



Certificate in Software Engineering (CSE)

Team Project

Lecture # 1

Introduction to Web Development and HTML

Mary Giblin



Objectives

Applied

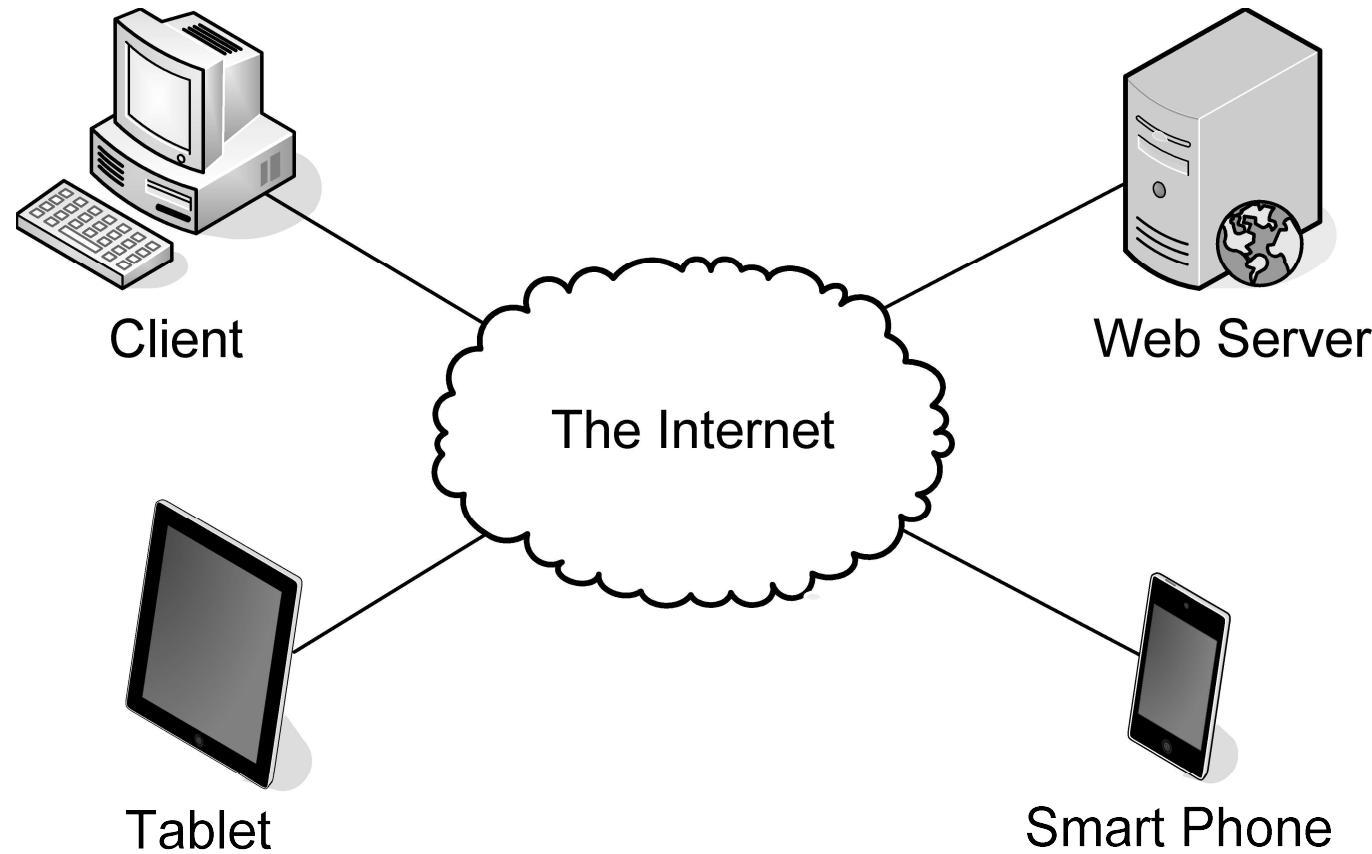
1. Load a web page from the Internet or an intranet into a web browser.
2. View the source code for a web page in a web browser.

Knowledge

1. Describe the components of a web application.
2. Distinguish between the Internet and an intranet.
3. Describe HTTP requests and responses.
4. Distinguish between the way a web server processes static web pages and dynamic web pages.
5. Name the five major web browsers.
6. Distinguish between HTML and CSS.
7. Describe the components of an HTTP URL.

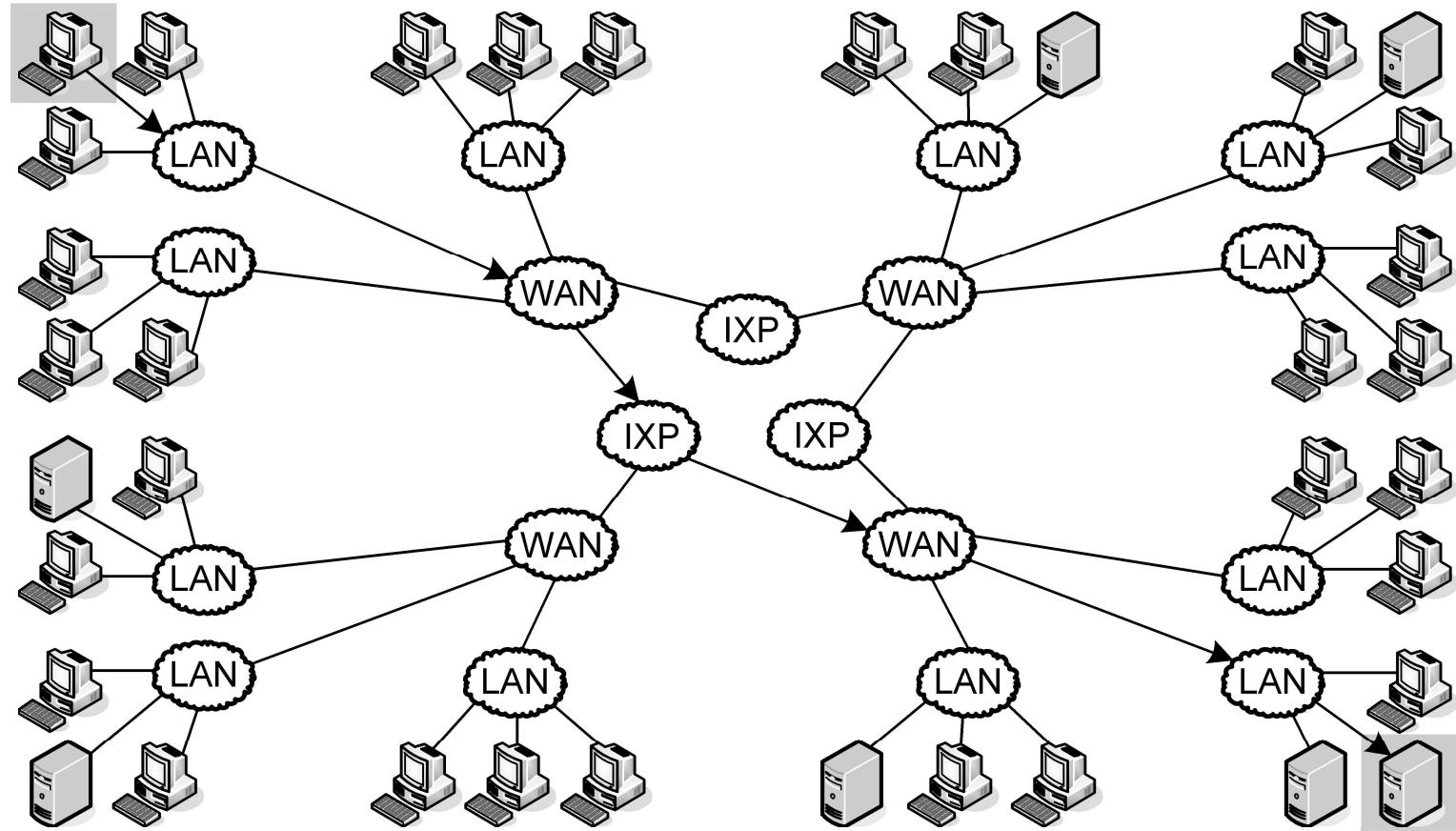


The components of a web application





The architecture of the Internet





A static web page

San Joaquin Valley Town Hall - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://www.valleytownhall.com/toobin.html

San Joaquin Valley Town Hall

October 19, 2011 JEFFREY TOOBIN

Lawyer, author, legal analyst ...

10:30 a.m. at the Saroyan

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The Supreme Nine: Black Robed Secrets



Author of the critically acclaimed best seller, *The Nine: Inside the Secret World of the Supreme Court*, Jeffrey Toobin brings the inside story of one of America's most mysterious and powerful institutions to the Saroyan stage. At the podium,

that Nearly Brought Down a President; *The Run of His Life: The People vs. O.J. Simpson*; and *Too Close to Call: The 36-Day Battle to Decide the 2000 Election*.

Jeffrey Toobin joined CBB from ABC News, where, during his six-year tenure as a legal analyst, he provided legal views on the nation's most provocative and high profile cases, including the O.J. Simpson civil trial and the Kenneth Starr investigation of the Clinton White House. Toobin received a 2001 Emmy Award for his coverage of the Elian Gonzales custody saga.

Toobin is a staff writer at *The New Yorker* and has been covering legal affairs for the magazine since 1993. He has written articles on such

For additional information:

<http://www.greatertalent.com/JeffreyToobin/>

http://www.lcav.org/get_involved/Toobinbio.asp

http://en.wikipedia.org/wiki/Jeffrey_Tooбин

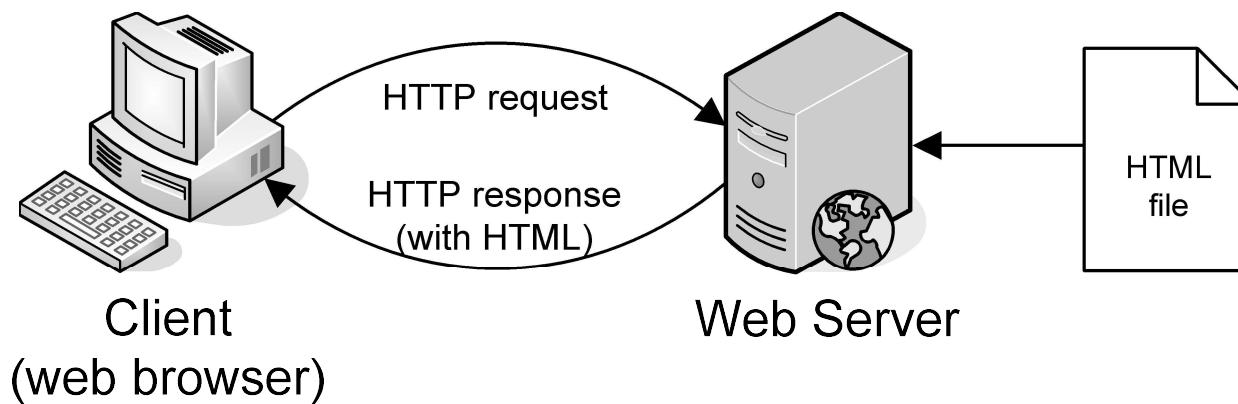
http://www.pbs.org/wnet/tavissmiley/archive/200811/20081112_toobin.html

http://www.newyorker.com/magazine/bios/jeffrey_toobin/search?contributorName=jeffrey%20toobin

<http://www.cityarts.net/n.toobin.html>



How a web server processes a static web page





A dynamic web page at amazon.com

Amazon.com: Murach's PHP and MySQL (Murach: Training & Reference) (9781890774561): Joel Murach, Ray Harris: Books - Mozilla Firefox

File Edit View History Bookmarks Tools Echo

← → a http://www.amazon.com/Murachs-PHP-MySQL-Murach-Reference/dp/1890774561/ref=sr_1_2?s=books&ie=UTF8&qid= san joaquin valley town hall

Amazon.com: Murach's PHP and MySQL... +

amazon.com

Hello, Mike Murach. We have recommendations for you. (Not Mike?)

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Murach's PHP and MySQL (Murach: Training & Reference) [Paperback]

Joel Murach (Author), Ray Harris (Author)

★★★★★ (15 customer reviews) | Like (3)

List Price: \$54.50

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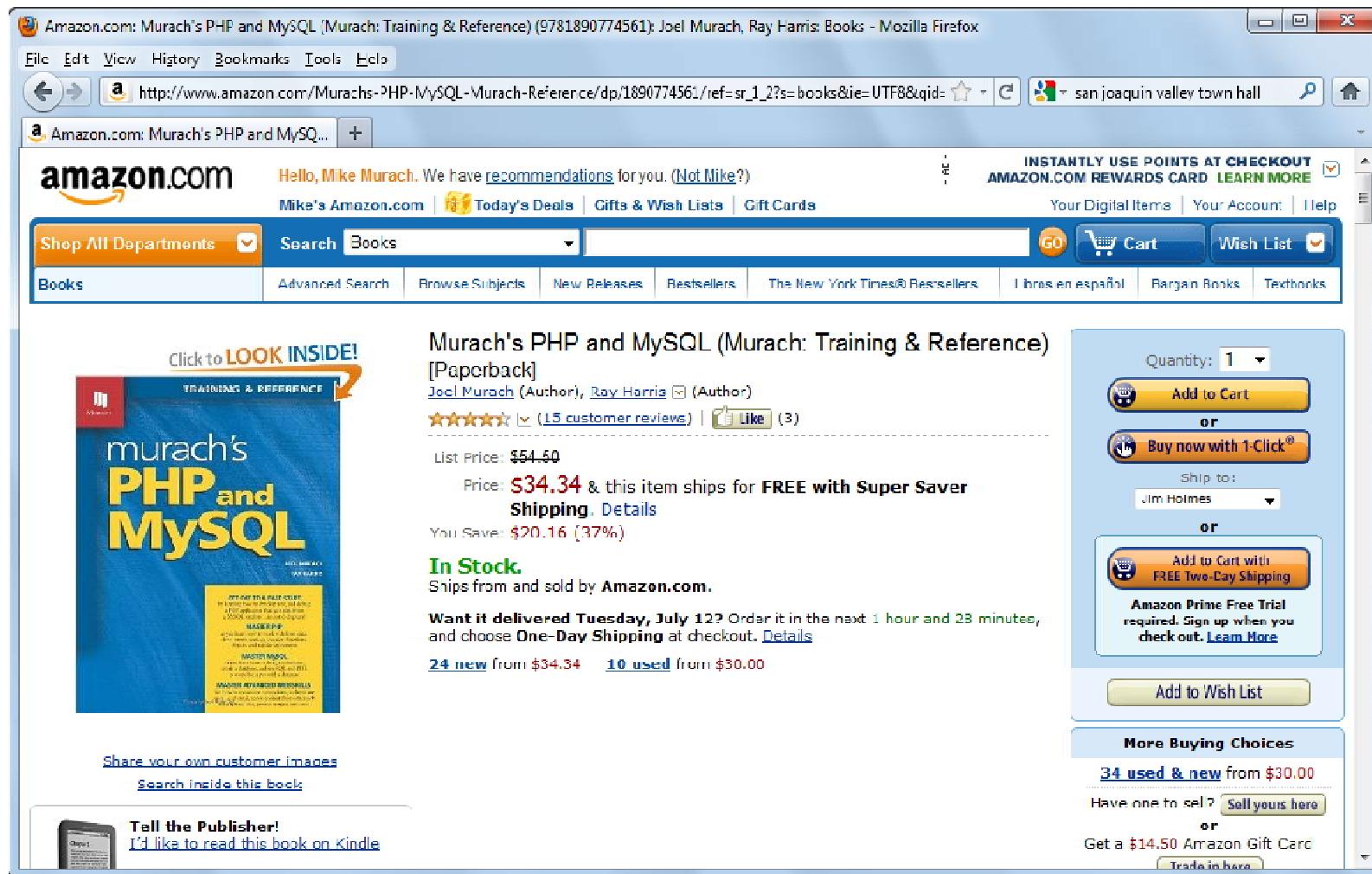
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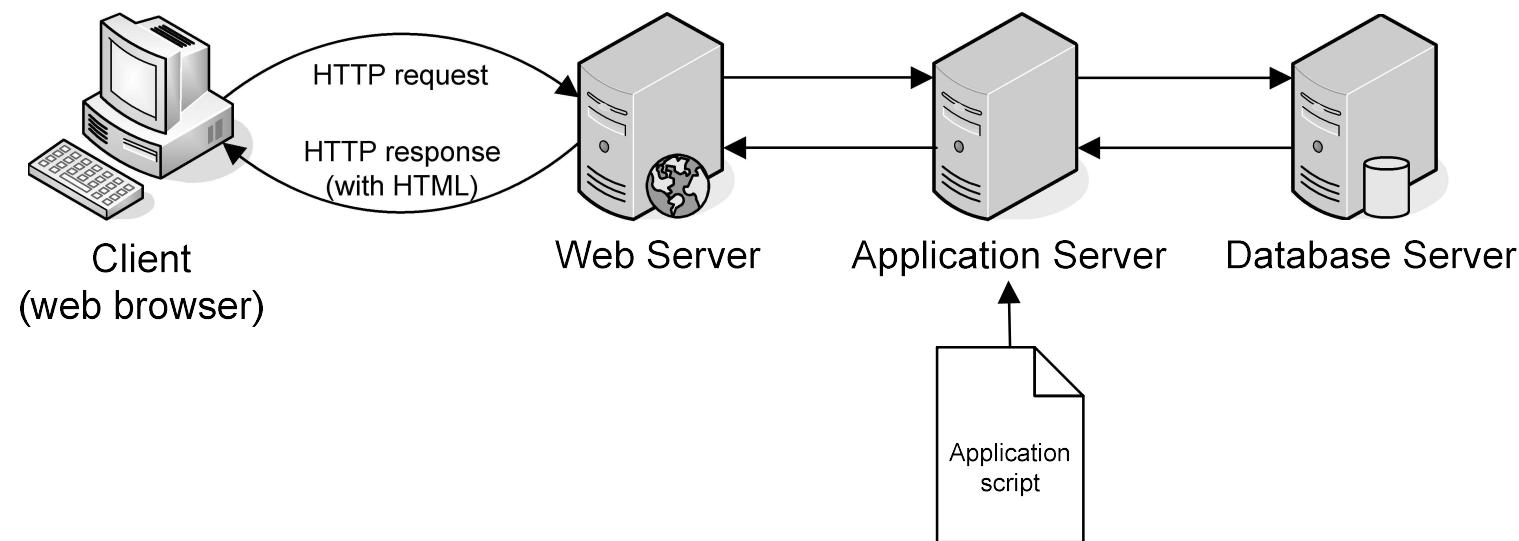
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How a web server processes a dynamic web page





Web browsers

- Internet Explorer
- Firefox
- Chrome
- Safari
- Opera

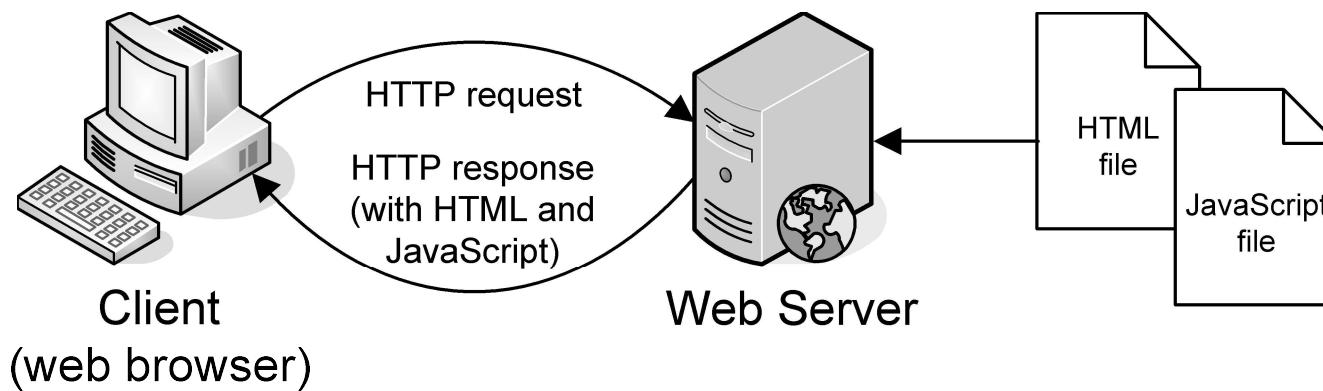


Server-side scripting languages

- ASP.NET
- Java/JSP/JSF/Servlets
- PHP
- ColdFusion
- Ruby
- Perl
- Python



How JavaScript fits into this architecture





8-bit Unicode Transformation Format

The code for an HTML file

```
<!DOCTYPE html>
<html lang="en">
  <head>
    <meta charset="utf-8">
    <title>JavaScript book</title>
  </head>
  <body>
    <h1>JavaScript and DOM Scripting</h1>
    
    <p>Today, web users expect web sites to provide
       advanced features, dynamic user interfaces,
       ...
    </p>
    <p>Now, at last, your trainees can learn both
       JavaScript and DOM scripting in this one great
       book. To find out how this book does it,
       <a href="">read more...</a>
    </p><br><br><br>
  </body>
</html>
```

This is using the
HTML5 standard



The HTML displayed in a web browser

The screenshot shows a Mozilla Firefox browser window titled "JavaScript book - Mozilla Firefox". The address bar displays the URL http://127.0.0.1:8020/HTML5 Book Apps/ch02/javascript_book.html. The main content area features a large title "JavaScript and DOM Scripting" and an image of the book "murach's JavaScript and DOM Scripting". Below the book image, there is a paragraph of text and a link.

JavaScript and DOM Scripting

**murach's
JavaScript
and DOM Scripting**

Today, web users expect web sites to provide advanced features, dynamic user interfaces, and fast response times. To deliver that, web developers need to know the JavaScript language. Beyond that, though, they need to know how to use JavaScript to script the Document Object Model (or DOM).

Now, at last, your trainees can learn both JavaScript and DOM scripting in this one great book. To find out how this book does it, [read more...](#)



The link element for a style sheet

```
<link rel="stylesheet" href="book.css" >
```



The code for the CSS file named book.css

```
body {  
    font-family: Arial, Helvetica, sans-serif;  
    font-size: 82.5%;  
    width: 500px;  
    margin: 0 auto;  
    padding: 1em;  
    border: 1px solid navy; }  
  
h1 {  
    margin: 0;  
    padding: .25em;  
    font-size: 250%;  
    color: navy; }  
  
img {  
    float: left;  
    margin: 0 1em; }  
  
p {  
    margin: 0;  
    padding-bottom: .5em; }
```



The web page displayed in a web browser

A screenshot of a Mozilla Firefox web browser window. The title bar reads "JavaScript book - Mozilla Firefox". The menu bar includes File, Edit, View, History, Bookmarks, Tools, and Help. The toolbar contains icons for back, forward, search, and other functions. The address bar shows the URL "http://127.0.0.1:8020/HTML5 Book Apps/ch02/javascript_book.html". The main content area displays a web page with the following text and image:

JavaScript and DOM Scripting

The cover of "Murach's JavaScript and DOM Scripting" book, which is blue with yellow and white text. The title "JavaScript and DOM Scripting" is prominently displayed in yellow.

Today, web users expect web sites to provide advanced features, dynamic user interfaces, and fast response times. To deliver that, web developers need to know the JavaScript language. Beyond that, though, they need to know how to use JavaScript to script the Document Object Model (or DOM).

Now, at last, your trainees can learn both JavaScript and DOM scripting in this one great book. To find out how this book does it, [read more...](#)



Notable releases of the HTML standards

1993	HTML 1.0	Never adopted
1995	HTML 2.0	Adopted in November 1995
1997	HTML 4.0	New features
1999	HTML 4.01	
2000	XHTML 1.0	Reformulates HTML with XML
2001	XHTML 1.1	Content presentation done with CSS
2008	HTML 5	Replaces both HTML 4 and XHTML 1 Released end of 2014



Notable releases of the CSS standards

1996	1.0	Adopted in December 1996
1998	2.0	Adopted in May 1998
2004	2.1	A candidate standard in February 2004 Returned to working draft status in 2005 Became a candidate standard again in 2007
1999	3.0	A modularized version of CSS Earliest drafts in June 1999, still under revision.



Two web sites to become familiar with

- World Wide Web Consortium (W3C):
www.w3.org.
- Web Hypertext Application Technology Working Group (WHATWG):
www.whatwg.org.



The components of an HTTP URL

`http://www.modulemedia.com/ourwork/index.html`

protocol domain name path filename



What happens if you omit parts of a URL

- If you omit the protocol, the default of http:// will be used.
- If you omit the filename, the default document name for the web server will be used. This is typically index.html, default.htm, or some variation.



Guidelines for cross-browser compatibility

- Test your web pages on all of the major browsers, including the older versions of these browsers.
- Use the HTML5 and CSS3 features that are supported by all of the modern browsers.
- But use the workarounds so the HTML5 and CSS3 features will work in the older browsers too.
- www.html5test.com to check HTML5 support



Objectives

Applied

1. Use a text editor to create and edit HTML and CSS files.
2. Test an HTML document that's stored on your computer or a local server by loading it into a browser.
3. Validate an HTML document using a web site like W3C Markup Validation Service.

Knowledge

1. Describe the use of the head and body elements in an HTML document.
2. Describe these types of HTML tags: opening, closing, and empty.
3. Describe the use of attributes within HTML tags.
4. Describe the use of HTML comments and whitespace.

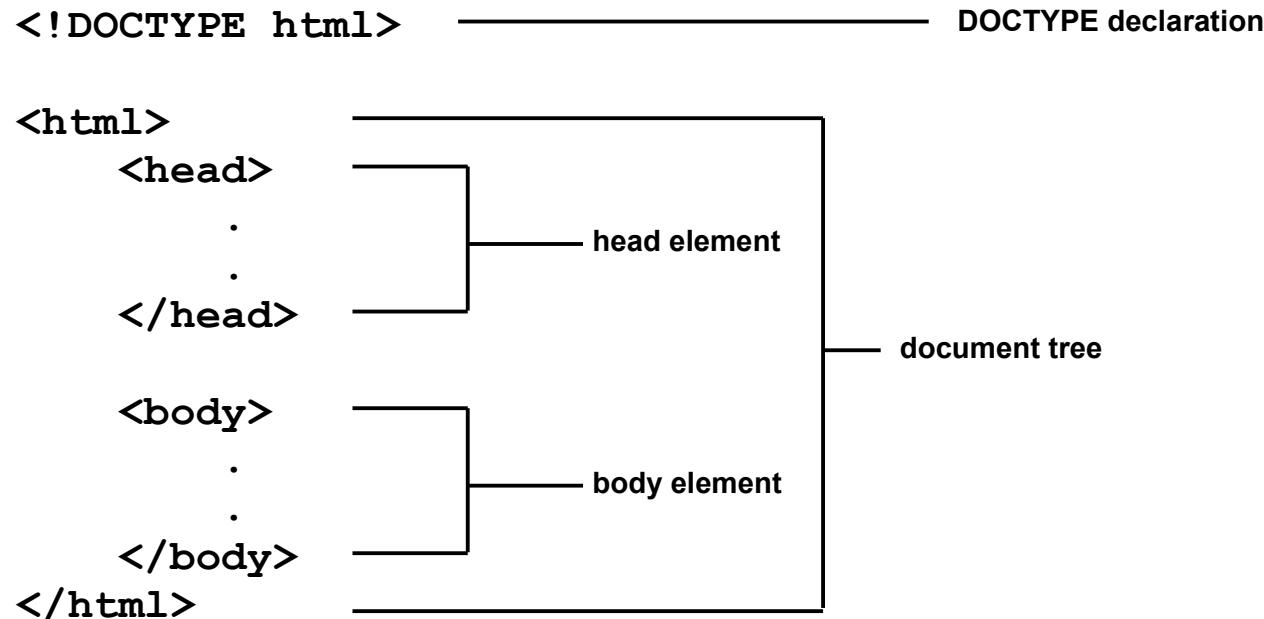


Objectives (cont.)

5. Describe the components of a CSS rule set.
6. Describe the use of these types of CSS selectors: type, id, and class.
7. Describe two benefits of validating HTML files.



The basic structure of an HTML5 document





A simple HTML5 document

```
<!DOCTYPE html>
<html lang="en">
  <head>
    <meta charset="utf-8">
    <title>San Joaquin Valley Town Hall</title>
  </head>
  <body>
    <h1>San Joaquin Valley Town Hall</h1>
    <p>Welcome to San Joaquin Valley Town Hall.</p>
    <p>We have some amazing speakers in store for you
      this season!</p>
    <p><a href="speakers.html">Speaker
      information</a></p>
  </body>
</html>
```



Our coding recommendation for HTML5

- Do all coding in lowercase because it's easier to read.



Two elements with opening and closing tags

```
<h1>San Joaquin Valley Town Hall</h1>
<p>Here is a list of links:</p>
```

Two empty tags

This is
 in XHTML

```
<br>

```

Correct and incorrect nesting of tags

Correct nesting

```
<p>Order your copy <i>today!</i></p>
```

Incorrect nesting

```
<p>Order your copy <i>today!</p></i>
```



How to code an opening tag with attributes

An opening tag with one attribute

```
<a href="contact.html">
```

An opening tag with three attributes

```
<a href="contact.html" title="Click to Contact Us"  
class="nav_link">
```

How to code an empty tag with attributes

```

```



How to code a Boolean attribute

```
<input type="checkbox" name="mailList" checked>
```

Attributes for identifying HTML elements

An opening tag with an id attribute

```
<div id="page">
```

An opening tag with a class attribute

```
<a href="contact.html" title=
    "Click to Contact Us" class="nav_link">
```



Coding rules

- An attribute consists of the attribute name, an equals sign (=), and the value for the attribute.
- Attribute values don't have to be enclosed in quotes if they don't contain spaces.
- Attribute values must be enclosed in single or double quotes if they contain one or more spaces, but you can't mix the type of quotation mark used for a single value.
- Boolean attributes can be coded as just the attribute name. To code multiple attributes, separate each attribute with a space.

Our coding recommendation

- For consistency, enclose all attribute values in double quotes.



A document with comments and whitespace

```
<!DOCTYPE html>
<!--
    This document displays the home page
    for the web site.
-->
<html>
    <head>
        <title>San Joaquin Valley Town Hall</title>
    </head>
    <body>
        <h1>San Joaquin Valley Town Hall</h1>
        <h2>Bringing cutting-edge speakers to the valley
        </h2>
        <!-- This comments out all of the unordered list
        <ul>
            <li>October 19, 2011: Jeffrey Toobin</li>
            <li>November 16, 2011: Andrew Ross Sorkin</li>
            ...
        </ul>
The code after the end of this comment is active -->
```

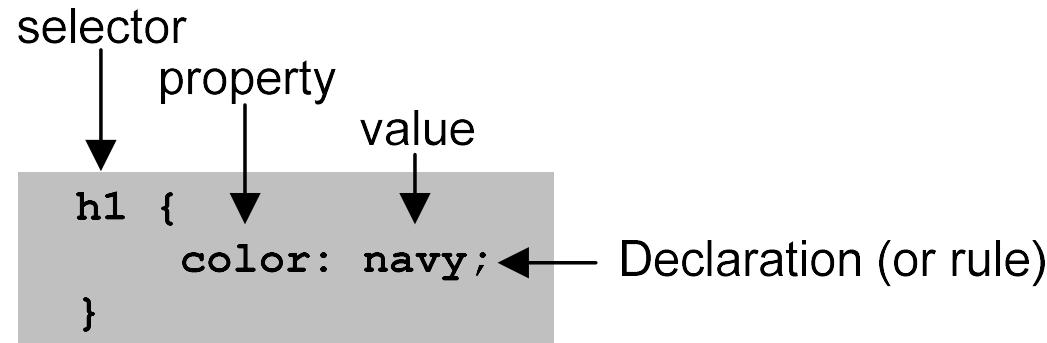


Our coding recommendations

- Use whitespace to indent lines of code and make them easier to read.
- Don't overdo your use of whitespace, because it does add to the size of the file.



The parts of a CSS rule set





A simple CSS document with comments

```
*****  
* Description: Primary style sheet for valleytownhall.com  
* Author:      Anne Boehm  
*****  
/* Adjust the styles for the body */  
body {  
    background-color: #FACD8A;      /* a shade of orange */  
}  
  
/* Adjust the styles for the headings */  
h1 {  
    color: #363636;  
}  
h2 {  
    font-style: italic;  
    border-bottom: 3px solid #EF9C00; /* bottom border */  
}  
/* Adjust the styles for the unordered list */  
ul {  
    list-style-type: square;      /* Change the bullets */  
}
```



Elements that can be selected by type, id, or class

```
<body>
  <div id="main">
    <h1 class="base_color">Student materials</h1>
    <p>Here are the links for the downloads:</p>
    <ul id="links">
      <li><a href=
          "exercises.html">Exercises</a></li>
      <li><a href=
          "solutions.html">Solutions</a></li>
    </ul>
    <p id="copyright" class=
      "base_color">Copyright 2012</p>
  </div>
</body>
```



CSS rule sets that select by type, id, and class

Type

```
body {  
    font-family: Arial, sans-serif;  
}
```

ID

```
#main {  
    width: 300px;  
    padding: 1em;  
}  
#copyright {  
    font-size: 75%;  
    text-align: right;  
}
```

Class

```
.base_color {  
    color: blue;  
}
```



The elements in a browser

Student Materials

Here are the links from the downloads:

- [Exercises](#)
- [Solutions](#)

Copyright 2012



HTML

Common coding errors

- An opening tag without a closing tag.
- Misspelled tag or attribute names.
- Quotation marks that aren't paired.
- Incorrect file references in link, img, or <a> elements.



CSS

Common coding errors

- Braces that aren't paired correctly.
- Missing semicolons.
- Misspelled property names.
- Id or class names that don't match the names used in the HTML.
-



The home page for the W3C validator

The W3C Markup Validation Service - Mozilla Firefox

File Edit View History Bookmarks Tools Help

W3 https://validator.w3.org/#validate_by_upload

W3 The W3C Markup Validation Service

W3C® Markup Validation Service
Check the markup (HTML, XHTML, ...) of Web documents

Validate by URI Validate by File Upload Validate by Direct Input

Validate by File Upload

Upload a document for validation:

File: C:\html5_css3\book_apps\ch02\js

[More Options](#)

Note: file upload may not work with Internet Explorer on some versions of Windows XP Service Pack 2, see our [information page](#) on the W3C QA Website.

This validator checks the markup validity of Web documents in HTML, XHTML, SMIL, MathML, etc. If you wish to validate specific content such as [RSS/Atom feeds](#) or [CSS stylesheets](#), [MobileOK content](#), or to [find broken links](#), there are [other validators and tools](#) available.



How to use the W3C Markup Validation Service

- Go to this URL:
<http://validator.w3.org/>
- Identify the file to be validated, and click the Check button.
-



The CSS Validation Service with errors displayed

W3C CSS Validator results for book.css (CSS level 2.1) - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://jigsaw.w3.org/css-validator/validator

W3C CSS Validator results for book.css (...)

W3C® The W3C CSS Validation Service
W3C CSS Validator results for book.css (CSS level 2.1)

Jump to: Errors (1) Validated CSS

W3C CSS Validator results for book.css (CSS level 2.1)

Sorry! We found the following errors (1)

URI : book.css

13 h1 Value Error : color attempt to find a semi-colon before the property name. add it

↑ TOP

I ❤ VALIDATOR

The W3C validators rely on community support for hosting and development.
[Donate](#) and help us build better tools for a better web.

2264

Flattr



How to use the W3C CSS Validation Service

- Go to the URL that follows, identify the file to be validated, and click the Check button:

`http://jigsaw.w3.org/css-validator/`

-



Objectives

Applied

1. Code a properly structured HTML web page using the HTML5 semantic elements and any of the other elements.
2. Given the HTML for a web page, code a relative URL that refers to any file in the folder structure for the web site.

Knowledge

1. Describe the use of the title and meta elements in the head section of an HTML document.
2. Distinguish between a block element and an inline element.
3. Describe the use of these block elements: h1, h2, h3, and p.
4. Describe the use of these inline elements: br, i, b, sup, em, q, and strong.



Objectives (cont.)

5. Describe the use of character entities like or ©.
6. Describe the use of these core attributes: id, class, and title.
7. Describe the use of the div and span elements in the HTML for a modern web site.
8. Describe the use of these HTML5 semantic elements: header, section, article, nav, aside, footer, and figure.
9. Distinguish between absolute and relative URLs, and distinguish between root-relative and document-relative paths
10. Distinguish between the use of the <a> element and the img element.
11. Describe the two types of lists that you can create with HTML.



A head section with a title and a link to a favicon

```
<head>
    <title>San Joaquin Valley Town Hall |  

        speakers and luncheons
    </title>
    <link rel="shortcut icon" href="favicon.ico">
</head>
```

A browser that shows the title and favicon



Internet Explorer note

- A favicon isn't displayed in older versions of Internet Explorer if the page is served from your local file system. It is only displayed if the page is served from the web server.



A head section that includes metadata

```
<head>
    <title>San Joaquin Valley Town Hall |  

        speakers and luncheons  

    </title>  

    <meta charset=utf-8">  

    <meta name="description" content="A yearly lecture  

        series with speakers that present new  

        information on a wide range of subjects">  

    <meta name="keywords" content="san joaquin,  

        town hall, speakers, lectures, luncheons">  

</head>
```



Three attributes of the <meta> tag

- charset
- name
- content



Block elements for headings and paragraphs

- h1
- h2
- h3
- h4
- h5
- h6
- p

SEO guidelines

- Use the heading tags to show the structure and importance of the content on a page.
- Always start with an h1 tag and decrease one level at a time to show subsequent levels of importance.



HTML that uses the block elements

```
<h1>San Joaquin Valley Town Hall Programs</h1>
<h2>Pre-lecture coffee at the Saroyan</h2>
<p>Join us for a complimentary coffee hour, 9:15 to 10:15
a.m. on the day of each lecture. The speakers usually
attend this very special event.</p>

<h2>Post-lecture luncheon at the Saroyan</h2>
<p>Extend the excitement of Town Hall by purchasing
tickets to the luncheons</p>
```

San Joaquin Valley Town Hall Programs

Pre-lecture coffee at the Saroyan

Join us for a complimentary coffee hour, 9:15 to 10:15 a.m. on the day of each lecture. The speakers usually attend this very special event.

Post-lecture luncheon at the Saroyan

Extend the excitement of Town Hall by purchasing tickets to the luncheons.



Inline elements for formatting text

- i
- b
- sub
- sup
- br



Inline elements for identifying content

- abbr
- cite
- code
- dfn
- em
- kbd
- q
- samp
- strong
- var



HTML that uses some of the inline elements

```
<p>If you don't get 78% or more on your final,  
  <em>you won't pass.</em></p>
```

```
<p>Save a bundle at our <strong>big yearend  
  sale</strong>.</p>
```

```
<p>When the dialog box is displayed, enter  
  <kbd>brock21</kbd>.</p>
```

```
<p>The chemical symbol for water is H<sub>2</sub>O.</p>
```

```
<p><q>To sleep, perchance to dream-ay, there's the  
  rub.</q></p>
```



The inline elements in a web browser

If you don't get 78% or more on your final, *you won't pass.*

Save a bundle at our **big yearend sale.**

When the dialog box is displayed, enter **brock21**.

The chemical symbol for water is H₂O.

"To sleep, perchance to dream-ay, there's the rub."



Common HTML character entities

Entity	Character
&	&
<	<
>	>
©	©
®	®
™	™
¢	¢
°	°
±	±
‘	‘ (opening single quote).
’	’ (closing single quote or apostrophe).
“	“ (opening double quote).



Common HTML character entities (continued)

Entity	Character
”	” (closing double quote).
 	A non-breaking space. It will always be displayed.



Examples of character entities

<p>It's time to start your Christmas shopping!</p>

<p>President John F. Kennedy said, "And so, my fellow Americans, ask not what your country can do for you; ask what you can do for your country."</p>

<p> Turning fear into hope, medical futurist Dr. Alan J. Russell will discuss the science of regenerating damaged or diseased human body parts, while offering real hope for the future of human health.</p>

<p>© 2012 Mike Murach & Associates, Inc.</p>



The character entities in a web browser

It's time to start your Christmas shopping!

President John F. Kennedy said, "And so, my fellow Americans, ask not what your country can do for you; ask what you can do for your country."

Turning fear into hope, medical futurist Dr. Alan J. Russell will discuss the science of regenerating damaged or diseased human body parts, while offering real hope for the future of human health.

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Core HTML attributes

- id
- class
- title
- lang

Accessibility guideline

- Always code the lang attribute on the html element to identify the language for the page.



HTML that uses these attributes

```
<html lang="en">
<body>
    <h1>San Joaquin Valley Town Hall</h1>
    <p class="first">Welcome to San Joaquin Valley Town
        Hall.</p>
    <form action="subscribe.php" method="post">
        <p>Please enter your e-mail address to subscribe
            to our newsletter.</p>
        <p class="first field">E-Mail:
            <input type="text" name="email" id="email"
                title="Enter e-mail here."></p>
        <p><input type="submit" value="Subscribe"></p>
    </form>
</body>
</html>
```



The HTML in a web browser with a tooltip

San Joaquin Valley Town Hall

Welcome to San Joaquin Valley Town Hall.

Please enter your e-mail address to subscribe to our newsletter.

E-Mail:



A block element for structuring a web page

- div

An inline element for formatting text

- span



A page structured with div and span elements

```
<body>
    <div id="header">
        <h1>San Joaquin Valley Town Hall</h1>
    </div>
    <div id="main">
        <p><span id="welcome">Welcome to San Joaquin
        Valley Town Hall.</span>
        We have some fascinating speakers for you
        this season!</p>
    </div>
    <div id="footer">
        <p>&copy; Copyright 2012 San Joaquin Valley Town
        Hall.</p>
    </div>
</body>
```



The page displayed in a web browser

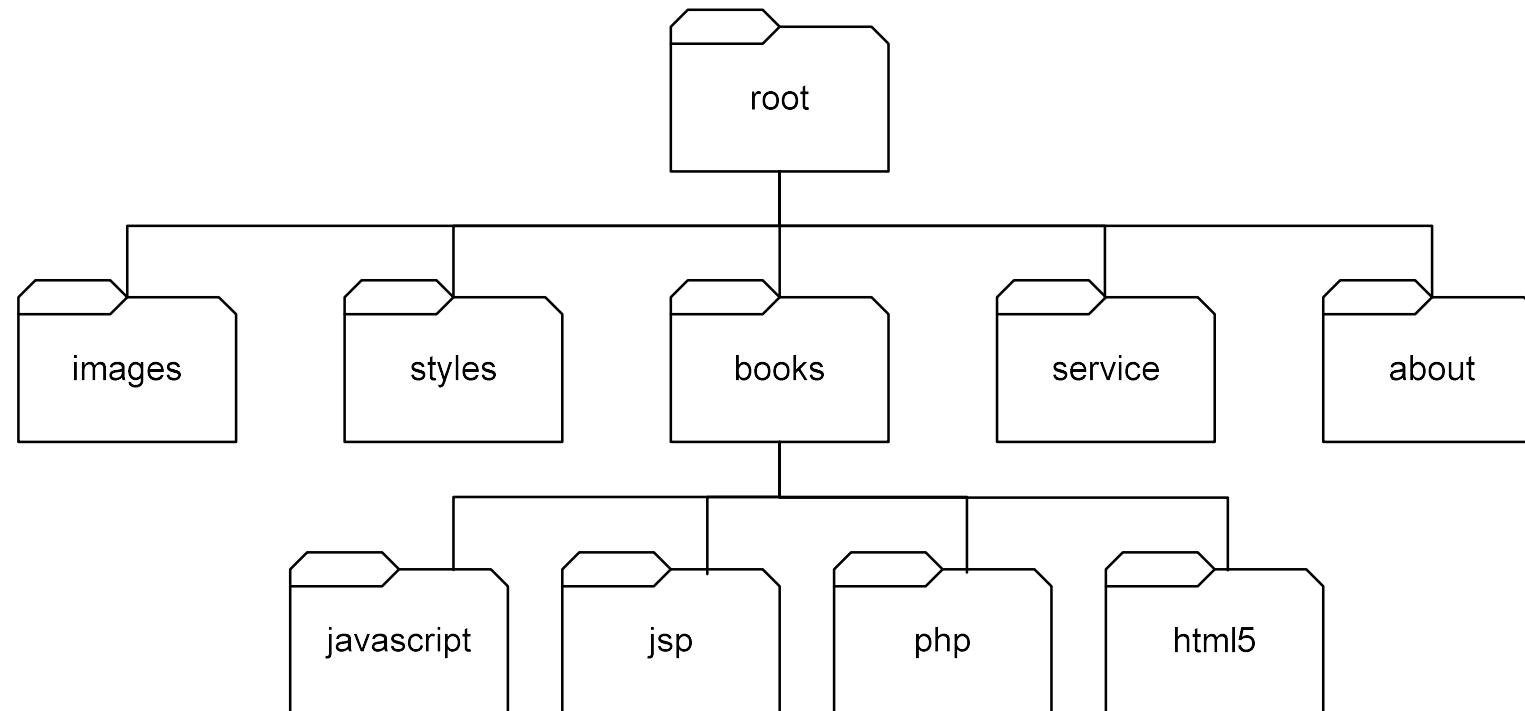
San Joaquin Valley Town Hall

Welcome to San Joaquin Valley Town Hall. We have some fascinating speakers for you this season!

© Copyright 2012 San Joaquin Valley Town Hall.



A simple web site folder structure





Absolute URLs

`http://www.murach.com/index.html`

`http://www.murach.com/books/php/toc.html`

Root-relative paths

`/login.html`

(refers to root/login.html)

`/images/logo.gif`

(refers to root/images/logo.gif)

Document-relative paths that navigate down from the root folder

`images/logo.gif`

(refers to root/images/logo.gif)

`books/php/overview.html`

(refers to
root/books/php/overview.html)

Document-relative paths that navigate up from the root/books folder

`../index.html`

(refers to root/index.html)

`../images/logo.gif`

(refers to root/images/logo.gif)



Basic attribute of the <a> element

- href

A link to a page in the same folder

```
<p>Go view our <a href="products.html">  
product list</a>.</p>
```

A link to a page in a subfolder of the parent folder

```
<p>Read about the <a href=".//company/services.html">  
services we provide</a>.</p>
```

A link to a page based on the root folder

```
<p>View your <a href="/orders/cart.html">  
shopping cart</a>.</p>
```

A link to a page at another web site

```
<p>To learn more about JavaScript, visit the  
<a href="http://www.javascript.com/">  
official JavaScript web site</a>.</p>
```



The links in a web browser

Go view our [product list](#).

Read about the [services we provide](#).



View your [shopping cart](#).

To learn more about JavaScript, visit the [official JavaScript web site](#).

SEO and accessibility guideline

- The content of a link should be text that clearly indicates where the link is going.



Elements that create ordered and unordered lists

-
-
-



HTML that creates two lists

```
<p>We have books on a variety of languages, including</p>
<ul>
    <li>JavaScript</li>
    <li>PHP and MySQL</li>
    <li>Servlets and JSP</li>
    <li>ASP.NET</li>
</ul>

<p>You will need to complete the following steps:</p>
<ol>
    <li>Enter your billing information.</li>
    <li>Enter your shipping information.</li>
    <li>Confirm your order.</li>
</ol>
```



The lists in a web browser

We have books on a variety of languages, including

- JavaScript
- PHP and MySQL
- Servlets and JSP
- ASP.NET

You will need to complete the following steps:

1. Enter your billing information.
2. Enter your shipping information.
3. Confirm your order.



Attributes of the element

- src
- alt
- height
- width

Accessibility guidelines

- For images with useful content, always code an alt attribute that describes the image.
- For images that are used for decoration, code the alt attribute with no value ("").



An img element

```
  
<h1>Mike Murach & Associates, Inc.</h1>
```

The image in a web browser





Image formats supported by most browsers

- JPEG (Joint Photographic Experts Group)
- GIF (Graphic Interchange Format)
- PNG (Portable Network Graphics)