

Class 5: Images

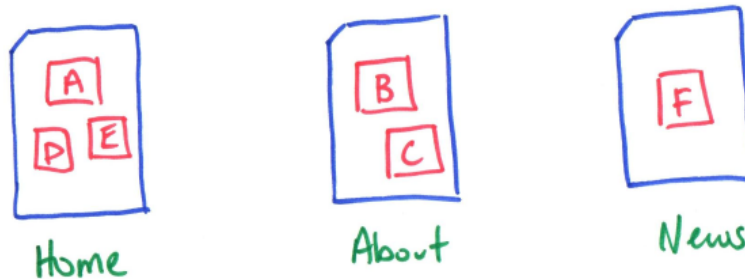
- Images as content
- Structuring images in HTML
- Web supported image file formats
- Image accessibility
- Image best practices

Copyright 2026, Kyle J. Harms

Review: Card Sorting

Card Sorting is a method for designing the information architecture of a website. Pieces of related content are ***physically* grouped** into categories and labeled.

Card sorting helps us determine the pages for a website and each page's name.



Review: URL

Uniform **R**esource **L**ocator – the address of a resource (file)

(Absolute) URL:

https://www.cornell.edu/index.html
scheme domain path

Relative URL:

index.html
path

Review: Links

The **Link** (Anchor) Element: `<a>`

```
<a href="URL">LINK CONTENT</a>
```

Internal Link

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

External Link

```
<a href="https://www.cornell.edu/">Cornell University</a>
```

Review: Structuring Navigation

<menu>

```
<nav>
  <menu>
    <li><a href="index.html">Home</a></li>
    <li><a href="about.html">About</a></li>
    <li><a href="news.html">News</a></li>
  </menu>
</nav>
```

```
<nav>
  <ul>
    <li><a href="index.html">Home</a></li>
    <li><a href="about.html">About</a></li>
    <li><a href="news.html">News</a></li>
  </ul>
</nav>
```

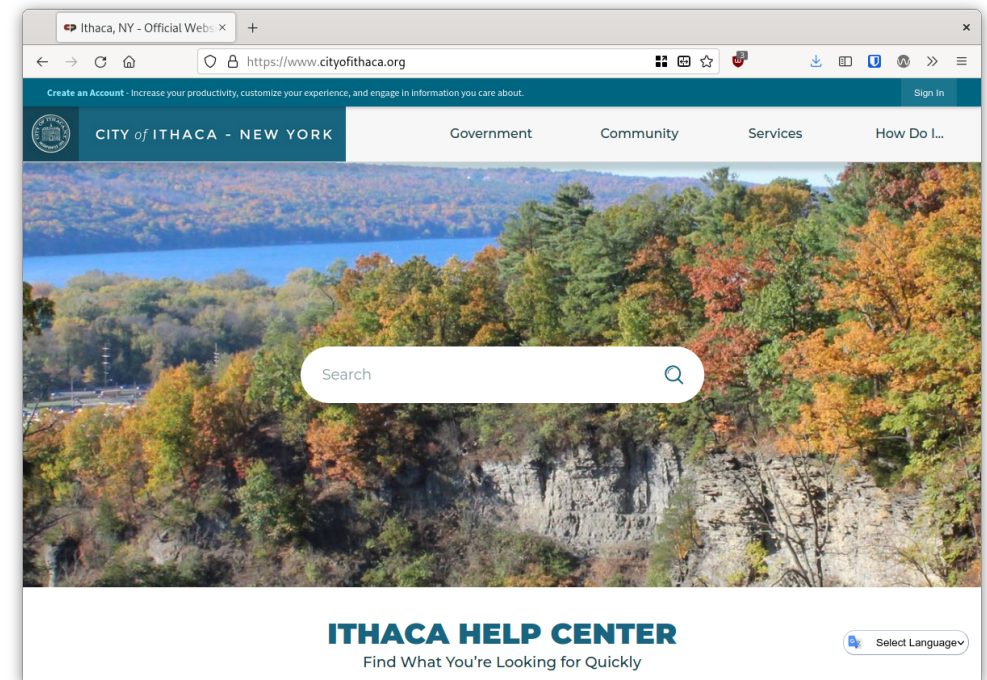
Images as Content

“Content is King”

- Bill Gates, 1996

Hero Images

A banner that sits at the top of a website. Typically, a large image that fills the entire page designed to capture the user's attention.

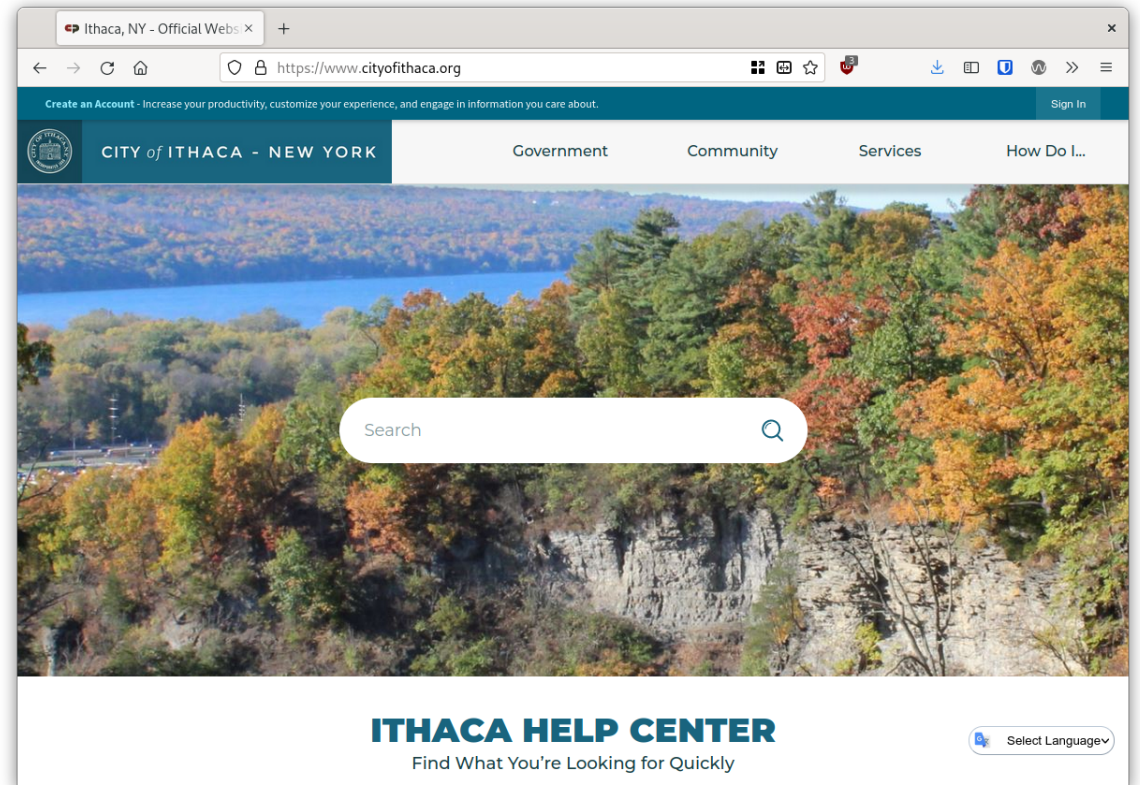


Images and Content

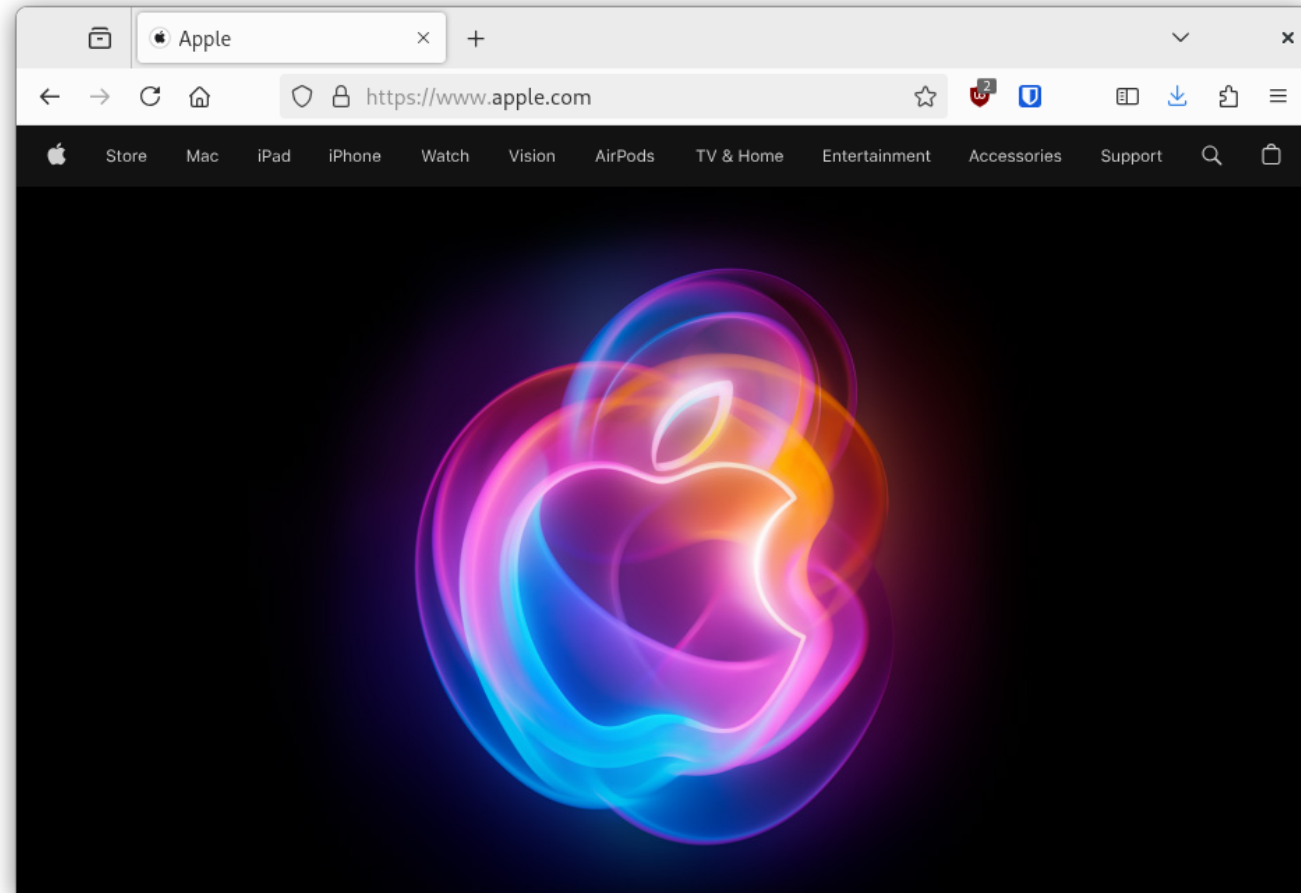
Ask yourself:

If you were a user of this website, would this image help you accomplish your **goals**?

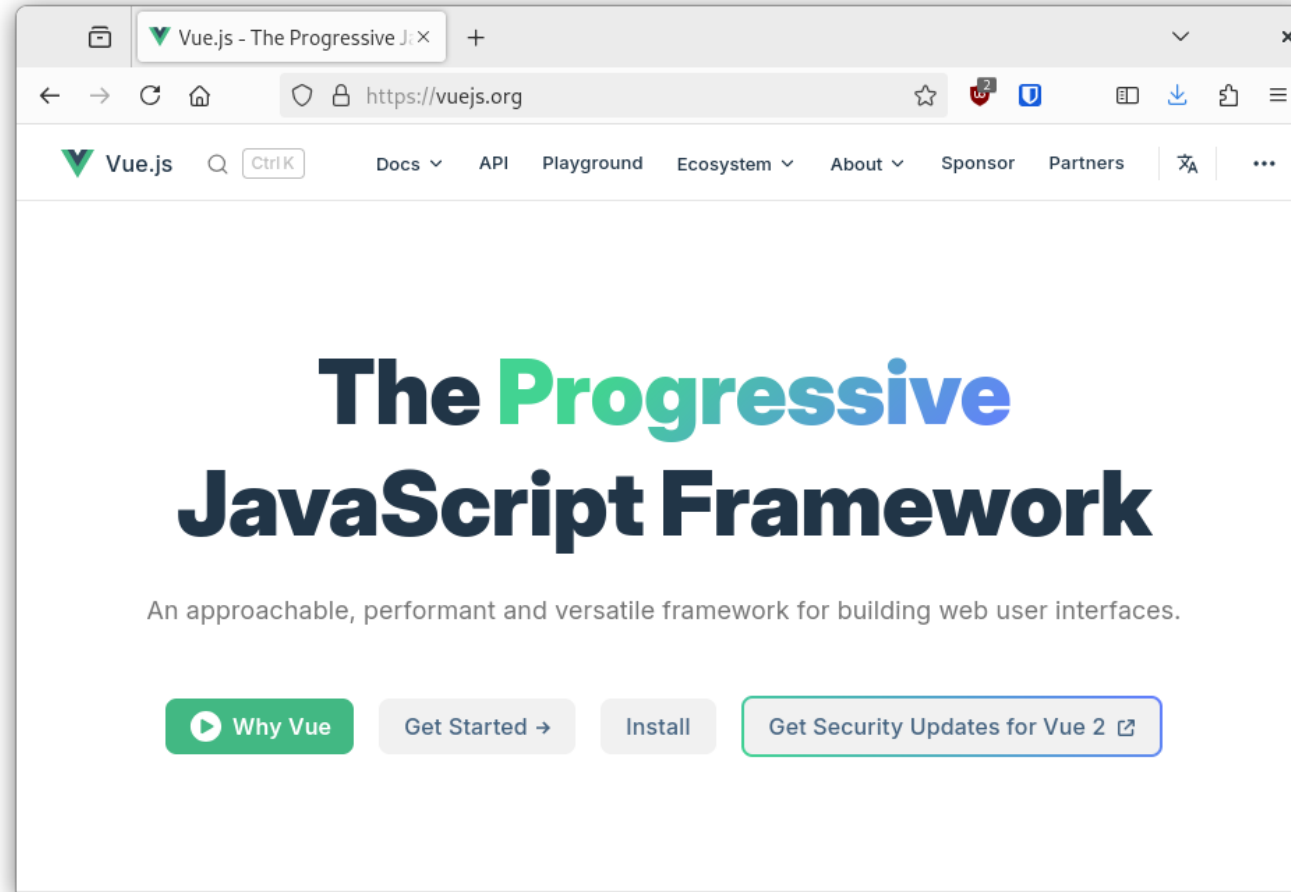
- **Yes:** It's content!
- **No:** It's not content!



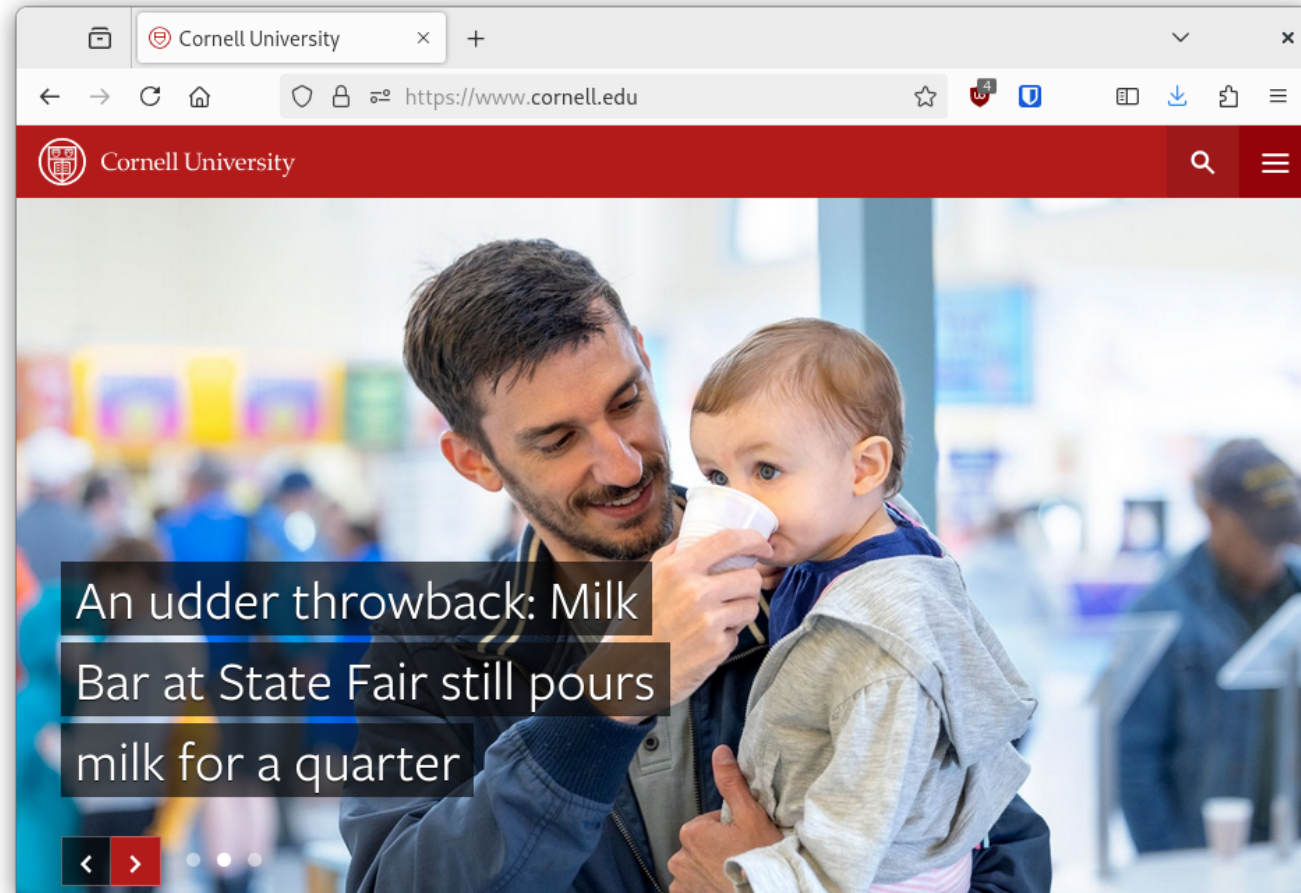
Activity: Content: 👍; Not Content 👎 – Apple



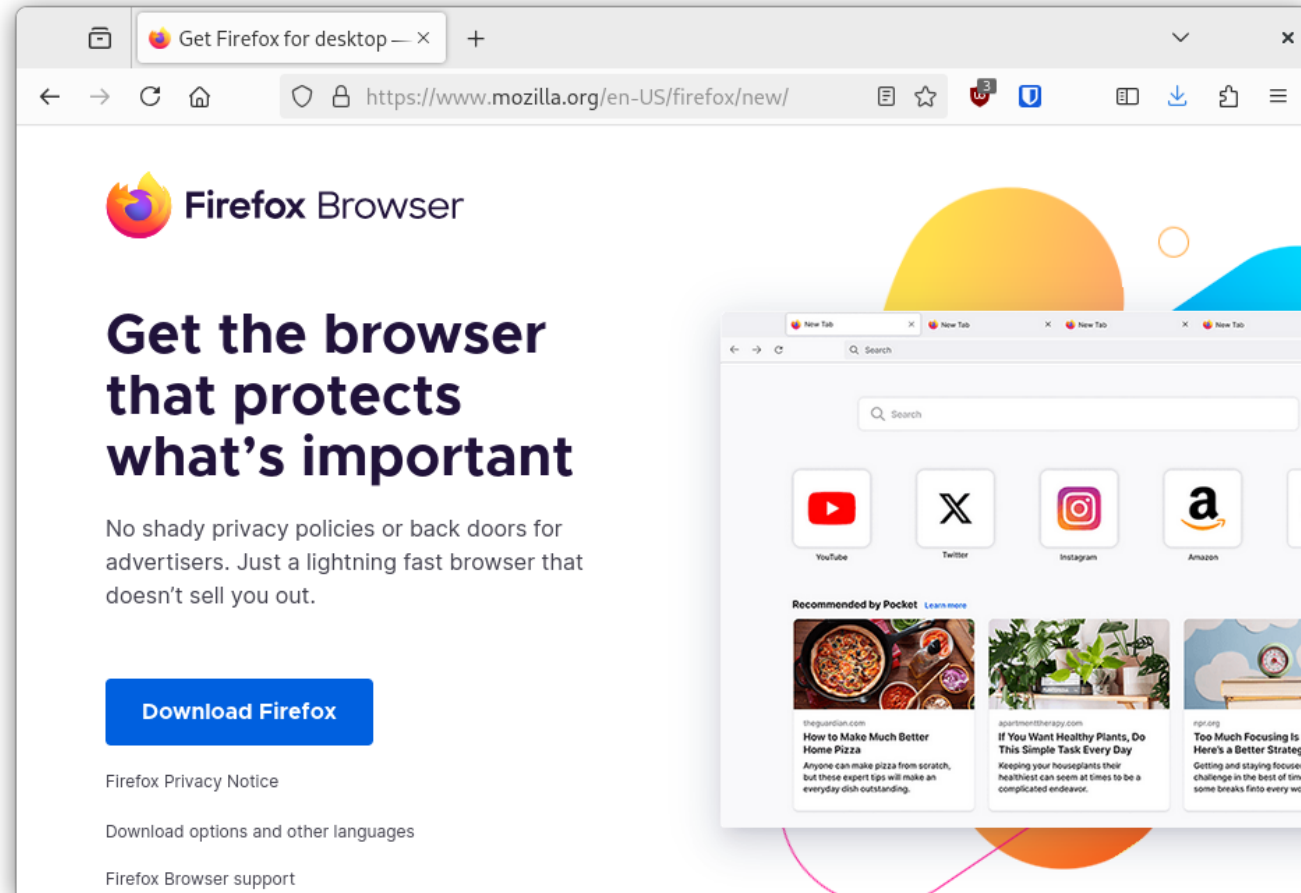
Activity: Content: 👍; Not Content 👎 – Vue.js



Activity: Content: 👍; Not Content 👎 – Cornell



Activity: Content: 👍; Not Content 👎 – Firefox



Review: Images as Content

If the **image** helps the user accomplish their **goals**, then it's **content**.

Otherwise, the image may be **decorative** (or functional).

Decorative images enhance the visual design of a page, but do not help the user accomplish their goals.

Picture Elements

Element Markup Rules – Attributes

An **attribute** extends an HTML element, changing its behavior or providing metadata.

Review the *element's reference documentation* for available attributes.

An attribute always has the form: `name="VALUE"`

```
<html lang="en">
...

<h1>
  <abbr title="Frequently Asked Questions"> FAQ </abbr>
</h1>
```

<picture> & Elements

```
<picture>  
  <img src="" alt="">  
</picture>
```

- **src=** **relative URL** (URL without scheme + domain)
- **alt=** text description of image for accessibility (and slow internet)

Example

```
<picture>  
    
</picture>
```

Use **Only** Relative URLs

Your images should be stored on *your* web server (relative URL):

```
<picture>  
    
</picture>
```

- *repository* root
 - `images` folder
 - `tower.jpg`



Demo: `<picture>`



Gotcha: Hotlinking

Hotlink: to load a resource (image) from *another* web server:

```
<picture>  
    
</picture>
```

If your image uses a **full** (absolute) URL, then it's **hotlinking!**

Hotlinking is bandwidth “*theft*” 😞.

Only use **relative URLs** for images and other media. (Do not “embed”.)

Gotcha: `<a>` is Not Hotlinking

A link takes the user to another website. It does **not** load a resource from another web server.

```
<a href="https://www.cornell.edu/">Cornell University</a>
```

Hotlinking does **not** apply to *links* (`<a>`); you may link to other websites without fear of hotlinking!

Gotcha: `<img>` without `<picture>`

The HTML specification permits `<img>` to be used without `<picture>`.

```

```

Though, you shouldn't do this. Always use `<picture>` to structure images in HTML.

Why? Because `<picture>` supports responsive design; we want to create websites that work on phones as well as laptops, etc.

Using Images on the Web

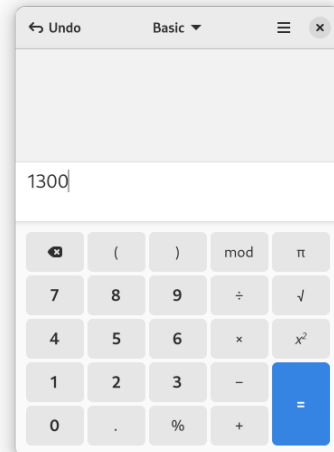
- What image format should you use?
 - JPG, PNG, SVG, or WEBP
- How do you make images accessible?
 - *alt* text
- How do you resize images?
 - HTML is about structure; we won't resize images *yet!*

Image Formats

Raster vs. Vector Images

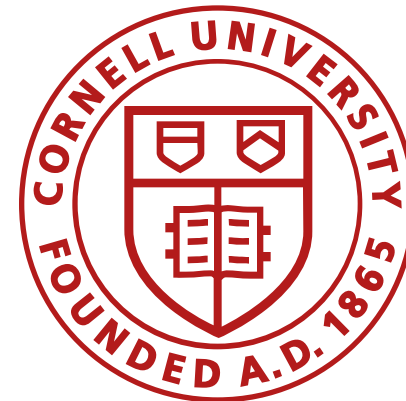
Raster (.jpg, .png, .webp)

- Raster images are a grid of pixels.
- **Raster** images become pixelated when enlarged.



Vector (.svg)

- Vector images are mathematical descriptions of shapes.
- You can enlarge vector images without losing quality.



JPEG/JPG (.jpg or .jpeg)

Pronunciation: “Jay-peg”

Type: Raster (grid of pixels)

An image format that’s **good for photos** because it’s **lossy** (compresses the image by removing some information).

It’s not good for precise drawings (like screenshots, logos, or charts/graphs) because the compression makes the image fuzzy.

Note: Does not support transparency (like PNG and WEBP).

PNG (`.png`)

Pronunciation: “Ping”

Type: Raster (grid of pixels)

An image format that’s **good for precise drawings** (like screenshots, logos, or charts/graphs) because it’s **lossless** (does not remove any information).

It’s not good for photos because the file sizes can be very large.

Note: Supports transparency (unlike JPG).

WEBP (`.webp`)

Pronunciation: “Web-pea”

Type: Raster (grid of pixels)

An image format that’s **good for both photos and precise drawings** because it’s **lossy** (compresses the image by removing some information).

It’s a newer format that is [not supported](#) by older browsers.

SVG (`.svg`)

Pronunciation: “S-V-G”

Type: Vector (mathematical description of shapes)

An image format that’s **good for scalable line drawings** (like logos, icons, and charts/graphs) because it’s a **vector** format (mathematical description of shapes).

SVG images can be enlarged without losing quality, unlike raster images (JPG, PNG, WEBP).

GIF (`.gif`)

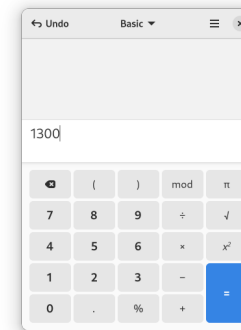
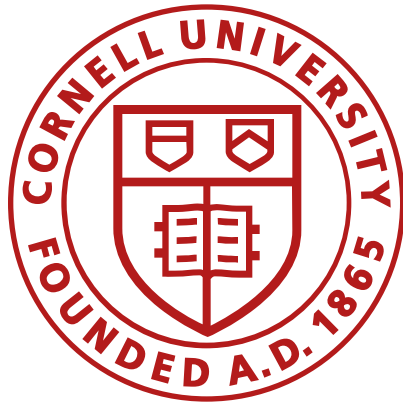
Pronunciation: “Jif” (not “gif”)

Type: Raster (grid of pixels)

An image format that’s **good for small, limited-color (max 256 colors) animations** because it’s a **lossless** (does not remove any information) raster format.

This is an older format that should probably be avoided.

Demonstration: JPG, PNG, SVG



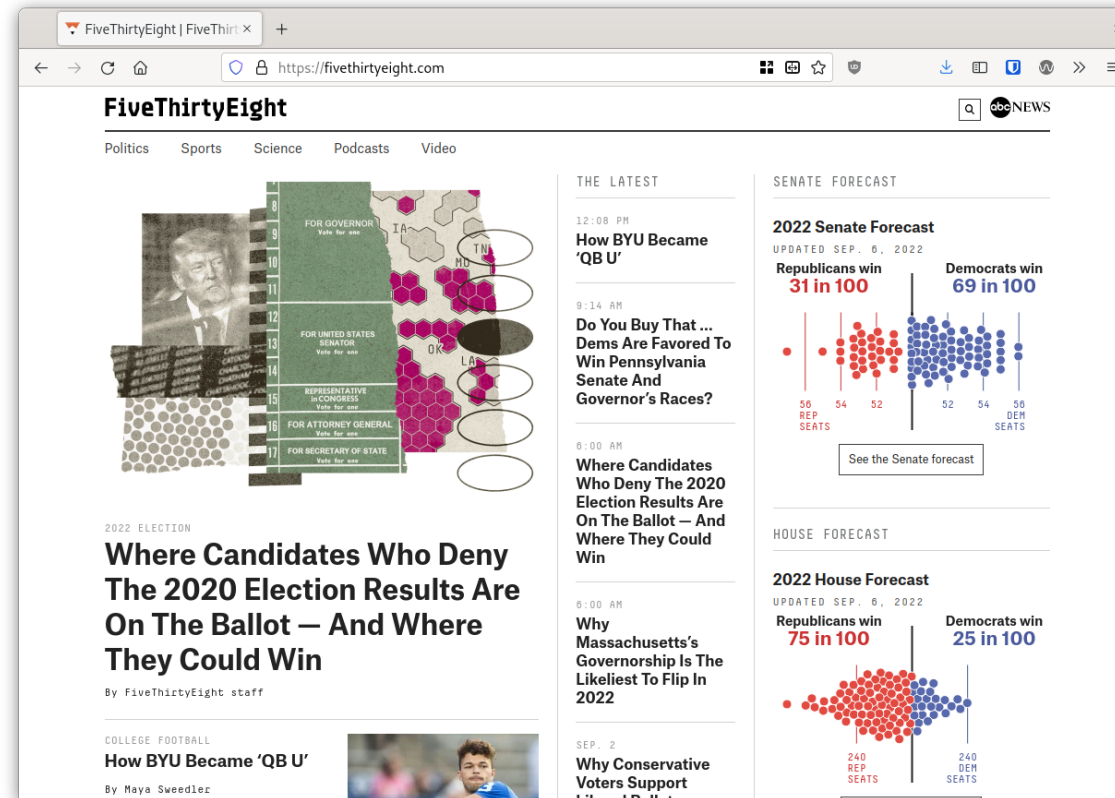
- Raster images (JPG, PNG) become pixalated when enlarged.
- Precise drawings as JPG are fuzzy; use PNG for precise drawings.
- Vector images (SVG) can be enlarged without becoming pixalated.

Supported Web Image Formats

Format	Type	File extension	Pronunciation	When to use
JPEG/JPG	Raster	.jpg	“Jay-peg”	Good for photos
PNG	Raster	.png	“Ping”	Good for precise drawings (non-photo) like screenshots, logos, or charts/graphs
WEBP	Raster	.webp	“Web-pea”	Newer format that’s good for both photos and drawings
SVG	Vector	.svg	“S-V-G”	Good for scalable line drawings
GIF	Raster	.gif	<u>“Gif”</u> “Jif”	Good for small, limited-color animations

Note: HEIC (.heic) images are not a web standard; HEIC mostly works with iPhones. **Do not use .heic images on the web!**

Activity: JPG, PNG, or SVG?



Working with a **peer**, complete **Part I** of the **handout**.

FiveThirtyEight | FiveThirtyEight.com

FiveThirtyEight PNG or SVG

abcNEWS PNG or SVG

Politics Sports Science Podcasts Video

2022 ELECTION

Where Candidates Who Deny The 2020 Election Results Are On The Ballot — And Where They Could Win

By FiveThirtyEight staff

JPG or PNG

JPG

COLLEGE FOOTBALL

How BYU Became 'QB U'

By Maya Sweedler

THE LATEST

12:08 PM

How BYU Became 'QB U'

9:14 AM

Do You Buy That ... Dems Are Favored To Win Pennsylvania Senate And Governor's Races?

6:00 AM

Where Candidates Who Deny The 2020 Election Results Are On The Ballot — And Where They Could Win

6:00 AM

Why Massachusetts's Governorship Is The Likeliest To Flip In 2022

SEP. 2

Why Conservative Voters Support Liberal Ballot

SENATE FORECAST

2022 Senate Forecast

UPDATED SEP. 6, 2022

Republicans win 31 in 100 Democrats win 69 in 100

56 REP SEATS 54 52 50 DEM SEATS

See the Senate forecast

HOUSE FORECAST

2022 House Forecast

UPDATED SEP. 6, 2022

Republicans win 75 in 100 Democrats win 25 in 100

240 REP SEATS 240 DEM SEATS

SVG

SVG

Image Accessibility

Image **alt=** text

alt text, is a **text description** of an image

Improves accessibility for assistive technology (e.g. screen reader) users and users with limited (e.g. slow) internet.

Example:

```
<picture>  
    
</picture>
```

Writing *Alt* Text

- **Informative** – simple concept or information (i.e. **content**)

`alt="2 tacos and a burrito combo"` (food on a restaurant menu)

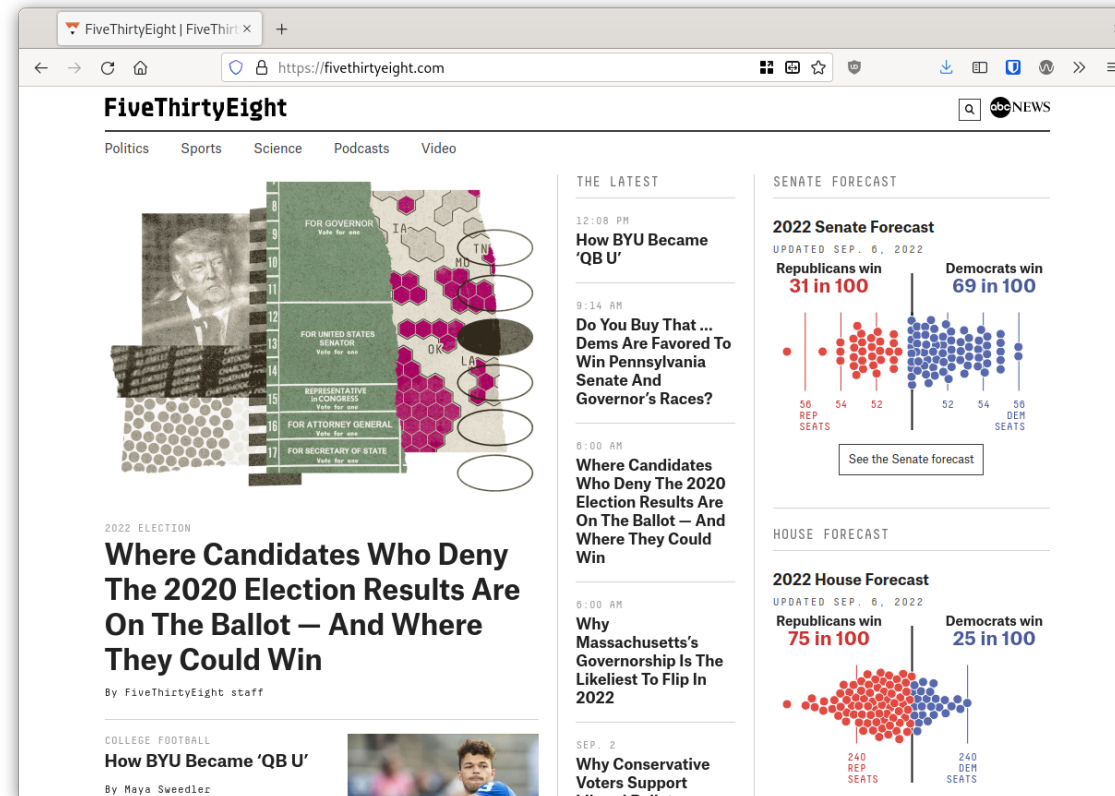
- **Functional** – used to **initiate action**

`alt="Search"` (search icon) or `alt="Print"` (print icon)

- **Decorative** – doesn't add information to page's content

`alt=""` (hero image, artsy line, interesting non-content image, etc.)

Activity: Informative, Functional, Decorative?



Working with a **peer**, complete **Part II** of the **handout**.

FiveThirtyEight | FiveThirt

+

←

→

↺

🏠

🔒

https://fivethirtyeight.com

🔍

functional

abcNEWS

🔍

functional

Politics

Sports

Science

Podcasts

Video

FOR GOVERNOR

Vote for one

FOR UNITED STATES SENATOR

Vote for one

REPRESENTATIVE in CONGRESS

Vote for one

FOR ATTORNEY GENERAL

Vote for one

FOR SECRETARY OF STATE

Vote for one

8

9

10

11

12

13

14

15

16

17

IA

TN

MO

OK

LA

2022 ELECTION

Where Candidates Who Deny The 2020 Election Results Are On The Ballot — And Where They Could Win

By FiveThirtyEight staff

COLLEGE FOOTBALL

How BYU Became 'QB U'

By Maya Sweedler

decorative

THE LATEST

12:08 PM

How BYU Became 'QB U'

9:14 AM

Do You Buy That ... Dems Are Favored To Win Pennsylvania Senate And Governor's Races?

6:00 AM

Where Candidates Who Deny The 2020 Election Results Are On The Ballot — And Where They Could Win

6:00 AM

Why Massachusetts's Governorship Is The Likeliest To Flip In 2022

SEP. 2

Why Conservative Voters Support Liberal Ballot

SENATE FORECAST

2022 Senate Forecast

UPDATED SEP. 6, 2022

Republicans win 31 in 100

Democrats win 69 in 100

56 REP SEATS

54

52

52

54

56 DEM SEATS

See the Senate forecast

HOUSE FORECAST

2022 House Forecast

UPDATED SEP. 6, 2022

Republicans win 75 in 100

Democrats win 25 in 100

240 REP SEATS

240 DEM SEATS

INFO 1300 - Images (9/9/2026)

39

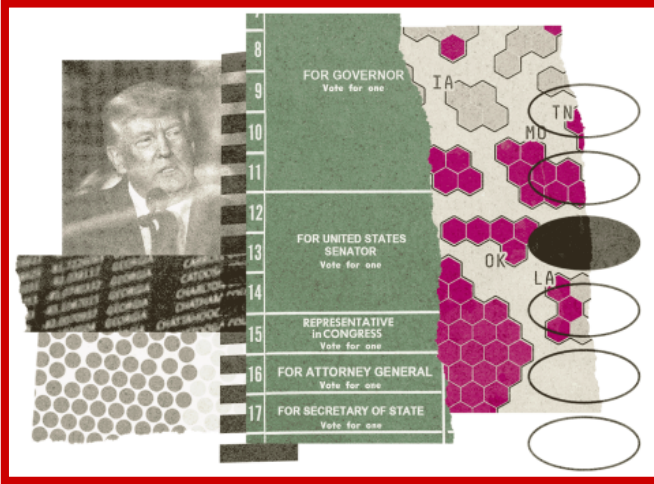
FiveThirtyEight | FiveThirtyEight

https://fivethirtyeight.com

FiveThirtyEight alt="Home"

alt="search" abcNEWS alt="ABC News"

Politics Sports Science Podcasts Video



alt=""

2022 ELECTION

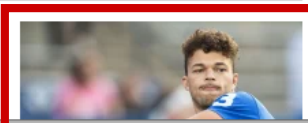
Where Candidates Who Deny The 2020 Election Results Are On The Ballot — And Where They Could Win

By FiveThirtyEight staff

COLLEGE FOOTBALL

How BYU Became 'QB U'

By Maya Sweedler



alt=""

THE LATEST

12:08 PM
How BYU Became 'QB U'

9:14 AM
Do You Buy That ... Dems Are Favored To Win Pennsylvania Senate And Governor's Races?

6:00 AM
Where Candidates Who Deny The 2020 Election Results Are On The Ballot — And Where They Could Win

6:00 AM
Why Massachusetts's Governorship Is The Likeliest To Flip In 2022

SEP. 2
Why Conservative Voters Support Liberal Ballot

SENATE FORECAST

2022 Senate Forecast

UPDATED SEP. 6, 2022

Republicans win 31 in 100 Democrats win 69 in 100

56 REP SEATS 54 52 50 DEM SEATS

See the Senate forecast

alt="Republicans win 31 in 100 Democrats win 69 in 100"

HOUSE FORECAST

2022 House Forecast

UPDATED SEP. 6, 2022

Republicans win 75 in 100 Democrats win 25 in 100

240 REP SEATS 240 DEM SEATS

Activity: Image as a Link

Working with a **peer**, complete **Part III** of the **handout**.

- **Informative** – simple concept or information (i.e. **content**)

`alt="2 tacos and a burrito combo"` (food on a restaurant menu)

- **Functional** – used to **initiate action**

`alt="Search"` (search icon) or `alt="Print"` (print icon)

- **Decorative** – doesn't add information to page's content

`alt=""` (hero image, artsy line, interesting non-content image, etc.)

Resizing / Scaling Images

Gotcha: `<img>` `width=` and `height=`

Do **not** “resize” an image by changing the `width=` and `height=` attributes:

```
<picture>  
    
</picture>
```

Why? Because “resizing” this way does not change the image’s file size and will make your website slow to download on slow internet connections.

Scale the image file in a file editor to make the file size smaller instead.
(We’ll cover this later.)

Example: Unscaled Images



I want my image to be smaller!

Sounds like you're changing the presentation (style) of the image. **We're not ready for that (yet)!**

Ignore the *dimension* of images in your homeworks and projects for now.
(They will be really big. That's okay.)

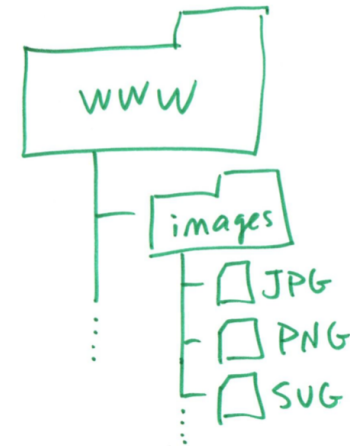
Simply focus on the content's structure. We'll worry about the style (and dimensions) of images next week.

Never resize images using the `width=` and `height=` attributes.
(Point deduction warning!)

Best Practices

Image Best Practices

- Store all **website** image files inside the `images` folder at the *root* of the repository.
- Use the same design best practices for image file names as URLs.
 - Use only lowercase letters in the file name.
`Tower.JPG` → `tower.jpg`
 - **Never** use spaces in file names / URLs.
Use dashes/hyphens (no underscores).
`mcgraw tower.jpg` → `mcgraw-tower.jpg`
- **Do not resize images in CSS or HTML.**



What's Next

Homework 3 released yesterday.

Fri, Sept 11th, 11:59 PM: Practice Quiz 2
(Classes 4 + 5, Homework 3)

Sun, Sept 13th, 11:59 PM: Class 6, Preparation due

Mon, Sept 14th, 11:59 PM: Homework 3 due