



HTML Notes



What is HTML?

HTML (HyperText Markup Language) is the standard markup language for creating web pages. It describes the structure and content of web documents using elements and tags.



Basic Structure

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Page Title</title>
</head>
<body>
  <!-- Content goes here -->
</body>
</html>
```



Key Components:

- `<!DOCTYPE html>` - Declares HTML5 document type
- `<html>` - Root element of the page
- `<head>` - Contains metadata (not visible on page)
- `<body>` - Contains visible content



HTML Elements and Tags



Basic Syntax

- **Opening tag:** `<tagnname>`

- **Closing tag:** </tagname>
- **Self-closing tag:** <tagname />
- **Element with content:** <tagname>content</tagname>

🎯 Attributes

```
<tagname attribute="value">content</tagname>

```

📖 Text Elements

abc Headings

```
<h1>Main Heading</h1>    <!-- Largest -->
<h2>Sub Heading</h2>
<h3>Section Heading</h3>
<h4>Subsection</h4>
<h5>Minor Heading</h5>
<h6>Smallest Heading</h6> <!-- Smallest -->
```

📄 Text Formatting

```
<p>Paragraph text</p>
<br>           <!-- Line break -->
<hr>           <!-- Horizontal rule -->

<!-- Text styling -->
<strong>Bold text</strong>
<b>Bold text (visual only)</b>
<em>Emphasized text</em>
<i>Italic text</i>
<u>Underlined text</u>
<mark>Highlighted text</mark>
<del>Deleted text</del>
<ins>Inserted text</ins>
<sub>Subscript</sub>
```

```
<!-- Download link -->  
<a href="file.pdf" download>Download PDF</a>  
  
<!-- Open in new tab -->  
<a href="https://example.com" target="_blank">Open in New Tab</a>
```

Images and Media

Images

```
  
  
<!-- Responsive image -->  
  
  
<!-- Image with different sources -->  
<picture>  
  <source media="(min-width: 800px)" srcset="large.jpg">  
  <source media="(min-width: 400px)" srcset="medium.jpg">  
    
</picture>
```

Audio and Video

```
<!-- Audio -->  
<audio controls>  
  <source src="audio.mp3" type="audio/mpeg">  
  <source src="audio.ogg" type="audio/ogg">  
  Your browser does not support audio.  
</audio>  
  
<!-- Video -->  
<video controls width="400">  
  <source src="video.mp4" type="video/mp4">  
  <source src="video.webm" type="video/webm">
```

Your browser does not support video.
</video>

Lists

Unordered Lists

```
<ul>
  <li>First item</li>
  <li>Second item</li>
  <li>Third item</li>
</ul>
```

Ordered Lists

```
<ol>
  <li>First step</li>
  <li>Second step</li>
  <li>Third step</li>
</ol>

<!-- Different numbering styles -->
<ol type="A"> <!-- A, B, C -->
<ol type="a"> <!-- a, b, c -->
<ol type="I"> <!-- I, II, III -->
<ol type="i"> <!-- i, ii, iii -->
<ol start="5"> <!-- Start from 5 -->
```

Definition Lists

```
<dl>
  <dt>HTML</dt>
  <dd>HyperText Markup Language</dd>
  <dt>CSS</dt>
  <dd>Cascading Style Sheets</dd>
</dl>
```

Tables

Basic Table Structure

```
<table>
  <thead>
    <tr>
      <th>Header 1</th>
      <th>Header 2</th>
      <th>Header 3</th>
    </tr>
  </thead>
  <tbody>
    <tr>
      <td>Data 1</td>
      <td>Data 2</td>
      <td>Data 3</td>
    </tr>
    <tr>
      <td>Data 4</td>
      <td>Data 5</td>
      <td>Data 6</td>
    </tr>
  </tbody>
  <tfoot>
    <tr>
      <td>Footer 1</td>
      <td>Footer 2</td>
      <td>Footer 3</td>
    </tr>
  </tfoot>
</table>
```

Table Attributes

```
<!-- Spanning cells -->
<td colspan="2">Spans 2 columns</td>
<td rowspan="3">Spans 3 rows</td>
```

```
<!-- Table caption -->
<table>
  <caption>Table Title</caption>
  <!-- table content -->
</table>
```



Forms

Form Structure

```
<form action="/submit" method="POST">
  <fieldset>
    <legend>Personal Information</legend>

    <!-- Text input -->
    <label for="name">Name:</label>
    <input type="text" id="name" name="name" required>

    <!-- Email input -->
    <label for="email">Email:</label>
    <input type="email" id="email" name="email" required>

    <!-- Password input -->
    <label for="password">Password:</label>
    <input type="password" id="password" name="password" required>

    <!-- Number input -->
    <label for="age">Age:</label>
    <input type="number" id="age" name="age" min="1" max="120">

    <!-- Date input -->
    <label for="birthdate">Birthdate:</label>
    <input type="date" id="birthdate" name="birthdate">

    <!-- Radio buttons -->
    <fieldset>
      <legend>Gender:</legend>
```

```
<input type="radio" id="male" name="gender" value="male">
<label for="male">Male</label>

<input type="radio" id="female" name="gender" value="female">
<label for="female">Female</label>
</fieldset>

<!-- Checkboxes -->
<input type="checkbox" id="newsletter" name="newsletter" value="yes">
<label for="newsletter">Subscribe to newsletter</label>

<!-- Dropdown select -->
<label for="country">Country:</label>
<select id="country" name="country">
    <option value="">Select a country</option>
    <option value="us">United States</option>
    <option value="uk">United Kingdom</option>
    <option value="ca">Canada</option>
</select>

<!-- Textarea -->
<label for="comments">Comments:</label>
<textarea id="comments" name="comments" rows="4" cols="50"></textarea>

<!-- File upload -->
<label for="file">Upload file:</label>
<input type="file" id="file" name="file" accept=".pdf,.doc,.docx">

<!-- Submit button -->
<input type="submit" value="Submit">
<button type="submit">Submit Form</button>
<button type="reset">Reset Form</button>
</fieldset>
</form>
```

Input Types

```
<input type="text">      <!-- Text input -->
<input type="email">     <!-- Email validation -->
<input type="password">   <!-- Hidden text -->
<input type="number">    <!-- Numeric input -->
<input type="tel">       <!-- Telephone -->
<input type="url">       <!-- URL validation -->
<input type="search">    <!-- Search box -->
<input type="date">      <!-- Date picker -->
<input type="time">      <!-- Time picker -->
<input type="datetime-local"> <!-- Date and time -->
<input type="month">     <!-- Month picker -->
<input type="week">      <!-- Week picker -->
<input type="color">     <!-- Color picker -->
<input type="range">     <!-- Slider -->
<input type="file">      <!-- File upload -->
<input type="hidden">    <!-- Hidden field -->
<input type="checkbox">  <!-- Checkbox -->
<input type="radio">    <!-- Radio button -->
<input type="submit">   <!-- Submit button -->
<input type="reset">    <!-- Reset button -->
<input type="button">   <!-- Generic button -->
```

Semantic HTML5 Elements

Layout Elements

```
<header>
  <nav>
    <ul>
      <li><a href="#home">Home</a></li>
      <li><a href="#about">About</a></li>
      <li><a href="#contact">Contact</a></li>
    </ul>
  </nav>
</header>

<main>
```

```
<article>
  <header>
    <h1>Article Title</h1>
    <time datetime="2024-01-01">January 1, 2024</time>
  </header>

  <section>
    <h2>Section Heading</h2>
    <p>Section content...</p>
  </section>

  <aside>
    <h3>Related Links</h3>
    <ul>
      <li><a href="#">Link 1</a></li>
      <li><a href="#">Link 2</a></li>
    </ul>
  </aside>
</article>
</main>

<footer>
  <p>&copy; 2024 Your Website. All rights reserved.</p>
</footer>
```

Content Elements

```
<figure>
  
  <figcaption>Image caption</figcaption>
</figure>

<details>
  <summary>Click to expand</summary>
  <p>Hidden content that can be toggled</p>
</details>

<progress value="70" max="100">70%</progress>
```

```
<meter value="6" min="0" max="10">6 out of 10</meter>

<address>
  Contact: <a href="mailto:email@example.com">email@example.com</a>
</address>
```

Meta Tags and Head Elements

Essential Meta Tags

```
<head>
  <!-- Character encoding →
  <meta charset="UTF-8">

  <!-- Viewport for responsive design →
  <meta name="viewport" content="width=device-width, initial-scale=1.0">

  <!-- Page description →
  <meta name="description" content="Page description for search engines">

  <!-- Keywords →
  <meta name="keywords" content="html, web development, tutorial">

  <!-- Author →
  <meta name="author" content="Your Name">

  <!-- Refresh page →
  <meta http-equiv="refresh" content="30">

  <!-- CSS link →
  <link rel="stylesheet" href="styles.css">

  <!-- Favicon →
  <link rel="icon" type="image/x-icon" href="favicon.ico">
```

```
<!-- External fonts -->
<link rel="preconnect" href="https://fonts.googleapis.com">

<!-- JavaScript -->
<script src="script.js"></script>
</head>
```

🎯 HTML Entities

abc Common Entities

<	<!-- < (less than) -->
>	<!-- > (greater than) -->
&	<!-- & (ampersand) -->
"	<!-- " (quotation mark) -->
'	<!-- ' (apostrophe) -->
 	<!-- Non-breaking space -->
©	<!-- © (copyright) -->
®	<!-- ® (registered) -->
™	<!-- ™ (trademark) -->
€	<!-- € (euro) -->
£	<!-- £ (pound) -->
¥	<!-- ¥ (yen) -->
§	<!-- § (section) -->
¶	<!-- ¶ (paragraph) -->

🔧 Best Practices

✅ Do's

- Always use proper DOCTYPE declaration
- Use semantic HTML5 elements
- Include alt attributes for images
- Use proper heading hierarchy (h1 → h2 → h3)
- Validate your HTML code

- Use lowercase for element names and attributes
- Quote attribute values
- Close all tags properly
- Use meaningful class and ID names
- Optimize for accessibility

Don'ts

- Don't use deprecated elements (``, `<center>`, etc.)
- Don't skip heading levels
- Don't use tables for layout
- Don't use inline styles (use CSS instead)
- Don't forget to escape special characters
- Don't use non-semantic elements when semantic ones exist
- Don't ignore validation errors

HTML5 APIs and Features

New Input Attributes

```
<input type="text" placeholder="Enter your name" required>
<input type="email" pattern="[a-zA-Z0-9._%+-]+@[a-zA-Z0-9.-]+\.[a-zA-Z]{2,}\$">
<input type="number" min="1" max="100" step="5">
<input type="text" autocomplete="name">
<input type="text" autofocus>
<input type="text" readonly>
<input type="text" disabled>
```

Data Attributes

```
<div data-user-id="123" data-role="admin">User Info</div>
<button data-action="delete" data-confirm="Are you sure?">Delete</button>
```

🔍 Accessibility Features

🌐 ARIA Attributes

```
<button aria-label="Close dialog">x</button>
<div role="button" tabindex="0">Custom button</div>

<p id="chart-desc">Detailed description of the chart...</p>

<!-- Skip link for screen readers -->
<a href="#main-content" class="skip-link">Skip to main content</a>
```

💡 Form Accessibility

```
<label for="username">Username:</label>
<input type="text" id="username" name="username" aria-required="true"
aria-describedby="username-help">
<div id="username-help">Must be 3-20 characters long</div>

<fieldset>
  <legend>Preferred contact method</legend>
  <input type="radio" id="email-contact" name="contact" value="email">
  <label for="email-contact">Email</label>
  <input type="radio" id="phone-contact" name="contact" value="phone">
  <label for="phone-contact">Phone</label>
</fieldset>
```

🚀 Advanced HTML Concepts

🔧 Custom Elements

```
<!-- Custom elements (requires JavaScript) -->
<my-custom-element attribute="value">Content</my-custom-element>
```

📦 Web Components

```
<template id="my-template">
  <style>
    /* Scoped styles */
  </style>
  <div>Template content</div>
</template>
```

Microdata

```
<div itemscope itemtype="http://schema.org/Person">
  <h1 itemprop="name">John Doe</h1>
  <p itemprop="jobTitle">Software Developer</p>
  <a itemprop="url" href="https://johndoe.com">Website</a>
</div>
```

Quick Reference

◦ Essential Tags Checklist

- `<!DOCTYPE html>`
- `<html lang="en">`
- `<head>` with meta tags
- `<title>`
- `<body>`
- Semantic elements (`<header>` , `<main>` , `<footer>`)
- Proper heading structure
- Alt text for images
- Form labels and validation
- Valid and accessible markup

Useful Resources

- **W3C HTML Validator:** <https://validator.w3.org/>

- **MDN HTML Reference:** <https://developer.mozilla.org/en-US/docs/Web/HTML>
 - **HTML5 Specification:** <https://html.spec.whatwg.org/>
 - **Accessibility Guidelines:** <https://www.w3.org/WAI/WCAG21/quickref/>
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Happy coding! 🎉 Remember to always write semantic, accessible, and valid HTML!