Web Development & Design Foundations with HTML5

Tenth Edition

WEB DEVELOPMENT
& DESIGN FOUNDATIONS
with **HTML5**

TERRY FELKE-MORRIS

10th Edition
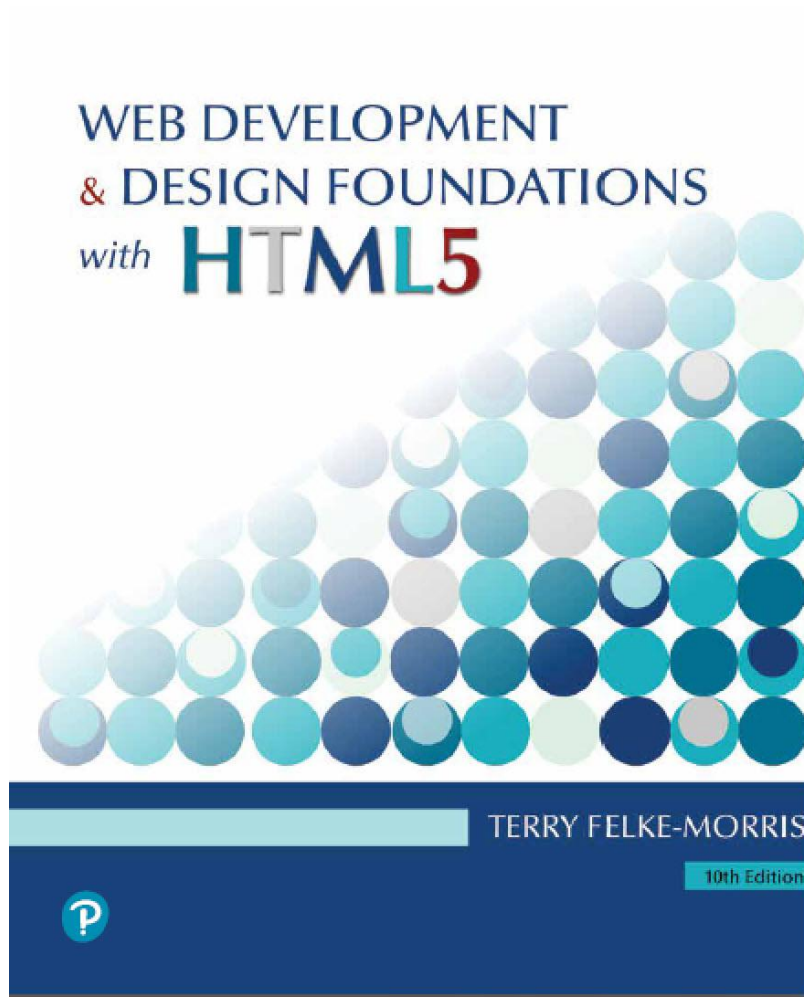
Chapter 4

Visual Elements and Graphics

Learning Outcomes

- Create and format lines and borders on web pages
- To add graphics to web pages
- Optimize an image for web page display
- Configure images as backgrounds and hyperlinks
- Configure visual effects with CSS3
- Configure RGBA and HSLA color with CSS3
- Use the meter and progress elements
- Follow recommended web design guidelines for graphics on web pages

Horizontal Rule Element
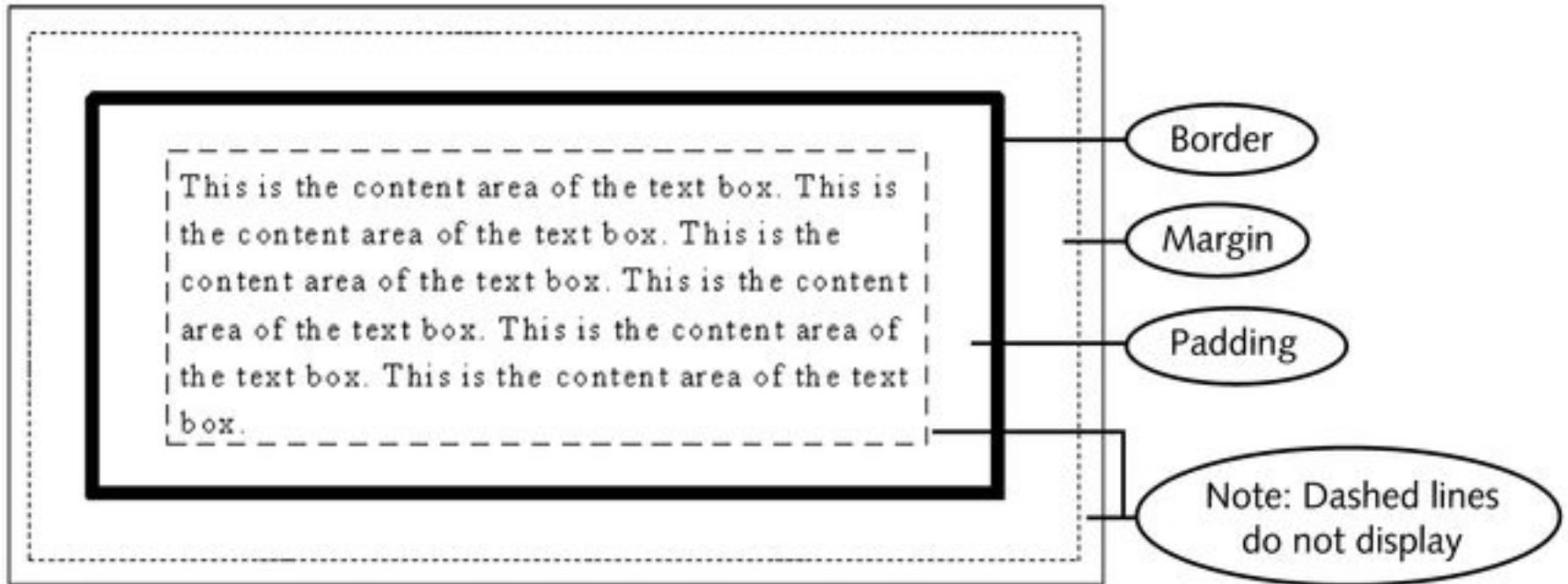
Configures a horizontal line

<hr>

Figure 4.1 The <hr> tag configures a horizontal line

Box Model –
Each Content Box can have Margins, Borders, & Padding

This is the content area of the text box. This is the content area of the text box. This is the content area of the text box. This is the content area of the text box. This is the content area of the text box. This is the content area of the text box.

Border

Margin

Padding

Note: Dashed lines do not display

CSS border Property

Configures a border on the top, right, bottom, and left sides of an element

Consists of

- border-width

- border-style

- border-color

h2 { border: 2px solid #ff0000 }

Heading with Border

CSS Borders

Description	Property Name		
Overall shorthand property	border		
Individual side shorthand properties	border-left, border-top, border-right, border-bottom		
Specific shorthand property	border-style	border-width	border-color
Individual properties	border-left-style border-right-style border-top-style border-bottom-style	border-left-width border-right-width border-top-width border-bottom-width	border-left-color border-right-color border-top-color border-bottom-color

Heading with Border

h2 { border-bottom: 2px solid #ff0000 }

Border-style options

- none
- dotted
- dashed
- solid
- double
- groove
- ridge
- inset
- outset
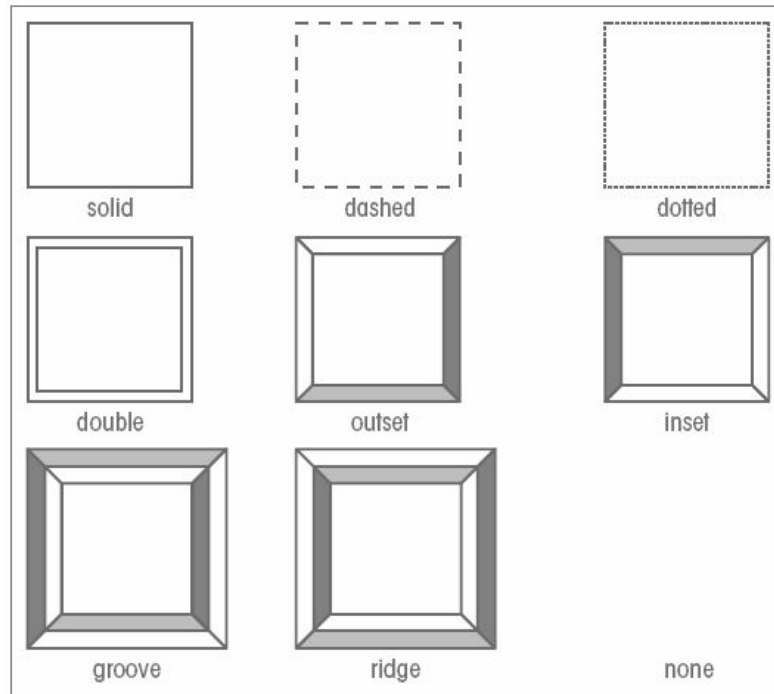
Figure 4.2 Examples of the various border-style values rendered by Firefox

CSS padding Property

Configures empty space between the content of the element and the border

Set to 0px by default

h2 { border: 2px solid #ff0000; padding: 5px; }

Heading with Border

No padding property configured:

Heading with Border

Configure Padding on Specific Sides of an Element

Use CSS to configure padding on one or more sides of an element
- padding-bottom
- padding-left
- padding-right
- padding-top

h2 { border: 2px solid #ff0000;

    background-color: #cccccc;

    padding-left: 5px;

    padding-bottom: 10px;

      padding-top: 10px; }

CSS padding Property Shorthand: two values

Two numeric values or percentages

- first value configures top and bottom padding
- the second value configures left and right padding

h2 { border: 2px solid #ff0000;

  background-color: #cccccc;

  padding: 20px 10px;

}

CSS padding Property Shorthand: four values

Four numeric values or percentages

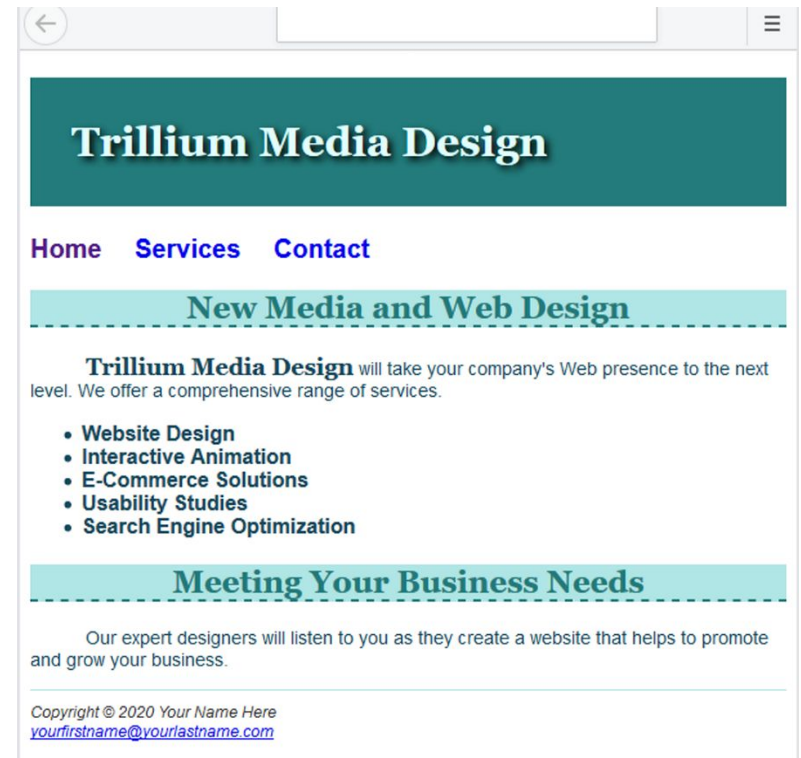• Configure top, right, bottom, and left padding

```
h2 { border: 2px solid #ff0000;
        width: 250px;
      background-color: #cccccc;
      padding: 30px 10px 5px 20px;
}
```


Heading with Border

Hands-On Practice

h2 { background-color: #B0E6E6;
    color: #237B7B;
    font-family: Georgia, "Times New Roman", serif;
    text-align: center;
    border-bottom: 2px dashed #237B7B; }

Checkpoint questions:

1. Is it reasonable to try to code a web page that looks exactly the same on every browser and every platform? Explain your answer.

2. When a web page containing the style rules below is rendered in a browser, the border does not display.
   Describe what is incorrect with the following code:

   h2 { background-color: #ff0000

         border-top: thin solid #000000

     }

3. True or False? CSS can be used to configure visual elements such as rectangular shapes and lines on web pages.

Types of Graphics

Graphic types commonly used on web pages:

- GIF

- JPG

- PNG

- WebP

Types of graphics - GIF

- Graphics Interchange Format
  - Best for clip art.
  - Maximum of 256 colors
  - One color can be configured as transparent
  - Can be animated
  - Uses lossless compression
  - Can be interlaced

GIF saved with Transparency

GIF saved without Transparency

Background color configured to be transparent

Background color – no transparency

JPEG

- Joint Photographic Experts Group
- Best used for photographs
- Up to 16.7 million colors
- Use lossy compression
- Cannot be animated
- Cannot be made transparent
- Progressive JPEG – similar to interlaced display

Figure 4.7 A JPEG saved at 80% quality (55KB file size) displays well on a web page

PNG

- Portable Network Graphic

- Supports millions of colors

- Supports multiple levels of transparency
  (but most browsers do not – so limit to one transparent color for Web display)

- Supports interlacing

- Uses lossless compression

- Combines the best of GIF & JPEG

- Well-supported by modern browsers

WebP

- https://developers.google.com/speed/webp/

- Supports millions of colors

- Supports transparency

- Uses both lossy and lossless compression

- Intended to provide improved compression for GIF and JPG images

- Browser support is growing

HTML Image Element

- Configures graphics on a web page

<img src="dog.jpg" alt="Dog at computer" height="100" width="100">

- src Attribute
  - File name of the graphic
- alt Attribute
  - Configures alternate text description
- height Attribute
  - Height of the graphic in pixels
- width Attribute
  - Width of the graphic in pixels

Figure 1.3 Who really updated that web page you are viewing?

Image Link

- To create an image hyperlink use an anchor element to contain an image element

Home

<img src="home.gif" height="19" width="85" alt="Home">

- Some browsers automatically add a border to image links.
- Configure CSS to eliminate the border
  img { border-style: none; }

Thumbnail Image

A small image configured to link to a larger version of that image.

<img src="small.jpg" alt="tropical island" width="200" height="100">

Image Optimization

- The process of creating an image with the lowest file size that still renders a good quality image—**balancing image quality and file size**.

- Photographs taken with digital cameras are not usually optimized for the Web

- Image Editing Tools:

- GIMP https://www.gimp.org/ (FREE!)

- Adobe Photoshop

- Pixlr https://pixlr.com/x/ (FREE!)

Organizing Your Site

- Place images in their own folder

- Code the path to the file in the src attribute

<img src="images/home.gif" alt="Home" height="100" width="200">
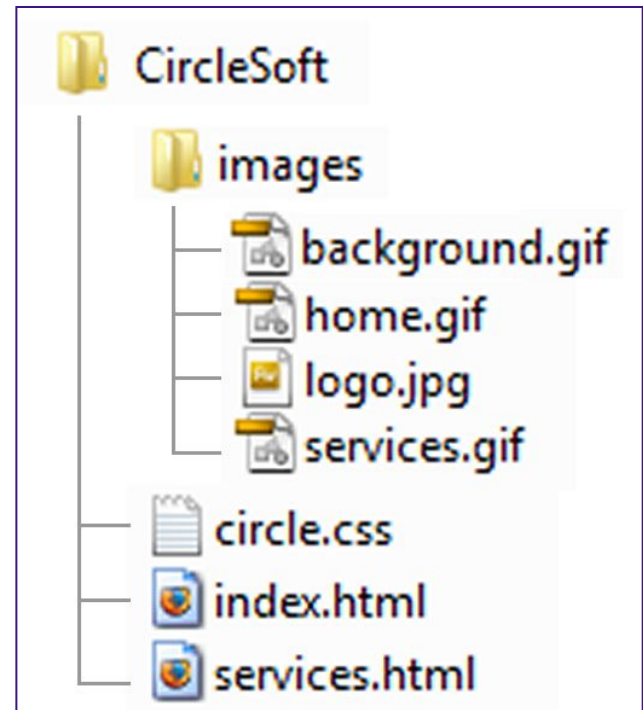
HTML5 Figure and Figcaption Elements

Figure Element: contains a unit of content that is self-contained, such as an image, along with one optional figcaption element.

```
<figure>
  <img src= "myisland.jpg" width= "400"
     height= "400"
     alt="Tropical Island Getaway">
     <figcaption>
 Tropical Island Getaway
     </figcaption>
</figure>
```
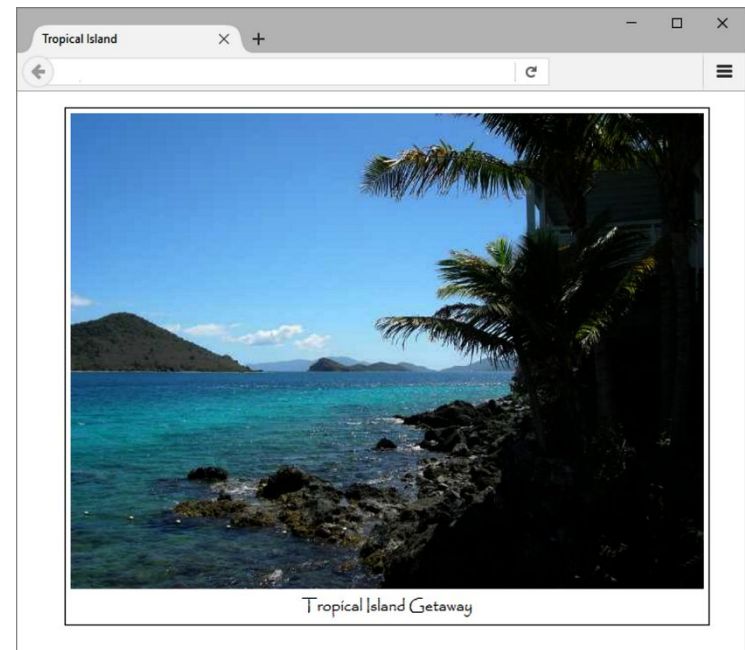
HTML5 Meter Element

```
<meter value="14417" min="0" max="14417">14417</meter>14,417 Total Visits<br>
<meter value="7000" min="0" max="14417">7000</meter> 7,000 Chrome<br>
<meter value="3800" min="0" max="14417">3800</meter> 3,800 Edge<br>
<meter value="2062" min="0" max="14417">2062</meter> 2,062 Firefox<br>
<meter value="1043" min="0" max="14417">1043</meter> 1,043 Safari<br>
<meter value="312" min="0" max="14417">312</meter>    312 Opera<br>
<meter value="200" min="0" max="14417">200</meter>    200 other<br>
```

Monthly Browser Report

14,417 Total Visits

7,000 Chrome

3,800 Edge

2,062 Firefox

1,043 Safari

312 Opera

200 other
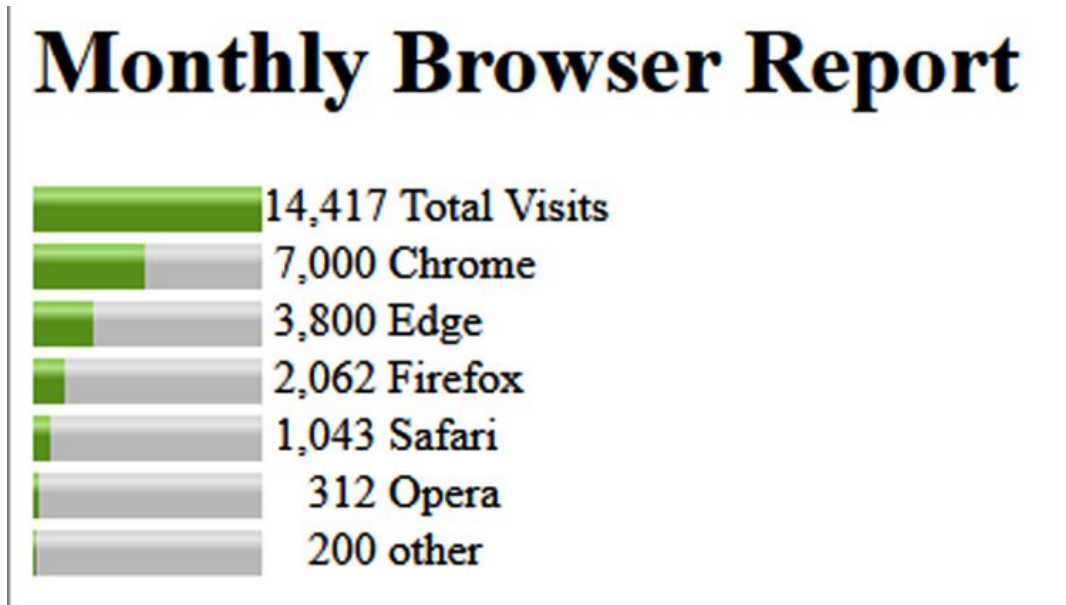
HTML5 Progress Element

Displays a bar that depicts a numeric value within a specified range

<progress value="5" max="10">50%</progress>
Progress Towards Our Goal
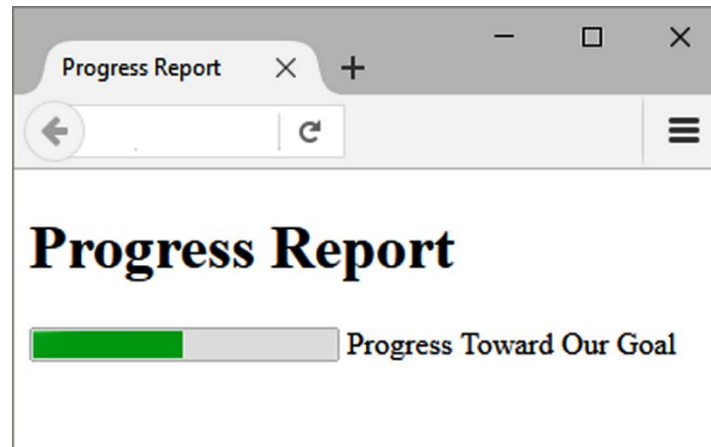
Figure 4.16 The progress element

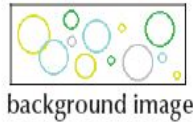# CSS background-image Property

Configures a background-image

By default, background images tile (repeat)

body { background-image: url(background1.gif); }
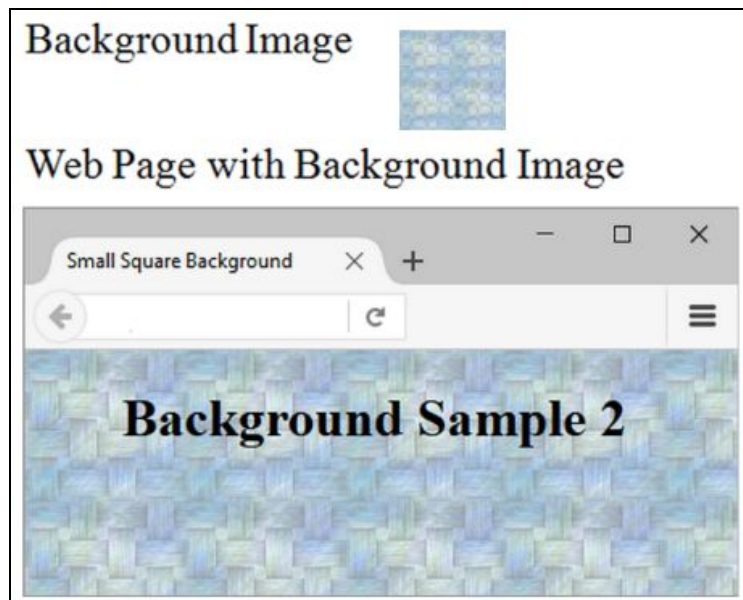
CSS background-repeat Property
CSS background-position Property
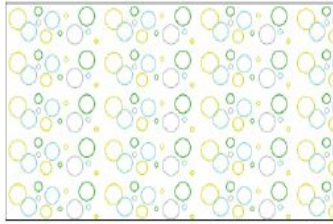
background image

background-image: repeat

background-image: repeat-x

background-image: repeat-y

background-image: no-repeat

LEFT TOP	CENTER TOP	RIGHT TOP
0% 0%	50% 0%	100% 0%
LEFT CENTER	CENTER	RIGHT CENTER
0% 50%	50% 50%	100% 50%
LEFT BOTTOM	CENTER BOTTOM	RIGHT BOTTOM
0% 100%	50% 100%	100% 100%

CSS background-repeat and background-position Property

The default placement of a background image is top left.

The background-position property can change this placement.

h2 { background-image: url(flower.gif);

   background-position: right;

   background-repeat: no-repeat; }

CSS background-clip Property

- confines the display of the background image
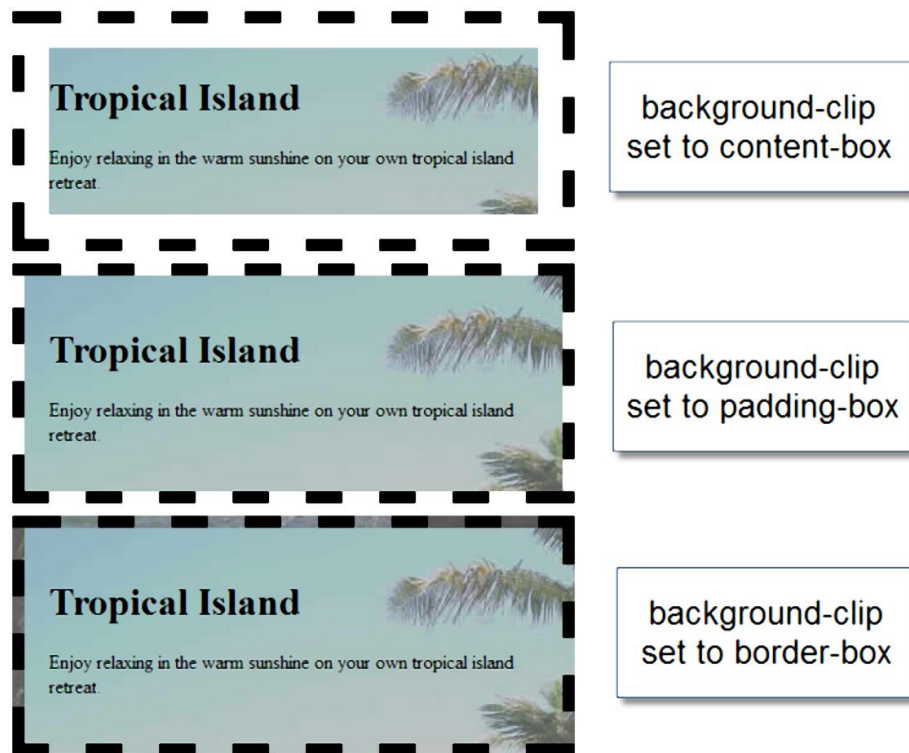
Figure 4.23 The CSS background-clip property

CSS background-origin Property

- positions the background image relative to the content, padding or border

CSS background-size Property

can be used to resize or scale the background image

CSS Multiple Background Images

```css
body { font-size: 150%;
       font-family: Arial, sans-serif;
       color: #992435;
       background-image: url(coffeepour.jpg);
       background-repeat: no-repeat;
       background-size: cover;
       background-attachment: fixed;
       background: url(coffee.gif) no-repeat left bottom,
                   url(coffeepour.jpg) no-repeat fixed;
       background-size: auto, cover;
}
```
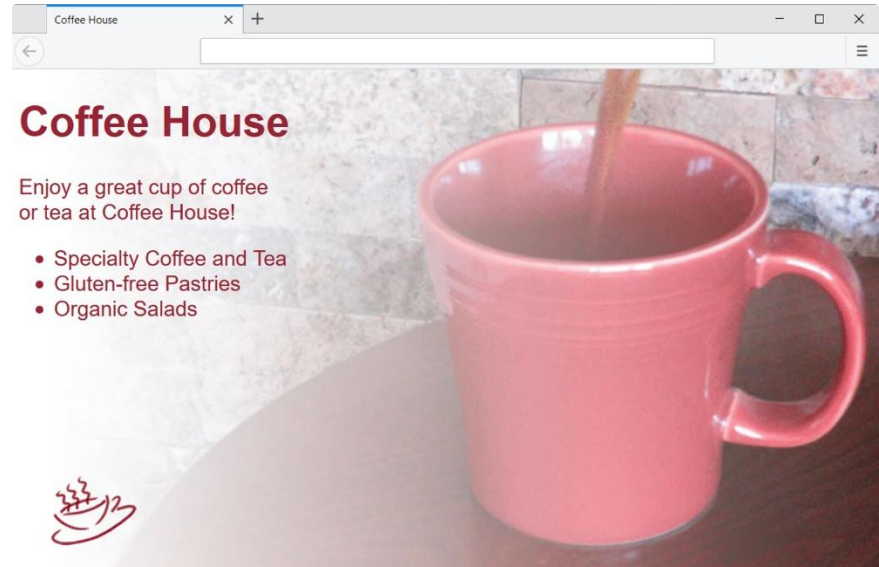
More about images - Image Map element

```html
<h1>Image Map</h1>
  <map id="fishing" name="fishing">
    <area href="http://nature.org"  shape="rect" coords="0,51,416,170" alt="The Nature Conservancy" title="The Nature Conservancy">
    <area href="http://www.fishingdoorcounty.com"  shape="rect" coords="24,188,339,283" alt="Door County Fishing Boat" title="Door County Fishing
  </map>
  <img src="fishingboat.jpg" usemap="#fishing" alt="Door County" height="350" width="416">
```
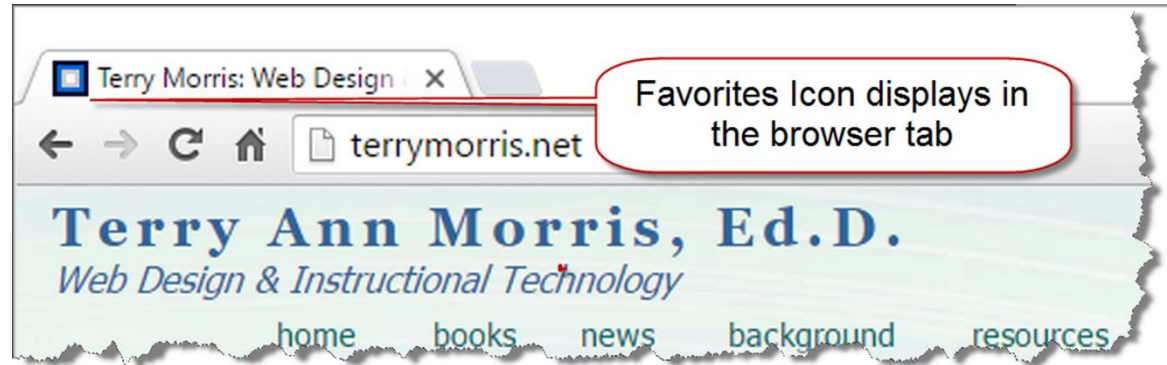

Image Map

Door County Fishing Boat

Sample image map

Favorites Icon - favicon

Favorites Icon displays in the browser tab

- A square image associated with a web page

- Usually named: favicon.ico

- May display in the browser address bar, tab, or favorites/bookmarks list

- Configure with a link tag:

<link rel="icon" href="favicon.ico" type="image/x-icon">

Sources for Graphics

- Create them yourself using a graphics application:
  - GIMP
  - Adobe Photoshop
  - Adobe Fireworks

- Download graphics from a free site

- Purchase/download professional-quality graphics

- Purchase a graphics collection on a CD

Guidelines for Using Images

Reuse images

Consider image file size with image quality

Consider image load time

Use appropriate resolution
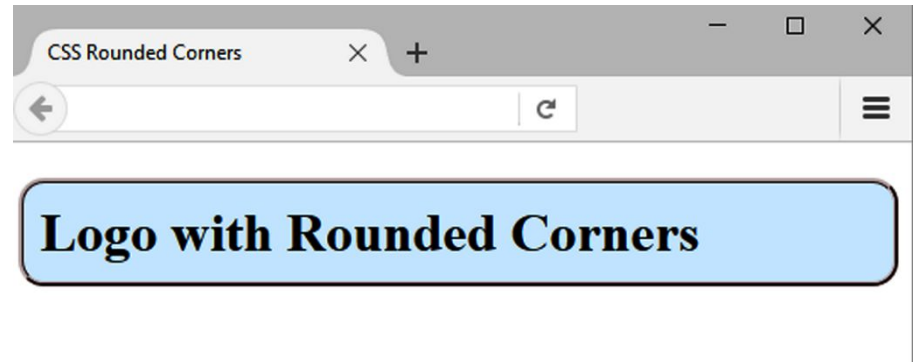
Specify dimensions

Be aware of brightness and contrast

CSS Rounded Corners

border-radius property

- Configures the horizontal radius and vertical radius of the corner

- Numeric value(s) with unit (pixel or em) or percentage

Example

h1 { border-radius: 15px;

}

Figure 4.32 Rounded corners were configured with CSS

CSS box-shadow Property

Example:

#wrapper { box-shadow: 5px 5px 5px #828282; }
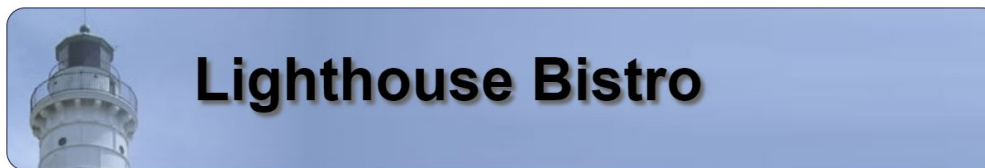
CSS opacity Property

Configure the transparency of the element

Example:h1{ background-color: #FFFFFF;
    opacity: 0.6; }
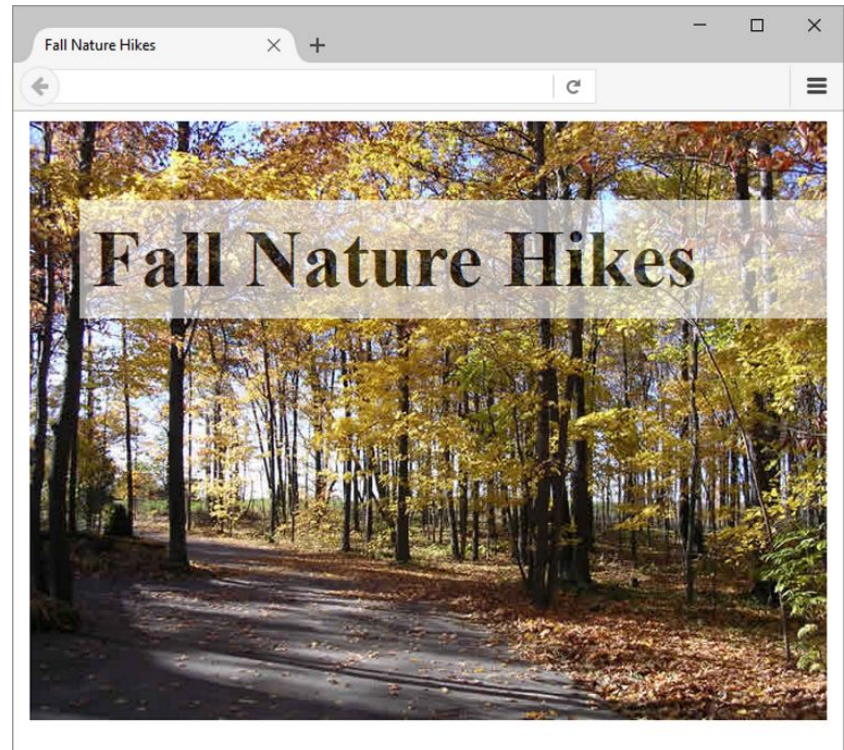
Rgba Color

Four values are required:

red color, green color, blue color, and alpha(transparency)

- The values for red, green, and blue
  must be decimal values from 0 to 255.

- The alpha value must be a number between 0
  (transparent) and 1 (opaque).

```
h1 { color: #ffffff;
    color: rgba(255, 255, 255, 0.7);
    font-size: 5em; padding-right: 10px;
    text-align: right;
    font-family: Verdana, Helvetica, sans-serif;
}
```

Hexadecimal and RGB decimal color values

|			

#FFFFFF
rgb (255, 255, 255)
	#FFFFCC
	rgb(255, 255, 204)
		#FFFF99
		rgb(255,255,153)
			#FFFF66
			rgb(255,255,102)

#FFFF33
rgb(255,255,51)
	#FFFF00
	rgb(255,255,0)
		#FFCCFF
		rgb(255, 204, 255)
			#FFCCCC
			rgb(255,204,204)

#FFCC99
rgb(255,204,153)
	#FFCC66
	rgb(255,204,102)
		#FFCC33
		rgb(255,204,51)
			#FFCC00
			rgb(255,204,0)

#FF99FF
rgb(255,153,255)
	#FF99CC
	rgb(255,153,204)
		#FF9999
		rgb(255,153,153)
			#FF9966
			rgb(255,153,102)
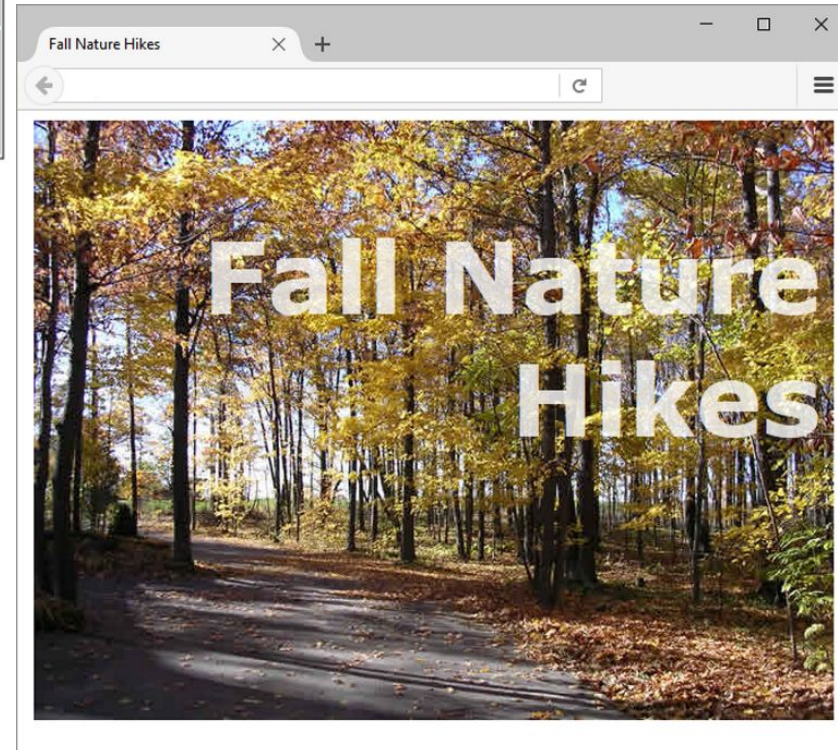
HSLA Color

hue, saturation, light, alpha

Hue is a value between 0 and 360

Saturation: percent

Lightness: percent

Optional alpha: from 0 to 1
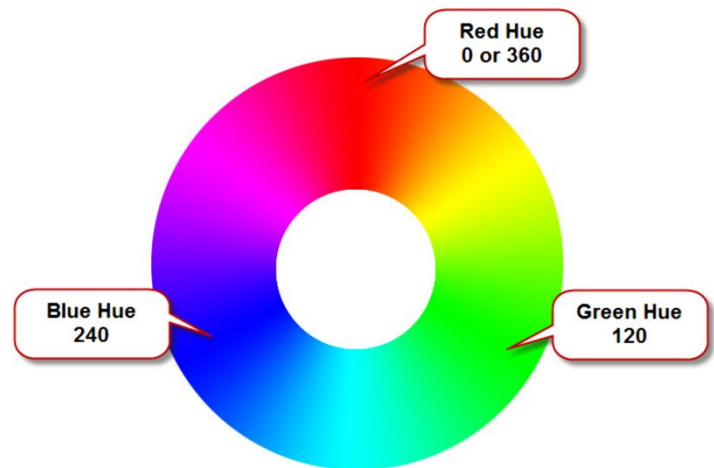
Figure 4.40 A color wheel

HSLA color examples

CSS Gradients

Gradient: a smooth blending of shades from one color to another
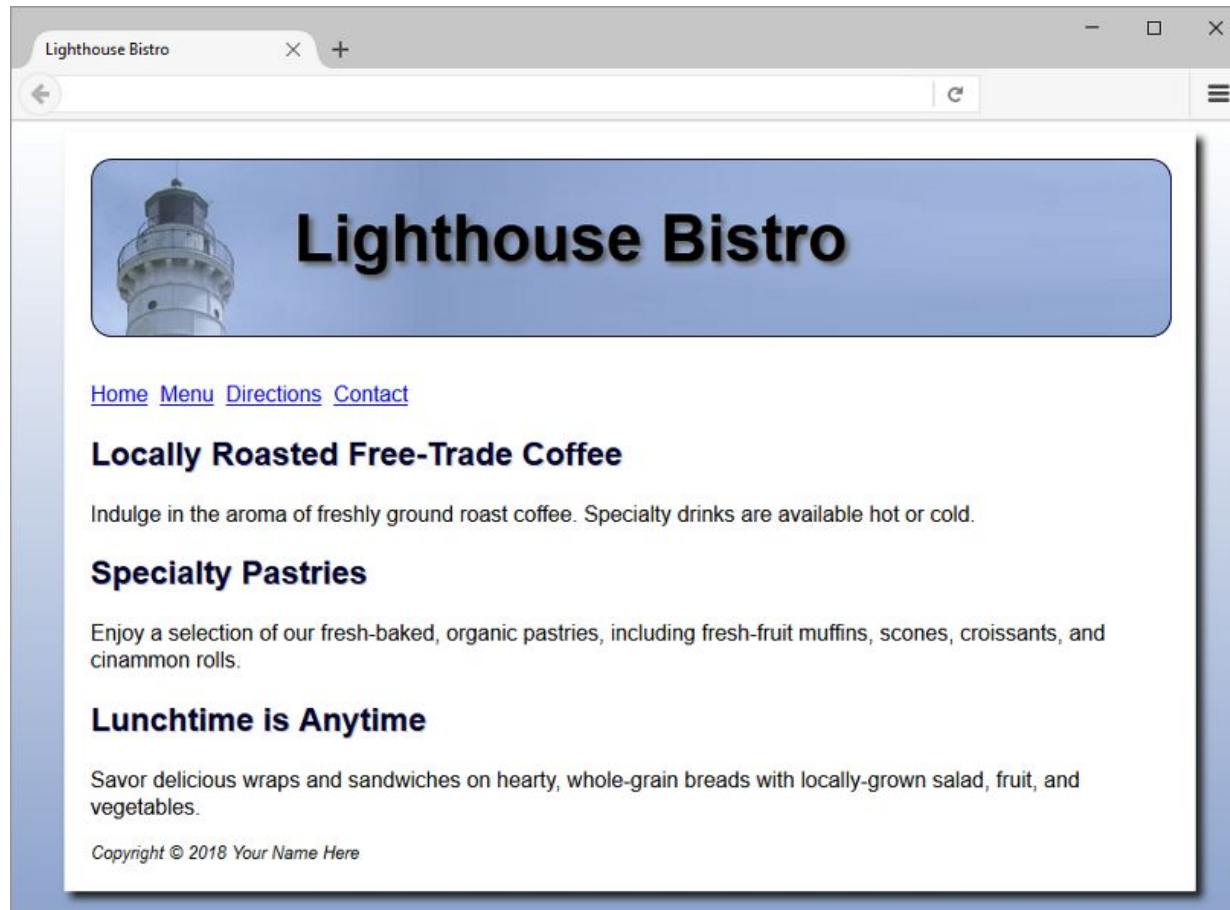
Use the background-image property

- linear-gradient()

- radial-gradient()

Example:

body {
    background-color: #8FA5CE;
    background-image: linear-gradient(#FFFFFF, #8FA5CE);
}

The gradient in the background was configured with CSS without an image file

Summary

- This chapter introduced the use of visual elements and graphics on web pages.

- As you continue to create web pages, look back at the guidelines and accessibility issues related to graphics.

- The number one reason for visitors to leave web pages is too long of a download time. When using images, be careful to minimize this issue.

- Provide alternatives to images (such as text links) and use the alt attribute on your pages.