

1. Introduction to HTML

HTML stands for **HyperText Markup Language** and is the standard language used to create webpages. It defines the structure and content of a webpage through the use of **tags** and **elements**.

2. Basic Structure of an HTML Document

An HTML document consists of several key sections:

```
<!DOCTYPE html>    <!-- Declaration for HTML5 document type -->
<html>              <!-- Root element -->
  <head>             <!-- Meta-information about the document -->
    <title>Title of the page</title>
  </head>
  <body>             <!-- Content of the webpage -->
    <!-- Page content goes here -->
  </body>
</html>
```

Key Tags:

- `<!DOCTYPE html>`: Defines the document type and version of HTML (HTML5 here).
- `<html>`: The root element that encloses all HTML content.
- `<head>`: Contains meta-information about the page (e.g., title, metadata, links to stylesheets).
- `<body>`: Contains the visible content on the webpage (text, images, links, etc.).

3. HTML Tags and Elements

- Tags are used to define HTML elements, typically enclosed in angle brackets (`<` `>`).
- Elements are the combination of the opening and closing tags, with content inside.

Example:

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

Here, `<p>` is the **opening tag**, and `</p>` is the **closing tag**. "This is a paragraph." is the **content** of the element.

4. Common HTML Tags

4.1 Text Formatting Tags

- `<h1>` to `<h6>`: Headings (h1 is the largest, h6 is the smallest).
- `<h1>This is a large heading</h1>`
- `<p>`: Paragraph.
- `<p>This is a paragraph.</p>`
- ``: Bold text.
- `This is bold text`
- `<i>`: Italic text.

- `<i>This is italic text</i>`
- `<u>`: Underlined text.
- `<u>This is underlined text</u>`

4.2 Links and Navigation

- `<a>`: Anchor tag for hyperlinks.
- `Click here to visit Example`
- `href`: Specifies the URL or path the link points to.

4.3 Images

- ``: Used to embed images.
- ``
- `src`: Specifies the path to the image.
- `alt`: Provides a description of the image for accessibility.

4.4 Lists

- **Unordered list:** ``
- ``
- `Item 1`
- `Item 2`
- ``
- **Ordered list:** ``
- ``
- `First item`
- `Second item`
- ``
- **List item:** `` is used within `` and ``.

4.5 Tables

- `<table>`: Creates a table.
- `<tr>`: Defines a table row.
- `<th>`: Defines a table header cell.
- `<td>`: Defines a table data cell.

Example of a table:

```
<table>
  <tr>
    <th>Name</th>
    <th>Age</th>
  </tr>
  <tr>
    <td>John</td>
    <td>30</td>
  </tr>
</table>
```

5. HTML Attributes

Attributes provide additional information about an element, placed inside the opening tag.

- **Common Attributes:**

- **id:** Uniquely identifies an element.
- **class:** Used for styling or scripting.
- **src:** Specifies the source of an image or media.
- **href:** Specifies the URL for links.
- **alt:** Alternative text for images.
- **style:** Inline styles for elements.

Example:

```

```

6. HTML Forms

Forms are used for collecting user input.

- **<form>:** Defines a form.
- **<input>:** Defines an input field.
- **<label>:** Defines a label for an input element.
- **<textarea>:** A multiline input field.
- **<button>:** Defines a button.
- **<select>:** Defines a drop-down list.

Example:

```
<form action="/submit_form" method="POST">
  <label for="name">Name:</label>
  <input type="text" id="name" name="name">
  <input type="submit" value="Submit">
</form>
```

- **action:** URL where the form data is sent.
- **method:** The HTTP method (GET or POST) used when submitting the form.

7. HTML Comments

Comments are written inside `<!-- -->` and are not displayed on the page.

```
<!-- This is a comment -->
```

8. HTML Media Elements

- **<audio>:** Embeds audio content.
- **<audio controls>**
- **<source src="audio.mp3" type="audio/mp3">**
- **</audio>**
- **<video>:** Embeds video content.
- **<video controls>**
- **<source src="video.mp4" type="video/mp4">**

- `</video>`

9. HTML Semantic Elements

HTML5 introduced semantic elements that give meaning to the structure of a webpage.

- `<header>`: Defines the header section.
- `<footer>`: Defines the footer section.
- `<article>`: Represents a self-contained piece of content.
- `<section>`: Represents a section of content.
- `<nav>`: Represents navigation links.
- `<aside>`: Represents content indirectly related to the main content.

Example:

```
<header>
  <h1>Welcome to My Website</h1>
</header>
<nav>
  <a href="#home">Home</a>
  <a href="#about">About</a>
</nav>
<article>
  <h2>Article Title</h2>
  <p>Article content...</p>
</article>
<footer>
  <p>Contact us at email@example.com</p>
</footer>
```

10. HTML5 Features

HTML5 includes new elements and APIs that enhance the functionality and structure of web pages:

- New form elements: `<input type="email">`, `<input type="date">`, etc.
- `<canvas>`: Used for drawing graphics.
- Local storage: Allows websites to store data locally in the browser.

11. HTML Document Structure Best Practices

- Always include `<!DOCTYPE html>` to specify HTML5.
- Use semantic elements for better accessibility and SEO.
- Properly close all tags.
- Use indentation for readability.
- Ensure images, links, and other media have alt text for accessibility.

Sure! Here's a simple HTML program to create a webpage that includes text, images, a link, a list, and a table. This is a great way to see many common HTML elements in action:

Example HTML Program

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Simple HTML Page</title>
  <style>
    body {
      font-family: Arial, sans-serif;
      background-color: #f4f4f4;
      margin: 20px;
    }
    h1 {
      color: #333;
    }
    ul {
      background-color: #e0e0e0;
      padding: 10px;
    }
    table {
      width: 100%;
      border-collapse: collapse;
      margin-top: 20px;
    }
    table, th, td {
      border: 1px solid #ddd;
    }
    th, td {
      padding: 8px;
      text-align: left;
    }
    img {
      max-width: 100%;
      height: auto;
    }
  </style>
</head>
<body>

  <header>
    <h1>Welcome to My Simple HTML Page</h1>
  </header>

  <section>
    <h2>Introduction</h2>
    <p>This is a simple example of an HTML webpage.</p>
    <p>Here are some of the key HTML elements in action:</p>
  </section>

  <section>
    <h2>Image Example</h2>
    
  </section>

  <section>
```

```
<h2>Navigation Links</h2>
<p>Here are some useful links:</p>
<ul>
  <li><a href="https://www.wikipedia.org" target="_blank">Visit
Wikipedia</a></li>
  <li><a href="https://www.example.com" target="_blank">Visit
Example</a></li>
</ul>
</section>

<section>
  <h2>List of Fruits</h2>
  <ul>
    <li>Apple</li>
    <li>Banana</li>
    <li>Cherry</li>
    <li>Grapes</li>
  </ul>
</section>

<section>
  <h2>Example Table</h2>
  <table>
    <tr>
      <th>Name</th>
      <th>Age</th>
      <th>City</th>
    </tr>
    <tr>
      <td>John Doe</td>
      <td>28</td>
      <td>New York</td>
    </tr>
    <tr>
      <td>Jane Smith</td>
      <td>34</td>
      <td>London</td>
    </tr>
    <tr>
      <td>Sam Wilson</td>
      <td>22</td>
      <td>Paris</td>
    </tr>
  </table>
</section>

<footer>
  <p>© 2025 My Website</p>
</footer>

</body>
</html>
```

Explanation of the Code:

1. `<!DOCTYPE html>`: This declares that the document is written in HTML5.
2. `<html>`: The root element that contains all the other HTML elements.
3. `<head>`: Contains metadata and styles for the page.
 - `<meta charset="UTF-8">` ensures the correct character encoding for your document.
 - `<title>` sets the title of the webpage that appears in the browser's title bar.
 - `<style>` includes internal CSS for page styling.
4. `<body>`: Contains the visible content of the webpage.
5. `<header>`: Defines the header section of the webpage (e.g., a title).
6. `<section>`: Used to group related content, making the page more structured.
7. ``: Displays an image with a placeholder image link.
8. `<a>`: Defines hyperlinks to other web pages.
9. `` and ``: Creates unordered lists, such as a list of fruits or navigation links.
10. `<table>`, `<th>`, `<td>`: Used to create a table and define table headers and data.
11. `<footer>`: Contains footer information, such as copyright notice.