HTML

HTML (**HyperText Markup Language**) is the standard language used to create and structure content on the web.

It provides the foundation for web pages by defining the structure and elements of the content, such as headings, paragraphs, links, images, tables, and more.

The latest standard is **HTML5**.

To add HTML5 code, start the document with:

```
<!DOCTYPE html>
```

DOCTYPE: document type (tag used to start the HTML document)

It is **case-insensitive**.

To add comment:

```
<!-- comment -->
```

Key Features of HTML

1. **Markup Language**: HTML uses tags to mark up different parts of content, indicating their roles (e.g., heading, paragraph, list).
2. **HyperText**: Enables linking to other web pages or resources using hyperlinks (`<a>` tag).
3. **Platform-Independent**: HTML can be rendered on any device with a web browser.
4. **Extensible**: Can be combined with other technologies like CSS (for styling) and JavaScript (for interactivity).

Tags

Word enclosed by `<` and `>` signs.

It is also called an **element**.

All tags in HTML are pre-defined by **W3C**.

Examples:

```
<h1>, <p>, <table>
```

Types of Tags

1. Opening Tag

Used to open data/information.

Examples:

```
<h1>, <p>, <html>
```

2. Closing Tag

Used to close data/information.

Examples:

```
</h1>, </p>, </html>
```

3. Empty Tag

Tag having no data/content.

Two ways of representing it:

```
<tag></tag>
<tag />
```

Examples:

```
<br />, <hr />
```

4. Root Tag

Tag which starts and ends the document.

Also called **Document Type**, **Document Tag**, or **Document Element**.

Example:

```
<html>
```

Attribute

Extra information about the tag.

Attribute always present in `name=value` format.

Example:

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

- `meta` → tag
- `charset` → attribute name
- `utf-8` → attribute value

A tag may have one or more attributes.

Every tag has the following attributes:

- **name**: used to create query string
- **id**: used to identify an element uniquely
- **style**: used to write inline CSS
- **class**: used for CSS

HTML Structure

It consists of **2 parts**:

1. Head

Contains extra information about the page.

Tags that can be used inside the head:

1. `title` – used to set the title for the tab
2. `script` – used to add JS code in the page
3. `style` – used to add CSS code
4. `meta` – used to add more information about the page
5. `link` – used to link external documents (files)
6. `base` – used to set the base URL used in the page

2. Body

Contains actual design.

Tags that can be used inside the body:

1. Textual
2. Resources
3. List

4. Table
5. Linking (Anchor)
6. Form

Tags can be **inline** or **block**.

- Inline tags keep data on the same line
- Block tags add data on the next line

Textual Tags

1. **Header**: used to add header in page
    - 6 levels: `h1` to `h6`
    - `h1` is the biggest and `h6` is the smallest
2. **Paragraph (`<p>`)**: used to add a paragraph
3. **Division (`<div>`)**: used to create groups of tags and textual contents

All the above are **block tags**.

Formatting Tags

These are **inline tags**:

1. `span` – used during CSS
2. Bold – `<b></b>` or `<strong></strong>`
3. Italic – `<i></i>`
4. Underline – `<u></u>`
5. Strike – `<strike></strike>`
6. Monospace – `<tt></tt>`
7. Superscript – `<sup></sup>`
8. Subscript – `<sub></sub>`
9. Marquee – `<marquee></marquee>`
10. Formatted – `<pre></pre>`

List Tags

1. Unordered List

Does not render the order.

```
<ul>
  <li>list item1</li>
  <li>list item2</li>
</ul>
```

2. Ordered List

Renders the list item order.

```
<ol>
  <li>list item1</li>
  <li>list item2</li>
</ol>
```

3. Definition List

Used to create list of definitions.

```
<dl>
  <dt>term 1</dt>
  <dd>definition 1</dd>
  <dt>term 2</dt>
  <dd>definition 2</dd>
</dl>
```

Table Tag

Used to create tabular representation.

Divided into **3 sections**:

1. Header – `<thead>`
2. Body – `<tbody>`
3. Footer – `<tfoot>`

To create row: `<tr>`

To create column:

- In header: `<th>`
- In body and footer: `<td>`

Example:

```
<table>
  <thead>
    <tr>
      <th></th>
    </tr>
  </thead>
  <tbody>
    <tr>
```

```
        <td></td>
      </tr>
    </tbody>
    <tfoot>
      <tr>
        <td></td>
      </tr>
    </tfoot>
  </table>
```

Attributes

1. `border` – used to create border
2. `colspan` – used to merge multiple columns horizontally
3. `rowspan` – used to merge multiple columns vertically

Resource Tags

1. Images

`img` – used to add image

- `src` – specify the source
- `alt` – alternative text (rendered only in case of missing source)

2. Audio

`audio` – used to play audio

- `src` – file to play
- `controls` – render controls
- `autoplay` – play automatically

3. Video

`video` – used to play video

- `src` – file to play
- `controls` – render controls
- `autoplay` – play automatically

Linking Tag (Anchor)

Used to link multiple pages.

```
<a href="page.html">text</a>
```

Multiple sections within same page:

```
<a href="#top">text</a>
```

Multiple pages with multiple sections:

```
<a href="page#section">text</a>
```

Form Tag

Used to get inputs from user.

Inside the `form` tag we can use:

1. Input

Used to get input from the user.

`type` attribute values:

- `text` – textual value
- `number` – number value
- `email` – email value
- `tel` – telephone
- `date` – date input
- `time` – time input
- `radio` – radio button
- `checkbox` – multiple selection
- `password` – masked characters
- `submit` – submit values
- `reset` – clear the form
- `file` – upload file

2. Textarea

Used to get multi-line input.

3. Select

Used to render drop-down.

```
<select>
  <option>op1</option>
  <option>op2</option>
</select>
```

GET Method

- Values sent using **Request Head**
- Values appended on URL (visible)
- Restriction on maximum size of data
- Only ASCII values can be sent
- URL can be bookmarked with values
- Files cannot be sent using GET

POST Method

- Values sent using **Request Body**
- Values are invisible
- No restriction on size of data
- Any type of data (binary) can be sent
- URL can be bookmarked without values
- Files can be sent using POST