

# Introduction to HTML in Detail

HTML, or HyperText Markup Language, is the foundational markup language used to create web pages. It provides the structure and content of a webpage, enabling browsers to interpret and display information. While CSS (Cascading Style Sheets) handles the visual presentation and JavaScript adds interactivity, HTML lays the essential framework.

## What is HTML?

- **Markup Language:** HTML uses tags, enclosed in angle brackets (<>), to "mark up" or define the structure and meaning of text and other content. These tags instruct the browser how to display the content.
- **HyperText:** The "HyperText" aspect of HTML allows for the creation of hyperlinks, which are clickable connections between web pages or other resources. This enables users to navigate the web.
- **Structure:** HTML defines the structural elements of a webpage, such as headings, paragraphs, lists, tables, and forms. This structural organization is crucial for accessibility and search engine optimization.
- **Foundation of the Web:** HTML is the cornerstone of the World Wide Web. Every webpage on the internet relies on HTML to present its content

## Basic HTML Structure

A typical HTML document follows a consistent structure:

HTML

```
<!DOCTYPE html>
<html>
<head>
  <title>Page Title</title>
</head>
<body>
  <h1>Heading 1</h1>
  <p>Paragraph text.</p>
</body>
</html>
```

**Output:**

## Heading 1

Paragraph text.

- **<!DOCTYPE html>:** This declaration, placed at the very beginning of the HTML document, informs the browser about the HTML version being used. For HTML5, it's simply `<!DOCTYPE html>`.
- **<html>:** The `<html>` tag acts as the root element of an HTML page, encapsulating all other elements.
- **<head>:** The `<head>` section contains metadata about the HTML document. Metadata includes information that is not directly displayed on the webpage, such as the page title, character set, and links to external stylesheets or scripts.
- **<title>:** The `<title>` tag specifies the title of the HTML page, which is displayed in the browser's title bar or tab. It is also used by search engines for indexing.
- **<body>:** The `<body>` section contains the visible content of the HTML page, including text, images, videos, and other elements.
- **<h1> to <h6>:** Heading tags, ranging from `<h1>` (largest) to `<h6>` (smallest), define headings of different levels of importance.
- **<p>:** The `<p>` tag defines a paragraph of text.

## Common HTML Tags

**<a> (Anchor):** Creates a hyperlink.

HTML

```
<a href="https://www.example.com">Visit Example</a>
```

The href attribute specifies the URL of the link.

**<img> (Image):** Embeds an image.

HTML

```

```

The src attribute specifies the source URL of the image, and the alt attribute provides alternative text for accessibility.

- **<ul> (Unordered List):** Creates an unordered list (bulleted list).
- **<ol> (Ordered List):** Creates an ordered list (numbered list).
- **<li> (List Item):** Defines a list item within an unordered or ordered list.
- **<div> (Division):** Defines a division or section within an HTML document. It is often used as a container for other elements.
- **<span>:** Defines an inline container used to mark up a part of a text or a part of a document. It is similar to `<div>` but is used for inline elements.
- **<table>, <tr> (Table Row), <td> (Table Data):** Create tables.

HTML

```
<table>
  <tr>
    <td>Row 1, Column 1</td>
```

```

        <td>Row 1, Column 2</td>
    </tr>
    <tr>
        <td>Row 2, Column 1</td>
        <td>Row 2, Column 2</td>
    </tr>
</table>

```

- **<form>, <input>, <button>:** Create forms for user input.

## HTML

```

<form>
    <label for="username">Username:</label>
    <input type="text" id="username" name="username"><br><br>
    <input type="submit" value="Submit">
</form>

```

- **<br> (Break):** Inserts a single line break.
- **<hr> (Horizontal Rule):** Creates a horizontal line.

## HTML Attributes

HTML tags can have attributes, which provide additional information about the element.

- **href:** Specifies the URL of a hyperlink.
- **src:** Specifies the source URL of an image.
- **alt:** Specifies alternative text for an image.
- **id:** Specifies a unique ID for an element, used for CSS styling or JavaScript manipulation.
- **class:** Specifies one or more class names for an element, used for CSS styling.
- **style:** Specifies inline styles for an element (though it's generally recommended to use external CSS stylesheets).

## HTML Editors

HTML files can be created using any text editor. However, dedicated code editors offer features like syntax highlighting, code completion, and debugging tools.

- **Notepad (Windows)**
- **TextEdit (macOS)**
- **VS Code (Cross-platform)**
- **Sublime Text (Cross-platform)**
- **Atom (Cross-platform)**

## How to View HTML

1. Save your HTML file with a .html extension.
2. Open the file in a web browser (Chrome, Firefox, Safari, Edge). The browser will render the HTML content and display the webpage.

## HTML5 Features

HTML features such as:

- Semantic elements (<header>, <article>, <footer>, etc.).
- Multimedia support (<audio>, <video>).
- Improved form controls (like date pickers).
- Canvas and SVG for graphic