column-rule-color	Specifies the color of the rule between columns
column-rule-style	Specifies the style of the rule between columns
column-rule-width	Specifies the width of the rule between columns
column-span	Specifies how many columns an element should span across
column-width	Specifies the width of the columns
columns	A shorthand property for setting column-width and column-count

CSS3 Example Styles

```
@font-face
{
font-family: myFirstFont;
src: url('Sansation_Light.ttf')
      ,url('Sansation_Light.eot') format("opentype"); /* IE */
}

div.main
{
font-family:myFirstFont;
border:2px solid;
-moz-border-radius:25px; /* Firefox */
-webkit-border-radius:25px; /* Safari and Chrome */
border-radius:25px;
-moz-box-shadow: 10px 10px 5px #888888; /* Firefox */
-webkit-box-shadow: 10px 10px 5px #888888; /* Safari and Chrome */
box-shadow: 10px 10px 5px #888888;
}

div.main ul#animateList li a
{
cursor: pointer;
-webkit-transition: padding-left 250ms ease-out;
-moz-transition: padding-left 250ms ease-out;
/* trans pattern:  property duration timingMethod delay */
}

div.main ul#animateList li a:hover
{
padding-left: 20px;
}
```

CSS3 Media Query Example for Targeting Mobile Devices

```
@media only screen and (device-width: 768px) and (orientation:
landscape) {
/* rules for iPad in landscape orientation */
}

@media only screen and (min-device-width: 320px) and (max-device-width:
480px) {
/* iPhone, Android rules here */
}
```


Further Reading and Resources

Dive into HTML 5

<http://diveintohtml5.org/>

HTML 5 Demos and Examples (from Remy Sharp)

<http://html5demos.com/>

HTML5ROCKS

<http://www.html5rocks.com/>

HTML5 Tag Reference (W3Schools)

w3schools.com/html5/html5_reference.asp

Cross Browser Support Tables

www.findmebyip.com/litmus/

HTML5 Doctor

html5doctor.com

CSS3 Previews (CSS3.info)

www.css3.info/preview/

HTML5 & CSS3 Cheat Sheets

webresourcesdepot.com/html-5-and-css3-cheat-sheets-collection/

HTML5 Boilerplate

<http://html5boilerplate.com/>

Modernizr

<http://www.modernizr.com/>