HTML

HTML

Hypertext Markup Language

Hypertext → One page linked to another page.

Markup → Markup is used to structure and organize content for the web.

HTML (HyperText Markup Language) is the foundation of web development and acts as the skeleton of every webpage.
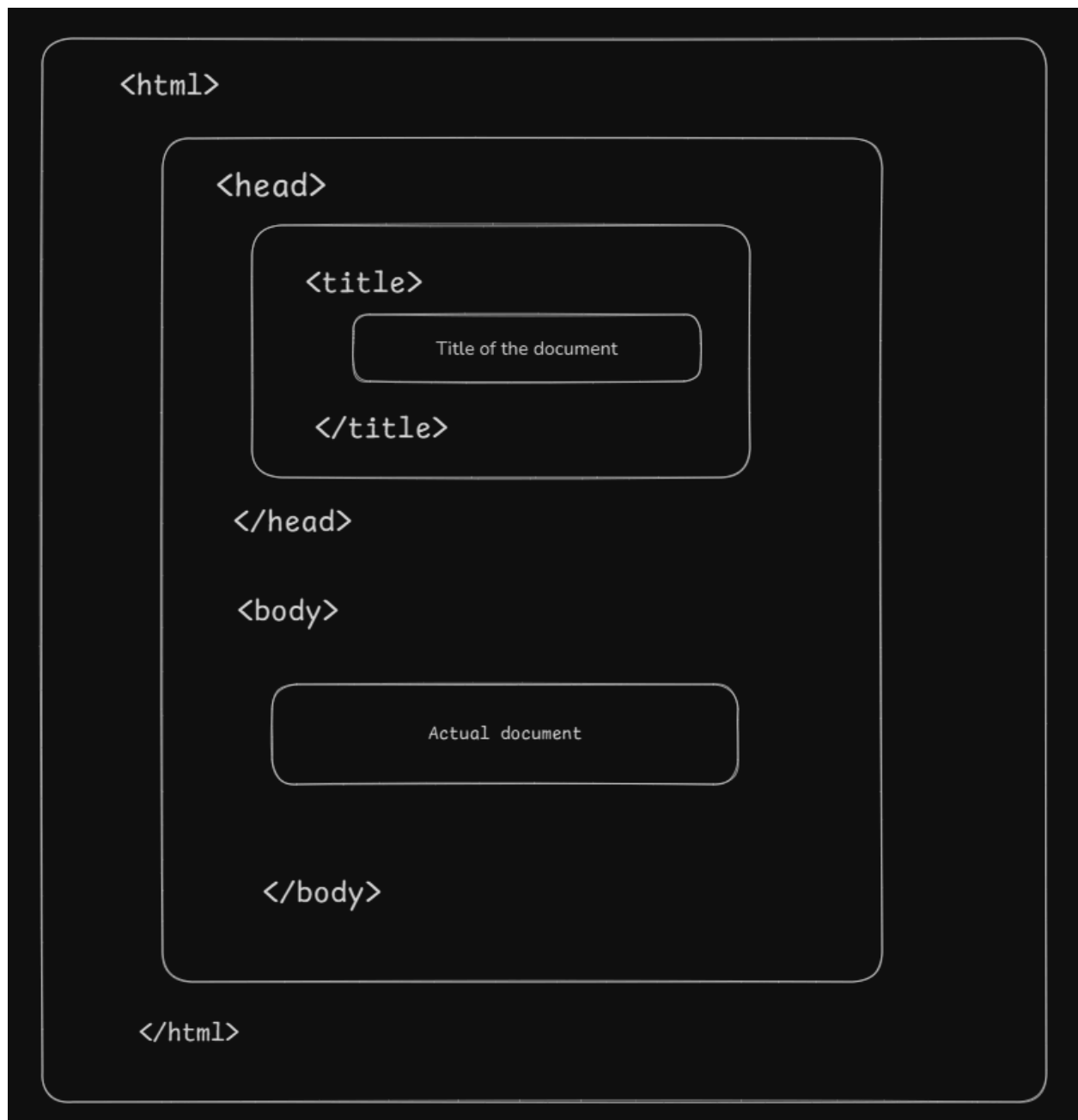
Markup Language

A markup language works like a guidebook that applies rules to the text, such as:

- This is a heading.

- This is a paragraph.

- An image should appear here.

- This text should be bold.

HTML Document Structure

The HTML document structure is a basic framework that defines the layout and content of any HTML web page. This structure follows a standardized format, providing instructions to the browser for rendering the page.

```
<html>
    <head>
        <title>
            Title of the document
        </title>
    </head>
    <body>

            Actual document

    </body>
</html>
```

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Document</title>
</head>
```

```
<body>

</body>
</html>
```

`<!DOCTYPE html>`

- This is the document type declaration.
- Its purpose is to tell the browser that the document is written in HTML5 format.
- This line should be at the very top of every HTML document to ensure the browser renders it correctly.

`<html lang="en">`

- This is the root element that wraps the entire HTML document.
- The `lang="en"` attribute indicates that the document's language is English.
- It is helpful for SEO and screen readers.

`<head>`

- This section stores the page's metadata (data about data).
- Metadata is not directly visible but is essential for browsers and search engines.
- In HTML, **metadata** provides information about the web page that is not displayed directly on the page but is essential for browsers, search engines, and other tools.

Inside head element

- Meta tag = metadata (Extra Info)

`<meta charset="UTF-8">`

- This specifies which character encoding is being used in the document.
- UTF-8 is a standard encoding that supports all characters, including letters, numbers, and symbols.

`<meta name="viewport" content="width=device-width, initial-scale=1.0">`

This is used for responsive design.

- `width=device-width` : Sets the page's width equal to the device's screen width.

- `initial-scale=1.0` : Sets the zoom level (default zoom is 100%).

`<title>Document</title>`

- This defines the title of the page.

- It appears in the browser tab and also in search engine results.

`<body>`

- The body is the section that contains the visible content of the web page.

- Anything written inside the `<body>` will be displayed in the browser.

Understanding HTML Tags and Elements

HTML Tags and HTML Elements define the structure and content of web pages.

Both have specific roles, and they guide the browser on how to display the content.

HTML Tags

- Tags are a fundamental part of HTML that specify content or structure.

- Each tag typically consists of an opening tag and a corresponding closing tag.

Syntax

```
<opening-tag>Content</closing-tag>

Example:
<p>This is a paragraph.</p>
```

1. **Self-closing Tags**:

    - Some tags do not contain content and do not require a closing tag.

Tag	Description	Example
`<img>`	Defines an image to display on a webpage.	`<img src="image.jpg" alt="Sample Image" />`
` `	Inserts a line break.	`This is line 1. This is line 2.`

`<hr>`	Creates a horizontal line (divider).	`<hr />`
`<input>`	Used for form fields to take user input.	`<input type="text" placeholder="Name" />`
`<meta>`	Specifies metadata, like SEO or browser information.	`<meta charset="UTF-8" />`
`<link>`	Links external resources, like CSS stylesheets.	`<link rel="stylesheet" href="style.css" />`
`<source>`	Defines multiple media sources for `<video>` or `<audio>`.	`<source src="video.mp4" type="video/mp4" />`
`<track>`	Adds subtitles or captions for videos.	`<track src="captions.vtt" kind="subtitles" />`
`<area>`	Defines clickable areas in an image map.	`<area shape="rect" coords="34,44,270,350" href="link.html" />`
`<col>`	Specifies columns in a table.	`<col span="2" style="background-color: yellow;" />`
`<wbr>`	Suggests a place where the browser can break a word.	`ThisIsA<wbr>LongWord.`

2. Attributes of tags:

- HTML **attributes** are special properties added to tags to provide additional information or functionality to HTML elements.

- Attributes are written inside the opening tag of an element.

Common HTML Attributes

Attribute	Description	Example
`id`	Provides a unique identifier for an element.	`<div id="main-container"></div>`
`class`	Assigns one or more class names for CSS styling.	`<p class="text-center"></p>`
`src`	Specifies the source file for media (images, videos).	`<img src="logo.png" />`

`alt`	Provides alternative text for an image.	`<img src="logo.png" alt="Company Logo" />`
`href`	Specifies the URL for a link.	`<a href="https://example.com">Visit</a>`
`style`	Adds inline CSS styles to an element.	`<p style="color: blue;">Hello!</p>`
`title`	Displays a tooltip when the user hovers over the element.	`<button title="Click me!">Submit</button>`
`target`	Specifies how a link is opened (`_blank` , `_self`).	`<a href="page.html" target="_blank">Link</a>`
`name`	Identifies an element in forms or scripts.	`<input type="text" name="username" />`
`type`	Defines the type of an element (common for forms).	`<input type="password" />`
`placeholder`	Provides a hint or example text in form inputs.	`<input type="text" placeholder="Enter Name"/>`
`value`	Specifies a default value for form elements.	`<input type="text" value="Default" />`
`disabled`	Disables an input or button.	`<button disabled>Submit</button>`
`readonly`	Makes an input field read-only.	`<input type="text" readonly value="Info" />`
`checked`	Indicates a default selected checkbox or radio button.	`<input type="checkbox" checked />`

Global Attributes

These attributes can be applied to most HTML elements:

Attribute	Description	Example
`id`	Unique identifier for an element.	`<div id="header"></div>`
`class`	Specifies one or more classes for an element.	`<span class="highlight"></span>`
`style`	Inline CSS for the element.	`<h1 style="color: red;">Hello</h1>`
`title`	Tooltip displayed when hovering over the element.	`<p title="This is a paragraph.">Text</p>`
`hidden`	Hides the element from the page.	`<div hidden>This is hidden.</div>`

data-*	Custom attributes for data storage in JavaScript.	`<div data-user-id="12345"></div>`

HTML Elements

An HTML Element is a complete structure made up of tags and their content.

Format

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


Example:
<p class="text">This is an element.</p>


Tag: <p> aur </p>.
Attribute: class="text".
Content: This is an element.
```

Types of HTML Tags and Elements

1. Block-level Elements

   • They take up the full width and start on a new line.

Block-Level Elements in HTML

Element	Description	Example
`<address>`	Represents contact information.	`<address>123 Street Name, City, Country</address>`
`<article>`	Defines an independent piece of content.	`<article> <h2>Blog Title</h2> <p>Blog content goes here.</p></article>`
`<aside>`	Content related to the main content, like a sidebar.	`<aside> <p>Related Links</p> </aside>`
`<blockquote>`	Represents a block of quoted text.	`<blockquote>"This is a quote."</blockquote>`
`<canvas>`	Used to draw graphics with JavaScript.	`<canvas id="myCanvas" width="200" height="100"></canvas>`

`<dd>`	A description in a description list.	`<dl> <dt>HTML</dt> <dd>Markup language for web pages.</dd> </dl>`
`<div>`	A generic container for grouping elements.	`<div class="container"> <p>Content goes here.</p> </div>`
`<dl>`	A description list.	`<dl> <dt>HTML</dt> <dd>Markup language for web pages.</dd> </dl>`
`<dt>`	A term in a description list.	`<dl> <dt>HTML</dt> <dd>Markup language for web pages.</dd> </dl>`
`<fieldset>`	Groups related elements in a form.	`<fieldset> <legend>Personal Info</legend><input type="text" /> </fieldset>`
`<figcaption>`	Caption for a figure element.	`<figure> <img src="image.jpg" alt="Sample"/> <figcaption>Image caption</figcaption> </figure>`
`<figure>`	Groups media with a caption.	`<figure> <img src="image.jpg" alt="Sample"/> <figcaption>Image caption</figcaption> </figure>`
`<footer>`	Footer of a section or page.	`<footer> <p>© 2025 My Website</p> </footer>`
`<form>`	Defines a form for user input.	`<form action="/submit"> <input type="text" /> </form>`
`<h1>` to `<h6>`	Headings, `<h1>` is largest, `<h6>` is smallest.	`<h1>Heading 1</h1> <h6>Heading 6</h6>`
`<header>`	Represents the header of a section or page.	`<header> <h1>Welcome</h1> </header>`
`<hr>`	Horizontal line or divider.	`<hr />`
`<li>`	Item in an ordered or unordered list.	`<ul> <li>Item 1</li> <li>Item 2</li> </ul>`
`<main>`	Main content of a document.	`<main> <h1>Main Heading</h1> <p>Main content here.</p> </main>`
`<nav>`	Section for navigation links.	`<nav> <a href="/">Home</a> <a href="/about">About</a> </nav>`
`<ol>`	Ordered list.	`<ol> <li>Step 1</li> <li>Step 2</li> </ol>`
`<p>`	Paragraph of text.	`<p>This is a paragraph.</p>`
`<pre>`	Preformatted text (preserves whitespace).	`<pre> Line 1 Line 2</pre>`

<section>	Thematic grouping of content.	<section> Section Title Section content. </section>
<table>	Table container.	<table> <tr> <td>Cell 1</td> <td>Cell 2</td> </tr> </table>
<td>	Cell in a table row.	<table> <tr> <td>Data 1</td> <td>Data 2</td> </tr> </table>
<tfoot>	Footer for a table.	<table> <tfoot> <tr> <td>Footer</td> </tr> </tfoot> </table>
<th>	Header cell in a table.	<table> <tr> <th>Header 1</th> </tr> </table>
<thead>	Groups the header content in a table.	<table> <thead> <tr> <th>Header</th> </tr> </thead> </table>
<tr>	Represents a row in a table.	<table> <tr> <td>Row 1</td> </tr> </table>
	Unordered list.	- Item 1 - Item 2

1. Inline Elements

- They stay on the same line as the content and do not take up the full width.

Element	Description	Example
<a>	Defines a hyperlink.	Visit
<abbr>	Represents an abbreviation or acronym.	<abbr title="HyperText Markup Language">HTML</abbr>
	Makes text bold (without emphasis).	Important text
<bdo>	Overrides text direction.	<bdo dir="rtl">Right-to-Left</bdo>
 	Inserts a line break.	Line 1 Line 2
<button>	Represents a clickable button.	<button>Click Me</button>
<cite>	Represents a title of a work (book, article, etc.).	<cite>Harry Potter</cite>
<code>	Displays a piece of computer code.	<code>let x = 10;</code>
<data>	Links a value with its corresponding machine-	<data value="12345">Product ID</data>

		readable data.	
`<datalist>`	Specifies a list of predefined input options.	`<input list="browsers"> <datalist id="browsers"> <option value="Chrome"></option></datalist>`
`<dfn>`	Represents a term being defined.	`<dfn>HTML</dfn> stands for HyperText Markup Language.`
`<em>`	Emphasizes text, typically displayed as italic.	`<em>Important</em>`
`<i>`	Italicizes text for alternate voice or mood.	`<i>Italic text</i>`
`<img>`	Embeds an image in a document.	`<img src="image.jpg" alt="Image description" />`
`<input>`	Creates an input field for forms.	`<input type="text" placeholder="Enter Name" />`
`<label>`	Specifies a label for an input element.	`<label for="name">Name:</label><input id="name" />`
`<mark>`	Highlights text.	`<mark>Highlighted text</mark>`
`<meter>`	Displays a measurement or gauge.	`<meter value="0.7">70%</meter>`
`<output>`	Displays the result of a calculation.	`<output name="result">42</output>`
`<q>`	Represents a short inline quotation.	`<q>To be, or not to be</q>`
`<s>`	Represents text that is no longer accurate or relevant.	`<s>Outdated text</s>`
`<samp>`	Displays sample output from a program or system.	`<samp>Error: File not found</samp>`
`<script>`	Embeds or refers to a JavaScript script.	`<script>alert('Hello');</script>`
`<select>`	Creates a drop-down list.	`<select> <option>Option 1</option></select>`
`<small>`	Displays smaller text, usually for side comments.	`<small>Disclaimer text</small>`
`<span>`	A generic container for inline content.	`<span class="highlight">Highlighted </span>`

`<strong>`	Represents strong importance, usually bold.	`<strong>Critical text</strong>`
`<sub>`	Displays text as subscript.	`H<sub>2</sub>O`
`<sup>`	Displays text as superscript.	`x<sup>2</sup>`
`<template>`	Defines reusable content that is not displayed by default.	`<template> <p>Reusable content</p> </template>`
`<textarea>`	Creates a multiline text input field.	`<textarea>Enter text here</textarea>`
`<time>`	Represents a date or time value.	`<time datetime="2025-01-23">Today</time>`
`<u>`	Underlines text (or shows non-textual annotations).	`<u>Underlined text</u>`
`<var>`	Represents a variable in math or programming.	`<var>x</var> = 10`
`<wbr>`	Suggests a word break opportunity.	`ThisIsA<wbr>LongWord`

Commonly Used HTML Tags

Tag	Description	Example
`<html>`	Root element of the HTML document.	`<html lang="en">...</html>`
`<head>`	Metadata container.	`<head>...</head>`
`<title>`	Defines the page title.	`<title>My Page</title>`
`<body>`	Contains visible content.	`<body>...</body>`
`<h1>` to `<h6>`	Headings, h1 is largest, h6 is smallest.	`<h1>Heading 1</h1>`
`<p>`	Paragraph.	`<p>Paragraph text</p>`
`<a>`	Hyperlink.	`<a href="url">Link</a>`
`<img>`	Image.	`<img src="image.jpg" alt="Image description">`
`<ul>`, `<li>`	Unordered list with items.	`<ul><li>Item 1</li></ul>`

`<ol>, <li>`	Ordered list with items.	`<ol><li>Item 1</li></ol>`
`<div>`	Generic block container.	`<div>Content</div>`
`<span>`	Generic inline container.	`<span>Content</span>`