MASSEY UNIVERSITY

COMPUTER SCIENCE & INFORMATION TECHNOLOGY
SCHOOL OF FUNDAMENTAL SCIENCES

Introduction to CSS3: *Designing a Web Page with CSS*

Textbook Tutorial 2: *Getting Started With CSS3*

Topic Case: Tri & Succeed Sport

Alison Palmer runs Tri and Succeed Sports, an athletic club in Wanganui, New Zealand the specialises in coaching women and men who are aspiring to compete in the triathelons and other enduring sports. The centre provides year-round instructions in running, swimming, cycling and general fitness with one-on-one and group training classes. Alison has asked you to work on the company's website.

Alison designed the original Tri & Succeed Sports website several years ago but she now feels that the site needs a makeover. She wants a new design that uses colours and interesting typography to create visual interest and impact, She wants you to use CSS3 to help give the website a new look.

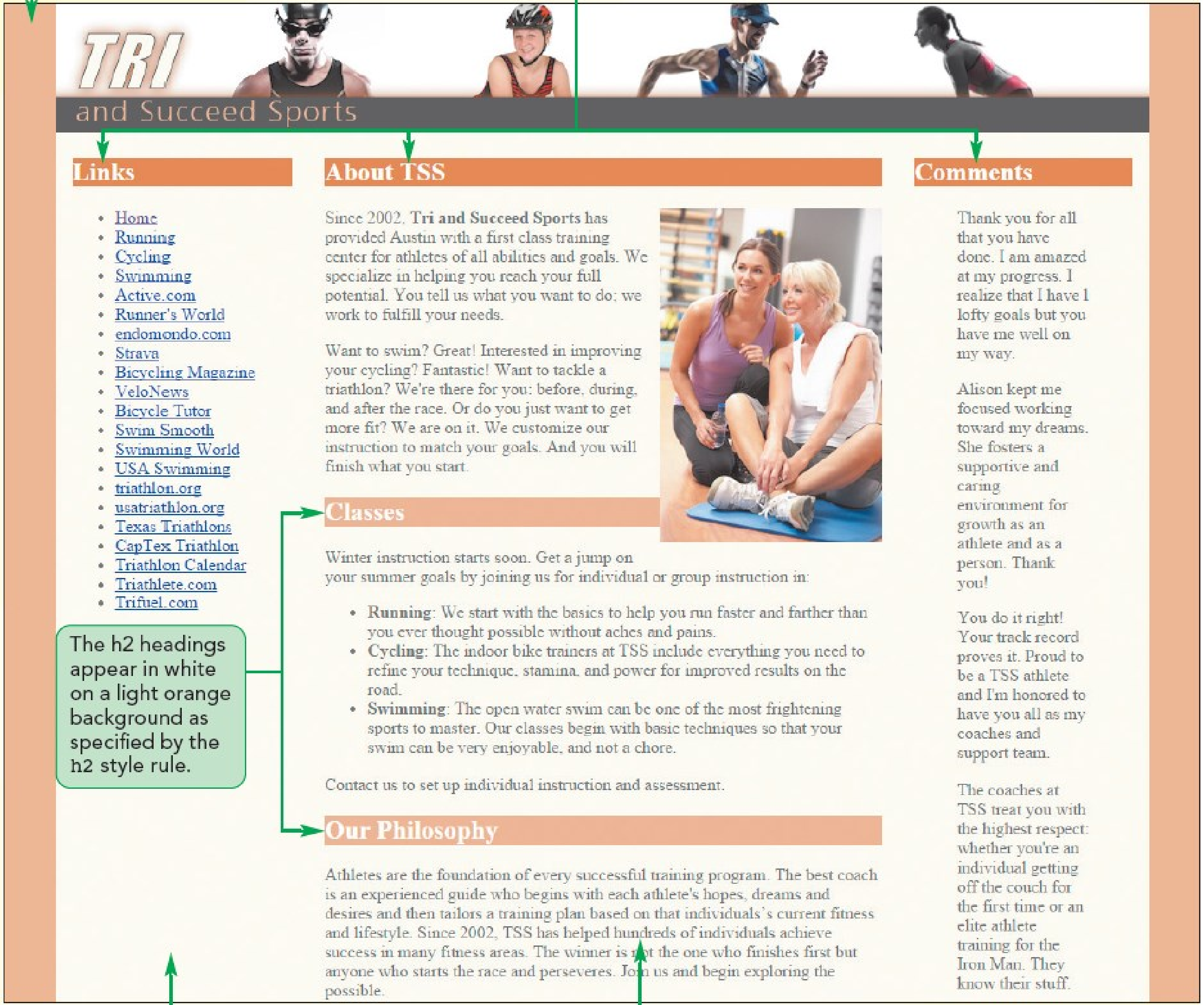
Objectives

1. Explore the history of CSS
2. Study different types of style sheets
3. Explore style precedence and inheritance
4. Apply color in CSS
5. Use contextual selectors
6. Work with attribute selectors
7. Apply text and font styles
8. Use a web font
9. Define list styles
10. Work with margins and padding space
11. Use pseudo-classes and pseudo-elements
12. Insert page content with CSS

CSS Styles and Colors

The browser window background color is set to the color value hsl(27, 73%, 72%) using the `html` style rule.

The h1 headings appear in white on a dark orange background as specified by the `h1` style rule.



Links

- Home
- Running
- Cycling
- Swimming
- Active.com
- Runner's World
- endomondo.com
- Strava
- Bicycling Magazine
- VeloNews
- Bicycle Tutor
- Swim Smooth
- Swimming World
- USA Swimming
- triathlon.org
- usatriathlon.org
- Texas Triathlons
- CapTex Triathlon
- Triathlon Calendar
- Triathlete.com
- Trifuel.com

About TSS

Since 2002, **Tri and Succeed Sports** has provided Austin with a first class training center for athletes of all abilities and goals. We specialize in helping you reach your full potential. You tell us what you want to do; we work to fulfill your needs.

Want to swim? Great! Interested in improving your cycling? Fantastic! Want to tackle a triathlon? We're there for you: before, during, and after the race. Or do you just want to get more fit? We are on it. We customize our instruction to match your goals. And you will finish what you start.

Classes

Winter instruction starts soon. Get a jump on your summer goals by joining us for individual or group instruction in:

- **Running**: We start with the basics to help you run faster and farther than you ever thought possible without aches and pains.
- **Cycling**: The indoor bike trainers at TSS include everything you need to refine your technique, stamina, and power for improved results on the road.
- **Swimming**: The open water swim can be one of the most frightening sports to master. Our classes begin with basic techniques so that your swim can be very enjoyable, and not a chore.

Contact us to set up individual instruction and assessment.

Our Philosophy

Athletes are the foundation of every successful training program. The best coach is an experienced guide who begins with each athlete's hopes, dreams and desires and then tailors a training plan based on that individuals's current fitness and lifestyle. Since 2002, TSS has helped hundreds of individuals achieve success in many fitness areas. The winner is not the one who finishes first but anyone who starts the race and perseveres. Join us and begin exploring the possible.

Comments

Thank you for all that you have done. I am amazed at my progress. I realize that I have l lofty goals but you have me well on my way.

Alison kept me focused working toward my dreams. She fosters a supportive and caring environment for growth as an athlete and as a person. Thank you!

You do it right! Your track record proves it. Proud to be a TSS athlete and I'm honored to have you all as my coaches and support team.

The coaches at TSS treat you with the highest respect: whether you're an individual getting off the couch for the first time or an elite athlete training for the Iron Man. They know their stuff.

The h2 headings appear in white on a light orange background as specified by the h2 style rule.

Page body background color is set to ivory using the `body` style rule.

Page text is set to the color value rgb(91, 91, 91).

Introducing CSS

- ❑ **Focus:** appearance of a Web page
- ❑ **Language:** Cascading Style Sheet (CSS) Language;
- ❑ **Latest version:** CSS version 3 (CSS3)
- ❑ **Modular nature of CSS3:** separate design topic

Types of Style Sheets

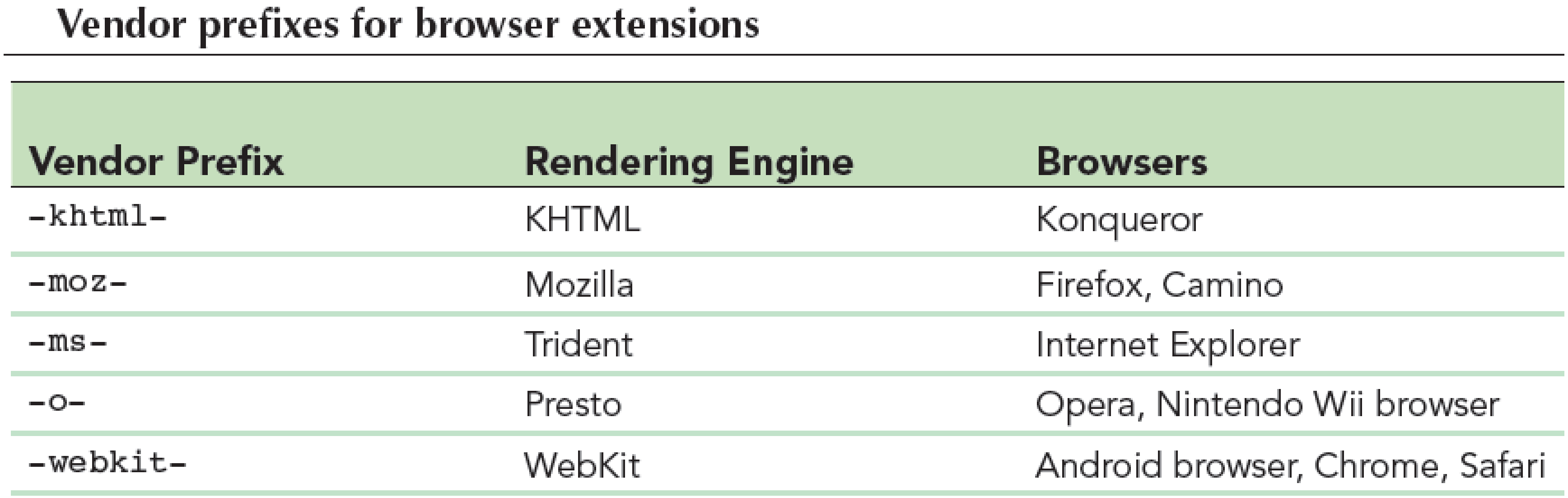
- ❑ Browser styles or user agent styles
- ❑ User-defined styles
- ❑ External styles
- ❑ Embedded styles
- ❑ Inline styles

Exploring Style Rules

The general syntax of a CSS style rule is

```
selector{
     property1: value1;
     property2: value2;
      ...
}
```

Exploring Style Rules (continued)



Vendor prefixes for browser extensions

Vendor Prefix	Rendering Engine	Browsers
`-khtml-`	KHTML	Konqueror
`-moz-`	Mozilla	Firefox, Camino
`-ms-`	Trident	Internet Explorer
`-o-`	Presto	Opera, Nintendo Wii browser
`-webkit-`	WebKit	Android browser, Chrome, Safari

Embedded Style Sheets

```
<style>
  style rules
</style>
```

Inline Styles

```
<element style=“property1:
  value1; property2: value2; …”>
     content
 </element>
```

Style Specificity and Precedence

- ❑ Specific style rules **vs** General style rules;
- ❑ **Specificity:** conflict of style rules;
- ❑ **Equal specificity →** last rule defined takes precedence

Style Inheritance

Style inheritance – Passing properties from a parent to children elements;

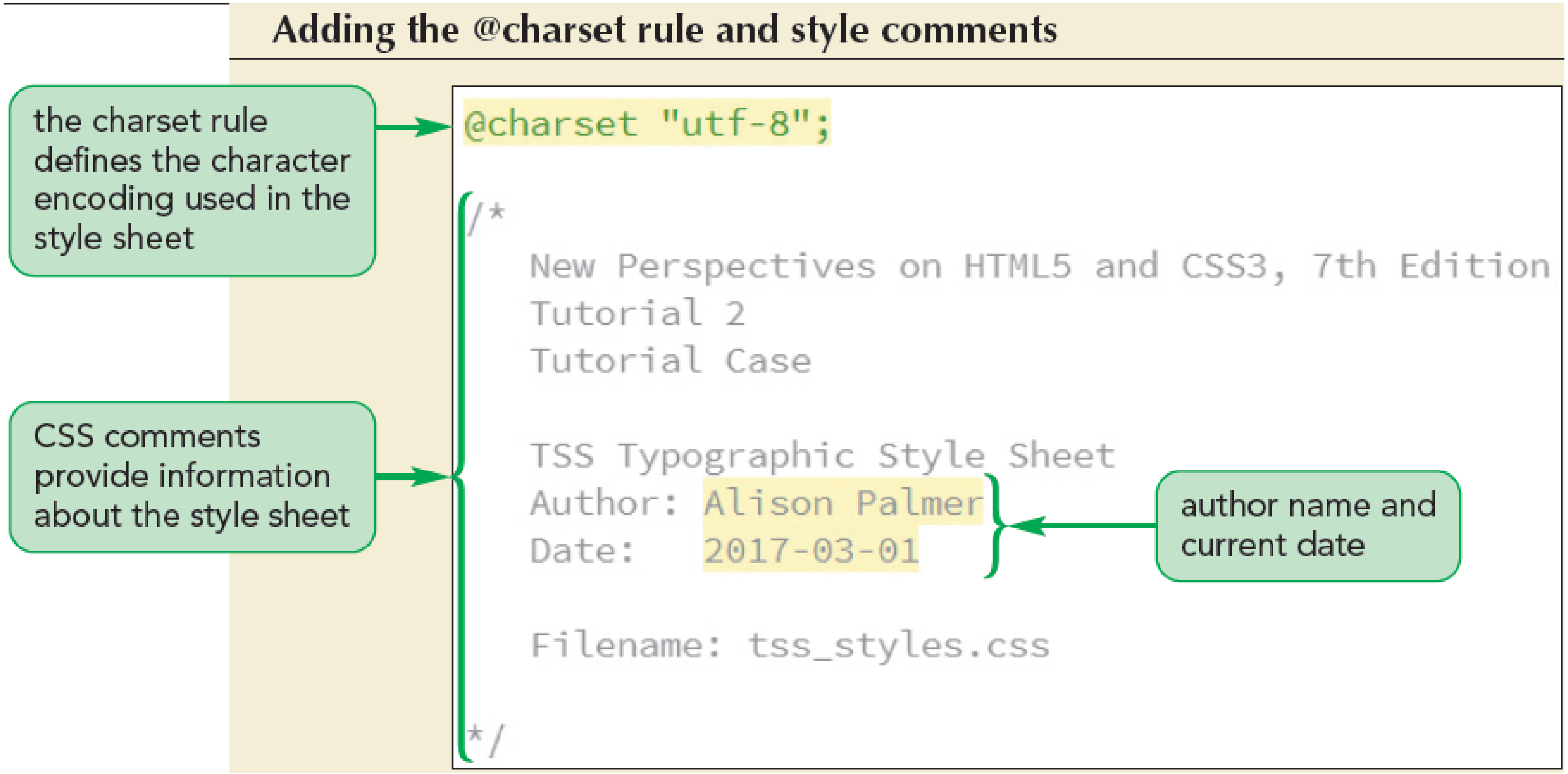
For example: *<p> inherits colour from <article>*

```
article {color: blue;}
p {text-align: center;}
```

Browser Developer Tools

- ❑ Viewing: *HTML code* and *CSS styles*
- ❑ Locating style applied to element
- ❑ Most browsers have such tools

Writing Style Comments



Adding the @charset rule and style comments

```
@charset "utf-8";

/*
   New Perspectives on HTML5 and CSS3, 7th Edition
   Tutorial 2
   Tutorial Case

   TSS Typographic Style Sheet
   Author: Alison Palmer
   Date:   2017-03-01

   Filename: tss_styles.css

*/
```

the charset rule defines the character encoding used in the style sheet

CSS comments provide information about the style sheet

author name and current date

Importing Style Sheets

@import is a CSS at-rule used to import the content of a style sheet file

```
@import url(url);
```

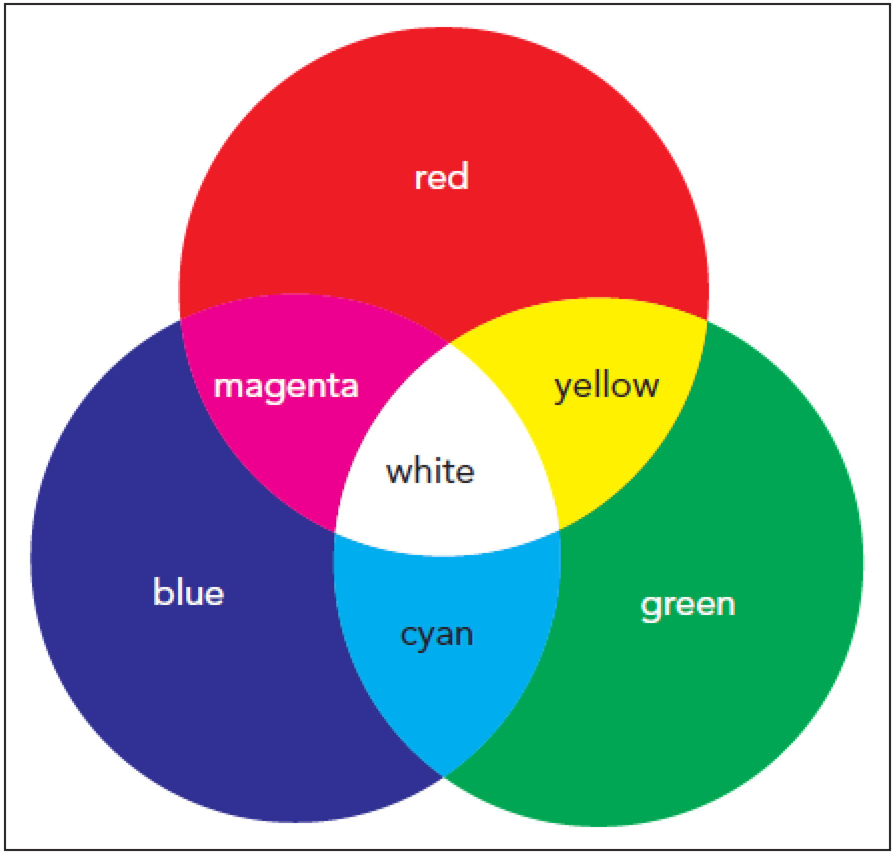
where *`url`* is the URL of an external stylesheet file

It is similar to adding `link` elements to an HTML file

Working with Color in CSS: *RGB Colour Values*

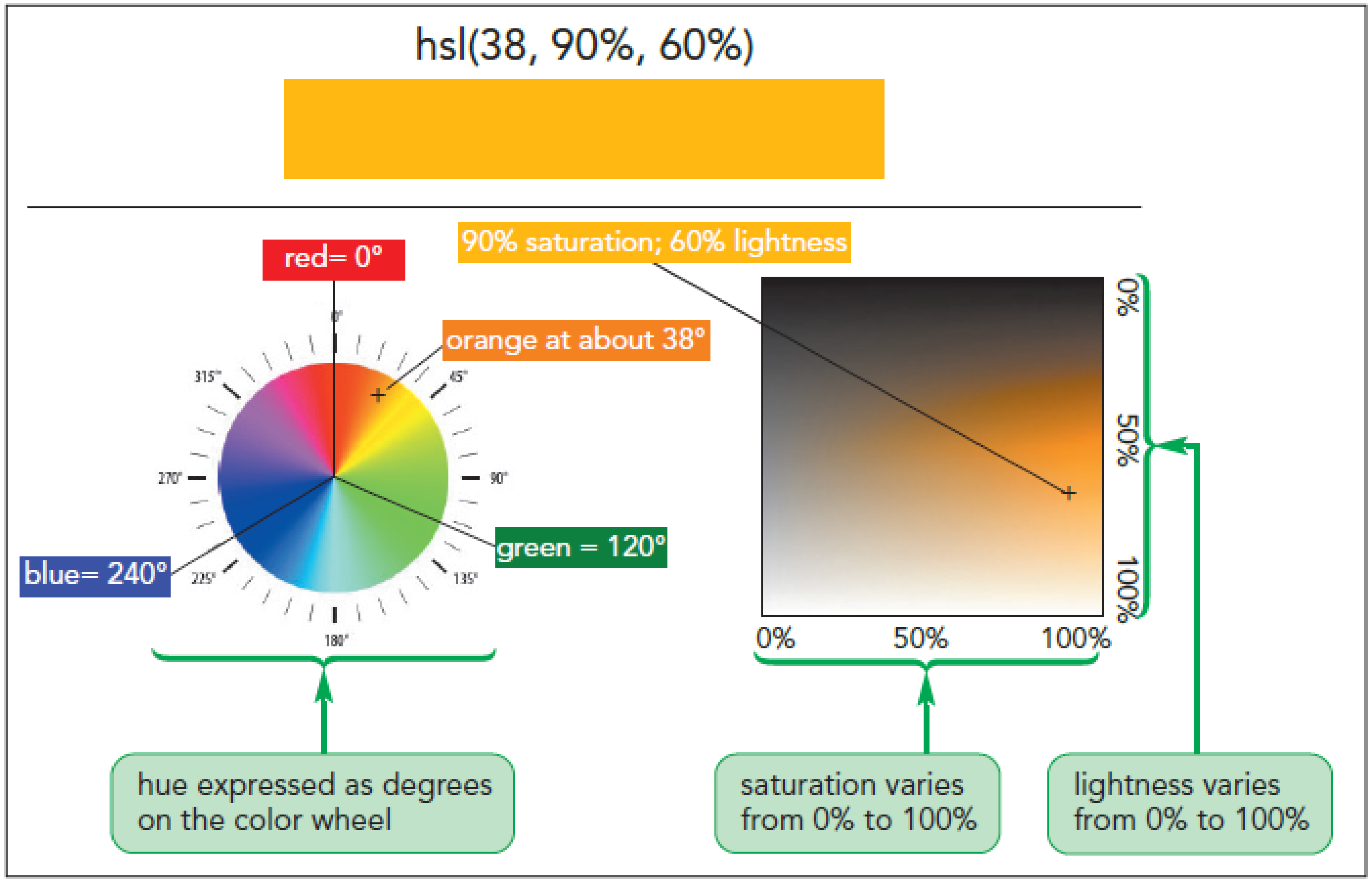
Figure 2-8 Color addition in the RGB color model

`rgb(red, green, blue)`



HSL Color Values

Figure 2-9 Defining the color orange under the HSL color model


hsl(38, 90%, 60%)
red= 0°
90% saturation; 60% lightness
orange at about 38°
0°
45°
90°
135°
180°
225°
270°
315°
green = 120°
blue= 240°
0%
50%
100%
0%
50%
100%
hue expressed as degrees on the color wheel
saturation varies from 0% to 100%
lightness varies from 0% to 100%

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Defining Semi-Opaque Colors

```
rgba(red, green, blue, opacity)

hsla(hue, saturation, lightness,
opacity)
```

Setting Text and Background Color

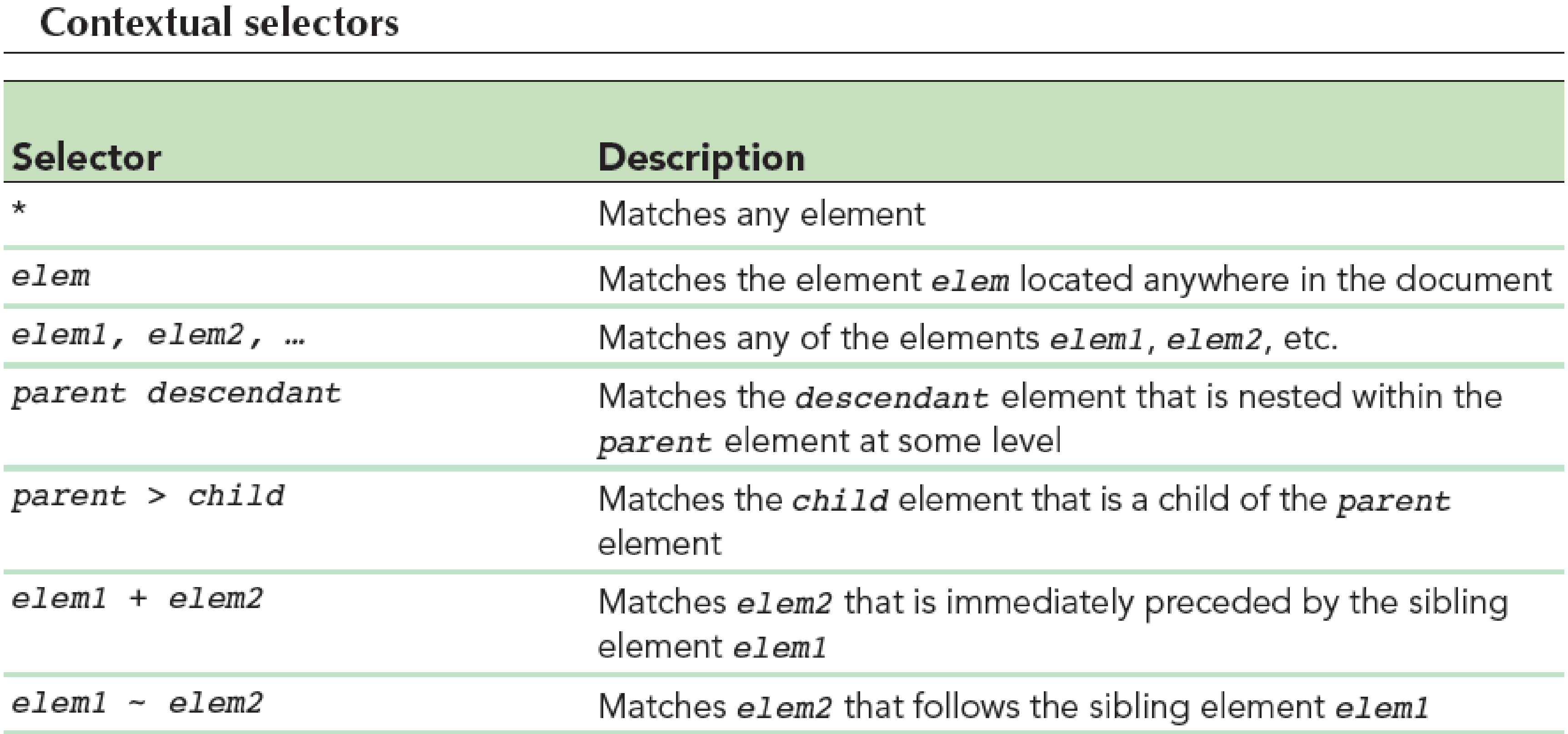
```
color: color;
background-color: color;
```

Employing Progressive Enhancement

Progressive enhancement:

a technique of placing the code conforming to elder standards before newer properties

Contextual Selectors



Contextual selectors

Selector	Description
`*`	Matches any element
`elem`	Matches the element `elem` located anywhere in the document
`elem1, elem2, …`	Matches any of the elements `elem1`, `elem2`, etc.
`parent descendant`	Matches the `descendant` element that is nested within the `parent` element at some level
`parent > child`	Matches the `child` element that is a child of the `parent` element
`elem1 + elem2`	Matches `elem2` that is immediately preceded by the sibling element `elem1`
`elem1 ~ elem2`	Matches `elem2` that follows the sibling element `elem1`

Attribute Selectors

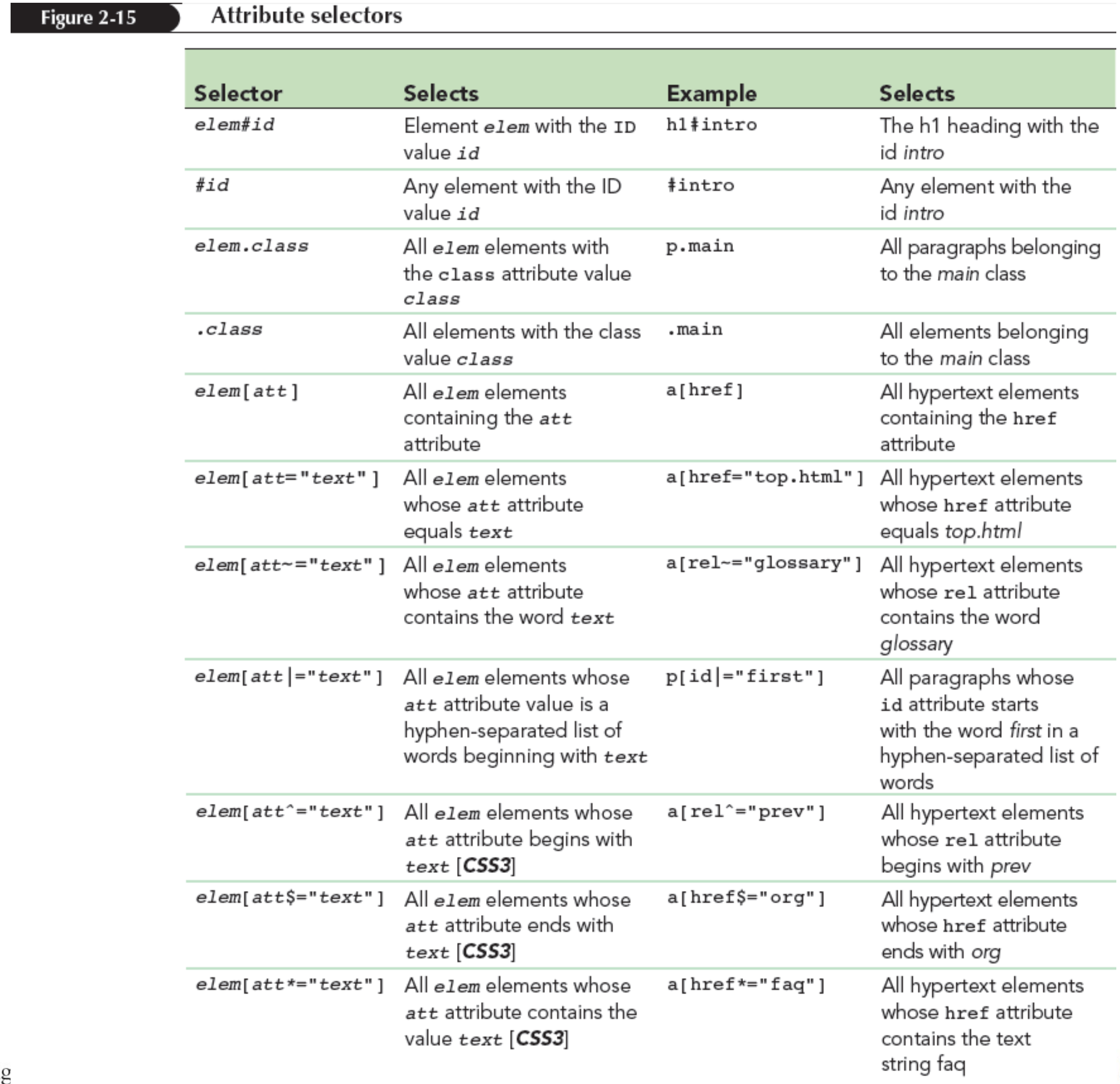


Figure 2-15 Attribute selectors

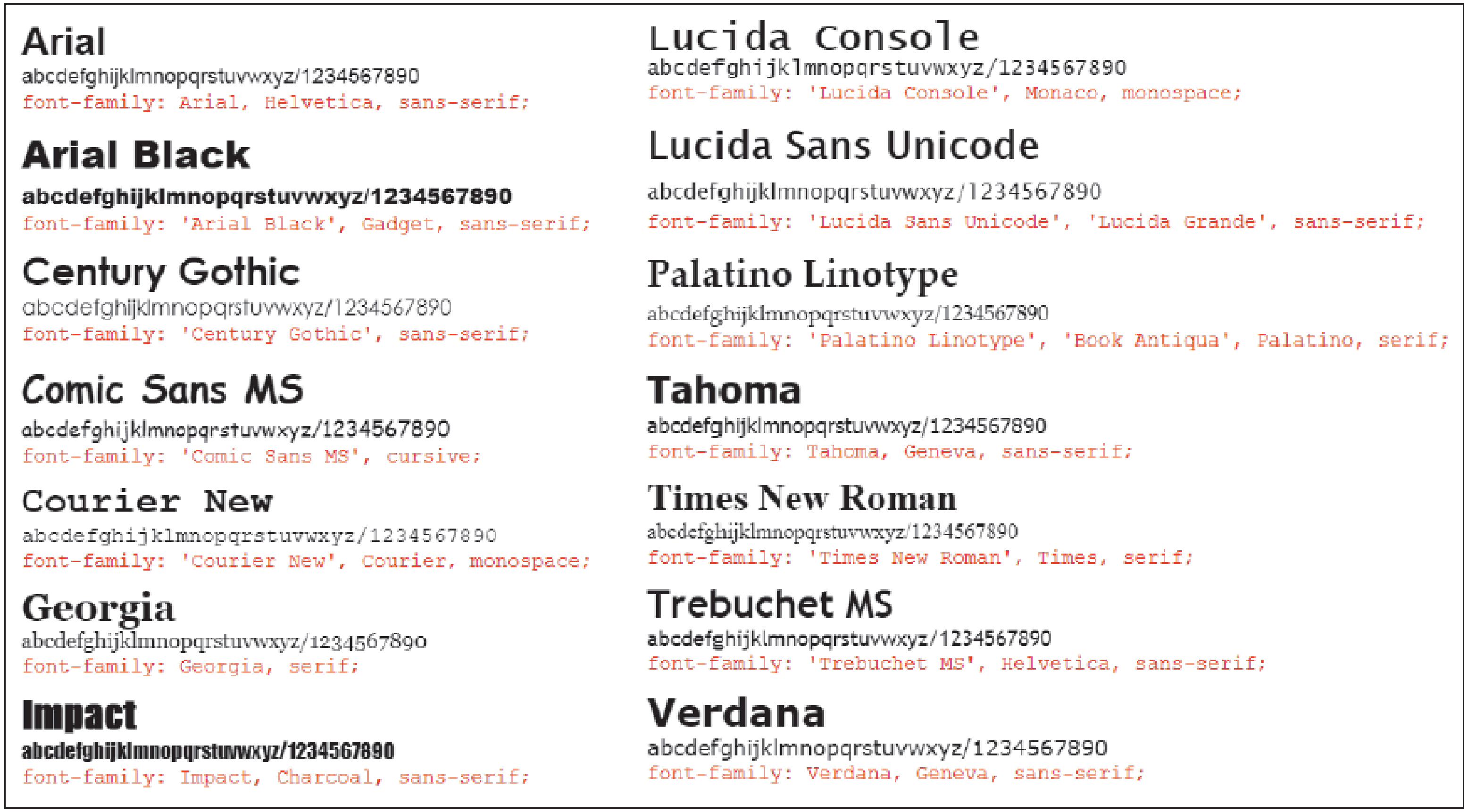
Selector	Selects	Example	Selects
elem#id	Element *elem* with the ID value *id*	`h1#intro`	The h1 heading with the id *intro*
#id	Any element with the ID value *id*	`#intro`	Any element with the id *intro*
elem.class	All *elem* elements with the `class` attribute value *class*	`p.main`	All paragraphs belonging to the *main* class
.class	All elements with the class value *class*	`.main`	All elements belonging to the *main* class
elem`[`*att*`]`	All *elem* elements containing the *att* attribute	`a[href]`	All hypertext elements containing the `href` attribute
elem`[`*att*`="`*text*`"]`	All *elem* elements whose *att* attribute equals *text*	`a[href="top.html"]`	All hypertext elements whose `href` attribute equals *top.html*
elem`[`*att*`~="`*text*`"]`	All *elem* elements whose *att* attribute contains the word *text*	`a[rel~="glossary"]`	All hypertext elements whose `rel` attribute contains the word *glossary*
elem`[`*att*`|="`*text*`"]`	All *elem* elements whose *att* attribute value is a hyphen-separated list of words beginning with *text*	`p[id|="first"]`	All paragraphs whose `id` attribute starts with the word *first* in a hyphen-separated list of words
elem`[`*att*`^="`*text*`"]`	All *elem* elements whose *att* attribute begins with *text* [*CSS3*]	`a[rel^="prev"]`	All hypertext elements whose `rel` attribute begins with *prev*
elem`[`*att*`$="`*text*`"]`	All *elem* elements whose *att* attribute ends with *text* [*CSS3*]	`a[href$="org"]`	All hypertext elements whose `href` attribute ends with *org*
elem`[`*att*`*="`*text*`"]`	All *elem* elements whose *att* attribute contains the value *text* [*CSS3*]	`a[href*="faq"]`	All hypertext elements whose `href` attribute contains the text string faq

Working with Fonts

```
font-family: fonts;
```

Styling Web Page Text

Figure 2-19 Web safe font stacks



Arial
abcdefghijklmnopqrstuvwxyz/1234567890
`font-family: Arial, Helvetica, sans-serif;`

Arial Black
abcdefghijklmnopqrstuvwxyz/1234567890
`font-family: 'Arial Black', Gadget, sans-serif;`

Century Gothic
abcdefghijklmnopqrstuvwxyz/1234567890
`font-family: 'Century Gothic', sans-serif;`

Comic Sans MS
abcdefghijklmnopqrstuvwxyz/1234567890
`font-family: 'Comic Sans MS', cursive;`

Courier New
abcdefghijklmnopqrstuvwxyz/1234567890
`font-family: 'Courier New', Courier, monospace;`

Georgia
abcdefghijklmnopqrstuvwxyz/1234567890
`font-family: Georgia, serif;`

Impact
abcdefghijklmnopqrstuvwxyz/1234567890
`font-family: Impact, Charcoal, sans-serif;`

Lucida Console
abcdefghijklmnopqrstuvwxyz/1234567890
`font-family: 'Lucida Console', Monaco, monospace;`

Lucida Sans Unicode
abcdefghijklmnopqrstuvwxyz/1234567890
`font-family: 'Lucida Sans Unicode', 'Lucida Grande', sans-serif;`

Palatino Linotype
abcdefghijklmnopqrstuvwxyz/1234567890
`font-family: 'Palatino Linotype', 'Book Antiqua', Palatino, serif;`

Tahoma
abcdefghijklmnopqrstuvwxyz/1234567890
`font-family: Tahoma, Geneva, sans-serif;`

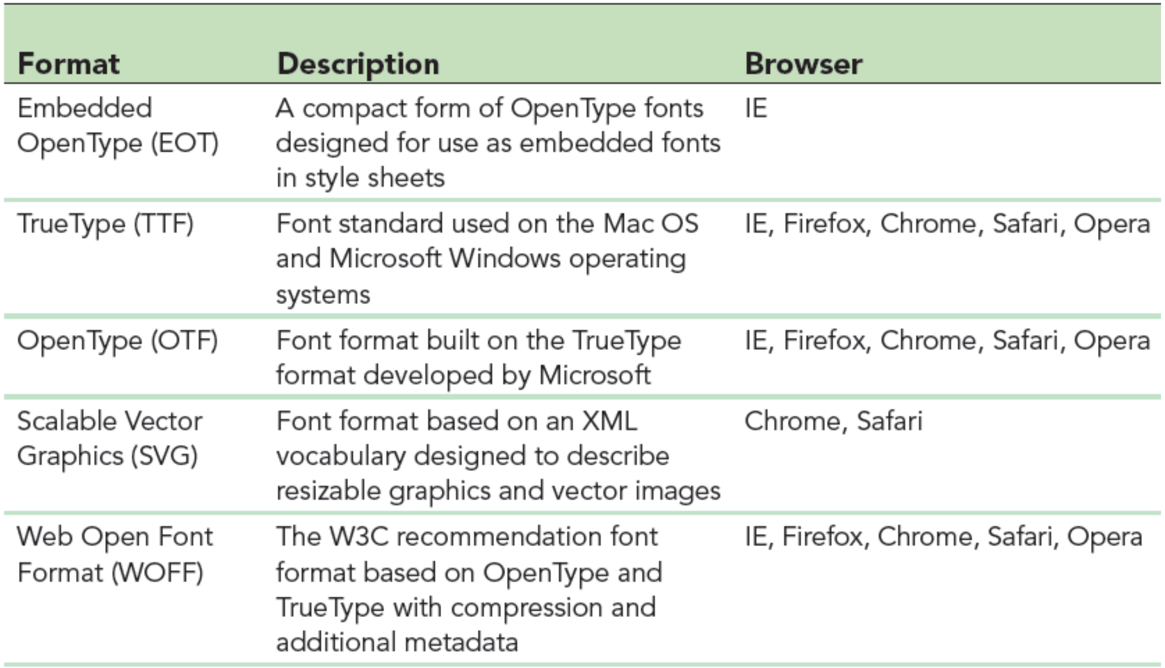
Times New Roman
abcdefghijklmnopqrstuvwxyz/1234567890
`font-family: 'Times New Roman', Times, serif;`

Trebuchet MS
abcdefghijklmnopqrstuvwxyz/1234567890
`font-family: 'Trebuchet MS', Helvetica, sans-serif;`

Verdana
abcdefghijklmnopqrstuvwxyz/1234567890
`font-family: Verdana, Geneva, sans-serif;`

Exploring Web Fonts

Figure 2-22 Web font formats



Format	Description	Browser
Embedded OpenType (EOT)	A compact form of OpenType fonts designed for use as embedded fonts in style sheets	IE
TrueType (TTF)	Font standard used on the Mac OS and Microsoft Windows operating systems	IE, Firefox, Chrome, Safari, Opera
OpenType (OTF)	Font format built on the TrueType format developed by Microsoft	IE, Firefox, Chrome, Safari, Opera
Scalable Vector Graphics (SVG)	Font format based on an XML vocabulary designed to describe resizable graphics and vector images	Chrome, Safari
Web Open Font Format (WOFF)	The W3C recommendation font format based on OpenType and TrueType with compression and additional metadata	IE, Firefox, Chrome, Safari, Opera

The @font-face Rule

The general syntax to include `@font-face` is

```
@font-face {
   font-family: name;
   src: url (‘url1’) format (‘text1’),
      url (‘url2’) format (‘text2’),
   …;
   descriptor1: value1;
   descriptor2: value2;
   …
      }
```

Setting the Font Size

```
font-size: size;
```

Three relative measurements for *font scalability* are:

- ❑ percentage
- ❑ `em` unit
- ❑ `rem` – the root `em` unit

Using Viewport Units

Viewport unit – A relative unit used to express length as a percentage if the width and height if the browser window

CSS3 introduced four viewport units

- 1 vw = 1% of the browser window width
- 1 vh = 1% of the browser window height
- 1 vmin = 1 vw or 1 vh (whichever is smaller)
- 1 vmax = 1 vw or 1 vh (whichever is larger)

Font Sizing Keywords

Font sizes are expressed using the following keywords

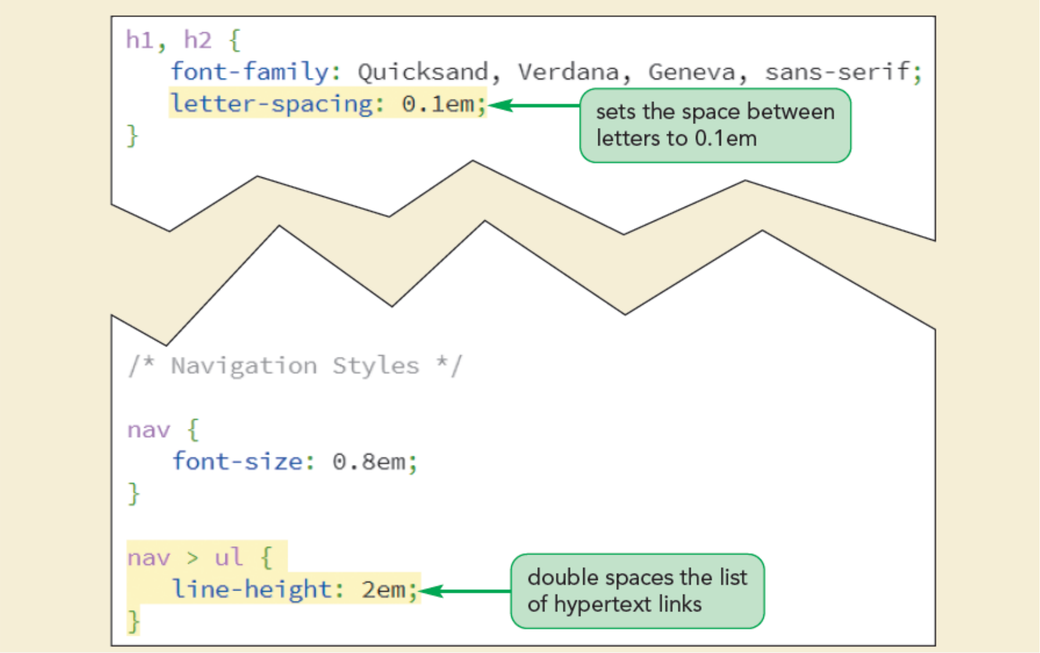
- `xx-small`
- `x-small`
- `small`
- `medium`
- `large`
- `x-large`
- `xx-large`
- `larger`
- `smaller`

Controlling Spacing and Indentation

```
letter-spacing: value;
word-spacing: value;

line-height: size;
text-indent: size;
```

Figure 2-27 Controlling letter spacing and line height



```
h1, h2 {
   font-family: Quicksand, Verdana, Geneva, sans-serif;
   letter-spacing: 0.1em;
}
```

sets the space between letters to 0.1em

```
/* Navigation Styles */

nav {
   font-size: 0.8em;
}

nav > ul {
   line-height: 2em;
}
```

double spaces the list of hypertext links

Working with Font Styles

To specify the **font style**, use

```
font-style: type;
```

where *type* is normal, italic, or oblique

To change the **weight of the font**, use

```
font-weight: weight;
```

where *weight* is the level of bold formatting applied to the text

To specify a **text decoration**, use

```
text-decoration: type;
```

where *type* is none, underline, overline, or line-through

To **transform text**, use

```
text-transform: type;
```

where *type* is capitalize, uppercase, lowercase, or none

To display **a font variant of text**, use

```
font-variant: type;
```

where *type* is normal or small-caps

Aligning Text Horizontally and Vertically

```
text-align: alignment;
vertical-align: alignment;
```

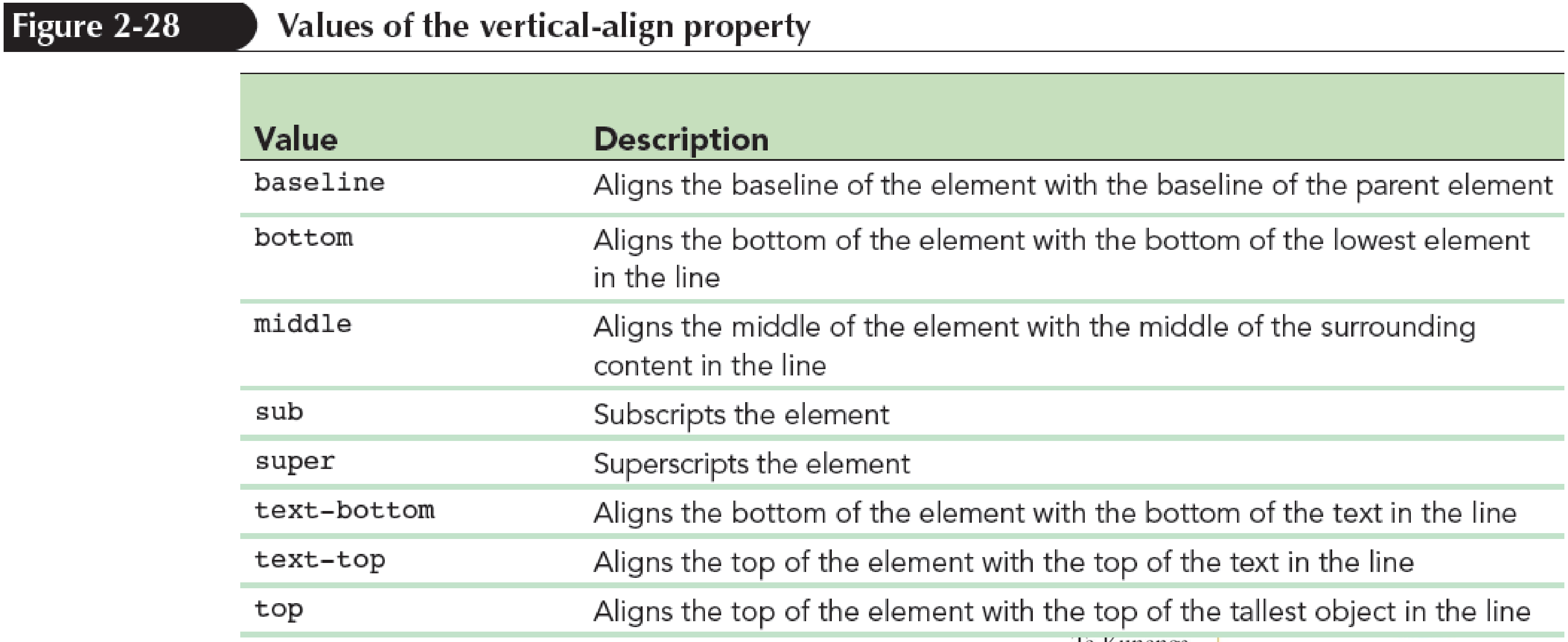
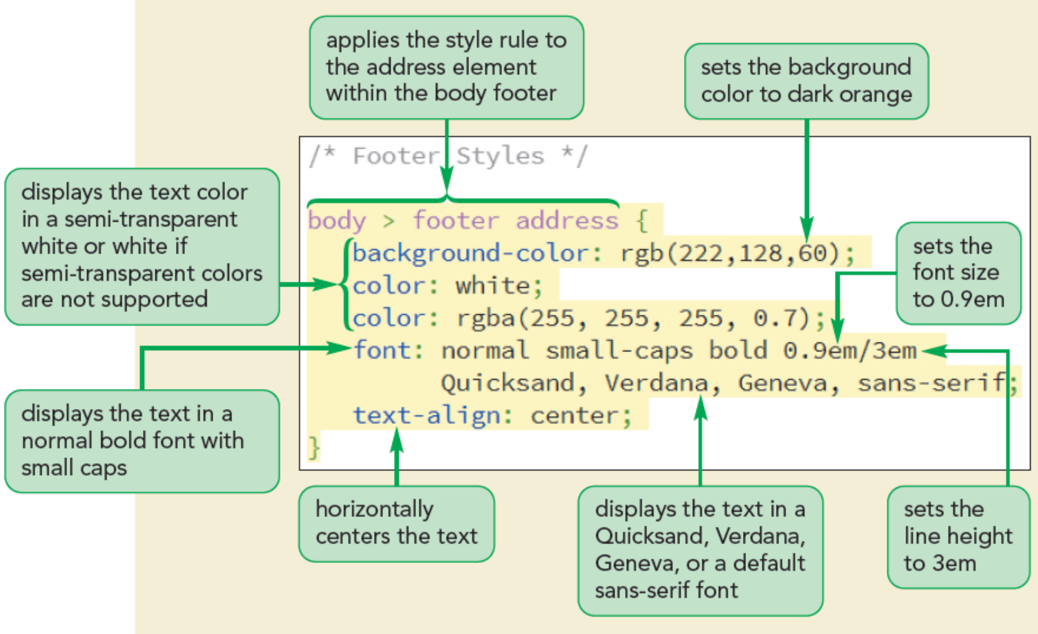


Figure 2-28 Values of the vertical-align property

Value	Description
`baseline`	Aligns the baseline of the element with the baseline of the parent element
`bottom`	Aligns the bottom of the element with the bottom of the lowest element in the line
`middle`	Aligns the middle of the element with the middle of the surrounding content in the line
`sub`	Subscripts the element
`super`	Superscripts the element
`text-bottom`	Aligns the bottom of the element with the bottom of the text in the line
`text-top`	Aligns the top of the element with the top of the text in the line
`top`	Aligns the top of the element with the top of the tallest object in the line

Combining All Text Formatting in a Single Style

Figure 2-29 Style rule for the body footer



```
/* Footer Styles */

body > footer address {
   background-color: rgb(222,128,60);
   color: white;
   color: rgba(255, 255, 255, 0.7);
   font: normal small-caps bold 0.9em/3em
         Quicksand, Verdana, Geneva, sans-serif;
   text-align: center;
}
```

applies the style rule to the address element within the body footer

sets the background color to dark orange

displays the text color in a semi-transparent white or white if semi-transparent colors are not supported

sets the font size to 0.9em

displays the text in a normal bold font with small caps

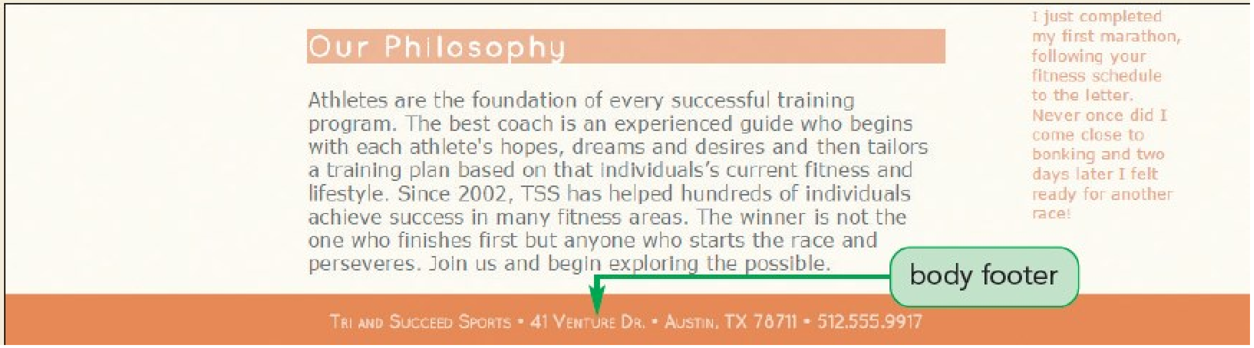
horizontally centers the text

displays the text in a Quicksand, Verdana, Geneva, or a default sans-serif font

sets the line height to 3em

```
font: style
variant weight
size/height
family;
```

Figure 2-30 Formatted body footer



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I just completed my first marathon, following your fitness schedule to the letter. Never once did I come close to bonking and two days later I felt ready for another race!

Tri and Succeed Sports • 41 Venture Dr. • Austin, TX 78711 • 512.555.9917

body footer

Formatting Lists

```
list-style-type: type;
```

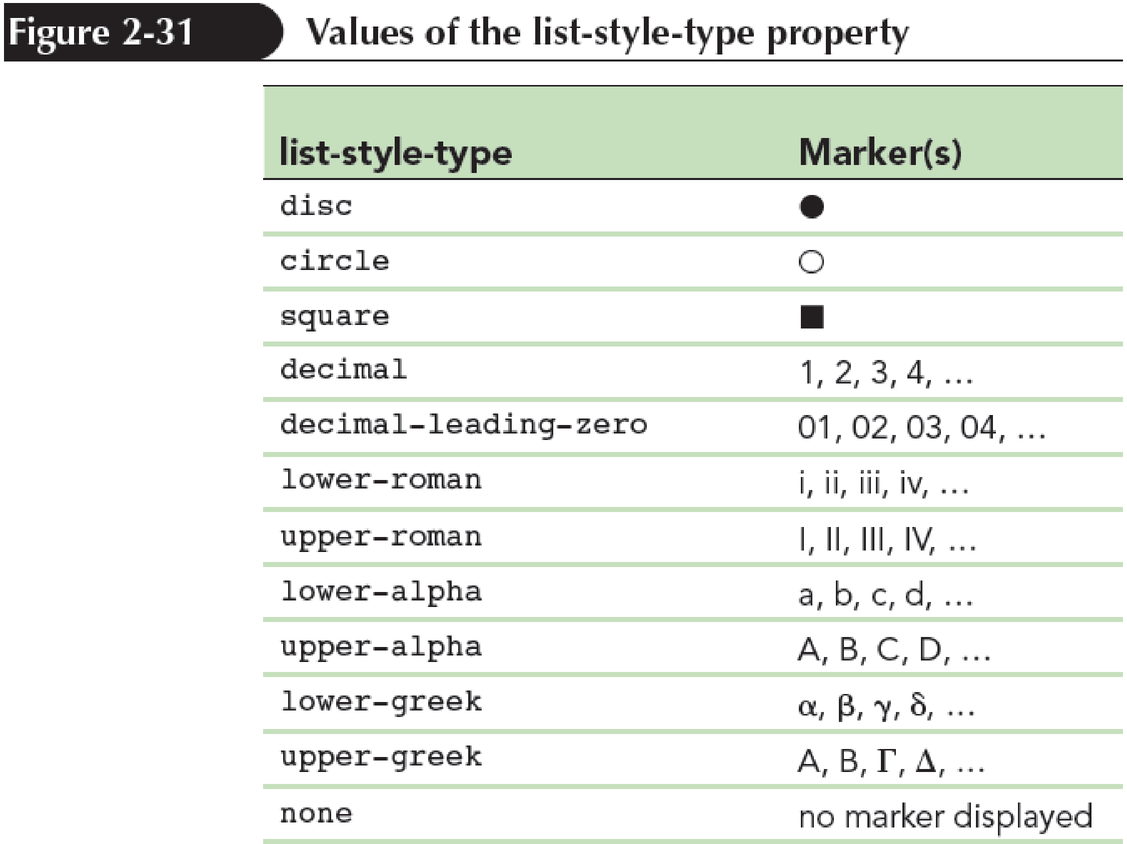


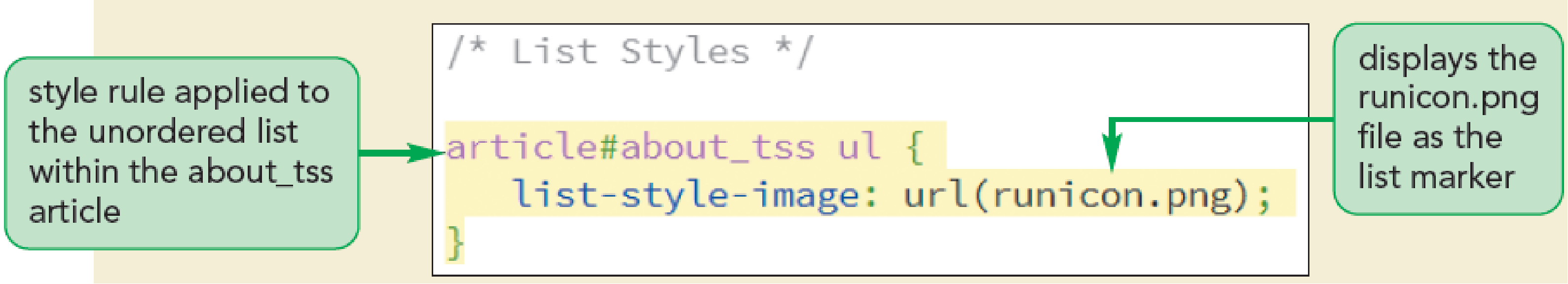
Figure 2-31 Values of the list-style-type property

list-style-type	Marker(s)
`disc`	●
`circle`	○
`square`	■
`decimal`	1, 2, 3, 4, …
`decimal-leading-zero`	01, 02, 03, 04, …
`lower-roman`	i, ii, iii, iv, …
`upper-roman`	I, II, III, IV, …
`lower-alpha`	a, b, c, d, …
`upper-alpha`	A, B, C, D, …
`lower-greek`	α, β, γ, δ, …
`upper-greek`	Α, Β, Γ, Δ, …
`none`	no marker displayed

Using Images for List Markers

```
List-style-image: url(url);
```

Figure 2-35 Displaying an image in place of a list marker



style rule applied to the unordered list within the about_tss article

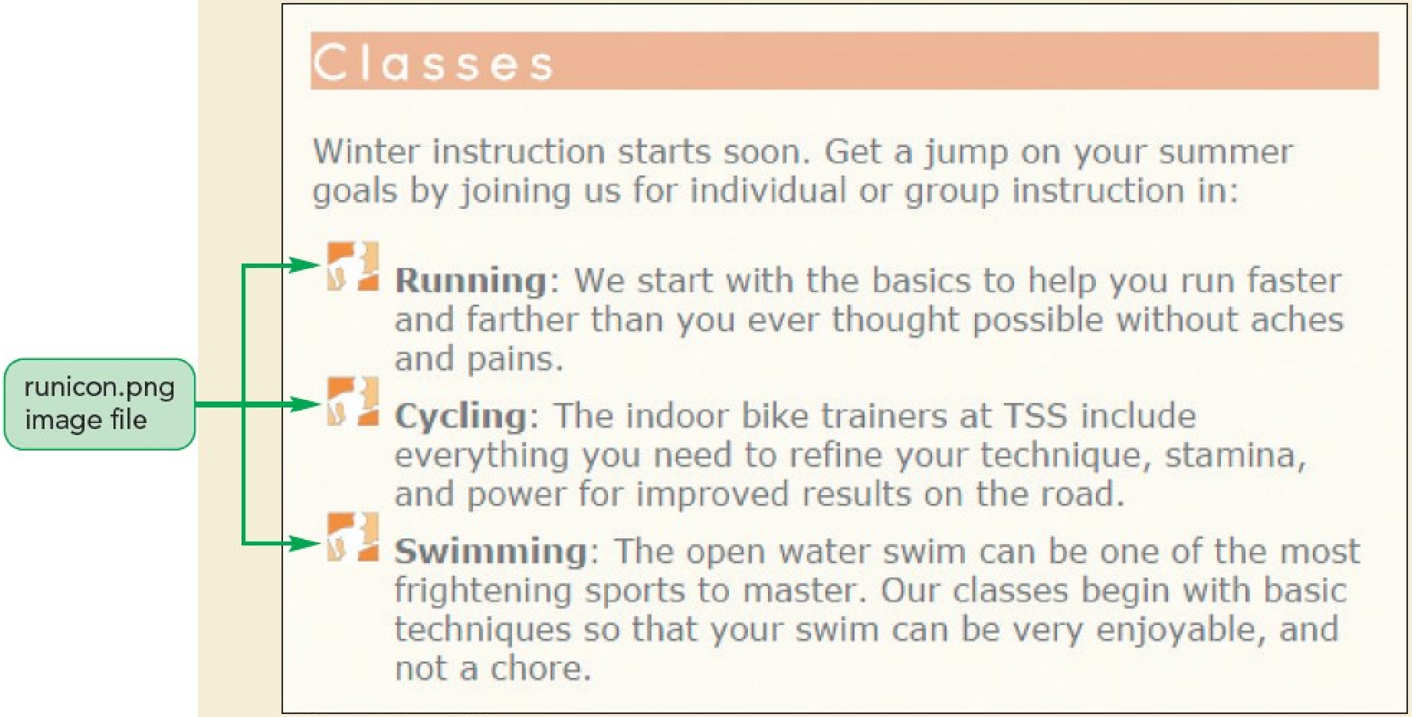
```
/* List Styles */

article#about_tss ul {
   list-style-image: url(runicon.png);
}
```

displays the runicon.png file as the list marker

Using Images for List Markers

```
list-style-image: url (url);
```

Figure 2-36 Unordered list with the runicon.png image marker



Classes

Winter instruction starts soon. Get a jump on your summer goals by joining us for individual or group instruction in:

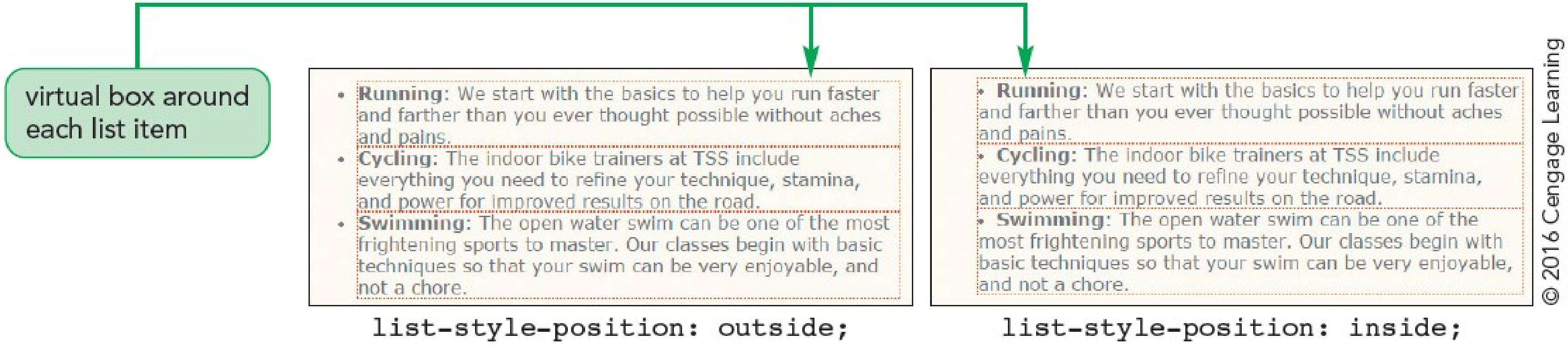
- **Running**: We start with the basics to help you run faster and farther than you ever thought possible without aches and pains.
- **Cycling**: The indoor bike trainers at TSS include everything you need to refine your technique, stamina, and power for improved results on the road.
- **Swimming**: The open water swim can be one of the most frightening sports to master. Our classes begin with basic techniques so that your swim can be very enjoyable, and not a chore.

© Courtesy Patrick Carey

Setting the List Marker Position

```
list-style-position: position;
```

Figure 2-37 Values of the list-style-position property



- **Running:** We start with the basics to help you run faster and farther than you ever thought possible without aches and pains.
- **Cycling:** The indoor bike trainers at TSS include everything you need to refine your technique, stamina, and power for improved results on the road.
- **Swimming:** The open water swim can be one of the most frightening sports to master. Our classes begin with basic techniques so that your swim can be very enjoyable, and not a chore.

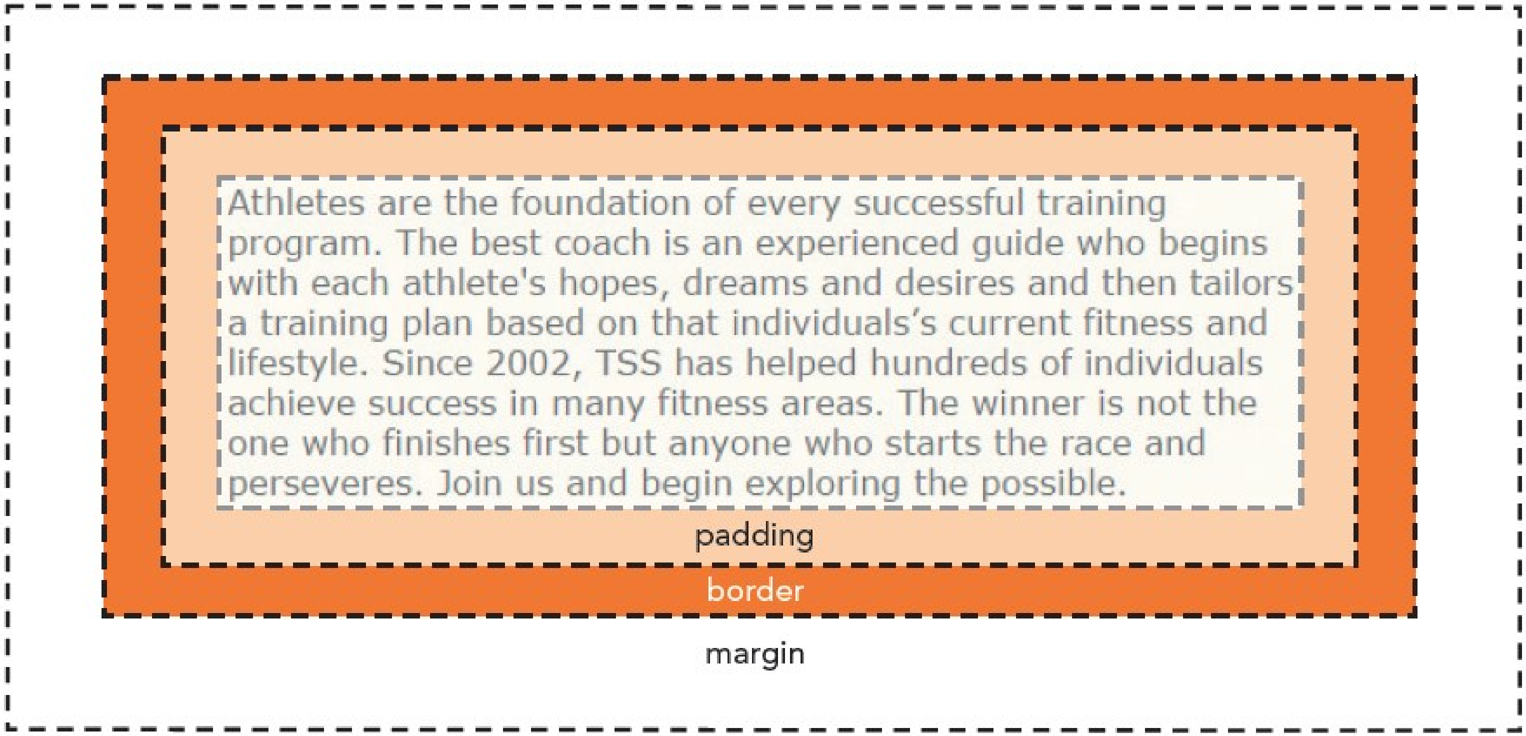
`list-style-position: outside;`

- **Running:** We start with the basics to help you run faster and farther than you ever thought possible without aches and pains.
- **Cycling:** The indoor bike trainers at TSS include everything you need to refine your technique, stamina, and power for improved results on the road.
- **Swimming:** The open water swim can be one of the most frightening sports to master. Our classes begin with basic techniques so that your swim can be very enjoyable, and not a chore.

`list-style-position: inside;`

Working with Margins and Padding

Figure 2-38 The CSS box model



Athletes are the foundation of every successful training program. The best coach is an experienced guide who begins with each athlete's hopes, dreams and desires and then tailors a training plan based on that individuals's current fitness and lifestyle. Since 2002, TSS has helped hundreds of individuals achieve success in many fitness areas. The winner is not the one who finishes first but anyone who starts the race and perseveres. Join us and begin exploring the possible.

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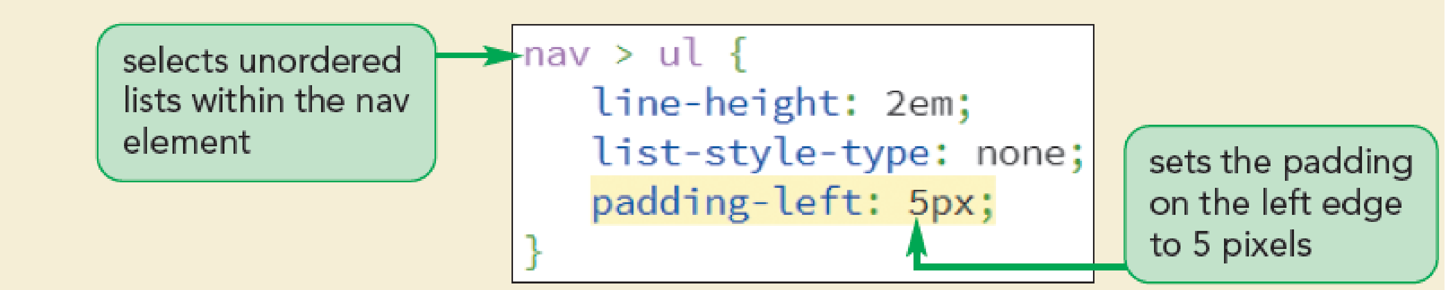
Setting the Padding Space (continued)

```
padding: size;
```

Figure 2-39 Setting the size of the left padding space



selects unordered lists within the nav element

```
nav > ul {
   line-height: 2em;
   list-style-type: none;
   padding-left: 5px;
}
```

sets the padding on the left edge to 5 pixels

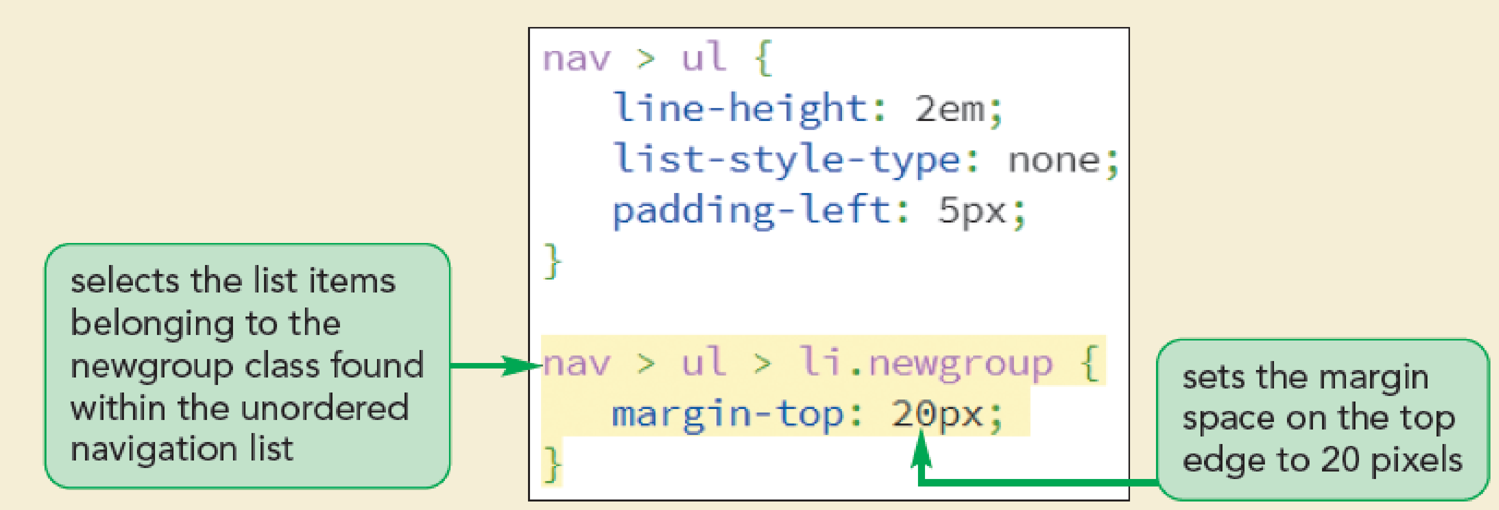
Setting the Margin and Border Spaces

```
margin: size;
margin: top right bottom left;
```

To set the size of the border space, use

```
border-width: size;
border-width: top right bottom left;
```

Figure 2-40 Setting the size of the top margin



```
nav > ul {
   line-height: 2em;
   list-style-type: none;
   padding-left: 5px;
}

nav > ul > li.newgroup {
   margin-top: 20px;
}
```

selects the list items belonging to the newgroup class found within the unordered navigation list

sets the margin space on the top edge to 20 pixels

Using Pseudo-Classes and Pseudo-Elements

element: pseudo-class

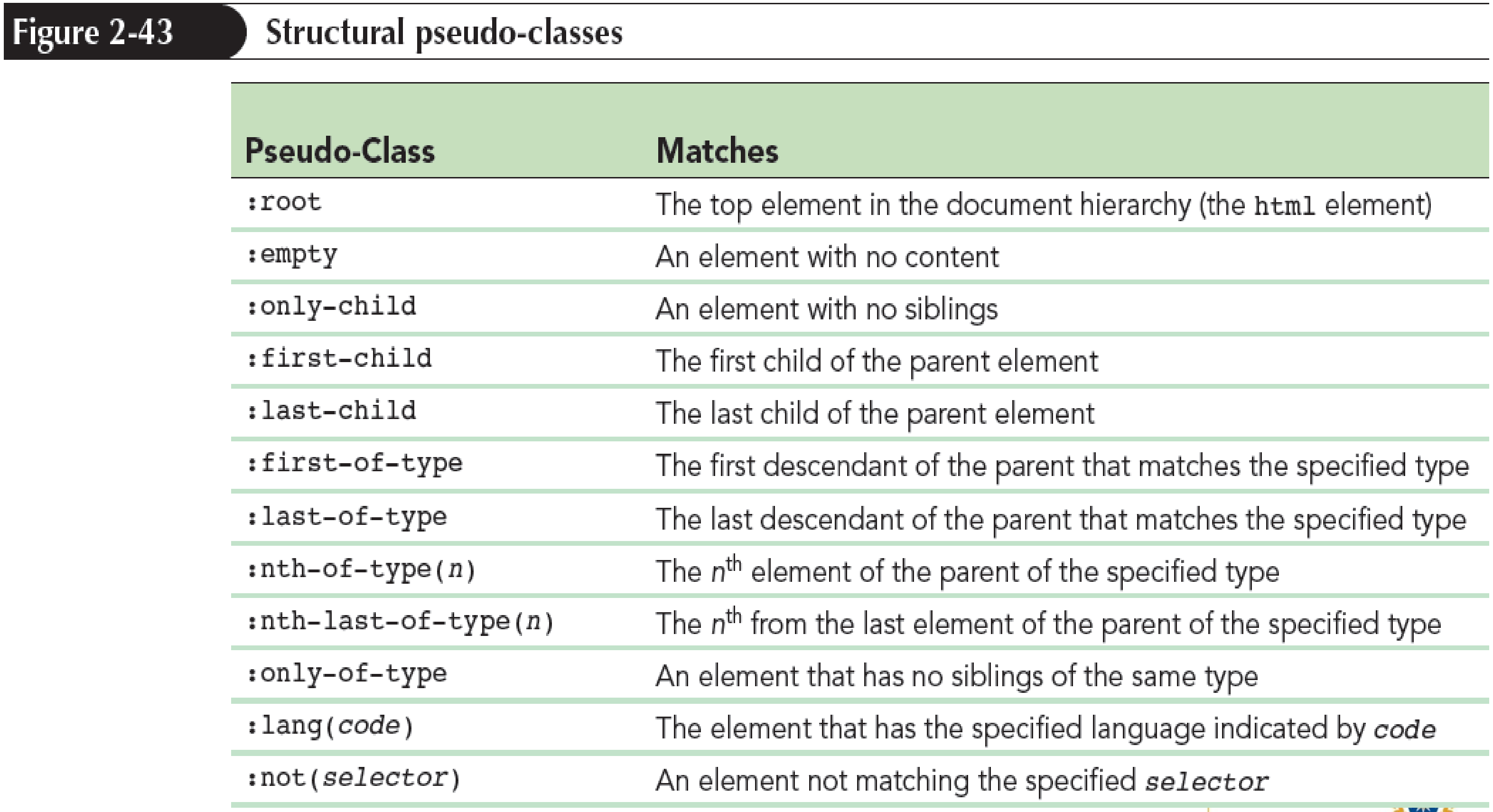
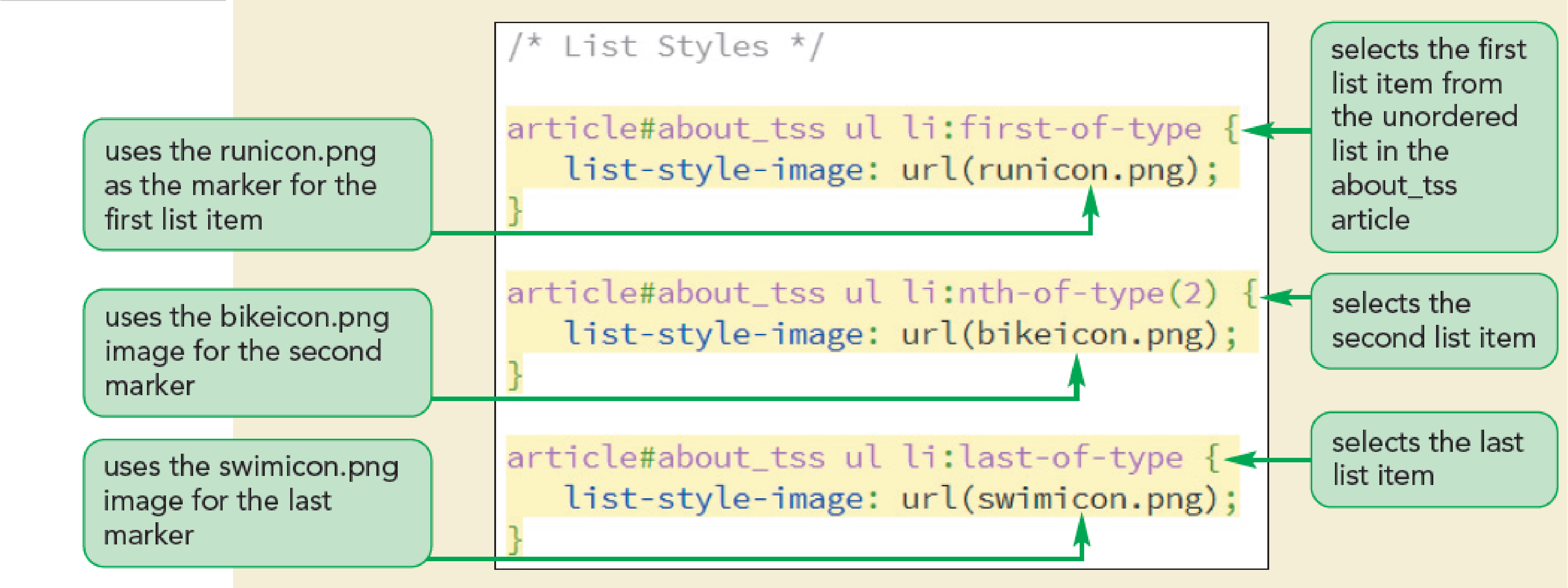


Figure 2-43 Structural pseudo-classes

Pseudo-Class	Matches
:root	The top element in the document hierarchy (the html element)
:empty	An element with no content
:only-child	An element with no siblings
:first-child	The first child of the parent element
:last-child	The last child of the parent element
:first-of-type	The first descendant of the parent that matches the specified type
:last-of-type	The last descendant of the parent that matches the specified type
:nth-of-type(*n*)	The *n*th element of the parent of the specified type
:nth-last-of-type(*n*)	The *n*th from the last element of the parent of the specified type
:only-of-type	An element that has no siblings of the same type
:lang(*code*)	The element that has the specified language indicated by *code*
:not(*selector*)	An element not matching the specified *selector*

Using Pseudo-Classes and Pseudo-Elements (continued 2)

Figure 2-44 Applying pseudo-classes to list items



```
/* List Styles */

article#about_tss ul li:first-of-type {
   list-style-image: url(runicon.png);
}

article#about_tss ul li:nth-of-type(2) {
   list-style-image: url(bikeicon.png);
}

article#about_tss ul li:last-of-type {
   list-style-image: url(swimicon.png);
}
```

uses the runicon.png as the marker for the first list item

uses the bikeicon.png image for the second marker

uses the swimicon.png image for the last marker

selects the first list item from the unordered list in the about_tss article

selects the second list item

selects the last list item

Pseudo-classes for Hypertext

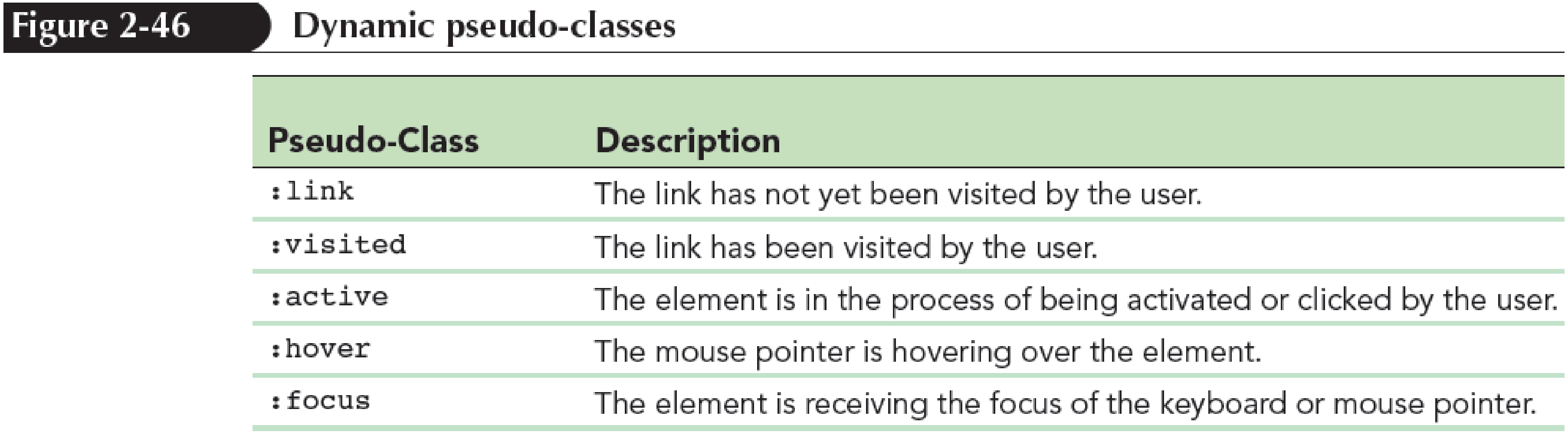


Figure 2-46 Dynamic pseudo-classes

Pseudo-Class	Description
`:link`	The link has not yet been visited by the user.
`:visited`	The link has been visited by the user.
`:active`	The element is in the process of being activated or clicked by the user.
`:hover`	The mouse pointer is hovering over the element.
`:focus`	The element is receiving the focus of the keyboard or mouse pointer.

Pseudo-Elements

```
element::pseudo-element
```

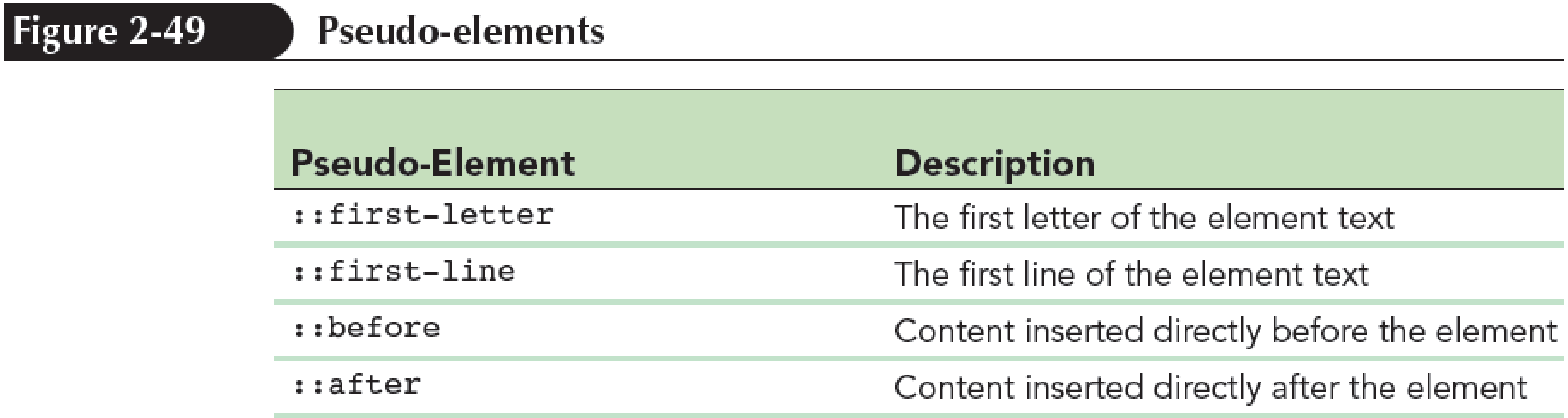


Figure 2-49 Pseudo-elements

Pseudo-Element	Description
`::first-letter`	The first letter of the element text
`::first-line`	The first line of the element text
`::before`	Content inserted directly before the element
`::after`	Content inserted directly after the element

Generating Content with CSS

```
element::before {content: text;}
element::after {content: text;}
```

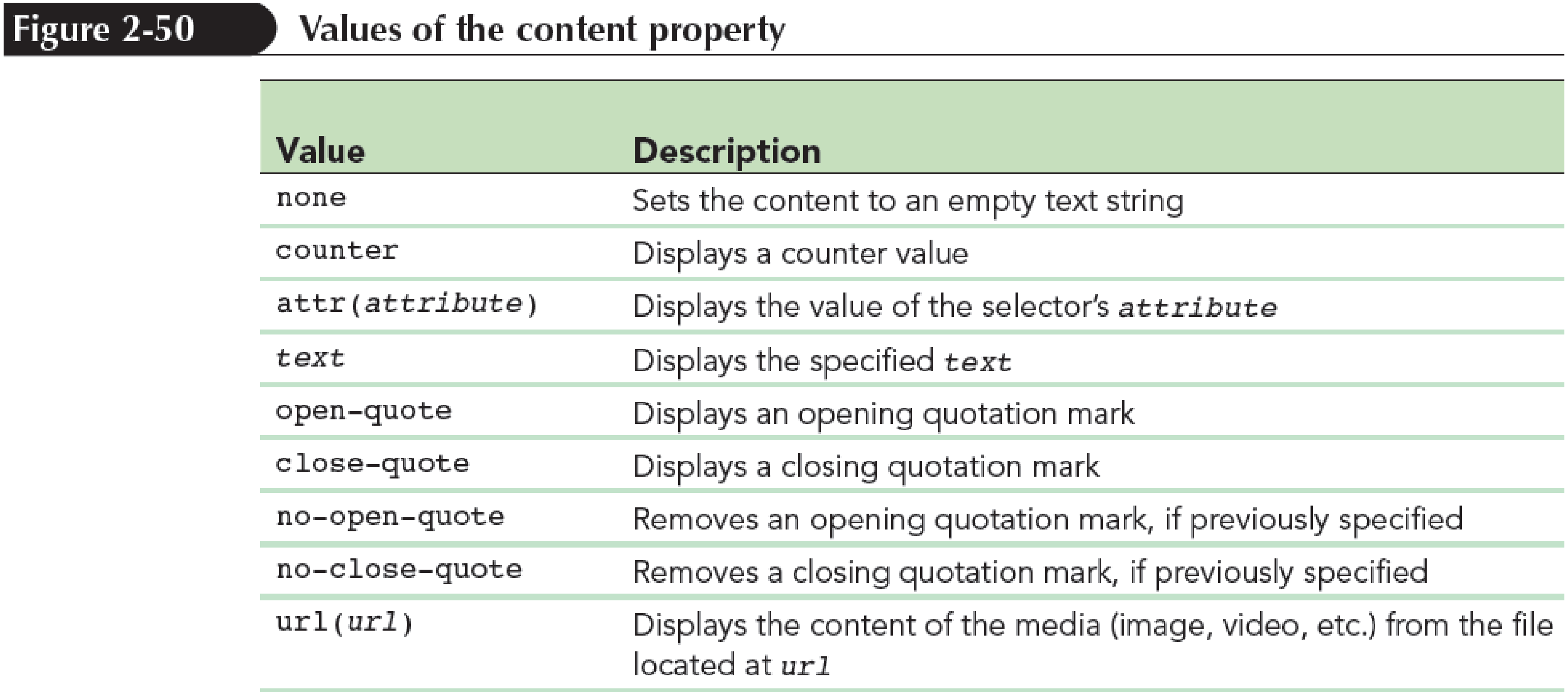


Figure 2-50 Values of the content property

Value	Description
`none`	Sets the content to an empty text string
`counter`	Displays a counter value
`attr(`*`attribute`*`)`	Displays the value of the selector's *`attribute`*
`text`	Displays the specified *`text`*
`open-quote`	Displays an opening quotation mark
`close-quote`	Displays a closing quotation mark
`no-open-quote`	Removes an opening quotation mark, if previously specified
`no-close-quote`	Removes a closing quotation mark, if previously specified
`url(`*`url`*`)`	Displays the content of the media (image, video, etc.) from the file located at *`url`*

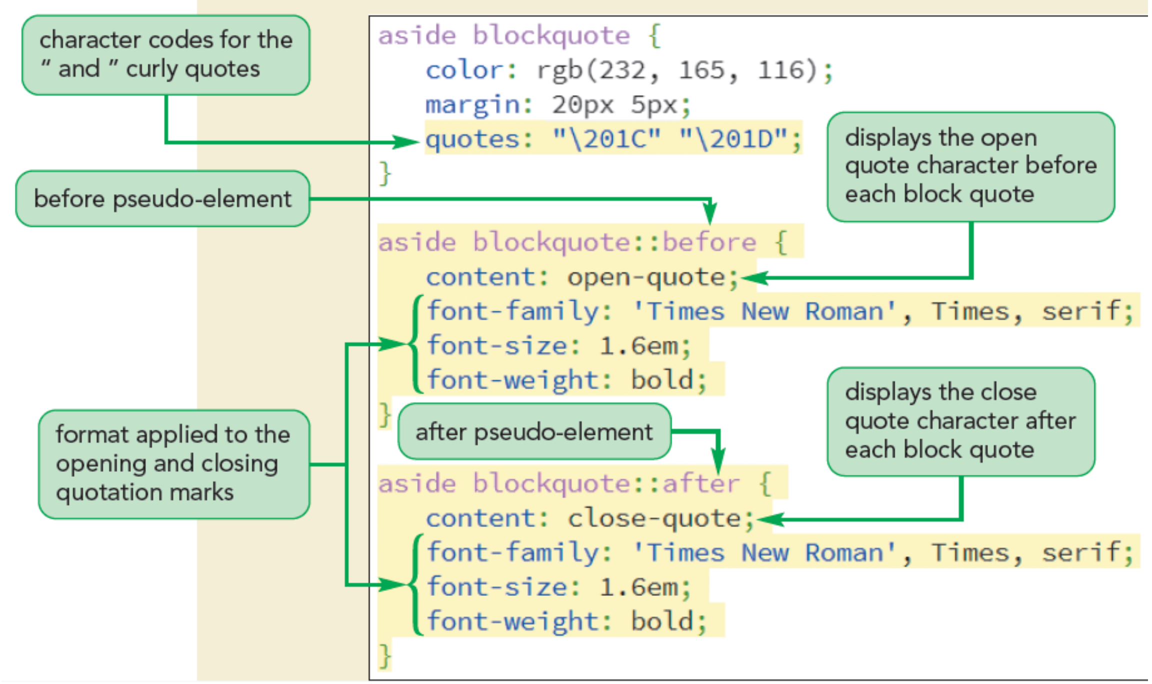
Displaying Attribute Values

```
content: attr(attribute);
```

Inserting Quotation Marks

```
content: open-quote;
content: close-quote;
```

Figure 2-51 Adding quotation marks to block quotes



```
aside blockquote {
   color: rgb(232, 165, 116);
   margin: 20px 5px;
   quotes: "\201C" "\201D";
}

aside blockquote::before {
   content: open-quote;
   font-family: 'Times New Roman', Times, serif;
   font-size: 1.6em;
   font-weight: bold;
}

aside blockquote::after {
   content: close-quote;
   font-family: 'Times New Roman', Times, serif;
   font-size: 1.6em;
   font-weight: bold;
}
```

character codes for the " and " curly quotes

before pseudo-element

displays the open quote character before each block quote

format applied to the opening and closing quotation marks

after pseudo-element

displays the close quote character after each block quote

Summary

Session 2.1:

- ❑ History of CSS
- ❑ Types of Style Sheets
- ❑ Style precedence and inheritance
- ❑ Colours in CSS

Session 2.2:

- ❑ Contextual selectors
- ❑ Attribute selectors
- ❑ Text and font styles
- ❑ Web fotns

Session 2.3:

- ❑ List styles
- ❑ Margins and padding space
- ❑ Pseudo-classes and pseudo-elements
- ❑ Adding content to a page using CSS

End of Lecture Slides