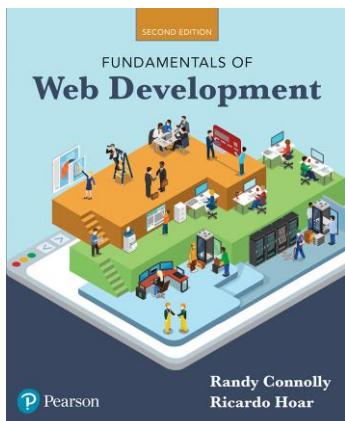


CSE 686 Internet Programming

Week 8: Introduction to HTML

Edmund Yu, PhD
Associate Teaching Professor
esyu@syr.edu

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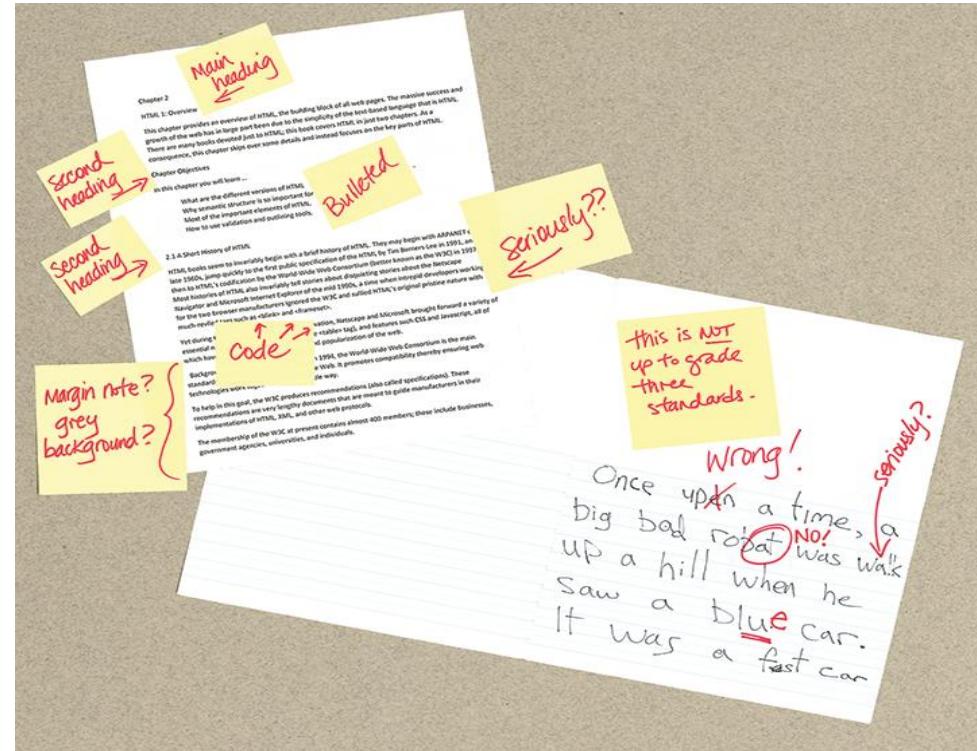
HTML

“To publish information for global distribution, one needs a universally understood language, a kind of publishing mother tongue that all computers may potentially understand. The publishing language used by the World Wide Web is HTML (from HyperText **Markup Language**).”

- The HTML Specification V4.01, W3C, 1998.

HTML

- ❖ **Markup** is a way to indicate information about the content that is distinct from the content
- ❖ A markup language is simply a way of annotating a document in such a way as to make the annotations distinct from the text being annotated.
- ❖ The term comes from the days of print, when editors would write instructions on manuscript pages that might be revision instructions to the author or copy editor.



HTML Versions

Since the early days of the web, there have been many versions of HTML:

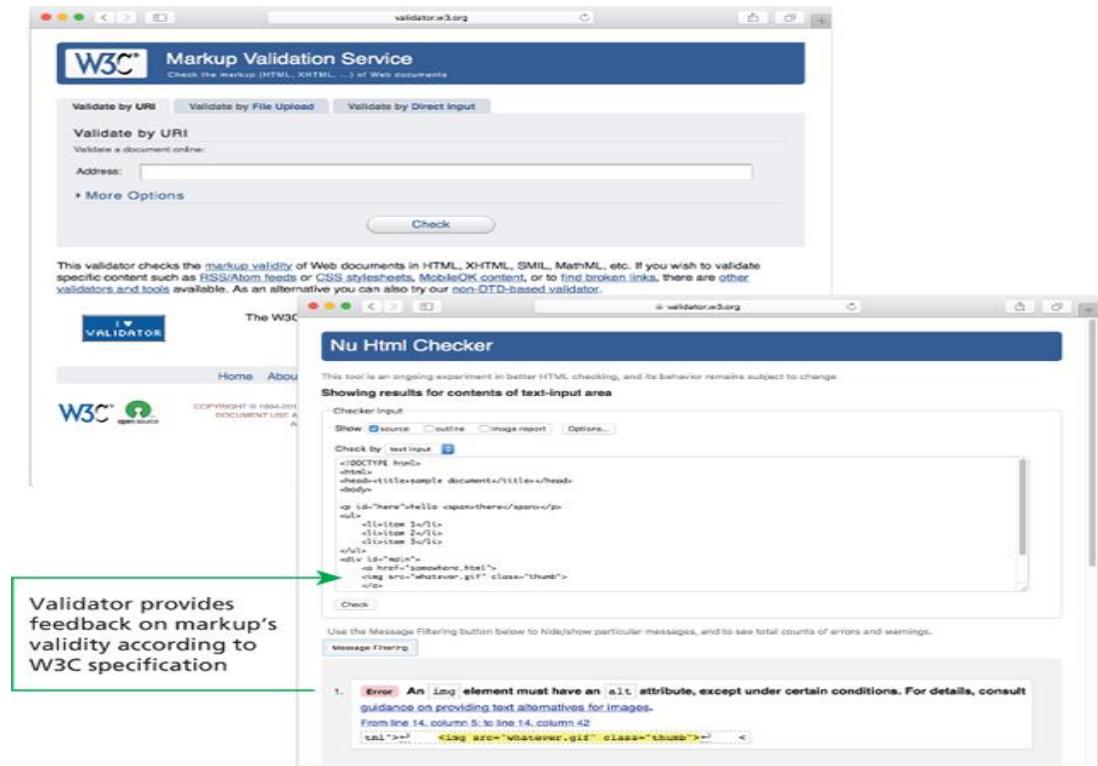
Version	Year
HTML	1991
HTML 2.0	1995
HTML 3.2	1997
HTML 4.01	1999
XHTML	2000
HTML5	2014

XHTML (Optional)

- ❖ Instead of growing HTML, the W3C turned its attention in the late 1990s to a new specification called **XHTML 1.0**, which was a version of HTML that used stricter XML (extensible markup language) syntax rules.
 - ❖ 2 versions of XHTML were created: XHTML 1.0 Strict and XHTML 1.0 Transitional.
 - ❖ The strict version was meant to be rendered by a browser using the strict syntax rules and tag support described by the W3C XHTML 1.0 Strict specification.
 - ❖ The transitional recommendation is a more forgiving flavor of XHTML, and was meant to act as a temporary transition to the eventual global adoption of XHTML Strict.
 - ❖ During much of the 2000s, the focus in the professional web development community was on XHTML.
-

XHTML (Optional)

- ❖ A key part of the standards movement in the web development community of the 2000s was the use of HTML **validators** as a means of verifying that a web page's markup followed the rules for XHTML Transitional or Strict.
- ❖ Web developers often placed images on their sites to tell the world that their site followed XHTML rules (and also to communicate their support for web standards).



XHTML (Optional)

- ❖ In the **mid-2000s**, the W3C presented a draft of the **XHTML 2.0** specification, which proposed a revolutionary and substantial change to HTML.
- ❖ It was backward-compatible with HTML, and XHTML 1.0 was dropped.
- ❖ Browsers would become significantly less forgiving of invalid markup.
- ❖ The XHTML 2.0 specification also dropped familiar tags such as `` `<a>` `
`, and numbered headings such as `<h1>`.
- ❖ Development on the XHTML 2.0 specification dragged on for many years.

HTML5

- ❖ At around the same time the XHTML 2.0 specification was being developed, a group of developers at Opera and Mozilla formed the **WHATWG** (Web Hypertext Application Technology Working Group) group within the W3C.

“The Web Hypertext Applications Technology working group therefore intends to address the need for one coherent development environment for Web applications, through the creation of technical specifications that are intended to be implemented in mass-market Web browsers.”
 - ❖ The very small WHATWG group led by Ian Hickson, progressed quickly, and eventually, by **2009**, the W3C stopped work on XHTML 2.0 and instead adopted the work done by WHATWG and named it HTML5.
-

HTML5

- ❖ There are three main aims to HTML5:
 - ❖ Specify unambiguously how browsers should deal with invalid markup.
 - ❖ Provide an open, nonproprietary programming framework (via JavaScript) for creating rich web applications.
 - ❖ Be backward compatible with the existing web.

HTML Syntax: Elements/Attributes

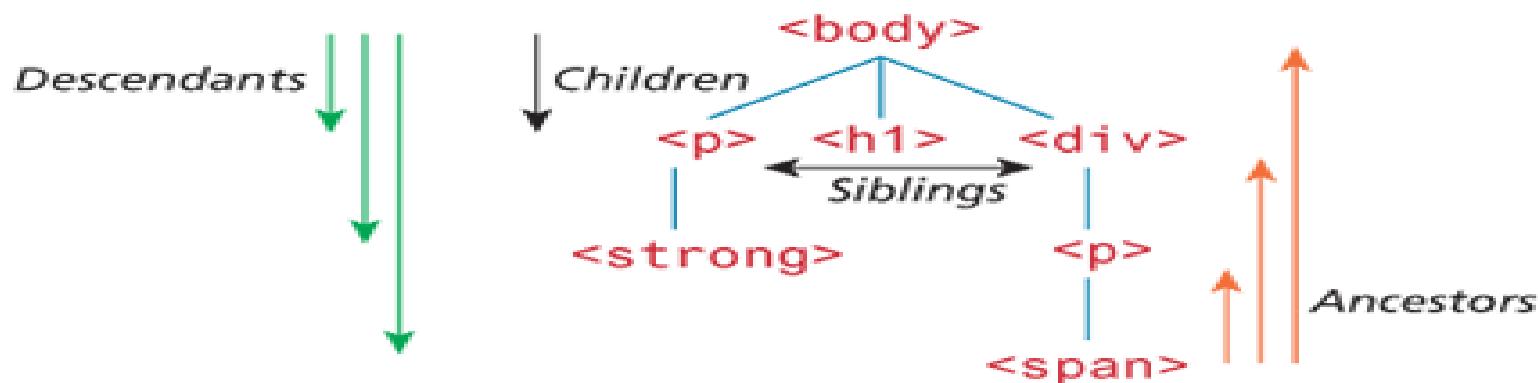
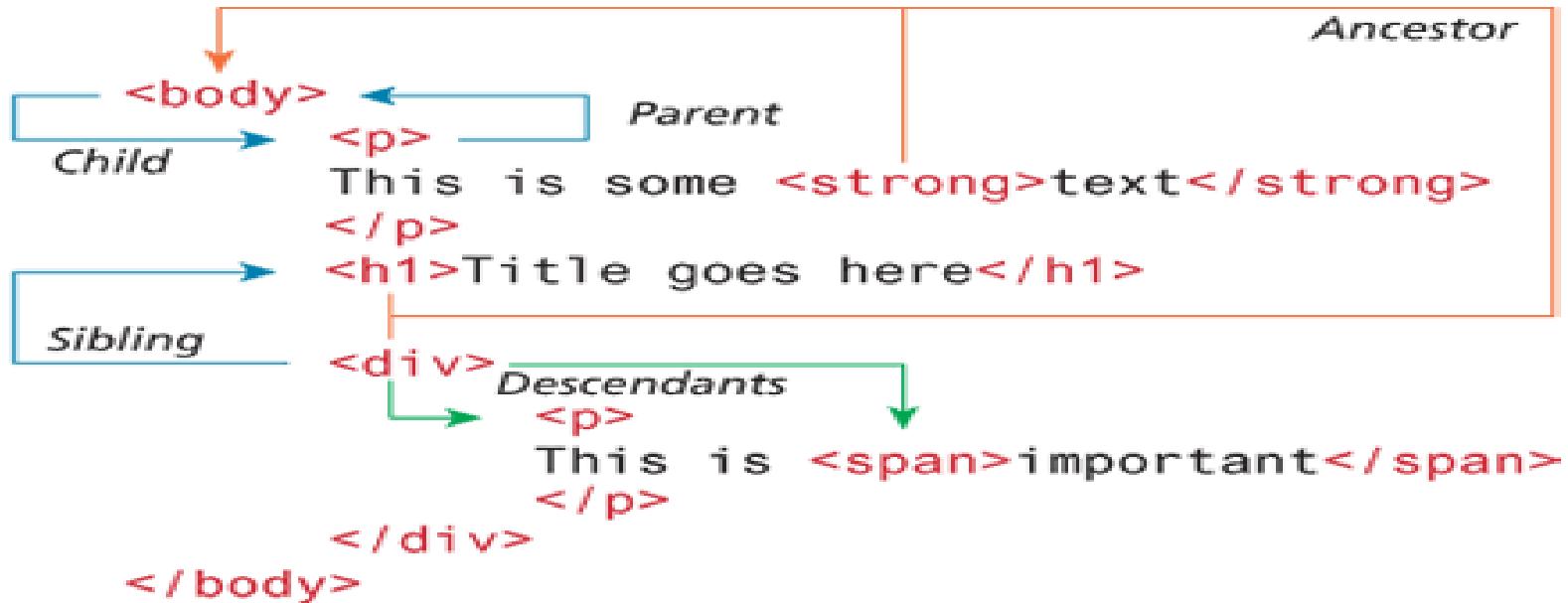
- ❖ **HTML documents** are composed of textual content and **HTML elements**
- ❖ **HTML element** encompasses
 1. the **element name** within angle brackets (i.e., the **tag**) and
 2. HTML elements can also contain **attributes**.
 3. **the content** within the tag.



Nesting HTML Elements

- ❖ Often an HTML element will contain other HTML elements. (See next 2 slides)
 - ❖ The container element is said to be a **parent** of the contained **(child)**, or child, element.
 - ❖ Any elements contained within the child are said to be descendants of the parent element
 - ❖ Any given child element may have a variety of ancestors.
- ❖ The hierarchical aspects of HTML documents are important later for **Cascading Style Sheets (CSS)** and JavaScript programming.
- ❖ The underlying concept is called **Document Object Model (DOM)**.

Nesting HTML Elements



Nesting HTML Elements

- ❖ In order to properly construct this hierarchy of elements, your browser expects each HTML nested element to be properly nested.
 - ❖ A child's ending tag must occur before its parent's ending tag:

Correct nesting

The diagram illustrates the correct nesting of HTML elements. It shows the code: <h1>Share Your Travels</h1>. Red brackets above the code indicate the nesting levels: one pair of brackets covers the entire <h1> tag, and another pair covers the tag nested within it. Below the code, blue brackets below the red ones show the corresponding closing tags: </h1> and , positioned such that the blue bracket for is to the left of the red bracket for </h1>, demonstrating the requirement that a child's ending tag must occur before its parent's ending tag.

```
<h1>Share Your <strong>Travels</strong></h1>
```

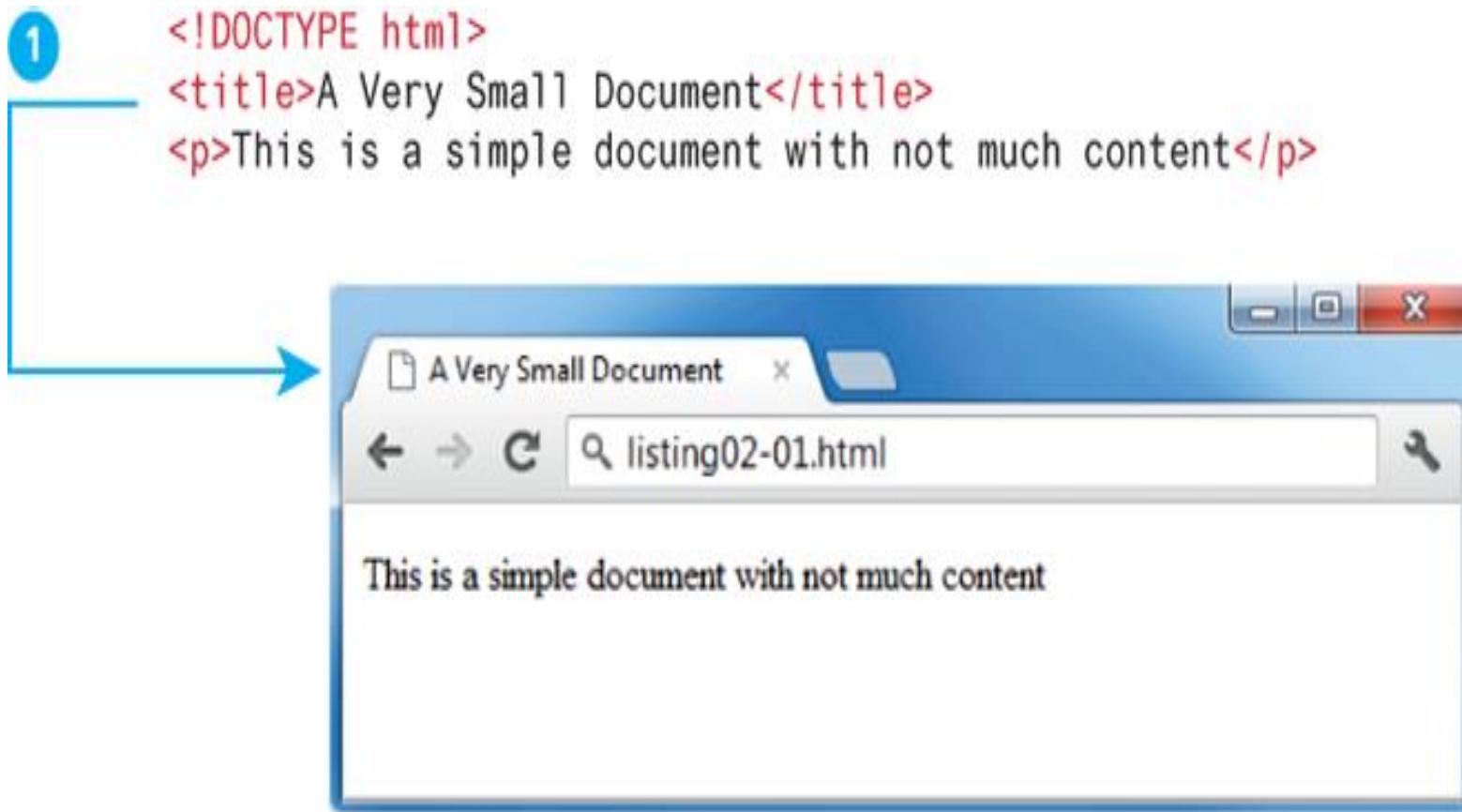
Incorrect nesting

The diagram illustrates incorrect nesting of HTML elements. It shows the code: <h1>Share Your Travels</h1>. Red brackets above the code indicate the nesting levels: one pair of brackets covers the entire <h1> tag, and another pair covers the tag nested within it. However, the blue brackets below the red ones show the corresponding closing tags: </h1> and , where the blue bracket for </h1> is to the right of the red bracket for , which is incorrect because the tag's closing bracket must appear before the </h1> tag's closing bracket.

```
<h1>Share Your <strong>Travels</h1></strong>
```

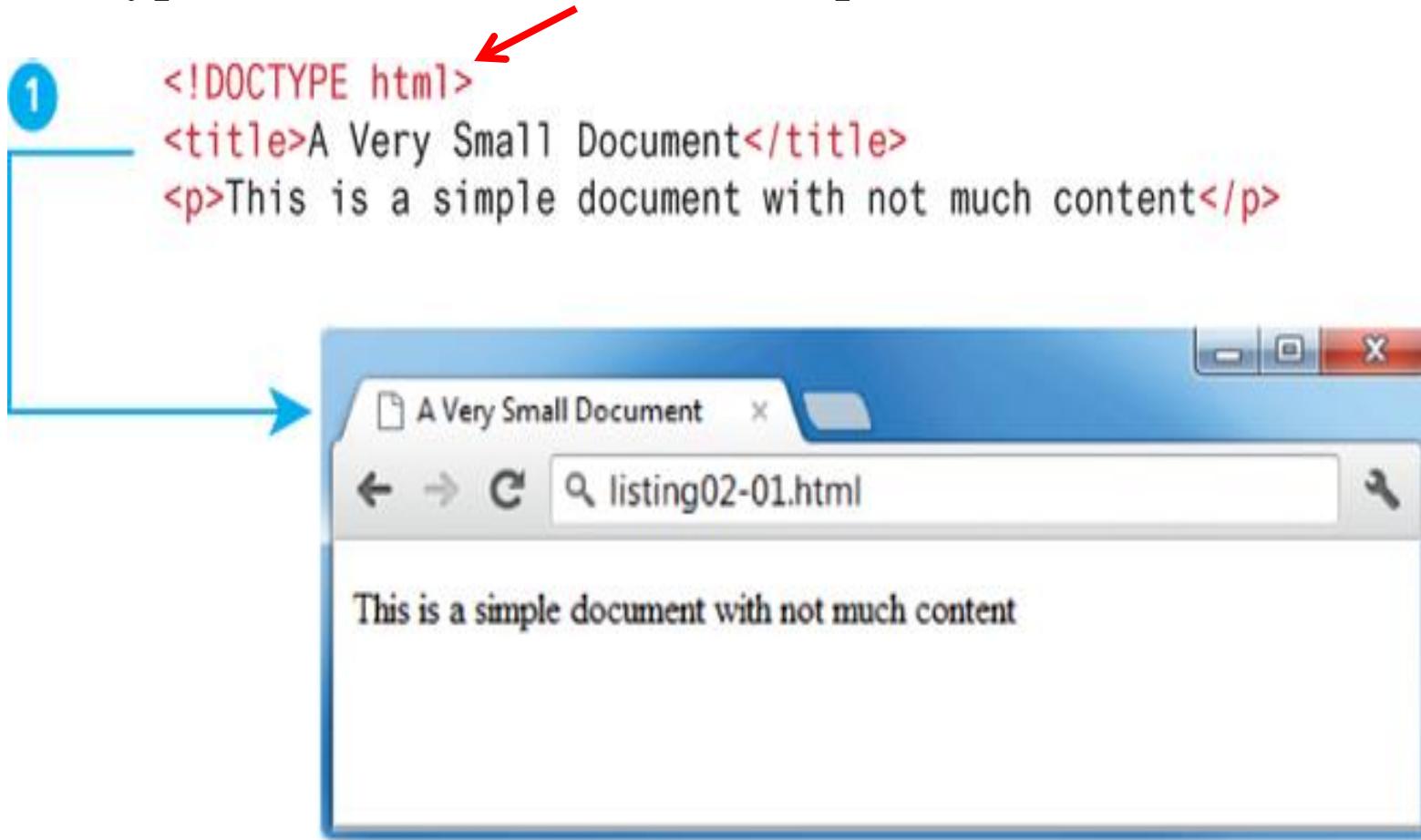
Structure of HTML Documents

- ❖ Figure 3.7 (below) illustrates one of the simplest valid HTML5 documents you can create.



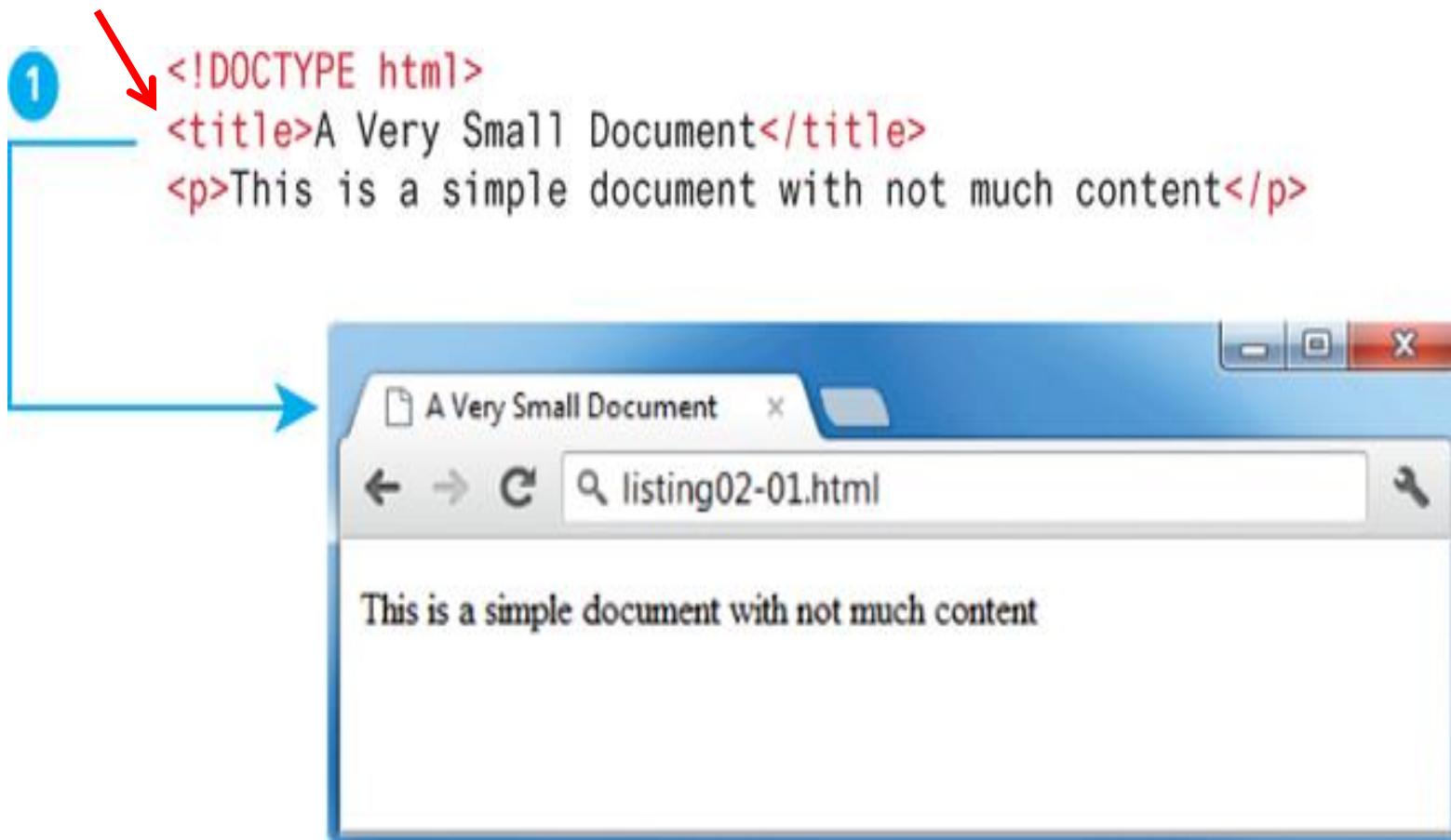
Structure of HTML Documents

DOCTYPE (Document Type Definition) tells the browser what type of document it is about to process



Structure of HTML Documents

The `<title>` element is used to provide a broad description of the content. The title is not displayed within the browser window.



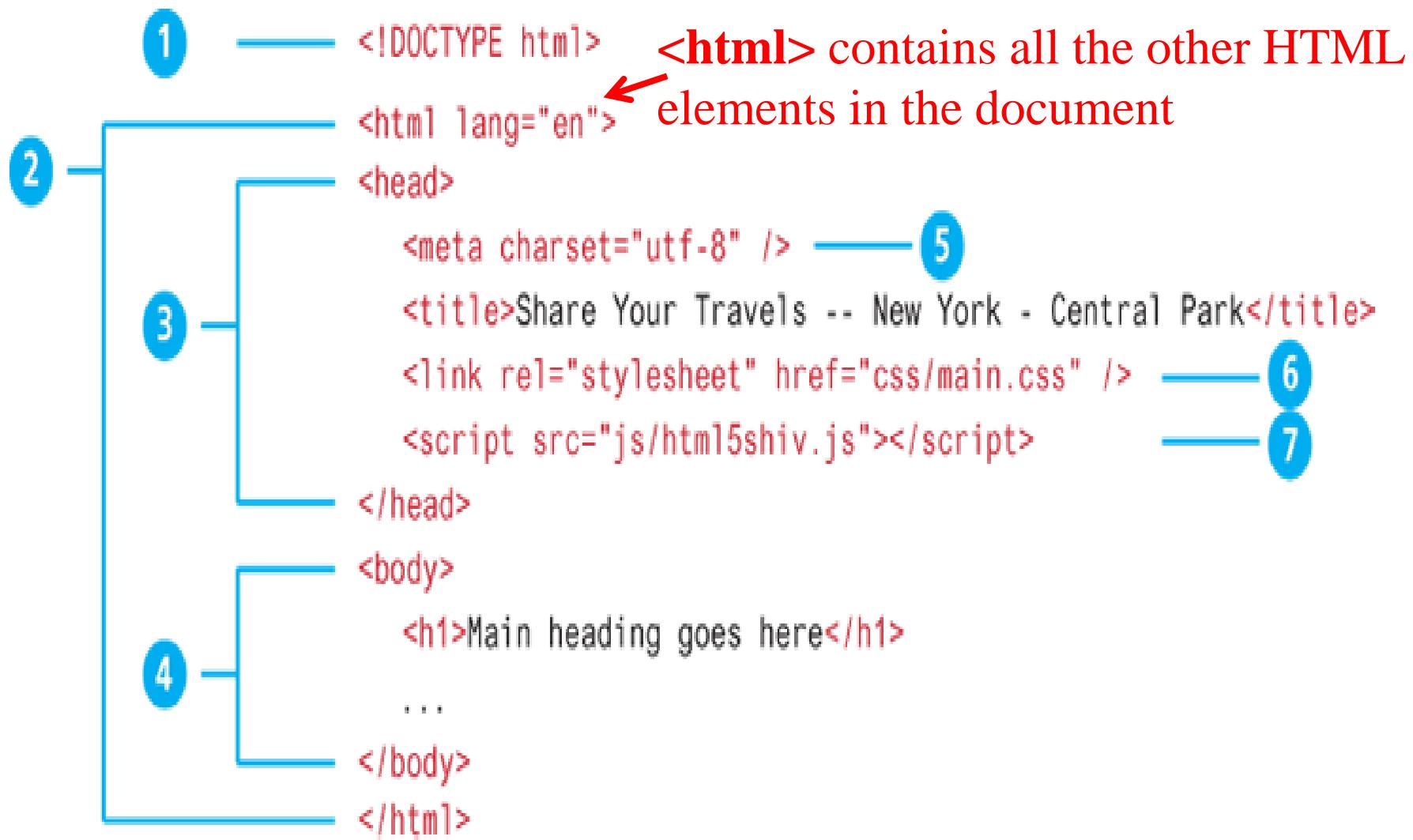
Structure of HTML Documents

- ❖ Additional uses of the titles:
 - ❖ The browser use them for its bookmarks and its browser history list.
 - ❖ The operating system might also use the page's title, for instance, in the Windows taskbar or in the Mac dock.
 - ❖ Search engines typically use the page's title as the linked text in their search engine result pages

A More Complete HTML Document



A More Complete HTML Document



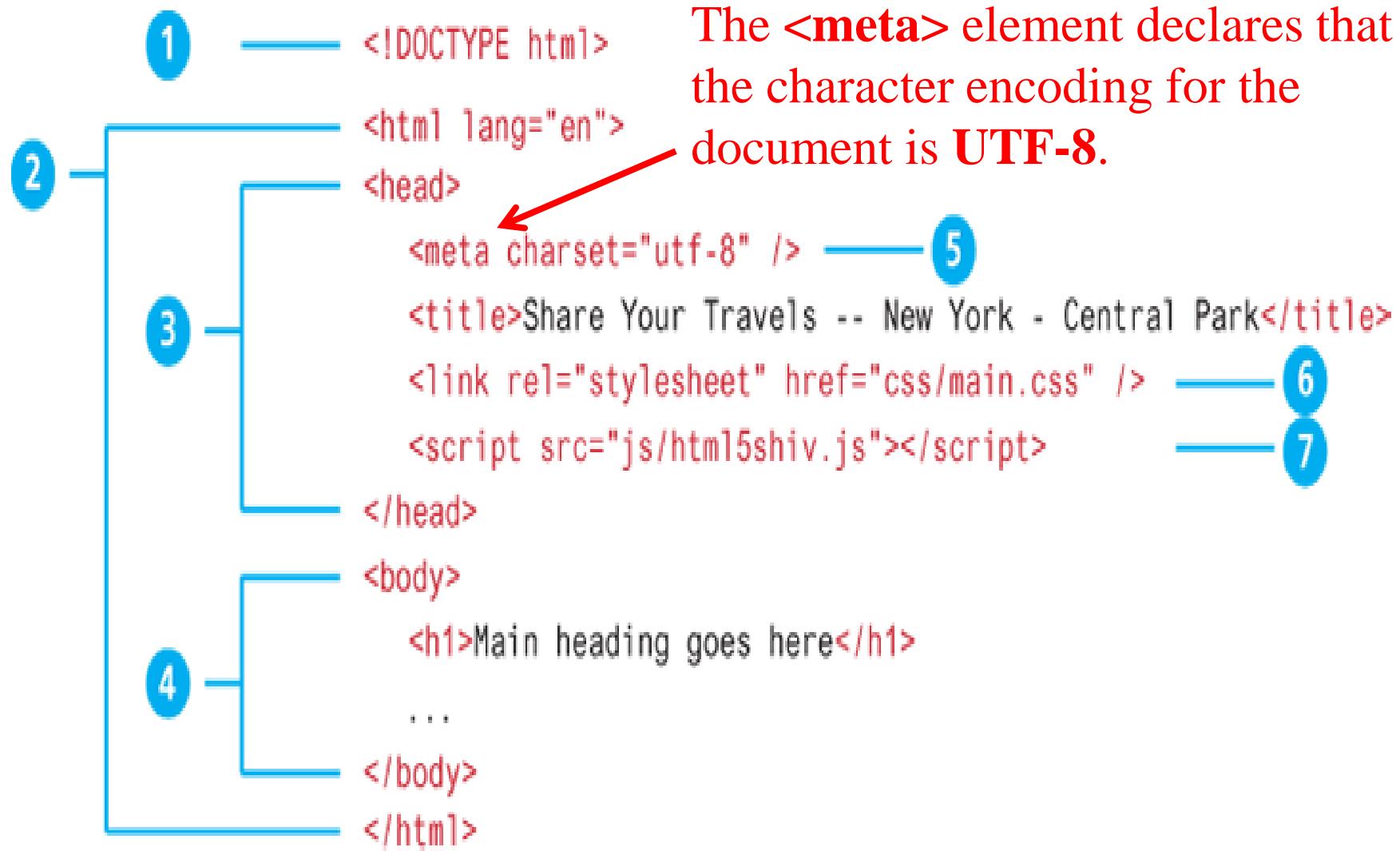
A More Complete HTML Document



A More Complete HTML Document



A More Complete HTML Document



HTML meta tag

https://www.w3schools.com/tags/tag_meta.asp

HTML CSS JAVASCRIPT SQL PHP BOOTSTRAP HOW TO MORE ▾ REFERENCES ▾ EXAM

<i>
<iframe>

<input>
<ins>
<kbd>
<label>
<legend>

<link>
<main>
<map>
<mark>
<menu>
<MenuItem>
<meta>
<meter>
<nav>
<noframes>
<noscript>
<object>

<optgroup>
<option>

HTML <meta> Tag

◀ Previous Complete HTML Reference Next ▶

Example

Describe metadata within an HTML document:

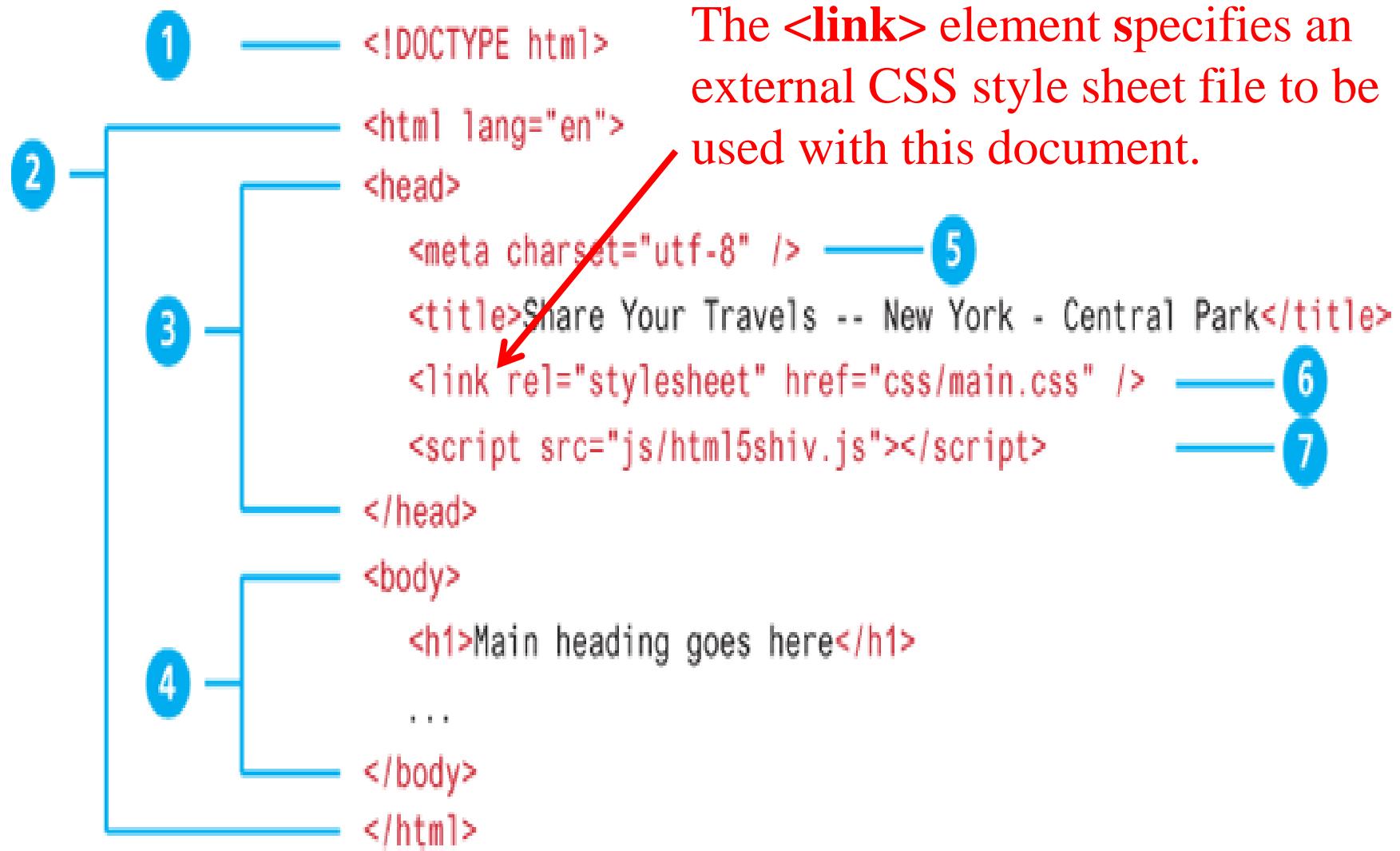
```
<head>
  <meta charset="UTF-8">
  <meta name="description" content="Free Web tutorials">
  <meta name="keywords" content="HTML,CSS,XML,JavaScript">
  <meta name="author" content="John Doe">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
</head>
```

Try it Yourself »

Definition and Usage

Metadata is data (information) about data.

A More Complete HTML Document



HTML link tag

https://www.w3schools.com/tags/tag_link.asp

[Home](#) [HTML](#) [CSS](#) [JAVASCRIPT](#) [SQL](#) [PHP](#) [BOOTSTRAP](#) [HOW TO](#) [JQUERY](#) [W3.CSS](#) [ANGULAR](#) [MORE ▾](#) [REFERENCES ▾](#) [EXAMPLES ▾](#)

<frame>
<frameset>
<h1> - <h6>
<head>
<header>
<hr>
<html>
<i>
<iframe>

<input>
<ins>
<kbd>
<label>
<legend>

<link>
<main>
<map>
<mark>
<menu>
<MenuItem>
<meta>
<meter>
<nav>
<noframes>
<noscript>
<object>

HTML <link> Tag

[« Previous](#) [Complete HTML Reference](#) [Next »](#)

Example

Link to an external style sheet:

```
<head>
  <link rel="stylesheet" type="text/css" href="theme.css">
</head>
```

[Try it Yourself »](#)

Definition and Usage

The <link> tag defines a link between a document and an external resource.

The <link> tag is used to link to external style sheets.

Browser Support

When used for style sheets, the <link> tag is supported in all major browsers. No real support for anything else.

Element	Chrome	Edge	Firefox	Safari	Opera

A More Complete HTML Document



HTML script tag

https://www.w3schools.com/tags/tag_script.asp

HTML CSS JAVASCRIPT SQL PHP BOOTSTRAP HOW TO JQUERY W3.CSS ANGULAR MORE ▾ REFERENCES ▾

<object>

<optgroup>
<option>
<output>
<p>
<param>
<picture>
<pre>
<progress>
<q>
<rp>
<rt>
<ruby>
<s>
<samp>
<script>
<section>
<select>
<small>
<source>

<strike>

<style>
<sub>
<summary>
<sup>

HTML <script> Tag

< Previous Complete HTML Reference Next >

Example

Write "Hello JavaScript!" with JavaScript:

```
<script>
document.getElementById("demo").innerHTML = "Hello JavaScript!";
</script>
```

[Try it Yourself »](#)

Definition and Usage

The <script> tag is used to define a client-side script (JavaScript).

The <script> element either contains scripting statements, or it points to an external script file through the src attribute.

Common uses for JavaScript are image manipulation, form validation, and dynamic changes of content.

Tip: If you want to learn JavaScript, visit our [JavaScript Tutorial](#).

Browser Support

Quick Tour of HTML Elements

```
<body>
  1   <h1>Share Your Travels</h1>
  2   <h2>New York - Central Park</h2>
  3   <p>Photo by Randy Connolly</p>
      <p>This photo of Conservatory Pond in
          <a href="http://www.centralpark.com/">Central Park</a> 3
          New York City was taken on October 22, 2016 with a
          <strong>Canon EOS 30D</strong> camera.
      </p> 4
  5   

  6   <h3>Reviews</h3>
  7   <div>
        <p>By Ricardo on <time>2016-05-23</time></p>
        <p>Easy on the HDR buddy.</p>
    </div>
  8   <hr>
    <div>
        <p>By Susan on <time>2016-11-18</time></p>
        <p>I love Central Park.</p>
    </div>
  9   <p><small>Copyright &copy; 2017 Share Your Travels</small></p>
</body> 10
```

Share Your Travels

New York - Central Park

Photo by Randy Connolly



This photo of Conservatory Pond in [Central Park](#) New York City was taken on October 22, 2016 with a **Canon EOS 30D** camera.

Reviews

By Ricardo on 2016-05-23

Easy on the HDR buddy.

By Susan on 2016-11-18

I love Central Park.

Share Your Travels

New York - Central Park

Photo by Randy Connolly

This photo of Conservatory Pond in [Central Park](#) New York City was taken on October 22, 2016 with a **Canon EOS 30D** camera.



Reviews

By Ricardo on 2016-05-23

Easy on the HDR buddy.

By Susan on 2016-11-18

I love Central Park.

Headings

- ❖ HTML provides six levels of heading (h1 - h6)

<body>

1

| <h1>Share Your Travels</h1>

| <h2>New York - Central Park</h2>

Share Your Travels

New York - Central Park

Photo by Randy Connolly



This photo of Conservatory Pond in [Central Park](#) New York City was taken on October 22, 2016 with a **Canon EOS 30D** camera.

Reviews

By Ricardo on 2016-05-23

Easy on the HDR buddy.

By Susan on 2016-11-18

I love Central Park.



HTML

CSS

JAVASCRIPT

SQL

PHP

MORE ▾

REFERENCES ▾

EXAMPLES ▾



Stunning
Photo
Themes

Photocrati
Photography
WordPress
Themes

<div>

<dl>

<dt>

<embed>

<fieldset>

<figcaption>

<figure>

<footer>

<form>

<frame>

<frameset>

<h1> - <h6>

<head>

<header>

<hr>

<html>

<i>

<iframe>

HTML <h1> to <h6> Tags

[◀ Previous](#)[Complete HTML Reference](#)[Next ›](#)

Example

The six different HTML headings:

```
<h1>This is heading 1</h1>
<h2>This is heading 2</h2>
<h3>This is heading 3</h3>
<h4>This is heading 4</h4>
<h5>This is heading 5</h5>
<h6>This is heading 6</h6>
```

[Try it Yourself »](#)

Photocrati.com

HTML h1 to h6 tag

https://www.w3schools.com/tags/tag_hn.asp

HTML CSS JAVASCRIPT SQL PHP BOOTSTRAP HOW TO MORE ▾ REFERENCES ▾ EXAMPLES ▾ 🔍

<dialog>
<dir>
<div>
<dl>
<dt>

<embed>
<fieldset>
<figcaption>
<figure>

<footer>
<form>
<frame>
<frameset>
<h1> - <h6>
<head>
<header>
<hr>
<html>
<i>
<iframe>

<input>

TECOVAS

HANDMADE CLASSICS



Try it Yourself »

```
h1 {  
    display: block;  
    font-size: 2em;  
    margin-top: 0.67em;  
    margin-bottom: 0.67em;  
    margin-left: 0;  
    margin-right: 0;  
    font-weight: bold;  
}
```

Most browsers will display the <h2> element with the following default values:

Example

```
h2 {  
    display: block;  
    font-size: 1.5em;  
    margin-top: 0.83em;  
    margin-bottom: 0.83em;  
    margin-left: 0;  
    margin-right: 0;  
}
```

Pixels	EMs	Percent	Points
6px	0.375em	37.5%	5pt
7px	0.438em	43.8%	5pt
8px	0.500em	50.0%	6pt
9px	0.563em	56.3%	7pt
10px	0.625em	62.5%	8pt
11px	0.688em	68.8%	8pt
12px	0.750em	75.0%	9pt
13px	0.813em	81.3%	10pt
14px	0.875em	87.5%	11pt
15px	0.938em	93.8%	11pt
16px	1.000em	100.0%	12pt
17px	1.063em	106.3%	13pt
18px	1.125em	112.5%	14pt
19px	1.188em	118.8%	14pt
20px	1.250em	125.0%	15pt
21px	1.313em	131.3%	16pt
22px	1.375em	137.5%	17pt
23px	1.438em	143.8%	17pt
24px	1.500em	150.0%	18pt

Pixels	EMs	Percent	Points
6px	0.375em	37.5%	5pt
7px	0.438em	43.8%	5pt
8px	0.500em	50.0%	6pt
9px	0.563em	56.3%	7pt
10px	0.625em	62.5%	8pt
11px	0.688em	68.8%	8pt
12px	0.750em	75.0%	9pt
13px	0.813em	81.3%	10pt
14px	0.875em	87.5%	11pt
15px	0.938em	93.8%	11pt
16px	1.000em	100.0%	12pt
17px	1.063em	106.3%	13pt
18px	1.125em	112.5%	14pt
19px	1.188em	118.8%	14pt
20px	1.250em	125.0%	15pt
21px	1.313em	131.3%	16pt
22px	1.375em	137.5%	17pt
23px	1.438em	143.8%	17pt
24px	1.500em	150.0%	18pt

1. Enter a base pixel size

16 px

2. Convert

PX to EM

EM to PX

1

ny

1

Convert

3. Result

Paragraphs and Divisions

< p > tag is a container for text and other HTML elements

2

< p > Photo by Randy Connolly</ p >
< p > This photo of Conservatory Pond in
 [Cen](http://www.centralpark.com/)
 New York City was taken on October 22, 20
 < strong > Canon EOS 30D</ strong > camera.
 </ p >

Share Your Travels

New York - Central Park

Photo by Randy Connolly



This photo of Conservatory Pond in [Central Park](#) New York City was taken on October 22, 2016 with a **Canon EOS 30D** camera.

Reviews

By Ricardo on 2016-05-23

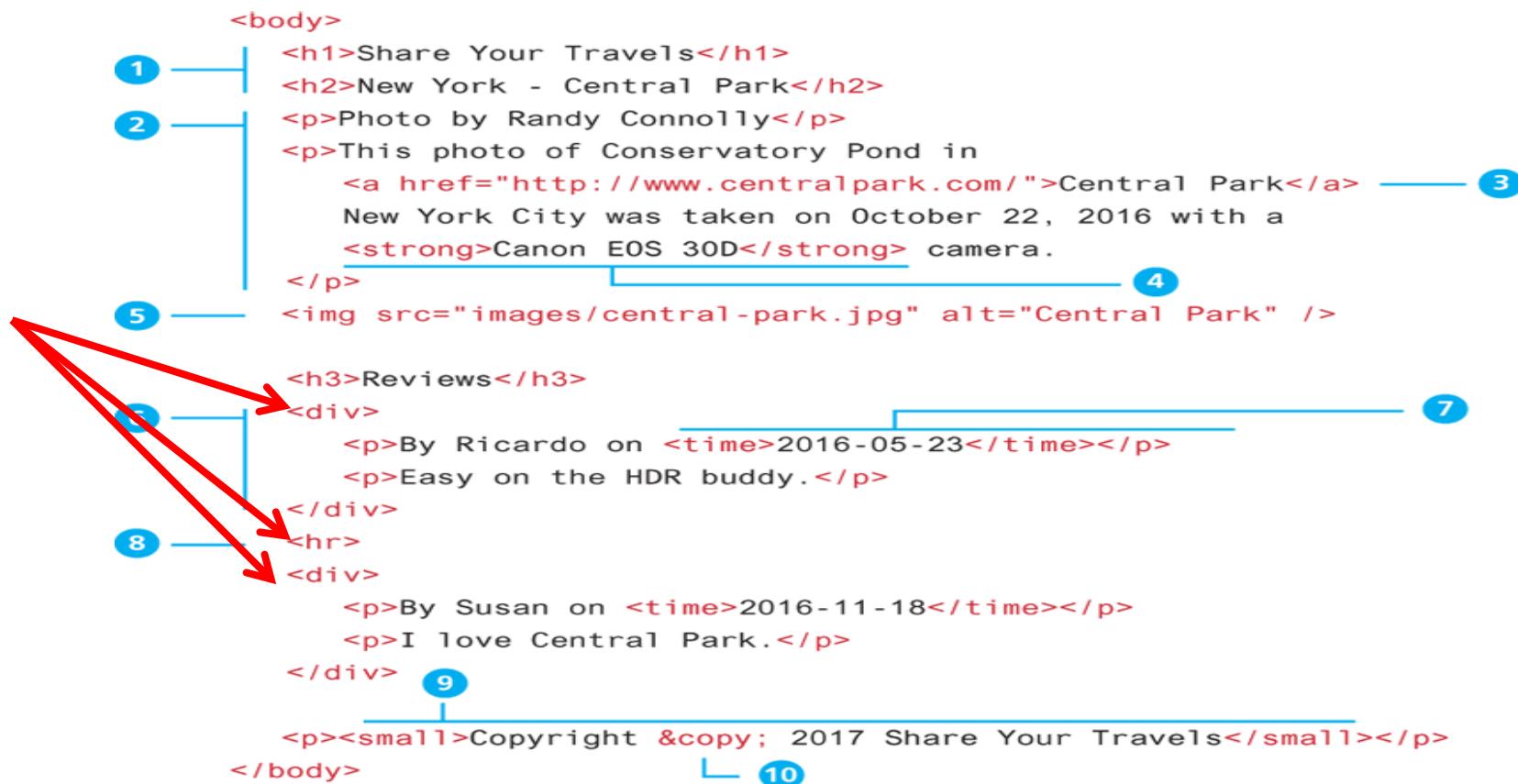
Easy on the HDR buddy.

By Susan on 2016-11-18

I love Central Park.

Quick Tour of HTML Elements

`<div>` also a container element and is used to create a logical grouping of content



Share Your Travels

New York - Central Park

Photo by Randy Connolly



This photo of Conservatory Pond in [Central Park](#) New York City was taken on October 22, 2016 with a **Canon EOS 30D** camera.

Reviews

By Ricardo on 2016-05-23



Easy on the HDR buddy.

By Susan on 2016-11-18

I love Central Park.

Links

Links are an essential feature of all web pages.
They use the `<a>` element (the “a” stands for anchor).

```
<a href="http://www.centralpark.com">Central Park</a>
```



Destination

Label (text)

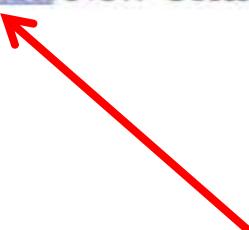
Share Your Travels

New York - Central Park

Photo by Randy Connolly



This photo of Conservatory Pond in [Central Park](#), New York City was taken on October 22, 2016 with a **Canon EOS 30D** camera.



Reviews

By Ricardo on 2016-05-23

Easy on the HDR buddy.

By Susan on 2016-11-18

I love Central Park.

Links

Link to external site


`Central Park`

Link to resource on external site


`Central Park`

Link to another page on same site as this page


`Home`

Link to another place on the same page


`Go to Top of Document`

...


``

Defines anchor for a link to another place on same page

HTML Reference

HTML by Alphabet

HTML by Category

HTML Attributes

HTML Global Attributes

HTML Events

HTML Colors

HTML Canvas

HTML Audio/Video

HTML Character Sets

HTML DocTypes

HTML URL Encode

HTML Language Codes

HTML Country Codes

HTTP Messages

HTTP Methods

PX to EM Converter

Keyboard Shortcuts

HTML Tags



HTML id Attribute

◀ Previous

All HTML Attributes

Next ▶

Definition and Usage

The id attribute specifies a unique id for an HTML element (the value must be unique within the HTML document).

The id attribute is most used to point to a style in a style sheet, and by JavaScript (via the HTML DOM) to manipulate the element with the specific id.

Applies to

The id attribute is part of the [Global Attributes](#), and can be used on any HTML element.

Links

Link to specific place on another page

 [Reviews for product X](productX.html#reviews)

Link to email

 [Someone](mailto:person@somewhere.com)

Link to JavaScript function

 [See This](javascript:OpenAnnoyingPopup();)

Link to telephone (automatically dials the number
when user clicks on it using a smartphone browser)

 [Call toll free \(800\) 922-0579](tel:+18009220579)

URL Relative Referencing

Relative Link Type	Example
Same directory	<code></code>
Child Directory	<code></code>
Grandchild/Descendant Directory	<code></code>
Parent/Ancestor Directory	<code></code> <code></code>
Sibling Directory	<code></code>
Root Reference	<code></code>

URL Relative Referencing

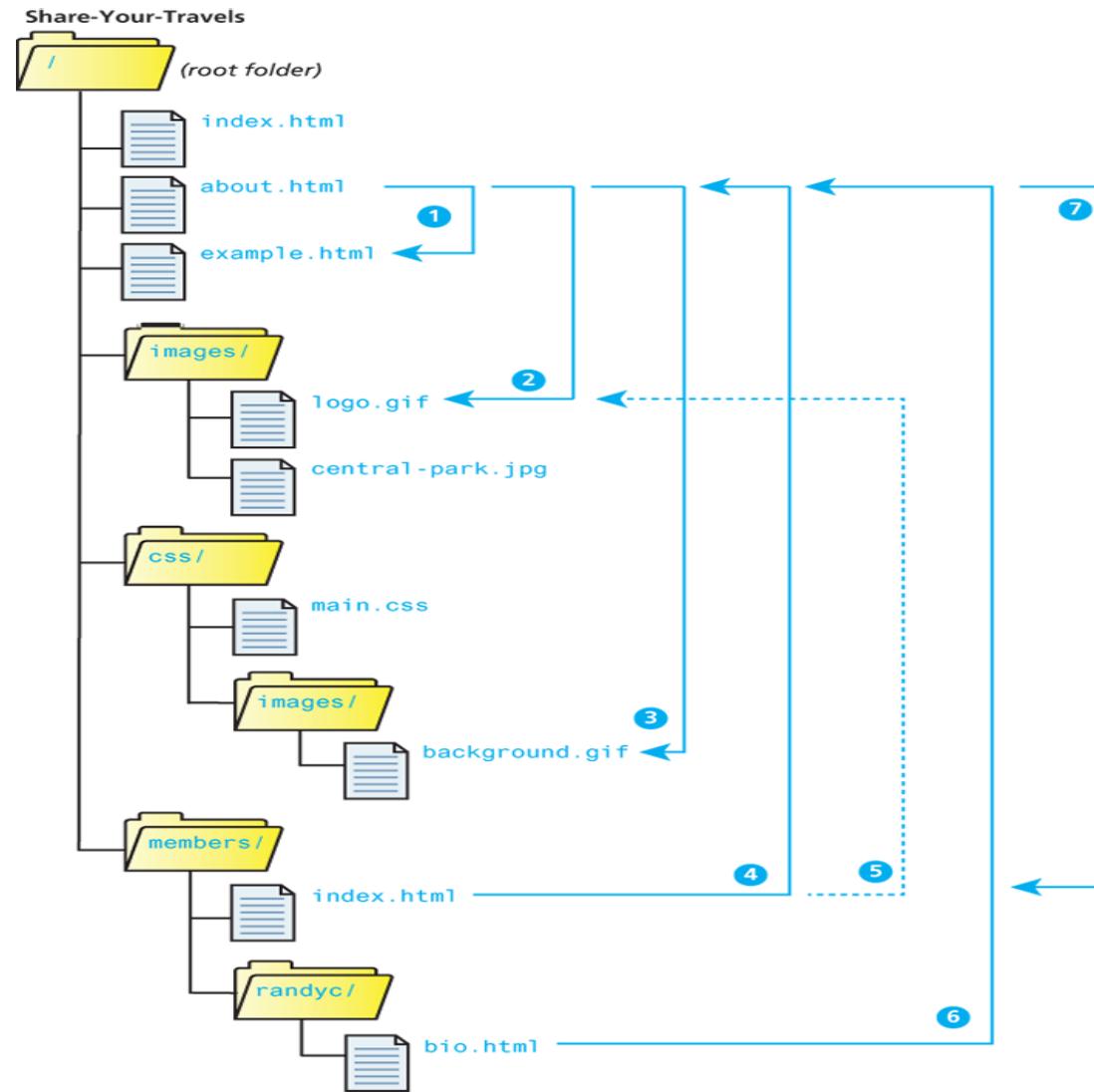


Table 3.2 Common Text-Level Semantic Elements

Element	Description
<a>	Anchor used for hyperlinks.
<abbr>	An abbreviation
 	Line break
<cite>	Citation (i.e., a reference to another work)
<code>	Used for displaying code, such as markup or programming code
	Emphasis
<mark>	For displaying highlighted text
<small>	For displaying the fine-print, that is, "nonvital" text, such as copyright or legal notices
	The inline equivalent of the <div> element. It is generally used to mark text that will receive special formatting using CSS
	For content that is strongly important
<time>	For displaying time and date data

Images

Specifies the URL of the image to display
(note: uses standard relative referencing).

Text in title attribute will be displayed in a pop-up
tool tip when user moves mouse over image.

```

```

Text in alt attribute provides a brief
description of image's content for users who
are unable to see it.

Specifies the width and height of
image in pixels

HTML img tag

https://www.w3schools.com/tags/tag_img.asp

HTML CSS JAVASCRIPT SQL PHP BOOTSTRAP HOW TO JQUERY W3.CSS ANGULAR MORE ▾ REFERENCES ▾

<embed>
<fieldset>
<figcaption>
<figure>

<footer>
<form>
<frame>
<frameset>
<h1> - <h6>
<head>
<header>
<hr>
<html>
<i>
<iframe>

<input>
<ins>
<kbd>
<label>
<legend>

<link>
<main>
<map>
<mark>
<menu>

HTML Tag

< Previous Complete HTML Reference Next >

Example

How to insert an image:

```

```

[Try it Yourself »](#)

More "Try it Yourself" examples below.

Definition and Usage

The tag defines an image in an HTML page.

The tag has two required attributes: src and alt.

Note: Images are not technically inserted into an HTML page, images are linked to HTML pages. The tag creates a holding space for the referenced image.

Tip: To link an image to another document, simply nest the tag inside <a> tags.

Character Entities

- ❖ These are special characters for symbols for which there is either no easy way to type them via a keyboard or which have a reserved meaning in HTML (like “<“)

Entity	Description
 	Nonbreakable space
<	<
>	>
©	©
™	™

Lists

- ❖ One of the most common block-level elements in HTML is **lists**.

HTML provides three types of lists:

****: **Unordered lists** are collections of items in no particular order, by default, rendered by the browser as a bulleted list.
(Most common)

However, it is common in CSS to style unordered lists without the bullets.

****: **Ordered lists** are collections of items that have a set order, by default, rendered by the browser as a numbered list.

<dl>: **Description lists** are collection of name and description/definition pairs. E.g. a FAQ list. (Uncommon)

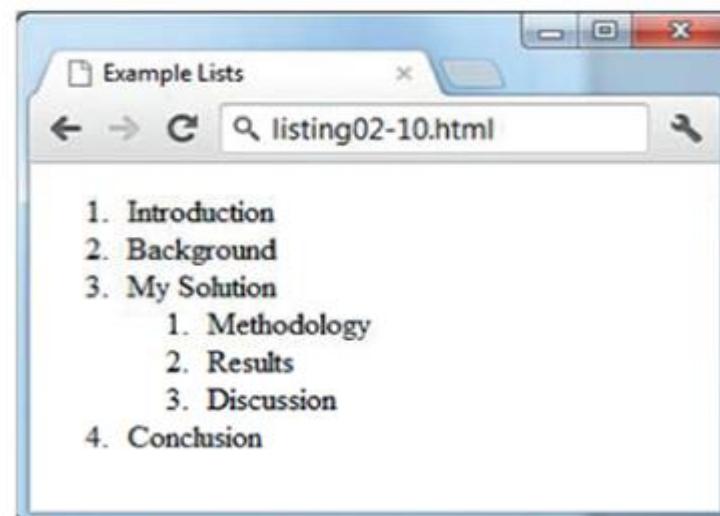
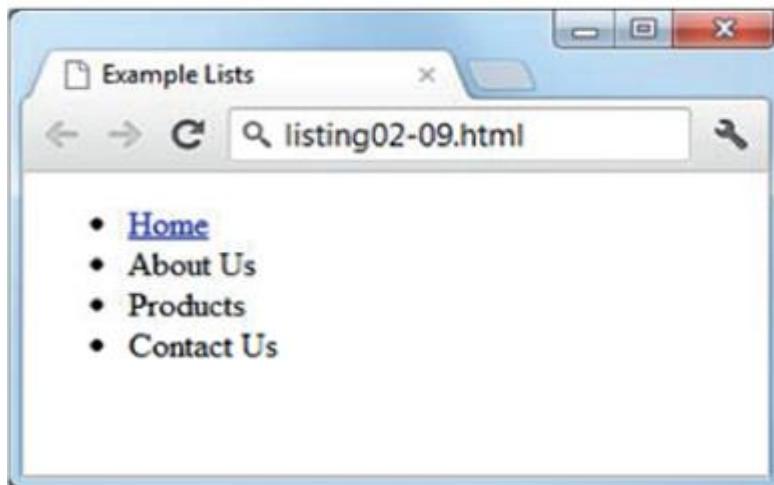
- ❖ See also: https://www.w3schools.com/html/html_lists.asp

Lists

Notice that the list item element can contain other HTML elements.

```
<ul>
  <li><a href="index.html">Home</a></li>
  <li>About Us</li>
  <li>Products</li>
  <li>Contact Us</li>
</ul>
```

```
<o1>
  <li>Introduction</li>
  <li>Background</li>
  <li>My Solution</li>
  <li>
    <o1>
      <li>Methodology</li>
      <li>Results</li>
      <li>Discussion</li>
    </o1>
  </li>
  <li>Conclusion</li>
</o1>
```





Run »

https://www.w3schools.com/tags/tryit.asp?filename=tryhtml_dd_test

Result Size: 625 x 510

```
<!DOCTYPE html>
```

```
<html>
```

```
<body>
```

```
<h2>A Description List</h2>
```

```
<dl>
```

```
  <dt>Coffee</dt>
```

```
  <dd>- black hot drink</dd>
```

```
  <dt>Milk</dt>
```

```
  <dd>- white cold drink</dd>
```

```
</dl>
```

```
</body>
```

```
</html>
```

A Description List

Coffee

- black hot drink

Milk

- white cold drink

HTML is Structural; CSS is Style

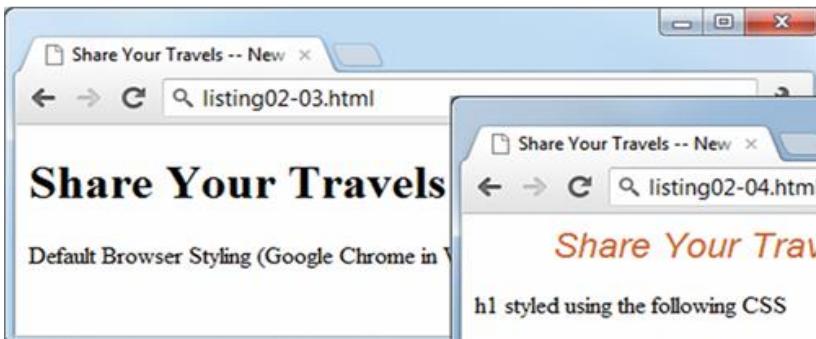


figure03-12b.html

listing02-03.html

listing02-04.html

listing02-05.html

Share Your Travels

h1 styled using the following CSS

```
h1 { margin : 0 0 0 50px; color : helvetica, sans-serif; font-style: }
```

h1 styled using the following CSS

```
h1 { margin : 0 0 0 0; color : #cc6633; font : 200% arial, helvetica, sans-serif; background-color : #FOEDC7; border : 2px solid green; padding : 5px 10px; }
```

figure03-12c.html

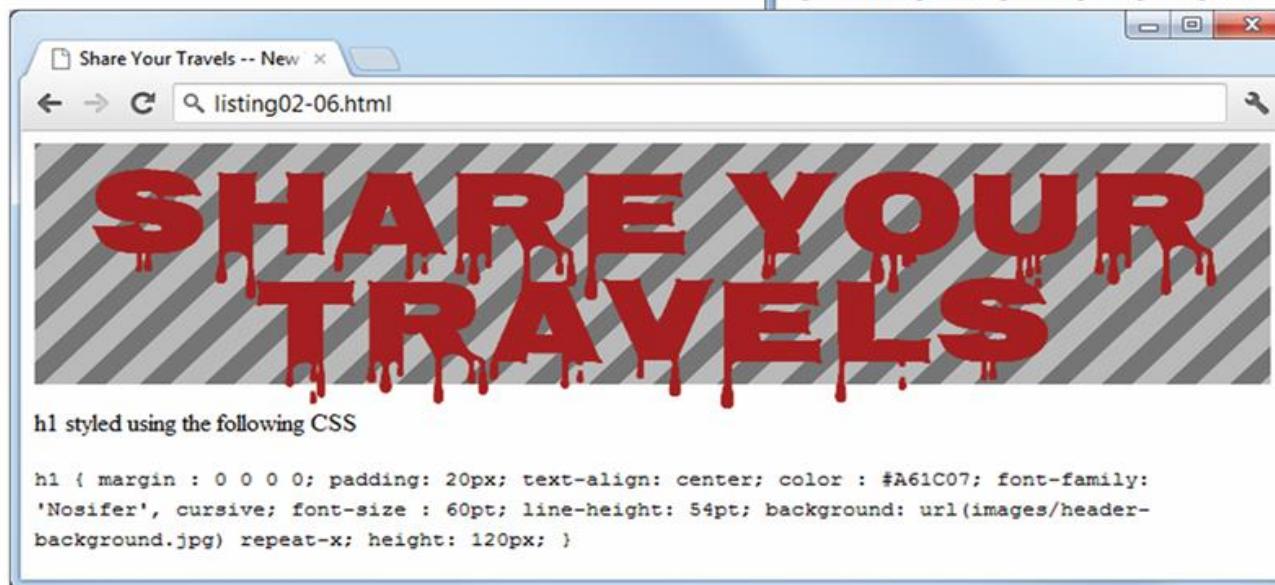


figure03-12d.html