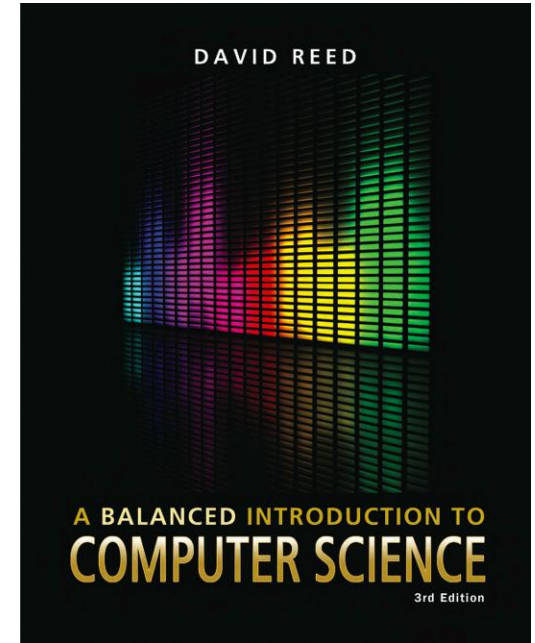


A Balanced Introduction to Computer Science, 3/E

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Chapter 2 HTML and Web Pages

HTML & Web Pages



recall: a Web page is a text document that contains additional formatting information in the HyperText Markup Language (HTML)

- HTML specifies formatting within a page using *tags*
- in its simplest form, a tag is a word or symbol surrounded by brackets (<>)

```
1 <!doctype html>
2 <!-- sample.html      Dave Reed -->
3 <!-- Sample Web page. -->
4 <!-- ----- -->
5
6 <html>
7 <head>
8   <title> Sample Web Page </title>
9 </head>
10
11 <body>
12   <div style="text-align:center">
13     <h2>Dave's Page</h2>
14     
15   </div>
16
17   <p>Hello and welcome to my page! If you
18   would like, you can find out more about me
19   <a href="personal.html">here</a>.</p>
20 </body>
21 </html>
```

A Web page is a text document that contains HTML formatting.



A Web browser is a program that interprets the HTML and displays the page.

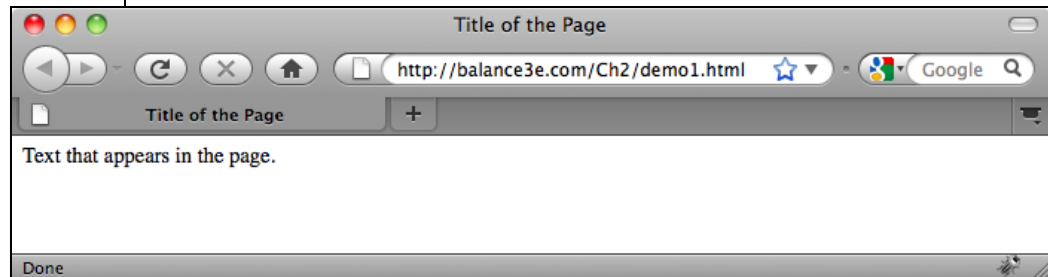
HTML Tags



required tags in a Web page:

- `<html>` and `</html>` enclose the entire HTML document
- the HEAD section (enclosed between `<head>` and `</head>`) contains information that the browser uses to control the look of the page
 - ▣ the HEAD can contain a title for the browser window, enclosed between `<title>` and `</title>`
- the BODY section (enclosed between `<body>` and `</body>`) contains the text that will appear in the page

```
1. <!doctype html>
2. <!-- demo1.html           Dave Reed -->
3. <!-- This is a simple Web page.      -->
4. <!-- =====            -->
5.
6. <html>
7. <head>
8.   <title> Title of the Page </title>
9. </head>
10.
11. <body>
12.   Text that appears in the page.
13. </body>
14. </html>
```



HTML Elements



tags and the text they enclose form an *HTML element*

`<title> Title of the Page </title>` is a TITLE element

```
<head>
  <title> Title of the Page </title>
</head>
```

is a HEAD element (which contains a nested TITLE element)

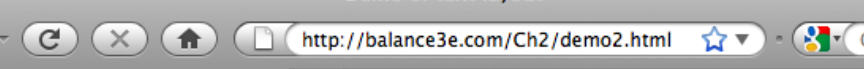
most HTML elements have opening and closing tags, but not all

`<!-- demo1.html Dave Reed -->` is a COMMENT element

- a comment is ignored by the browser (it does not appear in the rendered page)
- comments are used by the page developer to document page features

- this allows the browser to adjust the text to the window size

- a PARAGRAPH element (`<p>...</p>`) specifies text surrounded by blank lines
- a BREAK element (`
`) causes text to be displayed on a new line
- the ` ` symbol forces a space to appear in the text

A screenshot of a web browser window. The title bar at the top says "Demo of text layout". The address bar shows the URL "http://balance3e.com/Ch2/demo2.html". The page content consists of two paragraphs. The first paragraph is "Here is a paragraph that is broken across two lines." and the second is "Here is another paragraph. This time, the first line is indented two spaces." The browser's status bar at the bottom shows the word "Done".

Headings & Alignment



in a large document, it is useful to divide the text into sections and then provide each with a heading describing the content that follows

- `<h1> ... </h1>` enclose a top-level heading (large and bold)
- `<h2> ... </h2>` enclose a sub-heading (slightly smaller and bold)
- ...
- `<h6> ... </h6>` enclose the smallest sub-heading

the HORIZONTAL-RULE element `<hr>` draws a dividing line in the page

by default, headings and other elements are left-justified in the page

- can change the alignment of an element by adding a *style attribute* that qualifies the appearance of the element

```
<h1 style="text-align:center"> Centered Heading </h1>
```

```
<p style="text-align:right">
```

```
  This paragraph is right justified. Each line will be shifted  
  to line up at the right margin.
```

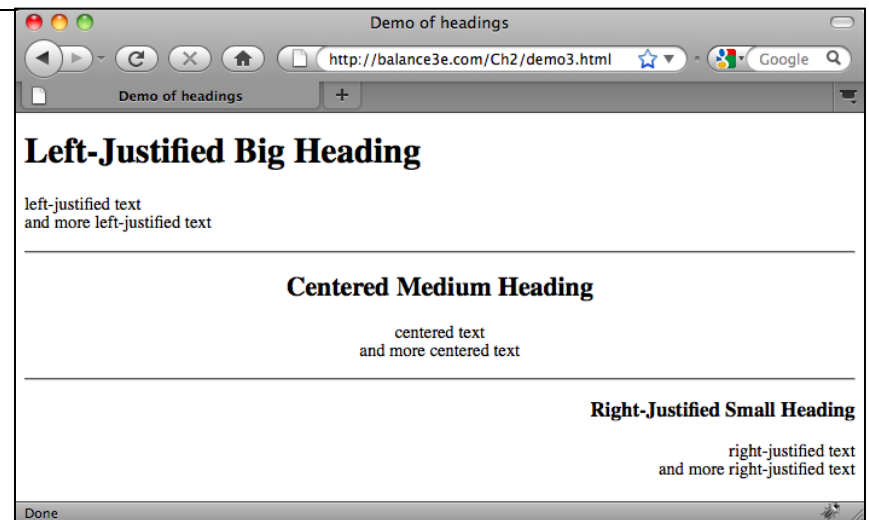
```
</p>
```

Headings & Alignment (cont.)



the DIV element groups multiple elements, so they can be formatted together

```
1. <!doctype html>
2. <!-- demo3.html Dave Reed -->
3. <!-- This page demos headings and alignment. -->
4. <!-- ===== -->
5.
6. <html>
7. <head>
8. <title> Demo of headings </title>
9. </head>
10.
11. <body>
12. <h1>Left-Justified Big Heading</h1>
13. <p>
14. left-justified text <br>
15. and more left-justified text
16. </p>
17.
18. <hr>
19.
20. <h2 style="text-align:center">Centered Medium Heading</h2>
21. <p style="text-align:center">
22. centered text <br>
23. and more centered text
24. </p>
25.
26. <hr>
27.
28. <div style="text-align:right">
29. <h3>Right-Justified Small Heading</h3>
30. <p>
31. right-justified text <br>
32. and more right-justified text
33. </p>
34. </div>
35. </body>
36. </html>
```



Font Formatting



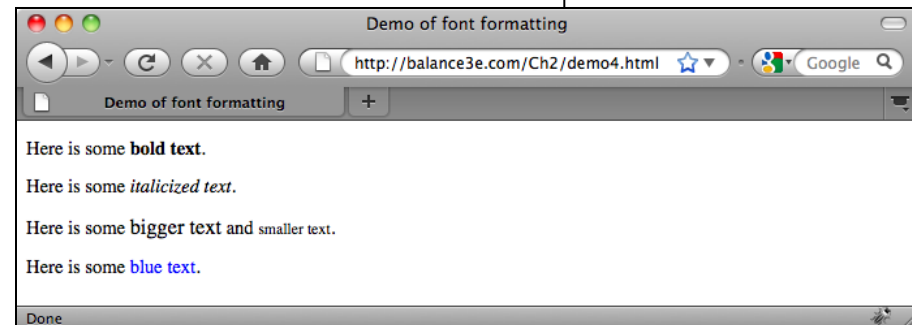
text can be formatted in a variety of ways

- bold (` ... `), italics (`<i> ... </i>`), underlined (`<u> ... </u>`)

colored text is enclosed in ` ... `

- common colors can be used (e.g., red, green, orange, lightblue, darkblue)

```
1. <!doctype html>
2. <!-- demo4.html Dave Reed -->
3. <!-- This page demos font formatting. -->
4. <!-- ===== -->
5.
6. <html>
7.   <head>
8.     <title> Demo of font formatting </title>
9.   </head>
10.
11.  <body>
12.    <p>Here is some <b>bold text</b>.</p>
13.
14.    <p>Here is some <i>italicized text</i>.</p>
15.
16.    <p>Here is some <big>bigger text</big> and <small>smaller text</small>.</p>
17.
18.    <p>Here is some <span style="color:blue">blue text</span>.</p>
19.  </body>
20. </html>
```



Hyperlinks



a *hyperlink*, or just *link*, is a connection to another Web page

- by default, a link appears as underlined text in the page
- when the user clicks on the link, the corresponding page is retrieved and displayed

a link is specified using ANCHOR tags `<a>` and ``

- text that appears within the tags is displayed as the link in the page
- must have an HREF attribute that specifies the associated Web address

```
<a href="http://www.creighton.edu">Creighton University</a>
```

```
<a href="personal.html">Local Page</a>
```

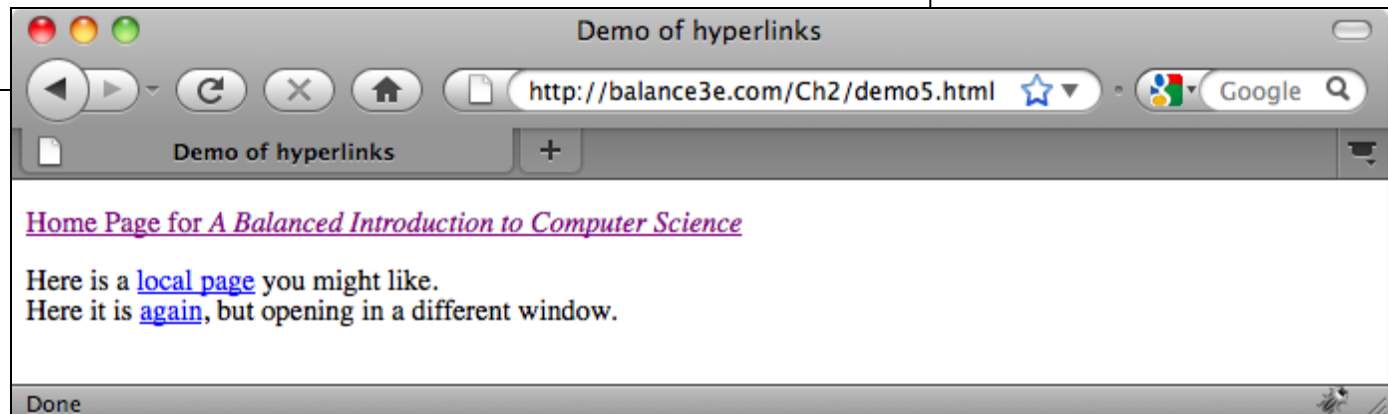
note: the browser displays links underlined and in color

- by default, links whose pages have not yet been visited are blue
- by default, links whose pages have previously been visited are purple

Hyperlinks (cont.)



```
1. <!doctype html>
2. <!-- demo5.html Dave Reed -->
3. <!-- This page demos hyperlinks. -->
4. <!-- ===== -->
5.
6. <html>
7. <head>
8. <title> Demo of hyperlinks </title>
9. </head>
10.
11. <body>
12. <p>
13. <a href="http://balance3e.com">Home Page for
14. <i>A Balanced Introduction to Computer Science</i></a>
15. </p>
16.
17. <p>
18. Here is a <a href="local.html">local page</a> you might like. <br>
19. Here it is <a href="local.html" target="_blank">again</a>, but
20. opening in a different window.
21. </p>
22. </body>
23. </html>
```



Images



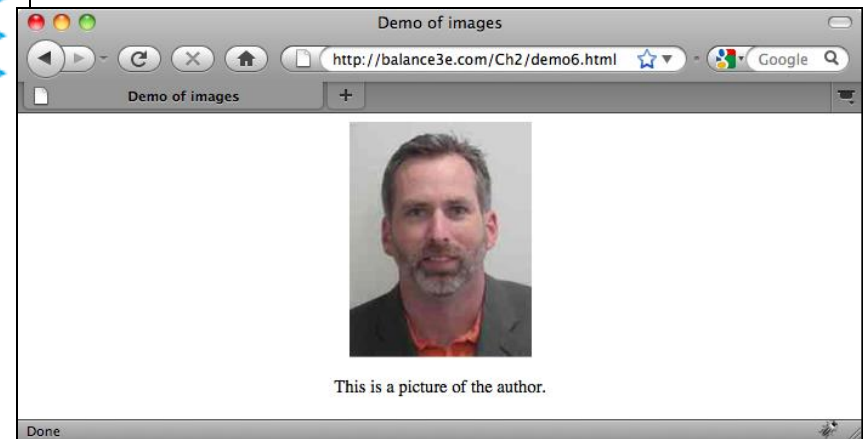
Web pages can contain other types of media besides text and links

- images are embedded in a page using an IMG tag (``)

IMG attributes

- SRC specifies the location of the image file
- ALT specifies alternate text that is displayed if the image fails to load

```
1. <!doctype html>
2. <!-- demo6.html                Dave Reed -->
3. <!-- This page demos images.    -->
4. <!-- =====                    -->
5.
6. <html>
7.   <head>
8.     <title> Demo of images </title>
9.   </head>
10.
11.  <body>
12.    <div style="text-align:center">
13.      
14.
15.      <p>This is a picture of the author.</p>
16.    </div>
17.  </body>
18. </html>
```



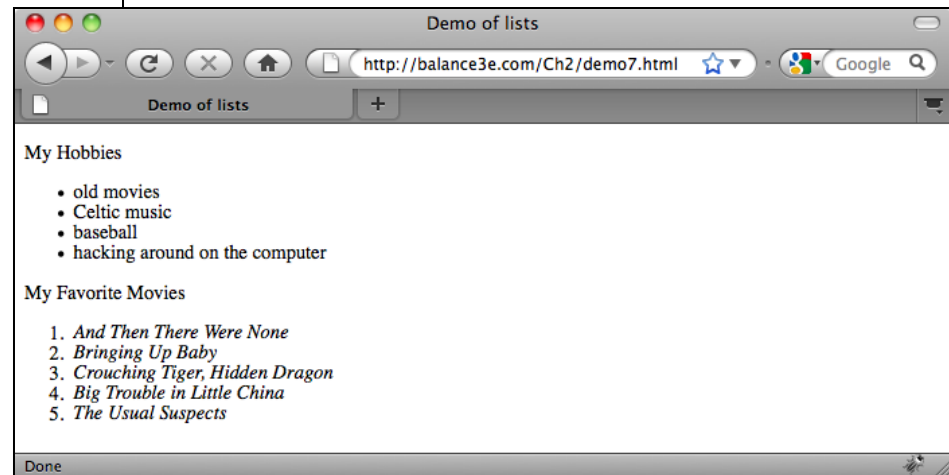
Lists



HTML lists organize items in sequence

- `...` enclose an unordered list; `...` enclose an ordered list
- `...` enclose a list item

```
1. <!doctype html>
2. <!-- demo7.html                                Dave Reed -->
3. <!-- This page demos unordered and ordered lists. -->
4. <!-- ===== -->
5.
6. <html>
7. <head>
8.   <title> Demo of lists </title>
9. </head>
10.
11. <body>
12.   <p>My Hobbies</p>
13.   <ul>
14.     <li> old movies </li>
15.     <li> Celtic music </li>
16.     <li> baseball </li>
17.     <li> hacking around on the computer </li>
18.   </ul>
19.
20.   <p>My Favorite Movies</p>
21.   <ol>
22.     <li> <i>And Then There Were None</i> </li>
23.     <li> <i>Bringing Up Baby</i> </li>
24.     <li> <i>Crouching Tiger, Hidden Dragon</i> </li>
25.     <li> <i>Big Trouble in Little China</i> </li>
26.     <li> <i>The Usual Suspects</i> </li>
27.   </ol>
28. </body>
29. </html>
```



Lists (cont.)



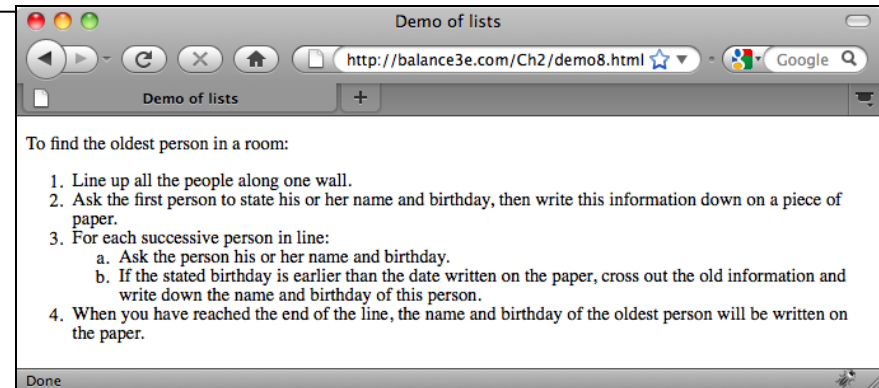
a style attribute can be used to format the list elements

```
<ul style="list-style-type:square">
<ol style="list-style-type:lower-alpha">

<ol style="list-style-type:upper-alpha">
<ol style="list-style-type:lower-roman">
<ol style="list-style-type:upper-roman">
```

- Items preceded by squares.
- Items preceded by lowercase letters (a, b, c, d, ...).
- Items preceded by uppercase letters (A, B, C, D, ...).
- Items preceded by lowercase roman letters (i, ii, iii, iv, ...).
- Items preceded by uppercase roman letters (I, II, III, ...).

```
1. <!doctype html>
2. <!-- demo8.html Dave Reed -->
3. <!-- This page demos formatted lists. -->
4. <!-- ===== -->
5.
6. <html>
7. <head>
8. <title> Demo of lists </title>
9. </head>
10.
11. <body>
12. <p>To find the oldest person in a room:</p>
13.
14. <ol>
15. <li>Line up all the people along one wall. </li>
16. <li>Ask the first person to state his or her name and birthday,
17. then write this information down on a piece of paper. </li>
18. <li>For each successive person in line:
19. <ol style="list-style-type:lower-alpha">
20. <li>Ask the person his or her name and birthday. </li>
21. <li>If the stated birthday is earlier than the date
22. written on the paper, cross out the old information
23. and write down the name and birthday of this person. </li>
24. </ol> </li>
25. <li>When you have reached the end of the line, the name and
26. birthday of the oldest person will be written on the paper. </li>
27. </ol>
28. </body>
29. </html>
```



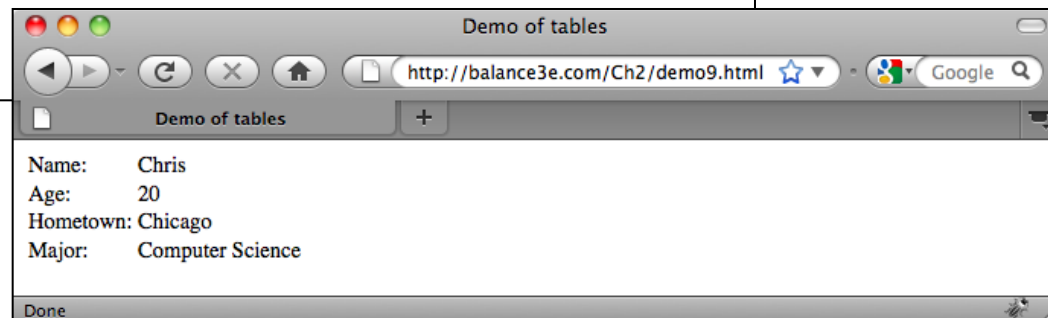
Tables



text can be aligned into rows and columns using a TABLE element

- `<table>` and `</table>` encapsulate the table data
- `<tr>` and `</tr>` encapsulate a row within the table
- `<td>` and `</td>` encapsulate table data within a row (i.e., a column entry)

```
1. <!doctype html>
2. <!-- demo9.html Dave Reed -->
3. <!-- This page demos a borderless table. -->
4. <!-- ===== -->
5.
6. <html>
7. <head>
8.   <title> Demo of tables </title>
9. </head>
10.
11. <body>
12.   <table>
13.     <tr> <td> Name: </td> <td> Chris </td> </tr>
14.     <tr> <td> Age: </td> <td> 20 </td> </tr>
15.     <tr> <td> Hometown: </td> <td> Chicago </td> </tr>
16.     <tr> <td> Major: </td> <td> Computer Science </td> </tr>
17.   </table>
18. </body>
19. </html>
```



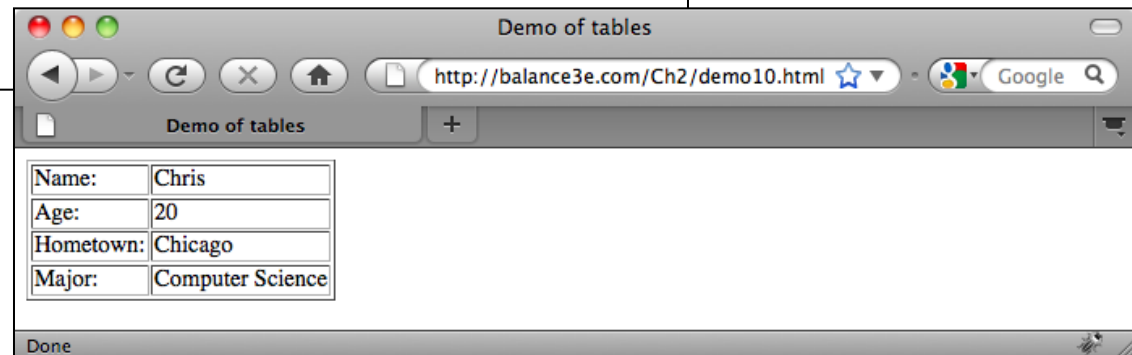
Tables with Borders



borders can be added to tables using a style attribute

- `style="border:solid"` adds a border to the table or table data items

```
1. <!doctype html>
2. <!-- demo10.html           Dave Reed -->
3. <!-- This page demos a borderless table. -->
4. <!-- ===== -->
5.
6. <html>
7.   <head>
8.     <title> Demo of tables </title>
9.   </head>
10.
11.   <body>
12.     <table style="border:solid">
13.       <tr> <td style="border:solid"> Name: </td>
14.         <td style="border:solid"> Chris </td> </tr>
15.       <tr> <td style="border:solid"> Age: </td>
16.         <td style="border:solid"> 20 </td> </tr>
17.       <tr> <td style="border:solid"> Hometown: </td>
18.         <td style="border:solid"> Chicago </td> </tr>
19.       <tr> <td style="border:solid"> Major: </td>
20.         <td style="border:solid"> Computer Science </td> </tr>
21.     </table>
22.   </body>
23. </html>
```



Tables for Alignment



```
1. <!doctype html>
2. <!-- demo11.html Dave Reed -->
3. <!-- This page demos a table for alignment. -->
4. <!-- ===== -->
5.
6. <html>
7. <head>
8. <title> Demo of tables </title>
9. </head>
10.
11. <body>
12. <table>
13. <tr>
14. <td></td>
15. <td>Thanks for visiting my site. <br> Please contact
16. <i>help@dave-reed.com</i> if you have any questions.</td>
17. </tr>
18. </table>
19. </body>
20. </html>
```

tables can be used to align elements in the page

- here, an image is aligned to the left of some text

