

HTML



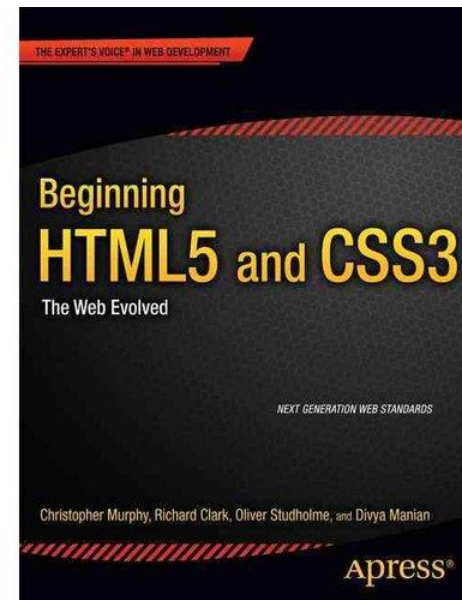
HTML5 & CSS3

for web designers

Web sites for mobile devices
& JavaScript use

Course materials

- Book
 - **Beginning HTML5 and CSS3: The Web Evolved**
Christopher Murphy; Richard Clark; Oli Studholme;
Divya Manian
Apress
November 21, 2012



Resources

- <http://github.com/doughoff>



Introduction

Web directions

- Web 1.0 – file downloads
- Web 2.0 – dynamic web with data
- Web 3 – page rendered apps on client
- Web 4 – development environment with WebAssembly

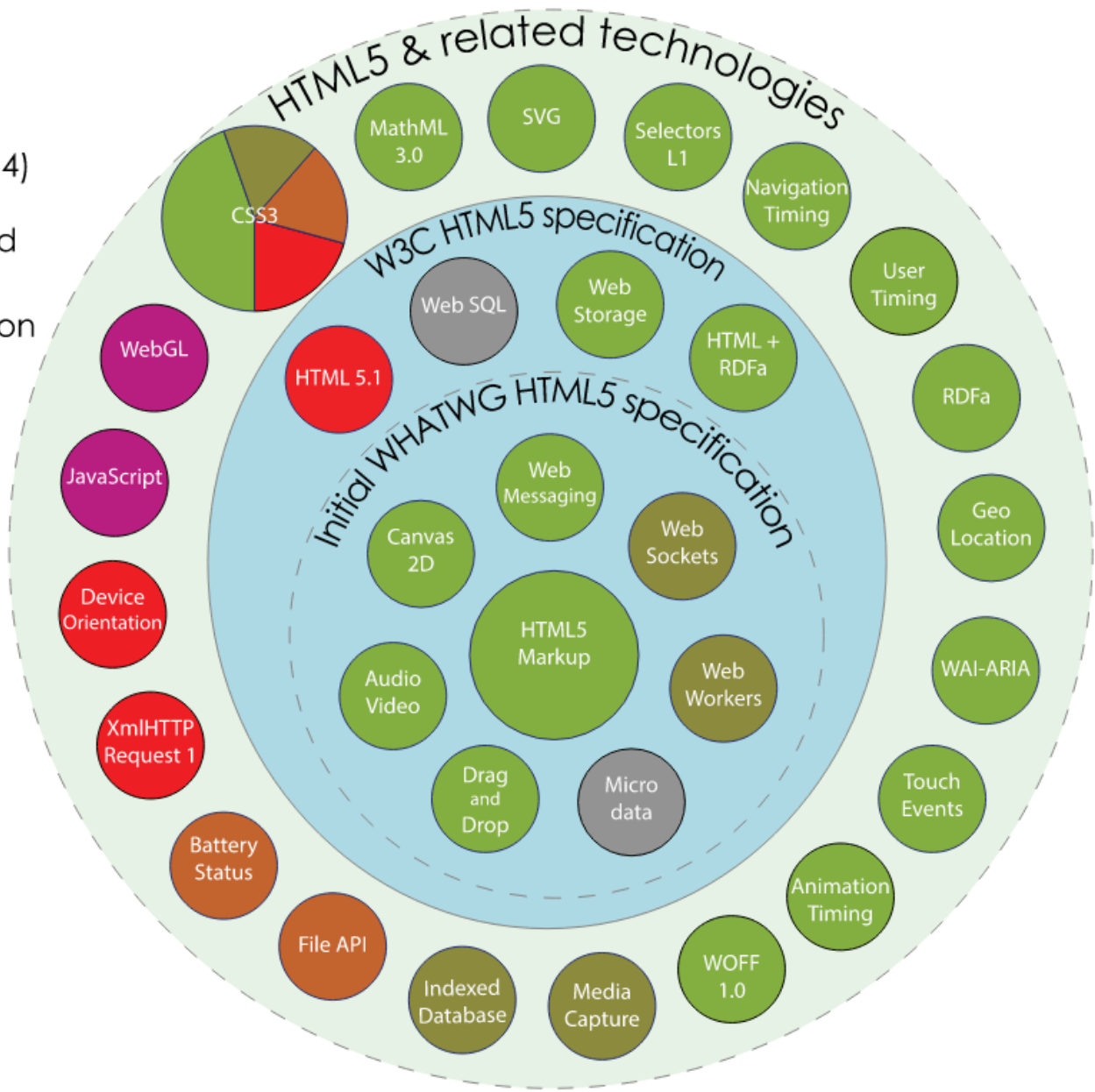
HTML5

- Oct 2014
- Not an HTML4 (2000) upgrade
 - A simplified redesign with acceptance of common usage
- Addresses needs for mobile and integration with JavaScript
- Associated with many standards being agreed upon
 - Drawing
 - Storage
 - Media

HTML5

Taxonomy & Status (October 2014)

- Recommendation/Proposed
- Candidate Recommendation
- Last Call
- Working Draft
- Non-W3C Specifications
- Deprecated or inactive



Why should I care about HTML5?

- Better ways for web designer to express what they mean. (semantic)
 - Better SEO
- Allows features previously only available through JavaScript
 - Tons of APIs coming usually associated with HTML5

HTML 5.1

- Dec 2016
- <https://www.w3.org/TR/2016/REC-html51-20161101/changes.html#changes>

What is CSS3?

- This **is** an upgrade from CSS 2.1
- New features
 - Selectors
 - Web fonts
 - Effects: drop shadows, rounded corners, transparency
 - Multiple backgrounds
 - Animation

Why should I care about CSS3?

- Cleaner markup
- Fewer images means a little faster loading.
- Eliminating browser specific markup eventually.
 - Specs are not final

Compatibility

- Always check new or promoted techniques
 - <http://caniuse.com/>
 - <http://mobilehtml5.org/>

HTML5

- ◊ Audio element
- ◊ Canvas (basic support)
- ◊ Color input type
- ◊ contenteditable attribute (basic support)
- ◊ Datalist element
- ◊ dataset & data-* attributes
- ◊ Date/time input types
- ◊ Details & Summary elements
- ◊ Drag and Drop
- ◊ Form validation
- ◊ HTML5 form features
- ◊ input placeholder attribute
- ◊ New semantic elements
- ◊ Number input type
- ◊ Offline web applications
- ◊ Progress & Meter
- ◊ Range input type
- ◊ Ruby annotation
- ◊ sandbox attribute for iframes
- ◊ Session history management
- ◊ Text API for Canvas
- ◊ Toolbar/context menu
- ◊ Video element
- ◊ WebGL - 3D Canvas graphics
- ◊ **All HTML5 features**

HTML5 info

- W3C HTML WG editors' drafts - <http://dev.w3.org/html5/>
- HTML 5.1 - <http://www.w3.org/TR/2012/WD-html51-20121217/>
- Other
 - <http://www.html5rocks.com/> - great interactive slide presentation, interactive code, samples and tutorials
 - <http://diveintohtml5.info/> - Mark Pilgrim's online book
 - <http://html5forwebdesigners.com/> - Jeremy Keith's online book for designers
 - <http://html5please.us/> - recommendations to use features

HTML / CSS Info

- CSS Tricks
 - <http://css-tricks.com/>
- CSS3.info
 - <http://www.css3.info/>
- Simpl.info - examples of new HTML, CSS, & JavaScript
 - <http://simpl.info/>

Exercise

- Follow instructions in Exercises handout for
 - 1. Set up development environment



Markup and Structure

A demo site

1. Native video
2. @font-face
3. CSS3 hover/transform
4. Geolocation & Local Storage
5. Form validation
6. Drag & drop

<http://thehtml5herald.com/>



doctype

- Document Type Declaration tells the browser what's coming if it cares.
- **Before:**
 - `<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN" "http://www.w3.org/TR/html4/loose.dtd">`
- **After:**
 - `<!doctype html>`

<html>

- lang = "en" (optional)
- no XML namespace
- no content attributes (MIME type)

<head>

- Character encoding and CSS link

- **Before:**

- `<meta http-equiv="Content-Type" content="text/html; charset=utf-8">`
- `<link rel="stylesheet" href="css/styles.css" type="text/css">`

- **After:**

- `<meta charset="utf-8">`
- `<link rel="stylesheet" href="css/styles.css">`

Validation

- Looser but still rules to follow
- Not required
 - case sensitivity
 - attribute quotes!
 - empty element slash!
 - an action for a form
 - & can now be &

Exercise

- Follow instructions in Exercises handout for
 - 2. Basic HTML5 template



Markup and Semantics

Semantics

- the meaning of the content
- you determine the best use for
 - your understanding
 - your team
 - your context (industry, velocity, scale...)

New block elements - containers

- **<main>**
 - 5.1 - content directly related to the central topic of a document. Once per page.
- **<header>**
 - repeated navigational aids and logo at top of page or each chunk on page
- **<footer>**
 - secondary info, bottom area
- **<nav>**
 - important navigation links

New block elements - containers

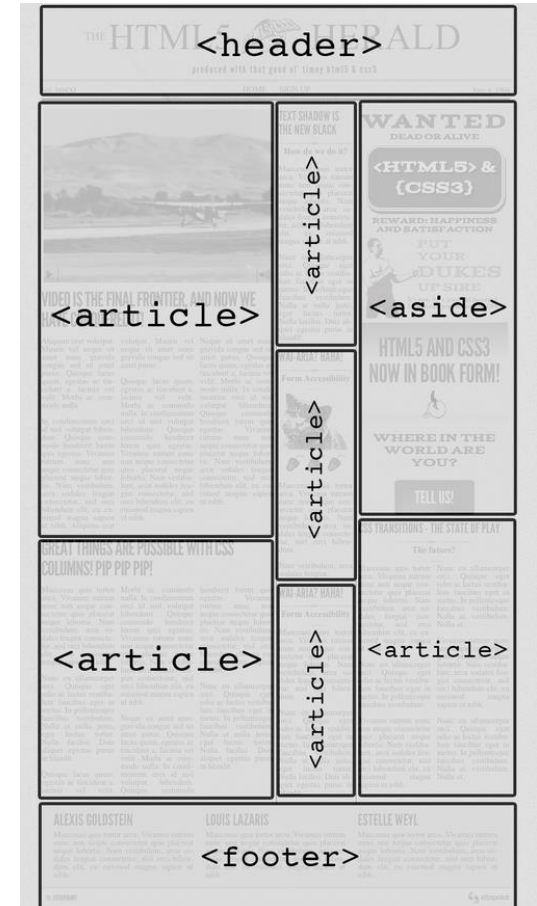
- **<section>**
 - a related group of content with a heading
 - use <div> if no meaning is inferred
 - nesting is OK
- **<article>**
 - intended for publication – RSS, post, blog, comment, tweet
- **<aside>**
 - related but separate information
 - sidebars, link lists, advertising

New block elements

- For structuring text with images
- `<figure id="fig1">`
 - ``
 - `<figcaption>Screen Reader Support for WAI-ARIA</figcaption>`
- `</figure>`

Structuring a page

- header, nav, column divs, article, aside, footer
- **header** for repeatable content at top of page with nav
- **nav** for repeatable navigation area
- **divs** for major columns in body
- **articles** for text units
- **aside** for related articles
- **footer** with sections and sub-sections



Exercise

- Follow instructions in Exercises handout for
 - 3. Show structure of HTML5Herald

Changes to elements

- Meaningful, not just a way to view text
 - `` is a style, `` is important
 - `<i>` is a style, `` is emphasized
 - `<big>` - for fonts, not recommended
 - `<small>` - for fonts, now just "the fine print"
 - definitions (`<dl>` `<dt>` `<dd>`) are descriptions
- Use visual elements for alternative markup
 - `<i>` is repurposed for icon with FontAwesome

Changes to elements

- `<cite>` “forbids” people’s names, for citing titles of works.
- ``
 - `start` attribute (again)
 - `reversed` attribute (not in IE/Edge)
- Block elements valid inside an `<a>`
 - bigger targets for mobile

5.1 New elements – picture/srcset

- Will make the adaptive to screen size capabilities
 - uses different images
 - load based on browser properties
- <https://responsiveimages.org/>
- [Picturefill](#) polyfill for IE

IE	Edge *	Firefox	Chrome	Safari
			49	
			63	
		58	64	
11	16	59	65	11
	17	60	66	11.1
		61	67	TP
			68	

5.1 New elements – details > summary

- browser supports accordion widget behavior
 - open attribute to show on load
- summary child element replaces default text “Details”
- Pack lengthy info, options, text into
- Not in IE/Edge yet

▼ Summary text

Lorem ipsum dolor sit, amet consectetur adipisicing elit. Voluptatem, ad velit officiis unde assumenda dolores, non culpa quisquam temporibus voluptas sit repellendus. Voluptates fuga nemo beatae! Eos, quas doloribus repellat tenetur cumque, magnam dolorum quae molestiae neque non blanditiis, praesentium corporis ipsam debitis dolorem. Nostrum, debitis voluptatem blanditiis animi dolor minima culpa obcaecati maxime similique tempora modi nulla alias id iure amet voluptatum dolorum provident dolorem repudiandae temporibus. Sed amet dignissimos neque sunt quibusdam, provident odio labore cum eveniet ab optio consequatur, et ad! Aliquam quas impedit quidem fugiat magnam pariatur ut cupiditate adipisci, corrupti in, vero incidunt numquam veniam. Sequi ea perferendis reprehenderit autem ipsa quae voluptate? Neque, ex voluptatem consequuntur totam beatae blanditiis officia quisquam debitis quia nisi provident iste, error doloribus non cum soluta consequatur incidunt, reprehenderit nesciunt praesentium est exercitationem! Asperiores quia expedita nulla sunt omnis! Itaque perspiciatis hic tenetur, eum dicta a, incidunt iusto, aliquam aperiam obcaecati

Exercise

- Follow instructions in Exercises handout for
 - 4. Associate a caption with a photo



Markup for Programmers

<script>

- No attribute `type="text/javascript"`
- Location
 - anywhere on page
 - DOM manipulation, follow the element it references
 - most recommended: at bottom of body

<script> attributes

- code is fetched and executed immediately
- <script **defer**>
 - external scripts will run after DOM is loaded
 - `jQuery(function(){...})`
- <script **async**>
 - external scripts will run when available
- **type="module"** – not in IE, Firefox soon

New elements - time

- To designate a precise date & time
- [ISO 8601](#) format
 - `<time>1904-06-04</time>`
 - `<time datetime="1904-06-04">the fourth of June, 1904 </time>`
 - `<time datetime="1904-06-04T16:24:34Z" pubdate>June 4, 1904 </time>`
- Added 2009, removed 2011, restored 2011
- <https://css-tricks.com/time-element/>

New elements - other

- **<mark>** to capture a location on the page.
 - Search results could be delimited with this element
- **<progress>** what we've done so far, no goal
 - attributes: max="" value=""
- **<meter>** - how far we are towards a goal
 - attributes: max="" value="" min="" high="", low="", optimum=""
- **<output>** - show calculation results

data-* custom attributes

- custom data elements
- data attribute key (name)
 - must be at least one character long
 - must be prefixed with 'data-'.
 - no uppercase letters
- data attribute value can be any string
- used in declarative code / frameworks
 - jQuery's data()
 - jQuery Mobile



Form elements

HTML5 form attributes

- `<input autofocus>` - give focus on page load
- `<input placeholder="http://example.com">`
 - My website is located at:
- `<input form="form1 form2 form3">` - nested forms
 - no IE

HTML5 form attributes

- `<input disabled>` - used to disable buttons
 - Use with `:disabled` in CSS selector
 - Value is not submitted, no focus
- `<input readonly>`
 - Value is submitted & can have focus
- `<input multiple>`
 - `<select>` more than one `<option>` in a drop down, now for email and file inputs.

Autofill

- `<input autocomplete>` - browser overrides
 - passwords
 - `chrome://settings/`
- Chrome disables autofill for forms without the `method` attribute

User ID:

[Forgot UserID or Password?](#)

Password:

This webpage has disabled automatic filling for this form.

Partial support - datalist

- `<input type="text" list="colors" id="tb_color" name="req_colors" >`
- `<datalist id="colors">`
 - `<option value="Blue">`
 - `<option value="Green">`
 - `<option value="Pink">`
 - `<option value="Purple">``</datalist>`
- Not in Safari, partial support in others

HTML5 form validation

- **<input required ...>** must have a value which is valid for the data type
 - Failure when form is submitted will put focus on first invalid input element
 - Chrome will provide error messages

• My name is:

• My email address is:

• My website is located at:

• I would like my password to be:



HTML5 form validation

- `<input type="datatype">`
 - search, email, url, tel, date, month, week, time, datetime-local, number, range, color
- `<form nonvalidate>` - stops validation
- `type="search"` – appearance like the o/s search style
- `type="email"` – mobile keypad, messages



A screenshot of a web form showing an email input field. The input field contains the text "elmerfudAT!@#\$..com". Below the input field, a red-bordered box displays the error message: "elmerfudAT!@#\$..com is not a legal e-mail address".

HTML5 form validation

- type="tel" – no validation
- type="range" min="0" max="10"
- type="number"
 - use step = "any" to use decimals
 - use min="0" for positive numbers only
 - check issues when using

On a scale of 1 to 10, my knowledge of HTML5 is:



I would like to receive copies of *The HTML5 Herald*.

HTML5 form validation

- `<input pattern="<regex pattern>"`
 - `\S{5}` – exactly five non-whitespace characters
 - `\d{5}` – exactly five digits
 - `\d{5}(-\d{4})?` – exactly five digits optionally followed by a dash and four digits
 - `\d{5,10}` – between five and ten digits
- Common regex patterns – <http://regexlib.com/>

HTML5 form validation

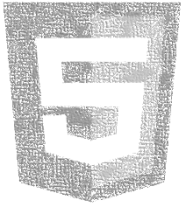
- type="date" – year-month-day: 2004-06-24
- type="month" – year-month: 2004-06
- type="week" – year-weekNumber: 2004-W09
- type="time" – time 24h clock: 22:00
- type="datetime-local" – no time zone
- Support mostly in Chrome

Please start my subscription on: 2011-07-18|



Changes

- `<form action="">`, `<form>`
 - requests current page, now in specs
- `<optgroup>` - can be nested
- `<textarea>`
 - no `rows="#"` or `cols="#"`. Use CSS.
 - `wrap="soft | hard"` – hard adds CR from word wrap and requires `cols="#"`



Exercise

- Follow instructions in Exercises handout for
 - 5. Form
 - 6. Find browser support for input element
 - 7. Form field testing on mobile



HTML5 Audio and Video

A bit of history

- Required third party player
 - QuickTime, RealPlayer, Silverlight, Flash
- Required special tags
- Required special formats

Current state

- Browsers must
 - Deconstruct the container
 - Decode the video to display it
 - Decode the audio to play it
- IE 8 does not support `<video>` but still has market share

Video containers / codecs

- A **container** holds the video and audio streams
 - .flv (Flash), .mp4, .m4v (MPEG-4), .avi (AVI)
 - HTML5 relevant containers are MPEG-4, OGG, WebM
- A **codec** is the engine that encodes or decodes the video stream
 - HTML5 relevant video codecs are H.264, Theora, and VP8
 - HTML5 relevant audio codecs are AAC and Vorbis



Video support in browsers

CODECS/ CONTAINER	Firefox	Safari	IE	Chrome	Opera	iPhone	Android
H.264+AAC +MP4	.	3.0+	9.0+	.	.	3.0+	2.0+
Theora+Vorbis+ Ogg	3.5+	†	.	5.0+	10.5+	.	.
WebM	4.0+	†	9.0 +*	6.0+	10.6+	.	2.3‡

when the user has installed a VP8
codec

DiveIntoHTML5 recommendation

- <http://diveintohtml5.info/video.html>
- Make three versions
 - H.264 baseline video and AAC "low complexity" audio in an MP4 container.
 - Theora video and Vorbis audio in an Ogg container.
 - WebM (VP8 + Vorbis).
- Link to all three video files from a single `<video>` element, and fall back to a Flash-based video player.

My recommendation

- Use YouTube or Vimeo Plus

Like About **Share** Add to

Share this video **Embed** Email







```
<iframe width="420" height="315"
src="//www.youtube.com/embed/tlI022aUWQQ" frameborder="0"
allowfullscreen></iframe>
```

Video size: 420 × 315

- ☒ Show suggested videos when the video finishes
- ☐ Enable privacy-enhanced mode [?]
- ☐ Use old embed code [?]

Share This Video

Link <http://vimeo.com/67809013>

Social      

Add E-mail

Embed [+ Show options](#)

```
<iframe src="//player.vimeo.com/video/67809013" width="500"
```

This embedded video will include a text link.

The markup

- Simplest - `<video src="example.webm"></video>`
- Better - `<video src="example.webm" width="375" height="280"></video>`
- Add controls - `<video src="example.webm" width="375" height="280" controls></video>`



The markup - attributes

- `<video autoplay>` - not polite unless requested
- `<video loop>` - infinite repeat
- `<video preload = "auto | none | metadata">` - auto loads both video and metadata before playing.
- `<video poster = "image.jpg">` - "splash screen"
- `<video audio = "muted">` - no other options

The real markup

- `<video id="movie" width="320" height="240" preload controls>`
 - `<source src="pr6.mp4" />`
 - `<source src="pr6.webm" type='video/webm; codecs="vp8, vorbis"' />`
 - `<source src="pr6.ogv" type='video/ogg; codecs="theora, vorbis"' />`
 - `<object width="320" height="240" type="application/x-shockwave-flash" data="flowplayer-3.2.1.swf"> <param name="movie" value="flowplayer-3.2.1.swf" /> <param name="allowfullscreen" value="true" /> <param name="flashvars" value='config={"clip":{"url": "http://wearehugh.com/dih5/pr6.mp4", "autoPlay":false, "autoBuffering":true}}' /> <p>Download video as MP4, WebM, or Ogg.</p> </object>`
- `</video>`

Miro VC video encoder

- Download [Miro Video Converter](#) for Mac OS X or Windows.
 - open source, GPL-licensed program for encoding video in multiple formats.
 - offers no options beyond choosing a video file and choosing an output format
 - can take virtually any video file as input, including DV video produced by consumer-level camcorders
 - produces reasonable quality output from most videos

Audio player

- `<audio controls="controls">`
 - `<source src="song.ogg" type="audio/ogg" />`
 - `<source src="song.mp3" type="audio/mpeg" />`
 - Your browser does not support the audio element.
- `</audio>`

Format	IE 9	Firefox 3.5	Opera 10.5	Chrome 3.0	Safari 3.0
Ogg Vorbis	No	Yes	Yes	Yes	No
MP3	Yes	No	No	Yes	Yes
Wav	No	Yes	Yes	Yes	Yes

Web Audio API

- JavaScript
- Web Audio API - Working Draft
 - no support in IE, Opera
- https://developer.mozilla.org/en-US/docs/Web_Audio_API
- Links
 - Beat box -
 - http://box.cloudymedia.com/?utm_source=html5weekly&utm_medium=email#!song-1544
 - <http://box.cloudymedia.com/#!song-589>

Web sites – audio & video

- **Simon Pieters**

- <http://dev.opera.com/articles/view/everything-you-need-to-know-about-html5-video-and-audio/>

- **Kaltura community**

- Html5video.org

Exercise

- Follow instructions in Exercises handout for
 - 7. Test video formats
 - 8. Test audio formats (on system with speakers)



CSS3 Introduction

Intro

- CSS3 spec has been around since 2006
- Few CSS3 modules have reached Recommendation status (approved).
 - CSS3 Color
 - CSS2.1
- Prediction for final approval is 2022.
- CSS Zen Garden - <http://www.csszengarden.com/>

Vendor extension prefixes

- Used to implement and test vendor specific extensions to CSS
- **Chrome, Safari:** -webkit-
- **Firefox:** -moz-
- **Opera:** -o-
- **IE:** -ms-
- **Microsoft Office:** -mso-

Initialize your CSS

- Set all values to zero, make HTML5 new elements block
- <http://www.cssreset.com/>
 - Recommended for HTML5 use
<http://html5doctor.com/html-5-reset-stylesheet/>
 - Full featured CSS framework use YUI 3
<http://yuilibrary.com/>
 - Smallest file size
normalize.css

Migration - Modernizr

- JavaScript feature detection library for HTML5/CSS3 features
- 2.8.3 current CDN version
 - 3.5 supports CSS grids
- HTML5 shiv included
- adds class names to all elements to show or not show support for behavior.
 - ... localStorage sessionStorage svg no-inlinesvg ...

Exercise

- Follow instructions in Exercises handout for
 - Run CSS3 browser score test



CSS selectors

Major selector types

CSS	HTML
tagname	<code><tagname></code> <code><tagname></code>
<code>className</code>	<code><tagname class="className"></code> <code><otherTagname class="className"></code>
<code>#idName</code>	<code><tagname id="idName"></code> (can only be one id per doc)
<code>[attributeName="attributeValue"]</code>	<code><tagname</code> <code>attributeName=attributeValue></code>

CSS2 Selector operators

- union selector1, selector2
 - combination of the two selections
 - h1, h2, h3 { }
- descendant: selector1 selector2
 - all elements at any child sublevel of selector1
 - ul.menu li
- child: selector1 > selector2
 - all elements at first child sublevel only
- adjacent / sibling: selector1 + selector2
 - first element at the same peer level coming after selector1

Relational selectors – CSS3

- general sibling: `selector1 ~ selector2`
 - all elements at the same peer level coming after `selector1`
 - a little buggy in IE 7+

CSS2 Attribute selectors

- `[attributeName=attributeValue]`
- All value matching is case insensitive
- No quotes are used for the attribute value
- Compatibility
 - IE6 and lower do not support attribute selection
 - IE7 and IE8 support attribute selectors only if a !DOCTYPE is specified.

Attribute selectors – CSS2

- `[attributeName]` – all tags with this attribute
- `tag[attributeName]` – all tags with this tag name and attribute having any value
- `tag[attributeName=value]` – all tags with this tag name and attribute matching this value
- `tag[attributeName|=value]` – all tags with this tag name and attribute matching or beginning with this value
- `tag[attributeName~=value]` – all tags with this tag name and attribute containing a word with this value

Attribute selectors – CSS3

- `tag[attributeName^=value]` – all tags with this tag name and attribute beginning with this value
- `tag[attributeName$=value]` – all tags with this tag name and attribute ending with this value
- `tag[attributeName*=value]` – all tags with this tag name and attribute containing any portion with this value

CSS3 selectors – pseudo classes

- LVHA - a:link, a:visited, a:hover, a:active (love-hate)
- Add :focus when using :hover (mobile)
 - a:focus:hover
- New pseudo-classes (states of elements)
 - :enabled, :disabled
 - :checked, :indeterminate
 - :target (http://domain.com#item1 matches button#item1:target or #item1:target)
 - :default
 - :valid, :invalid

CSS3 selectors – pseudo classes

- Firefox already has :invalid red shadow default style. Watch.

Email Address: *

johndoe@example.com

CSS3 selectors – pseudo classes

- New pseudo-classes
 - :in-range, :out-of-range (for min and max)
 - :required, :optional
 - :read-only, :read-write

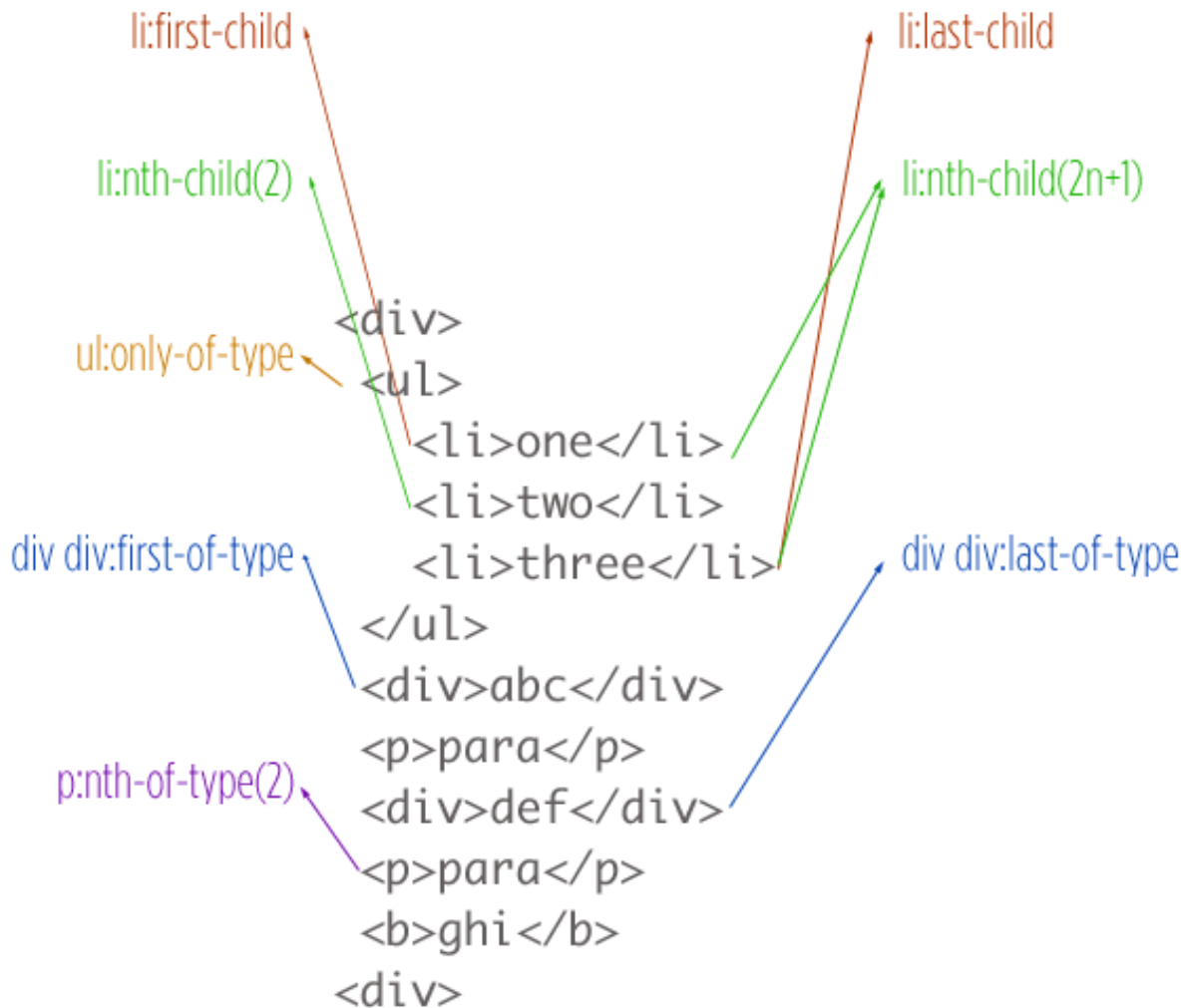
CSS3 selectors – pseudo classes

- Structural
 - :root
 - element1:nth-of-type(#) // also use odd & even
element1:nth-last-of-type(#)
 - element1 element2:nth-child(#)
element1 element2:nth-last-child(#)
 - element1:first-of-type
element1:last-of-type
element1:first-child
element1:last-child

CSS3 selectors – pseudo classes

- Structural
 - `element1:only-child`
`element1:only-of-type`
 - `element1:empty`
 - `element1:lang(en)`
 - `element1:not(selector)`

CSS3 selectors – pseudo classes



CSS3 selectors – pseudo classes

- implicit structure in element
 - :first-letter – useful for drop caps
 - :first-line – useful for magazine style lead-in
 - :lang (IE8+)
- selected text
 - ::selection (also use ::-moz-selection for Firefox)

Pseudo-elements

- generated content (pseudo element)
 - :before { content: "..."} }
 - :after {content: "..."} }
- can be any combination of: "text" or attr(key)
- <=IE8
 - supports the single-colon CSS 2.1 syntax (i.e. pseudo-class)
 - does not support the double-colon CSS3 syntax (i.e. pseudo-element)

Browser extensions

- include variations for maximum backwards compatibility
- -webkit-`<property>` - Chrome, Safari
- -moz-`<property>` - Firefox
- -o-`<property>` - Opera to v14
- -ms-`<property>` - Internet Explorer
- `<property>`
- Give it a few years after the CSS standard

Exercise

- Follow instructions in Exercises handout for
 - Create a style with :after
 - `css3/image-after.htm`
 - Change the selection style
 - `css3/select-style.htm`
 - Alternate by 2s and 3s in bullet lists
 - `css3/alternating-rows.htm`



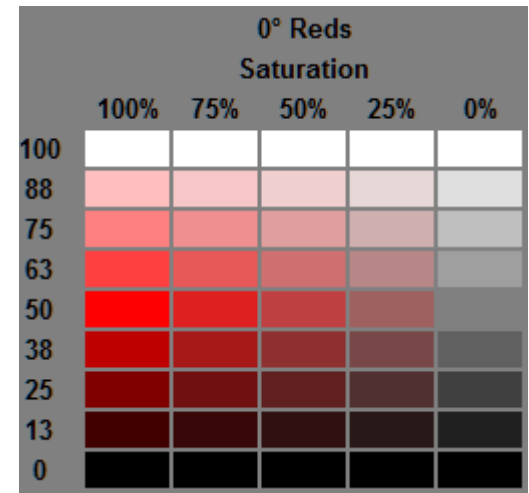
CSS3 colors & effects

CSS Colors

- #3e3e3e (RRGGBB)
 - #213
- rgb(40, 40, 40)
- **hsl(0, 0%, 25%)** – IE9+
- grey

Colors & opacity

- HSL
 - hue – 0 to 360, starting at red
 - saturation – 0% - 100%, starting at no gray
 - lightness – 0% - 100%, starting at black, 50% is normal
- RGBA, HSLA
 - alpha – 0% - 100%, starting at transparent
 - IE9+



Colors



- `<div style="background: rgba(255, 0, 0, 0.2);"></div>`
`<div style="background: rgba(255, 0, 0, 0.4);"></div>`
`<div style="background: rgba(255, 0, 0, 0.6);"></div>`
`<div style="background: rgba(255, 0, 0, 0.8);"></div>`
`<div style="background: rgba(255, 0, 0, 1) ;"></div>`



- `<div style="background: rgb(243, 191, 189);"></div>`
`<div style="background: rgb(246, 143, 142);"></div>`
`<div style="background: rgb(249, 95 , 94) ;"></div>`
`<div style="background: rgb(252, 47, 47) ;"></div>`
`<div style="background: rgb(255, 0, 0) ;"></div>`

Colors - names

- Basic - aqua, black, blue, fuchsia, gray, green, lime, maroon, navy, olive, purple, red, silver, teal, white, and yellow
- Extended - antiquewhite, aqua, aquamarine, azure, beige, bisque, black, blanchedalmond, blue, blueviolet, brown, burlywood, cadetblue, chartreuse, chocolate, coral, cornflowerblue, cornsilk, crimson, cyan, darkblue, darkcyan, darkgoldenrod, darkgray, darkgreen, darkgrey, darkkhaki, darkmagenta, darkolivegreen, darkorange, darkorchid, darkred, darksalmon, darkseagreen, darkslateblue, darkslategray, darkslategrey, darkturquoise, darkviolet, deeppink, deepskyblue, dimgray, dimgrey, dodgerblue, firebrick, floralwhite, forestgreen, fuchsia, gainsboro, ghostwhite, gold, goldenrod, gray, green, greenyellow, grey, honeydew, hotpink, indianred, indigo, ivory, khaki, lavender, lavenderblush, lawngreen, lemonchiffon, lightblue, lightcoral, lightcyan, lightgoldenrodyellow, lightgray, lightgreen, lightgrey, lightpink, lightsalmon, lightseagreen, lightskyblue, lightslategray, lightslategrey, lightsteelblue, lightyellow, lime, limegreen, linen, magenta, maroon, mediumaquamarine, mediumblue, mediumorchid, mediumpurple, mediumseagreen, mediumslateblue, mediumspringgreen, mediumturquoise, mediumvioletred, midnightblue, mintcream, mistyrose, moccasin, navajowhite, navy, oldlace, olive, olivedrab, orange, orangered, orchid, palegoldenrod, palegreen, paleturquoise, palevioletred, papayawhip, peachpuff, peru, pink, plum, powderblue, purple, red, rosybrown, royalblue, saddlebrown, salmon, sandybrown, seagreen, seashell, sienna, silver, skyblue, slateblue, slategray, slategrey, snow, springgreen, steelblue, tan, teal, thistle, tomato, turquoise, violet, wheat, white, whitesmoke, yellow, yellowgreen

Opacity

- same values as alpha: 0% - 100%
 - opacity: 0.5;
- changes all child elements
 - different than alpha in color

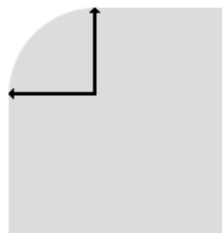
Rounded Corners

- border-radius: ##px
 - border-top-left-radius: ##px; border-top-right-radius: ##px;
border-bottom-right-radius: ##px; border-bottom-left-radius: ##px;

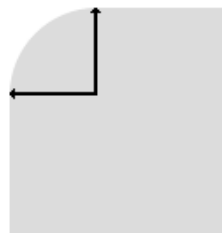


Rounded Corners - unequal

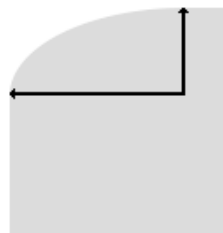
- `border-radius: ##px / ##px;`
 - horizontal / vertical radius
- `border-radius: ##px ##px ##px ##px / ##px ##px ##px ##px ;`



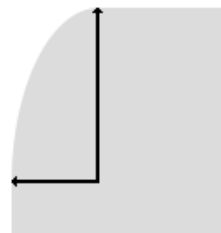
`border-top-left-radius: 50px;`



`border-top-left-radius: 50px 50px;`



`border-top-left-radius: 100px 50px;`



`border-top-left-radius: 50px 100px;`

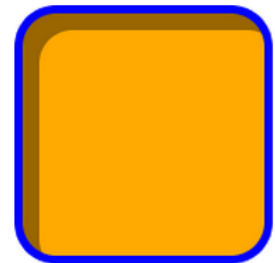
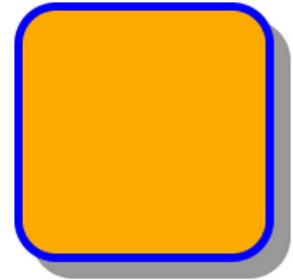
<HTML5> &
{CSS3}

Filters

- manipulate the color and shape by blur, brightness, contrast, drop-shadow, grayscale, hue-rotate, invert, opacity, saturate, sepia
 - <http://html.adobe.com/webplatform/graphics/customfilters/>
 - Not old IE 'filter' property
- SVG object filters : > IE9
- CSS filters like SVG: >Edge 12
- SVG transforms, filters with CSS: > IE8

Drop shadows

- box-shadow: inset #px #px # # rgba(##,##,##,##)
 - inset – optional
 - 1st – horizontal offset
 - 2nd – vertical offset
 - 3rd – optional, blur distance
 - 4th – optional , spread distance, pos or neg
 - 5th – recommended, color of shadow
- inset shadow effect
 - box-shadow: inset #px...



Drop shadows

- Multiple shadows, use comma between
 - ```
form {
 -webkit-box-shadow:
 inset 1px 1px 84px rgba(0,0,0,0.24), inset -1px -1px 84px
 rgba(0,0,0,0.24);
 -moz-box-shadow:
 inset 1px 1px 84px rgba(0,0,0,0.24), inset -1px -1px 84px
 rgba(0,0,0,0.24);
 box-shadow:
 inset 1px 1px 84px rgba(0,0,0,0.24), inset -1px -1px 84px
 rgba(0,0,0,0.24); }
```
- Images do a better job but
  - aren't reusable
  - require bandwidth

# Text shadows

- `text-shadow: #px #px # rgba(##,##,##,##)`
  - 1<sup>st</sup> – horizontal offset
  - 2<sup>nd</sup> – vertical offset
  - 3<sup>rd</sup> – optional, blur distance
  - 4<sup>th</sup> – recommended, color of shadow
- multiple shadows, use comma
- IE9 does not support
- @supports
  - example: `text/shadows-supports.html`



Drop Shadows



Multiple shadows are Hot

# CSS3 - Web sites

- Codrops tutorials HTML5 / CSS3 effects - <http://tympanus.net/codrops/category/tutorials/>
  - Background full size, slideshow - <http://tympanus.net/codrops/2012/01/02/fullscreen-background-image-slideshow-with-css3/>
- Menus, buttons
  - CSS Menu Maker - <http://css3menu.com/>
  - CSS Round/Shadowed Buttons - <http://cssround.com/>

# Exercise

- Follow instructions in Exercises handout for
  - 14. Contrast opacity and transparency
    - `css3/opacity-transparency.htm`
  - 15. Buttons with rounded corners and shadows
    - `css3/css3-buttons.htm`





Chapter 7

# CSS3 Gradients and Backgrounds

# Gradients

---

- smooth transitions between start and stop colors
- color stops are intermediate colors at a specified position
- use anywhere a background would be used
- two types
  - linear
  - radial



# Gradients - linear


- two different syntaxes becoming one W3C standard
  - recommended to use vendor prefixes
- Smooth transitions or stripes
- IE9 can use SVG
  - Scalable vector graphics is an XML language
- IE can use filters for linear gradients only



# Gradients - linear

- Code generation tool
  - <http://www.colorzilla.com/gradient-editor/>
    - SCSS, import file to use
- Other tools
  - [John Allsopp](#)
  - [Damian Galarza](#) - generator
  - [Paul Irish](#) – CSS3, please

Preview



Orientation:  Size:  x  ☒ IE

CSS

```
background: rgb(255,255,255); /* Old browsers */
background: -moz-linear-gradient(top,
 rgba(255,255,255,1) 0%, rgba(0,0,0,1) 99%); /*
 FF3.6+ */
background: -webkit-gradient(linear, left top, left
 bottom, color-stop(0%,rgba(255,255,255,1)),
 color-stop(99%,rgba(0,0,0,1))); /*
 Chrome, Safari4+ */
background: -webkit-linear-gradient(top,
 rgba(255,255,255,1) 0%,rgba(0,0,0,1) 99%); /*
 Chrome10+, Safari5.1+ */
background: -o-linear-gradient(top,
 rgba(255,255,255,1) 0%,rgba(0,0,0,1) 99%); /*
 Opera11.10+ */
background: -ms-linear-gradient(top,
 rgba(255,255,255,1) 0%,rgba(0,0,0,1) 99%); /*
 IE10+ */
filter: progid:DXImageTransform.Microsoft.gradient(
 startColorstr='#ffffff',
 endColorstr='#000000',GradientType=0); /* IE6-9
 */
background: linear-gradient(top,
 rgba(255,255,255,1) 0%,rgba(0,0,0,1) 99%); /*
 W3C */
```

# Gradients - repeating

- `repeating-linear-gradient( )`
- `repeating-radial-gradient( )`
- same syntax as non-repeating

# Background – multiple images

---

- Compose a background from multiple images
  - to reduce bandwidth using smaller files
  - to change position of images independent of each other (parallax effects)
- Before:
  - nested divs with backgrounds

# Background – multiple images

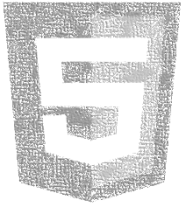
- After
  - background-image:  
url(firstImage.jpg) no-repeat x-position y-position,  
url(secondImage.gif),  
url(thirdImage.png);
  - background-image:  
url(firstImage.jpg), url(secondImage.gif),  
url(thirdImage.png);  
background-repeat: no-repeat, repeat, repeat;  
background-position: left top, 0 0, 50% 50%
- 1st is top image, last is bottom image

# background-size

- when included in background declaration, not supported
- -prefix-background-size: 100px, auto; (100 wide, proportionate height)
- -prefix-background-size: cover; (fills but overflows)
- -prefix-background-size: contain; (fits, no overflow)

| Value      | Description                                                                                                                                                                                                   |
|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| length     | Sets the height and width of the background image. The first value sets the width, the second value sets the height. If only one value is given, the second is set to "auto"                                  |
| percentage | Sets the height and width of the background image in percent of the parent element. The first value sets the width, the second value sets the height. If only one value is given, the second is set to "auto" |
| cover      | Scale the image to the smallest size such that both its width and its height can fit inside the content area                                                                                                  |
| contain    | Scale the image to the largest size such that both its width and its height can fit inside the content area                                                                                                   |





# Exercise

- Follow instructions in Exercises handout for
  - 16. Use gradients
    - `css3/gradients.htm`



Chapter 8

# CSS3 Transforms and Transitions

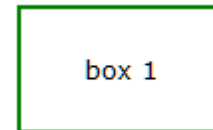
# Transforms

---

- Move (translate), scale, rotate, skew
- Supports 2D and 3D
- Additive
  - transform: translate(##) scale(#) rotate(#) skew(##);
  - applied in order
- Does not reflow text
- Needs vendor prefixes
- 2D – no IE8, uses filters
- 3D – no IE9 and no nesting at all.

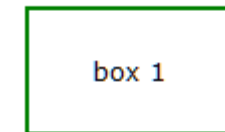
# Translate

- Measured from left top
- Use block or inline-block elements in WebKit
- Move from current position with
  - `transform: translate(x, y);`
  - `transform: translateX(#);`
  - `transform: translateY(#);`



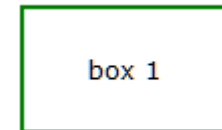
# Scale

- Scales from center of element by default
  - change with transform-origin
- Use percentage (1.5 or 150%)
- Grow/shrink from current position with
  - `transform: scale(#);` // proportional x & y
  - `transform: scale(x, y);`
  - `transform: scaleX(#);`
  - `transform: scaleY(#);`



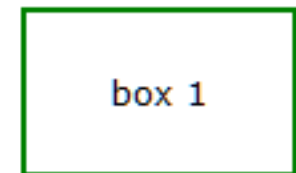
# Rotate

- Rotates from center (+clockwise, -countercw)
- Use degrees, grads, radians, or turns
- Rotate from current position with
  - transform: rotate(#deg);
- IE6, 7, 8 requires a filter
  - use a tool to get values like [css3please](#)



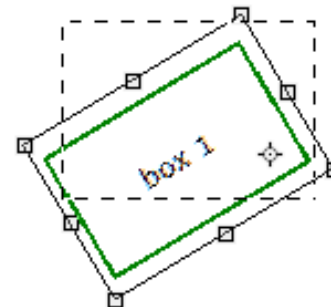
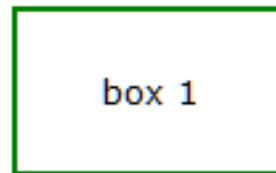
# Skew

- Skews from center of element
- Use degrees, grads, radians, or turns
- Skew from current position with
  - `transform: skew(#deg, #deg)`
  - `transform: skew(#deg)` or `transform: skewX(#deg)`
  - `transform: skewY(#deg)`



# Changing the origin

- The point which is nailed down
- Change the origin with respect to left top
  - `transform-origin: #px #px;`





# Tools - Transformations

- John Allsopp's CSS3 transform tool
  - <http://westciv.com/tools/transforms/index.html>
- Matthew Lein's Easing Animation tool
  - <http://matthewlein.com/ceaser/>

# Demo - transforms

- Unfolding the Box - a demo of transforms
  - <http://rupl.github.io/unfold/>
- Magic - a library of transforms
  - [http://minimamente.com/example/magic\\_animations](http://minimamente.com/example/magic_animations)

# Transitions

- Transitions follow the pattern of
  - -prefix-transition: property duration timingFunction <delay>;
- Properties are
  - all, opacity, zoom,
- Duration is in #s (seconds)
- Timing functions can be
  - ease (default), ease-in, ease-out, ease-in-out (popular)
- Delays are in #s also.

# Demos - animation

- 2011 Madmanimation “movie” demo
  - <http://stuffandnonsense.co.uk/content/demo/madmanimation/>
- Hyperspace effect demo
  - <http://codepen.io/noahblon/full/GKflw>

# Animation - CSS effects libraries

- Cloud-eight element animations
  - <http://www.cloud-eight.com/github/animations/>
- Animate.css
  - <http://daneden.me/animate/>
- Effeckt.css (Paul Irish)
  - <https://github.com/h5bp/Effeckt.css>
- LESS mixins
- SpinKit - animated icons when loading page|file
  - <http://tobiasahlin.com/spinkit/>

# Exercise

- Follow instructions in Exercises handout for
  - 17. Create overlapping Polaroids
    - `image-effects/polaroids.htm`



# Web Fonts

# Web loaded fonts

---

- Old school
  - Arial, Verdana, Times, Georgia fonts loaded from client
  - enhance with images to use other fonts
- Old workarounds
  - sIFR, Cufón – loaded from web, processed outside of browser
- Best way
  - CSS3's @font-face loaded from CDN, requested by browser
    - also can be locally loaded from web server



# Two choices

- Use content hosting service
  - You don't want to create all the font versions.
  - You want a simple link and CSS
  - You want lots of font options.
- Host fonts yourself
  - You own the fonts.
  - You need a font that is not available publicly.
  - You aren't always online.

# Implementing @font-face

---

- The "at-rule"
  - maybe you've seen the `@import url(otherStyleSheet.css)`
  - a group of CSS engine processing instructions
- For each face use a declaration
  - `@font-face {`
    - `font-family: 'fontName';`
    - `src: source;`
    - `font-weight: weight;`
    - `font-style: style; }`

## @font-face { font-family: ...

- Not the real font name, but one you or the OS give it.
  - a programming variable
- Link to font file in the src: descriptor
- @font-face {  
    font-family: Gentium;  
    src:  
    url(http://example.com/fonts/Gentium123.ttf); }
- p { font-family: Gentium, serif; }

# @font-face { src:

- Use multiple sources separated by commas
  - First one matched wins
- src: url('fontName.???') format('?????'),  
url('fontName.???') format('?????')
- Formats
  - EOT – proprietary for IE4-8
  - WOFF – Web Open Font Format
  - OTF – OpenType, iPhone 4.2+
  - TTF – TrueType
  - SVG – Scalable Vector Graphics, iPhone <4.2

# Tricking IE8 and before

- Thinks it's given one URL between the first quote to the last quote.
- Fix: Add a query string to the EOT URL
  - `src: url('fontName.eot?#iefix') format('eot'),...`
- Ignores the rest of the text for 99.9% of cases
- The other 0.1%, use a `<head>` tag
  - `<meta http-equiv="X-UA-Compatible" content="IE=Edge">`

# Font properties

- font-variant (small-caps)
- font-weight: bold selects a thicker face in the font-family.



- font-style: italic is the font variant not making it look oblique



Veggieburger Light - Lorem ipsum  
eiusmod tempor incididunt ut la  
quis nostrud exercitation ullamc  
aute irure dolor in reprehenderi  
pariatur. Excepteur sint occaec  
deserunt mollit anim id est labor

Veggieburger Regular - Lorem  
do eiusmod tempor incididunt ut  
veniam, quis nostrud exercitation  
consequat. Duis aute irure dolor  
fugiat nulla pariatur. Excepteu  
officia deserunt mollit anim id est

Veggieburger Bold - Lorem ipsum  
eiusmod tempor incididunt ut  
quis nostrud exercitation ullamc  
aute irure dolor in reprehende  
pariatur. Excepteur sint occaec  
deserunt mollit anim id est labor

# Font properties

- font-stretch – condensed, normal, expanded
  - no Safari yet, TBD

e e **e** e e e e e e

condensed normal expanded

- font-size-adjust – preserving x-height on font fallback
  - only Firefox, experimental Chrome

b b b      b b b

# Font properties

- font-synthesis
  - should the browser oblique and overstrike (synthetic faces)?
  - = style, = weight, or =none



# Font download resources

- [Font Squirrel](#) download kit includes
  - TrueType, EOT, WOFF, SVG, Cufón and fonts
  - Demo.html and stylesheet.css
  - Upload your own and generate kit

Undercover | 1 Font  
[View Font](#) | [View @ff Demo](#) | [Get Kit](#)

UNDERCOVER

Vanilla | 1 Font  
[View Font](#) | [View @ff Demo](#) | [Get Kit](#)

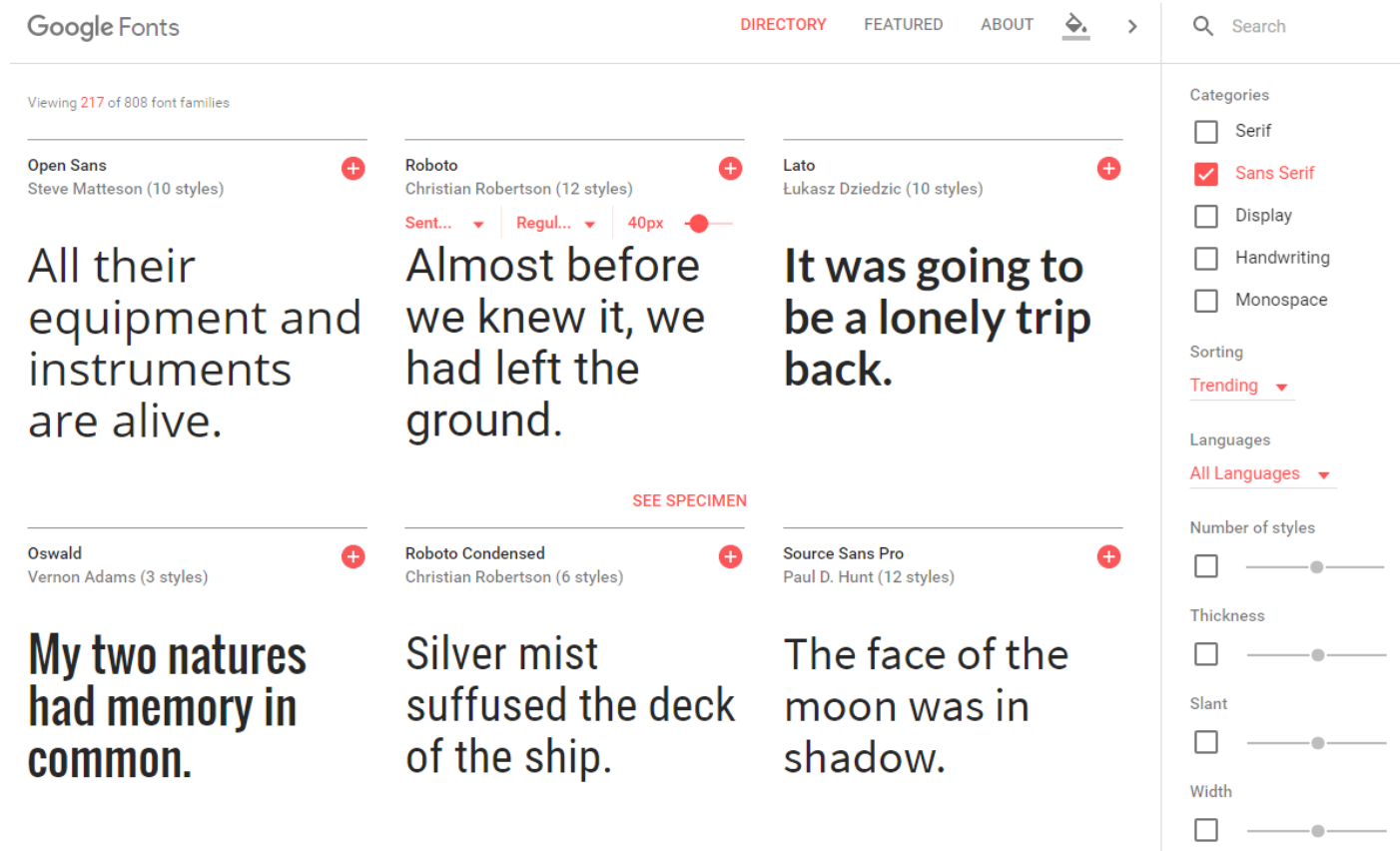
Vanilla AaBb

Veggieburger | 3 Fonts  
[View Font](#) | [View @ff Demo](#) | [Get Kit](#)

Veggieburger A

# Free font service resources

- Google Fonts online - <http://www.google.com/webfonts>



Google Fonts

DIRECTORY FEATURED ABOUT

Viewing 217 of 808 font families

**Open Sans**  
Steve Matteson (10 styles)

All their equipment and instruments are alive.

**Roboto**  
Christian Robertson (12 styles)

Sent... Regul... 40px

Almost before we knew it, we had left the ground.

SEE SPECIMEN

**Lato**  
Łukasz Dziedzic (10 styles)

It was going to be a lonely trip back.

**Oswald**  
Vernon Adams (3 styles)

My two natures had memory in common.

**Roboto Condensed**  
Christian Robertson (6 styles)

Silver mist suffused the deck of the ship.

**Source Sans Pro**  
Paul D. Hunt (12 styles)

The face of the moon was in shadow.

Categories

☐ Serif

☒ Sans Serif

☐ Display

☐ Handwriting

☐ Monospace

Sorting

Trending

Languages

All Languages

Number of styles

Thickness

Slant

Width

Add to Collection

# Free font service resources

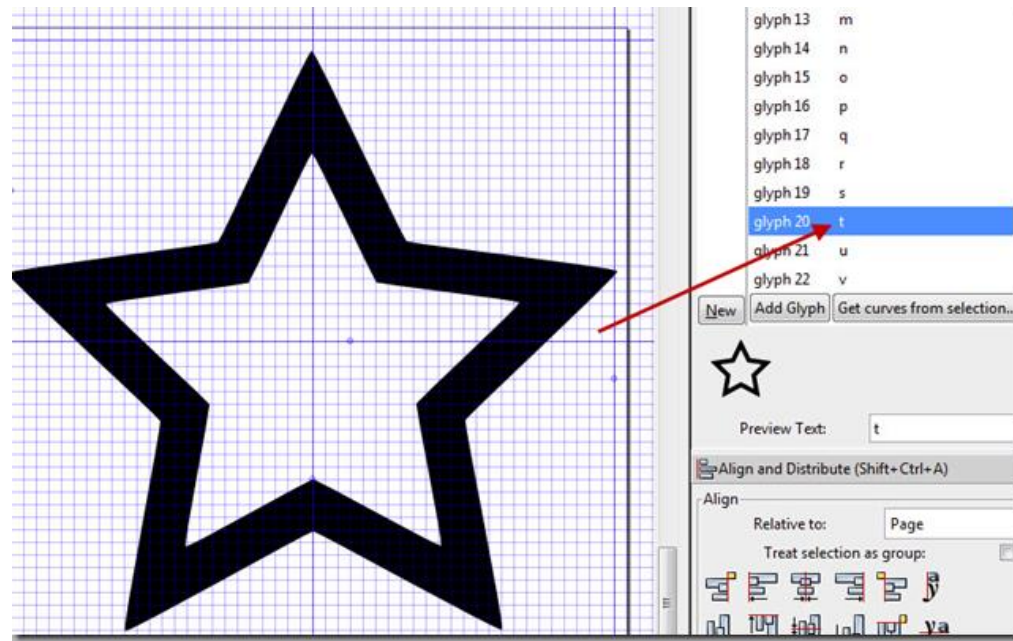
- Adobe Web Fonts – 500+  
<https://edgewebfonts.adobe.com/>
- Paid / free
  - [Typotheque](#), [Webtype](#), [Fontdeck](#), and [Fonts.com](#)

# Web font testing

- Typecast - <http://typecast.com/>
  - link from Google
- Type Wonder - preview font on site
  - <http://typewonder.com>
- Chrome extensions
  - <https://chrome.google.com/webstore/detail/google-font-previewer-for-engndlnldodigdjamndkplafgmkkencc>

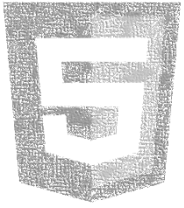
# Using fonts instead of sprites

- Use SVG editor to make initial font file
  - <http://inkscape.org/>
- Convert SVG to a font kit
  - <http://www.fontsquirrel.com/fontface/generator>



# Icon fonts

- Font Awesome - <http://fontawesome.io/icons/>
  - Use <https://cdnjs.com/> to get resource
  - <https://cdnjs.cloudflare.com/ajax/libs/font-awesome/4.6.3/css/font-awesome.min.css>
- Fontello - icon fonts generator, multiple icon fonts - <http://fontello.com/>
- Using fonts as bullets
  - <http://blogs.sitepointstatic.com/examples/tech/icon-bullets/index.html>



# Exercise

- Follow instructions in Exercises handout for
  - 18. Google Web Fonts
    - `html5/web-fonts.html`



# Media queries



# Media queries

---

- Adaptable layouts for mobile devices, print, ...
- @media screen {
  - /\* layout, typography, colors rule sets \*/ }
- @media print {
  - /\* layout, typography, colors rule sets \*/ }
- }

# Media queries

- Two ways
  - `@import url("color.css") screen and (color);`
  - `@media print{ /* styles */ }`  
or
  - `<link rel="stylesheet" href="style.css" media="screen and (color)">`
- Media types
  - all, braille, embossed, handheld, print, projection, screen, speech, tty, tv

# Features

| Value       | Description                                                                                                                                                            |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| width       | Specifies the width of the targeted display area.<br>Example: <code>media="screen and (min-width:500px)"</code>                                                        |
| orientation | Specifies the orientation of the target display/paper.<br>Possible values: "portrait" or "landscape"<br>Example: <code>media="all and (orientation: landscape)"</code> |

Others: height, aspect-ratio, device-height, device-width, device-aspect-ratio, color, color-index, monochrome, resolution, scan, grid

# Feature operators

- and
  - `@media screen and (min-width: 400px) and (max-width: 700px) { ... }`
- not
- ,
  - OR operator
  - `@media handheld and (min-width: 20em), screen and (min-width: 20em) { ... }`
- Only
  - Used to hide style sheets from older browsers

# Responsive web design

- **Change**
  - Layouts – 3 columns → 1 column
  - Fonts – change sizes
  - Images – change size, resolutions
  - Widgets – change type (horizontal nav bar → drop down)
- **Based on**
  - Browser type
  - Screen width
- **Executed by**
  - CSS media queries
  - JavaScript
  - Back end processing

# Exercise

- Follow instructions in Exercises handout for
  - 19. Responsive web design with media queries
    - `media-queries/media-queries.html`

**HTML**



**Other**

# Multicolumns

- Columns dynamically resize by width and length
- <IE9 – no support
- LESS

## VIDEO IS THE FINAL FRONTIER, AND NOW WE HAVE CONQUERED IT!

Aliquam erat volutpat. Mauris vel neque sit amet nunc gravida congue sed sit amet purus. Quisque lacus quam, egestas ac tincidunt a, lacinia vel velit. Morbi ac commodo nulla.

Mauris vel neque sit amet nunc gravida congue sed sit amet purus. Quisque lacus quam, egestas ac tincidunt a, lacinia vel velit. Morbi ac commodo nulla.

Neque sit amet nunc gravida congue sed sit amet purus. Quisque lacus quam, egestas ac tincidunt a, lacinia vel velit. Morbi ac commodo nulla.

## VIDEO IS THE FINAL FRONTIER, AND NOW WE HAVE CONQUERED IT!

Aliquam erat volutpat. Mauris vel neque sit amet nunc gravida congue sed sit amet purus. Quisque lacus quam, egestas ac tincidunt a, lacinia vel velit. Morbi ac commodo nulla.

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# Multicolumns - properties

- column-count: max number of columns allowed, auto will be one.
- column-width: min width of column, used to best fit text
- columns: combines count and width
- column-gap: gutter width
- column-rule: thin solid black (width style color)
- height: setting height will limit vertical size
  - text will overflow, or disappear (overflow:hidden)

# Animation

- @keyframes: IE10+
- @keyframes mymove {  
    from {top:0px;} to {top:200px;} }
- div {  
    animation:mymove 5s infinite;  
    position:relative; }
- CSS3 Animation Cheat Sheet
  - <http://justinaguilar.com/animations>

# Flexbox

- A better table with flow used for layouts
  - 3 syntax styles - old, tweener, new

| IE   | Edge * | Firefox | Chrome | Safari | Opera |
|------|--------|---------|--------|--------|-------|
|      |        |         | 29     |        |       |
|      |        |         | 49     |        |       |
|      |        |         | 50     |        |       |
| 8    | 13     | 47      | 51     |        |       |
| 4 11 | 14     | 48      | 52     | 9.1    | 39    |
|      |        | 49      | 53     | 10     | 40    |
|      |        | 50      | 54     | TP     | 41    |
|      |        | 51      | 55     |        |       |

# Flexbox simple grid

- A table-tr-td layout but with divs and classes
- `<div class="grid">`
  - `<div class="grid-row">`
    - `<div class="grid-item">1</div>`
    - `<div class="grid-item">2</div> ...`
  - `</div>`
  - `<div class="grid-row">...</div>`
- `</div>`

|                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                           |                                                                                                                                                                                                    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
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# Flexbox simple grid CSS

- Row layout
  - `.grid { border: solid 1px #e7e7e7; }`
  - `.grid-row { display: flex; }`
  - `.grid-item { flex: 1; padding: 12px; border: solid 1px #e7e7e7; }`
- Column layout
  - `.grid-row { display: flex; flex-direction: column; }`

# Flexbox responsive grid HTML

- `<div class="grid-row collapse-lt-480 ">`
  - `<div class="grid-item">lorem</div><div class="grid-item"> lorem </div>`
- `</div>`
- `<div class="grid-row collapse-lt-720 ">`
  - `<div class="grid-item"> lorem </div><div class="grid-item"> lorem </div><div class="grid-item"> lorem </div>`
- `</div>`
- `<div class="grid-row collapse-lt-960 ">`
  - `<div class="grid-item"> lorem </div><div class="grid-item"> lorem </div><div class="grid-item"> lorem </div><div class="grid-item"> lorem </div>`
- `</div>`

# Flexbox responsive grid CSS

- @media all and ( min-width: 480px ) {
  - .collapse-lt-480 { flex-direction: row; } }
- @media all and ( min-width: 720px ) {
  - .collapse-lt-720 { flex-direction: row; } }
- @media all and ( min-width: 960px ) {
  - .collapse-lt-960 { flex-direction: row; } }

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# Flexbox - links

- Cheatsheet - <http://www.sketchingwithcss.com/samplechapter/cheatsheet.html>
- CSS-Tricks - <http://css-tricks.com/snippets/css/a-guide-to-flexbox/>
- Smashing - <http://coding.smashingmagazine.com/2013/05/22/centering-elements-with-flexbox/>
- Mozilla - [https://developer.mozilla.org/en-US/docs/Web/Guide/CSS/Flexible\\_boxes](https://developer.mozilla.org/en-US/docs/Web/Guide/CSS/Flexible_boxes)
- Examples (used here) - <http://callmenick.com/post/flexbox-examples>





## Additional APIs

uses  
JAVASCRIPT

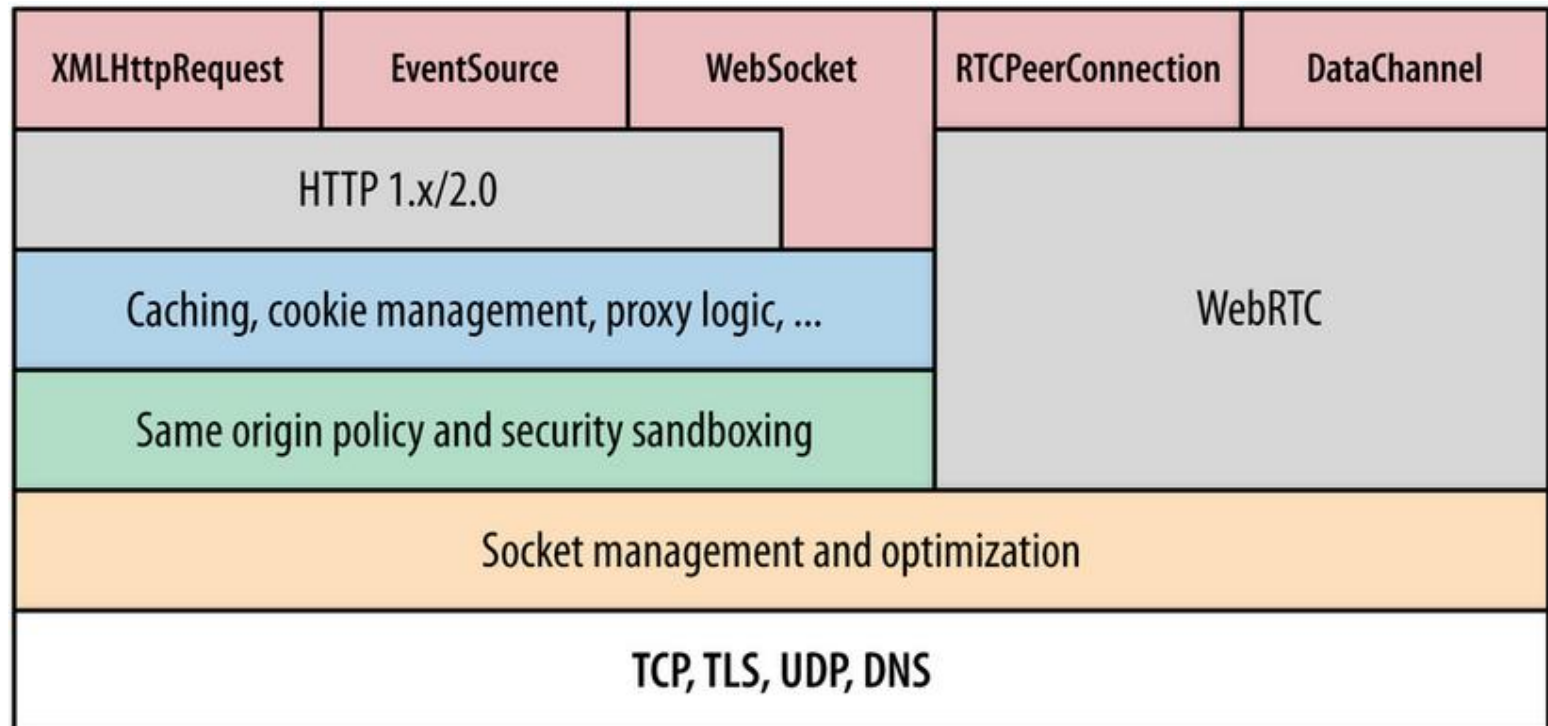
# Web workers

- Concurrent (threaded) JavaScript
- speeds up JS heavy pages
- not supported in Android 4.3, and of course, IE 9
  - 12/2013 - 72%
- based on XMLHttpRequest

# I/O



- Server Sent Events (SSE) - server to client only
- WebRTC (Real Time Comm.) - audio, video, and data sharing between browsers (peers)



# I/O - WebSocket

- bidirectional, message-oriented streaming of text and binary data
- low level, good for custom app protocol messaging
- supported by web servers like IIS...
- not supported in Android browser, and.... IE 9
- JavaScript libraries
  - <http://pusher.com>

# Web components

- Shadow DOM v1
  - optional DOM trees
  - Chrome, Safari only, polyfills available
  - <http://www.html5rocks.com/en/tutorials/webcomponents/shadowdom/>
  - Google Polymer
- HTML Templates – not IE
- Custom Elements – not IE/Edge/Firefox

# Geolocation

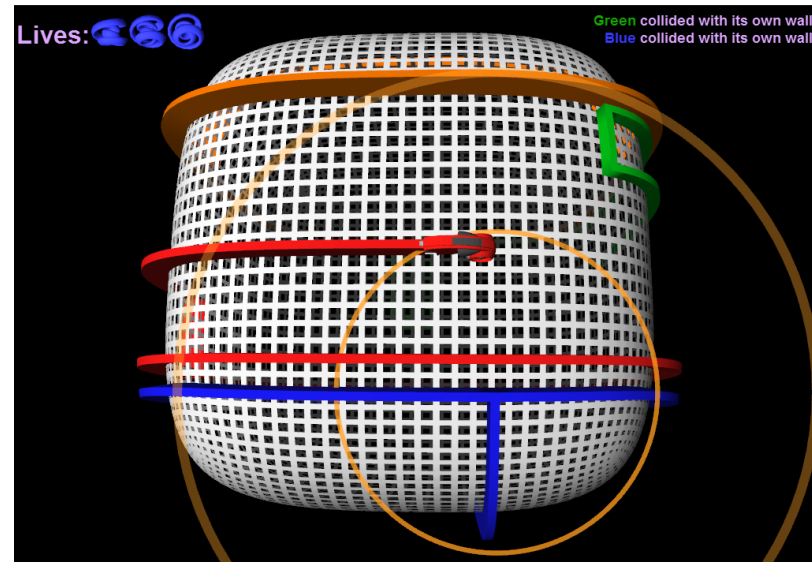
- Requires permission
- Gets current latitude and longitude from device or IP through JavaScript

# Offline apps

- AppCache
- FileAPI
- localStorage
  - Allows storage through different formats
  - Much like a larger cookie.
  - Not complete support yet.

# Canvas

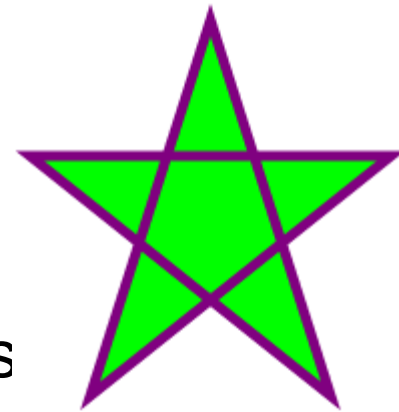
- JavaScript enabled bit-mapped drawing
- speed better than anything except Flash
- Apple developed
- WebGL - 3D JavaScript library, no IE
  - <http://cycleblob.com/>
- <http://hakim.se/experiments>





# SVG

- Scalable Vector Graphics, an XML language
- `<canvas>` is bitmapped, SVG is vector (zoomable)
- `>IE8`
  - filters not supported in IE9 (no sharp edges)
- `<svg height="210" width="500">`
- `<polygon points="100,10 40,198 190,78 10,78 160,198" style="fill:lime;stroke:purple;stroke-width:5;fill-rule:nonzero;"/>`
- `</svg>`



# SVG

- use open source images to borrow
  - <http://www.opencart.org/>
- use a tool to create
  - Inkscape - <http://inkscape.org>
  - SVG Edit (web) - <http://code.google.com/p/svg-edit/>
- use a JavaScript library to interact
  - Raphaël - <http://dmitrybaranovskiy.github.io/raphael/>

# Drag and drop

- not supported in iOS, Opera
- iPad is a major part of the D&D market

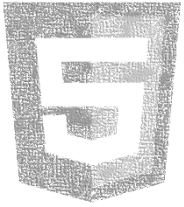
| IE                | Edge <sup>*</sup> | Firefox | Chrome | Safari |
|-------------------|-------------------|---------|--------|--------|
|                   |                   |         | 49     |        |
|                   |                   |         | 63     |        |
|                   |                   | 58      | 64     |        |
| <sup>2 3</sup> 11 | <sup>2</sup> 16   | 59      | 65     | 11     |
|                   | <sup>2</sup> 17   | 60      | 66     | 11.1   |
|                   |                   | 61      | 67     | TP     |
|                   |                   |         | 68     |        |

# Other APIs - no IE/Edge/Firefox support

- CSS Shapes
  - allows text to flow around content by marking where it should be allowed to go (not restricting based on image, etc.).
- HTML Imports
  - a way to include and reuse HTML in other HTML docs. No IE/Edge/Firefox/Safari support.
- Speech Recognition API

# Other APIs – no IE/Edge support

- getUserMedia API
  - provides access to multimedia streams (video, audio, or both) from local devices
- RTCPeerConnection API
  - send data across the Internet
- CSS Masks
- CSS Clip Paths



# Exercises

- 20. Geolocation
- 21. Web storage

**HTML**



**End matter**

# Songs

- HTML5 it is a-changin' – Opera web evangelist Bruce Lawson
  - <http://www.youtube.com/watch?v=7gNmFabAOGc> (2010)
- Web Standards Hoedown - Opera Developer Relations
  - <http://www.youtube.com/watch?v=SFvYhEhFsdQ> (2012)
- CSS3 Song from an Opera Developer Relations employee
  - <http://www.youtube.com/watch?v=5b7dNNapMCM> (2010)



# Evaluation

- <http://mtm.cebglobal.com/centriq1>

