Web Document Structure

Progressive Enhancement

The Original World Wide Web

- Share “documents”
- Structured documents
  - Paragraphs
  - headings (lots of levels)
  - lists (bulleted, numbered, definitions)
  - figures with captions
- Markup language (HTML)
  - Use tags that would help *format* content in a “document reader” called a web browser (bad idea)
  - Add extra meaning to the words in a way that machines would understand
- Example: 11201961 …without markup, it’s just data

Information Management: A Proposal

Tim Berners-Lee, CERN
March 1989, May 1990

Overview

Many of the discussions of the future at CERN and the LHC era end with the question - “Yes, but how will we ever keep track of such a large project?” This proposal provides an answer to such questions. Firstly, it discusses the problem of information access at CERN. Then, it introduces the idea of linked information systems, and compares them with less flexible ways of finding information.

It then summarises my short experience with non-linear text systems known as “hypertext”, describes what CERN needs from such a system, and what industry may provide. Finally, it suggests steps we should take to involve ourselves with hypertext now, so that individually and collectively we may understand what we are creating.

Losing Information at CERN

CERN is a wonderful organisation. It involves several thousand people, many of them very creative, all working toward common goals. Although they are nominally organised into a hierarchical management structure, this does not constrain the way people will communicate, and share information, equipment and software across groups.

The actual observed working structure of the organisation is a multiply connected “web” whose interconnections evolve with time. In this environment, a new person arriving, or someone taking on a new task, is normally given a few hints as to who would be useful people to talk to. Information about what facilities exist and how to find out about them travels in the corridor gossip and occasional newsletters, and the details about what is required to be done spread in a similar way. All things considered, the result is remarkably successful, despite occasional misunderstandings and duplicated effort.

A problem, however, is the high turnover of people. When two years is a typical length of stay, information is constantly being lost. The introduction of the new people demands a fair amount of their time and that of others before they have any idea of what goes on. The technical details of past projects are sometimes lost forever, or only recovered after a detective investigation in an emergency. Often, the information has been recorded, it just cannot be found. [1]

If a CERN experiment were a static once-only development, all the information could be written in a big book. As it is, CERN is constantly changing as new ideas are produced, as

[1] Linked information systems have entities and relationships. There are, however, many differences between such a system and an “Entity Relationship” database system. For one thing, the information stored in a linked system is largely comment for human readers. For another, nodes do not have strict types which define exactly what relationships they may have. Nodes of similar type do not all have to be stored in the same place.

Progressive enhancement

- A strategy for structured web design
- Using web technologies in a layered fashion
- Progressive Enhancement consists of the following core principles:
    - basic content should be accessible to all web browsers
    - basic functionality should be accessible to all web browsers
    - sparse, semantic markup contains all content
    - enhanced layout is provided by externally linked CSS
    - enhanced behavior is provided by unobtrusive, externally linked JavaScript
    - end-user web browser preferences are respected

Progressive enhancement

- Web pages are often visualized as being made up of layers:
  - Content - the foundational layer
    1. Structure
    2. Presentation
    3. Behavior
- Each layer enhances the base content in some way

The Technology behind the Layers

0. Content - MS Word (?) …anything
1. Structure - HTML
2. Presentation - CSS
3. Behavior - JavaScript

What is HTML?

- HTML:
  The set of markup symbols or codes placed in a file intended for display on a Web browser page.

- The World Wide Web Consortium (http://w3c.org) sets the standards for HTML and its related languages.

HTML Elements

- Each markup code represents an HTML **element .**
- Each element has a purpose.

  Most elements are coded as a pair of tags:
  an opening tag and a closing tag.
- Tags are enclosed in angle brackets, "**<**" and "**>**" symbols.

What is HTML5 ?

- Newest draft version of HTML/XHTML
- Supported by modern browsers
  - Safari, Google Chrome, Firefox, Internet Explorer 9
- Intended to be backwards compatible
- Adds new elements
- Adds new functionality
  - Edit form data
  - Native video and audio
  - And more!

Source: W3C http://www.w3.org/html/logo/

Document Type Definition

- **Document Type Definition** (**DTD**)
  - doctype statement
  - identifies the version of HTML contained in your document.
  - placed at the top of a web page document

DTD Examples

XHTML 1.0 Transitional DTD

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0
  Transitional//EN"
  http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd>
```

HTML5 DTD

```
<!DOCTYPE html>
```

Example HTML5 Web Page

```
<!DOCTYPE html>

<html>

    <head>
        <meta charset="utf-8">
        <title>Page Title Goes Here</title>
    </head>

    <body>
        body text and more HTML5 tags go here
    </body>

</html>
```

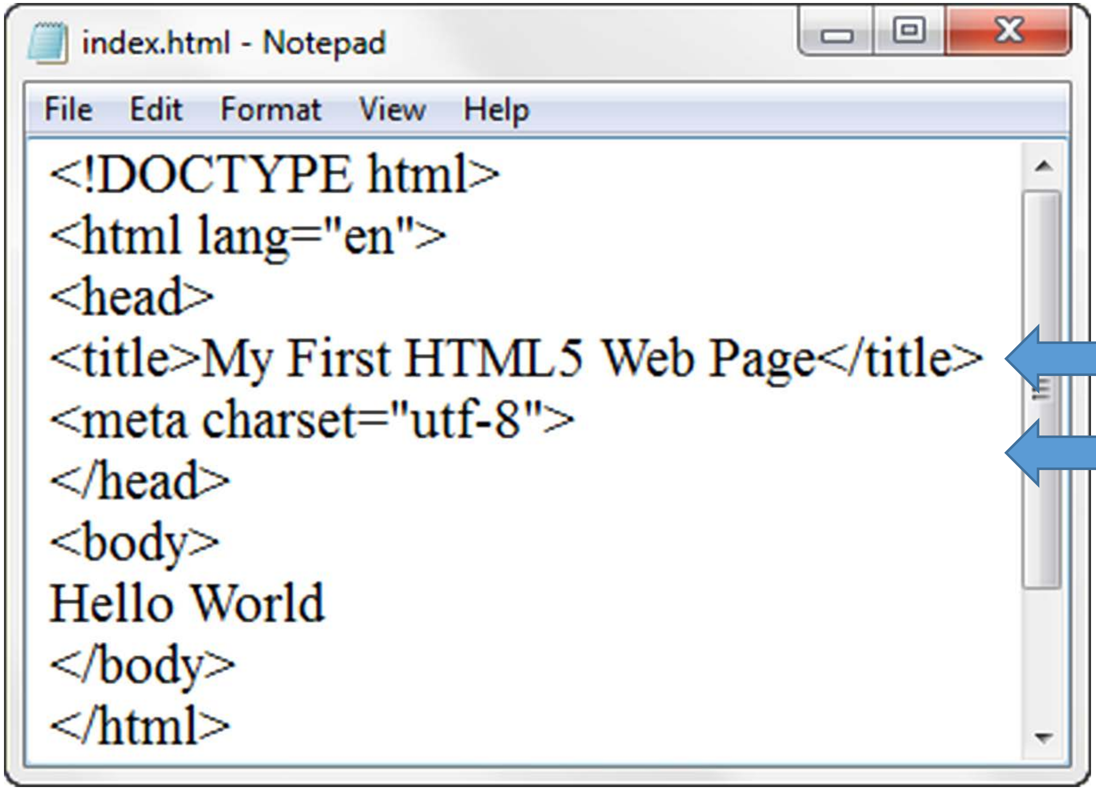
Head & Body Sections

- **Head Section**
  Contains information that describes the Web page document

```
  <head>
  …head section info goes here
  </head>
```

- **Body Section**
  Contains text and elements that display in the Web page document

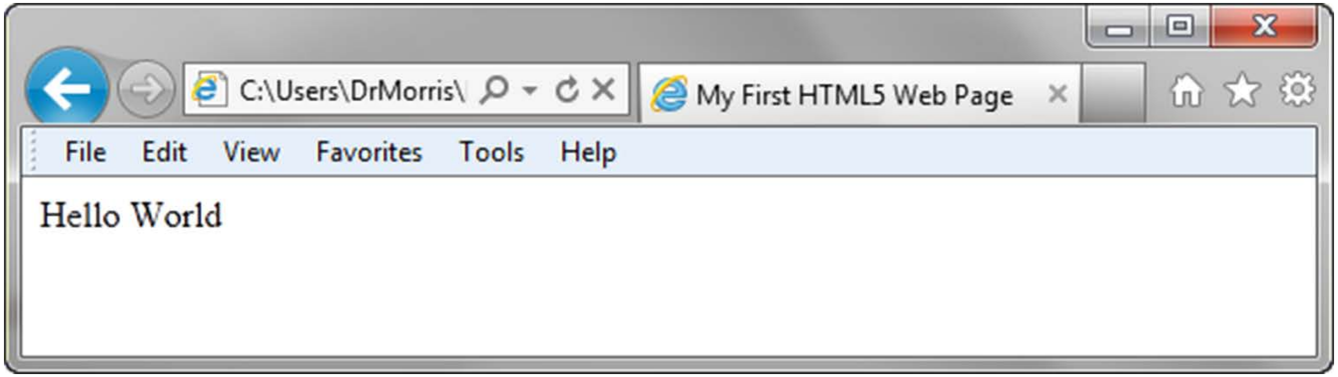
```
<body>
  …body section info goes here
  </body>
```



```
<!DOCTYPE html>
<html lang="en">
<head>
<title>My First HTML5 Web Page</title>
<meta charset="utf-8">
</head>
<body>
Hello World
</body>
</html>
```

Title Element

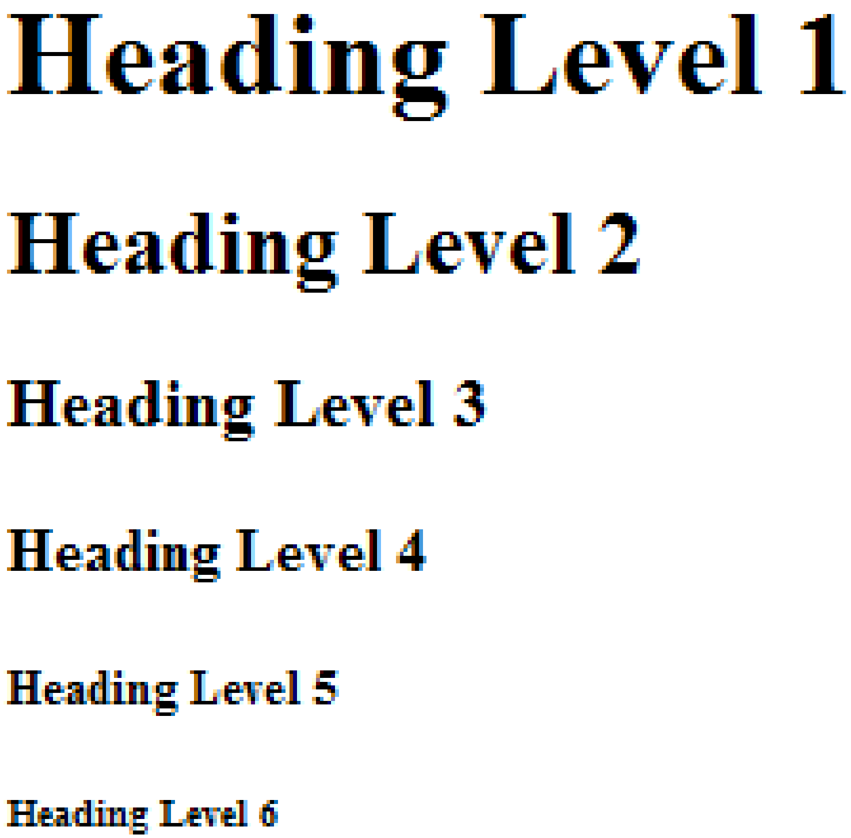
Meta Element



Hello World

Heading Element

```
<h1>Heading Level 1</h1>
<h2>Heading Level 2</h2>
<h3>Heading Level 3</h3>
<h4>Heading Level 4</h4>
<h5>Heading Level 5</h5>
<h6>Heading Level 6</h6>
```



Heading Level 1

Heading Level 2

Heading Level 3

Heading Level 4

Heading Level 5

Heading Level 6

Paragraph Element

- Paragraph element

<p> …*paragraph goes here*… </p>

  - Groups sentences and sections of text together.
  - Block Display – Configures empty space above and below

Line Break Element

- Line Break element
  - Stand-alone, or void tag

    …text goes here **<br>**
    This starts on a new line….

  - Causes the next element or text to display on a new line

HTML Lists

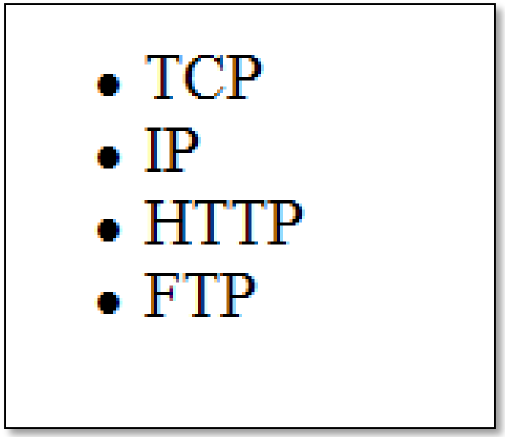
- Unordered List
- Ordered List
- Description List
  formerly called a definition list

Unordered List

- Displays a bullet, or list marker, before each entry in the list.

- <ul>
  Contains the unordered list

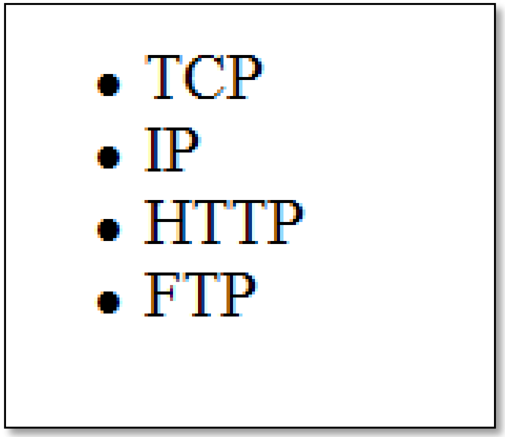
- <li>
  Contains an item in the list



- TCP
- IP
- HTTP
- FTP

Unordered List Example

```
<ul>
   <li>TCP</li>
   <li>IP</li>
   <li>HTTP</li>
   <li>FTP</li>
 </ul>
```



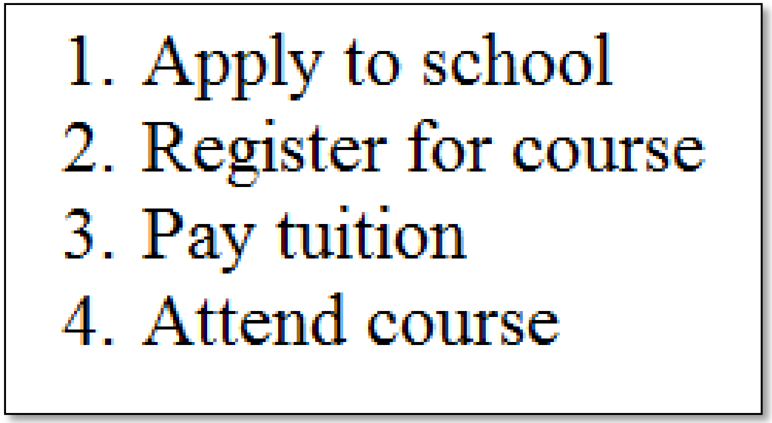
- TCP
- IP
- HTTP
- FTP

Ordered List

- Displays a numbering or lettering system to itemize the information contained in the list
- <ol>
  Contains the ordered list
  - type attribute determines numbering scheme of list, default is numerals
- <li>
  Contains an item in the list

Ordered List Example

```
<ol>
   <li>Apply to school</li>
   <li>Register for course</li>
   <li>Pay tuition</li>
   <li>Attend course</li>
 </ol>
```



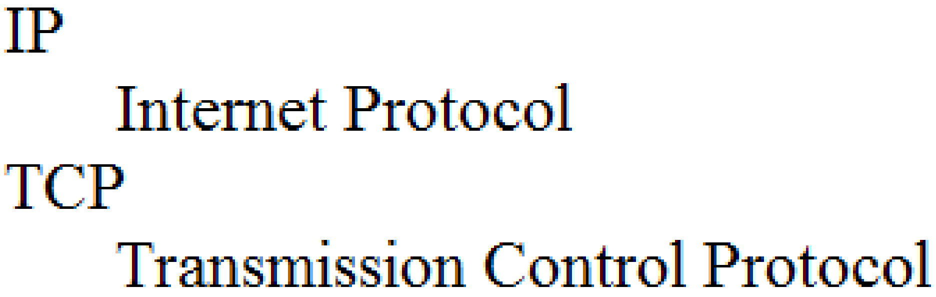
1. Apply to school
2. Register for course
3. Pay tuition
4. Attend course

Description List

- Useful to display a list of terms and descriptions or a list of FAQ and answers
  - <dl>
    Contains the description list
  - <dt>
    Contains a term/phrase/sentence
    Configures empty space above and below the text
  - <dd>
    Contains a description of the term/phrase/sentence
    - Indents the text
    - Configures empty space above and below the text

Description List Example

```
<dl>
   <dt>IP</dt>
        <dd>Internet Protocol</dd>
    <dt>TCP</dt>
         <dd>Transmission Control Protocol</dd>
</dl>
```



IP

Internet Protocol

TCP

Transmission Control Protocol

Proper Nesting

CODE:

```
<p><em>Call for a free quote for your web development needs:
<strong>888.555.5555 </strong></em></p>
```

BROWSER DISPLAY:

Call for a free quote for your web development needs: ***888.555.5555***

Special Characters

- Display special characters such as quotes, copyright symbol, etc.

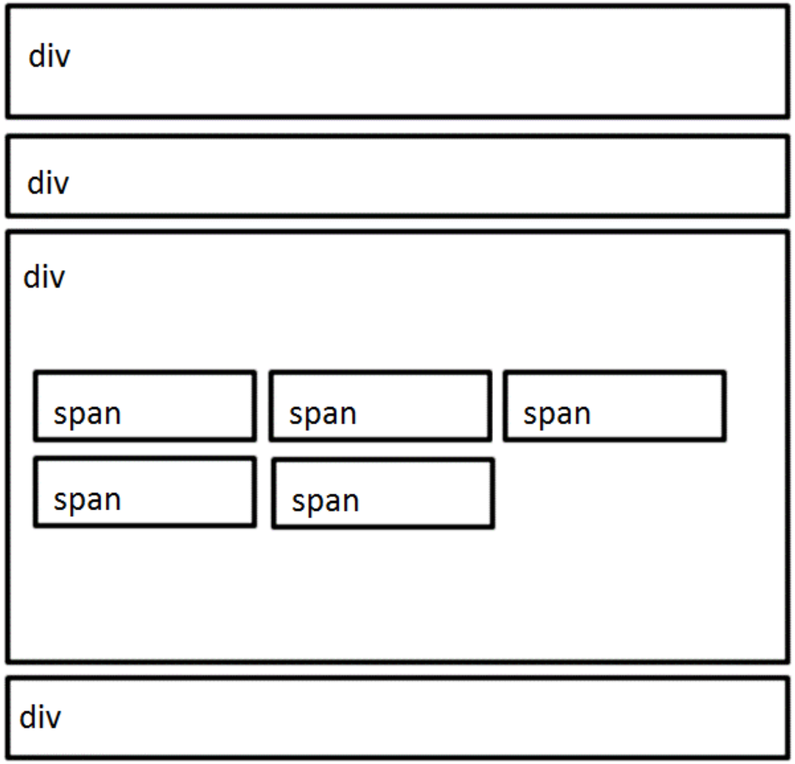
Character	Code
©	&copy;
<	&lt;
>	&gt;
&	&amp;
	&nbsp;

Structural elements

<div> and <span>

Block vs inline

- Some elements display as “blocks” by default
  - Stack-up, top-to-bottom
  - 100% width
- Some elements display “inline”
  - Line-up side-by-side
  - Only as wide as needed



Div Element

- Configures a structural block area or “division” on a web page with empty space above and below.
- Can contain other block display elements, including other div elements
    - Block elements are as tall (height) as they need to be (based on their content) and always take up all the width (100% wide)

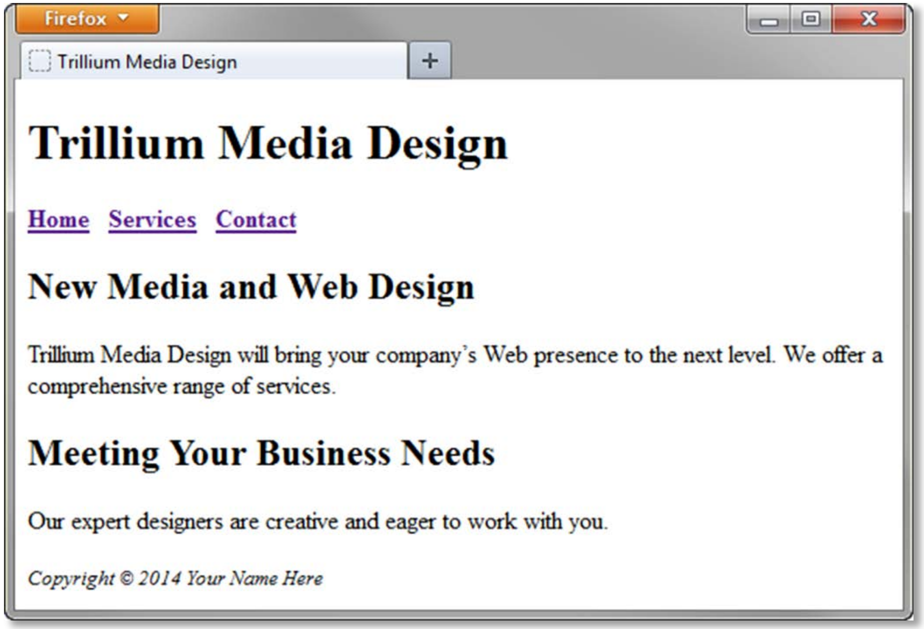
```
<div>Home Services Contact</div>
```

span element

- Purpose:
  - configure a specially formatted area displayed in-line with other elements, such as within a paragraph.
  - In-line elements are one line tall (height) and wrap to the next line when they run out of space (width)
  - There is no additional empty space above or below a span – it is inline display.
- This is a <span>line of inline text</span> that continues on and on.

HTML5 Structural Elements

```
<body>
  <header> document headings go here </header>
  <nav> main navigation goes here </nav>
  <main> main content goes here </main>
  <footer>  document footer information goes here </footer>
</body>
```



Trillium Media Design

Home Services Contact

New Media and Web Design

Trillium Media Design will bring your company's Web presence to the next level. We offer a comprehensive range of services.

Meeting Your Business Needs

Our expert designers are creative and eager to work with you.

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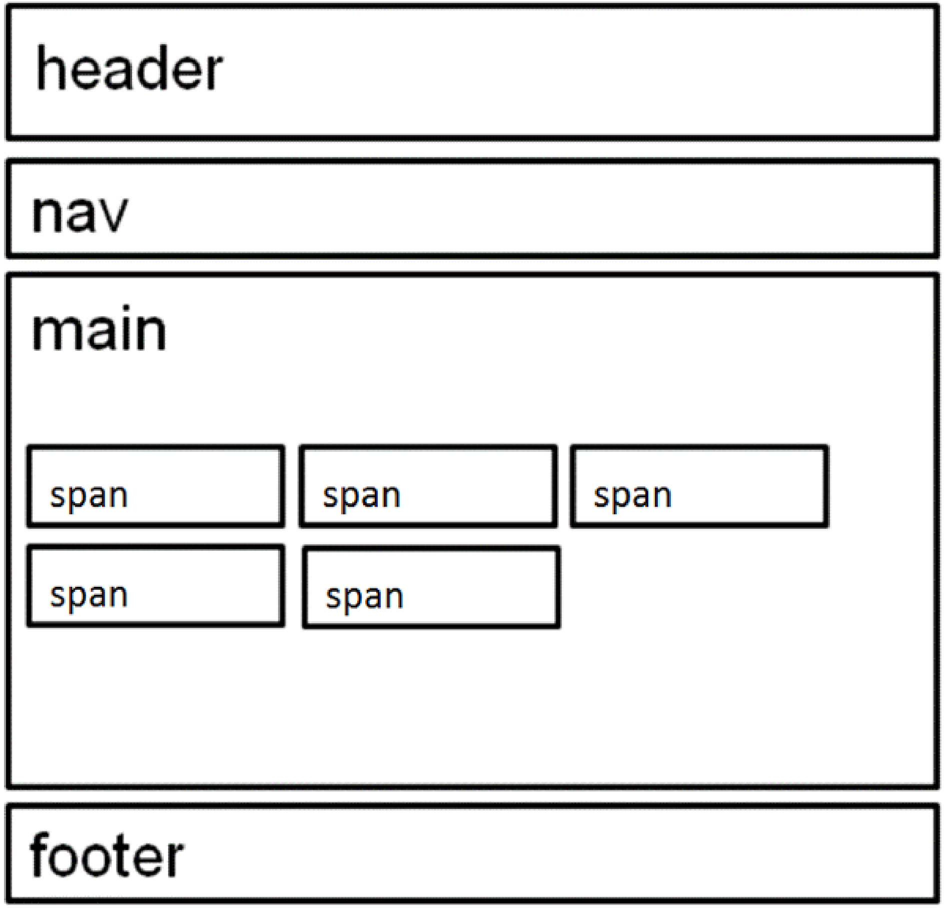
HTML5 Structural Elements



- header Element

  <header></header>
  Contains the web page document’s headings

- nav Element

  <nav></nav>
  Contains web page document’s main navigation

- main Element
  <main></main>
  Contains the web page document’s main content

- footer Element

  <footer></footer>
  Contains the web page document’s footer

More about elements

- Elements = tags (synonymous)
- Semantic markup: HTML elements exist to describe the meaning and structure of the content, *not* to describe its appearance.
  - E.g.: only use an "ordered" list for ordered data, not just because you want numbers on a list.
- Most tags have an open and closing tag; some are stand alone
  - e.g. <img> or <br>
- DIV and SPAN are elements that you can use that provides no semantic value to the document.

Anchor Element

- Specifies a hyperlink reference (href) to a file
- Text between the <a> and </a> is displayed on the web page.

```
<a href="contact.html">Contact Us</a>
```

- href Attribute
  - Indicates the file name or URL

More links

```
<img src="" alt="...">
<a href="">…</a>
```

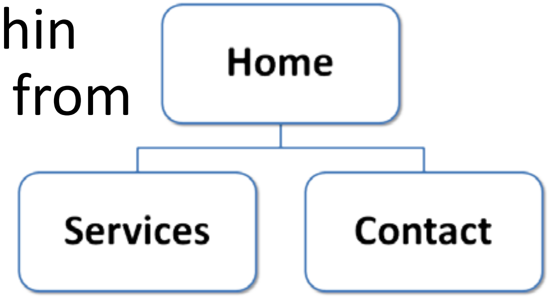
Absolute and relative links

- Absolute
  - Link from one resource to another on a different file system (e.g. a different web server)
  - <a href="http://www.anothersite.com/webpage.html">…</a>

  -- or –

  Link from one resource to another from within the same file system, but with a path that starts at the root (/)
  - <img src="/users/rkostin/public_html/image.jpg" alt="...">

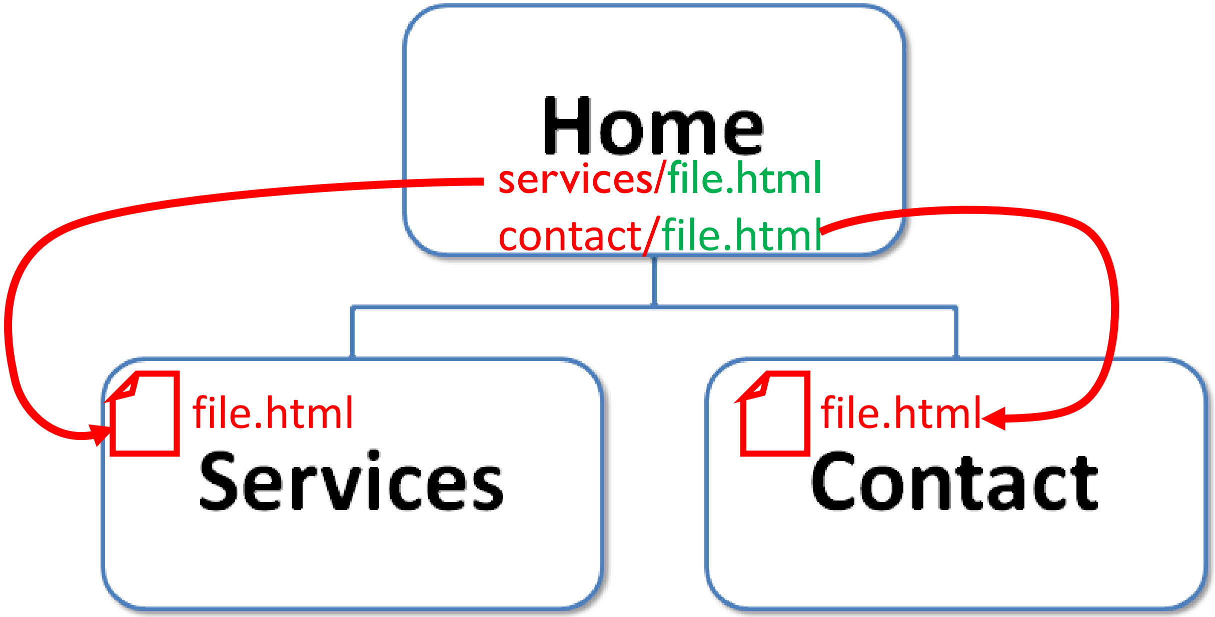
- Relative
  - Link from one resource to another from within the same file system, with the path starting from the location of where the code is written
  - <a href="services/webpage.html">…</a>



Hyperlinks

- Normal path: “foldername/filename”

Example: you’re writing an HTML file in the HOME folder, and you want to create links to files to the SERVICES folder and the CONTACTS folder:



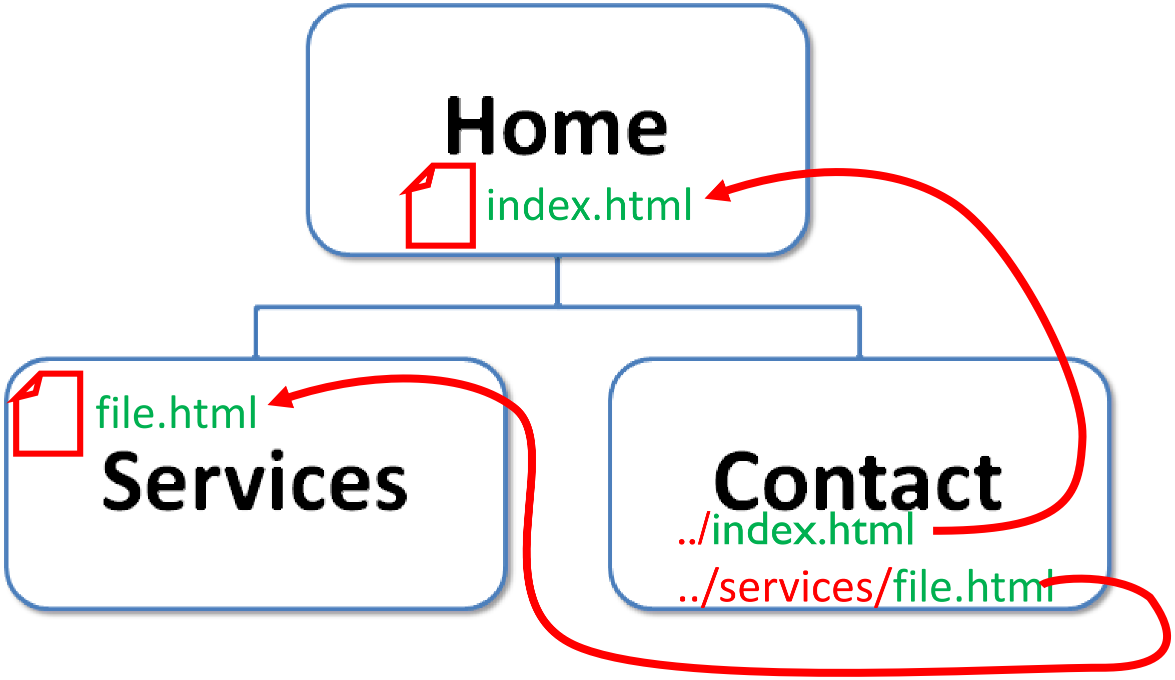
Child links

- Links to subfolders…
  - <img src=“services/image.jpg" alt="...">
  - <a href=“contact/file.html">…</a>

Hyperlinks

- “../” notation

Example: you’re writing a file in the CONTACT folder, and you want to create links to files in the HOME folder and the SERVICES folder:



Parent and sibling links

- Links to parent folders…
  - <img src=“../image.jpg" alt="...">
  - <a href=“../file.html">…</a>
- Links to sibling folders…
  - <img src=“../another-folder/image.jpg" alt="...">
  - <a href=“../another-folder/file.html">…</a>

Writing Valid XHTML

- Check your code for syntax errors
  - Benefit:
    - Valid code → more consistent browser display

- W3C HTML Validation Tool
  - http://validator.w3.org

- Fix the TOP error first, then revalidate