The Ultimate HTML Notebook

~ By SAGAR BISWAS

Ω WHY HTML?

HTML is the backbone of the World Wide Web, providing the structure and semantics for web pages. It is essential for anyone looking to build a career in web development or simply understand how websites work.

HTML's versatility and ease of use make it an ideal starting point for aspiring web developers.

Part 1 – Introduction

HTML, which stands for "HyperText Markup Language," is the foundational language of the web. It's used to create and structure websites. By utilizing HTML tags, we can define the appearance and layout of a website. With a good grasp of these tags and their proper usage, creating beautiful websites becomes straightforward and efficient!

Ω THEN WHY CSS & JAVASCRIPT

HTML is used to define the layout of a page, providing a barebone structure for the content.

CSS is used to add styling to that barebone page created using HTML.

JavaScript is used to program logic for the page layout. example: What happens when a user hovers on a text, when to hide or show elements etc.

A BEAUTIFUL ANALOGY

- HTML = Car body (only metal)
- CSS = Car paint, decoration etc.
- JavaScript = Car engine + Interior logic.

Ω INSTALLING VS CODE

We can use any text editor of our choice. Here I am using VS Code because it is lightweight, opensource & from Microsoft.

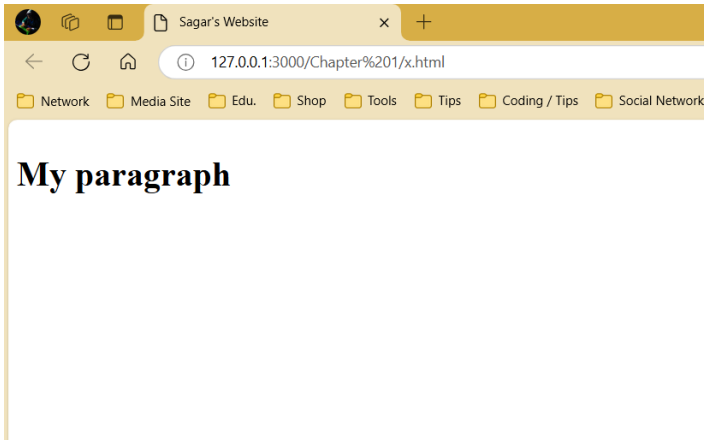
Note: You can write HTML even in Notepad. Text editors like VS Code just makes these things easier.

PART 2 – CREATING OUR FIRST WEBSITE

We start building a website by creating a file named index.html. index.html is a **special filename** which is presented when the website root address is typed.

Ω A BASIC HTML PAGE

```
<!Doctype html>
 <!-- Specifies this is an html 5 document -->
<html>
 <!-- Root of an HTML page-->

<head>
    <!-- Contains page metadata. -->
    <title>Sagar's Website</title> <!-- Contains title -->
</head>

<body>
    <!-- The main body of the page (rendered by the browser) -->
    <h1>
        <!-- This is a heading <h1> - heading tag -->
        <p> My paragraph </p> <!-- Paragraph tag -->
</body> <!-- Closing body tag. -->

</html>
```



A tag is like a container for either content or other HTML tags.

Ω IMPORTANT NOTES

- <head> & <body> tags are children of HTML tag.
- HTML is the parent of <head> & <body> tags.
- Most of the HTML elements have opening & closing tag with content in between opening & closing tags.
- Some HTML tags have no content. These are called **Empty elements**. example:
- We can either use .htm or .html extension.
- you can use "inspect element" or "view page source" option from Chrome to look into a website's HTML Code.

Ω COMMENTS IN HTML

Comments in HTML are used to mark text which should not be parsed. They can help document the source code.

```
<!-- HTML COMMENT -->
```

Ω CASE SENSITIVITY

HTML is a case **insensitive** language. <H1> and <h1> tags are the same.

PART 3 – BASIC HTML TAGS

We can add elements inside the body tag to define the page layout.

Ω HTML ELEMENT

An HTML element consists of everything from the starting tag to the ending tag.

```
<body>  <!-- Opening tag -->
    Content <!-- This is the content inside the element -->
</body> <!-- Closing tag -->
```

Ω HTML ATTRIBUTES

HTML attributes are used to add more information corresponding to an HTML tag.

```
<!DOCTYPE html>
<html lang="en">

<head>
    <title>HTML Attributes Example</title>
</head>

<body>
    <!-- Attributes: width, height, src, alt, style -->
    <img width="123" height="123" src="image.png" alt="" style="margin-left: 59px;"> <br>

    <!-- Attributes: href, target, style -->
    <a href="https://www.example.com" target="_blank" style="margin-left: 75px;">Visit
Example</a> <br> <br>

    <!-- Attribute: for -->
    <label for="name">Name</label>

    <!-- Attributes: type, placeholder, id -->
    <input type="text" placeholder="Enter your name" id="name">

    <!-- Attribute: style -->
    <p style="color: blue;">This is a blue paragraph.</p>

</body>

</html>
```

Visit Example

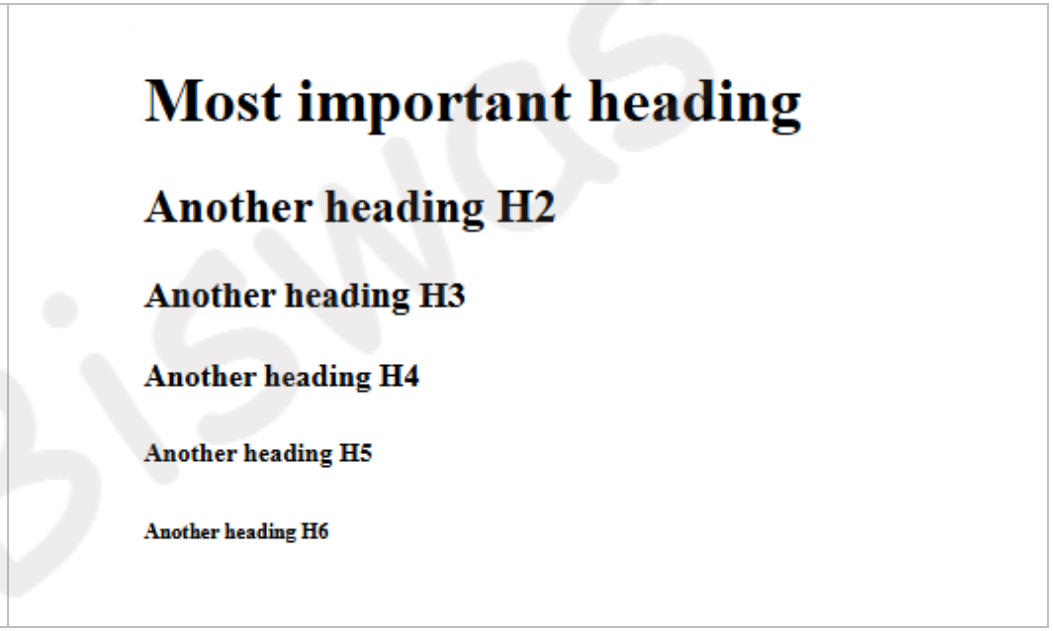
Name Enter your name

This is a blue paragraph.

Ω THE HEADING TAG

Heading tag is used to mark headings in HTML. From h1 to h6, we have tags for the most important to the least important heading.

```
<!DOCTYPE html>
<html lang="en">

<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>HeadingTag</title>
</head>

<body>
    <h1> Most important heading </h1>
    <h2> Another heading H2 </h2>
    <h3> Another heading H3 </h3>
    <h4> Another heading H4 </h4>
    <h5> Another heading H5 </h5>
    <h6> Another heading H6 </h6>

</body>

</html>
```



✓ Note: We should not use HTML headings to make text thick or bold.

Ω THE PARAGRAPH TAG

Paragraph tags are used to add paragraph to an HTML page.

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

This is a paragraph

Ω THE ANCHOR TAG

The Anchor Tag is used to add links to an existing content inside an HTML page.

```
<a href="https://google.com"> click here to visit Google. </a>
```

click here to visit Google.

Ω THE IMG TAG

<img> tag is used to add images in an HTML page.

```
<img src="image.png">
```

Ω BOLD, ITALIC AND UNDERLINE TAGS

We can use bold, italic and underline tags to highlight the text as follows:

```
<b> This is bold </b>
<i> This is italic </i>
<u> This is underline </u>
```

This is bold
This is italic
This is underline

Ω BR TAG

The
 tag is used to create line breaks in an HTML document.

```
<br>
```

Ω BIG AND SMALL TAGS

We can make text a bit larger and a bit smaller using and tags respectively.

```
<big>Hello world</big> <br>
<small>Hello world</small>
```

Hello world
Hello world

Ω HR TAG

<hr> tag in HTML is used to create a horizontal ruler often used to separate the content.

```
<hr><hr><hr>
```

Ω SUBSCRIPT & SUPERSCRIPT

We can add subscript and superscripts in HTML as follows:

```
a <sup> 2 </sup> + b <sup> 2 </sup> = c <sup> 2 </sup> <br>

<span style="margin-left: 20px;">H<sub>2</sub>O</span>
```

$a^2 + b^2 = c^2$
H_2O

Ω PRE TAG

HTML always ignores extra spaces and newlines. In order to display a piece of text as is, we use **pre** tag.

```
<pre>
    This is written.
        using pre
            tag
 </pre>
```

```
This is written.
    using pre
        tag
```

PART 4 – CREATING A PAGE LAYOUT

When we use the right tag in right place, it results in a better page layout, better indexing by search engines and better user experience.

We use the following tags to get the job done. Inside the main tag we insert the following tags:

```
!-- The main opening tag -->
<main>
    <!-- A page section -->
    <section>
        <!-- A self-contained content -->
        <article>
            <!-- Content goes here -->
        </article>
    </section>
    <!-- Content aside from the main content (e.g. Ads, sidebars) -->
    <aside>
        <!-- Aside content goes here -->
    </aside>
</main>
<!-- The main closing tag -->
```

Creating a page like this is not necessary but it creates a readable & structured layout. Also, they are useful for SEO.

Example:

```
<!DOCTYPE html>
```

```html
<html lang="en">

<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Web Page Layout Example</title>
</head>

<body>
    <!-- The main opening tag -->
    <main>
        <!-- A section of the page -->
        <section>
            <!-- An article representing self-contained content -->
            <article>
                <h1>Understanding HTML Semantic Tags</h1>
                <p>HTML provides semantic elements to help with page structure, improving readability and SEO. Using the right tags
                    results in better page layouts, better indexing by search engines, and better user experience.</p>
                <p>This article explains the usage of <code>&lt;main&gt;</code>, <code>&lt;section&gt;</code>,
                    <code>&lt;article&gt;</code>, and <code>&lt;aside&gt;</code> tags.</p>
            </article>
        </section>

        <!-- Another section for a different article -->
        <section>
            <article>
                <h2>Why Semantic HTML Matters</h2>
                <p>Semantic HTML tags like <code>&lt;article&gt;</code> and <code>&lt;section&gt;</code> provide meaning to the content
                    they wrap. This helps both search engines and assistive technologies to understand the structure of a web page.</p>
            </article>
        </section>

        <!-- Aside section (can be used for ads, related content, or sidebars) -->
        <aside>
            <h2>Related Articles</h2>
            <ul>
                <li><a href="#">How to Improve SEO with Semantic HTML</a></li>
                <li><a href="#">HTML5 Semantic Elements Overview</a></li>
            </ul>
        </aside>
    </main>
    <!-- The main closing tag -->
</body>

</html>
```

Understanding HTML Semantic Tags

HTML provides semantic elements to help with page structure, improving readability and SEO. Using the right tags results in better page layouts, better indexing by search engines, and better user experience.

This article explains the usage of `<main>`, `<section>`, `<article>`, and `<aside>` tags.

Why Semantic HTML Matters

Semantic HTML tags like `<article>` and `<section>` provide meaning to the content they wrap. This helps both search engines and assistive technologies to understand the structure of a web page.

Related Articles

- How to Improve SEO with Semantic HTML
- HTML5 Semantic Elements Overview

Ω LINK ATTRIBUTES:

```
<!-- Contact page opens in the same tab -->
<a href="/contact">Contact</a>
<!-- Contact page opens in a new tab -->
<a href="/contact" target="_blank">Contact us</a>
```

✓ Note: We can put any content inside an anchor tag (images, headings etc are all allowed).

If the page is inside a directory, we need to make sure that we link to the correct page (Same applies to img tag as well.)

We can add links to images like this.

```
<a href="/about"> <img src="a.jpg" width="120"> </a>
```

Ω THE DIV TAG

The tag is often used as a container for other elements. It is a **block-level** element, meaning it always takes up the full width available.

```
<div>
    <h1>This is a heading inside a div.</h1>
    <p>This is a paragraph inside a div.</p>
</div>
```

THE SPAN TAG

The tag is an **inline container**, meaning it only takes up as much width as necessary.

```
<p>This is a <span>highlighted</span> word in a sentence.</p>
```

PART 5 – LISTS, TABLES & FORMS

Ω LISTS

Lists are used to display content which represents a list.

UNORDERED LIST	ORDERED LIST

An unordered list is used to list items that do not have a specific order.
 	
`<ul>`
`  <li>Home</li>`
`  <li>About</li>`
`</ul>`
	An ordered list is used to list items in a specific order, typically numbered.
	
	`<ol>`
	`  <li>Phone</li>`
	`  <li>PC</li>`
	`  <li>Laptop</li>`
	`</ol>`

Ω TABLES

The <table> tag in HTML is used to define tables, which are used to format and display tabular data.

- <tr> tag: Used to display table row.
- <td> tag: Used to display table data.
- <th> tag: Used in place of table data for displaying table headers.

- We can define as many table rows as we want. To add a caption to the table, we use <caption> tag inside table.
  - <thead> tag: Used to wrap **table head** (caption & <tr> with <th>)
  - <tbody> tag: Used to wrap the **table body.**

Example:

```
<table>
    <caption>Report</caption>
    <thead>
        <tr>
            <th>Name</th>
            <th>Grade</th>
        </tr>
    </thead>
    <tbody>
        <tr>
            <td>Sagar</td>
            <td>A+</td>
        </tr>
        <tr>
            <td>Shisher</td>
            <td>B+</td>
        </tr>
    </tbody>
</table>
```

Report

Name	Grade
Sagar	A+
Shisher	B+

COLSPAN ATTRIBUTE

This attribute is used to create cells spanning multiple columns.

```
<!-- Spans 3 Columns -->
<th colspan="3"> Thanks </th>
```

Example:

```
<!DOCTYPE html>
<html lang="en">

<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-
scale=1.0">
    <title>Tables - HTML</title>
    <style>
        table {
            width: 100%;
            border-collapse: collapse;
            margin: 20px 0;
            font-size: 18px;
            text-align: left;
```

```
<body>
    <h1>Tables in HTML</h1>
    <table>
        <!-- Head of the table  -->
        <thead>
            <tr>
                <th>Name</th>
                <th>Role</th>
                <th>Salary</th>
            </tr>
        </thead>

        <!-- Body of the table  -->
        <tbody>
            <tr>
```

```
        }

        th, td {
            padding: 12px;
            border-bottom: 1px solid #ddd;
            border: 2px solid black;
        }

        th {
            background-color: #f4f4f4;
            color: #333;
        }

        tr:nth-child(even) {
            background-color: #f9f9f9;
        }

        tr:hover {
            background-color: #f1f1f1;
        }

        caption {
            font-size: 24px;
            font-weight: bold;
            margin-bottom: 15px;
        }
    </style>

</head>
```

```
                <td>Sagar</td>
                <td>Software Developer</td>
                <td>$70000</td>
            </tr>
            <tr>
                <td>Shisher</td>
                <td>Software Helper</td>
                <td>$7</td>
            </tr>
            <tr>
                <td>Sakib</td>
                <td>ML Engineer</td>
                <td>$100</td>
            </tr>

            <tr>
                <td>Faruk</td>
                <td>AI Engineer</td>
                <td>$100000</td>
            </tr>
            <tr>
                <td>Thank</td>
                <td colspan="2">You</td>
            </tr>
        </tbody>
    </table>
</body>

</html>
```

Tables in HTML

Name	Role	Salary
Sagar	Software Developer	$70000
Shisher	Software Helper	$7
Sakib	ML Engineer	$100
Faruk	AI Engineer	$100000
Thank	You	

Ω HTML FORMS

An HTML <form> tag is used to create a form that collects input from users.

```
<form>
    <!-- Elements of form -->
</form>
```

There are different form elements for different kinds of user input.

- <input> element: Can be of type text, checkbox, radio, button and submit. We also have a 'file' type.
- <textarea> element: Defines a multiline text input 'cols' and 'rows' attributes can be used to size the text area.
- <select> element: Defines a drop-down list.

Note: you don't have to remember all the tags, you will automatically memorize them with practice.

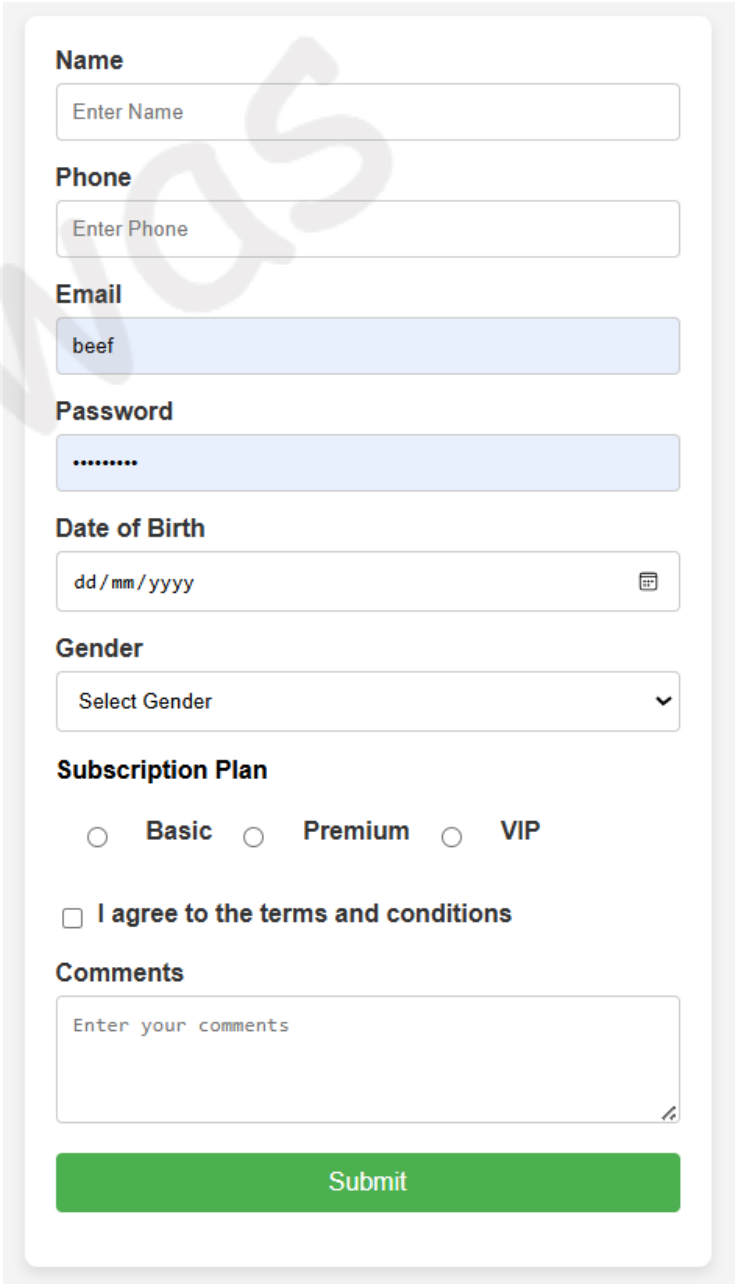
```
<!DOCTYPE html>
<html lang="en">

<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>HTML Forms</title>

</head>

<body>

    <!-- Form starts here -->
    <form action="/submit.php">
        <!-- Text input for Name -->
        <div>
            <label for="name">Name</label>
            <input id="name" type="text" placeholder="Enter Name" required>
        </div>

        <!-- Phone input -->
        <div>
            <label for="ph">Phone</label>
            <input id="ph" type="tel" placeholder="Enter Phone" required>
        </div>
```

Name Enter Name
Phone Enter Phone
Email Enter Email
Password Enter Password
Date of Birth dd/mm/yyyy
Gender Select Gender

Subscription Plan

Basic Premium VIP
I agree to the terms and conditions
Comments Enter your comments
Submit

```
        <!-- Email input -->
        <div>
            <label for="email">Email</label>
            <input id="email" type="email" placeholder="Enter Email" required>
        </div>

        <!-- Password input -->
        <div>
            <label for="password">Password</label>
            <input id="password" type="password" placeholder="Enter Password" required>
        </div>

        <!-- Date input -->
        <div>
            <label for="dob">Date of Birth</label>
            <input id="dob" type="date" required>
        </div>

        <!-- Dropdown (select input) for Gender -->
        <div>
            <label for="gender">Gender</label>
            <select id="gender" required>
                <option value="" disabled selected>Select Gender</option>
                <option value="male">Male</option>
                <option value="female">Female</option>
                <option value="other">Other</option>
            </select>
        </div>

        <!-- Radio buttons for Subscription Plan (flexbox applied here) -->
        <div>
            <p>Subscription Plan</p>
            <div class="subscription-plan">
                <input id="basic" type="radio" name="subscription" value="basic">
                <label for="basic">Basic</label>

                <input id="premium" type="radio" name="subscription" value="premium">
                <label for="premium">Premium</label>

                <input id="vip" type="radio" name="subscription" value="vip">
                <label for="vip">VIP</label>
            </div>
        </div>

        <!-- Checkbox for agreeing to terms (inline with label) -->
        <div class="checkbox-container">
            <input id="terms" type="checkbox" required>
```



```
            <label for="terms">I agree to the terms and conditions</label>
        </div>

        <!-- Textarea for Comments -->
        <div>
            <label for="comments">Comments</label>
            <textarea id="comments" placeholder="Enter your comments" rows="4"></textarea>
        </div>

        <!-- Submit button -->
        <div>
            <button type="submit">Submit</button>
        </div>
    </form>
    <!-- Form ends here -->

</body>

</html>
```

Ω EMBEDDING VIDEOS

To embed videos in HTML, you can use the tag along with various attributes to control its behavior.

```
<video src='Sagar.mp4'> Error </video>
```

Ω ATTRIBUTES FOR VIDEO

We can use the following attributes:

- src: Specifies the URL of the video file (sagar.mp4 in this case).
- width: Adjusts the width of the video player. Height adjusts automatically to maintain aspect ratio.
- controls: Displays video controls such as play, pause, volume, etc.
- autoplay: Automatically starts playing the video when the page loads.
- loop: Causes the video to automatically start over from the beginning when it reaches the end.
- preload: Specifies whether the video should be loaded when the page loads (auto, metadata, none).

Example:

```html
<!DOCTYPE html>
<html lang="en">

<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Video - HTML</title>
</head>

<body>
    <!-- <video src="video.mp4" autoplay muted controls loop>
        Sorry unable to play video
    </video> -->


    <video width="264" autoplay loop controls muted>
        <source src="video.mp4" type="video/mp4">
        Your browser does not support the video tag.
    </video>
</body>

</html>
```

PART 6 – SEO

We will focus only on HTML standpoint of SEO. We will not be looking into keyword building and content optimization aspect of SEO.

Ω TYPES OF SEO

1) On page SEO (This can be done by HTML developers).
2) Off page SEO.

Ω HTML SEO

HTML developers can implement SEO using the following techniques:

- Title Tag: Set a clear and descriptive <title> tag that accurately reflects the content of the page.
- Meta Description: Provide a concise summary of the page content using the <meta> tag.
- URL Slug: Use a clean and readable URL structure that includes relevant keywords.
- Meta Author Tag: Optionally include the author information in a <meta> tag
- Favicon: Use a favicon icon to enhance brand recognition and usability.
- Image Optimization: Compress images to improve page load times and include descriptive alt attributes.
- Optimize Resources: Remove unused HTML, CSS, and JavaScript files, and minify/compress them to reduce page load times.
- Semantic HTML: Use appropriate HTML tags (<header>, <nav>, <article>, <footer>, etc.) to structure the content logically, which can improve SEO indirectly by making the content more accessible and understandable to search engines.

Example:

```
<head>
    <title>Example Page - SEO Best Practices</title>
    <meta name="description" content="This is an example page
demonstrating SEO best practices in HTML.">
    <meta name="author" content="Sagar">
    <link rel="icon" href="favicon.ico" type="image/x-icon">
</head>
```

Example:

```html
<!DOCTYPE html>
<html lang="en">
<head>
    <!-- Title Tag: Clear and descriptive -->
    <title>Best Practices for SEO in HTML Development</title>

    <!-- Meta Description: A concise summary of the page content -->
    <meta name="description" content="Learn the best practices for implementing SEO in HTML development, including title tags, meta descriptions, image optimization, and more.">

    <!-- Meta Author Tag: Optional author information -->
    <meta name="author" content="John Doe">

    <!-- Favicon: Small icon that appears on the browser tab -->
    <link rel="icon" href="image.png" type="image/x-icon">

    <!-- Set character encoding and viewport for responsive design -->
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">

    <!-- Optimize Resources: Linking minified CSS -->
    <link rel="stylesheet" href="styles.min.css">

    <!-- Example of including a semantic HTML structure -->
</head>
<body>

    <!-- Semantic HTML: Using <header>, <nav>, and <footer> elements -->
    <header>
        <h1>SEO Best Practices for HTML Developers</h1>
        <nav>
            <ul>
                <li><a href="/">Home</a></li>
                <li><a href="/about">About Us</a></li>
                <li><a href="/contact">Contact</a></li>
            </ul>
        </nav>
    </header>

    <main>
        <article>
            <h2>How to Implement SEO in HTML</h2>
            <p>SEO is crucial for improving your website's visibility on search engines. Below are some key techniques HTML developers can use to enhance SEO:</p>

            <h3>1. Title Tag</h3>
            <p>The title tag should accurately reflect the content of the page, helping search engines and users understand the topic.</p>
```

```
            <h3>2. Meta Description</h3>
            <p>Provide a concise summary of the page content in the meta description tag. It may be used by search engines as a snippet in
search results.</p>

            <h3>3. URL Slug</h3>
            <p>Ensure the URL is clean, readable, and includes relevant keywords, like <strong>/best-seo-practices-html</strong>.</p>

            <h3>4. Image Optimization</h3>
            <p>Compress images to improve load times and always include descriptive alt text to help search engines understand the content
of the images.</p>

            <!-- Image with optimized alt attribute for SEO -->
            <img src="image.png" alt="SEO best practices illustration" width="50" height="50">
        </article>
    </main>

    <footer>
        <p>&copy; 2024 HTML SEO Tutorial | Contact: info@seo-example.com</p>
    </footer>

    <!-- Optimize Resources: Linking minified JavaScript -->
    <script src="scripts.min.js"></script>

</body>
</html>
```

SEO Best Practices for HTML Developers

- Home
- About Us
- Contact

How to Implement SEO in HTML

SEO is crucial for improving your website's visibility on search engines. Below are some key techniques HTML developers can use to enhance SEO:

1. Title Tag

The title tag should accurately reflect the content of the page, helping search engines and users understand the topic.

2. Meta Description

Provide a concise summary of the page content in the meta description tag. It may be used by search engines as a snippet in search results.

3. URL Slug

Ensure the URL is clean, readable, and includes relevant keywords, like **/best-seo-practices-html**.

4. Image Optimization

Compress images to improve load times and always include descriptive alt text to help search engines understand the content of the images.

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PART 2 – PRACTICE SET

1. Inspect your favourite website and change something on the page which is displayed.
2. Go to your favourite website and try to view the page source and write the exact lines of code. Does it clone the website? Why?
3. Write any HTML code inside a text file. Does it work if you write it using notepad?

PART 3 – PRACTICE SET

1. Create an HTML page with a heading (title heading), a primary heading and a subheading. Which tags did you use?
2. Create a page with 5 wallpaper images taken from the internet.
3. Use
 and <hr> tags to display a piece of text with line breaks.
4. Try to write the following Chemical equation using HTML. C + O2 = CO2
5. Try to write a Wikipedia article using HTML.

PART 4 – PRACTICE SET

1. Create an SEO friendly website using HTML.
2. Create an HTML page which opens google when clicked on an image.
3. Create a website which has your 5 top used websites bookmarked. The links should open in a new tab.

PART 5 – PRACTICE SET

1. Create an HTML page with video embedded inside it.
2. Replace the video in question no 1 with a YouTube video.
3. Create an HTML form for a travel website to book a vacation.
4. Create a table displaying score of cricket Players in a match using HTML.