Unit-02 HTML, XHTML and HTML5

Introduction to HTML, XHTML, and HTML5
- HTML (HyperText Markup Language)Overview:
- HTML is the standard markup language used to create web pages.
- It structures content on the web by defining elements such as headings, paragraphs, links, images, and more.
- HTML documents are plain text files that can be opened and edited with any text editor and viewed in any web browser.

Key Features:
Elements and Tags: HTML uses tags enclosed in angle brackets (e.g., <p>, <a>) to define elements.
Attributes: Tags can have attributes that provide additional information about elements (e.g., <img src="image.jpg" alt="Description">).
Document Structure: An HTML document typically starts with a <!DOCTYPE html> declaration, followed by <html>, <head>, and <body> tags.

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <title>Document Title</title>
</head>
<body>
    <h1>Heading</h1>
    <p>This is a paragraph.</p>
</body>
</html>
```

XHTML (Extensible HyperText Markup Language)Overview:

- XHTML is a stricter and cleaner version of HTML, designed to be more rigorous and XML-based.
- It enforces more strict coding practices, ensuring that web documents are well-formed and consistently structured.

Key Features:

- XML Syntax: XHTML follows XML syntax rules, meaning all tags must be properly closed, nested, and written in lowercase.
- Strict Standards: Enforces strict standards for element nesting and attribute quoting.
- Compatibility: Intended to be more compatible with XML tools and technologies.

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
<html xmlns="http://www.w3.org/1999/xhtml" lang="en">
<head>
  <meta http-equiv="Content-Type" content="text/html; charset=UTF-8" />
  <title>Document Title</title>
</head>
<body>
  <h1>Heading</h1>
  <p>This is a paragraph.</p>
</body>
</html>
```

HTML5 Overview:

- HTML5 is the latest version of HTML, introduced to enhance web functionality and user experience. It includes new elements, attributes, and APIs for more dynamic and interactive web applications.

Key Features:

- New Semantic Elements: Adds elements like <header>, <footer>, <article>, <section>, and <nav> to better define the structure of web documents.

- Multimedia Support: Provides built-in support for audio and video through the <audio> and <video> tags, without the need for third-party plugins.

- Graphics and Multimedia: Introduces the <canvas> element for drawing graphics and the <svg> element for scalable vector graphics.

- APIs and Advanced Features: Includes new APIs for offline storage (Web Storage), document editing, drag-and-drop, and more.
- Form Enhancements: Improves form controls with new input types (e.g., email, date, range), attributes, and validation.

```html
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <title>Document Title</title>
</head>
<body>
  <header>
    <h1>Heading</h1>
  </header>
  <section>
    <article>
      <p>This is a paragraph in an article.</p>
    </article>
  </section>
  <footer>
    <p>Footer content here.</p>
  </footer>
</body>
</html>
```

Document MetaData

- Document metadata in HTML provides essential information about a web page to browsers, search engines, and other services.

- Metadata is typically included within the <head> section of an HTML document.

- Here's an example of how to include various types of metadata in HTML:

```html
<html lang="en">
<head>
<meta charset="UTF-8">
<meta name="viewport" content="width=device-width, initial-scale=1.0">
<meta name="description" content="This is an example of a web page with metadata.">
 <meta name="keywords" content="HTML, metadata, example">
<meta name="author" content="John Doe">
<meta http-equiv="X-UA-Compatible" content="IE=edge">
<meta name="robots" content="index, follow">

<title>Example Page with Metadata</title>
<!-- Open Graph Meta Tags -->
<meta property="og:title" content="Example Page with Metadata">
<meta property="og:description" content="This is an example of a web page with metadata using Open Graph protocol.">
<meta property="og:image" content="https://example.com/image.jpg">
<meta property="og:url" content="https://example.com/page">
<meta property="og:type" content="website">

 <!-- Twitter Card Meta Tags -->
<meta name="twitter:card" content="summary_large_image">
<meta name="twitter:title" content="Example Page with Metadata">
<meta name="twitter:description" content="This is an example of a web page with metadata using Twitter Cards.">
<meta name="twitter:image" content="https://example.com/image.jpg">
```

```
<!-- Favicon -->
<link rel="icon" href="/favicon.ico" type="image/x-icon">
<!-- CSS Link -->
<link rel="stylesheet" href="styles.css">
<!-- JavaScript Link -->
<script src="scripts.js" defer></script>
</head>
<body>
<h1>Hello, World!</h1>
<p>This is an example web page to demonstrate the use of metadata in
HTML.</p>
</body>
</html>
```

Explanation of the Metadata Tags
<meta charset="UTF-8">: Specifies the character encoding for the HTML document.
<meta name="viewport" content="width=device-width, initial-scale=1.0">: Controls the layout on mobile browsers.
<meta name="description" content="...">: Provides a brief description of the page, useful for search engines.
<meta name="keywords" content="...">: Lists keywords relevant to the page, useful for search engine optimization (SEO).
<meta name="author" content="...">: Specifies the author of the page.
<meta http-equiv="X-UA-Compatible" content="IE=edge">: Instructs Internet Explorer to use the latest rendering engine.

<meta name="robots" content="index, follow">: Instructs search engines on how to index the page.
Open Graph Meta Tags (og:): Used to control how the page appears when shared on social media platforms like Facebook.
Twitter Card Meta Tags: Used to control how the page appears when shared on Twitter.
<link rel="icon" href="/favicon.ico" type="image/x-icon">: Specifies the favicon for the site.

<link rel="stylesheet" href="styles.css">: Links to an external CSS file for styling.
<script src="scripts.js" defer></script>: Links to an external JavaScript file, which will be executed after the HTML document has been parsed.

Basic Structure of HTML

```html
<!DOCTYPE html>
<html lang="en">
<head>
<meta charset="UTF-8">
<meta name="viewport" content="width=device-width, initial-scale=1.0">
<title>Basic HTML Structure</title>
</head>


<body>
<header>
<h1>Welcome to My Website</h1>
</header>
<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>
```

```html
    <main>
    <section id="home">
    <h2>Home</h2>
    <p>This is the home section.</p>
    </section>
    <section id="about">
    <h2>About</h2>
    <p>This is the about section.</p>
    </section>
    <section id="contact">
    <h2>Contact</h2>
    <p>This is the contact section.</p>
    </section>
    </main>

    <footer>
    <p>&copy; 2024 My Website</p>
    </footer>
    </body>
    </html>
```

Sections

In HTML, sections help to organize and structure the content of a web page.
Different sectioning elements serve different purposes, aiding both in the semantic structure and accessibility of the document.
Here's an overview of the main sectioning elements in HTML:

1. <header>
Represents introductory content, typically a group of introductory or navigational aids.

```html
<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>
```

2. <nav>Defines a set of navigation links.

```html
<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>
```

3. <main>Represents the dominant content of the <body> of a document.

```
<main>
   <section id="home">
      <h2>Home</h2>
      <p>Welcome to the home section.</p>
   </section>
</main>
```

- **4. <section>Defines a section in a document, such as a chapter, a grouping of content.**

```
<section id="about">
   <h2>About</h2>
   <p>This is the about section.</p>
</section>
```

5. <article>Represents a self-contained composition in a document, page, application, or site and is intended to be independently distributable or reusable.

<article>

   <h2>Article Title</h2>

   <p>This is an article. Articles can be distributed and reused independently.</p>

</article>

6. <aside>Represents a portion of a document whose content is only indirectly related to the document's main content.

<aside>

   <h2>Related</h2>

   <p>This is a related content, like a sidebar.</p>

</aside>

• 7. <footer>Represents a footer for its nearest sectioning content or sectioning root element.

<footer>

   <p>© 2024 My Website</p>

</footer>

Explanation of Section Elements

<header>: Often contains the main heading and navigational links.

<nav>: Contains navigation links to different sections of the website.

<main>: Contains the primary content of the page.

<section>: Groups related content together.<article>: Represents a self-contained piece of content.

<aside>: Contains related information, such as a sidebar.

<footer>: Contains footer information, typically at the bottom of the page.

- **Grouping Content**

Grouping content elements are used to group related items together without necessarily defining a distinct section of the document.

These elements include:

<div>: A generic container for flow content that has no special meaning. It's often used with CSS to style or with JavaScript for behavior.

```
<div class="container">
    <p>This is a paragraph within a div.</p>
    <img src="image.jpg" alt="An image within a div">
</div>
```

<span>: A generic inline container for phrasing content that has no special meaning. It's used to group text for styling or scripting purposes.

- `<p>This is a <span class="highlight">highlighted</span> word in a paragraph.</p>`

Text Level Semantics

1. <a> (Anchor)

• Defines a hyperlink, which is used to link from one page to another.

• Visit Example

**2. **

• Indicates that its content has strong importance, typically rendered in bold.

• <p>This is important text.</p>

3. (Emphasis)

• Marks text that has emphasized stress, typically rendered in italics.

• <p>This is emphasized text.</p>

4. (Bold)

• Represents text that is stylistically different from normal text, without conveying extra importance.

• <p>This is bold text.</p>

5. <i> (Italic)

• Represents a span of text in an alternate voice or mood, typically rendered in italics.

• <p>This is <i>italicized</i> text.</p>

6. <mark>

Represents text that is marked or highlighted for reference purposes.

<p>This is <mark>highlighted</mark> text.</p>

7. <small>

• Indicates smaller text, such as for fine print or disclaimers.

• <p>This is <small>small</small> text.</p>

8. <q> (Quote)Indicates a short inline quotation.

<p>He said, <q>This is a quote.</q></p>

9. <time>

Represents a specific period in time.

<p>The event starts at <time datetime="2024-06-01T19:00">7 PM on June 1, 2024</time>.</p>