Full-Stack Web Development

HTML: The Web's Skeleton

1. What is HTML?

HTML, or HyperText Markup Language, is the standard language for creating web pages. It provides the structure and content of a webpage using a system of tags. Think of it as the bones of a website.

- **Example:**

HTML

<h1>My First Heading</h1>

<p>My first paragraph.</p>

Here, <h1> and <p> are tags that give meaning to the text they contain.

2. What are tags and elements?

An element is a part of a webpage, created by using an HTML tag. A tag typically has an opening and closing part, like <p> and </p>. The content between these tags, including the tags themselves, forms an element.

CSS: The Web's Style

1. What is CSS?

CSS, or Cascading Style Sheets, is the language used for describing the presentation of a web page. It controls the colors, fonts, layout, and overall visual appearance. CSS is the "skin" or "clothing" of the website.

2. How do you link CSS to HTML?

You can link CSS to an HTML file in three main ways:

- **Inline:** Using the style attribute directly on an HTML element.

- **Internal:** Placing CSS code inside a <style> tag within the <head> section of the HTML document.

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- **External:** Linking to a separate .css file using the <link> tag. This is the most common and recommended method for larger projects.

3. What is a CSS selector?

A selector is a pattern used to select the HTML elements you want to style. Examples include:

- **Element Selector:** p { color: blue; } (styles all <p> elements).

- **Class Selector:** .my-class { font-size: 16px; } (styles all elements with class="my-class").

- **ID Selector:** #my-id { background-color: lightgray; } (styles the single element with id="my-id").

JavaScript: The Web's Brain

1. What is JavaScript?

JavaScript is a programming language that allows you to create dynamic and interactive effects on web pages. It handles the logic and behavior, making the website "smarter." It's the "nervous system" of the website.

2. What is the DOM?

The Document Object Model (DOM) is a programming interface for HTML. It represents the page so that programs (like JavaScript) can change the document structure, style, and content. When you use JavaScript to find an element or change its text, you're interacting with the DOM.

3. What is an event?

An event is an action that happens on a web page, such as a user clicking a button, hovering over an image, or pressing a key. JavaScript can "listen" for these events and execute a function in response. This is how you make a page interactive.

- **Example:**

JavaScript

```
document.getElementById("myButton").addEventListener("click", function() {
  alert("Button was clicked!");
```

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});

This code waits for a "click" event on an element with the ID myButton and then shows an alert.

Integration: How They Work Together

1. How do HTML, CSS, and JavaScript work together?

They are interdependent.

- **HTML** provides the raw content (text, images, forms).

- **CSS** applies styling to that content (colors, layout, fonts).

- **JavaScript** adds interactivity and functionality, responding to user actions and manipulating the content and style as needed.

2. How is JavaScript linked to HTML?

You can link a JavaScript file using the <script> tag. The best practice is to place this tag at the end of the <body> section. This ensures that the HTML content is loaded and structured before the script tries to manipulate it.

- **Example:**

HTML

<body>

  <p id="greeting">Hello!</p>

  <script src="my-script.js"></script>

</body>

This links the my-script.js file, which can then access and modify the paragraph with the ID greeting.

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