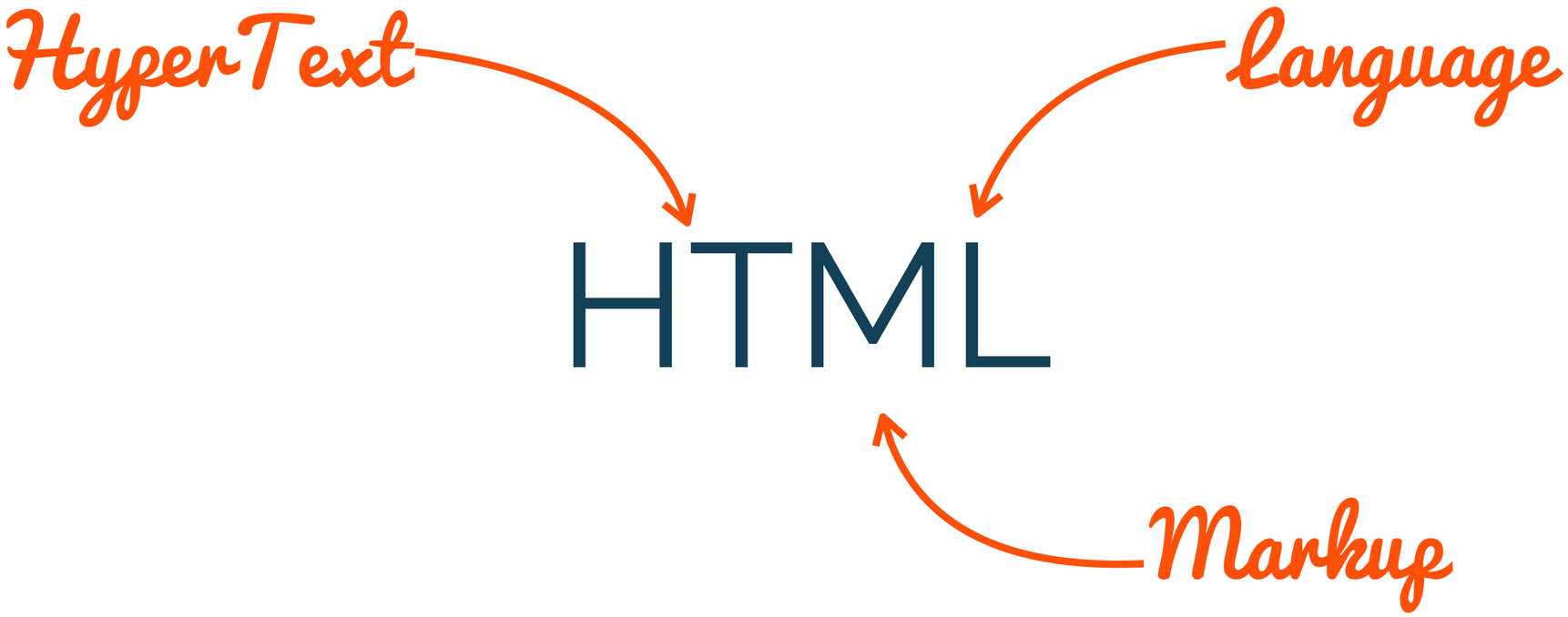

HyperText
Language
HTML
Markup

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

Nested elements that **structure** content

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

  <body>
    <div class="photo">
      <h3>My first photo</h3>
      <img src="picture1.jpg"/>
    </div>
  ...
  </body>
</html>
```

Image

Text


Start
End
<h3>My first photo</h3>
Name

Attribute

head

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

  <body>
    <div class="photo">
      <h3>My first photo</h3>
      <img src="picture1.jpg"/>
    </div>
  ...
  </body>
</html>
```

body

COMMON HTML TAGS

`<div>`	group elements spanning multiple lines line break before and after
`<span>`	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
`<ul><li>`	unordered list
`<ol><li>`	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

BROWSERS

WEB BROWSER

HTML

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

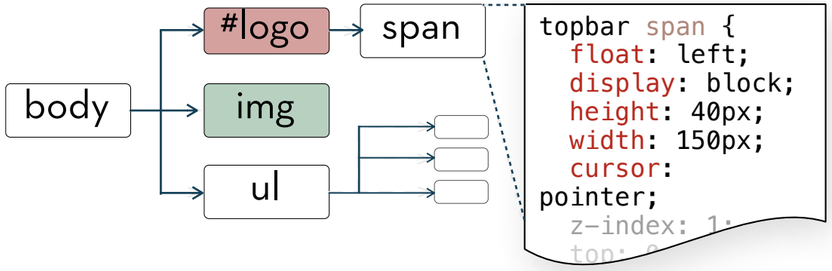
Resources

```
cforms.js
//Collap
String.p
function
  return
this.rep
```

```
creativecommons.css
topbar #home-button{
 position: relative;
 float: lef
 display: b
 height: 4
 width: 15
```

cc-logo.png

Document Object Model (DOM)



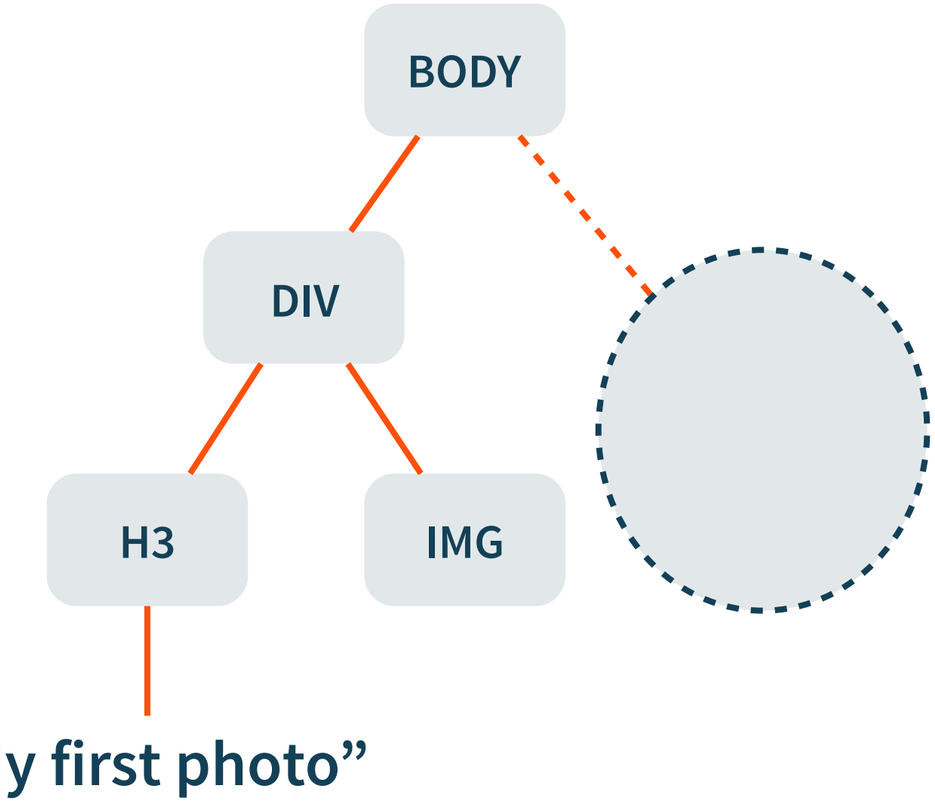

```
topbar span {
  float: left;
  display: block;
  height: 40px;
  width: 150px;
  cursor:
pointer;
  z-index: 1;
  top: 0;
```

Rendered Page

DOCUMENT OBJECT MODEL

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

```
<body>
  <div class="photo">
    <h3>My first photo</h3>
    <img src="picture1.jpg"/>
  </div>
...
</body>
```



LAYOUT ENGINE	WEB BROWSER
WebKit	Safari
Blink (WebKit fork)	Chrome, Opera
Gecko	Firefox
Trident	Internet Explorer

Timeline

Tim Berners-Lee proposed HTML draft to the IETF

Draft referenced Mosaic (Marc Andreessen @ UIUC)

STANDARDS

Internet Engineering Task Force (IETF)

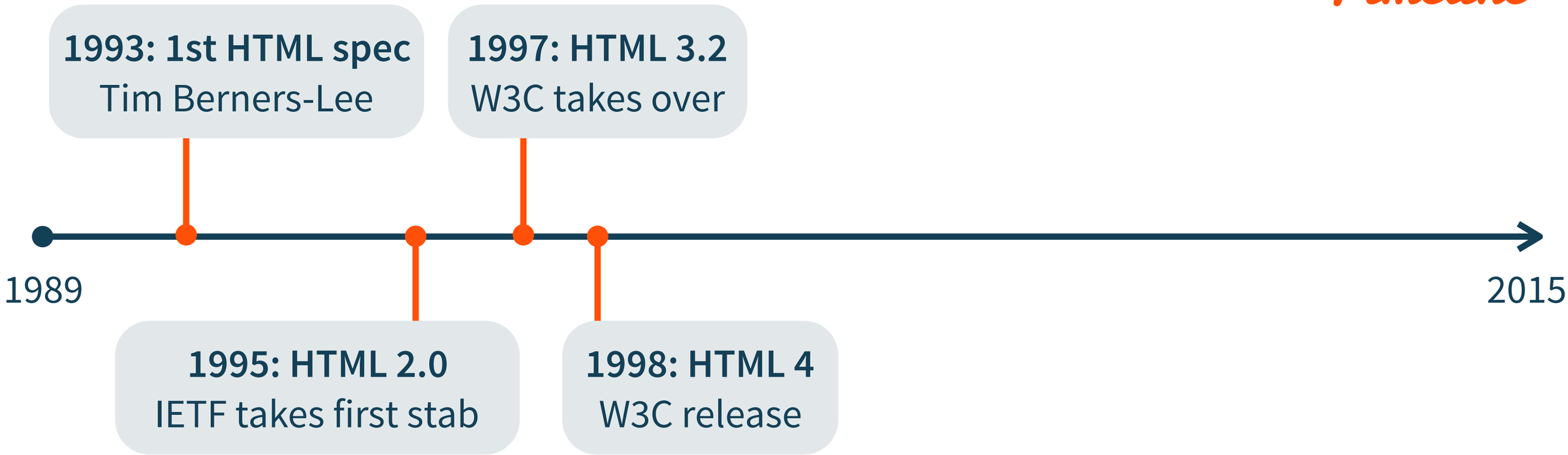
World Wide Web Consortium (W3C)

Web Hypertext Application Technology Working Group (WHATWG)

Timeline

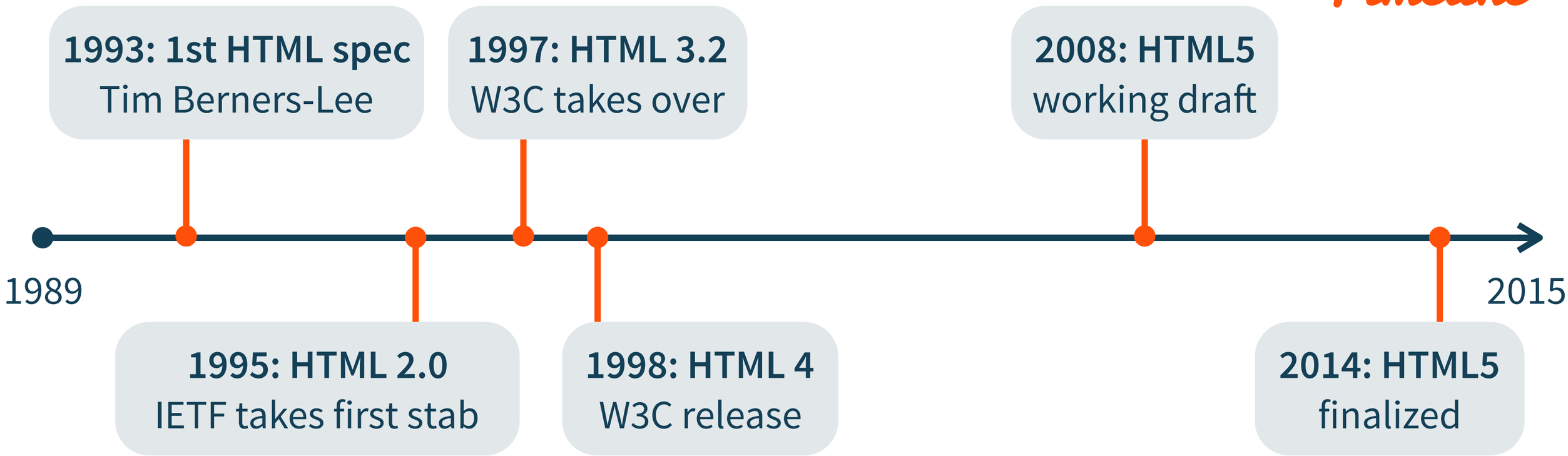
the IETF created HTMLWG, who created HTML 2

Timeline



Tim Berners-Lee creates the W3C in 1994

Timeline



10 years later — HTML5

Timeline

Ten Years of Solitude?

2008: HTML5
working draft

2015

1998: HTML 4
W3C release

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.”*

wiki.whatwg.org/wiki/FAQ#What_is_the_WHATWG.3F

WORK BACKWARDS TO MOVE FORWARD

understand error-handling done by browsers

HTML parsers should be compatible with existing Web content

backwards compatibility a must

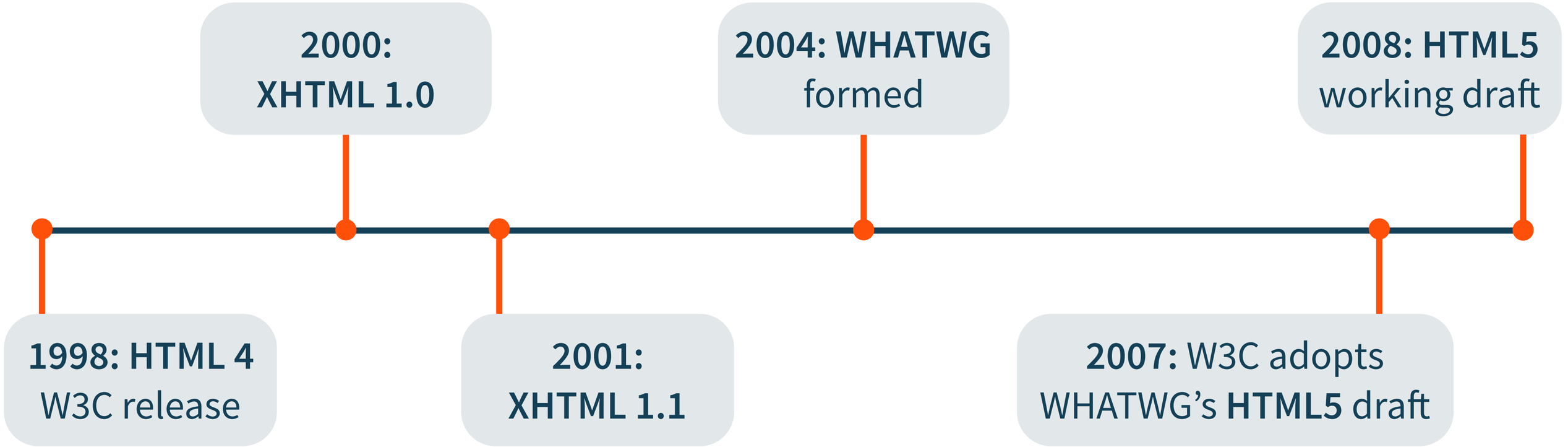
It is really important to have real developers on the ground involved with the development of HTML. ***It is also really important to have browser makers intimately involved and committed****…*

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…”

www.w3.org/TR/html5/

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>
```

CONTENT MODEL

defines how elements can be nested

html4 had two categories: inline and block

html5 is more fine-grained

www.w3.org/TR/html5-diff/#content-model

HTML5 CONTENT MODEL

Metadata: **`link`**, **`script`**

Flow: **`span`**, **`div`**

Sectioning: **`aside`**, **`section`**

Heading: **`h1`**

Phrasing: **`span`**, **`img`**

Embedded: **`img`**, **`iframe`**

Interactive: **`a`**, **`button`**

www.w3.org/TR/html5-diff/#content-model

OTHER HTML5 FEATURES

Fewer Flash sites

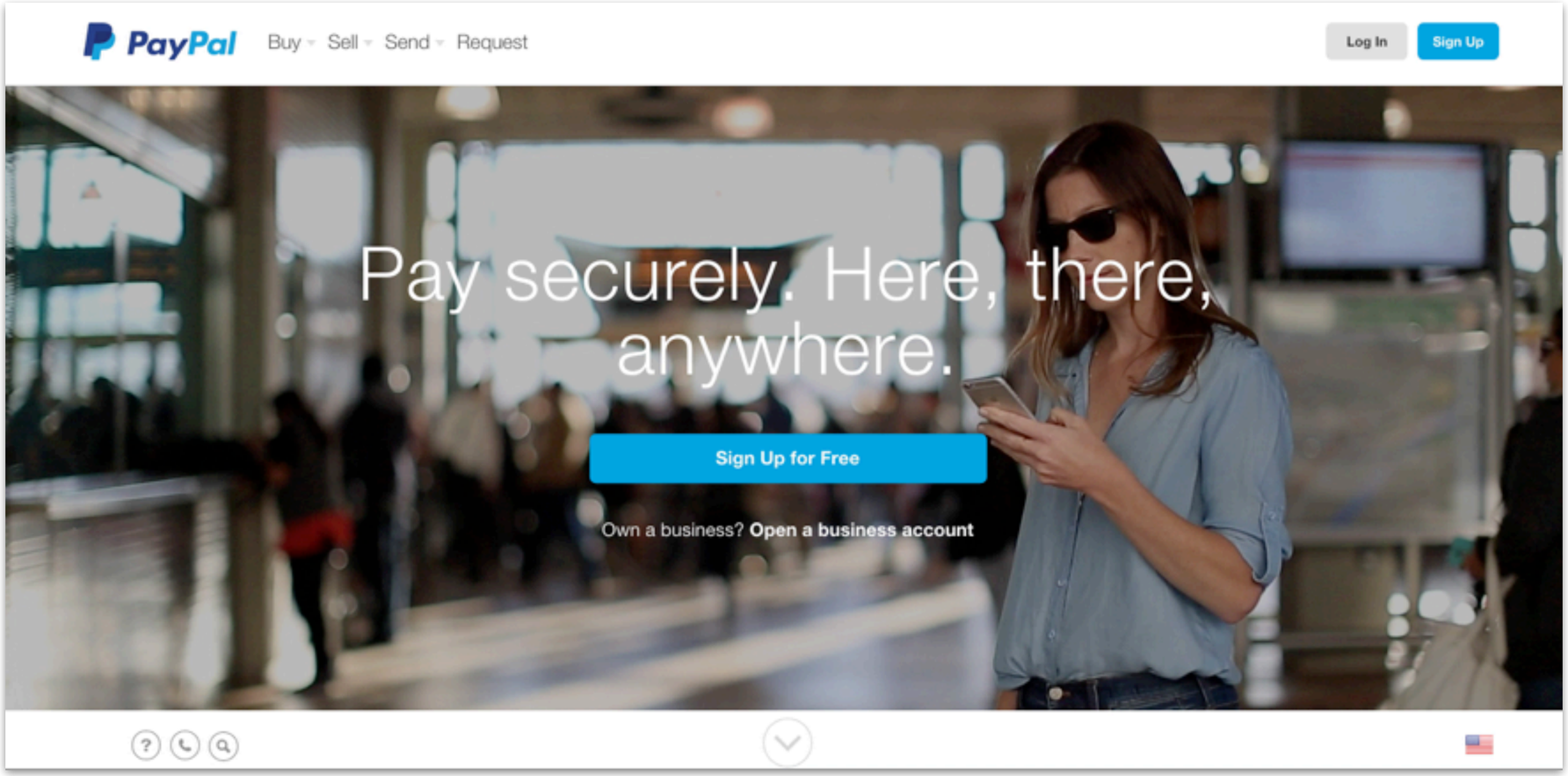
support for richer graphics and video

structural semantics

Semantic Web?

<video> and <audio>

pages with sound and large video backgrounds

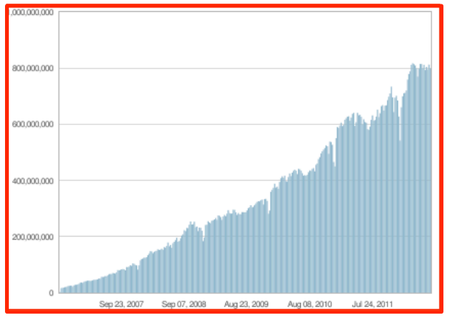


<canvas>

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><img src="benfranklin.jpg"></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>
```

"THERE ARE TWO TYPES OF DEVELOPERS:

those who argue about DIVs not being semantic,

and those who create epic shit."

Thomas Fuchs

@thomasfuchs

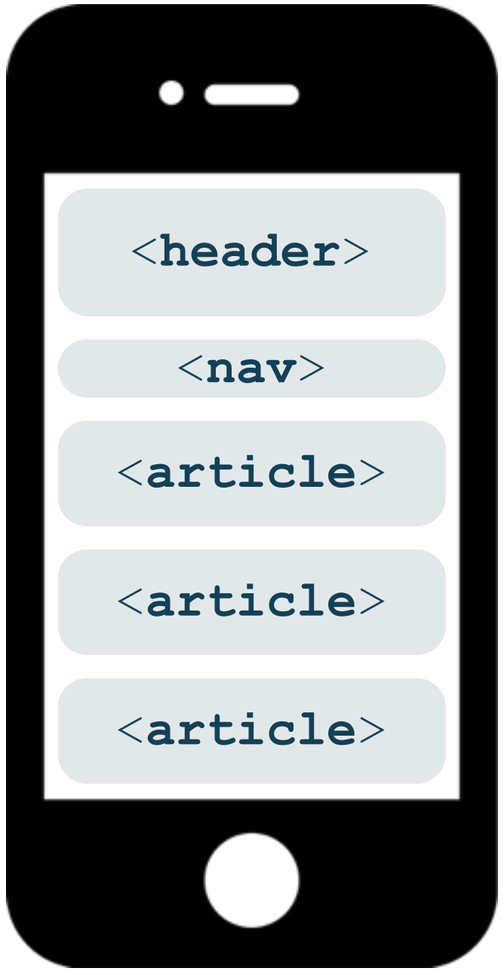
STRUCTURAL SEMANTIC APPLICATIONS?

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

```
<img alt=`UIUC logo’ />
```

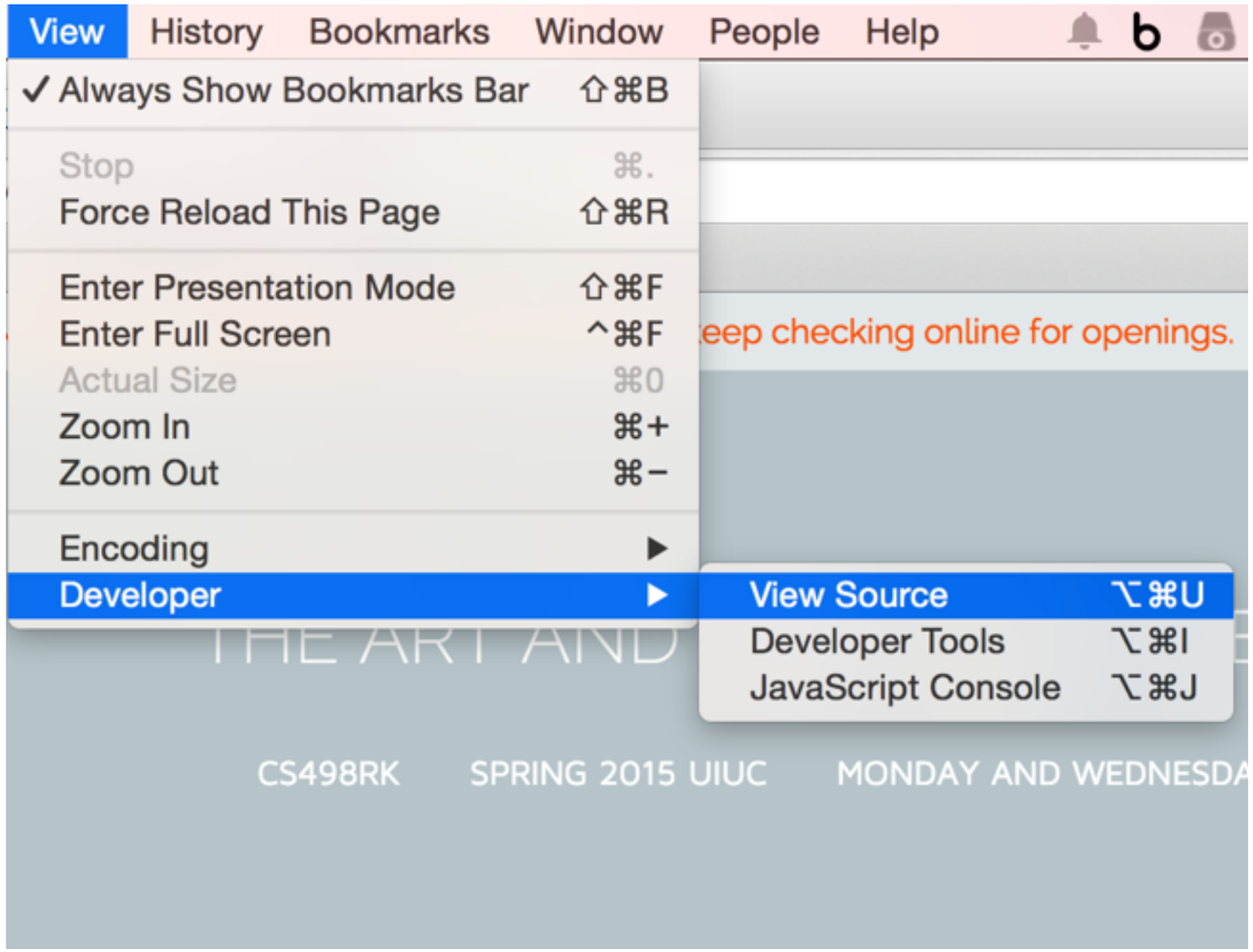
Alternative text for images

Use <h*> tags for headings, nested properly

Sufficient contrast between text and background

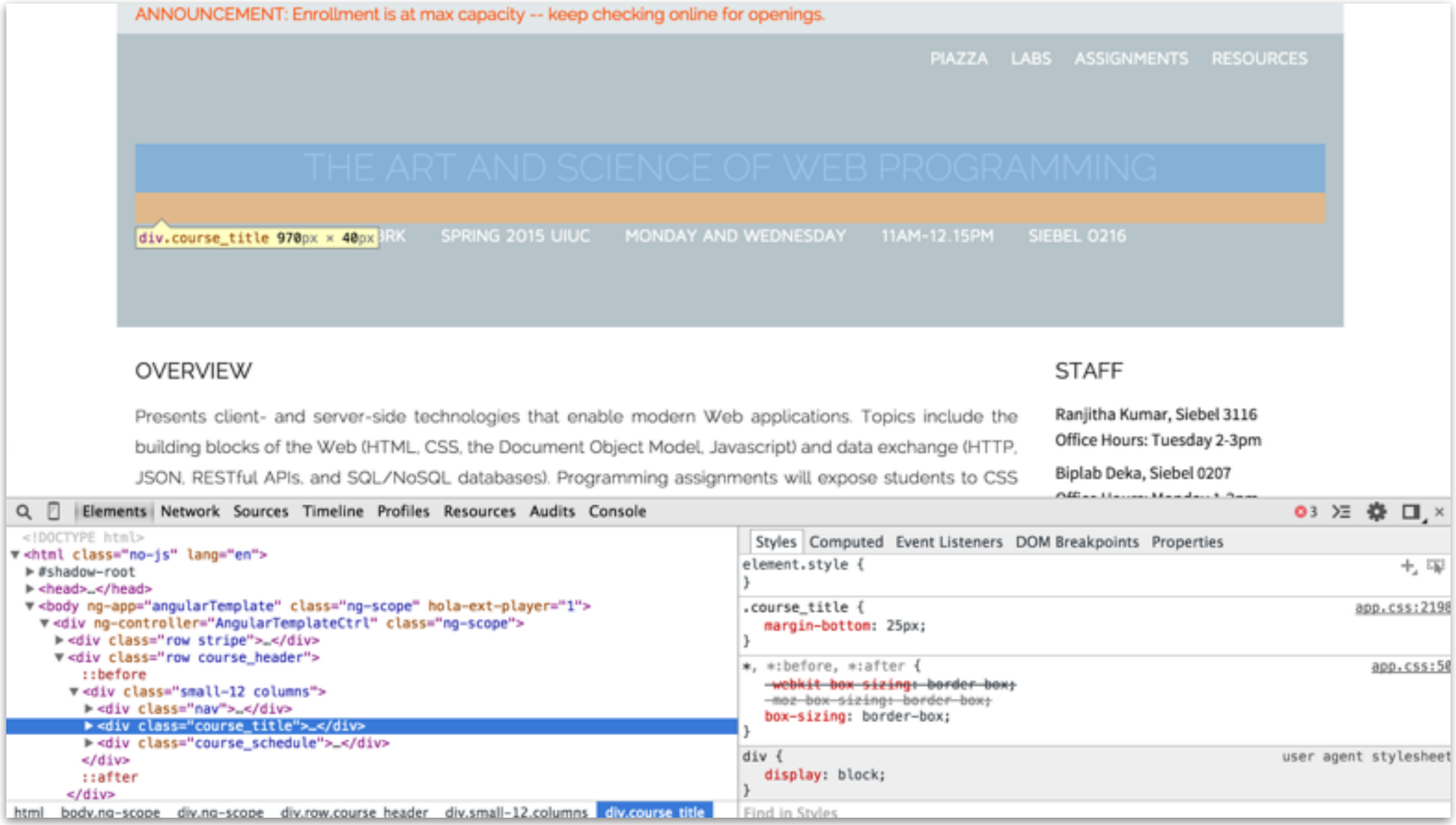
www.w3.org/WAI/eval/preliminary.html

VIEW SOURCE



inspect a page's implementation

BROWSER INSPECTOR



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: DEV LAB

courses.engr.illinois.edu/cs498rk1/