HTML Overview

Elements, Attributes, Entities

R. Scott Granneman & Jans Carton

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The DOM

Slides

The slides for this presentation can be found in CSS Overview (4 MB PDF) ← **Updated** 2015-03-06 to 1.7

Notes

To understand CSS, you have to understand the DOM (Document Object Model). A rendering

CSS Overview

- CSS History
- Why CSS?
- The DOM
- Basic Selectors
- Formatting
- SPAN & DIV
- Integrating CSS
- Inheritance
- Cascading
- Tools

📦 FORMATTING GUIDE

👍	Great!
👎	Don’t
🤮	Horrible
🚫	Broken

Symbol Key

Separation of Concerns

Divide computer program into separate *concerns*, each focusing on a specific resource

Meaning: HTML

Presentation: CSS

Behavior: JavaScript

Note: there are exceptions to each of these!

Semantic HTML

There has been an increased focus by the W3C over the last decade on *semantic HTML*

Semantic HTML is based on the idea that HTML should better help search engines, screen readers, & parsers understand what content *means* on the webpage

Some elements carry a strong semantic meaning, while others carry a (very) weak semantic meaning & are there for developer convenience

`<article>` describes the meaning of the content, while `<div>` is just a box with no meaning

`<strong>` means that the text is strongly emphasized by making it bold, while `<b>` just means make it bold for no particular reason

Semantic

```
<p>
  Shoggoth
</p>
<p>
  Shub-Niggurath
</p>
```

These are 2 paragraphs

Works with CSS

Not semantic

```
<p>
  Shoggoth
<br>
<br>
  Shub-Niggurath
</p>
```

This is 1 paragraph, not 2!

Will cause CSS problems

Why use semantic HTML?

» It’s correct
» Better accessibility
» Easier to read the code
» Helps CSS work correctly
» Search engines & assistive tools like it

<article>

<aside>

<figure>

<footer>

<header>

<nav>

<section>

<details>

<summary>

<time>

HTML5 added many new semantic elements

One of the goals of HTML 5: “paving the cowpaths” or “following the desire lines”

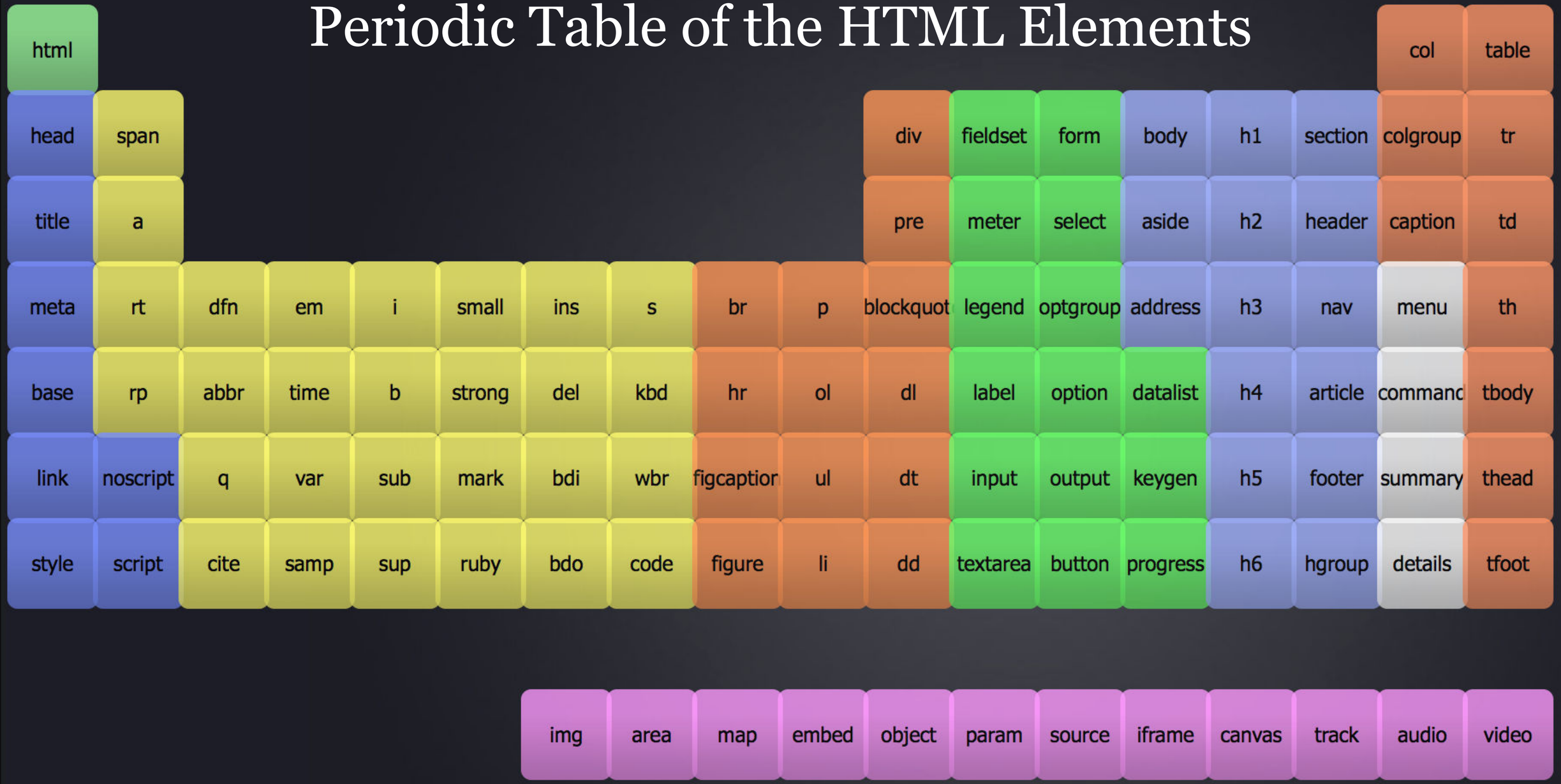
HTML 4.01 Non-semantic	HTML5 Semantic
`<div class="header">`	`<header>`
`<div class="footer">`	`<footer>`
`<div id="nav">`	`<nav>`
`<div id="sidebar">`	`<aside>`

Categorization

HTML 4.01 consists of 91 elements that tell the web browser about the webpage's structure & appearance

HTML5 consists of 115 elements, with 31 obsolete or deprecated

Periodic Table of the HTML Elements



- Root element
- Metadata and scripting
- Embedding content
- Text-level semantics
- Grouping content
- Forms
- Document sections
- Tabular data
- Interactive elements

Ways to categorize HTML elements

- Content categories
- Type
- Function

Content Categories

HTML 4.01 categorized virtually all elements into 1 or 2 categories: *block-level* or *inline*

HTML5 supersedes that simple categorization with a (much) more detailed set of *content categories*

HTML5 *content models* describe the allowed contents of elements

Basically, they determine what elements can correctly go inside other elements

To be technical about it, allowed content can include…

- *Content categories* that group elements with similar characteristics together
- Specific elements
- Specific attributes
- Hierarchy
- Text or embedded multimedia

4.3.10 The `address` element

WHATWG

Categories:

Flow content.
Palpable content.

Content categories

Parents:

Contexts in which this element can be used:

Where flow content is expected.

Children:

Content model:

Flow content but with no heading content descendants, no sectioning content descendants, and no `header`, `footer`, or `address` element descendants.

Tag omission in text/html:

Neither tag is omissible.

Content attributes:

Global attributes

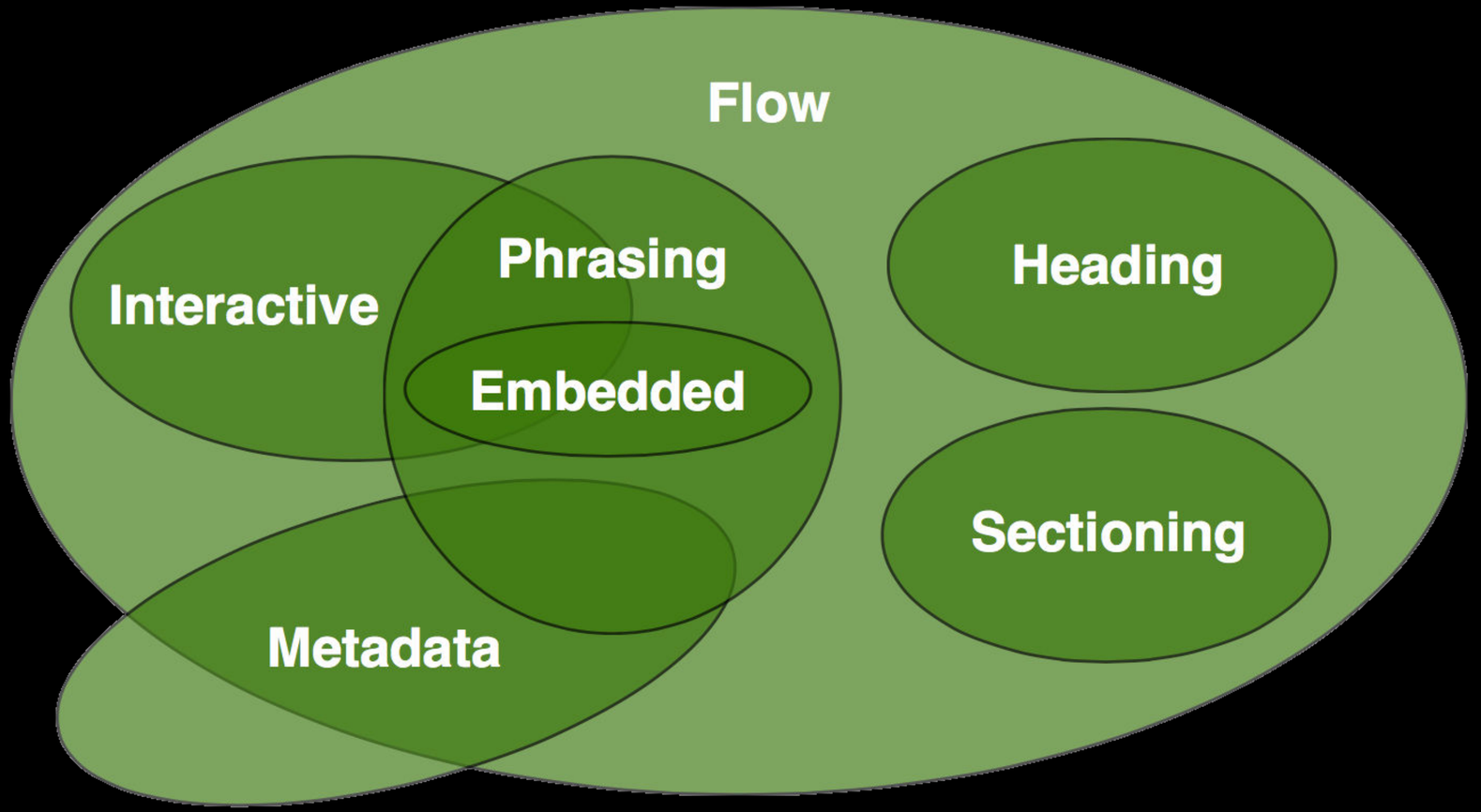
DOM interface:

Uses `HTMLElement`.

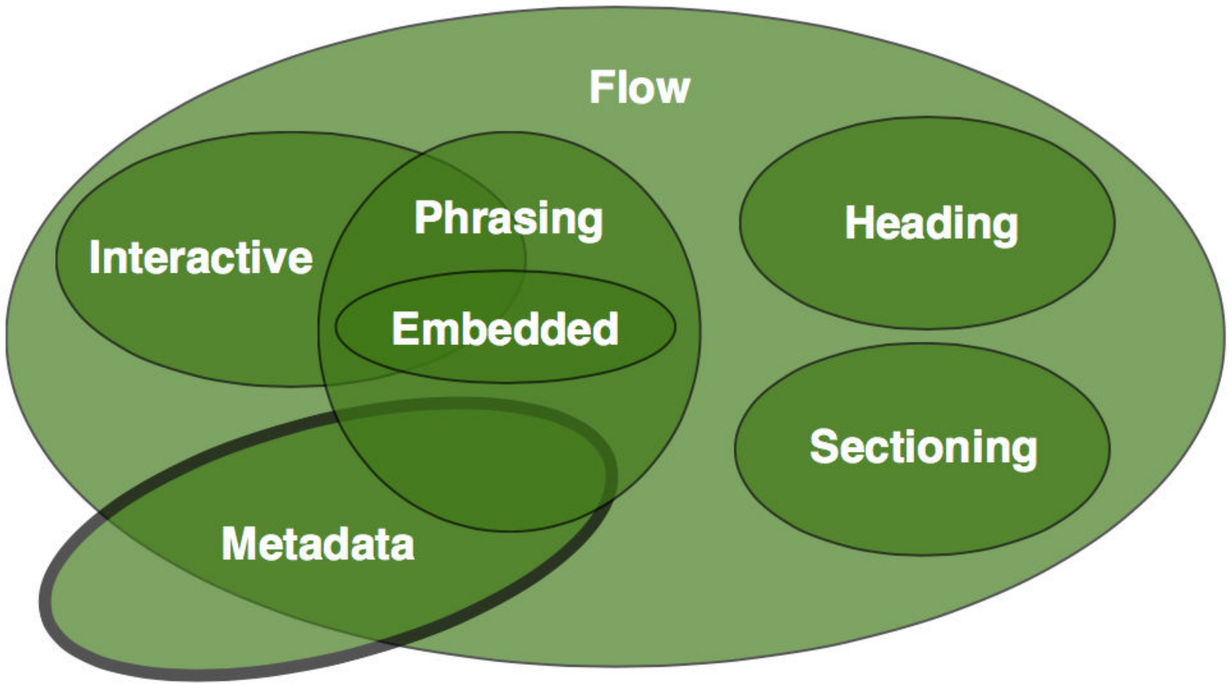
The `address` element represents the contact information for its nearest `article` or `body`

Parents:	Content categories: Flow content, palpable content.
Children:	Permitted content: Flow content, but with no nested `<address>` element, no heading content (`<hgroup>`, `<h1>`, `<h2>`, `<h3>`, `<h4>`, `<h5>`, `<h6>`), no sectioning content (`<article>`, `<aside>`, `<section>`, `<nav>`), and no `<header>` or `<footer>` element.
	Tag omission: None, both the starting and ending tag are mandatory.
	Permitted parent elements: Any element that accepts flow content.
	DOM interface: `HTMLElement` Prior to Gecko 2.0 (Firefox 4), Gecko implemented this element using the `HTMLSpanElement` interface

Content categories

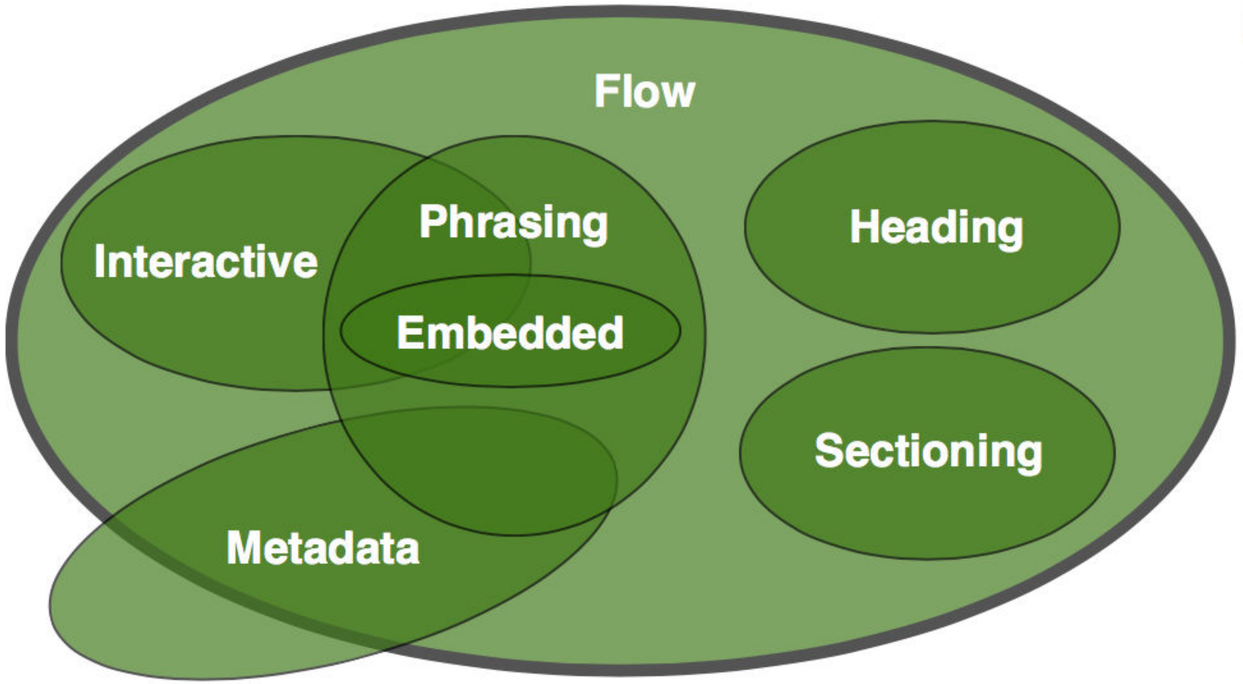


Every HTML element falls into zero or more content categories



Metadata content

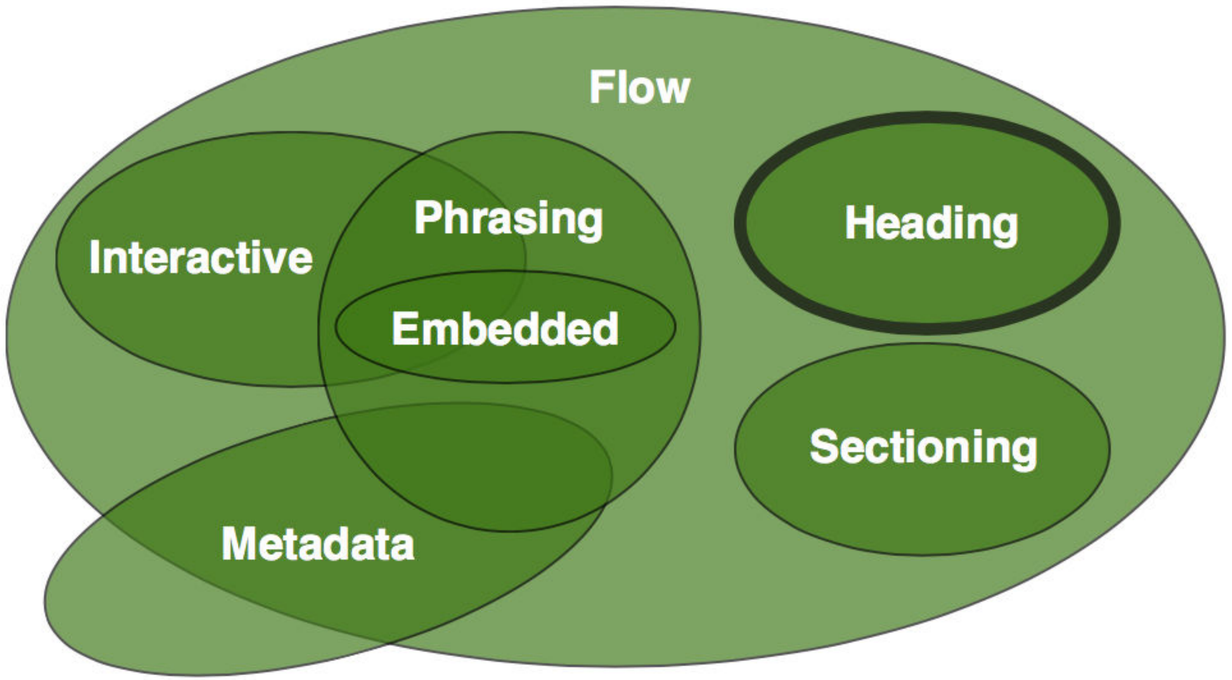
`base`, `link`, `meta`, `noscript`, `script`, `style`, `template`, `title`



Flow content

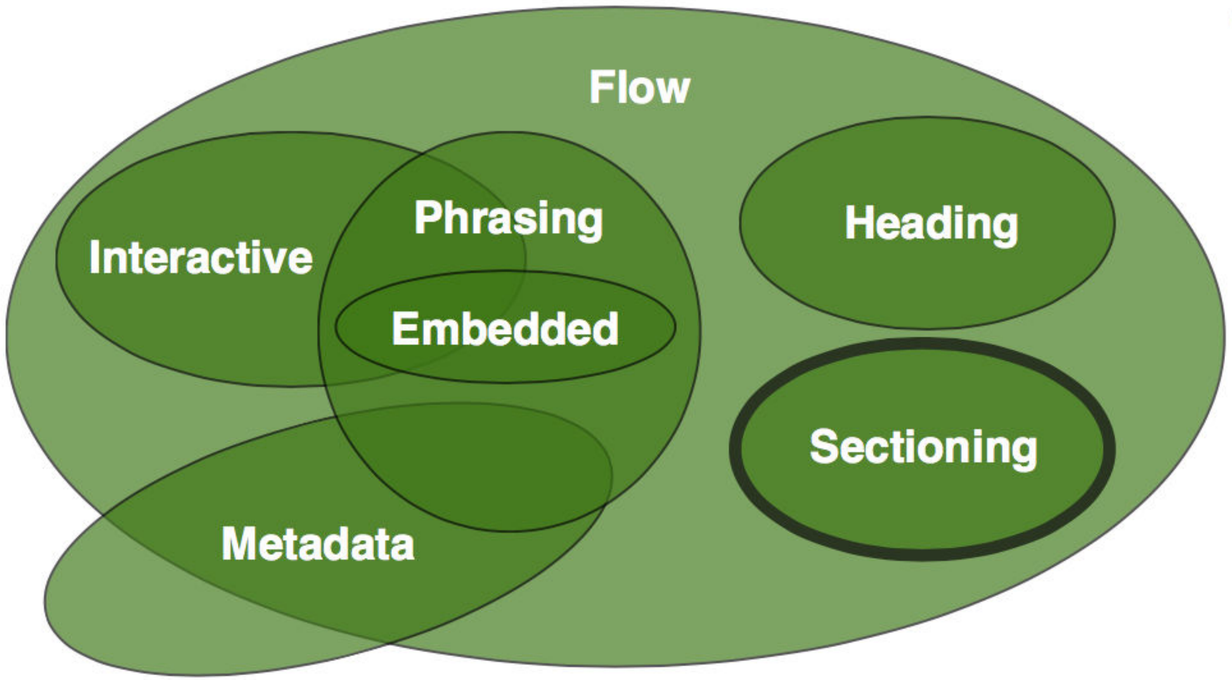
a, abbr, address, area*, article, aside, audio, b, bdi, bdo, blockquote, br, button, canvas, cite, code, data, date, datalist, del, details, dfn, dialog, div, dl, em, embed, fieldset, figure, footer, form, h1, h2, h3, h4, h5, h6, header, hgroup, hr, i, iframe, img, input, ins, kbd, keygen, label, link*, main, map, mark, math, menu, meta*, meter, nav, noscript, object, ol, output, p, pre, progress, q, ruby, s, samp, script, section, select, small, span, strong, style*, sub, sup, svg, table, template, textarea, time, u, ul, var, video, wbr, *Text**

** Under certain circumstances (see prose).*



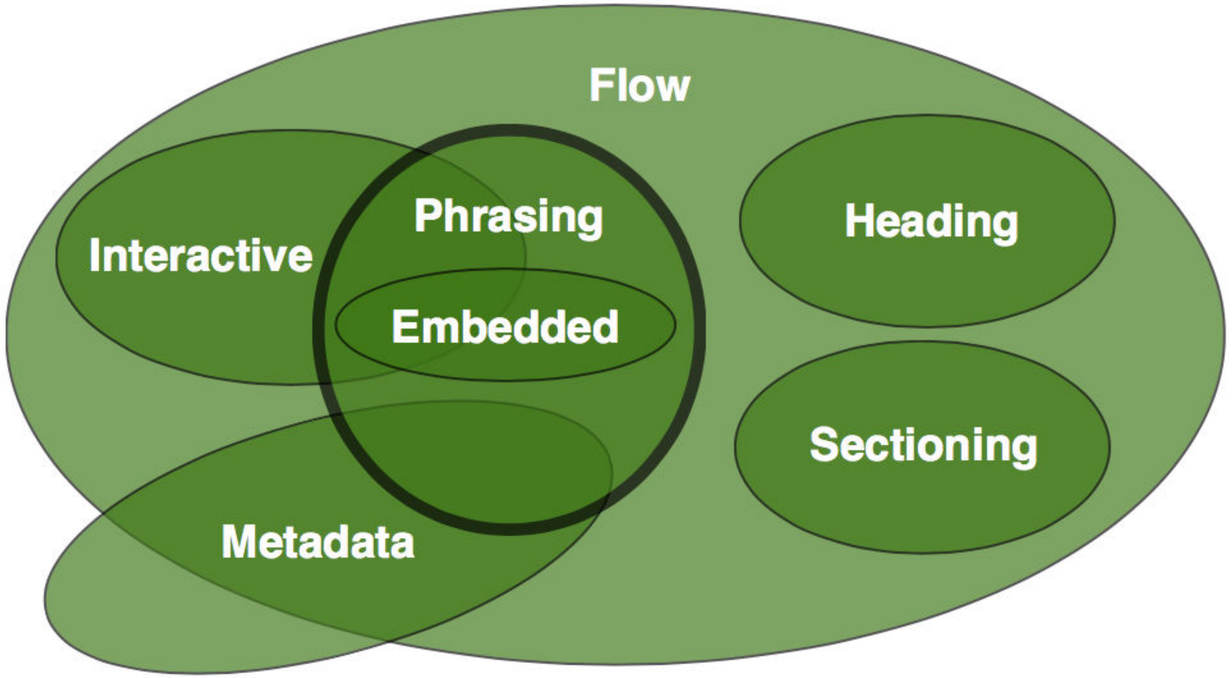
Heading content

`h1`, `h2`, `h3`, `h4`, `h5`, `h6`, `hgroup`



Sectioning content

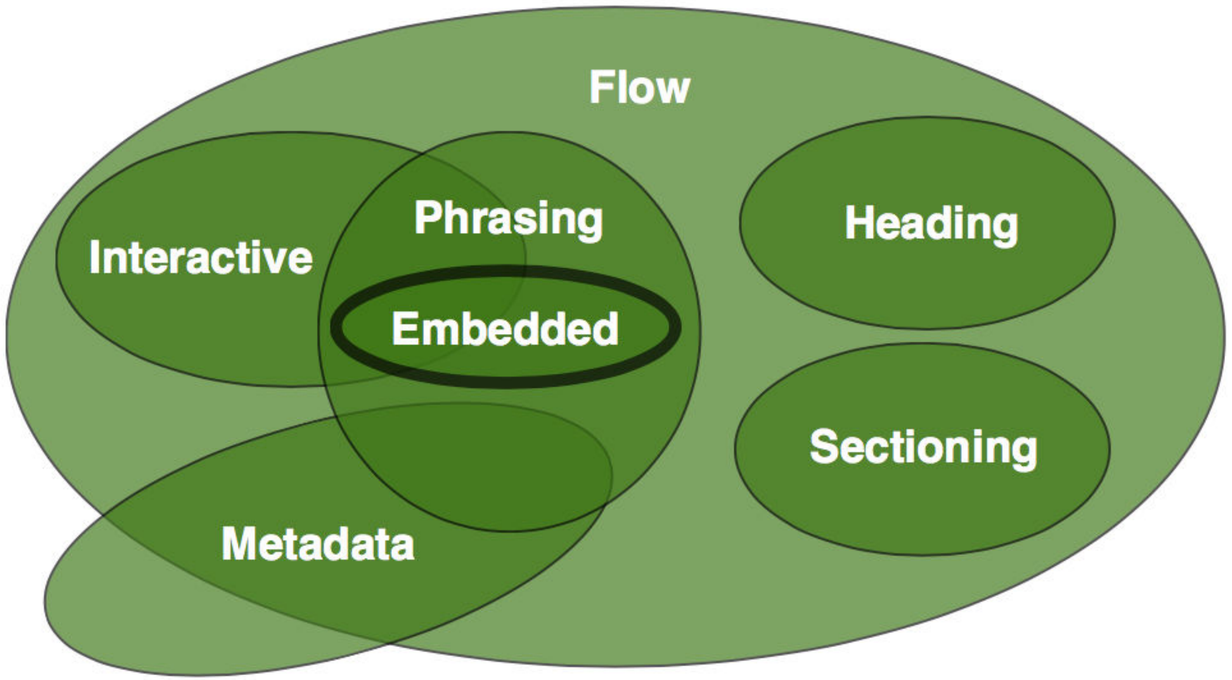
`article`, `aside`, `nav`, `section`



Phrasing content

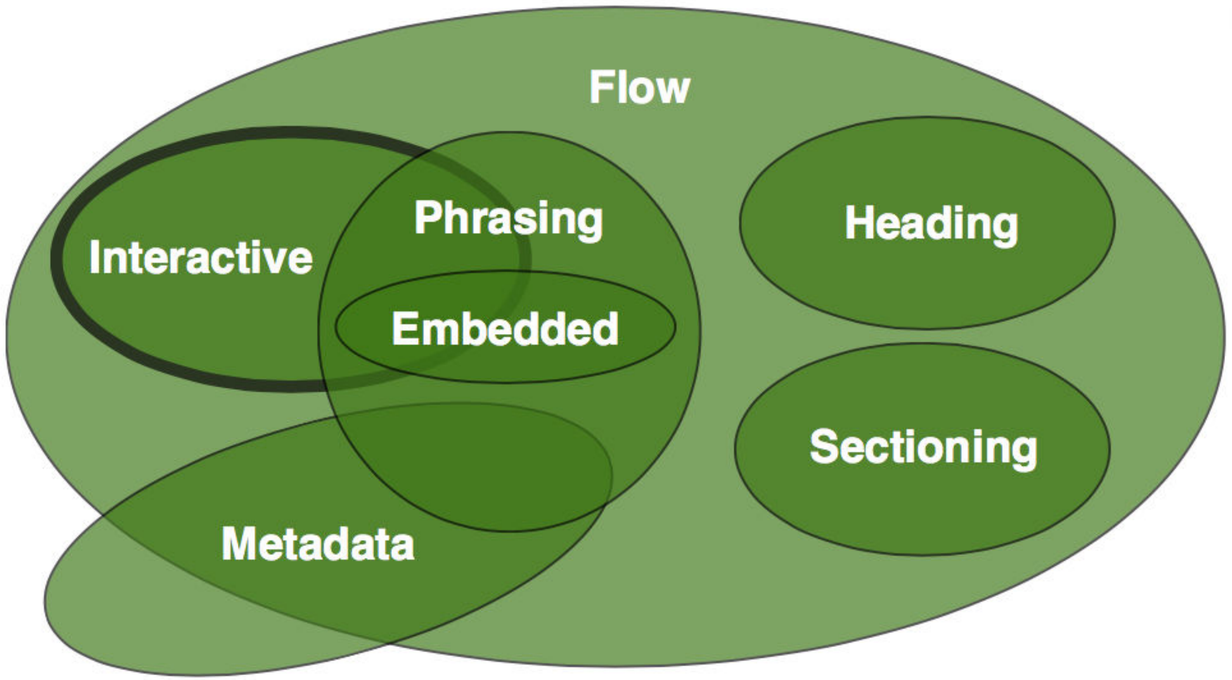
a*, abbr, area*, audio, b, bdi, bdo, br, button, canvas, cite, code, data, date, datalist, del*, dfn, em, embed, i, iframe, img, input, ins*, kbd, keygen, label, link*, map*, mark, math, meta*, meter, noscript, object, output, progress, q, ruby, s, samp, script, select, small, span, strong, sub, sup, svg, template, textarea, time, u, var, video, wbr, *Text**

** Under certain circumstances; see prose.*



Embedded content

`audio`, `canvas`, `embed`, `iframe`, `img`, `math`, `object`, `svg`, `video`



Interactive content

`a`, `audio`*, `button`, `details`, `embed`, `iframe`, `img`*, `input`*, `keygen`, `label`, `object`*, `select`, `textarea`, `video`*

** Under certain circumstances.*

Type

HTML5 spec defines 6 different kinds of elements:

» void elements: `area`, `base`, `br`, `col`, `embed`, `hr`, `img`, `input`, `link`, `meta`, `param`, `source`, `track`, `wbr`
» the `template` element
» raw text elements: `script` & `style`
» escapable raw text elements: `textarea` & `title`
» foreign elements: MathML & SVG
» normal elements: everything else

✏️ SIDE NOTE

Raw text elements can have text

Escapable raw text elements can have text & character references, but text cannot contain “an ambiguous ampersand”

That means you have to use *character encoding* to encode an ampersand as `&` (more on this later)

Function

HTML elements are often grouped by function

WHATWG (maintainers of the HTML Living Standard) & MDN (Mozilla Developer Network) have similar categorizations, with some differences

WHATWG	MDN
Document	Main root
Document metadata	Document metadata
Sections	Sectioning root
	Content sectioning
Grouping	Text content
Text-level semantics	Inline text semantics
Links	
Edits	Demarcating edits

WHATWG	MDN
Embedded content	Image & multimedia
	Embedded content
Tabular data	Table content
Forms	Forms
Interactive elements	Interactive elements
Scripting	Scripting
	Web Components
–	Obsolete & deprecated elements

WHATWG: Embedded

<area>
<audio>
<embed>
<iframe>
<img>
<map>
<object>
<param>
<picture>
<source>
<track>
<video>

MDN: Image & multimedia

<area>
<audio>
<img>
<map>
<track>
<video>

MDN: Embedded content

<embed>
<iframe>
<object>
<param>
<picture>
<source>

In particular, 3 groups are very closely related

Sectioning elements divide the webpage up into areas, e.g., navigation, articles, headings, & footers

Grouping elements group content within sections, e.g., paragraphs, lists, figures, & dividing lines

Text semantic elements add meaning to words & phrases inside a group, e.g., emphasis, bold, code, subscript, & abbreviation

Basic Document Structure

```
<html>

<head>

<body>
```

`<html>` … `</html>`

Root of the HTML document

Tells rendering engines where HTML starts & ends

`<head>` … `</head>`

Contains:

» *Information & metadata* primarily for rendering engines, computers, & searchbots
» *Resources* (CSS & JavaScript) for displaying the page

`<body> ... </body>`

Content that appears in the viewport for humans to see & use

Sectioning root for the content on the webpage (more in *Sectioning* later)

```
<html>
  <head>
    …
  </head>
  <body>
    …
  </body>
</html>
```

Metadata

<title>

<meta>

<base>

<link>

<style>

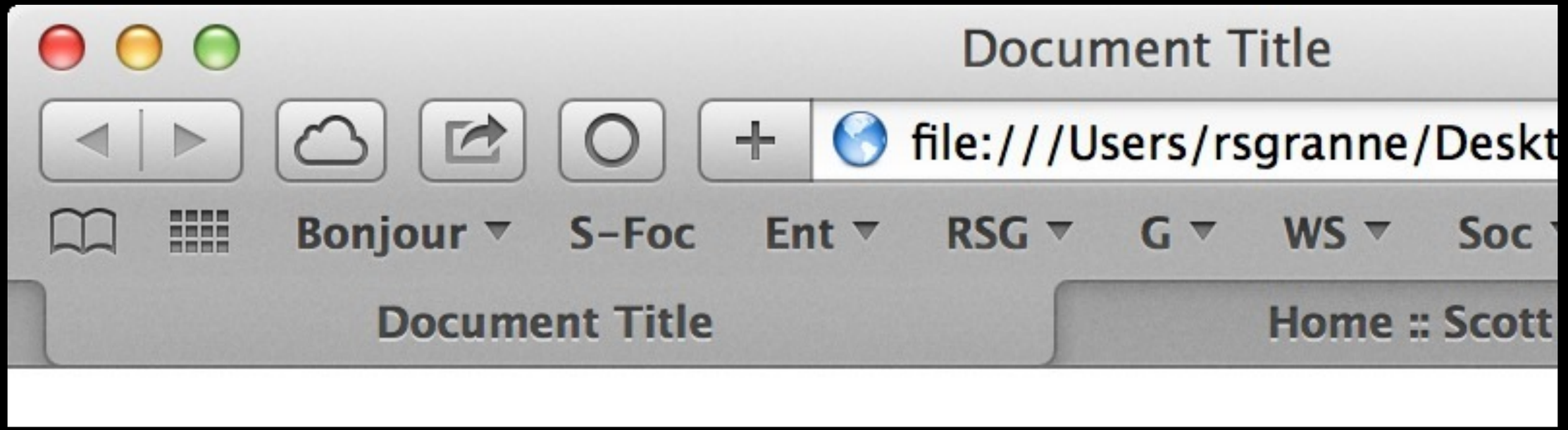
<script>

`<title>` … `</title>`

Title of the webpage used by browsers, computers, & search bots

Appears by default for humans to see in…

» Tab bar
» Bookmarks
» Title bar

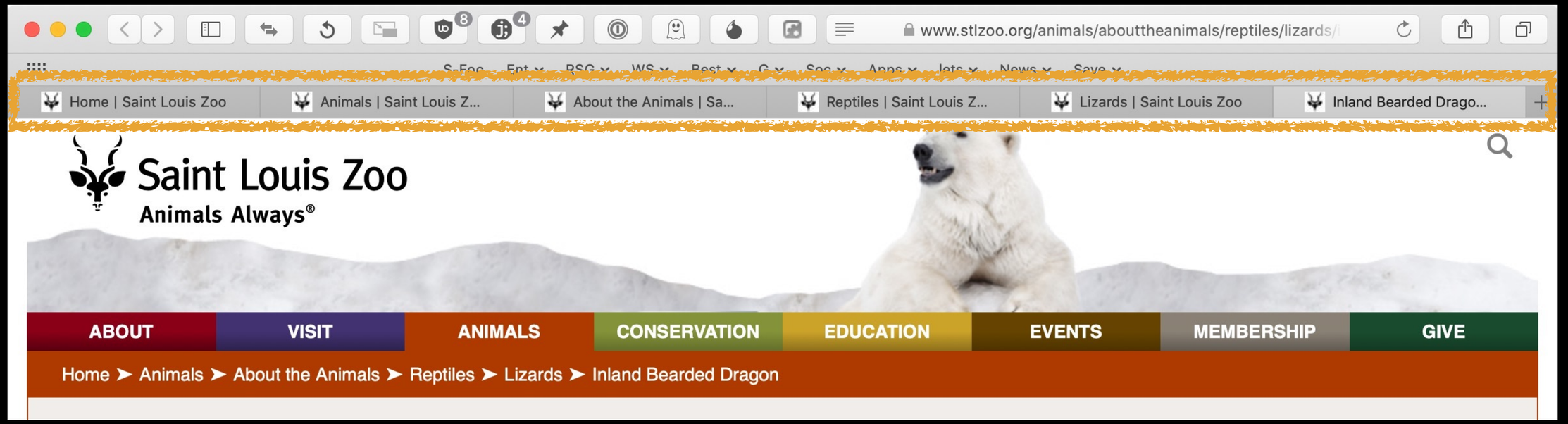



```
<head>
  <title>Document Title</title>
</head>
```

`<title>` should include both the title of the page & the name of the website — for the user & for SEO

Page should go first, then a separator, & then the site

```
<title>Assignments | Scott Granneman</title>
<title>Technology - The New York Times</title>
<title>Site Map :: WebSanity Help</title>
```




```
<title>Animals — Saint Louis Zoo</title>
```

Why the page first & then the site?

So the page title shows up on tabs, not the site

`<meta>`

Specifies *metadata*: information about the document instead of the document content

No closing `</meta>`!

Can have several `<meta>` elements in `<head>`

```
<head>
  <meta charset="utf-8">
  <meta name="description" content="Do NOT
read this!">
  <meta name="viewport" content="width=device-
width, initial-scale=1, shrink-to-fit=no">
</head>
```

Useful but not vital

Use with responsive (later!)

```
<meta name="description" content="The
Necronomicon is a fictional grimoire appearing
in stories by horror writer H. P. Lovecraft
and his followers">
```

Description of the document, used by some search engines

```
<meta name="keywords" content="grimoire, H. P.
Lovecraft, philosophy, history, Cthulhu">
```

Search terms associated with the document, used by very few search engines, so hardly worth including

```
<meta name="description" content="The
Necronomicon is a fictional grimoire appearing
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Description of the document, used by some search engines

```
<meta name="keywords" content="grimoire, H. P.
Lovecraft, philosophy, history, Cthulhu">
```

Search terms associated with the document, used by very few search engines, so hardly worth including

```
apple-itunes-app
bitcoin
contact
creator
designer
google-play-app
googlebot
pinterest
rating
review_date
robots
skype_toolbar
twitter:card
version
```

Possible values for `<meta name="">` taken from the WHATWG Wiki MetaExtensions page, which are in wide use but are not standardized (over 350 listed!)

`<link>`

Specifies *relationships between document & external resources*

More on this later when we get to the Links section

`<style> … </style>`

CSS embedded in the HTML document

You should almost never do this—use linked CSS instead (later!)

`<script>` … `</script>`

JavaScript

More on this later when we get to the *Scripting* section

Attributes & Values

`<h1 align="center">` … `</h1>`

`h1` is an *tag name* (but most people call it an *element*)

`align` is an *attribute*

`center` is a *value*

`align="center"` is an *attribute-value pair*

Attributes can be categorized

» Global
» Limited
» Custom

Global Attributes

Global attributes are attributes common to all elements (even those on which they have no effect!)

At this time, there are ~24 global attributes

CSS: `class`, `id`, `style`

Interactivity: `accesskey`, `draggable`, `hidden`, `tabindex`, `title`, `contenteditable`, `autocapitalize`, `inputmode`, `spellcheck`

I18n (*internationalization*): `dir`, `lang`, `translate`

Microdata: `itemid`, `itemprop`, `itemref`, `itemscope`, `itemtype`

Customization: `data-*`

Accessibility: `aria-*`

Web Components: `is`, `slot`, `part`, `exportparts`

JavaScript event handlers: `on*`

Some of these attributes are complex & require certain elements to really do something

I18n only encompasses 3 attributes — `dir`, `lang`, & `translate` — but it is a very complicated subject

Web Components allow you to combine HTML elements, 4 global attributes (`is`, `slot`, `part`, & `exportparts`), CSS, & JavaScript to create *custom elements* for your web apps — this is not simple stuff!

Let’s look at a few of the simpler global attributes now

The rest will have info about them in the Bonus section at the end of these slides, or will be covered in other presentations

class

id

style

title

`class=""`

Assign *CSS class(es)* to the element

Covered later when we get to CSS

Note: also used with JavaScript

`id=""`

Creates *page fragment* which can be used when linking

Also assigns *CSS ID(s)* to the element

Covered later when we get to CSS & Links

Note: also used with JavaScript

`style=""`

Applies *inline CSS* to the element

Don’t use it—there are better methods

Covered later when we get to CSS

`title=""`

Advisory or descriptive information about the element, e.g.:

» Description of link
» Credits for image
» Footnote
» Information about author

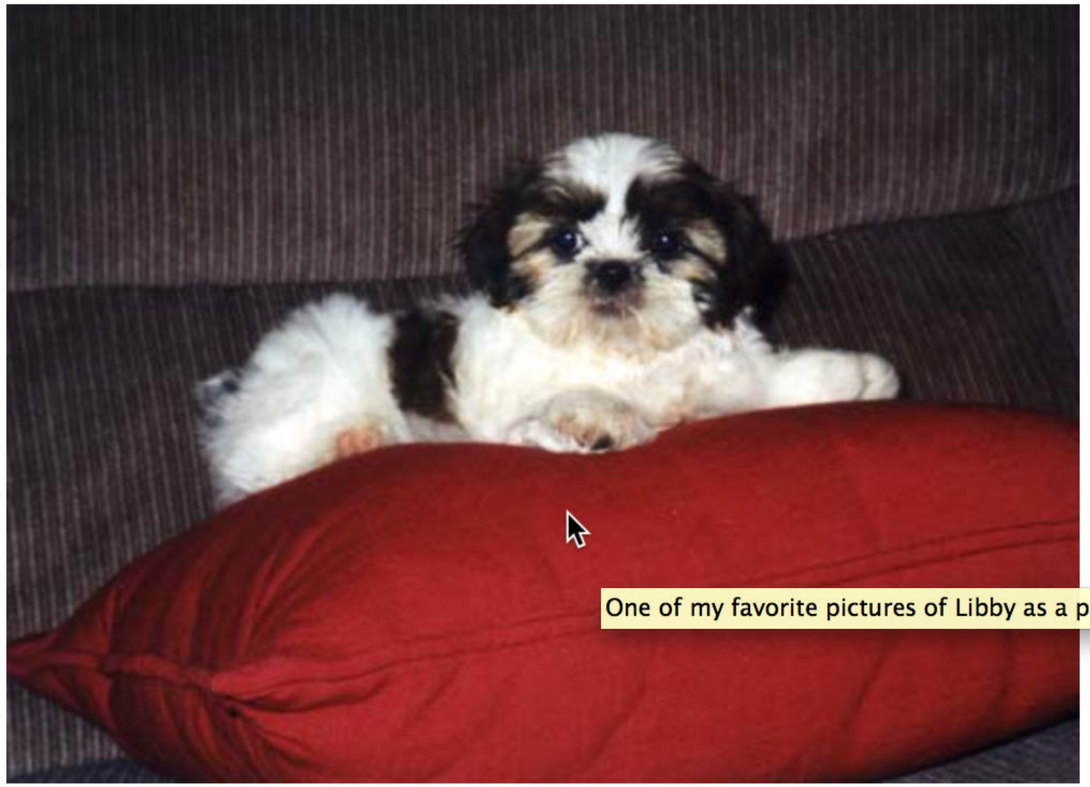
Usually displayed as a tooltip

HTML

```
<figure title="One of my favorite pictures of Libby as a puppy">
  <img src="https://s3-us-west-2.amazonaws.com/s.cdpn.io/122116/Libby.nov98.jpg" width="500" height="363" alt="Libby at 8 weeks old">
  <br><figcaption>Source: <a href="http://granneman.com" title="Taken by Scott Granneman">Scott Granneman</a></figcaption>
</figure>
```

CSS

JS



One of my favorite pictures of Libby as a puppy

Source: Scott Granneman

@karlgroves

If I found a genie and it gave me one wish, it would be that web developers stopped using the title attribute

5:17 PM · Dec 15, 2017

Browser support is problematic!

Tooltips render with small, bad fonts & ugly boxes, & they are un-stylable with CSS so you can’t fix them

Lack of consistency — default tooltips are displayed differently depending upon browser & operating system

For instance, what happens if you use a 5,000-character value for `title`?

HTML

```
<p title="The most merciful thing in the world, I think, is the inability of the human mind to correlate all its contents. We live on a placid island of ignorance in the midst of black seas of infinity, and it was not meant that we should voyage far. The sciences, each straining in its own direction, have hitherto harmed us little; but some day the piecing together of dissociated knowledge will open up such terrifying vistas of reality, and of our frightful position therein, that we shall either go mad from the revelation or flee from the deadly light into the peace and safety of a new dark age.
Theosophists have guessed at the awesome grandeur of the cosmic cycle wherein our world and human
```

CSS (SCSS)

JS

Ph’nglui mglw’nafh Cthulhu R’lyeh wgah’nagl fhtagn!

The most merciful thing in the world, I think, is the inability of the human mind to correlate all its contents. We live on a placid island of ignorance in the midst of black seas of infinity, and it was not meant that we should voyage far. The sciences, each straining in its own direction, have hitherto harmed us little; but some day the piecing together of dissociated knowledge will open up such terrifying vistas of reality, and of our frightful position therein, that we shall either go mad from the revelation or flee from the deadly light into the peace and safety of a new dark age.

Theosophists have guessed at the awesome grandeur of the cosmic cycle wherein our world and human race form transient incidents. They have hinted at strange survivals in terms which would freeze the blood if not masked by a bland optimism. But it is not from them that there came the single glimpse of forbidden aeons which chills me when I think of it and maddens me when I dream of it. That glimpse, like all dread glimpses of truth, flashed out from an accidental piecing together of separated things—in this case an old newspaper item and the notes of a dead professor. I hope that no one else will accomplish this piecing out; certainly, if I live, I shall never knowingly supply a link in so hideous a chain. I think that the professor, too, intended to keep silent regarding the part he knew, and that he would have destroyed his notes had not sudden death seized him.

My knowledge of the thing began in the winter of 1926–27 with the death of my grand-uncle George Gammell Angell, Professor Emeritus of Semitic Languages in Brown University, Providence, Rhode Island. Professor Angell was widely known as an authority on ancient inscriptions, and had frequently been resorted to by the heads of prominent museums; so that his passing at the age of ninety-two may be recalled by many. Locally, interest was intensified by the obscurity of the cause of death. The professor had been stricken whilst returning from the Newport boat; falling suddenly, as witnesses said, after having been jostled by a nautical-looking negro who had come from one of the queer dark courts on the precipitous hillside which formed a short cut from the waterfront to the deceased’s home in Williams Street. Physicians were unable to find any visible disorder, but concluded after perplexed debate that some obscure lesion of the heart, induced by the brisk ascent of so steep a hill by so elderly a man, was responsible for the end. At the time I saw no reason to dissent from this dictum, but latterly I am inclined to wonder—and more than wonder.

As my grand-uncle’s heir and executor, for he died a childless widower, I was expected to go over his papers with some thoroughness; and for that purpose moved his entire set of files and boxes to my quarters in Boston. Much of the material which I correlated will be later published by the American Archaeological Society, but there was one box which I found exceedingly puzzling, and which I felt much averse from shewing to other eyes. It had been locked, and I did not find the key till it occurred to me to examine the personal ring which the professor carried always in his pocket. Then indeed I succeeded in opening it, but when I did so seemed only to be confronted by a greater and more closely locked barrier. For what could be the meaning of the queer clay bas-relief and the disjointed jottings, ramblings, and cuttings which I found? Had my uncle, in his latter years, become

Firefox shows all 5,000 characters

HTML

```
<p title="The most merciful thing in the world, I think, is the inability of the human mind to correlate all its contents. We live on a placid island of ignorance in the midst of black seas of infinity, and it was not meant that we should voyage far. The sciences, each straining in its own direction, have hitherto harmed us little; but some day the piecing together of dissociated knowledge will open up such terrifying vistas of reality, and of our frightful position therein, that we shall either go mad from the revelation or flee from the deadly light into the peace and safety of a new dark age.
Theosophists have guessed at the awesome grandeur of the cosmic cycle wherein our world and human race form transient incidents. They have hinted at strange survivals in terms which would freeze the blood
```

CSS (SCSS)

JS

first of which was headed 1925—Dream and Dream Work of H. A. Wilcox, 7 Thomas St., Providence, R.I., and the second, Narrative of Inspector John R. Legrasse, 121 Bienville St., New Orleans, La., at 1908 A. A. S. Mtg.—Notes on Same, & Prof. Webb's Acct. The other manuscript papers were all brief notes, some of them accounts of the queer dreams of different persons, some of them citations from theosophical books and magazines (notably W. Scott-Elliot's Atlantis and the Lost Lemuria), and the rest comments on long-surviving secret societies and hidden cults, with references to passages in such mythological and anthropological source-books as F...

Ph'nglui mglw'nafh Cthulhu R'lyeh wgah'nagl fhtagn!

Safari shows all 5,000 characters — but starts above the monitor's display area 🙄

HTML

```
<p title="The most merciful thing in the world, I think, is the inability of the human mind to correlate all its contents. We live on a placid island of ignorance in the midst of black seas of infinity, and it was not meant that we should voyage far. The sciences, each straining in its own direction, have hitherto harmed us little; but some day the piecing together of dissociated knowledge will open up such terrifying vistas of reality, and of our frightful position therein, that we shall either go mad from the revelation or flee from the deadly light into the peace and safety of a new dark age.
Theosophists have guessed at the awesome grandeur of the cosmic cycle wherein our world and human race form transient incidents. They have hinted at strange survivals in terms which would freeze the blood
```

CSS (SCSS)

JS

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Theosophists have guessed at the awesome grandeur of the cosmic cycle wherein our world and human race form transient incidents. They have hinted at strange survivals in terms which would freeze the blood if not masked by a bland optimism. But it is not from them that there came the single glimpse of forbidden aeons which chills me when I think of it and maddens me when I dream of it. That glimpse, like all dread glimpses of tr

Brave (Chromium-based) shows 838 characters & then cuts it off

HTML

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<p title="The most merciful thing in the world, I think, is the inability of the human mind to correlate all its contents. We live on a placid island of ignorance in the midst of black seas of infinity, and it was not meant that we should voyage far. The sciences, each straining in its own direction, have hitherto harmed us little; but some day the piecing together of dissociated knowledge will open up such terrifying vistas of reality, and of our frightful position therein, that we shall either go mad from the revelation or flee from the deadly light into the peace and safety of a new dark age.
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CSS (SCSS)

JS

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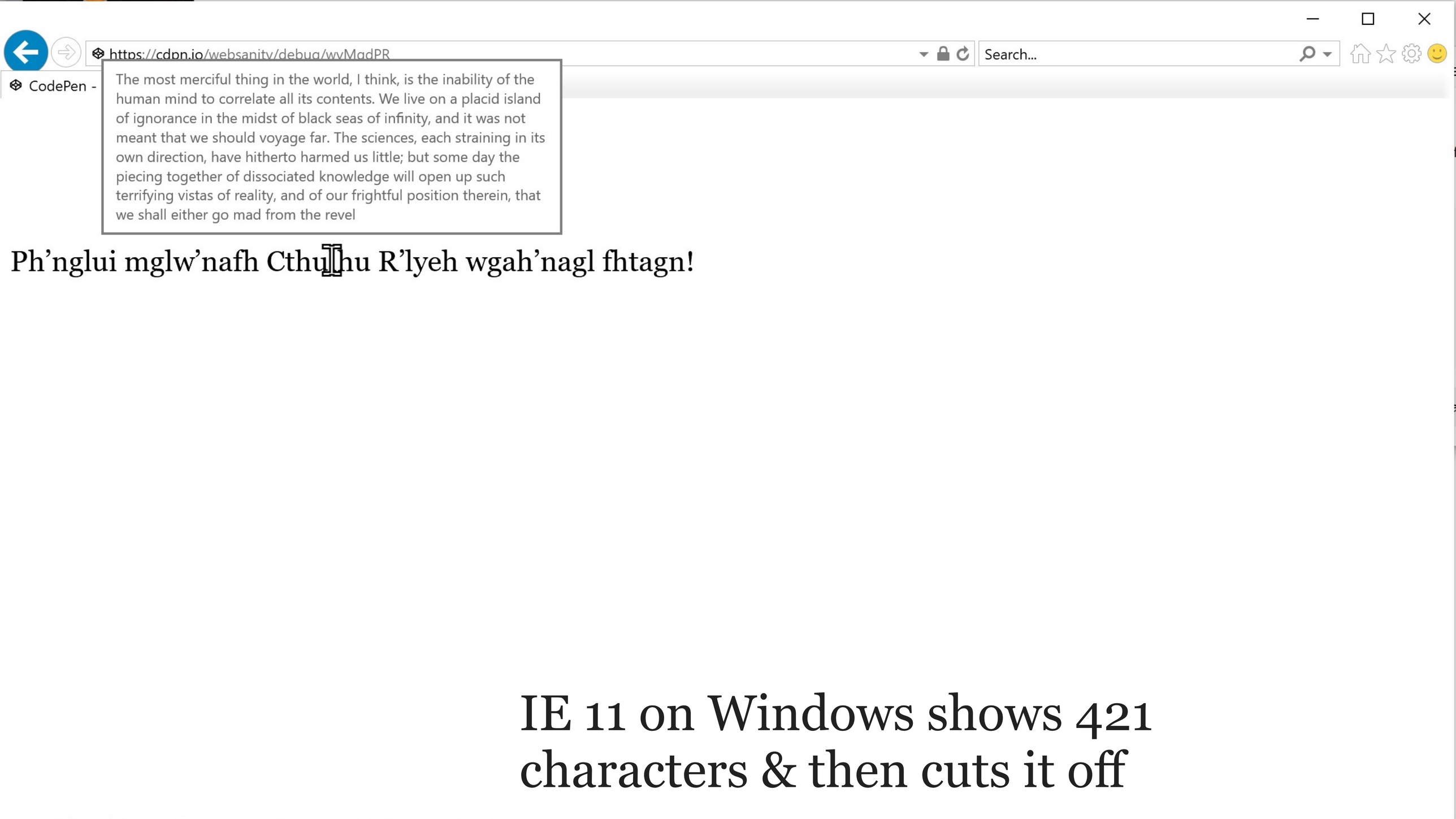
Edge 83 on Windows shows 836 characters & then cuts it off with an …


https://cdpn.io/websanity/debug/wvMadPR
Search...
CodePen -
The most merciful thing in the world, I think, is the inability of the human mind to correlate all its contents. We live on a placid island of ignorance in the midst of black seas of infinity, and it was not meant that we should voyage far. The sciences, each straining in its own direction, have hitherto harmed us little; but some day the piecing together of dissociated knowledge will open up such terrifying vistas of reality, and of our frightful position therein, that we shall either go mad from the revel
Ph’nglui mglw’nafh Cthu□hu R’lyeh wgah’nagl fhtagn!
IE 11 on Windows shows 421 characters & then cuts it off

Other problems

No default visual indicator that they’re available

Delay before appearing

Keyboard-only users cannot get the tooltip to appear

Biggest problem is on mobile

By default, the `title` attribute doesn't display anything on mobile devices, because there's no hover!

You can build your own for mobile, e.g., Bootstrap takes the value of `title` & displays it as a tooltip using `popper.js` — & it works using the keyboard only

Getting started

Layout

Content

Components

Alerts

Badge

Breadcrumb

Buttons

Button group

Card

Carousel

Collapse

Dropdowns

Forms

Input group

Jumbotron

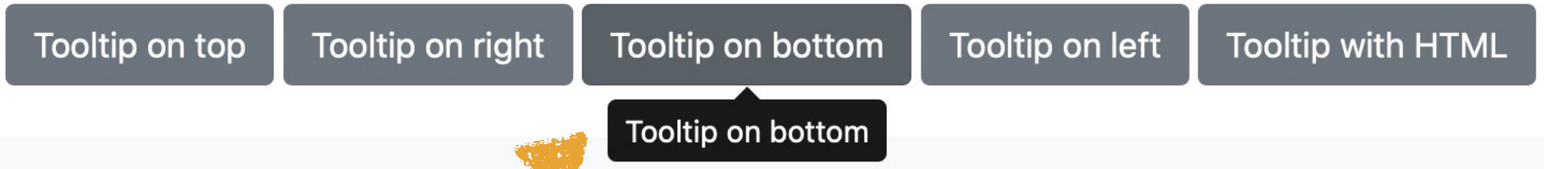
List group

Media object

Modal

Navs

Navbar



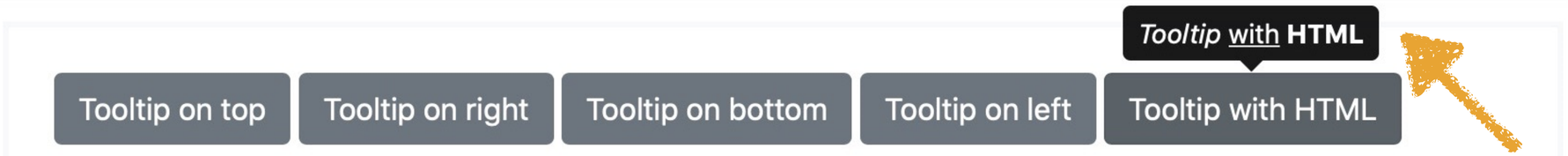

```
<button type="button" class="btn btn-secondary" data-toggle="tooltip" data-placement="top" title="Tooltip on top">
  Tooltip on top
</button>
<button type="button" class="btn btn-secondary" data-toggle="tooltip" data-placement="right" title="Tooltip on right">
  Tooltip on right
</button>
<button type="button" class="btn btn-secondary" data-toggle="tooltip" data-placement="bottom" title="Tooltip on bottom">
  Tooltip on bottom
</button>
<button type="button" class="btn btn-secondary" data-toggle="tooltip" data-placement="left" title="Tooltip on left">
  Tooltip on left
</button>
```

Copy

And with custom HTML added:

```
<button type="button" class="btn btn-secondary" data-toggle="tooltip" data-html="true" title="<em>Tooltip</em> <u>with</u> <b>HTML</b>">
  Tooltip with HTML
</button>
```

Copy



Copy

```
<button type="button" class="btn btn-secondary" data-toggle="tooltip" data-placement="top" t
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  Tooltip on top
</button>
<button type="button" class="btn btn-secondary" data-toggle="tooltip" data-placement="right"
 title="Tooltip on right">
  Tooltip on right
</button>
<button type="button" class="btn btn-secondary" data-toggle="tooltip" data-placement="bottom
" title="Tooltip on bottom">
  Tooltip on bottom
</button>
<button type="button" class="btn btn-secondary" data-toggle="tooltip" data-placement="left"
title="Tooltip on left">
  Tooltip on left
</button>
```

HTML doesn't work with `title` by default

And with custom HTML added:

Copy

```
<button type="button" class="btn btn-secondary" data-toggle="tooltip" data-html="true" title
="<em>Tooltip</em> <u>with</u> <b>HTML</b>">
  Tooltip with HTML
</button>
```

Don’t just shove a `title` on an element & consider it done

You will have (potentially a lot of) additional work ahead of you

				iOS		
`class`	6*	2	Y	Y	Y	Y
`id`	6*	2	Y	Y	Y	Y
`style`	6*	2	Y	Y	Y	Y

* At least

				iOS		
`title`	6*	2	Y	–	Y	–

* At least

Limited Attributes

Limited attributes are assigned to specific elements

§ 4.4.5 The `ol` element

MDN

MDN

Categories:

Flow content.

If the element's children include at least one `li` element: Palpable content.

Contexts in which this element can be used:

Where flow content is expected.

Content model:

Zero or more `li` and script-supporting elements.

Tag omission in text/html:

Neither tag is omissible.

Content attributes:

Global attributes

`reversed` — Number the list backwards

`start` — Starting value of the list

`type` — Kind of list marker

`<ol>` supports global attributes + `reversed`, `start`, & `type`

Accessibility considerations:

For authors.

For implementers.

DOM interface:

IDL

```
[Exposed=Window]
interface HTMLOListElement : HTMLElement {
  [HTMLConstructor] constructor();
```

File an issue about the selected text

Content attributes:

Global attributes
`accept` — Hint for expected file type in file upload controls
`alt` — Replacement text for use when images are not available
`autocomplete` — Hint for form autofill feature
`checked` — Whether the control is checked
`dirname` — Name of form control to use for sending the element's directionality in form submission
`disabled` — Whether the form control is disabled
`form` — Associates the element with a `form` element
`formaction` — URL to use for form submission
`formenctype` — Entry list encoding type to use for form submission
`formmethod` — Variant to use for form submission
`formnovalidate` — Bypass form control validation for form submission
`formtarget` — Browsing context for form submission
`height` — Vertical dimension
`list` — List of autocomplete options
`max` — Maximum value
`maxlength` — Maximum length of value
`min` — Minimum value
`minlength` — Minimum length of value
`multiple` — Whether to allow multiple values
`name` — Name of the element to use for form submission and in the `form.elements` API
`pattern` — Pattern to be matched by the form control's value
`placeholder` — User-visible label to be placed within the form control
`readonly` — Whether to allow the value to be edited by the user
`required` — Whether the control is required for form submission
`size` — Size of the control
`src` — Address of the resource
`step` — Granularity to be matched by the form control's value
`type` — Type of form control
`value` — Value of the form control
`width` — Horizontal dimension
Also, the `title` attribute has special semantics on this element: Description of pattern (when used with `pattern` attribute).

`<input>` supports global attributes
+ 30 more!

File an issue about the selected text

Custom Attributes

`data-*=""`

Allow developers to store *custom data* unique to a page, site, or application to create *custom attributes* to serve their needs

For example, WebSanity created `data-display` to use with FormSanity

Yes, `data-*` is a global attribute, but it is unique from the others

Rules for names

» Cannot contain spaces
» Cannot contain `;`
» Cannot contain `A–Z`
» Cannot start with `xml`

Stick to `a–z` & `0–9`, with `-` & `.` as separators

HTML

```
<h2>Categorization</h2>

<h3>New Plushies</h3>
<p>
 <button data-entity="Great Old One" data-sku="4567-381398">Cthulhu</button>
 <button data-entity="Great Old One" data-sku="4567-549803">Tsathoggua</button>
 <button data-entity="Outer God" data-sku="3968-831399">Yog-Sothoth</button>
 <button data-entity="Outer God" data-sku="3968-381104">Nyarlathotep</button>
</p>

<h2>Match Regex Pattern</h2>
<!-- Maine drivers license: 7 numbers or if under 21, 7 numbers followed by an X
-->
<p>
  Enter your Maine drivers license:
</p>
<form>
  <input type="text" minlength="7" maxlength="7" data-pattern="^\d{7}[xX]?$">
</form>
```

CSS

JS

Categorization

New Plushies

Cthulhu

Tsathoggua

Yog-Sothoth

Nyarlathotep

Match Regex Pattern

Enter your Maine drivers license:

				iOS		
`data-*`	11	6	5.1	5	7	3

What about attribute *values*?

Attribute values are always *strings*, but you can categorize those strings as well:

1. Pre-defined
2. Open-ended
3. Boolean
4. Custom

Pre-Defined Attribute Values

Some values are pre-defined by the HTML spec

`<ol>`'s `type` attribute supports only these values: `1`, `a`, `A`, `i`, & `I`

However, `<ol>`'s `start` attribute supports a range of any integer as a value, like `-1000`, `1`, or `1000`

In both cases, those are the only values allowed for those attributes

Open-Ended Attribute Values

Instead of a pre-defined list of values or a range of values, open-ended values can be almost anything you want

`<ol>`'s global attribute `title` can have almost any UTF-8 character you want in the value (with certain restrictions)

`title="The Call of Cthulhu was published in 1928"` & `title="The ☎ of 🦑 was 📖 in 1928"` are both valid

Boolean Attribute Values

`<ol>`'s `reversed` attribute is a *boolean attribute*

A boolean attribute is *true* if any of these are true:

» It's present: `<ol … reversed>`
» It's value is an empty string: `<ol … reversed="">`
» It's value matches the attribute: `<ol … reversed="reversed">`

A boolean attribute is *false* if it doesn't appear at all

HTML

```
<p>
  All these are equivalent:
</p>

<p>
  <label><input
type="checkbox" checked
name="Cthulhu" required>
Cthulhu</label>
</p>
<p>
  <label><input
type="checkbox"
checked="checked"
name="Cthulhu"
required="required">
Cthulhu</label>
</p>
<p>
  <label><input
type="checkbox" checked=""
name="Cthulhu" required="">
Cthulhu</label>
</p>
```

CSS (SCSS)

JS

All these are equivalent:

- [x] Cthulhu
- [x] Cthulhu
- [x] Cthulhu

```
allowfull-
  screen
allowpayment-
  request
allowusermedia
async
autofocus
autoplay
capture
```

```
checked
controls
defer
disabled
formnovalidate
hidden
ismap
itemscope
loop
```

```
multiple
muted
novalidate
playsinline
readonly
required
selected
truespeed
typemustmatch
```

Some of the boolean attributes used in HTML

Custom Attribute Values

Custom attributes of course require you to create a custom syntax for that attribute's value

What values does the custom attribute `foo` allow for?

How are those values expressed & used?

WebSanity's custom attribute `data-display` has used these values & more:

- `data-display="amount_option == 'other…'"`
- `data-display="((member_status == 'member' || member_status == 'member_spcl') || employment_status != '' || new_membership == 'No Membership')"`
- `data-display="(employment_status == 'Full-time' || employment_status == 'Part-time')"`

✏️ SIDE NOTE

Some attributes can contain multiple values — in `class="foo bar"`, `foo` & `bar` are separate values

`class="foo" class="bar"` is *not* allowed because you cannot repeat attributes in a tag, so instead you combine the values together as `class="foo bar"`

Other attributes have single values that contain strings with spaces in them — in `title="The Call of Cthulhu"`, that value is a phrase that is taken as a whole

As we dive further into HTML elements, let’s start big & go smaller, i.e.: sectioning to grouping to text semantics

Sectioning

Creates section

`<body>`

`<nav>`

`<article>`

`<aside>`

`<section>`

`<h1>–<h6>`*

Section info

`<h1>–<h6>`

`<header>`

`<footer>`

`<address>`

`<hgroup>`

* Can create *implicit*, not explicit, section

💡 PRO TIP

Sectioning elements are the main semantic structural elements

There was an idea when HTML5 was introduced that these elements would be used by browsers to create an outline for visitors to use for in-page navigation

This didn’t happen (too complex & messy!) & probably will never happen

Rely on heading elements, `<h1>`—`<h6>`

`<nav> ... </nav>`

A section of a page with *navigation links* to...

» Other pages, either internal or external, or
» Parts within the page (URL fragments), like a table of contents

Only “major navigation blocks”

More than one `<nav>` section is OK on a page

HTML

```
<h2>&lt;nav> without CSS</h2>

<nav>
  <ul>
    <li><a href="#">Life</a></li>
    <li><a href="#">Writings</a></li>
    <li><a href="#">Characters</a></li>
    <li><a href="#">Influence</a></li>
    <li><a href="#">Contact</a></li>
  </ul>
</nav>
```

CSS

JS

<nav> without CSS

- Life
- Writings
- Characters
- Influence
- Contact

<nav> with CSS

Life Writings Characters Influence Contact

HTML

```
<h2>&lt;nav> with CSS</h2>

<nav class="styled">
  <ul>
    <li><a href="#">Life</a></li>
    <li><a href="#">Writings</a></li>
    <li><a href="#">Characters</a></li>
    <li><a href="#">Influence</a></li>
    <li><a href="#">Contact</a></li>
  </ul>
</nav>
```

CSS

```
nav.styled ul {
  margin: 0;
  padding: 0;
  list-style: none;
}

nav.styled ul li {
  float: left;
  display: block;
  background: #4B4B4B;
```

JS

<nav> without CSS

- Life
- Writings
- Characters
- Influence
- Contact

<nav> with CSS

`<article> … </article>`

A section of content that can *stand on its own as a complete & self-contained composition* that could be independently distributed or reused

Services & software use `<article>` to gather important content from a webpage, e.g.:

- Scrapers like Diffbot & Mercury Web Parser
- Read-it-later services like Instapaper & Pocket
- Browser add-ons like Mercury Reader & Reader Mode
- Built-in browser tools like Safari Reader, Firefox Reader View, & Edge's Immersive Reader

TRAVEL

How to Find the Spirit of H.P. Lovecraft in Providence

Footsteps

By NOEL RUBINTON AUG. 10, 2016

To walk through the streets of Providence, particularly those of the city's verdant, historic East Side, is to be deep in Lovecraft-land.

Though H. P. Lovecraft was not widely appreciated during his prolific but brief writing career in the early 1900s, his love for and connection to his Rhode Island hometown were near absolute. His stock has risen dramatically in the worlds of horror and science fiction literature in recent years, and so

Footsteps

A collection of "Footsteps" columns published in The New York Times.

Eero Saarinen's Michigan OCT 6
Tom Petty's 'Greatest Trip' Was to Los Angeles OCT 4
Vancouver Island, Through an Artist's Eyes OCT 2
August Wilson's Pittsburgh AUG 15
The Belgian Port Town That Inspired James Ensor's Provocative Art JUL 27

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When I moved to Providence not long ago, I

T-Mobile Wi-Fi 11:12 AM 79%

mobile.nytimes.com

The New York Times

Travel

How to Find the Spirit of H.P. Lovecraft in Providence

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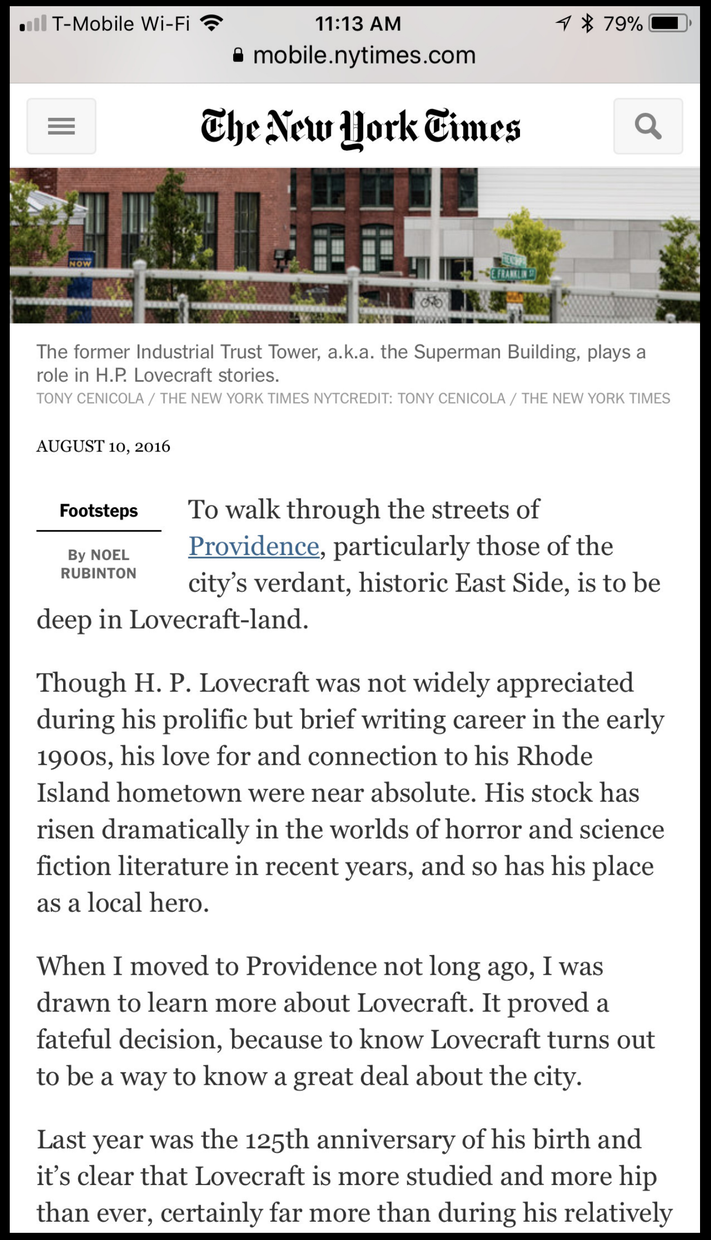
mobile.nytimes.com AA

How to Find the Spirit of H.P. Lovecraft in Providence

August 10, 2016



The former Industrial Trust Tower, a.k.a. the Superman Building, plays a role in H.P. Lovecraft stories.
TONY CENICOLA / THE NEW YORK TIMES NYTCREDIT: TONY CENICOLA / THE NEW YORK TIMES

AUGUST 10, 2016

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When I moved to Providence not long ago, I was drawn to learn more about Lovecraft. It proved a fateful decision, because to know Lovecraft turns out to be a way to know a great deal about the city.

Last year was the 125th anniversary of his birth and it's clear that Lovecraft is more studied and more hip than ever, certainly far more than during his relatively

The former Industrial Trust Tower, a.k.a. the Superman Building, plays a role in H.P. Lovecraft stories.

Tony Cenicola / The New York Times
NYTCREDIT: Tony Cenicola / The New York Times

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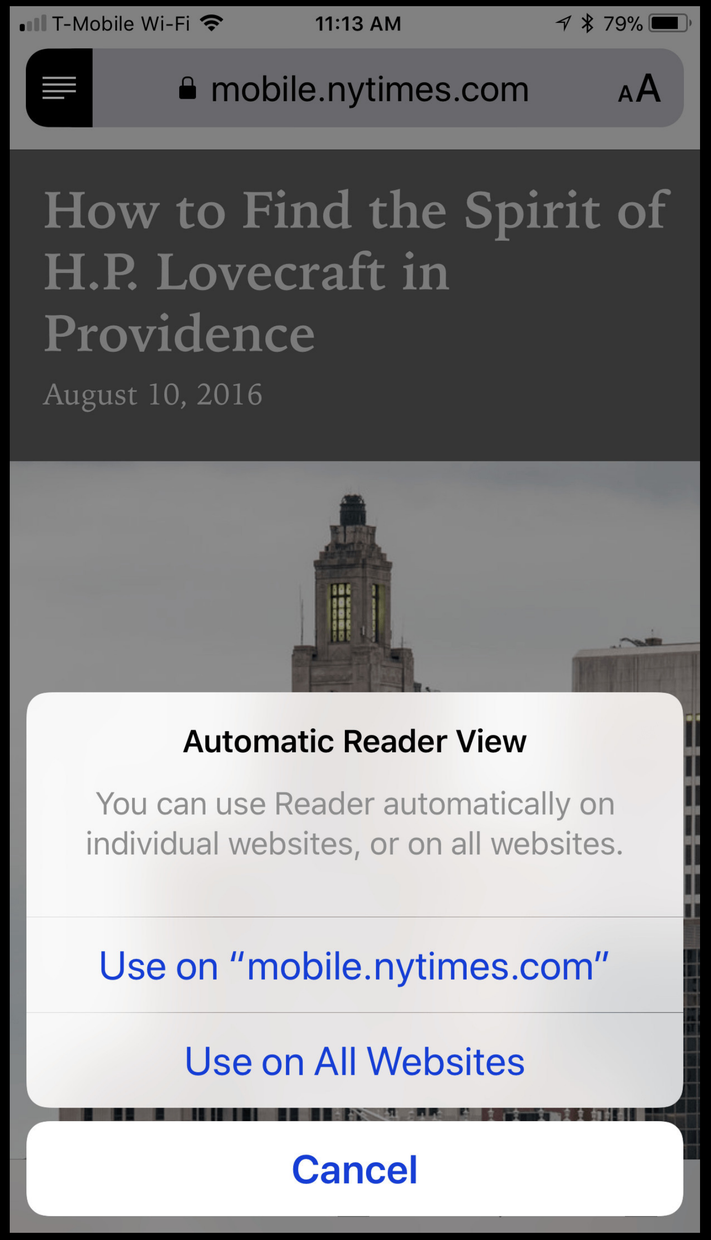
Set font options



Turn on Reader View automatically

`<aside>` … `</aside>`

Tangentially related content

» Sidebars
» Pull quotes
» Glossary
» Related links

Kenneth Branagh as Iago in Shakespeare's *Othello* (1995)

HTML

```
<article>
  <h1>
    Cthulhu Mythos
  </h1>
  <p>
    The Cthulhu Mythos is a shared fictional universe, based on the work of American horror writer H. P. Lovecraft.
  </p>
  <h2>
    Yog-Sothoth
  </h2>
  <p>
    “Imagination called up the shocking form of fabulous Yog-Sothoth—only a congeries of iridescent globes, yet stupendous in its malign suggestive<wbr>&shy;ness.”
  </p>
  <h2>
```

CSS

JS

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Yog-Sothoth

“Imagination called up the shocking form of fabulous Yog-Sothoth—only a congeries of iridescent globes, yet stupendous in its malign suggestive-ness.”

Nyarlathotep

August Derleth

Best remembered as the first publisher of the writings of H. P. Lovecraft, and for his own contributions to the Cthulhu Mythos genre of horror, as well as his founding of the publisher Arkham House.

HTML

```
      And it was then that
Nyarlathotep came out of Egypt. Who
he was, none could tell, but he was
of the old native blood and looked
like a Pharaoh."
    </p>
</article>

<aside>
    <h2>
      August Derleth
    </h2>
    <p>
      Best remem<wbr>&shy;bered as
the first publisher of the writings
of H. P. Lovecraft, and for his own
contributions to the Cthulhu Mythos
genre of horror, as well as his
founding of the publisher Arkham
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    </p>
</aside>
```

CSS

JS

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HTML

```
course the town's real business
was the refinery, whose
commercial office was on the
square only a few doors east of
where we stood. Old Man Marsh was
never seen, but sometimes went to
the works in a closed, curtained
car.
  </p>
  <aside>
    There were all sorts of
rumours about how Marsh had come
to look.
  </aside>
  <p>
    There were all sorts of
rumours about how Marsh had come
to look. He had once been a great
dandy, and people said he still
wore the frock-coated finery of
the Edwardian age, curiously
adapted to certain deformities.
```

CSS

JS

As for business—the abundance of fish was certainly almost uncanny, but the natives were taking less and less advantage of it. Moreover, prices were falling and competition was growing. Of course the town's real business was the refinery, whose commercial office was on the square only a few doors east of where we stood. Old Man Marsh was never seen, but sometimes went to the works in a closed, curtained car.

There were all sorts of rumours about how Marsh had come to look.

There were all sorts of rumours about how Marsh had come to look. He had once been a great dandy, and people said he still wore the frock-coated finery of the Edwardian age, curiously adapted to certain deformities. His sons had formerly conducted the office in the square, but latterly they had been keeping out of sight a good deal and leaving the brunt of affairs to the younger generation. The sons and their sisters had come to look very queer, especially the elder ones; and it was said that their health was failing.

`<section>` … `</section>`

A *generic section* containing a *thematic grouping* of content

Can start with a heading (`<h1>`–`<h6>`)

Not a generic container element! For that, use `<div>`

HTML

```
<footer>
  <section>
    <h2>Legal</h2>
    <p>
      All content, unless under a
      Creative Commons license, is ©
      1937 Willett Medical
    </p>
  </section>
  <section>
    <h2>Contact</h2>
    <address>
      Dr. Marinus Bicknell Willett<br
      />
      10 Barnes Street<br />
      Providence, RI 02906
    </address>
  </section>
  <section>
    <h2>Connect</h2>
    <ul>
      <li><a href="#">Facebook</a></li>
      <li><a href="#">Twitter</a></li>
      <li><a href="#">YouTube</a></li>
    </ul>
  </section>
  <p>
```

CSS

JS

Legal

All content, unless under a Creative Commons license, is © 1937 Willett Medical

Contact

Dr. Marinus Bicknell Willett
10 Barnes Street
Providence, RI 02906

Connect

- Facebook
- Twitter
- YouTube

You can use `<section>` to split `<article>` into logical groups of content (but you sure don’t have to)

HTML

```html
<article>
  <h1>Cthulhu Mythos</h1>
  <p>The Cthulhu Mythos is a shared fictional universe, based on the work of American horror writer H. P. Lovecraft.</p>
  <section>
    <h2>Yog-Sothoth</h2>
    <p>“Imagination called up the shocking form of fabulous Yog-Sothoth—only a congeries of iridescent globes, yet stupendous in its malign suggestiveness.”</p>
  </section>
  <section>
    <h2>Nyarlathotep</h2>
    <p>“And it was then that Nyarlathotep came out of Egypt. Who he was, none could tell, but he was of the old native blood and looked like a Pharaoh.”</p>
  </section>
</article>
```

CSS

JS

Cthulhu Mythos

The Cthulhu Mythos is a shared fictional universe, based on the work of American horror writer H. P. Lovecraft.

Yog-Sothoth

“Imagination called up the shocking form of fabulous Yog-Sothoth—only a congeries of iridescent globes, yet stupendous in its malign suggestiveness.”

Nyarlathotep

“And it was then that Nyarlathotep came out of Egypt. Who he was, none could tell, but he was of the old native blood and looked like a Pharaoh.”

Don’t get `<section>`-itis!

Only use `<section>` there’s a layout or other presentational purpose

`<body>` is the *root section container*

It's common to put a `<header>`, `<h1>`, or `<footer>` directly inside `<body>`

You can—& should!—still use `<header>`, `<h1>`, or `<footer>` inside other sectioning elements like `<aside>`

```
<h1> … </h1>
<h2> … </h2>
<h3> … </h3>
<h4> … </h4>
<h5> … </h5>
<h6> … </h6>
```

Headings, from biggest (most important) to smallest (least important)

Wiki

Navigation

Main page

Community portal

Current events

Recent changes

Random page

Help

Toolbox

What links here

Related changes

Upload file

Special pages

Printable version

Permanent link

Setting up a WebSanity Server: Linode

Contents [hide]

1 Create the clone master server
- 1.1 Set hostname
- 1.2 Set timezone
- 1.3 Update software
- 1.4 Install software
- 1.5 Install user files
  - 1.5.1 SSH
    - 1.5.1.1 SSH user files
    - 1.5.1.2 SSH server config
  - 1.5.2 ~/bin & dotfiles
- 1.6 /var
  - 1.6.1 /var subdirectories
- 1.7 Mail
- 1.8 cron & logging
  - 1.8.1 Create cron files
  - 1.8.2 Turn on cron logging
- 1.9 fail2ban
- 1.10 Monit
  - 1.10.1 Install
  - 1.10.2 SSL for Monit's web server
  - 1.10.3 Monit's config files

2 Clone a server
- 2.1 Update the cloned server & make it unique

3 Concrete5 server
- 3.1 Install software needed by a Concrete5 server

Headings are like an outline

They break up content & establish hierarchy

Very important for SEO

All Presentations

Home ➤ Presentations ➤ All Presentations

On this page...

1. Web Development
    1. Scott & Jans: An Intro
    2. Web Development: The Absolute Basics
    3. Bonus: Installing, Configuring, & Using Brackets
    4. Bonus: Installing, Configuring, & Using Visual Studio Co
    5. HTML Overview: Elements, Attributes, Entities
    6. Bonus: Markdown
    7. It's Boxes All the Way Down!: Elements & Their Relations
    8. CSS Overview: Selectors, Integration, Inheritance, Casca
    9. CSS Building Blocks: Selectors
    10. CSS Data Types
    11. CSS Preprocessors: Extending CSS with Sass to Provide Functionality
    12. CSS Typography: Fonts & Formatting
    13. Tables & Lists: Organized Data
    14. CSS Layout: Boxes, Displays, & Positioning
    15. Webpage Layouts: 5 Methods

h2 ## Web Development ↩

h3 ### *Scott & Jans: An Intro* ↩

Scott. Jans. Lovecraft. Outlines. Responsive web design.

- Slides (13 MB PDF) ← **Updated** 2020-06-09 to 1.15
- Notes

h3 ### *Web Development: The Absolute Basics* ↩

Background. History. W3C & WHATWG. Can I Use. How the Web
Web servers. HTTP. 3 Languages: HTML, CSS, & JavaScript. The
attributes, & values. DTDs. Character encoding. ASCII. UTF-8. Se
Comments. Editing.

- Slides (42 MB PDF) ← **Updated** 2020-06-26 to 2.0
- Notes

h3 ### *Bonus: Installing, Configuring, & Using Brackets*

Installation. How it works. First extensions. Brackets as debuggin

- Slides (12 MB PDF) ← **Updated** 2017-11-01 to 1.1
- Notes

h3 ### *Bonus: Installing, Configuring, & Using Visual Stud*

First tasks. Installation. How VSCode works. The GUI. Key feature

HTML

```
<h1>Heading 1</h1>
<h2>Heading 2</h2>
<h3>Heading 3</h3>
<h4>Heading 4</h4>
<h5>Heading 5</h5>
<h6>Heading 6</h6>
<p>Paragraph</p>
```

CSS

JS

Heading 1

Heading 2

Heading 3

Heading 4

Heading 5

Heading 6

Paragraph

`<h1>`

Title of the webpage for humans to see

`<h1>` often shares some of the same text as in `<title>`

Use it only once per page (usually)

`<h2>`

Generally used as the most important label in a non-`<body>` section

`<h4>`

By default, the same font size as `<p>`

Use as many headers per page as you’d like

Search engines give text inside headers extra weight,
so use good keywords

The first heading in a section *labels* that section

Any other heading *creates an implicit section* & also *labels* that implicit section

BREALEY MYERS ALLEN

Principles *of* Corporate Finance

TENTH EDITION

1-3 Goals of the Corporation

Shareholders Want Managers to Maximize Market Value

Wal-Mart has over 300,000 shareholders. There is no way that Wal-Mart's shareholders can be actively involved in management; it would be like trying to run New York City by town meetings. Authority has to be delegated to professional managers. But how can Wal-Mart's managers make decisions that satisfy all the shareholders? No two shareholders are exactly the same. They differ in age, tastes, wealth, time horizon, risk tolerance, and investment strategy. Delegating the operation of the firm to professional managers can work only if the shareholders have a common objective. Fortunately there is a natural financial objective on which almost all shareholders agree: Maximize the current market value of shareholders' investment in the firm.

A smart and effective manager makes decisions that increase the current value of the company's shares and the wealth of its stockholders. This increased wealth can then be put to whatever purposes the shareholders want. They can give their money to charity or spend it in glitzy nightclubs; they can save it or spend it now. Whatever their personal tastes or objectives, they can all do more when their shares are worth more.

Maximizing shareholder wealth is a sensible goal when the shareholders have access to well-functioning financial markets.[6] Financial markets allow them to share risks and transport savings across time. Financial markets give them the flexibility to manage their own savings and investment plans, leaving the corporation's financial managers with only one task: to increase market value.

A corporation's roster of shareholders usually includes both risk-averse and risk-tolerant investors. You might expect the risk-averse to say, "Sure, maximize value, but don't touch too many high-risk projects." Instead, they say, "Risky projects are OK, *provided* that expected profits are more than enough to offset the risks. If this firm ends up too risky for my taste, I'll adjust my investment portfolio to make it safer." For example, the risk-averse shareholders can shift more of their portfolios to safe assets, such as U.S. government bonds. They can also just say good-bye, selling shares of the risky firm and buying shares in a safer one. If the risky investments increase market value, the departing shareholders are better off than if the risky investments were turned down.

A Fundamental Result

The goal of maximizing shareholder value is widely accepted in both theory and practice. It's important to understand why. Let's walk through the argument step by step, assuming that the financial manager should act in the interests of the firm's owners, its stockholders.

1. Each stockholder wants three things:
   a. To be as rich as possible, that is, to maximize his or her current wealth.
   b. To transform that wealth into the most desirable time pattern of consumption either by borrowing to spend now or investing to spend later.
   c. To manage the risk characteristics of that consumption plan.
2. But stockholders do not need the financial manager's help to achieve the best time pattern of consumption. They can do that on their own, provided they have free

[6] Here we use "financial markets" as shorthand for the financial sector of the economy. Strictly speaking, we should say "access to well-functioning financial markets and institutions." Many investors deal mostly with financial institutions, for example, banks, insurance companies, or mutual funds. The financial institutions then engage in financial markets, including the stock and bond markets. The institutions act as financial intermediaries on behalf of individual investors.

HTML

```
<article>
  <div class="implied">
    <h1>Cthulhu Mythos</h1>
    <p>The Cthulhu Mythos is a
shared fictional universe, based on
the work of American horror writer
H. P. Lovecraft.</p>
    <div class="implied">
      <h2>Yog-Sothoth</h2>
      <p>“Imagination called up the
shocking form of fabulous Yog-
Sothoth—only a congeries of
iridescent globes, yet stupendous
in its malign suggestiveness.”</p>
    </div>
    <!-- /h2 -->
    <div class="implied">
      <h2><i>At the Mountains of
Madness</i></h2>
      <p>Creatures mentioned in the
famous story.</p>
      <div class="implied">
        <h3>Elder Things</h3>
        <p>“In the Mythos canon,
the Elder Things were the first
```

CSS

JS

Cthulhu Mythos

The Cthulhu Mythos is a shared fictional universe, based on the work of American horror writer H. P. Lovecraft.

Yog-Sothoth

“Imagination called up the shocking form of fabulous Yog-Sothoth—only a congeries of iridescent globes, yet stupendous in its malign suggestiveness.”

At the Mountains of Madness

Creatures mentioned in the famous story.

Elder Things

“In the Mythos canon, the Elder Things were the first extraterrestrial species to come to the Earth, colonizing the planet about one billion years ago.”

HTML

```
<article>
  <div class="implied">
    <h1>Cthulhu Mythos</h1>
    <p>The Cthulhu Mythos is a shared fictional universe, based on the work of American horror writer H. P. Lovecraft.</p>
    <div class="implied">
      <h2>Yog-Sothoth</h2>
      <p>“Imagination called up the shocking form of fabulous Yog-Sothoth—only a congeries of iridescent globes, yet stupendous in its malign suggestiveness.”</p>
    </div>
    <!-- /h2 -->
    <div class="implied">
      <h2><i>At the Mountains of Madness</i></h2>
      <p>Creatures mentioned in the famous story.</p>
      <div class="implied">
        <h3>Elder Things</h3>
        <p>“In the Mythos canon, the Elder Things were the first
```

CSS

JS

Cthulhu Mythos

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“Imagination called up the shocking form of fabulous Yog-Sothoth—only a congeries of iridescent globes, yet stupendous in its malign suggestiveness.”

At the Mountains of Madness

Creatures mentioned in the famous story.

Elder Things

“In the Mythos canon, the Elder Things were the first extraterrestrial species to come to the Earth, colonizing the

Never immediately follow a heading with another heading

```
<h2>The Call of Cthulhu</h2>
<h3>By H.P. Lovecraft</h3>
```

A heading should always be followed by content

Nest headers correctly

Do not skip or jump levels

Headers should never *decrease* by more than 1

`<h2>` followed by `<h3>` is 👍😀

`<h2>` followed by `<h4>` is 👎😕

HTML

```html
<div class="good">
  <p>Good</p>
  <h1>Heading 1</h1>
  <h2>Heading 2</h2>
  <h3>Heading 3</h3>
  <h3>Heading 3</h3>
  <h4>Heading 4</h4>
  <h2>Heading 2</h2>
</div>
<div class="bad">
  <p>Bad</p>
  <h1>Heading 1</h1>
  <h3>Heading 3</h3>
  <h2>Heading 2</h2>
  <h4>Heading 4</h4>
  <h3>Heading 3</h3>
  <h4>Heading 4</h4>
</div>
```

CSS

JS

Good 👍

Heading 1

Heading 2

Heading 3

Heading 3

Heading 4

Heading 2

Bad 👎

Heading 1

Heading 3

Heading 2

Heading 4

Heading 3

Heading 4

📦 FORMATTING GUIDE

```
<p>
  <h2>The Call of Cthulhu</h2>
</p>
```

👎

Never surround `<h1>`–`</h6>` with `<p>`

```
<h2>The Call of Cthulhu</h2>
```

👍

📦 FORMATTING GUIDE

```
<h2>
  The Call of Cthulhu
</h2>
```

Normally I put headings on 1 line, but you don't have to (you do use fewer lines in your code with just 1 line)

.....

```
<h2>The Call of Cthulhu</h2>
```

📦 FORMATTING GUIDE

```
<p>
  <b>The Call of Cthulhu</b>
</p>
```

Do not make fake headings!

```
<h4>The Call of Cthulhu</h4>
```

`<header> ... </header>`

Introductory or navigational aids for a section

Does not create a new section; it labels a section

Multiple `<header>`s are fine in a webpage, up to one per section

» One at the top of the webpage (in `<body>`)
» One at the top of sections (as appropriate)

Every section does not need a `<header>` (though you may want one)

Use `<header>` when you need something more complex than just a heading like `<h2>`

A typical `<header>` may contain…

» A section's heading (`<h1>`-`<h6>`)
» Table of contents
» Logos
» Navigation (likely in `<nav>`)
» Search form

HTML

```
<header>
  <img src="https://s3-us-west-2.amazonaws.com/s.cdpn.io/122116/lovecraft-portrait.jpg" width="97" height="125">
  <h1>H. P. Lovecraft’s Characters</h1>
  <p>
    The complete pantheon
  </p>
</header>
<article>
  <h2>
    Cthulhu Mythos
  </h2>
  <p>
    The Cthulhu Mythos is a shared fictional universe, based on the work of American horror writer H. P. Lovecraft.
  </p>
  <section>
    <h3>
      Yog-Sothoth
    </h3>
    <p>
```

CSS

JS

H. P. Lovecraft’s Characters

The complete pantheon

Cthulhu Mythos

The Cthulhu Mythos is a shared fictional universe, based on the work of American horror writer H. P. Lovecraft.

Yog-Sothoth

“Imagination called up the shocking form of fabulous Yog-Sothoth—only a congeries of iridescent globes, yet stupendous in its malign suggestiveness.”

Nyarlathotep

“And it was then that Nyarlathotep came out of Egypt. Who he was, none could tell, but he was of the old native blood and looked like a Pharaoh.”

`<footer>` … `</footer>`

Footer for a section

Multiple `<footer>`s are fine in a webpage, up to one per section

» One at the bottom of the webpage (in `<body>`)
» One at the end of sections (as appropriate)

Every section does not need a `<footer>` (though you may want one)

A typical `<footer>` may contain…

» Author
» Copyright
» Links to related content
» Contact info (in `<address>`)

HTML

```
<footer>
  <p>
    All content, unless under a
    Creative Commons license, is © 1937
    Willett Medical
  </p>
  <address>
    Dr. Marinus Bicknell Willett • 10
    Barnes Street • Providence, RI
    02906
  </address>
  <p>
    <a href="http://miskatonic-
    expedition.com/privacy">Privacy
    Policy</a> | <a
    href="http://miskatonic-
    expedition.com/about-this-
    site">About This Site</a> | <a
    href="https://en.wikipedia.org/wiki
    /H._P._Lovecraft">HPL
    Accredited</a> | <a
    href="http://www.cthulhulives.org">
    Member of HPLHS</a>
  </p>
</footer>
```

CSS

JS

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Dr. Marinus Bicknell Willett • 10 Barnes Street • Providence, RI 02906

Privacy Policy | About This Site | HPL Accredited | Member of HPLHS

A `<footer>` can itself contains sectioning elements (`<section>` or `<nav>` for instance)

If it does, those usually contain…

» Appendices
» Indexes
» Long colophons
» License agreements
» *Fat footer* content

HTML

```
<footer>
  <section>
    <h2>Legal</h2>
    <p>
      All content, unless under a
      Creative Commons license, is
      © 1937 Willett Medical
    </p>
  </section>
  <section>
    <h2>Contact</h2>
    <address>
      Dr. Marinus Bicknell
      Willett<br />
      10 Barnes Street<br />
      Providence, RI 02906
    </address>
  </section>
  <section>
    <h2>Connect</h2>
    <ul>
      <li><a href="#">Facebook</a>
      </li>  <li><a
      href="#">Twitter</a></li>
      <li><a href="#">YouTube</a>
      </li>
    </ul>
```

CSS

JS

Legal

All content, unless under a Creative Commons license, is © 1937 Willett Medical

Contact

Dr. Marinus Bicknell Willett
10 Barnes Street
Providence, RI 02906

Connect

- Facebook
- Twitter
- YouTube

`<address>` … `</address>`

Contact information for a document or major part of a document (form, post, article)

Often at beginning or end

Changed in HTML5—not supposed to be used for arbitrary postal info (but it will be anyway)

First Baptist Church
People Directory

A

Adams, Tammy*
Victoria* Clift
1009 Rowan Cove/P.O. Box 432
Primary Ph: 534-0937

Aderholt, Cindy*
Bradley*, Katie*
114 Morris Dale Lane
Primary Ph: 534-0072

Alexander, Raymond* & Dot***
1614 CR 107
Primary Ph: 534-4423

Allred, Cassie* Baskin
P.O. Box 162
Myrtle, MS 38650

Amos Family
Chloe***

Bailey, James H & Bettye***
610 Ridgeland Circle
Primary Ph: 534-4186

Baker, Ralph* & Lanie*
904 Poplar
Primary Ph: 534-0994

Baker, Tommy*
402 Glenhaven Drive
Primary Ph: 534-2067

Baldridge, Arthur* & Julie*
Emily*, Adam*
1028 Blake Dr.

Barkley, Tommy* & Bettye Lou*
1110 S Central Avenue
Primary Ph: 534-3284

Barkley, William (Bill*) & Anne***

Bennett, James C (J.C.*) & Peggie*
400 Highway 15 South
Primary Ph: 534-2226

Bennett, Julie* C
1035 Serenity Ln.
Primary Ph: 534-3222

Bennett, Mike* & Gloria* E
1004 CR 363
Primary Ph: 534-3089

Bennett, W. T.* & Helen* M
715 Highway 30 East
Primary Ph: 534-6259

Blythe, Rickey (Bro. Rick*) & Reta*
Katie*
1008 Sweetgum Dr.
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Katie*
1008 Sweetgum Dr.
Primary Ph: 507-3320

<address>
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1009 Rowan Cove
Ph: 534-0937
</address>

First Baptist Church

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Primary Ph: 507-3320

<address>
Adams, Tammy
1009 Rowan Cove
Ph: 534-0937
</address>

HTML

```
by such layers of restless cloud,
might easily have supplied the rest
—and of course Danforth did not
hint any of those specific horrors
till after his memory had had a
chance to draw on his bygone
reading. He could never have seen
so much in one instantaneous
glance.
</p>
<p>
  At the time his shrieks were
confined to the repetition of a
single mad word of all too obvious
source:
</p>
<p>
  <i>“Tekeli-li! Tekeli-li!”</i>
</p>
<hr>
<address>
  H.P. Lovecraft
  <br>10 Barnes St.
  <br>Providence, RI 02906
</address>
```

CSS (SCSS)

JS

The higher sky, as we crossed the range, was surely vaporous and disturbed enough; and although I did not see the zenith I can well imagine that its swirls of ice-dust may have taken strange forms. Imagination, knowing how vividly distant scenes can sometimes be reflected, refracted, and magnified by such layers of restless cloud, might easily have supplied the rest—and of course Danforth did not hint any of those specific horrors till after his memory had had a chance to draw on his bygone reading. He could never have seen so much in one instantaneous glance.

At the time his shrieks were confined to the repetition of a single mad word of all too obvious source:

“Tekeli-li! Tekeli-li!”

H.P. Lovecraft
10 Barnes St.
Providence, RI 02906

By default, browsers italicize text in `<address>`

HTML

```
    There had, as he had predicted,
    been no need for acids. For like
    his accursed picture a year before,
    Joseph Curwen now lay scattered on
    the floor as a thin coating of fine
    bluish-grey dust.
  </p>

  <hr>

  <address>
    <p>
      Full contact info at <a
  href="http://www.josephcurwen.com/c
  ontact">www.josephcurwen.com</a>.
    </p>
    <p>
      You may also want to visit us:
    </p>
    <p>
      Dr. Marinus Bicknell Willett
      <br>10 Barnes Street
      <br>Providence, RI 02906
    </p>
  </address>
```

CSS

JS

But he did not faint, and that man of unholy centuries and forbidden secrets never troubled the world again. The madness out of time had subsided, and the case of Charles Dexter Ward was closed. Opening his eyes before staggering out of that room of horror, Dr. Willett saw that what he had kept in memory had not been kept amiss. There had, as he had predicted, been no need for acids. For like his accursed picture a year before, Joseph Curwen now lay scattered on the floor as a thin coating of fine bluish-grey dust.

Full contact info at www.josephcurwen.com.

You may also want to visit us:

Dr. Marinus Bicknell Willett
10 Barnes Street
Providence, RI 02906

`<address>` may contain other text as well

📦 FORMATTING GUIDE

```
<address>hp@lovecraft.com</address>
```

👎

`<address>` should go on 3 lines

.....

```
<address>
  hp@lovecraft.com
</address>
```

👍

`<hgroup> … </hgroup>`

Combines two headings together into one item for outlining

Added in HTML5 & then removed in the W3C spec (but still in the WHATWG spec)

Outlining via sectioning is dead, so don't use `<hgroup>` (& there are better solutions anyway, coming right up)

“h1–h6 elements must not be used to markup subheadings, subtitles, alternative titles and taglines unless intended to be the heading for a new section or subsection.” —W3C

So how do you indicate subtitles without `<hgroup>`?

W3C provides 4 ways to solve the subtitle problem

1. `<hgroup>` 👎
2. Use `<header>`
3. Use a `:` or `–` or another appropriate character
4. Nest other HTML inside the heading

```
<hgroup>
  <h2>Nyarlathotep</h2>
  <h3>Stalker among the Stars</h3>
</hgroup>
```

As we said, `<hgroup>` can confuse parsers, so this is not advised

Use `<header>`:

```
<section>
  <header>
    <h2>Nyarlathotep</h2>
    <p>Stalker among the Stars</p>
  </header>
</section>
```

Too verbose & complex, & still requires understanding the outlining algorithm (which nothing does)

Why `<section>`? Because if this is in the middle of an `<article>`, what else would be semantically appropriate?

Use a character to separate title & subtitle:

```
<h2>
   Nyarlathotep: Stalker among the Stars
</h2>
```

This is pretty good & is widely used, but it doesn’t fit every circumstance

Nest other elements inside the heading:

```
<h2>
   Nyarlathotep
   <small>Stalker among the Stars</small>
</h2>
```

More on this when we get to `<small>` in Text Semantics

				iOS		
<nav>	9	4	4.1	4.2	5	Y
<article>	9	4	4.1	4.2	5	Y
<aside>	9	4	4.1	4.2	5	Y
<section>	9	4	4.1	4.2	5	Y
<header>	9	4	4.1	4.2	5	Y
<footer>	9	4	4.1	4.2	5	Y
<hgroup>	9	4	5	4.2	5	2.2

Grouping

Grouping elements go inside sectioning elements like `<section>`, `<article>`, & `<aside>`

They group content *inside* sectioning elements, but do not *create* sections

<p>

<hr>

<blockquote>

<figure> & <figcaption>

<pre>

<main>

✏️ SIDE NOTE

These grouping elements are covered elsewhere

Lists: `<li>`, `<ul>`, `<ol>`, `<menu>`, `<dl>`, `<dt>`, `<dd>`

CSS Hooks: `<div>`

`<p> ... </p>`

Paragraph

Very common element!

Built-in browser styles…

» Insert top & bottom margins
» Do not indent
» Use ragged right margin

HTML

```
<p>
  The writing was in a system of
  hieroglyphics unknown to me, and unlike
  anything I had ever seen in books,
  consisting for the most part of
  conventionalised aquatic symbols such
  as fishes, eels, octopi, crustaceans,
  molluscs, whales and the like. Several
  characters obviously represented marine
  things which are unknown to the modern
  world, but whose decomposing forms I
  had observed on the ocean-risen plain.
</p>
<p>
  It was the pictorial carving, however,
  that did most to hold me spellbound…
</p>
<p>
  From “Dagon”, by H. P. Lovecraft
</p>
```

CSS

JS

The writing was in a system of hieroglyphics unknown to me, and unlike anything I had ever seen in books, consisting for the most part of conventionalised aquatic symbols such as fishes, eels, octopi, crustaceans, molluscs, whales and the like. Several characters obviously represented marine things which are unknown to the modern world, but whose decomposing forms I had observed on the ocean-risen plain.

It was the pictorial carving, however, that did most to hold me spellbound…

From “Dagon”, by H. P. Lovecraft

📦 FORMATTING GUIDE

```
<p>
  You fool, Warren is dead!
</p>
```

👍

```
<p>You fool, Warren is dead!</p>
```

👎

```
<p>You fool, Warren is dead!
</p>
```

📦 FORMATTING GUIDE

Don’t forget `</p>`! 👎

```
<p>
  123 Fourth Street Arkham, MA 65340
    <p>
      colors@miskatonic.edu
        <p>
          Socialize
            <p>
              Social media goes here
```

📦 FORMATTING GUIDE

```
<p>
  Cthulhu
</p>
Yog-Sothoth
<p>
  Nyarlathotep
</p>
```

No free-floating text!

```
<p>
  Cthulhu
</p>
<p>
  Yog-Sothoth
</p>
<p>
  Nyarlathotep
</p>
```

If not `<p>`, then *something*

`<hr>`

Horizontal rule

HTML5: indicates “paragraph-level thematic break” between topics & scenes

Use sparingly, as `<hr>`s are very heavy — & it’s rarely appropriate (headers are usually all you need)

HTML

```
<p>
  I had but little notion of how the thought-impressions would, if successfully conveyed, arouse an intelligent response in my brain; but I felt certain that I could detect and interpret them. Accordingly I continued my experiments, though informing no one of their nature.
</p>
<hr>
<p>
  It was on the twenty-first of February, 1901, that the thing finally occurred. As I look back across the years I realise how unreal it seems; and sometimes half wonder if old Dr. Fenton was not right when he charged it all to my excited imagination.
</p>
<p>
  From H. P. Lovecraft's "Beyond the Wall of Sleep"
</p>
```

CSS

JS

I had but little notion of how the thought-impressions would, if successfully conveyed, arouse an intelligent response in my brain; but I felt certain that I could detect and interpret them. Accordingly I continued my experiments, though informing no one of their nature.

It was on the twenty-first of February, 1901, that the thing finally occurred. As I look back across the years I realise how unreal it seems; and sometimes half wonder if old Dr. Fenton was not right when he charged it all to my excited imagination.

From H. P. Lovecraft's "Beyond the Wall of Sleep"

💡 PRO TIP

Instead of putting `<hr>` above `<footer>`, use CSS to set a border on top of `<footer>`

`<blockquote>` … `</blockquote>`

For *long or multi-paragraph quotations from another source*

Browser styles increase margin equally on the right & left

Can include `cite` attribute that points to URL (however, users will never see it, as no browser exposes it!)

HTML

```
<h3>From H. P. Lovecraft's "Dagon"</h3>

<p>Lovecraft describes an eerie landscape that appears overnight:</p>

<blockquote cite="http://www.hplovecraft.com/writings/texts/fiction/d.aspx">
  <p>
    Through some unprecedented volcanic upheaval, a portion of the ocean floor must have been thrown to the surface, exposing regions which for innumerable millions of years had lain hidden under unfathomable watery depths. …
  </p>
  <p>
    For several hours I sat thinking or brooding in the boat, which lay upon its side and afforded a slight shade as the sun moved across the heavens. As the day progressed, the ground lost some of its stickiness, and seemed likely to dry sufficiently for travelling purposes in a short time.
  </p>
</blockquote>
```

CSS

JS

From H. P. Lovecraft's "Dagon"

Lovecraft describes an eerie landscape that appears overnight:

> Through some unprecedented volcanic upheaval, a portion of the ocean floor must have been thrown to the surface, exposing regions which for innumerable millions of years had lain hidden under unfathomable watery depths. …
>
> For several hours I sat thinking or brooding in the boat, which lay upon its side and afforded a slight shade as the sun moved across the heavens. As the day progressed, the ground lost some of its stickiness, and seemed likely to dry sufficiently for travelling purposes in a short time.

📦 FORMATTING GUIDE

```
<blockquote>Ph’nglui mglw’nafh Cthulhu R’lyeh
wgah’nagl fhtagn!</blockquote>
```

👎

<blockquote> goes on 3 lines, not 1

.....

```
<blockquote>
  Ph’nglui mglw’nafh Cthulhu R’lyeh wgah’nagl
fhtagn!
</blockquote>
```

👍

📦 FORMATTING GUIDE

```
<p>
  <blockquote>
    …
  </blockquote>
</p>
```

👎

Never surround `<blockquote>` with `<p>`

.....

```
<blockquote>
  …
</blockquote>
```

👍

📦 FORMATTING GUIDE

```
<blockquote>
  H.P. Lovecraft is dead.
</blockquote>
```

👎

Don’t put text by itself in a `<blockquote>`

```
<blockquote>
  <p>
    H.P. Lovecraft is dead.
  </p>
</blockquote>
```

👍

`<figure>` … `</figure>`

Self-contained content, usually referenced as a single unit

Used to display…

» Illustrations
» Diagrams
» Photos
» Code listings
» Charts

BREALEY MYERS ALLEN

Principles *of* Corporate Finance

TENTH EDITION

2-1 Future Values and Present Values

Calculating Future Values

Money can be invested to earn interest. So, if you are offered the choice between $100 today and $100 next year, you naturally take the money now to get a year's interest. Financial managers make the same point when they say that money has a *time value* or when they quote the most basic principle of finance: *a dollar today is worth more than a dollar tomorrow.*

Suppose you invest $100 in a bank account that pays interest of $r = 7\%$ a year. In the first year you will earn interest of $.07 \times \$100 = \$7$ and the value of your investment will grow to $107:

$$\text{Value of investment after 1 year} = \$100 \times (1 + r) = 100 \times 1.07 = \$107$$

By investing, you give up the opportunity to spend $100 today and you gain the chance to spend $107 next year.

If you leave your money in the bank for a second year, you earn interest of $.07 \times \$107 = \$7.49$ and your investment will grow to $114.49:

$$\text{Value of investment after 2 years} = \$107 \times 1.07 = \$100 \times 1.07^2 = \$114.49$$

Today		Year 2
$100	$\times 1.07^2$	$114.49

Notice that in the second year you earn interest on both your initial investment ($100) and the previous year's interest ($7). Thus your wealth grows at a *compound rate* and the interest that you earn is called **compound interest.**

If you invest your $100 for t years, your investment will continue to grow at a 7% compound rate to $\$100 \times (1.07)^t$. For any interest rate r, the future value of your $100 investment will be

$$\text{Future value of } \$100 = \$100 \times (1 + r)^t$$

The higher the interest rate, the faster your savings will grow. Figure 2.1 shows that a few percentage points added to the interest rate can do wonders for your future wealth. For example, by the end of 20 years $100 invested at 10% will grow to $\$100 \times (1.10)^{20} = \$672.75$. If it is invested at 5%, it will grow to only $\$100 \times (1.05)^{20} = \$265.33$.

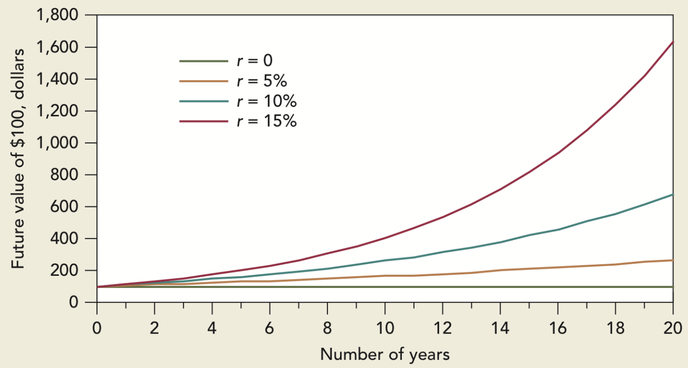


FIGURE 2.1
How an investment of $100 grows with compound interest at different interest rates.

ment will be

$$\text{Future value of \$100} = \$100 \times (1 + r)^t$$

The higher the interest rate, the faster your savings will grow. Figure 2.1 shows that a few percentage points added to the interest rate can do wonders for your future wealth. For example, by the end of 20 years \$100 invested at 10% will grow to $\$100 \times (1.10)^{20} = \$672.75$. If it is invested at 5%, it will grow to only $\$100 \times (1.05)^{20} = \$265.33$.

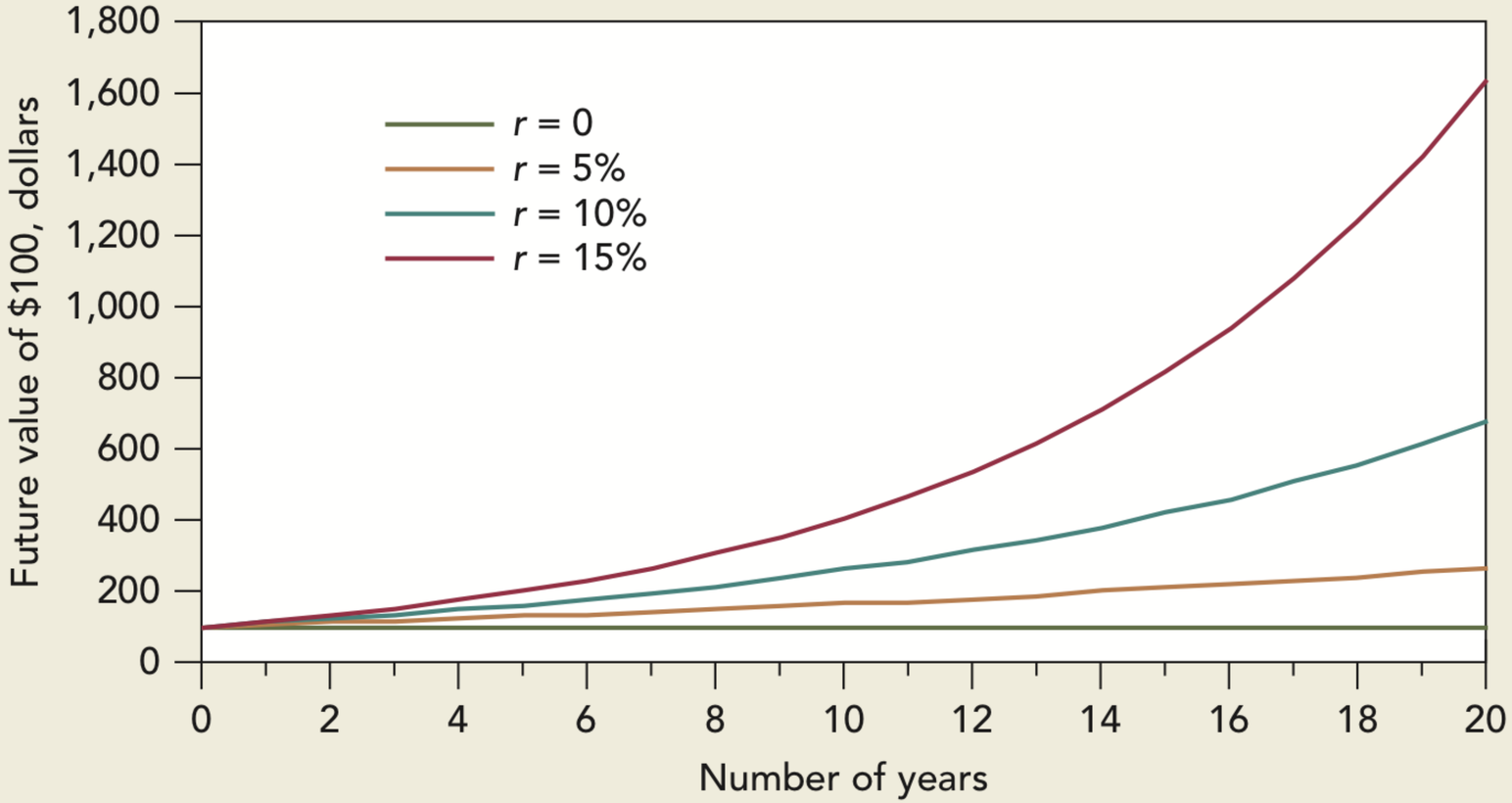


FIGURE 2.1

How an investment of \$100 grows with compound interest at different interest rates.

Referred to in main content, but could be moved elsewhere, to…

» Sidebar
» Dedicated page
» Appendix

If it is tangentially related, it should be in an `<aside>`, not `<figure>`

`<figcaption>`

Optional *caption or legend* associated with a `<figure>`

Can be first *or* last element inside `<figure>`

HTML

```
<p>
  My dog Libby was a wonderful dog, & very cute, as you can see:
</p>

<figure>
  <img src="https://s3-us-west-2.amazonaws.com/s.cdpn.io/122116/Libby.nov98.jpg" alt="My dog Libby" width="500" height="363">
  <figcaption>
    Libby when she was a few months old
  </figcaption>
</figure>
```

CSS

JS

My dog Libby was a wonderful dog, & very cute, as you can see:

Libby when she was a few months old

Do not use `<figure>` unless it is referenced in the text

```
<p>
  Cthulhu's followers speak a near-unintelligible
chant, as shown in Figure 1.
</p>
<figure>
  Ph'nglui mglw'nafh Cthulhu R'lyeh wgah'nagl
fhtagn!
  <figcaption>
    Figure 1: Cthulhu cultists' chant.
  </figcaption>
</figure>
```

```
<figure>
  <img src="cthulhu.jpg">
</figure>
```

👎

Images can go inside `<figure>`, but *do not automatically put every image in a* `<figure>` (unless it is referenced in the text)

```
<p>
  …as you can see in Figure 3.
<p>
<figure>
  <img src="cthulhu.jpg">
</figure>
```

👍

📦 FORMATTING GUIDE

```
<p>
  <figure>
  </figure>
</p>
```

👎

Never surround `<figure>` with `<p>`

.....

```
<figure>
  hp@lovecraft.com
</figure>
```

👍

✏️ SIDE NOTE

How do you put a caption on an image that is not a `<figure>`?

HTML

```
<p>
  Among the dogs in my life, I’ve been lucky enough to have the companionship of Alex, Libby, Buddy, & Dobie.
</p>

<p>
  <img src="https://s3-us-west-2.amazonaws.com/s.cdpn.io/122116/Libby.nov98.jpg" alt="My dog Libby" width="500" height="363">
  <br><i>Libby when she was a few months old</i>
</p>
```

CSS

JS

Among the dogs in my life, I’ve been lucky enough to have the companionship of Alex, Libby, Buddy, & Dobie.

Libby when she was a few months old

How rendering engines display white space

The rule: *multiple white spaces are rendered as 1 space*

Type 100 spaces? Browser shows 1 space

Type 100 tabs? Browser shows 1 space

Type 100 returns? Browser shows 1 space

With 1 exception …

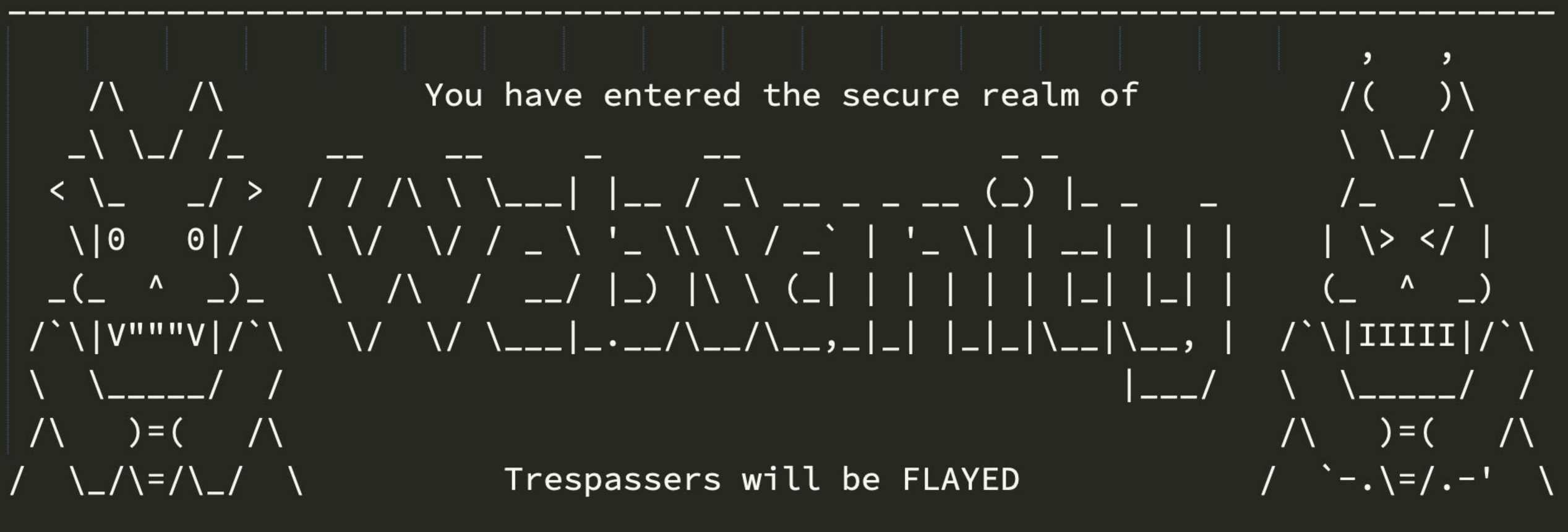
`<pre> ... </pre>`

Preformatted text that relies on typography for meaning

- White space is respected: 5 spaces rendered with 5 spaces
- Browsers use a `monospace` font for text
- Automatic word wrap disabled

Uses for `<pre>`:

» Code (normally wrapped in `<code>`)
» ASCII art
» Embedded email
» Poetry



Real live ASCII art, courtesy of Jans Carton

HTML

```
<h2>From “[in Just-]”, by e. e. cummings</h2>

<pre>
it’s
spring
and
        the
                goat-footed

baloonMan       whistles
far
and
wee
</pre>
```

CSS

JS

From “[in Just-]”, by e. e. cummings

```
it’s
spring
and
        the
                goat-footed

baloonMan       whistles
far
and
wee
```

I immediately began to worry when I felt like I was climbing down a ladder the further I walked away from Moe & Grace's. Soon I realized that instead of climbing down a ladder, I was in fact descending into the pits of Hell, and TJ was Satan himself, the tormentor, the evil one, intent on torturing us all until we were left broken shells of humanity, weak and unable to continue any longer.

We walked. "We're almost there!", TJ would proclaim confidently. Minutes would pass, as we would walk up and then down and then up and then up and then up a hill. "Oh wait," TJ would softly whisper, hoping we didn't hear him, "No, we need to go over here." More climbing …

```
                                and                        up ...
                            world   then                  and
                         entire        back             up
                      the                down         back
                    in                     again  then
                 hills                          and
             steepest
           the
         up
     walked
   we
 as
```

"We're almost there!", TJ would again announce, and what was the worst thing is that we would believe him. We would believe him! "OK, TJ! OK!", we would all puff, following along like brainwashed prisoners in a new Bataan Death March. And then the whole process would begin again. "Oh, hmmm, it's not here …", TJ would mutter. Soon it became obvious that TJ was just trying to destroy us as part of a sick game that only he could truly comprehend. And I was so glad I was wearing pants on what was perhaps the warmest night in San Francisco's history. I loved the hot feeling of stickiness on my legs as the sweat melted my jeans to my thighs. And then we finally made it! We made it! The bar was ahead! We were saved! YES!

📦 FORMATTING GUIDE

```
<p>
  <pre>the
          goat-footed
  </pre>
</p>
```

Never surround `<pre>` with `<p>`

.....

```
<pre>the
        goat-footed
</pre>
```

`<main>` … `</main>`

Dominant contents of the `<body>` of a webpage or app

Only ancestors must be `<html>`, `<body>`, & `<div>`*

Does *not* create outline or section, so `<main>` is for grouping, not sectioning

* Also `<form>` in some special cases & custom elements

Should *not* include content repeated across webpages:

- Sidebars (maybe, maybe not)
- Navigation links
- Copyright info
- Logos
- Search forms (unless you are DuckDuckGo or Google!)

```
<body>
  <header></header>
  <nav></nav>
  <main>
    <article>
      <header></header>
      <footer></footer>
    </article>
    <aside></aside>
  </main>
  <footer></footer>
</body>
```

					iOS		
`<main>`	–	12	21	7	7.1	26	4.4

Text Semantics

<wbr>

<i>
<b>
<mark>
<s>
<u>

<small>

<sub>
<sup>

<code>

<q>

<dfn>
<abbr>
<cite>

✏️ SIDE NOTE

These text semantic elements are covered elsewhere

Links: `<a>`

I18n: `<bdi>`, `<bdo>`, `<ruby>`, `<rt>`, & `<rp>`

Machine-Readable: `<data>` & `<time>`

Technical: `<kbd>`, `<samp>`, & `<var>`

CSS Hooks: `<span>`

Breaks

```
<br>

<wbr>
```

`<br>`

Line break

Looks like single spacing

Very limited uses: poetry & addresses

HTML

```
<h2>Poem</h2>

<p>
  The woods are lovely, dark and deep,
  <br>But I have promises to keep,
  <br>And miles to go before I sleep,
  <br>And miles to go before I sleep.
</p>

<h2>Address</h2>

<p>
  Dr. Marinus Bicknell Willett<br>
  10 Barnes Street<br>
  Providence, RI 02906
</p>
```

CSS

JS

Poem

The woods are lovely, dark and deep,
But I have promises to keep,
And miles to go before I sleep,
And miles to go before I sleep.

Address

Dr. Marinus Bicknell Willett
10 Barnes Street
Providence, RI 02906

`<br>` can go at the beginning or end of a line

I prefer it at the beginning so it's easier to see when scanning down through code

Warning!

Never use 2 <br> consecutively to create a fake paragraph, as it complicates styling with CSS!

HTML

```
<p>
  “Fifteen year’ gone,” he rambled, “I heered Ol’ Whateley say as haow some day we’d hear a child o’ Lavinny's a-callin’ its father’s name on the top o’ Sentinel Hill…”
</p>
<p>
  But Joe Osborn interrupted him to question the Arkham men anew.
  <br>
  <br>“What was it, anyhaow, an’ haowever did young Wizard Whateley call it aout o’ the air it come from?”
</p>
<p>
  Armitage chose his words very
```

CSS (SCSS)

```
p {
  text-indent: 1.5em;
  margin: 0;
}
```

JS

“Fifteen year’ gone,” he rambled, “I heered Ol’ Whateley say as haow some day we’d hear a child o’ Lavinny's a-callin’ its father’s name on the top o’ Sentinel Hill…”

But Joe Osborn interrupted him to question the Arkham men anew.

“What was it, anyhaow, an’ haowever did young Wizard Whateley call it aout o’ the air it come from?”

Armitage chose his words very carefully.

HTML

```
<p>
  “Fifteen year’ gone,” he rambled, “I heered Ol’ Whateley say as haow some day we’d hear a child o’ Lavinny's a-callin’ its father’s name on the top o’ Sentinel Hill…”
</p>
<p>
  But Joe Osborn interrupted him to question the Arkham men anew.
</p>
<p>
  “What was it, anyhaow, an’ haowever did young Wizard Whateley call it aout o’ the air it come from?”
</p>
<p>
```

CSS (SCSS)

```
p {
  text-indent: 1.5em;
  margin: 0;
}
```

JS

“Fifteen year’ gone,” he rambled, “I heered Ol’ Whateley say as haow some day we’d hear a child o’ Lavinny's a-callin’ its father’s name on the top o’ Sentinel Hill…”

But Joe Osborn interrupted him to question the Arkham men anew.

“What was it, anyhaow, an’ haowever did young Wizard Whateley call it aout o’ the air it come from?”

Armitage chose his words very carefully.

Warning!

Be careful using a `<br>` at all, as it overrides the default line wrapping your browser creates, which can look awful on devices that have different viewport widths

What looks decent on your desktop browser may look really bad on a mobile browser

HTML

```
<h1>
  Facts Concerning the Late Arthur Jermyn and His Family
</h1>

<!-- The first doesn't break nicely, so let's control where breaks occur using <br> -->

<h1>
  Facts Concerning<br>the Late Arthur Jermyn<br>and His Family
</h1>

<!-- Now make the frame on the right narrower & see how the <br> actually makes things worse -->
```

CSS (SCSS)

JS

Facts Concerning the Late Arthur Jermyn and His Family

Facts Concerning the Late Arthur Jermyn and His Family

HTML

```
<h1>
  Facts Concerning the Late Arthur Jermyn and His Family
</h1>

<!-- The first doesn't break nicely, so let's control where breaks occur using <br> -->

<h1>
  Facts Concerning<br>the Late Arthur Jermyn<br>and His Family
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<!-- Now make the frame on the right narrower & see how the <br> actually makes things worse -->
```

CSS (SCSS)

JS

Facts Concerning the Late Arthur Jermyn and His Family

Facts Concerning the Late Arthur Jermyn and His Family

HTML

```
<h1>
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</h1>

<!-- The first doesn't break nicely, so let's control where breaks occur using <br> -->

<h1>
  Facts Concerning<br>the Late Arthur Jermyn<br>and His Family
</h1>

<!-- Now make the frame on the right narrower & see how the <br> actually makes things worse -->
```

CSS (SCSS)

JS

Facts Concerning the Late Arthur Jermyn and His Family

Facts Concerning the Late Arthur Jermyn and His Family

💡 PRO TIP

For poetry, you should use the following CSS in case of longer lines rendered on smaller screens

```
.poetry > span {
  text-indent: -1em;
  display: inline-block;
  margin-left: 1em;
}
```

HTML

```
  <p class="poetry">
    <span>I sing the body electric,
</span>
    <br><span>The armies of those I love
engirth me and I engirth them,</span>
    <br><span>They will not let me off
till I go with them, respond to
them,</span>
    <br><span>And discorrupt them, and
charge them full with the charge of the
```

CSS (SCSS)

```
.poetry > span {
  /* Pulls 1st line to left */
  text-indent: -1em;
  /* Allows margin-left to work on inline
elements */
  /* Still need <br> so copying & pasting
works correctly */
  display: inline-block;
  /* Wrapped lines are “indented” */
  margin-left: 1em;
}
```

JS

I Sing the Body Electric

by Walt Whitman

1

I sing the body electric,
The armies of those I love engirth me and I engirth them,
They will not let me off till I go with them, respond to them,
And discorrupt them, and charge them full with the charge of the soul.

Was it doubted that those who corrupt their own bodies conceal themselves?
And if those who defile the living are as bad as they who defile the dead?

📦 FORMATTING GUIDE

```
<p>
  <br>Better yet, if called by a panther,
  <br>Don’t anther.
</p>
```

Never have a `<br>` as the first thing in any element

.....

```
<p>
  Better yet, if called by a panther,
  <br>Don’t anther.
</p>
```

📦 FORMATTING GUIDE

```
</ul>
<br> Tools
<ul>
```

Huh?

.....

```
</ul>
<p>
  Tools
</p>
<ul>
```

`<wbr>`

Word break opportunity: place(s) where rendering engines may optionally break lines of text, even where they might not otherwise create breaks

When using `<wbr>` with URLs, insert `<wbr>` *before* punctuation

This avoids leaving punctuation marks at the ends of lines

HTML

```
<p>

  http://www<wbr>.granneman<wbr>.com<wbr>/teaching<
  wbr>/cait<wbr>-center<wbr>-application<wbr>-
  information<wbr>-technology<wbr>/mastering<wbr>-
  effective<wbr>-web<wbr>-design/
</p>
```

CSS

JS

http://www.granneman.com/teaching/cait-center-application-information-technology/mastering-effective-web-design/

`<wbr>` does not automatically insert hyphens at the break

Use the *soft hyphen* character entity (``), which inserts a hyphen only at a break, after the `<wbr>`

HTML

```
<p>
  One of my favorite songs from <i>Mary
  Poppins</i> is
  Supercali<wbr>fragilistic<wbr>expiali<wbr>doci
  ous.
</p>

<!-- Use the soft hyphen to insert a hyphen at
the break -->
<p>
  One of my favorite songs from <i>Mary
  Poppins</i> is
  Supercali<wbr>&shy;fragilistic<wbr>&shy;expiali
  <wbr>&shy;docious.
</p>
```

CSS

JS

One of my favorite songs from *Mary Poppins* is Supercali fragilisticexpialidocious.

One of my favorite songs from *Mary Poppins* is Supercali-
fragilisticexpialidocious.

💡 PRO TIP

Can also automatically hyphenate with CSS properties

`word-break` & `hyphens`

Emphasis

 &

<i> & <b>

<mark>

<s> & ~~<strike>~~

<u>

`<em> ... </em>`

Text that has *stress emphasis* (that's stress as in *prominence*, not as in emotions)

Always italicized by browsers, but that's not in the spec

HTML

```
<p>
  Who's going to eat you?
  <em>Cthulhu</em> is going to eat you.
</p>

<p>
  Am I really going to get eaten? Cthulhu
  <em>is</em> going to eat you.
</p>

<p>
  What's Cthulhu going to do to me?
  Cthulhu is going to <em>eat</em> you.
</p>

<p>
  Who's Cthulhu going to eat? Cthulhu is
  going to eat <em>you</em>.
</p>
```

CSS

JS

Who's going to eat you? *Cthulhu* is going to eat you.

Am I really going to get eaten? Cthulhu *is* going to eat you.

What's Cthulhu going to do to me? Cthulhu is going to *eat* you.

Who's Cthulhu going to eat? Cthulhu is going to eat *you*.

`<strong> ... </strong>`

Strongly emphasized text

Text that shows “strong importance, seriousness, or urgency”

Always bolded by built-in browser styles, but that’s not in the spec

HTML

```
<p>
  <strong>Warning</strong>: Do not
  feed the bears.
</p>

<p>
  Your papers are due no later than
  <strong>May 8</strong>.
</p>

<p>
  Come here <strong>now</strong>.
</p>
```

CSS

JS

Warning: Do not feed the bears.

Your papers are due no later than **May 8**.

Come here **now**.

`<i> … </i>`

HTML 4: *Italicized text* (& deprecated!)

HTML5: “text in an *alternate voice* or mood, or … indicating a different quality of text”

Stylistically italic

HTML

```
<h3>Taxonomic designation</h3>
<p>That, my friend, is a
<i>Heterocephalus glaber</i>.</p>
<h3>Technical terms</h3>
<p>What you are experiencing is a
<i>PEBKAC</i> error.</p>
<h3>Idiomatic phrase from another
language</h3>
<p>“Listen, <i>boychick</i>,” the
Rabbi said, “you know
<i>bupkes</i>.”</p>
<h3>Transliteration</h3>
<p>Achilles is driven by κλέος (<i
lang="grc">kleos</i>).</p>
<h3>A thought</h3>
<p>And then it hit him: <i>I forgot to
put on pants.</i></p>
<h3>Ship name</h3>
<p>The <i>Minnow</i> set sail in 1964.
</p>
```

CSS

JS

Taxonomic designation

That, my friend, is a *Heterocephalus glaber*.

Technical terms

What you are experiencing is a *PEBKAC* error.

Idiomatic phrase from another language

“Listen, *boychick*,” the Rabbi said, “you know *bupkes*.”

Transliteration

Achilles is driven by κλέος (*kleos*).

A thought

And then it hit him: *I forgot to put on pants*.

Ship name

The *Minnow* set sail in 1964.

`<b> ... </b>`

HTML 4: *Bold text* (& deprecated!)

HTML5: “text to which attention is being drawn for utilitarian purposes without conveying any extra importance and with no implication of an alternate voice or mood”

Stylistically bold

“The `b` element should be used as a last resort when no other element is more appropriate.”

Don’t use `<b>` when you can correctly use…

- `<h1>–<h6>`
- `<em>`
- `<strong>`
- `<mark>`

HTML

```
<h3>Key words in an abstract</h3>
<p>The <b>Heartbleed Bug</b> is a
serious vulnerability in the popular
<b>OpenSSL</b> cryptographic software
library.</p>

<h3>Product names in a review</h3>
<p>The best password manager is
<b>1Password</b>.</p>

<h3>Article or story lede</h3>
<p><b>I am forced into speech because
men of science have refused to follow
my advice without knowing why.</b> It
is altogether against my will that I
tell my reasons for opposing this
contemplated invasion of the antarctic—
with its vast fossil-hunt and its
wholesale boring and melting of the
ancient ice-cap—and I am the more
reluctant because my warning may be in
vain.</p>
```

CSS

JS

Key words in an abstract

The **Heartbleed Bug** is a serious vulnerability in the popular **OpenSSL** cryptographic software library.

Product names in a review

The best password manager is **1Password**.

Article or story lede

I am forced into speech because men of science have refused to follow my advice without knowing why. It is altogether against my will that I tell my reasons for opposing this contemplated invasion of the antarctic—with its vast fossil-hunt and its wholesale boring and melting of the ancient ice-cap—and I am the more reluctant because my warning may be in vain.

`<mark> ... </mark>`

Text that is *highlighted* for reference purposes

Designed to bring reader's attention to "text that might not have been considered important by the original author"

HTML

```
<p>
  Check out the SAT words in this
  sentence from H. P. Lovecraft's "At the
  Mountains of Madness"!
</p>
<blockquote>
  In the whole <mark>spectacle</mark>
  there was a <mark>persistent</mark>,
  <mark>pervasive</mark> hint of
  <mark>stupendous</mark> secrecy and
  potential <mark>revelation</mark>; as
  if these stark, nightmare
  <mark>spires</mark> marked the
  <mark>pylons</mark> of a frightful
  gateway into forbidden spheres of
  dream, and complex <mark>gulfs</mark>
  of remote time, space, and <mark>ultra-
  dimensionality</mark>.
</blockquote>
```

CSS

JS

Check out the SAT words in this sentence from H. P. Lovecraft's "At the Mountains of Madness"!

> In the whole spectacle there was a persistent, pervasive hint of stupendous secrecy and potential revelation; as if these stark, nightmare spires marked the pylons of a frightful gateway into forbidden spheres of dream, and complex gulfs of remote time, space, and ultra-dimensionality.

					iOS		
`<mark>`	—	12	21	6.1	7.1	26	4.4

~~<strike>~~ … ~~</strike>~~

<s> … </s>

Text displayed with *strikethrough*

Was only case in which 2 elements did the same thing

HTML 4: Deprecated

HTML5: “contents that are *no longer accurate or no longer relevant*”

HTML

```
<p>
  Buy Cthulhu-Frosted Flakes for just
  $<s>10</s>5!
</p>
```

CSS

JS

Buy Cthulhu-Frosted Flakes for just $~~10~~5!

`<u> … </u>`

Underlined text

Never use this!

HTML 4: Deprecated

HTML5: “*unarticulated*, though explicitly rendered, non-textual annotation”

HTML

```
<p>
  <u>I’m a link! Click me, by Cthulhu!</u>
</p>
```

CSS

JS

I’m a link! Click me, by Cthulhu!

typewriter responds perfectly. Unwven touch and erratic thythm will cause a perfectly adjusted machie to skip, pile, crowd, or shadow. A flimsy or unéven desk will create a vibration that may result in any of these difficulties in a perfectly adjusted machine. An impro perly installed ribbon or ribbon sprool will create ribbon trouble and dim or unevenly typed impressions. Too often, because of some t of these defects of operation, a mechanic will attempg adjustments resulting in maladjusting the machine.

2. Purpose. It is the purpose of this manual to present proper methods of adjustment and repair for the benefit of all persanal engaged in adjusting and repairing typewriters. Careful study of this manual will enable proper adjustments and repairs to be made with a minimum amount of time lost in such operations.

3. Method of presentation. Attempt has been made to consolidate into xeach ~~situation~~ section similar assemblies of all of the latest models of all makes of non-portable typewriters. As nearly as possible, the material is presented in order of adjustments to be made, so that adjustments, once made, will not be affected by subsequent adjustments to other assemblies. Sequence of Adjustments (see page) details the correct approach for adjusting each make of typewriter.

📦 FORMATTING GUIDE

```
<i> Nyarlathotep </i>

<br> Shub-Niggurath
```

Never put spaces after an opening tag or before a closing tag for *any* element

.....

```
<i>Nyarlathotep</i>

<br>Shub-Niggurath
```

Size?

<small>

~~<big>~~

HTML

```
<span>Normal</span>

<small>small</small>

<big>big</big>
```

CSS

```
/* uninteresting stuff below here */

html {
  font-size: 48px;
  font-family: "Iowan Old Style", Georgia, serif;
}

```

JS

Normal small big

`<small>` … `</small>`

HTML 4: Text in a *small* font (but deprecated)

HTML5: *Side comments such as fine print*, regardless of how it looks (but usually smaller)

Examples:

» Legalese, disclaimers, & caveats
» Copyright notice
» Footnotes
» Licensing info

HTML

```html
<p>
  Try new Cthulhu-Frosted Flakes! They’re delicious!
</p>
<p>
  <small>Note: may cause nightmares, despair, passivity, & insanity.</small>
</p>

<hr>

<h2>
  No Time for the L: <small>The Scott Granneman Story</small>
</h2>
```

CSS

```css
h2 small {
  display: block;
  font-size: 1.2rem;
}
```

JS

Try new Cthulhu-Frosted Flakes! They’re delicious!

Note: may cause nightmares, despair, passivity, & insanity.

No Time for the L:
The Scott Granneman Story

Now also used as a semantically smaller part of text, e.g., as a sub-header (instead of `<h1>` followed immediately by `<h2>`, which isn't valid)

```
<h1>
   H.P. Lovecraft: <small>Creator of Cthulhu</small>
</h1>
```

HTML

```
<div class="good">
  <div></div>
  <section>
    <h2>
      Title <small>Subtitle</small>
    </h2>
    <p>
      Ph’nglui mglw’nafh Cthulhu R’lyeh wgah’nagl fhtagn!
    </p>
  </section>
</div>

<div class="bad">
  <div></div>
  <section>
    <h2>Title</h2>
    <h3>Subtitle</h3>
    <p>
      Ph’nglui mglw’nafh Cthulhu R’lyeh wgah’nagl fhtagn!
    </p>
  </section>
```

CSS

JS

Title
Subtitle

Ph’nglui mglw’nafh Cthulhu R’lyeh wgah’nagl fhtagn!

Title
Subtitle

Ph’nglui mglw’nafh Cthulhu R’lyeh wgah’nagl fhtagn!

HTML

```
<div class="good">
  <div></div>
  <section>
    <h2>
      Title <small>Subtitle</small>
    </h2>
    <p>
      Ph’nglui mglw’nafh Cthulhu R’lyeh wgah’nagl fhtagn!
    </p>
```

CSS

```
h2, h3 {
  margin-bottom: 0;
}

h3 {
  margin-top: 0;
}

h2 small {
  display: block;
  font-size: 77%;
}
```

JS

Title
Subtitle

Ph’nglui mglw’nafh Cthulhu R’lyeh wgah’nagl fhtagn!

Title
Subtitle

Ph’nglui mglw’nafh Cthulhu R’lyeh wgah’nagl fhtagn!

Inferiors & Superiors

<sub>

<sup>

HTML

```
<span>Normal</span>

<sub>sub</sub>

<sup>sup</sup>
```

CSS

```
/* uninteresting stuff below here */

html {
  font-size: 48px;
  font-family: "Iowan Old Style", Georgia, serif;
}

```

JS

Normal sub sup

`<sub> ... </sub>`

Displays *subscript*: text that is lower & usually smaller

Examples:

» Chemical formulas
» Mathematical formulas
» Subatomic particles

HTML

```
<p>
  Don’t drink that H<sub>2</sub>O!
  Cthulhu was in it!
</p>

<hr>

<p>
  Ask a Shoggoth what this means:
  C<sub>hex</sub> = 12<sub>dec</sub> =
  14<sub>oct</sub>
</p>
```

CSS

JS

Don’t drink that H_2O! Cthulhu was in it!

Ask a Shoggoth what this means: $C_{hex} = 12_{dec} = 14_{oct}$

`<sup> … </sup>`

Displays *superscript*: text that is higher & often smaller

Examples:

» Footnotes & endnotes
» Mathematical formulas
» French abbreviations

HTML

```html
<h3>Footnotes & endnotes</h3>
<p>
  From H. P. Lovecraft's "The Rats in the Walls":
</p>
<p>
  The place had not been inhabited since the reign of James the First<sup>1</sup>, when a tragedy of intensely hideous, though largely unexplained, nature had struck down the master, five of his children, and several servants…
</p>
<p>
  <small>1. James I was King of England from March 24, 1603 until his death in March 1625.</small>
</p>

<h3>Mathematical formulas</h3>
<p>
  E=mc<sup>2</sup>
</p>
```

CSS

JS

Footnotes & endnotes

From H. P. Lovecraft's "The Rats in the Walls":

The place had not been inhabited since the reign of James the First[1], when a tragedy of intensely hideous, though largely unexplained, nature had struck down the master, five of his children, and several servants…

1. James I was King of England from March 24, 1603 until his death in March 1625.

Mathematical formulas

$E=mc^2$

Technical

`<code> ... </code>`

Fragment of *computer code*

Usually displayed with a `monospace` font by rendering engines

HTML

```
<p>
  Cthulhu will be very unhappy if you do
  not use the correct DTD at the top of
  your webpage: <code>&lt;!DOCTYPE html>
  </code>.
</p>
```

CSS

JS

Cthulhu will be very unhappy if you do not use the correct DTD at the top of your webpage: `<!DOCTYPE html>`.

HTML

```
<span>normal</span>

<code>code</code>

<samp>samp</samp>

<kbd>kbd</kbd>

<var>var</var>
```

CSS

```
/* uninteresting stuff below here */

html {
  font-size: 48px;
  font-family: "Iowan Old Style", Georgia, serif;
}
```

JS

normal code samp kbd *var*

Often combined with `<pre>` when displaying code

To indicate the language used in `<code>` so that syntax highlighting scripts display correctly, use the `class` attribute with the prefix `language-`

- `language-javascript`
- `language-css`
- `language-shell`
- `language-java`
- `language-html`

HTML

```
<p>
  Add the following just before <code>&lt;/body></code>:
</p>

<pre><code class="language-html">&lt;script>
  $(document).ready(function() {
    $(".fancybox").fancybox();
  });
&lt;/script></code>
</pre>

<h3>Problems</h3>

<p>
  Add the following just before <code>&lt;/body></code>:
</p>

<pre>
<code class="language-html">
&lt;script>
  $(document).ready(function() {
    $(".fancybox").fancybox();
  });
&lt;/script></code>
</pre>
```

CSS

JS

Good

Add the following just before </body>:

```
<script>
  $(document).ready(function() {
    $(".fancybox").fancybox();
  });
</script>
```

Problems

Add the following just before </body>:

```


<script>
  $(document).ready(function() {
    $(".fancybox").fancybox();
  });
</script>
```

Quotations

`<q> ... </q>`

For *short inline quotations*

Can include `cite` attribute that points to URL (not exposed to users, so for server-side processing only)

Can nest `<q>` within `<q>`

HTML

```
<h3>Single &lt;q></h3>

<p>
  Then I thought with a shudder of what old Castro had told Legrasse about the primal Great Ones: <q>They had come from the stars, and had brought Their images with Them.</q>
</p>

<h3>Nested &lt;q></h3>

<p>
  Lovecraft's narrator realizes the cosmic nature of the horror confronting him: <q>Then I thought with a shudder of what old Castro had told Legrasse about the primal Great Ones: <q>They had come from the stars, and had brought Their images with Them.</q></q>
</p>
```

CSS

JS

Single <q>

Then I thought with a shudder of what old Castro had told Legrasse about the primal Great Ones: “They had come from the stars, and had brought Their images with Them.”

Nested <q>

Lovecraft’s narrator realizes the cosmic nature of the horror confronting him: “Then I thought with a shudder of what old Castro had told Legrasse about the primal Great Ones: ‘They had come from the stars, and had brought Their images with Them.’”

Default	“ ” ‘ ’
Afrikaans	“ ” ‘ ’
Aghem	„ ” ‚ ’
Bambara	« » “ ”
Belarusian	« » „ “
Bulgarian	„ “ „ “
Cantonese	「 」 『 』
Dutch	‘ ’ “ ”
Georgian	„ “ « »
German	„ “ ‚ ‘
Kako	« » ‹ ›
Kinyarwanda	« » ‘ ’
Polish	„ ” « »
Rwa	“ ” ‘ ’
Serbian	„ “ ‘ ‘
Turkmen	“ ” “ ”

Quotation marks in different languages

WHATWG spec says: “The `q` element must not be used in place of quotation marks that do not represent quotes; for example, it is inappropriate to use the `q` element for marking up sarcastic statements.”

No air quotes!

Chris Farley on Saturday Night Live • March 19, 1994

✏️ SIDE NOTE

Use hyphens & dashes correctly

Hyphen	-	Join words	Kareem Abdul-Jabbar Jay-Z Newly-formed group
En dash	–	Range	June–August 7–9 p.m.
Em dash	—	Parenthetical Inverted colon Interruption	Oh no—he thought—it’s her! Beer & brats—a great breakfast. I lo—no, I’ll say it later.
Minus	−	Math	$i^2 = -1$

-- or --- is *not* an en or em dash!

"Those who don't know better might use two successive hyphens to indicate an em dash-like interruption. In her book, *Type Rules!*, Ilene Strizver describes this as a 'typographically incorrect and downright ugly practice.'" —Kate Mooney

Hyphen	-	-	-
En dash	–	: ⌥- ⊞: Alt+0150	–
Em dash	—	: ⇧⌥- ⊞: Alt+0151	—
Minus	−	: ^⌘␣ & search for “minus” ⊞: Alt+2212 (Really, just use a hyphen)	−

Terms

<dfn>

<abbr>

<cite>

`<dfn>` … `</dfn>`

A word or term that is *defined* …

» in the text around it, or
» via the `title` attribute, which displays a tooltip when the user hovers over the term

Usually italicized by browsers

HTML

```
<p>
  <dfn>Cthulhu</dfn> is a fictional cosmic entity that first appeared in the short story “The Call of Cthulhu”, written by H. P. Lovecraft.
</p>

<p>
  Some of the cosmic entities created by H. P. Lovecraft include <dfn title="A Great Old One that appears as a mix of a giant human, an octopus, and a dragon">Cthulhu</dfn>, <dfn title="A messenger of the Outer Gods who often appears as a tall, slim, joyous man">Nyarlathotep</dfn>, and <dfn title="An Elder God who appears as an elderly, human male with white hair">Nodens</dfn>.
</p>
```

CSS

JS

Cthulhu is a fictional cosmic entity that first appeared in the short story “The Call of Cthulhu”, written by H. P. Lovecraft.

Some of the cosmic entities created by H. P. Lovecraft include *Cthulhu*, *Nyarlathotep*, and *Nodens*.

A Great Old One that appears as a mix of a giant human, an octopus, and a dragon

`<abbr> ... </abbr>`

A word or term that is *abbreviated* (shortened but used to represent the complete form) or is an *acronym*

May use `title` attribute to give the meaning

Some browsers display it with a dotted underline

HTML

```
<p>
  One of the most influential horror
  writers in history is <abbr
  title="Howard Phillips">H. P.</abbr>
  Lovecraft.
</p>
```

CSS

JS

One of the most influential horror writers in history is H. P. Lovecraft.

Howard Phillips

✏️ SIDE NOTE

Identify these abbreviations & acronyms:

ADA • ALT • AOL • API • BRB • CD • CGI • CMS • CSS • CTRL • DMV • DNS • DOS • DTD • DVD • EFF • FAQ • FQDN • FSF • FTP • GIF • GPL • HTML • HTTP • IE • IIRC • IIS • IM • IMAP • IO • JPEG • KB • LOL • MB • MSDN • MSN • OPML • P2P • PBS • PDF • POP3 • ROTFLMAO • ROYGBIV • RSS • Scuba • SPECTRE • SQL • SSH • SSN • TANSTAAFL • URL • US • VNC • W3C • WYSIWYG • XHTML • XML

`<cite> … </cite>`

HTML 4: *Citation* or reference to a creative work

HTML5: *Title* of a work

Most rendering engines italicize (fix that in CSS)

What things have titles? WHATWG's examples:

"… a book, a paper, an essay, a poem, a score, a song, a script, a film, a TV show, a game, a sculpture, a painting, a theatre production, a play, an opera, a musical, an exhibition, a legal case report, a computer program, etc"

HTML

```
<p>
  H. P. Lovecraft wrote one of the most famous sentences in horror fiction, found in <cite>The Call of Cthulhu</cite>: “Ph’nglui mglw’nafh Cthulhu R’lyeh wgah’nagl fhtagn”.
</p>
```

CSS

JS

H. P. Lovecraft wrote one of the most famous sentences in horror fiction, found in *The Call of Cthulhu*: “Ph’nglui mglw’nafh Cthulhu R’lyeh wgah’nagl fhtagn”.

`<blockquote>` & `<q>` provide a `cite` attribute to reference online resources

`<cite>` & `cite` serve different purposes!

The content in the `<cite>` element is displayed by the browser; the value of the `cite` attribute is not

Yes, this is confusing… ¯_(ツ)_/¯

HTML

```
<p>H.P. Lovecraft describes an eerie landscape that appears overnight in “<cite class="short-story">Dagon</cite>”, found in his <cite>Collected Short Stories</cite>:</p>

<blockquote cite="http://www.hplovecraft.com/writings/texts/fiction/d.aspx">
  <p>
    Through some unprecedented volcanic upheaval, a portion of the ocean floor must have been thrown to the surface, exposing regions which for innumerable millions of years had lain hidden under unfathomable watery depths. …
  </p>
  <p>
    For several hours I sat thinking or brooding in the boat, which lay upon its side and afforded a slight shade as the sun moved across the heavens. As the day progressed, the ground lost some of its stickiness, and
```

CSS

```
.short-story {
  font-style: normal;
}
```

JS

H.P. Lovecraft describes an eerie landscape that appears overnight in “Dagon”, found in his *Collected Short Stories*:

> Through some unprecedented volcanic upheaval, a portion of the ocean floor must have been thrown to the surface, exposing regions which for innumerable millions of years had lain hidden under unfathomable watery depths. …
>
> For several hours I sat thinking or brooding in the boat, which lay upon its side and afforded a slight shade as the sun moved across the heavens. As the day progressed, the ground lost some of its stickiness, and seemed likely to dry sufficiently for travelling purposes in a short time.

CSS Hooks

```
<div>

<span>
```

`<div> … </div>`

Generic container for adding a *division* (a *block box* or new object on the document tree) that can be manipulated with CSS & JavaScript

Should be used *only* if nothing semantic is appropriate

Does *nothing* on its own!

`<span> ... </span>`

Generic container for adding a *span* of text (an *inline box* or new object on the document tree) that can be manipulated with CSS & JavaScript

Should be used *only* if nothing semantic is appropriate

Does *nothing* on its own!

Lists

 &

<menu>

<dl>, <dt>, <dd>

Unordered (Bulleted)	Ordered (Numbered)	Description (~~Definition~~)
• Fee • Fie • Fo • Fum	1. Alien 2. Aliens 3. Alien^3	Lovecraft Cthulhu Burroughs Tarzan Dent Doc Savage

3 types of lists

	Type of List		
	Unordered	Ordered	Description
Main Element	`<ul>`	`<ol>`	`<dl>`
List Item Element	`<li>`	`<li>`	`<dt>` & `<dd>`

`<li> ... </li>`

List items in both unordered & ordered lists

Can be inside either `<ul>` or `<ol>`

Do *not* use on its own!

HTML

```
<p>
  Great Old Ones in the Cthulhu Mythos:
</p>
<ul>
  <li>Cthulhu</li>
  <li>Cthugha</li>
  <li>Cyäegha</li>
</ul>

<p>
  Great Old Ones in the Cthulhu Mythos, ranked:
</p>
<ol>
  <li>Cthulhu</li>
  <li>Cthugha</li>
  <li>Cyäegha</li>
</ol>
```

CSS

JS

Great Old Ones in the Cthulhu Mythos:

- Cthulhu
- Cthugha
- Cyäegha

Great Old Ones in the Cthulhu Mythos, ranked:

1. Cthulhu
2. Cthugha
3. Cyäegha

📦 FORMATTING GUIDE

```
<li>
  The Call of Cthulhu
</li>
```

Normally I put `<li>` on 1 line, but you don't have to (if you don't, 8 `<li>`s take up 24 lines in your code!)

.....

```
<li>The Call of Cthulhu</li>
```

`<ul>` … `</ul>`

Unordered list

Item order doesn’t matter

Usually displayed with a solid bullet •, with sub-lists using other symbols ◦ ■ (all controllable via CSS)

HTML

```
<p>
  The Great Old Ones in the Cthulhu
  Mythos:
</p>
<ul>
  <li>Cthugha</li>
  <li>Cthulhu</li>
  <li>Cyäegha</li>
  <li>Ghatanothoa</li>
  <li>Hastur</li>
  <li>Ithaqua</li>
  <li>Tsathoggua</li>
</ul>
```

CSS

JS

The Great Old Ones in the Cthulhu Mythos:

- Cthugha
- Cthulhu
- Cyäegha
- Ghatanothoa
- Hastur
- Ithaqua
- Tsathoggua

`<ol>` … `</ol>`

Ordered list

Item order matters

Usually displayed with Arabic numbers (`1.`), but can use other numbering `01 I i A a` (all controllable via CSS)

HTML

```
<p>
  The Underpants Gnomes' 3-part business
  plan:
</p>
<ol>
  <li>Collect Underpants</li>
  <li>???</li>
  <li>Profit!</li>
</ol>
```

CSS

JS

The Underpants Gnomes' 3-part business plan:

1. Collect Underpants
2. ???
3. Profit!

Attributes

- `type`: numbering type (`1`, `A`, `a`, `I`, `i`), but only use with technical or legal document (use CSS instead)
- `start`: start value for numbering `<li>`s, but value is always an Arabic numeral (`start="3"`, even if `III` or `C` is used)
- `reversed`: `<li>`s are numbered in reverse order

					iOS		
`reversed`	–	79	18	6.1	6	20	4.4

`<ol>` is often used to create navigation via CSS

Why? Because the order of navigation matters

HTML Tidy

```
<nav>
  <ol class="crumbs">
    <li><a href="#">Home</a></li>
    <li><a href="#">Lovecraft</a></li>
    <li><a href="#">Great Old Ones</a></li>
    <li><a href="#">Cthulhu</a></li>
  </ol>
</nav>
```

CSS Tidy

```
.crumbs li {
  display: inline-block;
}

.crumbs li::after {
    content: '➤';
    padding: 0 0.25em 0 0.5em;
    color: #999;
  }

.crumbs li a {
  display: inline;
  border: 0;
```

JS Tidy

Home ➤ Lovecraft ➤ Great Old Ones ➤ Cthulhu

```
<ol>
  <li>Home</li>
  <li>Lovecraft</li>
  <li>Great Old Ones</li>
  <li>Cthulhu</li>
</ol>
```

It looks all fancy thanks to CSS!

You can nest unordered & ordered lists, as many levels deep as you'd like

HTML

```
<ol>
  <li>Earth
    <ol>
      <li>Tarzan
        <ol>
          <li><i>Tarzan of the Apes</i></li>
          <li><i>The Return of Tarzan</i></li>
          <li><i>The Beasts of Tarzan</i></li>
        </ol>
      </li> <!-- end Tarzan -->
      <li>Pellucidar</li>
      <li>Caspak</li>
    </ol>
  </li> <!-- end Earth -->
  <li>Other planets
    <ol>
      <li>Mars
        <ol>
          <li><i>A Princess of Mars</i></li>
          <li><i>The Gods of Mars</i></li>
          <li><i>The Warlord of Mars</i></li>
        </ol>
      </li> <!-- end Mars -->
      <li>Venus</li>
    </ol>
  </li> <!-- end Other planets -->
</ol>
```

CSS

JS

1. Earth
    1. Tarzan
        1. *Tarzan of the Apes*
        2. *The Return of Tarzan*
        3. *The Beasts of Tarzan*
    2. Pellucidar
    3. Caspak
2. Other planets
    1. Mars
        1. *A Princess of Mars*
        2. *The Gods of Mars*
        3. *The Warlord of Mars*
    2. Venus

HTML

```html
<ul>
  <li>Great Old Ones
    <ul>
      <li>Cthugha</li>
      <li>Cthulhu</li>
      <li>Cyäegha</li>
    </ul>
  </li> <!-- end Great Old Ones -->
  <li>Gods
    <ul>
      <li>Outer Gods
        <ul>
          <li>Azathoth</li>
          <li>Nyarlathotep</li>
          <li>Yog-Sothoth</li>
        </ul>
      </li> <!-- end Outer Gods -->
      <li>Elder Gods
        <ul>
          <li>Bastet</li>
          <li>Hypnos</li>
          <li>Nodens</li>
        </ul>
      </li> <!-- end Elder Gods -->
    </ul>
  </li> <!-- end Gods -->
</ul>
```

CSS

JS

- Great Old Ones
  - Cthugha
  - Cthulhu
  - Cyäegha
- Gods
  - Outer Gods
    - Azathoth
    - Nyarlathotep
    - Yog-Sothoth
  - Elder Gods
    - Bastet
    - Hypnos
    - Nodens

Combining `<ul>` & `<ol>` is a bit weird, but allowed

HTML

```html
<ul>
  <li>Earth
    <ul>
      <li>Tarzan
        <ol>
          <li><i>Tarzan of the Apes</i></li>
          <li><i>The Return of Tarzan</i></li>
          <li><i>The Beasts of Tarzan</i></li>
        </ol>
      </li> <!-- end Tarzan -->
      <li>Pellucidar</li>
      <li>Caspak</li>
    </ul>
  </li> <!-- end Earth -->
  <li>Other planets
    <ul>
      <li>Mars
        <ol>
          <li><i>A Princess of Mars</i></li>
          <li><i>The Gods of Mars</i></li>
          <li><i>The Warlord of Mars</i></li>
        </ol>
      </li> <!-- end Mars -->
      <li>Venus</li>
    </ul>
  </li> <!-- end Other planets -->
</ul>
```

CSS

JS

- Earth
  - Tarzan
    1. *Tarzan of the Apes*
    2. *The Return of Tarzan*
    3. *The Beasts of Tarzan*
  - Pellucidar
  - Caspak
- Other planets
  - Mars
    1. *A Princess of Mars*
    2. *The Gods of Mars*
    3. *The Warlord of Mars*
  - Venus

The sub-list *must* nest inside the parent's `<li>` … `</li>`

HTML

```
<div class="good">
  <div></div>
  <section>
    <ol>
      <li>Tarzan
        <ol>
          <li><i>Tarzan of the Apes</i></li>
          <li><i>The Return of Tarzan</i></li>
          <li><i>The Beasts of Tarzan</i></li>
        </ol>
      </li> <!-- end Tarzan -->
      <li>Pellucidar</li>
    </ol>
  </section>
</div>
<div class="bad">
  <div></div>
  <section>
    <ol>
      <li>Tarzan</li>
      <ol>
        <li><i>Tarzan of the Apes</i></li>
        <li><i>The Return of Tarzan</i></li>
        <li><i>The Beasts of Tarzan</i></li>
      </ol>
      <li>Pellucidar</li>
    </ol>
```

CSS

JS

1. Tarzan
    1. *Tarzan of the Apes*
    2. *The Return of Tarzan*
    3. *The Beasts of Tarzan*
2. Pellucidar

1. Tarzan
    1. *Tarzan of the Apes*
    2. *The Return of Tarzan*
    3. *The Beasts of Tarzan*
2. Pellucidar

`<menu> ... </menu>`

Acts like `<ul>` in every way, except it is *semantically correct for building menus*

HTML

```
<h2><code>&lt;nav></code> &amp;
<code>&lt;menu></code> without CSS</h2>

<nav>
  <menu>
    <li><a href="#">Life</a></li>
    <li><a href="#">Writings</a></li>
    <li><a href="#">Characters</a></li>
    <li><a href="#">Influence</a></li>
    <li><a href="#">Contact</a></li>
  </menu>
</nav>

<h2><code>&lt;nav></code> &amp;
<code>&lt;menu></code> with CSS</h2>

<nav class="styled">
  <menu>
    <li><a href="#">Life</a></li>
    <li><a href="#">Writings</a></li>
    <li><a href="#">Characters</a></li>
    <li><a href="#">Influence</a></li>
```

CSS (SCSS)

JS

<nav> & <menu> without CSS

- Life
- Writings
- Characters
- Influence
- Contact

<nav> & <menu> with CSS

Life | Writings | Characters | Influence | Contact

HTML

```
<h2><code>&lt;nav></code> &amp;
<code>&lt;menu></code> with CSS</h2>

<nav class="styled">
  <menu>
    <li><a href="#">Life</a></li>
    <li><a href="#">Writings</a></li>
    <li><a href="#">Characters</a></li>
    <li><a href="#">Influence</a></li>
    <li><a href="#">Contact</a></li>
  </menu>
</nav>
```

CSS (SCSS)

```
nav.styled menu {
  margin: 0;
  padding: 0;
  list-style: none;

  li {
    float: left;
    display: block;
    background: #4B4B4B;
```

JS

<nav> & <menu> without CSS

- Life
- Writings
- Characters
- Influence
- Contact

<nav> & <menu> with CSS

Life | Writings | Characters | Influence | Contact

Originally, <menu> was supposed to include <menuitem> as children, & browsers were supposed to turn the following into a menu for users on a webpage:

```
<menu>
   <menuitem>Tsathoggua</menuitem>
   <menuitem>Cxaxukluth</menuitem>
   <menuitem>Zstylzhemghi</menuitem>
</menu>
```

This was never really supported, & <menuitem> is dead, as you can see in the compatibility chart

					iOS		
`<menu>`	11	12	8	Y	Y	Y	Y

Note: the purpose of `<menu>` has changed. The old use with `<menuitem>` is not supported at all, but all browsers now support the new use with `<li>`, but compatibility charts have not been updated

`<dl> … </dl>`

HTML 4: *Definition list*

HTML5: Renamed *Description List*

Lists terms & descriptions of those terms, like…

» Glossary
» Metadata keys & values

HTML

```html
<h3>Glossary</h3>
<dl>
  <dt>Cthulhu</dt>
  <dd>"…a monster of vaguely anthropoid
  outline, but with an octopus-like head whose
  face was a mass of feelers, a scaly, rubbery-
  looking body, prodigious claws on hind and
  fore feet, and long, narrow wings
  behind."</dd>
  <dt>R'lyeh</dt>
  <dd>"The nightmare corpse-city of R'lyeh …
  was built in measureless eons behind history
  by the vast, loathsome shapes that seeped
  down from the dark stars."</dd>
</dl>

<h3>Metadata keys & values</h3>
<dl>
  <dt>Name</dt>
  <dd>Cthulhu</dd>
  <dt>Deity Type</dt>
  <dd>Great Old One</dd>
  <dt>Location</dt>
  <dd>R'lyeh</dd>
  <dt>Current status</dt>
  <dd>Sleeping</dd>
</dl>
```

CSS

JS

Glossary

Cthulhu
: "…a monster of vaguely anthropoid outline, but with an octopus-like head whose face was a mass of feelers, a scaly, rubbery-looking body, prodigious claws on hind and fore feet, and long, narrow wings behind."

R'lyeh
: "The nightmare corpse-city of R'lyeh … was built in measureless eons behind history by the vast, loathsome shapes that seeped down from the dark stars."

Metadata keys & values

Name
: Cthulhu

Deity Type
: Great Old One

Location
: R'lyeh

Current status
: Sleeping

`<dt> ... </dt>`

Description term

The word or phrase being defined or described

`<dd> ... </dd>`

Description data for a description term

HTML

```html
<h3>Glossary</h3>
<dl>
  <dt>Cthulhu</dt>
  <dd>"…a monster of vaguely anthropoid
  outline, but with an octopus-like head whose
  face was a mass of feelers, a scaly, rubbery-
  looking body, prodigious claws on hind and
  fore feet, and long, narrow wings
  behind."</dd>
  <dt>R'lyeh</dt>
  <dd>"The nightmare corpse-city of R'lyeh …
  was built in measureless eons behind history
  by the vast, loathsome shapes that seeped
  down from the dark stars."</dd>
</dl>

<h3>Metadata keys & values</h3>
<dl>
  <dt>Name</dt>
  <dd>Cthulhu</dd>
  <dt>Deity Type</dt>
  <dd>Great Old One</dd>
  <dt>Location</dt>
  <dd>R'lyeh</dd>
  <dt>Current status</dt>
  <dd>Sleeping</dd>
</dl>
```

CSS

JS

Glossary

Cthulhu
: "…a monster of vaguely anthropoid outline, but with an octopus-like head whose face was a mass of feelers, a scaly, rubbery-looking body, prodigious claws on hind and fore feet, and long, narrow wings behind."

R'lyeh
: "The nightmare corpse-city of R'lyeh … was built in measureless eons behind history by the vast, loathsome shapes that seeped down from the dark stars."

Metadata keys & values

Name
: Cthulhu

Deity Type
: Great Old One

Location
: R'lyeh

Current status
: Sleeping

May have more than 1 <dt> and/or 1 <dd>

HTML

```
<dl>
  <dt>H. P. Lovecraft</dt>
    <dd>An American horror writer.</dd>
    <dd>A psychedelic band from the 1960s.</dd>
  <dt>Cthulhu</dt>
  <dt>Yog-Sothoth</dt>
    <dd>Malevolent creatures in the Cthulhu
    Mythos</dd>
</dl>
```

CSS

JS

H. P. Lovecraft
: An American horror writer.
: A psychedelic band from the 1960s.

Cthulhu

Yog-Sothoth
: Malevolent creatures in the Cthulhu Mythos

📦 FORMATTING GUIDE

Don’t do this — it makes your code harder to read

```
<dl>
  <dt>Cxaxukluth</dt><dd>Spawn of Azathoth; father of Hziulquoigmnzhah & Ghisguth</dd>
  <dt>Hziulquoigmnzhah</dt><dd>Son of Cxaxukluth; uncle of Tsathoggua</dd>
  <dt>Tsathoggua</dt><dd>Son of Ghisguth; aka the Sleeper of N'kai</dd>
</dl>
```

Just put `<dt>` & `<dd>` on separate lines

📦 FORMATTING GUIDE

```
<ul>
  <dl>
    <li><dt>Term</dt></li>
    <li><dd>Description</dd></li>
  </dl>
</ul>
```

No. Just no.

An unordered list inside `<dd>`? Maybe. But this? No.

📦 FORMATTING GUIDE

```
<p>
   <ul>
      …
   </ul>
</p>
```

Never surround `<ul>`, `<ol>`, & `<dl>` with `<p>`

```
<ul>
   …
</ul>
```

Links

<a>

<map> & <area>

<link>

Before continuing, let’s go over *The Anatomy of a Web Address*

Easily our most-viewed & most-loved pen on CodePen!

The Anatomy of a Web Address

URL

```
http://foo:bar@www.websanity.com:80/calendar/index.php?month=10&week=3#thurs
```

Scheme

This is commonly referred to as the *protocol*.

```
http://foo:bar@www.websanity.com:80/calendar/index.php?month=10&week=3#thurs
```

Authority

http://foo:bar@www.websanity.com:80/calendar/index.php?month=10&week=3#thurs

User Information

http://foo:bar@www.websanity.com:80/calendar/index.php?month=10&week=3#thurs

User Name

http://foo:bar@www.websanity.com:80/calendar/index.php?month=10&week=3#thurs

Password

http://foo:bar@www.websanity.com:80/calendar/index.php?month=10&week=3#thurs

Host

`http://foo:bar@www.websanity.com:80/calendar/index.php?month=10&week=3#thurs`

Top-Level Domain

`http://foo:bar@www.example.com:80/calendar/index.php?month=10&week=3#thurs`

Second-Level Domain

`http://foo:bar@www.example.com:80/calendar/index.php?month=10&week=3#thurs`

Third-Level Domain

This is commonly referred to as the *subdomain*. Technically each level of the domain name is a subdomain.

`http://foo:bar@www.websanity.com:80/calendar/index.php?month=10&week=3#thurs`

Registered Domain Name

`http://foo:bar@www.websanity.com:80/calendar/index.php?month=10&week=3#thurs`

Port

`http://foo:bar@www.websanity.com:80/calendar/index.php?month=10&week=3#thurs`

Path

http://foo:bar@www.websanity.com:80/calendar/index.php?month=10&week=3#thurs

Path Segment

http://foo:bar@www.websanity.com:80/calendar/index.php?month=10&week=3#thurs

Path Segment

http://foo:bar@www.websanity.com:80/calendar/index.php?month=10&week=3#thurs

Query

http://foo:bar@www.websanity.com:80/calendar/index.php?month=10&week=3#thurs

Key-Value Pair

http://foo:bar@www.websanity.com:80/calendar/index.php?month=10&week=3#thurs

Key

http://foo:bar@www.websanity.com:80/calendar/index.php?month=10&week=3#thurs

Value

http://foo:bar@www.websanity.com:80/calendar/index.php?month=10&week=3#thurs

Fragment Identifier

http://foo:bar@www.websanity.com:80/calendar/index.php?month=10&week=3#thurs

from RFC 3686 — *Uniform Resource Identifier (URI): Generic Syntax*

`<a> ... </a>`

Anchor that defines a hyperlink

`href` attribute (*hypertext reference*) is required

No `href`? No blue color, no underline... & no link!

HTML

```
<p>
  Don’t blame me—I voted for <a href="http://cthulhu-for-prez.com">Cthulhu</a>!
</p>
```

CSS

JS

Don’t blame me—I voted for Cthulhu!

`href` attribute must link to:

» a URL; e.g., `https://cthulhu.com/hpl.html` or `/hpl.html`
» a path; e.g., `hastur.html` or `dagon/` or `dagon/hastur.html` or `../dagon/hastur.html`
» a query; e.g., `?monster=shoggoth`
» a fragment identifier; e.g., `#cthulhu`
» a combination of any of the above

2 places to link to with `<a>`

» External: to another website, via *absolute URLs**
» Internal: to other pages on your website, via *root-relative* or *document-relative* URLs

* Yes, you can use absolute URLs to link to pages of the site you're already on, but you shouldn't

`https://cthulhu.com/hpl.html`

Absolute (complete) URL

Only way to create external links to other websites

You can use it for internal linking, but don’t

`/hpl.html`
`/dagon/hastur.html`

Root-relative URL

Web server fills in scheme (`https://`) & domain (`foo.com`)

Always starts at root of website & continues from there

You're at `https://cthulhu.com/hpl.html`

You click on `<a href="/dagon/hastur.html">`

Your browser sees `/` at beginning & thinks, "This link points to another page at `https://cthulhu.com`"

The link is evaluated as `https://cthulhu.com/dagon/hastur.html`

You're at `https://granneman.com`

All of these links…

- `/presentations/html-css-responsive-web-design/`
- `/writing/books/`
- `/personal/bio/`

…are evaluated as having `https://granneman.com` in front of them

💡 PRO TIP

Understand *default* (or *main*, or *index*) pages

💡 PRO TIP

Type `www.nytimes.com` & press Enter — where do you end up?

On a webpage

The New York Times

Saturday, November 4, 2017 | Today's Paper | Video | 47°F | S. & P. 500 +0.31%

Why Flood Insurance in U.S. Is Broke and Broken

By MARY WILLIAMS WALSH
12:51 PM ET

- A government-run program is virtually the only source of flood insurance for more than five million households.
- It keeps running out of money. Now, an unusual coalition of insurers, environmentalists and fiscal conservatives is calling for major changes.

113 Comments

'Frustrated' Trump Wishes for Power Over Justice System

By PETER BAKER

https://www.nytimes.com

Bryan Denton for The New York Times

Smuggled, Beaten and Drugged: Illicit Trade Imperils Apes

The New York Times tracked international ape smugglers

Opinion

Let's Open Up About Addiction and Recovery

By LAURA HILGERS

There is a lot to be

Kids, Would You Please Start Fighting?

By ADAM GRANT

Creativity doesn't come from agreement, it comes from good-natured quarreling.

- **Editorial: A Good Choice for the Fed. But if Only …**
- **Collins: Rick Perry's Strange Sex Story**
- **Stephens: The Sleazy Case Against Mueller's Probe**
- **An Injustice in the Bergdahl Sentence**

$1.3 Million for That?

By VANESSA FRIEDMAN

Paul Manafort has robbed us of a "lavish lifestyle" fantasy.

Are Christians Supposed to Be Communists?

By DAVID BENTLEY HART

I recently translated the New Testament. I learned a few things.

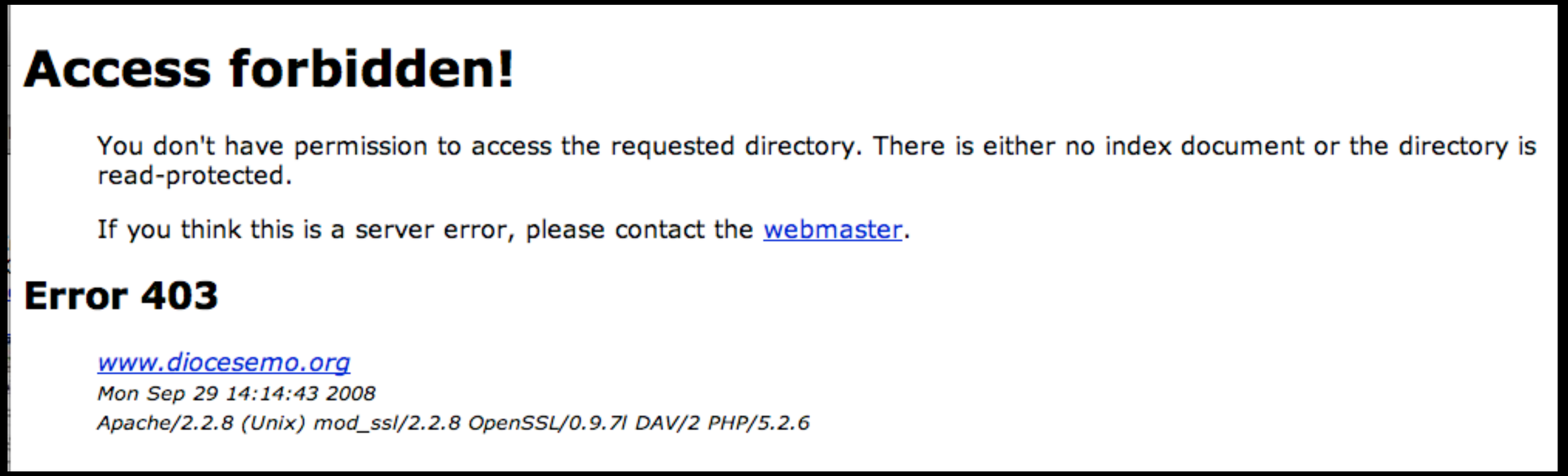
- **The Promise of Ecstasy for PTSD**
- **The G.O.P. Tax Bill Helps Me and That's Too Bad**
- **A Billionaire Destroyed His Newsrooms Out of Spite**

💡 PRO TIP

Type `www.websanity.com` & press Enter — where do you end up?

On a webpage

WebSanity
SERVICES
PORTFOLIO
ABOUT
TEAM
CONTACT
https://www.websanity.com
We empower and enlighten!
WebSanity works closely with clients to plan, develop, and host attractive, usable websites that enable editors to manage all aspects of their sites.
LEARN MORE



In both cases, you ended up at a webpage

You didn’t get an error 403…

Or an Error 404...

Or a list of files (this should be *very* rare!)

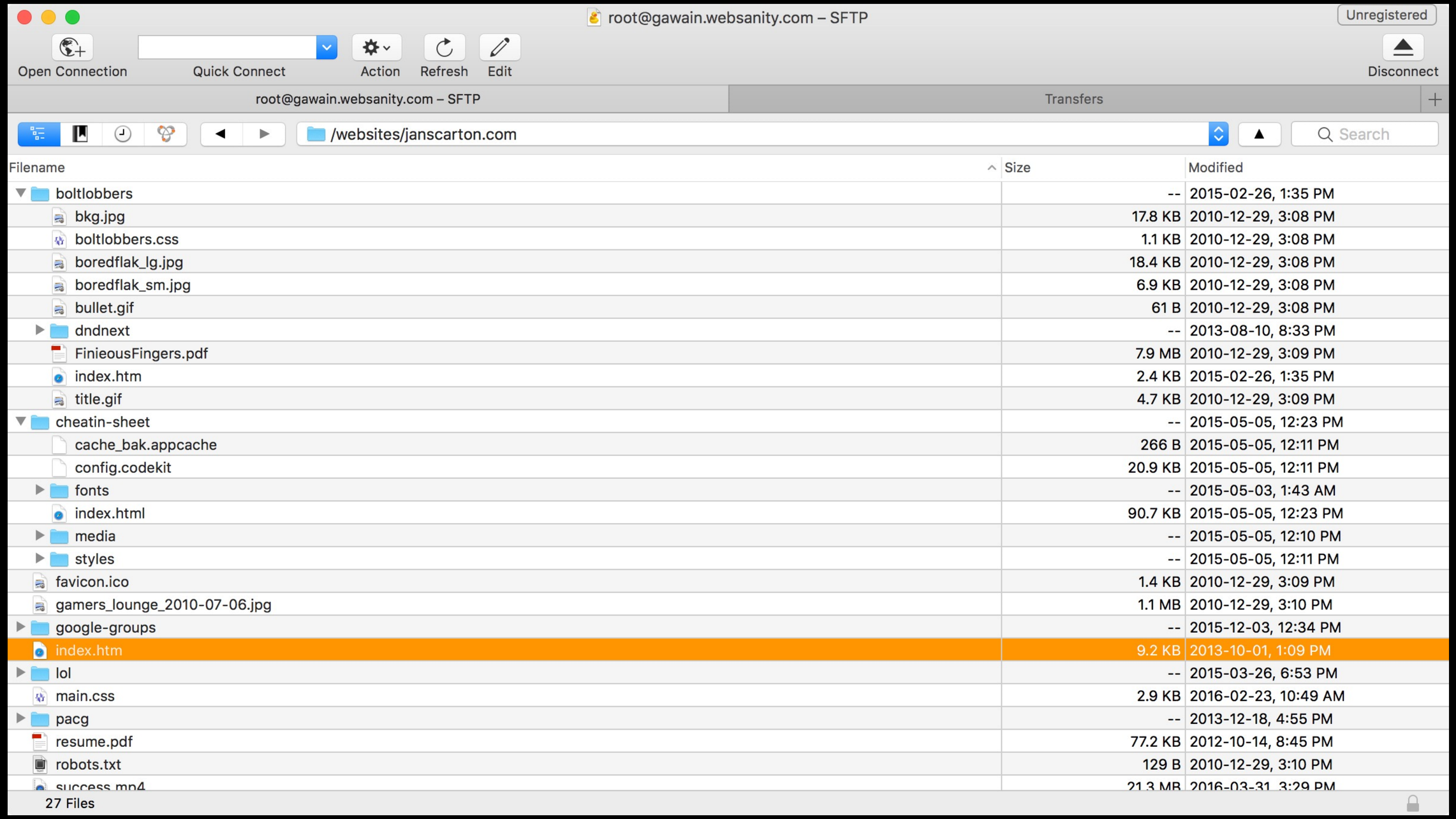
💡 PRO TIP

When you request a URL that points to a directory instead of an actual webpage, the web server will (usually) serve a *default* (AKA *main* or *index*) page

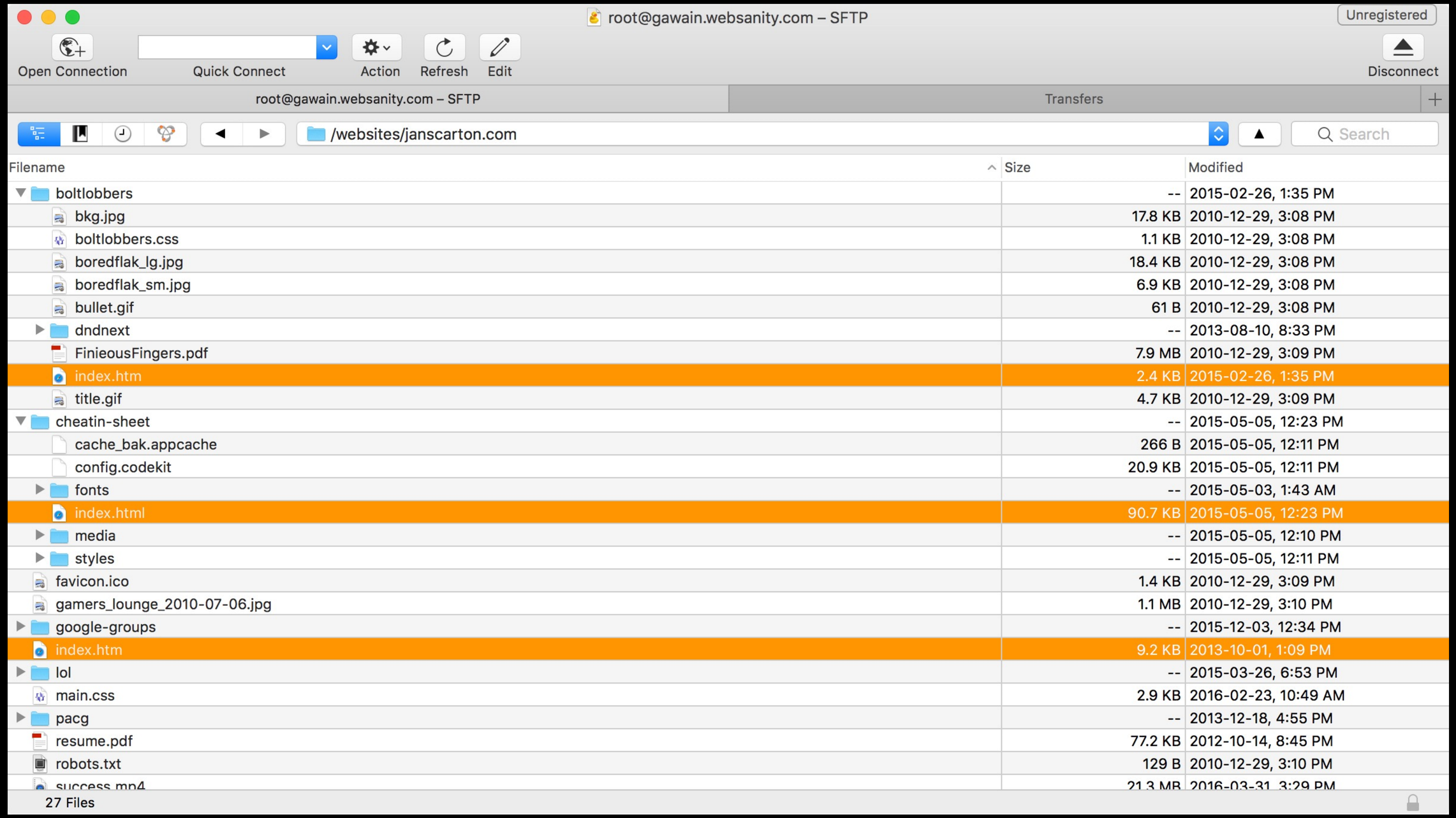
Apache	IIS	Nginx
`index.html`	`default.htm`	`index.html`
`index.php`	`default.asp`	`index.htm`
`index.htm`	`default.aspx`	`index.php`
`index.shtml`	`index.htm`	
	`index.html`	
	`iisstart.htm`	

Typical default pages — but you can enter any you want

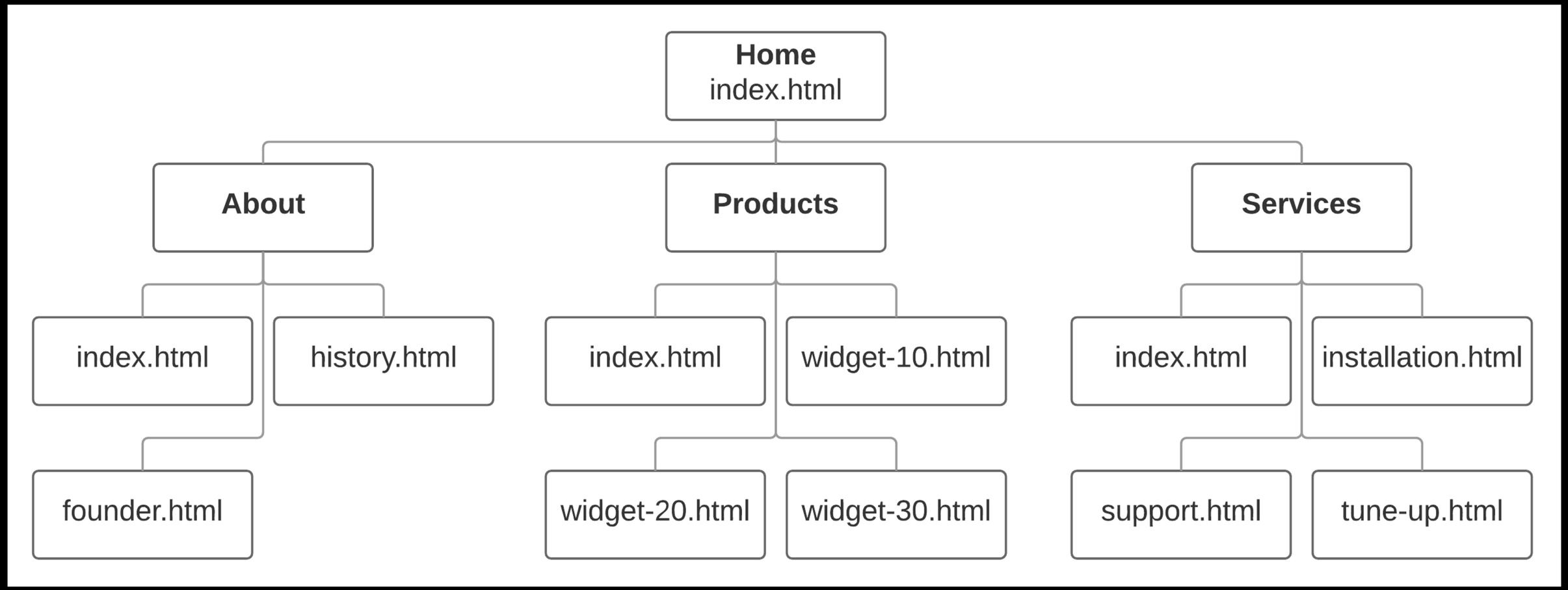
PRO TIP


root@gawain.websanity.com – SFTP
Unregistered
Open Connection
Quick Connect
Action
Refresh
Edit
Disconnect
root@gawain.websanity.com – SFTP
Transfers
/websites/janscarton.com
Search
Filename
Size
Modified
boltlobbers -- 2015-02-26, 1:35 PM
bkg.jpg 17.8 KB 2010-12-29, 3:08 PM
boltlobbers.css 1.1 KB 2010-12-29, 3:08 PM
boredflak_lg.jpg 18.4 KB 2010-12-29, 3:08 PM
boredflak_sm.jpg 6.9 KB 2010-12-29, 3:08 PM
bullet.gif 61 B 2010-12-29, 3:08 PM
dndnext -- 2013-08-10, 8:33 PM
FinieousFingers.pdf 7.9 MB 2010-12-29, 3:09 PM
index.htm 2.4 KB 2015-02-26, 1:35 PM
title.gif 4.7 KB 2010-12-29, 3:09 PM
cheatin-sheet -- 2015-05-05, 12:23 PM
cache_bak.appcache 266 B 2015-05-05, 12:11 PM
config.codekit 20.9 KB 2015-05-05, 12:11 PM
fonts -- 2015-05-03, 1:43 AM
index.html 90.7 KB 2015-05-05, 12:23 PM
media -- 2015-05-05, 12:10 PM
styles -- 2015-05-05, 12:11 PM
favicon.ico 1.4 KB 2010-12-29, 3:09 PM
gamers_lounge_2010-07-06.jpg 1.1 MB 2010-12-29, 3:10 PM
google-groups -- 2015-12-03, 12:34 PM
index.htm 9.2 KB 2013-10-01, 1:09 PM
lol -- 2015-03-26, 6:53 PM
main.css 2.9 KB 2016-02-23, 10:49 AM
pacg -- 2013-12-18, 4:55 PM
resume.pdf 77.2 KB 2012-10-14, 8:45 PM
robots.txt 129 B 2010-12-29, 3:10 PM
success.mp4 21.3 MB 2016-03-31, 3:29 PM
27 Files

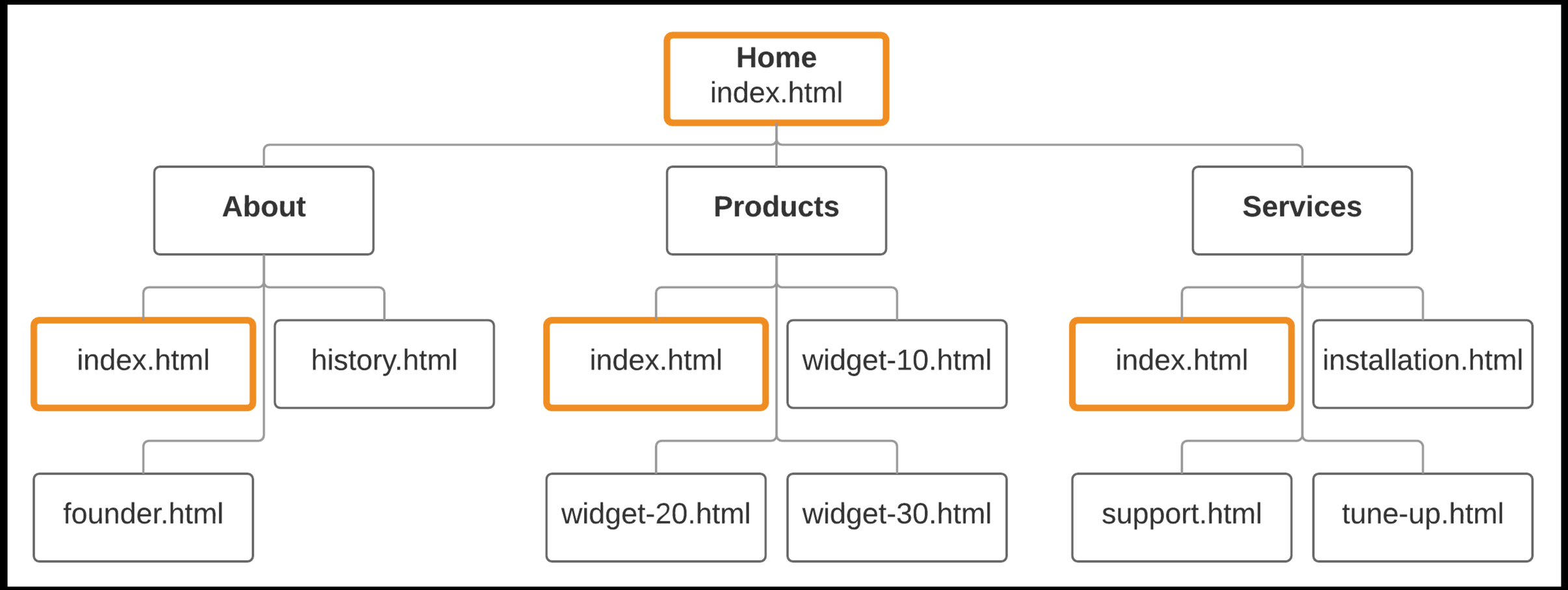
PRO TIP


root@gawain.websanity.com – SFTP
Unregistered
Open Connection
Quick Connect
Action
Refresh
Edit
Disconnect
root@gawain.websanity.com – SFTP
Transfers
/websites/janscarton.com
Search
Filename
Size
Modified
boltlobbers -- 2015-02-26, 1:35 PM
bkg.jpg 17.8 KB 2010-12-29, 3:08 PM
boltlobbers.css 1.1 KB 2010-12-29, 3:08 PM
boredflak_lg.jpg 18.4 KB 2010-12-29, 3:08 PM
boredflak_sm.jpg 6.9 KB 2010-12-29, 3:08 PM
bullet.gif 61 B 2010-12-29, 3:08 PM
dndnext -- 2013-08-10, 8:33 PM
FinieousFingers.pdf 7.9 MB 2010-12-29, 3:09 PM
index.htm 2.4 KB 2015-02-26, 1:35 PM
title.gif 4.7 KB 2010-12-29, 3:09 PM
cheatin-sheet -- 2015-05-05, 12:23 PM
cache_bak.appcache 266 B 2015-05-05, 12:11 PM
config.codekit 20.9 KB 2015-05-05, 12:11 PM
fonts -- 2015-05-03, 1:43 AM
index.html 90.7 KB 2015-05-05, 12:23 PM
media -- 2015-05-05, 12:10 PM
styles -- 2015-05-05, 12:11 PM
favicon.ico 1.4 KB 2010-12-29, 3:09 PM
gamers_lounge_2010-07-06.jpg 1.1 MB 2010-12-29, 3:10 PM
google-groups -- 2015-12-03, 12:34 PM
index.htm 9.2 KB 2013-10-01, 1:09 PM
lol -- 2015-03-26, 6:53 PM
main.css 2.9 KB 2016-02-23, 10:49 AM
pacg -- 2013-12-18, 4:55 PM
resume.pdf 77.2 KB 2012-10-14, 8:45 PM
robots.txt 129 B 2010-12-29, 3:10 PM
success.mp4 21.3 MB 2016-03-31, 3:29 PM
27 Files

💡 PRO TIP


Home
index.html
About
Products
Services
index.html
history.html
index.html
widget-10.html
index.html
installation.html
founder.html
widget-20.html
widget-30.html
support.html
tune-up.html

💡 PRO TIP


Home
index.html
About
Products
Services
index.html
history.html
index.html
widget-10.html
index.html
installation.html
founder.html
widget-20.html
widget-30.html
support.html
tune-up.html

To understand *document-relative URLs*, you need to understand the basics of how *paths* work

Computer paths specify where a file or folder is located

⊞: `C:\Users\scott\Pictures\yog-sothoth.jpg`

: `/Users/scott/Pictures/yog-sothoth.jpg`

✏️ SIDE NOTE

None of these will ever work on the public Web, so *never* use them as the value of `href`:

- `C:\Users\HPL\Documents\cthulhu.html`
- `\Documents\cthulhu.html`
- `\cthulhu.html`
- `file:///anything`

Web servers use a specified folder as the *root folder* of a website

Everything in the root folder *is* the website

On *nix, website root folders go inside `/var/www`

All the files & assets for my website go inside `www.granneman.com`

All the files & assets for Finn's website go inside `www.finn.com`

And so on

When the web server is serving files from `www.cthulhu.com`, it acts as though `www.cthulhu.com` is the only folder on the server

Every internal link is based on the fact that everything exists *solely inside* `www.cthulhu.com`

Start with standard folders & a default page

The 4 folders & the file are all *siblings*, in the same folder

The 4 folders & the file are also *children* of the `www.granneman.com` folder

Add a `privacy.html` page

`index.html` & `privacy.html` are now siblings

`index.html` needs to link to `privacy.html`

Since they're in the same folder, linking is easy:

```
<a href="privacy.html">
```

This is true for sibling files in any folder

Add another folder with files in it: `web-dev/browsers`

`index.html` needs to link to its other 3 sibling webpages

```
<a href="chrome.html">
<a href="firefox.html">
<a href="safari.html">
```

Add more files & folders

Create a link on `web-dev/index.html` pointing to `sublime.html`:

```
<a href="editors/sublime.html">
```

`web-dev/index.html` is a sibling of `editors`, so go into it & find `sublime.html`

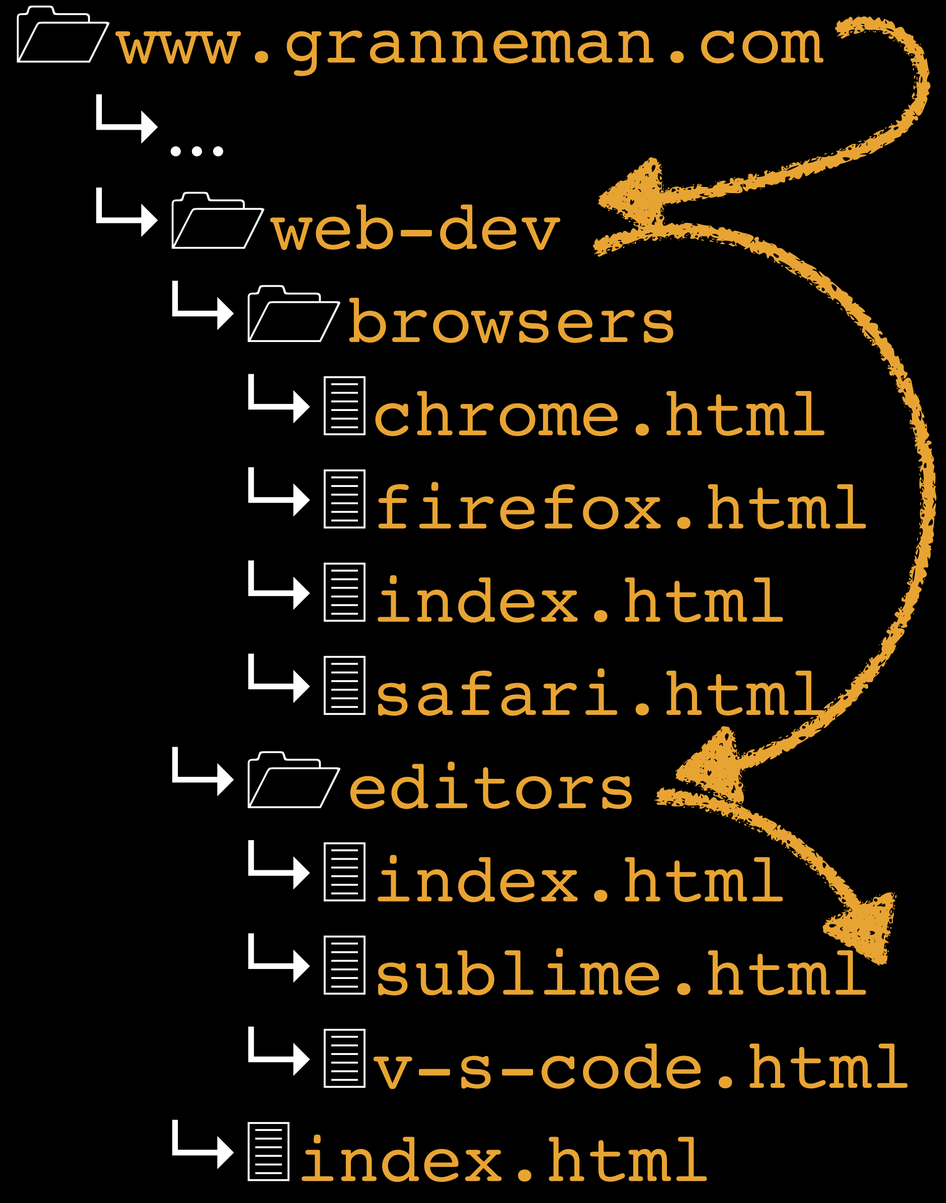
💡 PRO TIP

Remember root-relative URLs that start with `/`?

You could do that here too:

```
<a href="/web-dev/
editors/sublime.html">
```

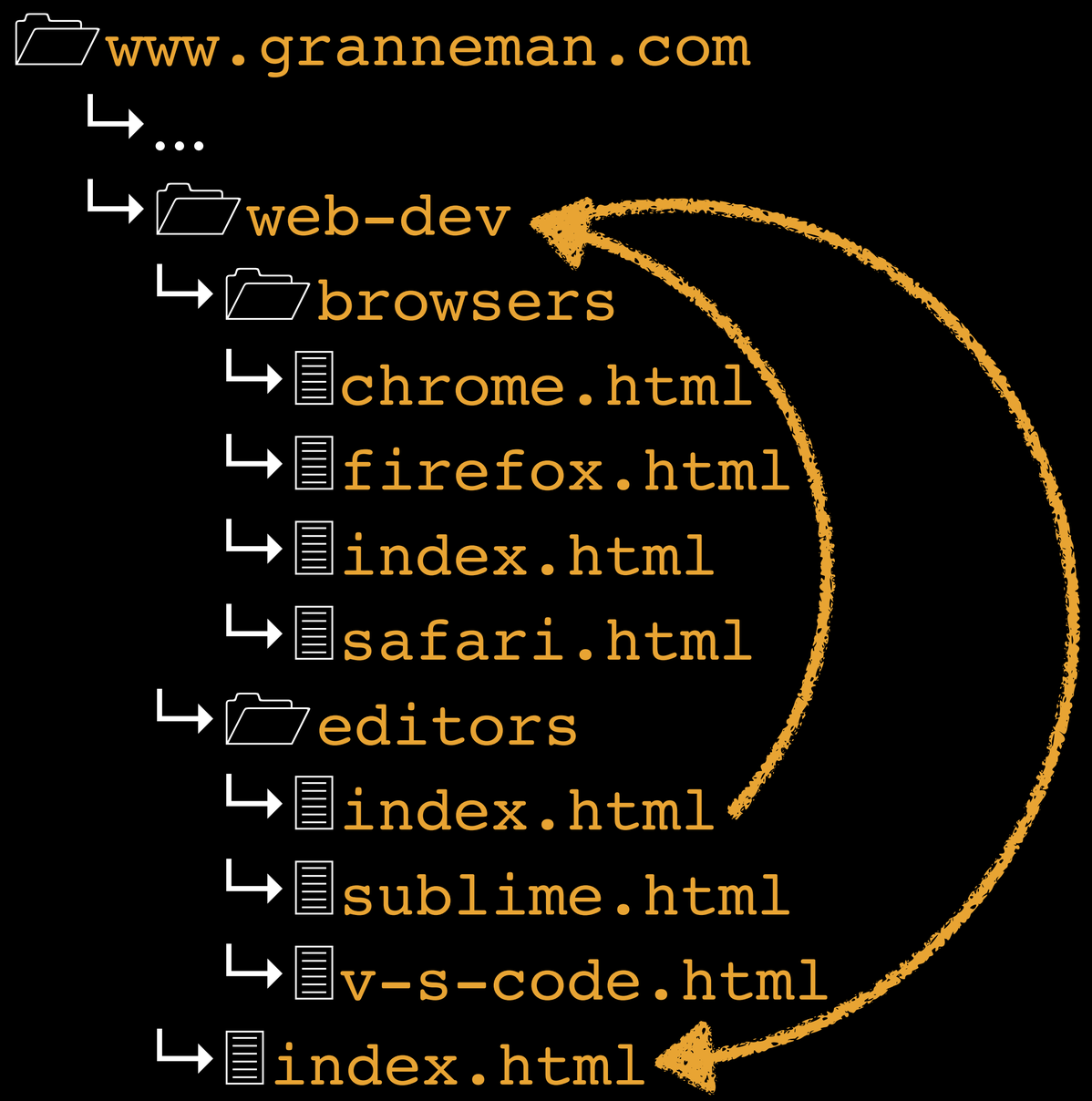
Start at `/`, go down into `web-dev`, then into `editors`, & then find `sublime.html`



What if I want to link from `editors/index.html` to `web-dev/index.html`?

```
<a href="../index.
html">
```

`..` means go *up* one directory, so go up from `editors` into `web-dev` & find `index.html`



`index.html` is a default page, however, so actually we could do this:

```
<a href="../">
```

`..` means go up from `editors` into `web-dev` & find the default page, which is `index.html`

Or we could use a root-relative URL along with the default page!

```
<a href="/web-dev/">
```

Start at `/`, go down into `web-dev`, & then find the default page, which is `index.html`

Add some sections that'll be on my website

I need to link `index.html` to `main.css`

`index.html` & the `css` folder are siblings

`main.css` is the child of `css`

```
<link … href="css/
main.css">
```

To link to `main.css`, `index.html` has go into `css`, & then select `main.css`

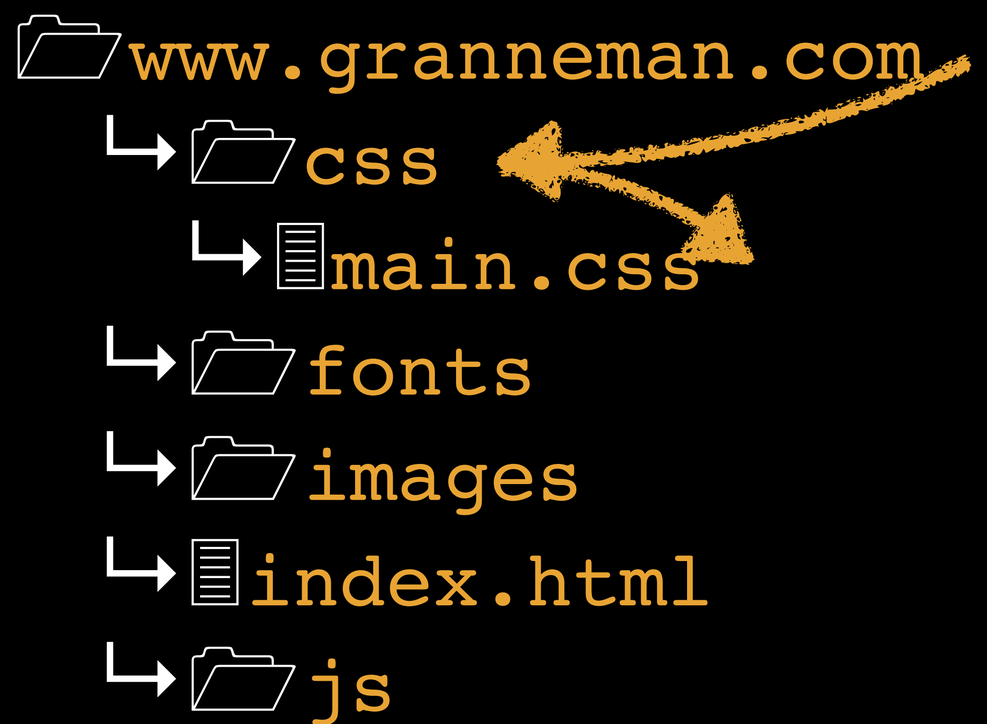
💡 PRO TIP

Remember root-relative URLs that start with `/`?

You could do that here too:

```
<link … href="/css/
main.css">
```

Start at `/`, go down into `css`, & then find `main.css`



(Actually, this is what I always do when linking to CSS)

Absolute	`https://cthulhu.com/hpl.html`	Complete URL
Root-relative	`/hpl.html` `/dagon/hastur.html`	Web server fills in scheme & domain
Document-relative	`hpl.html`	Same directory
	`dagon/hastur.html`	Down into sub-directory
	`../dagon/hastur.html`	Up into parent directory

Page fragments & fragment identifiers

Name preceded by `#`, specifying an internal location in a webpage that is targeted using the `id` attribute

Can be pointed to on the same page, from other pages on the same site, or from other sites

HTML

```
<h3 id="toc">Table of Contents</h3>
<ul>
  <li><a href="#the-tomb">The Tomb</a></li>
  <li><a href="#dagon">Dagon</a></li>
  <li><a href="#beyond-the-walls">Beyond the Walls
  of Sleep</a></li>
</ul>

<hr>

<h3 id="the-tomb">The Tomb <a href="#toc">[TOC]</a>
</h3>
<p>In relating the circumstances which have led to
my confinement…</p>

<h3 id="dagon">Dagon <a href="#toc">[TOC]</a></h3>
<p>I am writing this under an appreciable mental
strain…</p>

<h3 id="beyond-the-walls">Beyond the Walls of Sleep
<a href="#toc">[TOC]</a></h3>
<p>I have frequently wondered if the majority of
mankind…</p>
```

CSS

JS

Table of Contents

- The Tomb
- Dagon
- Beyond the Walls of Sleep

The Tomb [TOC]

In relating the circumstances which have led to my confinement…

Dagon [TOC]

I am writing this under an appreciable mental strain…

Beyond the Walls of Sleep [TOC]

I have frequently wondered if the majority of mankind…

Hey, old-timers! 👵 👴

Do not make a “named anchor” or a “bookmark” like this:

```
<h2><a name="hpl"></a>H.P. Lovecraft</h2>
```

Obsolete! Use this instead:

```
<h2 id="hpl">H.P. Lovecraft</h2>
```

Use `target="_blank"` to open the URL in a new browser tab

```
<a href="cthulhu.html" target="_blank">
```

However, this is often very confusing &/or annoying to users — & it breaks the back button!

Do *not* do this unless you have a very good reason!

Bad reasons for `target="_blank"`

- You like it
- You want to keep users on your webpage
- You're linking to a PDF

OK reasons for `target="_blank"`

» User-initiated media is playing
» You need to link to info a user needs while filling out a form

💡 PRO TIP

For security reasons, you must also use `rel="noopener"`:

```
<a href="cthulhu.html" target="_blank"
rel="noopener">
```

For more info, see mathiasbynens.github.io/rel-noopener/

Want to create a fake link that looks like a hyperlink but doesn't go anywhere?

Do not use `<a href="#">Oops</a>`, as that will jump to the top of the page when clicked

Use one of these:

- `<a href="❌">Fake!</a>` ⭐
- `<a href="#id-that-does-not-exist">Fake!</a>` ⭐
- `<a href="javascript:void(0)">Fake!</a>`
- `<a href="#" onClick="return false;">Fake!</a>`

For email links, use
`href="mailto:name@example.com"`

You can also include a subject & CC addresses, but those are not as widely supported

HTML

```html
<h3>Email address</h3>
<p>
  <a
  href="mailto:cthulhu@rlyeh.com">Email
  Cthulhu</a>
</p>

<h3>Email address with Subject</h3>
<p>
  <a href="mailto:cthulhu@rlyeh.com
?subject=Stay%20sleeping">Email
Cthulhu</a>
</p>

<h3>Email address with Subject & CC</h3>
<p>
  <a href="mailto:cthulhu@rlyeh.com
?subject=Stay%20sleeping
&Cc=herbert.west@miskatonic.edu">Email
Cthulhu</a>
</p>
```

CSS

JS

Email address

Email Cthulhu

Email address with Subject

Email Cthulhu

Email address with Subject & CC

Email Cthulhu

If your link is simply `<a href="mailto:">`, a new email window will open in the user's mail client with no destination address at all

The user can then set the TO & the SUBJECT for herself

If you use webmail (e.g., Gmail, Yahoo, Outlook.com), clicking on a `mailto` link probably will not open a new email

You'll need to follow the instructions at "A guide to getting webmail services to work with `mailto` links" (chnsa.ws/yc) … & even then, they might not work

For phone numbers, use `href="tel:+18005551212"`

On mobile devices, clicking opens your phone app

On desktops, it depends on your OS & software

- On my Mac, it opens FaceTime
- On Jans' Mac, he is prompted to use FaceTime or Skype
- On Windows, you're asked to pick an app

What about extensions?

`,` adds a *pause*

`;` adds a *wait* (a long pause)

```
<a href="tel:+18005551212;123">Call us!</a>
```

For addresses, use:

```
<a href="http://maps.apple.com/?
q=454+Angell+St+Providence+RI+02906">address</a>

<a href="http://maps.apple.com/?q=02906">address
</a>

<a href="http://maps.apple.com/?
q=Providence+RI">address</a>
```

Use `maps.apple.com` — it works on every browser & on every OS!

Table of Contents

Introduction
Mail Links
Phone Links
FaceTime Links
SMS Links
Map Links
iTunes Links
YouTube Links
Revision History

RELATED DOCUMENT
App Programming Guide for iOS

Map Links

The maps URL scheme is used to show geographical locations and to generate driving directions between two points. If your app includes address or location information, you can use map links to open that information in the Maps app in iOS or macOS.

Unlike some schemes, map URLs do not start with a “maps” scheme identifier. Instead, map links are specified as regular `http` links and are opened either in Safari or the Maps app on the target platform.

Table 5-1 lists the supported parameters along with a brief description of each.

Table 5-1 Supported Apple Maps parameters

Parameter	Meaning	Values
`t`	The map type. If you don’t specify one of the documented values, the current map type is used.	▪ `m` (standard view) ▪ `k` (satellite view) ▪ `h` (hybrid view) ▪ `r` (transit view)
`q`	The query. This parameter is treated as if its value had been typed into the Maps search field by the user. Note that `q=*` is not supported The `q` parameter can also be used as a label if the location is explicitly defined in the `ll` or `address` parameters.	A URL-encoded string that describes the search object, such as “pizza,” or an address to be geocoded
`address`	The address. Using the address parameter simply displays the specified location, it does not perform a search for the location.	An address string that geolocation can understand.
`near`	A hint used during search. If the `sll` parameter is missing or its value is incomplete, the value of `near` is used instead.	A comma-separated pair of floating point values that represent latitude and

Feedback

Internet Engineering Task Force (IETF) A. Mayrhofer
Request for Comments: 5870 IPCom
Category: Standards Track C. Spanring
ISSN: 2070-1721 June 2010

A Uniform Resource Identifier for Geographic Locations ('geo' URI)

Abstract

This document specifies a Uniform Resource Identifier (URI) for geographic locations using the 'geo' scheme name. A 'geo' URI

There is a `geo:` URI scheme

Only Android supports it, but its implementation doesn't adhere to the actual standard 😜

`bingmaps:`, `ms-drive-to:`, & `ms-walk-to:` work on Windows

`maps:` works on Android & Windows

Scheme (protocol)-relative URLs leave out `http(s):`

`//www.miskatonic-expedition.com/elder-ones.htm`

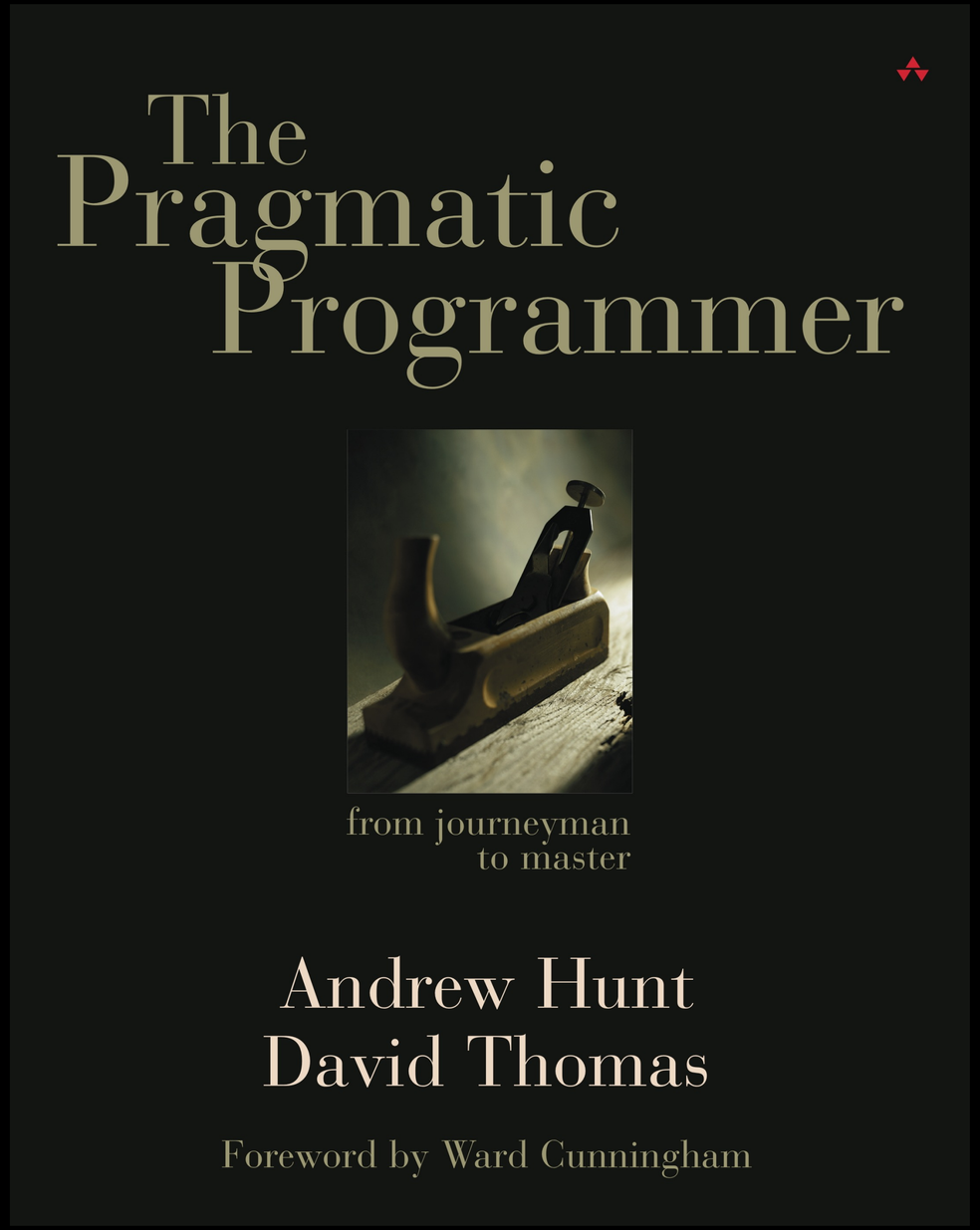
If the page is served via http, the browser uses http

If the page is served via https, the browser uses https

Actually, do NOT use protocol-relative URLs, as it’s insecure (why encourage links that use HTTP?)

Just use HTTPS wherever you can

If your site is on HTTP, it’s perfectly safe to request HTTPS assets (if your site is on HTTPS, you cannot request HTTP assets)



DRY: *Don't Repeat Yourself*

"Every piece of knowledge must have a single, unambiguous, authoritative representation within a system."

📦 FORMATTING GUIDE

```
<h2><a
href="hpl.html">Title
Text</a></h2>
<p>
  <a
href="hpl.html"><img…>
</a>
</p>
```

Before HTML5 👎
Not DRY

```
<a href="hpl.html">
  <h2>Title Text</h2>
  <p>
    <img…>
  </p>
</a>
```

HTML5 👍
DRY

`<map> ... </map>`

Defines an *image map*, a list of coordinates that define hyperlinked areas on an image

`shape` attribute's value can be `rect`, `poly`, or `circle`

`<area> ... </area>`

Defines a *linked section* in an image map

Must be inside `<map>`

HTML

```
<figure>
<img id="Image-Maps-Com-image-maps-2014-05-07-124457" src="https://s3-us-west-2.amazonaws.com/s.cdpn.io/122116/Miskatonic_University_in_Arkham_-_From_Lovecraft_Country_Return_to_Arkham_-_CC_A-NC-SA_2.5_license_copy.jpeg" border="0" width="688" height="351" orgwidth="688" orgheight="351" usemap="#miskatonic-map" alt="" />
<map name="miskatonic-map" id="miskatonic-map">
  <area id="carter-hall" alt="Carter Hall" title="Carter Hall" href="http://www.miskatonic-expedition/carter-hall/" shape="rect" coords="56,154,202,301"></area>
  <area id="locksley-hall" alt="Locksley Hall" title="Locksley Hall" href="http://www.miskatonic-expedition/locksley-hall/" shape="rect" coords="436,81,480,166">
  </area>
  <area id="dorms" alt="Men's Dormitories" title="Dormitories" href="http://www.miskatonic-
```

CSS

JS

Miskatonic University

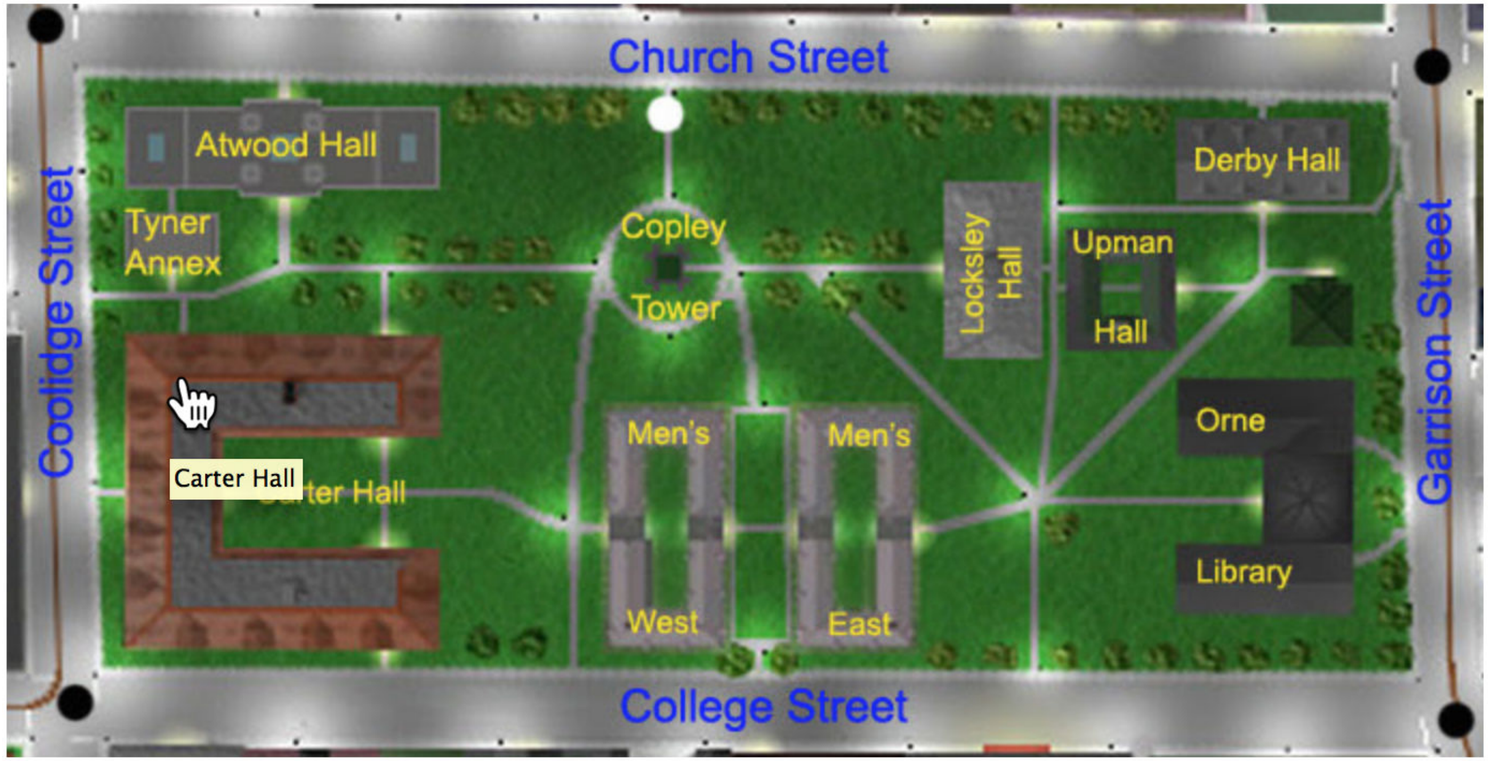


Image from Lovecraft Country: Return to Arkham, under a Creative Commons Attribution-NonCommercial-ShareAlike 2.5 license.

HTML

```
    <area id="library" alt="Library"
    title="Library"
    href="http://www.miskatonic-
    expedition.com/library" shape="poly"
    coords="549,175,626,176,628,284,549,2
    84,544,284,546,254,589,254,587,209,55
    8,210"></area>
    <area id="copley-tower" alt="Copley
    Tower" title="Copley Tower"
    href="http://www.miskatonic-
    expedition.com/copley-tower"
    shape="circle" coords="308,120,35">
    </area>
</map>

<figcaption>
    Image from <a
    href="http://www.lovecraftcountry.com
    /comic/map.shtml">Lovecraft Country:
    Return to Arkham</a>, under a <a
    href="http://creativecommons.org/lice
    nses/by-nc-sa/2.5/">Creative Commons
    Attribution-NonCommercial-ShareAlike
    2.5</a> license.
</figcaption>
</figure>
```

CSS

JS

Miskatonic University

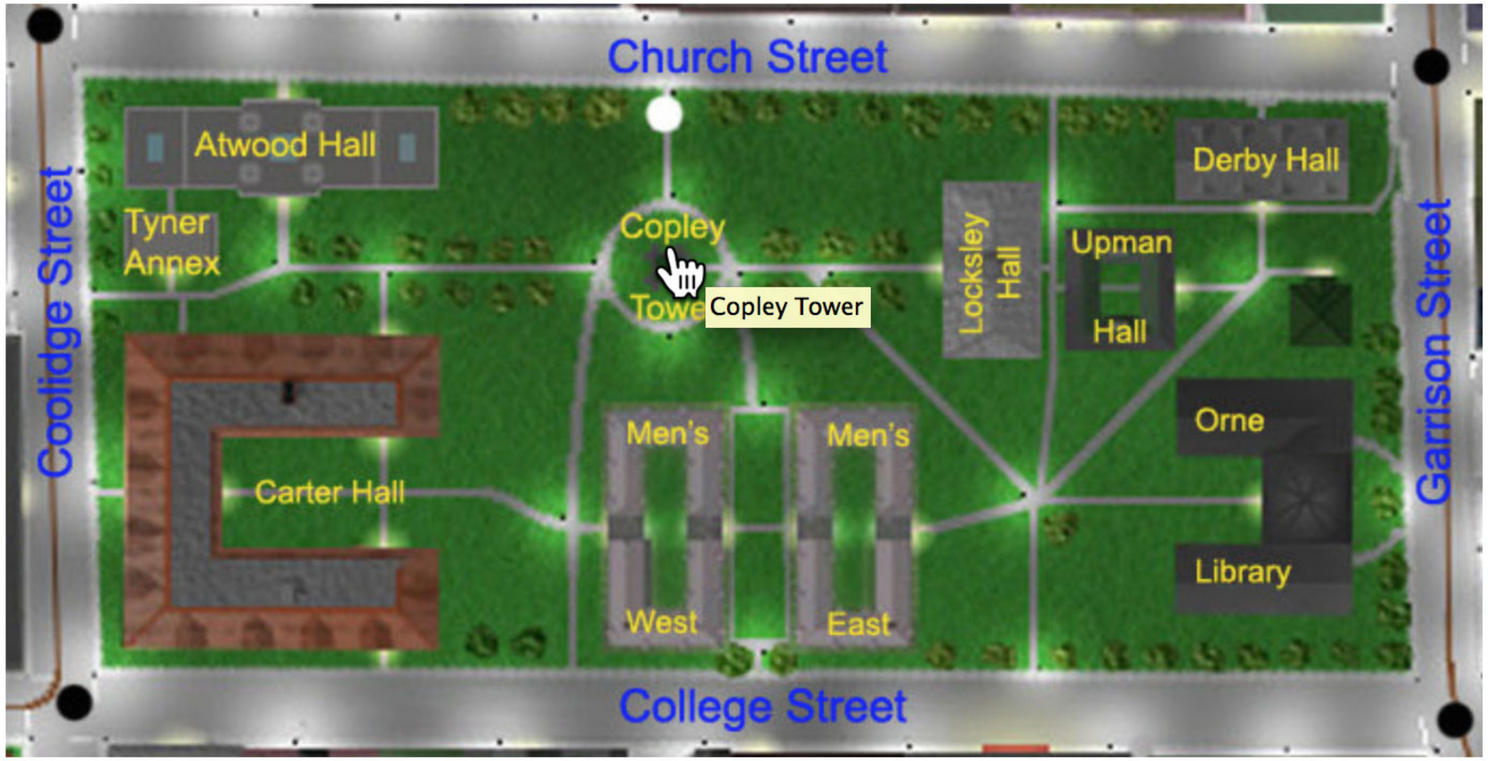


Image from Lovecraft Country: Return to Arkham, under a Creative Commons Attribution-NonCommercial-ShareAlike 2.5 license.

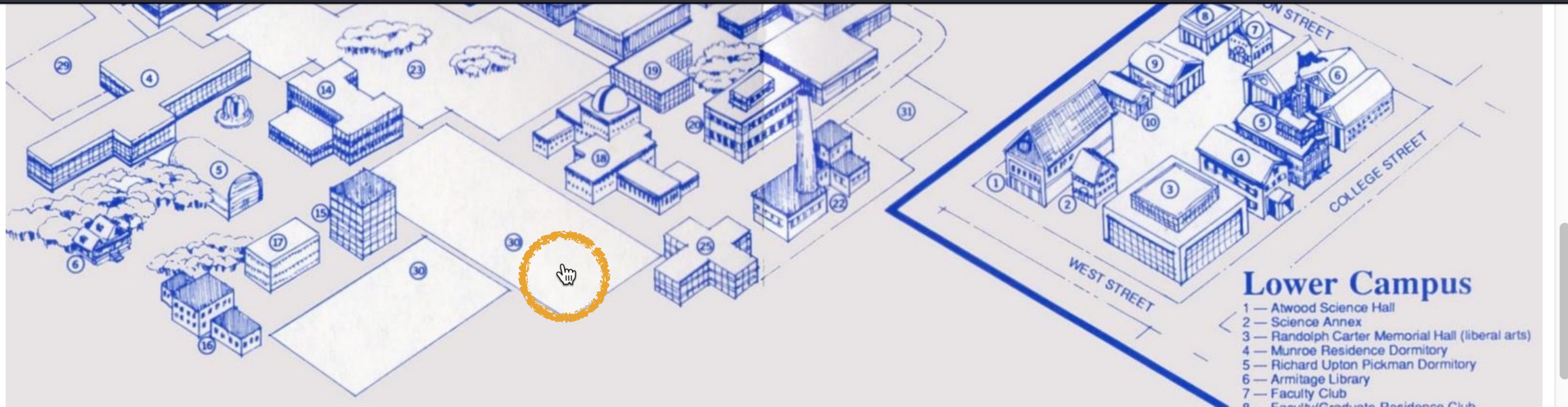
Big problem with image maps is they’re not responsive

The images can be resized, but the coordinates cannot (without a lot of extra work & JavaScript)!

A better way to create a modern image map is with SVG

HTML

```
<svg xmlns="http://www.w3.org/2000/svg" viewBox="0 0 1600 912">
  <defs>
    <style>
      a > * { opacity: 0; }
    </style>
  </defs>
  <image width="1600" height="912" href="https://i.redd.it/lqay9nmlb4q21.jpg"/>
  <a href="https://miskatonic.edu/athletic-fields/" title="Athletic Fields">
    <polygon points="378.961 624.355 458.775 575.239 682.03 713.657 584.914 781.192 406.868 668.448 406.868 643.89 378.961 624.355"/>
  </a>
</svg>
```



`<link>`

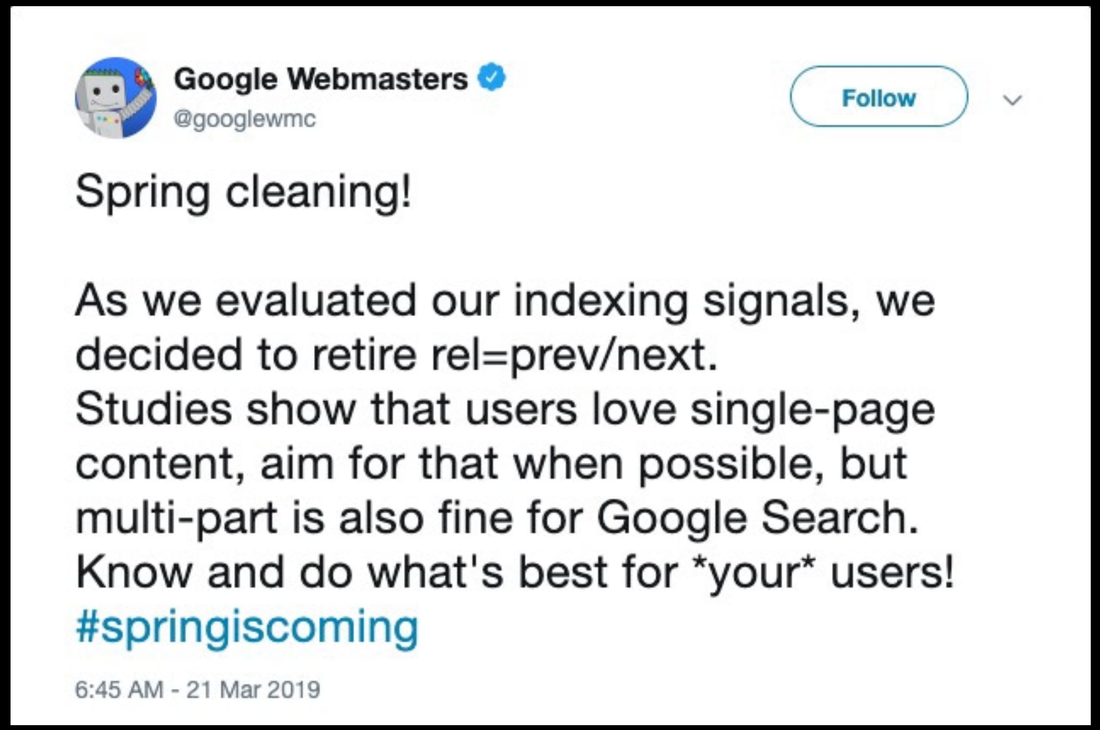
Indicates a *relationship* with another linked document

Must go in `<head>` & may have multiple `<link>` elements in `<head>`

No `</link>`!

`rel` attribute (`<link rel="[value]">`) defines the relationship

```
<head>
  <link rel="stylesheet" href="main.css">
  <link rel="prev" href="chapter-1.htm">
  <link rel="next" href="chapter-3.htm">
</head>
```



Googlebot no longer looks at either `rel="prev"` or `rel="next"`

Why? A Google engineer explained that “Googlebot is smart enough to find your next page by looking at the links on the page, we don’t need an explicit ‘`prev`, `next`’ signal.”

`alternate`
`author`
`bookmark`
`canonical`
`dns-prefetch`
`external`
`help`
`icon`
`license`
`modulepreload`
`next`
`nofollow`
`noopener`
`noreferrer`
`opener`
`pingback`
`preconnect`
`prefetch`
`preload`
`prerender`
`prev`
`search`
`stylesheet`
`tag`

WHATWG's predefined values for `rel` attribute

`rel="alternate"`
Either an alternate style sheet or an RSS or ATOM feed

`rel="icon"`
Browser *favicon* or icons used by other devices

`rel="nofollow"`
Current webpage doesn’t endorse the linked-to webpage

`rel="shortlink"`
Specifies a short link to use for the webpage

💡 PRO TIP

Several `rel` values focus on fine tuning resource loading by telling the browser to do something in advance

- `preconnect`: open connection to linked website without downloading anything
- `prefetch`: fetch linked resource because it's likely to be requested by user
- `preload`: download something (CSS, JS, `<img>`) because it will be needed later on the current webpage
- `prerender`: fetch linked webpage & render content offscreen
- `dns-prefetch`: look up DNS before a user clicks a link

💡 PRO TIP

`as`

`<link>` attribute only used when `rel="preload"` or `rel="prefetch"` has been set & *specifies the type of content* being loaded

```
<link rel="prefetch" as="video" href=
"trailer.m4v">
```

💡 PRO TIP

Some values for `as`

- `audio`: `<audio>`
- `document`: `<iframe>` & `<frame>`
- `embed`: `<embed>`
- `font`: CSS `@font-face`
- `image`: `<img>` & `<picture>` with `srcset` or `imageset` attributes, SVG `<image>`, & CSS `*-image` rules

💡 PRO TIP

Some values for `as`

- `object`: `<object>`
- `script`: `<script>`
- `style`: `<link rel="stylesheet">` & CSS `@import`
- `track`: `<track>`
- `video`: `<video>`

✏️ SIDE NOTE

The list of `rel` values at WHATWG is not the entire list

Organizations can register extensions to the predefined list

You can see the list of 98* “HTML5 link type extensions” at the Microformats Wiki (link in Notes)

* As of June 2020

✏️ SIDE NOTE

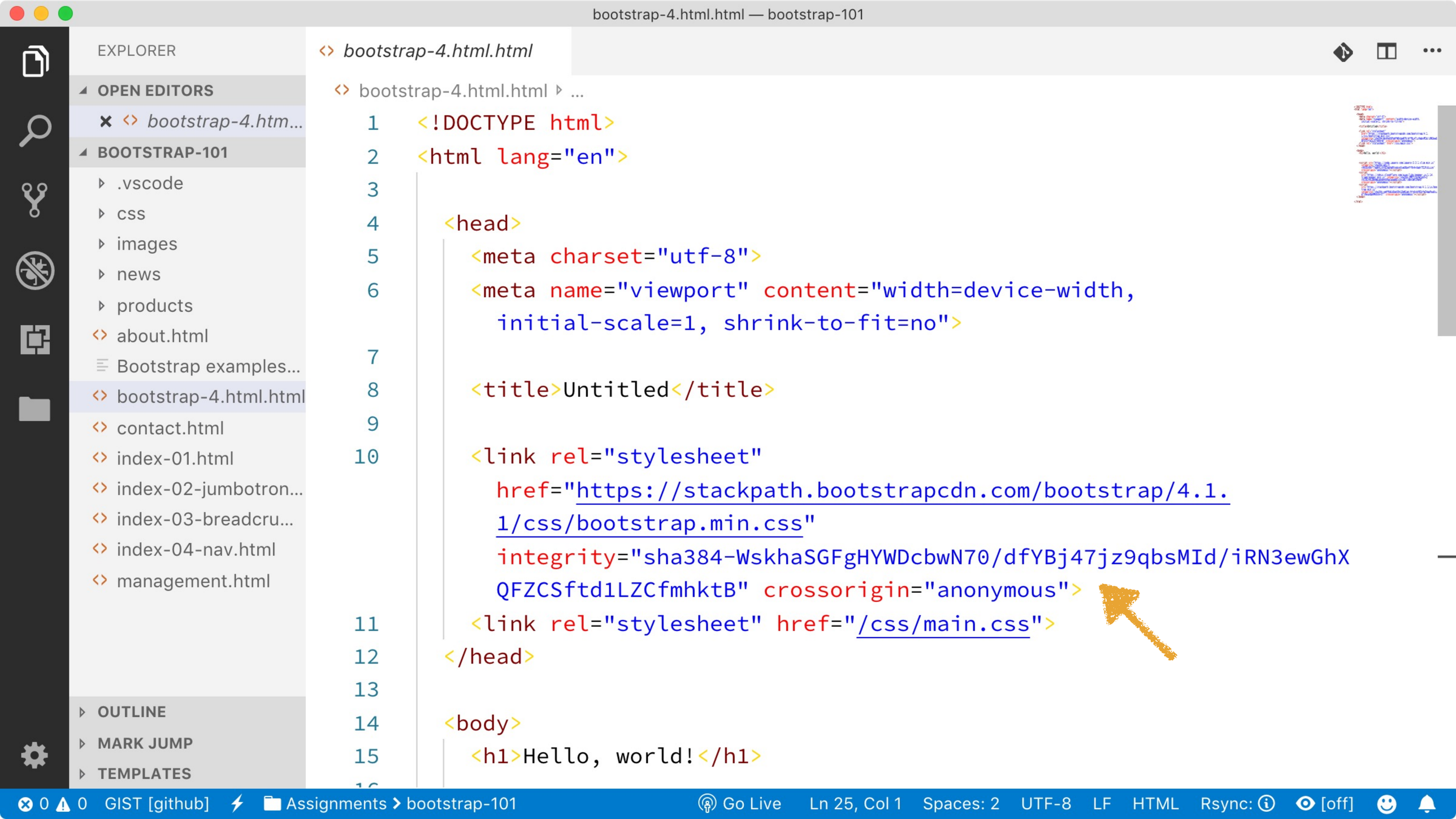
Examples include:

`amphtml` • `apple-touch-icon` • `archived` • `canonical` • `category` • `code-license` • `chrome-webstore-item` • `content-license` • `discussion` • `dns-prefetch` • `import` • `root` • `lightbox` • `manifest` • `pgpkey` • `pingback` • `preconnect` • `prerender` • `shortlink` • `sitemap` • `syndication` • `widget`

`integrity`

Value is a base64-encoded cryptographic hash (SHA-256, SHA-384, or SHA-512) of requested file so browser can verify the file hasn’t been tampered with

```
integrity="sha384-GJzZqFGwb1QTTN6wy59ffF1BuGJp
LSa9DkKMp0DgiMDm4iYMj70gZWKYbI706tWS"
```


EXPLORER
OPEN EDITORS
bootstrap-4.htm...
BOOTSTRAP-101
.vscode
css
images
news
products
about.html
Bootstrap examples...
bootstrap-4.html.html
contact.html
index-01.html
index-02-jumbotron...
index-03-breadcru...
index-04-nav.html
management.html
OUTLINE
MARK JUMP
TEMPLATES
bootstrap-4.html.html
bootstrap-4.html.html ▸ ...
1 <!DOCTYPE html>
2 <html lang="en">
3
4 <head>
5 <meta charset="utf-8">
6 <meta name="viewport" content="width=device-width,
initial-scale=1, shrink-to-fit=no">
7
8 <title>Untitled</title>
9
10 <link rel="stylesheet"
href="https://stackpath.bootstrapcdn.com/bootstrap/4.1.
1/css/bootstrap.min.css"
integrity="sha384-WskhaSGFgHYWDcbwN70/dfYBj47jz9qbsMId/iRN3ewGhX
QFZCSftd1LZCfmhktB" crossorigin="anonymous">
11 <link rel="stylesheet" href="/css/main.css">
12 </head>
13
14 <body>
15 <h1>Hello, world!</h1>
0 0 GIST [github] Assignments > bootstrap-101 Go Live Ln 25, Col 1 Spaces: 2 UTF-8 LF HTML Rsync: [off]

To generate the hash yourself:

```
$ openssl dgst -sha384 -binary cthulhu.css | openssl
base64 -A

u5RnNZ22Sd1Zwh+VBKJdG2PI0uX5C+26wTRc/F0GfSGHxLyYwXvby4
ZonSsizaB3
```

Then do this:

```
<link rel="stylesheet" href="https://miskatonic-
expedition.com/css/cthulhu.css" integrity="sha384-
u5RnNZ22Sd1Zwh+VBKJdG2PI0uX5C+26wTRc/F0GfSGHxLyYwXvby
4ZonSsizaB3" crossorigin="anonymous"></script>
```

SRI Hash Generator

Enter the URL of the resource you wish to use:

https://raw.githubusercontent.com/rsgranne/Brackets-HTML-Templates-Updated/master/main.js

Hash!

```
<script src="https://raw.githubusercontent.com/rsgranne/Brackets-HTML-Templates-Updated/master/main.js" integrity="sha384-uRb8FnWmFz/zoPMZQzAjMqSti0Mtn3be2aJTMU7vWlfTugXRXup5nVJAJM5a5Ess" crossorigin="anonymous"></script>
```

What is Subresource Integrity?

Cross-Origin Resource Sharing (CORS) uses HTTP headers to give the webpage access in a secure way to a resource from a different *origin* (domain, protocol, or port)

Why? Mitigate the risks of cross-origin HTTP requests

CORS comes into play when making cross-site requests for:

- Invocations of the `XMLHttpRequest` (AJAX) or Fetch APIs, as discussed above
- Web Fonts using `@font-face`
- WebGL textures
- Images or video frames drawn to `<canvas>` using `drawImage()`
- CSS Shapes from images

Web server's HTTP header Access-Control-Allow-Origin controls CORS access

`Access-Control-Allow-Origin: *` means that any domain can access the resource

`Access-Control-Allow-Origin: https://cthulhu.com` means that only `cthulhu.com` can access the resource

Scott Granneman

Home

Home

Scott Granneman is an author, educator, & partner in a Web development company in St. Louis, Missouri. Scott has written six books, contributed to two, and penned monthly columns for SecurityFocus and *Linux Magazine*. He is an Adjunct Professor at Washington University in St. Louis & Webster University, teaching courses on technology, security, web development, & the Internet. As a Principal of WebSanity, he plans, develops, and hosts websites for clients in 12 states using an open source, UNIX-based content management system. He has given presentations all over the United States, and loves speaking to people.

Key Site Links

Elements Console Sources Network Performance Memory Application

Preserve log Disable cache Online

Filter Hide data URLs All XHR JS CSS Img Media Font Doc WS Manifest Other

Has blocked cookies Blocked Requests

100 ms 200 ms 300 ms 400 ms 500 ms 600 ms 700 ms 800 ms

Name

- www.granneman.com
- jquery.js
- ws_nav_menu.js?v=e00…
- view.css
- bootstrap.css
- main.css
- conversion.css
- bootstrap.min.js
- modernizr.js
- content-hooks-frames-w…
- content-hooks-web.js
- 3ae262a51e0e8ac49e6a…
- 2015-12-15_Teaching_at…
- bkg.png
- robotocondensed-bold-…
- fontawesome-webfont.w…
- ga.js
- favicon.ico

18 requests | 1.1 MB transfe

× Headers Preview Response Initiator Timing

General

Request URL: https://ssl.google-analytics.com/ga.js
Request Method: GET
Status Code: 200 OK
Referrer Policy: no-referrer-when-downgrade

Response Headers

Access-Control-Allow-Origin: *
Content-Type: application/javascript

Request Headers

⚠ **Provisional headers are shown**
DNT: 1
Referer: https://www.granneman.com/
User-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10_15_5) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/83.0.4103.116 Safari/537.36

CORS failures result in errors, but for security reasons, specifics are not available to JavaScript

The *only* way to determine what went wrong is to look at the browser's console in Developer Tools

				iOS		
`Access-Control-Allow-Origin`	9	3.5	3.1	3.1	3	2.3
CORS	10*	3.5	4†	3.2†	4*	4.4

* Doesn't support `<img>` in `<canvas>` † Doesn't support `<video>` in `<canvas>`

`crossorigin`

Provides support for CORS by defining how `<link>` handles giving the webpage access to a resource from a different origin

Also valid on `<audio>`, `<img>`, `<script>`, & `<video>`

`crossorigin` values

- `anonymous`: credentials flag set to `same-origin`, so resource will be fetched without any exchange of user credentials via cookies, client-side SSL certificates, or HTTP authentication
- `use-credentials`: credentials flag set to `include`, so resource to be fetched requires exchange of user credentials

If the attribute isn't used, CORS isn't used

<link>					iOS		
rel	Y	12	2	Y	Y	4	Y
rel.dns-prefetch	10	12	3.5‡	5	?	4	Y
rel.preconnect	–	79	40	11.1	11.3	46	46
rel.prefetch	11	12	2	13.1†	13.5†	8	18
rel.preload	?	17	57*	11.1	11.3	50	50
rel.prerender	11	79	–	–	–	13	18

* Can be enabled with `network.preload` flag
† Enable `LinkPrefetch` in the Develop menu
‡ HTTPS is unsupported

<link>							
integrity	–	79	?	–	–	45	Y
crossorigin	–	79	18	?	?	25	Y

Embedded Multimedia

<picture>

<video>, <audio>, <source>, <track>

<iframe>

<object> & <param>

<embed>

Replaced elements	Non-replaced elements
Reference to external or generated content in the code	Content contained in the code
Cannot control all aspects with CSS	Can control all aspects with CSS
Usually no closing tag	Usually a closing tag
`<img>`, `<input>`, `<object>`, `<textarea>`, `<video>`	`<div>`, `<p>`, `<a>`, `<b>`, `<em>`, `<span>`

`<img>`

Embedded *image*

`src` attribute is required (just like `href` for `<a>`)

`width`

» Width of image in pixels
» Unimportant with responsive web design*

`height`

» Height of image in pixels
» Unimportant with responsive web design*

* In which case the `width` & `height` are defined in CSS

`alt`

Alternate text information describing image for those with visual disabilities or images turned off

Was required by HTML 4, but HTML5 changes this

» Omitting `alt` tells rendering engine that the image is *vital, but no textual equivalent* is available
» Using `alt=""` tells rendering engine that the image is *not vital*, so non-visual browsers may omit it

📦 FORMATTING GUIDE

Be careful using quotation marks in values

This will cause problems:

```
<img alt="Cthulhu says "This is tasty!""> 🚫
```

`alt` text, to browser

Ignored by browser

📦 FORMATTING GUIDE

Get rid of the quotation marks that do not explicitly begin & end the value:

```
<img alt="Cthulhu says This is tasty!">
```

Or use single quotes:

```
<img alt="Cthulhu says 'This is tasty!'">
```

Or use typographer's (“curly”) quotes:

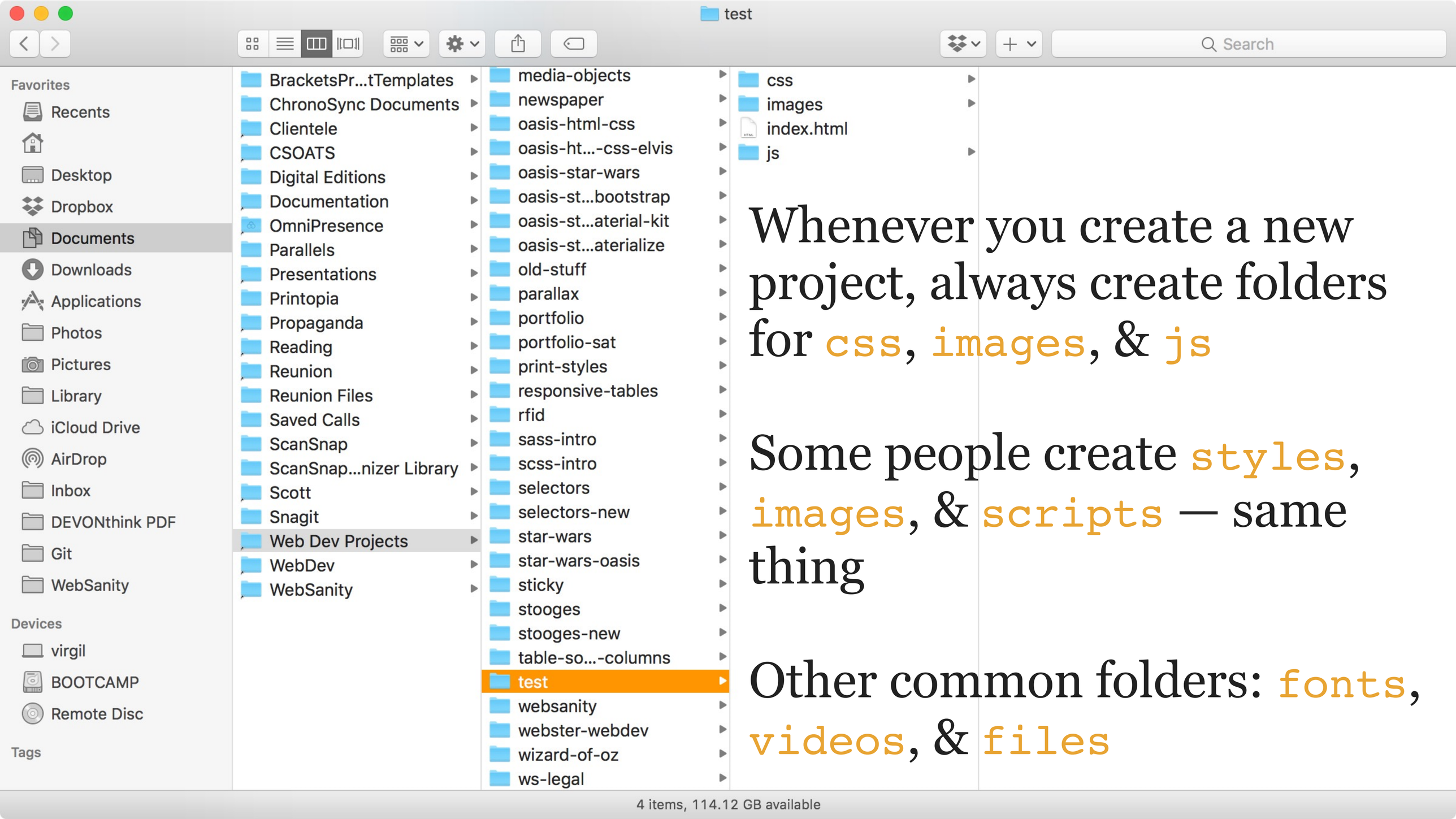
```
<img alt="Cthulhu says “This is tasty!”">
```

Or use *character entities* (covered later):

```
<img alt="Cthulhu says &ldquo;This is tasty!
&rdquo;">
```

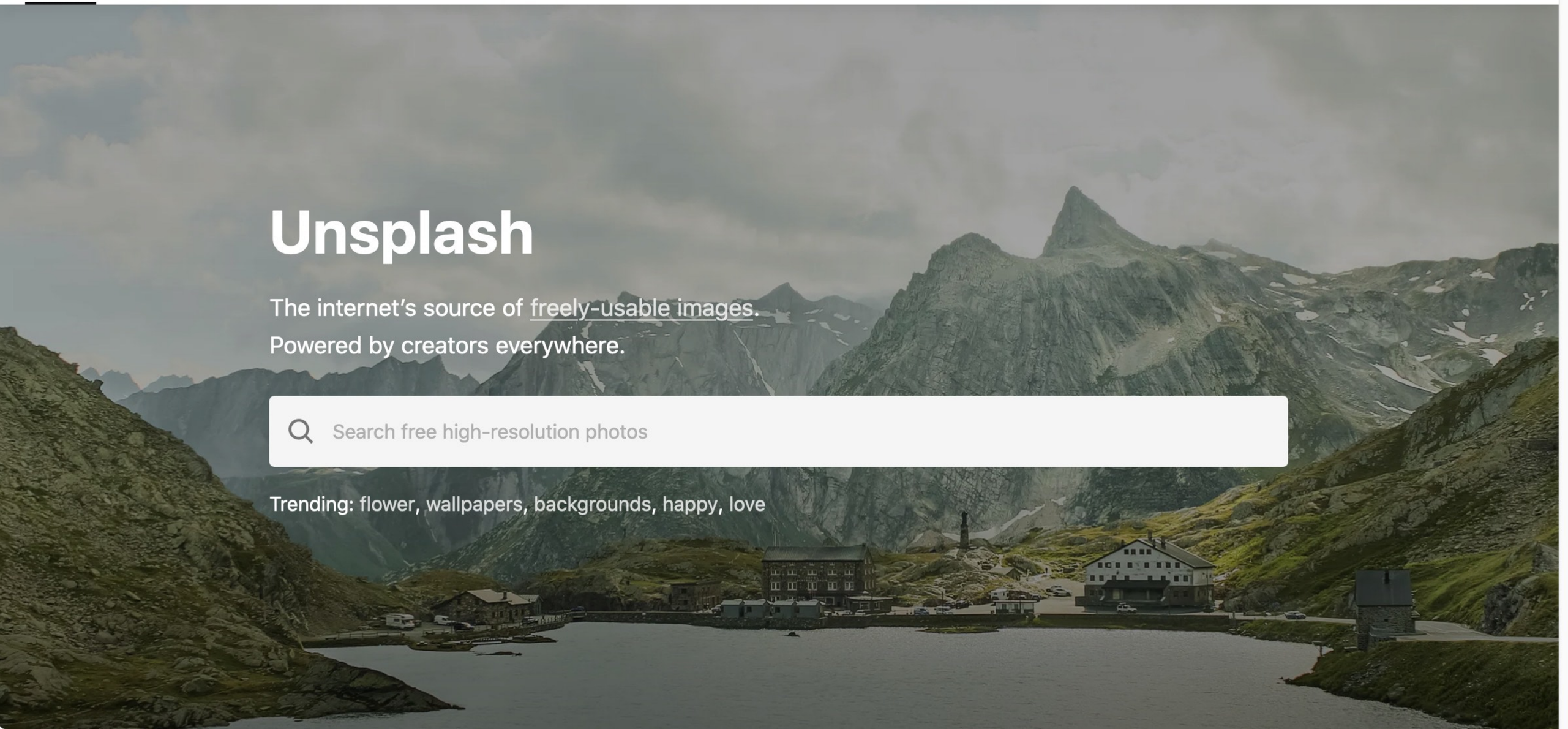
📦 FORMATTING GUIDE

Be careful with using quotation marks inside a `value` in every `attribute="value"` pair for every element


test
Search
Favorites
Recents
Desktop
Dropbox
Documents
Downloads
Applications
Photos
Pictures
Library
iCloud Drive
AirDrop
Inbox
DEVONthink PDF
Git
WebSanity
Devices
virgil
BOOTCAMP
Remote Disc
Tags
BracketsPr...tTemplates
ChronoSync Documents
Clientele
CSOATS
Digital Editions
Documentation
OmniPresence
Parallels
Presentations
Printopia
Propaganda
Reading
Reunion
Reunion Files
Saved Calls
ScanSnap
ScanSnap...nizer Library
Scott
Snagit
Web Dev Projects
WebDev
WebSanity
media-objects
newspaper
oasis-html-css
oasis-ht...-css-elvis
oasis-star-wars
oasis-st...bootstrap
oasis-st...aterial-kit
oasis-st...aterialize
old-stuff
parallax
portfolio
portfolio-sat
print-styles
responsive-tables
rfid
sass-intro
scss-intro
selectors
selectors-new
star-wars
star-wars-oasis
sticky
stooges
stooges-new
table-so...-columns
test
websanity
webster-webdev
wizard-of-oz
ws-legal
css
images
index.html
js
Whenever you create a new project, always create folders for css, images, & js
Some people create styles, images, & scripts — same thing
Other common folders: fonts, videos, & files
4 items, 114.12 GB available

💡 PRO TIP

When you’re developing your website, you will often need temporary placeholder images



Unsplash

The internet's source of freely-usable images.
Powered by creators everywhere.

Search free high-resolution photos

Trending: flower, wallpapers, backgrounds, happy, love

Includes random images, grayscale, & blurring

Lorem Picsum

Lorem Ipsum... but for photos

Basic Usage

Just put your image size (width & height) after our URL and you'll get a placeholder.

```
https://picsum.photos/200/300
```

To get a square image, just put the size you want.

```
https://picsum.photos/200
```

Dynamic Dummy Image Generator

by Russell Heimlich (@kingkool68)

https://dummyimage.com/700x400/000000/fff

Size: 700x400 / Background Color: 000000 / Foreground Color: fff Format: -

HTML

```
<img src="https://unsplash.it
/200/200" alt="Placeholder"
width="200" height="200">

<img src="https://picsum.photos/200"
alt="Placeholder" width="200"
height="200">

<img src="https://dummyimage.com
/200x200/cccccc/222222&
text=The+Call+of+Cthulhu"
alt="Placeholder" width="200"
height="200">
```

CSS

JS

- `cccccc`: background color
- `222222`: text color
- `&text=The+Call+of+Cthulhu`: custom text; use + instead of space

placebear

A quick and simple service for getting pictures of bears for use as placeholders in your designs or code. Just put your image size (width & height) after our URL and you'll get a placeholder.

Like this: `http://placebear.com/200/300`
or: `http://placebear.com/g/200/300`
(Note: You can also add .jpg to the end of the URL, if you like.)

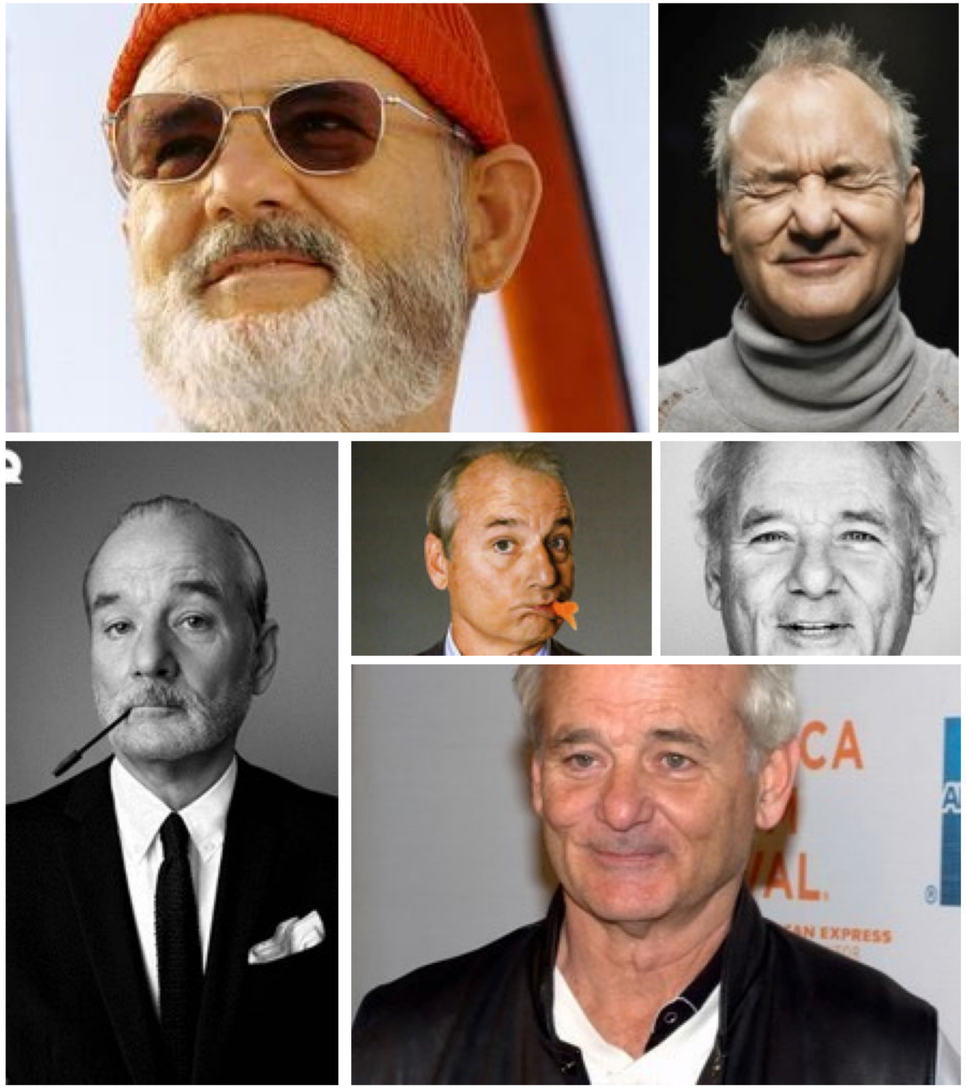
Delivered by Otto — Inspired by placekitten

Fill Murray

The internet was missing the ability to provide custom-sized placeholder images of Bill Murray. Now it can.

Calm: http://fillmurray.com/200/300

Gray: http://fillmurray.com/g/200/300



by @davecowart | Check out my other sites PlaceCage (Nick Cage Filler Images) | Steven SeGALLERY (Steven Segal Filler Images) | PlateFork (Recipe Sharing Made Easy)

PlaceCage

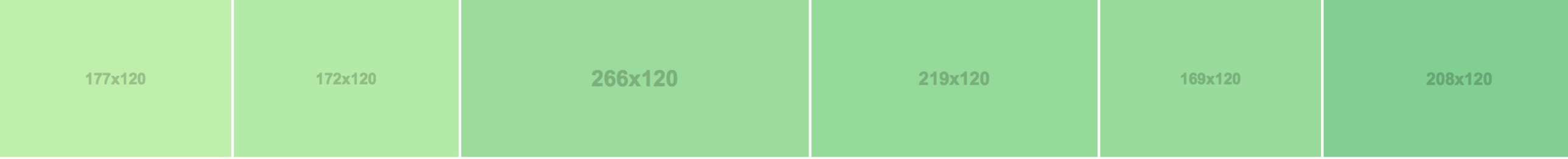
The internet was missing the ability to provide custom-sized placeholder images of Nicolas Cage. Now it can.

Calm: http://placecage.com/200/300

Gray: http://placecage.com/g/200/300

CRAZY: http://placecage.com/c/200/300

by @davecowart | Check out my other sites Fill Murray (Bill Murray Filler Images) | Steven SeGALLERY (Steven Segal Filler Images) | PlateFork (Recipe Sharing Made Easy)



Holder.js

Holder renders image placeholders entirely in browser.

Placeholders can have custom colors, fonts, resizing behavior, and rendering engine (Canvas/SVG).

Download Holder.js (6KB)

Usage

```
<img src="holder.js/300x200">
```

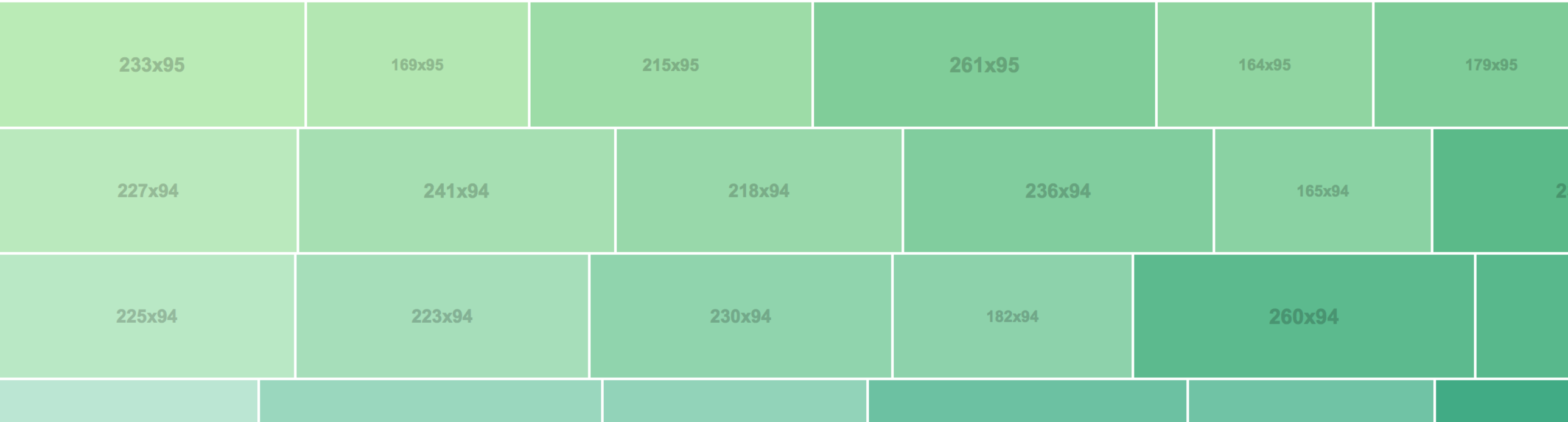
Documentation

Learn more at the Holder.js GitHub page.

Credits

Made by Ivan Malopinsky.

Self-hosted in your project, so no need for an Internet connection



					iOS		
GIF	Y	Y	Y	Y	Y	Y	Y
JPEG	Y	Y	Y	Y	Y	Y	Y
PNG	Y	Y	Y	Y	Y	Y	Y
SVG	Y	Y	Y	Y	Y	Y	Y
WebP	–	18	65	14	14	32	4.2

					iOS		
APNG	–	79	3	8	8	59	Y
BMP	Y	Y	Y	Y	?	Y	?
ICO	Y	Y	Y	Y	Y	Y	Y

`<picture> ... </picture>`

Allows you to offer alternative versions of an image to support responsive design

Covered later in *Responsive Design*

					iOS		
<picture>	–	13	38	9.1	9.3	38	Y

`<video> ... </video>`

Allows the browser to *play video*, completely obsoleting the need to use Flash or other plugins

Attributes

- `width` & `height`
- `src="[URL]"`: if multiple, use `<source>` instead
- `controls`: Show play, stop, & other controls
- `autoplay`: No!
- `muted`: Not normally a good idea (default is `false`)
- `loop`: No!
- `preload="auto"`: Video downloaded in background (Yes!)
- `poster="action.png"`: Display image before video loads

On mobile browsers, `preload="auto"` never works

On mobile browsers, `autoplay` & `muted` are conditional

For `autoplay` to work, you must either set `muted` or lack an audio track

Supported browsers:

» Chrome on Android 55+
» Mobile Safari 10+

HTML

```
<video controls="controls" poster="http://files.granneman.com/interviews/2010-0518-KMOV-News-4.png"
src="http://files.granneman.com/interviews/2010-0518-KMOV-News-4.mp4" width="640" height="360">
</video>
```

`<source>`

Enables authors to specify *multiple media resources* for `<video>` & `<audio>`

Does nothing on its own

Always a child of `<video>` & `<audio>`

No `</source>`!

`type`

Attribute *specifying MIME/media type of the resource*, optionally with a codecs parameter

In other words

```
<source src="foo.mp4" type="video/mp4">
```

✏️ SIDE NOTE

What's a *MIME type*?

Originally defined in 1996 as the MIME (*Multipurpose Internet Mail Extensions*) specification for identifying types of email message content & attachments

Now just called *media types*

✏️ SIDE NOTE

Always specified as `type/subtype`

Allowed types: `application`, `audio`, `example`, `font`, `image`, `message`, `model`, `multipart`, `text`, & `video`

Examples:

- `application/pdf`
- `audio/mp3`
- `image/jpeg`
- `text/css`
- `video/mp4`

SIDE NOTE

MDN web docs
moz://a

Technologies | References & Guides | Feedback | Sign in

Incomplete list of MIME types

Languages | Edit

Here is a list of MIME types, associated by type of documents, ordered by their common extensions.

Two primary MIME types are important for the role of default types:

- `text/plain` is the default value for textual files. A textual file should be human-readable and must not contain binary data.
- `application/octet-stream` is the default value for all other cases. An unknown file type should use this type. Browsers pay a particular care when manipulating these files, attempting to safeguard the user to prevent dangerous behaviors.

IANA is the official registry of MIME media types and maintains a list of all the official MIME types. This table lists some important MIME types for the Web:

Extension	Kind of document	MIME Type

Related Topics

HTTP

Guides:

- Resources and URIs
- HTTP guide
- HTTP security

HTTP access control (CORS)

SIDE NOTE

Full list of all MIME/media types

Media Types

Last Updated
2018-11-06

Registration Procedure(s)
Expert Review for Vendor and Personal Trees.

Expert(s)
Ned Freed, Murray Kucherawy

Reference
[RFC6838][RFC4855]

Note
Per Section 3.1 of [RFC6838], Standards Tree requests made through IETF documents will be reviewed and approved by the IESG, while requests made by other recognized standards organizations will be reviewed by the Designated Expert in accordance with the Specification Required policy. IANA will verify that this organization is recognized as a standards organization by the IESG.

Note
[RFC2046] specifies that Media Types (formerly known as MIME types) and Media Subtypes will be assigned and listed by the IANA.

Procedures for registering Media Types can be found in [RFC6838], [RFC4289], and [RFC6657]. Additional procedures for registering media types for transfer via Real-time Transport Protocol (RTP) can be found in [RFC4855].

The following is the list of Directories of Content Types and Subtypes. If you wish to register a Media Type with the IANA, please see the following for the online application:

[Application for registration of Media Types]

Other Media Type Parameters: [IANA registry *media-types-parameters*]
Media Type Sub-Parameters: [IANA registry *media-type-sub-parameters*]

Available Formats

Registries included below

If you leave `type` out…

1. Rendering engine queries server for media's type, checks to see if it can play the type, & then does if it can
2. If rendering engine cannot play the type, it checks the next `<source>` & repeats step 1

If you specify a value for `type`…

1. Rendering engine checks to see if it can play the type & then does if it can
2. If rendering engine cannot play the type, the server is *not* queried & it checks the next `<source>` & repeats step 1

Therefore…

» always include `type` to reduce server calls
» the order of your `<source>` elements matter

HTML

```
<video controls="controls"
poster="http://files.granneman.com/interviews
/2010-0518-KMOV-News-4.png" width="640"
height="360">
  <source
  src="http://files.granneman.com/interviews/
  2010-0518-KMOV-News-4.mp4"
  type="video/mp4">
  <source
  src="http://files.granneman.com/interviews/
  2010-0518-KMOV-News-4.webm"
  type="video/webm">
  <source
  src="http://files.granneman.com/interviews/
  2010-0518-KMOV-News-4.ogv"
  type="video/ogg">
</video>
```

The code here is wrapping; note that `source`, `src`, & `type` are all on one line!

CSS

JS

HTML

```
<video controls="controls" poster="http://files.granneman.com/interviews/2010-0518-KMOV-News-4.png"
width="640" height="360">
  <source src="http://files.granneman.com/interviews/2010-0518-KMOV-News-4.mp4" type="video/mp4">
  <source src="http://files.granneman.com/interviews/2010-0518-KMOV-News-4.webm" type="video/webm">
  <source src="http://files.granneman.com/interviews/2010-0518-KMOV-News-4.ogv" type="video/ogg">
</video>
```

Only 1 video file/format? Use the `src` attribute

```
<video src="/videos/cthulhu.mp4">
```

2 or more video files/formats? Use `<source>`

```
<video>
  <source src="/videos/cthulhu.mp4">
  <source src="/videos/cthulhu.webm">
</video>
```

`<track>`

Enables authors to specify *multiple timed text resources* for `<video>` & `<audio>`

Does nothing on its own

Always a child of `<video>` & `<audio>`

No `</track>`!

5 kinds of text tracks:

» `subtitles`: translation + extra background info
» `captions`: transcription + sound effects for deaf viewers
» `descriptions`: narration of content for blind users
» `chapters`: titles for navigating the content
» `metadata`: for use by scripts, so not visible to users

Attributes

» `src`: link to file that is either *Web Video Timed Text* (WebVTT) or *Timed Text Markup Language* (TTML)
» `srclang`: language of the `src` file, e.g., `en`, `es`, `fr`
» `kind`: type of text content, e.g., `subtitles` or `captions`
» `label`: text displayed to a user selecting a track
» `default`: enables a single `<track>` automatically

Sample WebVTT (`file-name.vtt`) file:

```
WEBVTT

1
00:00:01.000 --> 00:00:08.000
This is the first line of text,
displaying from 1-8 seconds

2
00:00:09.000 --> 00:00:20.000
This is the second chunk of text
```

HTML

```
<video controls="controls"
poster="https://s3-us-west-
2.amazonaws.com/s.cdpn.io/122116/2010-
0927-KMOV-News-4.png" width="640"
height="360" crossorigin="anonymous">
  <source src="https://s3-us-west-
  2.amazonaws.com/s.cdpn.io/122116/2010-
  0927-KMOV-News-4.mp4" type="video/mp4">
  <track src="https://s3-us-west-
  2.amazonaws.com/s.cdpn.io/122116/2010-
  0518-KMOV-News-4_3.vtt"
  kind="subtitles" srclang="en"
  label="Testola" default>
</video>

```

CSS

JS

					iOS		
Ogg	–	17	3.5	–	–	4	2.3
H.264 (MP4)	9	12	21	3.2	3.2	4	4.4
H.265 (HEVC)	11*	12†	–	11‡	11	–	–
WebM	–	79	28	12.1§	12.2§	25	Y

* Requires hardware support † 12–18 only ‡ macOS 10.13 High Sierra or later § Only in WebRTC

Adapter
www.macroplant.com/adapter/

Adapter
www.macroplant.com/adapter/

Video conversion software

`<audio>` … `</audio>`

Allows the browser to *play audio* without Flash or other plugins

Attributes

» `src="[URL]"`: if multiple, use `<source>` instead
» `controls`: Show play, stop, & other controls
» `autoplay`: No!
» `muted`: Not normally a good idea (default is `false`)
» `loop`: Repeat audio—only use if necessary!
» `preload="auto"`: Audio downloaded in background (Yes!)

On mobile browsers, the following `<audio>` attributes are not supported:

- `autoplay`
- `muted`
- `preload="auto"`

HTML

```
<audio controls preload="auto" autobuffer
src="http://files.granneman.com/interviews/
2004-0630-Future-Tense.mp3">
</audio>
```

CSS

JS

Don’t forget you can also use `<source>` & `<track>`

HTML

```
<audio controls preload="auto" autobuffer>
  <source
  src="http://files.granneman.com/interviews/
  2004-0630-Future-Tense.mp3">
  <source
  src="http://files.granneman.com/interviews/
  2004-0630-Future-Tense.ogg">
</audio>
```

CSS

JS

					iOS		
Ogg	–	17	3.5	–	–	4	2.3
MP3	9	12	22	4	4	4	2.3
AAC	9	12	22*	4	4	12	3
WebM	–	79	28	12.1†	12.2†	25	Y
WAV	–	12	3.5	4	3.2	8	3.2

* Only in MP4 container & only if OS has codec installed † Only in WebRTC

Adapter
www.macroplant.com/adapter/

Adapter
www.macroplant.com/adapter/

Audio conversion software

📦 FORMATTING GUIDE

```
<p>
  <video …>
    <track …>
  </video>
</p>
```

👎

Never surround `<video>` & `<audio>` with `<p>`

.....

```
<video …>
  <track …>
</video>
```

👍

				iOS		
<video>	9	3.5	3.1	3.1	3	2.3
<audio>	9	3.5	3.1	4	3	2.3
<source>	9	3.5	3.1	Y	Y	Y
<track>	10	31	6	7	23	25

`<iframe>` … `</iframe>`

Internal frame: embeds another webpage inside the current webpage

`src` attribute is required

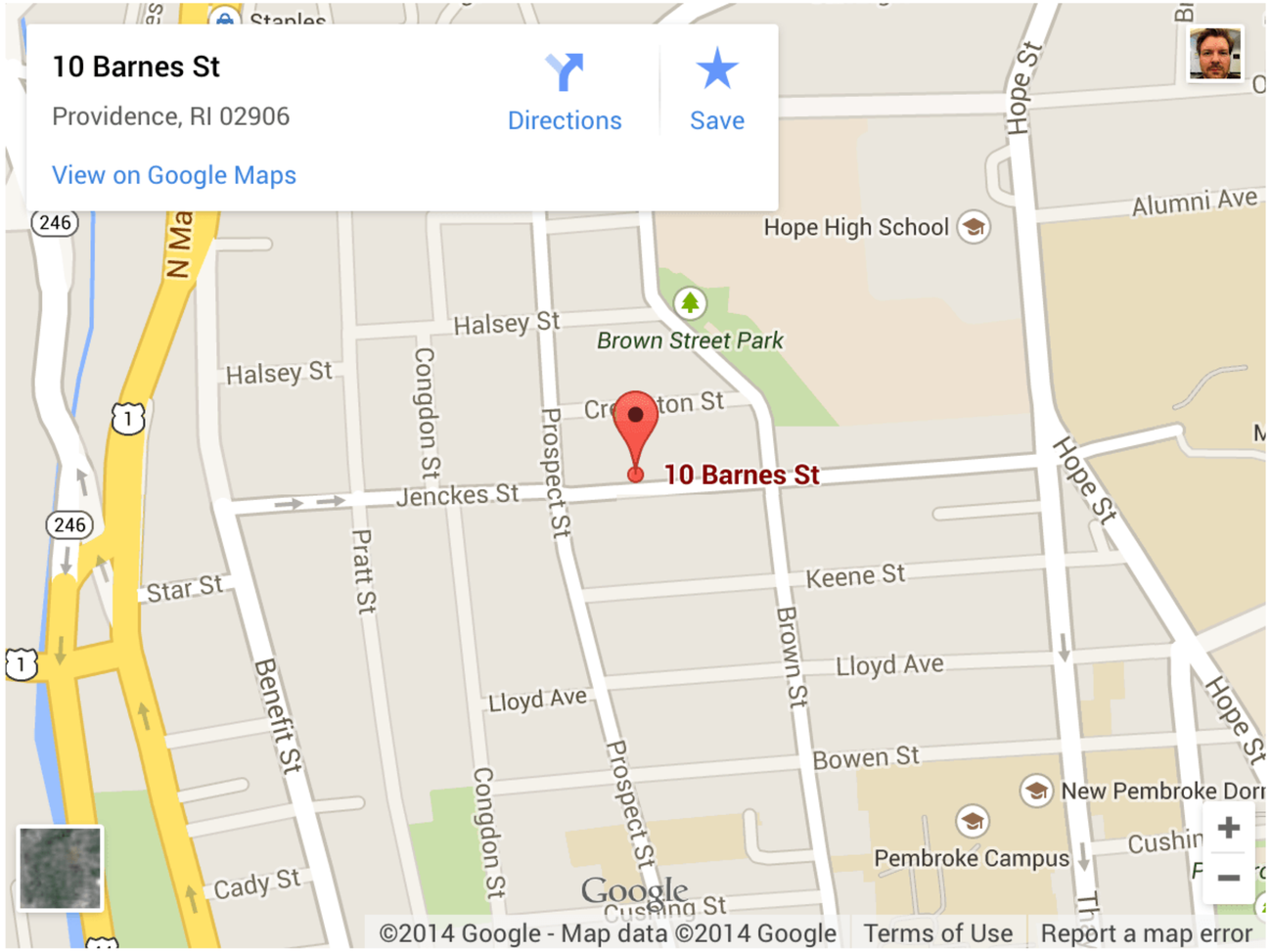
2 attributes should instead be handled using CSS: `width` (default is `300px`) & `height` (default is `150px`)

HTML

```
<iframe
src="https://www.google.com/maps/embed?
pb=!1m17!1m11!1m3!1d2972.7925037011373!2d
-
71.405474!3d41.8327660000000 14!2m2!1f0!2f
0!3m2!1i1024!2i768!4f13.1!3m3!1m2!1s0x89e
4452202b2d2ed%3A0x85a79d56cdc815c2!2s10+B
arnes+St!5e0!3m2!1sen!2sus!4v139887481779
4" width="600" height="450"
frameborder="0" style="border:0">
</iframe>
```

CSS

JS



A good thing: the embedded webpage in an `<iframe>` can be updated without reloading the container page

A caveat: the container webpage's CSS & JavaScript cannot affect the embedded webpage in an `<iframe>` (but this is good!)

`<iframe>` security is a big deal, so several attributes focus on that

- `allow`: Specifies a feature policy
- `sandbox`: Applies extra restrictions to the content in the frame
- `csp`: A Content Security Policy enforced for the embedded resource
- `referrerpolicy`: Indicates which referrer to send when fetching the frame's resource

`srcdoc`

Instead of a link to a document, *specifies inline HTML* to show

Overrides `src` attribute — if the browser doesn't support `srcdoc`, it falls back to the URL in `src`

Must encode any quotation marks inside `srcdoc`'s value using `"` (see *Character Entities* later)

HTML

```
<iframe src="https://www.google.com/maps/embed?
pb=!1m17!1m11!1m3!1d2972.7925037011373!2d-
71.405474!3d41.832766000000014!2m2!1f0!2f0!3m2!1i1024!2i768
!4f13.1!3m3!1m2!1s0x89e4452202b2d2ed%3A0x85a79d56cdc815c2!2
s10+Barnes+St!5e0!3m2!1sen!2sus!4v1398874817794"
width="600" height="450" frameborder="0" style="border:0"
srcdoc="<p><a href=&quot;https://maps.apple.com/?
address=10%20Barnes%20St,%20Providence,%20RI%20%2002906,%20
United%20States%26ll=41.832954,-71.405405%26q=10%20Barnes%2
0St%26_ext=EiYpWx/WDAvqREAxWhpL6lTaUcA52fT7aDHrREBBljj6YY/Z
UcBQBA%3D%3D%26t=m&quot;>Open in your device's Maps app</a>
</p>"</iframe>
```

CSS

JS

Open in your device's Maps app

					iOS		
srcdoc	–	79	25	6	6	20	25

✏️ SIDE NOTE

There is a much older feature called Frames which uses `<frameset>` & `<frame>`

MDN: “Avoid using it, and update existing code if possible; see the compatibility table at the bottom of this page to guide your decision. Be aware that this feature may cease to work at any time.”

Don’t use those elements!

And besides, Frames sucked anyway

`<object>` … `</object>`

Embedded *external resource*; e.g., image, plugin, SVG

For standard multimedia, only use if `<video>` or `<audio>` won't work

Must use with SVG to be fully parsed for links, animations, JavaScript

May need 1 or more `<param>` elements

Attributes

» `data`: (required)
» `type`: (required)
» `width` & `height`

`<param>`

Defines *parameters* used by `<object>`

Need to use the `name` & `value` attributes

HTML

```
<object type="application/x-shockwave-flash"
data="http://releases.flowplayer.org/swf/flowp
layer-3.2.1.swf" width="640" height="360">
  <param name="movie"
  value="http://releases.flowplayer.org/swf/fl
  owplayer-3.2.1.swf">
  <param name="allowFullScreen" value="true">
  <param name="wmode" value="transparent">
  <param name="flashVars" value="config=
  {'playlist':
  ['http%3A%2F%2Ffiles.granneman.com%2Fintervi
  ews%2F2010-0518-KMOV-News-4.png',
  {'url':'http%3A%2F%2Ffiles.granneman.com%2Fi
  nterviews%2F2010-0518-KMOV-News-
  4.mp4','autoPlay':false}]}">
  <img alt="KMOV News 4, May 18, 2010"
  src="http://files.granneman.com/interviews/2
  010-0518-KMOV-News-4.png" width="640"
  height="360" title="No video playback
  capabilities, please download the video
  below">
</object>
```

CSS

JS

`<embed>`

Integrates *external applications or interactive content* (in other words, *non-HTML plug-ins*)

No fallback content

No `</embed>`!

`<embed>` is mostly around for historical reasons, so use `<video>`, `<audio>`, or `<object>` instead

Tables

<table>

<caption>

<thead>, <tfoot>, <tbody>

<colgroup> & <col>

<tr>

<th> & <td>

We’ll cover tables in another lecture

Info is in *Tables & Lists: Organized Data* presentation on granneman.com

Forms

<form>

<input>

<button>

<select>, <optgroup>, <option>

<textarea>

<isindex>

<label>, <fieldset>, <legend>

We’ll cover forms in another lecture

Info is in *Forms: Collecting Information in a Usable Way* presentation on granneman.com

Interactivity

<details> & <summary>

<dialog>

`<details>` … `</details>`

Represents a “disclosure widget” that *allows users to obtain additional info or controls*

First child must be `<summary>`, which the user sees, & then followed by text (if you leave out `<summary>`, most browsers will use `Details` as the label)

`<summary> ... </summary>`

Specifies a summary, caption, or legend for a `<details>` disclosure box

Clicking `<summary>` toggles the parent `<details>` open & closed

Only use for `<summary>` is inside `<details>`

`<summary>` can only contain:

» `<h1>`–`<h6>`
» plain text
» HTML that can be used within a `<p>`

HTML

```
<h2>Un-styled</h2>

<details>
  <summary>In what story did the cosmic entity <i>Yog-Sothoth</i> first appear?</summary>
  <i>The Case of Charles Dexter Ward</i>, written in 1927 but not published until 1941
</details>

```

CSS (SCSS)

JS

Un-styled

▶ In what story did the cosmic entity *Yog-Sothoth* first appear?

Styled

▶ Who was the author of *Al-Azif*, aka *The Necronomicon*?

▶ Who did *not* kill Harley Warren?

▶ Who self-immolates after discovering his ancestry?

Firefox 82

HTML

```
<h2>Un-styled</h2>

<details>
  <summary>In what story did the cosmic entity <i>Yog-Sothoth</i> first appear?</summary>
  <i>The Case of Charles Dexter Ward</i>, written in 1927 but not published until 1941
</details>

```

CSS (SCSS)

JS

Un-styled

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The Case of Charles Dexter Ward, written in 1927 but not published until 1941

Styled

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Firefox 82

HTML

```
<h2>Un-styled</h2>

<details>
  <summary>In what story did the cosmic entity <i>Yog-Sothoth</i> first appear?</summary>
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</details>

```

CSS (SCSS) Compiled

JS

Un-styled

▼ In what story did the cosmic entity *Yog-Sothoth* first appear?

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Styled

▶ Who was the author of *Al-Azif*, aka *The Necronomicon*?

▶ Who did *not* kill Harley Warren?

▶ Who self-immolates after discovering his ancestry?

Brave (Chromium-based) 1.10.97

HTML

```
<details class="styled">
  <summary>Who was the author of <i>Al-Azif</i>, aka <i>The Necronomicon</i>?</summary>
  <p>Abdul Alhazred, first mentioned in “The Hound”, published in 1924</p>
</details>
```

CSS (SCSS) Compiled

```
details.styled {
  padding-left: 1.7em;
}
details.styled > summary {
  margin-left: -1.7em;
  background-color: #f2f2f2;
  padding: .25em .5em;
  border-bottom: 2px solid white;
  cursor: pointer;
}
details.styled > summary:focus {
  outline: unset;
}
```

JS

Un-styled

▸ In what story did the cosmic entity *Yog-Sothoth* first appear?

Styled

▸ Who was the author of *Al-Azif*, aka *The Necronomicon*?

▸ Who did *not* kill Harley Warren?

▸ Who self-immolates after discovering his ancestry?

Firefox 82

HTML

```
<details class="styled">
  <summary>Who was the author of
<i>Al-Azif</i>, aka <i>The
Necronomicon</i>?</summary>
  <p>Abdul Alhazred, first
mentioned in “The Hound”, published
in 1924</p>
</details>
```

CSS (SCSS) Compiled

```
details.styled {
  padding-left: 1.7em;
}
details.styled > summary {
  margin-left: -1.7em;
  background-color: #f2f2f2;
  padding: .25em .5em;
  border-bottom: 2px solid white;
  cursor: pointer;
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details.styled > summary:focus {
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JS

Un-styled

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Abdul Alhazred, first mentioned in “The Hound”, published in 1924

▶ Who did *not* kill Harley Warren?

▶ Who self-immolates after discovering his ancestry?

Firefox 82

HTML

```
<details>
  <summary>Name at least 3 professors found in works by H.P. Lovecraft who work at Miskatonic University.</summary>
  <ul>
    <li>Prof. Ferdinand C. Ashley</li>
    <li>Prof. Atwood</li>
    <li>Prof. William Dyer</li>
    <li>Prof. Lake</li>
    <li>Prof. Seneca Lapham</li>
    <li>Prof. Francis Morgan</li>
    <li>Prof. Nathaniel Wingate Peaslee</li>
    <li>Prof. Warren Rice</li>
  </ul>
</details>

<!-- Source: https://en.wikipedia.org/wiki/Characters_of_the_Cthulhu_My
```

CSS (SCSS)

JS

<details>
<summary>Name at least 3 professors found in works by H.P. Lovecraft who work at Miskatonic University.</summary>
</details>

HTML

```
<details>
  <summary>Name at least 3 professors found in works by H.P. Lovecraft who work at Miskatonic University.</summary>
  <ul>
    <li>Prof. Ferdinand C. Ashley</li>
    <li>Prof. Atwood</li>
    <li>Prof. William Dyer</li>
    <li>Prof. Lake</li>
    <li>Prof. Seneca Lapham</li>
    <li>Prof. Francis Morgan</li>
    <li>Prof. Nathaniel Wingate Peaslee</li>
    <li>Prof. Warren Rice</li>
  </ul>
</details>

<!-- Source: https://en.wikipedia.org/wiki/Characters_of_the_Cthulhu_My
```

CSS (SCSS)

JS

<details open>
<summary>Name at least 3 professors found in works by H.P. Lovecraft who work at Miskatonic University.</summary>

- Prof. Ferdinand C. Ashley
- Prof. Atwood
- Prof. William Dyer
- Prof. Lake
- Prof. Seneca Lapham
- Prof. Francis Morgan
- Prof. Nathaniel Wingate Peaslee
- Prof. Warren Rice
</details>

💡 PRO TIP

Default styles for `<summary>` includes `display: list-item`, which allows you to change or remove the disclosure triangle icon that indicates closed or open

You can also remove the disclosure triangle if you change the style to `display: block`

`<dialog> … </dialog>`

Displays a *dialog box or other interactive component*, such as a dismissable alert, inspector, or subwindow

Requires CSS & JavaScript to really do anything

Covered in *For Developers Only*

Scripting

<script>

<noscript>

<canvas>

✏️ SIDE NOTE

These scripting elements are covered elsewhere

Web Components: `<template>` & `<slot>`

`<script>` … `</script>`

Embeds or references *executable script* in the document

Embedding reduces outbound requests, an example of *resource inlining*

If `type` attribute is absent, browser assumes JavaScript

If referenced, `src` attribute is required

HTML

```
<h3>Embedded JavaScript</h3>

<p>
  Let's hope Cthulhu doesn't wake up in
  <script
  type="text/javascript">document.write
  (new Date().getFullYear());</script>
  & doom us all.
</p>

<h3>Referenced JavaScript</h3>

<p>
  Let's hope Cthulhu doesn't wake up in
  <script
  src="http://codepen.websanity.com/js/
  year.js"></script> & doom us all.
</p>
```

CSS

JS

Embedded JavaScript

Let's hope Cthulhu doesn't wake up in 2014 & doom us all.

Referenced JavaScript

Let's hope Cthulhu doesn't wake up in 2014 & doom us all.

`<noscript>` … `</noscript>`

Alternate content when `<script>` is not executed

If `<noscript>` is in `<head>`, can only contain `<link>`, `<style>`, or `<meta>`

If `<noscript>` is in `<body>`, can contain content

HTML

```
<noscript>
  <p>
    <strong>Please turn on JavaScript,
    or Cthulhu will be angry.</strong>
  </p>
</noscript>

<p>
  Let’s hope Cthulhu doesn’t wake up in
  <script
  type="text/javascript">document.write
  (new Date().getFullYear());</script>
  & doom us all.
</p>
```

CSS

JS

Please turn on JavaScript, or Cthulhu will be angry.

Let’s hope Cthulhu doesn’t wake up in & doom us all.

`<canvas> ... </canvas>`

A resolution-dependent *bitmap canvas* that is used for drawing graphics on the fly using JavaScript

`<canvas>` is *raster-based*, while SVG is *vector-based*

Used for:

» graphs
» game graphics
» art
» visual images
» photo compositions
» animations
» & much more!

Sizing via CSS can cause distortion, so better to use the `width` & `height` attributes

Unless you're creating a responsive webpage…

💡 PRO TIP

What about `height` & `width` on a responsive webpage?

1. Don’t use `width` & `height` attributes on `<canvas>`
2. In CSS, set `width: 100%` for the `<canvas>`
3. Using JavaScript, set the `height` to some ratio of the `width`

```
var canvas =
 document.getElementById('responsive-canvas');
var heightRatio = 1.5;
canvas.height = canvas.width * heightRatio;
```

Can provide alternate content inside `<canvas>` for older rendering engines & those with JavaScript disabled

```
<canvas width="640" height="480">
  Time to get a real browser!
</canvas>
```

Advantages of `<canvas>`

» Interactivity via keyboard, mouse, or touch
» Animation of all objects
» Flexibility in what can be created
» Supported by all major desktop & mobile rendering engines
» Programmable!

Software you can use to create `<canvas>`

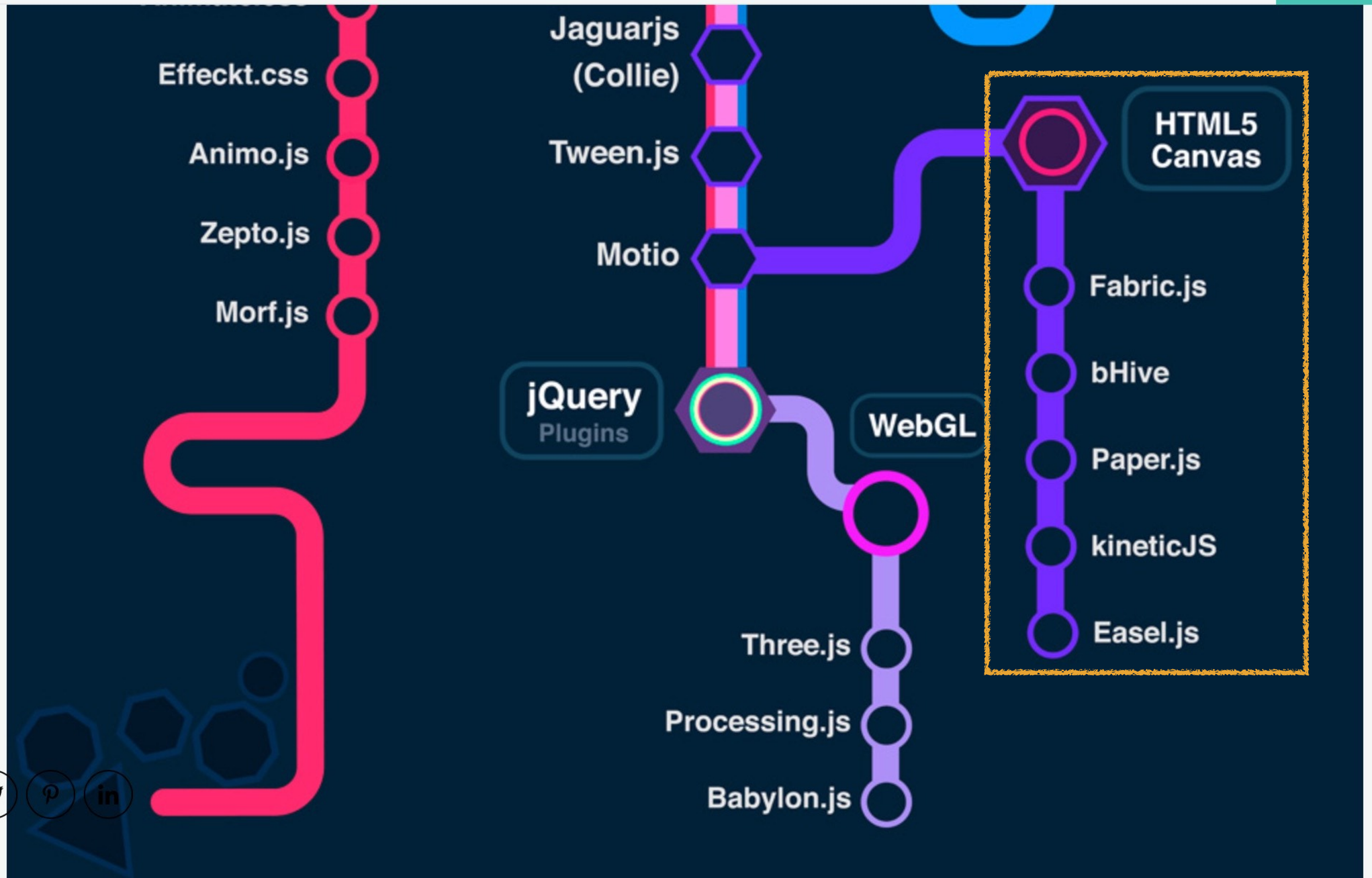
» Adobe ~~Flash~~ Animate
» Adobe Illustrator
» Adobe After Effects + bodymovin extension
» Tumult Hype
» Google Web Designer
» Construct 2 (games)

Web Animation Infographics: A Map of the Best Animation Libraries for JavaScript and CSS3 plus Performance Tips

ARTICLE BY **AWWWARDS TEAM** IN **WEB DESIGN** - APRIL 30

This website uses cookies to ensure you get the best experience on our website. Learn More. GOT IT!

Today we have decided to showcase a **'map'** of the **current state of web animation** by compiling highly regarded


Effeckt.css
Animo.js
Zepto.js
Morf.js
Jaguarjs
(Collie)
Tween.js
Motio
jQuery
Plugins
WebGL
HTML5
Canvas
Fabric.js
bHive
Paper.js
kineticJS
Easel.js
Three.js
Processing.js
Babylon.js

HTML

```html
<canvas id="example" width="200" height="200">
  This text is displayed if your browser does
  not support the canvas element.
</canvas>
```

CSS

JS

```js
var example = document.getElementById('example');
var context = example.getContext('2d');
context.fillStyle = 'red';
context.fillRect(30, 30, 50, 50);
```

HTML

```
<canvas id="canvas" width="400"
height="400"></canvas>
```

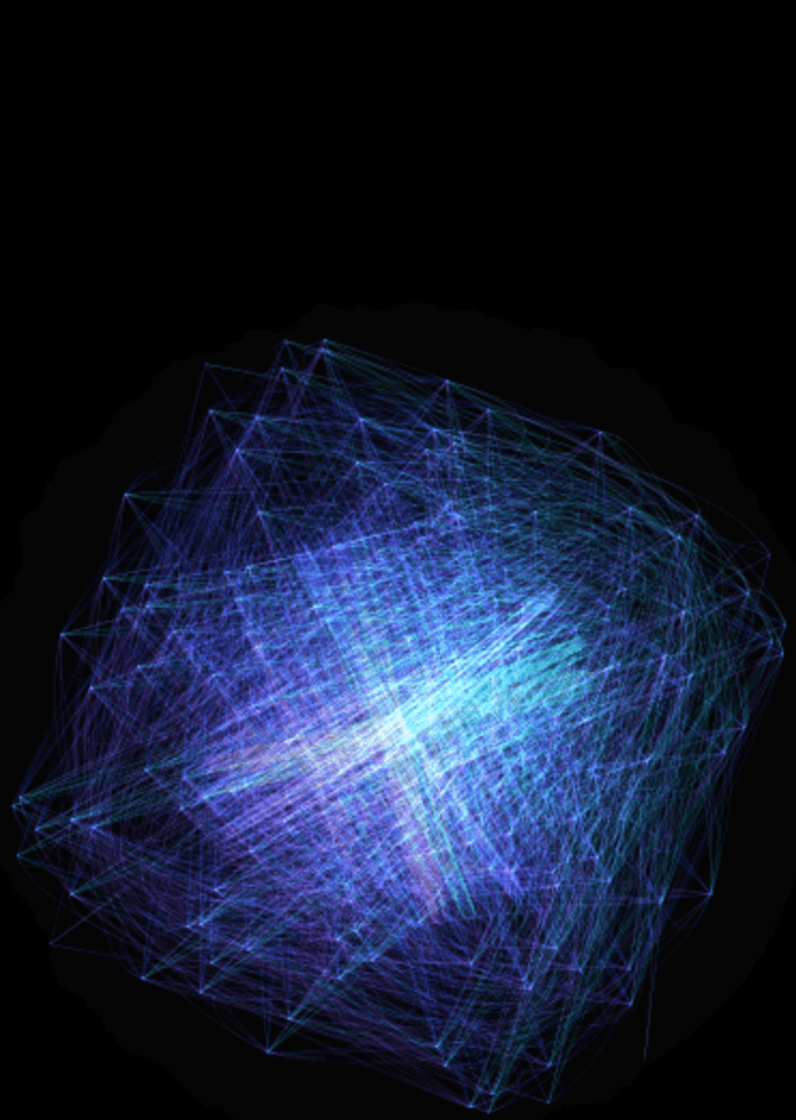
CSS

JS

```
  /* Update Trail
/*=====================================
=====================================
===*/
  this.updateTrail = function(){


    if(this.trail.length <
    this.maxTrail){
      this.createPoint(this.arcx,
      this.arcy);
    }

```



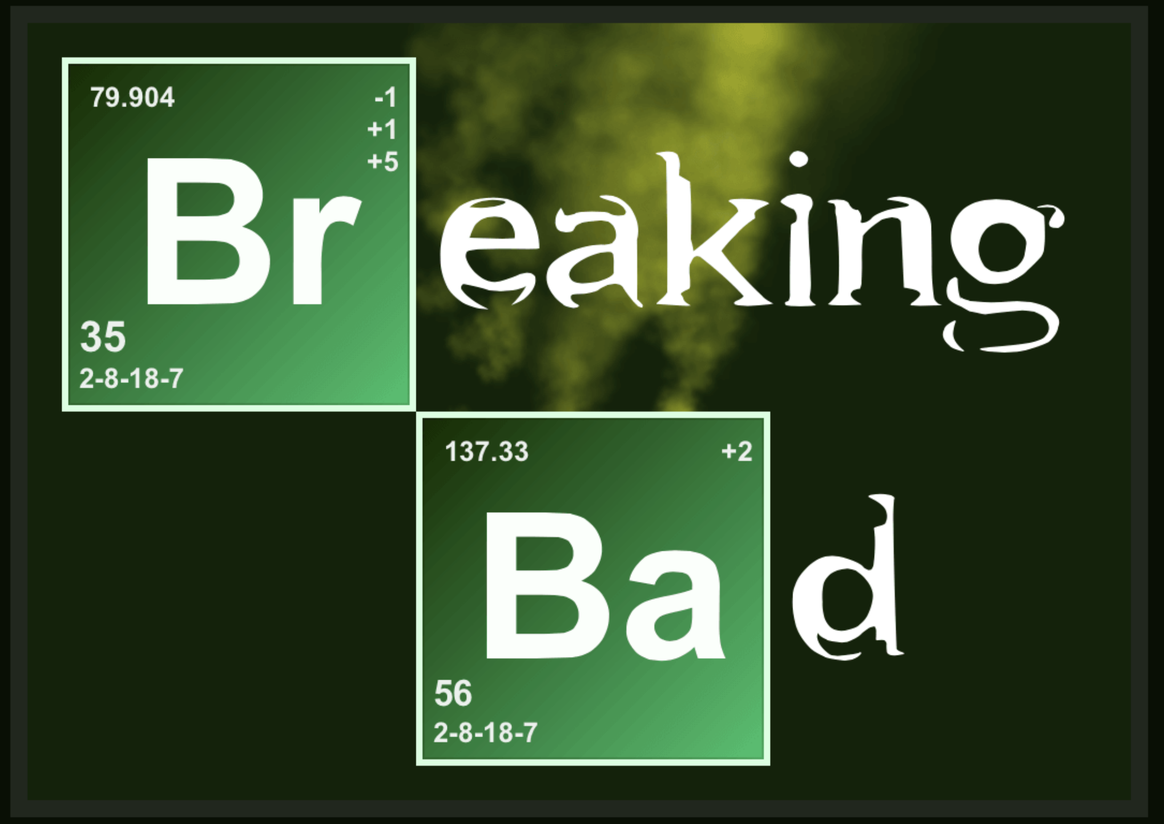
HTML

```
84
85      </span>
86
87    <canvas id="smoke"></canvas>
88  </section>
89  </div>
90  <!-- /Breaking Bad Logo -->
91
92
93
94
95
96  <!-- Breaking Bad theme -->
```

CSS (SCSS)

JS

```
277     smoke_1.update(timeElapsed);
278     smoke_1.render(context);
279
280     smoke_2.update(timeElapsed);
281     smoke_2.render(context);
282
283     smoke_3.update(timeElapsed);
284     smoke_3.render(context);
285
286     windVelocity += (Math.random() -
        0.5) * 0.002;
287     if (windVelocity > 0.015) {
288         windVelocity = 0.015;
```



HTML

```
<canvas class="canvas"></canvas>

<div class="help">?</div>

<div class="ui">
  <input class="ui-input" type="text"
  />
  <span class="ui-return">↵</span>
</div>

<div class="overlay">
  <div class="tabs">
```

CSS

JS

```
*/


var S = {
  init: function () {
    var action = window.location.href,
        i = action.indexOf('?a=');

    S.Drawing.init('.canvas');
    document.body.classList.add('body-
    -ready');

    if (i !== -1) {
```

HTML

```
<canvas class="canvas"></canvas>

<div class="help">?</div>

<div class="ui">
  <input class="ui-input" type="text"
  />
  <span class="ui-return">↵</span>
</div>

<div class="overlay">
  <div class="tabs">
```

CSS

JS

```
*/


var S = {
  init: function () {
    var action = window.location.href,
        i = action.indexOf('?a=');

    S.Drawing.init('.canvas');
    document.body.classList.add('body-
    -ready');

    if (i !== -1) {
```

				iOS		
<canvas>	9	1.5	2	3.2	1	3

Character References

You might see these in some code

```
&amp;
&copy;
&quot;
 
```

Those are *character entities* or *named references*

Before UTF-8 was available, there was no easy way to enter a © or ¢ or — in your HTML

You had to use HTML character entities

HTML 1	3 (`amp`, `lt`, `gt`)
HTML 2	63
HTML 3.2	34
HTML 4	153
HTML5	1258 new + 84 additions to earlier ones (For example, `gt` was defined in HTML 1, but in HTML5 `GT` was added)

HTML versions & character entities introduced

All character entities…

» begin with `&`
» end with `;`

Contents are case-sensitive letters, along with numbers in a few cases

`©`	©	`§`	§	`ö`	ö
`™`	™	`¶`	¶	`É`	É
`"`	"	`¼`	¼	`é`	é
`“`	“	`—`	—	`÷`	÷
`”`	”	`<`	<	`·`	•
`…`	…	`>`	>	`✓`	✓

Character entities use letters as mnemonics

In addition to character entities, which use letters, you can also represent Unicode code points using numbers, in either *decimal* or *hexadecimal* form

These still start with `&` & end with `;`

©	©	§	§	ö	ö
™	™	¶	¶	É	É
"	"	¼	¼	é	é
“	“	—	—	÷	÷
”	”	<	<	·	•
…	…	>	>	✓	✓

Decimal numbers

Numeral systems

Humans use *base 10*: `0`–`9`

Computers use *base 2* (*binary*): `0` & `1`

Hexadecimal uses base 16: `0`–`F` (`0`–`9`, then `A`–`F`)

The letters in hex are *not* case sensitive

& is 0026 • M is 004D • @ is 0040 • T is 0054 • z is 007A • ~ is 007E

	0x00	0x01	0x02	0x03	0x04	0x05	0x06	0x07	0x08	0x09	0x0A	0x0B	0x0C	0x0D	0x0E	0x0F
0x0																
0x10																
0x20		!	"	#	$	%	&	'	(	)	*	+	,	-	.	/
0x30	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
0x40	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
0x50	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
0x60	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
0x70	p	q	r	s	t	u	v	w	x	y	z	{	|	}	~	

Unicode Block: Basic Latin

€ is 0080 • “ is 0093 • © is 00a9 • × is 00d7 • ë is 00eB • þ is 00fE

	0x00	0x01	0x02	0x03	0x04	0x05	0x06	0x07	0x08	0x09	0x0A	0x0B	0x0C	0x0D	0x0E	0x0F
0x80	€	·	–		—											
0x90				“	”											
0xa0		¡	¢	£	¤	¥	¦	§	¨	©	ª	«	¬		®	¯
0xb0	°	±	2	3	´	µ	¶	·	¸	1	º	»	¼	½	¾	¿
0xc0	À	Á	Â	Ã	Ä	Å	Æ	Ç	È	É	Ê	Ë	Ì	Í	Î	Ï
0xd0	Ð	Ñ	Ò	Ó	Ô	Õ	Ö	×	Ø	Ù	Ú	Û	Ü	Ý	Þ	ß
0xe0	à	á	â	ã	ä	å	æ	ç	è	é	ê	ë	ì	í	î	ï
0xf0	ð	ñ	ò	ó	ô	õ	ö	÷	ø	ù	ú	û	ü	ý	þ	ÿ

Unicode Block: Latin-1 Supplement

↑ is ? • ↬ is ? • ⇉ is ? • ⇦ is ?

	0x00	0x01	0x02	0x03	0x04	0x05	0x06	0x07	0x08	0x09	0x0A	0x0B	0x0C	0x0D	0x0E	0x0F
0x2190	←	↑	→	↓	↔	↕	↖	↗	↘	↙	↚	↛	↜	↝	↞	↟
0x21a0	↠	↡	↢	↣	↤	↥	↦	↧	↨	↩	↪	↫	↬	↭	↮	↯
0x21b0	↰	↱	↲	↳	↴	↵	↶	↷	↸	↹	↺	↻	↼	↽	↾	↿
0x21c0	⇀	⇁	⇂	⇃	⇄	⇅	⇆	⇇	⇈	⇉	⇊	⇋	⇌	⇍	⇎	⇏
0x21d0	⇐	⇑	⇒	⇓	⇔	⇕	⇖	⇗	⇘	⇙	⇚	⇛	⇜	⇝	⇞	⇟
0x21e0	⇠	⇡	⇢	⇣	⇤	⇥	⇦	⇧	⇨	⇩	⇪	⇫	⇬	⇭	⇮	⇯
0x21f0	⇰	⇱	⇲	⇳	⇴	⇵	⇶	⇷	⇸	⇹	⇺	⇻	⇼	⇽	⇾	⇿

Unicode Block: Arrows

© is `©` in decimal

© is `©` or `©` (you don't need the `00` at the beginning) in hexadecimal

Remember, © had Unicode code point `00a9`

The lowercase `x` tells the browser you're about to give it a Unicode code point in hexadecimal

©	©	§	§	ö	ö
™	™	¶	¶	É	É
"	"	¼	¼	é	é
“	“	—	—	÷	÷
„	”	<	<	·	•
…	…	>	>	✓	✓

Hexadecimal points to positions in Unicode blocks

	<	©	&	é
Named	`<`	`©`	`&`	`é`
Decimals	`<`	`©`	`&`	`é`
Hex	`<`	`©`	`&`	`é`

Character entities are easier to remember, but there are far more numbers

	♩	♕	⌘	💩
	Quarter note	White chess queen	Place of interest sign	Pile of poo
Named				
Decimals	`♩`	`♕`	`⌘`	`💩`
Hex	`♩`	`♕`	`⌘`	`💩`

No character entities for these — numbers only

HTML

```
<p>
  &copy; 2014 Cthulhu Inc.
</p>

<p>
  &quot;Hi, Nyarlathotep!&quot;
</p>

<p>
  &ldquo;Herrre, Shoggy Shoggy
  Shoggoth!&rdquo;
</p>

<p>
  Don’t eat me&mdash;eat him!
</p>

<p>
  Pabodie, Lake, Atwood &amp; Dyer
</p>

<p>
  Charles Dexter Ward
</p>
```

CSS

JS

© 2014 Cthulhu Inc.

"Hi, Nyarlathotep!"

“Herrre, Shoggy Shoggy Shoggoth!”

Don’t eat me—eat him!

Pabodie, Lake, Atwood & Dyer

Charles Dexter Ward

` ` is a *non-breaking space*

It glues words together so they can’t be split apart

HTML

```
<p>
  Resize the browser window slowly & notice
  where & when “Herbert West” wraps.
</p>

<h3>Without &amp;nbsp;</h3>

<p>
  Meet my good friend—the esteemed young Dr.
  Herbert West.
</p>

<h3>With &amp;nbsp;</h3>

<p>
  Meet my good friend—the esteemed young Dr.
  Herbert West.
</p>
```

CSS

JS

Resize the browser window slowly & notice where & when “Herbert West” wraps.

Without

Meet my good friend—the esteemed young Dr. Herbert West.

With

Meet my good friend—the esteemed young Dr. Herbert West.

Unfortunately, before CSS, developers figured out ways to mis-use ` ` to insert multiple spaces without the monospaced fonts of `<pre>`

HTML

```
<h3>Mailing Address</h3>
<p>
      Dr. Marinus Bicknell
  Willett
  <br>    10 Barnes Street
  <br>    Providence, RI 02906
</p>

<h3>Indented Paragraph</h3>

<p>
       During the winter
  of 1927–28 officials of the Federal government
  made a strange and secret investigation of
  certain conditions in the ancient Massachusetts
  seaport of Innsmouth. The public first learned
  of it in February, when a vast series of raids
  and arrests occurred, followed by the deliberate
  burning and dynamiting—under suitable
  precautions—of an enormous number of crumbling,
  worm-eaten, and supposedly empty houses along
  the abandoned waterfront.
</p>
```

CSS

JS

Mailing Address

Dr. Marinus Bicknell Willett
10 Barnes Street
Providence, RI 02906

Indented Paragraph

During the winter of 1927–28 officials of the Federal government made a strange and secret investigation of certain conditions in the ancient Massachusetts seaport of Innsmouth. The public first learned of it in February, when a vast series of raids and arrests occurred, followed by the deliberate burning and dynamiting—under suitable precautions—of an enormous number of crumbling, worm-eaten, and supposedly empty houses along the abandoned waterfront.

Do not mis-use the ` ` character entity!

It’s a terrible hack

It’s not semantic

It complicates code

It breaks CSS

Use CSS instead!

List of XML and HTML character entity references

From Wikipedia, the free encyclopedia

In SGML, HTML and XML documents, the logical constructs known as *character data* and *attribute values* consist of sequences of characters, in which each character can manifest directly (representing itself), or can be represented by a series of characters called a *character reference*, of which there are two types: a *numeric character reference* and a ***character entity reference***. This article lists the character entity references that are valid in HTML and XML documents.

A character entity reference refers to the content of a named entity. An entity declaration is created by using the `<!ENTITY name "value">` syntax in a Document Type Definition (DTD).

Contents [hide]

1 Character reference overview
2 Standard public entity sets for characters
3 Predefined entities in XML
4 Character entity references in HTML

HTML

Dynamic HTML • HTML5 (audio • canvas • video) • XHTML (Basic • Mobile Profile • C-HTML) • HTML element (span and div) • HTML attribute • HTML frame • HTML editor • Character encodings (Unicode) • Language code • Document Object Model • Browser Object Model • Style sheets (CSS) • Font family • Web colors • HTML scripting • JavaScript (WebGL • WebCL) • W3C (Validator) • WHATWG • Quirks mode • Web storage • Rendering engine

Comparisons

Document markup languages • HTML support • XHTML (1.1)

Wikipedia
The Free Encyclopedia

Main page
Contents
Current events
Random article
About Wikipedia
Contact us
Donate

Contribute

Help
Community portal
Recent changes
Upload file

Unicode Character Search

Unicode Character Search

Query:

include Han codepoints?

Preview:
- No
- HTML Entities

Search | Cancel

A-Z index | Search options

Unicode Blocks

Summary

The Unicode standard arranges groups of characters together in blocks. This is the complete list of blocks.

Detail

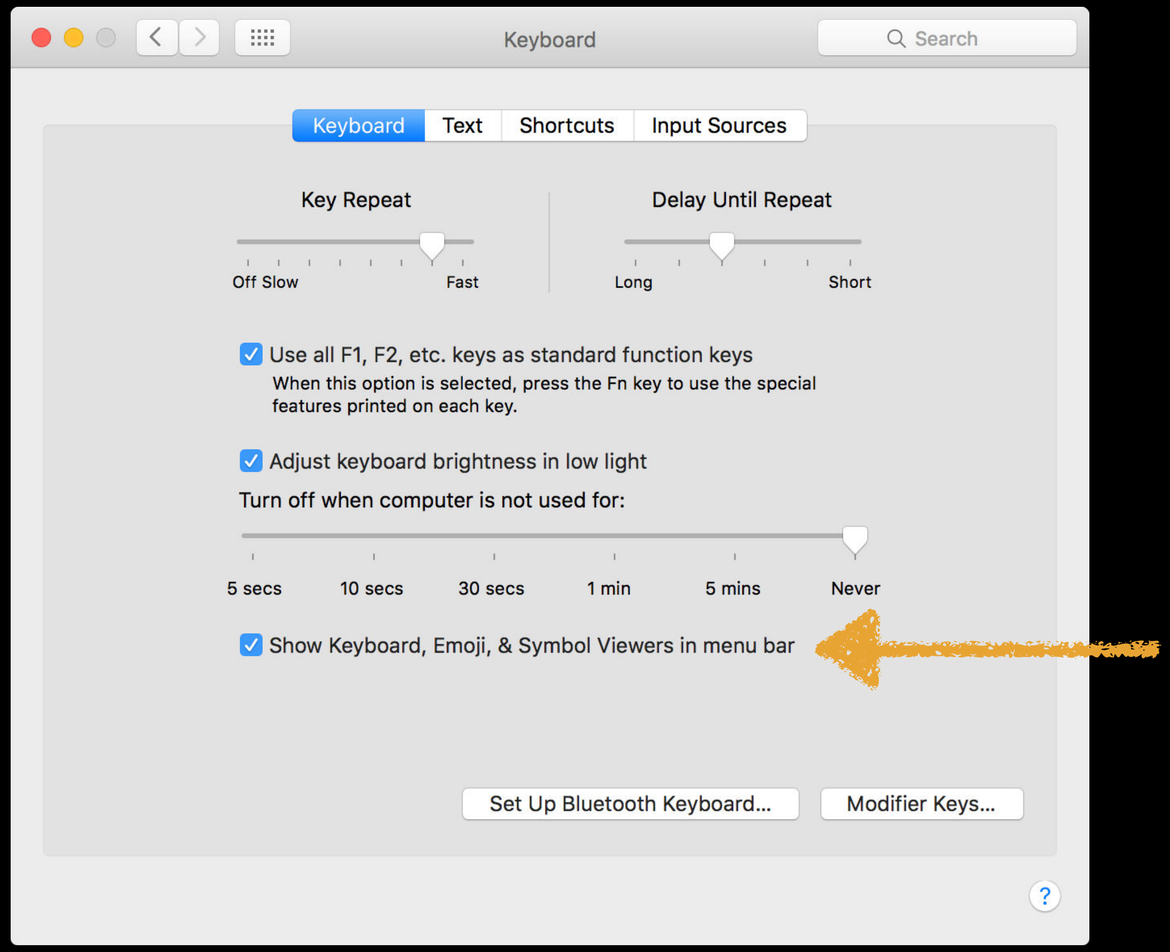
Name	From	To	# Codepoints
Basic Latin	U+0000	U+007F	(128)
Latin-1 Supplement	U+0080	U+00FF	(128)
Latin Extended-A	U+0100	U+017F	(128)
Latin Extended-B	U+0180	U+024F	(208)
IPA Extensions	U+0250	U+02AF	(96)
Spacing Modifier Letters	U+02B0	U+02FF	(80)
Combining Diacritical Marks	U+0300	U+036F	(112)

Even with UTF-8, you still have to use these 3 character entities

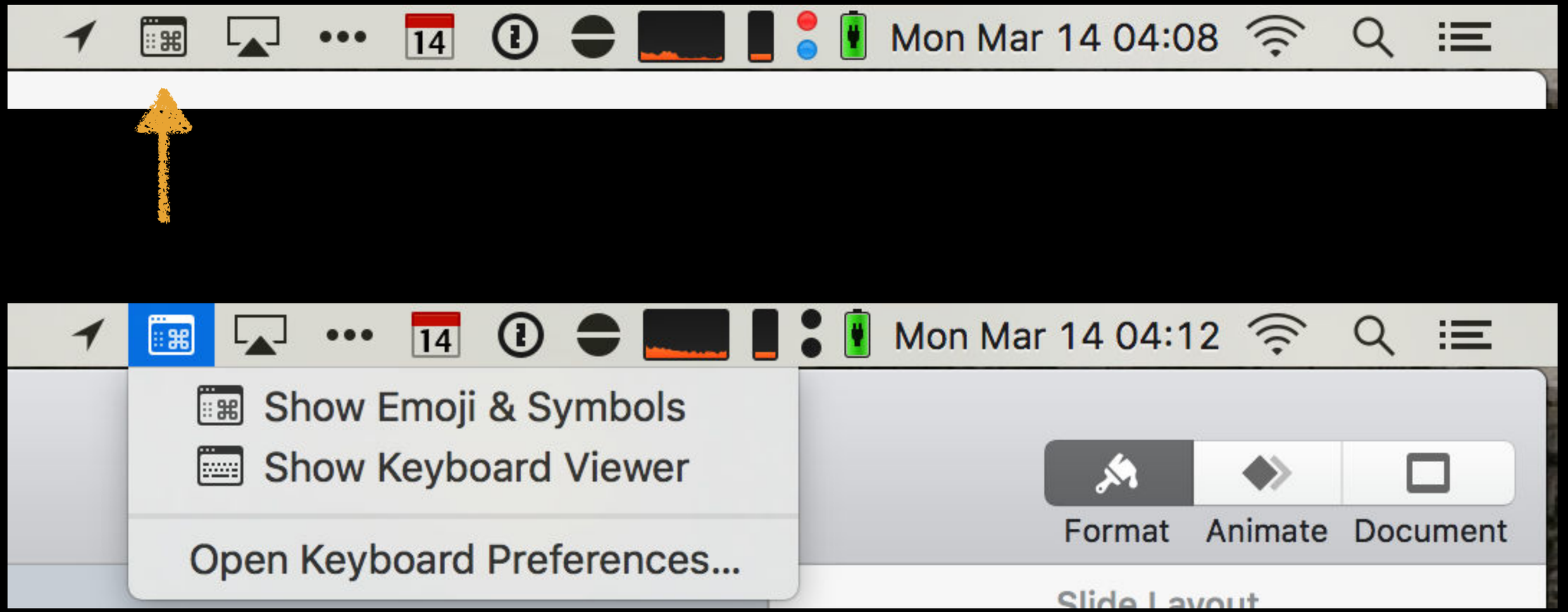
`<`	<
`&`	&
` `	[non-breaking space]

Just type in all other characters

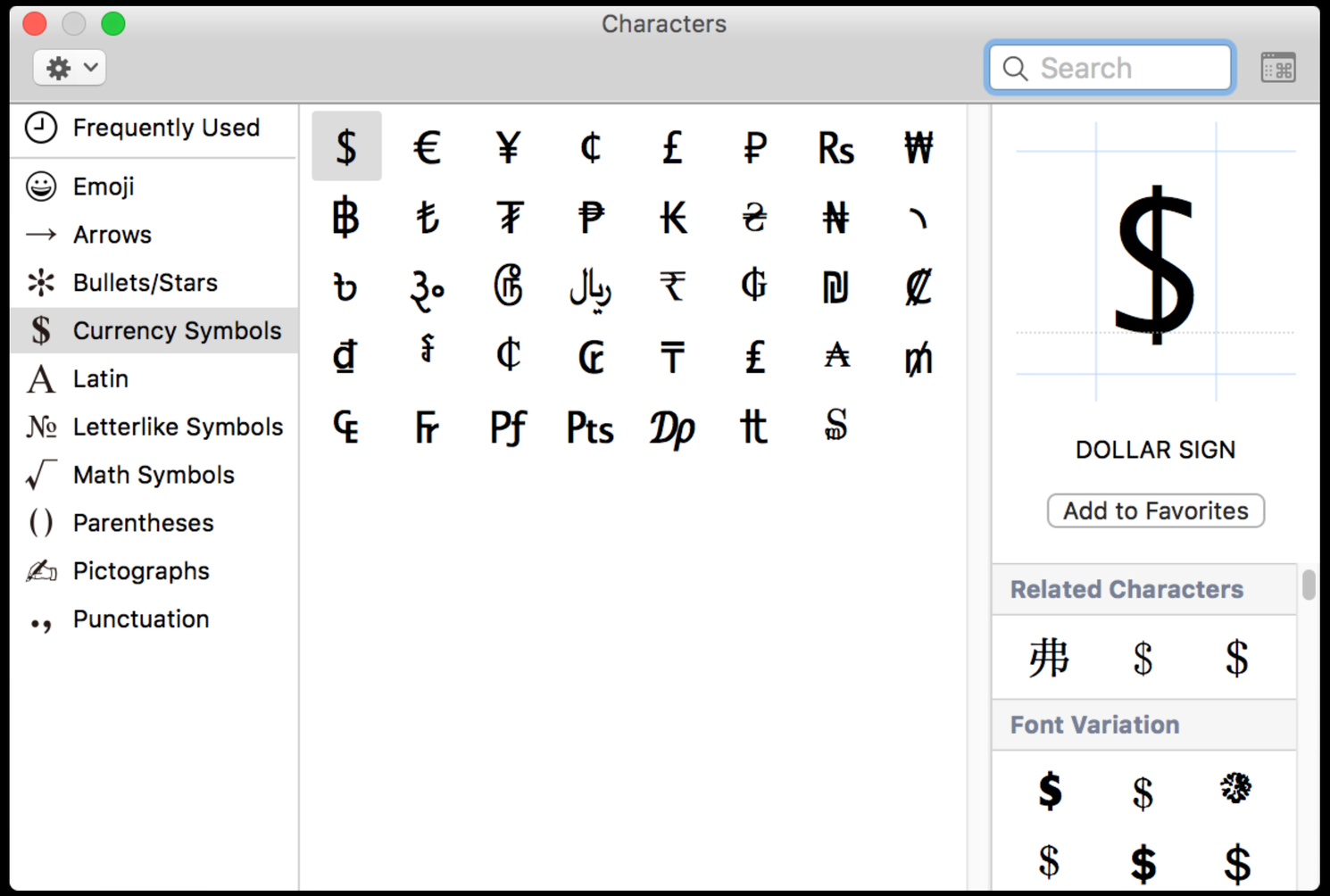
 > System Preferences > Keyboard > Keyboard



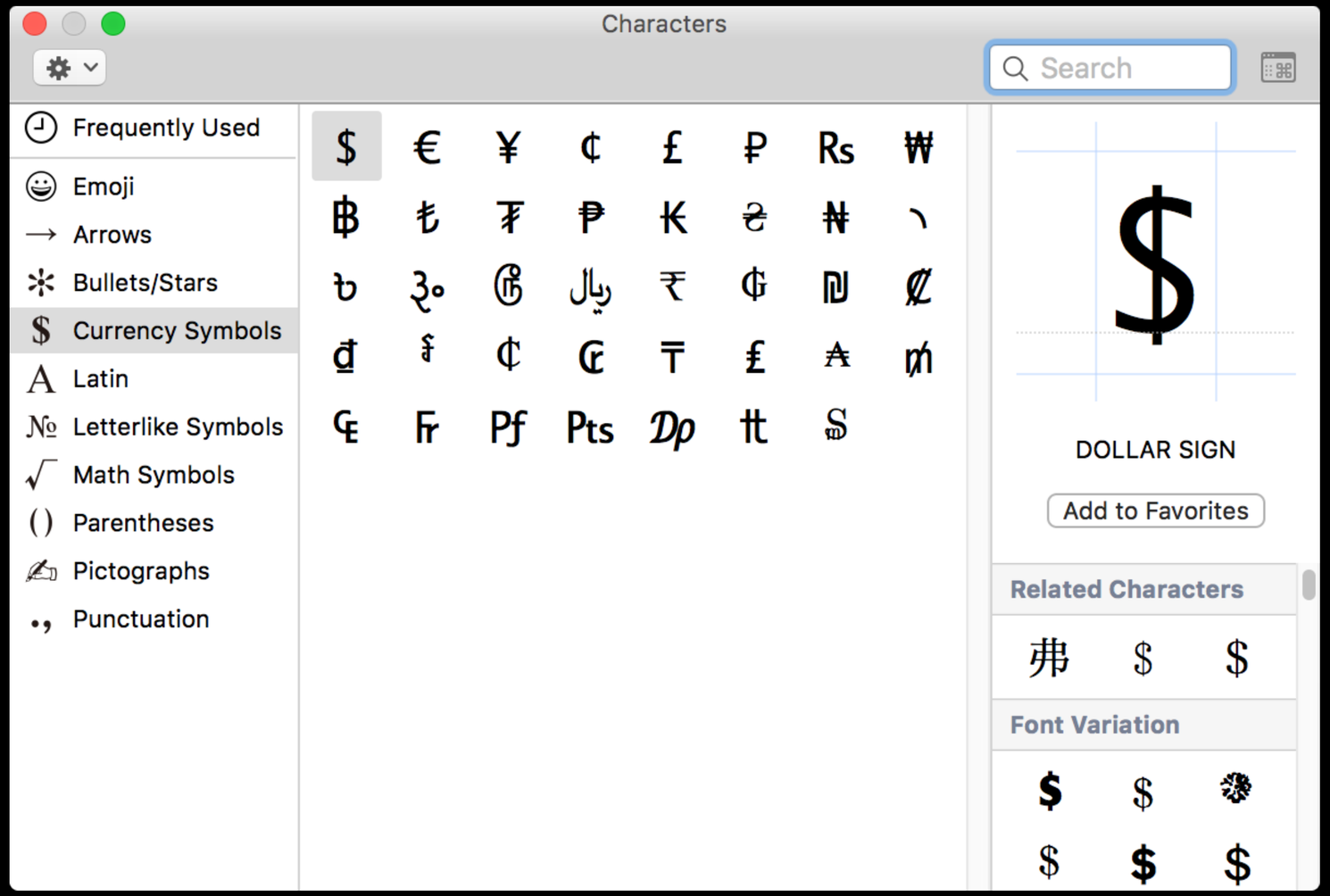
Check the box next to Show Keyboard, Emoji, & Symbol Viewers In Menu Bar



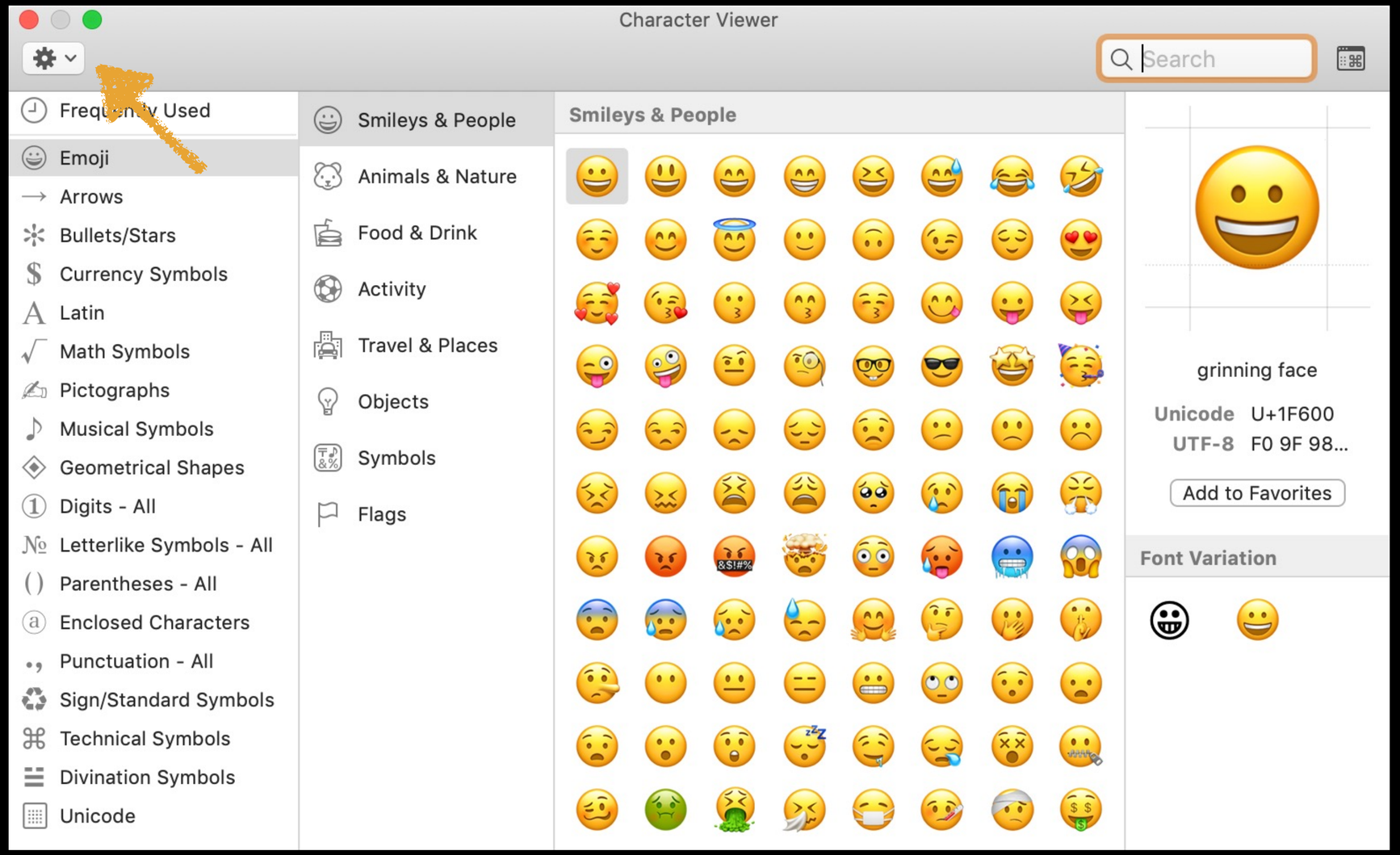
Show Keyboard, Emoji, & Symbol Viewers menulet appears



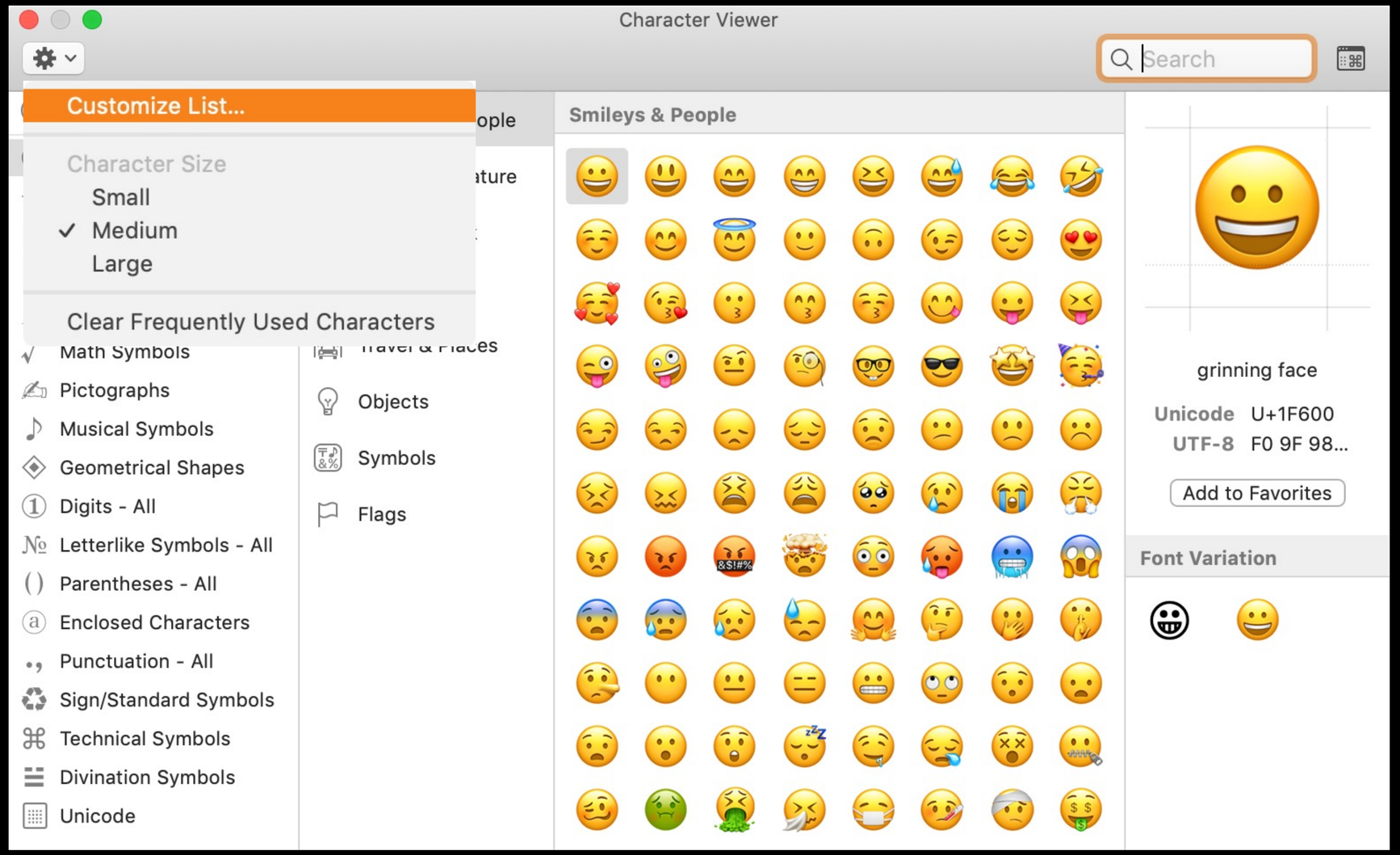
Emoji & Symbols



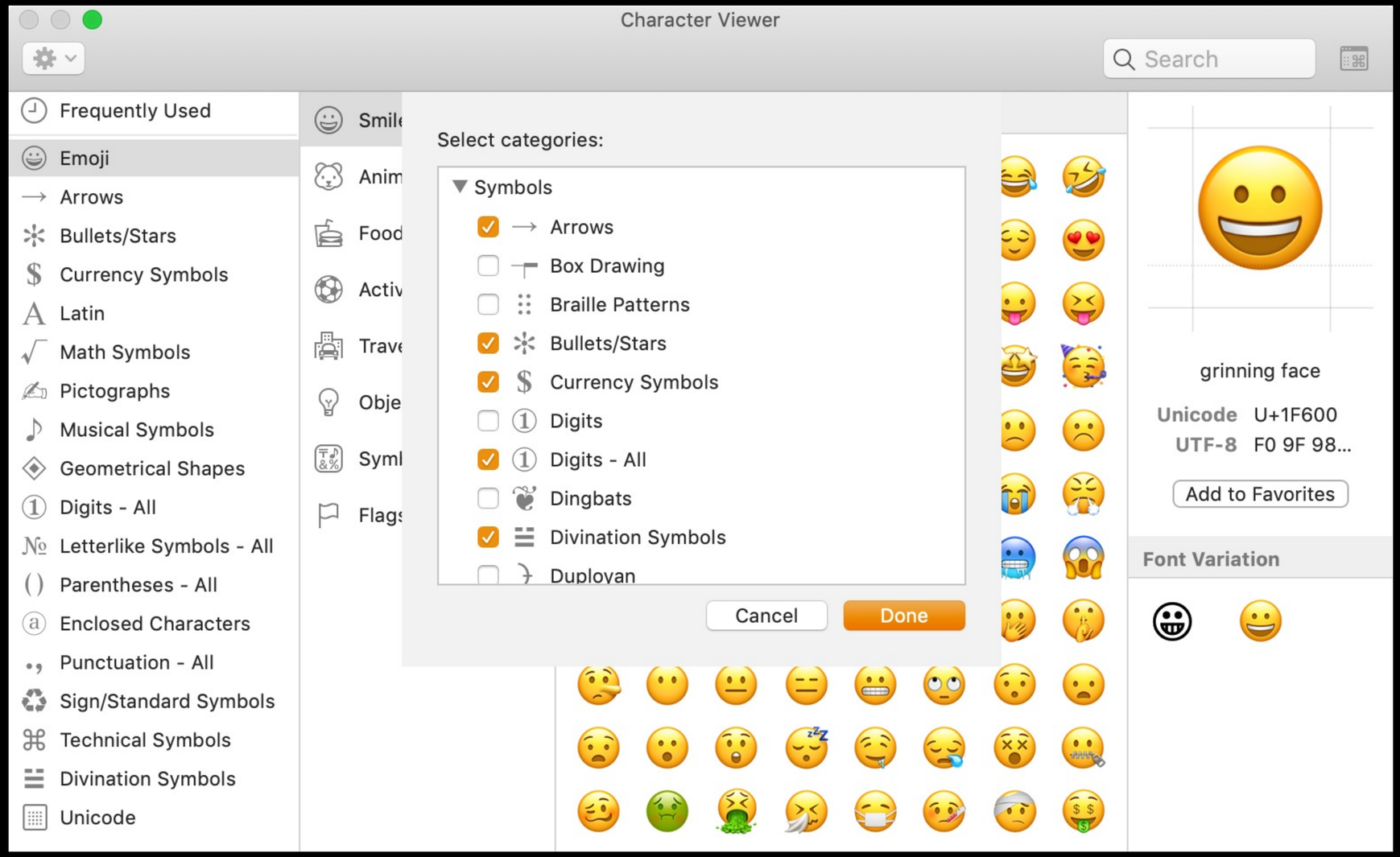
Double-click on a character to insert it



Customize the Character Viewer



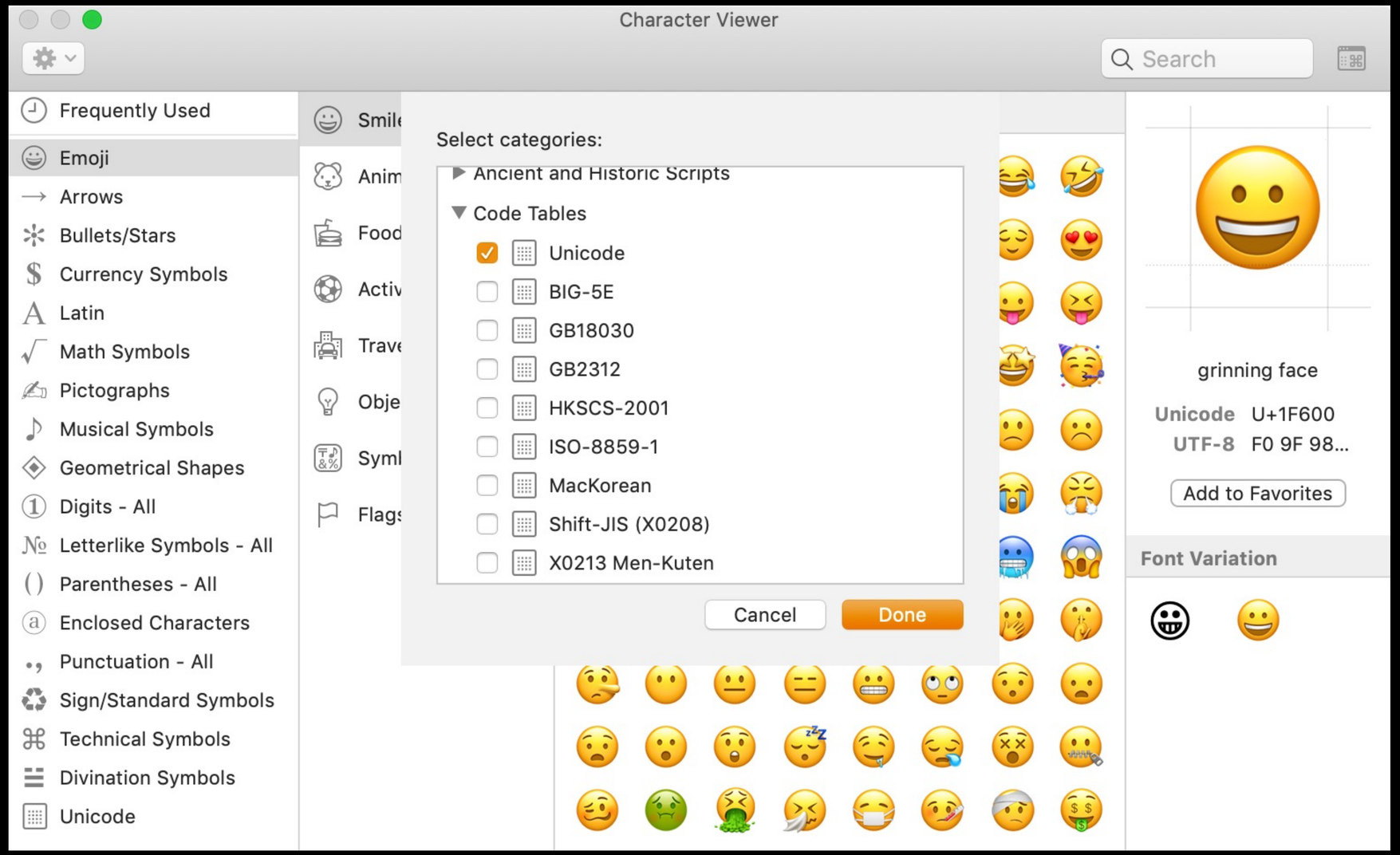
Customize the Character Viewer



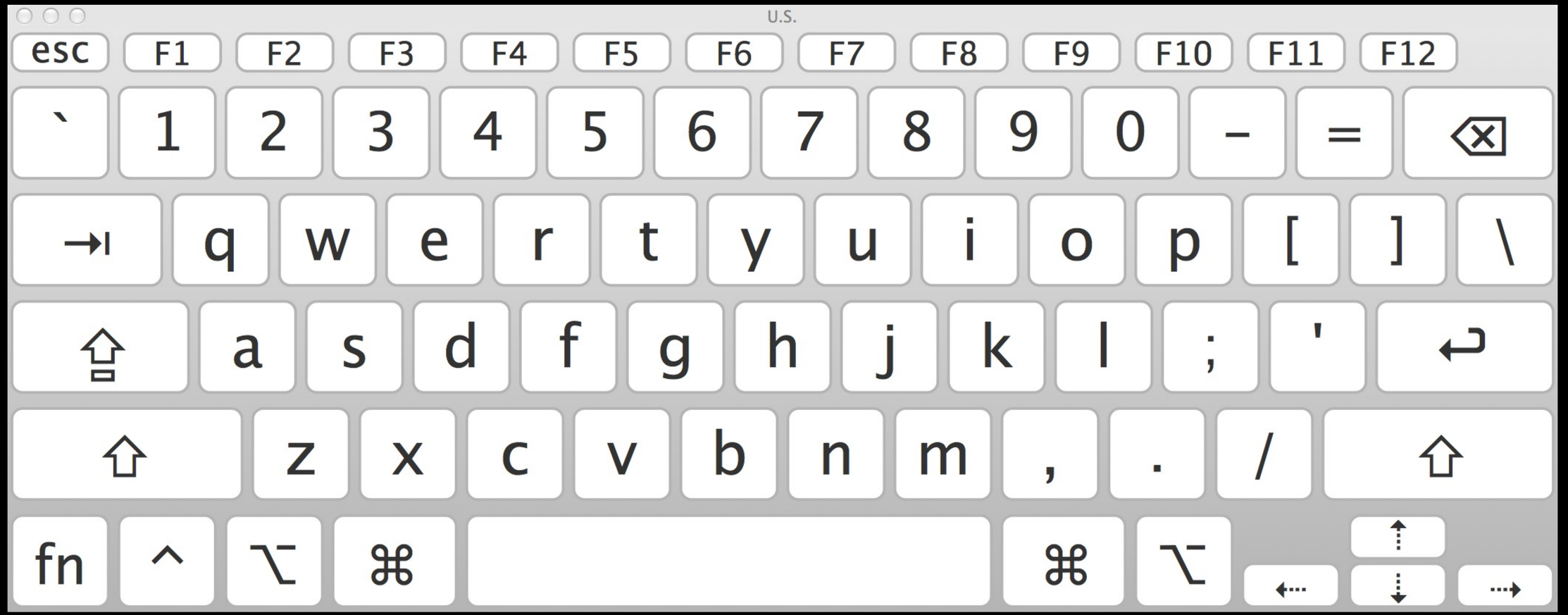
Customize the Character Viewer

Customize the Character Viewer

Customize the Character Viewer



Customize the Character Viewer

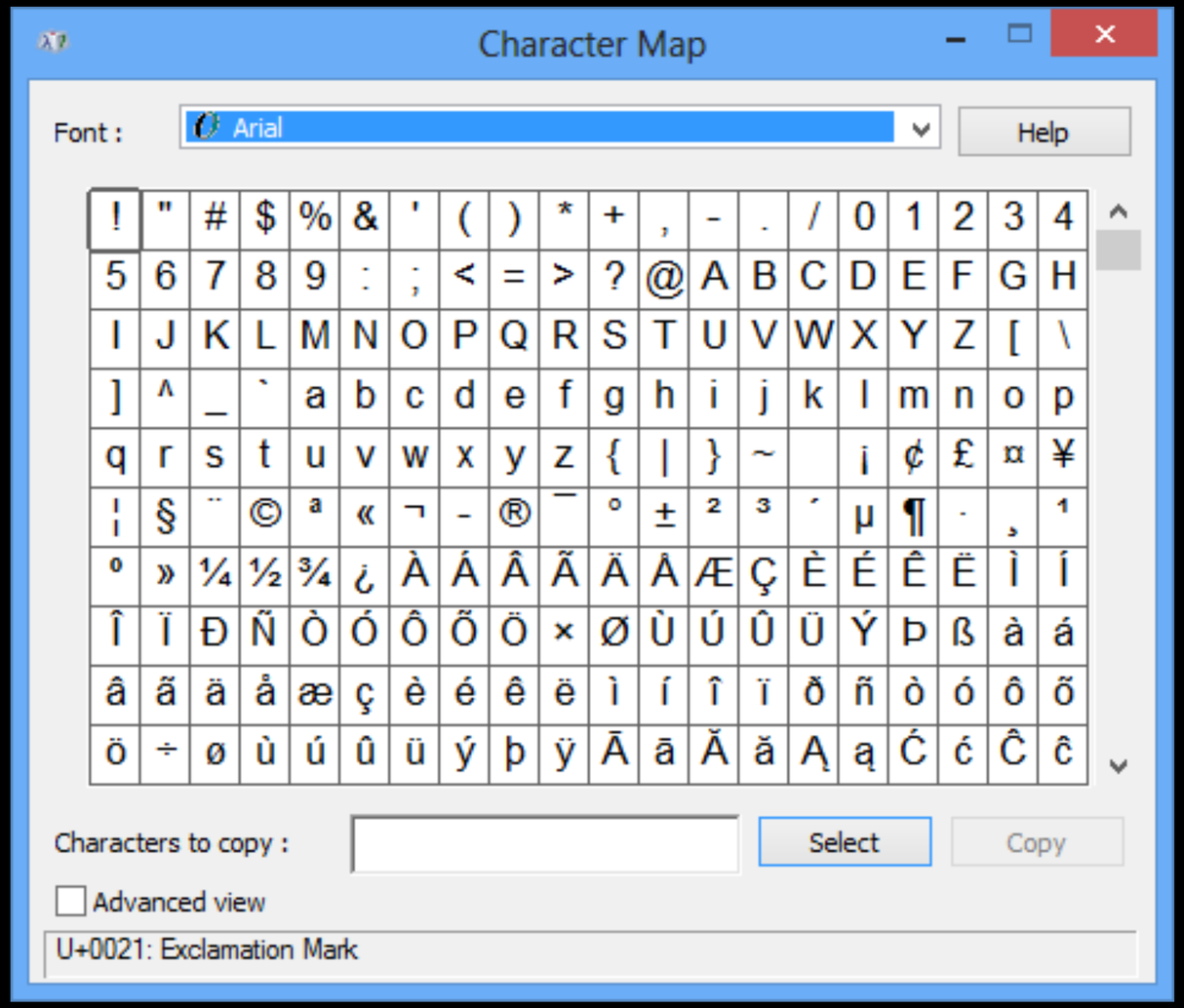


Keyboard Viewer

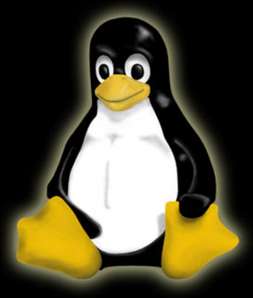
Keyboard Viewer with Alt/Option pressed

Keyboard Viewer with Alt/Option+Shift pressed

Start > Search for “Character Map”



Character Map



GNOME: Gnucharmap

KDE: KCharSelect

©	⌥G	Alt+0169
—	⌥⇧-	Alt+0151
é	⌥e, e	Alt+0233
€	⌥⇧2	Alt+0128
…	⌥;	Alt+0133

Windows key codes require a numeric keypad or you have to use Character Map

IE*

* Only necessary if you need to support really old version of IE

Support for older versions of Internet Explorer ends on January 12, 2016

Upgrade now

What is end of support?

What does this mean?

Microsoft
Windows
For business
Learn
Try
Buy
Deploy
Get help
Stay connected
Support for older versions of Internet Explorer ends on January 12, 2016
Upgrade now
“After January 12, 2016, Microsoft will no longer provide security updates or technical support for older [pre-11] versions of Internet Explorer.”
What is end of support?
What does this mean?

IE 9 & below does not adequately support HTML5

(surprise!)

There are ways to add HTML5 support to IE, however

They are a PITA & don’t work perfectly

Modernizr

FRONT-END DEVELOPMENT DONE RIGHT

DOWNLOAD DOCUMENTATION RESOURCES NEWS

"An indispensable tool."
— Bruce Bowman, sr. product manager, Edge Tools & Services

Modernizr is a JavaScript library that detects HTML5 and CSS3 features in the user's browser.

Why use Modernizr?

Taking advantage of cool new web technologies is great fun, until you have to support browsers that lag behind. Modernizr makes it easy for you to write conditional JavaScript *and CSS* to handle each situation, whether a browser supports a feature or not. It's perfect for doing progressive enhancement easily.

How it works

Modernizr runs quickly on page load to detect features; it then creates a JavaScript object with the results, and adds classes to the `html` element for you to key your CSS on. Modernizr supports dozens of tests, and optionally includes YepNope.js for conditional loading of external **.js** and **.css** resources.

Download Modernizr 2.8.3

Use the commented, uncompressed Development version to develop with and learn from.

Then, dive into the Production build tool and pick just the tests you need!

View documentation

DEVELOPMENT
Uncompressed, 42 Kb

PRODUCTION
Configure Your Build

Get started with Modernizr

While Modernizr gives you finer control over the experience through JavaScript-driven feature detection, it is important to continue to use best practices throughout your development process. Use progressive enhancement wherever you can, and don't sacrifice accessibility for convenience or performance.

- Documentation: Getting started
- Taking Advantage of HTML5 and CSS3 with Modernizr, *Faruk Ateş*
- How to use Modernizr, *Inayaili de León*
- Modernizr: front-end development done right, *Ryan Seddon*
- [wiki] The Undetectables: features that cannot be detected
- [wiki] Cross-browser Polyfills

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Latest news

April 2nd, 2013
Modernizr 3, Stickers & Diversity
News on v.3, stickers, and a message from the team.

PREVIOUS

January 7th, 2013
Modernizr Policy on Browser Bugs and Feature Detects

September 4th, 2012
Modernizr 2.6.2 released

July 19th, 2012
Modernizr 2.6 released

Polyfill: JavaScript code that implements an HTML5 feature for web browsers that do not support that feature

HTML5 Cross Browser Polyfills

Edit | New Page

EvandroLG edited this page 16 days ago · 30 revisions

So here we're collecting all the shims, fallbacks, and polyfills in order to implant html5 functionality in browsers that don't natively support them.

The general idea is that: we, as developers, should be able to develop with the HTML5 apis, and scripts can create the methods and objects that should exist. Developing in this future-proof way means as users upgrade, your code doesn't have to change but users will move to the better, native experience cleanly.

Looking for a way to conditionally load these scripts client-side based on feature detects? See Modernizr. Looking for a guide to writing your own polyfills? See Writing Cross-Browser JavaScript Polyfills. Looking for a alphabetical guide on HTML5, CSS3, etc features and how you should use them? See HTML5PLEASE.

Pages 7

Authoring a v3 test

Filing a bug

Home

How We Test

HTML5 Cross Browser Polyfills

Other feature tests

Undetectables

Clone this wiki locally

https://github.com/Modernizr/Modern

Clone in Desktop

The No-Nonsense Guide to HTML5 Fallbacks

SVG

Canvas

Sectioning

Video

Audio

Forms

Accessibility

`<meter>`

`<progress>`

`data-*` attributes

MathML

DOM

Backgrounds

Responsive

Text & Fonts

Layout

Hyphenation

Generated content

"An indispensable tool."
— Bruce Bowman, sr. product manager, Edge Tools & Services

Download Modernizr 2.8.3

Use the Development version to develop with and learn from. Then, when you're ready for production, use the build tool below to pick only the tests you need.

CSS3 TOGGLE

- [ ] @font-face
- [ ] background-size
- [ ] border-image
- [ ] border-radius
- [ ] box-shadow
- [ ] Flexible Box Model (flexbox)
- [ ] Flexbox Legacy
- [ ] hsla()
- [ ] multiple backgrounds
- [ ] opacity
- [ ] rgba()
- [ ] text-shadow
- [ ] CSS Animations
- [ ] CSS Columns
- [ ] CSS Generated Content (:before/:after)
- [ ] CSS Gradients
- [ ] CSS Reflections

HTML5 TOGGLE

- [ ] applicationCache
- [ ] Canvas
- [ ] Canvas Text
- [ ] Drag 'n Drop
- [ ] hashchange
- [ ] History (pushState)
- [ ] HTML5 Audio
- [ ] HTML5 Video
- [ ] IndexedDB
- [ ] Input Attributes
  Note: does not add classes
- [ ] Input Types
  Note: does not add classes
- [ ] localStorage
- [ ] postMessage
- [ ] sessionStorage
- [ ] Web Sockets
- [ ] Web SQL Database

Misc. TOGGLE

- [ ] Geolocation API
- [ ] Inline SVG
- [ ] SMIL
- [ ] SVG
- [ ] SVG clip paths
- [ ] Touch Events
- [ ] WebGL

Extra

- [x] html5shiv v3.7
- [ ] html5shiv v3.7.1 w/ printshiv
- [x] Modernizr.load
  (yepnope.js)
- [ ] Media Queries
- [x] Add CSS Classes

className prefix:

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Latest news

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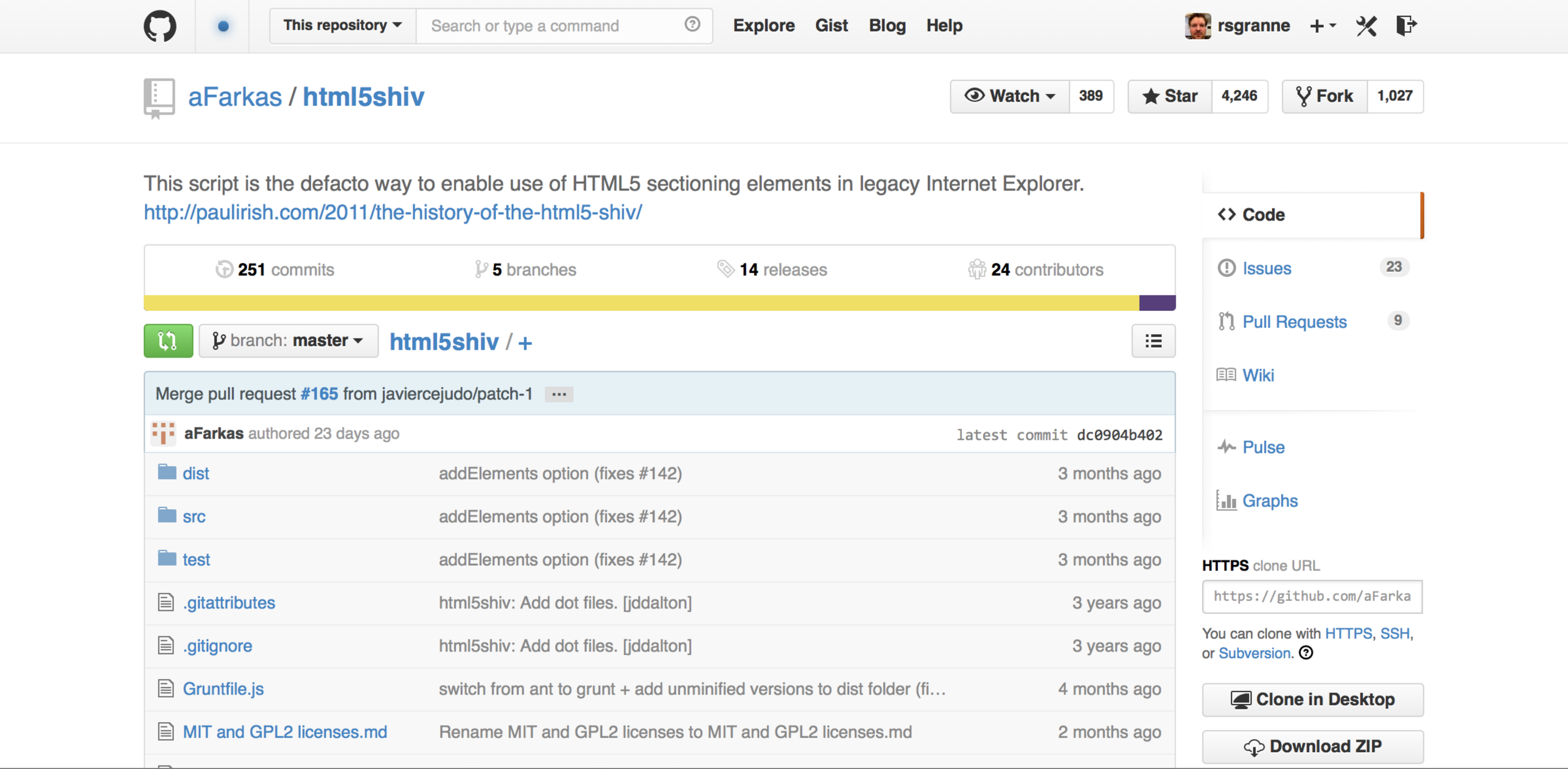


github.com/aFarkas/html5shiv

```
<!--[if lt IE 9]>
  <script src="dist/html5shiv.js"></script>
<![endif]-->
```

`<!--[if lt IE 9]>` … `<![endif]-->` indicates a *conditional comment*

Supported only by Internet Explorer 5–10

IE 10 does not support conditional comments if the HTML5 DTD is used, but will still work with them with earlier DTDs

Conditional comments are special comments that allow you to provide IE-specific HTML, CSS, & JavaScript

Every other browser sees a comment & ignores it

IE sees a comment, checks to see if it is a conditional comment, & if it is, it parses the code

```
[if lte IE 8]
```
Matches IE 8 & earlier

```
[if gt IE 5]
```
Matches IE versions later than IE 5

```
[if (gt IE 5)&(lt IE 7)]
```
Matches IE versions later than IE 5 & earlier than IE 7

```
[if (IE 6)|(IE 7)]
```
Matches IE 6 or IE 7

Or match any version of IE

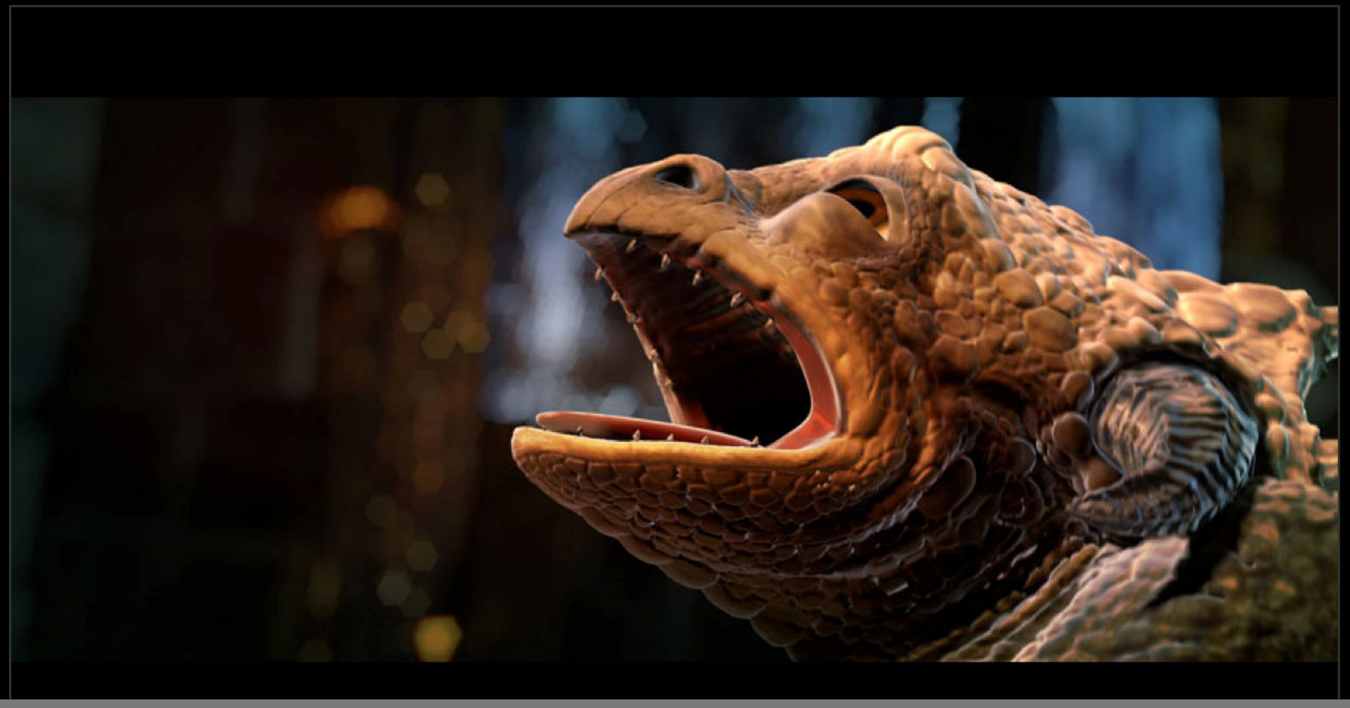
```
<!--[if IE]>
<p>
  You are using Internet Explorer. Please
stop.
</p>
<![endif]-->
```

“Conditional comments really aren’t necessary anymore. If as a developer you focus on building to web standards and leverage feature detection instead of UA sniffing or conditional comments, you should be able to build and maintain standards-based sites that work easily across modern versions of IE and cross-browser.” —Rey, IE developer at Microsoft

“We implemented the HTML5 parser in IE10. The standard doesn’t mention conditional comments so they aren’t supported.” —Adrian, IE developer at Microsoft

HTML5 video was meant to be this easy

html5media enables <video> and <audio> tags in all major browsers



All it takes is a single line of code to make HTML5 video and audio tags work in all major browsers.

- ✔ Nothing to install.
- ✔ Works in all browsers and phones.
- ✔ One of the fastest solutions available.

html5media.info

How to enable <video> and <audio> tags in all major browsers

To make HTML5 video and audio tags work in all major browsers, simply add the following line of code somewhere in the <head> of your document.

```
<script src="//api.html5media.info/1.1.8/html5media.min.js"></script>
```

Tools

Books

Jon Duckett's *HTML & CSS: Design & Build Websites* is overall good

References

Pinboard (rsgranne) 0.319 s history · network · recent · popular · add url · add note · settings · account · howto log out

rsgranne + html 126 edit · organize · ⇳ date · title RSS

« earlier

Search Mine Search All

search full text

★ How to enable Safari Reader on your site? · Mathias Bynens
http://mathiasbynens.be/notes/safari-reader
When is Safari Reader enabled on a site?
html safari webdev
2014.07.24 17:35:46 by rsgranne 27 others edit delete

★ Web Components Catalog - Component Kitchen
http://component.kitchen/
webdev html javascript chart visualization
2014.07.10 22:16:24 by rsgranne 48 others edit delete

★ Home - schema.org
http://www.schema.org/
This site provides a collection of schemas that webmasters can use to markup HTML pages in ways recognized by major search providers, and that can also be used for structured data interoperability (e.g. in JSON). Search engines including Bing, Google, Yahoo! and Yandex rely on this markup to improve the display of search results, making it easier for people to find the right Web pages.
google seo webdev html
2014.05.23 23:46:52 by rsgranne 42 others edit delete

★ Front-end Style Guides ◆ 24 ways
http://24ways.org/2011/front-end-style-guides/
To counter this problem, graphic designers are often commissioned to produce style guides as part of a rebranding project. A style guide provides details such as how much white space should surround a logo, which typefaces and colours a brand uses, along with when and where it is appropriate to use them.

related tags

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★ Can I use... Support tables for HTML5, CSS3, etc
http://caniuse.com/#
Compatibility tables for support of HTML5, CSS3, SVG and more in desktop and mobile browsers.
browser css html5 webdev standards
2014.05.16 16:47:16 by rsgranne 40 others edit delete

★ Safari HTML Reference: Introduction
https://developer.apple.com/library/safari/documentation/AppleApplications/Reference/Safar…
This document details every HTML element and property supported by WebKit and Safari on all platforms, which include Mac OS X, iOS, and Windows. You should read this if you are developing web content that will be displayed in Safari or within a WebKit-based application.
webdev apple safari browser html5
2014.05.16 16:46:18 by rsgranne 2 others edit delete

★ Normalize.css: Make browsers render all elements more consistently.
http://necolas.github.io/normalize.css/
A modern, HTML5-ready alternative to CSS resets

Normalize.css makes browsers render all elements more consistently and in line with modern standards. It precisely targets only the styles that need normalizing.
css framework html5 webdev
2014.05.12 22:12:33 by rsgranne edit delete

★ HTML5test - How well does your browser support HTML5?
http://html5test.com/compare/browser/index.html
Select up to five browsers and compare their test results in detail
html5 browser webdev comparecontrast

related tags

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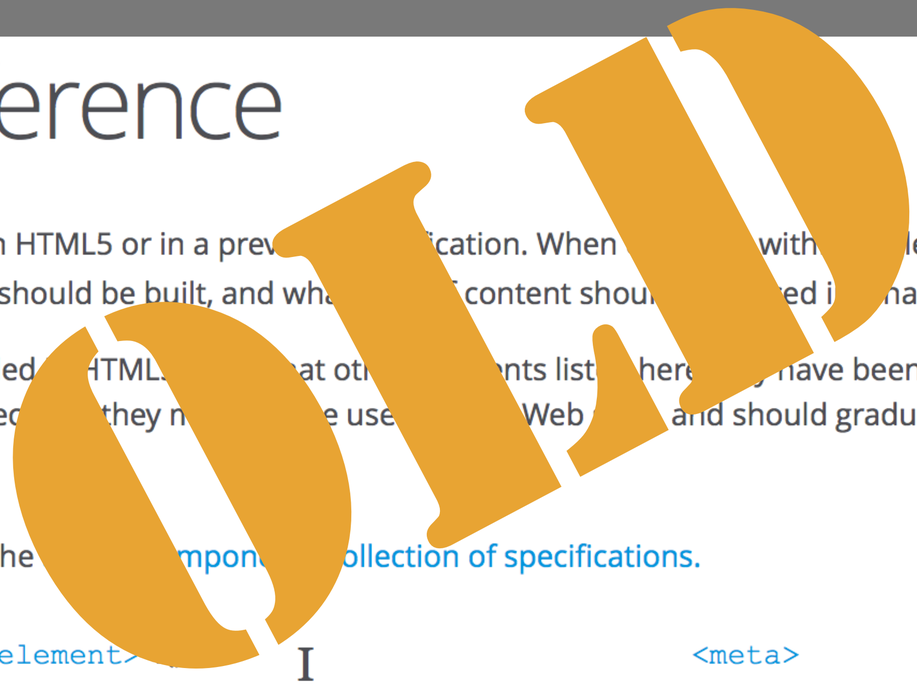
javascript ⊕ macosx ⊕ media ⊕ ogg ⊕
opensource ⊕ opera ⊕ php ⊕ plugin ⊕
presentation ⊕ reference ⊕ safari ⊕ search ⊕

pinboard.in/u:rsgranne/t:html5

developer.mozilla.org/en-US/docs/Web/HTML/Element

HTML element reference



This HTML reference lists all **HTML elements**, defined in HTML5 or in a prev ication. When with le brackets, they form *HTML tags*: `<elementname>`. Elements are entities specifying how HTML documents should be built, and wh content shou ed i at part of an HTML document.

The symbol indicates that the element has been added HTML at ot nts list here have been modified or extended by the HTML5 specification. Dimmed elements are non-standard, obsolete, or depre they n e use Web and should gradually be removed from existing ones to avoid unwanted results.

The symbol indicates that the element is defined in the mpon ollection of specifications.

A

- <a>
- <abbr>
- <acronym>
- <address>
- <applet>
- <area>

C

- <canvas>
- <caption>
-
- <cite>
- <code>
- <col>

<element>

-
- <embed>

F

- <fieldset>
- <figcaption>

I

- <i>
- <iframe>
- <img>
- <input>
- <ins>
- <isindex>

- <meta>
- <meter>

N

- <nav>
- <nobr>
- <noframes>

R

- <rp>
- <rt>
- <ruby>

S

- <s>

- <td>
- <template>
- <textarea>
- <tfoot>
- <th>
- <thead>
- <time>

HTML elements reference

On this Page

Main root
Document metadata
Sectioning root
Content sectioning
Text content
Inline text semantics
Image and multimedia
Embedded content

This page lists all the HTML elements, which are created using tags. They are grouped by function to help you find what you have in mind easily. An alphabetical list of all elements is provided in the sidebar on every element's page as well as this one.

> For more information about the basics of HTML elements and attributes, see the section on elements in the Introduction to HTML article.

https://developer.mozilla.org/en-US/docs/Web/HTML/Element

Sectioning root

Element	Description
`<body>`	The **HTML `<body>` Element** represents the content of an HTML document. There can be only one `<body>` element in a document.

Content sectioning

Content sectioning elements allow you to organize the document content into logical pieces. Use the sectioning elements to create a broad outline for your page content, including header and footer navigation, and heading elements to identify sections of content.

Element	Description
`<address>`	The **HTML `<address>` element** indicates that the enclosed HTML provides contact information for a person or people, or for an organization.
`<article>`	The **HTML `<article>` element** represents a self-contained composition in a document, page, application, or site, which is intended to be independently distributable or reusable (e.g., in syndication)

HTML attribute reference

developer.mozilla.org/en-US/docs/Web/HTML/Attributes

Attribute list
Content versus IDL attributes
Boolean Attributes
See also

Attribute list

Attribute Name	Elements	Description
`accept`	`<form>`, `<input>`	List of types the server accepts, typically a file type.
`accept-charset`	`<form>`	List of supported charsets.
`accesskey`	Global attribute	Keyboard shortcut to activate or add focus to the element.
		The URI of a program that processes the information

Related Topics
HTML
Tutorials:
HTML basics
Introduction to HTML

https://developer.mozilla.org/en-US/docs/Web/HTML/Attributes

Can I use _____ ? Settings

CSS

- ::placeholder CSS pseudo-element
- ::selection CSS pseudo-element
- :placeholder-shown CSS pseudo-class
- @font-face Web fonts
- Blending of HTML/SVG elements
- calc() as CSS unit value
- 2.1 selectors
- background-attachment
- background-blend-mode
- background-position edge offsets
- box-decoration-break
- clip-path property
- Counter Styles
- Counters
- currentColor value

HTML5

- Audio element
- Audio Tracks
- Autofocus attribute
- Canvas (basic support)
- Canvas blend modes
- classList (DOMTokenList)
- Color input type
- contenteditable attribute (basic support)
- Custom Elements
- Custom protocol handling
- Datalist element
- dataset & data-* attributes
- Date and time input types
- Details & Summary elements
- Dialog element

SVG

- Inline SVG in HTML5
- SVG (basic support)
- SVG effects for HTML
- SVG favicons
- SVG filters
- SVG fonts
- SVG fragment identifiers
- SVG in CSS backgrounds
- SVG in HTML img element
- SVG SMIL animation
- **All SVG features**

JS API

- Ambient Light API

Can I use meter ? Settings

2 results found

Detected your country as "U.S.A.". Would you like to import usage data for that country?

Import No thanks

meter element - LS

Global 92.04%

Method of indicating the current level of a gauge.

Current aligned | Usage relative | Date relative | Show all

IE	Edge *	Firefox	Chrome	Safari	Opera	iOS Safari *	Opera Mini *	Android Browser *	Chrome for Android
			49						
			60			10.2			
	15	55	61	10.1	47	10.3		4.4	
11	16	56	62	11	48	11	all	56	61
		57	63	TP	49				
		58	64		50				
		59	65						

```
<!DOCTYPE html>
<html>
  <head>
    <title>
      HTML Vocabulary Example
    </title>
    <link rel="stylesheet" href="style.css">
  </head>
  <body>
    <!--Mumbo jumbo-->
    <p>
      Lorem ipsum dolor sit amet.
    </p>
    <div class="special" contenteditable>
      Etiam turpis &amp; felis, porttitor vitae dapibus.
    </div>
    <p>
      <span>
        In vulputate, tellus turpis euismod diam.
      </span>
    </p>
  </body>
</html>
```

HTML VOCABULARY

?

SYNTAX

- Doctype
- Element
- Tag
- Tag name
- Start tag
- End tag
- Attribute
- Attribute name
- Attribute value
- Comment
- Text
- Character reference

STRUCTURE

- Root
- Parent

apps.workflower.fi/vocabs/html/en

```
<!DOCTYPE html>
<html>
  <head>
    <title>
      HTML Vocabulary Example
    </title>
    <link rel="stylesheet" href="style.css">
  </head>
  <body>
    <!--Mumbo jumbo-->
    <p>
      Lorem ipsum dolor sit amet.
    </p>
    <div class="special" contenteditable>
      Etiam turpis &amp; felis, porttitor vitae dapibus.
    </div>
    <p>
      <span>
        In vulputate, tellus turpis euismod diam.
      </span>
    </p>
  </body>
</html>
```

HTML VOCABULARY

?

SYNTAX

- Doctype
- Element
- Tag
- Tag name
- Start tag
- End tag
- Attribute
- **Attribute name**
- Attribute value
- Comment
- Text
- Character reference

STRUCTURE

- Root
- Parent
- Children
- Child
- Siblings

Browser Tools

Built-in developer tools are excellent

- Getting Started
- Chrome DevTools
  - Overview
  - Debug Progressive Web Apps
  - Understand Security Issues
  - Run Snippets of Code From Any Page
  - Keyboard Shortcuts Reference
  - UI Reference
  - Inspect and Edit Pages
  - View and Change CSS
  - Inspect and Manage Storage, Caches, and Resources
  - Simulate Mobile Devices with Device Mode
  - Remote Debugging Android Devices
  - Inspect and Debug JavaScript

Chrome DevTools

Contents

Open DevTools

Discover DevTools

Device Mode

Elements panel

•••

Chrome DevTools is a set of authoring, debugging, and profiling tools built into Google Chrome.

★ **Note:** Many of the DevTools docs are based on Chrome Canary, which provides the latest Chrome features.

Open DevTools

- Select **More Tools** > **Developer Tools** from Chrome's Main Menu.
- Right-click a page element and select **Inspect**.
- Press `Command+Option+I` (Mac) or `Control+Shift+I` (Windows, Linux)

Scott Granneman

Writing | Presentations | Teaching | Web Development | Tech Info | Personal

p 691px × 168px

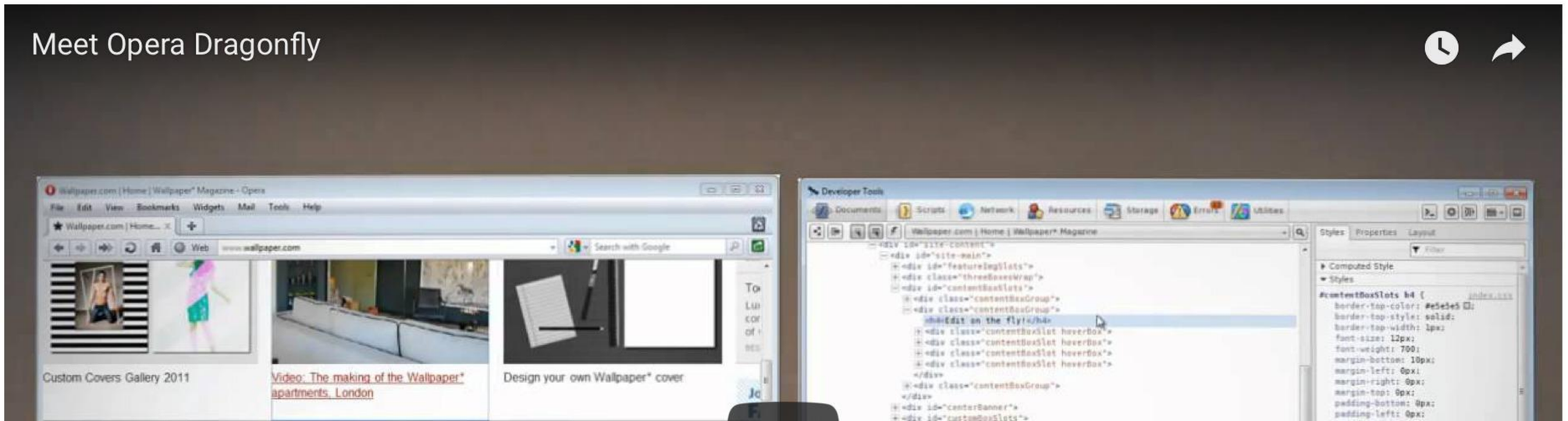
Scott Granneman is an author, educator, & partner in a Web development company in St. Louis, Missouri. Scott has written six books, contributed to two, and penned monthly columns for SecurityFocus and *Linux Magazine*. He is an Adjunct Professor at Washington University in St. Louis & Webster University, teaching courses on technology, security, web development, & the Internet. As a Principal of WebSanity, he plans, develops, and hosts websites for clients in 12 states using an open

Key Site Links

Pages you're probably looking for:

Opera Dragonfly

Fast, lean and powerful. Meet Opera Dragonfly — our fully-featured suite of developer tools, designed to make your job easier. It's just a right-click away. No install required.



Firefox Developer Tools

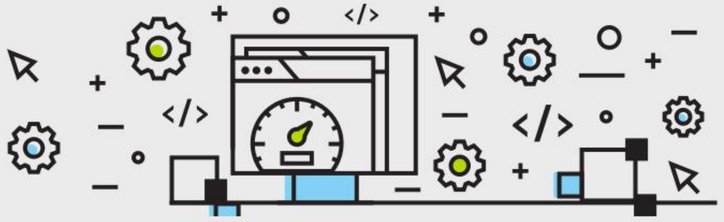
CORE TOOLS
MORE TOOLS
CONNECTING THE DEVTOOLS
DEBUGGING THE BROWSER
EXTENDING THE DEVTOOLS

Examine, edit, and debug HTML, CSS, and JavaScript on the desktop and on mobile. For the latest updates to the developer tools, download Firefox Developer Edition.

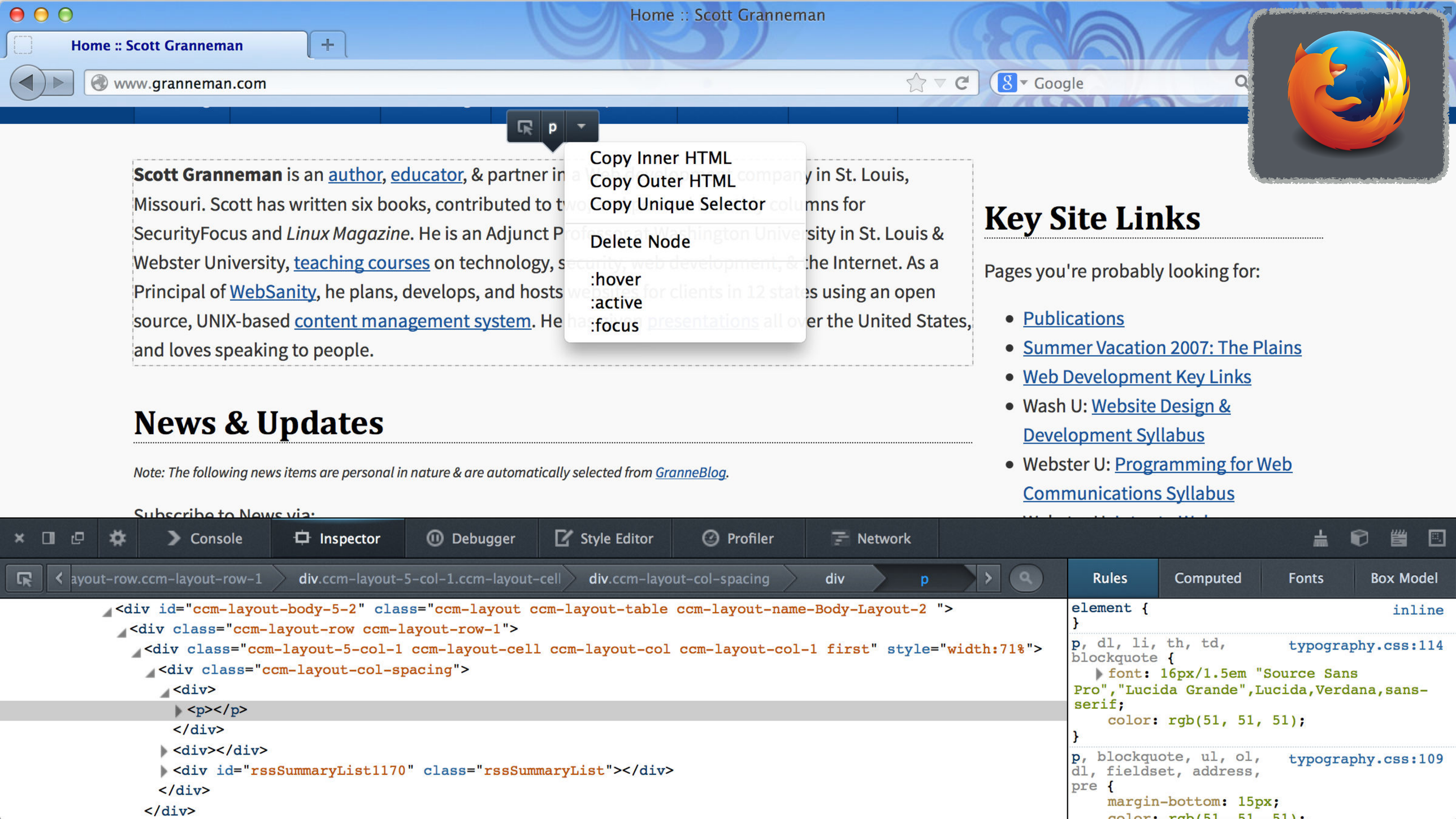
See what your users see in their browsers. Test your sites in up to 800 browser and OS combinations with our cross-browser testing tutorial.

Made just for you by Mozilla and Sauce labs.

Test on Sauce Labs



The Core Tools


Home :: Scott Granneman
Home :: Scott Granneman
www.granneman.com
Google
p
Copy Inner HTML
Copy Outer HTML
Copy Unique Selector
Delete Node
:hover
:active
:focus
Scott Granneman is an author, educator, & partner in
y in St. Louis,
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SecurityFocus and Linux Magazine. He is an Adjunct P
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Webster University, teaching courses on technology, s
he Internet. As a
Principal of WebSanity, he plans, develops, and hosts
s using an open
source, UNIX-based content management system. He
er the United States,
and loves speaking to people.
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Webster U: Programming for Web Communications Syllabus
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Subscribe to News via:
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Inspector
Debugger
Style Editor
Profiler
Network
ayout-row.ccm-layout-row-1
div.ccm-layout-5-col-1.ccm-layout-cell
div.ccm-layout-col-spacing
div
p
Rules
Computed
Fonts
Box Model

element {
inline
}
p, dl, li, th, td, blockquote {
typography.css:114
font: 16px/1.5em "Source Sans Pro","Lucida Grande",Lucida,Verdana,sans-serif;
color: rgb(51, 51, 51);
}
p, blockquote, ul, ol, dl, fieldset, address, pre {
typography.css:109
margin-bottom: 15px;

Table of Contents

Introduction

Enabling Web Inspector

Enable the Develop Menu

Editing Code to Change Your Webpage

1. Select an Element

2. Modify and Save CSS Properties in the Elements Tab

3. Open the CSS file with Quick Open

4. Search Within a File

5. Modify the CSS Properties in the Resources Tab

6. Test Your Page in Responsive Design Mode

Debugging Your Webpage

1. Add Breakpoints

2. Control the Debugger

3. Examine Variables and Functions

4. Modify the JavaScript

5. Examine an Error Message

6. Enable the Type Profiling Tool and Open a Token Popover

Enhancing the Performance of Your Webpage

Next

Introduction

Web Inspector expands Safari's web browser with a set of web development tools. It provides a clean, unified, easy-to-use interface for developers to create advanced web apps. With Web Inspector, you can make changes to your webpage's underlying code, debug the code, and improve and enhance the performance of your website.

This tutorial walks you through a code sample to show you how to accomplish these tasks with Web Inspector. The code is from the web portfolio of a graphic designer.

Next

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Feedback

Table of Contents

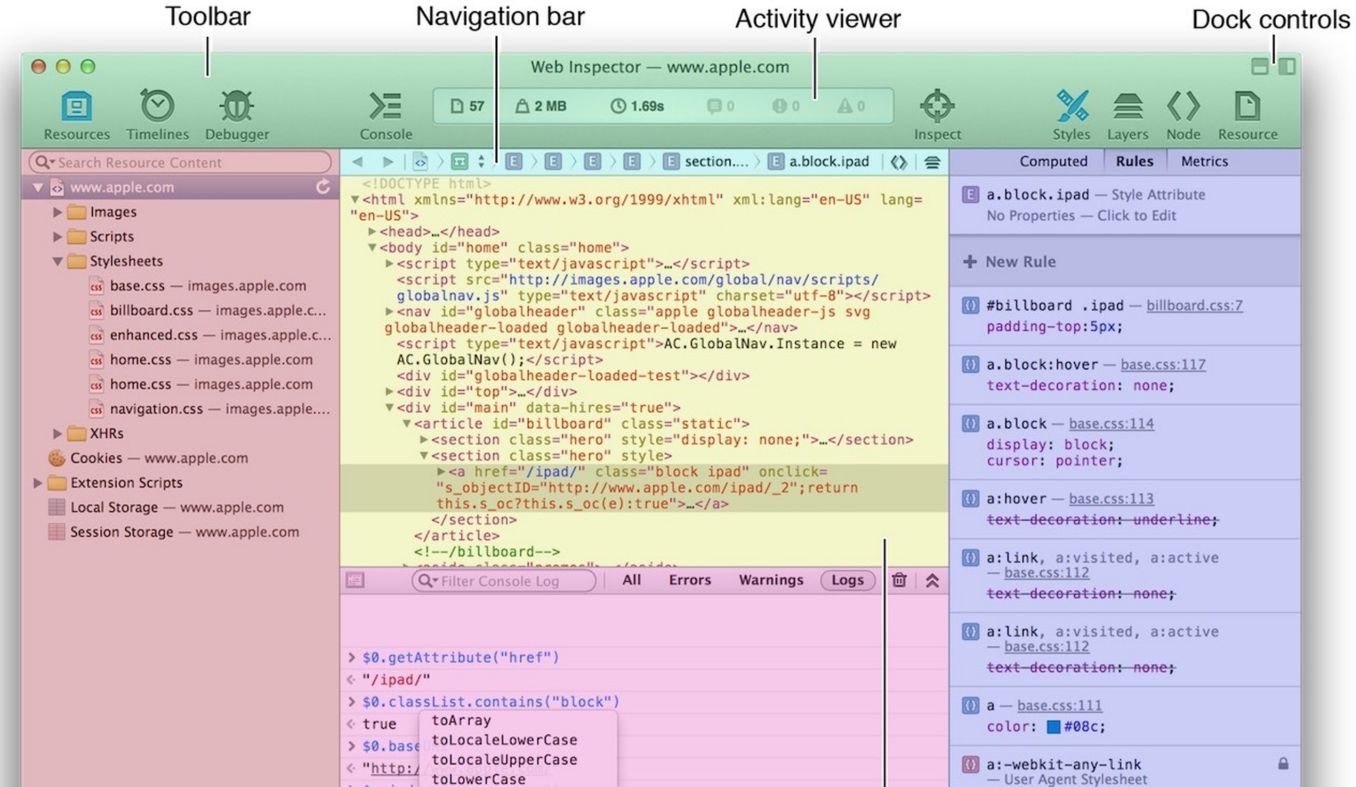
Introduction
Get Oriented
Resources and the DOM
Timelines
Debugger
The Console
Appendix A: The Develop Menu
Appendix B: Keyboard Shortcuts
Revision History

Next

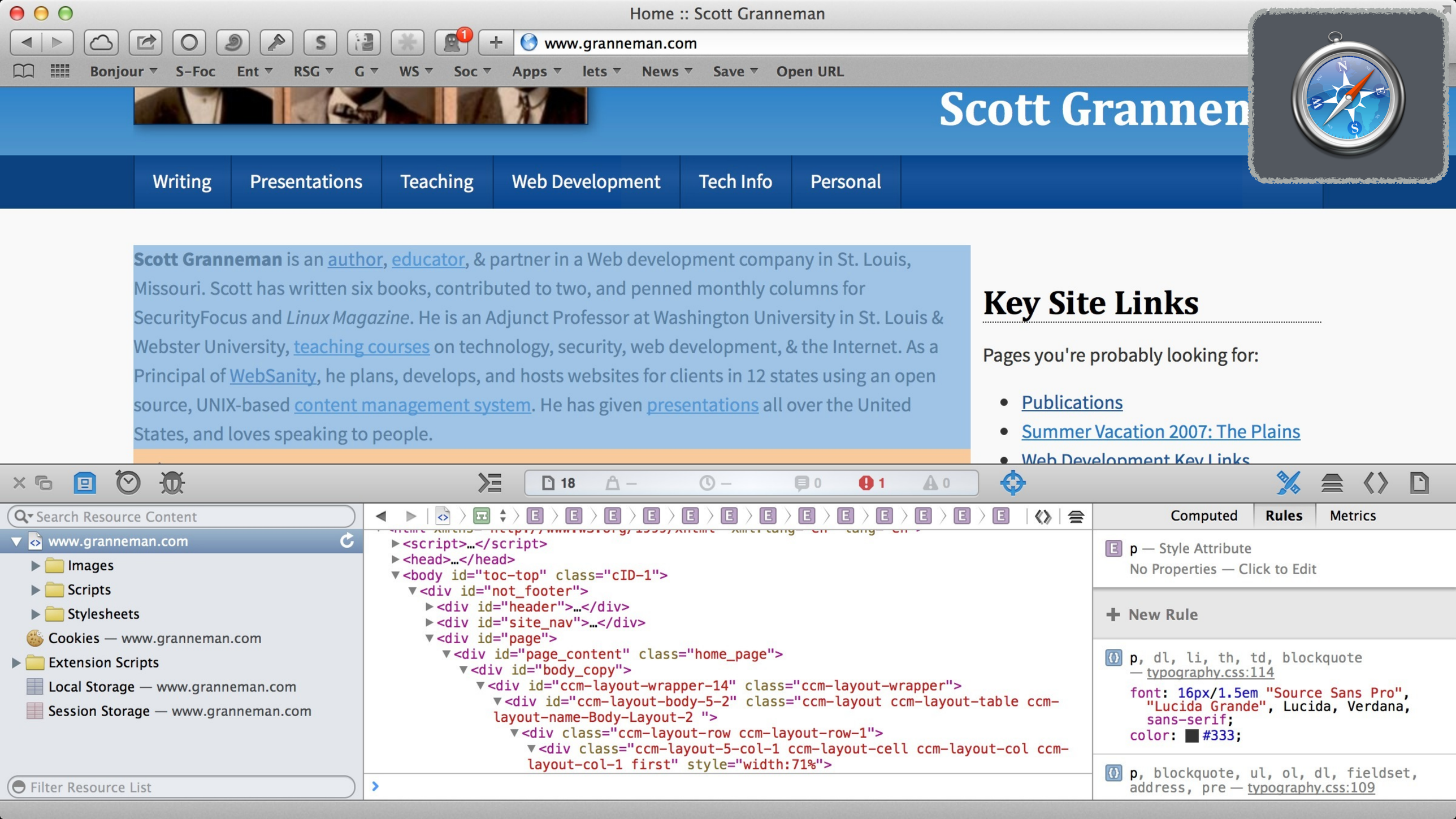
About Safari Web Inspector

Note: This document was formerly titled *Safari Developer Tools Guide*. It has been updated to support Safari 6.1.

Web Inspector is an open source web development tool built into Safari that makes it easy to prototype, optimize, and debug your web content on iOS and OS X.



Feedback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Scott Grannen
Writing Presentations Teaching Web Development Tech Info Personal
Scott Granneman is an author, educator, & partner in a Web development company in St. Louis, Missouri. Scott has written six books, contributed to two, and penned monthly columns for SecurityFocus and Linux Magazine. He is an Adjunct Professor at Washington University in St. Louis & Webster University, teaching courses on technology, security, web development, & the Internet. As a Principal of WebSanity, he plans, develops, and hosts websites for clients in 12 states using an open source, UNIX-based content management system. He has given presentations all over the United States, and loves speaking to people.
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Cookies — www.granneman.com
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Session Storage — www.granneman.com
Filter Resource List
<script>…</script>
<head>…</head>
<body id="toc-top" class="cID-1">

…
…

Computed Rules Metrics
p — Style Attribute
No Properties — Click to Edit
New Rule
p, dl, li, th, td, blockquote — typography.css:114
font: 16px/1.5em "Source Sans Pro", "Lucida Grande", Lucida, Verdana, sans-serif;
color: #333;
p, blockquote, ul, ol, dl, fieldset, address, pre — typography.css:109

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  - Memory
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  - Performance
  - Settings
- Performance analysis
- WebDriver commands

Meet the Microsoft Edge F12 Dev Tools

2017-2-8 • 4 min to read • Contributors

Tip

Test on Microsoft Edge free from any browser: We partnered with BrowserStack to get free live and automated testing on Microsoft Edge.

Microsoft Edge introduces great new improvements to F12 developer tools, including some of the most requested features from UserVoice. The new tools are built in TypeScript, and are always running, so no reloads are required. In addition, F12 developer tools documentation is now fully available on GitHub. From this point on, the docs will not only be influenced by your feedback, but you're invited to contribute and help shape our documentation.

Comments
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Theme

Light

In this article

The F12 tools at work
The DOM Explorer tool (CTRL+1)
The Console tool (CTRL+2)
The Debugger tool (CTRL+3)
The Network tool (CTRL+4)
The Performance Tool (CTRL+5)
The Memory tool (CTRL+6)
The Emulation tool (CTRL+7)

Is this page helpful?

YES NO

...
Web development for Windows Phone
Media Source Extensions
WebGL
Using the F12 developer tools
DOM Explorer
Console
Debugger
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Emulation
Keyboard shortcuts

Using the F12 developer tools

This content refers to an older version of F12 developer tools. Please visit our latest F12 tools documentation.

Using the F12 tools, you can debug, test, and speed up your webpages. Whether you need to fine tune your CSS layout or find a memory leak, you'll find tools to help here.

If you're looking for the **Tools** menu or toolbars in Internet Explorer 11, try:

- "The menu bar and the toolbar are missing in Internet Explorer."

If you got here by clicking an error message and simply want to avoid error messages in the future, try:

- What should you do about Internet Explorer script errors?
- Question: I cannot turn off the automatic script debugger under explorer options.

The F12 tools at work

We rebuilt the F12 tools from the ground up in IE11. They have a brand new UI and new functionality to make your developing and debugging faster and easier. And we're going to be rolling out more improvements in updates.

Press the **F12** key on your keyboard to open the tools. If your keyboard doesn't have function keys, you can use the **Tools** menu.

There are eight distinct tools, each with their own tab in the F12 tools interface. Here you'll find an image of each tool, a quick summary of what it does and what's new, and a couple of typical development or debugging tasks the tool makes easier.

Validation

Markup Validation Service

Check the markup (HTML, XHTML, ...) of Web documents

Validate by URI | Validate by File Upload | Validate by Direct Input

Validate by URI

Validate a document online:

Address:

▸ More Options

Check

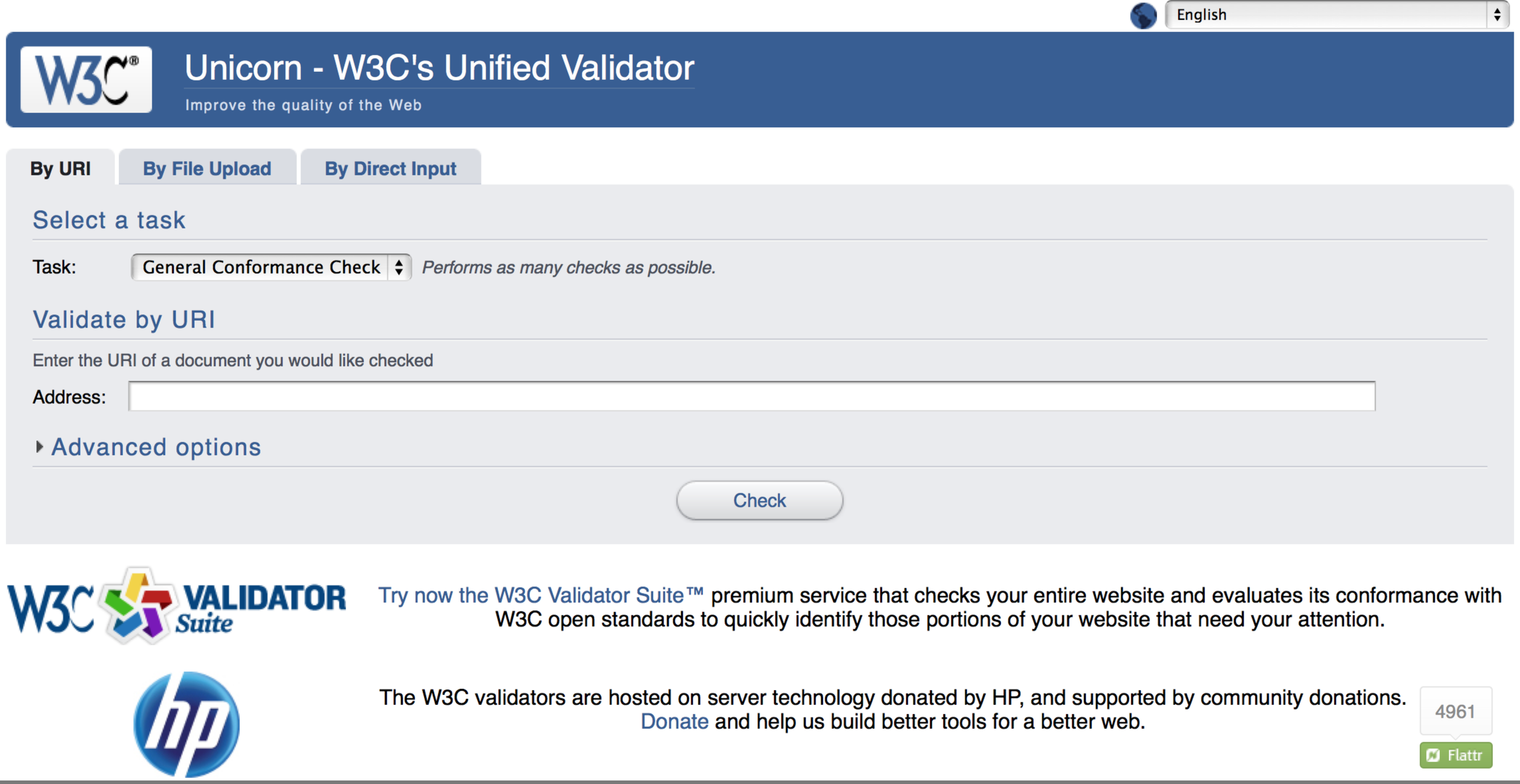
This validator checks the markup validity of Web documents in HTML, XHTML, SMIL, MathML, etc. If you wish to validate specific content such as RSS/Atom feeds or CSS stylesheets, MobileOK content, or to find broken links, there are other validators and tools available. As an alternative you can also try our non-DTD-based validator.

W3C VALIDATOR Suite

Try now the W3C Validator Suite™ premium service that checks your entire website and evaluates its conformance with W3C open standards to quickly identify those portions of your website that need your attention.

The W3C validators are hosted on server technology donated by HP, and supported by community donations.

validator.w3.org



validator.w3.org/unicorn/

Address, File Upload, or Text Field

Thank you!

scott@granneman.com
www.granneman.com
ChainsawOnATireSwing.com
@scottgranneman

jans@websanity.com
websanity.com

Bonus

The following slides contain extra, bonus information that we don’t have time to cover in class

Metadata

<meta>

Some that do not exist (but people think they do) & should not be used

```
<meta name="copyright" content="…">
```

```
<meta name="robots" content="all">
```

(`content="all"` does not exist; `name="robots"` definitely does!)

`<meta>`	1	12	1	1	1	1	1
`name="referrer"`	11*	12†	36	7.1	8	21	46

* Only starting in Windows 10 Creators Update

† Only supports values of `never`, `always`, `origin`, & `default`

`<base>`

Base URL to use for all relative URLs in a document

Not really used that often

No `</base>`!

```
<head>
  <base href="http://www.foobar.com/">
</head>
```

Text Semantics

`<big> … </big>`

Text in a *large font*, with nothing semantic about it

Deprecated in HTML 4.01

Removed in HTML5!

HTML

```
<p>
  That Cthulhu is <big>huge</big>!
</p>
```

CSS

JS

That Cthulhu is huge!

`<acronym>` … `</acronym>`

Acronym (abbreviation pronounced as a word)

Should use `title` attribute to give the meaning

Some rendering engines display it with a dotted underline, & some add small caps

Obsolete! Removed in HTML5!

HTML

```
<p>
  Be careful <acronym title="self-
  contained underwater breathing
  apparatus">scuba</acronym> diving near
  47°9′S 126°43′W, or you may run into
  Cthulhu, dreaming away his time in
  R’lyeh.
</p>
```

CSS

JS

Be careful scuba diving near 47°9′S 126°43′W, or you may run into Cthulhu, dreaming away his time in R’lyeh.

Multimedia

`<video> ... </video>`

Allows the browser to *play video*, completely obsoleting the need to use Flash or other plugins

Older rendering engines that don’t support `<video>` can still use Flash embedded via `<object>`

```
<video>
  <source>
  <source>
  <track>
  <track>
  <object>
    <param>
    <param>
  </object>
</video>
```

HTML

```
<video controls="controls"
poster="http://files.granneman.com/interviews/2010-0518-KMOV-News-4.png" width="640"
height="360">
  <source
  src="http://files.granneman.com/interviews/2010-0518-KMOV-News-4.mp4"
  type="video/mp4">
  <source
  src="http://files.granneman.com/interviews/2010-0518-KMOV-News-4.webm"
  type="video/webm">
  <source
  src="http://files.granneman.com/interviews/2010-0518-KMOV-News-4.ogv"
  type="video/ogg">
  <object type="application/x-shockwave-flash"
  data="http://releases.flowplayer.org/swf/flowplayer-3.2.1.swf" width="640"
  height="360">
    <param name="movie"
    value="http://releases.flowplayer.org/swf/flowplayer-3.2.1.swf">
    <param name="allowFullScreen"
    value="true">
    <param name="wmode" value="transparent">
```

CSS

JS

Easier way to generate `<video>` code

Video for Everybody Generator
sandbox.thewikies.com/vfe-generator/

MP4 Video
http://clips.vorwaerts-gmbh.de/big_buck_bunn

Ogg Video
http://clips.vorwaerts-gmbh.de/big_buck_bunn

WebM Video
http://clips.vorwaerts-gmbh.de/big_buck_bunn

Poster Image
http://sandbox.thewikies.com/vfe-generator/in

Fallback Title
Big Buck Bunny

Width
640

Height
360

Autoplay

XML Formatting

Embed as
HTML5+Flash
HTML5

Flash Player
Flow Player

Preview

Source Code

```
<!-- "Video For Everybody" http://camendesign.com/code/video_for_everybody -->
<video controls="controls" poster="http://sandbox.thewikies.com/vfe-generator/images/big-buck-bunny_poster.jpg" width="640" height="360">
	<source src="http://clips.vorwaerts-gmbh.de/big_buck_bunny.mp4" type="video/mp4" />
	<source src="http://clips.vorwaerts-gmbh.de/big_buck_bunny.webm" type="video/webm" />
	<source src="http://clips.vorwaerts-gmbh.de/big_buck_bunny.ogv" type="video/ogg" />
	<object type="application/x-shockwave-flash" data="http://releases.flowplayer.org/swf/flowplayer-3.2.1.swf" width="640" height="360">
		<param name="movie" value="http://releases.flowplayer.org/swf/flowplayer-3.2.1.swf" />
		<param name="allowFullScreen" value="true" />
		<param name="wmode" value="transparent" />
		<param name="flashVars" value="config={'playlist':['http%3A%2F%2Fsandbox.thewikies.com%2Fvfe-generator%2Fimages%2Fbig-buck-bunny_poster.jpg',{'url':'ht
		<img alt="Big Buck Bunny" src="http://sandbox.thewikies.com/vfe-generator/images/big-buck-bunny_poster.jpg" width="640" height="360" title="No video pl
	</object>
</video>
<p>
	<strong>Download video:</strong> <a href="http://clips.vorwaerts-gmbh.de/big_buck_bunny.mp4">MP4 format</a> | <a href="http://clips.vorwaerts-gmbh.de/big_buck_
</p>
```

`<embed>`

Integrates *external applications or interactive content* (in other words, non-HTML plug-ins)

No fallback content

No `</embed>`!

`<embed>` is mostly around for historical reasons, so use `<video>`, `<audio>`, or `<object>` instead

Attributes

`src`: Address of the resource

`width` & `height`

`type`: MIME type of embedded resource

HTML

```
<p>
  <embed
  src="http://ftp.granneman.com.s3.amazon
  aws.com/super-mario-bros.mov"
  width="640" height="480"
  controller="true"></embed>
</p>
```

CSS

JS

Frames

<frameset> & <frame>

<noframes>

What are frames for?

» Present multiple documents in one window

» Keep certain information visible while other information is scrolled or replaced

Frames (`<frameset>` & `<frame>`) are deprecated — & evil

Don’t use them

» Breaks the back button
» Breaks bookmarking
» Breaks printing
» Difficult to implement
» Easy to go down the rathole

OMNITEC Corporation

the same hardware!

Servers

We can also replace expensive Windows Applications (Exchange, SQL Server) with robust, production-ready, Open Source options. Contact us for a complementry evaluation.

Has **your** company considered using *better* software for your servers? The Open Source community has a number of options available to provide ***extremely viable alternatives*** for critical business solutions! In fact, the **most secure operating system** in the world (OpenBSD) has just released a new version (4.6). Contact us for a complementry evaluation.

We also support Linux (SuSE & Debian) for desktop and workgroup server projects.

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Last Updated: 04/30/2014 15:08:27

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Computer Consultants of St. Louis

Who we are

CCSL, Computer Consultants of St. Louis, is a regional not-for-profit association of professional consultants serving business computer users in the greater St. Louis area.

The goal of this website is to provide a connection for prospective users of consulting services, CCSL members and prospective members.

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10:22:45 A.M.

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10:22:45 A.M.

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We specialize in using Network Techologies and the best of Open Source Software to solve complex business problems. The future of software technology lies in Open Software, where the *source code* for the entire system is readily available for inspection, review, and/or change.

On all platforms (Windows, Macintosh, Linux, Unix), Open Source Software is the way to use a system properly - lessened risk of viral payloads, flexibility not found with commercial software, and, most importantly, better support.

As Integrators, we also develop and install custom applications, both online and in-house, such as inventory and product data acquisition for real time data management. We can track product at creation and throughout assembly, providing historical data on how a unit was produced, providing real-time inventory updates, as well as reduction of raw material usage. Using Open Source Software, we can also interface with many existing computer systems and software, using vendor agnostic hardware from multiple manufacturers to provide you with the best solution for an application.

Our technical expertise that goes above and beyond the resources typically found in an organization, and we would certainly appreciate any comments or requests, .. let us know! .

Open Tech Support Request

Almost all of the cell service providers in the current market subsidize the cost of phones with long-term contracts. We have signed up with a Sprint Network Service provider called Ting, that provides the lowest cost service on the best network! Check out the site to the right for more information - as a reward, there is a $25 credit for signing up!

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10:22:57 A.M.

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Services
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10:22:57 A.M.

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openSUSE

We also support Linux (SuSE & Debian) for desktop and workgroup server projects.

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The St. Louis Network of Professional Computer Consultants

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10:23:03 A.M.

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Services
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Other Links
Home

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10:23:03 A.M.

Computer Consultants of St. Louis

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  Software development, program management, business strategy, Genex
  314 852-7356
- Marcel Brown Technology Services
  Apple, Linux, PCs, i-Pads, iPhones, Business consulting
  618 580-625
- Rainbow Consulting, Inc.
  Custom database development with Microsoft Access
  314 504-4234
- Omnitec Corporation
  Network Technologies, open source software, integration, real time applications

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10:23:08 A.M.

OMNITEC Corporation

10:23:07 A.M.

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10:23:08 A.M.

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Open Tech Support Request

What's New
Company Info
Services
Wisdom
Other Links
Home

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10:23:27 A.M.

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Company Info
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Home

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Services
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Other Links
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10:23:34 A.M.

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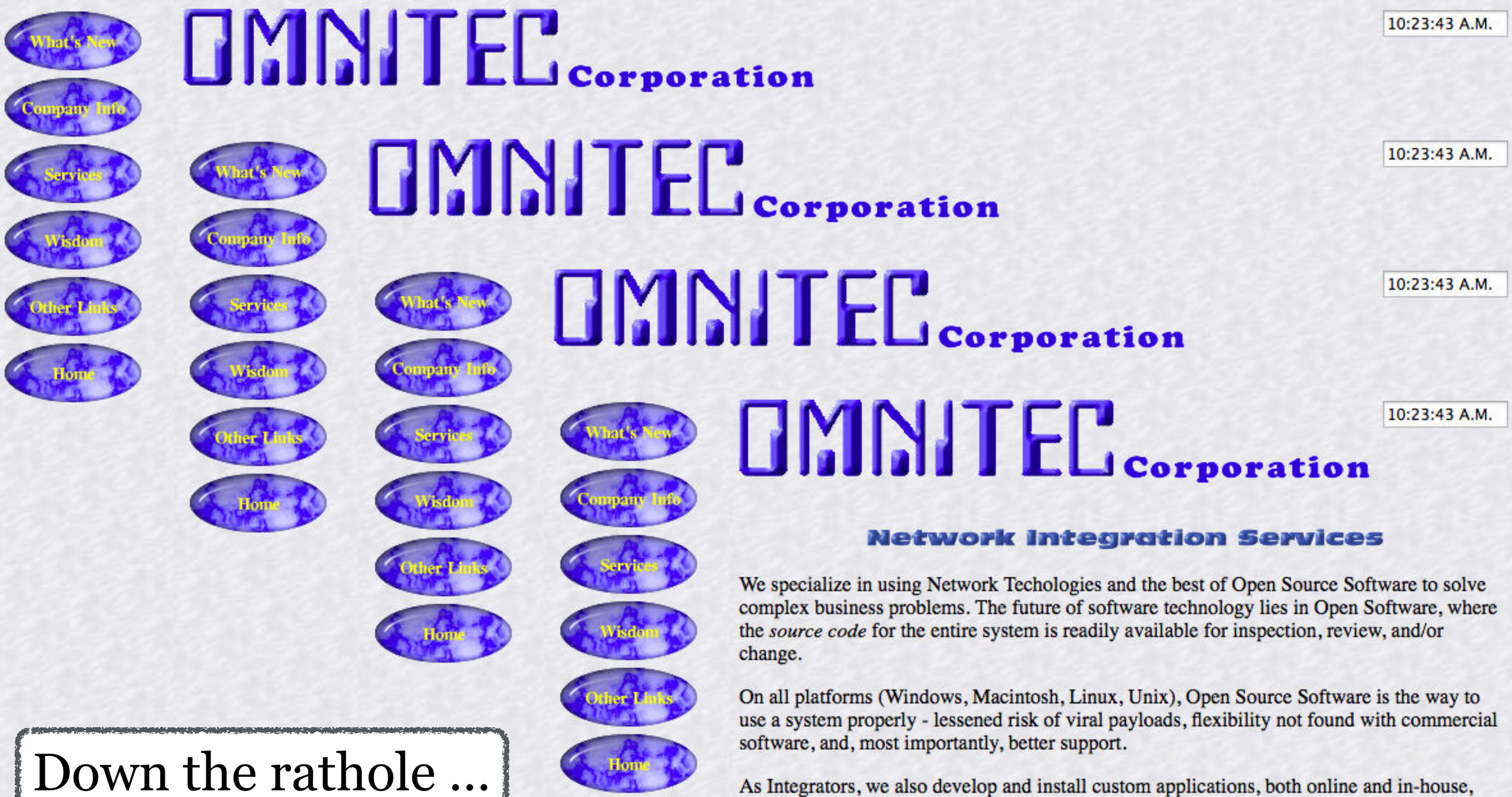
  Apple, Linux, PCs, i-Pads, iPhones, Business consulting
  618 580-625



Down the rathole ...

`<iframe>`, however, is OK

Widely used in apps

For more info, see `<iframe>` above in Embedded Multimedia

Tools

References

+1 40

HTML Elements Index

A continuously updated list of all HTML and XHTML elements:

- Announcement and comments,
- additional CSS properties index.

JavaScript Powerful Tool
wakanda.org
Need to start a great Business Web Application?Try Javascript for free

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

Element	HTML 2.0	HTML 3.2	HTML 4.01	XHTML 1.0	XHTML 1.1	*HTML 5*	XHTML 2.0	Meaning
a	✓	✓	✓	✓	✓	✓	✓	Anchor.
abbr	✗	✗	✓	✓	✓	✓	✓	Abbreviation.
access	✗	✗	✗	✗	✗	✗	✓	Accessibility mapping.
acronym	✗	✗	✓	✓	✓	✗	✗	Acronym.
action	✗	✗	✗	✗	✗	✗	✓	Action.
addEventListener	✗	✗	✗	✗	✗	✗	✓	Event-related.
address	✓	✓	✓	✓	✓	✓	✓	Author information.
applet	✗	✓	✓	✓	✗	✗	✗	Java applet.

+1 40

HTML Elements Index

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- Announcement and comments,
- additional CSS properties index.

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wakanda.org
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A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

Element	HTML 2.0	HTML 3.2	HTML 4.01	XHTML 1.0	XHTML 1.1	*HTML 5*	XHTML 2.0	Meaning
a	✓	✓	✓	✓	✓	✓	✓	Anchor.
abbr	✗	✗	✓	✓	✓	✓	✓	Abbreviation.
access	✗	✗	✗	✗	✗	✗	✓	Accessibility mapping.
acronym	✗	✗	✓	✓	✓	✗	✗	Acronym.
action	✗	✗	✗	✗	✗	✗	✓	Action.
addEventListener	✗	✗	✗	✗	✗	✗	✓	Event-related

meiert.com/en/indices/html-elements/

Learning

Newsletters

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Web Design Weekly's First Event!

AUGUST 5, 2014

For all you folks based in Sydney you should totally come to this free event that General Assembly and WDW are putting on.

Latest Newsletters

Web Design Weekly #149

Web Design Weekly #148

Web Design Weekly #147

web-design-weekly.com

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A once a week email with no spam, no rambling. Just pure awesome links to the best news and articles to hit the interweb during the week.

Your email... Subscribe

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Latest Newsletters

Web Design Weekly #149

Web Design Weekly #148

Web Design Weekly #147

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learners from around the globe

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Articles
Schools
Help

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Make a Website
Make an Interactive Website
Learn Sass
Deploy a Website
Learn JavaScript
Learn Rails
Learn AngularJS
Learn ReactJS: Part I
Learn ReactJS: Part II
Ruby on Rails Authentication
Learn the Command Line
Learn Git
Learn SQL
SQL: Table Transformation
SQL: Analyzing Business Metrics
Learn Java
Learn HTML & CSS

HTML & CSS
JavaScript
jQuery
PHP
Python
Ruby
Learn APIs

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English

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Math by subject

- Early math
- Arithmetic
- Algebra
- Geometry
- Trigonometry
- Statistics & probability
- Calculus
- Differential equations
- Linear algebra
- Math for fun and glory

Math by grade

- K–2nd
- 3rd
- 4th
- 5th
- 6th
- 7th
- 8th
- High school

Science & engineering

- Physics
- Chemistry
- Organic chemistry
- Biology
- Health & medicine
- Electrical engineering
- Cosmology & astronomy

Computing

- Computer programming
- Computer science
- Hour of Code
- Computer animation

Arts & humanities

- Art history
- Grammar
- Music
- US history
- World history

Economics & finance

- Microeconomics
- Macroeconomics
- Finance & capital markets
- Entrepreneurship

Test prep

- SAT
- MCAT
- GMAT
- IIT JEE
- NCLEX-RN

College Admissions

Obnoxious

<blink>

<marquee>

`<blink>`

Causes text to *blink* slowly on & off

Never well-supported, & now completely gone

HTML

```
<p>
  <blink>Why would somebody use this?</blink>
</p>
```

CSS

JS

Why would somebody use this?

HTML

```
<p>
  <blink>Why would somebody use this?</blink>
</p>
```

CSS

JS

Why would somebody use this?

`<marquee>`

Inserts *scrolling text*

Always a bad idea, & now removed from HTML5

HTML

```
<p>
  <marquee>EXTRA! EXTRA! Cthulhu
  Discovered; Immediately Begins
  Path of Destruction!</marquee>
</p>
```

CSS

JS

ɔn!

HTML

```
<p>
  <marquee>EXTRA! EXTRA! Cthulhu
  Discovered; Immediately Begins
  Path of Destruction!</marquee>
</p>
```

CSS

JS

ɔn!

Obsolete

<font>

<basefont>

<tt>

`<font>` … `</font>`

Change font using these attributes: `size`, `color`, & `face`

Deprecated in HTML 4.01

Removed in HTML5!

HTML

```
<p>
  <font color="#ff0000" face="Comic Sans MS" size="+2">People who use Comic Sans should get a visit from Cthulhu.</font>
</p>
```

CSS

JS

People who use Comic Sans should get a visit from Cthulhu.

`<basefont>` … `</basefont>`

Set *base font size* for document

Deprecated in HTML 4.01

Removed in HTML5!

```
<head>
  <basefont color="#ff0000" face="Helvetica,
serif" size="+2">
</head>
```

`<tt> ... </tt>`

Text in a *teletype* or monospace font

Removed in HTML5!

HTML

```
<p>
 The news is coming in: <tt>Cthulhu
 Destroying Everything As He Heads Toward
 US!</tt>
</p>
```

CSS

JS

The news is coming in: `Cthulhu Destroying Everything As He Heads Toward US!`

`<center> ... </center>`

Horizontally centers text & block-level elements

Removed in HTML 4

Do not use this! Use CSS instead!

HTML

```html
<h3>Centered text</h3>

<center>
  You are invited to the wedding
  <br>of Ms. Sonia Greene
  <br>& Mr. Howard Phillips Lovecraft
</center>

<h3>Center elements</h3>

<center>
  <h4>
    The Shadow Over Innsmouth
  </h4>
  <p>
    By H. P. Lovecraft
  </p>
</center>
```

CSS

JS

Centered text

You are invited to the wedding
of Ms. Sonia Greene
& Mr. Howard Phillips Lovecraft

Center elements

The Shadow Over Innsmouth

By H. P. Lovecraft

Long Obsolete

<applet>

<bgsound>

<nextid>

<nobr>

<plaintext>, <listing>, & <xmp>

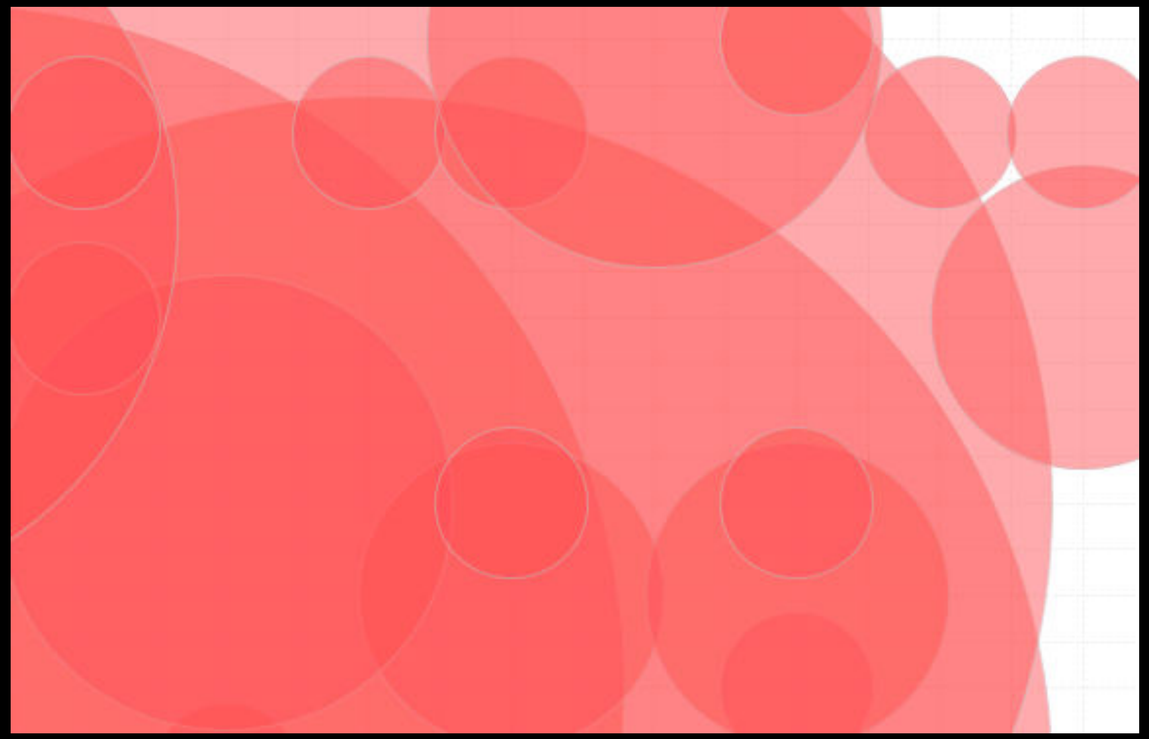
<spacer>

`<applet>` … `</applet>`

Embed *Java applet*

Deprecated in HTML 4.01 in favor of `<object>`

Removed in HTML5!



```
<applet code="bubbles.class" width="500"
height="500">
  Java applet that draws animated bubbles.
</applet>
```

`<bgsound>`

Plays a *background sound* on a webpage, which is obnoxious

Only ever supported by Internet Explorer

`<nextid>`

Used by the *NeXT Web Editor* to generate names for `<a>` & then automatically increment those names, keeping track of the last name used in `<head>`

Last used in HTML 2, & then only by the NeXT Web Editor

For more, see www.the-pope.com/nextid.html

`<nobr> ... </nobr>`

Prevents text from breaking into new lines

Do not use! Last supported in IE 3!

`<plaintext>`

Renders everything after the tag as *raw text*, without interpreting any HTML

No closing tag, because *everything* after `<plaintext>` is considered raw text

Deprecated since HTML 2!

`<listing>` … `</listing>`

Displays text *without interpreting any HTML*

Displayed with a monospaced font

Deprecated since HTML 3.2!

`<xmp> ... </xmp>`

Displays text *without interpreting any HTML*

Displayed with a monospaced font

Deprecated since HTML 3.2!

`<spacer>` … `</spacer>`

Inserts *white spaces*

Only ever used by Netscape

HTML Overview

Elements, Attributes, Entities

R. Scott Granneman & Jans Carton

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Last updated 2020-08-06
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Changelog

2020-08-06 2.4: Added better examples of `<address>`; added note re specifying `width` & `height` for `<img>`; better screenshot showing headings create implied sections; Lovecraft-ized all `<a>` examples; renamed *Character Entities* to *Character References* & greatly expanded it

Changelog

2020-07-14 2.3: Minor fixes & word changes; added & fixed arrows in `<a>`; added another way to create fake link; added examples of what never to use with `href`; added fun quiz of abbreviations & acronyms

2020-07-13 2.2: (con’t. from ↓) re-took Anatomy of a Web Address screenshots; fixed bad link explaining how links work

Changelog

2020-07-13 2.2: Changed “rendering engine” to “browsers” where appropriate; minor wording changes; Lovecraft-ized semantic HTML example; changed “small print” to “fine print” on `<small>`; (con’t. ↑)

2020-07-04 2.1: Added compatibility charts for `<img>`; added details about the `type` attribute for `<a>`, `<area>`, & `<link>`; moved `<font>`, `<basefont>`, `<tt>`, `<center>` into new section in *Bonus*: *Obsolete*; cleaned up *Bonus* section & moved some things

Changelog

2020-07-03 2.0: (con't. from ↓) meaning of `<cite>` has changed, with examples; added `<svg>` example to `<map>`; added more detail about values for `<link>`'s `rel` & `integrity` attributes; added `as` to `<link>` attributes; moved list counters from *Lists* to *Tables & Lists* presentation; added compatibility table for `<iframe>` `srcdoc`; updated `<video>` & `<audio>` compatibility tables; updated *Bonus*; so many changes it's now bumped to 2.0!

Changelog

2020-07-03 2.0: (con’t. from ↓) added details re: `<canvas>` & moved into Scripting; streamlined *Tools*; updated screenshots of MDN Element Reference; added more info re: `<canvas>`, esp. re: responsiveness; removed ImgPlaceholder.com & added Unsplash & unsplash.it; changed *site root-relative* to *root-relative*; fixed `<a>` diagram missing arrows; added screenshot showing how headings become tables of contents via JS; added several examples for `<br>`; (con’t. ↑)

Changelog

2020-07-03 2.0: (con’t. from ↓) moved `<hgroup>` under *Sectioning* & expanded it; moved `<blockquote>` into *Grouping*; moved `<q>` & `<cite>` into *Text Semantics*; added detail re: `<q>` incl. Chris Farley video; updated browser compatibility tables for *Sectioning*; updated wording for elements in *Grouping*; added more info & illustrations to `<pre>`; re-did `<main>`; replaced screenshots in `<aside>`; added `<menu>` & `<menuitem>` to *Lists*; added `<summary>` & `<details>`; (con’t. ↑)

Changelog

2020-07-03 2.0: (con’t. from ↓) removed *Lines & Paragraphs* & moved `<p>`, `<br>`, `<wbr>`, & `<pre>` into *Grouping* & *Text Semantics*; re-ordered *Categorization* & added slide about sectioning, grouping, & text semantics; added `<body>` to *Sectioning*; added slide re: outlining to *Sectioning*; re-ordered elements in *Sectioning*; better explanation for `<article>`, & more on services & software that use it; moved details re: `<small>` out of sectioning & into *Sizes?*; added justification for `<header>`; (con’t. ↑)

Changelog

2020-07-03 2.0: (con’t. from ↓) added Function to *Categorization* with tables; moved basic outline of `<html>`, `<head>`, & `<body>` at end of *Document Structure*; changed *Global Attributes* to *Attributes & Values* & completely re-did it; moved `<ruby>`, `<rt>`, `<rp>`, `<bdo>`, & `<bdi>` out of *Bonus* & into *For Developers Only*; added screenshot to `hidden`; improved screenshot & details for `tabindex`; removed Kevin Spacey from `<aside>` & added in Shakespeare’s *Othello*; (con’t. ↑)

Changelog

2020-07-03 2.0: Updated number of elements; changed *Multimedia* to *Embedded Multimedia*; vastly improved semantic explanation & examples & moved from *Categorization* to *Semantic HTML*; re-did Categorization so it's now much better (con't. ↑)

2019-09-14 1.26: Removed Web Platform Daily from *Tools*; added compatibility chart for `<ol>` `reversed` attribute; added examples for `href` attribute; added screenshot in `<li>`; added `srcdoc` to `<iframe>`

Changelog

2019-08-25 1.24: Added detail re: `<noscript>`; Googlebot no longer looks at `rel="prev"` & `"next"`; added grouped examples for almost all elements in Text Semantics; added note that `---` is not an em dash; added that headings are important for SEO

2018-12-10 1.23: (con’t. from ↓) …better `data-*` screenshot; added slides re: `target="_blank"` & `rel="noopener"`; added detail re: headings

Changelog

2018-12-10 1.23: Added more detail re: customizing the Character Viewer; added CodePen example for placeholder.com; added `<pre>` example from my journals; added put page before site in `<title>`; replaced screenshots for `<aside>` & `<main>`; replaced `<figure>` screenshot & added screenshot for making caption without `<figure>`; replaced placeholder.com (because it sucks now) with ImgPlaceholder.com & added other placeholder sites; (con't. ↑)…

Changelog

2018-11-08 1.22: Updated `<time>` screenshot; changed `src` to `alt` in value quotation example; added `type` to `<source>` with info re: MIME types; more info on `<video>` attributes for mobile

2018-10-24 1.21: Updated compatibility tables with new Safari & iOS logos & reordered columns; deleted a few useless pages in *Bonus*

2018-10-01 1.20: Re-ordered slides in *Categorization* & made them clearer; updated & fixed list of Boolean attributes; small fixes

Changelog

2018-09-19 1.19: Added more formatting re: `<blockquote>`; fixed `<meter>`/`<progress>` table; added compatibility table for `<mark>`; better `<h1>` example for `<small>`; added links to slides for *Tables* & *Forms*; added links & details to Brackets & VSCode under *Tools*; added Matt's Rule for `<video>`/`<audio>`; added slide re: when to use `src` or `<source>`; added formatting rule in `<a>` for quotation marks inside values; switched out image for `<aside>` pull quote

Changelog

2018-09-17 1.18: Added formatting guides for `<pre>`, `<dl>`, `<p>`, `<a>`, `<br>`, `<li>`, `<blockquote>`, `<address>`, & headings; added Gerhyrah's Rule, Eddie's Rule, Chris's Rule, & Christian's Rule for formatting; un-hid using `<section>` inside `<article>`

2018-05-07 1.17: Massively changed `<a>`; fixed minor formatting errors introduced when switching themes; added Gmail screenshots to `accesskey`; added examples for video & audio (!); added pictures for Reader View that were stripped out when switching themes (?)

Changelog

2017-11-06 1.16: Added PRO TIP section for default/index/main pages; added FORMATTING GUIDE to `<p>` & `<hx>`; updated theme to updated Granneman 1.4 again; formatting fixes; added slides re: when to use `<figure>` with `<image>`; added page showing different quotation marks in different languages; added in Unicode; changed `accesskey` to mostly don't use it; better slide introducing list types; re-organized `<video>` & `<audio>` to explain `<source>`; added further explanation of proper heading levels

Changelog

2017-11-03 1.15: Clearer hyphens & dashes table; added Edge to Visualized Data compatibility chart; switched theme to Granneman 1.4; minor formatting fixes; added links to more info I've created on Brackets & Visual Studio Code; added slides on *boolean attributes*; placehold.it has become placeholder.com; added note re: holder.js; `<img>` goes inside `<p>` &tc; added note re: correct formatting of `<source>`; made placeholder images into a PRO TIP; for `<img>`, added slide re: creating `css`, `images`, `js`

Changelog

2017-11-02 1.14: Updated “HTML 4.01” & “HTML5” to use lining numbers; updated iOS logo & removed Edge if unnecessary in compatibility charts; added compatibility chart for *Sectioning*; better Lists table

2017-10-23 1.13: Hid examples in `<frame>`; moved Tools > Learning to *Bonus*; added Nu Validation Checker to *Validation*; updated `<small>` example to show CSS; better example for `<main>`; added JavaScript libraries for `<canvas>`; copied Separation of Concerns from *CSS Overview*; updated `<aside>` example

Changelog

2017-10-20 1.12 (con't ↓): Removed `<q>` details; moved `<cite>` to *Bonus*; warned against "named anchors"; removed Nice Nice JPG (peace out, Vanilla); better example of using `<small>` to create subtitles with `<h2>`; better example for `<data>`; added details about `<time>` & `datetime`; updated compatibility table for `<time>` & `<data>`; reformatted `<link>` `rel` slide; in *Video*, moved `<object>`, Video for Everybody Generator, & `<embed>` example to *Bonus*; re-did `<audio>` & `<video>` compatibility tables

Changelog

2017-10-20 1.12: Removed old Safari Reader examples & added new ones, including iOS; added `tel:` & `maps:` to `<a>`; improved `<meta>` examples & list; removed useless examples; better example of headings & implicit sections; better examples of `<nav>`; hid example in `<section>` (con't ↑)

2017-09-06 1.11: Added screenshots for websites of built-in browser dev tools; added websites under *Learning*; added new global attributes & compatibility table: `spellcheck`, `accesskey`, `contenteditable`, & `hidden`

Changelog

2016-09-23 1.10: Better notation for placeholder images; lots of little cleanups of formatting & text; note re: `<br>`

2016-09-07 1.9: Lots of little fixes; better compatibility tables for `<main>` & many other elements; added that `<span>` & `<div>` draw boxes; added slide explaining *polyfills*; fixed formatting on several slides

2016-03-02 1.8: Added slide comparing headings to outline; added attributes for `<ol>`

Changelog

2016-03-02 1.7: Switched theme to Georgia Pro; forgot to format `<canvas>` as code on support chart; added slide re: Microsoft ending support for pre-11 IE; added slide showing `<ol>` for navigation; fixed wording on `<p>` margins; reformatted `<hr>` pro tip; different recommendations for video & audio converters; tons of minor changes & fixes

2016-01-10 1.6: Added tiny detail to `<figure>`; added a lot more info re: `<meta>`; added tiny details re: URL fragments in `<a>`; added page about empty `mailto` links; added tiny detail to content models

Changelog

2015-09-14 1.5: Added HTML Vocabulary; edited a tiny bit in `<a>`; more info about `<small>`

2015-05-20 1.4: Added slides to beginning re: slides & videos; renamed *Outlines & Sections* to *Outlining*; moved HTML Doctor HTML5 Element Flowchart to *Bonus*; added pull quote examples to `<aside>`; added example of HTML 4 use of `<address>`; added loop attribute to `<video>`; listed attributes for `<video>` & `<audio>` not supported on mobile; added example from textbook of heading as section; added example from textbook of `<figure>`

Changelog

2015-03-06 1.3: Added note about built-in MP4 support in Firefox; added video of Kevin Spacey from *House of Cards* for `<aside>`; added rules & updated image for `data-*` global attribute; moved example of Microsoft Word's `<ins>` & `<del>`; added details about *resource inlining*

2015-01-12 1.2: Minor typos fixed; moved Safari Reader examples to `<article>` from `<main>`; fixed `<dl>` screenshot

2014-09-13 1.12: Changed "browser" to "rendering engine" almost everywhere; fixed text on fake link page; crossed out `<hgroup>`; minor typos fixed

Changelog

2014-09-11 1.11: Fixed images for `<em>` & `<small>`; for `<ins>` & `<del>`, changed “Microsoft Word” to “word processors”; added image of Word’s Track Changes; indicated `<strike>` & `<s>` was in past; added image of typed page for `<u>`; moved `<kbd>` & `<samp>` interactions to *Bonus*

2014-09-06 1.10: Added slide defining attributes to *Global Attributes*; added `data-*` to slide listing Global Attributes; added screenshots to `lang` attribute; added detail to `<pre>`; major re-org of *Outlines & Sections*

Changelog

2014-09-04 1.9: Removed `<style>` example; minor textual additions & fixes; moved multiple `<meta>` note; added screenshot after `data-*` global attribute

2014-09-02 1.8: Added semantic examples to table; removed animation for content categories

2014-08-15 1.7: Added quotes from IE devs re: conditional comments

Changelog

2014-08-11 1.6: Added Web Design Weekly in *Tools*; added additional slide for placehold.it & removed slide for fpoimg.com

2014-08-09 1.5: Added info re: placeholders in `<img>`

2014-08-05 1.4: Added *Tools* section; added screenshots of SVG image maps; added details about `alt` attribute; updated Modernizr, html5shiv, & html5media; added conditional comments info; added responsive image replacement with `<h1>`

Changelog

2014-08-03 1.3: Moved bonus stuff to *Extras* section at end

2014-07-28 1.2.3: Fixed `<blockquote>` & `<p>`; added slides for Reader

2014-07-28 1.2.2: Removed `<big>`

2014-07-27 1.2.1: Improved *Outlines & Sections*

Changelog

2014-07-21 1.2: Shortened to get rid of obsolete or confusing stuff

2014-05-15 1.1.2: Improved URL table in `<a>`

2014-05-12 1.1.1: Various fixes for errors

2014-05-11 1.1: Updated to new format

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