

HTML learning roadmap

Perfect! Let's dive deep into **HTML Images** ``, covering **all attributes**, **responsive techniques**, **performance hacks**, **SEO & accessibility**, and a **mini-project** with live examples.

HTML Images — `` Tag

1 Basic Syntax

html

```

```

Output:

- Displays the image with specified dimensions
- `alt` → textual description for accessibility and SEO

Explanation:

- `src` → path to the image (absolute or relative)
 - `alt` → mandatory for accessibility (screen readers) and SEO
 - `width` & `height` → reserve layout space → prevents **layout shift**
-

2 Common Attributes

Attribute	Purpose
<code>alt</code>	Text for screen readers & SEO
<code>title</code>	Tooltip on hover
<code>srcset</code>	Responsive images for different screen sizes
<code>sizes</code>	Define the image size for <code>srcset</code>
<code>loading</code>	<code>lazy</code> or <code>eager</code> → controls when image loads

Attribute	Purpose
crossorigin	Controls CORS for images from other domains
decoding	async or sync → how the browser decodes image

3 Absolute vs Relative Image Paths

Relative Path:

```
html  
  

```

- Relative to current HTML file

Absolute Path:

```
html  
  

```

- Full URL → useful for external images

Pro Tip:

- Use relative paths for internal assets → easier to move project
- Absolute URLs → required for CDNs or external assets

4 Responsive Images (srcset & sizes)

```
html  
  

```

Explanation:

- Browser chooses the best image based on screen size & resolution
- Reduces bandwidth usage → improves performance

Hidden Tip:

- Use **WebP** format → smaller file sizes with good quality
-

5 Lazy Loading Images

html

```

```

Explanation:

- Browser loads the image **only when it comes into viewport**
 - Boosts page speed → important for SEO & UX
-

6 Accessibility & SEO Best Practices

1. Always provide **descriptive** `alt` **text** → improves search indexing
2. Use `title` for optional tooltip hints
3. Combine images with **structured content** → improves semantic meaning

html

```
<figure>
  
  <figcaption>Snowy mountains at sunrise</figcaption>
</figure>
```

- `<figure>` + `<figcaption>` → semantic, SEO-friendly
-

7 Advanced Developer Tricks

1. **Art Direction** (different crops for different devices)

html

```
<picture>
  <source media="(max-width:600px)" srcset="small.jpg">
```

```
<source media="(max-width:1200px)" srcset="medium.jpg">

</picture>
```

2. CSS Image Effects

css

```
img { filter: grayscale(50%); transition: filter 0.3s; }
img:hover { filter: grayscale(0%); }
```

3. Performance Optimization

- Compress images → WebP or AVIF
- Use `width` & `height` → prevent layout shift
- Combine `loading="lazy"` + CDN → fastest delivery

4. CORS for External Images

html

```

```

- Needed if you manipulate the image in canvas for JS

🏗 Mini Project — Responsive Travel Gallery

Features:

1. `` + `<figure>` + `<figcaption>`
2. Responsive images (`srcset`)
3. Lazy loading
4. Hover effect
5. SEO & accessibility optimized

html

```
<!DOCTYPE html>
<html lang="en">
<head>
<meta charset="UTF-8">
<title>Travel Gallery</title>
<style>
body { font-family: Arial; padding: 20px; display: flex; gap: 20px; flex-wrap: wrap; }
```

```

figure { width: 300px; margin: 0; }
  img { width: 100%; height: auto; border-radius: 10px; filter: grayscale(50%); transition: filter 0.3s; }
    img:hover { filter: grayscale(0%); }
  figcaption { text-align: center; padding: 5px; }
</style>
</head>
<body>

<figure>
  
  <figcaption>Beach Sunset</figcaption>
</figure>

<figure>
  
  <figcaption>Mountain Peak</figcaption>
</figure>

</body>
</html>

```

Output Preview:

- Responsive images automatically scale
- Lazy loading → improves initial load time
- Hover effect → visual engagement
- Semantic `<figure>` + `<figcaption>` → SEO & accessibility optimized

🔑 Key Takeaways

1. Always use `alt` **text** → accessibility & SEO
2. Use `srcset` + `sizes` → responsive images
3. Lazy loading (`loading="lazy"`) → performance
4. Semantic images → `<figure>` + `<figcaption>`

5. Advanced tricks → art direction, hover effects, CORS, WebP/AVIF

Next Step:

We can move to **Lists & Tables for data display**, or **Forms** for MERN stack login/register examples next.

Do you want to proceed with **Lists & Tables** next?