HTML Notes

1. What is HTML?

Basic HTML Tags

Heading Tags

Used to display headings in HTML:

- **<h1>**: Most important (main heading)

- **<h2>**: Subheading

- **<h3>**: Sub-subheading

- **<h4>**: Smaller heading

- **<h5>**: Lesser heading

- **<h6>**: Least important heading

Each level helps organize content hierarchically and semantically.

Anchor Tag

The anchor tag `<a>` is used to create hyperlinks that allow users to navigate to other web pages, sections within a page, or external websites.

Syntax:

```
<a href="https://google.com">Google</a>
```

Explanation:

- `href` is the attribute that specifies the destination URL.

- The text between the tags becomes the clickable link.

Image Tag

The image tag `<img>` is used to embed images into a webpage.

Syntax:

```
<img src="/image.png" alt="Random Image">
```

Explanation:

- `src` specifies the path to the image file.

- `alt` provides alternative text for accessibility or if the image fails to load.

Br Tag

The `<br>` tag is used to insert a line break in the content. It does not have a closing tag.

Syntax:

```
This is line one.<br>This is line two.
```

Explanation:

- Adds a break in the text, making the next part appear on a new line.

- Commonly used within paragraphs to break lines without starting a new paragraph.

Big & Small Tags

Used to change the size of the displayed text.

Syntax:

```
<big>Big</big>
<small>Small</small>
```

Explanation:

- `<big>` displays the text slightly larger than the surrounding text.

- `<small>` displays the text slightly smaller.

The anchor tag `<a>` is used to create hyperlinks that allow users to navigate to other web pages, sections within a page, or external websites.

Syntax:

Google

Explanation:

- `href` is the attribute that specifies the destination URL.

- The text between the tags becomes the clickable link.

HTML elements are represented by tags, which are enclosed in angle brackets. Most tags come in pairs, such as `<p>...</p>`. Some tags are self-closing like `<br>`.

HTML Attributes

Attributes provide additional information about HTML elements. They are always specified in the opening tag and come in name/value pairs like `name="value"`.

Example:

<html lang="en">

Here, `lang="en"` is an attribute specifying the language as English.

HTML (HyperText Markup Language) is the standard markup language used to create web pages. It forms the structural foundation of all websites. HTML elements are the building blocks that define the structure and layout of content on the web.

HTML consists of a series of elements, represented by tags, that tell the browser how to display content. These tags usually come in pairs: an opening tag and a closing tag.

Example:

```
<!DOCTYPE html>
<html>
  <head>
    <title>My Web Page</title>
  </head>
  <body>
    <h1>Hello, World!</h1>
    <p>This is a paragraph.</p>
  </body>
</html>
```

Explanation:

- `<!DOCTYPE html>`: Declares the document type and version of HTML.

- `<html>`: The root of the document.

- `<head>`: Contains meta-information.

- `<title>`: Sets the title in the browser tab.

- `<body>`: Contains visible content.

Quick Points:

- `<html>` tag is the parent of both `<head>` and `<body>` tags.

- Most HTML elements have opening and closing tags with content in between.

- Some tags like `<br>` are self-closing and do not contain content.

- You can use browser tools like Inspect Element or View Page Source to experiment with and understand HTML structure.

- HTML is NOT case sensitive:

  - `<p>` = `<P>`

  - `<html>` = `<HTML>`

  - `<head>` = `<HEAD>`

  - `<body>` = `<BODY>`

2.HTML Entities

HTML entities are used to display reserved characters in HTML. They start with an ampersand (&) and end with a semicolon (;).

Entity	Character	Description
<	<	Less than
>	>	Greater than
&	&	Ampersand
&quot	"	Double quote
'	'	Single quote
	(space)	Non-breaking space

These are helpful for writing special characters that might otherwise be interpreted as code.

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3. Structure and Boilerplate Code

A boilerplate is a standard starting template for an HTML file.

Boilerplate Example:

```
<!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>
  <p>Hello, world!</p>
 </body>
</html>
```

Key Tags:

- `<meta charset>`: Sets character encoding.

- `<meta viewport>`: Controls how the website is displayed on mobile devices.

- `<title>`: Title shown in browser.

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4. Text Formatting Tags

Horizontal Rule (`<hr>` Tag)

Used to display a horizontal ruler that separates sections of content.

```
<hr>
```

Subscript & Superscript Tags

Used for mathematical or chemical notations.

```
H<sub>2</sub>O
A<sup>2</sup> + B<sup>2</sup>
```

Pre Tag

Displays text exactly as written (including spaces and new lines).

```
<pre>
This
  is a sample
    text.
</pre>
```

Page Layout Techniques using Semantic Tags

```
<header>
  Page Header
</header>
<main>
  <section>
    Section content
  </section>
  <article>
Article content
  </article>
  <aside>
    Sidebar content
  </aside>
</main>
<footer>
  Footer content
```

```
</footer>
```

Revisiting Anchor Tag

Open links in a new tab:

```
<a href="https://google.com" target="_blank">Google</a>
```

Make image clickable:

```
<a href="https://google.com">
  <img src="link">
</a>
```

Revisiting Image Tag

Set height and width:

```
<img src="pic.jpg" alt="Sample" width="300" height="200">
```

Div & Span Tags

- `<div>`: Block-level container for other HTML elements.

- `<span>`: Inline container for styling text or grouping inline elements.

Example:

```
<div style="background: lightgray;">
  This is a div block
</div>
<span style="color: red;">Red text</span>
```

Reminder: Tables in HTML end with `</table>` tag.

HTML provides several tags to format and emphasize text:

```
<b>Bold</b>
<strong>Strong Importance</strong>
<i>Italic</i>
<em>Emphasized</em>
<u>Underline</u>
<small>Small Text</small>
<big>Big Text</big>
<sub>Subscript</sub>
<sup>Superscript</sup>
<pre>Preformatted   Text</pre>
```

Semantic Tags:

- `<strong>` and `<em>` have meaningful weight for accessibility and SEO.

5. Lists and Tables

Lists

HTML supports ordered and unordered lists:

```
<ul>
  <li>Item One</li>
  <li>Item Two</li>
</ul>

<ol>
  <li>First</li>
  <li>Second</li>
</ol>
```

Tables

Tables are used to represent data in rows and columns.

```
<table border="1">
  <caption>Student Info</caption>
  <thead>
    <tr><th>Name</th><th>Age</th></tr>
  </thead>
  <tbody>
    <tr><td>Alice</td><td>22</td></tr>
    <tr><td>Bob</td><td>23</td></tr>
  </tbody>
</table>
```

Attributes:

- `colspan`, `rowspan` control cell merging.

- `<thead>`, `<tbody>` help group rows.

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6. Media Embedding

Images

```
<img src="img.jpg" alt="Description" width="300">
```

Video

```
<video controls width="300">
  <source src="movie.mp4" type="video/mp4">
</video>
```

Audio

```
<audio controls>
  <source src="audio.mp3" type="audio/mpeg">
</audio>
```

Iframe

```
<iframe src="https://example.com" width="400" height="300"></iframe>
```

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7. Forms and User Input

Forms are used to collect data from the user. Common use cases include sign-up, login, help requests, and contact forms.

```
<form>
  <!-- form elements here -->
</form>
```

Action in Form

The `action` attribute specifies where to send the form data when submitted.

```
<form action="/action.php">
```

Form Element: Input

```
<input type="text" placeholder="Enter Name">
```

Label Tag

```
<input type="radio" value="class X" name="class" id="id1">
<label for="id1">Class X</label>

<input type="radio" value="class Y" name="class" id="id2">
<label for="id2">Class Y</label>
```

Class & ID Attributes

```
<div id="id1" class="group1">
</div>
```

```
<div id="id2" class="group1">
</div>
```

Checkbox

```
<input type="checkbox" value="class X" name="class" id="id1">
<label for="id1">Class X</label>

<input type="checkbox" value="class Y" name="class" id="id2">
<label for="id2">Class Y</label>
```

Iframe Tag

Displays a website within a website.

```
<iframe src="https://example.com" width="400" height="300"></iframe>
```

Video Tag

```
<video src="myVid.mp4" controls height="300" width="400" loop
autoplay>
  Your browser does not support the video tag.
</video>
```

Attributes:

- controls

- height

- `width`

- `loop`

- `autoplay`

Forms collect data from users using various input types.

```
<form action="/submit" method="post">
  <label for="name">Name:</label>
  <input type="text" id="name" name="name">

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

  <input type="checkbox" name="subscribe"> Subscribe

  <select name="city">
    <option value="delhi">Delhi</option>
<option value="mumbai">Mumbai</option>
  </select>

  <textarea name="feedback">Enter feedback</textarea>

  <input type="submit" value="Submit">
</form>
```

Input Types: text, radio, checkbox, password, email, date, etc.

8. Semantic Tags

Semantic tags improve accessibility and structure by defining the purpose of sections.

```
<header>
  <h1>Site Header</h1>
</header>

<main>
  <article>
    <h2>Blog Post</h2>
    <p>Article content...</p>
  </article>
  <aside>
    <p>Sidebar info</p>
  </aside>
</main>

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

Other Semantic Tags:

- `<section>`,
- `<nav>`,
- `<figure>`,
- `<figcaption>`

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9. Best Practices

- Always use semantic tags when possible.

- Use lowercase for tag names and attributes.

- Indent code for readability.

- Provide `alt` text for images.

- Validate code using [W3C Validator](#)

- Avoid deprecated tags like `<font>`, `<center>`

- Use comments `<!-- like this -->` to annotate code.

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10. Conclusion

HTML is the foundation of all web pages. Mastering tags, attributes, structure, and best practices will allow you to create well-structured, accessible, and SEO-friendly websites.

Keep practicing with projects, validate your code, and explore how HTML integrates with CSS and JavaScript for full web development mastery.