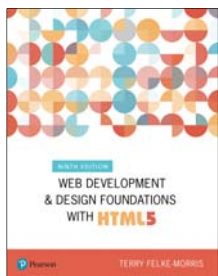


**Web Development & Design Foundations with HTML5**  
 Ninth Edition



**Chapter 4**  
 Visual Elements and Graphics

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**Learning Objectives** (1 of 2)

- 4.1 Create and format lines and borders on web pages
- 4.2 Apply the image element to add graphics to web pages
- 4.3 Optimize an image for web page display
- 4.4 Configure images as backgrounds on web pages
- 4.5 Configure images as hyperlinks

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**Learning Objectives** (2 of 2)


- 4.6 Configure visual effects with CSS3 including multiple background images, rounded corners, box shadow, text shadow, opacity, and gradients
- 4.7 Configure RGBA and HSLA color with CSS3
- 4.8 Use HTML5 elements to caption a figure
- 4.9 Use the HTML5 meter and progress elements
- 4.10 Find free and fee-based graphics sources
- 4.11 Follow recommended web design guidelines for graphics on web pages

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**Horizontal Rule Element**

Configures a horizontal line

`<hr>`



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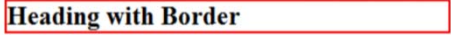
**CSS Border Property**

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

Consists of

- border-width
- border-style
- border-color

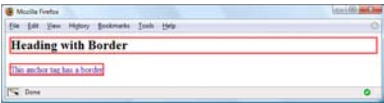
`h2 { border: 2px solid #ff0000 }`



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**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; }`

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### Border Display Can Vary by Browser

Firefox:

default none  
inset outset  
double groove  
ridge solid  
dashed dotted

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### 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

**Heading with Border**

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

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### 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**

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### 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; }
```

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### 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; }
```

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### 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; }
```

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### Hands-On Practice

```
h2 { background-color:#AEAED4;
color:#191970;
font-family: Georgia, "Times New Roman", serif;
text-align: center;
border-bottom: 2px dashed #191970;
}
```



### Checkpoint 4.1

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

### 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



### 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



### PNG

- 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

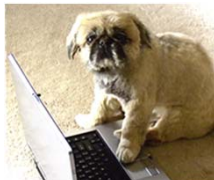
## HTML Image Element

- 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



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## 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.



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## Image Link

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

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

- Some browsers automatically add a border to image links.
- Configure CSS to eliminate the border
 

```
img { border-style: none; }
```



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## Thumbnail Image

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

```
<a href="big.jpg"></a>
```



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## 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



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## 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 Photoshop
- <https://pixlr.com/editor> (free!)



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## CSS Background-Repeat Property



repeat-y

repeat-x

no-repeat

repeat-y

repeat-x

no-repeat

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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;
}
    
```

New Media and Web Design

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## 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); }
    
```



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## Checkpoint 4.2

1. Describe the CSS to configure a graphic named circle.jpg to display once in the background of all <h1> elements. Code sample CSS to demonstrate this.
2. Describe the CSS that configures a file named bg.gif to repeat vertically down the background of a web page. Code sample CSS to demonstrate this.
3. Explain how the browser will render the web page if you use CSS to configure both a background image and a background color.

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## More About Images

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

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## Image Map

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>

    
```

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## 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">
```



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## 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!



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## Sources for Graphics (1 of 2)

- 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



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## Sources for Graphics (2 of 2)

- 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



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## 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



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## 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.**



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### Checkpoint 4.3

Search for a site that uses image links to provide navigation. List the URL of the page.

What colors are used on the image links?

If the image links contain text, is there good contrast between the background color and letters on the image links?

Would the page be accessible to a visitor who is sight-challenged?

How have accessibility issues been addressed?

Is the alt attribute used to describe the image link?

Is there a row of text links in the footer section of the page?

Answer the questions above and discuss your findings.



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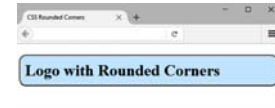
### CSS3 Rounded Corners

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;
}
```



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### 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



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### 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



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### 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

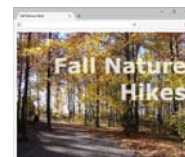
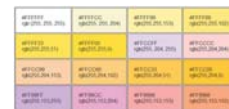
Four values are required:

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, sans-serif;
```



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## HSLA Color (Hue, Saturation, Light, Alpha)

Hue is a value between 0 and 360  
 Saturation: percent  
 Lightness: percent  
 Optional alpha: from 0 to 1



## CSS3 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); }
```

## 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.

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