

HTML/HTML

1. Introduction to HTML

- **HTML** (Hypertext Markup Language) is the standard language for creating web pages.
- It describes the structure of a webpage using markup tags.
- The file extension for HTML files is .html or .htm.

Basic Structure of an HTML Document

```
<!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>
```

```
<h1>Welcome to HTML</h1>
```

```
<p>This is a simple HTML document.</p>
```

```
</body>
```

```
</html>
```

2. HTML Tags

- **HTML tags** are the building blocks of an HTML document.
- Tags are written inside angle brackets, like <tagname>.
- HTML tags can be of two types:

- **Paired tags:** <h1>content</h1>
- **Self-closing tags:**

Common HTML Tags

Tag	Description	Example
<!DOCTYPE >	Declares the HTML document type	<!DOCTYPE html>
<html>	Root element of the HTML document	<html>...content...</html>
<head>	Contains metadata and links	<head><title>Page Title</title></head>
<title>	Specifies the page title	<title>My Web Page</title>
<body>	Contains the visible content	<body>...content...</body>
<h1> to <h6>	Headings from largest to smallest	<h1>Main Title</h1>
<p>	Paragraph of text	<p>This is a paragraph.</p>
	Bold text	Bold Text
<i>	Italic text	<i>Italic Text</i>
<u>	Underlined text	<u>Underlined Text</u>
<a>	Hyperlink to another page	Visit
	Embeds an image	

<video>	Embeds a video	<code><video controls><source src="video.mp4"></video></code>
<audio>	Embeds an audio file	<code><audio controls><source src="audio.mp3"></audio></code>
	Unordered list	<code>Item 1Item 2</code>
	Ordered list	<code>Step 1Step 2</code>
	List item	<code>Item</code>
<table>	Table structure	<code><table><tr><td>Data</td></tr></table></code>
<tr>	Table row	<code><tr>...row content...</tr></code>
<th>	Table header	<code><th>Header</th></code>
<td>	Table data	<code><td>Data</td></code>
<iframe>	Embeds external content	<code><iframe src="https://example.com"></iframe></code>
<embed>	Embeds external media files	<code><embed src="file.swf"></code>
<meta>	Metadata about the document	<code><meta charset="UTF-8"></code>
<link>	Links to an external stylesheet	<code><link rel="stylesheet" href="styles.css"></code>
<script>	Embeds JavaScript code	<code><script>console.log("Hello");</script></code>

<style>	Embeds internal CSS	<code><style>body { background-color: #f0f0f0; }</style></code>
	Deprecated; changes font style	<code>Text</code>
<center>	Deprecated; centers content	<code><center>Centered Text</center></code>
<big>	Deprecated; enlarges text size	<code><big>Big Text</big></code>

3. HTML5 New Features

HTML5 introduced new tags and features to improve web development.

New Semantic Tags

Tag	Description
<header>	Defines the header section
<footer>	Defines the footer section
<article>	Self-contained article content
<section>	Section in a document
<nav>	Navigation links
<aside>	Sidebar content

<main>	Main content of the page
<figure>	Contains images, diagrams, etc.
<figcaption>	Caption for <figure>
<mark>	Highlights text
<time>	Date or time information

4. Forms in HTML

HTML forms are used to collect user input and send it to a server.

Common Form Elements

Tag	Description	Example
<form>	Form container	<code><form action="submit.php"></code>
<input>	Input field	<code><input type="text"></code>
<textarea>	Multi-line text input	<code><textarea></textarea></code>
<button>	Button	<code><button>Submit</button></code>
<select>	Dropdown list	<code><select><option>Option</option></select></code>
<option>	Dropdown option	<code><option>Option 1</option></code>

<label>	Label for input	<code><label for="name">Name</label></code>
<fieldset>	Group related inputs	Wraps input fields together
<legend>	Title for fieldset	Title of fieldset

5. Multimedia Elements

HTML5 introduced support for audio and video.

Audio Tag

`<audio controls>`

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

Your browser does not support the audio element.

`</audio>`

Video Tag

`<video controls width="320" height="240">`

`<source src="video.mp4" type="video/mp4">`

Your browser does not support the video tag.

`</video>`

6. HTML Attributes

Attributes provide additional information about an element.

Global Attributes

Attribute	Description
class	Specifies the CSS class
id	Unique identifier
style	Inline CSS styles

title	Tooltip text
lang	Language of the document
tabindex	Keyboard tab order

Boolean Attributes

These attributes do not require a value, e.g., disabled, readonly, checked.

`<input type="checkbox" checked>`

7. HTML Comments

Comments help developers understand the code. They do not affect the web page.

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

8. Doctype Declaration

HTML5 uses `<!DOCTYPE html>` to tell the browser to use the latest HTML version.

9. Conclusion

- HTML is essential for web development.
- HTML5 introduced modern tags, multimedia, and APIs to improve web applications.
- Mastering HTML is the first step toward becoming a web developer.

CSS & CSS3

1. Introduction to CSS

- **CSS** (Cascading Style Sheets) is used to style HTML elements and control the layout of web pages.
- It separates the content (HTML) from the presentation (CSS).
- CSS can be added in three ways:
 - **Inline CSS**: Inside an HTML element using the style attribute.
 - **Internal CSS**: Inside a <style> tag within the <head> section.
 - **External CSS**: In an external file with a .css extension linked via a <link> tag.

Example of External CSS

```
<!DOCTYPE html>
<html lang="en">
  <head>
    <link rel="stylesheet" href="styles.css">
  </head>
  <body>
    <h1 class="title">Welcome to CSS</h1>
    <p class="content">This is a simple paragraph styled with external CSS. </p>
  </body>
</html>
```

styles.css

```
.title {
    color: blue;
    font-size: 24px;
}

.content {
    color: gray;
    line-height: 1.6;
}
```


2. Selectors in CSS

CSS selectors are used to target HTML elements for styling.

Types of Selectors

Selector	Example	Description
Universal	<code>* { margin: 0; }</code>	Targets all elements
Element	<code>h1 { color: red; }</code>	Targets all <code><h1></code> tags
Class	<code>.title { font-size: 20px; }</code>	Targets elements with <code>class="title"</code>
ID	<code>#header { background: #333; }</code>	Targets an element with <code>id="header"</code>
Group	<code>h1, h2, h3 { color: blue; }</code>	Styles multiple elements at once
Attribute	<code>input[type='text'] { }</code>	Targets input fields of type text
Pseudo-class	<code>a:hover { color: red; }</code>	Targets elements during a specific state

Pseudo-element	<code>p::first-line {}</code>	Styles the first line of a paragraph
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3. CSS Properties

CSS properties are used to style elements.

Text and Font Properties

Property	Description	Example
color	Sets text color	<code>color: red;</code>
font-size	Sets font size	<code>font-size: 16px;</code>
font-weight	Sets boldness of text	<code>font-weight: bold;</code>
text-align	Aligns text horizontally	<code>text-align: center;</code>
text-decoration	Underline, overline, or none	<code>text-decoration: underline;</code>
letter-spacing	Space between characters	<code>letter-spacing: 2px;</code>

Box Model Properties

The CSS box model includes **margin**, **border**, **padding**, and **content**.

Property	Description	Example
----------	-------------	---------

margin	Space outside the element	margin: 10px;
padding	Space inside the element	padding: 20px;
border	Border around the element	border: 1px solid #000;
width	Sets the width of an element	width: 100px;
height	Sets the height of an element	height: 100px;

Background and Color Properties

Property	Description	Example
background-color	Sets background color	background-color: #f4f4f9;
background-image	Sets background image	background-image: url('bg.jpg');
background-size	Specifies size of the background	background-size: cover;
background-position	Sets position of the background	background-position: center;

background-repeat	Repeat or no-repeat background	background-repeat: no-repeat;
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4. Flexbox and Grid Layout

CSS Flexbox and Grid are layout systems used to design modern web pages.

Flexbox

Property	Description	Example
display: flex;	Enables flex layout	display: flex;
justify-content	Aligns items horizontally	justify-content: space-between;
align-items	Aligns items vertically	align-items: center;
flex-direction	Defines direction of items	flex-direction: column;
align-content	Aligns items in a flex container along flex lines	align-content: stretch.
align-self	Aligns an item inside a flex container.	align-self: auto;

Grid

Property	Description	Example
display: grid;	Enables grid layout	display: grid;
grid-template-columns	Defines column layout	grid-template-columns: 1fr 1fr;
grid-gap	Space between items	grid-gap: 20px;

5. Transitions and Animations

Property	Description	Example
transition	Adds smooth changes	transition: all 0.3s ease;
animation	Used for animations	animation: move 2s infinite;

Keyframe Example

```
@keyframes move {  
  0% { transform: translateX(0); }  
  100% { transform: translateX(100px); }  
}  
.box {  
  animation: move 2s infinite;  
}
```

6. Media Queries

Media queries enable responsive design for different screen sizes.

```
@media (max-width: 768px) {  
  
  body {
```

```
background-color: lightblue;

}

}
```

7. CSS3 New Features

CSS3 introduced new features like **shadows**, **gradients**, **transitions**, and **animations**.

New Properties in CSS3

Property	Description	Example
border-radius	Rounds corners	border-radius: 10px;
box-shadow	Adds shadow to elements	box-shadow: 2px 2px 5px gray;
gradient	Background gradient	background: linear-gradient(red, yellow);
transform	Transforms elements	transform: rotate(45deg);
z-index	Sets the vertical stacking order relative to other elements.	z-index: 100;

8. CSS Border Property

The border property in CSS allows you to add, style, and customize borders around HTML elements. You can define the width, style, and color of the border.

Property	Description	Example
----------	-------------	---------

border	Shorthand for width, style, color	border: 2px solid red;
border-width	Sets the width of the border	border-width: 5px;
border-style	Sets the style of the border	border-style: dashed;
border-color	Sets the color of the border	border-color: blue;
border-top	Sets the top border	border-top: 2px solid red;
border-right	Sets the right border	border-right: 4px dotted green;
border-bottom	Sets the bottom border	border-bottom: 6px double blue;
border-left	Sets the left border	border-left: 8px groove black;
border-radius	Rounds the corners of the border	border-radius: 10px;
border-image	Sets an image border	border-image: url('img.png') 30;

10. Conclusion

- CSS and CSS3 are essential for creating visually appealing web pages.
- Key concepts include selectors, properties, layouts, animations, and media queries.
- Mastering CSS allows for the creation of responsive, modern, and interactive web applications.