

HTML5 Fundamentals

INTRODUCTION



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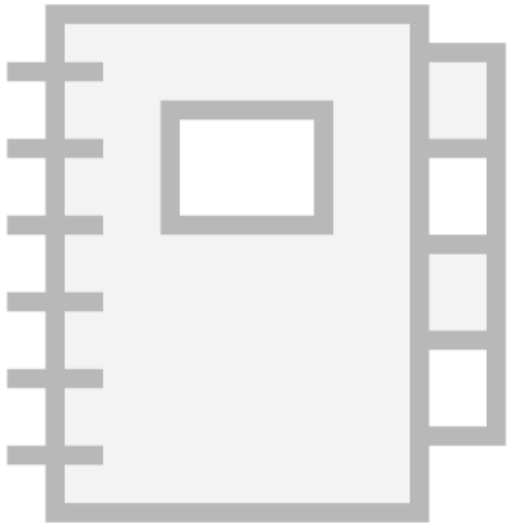
Demo



Course Preview



Course Overview



Introduction

Finding Parts of the Page

Working with User Input

Music and Video (without Plugins)

Drawing Shapes, Charts and More

Creating Drag and Drop Interactivity



Prerequisites



Some HTML

Some JavaScript

Node.js Installed (optional)



“HTML5 is a markup language used for structuring and presenting content on the World Wide Web.”

- Wikipedia



```
<html>
  <body>
    <header>...</header>
    <main>...</main>
    <footer>...</footer>
  </body>
</html>
```



```
<html>  
  <body>  
    <div id="header">...</div>  
    <div id="main">...</div>  
    <div id="footer">...</div>  
  </body>  
</html>
```



```
<html>  
  <body>  
    <header>...</header>  
    <main>...</main>  
    <footer>...</footer>  
  </body>  
</html>
```





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A (Very) Brief History of HTML5

Sources: https://commons.wikimedia.org/wiki/File:Tim_Berners-Lee_April_2009.jpg, <http://code.tutsplus.com/articles/a-brief-history-of-html5--net-23064>



A (Very) Brief History of HTML5



HTML





Source: https://commons.wikimedia.org/wiki/File:First_Web_Server.jpg



A (Very) Brief History of HTML5



HTML

W3C
World Wide
Web Consortium



A (Very) Brief History of HTML5



HTML

W3C
World Wide
Web Consortium

HTML 4



A (Very) Brief History of HTML5



HTML

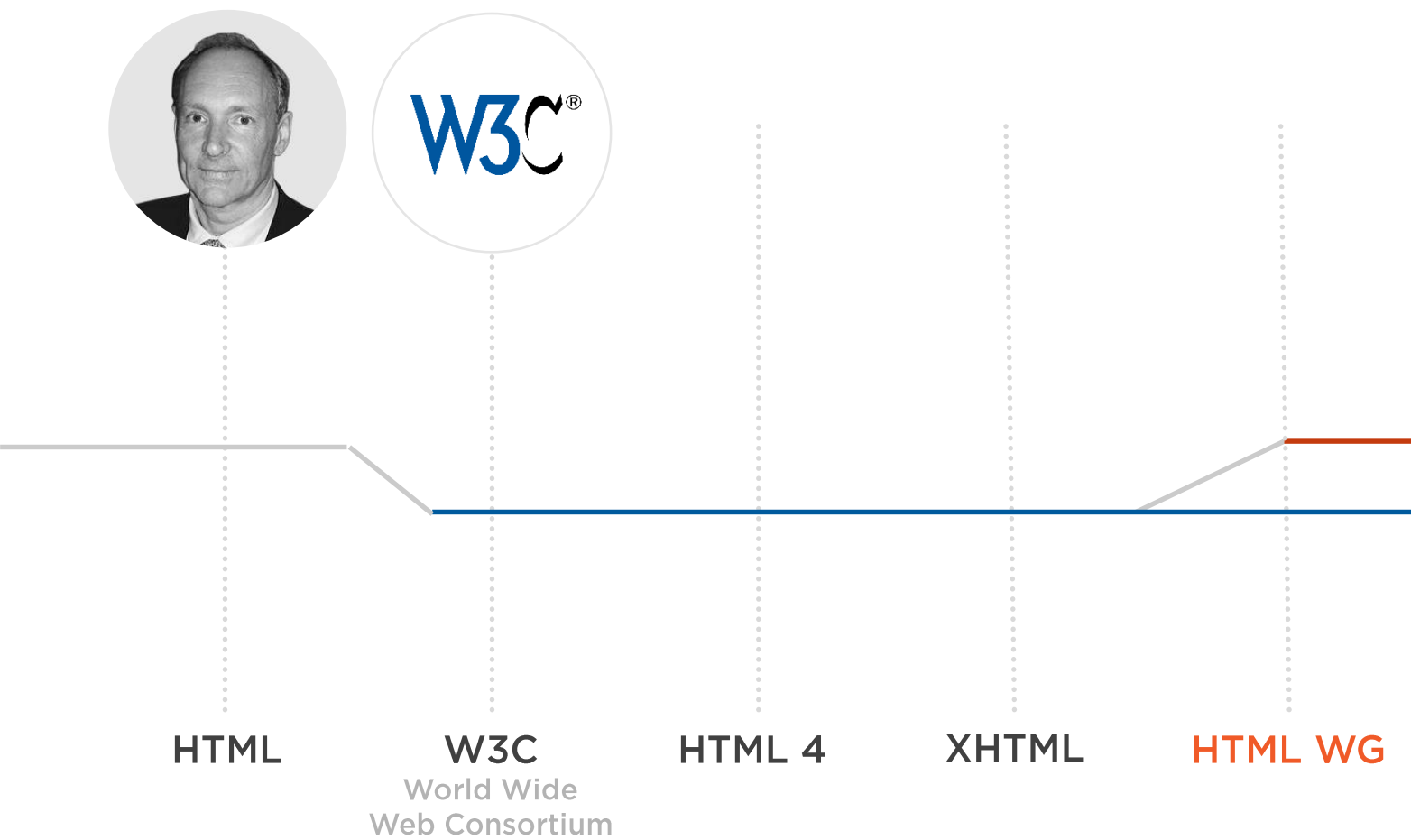
W3C
World Wide
Web Consortium

HTML 4

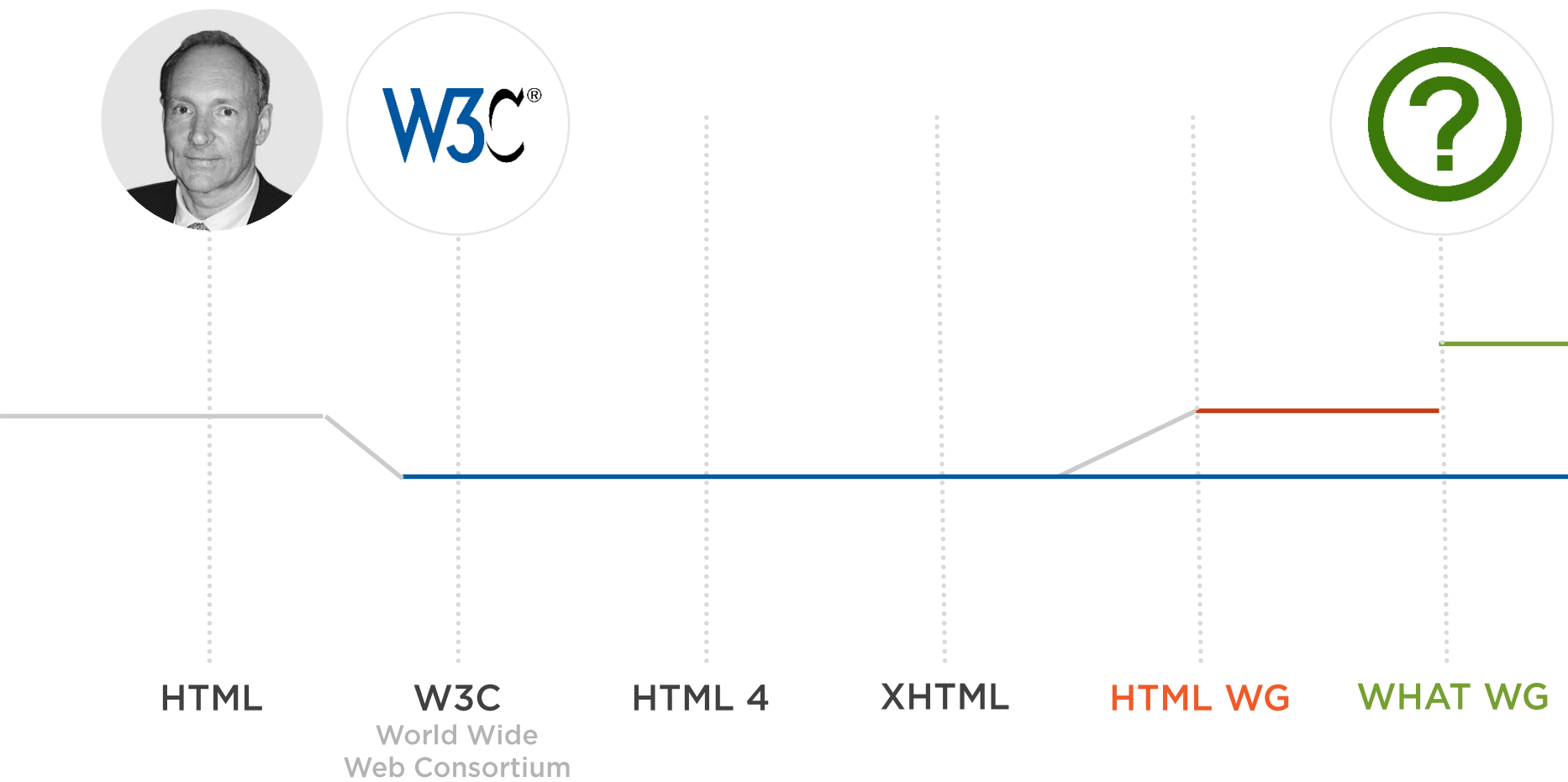
XHTML



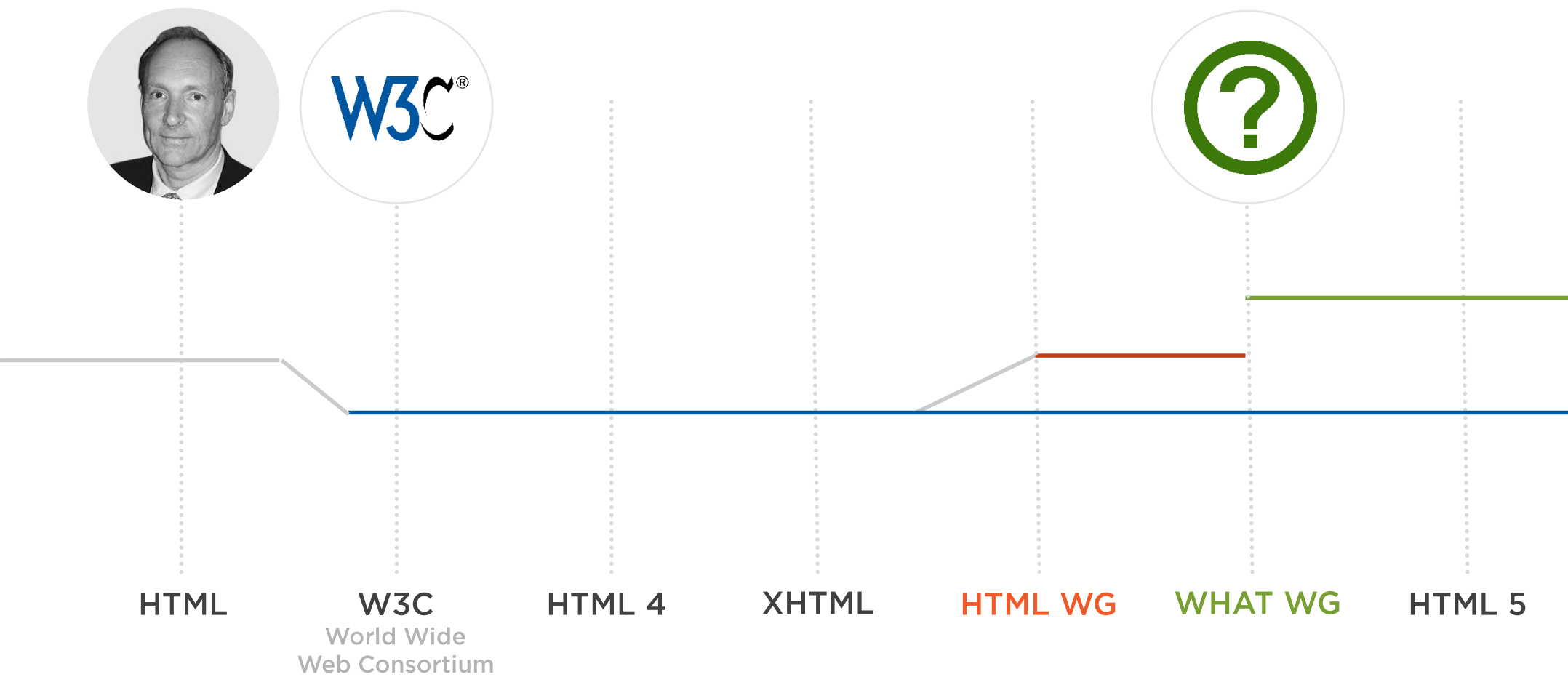
A (Very) Brief History of HTML5



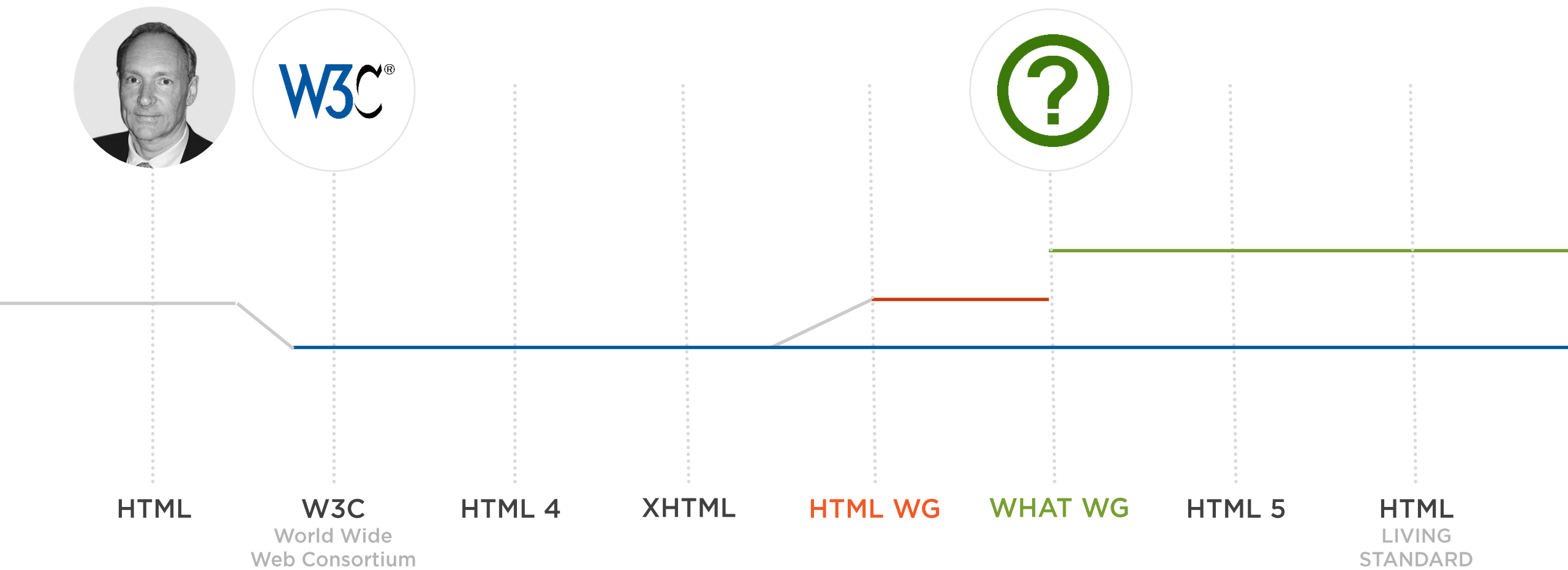
A (Very) Brief History of HTML5



A (Very) Brief History of HTML5



A (Very) Brief History of HTML5



HTML5 no longer exists



Demo



<https://platform.html5.org/>



Standards Bodies



W3C



WHATWG



ECMAScript



What, why and when



What, why and when

What advances in the web platform are applicable to you?



What, why and when

What sort of need are you trying to meet?



What, why and when

At what point in time are the different technologies ready for widespread use?



What



New HTML Elements



New Elements

article
aside
audio
bdi
canvas
datalist
details
embed
figcaption
figure
footer

header
main
math
mark
meter
nav
output
progress
section
source
summary

svg
time
track
video
wbr





The diagram illustrates a browser window with a dark gray border and a light gray title bar containing three window control buttons. Inside the window is a large white rectangular area. Below the window, on the left, is a white rectangular box with a thin orange vertical bar on its right side. This box contains the text 'CODE:' followed by the HTML code '<main></main>'. The word 'main' is also displayed inside the white area of the browser window.

main

CODE:

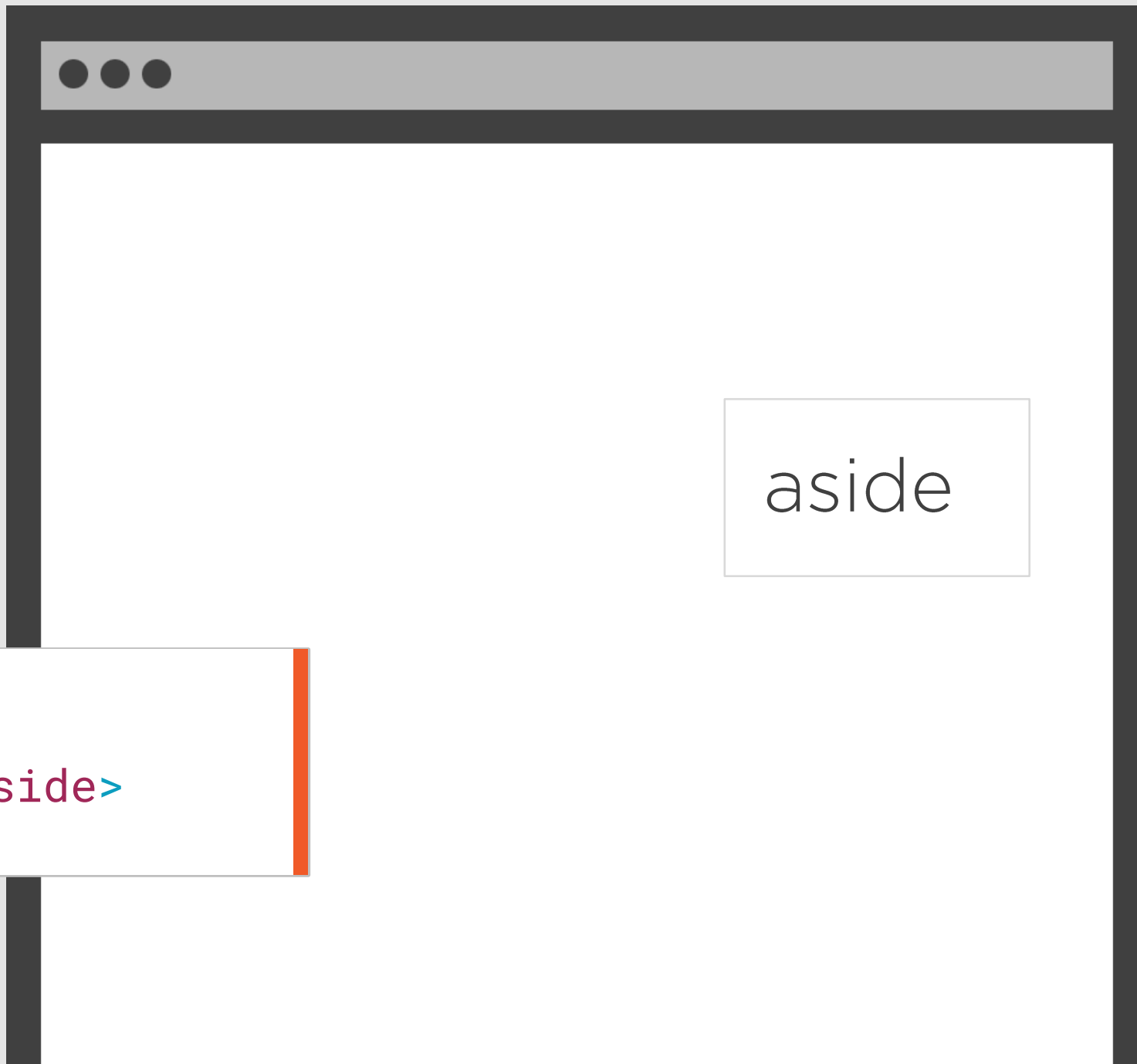
```
<main></main>
```



article

CODE:

```
<article></article>
```



CODE:

```
<aside></aside>
```


A diagram illustrating an HTML section element. It features a browser window frame with a grey header bar containing three black dots. Inside the window, a light grey rectangular box is centered, containing the word "section". To the left of this box, a white rectangular box with an orange vertical bar on its right edge contains the text "CODE:" followed by the HTML code "<section></section>".

section

CODE:

```
<section></section>
```



header

CODE:

```
<header></header>  
<footer></footer>
```

footer



nav

CODE:

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

```
<html>
  <body>
    <header>
      <nav>...</nav>
    </header>
    <main>
      <article>
        <section>...</section>
        <aside>...</aside>
      </article>
    </main>
    <footer>
      <nav>...</nav>
    </footer>
  </body>
</html>
```





The diagram illustrates the relationship between an XML element and its visual representation in a browser. A browser window is shown with a gray title bar containing three window control buttons. Inside the window, a rectangular box contains the text 'time'. Below the window, a white box contains the XML code for this element. A vertical orange line connects the 'time' box to the opening tag of the XML code.

time

CODE:

```
<time  
  date="2016-08-12" pubdate>  
  August 12, 2016  
</time>
```

CODE:

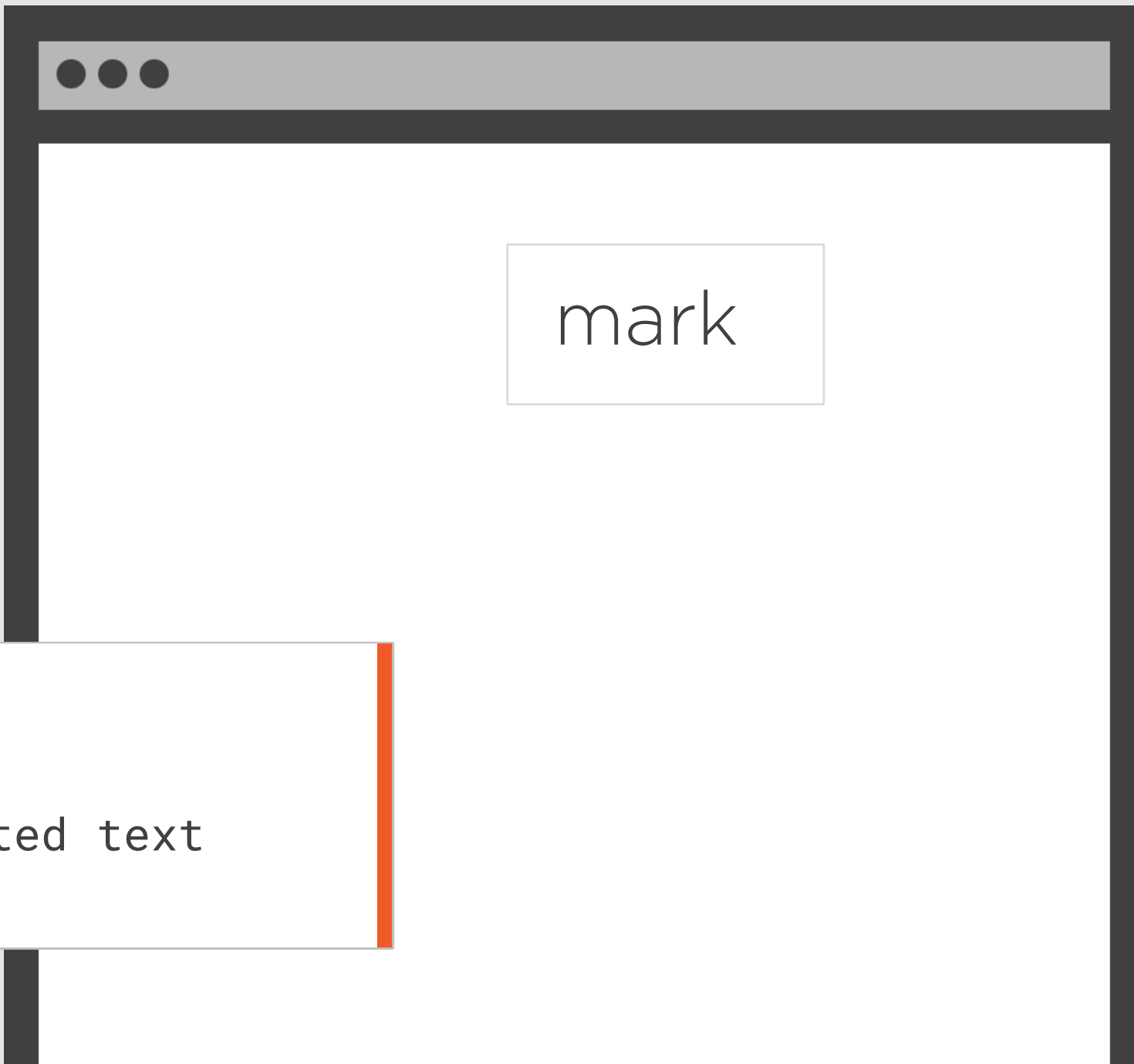
```
<figure>
  <figcaption>
    Screenshot of Menu
  </figcaption>
  
</figure>
```

figure
figcaption

CODE:

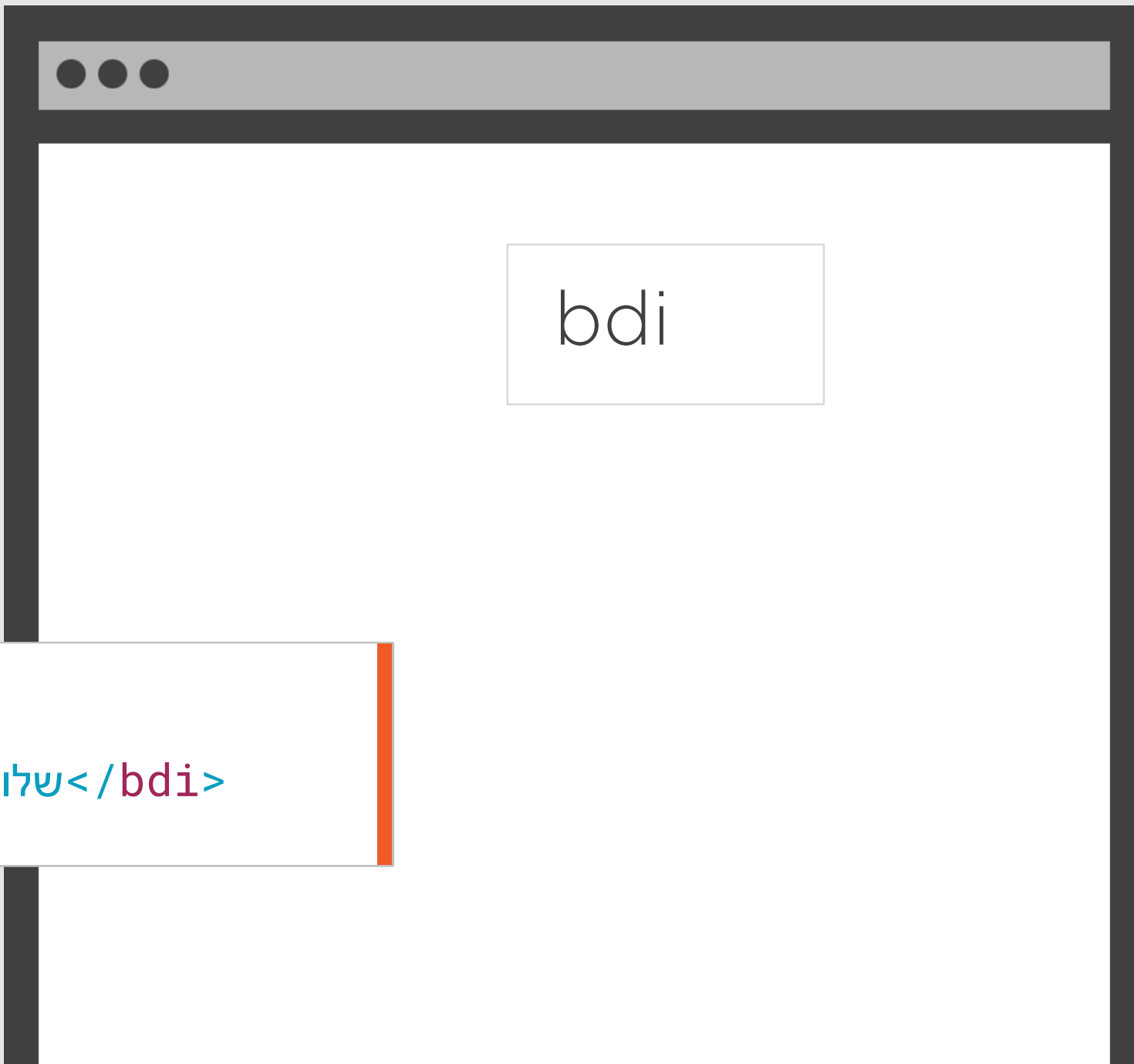
```
<details>  
  <summary>Events</summary>  
  <p>Come join us.</p>  
</details>
```

details
summary



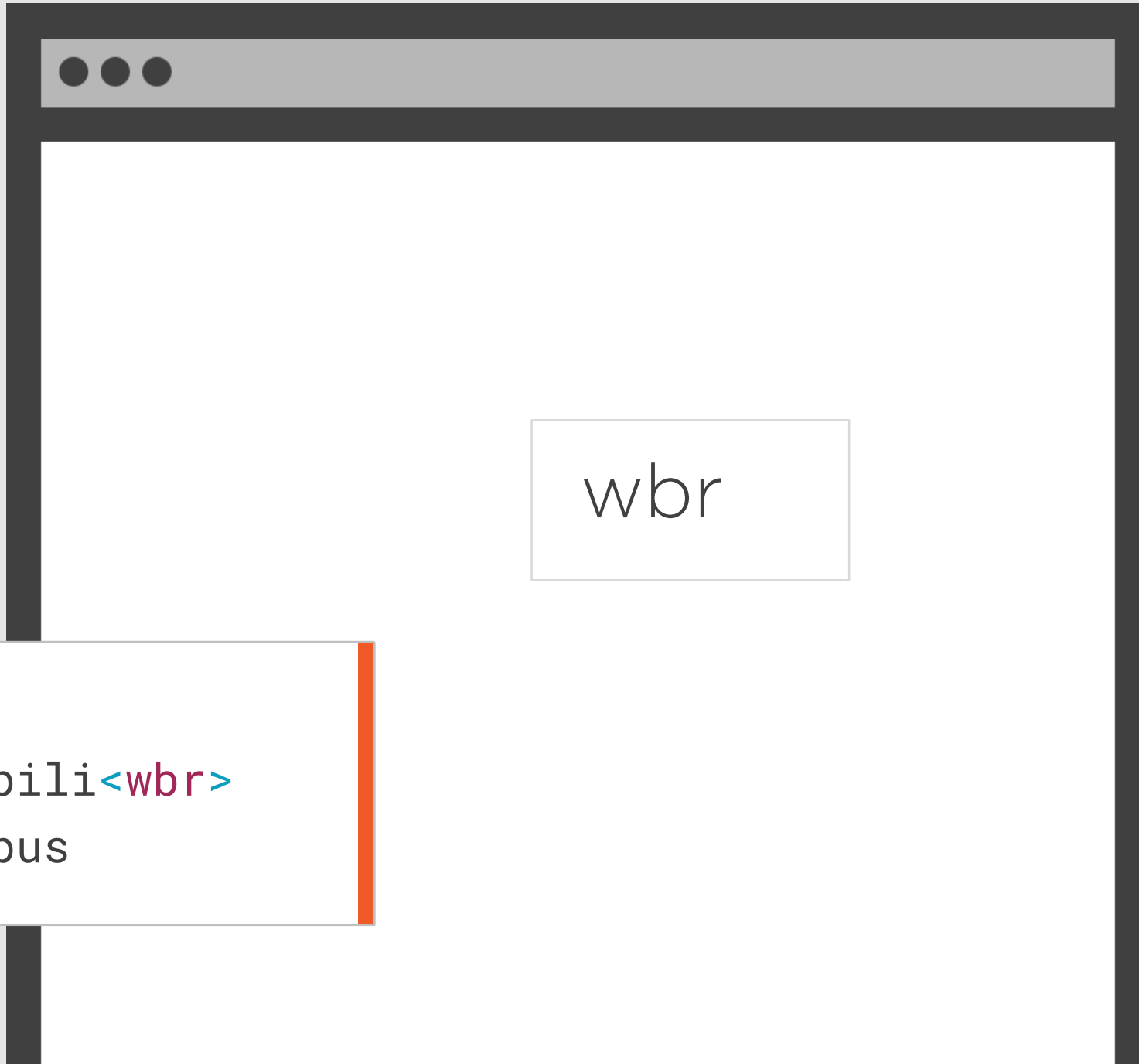
CODE:

```
<mark>  
  highlighted text  
</mark>
```

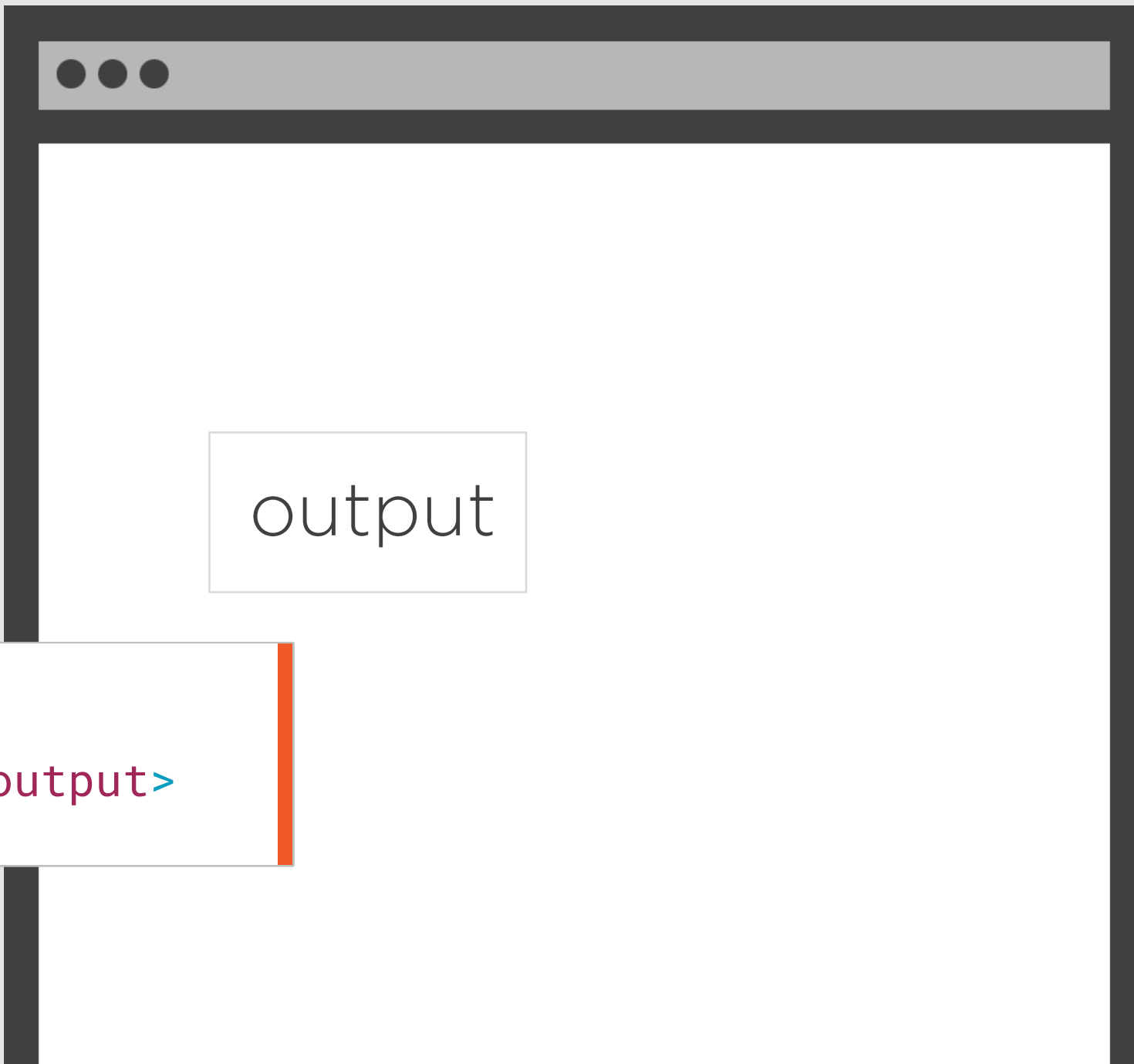
CODE:

```
<bdi>!שלום עולם</bdi>
```



CODE:

```
Honorificabili<wbr>  
tudinibus
```



output

CODE:

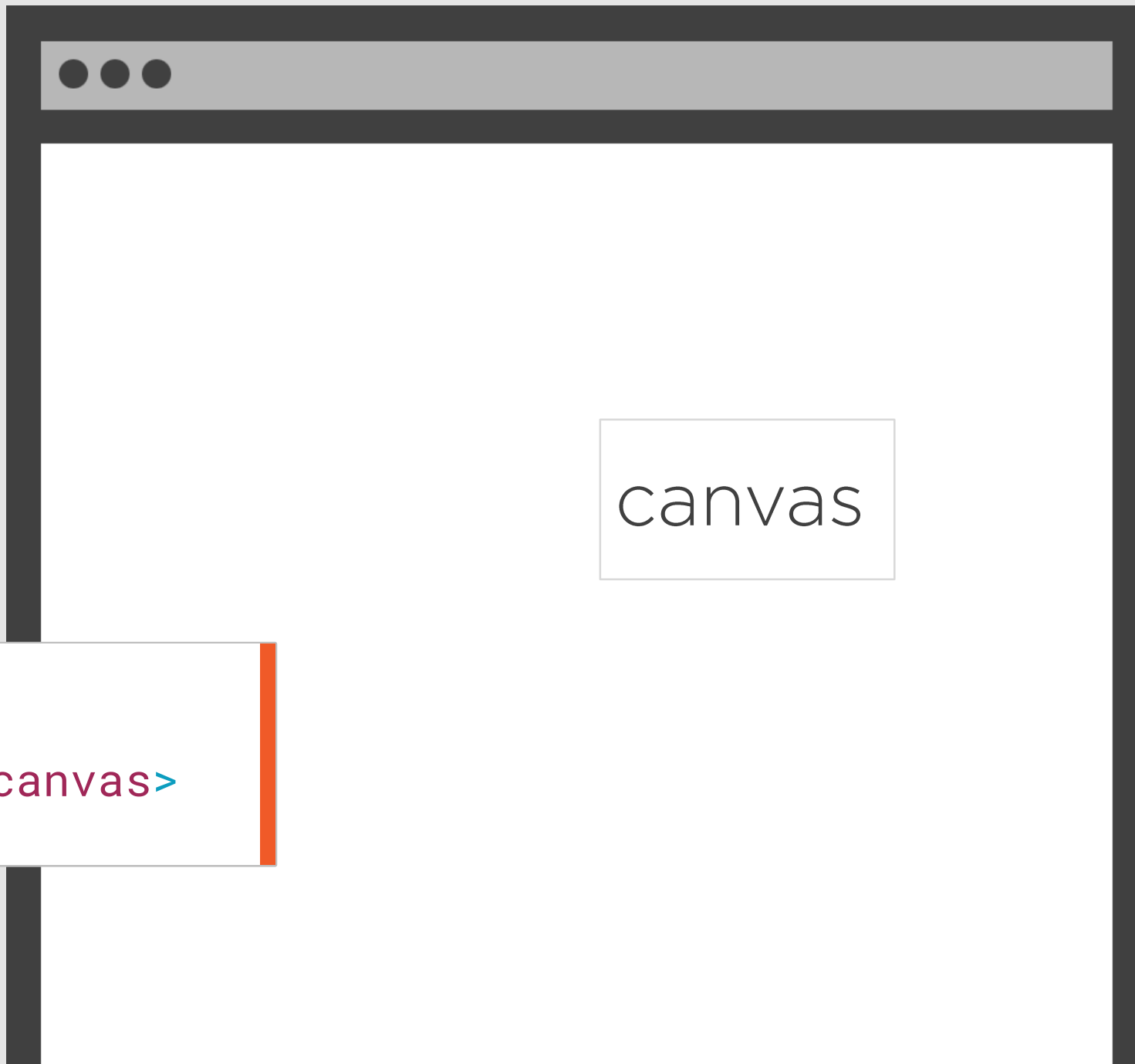
`<output></output>`

A diagram of a web browser window. The window has a dark gray title bar with three small circles on the left. The main content area is white and contains a single rectangular button with a thin gray border and the text "embed" in a simple, black, sans-serif font.

embed

CODE:

```
<embed  
  src="intro.mov">
```



CODE:

```
<canvas></canvas>
```



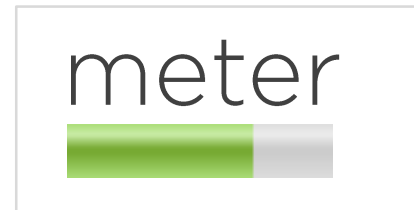
CODE:

```
<video>  
  <source src="vid.mp4">  
  <source src="vid.ogg">  
  <source src="vid.webm">  
  <track  
    kind="subtitles"  
    label="Spanish Subtitles"  
    src="es.vtt"  
    srclang="en">  
</video>
```

video
source
track

CODE:

```
<meter  
  min="0"  
  max="100"  
  value="70">  
    70 out of 100  
</meter>
```

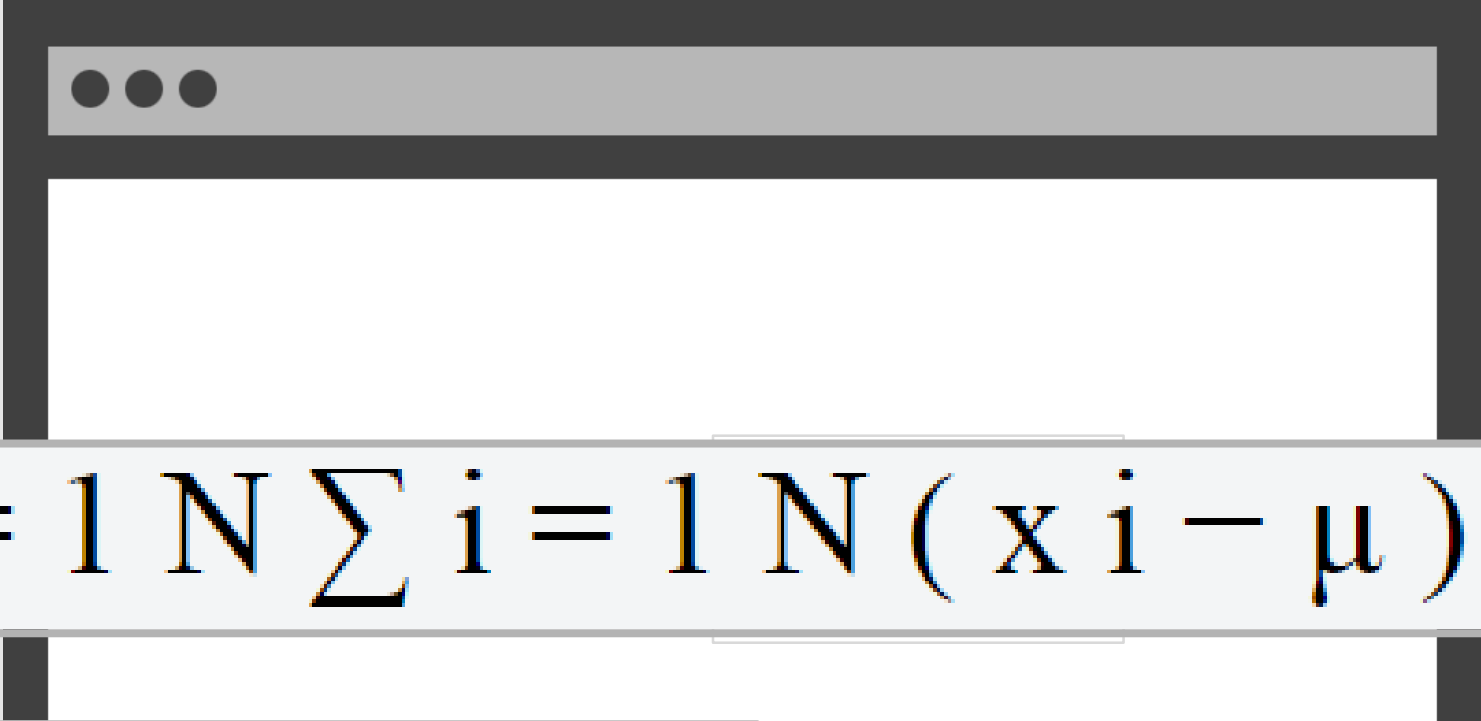


CODE:

```
<progress  
  max="100"  
  value="50">  
</progress>
```

progress




$$\sigma = \frac{1}{N} \sum_{i=1}^N (x_i - \mu)^2$$

CODE:

```
<math>  
  <!-- MathML elements -->  
</math>
```

CODE:

```
<input  
  type="text"  
  list="colors"  
  min="70">  
  
<datalist id="colors">  
  <option src="blue">  
  <option src="red">  
</datalist>
```

datalist

New Elements

article
aside
audio
bdi
canvas
datalist
details
embed
figcaption
figure
footer

header
main
math
mark
meter
nav
output
progress
section
source
summary

svg
time
track
video
wbr



New Elements

article
aside
audio
bdi
canvas
datalist
details
embed
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header
main
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svg
time
track
video
wbr



New JavaScript APIs



The Web platform: Browser technologies

Core platform

- HTML
- DOM
- ECMAScript and JavaScript
- URL
- Fetch (includes CORS)
- XMLHttpRequest
- Encoding

CSS features

- CSS roadmap
- Animations
- Background-image options
- Border images
- Border radius (rounded corners)
- Box shadows
- Box sizing
- Cascading and inheritance
- Colors
- Compositing and Blending
- Device Adaptation
- Downloadable fonts (@font-face)
- Exclusions
- Feature queries (@supports)

- Writing modes
- CSSOM (CSS Object Model)
- CSSOM View Module

Graphics and typography

- Canvas
- WebGL
- SVG
- WOFF
- MathML
- Web Animations

Media

- Web Audio API
- WebVTT
- Media Source Extensions
- Media Fragments

Platform interaction, events, messaging

- Notifications API
- Cross-document messaging
- Channel messaging
- Fullscreen API
- Geofencing
- Geolocation

- dataset (data-* attributes)
- async for scripts
- defer for scripts
- Session-history management
- hashchange
- Sandboxed iframe
- Drag and drop
- contentEditable
- HTML Editing APIs
- ARIA

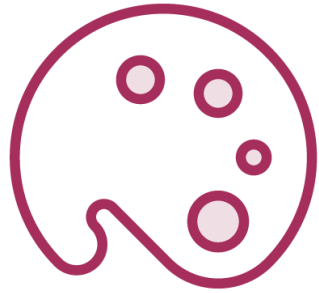
Performance optimization and analysis

- Web Workers
- Shared Workers
- Timing control for script-based animations
- Navigation Timing
- Page Visibility
- User Timing
- Performance Timeline
- High Resolution Time
- SIMD (Single instruction, multiple data)

Security and privacy

- Content Security Policy (CSP)
- Upgrade Insecure Requests

Graphics and Typography



Canvas



Web Animations

Interaction, Events & Messaging



Battery Status



**Clipboard API &
Events**



**Cross Document
Messaging**



**Device & Screen
Orientation**



Fullscreen



Interaction, Events & Messaging



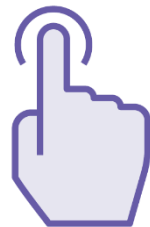
Geolocation



Media Capture



Notifications

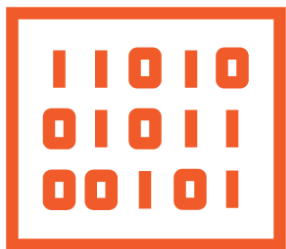


Touch Events



Vibration

Storage & Files



Blob URLs



File API



File Reader



IndexedDB



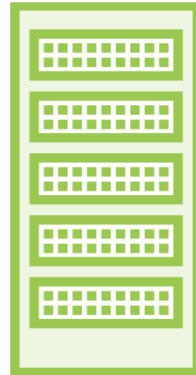
Local Storage



Real-Time Communication



Push API

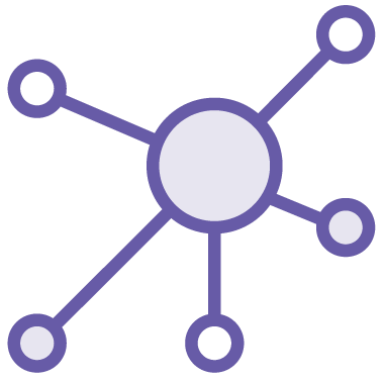


Server-Sent Events



Web Sockets

Web Components



**Custom
Elements**



Standard Markup

```
<div id="comment-container">
  <div class="comment">
    <div class="user-info-container">
      <div class="user-name">Craig Shoemaker</div>
      <div class="avatar">
      </div>
    </div>
    <div class="content-container">
      <div class="publish-date">12/01/2016</div>
      <div class="content">HTML5 is a set of markup enhancements
                           and new JavaScript APIs</div>
    </div>
  </div>
</div>
```

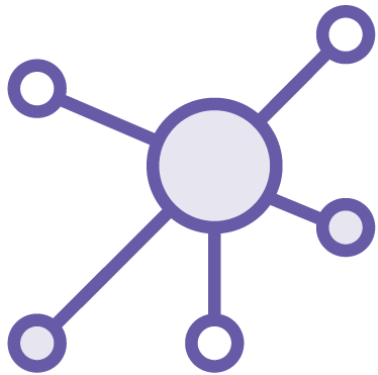


Custom Elements

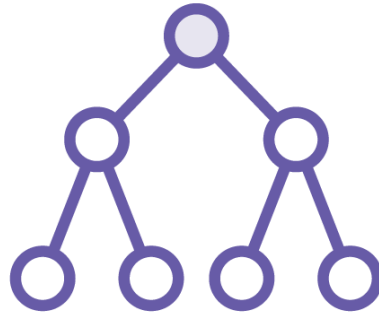
```
<comments>  
  <comment author="Craig Shoemaker"  
    avatarUrl="images/cs.png"  
    publishDate="12/01/2016">  
    HTML5 is a set of markup enhancements and new JavaScript APIs.  
  </comment>  
</comments>
```



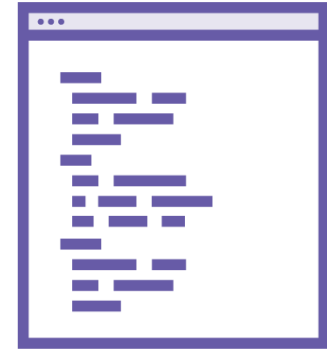
Web Components



Custom
Elements



Shadow DOM



Templates

Performance Optimization & Analysis



High Resolution
Time



Navigation Timing



Page Visibility



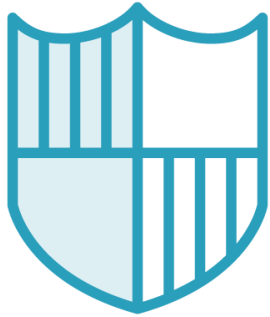
User Timing



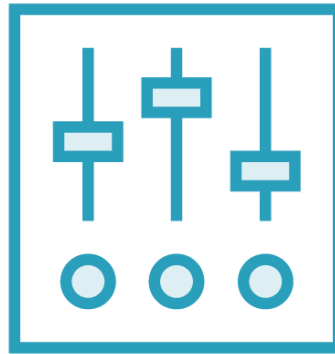
Web Workers



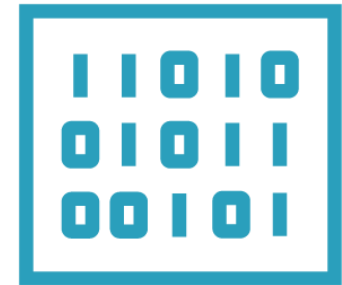
Security & Privacy



Content Security
Policy



Referrer Policy



Web Cryptography



Miscellaneous Features



scripts:
async & defer



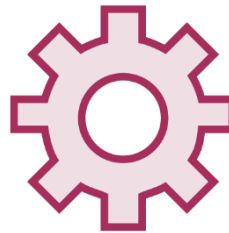
contentEditable



Drag & Drop



History



Promises



Service Workers





+



=



Why



When



Shadow DOM - WD

Method of establishing and maintaining functional boundaries between DOM trees and how these trees interact with each other within a document, thus enabling better functional encapsulation within the DOM.

Global 52.02%
unprefixed: 48.56%
U.S.A. 43.73%
unprefixed: 41.84%

Current aligned	Usage relative	Show all							
IE	Edge *	Firefox	Chrome	Safari	Opera	iOS Safari *	Opera Mini *	Android Browser *	Chrome for Android
			45						
8			46					4.3	
9		¹ 43	47					4.4	
10		¹ 44	48			8.4		4.4.4	
11	13	¹ 45	49	9	35	9.2	8	47	49
	14	¹ 46	50	9.1	36	9.3			
		¹ 47	51		37				
		¹ 48	52						

Notes Known issues (0) Resources (9) Feedback

Supported in current WebKit nightly, so may appear in an upcoming Safari version.

MS Edge status: Under Consideration

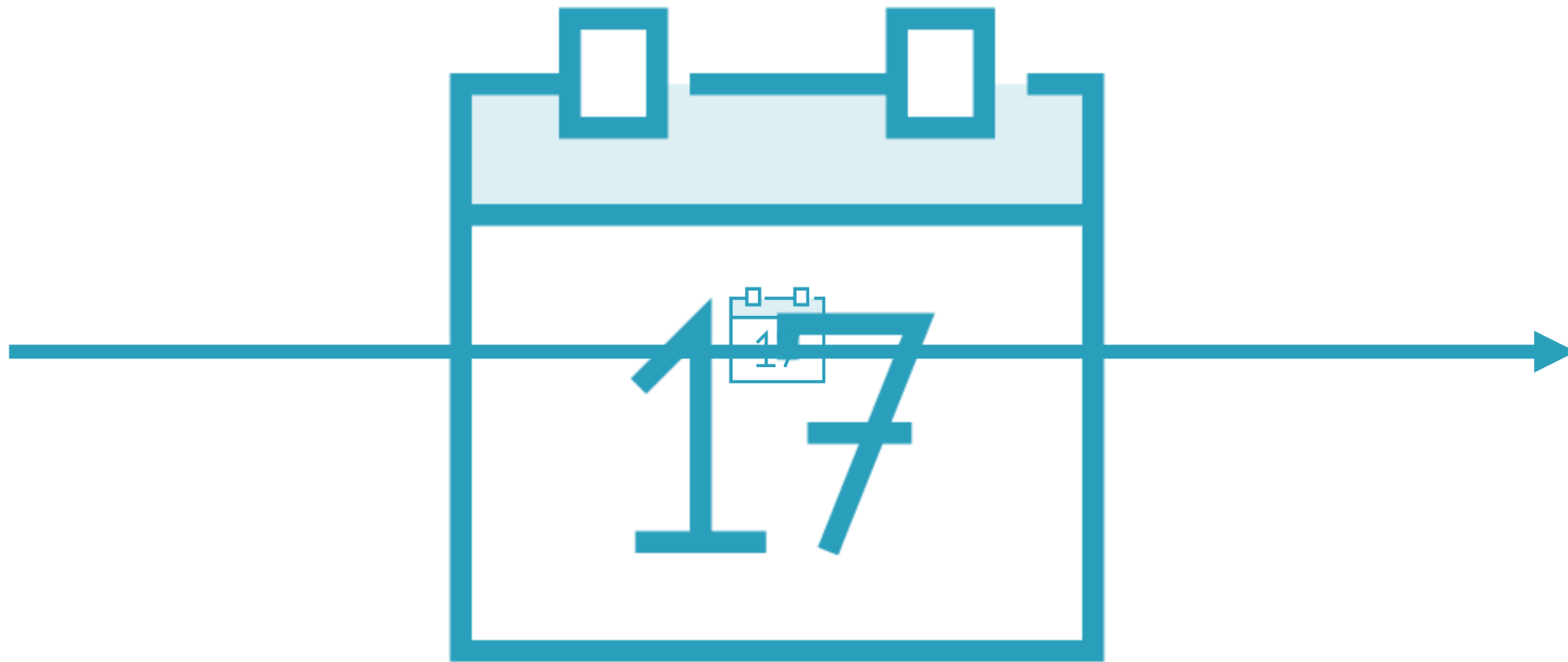
Firefox status: In-development

WebKit status: In Development

¹ Supported in Firefox behind the `dom.webcomponents.enabled` flag.



No Completion Date



HTML4 vs HTML5



Demo



HTML4 vs HTML5



Getting Started



Demo



HTML5 Boilerplate



Detecting Features



Demo



caniuse.com



Demo



Modernizr



Fallbacks & Polyfills



A large teal circle with the word "Fallback" centered inside in white text.

Fallback

A large maroon circle with the word "Polyfill" centered inside in white text.

Polyfill



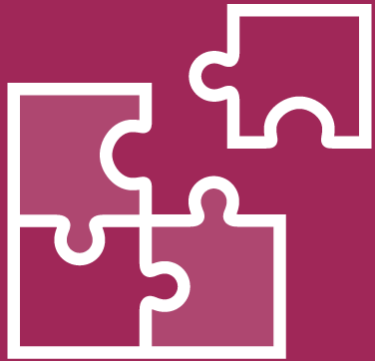
Demo



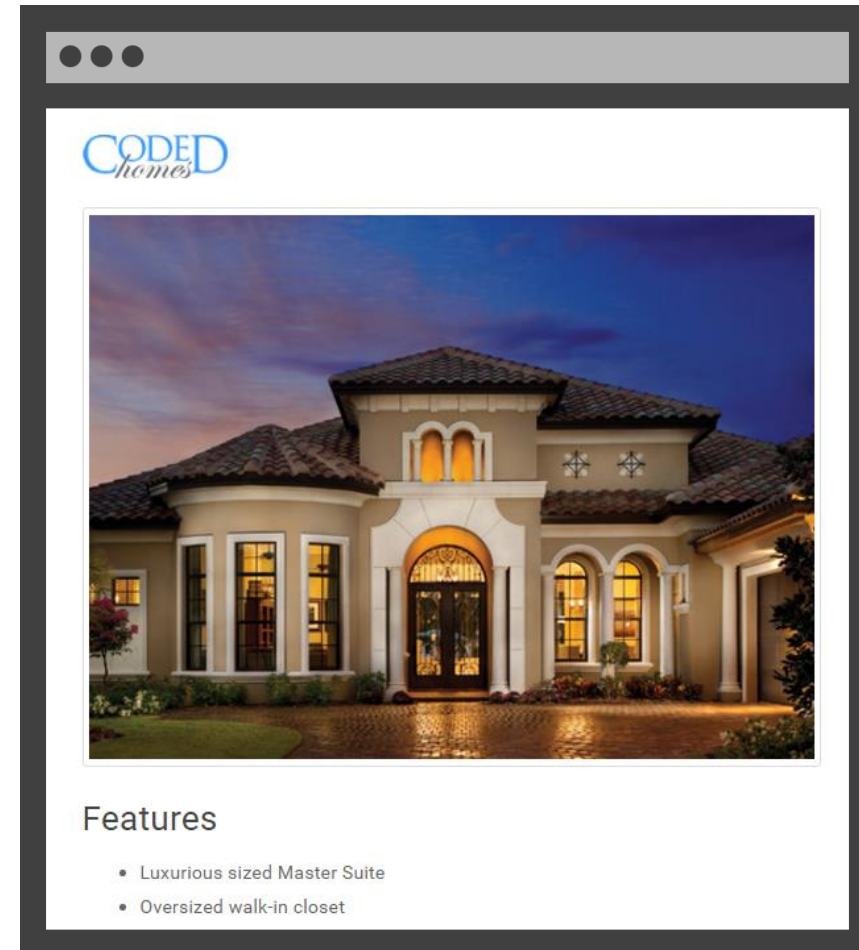
HTML5please.com



Next Module



Finding Parts of the Page



Summary



What is HTML5?

A collection of APIs and markup

Many standards bodies

Implemented at different rates

Easy to get started

Fallbacks and Polyfills available

