

What is HTML?

HYPERTEXT

text which contains links to other texts

1945: Vannevar Bush proposed the Memex, which could create and follow links between documents on microfiche

1989: Tim Berners-Lee proposed Internet-based hypertext system to use and share CERN's information

MARKUP LANGUAGE

```
<!DOCTYPE html>
<html>
  <head>
    <title>Photo Gallery</title>
  </head>
```

Nested elements that
structure content

```
Image           Text
<body>
  <div class="photo">
    <h3>My first photo</h3>
    
  </div>
  ...
</body>
</html>
```

Start

The diagram shows the opening and closing tags of an `<h3>` element. A red curved arrow labeled "Start" points from the top left to the opening tag `<h3>`. Another red curved arrow labeled "End" points from the top right to the closing tag `</h3>`. The text "My first photo" is centered between the two tags.

`<h3>My first photo</h3>`

Name

The diagram shows the opening tag of an `` element. A red curved arrow labeled "Name" points from the top left to the tag ``. A red curved arrow labeled "Attribute" points from the bottom right to the attribute `src="picture1.jpg"`.

``

head

```
<!DOCTYPE html>
<html>
  <head>
    <title>Photo Gallery</title>
  </head>
```

body

```
<body>
  <div class="photo">
    <h3>My first photo</h3>
    
  </div>
  ...
</body>
</html>
```

COMMON HTML TAGS

<div>

group elements spanning multiple lines
line break before and after

group elements within a single line

<p>

new paragraph

**
**

line break

COMMON HTML TAGS

<h1>, ... , **<h6>** headings

<img src='' images

<a href='' hyperlink

COMMON HTML TAGS

<table><tr><td> tables

**** unordered list

**** ordered list

<form><input> forms that take in user input

COMMON HTML TAGS

<title>

set title that appears in
browser window

<link>

include CSS stylesheets

<script>

embed javascript

CODEPEN

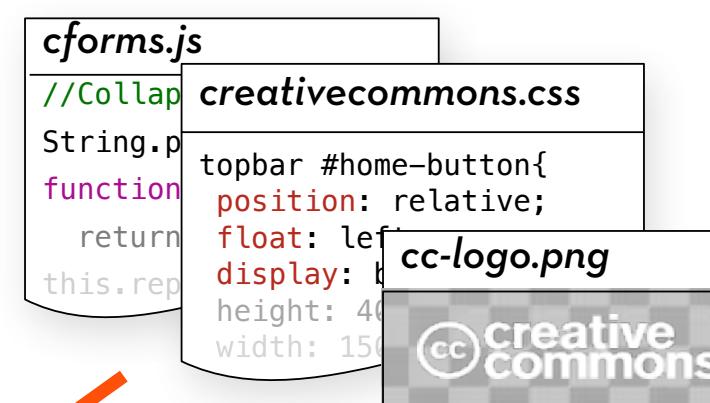
BROWSERS

WEB BROWSER

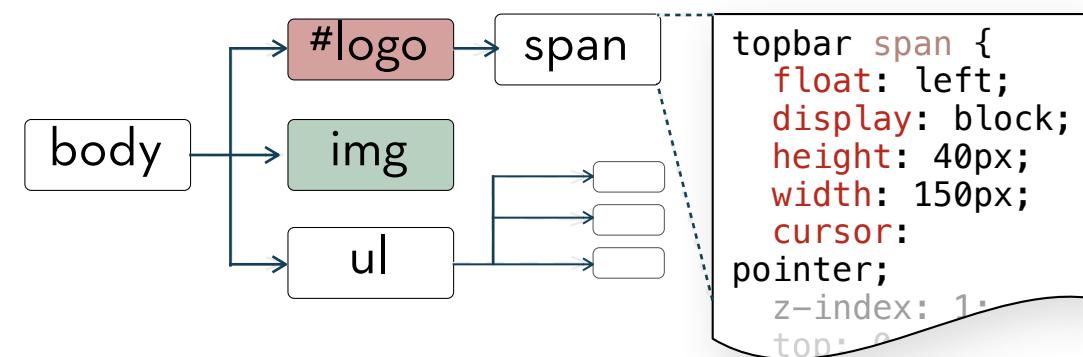
HTML

```
http://creativecommons.org
<a><span id="home-button">
</span></a>
<div id="logo">
  <span>
    Creative Commons
  </span>
</div>
```

Resources



Document Object Model (DOM)



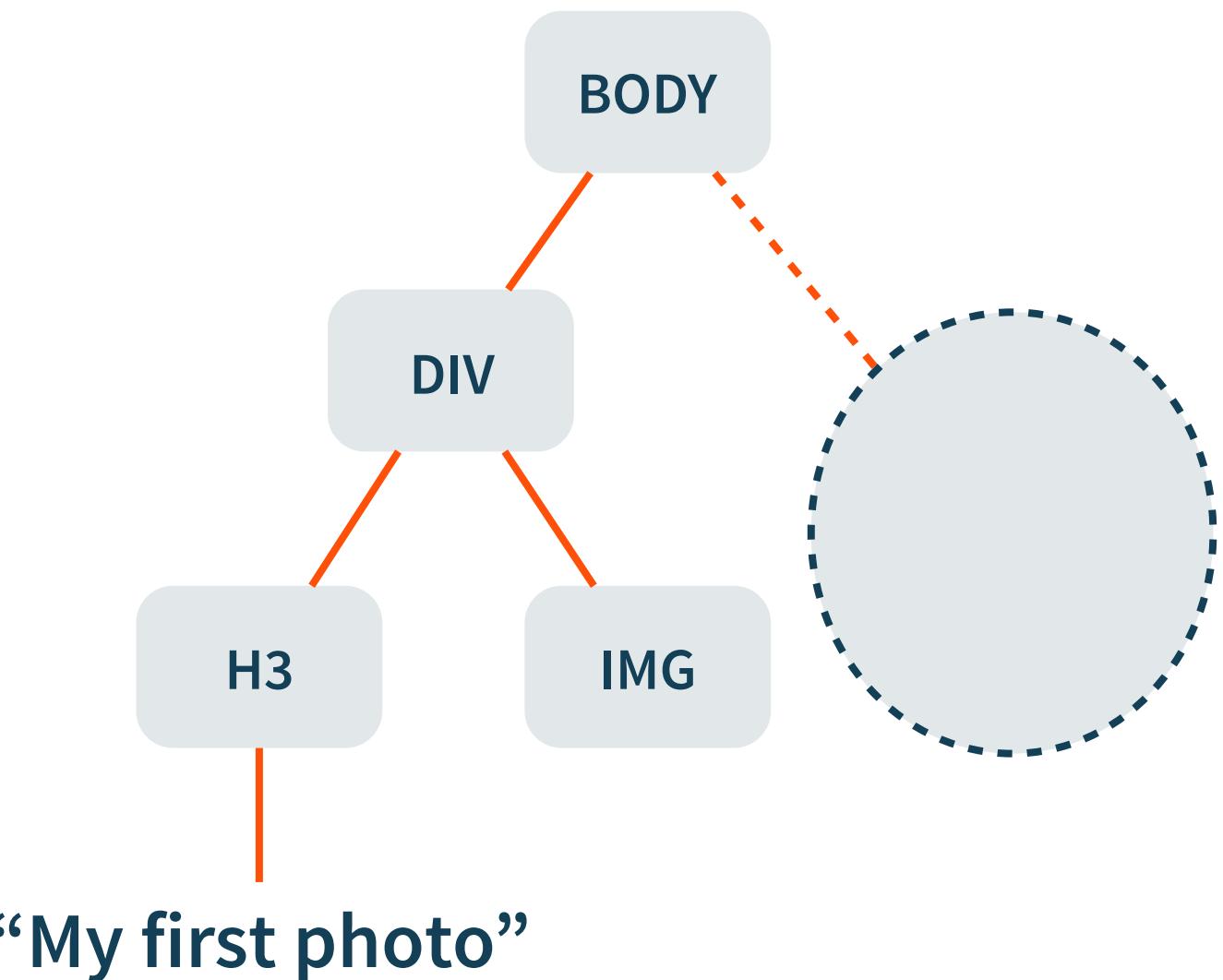
Rendered Page



DOCUMENT OBJECT MODEL

one-to-one correspondence between HTML elements and DOM nodes

```
<bodyy
```



LAYOUT ENGINE

WebKit

Blink (WebKit fork)

Gecko

Trident

WEB BROWSER

Safari

Chrome, Opera

Firefox

Internet Explorer

Timeline

1993: 1st HTML spec

Tim Berners-Lee



Tim Berners-Lee proposed HTML draft to the IETF

Draft referenced Mosaic (Marc Andreessen @ UIUC)

STANDARDS

Internet Engineering Task Force (IETF)

World Wide Web Consortium (W3C)

Web Hypertext Application Technology Working Group (WHATWG)

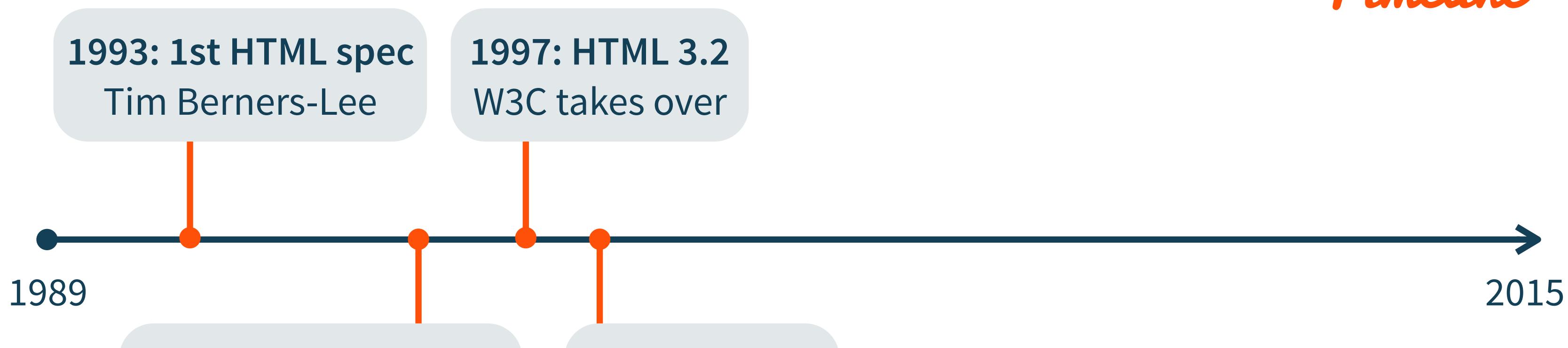
Timeline

1993: 1st HTML spec
Tim Berners-Lee



the IETF created HTMLWG, who created HTML 2

Timeline



Tim Berners-Lee creates the W3C in 1994

Timeline



10 years later – HTML5

Timeline

Ten Years of Solitude?

1998: HTML 4
W3C release



2008: HTML5
working draft

2015

a Tale of Two Working Groups

TOWARDS A CLEANER WEB

Web browsers have forgiving parsers

99% of pages have at least one error

Move HTML from SGML to stricter XML

X for extensibility

XHTML

2000: XHTML 1.0 (HTML 4 as XML and not SGML)

2001: XHTML 1.1

XHTML2: complete departure from HTML 4

Browser vendors were slow to adopt

XHTML SYNTAX

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD XHTML 1.0  
Strict//EN" "http://www.w3.org/TR/xhtml1/DTD/  
xhtml1-strict.dtd">
```

All tags must be closed: <**p**>...</**p**>, <**br** />

lower case tags

quotes around attribute values

XHTML LOOPHOLE

Set DOCTYPE to XHTML, MIME type to text/html

Upgrade to XHTML syntax

Browsers interpret document as HTML

Loophole closed in XHTML 1.1

WHATWG

“The WHATWG was founded by individuals of Apple, the Mozilla Foundation, and Opera Software in 2004, after a W3C workshop. Apple, Mozilla and Opera were becoming increasingly concerned about the W3C’s direction with XHTML, lack of interest in HTML and apparent disregard for the needs of real-world authors. So, in response, these organizations set out with a mission to address these concerns and the Web Hypertext Application Technology Working Group was born.”

WORK BACKWARDS TO MOVE FORWARD

understand error-handling done by browsers

HTML parsers should be compatible with
existing Web content

backwards compatibility a must

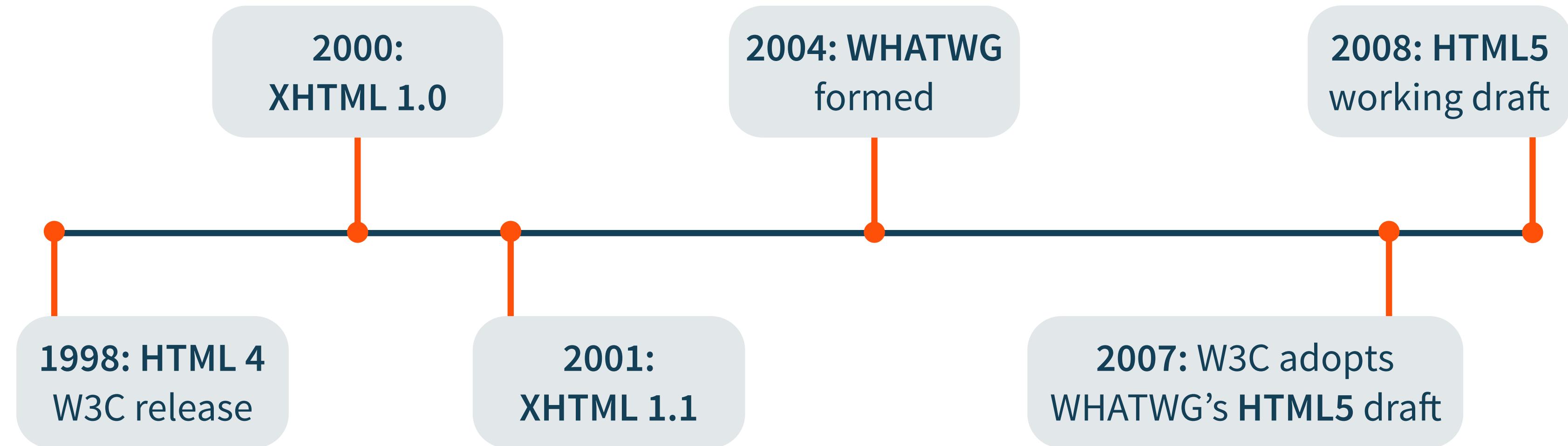
It is really important to have real developers on the ground involved with the development of HTML. It is also really important to have browser makers intimately involved and committed...

It is necessary to evolve HTML incrementally. The attempt to get the world to switch to XML, including quotes around attribute values and slashes in empty tags and namespaces all at once didn't work...

Tim Berners-Lee

Reinventing HTML, 2006

Missing Timeline



Browser vendors shape the future of HTML?

“The W3C HTML working group actively pursues convergence of the HTML specification with the WHATWG living standard...”

HTML5: A NEW HOPE

All code in this class will be written in HTML5!

HTML5

successor to HTML 4.01 and XHTML 1.1

not based on SGML; backwards compatible

```
<!DOCTYPE html>
```



So much simpler!

CONTENT MODEL

defines how elements can be nested

html4 had two categories: inline and block

html5 is more fine-grained

HTML5 CONTENT MODEL

Metadata: **link, script**

Flow: **span, div**

Sectioning: **aside, section**

Heading: **h1**

Phrasing: **span, img**

Embedded: **img, iframe**

Interactive: **a, button**

OTHER HTML5 FEATURES

support for richer graphics and video

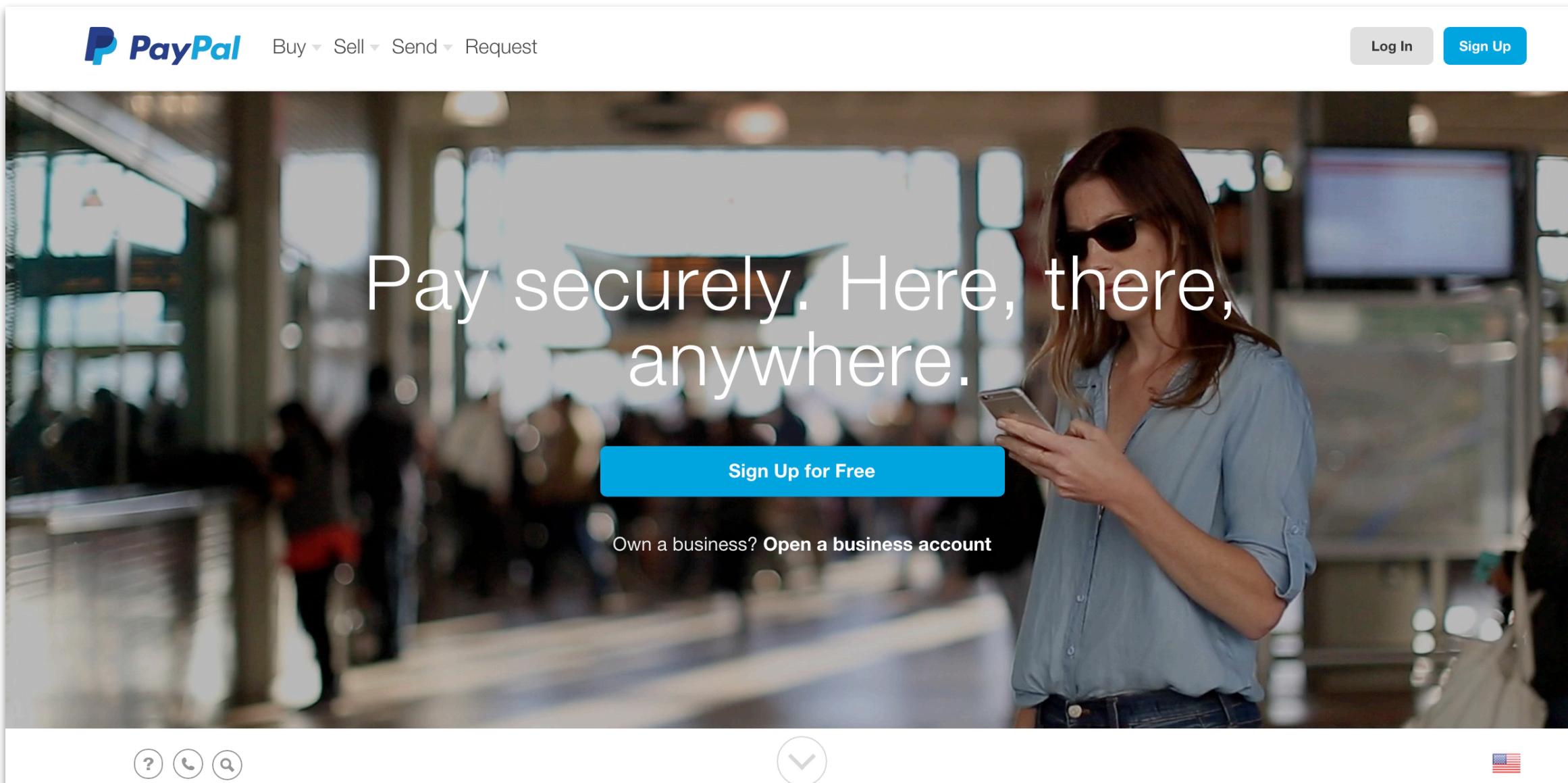
structural semantics

Fewer Flash sites

Semantic Web?

<video> and <audio>

pages with sound and large video backgrounds



<canvas>



How many people read blogs on WordPress.com?

Over 346 million people view more than 2.5 billion pages each month.

[View weekly pageview stats.](#)



STRUCTURAL SEMANTIC TAGS

focus on **structure** rather than content

describe the information architecture of pages

step on the road to a semantic “web of data”

STRUCTURAL SEMANTIC TAGS

```
<body>
  <header>
    <h1>How to Get a PhD</h1>
    <nav>...</nav>
  </header>
  <article>
    <section>
      <figure></figure>
      <h3>Bribing your Committee</h3>
      <p>When blackmail fails...</p>
    </section>
    <aside>
      <h4>Useful Links</h4>
      <a href="www.bevmo.com">Research Supplies</a>
    </aside>
  </article>
</body>
```

CODEPEN

“THERE ARE TWO TYPES OF DEVELOPERS:

those who argue about DIVs not being semantic,

and those who create epic shit.”

Thomas Fuchs

@thomasfuchs

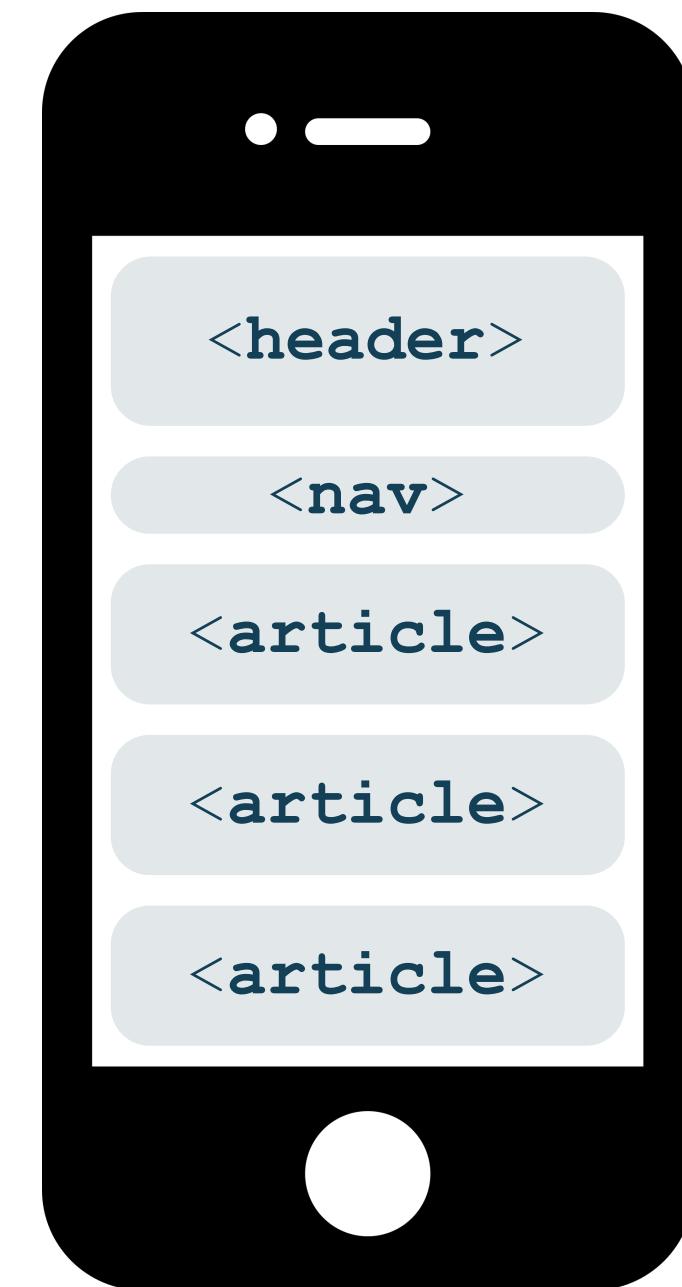
STRUCTURAL SEMANTIC APPLICATIONS?

STRUCTURAL SEMANTIC APPLICATIONS

Reuse stylesheets

Remix pages and applications

Retarget between form factors



class AND id ATTRIBUTES

Often contain structural semantic clues

many elements can share the same class value; id values are unique

Use semantic class and id values for readability and maintainability

```
<div class='product'>  
  <img class='product_image' />  
  <div class='product_description'>...</div>  
</div>
```

WRITING GOOD HTML IS HARD

DESIGN FOR DIFFERENT...

Browsers: Cross-browser Compatibility

Form-Factors: Responsive Design

People: Accessibility, Localization

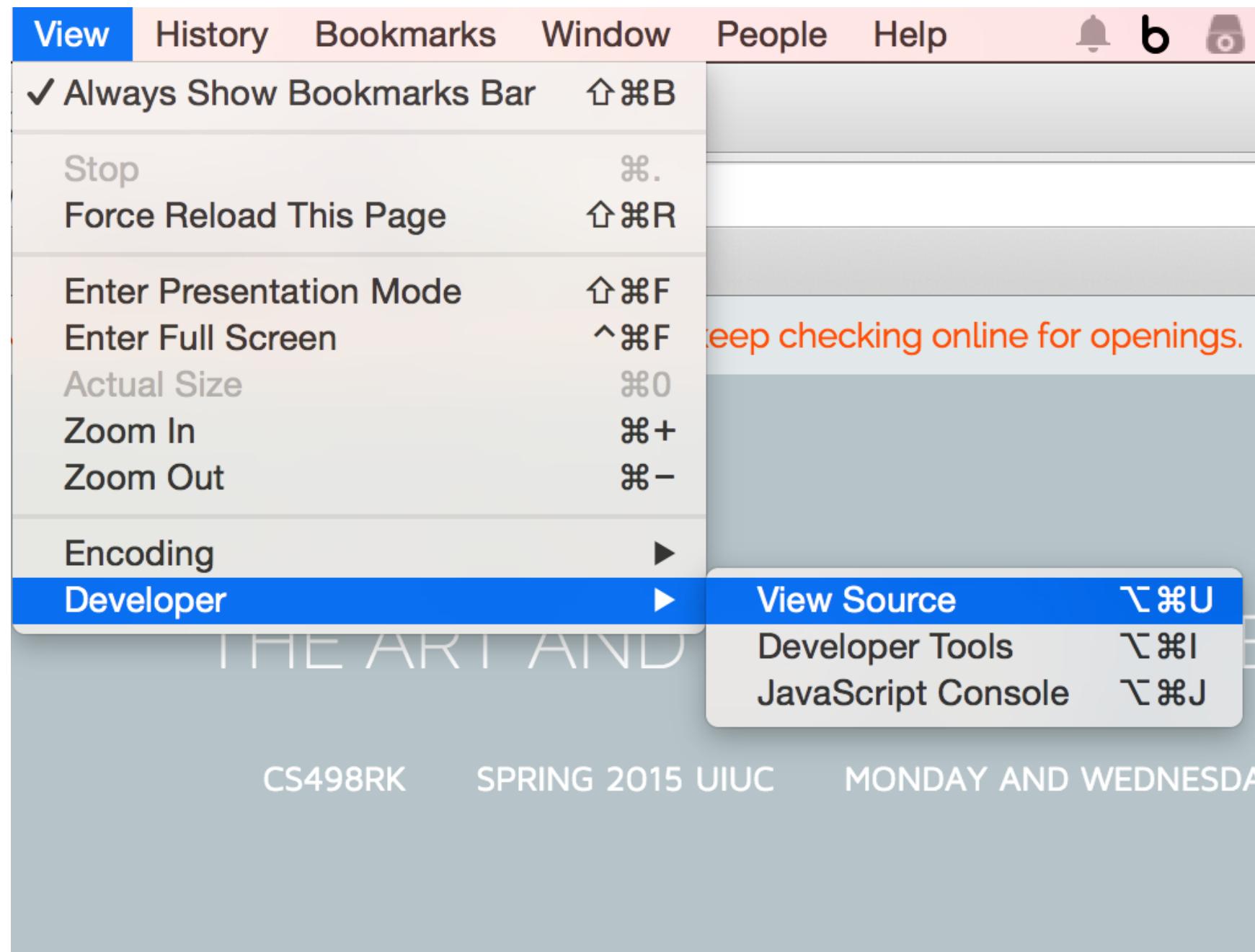
ACCESSIBILITY

Alternative text for images

Use <h*> tags for headings, nested properly

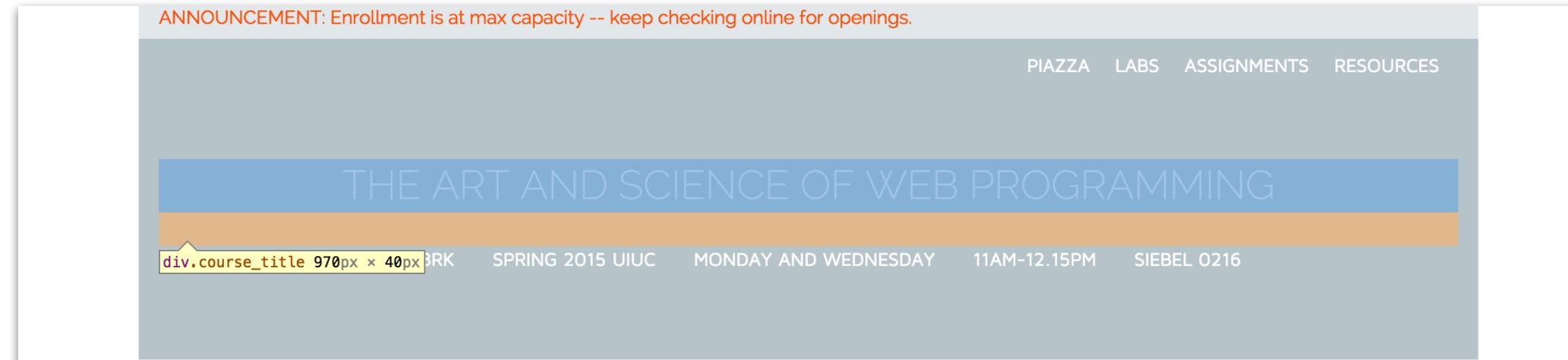
Sufficient contrast between text and background

VIEW SOURCE



inspect a page's implementation

BROWSER INSPECTOR



OVERVIEW

Presents client- and server-side technologies that enable modern Web applications. Topics include the building blocks of the Web (HTML, CSS, the Document Object Model, Javascript) and data exchange (HTTP, JSON, RESTful APIs, and SQL/NoSQL databases). Programming assignments will expose students to CSS

STAFF

Ranjitha Kumar, Siebel 3116
Office Hours: Tuesday 2-3pm
Biplab Deka, Siebel 0207
Office Hours: Monday 1-2pm

The screenshot shows the Chrome DevTools interface. The Elements tab is active, displaying the DOM structure of the page. A specific element, `<div class="course_title">`, is selected and highlighted with a blue border. The Styles tab in the DevTools sidebar is also active, showing the CSS rules applied to this element. One rule is visible: `.course_title { margin-bottom: 25px; }`. This rule is defined in the file `app.css:2198`. The DevTools interface includes a top navigation bar with tabs like Elements, Network, Sources, Timeline, Profiles, Resources, Audits, and Console.

map code to render-time environment

OTHER RESOURCES

HTML5 Reference: www.w3schools.com/

HTML5 Validator: html5.validator.nu

History of HTML: diveintohtml5.info/past.html

NEXT CLASS: CSS

courses.engr.illinois.edu/cs498rk1/