# HTML Primer

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# 1 Keywords

**HTML:** Hypertext Markup Language, a standardized system for tagging text files to achieve font, colour, graphic, and hyperlink effects on World Wide Web pages. *(Oxford English Dictionary)*

**Regex (Regular Expression):** A pattern-matching tool used to find, extract, or manipulate data within text. Given a specific pattern, it can locate matching text in documents, web pages, or even code.

**HTML Tag:** The basic building block of HTML. Tags define how content is structured and displayed. They form a tree-like structure in the page's source code.

**Start Tag and End Tag:** Tags that wrap around content to define its structure or style.

- The start tag uses angle brackets: `<tagname>`

- The end tag includes a forward slash: `</tagname>`

**HTML Element:** A complete structure consisting of a start tag, content, and an end tag. For example:

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

**Attribute:** Extra information inside a start tag that defines the element's behavior or appearance. Attributes are written as name–value pairs, like:

```
<p class="intro">This is an intro paragraph.</p>
```

where `class="intro"` is the attribute (`class`) and its value (`intro`).

# 2 Introduction to HTML

**HTML (Hypertext Markup Language)** is the standard language used to create and structure content on the web. It consists of a collection of tags (also called elements) that are organized in a tree-like structure, often referred to as the Document Object Model (DOM).

When a browser such as Google Chrome or Microsoft Edge loads a webpage, it reads the HTML code and translates it into the visual layout you see — including text, images, links, headings, and more.

Think of HTML as the skeleton of a webpage: it defines what goes where, while other technologies like CSS and JavaScript control how it looks and behaves.

# 3 HTML Tags

**Tags** are the fundamental building blocks of HTML. Each tag is enclosed in angle brackets — a less-than symbol (<) followed by the tag name, and ending with a greater-than symbol (>).

Tags tell the browser how to display or interpret the enclosed content. For example:

```
<b>Hello World</b>    →    Hello World (bold)
<i>Hello World</i>    →    Hello World (italic)
```

Most HTML tags come in pairs:

- A **start tag**, e.g., `<b>`

- An **end tag**, e.g., `</b>`

The end tag includes a forward slash (/) to indicate the closing of that element.

HTML tags are **not case-sensitive**, which means `<b>` and `<B>` are treated the same by browsers.

## 3.1 HTML Elements

An **HTML element** consists of three parts:

- A **start tag** (e.g., `<b>`),

- Some **content** (e.g., `Hello World`),

- And an **end tag** (e.g., `</b>`).

Together, they form a complete HTML element:

```
<b>Hello World</b>
```

This element displays the text **Hello World** in bold.

Elements can also be **nested**, meaning one element is placed inside another. For example:

```
<b><i>Hello World</i></b>
```

This nests the `<i>` (italic) element inside the `<b>` (bold) element, resulting in:
***Hello World***

In this example, the inner element `<i>Hello World</i>` is treated as the content of the outer `<b>` element.

## 3.2 Attributes

HTML elements can include extra information using **attributes**. These attributes appear inside the start tag and follow a `name="value"` format.

Attributes are commonly used to:

- Apply CSS styles or assign class names,

- Specify image sources and hyperlink targets,

- Add unique IDs,

- Provide metadata for scripting or accessibility.

**Example:**

```
<p class="p23">Some content...</p>
```

In this example:

- `<p>` and `</p>` define a paragraph element.

- `class="p23"` assigns a class name to the paragraph.

The `class` attribute can be reused across multiple elements. It is typically used in CSS for styling and can also be accessed by JavaScript or other tools to interact with the element.

## 3.3 Common Tags and Elements

### 3.3.1 Div

The `<div>` element defines a block-level section or division in an HTML document. It is commonly used as a container for other elements and often appears with attributes like `class`, `id`, or `style`.
**Example:**

```
<div class="Country">
    <h1> United Kingdom </h1>
    <div class="City">
        <h2> London </h2>
        <p> Capital City of United Kingdom </p>
    </div>
</div>
```

# United Kingdom

## London

Capital City of United Kingdom

Figure 1: Visual representation of the HTML structure with nested `<div>` elements

### 3.3.2 Span

The `<span>` element works like `<div>` but is an **inline** element. This means it does not begin on a new line and is generally used to style or group a small section of text.
**Example:**

```
<div class="Country">
    <h1> United Kingdom </h1>
    <div class="City">
        <h2> London </h2>
        <p> Capital
            <span class="def" style="color:blue; font-weight:bold;">
            City of United Kingdom
            </span>
        </p>
    </div>
</div>
```

In this case, the `<span>` is used to apply bold blue text to "City of United Kingdom" within the paragraph.

**United Kingdom**

**London**

Capital **City of United Kingdom**

Figure 2: Example where `<span>` styles inline text within a paragraph

## 3.4 Other Elements of Interest

### 3.4.1 Heading

HTML provides six levels of headings, from most important (`<h1>`) to least important (`<h6>`).

- **Tag:** `<h1>` to `<h6>`
- **Example:**

  ```
  <h1>HELLO WORLD</h1>
  ```

- `<h1>` defines the largest/most important heading; `<h6>` is the smallest.

### 3.4.2 Hyperlink

Used to create clickable links that navigate to another page or section.

- **Tag:** `<a href="URL">` ... `</a>`
- **Key Attribute:** `href` defines the destination URL
- **Example:**

  ```
  <a href="https://www.google.co.uk/">google</a>
  ```

### 3.4.3 Images

Used to embed images in a web page.

- **Tag:** `<img>`
- **Common Attributes:**
  - `src=""` – the source URL of the image
  - `alt=""` – alternative text if the image doesn't load
  - `width` and `height` – control the size
- **Example:**

  ```
  <img class="image" alt="Image" height="100" width="280"
       src="LINK_TO_IMAGE">
  ```

### 3.4.4 Paragraph

Defines a block of text as a paragraph.

- **Tag:** <p> and </p>

- **Example:**

```
<p>Hello World! This is an example of a paragraph element in HTML.</p>
```