

2.6 Images

 tag

The **** tag displays an image in a webpage. The **** tag does not enclose any content and is therefore a void element with no closing tag. The **** tag has two required attributes:

- The **src attribute** specifies the URL of the image file to display.
- The **alt attribute** provides a text description to use as an alternative to displaying the image.

Ex:

`` displays the image family.jpg, but the text "Smith family reunion" displays if the image cannot be displayed.

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2.6.1: Loading images in HTML.



Start



2x speed

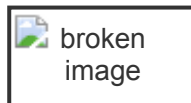
```
<p>Cat image:</p>





<p>Source: https://resources.
zybooks.com/WebProgramming/
smallCatv1.jpg</p>
```

Cat image:



Source: <https://resources.zybooks.com/WebProgramming/smallCatv1.jpg>

Captions ^

1. The image tag adds an image to the webpage. The browser retrieves the image using the src attribute.
2. The browser displays the text from the alt attribute when the image cannot be loaded. A person with visual impairments may use assistive technology to read the alt text aloud.
3. The browser displays content following the images.

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2.6.2: Images.



1) What tag includes a picture in a webpage?

- ☐ <image>
- ☒
- ☐ <pict>

Correct

The `` tag displays many different image formats, including JPEG, GIF, and PNG.



2) Which image tag attribute specifies the image's URL?

- ☐ url
- ☒ src
- ☐ alt

Correct

The `src` attribute may specify a complete URL like `http://example.com/dog.jpg` or just an image name like `dog.jpg` if the image resides on the same web server and directory as the HTML file.



3) Which is *not* a required attribute for images?

- ☐ src
- ☐ alt
- ☒ title

Correct

The `title` attribute is not required. Many web browsers use the `title` attribute to provide "tooltips" when hovering over an image.

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2.6.3: Reasons for using alt attribute for images.



Below are reasons for using the alt attribute. Match the reason with the appropriate scenario.

If unable to drag and drop, refresh the page.

Support assistive technology

Software, such as page readers, help users with vision or cognitive impairments.

Correct

Page reader software reads the `alt` attribute text out loud for an image.

Correct

Allow browser to turn off image display

A user may want to reduce data cost or load a page faster.

Image loading can be disabled in a web browser. Ex: A mobile phone user may disable loading images to avoid exceeding their plan's data limit. Typically, the browser will display the `alt` text in place of the image.

Handle broken image URLs

The image cannot be loaded from the specified location.

Web browsers may fail to load images because the URL specified by the `src` attribute is invalid or the image file format is not supported.

Pass HTML validation

The `alt` attribute is required.

Validators will generate an error if the `alt` attribute is missing, except under special circumstances. Generating valid HTML documents is important because all web browsers agree on how the documents should be processed. Invalid documents are processed differently by each web browser.

Correct

Correct

Reset

[Feedback?](#)

Image size

The ***width attribute*** and ***height attribute*** are optional `` attributes that tell the browser how many pixels the image should occupy. Ex:

`` makes the logo.png image display in a rectangle that is 200 × 100 pixels. If the specified ***width*** and ***height*** are different from the image's actual size, the browser will resize the image for display.

An image's ***aspect ratio*** is the ratio of the image width to the image height. The aspect ratio is written as width:height. Ex: An image 500 pixels wide and 250 pixels high has an aspect ratio of 500:250, which simplifies to 2:1.

If an `` contains only a `width` or only a `height` attribute, the image's aspect ratio is maintained. If an `` specifies a `width` and `height` different from the image's aspect ratio, the browser will distort the image to match the specified attribute values.

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2.6.4: Image sizing.



The following HTML fragment shows a cat image that is 640 × 424 pixels. Try modifying the HTML to adjust the image size:

1. Make the image 250 pixels wide. Specify only the width.
2. Make the image 250 pixels high. Specify only the height.
3. Resize the image to have a width of 250 pixels and a height of 250 pixels.

Try experimenting with other combinations of sizes to see how the width and height affect the display of the image.

```
1 
```

```
--- END FILE: html ---
```

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2.6.5: Image width and height attributes.



For the following questions, assume the image is 1000 pixels wide and 800 pixels high. Indicate the values needed in the following HTML to produce an image with an aspect ratio of 2:1 while maintaining the image's width of 1000 pixels.

```

```

1) (a)

- ☒ 1000
- ☐ 500
- ☐ 800
- ☐ 400

Correct

The width of the image remains the same.



2) (b)

- ☐ 1000
- ☒ 500
- ☐ 800
- ☐ 400

Correct

The height of the image is changed to half the original width.

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2.6.6: Valid HTML code.

Indicate which of the following `img` tags are valid.

1)

```

```

- ☐ Valid
- ☒ Invalid

CorrectThe `` tag is missing the required `alt` attribute.

2)

```
  
</img>
```

- ☐ Valid
- ☒ Invalid

CorrectThe `` tag does not enclose content, so a closing `` tag is not needed.

3)

```

```

- ☒ Valid
- ☐ Invalid

Correct

Tag attributes can appear in any order.



4)

```

```

- ☒ Valid
- ☐ Invalid

CorrectThe `width` attribute may be specified without the `height`. The image renders with a 200 pixel width and keeps the same aspect ratio.

Image formats

Web browsers support three popular image formats:

1. The **JPEG** (**Joint Photographic Experts Group**) image format is commonly used for digital photographs.
2. The **PNG** (**Portable Network Graphics**) image format is commonly used for line art, screenshots, or images requiring transparency.
3. The **GIF** (**Graphics Interchange Format**) image format is commonly used for simple animated images.

All three formats use data compression to decrease the image file size, which allows the file to be transferred over the internet quicker. JPEG images use **lossy compression**, meaning that some of the original picture information is lost when compressed. A photograph is best saved as a JPEG image because humans cannot easily perceive the quality loss in a photograph. PNG and GIF images use **lossless compression**, meaning no image quality is lost. Lossless compression works best when a large number of adjacent pixels are the same color.

JPEG and PNG images can display **true color** (24-bit color), which is approximately 16 million different colors. GIF images are limited to only 256 colors (8-bit color), but GIF images can display animations, which are popular on social media.

Table 2.6.1: Three popular image formats.

Name	File extension	Use	Compression	Colors	Transparency	Animation
JPEG	.jpg	Photographs	Lossy	24-bit	No	No
PNG	.png	Line art and screenshots	Lossless	24-bit	Yes	No
GIF	.gif	Animated images	Lossless	8-bit	Yes	Yes

Other image formats

Less common image formats include:

- The **APNG** image format by Mozilla adds animation capability to PNG with true color support.
- The **SVG** image format is an XML format that describes an image as a series of shapes and lines.
- The **WebP** image format by Google supports true color, transparency, and animation.
- The **AVIF** image format supports transparency, lossy or lossless compression, and higher compression rates.

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2.6.7: Image formats.



Match each image to the image format most appropriate for that image.

(a)



Source: [Stork image](#)

(b)



(c)



If unable to drag and drop, refresh the page.

(b)

PNG

An image that uses line art has many adjacent pixels that are identical in color, which is ideal for lossless compression.

Correct

(c)

JPEG

A photograph is best stored in a JPEG image.

Correct

(a)

GIF

Animated images are normally stored in GIF format. PNG and JPEG formats cannot perform animation without the help of JavaScript.

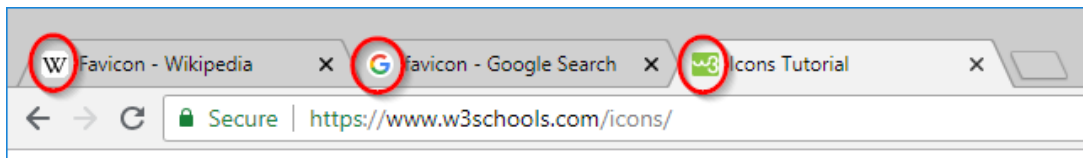
Correct

Reset

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Favicon

A **favicon** is a small icon that identifies a website and typically displays in a browser tab. A favicon can be any image format (JPEG, PNG, GIF) and any size. PNG is a popular favicon format because a PNG can have transparent pixels.



A favicon is defined with a **<link>** tag, which defines a link between a webpage and an external resource.

```
<head>
  <title>My webpage</title>
  <link rel="icon" href="favicon.png">
  ...
```

**CHALLENGE
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2.6.1: Images.



530096.4000608.qx3zqy7

Start



1

Add an tag with src attribute containing:

<https://resources.zybooks.com/WebProgramming/diamondsv1.png>



2

SHOW EXPECTED

3

```
1
2 <!-- Your solution goes here -->
3
```

1

2

3

Check

Next

View your last submission ▼

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Exploring further:

- [HTML images](#) (W3Schools)
- [WebP image format](#) (Google)
- [AVIF has landed](#) (Jake Archibald)
- [Favicon](#) (W3Schools)

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