Introduction to
HTML and CSS

January 8, 2019

Coding for Digital Storytelling

Overview

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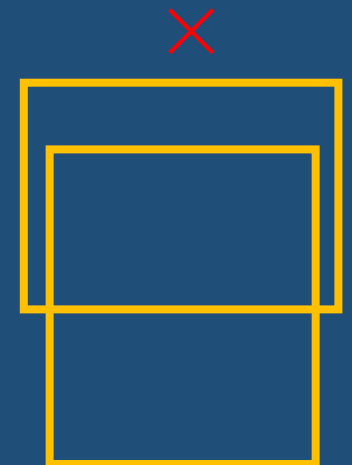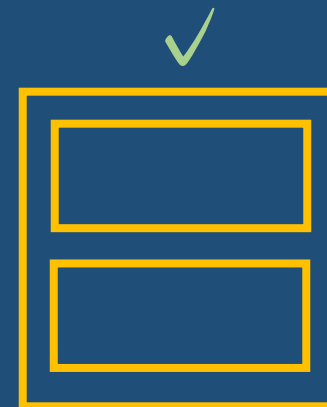3. "Hello, world!" Hands-on practice

Creating a structured language

Examine the example news article provided and answer the following questions:
- 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 important than others? (e.g., paragraph versus individual words)
- are there different levels of hierarchy across the units? (e.g., body text, footnotes)
- can certain units be collapsed into other units?

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

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

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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

| plain content
(words, images, hyperlinks) | MARKUP → | structured content
(elements) |

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header

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.

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.

body text

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

HTML is a markup language

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
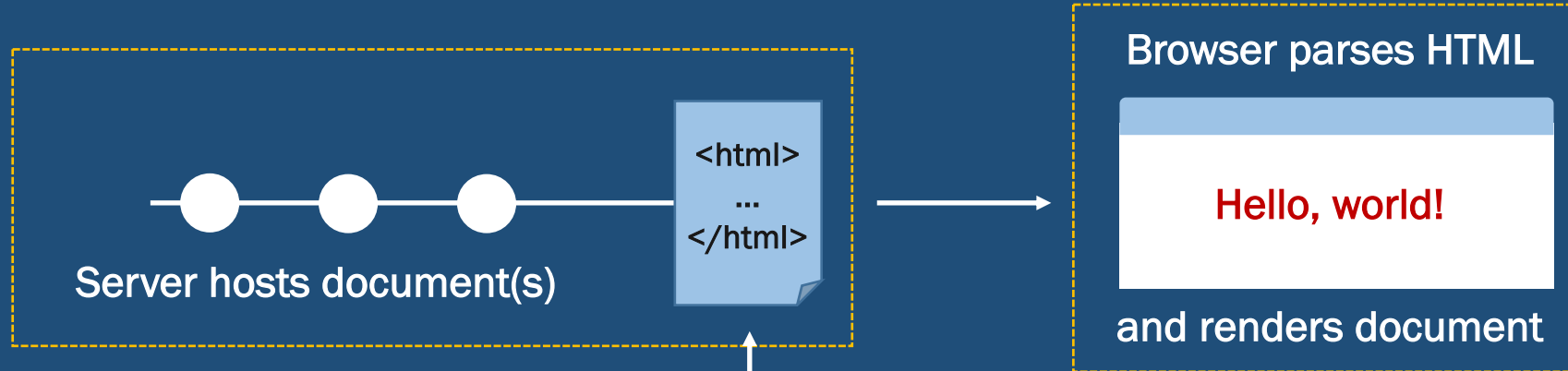
Syntax   tags are written following specific rules

Semantics   elements indicate the meaning of the
                    content they structurally represent

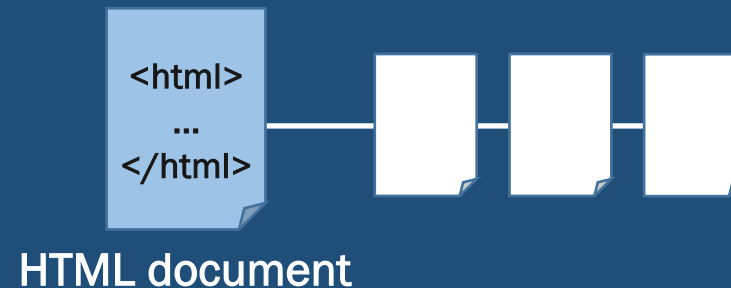   the <p> tag specifies the content inside
                    of it indicates paragraph text

HTML documents are situated in systems

THE WORLD WIDE WEB

Server hosts document(s)

`<html>`
`...`
`</html>`

Browser parses HTML

Hello, world!

and renders document

YOUR COMPUTER

`<html>`
`...`
`</html>`

HTML document

Browser

Server

Server Contents

index.html   foods.gif

spoon.gif   kitchen.css

http://www.jenskitchensite.com ▼

1 Type in a URL or click on a link in the browser.

2 The browser sends an HTTP request.

HTTP request

3 The server looks for the file and responds with an HTTP response.

index.html

"I see that you requested a directory, so I'm sending you the default file, index.html. Here you go."

HTTP response

Welcome to the future home of Jen's Kitchen

Oops, no file

If the file is not on the server, it returns an error message.

404 Not Found

Not Found

The requested URL /housepics was not found on this server.

Apache/1.3.34 Server at www.littlechair.com Port 80

4 The browser parses the document. If it has images, style sheets, and scripts, the browser contacts the server again for each resource.

foods.gif

spoon.gif

kitchen.css

5 The page is assembled in the browser window.

Jen's Kitchen

If you love to read about **cooking and eating,** would like to find out about some of the best restaurants in the world, or just want a few choice recipes to add to your collection, *this is the site for you!*

Your pal, Jen at Jen's Kitchen

Copyright 2011, Jennifer Robbins

Learning Web Design

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

```html
<!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

`<p>` This is a paragraph `</p>`
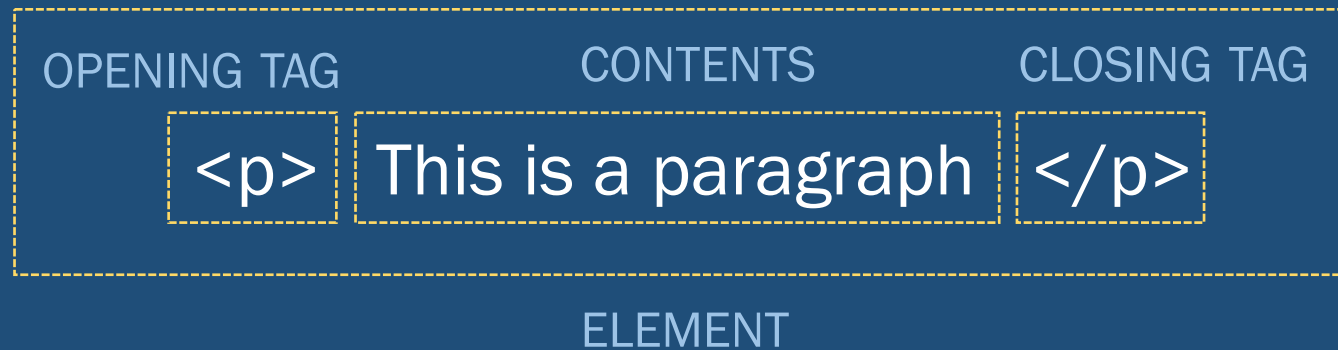
Tags, elements, and content

OPENING TAG   CONTENTS   CLOSING TAG

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

Tags, elements, and content

OPENING TAG   CONTENTS   CLOSING TAG

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

ELEMENT

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">

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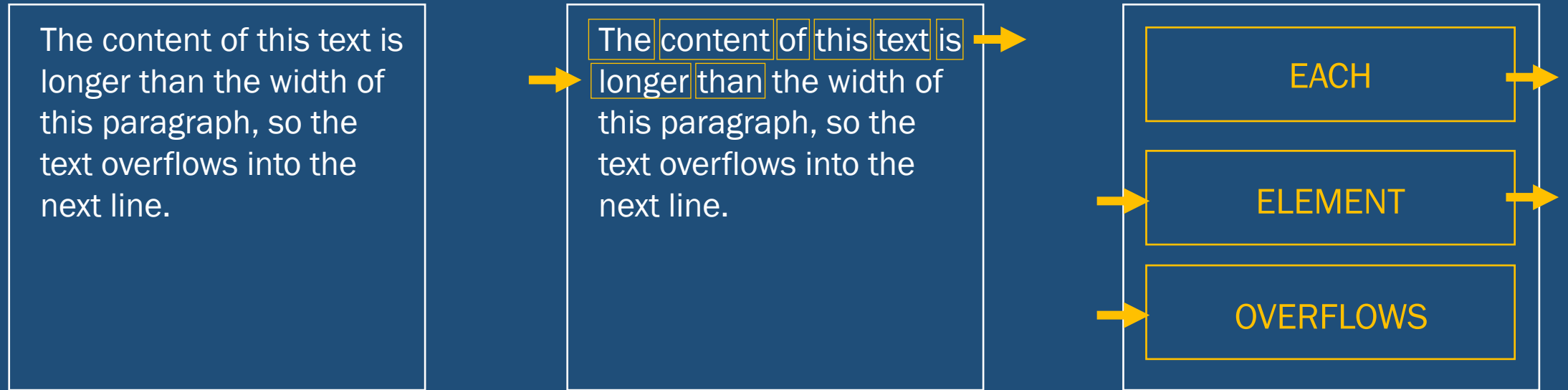
We have different units of like content
Units have variety and replication
Varieties of units have semantic importance (meaning)
Order and hierarchy of units matters

HTML structure is block-directed

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

The content of this text is longer than the width of this paragraph, so the text overflows into the next line.

The content of this text is longer than the width of this paragraph, so the text overflows into the next line.

EACH

ELEMENT

OVERFLOWS

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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My favorite website is www.stevengbraun.com.

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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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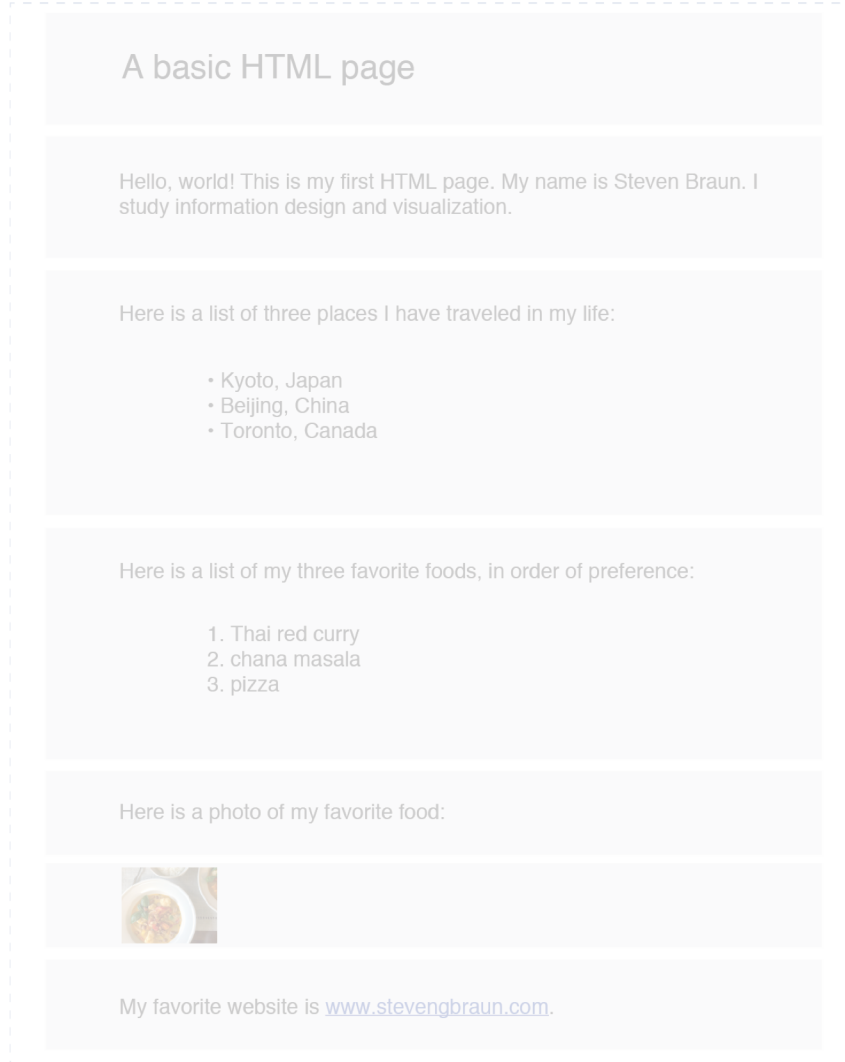- Kyoto, Japan
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My favorite website is www.stevengbraun.com.

```html
<!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>

        <div>
            <img src="[URL]">
        </div>

        <p>
            My favorite website is <a href="[URL]">ww.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

10 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
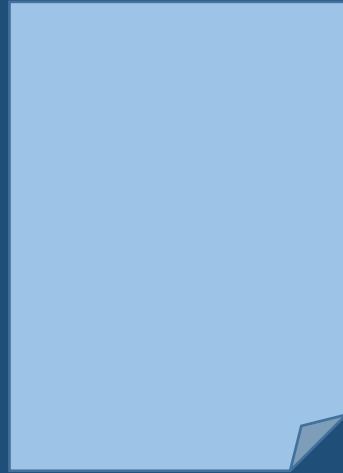- visual arrangement of elements

Hello, world!

HTML structure is block-directed

HTML structure is nested
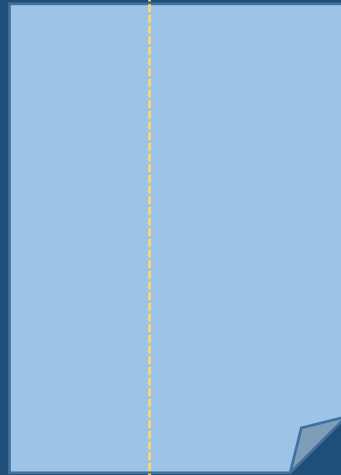
HTML structure is semantically specified

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
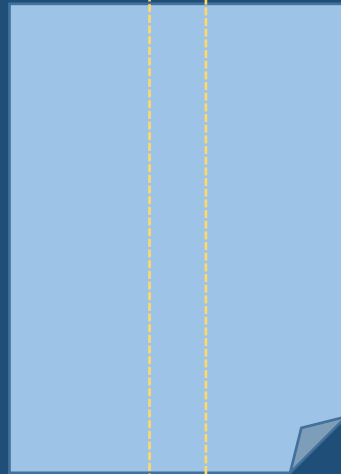to render, their semantics,
and their structure

Web document

CONTENT

STYLE

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

Specifies how the browser should visually render content elements

Web document

An example of the importance of semantics

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

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

An example of the importance
of semantics

<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

10 minutes

With a partner, identify all semantic elements in the sample HTML page provided

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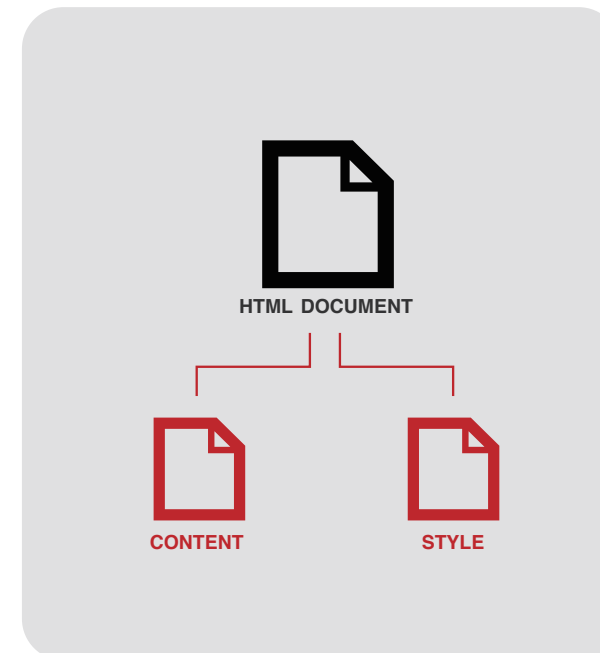
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HTML DOCUMENT

CONTENT   STYLE

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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

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

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

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 serves both syntactic and semantic functions in representing Web content

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/