Perform Basic Internet programming

What is HTML?

The foundational language of web content, HTML, stands for **HyperText Markup Language**. Stylesheets explain to web pages how they should display text, images, videos, links and additional content. HTML serves as the foundation for designing anything on the web.

Understanding the term HyperText Markup Language

Hyper Text: HyperText simply means "Text within Text." A text that has a link within it is a hypertext. Whenever you click on a link that brings you to a new webpage, you have clicked on a hypertext. HyperText is a way to link two or more web pages (HTML documents) with each other.

Markup: When we talk about markup, we mean the tags used in the text to let the browser know how different elements will be displayed. Markup shapes content, organizes it and supplies more details.

Language: Language here refers to a way of writing web content that computers can decode and show in a web browser.

Other Important Terms

Web Page: A web page is a document that is commonly written in HTML and translated by a web browser. A web page can be identified by entering a URL. A Web page can be of the static or dynamic type. With the help of HTML only, we can create static web pages.

Website: A website links a collection of similar web pages under a single domain name. Frequently, it consists of a homepage, a page about the company, a contact form and additional segments. All the pages on a site are connected using hyperlinks.

Web Browser: Web browsers like Chrome, Firefox and Safari are programs that gather, read and display web pages. To help users, it processes HTML, CSS and JavaScript codes and presents them through a user interface.

In summary, HTML is a markup language that is used for creating attractive web pages with the help of styling and which looks in a nice format on a web browser. An HTML document is made of many HTML tags, and each HTML tag contains different content.

Brief History of HTML

In the late 1980s, a physicist, Tim Berners-Lee, who was a contractor at CERN, proposed a system for CERN researchers. In 1989, he wrote a memo proposing an internet-based hypertext system.

Tim Berners-Lee is known as the father of HTML. The first available description of HTML was a document called "HTML Tags," proposed by Tim in late 1991. The latest version of HTML is HTML5

HTML Versions

Lots of different HTML versions have been released since the language was invented.

HTML 1.0: The first version of HTML was 1.0, which was the barebones version of HTML language, and it was released in 1991.

HTML 2.0: This was the next version, which was released in 1995, and it was the standard language version for website design. HTML 2.0 was able to support extra features such as form-based file upload and form elements such as text box, option button, etc.

HTML 3.2: The HTML 3.2 version was published by W3C in early 1997. This version was capable of creating tables and providing support for extra options for form elements. It can also support a web page with complex mathematical equations. It became an official standard for any browser till January 1997. Today, it is practically supported by most browsers.

HTML 4.01: The HTML 4.01 version was released in December 1999, and it is a very stable version of the HTML language. This version is the current official standard, and it provides added support for stylesheets (CSS) and scripting ability for various multimedia elements.

HTML5: HTML5 is the newest version of HyperText Markup language. The first draft of this version was announced in January 2008. There are two major organizations: one is W3C (World Wide Web Consortium), and another one is WHATWG(Web Hypertext Application Technology Working Group), which is involved in the development of the HTML 5 version and is still under development.

Structure of an HTML Document

An HTML document consists of content organized by elements and tags. This example in HTML is very basic:

Example

```
<!DOCTYPE html>
<html>
<head>
<title>Web page title</title>
</head>
<body>
<h1>Write Your First Heading</h1>
<p>Write Your First Paragraph.</p>
</body>
</html>
```

Description of HTML Example

We can see the structure of the above example as follows:

<!DOCTYPE>: It defines the document type, or it instructs the browser about the version of HTML.

<html>: This tag informs the browser that it is an HTML document. Text between html tags describes the web document. It is a container for all other elements of HTML except <!DOCTYPE>

<head>: It should be the first element inside the <html> element, which contains the metadata (information about the document). It must be closed before the body tag opens.

<title>: As its name suggested, it is used to add the title of that HTML page, which appears at the top of the browser window. It must be placed inside the head tag and should close immediately. (Optional)

<body>: Text between body tags describes the body content of the page that is visible to the end user. This tag contains the main content of the HTML document.

<h1>: Text between <h1> tag describes the first level heading of the webpage.

<p>: Text between <p> tag describes the paragraph of the webpage.

HTML Tags, Elements, and Attributes

Tags

Tags are keywords enclosed in angular brackets (< and >).

Examples include , <h1>, or <a>.

Note: Tags like <br> and <hr> are considered empty elements as they have no closing tag.

Elements

An element is made up of an opening tag, some content and a closing tag.

Example

 This is a paragraph

Attributes

Attributes help to change how a tag works or what it looks like by adding extra properties like behavior and styling.

Example

 Visit Site

Here, "href" is the attribute having the value "https://www.tpointtech.com".

Empty Elements

Some elements like <img> and <meta> don't need a closing tag since they are not intended to contain information between the tags.

Common HTML Elements

Element	Description
<h1> to <h6>	Headings from most important (<h1>) to least (<h6>). Helps with SEO and accessibility.
** **	Paragraph element used for blocks of text.
<a>	The anchor tag is used for hyperlinks.
<img>	Embeds images.
** , , **	Lists: unordered, ordered, and list items.
<table>	Organizes data in rows and columns.
<button>	Creates clickable buttons.

Semantic HTML

Nowadays, HTML5 uses tags called <header>, <footer>, <section>, <article> and <nav> to help explain the page's structure. They help search engines and devices for the visually impaired to read and understand your web content.

Features of HTML



- It is a very easy and simple language. It can be easily understood and modified.
- It is very easy to make an effective presentation with HTML because it has a lot of formatting tags.
- It is a markup language, so it provides a flexible way to design web pages along with the text.
- It facilitates programmers in adding a link to the web pages (by html anchor tag), so it enhances the user's interest in browsing.
- It is platform-independent because it can be displayed on any platform, such as Windows, Linux, Macintosh, etc.
- It facilitates the programmer in adding graphics, videos, and sound to the web pages, which makes them more attractive and interactive.
- HTML is a case-insensitive language, which means we can use tags either in lower-case or upper-case.

Note: It is recommended to write all tags in lower-case for consistency, readability, etc.

Advantages of HTML

- Works in all modern web browsers.
- Supported by many tools and editors.
- A strong foundation for web development.
- The key to the organization of any web project.
- Helps search engines better index and rank web pages.

Disadvantages of HTML

- Can only create static pages; dynamic functionality needs JavaScript or server-side languages.
- With plenty of HTML files, it becomes difficult to handle big projects.
- A few small mistakes can cause pages to take a long time to load.

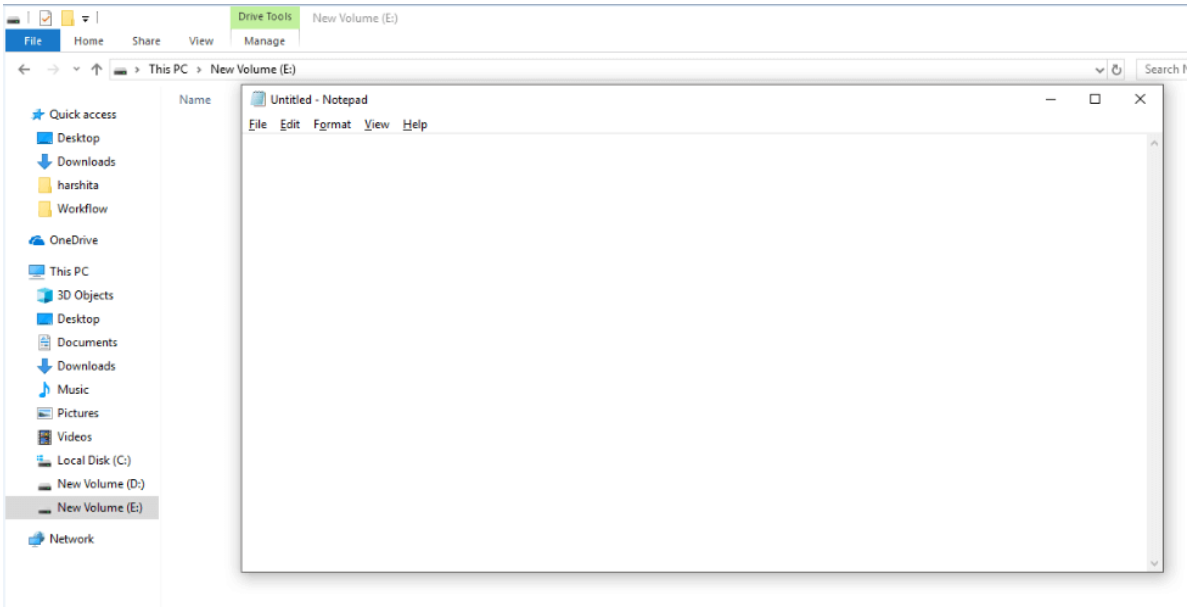
HTML text Editors

- An HTML file is a text file, so to create an HTML file we can use any text editors.
- Text editors are the programs which allow editing in a written text, hence to create a web page we need to write our code in some text editor.
- There are various types of text editors available which you can directly download, but for a beginner, the best text editor is Notepad (Windows) or TextEdit (Mac).
- After learning the basics, you can easily use other professional text editors which are, **Notepad, Notepad++, Sublime Text, Vim, etc**.
- In our tutorial, we will use Notepad and sublime text editor. Following are some easy ways to create your first web page with Notepad, and sublime text.

A. HTML code with Notepad. (Recommended for Beginners)

Notepad is a simple text editor and suitable for beginners to learn HTML. It is available in all versions of Windows, from where you easily access it.

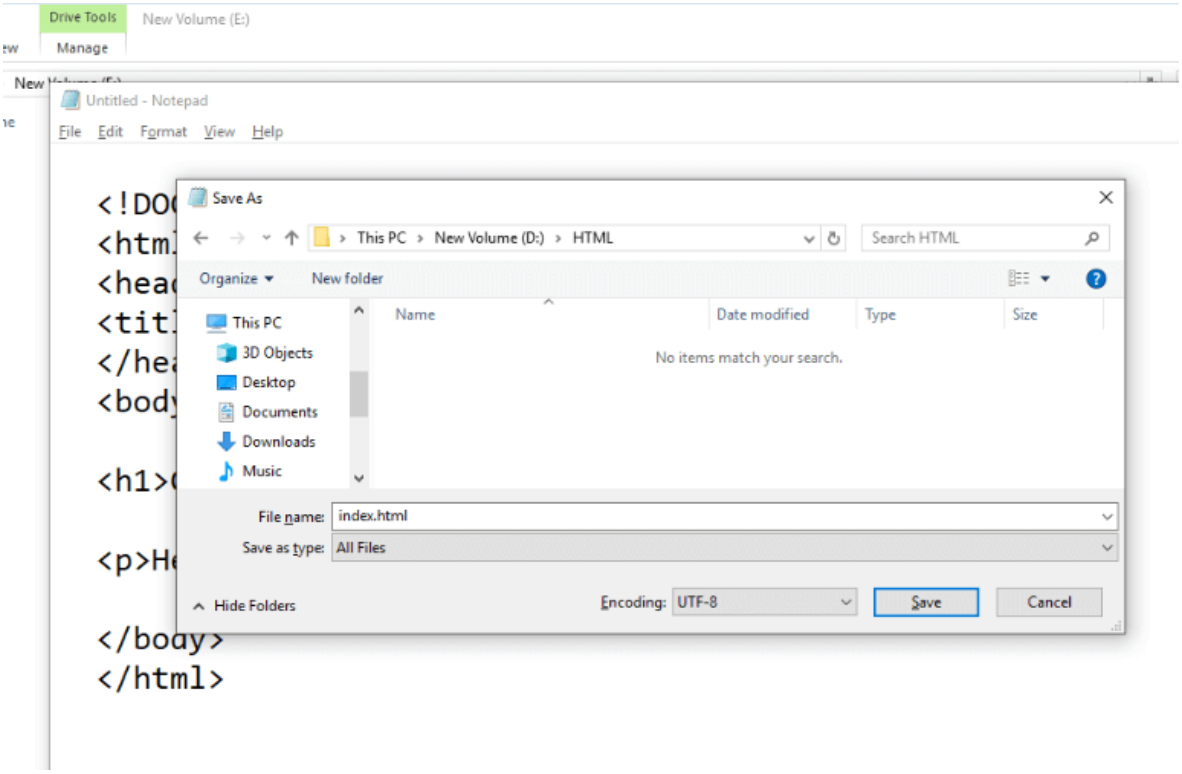
Step 1: Open Notepad (Windows)



Step 2: Write code in HTML

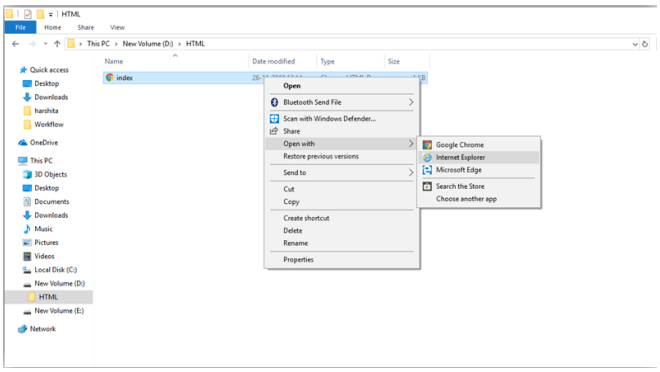


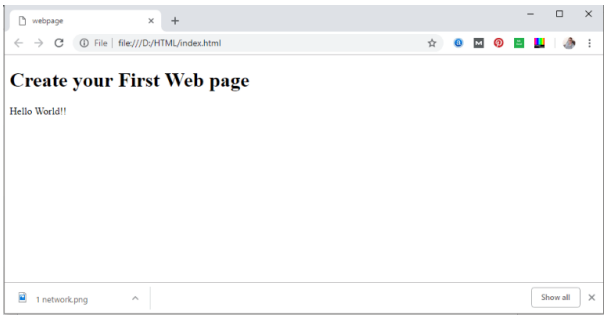
Step 3: Save the HTML file with .htm or .html extension.



Step 4: Open the HTML page in your web browser.

To run the HTML page, you need to open the file location, where you have saved the file and then either double-click on file or click on open with option



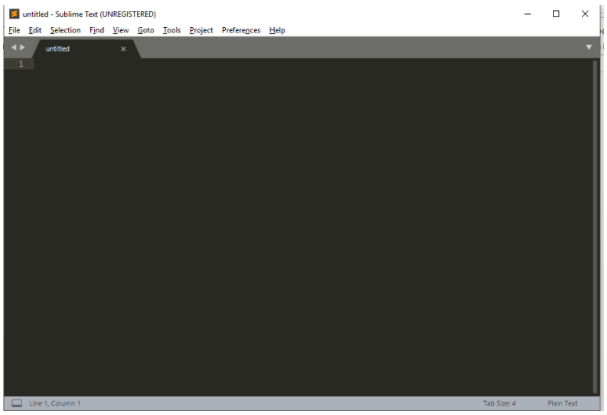


B. HTML code with Sublime Text-editor. (Recommended after learning basics of HTML)

When you will learn the basics of HTML, then you can use some professional text editors, which will help you to write an efficient and fast code. So, to use Sublime Text editors, first it needs to download and install from internet. You can easily download it from this https://www.sublimetext.com/download link and can install in your PC. When installation of Sublime text editor done then you can follow the simple steps to use it:

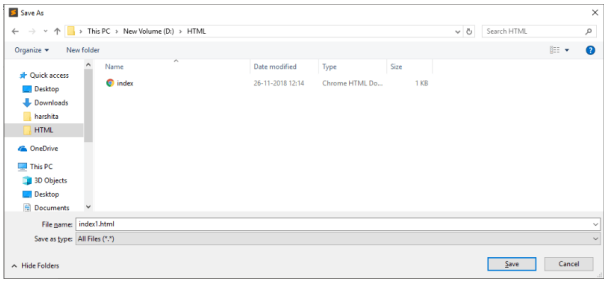
Step 1: Open Sublime Text editor

To open Sublime Text editor, go to **Start screen --› type Sublime Text--› Open** it. To open a new page press **CTRL+N.**

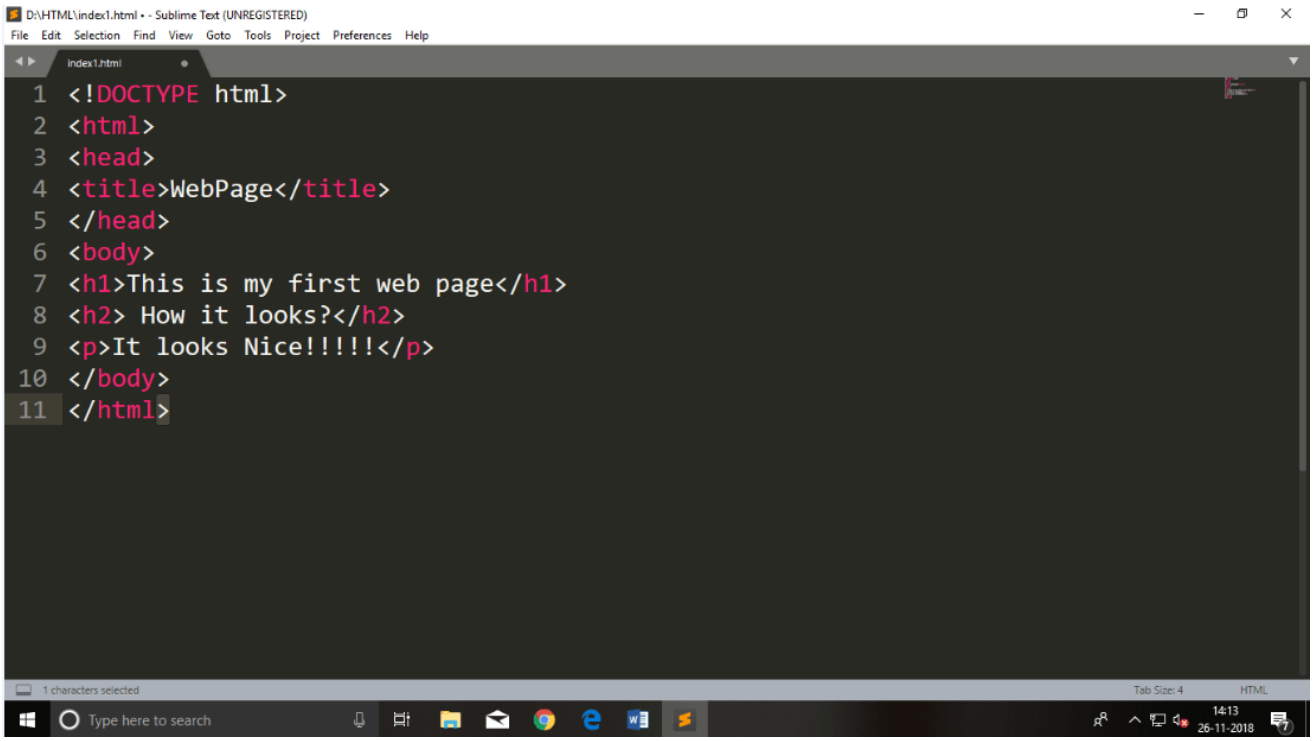


Step 2: Save the page before writing any code.

To save your page in Sublime Text press Ctrl+S or go to File option --› save, to save a file use extension .htm or .html. We recommend to save the file first then write the code because after saving the page sublime text editor will give you suggestions to write code.

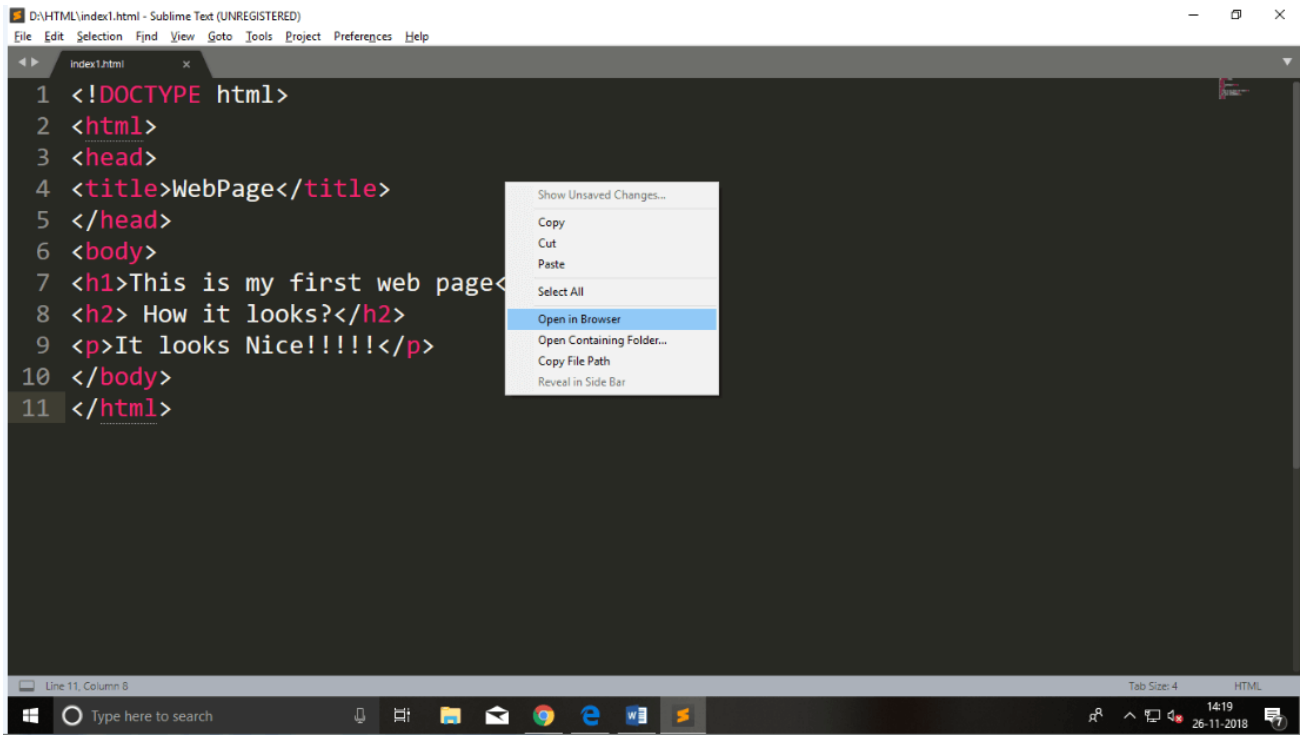


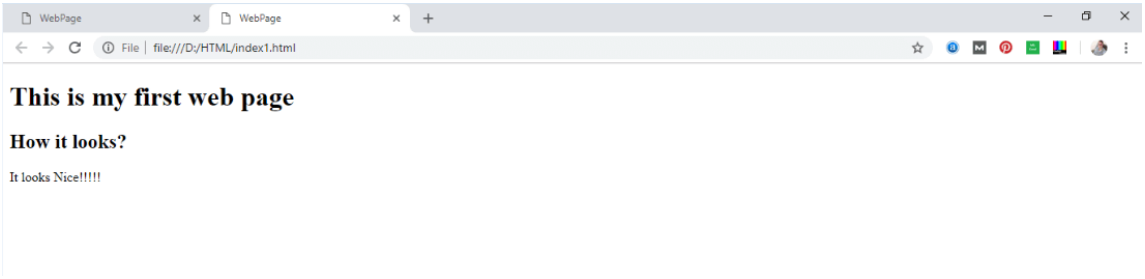
Step 3: Write the code in Sublime Text editor



Step 4: Open the HTML page in your Browser

To execute or open this page in Web browser just **right click** by mouse on sublime text page and click on **Open in Browser**.





Note: You can execute HTML file in any browser, but there are some tags which are not supported by Some Web browser.

Building Blocks of HTML

HTML is necessary for creating any webpage that you find on the internet. It presents text, images, links, forms and similar items using tags in a special system. For either beginners or those who plan to become web developers, it's important to learn how HTML forms the base of web pages.

The most important components of an HTML document are:

1. **Tags**
2. **Attributes**
3. **Elements**

It's important to understand how the two are joined to affect a webpage's design and content.

1) HTML Tags

Tags make HTML possible. They set out the way content should behave or look when displayed on the internet. Most of the time, the tags used in HTML pair a start tag and an end tag.

Syntax

1. <tagname>Content goes here</tagname>

The tag at the start of a content section, such as , marks the beginning of its layout or purpose. This tag indicates the ending of a paragraph: . What's inside the tags is the content that gets altered.

Some tags, though, are self-closing or do not need content-they have functions, even without any content inside. These are tags, for example, <br> for new lines and <img> for photos.

Examples

Tags	Meaning
<h1> to <h6>	Headings from most to least important
** **	Paragraph
<a>	Anchor (hyperlink)
** **	Division or section
<img>	Image
** **	Line break

2) HTML Attributes

Attributes add additional information to elements and should be set up in the tag where the element is first mentioned. Each pair consists of a name and a value, where the name describes the value.

Syntax

1. <tagname attribute="value">Content</tagname>

Example

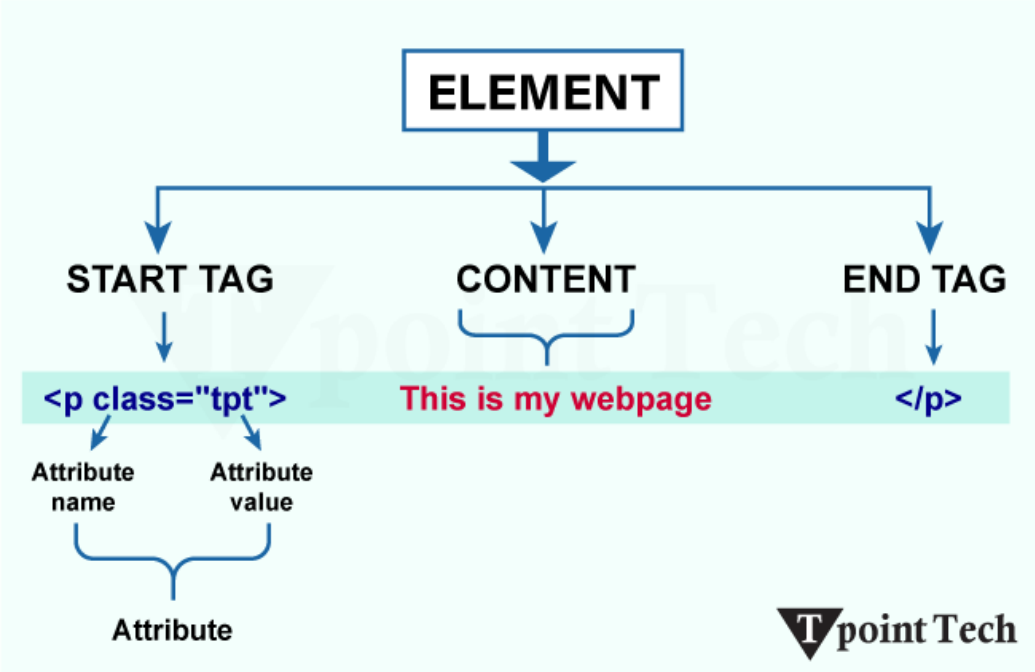
1. This paragraph is styled blue.
2.
3. Visit TPointTech

HTML behaviour and look are greatly improved by attributes such as style, src, href, alt and class.

3) HTML Elements

The structure of an HTML element is a tag, the content you place and another tag. Browsers turn various elements into the content you see, such as headings, lists, links, images and paragraphs. A tag surrounds any time content, and an element is formed.

The diagram below will show you how HTML elements work.



Example

```
<!DOCTYPE html>
<html>
  <head>
    <title>The basic building blocks of HTML</title>
  </head>
  <body>
      <h2>The building blocks</h2>
      <p>This is a paragraph tag</p>
      <p style="color: red">The style is attribute of paragraph tag</p>
      <span>The element contains tag, attribute and content</span>
  </body>
</html>
```

Output:

The building blocks

This is a paragraph tag

The style is attribute of paragraph tag

The element contains tag, attribute and content

Structure of an HTML Document

All HTML documents use certain structural elements in a basic way. An HTML skeleton is ready for you below:

Example

```
<!DOCTYPE html>
<html>
  <head>
    <title>HTML Page</title>
  </head>
  <body>
    <h1>Hello, World!</h1>
    <p>This is a simple webpage.</p>
  </body>
</html>
```

What Every Structure Tag Means:

<!DOCTYPE html>: Defines that this document is HTML5.

<html>: Holds together the entire HTML document.

<head>: Has data known as metadata inside, which covers the page title and links to related resources.

<title>: It sets the headline seen above the page when you open your browser.

<body>: Includes everything that can be seen on the screen, like text, images, buttons and links.

Nested Elements

In HTML, you are able to put elements within other elements. People call this nesting and it's very important for keeping things orderly.

Example

```
<body>
  <div>
    <h2>Nested Structure</h2>
    <p>This paragraph is nested within a div.</p>
  </div>
</body>
```

Note: Above, you can see that the parent of <p> and <h2> within the element.

Empty / Void Elements

A number of elements in HTML can be open or closed, as they do not include content. We call these elements empty or void for this reason.

List of Empty Elements

Tag	Description
** **	Inserts a line break
<hr>	Horizontal rule (line)
<img>	Embeds an image
<input>	Input field in forms
<link>	Used in the <head> for stylesheets

Example

```
<h2>Title</h2>
<br />
<p>Continued text after line break. </p>
```

Block-Level vs Inline Elements

Each **block-level element** is separated into its line and spans the entire width of the container. Most of these elements additionally contain other elements such as <p>, <h1> to <h6>, <section>, <article> and <table>.

Example

```
1. <p>This is a block-level paragraph.</p>
```

Meanwhile, **inline elements** run along with the adjacent content and only grab as much space as needed. , <a>, <img>, , , <input> are considered as inline elements.

Example

```
1. <p>This is <strong>bold text</strong> in a paragraph.</p>
```

Text Formatting Tags

HTML allows you to use text formatting without CSS.

Tag	Description
****	Bold
****	Italic
<u>	Underlined
<mark>	Highlighted
<del>	Strikethrough
<small>	Smaller text

List Elements

HTML allows users to organise things into lists with three types, as follows:

Unordered List

This is applied when order does not play any role. Most of the time, each item is shown with bullet points.

Example

```
<ul>
  <li>HTML</li>
  <li>CSS</li>
</ul>
```

Ordered List

It helps to convey meaning when order matters. The process automatically numbers your items for you.

Example

```
<ol>
  <li>First Step</li>
  <li>Second Step</li>
</ol>
```

Definition List

Designed to present terms and what they mean. It is convenient for creating glossaries or metadata.

Example

```
<dl>
  <dt>HTML</dt>
  <dd>Standard markup language for creating web pages.</dd>
</dl>
```

Hyperlinks

Users are taken to other websites by clicking on the hyperlinks within the text.

Example

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

Images

You need the <img> tag to embed images on a webpage. Don't forget to mention the source attribute (src) and the optional alternate text (alt).

Example

```
1. <img src="logo.png" alt="TPointTech Logo" width="200" />
```

Note: Having alt text in the <img> tag makes a website more accessible and easier to find for search engines.

Tables

Tables in HTML are helpful because they line up data in both rows and columns, making it clear to the viewer.

Example

```
<table>
  <thead>
    <tr><th>Name</th><th>Age</th></tr>
  </thead>
  <tbody>
    <tr><td>Alice</td><td>28</td></tr>
    <tr><td>Bob</td><td>32</td></tr>
  </tbody>
</table>
```

Forms

Forms allow users to input data, such as names or comments, which can be submitted to a server for processing.

Example

```
<form>
  <label>Name:</label>
  <input type="text" name="username" />
  <button type="submit">Submit</button>
</form>
```

Semantic Tags

HTML5 introduced semantic elements to clearly describe the meaning and role of different parts of a webpage. Because of these elements, web content becomes easier for browsers, search engines and assistive technologies to interpret and understand.

A webpage or section has a **<header>** at the top and a **<footer>** at the bottom, which usually includes even main titles, navigation or credits. The <nav> bar provides a set of links that lets users navigate through a site's inner pages.

<main> shows the most important topic on the page within the main content area. **<section>**, **<article>** is dedicated to setting up content in circular collections or as reusable and thematic things (such as blog articles or newspaper posts).

The use of semantic tags ensures accessibility is improved, SEO becomes enhanced, and your code is organized and easy to handle by developers.