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**18AIC302J**

# **Web Programming for Artificial Intelligence**

**HTML – PART1**

### 2.1 Introduction

- HTML5 (HyperText Markup Language 5)
  - markup language that specifies the *structure* and *content* of documents that are displayed in web browsers
- We introduce some basics, then cover more sophisticated HTML5 techniques such as:
  - tables, which are particularly useful for structuring information from databases (i.e., software that stores structured sets of data)
  - forms for collecting information from web-page visitors
  - internal linking for easier page navigation
  - meta elements for specifying information about a document

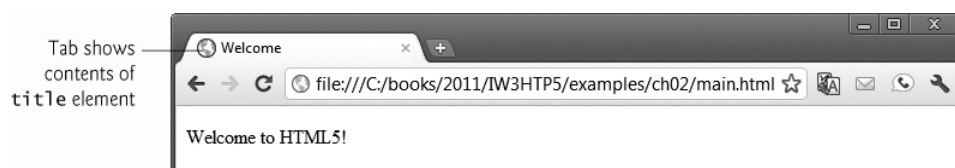
### 2.2 Editing HTML5

- We'll create HTML5 documents by typing HTML5 markup text in a text editor (such as Notepad, TextEdit, vi, emacs) and saving it with the .html or .htm filename extension.
- Computers called web servers store HTML5 documents.
- Clients (such as web browsers running on your local computer or smartphone) request specific resources such as HTML5 documents from web servers.

### 2.3 First HTML5 Example

- Figure 2.1 is an HTML5 document named main.html, which is stored in the examples/ch02 folder.
- This first example displays the message Welcome to HTML5! in the browser.

```
1 <!DOCTYPE html>
2
3 <!-- Fig. 2.1: main.html -->
4 <!-- First HTML5 example. -->
5 <html>
6   <head>
7     <meta charset = "utf-8">
8     <title>Welcome</title>
9   </head>
10
11   <body>
12     <p>Welcome to HTML5! </p>
13   </body>
14 </html>
```



---

**Fig. 2.1. First HTML5 example.**

## *Document Type Declaration*

- The **document type declaration (DOCTYPE)** is required in HTML5 documents so that browsers render the page in standards mode.
- Some browsers operate in quirks mode to maintain backward compatibility with web pages that are not up-to-date with the latest standards.

## *Comments*

- Insert comments in your HTML5 markup to improve readability and describe the content of a document.
- The browser ignores comments when your document is rendered.
- Comments start with `<!--` and end with `-->`.

## *html, head and body Elements*

- HTML5 markup contains text (and images, graphics, animations, audios and videos) that represents the content of a document and elements that specify a document's *structure* and *meaning*.
  - The `html` element *encloses* the head section (represented by the head element) and the body section (represented by the body element).
  - The **head section** contains information about the HTML5 document, such as the character set (UTF-8, the most popular character-encoding scheme for the web) that the page use—which helps the browser determine how to render the content—and the **title**.
  - The head section also can contain special document-formatting instructions called **CSS3 style sheets** and client-side programs called scripts for creating dynamic web pages.
  - The **body section** contains the page's content, which the browser displays when the user visits the web page.

## *Start Tags and End Tags*

- HTML5 documents *delimit* most elements with a start tag and end tag.
- A **start tag** consists of the element name in angle brackets
  - For example, `<html>`
- An **end tag** consists of the element name preceded by a forward slash (/) in angle brackets
  - For example, `</html>`
- There are several so-called “void elements” that do not have end tags.
- Many start tags have attributes that provide additional information about an element, which browsers use to determine how to process the element.
- Each **attribute** has a **name** and a **value** separated by an equals sign (=).

## *Title Element*

- The title element is called a **nested element**, because it's enclosed in the head element's start and end tags.
- The head element is also a nested element, because it's enclosed in the `html` element's start and end tags.
- The title element describes the web page.

- Titles usually appear in the title bar at the top of the browser window, in the browser tab on which the page is displayed, and also as the text identifying a page when users add the page to their list of Favorites or Bookmarks, enabling them to return to their favorite sites.
- Search engines use the title for indexing purposes and when displaying results

### ***Paragraph Element (<p>...</p>)***

- All text placed between the <p> and </p> tags forms one paragraph.

## **2.4 W3C HTML5 Validation Service**

- HTML5 documents that are syntactically correct are guaranteed to render properly
- HTML5 documents that contain syntax errors may not display properly
- Validation services (e.g., [validator.w3.org/#validate-by-upload](http://validator.w3.org/#validate-by-upload)) ensure that an HTML5 document is syntactically correct

## **2.5 Headings**

- HTML5 provides six heading elements (h1 through h6) for specifying the *relative importance* of information
  - Heading element h1 is considered the most significant heading and is rendered in the largest font.
  - Each successive heading element (i.e., h2, h3, etc.) is rendered in a progressively smaller font.

---

```

1  <!DOCTYPE html>
2
3  <!-- Fig. 2.2: heading.html -->
4  <!-- Heading elements h1 through h6. -->
5  <html>
6      <head>
7          <meta charset = "utf-8">
8          <title>Headings</title>
9      </head>
10
11     <body>
12         <h1>Level 1 Heading</h1>
13         <h2>Level 2 heading</h2>
14         <h3>Level 3 heading</h3>
15         <h4>Level 4 heading</h4>
16         <h5>Level 5 heading</h5>
17         <h6>Level 6 heading</h6>
18     </body>
19 </html>

```

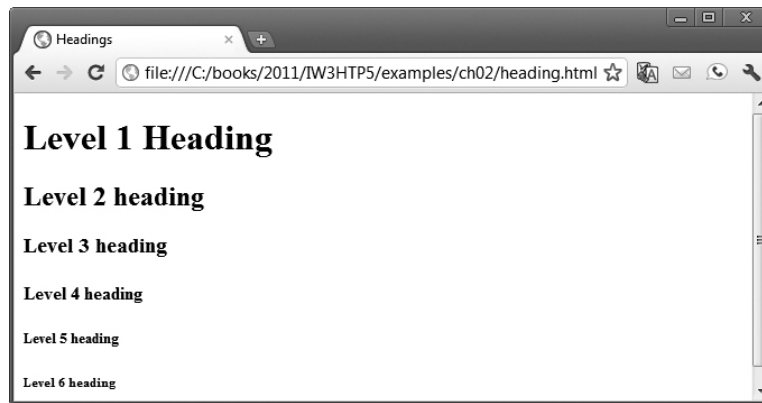
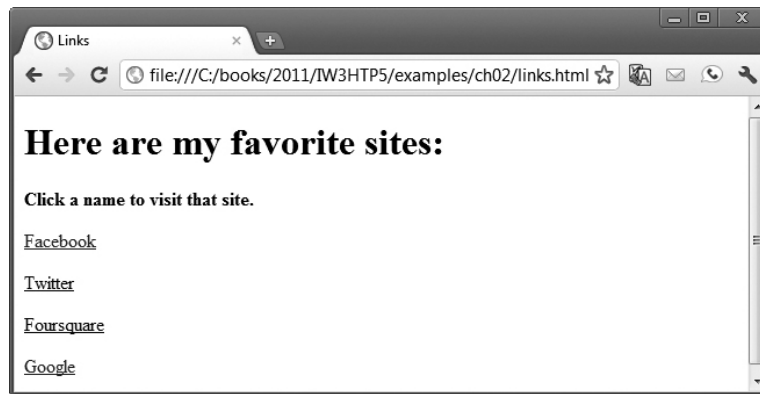


Fig. 2.2. Heading elements h1 through h6.

## 2.6 Linking

- A hyperlink references or links to other resources, such as HTML5 documents and images.
- Web browsers typically *underline* text hyperlinks and color them *blue* by default.

```
1  <!DOCTYPE html>
2
3  <!-- Fig. 2.3: links.html -->
4  <!-- Linking to other web pages. -->
5  <html>
6      <head>
7          <meta charset = "utf-8">
8          <title>Links</title>
9      </head>
10
11     <body>
12         <h1>Here are my favorite sites:</h1>
13         <p><strong>Click a name to visit that site.</strong></p>
14
15         <!-- create four text hyperlinks -->
16         <p><a href = "http://www.facebook.com">Facebook</a></p>
17         <p><a href = "http://www.twitter.com">Twitter</a></p>
18         <p><a href = "http://www.foursquare.com">Foursquare</a></p>
19         <p><a href = "http://www.google.com">Google</a></p>
20     </body>
21 </html>
```



**Fig. 2.3. Linking to other web pages.**

- The **strong element** indicates that the content has high importance. Browsers typically render such text in a bold font.
- Links are created using the **a (anchor) element**.
- Attribute **href (hypertext reference)** specifies a resource's location, such as
  - a web page or location within a web page
  - a file
  - an e-mail address
- When a URL does not indicate a specific document on the website, the web server returns a default web page. This page is often called `index.html`, but most web servers can be configured to use any file as the default web page for the site.
- If the web server cannot locate a requested document, it returns an error indication to the web browser (known as a 404 error), and the browser displays a web page containing an error message.

### *Hyperlinking to an E-Mail Address*

- Anchors can link to an e-mail address using a `mailto:` URL
  - When a user clicks this type of anchored link, most browsers launch the default e-mail program (e.g., Mozilla Thunderbird, Microsoft Outlook or Apple Mail) to enable the user to write an e-mail message to the linked address.

```

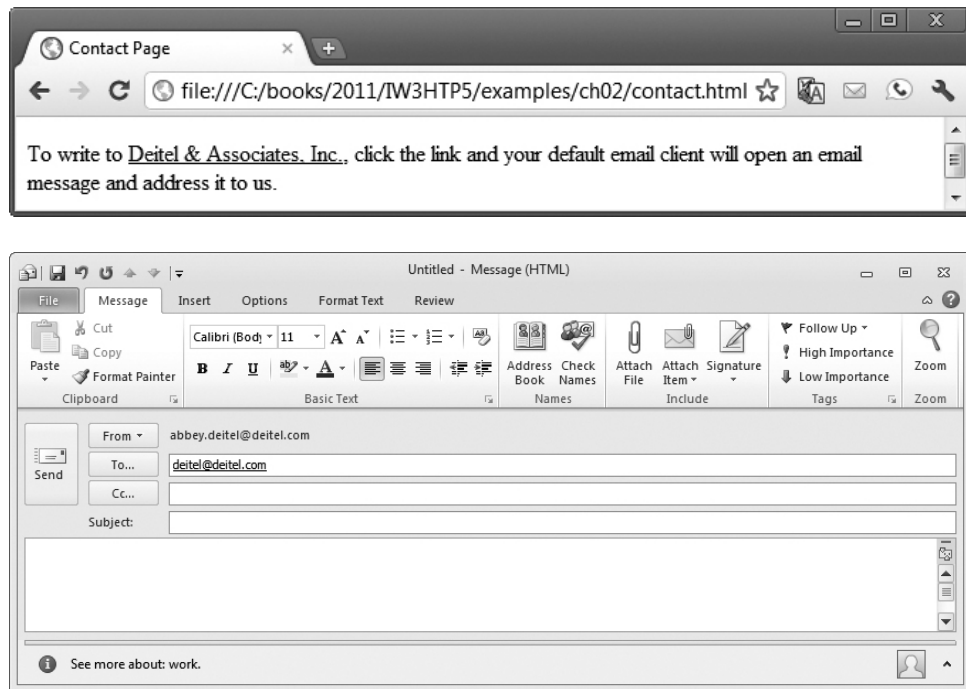
1  <!DOCTYPE html>
2
3  <!-- Fig. 2.4: contact.html -->
4  <!-- Linking to an e-mail address. -->
5  <html>
6      <head>
7          <meta charset = "utf-8">
8          <title>Contact Page</title>
9      </head>
10
11     <body>
12         <p>
13             To write to <a href = "mailto:deitel@deitel.com">
14             Deitel & Associates, Inc.</a>, click the link and your
default
15             email client will open an email message and address it to us.
16         </p>

```

```

17     </body>
18 </html>

```



**Fig. 2.4. Linking to an e-mail address.**

## 2.7 Images

- The most popular image formats used by web developers today are PNG (Portable Network Graphics) and JPEG (Joint Photographic Experts Group).
- Users can create images using specialized software, such as Adobe Photoshop Express ([www.photoshop.com](http://www.photoshop.com)), G.I.M.P. ([www.gimp.org](http://www.gimp.org)), Inkscape ([www.inkscape.org](http://www.inkscape.org)) and many more.
- Images may also be acquired from various websites, many of which offer royalty-free images.

Image-sharing site	URL
Flickr®	<a href="http://www.flickr.com">www.flickr.com</a>
Photobucket	<a href="http://photobucket.com">photobucket.com</a>
Fotki™	<a href="http://www.fotki.com">www.fotki.com</a>
deviantART	<a href="http://www.deviantart.com">www.deviantart.com</a>
Picasa™	<a href="http://picasa.google.com">picasa.google.com</a>
TinyPic®	<a href="http://tinypic.com">tinypic.com</a>
ImageShack	<a href="http://www.imageshack.us">www.imageshack.us</a>
FreeDigitalPhotos.net	<a href="http://www.freedigitalphotos.net">www.freedigitalphotos.net</a>
Open Stock Photography	<a href="http://www.openstockphotography.org">www.openstockphotography.org</a>
Open Clip Art Library	<a href="http://www.openclipart.org">www.openclipart.org</a>

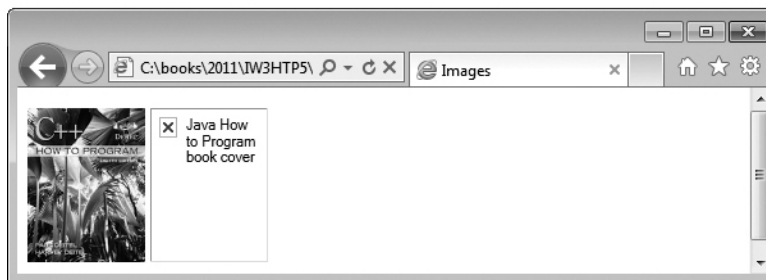
**Fig. 2.5. Popular image-sharing sites.**

```

1  <!DOCTYPE html>
2
3  <!-- Fig. 2.6: picture.html -->
4  <!-- Including images in HTML5 files. -->
5  <html>
6      <head>
7          <meta charset = "utf-8">
8          <title>Images</title>
9      </head>
10
11     <body>
12         <p>
13             <img src = "cpphttp.png" width = "92" height = "120"
14                 alt = "C++ How to Program book cover">
15             <img src = "jhttp.png" width = "92" height = "120"
16                 alt = "Java How to Program book cover">
17         </p>
18     </body>
19 </html>

```

Internet Explorer 9 showing an image and the alt text for a missing image



**Fig. 2.6. Including images in HTML5 files.**

- The img element's src attribute specifies an image's location
- Every img element must have an alt attribute, which contains text that is displayed if the client cannot render the image
  - The alt attribute makes web pages more accessible to users with disabilities, especially vision impairments
  - Width and height are optional attributes
    - ▮ If omitted, the browser uses the image's actual width and height
    - ▮ Images are measured in pixels

### ***alt Attribute***

- A browser may not be able to render an image.
- Every img element in an HTML5 document must have an alt attribute.
- If a browser cannot render an image, the browser displays the alt attribute's value.
- The alt attribute is also important for accessibility—speech synthesizer software can speak the alt attribute's value so that a visually impaired user can understand what the browser is displaying. For this reason, the alt attribute should describe the image's contents.



## *Void Elements*

- Some HTML5 elements (called **void elements**) contain only attributes and do not mark up text (i.e., text is not placed between a start and an end tag).
- You can terminate void elements (such as the `img` element) by using the forward slash character (/) inside the closing right angle bracket (>) of the start tag.
- For example, lines 15–16 of Fig. 2.6 could be written as follows:  

```
<img src = "jhtp.png" width = "92" height = "120"  
alt = "Java How to Program book cover" />
```

## *Using Images as Hyperlinks*

- By using images as hyperlinks, you can create graphical web pages that link to other resources.
- In Fig. 2.7, we create five different image hyperlinks.
- Clicking an image in this example takes the user to a corresponding web page—one of the other examples in this chapter.

---

```
1  <!DOCTYPE html>
2
3  <!-- Fig. 2.7: nav.html -->
4  <!-- Images as link anchors. -->
5  <html>
6      <head>
7          <meta charset = "utf-8">
8          <title>Navigation Bar</title>
9      </head>
10
11     <body>
12         <p>
13             <a href = "links.html">
14                 <img src = "buttons/links.jpg" width = "65"
15                     height = "50" alt = "Links">
16             </a>
17
18             <a href = "list.html">
19                 <img src = "buttons/list.jpg" width = "65"
20                     height = "50" alt = "List of Features">
21             </a>
22
23             <a href = "contact.html">
24                 <img src = "buttons/contact.jpg" width = "65"
25                     height = "50" alt = "Contact Me">
26             </a>
27
28             <a href = "table1.html">
29                 <img src = "buttons/table.jpg" width = "65"
30                     height = "50" alt = "Tables Page">
31             </a>
32
33             <a href = "form.html">
34                 <img src = "buttons/form.jpg" width = "65"
35                     height = "50" alt = "Feedback Form">
```

```

36         </a>
37     </p>
38 </body>
39 </html>

```



**Fig. 2.7. Images as link anchors.**

## 2.8 Special Characters and Horizontal Rules

- HTML5 provides **character entity references** (in the form `&code;`) for representing special characters that cannot be rendered otherwise
- The code can be:
  - Word abbreviations
  - Numbers
    - ▮ Decimal
    - ▮ Hexadecimal

Symbol	Description	Character entity reference
<i>HTML5 character entities</i>		
&	ampersand	&amp;
'	apostrophe	&apos;
>	greater-than	&gt;
<	less-than	&lt;
"	quote	&quot;
<i>Other common character entities</i>		
non-breaking space		&nbsp;
©	copyright	&copy;
—	em dash	&mdash;
—	en dash	&ndash;
¼	fraction 1/4	&frac14;
½	fraction 1/2	&frac12;
¾	fraction 3/4	&frac34;
...	horizontal ellipsis	&hellip;
®	registered trademark	&reg;
§	section	&sect;
™	trademark	&trade;

**Fig. 2.8. Some common HTML character entity references.**

- Figure 2.9 demonstrates how to use special characters in an HTML5 document.
- For an extensive list of character entities, see  
[www.w3.org/TR/REC-html40/sgml/entities.html](http://www.w3.org/TR/REC-html40/sgml/entities.html)

```

1  <!DOCTYPE html>
2
3  <!-- Fig. 2.9: contact2.html -->
4  <!-- Inserting special characters. -->
5  <html>
6    <head>
7      <meta charset = "utf-8">
8      <title>Contact Page</title>
9    </head>
10
11   <body>
12     <p>
13       <a href = "mailto:deitel@deitel.com">Send an email to
14       Deitel &amp; Associates, Inc.</a>.
15     </p>
16
17     <hr> <!-- inserts a horizontal rule -->
18
19     <!-- special characters are entered -->
20     <!-- using the form &code; -->
21     <p>All information on this site is <strong>&copy;
22     Deitel & Associates, Inc. 2012.</strong> </p>
23
24     <!-- to strike through text use <del> element -->
25     <!-- to subscript text use <sub> element -->
26     <!-- to superscript text use <sup> element -->
27     <!-- these elements are nested inside other elements -->
28     <p><del>You may download 3.14 x 10<sup>2</sup>
29     characters worth of information from this site.</del>
30     The first item in the series is x<sub>1</sub>.</p>
31     <p>Note: < ¼ of the information
32     presented here is updated daily.</p>
33   </body>
34 </html>

```



**Fig. 2.9. Inserting special characters.**

- A **horizontal rule**, indicated by the `<hr>` tag renders a horizontal line with extra space above and below it in most browsers.
- The horizontal rule element should be considered a legacy element and you should avoid using it.
- CSS can be used to add horizontal rules and other formatting to documents.
- Special characters can also be represented as **numeric character references**—decimal or hexadecimal (hex) values representing special characters.
  - For example, the `&` character is represented in decimal and hexadecimal notation as `&#38;` and `&#x26;`, respectively.
- Hexadecimal numbers are discussed in Appendix E, Number Systems, which is available online at [www.deitel.com/books/iw3http5/](http://www.deitel.com/books/iw3http5/).

## 2.9 Lists

- Unordered list element `ul`
  - creates a list in which each item in the list begins with a bullet symbol (typically a disc)
  - Each entry is an `li` (list item) element. Most web browsers render these elements with a line break and a bullet symbol at the beginning of the line.

---

```
1  <!DOCTYPE html>
2
3  <!-- Fig. 2.10: links2.html -->
4  <!-- Unordered list containing hyperlinks. -->
5  <html>
6      <head>
7          <meta charset = "utf-8">
8          <title>Links</title>
9      </head>
10
11     <body>
12         <h1>Here are my favorite sites</h1>
13         <p><strong>Click on a name to go to that page</strong></p>
14
15         <!-- create an unordered list -->
16         <ul>
17             <!-- the list contains four list items -->
18             <li><a href = "http://www.youtube.com">YouTube</a></li>
19             <li><a href = "http://www.wikipedia.org">Wikipedia</a></li>
20             <li><a href = "http://www.amazon.com">Amazon</a></li>
21             <li><a href = "http://www.linkedin.com">LinkedIn</a></li>
22         </ul>
23     </body>
24 </html>
```



**Fig. 2.10. Unordered list containing hyperlinks.**

### *Nested Lists*

- Lists may be *nested* to represent *hierarchical* relationships, as in a multi-level outline.
- Figure 2.11 demonstrates nested lists and ordered lists.
- The ordered-list element **ol** creates a list in which each item begins with a number.

```

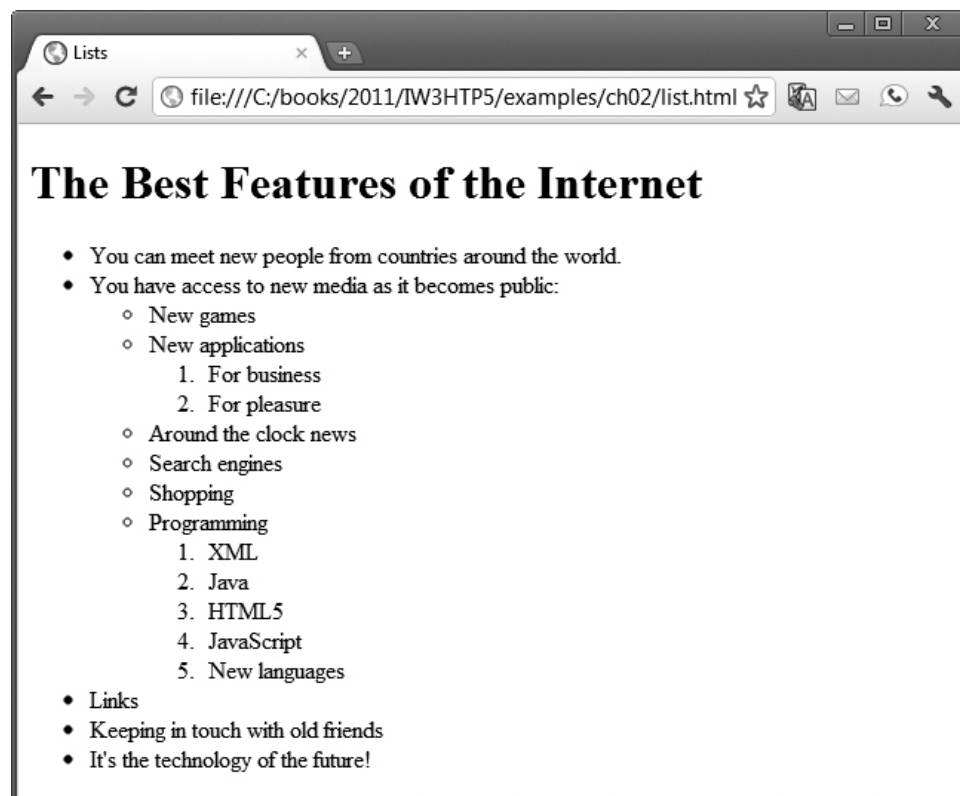
1  <!DOCTYPE html>
2
3  <!-- Fig. 2.11: list.html -->
4  <!-- Nested lists and ordered lists. -->
5  <html>
6      <head>
7          <meta charset = "utf-8">
8          <title>Lists</title>
9      </head>
10
11     <body>
12         <h1>The Best Features of the Internet</h1>
13
14         <!-- create an unordered list -->
15         <ul>
16             <li>You can meet new people from countries around
17                 the world.</li>
18             <li>
19                 You have access to new media as it becomes public:
20
21                 <!-- this starts a nested unordered list, which uses a -
22                 <!-- different bullet. The list ends when you -->
23                 <!-- close the <ul> tag. -->
24                 <ul>
25                     <li>New games</li>
26                     <li>New applications
27
28                     <!-- nested ordered list -->
29                     <ol>
30                         <li>For business </li>
31                         <li>For pleasure </li>
32                     </ol>
33                 </li> <!-- ends line 27 new applications li-->

```

```

34
35         <li>Around the clock news</li>
36         <li>Search engines</li>
37         <li>Shopping</li>
38         <li>Programming
39
40             <!-- another nested ordered list -->
41             <ol>
42                 <li>XML</li>
43                 <li>Java</li>
44                 <li>HTML5</li>
45                 <li>JavaScript</li>
46                 <li>New languages</li>
47             </ol>
48         </li> <!-- ends programming li of line 38 -->
49     </ul> <!-- ends the nested list of line 24 -->
50 </li>
51
52     <li>Links</li>
53     <li>Keeping in touch with old friends</li>
54     <li>It's the technology of the future!</li>
55 </ul> <!-- ends the unordered list of line 15 -->
56 </body>
57 </html>

```



**Fig. 2.11. Nested lists and ordered lists.**

## 2.10 Tables

- Tables are frequently used to organize data into *rows* and *columns*.
- The table element defines an HTML5 table
- The summary attribute summarizes the table's contents and is used by speech devices to make the table more accessible to users with visual impairments.
- The caption element specifies a table's title.
- It's good practice to include a general description of a table's information in the table element's **summary** attribute—one of the many HTML5 features that make web pages more accessible to users with disabilities.
  - Speech devices use this attribute to make the table more accessible to users with visual impairments.

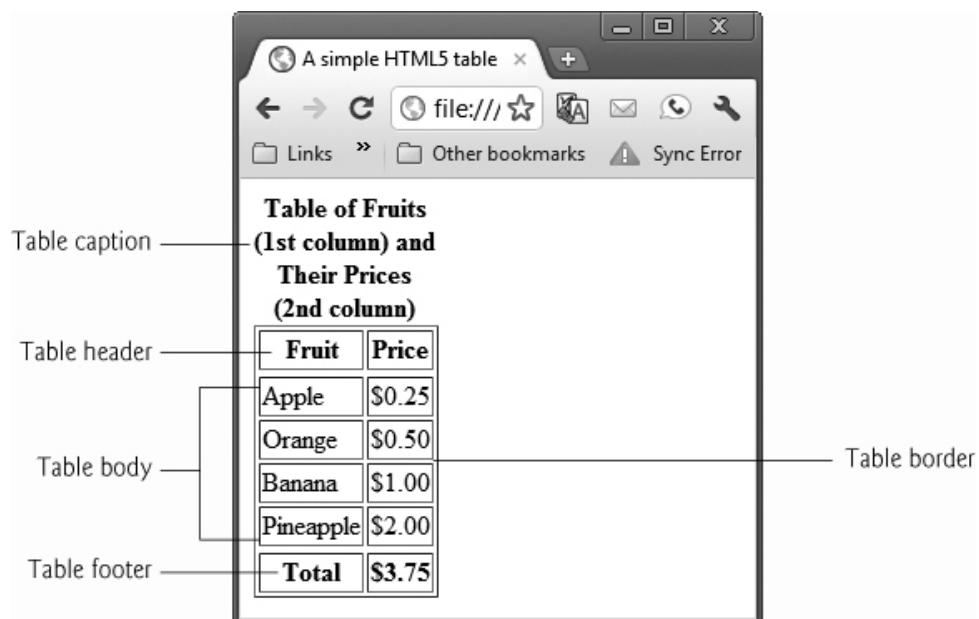
---

```
1  <!DOCTYPE html>
2
3  <!-- Fig. 2.12: table1.html -->
4  <!-- Creating a basic table. -->
5  <html>
6      <head>
7          <meta charset = "utf-8">
8          <title>A simple HTML5 table</title>
9      </head>
10
11     <body>
12         <!-- the <table> tag opens a table -->
13         <table border = "1">
14
15             <!-- the <caption> tag summarizes the table's -->
16             <!-- contents (this helps visually impaired people) -->
17             <caption><strong>Table of Fruits (1st column) and
18                 Their Prices (2nd column)</strong></caption>
19
20             <!-- the <thead> section appears first in the table -->
21             <!-- it formats the table header area -->
22             <thead>
23                 <tr> <!-- <tr> inserts a table row -->
24                     <th>Fruit</th> <!-- insert a heading cell -->
25                     <th>Price</th>
26                 </tr>
27             </thead>
28
29             <!-- the <tfoot> section appears last in the table -->
30             <!-- it formats the table footer -->
31             <tfoot>
32                 <tr>
33                     <th>Total</th>
34                     <th>$3.75</th>
35                 </tr>
36             </tfoot>
37
38             <!-- all table content is enclosed -->
39             <!-- within the <tbody> -->
```

```

40     <tbody>
41     <tr>
42         <td>Apple</td> <!-- insert a data cell -->
43         <td>$0.25</td>
44     </tr>
45     <tr>
46         <td>Orange</td>
47         <td>$0.50</td>
48     </tr>
49     <tr>
50         <td>Banana</td>
51         <td>$1.00</td>
52     </tr>
53     <tr>
54         <td>Pineapple</td>
55         <td>$2.00</td>
56     </tr>
57 </tbody>
58 </table>
59 </body>
60 </html>

```



**Fig. 2.12. Creating a basic table.**

- A table can be split into three distinct sections:
  - Head (thead element)
    - Table titles
    - Column headers
  - Body (tbody element)
    - Primary table data
  - Table Foot (tfoot element)
    - Calculation results
    - Footnotes
    - Above body section in the code, but displays at the bottom in the page



- **tr Element**
  - Defines individual table rows
  - Element th
    - Defines a header cell
- **Td Element**
  - Contains table data elements

### *Using rowspan and colspan with Tables*

- Figure 2.13 introduces two new attributes that allow you to build more complex tables.
- You can merge data cells with the rowspan and colspan attributes
  - The values of these attributes specify the number of rows or columns occupied by the cell.
  - Can be placed inside any data cell or table header cell.
- The br element is rendered as a line break in most browsers—any markup or text following a br element is rendered on the next line.
- Like the img element, br is an example of a void element.
- Like the hr element, br is considered a legacy formatting element that you should avoid using—in general, formatting should be specified using CSS.

---

```

1  <!DOCTYPE html>
2
3  <!-- Fig. 2.13: table2.html -->
4  <!-- Complex HTML5 table. -->
5  <html>
6      <head>
7          <meta charset = "utf-8">
8          <title>Tables</title>
9      </head>
10
11     <body>
12         <h1>Table Example: Spanning Rows and Columns</h1>
13
14         <table border = "1">
15             <caption>A more complex sample table</caption>
16
17             <thead>
18                 <!-- rowspans and colspans merge the specified -->
19                 <!-- number of cells vertically or horizontally -->
20                 <tr>
21                     <!-- merge two rows -->
22                     <th rowspan = "2">
23                         <img src = "camel.png" width = "205"
24                             height = "167" alt = "Picture of a camel">
25                     </th>
26
27                     <!-- merge four columns -->
28                     <th colspan = "4">
29                         <strong>Camelid comparison</strong><br>
30                         Approximate as of 10/2011
31                     </th>

```

```

32         </tr>
33     <tr>
34         <th># of humps</th>
35         <th>Indigenous region</th>
36         <th>Spits?</th>
37         <th>Produces wool?</th>
38     </tr>
39 </thead>
40 <tbody>
41     <tr>
42         <th>Camels (bactrian)</th>
43         <td>2</td>
44         <td>Africa/Asia</td>
45         <td>Yes</td>
46         <td>Yes</td>
47     </tr>
48     <tr>
49         <th>Llamas</th>
50         <td>1</td>
51         <td>Andes Mountains</td>
52         <td>Yes</td>
53         <td>Yes</td>
54     </tr>
55 </tbody>
56 </table>
57 </body>
58 </html>

```

Tables

file:///C:/books/2011/IW3HTP5/examples/ch02/table2.html

## Table Example: Spanning Rows and Columns

A more complex sample table


	Camelid comparison Approximate as of 6/2011			
	# of humps	Indigenous region	Spits?	Produces wool?
Camels (bactrian)	2	Africa/Asia	Yes	Yes
Llamas	1	Andes Mountains	Yes	Yes

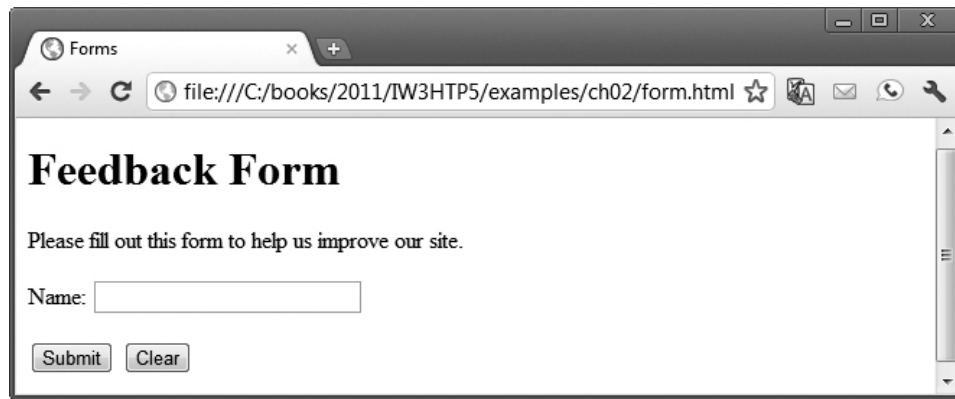
Fig. 2.13. Complex HTML5 table.

## 2.11 Forms

- HTML5 provides **forms** for collecting information from users.
- Figure 2.14 is a simple form that sends data to the web server for processing.

---

```
1  <!DOCTYPE html>
2
3  <!-- Fig. 2.14: form.html -->
4  <!-- Form with a text field and hidden fields. -->
5  <html>
6      <head>
7          <meta charset = "utf-8">
8          <title>Forms</title>
9      </head>
10
11     <body>
12         <h1>Feedback Form</h1>
13
14         <p>Please fill out this form to help
15             us improve our site.</p>
16
17         <!-- this tag starts the the form, gives the -->
18         <!-- method of sending information and the -->
19         <!-- location of the form-processing script -->
20         <form method = "post" action = "http://www.deitel.com">
21             <!-- hidden inputs contain non-visual -->
22             <!-- information that will also be submitted -->
23             <input type = "hidden" name = "recipient"
24                 value = "deitel@deitel.com">
25             <input type = "hidden" name = "subject"
26                 value = "Feedback Form">
27             <input type = "hidden" name = "redirect"
28                 value = "main.html">
29
30             <!-- <input type = "text"> inserts a text field -->
31             <p><label>Name:
32                 <input name = "name" type = "text" size = "25"
33                     maxlength = "30">
34             </label></p>
35
36             <p>
37                 <!-- input types "submit" and "reset" insert -->
38                 <!-- buttons for submitting and clearing the -->
39                 <!-- form's contents, respectively -->
40                 <input type = "submit" value = "Submit">
41                 <input type = "reset" value = "Clear">
42             </p>
43         </form>
44     </body>
45 </html>
```



**Fig. 2.14. Form with a text field and hidden fields.**

### *method Attribute of the form Element*

- A form is defined by a form element
  - Attribute method specifies how the form's data is sent to the web server.
  - Using method = "post" appends form data to the browser request, which contains the protocol (HTTP) and the requested resource's URL.
  - The other possible value, method = "get", appends the form data directly to the end of the URL of the script, where it's visible in the browser's Address field.
  - The action attribute of the form element specifies the script to which the form data will be sent

### *action Attribute of the form Element*

- The action attribute of the form element specifies the script to which the form data will be sent.
- Since we haven't introduced server-side programming yet, we set this attribute to `http://www.deitel.com` for now.
- **input** elements that specify data to provide to the script that processes the form (also called the **form handler**).
- An input's type is determined by its **type attribute**.

### *Hidden Inputs*

- Forms can contain visual and nonvisual components.
- Visual components include clickable buttons and other graphical user interface components with which users interact.
- Nonvisual components, called hidden inputs, store any data that you specify, such as e-mail addresses and HTML5 document file names that act as links.

### *text input Element*

- The text input inserts a text field into the form, which allows the user to input data.
- The label element provides users with information about the input element's purpose
- The size attribute specifies the number of characters visible in the text field.
- Optional attribute maxlength limits the number of characters input into a text field.

### *submit and reset input Elements*

- The **submit** input element is a button.
  - When the submit button is pressed, the form's data is sent to the location specified in the form's action attribute.
- The **value** attribute sets the text displayed on the button.
- The **reset** input element allows a user to reset all form elements to their default values.

### *Additional Form Elements*

- Figure 2.15 contains a form that solicits user feedback about a website.
- The **textarea** element inserts a *multiline text area* into the form.
- The number of rows is specified with the **rows** attribute, and the number of columns (i.e., characters per line) with the **cols** attribute.
- Default text can be specified in other input types, such as text fields, by using the value attribute.

---

```
1  <!DOCTYPE html>
2
3  <!-- Fig. 2.15: form2.html -->
4  <!-- Form using a variety of components. -->
5  <html>
6      <head>
7          <meta charset = "utf-8">
8          <title>More Forms</title>
9      </head>
10
11     <body>
12         <h1>Feedback Form</h1>
13         <p>Please fill out this form to help
14             us improve our site.</p>
15
16         <form method = "post" action = "http://www.deitel.com">
17
18             <input type = "hidden" name = "recipient"
19                 value = "deitel@deitel.com">
20             <input type = "hidden" name = "subject"
21                 value = "Feedback Form">
22             <input type = "hidden" name = "redirect"
23                 value = "main.html">
24
25             <p><label>Name:
26                 <input name = "name" type = "text" size = "25">
27             </label></p>
28
29             <!-- <textarea> creates a multiline textbox -->
30             <p><label>Comments:<br>
31                 <textarea name = "comments"
32                     rows = "4" cols = "36">Enter comments here.</textarea>
33             </label></p>
34
35             <!-- <input type = "password"> inserts a -->
36             <!-- textbox whose display is masked with -->
```

```

37      <!-- asterisk characters -->
38      <p><label>E-mail Address:
39          <input name = "email" type = "password" size = "25">
40      </label></p>
41
42      <p>
43          <strong>Things you liked:</strong><br>
44
45          <label>Site design
46              <input name = "thingsliked" type = "checkbox"
47                  value = "Design"></label>
48          <label>Links
49              <input name = "thingsliked" type = "checkbox"
50                  value = "Links"></label>
51          <label>Ease of use
52              <input name = "thingsliked" type = "checkbox"
53                  value = "Ease"></label>
54          <label>Images
55              <input name = "thingsliked" type = "checkbox"
56                  value = "Images"></label>
57          <label>Source code
58              <input name = "thingsliked" type = "checkbox"
59                  value = "Code"></label>
60      </p>
61
62      <!-- <input type = "radio"> creates a radio -->
63      <!-- button. The difference between radio buttons -->
64      <!-- and checkboxes is that only one radio button -->
65      <!-- in a group can be selected. -->
66      <p>
67          <strong>How did you get to our site?:</strong><br>
68
69          <label>Search engine
70              <input name = "howtosite" type = "radio"
71                  value = "search engine" checked></label>
72          <label>Links from another site
73              <input name = "howtosite" type = "radio"
74                  value = "link"></label>
75          <label>Deitel.com Web site
76              <input name = "howtosite" type = "radio"
77                  value = "deitel.com"></label>
78          <label>Reference in a book
79              <input name = "howtosite" type = "radio"
80                  value = "book"></label>
81          <label>Other
82              <input name = "howtosite" type = "radio"
83                  value = "other"></label>
84      </p>
85
86      <p>
87          <label>Rate our site:
88
89              <!-- the <select> tag presents a drop-down -->
90              <!-- list with choices indicated by the -->

```

```

91      <!-- <option> tags -->
92      <select name = "rating">
93          <option selected>Amazing</option>
94          <option>10</option>
95          <option>9</option>
96          <option>8</option>
97          <option>7</option>
98          <option>6</option>
99          <option>5</option>
100         <option>4</option>
101         <option>3</option>
102         <option>2</option>
103         <option>1</option>
104         <option>Awful</option>
105     </select>
106 </label>
107 </p>
108
109     <p>
110         <input type = "submit" value = "Submit">
111         <input type = "reset" value = "Clear">
112     </p>
113 </form>
114 </body>
115 </html>

```

The screenshot shows a web browser window titled 'More Forms' with the address bar displaying 'file:///C:/books/2011/IW3HTP5/examples/ch02/form2.html'. The page content is a 'Feedback Form' with the following elements:

- Title:** Feedback Form
- Text:** Please fill out this form to help us improve our site.
- Name:** A text input field.
- Comments:** A text area with the placeholder text 'Enter comments here.'
- E-mail Address:** A text input field.
- Things you liked:** A section with checkboxes for 'Site design', 'Links', 'Ease of use', 'Images', 'Source code', and an unchecked checkbox.
- How did you get to our site?:** A section with radio buttons for 'Search engine', 'Links from another site', 'Deitel.com Web site' (which is selected), 'Reference in a book', and 'Other'.
- Rate our site:** A dropdown menu currently showing 'Amazing'. Below it is a list of options: 10, 9, 8, 7, 6, 5, 4, 3, 2, 1, and Awful.
- Buttons:** A 'Submit' button and a 'Clear' button (represented by a 'C' in a circle).

**Fig. 2.15. Form using a variety of components.**

- The password input inserts a password box into a form.
  - Allows users to enter sensitive information, such as credit card numbers and passwords, by “masking” the information input with another character, usually asterisks.
  - The actual value input is sent to the web server, not the asterisks that mask the input.
- The checkbox input element enables users to select and option.
  - When the checkbox is selected, a check mark appears in the checkbox . Otherwise, the checkbox is empty
  - checkboxes can be used individually and in groups. checkboxes that are part of the same group have the same name
- radio buttons are similar to checkboxes, except that only one radio button in a group can be selected at any time.
  - All radio buttons in a group have the same name attribute but different value attributes.
- The select input provides a drop-down list of items.
  - The name attribute identifies the drop-down list.
  - The option element adds items to the drop-down list.

## 2.12 Internal Linking

- The a tag can be used to link to another section of the same document by specifying the element’s id as the link’s href.
- To link internally to an element with its id attribute set, use the syntax *#id*.

---

```

1  <!DOCTYPE html>
2
3  <!-- Fig. 2.16: internal.html -->
4  <!-- Internal Linking -->
5  <html>
6    <head>
7      <meta charset = "utf-8">
8      <title>Internal Links</title>
9    </head>
10
11   <body>
12     <!-- id attribute creates an internal hyperlink destination -->
13     <h1 id = "features">The Best Features of the Internet</h1>
14
15     <!-- an internal link's address is "#id" -->
16     <p><a href = "#bugs">Go to <em>Favorite Bugs</em></a></p>
17
18     <ul>
19       <li>You can meet people from countries
20         around the world.</li>
21       <li>You have access to new media as it becomes public:
22         <ul>
23           <li>New games</li>
24           <li>New applications

```



```

25         <ul>
26             <li>For Business</li>
27             <li>For Pleasure</li>
28         </ul>
29     </li>
30
31     <li>Around the clock news</li>
32     <li>Search Engines</li>
33     <li>Shopping</li>
34     <li>Programming
35         <ul>
36             <li>HTML5</li>
37             <li>Java</li>
38             <li>Dynamic HTML</li>
39             <li>Scripts</li>
40             <li>New languages</li>
41         </ul>
42     </li>
43 </ul>
44 </li>
45
46     <li>Links</li>
47     <li>Keeping in touch with old friends</li>
48     <li>It is the technology of the future!</li>
49 </ul>
50
51 <!-- id attribute creates an internal hyperlink destination -->
52 <h1 id = "bugs">My 3 Favorite Bugs</h1>
53 <p>
54     <!-- internal hyperlink to features -->
55     <a href = "#features">Go to <em>Favorite Features</em></a>
56 </p>
57 <ol>
58     <li>Fire Fly</li>
59     <li>Gal Ant</li>
60     <li>Roman Tic</li>
61 </ol>
62 </body>
63 </html>

```

a) Browser before the user clicks the internal link



b) Browser after the user clicks the internal link

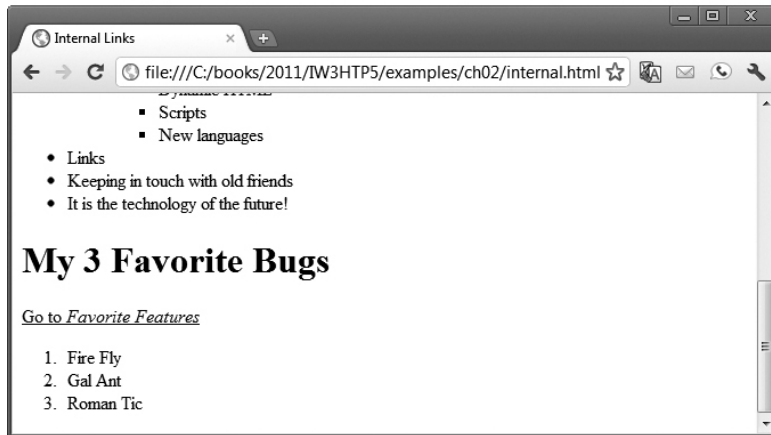


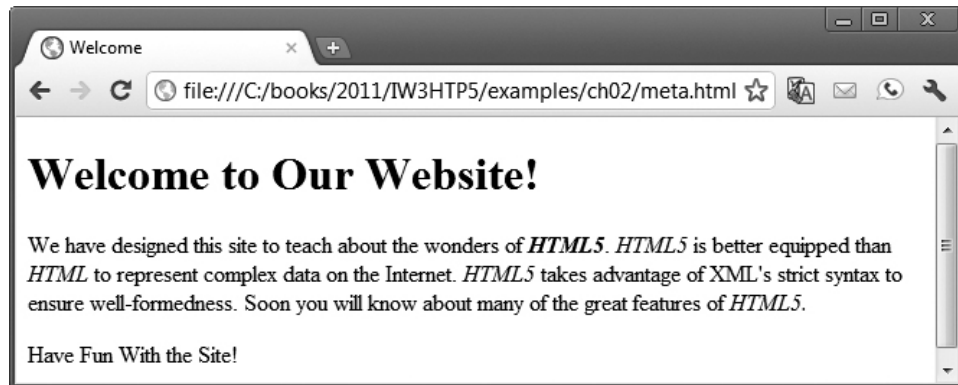
Fig. 2.16. Internal hyperlinks to make pages more navigable.

## 2.13 meta elements

- One way that search engines catalog pages is by reading the meta element's contents.
  - The name attribute identifies the type of meta element
  - The content attribute
    - ▮ Of a keywords meta element: provides search engines with a list of words that describe a page, which are compared with words in search requests
    - ▮ Of a description meta element: provides a three- to four-line description of a site in sentence form, used by search engines to catalog your site. This text is sometimes displayed as part of the search result

```
1  <!DOCTYPE html>
2
3  <!-- Fig. 2.17: meta.html -->
4  <!-- meta elements provide keywords and a description of a page. -->
5  <html>
6    <head>
7      <meta charset = "utf-8">
8      <title>Welcome</title>
9
10     <!-- <meta> tags provide search engines with -->
11     <!-- information used to catalog a site      -->
12     <meta name = "keywords" content = "web page, design,
13       HTML5, tutorial, personal, help, index, form,
14       contact, feedback, list, links, deitel">
15     <meta name = "description" content = "This website will
16       help you learn the basics of HTML5 and web page design
17       through the use of interactive examples and
18       instruction.">
19   </head>
20   <body>
21     <h1>Welcome to Our Website!</h1>
22
23     <p>We have designed this site to teach about the wonders
24     of <strong><em>HTML5</em></strong>. <em>HTML5</em> is
25     better equipped than <em>HTML</em> to represent complex
```

```
26      data on the Internet. <em>HTML5</em> takes advantage of
27      XML's strict syntax to ensure well-formedness. Soon you
28      will know about many of the great features of
29      <em>HTML5.</em></p>
30
31      <p>Have Fun With the Site!</p>
32  </body>
33 </html>
```



---

**Fig. 2.17.** meta elements provide keywords and a description of a page.