

HTML – Introduction

What is HTML?

- **HTML** stands for **HyperText Markup Language**.
- It is the **standard language** used to create and design web pages.
- HTML is not a programming language, it is a **markup language**.
- A markup language uses **tags** to define the structure and elements of a webpage.

Why HTML is important?

- It is the **backbone of every website**.
- Provides the **basic structure** of a webpage.
- All web technologies (like CSS, JavaScript, etc.) work **along with HTML**.
- Every browser (Chrome, Firefox, Edge, etc.) can read and display HTML documents.

Features of HTML

1. **Simple & Easy to Learn** – Beginners can quickly understand and use it.
2. **Platform Independent** – Works on all operating systems (Windows, Mac, Linux).
3. **Supports Multimedia** – Can display text, images, audio, video, and animations.
4. **Hyperlinking** – Connects one page to another using **links**.
5. **Extensible** – Can be combined with CSS and JavaScript for advanced features.

Structure of HTML Document

```
<!DOCTYPE html>
<html>
<head>
  <title>My First Webpage</title>
</head>
<body>
  <h1>Hello, World!</h1>
  <p>This is my first webpage.</p>
</body>
</html>
```

Explanation:

- `<!DOCTYPE html>` → Defines the document type (HTML5).
- `<html>` → Root element of the webpage.
- `<head>` → Contains meta information (title, styles, etc.).
- `<title>` → Title shown on the browser tab.
- `<body>` → Contains the actual content shown on the webpage.

Advantages of HTML

- Free and easy to use.
- Supported by all web browsers.
- Helps in creating structured documents.
- Can integrate with CSS (for styling) and JavaScript (for interactivity).

History of HTML:

- HTML was created by **Tim Berners-Lee** in **1991**.
- It was developed to share and structure information on the **World Wide Web (WWW)**.

- Over time, many versions of HTML have been released to improve features and support new technologies.

Versions of HTML

1. **HTML 1.0 (1991):**
 - The first version, very basic, limited features.
2. **HTML 2.0 (1995):**
 - Standardized version, introduced forms and tables.
3. **HTML 3.2 (1997):**
 - Added support for scripting (JavaScript), applets, and more styling.
4. **HTML 4.01 (1999):**
 - Most popular older version, supported CSS, scripting, and multimedia.
5. **XHTML (2000):**
 - A stricter version of HTML, followed XML rules.
6. **HTML5 (2014 – Present):**
 - Current version.
 - Supports audio, video, canvas, SVG, and mobile-friendly websites.
 - Provides modern features for web apps.

Basic HTML Tags

1. Document Tags

- `<!DOCTYPE html>` → Declares HTML5 document type.
- `<html>` → Root element of an HTML page.

2. Head Section Tags

- `<head>` → Contains metadata (information about the page).
- `<title>` → Defines the title of the webpage (shown in browser tab).
- `<meta>` → Provides metadata like character set, description, keywords.
- `<link>` → Used to connect external files (like CSS).

3. Body Section Tags

- `<body>` → Contains all visible content of the webpage.

4. Heading Tags

- `<h1>` to `<h6>` → Headings, where `<h1>` is the largest and `<h6>` is the smallest.

Example:

```
<h1>Main Heading</h1>
<h2>Sub Heading</h2>
```

HTML Text Formatting Tags:

Text formatting tags are used to **change the appearance of text** (bold, italic, underline, etc.).

1. Bold Text

- `` → Makes text **bold** (just for style).
- `` → Makes text **bold** and also indicates **importance** (semantic).

```
<p>This is <b>bold</b> text.</p>
<p>This is <strong>important</strong> text.</p>
```

2. Italic Text

- `<i>` → Makes text *italic* (just for style).
- `` → Emphasizes text in *italic* (semantic, useful for screen readers).

```
<p>This is <i>italic</i> text.</p>
<p>This is <em>emphasized</em> text.</p>
```

3. Underline & Strike

- `<u>` → Underlines text.
- `<s>` or `<strike>` → Shows text as deleted (not recommended, old).
- `` → Marks deleted text (semantic).
- `<ins>` → Marks inserted (underlined) text.

```
<p>This is <u>underlined</u> text.</p>
<p>This is <s>wrong</s> but <ins>correct</ins>.</p>
```

4. Superscript & Subscript

- `<sup>` → Superscript (above text line).
- `<sub>` → Subscript (below text line).

```
<p>2<sup>3</sup> = 8</p>
<p>H<sub>2</sub>O is water</p>
```

5. Small & Big Text

- `<small>` → Displays smaller text.
- `<big>` → Displays bigger text (deprecated in HTML5, use CSS).

```
<p>This is <small>small</small> text.</p>
<p>This is <big>big</big> text.</p>
```

6. Marked / Highlighted Text

- `<mark>` → Highlights text.

```
<p>This is <mark>highlighted</mark> text.</p>
```

7. Quote & Code Formatting

- `<q>` → Short quotation (with quotes).
- `<blockquote>` → Long quotation (indented).
- `<code>` → For code snippets.
- `<pre>` → Preformatted text (keeps spaces & line breaks).

```
<p>He said <q>Hello World!</q></p>
<blockquote>This is a long quoted text.</blockquote>
<pre>
Line 1
    Line 2 (keeps spaces)
</pre>
<p>Use <code>printf()</code> in C.</p>
```

HTML Lists

HTML provides different list types to organize items:

- **Unordered List ()** → Bulleted list
- **Ordered List ()** → Numbered/lettered list
- **(Definition List <dl>, <dt>, <dd>)**

1. Unordered List ()

- Displays items with **bullets** (• by default).
- Each list item is written inside (list item).

Example:

```
<ul>
  <li>Apple</li>
  <li>Mango</li>
  <li>Banana</li>
</ul>
```

Output:

- Apple
- Mango
- Banana

Common Attributes of

Attribute	Values	Description
type	disc (•), circle (o), square (■), none	Defines bullet style (not supported in HTML5, use CSS instead).

Example:

```
<ul type="square">
  <li>Item 1</li>
  <li>Item 2</li>
</ul>
```

2. Ordered List ()

- Displays items in a **numbered/lettered sequence**.
- Each item inside .

Example:

```
<ol>
  <li>Step 1</li>
  <li>Step 2</li>
  <li>Step 3</li>
</ol>
```

Output:

1. Step 1
2. Step 2
3. Step 3

Common Attributes of

Attribute	Values	Description
type	1 (default numbers), A (A, B, C), a (a, b, c), I (I, II, III), i (i, ii, iii)	Defines numbering style
start	Any number	Specifies starting value
reversed	Boolean (no value needed)	Displays list in reverse order

HTML Table Tags

Tables in HTML are created using the <table> element. They are used to display data in rows and columns.

1. Table Structure Tags

Tag	Description
<table>	Defines a table
<tr>	Table row
<th>	Table header cell (bold & centered by default)
<td>	Table data cell
<caption>	Adds a title/caption for the table
<thead>	Groups the header content
<tbody>	Groups the body content
<tfoot>	Groups the footer content
<colgroup>	Groups columns for applying styles
<col>	Defines column properties inside <colgroup>

2. Common Attributes of <table>

Attribute	Description	Example
border	Sets table border	<table border="1">
cellpadding	Space inside a cell	<table cellpadding="10">
cellspacing	Space between cells	<table cellspacing="5">

Attribute	Description	Example
width	Width of table	<code><table width="80%"></code>
align	Aligns table (left, center, right)	<code><table align="center"></code>
bgcolor	Background color (old HTML, not recommended now, use CSS)	<code><table bgcolor="lightblue"></code>

3. Common Attributes of <tr>, <th>, <td>

Attribute	Used in	Description
align	<tr>, <th>, <td>	Aligns content (left, center, right)
valign	<tr>, <th>, <td>	Vertical alignment (top, middle, bottom)
colspan	<th>, <td>	A cell spans multiple columns
rowspan	<th>, <td>	A cell spans multiple rows
bgcolor	<tr>, <th>, <td>	Background color of a cell/row

4. Example Table with Attributes

```

<!DOCTYPE html>
<html>
<head>
    <title>Table Example</title>
</head>
<body>

<table border="1" cellpadding="8" cellspacing="5" width="70%"
align="center">
    <caption><b>Student Marks</b></caption>

    <thead>
        <tr bgcolor="lightgray">
            <th>Roll No</th>
            <th>Name</th>
            <th colspan="2">Marks</th>
        </tr>
    </thead>

    <tbody>
        <tr>
            <td>101</td>
            <td>Amit</td>
            <td>85</td>
            <td>90</td>
        </tr>
        <tr>
            <td>102</td>
            <td>Neha</td>
            <td colspan="2" align="center">Absent</td>
        </tr>
        <tr>
            <td rowspan="2">103</td>
            <td>Ravi</td>
            <td>78</td>
            <td>88</td>
        </tr>
    </tbody>
</table>

```

```

        <tr>
            <td>Priya</td>
            <td>92</td>
            <td>95</td>
        </tr>
    </tbody>

    <tfoot>
        <tr bgcolor="lightyellow">
            <td colspan="4" align="center">Result: Passed</td>
        </tr>
    </tfoot>
</table>

</body>
</html>

```

Semantic vs Non-Semantic Text Formatting Tags

1. What is Semantic HTML?

- **Semantic tags** have **meaning** – they describe the role or purpose of the text.
- Example: `` → means "important text", not just bold.
- Helps **search engines (SEO)** and **screen readers** understand the content better.

2. What is Non-Semantic HTML?

- **Non-semantic tags** only define **style/appearance** of the text.
- They do not provide meaning, only change how the text looks.
- Example: `` → makes text bold but does not say it is important.

3. Key Differences

Feature	Semantic Tags	Non-Semantic Tags
Meaning	Carry meaning (importance/emphasis)	No meaning, only style
Accessibility	Helps screen readers & SEO	Not useful for accessibility
Examples	<code></code> , <code></code> , <code></code> , <code><ins></code>	<code></code> , <code><i></code> , <code><u></code> , <code><s></code>
Usage	For meaningful/important text	For styling only
Preferred in HTML5	Yes, recommended	Not recommended (use CSS instead)

4. Examples

Non-Semantic:

```

<p>This is <b>bold</b> text.</p>
<p>This is <i>italic</i> text.</p>

```

Text is bold/italic, but no special meaning.

Semantic:

```

<p>This is <strong>important</strong> text.</p>
<p>This is <em>emphasized</em> text.</p>

```

Text is bold/italic **and** browsers, search engines, and screen readers know that it's important/emphasized.

HTML Forms

What is a Form?

- An **HTML form** is used to collect user input.
- Example: Login page, signup form, feedback form.
- All form elements are written inside the `<form>` tag.

1. The `<form>` Tag

Important Attributes of `<form>`

Attribute	Values	Description
action	URL (server script)	Where to send form data (e.g., PHP file, API).
method	get, post	HTTP method: <ul style="list-style-type: none">• GET – Data visible in URL (less secure, used for search).• POST – Data hidden, secure (used for login, signup).

2. Common Form Elements

(a) Input Field `<input>`

Used for text, passwords, checkboxes, radio buttons, etc.

Attributes of `<input>`:

- `type` → Defines input type (text, password, email, number, date, file, checkbox, radio, submit, reset, etc.).
- `name` → Name of input (sent to server).
- `value` → Default value.
- `placeholder` → Hint text inside field.
- `required` → Field must be filled before submission.
- `readonly` → Makes field non-editable.
- `disabled` → Field disabled (not sent to server).
- `maxlength` / `minlength` → Restrict input length.
- `min` / `max` → Set numeric/date range.

Example:

```
<input type="text" name="username" placeholder="Enter your name" required>
<input type="password" name="pass" maxlength="12">
<input type="checkbox" name="agree"> I Agree
<input type="radio" name="gender" value="male"> Male
<input type="radio" name="gender" value="female"> Female
```

(b) Textarea `<textarea>`

Multi-line input field.


```
<textarea name="message" rows="5" cols="30" placeholder="Enter your message"></textarea>
```

(c) Select (Dropdown) **<select>** with **<option>**

```
<select name="course">
  <option value="html">HTML</option>
  <option value="css">CSS</option>
  <option value="js">JavaScript</option>
</select>
```

Attributes: multiple (for multiple selection), selected (default option).

(d) Button

- **<button>** or **<input type="button">** → Normal button.
- **<input type="submit">** → Submit form.
- **<input type="reset">** → Reset form values.

Example:

```
<input type="submit" value="Register">
<input type="reset" value="Clear">
<button type="button">Click Me</button>
```

(e) File Upload

```
<input type="file" name="resume">
```

(f) Label **<label>**

Links text to a form element for accessibility.

```
<label for="uname">Username:</label>
<input type="text" id="uname" name="username">
```

Tag **<optgroup>**

- Used to **group related options** inside a dropdown.
- Helps organize long dropdowns.

Syntax:

```
<select name="fruits">
  <optgroup label="Citrus">
    <option value="orange">Orange</option>
    <option value="lemon">Lemon</option>
  </optgroup>
  <optgroup label="Berries">
    <option value="strawberry">Strawberry</option>
    <option value="blueberry">Blueberry</option>
  </optgroup>
</select>
```

Output:

- Citrus
 - Orange
 - Lemon
- Berries

- Strawberry
- Blueberry

3. Complete Example Form

```
<!DOCTYPE html>
<html>
<head>
  <title>Registration Form</title>
</head>
<body>

<form action="submit.php" method="post" autocomplete="on">

  <label for="uname">Username:</label>
  <input type="text" id="uname" name="username" placeholder="Enter name"
required><br><br>

  <label for="pass">Password:</label>
  <input type="password" id="pass" name="password" minlength="6"
required><br><br>

  Gender:
  <input type="radio" name="gender" value="male"> Male
  <input type="radio" name="gender" value="female"> Female<br><br>

  <label for="course">Select Course:</label>
  <select id="course" name="course">
    <option value="html">HTML</option>
    <option value="css">CSS</option>
    <option value="js">JavaScript</option>
  </select><br><br>

  <label for="msg">Message:</label><br>
  <textarea id="msg" name="message" rows="4" cols="30"></textarea><br><br>

  <label for="resume">Upload Resume:</label>
  <input type="file" id="resume" name="resume"><br><br>

  <input type="submit" value="Register">
  <input type="reset" value="Clear">

</form>

</body>
</html>
```