Ch 4: Marking Up with HTML

- More HTML
- Hyperlinks with anchor tags
- Handling images
- Absolute and relative pathnames
- Color, lists, tables

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Hypertext and anchor tags

- Probably the most revolutionary feature of HTML: *hypertext*
  - Hypertext: The ability for one document to link to another document, or to another part of itself
  - This takes us beyond ordinary linear, sequential text
  - In HTML, this is done with *anchor tags*

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Anchor tags with text hyperlink

- Anchor tags have this form:

```
<a href="file-to-link-to">
  Text to click on goes here
</a>
```

  – This will display the text between the start and end anchor tags (the "anchor text") as a *hyperlink*

  – When viewing the page in a browser, clicking on that text sends a request for the page specified by the value of the anchor tag's href attribute

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Anchor tags with image hyperlink

- Anchor tags can also have this form:

```
<a href="file-to-link-to">
  <img src="image-file">
</a>
```

  - This will display the image as an *active image hyperlink*
  - When viewing the page in a browser, clicking on that image sends a request for the page specified by the value of the anchor tag's href attribute

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Absolute and relative path names

- In those examples:
  - file-to-link-to has to name an HTML file
  - image-file has to name an image file
- If the file is on the same web server as the page containing the <a> or <img> tag, you can use a *relative path name*
- If the file is on another server, you have to use an *absolute path name*

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Absolute path names

- An absolute path name is a full URL

- Example:

```
For more information about skiing, go
to
<a href="http://www.onthesnow.com">
this site! </a>
```

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Relative path names

- A relative path name specifies a file relative to the HTML file in which the anchor or image *tag* appears

- To understand relative path names, it really helps to understand directory structure in filesystems

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Relative path names

- Suppose that you have a web page in a file **file1**. In **file1**, you want to refer to another file **file2**. Then:
  - If file2 is in the same directory as file1, just give the name of file2, e.g.: `ski.jpg`
  - If file2 is in a subdirectory, specify the subdirectory and the name of file2, e.g.: `pix/ski.jpg`
  - If file2 is in a superdirectory, move up using dot-dot notation, e.g.: `../ski.jpg`

Common bugs: the path is wrong, or permissions are not set correctly … check!

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File Structure

- A *Directory*, or *folder*, is a named collection of files, other directories, or both
- *Directory Hierarchy*: Directories can contain other directories, which can contain other directories, etc.
  - Down, or lower in the hierarchy, means moving into subdirectories
  - Up, or higher in the hierarchy, means into containing directories

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File Structure (cont'd)

- Pathnames appear in some URL's:

  `http://www.si.edu/galleries/ga1100/pioneer.html`

- Pathname appears after the server domain name:

  `/galleries/ga1100/pioneer.html`

- Moving left to right in a pathname:
  - Each time you pass a slash (/), you move down the filesystem hierarchy into a subdirectory or into a file

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Hierarchical organization is useful

- People naturally use hierarchies to organize their thinking and work
- Moving down a hierarchy, you move from the general to the more specific
- Example: an outline for a paper or a book

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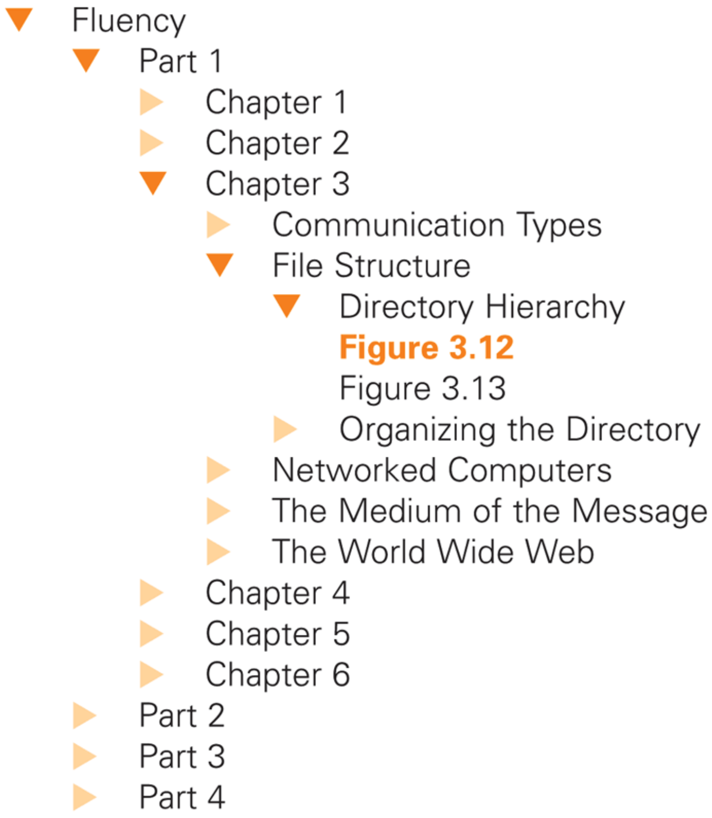

- ▼ Fluency
  - ▼ Part 1
    - ▶ Chapter 1
    - ▶ Chapter 2
    - ▼ Chapter 3
      - ▶ Communication Types
      - ▼ File Structure
        - ▼ Directory Hierarchy
          - **Figure 3.12**
          - Figure 3.13
        - ▶ Organizing the Directory
      - ▶ Networked Computers
      - ▶ The Medium of the Message
      - ▶ The World Wide Web
    - ▶ Chapter 4
    - ▶ Chapter 5
    - ▶ Chapter 6
  - ▶ Part 2
  - ▶ Part 3
  - ▶ Part 4

Figure 3.12. *The hierarchy of this book highlighting the path to this figure.*

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Relative path names in a hierarchy

- Suppose you have a folder named galleries
- In galleries, you have a folder named gal001, and a file named index.html
- In the directory gal001, you have a file named info.html
- In that index.html file, you want to refer to that info.html file. What relative pathname should you use?

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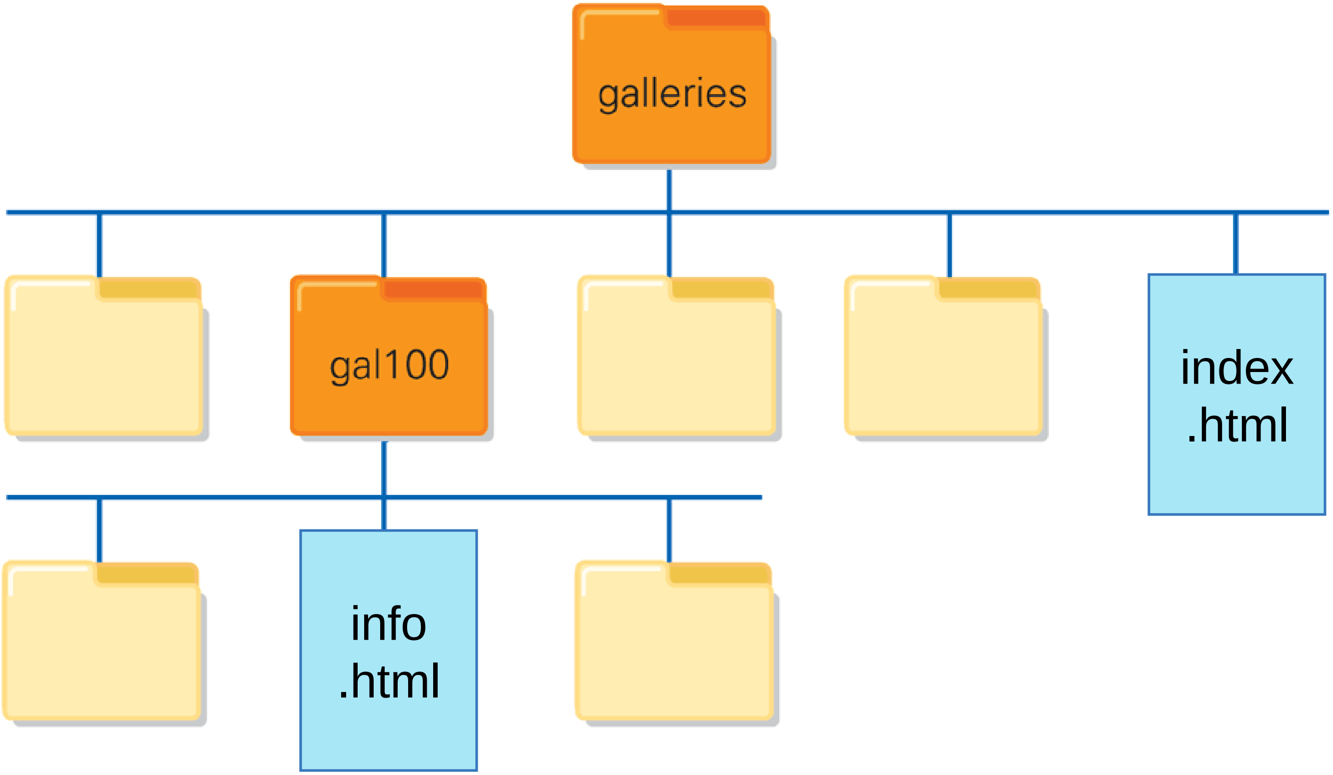

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Relative pathname example

- In that index.html file, you can refer to that info.html file with the relative pathname gal001/info.html
- For example, in index.html:

```
For more information about Gallery 001,
click
<a href="gal001/info.html">here.</a>
```

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The index file

- The main home page for a web site is usually put in a file named index.html or index.htm
- When a URL ends with a directory name, the server automatically looks for a file named index.html or index.htm in that directory
- If it can't find one, the browser will display the entire contents of that directory (files and subdirectories) instead

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Handling Color

- In a HTML page, default colors are usually light gray for the page background, black for text, blue for hypertext links
- But different colors can be specified for these
- In a **`body`** tag:
  - `bgcolor` attribute specifies solid background color of the page
  - `text` attribute specifies color of normal text
  - `link` attribute specifies color of hypertext links
- In a **`font`** tag:
  - `color` attribute specifies color of text up to closing font tag

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How to specify color values

- The value of a color-controlling attribute can be specified in two ways:
  - Use hexadecimal color numbers: # followed by 2 hexadecimal digits for each of R, G, B
    - 2 hexadecimal digits gives a number in range 0-255
    - 000000 = black, FFFFFF = white, FF0000 = red, etc
    - Need to understand additive RGB colors! examples:

```
bgcolor='#000000'

text='#00FF00'
```

  - Use predefined color terms. Examples:

```
bgcolor='black'

text='green'
```

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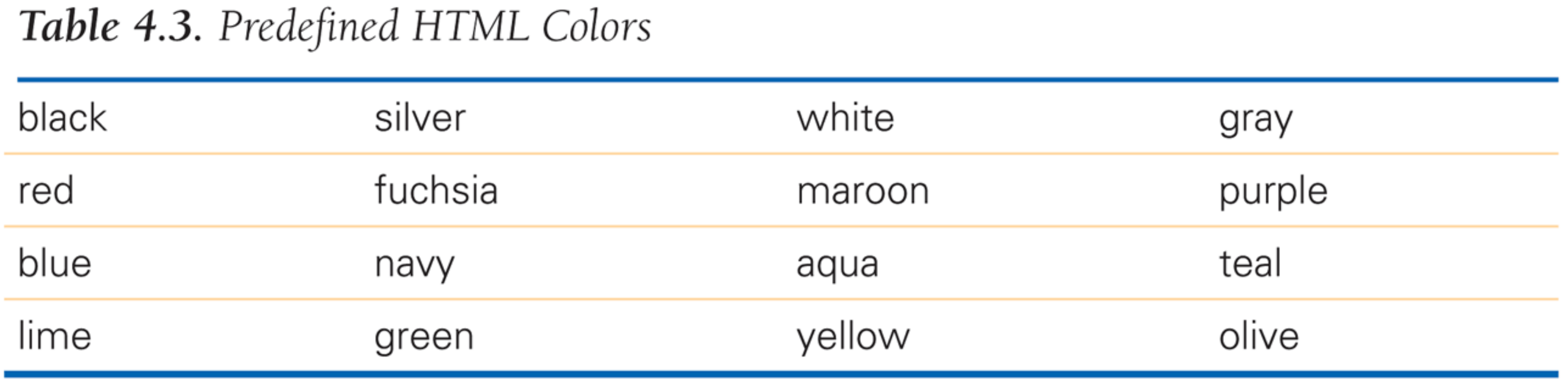

Table 4.3. Predefined HTML Colors

black	silver	white	gray
red	fuchsia	maroon	purple
blue	navy	aqua	teal
lime	green	yellow	olive

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***Table 4.4.** Hexadecimal Digit Equivalents*

Hex	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
3	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
4	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
5	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
6	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
7	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
8	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
9	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
A	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
B	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191
C	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
D	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
E	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
F	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255

Note: Find the decimal number in the table and then combine the entries in the left column and the top row symbols to form the hexadecimal equivalent. Thus decimal 180 is hexadecimal B4.

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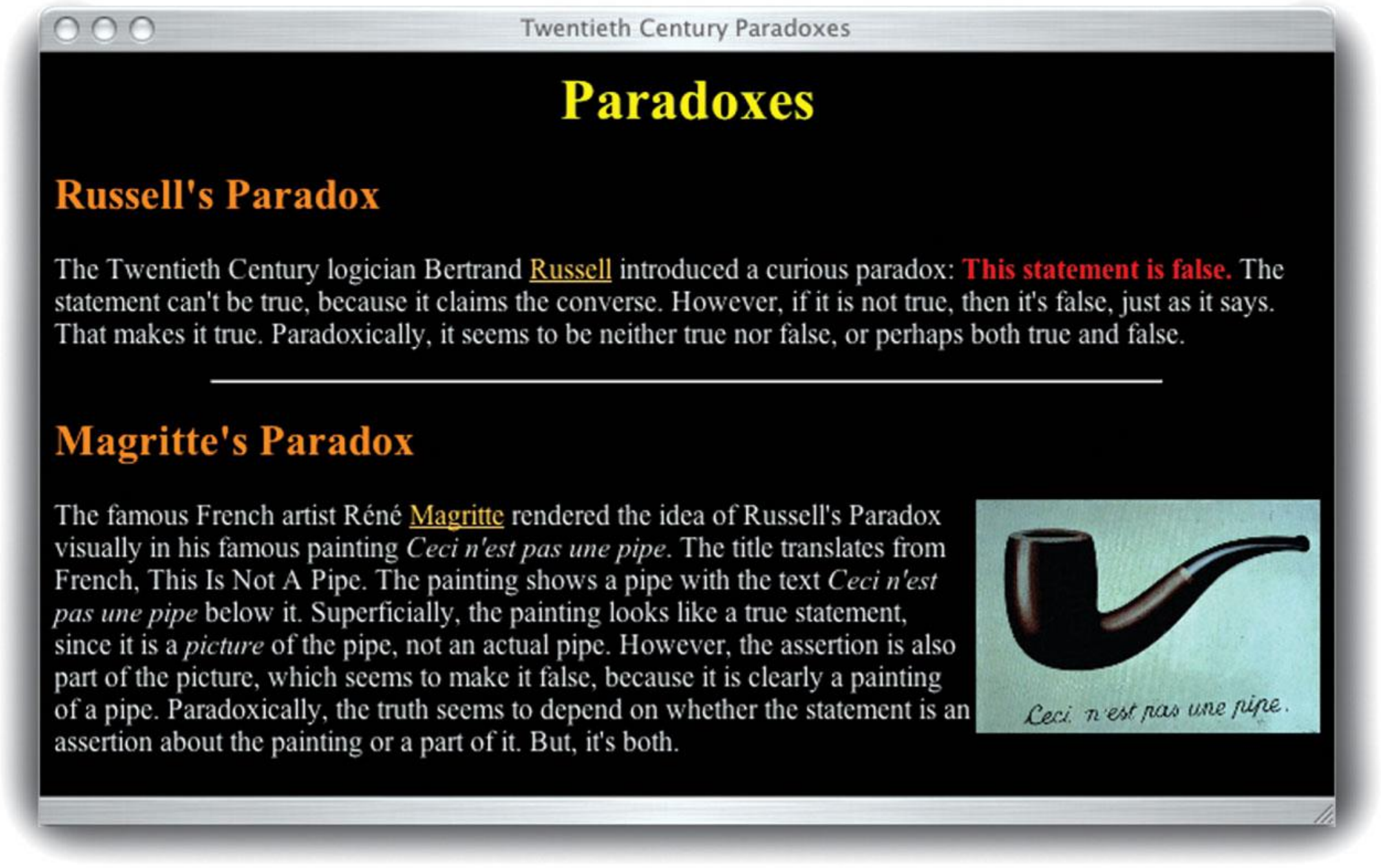

Twentieth Century Paradoxes

Paradoxes

Russell's Paradox

The Twentieth Century logician Bertrand Russell introduced a curious paradox: **This statement is false.** The statement can't be true, because it claims the converse. However, if it is not true, then it's false, just as it says. That makes it true. Paradoxically, it seems to be neither true nor false, or perhaps both true and false.

Magritte's Paradox

The famous French artist Réné Magritte rendered the idea of Russell's Paradox visually in his famous painting *Ceci n'est pas une pipe*. The title translates from French, This Is Not A Pipe. The painting shows a pipe with the text *Ceci n'est pas une pipe* below it. Superficially, the painting looks like a true statement, since it is a *picture* of the pipe, not an actual pipe. However, the assertion is also part of the picture, which seems to make it false, because it is clearly a painting of a pipe. Paradoxically, the truth seems to depend on whether the statement is an assertion about the painting or a part of it. But, it's both.

Figure 4.2. *Completed Web page and the HTML source (continues next page).*

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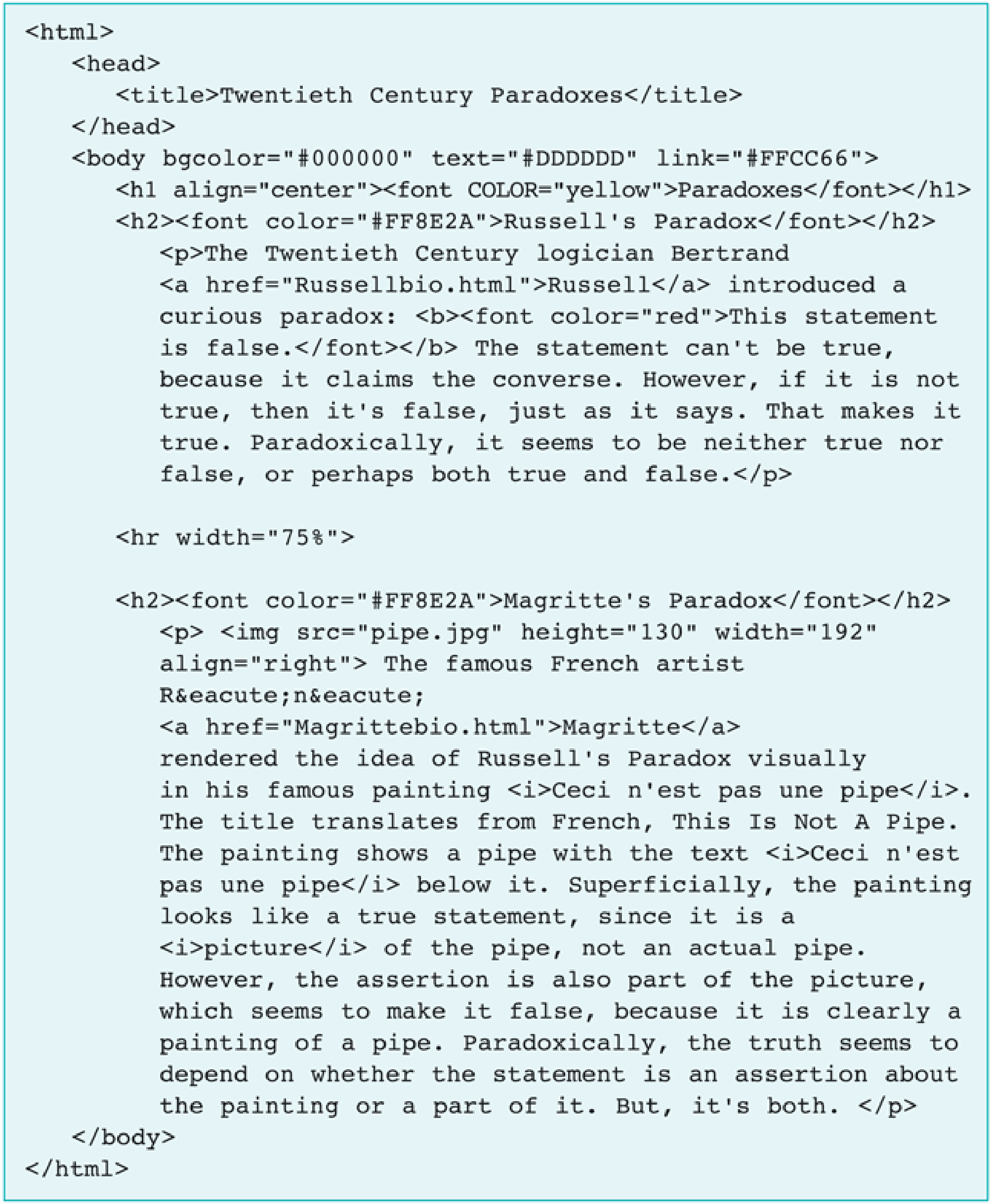

```
<html>
   <head>
      <title>Twentieth Century Paradoxes</title>
   </head>
   <body bgcolor="#000000" text="#DDDDDD" link="#FFCC66">
      <h1 align="center"><font COLOR="yellow">Paradoxes</font></h1>
      <h2><font color="#FF8E2A">Russell's Paradox</font></h2>
         <p>The Twentieth Century logician Bertrand
         <a href="Russellbio.html">Russell</a> introduced a
         curious paradox: <b><font color="red">This statement
         is false.</font></b> The statement can't be true,
         because it claims the converse. However, if it is not
         true, then it's false, just as it says. That makes it
         true. Paradoxically, it seems to be neither true nor
         false, or perhaps both true and false.</p>

      <hr width="75%">

      <h2><font color="#FF8E2A">Magritte's Paradox</font></h2>
         <p> <img src="pipe.jpg" height="130" width="192"
         align="right"> The famous French artist
         R&eacute;n&eacute;
         <a href="Magrittebio.html">Magritte</a>
         rendered the idea of Russell's Paradox visually
         in his famous painting <i>Ceci n'est pas une pipe</i>.
         The title translates from French, This Is Not A Pipe.
         The painting shows a pipe with the text <i>Ceci n'est
         pas une pipe</i> below it. Superficially, the painting
         looks like a true statement, since it is a
         <i>picture</i> of the pipe, not an actual pipe.
         However, the assertion is also part of the picture,
         which seems to make it false, because it is clearly a
         painting of a pipe. Paradoxically, the truth seems to
         depend on whether the statement is an assertion about
         the painting or a part of it. But, it's both. </p>
   </body>
</html>
```

Figure 4.2 (continued). *Completed Web page and the HTML source.*

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Handling Lists

- *Unnumbered* (bulleted) list:
  - `<ul>` and `</ul>` tags begin and end the list
  - `<li>` and `</li>` tags begin and end each item within the list
- *Ordered* (numbered) list:
  - `<ol>` and `</ol>` tags begin and end the list
  - Uses the same `<li>` tags for each item in the list
- *Sublists:* You can have lists within lists
- *Definitional* list:
  - `<dl>` and `</dl>` tags begin and end the list
  - `<dt>` and `</dt`> surround each term to be defined
  - `<dd>` and `</dd>` surround each definition

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List examples: HTML

- This HTML code displays as shown next:

```
<ul>
    <li> first item </li>
    <li> second item </li>
</ul>
<ol>
    <li> an item </li>
    <li> another one </li>
    <li> yet another </li>
 </ol>
<dl>
    <dt> term1 </dt> <dd> definition 1 </dd>
    <dt> term2 </dt> <dd> definition 2 </dd>

<dl>
```

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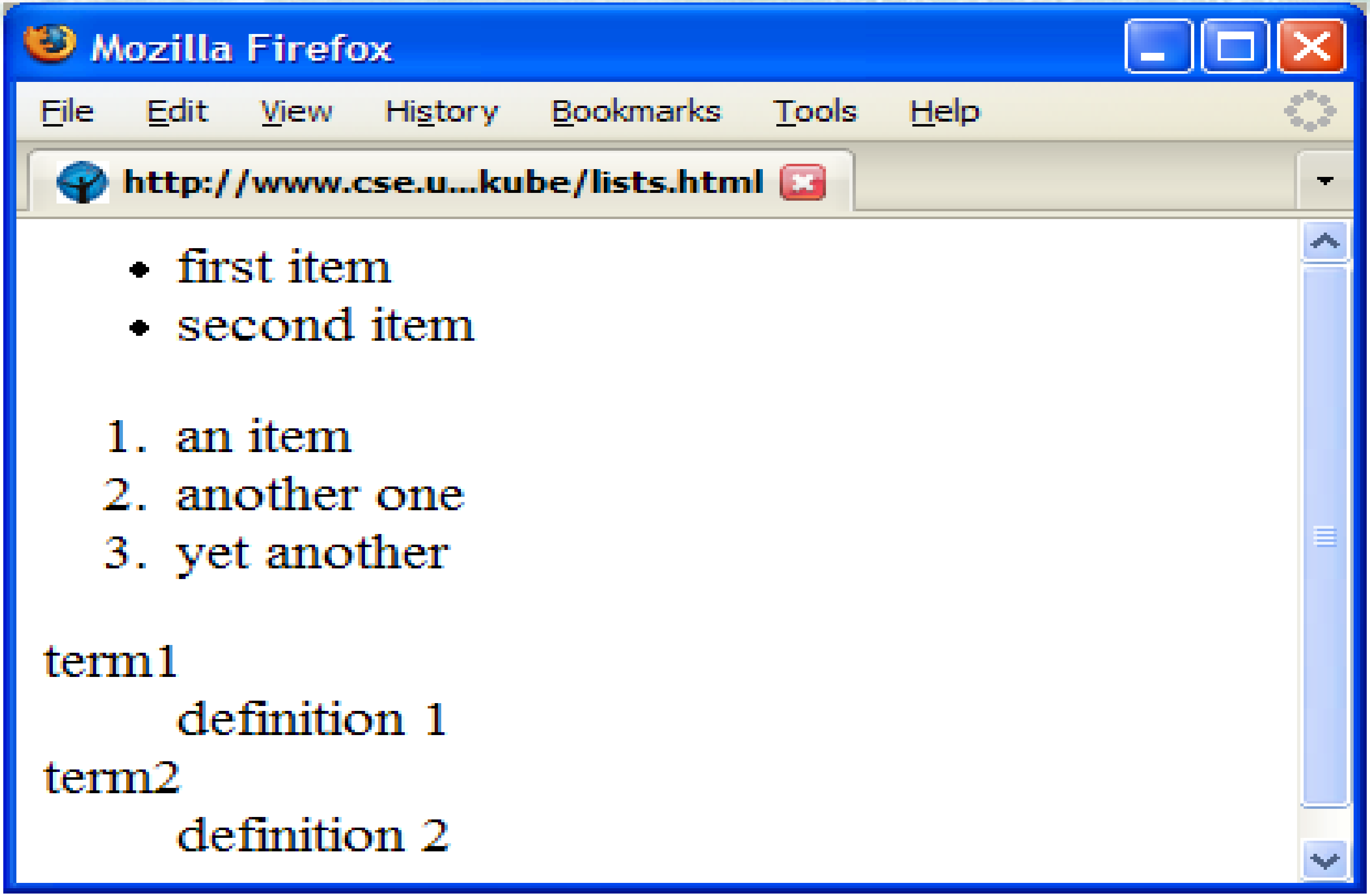
List examples: display



- first item
- second item

1. an item
2. another one
3. yet another

term1
    definition 1
term2
    definition 2

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Handling Tables

- Table begins and ends with `<table>` and `</table>` tags
- Each row is enclosed in table row tags, `<tr>` and `</tr>`
- Each cell in a row is surrounded by table data tags, `<td>` and `</td>`
- Create a caption centered at the top of the table with `<caption>` and `</caption>` tags
- Column headings are created as first row of table by using `<th>` and `</th>` tags instead of `td`

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Table example: HTML

- This HTML code displays as shown next:

```
<table border='1'>

 <caption> A Wonderous Table </caption>

 <th>Col 1</th> <th>Col 2</th> <th>Col 3</th>

 <tr>
    <td>1,1</td> <td>1,2</td> <td>1,3</td>
 </tr>
 <tr>
    <td>2,1</td> <td>2,2</td> <td>2,3</td>
 </tr>

</table>
```

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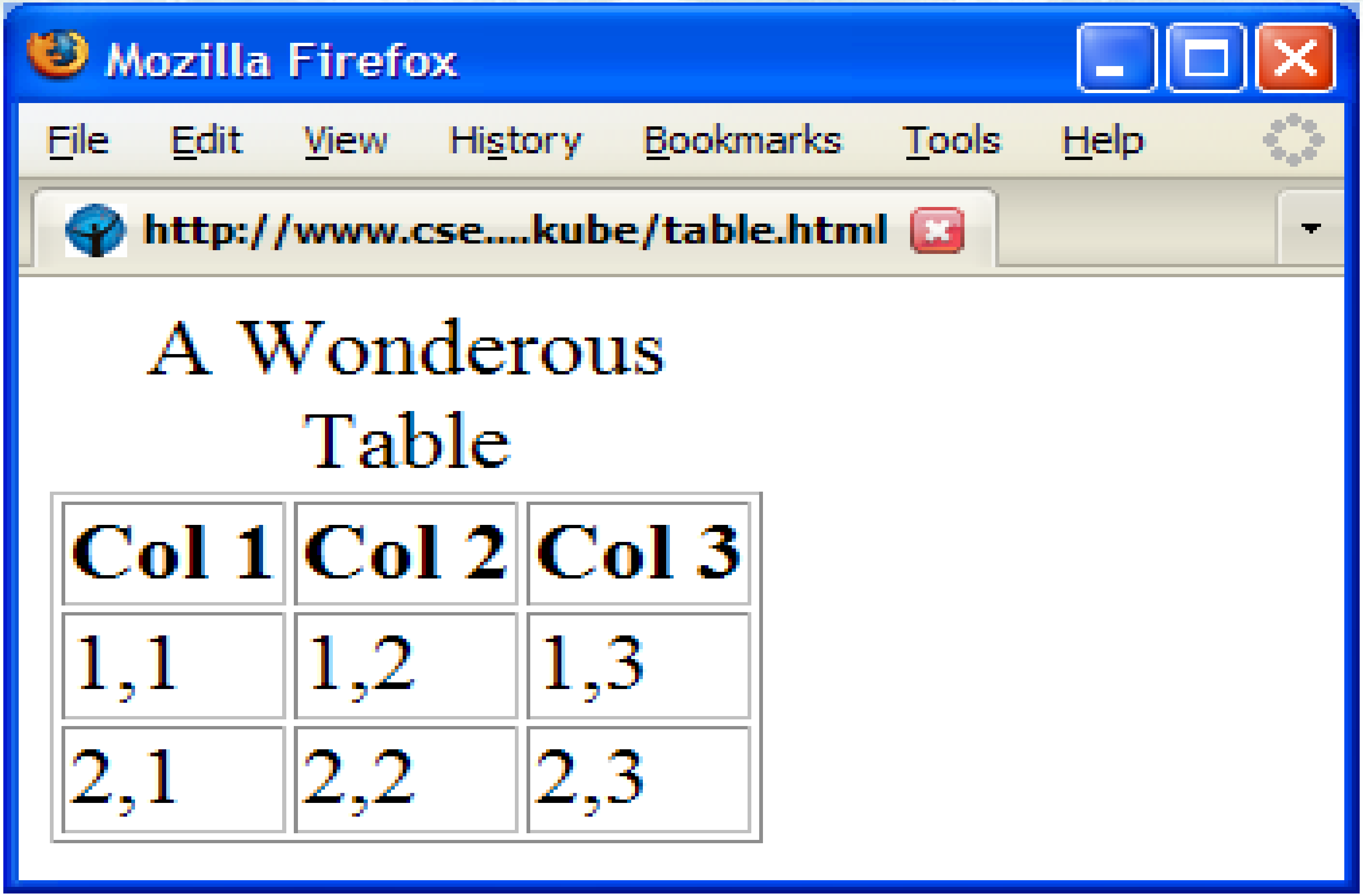
Table example: display



A Wonderous Table

Col 1	Col 2	Col 3
1,1	1,2	1,3
2,1	2,2	2,3

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Controlling Text with Tables

- Tables can control arrangement of information on a page
- e.g., a series of links listed across the top of the page could be placed in a one-row table to keep them together
    - If the window is too small to display all the links, the table keeps them in a row and a scroll bar is automatically added
    - If the tags are not in a table, the links will wrap to the next line instead

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Summary

- Web pages are written in HTML
  - The files must be text
  - The file extension must be **`.html`** or **`.htm`**
- Tags and attributes specify structure
- Use a change-and-test process
- Images have various formats
- Links use relative or absolute paths
- Lists and tables add formatting power
- Look for HTML tutorials on the web!

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