**HTML Documentation**

**1. HTML Syntax and Structure**

**Basic Structure**

An HTML document is structured in a specific way, starting with a doctype declaration, followed by the html, head, and body elements.

<!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>Hello, World!</h1>

<p>This is a basic HTML document structure.</p>

</body>

</html>

**Explanation:**

* <!DOCTYPE html>: Declares the document type and version of HTML.
* <html lang="en">: The root element of the document, with a language attribute set to English.
* <head>: Contains meta-information about the document, such as the character set and viewport settings.
* <title>: Specifies the title of the document, shown in the browser tab.
* <body>: Contains the content of the document, such as headings and paragraphs.

**Text Formatting Tags**

Text formatting tags are used to format and style text within an HTML document.

<h1>This is a heading</h1>

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

<p><b>Bold text</b> and <i>italic text</i>.</p>

<ul>

<li>Unordered list item 1</li>

<li>Unordered list item 2</li>

</ul>

<ol>

<li>Ordered list item 1</li>

<li>Ordered list item 2</li>

</ol>

<hr>

<p>This is a line break<br>after this sentence.</p>

**Explanation:**

* <h1> to <h6>: Define headings, with <h1> being the highest level and <h6> the lowest.
* <p>: Defines a paragraph.
* <b>: Makes text bold.
* <i>: Italicizes text.
* <ul>: Creates an unordered list.
* <ol>: Creates an ordered list.
* <li>: List items within <ul> or <ol>.
* <hr>: Inserts a horizontal rule (line).
* <br>: Inserts a line break.

**Links and Images**

Links and images are essential for navigation and adding visual content to a webpage.

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

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

<map name="image-map">

<area shape="rect" coords="34,44,270,350" alt="Area 1" href="https://www.example1.com">

<area shape="circle" coords="100,100,60" alt="Area 2" href="https://www.example2.com">

</map>

<img src="image-map.jpg" usemap="#image-map" alt="Image with clickable areas">

**Explanation:**

* <a href="URL">: Creates a hyperlink to the specified URL.
* <img src="URL" alt="description">: Embeds an image. The alt attribute provides alternative text for accessibility.
* <map> and <area>: Define an image map, where specific areas of an image are clickable.

**Tables**

Tables are used to organize data into rows and columns.

<table>

<caption>Monthly Savings</caption>

<tr>

<th>Month</th>

<th>Savings</th>

</tr>

<tr>

<td>January</td>

<td>$100</td>

</tr>

<tr>

<td>February</td>

<td>$80</td>

</tr>

</table>

**Explanation:**

* <table>: Defines a table.
* <caption>: Provides a title or caption for the table.
* <tr>: Defines a row in the table.
* <th>: Defines a header cell.
* <td>: Defines a standard data cell.

**Forms**

Forms collect user input and send it to a server for processing.

<form action="/submit-form" method="post">

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

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

<label for="email">Email:</label>

<input type="email" id="email" name="email" required>

<textarea id="message" name="message" placeholder="Your message" required></textarea>

<button type="submit">Submit</button>

</form>

**Explanation:**

* <form action="URL" method="post">: Defines a form that sends data to the specified URL using the POST method.
* <label for="id">: Associates a label with a form element.
* <input type="text">: Creates a single-line text input field.
* <input type="email">: Creates an input field for email addresses.
* <textarea>: Creates a multi-line text input field.
* <button type="submit">: Creates a submit button.

**2. Intermediate HTML Topics**

**Semantic HTML**

Semantic HTML introduces meaning to the structure, improving accessibility and SEO.

<header>

<h1>My Website</h1>

<nav>

<ul>

<li><a href="#home">Home</a></li>

<li><a href="#about">About</a></li>

<li><a href="#contact">Contact</a></li>

</ul>

</nav>

</header>

<section>

<article>

<h2>Article Title</h2>

<p>This is an article.</p>

</article>

<aside>

<h2>Related</h2>

<p>Related content goes here.</p>

</aside>

</section>

<footer>

<p>&copy; 2024 My Website</p>

</footer>

**Explanation:**

* <header>: Represents the introductory content or navigation links.
* <nav>: Defines a set of navigation links.
* <section>: Groups related content.
* <article>: Represents an independent piece of content.
* <aside>: Defines content aside from the main content.
* <footer>: Represents the footer of a document or section.

**Media Elements**

Media elements are used to embed audio and video content.

<audio controls>

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

Your browser does not support the audio element.

</audio>

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

<source src="video-file.mp4" type="video/mp4">

Your browser does not support the video element.

</video>

**Graphics**

**SVG**

SVG (Scalable Vector Graphics) is an XML-based format for vector graphics.

<svg width="100" height="100">

<circle cx="50" cy="50" r="40" stroke="black" stroke-width="3" fill="red" />

</svg>

**Forms and Input Types**

HTML5 introduces new input types and attributes to enhance forms.

<form>

<label for="email">Email:</label>

<input type="email" id="email" name="email" placeholder="example@example.com" required>

<label for="birthday">Birthday:</label>

<input type="date" id="birthday" name="birthday">

<label for="quantity">Quantity:</label>

<input type="number" id="quantity" name="quantity" min="1" max="5">

</form>

**3. Advanced HTML Topics**

**SEO (Search Engine Optimization)**

SEO practices improve the visibility of a website in search engine results.

<head>

<meta name="description" content="This is a description of the page content.">

<meta name="keywords" content="HTML, CSS, JavaScript">

<meta property="og:title" content="Page Title">

<meta property="og:description" content="Page description">

<meta property="og:image" content="image.jpg">

</head>

**Performance Optimization**

Optimizing performance ensures that web pages load quickly and efficiently.

<head>

<link rel="stylesheet" href="styles.min.css">

<script src="script.min.js" defer></script>

</head>

<body>

<img src="image.jpg" loading="lazy" alt="Lazy loaded image">

</body>

**Progressive Web Apps (PWAs)**

PWAs offer a native app-like experience on the web.

**Cross-Browser Compatibility**

Ensuring that web content works across different browsers involves using various techniques and tools.

html

Copy code

<head>

<style>

.example {

display: -webkit-box; /\* OLD - iOS 6-, Safari 3.1-6 \*/

display: -moz-box; /\* OLD - Firefox 19- (buggy but mostly works) \*/

display: -ms-flexbox; /\* TWEENER - IE 10 \*/

display: -webkit-flex; /\* NEW - Chrome \*/

display: flex; /\* NEW, Spec - Opera 12.1, Firefox 20+ \*/

}

</style>

</head>

<body>

<div class="example">Content here</div>

</body>

**Security**

**Content Security Policy (CSP)**

CSP is a security feature that helps prevent various types of attacks, such as cross-site scripting (XSS) and data injection attacks.

<head>

<meta http-equiv="Content-Security-Policy" content="default-src 'self'; script-src 'self' https://apis.google.com">

</head>

**Cross-Origin Resource Sharing (CORS)**

CORS is a mechanism that allows resources on a web page to be requested from another domain outside the domain from which the resource originated. (No specific HTML code; configured on the server.)

**Sub resource Integrity (SRI)**

SRI allows browsers to verify that the resources they fetch (such as scripts) are delivered without unexpected manipulation.

<head>

<script src="https://code.jquery.com/jquery-3.x.x.min.js" integrity="sha384-xxxxxxxxxxxxxxxxxxxxxxxxxx" crossorigin="anonymous"></script>

</head>