**HTML:**

HTML (HyperText Markup Language) is the standard language used for creating webpages.

**1. Elements:**

* HTML is made up of elements. Elements are the building blocks of a webpage.
* An element typically consists of an **opening tag**, **content**, and a **closing tag**.
* Example: <p>This is a paragraph.</p>

**2. Tags:**

* **Tags** are used to define elements. Tags are enclosed in angle brackets (< >).
* Common tags include <div>, <h1>, <a>, <img>, <p>, and many more.
* Every tag has an opening (<tag>) and closing (</tag>) version, except for **self-closing tags** like <img />.

**3. Attributes:**

* Tags can have **attributes** that provide additional information or modify the behavior of an element.
* Attributes are placed inside the opening tag.
* Common attributes: id, class, src, href, alt, style, etc.
* Example: <img src="image.jpg" alt="A description of the image" />

**4. Nesting:**

* HTML elements can be **nested** inside other elements to create complex structures.
* Example:

<div>

<h1>Welcome</h1>

<p>This is a sample webpage.</p>

</div>

**5. DOCTYPE Declaration:**

* The <!DOCTYPE html> declaration is used at the top of an HTML document to define the HTML version being used (HTML5 in modern cases).
* It helps the browser render the page correctly.

Example:

<!DOCTYPE html>

<html lang="en">

**6. HTML Structure:**

* A basic HTML document structure:

<!DOCTYPE html>

<html lang="en">

<head>

<meta charset="UTF-8">

<meta name="viewport" content="width=device-width, initial-scale=1.0">

<title>Page Title</title>

</head>

<body>

<!-- Content of the page goes here -->

</body>

</html>

* **<head>**: Contains metadata, links to external resources (like stylesheets), and the title of the page.
* **<body>**: Contains the visible content of the page, like text, images, and links.

**7. Headings and Paragraphs:**

* HTML uses heading tags (<h1> to <h6>) to define headings, where <h1> is the most important, and <h6> is the least important.
* Paragraphs are defined with <p>.

**8. Links:**

* Links to other pages or resources are created using the <a> tag, with the href attribute specifying the destination.

html

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<a href="https://example.com">Click Here</a>

**9. Images:**

* Images are added with the <img> tag, which uses the src attribute to define the image path.

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

**10. Forms:**

* Forms are created using the <form> tag and include input elements like <input>, <select>, and <textarea> to collect user data.

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<form action="/submit" method="POST">

<label for="name">Name:</label>

<input type="text" id="name" name="name">

<input type="submit" value="Submit">

</form>

**11. Semantic HTML:**

* HTML5 introduced **semantic elements** to make the structure of the page clearer and more meaningful for both browsers and developers. Examples include:
* **Semantic elements** in HTML5 are HTML tags that have clear, descriptive meanings about the content they contain. They improve the structure and readability of a webpage, making it easier for both developers and machines (like search engines or screen readers) to understand the page. Unlike generic elements such as <div> and <span>, which do not describe the content they enclose, semantic elements clearly convey the role of the content within. This improves accessibility, search engine optimization (SEO), and overall user experience.

**<header>** for the page or section header,

**<footer>** for the footer content,

**<article>** for a self-contained piece of content,

**<section>** for a thematic grouping of content,

**<nav>** for navigation links,

**<main>** for the primary content of the page.

**12. Lists:**

* There are two main types of lists:
  + **Ordered lists** (<ol>) for numbered items.
  + **Unordered lists** (<ul>) for bulleted items.
  + List items are created with the <li> tag.

<ul>

<li>Item 1</li>

<li>Item 2</li>

</ul>

**13. Tables:**

* Tables are created using the <table>, <tr> (table row), <td> (table data), and <th> (table header) tags.

html

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<table>

<tr>

<th>Header 1</th>

<th>Header 2</th>

</tr>

<tr>

<td>Data 1</td>

<td>Data 2</td>

</tr>

</table>

**14. Comments:**

* HTML comments are enclosed in <!-- --> and are used to annotate the code.

<!-- This is a comment -->

**HTML and HTML5**

HTML and HTML5 are both versions of the same markup language used to create webpages, but HTML5 is the latest version that introduced several improvements and new features. Here's a comparison to highlight the differences:

**1. Doctype Declaration:**

* **HTML**: In earlier versions of HTML (like HTML 4.01), the doctype declaration was more complex:

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<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN" "http://www.w3.org/TR/html4/loose.dtd">

* **HTML5**: The doctype declaration is simplified:

<!DOCTYPE html>

**2. New Semantic Elements:**

* **HTML**: Relied heavily on <div> and <span> elements, which were non-semantic and didn’t describe the content.
* **HTML5**: Introduced **semantic elements** that provide meaning to the structure of a webpage. These include:
  + <header>, <footer>, <article>, <section>, <nav>, <aside>, and <main>.

**3. Multimedia Support:**

* **HTML**: Required third-party plugins like Flash or QuickTime to embed audio and video content.
* **HTML5**: Introduced built-in support for multimedia with the <audio> and <video> tags, eliminating the need for plugins:

html

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<video controls>

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

</video>

<audio controls>

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

</audio>

**4. Forms and Input Types:**

* **HTML**: Forms were limited to basic input types like text, password, and submit. Validation was also limited.
* **HTML5**: Introduced new input types, attributes, and form features, such as:
  + New input types like email, date, tel, number, range, and color.
  + Attributes for input validation, like required, placeholder, and pattern.

<input type="email" required placeholder="Enter your email">

**5. Canvas and SVG:**

* **HTML**: To create graphics or animations, developers had to rely on plugins like Flash or use third-party JavaScript libraries.
* **HTML5**: Introduced the <canvas> element for drawing graphics dynamically using JavaScript. It also improved support for **Scalable Vector Graphics (SVG)**.

<canvas id="myCanvas" width="200" height="200"></canvas>

**6. Local Storage and Session Storage:**

* **HTML**: Relied on cookies to store small pieces of data on the client side, which had limitations and security issues.
* **HTML5**: Introduced **local storage** and **session storage** to store data more securely and efficiently:
  + **Local Storage**: Stores data with no expiration date.
  + **Session Storage**: Stores data for the duration of the page session.

localStorage.setItem('name', 'John Doe');

**7. Offline Web Apps:**

* **HTML**: Web applications required a constant internet connection.
* **HTML5**: Introduced the **Application Cache** (AppCache) to enable offline web apps. Later, it was replaced by Service Workers for more advanced offline capabilities.

**8. Geolocation API:**

* **HTML**: Did not have a built-in way to access the user's geographical location.
* **HTML5**: Introduced the **Geolocation API**, allowing web pages to get the user's location (with permission):