Unit-2
Hypertext Markup Language (HTML)

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1. Introduction to HTML

HTML (Hypertext Markup Language) is the foundational language for creating web pages. It uses a system of tags to define the structure and content of a webpage. HTML documents are essentially a collection of elements that tell the browser how to display text, images, links, forms, and other content.
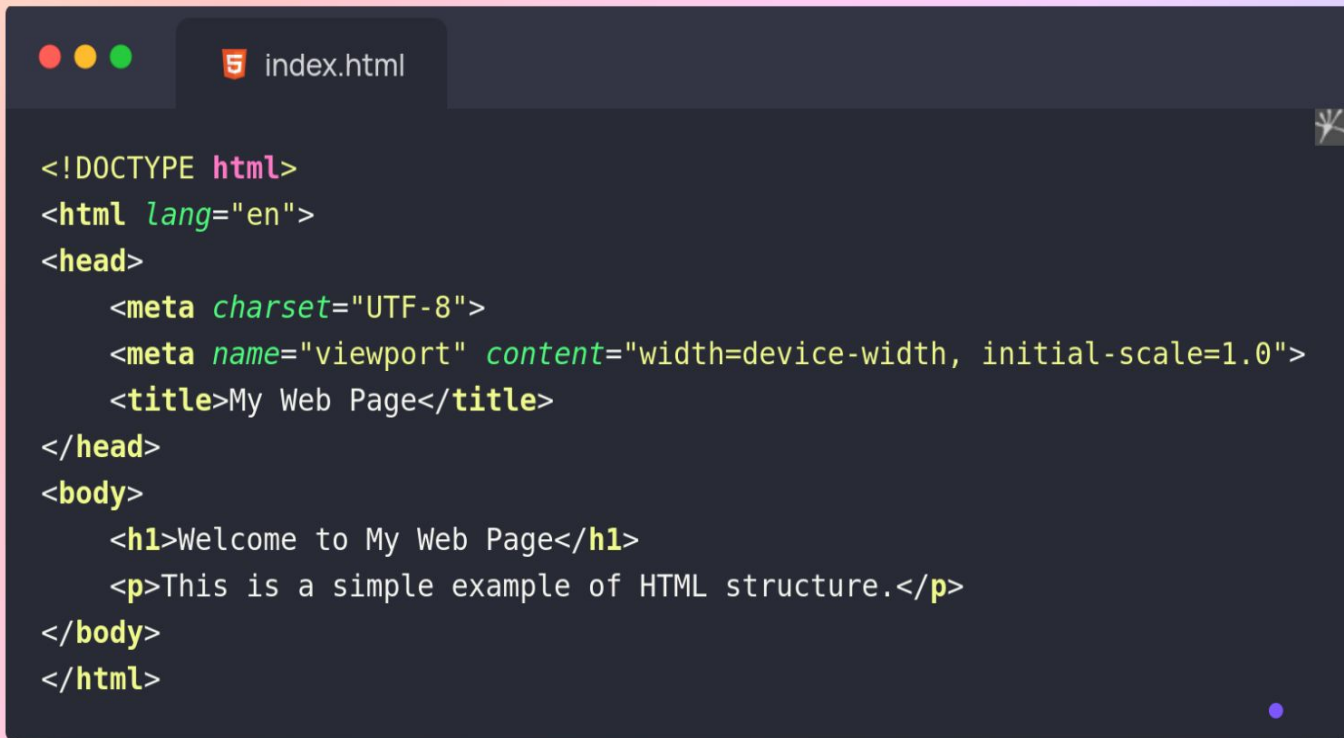
Key Points:
1. HTML is the backbone of web development.
2. It allows developers to structure content in a meaningful way.
3. It works in combination with CSS (for styling) and JavaScript (for interactivity).

2. Basic Structure of HTML

An HTML document has a basic structure that must include certain key elements.

- ❖ <html>
  - ➢ The root element that contains all HTML content.
- ❖ <head>
  - ➢ Contains metadata and links to external resources such as stylesheets and scripts.
- ❖ <title>
  - ➢ Defines the title of the webpage that appears in the browser's title bar or tab.
- ❖ <body>
  - ➢ Contains the visible content of the webpage that users see.

```html
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>My Web Page</title>
</head>
<body>
    <h1>Welcome to My Web Page</h1>
    <p>This is a simple example of HTML structure.</p>
</body>
</html>
```

3. BODY Attributes

The <body> tag, which contains the visible content of the web page, can have several attributes to modify its appearance.

1. Forecolor (TEXT): Defines the color of text within the <body>
   - ➢ Example: <body text="blue">

2. Background Color (BGCOLOR): Sets the background color of the page.
   - ➢ Example: <body bgcolor="#f0f0f0">

3. Background Image: Allows you to set an image as the background of the page.
   - ➢ Example: <body background="background.jpg">

4. Background Sound: Plays an audio file in the background.
   - ➢ Example: <body background="audiofile.mp3">

4. HTML Elements

An HTML element is a complete unit of content that consists of:

❖ Opening tag: Denoted by <tagname>.

❖ Content: The content between the tags.

❖ Closing tag: Denoted by </tagname>.

Example:
<p>This is a paragraph.</p>

5.1. HTML TAGS and Attributes

HTML tags define the structure of the content, while attributes provide additional information about those tags.

1) Singular Tags: These tags do not have a closing tag and are self-contained.

   ➢ Example: <img>, <br>, <hr>

   ➢ <img>: Used to embed images.

   ➢ <img src="image.jpg" alt="Description of Image">

2) Paired Tags: These tags have both an opening and a closing tag.

   ➢ Example: <p>...</p>, <h1>...</h1>, <a>...

   ➢ <p>: Represents a paragraph of text.

   ➢ <p>This is a paragraph.</p>

5.2. Attributes of HTML Tags

Attributes provide extra information about HTML elements. They are always included inside the opening tag. Common attributes include:

❖ src: Specifies the source of an image, audio, or video.

❖ href: Specifies the destination URL for hyperlinks.

❖ class: Assigns a class to an element, typically used for CSS styling.

❖ id: Uniquely identifies an element on the page.

Example with attributes:
Visit Example

6. Character Formatting in HTML

❖ HTML provides various tags and attributes to format and organize text on a webpage, making it easier to control text style, alignment, and other formatting properties.

❖ Here's a breakdown of the key tags and attributes for character formatting.

6.1. Heading Tag and Attribute (ALIGN)

Headings are used to define titles and subtitles, and HTML offers six levels of headings:

- ❖   <h1>: Largest and most important heading.
- ❖   <h6>: Smallest and least important heading.

Headings also support the align attribute, though it's less commonly used now, as CSS is preferred for alignment.

Example:

```
<h1 align="center">Main Heading</h1>
<h2 align="left">Subheading</h2>
<h3 align="right"> I am h3 heading </h3>
```

6.2. Paragraph Tag (<p>) and Attribute (ALIGN)

❖   The <p> tag is used to define a paragraph of text. You can control text alignment within a paragraph using the align attribute (e.g., left, right, center).

❖   Example:

```
<p align="justify">
    This paragraph is justified. Text alignment is often handled using CSS today, but
the align attribute can also work.
</p>
```

6.3. Line Break (<br>)

❖   The <br> tag creates a line break within the text, which is useful for spacing without starting a new paragraph. This tag is self-closing.

❖   Example:

```
<p>This is the first line.<br>This is the second line after a break.</p>
```

6.4. Horizontal Rule (<hr>) and Attributes (ALIGN, SIZE, WIDTH, NOSHADE)

The <hr> tag creates a horizontal line, often used to separate content sections. Several attributes are available:

- ❖ align: Specifies alignment (e.g., left, center, right).
- ❖ size: Defines the thickness of the line.
- ❖ width: Sets the width of the line as a percentage or a specific pixel value.
- ❖ noshade: Removes the default shading for a solid line.

Example:

```
<hr align="center" size="5" width="50%" noshade>
```

6.5. Comment in HTML (<!— -->)

Comments are notes for developers that are not displayed on the web page. They are helpful for leaving instructions or explanations in the code.

Example:

```
<!-- This is a comment in HTML and will not be displayed on the page -->
<p>This is visible text.</p>
```

Text Formatting Tags

HTML includes several tags for formatting text to enhance readability and emphasis.

❖   `<b>`: Bold text.

    ➢   Example: `<b>This text is bold.</b>`

❖   `<i>`: Italic text.

    ➢   Example: `<i>This text is italicized.</i>`

❖   `<u>`: Underlined text.

    ➢   Example: `<u>This text is underlined.</u>`

❖   `<blockquote>`: Indents a block of text for quotations.

    ➢   Example: `<blockquote>This is a long quotation or excerpt.</blockquote>`

❖   `<q>`: Inline quotation, typically adds quotation marks around text.

    ➢   Example: `<q>This is an inline quote.</q>`

❖ **<pre>**: Preformatted text preserves whitespace and line breaks.
```
<pre>
    This text
   is preformatted.
</pre>
```

❖ **<sub>**: Subscript text (text appears lower than the regular text line).
```
H<sub>2</sub>O
```

❖ **<sup>**: Superscript text (text appears higher than the regular text line).
```
E = mc<sup>2</sup>
```

❖ **<em>**: Emphasized text, usually rendered as italic.
```
<em>Important text</em>
```

❖ **<strike>**: Strikethrough text (deprecated, <s> or CSS is preferred).
```
<strike>Incorrect text</strike>
```

❖ **<small>**: Smaller text.
```
<small>This text is smaller.</small>
```

❖ **<big>**: Larger text (not commonly used in modern HTML).
```
<big>This text is larger.</big>
```

❖ **<center>**: Centers the text or content (deprecated; CSS text-align: center is preferred).
```
<center>This text is centered.</center>
```

7. FONT Tag and Attributes (COLOR, FACE, and SIZE)

The tag is used to style the text in terms of color, font face, and size. Although it has been deprecated in favor of CSS, it can still be found in older HTML code.

❖ color: Specifies the color of the text.
❖ face: Defines the font family (e.g., Arial, Times New Roman).
❖ size: Sets the size of the text on a scale from 1 to 7, where 3 is the default.

Example:

This is styled text

8. List Tags and Attributes

Lists help to organize content in a structured and readable manner. HTML offers three main types of lists.

- Ordered List (<ol>, <li>) and Attributes
  - An ordered list displays items in a numbered or lettered sequence.
  - : Creates the ordered list container.
  - : Defines each item in the list.
  - Attributes of <ol>:
    - type: Specifies the numbering style (1, A, a, I, i).
    - start: Sets the starting point of the list.
    - value (on <li>): Overrides the list count for individual items.
  - Example:
    ```
    <ol type="A" start="3">
         <li>Item 1</li>
        <li>Item 2</li>
    </ol>
    ```

- **Unordered List (<ul>, <li>) and Attributes**
  - ➢ Unordered lists display items with bullets or other markers.
  - ➢ : Creates the unordered list container.
  - ➢ : Represents each item in the list.
  - ➢ Attributes of <ul>:
    - ■ type: Specifies the bullet style (disc, circle, square).

- **Definition List (<dl>, <dt>, <dd>)**
  - ➢ A definition list is used to group terms and descriptions.
  - ➢ <dl>: Contains the list of terms and descriptions.
  - ➢ <dt>: Represents a term or item.
  - ➢ <dd>: Describes or defines the term.

Example:
```
<ul type="circle">
    <li>First item</li>
    <li>Second item</li>
</ul>
```

Example:
```
<dl>
    <dt>HTML</dt>
    <dd>Hypertext Markup Language</dd>
    <dt>CSS</dt>
    <dd>Cascading Style Sheets</dd>
</dl>
```

9. Inserting Images and Objects

HTML allows embedding of images and multimedia content to enhance web pages

9.1. Images (<img>) and Attributes

The <img> tag displays images within a web page.

❖ align: Aligns the image with text (deprecated).
❖ src: Specifies the image file location.
❖ width and height: Sets image dimensions in pixels or percentage.
❖ alt: Alternate text for accessibility.
❖ border: Adds a border around the image.

Example:

<img src="image.jpg" alt="Example Image" width="200" height="150" border="1">

9.2. Objects (<object>) and Attributes

The <object> tag is used to embed multimedia, such as videos, PDFs, or other web resources.

- ❖ data: Specifies the URL of the object.
- ❖ width and height: Sets the object's dimensions.

Example:

<object data="example.pdf" width="400" height="500"></object>

10. MARQUEE Tag and Attributes

The <marquee> tag creates scrolling text or images across the screen, though it's deprecated and should be replaced with CSS animations in modern HTML.

Attributes:

- ❖   direction: Specifies the direction (left, right, up, down).
- ❖   scrollamount: Speed of the scroll.
- ❖   behavior: Defines the type of scroll (scroll, slide, alternate).
- ❖   loop: Number of times the marquee will scroll.

Example:
```
<marquee direction="left" scrollamount="5" behavior="scroll" loop="10">
    Welcome to our website!
</marquee>
```

11. HYPERLINK and Anchor Tag

Hyperlinks in HTML allow navigation to other web pages, sections within a page, or other online resources. The <a> (anchor) tag is used to create these hyperlinks.

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11.1. Creating Internal Links: Links to Other Places in the Same HTML Document

Internal links navigate to different sections within the same document, using the id attribute to mark target locations.

Example:

❖ Define the target section with an id attribute:

      `<h2 id="section1">Section 1</h2>`

❖ Create a link to jump to the section:

      `<a href="#section1">Go to Section 1</a>`

11.2. Creating Local Links: Links to Other HTML Documents or Data Objects

Local links navigate to other files in the same directory or nearby folders. They are often used to link to other pages of a website.

Example:

About Us

Download Sample PDF

11.3. Creating Global Links: Links to Places in Other HTML Documents

Global links point to resources on other websites, requiring a full URL.

Example:

Visit Example Website

❖ target="_blank": Opens the link in a new tab.

11.4. Anchor Tag and Hyperlink (<A HREF TARGET> and <A NAME>)

Link Text: The href attribute specifies the URL, and the target attribute defines where the link opens.

     target="_self": Opens in the same tab (default).

     target="_blank": Opens in a new tab.

     target="_parent": Opens in the parent frame.

     target="_top": Opens in the full body of the window.

<a name="anchorname">: Used to define an anchor point in the document, which other links can target.

11.5. Creating Image Links

Images can also function as clickable links using the <a> tag.

Example:

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

    <img src="logo.png" alt="Example Logo" width="100" height="100">

</a>
```

12. TABLE Tag

The <table> tag is used to create a table layout, structuring data in rows and columns.

12.1. Creating TABLE, TR, TH, and TD Tags and Attributes

❖ TABLE: The <table> element defines the container for a table.
❖ TR: The <tr> tag creates a new row in the table.
❖ TH: The <th> tag defines a header cell, typically displayed in bold.
❖ TD: The <td> tag represents a standard data cell.
❖ Example:

```
<table>
   <tr>
      <th>Header1</th>
      <th>Header2</th>
   </tr>
   <tr>
      <td>Row 1, Cell 1</td>
      <td>Row 1, Cell 2</td>
   </tr>
</table>
```

TABLE Tag Attributes:

- ❖   ALIGN: Aligns the table or cell content (left, center, right).
- ❖   CELLSPACING: Specifies the space between cells.
- ❖   CELLPADDING: Sets the padding inside cells.
- ❖   BORDER: Defines the thickness of the table border.
- ❖   WIDTH: Specifies the width of the table.
- ❖   BGCOLOR: Sets the background color for the table or cells.
- ❖   COLSPAN: Merges multiple columns within a single cell.
- ❖   ROWSPAN: Merges multiple rows within a single cell.
- ❖   CAPTION: Adds a title or description to the table.
- ❖   CENTER: Centers the table on the page.

Example:

```
<table border="1" cellpadding="5" cellspacing="5" width="50%">
    <caption>Sample Table</caption>
    <tr>
        <th colspan="2" bgcolor="#ddd">Header</th>
    </tr>
    <tr>
        <td>Row 1, Cell 1</td>
        <td>Row 1, Cell 2</td>
    </tr>
</table>
```

13. FRAME and FRAMESET Tags

The <frameset> and <frame> tags are used to divide a browser window into multiple sections, each capable of displaying a different HTML document.

13.1. FRAMESET Tag and Attributes

❖ FRAMESET: Defines the structure for frames, dividing the window into rows or columns.
❖ ROWS and COLS: Specify the number and size of rows or columns in the frameset.
❖ Dimensions:
  ➢ Absolute: Sets exact pixel values.
  ➢ Percentage: Defines frame sizes as percentages of the window.
  ➢ Relative: Allocates remaining space proportionally.
❖ Example:

```
<frameset rows="30%, 70%">
    <frame src="header.html">
    <frame src="content.html">
</frameset>
```

13.2. FRAME Tag and Attributes

❖ FRAME: Loads content within a specified frame area.

❖ SRC: Defines the file to be displayed in the frame.

❖ NAME: Assigns a name to the frame for targeting with hyperlinks.

❖ MARGINHEIGHT and MARGINWIDTH: Set the frame's top/bottom and left/right margins.

❖ SCROLLING: Enables or disables scrolling within the frame (auto, yes, no).

❖ NORESIZE: Prevents the user from resizing the frame.

❖ Example:

```
<frame src="sidebar.html" name="sideFrame" scrolling="no" noresize>
```

13.3. NOFRAMES Tag

The <noframes> tag provides alternate content for users whose browsers do not support frames, ensuring accessibility and usability.

Example:

```
<noframes>

   <p>Your browser does not support frames. Please use a modern browser.</p>

</noframes>
```

14. HTML FORM

- The HTML <form> element is used to create interactive forms for collecting user input.
- HTML forms facilitate the collection of user inputs and submission to a server for processing.
- Example:

```
<form action="/submit-form" method="post" target="_blank">
    <!-- Form elements go here -->
</form>
```

14.1. FORM Tag and Attributes

FORM: The <form> tag creates a container for input fields and submission controls.

Attributes:
- ❖ METHOD: Defines how the form data is sent.
  - ➢ GET: Appends form data to the URL, visible in the address bar.
  - ➢ POST: Sends data in the request body, more secure for sensitive information.
- ❖ ACTION: Specifies the server URL where the form data will be sent.
- ❖ TARGET: Determines how the response is displayed.
  - ➢ _self: Default, displays in the same tab.
  - ➢ _blank: Opens in a new tab.
  - ➢ _parent: Displays in the parent frame.
  - ➢ _top: Displays in the full browser window.

14.2. INPUT Element and Attributes

The <input> element allows users to enter data, with different types available through the type attribute. Types:

- ❖ TEXT: Single-line text input.
- ❖ PASSWORD: Concealed text input for passwords.
- ❖ CHECKBOX: A box that can be checked or unchecked.
- ❖ HIDDEN: Stores hidden data within the form.
- ❖ IMAGE: An image as a clickable form element.
- ❖ FILE: Allows file selection for upload.
- ❖ RANGE: Slider for selecting a numeric value within a range.
- ❖ RADIO: Selectable circle option (used in groups).
- ❖ RESET: Resets form fields to their default values.
- ❖ SUBMIT: Submits the form data.
- ❖ BUTTON: A clickable button.

Attributes:

❖ VALUE: Sets the default value of the input.

❖ SRC: Specifies the URL of an image input.

❖ CHECKED: Indicates a checkbox or radio button is pre-selected.

❖ SIZE: Defines the width of the text input in characters.

❖ MAXLENGTH: Limits the number of characters in a text input.

❖ ALIGN: Aligns the input element (deprecated in HTML5).

Examples:

```
<input type="text" name="username" size="20" maxlength="50">
<input type="checkbox" name="subscribe" checked> Subscribe to newsletter
```

14.3. SELECT, OPTION Tag and Attributes

The <select> element creates a drop-down list, with <option> elements as individual selectable items.

❖ Attributes:
  ➢ NAME: Defines the name of the drop-down list for data submission.
  ➢ SIZE: Sets the number of visible options (a larger size creates a list box).
  ➢ MULTIPLE: Allows selection of multiple options.
  ➢ SELECTED: Pre-selects a specific option.
❖ Example:
```
<select name="color" size="1" multiple>
    <option value="red">Red</option>
    <option value="blue" selected>Blue</option>
    <option value="green">Green</option>
</select>
```

14.4. TEXT AREA Tag and Attributes

The <textarea> tag is used for multi-line text input fields.

Attributes:

- ❖ ROWS: Specifies the number of visible text lines.
- ❖ COLS: Sets the width of the text area in characters.
- ❖ READONLY: Makes the text area content non-editable.
- ❖ DISABLED: Disables the text area from user interaction.

Example:

```
<textarea name="comments" rows="5" cols="30" readonly>This is test.</textarea>
```