

Introduction to HTML

January 8, 2019

Coding for Digital Storytelling

Overview

1. What is HTML and why is it important?
2. The many structural faces of HTML
3. “Hello, world!” Hands-on practice

Creating a structured language

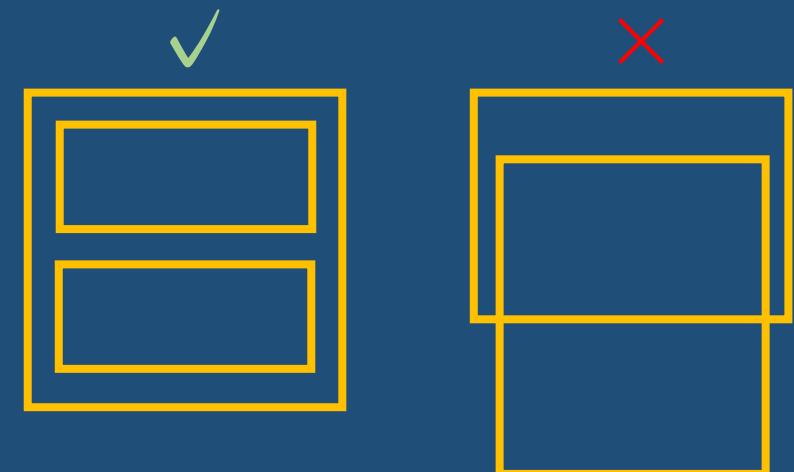
Examine the example news article provided and answer the following questions:

- how is the news article structured? how does this help readability?
- what are the functional units of content in the article? (e.g., headline, paragraph)
- which units are unique and which are repeated?
- are certain scales of units more functionally important than others? (e.g., paragraph versus individual words)
- are there different levels of hierarchy across the units? (e.g., body text, footnotes)

Structure the article using the following rules:

- draw rectangles around your units identified above
- rectangles may nest but not cross lines
- give labels to each rectangle indicating type, using a minimum number of unique labels

How would you communicate the structure of this article to a machine?



14-Year-Old Driver Charged With Murder After Egg Prank Turns Deadly

The boy was allegedly pelting cars with eggs, which led to a high-speed chase that killed 45-year-old Silvia Zavala.



By **Nina Golgowski**

A 14-year-old boy has been charged with murder after authorities said an egg prank sparked a high-speed car chase through a Texas intersection that killed a mother.

The underage driver was allegedly pelting cars with eggs from an SUV with two juvenile passengers on Tuesday when Harris County authorities said he provoked another driver just before 2:30 p.m. That driver allegedly then displayed a semiautomatic handgun.

The confrontation sparked a chase between the two vehicles, leading to the boy's SUV blowing through an intersection's red light and T-boning a red Ford F-150 that was driven by 45-year-old Silvia Zavala. She was pronounced dead at the scene, authorities said in a release.

14-Year-Old Driver Charged With Murder After Egg Prank Turns Deadly

headline

The boy was allegedly pelting cars with eggs, which led to a high-speed chase that killed 45-year-old Silvia Zavala.



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byline

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Creating a structured language

Markup is just a way of communicating the structure of a document

Markup turns content into a structured format that can be understood by machines



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14-Year-Old Driver Charged With Murder After Egg Prank Turns Deadly

headline

The boy was allegedly pelting cars with eggs, which led to a high-speed chase that killed 45-year-old Silvia Zavala.

subtitle



By Nina Golgowski

byline

A 14-year-old boy has been charged with murder after authorities said an egg prank sparked a high-speed car chase through a Texas intersection that killed a mother.

paragraph

The underage driver was allegedly pelting cars with eggs from an SUV with two juvenile passengers on Tuesday when Harris County authorities said he provoked another driver just before 2:30 p.m. That driver allegedly then displayed a semiautomatic handgun.

The confrontation sparked a chase between the two vehicles, leading to the boy's SUV blowing through an intersection's red light and T-boning a red Ford F-150 that was driven by 45-year-old Silvia Zavala. She was pronounced dead at the scene, authorities said in a release.

hyperlink

header

body text

headline

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subtitle



By Nina Golgowski

byline

header

A 14-year-old boy has been charged with murder after authorities said an egg prank sparked a high-speed car chase through a Texas intersection that killed a mother.

paragraph

The underage driver was allegedly pelting cars with eggs from an SUV with two juvenile passengers on Tuesday when Harris County authorities said he provoked another driver just before 2:30 p.m. That driver allegedly then displayed a semiautomatic handgun.

paragraph

The confrontation sparked a chase between the two vehicles, leading to the boy's SUV blowing through an intersection's red light and T-boning a red Ford F-150 that was driven by 45-year-old Silvia Zavala. She was pronounced dead at the scene, authorities said in a release.

paragraph

body text

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header

body text



CBS NEWS

A 45-year-old driver was killed after her vehicle was hit by an SUV driven by a 14-year-old boy who had been pelting cars with eggs, authorities said.

The teenage driver, who has not been identified, suffered a broken ankle in the crash, Sheriff Ed Gonzalez [said on Twitter](#).

[Surveillance video](#) capturing the violent collision appears to show Zavala's truck briefly going airborne as both vehicles spin into a ditch. The vehicle that appears to have been chasing the teens' SUV is seen speeding past them. The driver of that vehicle fled the scene but was later located and is cooperating with investigators, authorities said.

Zavala's daughter, Jessica Gaspar, speaking to local news stations, said her mother was in town for New Year's and planned to return home that same day. She said she's glad the teen driver is facing charges.

body text

What is HTML?

What is HTML?

Hypertext Markup Language

The core (markup) language for creating documents and other forms of content on the Web

What is HTML?

Hypertext Markup Language

The core (markup) language for creating documents and other forms of content on the Web

The current specification, HTML5, is designed for the semantic web and is maintained by the W3C

HTML is a markup language

HTML is **not** a programming language or scripting language;
It is a markup language used to represent structured data

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HTML is **not** a programming language or scripting language;
It is a markup language used to represent structured data

It has the key components of a human language:
a vocabulary, a syntax, and semantics

HTML is a markup language

Vocabulary

elements specified by tag names

examples include body, p, img, ul

HTML is a markup language

Vocabulary

elements specified by tag names

Syntax

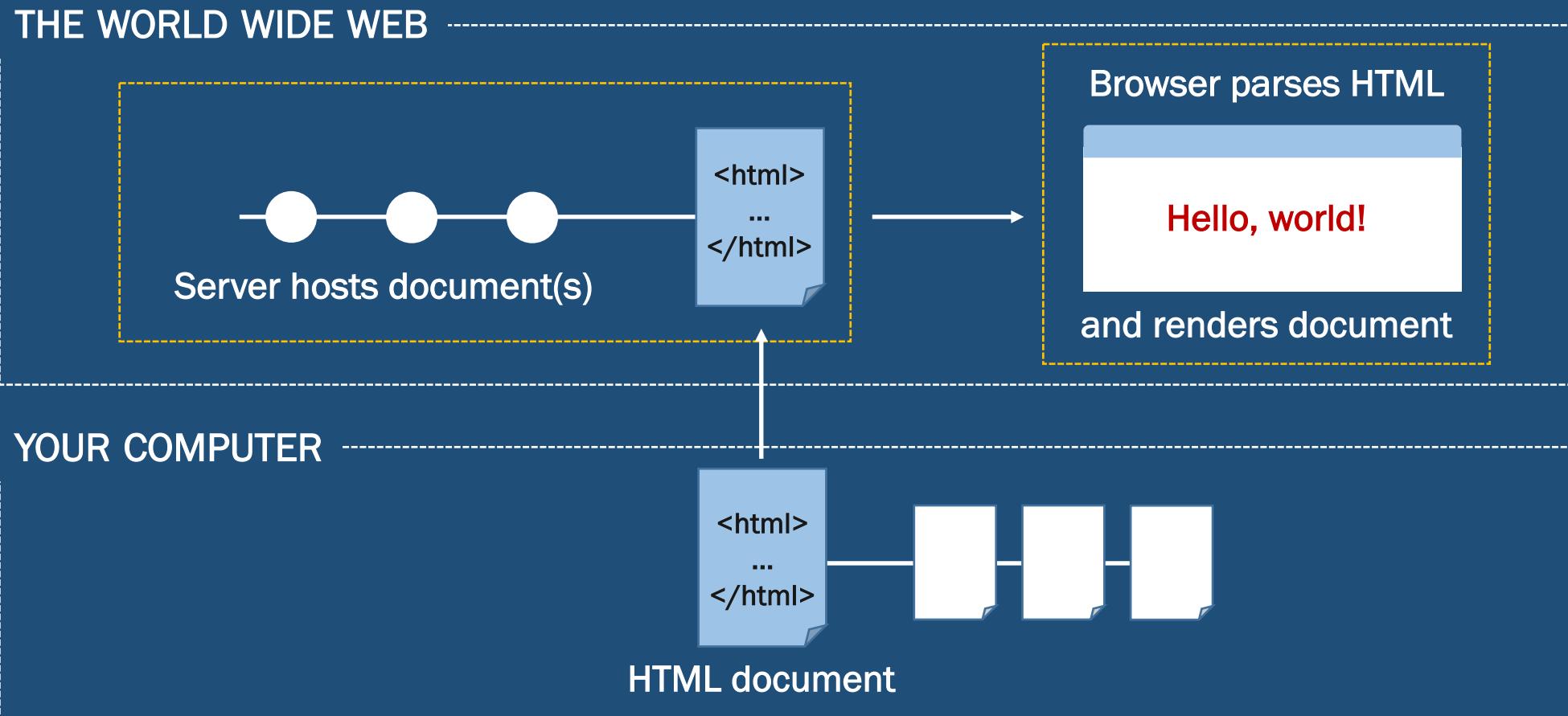
tags are written following specific rules

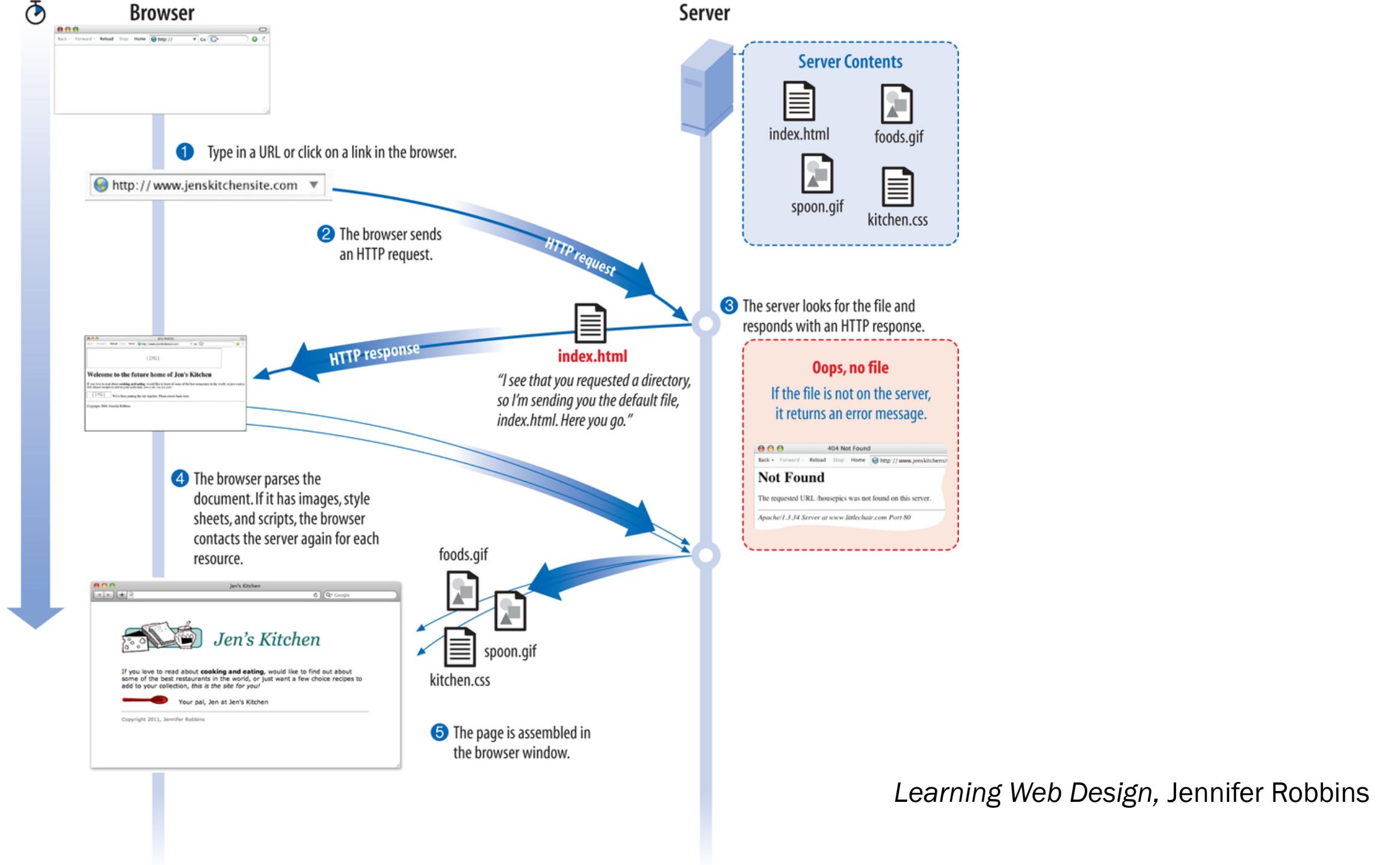
`<body> ... </body>`

HTML is a markup language

Vocabulary	elements specified by tag names
Syntax	tags are written following specific rules
Semantics	elements indicate the meaning of the content they structurally represent the <p> tag specifies the content inside of it indicates paragraph text

HTML documents are situated in systems





Anatomy of a basic HTML document

The **document type declaration** informs the browser how it should parse the contents of the markup that follows

```
<!DOCTYPE html>  
<html>  
  <head>
```

Metadata about the page,
not visually rendered by browser

```
  </head>  
  <body>
```

Page contents that
are visually rendered by browser

```
  </body>  
</html>
```

Anatomy of a basic HTML document

The **html element** encapsulates all elements in the document that will be rendered as HTML-valid markup

```
<!DOCTYPE html>  
<html>  
  <head>
```

Metadata about the page,
not visually rendered by browser

```
  </head>  
  <body>
```

Page contents that
are visually rendered by browser

```
  </body>  
</html>
```

Anatomy of a basic HTML document

The **head element** contains metadata about the page that is **not visually rendered by the browser**, e.g., page title and character encoding

```
<!DOCTYPE html>  
<html>  
  <head>
```

Metadata about the page,
not visually rendered by browser

```
  </head>  
  <body>
```

Page contents that
are visually rendered by browser

```
  </body>  
</html>
```

Anatomy of a basic HTML document

The **body element** contains the content of the page that will be **visually rendered by the browser**, e.g., text, images, hyperlinks, and tables

```
<!DOCTYPE html>
<html>
  <head>
```

Metadata about the page,
not visually rendered by browser

```
</head>
<body>
```

Page contents that
are visually rendered by browser

```
</body>
</html>
```

Anatomy of a basic HTML document

The use of **whitespace** and **indentation** here is deliberate;

Although this whitespace is ignored by the browser when it parses the HTML, it makes the document more readable to human eyes

```
<!DOCTYPE html>
<html>
  <head>
    <title>An HTML page</title>
    ...
  </head>
  <body>
    <p>This is a paragraph</p>
    ...
  </body>
</html>
```

Tags, elements, and content

```
<p> This is a paragraph </p>
```

Tags, elements, and content

OPENING TAG

[<p>] This is a paragraph </p>

Tags, elements, and content

OPENING TAG



TAG NAME

This is a paragraph </p>

Tags, elements, and content

OPENING TAG

[<p>]

This is a paragraph

CLOSING TAG

[</p>]

Tags, elements, and content

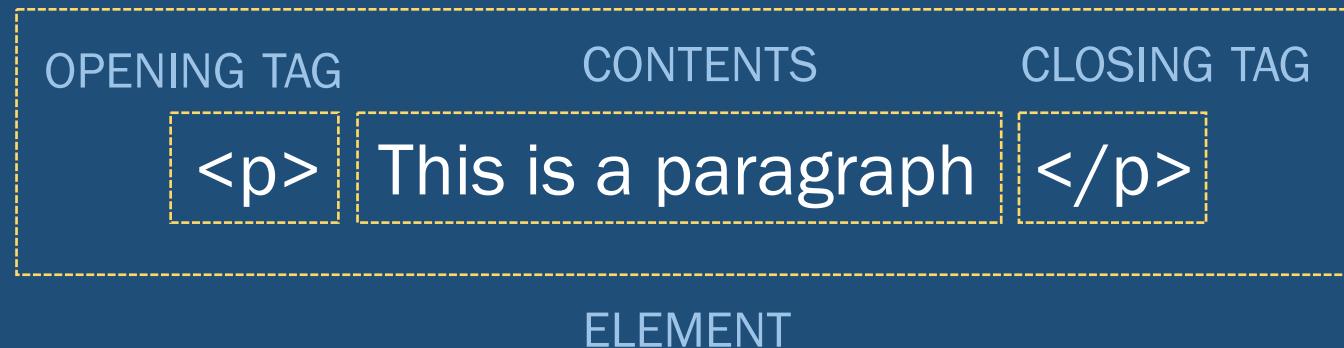
OPENING TAG

CONTENTS

CLOSING TAG

[<p>] This is a paragraph [</p>]

Tags, elements, and content



Tags sometimes have attributes

```
<p class = “paragraph” > This is a styled paragraph </p>
```

Tags sometimes have attributes

ATTRIBUTE
`<p class="paragraph"> This is a styled paragraph </p>`
VALUE

Tags sometimes have attributes

```
<p class = “paragraph” > This is a styled paragraph </p>
```

```
<img src=“myImage.png” width=“200” height=“200”>
```

Tags sometimes have attributes
but no closing tag

```
<p class = “paragraph” > This is a styled paragraph </p>
```

```
<img src=“myImage.png” width=“200” height=“200”>
```



NO CLOSING TAG!

Tags sometimes have attributes
but no closing tag

```
<p class = “paragraph” > This is a styled paragraph </p>
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```
<img src=“myImage.png” width=“200” height=“200”>
```

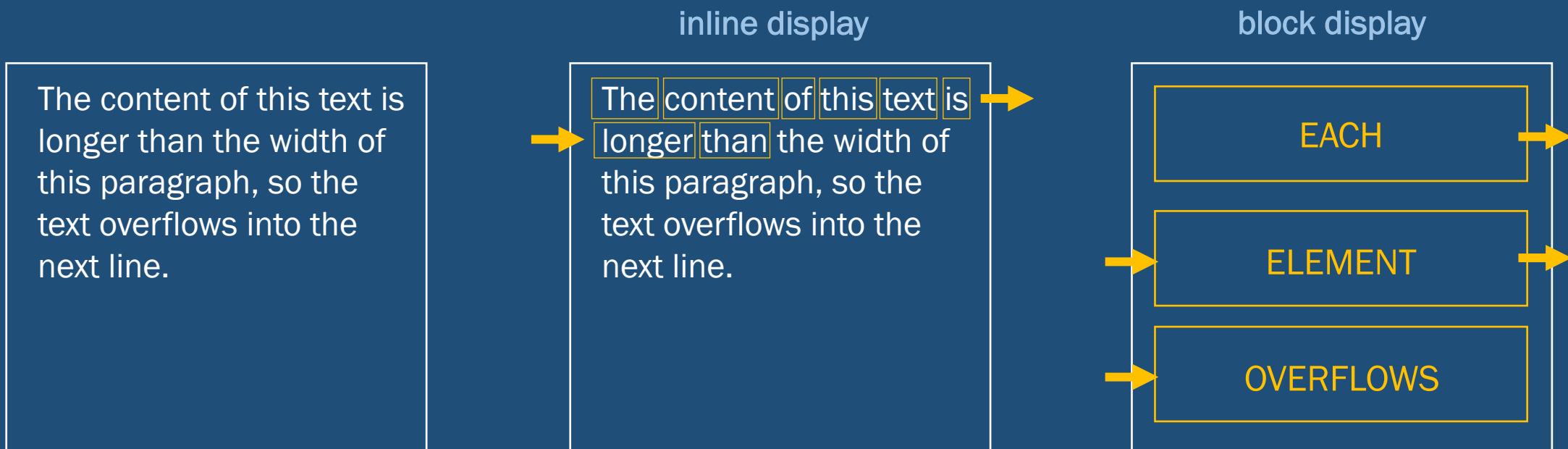
“EMPTY ELEMENT”

Our rectangles were elements!
transforming rectangles into syntax

We have different units of like content
Units have variety and replication
Varieties of units have semantic importance (meaning)
Order and hierarchy of units matters

HTML structure is block-directed

HTML elements are rendered in block units, partitioning the page into sections in the order specified by the HTML



HTML structure is block-directed

Elements may be one of two varieties:

block-level elements force a new line on the page

inline elements do not force a new line on the page

A block is a unit element that spans the width of the rendered page, forcing the flow of following elements into new lines

A basic HTML page

Hello, world! This is my first HTML page. My name is Steven Braun. I study information design and visualization.

Here is a list of three places I have traveled in my life:

- Kyoto, Japan
- Beijing, China
- Toronto, Canada

Here is a list of my three favorite foods, in order of preference:

1. Thai red curry
2. chana masala
3. pizza

Here is a photo of my favorite food:



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HTML structure is block-directed

HTML structure is nested

HTML block elements may be infinitely nested within other block elements, as long as proper syntax is followed

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```
<!DOCTYPE html>
<html>
  <head>
    <title>My first HTML page</title>
    <meta charset="UTF-8">
  </head>
  <body>
    <h1>A basic HTML page</h1>
    <p>Hello, world! This is my first HTML page. My name is Steven Braun. I study information design and visualization.</p>
    <div>
      Here is a list of three places I have traveled in my life:
      <ul>
        <li>• Kyoto, Japan</li>
        <li>• Beijing, China</li>
        <li>• Toronto, Canada</li>
      </ul>
    </div>
    <div>
      Here is a list of my three favorite foods, in order of preference:
      <ol>
        <li>1. Thai red curry</li>
        <li>2. chana masala</li>
        <li>3. pizza</li>
      </ol>
    </div>
    <div>
      Here is a photo of my favorite food:
      
    </div>
    <p>My favorite website is <a href="[URL]">www.stevengbraun.com.</a></p>
  </body>
</html>
```

HTML structure is nested

Elements may be nested in essentially any combination, as long as opening and closing tags for elements are encapsulated without overlapping

VALID

```
<p>The rent is <strong>too damn high!</strong></p>
```

INVALID

```
<p>The rent is <strong>too damn high!</p></strong>
```

Identifying block structure

5-7 minutes

With a partner, identify all block-level elements in the sample HTML page provided

Draw a square around each block element, paying attention to proper nesting

A brief introduction to HTML

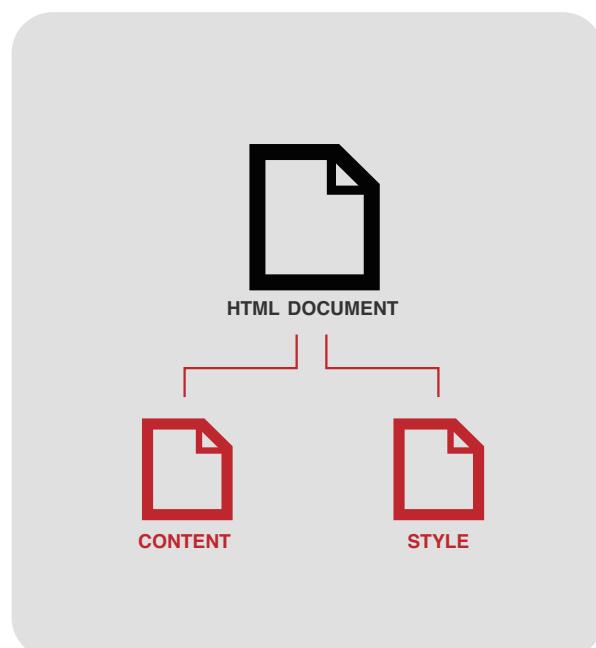
by Steven Braun

What is HTML?

HTML stands for “Hypertext Markup Language” and is the Web’s core language for creating Web documents. The **World Wide Web Consortium** (W3C) describes the history of HTML briefly:

Originally, HTML was primarily designed as a language for semantically describing scientific documents. Its general design, however, has enabled it to be adapted, over the subsequent years, to describe a number of other types of documents and even applications.

HTML has undergone many revisions since its first specification in 1990. Today, most Web documents are composed with [HTML5, the most current specification for HTML](#) documents on the Web. HTML5 emphasizes the use of *semantic markup principles* to separate two facets of a Web document: **content** and **style**.



Content

HTML *content* includes the primitive elements on a page and the structure of their arrangement. This includes objects like paragraphs, hyperlinks, and images, but it also includes structural syntax.

Style

HTML *style* includes the specification that dictates how the *content* is rendered. This is best dictated by using cascading style sheets (CSS). Some example CSS properties include:

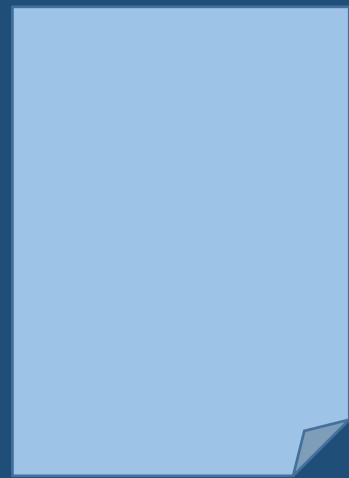
- text color, font, size
- background color of the page
- visual arrangement of elements

HTML structure is block-directed

HTML structure is nested

HTML structure is semantically specified

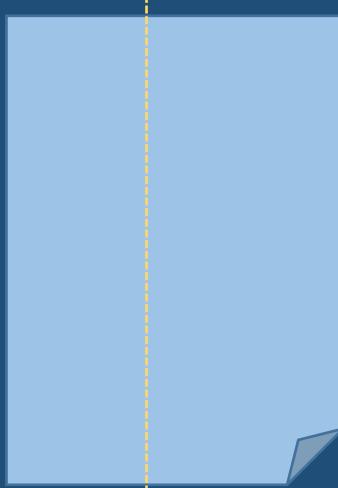
HTML elements designate not only visual style but more importantly content, and that content must be intelligible independent of style



Web document

CONTENT

Specifies what elements
to render, their semantics,
and their structure



Web document

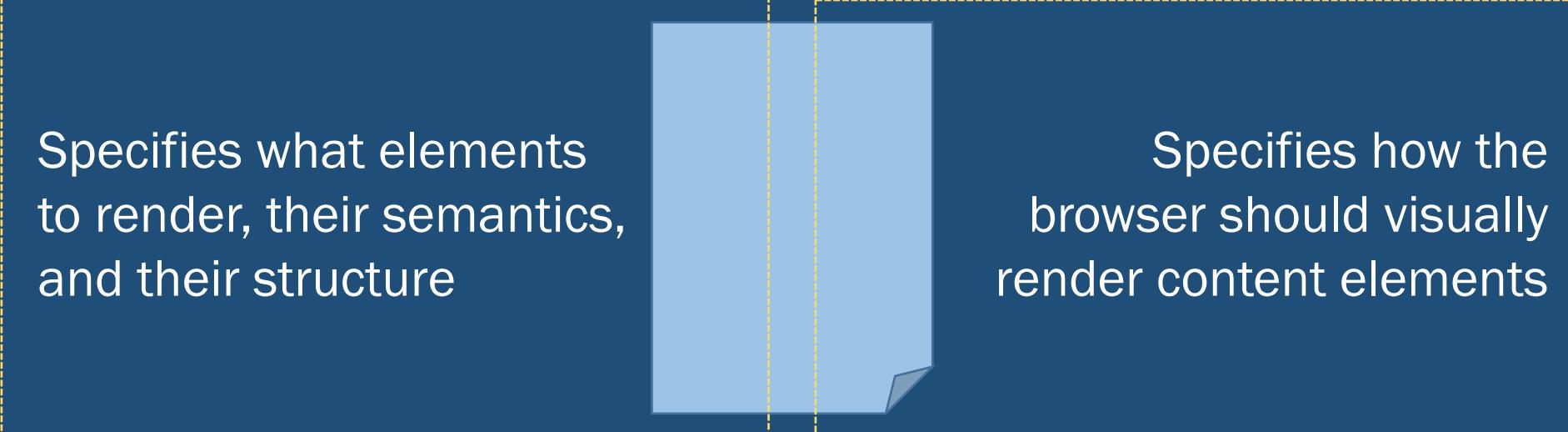
CONTENT

Specifies what elements to render, their semantics, and their structure

STYLE

Specifies how the browser should visually render content elements

Web document



HTML separates content from style,
but browsers conflate the two together

<p> This is bold and <i> italic </i> text. </p>

<p> This is stressed and
 emphatic text. </p>

HTML separates content from style,
but browsers conflate the two together

<p> This is bold and <i> italic </i> text. </p>

<p> This is stressed and
 emphatic text. </p>

<p> These are keywords and <i> technical terms </i>
that do not need to be stressed or emphasized. </p>

Identifying semantic structure

5-7 minutes

With a partner, identify all semantic elements (e.g., paragraphs, text styles) in the sample HTML page provided

Draw a square around each element, paying attention to proper nesting

A brief introduction to HTML

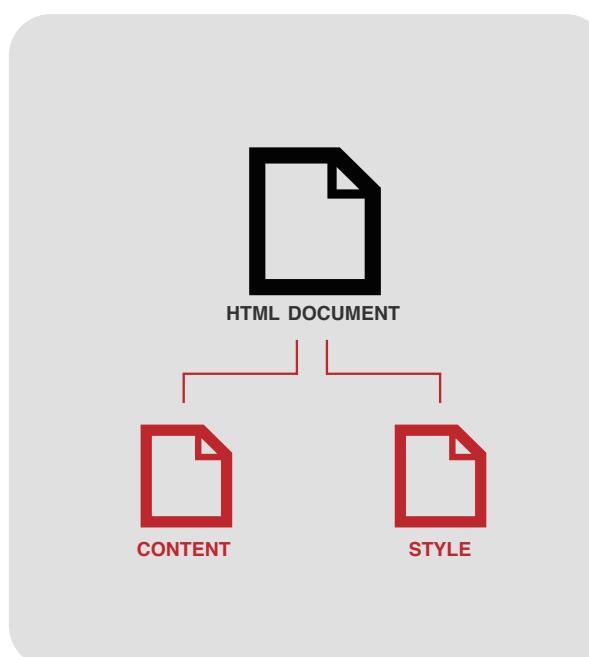
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- background color of the page
- visual arrangement of elements

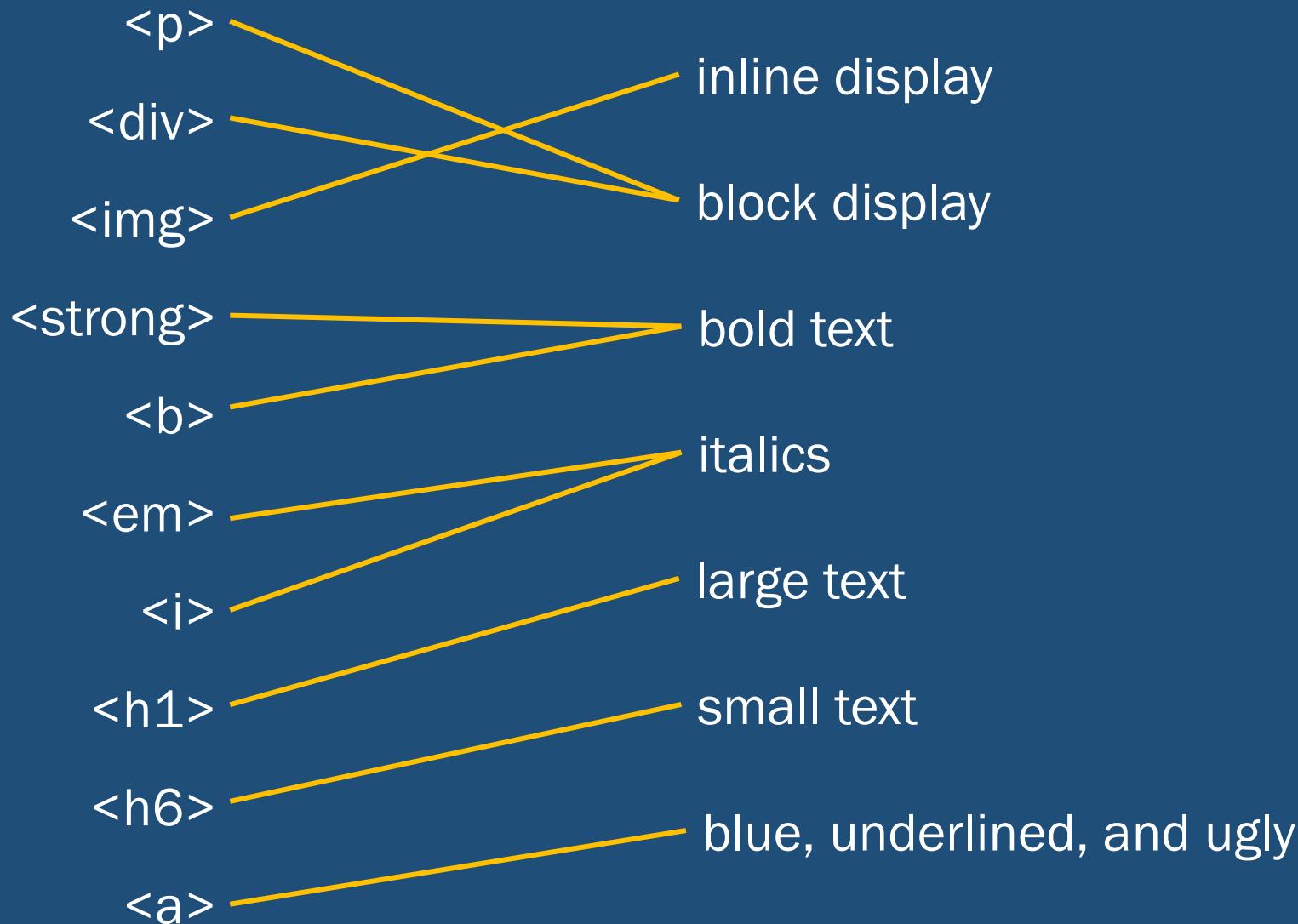
Hello, world!

HTML is not rendered in isolation

HTML5 is a **specification**, but different browsers and different devices implement those standards with slight (and important) variation

An HTML page you create may render differently on others' devices due to different **user agent style sheets**

Common user agent style sheet default styles



HTML is not rendered in isolation

The semantic nature of the HTML5 specification is designed to ensure an HTML document is intelligible independent of browser or device

This is also true of text-to-voice screen readers and other digital assistants

HTML structure is block-directed

HTML structure is nested

HTML structure is semantically specified

HTML structure is infinitely variable

There are lots of ways to create the same Web document using different HTML syntax; best practices prioritize certain conventions over others

Hands-on Practice

Remaining time

With a partner, try to replicate the following Web page templates using HTML, filling in content of your own.

How many different ways can you think of to create each document using HTML?

PAGE HEADER

PARAGRAPH TEXT

PARAGRAPH TEXT

Include at least **two** instances each
of **stressed** and **emphatic** text

UNORDERED LIST

Include at least **two** items that contain
hyperlinks to other websites

PAGE HEADER

PARAGRAPH TEXT

SECTION HEADER 1

SECTION / DIVISION

Include at least **3** images, each sized
appropriately to create a small gallery

SECTION HEADER 2

SECTION / DIVISION

Include at least **3** images, each sized
appropriately to create a small gallery

Using a validator

HTML validation tools check if your HTML syntax is valid

See the W3C Validator at

<https://validator.w3.org>

Key points, in review

1. HTML stands for Hypertext Markup Language and is the core markup language for creating Web documents
2. HTML is a specification that declares how structured data (content) should be represented and communicated on the Web
3. HTML documents are composed from elements that dictate the structure of the page's content and suggestions for how it should be rendered (**style**)
4. HTML is a constantly evolving set of standards that relies on developers employing best practices to ensure interoperability

Key Resources

MDN Web Docs

<https://developer.mozilla.org/en-US/docs/Web/HTML>

W3Schools HTML Reference

<https://www.w3schools.com/tags/>

Supplementary Materials

HTML & CSS: Design and Build Websites, J. Duckett
Chapter 1 (Structure) through Chapter 5 (Images)

Learning Web Design, J. Robbins
Chapter 4 (HTML Overview) through Chapter 7 (Images)