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Web Development & Design

Visual Elements and Graphics

Learning Outcomes

■ In this chapter, you will learn how to ...

- Create and format lines and borders on web pages
- Apply the image element to add graphics to web pages
- Optimize an image for web page display
- Configure images as backgrounds on web pages
- Configure images as hyperlinks
- Configure visual effects with CSS3 including multiple background images, rounded corners, box shadow, text shadow, opacity, and gradients
- Configure RGBA and HSLA color with CSS3
- Use HTML5 elements to caption a figure
- Use the HTML5 meter and progress elements
- Find free and fee-based graphics sources
- Follow recommended web design guidelines for graphics on web pages

Horizontal Rule Element

- Configures a horizontal line
`<hr>`



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CSS border Property

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

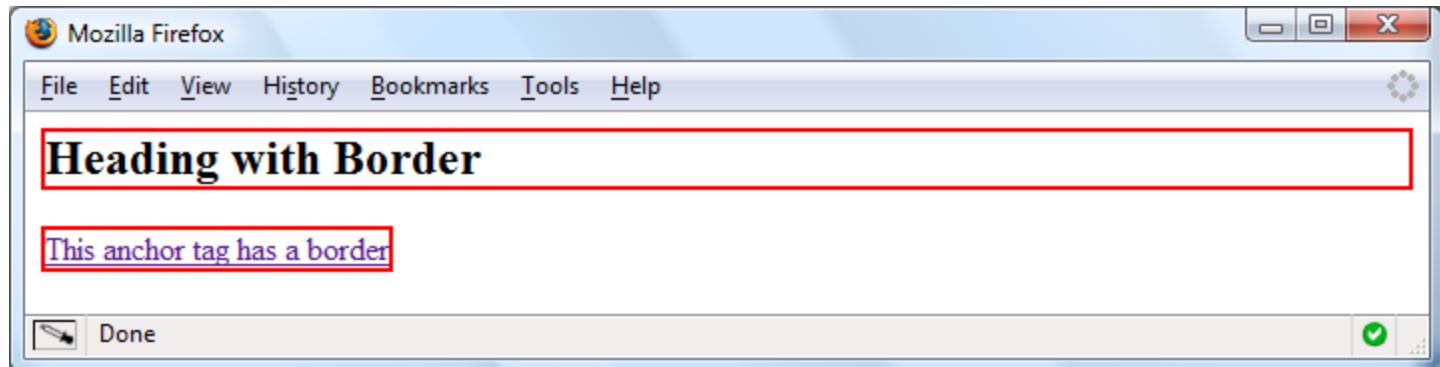
- Consists of
 - border-width
 - border-style
 - border-color

Heading with Border

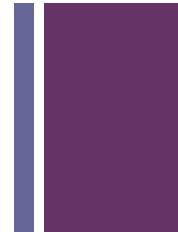
CSS Borders: Block / Inline Elements

- Block display element
 - default width of element content extends to browser margin (or specified width)
- Inline display element
 - Border closely outlines the element content

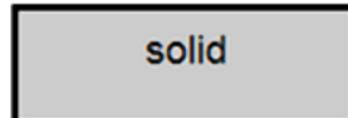
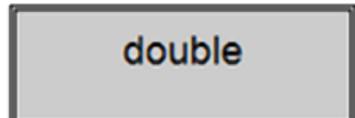
```
h2 { border: 2px solid #ff0000; }  
a { border: 2px solid #ff0000; }
```



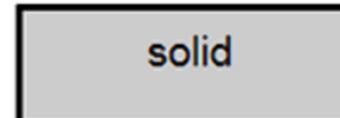
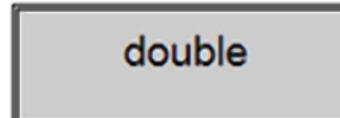
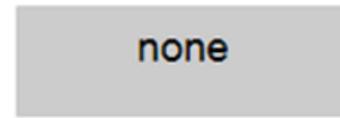
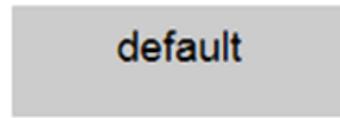
Browser Display Can Vary



Firefox



Internet Explorer





Configuring Specific Sides of a Border

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

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

Heading with Border

CSS padding Property

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

- Set to 0px by default

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

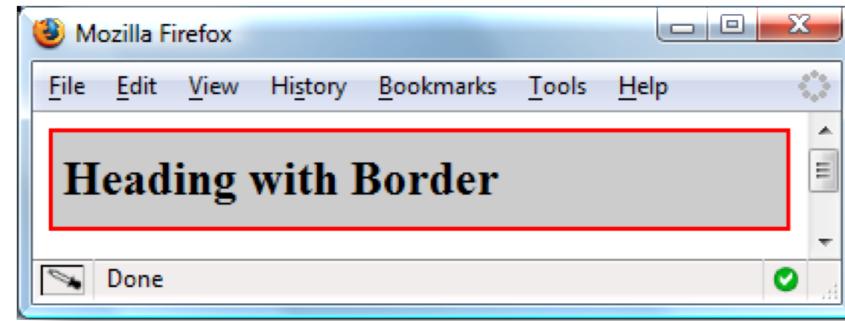
Heading with Border

No padding property configured:

Heading with Border

Configure Padding on Specific Sides of an Element

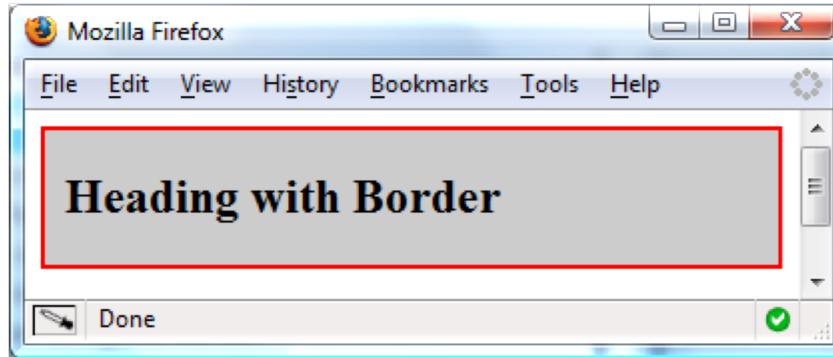
- ▶ Use CSS to configure padding on one or more sides of an element
 - ▶ padding-bottom
 - ▶ padding-left
 - ▶ padding-right
 - ▶ padding-top



```
h2 { border: 2px solid #ff0000;  
      background-color: #cccccc;  
      padding-left: 5px;  
      padding-bottom: 10px;  
      padding-top: 10px; }
```

CSS padding Property Shorthand: two values

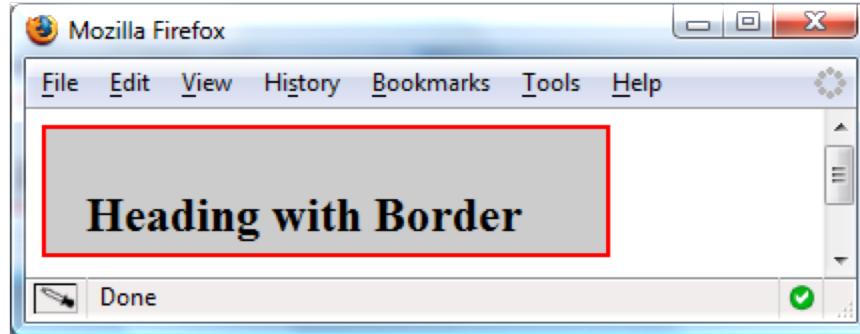
- ▶ Two numeric values or percentages
 - ▶ first value configures top and bottom padding
 - ▶ the second value configures left and right padding



```
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;  
 }
```



Hands-On Practice



```
h2 { background-color:#AEAEAD4;  
color:#191970;  
font-family: Georgia, "Times New Roman", serif;  
text-align: center;  
border-bottom: 2px dashed #191970;  
}
```

Types of Graphics

■ Graphic types commonly used on web pages:

- GIF
- JPG
- PNG

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GIF saved with Transparency

Background color configured to be transparent

GIF saved without Transparency

Background color – no transparency

GIF

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

- 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



- Portable Network Graphic
- Support millions of colors
- Support multiple levels of transparency
*(but most browsers do not --
so limit to one transparent color for Web display)*
- Support interlacing
- Use lossless compression
- Combines the best of GIF & JPEG
- Browser support is growing

HTML Image Element

- Configures graphics on a web page

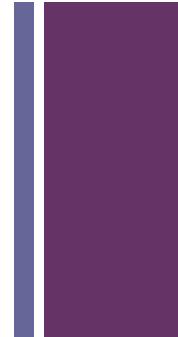
```

```

- **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



Accessibility & Images



■ Required:

■ Configure the alt attribute

- Alternate text content to convey the meaning/intent of the image
- NOT the file name of the image
- Use alt="" for purely decorative images

■ Recommended:

- If your site navigation uses image links for the main navigation, provide simple text links at the bottom of the page.

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

```
<a href="index.html"></a>
```



Home

- 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.

```
<a href= “big.jpg” ><img src= “small.jpg”  
alt= “country road” width= “200”  
height= “100” ></a>
```



- 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





Optimize An Image for the Web

■ Image Optimization

- Reduce the file size of the image
- Reduce the dimensions of the image to the actual width and height of the image on the web page.

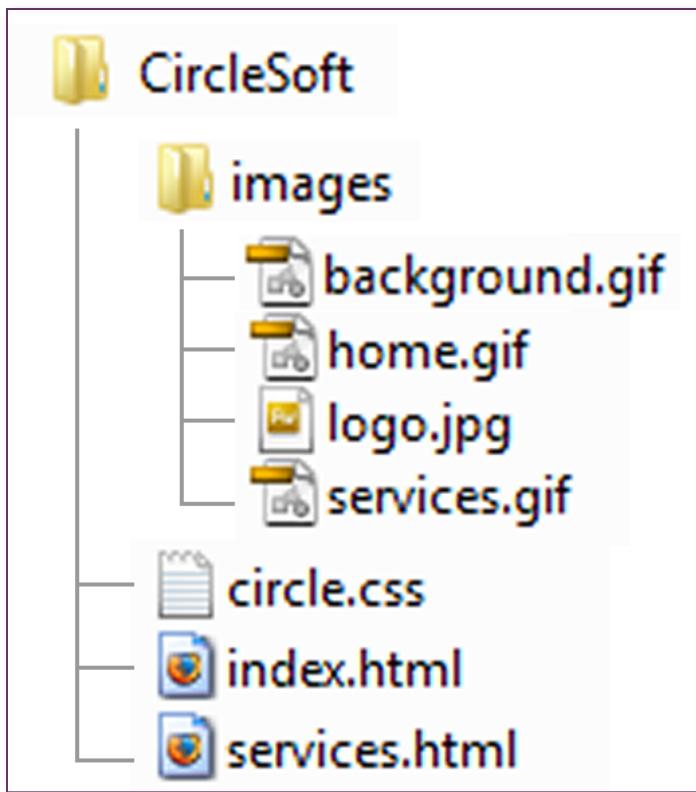
■ Image Editing Tools:

- GIMP (free!)
- Adobe Fireworks
- Adobe Photoshop
- <http://pixlr.com/editor> (free!)

Choosing Names for Image Files

- Use all **lowercase** letters
- Do not use punctuation symbols and spaces
- Do not change the file extensions
(should be .gif, .jpg, .jpeg, or .png)
- Keep your file names short but descriptive
 - i1.gif is probably too short
 - myimagewithmydogonmybirthday.gif is too long
 - dogbdy.gif may be just about right

Organizing Your Site



- Place images in their own folder
- Code the path to the file in the src attribute

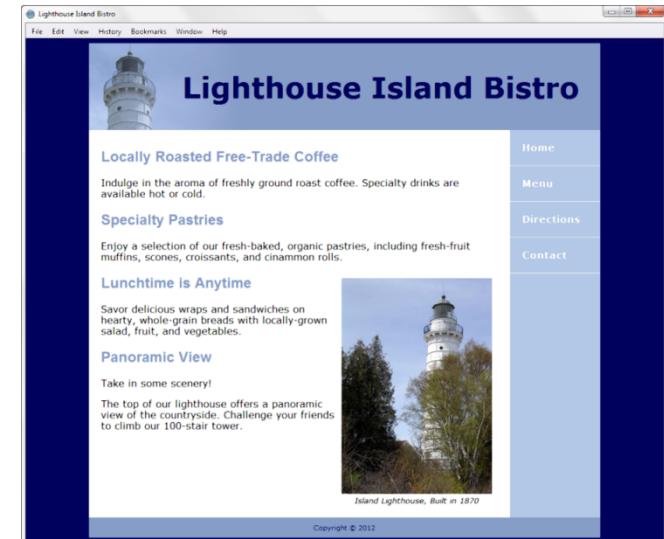
```

```

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.

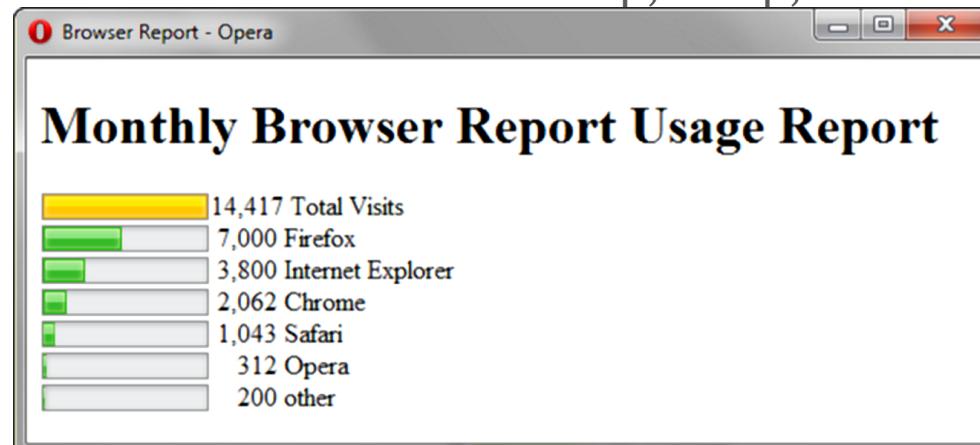
```
<figure>
  
  <figcaption>
    Island Lighthouse, Built in 1870
  </figcaption>
</figure>
```



HTML5 Meter Element

Displays a visual gauge of a numeric value within a known range

```
<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 Firefox<br>
<meter value="3800" min="0" max="14417">3800</meter> 3,800 Internet Explorer<br>
<meter value="2062" min="0" max="14417">2062</meter> 2,062 Chrome<br>
<meter value="1043" min="0" max="14417">1043</meter> 1,043 Safari<br>
<meter value="312" min="0" max="14417">312</meter> &nbsp;&nbsp; 312 Opera<br>
<meter value="200" min="0" max="14417">200</meter> &nbsp;&nbsp; 200 other<br>
```

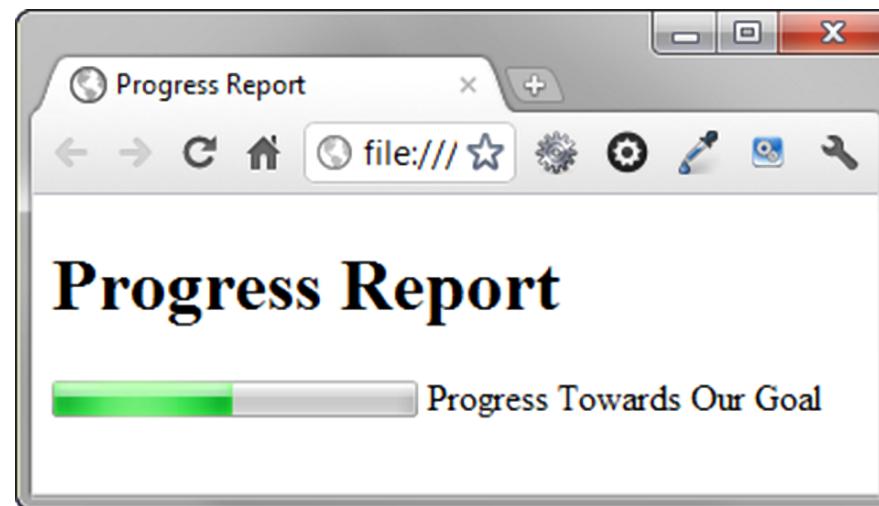


HTML5 Progress Element

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

```
<progress value="5000" max="10000">5000</progress>
```

Progress Towards Our Goal

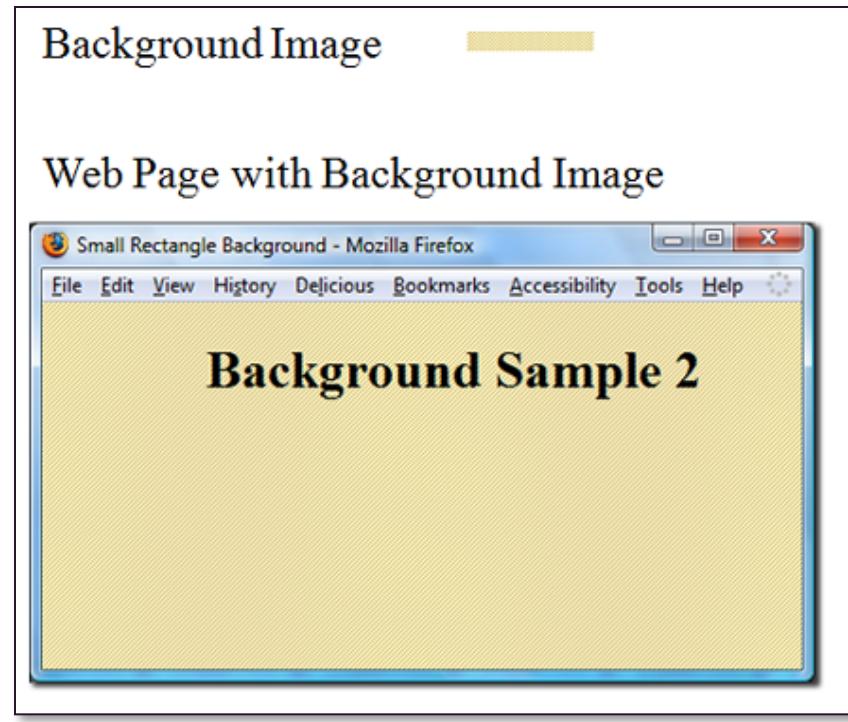
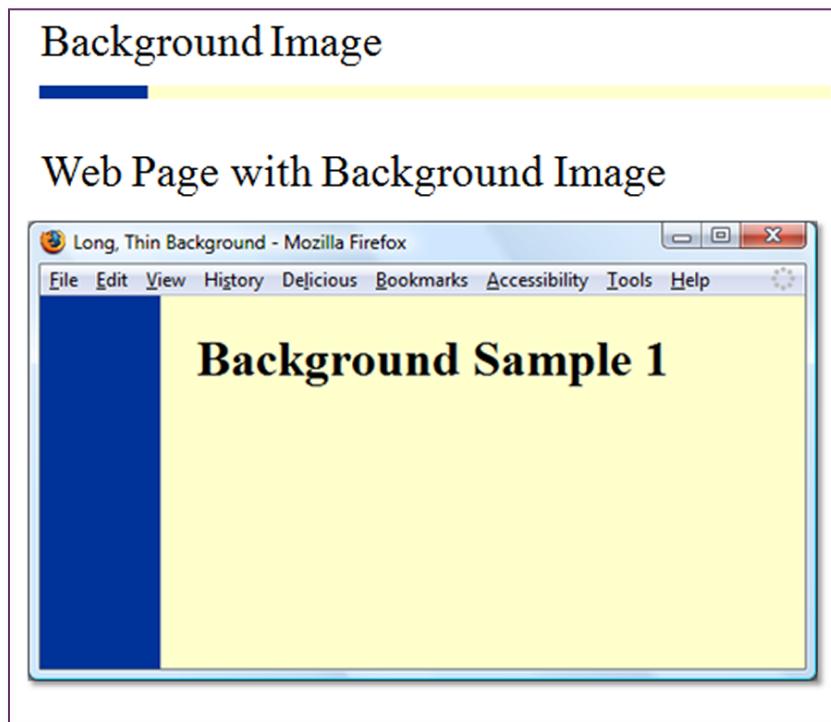


CSS background-image Property

- Configures a background-image

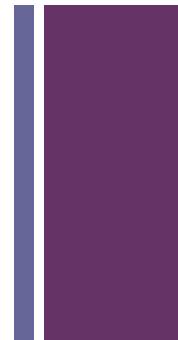
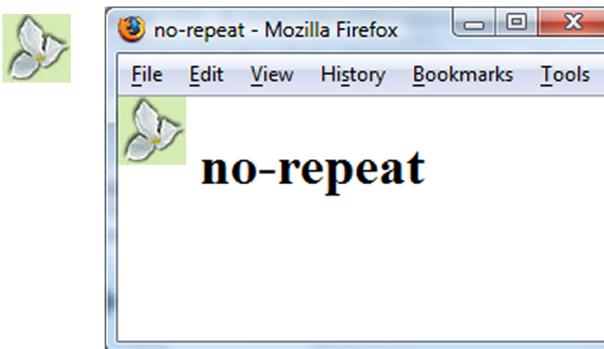
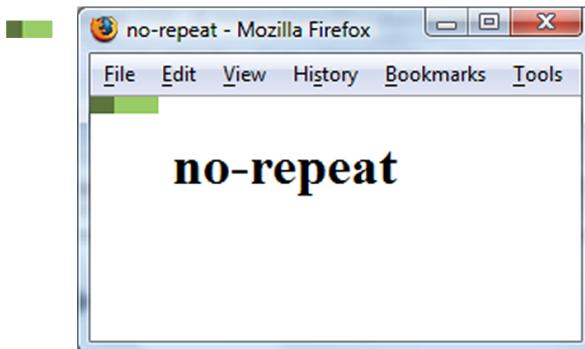
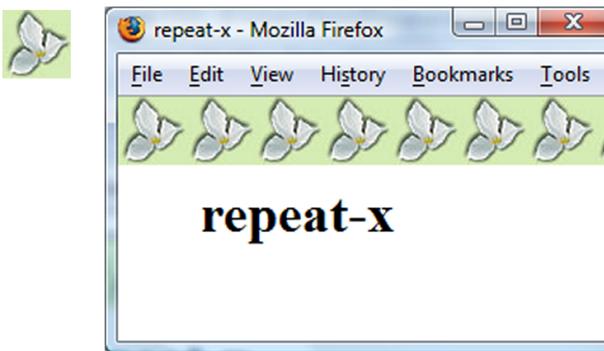
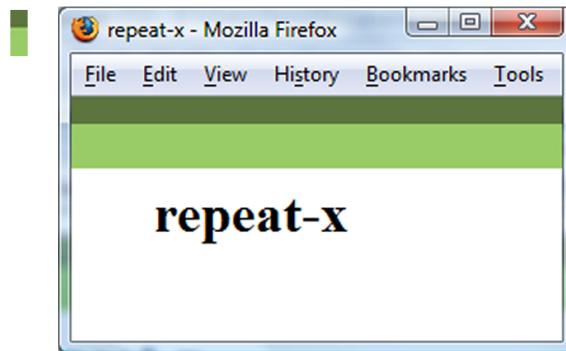
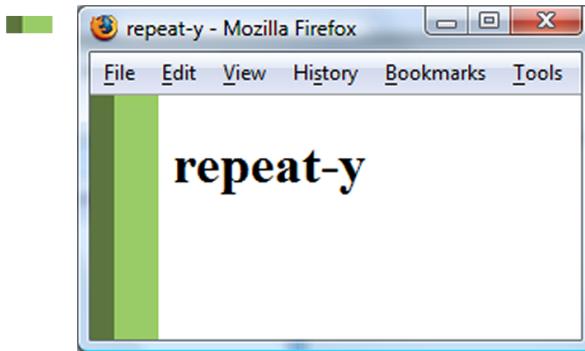
- By default, background images tile (repeat)

```
body { background-image: url(background1.gif); }
```



CSS background-repeat Property

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Using background-repeat

trilliumbullet.gif:

```
h2 { background-color: #d5edb3;  
     color: #5c743d;  
     font-family: Georgia, "Times New Roman", serif;  
     padding-left: 30px;  
     background-image: url(trilliumbullet.gif);  
     background-repeat: no-repeat;  
 }
```



+ CSS3 Multiple Background Images

```
body {  
background-color: #f4ffe4;  
color: #333333;  
background-image: url(trilliumgradient.png);  
background: url(trilliumfoot.gif)  
no-repeat bottom right,  
url(trilliumgradient.png);  
}
```



More About Images

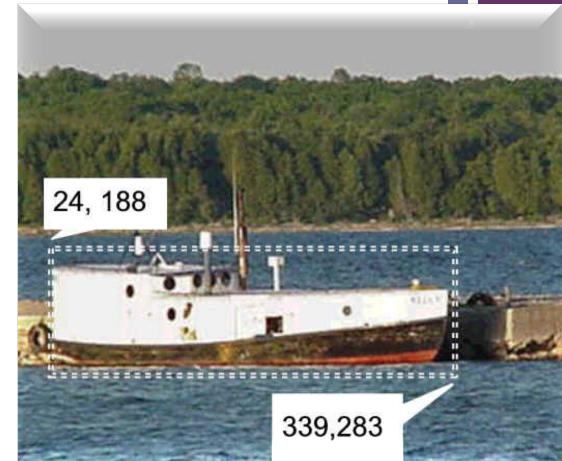
- Image Map
- Favorites Icon
- CSS Sprites
- Sources for Graphics
- Guidelines for Using Images
- Accessibility & Visual Elements

■ map element

- Defines the map

■ area element

- Defines a specific area on a map
- Can be set to a rectangle, circle, or polygon
 - href Attribute
 - shape Attribute
 - coords Attribute



```
<map name="boat" id="boat">
  <area href="http://www.fishingdoorcounty.com" shape="rect"
    coords="24, 188, 339, 283" alt="Door County Fishing">
</map>

```

Favorites Icon - favicon

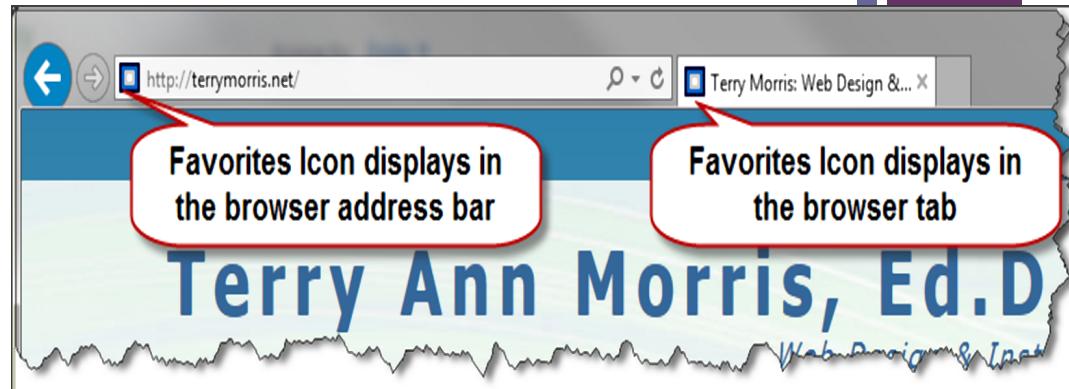
- ▶ A square image associated with a Web page



- ▶ 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">
```



CSS Sprites

■ Sprite –

- an image file that contains multiple small graphics that are configured as background images for various web page elements

■ Modern technique to optimize use of multiple icon or small images

■ Saves overhead by reducing the number of http requests made by the browser.

■ You'll use CSS Sprites in Chapter 7!

Sources for Graphics

- Create them yourself using a graphics application:
 - GIMP
 - Adobe Photoshop
 - Adobe Fireworks
 - Google's Picasa (<http://picasa.google.com/>)
- Download graphics from a free site
- Purchase/download professional-quality graphics
- Purchase a graphics collection on a CD
- Take digital photographs
- Scan your photographs
- Scan your drawings
- Hire a graphic designer to create graphics

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

Images and Accessibility

■ **Don't rely on color alone.**

- Some visitors may have color perception deficiencies. Use high contrast between background and text color.

■ **Provide a text equivalent for non-text elements.**

- Use the alt attribute on your image elements

■ **If your site navigation uses image links, provide simple text links at the bottom of the page.**

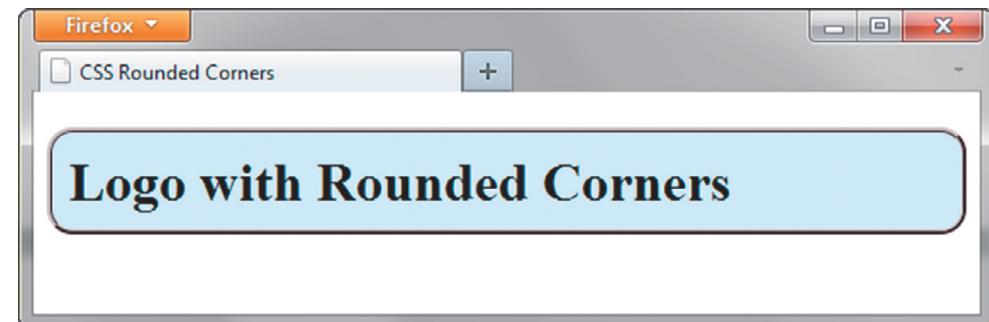
CSS3 Rounded Corners

► 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;  
}
```





Examples of Rounded Corners

- One value for border-radius configures all four corners

Example:

```
border-radius: 15px;
```

Logo with Rounded Corners

- Four values for border-radius configure each corner separately
Ordered by top left, top right, bottom right, bottom left

Example:

```
border-radius: 15px 30px 100px 5px;
```

Logo with Rounded Corners

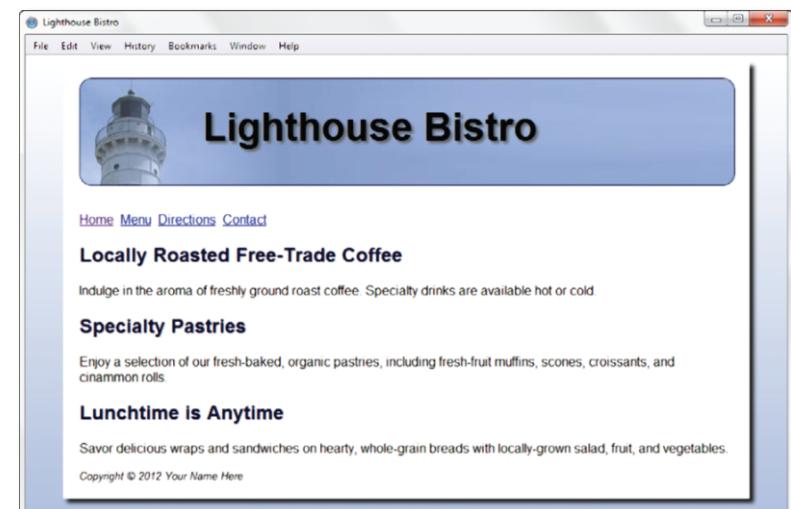
CSS3 box-shadow Property

- Configure the horizontal offset, vertical offset, blur radius, and valid color value

- Example:

```
#wrapper { box-shadow: 5px 5px 5px #828282; }
```

Optional keyword: inset



CSS3 opacity Property

- Configure the opacity of the element

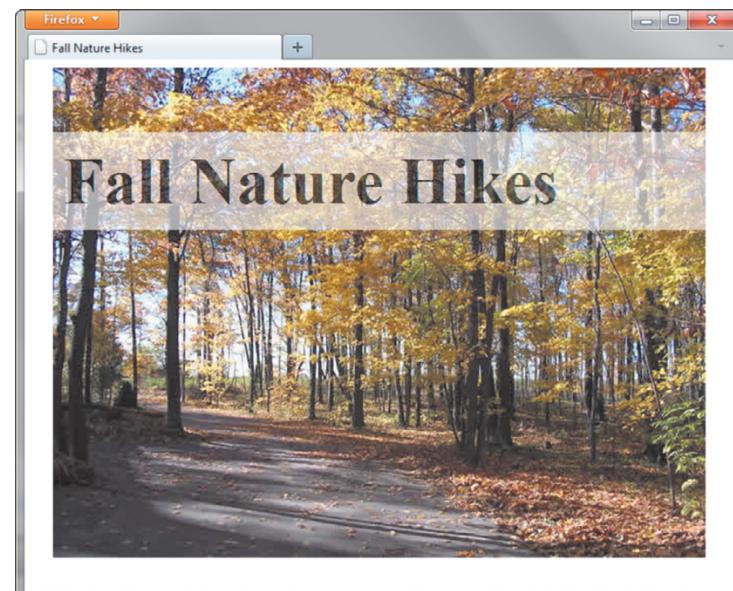
- Opacity range:

- 0 Completely Transparent

- 1 Completely Opaque
horizontal offset,
vertical offset, blur radius,
and valid color value

- Example:

```
h1{ background-color: #FFFFFF;  
    opacity: 0.6; }
```



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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).
- ▶ Example:

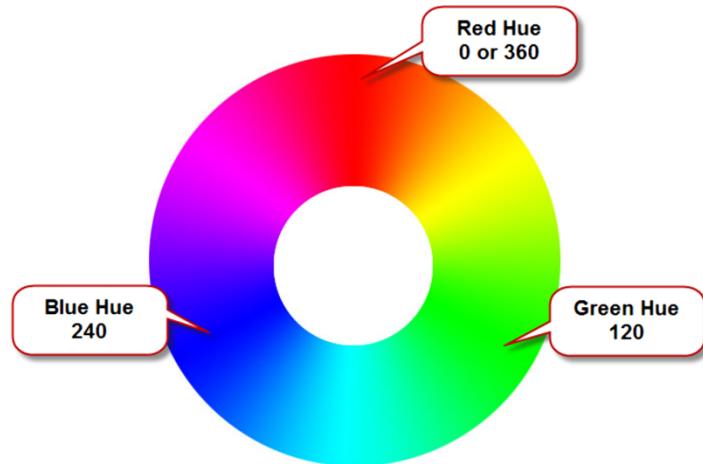
```
h1 { color: #ffffff;  
      color: rgba(255, 255, 255, 0.7);  
      font-size: 5em; padding-right: 10px  
      text-align: right;  
      font-family: Verdana, Helvetica, san  
    }
```

#FFFFFF rgb (255, 255, 255)	#FFFFCC rgb(255, 255, 204)	#FFFF99 rgb(255,255,153)	#FFF66 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

Red
`hsla(360, 100%, 50%, 1.0);`

Green
`hsla(120, 100%, 50%, 1.0);`

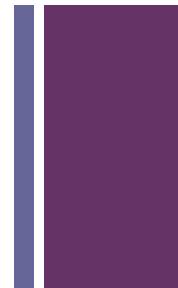
Blue
`hsla(240, 100%, 50%, 1.0);`

Black
`hsla(0, 0%, 0%, 1.0);`

Gray
`hsla(0, 0%, 50%, 1.0);`

White
`hsla(0, 0%, 100%, 1.0);`

+ CSS3 Gradients

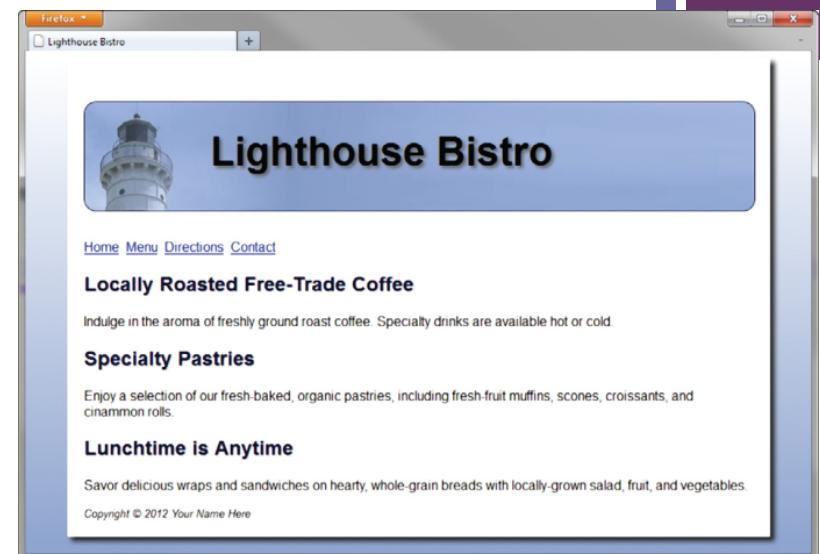


- Gradient: a smooth blending of shades from one color to another

- Use the background-image property
 - linear-gradient()
 - radial-gradient()

- Example:

```
background-color: #8FA5CE;  
background-image:  
    -webkit-gradient(linear, left top, left bottom, from(#FFFFFF), to(#8FA5CE));  
background-image: -moz-linear-gradient(top, #FFFFFF, #8FA5CE);  
filter: progid:DXImageTransform.Microsoft.gradient  
    (startColorstr=#FFFFFF, endColorstr=#FF8FA5CE);  
linear-gradient(#FFFFFF, #8FA5CE);
```



- 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.