

Introducing HTML5

CSE/ISE 102: Introduction to Web Design
Stony Brook University

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What is HTML5?

- HTML5 is a standardized, open-source way to:
 - add audio/video/interactive elements to a page
 - store Web site data locally
 - work offline
 - take advantage of location information
 - and more...

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A Brief History of the Web



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- Early Web browsers (Netscape, Internet Explorer) didn't wait for standards to be created
 - They created browser-specific extensions to HTML, leading to what become known as the "Browser Wars"
- In 1996, the W3C released its HTML 3.2 Recommendation
- HTML 4.0 and HTML 4.01 started to separate structure from presentation, and introduces Cascading Style Sheets
- Around this time, the W3C also introduces XHTML (eXtensible HTML) 1.0, with a stricter set of requirements for markup
- XHTML 2.0 went nowhere, but in 2004 Apple, Mozilla, and Opera formed the Web Hypertext Application Technology Working Group (WHATWG), separate from the W3C
 - Their work would eventually be rolled together into what was called HTML5



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So What's in HTML5?

- A new DOCTYPE
- New elements and attributes
- Obsolete HTML 4.01 elements
- new APIs (Application Programming Interfaces)

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A Minimal DOCTYPE

- HTML documents should begin with a Document Type Declaration (DOCTYPE) that specifies what version of HTML the document follows

- e.g., HTML 4.01 Strict:

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01//EN"
"http://www.w3.org/TR/HTML4.01/strict.dtd">
```

- HTML5's DOCTYPE is much simpler:

```
<!DOCTYPE html>
```

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New HTML5 Elements

article	datalist	header	output	source
aside	details	hgroup	progress	summary
audio	embed	keygen	rp	time
bdi	figcaption	mark	rt	track
canvas	figure	meter	ruby	video
command	footer	nav	section	wbr

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New HTML5 Form Input Types

color	date	datetime	datetime-local
email	month	number	
range	search	tel	
time	url	week	

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New HTML5 Global Attributes

`contenteditable` `contextmenu` `data-*` `draggable`

`dropzone` `hidden` `role` `spellcheck`

Obsolete HTML 4 Elements

`acronym` `center` `frameset` `tt`

`applet` `dir` `isindex`

`basefont` `font` `noframes`

`big` `frame` `strike`

New HTML5 APIs

- API (Application Programming Interface) — a documented set of commands that lets one software application communicate with another
- HTML5 includes APIs for tasks that traditionally required proprietary plug-ins or custom programming
 - Developers can rely on these capabilities being present in all browsers

Some HTML5 APIs

- Media Player API
- Session History API
- Offline Web Application API
- Editing API
- Drag and Drop API
- Canvas API
- Web Storage API
- Geolocation API
- Web Workers API
- Web Sockets API
- and many, many more...

Video and Audio

- Third-party plug-ins like RealPlayer and Windows Media (and Flash) used to be necessary to embed audio and video into a Web page
- Modern Web browsers now support the HTML5 `audio` and `video` elements
- The catch is that different browsers support different media formats
 - Video: Ogg Theora, MPEG-4, WebM
 - Audio: MP3, WAV, Ogg Vorbis, MPEG4 audio, WebM

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Table 10-4. Video support in current browsers (as of mid-2012)

Format	Type	IE	Chrome	Firefox	Safari	Opera Mobile	Mobile Safari	Android
Ogg Theora	video/ogg	—	50+	3.5+	—	10.5+	—	—
MP4/H.264	video/mp4	90+	—	—	3.1+	—	3.0+	2.0+
WebM	video/webm	90+	6.0+	4.0+	—	11+	—	2.3.3+

Table 10-5. Audio support in current browsers (as of 2012)

Format	Type	IE	Chrome	Firefox	Safari	Opera Mobile	Mobile Safari	Android
MP3	audio/mpeg	90+	5.0+	—	4+	—	3.0+	2.0+
WAV	audio/wav or audio/wave	—	5.0+	3.5+	4+	10.5+	3.0+	2.0+
Ogg Vorbis	audio/ogg	—	5.0+	3.5+	—	10.5+	—	2.0+
MPEG-4/AAC	audio/mp4	90+	5.0+	—	4+	—	3.0+	2.0+
WebM	audio/webm	90+	6.0+	4.0+	—	11+	—	2.3.3+

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Sample video Element

```
<video src="highlight_reel.mp4"
width="640" height="480"
poster="highlight-still.jpg"
controls autoplay>
</video>
```

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Video For All

```
<video id="yourmovieid" width="640" height="360" poster="yourmovie_
still.jpg" controls preload="auto">
  <source src="yourmovie-baseline.mp4" type="video/mp4;
  codecs="avc1.42E01F, mp4a.40.2" />
  <source src="yourmovie.webm" type="video/webm; codecs="VP8,
  vorbis" />
  <source src="yourmovie.ogv" type="video/ogg; codecs="theora,
  vorbis" />
  <!--Flash fallback -->
  <object width="640" height="360" type="application/x-shockwave-
  flash" data="your_flash_player.swf">
    <param name="movie" value="your_flash_player.swf">
    <param name="flashvars" value="controlbar=over&image=poster.
  jpg&file=yourmovie-main.mp4">
    
  </object>
</video>
<p>Download the Highlights Reel:</p>
<ul>
  <li><a href="yourmovie.mp4">MPEG-4 format</a></li>
  <li><a href="yourmovie.ogv">Ogg Theora format</a></li>
</ul>
```

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Canvas

- ▀ The `canvas` element creates an area on a Web page that you can draw on using JavaScript functions
- ▀ It can draw things on the fly, and respond to user input
- ▀ The `canvas` element itself just requires `height` and `width` attributes (and an `id` for your JavaScript to latch onto)

A Few Canvas API Functions

- ▀ `strokeRect(x1, y1, x2, y2)`
 - ▀ (0, 0) refers to the top left corner of the Canvas
- ▀ `beginPath()`
- ▀ `closePath()`
- ▀ `arc(x, y, arc_radius, angle_radians_begin, angle_radians_end)`
- ▀ `stroke()`
- ▀ `fill()`
- ▀ `fillText(your_text, x1, y1)`