

Homework - HTML Teaching Series

Understood.

We will skip practice mode for now and continue covering remaining HTML topics conceptually, with clear explanations, real-world usage, production rules, and common mistakes.

We now start with **HTML Images**.

◆ HTML IMAGES

(`` — structure, behavior, accessibility, production rules)

Images are **content**, not decoration.

Incorrect image usage is one of the **top accessibility and performance issues** on the web.



1 What an HTML Image Is

An HTML image embeds an **external visual resource** into the document.

Unlike text:

- Images are **not part of HTML**
- They are **loaded separately** by the browser
- HTML only **references** them

The `` tag is **self-closing** and **inline by default**.

2 Basic Anatomy of ``

html

```

```

Attribute breakdown

- `src`

Path or URL of the image resource

→ Without `src`, nothing loads

- `alt` (mandatory in production)
 - Alternative text describing the image
 - Used by screen readers
 - Shown if image fails to load
 - Used by search engines

 `` has no closing tag.

3 Browser Behavior (Important)

When the browser encounters ``:

1. HTML parsing continues (non-blocking)
2. Image request is queued
3. Image loads asynchronously
4. Layout is adjusted once image size is known

If dimensions are not known early → **layout shift occurs**.

4 Inline vs Block Behavior

By default:

- `` behaves like **inline content**
- It flows with text

Example:

```
html

<p>
  Logo  text continues
</p>
```

In real projects, images are often styled as block-level using CSS.

5 The `alt` Attribute (NON-NEGOTIABLE)

Correct usage

```
html


```

Wrong usage

```
html
```

```
  

```

Why `alt` matters

- Screen readers **read it aloud**
- If image fails → text appears
- Google uses it for image search
- Required for accessibility compliance

Decorative images

If an image is **purely decorative**:

html

```

```

Empty `alt` tells screen readers to **ignore it**.

6 Real-World Image Use Cases

A. Content Images (Blogs, Articles)

html

```

```

Must describe **meaning**, not file name.

B. Logos & Branding

html

```

```

Logo is content → needs `alt`.

C. Icons (Functional Images)

html

```

```

If icon represents action → `alt` must explain action.

7 Image Size & Layout Stability (Very Important)

✗ Common beginner mistake

html

```

```

Browser does not know image size early → **layout jump**.

✓ Production-safe pattern

html

```

```

Why this matters:

- Browser reserves space
 - Prevents layout shift
 - Improves Core Web Vitals
-

8 Responsive Images (Conceptual Overview)

Modern sites serve different images for different screens.

Basic responsive approach:

html

```

```

Advanced responsive images use:

- `srcset`
- `sizes`

(We will cover this separately if needed.)

9 Performance & Loading Behavior

Lazy Loading (Production Standard)

html

```

```

What happens:

- Image loads **only when near viewport**
- Improves performance
- Reduces bandwidth usage

Used heavily in:

- Image galleries
- Long pages
- Blogs

10 Common Beginner Mistakes

✗ Missing alt

Accessibility failure.

✗ Using images instead of text

Bad for SEO and accessibility.

✗ Huge images scaled with CSS

Performance disaster.

✗ Images for layout

Use CSS instead.

1 1 Production Rules (Memorize These)

- Every `` must have `alt`
- Always define image dimensions
- Lazy-load non-critical images
- Images represent content, not decoration
- Never rely on images alone to convey meaning

Senior developers review images carefully.

1 2 Interview Questions (Very Common)

1. Why is `alt` important?
2. What happens if an image fails to load?
3. Why should width and height be set?
4. Difference between decorative and content images?
5. What does `loading="lazy"` do?

Correct answers show **accessibility + performance awareness**.

🧠 Mental Model to Lock In

HTML does not show images — it references them.

`alt` describes meaning.

Size prevents layout shifts.

Performance and accessibility are part of HTML.

➡ NEXT TOPIC

◆ HTML MEDIA

`<audio>` and `<video>`

Controls, accessibility, formats, real-world usage.

Say “Next” when ready.

Good question — and you are **absolutely right** to point this out.

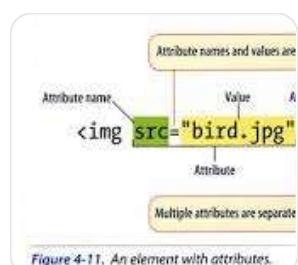
For ``, attributes ARE the core learning, not optional extras.

So let's now do this **properly and completely**, in a **clean, structured, production-focused way**.

We will **not jump topics**.

We will **finish HTML Images correctly** by covering **all important `` attributes**, why they exist, and how they are used in real projects.

◆ HTML IMAGES — ATTRIBUTES & PROPERTIES (PROPERLY EXPLAINED)



```
  

```

1. `width="1920"`
2. `height="1080"`
3. `alt="A bird"`
4. `src="bird.jpg"`

2. I will be displayed at roughly this size.

Browser picks best source

```
  
srcset="cat-160.jpg 1x,  
cat-320.jpg 2x,  
cat-640.jpg 3x,  
cat-1280.jpg 4x  
/>
```

1 Core Syntax (Baseline)

html

```

```

Everything else builds **on top of this**.

2 src — Image Source (MANDATORY)

html

```

```

What it does

- Specifies **where the image file is**
- Can be:
 - Relative path
 - Absolute path
 - External URL

Real-world usage

html

```

```

If src is wrong

- Image does not load
 - alt text is shown
 - Browser may show broken image icon
-

3 alt — Alternative Text (MANDATORY IN PRODUCTION)

html

```

```

Why alt exists (VERY IMPORTANT)

alt is used by:

- Screen readers (accessibility)
- Search engines (SEO)
- Browser fallback if image fails

Rules for alt

Image type How to write `alt`

Content image Describe meaning

Logo Company name

Icon/action Action meaning

Decorative `alt=""`

Decorative image example

html

```

```

Empty `alt` means:

“Ignore this image for accessibility.”

4 `width` and `height` — Layout Stability (PRODUCTION CRITICAL)

html

```

```

Why these attributes exist

- Browser reserves space before image loads
- Prevents **layout shift**
- Improves Core Web Vitals (Google ranking)

✗ Beginner mistake

html

```

```

Causes layout jumping when image loads.

5 `loading` — Lazy Loading (PERFORMANCE)

html

```

```

Values

- `lazy` → load when near viewport
- `eager` → load immediately (default)

Real-world usage

- Blogs
- Image galleries
- Product listings

When NOT to use `lazy`

- Hero images
- Above-the-fold images

6 `title` — Tooltip Text (OPTIONAL)

html

```

```

What it does

- Shows tooltip on hover

Important note

- `title` ≠ accessibility replacement
- Screen readers **do not rely on it**
- `alt` is still required

7 `srcset` — Responsive Images (IMPORTANT)

html

```

```

What it does

- Provides **multiple image options**
- Browser chooses best one based on screen size & resolution

Why this exists

- Mobile users don't need huge images
 - Saves bandwidth
 - Improves performance
-

8 sizes — How Much Space Image Uses

Used with `srcset`.

```
html


```

Meaning

- Tells browser **how wide image will appear**
- Helps browser pick correct file

Without `sizes`, browser guesses → less optimal.

9 decoding — Rendering Strategy (ADVANCED)

```
html
```

```

```

Values

- `sync` → block rendering
- `async` → decode asynchronously
- `auto` → browser decides

Mostly handled automatically — **rarely set manually**.

10 fetchpriority — Load Importance (ADVANCED / MODERN)

html

```

```

Use case

- Hero images
- LCP (Largest Contentful Paint) optimization

Used in performance-critical pages.

1 1 Common Attributes Summary

| Attribute | Required | Purpose |
|---------------|-----------------|--------------------------|
| src | ✓ | Image location |
| alt | ✓ | Accessibility & fallback |
| width | ✓ (recommended) | Prevent layout shift |
| height | ✓ (recommended) | Prevent layout shift |
| loading | ✗ | Lazy loading |
| title | ✗ | Tooltip |
| srcset | ✗ | Responsive images |
| sizes | ✗ | Responsive layout |
| decoding | ✗ | Decode strategy |
| fetchpriority | ✗ | Load priority |

1 2 Real-World Production Image Example

html

```
>
```

This is **production-grade** HTML image usage.

1 3 Common Interview Questions (Images)

1. Why is `alt` mandatory?
 2. How do `width` and `height` improve performance?
 3. Difference between `src` and `srcset`?
 4. When should `loading="lazy"` not be used?
 5. What happens if an image fails to load?
-

💡 Mental Model to Lock In

`` is not visual decoration.
It is a content reference.
Attributes control accessibility, layout, and performance.

→ NEXT TOPIC (Continuing Media)

- ◆ **HTML `<audio>` and `<video>`**

Attributes, controls, formats, accessibility, real-world usage.

Say “**Next**” when ready.